# why digital-to-network automation is critical for the era of 5G and open cloud networks

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It is almost ironic that the network services used by consumers and enterprises to support their own digital lifestyles and business transformation are themselves sold, ordered, processed and assured in a high-touch, mostly manual, manner.

While service providers have mainly focused on digitalizing the front-end customer sales and care experience, in order to better meet the new demands of our connected society, service providers must also fully automate and digitalize their end-to-end service operations and assurance processes.

*Digital transformation **done right** requires much more than simply having an appealing customer facing self-service interface.*

In this eBook we will review why comprehensive digital-to-network automation is critical for service provider digital transformation success, and how it will enable them to deliver superior customer experiences and drive efficient operations.

# from the front office all the way to the network, why end-to-end digitalization is essential for a great customer experience

**By: Angela Logothetis, CTO, Amdocs Open Network**

Search, click, buy, use – online stalwarts like Amazon, Uber and Netflix have shaped our expectations of a fast and joined-up digital customer experience.

But when the pandemic raised the bar and digital became virtually the only way to shop, work and access entertainment, not everyone could match this speedy delivery. Gaps in digitalization meant there was often a significant lag between clicking and receiving purchases, as digital user interfaces and back-office processes were not connected.

Communication service providers (CSPs) frequently face the same issue. While most have their digital transformation well underway, digitalization is typically introduced at the customer-facing front-end, for basic commerce and care processes. However, we frequently find that the 'back office' service and network operations areas lag or are not entirely on board.

This needs to change if CSPs want to win over and retain customers in what is an ever more competitive environment. At the same time, a new mindset will be needed if service providers are to achieve more efficient operations as their networks become increasingly complex.

Digitalizing operations end-to-end and driving true 'digital-to-network' automation is key to reaping the full benefit of investments being made in new network infrastructure.



Real digital transformation of network services is more than a good-looking customer interface
*Camille Mendler, Omdia, Chief Analyst*

## Joining up the digital dots

It is one thing allowing new 'enterprise consumers' to upgrade their broadband service for higher speed and new security features with just a few clicks. But the digital illusion quickly breaks down when those customers then have to wait weeks for the service to be provisioned and for an engineer to come out to configure their home gateway.

The reason is that – despite an all-singing-all-dancing front-end – the CSP's underlying business/operational support systems (B/OSS) are not fully digitalized and connected up with the network to orchestrate and activate the broadband upgrade remotely.

Not being able to follow through in real-time or near-real-time has significant implications for the customer experience, especially at a time of rapidly changing end-user requirements.

Hear from Angela Logothetis, Amdocs Open Network and Jim Hodges, Chief Analyst – Cloud & Security at Heavy Reading on why 5G and the cloud make it more critical than ever to automate the back office.

## New market drivers

The response to COVID-19 has heightened customer demand and expectations when it comes to digital services. This is especially true for businesses' rapidly expanding need for flexible bandwidth allocation and enterprise-grade services to accommodate large-scale remote working or online events.

Another driver for digitalization is the accelerating competition between traditional telco networks and cloud providers. Cloud players are increasingly offering similar services to telcos, and they are fully digitalized and automated by default. When it takes a cloud provider seconds to provision a new service, CSPs cannot get away with taking weeks or months to do the same. Customers will simply vote with their feet.

However, the most compelling argument for end-to-end digitalization comes from 5G. This is due to the complexity and flexibility of services that these new mobile networks will enable. Network slicing, on-demand services, edge solutions, IoT and low-latency applications – to name just a few – represent substantial new business opportunities for CSPs to tap into.

But they require real-time responsiveness on the part of the network and B/OSS systems to deliver the desired customer experience.

## It's digitalize or bust

Vestiges of non-digitalized or manual business support systems and processes will simply not be able to cope. It's a risk that service providers cannot take.

Moreover, if you've invested heavily in building a virtualized, cloud-based network – as much of the telco industry has done over the past decade – automating network operations is key to realizing significant savings and maximizing return on the sizeable network investment.

If you still have a lot of cumbersome manual processes in the mix, you won't be able to automate your operations comprehensively and realize the significant savings that can be derived from automation.

