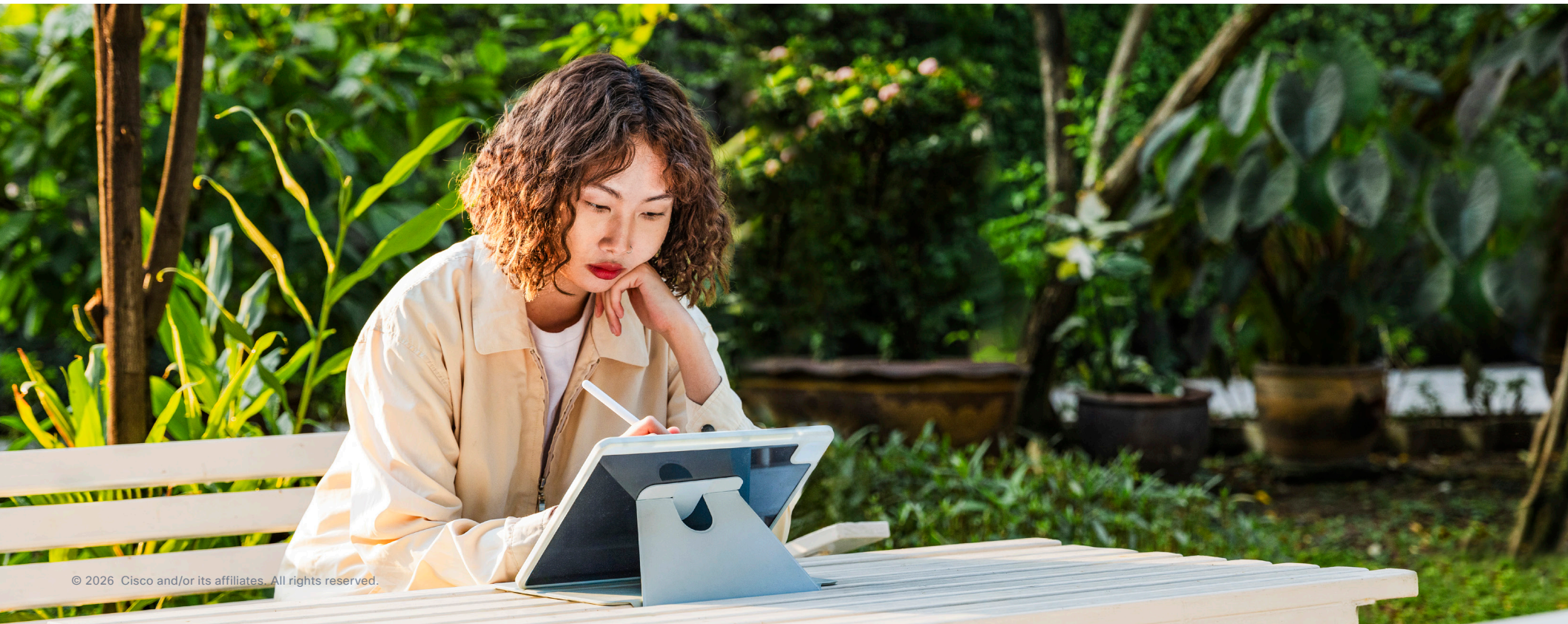
Deliver 5G Access Performance and Assure Customer Experience Where It Matters

Enabling efficient 5G upgrades and automated service launches



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The number of 5G Non-Standalone (NSA) networks is increasing exponentially year over year. This means the strategic direction, technical challenges, and performance characteristics of many primary 5G use cases and services are becoming clearer. Current 5G networks are largely built on existing 4G backhaul and an adapted Evolved Packet Core (ePC), which serves both 4G and 5G sites.

The access network is at the front end of the customer experience. In terms of service quality impact, the access network is one of the most important parts of the mobile network. Operators are now working toward the next phase of 5G standalone networks, which will enable advanced, ultra-reliable 5G; massive IoT services; and low-latency, Multi-access Edge Computing (MEC) services. As networks move to the cloud and open architectures, monitoring and virtualization must adapt to these new environments.

