

Cisco

Crosswork Cloud

Network Insights

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The Cisco Crosswork Cloud Network Insights™ SaaS solution addresses routing event security with global monitoring, analysis and insights across a infrastructure.

Product overview

Your network can be a complex and often unpredictable environment. Routing events that are caused by automated systems, malicious attacks, or simple operational errors can have unforeseen effects on services. Network operators, be it enterprise or service provider, need a scalable and insightful toolset to help them identify and resolve network issues swiftly.

While the operational performance data provided by networks is plentiful, the existing toolsets lack an understanding of the network control state. Routing protocol event information can be difficult to comprehend when not organized, analyzed, and displayed logically.

By leveraging Cisco's unparalleled expertise with routing protocols, Crosswork Cloud Network Insights can help you structure the information you need to quickly identify and resolve issues throughout the network.

Product description

Cisco Crosswork Cloud Network Insights is a revolutionary cloud-based platform for presenting real-time network routing, event, and traffic information. A successor of BGPMon.net for vendor independent networks, it uses IETF standards-based routing control protocols in combination with a cloud-native architecture to capture the state of your network's control plane.

Through rich analysis, visualization, and alerting on actionable network events, Crosswork Cloud Network Insights that helps you assess the routing health of your network, providing information to determine stability and potential risks to your IP routing assets.

How does it work?

Crosswork Cloud Network Insights aggregates global and local routing information and identifies the source of anomalies based on a consensus of the routing databases Crosswork Cloud Network Insights provides a secure and low-risk method of collecting route information at a global scale, tracking hundreds of thousands of IP route update records, while maintaining event history.

Subscribers can track live and historical activity of their own global BGP and IP information. They can also quickly and easily investigate other entities that might be the cause of issues based on the information provided by the solution.

The timeline to know when a routing event has impacted your network.

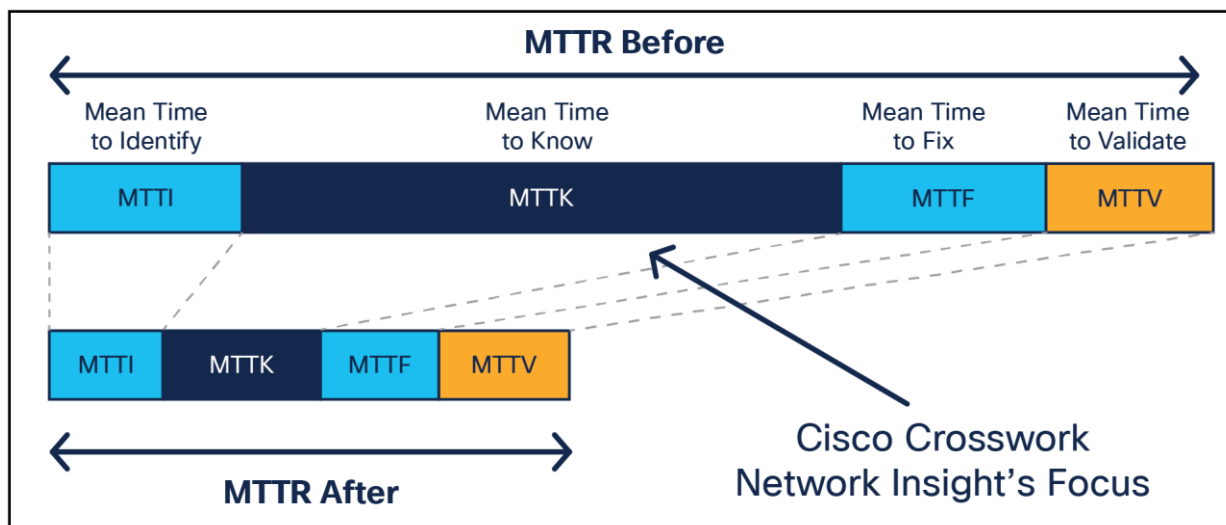


Figure 1.
The timeline to know when network events have impacted your network

Network Insights collects network data through a secure, federated collection model and provides routing data analytics to significantly reduce Mean Time to Know (MTTK). Network operators can achieve the following benefits:

- Real-time and historical visualizations of global BGP route events
- Looking Glass plus Alarms and notifications
- ASN and prefix registration and geographic position

Network Insights also provides several viewing dashboards, including but not limited to AS and Prefix health, Perring (local and remote) analytics, RPKI and DNS monitoring.

