White Paper

Operations as the Nexus of Telco Digital Transformation
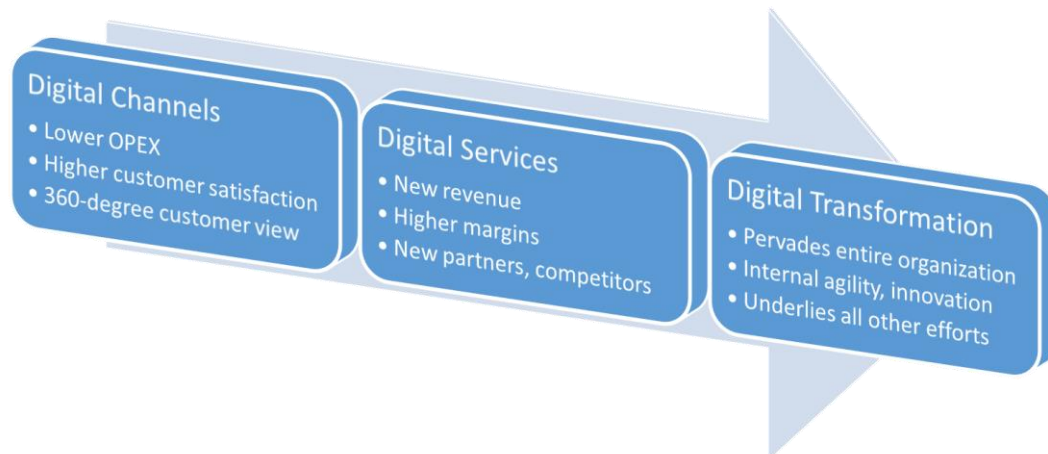
Sponsored by: Huawei

Andy Hicks
May 2017

DIGITAL TRANSFORMATION IS OPERATIONAL TRANSFORMATION: THE BUSINESS SIDE, THE TECHNICAL SIDE, AND THE OPERATIONAL SIDE

If there is one thing everyone knows about communications service providers (CSPs), it is that they are going through a wave of digital transformation (DX). But if there is one thing that everyone asks, even within those CSPs, it is the following question – "What is DX exactly?" Generally, there are three main answers depending on where people sit in the organization: a) implementing digital channels/omnichannel in the care and marketing departments, b) introducing new IT-based services, and c) using IT to improve business across all parts of the company. Figure 1 shows the chief characteristics of each approach.

FIGURE 1

Three Common Definitions of CSP DX

Digital Channels
• Lower OPEX
• Higher customer satisfaction
• 360-degree customer view

Digital Services
• New revenue
• Higher margins
• New partners, competitors

Digital Transformation
• Pervades entire organization
• Internal agility, innovation
• Underlies all other efforts

Source: IDC, 2017

Information technology is clearly the common theme, putting the "digital" in the latest wave of transformation to sweep through the telecommunications world. As revenue from their traditional communications services declines, CSPs are both virtualizing their networks and developing new ICT services for new audiences. Both of these progressions make IT more central to the carrier's

business by enabling new capabilities and new services. But that is not all; IT increasingly defines the entire operational environment and way of working at the CSP as it automates workflows, orchestrates processes, and defines performance dynamically. Network, datacenter, and service operations at the CSP are inexorably becoming software-defined, with software driving real-time adjustments in a unified, dynamic, and responsive architecture, as well as the services running on top of it.

The logic of multiple datacenters, network nodes, and partner locations, combined with the increasing standardization and infrastructure unification in CSP groups, argues for increased cloudification of CSP operations. Although it may take a long time for the network datacenter platform to converge with other datacenter platforms, we believe that the need to provide and assure ICT services will lead to converged operations of all of these elements. By necessity, those operations will primarily be software-defined. Not only will the platform architecture eventually become entirely software-based, but increasing automation, intelligence, and API enablement will let CSPs adjust their operations and create new services much more rapidly. By cloudifying this architecture, CSPs ensure that these various elements are integrated and available to the entire organization. Service experience can thus be guaranteed throughout the infrastructure and over any network type.

For this project, IDC interviewed service providers throughout Europe, the Middle East, and Africa (EMEA), and found that while CSPs of all types are committed to digital transformation, their approaches vary widely. Every transformation is designed to address the CSP's unique circumstances, but at a fundamental level, each applies to the business side, the technical side, and the operational side. In effect, DX is actually at least three transformations at once, each of which presents multiple challenges to operations staff. This document will elaborate on each of these three areas in turn; together, the three suggest that the CSP's operations functions are the nexus of DX.

