

One-Hit-Wonder: IOS-XE Firmware Upgrade with a Twist (Install Mode)

What is Covered:

- Standalone Catalyst 9200, 9400, 9500, 9600
- Standalone Catalyst 8000-series router
- Standalone Catalyst 9800 wireless LAN Controller
- Standalone ASR 1000
- Standalone ISR 1000, 4000 series routers
- Switch Virtual (aka VSS) pair of Catalyst 9400, 9500, 9600
- Switch Virtual (aka VSS) pair of Catalyst 9800

Not Covered:

- Router(s) & switch(es) running “classic” IOS is not covered.
- AireOS WLC is not covered.
- Standalone or Stack Catalyst 3650, 3850, 9300

NOTE: Use “request platform software package install switch all file flash: **on-reboot** new auto-copy verbose” command.

A Word from our Sponsors:

There is a very fine line between writing something short-and-sweet and writing something comprehensive while losing the target “market” in the process. I have done all I can to make this document as “digestible” as possible without losing much of the important content but still maintaining some forward momentum.

Introduction:

One of the biggest challenges about firmware upgrade is the outage, particularly the duration and inconvenience of the outage. Typically, rebooting a router, switch or a WLC would take about five (5) minutes, however, there are times when the reboot would blow out to fourteen (14) minutes (or longer). Because of this, firmware upgrade tends to happen outside business hours.

Cisco IOS/IOS-XE (Polaris) has the feature to schedule the reboot at a later date (`reload at <time> [date]`), however, the Cisco-recommended Install Mode command will immediately reboot the appliance as soon as the command is entered.

This process uses the recommended Install Mode CLI command (“`install add file bootflash: activate commit`”) but with a twist: *The process **WILL NOT reboot** the appliance.*

This means an operator can, *during business hours*, unpack the packages and schedule the reboot of the appliance(s) later.

IMPORANT: This procedure is neither recommended nor supported by Cisco (TAC).

Layout:

This document is broken into two “chapters”:

- Chapter 1: Standalone (non-stack)
- Chapter 2: Switch Virtual (aka VSS)

Technojargon:

- Appliance: A router, switch, wireless LAN controller (WLC) that operates on IOS-XE (Polaris)
- Target “firmware.conf” file: A firmware version intended to upgrade to with a file extension of “conf”.
- Switch Virtual: Virtual Switching System (VSS)

Chapter 1: Standalone

General Procedure

1. Read the Release Notes very carefully.
2. IOS-XE firmware have a filename extension of "bin".
3. Clean the flash/bootflash: `install remove inactive`
4. Copy the file into the switch/stack master. Make sure the boot-variable string is pointing to "packages.conf" file & "MANUAL_BOOT" is not enabled (or "no").

```
Switch#sh boot
BOOT variable = bootflash:packages.conf;
MANUAL_BOOT variable = no
BAUD variable = 9600
ENABLE_BREAK variable does not exist
BOOTMODE variable does not exist
IPXE_TIMEOUT variable does not exist
CONFIG_FILE variable does not exist
```

5. Initiate Install Mode

```
install add file bootflash:filename.bin activate commit
```

WARNING: After entering the (above) command, DO NOT TOUCH the keyboard!

Explanation:

After entering the Install Mode command, the automation script will unpack all the files from IOS-XE firmware. Around twelve (12) minutes (time duration varies depending on several factors, such as current firmware version, uptime, condition of the CPU/Memory, etc.) the script will stop with a "y/n" question.

- To stop the process, press "n" and Enter key (two keystrokes).
- Press "y" (one keystroke) and the process will continue and reboot the appliance automatically.

The warning is there as to minimize the risk of entering wrong key.

```
Switch#install add file bootflash:cat9k_iosxe.17.09.03.SPA.bin activate commit
install_add_activate_commit: START Mon Jul 10 03:46:17 UTC 2023

Jul 10 03:46:17.474: %INSTALL-5-INSTALL_START_INFO: R0/0: install_engine: Started install one-shot bootflash:cat9k_iosxe.17.09.03.SPA.bininstall_add
_activate_commit: Adding PACKAGE
install_add_activate_commit: Checking whether new add is allowed ...

--- Starting Add ---
Performing Add on Active/Standby
  [1] Add package(s) on R0
  [1] Finished Add on R0
Checking status of Add on [R0]
Add: Passed on [R0]
Finished Add

Image added. Version: 17.09.03.4111
install_add_activate_commit: Activating PACKAGE
Following packages shall be activated:
/bootflash/cat9k-wlc.17.09.03.SPA.pkg
/bootflash/cat9k-webui.17.09.03.SPA.pkg
/bootflash/cat9k-srdriver.17.09.03.SPA.pkg
/bootflash/cat9k-sipspsa.17.09.03.SPA.pkg
/bootflash/cat9k-sipbase.17.09.03.SPA.pkg
/bootflash/cat9k-rpboot.17.09.03.SPA.pkg
/bootflash/cat9k-rpbase.17.09.03.SPA.pkg
/bootflash/cat9k-lni.17.09.03.SPA.pkg
/bootflash/cat9k-guestshell.17.09.03.SPA.pkg
/bootflash/cat9k-espbase.17.09.03.SPA.pkg
/bootflash/cat9k-cc_srdriver.17.09.03.SPA.pkg

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

6. Press “n” (or “N”).
7. Do not be alarmed by an error message generated – It is expected.

