

Release Notes for Cisco Optical Network Controller, Release 2.1

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Cisco Optical Network Controller Overview

Cisco Optical Network Controller (ONC) is an SDN Domain Controller for Cisco Optical Networks. ONC collects optical data which is used to provide network information in an abstracted format to higher layer controllers. This abstraction enables a centralized control of a Cisco Optical Network.

Some of the features of Cisco ONC are:

- Serves as a domain controller for optical products and provides data to Hierarchical Controllers. ONC supports a standardized TAPI model which enables it to abstract the device level details from hierarchical controller.
- As a Provisioning Network Controller (PNC), monitors the topology (physical or virtual) of the network, and collects information about the topology, and setup/teardown of optical circuits.
- PCE service provides optical path computation to other Cisco ONC services.

What's New in Cisco Optical Network Controller, Release 2.1

Cisco is continuously enhancing the product with every release and this section covers a brief description of key features and enhancements.

Feature	Description
Node Functional View	Cisco Optical Network Controller now provides a graphical view of each node. Node Functional View visualizes all equipment and connections between them. The functional view supports NCS 1010 devices. You see a degree view, component view, and a detailed view. The functional view also shows the current alarms in all the views. These views act as a troubleshooting tool for internal connections at a node as you can see a graphical representation along with the Alarms.
Rack View	Cisco Optical Network Controller provides a rack view, a graphical representation of the hardware at a site in racks. You can reposition the equipment in the rack. Rack view visualizes the physical equipment.
Cross Connects Management	You can now view optical cross connects, perform fan-out allocation, and delete cross connects from the Cisco Optical Network Controller. This feature makes troubleshooting of cross-connects simpler by displaying detailed information about the cross-connects.
Passive preprovisioning	You can now preprovision passive modules before connecting them to NCS 1010 modules. You can view information about, add, and delete passive modules. This feature allows for flexibility as it provides a different option for deployment and allows you to make quick changes to the setup.
Support for Bright ZR pluggable modules	Cisco Optical Network Controller now supports provisioning and validation of Bright ZR application code. This feature enables various controllers associated with Routed Optical Networking automation to provision IP links across Bright ZR pluggable modules.
Performance Monitoring Support for NCS 2000 devices	Cisco Optical Network Controller now supports performance monitoring of NCS 2000 devices. You can now access performance monitoring information for NCS 2000 devices using the TAPI and Rest API. You can visualize NCS 2000 performance monitoring information collected by the Cisco Optical Network Controller in Crosswork Hierarchical Controller for better analytics and troubleshooting.

Software and Hardware Requirements

Before installing Cisco ONC, you must install Cisco Crosswork Infrastructure 4.4.

The infrastructure requirements for installing Cisco Crosswork are listed below. For complete installation requirements, see the *Cisco Crosswork Infrastructure 4.4 and Applications Installation Guide*.

Data Center Requirements

Cisco Crosswork can be deployed in either a vCenter managed data center. To aid in the deployment, Cisco has developed a cluster installation tool. This tool works in both environments. However, there are limitations to the tool which are detailed later in this section.

**Note**

- The machine where you run the installer must have network connectivity to the data center (vCenter) where you plan to install the cluster. If this mandatory requirement cannot be met, you must manually install the cluster.
- Cisco Crosswork cluster VMs (Hybrid nodes and Worker nodes) must be hosted on hardware with Hyper Threading disabled.
- Ensure that the host resources are not oversubscribed (in terms of CPU or memory).
- Starting with the Cisco Crosswork 4.4 release, Crosswork deployment is no longer supported for the Cisco CSP platform. For more information, see [End-of-Life Announcement for the Cisco Cloud Services Platform Operating System](#).

VMware Data Center Requirements

This section explains the data center requirements to install Cisco Crosswork on VMware vCenter.

**Note**

The following requirements are mandatory if you are planning to install Cisco Crosswork using the cluster installer. If your vCenter data center does not meet these requirements, then the VMs have to be deployed individually, and connectivity has to be established manually between the VMs.

