

SOLUTION BRIEF

End-to-End Mobile Service Assurance

From the RAN, to the Backhaul to the Core of the Hybrid Mobile Network: Improve the customer experience by reducing service outages and degradations



The mobile network transformation

The market demand for faster data speeds, lower latency and higher availability to support digital services is increasing. High-definition video, connected devices, the Internet of Things, OTT applications and future services based on network slicing are driving mobile operators to transform their mobile networks like never before. Ericsson predicts an eight times growth of mobile traffic from 2016 to 2022, and that video will constitute 75% of mobile data traffic by 2022.

Assure end-to-end performance

To cope with these demands, mobile operators have been adopting more capable and cost-efficient networks, such as LTE-A in the RAN and Metro Ethernet in the backhaul. Other recent initiatives involving Wi-Fi Offload, Voice and Video over LTE (VoLTE), Network Function Virtualization (NFV) and Software-Defined Networks (SDN), C-RAN and Xhaul aim to further increase network capacity and efficiency. These technologies, however, introduce their own set of challenges.

First, network complexity increases considerably because new packet-based IP convergent networks are statistical in behavior, and less predictable than their deterministic TDM- based counterparts.

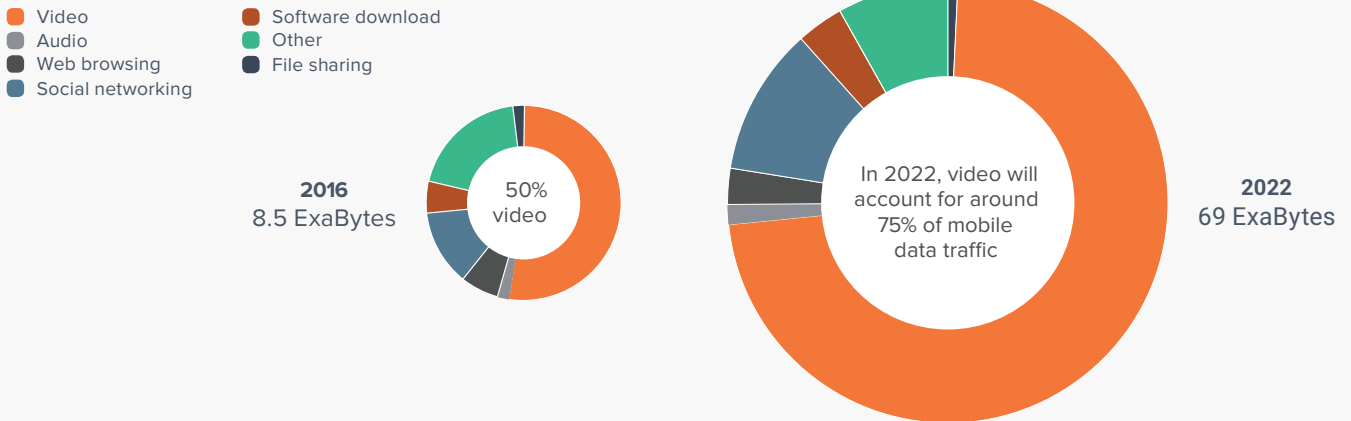
In addition, these different networks often coexist and their performance can impact each other, with quality of service (QoS) ultimately depending on all of them working together as a cohesive service chain.

As new technologies typically introduce new interdependencies within the service chain, the overall manageability of the network becomes complex. The problem is that existing mobile networks already pose several challenges for the mobile operators. A recent survey of 76 mobile operators conducted by Heavy Reading shows network failure and congestion to be the type of outages and degradations that affect customers the most, resulting in a bad experience and increased customer churn.

If network performance is already hurting customers today, what will happen when new technologies are adopted? In this context, new technologies are both a huge promise and a huge risk. The promise is to offer customers the advanced, high-speed digital services they demand, in a cost-effective manner. The risk is that QoS can go the other way, causing clients to leave because of frequent service outages and degradations.

