

Campus B-03 Wireless Lab Guide

SSU Firmware Upgrade



Links:

1. This Lab Guide:
 - a. <https://github.com/arista-rockies/Workshops/tree/main/Campus>
2. Lab Floor Plan Download:
 - a. <https://tinyurl.com/wififloorplan> [Arista-rockies Github]

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2.Intro to Arista Smart System Upgrade (SSU)

SSU, or Smart System Upgrade, is a feature to minimize traffic loss when upgrading from one SSU-supported EOS version to a newer SSU-supported EOS version. SSU is also referred to as 'hitless' upgrades. The SSU feature allows a switch to maintain packet forwarding performed by the switch ASIC while the management plane performs an OS upgrade.

Additional information about this feature can be found here

<https://www.arista.com/en/support/toi/eos-4-15-2f/13710-hitless-ssu>

In our workshop lab topology, pictured on the previous page, you will see that leaf1c in each pod is directly connected to the pod access point and RaspberryPi client. Traditionally, a firmware upgrade on leaf1c in the pod would cause the access point, wireless clients connected to the access point, and the raspberry pi client to lose network connectivity. In this lab, we will use Arista SSU on the leaf1c switch in your pod to perform a firmware upgrade without causing network connectivity loss on wireless clients connected to the pod access point or loss on any wired client connected to the switch.

Prerequisites

- Continuous POE should be configured to maintain POE power delivery to connected devices.
- Must be running an EOS version that includes the SSU feature.
- Must be upgrading to a new EOS version that also includes the SSU feature.
- Spanning-tree must be running in MST mode or disabled. RSTP support is coming soon.
- Spanning-tree edge ports must have portfast and BPDUGuard enabled.
- If a switch is running BGP, it must be configured with graceful-restart or BGP routing information will be lost and the ASIC may fail to forward traffic.

Caveats

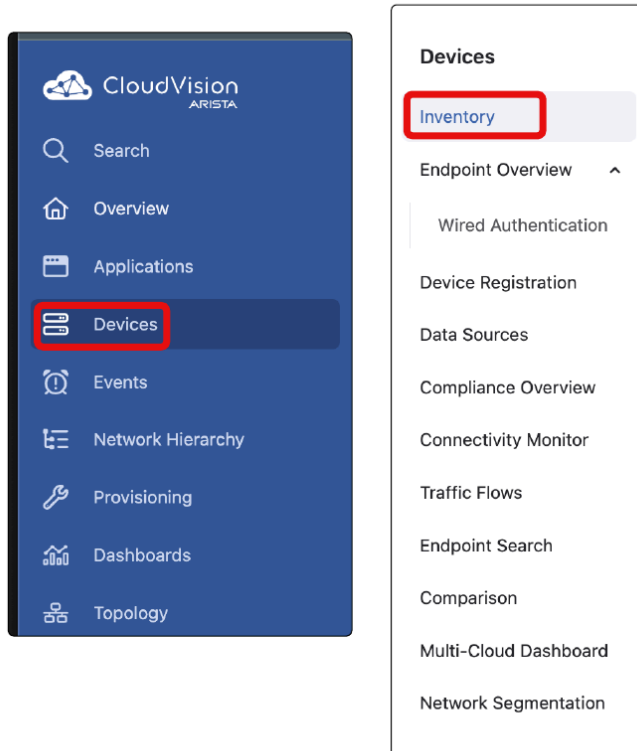
- SSU only supports upgrades. Hitless image downgrades are not supported.
- If a new EOS version includes an FPGA upgrade, the FPGA upgrade will be suppressed. FPGA upgrades require a full reboot of a switch to apply.
- Some switch features, when in use, will prevent SSU from starting. See this link for more details

<https://www.arista.com/en/support/toi/eos-4-15-2f/13710-hitless-ssu#limitations>

3.Lab Start: Perform the Arista SSU on the leaf1c switch

Let's begin the hands-on portion of this lab. SSU can be triggered on the command line, or through CloudVision. For this lab, we will be triggering an SSU upgrade using CloudVision.

