

SOLUTION BRIEF

# Automated Analytics Platform for Mobile Service Assurance

VistaInsight Service Assurance



## On-Demand Services in Hybrid Networks

As Communication Service Providers (CSPs) introduce new technologies such as 5G, NFV, SD-WAN and Network Slices to deliver on-demand services for their customers, the ensuing hybrid (physical and virtualized) network environment will demand speed and agility in the provisioning, deployment and management of the new mobile services. The Service Assurance system will play a key role in supporting the deployment and assuring such real-time, dynamic operations through automation and analytical insights.

According to our study, 90% of CSPs reported that end-to-end service visualization tools are the most critical feature of a Service Assurance system for building service models across hybrid networks.

If a Service Assurance system is not able to keep up with the speed of service provisioning, is not synchronized with the changes in network topology, and cannot ingest and enrich data from multiple sources (including Big Data), CSPs will be unable to deliver and maintain the velocity required in an on-demand service environment.

Such expectations of service velocity require support from Service Assurance systems. To achieve this, the Service Assurance systems need to be open, agile, automated and analytical. To keep-up with the growth of network elements to monitor, the amount of data to manage and their high frequency, the Service Assurance platform needs to scale and leverage automation to face the unpredictable on demand requests.

CSPs need to make strategic transformation in their Service Assurance platforms to be able to transform their legacy business models to digital business models and protect their revenue.

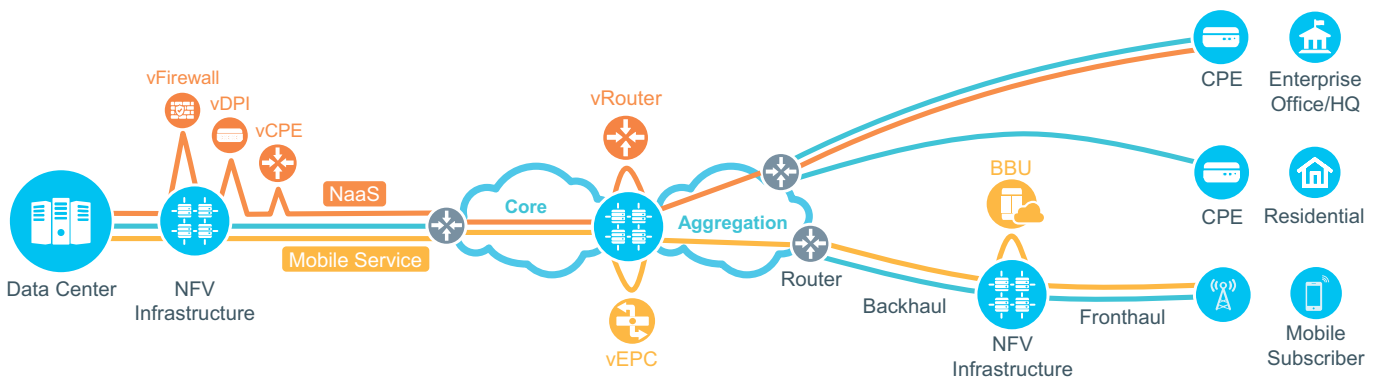


Figure 1. Service models for Hybrid Networks

## Challenges of CSPs

According to the study - NFV Assurance & Analytics, undertaken by Heavy Reading with the world's leading Tier 1 CSPs, the top five "massive or significant challenges for Service Assurance in operationalizing NFV" in a CSP ecosystem are:

1. Assuring performance of multi-vendor VNFs
2. Offering dynamic SLAs
3. Integration/API issues between OSS and MANO
4. Scaling to manage huge volume of data in real time
5. Assuring hybrid networks in common platform