Business Transformation Requires New IT Operations

DX requires both technical and business change; if the technology does not improve the business, it is by definition not transformative. Operations plays a crucial role in ensuring the business improves. Based on CSP interviews conducted for this project, Table 1 describes critical business transformation practices and the operational concerns associated with them. It is important for CSPs to understand these factors so that they and their partners can develop a new strategy for IT operations.

TABLE 1

Business Transformation Factors

Transformation Factor	Description	Operational Impact
Experience Operations	Customer experience has become one of the most central key performance indicators (KPIs).	To monitor and model customer experience, operations departments must strengthen their real-time analytics, and make sure that those analytics can process data from across the entire organization to produce a 360-degree view of the customer. They should also be able to "close the loop," adjusting service delivery in real time to improve experience.
Service Agility	Under the rubric of service agility, CSPs must bring much higher numbers of services to market much more rapidly, and customize them for much narrower customer segments.	Operations must continually improve the infrastructure with an eye not only to lowering defects, but also to making it cheaper and easier to develop a service. It must also operate the vastly increased number of services that result.
Partner Ecosystems	As they move to provide more services to more customer types, including industry verticals, horizontal services, and B2B2x offerings, CSPs will require a robust partner ecosystem to provide all the services needed by these segments.	Operations will need to administer the partner ecosystem, managing certification, validation, and onboarding. It will also need to monitor the performance of partner offerings, eventually assuring service components provided by the partner in real time. On the business-support-system (BSS) side, it will also have to allocate revenue back to those partners based on usage. In the future, services will likely be composed of components supplied by both the CSP and its partners. This will make revenue recognition and service assurance, among other things, much more complicated.
Entertainment and Gaming	CSPs are providing increasing amounts of entertainment and gaming content.	Entertainment and gaming is unforgiving of poor network performance, so Operations must be able to monitor and assure the experience of that content.
Artificial Intelligence	CSPs are introducing chatbots and other artificial intelligence into their customer channels.	Artificial intelligence must be monitored and tuned for optimal performance, and must be configured to refer serious or complicated issues to human staff.
B2B2x Operations	CSPs are increasingly exploring B2B2x models, providing services that their enterprise customers can roll out to their own user bases.	To support the provision of a good customer experience by its service partners, Operations will have to interface with customers' operations systems, including customer care and trouble ticketing, as well as with their billing environments.
Security	Data security and user privacy are essential requirements of ICT services. CSPs will increasingly be called on to certify compliance with these demands, especially for enterprise and government customers.	Security must be assured at multiple levels of the network and often at the endpoints as well. Security capabilities should incorporate both real-time protection and audit trails.

Source: IDC, 2017

Business transformation is sometimes regarded as primarily a matter of monetization. For example, those CSPs that had recently rolled out significant new fiber or mobile broadband capacity regarded digital transformation primarily as a way to drive the most use of this new capacity via new services and content.

> "IT is regarded as a support function here, so we focus more on the network in our digital transformation journey. However, when it comes to selling products and services to support our customers in their own digital transformation journey, then IT comes forward."

In addition to its business-side effects, security is increasingly driving transformation of the technical architecture as well, since most CSPs that we interviewed believed that implementing end-to-end security was much easier on a simplified and unified IT stack. As security grows in importance – not only as a hygiene factor, but as the subject of added-value services, especially for the enterprise – business requirements will require an integrated and unified technical environment.

Technical Transformation Requires New IT Operations

The most obvious operational challenges are those associated with technology change, since it stands to reason that different technology must be operated in new ways. Based on the CSP interviews conducted for this project, Table 2 describes critical technology transformation practices and the operational concerns associated with them. Again, it is important for CSPs to understand these factors so that they and their partners can develop a new strategy for IT operations.