Benefits

- **Communicate and alert on issues using new collaboration media platforms and legacy methods such as email.**
- **Manage large-scale service provider data sets.**
- Track millions of IP prefix updates in real time while maintaining their historical state information.

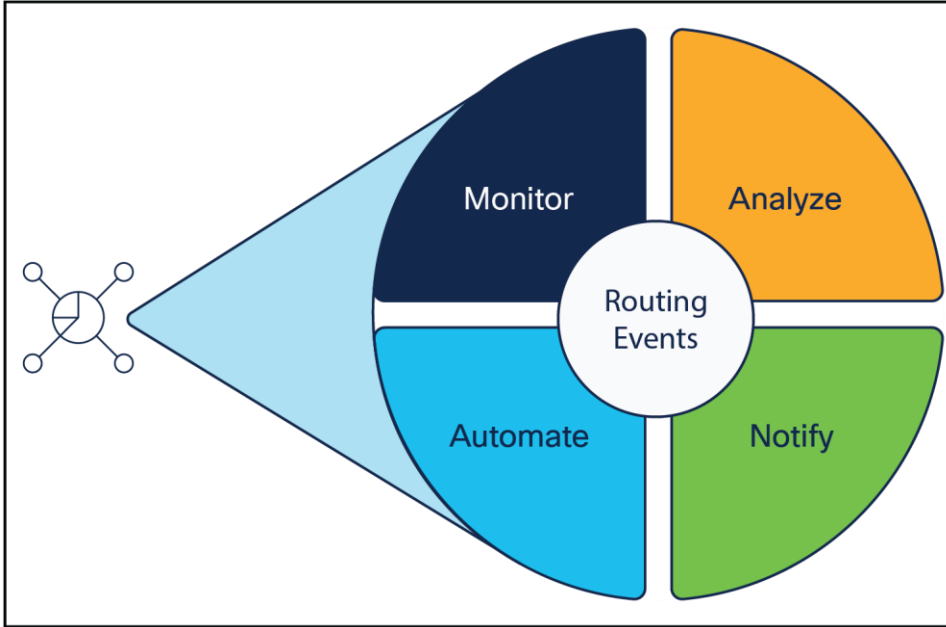


Figure 2.
Crosswork Cloud Network Insights use cases

Use Cases

Routing event awareness and management

- Real-time continuous monitoring of routing event workflow
 - Independent out-of-band monitoring of edge routers and my IP prefixes with anomaly notification.
 - Monitor changes to critical routes inside and outside my network, including third party and peer routes.
- BGP hi-jack and route leak event signatures.
- Forensic BGP update analysis.
- Peer (local and remote) monitoring
- RPKI monitoring
- DNS monitoring
- Integration with Crosswork Network Automation tools (on-premises)

Get Started Quickly with Crosswork Cloud Network Insights “Express Setup”

First-time users can get set up quickly to monitor their IP prefixes based on ASN information. Network Insights automatically populates the configuration of the service for all IP prefixes based on their current observed state.

