

Accelerating Nationwide Fiber Rollout for a Leading Telco in the UK



Overview

The client is a UK-based telecommunications service provider and faced challenges with inflexible legacy operations support system (OSSs), vendor-dependent network changes, tight coupling with network vendors, and data inconsistencies between systems and networks which led to expansive operational costs and excessive time to market hindering the client to achieve their fiber rollout targets. TechM being the strategic partner digitally transformed and enhanced multiple client systems like unified inventory, templated network, inventory planning, OSS-driven migrations, multi-domain, and multi-vendor orchestration. The multiple solutions led to reduced operations costs and efficiency, allowing the client to achieve their fiber rollout targets.

Client Background and Challenges

The client is a UK-based telecommunications service provider. To improve the customer experience, the client began a major fiber rollout that involved placing new fiber across the UK including difficult-to-serve parts of the country. There were many challenges to be addressed to achieve the rollout targets and the customer started planning to embark on a transformation journey.

- ▶ **Legacy, Multiple Inventory Systems:** The client has large network deployments supported by several OSS/BSS systems, many of which are based on commercial off the shelf (COTS) products. As the complexity of networks increased, the levels of customizations in the COTS grew exponentially, thereby increasing costs and rollout times. The complex UI and non-configurability of the legacy solution resulted in increased efforts for even minor network changes. Also, EoSL of products were leading to performance degradation and issues in production. Certain platform upgrades were not possible as the COTS was compatible with specific versions.
- ▶ **Non-standard Network and Service Modelling:** Their existing process to launch a device and make it available to the network planners involves a long design phase followed by non-standardized and vendor specific approach for manually configuring new devices, complex cross application changes and manual testing - all these leading to excessive cost of delivery and reworks and slower time to market.
- ▶ **Network-driven Migrations:** The existing process of migrations was complex and time-consuming. It was heavily dependent on point solutions by network vendors and tightly coupled to vendor's code and element management system (EMS) versions. The commercials were also linked to vendor's support to run their tools which were not cost-effective. Data mismatches between the network and OSS (Operations Support System) further added to the complexities and led to migration failures. Coordination between different teams and a high degree of manual intervention made the entire process of network-driven migrations inefficient leading to high cycle times and impacts on services.
- ▶ **Vendor-dependent Service Activation:** The current service activation process has vendor specific implementation. The service configuration needs to be executed on multiple-vendor, multi-domain scenario. Every new configuration or existing changes needs complex OSS updates and must undergo design, development, test, and deployment cycles
- ▶ **Vendor-specific EMS:** In the current scenario, the EMS is tied to a device and is locked in with a vendor. This is not conducive to rolling out new devices, features, and changes to the networks quickly and in a scalable manner.

To summarize, the client faced challenges around:

- Brown field systems and processes with expansive operational costs and excessive time to market
- Inflexible legacy OSSs, vendor-dependent network changes, tight coupling with network vendors, and data inconsistencies between systems and networks

Our Approach and Solution

The client's fiber rollout ambition is being enabled through innovative digital and transformational enhancements in its inventory, planning, and activation functions and building a future-ready next-gen agile OSS. These transformations in network and IT operations rely on standardizations involving the use of TM Forum's Open Digital Framework, Open APIs, TOSCA, NETCONF/YANG, and simplifications using open-source technologies such as Java/J2EE, ONOS, and Camunda.



Unified Inventory

The business transformation started with the consolidation of logical inventory that was spread across multiple systems. Through the new system, the client lowered software solution costs and improved its service route provisioning process by 3x while reducing its level of provisioning failures due to closed-loop planning that helped avoid gaps in the plan versus build processes. The new system adopted microservices-based architecture and agile DevOps in transforming legacy COTS to an open source-based solution.



Templatized Network and Inventory Planning

With our consistent advisory and support, we enabled the client to develop its templated network modeling tool, the Inventory Design tool for OSS and Network. The network uses an industry-standard YANG data model and TOSCA templates for adding modeling constructs to support orchestration. It also provides automated interfaces to other OSSs for inventory updates.



OSS-driven migrations

The client's OSS-Driven network migration framework enables a flexible and OSS-driven migration approach with minimal service impact, de-risking from a vendor EMS, and network code dependencies. The Next-Gen Agile OSS framework is vendor agnostic and can be reused across different networks. When the framework is applied to multiple migrations, the resultant cost savings is significant while downtime is also reduced.



Multi-domain, multi-vendor orchestration

The client's next-gen OSS uses an orchestrator that employs a service YANG-based approach to enable templated service activation for multidomain configurations. The service YANG incorporates vendor-agnostic activation templates for a common language identifier (CLI) as well as RESTCONF/NETCONF-based network devices. The orchestrator uses Camunda business process management (BPM) for workflows and follows a microservices architecture. Unified inventory within the new solution provides close coupling along with real-time views of system resources, services, and products as well as their relationships with one another. The multi-vendor, multi-domain orchestration standardizes and automates service delivery via repeatable, simplified, and auditable processes, which in turn enables faster network adaptations.



Generic EMS

To complement its multidomain, multivendor service orchestration function. The client created a generic EMS based on ONOS. The generic EMS adapts to new and legacy devices in a plug-in architecture. Using the ONOS-based generic EMS, the orchestrator interacts with various network elements that support configuration interactions modeled via YANG and removes the dependency on vendor-specific configurations.



Business Impact



Through this transformation, the client lowered software solution costs and improved its service route provisioning process by 3x while reducing its level of provisioning failures due to closed-loop planning that helped avoid gaps in the plan versus build processes.



The simplified user interface (UI) within the new system is preferred by 97% of system users across the company compared with the legacy inventory UI.



Improvement in field engineer efficiency by 6-8% and a reduction in the number of manual surveys.



The new network tool reduces new device modeling time intervals from several months to a few hours.



The template-based configurable network and service design approach reduced the cost of operations by 20-25%.



The client could see up to 40% reduction in development costs by using OSS-driven migrations standards-based solution.

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