```
This operation may require a reload of the system. Do you want to proceed? [y/n]n
FAILED: install_add_activate_commit /bootflash/cat9k-wlc.17.09.03.SPA.pkg /bootflash/cat9k-webui.17.09.03.SPA.pkg /bootflash/cat9k-srdriver.17.09.03.
SPA.pkg /bootflash/cat9k-sipspsa.17.09.03.SPA.pkg /bootflash/cat9k-sipbase.17.09.03.SPA.pkg /bootflash/cat9k-rpboot.17.09.03.SPA.pkg /bootflash/cat9k-
rpbase.17.09.03.SPA.pkg /bootflash/cat9k-lni.17.09.03.SPA.pkg /bootflash/cat9k-guestshell.17.09.03.SPA.pkg /bootflash/cat9k-espbase.17.09.03.SPA.pkg
/bootflash/cat9k-cc_srdriver.17.09.03.SPA.pkg: Cannot proceed activate because of user input
```

```
Jul 10 03:51:10.109: %INSTALL-3-OPERATION_ERROR_MESSAGE: R0/0: install_engine: Failed to install_add_activate_commit package bootflash:cat9k_iosxe.1
7.09.03.SPA.bin, Error: install_add_activate_commit /bootflash/cat9k-wlc.17.09.03.SPA.pkg /bootflash/cat9k-webui.17.09.03.SPA.pkg /bootflash/cat9k-sr
driver.17.09.03.SPA.pkg /bootflash/cat9k-sipspsa.17.09.03.SPA.pkg /bootflash/cat9k-sipbase.17.09.03.SPA.pkg /bootflash/cat9k-rpboot.17.09.03.SPA.pkg /
bootflash/cat9k-rpbase.17.09.03.SPA.pkg /bootflash/cat9k-lni.17.09.03.SPA.pkg /bootflash/cat9k-guestshell.17.09.03.SPA.pkg /bootflash/cat9k-espbase.1
```

8. Two files in the bootflash: are of importance, they are:
 - packages.conf (green font)
 - Target “firmware.conf” file. Example, “cat9k_iosxe.17.09.03.SPA.conf” is highlighted in the first picture (below)

Switch#dir

Directory of bootflash:/

608401	drwx	4096	Jul 10 2023 03:51:38	+00:00	.installer
673309	-rw-	7535	Jul 10 2023 03:48:17	+00:00	cat9k_iosxe.17.09.03.SPA.conf
673320	-rw-	53773515	Jul 10 2023 03:48:17	+00:00	cat9k-rpboot.17.09.03.SPA.pkg
673319	-rw-	9220	Jul 10 2023 03:47:27	+00:00	cat9k-wlc.17.09.03.SPA.pkg
673318	-rw-	18809860	Jul 10 2023 03:47:27	+00:00	cat9k-webui.17.09.03.SPA.pkg
673317	-rw-	39785480	Jul 10 2023 03:47:27	+00:00	cat9k-srdriver.17.09.03.SPA.pkg
673316	-rw-	65811460	Jul 10 2023 03:47:27	+00:00	cat9k-sipsa.17.09.03.SPA.pkg
673315	-rw-	51717128	Jul 10 2023 03:47:27	+00:00	cat9k-sipbase.17.09.03.SPA.pkg
673314	-rw-	816768004	Jul 10 2023 03:31:38	+00:00	cat9k-rpbase.17.09.03.SPA.pkg
673313	-rw-	9220	Jul 10 2023 03:47:27	+00:00	cat9k-lni.17.09.03.SPA.pkg
673312	-rw-	2151432	Jul 10 2023 03:47:27	+00:00	cat9k-guestshell.17.09.03.SPA.pkg
673311	-rw-	173028360	Jul 10 2023 03:47:27	+00:00	cat9k-espbase.17.09.03.SPA.pkg
673310	-rw-	26047500	Jul 10 2023 03:47:27	+00:00	cat9k-cc_srdriver.17.09.03.SPA.pkg
551641	-rw-	1246984471	Jul 10 2023 03:43:23	+00:00	cat9k_iosxe.17.09.03.SPA.bin
