

FTE CISCO Switch IOS Version

## **Update for Supported Cisco Switches**

**Software Change Notice**

**Revision Date: January 17, 2024**

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# Symbol Definitions

The following table lists the symbols used in this document to denote certain conditions.

Symbol	Definition
	ATTENTION: Identifies information that requires special consideration.
	TIP: Identifies advice or hints for the user, often in terms of performing a task.
	REFERENCE -EXTERNAL: Identifies an additional source of information outside of the bookset.
	REFERENCE - INTERNAL: Identifies an additional source of information within the bookset.

## Revision history

Revision	Date	Description
1.0	3/7/2016	Generate for IOS Version support updates
2.0	8/13/2018	Updated for the latest Security updates
2.1	10/10/2019	Update for 16.3.9 IOS XE for 3850 switches
2.2	03/20/2020	Update to support 16.12.1 for 3850 Routers only
2.3	5/6/2020	Fixed wording for SLR to be more clear.
2.4	7/29/2020	Introduce IE 3300 Switch to product line.
2.4.1	8/13/2020	Add Reference and workaround for IE3300 PTP bug.
2.4.2	10/27/2020	Change SLR to have Customer go to Cisco website and update Honeywell contact section.
2.5	11/03/2020	Add Support for the C9200, C9300 routers and C9300-24UX ToR switches.
2.6	4/30/2021	Add Support for the C9200L-24/48T-4G, 9300L-24T-4G, C9300-24T and C9300-24S switches
2.7	6/23/2022	Add support for IOS XE on all C3850 switches to version 16.12.07 to fix PAR 1-EDSCWMZ
2.8	12/07/22	Add support for the IOS XE for IE3300 switch to fix PAR 1-EC9KLVI
3.0	04/20/23	Add updated support for the 9200/9300 series of switches on IOS XE 17.06.05 for PAR 1-ERJEJCV
3.1	08/08/2023	Add updated support for the 2960+, 2960x and ie3000 switches on IOS 15.2 (7) E8 for PAR 1-F1J3Y21
3.2	12/15/2023	Add procedure for usage licensing for switches running IOS XE newer than 17.6.X
3.3	01/17/2024	Remove Note 2 from Table, as it no longer applies the later IOS XE version.

# Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>1</b>
1.1	About the document.....	1
1.2	About the update .....	1
1.2.1	Honeywell/Cisco Switch Models affected .....	2
1.2.2	Problems Resolved.....	4
1.2.3	Open Issues against Cisco IOS versions .....	5
1.3	Applying the updates .....	6
1.3.1	Prerequisites.....	7
1.3.2	Applicable Cisco Switches .....	7
1.4	Change impact.....	8
<b>2</b>	<b>Additional information .....</b>	<b>9</b>
2.1	Special Instructions for Cisco IOS XE Upgrade to 16.X.X .....	9
2.1.2	Reference Documents: .....	9
2.1.3	Steps to update 3850 switches to IOS XE 16.3.9 or Later Release .....	9
2.2	Smart Licensing Setup for IOS XE 16.9.X to 16.12.X versions.....	16
2.2.1	Switch Licensing Reservation (SLR) .....	18
2.3	Smart License Using Policy Setup for IOS XE 17.6.X and Later .....	24
2.3.1	Collect the following information.....	24
2.3.2	Smart Licensing Using Policy (SLUP) .....	24
2.4	IE 3300 IOS XE Bundle update.....	30
2.5	Cisco 9200/9300 Switches IOS XE Package Updates .....	32
2.5.1	References .....	32
2.5.2	IOS XE Gibraltar 16.12.X to Bengaluru 17.6.x .....	32

# **1 Introduction**

## **1.1 About the document**

This Software Change Notice describes the latest qualified Cisco Switch IOS versions, the PARs resolved by these versions and any open issues. The latest version of this SCN is always available on the Honeywell Process Solutions website. This document covers the latest version of IOS or IOS XE last qualified for each Cisco switch.

## **1.2 About the update**

The main purpose of this update is to document the latest Cisco Switch IOS versions that are qualified to be used with the Experion PKS FTE network. This update is to inform users that newer versions of the Cisco IOS are now required to be used with the FTE network. The update supersedes earlier released versions. It can be installed on systems installed with FTE and is release independent. The currently qualified switch software/firmware version information can always be found at [Process.Honeywell.com](http://Process.Honeywell.com).

This version updates the 2960 Plus, 2960X and ie3000 family of Experion qualified switches IOS version to fix PAR 1-F1J3Y21, where there are open security alerts addressed from Cisco. The IOS version 15.2(7).E8 is now qualified. This newer version is required to address the latest Cisco security notices.

Cisco has changed the licensing procedure from SLR to Smart License Usage Policy (SLUP) causing an issue for users to register their switch smart licensing. A new procure has been supplied to aid Honeywell Customers and Technical Assistance Center to fix any smart licensing issues for the newer upgrades or installation of the IOS XE 17.6.X.

### **1.2.1 Honeywell/Cisco Switch Models affected**

This list switches below includes the currently qualified IOS versions for use in the Experion PKS FTE Network.

This table is the list of switches that are currently available for purchase, this is the current IOS updates qualified.

<b>Honeywell Model</b>	<b>Cisco Part Number</b>	<b>Qualified IOS</b>	<b>Cisco file name</b>
SI-920LN4 <sup>1</sup>	C9200L-24T-4G-E	IOS XE17.06.05	cat9k_lite_iosxe.17.06.05.SPA.bin <sup>2</sup>
SI-930LN4 <sup>1</sup>	C9300L-24T-4G-E	IOS XE 17.06.05	cat9k_iosxe.17.06.05.SPA.bin
SI-920LN8 <sup>1</sup>	C9200L-48T-4G-E	IOS XE 17.06.05	cat9k_lite_iosxe.17.06.05.SPA.bin <sup>2</sup>
SI-930SN4 <sup>1</sup>	C9300-24S-E	IOS XE 17.06.05	cat9k_iosxe.17.06.05.SPA.bin
SI-930TN4 <sup>1</sup>	C9300-24T-E	IOS XE 17.06.05	cat9k_iosxe.17.06.05.SPA.bin
SI-930UN4 <sup>1</sup>	C9300-24UX-E	IOS XE 17.06.05	cat9k_iosxe.17.06.05.SPA.bin <sup>1</sup>
SI-9300R4 <sup>1</sup>	C9300-24T-A	IOS XE 17.06.05	cat9k_iosxe.17.06.05.SPA.bin <sup>1</sup>
SI-9200R4 <sup>1</sup>	C9200-24T-A	IOS XE 17.06.05	cat9k_lite_iosxe.17.06.05.SPA.bin <sup>1</sup>
SI-3300I2	IE-3300-8T2S-E	IOS XE 17.06.04	ie3x00-universalk9.17.16.04.SPA.bin

Note 1 –These switches require smart licensing activation/registration with Cisco, which should be included when purchased from the Honeywell Factory.



**FTE CISCO Switch IOS Version Update for Supported Cisco Switches**  
**Software Change Notice**

This table is the list of switches that are no longer available for purchase, listed current IOS versions.

<b>Honeywell Model</b>	<b>Cisco Part Number</b>	<b>Qualified IOS</b>	<b>Cisco file name</b>
SI-385XN4 <sup>1</sup>	WS-C3850-24XU-L	IOS XE 16.12.07	cat3k_caa-universalk9.16.12.07.SPA.bin
SI-3850N2 <sup>1</sup>	WS-C3850-12S-S	IOS XE 16.12.07	cat3k_caa-universalk9.16.12.07.SPA.bin
SI-2960R4	WS-C2960XR-24TS-I	15.2 (7) E8	c2960x-universalk9-mz.152-7.E8.bin
NE-SW224P	WS-C2960+24TC-L	15.2 (7) E8	c2960-lanbasek9-mz.152-7.E8.bin
NE-SW248P	WS-C2960+48TC-L	15.2 (7) E8	c2960-lanbasek9-mz.152-7.E8.bin
SI-296XN8	WS-C2960X-48TS-L	15.2 (7) E8	c2960x-universalk9-mz.152-7.E8.bin
NE-SW24G1	WS-C2960X-24-TS-L	15.2 (7) E8	c2960x-universalk9-mz.152-7.E8.bin
SI-3850R4 <sup>1</sup>	WS-C3850-24T-E	IOS XE 16.12.07	cat3k_caa-universalk9.16.12.07.SPA.bin <sup>1</sup>
NE-SW504S	IE-3000-4TC	15.2 (7) E8	ies-lanbasek9-mz.152-7.E8.bin
NE-SW508S	IE-3000-8TC	15.2 (7) E8	ies-lanbasek9-mz.152-7.E8.bin

Note 1 – Upgrading to this version will require smart licensing activation/registration with Cisco

## 1.2.2 Problems Resolved

This update includes the latest security alerts including the following issues:

