

Managing Big Data in an Era of Digital Transformation

By: John English

Data is big business. As the saying goes, information is power, and this has never been truer than with traditionally hardware-focused companies shifting toward a software-based model. This digital transformation is happening across the board and is causing enterprises around the world to scramble in efforts to better grasp what's happening on their networks and operations in order to transform their own businesses. As a result of this ongoing transition, the last few years have seen the likes of IBM and Oracle hoovering up application and cloud technology providers, driven by a need to offer end-to-end services for their customers.



Cisco's \$3.7 billion acquisition of AppDynamics earlier this year is a recent example — the latest in a long line of major tech brands betting big on application and network management technology in the age of IP. And while this has primarily been a change we are seeing in the enterprise space, it's holding implications for the future of the telecoms sector too.

The Current State of Play

Digital Transformation (DX) continues to sweep across all industry sectors, driving the fundamental shift from physical to digital assets. Underpinning DX is the conversion towards an information-driven economy in which data is the new currency and almost all aspects of business are rooted in software. Nowhere is this more applicable than in telecom. The shift experienced by telcos has already included the move to 4G, supporting and encouraging data-hungry applications and high-bandwidth traffic. This has been great for the subscriber, who has experienced much faster speeds and better connectivity. For the operator, however, it has posed a problem.

Operators face the complex challenges of slow business growth and ongoing disruption to their core services by OTT players and new market entrants, as well as having to manage the mobile data explosion and network expansion — all while providing a consistent subscriber experience. These challenges have created a disconnect between the significant investments operators have made in 4G LTE and the decline in revenues they've seen thereafter.

The reality is that physical infrastructure is already being stretched in attempts to accommodate subscriber capacity demands, yet updating or expanding this architecture is a difficult and costly process. A related challenge is the sheer amount of network data that operators now need to store, process and manage as a result of meeting subscriber demands, which was supposed to be mitigated by the move to 4G. But it seems that move may actually be contributing to the problem.

New Data Demands, New Operator Challenges

4G networks, like 3G, are IP-based. However, unlike 3G, the 4G networks also use IP for voice data. Having a common platform for all network traffic was supposed to make things run smoother, but the complexity grew and the volume of data operators had to accommodate grew substantially. As a result, the industry has been looking ahead to 5G in the hopes it will help alleviate capacity demands. But with 5G, there will be the added pressure to deliver a consistent quality of experience

in an environment that forever demands higher data throughput. The volume of network data that operators will need to accommodate will also increase substantially.

Fortunately, there is light at the end of the tunnel in the form of the broader digital ecosystem and new commercial opportunities opening up to operators. With those opportunities come greater expectations from the network and new challenges for delivering on the next stage of CSPs' digital transformation journeys. In order to meet expectations, and to create a setting in which it becomes possible for mobile operators to embrace new business models and innovate in the use of new technology for delivering new services, a new approach will be needed in terms of network design. Network design could drive DX efforts, but only if operators approach it in the right way.

The Future Will Be Virtualized

Proprietary hardware alone is simply not capable, or economic, when it comes to supporting 5G. The deployment of this technology will be enabled through network functions virtualization (NFV) and software defined networking (SDN). After all, it is already recognized that NFV/SDN holds the key to simplified operations, increased automation, and the enhanced flexibility and agility of existing systems by creating a “quick to fail” environment where new business models can be set up and running in minutes rather than in days or weeks.

All hail virtualization then? Not exactly. While costs are reduced and capacity is increased, network visibility is compromised. Network virtualization means that services and core network functions will be disaggregated across disparate compute resources running on commercial-off-the-shelf (COTS) hardware. While performance will increase, so too will the volume of data being created. For that reason, the visibility of all the various siloed technologies powering the network will be more critical than ever before.

Operators have always relied on network monitoring and troubleshooting tools to identify issues affecting subscribers, but these tools will be all the more essential within a virtualized environment — particularly if operators are looking to introduce new digital services. An inability to identify problems on the network and address them before the subscriber is affected, can cost operators dearly. Poor quality of service can result in customer dissatisfaction and quickly tarnish the reputation of the service provider.

Other pressing issues will revolve around the potential for cyber-criminal activity on networks, causing untold problems and financial damage if there is a subsequent inability to deliver on business-level SLAs for new commercial services deployed across networks. In the era of the IoT, this is especially important, since mobile operators will become the logical partners for digital services in different sectors, such as health, home automation, energy, and financial services. Success in each sector will depend on the ability of operators to deliver reliable and consistent access to their networks. Both security and the expanding responsibilities for operators are becoming all the more pronounced as IoT momentum grows and oftentimes lax security of connected devices remains.

Addressing the Problem with 'Smart Data'

The whole of these considerations brings us back to the question of how operators can efficiently drive the next stage of their digital transformation. Information and data are the very heart of the digital transformation process, serving a vital role in providing much-needed insights into service delivery, operations, and other KPIs for business performance. Pulling data from the various disparate silos — which were created during the shift to network virtualization in support of 5G — has had some value, but it is not enough to make DX a success.

Simply having access to big data is not enough. Business analytics reliant on a data set that has not been normalized and correlated in the context of service delivery, operations, and business performance will not be effective.

The bottom line is that the quality of business insight is entirely contingent on what's become

known as smart data. Smart data is well structured, contextual, available in real-time, and based on end-to-end pervasive visibility across the entire business. Smart data can, therefore, lead to greater data analytics capabilities.

When considering the smart-data requirement, it is clear that advanced network monitoring and service assurance will be key drivers for DX success — providing the real-time and historic insights needed to power those decisions, not only for assuring overall service delivery to customers externally, but also ensuring the validity and competitiveness of the operator's internal business operations in the long term.

From a server in a data center to a physical base station or virtualized network function, all aspects of the next-generation mobile network need to be accessible and capable of being monitored at a granular level in order to keep track of digital service performance. Everything is interconnected in today's network environment, and network performance and the subscriber experience need to be running at peak levels at all times. When 5G arrives and the IoT becomes ubiquitous, there will be no margin for error. These connections must be faultless and operators must be able to track all the data crossing their networks at all times.

Success depends on having the right tools in place, and using service assurance technology to unlock the smart data that is contained within the network in order to drive internal and external business success. Delivering on this will be a necessity for CSPs and their customers in the enterprise space, which brings us back to the M&A activity we have seen in recent years. We can expect more of the same as we look towards the future, with new players crossing the divide between the enterprise and mobile sectors in order to address the network visibility challenges that are commonplace between them.