For all these reasons, it's no longer enough to focus on digital 'window-dressing'. The customer engagement interface can only ever be the tip of the iceberg. It cannot operate without digital-to-network automation covering service management, orchestration, or charging that integrates with the front-end.

Digitalization must be deployed end-to-end, from ordering through design, fulfillment, operations and assurance to billing and charging. Meeting customer expectations, staying competitive, and tapping into new revenue streams will depend on it.

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# CSPs look to open systems to accelerate digital-to-network automation

**A Vanilla Plus interview with Ilan Sade, General Manager, Amdocs Open Network**

In this interview, Ilan Sade, the general manager of Amdocs Open Network, tells VanillaPlus managing editor George Malim why digital-to-network automation is so critical for service provider digital transformation success and how it will enable the continuous delivery of uninterrupted experiences to consumers and enterprises.

*George Malim: How would you describe the state of play in terms of digitalization and automation in the telecoms industry?*

**Ilan Sade:** Over the past few years, there has been an acceleration into digital-first and everyone wants to be connected fast. Consumers and businesses are moving into a connectivity-centric ecosystem which has been even further accelerated by COVID-19. The pandemic has brought in a greater sense of urgency and service providers need to respond to this. Although service providers have been making steady progress in certain areas of their digital transformation journeys, the focus has been on customers' and businesses' experiences across the different channels and on ensuring net promoter score (NPS) improvements. However, it's more clear now than ever before that we can't afford gaps and broken areas within service operations and network infrastructure that are still being addressed with 'human glue' or dealt with as checkmarks on a maintenance roadmap. The number one issue is that processes aren't automated end-to-end.

The human glue is needed because there are too many manual steps. Much work remains to be done to automate service and network operations to remove dependencies on time-consuming manual steps and long lead-time break-fix activities. Several urgent steps need to be taken to reduce and eventually eliminate the risk of disjointed experiences, widespread outages and missed growth opportunities.

In addition, the manual steps have huge impacts on efficiency and service providers' abilities to operate with the right cost structure. This is also preventing service providers from fully enabling their revenue potential because the scalability is not in place.

*GM: Why is there this lag when it comes to automation of service and network operations relative to other areas for service providers?*

**IS:** There has never been a single answer to address digital transformation and each service provider will have to plot its own journey based on business priorities. It depends on what the CSP has and what the CSP plans to do. That informs the direction taken and what the journey will look like.

There is no magic answer. You have got to pick a journey that starts from the use case and the resources you have. Your access to technical people is a major factor and you have to make sure you are able to move in the direction you have chosen. There will be multiple directions chosen by different CSPs.

Having said that, it is no secret that CSPs have historically trailed on basic customer relationship metrics relative to other industries, and therefore there is a generalised focus on improving customer engagement capabilities, including digital support channels, as well as in analytics and artificial intelligence (AI), to make the channels more intelligent with chatbot capabilities, for example.

The number one challenge is a CSP's legacy. They may have many siloed pieces to consider but they may also have legacy in terms of their people.

> **Much work remains to be done to automate service and network operations to remove dependencies on time-consuming manual steps and long lead-time break-fix activities.**

Transformation brings a set of complexities that need to be addressed holistically in a top-down management approach. However, service providers recognise that as communications technology dependency deepens and demand for new experiences grows, they will need to more fully automate and digitalise their service delivery processes, including service ordering, fulfillment, orchestration, activation and assurance.

The advent of 5G and the telco cloud is also now motivating many service providers to transform their operations support systems (OSS) and related processes in order to handle the size and complexity of new networks and technology. Finding a specific use case and making sure that's pragmatic and then choosing the right technology to enable you to fully automate is the key and 5G and telco cloud are triggers for this.

**GM: What are some of the specific OSS challenges that need be addressed to better automate service management processes?**
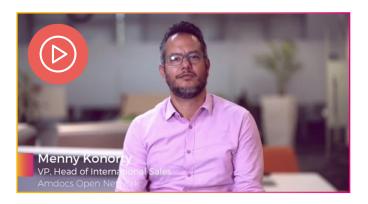
**IS:** The prevalence of siloed IT systems for each network and/or service domain is a major issue. Services are increasingly being supported by chaining capabilities across a hybrid network that span multiple technologies and capabilities, for example, a mix of physical, virtual and cloud functions. So, the current systems environment of 'islands' makes it extremely hard to control and run operational processes efficiently.

