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How Service Providers Leverage AIOps to Increase Profits

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Executive Summary

Communication service providers' (CSPs) revenues and profit have been pressured by exponentially increasing traffic, declining price per Gigabit (Gb), as well as by competition from inside and outside of the industry. The first step to regain competitiveness is for CSPs to have complete and instant visibility into what is happening in the network.

Artificial Intelligence for IT Operations, or AIOps, can play a valuable role for CSPs by both gaining thorough data visibility and delivering actionable intelligence in real time, without adding hardware cost or increasing network complexity. True operational value can be derived from lowered cost, increased revenues, and improved customer experience.

The Increasing Complexity and Pressure on Profit

In the recent Telecoms.com Annual Industry Survey, nearly a quarter of all telecom industry professionals who answered the survey went for "increased pressure to lower prices and profit

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margins" as the leading long-term threat to the success of their businesses. The threat comes from two directions.

On one side, the advancement of technologies, from 10 Gigabit Ethernet, to 40 GbE to 100 GbE, or in the mobile world, from 3rd Generation to 4G then to 5G, has driven the volume of data going through the communications networks to grow exponentially. CSPs have made large investments in upgrading their networks with the latest and greatest technologies, but the price

they can charge customers has not increased much. For many operators the ARPU value has barely moved for years, which means the revenue per Gb of data or per minute of airtime has come down dramatically. Meanwhile, competition between CSPs, often just focused on price, and more disruptively, from outside of the communications industry, has vastly changed the status quo. There is probably no case more telling of such disruption over the last decade than instant messaging services replacing text messages (SMS).

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Thanks to the close-to-zero additional network cost to handle it, SMS was a highly profitable business for mobile operators for many years. With the ascendency of 4G, many OTT messaging services with rich features have taken over SMS in a big way. It is probably most disheartening to mobile operators to see these services, some exclusively on mobile, using the operators' networks to destroy their value. To counter such revenue and profit losses, operators have been busy rolling out new technologies, aiming to gain both a first-mover advantage over their peers and regain more control over the ecosystem. As a matter of fact, in the same Telecoms.com survey, an almost equal number of respondents chose "failure to roll out new technologies fast enough" as a leading threat. However, in addition to increasing network costs, another side effect of rolling out new technologies in quick succession, especially by the incumbent operators, is that the networks become more complex, with generations of legacy networks coexisting with the newest additions.

One consequence of such complexity is that it becomes very hard for the operators to have full visibility of what is happening on their networks, which should be the foundation for the successful launch of new services and transformation into new business models. Conventionally, operators have used corporate IT analytics tools like deep packet inspection (DPI) technologies to extract network data for monitoring, analytics, and security purposes. The drawbacks of DPI and other monolithic solutions include high costs, weak scalability, and rigid policy regimes, which cannot fully satisfy CSPs' much more dynamic needs. They need new tools to carry out the tasks more efficiently and more effectively.

Source: Telecoms.com Intelligence, 2019

Artificial Intelligence: From Supporting IT to Empowering Networks

Artificial Intelligence for IT Operations, or AIOps, was a concept developed by Gartner a few years ago. Initially, as its name suggests, the system was designed for improving corporate IT support systems. Riding on AI's big data analytics capability, AIOps is meant to scale the manageability of IT systems to support the corporates' growth strategies.

It can also apply to telecom operators, and its application in the telecoms world should go way beyond IT support. This is driven by two trends in the communications industry, with one complementing the other.

The first is the evolution of networks. There used to be a clear demarcation inside CSPs between production telecom networks and IT support systems. But as the networks become more and more IP-based, especially when we move to 5G, with its strong characteristics of virtualisation and software centricity, there needs to be a much stronger integration between the networks and the IT systems.

The second is the size and complexity of data that operators are working with. While the telecom systems become more powerful, the sheer size of data they generate and handle is growing exponentially.

To make sense of the interrelations between data points and to produce actionable business intelligence from such volumes of data is beyond the capability of manual work. The industry must embrace AI and machine learning to do the job for us.

The complexity, in addition to the hybrid nature of most networks with components from different generations, also comes from ecosystem change. Since the 4G years, and in the 5G era in particular, telecom companies have been working hard to break away from being merely connectivity providers to become more of a digital service platform. To succeed in such a transformation, operators need to be more active in their partnering strategies. Partners in this context may include OTT service providers, and may also include industrial customers, manufacturing facilities, and autonomous car operators, for example. Managing and interacting with partners in real time therefore also requires a high degree of automation from telecom operators, powered by robust AI, machine learning, and big data analytics capabilities.

How to Restore Competitive Edge with AIOps
The advantages of AIOps first manifest in its capability to provide comprehensive visibility into the networks. This includes network data, service and application data, and customer data. Each category can be further broken down into many sub-categories. For example, network data covers data from classic telecom networks, virtualised networks, and cloud networks.

Additionally, AIOps is much more agile in following user-defined workflows and answering ad hoc questions (as opposed to only generating data for predefined questions in the case of traditional IT analytics tools). The scalability is much stronger, with its capability to process distributed internet-scale networks. AIOps is also integration ready with other network components and also interfaces with partner networks, with strong API-based automation. Last but not least, AIOps can tie network traffic to business

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identifiers (e.g. customers, applications, locations), as opposed to conventional IT analytics tools that would record network identifiers (e.g. IP addresses, network elements, interfaces).

