

Network Management and Automation to Simplify Rural Service Provider Networking

Set yourself up for success

In today's competitive market, rural service providers must operate with a new level of agility and efficiency. Time to market of network services is critical, as is speeding up deployment of new devices and feature updates. An integrated, end-to-end management solution that provides greater efficiency, ease of deployment, and simple maintenance can reduce operating expenses while meeting heightened customer expectations.



Automation in the real world is complicated

Robust automation capabilities are also a competitive advantage because they help improve customer experience, increase revenues, and lower costs. However, automation is complicated; it requires extensive domain knowledge, and solutions are sometimes restricted to specific network types and vendors. In addition, automation solutions often provide a single-layered approach to network management instead of a holistic, multilayered view of the network.

Many service providers rely on home-grown scripting and basic playbooks to configure devices, typically with manual and error-prone processes that require ongoing maintenance. Smaller service providers may also have difficulty adopting complex management applications because of limited resources.

So how can rural service providers position themselves for success by driving automation and agile approaches to network management? Choosing the right automation and orchestration technology partner is crucial.

Cisco provides industry leading solutions in network automation and orchestration designed to simplify your network operations while minimizing maintenance and training costs.

Cisco Crosswork Automation

[Cisco Crosswork Network Automation](#) enables operational transformation by providing a scalable and efficient operations automation framework while making it easier for service providers to develop new automated operations with minimal development time and cost. Crosswork's broad range of applications addresses all aspects of the rural service provider's network operation journey and key use cases. These use cases bring value not only to infrastructure management, but also to related areas of a service provider business including processes, service automation, analytics, security, and policy.

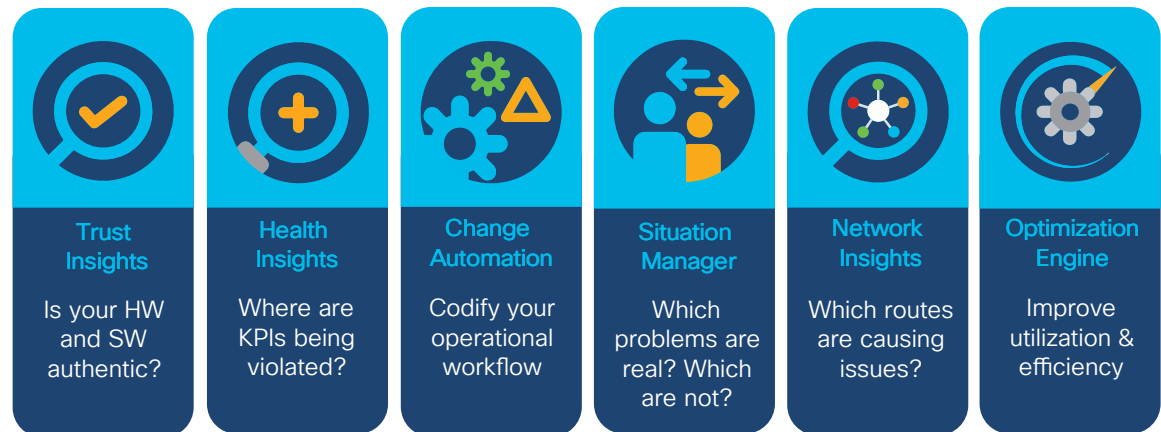
The Crosswork application portfolio focuses on the following critical service provider capabilities:

- Ensuring network devices adhere to trusted Known Good Values (KGVs)
- Immediate network health analysis with closed-loop and automated remediation
- Live alert monitoring with noise reduction and alert grouping
- Network routing analysis with monitoring for route leaks or hijacking
- Optimizing network paths for efficiency with real-time end-to-end transport network visibility