CSPs are therefore looking at these islands holistically and seeing if their processes can flow from end-to-end. Often, they don't. With network functions virtualization (NFV), for example, it's still one piece of the overall network but it's highly siloed.

There is a need for an end-to-end system to look across all of these different islands. Secondly, due to the prevalence of closed and monolithic legacy systems, we continue to have fragmented fulfillment and orchestration processes, comprising a multitude of unintegrated touch points with manual steps along the way. This leads to many service delivery inaccuracies and significant order fallout. In addition, there is a lack of real-time contextual integration and connection between orchestration and assurance systems, which limits the ability to implement proactive, assurance and operations, thereby leading to dependence on reactive problem-solving approaches only. If you look at future services, it's clear CSPs have to

go further than ever before and systems need to be kept open in order to enable the services. If you have a key performance indicator (KPI) on latency for a high demand service like a connected factory, it's not enough to provision the service, you have to keep measuring and assuring. Today it's different CSP organisations that perform these functions but they need to come together to support the service proposition.

You don't need to boil the ocean in one day to achieve this, you can do it step-by-step, but it does need to happen.



**Amdocs Digital to Network Automation solution**
Addressing the operational aspects of digital transformation
*Menny Konorty, Head of Open Network Sales, International*

**GM: How does Amdocs help service providers address these challenges and what is your approach for modernising and transforming the OSS?**

**IS:** We are doing a number of things to help service providers consolidate, modernise and transform their operations support systems, which will all help accelerate the digital-to-network automation journey for service providers.

Amdocs has evolved its proven OSS capabilities into Amdocs NEO, a unified service and network automation platform designed to manage and orchestrate hybrid networks, combining traditional service management functionality with cloud and NFV orchestration and automation capabilities. NEO is a cloud-native, microservices offering which embraces a modular, open, standards-based approach in providing service and network automation capabilities.

And, we have incorporated policy and AI and machine learning driven operations capabilities into the platform to support the move towards more autonomous operations.

Putting all these worlds into one fully cloud-based, microservices platform is not obvious and there aren't many independent providers in this ecosystem. Network equipment providers, for example, find it's in their own interest to combine this capability in their own siloed systems but this doesn't help CSPs have open systems.

We're totally open and it doesn't matter if you're operating a hybrid network of multiple vendors, we'll enable your business with end-to-end capabilities.

**GM: How should service providers navigate the digital-to-network automation journey?**

**IS:** It's important to first recognise that such a transformation cannot happen in one shot overnight, and indeed it's a journey. To start with, service providers need to adopt an OSS platform that can support automation in an incremental manner, be it by specific business process or service type. Explore how new capabilities can start getting incorporated in either 'side-by-side' and 'over-the-top' implementations through federation and loosely coupled integration. Advanced and flexible technology underpinnings using industry-standard APIs, microservices architecture, embedded AI, CI/CD tools and testing automation help take this approach.

The service provider should clearly identify and prioritise the key processes to automate, taking into consideration their desired future state. The objective may be to have a unified order handling process and single catalogue across the BSS and OSS layers; or on-demand, adaptive, contextual orchestration with real-time notification to billing and charging for efficient monetisation. Other objectives include closed-loop operations with contextual notifications and alerts through inventory as well as back to the order and service orchestrators and real-time active and federated inventory for full visibility of hybrid network services and resources. Finally, it's important to factor in the impact of new network technologies and service architectures, even if the adoption is still in progress or further out. This includes things like 5G network slicing and edge services, the transition to cloud-based services and applications, the acceleration of IoT, ecosystem powered innovation and more.

