

Managing Network Congestion with Automated Configuration and Customer Service

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Communications service providers have created a new customer demand for faster, more reliable services and increased network capacity for their subscribers with the use of smartphones and tablets. This trend has been additionally strengthened by the dropping prices of mobile devices. All of this is pushing traffic in access network to its limits. Apart from issues associated with finding new business models for increasing revenues, operators are also investing in the roll out of their 3G/4G network. How does one manage roll-out so that the millions of Euros spent actually entail an increase in network & service quality?

Resource Inefficiency and Service quality – Two Main Challenges

Each operator can manage massive network roll outs to a certain extent. Aside from huge investments, the main limitations are observed in resource efficiency and the capability to manage both positive and negative impact on service quality. One of the ways of improving resource efficiency is by automating the configuration management process.



So far, a typical approach is that the planner works with a planning tool and output is provided via a file-based interface to the configuration department. The latter is then responsible for providing configuration to the network. This means that input from planners is combined with current network information (input from operations or ticketing systems). In fact, this means manually re-planning the network, very often without tools or consistency checks that are available for planners. As the configuration is then integrated in the network, planners have to also compare the exact implementation effort with their plans, and manage changes. They can do so either by accepting differences, or by rejecting and pushing engineers to update the configuration. All of this creates an additional workload, which limits the operator's possibilities to manage massive network roll outs.

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An advertisement for Comarch mobile self-care services. On the left, two smartphones are shown. The one on the left displays a 'POKER' game interface, and the one on the right displays a 'Paragliding' app interface. To the right of the phones, the text reads: 'Innovative Mobile Self-Care with App Market'. Below this, it says: 'Join the Self-Care Revolution and let the sale of games, apps & new interactive services be driven through your mobile channel!'. At the bottom left is the 'COMARCH' logo, and at the bottom right is a blue button with the text 'cam.comarch.com'.

Additionally, the output quality of the network is very often different from what was requested.

The second issue relates to the quality of services perceived by customers. When an operator is conducting large network rollouts, the standard way of performing drive tests is not always the most reliable. Additionally, together with standard coverage and population key performance indicators (KPIs), strategy decisions regarding site locations should take into account the impact on service quality. However, currently only a few operators have systems in place allowing for providing key quality indicators (KQIs) with aggregated services, based on specified criteria. So the decisions are purely based on standard coverage KPIs.

Transforming the OSS

In order to mitigate those problems, operators must transform both their OSS and organization. As this is already happening, there are different strategies on the market to manage the process. Some service providers focus on outsourcing as a strategy to eliminate in-house problems and enable flexibility in their roll out activities. Such a strategy looks good, but in fact, in order to successfully implement it, a change in the IT landscape is also necessary. Other

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operators choose to address only OSS transformation by improving tools and capabilities.

Automating Configuration Management

Figure 1 illustrates the direction in which the transformation of the OSS should head in order to improve network quality and operations efficiency. There are two elements of the solution: automation of configuration management, and constant monitoring of service quality.

Automating configuration management is a key element, as it brings planners closer to the network and improves the quality of the roll out and integration. With such an approach, planners have full control over the network, and the error rate in configuration requests is significantly decreased. Additionally, through feedback from the network, planners can easily control the implementation of