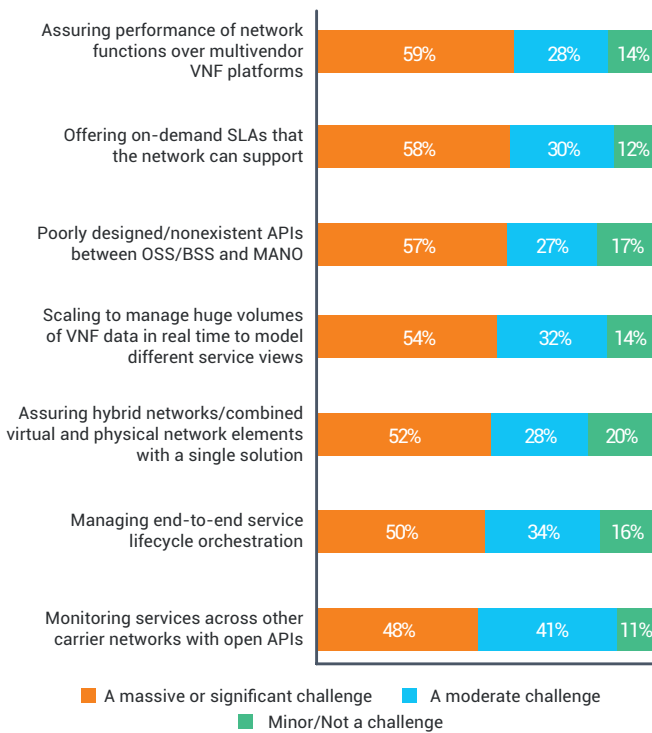


Figure 2. Service Assurance Challenges in NFV Operations (Heavy Reading study- NFV Assurance & Analytics, 2017).

## Real-time Data for on-demand services

The study showed that 76% of the respondent CSPs identified **real-time data per session** as critical or important, and 71% CSPs identified an **open platform and easy third-party integration** as critical or important features of a Service Assurance system.

CSPs' expectations from a Service Assurance system include receiving and processing data from across the entire network, regardless of the stage of hybridity, technologies, vendors, services and applications that it supports. That is, it should consolidate all Service Assurance functions across the entire hybrid network. However, achieving this is impractical, due to the effort and time required to replace all legacy systems. As a result, there is growing demand for open APIs as a means for the unification of the silos of a CSP's ecosystem.

A white paper by Heavy Reading ('The Antifragile Telco: Assuring the virtualized network') recommends that the Service Assurance platform will need to support a comprehensive set of application programming interfaces (APIs) to connect with other systems to deliver connectivity services. Examples of what such APIs can deliver include:

- Dynamic solution topology/inventory, aligned with CSPs' service/information models
- Allowing other solutions (orchestrator, controller, etc.) to start data and event streaming, on demand and for a defined period or indefinitely (requiring alignment with standards such as TMF 628)
- Data insertion from other solutions or a mediation bus
- KPI data and event query capabilities from other solutions (portal, orchestrator, etc.)
- On-demand discovery and context enrichment of infrastructure elements
- Service assurance solution health indicators for telco cloud support
- Configuration and management of the service assurance solution

## Enablers for Digital Business Transformation

The Heavy Reading Survey indicates the following 3 critical needs of CSPs for service assurance of on-demand services:

1. Real-time analytics, Telemetry Streaming and event/fault correlation
2. Unified performance monitoring across service, network and telco cloud domains
3. Automated prioritization of fixes and faults

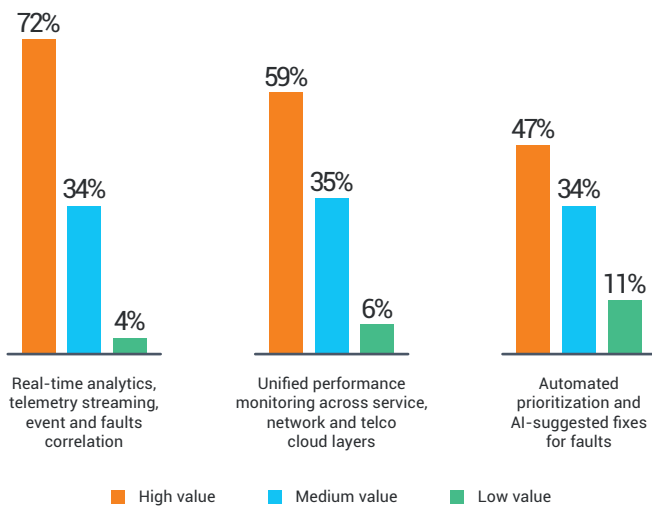


Figure 3. What CSPs Want in Service Assurance Systems (Light Reading Survey, 65 Tier 1 CSPs, 2017)

A Service Assurance system needs to acquire data rapidly and then perform data analysis for actionable outcomes. These outcomes act as triggers for orchestrators and controllers (NFV Resource Orchestrator, NFV Service Orchestrator, SDN/SD-WAN Controllers etc.), which, in turn, carry out the recommended changes (based on policies) for effective closed-loop problem resolution.

