



ArQoS

Network
and service
monitoring

Improve network service quality

Optimize customer experience
and network performance



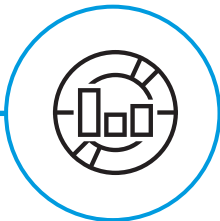
Measure and evaluate network service quality

One of the main reasons customers point out to remain loyal to their Communication Service Provider (CSP) is network's performance consistency.

Customers want a network always available, without service interruption and fast enough. In order to maintain the preference of high-value customers, it's crucial to CSPs understand what is the customer's experience when using network services. It is necessary to measure and evaluate the level of network service quality customers enjoy and to guarantee the network is always accessible and performing at its peak. Anytime, anywhere. Having a convergent solution for all networks, customers and devices, that provides real-time understanding of the impact of the network on customers' experience as well as optimizes time to solve any outage, entitle CSPs to take actions to maintain customers' loyalty and optimize network investment.



Current market



Network service quality, is one of the top factors customers care more about when choosing a Communication Service Provider.

Challenge



Customers aim for consistent network availability and performance.

Business benefits

- **Investment planning optimization**

Optimize investment by benchmarking and mapping of network coverage, service performance and failure points.

- **Gain mobile operational efficiency**

Reduce costs and optimize network service availability and performance without costly drive tests.

- **Reduce running expenditures of fiber enabled networks**

Minimize truck rolls and decrease both the quantity of remote fibre tests needed and the mean-time-to-repair.

- **Link customer loyalty and network service quality**

Increase customer satisfaction by detecting problems before they impact customers.

Centralized and convergent performance monitoring

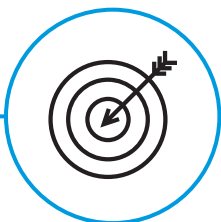
Solution

quality of services and quality
of experience evaluation for
multi-service, multi-technology
and multi-vendor
environments



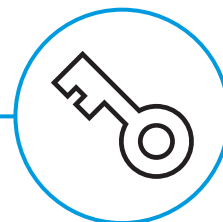
ArQoS

Opportunity



To provide the best
user experience at
optimal network
resource usage.

Solution



Having a system that effectively measures and
evaluates network service quality - whether it is
a fixed, mobile or fiber network - linking service
performance with overall customer experience.



Who benefits from it?



Network operations, engineering and network planning teams



Marketing and Customer Key accounts



Field Force/Drive Tests Teams

Key differentiators

- Extensive service and network performance monitoring;
- One single performance Monitoring system for Fixed, Mobile and Convergent Networks
- Fiber Networks future proof Monitoring features;
- Fast deployment of tests and measurements plans;
- End-user service simulation and Quality of Experience monitoring;
- ArQoS as part of TMForum certified NOSSIS Suite.

Customer



Increase customer satisfaction
Reduce churn

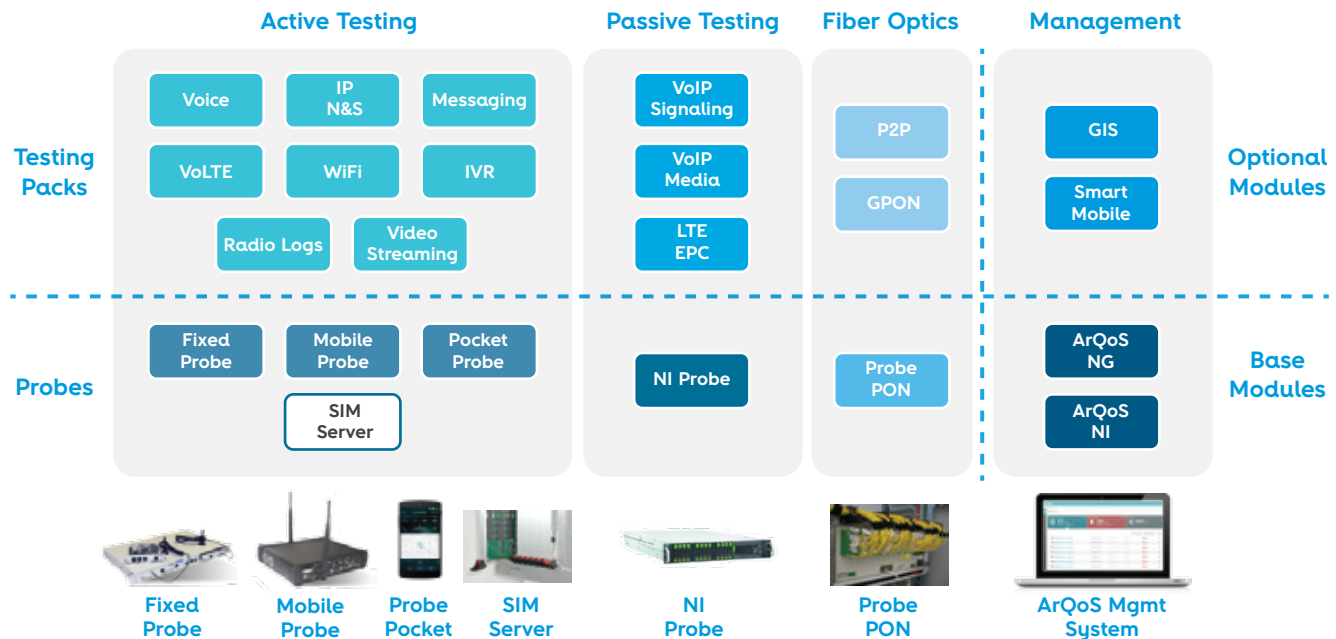
Operator



Evaluate overall quality
Optimize resource investment

The architecture

ArQoS' modular and scalable architecture easily adapts to the continuous network and services evolution, providing support for state-of-the-art network technologies and its services.