1. Review the current version of software in use on each switch. Go to the Devices > Inventory section.



Inventory

View all devices onboarded to CloudVision

Showing all 3 devices

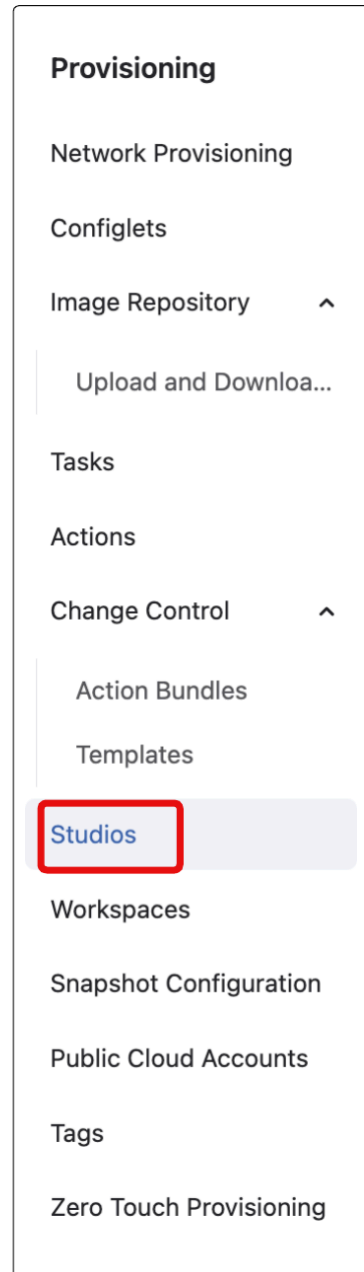
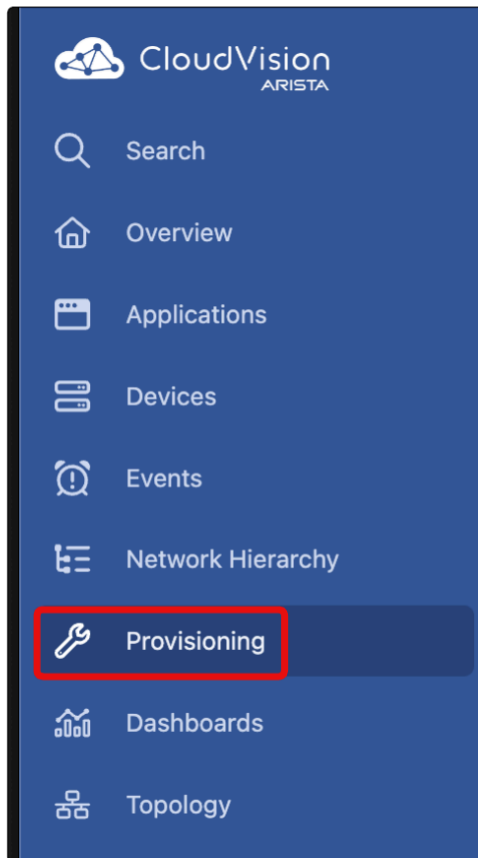
Onboard Devices

Device ↑	Streaming	Issues	Model	Software	Streaming Agent	IP Address	MAC Address	Device Type	Device ID
Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter
campus-pod03-leaf1a	● Active	🚩	710P-16P	4.32.5.1M	1.34.4	10.0.103.11	2c:dd:e9:fd:83:4d	EOS	WTW22200305
campus-pod03-leaf1b	● Active	🚩	710P-16P	4.32.5.1M	1.34.4	10.0.103.12	2c:dd:e9:fd:86:91	EOS	WTW22200349
campus-pod3-leafc	● Active	🚩	710P-16P	4.32.4.1M	1.34.3	10.0.103.6	2c:dd:e9:fd:97:c9	EOS	WTW22210161

[Export to CSV](#)

Showing 3 of 3 rows

2. Note that leaf1a and leaf1b are running a different version of code than leaf1c. During this section of the lab, we are going to bring leaf1c up to the same software version as leaf1a/b. To apply the new version of software to leaf1c we are going to utilize the Software Management Studio. Navigate to **Provisioning > Studios**.