551636	drwx	4096	Jul 10 2023 03:31:38	+00:00	pnp-tech
551639	-rw-	0	Jul 10 2023 03:08:54	+00:00	dope_hist
551628	-rw-	17197	Jul 10 2023 03:08:54	+00:00	rdope_out.txt
551629	-rw-	91	Jul 10 2023 03:08:53	+00:00	rdope.log
551627	-rwx	2049	Jul 10 2023 03:08:27	+00:00	svl_ipc.tcl
551626	-rw-	134458	Jul 10 2023 03:08:27	+00:00	memleak.tcl
551625	-rw-	396	Jul 10 2023 03:08:06	+00:00	boothelper.log
648985	drwx	4096	Jul 10 2023 03:08:05	+00:00	dc_profile_dir
551624	-rw-	407	Jul 10 2023 03:07:47	+00:00	bootloader_evt_handle.log
551632	drwx	4096	Jan 3 2023 01:36:02	+00:00	guest-share
551621	-rw-	396	Jan 3 2023 01:35:20	+00:00	boothelper.log.old
73015	drwx	4096	Jan 3 2023 01:32:27	+00:00	pnp-info
551618	drwx	4096	Jan 3 2023 01:32:27	+00:00	.dbpersist
616516	-rw-	7716	Mar 27 2022 22:51:17	+00:00	packages.conf
616527	-rw-	47410403	Mar 27 2022 22:51:17	+00:00	cat9k-rpboot.17.03.05.SPA.pkg
616526	-rw-	9220	Mar 27 2022 22:50:34	+00:00	cat9k-wlc.17.03.05.SPA.pkg
616525	-rw-	14451716	Mar 27 2022 22:50:34	+00:00	cat9k-webui.17.03.05.SPA.pkg
616524	-rw-	30131208	Mar 27 2022 22:50:34	+00:00	cat9k-srdriver.17.03.05.SPA.pkg
616523	-rw-	57136132	Mar 27 2022 22:50:34	+00:00	cat9k-sipsa.17.03.05.SPA.pkg
616522	-rw-	34903048	Mar 27 2022 22:50:34	+00:00	cat9k-sipbase.17.03.05.SPA.pkg
616521	-rw-	597697540	Mar 27 2022 22:50:34	+00:00	cat9k-rpbase.17.03.05.SPA.pkg
616520	-rw-	5124	Mar 27 2022 22:50:33	+00:00	cat9k-lni.17.03.05.SPA.pkg
616519	-rw-	2262024	Mar 27 2022 22:50:33	+00:00	cat9k-guestshell.17.03.05.SPA.pkg
616518	-rw-	104571912	Mar 27 2022 22:50:33	+00:00	cat9k-espbase.17.03.05.SPA.pkg
616517	-rw-	18334732	Mar 27 2022 22:50:33	+00:00	cat9k-cc_srdriver.17.03.05.SPA.pkg
129794	drwx	4096	Dec 21 2021 04:00:47	+00:00	Tbot
73014	drwx	4096	Dec 21 2021 04:00:15	+00:00	ss_disc
551635	-rw-	5242880	Dec 21 2021 04:00:15	+00:00	ssd
97345	drwx	4096	Dec 21 2021 04:00:15	+00:00	sys_report
648961	drwx	4096	Dec 21 2021 04:00:15	+00:00	tech_support
640849	drwx	4096	Dec 21 2021 04:00:15	+00:00	gs_script
608402	drwx	4096	Dec 21 2021 03:59:57	+00:00	.ssh
551620	-rw-	179316	Dec 21 2021 03:57:48	+00:00	pnp-tech-reload-summary
632737	drwx	4096	Dec 21 2021 03:57:08	+00:00	.rollback_timer
551633	-rw-	2845	Dec 21 2021 03:15:55	+00:00	dir_copy
551631	-rw-	149453	Dec 21 2021 03:14:59	+00:00	pnp-tech-discovery-summary
551630	-rw-	35	Dec 21 2021 03:14:57	+00:00	pnp-tech-time
616513	drwx	4096	Oct 26 2021 00:08:48	+00:00	.prst_sync
657076	drwx	4096	Oct 25 2021 23:59:10	+00:00	onep
657073	drwx	4096	Oct 25 2021 23:58:49	+00:00	callhome
608410	drwx	4096	Oct 25 2021 23:58:31	+00:00	core

