SPEC SHEET

EXFO Mobile Agent

AUTOMATED SERVICE ASSURANCE APPLICATION FOR MOBILE SMART DEVICES

- Fully integrated mobile solution for 24/7 quality-of-service (QoS)/quality-of-experience (QoE) monitoring of radio, voice and data service performance in the HetNet environment.

KEY FEATURES

- Validate wireless voice, data and radio service quality in real time via any compatible smart devices
- Fully automated Remote Control mode for 24/7 validations
- Manual/on-demand mode for spot-check validations
- Automated sync with EXFO Worx for result and report generation
- Comprehensive analytics for real-time assurance of end-to-end (E2E) wireless services
- Complete compatibility with EXFO Verifier probes
- Available for download from Google Play store

BENEFITS

- True customer experience monitored from end-user mobile devices for indoor and outdoor HetNet environments
- Zero-touch provisioning and complete automation to aid large-scale deployments
- Dashboard analytics for 24/7 monitoring of radio, voice and data services
- End-to-end network segmentation analysis using EXFO Verifier probes
- Continuous monitoring of new service rollouts and QoS during large events (e.g., conventions, concerts and sporting events)

SUMMARY

EXFO Mobile Agent (EMA) takes the functionality of our service assurance verifier probes to next level with an over-the-top (OTT) application for smart devices (e.g., smartphones, tablets, COTS Android boxes). The EMA application provides manual and automatic (remote control) validation modes for 24/7 monitoring of radio, voice and data services across wireless networks. Aided by zero-touch provisioning to support large-scale deployments, EMA collects service-experience data from end-user devices to help analyze QoS. Network segmentation analysis in conjunction with the use of EXFO Verifiers provides per-segment service-quality views, yielding fast drill-downs to the root cause of performance degradation. The EMA application is available for download from the Google Play store and via the EXFO Worx central server.

EMA results are automatically uploaded to the EXFO Worx central server for storage, aggregation, correlation and presentation. Through powerful dashboard analytics, customers gain visibility of both current and historic network performance, with service-level visibility all the way to individual devices, cell sites, drive routes and regions.

USE CASES

- Automated mobile service quality analysis for:
  - Active assurance—voice (VoLTE, VoWiFi, CS) MOS, data and radio frequency (RF) coverage
  - WiFi assurance—data, voice and WiFi coverage using COTS Android boxes
- Centralized subscriber QoE/QoS analytics for:
  - Service performance—availability, integrity, retainability, accessibility, mobility (AIRAM)
  - Location analysis—SRVCC, call drops and network unavailability for indoors/outdoors
  - Trend analysis—analyze issues before dispatching field operation teams
- Complementary to traditional drive test solutions
  - Reduce drive test campaigns for RF coverage and network optimization
  - Counter/align against third-party benchmarking (e.g., RootMetrics, OpenSignal)
  - Benchmarking—device OS, operator services and RF coverage

MOBILE SERVICE EXPERIENCE MANAGEMENT (SEM)

Wireless operators are constantly trying to differentiate themselves from their competition by rolling out new services for smart devices, with the hope of capturing a continuously larger share of the services market and consequently making a positive impact on their bottom lines. Achieving this goal means that operators are perpetually evaluating deployed services and the impact that QoS has on end-user usage patterns.

EMA aids in the evaluation of deployed radio frequency, voice and data services, right down to the performance of end-user devices. Using completely automated active tests scheduled from a remote EXFO Worx server, EMA continuously tests and reports results for QoS parameters deployed in the network. When several EXFO Mobile Agents are deployed across an entire country, that data obtained is thoroughly analyzed by the agent's analytics engine to highlight specific problem areas, services or devices. Remote troubleshooting on specific end-user devices can be done through EXFO Worx (upon obtaining customer consent), and the application can be easily uninstalled, thereby helping customer-service professionals solve problems without frequent truck rollouts.

EMA provides a cost-effective solution for continuous monitoring during deployment of new services, friendly trials, VIP customers, enterprise and employees using commercial devices. New and legacy services such as voice over WiFi (VoWiFi), VoLTE, HTTP, ping, DNS, FTP, traceroute, UDP, OTT SIP and CS voice can be continuously monitored from end-user devices for supported QoS metrics such as POLQA mean opinion score (MOS), latency, packet loss, jitter, throughput, embedded objects, coverage and call-setup details, along with the prevailing wireless conditions. Automated Uu (air interface) troubleshooting can be performed on the same platform for signaling and user-plane data, thereby providing thorough analysis of deployed service issues. Segmentation for standardized network interfaces can be conducted using EMA and EXFO Verifiers.