Figure 1. Mobile Data Growth Forecast

Mobile traffic by application category per month (ExaBytes)



Source: Ericsson Mobility Report, November 2016

CROSS-DOMAIN VISIBILITY AND TEAM COLLABORATION

Historically, mobile operators have anywhere between a handful to a dozen different tools for managing the performance of different parts (domains) of the network. Tools are often network- or vendor-specific, developed in-house, and used and maintained by distinct departments (Operations, Engineering, NOC, Optimization, Quality, etc). Although these silo tools do provide some level of visibility, but this is not enough.

Service quality indicators are end-to-end by nature, as the service relies on all networks working together as links in a chain. For instance, a mobile customer accessing the Internet relies on the RAN, Backhaul, Packet Core and IP Core networks functioning properly. To make matters more complicated, networks can also affect each other, making service quality issues much more difficult to isolate and diagnose. For instance, problems with dropped calls in a region of the radio access network may be caused by dropped packets in a backhaul link far away.

With silo tools and only partial visibility into different domains, it is very impractical – if not impossible – to measure end-to-end quality parameters, let alone

quickly detect and solve quality problems that involve multiple networks.

Often in this scenario, service outages and degradations are detected only after customers begin to complain.

To have proper visibility into network behavior, while being able to model and measure global service quality parameters, the mobile operator needs to consolidate all performance systems into a unified system that acts as an overarching Service Assurance system.

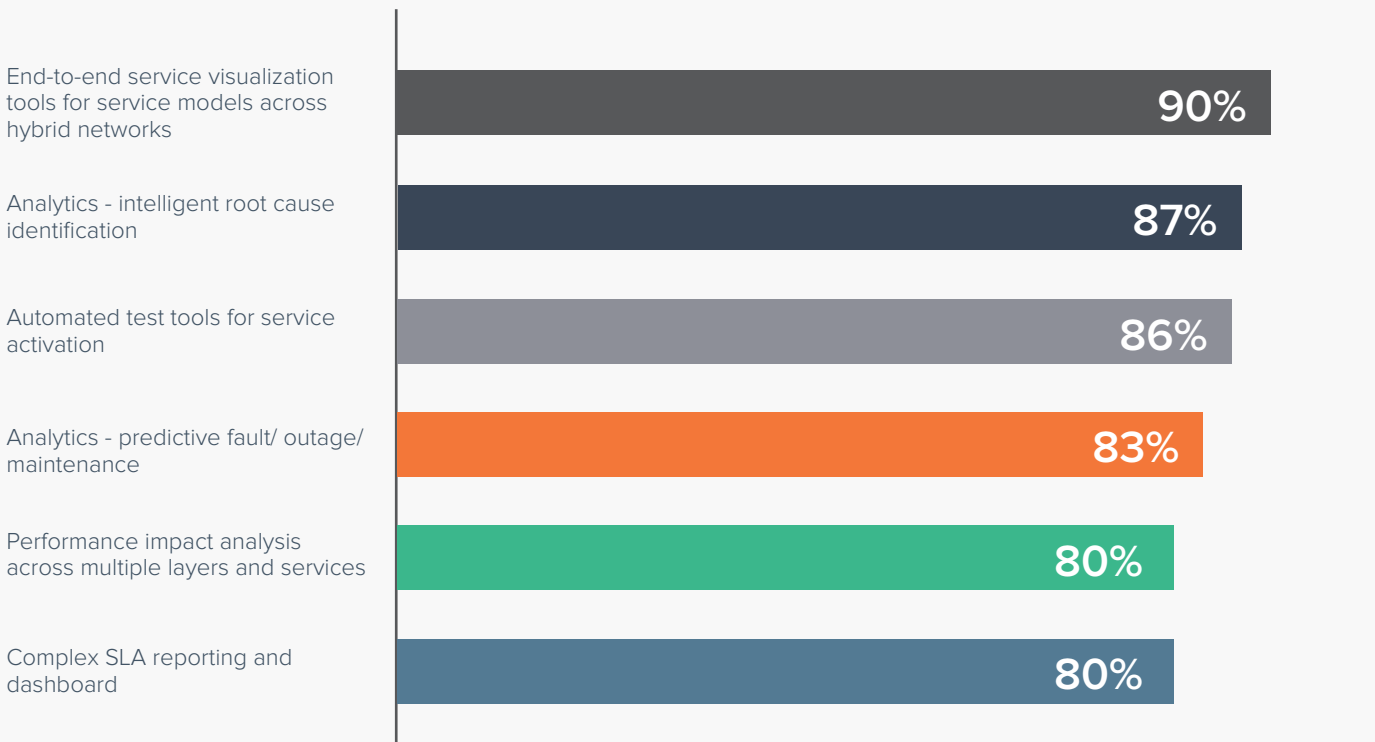
This provides effective end-to-end visibility across multi-technology, multi-vendor network domains, physical and virtualized (hybrid).

