SOLUTION BRIEF

Communications Service Providers
Network Management

Infosim* and Intel Show Internet of Things Network Management

Infosim StableNet and Intel® IoT Gateway Demonstrate unified, security-enabled management of IT infrastructure with scalability and connectivity assurance across IoT, SDN, NFV, and legacy networks.

Overview

The complexity of communications service providers' (CommSPs) networks is increasing as they embrace new services. CommSPs today must manage a mix of legacy circuit switched networks, IP-based networks, software defined networks (SDN), and network functions virtualization (NFV) technologies. Now, Internet of Things (IoT) services are starting to pick up, which adds new wireless networks to this mix that bring the extra challenge of supporting an extremely high number of devices on the network.

Infosim* has developed its StableNet* network management solution to manage these diverse networks. To demonstrate the solution's ability to support IoT, the company recently teamed up with Intel to demonstrate how its virtualized software works with the Intel® IoT Gateway.

The Challenge

Many network services depend on the heterogeneous CommSP networks, but managing these networks is increasingly unwieldy, complex, expensive, and difficult—leaving blind spots that could impact customer service levels. This challenge grows with the addition of IoT network services.

Gartner* predicts there are more than 8.4 billion connected "things" on the Internet in 2017, which will grow to 20 billion by the year 2020.[1] This figure dwarfs the number of mobile devices currently on the network, yet CommSPs still need to provide consistent monitoring and service-quality management for connectivity, availability, and network and systems performance.

The Solution

StableNet is a unified network and services management solution that addresses management challenges of diverse networks by identifying and inventorying network assets across all networks. The solution provides visualizations of network architectures. It also helps secure and enables management and support of connected devices. StableNet uses open interfaces to integrate with diverse network switch, controller, and orchestration platforms and systems. Organizations can set up and manage mixed networks, systems, and applications using SNMP, XML, SSH, Telnet, WMI, REST, VMware,* JMX/JMS, and RPC.

StableNet is based on a service-oriented architecture (SOA) and includes three unified operational support systems (OSS) functions: configuration, fault, and performance management, with automated root cause analysis (RCA).

With integrated automated service delivery, StableNet automates complex and time-consuming tasks, such as component onboarding, performance reporting and monitoring, configuration management, and root cause analysis (RCA).

Inventory statistics from devices, modules, and software can include IoT gateways, networked elements, SDN controllers, and cloud controllers. Automation is accomplished with a policy-based discovery engine and auto RCA. CommSPs do not need to write code around event and alarm types for the network to interpret when changes have occurred, as this process is automated by StableNet when it conducts network discovery. StableNet's automated navigation trees, inventory statistics, and topology maps make management of large and heterogeneous networks and services easy.

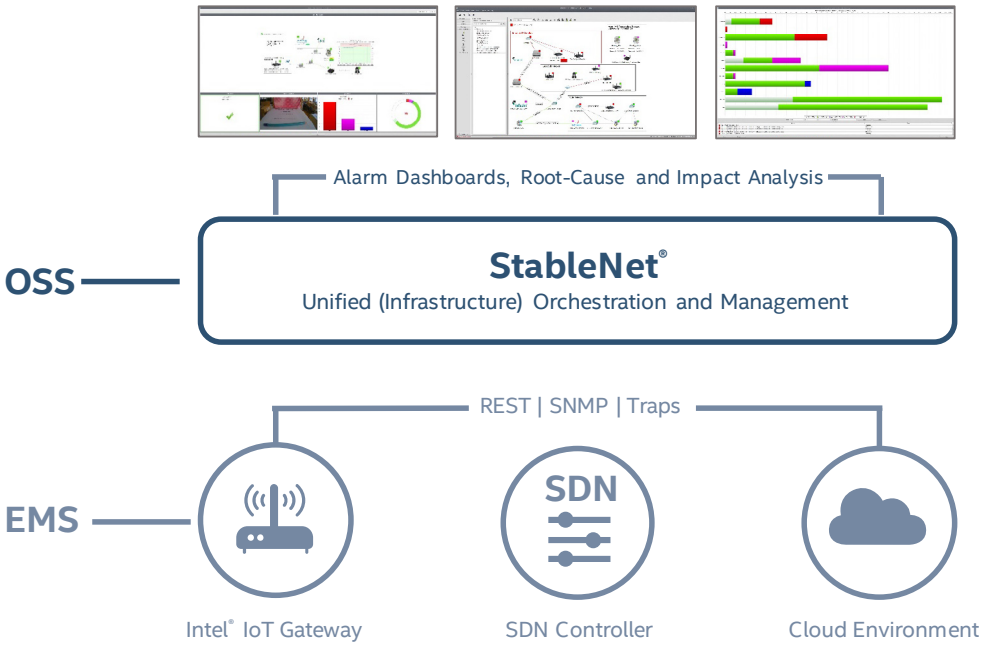

Figure 1. Unified discovery of system environment*[2]

CommSPs can automatically provision services end-to-end, including the delivery of all service reporting metrics, tracking the full OSS lifecycle of the service delivered from a single-touch tool.

Bringing IoT Into the Network Fold

Infosim and Intel demonstrated the use of StableNet in IoT networks with agents running on the Intel IoT Gateway. The demonstrations involved gateway systems, SDN orchestrators and controllers, and white box switches featuring Intel Atom® processor E3826, Intel® Celeron® processor N3150, and Intel® Core™ i7-6700T processors. The Intel IoT Gateway software provides a key building block for connectivity of circuit, cellular, and IP network infrastructure to the IoT. It integrates technologies and protocols for networking; embedded control; CommSP-, managed service provider (MSP)-, and enterprise-grade security; and easy manageability on which application-specific software can run.

