

Accessing the Blackbox for Nextgen Networks

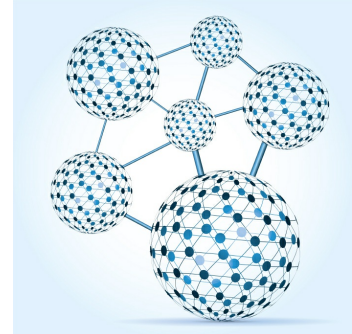
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As the industry heads for more complex network environments—including 5G and IoT—it is becoming even more of a necessity for engineers to collaborate and combine their expertise in achieving network key performance indicators (KPIs).

Yet communications service providers remain focused on traditional network equipment and utilize large numbers of engineers to manage it.

Ahmet Ozturk, chief technical executive of Innovile, explains how the introduction of greater automation enabled by SON (Self Organising Networks) and Unified NMS (Network Management System) solutions enables service providers to better utilize the experience of their engineers by managing the complexity of the future network and focusing on higher value-add tasks.

Together, software specialists can work in an open, transparent environment to automate systems and create KPIs that work to drive operational efficiency and help operators grow margins in a declining market.



5G

For many CSPs, 5G is a game-changer: it could alter the technical and commercial parameters of almost every use case. 5G will involve lots of small cells, many IoT items and new network management technologies, such as software defined networks (SDN) and network functions virtualization (NFV). By its nature, this shift will be complex and time-consuming, it will require more efficient automation and optimization.

Compared to the transition to LTE from UMTS—which had similar standards and technical operations—5G is a more dramatic shift. The complexity and uncertainty of 5G poses a big challenge, and service providers need to manage it without the expectation of generating immediate profit.

Huge amounts of equipment will be needed, which will be expensive to deploy and operate but, for many service providers, the business case for deploying 5G is unclear. Few customers need the performance of 5G specifically—yet. In IoT, and other areas such as self-driving cars, minimum network latency will be required for services to perform, and 5G will be able to support that. However, this is an emerging market and no one sees profit coming from that anytime soon, so most service providers will begin by collocating 5G with LTE, rather than building standalone 5G networks. Service providers therefore have to find funding to go through 5G installation when there is no profit to be made yet, just complication to be addressed.

Inevitably, the complexity results in costs, which is exactly what service providers are trying to minimize. Even with existing systems, service providers have substantial engineering headcount in place to manage operations and optimization. Most of the optimization workload is in the radio access network (RAN) and all the early changes will happen there as small cells, IoT devices, and others are added over time. The core network will be more stable in comparison to the RAN, but there will be a huge volume of changes to incorporate into the RAN.

Automation

Service providers face two automation challenges: automation in operation and automation in optimization. We see them using Unified NMS to automate operations and SON to automate optimization. This automation will be vital to move service providers to a sustainable cost base and to enable changes to be made sufficiently and quickly. Manual processes are simply too slow, too expensive and too error prone.

Typically, service providers have equipment from more than one vendor installed and therefore have to build engineering expertise to support each vendor. Each has different specifics for software upgrades or parameter changes that need to be considered, and different experts are required for each activity. Service providers are therefore dependent on vendor tools and must employ people who know how to use them.

Innovile provides a platform designed as one single, transparent management interface that can be adapted to all vendors' OSS and covers all access technologies (GSM, WCDMA and LTE). It is implemented as a single platform accessing all data sources and provides detailed operations logging and history. Having one single configuration management, performance management and site database for all vendors and technologies gives operators the ability to feed all third parties from a single, reliable and unique data source.

Let's consider an example in which an operator uses three different vendors across 2G, 3G and 4G. It will have at least three different platforms that need to be managed by many different experts. These experts work at night to minimize network disruption, making them even more expensive and, to make the situation even less appealing for operators, the process involves lots of manual inputs. Therefore errors can easily happen.

Service providers do not have to accept this traditional approach. They can adopt an NMS solution to create an operational support model. The Unified NMS platform can be used to automatically create the required tools to integrate with the software of all the various vendors that are deployed in a network. No vendor-specific knowledge is required, which makes integration and operation fast and error-free.

A tier 1 operator in Turkey will use our platform for 2G, 3G and 4G—not just to create the network but also to manage it. The service provider plans to have more than 2,000 sites integrated into its network and optimized by our tools in a couple of months. In addition, daily tasks in its network operations center (NOC) will be handled with our platform.

As the industry approaches 5G, service providers are preparing to be more efficient and to simplify their operations so they can consolidate existing tools and experts and optimize and manage operations in one platform—even though the multi-vendor environment will be maintained.

Automation in optimization (SON)

Optimization of the RAN also requires a lot of headcount and specific knowledge. A SON-based approach enables automation of many of the daily activities optimization engineers have to carry out. We are extending our solutions to the transport and core networks because there will be a need for automation in these topologies as well. For the continued uptake of SON, it's important to recognize there are lots of jobs that SON can automate.

SON for maximized network utilization

In addition, there are tasks that simply cannot be performed manually. These either involve huge volumes of actions or actions that need to be performed more quickly than an engineer can manage. For example, service providers can use SON to ensure maximized utilization of the network. This is vital because sub-optimal network utilization means providers are incurring operating costs without generating revenue. Achieving maximum utilization requires constant

changes to be made to the network, and this is not possible for an engineer to do.

SON can also be used to enable energy savings, turning parts of the network on or off in order to match demand. It can achieve this by analyzing previous trends and learning algorithms to predict upcoming traffic patterns and adapt the network accordingly.

Operators see these benefits and are adopting SON for both optimization and operations automation. As an example, one of the largest SON integrations undertaken to date will use 13 of our modules to standardize and optimize a multi-technology, multi-vendor network of 800,000 2G, 3G and LTE cells in a tier one operator in Russia. One of our customers in Albania has been using six SON modules, including the Energy Saving module—achieving a gain of four percent in energy cost efficiency.

A tier one operator in Portugal has started to maximize its performance by implementing Unified NMS, which is vital for ensuring that the different technologies do not interfere with each other for its 2G, 3G and 4G network. It has plans to use further Innovile SON modules in future.

A task which previously required a team of experienced engineers trained on specific vendor platforms can now be completed by one single engineer, saving considerable resources and time.

Another example would be for a CSP to change the release version of its operational support system (OSS). Such an upgrade usually takes a long time because of the need to adopt internal tools and train engineers, but the Unified NMS platform makes it possible in two or three weeks, adapting the system so it is ready for the new release.



SON has been under development for many years, but the complexity of the transition from 4G to 5G and the need to optimize to improve the cost base is driving its adoption now. There are many SON solutions on the market, but most are like a black box and only provide some of the potential functionality to service providers.

Our approach has been to work with service providers to support them in their introductions of upcoming technologies. We provide our solution as an open platform with all the parameters, KPIs and thresholds included and the flexibility to enable providers to set whatever values they require.

A further limitation with many SON systems is that they don't provide an environment in which service providers can create their own scenarios. Our approach is to provide an environment that makes it simple and fast for service providers to create their own scenarios and achieve more benefits from their SON platform.

It's time to go beyond the black box and make all the capabilities available to operators as they struggle to optimize and manage their operations in a cost-effective way, to face the huge challenges of deploying 5G against a backdrop of dwindling profits.