This unification process also allows mobile operators to simplify the service assurance practices, by establishing a collaborative ecosystem among different stakeholders, such as Operations, NOC, Quality, Engineering, Marketing, Sales and CxO. This is especially important when different functions need to work efficiently to solve problems involving multiple domains.

The consolidation of performance management tools into one single Service Assurance solution, combined with the unification of service assurance practices offers significant benefits:

- Mitigation of network outages and service degradations, ensuring better customer quality of experience (QoE) and reducing customer churn;
- Prevention of direct revenue loss, due to an inability to capture revenue from billable minutes (lost voice minutes and data KB due to unavailable network);
- Rationalization of costs via a number of direct and indirect CAPEX and OPEX gains, including:
 - Reduction in the number of tools and associated operational and maintenance costs;
 - Reduction of all direct and indirect costs associated with network troubleshooting. For instance, reduction of field drive tests;
- Reduction of regulator intervention and fines; and other financial provisions reserved to deal with the nasty consequences of more severe or widespread service outages and degradations;
- Rightsizing the network for better allocation of CAPEX. This includes the ability to identify parts of the network that are – or will be – over- or underutilized;
- Guarantee of capital protection by investing in a long-term strategic platform that evolves and supports all current and all future hybrid networks.

Figure 2. The Most Critical Features Required in Service Assurance Tools



Source: Heavy Reading Survey, 2017

CRITICAL SUCCESS FACTORS

The solution should effectively work as an umbrella of performance assurance, managing the entire network delivery chain and providing the level of visibility that mobile operators need to be able to model, enforce and achieve the strategic QoS parameters defined by executives. For this, mobile operators need to leverage E2E performance assurance solutions that offer the following capabilities:

CARRIER GRADE PLATFORM

- Support for all networks and their intrinsic complexity, especially the ability to collect relevant performance data via standard or customized interfaces in real-time or near real-time;
- Ability to gather massive amounts of raw data from all networks and transform it into meaningful network and service level quality indicators – in near real-time – via use of a powerful and flexible data model;
- A significant level of automation for processing the data and reducing complexity, eliminating the human factor whenever it is possible, and allowing quicker reaction times when problems happen
- Cloud-readiness of the system to reduce capex

CROSS-DOMAIN VISIBILITY

The system must provide a graphical, easy-to-use reporting and visualization tool where users can see all networks and their relevant performance data in a single pane of glass. The interfaces should be intuitive and suitable for both technical and non-technical teams, thus serving different functions and stakeholders of the mobile operator.

ACTIONABLE VISIBILITY

The ability for users to quickly visualize and act on problems. The solution must provide consolidated quality and alarm dashboards with drill-down workflows so that the users can quickly navigate through performance reports in context to isolate and diagnose problems (root cause) when performance alarms trigger. Ideally, the user must be able to go from a higher-level quality view to a detailed network view (raw performance counters) in a matter of few “clicks.”

HISTORICAL DATA AND PREDICTIVE ANALYTICS

The solution must be able to scale and consolidate all network information into a single database, using the historical information to run predictive analytics (for example: 3-month forecast, baselines etc), as well as making all relevant history and data available to other external systems (via open interfaces and open APIs).