Issue	Description	Applicable Switches
This version:		
PAR 1-FNIJGT1 Cisco Caveat: CSCwa03358	CISCO SLR process changes on IOSXE 17.3.2a onwards the new process is SLUP.	3850, 9200, and 9300 switches, only documentation changes to this document.
Cisco Caveat: CSCwa03358	Devices that are in OOC state are making huge auth renewal requests to onprem to get back into compliance because of these extensive requests on-prem performance is down. Use SLR for license process to avoid issue.	9200 and 9300 switches, running IO XE 16.12.4
Version 3.1:		
PAR 1-F1J3Y21	Cisco IOS vulnerabilities for IOS currently used by IE3000 and 2960 family of switches.	2960 Plus, 2960X, ie3000
Version 3.0		
PAR 1-ERJEJCV	Cisco IOS XE Software for Catalyst 9200/9300 Series Switches Arbitrary Code Execution Vulnerability	All 9200/9300 qualified switches
Version 2.8		
PAR 1-EC9KLVI	PTP does not forward packets properly.	This applies to IE3300 switches only.
Version 2.7		
<a href="#">PN2019-25C</a> PAR 1-AR63W71 PAR 1-BCV8H1B Cisco Caveat: CSCvt04055.	CISCO 3850 Routers IOS XE has frequent communication disruptions by Cisco Catalyst 3850 router randomly loses connectivity to L3 Domain.	This applies to all 3850 switches.
PAR 1-EDSCWMZ	Cisco problem that was previously identified against L3 Routers, but was never identified against L2	This applies to all 3850 switches.

### 1.2.3 Open Issues against Cisco IOS versions

The following is a list of open issues against the Cisco Switches used for Experion PKS FTE networks

Issue	Description
PAR 1-FA8U8E1	<p>2960x and 2960 Plus Switches don't connect via Telnet post IOS Upgrade to 15.2(7)E8</p> <p>Cisco has changed how the default settings for the lines and console connections the following commands are required to be applied before updating to IOS universalk9-mz.152-7.E8, for the 2960 Plus, 2960x and ie3000 family of switches The following commands need to be applied for customers that have not enabled ssh fully, or telnet enabled via line vty 0 4 with "transport input all" as referenced below. Failure to do so can result in ability to login to switch.</p> <p>Workaround:</p> <pre>line con 0 stopbits 1 exec-timeout 30 0 transport preferred telnet line vty 0 4 exec-timeout 30 0 transport preferred telnet transport input all</pre>
PAR 1-EV55HJP	<p>Problem Summary: IE3300 switch running 17.6.4 has log entries with %SMART_LIC-3-COMM_FAILED.....: once a day.</p> <p>Workaround: Apply the following commands to the switches running configuration:</p> <pre>no call-home license smart privacy all license smart transport off no service call-home no license smart reservation</pre> <p>or download the latest switch configuration files for updated templates.</p>
<a href="#">BW2018-05</a>	SI-3850N2, Cisco 3850-12-S, switch ports are disabled when hot-swapping the Fiber Optic SFPs too fast.

## 1.3 Applying the updates

All IOS updates should be performed by the site's network specialist. The software can be obtained directly from the Cisco website. If this is not possible Honeywell GTAC should be able to assist in obtaining the IOS (XE) files.



ATTENTION: Follow the Updating/Upgrading Switches and Replacing Switches procedure, while updating the Cisco Switch IOS (XE) to ensure no LOC/LOV occurs during the switch reloads.



REFERENCE the latest *Fault Tolerant Ethernet Overview and Implementation Guide* Honeywell Process Solutions support website for the latest instructions for switch update procedures.

### **1.3.1 Prerequisites**

Only for universalk9-mz.152-7.E8, for the 2960 Plus, 2960x and ie3000 family of switches:

Cisco has changed how the default settings for the lines and console connections the following commands are required to be applied before updating to IOS universalk9-mz.152-7.E8. The following commands need to be applied for customers that have not enabled ssh fully, or telnet enabled via line vty 0 4 with “transport input all” as referenced below. Failure to do so can result in the inability to login into the switch.

```
line con 0
stopbits 1
exec-timeout 30 0
transport preferred telnet
line vty 0 4
exec-timeout 30 0
transport preferred telnet
transport input all
```

### **1.3.2 Applicable Cisco Switches**

New IOS versions are for the models listed in section 1.2.1

For a list of latest qualified IOS Versions see [FTE Qualified Switch Firmware Versions](#).



Reference the [FTE Qualified Switch Firmware Versions](#) document for the complete list of Firmware versions for all FTE qualified switches.

## 1.4 Change impact

The Cisco switches will need to be reloaded after the latest IOS updates have been installed. These updates should only be performed by your site's network specialist.



ATTENTION: Follow the Updating/Upgrading Switches and Replacing Switches procedure while updating the Cisco Switch IOS (XE) to ensure no LOC/LOV occurs during the switch reloads.

The procedures for Upgrading/Updating Switches and Replacing Switches have been updated in the [Fault Tolerant Ethernet Overview and Implementation Guide](#) and need to be followed when installing the new IOS (XE) on the switches. Before reloading switch during installing the updated IOS (XE) make sure the switch configurations have been updated per the lasted posted versions of the templates or FTE Switch Configuration Tool.



REFERENCE the latest [Fault Tolerant Ethernet Overview and Implementation Guide](#) on the Honeywell Process Solutions support website for the latest instructions for switch update procedures.

## 2 Additional information

### 2.1 Special Instructions for Cisco IOS XE Upgrade to 16.X.X



ATTENTION: Follow the Updating/Upgrading Switches and Replacing Switches procedure while updating the Cisco Switch IOS (XE) to ensure no LOC/LOV occurs during the switch reloads.

#### 2.1.1 Purpose

The purpose of this section is to provide the instructions to update the IOS XE software on the Cisco Catalyst 3850 family of switches to the latest 16.X.X releases.

#### 2.1.2 Reference Documents:



Release Notes:

[https://www.cisco.com/c/en/us/td/docs/switches/lan/catalyst3850/software/release/16-3/release\\_notes/ol-16-3-3850.html?referring\\_site=RE&pos=1&page=https://www.cisco.com/c/en/us/td/docs/switches/lan/catalyst3850/software/release/16-6/release\\_notes/ol-16-6-3850.html](https://www.cisco.com/c/en/us/td/docs/switches/lan/catalyst3850/software/release/16-3/release_notes/ol-16-3-3850.html?referring_site=RE&pos=1&page=https://www.cisco.com/c/en/us/td/docs/switches/lan/catalyst3850/software/release/16-6/release_notes/ol-16-6-3850.html)

[https://www.cisco.com/c/en/us/td/docs/switches/lan/catalyst3850/software/release/16-12/release\\_notes/ol-16-12-3850.html](https://www.cisco.com/c/en/us/td/docs/switches/lan/catalyst3850/software/release/16-12/release_notes/ol-16-12-3850.html)

[https://www.cisco.com/c/en/us/td/docs/switches/lan/catalyst9300/software/release/17-6/release\\_notes/ol-17-6-9300.html?dtid=osscdc000283#id\\_67613](https://www.cisco.com/c/en/us/td/docs/switches/lan/catalyst9300/software/release/17-6/release_notes/ol-17-6-9300.html?dtid=osscdc000283#id_67613)

Migration:

[https://www.cisco.com/c/en/us/td/docs/switches/lan/catalyst3850/software/release/16-6/release\\_notes/ol-16-6-3850.html#35912](https://www.cisco.com/c/en/us/td/docs/switches/lan/catalyst3850/software/release/16-6/release_notes/ol-16-6-3850.html#35912)

Smart Licensing:

[https://www.cisco.com/c/en/us/td/docs/switches/lan/catalyst\\_slr/b-169-9000-series-SLR-cg/b-169-9000-series-SLR-cg\\_chapter\\_00.html#concept\\_qn3\\_l1l\\_52b](https://www.cisco.com/c/en/us/td/docs/switches/lan/catalyst_slr/b-169-9000-series-SLR-cg/b-169-9000-series-SLR-cg_chapter_00.html#concept_qn3_l1l_52b)

[www.cisco.com/go/scm](http://www.cisco.com/go/scm)

#### 2.1.3 Steps to update 3850 switches to IOS XE 16.3.9 or Later Release

##### 2.1.3.1 Verify Installed Version

1. Log into the current switch, using either Serial Connections,
2. Type Enable, verify Password:

## FTE CISCO Switch IOS Version Update for Supported Cisco Switches

### Software Change Notice

3. Type in password.
4. Switch#**show version**
5. Verify final output:

```
Switch Ports Model          SW Version  SW Image                Mode
---  ---  ---          -
*1    38   WS-C3850-24XU 03.07.04E   cat3k_caa-universalk9  INSTALL
```

6. If the version above is 16.12.07, the switch IOS XE is up to date and no other actions are required. New switches from Honeywell should have the latest qualified IOS XE version.

