Upgrade FTD HA Managed by FMC

Contents

Introduction

This document describes the upgrade process for a Cisco Secure Firewall Threat Defense in High Availability managed by a Firewall Management Center.

Prerequisites

Requirements

Cisco recommends you have knowledge of these topics:

- High Availability (HA) concepts and configuration
- Secure Firewall Management Center (FMC) configuration
- Cisco Secure Firewall Threat Defense (FTD) configuration

Components Used

The information in this document is based on:

- Virtual Firewall Management Center (FMC), version 7.2.4
- Virtual Cisco Firewall Threat Defense (FTD), version 7.0.1

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Overview

The way the FMC works is to upgrade one peer at a time. First the Standby, then the Active, doing a failover before the Active upgrade gets completed.

Background Information

Upgrade package must be downloaded from software.cisco.com before the upgrade.

On CLI clish, run the **show high-availability config** command in the Active FTD to check the status of the High Availability.

```
> show high-availability config
Failover On
Failover unit Secondary
Failover LAN Interface: FAILOVER_LINK GigabitEthernet0/0 (up)
Reconnect timeout 0:00:00
Unit Poll frequency 1 seconds, holdtime 15 seconds
Interface Poll frequency 5 seconds, holdtime 25 seconds
Interface Policy 1
Monitored Interfaces 3 of 1285 maximum
MAC Address Move Notification Interval not set
failover replication http
Version: Ours 9.16(2)5, Mate 9.16(2)5
Serial Number: Ours 9AJJSEGJS2T, Mate 9AVLW3FSSK8
Last Failover at: 00:37:48 UTC Jul 20 2023

        This host: Secondary - Standby Ready
                Active time: 4585 (sec)
                slot 0: ASAv hw/sw rev (/9.16(2)5) status (Up Sys)
                  Interface INSIDE (10.10.153.2): Normal (Monitored)
                  Interface diagnostic (0.0.0.0): Normal (Waiting)
                  Interface OUTSIDE (10.20.153.2): Normal (Monitored)
                slot 1: snort rev (1.0)  status (up)
                slot 2: diskstatus rev (1.0)  status (up)

        Other host: Primary - Active
                Active time: 60847 (sec)
                  Interface INSIDE (10.10.153.1): Normal (Monitored)
                  Interface diagnostic (0.0.0.0): Normal (Waiting)
                  Interface OUTSIDE (10.20.153.1): Normal (Monitored)
                slot 1: snort rev (1.0)  status (up)
                slot 2: diskstatus rev (1.0)  status (up)

Stateful Failover Logical Update Statistics

        Link : FAILOVER_LINK GigabitEthernet0/0 (up)
        Stateful Obj    xmit       xerr       rcv        rerr
        General         9192       0          10774      0
        sys cmd         9094       0          9092       0
…
        Rule DB B-Sync  0          0          0          0
        Rule DB P-Sync  0          0          204        0
        Rule DB Delete  0          0          1          0

        Logical Update Queue Information
                        Cur     Max     Total
        Recv Q:         0       9       45336
        Xmit Q:         0       11      11572
```

If no errors are visible, then proceed with upgrade.

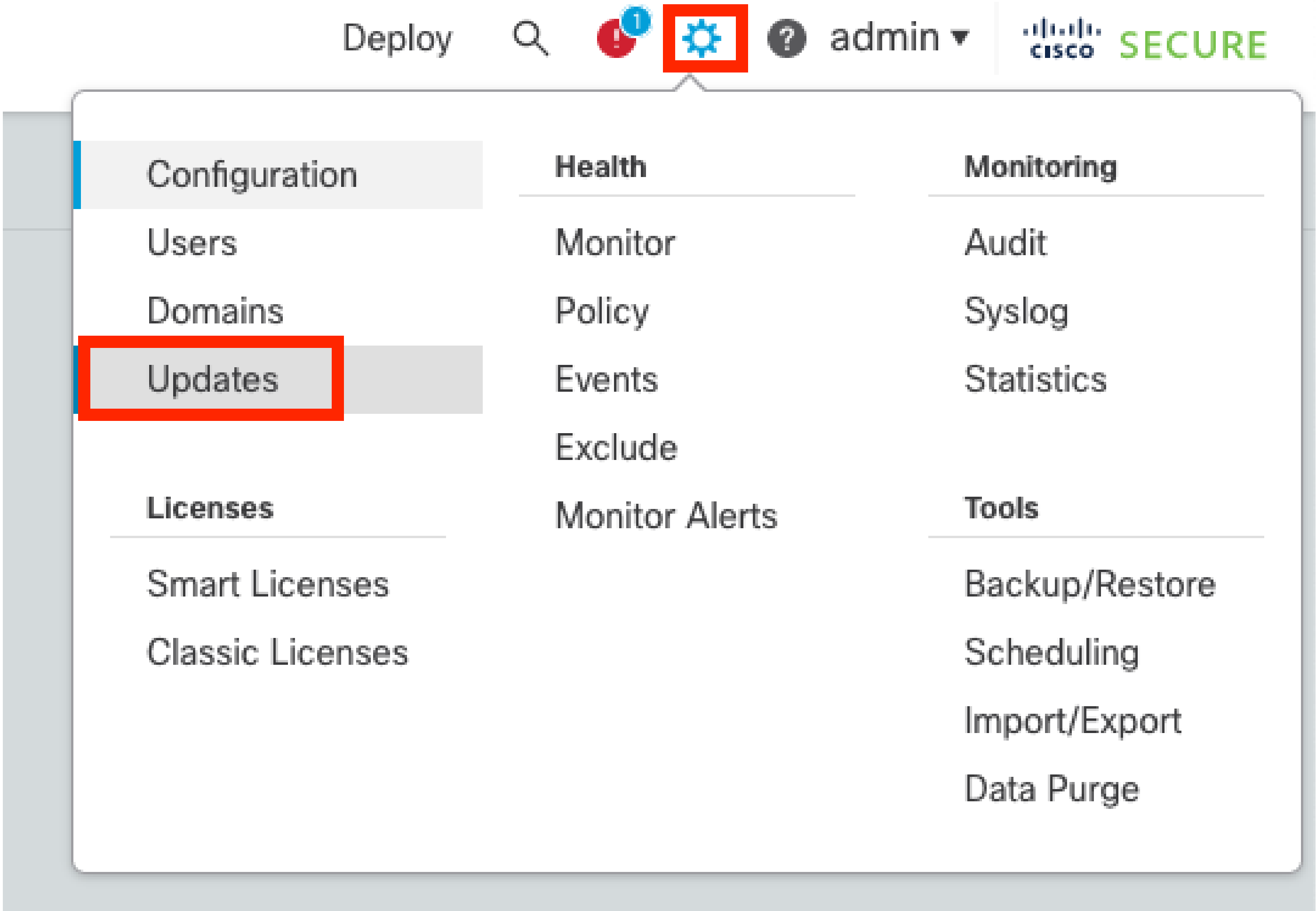
Configure

Step 1. Upload Upgrade Package

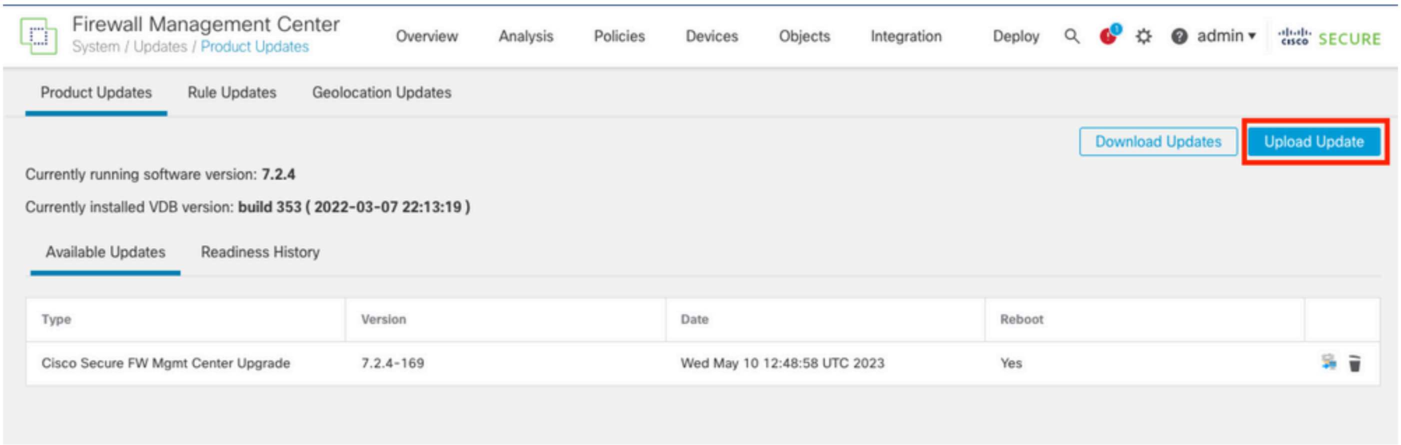
- Upload the FTD upgrade package to the FMC using the graphical user interface (GUI).
  This has to be previously downloaded from the Cisco Software site based on the FTD model and desire version.

Warning: Ensure that the FMC version is higher or equal than the new FTD version to upgrade.

System > Updates



- Select **Upload Update**.