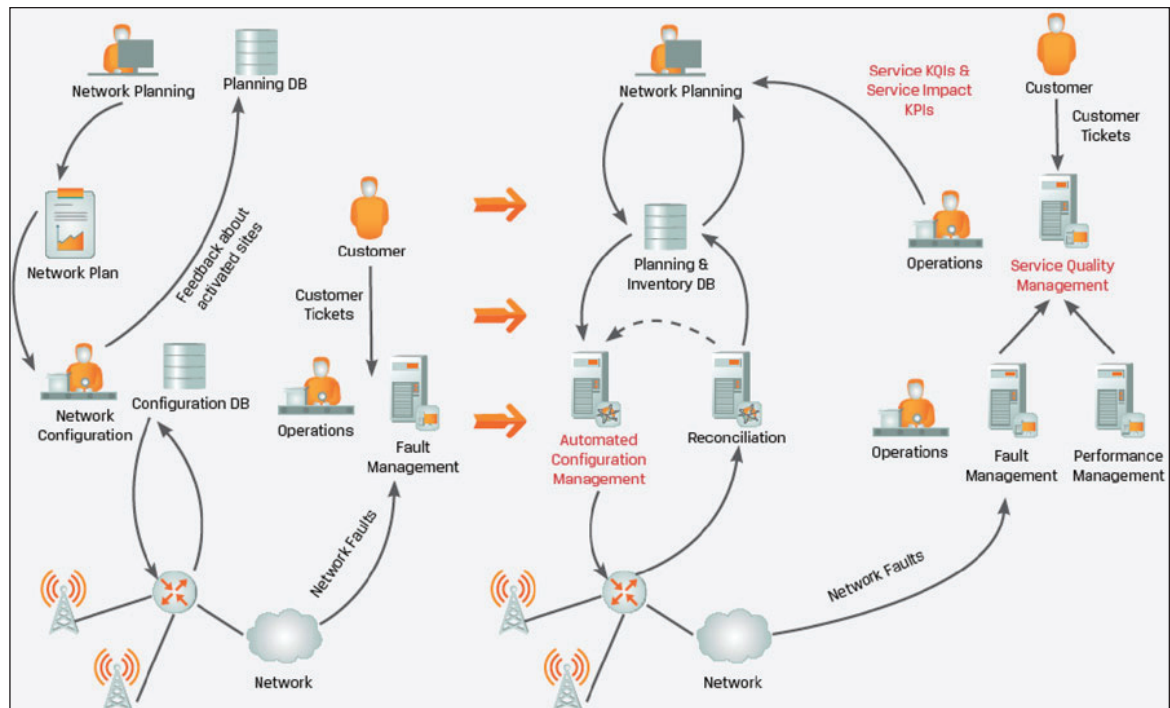


Figure 1 OSS transformation

the configuration requests and immediately react on discrepancies. Such a solution also allows seamless introduction of a self-organizing network (SON) strategy, with central configuration management and automated site configuration delivery, which retains the planners' control over the process and the network.

What About Service Quality Management?

In order to fully benefit from the automation, it is also important to implement a tool and processes that will measure the impact on service quality. Every process needs measuring and a constant improvement strategy - the same applies to configuration management. A Service Quality Management (SQM) solution delivers information, that is used by several departments - starting from operations and planning departments and ending on management. The use of the solution in the planning department is an interesting case. There are two main processes which can be used. The first one corresponds with measuring network quality and pointing out areas where services are not fully supported due to issues with the capacity of the network. Such information can be used to trigger network optimization processes or plan a network upgrade in a specified area. The second process is an automated one, allowing to compare service quality before and after network upgrade. This example can show planners how their changes influence services and can steer the planner towards a more efficient network design in the future.

Customer Impact and Customer Experience Management

Going even further, many business customers require very good service quality and high overall experience. As they demand it to be proven by SLA, it is even more demanding for network operations to make sure that any changes introduced to the network are in line with agreed quality and availability. This means that a planner can only introduce a change where introduction is causing service downtime, after verification with the SLA module of the Service Quality Management solution. In this case, switching from standard coverage KPI's to service quality KPI's in network planning completely changes the planning habits of network operators. The required solutions must be more and more integrated in order to deliver much needed information to planners in a quick and efficient manner. Rollout teams, reconfiguring the network, need access to such information as well.

Carriers must switch from standard coverage KPI's to service quality KPI's in network planning.

The other case is managing and analyzing customers' experience. In many cases so far, the customer is still the source of information for potential problems. When one appears, an operator sends a team for drive tests or network inspection. All of these costly actions are done in order to fix the problem, which may no longer exist. Along with the implementation of a service quality engine, operators receive a tool that can eliminate unnecessary costs. First of all, service problems can be spotted in an automated, proactive way. This means that the customer calling and issuing a complaint can already receive a message about the root cause of the problem and receive information on potential down time. If the complaint is not identified within the SQM tool, these analysis actions are launched only when a problem needs to be fixed and to identify the point, which lacks automated quality monitoring. At the end of any reconfiguration, because a solution for caused trouble can be immediately verified within a SQM solution, one can check if the problem is actually fixed.