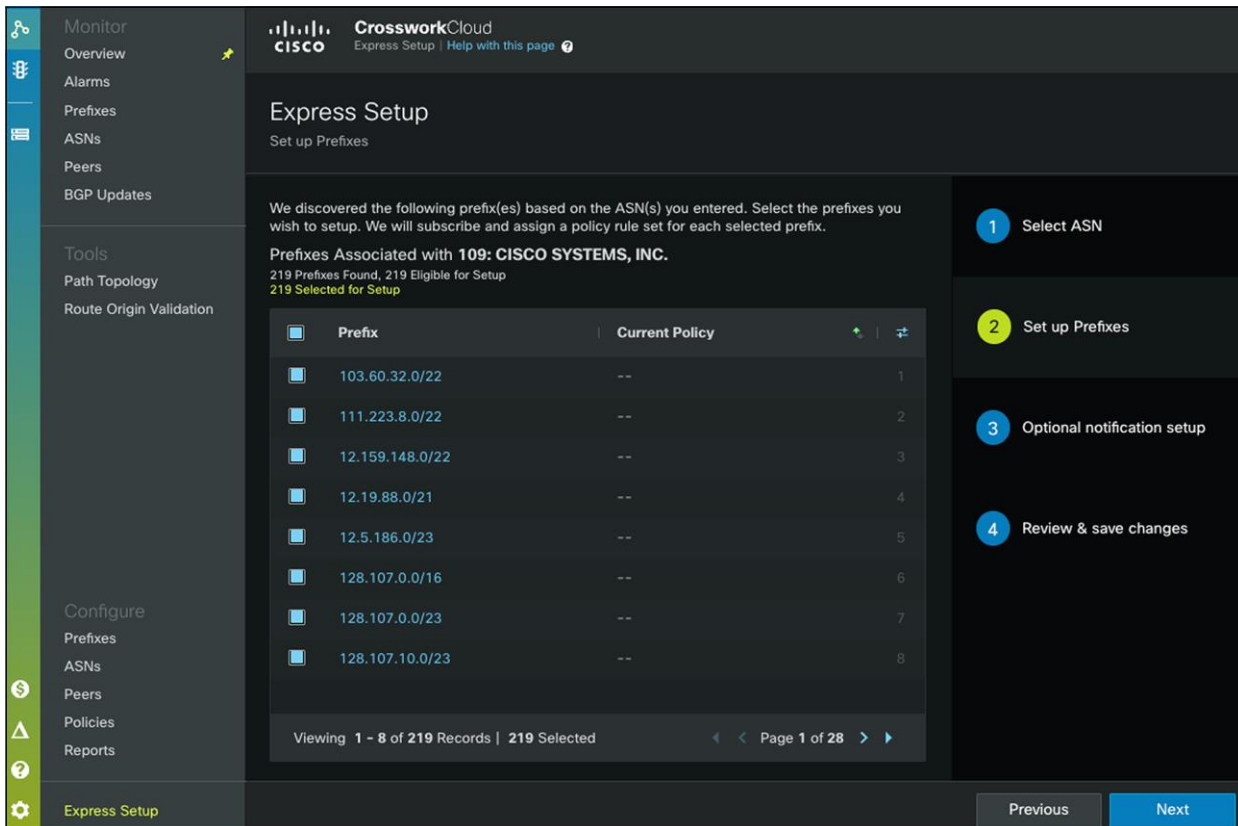


Figure 3.
Express setup feature

Additional features

Monitored IP prefix alarm history

The alarm history helps users quickly identify IP prefix alarm events of importance. Events can be sorted and searched in various ways to quickly locate the root cause of a service -impacting incident. Once an event is located, the detailed information for that event can be viewed as part of the next action. Subscribers will have different lookback periods based on the tier of subscription purchased.

| Alarm Details | Trigger | Policy | # Peers | Severity | Activated | Notes |
|--------------------------------------|-------------------|--------------------|---------|----------|----------------------|-------|
| <input type="checkbox"/> ROA Failure | 192.135.250.64/27 | Express_109_PREFIX | 12 | High | 22 Apr 24 19:10:46 U | 1 |
| <input type="checkbox"/> ROA Failure | 72.163.7.128/25 | Express_109_PREFIX | 12 | High | 22 Apr 24 19:10:45 U | 2 |
| <input type="checkbox"/> ROA Failure | 64.100.58.176/28 | Express_109_PREFIX | 12 | High | 22 Apr 24 19:10:45 U | 3 |
| <input type="checkbox"/> ROA Failure | 64.102.249.128/25 | Express_109_PREFIX | 12 | High | 22 Apr 24 19:10:45 U | 4 |
| <input type="checkbox"/> ROA Failure | 64.100.58.224/27 | Express_109_PREFIX | 12 | High | 22 Apr 24 19:10:45 U | 5 |
| <input type="checkbox"/> ROA Expiry | 192.135.250.0/24 | Express_109_PREFIX | 154 | High | 22 Apr 24 19:10:44 U | 6 |
| <input type="checkbox"/> ROA Failure | 72.163.4.128/25 | Express_109_PREFIX | 12 | High | 22 Apr 24 19:10:43 U | 7 |
| <input type="checkbox"/> ROA Failure | 173.38.246.64/26 | Express_109_PREFIX | 12 | High | 22 Apr 24 19:10:42 U | 8 |
| <input type="checkbox"/> ROA Failure | 64.100.59.0/25 | Express_109_PREFIX | 12 | High | 22 Apr 24 19:10:42 U | 9 |
| <input type="checkbox"/> ROA Failure | 173.37.145.0/25 | Express_109_PREFIX | 12 | High | 22 Apr 24 19:10:39 U | 10 |
| <input type="checkbox"/> ROA Failure | 72.163.4.0/25 | Express_109_PREFIX | 12 | High | 22 Apr 24 19:10:39 U | 11 |
| <input type="checkbox"/> ROA Failure | 173.37.145.128/25 | Express_109_PREFIX | 12 | High | 22 Apr 24 19:10:39 U | 12 |

