# Release Notes for Cisco Enterprise Network Function Virtualization Infrastructure Software, Release 4.15.x

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## About Cisco Enterprise NFVIS

**Note** To achieve simplification and consistency, the Cisco SD-WAN solution has been rebranded as Cisco Catalyst SD-WAN. In addition, from Cisco IOS XE SD-WAN Release 17.12.1a and Cisco Catalyst SD-WAN Release 20.12.1, the following component changes are applicable: **Cisco vManage** to **Cisco Catalyst SD-WAN Manager**, **Cisco vAnalytics** to **Cisco Catalyst SD-WAN Analytics**, **Cisco vBond** to **Cisco Catalyst SD-WAN Validator**, **Cisco vSmart** to **Cisco Catalyst SD-WAN Controller**, and **Cisco Controllers** to **Cisco Catalyst SD-WAN Control Components**. See the latest Release Notes for a comprehensive list of all the component brand name changes. While we transition to the new names, some inconsistencies might be present in the documentation set because of a phased approach to the user interface updates of the software product.

Find all the information you need about this release—new features, known behavior, resolved and open bugs, and related information.

## What's New

### New and Enhanced Features for Cisco Enterprise NFVIS Release 4.15.3

*Table 1: Feature History*

| Feature Name | Release Information | Description |
|---|---|---|
| Cisco NFVIS ThousandEyes Support | Cisco NFVIS Release 4.15.3 | This feature allows upgrading the NFVIS ThousandEyes agent container image directly from the Cisco NFVIS web portal. You can choose from registered images or upgrade to new images. |

### New and Enhanced Features for Cisco Enterprise NFVIS Release 4.15.2

*Table 2: Feature History*

| Feature Name | Release Information | Description |
|---|---|---|
| Cisco NFVIS ThousandEyes Support | Cisco NFVIS Release 4.15.2 | This feature adds support to deploy and operate Cisco ThousandEyes as a container using Cisco NFVIS. Download the NFVIS ThousandEyes agent container image from ThousandEyes, and deploy the ThousandEyes container to leverage ThousandEyes related technologies within Cisco NFVIS.<br><br>This feature adds support for ThousandEyes Docker Container Upgrade using the NFVIS VM Lifecycle Workflow. It also introduces support for using new NFVIS-specific Docker images provided by ThousandEyes. |

### New and Enhanced Features for Cisco Enterprise NFVIS Release 4.15.1

There are no new features released as part of Cisco Enterprise NFVIS Release 4.15.1

## Resolved and Open Bugs

### About the Cisco Bug Search Tool

Use the Cisco Bug Search Tool to access open and resolved bugs for a release.

The tool allows you to search for a specific bug ID, or for all bugs specific to a product and a release.

You can filter the search results by last modified date, bug status (open, resolved), severity, rating, and support cases.

## Resolved and Open Bugs for Cisco Enterprise NFVIS Release 4.15.6

### Resolved Bugs for Cisco NFVIS Release 4.15.6

| Bug ID | Description |
|---|---|
| CSCwt49377 | NFVIS: Upgrade Fails due to Package File Conflict |
| CSCwu00795 | After NFVIS upgrade on ENCS, confd fails to establish and switch services fail. |
| CSCwr58939 | NFVIS: Missing Static Management Route |

### Open Bugs for Cisco NFVIS Release 4.15.6

There are no open defects captured in this release.

## Resolved and Open Bugs for Cisco Enterprise NFVIS Release 4.15.5

### Resolved Bugs for Cisco NFVIS Release 4.15.5

| Bug ID | Description |
|---|---|
| CSCwr77187 | NFVIS: Issues with system_disk impact ability to access filesystem |
| CSCwr29515 | PNic does not change from autonegotiate in NFVIS |
| CSCwq74496 | NFVIS Memory leak with libvirtd 8.0.0 |
| CSCwr58936 | NFVIS: Missing Default Route when Using Single-IP Mode |

### Open Bugs for Cisco NFVIS Release 4.15.5

There are no open defects captured in this release.

## Resolved and Open Bugs for Cisco Enterprise NFVIS Release 4.15.4

### Resolved Bugs for Cisco NFVIS Release 4.15.4

| Bug ID | Description |
|---|---|
| CSCwo00476 | UCSC-M6 NFVIS lose control connection after idle for few days |
| CSCwp25909 | hugepages lost after Upgrading from 4.9 to 4.12 |
| CSCwo96219 | Single_ip_mode NFVIS didnt take over the WAN IP after C8KV is undeployed. |

### Open Bugs for Cisco NFVIS Release 4.15.4

| Bug ID | Description |
|---|---|
| CSCwq46142 | NFVIS4.15.1 to 4.15.4 upgrade stuck at ERROR: Class:3000000; Subclass:50000; Operation: D. |

## Resolved and Open Bugs for Cisco Enterprise NFVIS Release 4.15.3

### Resolved Bugs for Cisco NFVIS Release 4.15.3

| Bug ID | Description |
|---|---|
| CSCwk76846 | Aikido upgrade, BIOS upgrade and entropy support functionality for C8200-UCPE. |
| CSCvu44402 | CLI to find out Tabei Aikido version. |
| CSCwo50016 | NFVIS does not generate snmp Engine Id for UCSC-M6. |

### Open Bugs for Cisco NFVIS Release 4.15.3

There are no open defects captured in this release.

