Release Notes for Cisco Routed Optical Networking, Release 2.0

First Published: 2022-10-31

Release Notes for Routed Optical Networking Solution, Release 2.0

The release notes provide an overview of the Routed Optical Networking solution and its features. It also lists the caveats.

Routed Optical Networking Overview

Routed Optical Networking simplifies complex multilayer networks by collapsing network layers and minimizing the functional overlap. Routed Optical Networking also improves the overall network efficiency by optimizing each layer of the network. The architecture also integrates open data models and standard APIs, enriching powerful automation making Routed Optical Networking easier to operate than legacy networks.

Routed Optical Networking is able to provide improvements and simplification because it:

- Leverages state of the art optical and routing technologies to converge services over an IP infrastructure connected by a simplified DWDM layer
- Merges IP and private line services onto a single unified IP layer
- Simplifies end-to-end network architecture
- Utilizes a modern software stack that spans across network management and control planes
- Improves the capacity and cost efficiency of networks
- Has a smaller carbon footprint
- Offers unified capacity planning, unified EMS, unified path optimization, orchestration, and assurance
- Provides an automation ecosystem with open, programmable, and modular components
- Total Cost of Ownership savings across CapEx and OpEx

Routed Optical Networking utilizes high-density routers, high-capacity ZR or ZR+ pluggable digital coherent optics, simplified DWDM line systems, and end-to-end multi-layer automation to create next generation networks.

What's New in RON 2.0

Feature	Release	Description
Simple Optical Line Systems	**IOS-XR: 7.7.1**	NCS 1010 OLS platform is an integral component of Routed Optical Networking solution. It provides point-to-point connectivity between routers with ZR/ZR+ optics and multiplexes signals from multiple routers over a single fiber. The OLS platform supports ROADM nodes of up to eight degrees. The NCS 1010 OLS platform provides: • Versatility by supporting multiple coherent sources • Simplicity by using integrated Optical line cards that minimize fiber patching and cabling errors in the field. • Automation through IOS XR operating system that provides a rich suite of automation features including Zero Touch Provisioning (ZTP), open config YANG model support with NETCONF, and streaming telemetry. • Network Monitoring through a combination of probes based on OTDR, OSC, OCM, and telemetry data.
OpenConfig support for ZR/ZR+	**IOS-XR: 7.7.1**	You can manage the pluggable digital coherent optics using open models from the OpenConfig consortium.
Private Line Emulation	**IOS-XR: 7.7.1**	Private line emulation (PLE) enables service providers to carry SONET/SDH, OTN, Ethernet, and Fiber Channel over a circuit-style segment routed packet network while maintaining existing service SLAs. Private Line Emulation (PLE) utilizes Circuit Emulation (CEM) to transparently transfer PLE client frames over MPLS or Segment Routing networks without changing the characteristics of the original signal.

Feature Support

Table 1: Routed Optical Networking Features

Product	Features	Release
• 8201-SYS • 8202-SYS • 8101-32FH • 8201-32FH • 8800-LC-36FH • 88-LC0-36FH-M • 88-LC0-36FH • NC57-24DD • NC57-18DD-SE • NC57-36H6D-S • NCS-57B1-6D24-SYS • NCS-57B1-5DSE-SYS • A99-10X400GE-X-SE • A99-10X400GE-X-TR • A9K-20HG-FLEX-SE • A9K-20HG-FLEX-TR • A9K-8HG-FLEX-SE • A9K-8HG-FLEX-TR • A9903-20HG-PEC-FC • NCS-55A2-MOD-S(E)-S • N540-24Q8L2DD-SYS • N540-24Q8L2DD-SYS • NC57-MOD-S	• Support for QDD-400G-ZR-S and QDD-400G-ZRP-S • OpenConfig support for ZR/ZR+	IOS XR 7.7.1
• NCS-57C3-MOD • 8x PLE MPA • NCS-55A2-MOD	• Support for Private Line Emulation using Circuit Emulation (CEM) on the following hardware: • OpenConfig support for ZR/ZR+	

Product	Features	Release
• NCS1K-MD-64-C module • NCS 2000 shelf • NCS 2000 line cards	Simple optical line systems	SVO, Release 12.3.1
• NCS 1010 shelf • NCS 1010 line cards • NCS 1K breakout modules • NCS 1K MD32 filters		IOS XR 7.7.1
NETCONF and YANG ZR/ZR+ Programmability	Support for NETCONF and YANG models. NETCONF is a standard based and XML encoded protocol. You can use YANG to create device configuration requests or the requests for operational data.	IOS XR 7.7.1
Telemetry	Support for telemetry data. Model-driven telemetry allows network devices to continuously stream real-time configuration and operating state information to subscribers.	IOS XR 7.7.1
Cisco Evolved Programmable Network Manager	Support for QDD-400G-ZR-S and QDD-400G-ZRP-S optics on Release1.0 GA platforms. It also displays optical performance monitoring and fault data. Support for Private Line Emulation	6.1.1

