EXPERT OPINION:

Network testing and monitoring accelerates your path to LTE service revenues

Long Term Evolution (LTE) is on track, attracting global industry support with 17 commercial deployments and 140 commitments in 56 countries so far. However, deploying LTE entails risks from the significant investment required, its technical complexity, insatiable demand from subscribers for bandwidth and the high quality of service (QoS) expectations. The correct approach to testing and monitoring is critical, says Manuel Mato.

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Mobile broadband technology represents an enormous opportunity for operators to offer new services and generate all-important additional high-value service revenues. But there's more to deploying and generating revenues from LTE than meets the eye. Network and service testing is a key factor to successful deployment, providing the information needed during the trial phase to anticipate and prevent revenue threatening issues when deployed. Once the network is operational, network-wide monitoring provides end-to-end visibility of the network and services, enabling revenue-threatening problems to be detected and corrected before they impact revenues and result in customer dissatisfaction.

As operators evolve from traditional 3G to pure-IP networks, they are migrating from a familiar technology to one that is relatively new. Operators are faced with the challenge of successfully planning and executing LTE trials prior to their live network deployment in a domain where they may have gaps in their expertise. Trial logistics are complex. Trial teams must set the trial framework, communicate with and police all the participating network equipment manufacturers, run test cases in a uniform and consistent way, capture and evaluate huge volumes of data, and adapt when something goes wrong. With the correct tools operators can quickly solve problems during trials thereby accelerating deployment of their production network and the generation of those all-important revenues more rapidly.

When a trial begins, operators face the challenge of quickly developing the capability to manage 4G network equipment, capabilities and components. Test platforms that enable on-the-fly adjustments will assist teams in verifying all functions critical to future LTE services, including data capacity, throughput, handover to or from 2G and 3G networks, radio frequency coverage, latency, interoperability of multi-vendor elements and QoS. Tests must be repeatable for as many scenarios and environments as practical, for all relevant standards and different frequency bands. The ideal tools are vendor agnostic providing apple-to-apple comparisons, enabling operators to make critical purchasing decisions based on objective criteria.

The ideal testing platform

To guarantee success, trial teams need tools that make them more productive and reduce problem resolution time, resulting in enhanced service quality when the network goes live. The ideal testing platform provides 'multi-user' access with centralised management where each member of the trial team shares a common architecture and can test independently of each other resulting in significant productivity improvements.

This shared test architecture results in significant CapEx and OpEx savings for the operator by removing the need for each engineer to have their own independent expensive test system.

The urgency to deploy LTE and its associated new services has resulted in the compression of LTE trial times compared to 3G, increasing the risk for QoS issues in the live network and generating a greater need for assurance solutions. As operators rush to be first to market with high quality 4G services in 2011 assurance solutions will help minimise their risk by allowing them to quickly identify and ▶

resolve issues in the live network before they impact subscribers.

LTE assurance solutions, allow operators to manage issues by tracking an extensive, yet focused set of Key Performance Indicators (KPIs), including network performance and service quality, supporting the delivery of outstanding customer experience.

The best solutions combine pro-active monitoring with guided troubleshooting, allowing less skilled engineers to be more effective. LTE introduces hundreds of new transactions that are used in tens of procedures that control the subscribers' experience in relation to accessibility, mobility, integrity and retainability of the network. How will operators effectively manage their network, service and customer experience when the set of measurements could run into the hundreds? Given LTE's complexity and high traffic volume, operators can maximise the efficiency of network assurance and minimise operating expenses by focusing on the right KPIs and the essential data. Hundreds of KPIs will overwhelm operations teams, the latest assurance solutions allow operators to focus only on the service-focused Composite KPIs that are important to their business. Composite KPIs simplify reporting on performance and quality by correlating measurement information across interfaces, transactions and protocols. Crucially composite KPIs provide information on the actual customer experience not just the transaction quality.

To illustrate the value of Composite KPIs, the Attach Procedure in LTE includes 19 separate transactions before the user is able to access services. By managing procedure rather than transaction based KPIs, four procedural Composite KPIs can replace 76 transaction based KPIs making the task of managing the network much easier.

Easily configured, KPIs use thresholds to pinpoint critical service and network problems, which combined with in-context guided analysis drilldown presents the problem in a simplified format dramatically reducing problem resolution time.

Assurance solutions provide constant performance monitoring enabling real- time surveillance and historical analysis of metrics relating to the network and services. Continuous monitoring enables service operations to provide long-term network planning and service level agreement (SLA) tracking.

Consider the previous Attach Procedure example which requires many separate transactions across an entire network. An operations team can troubleshoot far more quickly and efficiently if their assurance tool stitches those transactions together into a single, coherent view. The latest generation of service assurance solutions correlates all the elements into one complete bundle to provide an end- to-end view of the complete LTE network.

Intelligent help and guidance

This end-to-end view provides insight into network and service performance enabling quick and cost-efficient action on customer satisfaction issues to protect revenues. When problems do occur service assurance applications provide intelligent help and guidance that enables less skilled resources to diagnose complex issues quickly and reliably regardless of technology, service or scale. As an example, a pictorial sequence diagram of a subscriber's session enables the user to perform detailed analysis of signaling procedures for each subscriber's interaction with the LTE network. This approach moves troubleshooting from a niche area occupied by handful of specialists into one in which less skilled users are able to effectively diagnose problems. The result is a substantial improvement in operating efficiency in the fault management lifecycle.

The growth in mobile broadband represents an enormous opportunity for operators to offer lucrative new services. But LTE's technical complexity, significant investment and heavy competition from other operators creates significant risks. Pre-deployment testing helps mitigate this risk by ensuring the construction of an efficient, high-performance network. Service assurance helps keep and attract subscribers by maintaining a high quality of customer experience when the network goes live.

Operators using the latest service assurance tools have reported a reduction in problem resolution time from 45 to five minutes. These tools will help operators effectively maximise the benefits of next-generation LTE technology.

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