Figure 4.
Alarm history

IP prefix alarm details

Each alarm event can be viewed in detail. Detailed BGP event information can be viewed to assess the cause and impact of each BGP event signature. Detailed forensic BGP update information can then be viewed to locate offending route change sources and to quickly identify the appropriate remediation action. A history of the frequency of each BGP event signature can then be compared to understand related route events for the same policy.

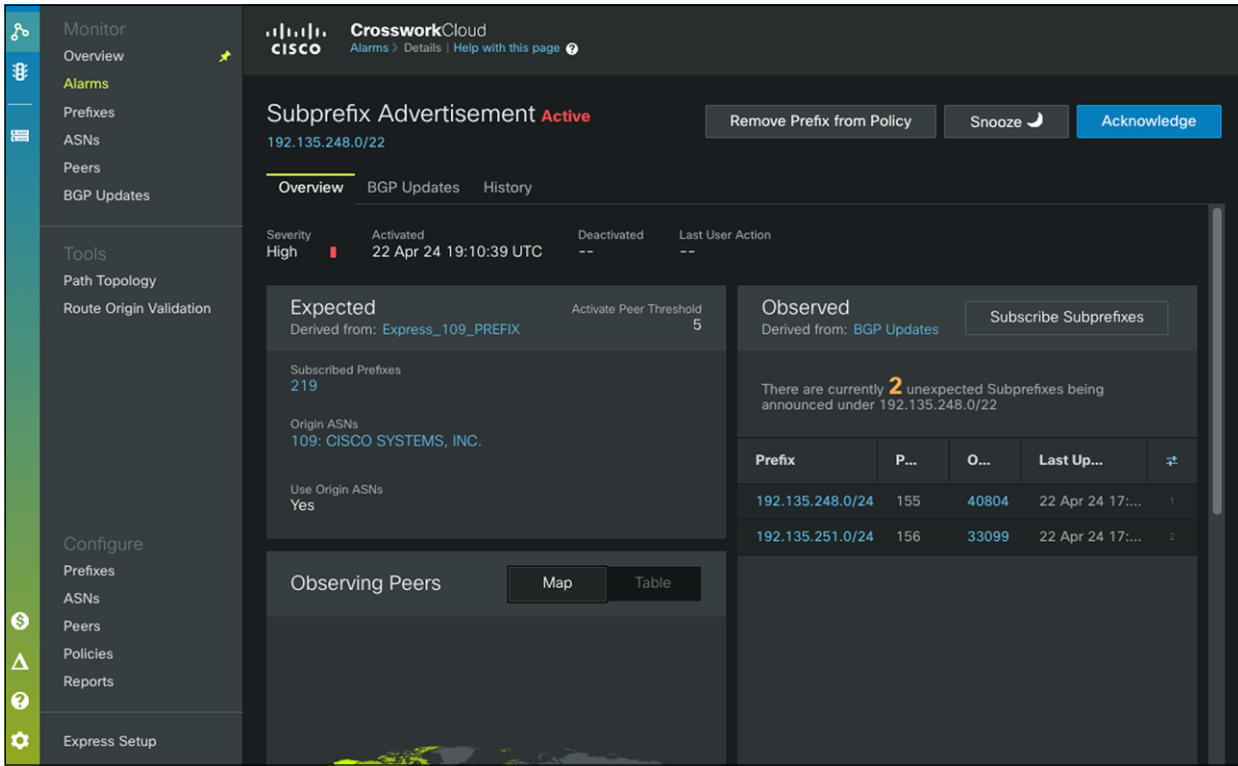


Figure 5.
Detailed BGP event information

IP Prefix Path Topology