## Resolved and Open Bugs for Cisco Enterprise NFVIS Release 4.15.2

### Resolved Bugs for Cisco NFVIS Release 4.15.2

| Bug ID | Description |
|---|---|
| CSCwn10439 | Fan Failure Notification Missing on EUT and Remote Monitoring Systems |
| CSCwn07046 | uCPE8300 hostaction restore fail with portchannel |
| CSCwm05986 | Installation of a VM on CSP NFVIS Leads to Removal of Other VM's Interfaces |
| CSCwm49446 | Ubuntu VM deployment failed with iso image |

### Open Bugs for Cisco NFVIS Release 4.15.2

There are no open defects captured in this release.

## Resolved and Open Bugs for Cisco Enterprise NFVIS Release 4.15.1

### Resolved Bugs for Cisco NFVIS Release 4.15.1

| Bug ID | Description |
|---|---|
| CSCwj27568 | Cisco_NFVIS-4.14.1-EFT2 NIM is missing or not booting UP |
| CSCwi66014 | C8300-UCPE-1N20: MEMORY_USAGE_HIGH: System uses 90.1987075805664% of memory |

### Open Bugs for Cisco NFVIS Release 4.15.1

| Bug ID | Description |
|---|---|
| CSCwj39210 | C8Kv does not get QAT hardware crypto when scale up with 5 interfaces |
| CSCwj40313 | C8Kv does not get QAT hardware crypto when scale up C8Kv with NGIO enabled |
| CSCwm26308 | uCPE8300 cimc crash 4.15.0.2R Unable to handle kernel paging request at virtual address b6eff000 |

## Important Notes

- Starting from Cisco NFVIS Release 4.13.1, install Cisco NFVIS using a smart license on Cisco UCS C M6 Rack Servers.
- Starting from Cisco NFVIS Release 4.10.1, the guest VNF settings are automatically preserved from the previous release version, when you upgrade to a newer release version. You don't have to reinstall NFVIS to update the guest VNF settings. For more information see, Upgrade Cisco NFVIS.

- Starting from Cisco NFVIS Release 4.10.1, Cisco NFVIS is based on open source AlmaLinux distribution. In Cisco NFVIS Release 4.9.x and earlier releases, Cisco NFVIS was based on CentOS Linux distribution which is now end-of-life. The support for CentOS Linux distribution will be discontinued in June 2024.
- If you are using I-350 based Network Interface Cards (NICs) that use IGB drivers, the Virtual Router Redundancy Protocol (VRRP) is not supported due to a limitation of MAC addresses that can be used in your network.

### Software Upgrade

The Cisco Enterprise NFVIS upgrade image is available as *.iso* file. Currently, downgrades are not supported.

For more details on the software upgrade, see the Upgrading Cisco Enterprise NFVIS section in the Cisco Network Function Virtualization Infrastructure Software Getting Started Guide.

## System Requirements

The following resources are required for a standalone Cisco Enterprise NFVIS:

- NFVIS needs 5GB of system memory.
- For a system that has 16 or less CPU cores, one CPU core is reserved for NFVIS. For a system that has more than 16 CPU cores, 2 CPU cores are reserved for NFVIS except C8300-UCPE. C8300-UCPE-1N20 (20 cores system) will reserve 1 CPU core for NFVIS.
- For a system that has 32 GB or less of RAM, 3 GB is reserved for NFVIS. For a system that has more than 32 GB of RAM, 4 GB is reserved for NFVIS.
- 20 GB storage.
- For NFVIS portal, the minimum supported version of browsers are:
  - Mozilla Firefox 66
  - Google Chrome 71
  - Windows 10 Edge
  - MacOS 10.15 Safari
- Starting from Cisco NFVIS Release 4.14.1, the following are the system requirements for Cisco NFVIS devices that have more than 128 GB RAM:
  - For a Cisco Catalyst Edge uCPE 8300 on numa node 0, 16 GB is reserved. A total of 16 GB is reserved .
- Starting from Cisco NFVIS Release 4.14.1, the following are the system requirements for Cisco NFVIS devices that have more than 64 GB RAM:
  - For a Cisco Catalyst Edge uCPE 8300 on numa node 0, 13 GB is reserved. A total of 13 GB is reserved .
  - For a UCS M6, numa node 0 reserves 11 GB and numa node 1 reserves 2 GB, totaling 13 GB. For other NFVIS devices, 11 GB is reserved on numa node 0, totaling 11 GB.
- Starting from Cisco NFVIS Release 4.14.1, the following are the system requirements for Cisco NFVIS devices that have more than 32 GB RAM:

- For a Cisco Catalyst Edge uCPE 8300 on numa node 0, 8 GB is reserved. A total of 8 GB is reserved .
- For a Cisco UCS C M6 Rack servers on numa node 0, 11 GB is reserved and 1 GB is reserved on the numa node 1. A total of 12 GB is reserved.
- For other Cisco NFVIS devices on numa node 0, 5 GB is reserved and 1 GB on the numa node 1 is reserved (if applicable).

- Starting from Cisco NFVIS Release 4.14.1, the following are the system requirements for Cisco NFVIS devices that have less than 32 GB RAM:
  - For a Cisco Catalyst Edge uCPE 8300, 8 GB on numa node 0 is reserved. A total of 8 GB is reserved .
  - For a Cisco UCS C M6 Rack servers, 7 GB is reserved on numa node 0 and 1 GB is reserved on the numa node 1. A total of 8 GB is reserved.
  - For other Cisco NFVIS devices on numa node 0, 5 GB is reserved and 1 GB on the numa node 1 is reserved (if applicable).

- Starting from Cisco NFVIS Release 4.14.1, the following are the system requirements for Cisco NFVIS devices that have less than 16 GB RAM:
  - For a Cisco Catalyst Edge uCPE 8300, 8 GB on numa node 0 is reserved and 1 GB is reserved on the numa node 1. A total of 9 GB is reserved .
  - For other Cisco NFVIS devices on numa node 0, 5 GB is reserved and 1 GB on the numa node 1 is reserved (if applicable).

- Starting from Cisco NFVIS Release 4.14.1, the following are the system requirements for Cisco NFVIS devices that have 8 GB RAM:
  - 3 GB is reserved for the Cisco NFVIS devices.

**Note** More memory and disk space are required to be added to the system, depending on VM deployments.

# Supported Programs and Platforms

### Supported Programs

The Cisco Meraki vMX solution is supported on Cisco's Enterprise NFV Infrastructure Software (NFVIS). For more information see, vMX Setup Guide for NFVIS.

### Supported Platforms

The following table lists the only supported platforms and firmware for Cisco ENFV

*Table 3: Cisco ENFV*

| Platform | Firmware | Version |
|---|---|---|
| C8200-UCPE-1N8 | BIOS | C8200-UCPE_1.04.103020201614 |
| | MCU | 240.52 |
| ENCS 5406, ENCS 5408, and ENCS 5412 | BIOS | ENCS54_BIOS_4.00.SPA |
| | CIMC | CIMC_3.2.14.19.bin |
| | WAN Port Driver | 4.18.0-477.27.1.el8_8.x86_64 |
| | LAN Port Driver | 1.4.22.7-12-ciscocsx |
| C8300-UCPE-1N20 | BIOS | C83uCPE_BIOS_1.05.SPA |
| | CIMC | CIMC_4.15.0.2R.bin |
| UCS C-Series M6 Rack Servers | BIOS | C240M6.4.3.2c.0.0726232000 |
| | CIMC | HUU version 4.3(2.230207) |

*Table 4: Third Party*

| Platform | Platform Description |
|---|---|
| M3X-APP | Cubic Expeditionary Networking and Compute Platform |

# Guest VNFs

This section provides support statements for different guest Virtual Network Functions (VNFs) that you can run on Cisco Routing virtual platforms that are enabled by the Cisco NFVIS Release 4.15.1.

### Cisco Router VNFs

**Note**

- Cisco provides deployment and configuration support for the VNF versions listed below, when these VNFs are deployed on Cisco Routing virtual platforms that are enabled by Cisco NFVIS Release 4.15.1.
- Cisco provides support on a case-by-case basis for unlisted combinations of Cisco NFVIS releases and VNF version combinations.