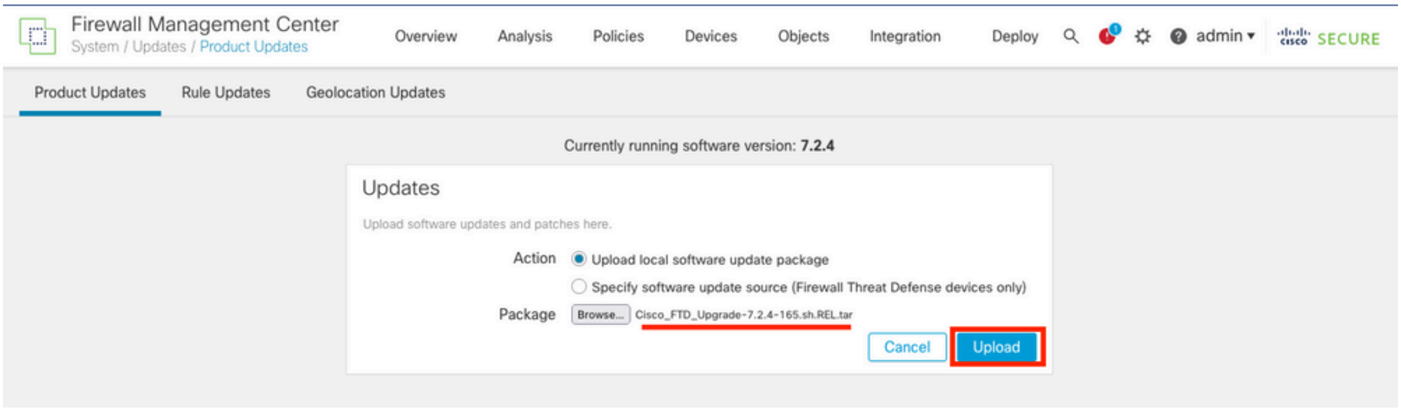


Currently running software version: **7.2.4**

Currently installed VDB version: **build 353 (2022-03-07 22:13:19)**

Type	Version	Date	Reboot
Cisco Secure FW Mgmt Center Upgrade	7.2.4-169	Wed May 10 12:48:58 UTC 2023	Yes

- Browse for the previously downloaded image, then select **Upload**.



Currently running software version: **7.2.4**

Updates

Upload software updates and patches here.

Action ● Upload local software update package

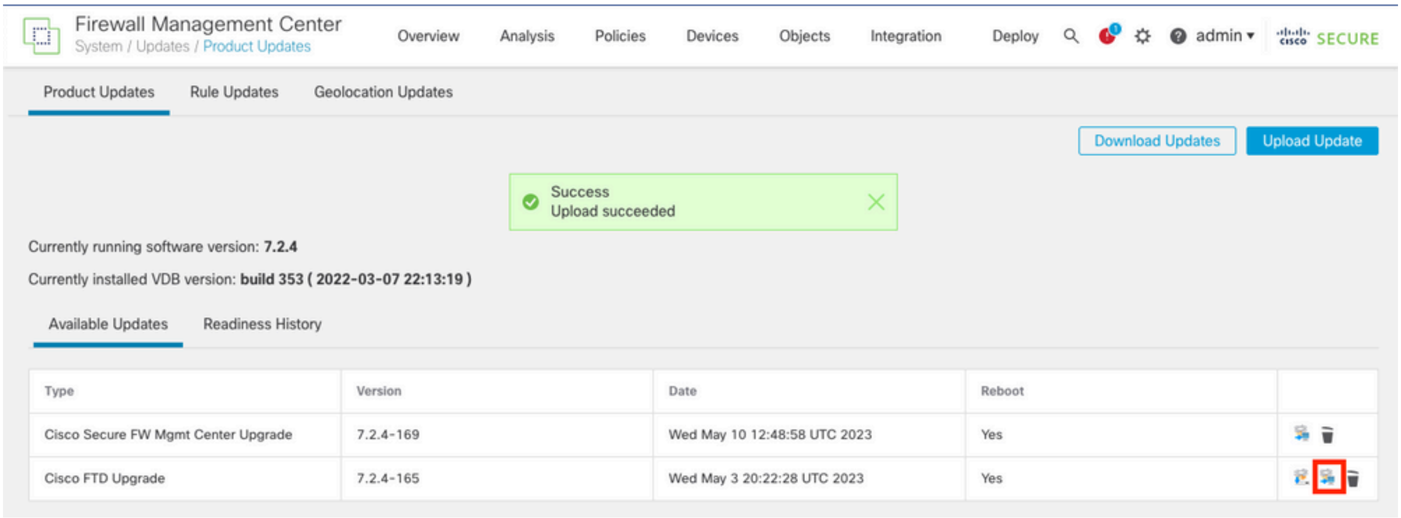
○ Specify software update source (Firewall Threat Defense devices only)

Package Browse... Cisco_FTD_Upgrade-7.2.4-165.sh.REL.tar

Step 2. Check Readiness

Readiness checks confirm if appliances are ready to proceed with upgrade.

- Select the **Install** option in the correct upgrade package.



Success
Upload succeeded

Currently running software version: **7.2.4**

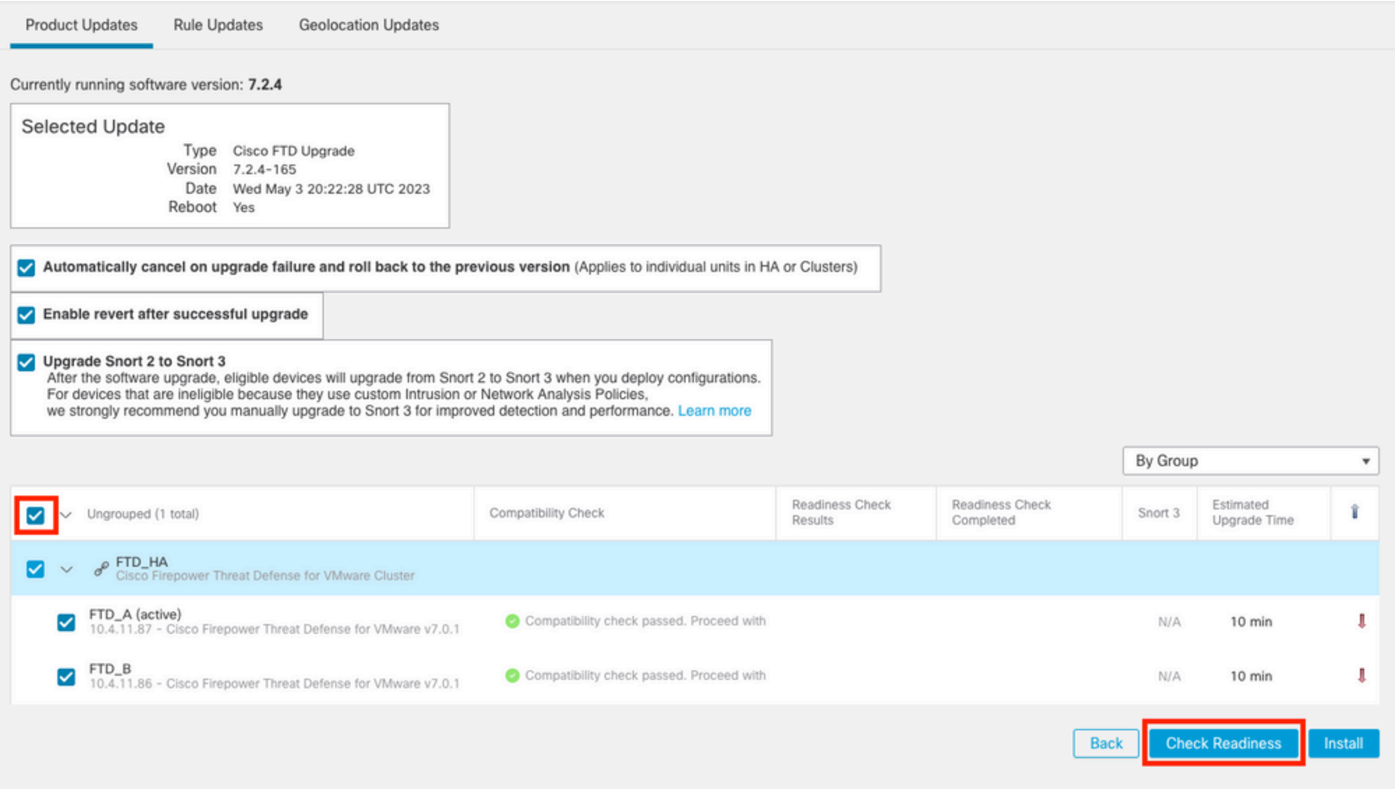
Currently installed VDB version: **build 353 (2022-03-07 22:13:19)**

Type	Version	Date	Reboot
Cisco Secure FW Mgmt Center Upgrade	7.2.4-169	Wed May 10 12:48:58 UTC 2023	Yes
Cisco FTD Upgrade	7.2.4-165	Wed May 3 20:22:28 UTC 2023	Yes

Select the upgrade you prefer. In this case, the selection is for:

- Automatically cancel on upgrade failure and roll back to previous version.
- Enable revert after successful upgrade.
- Upgrade Snort 2 to Snort 3.

- Select the HA group of FTDs and click **Check Readiness**.