Crosswork Hierarchical Controller	CNC and Crosswork Hierarchical Controller integration is supported for hierarchical multi-vendor, multi-domain, and multi-layer visualization across service, IP and, optical layers for new deployments and deployments on existing networks. Crosswork Hierarchical Controller supports:
	• Routed Optical Networking multi-layer service provisioning
	• Routed Optical Networking multi-layer discovery and visualization:
	  • Topology and inventory discovery from Cisco ONC (optical layer) and CNC (routing layer)
	  • Optical and routing service discovery from NSO and Cisco ONC
	• UI support for Routed Optical Networking service management using NSO Routed Optical Networking CFP
		5.3

Product	Features	Release
Cisco Optical Network Controller	Support for QDD-400G-ZR-S and QDD-400G-ZRP-S wavelength services on Cisco NCS 2000 devices Cisco Optical Network Controller (Cisco ONC) is an optical domain controller. Cisco ONC supports a standardized TAPI model. Cisco ONC enables connection verification. Connection verification measures power levels and verifies the optical cables and patchcords in a node for connectivity and insertion loss.	2.0
Cisco Crosswork Network Controller	Cisco Crosswork Network Controller (CNC) is a network automation solution for deploying and operating IP transport networks. Its unified user interface allows real-time visualization of the network topology and services, as well as service and transport provisioning. CNC is the IP domain controller.	4.1
NSO Routed Optical Networking Core Function Pack	Support for unified IP and optical provisioning for Cisco routers using QDD-400G-ZR-S and QDD-400G-ZRP-S optics and NCS 2000 optical line systems.	2.0
Cisco Optical Network Planner	Support for designing and validating networks of the NCS 2000 series. Cisco ONP must be used to perform the final network feasibility analysis and generate production network designs.	5.0
Cisco WAN Automation Engine	Support for creating and maintaining a model of the current network through the continual monitoring and analysis of the network and the traffic demands that are placed on it. This tool is used for IP planning.	7.5.0

Caveats

The open caveats are:

Identifier	Headline
CSCwc13977	NCS540L platform ZR/ZR+ 400gig- link bringup base baud-rate displayed 0 and wrong modulation
CSCwc30621	Connection service and cross-connections inconsistency between OSA and NBI after repeat re-creation
CSCwd12211	Auto Resync fails in CONC after NCS1010 is reloaded using reload location all cli
CSCwc93705	ZR/ZR+ Optics (400G/100G) Stale IP-MIB ipAddressIfIndex.ipv4 value post delete/recreate of interface
CSCwd28290	Post reload or fiber cut: OMS fiber link is not present in TAPI model intermittently

The following table contains open caveats on the Crosswork Hierarchical Controller:

Open Caveats	Workaround
[NMC Crosslinks] links are removed when line card is reloaded or interfaces disappear (HW OIR) The application adds the cross layer links (OCH → OLS) directly to the database without state. In case an interface disappears for any period (such as during a line card reload), the link disappears and does not return when the interface returns.	None
After changing the credential profile where the CNC adapter was not using the updated password in the adapter Devices under the CNC adapter continued to show as "OK". The failed auth message from CNC does not get relayed in the logs under response during provisioning. Instead, it shows an internal HCO error: '<=' not supported between instances of 'int' and 'AssertionError'. [CNC adapter] when changing credentials, the adapter does not pick the new credentials.	Restart the CNC Adapter in HCO

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.

Related Documentation

Use this guide along with the following referenced publications:

- Cisco NCS 2000 Series SVO Configuration Guide, Release 12.3.x
- Cisco Optical Network Planner Configuration Guide, Release 5.0
- Cisco WAE 7.5.0 Installation Guide
- Cisco Crosswork Infrastructure 4.3 and Applications Installation Guide
- Cisco Network Services Orchestrator Installation Guide
- Cisco Network Services Orchestrator DLM Service Pack Installation Guide 4.4.0
- Cisco Crosswork Infrastructure 4.4 and Applications Administration Guide
- Cisco Crosswork Hierarchical Controller Administration Guide
- Cisco ONC 2.0 Configuration Guide
- *Cisco NSO Transport-SDN Function Pack Bundle User Guide 4.1*
- *Cisco Evolved Programmable Network Manager 5.1.3*
- *Cisco NSO Routed Optical Networking Core Function Pack Installation Guide*
- *Cisco NSO Routed Optical Networking Core Function Pack User Guide*