*Table 5: Software Download Links*

| Product Homepage | Software Download |
|---|---|
| Cisco Catalyst 8000V Edge Software | 17.15.6<br>17.15.5<br>17.15.4<br>17.15.3<br>17.15.2<br>17.15.1<br>17.12.4<br>17.12.3<br>17.12.2<br>17.12.1<br>17.11.1<br>17.10.1<br>17.9.3<br>17.9.1<br>17.8.1<br>17.7.1<br>17.6.3 |
| Cisco vEdge | 20.9.1<br>20.9.3 |

*Table 6: Supported Linux Drivers for SR-IOV Acceleration*

| Platform | NIC Type | VM OS Kernel Driver Version | VM OS DPDK Version |
|---|---|---|---|
| Cisco ENCS | Intel 1350 for GEO-0 and GEO-1 | 2.3.9.6 or higher (igbvf) | DPDK 19.11 or higher |
| | Intel XL710 | iavf 4.5.3 or higher | DPDK 19.11 or higher |
| Cisco Catalyst 8200 Series Edge uCPE | Intel 1350 for GEO-2 and GEO-5 | 2.3.9.6 or higher (igbvf) | DPDK 19.11 or higher |
| | Intel-l X553 1GbE for GEO-0 and GEO-1 | 4.9.3 or higher version (ixgbevf) | DPDK 19.11 or higher |
| Cisco Catalyst 8300 Series Edge uCPE | Intel E810 GEO-0 to GEO-6 | iavf 4.18.7 or Higher | DPDK 21.11.2 or higher |

| Platform | NIC Type | VM OS Kernel Driver Version | VM OS DPDK Version |
|---|---|---|---|
| Cisco UCS C M6 Rack Servers | Intel X550 LOM<br>GE0-0 & GE0-6 | 4.9.3 or higher version (ixgbevf) | DPDK 19.11 or higher |
| Cisco UCS C M6 Rack Servers | UCSE-PCIE-1D 10GF (Intel X710-DA4 Quad port 10 GB) | iavf 4.5.3 or higher | DPDK 19.11 or higher |
| Cisco UCS C M6 Rack Servers | Intel i350 Quad Port 1 GB Adapter | 2.3.9.6 or higher (igbuf) | DPDK 19.11 or higher |

### Other Cisco Owned VNFs

**Note**

- Limited testing is done to ensure you can create a guest VM instance using the software download image for these versions, as posted on Cisco Software download page.
- For full-support statement see the individual product release documentation.

The following section provides information about generic Linux Distro Images (Ubuntu 22.10 & Alma 8.6 or similar) that can be deployed on Cisco NFVIS Release 4.13.1. See the above table for details on the SRIOV driver that is required on the guest Linux VM based on the platform.

***Table 7: Software Download Links***

| Product Homepage | Software Download |
|---|---|
| **Security VNFs** | |
| Cisco NGFW (FTDv) | 6.6.1-91<br>6.6.0-90 |
| Cisco ASAv | 9.14.2<br>9.14.1 |
| **WAN Optimization VNFs** | |
| Cisco vWAAS | 6.4.5a-b-50<br>6.4.5-b-75<br>6.4.3c-b-42 |

### Non-Cisco Vendor Owned VNFs

You can run VNFs owned by various vendors on Cisco's NFV platforms enabled by NFVIS . Formal support for these VNFs requires a joint effort between Cisco and the VNF vendor.

Cisco offers VNF vendors a "for-fee" NFVIS 3rd-party certification program to test and certify their VNFs on Cisco's virtualized platforms. After testing and certification is complete, the results are published on this page- Cisco Enterprise NFV Open Ecosystem and Qualified VNF Vendors.

For more specific support details about VNF versions and test compatibility matrix with NFVIS releases, see the VNF release documentation on the vendor support site.

As a NFVIS customer, if you need a unique combination of NFVIS release and a specific VNF version, you may submit your certification request to Cisco at nfv-ecosystem@cisco.com or reach out to the VNF vendor support team asking them to initiate a certification on the Cisco platform.

## Related Documentation

- Cisco Network Function Virtualization Infrastructure Software Getting Started Guide
- API Reference for Cisco Enterprise Network Function Virtualization Infrastructure Software
- Cisco Enterprise Network Function Virtualization Infrastructure Software Configuration Guide, Release 4.x
- Cisco Enterprise Network Function Virtualization Infrastructure Software Command Reference
- Release Notes for Cisco NFV SD-Branch features in Cisco vManage Release 20.12.x
- Design and Deployment Guide of Cisco NFVIS SD-Branch using Cisco SD-WAN Manager
- Cisco Catalyst 8200 Series Edge uCPE Data Sheet
- Cisco Cloud Services Platform 5000 Series Data Sheet
- Cisco 5400 Enterprise Network Compute System Hardware Installation Guide
- Cisco 5400 Enterprise Network Compute System Data Sheet
- Configuration Guide for Cisco Network Plug and Play on Cisco APIC-EM, Release 1.5.x
- Cisco SD-WAN Controller Compatibility Matrix and Recommended Computing Resources, Cisco SD-WAN Release 20.12.x

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