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3G is a new and complex technology that enables breakthroughs in service delivery business models in an environment where speed of change has never been so high

3G Services: high quality or no future — the key role of end-to-end active testing

Third generation mobile is today a major challenge for the mobile operators – the huge technology investments made require a rapid and massive adoption of new services. As shown in the picture below, operators just have a few actionable drivers to succeed: new services introduction, demand stimulation, quality and price.

The interdependence of new services, demand stimulation, quality and price makes the introduction of 3G even more challenging.

For example, a recognized high quality of service will not only secure the adoption of a new service, but also accelerate its take-up curve and help to maintain the price levels required to reach the expected financial returns for 3G.

Increased complexity and speed-of-change raise the QoS risk

Not only 3G is a new and complex technology, but it also enables breakthroughs in service delivery business models in a mobile environment where speed of change has never been so high. The resulting challenges are well known:

- Increased network infrastructure complexity, especially at the radio access level (RNC and Node B) where not so mature implementations of more complex protocols coupled with manufacturer-proprietary enhancements still leave major coverage issues open;
- Increased role in the service delivery chain of the handset (now acting as a real network node), the service platforms and the third-party contents — all of these continuously and rapidly changing;
- Loss of control over the end-to-end service delivery chain with complex technical and business interactions with application/content providers, roaming partners, etc.

Naturally, a growing complexity and speed-of-change increases the quality risk — and more impor-

tant: the risk of leaving customers with poor quality of experience. Is it acceptable to receive 3G voice calls with a lower voice quality than on 2G? Is mobile browsing relevant when more time is spent waiting than on actual browsing? How many customers will compare their video streaming performance with their day-to-day TV experience?

Guaranteeing a positive customer experience in this challenging environment requires more than additional network monitoring equipments and engineers. The exponential growth in complexity and scale of the probed data correlation just makes it non cost-effective and incompatible with services' time-to-market. A QoS approach independent from infrastructure complexity and speed of change is needed — that's why leading operators complement their traditional network supervision approach with a solid end-to-end active testing approach.

The value of end-to-end active testing

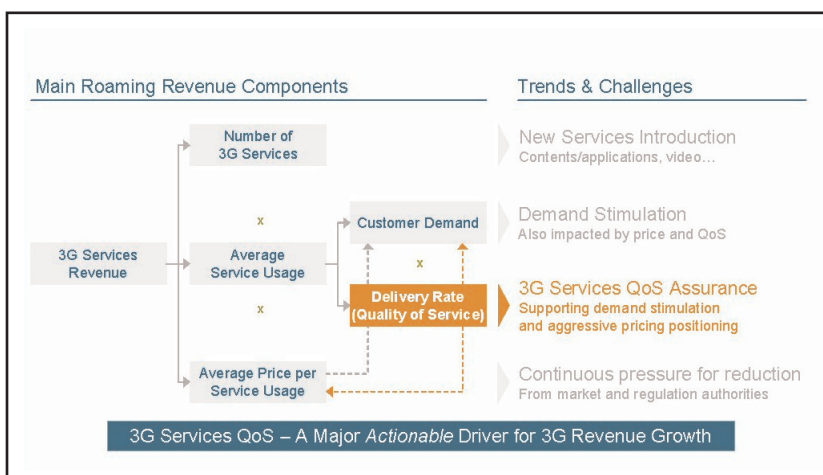
With end-to-end active testing, telecom operators are in a position to monitor and manage the customer perception of their services quality, from launch time, to secure and accelerate adoption by the market and revenue growth. Indeed, once rapidly designed — independently from the underlying infrastructure and delivery chain, service use cases are executed in the real-life conditions by handsets or handset emulators spread over the country, thus reflecting real users' experience.

The example of video telephony, which is widely recognized to play a dominant role in the 3G take-up, is representative of the QoS challenge. A low perceived quality could seriously delay (if not kill) the success of the service, but how to ensure customer satisfaction when a huge number of factors can cause impairments on the audio, on the video, on their synchronization, etc?

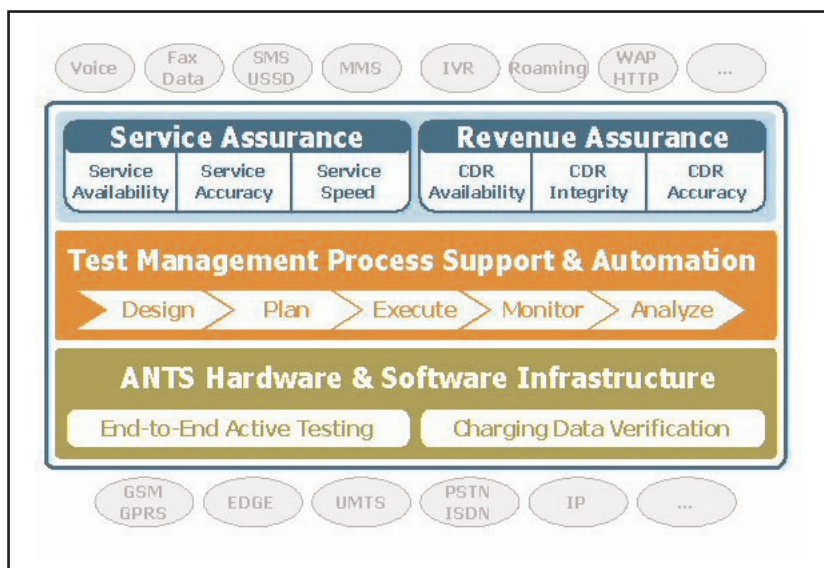
These impairments are not necessarily linked to faults, radio issues or other 'local' malfunctions — the end-to-end perspective is required to transparently catch all the factors contributing to the perceived quality.

