



Cisco Crosswork Overview

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About this guide

This guide explains the requirements and process to install Cisco Crosswork Infrastructure, along with Cisco Crosswork Data Gateway and the Cisco Crosswork applications. It also explains the process to upgrade your Cisco Crosswork to the latest version. This guide is relevant for customers using the Cisco Crosswork Network Controller solution, the Cisco Routed Optical Networking solution, or any of the Crosswork applications.

There are [Integrated Components](#) that integrate with Cisco Crosswork, such as Cisco NSO, but they are NOT covered in this document. Please refer to the respective install documentation of those components for more details.

Audience

This guide is for experienced network users and operators who want to use Cisco Crosswork Infrastructure and applications in their network. This guide assumes that you are familiar with the following:

- Using a Docker container
- Running scripts in Python
- Deploying OVF templates using VMware vCenter
- Deploying using OVF tool
- Deploying a virtual machine on Cisco Cloud Services Platform (CSP)

Introduction

Cisco Crosswork Infrastructure is a microservices-based platform and is the foundation required for running Crosswork on-premise applications. It employs a cluster architecture to be extensible, scalable, and highly available. The Crosswork cluster consists of at least three VMs or nodes operating in a hybrid configuration. Additional VMs or nodes in a worker configuration can be added, as needed, to match the requirements of your network. A hybrid node can run infrastructure and application pods, while a worker node can run only application pods.



Note Hereafter in this guide, Cisco Crosswork Infrastructure is referred to as "Cisco Crosswork".

Cisco Crosswork uses **Cisco Crosswork Data Gateway (CDG)**, a software package that is separated out into its own Virtual Machine (VM), to gather information from the managed devices and forward it to Cisco Crosswork as well as external destinations. The information is then analyzed and processed by the Crosswork applications, and used to manage the network or respond to changes in the network. Crosswork Data Gateway can also be configured to collect and forward data from network devices to non-Crosswork users and applications. The number of Crosswork Data Gateways deployed in your network depends on the number of devices, the amount of data being collected, the overall topology, and your redundancy requirements. Please consult with your Cisco account team for guidance on your deployment to best meet your needs.

Integrated Components

Cisco Network Services Orchestrator functions as the provider for Crosswork to configure the devices according to their expected functions, including configuring model-driven telemetry (MDT) sensor paths, if any, for data collection. Cisco NSO is vital in supplying device management and configuration-maintenance services.

Cisco Segment Routing Path Computation Element (SR-PCE) is an IOS-XR multi-domain stateful PCE supporting both Segment Routing Traffic Engineering (ST-TE) and Resource Reservation Protocol Traffic Engineering (RSVP-TE). Cisco Crosswork uses the combination of telemetry and data collected from the Cisco SR-PCE to analyze and compute optimal TE tunnels.

Cisco Crosswork can also integrate with other providers (Cisco WAE, Syslog and Alert) and servers (TACACS+ and LDAP).

Cisco Crosswork Product Portfolio

Cisco Crosswork Infrastructure provides a flexible platform to deploy different Crosswork products and each product is downloaded and added to the platform.

The list of Crosswork products are:

- **Cisco Crosswork Optimization Engine** is a Crosswork application that provides real-time network optimization allowing operators to effectively maximize network capacity utilization, as well as increase service velocity. Leveraging real-time protocols, such as BGP-LS and Path Computation Element Communication Protocol (PCEP) and Segment Routing Path Computation Element (SR-PCE) Cisco Crosswork Optimization Engine enables closed-loop tracking of the network state, quickly reacting to changes in network conditions to support a self-healing network.

- **Cisco Crosswork Zero Touch Provisioning** is a Crosswork application that allows users to quickly and easily bring up devices using a Cisco-certified software image and a day-zero software configuration of the customer's choice. After it is provisioned in this way and configured to Cisco NSO, the new device is onboarded to the Crosswork device inventory, where it can be monitored and managed like other devices.
- **Cisco Crosswork Network Controller** is an integrated Crosswork solution that combines essential components, such as Cisco Network Services Orchestrator, Segment Routing Path Computation Element (SR-PCE), Crosswork Active Topology, and Crosswork Optimization Engine. The solution enables you to proactively manage your end-to-end networks, and it provides intent-based and closed-loop automation solutions to ensure faster innovation, optimal user experience, and operational excellence.
 - **Cisco Crosswork Active Topology** application is a part of Cisco Crosswork Network Controller and it enables visualization of topology and services on logical and geographical maps.
 - **Cisco Crosswork Service Health (Automated Assurance)** application is an optional component of Cisco Crosswork Network Controller that overlays a service level view of the environment and makes it easier for operators to monitor if services (for example, L2/L3 VPN) are healthy based on the rules established by the operator.
 - **Cisco Crosswork Health Insights** application is an optional network health component of Cisco Crosswork Network Controller that performs real-time Key Performance Indicator (KPI) monitoring, alerting, and troubleshooting. Cisco Crosswork Health Insights enables programmable monitoring and analytics, and builds dynamic detection and analytics modules that allow operators to monitor and alert on network events based on user-defined logic.
 - **Cisco Crosswork Change Automation** application is an optional component of Cisco Crosswork Network Controller that automates the process of deploying changes to the network. Orchestration is defined via an embedded Ansible Playbook and then configuration changes are pushed to Cisco Network Services Orchestrator (NSO) to be deployed to the network.

For information on the installation and configuration requirements of Cisco Crosswork products, see [Installation Dependencies for Cisco Crosswork Products](#).

