



# Cisco Crosswork Change Automation and Health Insights 4.0 Release Notes

---

**First Published:** 2021-04-19

This document provides an overview of Cisco Crosswork Change Automation and Health Insights, new functionalities, compatibility information, usage guidelines and any limitations for this release.

## Product Overview

The Cisco Crosswork Infrastructure with Cisco Crosswork Change Automation and Health Insights enables service providers to quickly deploy intent-driven, closed-loop operations.

Cisco Crosswork Change Automation and Health Insights provides a ready-to-use solution supporting the following use cases:

- Monitor Key Performance Indicators (KPIs) and notify of any anomalies.
- Prepare network changes triggered by changes in KPIs and roll out these changes.
- Automate change-impact and remediation.

## Functionality added in Cisco Crosswork Change Automation and Health Insights 4.0

This section lists the new functionalities delivered in Cisco Crosswork Change Automation and Health Insights 4.0.

### Change Automation

- Enhanced ability to create custom plays to customize playbooks for Cisco and non-Cisco devices.
- Added ability to store output from a verb into register so it can be used by a subsequent play in the playbook.
- Added ability to control the playbook execution workflow using conditionals.
- Device override credentials added to provide additional authentication during Playbook execution.
- Added the ability for Change Automation to integrate into Crosswork Network Controller 2.0.

### Health Insights

- Added support for Health Insights KPIs to use GNMI transport and Openconfig YANG models.

- Added ability to store KPI sensor data for a period of 24 hours.
- Added the ability to export Health Insights KPI sensor data to user-specified external applications.
- Added the ability for Health Insights to integrate into Crosswork Network Controller 2.0.

## Compatibility Information

The following table lists hardware and software versions that have been tested and are known to be compatible with Cisco Crosswork Change Automation and Health Insights. For complete installation requirements, see the *Cisco Crosswork Infrastructure 4.0 and Applications Installation Guide*.

Hardware/Software	Supported Version
Cisco Network Services Orchestrator (Cisco NSO)	<ul style="list-style-type: none"> <li>• 5.4.2</li> </ul>
	<p><b>Cisco Network Element Driver (NED)</b></p> <ul style="list-style-type: none"> <li>• Cisco IOS XR: <ul style="list-style-type: none"> <li>• CLI: 7.33, 7.33.1</li> <li>• NETCONF: 6.6, 6.6.3, 7.3, 7.3.1</li> </ul> </li> <li>• Cisco IOS: <ul style="list-style-type: none"> <li>• CLI: 6.67, 6.67.8</li> </ul> </li> </ul>
	<p><b>Function Packs</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Cisco Crosswork Telemetry Traffic Collector Function Pack 2.0 Installation Guide</a></li> <li>• <a href="#">Cisco NSO DLM Service Pack 1.0 Installation Guide</a></li> <li>• <a href="#">Cisco Crosswork Change Automation Function Pack 1.0 Installation Guide</a></li> </ul>
Software platform	<ul style="list-style-type: none"> <li>• Cisco IOS XR 6.4.1 or later (recommended 6.5.x or later)</li> <li>• Cisco IOS XE 16.10 or later (limited functionality)</li> <li>• Cisco NX-OS (N7K - 8.4(1), N9K - 7.0(3) I7(2))</li> </ul>
Cisco WAN Automation Engine (Cisco WAE)	Version 7.21
Cisco Crosswork Data Gateway	Version 2.0
Browsers	<ul style="list-style-type: none"> <li>• Google Chrome—70 or later</li> <li>• Mozilla Firefox—60 or later</li> </ul>

# Usage Guidelines and Important Notes

This section provides guidelines and important notes to consider when using Cisco Crosswork Change Automation and Health Insights.

## Change Automation

For information on how to use Change Automation see the "Automate Network Changes" chapter in the *Cisco Crosswork Change Automation and Health Insights User Guide*.

- For information about using flexible Playbook development tools, see ["Custom Playbooks" tutorial in the Change Automation Developer Guide on Cisco DevNet](#).
- When using dynamic tags to run a playbook on a set of devices, the playbook will be executed on groups of 20 devices at a time until the playbook has been run on all of the tagged devices.

