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Cisco Network Assurance Engine: The Power to Predict

Solution overview

Cisco Network Assurance Engine is the critical intent-assurance pillar of Cisco's vision for intent-based data center networks. Built on Cisco's patented network-verification technology, Network Assurance Engine is a comprehensive intent-assurance solution that mathematically verifies the entire data center network for correctness. It gives operators the confidence that their network is always operating consistently with their intent, even as it changes dynamically.

With Cisco Network Assurance Engine operators can:

· **Predict the impact of network changes:** Proactively verify changes made to the network for correctness to drive increased change agility while significantly reducing the risk of network failures induced by human error.

· **Verify network-wide behavior:** Continuously analyze and verify the dynamic state of the network against intent and policy to ensure connectivity and eliminate potential network outages and vulnerabilities before any business impact occurs.

· **Ensure network security policy and compliance:** Ensure network security policies and check for compliance against business rules to reduce security risk and achieve provable continuous compliance by policy and state.

"Using the change verification process, we see Cisco Network Assurance Engine as a way to achieve higher levels of automation with increased certainty, allowing us to confidently move at a faster pace."

- Tania Mazza, Director
Networking Engineering for West Corporation (United States)

Operational benefits

· **Operator playbook:** Smart events that precisely convey the diagnosis, cause, impact, and remediation of complex network issues in a context-specific human-readable manner.

· **Codification of knowledge:** Codifies multiple years of Cisco Technical Assistance Center (TAC) and autonomous system cross-customer domain knowledge.

· **DVR audit trail:** Complete record of historical configuration, state and assurance analysis data that is easily retrievable, searchable, sortable, and filterable.

· **Offline analysis:** Enable customers to do remote on-demand analysis of multiple fabrics.

· **Ease of deployment:** Seamless deployment using controller credentials with no additional sensors; deep linking with Cisco ACI fabric.

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Cisco Network Assurance Engine innovation

As the industry's most comprehensive intent-assurance suite, Cisco Network Assurance Engine provides continuous verification and analysis of the entire data center network, giving operators the advantages of an always-on network that is agile with proactive change management. Cisco Network Assurance Engine brings together unique capabilities, including:

- **The most complete vision for intent-based networks in the industry:** Network Assurance Engine has been architected from the ground up for seamless integration with the Cisco **Application Centric Infrastructure** (Cisco ACI®) and Cisco **Data Center Network Manager** (DCNM) for **NX-OS** solution to deliver on the vision of intent-based networks for data centers.
- **Codified Cisco operational domain knowledge:** Built-in failure scenarios span several features and configurations, powering smart events with remediation steps.
- **Deep policy controller integration:** Integration helps ensure controller policy and configurations, correlating with dynamic network state.
- **Comprehensive analysis:** Network Assurance Engine captures, analyzes, and correlates the entire network's state, including switch configurations plus the hardware data-plane state.

Figure 1.   Cisco Network Assurance Engine: innovation
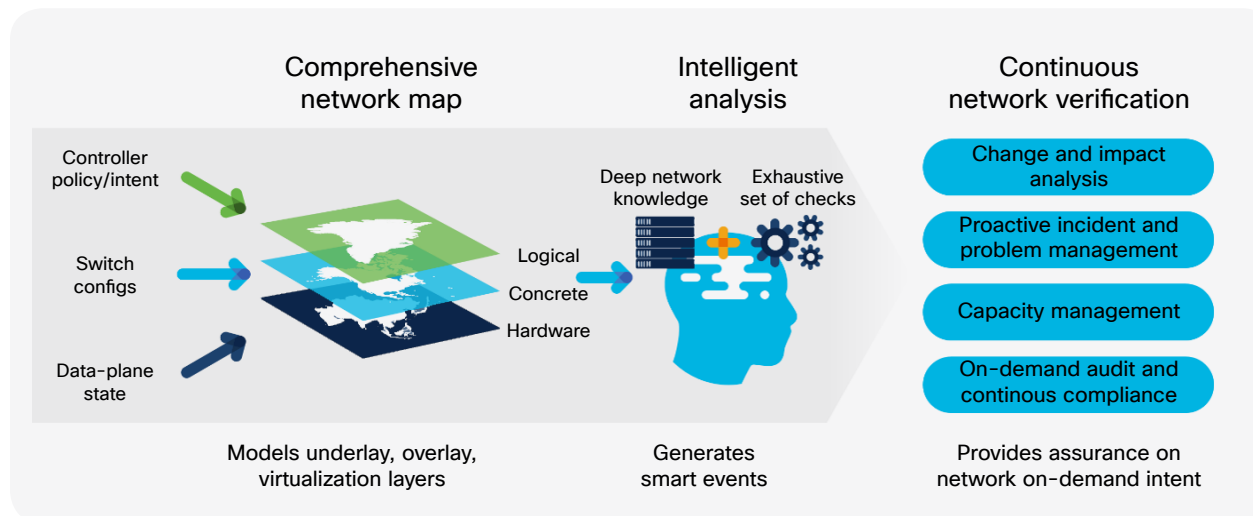
Business benefits