```
Switch#dir bootflash:*.conf
Directory of bootflash:/*.conf

Directory of bootflash:/

616516  -rw-          7716  Mar 27 2022 22:51:17 +00:00  packages.conf
673309  -rw-          7535  Jul 10 2023 03:48:17 +00:00  cat9k_iosxe.17.09.03.SPA.conf
11250098176 bytes total (7169294336 bytes free)
```

9. Rename "packages.conf" into a completely different filename, like "packages.conf.000".

```
Switch#rename bootflash:packages.conf bootflash:packages.conf.000
Destination filename [packages.conf.000]?
```

10. Copy or rename target "firmware.conf" file to "packages.conf".

```
Switch# copy bootflash:cat9k_iosxe.17.09.03.SPA.conf bootflash:packages.conf
Destination filename [packages.conf]?
Copy in progress...C
7535 bytes copied in 0.018 secs (418611 bytes/sec)
```

11. Check the bootflash: for the presence of the "packages.conf" file.

```
Switch#dir bootflash:packages*
Directory of bootflash:/packages*

Directory of bootflash:/

551642  -rw-          7535  Jul 10 2023 04:00:51 +00:00  packages.conf
616516  -rw-          7716  Mar 27 2022 22:51:17 +00:00  packages.conf.000
11250098176 bytes total (7169286144 bytes free)
```

12. Peer or inspect inside the "packages.conf" file and make sure the contents point to the intended firmware version, in the picture (below) it is 17.9.3.

```

Switch#more bootflash:packages.conf | begin rp_boot
boot  rp 0 0  rp_boot cat9k-rpboot.17.09.03.SPA.pkg
boot  rp 1 0  rp_boot cat9k-rpboot.17.09.03.SPA.pkg

iso   rp 0 0  rp_base cat9k-rpbase.17.09.03.SPA.pkg
iso   rp 1 0  rp_base cat9k-rpbase.17.09.03.SPA.pkg

iso   rp 0 0  rp_daemons cat9k-rpbase.17.09.03.SPA.pkg
iso   rp 1 0  rp_daemons cat9k-rpbase.17.09.03.SPA.pkg

iso   rp 0 0  rp_iosd cat9k-rpbase.17.09.03.SPA.pkg
iso   rp 1 0  rp_iosd cat9k-rpbase.17.09.03.SPA.pkg

iso   rp 0 0  rp_security cat9k-rpbase.17.09.03.SPA.pkg
iso   rp 1 0  rp_security cat9k-rpbase.17.09.03.SPA.pkg

iso   rp 0 0  rp_wlc cat9k-wlc.17.09.03.SPA.pkg
iso   rp 1 0  rp_wlc cat9k-wlc.17.09.03.SPA.pkg

iso   rp 0 0  rp_webui cat9k-webui.17.09.03.SPA.pkg
iso   rp 1 0  rp_webui cat9k-webui.17.09.03.SPA.pkg

iso   rp 0 0  srdriver cat9k-srdriver.17.09.03.SPA.pkg
iso   rp 1 0  srdriver cat9k-srdriver.17.09.03.SPA.pkg
--More-- █

```

13. If the contents of the “packages.conf” points to the correct firmware version, then save the config and reboot the switch.
14. [RECOMMENDED][OPTIONAL] Clean the flash: `install remove inactive`
15. DONE.

Chapter 2: Switch Virtual (aka VSS)

General Procedure

16. Read the Release Notes very carefully.
17. IOS-XE firmware have a filename extension of "bin".
18. Clean the flash/bootflash: `install remove inactive`
19. Copy the file into the switch/stack master. Make sure the boot-variable string is pointing to "packages.conf" file & "MANUAL_BOOT" is not enabled (or "no").

