Release Notes for Cisco Routed Optical Networking, Release 2.1

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Release Notes for Cisco Routed Optical Networking Solution, Release 2.1

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 Routed Optical Networking 2.1

Feature	Release	Description
Cisco 400G QSFP-DD High-Power (Bright) Optical module Support	Cisco IOS XR 7.9.1	The following routers support Cisco 400G QSFP-DD High-Power (Bright) Optical Module (DP04QSDD-HE0) • NCS-57C3-MOD • 8201-32FH • 8201-24H8FH • A9K-20HG-FLEX-SE/TR • A9K-8HG-FLEX-SE/TR This high-power optical module allows easier interoperability with all deployed add/drop architectures and enhances unamplified reach by about 12dB as compared to QDD-400G-ZR-S and QDD-400G-ZRP-S.
PLE Improvements	Cisco IOS XR 7.9.1	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. In this release, the user can configure dynamic circuit-style SR-TE policies with or without bandwidth Call Admission Control (CAC).
Connection Verification Improvements	Cisco Crosswork Hierarchical Controller 7.0	You can now perform connection validation from a ZR/ZR+ pluggable on a router to the Optical Line System (OLS) add-drop port. In this release Cross-Link Connectivity Verification is supported on all router platforms and NCS 1010 OLT systems.

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 7.9.1
• NCS-57C3-MOD • 8x10G SFP+ PLE MPA (NC55-OIP-02) • NCS-55A2-MOD	• Support for Private Line Emulation using Circuit Emulation (CEM) • OpenConfig support for ZR/ZR+	

Product	Features	Release
• NCS-57C3-MOD • 8201-32FH • 8201-24H8FH • A9K-20HG-FLEX-SE/TR • A9K-8G-FLEX-SE/TR	• Support for Cisco 400G QSFP-DD High-Power (Bright) Optical Module	
• 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 shelf and modules • NCS 1K MD32 filters		IOS XR 7.9.1
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 7.9.1
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 7.9.1
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 NCS 1010 Optical Nodal Assurance	7.0.1

Product	Features	Release

Crosswork Hierarchical Controller	Crosswork Network Controller 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 Optical Network Controller (optical layer) and Crosswork Network Controller (routing layer)
	  • Optical and routing service discovery from Crosswork Network Controller and Cisco Optical Network Controller
	• UI support for Routed Optical Networking service management
	• Cross-Link Connectivity Verification between router and NCS 1010 using Link Manager application.
		7.0

Cisco Optical Network Controller	Support for ZR/ZR+ wavelength services on Cisco NCS 2000 and NCS 1010 devices Cisco Optical Network Controller is an optical domain controller. Cisco Optical Network Controller supports a standardized TAPI model. Cisco Optical Network Controller enables connection verification between NCS 1010 nodes and breakout modules. Connection verification measures power levels and verifies the optical cables and patchcords in a node for connectivity and insertion loss.	2.1
Cisco Crosswork Network Controller	Cisco Crosswork Network Controller 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. Cisco Crosswork Network Controller is the IP domain controller. Crosswork Optimization Engine manages SR-TE Policy and RSVP-TE tunnel lifecycle. Circuit Style Manager in Crosswork Optimization Engine also enables Circuit-Style SR-TE Bandwidth Call Admission Control.	5.0
NSO Routed Optical Networking Core Function Pack	Supports unified IP and optical provisioning for ZR/ZR+ optics on Cisco routers.	2.1

Product	Features	Release
Cisco Optical Network Planner	Support for designing and validating networks of the NCS 2000 series and NCS 1010 devices. Cisco ONP must be used to perform the final network feasibility analysis and generate production network designs.	5.1
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.	7.6.2

Caveats

The open caveats are:

Identifier	Headline
CSCwf24857	PLE: L2VPN over CS SRTE with P node having BE (2 active members) CEM AC flaps intermittently
CSCwf15838	RON SOLN ONC::TAPI Response Issue On One of the Service End-Point
CSCwe83880	ZR/ZRP 400G Muxponder cfg deletion fails with bcmdpa l1 port create failed error
CSCwf03116	CONC 2.1: planning import IPC push on ILA should not fail
CSCwf23809	[Service Manager] Unable to configure Tx Power beyond 0dBm from HCO for Bright ZRP
CSCwe12008	[Cisco-XR] Adapter periodically stops running
CSCwf23782	[CNC] IP Link provisioning Failed due to CNC Token expiry
CSCwf25441	link is taking long time to come up on triggering shut/no-shut on fully populated router

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 5.1

- Cisco WAE 7.6.0 Installation Guide
- Cisco Crosswork Network Controller 5.0 Installation Guide
- Cisco Network Services Orchestrator 6.1 Documentation
- Cisco Crosswork Network Controller 5.0 Administration Guide
- Cisco Crosswork Hierarchical Controller Administration Guide
- Cisco Optical Network Controller 2.1 Configuration Guide
- Cisco NSO Transport-SDN Function Pack Bundle User Guide 5.0
- Cisco EPN Manager 7.0 Installation
- Cisco NSO Routed Optical Networking Core Function Pack Documentation
- Hardware Installation Guide for Cisco NCS 1010 and Cisco NCS 1000 Passive Modules
- Cisco NCS 1010 Data Models Configuration Guide, IOS XR Release 7.9.x
- Cisco NCS 1010 Datapath Configuration Guide, IOS XR Release 7.9.x
- Cisco NCS 1010 Optical Applications Configuration Guide, IOS XR Release 7.9.x
- Cisco NCS 1010 System Setup and Software Installation Guide, IOS XR Release 7.9.x