

Operations processes and systems defining network transformation initiatives are in a state of flux for communications service providers. Openreach is one example of how meeting customer needs through system and process upgrades is paying off in the form of increased productivity and improved customer experience.

## How Openreach Is Accelerating Its Fiber Rollout Program by 3x

July 2022

**Written by:** Karl Whitelock, Research Vice President, Communications Service Provider Operations and Monetization

### Introduction

Openreach provides last-mile copper and fiber to the 640+ communications service providers (SPs) selling voice services, broadband connectivity, and Ethernet to customers in the United Kingdom. Openreach delivers connectivity to approximately 28.3 million homes and businesses with speeds of 30Mbps, 4.8 million customers with ultrafast broadband, and 13.9 million customers with direct fiber.

To improve the customer experience, Openreach began a major fiber rollout four years ago that involved placing new fiber across the United Kingdom to address several operations challenges. Issues included inflexible operations support systems (OSSs), vendor-dependent network changes, tight coupling with network vendors, and data inconsistencies between systems and networks. Combined, these bottlenecks led to increased operational costs and expanding time frames for meeting customer objectives.

The company's ambition to cover 25 million homes and businesses with fiber by 2026, including more than 6 million in the hardest-to-serve parts of the country, is enabled through digital transformation of the Openreach inventory, planning, activation, and service assurance OSS functions. Openreach calls its new operations solution "NextGen Agile OSS."

Covering both network and IT transformation within each of the previously mentioned domains relies on standardization. Standards-based capabilities used by Openreach include the TM Forum's Open Digital Framework (ODF), open application programming interfaces (APIs), model-based testing (TOSCA), Network Configuration Protocol (NETCONF)/Yet Another Next Generation (YANG) modeling language, and simplifications using open source technologies such as the Open Network Operating System (ONOS) and Camunda.

### SOLUTION SNAPSHOT

#### ORGANIZATION:

Openreach Limited is a wholly owned subsidiary of BT Group and runs the United Kingdom's digital network for providing last-mile copper and fiber connectivity.

#### ORGANIZATIONAL CHALLENGES:

- » 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

#### SOLUTION:

Transformational enhancements within the Openreach inventory system, including planning, activation, and service assurance functions to establish a future-ready "NextGen Agile OSS."

#### PROJECT DURATION:

The project launched in early 2017 with portions now live; other work efforts are ongoing.

#### BENEFITS:

- » Single-source-of-the-truth inventory with opex savings in license fees over five years
- » Three times faster service route provisioning
- » 70% efficiency improvement in user experience
- » Improved network and service design intervals resulting in 20–25% cost savings
- » Two-thirds reduction in network launch times

## Heart of the Fiber Rollout Challenge: Issues and Benefits

Rolling out fiber at the scale and speed that Openreach needed to introduce dynamic network services based on software-defined network (SDN) and network function virtualization (NFV) capabilities meant a revamp of nearly all the company's operations support systems. This update addressed business and operational challenges such as delivering a single view of inventory across systems and processes; dynamic provisioning of advanced network services spanning the core network, SDN-based virtual private networks (VPNs), client site NFV, hosted NFV service chains, and external connectivity to multiple hyperscaler cloud providers; technical integration of services across multiple domains; remediation; analytics; and self-service functionality.

The core building blocks of the Openreach NextGen Agile OSS framework that optimize and digitize key OSS processes, such as inventory modeling, network planning, network migration and rollout, lead-to-cash service management, network configuration management, discovery, and reconciliation, are noted along with the associated benefits:

- » **Unified inventory.** Openreach has large network deployments supported by several operations support systems/business support systems, many of which are based on commercial software products. The existing legacy solutions for maintaining logical inventory connected to 36 interfacing systems, provided 15 reusable capabilities, supported 72 unique topologies, and addressed 700,000 to 1 million transactions per day. The inventory update project — Service and Resource Inventory Management System (SRIMS) — started in 2018 with consolidation of logical inventory that was spread across multiple systems. The new system went live in 2020.

Through SRIMS, Openreach 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 single-source-of-the-truth inventory produced a significant level of opex savings over five years in license, upgrade, and maintenance costs. From internal discussion, Openreach determined that the simplified user interface (UI) within SRIMS is preferred by 97% of system users across the company compared with the legacy inventory UI. With inventory now available by a single click, Openreach estimates a 6–8% improvement in field engineer efficiency and a reduction in the number of needed manual surveys.

- » **Templatized network and service modeling.** The existing process to launch a device and make it available to network planning was not agile enough to address rapidly changing needs. This process involved a long design phase and a nonstandardized, vendor-specific approach for manually configuring new devices, complex cross-application changes, and manual testing. To reduce costs, improve delivery times, eliminate most reworks, and reduce the time to market, Openreach developed its templated network modeling tool known as Inventory Design tool for OSS and Network (iDON). iDON 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.