```
SWITCH#sh boot
BOOT variable = bootflash:packages.conf;
MANUAL_BOOT variable = no
BAUD variable = 9600
ENABLE_BREAK variable does not exist
BOOTMODE variable does not exist
IPXE_TIMEOUT variable does not exist
CONFIG_FILE variable does not exist

Standby BOOT variable = bootflash:packages.conf;
Standby MANUAL_BOOT variable = no
Standby BAUD variable = 9600
Standby ENABLE_BREAK variable does not exist
Standby BOOTMODE variable does not exist
Standby IPXE_TIMEOUT variable does not exist
Standby CONFIG_FILE variable =
```

20. Initiate Install Mode

```
install add file bootflash:filename.bin activate commit
```

WARNING: After entering the (above) command, DO NOT TOUCH the keyboard!

Explanation:

After entering the Install Mode command, the automation script will unpack all the files from IOS-XE firmware. Around twelve (12) minutes (time duration varies depending on several factors, such as current firmware version, uptime, condition of the CPU/Memory, etc.) the script will stop with a "y/n" question.

- To stop the process, press "n" and Enter key (two keystrokes).
- Press "y" (one keystroke) and the process will continue and reboot the Switch Virtual pair automatically.

The warning is there as to minimize the risk of entering wrong key.

```
SWITCH# file bootflash:cat9k_iosxe.17.09.03.SPA.bin activate commit
install_add_activate_commit: START Mon Jul 10 11:39:07 AEST 2023

0install_add_activate_commit: Adding PACKETALL-5-INSTALL_START_INFO: Chassis 1 R0/0: install_engine: Started install one-shot bootflash:cat9k_iosxe.17.09.03.SPA.bin
install_add_activate_commit: Checking whether new add is allowed ....

--- Starting initial file syncing ---
[1]: Copying bootflash:cat9k_iosxe.17.09.03.SPA.bin from chassis 1/R0 to chassis 2/R0
[2]: Finished copying to chassis 2/R0
Info: Finished copying bootflash:cat9k_iosxe.17.09.03.SPA.bin to the selected chassis
Finished initial file syncing

--- Starting Add ---
Performing Add on all members
[1] Add package(s) on chassis 1/R0
[1] Finished Add on chassis 1/R0
[2] Add package(s) on chassis 2/R0
[2] Finished Add on chassis 2/R0
Checking status of Add on [1/R0 2/R0]
Add: Passed on [1/R0 2/R0]
Finished Add

Image added. Version: 17.09.03.0.4111
install_add_activate_commit: Activating PACKAGE
Following packages shall be activated:
/bootflash/cat9k-wlc.17.09.03.SPA.pkg
/bootflash/cat9k-webui.17.09.03.SPA.pkg
/bootflash/cat9k-srdriver.17.09.03.SPA.pkg
/bootflash/cat9k-sipspa.17.09.03.SPA.pkg
/bootflash/cat9k-sipbase.17.09.03.SPA.pkg
/bootflash/cat9k-rpboot.17.09.03.SPA.pkg
/bootflash/cat9k-rpbase.17.09.03.SPA.pkg
/bootflash/cat9k-ini.17.09.03.SPA.pkg
/bootflash/cat9k-guestshell.17.09.03.SPA.pkg
/bootflash/cat9k-espbase.17.09.03.SPA.pkg
/bootflash/cat9k-cc_srdriver.17.09.03.SPA.pkg

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

21. Press “n” (or “N”).
22. Do not be alarmed by an error message will be generated – It is expected.

```
This operation may require a reload of the system. Do you want to proceed? [y/n]n
ERR!00: install_add_activate_commit /bootflash/cat9k-wlc.17.09.03.SPA.pkg /bootflash/cat9k-webui.17.09.03.SPA.pkg /bootflash/cat9k-srdriver.17.09.03.SPA.pkg /bootflash/cat9k-sipspa.17.09.03.SPA.pkg /bootflash/cat9k-sipbase.17.09.03.SPA.pkg /bootflash/cat9k-rpboot.17.09.03.SPA.pkg /bootflash/cat9k-rpbase.17.09.03.SPA.pkg /bootflash/cat9k-ini.17.09.03.SPA.pkg /bootflash/cat9k-guestshell.17.09.03.SPA.pkg /bootflash/cat9k-espbase.17.09.03.SPA.pkg /bootflash/cat9k-cc_srdriver.17.09.03.SPA.pkg: Cannot proceed activate because of user input
```

```
000321: Jul 10 2023 11:50:03.686 AEST: %INSTALL-3-OPERATION_ERROR_MESSAGE: Chassis 1 R0/0: install_engine: Failed to install_add_activate_commit package bootflash:cat9k_iosxe.17.09.03.SPA.bin, Error: install_add_activate_commit /bootflash/cat9k-wlc.17.09.03.SPA.pkg /bootflash/cat9k-webui.17.09.03.SPA.pkg /bootflash/cat9k-srdriver.17.09.03.SPA.pkg /bootflash/cat9k-sipspa.17.09.03.SPA.pkg /bootflash/cat9k-sipbase.17.09.03.SPA.pkg /bootflash/cat9k-rpboot.17.09.03.SPA.pkg /bootflash/cat9k-rpbase.17.09.03.SPA.pkg /bootflash/cat9k-ini.17.09.03.SPA.pkg /bootflash/cat9k-guestshell.17.09.03.SPA.pkg /bootflash/cat9k-espbase.17.09.03.SPA.pkg /bootflash/cat9k-cc_srdriver.17.09.03.SPA.pkg: Cannot proceed activate because of user input
```