- You will be presented with the Studios landing page where it will display the Essential Studios and the Studios that are actively used in this lab environment. Select the **Software Management Studio**

The screenshot shows the 'Studios' landing page. At the top, there's a header with 'Import Studio' and 'New Studio' buttons, and a user profile 'aristaro...es1+pod3'. Below the header, a search bar and a 'Review Workspace' button are visible. The main content area is titled 'Essential Studios' and contains three cards: 'Inventory and Topology', 'Static Configuration', and 'Software Management'. The 'Software Management' card is highlighted with a red box. It describes managing EOS images, Streaming Agents, and other extensions. Below the cards, there's a 'Device Management' section with 'Access Interface Configuration' and a 'Network Fabric' section with 'Campus Fabric (L2/L3/EVPN)'. At the bottom, it says 'Showing only active Studios. Show All Studios'.


- Review the 2 leaves already present in the Studio. We are now going to include leaf1c to this studio. Select **Create Workspace**.

The screenshot shows the 'Software Management' studio interface. At the top, there's a header with 'Actions' and a user profile 'aristaro...es1+pod3'. Below the header, there's a 'Create Workspace' button (highlighted with a red box) and a 'Select a workspace' dropdown. A yellow banner states 'You must create or select a workspace to modify a studio.' Below this, there are tabs for 'Software Assignment', 'Software Repository', and 'ZTP Upgrade Version'. The 'Software Assignment' tab is active, showing a table titled 'Assign Software to Devices'. The table has columns for 'Devices', 'Image', 'Streaming Agent', and 'Extensions'. Two rows are visible, both for 'device: campus-pod03-leaf1a' and 'device: campus-pod03-leaf1b', both using 'EOS-4.32.5.1M.swi' as the image. The table is highlighted with a red box. At the bottom, there's a '+ Add Device' button.

5. Name the Workspace **SSU Leaf1c** and select Create

Create Workspace

×

 A workspace is used to make changes to your network by configuring studio inputs and assigning tagged devices.