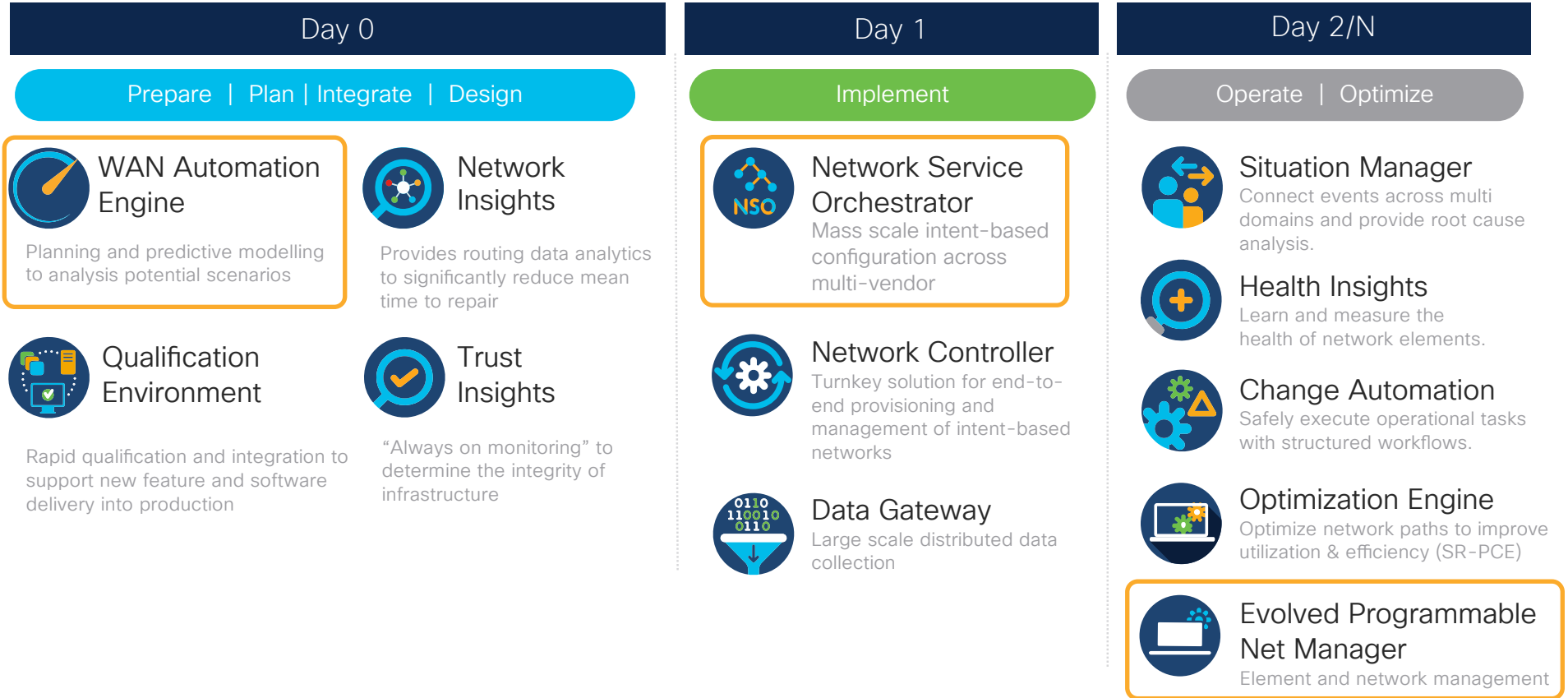
Cisco Crosswork offers the industry's most comprehensive automation platform. Service providers can optimize their network infrastructure using Cisco's closed loop automation with Crosswork and Network Services Orchestrator (NSO), along with Cisco Customer Experience services as part of a "better together" solution for full lifecycle management.

Network Operations Problems Addressed with Crosswork

Broad applications portfolio to address full closed-loop operational lifecycle



Automating the Network Operations Lifecycle with Cisco Crosswork



Cisco WAN Automation Engine (WAE), Network Service Orchestrator (NSO), and Evolved Programmable Network (EPN) Manager, are integral components of the Cisco Crosswork Automation portfolio of solutions for rural service providers and are described in more detail below.