## Health Insights

For information on how to use Health Insights, see the "Monitor Network Health and KPIs" chapter in the *Cisco Crosswork Change Automation and Health Insights User Guide*.

- Group the KPIs within a KPI Profile for monitoring relevant device metrics. For best results, limit to adding 10 KPIs per KPI Profile. Maximum number of KPIs that can be supported within a KPI profile is 50.
- For optimal performance, enable a KPI Profile in batches of no more than 100 devices.
- For best system performance, use the default KPI cadence.

## Known Issues and Limitations

The following are known issues, limitations, and workarounds in Cisco Crosswork Change Automation and Health Insights.

### Change Automation

- Sometimes, under certain load conditions, the execution of a Playbook times out. If it continues to fail for a specific device, try changing the time out for the job, or changing the device state to DOWN and UP again.
- While scheduling playbooks across a dynamic group tag, the corresponding job set screen for the job in the Job History page will not display the relevant devices, until the job is scheduled for execution.
- Running a Playbook on multiple devices at the same time with different *collection\_type* parameter values may result in failure. Re-executing the failed Playbook will resolve the issue.
- Under extreme load conditions, Change Automation may fail to cleanup the collection jobs that were created. These stale collections jobs can be deleted using API.
- If you try to access Change Automation UI after restarting the `robot-nca` pod, you may get a temporary error message (**pstream host lookup failed**) for 5 minutes.

## Health Insights

- Setting the alert flag as ON for an enabled KPI Profile is not displayed on the corresponding Health Insights job details page as the update operation is an internal system transaction. If the job completes successfully, the alerts triggered can be viewed on the alert dashboard.
- After a KPI Profile is enabled, editing cadence & threshold parameter for any of the associated KPIs can be achieved using one of the three procedures detailed below:
  - Create a custom KPI with the required cadence & threshold parameters and associate with the existing KPI Profile.
  - Create a new KPI Profile with the relevant KPIs associated. Update the cadence & alert parameters before enabling this new KPI Profile.
  - Disable the KPI Profile & perform the modifications on relevant associated KPIs and re-enable the KPI Profile.
- Multiple active KPIs cannot use the same sensor path on the same device.
- For custom KPIs:
  - While creating custom KPI, user is restricted to selecting leaf sensors only upto a certain hierarchy (gather path).
  - All leaf sensor paths are reserved for that KPI use only.
- Any Health Insights job stuck in the processing state and does not complete within the stipulated time out of 60 minutes will be marked as "failed". After addressing any underlying issues (e.g. device connectivity, credentials or NSO sync etc.), the same job must be reapplied.
- Filtering is case sensitive for the **Manage KPIs** and **Enable-Disable KPI Profiles** pages.
- For using Health Insights alert forwarding functionality, you need to setup one Alert provider with correct credentials.
- You can view KPI graphical data in the Cisco Crosswork UI only for time slots that has alerts triggered. To view the alerts for the last 24 hours, go to the grafana dashboard (<https://<IPaddress:port>/robot-grafana/>) and select the desired KPI.

## Cisco Crosswork Infrastructure 4.0 Release Notes

Cisco Crosswork Infrastructure is a microservices-based platform that brings together streaming telemetry and model-driven application programming interfaces (APIs) to redefine service provider network operations. It employs a cluster architecture to be extensible, scalable, and highly available.




---

**Note** Henceforth, Cisco Crosswork Infrastructure is referred to as "Cisco Crosswork" in this document.

---

For installation, configuration and administration procedures, see the [Cisco Crosswork Infrastructure 4.0 and Applications Installation Guide](#) and the [Cisco Crosswork Infrastructure 4.0 and Applications Administration Guide](#).