* Name

SSU Leaf1c

Description

Cancel

Create

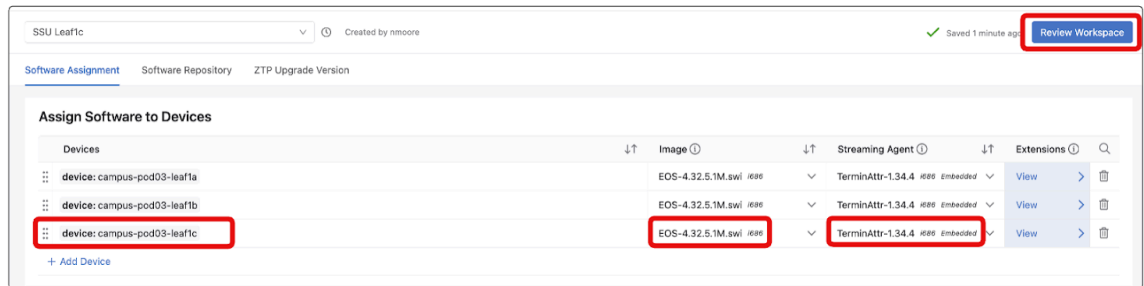
6. Select **+ Add Device**

Software Assignment Software Repository ZTP Upgrade Version

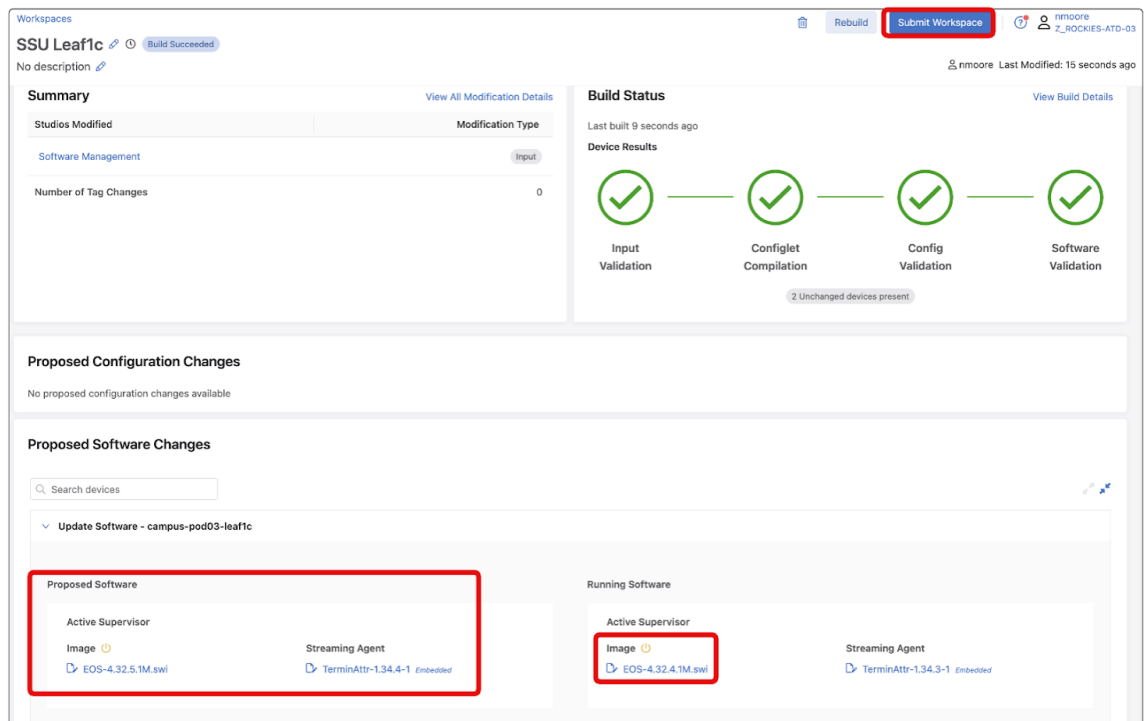
Assign Software to Devices

Devices	Image	Streaming Agent	Extensions
device: campus-pod03-leaf1a	EOS-4.32.5.1M.swi	TerminAttr-1.34.4	View
device: campus-pod03-leaf1b	EOS-4.32.5.1M.swi	TerminAttr-1.34.4	View
+ Add Device			

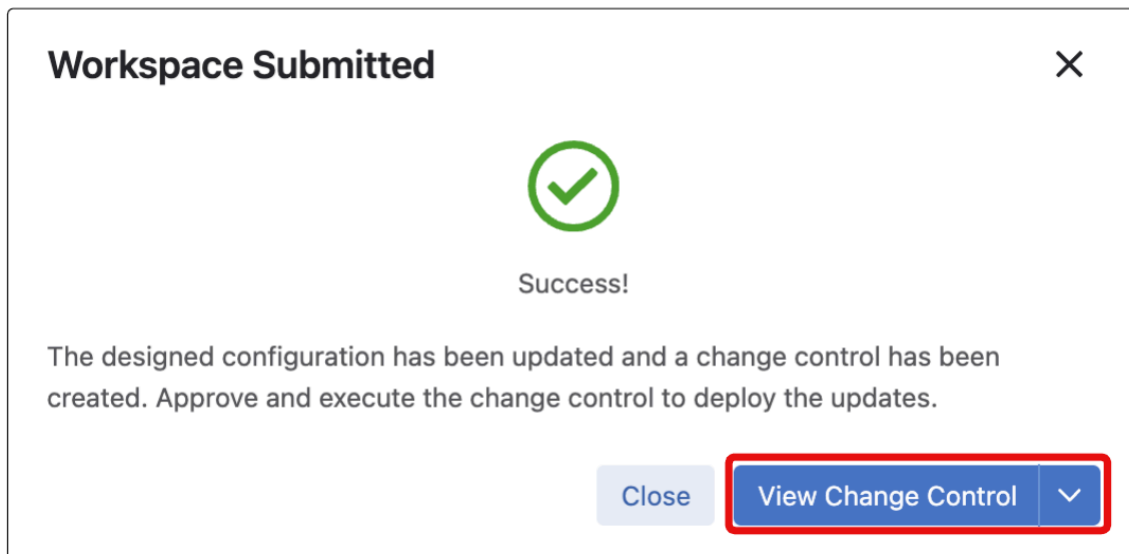
7. Within the Software Management Studio add leaf1c.
 - a. Under the **Devices** section add **device:campus-pod[POD#]leaf1c**.
 - b. Under the Image section select the dropdown for **EOS-4.32.5.1M.swi**. (The streaming agent will auto-populate with TerminAttr-1.34.)
 - c. Select **Review Workspace**.