- Hypervisor and vCenter supported:
 - VMware vSphere 6.5 or above
 - VMware vCenter Server 6.5 Update 2d or later (ESXi 6.5 Update 2 installed on hosts), OR vCenter Server 6.7 Update 3g or later (ESXi 6.7 Update 1 installed on hosts).
- All the physical host machines must be organized within the same VMware Data Center, and while it is possible to deploy all the cluster nodes on a single physical host (provided it meets the requirements), it is recommended that the nodes be distributed across multiple physical hosts.
- The networks required for the Crosswork Management and Data networks need to be built and configured in the data centers, and must allow low latency L2 communication.
- To allow use of VRRP, DVS Port group needs to be set as follows:

Property	Value
Promiscuous mode	Reject
MAC address changes	Reject
Forged transmits	Accept

- Ensure the user account you use for accessing vCenter has the following privileges:
 - VM (Provisioning): Clone VM on the VM you are cloning.

- VM (Provisioning): Customize on the VM or VM folder if you are customizing the guest operating system.
 - VM (Provisioning): Read customization specifications on the root vCenter server if you are customizing the guest operating system.
 - VM (Inventory): Create from the existing VM on the data center or VM folder.
 - VM (Configuration): Add new disk on the data center or VM folder.
 - Resource: Assign VM to resource pool on the destination host, cluster, or resource pool.
 - Datastore: Allocate space on the destination datastore or datastore folder.
 - Network: Assign network to which the VM will be assigned.
 - Profile-driven storage (Query): This permission setting needs to be allowed at the root of the DC tree level.
- We also recommend you to enable vCenter storage control.

VM Host Requirements

This section explains the VM host requirements.

Table 1: VM Host Requirements

Requirement	Description
CPU/Memory/Storage Profiles (per VM)	<p>The data center host platform has to accommodate three VMs of the following minimum configuration:</p> <p>VMware vCenter:</p> <ul style="list-style-type: none"> • Large: 12 vCPUs 96 GB RAM Memory 1 TB disk space <p>Cisco CSP:</p> <ul style="list-style-type: none"> • Large: 12 CPU cores 96 GB RAM Memory 1 TB disk space <p>Note For assistance in adjusting VM Memory and CPU sizes post installation, contact your Cisco Customer Experience team.</p> <p>Few things to note:</p> <ul style="list-style-type: none"> • Storage requirements vary based on factors such as the number of devices being supported and the type of deployment selected. However, 1 TB disk space should work for most deployments. • Due to their performance, solid state drives (SSD) are preferred over traditional hard disk drives (HDD). • If you are using HDD, the minimum speed should be over 10,000 RPM. • The VM data store(s) need to have disk access latency of < 10 ms.

Requirement	Description
Additional Storage	10 GB (approximately) of storage is required for the Crosswork OVA (in vCenter), OR the Crosswork QCOW2 image on each CSP node (in CSP).
Network Connections	For production deployments, we recommend that you use dual interfaces, one for the Management network and one for the Data network. For optimal performance, the Management and Data networks should use links configured at a minimum of 10 Gbps.
IP Addresses	Two IP subnets, one for the Management network and one for Data network, with each allowing a minimum of four assignable IP addresses (IPv4 or IPv6). A Virtual IP (VIP) address is used to access the cluster, and then three IP addresses for each VM in the cluster. If your deployment requires worker nodes, you will need a Management and Data IP address for each worker node. <ul style="list-style-type: none"> • The IP addresses must be able to reach the gateway address for the network where Cisco Crosswork Data Gateway will be installed, or the installation will fail. • When deploying a IPv6 cluster, the installer needs to run on an IPv6 enabled container/VM. • At this time, your IP allocation is permanent and cannot be changed without re-deployment. For more information, contact your Cisco Customer Experience team.
NTP Servers	The IPv4 or IPv6 addresses or host names of the NTP servers you plan to use. If you want to enter multiple NTP servers, separate them with spaces. These should be the same NTP servers you use to synchronize the Crosswork application VM clock, devices, clients, and servers across your network. <ul style="list-style-type: none"> • Ensure that the NTP servers are reachable on the network before attempting installation. The installation will fail if the servers cannot be reached. • The ESXi hosts that will run the Crosswork application and Crosswork Data Gateway VM must have NTP configured, or the initial handshake may fail with "certificate not valid" errors.
DNS Servers	The IPv4 or IPv6 addresses of the DNS servers you plan to use. These should be the same DNS servers you use to resolve host names across your network. <ul style="list-style-type: none"> • Ensure that the DNS servers are reachable on the network before attempting installation. The installation will fail if the servers cannot be reached.
DNS Search Domain	The search domain you want to use with the DNS servers, for example, cisco.com . You can have only one search domain.

