



Cisco Network Assurance and Insights

From reactive to proactive operations

Introduction

Notwithstanding the scale and complexity of an infrastructure that is ever growing, Network administrators are expected to prevent problems and recover from them faster when they do occur.

Troubleshooting, root-cause analysis, and remediation of network issues are common challenges for any infrastructure operation. Though just three simple actions, they require network operators to have a high level of domain expertise and the ability to correlate complex IT environments to prevent or fix issues while upholding the infrastructure uptime to honor Service-Level Agreements (SLAs) with minimum disruption.

Benefits to business:

1. Highest Operational Uptime and Outage Mitigation to meet SLAs/SLOs
2. OpEx (Operational Expenditure) Optimization and IT Strategic Agility Enhancement
3. Security Compliance and Assurance

Benefits to IT:

1. Faster remediation of issues while increasing agility
2. Allow engineers to focus on mission critical work
3. Greater confidence and less risk in operating your network

According to latest Gartner report “2019 Strategic Roadmap for IT Operations Monitoring”

What's happening on Day 2 and what needs to change?

Figure 1. Customer challenges



We want 100% uptime and we want it soon. The problem is that the current network operations tools that network administrators are equipped with do not address the needs of the modern network. These tools are fragmented, reactive in nature, outdated and limited in insights. They don't provide a holistic picture of the entire Data Center network.

The **Cisco Network Assurance and Insights** portfolio today provides a solution to all these challenges especially for Day 2 operations use cases. Our Assurance and Insights suite consists of 3 apps.

1. Cisco Network Assurance Engine (NAE)
2. Cisco Network Insights for Resources (NIR)
3. Cisco Network Insights Advisor (NIA)

IT Ops monitoring tools and practices have been around for decades. According to Gartner, "Digital business and technology disruptions are forcing organizations to re-evaluate their IT monitoring strategy." In the 2019 Strategic Roadmap for IT Operations Monitoring, Gartner advises to:

- Align business goals with customer experience
- Improve agility and automation
- Maximize insights via AIOps

Citation/Reference: <https://www.gartner.com/en/documents/3941791/2019-strategic-roadmap-for-it-operations-monitoring>

Cisco Assurance and Insights Overview

The Cisco Assurance and Insights portfolio has been built specifically to address Day2 Operations use cases to assure, monitor and troubleshoot after the Data Center network devices have been configured and secured.