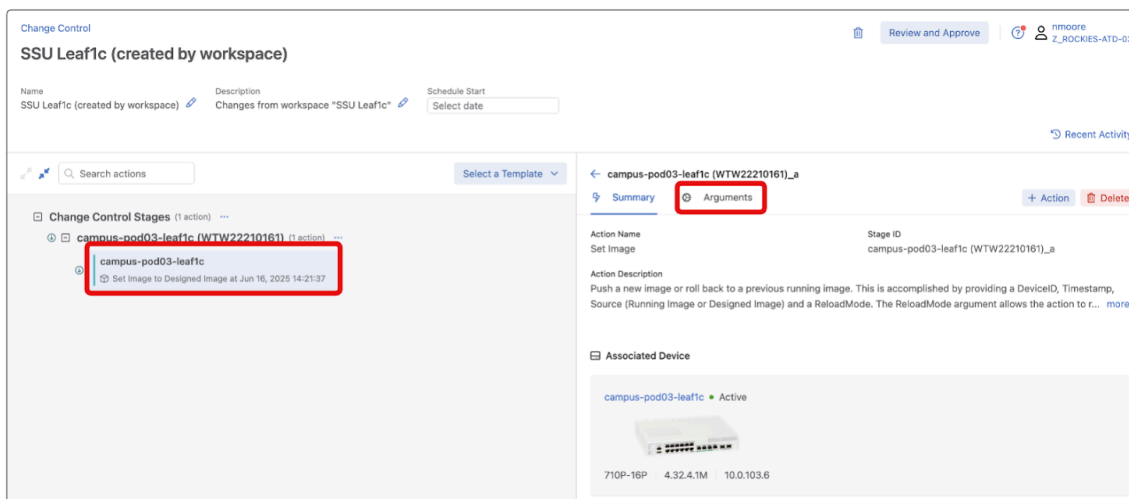
- Review the pending workspace. Look at the Proposed Software and verify that 4.32.5.1M. Select **Submit Workspace**



- Now that you have submitted that workspace, we have added the proposed software image for Leaf1c to the designed configuration. No changes have been made to any device up until this point. Through the change control process we will upgrade the switch to the new version. Select **View Change Control**



10. We are not going to set the change control to upgrade the image using the SSU process.
 - a. Select **leaf1c** under Change Control Stages.
 - b. **Select Arguments.**



11. Under Arguments populate the following information
 - a. DeviceID - **campus-pod[POD#]-leaf1c**
 - b. ReloadMode - from the dropdown select **SSU Only**.
 - c. Source - **Designed Image**

← campus-pod03-leaf1c (WTW22210161)_a

Summary

Arguments

+ Action

Delete

DeviceID ⓘ

campus-pod03-leaf1c

Raw value: WTW22210161

ReloadMode (Optional) ⓘ

SSU Only

Raw value: SSUOnlyReload

Source ⓘ

Designed Image

Raw value: DesignedImage

Timestamp ⓘ

Jun 16, 2025 14:21:37

Raw value: 1750105297595873821

12. Before we apply the new firmware, let's start a ping test which will run during the switch upgrade process. We will see that the ping traffic will continue to flow through the switch even while its software is being upgraded.