Crosswork Cloud Network Insights Path Topology makes it easy to search key BGP changes over time. IP Route Prefix Path Topologies can be observed as a point in time 'Snapshot' or as a 'Time Comparison'. BGP path events can be visualized to help identify changes in Autonomous Systems (AS) paths via intermediate networks. Filters support visualization of BGP updates from All Peers or specifically Peers owned by the user.

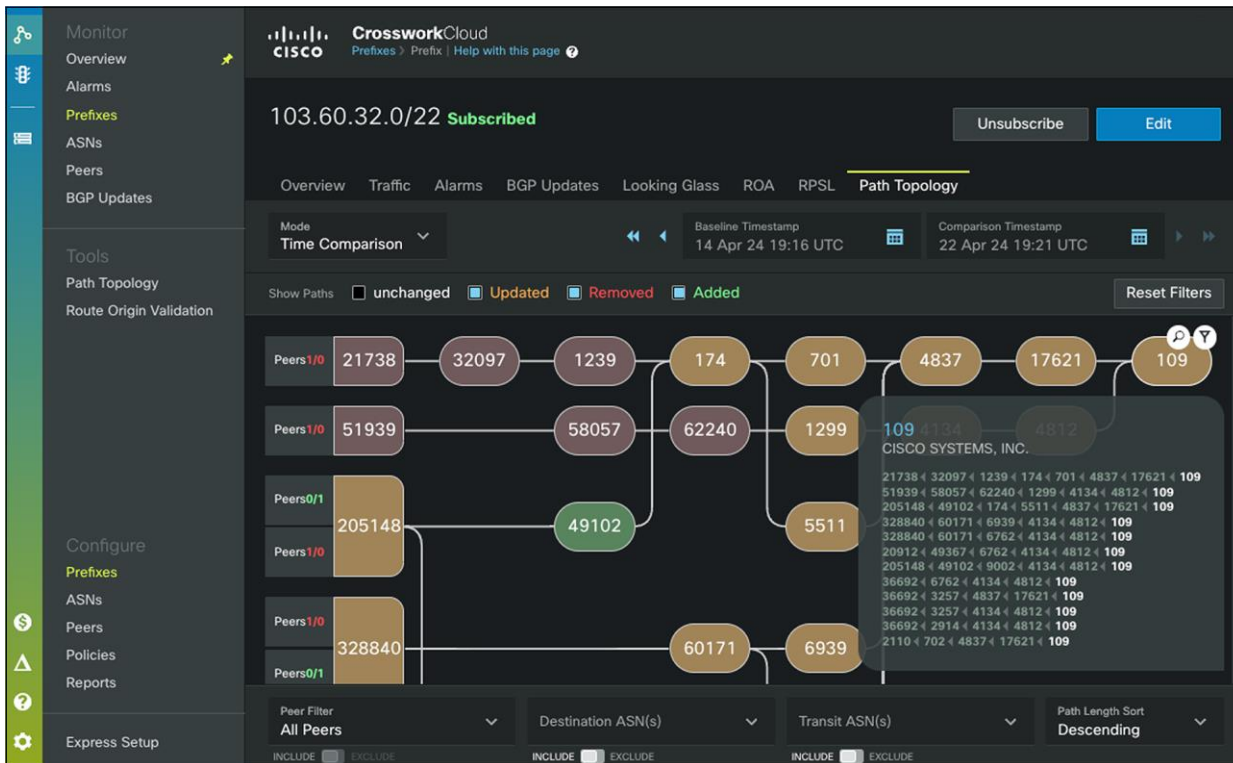


Figure 6.
BGP Path Topology View

Features and benefits

Table 1. Lists the main features and benefits of the Crosswork Cloud Network Insights