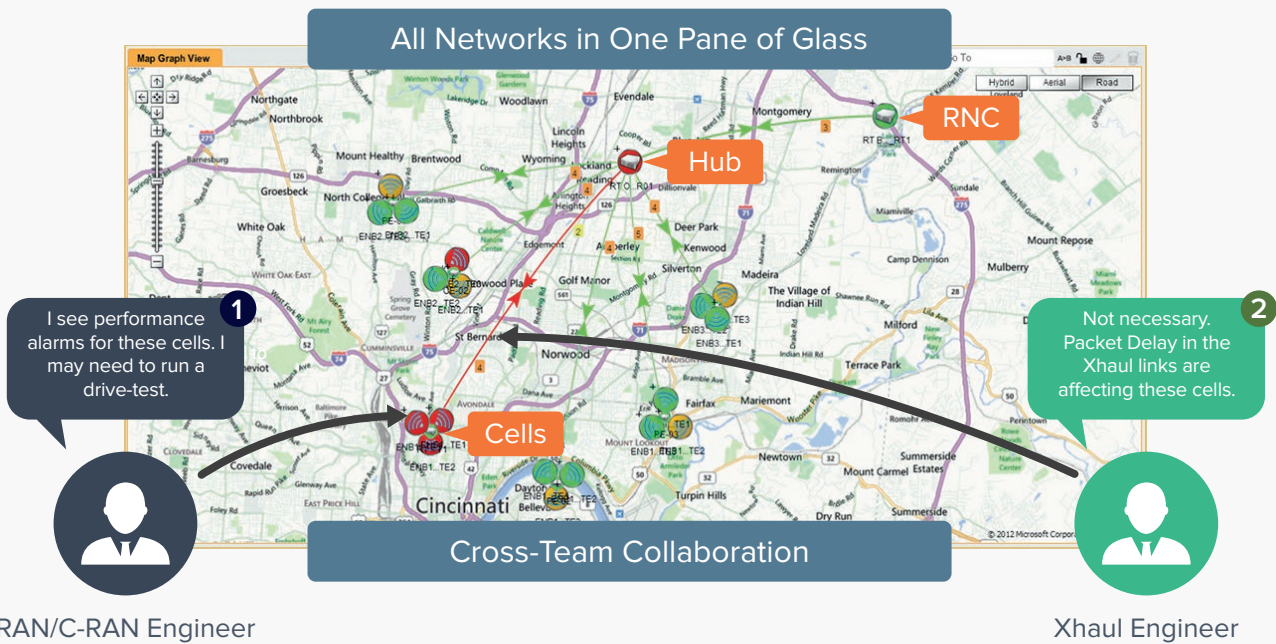
ONLINE, SELF-SERVICE AND INTERACTIVE PERFORMANCE DASHBOARDS

All reporting interfaces must allow the users to create their own reports. The solution must also provide non-specialist users simple and intuitive interfaces requiring no formal training in the tool. Furthermore, reporting tools must allow users to export and share their reports in online and offline formats, facilitating intra- and inter- department collaboration.

A CENTRAL REPOSITORY OF NETWORK INTELLIGENCE AVAILABLE ANYWHERE, ANYTIME

- Modern Service Assurance solutions have evolved to offer cloud-based options, significantly reducing the TCO and deployment times;
- Different teams within the operators, and even different OpCos in different countries, can unify and centralize all network intelligence in the same repository;
- The cloud can serve anyone, anywhere, anytime. A private cloud architecture ensures security, while multi-tenancy guarantees that information is accessible according to profile and strict access privileges, ensuring privacy;
- Executives overseeing all OpCos can effectively implement and enforce network quality parameters in specific countries as well as globally, overseeing all different OpCos simultaneously and in real-time.

