Swisscom modernizes nationwide optical network with WDM/ OTN technology

- Modernized network scales more easily to address yearly capacity growth of 25 percent.

- New solution transforms the optical network into a service engine that is ready to deliver new services.

- Solution lowers costs through simplified and automated end-to-end service operations.

About Swisscom

Swisscom, the largest telecom provider in Switzerland, continuously invests to improve the quality, coverage and performance of its network. The company's goal is to leverage the latest innovations and cutting-edge technology to deliver an enhanced customer experience.

In support of this goal, Swisscom is modernizing its optical network to provide customers with a highly differentiated quality of experience and respond more effectively to their new service needs while reducing network total cost of ownership (TCO). It has deployed the Nokia optical transport solution to create a more scalable, automated and service-centric platform that will support the needs of customers well into the future.

Swisscom offers the following services to its customer segments in Switzerland:

- **Residential services**, including mobile and fixed-line services such as fixed-line telephony, broadband, TV and mobile communications.

- **Business services**, including telecom services and overall communications solutions for large corporations and small and medium enterprises (SMEs). Swisscom's business ICT infrastructure offering covers a full range of capabilities, from individual products to complete solutions.

- **Wholesale services**, which enable other telecommunications providers to use the Swisscom fixed and mobile network.

- **Infrastructure and support functions**, which plan, operate and maintain the network and IT infrastructure.

Swisscom has evolved its optical network by adding WDM/OTN technology to address ever-increasing capacity demand from remote work and learning applications, video streaming, gaming and cloud computing. The company needed to scale its national optical transport network to keep up with 25 percent annual traffic growth.

Surging demand presents a continual challenge for Swisscom. Evolving the network to increase capacity, performance and resilience was a top priority. Swisscom had a clear goal in mind—to transform its existing transport infrastructure into a state-of-the-art, fully automated, high-capacity optical transport network.

Swisscom's aim was to bolster support for high-performance, business-critical fixed and wireless services. Automation was a key focus area because it would improve network efficiency by eliminating repetitive tasks, accelerate service delivery and reduce overall ownership costs.

This network modernization initiative encompassed Swisscom's entire optical transport network, extending from access to core. Throughout the upgrade process, Swisscom had specific requirements in mind, such as massive scalability, stability and

guaranteed bandwidth to cater to the ever-growing demands of its customers. The company also sought to deliver high resiliency through dual routing and optical protection to ensure that the network would provide reliable, uninterrupted connectivity.

In addition, Swisscom was looking for a network that could offer service transparency and enable a flexible mix of services with low latency. The company emphasized the importance of simplified and streamlined end-to-end service operations, enabled by proactive monitoring of the transport network, to swiftly address any potential issues and ensure smooth operations. Robust frequency and time/phase synchronization was also a priority to support the deployment of cutting-edge 5G services and elevate the network's capabilities to meet future demands.

Solution

Swisscom selected Nokia as the sole supplier to address its network modernization challenges. Nokia offered an end-to-end solution, providing hardware, software and professional services. To modernize Swisscom's optical network, Nokia deployed its 1830 Photonic Service Switch (PSS) family to facilitate OTN access at customer premises and WDM/OTN access and aggregation in the metro and core. This comprehensive approach helps improve capacity and bandwidth efficiency across the network.

As part of its ongoing network expansion objectives, Swisscom put particular emphasis on scaling and automating its fiber infrastructure. Nokia 1830 PSS and metro/core P-OTN switches (1830 PSS-x) help Swisscom meet the escalating bandwidth demands arising from business, residential and mobile broadband services. They use Nokia coherent optics, including the market-leading 600 Gb/s-capable Nokia PSE-V Super-Coherent (PSE-Vs) line cards.

These cutting-edge technologies were strategically deployed within Swisscom's metro access, metro core, and backbone network sites. Nokia 1830 Photonic Service Demarcation (PSD) enabled cost-effective Ethernet/OTN access at customer sites.