7. Verify enough space to copy file to switch, Switch#**dir**

Directory of flash:/

```
8082  -rw-      2097152   Jun  9 2017 09:28:03 +00:00  nvram_config
8083  -rw-      81992100  Nov 15 2016 16:37:01 +00:00  cat3k_caa-base.SPA.03.07.04E.pkg
8084  -rw-      5667516   Nov 15 2016 16:37:02 +00:00  cat3k_caa-drivers.SPA.03.07.04E.pkg
8085  -rw-      36656136  Nov 15 2016 16:37:01 +00:00  cat3k_caa-infra.SPA.03.07.04E.pkg
8086  -rw-      46349632  Nov 15 2016 16:37:02 +00:00  cat3k_caa-iosd-universalk9.SPA.152-
3.E4.pkg
8087  -rw-      28904332  Nov 15 2016 16:37:01 +00:00  cat3k_caa-platform.SPA.03.07.04E.pkg
8088  -rw-      128582464  Nov 15 2016 16:37:02 +00:00  cat3k_caa-wcm.SPA.10.3.141.0.pkg
8089  -rw-         1236   Nov 15 2016 16:37:11 +00:00  packages.conf
8090  drwx         4096   Nov 15 2016 16:51:57 +00:00  virtual-instance
56561 drwx         4096   Nov 15 2016 16:54:20 +00:00  dc_profile_dir
56563 drwx         4096   Nov 15 2016 16:55:06 +00:00  wnweb_store
8091  -rw-         1336   Jun  9 2017 09:27:53 +00:00  vlan.dat
```

1562509312 bytes total (122892390 bytes free)

### 2.1.3.2 Copy file to switch using usbflash, FTP or TFTP

Using USBFLASH:USB Flash drive must be formatted as FAT32 and it is recommended to use the smallest drive possible 4 GB to 16 GB works well. The following steps assume an update to 16.12.07, the file cat3k\_caa-universalk9.16.12.07.SPA.bin

1. Type “**copy usbflash0:cat3k\_caa-universalk9.16.12.07.SPA.bin flash:**”

```
Destination filename [cat3k_caa-universalk9.16.12.07.SPA.bin]? Yes
Copy in progress...CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
....
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
539622403 bytes copied in 85.630 secs (4776126 bytes/sec)
Switch#
```

After the copy is complete remove the USB Flash drive from switch.

2. Using TFTP/FTP:

```
Type “copy TFTP://IPaddress/cat3k_caa-universalk9.16.12.07.SPA.bin flash:”
Destination filename [cat3k_caa-universalk9.16.12.07.SPA.bin]? Yes
Copy in progress...!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
....
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
539622403 bytes copied in 85.630 secs (4776126 bytes/sec)
Switch#
```

Note: There is additional setup for TFTP and FTP for authentication.

3. Verify file copied correctly: Switch#**dir**

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## FTE CISCO Switch IOS Version Update for Supported Cisco Switches

### Software Change Notice

```
Directory of flash:/

62082  -rw-   2097152  Oct 13 2017 13:15:26 +00:00  nvram_config
62083  -rw-  539622403  Nov 13 2017 12:04:10 +00:00  cat3k_caa-universalk9.16.12.07.SPA.bin
62093  -rw-    1250     Oct 13 2017 10:20:49 +00:00  packages.conf
77601  drwx    4096     Oct 13 2017 13:14:46 +00:00  dc_profile_dir
62091  -rw-    8901     Oct 13 2017 10:18:22 +00:00  C3850-24XUMgmtStandbye-New.txt
13     -rw-  81992312  Oct 13 2017 10:20:46 +00:00  cat3k_caa-base.SPA.03.07.04E.pkg
14     -rw-  5667516  Oct 13 2017 10:20:46 +00:00  cat3k_caa-drivers.SPA.03.07.04E.pkg
15     -rw-  36656136 Oct 13 2017 10:20:46 +00:00  cat3k_caa-infra.SPA.03.07.04E.pkg
16     -rw-  46349632 Oct 13 2017 10:20:46 +00:00  cat3k_caa-iosd-universalk9.SPA.152-
3.E4.pkg
17     -rw-  28904332 Oct 13 2017 10:20:46 +00:00  cat3k_caa-platform.SPA.03.07.04E.pkg
18     -rw- 128580312 Oct 13 2017 10:20:47 +00:00  cat3k_caa-wcm-ldpe.SPA.10.3.141.0.pkg
23284  drwx    4096     Oct 13 2017 10:33:25 +00:00  virtual-instance
38801  drwx    4096     Oct 13 2017 10:34:57 +00:00  wnweb_store
62089  -rw-    676      Oct 13 2017 13:15:21 +00:00  vlan.dat

1624104960 bytes total (750243840 bytes free)Directory of flash:/
```

### 2.1.3.3 Software Installation from IOS XE 3.7.4 release to IOS XE 16.X.X.

This section is to be used if the current IOS XE Version loaded in the 3850 is version 3.7.X series. Perform the steps in sections *Verify Installed Version* and *Copy file to switch using usbflash, FTP or TFTP* before performing the steps below.

1. Verify the switch is ready to be rebooted, it is recommended that the Green or standby switch be worked on first. It can take up to 30 minutes for the complete reload and reprogramming.
2. Ready the switch for reboot and command compatibility perform the following configurations:
  - a. Switch#**config t**  
Preform the following commands:
    - Switch (config)#**no vstack**
    - Switch (config)# **end**
  - b. Switch#**write mem**

Now start software installation:

3. Switch#**software install file flash:/cat3k\_caa-universalk9.16.12.07.SPA.bin new force verbose**

Note:

The “new force” options are very important the force is required because of the transition from the 3.7.4 to the 16.X series of IOS XE, the new is required because it will rebuild the packages.conf boot file.

This command will not work on a switch running 16.X version of software or better.

Verify output:

(The output will repeat for each switch in the stack if the 3850 is stacked)

```
Preparing install operation ...
[1]: Starting install operation
[1]: Expanding bundle flash:cat3k_caa-universalk9.16.12.07.SPA.bin
[1]: Copying package files
[1]: Package files copied
[1]: Finished expanding bundle flash:cat3k_caa-universalk9.16.12.07.SPA.bin
[1]: Verifying and copying expanded package files to flash:
[1]: Verified and copied expanded package files to flash:
[1]: Starting compatibility checks
```

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## FTE CISCO Switch IOS Version Update for Supported Cisco Switches

### Software Change Notice

```
[1]: Bypassing peer package compatibility checks due to 'force' command option
[1]: Finished compatibility checks
[1]: Starting application pre-installation processing
[1]: Finished application pre-installation processing
[1]: Old files list:
    Removed cat3k_caa-base.SPA.03.07.04E.pkg
    Removed cat3k_caa-drivers.SPA.03.07.04E.pkg
    Removed cat3k_caa-infra.SPA.03.07.04E.pkg
    Removed cat3k_caa-iosd-universalk9.SPA.152-3.E4.pkg
    Removed cat3k_caa-platform.SPA.03.07.04E.pkg
    Removed cat3k_caa-wcm-ldpe.SPA.10.3.141.0.pkg
[1]: New files list:
    Added cat3k_caa-guestshell.16.12.07.SPA.pkg
    Added cat3k_caa-rpbase.16.12.07.SPA.pkg
    Added cat3k_caa-rpcore.16.12.07.SPA.pkg
    Added cat3k_caa-srdriver.16.12.07.SPA.pkg
    Added cat3k_caa-wcm.16.12.07.SPA.pkg
    Added cat3k_caa-webui.16.12.07.SPA.pkg
[1]: Creating pending provisioning file
[1]: Finished installing software.  New software will load on reboot.
[1]: Committing provisioning file

[1]: Do you want to proceed with reload? [yes/no]:
```

#### 4. Type Y

```
[1]: Reloading
```

```
Switch#
<Fri Sep  8 10:42:07 2017> Message from sysmgr: Reason Code:[3] Reset
Reason:Reset/Reload requested by [stack-manager]. [User requested reload]
umount: /proc/fs/nfsd: not mounted
^CUnmounting ng3k filesystems...
Unmounted /dev/sda3...
Warning! - some ng3k filesystems may not have unmounted cleanly...
Please stand by while rebooting the system...
Restarting system.
```

```
Booting...
reboot occurs:
```

```
no vstack
^
% Invalid input detected at '^' marker.

Switch Ports Model          SW Version  SW Image        Mode
-----
*    1 32    WS-C3850-24T    16.12.07    CAT3K_CAA-UNIVERSALK9 INSTALL
```

```
Press RETURN to get started!
```

## FTE CISCO Switch IOS Version Update for Supported Cisco Switches

### Software Change Notice

#### 2.1.3.4 Software Installation from IOS XE Denali 16.3.X. Release to IOS XE 16.X.X



ATTENTION: The IOS XE releases 16.9.X and above now have smart licensing requirements. See section 2.2 Smart Licensing Setup for IOS XE 16.9.X and above

The licensing registration process will need to be completed within 90 days of the upgrade to 16.12.X, to ensure proper operations.



ATTENTION: Follow the Updating/Upgrading Switches and Replacing Switches procedure while updating the Cisco Switch IOS (XE) to ensure no LOC/LOV occurs during the switch reloads.

