NOKIA

Unlock Gigabit fiber services for MDU residents with G.fast

SDAN in Action

Use case

To boost speeds for 50 million customers in MDUs, this national operator embarks on a gigabit play with G.fast. Nokia Lightspan nodes and Altiplano cloud platform enable them to be a fast-mover, minimize the deployment effort and improve overall operational efficiency to strengthen their competitiveness in the market.

Challenge
Quickly and efficiently deploy gigabit services to MDUs in saturated urban areas.

Solution
Altiplano cloud platform to integrate all access technologies with the OSS.

Benefits
Gigabit services deployed quickly with substantial power savings and operational simplicity.

The challenge

This national operator has a complex mix of DSL and fiber technologies. Where their legacy DSL services compete against cable, the operator only achieves 20% market share. Even with FTTN services, they are limited to around 40% market share. Losing market share to cablecos in key urban battlegrounds, this telco must embark on a gigabit play.

About 50% of subscribers in these urban battlegrounds are connected with FTTP. It is however impossible to reach all subscribers with fiber and other options will be needed to bring a 1 Gb/s connection to more challenging locations. This can be achieved with a mix of deep-fiber and G.fast 212 MHz technology. The operator has already introduced G.fast 106 MHz technology but now wants a new lower-cost solution with easy integration into their OSS, higher speeds, more flexible deployment options, and faster deployment.

Operator profile

- National telecom operator.
- > 4 million broadband lines
- > 5% market share.
- 50:50 mix of FTTN and FTTP architectures.
- Multiple technologies from multiple vendors.

Multi-dwelling units (MDUs) such as apartment complexes, townhouses and multi-flat houses, dominate in urban areas. They have been growing steadily and constitute about 40% of all households nationwide. However, dense urban areas and MDUs present significant deployment challenges in civil works and permits, gaining access to buildings and residences, saturated underground ducts, scheduling and cost. This makes the fiber drop often impractical: the large majority of MDUs are run with twisted pairs and coax cable. However, both tenants and landlord rate ultra-high speed, reliable broadband as a very important amenity, contributing to the value of the property. To win in this market, the operator must use a combination of technologies—roll-out fiber as deep as possible and reuse the last bit of existing cables inside the building.

Substantial OSS integration effort needs to be avoided: in the past the operator has integrated a vendor-proprietary G.fast solution, but ended up with a solution that did not have all the functionality they required. The need for local powering of the Distribution Point Unit (DPU) introduced delays, high installation costs, and onsite work of a licensed electrician. The qualification of the nodes and the dedicated management system also led to interworking issues. This seriously hampered the roll-out and now the operator wants to change technology. Nokia's proven solutions deliver flexible integration without problematic delays and proprietary deviations, accommodating the operator's tight schedule of 6 months between lab entry and field deployment, and allow to switch more easily hardware or technology during any stage of the project.

> 80% of premises in our market don't have fiber, so we're deploying cost-effective alternatives to cover the last mile and deliver the same fiber-like speeds to our subscribers.

The solution

Main components:

- Lightspan SX-16F G.fast DPU, Nokia FX and Nokia DF-16GW fiber OLT
- 212 MHz G.fast CPE with RPF
- Altiplano Access Controller

These solutions increase business and residential broadband speeds to 1 Gb/s symmetrical. They also reduce power install costs and cycle times using reverse powering from customers. AC/RPF dual powering is a key reason for selecting the Nokia solution: it brings fully flexible powering, fast and low cost deployment of the DPU. Compatibility with SR-2 reverse power feeding limits the power to 15W and enables self-installation of the CPE, further reducing deployment costs. To accelerate the integration of the G.fast DPU in the OSS, add-on software for protocol adaptation is deployed on a self-contained virtual machine, pre-configured in the customer data center, facilitating the Nokia DPU northbound communication to the OSS for management.

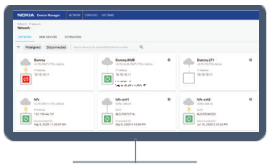
The operator leverages the existing PON network into the premises and installs XGS-PON fed Lightspan SX G.fast DPUs inside the premises, using the in-building twisted pair or coaxial wiring for the drop connection. The 212 MHz G.fast profile offers gigabit symmetrical services like GPON.

The Lightspan DPUs have flexible powering options with seamless switchover between power sources. Without their own power supply in these locations, the Lightspan nodes are reverse-powered from homes, with power consumption shared between multiple residents. The solution provides full flexibility with the CPE auto-sensing twisted pair or coaxial cable infrastructure.

Nokia Altiplano Access Controller provides unified network management through adapting interface protocols between the OSS and all types of access nodes. It automates processes and end-to-end service provisioning for all subscribers, on fiber and on G.fast. The integration flexibility allows the operator to fulfill their ambitious, short introduction plans. The Altiplano cloud platform with open application interfaces (API) and intent-based networking allows flexible integration into any future digital environment and control of both Nokia and multi-vendor network assets.

Lightspan SX-16F

Nokia G.fast CPE



Altiplano Access Controller

DF-16GW OLT

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The Nokia SDAN advantage

1. **Operational simplicity**. The Altiplano platform has a wide range of commonly used interfaces which allow seamless integration. Access to traditional OSS/BSS protocols allows the operator to reuse their existing management components. This is enabled by the Altiplano software plugin framework, providing support with a lower implementation cost and a shorter timeline than adoption of an entirely new management infrastructure.
2. **Fast-to-market**. The operator absolutely needs to minimize the deployment time and cost in these remote harsh locations. This is enabled by Nokia SDAN's automation and zero-touch provisioning capabilities. This reduces the time necessary to deploy, configure and activate each G.fast node by 50%. Deployment costs are reduced accordingly.
3. **Fully customizable**. The intent-based Nokia Altiplano cloud platform can be customized as little or as much as desired. The customer can use it out-of-the-box with reference blueprints included for common deployments, or it can be fully customized, all the way to reprogramming the web-based graphical user interface. This enables services and workflows to be tailored to create a more efficient work environment.

Other benefits

- **Evolution to 1 Gb/s services**. Lightspan SX has more processing power and advanced vectoring capacity to cancel crosstalk in the higher frequency bands (106-212 MHz) and enables the operator to offer gigabit services. With cDTA, G.fast can dynamically adjust the timeslot allocation for upstream and downstream capacity to match user traffic in real-time and offer gigabit services both upstream and downstream.
- **Saving on total cost of ownership with SR-2 RPF**. With their current vendor, a licensed electrician is needed to connect the DPU to AC power or connect CPEs with SR-3 class reverse power feeding. Lightspan SX has SR-2 class reverse powering, which draws power from the home and guarantees safe and easy self-installation. In addition, the Lightspan SX runs highly efficient power circuitry, significantly reducing the power consumption per port.
- **Always-on network**. Reverse powering leaves the possibility of nodes not being powered-up when configuration changes are required. Altiplano solves this; with configuration managed in the cloud, updates are simply applied as soon as the node comes back online.
- **Faster network evolution**. Straight out of the box, Altiplano manages all access network elements: traditional and software-defined, Nokia and OEM. By eliminating the dependency on multiple proprietary element managers, and with SDN programmability through open APIs, Nokia Altiplano's fully automated testing reduces network upgrade test effort by 71%.

About Nokia Altiplano Cloud Platform

Nokia Altiplano Cloud Platform creates 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 means decisions can 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.

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