EXFO Mobile Service-Experience-Management (SEM) dashboard analytics

EMA takes data obtained from large-scale mobile agent deployments across entire regions and countries and places it at operators' fingertips through the EXFO Mobile Service-Experience-Management (SEM) dashboard. Wireless network service availability, maintainability and quality are the prime focus of SEM dashboards with user-account profiles for C-level, engineering and operations teams. Teams obtain overall network health and can focus on specific geographical areas based on network outages highlighted in color-coded schemas.

Heat maps help drill down to individual mobile devices, cell sites and regions with dynamically adjusted views based on time and service quality. Data is analyzed from end-user mobile devices, facilitating large-volume commercial deployments of new service turn-ups, troubleshooting and 24/7 continuous monitoring. Mobile device models, operating system (OS) versions, physical location, and wireless technology details play big roles in the way wireless services are utilized by end-users of mobile devices. Operators must be cognizant of these differences when analyzing cross-sectioned views of mobile device activity, and of how those differences affect the QoE of deployed services.

EXFO Worx central server

EXFO Worx is the central source for EMA download, activation, upgrade, test-template management, results collection, aggregation, storage and presentation.

Remote-control tests are created and scheduled to execute at predefined intervals using templates called service-level agreements (SLAs), whereas manual tests are created and downloaded automatically on EXFO Mobile Agents synchronized with EXFO Worx. Synergy with EXFO Worx ensures that applications have access to common essential functions, such as open application programming interfaces (APIs), for easy integration of key performance indicators (KPIs) and alerts with third-party platforms. Users have easy access to service status, SLAs, problem detection and troubleshooting functions through the web-based EXFO Worx operation center.