StableNet embedded software agents on the gateways collect the data needed to provide security-enabled configuration, bulk management, performance monitoring and alarming, and orchestration for IoT devices, sensors, and actuators.

The system is controlled from the StableNet management console or web interface. With the StableNet agents running on the host systems, rather than centralized on one node or device, the system can scale with the growth of the number of gateways.

In addition to monitoring large numbers of IoT devices, the system can also monitor service chains that are set up in NFV networks. Service chains are a collection of functions grouped into a service that can be redeployed based on business needs. The challenge is to easily and reliably manage large volumes of devices and services that make up the chain. StableNet provides centralized, security-enabled, and easy monitoring of service chains, including threshold-triggered actions on IoT sensor and actuator data from multiple Intel IoT gateways. This allows StableNet to manage and automate orchestration for service chains end-to-end, enabling service assurance that understands all chained components.

StableNet simplifies network deployments and provides an extensible platform that can integrate Intel IoT Gateways to help CommSPs manage their scaled-out IoT networks as these services grow. The solution also allows CommSPs to extend the boundaries of network monitoring and redefine licensing models to help drive down the cost of managing large IT networks.

The solution benefits include:

- Security-enabled management for distributed Intel IoT Gateways and other networks and applications
- Consistent monitoring and service-quality management for connectivity, availability, and network and systems performance
- Automated orchestration, provisioning, configuration, backup, and restore
- Inventory automation, including discovery, update, change monitoring, and discrepancy checking

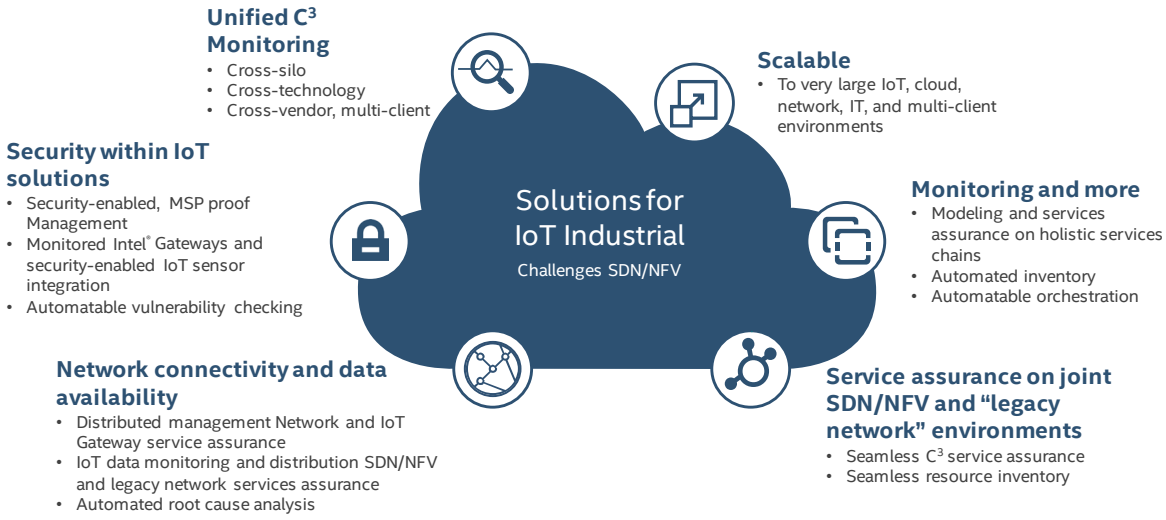

Figure 2. Security-Enabled Management—monitoring and orchestration for large, IoT, distributed legacy, SDN, and IT infrastructures

Conclusion

Deploying StableNet with Intel IoT Gateways provides a unified solution for security-enabled management of diverse network architectures. CommSPs benefit from simplified network deployments with an extensible platform to help scale their networks to grow with their business. The combined StableNet and Intel IoT Gateway solution provides organizations with centralized operations to control distributed actions on IoT data, reduces deployment and provisioning time, and eases monitoring and management of IoT network infrastructure.

About Infosim

Infosim manufactures automated service fulfillment and service assurance solutions for CommSPs and corporations. Since 2003, Infosim has been developing and providing StableNet to CommSP and enterprise customers. StableNet is a unified software solution for fault, performance, and configuration management. StableNet is available in two versions: telco (for telecom operators and MSPs/ISPs) and enterprise (for IT and managed service providers). StableNet is a single platform unified solution designed to address today's many operational and technical challenges of managing distributed and mission-critical IT infrastructures.

About Intel® Network Builders

Intel® Network Builders is an ecosystem of independent software vendors (ISVs), operating system vendors (OSVs), original equipment manufacturers (OEMs), telecom equipment manufacturers (TEMs), system integrators (SIs), enterprises, and service providers coming together to accelerate the adoption of network functions virtualization (NFV)-based and software-defined networking (SDN)-based solutions in telecom networks and in public, private, and hybrid clouds. The Intel Network Builders program connects service providers and enterprises with the infrastructure, software, and technology vendors that are driving new solutions to the market. Learn more at http://networkbuilders.intel.com.

[1] Gartner Says 8.4 Billion Connected "Things" Will Be in Use in 2017, Up 31 Percent From 2016

[2] Figures courtesy of Infosim.