- **Increase change agility:** Exhaustive verification-driven methodology to drive faster change approvals and elimination of human error.
- **Automated data centers:** Powering Continuous Integration (CI) and Continuous Delivery (CD) pipeline with predictive change analysis enables deployments to be faster, simpler and efficient.
- **Avoid lost revenue and improve Service-Level Agreements (SLAs):** Deep, continuous fabric analysis and visibility to reduce outages and dramatically lower issues' Mean Time to Repair (MTTR).
- **Improve network security:** Complete network security policy analysis and visualization, and ability to check for compliance against business intent.
- **Accelerate migrations:** Day-zero configuration analysis and an accelerated learning curve of the software-driven networking paradigm to reduce migration timelines.
- **Enhance operational maturity:** Detailed runbooks to empower tier 1 and 2 network operations center teams and reduce escalations.
- **Compliance audits:** Network segmentation and configuration compliance analysis data can be saved and restored for auditing.

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Cisco Network Assurance Engine licensing model

- Cisco Network Assurance Engine licenses are included as part of the Cisco Data Center Networking (DCN) Premier license.
- For customers who have a Cisco DCN Essentials or Advantage license, customers can acquire Cisco Network Assurance Engine licenses through a Day2Ops bundle.
- Cisco Network Assurance Engine licenses are available in subscription mode only.
- For Cisco ACI environments, the number of device licenses required is equal to the sum of the leafs. The spine switches do not require a license.
- For a Cisco NX-OS/DCNM environment, licenses are required for all the devices. The number of add-on device licenses required is equal to the sum of the leafs, fixed spines, and/or modular spines.
- To learn more about Cisco NAE licensing, click here.
- Contact your Cisco account team to learn pricing and additional details.

Cisco Services for Network Assurance Engine

Accelerate implementation and adoption, gain network insight, speed remediation, and reduce risk with Cisco implementation service and solution support for Cisco Network Assurance Engine. Through knowledge sharing and experienced guidance, network operators can realize the full benefits of their product investment. Cisco Services experts focus on quick installation, discovery of the most important network and configuration smart events, and analysis of top vulnerabilities and provide strategic recommendations for remediation. By leveraging unique insights and expertise gained from many Cisco ACI and DCNM/NX-OS deployments, Cisco Services can help identify and analyze the real impact of Cisco Network Assurance Engine to enhance and ensure data center reliability.

Available now, Cisco Network Assurance Engine is in production with customers globally across verticals spanning cloud service providers, manufacturing, financial services, healthcare, information technology, and retail, among others.

Deployment model

The Cisco Network Assurance Engine can be deployed as:

- A software-only virtual form factor that runs on three virtual machines, with specifications depending on the scale of the customer's fabric.
- The product is nonintrusive, requiring only fabric credentials without the need to deploy any sensors.
- Cisco Network Assurance Engine can be deployed with a one click upload and installed on the Cisco Nexus® Dashboard. Another option is to deploy using the virtual form factor that runs on three virtual machines; this typically takes less than 30 minutes to deploy.
- An application on the Cisco Nexus Dashboard that can be downloaded from the Cisco DC App Center.

Customer anecdotes

"Cisco Network Assurance Engine's approach of 'always-on assurance' for our network and services will make our operating model more proactive and enable us to remain as the best-in-class service provider to our customers."

- Erik Sohlman
Senior Manager and CTO, Axians Nordic (Sweden)

"Cisco Network Assurance Engine enables a new level of quality for our application migrations. With a detailed understanding of the policy model and proactive verification of all changes, this technology can help us greatly reduce the risk of production outages and accelerate our timelines."

- Jan Holzmann
Team Lead, Data Center Network Operations, Robert Bosch GmbH (Germany)

"In our trial of cisco Network Assurance Engine, we were able to analyze tens of thousands of network security policies to immediately identify compliance violations in our policies, find opportunities to significantly optimize hardware resource utilization, and give a clear understanding of our entire policy space so we can make changes faster and with more confidence."

- Job van Wees and Johnmar Mulder-Wolswijk
Senior Network specialists, DICTU (Netherlands)

"With Cisco Network Assurance Engine, we have a technology that promises the ability to proactively avoid any disruption to our manufacturing line, ensuring we meet and exceed the uptime SLAs. As we expand globally, having Network Assurance Engine will enable us to bring new data centers online quickly, with confidence, and allow our core business to move at a faster pace."

- Facundo velurtas
Network Engine, Tenaris (Argentina)

For more information

Please contact your account team to request your free trial and additional information.

To learn more about Cisco Network Assurance Engine, please visit https://www.cisco.com/c/en/us/products/data-center-analytics/network-assurance-engine/index.html