Passive Monitoring Solution

## REAL-TIME 24/7 TROUBLESHOOTING FOR VoLTE, VoWi-Fi AND FIXED VoIP

The EXFO Worx passive monitoring solution is part of a comprehensive end-to-end service experience solution that consists of active testing, passive monitoring and real-time analytics providing communication service providers (CSPs) with **global visibility** on their network and service performance through **real-time** actionable data, leading to greater operational efficiency and customer quality of experience (QoE).

SERVICE QUALITY IS THE PRIMARY SERVICE PROVIDER SELECTION CRITERION

Mobile and business users consider service quality as the primary decision criterion for selecting a CSP. Network and service issues resulting in decreased subscriber experience increase the risk of subscriber churn and loss of CSP revenue. In order to ensure high performance, CSPs need efficient real-time tools that monitor the quality of the offered service and automated alerts on unexpected key-performance-indicator (KPI) behavior. In order to efficiently support call-center cases, technical support teams need troubleshooting tools that enable fast drilldowns to the level of a single subscriber call or service delivery.

FOCUS ON SERVICE AND SUBSCRIBER PERFORMANCE

EXFO's passive monitoring solution enables continuous 24/7 real-time monitoring of VoLTE, fixed VoIP, IMS rich-media, video-calling traffic and mobile circuit-switched calls. The solution supports LTE, 3G and 2G access networks, untrusted Wi-Fi and fixed network access to operator VoIP, IMS rich-media and video-calling services. All gathered call data is continuously correlated and stored in real time. Thus, network operations and engineering team experts have instant access to key data, making the EXFO troubleshooting solution the most efficient on the market. Instant drilldown capabilities extend to the level of a single subscriber, enabling detailed troubleshooting of failed calls.
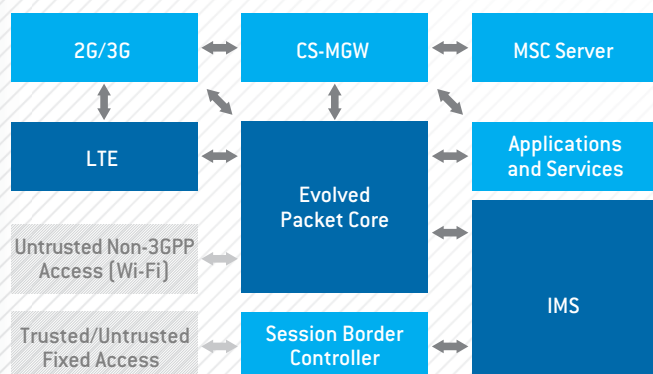
EXFO's passive monitoring solution enables monitoring of key wireless network interfaces.

SCALABLE SOLUTION SERVING MULTIVENDOR NETWORKS

EXFO's solution scales efficiently (even for very large deployments), both in terms of monitoring endpoints and the number of operations center users. The number of EXFO BV-41XX/42XX/6000 Series probes can be freely scaled up in the system as needed. Data can be gathered and correlated from passive verifiers residing at multiple physical network sites. The EXFO passive monitoring solution is vendor-agnostic and can be leveraged in multivendor networks to provide impartial and unbiased information on service performance and subscriber experience.

POWERFUL AND FLEXIBLE SOLUTION WITH COMPREHENSIVE PROTOCOL COVERAGE

The EXFO passive monitoring solution relies on EXFO Worx, a central-site software engine that closes the visibility gap between expected network performance and actual customer experience. EXFO Worx provides ready-made dashboards and graphs indicating the key KPIs describing service performance. The solution also enables third-party data input via packet-capture (PCAP) files and output to external systems via the comma-separated-value (CSV) file format.

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EXFO Worx provides comprehensive protocol coverage for mobile, wireless and fixed networks. All probes work together in synchronization. A unique differentiator of the solution is its continuous real-time correlation of all signaling and call detail data retrieved from multiple verifiers along the connection path. Call quality records are provided for both in-progress and completed calls within seconds, not minutes—dramatically speeding up mean time to resolution. This point-in-time performance information for active calls is often critical for troubleshooting intermittent problems that only surface on calls of longer durations, or at particular times of the day.

INTEGRATED CALL FAILURE ANALYSIS AND TROUBLESHOOTING

Integrated call failure analysis instantly characterizes the presence and location of call routing and setup failures. Call search tools can then be launched to pinpoint detailed information, including source and destination numbers, mean opinion score (MOS), duration, bandwidth, call setup and routing performance metrics for individual calls. Once offending calls are isolated, circuit query response (CQR) records provide full per-call metrics and integrated end-to-end call flow diagrams for easy problem isolation.

PROACTIVE PERFORMANCE ALERTING

Leveraging the capability of the EXFO Worx central-site software engine, EXFO Call administrators establish and monitor performance thresholds to proactively alert operational staff of call quality degradations, outages or abnormal calling patterns. Thresholds can be standardized network-wide or customized for individual locations, depending on business requirements.

ASSISTING YOU IN TACKLING VoLTE, VoWi-Fi AND VoIP DEPLOYMENT CHALLENGES

Service availability and call failures
- Registration issues
- IPsec AKA authentication

Dropped calls
- SRVCC and inter-RAT handovers
- Roaming and interconnect

Call quality issues common to fixed VoIP, VoLTE and VoWi-Fi
- Latency: signaling issues and added load at IPsec and home subscriber server (HSS), for VoLTE
- Transport impairments: packet loss, jitter, IP routing, quality-of-service (QoS) management and traffic shaping issues
- Voice impairments: interference with Internet traffic and streaming video, noise, transcoding and echo, and incorrect codec selections

VoLTE-specific considerations
- SRVCC and inter-RAT handovers
- Roaming and interconnect

VoWi-Fi-specific considerations
- Accessibility, continuity, retainability and voice quality (MOS)
- Benchmarking untrusted Wi-Fi access quality for voice calls
- Isolating quality issues within the CSP network or within the untrusted Wi-Fi access network

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