23. Two files in the bootflash:/bootflash-2: are of importance, they are:
 - packages.conf (green font)
 - Target “firmware.conf” file. Example, “cat9k_iosxe.17.09.03.SPA.conf” is highlighted in the first picture (below)

SWITCH#dir bootflash:

Directory of bootflash:/

324486	drwx	4096	Jul 10 2023 11:52:02	+10:00	.installer
259636	drwx	4096	Jul 10 2023 11:51:52	+10:00	.images
340706	-rw-	7535	Jul 10 2023 11:46:20	+10:00	cat9k_iosxe.17.09.03.SPA.conf
340717	-rw-	53773515	Jul 10 2023 11:46:20	+10:00	cat9k-rpboot.17.09.03.SPA.pkg
340716	-rw-	9220	Jul 10 2023 11:45:28	+10:00	cat9k-wlc.17.09.03.SPA.pkg
340715	-rw-	18809860	Jul 10 2023 11:45:28	+10:00	cat9k-webui.17.09.03.SPA.pkg
340714	-rw-	39785480	Jul 10 2023 11:45:28	+10:00	cat9k-srdriver.17.09.03.SPA.pkg
340713	-rw-	65811460	Jul 10 2023 11:45:28	+10:00	cat9k-sipsa.17.09.03.SPA.pkg
340712	-rw-	51717128	Jul 10 2023 11:45:28	+10:00	cat9k-sipbase.17.09.03.SPA.pkg
340711	-rw-	816768004	Jul 10 2023 11:45:28	+10:00	cat9k-rpbase.17.09.03.SPA.pkg
340710	-rw-	9220	Jul 10 2023 11:45:27	+10:00	cat9k-lni.17.09.03.SPA.pkg
340709	-rw-	2151432	Jul 10 2023 10:13:55	+10:00	cat9k-guestshell.17.09.03.SPA.pkg
340708	-rw-	173028360	Jul 10 2023 11:45:27	+10:00	cat9k-espbase.17.09.03.SPA.pkg
340707	-rw-	26047500	Jul 10 2023 11:45:27	+10:00	cat9k-cc_srdriver.17.09.03.SPA.pkg
259625	-rw-	1246984471	Jul 10 2023 11:37:55	+10:00	cat9k_iosxe.17.09.03.SPA.bin
259632	-rw-	0	Jul 10 2023 10:13:55	+10:00	dope_hist
259599	-rw-	17221	Jul 10 2023 10:13:55	+10:00	rdope_out.txt
259600	-rw-	91	Jul 10 2023 10:13:54	+10:00	rdope.log
259630	-rw-	736	Jul 10 2023 10:13:51	+10:00	vlan.dat
259598	-rwx	2049	Jul 10 2023 10:12:48	+10:00	svl_ipc.tcl
259597	-rw-	134899	Jul 10 2023 10:12:48	+10:00	memleak.tcl
259590	-rw-	395	Jul 10 2023 10:12:32	+10:00	boothelper.log
324536	drwx	4096	Jul 10 2023 10:12:31	+10:00	dc_profile_dir
259593	-rw-	1073	Jul 10 2023 10:12:14	+10:00	bootloader_evt_handle.log
259633	-rw-	455	May 30 2023 16:57:11	+10:00	mcelog.txt
259602	-rw-	398	May 30 2023 16:57:10	+10:00	boothelper.log.old
259586	drwx	4096	May 30 2023 15:20:51	+10:00	.prst_sync
64903	drwx	4096	May 30 2023 15:18:36	+10:00	cflow
259626	drwx	4096	May 30 2023 15:18:36	+10:00	pcap
324488	drwx	4096	May 30 2023 15:16:41	+10:00	.rollback_timer
259596	drwx	4096	Apr 3 2023 15:21:58	+10:00	pnp-info
259635	-rw-	12619	Apr 3 2023 15:21:15	+10:00	pnp-archive-Apr--3-05-21-15.683-0
259609	-rw-	5924	Apr 3 2023 15:15:38	+10:00	dir_copy
324505	drwx	4096	Apr 3 2023 13:32:53	+10:00	tech_support
259604	-rwx	0	Apr 3 2023 13:31:17	+10:00	mode_event_log
543511	drwx	4096	Apr 3 2023 13:31:17	+10:00	SHARED-IOX
438050	drwx	4096	Apr 3 2023 10:01:23	+10:00	pnp-tech
259587	drwx	4096	Apr 3 2023 09:56:39	+10:00	.dbpersist
259624	-rw-	48600136	Mar 27 2023 15:03:53	+11:00	cat9k-rpboot.17.06.04.SPA.pkg