Currently running software version: **7.2.4**

Selected Update

Type	Cisco FTD Upgrade
Version	7.2.4-165
Date	Wed May 3 20:22:28 UTC 2023
Reboot	Yes

☑ **Automatically cancel on upgrade failure and roll back to the previous version** (Applies to individual units in HA or Clusters)

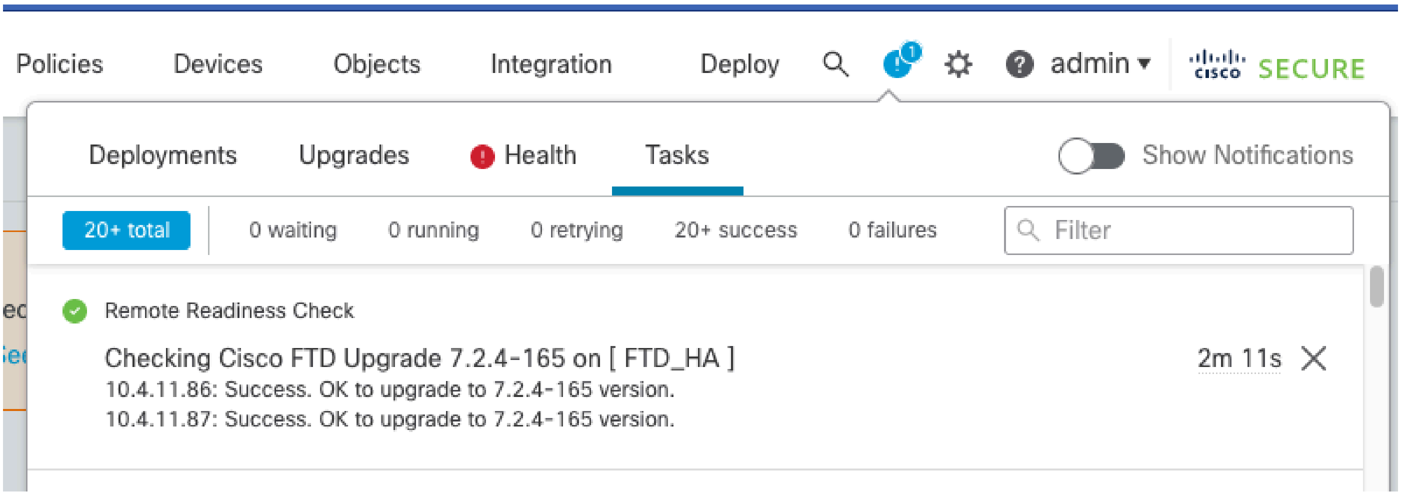
☑ **Enable revert after successful upgrade**

☑ **Upgrade Snort 2 to Snort 3**
After the software upgrade, eligible devices will upgrade from Snort 2 to Snort 3 when you deploy configurations.
For devices that are ineligible because they use custom Intrusion or Network Analysis Policies,
we strongly recommend you manually upgrade to Snort 3 for improved detection and performance. Learn more

By Group

☑ Ungrouped (1 total)	Compatibility Check	Readiness Check Results	Readiness Check Completed	Snort 3	Estimated Upgrade Time	
☑ FTD_HA Cisco Firepower Threat Defense for VMware Cluster						
☑ FTD_A (active) 10.4.11.87 - Cisco Firepower Threat Defense for VMware v7.0.1	✓ Compatibility check passed. Proceed with			N/A	10 min	
☑ FTD_B 10.4.11.86 - Cisco Firepower Threat Defense for VMware v7.0.1	✓ Compatibility check passed. Proceed with			N/A	10 min	

The progress can be checked in the message center **Messages > Tasks**.

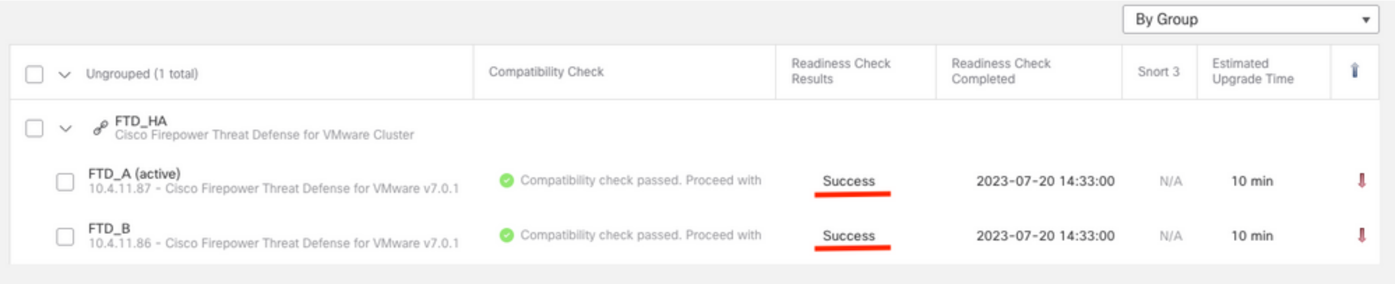


Remote Readiness Check

Checking Cisco FTD Upgrade 7.2.4-165 on [FTD_HA]
10.4.11.86: Success. OK to upgrade to 7.2.4-165 version.
10.4.11.87: Success. OK to upgrade to 7.2.4-165 version.

2m 11s

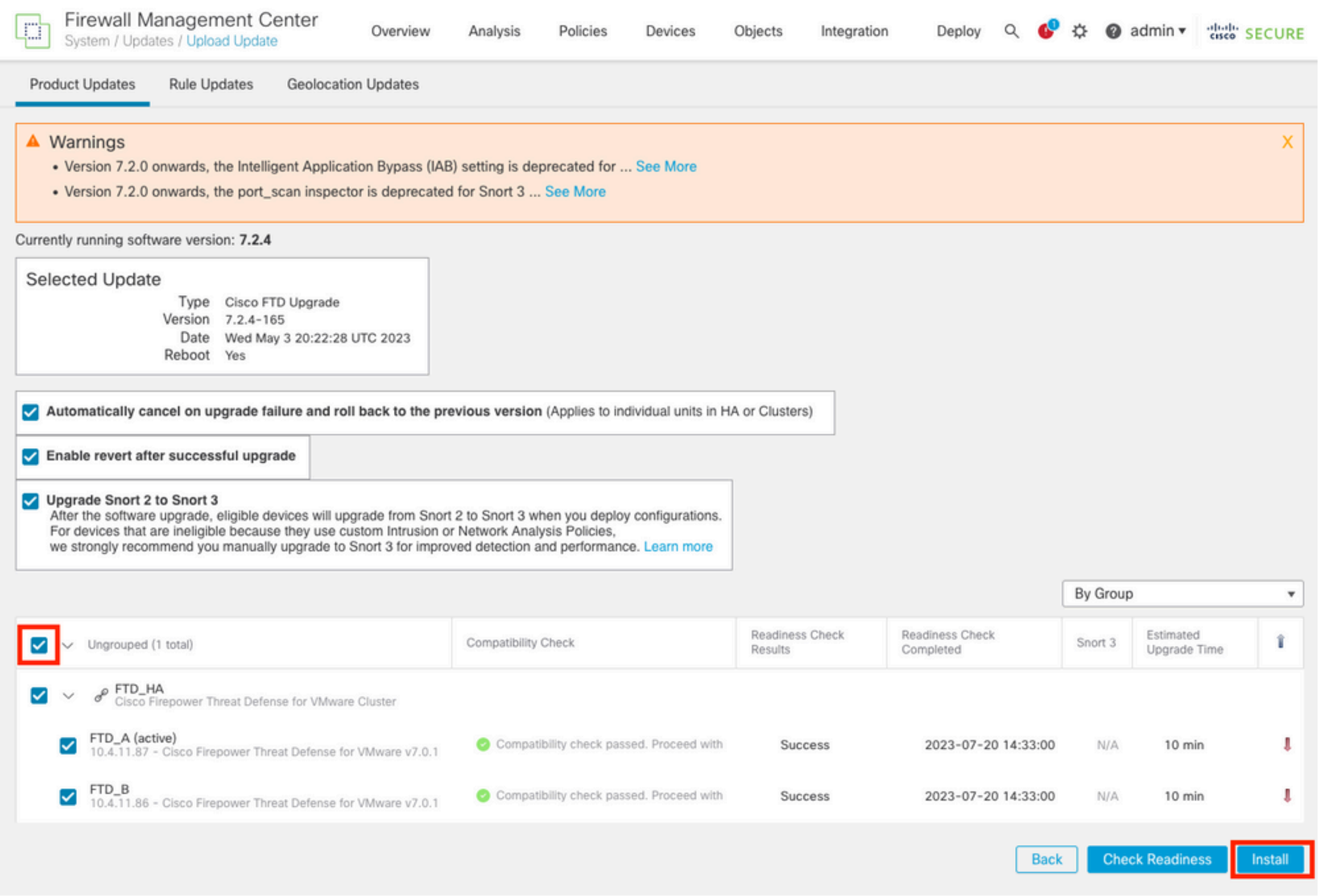
When the readiness check completes in both FTD and result is Success, the upgrade can be done.


By Group

□ Ungrouped (1 total)	Compatibility Check	Readiness Check Results	Readiness Check Completed	Snort 3	Estimated Upgrade Time	
□ FTD_HA Cisco Firepower Threat Defense for VMware Cluster						
□ FTD_A (active) 10.4.11.87 - Cisco Firepower Threat Defense for VMware v7.0.1	✓ Compatibility check passed. Proceed with	Success	2023-07-20 14:33:00	N/A	10 min	
□ FTD_B 10.4.11.86 - Cisco Firepower Threat Defense for VMware v7.0.1	✓ Compatibility check passed. Proceed with	Success	2023-07-20 14:33:00	N/A	10 min	

Step 3. Upgrade FTD in High Availability

- Select the **HA Pair** and click **Install**.