The operational benefits derived from the end-to-end approach also enable significant incremental gains with regards to QoS management:

- End-to-end control of the service delivery chain, including the chain steps handled by partners (e.g. application/content providers)
- Key performance/quality indicators generation to support marketing operations and Service Level Agreements (SLA) contracted with large accounts
- Benchmarking with the competition



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Capitalizing on more than twenty years of extensive collaboration with telecom operators, Datamat has developed the ANTS solution, based on a solid end-to-end active testing platform, to help them to achieve their service and revenue assurance objectives. Two factors have appeared to be instrumental in assuring successful QoS assurance implementations: industrialization and operational agility.

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Streamlining QoS assurance operations

Because they use a single service with different handsets, different tariff plans, from different places at different times, two customers might not get the same level of quality of service. When considering also all the possible use cases for services like video streaming or video telephony, it appears clearly that millions of end-to-end tests have to be conducted frequently to assure QoS.

If end-to-end testing systems can support such operations, the level of test management automation they offer should be assessed carefully, as well as the capabilities to map with the organization roles and responsibilities, and to interface smoothly with the other OSS components.

ANTS for example has been optimized to automate as much as possible the traditional five-step test management process to support with the highest efficiency and effectiveness the 24x7 monitoring of QoS, the frequent roll-out of validation or non-regression

campaigns, and the always-urgent troubleshooting activities.

Implementing a “zero-hole” assurance

3G Networks and services are today in the early stages of their life, when it is essential to anticipate or quickly recover issues that could impair the customer experience, thus seriously affect the new services’ adoption success. At the same time, Marketing departments are pushing to shorten the time-to-market to maximize the competitive advantage.

To address this “zero-hole” service quality challenge, leading end-to-end active testing solutions enable test plants and network operations teams to easily and rapidly design end-to-end test campaigns for their new services, independently from the underlying infrastructure and delivery chain complexity.

Such campaigns can then be run prior to launch for validation purposes, and continuously (24x7) right after the commercial opening, when tuning is often required.

Such operational agility at test-design stage is also critical to handle the frequent changes to be made in the numerous reference service use-cases: new handsets characteristics to be tested, new contents and applications, etc.

Minimizing QoS issues resolution time

While on-going monitoring of QoS and non-regression testing after network maintenance operations provide a continuous close control of the customer experience, minimizing the resolution time of the identified issues is critical to minimize the impact on customers and revenues.

When offering ad-hoc testing capabilities and advanced tracing functions, end-to-end active testing solutions enable troubleshooting teams to reproduce QoS impairments cases and capture detailed diagnosis information to accelerate issues resolution.

“Creativity is no longer limited by technology,” says Paolo Brunelli, ANTS marketing director. “A huge number of highly heterogeneous services can and will be developed, with a strong pressure to reduce time to market for new services in an increasingly complex and changing mobile services ecosystem — leveraging end-to-end active testing is fundamental to ensure quality from the customer perspective and sustain ambitious revenue growth on new services.” ■

ANTS — service and revenue assurance solution enabled by end-to-end active testing

ANTS enables operators to streamline their service and revenue assurance testing operations through powerful process automation, while allowing top management to closely control the QoS and revenue generation integrity through automatically generated Key Performance Indicators (KPIs).

Operational benefits

Secured revenue generation and growth:

- QoS and revenue generation closely controlled through auto-generated KPIs and alarms
- “Zero-hole” assurance: services can be tested in all the real life conditions, from a customer perspective
- Potential QoS or revenue generation issues are detected in near real time, if not prevented
- New services QoS and revenue generation can be monitored since launch time, with ANTS rapid

approach for modeling new test scenarios, charging cases and KPIs

- Rapid ANTS deployment in the organization due to webbased architecture, pre-built tests & KPIs, and distributed process for CDR verification

Strategic benefits

- Improved brand value through enhanced customer experience when using mobile services

- Secured and accelerated service take-up curve due to close control of QoS and revenue generation
- Reduced churn and customer service costs through higher customer satisfaction
- Reduced revenue leakage due to near-real time charging data verification at network level
- Cost-effective compliance with regulatory requirements, such as Sarbanes Oxley Act ■