Case Study

Tier 1 European CSP implements Amdocs End-to-end Service Orchestration for Network-as-a-Service

A leading European communications service provider (CSP) has partnered with Amdocs to implement Network-as-a-Service (NaaS), leveraging Amdocs' E2E Service Orchestration (E2ESO) solution. In this case study, we'll focus on the technical aspects of the implementation, including supported devices, use cases, and APIs.

Overview

In the midst of their digital transformation, this CSP sought to create a programmable, distributed, and automated network infrastructure, leveraging technologies such as software-defined networking (SDN), network functions virtualization (NFV), and cloud technologies. Amdocs E2ESO solution, part of Amdocs Intelligent Networking Suite, was chosen due to its industry-leading capabilities for orchestrating telco cloud data centers and automating network and service operations. To further leverage the solution's capabilities, Amdocs Network-as-a-Service (NaaS) was adopted for its ability to simplify, standardize, and automate the fulfillment of network services.

Strategic objectives

The project seeks to expand the scope of the CSPs' ongoing network transformation to offer a more agile, customer-centric approach to network provisioning and management by evolving their existing network orchestration into a comprehensive Network-as-a-Service (NaaS) platform. The objective is to enable the delivery of flexible, scalable, and customized services while optimizing resource utilization and improving overall network performance and reliability.

The NaaS platform has simplified, standardized, automated, and orchestrated the lifecycle management and provisioning of various enterprise telco services, creating a NaaS abstraction layer between the IT and network that decoupled the services from the underlying technology, as well as exposing network capabilities to external and internal consumers to enable dynamic service configuration. From a business perspective, the goal is to enable a cloud-like marketplace consumption model, supported by the NaaS platform's ability to translate business intent into actionable network configurations, ensuring an infrastructure that directly supports and contributes to strategic initiatives.
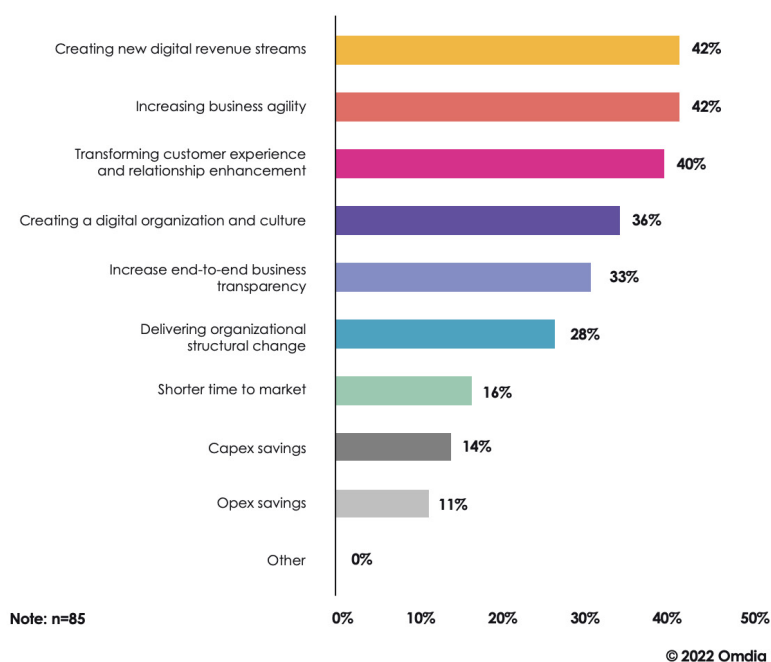

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Figure 1: CSP's main drivers for digital transformation

Underlying challenges

As the CSP incorporated new technologies and advanced services, its customers' expectations – both consumer and business – continued to grow. This created numerous challenges and complexities, driven by the demand for agile digital experiences characterized by the demand for rapid and flexible interactions, both in pre-and post-sales scenarios.

Modern networks offer the dual advantages of being software-defined and highly programmable. But while they bring a wealth of opportunities in the form of differentiated services, they began to encounter significant complexities that posed challenges to existing operations. This created a need for greater agility, resilience, and performance on one hand, and controlling capital (CAPEX) and operating (OPEX) expenditures on the other, as well as higher management complexity overall that comes as a result. To achieve this, operational practices had to be aligned across diverse organizational boundaries, while facilitating the repeated utilization of reusable building blocks.