TABLE 2

Technical Transformation Factors

Transformation Factor	Description	Operational Impact
IT-Based Networks	With the advent of network function virtualization (NFV) and software defined networking (SDN), CSPs are now managing networks on a software basis.	Operations must ensure smooth functioning not only of the network infrastructure, but of the datacenter environment that controls the network.
Hybrid Networks	It will take several years to complete the transition from traditional hardware-based functions to software-based functions.	Operations must oversee the gradual migration of services and customers from the legacy environment to the virtual environment. If the CSP has decided to provide services with a hybrid legacy/virtual environment, it must seamlessly provision and assure services across these environments.
Network Slicing	In preparation for 5G, CSPs are transforming their infrastructure to support network slicing.	Operations must be able to monitor the health and usage of network slices as well as the services they support, and to manage the lifecycle of those slices.
Cloudified Resources	Under the rubric of cloudification, CSPs are increasingly moving to a common pool of resources that is dynamically allocated to all services and products that are active at a given time.	This shared resource model means that finding the root cause of poor experience and outages becomes more difficult. Finding the problem requires robust analytics and a deep operational knowledge base.
Platform Consolidation	CSPs often operate multiple datacenter platforms: one for internal applications like BSS, one for customer-facing applications, one for virtualized network elements, and so on. The mergers and acquisitions that characterize the industry mean they may be running multiple versions of each.	CSPs must coordinate and manage operations across these different platforms. In the long term, they will gradually converge many of them. The resulting consolidating, cloudified platform must support evolution of operations, ensuring increased automation, intelligence, and capability exposure through open APIs.
Multinational Cloud	Multinational carrier groups are increasingly moving to unified private cloud models that incorporate multiple national operations.	CSPs will need to migrate national systems onto this common platform, use it to comply with national regulatory burdens, and oversee geographically distributed business continuity capabilities.
Omnichannel	CSPs are unifying their channels with the customer to provide a consistent experience, self-service capabilities, and a 360-degree view of the customer.	Operations must be able to support interaction with customers as they move among channels, including the retail store network.

Source: IDC, 2017

"We need to be able to offer premium services to customers via a single integrated platform."

> "I believe that full automation is 100% needed in today's IT environments. I also believe that this can only be achieved through collaboration with business units. These new systems don't actually require a lot of investment; on the contrary, in most cases they allow incremental investments and can be cost effective if planned properly."

One critical element of unification and integration is decommissioning and migration; larger CSPs are decommissioning literally hundreds of systems and hundreds of products. The goal is to migrate as few services as possible while migrating customers to new services on the new platform. Given the complexity of the complicated technical and business tasks involved here, most CSPs seek help either from professional services providers or from strategic operations partners.

Operational Transformation Requires New IT Operations

To support the changes in business model and product portfolio, CSPs must change their culture and processes, something that CIOs and CTOs often find hardest to do. Based on CSP interviews conducted for this project, Table 3 describes critical operational transformation practices and the operational concerns associated with them. These factors are some of the most important catalysts in establishing a predictive, intelligent environment that attends to customer needs more effectively, and the operational culture that supports it.

TABLE 3

Operational Transformation Factors

Transformation Factor	Description	Operational Impact
Fail-Fast Service Development	As ICT providers, CSPs will increasingly have to develop services in a fail-fast model, launching a variety of services, tracking their performance, and then developing the winners while deleting the losers.	While other departments at the CSP can track downloads, purchases, and so on, Operations is best situated to collect service performance and usage data that will feed into further development.
Process Redesign	Increasing automation and collaboration must be matched by process simplification if technological transformation is to produce lower OPEX and higher service agility.	CSPs must drive automation and drive collaboration between the traditional technological and operational siloes.
Service Experience	CSPs will increasingly commit to specific quality-of-service levels and other performance parameters.	Those service levels must be monitored/modelled and assured across all network types.
Staff Skills	As CSPs move to a more software-defined operational model, and as they automate more functions, their staff skills and organization often lag the technological change, hampering the expected OPEX and agility benefits.	Operations must retrain existing employees, find new sources of necessary skills, and change the way that people work together to support the new speed and efficiency of the CSP's business.
DevOps	Many CSPs are working toward a DevOps model that requires service development and operations to work together.	Operations must evolve to work more closely with service developers while maintaining operational excellence.
Culture	Many CSPs find it difficult to change their internal culture to take advantage of new technical capabilities. Cultural difficulties range from active box-hugging to a more general lack of habits around innovation and efficiency.	Operations must both maintain and improve the infrastructure's ability to support service innovation, and foster loyalty to service agility via actions such as employee reskilling, changes in bonus goals, and empowering employees to improve operations autonomously.

Source: IDC, 2017

> "We're transforming from a supply-driven to a demand-driven company, meaning that the organization should exist to respond to customer needs and offer solutions that only meet customer demand and increase their value. The key is creating an open platform from which all services can be provisioned and orchestrated."

