

CASE STUDY

MARKET: SERVICE PROVIDER

REGION: NORWAY

COMPANY: TELENOR

TELENOR ACHIEVES COMPETITIVE ADVANTAGE IN ULTRA-BROADBAND

Alcatel-Lucent aids operator in offering higher bandwidth-services, more quickly, accurately and economically to meet customer demands and needs.



Norway-based Telenor is one of the world's largest service providers, with networks in 12 countries and operations in 29 more. With a market capitalization of 223 billion Norwegian krone (38 billion US dollars), the company is among the three largest listed on the Oslo Stock Exchange. In its domestic market, Telenor offers fixed and mobile telephony, hybrid fibre-coaxial, fiber-to-the-home, satellite TV services, and retail and residential DSL Internet access. In 2013, Telenor started working with Alcatel-Lucent to deploy a solution that would help to modernize its access network to allow for the delivery of ultra-broadband services using ADSL2+ and VDSL2 technology. At the same time, Telenor was interested in improving line stability and reducing costs.

CHALLENGES

- Offer higher broadband speeds, based on market demand
- Identify and prequalify customers suitable for an upgrade to ADSL2+ or VDSL2
- Improve accuracy of speed predictions for DSL services, currently based on very conservative line-length tables
- Avoid unstable DSL connections, which result in poor quality of experience (QoE) and customer complaints
- Improve visibility of problems at the DSL layer
- Reduce copper-pair related faults impacting VDSL2 performance

SOLUTION

- Motive® Network Analyzer – Copper (NA-C): a comprehensive line testing, diagnosis and optimization solution for DSL networks, featuring:
 - Upgrade Predictor: ensures that the service requested by the customer can be delivered with the required quality
 - Dynamic Line Management: proactively guarantees the stability of the line for the highest possible profile
- Proactive maintenance through continuous monitoring
- Optimal line stability and quality through automated line profile configuration

BENEFITS

- Increase in reported quality of customer experience (with VDSL) by 40 to 80 percent
- Reduced churn, owing to higher speeds offered
- Customers provided with accurate estimate of speed prior to upgrade
- Fewer faulty deliveries and fault-handling costs
- Increased revenue – Upgrade Predictor increased the number of potential upgrade candidates
- Accelerated time to accurate troubleshooting
- Minimized service downtime
- Complete, real-time view of the DSL layer
- Dramatic reductions in OPEX – through reduced field interventions and Help Desk calls



THE CHALLENGES

Demand for higher-bandwidth services and applications – such as video-on-demand and online gaming – is increasing in Norway. At the same time, Telenor is facing growing competition from FTTH providers in the broadband market. The operator was conducting a massive infrastructure upgrade, but was looking for additional ways to increase the speed of its DSL service to maintain market share until a realistic transition from copper to fiber was possible.

In the interim, a decision to modernize its DSL network was made, upgrading the existing broadband copper infrastructure with VDSL2 technology to enable higher data speeds. Deployment is currently underway, and Telenor expects to have its 500,000 DSL lines migrated to the new VDSL2 platform by 2015.

VDSL2 is capable of speeds of up to 100 Mb/s downstream at 1,000 meters. However, in most deployments, the speed is limited by noise originating from other lines in the same bundle, a phenomenon called crosstalk. Making matters more difficult, crosstalk is not static, but instead constantly changes. This requires operators to constantly monitor their VDSL2 lines to ensure the proper line profiles are being used.

To efficiently offer ultra-broadband services, Telenor needed a way to accurately determine which of its existing DSL lines could be upgraded to VDSL2 without issue, and which ones needed additional infrastructure changes. In addition, the operator wanted to be able to provide DSL subscribers with the realistic attainable speed they could expect to receive if they upgraded to VDSL2. This would help to manage customer expectations and minimize

faulty deliveries that often lead to customer support calls. Finally, Telenor needed a solution to monitor and manage the entire system's performance, proactively detecting any issues and adjusting settings to maintain broadband performance while minimizing human intervention.

WHY ALCATEL-LUCENT

As market leaders in fixed ultra-broadband access, Alcatel-Lucent was the natural choice for Telenor to help ensure the delivery of the enhanced service.

“We selected Alcatel-Lucent because we wanted the most reliable and technically advanced product on the market,” said Terje Foyen Johannessen, Director of Telephony & Broadband at Telenor Norway.

“Alcatel-Lucent is widely recognized in the industry for its leadership in DSL, they're continuously pushing the boundaries of what's possible with the technology, making it faster, easier and more cost-efficient to offer ultra-broadband services.”

“Deployment of the Motive Network Analyzer and VDSL2 technology directly supports our goal to provide high speed services with high quality and stability to all our DSL subscribers.”

THE SOLUTION

To help Telenor overcome the technical hurdles of delivering VDSL2 services to its commercial and residential customers, Alcatel-Lucent provided the Motive® Network Analyzer – Copper (NA-C). This market-proven solution integrates line testing, diagnosis, and optimization, and helps operators ensure that DSL lines meet quality and stability requirements to successfully deploy high-speed Internet and triple play services. Motive NA-C supports operational best practices throughout the life cycle of the access lines, including planning, prequalification, provisioning, maintenance, troubleshooting, and customer support.

