Deutsche Telekom turns telco cloud vision into results

Deutsche Telekom is the premier network operator in Germany and one of the world's leading integrated telecommunications companies. It serves 245 million mobile customers and has 25 million fixed-network and 21 million broadband lines deployed. In addition, the company offers IPTV products and services to consumers and information and communication technology (ICT) solutions to business customers.

DT embarked on a unique collaboration with Juniper to build a second-generation telco cloud platform with Network Functions Virtualization (NFV) technology at its core. End-to-end automation and DevOps practices allow DT to move with game-changing agility and scale, while assuring operational efficiency.

OVERVIEW

Company	Deutsche Telekom
Industry	Service Provider
Products Used	Cloud-Native Contrail Networking , QFX10008 and QFX10016, QFX5100, MX Series
Region	EMEA

CUSTOMER SUCCESS AT-A-GLANCE

>10X

Faster to update the NIMS application software

>90%

Automation of NIMS application test cases

1 day

To upgrade a non-service impacting cloud software (NFVI) release per site

15 million

Subscribers in Germany migrated to the NIMS telco cloud

◐◯ CHALLENGE

Build next-generation telco cloud

DT wanted to accelerate the speed of business and derive more value from its telco cloud. As DT planned its Next-generation IP Multimedia Subsystem (NIMS) platform, it aimed to incorporate the lessons it learned as an early innovator of telco cloud.

DT built its first-generation NIMS as a private, on-premises cloud, as many other telco providers did in the same era. But DT found that reliance on a "black box" virtualized platform resulted in complexity, vendor lock-in, and operational inefficiencies that made it challenging to meet its aggressive time-to-market goals for delivering new customer services.

The company wanted to break free of limitations and operate with the speed and agility of a hyperscaler.

SOLUTION

An innovative partnership with Juniper

To achieve its goals, the company built its next-generation telco cloud with a Network Functions Virtualization (NFV) core, which alleviates the one-time cost, scalability, and lock-in drawbacks of early NIMS architectures. An open, multivendor NIMS platform allows DT to leverage open-source solutions to protect against vendor lock-in while also delivering the flexibility to mix, match, and scale its services based on customer requirements.

"Deutsche Telekom chose Juniper Networks to implement our vision for a universal cloud-based service platform," says Christoph Hilz, senior vice president of Service and Platform (DevOps) at Deutsche Telekom. "Partnering with multiple vendors, Juniper supported DT in delivering a fully automated, cloud-native, telco cloud architecture, Our platform supports a broad portfolio of virtual and cloud-native functions that allow us to quickly turn ideas into reality and make real-time changes without impacting customers."

Juniper played a pivotal role as the prime integrator for the NFV infrastructure for the carrier network as well as a systems integrator, automation architect, and NFV infrastructure technology partner. Juniper's software development and global professional services teams served as application-neutral advisors to help DT define, build, and deploy the NIMS architecture, and shepherded the contributing vendors and solutions across the finish line.

The Juniper team also managed the integration of other vendors' software with DT's new and legacy operations and business support (OSS/BSS) systems. Juniper worked alongside DT to implement its automation and operation platform (AOP) framework, including the CI/CD blueprints used throughout the NIMS architecture.

Juniper delivered and integrated the NFV infrastructure underlay and overlay networks for the NIMS production and lab environments. Juniper Cloud-Native Contrail Networking is used for overlay networking for all existing virtual network functions (VNFs). Juniper Networks MX Series Universal Routers and QFX Series Switches provide the physical underlay network. MX routers also serve as data center gateways, interfacing with the IP fabric through cloud-managed firewalls and providing connectivity to the WAN.

OUTCOME

Move at the speed of hyperscalers

As an automation engine for the future, DT's NIMS has been fundamental to service migrations and introductions. As of early 2023, 12 million voice subscribers in Germany have successfully been migrated. Additionally, billions of interconnect voice minutes with about 100 interconnect partners are now completely processed via NIMS. The next milestone is to migrate 18 million subscribers.

Through end-to-end automation, DT can create, test, and launch new telco services with the agility and speed approaching that of a hyperscaler, ultimately benefiting DT's consumer and business customers.

Using CI/CD automation and tools, DT has digitized the physical cloud components, increasingly allowing DT to transform a pallet of network gear and servers into a functioning NIMS cloud in just hours instead of weeks. Nearly all of the NFV infrastructure test cases have been automated, allowing DT to fully leverage its AOP to accelerate and simplify the lifecycle management of the NFV infrastructure.

Code-first collaboration between operators and multiple vendors in a market-leading ecosystem has allowed DT to create a successful model of collaboration and a common, vendor-agnostic automation platform. This allows DT and its vendor-partners to co-create new service offerings under DT's governance.

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> Christoph Hilz
> Group Head Voice & Messaging (DevOps), Deutsche Telekom