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# Cisco Crosswork Change Automation and Health Insights

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Cisco Crosswork™ Change Automation and Health Insights provide a programmable automation system that supports closed-loop operations based on configurable KPIs and feedback-driven workflows.

## Product overview

Network operators are challenged with exponential growth in network traffic and increases in the number of network endpoints. At the same time, there is tremendous pressure to efficiently and cost-effectively run network operations. This highlights the importance of modernized operations enabled with automation to substantially improve operational efficiency.

**Cisco Crosswork Network Automation:** Cisco Crosswork Network Automation is an outcome-driven automation software suite used to deliver efficient mass-scale network operations. It includes the ability to implement programmable closed-loop operations using Crosswork Change Automation and Crosswork Health Insights applications. These applications help to streamline and implement network-focused Method Of Procedure (MOP) for automating remediation and maintenance tasks.

**Cisco Crosswork Change Automation:** Cisco Crosswork Change Automation helps to codify workflows using parameterized Plays and stitches them into Playbooks for execution in a step-by-step or single-step fashion. It offers programmability and user control much needed when automating MOP in today’s operations environment. Any network or service configuration changes codified as part of the MOP get pushed to Cisco® Network Services Orchestrator (NSO) to be deployed to the network.

**Cisco Crosswork Health Insights:** Cisco Crosswork Health Insights offers real-time, telemetry-based Key Performance Indicator (KPI) monitoring and intelligent alerting. The alerts are based on predefined templates or user-defined logic. These alerts can be tied to the Playbooks to implement closed-loop automation workflows.

## Features and benefits

Feature	Benefit
<b>Open and programmable</b>	<ul style="list-style-type: none"> <li>Standards-based API for ease of integration</li> <li>Flexible and open framework for custom KPI and Playbook development</li> </ul>
<b>Closed-loop implementation</b>	<ul style="list-style-type: none"> <li>Ability to link network alerts to Playbooks in order to implement remediation, optimization, or maintenance workflows</li> </ul>
<b>Multivendor enabled</b>	<ul style="list-style-type: none"> <li>Collection of network data using SNMP with standard MIBs and telemetry using gNMI with Open Config models</li> <li>Configuration of devices via Cisco Network Service Orchestrator (NSO) using Network Element Drivers (NEDs)</li> </ul>
<b>Crosswork Health Insights</b>	
<b>Real-time KPI tracking</b>	<ul style="list-style-type: none"> <li>Dramatically reduces the cost associated with discovering and fixing errors in the network</li> </ul>
<b>Intelligent alerting engine</b>	<ul style="list-style-type: none"> <li>Utilize prebuilt templates or define your own alerting logic to detect specific behaviors of concern</li> </ul>
<b>Out-of-the-box KPI</b>	<ul style="list-style-type: none"> <li>Expedite operational readiness with a prebuilt set of rich KPIs</li> </ul>
<b>Custom KPI development</b>	<ul style="list-style-type: none"> <li>Easy-to-use wizard to help create KPIs for your specific operational needs</li> </ul>
<b>Zero-touch telemetry</b>	<ul style="list-style-type: none"> <li>Automatic provisioning of KPIs based on Model-Driven Telemetry (MDT)</li> </ul>

Feature	Benefit
<b>Alert forwarding</b>	<ul style="list-style-type: none"> <li>• Forward alerts to an external system to enable integration with existing workflows</li> </ul>
<b>Rich data collection mechanisms</b>	<ul style="list-style-type: none"> <li>• Breadth of mechanisms to support collection from a wide range of devices: <ul style="list-style-type: none"> <li>◦ gNMI with Open Config models, supporting gNMI-Proto and JSON-IETF encoding</li> <li>◦ SNMP with standard MIBs</li> <li>◦ MDT</li> </ul> </li> </ul>
<b>Crosswork Change Automation</b>	
<b>Flexible workflow execution</b>	<ul style="list-style-type: none"> <li>• Dramatically reduces the time to execute planned and unplanned changes to the network</li> </ul>
<b>Continuous, single-step, or dry-run execution</b>	<ul style="list-style-type: none"> <li>• Flexible execution modes with user control</li> <li>• Validate Playbook execution flow and verify configuration changes without making them using the dry-run mode</li> </ul>
<b>Scheduled execution</b>	<ul style="list-style-type: none"> <li>• Ability to schedule Playbook execution can be used in many ways—for example: <ul style="list-style-type: none"> <li>◦ Schedule maintenance tasks in the designated maintenance window</li> <li>◦ Schedule service provisioning, activation, and deactivation at specific times based on customer request</li> </ul> </li> </ul>
<b>Out-of-the-box Plays</b>	<ul style="list-style-type: none"> <li>• Leverage deployment best practices with prebuilt Plays to simplify network automation tasks</li> </ul>
<b>Custom Playbook development</b>	<ul style="list-style-type: none"> <li>• Flexible framework that allows you to create network-focused workflow or MOPs</li> </ul>
<b>Rollback</b>	<ul style="list-style-type: none"> <li>• User control with ability to rollback all changes during Playbook execution or changes related to any previous plays</li> </ul>
<b>Pre- and post-check</b>	<ul style="list-style-type: none"> <li>• Ability to organize the tasks to help validate if the network state has been restored after Playbook execution is complete</li> </ul>
<b>Detailed audit trail</b>	<ul style="list-style-type: none"> <li>• Enhance traceability with ability to track who executed the Playbook and when was it executed</li> </ul>

