

Cisco Crosswork Hierarchical Controller

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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.

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

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).
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.

Feature	Benefit
Path Optimization	Select a group or specific tunnels or connections and run a path calculation to optimize their path. Show results by comparing existing to optimized path based on latency, hops, and cost. Applies to OTN/ETH connection, RSVP-TE and SR policies, and VPNs.
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.
Network Vulnerability	Find if there will be network routing parts that will be isolated from the rest of the network given current failures and simulated failures.
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.

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.

- Preintegrated 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

Product Family	Platforms Supported	Content coverage
Optical SDN controllers	Ciena MCP	Network discovery for inventory, topology, services Service provisioning for OTN, E-Line, OCH
	Huawei NCE-T	Network discovery for inventory, topology, services Service provisioning for OTN, E-Line, OCH
	Nokia NSP	Network discovery for inventory, topology, services Service provisioning for OTN, E-Line, OCH
	Cisco ONC	Network discovery for inventory, topology, services Service provisioning for OTN, E-Line, OCH, as well as RON automation where ZR pluggables are connected to NS1010 as OLS
Optical NMSs	Cisco EPNM	NCS2k discovery for inventory, topology, services
	Nokia NFM-T	Network discovery for inventory, topology, services
	Huawei U2000	Network discovery for inventory, topology, services

Product sustainability

Information about Cisco’s environmental, social, and governance (ESG) initiatives and performance is provided in Cisco’s CSR and sustainability [reporting](#).

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

Product specifications

Details	Feature
HW requirements	A single VM with 196G RAM, 1Tb disk, 20 vCPUs
Operating system	Alma or RedHat 7.6 Linux
High Availability	Three-node cluster, need 3 VMs (2 as main and standby instances, 1 as witness with 16G RAM, 250G disk, 4 vCPUs)
Scalability	10,000 NEs, 50,000 links, 100,000 services
Architecture	Docker container based, with Postgress DB, Python applications

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