## Infrastructure Enhancements

- Starting with the 4.0 release, only the infrastructure components will be installed on the target machines. Each Cisco Crosswork application will be available as a separate installable package.
- Node-level High Availability (HA) is provided for the Cisco Crosswork applications.
- Ability to scale the Cisco Crosswork applications as per your business requirements.
- Added license compliance check for non-Crosswork active collection jobs.
- Support provided for an Alert Framework.
- New certificate management architecture to support secure communication between Cisco Crosswork Data Gateway and devices. Includes device TLS certificate management from the Cisco Crosswork UI.
- Support for secure GNMI telemetry.
- Added extensibility framework that supports:
  - Installing the Cisco Crosswork infrastructure without any applications.
  - Dynamic integration of Cisco Crosswork applications after day 0.
  - Managing (install, activate, upgrade, and uninstall) a purchased application in Cisco Crosswork.
- Cisco Crosswork deployment is supported on Cisco CSP 5K devices.
- Support for applications to send standard syslog events from Cisco Crosswork to external syslog servers.
- Support for display of system alarms and events for troubleshooting scenarios.

## Infrastructure Guidelines

- It is recommended to deploy Cisco Crosswork on a highly available cluster (vSphere HA) with shared storage.
- When manually installing the cluster nodes, use VMware vCenter and vSphere Web Client (flash mode) for OVA deployment.
- Managed devices, VM host and the VMs should use the same NTP source to avoid time synchronization issues.
- Confirm that the DNS and NTP servers are properly configured.
- Use Terminal Access-Control System Plus (TACACS+), Lightweight Directory Access Protocol (LDAP) or Role-Based Access Control (RBAC) for auditing purposes.
- During configuration, note the Cisco Crosswork UI and CLI user names and passwords. Due to added security, the only way to recover the administrator password is to re-install the software.
- In situations where it is expected to work with SR-PCE (for L3 topology discovery), we recommend the use of dual SR-PCEs.
- Use CSV files to quickly import and onboard device, credential, and provider information.

## Infrastructure Known Issues and Limitations

### UI

- Sometimes, NETCONF reachability times out for IOS XE devices. To recover, try increasing the NETCONF reachability timer to a higher timeout value (for example, 120 seconds).
- While retrieving device inventory via API from Cisco Crosswork, use page size of 200.
- In rare cases, after the successful registration, the License Authorization Status in the Smart Licensing page is not changed and will continue to display as being in EVALUATION mode. As a consequence, the evaluation timer will be started and incorrect messages will be displayed to the user. As a workaround, please de-register and register the product again.
- If you restart microservices for a Crosswork application, the microservice may appear removed upon restart, but the application will continue to show a healthy status.

### Alerting

- Alarms, faults, errors, or any status indications for Cisco Crosswork Data Gateway will not be reflected on the VM node or its operational state.
- Alerting service can become unresponsive during stress testing. Alerts related to Crosswork applications may not be generated during this time. If this happens, Cisco Crosswork will recover the alerting by automatically restarting the service.
- If the node containing the Cisco Crosswork orchestrator is restarted, it might take up to 10 minutes before the health of the cluster can be viewed.

### Topology

- L2 links are discovered utilizing either point-to-point Cisco Discovery Protocol (CDP) or Link Layer Discovery Protocol (LLDP).
- PCE is required for L3 link topology mapping.
- Enable traps on routers to receive L2 link down and up status changes quickly. Otherwise, it may take one SNMP poll cadence (default is 5 minutes) to see the L2 link status change.

### High Availability

Cisco Crosswork will not allow you to power off two hybrid nodes at the same time. If a system loses a hybrid node due to any faults, it must be replaced as soon as possible.

## Related Documents

The following table lists the documents provided for the current release of Cisco Crosswork Change Automation and Health Insights. You can access all Cisco Crosswork Change Automation and Health Insights end user documentation at <https://www.cisco.com/c/en/us/support/cloud-systems-management/crosswork-change-automation/model.html>.