Cisco EPN Manager

The [Cisco Evolved Programmable Network \(EPN\) Manager](#) is an all-in-one element and network management solution for today's converged routing and optical infrastructures. Businesses can improve operational effectiveness through simplified network administration, fast provisioning, and proactive assurance.

Network operators across the world, including local telephony cooperatives, utility companies, and international communications providers are leveraging Cisco EPN Manager for day-to-day network operations. With Cisco EPN Manager, network operators reduce the overhead involved in maintaining a precise inventory of a growing network, activate network capacity with greater accuracy, maintain an ongoing view of the state of the network, and reduce the time needed to maintain network availability. Presenting a visually appealing user interface, the EPN Manager provides a single product experience across management functions, which helps reduce training costs.

The Cisco EPN Manager is offered as a virtual appliance containing the needed software components in one package.

Benefits:

- Reduce overhead involved in maintaining an accurate inventory of your changing network.
- Reduce time to know the state of your network.
- Reduce time to react to network events and restore network service, if needed.
- Activate network capacity with greater accuracy.

Cisco WAN Automation Engine

The [Cisco WAN Automation Engine \(WAE\)](#) is a model-driven network design and planning tool that abstracts and simplifies your Wide Area Network (WAN) environment while making it fully open and programmable. You can accurately model growth in your network, simulate failures, and optimize metrics to maximize network utilization without sacrificing performance or cost.

Cisco WAE lets you automate time-intensive manual operations in service provider networks. Tasks that can be automated include managing, controlling, analyzing, and improving network performance and capacity planning.

Use cases and benefits:

- **Demand-Admission Requests:** Service providers can intelligently consider content location as well as network impact using the WAN Automation Engine when placing the demand. This helps ensure network health.
- **Failure Analysis:** Service providers can reduce the risk of network failures by proactively simulating multiple failure scenarios. The ability to examine collateral damage due to link, node, site, or Shared Risk Link Groups (SRLG) failures before they happen allows for more resilient network design.
- **Metric Optimization:** Interior Gateway Protocol (IGP) metrics are often set to meet a certain goal. However, there isn't an easy method of continuously examining if the metrics remain optimal under changing network conditions. WAE includes a comprehensive metric optimization tool to ensure your network utilization goals can be met without additional investment.
- **Growth Modeling:** WAE can take snapshots of the network state and project future growth based on tunable growth parameters. Being able to plan network growth based on observed traffic and topology allows for better budget planning and justification for future investments.

Cisco Network Services Orchestrator

[Cisco Network Services Orchestrator](#) is industry-leading software for automating services across traditional and virtualized networks, enabling you to deliver high-quality services faster and more easily. Use NSO to add, change, and delete services without disrupting overall service, and help ensure that services are delivered in real time.

NSO is unique in that it works in multi-vendor environments and technology stacks delivering consistent, seamless performance across a broad scope of environments. NSO has the broadest multivendor support in the industry and is constantly incorporating new vendor drivers into the platform. The Cisco NSO solution works with today's legacy network challenges, such as layer two or three Virtual Private Network (VPN) provisioning as well as next generation networking based on Network Functions Virtualization (NFV) and SDN.

Benefits

- Reduce errors and speed delivery of new network devices
- Faster, less error-prone time to update/upgrade networks
- Reduce support hours and free staff to perform other efforts
- Accelerate network changes, shortening time-to-market for new services

Conclusion

Rural service providers are looking to accelerate time to market for network services and speed up deployment of new devices and feature updates. The challenge lies in how to scale the transformation of network operations to become faster, more agile, less complex, and more cost-effective service delivery environments. For rural service providers, the industry leading network automation and orchestration solutions from Cisco are designed to simplify network operations, accelerate service delivery, and improve cost-efficiency.

Learn more

[Cisco Crosswork Automation](#)

[Cisco EPN Manager](#)

[Cisco WAN Automation Engine](#)

[Cisco Network Services Orchestrator](#)

Explore all of our [Rural Broadband Network Solutions](#)