This section is to be used if the current IOS XE Version loaded in the 3850 is version IOS XE 16.X.X series. Perform the steps in this section, *Verify Installed Version* and *Copy file to switch using usbflash, FTP or TFTP*, before performing the steps below:

Note: cat3k\_caa-universalk9.16.12.07.SPA.bin is used as example.

1. Log in to switch using enable mode.
2. Switch# **request platform software package install switch all file flash:/cat3k\_caa-universalk9.16.12.07.SPA.bin new auto-copy verbose**  
Note the new and the auto-copy are very important options, if not used the packages.conf file used to boot the switch will not be automatically updated.
3. When the updates are complete the switch must be manually reloaded to start the IOS XE update.
4. Switch# **reload**
5. Confirm? **Y**
6. Verify switch reloads and installs the IOS XE Version 16.12.07

Reload example last lines:

```
...
no vstack
^
% Invalid input detected at '^' marker.
Switch Ports Model          SW Version  SW Image                Mode
-----
*    1 32    WS-C3850-24T    16.12.7     CAT3K_CAA-UNIVERSALK9  INSTALL

Press RETURN to get started!
```



ATTENTION: The new release 16.12.7 has deprecated the **vstack** command, upon initial loading of 16.12.7 may get an error for either **vstack** or **no vstack**.

#### 2.1.3.5 Command differences for IOS XE 16.12.7

Warnings will appear for type 5 encryption for passwords if in affect:

WARNING: Command has been added to the configuration using a type 5 password. However, type 5 passwords which are considered weak are now deprecated.

WARNING: Auto-converting the entered Type 5 password to Type 9

WARNING: Command has been added to the configuration using a type 7 password. However, type 7 passwords will soon be deprecated. Migrate to a supported password type

The new release 16.12.1 and above has deprecated the following commands and errors about these commands will appear upon reload of the switch.

```
errdisable recovery cause vmps
ap dot11 airtime-fairness policy-name Default 0
ap group default-group
ap hyperlocation ble-beacon 0
ap hyperlocation ble-beacon 1
ap hyperlocation ble-beacon 2
ap hyperlocation ble-beacon 3
ap hyperlocation ble-beacon 4
```

Smart licensing is going to be enabled and call-home will be enabled. This will be an issue with any Catalysis 3850 updated to IOS XE greater than 16.9 or greater. Honeywell does not recommend having the call-home feature enabled on the Experion PKS networks so a manual smart licensing process must be used to register each switch to 16.9 or above.

#### 2.1.3.6 Verify release and clean up files

1. Login into the switch enable mode:
2. Write current configuration to remove all deprecated commands from the startup-config:  
Switch# **write memory**
3. Now Cleanup the old files.  
For updates to 16.3.X use the following command:  
Switch# **request platform software package clean switch all**  
For updates to 16.12.X and above use the following command:

**Honeywell**

## FTE CISCO Switch IOS Version Update for Supported Cisco Switches

### Software Change Notice

#### Switch# install remove inactive

```
This operation may take several minutes...
Running command on switch 1
No path specified, will use booted path flash:packages.conf
Cleaning flash:
  Scanning boot directory for packages ... done.
  Preparing packages list to delete ...
    cat3k_caa-guestshell.16.12.07.SPA.pkg
      File is in use, will not delete.
    cat3k_caa-rpbase.16.12.07.SPA.pkg
      File is in use, will not delete.
    cat3k_caa-rpcore.16.12.07.SPA.pkg
      File is in use, will not delete.
    cat3k_caa-srdriver.16.12.07.SPA.pkg
      File is in use, will not delete.
    cat3k_caa-wcm.16.12.07.SPA.pkg
      File is in use, will not delete.
    cat3k_caa-webui.16.12.07.SPA.pkg
      File is in use, will not delete.
  packages.conf
    File is in use, will not delete.
done.

The following files will be deleted:
[1]:
/flash/cat3k_caa-guestshell.16.03.09.SPA.pkg
/flash/cat3k_caa-rpbase.16.03.09.SPA.pkg
/flash/cat3k_caa-rpcore.16.03.09.SPA.pkg
/flash/cat3k_caa-srdriver.16.03.09.SPA.pkg
/flash/cat3k_caa-universalk9.16.03.09.SPA.conf
/flash/cat3k_caa-wcm.16.03.09.SPA.pkg
/flash/cat3k_caa-webui.16.03.09.SPA.pkg
/flash/packages.conf.00-

Do you want to proceed? [y/n]
```

#### 4. Type **Y**

```
[1]:
Deleting file flash:cat3k_caa-guestshell.16.03.09.SPA.pkg ... done.
Deleting file flash:cat3k_caa-rpbase.16.03.09.SPA.pkg ... done.
Deleting file flash:cat3k_caa-rpcore.16.03.09.SPA.pkg ... done.
Deleting file flash:cat3k_caa-srdriver.16.03.09.SPA.pkg ... done.
Deleting file flash:cat3k_caa-universalk9.16.03.09.SPA.conf ... done.
Deleting file flash:cat3k_caa-wcm.16.03.09.SPA.pkg ... done.
Deleting file flash:cat3k_caa-webui.16.03.09.SPA.pkg ... done.
Deleting file flash:packages.conf.00- ... done.
SUCCESS: Files deleted.
```

**Note:** This process will be repeated for each switch in the stack. This deleted release depends on the migration used.

#### 5. Verify flash is cleaned up: Switch#**dir**

Directory of flash:/

```
62082  -rw-      2097152  Nov 13 2017 14:18:27 +00:00  nvram_config
62083  -rw-      65301   Nov 13 2017 14:11:27 +00:00  memleak.tcl
62093  drwx       4096   Nov 13 2017 14:11:40 +00:00  .installer
62088  drwx       4096   Nov 13 2017 14:18:22 +00:00  core
   19  -rw-      c      Nov 13 2017 14:05:18 +00:00  cat3k_caa-
guestshell.16.03.09.SPA.pkg
   20  -rw-     22301472  Nov 13 2017 14:05:18 +00:00  cat3k_caa-
rpbase.16.03.09.SPA.pkg
```

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## FTE CISCO Switch IOS Version Update for Supported Cisco Switches

### Software Change Notice

```

21 -rw- 266035828 Nov 13 2017 14:05:19 +00:00 cat3k_caa-
rpscore.16.03.09.SPA.pkg
69843 drwx 4096 Nov 13 2017 14:11:00 +00:00 .prst_sync
62085 -rw- 4748 Nov 13 2017 14:05:52 +00:00 packages.conf
77601 drwx 4096 Nov 13 2017 14:11:10 +00:00 dc_profile_dir
22 -rw- 9089660 Nov 13 2017 14:05:22 +00:00 cat3k_caa-
srdriver.16.03.09.SPA.pkg
62092 drwx 4096 Nov 13 2017 14:11:10 +00:00 gs_script
62091 -rw- 8901 Oct 13 2017 10:18:22 +00:00 C3850-24XUMgmtStandby-
New.txt
85361 drwx 4096 Nov 13 2017 14:11:02 +00:00 .rollback_timer
31042 drwx 4096 Oct 13 2017 10:33:25 +00:00 vman_fdb
23284 drwx 4096 Oct 13 2017 10:33:25 +00:00 virtual-instance
38801 drwx 4096 Oct 13 2017 10:34:57 +00:00 wnweb_store
62089 -rw- 676 Nov 13 2017 14:18:14 +00:00 vlan.dat
23 -rw- 212812400 Nov 13 2017 14:05:48 +00:00 cat3k_caa-
wcm.16.03.09.SPA.pkg
24 -rw- 13423224 Nov 13 2017 14:05:50 +00:00 cat3k_caa-
webui.16.03.09.SPA.pkg
62087 -rw- 37 Nov 13 2017 14:10:55 +00:00 bootloader_evt_handle.log
62094 -rw- 2097152 Nov 13 2017 14:18:27 +00:00 nvram_config_bkup

1624104960 bytes total (994181120 bytes free)

```



The following step needs to be performed to disable the switch from contacting Cisco directly for licensing confirmation.

6. If 16.9.X IOS XE or above has been installed: Disable the call-home feature that has been enabled by default:
7. Switch# **config t**
8. Switch(config)# **no call-home**  
All configuration under call-home mode are set to default value. All profiles except CiscoTAC-1 profile are removed.
9. Switch(config)# **no service call-home**
10. Switch (config)# **end**
11. Switch# **write**
12. Switch is ready to use.
13. Always get the latest FTE Switch Configurations files from [HoneywellProcess.com](http://HoneywellProcess.com).

## 2.2 Smart Licensing Setup for IOS XE 16.9.X to 16.12.X versions



**ATTENTION:** The licensing registration process will need to be completed within 90 days of the upgrade to 16.12.X, to ensure proper operations. It is required that this method be used for licensing for these versions and not use any method that attempts to connect to an external license server.

Because of the nature of the Experion PKS Network, the Cisco switches confirming and registering licenses from the internet is not allowed. The following procedure is for smart

## FTE CISCO Switch IOS Version Update for Supported Cisco Switches

### Software Change Notice

licensing reservation with Cisco for your existing 3850 routers to keep from having the switch connect to the Cisco Smart licensing system.