Warnings

- Version 7.2.0 onwards, the Intelligent Application Bypass (IAB) setting is deprecated for ... See More
- Version 7.2.0 onwards, the port_scan inspector is deprecated for Snort 3 ... See More

Currently running software version: **7.2.4**

Selected Update

Type	Cisco FTD Upgrade
Version	7.2.4-165
Date	Wed May 3 20:22:28 UTC 2023
Reboot	Yes

☑ **Automatically cancel on upgrade failure and roll back to the previous version** (Applies to individual units in HA or Clusters)

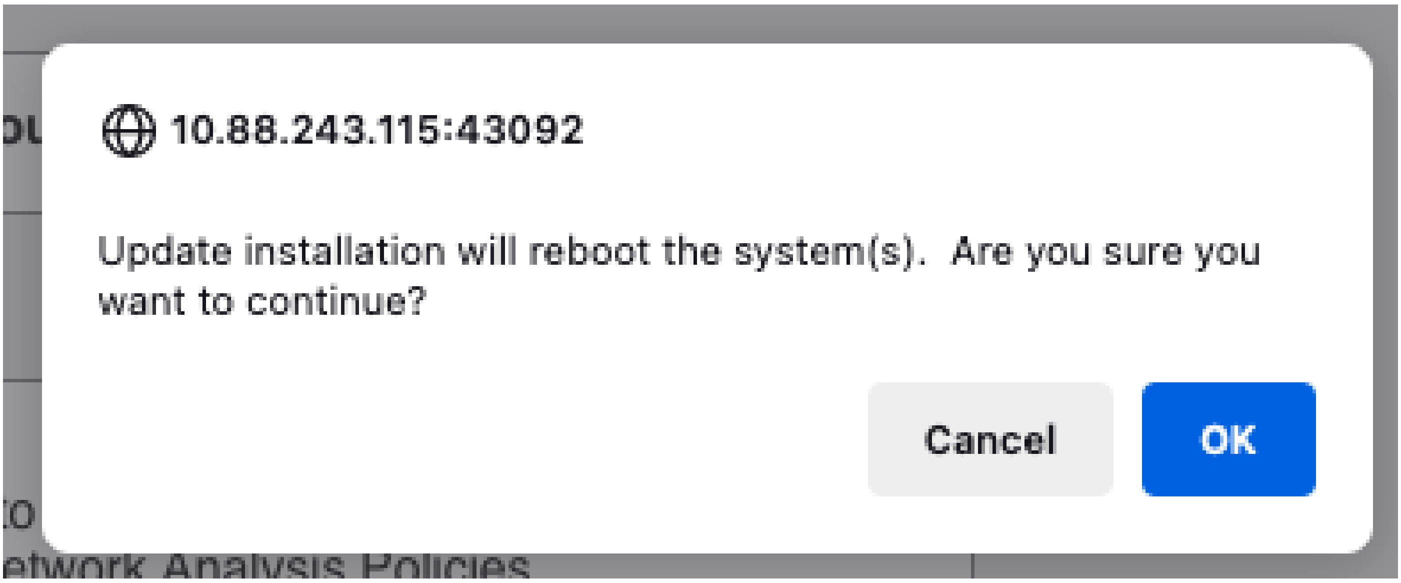
☑ **Enable revert after successful upgrade**

☑ **Upgrade Snort 2 to Snort 3**
After the software upgrade, eligible devices will upgrade from Snort 2 to Snort 3 when you deploy configurations.
For devices that are ineligible because they use custom Intrusion or Network Analysis Policies,
we strongly recommend you manually upgrade to Snort 3 for improved detection and performance. Learn more

By Group

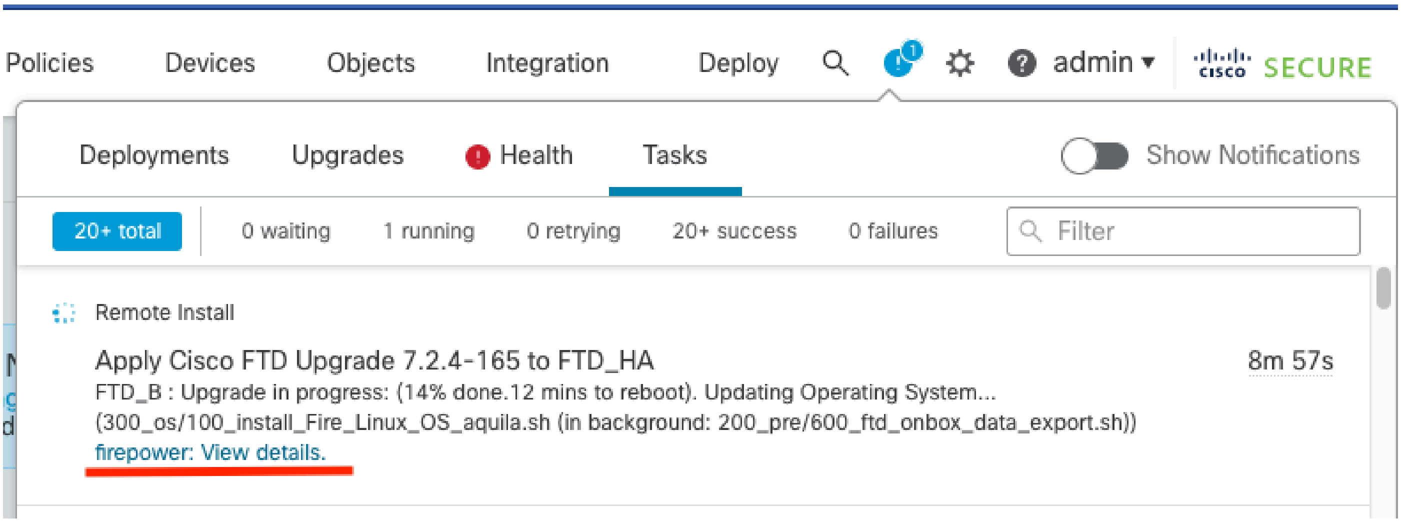
☑ Ungrouped (1 total)	Compatibility Check	Readiness Check Results	Readiness Check Completed	Snort 3	Estimated Upgrade Time	
☑ FTD_HA Cisco Firepower Threat Defense for VMware Cluster						
☑ FTD_A (active) 10.4.11.87 - Cisco Firepower Threat Defense for VMware v7.0.1	Compatibility check passed. Proceed with	Success	2023-07-20 14:33:00	N/A	10 min	
☑ FTD_B 10.4.11.86 - Cisco Firepower Threat Defense for VMware v7.0.1	Compatibility check passed. Proceed with	Success	2023-07-20 14:33:00	N/A	10 min	

Warning to continue with upgrade, the system reboots to complete upgrade. Select **OK**.


10.88.243.115:43092

Update installation will reboot the system(s). Are you sure you want to continue?

The progress can be checked in the message center **Messages > Tasks**.



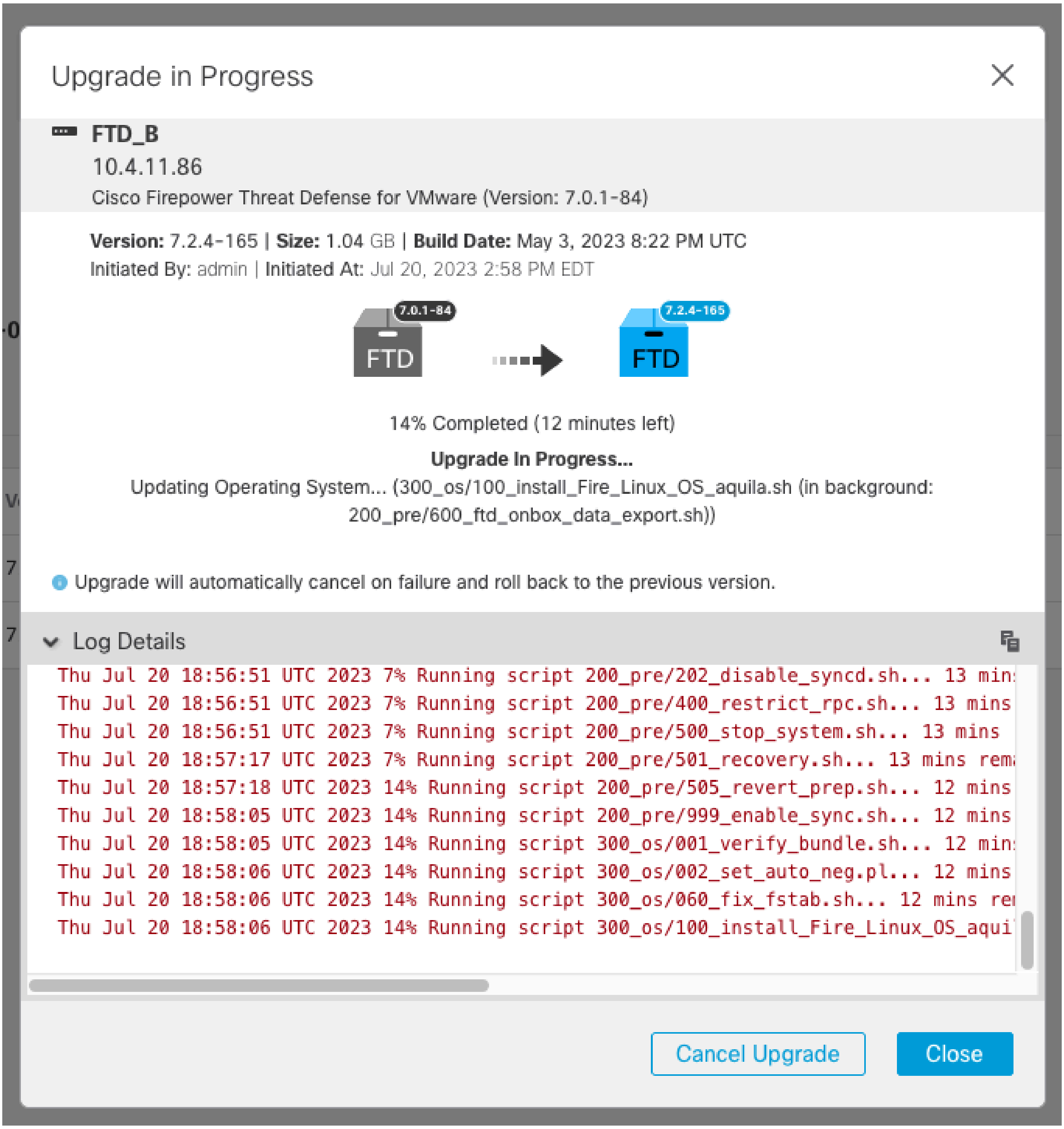
Remote Install

Apply Cisco FTD Upgrade 7.2.4-165 to FTD_HA 8m 57s

FTD_B : Upgrade in progress: (14% done.12 mins to reboot). Updating Operating System... (300_os/100_install_Fire_Linux_OS_aquila.sh (in background: 200_pre/600_ftd_onbox_data_export.sh))

firepower: View details.

If you click on **firepower: View details**, the progress is shown in a graphical way and the logs of status.log.



FTD_B

10.4.11.86

Cisco Firepower Threat Defense for VMware (Version: 7.0.1-84)

Version: 7.2.4-165 | **Size:** 1.04 GB | **Build Date:** May 3, 2023 8:22 PM UTC

Initiated By: admin | Initiated At: Jul 20, 2023 2:58 PM EDT

14% Completed (12 minutes left)

Upgrade In Progress...

