



## Federos Software Assure<sup>1</sup>™ Unified Service Assurance for MSOs

### Enabling automation through intelligence

As the complexity grows, service assurance must be able to illuminate the current and historical performance of networks, and to troubleshoot in real time without disrupting subscribers' experiences.

#### Assure<sup>1</sup> Unified Service Assurance for NFV Service- and network-aware automation for today's existing hybrid and virtualized environments

Competing in the 'Gigabit Era' means cable multi-system operators (MSOs) are evaluating how disruptive technologies like virtualized CMTS/CCAP and DOCSIS can help them optimize the bandwidth capacity of existing hybrid fiber/coax (HFC) lines, fight revenue erosion and accelerate service velocity.

The key is to transform CX with more compelling, performance-sensitive services, such as IP video and multiscreen services, video chat, multiplayer games, video streaming, interactive live streaming, MSO Wi-Fi calling, smart home and managed commercial services.

MSOs want to innovate in these service areas, but without having to immediately upgrade HFC networks, expand RF plant spectrum or add more fiber lines. This becomes possible if service assurance is elevated to a higher level, deriving insight and driving automation across what is becoming an increasingly complex landscape of devices, network elements and service categories.

As the complexity grows, service assurance must be able to illuminate the current and historical performance of networks, and to troubleshoot in real time without disrupting subscribers' experiences. As such, MSOs must move toward unified service assurance, which drives automation and intelligence and sets the stage for self-healing, and self-optimization of networks.

#### Assure<sup>1</sup> Unified Service Assurance for Automation and Intelligence

Troubleshooting and service assurance capabilities are critical to today's HFC environments and the transition toward NFV deployments. In order to support SLAs for real-time, always-on service delivery in virtual environments, MSOs must automate so that they can achieve true intelligence in how they

capture, normalize and analyze data from an increasingly complex universe of resources. They must have service- and network-aware management capabilities in order to recognize whether functions are performing as needed in virtual and hybrid environments.

Assure1 unified service assurance is designed to be the “brain” that will drive that automation and intelligence, thus opening the door to self-healing, and self-optimization of networks. With rich data collection plug-ins, advanced visualization and open APIs, it will be possible for data to flow seamlessly across applications, fault management, performance management and topology graphs.

This will help MSOs to both understand and facilitate automation of event-driven processes, which will ultimately feed orchestrators for what can become automatic reconfiguration and hence optimal service delivery through just-in-time resource management. This simplification means that service chain creation can go from months to days; onboarding services can go from weeks to hours; instantiating complex services can go from days to minutes.

This is a departure from silo'd “manager-of-manager” point solutions, rules-based engines and other static root cause analysis systems that manage only individual parts of the network — making them incapable of relating data across domains in hybrid environments.

Critical in these hybrid environments will be a foundation of robust topology graphs rich with insight and clarity derived from the knowledge and awareness hidden in data sets spanning myriad network domains. Assure1 topology is rich with insight because it leverages a single, unified code set, database and presentation interface, providing an end-to-end view of both physical- and virtual network function domains (PNF and VNF). Only with that unified view can there be enforceable QoS across the dynamic landscape of hybrid networks. Assure1's ability to traverse both virtual and physical environments means service providers can collect and present data from all sources, such as tools, EMSes and databases. They can also combine fault, performance, service management, and topology components in one unified GUI.

## Closed-Loop Automation

Closed-loop automation refers to the constant assessment of network traffic and performance to ensure service quality, as well as detect threats and drive innovation. For example, it means a network should automatically add layers of a firewall if a network comes under a DDoS attack, or that it should automatically make adjustments when latency issues for a service arise. Such capabilities can set the stage for constant improvement, optimization and remediation in terms of security, performance and fault management.

Closed-loop automation is invaluable, but difficult to achieve because of the dynamic and constant movement of resources as PNFs and VNFs are stitched together in service chains comprising increasingly complex interdependencies and diverse topologies.

Assure1's Discovery Engine can accelerate the evolution toward closed-loop automation, as it is designed specifically for layer-2 and layer-3 PNFs. And because it works with a variety of commercial orchestration systems, it can expedite the move toward virtual and hybrid networks — performing discovery of the “normal network” in the layer-2 and layer-3 topology, and using a “hybrid stitch” to gain awareness of how provisioning systems are chaining together VNFs and PNFs in the topology. This is accomplished through an API layer that accepts connections from a variety of network orchestrators.

## Architecting for Scale

To accommodate the constant fluctuation and change, Assure1 boasts a modular and componentized product set so that service providers and enterprises can evolve from base-level topology graphs to more robust capabilities.

At the orchestration level, the Assure1 topology graph and object model have been built out to monitor service instantiation and provisioning, and to report back on which services are turned up and running. Rich data modeling enforces the common object model, into which data and objects can be abstracted and aligned for runbook automation (RBA). As that evolution takes place, Assure1 will enable next-gen discovery and polling, which can set the stage for ML in Elastic Stack and other advancements.

The importance of this RBA approach cannot be understated, as it codifies service characteristics, interdependencies and policies, eliminating the need for hard coding service behaviors into workflows — an important step in operationalizing best practices and intellectual property so that automation can become a reality for service providers.

For a greater degree of automation, Assure1's Knowledge-driven Operational Automated Learning Agents bridge the gap between knowledge management engines and RBA tools, which empowers runbook developers to insert a knowledge base into a wiki-based runbook process. That allows knowledge to flow among all users. For example, administrators can develop, test and deploy new automation policies, which can then be leveraged by operators to reduce or eliminate mundane tasks.

And to further augment flexibility and agility, Assure1 leverages RabbitMQ, an open source message broker software that converts scalable components into microservices. This will help service providers and enterprises scale on demand, as the individual components (products, for example) will automatically report back on how busy they are, becoming self aware.

With each of these capabilities, Assure1 demonstrates a desire to future-proof investments for its customers, addressing not only today's vital service-assurance challenges but looking to the future and what will be critical to NFV deployments as virtualization initiatives continue to mature.

### ABOUT

#### Federos

Federos provides a next generation, service assurance solution that unifies fault, performance, topology and service level management in a single scalable platform. With the product suite from Federos, you can drive IT and OSS transformation to service-oriented operations and accelerate delivery of new services to increase revenue, while consolidating disparate and legacy tools to significantly reduce operations costs.