- First, please make sure that your laptop is connected to the wireless network called "**ATD-##-PSK**". Use the PSK you configured in the previous lab to associate with this wireless network.
- Second, open a command prompt (or a terminal window if using a macbook), and issue the command "**ping -t 10.0.1##.1**" (or the command 'ping 10.0.1##.1 if using macbook). Please replace **##** with your pod number. Now leave this window open for the following steps. We will see ping packets being sent and received every second. You are now pinging the gateway IP address for your pod from your wireless device connected to your pods access point. The ping traffic must traverse the leaf1c switch to reach the gateway. We should be able to observe how traffic is affected while leaf1c is upgrading during SSU.

13. Return to CloudVision. Select **Review and Approve**

Change Control

SSU Leaf1c (created by workspace)

Review and Approve

Name: SSU Leaf1c (created by workspace) Description: Changes from workspace "SSU Leaf1c" Schedule Start: Select date

Recent Activity

Search actions

Select a Template

Change Control Stages (1 action)

- campus-pod03-leaf1c (WTW22210161) (1 action)
 - campus-pod03-leaf1c
 - Set Image to Designed Image at Jun 16, 2025 14:21:37

campus-pod03-leaf1c (WTW22210161)_a

Summary Arguments

+ Action Delete

DeviceID

campus-pod03-leaf1c

Raw value: WTW22210161

ReloadMode (Optional)

SSU Only

Raw value: SSUOnlyReload

Source

Designed Image

Raw value: DesignedImage

Timestamp

Jun 16, 2025 14:21:37

Raw value: 1750105297595873821

14. Select **Approve and Execute**

Review Change - SSU Leaf1c (created by workspace)

