

Making the business case for software-defined access

SDAN in Action

What are the quantifiable benefits of a software-defined access network (SDAN)? This operator is seriously considering SDN and NFV to simplify its fixed access network and operations, but it is hard to find a partner with the right expertise to help figure out what the business case might be. In order to get an answer to its questions, this operator asked Nokia to conduct an OPEX modelling exercise. This study quantifies the savings the operator would realize and helps to fully understand the implications of SDAN without resorting to hype.

Challenge

Understand the operational and business benefits of adopting SDAN.

Solution

Nokia OPEX quantitative analysis based on implementing SDAN across the national network.

Benefits

Quantified and substantiated financial projections showing an OPEX saving of 78M€ per year.

The challenge

This operator has a mix of VDSL2 and GPON technologies from two vendors across its national network. Multiple vendor-specific element management systems reside in the network which are integrated with the operator's OSS, creating a complex software integration problem. Frequent upgrades with corresponding manual test cycles are leading to ever-increasing OPEX costs. Time-to-service and agility suffer as a result of network complexity, diminishing the operator's competitive advantage.

Operator Profile

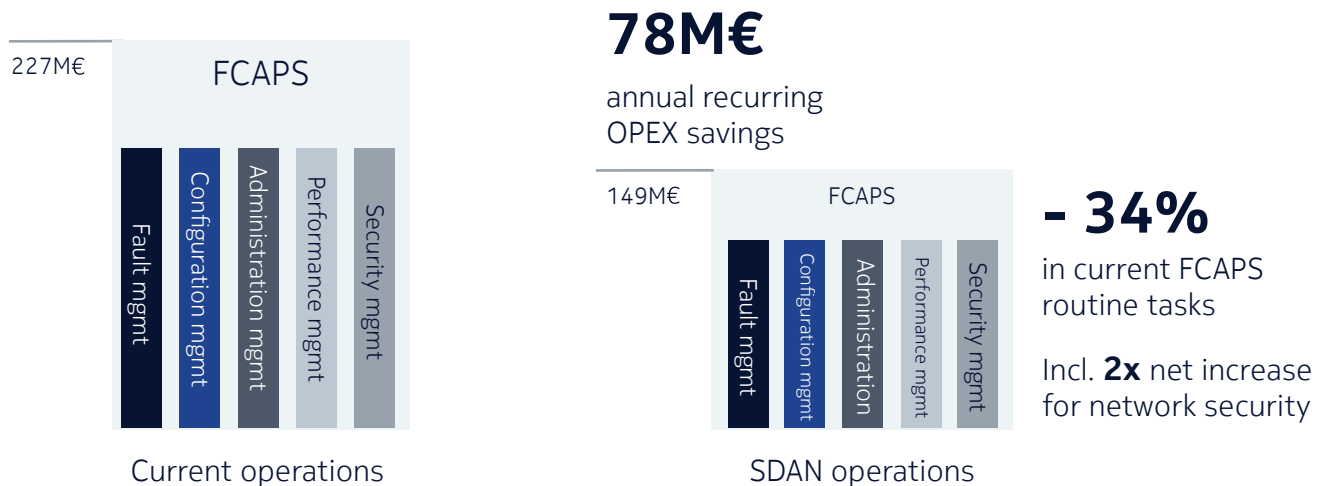
- National telecom operator
- >40% market share
- Mix of FTTC (VDSL2) and FTTH (GPON)
- Dual-vendor environment

The automation and improved agility of SDAN could have a substantial impact on the operator’s operational efficiency and resolve these problems. While the operator has a sense of where the value could come from, quantifying it is complex. The operator anticipates significant internal barriers to adoption from legacy practices and skillsets and so needs a robust demonstration of both the business and operational benefits of SDAN.

The solution

Nokia performed an OPEX quantitative analysis based on implementing SDAN across the national network. SDAN is a versatile solution that delivers operational efficiencies for many network management tasks such as maintenance, network provisioning, service fulfilment, service assurance, software upgrades, system integration and capacity planning. For this operator, Nokia shows how SDAN **reduces OPEX by 78M€** per year on operations and maintenance activities. This is a **34% cost saving on current FCAPS** (Fault, Configuration, Administration, Provisioning and Security) routine tasks. It includes a 2x net increase in network security that comes from the separation of software functionalities from the traditional hardware and the introduction of cloud-based technologies.

Figure 1. Nokia SDAN saves on operations and maintenance activities



The key contributors to the operator’s 78M€ savings.