Updating Operating System... (300_os/100_install_Fire_Linux_OS_aquila.sh (in background: 200_pre/600_ftd_onbox_data_export.sh))

Upgrade will automatically cancel on failure and roll back to the previous version.

```
Thu Jul 20 18:56:51 UTC 2023 7% Running script 200_pre/202_disable_syncd.sh... 13 min
Thu Jul 20 18:56:51 UTC 2023 7% Running script 200_pre/400_restrict_rpc.sh... 13 mins
Thu Jul 20 18:56:51 UTC 2023 7% Running script 200_pre/500_stop_system.sh... 13 mins
Thu Jul 20 18:57:17 UTC 2023 7% Running script 200_pre/501_recovery.sh... 13 mins rem
Thu Jul 20 18:57:18 UTC 2023 14% Running script 200_pre/505_revert_prep.sh... 12 mins
Thu Jul 20 18:58:05 UTC 2023 14% Running script 200_pre/999_enable_sync.sh... 12 mins
Thu Jul 20 18:58:05 UTC 2023 14% Running script 300_os/001_verify_bundle.sh... 12 min
Thu Jul 20 18:58:06 UTC 2023 14% Running script 300_os/002_set_auto_neg.pl... 12 mins
Thu Jul 20 18:58:06 UTC 2023 14% Running script 300_os/060_fix_fstab.sh... 12 mins re
Thu Jul 20 18:58:06 UTC 2023 14% Running script 300_os/100_install_Fire_Linux_OS_aqui
```

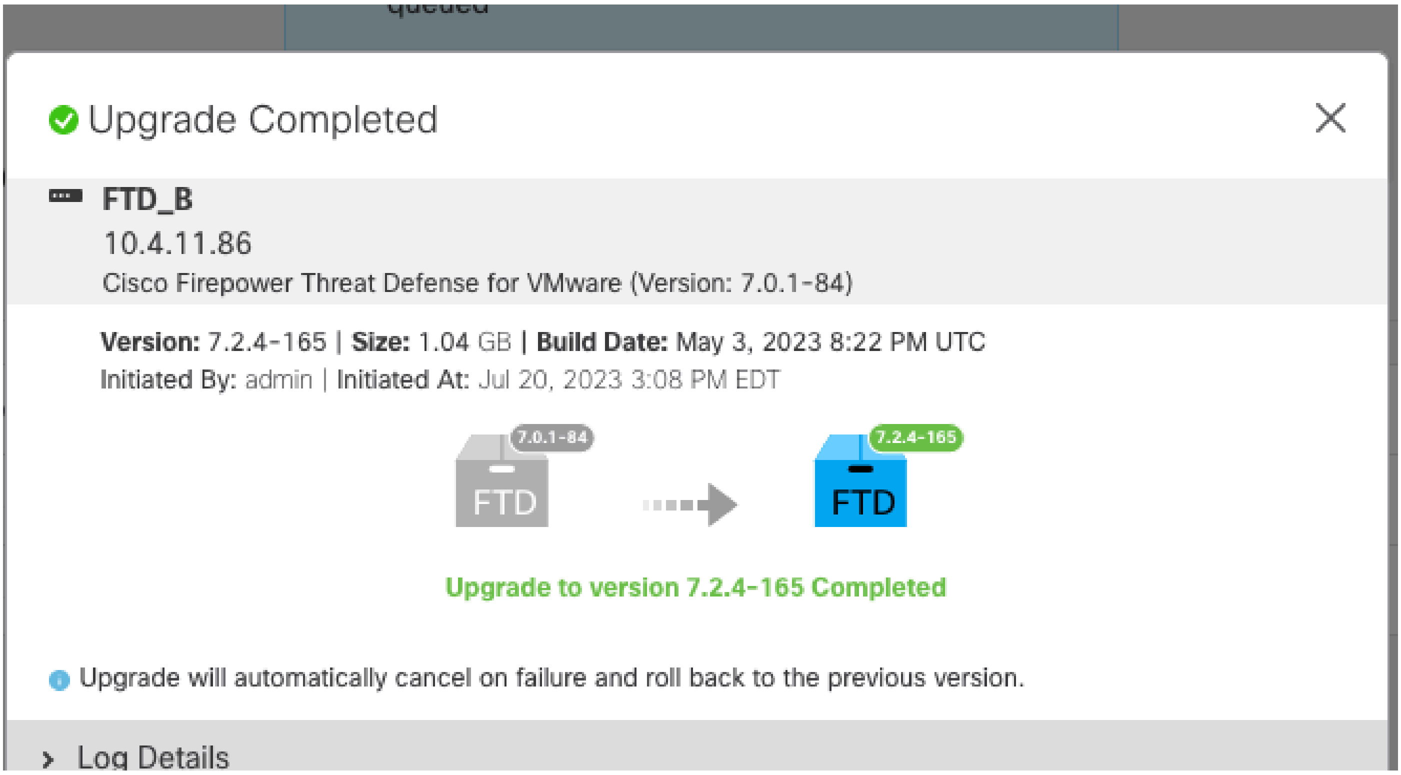
Note: Upgrade takes around 20 min per FTD.

On CLI, progress can be checked in upgrade folder **/ngfw/var/log/sf;** move to **expert mode** and enter **root access**.

```
> expert
admin@firepower:~$ sudo su
Password:
root@firepower:/home/admin# cd /ngfw/var/log/sf

root@firepower:/ngfw/var/log/sf# ls
Cisco_FTD_Upgrade-7.2.4

root@firepower:/ngfw/var/log/sf# cd Cisco_FTD_Upgrade-7.2.4

root@firepower:/ngfw/var/log/sf/Cisco_FTD_Upgrade-7.2.4# ls
000_start  AQ_UUID  DBCheck.log  finished_kickstart.flag  flags.conf  main_upgrade_script.log  status.l

root@firepower:/ngfw/var/log/sf/Cisco_FTD_Upgrade-7.2.4# tail -f status.log
state:running
```

```
ui:Upgrade has begun.
ui: Upgrade in progress: ( 0% done.14 mins to reboot). Checking device readiness... (000_start/000_00_r
…
ui: Upgrade in progress: (64% done. 5 mins to reboot). Finishing the upgrade... (999_finish/999_zzz_com
ui: Upgrade complete
ui: The system will now reboot.
ui:System will now reboot.

Broadcast message from root@firepower (Thu Jul 20 19:05:20 2023):

System will reboot in 5 seconds due to system upgrade.

Broadcast message from root@firepower (Thu Jul 20 19:05:25 2023):

System will reboot now due to system upgrade.

Broadcast message from root@firepower (Thu Jul 20 19:05:34 2023):

The system is going down for reboot NOW!
```

Upgrade status is marked as completed on GUI, and shows the next steps.



Upgrade Completed

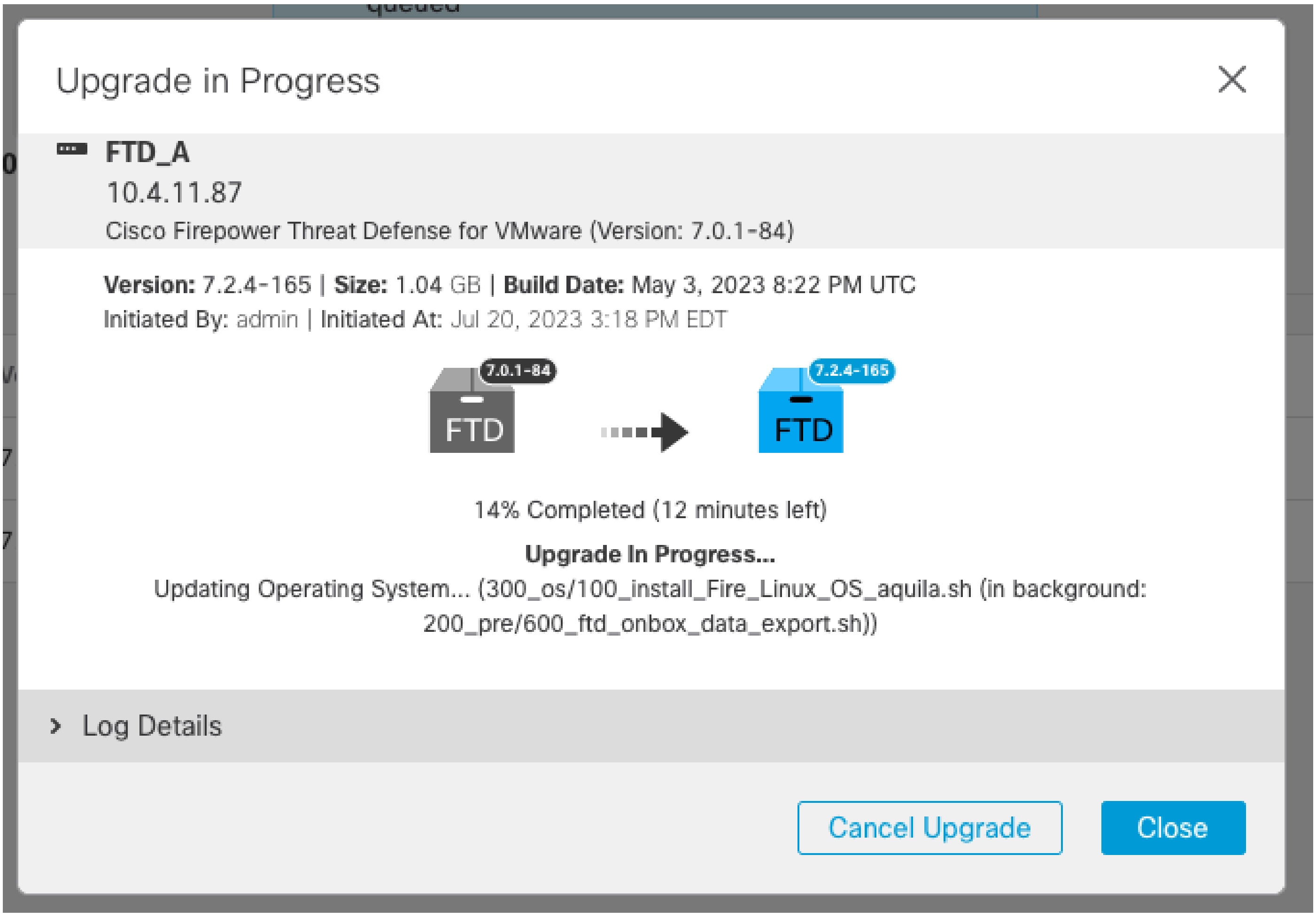
FTD_B
10.4.11.86
Cisco Firepower Threat Defense for VMware (Version: 7.0.1-84)

Version: 7.2.4-165 | **Size:** 1.04 GB | **Build Date:** May 3, 2023 8:22 PM UTC
Initiated By: admin | Initiated At: Jul 20, 2023 3:08 PM EDT

Upgrade to version 7.2.4-165 Completed

Upgrade will automatically cancel on failure and roll back to the previous version.