The new iDON tool allows network changes to be introduced without any design, development, and test cycles, which can reduce new device modeling time intervals from several months to a few hours. The iDON project started in FY 1Q21 and the iDON tool was implemented in FY 3Q21. Openreach estimates that compared with previous methods, the template-based configurable network and service design approach reduced the cost of operations by 20–25%.

- » **OSS-driven network migrations.** The previous process of network migrations was complex and time consuming. It was heavily dependent on point solutions provided by network suppliers and tightly coupled to a vendor's code and element management systems (EMSs). Data mismatches between the network and OSS added more complexity and usually led to migration failures. A high degree of manual intervention among multiple teams made the process of network-driven migrations inefficient, which led to high cycle times and impacted services. The Openreach 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 NextGen 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. In achieving these results, Openreach determined it could see up to a 40% reduction in development costs by using this standards-based solution compared with how it did business before. The company also noted that it completed a new network launch in one-third the time it took using previous processes and systems.

- » **Multidomain, multivendor service orchestration.** The former service activation process engaged vendor-specific implementation processing. Service configuration was executed following a multivendor, multidomain scenario. Every new configuration or existing change required complex OSS updates. Each had to undergo design, development, test, and deployment cycles. The Openreach NextGen 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.

The key features of the transformation strategy are now standardized and qualified as a best practice for every Openreach IT transformation initiative.

Unified inventory within SRIMS provides close coupling along with real-time views of system resources, services, and products as well as their relationships to one another. Openreach believes this approach standardizes and automates service delivery via repeatable, simplified, and auditable processes, which in turn enables faster network adaptations.

- » **Generic EMS.** Previously, the EMS was tied to a device and locked in with a vendor, a situation that was not conducive to rolling out new devices, features, and changes to the networks in a fast and scalable manner. To complement its multidomain, multivendor service orchestration function, Openreach 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.
- » **Strengthened service assurance.** Openreach also transformed its processes to strengthen its focus on service assurance once orders are fulfilled. By combining network telemetry information with network performance management systems, Openreach is moving toward proactive fault management and preemptive assurance. It has addressed the data inconsistencies between OSSs and the network by using artificial intelligence and machine learning (AI/ML) techniques. SRIMS is also an enabler for a unified portal that facilitates operations to follow generic processes for all network elements and to automate inventory updates to OSSs alongside network updates. As a result, data discrepancies in the OSSs are reduced, which prevents failures during the activation and assurance processes. As data quality improves, Openreach can respond more quickly to service-related issues.

The existing legacy OSSs had been in place for the past 13 years, supporting next-generation access (NGA) networks and Ethernet products. To ensure smooth data migration and seamless cutover, Openreach engaged in detailed planning to achieve functional accuracy and to cater to nonfunctional requirements. The cutover was completed in phases where both legacy and new system functionality would coexist for functionality validation. The key features of the transformation strategy are now standardized and qualified as a best practice for every Openreach IT transformation initiative.

## Methodology

The project and company information contained in this document was obtained from discussions with Tech Mahindra and documentation provided by Openreach. Tech Mahindra was strategically involved with Openreach in the creation of its new systems, including SRIMS, iDON, and NextGen Agile OSS.

## About the Analyst



***Karl Whitelock, Research Vice President, Communications Service Provider Operations and Monetization***

Karl Whitelock leads IDC's Communications Service Provider Operations and Monetization global practice. He offers strategic insight and global perspectives concerning service operations and monetization functions, formerly known as OSS/BSS. Areas covered include service assurance, network data analytics, service orchestration, network operations, rating and charging, policy management, partner management, customer experience, revenue assurance, and fraud management.

## MESSAGE FROM THE SPONSOR

Tech Mahindra offers innovative and customer-centric digital experiences, enabling enterprises, associates, and the society to Rise. We are a USD 6 billion organization with 151,100+ professionals across 90 countries helping 1224 global customers, including Fortune 500 companies. We are focused on leveraging next-generation technologies including 5G, Blockchain, Quantum Computing, Cybersecurity, Artificial Intelligence, and more, to enable end-to-end digital transformation for global customers.



**IDC Research, Inc.**  
140 Kendrick Street  
Building B  
Needham, MA 02494, USA  
T 508.872.8200  
F 508.935.4015  
Twitter @IDC  
idc-insights-community.com  
www.idc.com

This publication was produced by IDC Custom Solutions. The opinion, analysis, and research results presented herein are drawn from more detailed research and analysis independently conducted and published by IDC, unless specific vendor sponsorship is noted. IDC Custom Solutions makes IDC content available in a wide range of formats for distribution by various companies. A license to distribute IDC content does not imply endorsement of or opinion about the licensee.

External Publication of IDC Information and Data — Any IDC information that is to be used in advertising, press releases, or promotional materials requires prior written approval from the appropriate IDC Vice President or Country Manager. A draft of the proposed document should accompany any such request. IDC reserves the right to deny approval of external usage for any reason.

Copyright 2022 IDC. Reproduction without written permission is completely forbidden.