Ultimately, the CSP sought to accelerate its deployment of network services to rapidly capitalize on emerging opportunities, enhance customer experience, and reduce the total cost of ownership to maintain its competitive edge.

To address this challenge, the CSP and Amdocs partnered to design a NaaS platform that would support cloud-like operations capable of supporting the creation of scalable, self-healing, and self-managing services and networks in real-time, based on customer and network demand. Main focus areas included enhancing efficiency, automating repetitive tasks, optimizing provisioning and management of network services, and reducing manual effort and human errors.

Platform goals include:

- Deliver a unified interface for IT across all network domains

- Expediting and accelerating fulfillment and deployment of network services

- Enhance total cost of ownership through increased cost efficiency, by exposing reusable services, implementing zero-touch operations, hyper-automation and auto-healing

- Resolve operational complexity associated with the lifecycle management of end-to-end voice & data services spanning multiple network domains/layers and various network equipment providers

- Address operational complexity linked to the lifecycle management of current and future advanced services, including enterprise voice and data, ubiquitous connectivity (e.g. Wi-Fi, SDWAN, business internet)

- Recognize the critical role of the cloud-native architecture in supporting the agility and elasticity required for automated resource provisioning and optimization across multiple clouds

- Ensure openness and alignment with standards to seamlessly integrate with southbound, northbound, and east/west interfaces (see Figure 2 NaaS end-to-end cross-domain orchestration)

The solution

Amdocs E2ESO has provided the CSP with a set of technical and operational practices that enable seamless service orchestration and enhanced customer experiences. This has been achieved by decoupling the service lifecycle from the network technologies via standardization of the management and exposure of network capabilities, in a consistent service consumption pattern, abstracting all the network complexity, and using a common suite of common APIs.
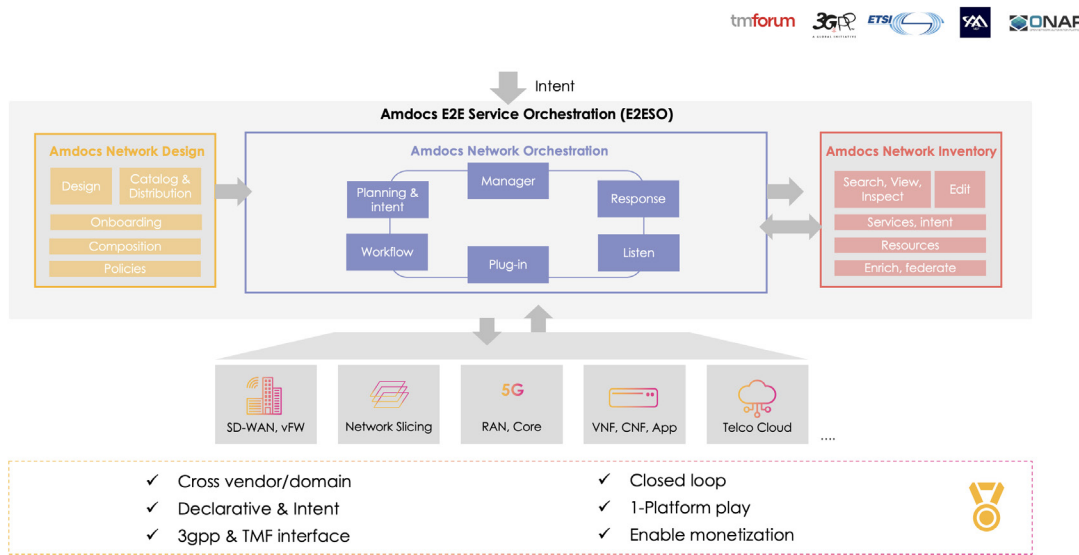

Figure 2: Amdocs E2ESO [NaaS Platform]

Amdocs NaaS platform will streamline, standardize, automate, and orchestrate the interaction between business support systems (IT layer) and network infrastructure, facilitating the translation of business intent into actionable network configurations, while directly supporting and contributing to strategic initiatives. These capabilities will ensure that the system consistently delivers the intended outcomes. It includes comprehensively orchestrating the CSP's network with truly end-to-end lifecycle management of services that spans multiple domains and vendors, including CPE & devices, mobile access, fixed access, core network, and data center & cloud.