Figure 3. Effective Cross-domain Visibility and Cross-team Collaboration



ACCELERATE SERVICE ASSURANCE CONSOLIDATION, MITIGATE RISKS AND REDUCE TCO WITH VISTAINLIGHT

With over 20 years in the telecom market, Infovista understands the challenges involved in Service Assurance consolidation projects. In fact, Infovista is involved in several such projects with Tier 1 and Tier 2 operators around the globe.

Infovista’s solution Vistainlight transcends a toolset; it offers a comprehensive out-of-the-box packaged solution that allows mobile operators to start using the system very quickly. Out-of-the-box support is quite important, especially for mobile operators working within a very tight schedule. Sometimes they need to launch new networks (example: LTE, VxLTE) with limited or silo assurance tools in place.

In such cases, it is essential to start monitoring and managing the performance of the new network as soon as possible.

No matter how comprehensive the OOB features are, there is always the need to adapt the tool to each mobile operator’s (Department’s, Individual’s) specific needs. After all, consolidation projects do involve the replacement of several performance tools already in place, and it is natural that users expect the new solution to provide similar capabilities, indicators and reports that they already use today.

The more the tool adapts to users – and not the other way around – the better.

Therefore, the Vistainlight design allows mobile operators to tailor the solution to their particular needs, with incredible speed.

Vistainlight’s powerful end-to-end performance platform combined without-of-the-box content and flexible design enables mobile operators to conduct projects in a controlled manner and ensure quick results while the solution is gradually adapted to each user. This considerably reduces the project risk for all project stakeholders in massive consolidation initiatives.

Furthermore, in a scenario of increasing market saturation and lower ARPU, mobile operators need to find ways to reduce total cost of ownership (TCO). Here, Infovista offers new innovative business models that allows mobile operators to implement the end-to-end mobile service assurance solution with reduced TCO. The available options range from a Managed Services model to a full cloud-based “as a Service” model that provides the solution at a pure OPEX yearly fee. This allows for an even faster ROI.

Figure 4. Troubleshoot Complex Cross-domain Network Problems in a Few Clicks.



SOLUTION PACKAGES

SUPPORT FOR THE MOST RELEVANT NETWORKS AND TECHNOLOGIES

- 2G, 3G, LTE, Metro Ethernet, IP, MPLS, ATM, Transmission, DSL, Etc.

PARTNERSHIP WITH MOST RELEVANT NETWORK VENDORS

- Cisco, Ericsson, Nokia, Huawei, Juniper, Alcatel-Lucent, Etc.

THOUSANDS OF KPIS IN A POWERFUL AND FLEXIBLE DATA MODEL

- 200+ LTE, 500+ 3G, 200+ Core, 3200 MIB Groups, 162 device families.

HUNDREDS OF REPORTS, INCLUDING TROUBLESHOOTING WORKFLOWS

- Provides Actionable Visibility from the onset.

INDUSTRY STANDARD PROTOCOLS AND OPEN APIS

- Seamless integration with the network, as well as with the OSS/ BSS in the ecosystem, using TMF and MEF standards.

STRONG ROADMAP TO SUPPORT FUTURE TECHNOLOGIES

- Active engagement with ITU-T, IEEE, 3GPP, MEF and NGMN

UNIFIED E2E PLATFORM

FLEXIBLE MEDIATION LAYER TO COLLECT PERFORMANCE COUNTERS

- All net works, all technologies, all vendors: Telemetry, SNMP, XML, Files, FLOW, etc.

ONE DATABASE TO CONSOLIDATE ALL NETWORK INTELLIGENCE

- Consolidate all network information into a single database.

REPORTING FOR TECHNICAL AND NON-TECHNICAL USERS

- Operations, Engineering, Optimization, Quality, Marketing, CxO.

POWERFUL DATA MODEL FOR KPI & ALARM AUTOMATION

- Significant level of automation to process the data and hide complexity.

DRILL-DOWN WORKFLOWS FOR TROUBLESHOOTING

- Operators can quickly diagnose problems as they happen.