After the upgrade is completed in the Standby device, it starts in the Active device.



Upgrade in Progress

FTD_A

10.4.11.87

Cisco Firepower Threat Defense for VMware (Version: 7.0.1-84)

Version: 7.2.4-165 | **Size:** 1.04 GB | **Build Date:** May 3, 2023 8:22 PM UTC

Initiated By: admin | Initiated At: Jul 20, 2023 3:18 PM EDT

14% Completed (12 minutes left)

Upgrade In Progress...

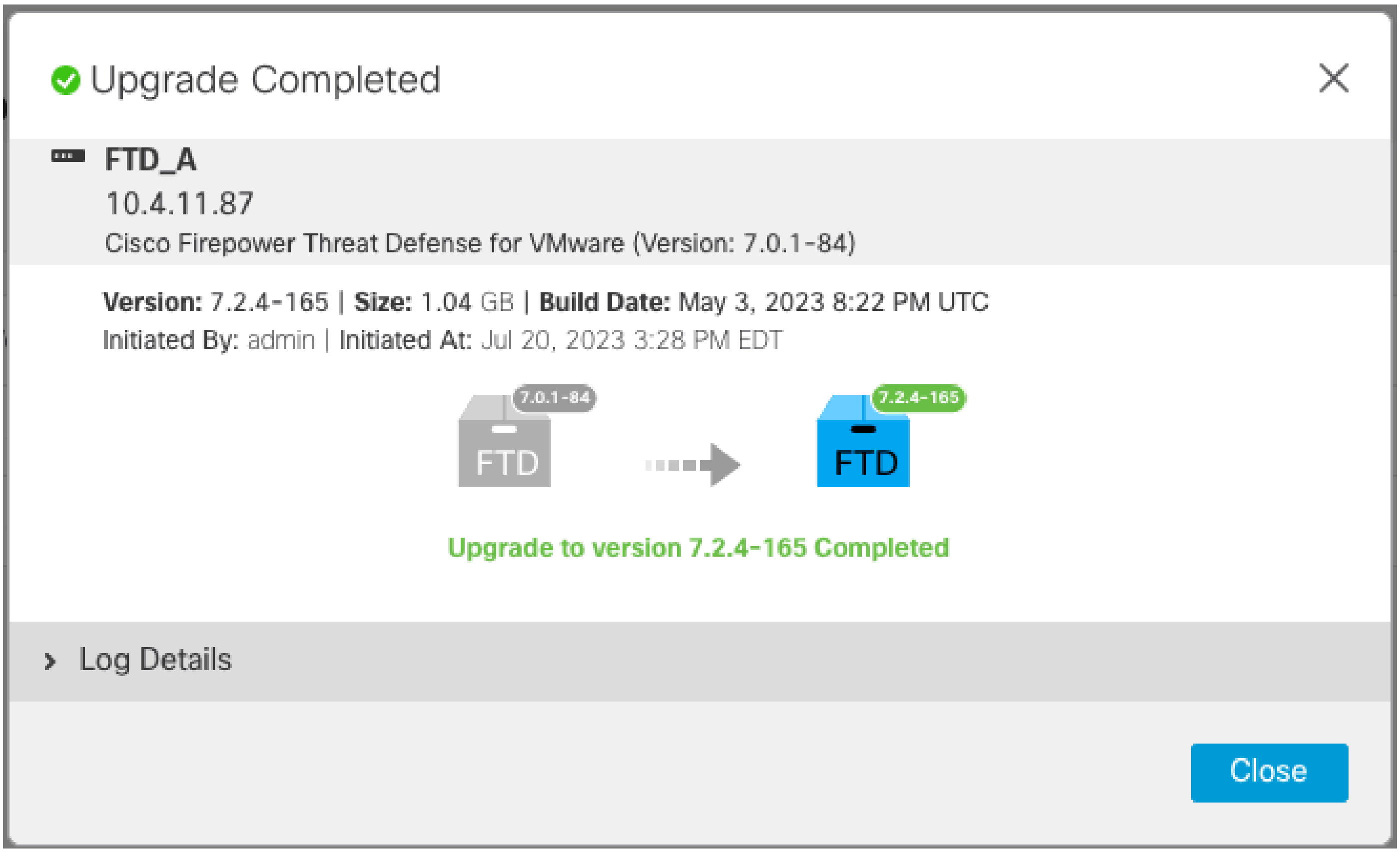
Updating Operating System... (300_os/100_install_Fire_Linux_OS_aquila.sh (in background: 200_pre/600_ftd_onbox_data_export.sh))

On CLI, move to LINA (system support diagnostic-cli) and check the failover state on the Standby FTD using command **show failover state**.

```
> system support diagnostic-cli
Attaching to Diagnostic CLI ... Press 'Ctrl+a then d' to detach.
Type help or '?' for a list of available commands.

firepower> enable
Password:
firepower# show failover state

               State          Last Failure Reason      Date/Time
This host  -   Secondary
               Standby Ready  None
Other host -   Primary
               Active         None

====Configuration State===
        Sync Done - STANDBY
====Communication State===
        Mac set

firepower#
        Switching to Active
```

Note: The failover occurs automatically as part of the upgrade. Before Active FTD reboots and complete the upgrade.

When the upgrade completes, a reboot is needed:



Upgrade Completed

FTD_A

10.4.11.87

Cisco Firepower Threat Defense for VMware (Version: 7.0.1-84)

Version: 7.2.4-165 | **Size:** 1.04 GB | **Build Date:** May 3, 2023 8:22 PM UTC

Initiated By: admin | Initiated At: Jul 20, 2023 3:28 PM EDT

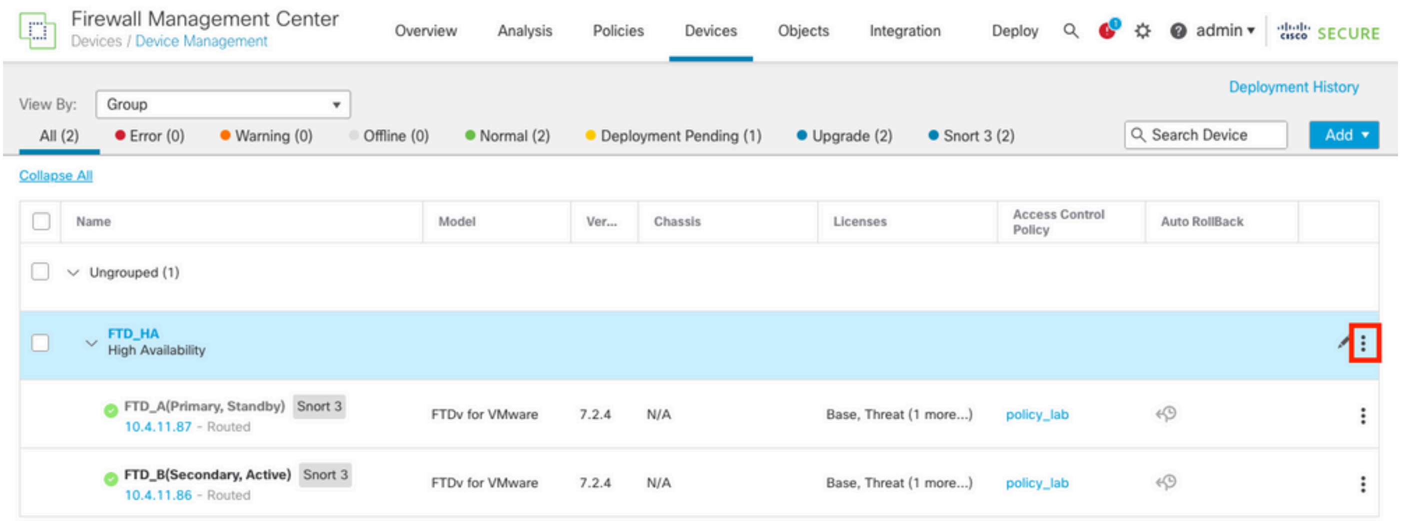
Upgrade to version 7.2.4-165 Completed

Step 4. Switch Active Peer (Optional)

Note: If Secondary device as Active, it does not have any operational impact.
Having Primary device as Active and Secondary as Standby is a best practice that helps tracking any failover that can occur.

