Active Testing and Monitoring for Network Performance Optimization



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Detecting microbursts and macro user experience issues

Slow is the new down.

In recent years, modern connected technologies and online services have become essential to business success, underlining the critical importance of network performance.

But not all monitoring solutions are created equal. To preserve digital transformation investments and carve out competitive differentiation, organizations need intelligent digital experience monitoring solutions to detect minor service degradations much earlier.

Degradations are destructive

Five years ago, the only types of companies that absolutely relied on microsecond accuracy and millisecond sampling rates were in financial services. Even a delay of a minute could impact the ability of these businesses to trade quickly and reliably, damaging brand reputations and potentially driving customer churn. Today this applies to virtually all applications, organizations, and industries.

Network performance could be the difference between success and failure for a manufacturing company whose connected systems are regularly adjusted to modify what's rolling off the production line. This is also true for a professional services business that relies on the seamless performance of Software-as-a-Service (SaaS) applications to drive the productivity of its knowledge workers.

The bottom line is that network performance matters today more than ever. As InterContinental Hotels Group's CIO, Eric Pearson, said, "It's no longer the big beating the small, but the fast beating the slow."

When a network or application starts to degrade, its performance slows, data becomes stale, and retransmissions occur. The result can be hugely damaging to the user experience and service levels.

This is more common than you may imagine: Data from Sapio Research shows that 40% of enterprises experience a network brownout at least several times a week, and one in five IT leaders report them on a daily basis. On top of that, 53% of IT teams spend an average of 2.5 hours resolving each network brownout. [Source: Sapio Research]

Active monitoring delivers real benefits

- Microsecond accuracy
- Microburst capacity monitoring (1 ms)
- Full line rate Service Activation Testing (SAT) testing and remote packet capture on-demand
- Low cost, high value for rapid ROI
- Advanced customer analytics and reporting portal

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Proactively identify issues before they impact user experience

Active monitoring is a key method of holistically testing networks via end-to-end monitoring between nodes. It does this by injecting test packets into the network and then recording what happens as they travel across it. By continuously probing the network for problems and using real-time performance analytics to correlate data, organizations can begin to get ahead of the game by spotting degradation problems before they seriously impact the end-user experience.

The difference with Cisco® Crosswork Assurance is in the sheer level of accuracy and granularity that it provides – the platform's microsecond accuracy and millisecond granularity enable the most detailed, fine-grained insight available on the market today.

Crosswork Assurance active monitoring capabilities can proactively identify any degraded services by monitoring Layers 2 to 4 and immediately determining the root cause of the problem. Is the issue caused by the application, the network, the protocol, the cloud, SaaS, or even the individual user device? You'll know.

Key features of Cisco Crosswork Assurance

A combination of virtual software-based Assurance Sensors and Assurance Small Form-Factor Pluggables (SFP) helps ensure that deployment is quick, easy, and low cost. And the accuracy provided is like having an engineer at the end of every circuit.

Crosswork Assurance delivers value with:

Service Activation Testing (SAT) or turn-up testing: Full line-rate stress testing of circuits on demand with no need for truck rolls. Test any circuit in any direction to ascertain beyond a doubt whether a circuit is meeting Service Level Agreements (SLAs). Industry standard tests follow RFC 2544 and Y.1564.

TWAMP (Two-Way Active Measurement Protocol): Microsecond-accurate, 24x7 continuous performance monitoring of every critical flow on all circuits, measuring packet loss, latency, and jitter. Over 50 Key Performance Indicators (KPIs) and real-time metrics are recorded every second.