When it comes to its role in helping restore telecom operators' competitive edge, the contribution from AIOps can be evaluated in three dimensions: growing top line business revenues, optimising network costs, and improving customer experience. Thorough and real-time data visibility enables operators to observe the end-to-end traffic flow through their networks. With such data visibility, operators can discover if untapped upsell opportunities exist. For example, current customers might be using off-net services where the operators could promote their own in-house alternatives, or outreaching to potential customers with focused data. The visibility will also help the operators' pricing strategies, as they

will be able to see individual customers' impact on costs and profit margin. The data and analytics can even become a value-added service in its own right. With an easy-to-use interface, the best AIOps solutions can provide customers with self-service capabilities for interactive views. Data and analytics generated by the AIOps solutions should also be made available and approachable to the operators' internal sales and marketing teams, which can help improve the ROI of these teams.

When it comes to reducing network costs, first and foremost, the data extracted and analytics generated by AIOps solutions can provide operators with tools to optimise their network planning, for example adding new connectivity, instead of investing in expanding the capacity of existing links, in areas where traffic is not routed optimally, as a means to reduce the transport cost.
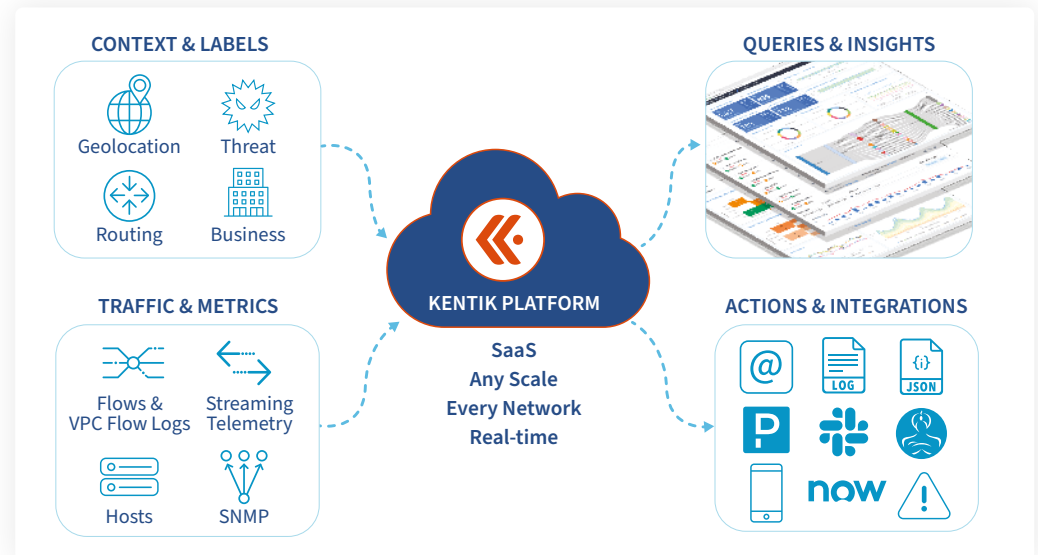
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In other cases, thanks to AIOps solutions' capability to identify customers throughout the traffic routes, operators equipped with such data and analytics can not only optimise the traffic for OTTs and CDNs, but also negotiate better terms and contracts from a data-supported strong position. It can also enable operators to automatically implement fair-use policies, as well as create service packages based on the customers' usage patterns.

AIOps' role in improving customer experience is most obvious in the domains of service assurance, performance management, and network defense. For example, with the thorough data visibility and analytics, operators equipped with AIOps solutions can vastly reduce the mean time to identify (MTTI) and mean time to resolve (MTTR) when network failures occur. Moreover, the strong machine learning capability also helps the network operators get better at predicting and preventing known failures from recurring. This also includes defending the networks against malicious attacks like DDoS, with instant detection of traffic anomalies. Another aspect of customer experience improvement is AIOps' capability to provide customers with custom automation through full-feature APIs.

AIOps from Kentik

The Kentik AIOps Platform is embraced by over 200 customers, primarily service providers and large enterprises. These solutions have delivered tangible values to customers in real life. For example, Kentik's real-time monitoring and investigation insights solutions helped Viasat, one of the leading satellite communication providers, successfully identify more than 1,700 attacks and similar incidents, preventing over 60 Terabytes of malicious or unnecessary traffic from traversing their satellites. Limelight Networks, one of the leading CDNs, reduced its MTTR from 90 minutes to 20 minutes with Kentik solutions, and its average traffic engineering tasks time from several hours to 15 minutes. The network OPEX savings equals to 6% of Limelight Networks' annual revenue.

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Sponsor's Comment

Network data is your competitive advantage. Fast, comprehensive data analytics help drive revenue, optimize performance, make better business decisions, and enable new products. AIOps acts as a force multiplier, allowing teams to spend less time firefighting and more time building new technology capabilities for the organization.

Kentik views AIOps as a set of three primary capabilities:

· Scalable data *collection and correlation* from a wide variety of sources
· *Real-time and historical analytics* with problem detection based on machine learning
· Suggestions and workflows with an option to *initiate an action* or next step

All of these capabilities are centered around a key goal of using big data and machine learning technology to increase the efficiency of IT operations teams. The ever-increasing volume, velocity and variety of IT operations data requires organizations to adopt AIOps technology to maintain the status quo of running reliable IT infrastructure.

Our company was created with a vision of solving any problem for any user wishing to analyze and mine their network traffic data. Our platform has been proven to scale to support the largest networks in the world—while providing rapid query and responses—without rolling up data, thanks to our data architecture. Our sophisticated users, with complex needs and advanced imaginations, have been able to answer any question in near real-time, across any environment, without needing to plan in advance.

Kentik's Key Differentiators:

· Purpose-built for the scale needs of the world's largest networks
· Answers time-critical questions in seconds with unmatched query performance
· Automatically surfaces traffic anomalies like spikes, outages, DDoS and traffic shifts
· using a powerful, machine learning engine
· Retains full detail for months without roll-ups or aggregation
· Intuitive UI simplifies workflows for each user with fully customizable views and dashboards

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