The Nokia PSE-Vs line cards are optimized for maximum capacity and reach on challenging routes and capable of peak line rates of 600 Gb/s. They are complemented by low-power PSE-V Compact (PSE-Vc) line cards optimized for metro and regional links at speeds up to 400 Gb/s. These line cards support client services ranging from 100 Mb to 400 Gb Ethernet and can flexibly address changing bandwidth requirements.

Swisscom is using the Nokia WaveSuite applications to improve its network automation capabilities. WaveSuite delivers applications for tasks such as network commissioning, service enablement and proactive maintenance using network health and analytics.

Benefits and advantages

Swisscom implemented Nokia optical equipment and software to enhance service delivery and increase the capacity, performance and resiliency of its optical network. By utilizing Nokia core WDM transport (1830 PSS) and P-OTN switching (1830 PSS-x) platforms in the network core, and the 1830 PSD and Optical Network Extender (ONE) platforms at customer premises and access networks, Swisscom can efficiently aggregate and manage traffic from end to end while maximizing fiber usage.

Swisscom benefits from lower equipment costs, quicker service provisioning and improved service resilience through optical layer protection. With Nokia WaveSuite software, Swisscom can take advantage of automation to reduce operating expenses through simplified and streamlined end-to-end service operations that make more efficient use of network resources.

Swisscom's modernized optical network also delivers highly accurate frequency and phase/time synchronization in support of 5G mobile services. This ensures that an accurate synchronization source is always available for smooth network operations.

The Nokia 1830 portfolio is powered by the Nokia coherent PSE and coherent optics, which maximize reach and capacity in support of flexible deployment scenarios. It uses the latest advanced multilayer networking algorithms, coherent wavelength modulation formats and probabilistic constellation shaping to optimize network performance. With OTN aggregation switches deployed throughout metro access, metro core and backbone sites, Swisscom benefits from improved bandwidth efficiency, scaling and service agility.

The revamped network's programmability significantly accelerates service delivery times and makes it easier for Swisscom to innovate. WaveSuite automation software provides efficiency gains by reducing complexity. Designed to ensure high network and service availability, the WaveSuite applications provide robust tools to maximize optical network service performance, monitor real-time network performance indicators, and adapt to unforeseen or changing traffic and network conditions. This adaptability ensures that the network will sustain high performance and adhere to service-level agreements (SLAs).

Why Swisscom chose Nokia

Swisscom is transforming its optical network into a service-centric platform that can scale effortlessly to meet the surging demand for business, residential and mobile broadband services. The company decided to rely exclusively on Nokia for the project for several reasons:

- The massive scale, stability and ample bandwidth of the end-to-end Nokia WDM/OTN portfolio addresses the growing demand for new services and lays the groundwork to accommodate future growth.

- The Nokia optical network solution's flexibility in supporting a diverse service offering enables Swisscom to cater to a wide array of clients with varying requirements in support of residential, business and wholesale services.

- The Nokia optical network solution's high resiliency, enabled by optical protection and restoration mechanisms, ensures continuous connectivity and bolsters overall service reliability.

- The innovative Nokia tools enable a simplified and streamlined operations experience through the incorporation of advanced management software and automation.

"With Nokia's optical network solutions, we are transforming our existing transport infrastructure into a state-of-the-art, fully automated, and high-capacity optical transport network."

Markus Reber – Executive Vice President of Networks, Swisscom

To find out more about Swisscom, visit Swisscom.com

To learn more about Nokia optical solutions, visit nokia.com/optical-networks

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About Nokia

At Nokia, we create technology that helps the world act together.

As a B2B technology innovation leader, we are pioneering networks that sense, think and act by leveraging our work across mobile, fixed and cloud networks. In addition, we create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs.

Service providers, enterprises and partners worldwide trust Nokia to deliver secure, reliable and sustainable networks today – and work with us to create the digital services and applications of the future.