BASELINING AND TRENDING FEATURES

- Detect abnormal net work behavior and predict net work load.

FLEXIBILITY AND SELF-SERVICE FEATURES

AGILE TOOL TO ADD NEW COUNTERS, INDICATORS, REPORTS

- Done in a matter of hours or days, NOT weeks or months!

DOES NOT REQUIRE CODE WRITING OR DEVELOPMENT

- Does not require expensive Professional Services – your team can do it.

NEW CONTENT CAN BE ACTIVATED “ON-THE-FLY”

- Without the need to interrupt the production platform, or new software versions.

MODULAR SOFTWARE AND DATA MODEL DESIGN

- Allows operators to add networks in a controlled phased approach, one at a time.

SELF-SERVICE, EASY-TO-USE WEB-BASED REPORTING TOOLS

- Users with no formal training can create reports in a matter of minutes.

FULL MULTI-TENANT CAPABILITIES

- Serves all relevant areas and stakeholders with meaningful information.

AN INNOVATIVE BUSINESS MODEL

FULLY HOSTED SERVICES OPTION (AAS)

- No licenses, no hardware, no headache. Full OPEX based offer based on a yearly fee!

MANAGED SERVICES OPTION (LICENSE)

- Infovista operates, administrates and maintains the service assurance solution.

DATACENTER OPTION

- Infovista provides the software, the mobile operator provides the datacenter infrastructure.

CLOUD OPTION

- Hardware is hosted in a private cloud and managed by Infovista. The solution can also be hosted in a public cloud.

USE THE CLOUD AS A CENTRALIZED REPOSITORY OF ALL NETWORK INTELLIGENCE

- Ensure KPIs are available and normalized across all organizations and all OpCos!

A COMPLETE SERVICE CATALOG

- Catalog “A la carte” to maintain the platform evolving together with the operator’s business.

The results are quicker reaction times to detect and diagnose network outages and degradations, happier customers, and less churn. This is also the only way mobile operators can fully realize the benefits of the newly adopted network technologies, such as VxLTE, NFV/ SDN and upcoming C-RAN/5G, without compromising the customer experience.

SUMMARY

Mobile operators need to adopt newer, more efficient network technologies to cope with the exponential growth of customer data traffic, while remaining competitive. However, today's typical service assurance practices, which involve multiple, siloed performance management tools and a lack of team coordination, are no longer able to handle the increasing complexity of newly-introduced technologies, especially in the virtualized hybrid networks. Often, mobile operators discover problems after customers complain.

Mobile operators need to answer the hybrid network transformation with another transformation: that of their Service Assurance. At the core of this transformation is the unification of all current network performance tools under an end-to-end service assurance solution. This simplifies the operations, empowers all teams with the visibility needed to monitor global service quality indicators in real-time, and encourages collaboration to proactively solve and prevent problems, even in complex cross-domain scenarios.

The results are quicker reaction times to detect and diagnose network outages and degradations, happier customers, and less churn. This is also the only way mobile operators can fully realize the benefits of the newly adopted network technologies, such as VxLTE, NFV/ SDN and upcoming C-RAN/5G, without compromising the customer experience. Ultimately, mobile operators can aim even higher and confidently launch more elaborate, complex convergent digital services that the new technologies are designed for, or, perhaps offer packages in which better QoS is provided as a premium.

Finally, mobile operators today can further benefit from new innovative commercial models where the end-to- end mobile Service Assurance solution is available as a managed service or as a full cloud-based service (aaS) solution, reducing TCO and accelerating ROI.

About Infovista

Infovista, the leader in modern network performance, provides complete visibility and unprecedented control to deliver brilliant experiences and maximum value with your network and applications. At the core of our approach are data and analytics, to give you real-time insights and make critical business decisions. Infovista offers a comprehensive line of solutions from radio network to enterprise to device throughout the lifecycle of your network. No other provider has this completeness of vision. Network operators worldwide depend on Infovista to deliver on the potential of their networks and applications to exceed user expectations every day. Know your network with Infovista.