Crucially, interfaces are aligned with industry standards, presenting standardized northbound interfaces such as TMF Open APIs toward the IT layer for service management. In addition, TMF-641, 639, and 633 standards are currently in use, while 638 and 640 are on the roadmap. 3GPP interfaces such as 28.531/2 are also leveraged.

In addition to northbound interfaces, the platform also exposes standard TMF 641 & 3GPP APIs to seamlessly integrate with third-party orchestration engines. Other network layers utilize more proprietary southbound interfaces towards the network layer, employing technologies like SSH, REST, SOAP, SNMP, and so on, for provisioning SDWAN, Wi-Fi, IMS, and SBC cluster for enterprise services, supporting continuous lifecycle management through service monitoring and device configurations.

For a seamless single sign-on experience, the INS system supports Auth2.0-based Integration with Azure and Active Directory.
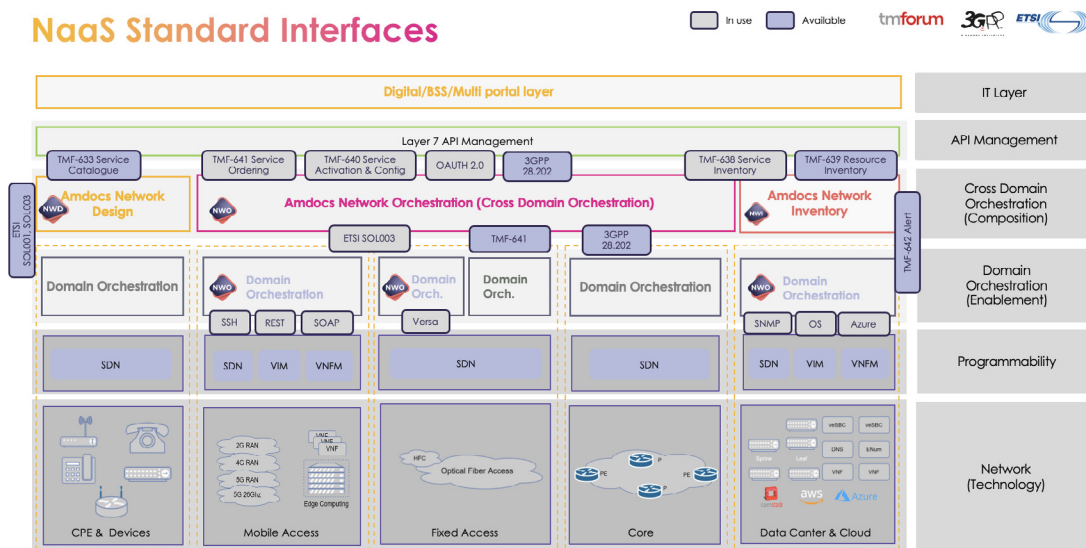

Figure 3: NaaS end-to-end cross-domain orchestration

Delivering customized offerings and use cases

By decoupling services from the underlying infrastructure, the NaaS platform will enable flexible, scalable, and customized service offerings, including:

- Enterprise voice and VPN provisioning: ensuring secure and scalable connectivity for businesses

- Onboarding voice services for contact centers: facilitating smooth integration of voice communication services to enhance customer support

- SD-WAN for flexible WAN management: enhancing network performance and optimizing costs through flexible and efficient WAN management

- Business internet cable modem solutions: providing high-speed connectivity to enterprises over HFC networks

- Multiple Wi-Fi deployment: ensuring seamless wireless connectivity for reliable, high-performance Wi-Fi services

To support these services, the CSP and Amdocs are in the process of developing a NaaS platform is being developed to accommodate a wide range of use cases and integrate with multiple domains and vendors, while managing service lifecycles across the following network domains:

- Customer premises equipment (CPE) and devices
- Mobile access
- Fixed access
- Core network
- Cloud Infrastructure

Key solution capabilities

- **End-to-end service and network orchestration** covering all aspects of design and orchestration for services spanning multiple domains and vendor technologies

- **Automated continuous service fulfillment and assurance** through real-time monitoring and enforcement of policies to VNFs, networks, and cloud resources, as well as service-related policies

- **Hybrid cloud and network platform** for creating, deploying, and managing a variety of traditional and innovative services

- **Standards-based service-driven modeling** for composing reusable service building blocks, as well as all cloud and network resources required to roll out and operate the service