Important Notes

- Cisco Crosswork Infrastructure and applications are built to run as a distributed collection of containers managed by Kubernetes. The number of containers varies as applications are added or deleted.

- Dual stack configuration is not supported in Crosswork Platform Infrastructure. Therefore, **all** addresses for the environment must be either IPv4 or IPv6.

Scale Support

Cisco Optical Network Controller was designed to manage high scale of Network Element Devices. We tested Cisco Optical Network Controller 2.1 with up to 1,000 network element devices. We plan to perform extended scale testing for future releases.

Caveats

Open Caveats

The following table lists the open caveats for Cisco ONC 2.1:

Identifier	Headline
CSCwe69116	after a pre provisioned passive was connected, its ports status remained "DISABLED"
CSCwe93258	With CONC 2.1 Longevity run, one of the VM in cluster went to high CPU Utilization
CSCwf17039	Unable to delete BRK-8 & BRK-24 provisioned in MF-1RU
CSCwe76631	CONC 2.1: CV error is wrong if there are no available freq on one endpoint
CSCwe33369	Inventory part not updated after creation of degree in SVO via NETCONF bulk rpc
CSCwe93216	Incorrect submode in Bright-ZR+ 100G QPSK alien
CSCwe24066	After the IPC of a disconnected passive is deleted, the passive is still visible.

Bug Search Tool

[Cisco Bug Search Tool](#) (BST) is a web-based tool that acts as a gateway to the Cisco bug tracking system that maintains a comprehensive list of defects and vulnerabilities in Cisco products and software. BST provides you with detailed defect information about your products and software.

Using the Cisco Bug Search Tool

You can use the Cisco Bug Search Tool to search for a specific bug or to search for all bugs in a release.

Procedure

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- Step 1** Go to the <http://tools.cisco.com/bugsearch>.
 - Step 2** Log in using your registered Cisco.com username and password.
The Bug Search page opens.
 - Step 3** Use any of these options to search for bugs, and then press Enter (Return) to initiate the search:

- To search for a specific bug, enter the bug ID in the Search For field.
- To search for bugs based on specific criteria, enter search criteria, such as a problem description, a feature, or a product name, in the Search For field.
- To search for bugs based on products, enter or select a product from the Product list. For example, if you enter “WAE,” you get several options from which to choose.
- To search for bugs based on releases, in the Releases list select whether to search for bugs affecting a specific release, bugs that were fixed in a specific release, or both. Then enter one or more release numbers in the Releases field.

Step 4 When the search results are displayed, use the filter tools to narrow the results. You can filter the bugs by status, severity, and so on.

To export the results to a spreadsheet, click **Export Results to Excel**.

Other Important Information and References

Cisco Optical Network Controller Documentation

This section lists the guides that are provided with Cisco Optical Network Controller, Release 2.1.

Title	What is included
Cisco Optical Network Controller 2.1 Configuration Guide	<ul style="list-style-type: none"> • Overview • Installation requirements • Installation instructions • Using Cisco Optical Network Controller
Cisco Optical Network Controller TAPI Northbound Interface API Guide	<ul style="list-style-type: none"> • APIs exposed by Transport API Northbound Interface supported by Cisco Optical Network Controller.
Cisco Optical Network Controller TAPI Northbound Interface Description Document	<ul style="list-style-type: none"> • Interface descriptions of the Transport API Northbound Interface supported by Cisco Optical Network Controller.
<i>Cisco Optical Network Controller 2.1 REST API Guide</i>	<ul style="list-style-type: none"> • API documentation for the REST APIs exposed by Cisco Optical Network Controller
<i>Cisco NCS 1010 Network Setup Workflows</i>	<ul style="list-style-type: none"> • End-to-end workflows and usecases for setting up and troubleshooting an NCS 1010 network using Cisco Optical Network Planner, Optical Network Controller, and Crosswork Hierarchical Controller