There will be almost as many paths from the present state to the future state as there are CSPs. The reason is that each has a different current state of legacy infrastructure and operations, but also different business priorities, appetite for risk, stakeholders, partner environment, and customer mix. "Rebuilding the plane while you're flying it," to use a common industry phrase, will be a different process in every case – although every such case will be scary.

> "A successful roadmap depends primarily on filling in the right preconditions: good product rationalization, good process rationalization, and a good team that can set the targets well. Executing well is about keeping the organization's mind on the job."

Using a Strategic Partner for IT Operations Transformation

All three of these aspects are necessary for a successful transformation. Taken together, they present a daunting mass of factors to incorporate into a single transformation plan and execute with internal staff without major disruptions to CAPEX and OPEX budgets. Most carriers are daunted by the scale of these challenges, and therefore search for assistance with best practices and with managing the various levels of transformation. A strategic partner can increase the speed of transformation while minimizing disruption.

> "We have a good understanding of what needs to be done. What's important to us is a partner who shares our strategy and is able to support it through this process, be it through managed services, outsourcing services, or a combination of models."

This trend has been going full steam on the network side for around a decade, and is starting to pick up speed on the IT side. By transferring dedicated resources to a company where they become shared resources and learn operational best practices, the CSP pays less for the same quality of service or higher. Meanwhile, the employees move from a company where operations are often a secondary role to a company where it is a primary business activity, with new challenges and opportunities for advancement.

> **"The biggest advantage of the aaS model is the ability to leverage a skill and talent pool that is larger and more diverse. Decisions become less and less cost driven, though obviously, we still look at the business case. The sourcing debate becomes more and more driven by skills and less by cost."**

Our interviews with CSPs indicated that while most are working to tie technology and business KPIs together more closely, often by subordinating everything to customer experience and the customer journey, many still have reservations about entrusting their network and IT operations to a single partner. There are early indications, however, that CSPs are starting to consider the convergence of datacenter resources and operations. Sunrise Switzerland, for example, has recently awarded a converged operational contract to Huawei, as part of a plan for true ICT infrastructure convergence.
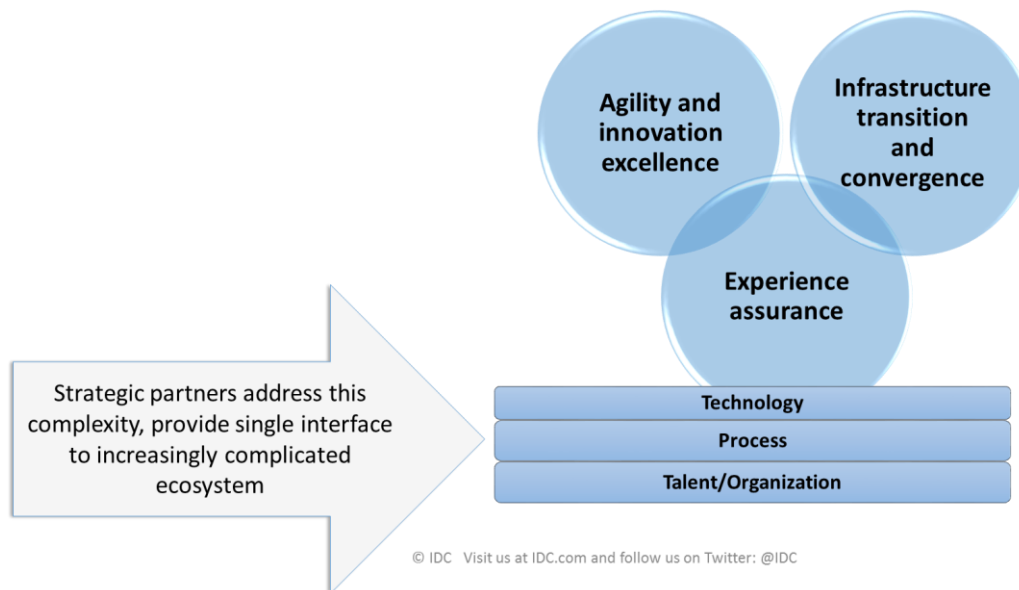
This attitude should permeate more CSPs over time. We believe that the ability to have a single partner manage converged infrastructure operations – and potentially service operations, the customer care organization, and the partner ecosystem as well – will appeal to those that wish to devote their limited resources to new service creation and other forms of innovation. As happened with network operations, CSPs will gradually decide that unified ICT operations is not their core skill, and so will collaborate with a strategic partner in order to focus on value creation. Consolidating vendors also frees up resources that were formerly devoted to partner management.