- Microsecond accuracy
- Centralized and distributed
- Both traffic actuation and reflection

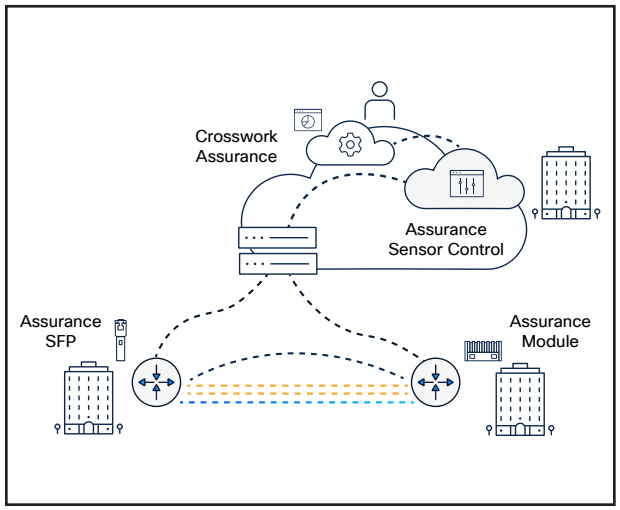


Figure 1. SAT with Crosswork Assurance

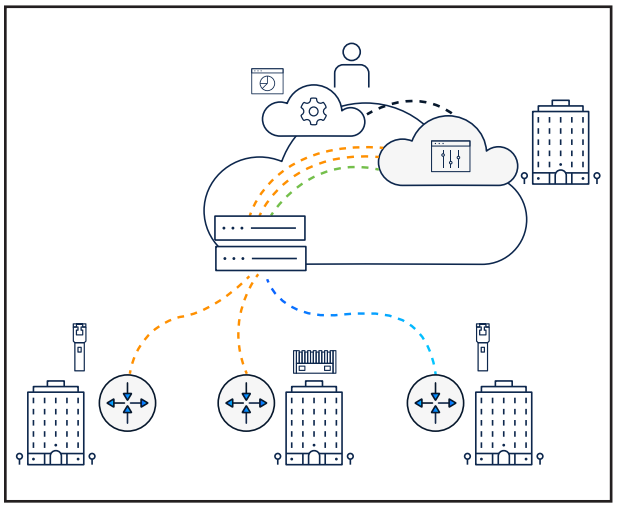


Figure 2. Traffic actuation and reflection

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Built-in flow broker capabilities:
On-demand remote packet capture to accelerate troubleshooting, fault isolation, Quality of Experience (QoE) reporting, and trending up to the application layer – with no need for truck rolls.

- Targeted flows
- Packet splitting
- Time stamping
- Lossless recovery

Built-in flow meter capabilities: Advanced measurement and monitoring of bandwidth utilization for multiple bidirectional traffic flows. Millisecond monitoring of microburst capacity on each circuit and of every critical flow for highly granular results.

- Exact capacity monitoring every 1 ms, 10 ms, and 100 ms for multiple flows
- Real-time flow metering

AI-enabled predictive analytics and reporting: A single-view analytics platform, Crosswork Assurance, is driven by machine learning to correlate active and passive measurements from Assurance Sensors and third-party data sources for immediate root cause identification. Metadata tagging enhances troubleshooting and diagnostics, with 24x7 proactive focus on service degradation. Tailored reporting dashboards improve IT productivity and collaboration.