The service-based, distributed network architecture of 5G will require new levels of performance control and end-to-end visibility of services in order to meet strict performance Service Level Agreements (SLAs).

The additional complexity of managing virtualized network functions in distributed cell sites, small cell densification, and automated service lifecycle management will present new granular requirements for monitoring, analytics, and event correlation.

Challenges

5G is an exciting prospect for businesses, consumers, and developers alike. To deliver on this excitement, operators must create value for customers, innovate with partners, and provide new service experiences and performance levels beyond just speed.

The new 5G access model and the split of the Baseband Unit (BBU) to a more open, distributed Radio Access Network (RAN) and access network architecture brings benefits as well as challenges. From a high-level view, the new RAN and access network architecture and standards help to:

- Introduce new market competition.
- Improve network and service performance.
- Optimize hardware and cost of ownership expenditures. .

5G access challenges:

- While implementing new 5G access nodes has been defined, these implementations are not widely adopted.
- The new distributed access network and open multi-vendor approach introduce greater network complexity and challenges in managing the performance of diverse services.
- From a cell site densification and transport perspective, there are more links to monitor and correlate with the service and architectural mesh.

Full visibility of the mobile access network helps identify performance bottlenecks that can hamper 5G rollouts and the ability to meet strict SLAs. 4G networks are not going away, so it’s important to leverage performance tools that work within existing operations and provide integrated visibility and control of 4G and 5G performance.

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Optimize 5G performance and elevate customer experiences with Cisco Crosswork Assurance

Cisco Crosswork Assurance provides fully automated discovery and deployment; initial service activation testing; and highly granular, in-life performance monitoring of new 5G services. Crosswork Assurance supports in-life monitoring for 4G, and 5G services, while fitting seamlessly into existing operations. The result? Simplified management and operational cost savings.

With end-to-end 5G service monitoring of the access network, including third-party providers, you can confidently offer advanced services and meet strict business SLAs. Operators that deliver on performance have a huge opportunity to take a lead on 5G services by differentiating on customer experience and winning trust from new enterprise customers. Cloud hyperscalers and application software developers will also play a role in the 5G services ecosystem and will require access and MEC-related SLAs from service providers.