- **46M€ from faster diagnostics and troubleshooting.** High-precision telemetry, timely access to data, easy correlation of alarms and fully integrated availability enable faster execution and fewer deviations in operational processes and staff knowledge.
- **22M€ from better insights for pro-active action.** Automated measurements, unified reporting, simplified operations and common analysis of data anomalies and trends reduce the cost of poor quality/rework, and resolve a lot of inefficiencies in the existing processes.

- **7M€ from zero-touch provisioning.** Always on programmability and zero-touch device turn-up leads to fewer errors, less retries and faster fulfilment procedures with first-time-right provisioning of network elements in the cloud prior to node installation.

The modelling study revealed the tasks most improved by SDAN for this operator.

- **Lengthy back-up and restore procedures** are largely eliminated due to continuous versioning in the cloud and capability to restore to any point in time. Cost saving: 97%.
- **Customer activation** is zero-touch and first-time-right with practically no time-consuming planning that requires expert engineers or OSS retries. Cost saving: 95%.
- **OSS and EMS system testing** is dramatically reduced due to more efficient testing with a common SDN controller, fully open APIs and automated test stages. Cost saving: 90%.
- **Reduced interoperability validation efforts** to deploy multi-vendor PON networks by decoupling ONU features from OLT software with Nokia Multivendor ONU Connect. Cost saving: 85%.

The modelling shows that OPEX costs are reduced significantly by using open network element models across systems and building the related automated test suites. Traditional EMS systems were designed for human operators running complex networks that require little reconfiguration due to the limited rate of service evolution. While some workflows can be automated in legacy systems with the help of scripting and, more recently, robotic process automation, there are clear limitations since neither data collection nor configuration changes of a traditional EMS can support real-time automation. One of the underlying reasons is that network data is processed multiple times across different applications before any relevant insights can be derived. A new data management paradigm is therefore essential to simplify and accelerate this process. In addition, different management software applications typically keep data in a variety of highly proprietary and inaccessible database systems, preventing reusability and leading to data consistency issues.

The study helps this operator to understand the benefits of Nokia SDAN, identify the implications on their current operating model, and quantify the savings. The operator uses Nokia's calculator tool to compare alternative scenarios and run timing assumptions over 3 to 4 years. Savings will vary for each service provider, but our analysis indicates that typical FCAPS fixed access savings for most operators will be between **25% and 40%**. We can help operators to calculate and validate the benefits they would realize when moving to Nokia SDAN, taking into account their current mode of operations.

We understand now the operational value of SDAN thanks Nokia's unique explanation and quantification of many of these aspects.

The Nokia SDAN advantage

Nokia SDAN creates a new way of working that frees up resources and capital and enables new revenue-generating opportunities.

- **Efficient operations.** Network in the cloud is always-on; zero-touch provisioning, whether nodes are online or offline; better troubleshooting and error-free operations with fast telemetry and big volumes of high-quality data available in the cloud when you need it



- **Easy evolution.** Reduce the impact of upgrades to add, customize and deploy new access functions and services, limit the OSS impact with software abstraction and run an automated software validation without requiring prolonged semi-manual testing cycles
- **Innovation speed.** Fast feedback cycles; DevOps continuous delivery and risk contingency; compliant with YANG standards for multivendor deployments and immediate interop.
- **Collaborative ecosystem.** Seamless integration via open APIs and software frameworks in cooperative partnerships and with a common SDN controller for multivendor constellations.

About Nokia SDAN

Nokia Software Defined Access Networking solutions enable more agile, manageable, dynamic and cost-effective networks by applying cloud, IT and DevOps technologies.

This enables:

- **Programmability.** Networks are controlled by software functionality, allowing network operations to be automated and adapted in a flexible way.
- **User plane separation.** Separation of the management and control plane from the user plane allows new services and behaviors to be introduced across underlying hardware.
- **Abstraction.** Operations are abstracted from service implementation logic, simplifying provisioning and troubleshooting processes that can deal with different technologies, and maximizing portability in the face of future network evolutions.
- **Central control.** Centralized network intelligence allows decisions to be made based on a global view of the network, allowing rapid network changes and rollout of network services.
- **Open standards.** Open standards and open APIs for programming the network enable innovation and differentiation by operators.

About Nokia

We create the technology to connect the world. Powered by the research and innovation of Nokia Bell Labs, we serve communications service providers, governments, large enterprises and consumers, with the industry's most complete, end-to-end portfolio of products, services and licensing.

From the enabling infrastructure for 5G and the Internet of Things, to emerging applications in digital health, we are shaping the future of technology to transform the human experience. networks.nokia.com

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