Get Started

This section explains the following topics:

Before You Begin

Before you begin using Crosswork Service Health, you are recommended to be familiar with the following concepts and complete any planning and information-gathering steps:

- Crosswork Service Health offers two levels of service monitoring - Basic and Advanced.
  - **Basic Monitoring**: This type of monitoring offers the option of adding up to 52,000 services and provides limited sub-service metrics, resulting in lower overall CPU usage. Additionally, the graphic map renderings are smaller compared to more detailed monitoring.
  - **Advanced Monitoring**: This monitoring approach allows for the addition of up to 2,000 services, resulting in higher CPU consumption, an increased number of sub-service metrics, and larger graphic map renderings.
- You can monitor upto a total of 52000 services in total, that is 52000 services using Basic monitoring only or 50000 services using Basic monitoring and an additional 2000 services using Advanced monitoring.
- Service Health uses Heuristic packages to monitor the health of the services. A Heuristic package contains what to monitor, how to compute the monitored metrics, and symptoms associated with service health degradation. The overall health of the service is determined by applying the rules from the Heuristic Package.
- The default set of Heuristic packages provided with Service Health are called system packages and cannot be modified. Based on the rules that are defined in the system packages, Service Health uses various testing probes such as IP SLA, Y.1731, TWAMP, SR-PM, Accedian Skylight, or telemetry data to analyze the health and determine if the service meets the Service Level Agreement (SLA).

  You can create a custom Heuristic package by exporting an existing package, modifying it, and then importing it back. See About Heuristic Packages.
- Service Health works in environments with either standalone NSO or NSO deployed in the LSA configuration.

- Extended CLI support using Service Health system device packages allows for more comprehensive service monitoring capabilities. These packages are capable of deriving exact sensor paths for metric health calculation, and can be installed as a bundle. Engage with your account team for more details regarding this.
- Service Health can store a maximum of 50 GB of monitoring data on the Crosswork Cluster. Crosswork Network Controller will raise an alarm when this storage reaches 70% of the 50 GB available storage capacity. In case you need additional storage, you can configure external storage in the cloud using an Amazon Web Services (AWS) cloud account. See Configure Additional External Storage.

Getting Started

Crosswork Service Health is available as part of the Cisco Crosswork Network Controller Advantage Package (see Cisco Crosswork Network Controller Packages).

To get started with Crosswork Service Health, follow the steps mentioned in the below table:

Note In order to set up and run Crosswork Service Health with Crosswork Network Controller, you only need to follow Steps 1 through 6 in the following table. Steps 7 to 9 are optional and explain advanced use cases of Crosswork Service Health.

Workflow	Action
1. Install Cisco Crosswork Network Controller Advantage package.	See the Cisco Crosswork Network Controller Installation Guide.
2. Do the basic reachability checks from the Crosswork UI.	See Setup Workflow in the Cisco Crosswork Network Controller Administration Guide.
3. Determine if you would like to configure additional external storage. **Note** You can configure external storage at any time.	If you anticipate monitoring health of many services, Cisco recommends configuring external storage after you install Crosswork Service Health and before you begin monitoring the services. See Workflow: Manage Stored Data, on page 4.
4. Create and provision the L2VPN/L3VPN services.	You can create and provision services using both the Crosswork Network Controller UI or using APIs: • Orchestrated Service Provisioning chapter in the Crosswork Network Controller Solution Workflow Guide. • Crosswork Network Controller API Documentation on Devnet
5. Enable service health monitoring for the provisioned services.	Start monitoring VPN services. See Start Service Health monitoring.

Workflow	Action
6. Establish your operational processes for responding to degraded services.	Deep dive into the impacted services and sub-services health, and drill down to the root cause of the service degradation. See Workflow: Analyze the Cause of Service Degradation, on page 4.
7. (Optional) Use SR-PM to probe and monitor VPN services associated with TE policies.	Use SR-PM to measure performance metrics of the underlay SR-TE policies to ensure that the VPN services are meeting the Service Level Agreements (SLA). See Workflow: View Performance Metrics of TE Policies using SR-PM, on page 5.
8. (Optional) Use Accedian Skylight to probe service health.	Using Accedian Skylight probes can give additional insights into health of the service. See Workflow: Monitor Service Health using Accedian Skylight, on page 6. **Note** Accedian Skylight integration is available as a limited-availability feature in this release. Engage with your account team for more information.
9. (Optional) Customize and Import Heuristic Packages	After you have used the default set of Heuristic packages that Service Health provides for monitoring, you may identify opportunities to customize them to better suit your needs. See Workflow: Customize Heuristic Packages, on page 6.

Service Health Workflows

In this section, we provide the details for each of the workflows identified in the Getting Started, on page 2 section.

- Workflow: Manage Stored Data, on page 4
- Workflow: Analyze the Cause of Service Degradation, on page 4
- Workflow: View Performance Metrics of TE Policies using SR-PM, on page 5
- Workflow: Monitor Service Health using Accedian Skylight, on page 6
- Workflow: Customize Heuristic Packages, on page 6

Workflow: Manage Stored Data

Crosswork Service Health provides up to 50 GB of storage for monitoring data. If that limit is reached, the oldest monitoring data will be deleted first.

When the storage exceeds 70% capacity, Crosswork Network Controller generates an alarm prompting you to configure external storage in order to save older Service Health monitoring data. The actions detailed in the section describe how to monitor storage usage, reduce the amount of data being stored and how to add additional external storage.