Documentation Title	What is included
Cisco Crosswork Change Automation and Health Insights 4.0 Release Notes	This document
<a href="#">Cisco Crosswork Infrastructure 4.0 and Applications Installation Guide</a>	Shared installation guide for all the Cisco Crosswork applications and their common infrastructure. Covers: <ul style="list-style-type: none"> <li>• System requirements</li> <li>• Installation prerequisites</li> <li>• Installation instructions</li> <li>• Upgrade instructions</li> </ul>
<a href="#">Cisco Crosswork Infrastructure 4.0 and Applications Administration Guide</a>	Shared administration guide for all the Cisco Crosswork applications and their common infrastructure. Covers: <ul style="list-style-type: none"> <li>• Managing clusters and data gateway</li> <li>• Data collection</li> <li>• High availability</li> <li>• Backup and restore</li> <li>• Onboard and manage devices</li> <li>• Zero touch provisioning</li> <li>• Set up maps</li> <li>• Managing users, access and security</li> <li>• Maintain system health</li> </ul>
<a href="#">Cisco Crosswork Change Automation and Health Insights 4.0 User Guide</a>	<ul style="list-style-type: none"> <li>• Getting started</li> <li>• Automating the process of deploying changes to the network</li> <li>• Monitoring network health</li> <li>• Performing real-time key performance indicator (KPI) monitoring, alerting, and troubleshooting</li> <li>• Collecting and managing telemetry data in a multivendor environment</li> </ul>
<a href="#">Open Source used in Cisco Crosswork Change Automation and Health Insights</a>	Lists of licenses and notices for open source software used in Cisco Crosswork Change Automation and Health Insights

### Additional Related Documentation

This section provides links to documentation for products related to Cisco Crosswork Change Automation and Health Insights:

- [Cisco Crosswork Data Gateway 2.0](#)
- [Cisco Network Services Orchestrator 5.4.2](#)

You can access documentation for all Cisco Crosswork products at <https://www.cisco.com/c/en/us/support/cloud-systems-management/crosswork-network-automation/tsd-products-support-series-home.html>.

### Cisco Crosswork API Documentation

Advanced users can extend Cisco Crosswork product functions by using the product APIs. For more about the product APIs, see [the Cisco Crosswork Network Automation API Documentation on Cisco DevNet](#).

## Open Bugs in Cisco Crosswork

If you encounter problems while working with Cisco Crosswork, please check this [list of open bugs](#). Each bug ID in the list links to a more detailed description and workaround.

You can use the Cisco Bug Search Tool to search for a specific bug or to search for all bugs in a release.

1. Go to the [Cisco Bug Search Tool](#).
2. Enter your registered Cisco.com username and password, and click **Log In**.

The Bug Search page opens.




---

**Note** If you do not have a Cisco.com username and password, you can [register here](#).

---

3. Use any of these options to search for bugs, and then press Enter (Return) to initiate the search:
  - To search for a specific bug, enter the bug ID in the Search For field.
  - To search for bugs based on specific criteria, enter search criteria, such as a problem description, a feature, or a product name, in the Search For field.
  - To search for bugs based on products, enter or choose the product from the Product list. For example, enter **Cisco Crosswork Change Automation** or **Cisco Crosswork Health Insights**.
  - To search for bugs based on releases, in the Releases list choose whether to search for bugs affecting a specific release, bugs that were fixed in a specific release, or both. Then enter one or more release numbers in the Releases field.
4. When the search results are displayed, use the filter tools to narrow the results. You can filter the bugs by status, severity, and so on.




---

**Tip** To export the results to a spreadsheet, click **Export Results to Excel**.

---



## Open Source

A list of open source software used in Cisco Crosswork can be found in [Open Source Used in Cisco Crosswork Change Automation and Health Insights](#).

## Accessibility Features

All product documents are accessible except for images, graphics, and some charts. If you would like to receive the product documentation in audio format, braille, or large print, contact the [Cisco Accessibility Team](#) on the Web or send email to [accessibility@cisco.com](mailto:accessibility@cisco.com).

## Obtain Documentation and Submit a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see [What's New in Cisco Product Documentation](#).

To receive new and revised Cisco technical content directly to your desktop, you can subscribe to the What's New in [Cisco Product Documentation RSS feed](#). The RSS feeds are a free service.

