

The Customer-centric NOC

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If communications service providers (CSPs) are to consistently deliver world-class customer experiences across their diverse network service portfolios, their network operations centers (NOCs) must become far more customer-centric in nature.

Traditional NOCs weren't designed with today's network and service complexity in mind. That reality leaves CSPs with little choice but to move beyond the key performance indicators (KPIs) they have long used to manage their networks. Mounting competitive pressures to deliver and maintain high-quality, on-demand services are driving CSPs to add smart capabilities in the form of analytics, artificial intelligence (AI) and machine learning (ML) to their operational arsenals.



Analytics platforms that ingest data from a wide variety of sources open up visibility into end-user devices and applications, partnered and overlaid services, and specific subscriber experiences. Analytics also can predict the trickle-down impact of a network change and allow CSPs to automate operational, troubleshooting, and provisioning functions so that they can achieve the agility needed in today's on-demand digital business climate.

The dividends that analytics can pay are substantial. [McKinsey estimates](#), for example, that telcos that deploy advanced analytics can reduce customer churn by up to 15 percent. The firm also says it has seen some CSPs using advanced analytics squeeze as much as 30 percent out of their operating costs.

Where Today's NOCs Fall Short

At issue is that today's NOCs were built by people who were experts in network infrastructure equipment. As such, NOCs tend to deliver a network-focused view of the telco infrastructure; they lack details that pertain to individual subscribers or application services and infrastructure. The Net Promoter Score (NPS) system that most operators use to determine aggregate customer satisfaction levels is woefully uninformative in terms of what customers are actually experiencing with any given service at any particular time.

Traditional NOCs have long allowed CSPs to maintain a handle on their networks at a macro level, offering visibility into KPIs such as overall volume of dropped calls, packet loss levels in a given switch or router, and network congestion levels. These aggregate measurements remain important for tuning the network and rerouting traffic for overall network health and optimization. Alone, they were once adequate when CSP networks were built on fairly consistent topologies and delivered a finite number of services that mapped directly to CSP's infrastructures.

Today's networks and services paint a very different picture. CSP networks often deliver disaggregated, over-the-top (OTT) applications and services originating from third-party sources, for example, with little or no visibility into those services. A given subscriber might be multiple "hops" away on a mobile device traversing a variety of connections to reach a given CSP's backbone network or content service.

As a result, there's a continual avalanche of data, alerts, and alarms concerning a

seemingly endless number of network elements, applications, and subscribers being generated and stored across many interconnected networks. It has become very difficult for NOC engineers to sift through it all to find and act upon the ones that are important—and to do so in the split-second time frames that real-time services require.

There are plenty of alarms that lack relevance and can be disregarded. But others—such as notification of equipment overheating—are critical, yet difficult to uncover in the “haystack” of notifications. In addition, alarms don’t help CSPs understand the experience that an individual customer is having with a particular service. Consequently, by themselves, alarms are inadequate for managing today’s telco environment in a way that reliably delivers high-quality, consistent experiences.

Who Ya Gonna Call?

Consider the following scenario, for example: a third-party content provider such as Netflix or Hulu delivers streaming video entertainment to its subscribers over a CSP’s telecom network. A subscriber experiences an issue with the video frequently buffering or freezing. Unable to find a service or support number for Netflix or Hulu, the subscriber contacts his network operator to resolve the issue.

But the CSP has perhaps hundreds or thousands of different kinds of services riding its network—five flavors of landline and wireless voice, Internet access, multimedia entertainment, messaging from a variety of providers, shopping services, and so on. How does the CSP begin to figure out the root cause of that subscriber’s issue to fix it?

CSPs need to be able see what’s happening with an individual subscriber at any point in time. They also need to know how a change made to one part of the network will impact other network segments and subscribers. The only way to gain these capabilities is to install an analytics platform that stitches together data from a number of diverse sources in near-real-time and incorporates a measure of ML to automate some of the decision-making and action-taking.

Analytics let the CSP identify very granular customer experience measures that the operator can then aggregate back up into a network-wide view. It’s possible, for example, to see just where voice calls aren’t working well. They might show a pattern—for example, that customers with a particular model of mobile handset running a particular software version are the ones experiencing a common issue. Armed with that information, the CSP could push out an appropriate notice to those customers that they need a software update.

Analytics at Scale

The impetus to deploy a carrier-class analytics platform in a CSP organization will likely come from someone who has been tasked to improve service quality and reduce operating costs, even as the infrastructure becomes more complicated—and with no or little budget for additional human resources. The proverbial “do more with less” mantra speaks directly to the emergence and importance of analytics and automation in the telecom industry.

Different CSP organizations are in different phases of analytics deployment. Some have gotten as far as bringing their data together in a data lake or data warehouse but haven’t yet deployed a platform to generate analytics. A number of CSPs have tried to implement traditional business intelligence (BI) or enterprise-grade analytics but haven’t been rewarded with the returns they were anticipating. The overriding reason is that these systems aren’t geared to the scale, size, complexity and real-time requirements of providing operational intelligence (OI) for today’s carrier networks.

It’s important that the analytics platform scales to meet the large and complex requirements of CSPs. The first step is to identify the relevant sources of data that need to be analyzed and to bring the data together. It’s possible that this function can be accomplished by the analytics platform, depending on the vendor.

The ultimate goal is for analytics to identify issues and automatically fix them.

Substantial work in the wireless arena is under way, for example, to build self-organizing networks (SON). One premise behind SON is to leverage the substantial amount of data coming from the network to automatically identify issues impacting customer experience and the changes that can be made to improve that experience. These changes need to balance the effect on the impacted cell sector with the anticipated effect on neighboring sectors and make the appropriate tradeoff that maximizes customer experience.

A fix in one part of the network has a ripple effect elsewhere, and the number and nature of those effects—or tradeoffs—are very complicated in nature. As such, they are nearly impossible for a human to quickly foresee or calculate. Successful automation such as the SON environment requires AI and ML to build and “understand” the relationships among the various network elements to successfully determine—and execute—the best possible fix.

Start with a Finite Set of Services

To evolve the NOC into one that’s customer-centric, it’s best to begin with a single service, such as voice or real-time streaming, and phase in the analytics on a service-by-service basis. Implementation doesn’t require a rip-and-replace of existing NOC capabilities, but rather the integration of a carrier-scale analytics platform into NOC tools and operations.

Starting with a single service enables telcos to see success quickly and get familiar with the platform. Each service will have some common data sources, measurements, and capabilities, so as CSPs add services and data to the platform, the process will go increasingly faster.

In a digital marketplace obsessed with individual customer experience (CX) levels, CSPs can no longer rely on KPI-based NOC operations alone. By adding smart analytics tools to their NOCs, they gain visibility into each customer’s experiences with their services and are able to begin automating network fixes to help improve those experiences, reduce churn, and slash expenses.