Figure 2. Day-2 Operations stack

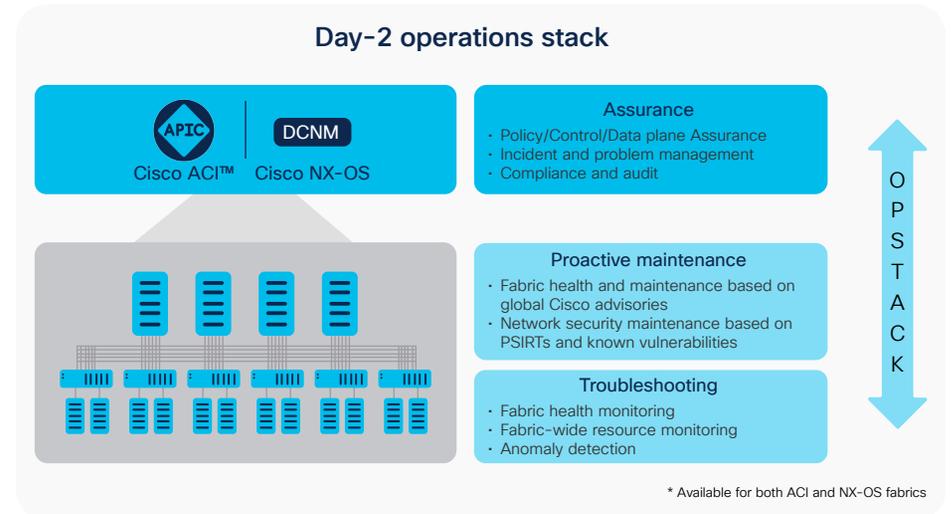


Figure 3: Network Assurance Engine: How it works

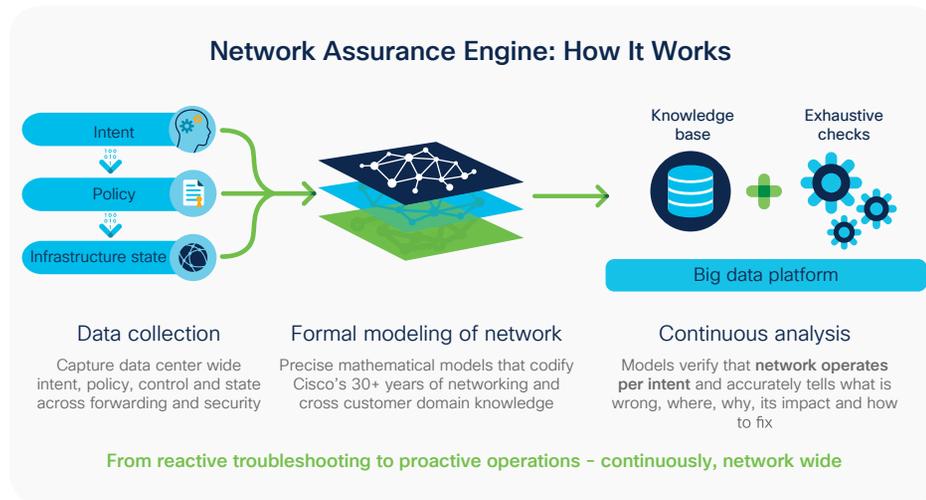
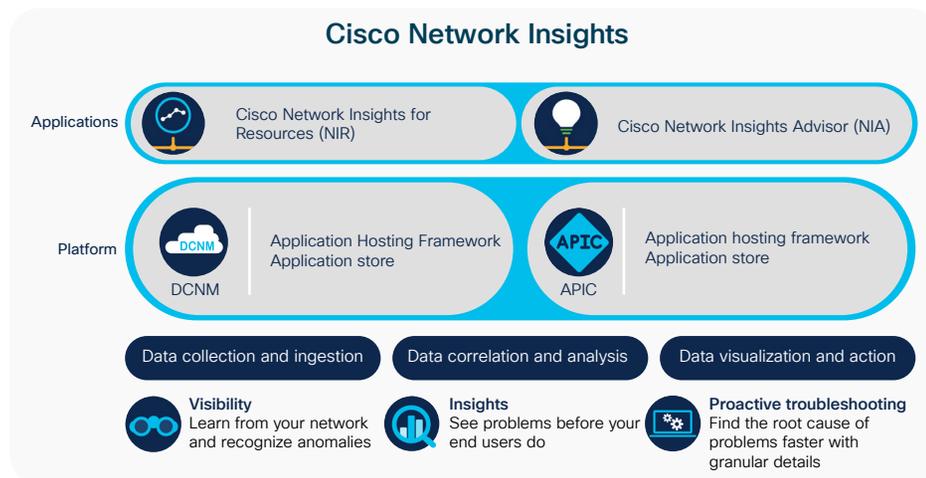


Figure 4: Cisco Network Insights



Cisco Network Assurance Engine is an intent assurance suite that verifies the entire network for correctness, giving operators the confidence that their network is always operating consistent with their intent. It uses formal verification to build a real-time model of the network, derived from the continuous collection of each device's state and configuration. This provides an accurate dynamic representation of the network, as opposed to a static diagram to 1) Predict impact of network changes 2) Verify network-wide behavior and 3) Assure network security policy and compliance.

Network Insights for Resources (NIR) application on the other hand monitors, records and analyzes hardware and software telemetry data over time to identify anomalies in the fabric and help automate Day-2 network operations such as troubleshooting, root-cause analysis, capacity planning and remediation. It helps infrastructure owners comply with SLAs required by businesses.

The Cisco Network Insights Advisor (NIA) application helps customers prevent unscheduled outages and lower downtime for data center networks, especially for Day2 network operations use-cases by providing proactive notifications covering security advisories, critical bugs, end-of-life and end-of-support announcements. It gives actionable recommendations based on known issues and Cisco best common practices.

Together these 3 apps deliver the capability to:

- **Assure intent:** Assure business intent is met, continuously verify policy compliance, analyze and assess the impact of changes, and verify network-wide behavior to help prevent outages.
- **Monitor proactively:** Proactively monitor network fabrics – get service level agreement insight, views into latency and throughput, and proactive utilization monitoring.
- **Troubleshoot real-time:** Provide proactive advice with a focus on maintaining availability. Create advisories for issues found and suggests remediation steps.

Call to action

<https://www.cisco.com/c/en/us/products/data-center-analytics/index.html>

What it does

Some key innovations that this portfolio brings to the market are below:

1. **Automated Subject Matter Expert:** Network Insights builds a knowledge base by collecting software and hardware telemetry data. It has an in-depth understanding of protocols and features that run on the environment and can correlate and differentiate between expected vs unexpected behavior. It builds a relationship between behavior, symptoms, logs, solutions and can derive root causes of the problem. It's a virtual assistant or an automated SME always holding your back.
2. **Flow Telemetry:** Industry's first detailed end-to-end packet path with information about flow such as 5-tuple, Latency, Tenant, VRF, End-Point groups, Packets, Drops and more. It detects and root-cause data plane issues.
3. **Fast Troubleshooting and Proactive advisory notifications:** Network Insights provides advisories customized to the customer environment on maintenance issues which require their immediate attention so that the end user doesn't have to plow through oceans of data. You can troubleshoot across the data center with the help of connected TAC, notification of known issues and steps to fast remediation.