**GM: Please can you give some examples of service providers that are successfully digitalising and automating service and network operations?**

**IS:** We have many examples, but I can highlight one of our recent deployments in Europe where a customer took a strategic decision to grow its revenue and expand its broadband offering with fibre to the home (FTTH). In order to enter the market quickly and do so with lower capex, the service provider is taking advantage of unbundled local fibre access. To execute its strategy on that kind of infrastructure, the customer knew it needed an advanced OSS solution that would enable automation of the service activation process over a complex mix of third party and organic network infrastructure. This includes seamless interaction with systems of the third-party fibre infrastructure providers for accurate feasibility checks, reservation of partner fibre infrastructure, automatic service activation and closed-loop service assurance.

To achieve this, the customer selected our Service and Network Automation platform, Amdocs NEO, which is deployed on the cloud and operated by us as a managed service which enabled it to accelerate the project timeline and minimise its investment. Our platform is responsible for automatic end-to-end service lifecycle management which includes inventory management, order fulfillment, configuration and activation of the customer premises equipment (CPE), as well as automatic fault detection and resolution. In short: full-stack OSS on the cloud. The bottom line is that this is a good example of a service provider that expanded its business quickly by utilising our service and network automation solutions to accomplish digital-to-network automation of their services management processes.

Deep and comprehensive service and network automation will be key for CSPs as they transform to Digital Service Providers. Those that adopt the right automation strategy will achieve the efficient operating models needed to thrive, and the agile, innovative service delivery models required to compete. As Angela Logothetis explains in the following article, next generation networks and new automation and intelligence technologies present a strategic opportunity for CSPs to start their automation journey now, incrementally automate, and achieve their end state vision of closed loop operations and digital service monetization.

# build it and they may not come – why automation is critical to effectively operate and monetize new networks
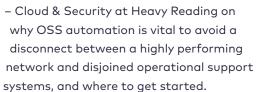
**By: Angela Logothetis, CTO, Amdocs Open Network**

We see it in the press everyday – CSPs are investing billions of dollars in next generation networks – fiber broadband, 5G, cloud, edge, IoT, satellite, enterprise. But building super-capable networks won't, on their own, grow revenues. We all want to be connected, and at faster speeds, but as well as that, we want a digital 'cloud-like' experience, and a raft of new digital services. So CSPs are transforming to be Digital Service Providers. This requires a high degree of automation – not only in customer interaction, but in network operations. If we only digitize and automate the front of house, the experience and the service quickly breaks down, when it reaches a manually operated network. And with the network becoming even more complex the vision of a digital experience and a digital service is becoming harder to achieve.

CSPs recognize the importance of automation and have begun to automate. But the starting point has been 'islands' of automation for specific tasks, specific network domains or for an individual service. This has led to a proliferation of automation solutions for different process and network domains. Some benefits have been achieved in automating repetitive tasks and in managing new technologies – but the end to end network and the services it carries are still managed by legacy and largely manual OSS silos.

Instead of this siloed automation approach, CSPs should first select a strategic automation platform – one that will enable them to automate the hybrid network end-to-end and form the basis for new service launches. Network organizations are really good at defining a strategic network architecture and deploying it over time. Success in automation will require the same strategic approach.

> Hear from Angela Logothetis, Amdocs Open Network CTO and Jim Hodges, Chief Analyst – Cloud & Security at Heavy Reading on why OSS automation is vital to avoid a disconnect between a highly performing network and disjoined operational support systems, and where to get started.

## Managing growing complexity

Next-generation networks are complex. Public, private, and hybrid clouds interact with legacy and next generation network and with a whole ecosystem of application and content partners to deliver new types of services. With 5G deployments accelerating globally, this will only get more intricate. Managing this kind of infrastructure with partial, siloed automation forces CSPs to use often convoluted "workarounds" to make it all gel together. These ad-hoc approaches are driving even greater dependency on time-consuming manual steps and long lead-time break-fix activities.

Not only does this approach make it hard to have end-to-end visibility, it's also challenging to launch, deliver and assure new types of services along with the old. Eliminating the risk of disjointed experiences, widespread outages and missed monetization opportunities will require urgently taking steps to better automate service and network operations with a unified platform.

## Start with the end in mind

The goal of many services providers is to be digital service providers – to expand from connectivity to deliver and monetize the new digital services we will use to live, work, learn, relax and socialize.