- **Open and Vendor-agnostic solution**, aligned with and based on industry-leading standards including, ETSI, TMF, ONAP, and MEF

Predicted business benefits

Both Amdocs and the CSP are confident that the solution will lead to the following business benefits:

- Automated operations and reduced costs
    - Evolution to a dynamic and agile service and network management approach on a distributed, virtualized, and cloud architecture
    - Adoption of standard service modeling principles, ensuring easy reusability, and simplification of new service offering design and creation
    - Modeling the intricacies of the service using no-code/low-code tools and a model-driven approach that translates business intent into detailed actions, topology, and provisioning
    - Reduced time to deliver and fulfill new services, as well as implementing service modifications
    - Improved operational efficiency and human error reduction by automating service order fulfillment processes
    - Automation of the interface between the IT layer and network infrastructure, coupled with the adoption of intent-based and model-driven service delivery, achieves a significant TCO reduction
- Increased revenues and better customer experience
    - Improved customer satisfaction due to reduced service order processing time from days to minutes
    - Enhanced customer stickiness and reduced churn
    - Ability to leverage operational efficiencies for expanding addressable markets

Service / Business / Application / Partner		

Amdocs NaaS

Service & Network Design	Service & Network Orchestration	Service & Network Inventory
Service design & on-boarding	E2E lifecycle management	Network & Service inventory
	Domain Orchestrator • • • Domain Orchestrator	

Assurance
closed-loop operations

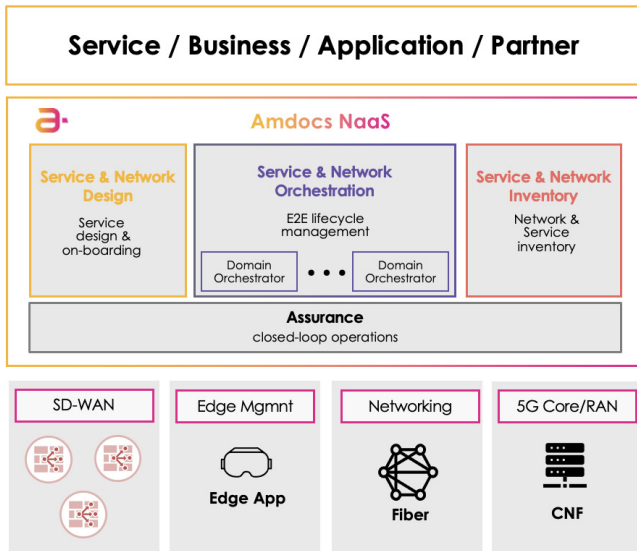| SD-WAN	Edge Mgmnt	Networking	5G Core/RAN
	Edge App	**Fiber**	**CNF**

Figure 4: CSPs building bridges from the traditional network to business

- 'Cloud-like' digital marketplace, enabling rapid access to ecosystems with a wealth of third-party content
  - Increased innovation and reduced time to market by adopting a "continuous deployment" model and creating a marketplace consumption model
  - Programmable network that meets rapidly changing needs of the connected digital enterprise society
  - Abstraction layer (NaaS) that decouples services from the underlying technology and exposes network capabilities in a standardized way for third-party marketplace consumption
  - Foundation for offering reliable, agile, and secured high-value hosted and cloud-based services

About the service provider

This Tier-1 CSP is a European-based company that provides a wide range of communication and entertainment services to consumers and businesses. Their service portfolio includes fixed, mobile, and integrated solutions catering to both consumer and business customers. They offer voice, advanced data, video, wireless, and cloud-based services, including converged fixed-mobile offerings.

amdocs

make it
amazing

Amdocs helps those who build the future to make it amazing. With our market-leading portfolio of software products and services, we unlock our customers' innovative potential, empowering them to provide next-generation communication and media experiences for both the individual end user and enterprise customers. Our approximately 30,000 employees around the globe are here to accelerate service providers' migration to the cloud, enable them to differentiate in the 5G era, and digitalize and automate their operations. Listed on the NASDAQ Global Select Market, Amdocs had revenue of $4.89 billion in fiscal 2023.

To learn more about Amdocs Intelligent Networking Suite's key capabilities please see:
https://www.amdocs.com/products-services/intelligent-networking-suite