Prerequisites: A Cisco.com ID will be required to request these licenses and complete the procedure below. If your company is handling all the Cisco Licensing, contact your Company's network specialist to determine the applicable Cisco Smart Virtual Account or Cisco representative to create the Cisco Smart Virtual Account.

If Honeywell is handling your Cisco equipment contact Honeywell GTAC to help with the next steps.

1. Collect the following information:
  - Cisco.com ID: CCiscoID
  - Smart virtual account name: SVAName
  - Smart account domain ID (such as "companyXYZ.com"): Company.com
  - Catalyst 3850 switches with ipservices, serial numbers and device information.
  - Include show tech or show inventory command output to find out the correct model type.
2. Go to website [www.cisco.com/go/scm](http://www.cisco.com/go/scm), Verify the Cisco Sign in window is displayed
3. Enter your Cisco.com ID, select Next, Verify the Cisco Welcome window.
4. Enter the password to the CCiscoID account entered, select **Sign in**.
5. Verify **Support Case Manager**, select **Open New Case**, select **Software Licensing**.
6. Choose a Category expand **CSSM & LRP Issues**, select **Enterprise (Route/Switch/Data Center/Io/SP)**.



7. Select **OPEN CASE**, enter the following data:

**FTE CISCO Switch IOS Version Update for Supported Cisco Switches**  
**Software Change Notice**

- Title enter 'Enabling License Reservation for Smart Account'
  - Description should contain the wording:  
Application use of the Catalyst 3850 ipservices cannot initiate DLC (Device Led Conversion) to migrate the RTU (Right to Use) licenses to Smart licensing. This is due to the devices being used cannot connect to the internet for security reasons and call home functionality cannot be used.  
Include the Smart License Virtual account name and Smart account domain ID in the description to help accelerate the Smart Licenses to have a place to be accessed.
  - Enter Sales Order information if available
  - Enter Serial Number of 3850 switch with IPServices
  - Enter Smartnet contract number if available.
  - Confirm contact information
  - Select Contact Preferences
  - Enter email addresses of others you want copied on this CASE.
  - Select **SUBMIT CASE**
8. The Cisco Licensing Support Team will issue the Smart Licenses for the Catalyst 3850 switches and deposit the correct licenses in Your Company's Smart Account provided in the support case.
9. Once the licenses are in the Smart Account specified, the 3850 switches can begin registering the devices using [Specific License Reservation \(SLR\)](#)

## **2.2.1 Switch Licensing Reservation (SLR)**

This checklist is to complete the Switch Licensing Reservation (SLR) procedure:

- Enable license reservation on the device.
- Generate a license reservation request code from the device.
- Enter the request code in CSSM (Cisco Smart Software Manager), reserve a license and generate an authorization code.
- Register the device with the generated authorization code.

### **2.2.1.1 Enable License Reservation on Switch**

This procedure enables the ability on the switch to generate the License reservation code for the Smart Licensing registration. This command is only available on versions IOS XE 16.9.X or later.

1. Connect to the router or switch via console connection.



## FTE CISCO Switch IOS Version Update for Supported Cisco Switches

### Software Change Notice

2. Enable privileged EXEC mode on the switch: switch> **enable**, Enter your password if prompted. From the switch prompt
3. Enter global configuration mode: switch# **configure terminal**
4. Enables SLR: switch(config)# **license smart reservation**
5. Exit configuration mode: switch(config)#**exit**

#### 2.2.1.2 Generating a Request Code from the Device

This procedure generates the code required to reserve the license for the switch.

1. Connect to the router or switch via console connection.
2. Enable privileged EXEC mode on the switch: switch> **enable**, Enter your password if prompted. From the switch prompt
3. Enter global configuration mode: switch# **license smart reservation request local**  
  
Enter this request code in the Cisco Smart Software Manager portal:  
CB-ZWS-C3850-24T:FCW2723F0BX-AK9A6sMTr-47 (Example output)
4. Copy the generated Request code and save into a file for Entry into the CSSM.
5. Verifying the License Status After Generating Request Code:  
Switch# **show license reservation**

```
Overall status:
  Active: PID: WS-C3850-24T,SN:FCW2723F0BX
  License reservation: ENABLED
  Reservation status: RESERVATION IN PROGRESS on Jun 12 15:36:04 2018 UTC
  Export-Controlled Functionality: Not Allowed
  Request code: WS-C3850-24T:FCW2723F0BX-AK9A6sMTr-47
```

6. Continue to next section.

#### 2.2.1.3 Reserving License in CSSM

This procedure reserves the smart license for switches are

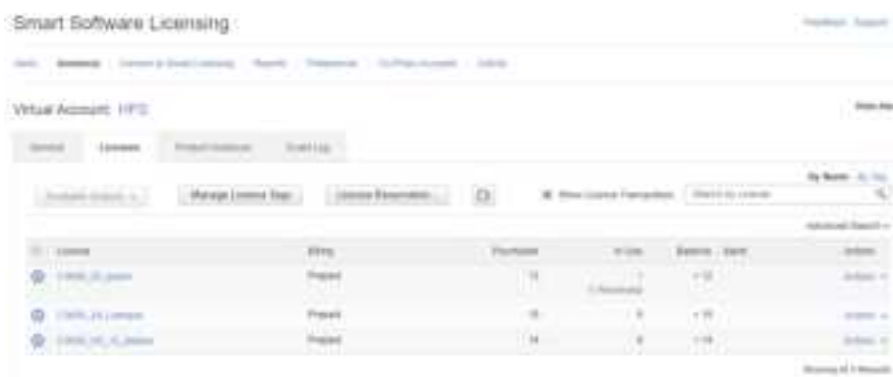
1. Log in to CSSM at <https://software.cisco.com/#>. Log in to the portal using a Cisco provided username and password.
2. Select **Smart Software Licensing** from License section.

## FTE CISCO Switch IOS Version Update for Supported Cisco Switches

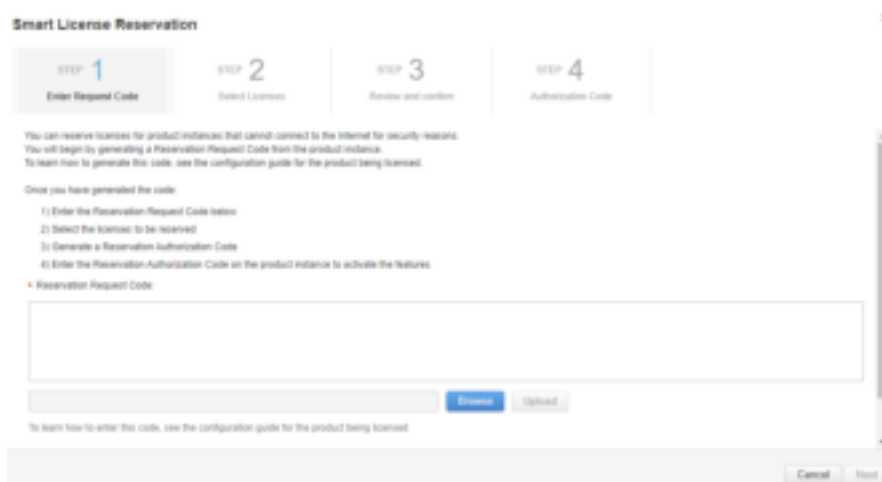
### Software Change Notice



3. From the Smart Software Licensing, Select the **Inventory** tab.
4. Select the **Virtual Account** from the drop-down
5. Select the **Licenses** tab.



6. Select the **License Reservation** button, the Smart License Reservation window appears.



7. Enter the Reservation request code and select **Next**.

## FTE CISCO Switch IOS Version Update for Supported Cisco Switches

### Software Change Notice

8. Select the **Reserve a specific License** checkbox.
9. For the required license, enter **1** in the Quantity to Reserve field and click **Next**.

Smart License Manager

Step 1 of 4  
Setup Product Code

Step 2 of 4  
Select License

Step 3 of 4  
License Activation

Step 4 of 4  
License Activation

**Product Instance Details**

Product Type: Cognate

License Key: K11-1234-567

License Number: K1234...

It is not a software. Please do not use it as a software. It is a license key. It is not a software. It is a license key.

License is a software license

License	License Key	License Number	License Type	License Status
Cognate_01_license	K11-1234-567	11	11	1
Cognate_02_license	K11-1234-567	11	11	1
Cognate_03_license	K11-1234-567	11	11	1
Cognate_04_license	K11-1234-567	11	11	1

10. Verify step 3 Review and Confirm, Select **Generate Authorization Code**.

1 ✓

Enter Request Code

2 ✓

Select Licenses

3

Review and confirm

4

Activation Code

Product Instance Details

Product Type

License

SKU Details Number

COMB

MS-COMB-AM

00000000000000000000

License to Reserve

License	Expires	Quantity to Reserve
<div>COMB_00000000000000000000</div> <div>00000000000000000000</div>	never	1

Cancel

Back

Reserve and activate License

## FTE CISCO Switch IOS Version Update for Supported Cisco Switches

### Software Change Notice

11. Verify Product Instance Detail, Select **Download as File**, Save file with name or serial number of switches in the file name. Suggest copy to USB Flash drive for insertion to switch for transfer.