## Closed-loop remediation

The ability to identify and remediate problems in the network before customers notice is critical for network operators. With the Crosswork Change Automation and Health Insights closed-loop function, service providers can automate the process of discovering and remediating problems in the network by allowing an operator to match an alert to predefined remediation tasks. These tasks will automatically be performed once a defined Key Performance Indicator (KPI) threshold has been breached.

Remediation can be implemented with or without the network operator approval, depending on the setting and preferences of the operator.

Using closed-loop remediation reduces the time it takes to discover and repair a problem while minimizing the risk of making a mistake and creating an additional error through high-stakes manual network operator intervention.

## Platform support information

Cisco Crosswork supports collection of telemetry using gNMI and Cisco MDT, depending on the platform and associated software version.\* For Cisco XR devices, gNMI telemetry is supported for Cisco native IOS® XR and openconfig YANG models. Supported encoding types are gnmi.proto and JSON\_IETF. Cisco MDT requires CLI NED version 7.33.1 and NetConf NED version 7.3.1.\*\*

Cisco Crosswork also supports the collection of standard MIBs using SNMP.

### Supported Cisco platforms

OS	Cisco platforms	gnmi	MDT	SNMP
IOS XR	Cisco NCS 6000 Series	7.2.1 or later	7.1.2 or later	6.2.1 or later
	Cisco NCS 8000 Series	7.1.2 or later		
	Cisco ASR 9000 (64-bit) Series			
	Cisco ASR 9900 Series			
	Cisco NCS 5500 Series			
	Cisco NCS 1000 Series			
	Cisco NCS 500 Series			
NX-OS	Cisco Nexus 9000 Series			7.0(3)I7(2) or later
	Cisco Nexus 7000 Series			8.4(1) or later
IOS XE	Cisco ASR 1000 Series			16.12 or later
	Cisco ASR 900 Series			
	Cisco ASR 920 Series			

\*NetConf NED requires IOS XR version 7.3.1 or later.

\*\*Contact your Cisco sales representative for details related to Cisco software versions and support for non-Cisco devices.

## System requirements for Release 4.0

### Cisco Network Services Orchestrator requirements

Software/driver	Version
Cisco Network Services Orchestrator	5.4.2

### Cisco Crosswork Data Gateway requirements

Software/driver	Version
Cisco Crosswork Data Gateway (Extended)	2.0

## Supported web browsers

Browser	Version
Google Chrome	70 or later
Mozilla Firefox	60 or later

Recommended display resolution: 1600 x 900 pixels or higher (minimum: 1366 x 768).

## System resources

Cisco Crosswork Health Insights and Change Automation are applications hosted on Crosswork infrastructure that is designed to scale horizontally to support a variety of customer deployments. The realized scale can vary significantly (higher or lower) depending on the type and number of KPIs, desired cadence, and relative distribution of interfaces across devices. Contact your Cisco sales representative for more details.

## Cisco and Partner Services

Please contact your Cisco account representative for details regarding configuring and ordering Cisco Crosswork Network Automation.

## 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.](#)

## For more information

For more information on Cisco's network automation portfolio for Service Providers please visit <https://www.cisco.com/go/crosswork>. To learn more about Cisco Crosswork Change Automation and Health Insights or to schedule a demonstration contact your Cisco sales representative.

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