Upgrade Predictor

As Telenor begins offering VDSL services, the Motive NA-C Upgrade Predictor allows the operator to see how well the technology will work on existing infrastructure, and where improvements might be needed. Upgrade Predictor takes snapshot views of each individual DSL line based on values obtained from customer premises equipment (CPE) and the DSL access multiplexer (DSLAM) over a period of weeks. This

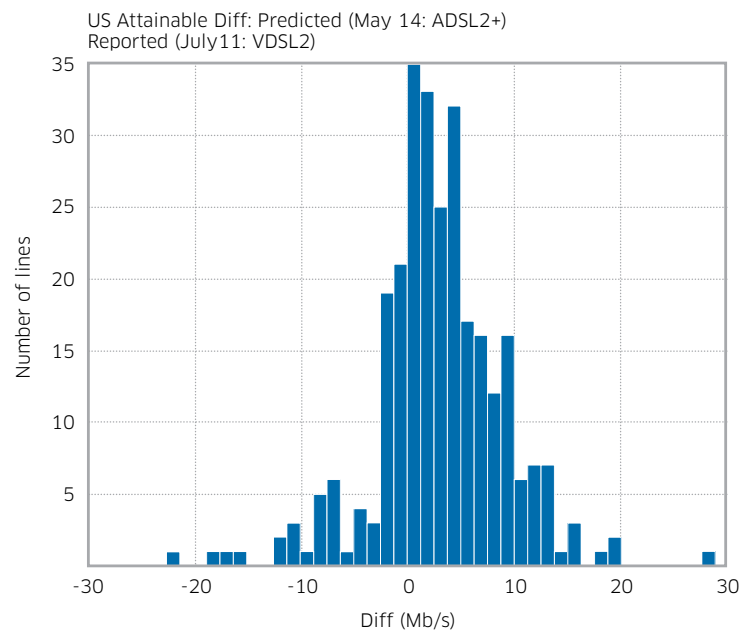
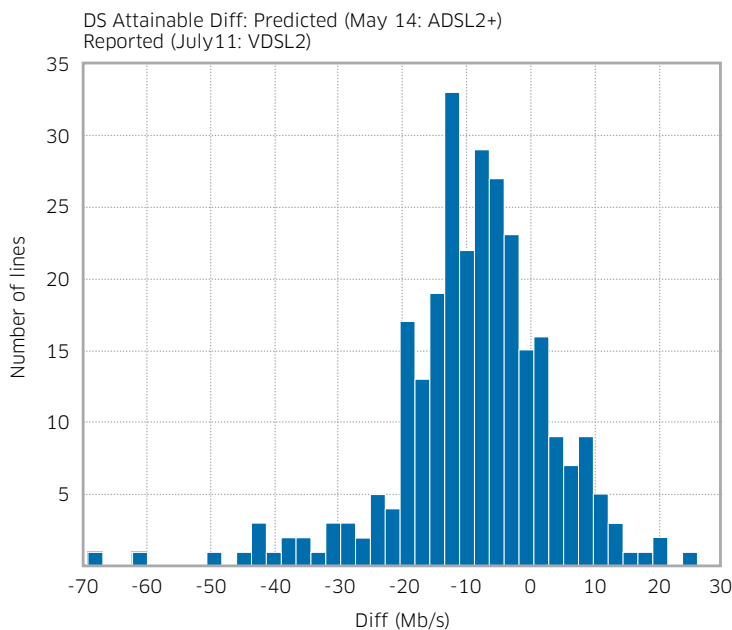
provides Telenor with the attainable bit rate when upgrading a line to VDSL2 technology, increases the success rate for the upgrade, identifies where remote cabinets may be needed, and makes it possible to accurately calculate the associated cost of offering an upgrade. Figure 1 shows the results forecast by Upgrade Predictor (left) and actual results (right) for maximum attainable speeds for converting an ADSL/2+ line to VDSL2. The two graphs are nearly identical, highlighting the accuracy of the Upgrade Predictor.

Dynamic Line Management (DLM)

DLM enables automatic line reconfiguration, ensuring the best profile is assigned to the line in combination with its service. Using a real-time and per-line approach, DLM automatically monitors the condition of each of the lines in the network, and uses a variety of factors to optimize speed and preserve stability. It creates a number of optimum profiles that can be applied automatically depending on conditions within the network. By so doing, DLM guarantees quality of service (QoS) for all lines – both legacy DSL and VDSL2 – while improving the performance.



Results forecast by Upgrade Predictor (left) and actual results (right).



THE BENEFITS

Telenor is now able to determine much more quickly and accurately which of its customer lines are good candidates for upgrade to ultra-broadband services.

“Before Upgrade Predictor, we used tables that showed the line length from the DSLAM to the customer premises to determine if the customer line was a good candidate for upgrade,” said Foyn Johannessen.

“While we still use these tables for new lines, they’re very conservative. Upgrade Predictor provides us with a substantial increase in potential lines we can offer ultra-broadband services, increasing revenue, and we know the lines can handle the technology, reducing support costs and improving customer experience. We can also use Upgrade Predictor data to determine which lines need repair and perform proactive maintenance.”

The optimum profiles created by DLM ensure that the lines upgraded to VDSL2 are stable and provide the speeds promised in the service level agreement. Telenor estimates the quality of VDSL customer experience in Norway has increased by between 40 and 80 percent.

“At the end of the day, the Motive Network Analyzer, together with our total upgrade of infrastructure, has given us a real competitive advantage,” said Foyn Johannessen. “We can offer ultra-broadband to more subscribers, know that it’s going to work, and that the customer experience will be excellent. This helps us to reduce churn and really compete and win in the marketplace.”



SUMMARY

To remain competitive and deliver the high-bandwidth services its subscribers expected, Telenor Norway had to upgrade its DSL infrastructure to support faster speeds. Thanks to the network intelligence provided by the Motive Network Analyzer, Telenor is able to predict which of its lines can support VDSL2, and which require upgrades. It can also provide accurate estimates of speeds customers can expect to receive with the new service, and ensure the right profiles are used to deliver according to service level agreements. These factors result in fewer service calls, increased QoE for customers, and reduced churn to competitive offers. Telenor can now confidently go to market with an ultra-broadband offer that it knows will deliver.