12. Select **Close**

13. Repeat steps 6-11 for each switch.

#### 2.2.1.4 Registering Switch with Authorization Code

This procedure installs the registration code into the switch.

1. Connect to the router or switch via console connection.
2. Enable privileged EXEC mode on the switch: switch> **enable**, Enter your password if prompted. From the switch prompt
3. Verifying the License Status After Generating Request Code before registration:  
Switch# **show license reservation**

Overall status:

Active: PID: WS-C3850-24T, SN:FCW2723F0BX

License reservation: ENABLED

Reservation status: RESERVATION IN PROGRESS on Jun 12 15:36:04 2018 UTC

Export-Controlled Functionality: Not Allowed

Request code: WS-C3850-24T:FCW2723F0BX-AK9A6sMTr-47

4. Copy the authorization code file from USB Drive or using TFTP/FTP to flash:

Examples: copy usbflash0:/authorizationcode.txt flash:/authorizationcode.txt

Copy tftp://<ipaddress>/authorizationcode.txt flash:/authorizationcode.txt

**Honeywell**

**FTE CISCO Switch IOS Version Update for Supported Cisco Switches**  
**Software Change Notice**

5. Load the authorization code either from flash register the device:  
**switch# license smart reservation install file flash:/AuthorizationCode.txt**

```
Reservation install file successful
Last Confirmation code UDI: PID:WS-C3850-24T,SN:FCW2723F0BX
Confirmation code: 785533cf
```

6. Verify the License Status After Registering the Device with Authorization Code:  
**switch# show license reservation**

```
License reservation: ENABLED
```

```
Overall status:
```

```
Active: PID:WS-C3850-24T,SN:FCW2723F0BX
Reservation status: SPECIFIC INSTALLED on Mar 13 16:24:31 2020 MST
Export-Controlled Functionality: ALLOWED
Last Confirmation code: 785533cf
```

```
Specified license reservations:
```

```
C3850_24_Ipserv (C3850-24 IP Services):
Description: C3850 24 Port Ipserv
Total reserved count: 1
Term information:
Active: PID:WS-C3850-24T,SN:FCW2723F0BX
License type: PERPETUAL
Term Count: 1
```

7. Save configuration to switch: **switch# write memory**
8. Repeat for each Router or switch needing reservations.

## 2.3 Smart License Using Policy Setup for IOS XE 17.6.X and Later

Because of the nature of the Experion PKS Network, the Cisco switches confirming and registering licenses from the internet is not allowed. The following procedure is for Smart Licensing Using Policy with Cisco for any of the Cisco switches that use 17.6.X software requires a right to use authorization. For Cisco switches, going from 16.12.X to 17.6.X the SLR licensing should be carried forward and only one command should be run to turn off the SLR process.

Some versions of the IOS XE can cause switches to run out of memory if attempting to connect to an external license server that does not respond for extended period to avoid this setting up the licensing to not to request connection either to the cisco.com or customer specific license server is the best way to ensure this does not happen. (Reference Cisco Caveat: CSCwa03358)

Prerequisites: A Cisco.com ID will be required to request these licenses and complete the procedure below. If your company is handling all the Cisco Licensing, contact your Company's network specialist to determine the applicable Cisco Smart Virtual Account or Cisco representative to create the Cisco Smart Virtual Account.

If Honeywell is handling your Cisco equipment contact Honeywell GTAC to help with the next steps.

### 2.3.1 Collect the following information

- Cisco.com ID: CCiscoID
- Smart virtual account name: SVAName
- Smart account domain ID (such as "companyXYZ.com"): Company.com
- Generate the all\_rum.txt file that contains the device information and copy from switch.

### 2.3.2 Smart Licensing Using Policy (SLUP)

This checklist is to complete the Switch Smart Licensing Using Policy procedure:

- Disable license reservation on the switch.
- Generate a all\_rum.txt file from the switch.
- Upload the all\_rum.txt request file in CSSM (Cisco Smart Software Manager), reserve a license and generate an ack.txt.
- Import the ack.txt file to the switch.

#### 2.3.2.1 Disable License Reservation on Switch

This procedure disables the ability for Smart Licensing registration. This command is only available on versions IOS XE 17.6.X or later. If SLR was implemented on the switch prior to

## FTE CISCO Switch IOS Version Update for Supported Cisco Switches

### Software Change Notice

the upgrade to 17.6.X then perform the steps below as the SLR reservation is preserved with the upgrade.

1. Connect to the router or switch via console connection.
2. Enable privileged EXEC mode on the switch: switch> **enable**, Enter your password if prompted. From the switch prompt
3. Enter global configuration mode: switch# **configure terminal**.
4. Disables SLR: switch(config)# **license transport off**
5. Exit configuration mode: switch(config)#**exit**
6. Save the configuration: switch(config)#**copy running-config startup-config**
7. If the SLR was already on the switch before the upgrade no other steps are required. This can be verified by performing the following commands on the switch:

- switch#**show license summary**

Validate output:

License Reservation is ENABLED

License Usage:

License	Entitlement Tag	Count	Status
network-essentials	(C9300-24 Network Essen...)	1	IN USE
dna-essentials	(C9300-24 DNA Essentials)	1	IN USE

- switch#**show license usage:**

Validate output:

License Authorization:

Status: Not Applicable

network-essentials (C9300-24 Network Essentials):

Description: C9300-24 Network Essentials

Count: 1

Version: 1.0

Status: IN USE

Export status: NOT RESTRICTED

Feature Name: network-essentials

Feature Description: C9300-24 Network Essentials

Enforcement type: NOT ENFORCED

License type: Perpetual

Reservation:

Reservation status: SPECIFIC INSTALLED

**Honeywell**

## FTE CISCO Switch IOS Version Update for Supported Cisco Switches

### Software Change Notice

```
Total reserved count: 1
dna-essentials (C9300-24 DNA Essentials):
  Description: C9300-24 DNA Essentials
  Count: 1
  Version: 1.0
  Status: IN USE
  Export status: NOT RESTRICTED
  Feature Name: dna-essentials
  Feature Description: C9300-24 DNA Essentials
  Enforcement type: NOT ENFORCED
  License type: Subscription
  Reservation:
    Reservation status: SPECIFIC INSTALLED
    Total reserved count: 1
```

If the switches are stacked the license count will include all of the switches in the stack.

#### 2.3.2.2 Generating an all\_rum.txt file from the Switch

This procedure generates the all\_rum.txt file required to register the licenses for the switch. If the switches are stacked the file generated will include all switches in the stack.

1. Connect to the router or switch via console connection.
2. Enable privileged EXEC mode on the switch: switch> **enable**, Enter your password if prompted. From the switch prompt
3. Enter global configuration mode:

```
switch# license smart save usage all file flash:/all_rum.txt
```

Note for a stacked switch instead of “flash: “use flash-1:” this will ensure the file is saved to the primary switch’s flash.

4. Copy the generated file and for Entry into the CSSM.

#### **Copy to usb flash:**

```
switch#copy flash:/all_rum.txt usbflash0:all_rum.txt
```

(Rename this file to be more descriptive such as SwitchSN\_rum.txt this will enable traceability in the CSSM)

Copy to TFTP:

```
switch#copy flash:/all_rum.txt tftp://<TFTP IP Address>/all_rum.txt
```

Where IP Address is the address of the TFTP server

Copy to FTP:

```
switch#copy flash:/all_rum.txt ftp://<FTP IP Address>/all_rum.txt
```

Where IP Address is the address of the FTP server, ip ftp username and password must be configured.

5. Continue to next section.



## FTE CISCO Switch IOS Version Update for Supported Cisco Switches

### Software Change Notice

#### 2.3.2.3 Requesting the ACK file from CSSM

This procedure reserves the smart license usage for the switches.

1. Log in to CSSM at <https://software.cisco.com/#>. Log in to the portal using a Cisco provided username and password.



2. Select from Download and Manage, Smart Software Manager section [Manage licenses](#).
3. From the Smart Software Licensing, Select the **Reports** tab.



4. Select the **Usage Data File** tab.



5. Select the **Upload Usage Data...** button.

## FTE CISCO Switch IOS Version Update for Supported Cisco Switches

### Software Change Notice



6. Select the **Browse** button, the File Browse window appears, select the all\_rum.txt file generated by the switch that has been copied to your computer.



7. Select the **Upload Data** button.



8. Verify return to Usage Data Files with newly upload file listed with today's date, correct number of devices and Reporting status of "Data Being Processed" with Acknowledgement Pending.

Usage Data File	Reported	Vehicle Account	Reporting Status	Devices	Acknowledgement
all_rum.txt	2021-01-19	Customer Virtual Account	Data Being Processed	0	Pending

9. Wait until the Acknowledgement field changes from **Pending** to **Download**, it may take as long as 30 minutes or more for this to happen. Select the **Download** and the file will be placed in the devices download default location named ACK\_<customText>\_rum.txt.
10. Continue to Import the ack.txt file.