> **"We see the landscape changing from complex to more integrated. To avoid spending a disproportionate amount on managing these relationships, we are aiming for a more consolidated vendor base."**

Planning and executing the transition is the area in which CSPs are most likely to need a strong, experienced partner. Dealing with all the challenges listed here while both maintaining service continuity and expanding the service portfolio is a huge challenge. Increasingly, CSPs are accepting that outsourcing works best when the processes are already well defined and understood inside the company. Most CSPs will benefit from a partner that can bring experience gained at a wide variety of CSPs, expertise in myriad technical environments and transition paths, and credible knowledge of standards, methodologies, and ecosystems. Figure 2 shows how a single strategic partner could help CSPs to achieve DX in the Business, Technology, and Operations domains.

FIGURE 2

Strategic Partners Can Help with DX Complexity

Source: IDC, 2017

Huawei's IT Operation Transformation Solution

Huawei Global Services is one of the largest operations outsourcing and transformation partners in the telecommunications industry. It provides both IT and network operations, including unified operations of the network and datacenter. Huawei's IT Operation Transformation solution is a comprehensive engagement model that works in partnership with CSPs to deliver the full suite of transformation services across the business, technology, and operations functions. This services solution uses three main offerings to support CSP DX:

- To address business transformation, Huawei offers transformation of BSS operations, first assuming management of the existing state, followed by transformation to its business enabling system (BES). The BES is designed to support agile, intelligent, and cloud-native operations. It also incorporates digital ecosystem management, including partner offerings, and is designed to support Huawei's ROADS (Real-time, On-demand, All-online, Do-it-yourself, and Social) experience paradigm.

- To address technology transformation, Huawei offers IT infrastructure operations services, which is meant to free the CIO organization from having to look after the datacenter environment so that it can focus on business support and service innovation. The targets of this activity are usually lower total cost of ownership (TCO) and improved datacenter efficiency. Huawei's Fusion Cloud technology is an open platform designed to adapt to any multivendor and multi-technology environment. It is part of a managed IT cloud transformation services portfolio aimed at managing and unleashing the resources in different siloes, including all computing, storage, and network resources isolated in different sites. It is designed to enable rapid deployment of services, simplified and unified management of the underlying datacenter infrastructure, and enhanced openness to ensure applications compatibilities.

- To address operation transformation, Huawei has implemented Operation Web Services (OWS), which was designed to transcend traditional closed and monolithic operations management tools with a cloud and microservices-based operations platform. The OWS cloud platform is being accessed by over 100 operations globally. It is designed to enable automation and autonomous recovery. Using a DevOps model, its micro-services architecture enables operations personnel to develop applications that support task and process automation, and allow the sharing of such applications with their colleagues globally. Huawei says that this automation and reusability has fueled significant operational efficiencies for their outsourcing customers.

CONCLUSION: CHALLENGES AND OPPORTUNITIES

For CSPs

The telecommunications industry is at a critical juncture: those CSPs that do not transform will be relegated to commodity connectivity providers and thin platforms. Those that do transform can find themselves as primary providers of ICT services to consumer and enterprise customers alike. To do so, however, they will have to manage transitions in business strategy, technology, and operations. A few CSPs will have the scale and internal change-management capacity to perform this transition entirely on their own; however, most will not. The majority that require a strategic IT operations partner should find one that not only has a complete set of operations capabilities from direct management of IT systems to network virtualization, but also has experience and consulting skills in the cultural and organizational aspects of transformation. Without these softer aspects, technology transformation will never lead to business transformation.

For Huawei

Huawei has the scale and experience to assist CSPs in their IT and network transformation, and continues to industrialize its platforms to a high degree. Like many technology vendors, it faces a challenge in translating its credibility as a technology partner to credibility as a business transformation partner. To gain that credibility, it must continue to drive automation and best practices throughout its outsourcing relationships, and strengthen systems integration and business consulting capabilities. Consulting capabilities, in particular, will become more important as CSPs struggle to reform their culture, skills, and organization to match their technological transformation.

About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

IDC CEMA

Male namesti 13 110 00
Praha 1 110 00 Czech Republic
+420 2 2142 3140
Twitter: @IDC
idc-community.com
www.idc.com