259613	-rw-	7488	Mar 27 2023 15:03:53	+11:00	packages.conf
259623	-rw-	9220	Mar 27 2023 15:03:07	+11:00	cat9k-wlc.17.06.04.SPA.pkg
259622	-rw-	17527812	Mar 27 2023 15:03:07	+11:00	cat9k-webui.17.06.04.SPA.pkg
259621	-rw-	31880200	Mar 27 2023 15:03:07	+11:00	cat9k-srdriver.17.06.04.SPA.pkg
259620	-rw-	61162500	Mar 27 2023 15:03:07	+11:00	cat9k-sipsa.17.06.04.SPA.pkg
259619	-rw-	37700616	Mar 27 2023 15:03:07	+11:00	cat9k-sipbase.17.06.04.SPA.pkg
259618	-rw-	689165316	Mar 27 2023 15:03:07	+11:00	cat9k-rpbase.17.06.04.SPA.pkg
259617	-rw-	9220	Mar 27 2023 15:03:06	+11:00	cat9k-lni.17.06.04.SPA.pkg
259616	-rw-	2098184	Mar 27 2023 15:03:06	+11:00	cat9k-guestshell.17.06.04.SPA.pkg
259615	-rw-	110449672	Mar 27 2023 15:03:06	+11:00	cat9k-espbase.17.06.04.SPA.pkg
259614	-rw-	19760140	Mar 27 2023 15:03:06	+11:00	cat9k-cc_srdriver.17.06.04.SPA.pkg
259601	drwx	4096	Jul 27 2022 14:16:37	+10:00	guest-share
324552	drwx	4096	Jul 27 2022 13:58:38	+10:00	onep
324541	drwx	4096	Jul 27 2022 13:58:20	+10:00	Tbot
324539	drwx	4096	Jul 27 2022 13:58:19	+10:00	fp_cc_crash
324538	drwx	4096	Jul 27 2022 13:58:19	+10:00	sys_report
324503	drwx	4096	Jul 27 2022 13:58:18	+10:00	ss_disc
259595	-rw-	5242880	Jul 27 2022 13:58:18	+10:00	ssd
324487	drwx	4096	Jul 27 2022 13:58:16	+10:00	core
324494	drwx	4096	Jul 27 2022 13:58:02	+10:00	.ssh
259594	-rw-	1442	Jul 27 2022 13:52:15	+10:00	2022_07_27T03_52_15.129577.xml

```

SWITCH#dir bootflash:*.conf
Directory of bootflash:/*.conf

Directory of bootflash:/
259613  -rw-          7488  Mar 27 2023 15:03:53 +11:00  packages.conf
340706  -rw-          7535  Jul 10 2023 11:46:20 +10:00  cat9k_iosxe.17.09.03.SPA.conf
11250098176 bytes total (7057412096 bytes free)

SWITCH#dir bootflash-2:*.conf
Directory of bootflash-2:/*.conf

Directory of bootflash-2:/
519216  -rw-          7488  Jul 10 2023 10:09:17 +10:00  packages.conf
600290  -rw-          7535  Jul 10 2023 11:46:21 +10:00  cat9k_iosxe.17.09.03.SPA.conf
11250171904 bytes total (7057965056 bytes free)

```

24. Rename both "packages.conf" into a completely different filename, like "packages.conf.bak".

```

SWITCH#rename bootflash:packages.conf bootflash:packages.conf.bak
Destination filename [packages.conf.bak]?

SWITCH#rename bootflash-2:packages.conf bootflash-2:packages.conf.bak
Destination filename [packages.conf.bak]?

```

25. Copy or rename both target "firmware.conf" files into "packages.conf".

```

SWITCH#rename bootflash:cat9k_iosxe.17.09.03.SPA.conf bootflash:packages.conf
Destination filename [packages.conf]?

SWITCH#copy bootflash-2:cat9k_iosxe.17.09.03.SPA.conf bootflash-2:packages.conf
Destination filename [packages.conf]?
Copy in progress...C
7535 bytes copied in 0.026 secs (289808 bytes/sec)

```

NOTE: In the above example, I deliberately used both "rename" and "copy". Use either one will not change the course of history.