#### **2.3.2.4 Import the ack.txt file on the Switch**

1. Copy the downloaded file to the switch using usbflash drive or TFTP or FTP. Copy the file to flash:/ACK\_<customText>\_rum.txt. Stacked switch it is recommend to ACK\_<customText>\_rum.txt save the file on flash-1:/ the primary switch in the stack flash.
2. Connect to the router or switch via console connection.
3. Enable privileged EXEC mode on the switch: switch> **enable**, Enter your password if prompted. From the switch prompt

4. Copy the ack file:

```
switch# copy usbflash0:/ACK_<customText>_rum.txt
```

5. Import the ACK file to the switch:

```
switch(config)#license smart import file flash:/ACK_<customText>_rum.txt
```

```
Import Data Successful
```

6. Verify license is imported: switch# **show license usage**

```
License Authorization:  
Status: Not Applicable
```

```
network-essentials (C9300-24 Network Essentials):  
Description: C9300-24 Network Essentials  
Count: 2  
Version: 1.0  
Status: IN USE  
Export status: NOT RESTRICTED  
Feature Name: network-essentials  
Feature Description: C9300-24 Network Essentials  
Enforcement type: NOT ENFORCED  
License type: Perpetual
```

```
dna-essentials (C9300-24 DNA Essentials):  
Description: C9300-24 DNA Essentials  
Count: 2  
Version: 1.0  
Status: IN USE  
Export status: NOT RESTRICTED  
Feature Name: dna-essentials  
Feature Description: C9300-24 DNA Essentials  
Enforcement type: NOT ENFORCED  
License type: Subscription
```

7. Smart Licensing Usage policy is now active on switch

## 2.4 IE 3300 IOS XE Bundle update



ATTENTION: Follow the Updating/Upgrading Switches and Replacing Switches procedure while updating the Cisco Switch IOS (XE) to ensure no LOC/LOV occurs during the switch reloads.

This is the IE 3300 IOS XE update procedure, which can be used to update an IE 3300 to the latest qualified firmware version that is listed in the current [FTE Qualified Switch Firmware Versions](#) document. The current example is to update to IOS XE 17.06.04.

1. Log in to switch using enable mode.
2. Verify the IOS XE version on the IE 3300 is 17.06.04 or the latest version:  
**switch#show version**  
Cisco IOS XE Software, Version 17.06.04  
Cisco IOS XE Software, Version 17.06.04  
Cisco IOS Software [Bengaluru], IE3x00 Switch Software (IE3x00-UNIVERSALK9-M), Version 17.6.4, RELEASE SOFTWARE (fc1)  
Technical Support: <http://www.cisco.com/techsupport>  
Copyright (c) 1986-2022 by Cisco Systems, Inc.  
Compiled Sun 14-Aug-22 08:15 by mcpre
3. If the IOS XE Version is not 17.06.04 or latest then, download from Cisco or get the version from Honeywell Network support specialist, and copy the IOS ie3x00-universalk9.17.06.04.SPA.bin file to a USB Stick (formatted as FAT32) or FTP/TFTP Server.

Verify there is enough space to copy the new IOS XE to the flash memory or you must delete any extra \*.bin file other than what is the current IOS XE and the new file. Verify there is at least twice 404530841 bytes available to copy the IOS XE over to switch.

4. Display the bytes available, from the switch in enable mode, **switch#dir**

```
Directory of flash:/
 6228  -rw-          269118486  Jul 27 2020 09:13:38 -07:00  ie3x00-
universalk9.16.12.04.SPA.bin
...
 40630  drwx              4096  Dec 31 1999 17:01:10 -07:00  onep

1697755136 bytes total (860286976 bytes free)
```

5. From the switch in enable mode,  
Copy from USB:  
**switch#copy usbflash#:/ie3x00-universalk9.17.06.04.SPA.bin flash:/**  
where # is 0 or 1 depending on which USB port the flash drive was placed.  
Copy from FTP or TFTP:  
**switch#copy ftp://<ipaddress>/ie3x00-universalk9.17.06.04.SPA.bin flash:/** or  
**switch#copy tftp://<ipaddress>/ie3x00-universalk9.17.06.04.SPA.bin flash:/**
6. Now set boot variable to point to new IOS XE Version:

**FTE CISCO Switch IOS Version Update for Supported Cisco Switches**  
**Software Change Notice**

switch#**config t**

- a) Clear Boot variable before pointing to new file:

switch(config)#**no boot system**

- b) Set boot system to point to new IOS XE file:

switch(config)#**boot system flash:/ie3x00-universalk9.17.06.04.SPA.bin**

switch(config)#**end**

7. Verify boot variable:

switch#**show boot**

Boot Variables on next reload:

BOOT variable = flash:/ie3x00-universalk9.17.06.04.SPA.bin;

Config file = flash:/nvram\_config

ENABLE\_FLASH\_PRIMARY\_BOOT = no

MANUAL\_BOOT variable = no

ENABLE\_BREAK variable = yes

8. Save configuration: switch#**write**

Building configuration...

[OK]

9. Remove USB stick if present and reload switch:

switch#**reload**

Proceed with reload? [confirm]**y**

10. Verify the reload completes correctly and proceed with configuration or operations.

## 2.5 Cisco 9200/9300 Switches IOS XE Package Updates

The IOS XE version should be present on the switches, if purchased from the Honeywell factory. If for some reason the version that is listed is not loaded on the switch, please follow the procedure to update the C9200/C9300 series of switches to the latest qualified IOS XE 16.12.04.

Installation procedures are example update paths and versions may not be exactly as stated in the examples.



**ATTENTION:** Follow the Updating/Upgrading Switches and Replacing Switches procedure while updating the Cisco Switch IOS (XE) to ensure no LOC/LOV occurs during the switch reloads.

### 2.5.1 References

The links to the Cisco release notes for the current IOS XE Release.



Release Notes:

[https://www.cisco.com/c/en/us/td/docs/switches/lan/catalyst9300/software/release/16-12/release\\_notes/ol-16-12-9300.html#id\\_67613](https://www.cisco.com/c/en/us/td/docs/switches/lan/catalyst9300/software/release/16-12/release_notes/ol-16-12-9300.html#id_67613)

[https://www.cisco.com/c/en/us/td/docs/switches/lan/catalyst9200/software/release/16-12/release\\_notes/ol-16-12-9200.html](https://www.cisco.com/c/en/us/td/docs/switches/lan/catalyst9200/software/release/16-12/release_notes/ol-16-12-9200.html)

### 2.5.2 IOS XE Gibraltar 16.12.X to Bengaluru 17.6.x

1. Log in to switch using enable mode.
2. Verify the IOS XE version on the C9200 or C9300 switch is 17.06.05 or the later version:  
**switch#show version**  
Cisco IOS XE Software, Version 16.12.04  
Cisco IOS Software [Gibraltar], Catalyst L3 Switch Software (CAT9K\_IOSXE), Version 16.12.4, RELEASE SOFTWARE (fc5)  
Technical Support: <http://www.cisco.com/techsupport>  
Copyright (c) 1986-2020 by Cisco Systems, Inc.  
...  

Switch	Ports	Model	SW Version	SW Image	Mode
-----	-----	-----	-----	-----	----
*	1 41	C9300-24T	16.12.4	CAT9K_IOSXE	INSTALL
3. If the IOS XE Version is not 17.06.05, download from Cisco or get the version from Honeywell Network support specialist, and copy the IOS XE \*.bin file to a USB Stick (formatted as FAT32) no larger than 8 GB or FTP/TFTP Server.
4. Before starting the update verify there enough space to copy file to switch, Switch#dir

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## FTE CISCO Switch IOS Version Update for Supported Cisco Switches

### Software Change Notice

...