Standardizing on an underlying automation platform can substantially simplify managing both legacy and new service offerings – by making them all manageable in a unified and seamless manner.

SES is a good example. Instead of launching new business connectivity services such as SD-WAN with siloed and tactical support systems, it opted to deploy a strategic automation platform that would form the foundation for all future service launches. Thanks to its foresight, SES not only successfully launched its new cloud-based SD-WAN service but is now building on the capabilities of its automation platform to support the end-to-end orchestration of new cloud-based offerings.



Case Study:
**Implementing the world's first open, standards-based network-automation and service-orchestration NaaS platform on a public cloud**

Gint Atkinson
Vice President, Network Strategy & Digital Architecture, SES

Yogen Patel
Vice President & Head of Solutions Marketing, Amdocs

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A Tier 1 in the USA made a similar strategic decision and implemented its first software defined enterprise service on a strategic automation platform. In rapid succession it was then able to launch a whole raft of new services including virtualized CPE, WAN optimization, firewalls, virtualized WiFi and with the benefit of automation it was able to turn these services into managed services – managed WiFi, managed security, managed WAN. And it's not just about responsiveness to customer demands. Consolidated automation also allows CSPs to experiment with new services: launching them quickly, scaling them up, or withdrawing them just as swiftly, depending on their success.

And then there is the impact on the customer experience: in our on-demand world, we're used to clicking, paying, and using services immediately. Waiting several weeks for a service to be activated, or an error to be rectified manually, is no longer a viable option.

## Where to start?

So why, when network organization are so great at strategic network decisions are they making tactical automation decisions? It is tempting when selecting a new network technology to just use the 'automation' that comes bundled with the technology. But SP experience in virtualization has shown this approach has led to very low levels of automation. It didn't tackle automation of the existing network, it didn't tackle automation across the end to end network, and it didn't tackle automation of the service. In some cases, it didn't even really automate the domain it came with.

Now as we move to 5G and Cloud Native Networks we have the chance to take a different approach. It is a 3-step approach:

**1.** Select a strategic automation platform – one that will automate across network domains, across physical, virtual and cloud networks, and will automate the connectivity and digital service

**2.** Triage and prioritize what to automate first

**3.** Automate new technology – like 5G and edge and cloud – from the get-go. Incrementally automate existing physical and virtual technologies. Technology that will get used less, or be phased out, should not be on the list of automation priorities.



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Amdocs Service and Network Automation platform (NEO), has wins Frost & Sullivan's 2021 New Product Innovation Award for Next Generation OSS.

## Automation can no longer wait

We all agree automation is critical. Without far-reaching automation, service providers will not be able to efficiently operate and monetize the next-generation networks they are building. The CSPs that get it right will achieve the low-cost operating model they need to thrive and the service agility and innovation they need to compete. However, automation needs to happen strategically, with the long-term game plan in mind.

This means selecting a single platform for all automation, rather than returning to the stovepipes of old. On this solid foundation, service providers then have the freedom to progress automation at their own pace – but with a firm red thread throughout.

## Amdocs Digital-to-Network Automation solution

Investing in digitizing the front-end customer experience is important.

Yet to reap the full benefits of digitization, maintain a competitive edge and fully meet the expectations of digital customers, service providers must also digitize their service operations and assurance processes.

Amdocs' Digital-to-Network Automation solution, powered by the Amdocs NEO service and network automation platform, provides an efficient, automated and integrated approach to fulfilling, activating, orchestrating and operating any consumer/enterprise service – with full-service lifecycle management capabilities.

**Visit amdocs.com/D2N to learn more**

# about amdocs

Amdocs' purpose is to enrich lives and progress society, using creativity and technology to build a better connected world. Amdocs and its 26,000 employees partner with the leading players in the communications and media industry, enabling next-generation experiences in 85 countries. Our cloud-native, open and dynamic portfolio of digital solutions, platforms and services brings greater choice, faster time to market and flexibility, to better meet the evolving needs of our customers as they drive growth, transform and take their business to the cloud. Listed on the NASDAQ Global Select Market, Amdocs had revenue of $4.2 billion in fiscal 2020. For more information visit Amdocs at www.amdocs.com.

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