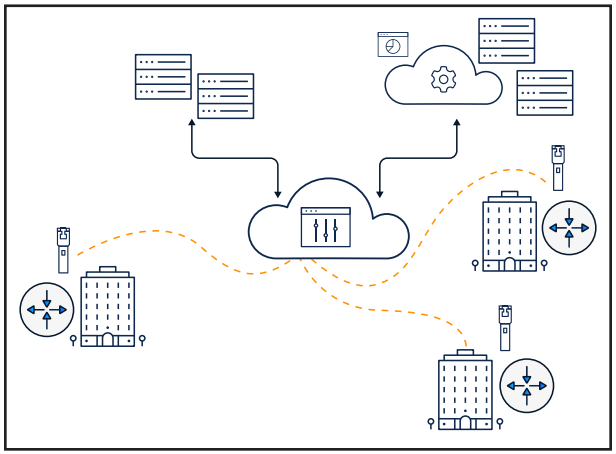


Figure 3. Lossless recovery

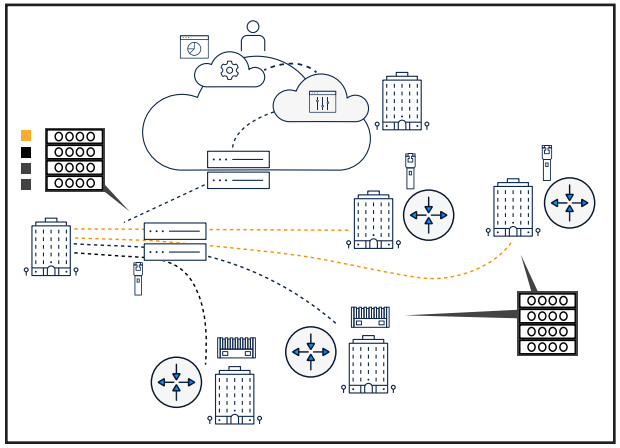


Figure 4. Real-time flow metering



Figure 5. Crosswork Assurance visualization and AI-powered analytics dashboard

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Quick to install, quicker time to value

10X reduced resolution time of any performance issues with a solution that installs in minutes.

- Fast and easy plug and go deployment
- Remote firmware upgrade future-proofing
- Vendor agnostic
- Supports in-line and out-of-line deployment
- IP-agnostic mode (no IP address required)
- Northbound REST API for easy integration
- Automated orchestration

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Immediate insight drives business value

Application performance degradation is the enemy of the digital-first business. Crosswork Assurance high-definition active monitoring detects issues early on to preserve and enhance service levels and brand reputation, and to minimize any costly impacts on end-user productivity.

Business benefits include the following:

Early detection of degradations, before end users experience them

Early detection of application and network degradation allows you to address issues before they cause service disruptions and affect the digital experience. When addressed sooner, degradation issues are cheaper and easier to fix, breaking the destructive cycle of reactive “firefighting” and, many times, avoiding customer dissatisfaction and complaints in the process.

Operational efficiency and improved collaboration

Crosswork Assurance drives efficiencies across network operations teams through:

- Reduced need for firefighting
- Fewer reactive trouble tickets
- Quicker Mean Time to Insight (MTTI)
- Faster Mean Time to Resolution (MTTR)
- Increased productivity
- More time to focus on service improvements rather than troubleshooting

Improved network performance, now and in the future

Detecting degradations early avoids service disruption and improves stability. Identifying the root cause of issues and ensuring that repeat incidents do not occur drives even bigger improvements in network performance.

Enhanced troubleshooting, driving rapid diagnostics and resolution

The primary aim of the platform is early detection of degradations to avoid service issues altogether. However, when there are problems, built-in troubleshooting tools enable rapid diagnostics and root cause analysis. This means faster resolution times and minimal disruption.

Network proof of innocence that puts an end to finger-pointing

The ability to immediately and confidently identify that the network is not the cause of a service issue is extremely valuable. It avoids wasting time on further investigation and refocuses operations or application teams on finding the correct cause of the problem faster.

Crosswork Assurance monitors private enterprise networks in a highly accurate and granular way. This also helps you ensure that your network service provider is delivering the required SLAs. If they are not, the platform provides evidence to either fix the issues or justify SLA penalty payments.

Major cost savings driven from operational efficiencies

Service activation testing and remote packet capture via built-in flow broker capabilities in Crosswork Assurance help avoid truck rolls and unnecessary site visits. The solution identifies the exact bandwidth being used and individual circuits that are under- or overutilized, allowing you to reduce bandwidth or explain why bandwidth upgrades are needed.

Crosswork Assurance is easy to deploy, is vendor agnostic, and can be deployed across any network or cloud architecture. Extensive automation capabilities minimize the time and cost of deploying the solution across the entire network.

Learn more

Book a personalized demo to understand how Cisco Crosswork Assurance active testing and monitoring can improve your users' digital experience.

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