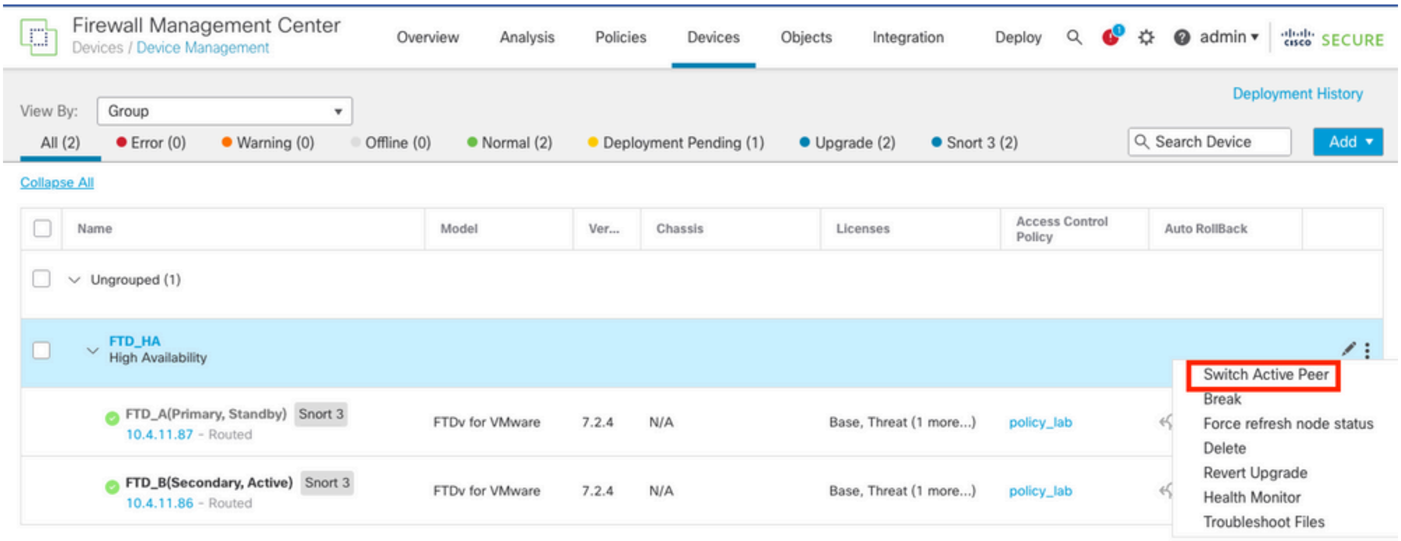
In this case, the FTD Active is now Standby, a manual failover can be used to set it back to Active.

- Navigate to the three dots next to the edit sign.



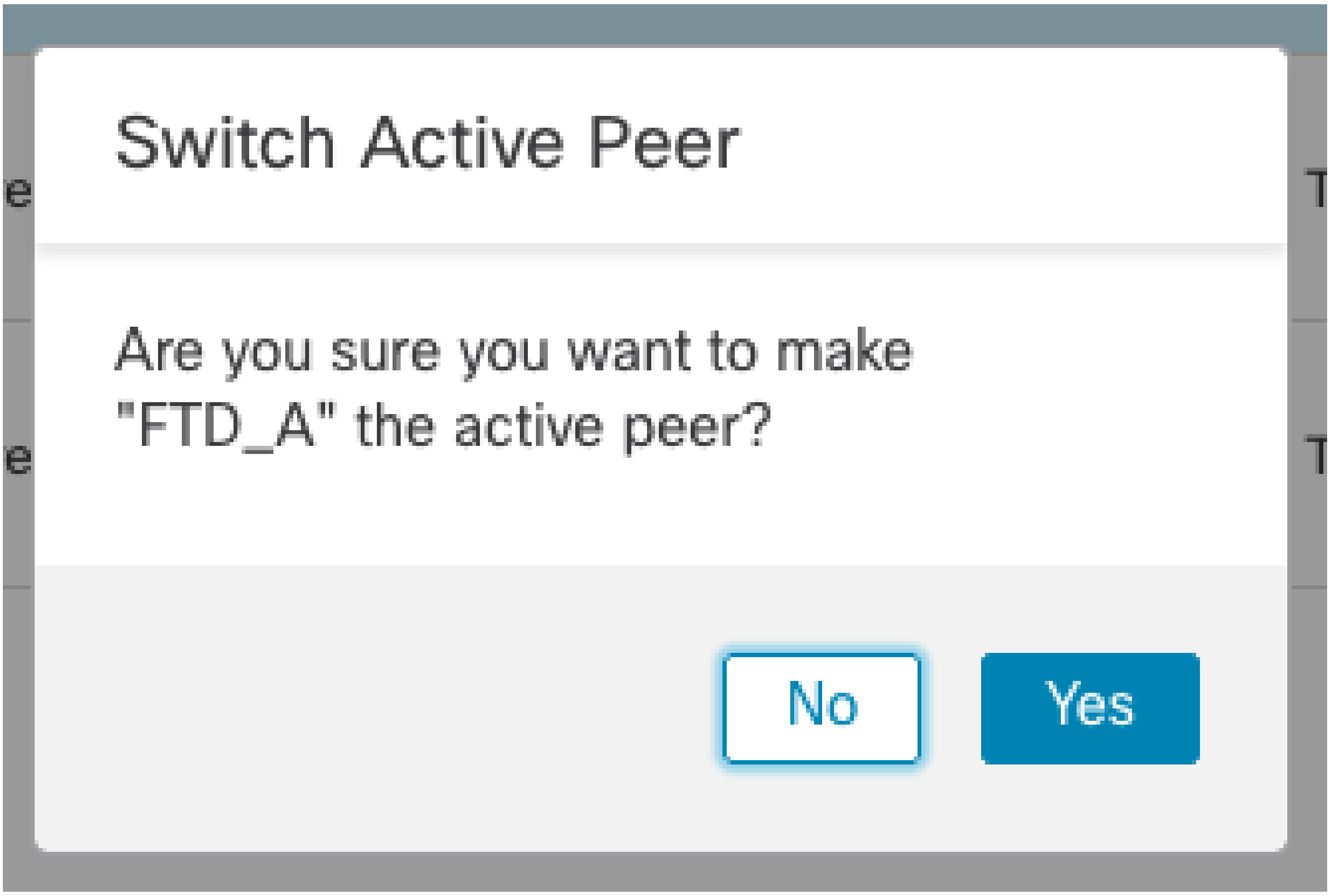
Name	Model	Ver...	Chassis	Licenses	Access Control Policy	Auto RollBack
Ungrouped (1)						
FTD_HA High Availability						
FTD_A(Primary, Standby) Snort 3 10.4.11.87 - Routed	FTDv for VMware	7.2.4	N/A	Base, Threat (1 more...)	policy_lab	
FTD_B(Secondary, Active) Snort 3 10.4.11.86 - Routed	FTDv for VMware	7.2.4	N/A	Base, Threat (1 more...)	policy_lab	

- Select **Switch Active Peer**.



Name	Model	Ver...	Chassis	Licenses	Access Control Policy	Auto RollBack
Ungrouped (1)						
FTD_HA High Availability						
FTD_A(Primary, Standby) Snort 3 10.4.11.87 - Routed	FTDv for VMware	7.2.4	N/A	Base, Threat (1 more...)	policy_lab	
FTD_B(Secondary, Active) Snort 3 10.4.11.86 - Routed	FTDv for VMware	7.2.4	N/A	Base, Threat (1 more...)	policy_lab	

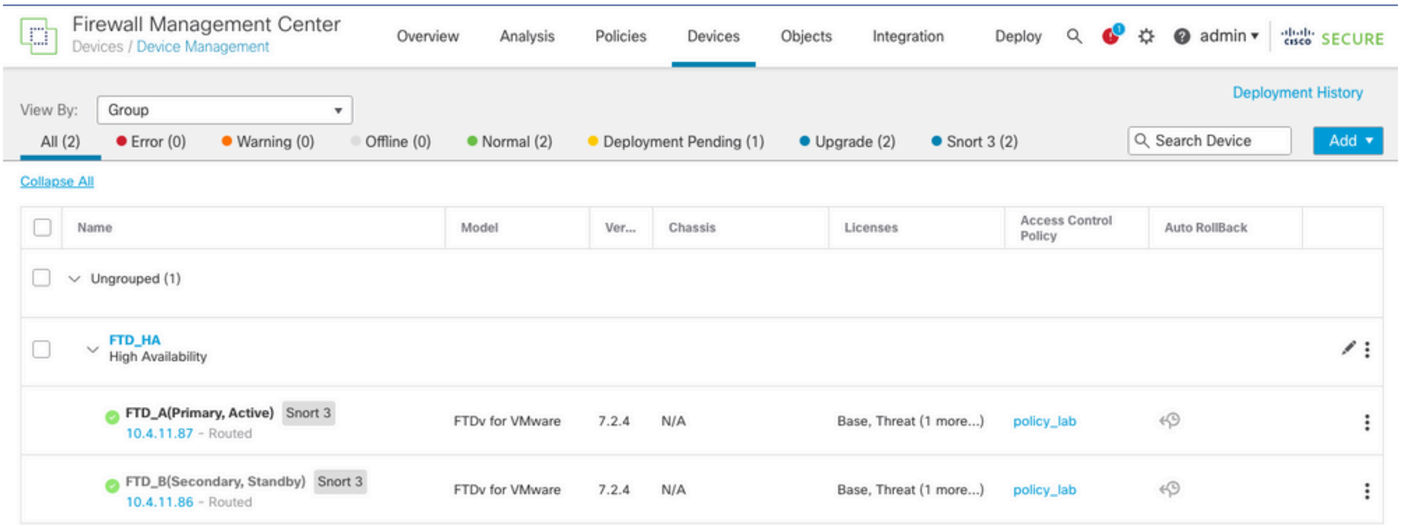
- Select **YES** to confirm the failover.



Switch Active Peer

Are you sure you want to make "FTD_A" the active peer?