11353194496 bytes total (9935908864 bytes free)

5. Verify there is more than 1027574083 bytes free to copy the file to the flash:
6. Clean up the flash before copying the file to the switch: **Switch#install remove inactive**

```
Switch#install remove inactive
```

```
install_remove: START Wed Sep 9 21:53:59 UTC 2020
```

```
*Sep 9 21:54:01.386: %INSTALL-5-INSTALL_START_INFO: Switch 1 R0/0: install_engine:
Started install removeCleaning up unnecessary package files
```

```
No path specified, will use booted path flash:packages.conf
```

```
Cleaning flash:
```

```
Scanning boot directory for packages ... done.
```

```
Preparing packages list to delete ...
```

```
cat9k-cc_srdriver.17.06.05.SPA.pkg
```

```
File is in use, will not delete.
```

```
cat9k-espbases.17.06.05.SPA.pkg
```

```
File is in use, will not delete.
```

```
cat9k-guestshell. 17.06.05.SPA.pkg
```

```
File is in use, will not delete.
```

```
cat9k-rpbases. 17.06.05.SPA.pkg
```

```
File is in use, will not delete.
```

```
cat9k-rpboot. 17.06.05.SPA.pkg
```

```
File is in use, will not delete.
```

```
cat9k-sipbases. 17.06.05.SPA.pkg
```

```
File is in use, will not delete.
```

```
cat9k-sipspa. 17.06.05.SPA.pkg
```

```
File is in use, will not delete.
```

```
cat9k-srdriver. 17.06.05.SPA.pkg
```

```
File is in use, will not delete.
```

```
cat9k-webui. 17.06.05.SPA.pkg
```

```
File is in use, will not delete.
```

```
cat9k-wlc. 17.06.05.SPA.pkg
```

```
File is in use, will not delete.
```

```
packages.conf
```

```
File is in use, will not delete.
```

```
done.
```

```
The following files will be deleted:
```

```
[switch 1]:
```

```
/flash/cat9k-cc_srdriver.16.12.04.SPA.pkg
```

```
/flash/cat9k-espbases.16.12. 04.SPA.pkg
```

```
/flash/cat9k-guestshell.16.12.04.SPA.pkg
```

```
/flash/cat9k-rpbases.16.12.04.SPA.pkg
```

```
/flash/cat9k-rpboot.16.12.04.SPA.pkg
```

```
/flash/cat9k-sipbases.16.12.04.SPA.pkg
```

```
/flash/cat9k-sipspa.16.12.04.SPA.pkg
```

```
/flash/cat9k-srdriver.16.12.04.SPA.pkg
```

```
/flash/cat9k-webui.16.12.04.SPA.pkg
```

```
/flash/cat9k-wlc.16.12.04.SPA.pkg
```

```
/flash/cat9k_iosxe.17.06.05.SPA.bin
```

```
/flash/cat9k_iosxe.17.06.05.SPA.conf
```

```
Do you want to remove the above files? [y/n]y
```

7. Verify the list of files to be deleted and proceed: Type: y

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## FTE CISCO Switch IOS Version Update for Supported Cisco Switches

### Software Change Notice

In the case below there was extra files from the previous update left behind.

```
[switch 1]:
Deleting file flash:cat9k-cc_srdriver.16.12.04.SPA.pkg ... done.
Deleting file flash:cat9k-esppbase.16.12.04.SPA.pkg ... done.
Deleting file flash:cat9k-guestshell.16.12.04.SPA.pkg ... done.
Deleting file flash:cat9k-rpbase.16.12.04.SPA.pkg ... done.
Deleting file flash:cat9k-rpboot.16.12.04.SPA.pkg ... done.
Deleting file flash:cat9k-sipbase.16.12.04.SPA.pkg ... done.
Deleting file flash:cat9k-sipspa.16.12.04.SPA.pkg ... done.
Deleting file flash:cat9k-srdriver.16.12.04.SPA.pkg ... done.
Deleting file flash:cat9k-webui.16.12.04.SPA.pkg ... done.
Deleting file flash:cat9k-wlc.16.12.04.SPA.pkg ... done.
Deleting file flash:cat9k_iosxe.17.06.05.SPA.bin ... done.
Deleting file flash:cat9k_iosxe.17.06.05.SPA.conf ... done.
SUCCESS: Files deleted.
--- Starting Post_Remove_Cleanup ---
Performing Post_Remove_Cleanup on all members
  [1] Post_Remove_Cleanup package(s) on switch 1
  [1] Finished Post_Remove_Cleanup on switch 1
Checking status of Post_Remove_Cleanup on [1]
Post_Remove_Cleanup: Passed on [1]
Finished Post_Remove_Cleanup

SUCCESS: install_remove Wed Sep  9 21:55:39 UTC 2020
```

#### 8. Copy the new IOS XE to the switch:

Copy from USB:

**switch#copy usbflash0:cat9k\_iosxe.17.06.05.SPA.bin flash:/**  
where # is 0 or 1 depending on which USB port the flash drive was placed.

Copy from FTP or TFTP:

**switch#copy ftp://<FTPIpaddress>/cat9k\_iosxe. 17.06.05.SPA.bin flash:/** or  
**switch#copy tftp://<TFTPIpaddress>/cat9k\_iosxe. 17.06.05.SPA.bin flash:/**

#### 9. Install new version:

**Switch#install add file flash:/cat9k\_iosxe. 17.06.05.SPA activate commit**

```
install_add_activate_commit: START Wed Sep  9 21:34:10 UTC 2020
*Sep  9 21:34:25.517: %INSTALL-5-INSTALL_START_INFO: Switch 1 R0/0: install_engine:
Started install one-shot flash:/cat9k_iosxe.17.06.05.SPA.bininstall_add_activate_commit:
Adding PACKAGE
install_add_activate_commit: Checking whether new add is allowed ....

--- Starting initial file syncing ---
Info: Finished copying flash:/cat9k_iosxe.17.06.05.SPA.bin to the selected switch(es)
Finished initial file syncing

--- Starting Add ---
Performing Add on all members
  [1] Add package(s) on switch 1
  [1] Finished Add on switch 1
Checking status of Add on [1]
Add: Passed on [1]
Finished Add
Image added. Version: 16.12.4.0.4480
install_add_activate_commit: Activating PACKAGE
```

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## FTE CISCO Switch IOS Version Update for Supported Cisco Switches

### Software Change Notice

```
Following packages shall be activated:
/flash/cat9k-wlc.17.06.05.SPA.pkg
/flash/cat9k-webui.17.06.05.SPA.pkg
/flash/cat9k-srdriver.17.06.05.SPA.pkg
/flash/cat9k-sipspa. 17.06.05.SPA.pkg
/flash/cat9k-sipbase. 17.06.05.SPA.pkg
/flash/cat9k-rpboot.17.06.05.SPA.pkg
/flash/cat9k-rpbase.17.06.05.SPA.pkg
/flash/cat9k-guestshell.17.06.05.SPA.pkg
/flash/cat9k-espbases.17.06.05.SPA.pkg
/flash/cat9k-cc_srdriver.17.06.05.SPA.pkg
```

This operation may require a reload of the system. Do you want to proceed? [y/n]y

#### 10. Answer prompt: Switch# Do you want to proceed? [y/n]y

```
--- Starting Activate ---
Performing Activate on all members
[1] Activate package(s) on switch 1
--- Starting list of software package changes ---
Old files list:
  Removed cat9k-cc_srdriver.16.12.04.SPA.pkg
  Removed cat9k-espbases.16.12.04.SPA.pkg
  Removed cat9k-guestshell.16.12.04.SPA.pkg
  Removed cat9k-rpbase.16.12.04.SPA.pkg
  Removed cat9k-rpboot.16.12.04.SPA.pkg
  Removed cat9k-sipbase.16.12.04.SPA.pkg
  Removed cat9k-sipspa.16.12.04.SPA.pkg
  Removed cat9k-srdriver.16.12.04.SPA.pkg
  Removed cat9k-webui.16.12.04.SPA.pkg
  Removed cat9k-wlc.16.12.04.SPA.pkg
New files list:
  Added cat9k-cc_srdriver.17.06.05.SPA.pkg
  Added cat9k-espbases.17.06.05.SPA.pkg
  Added cat9k-guestshell.17.06.05.SPA.pkg
  Added cat9k-rpbase.17.06.05.SPA.pkg
  Added cat9k-rpboot.17.06.05.SPA.pkg
  Added cat9k-sipbase.17.06.05.SPA.pkg
  Added cat9k-sipspa.17.06.05.SPA.pkg
  Added cat9k-srdriver.17.06.05.SPA.pkg
  Added cat9k-webui.17.06.05.SPA.pkg
  Added cat9k-wlc.17.06.05.SPA.pkg
Finished list of software package changes
[1] Finished Activate on switch 1
Checking status of Activate on [1]
Activate: Passed on [1]
Finished Activate
*Sep  9 21:40:29.306: %INSTALL-5-INSTALL_AUTO_ABORT_TIMER_PROGRESS: Switch 1 R0/0:
rollback_timer: Install auto abort timer will expire in 7200 seconds--- Starting Commit
---
Performing Commit on all members
[1] Commit package(s) on switch 1
[1] Finished Commit on switch 1
Checking status of Commit on [1]
Commit: Passed on [1]
Finished Commit
```

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## FTE CISCO Switch IOS Version Update for Supported Cisco Switches

### Software Change Notice

11. Verify the reload completes correctly and proceed with configuration or operations.

Note the C9200 switches will show the following error when completely the load process:

```
WARNING: Configured enable password CLI with weak encryption type 7 will be deprecated
in future. Hence please migrate to enable secret CLI which accomplishes same
functionality as enable password CLI and which also supports strong irreversible
encryption type 9
```

```
negotiation auto
```

```
^
```

```
% Invalid input detected at '^' marker.
```

This message is benign and is only because of a misspelled word on a shutdown port.

12. Log in to switch using enable mode.
13. Now Clean up the file system: **Switch#install remove inactive**
14. Verify the list of files to be deleted is only the older version files and proceed: Type: **y**
15. Switch is ready for configuration or should run as it was before the reload.