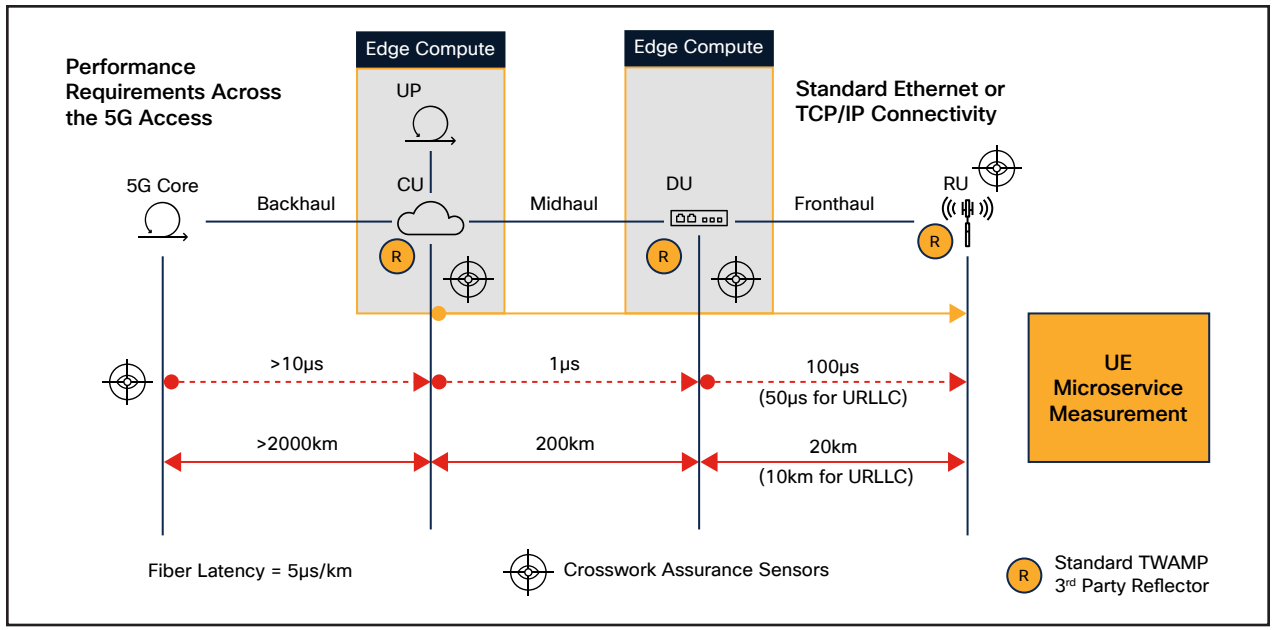


Figure 1. Performance Requirements Across 5G Access

Business benefits

- Deploy new 5G services faster and with confidence.
- Reduce risk of new service failure and the associated brand impact.
- Differentiate on service quality with granular monitoring of Key Performance Indicators (KPIs).
- Gain the confidence to meet strict SLAs with business customers.
- Detect service degradations before customers are impacted.
- Optimize capacity, deployment planning, and mobile backhaul.

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Cisco Crosswork Assurance offers a multi-layered approach to performance monitoring

A flexible combination of software agents, hardware-assisted components, virtualized functions, and smart, small form-factor pluggable (SFP) hardware comprise the Crosswork Assurance lightweight sensor layer. Unique and truly industry-first 10 Gbps compact SFP devices can be installed at cell sites to enable turn-up testing, bandwidth monitoring, and 24/7 performance monitoring, all on a per-service basis.

A virtualized orchestration layer within the platform virtualizes management and orchestration of the sensors, leveraging local controls and REST API automation. It can also feed data into third-party platforms for planning and troubleshooting. Crosswork Assurance automates the configuration, service provisioning, and testing for fast service turn-up.

Cisco Crosswork Assurance combines data from its Assurance Sensors and third-party sources into a single unified view. It offers machine learning-powered analytics and rapid troubleshooting for network and application performance issues. Real-time intelligent monitoring also helps predict and automate fixes.

Benefits for the 5G access network

Fast 5G service rollout

- Seamlessly integrates with existing infrastructure and operations.
- Fully automates discovery and deployment, fast turn-up, and initial service activation testing, minimizing the number of site visits.
- Transport issues can be detected and corrected to an optimal level before enabling live services.

Unsurpassed performance

- Data granularity to 1 millisecond sampling and the ability to detect performance issues before and after network changes.
- Lowest sample rate and highest accuracy in the industry for time-based KPIs.
- End-to-end monitoring of Ethernet backhaul, Alternative Access Vendors (AAVs), SLA validation, and baseline performance of primary and secondary paths.

Scale and performance

- A single SFP sensor can monitor thousands of destinations, including physical and virtual infrastructure.
- Crosswork Assurance AI-powered analytics supports billions of performance measurements every day.

Automated provisioning and deployment

- Crosswork Assurance centrally manages all configurations, as well as intelligent auto-discovery and auto-provisioning.

Machine learning and analytics

- Single dashboard for visualization, reporting, and analytics of all active and passive Assurance Sensor data plus third-party data.
- Real-time telemetry feed of performance KPIs to Software-Defined Networking (SDN) controllers and slice orchestrators can support closed-loop automation use cases.

“Cisco Crosswork Assurance has helped to reduce 5G site visits by 60% and accelerated 5G rollouts in the process, increasing the number of sites that can be rolled out in a day by 88%.”

– Tier 1 mobile network operator

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