Analytics derived from such multiple data sources can also be fed back into CSP Big Data lakes to be used by other systems to create new contextualized services, based on patterns, customer usage, trends and predictions. To achieve this, the Service Assurance platform needs certain fundamental components. These are:

- Faster rates of data ingestion
- Automated processing and correlation of information

- Opening of data ports to all ecosystem components
- Dynamic real-time synchronization with network topology
- Analytics capability

Service Assurance systems need to acquire accurate

### METHODS OF DATA INGESTION

data to generate precise performance KPIs. Data acquisition based on older methods such as SNMP need to give way to more real-time and secure data-flow methods, such as Data Buses, Telemetry, NetFlow and APIs.

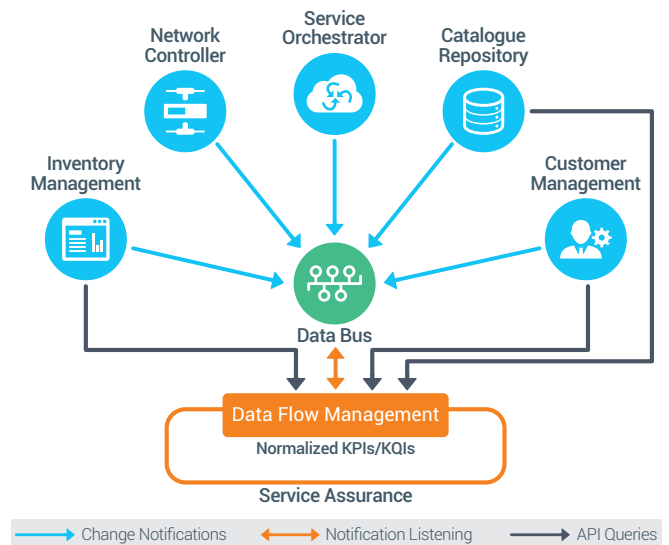


Figure 4. Dynamic Topology Management.

Data Buses are being introduced, such as Kafka, which allow Service Assurance systems to acquire and share data quickly, and to direct it to the right NFV elements (i.e. VNF managers, MANO, hypervisors etc.), as well as other ecosystem components (Orchestrators, Big Data lakes, Fault management systems etc.).

Telemetry sources and Orchestrators also offer measurements for the Service Assurance system, such as CPU utilization, memory utilization, I/O operations rate, and more. To determine the health/performance of the underlying NFV hardware, these measurements are also considered relevant and important.

**AUTOMATED PRIORITIZATION FOR NETWORK ORCHESTRATION**

Actionable outcomes of a Service Assurance system can be in the form of policy violation alarms, corrective recommendations, root cause identification, and in more sophisticated systems, prescriptive actions.

Through dynamic discovery of relationships across network functions, the Service Assurance system should be able to construct a real-time network topology. This is essential for the creation and updating of service models, managing network/service configurations, and dynamic policy adjustment.

In an NFV or SD-WAN environment the Service Assurance system is expected to be able to configure SLAs dynamically. That is, to enable customizable KPIs and SLAs, and ultimately recommend changes to the SLA parameters.

Data (using Telemetry), the dynamically synchronized state of the network topology, automated resource capacity and network planning analytics and a real-time view of network and service performance. By streaming data in real-time and breaking down operational silos, Vistalnsight platform is designed for business agility in hybrid networks.

**Vistalnsight helps the CSPs to prepare for the virtualization challenge by becoming acquainted with the capabilities listed above, creating an ecosystem that is ready for virtualization.**

CSPs can obtain immediate benefits from the use of Vistalnsight platform, even before embarking on the virtualization process. These include:

- Design and testing of future NFV networks
- Support in designing NFV hybrid service models
- NFV MANO ecosystem management

When the CSP network has been virtualized, the Vistalnsight Open APIs enable integration and interoperability in the ecosystem by:

- Initiation of KPI data/event streaming from other elements (orchestrator, controller, portal, etc.)
- Data ingestion from other solutions or mediation bus
- Alignment of dynamic topology/inventory with CSP service model
- On-demand discovery and context enrichment of infrastructure elements
- Configuration and management of the Service Assurance solution

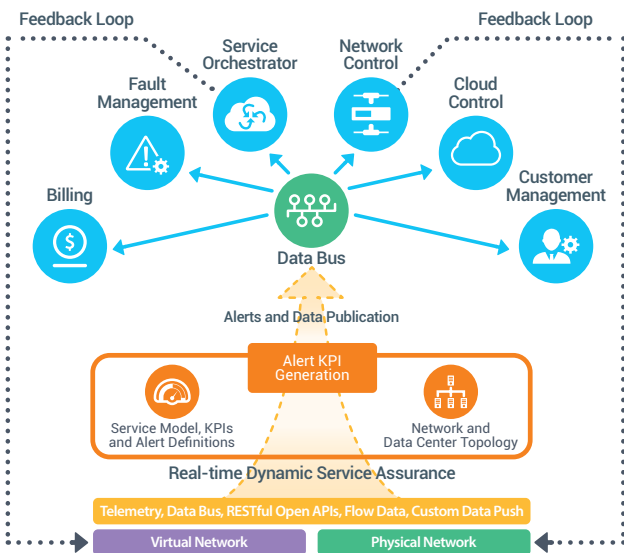


Figure 5. Automated Closed-loop Optimization.

## Infovista Solution: Automated Analytics Platform for Service Assurance (VistaInsight)

Vistalnsight Automated Analytics platform complements the service orchestrator to support automated healing and closed feedback loop for capex and opex optimization. This is achieved through an extensive set of Open APIs, agile ingestion of Big

In addition to offering Open APIs, Infovista's Vistalnsight Automated Analytics Platform is an extensible, highly scalable and resilient Service Assurance framework, which is designed to accelerate the CSP's digital transformation programs, using fast data management flows for agile ingestion of multi-source data, telemetry, a high performance analytical database and a visualization system offering automated analysis.

**CSPs can obtain immediate benefits from the use of Infovista's platform, even before embarking on the virtualization process.**

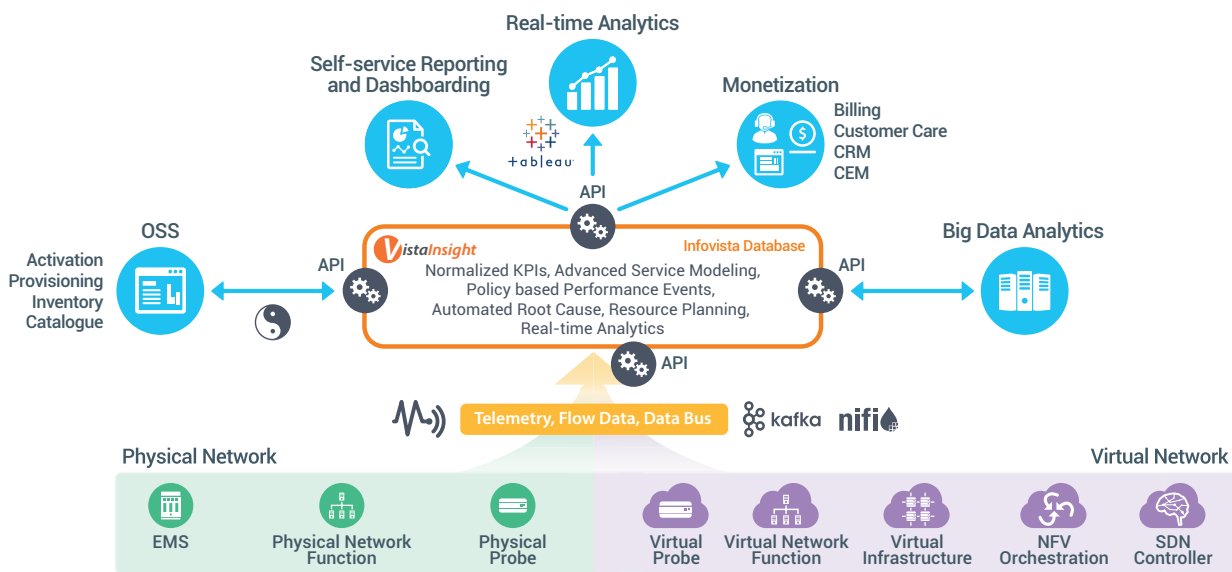


Figure 6. Vistalnsight Automated Analytics Platform.

