

Cisco Crosswork Hierarchical Controller

Contents

Product overview	3
Features and benefits	3
Product specifications	4
Prominent feature	5
SDN controllers and NMSs support	5
Product sustainability	6
Cisco Capital	6
Document history	7

Cisco® Crosswork Hierarchical Controller (HCO) enables multilayer visibility of transport networks, IP to optical topologies. And leverage automation of operations across vendors and domains.

Product overview

Cisco Crosswork HCO is a multilayer, multivendor, multidomain transport controller. It provides powerful and intuitive applications to simplify operations in IP and optical networks.

Crosswork HCO covers a variety of use cases throughout the network and services lifecycle.

Visualization – End-to-end, 3D view of IP and optical topologies and services, across domains and layers, using schematic or satellite maps. Enables contextual launch of controller UI on managed objects (device, link, tunnel, service)

Analytics – Simulate failures, find alternative paths, and find single points of failure and diversity violations, all across optical and IP layers.

Assurance – Collects performance metrics on packet, L1, and photonic links. Smart analysis of bundles links and LSPs.

Provisioning – Unified and generic way to provision new optical transport services on optical domains, with proven integration to all lead vendors.

Crosswork HCO reduces complexity of operations across domains and layers and increases efficiency and network utilization.

Features and benefits

Table 1. HCO Features and Applications

Feature	Benefit
3D Explorer	Visualize IP and optical links/tunnels/services between geo sites on a satellite or schematic map, with correlation between layers.
Layer Relations	Show relationships between links in different layers (for example, show all SR policies over all or specific physical links).
Network Inventory	Show full tabular view of devices, cards, ports, links, SR policies, and services.
Time Machine	Go back in time to a date in the past and analyze the network as it was at that point in time.
Dashboard	View visual widgets displaying inventory, topology, and services info. Define rule-based widgets with SHQL queries.
Network History	Analyze historical records of all inventory resources, topology, and service changes (add, modify, and delete).

Feature	Benefit
Failure Impact	Plan a maintenance event, finding which connections will be impacted by taking resources down and if there is an alternative path. When found, comparing existing and alternative path latency, cost, and hops. Supported for OTN, ETH, and RSVP-TE tunnels.
Shared Risk Analysis	Find if there are commonly shared resources (node, site, link, and card) between selected group of links in any layer. Group can be selected explicitly or as an SHQL rule.
SHQL	Simple, yet sophisticated multilayer query language to get inventory, topology, tunnels, and services. All based on multilayer correlation.
Model settings (tags, regions, sites)	Add external data and tag resources based on rules.
Service Manager	Service CRUD, show and provision all these service types. L2-L3-VPNs, RSVP-TE, and SR policies. ETH/OTN connections, OCH, and ZR links.
Service Assurance	View E-Line, L3VPN and L2VPN service configuration and status, as well as service underlay topology, mapped to optical topology over 3D map.
Link Assurance	Analyze multi-layer topologies of IP links, over ZR/ZR+ pluggables or OTN to WDM network, view link hop-by-hop path and performance graphs per selected port and link.
Link Manager	Enable managing inter-domain and inter-layer links. User can manually add cross-links and let HCO validate link connectivity.

Product specifications

Table 2. Product HW specifications

Details	Feature
HW requirements	A single VM with 96G RAM, 3Tb disk, 12 vCPUs
Operating system	HCO comes as OVA package with Linux OS
High Availability	Three-node cluster, need 3 VMs (2 as main and standby instances, 1 as witness)
Scalability	10,000 NEs, 50,000 links, 100,000 services
Architecture	Docker container based, with Postgres DB, Python applications

Prominent feature

Crosswork HCO is unique in providing full support of lifecycle operations of IP and optical transport networks, with proven integration (pre-SDN and SDN) to all lead vendors.

- Pre-integrated with all vendors: Both pre-SDN and SDN APIs
- Ensuring tight SLA: Provisioning and assurance for both service overlay and underlay
- Unique discovery solution for all network layers, all services, and cross-layer and cross-domain links
- Sophisticated path computation allowing to optimize paths for multilayer constraints using powerful path computation algorithms
- Network analytics engine: Understand network anomalies and track changes and degradations over time using powerful query language
- Scalability: Hierarchical control scales to over 10,000 elements in real time
- Supporting evolution from pre-SDN to SDN and from legacy networks to new ones
- Demonstrable leadership for advanced use cases: Multilayer restoration, optimization, and predictive failure avoidance

SDN controllers and NMSs support

Table 3. HCO supported integrations with SDN controllers and NMSs

Product Family	Platforms Supported	Content coverage
Optical SDN controllers	Ciena MCP	Network discovery for inventory, topology, services Service provisioning for OTN, E-Line, OCH, Alien Wavelength Link and service assurance (performance monitoring)
	Huawei NCE-T	Network discovery for inventory, topology, services Service provisioning for OTN, E-Line Link and service assurance (performance monitoring)
	Nokia NSP	Network discovery for inventory, topology, services Link and service assurance (performance monitoring)
	Cisco ONC	Network discovery for inventory, topology, services Service provisioning for RON automation where ZR pluggables are connected to NS1010 as OLS Link and service assurance (performance monitoring)
Optical NMSs	Cisco EPNM	NCS2k discovery for inventory, topology, services
	Nokia NFM-T	Network discovery for inventory, topology, services
IP NMSs	Cisco EPNM	ASR9k discovery for inventory, topology, assurance

Product Family	Platforms Supported	Content coverage
IP SDN Controllers	Cisco CNC	Network discovery for inventory, topology, services Service provisioning for L2VPN, L3VPN Link and service assurance (performance monitoring)
	Nokia NSP	Network discovery for inventory, topology, services Service provisioning for L2VPN, L3VPN Link and service assurance (performance monitoring)
	Juniper Northstar	Network discovery for inventory, topology, services RSVP-TE tunnel provisioning Link and service assurance (performance monitoring)

Product sustainability

Information about Cisco’s Environmental, Social, and Governance (ESG) initiatives and performance is provided in Cisco’s CSR and sustainability [reporting](#).

Table 4. Product sustainability

Sustainability Topic		Reference
General	Information on product-material-content laws and regulations	Materials
	Information on electronic waste laws and regulations, including our products, batteries, and packaging	WEEE Compliance
	Information on product takeback and reuse program	Cisco Takeback and Reuse Program
	Sustainability inquiries	Contact: csr_inquiries@cisco.com
Material	Product packaging weight and materials	Contact: environment@cisco.com

Cisco Capital

Flexible payment solutions to help you achieve your objectives

Cisco Capital makes it easier to get the right technology to achieve your objectives, enable business transformation and help you stay competitive. We can help you reduce the total cost of ownership, conserve capital, and accelerate growth. In more than 100 countries, our flexible payment solutions can help you acquire hardware, software, services and complementary third-party equipment in easy, predictable payments. [Learn more](#).

Document history

New or revised topic	Described in	Date
Updated HW requirements	Product specifications	July 25, 2024
Added Cisco EPNM Adapter under IP NMSs	SDN controllers and NMSs support	July 25, 2024
Updated the list of network adapters supported. Added more details of the specific features per adapter	SDN controllers and NMSs support	June 11, 2024
Removed deprecated applications from the list (Network Vulnerability and Path Optimization)	Features and benefits	June 11, 2024

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at <https://www.cisco.com/go/offices>.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: <https://www.cisco.com/go/trademarks>. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)