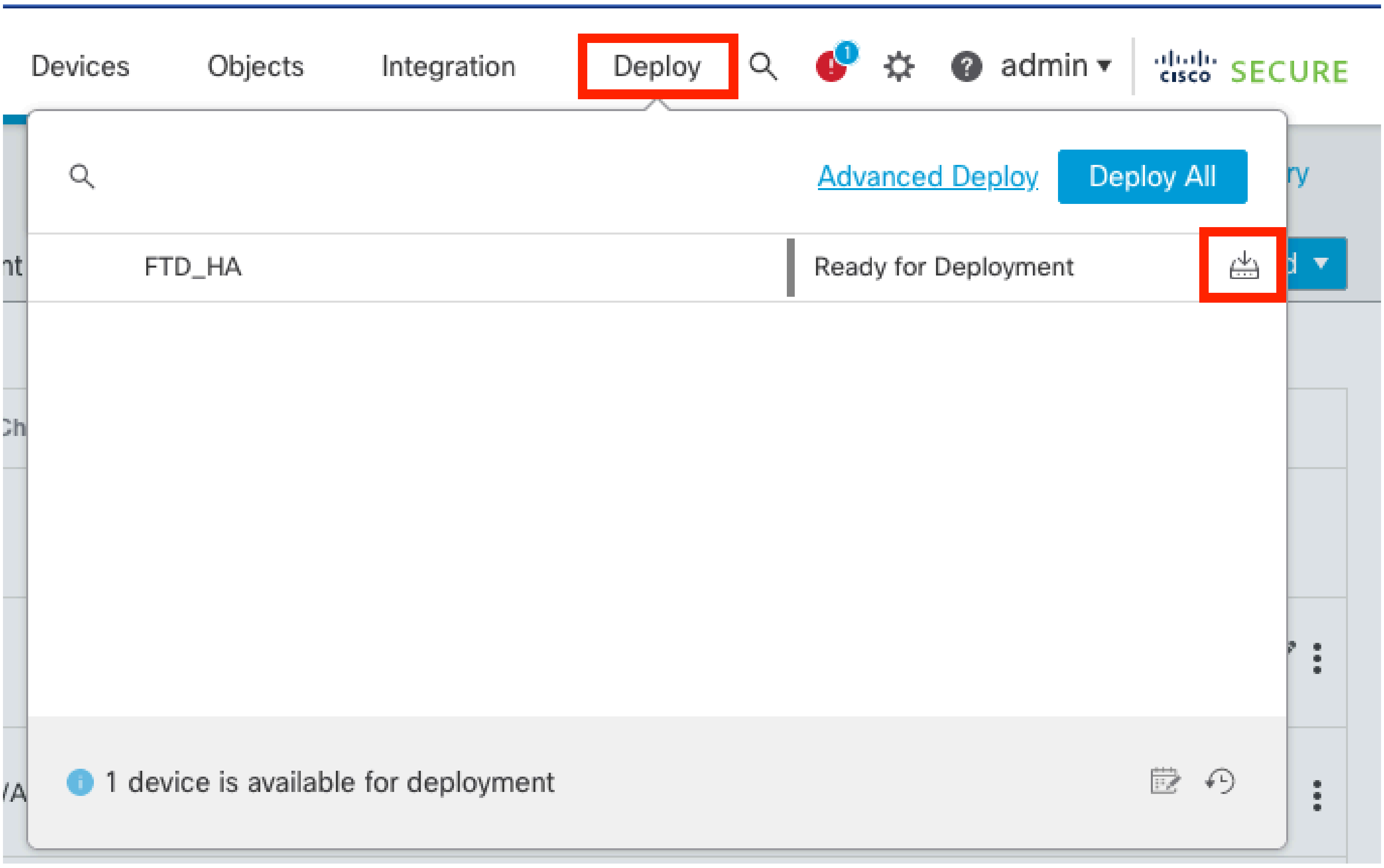
Validation of High Availability status at the end of upgrade and failover done.
Devices > Device Management



□	Name	Model	Ver...	Chassis	Licenses	Access Control Policy	Auto RollBack
□	Ungrouped (1)						
□	FTD_HA High Availability						
	● FTD_A(Primary, Active) Snort 3 10.4.11.87 - Routed	FTDv for VMware	7.2.4	N/A	Base, Threat (1 more...)	policy_lab	
	● FTD_B(Secondary, Standby) Snort 3 10.4.11.86 - Routed	FTDv for VMware	7.2.4	N/A	Base, Threat (1 more...)	policy_lab	

Step 5. Final Deploy

- Deploy a policy to devices **Deploy > Deploy to this device**.



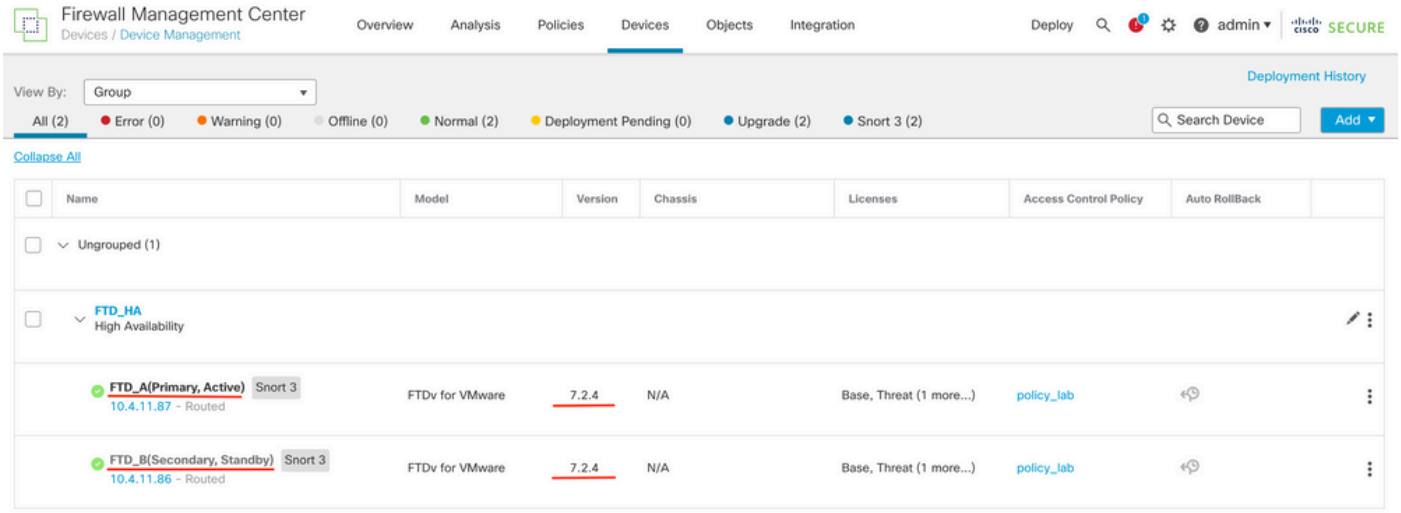
FTD_HA	Ready for Deployment

1 device is available for deployment

Validate

To validate High Availability status and upgrade are complete, you need to confirm the status:
Primary: Active
Secondary: Standby Ready
Both are under the version that is the recently changed one (7.2.4 in this example).

- In FMC GUI, navigate to **Devices > Device Management**.



View By: Group

All (2) · ● Error (0) · ● Warning (0) · ● Offline (0) · ● Normal (2) · ● Deployment Pending (0) · ● Upgrade (2) · ● Snort 3 (2)

Name	Model	Version	Chassis	Licenses	Access Control Policy	Auto RollBack
Ungrouped (1)						
FTD_HA High Availability						
FTD_A(Primary, Active) Snort 3 10.4.11.87 - Routed	FTDv for VMware	7.2.4	N/A	Base, Threat (1 more...)	policy_lab	
FTD_B(Secondary, Standby) Snort 3 10.4.11.86 - Routed	FTDv for VMware	7.2.4	N/A	Base, Threat (1 more...)	policy_lab	

- Over CLI clish, check the failover state using command **show failover state** and **show failover** for a more detailed information.

```
Cisco Firepower Extensible Operating System (FX-OS) v2.12.0 (build 499)
Cisco Firepower Threat Defense for VMware v7.2.4 (build 165)

> show failover state

               State          Last Failure Reason      Date/Time
This host  -   Primary
               Active         None
Other host -   Secondary
               Standby Ready  None

====Configuration State===
====Communication State===
        Mac set

> show failover
Failover On
Failover unit Primary
Failover LAN Interface: FAILOVER_LINK GigabitEthernet0/0 (up)
Reconnect timeout 0:00:00
Unit Poll frequency 1 seconds, holdtime 15 seconds
Interface Poll frequency 5 seconds, holdtime 25 seconds
Interface Policy 1
Monitored Interfaces 3 of 1285 maximum
MAC Address Move Notification Interval not set
failover replication http
Version: Ours 9.18(3)39, Mate 9.18(3)39
Serial Number: Ours 9AVLW3FSSK8, Mate 9AJJSEGJS2T
Last Failover at: 19:56:41 UTC Jul 20 2023
        This host: Primary - Active
                Active time: 181629 (sec)
                slot 0: ASAv hw/sw rev (/9.18(3)39) status (Up Sys)
                  Interface INSIDE (10.10.153.1): Normal (Monitored)
                  Interface OUTSIDE (10.20.153.1): Normal (Monitored)
                  Interface diagnostic (0.0.0.0): Normal (Waiting)
                slot 1: snort rev (1.0)  status (up)
                slot 2: diskstatus rev (1.0)  status (up)
        Other host: Secondary - Standby Ready
                Active time: 2390 (sec)
                  Interface INSIDE (10.10.153.2): Normal (Monitored)
                  Interface OUTSIDE (10.20.153.2): Normal (Monitored)
                  Interface diagnostic (0.0.0.0): Normal (Waiting)
                slot 1: snort rev (1.0)  status (up)
                slot 2: diskstatus rev (1.0)  status (up)

Stateful Failover Logical Update Statistics
        Link : FAILOVER_LINK GigabitEthernet0/0 (up)
        Stateful Obj    xmit       xerr       rcv        rerr
        General         29336      0          24445      0
        sys cmd         24418      0          24393      0
...

        Logical Update Queue Information
                        Cur     Max     Total
        Recv Q:         0       11      25331
        Xmit Q:         0       1       127887
```

If both FTDs are on the same version and high availability status is healthy, then the upgrade is complete.