26. Check both bootflash: and bootflash-2: for the presence of the "packages.conf" file.

```
SWITCH#dir bootflash:packages*
Directory of bootflash:/packages*

Directory of bootflash:/

340706  -rw-          7535  Jul 10 2023 11:46:20 +10:00  packages.conf
259613  -rw-          7488  Mar 27 2023 15:03:53 +11:00  packages.conf.bak
11250098176 bytes total (7057412096 bytes free)
```

```
SWITCH#dir bootflash-2:packages*
Directory of bootflash-2:/packages*

Directory of bootflash-2:/

519204  -rw-          7535  Jul 10 2023 12:25:58 +10:00  packages.conf
519216  -rw-          7488  Jul 10 2023 10:09:17 +10:00  packages.conf.bak
11250171904 bytes total (7057965056 bytes free)
```

27. Peer or inspect inside the "packages.conf" file and make sure the contents point to the intended firmware version.

```
SWITCH#more bootflash:packages.conf | begin rp_boot
boot  rp 0 0  rp_boot cat9k-rpboot.17.09.03.SPA.pkg
boot  rp 1 0  rp_boot cat9k-rpboot.17.09.03.SPA.pkg

iso   rp 0 0  rp_base cat9k-rpbase.17.09.03.SPA.pkg
iso   rp 1 0  rp_base cat9k-rpbase.17.09.03.SPA.pkg

iso   rp 0 0  rp_daemons cat9k-rpbase.17.09.03.SPA.pkg
iso   rp 1 0  rp_daemons cat9k-rpbase.17.09.03.SPA.pkg

iso   rp 0 0  rp_iosd cat9k-rpbase.17.09.03.SPA.pkg
iso   rp 1 0  rp_iosd cat9k-rpbase.17.09.03.SPA.pkg

iso   rp 0 0  rp_security cat9k-rpbase.17.09.03.SPA.pkg
iso   rp 1 0  rp_security cat9k-rpbase.17.09.03.SPA.pkg

iso   rp 0 0  rp_wlc cat9k-wlc.17.09.03.SPA.pkg
iso   rp 1 0  rp_wlc cat9k-wlc.17.09.03.SPA.pkg

iso   rp 0 0  rp_webui cat9k-webui.17.09.03.SPA.pkg
iso   rp 1 0  rp_webui cat9k-webui.17.09.03.SPA.pkg

iso   rp 0 0  srdriver cat9k-srdriver.17.09.03.SPA.pkg
iso   rp 1 0  srdriver cat9k-srdriver.17.09.03.SPA.pkg
```

```
SWITCH#more bootflash-2:packages.conf | begin rp_boot
boot  rp 0 0  rp_boot cat9k-rpboot.17.09.03.SPA.pkg
boot  rp 1 0  rp_boot cat9k-rpboot.17.09.03.SPA.pkg

iso   rp 0 0  rp_base cat9k-rpbase.17.09.03.SPA.pkg
iso   rp 1 0  rp_base cat9k-rpbase.17.09.03.SPA.pkg

iso   rp 0 0  rp_daemons cat9k-rpbase.17.09.03.SPA.pkg
iso   rp 1 0  rp_daemons cat9k-rpbase.17.09.03.SPA.pkg

iso   rp 0 0  rp_iosd cat9k-rpbase.17.09.03.SPA.pkg
iso   rp 1 0  rp_iosd cat9k-rpbase.17.09.03.SPA.pkg

iso   rp 0 0  rp_security cat9k-rpbase.17.09.03.SPA.pkg
iso   rp 1 0  rp_security cat9k-rpbase.17.09.03.SPA.pkg

iso   rp 0 0  rp_wlc cat9k-wlc.17.09.03.SPA.pkg
iso   rp 1 0  rp_wlc cat9k-wlc.17.09.03.SPA.pkg

iso   rp 0 0  rp_webui cat9k-webui.17.09.03.SPA.pkg
iso   rp 1 0  rp_webui cat9k-webui.17.09.03.SPA.pkg

iso   rp 0 0  srdriver cat9k-srdriver.17.09.03.SPA.pkg
iso   rp 1 0  srdriver cat9k-srdriver.17.09.03.SPA.pkg
```

28. Reboot the VSS pair.
29. [RECOMMENDED][OPTIONAL] Clean the flash: `install remove inactive`
30. DONE.