| Feature | Benefit |
|-------------------------------------|--|
| Cloud Delivered | <ul style="list-style-type: none"> Easy to order, provision, and instantly available. Faster delivery of ongoing innovation. Easier to integrate with other systems through APIs. |
| Software as a Service (SaaS) | <ul style="list-style-type: none"> Less technical and operational overhead needed to set up, operate, and maintain servers and software. Ability to seamlessly add capacity, scale, and features, securely and reliably. Frees you to focus on business objectives. |

| Feature | Benefit |
|----------------------------------|--|
| Subscription Pricing | <p>Flexibility of payments, with 12- to 60-month terms and annual renewals.</p> <p>Lower up-front CapEx and overall Total Cost of Ownership (TCO).</p> <p>Ability to add capacity or term as needed to meet business requirements.</p> <p>Three subscription tiers[*]:</p> <ul style="list-style-type: none"> • Essentials • Advantage • Premier <p>Subscription tiers are based on the number of configured IP Prefixes to be monitored.</p> <p>Subscription tiers cannot be mixed in the same tenancy.</p> <ul style="list-style-type: none"> • [*]FREE tier is also available continuing BGPmon.net's legacy |
| External Route Analysis | <p>Analyze any IPv4 and IPv6 prefix regardless of paid subscription state.</p> <ul style="list-style-type: none"> • Global BGP looking glass for each prefix. • Global BGP update history with lookback based on entitlement tier. • Internet Registrar Maintainer Information (RIR). • Route Origin Authorization (ROA) status. • Resource Public Key Infrastructure Information (RPKI). |
| External Route Monitoring | <p>Subscribe based on the number of IP prefixes to be monitored.</p> <p>Internet IPv4 and IPv6 Prefix Analysis and Monitoring.</p> <p>Internet BGP ASN Analysis and Monitoring.</p> <p>Monitor IPv4 and IPv6 prefixes using BGP from your edge routers.</p> <ul style="list-style-type: none"> • Origin and Transit Routes. • DNS Root Server Routes. • Certificate Authority ROA/ROV Server Routes. • Key third-party external routes (AWS, GCP, Azure, etc). • Peer monitoring (local and remote) <p>Monitor your edge routing devices using BGP for out-of-band connectivity awareness.</p> <ul style="list-style-type: none"> • Ensure your management infrastructure is available remotely. |
| BGP AS Monitoring | <p>Dashboard provides quick insights into an ASN's current and historical number of prefixes flapping, update and withdrawal trending, and deviation from baselines.</p> <p>AS Daily Routing Reports.</p> <p>Detailed sliding time series charts show subscribed ASNs and their properties, including.</p> <p>Alerts and Notifications:</p> <ul style="list-style-type: none"> • Alarm Count. • Alarm Type. • Alarm State. • Unexpected Prefix Detection (not previously seen).. • Prohibited Prefix Detection (RFC 1918 and Bogon lists) • Automated WHOIS and Regional Internet Registry (RIR) information lookup. <p>Per Autonomous System Number (ASN):</p> |

| Feature | Benefit |
|------------------------------|---|
| | <ul style="list-style-type: none"> • Up/down status of origin peers. • Prefix change statistics (origin and transit). • Origin Prefix Count. • Origin Prefix State Snapshots. • Origin Prefix Geo Location. • Origin Prefix Global Update History. • Origin Prefix Global Looking Glass. • Automated WHOIS and Regional Internet Registry (RIR) information lookup. |
| BGP Prefix Monitoring | <p>Dashboards that provide current and historical information for a set of subscribed prefixes.</p> <p>Daily Prefix Routing Reports.</p> <p>Detailed sliding time series charts show subscribed Prefixes and their properties.</p> <p>Alarms and Notifications, including:</p> <ul style="list-style-type: none"> • Prefix Change. <ul style="list-style-type: none"> ◦ Advertisement. ◦ Withdrawal. ◦ AS Path Expression. • Prefix Hi-Jack. <ul style="list-style-type: none"> ◦ More-Specific Prefix Detection. ◦ ROA Failure. ◦ Origin ASN Violation (without ROA). ◦ New AS Path Edge (man in the middle). • Prefix Leak. <ul style="list-style-type: none"> ◦ Next Hop AS Path Violation. ◦ ASN Path Length Violation. ◦ Parent Aggregate Change. • Prefix Compliance. <ul style="list-style-type: none"> ◦ ROA Expiry Approaching. • Per Prefix: <ul style="list-style-type: none"> ◦ BGP Path Topology Visualization. ◦ BGP Global Update History. ◦ BGP Global Looking Glass. ◦ Origin ASN lookup. ◦ Origin Geo Location. ◦ Automated WHOIS and Regional Internet Registry (RIR) information lookup. |