Search devices

Update Software - campus-pod03-leaf1c

Proposed Software

Active Supervisor

Image EOS-4.32.5.1M.swi

Streaming Agent TerminAttr-1.34.4-1 Embedded

Running Software

Active Supervisor

Image EOS-4.32.4.1M.swi

Streaming Agent TerminAttr-1.34.3-1 Embedded

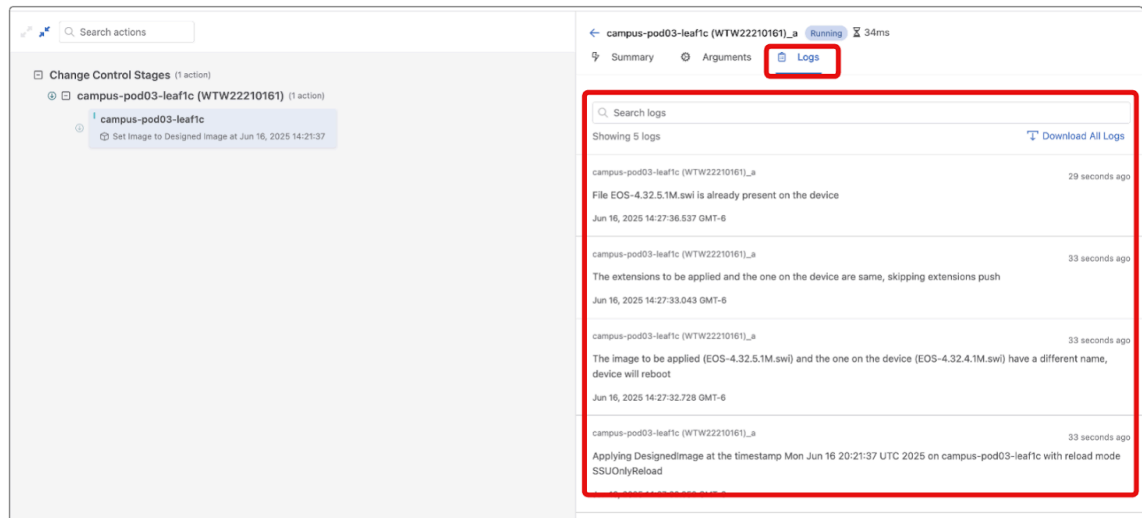
Notes: Enter approval note

Execute immediately

Cancel Approve and Execute

15. The device is now going to upgrade the image. This can take a few minutes. While the change control is running.

- Select the **Logs** to see details of the change as they're happening.
- Return to your terminal that is running a continuous ping



16. As our final step, take another look at the terminal window that was running the consistent pings. You should see pings continue to flow without issue during the upgrade. Only towards the end of the process you may see 1 or 2 pings lost as the ASIC reconnects to the updated management plane.

None

```
nhancock@Nates-MacBook-Pro ~ % ping 10.0.111.1
PING 10.0.111.1 (10.0.111.1): 56 data bytes
64 bytes from 10.0.111.1: icmp_seq=0 ttl=64 time=4.681 ms
64 bytes from 10.0.111.1: icmp_seq=1 ttl=64 time=4.510 ms
64 bytes from 10.0.111.1: icmp_seq=2 ttl=64 time=4.063 ms
64 bytes from 10.0.111.1: icmp_seq=3 ttl=64 time=4.417 ms
64 bytes from 10.0.111.1: icmp_seq=4 ttl=64 time=4.575 ms
64 bytes from 10.0.111.1: icmp_seq=5 ttl=64 time=5.000 ms
... trunkated for brevity
64 bytes from 10.0.111.1: icmp_seq=579 ttl=64 time=3.853 ms
64 bytes from 10.0.111.1: icmp_seq=580 ttl=64 time=3.993 ms
64 bytes from 10.0.111.1: icmp_seq=581 ttl=64 time=4.263 ms
64 bytes from 10.0.111.1: icmp_seq=582 ttl=64 time=6.234 ms
64 bytes from 10.0.111.1: icmp_seq=583 ttl=64 time=4.219 ms
64 bytes from 10.0.111.1: icmp_seq=584 ttl=64 time=3.267 ms
64 bytes from 10.0.111.1: icmp_seq=585 ttl=64 time=3.196 ms
64 bytes from 10.0.111.1: icmp_seq=586 ttl=64 time=3.535 ms
64 bytes from 10.0.111.1: icmp_seq=587 ttl=64 time=4.167 ms
64 bytes from 10.0.111.1: icmp_seq=588 ttl=64 time=3.977 ms
64 bytes from 10.0.111.1: icmp_seq=589 ttl=64 time=4.937 ms
64 bytes from 10.0.111.1: icmp_seq=590 ttl=64 time=4.248 ms
Request timeout for icmp_seq 591
64 bytes from 10.0.111.1: icmp_seq=592 ttl=64 time=4.348 ms
```

```
64 bytes from 10.0.111.1: icmp_seq=593 ttl=64 time=4.337 ms
64 bytes from 10.0.111.1: icmp_seq=594 ttl=64 time=3.766 ms
64 bytes from 10.0.111.1: icmp_seq=595 ttl=64 time=5.510 ms
64 bytes from 10.0.111.1: icmp_seq=596 ttl=64 time=4.399 ms
64 bytes from 10.0.111.1: icmp_seq=597 ttl=64 time=4.167 ms
64 bytes from 10.0.111.1: icmp_seq=598 ttl=64 time=4.033 ms
64 bytes from 10.0.111.1: icmp_seq=599 ttl=64 time=3.904 ms
```

Lab Conclusion

We just observed how Arista SSU allows network connected devices to continue to operate on the network even while an EOS firmware update occurs on the connected switch.

LAB GUIDE COMPLETE