Customer Service

Automated service quality management and automated network configuration is very much desired by most operators. The key issue is to be able to model customer services and service components, creating a link between the manageable resource world and customer world. Although there are standards showing how to document and exchange information about services, there is no available standards that shows how to model typical services. This means that each operator has to try to picture the service model on its own. There are different approaches, from detailed model tracking of all network elements, interfaces, IT nodes and applications, to more high-level models which just track relevant information. I believe the second approach is better, because without significant investments in detail modeling, operators can notice business benefits from the carried out work. In consequence, the existing models may be further detailed to cover more and more

Summary

Automated configuration management and service quality management solutions are key components on the road to manage increasing network and service traffic. As this trend will stay strong and customers will demand more and more capacity for their services, it is very important to keep the network cost under control. Automation and good control over service quality are one of the most important elements of cost management. Customer perceived experience can be an argument when offering a more expensive, but nonetheless higher, SLA conditions. Such an offering, especially aimed at a business customer, can be a solution to differentiate oneself on the current complex battlefield for a potential customer. Triggering transformation processes into the Next Generation OSS direction can, in fact, bring more benefits in new customer service offerings and additionally, help with existing cost pleasure. Service centric systems are the future, and the key component, of the NG OSS solution.

“[CEM] reflects a complete sea-change in the way companies think about and approach every interaction with their customers.”

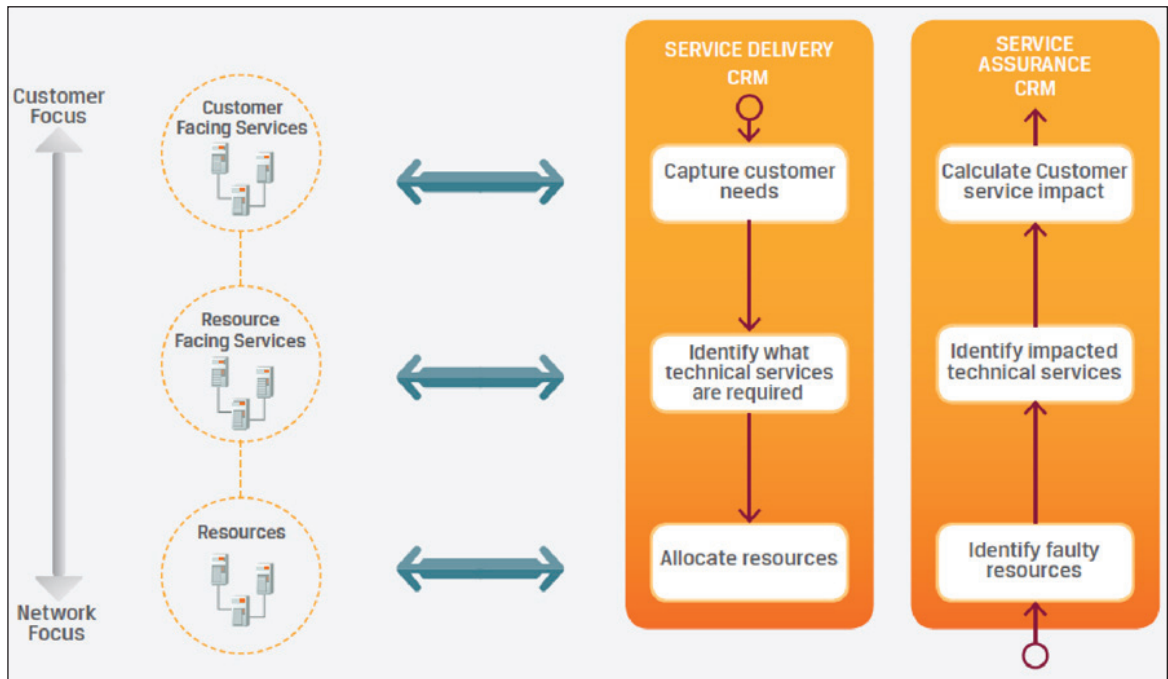


Figure 2. Service fulfillment and assurance synergy