| Feature | Benefit |
|---|---|
| BGP Peer Health | <p>Remote monitor your peering router health and its adjacency through BGP connection</p> <p>Detailed sliding time series charts showing peer statistics, including:</p> <ul style="list-style-type: none"> • Peering Connection Events • Prefix Withdrawals and Advertisements • Prefix and ASN Statistics <p>Alarms and Notifications, including:</p> <ul style="list-style-type: none"> • Alarm Count • Alarm Type • Alarm State • Peer Specific <ul style="list-style-type: none"> ◦ Prefix Alarms and Notifications ◦ ASN Alarms and Notifications ◦ BGP Session Availability ◦ Prefix Count (IPv4 and IPv6 specific) ◦ Unexpected Prefix Detection (not previously seen) ◦ Prohibited Prefix Detection (RFC 1918 and Bogon lists) ◦ DNS and CA Prefix Withdrawal ◦ BGP Policy Violation Detection |
| BGP ROA Validation Service | <p>Monitor and alert on BGP Route Origin Authorization (ROA) state and incidents.</p> <ul style="list-style-type: none"> • RPKI Status Checking (Valid, Invalid, Unknown, Max Path). • RPKI Signature Expiry and Alarms. • Route Origin Validation. <ul style="list-style-type: none"> ◦ BGP update Validation using ROA information. |
| BGP Tools | AS Path Topology |
| Data Learning Intelligence | <p>Provides deeper insight into event correlation and root cause analysis.</p> <p>Enables machine learning methods to be applied to various data and event inputs.</p> <p>Send alarms to external event management or AIOps platform for deeper learning.</p> |
| Collaboration Platform Integration | <p>Collaboration platform notifications present a unique ability to send alarm notification events into an open channel with external parties to help validate and solve issues.</p> <p>Traditional alarm notifications via:</p> <ul style="list-style-type: none"> • Email • SMS • Structured Syslog to Cloud File Storage (AWS S3 & Google Storage) ^{1 & 6} <p>Collaboration integration sends alarm notifications via:</p> <ul style="list-style-type: none"> • Cisco Webex[®] Teams Channel ² • Microsoft Teams Channel ³ • PagerDuty^l ⁴ • Slack Channel ⁵ |

| Feature | Benefit |
|---------------------------------------|--|
| API Framework | <p>Provides easy-to-use APIs for all tasks.</p> <ul style="list-style-type: none"> • REST/JSON “pull” based APIs. • gRPC/gNMI “streaming” based APIs. <p>The platform can be integrated into other SDN platforms:</p> <ul style="list-style-type: none"> • Validate route change visibility as part of an automation playbook. • Use alarm events to trigger automation playbooks. <p>Configure all interface components, including.</p> <ul style="list-style-type: none"> • Prefixes and ASNs • Policies • Notification Endpoints <p>The platform supports Stream based BGP Events to enable event-driven frameworks.</p> |
| Multitenant | <p>Role-Based Access Controls.</p> <ul style="list-style-type: none"> • Admin, Read/Write, Read Only. <p>Cisco.com Federated One Identity for easy access to multiple customer tenancies.</p> |
| Network Automation Integration | <p>Trigger Per Prefix Automation Events using customizable criteria:</p> <ul style="list-style-type: none"> • Prefix pre-change and post-change state checking. • Prefix Presence, Absence, Redundancy, and Coverage. • Prefix BGP ASN Path Match Criteria. • Prefix BGP Community Match Criteria. <p>Integrated Options with Cisco Crosswork Portfolio solutions like Network Controller, Work Flow Manager, WAE and NSO.</p> |

¹ AWS S3 is the property of Amazon Web Services, Inc. Customers are required to provide their own storage subscription entitlement.

² Cisco Webex Teams is the property of Cisco Systems, Inc. Customers are required to provide a separate subscription and API entitlement.

³ Microsoft Teams is the property of Microsoft Corp., Inc. Customers are required to provide a separate subscription and API entitlement.