## Why VistaInsight?

Vistalnsight Platform meets key CSP use-cases, such as:

### DYNAMIC AND AUTOMATED SERVICE MODELLING

To build effective service policies and service models, CSPs require perfect synchronization between the network/service topology and KPI data acquisition (creation, update, delete). With real-time dialogue between the topology systems and Vistalnsight, performance information from the SDN orchestrator, NFV Manager, Virtual Infrastructure Manager, and others, is processed to enable real-time orchestration of the network/services.

### BIG DATA ENRICHMENT THROUGH ANALYTICS

Vistalnsight can feed the CSP Big Data lake with enriched analytics on the network, location, service context and topology. Examples of analytics based on Telemetry data include traffic behavior patterns, identification of traffic bursts, and resource saturation. This enables CSPs to create new services, based on better understanding of service usage, trends and patterns to derive significant additional business benefits.

### AUTOMATION OF OPERATIONAL TASKS

Vistalnsight platform can automate most operational tasks to support zero-touch operations and management, by interacting automatically with network elements, network orchestrators and the IT infrastructure. Examples include monitoring and predicting issues for each PNF/VNF so that remedial action (such as rerouting, traffic sharing, etc) are implemented through the orchestrator.

It can stream real-time alerts and KPIs to the orchestrator (Recommendation) and receive notification streams to verify implementation of the recommended changes (Feedback).

This simplifies complex optimization problems and reduces routine employee activities.

**CAPACITY PLANNING**

Vistalnsight analytics bring added benefit to capacity planning. Examples include tracking allocated versus actual resource utilization by VNFs and PNFs, resource capacity/network planning trending, PNF/VNF availability KPIs, and forecast using exponential smoothing model and seasonality detection etc. Predictive analytics can also support in simulation of potential impacts of link usage, PNF/VNF usage, coverage and congestion.

**SERVICE END TO END VISIBILITY ACROSS DOMAINS**

Vistalnsight can provide CSPs with end-to-end visibility of services across mobile network domains, and different data sources. Combined with the Infovista’s solution dedicated to automate RAN operations, Vistalnsight provides CSP with detailed insights across the RAN, mobile core and xHaul. With the emerging 5G standalone network and migration of network functions to the cloud, unifying the view and control across domains becomes critical to deliver the expected performances and secure SLAs.

**With the velocity of service deployment in NFV, there is a need for automated data acquisition from streaming telemetry sources and real-time data processing.**

**Summary**

As NFV, SD-WAN and Network Slices become a reality, CSPs are assigning the highest priority to real-time processing, automation and analytics as key capabilities for Service Assurance platforms to support on-demand services. Service Assurance is no longer a system only for the Operation Center, where engineers monitor and manage the performance of the network and its services. Instead, Service Assurance systems play the role of a key central service enabler offering real-time analytics that support closed-loop orchestration of the network and services. With the velocity of service deployment and tear-down expected in on-demand environments, there is a clear need for faster data acquisition from streaming telemetry sources and real-time data processing. Data granularity is expected to move from 5-minute intervals to just a few seconds, which, in turn, leads to a significant increase in smarter analysis.

Infovista has responded to this need of CSPs through its innovative open, real-time and automated analytics platform architecture – Vistalnsight. This will lead CSPs into more efficient virtualized operations. The capabilities of open APIs, dynamic inventory, telemetry sourcing of data, and policy-driven closed loop enable CSPs to derive the maximum business benefits from their virtualized on-demand service environment.

By streaming data in real-time and breaking down operational silos, Vistalnsight is dedicated to increasing business agility and interoperability (through open source components) in hybrid networks, either physical or virtual.

Vistalnsight platform enables the consolidation of data and open platform functionalities for real-time, automated operations. This, in turn, drives service agility enabling a competitive service creation environment leading to rapid return on investment.

Finally, Vistalnsight can support the digital transformation of a CSP by enabling new digital products, on-demand services through automation and analytical insights over a wide set of hitherto unexplored data from multiple sources, including the CSP’s Big Data.

## 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.