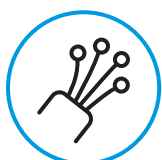
ArQoS - Active Probing

- Use of ArQoS proprietary fixed and mobile probes managed by ArQoS NG Management System software;
- Applicable to both static (e.g. data center) or mobile (e.g. vehicles) deployment scenarios;
- Quick test setup and wide range of network key performance indicators production;
- Voice, data, messaging and USSD, IP, and video services monitoring supported;
- Compliant with multiple technologies: GSM/GPRS/EDGE/UMTS/HSPA+/DC-HSPA/LTE/ VoLTE and PSTN/IP GbE/ISDN, among others.



ArQoS NI - Passive Probing

- Use of ArQoS proprietary VoIP and LTE probes managed by ArQoS NI Management System software;
- Collection and analysis of a wide range of network data;
- Customer quality experience continuous measurements;
- MOS calculation for every VoIP call based on algorithm calibrated with PESQ;
- Compliant with multiple protocols: RTP / SIP / MEGACO (H.248) / RADIUS / DIAMETER / Media Analysis.



ArQoS ON - Optical Network Probing

- Use of ArQoS proprietary fiber optic probes managed by ArQoS Resource Manager software;
- Optical fiber point-multipoint or point-to-point network testing;
- Customer detection and validation tests on point-multipoint optical network;
- Compliant with multiple PON technologies: GPON/NGPON2/GEAPON/BPON/next generation networks.

Use cases

Whether the challenge is having full transparency on the network service quality customers experience or comparing it to the network service quality competitors offer, ArQoS proactive and benchmarking features perfectly fit. Still, ensuring permanent and continuous network service quality monitoring can be time and money consuming. ArQoS capability to perform autonomous and unattended tests on mobile scenarios or its automated remote fiber networks monitoring feature, both play an important part in planning and optimizing costs.



Autonomous unattended mobile testing

Today's customers tendency is to be on the move most of the time, thus, evaluating network service quality and simulating user-experience on mobile scenarios is mandatory. Using ArQoS mobile probes installed in vehicles (e.g. CSP fleets), enables to perform autonomous and unattended service tests concerning locations, main roads or walk paths. ArQoS Mobile Testing provides valuable performance information and drastically reduces the need for drive tests with a significant reduction in costs.



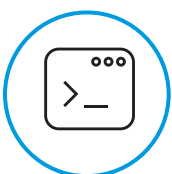
Continuous network service quality monitoring

Constant network availability and performance expected by customers, requires permanent control over the network service quality. ArQoS monitoring features allows to easily test video, data, voice and messaging services continuously, alerting to any degradation or failure occurrences in real time with QoE prespective. It also enables correlation of QoE indicators with traditional vendor supplied network KPIs. ArQoS strongly contributes to link network and service performance with overall customer experience.



Benchmarking testing

Benchmarking the competition for every service on every important location guaranteeing same test conditions is as essential as continuously monitoring network service quality. ArQoS benchmarking features across extensive services and technologies permit to identify both the gaps between competitors and the existing potential for improvements which translates into actual competitive advantages.



Automated remote fiber monitoring

Today as well as in the foreseeable future, optical fiber technologies are among the main options to deploy broadband demanding networks. Would it be a point-to-point or a point-multipoint fiber network deployment, detecting and locating a fiber cut or degradation is crucial to proactively handle any quality of service issue customers might experience. Reduced downtimes, fewer truck rolls and fiber cut recurrence avoidance are some of the differentiating advantages ArQoS offer.



References

Customers:

- MEO; MTC; TT; MEDITEL; VIVO; OI; MASCOM; CTM; SFR; Outremer Telecom.

Motivation:

- To evaluate network performance, in order to optimize the customer experience.

Application scenarios:

- Engineering and planning teams;
- Network/Service Operations Center (NOC/SOC);
- Country Regulators;
- Customer account management.

Added value:

- Ensures consistently peak performance operation while reducing MTTR and OPEX;
- Optimizes investment by decreasing expenditures on network resources;
- Increases Quality-of-Service and Quality-of-Experience delivery;
- Contributes to create an unified view of the customer as evaluates the customer experience when using CSP network and services.



About Altice Labs

Delivering key telecommunications technologies since 1950, Altice Labs has been shaping the future of technology, enabling Communications Service Providers and Enterprises to offer advanced and differentiated services to their customers and users.

Altice Labs is an innovation and transformation catalyst supported on a strong and dynamic Innovation Ecosystem. Through technology, we are committed to improve people's lives and the way in which companies do business.



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