⁴ PagerDuty is the property of PagerDuty, Inc. Customers are required to provide a separate subscription and API entitlement.

⁵ Slack.com is the property of Slack Technologies, Inc. Customers are required to provide their own subscription and API entitlement.

⁶ Google Drive is a the property of Google LLC. Customers are required to provide their own storage subscription entitlement.

Product subscription tiers

Crosswork Cloud Network Insights is a natural evolution of the BGPmon.net solution. Customers familiar with the BGPmon.net Premium and free services can subscribe to the equivalent Crosswork Network Insights Essentials subscription and free tiers. This Essentials tier provides approximate price parity and more features with the now deprecated (circa Feb 2024) BGPmon.net Premium and free Services.

The Crosswork Cloud Network Insights Advantage and Premier subscription tiers expand on the Crosswork Cloud Essentials tier to provide new insight and analysis capabilities. These new tiers provide expanded near real-time and historical state information for each monitored IP prefix. Building upon the Essentials tier, the Advantage and Premier tiers will continue to be enhanced with new alarm, reporting, and analysis capabilities

over time. The primary difference between the Advantage Tier and the Premier Tier is the accessibility of historical route information and its use in event normalization.

| Essentials* | Advantage | Premier |
|---|---|---|
| BGPmon Parity+ Basic alarms 1 day history *Free Tier available limited capabilities | Essentials+ Enhanced alarms 7 days history RPKI Monitoring Peering monitoring | Advantage+ Latest alarms 90 days history Future features |

Figure 7.
Crosswork Cloud Network Insights Subscription Tiers

Table 2.

| Description | Entitlement Model |
|--|--|
| Crosswork Cloud Network Insights Essentials Tier* | Per Configured IP Route Prefix Monitored |
| Crosswork Cloud Network Insights Advantage Tier* | Per Configured IP Route Prefix Monitored |
| Crosswork Cloud Network Insights Premier Tier* | Per Configured IP Route Prefix Monitored |

Cisco environmental sustainability

Information about Cisco’s environmental sustainability policies and initiatives for our products, solutions, operations, and extended operations or supply chain is provided in the “Environment Sustainability” section of Cisco’s [Corporate Social Responsibility](#) (CSR) Report.

Reference links to information about key environmental sustainability topics (mentioned in the “Environment Sustainability” section of the CSR Report) are provided in the following table:

| Sustainability topic | Reference |
|--|---------------------------------|
| Information on product material content laws and regulations | Materials |
| Information on electronic waste laws and regulations, including products, batteries, and packaging | WEEE compliance |

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Cisco and Partner Services

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Cisco offers a wide range of services to help accelerate your success in connecting to Cisco Crosswork Cloud Network Insights. The innovative Cisco Services offerings are delivered through a unique combination of people, processes, tools, and partners and are focused on helping you increase operational efficiency and improve your network control. Cisco Advanced Services use an architecture-led approach to help you align your network infrastructure with your business goals and achieve long-term value. Cisco Crosswork™ products can be combined with the Cisco SMARTnet® service to help you resolve mission-critical problems with direct access at any time to Cisco network experts and award-winning resources. Spanning the entire network lifecycle, Cisco Services offerings help increase investment protection, optimize network operations, support migration operations, and strengthen your IT expertise. For more information, please visit

www.cisco.com/go/services.

Cisco Capital

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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](#).

Learn more

For more information on Cisco's network automation portfolio for Service Providers please visit www.cisco.com/go/crosswork. To learn more about Cisco Crosswork or to schedule a demonstration contact your Cisco sales representative.

Document history

Table 3. Document revisions

| New or revised topic | Described in | Date |
|-------------------------------------|--|-------------------|
| IP Prefix Peer Alarm Updates | Features and Benefits | August 2023 |
| Offer updates | Features and Benefits | February 2022 |
| Offer and UI Updates | Crosswork Network Insights User Guide | July 30, 2021 |
| User Interface Update | Crosswork Network Insights User Guide | November 28, 2019 |
| Subscription Tiers Added | Crosswork Network Insights Release Notes | October 30, 2019 |
| General Availability | Crosswork Network Insights User Guide | January 30, 2019 |

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