Table 1: Workflow: Manage Stored Data

Action	See..
1. Reduce the number of services being monitored by stopping the monitoring for few services. Review the monitoring data that is already stored on your system and delete any data that you no longer need to free up storage space.	Stop Service Health Monitoring
2. Switch services that are using Advanced Monitoring to Basic Monitoring to monitor the services in lesser detail.	Edit Existing Monitoring Settings
3. If you still need additional storage, configure additional external storage on AWS Cloud.	Configure Additional External Storage

Workflow: Analyze the Cause of Service Degradation

This is an operational workflow and it is iterative. Deep dive into the impacted services and sub-services health, and drill down to the root cause of the service degradation in any of the following ways:

Table 2: Analyze the Cause of Service Degradation

Action	See..
1. View Monitored Services and identify degraded services.	View Monitored Services
2. Identify cause of the service degradation.	• Identify Root Causes Using Last 24Hr Metrics • Identify Active Symptoms and Root Causes of a Degraded Service • Identify Root Causes Using Assurance Graph

Action	See..
3. Confirm if the reported degradation is a valid issue. In case it is not a valid issue, you may need to adjust the monitoring level (from Basic Monitoring to Advanced Monitoring or vice versa) to ensure accurate reporting of service health. Alternatively, you can modify the system Heuristic package to create a custom Heuristic package to resolve the issue of false positive flagging of service health. If the reported issue is valid, proceed to the next step in this workflow.	Edit Existing Monitoring Settings About Heuristic Packages
3. Analyze if the service degradation is on account of an issue with device health.	• View the Devices Participating in the Service • View Collection Jobs

Workflow: View Performance Metrics of TE Policies using SR-PM

To measure the performance metrics of VPN services using either SR-MPLS or RSVP-TE Traffic Engineering policies, Service Health can leverage Segment Routing Performance Measurement (SR-PM). When this feature is enabled, Service Health gathers and processes additional metrics such as Delay, Delay Variance or Liveness to measure performance of the underlay SR-TE policy and determine Service Level Agreements (SLA) compliance.

The following workflow describes how you can enable SR-PM collection and view performance metrics of the underlay TE policies.

Table 3: Workflow to View Performance Metrics of TE policies using SR-PM

Action	See..
1. Enable SR-PM metrics Collection in Crosswork and on the devices	Enable SR-PM Metrics Collection
2. View the performance metrics of the policy	View SR-MPLS Policy Performance Metrics View RSVP-TE Policy Performance Metrics
3. Analyze the metrics and identify the cause of service degradation.	Identify Active Symptoms and Root Causes of a Degraded Service
4. Confirm if the reported degradation is a valid issue. In case it is not a valid issue, you may need to adjust the monitoring level (from Basic Monitoring to Advanced Monitoring or vice versa) to ensure accurate reporting of service health. Alternatively, you can create a custom Heuristic package by modifying the system Heuristic package for customized reporting of service health.	Edit Existing Monitoring Settings About Heuristic Packages

Workflow: Monitor Service Health using Accedian Skylight

Crosswork Network Controller can leverage external probing, provided by Accedian Skylight, to measure performance metrics of the L3VPN services. The metrics are compared with the contracted SLA (defined in the Heuristic package), and the results are made available on the UI for further analysis.

Note For the first time you add Accedian as a provider, follow step 1 and 2. Follow step 3 to 6 iteratively for operational purposes.

Table 4: Probe and Monitor Service Health using Accedian Skylight

Action	See
1. Install the Accedian Skylight Software.	Refer to the Accedian Skylight documentation for information on installing Accedian Skylight and deploying it with Crosswork Network Controller. **Note** You need an account with Accedian Skylight to access the documentation. Sign up and create an account with the self sign-up tool.
2. Add Accedian Skylight as a provider in Crosswork Network Controller.	Add Accedian Skylight as a Provider
3. Set up Probe sessions with Accedian Skylight for the L3VPN service.	Monitor Service Health using Accedian Skylight
4. View the Accedian Skylight probe session Details in the Crosswork Network Controller UI.	View Accedian Skylight Probe Session Details
5. Analyze the cause of the service degradation.	Identify Active Symptoms and Root Causes of a Degraded Service
6. Confirm if the reported degradation is a valid issue. In case it is not a valid issue, you may need to adjust the monitoring level (from Basic Monitoring to Advanced Monitoring or vice versa) to ensure accurate reporting of service health. Alternatively, you can modify the system Heuristic package to create a custom Heuristic package for a customized report of service health.	Edit Existing Monitoring Settings Workflow: Customize Heuristic Packages, on page 6

Workflow: Customize Heuristic Packages

Crosswork Service Health uses Heuristic Packages as the core logic to monitor and report the health of services. Heuristic Packages define a list of rules, configuration profiles, supported sub-services and associated metrics for every service type. Heuristic Packages provided by the system are read-only and cannot be modified.

If you find that the Heuristic Packages provided by the system are insufficient in terms of monitoring metrics or monitoring thresholds, you have the option to export, modify and import the system package to create a customized Heuristic package that caters to your specific monitoring requirements.

Table 5: Customize Heuristic Packages

Action	See..
1. Analyze your network services. Check the system Heuristic Packages for rules, sub-services, and metrics to ensure that the system packages do not have the required metrics, services or thresholds already.	See Basic and Advanced Monitoring Rules and Reference - Supported Subservices.
2. Export and modify the Heuristic package to build a customized Heuristic package.	See About Heuristic Packages and Build a Custom Heuristic Package.
3. Import the customized Heuristic package in Crosswork Network Controller.	Import Custom Heuristic Packages
3. Apply the custom package to all the services that should be using it.	Start Service Health monitoring Edit Existing Monitoring Settings
4. Verify that the custom package is providing the monitoring data that you need to meet your requirements.	View Monitored Services