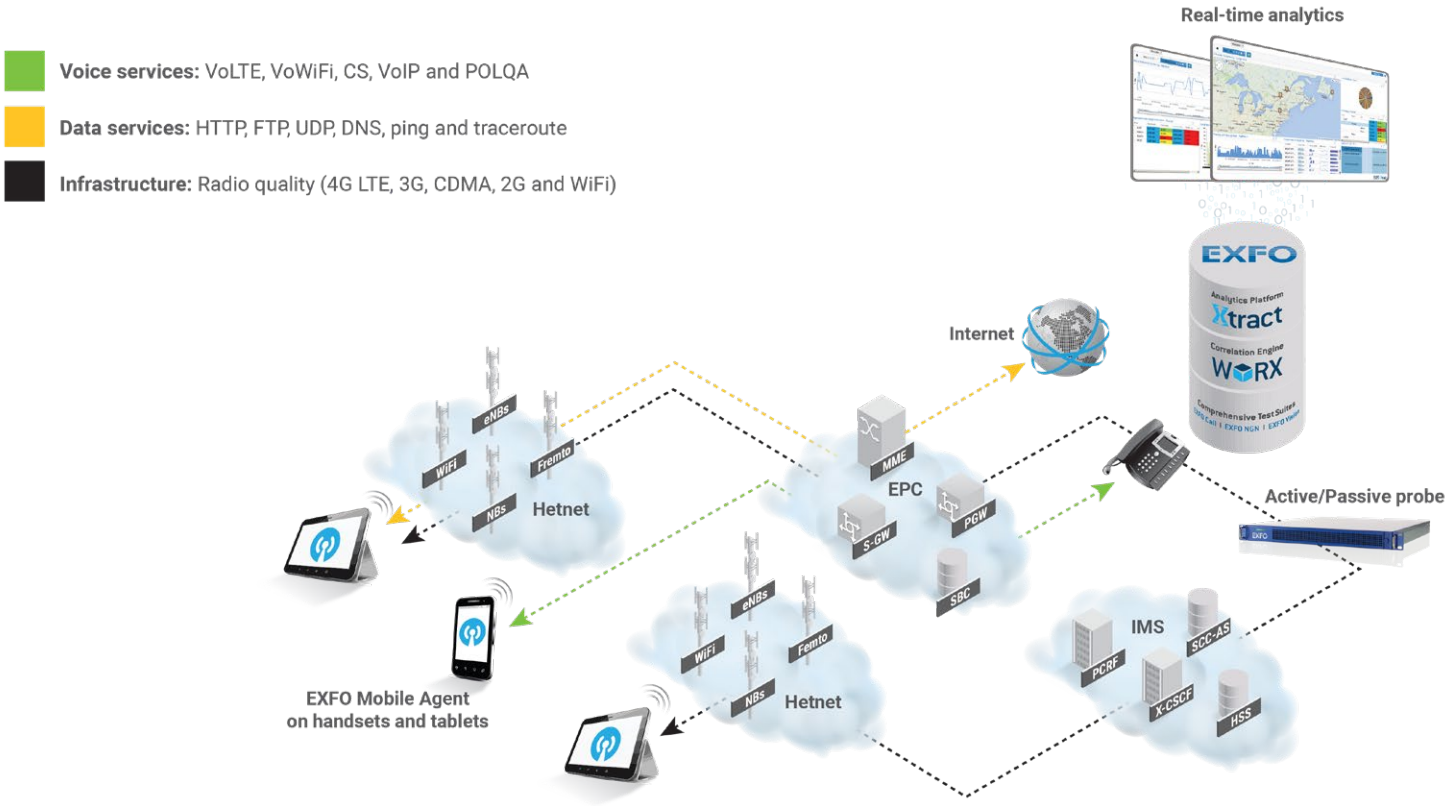

Figure 1. Field of play: automated voice, data and radio-coverage monitoring

SPECIFICATIONS

SUPPORTED TESTS	
HD voice testing for VoLTE, VoWiFi and CS call types with mean opinion score (MOS) analysis using POLQA (on supported mobiles)	Availability, accessibility, retainability and mobility KPI measurements
HTTP performance	For website and embedded objects availability and throughput measurements
Ping active	Latency, packet loss and jitter measurements
Traceroute performance	Individual hop count measurements
DNS performance	DNS server availability and response times
FTP performance	Server availability and UL/ DL throughput measurements
SIP service performance	• Signaling, latency, loss, jitter, RTP/ RTCP-XR and MOS (PESQ and POLQA) measurements • Optional EXFO Verifiers may be necessary
UDP bandwidth (BW)	• Achieved BW, stream performance, latency, loss and jitter measurements • Optional EXFO Verifiers may be necessary
Radio signaling metrics	• Radio signaling metrics • Device: model, OS, identifiers, battery health • Location: latitude, longitude, altitude, bearing, speed, accuracy and provider • IP data : IP address, DNS, DHCP and gateway • Cell information: LTE, WCDMA, CDMA, GSM cells signal quality measurements • WiFi: network ID, BSSID, SSID, signal strength, link speed and WiFi scanning • Locking: LTE, 3G, CDMA, 2G technology, bands (on supported devices)

DASHBOARDS	
Widgets	Real-time and historic network service quality analysis for supported tests
Heat maps	Dynamically updated for radio coverage, devices, cell sites and regional visibility
User profiles	C-Level, marketing, engineering and operations teams

SUPPORTED DEVICE / OS
OS: Android Jelly Bean, KitKat, Lollipop and Marshmallow
Devices: smartphones, tablets and COTS Android boxes

SYSTEM CONFIGURATION
EMA is available for download via the Google Play store
Other system configuration requirements include: • EMA license • EXFO Worx test instance licenses • EXFO Mobile Service-Experience-Management (SEM) Dashboard license (Linux OS support) • EXFO Verifiers (optional)

SERVICE ASSURANCE AND NETWORK SIMULATION

EXFO's Service Assurance and Network Simulation Division develops and offers converged solutions that are utilized by world's smallest to largest network service providers and larger enterprises to ensure high-quality network reliability and outstanding subscriber experiences for voice, video, data and mobile services.

This division delivers proven IP expertise that is unique across the service assurance marketplace and collaborates closely with customers and partners to assure the performance of any IP-based service, over any network, to any endpoint.

EXFO's service assurance solutions provide both active, automated, multipath testing of networks and passive network monitoring coupled with unmatched three-dimensional analytics for real-time customer, service and network visibility across both physical and virtual networks. In addition, EXFO develops simulators that are used in labs by NEMs and network service providers to develop and prove the latest fixed, wireless and virtual services under the stress of massive simulated stateful traffic.

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