CASE STUDY MARKET: **TELECOM** REGION: **MEDELLÍN, COLOMBIA** COMPANY: **UNE**

UNE SECURES COLOMBIA'S ULTRA-BROADBAND FUTURE WITH 100Gbps NETWORK

Colombia's UNE launches the country's first 100 gigabit-per-second backbone network, vastly enhancing speed, capacity and services for years to come.

UNE, one of Colombia's largest telecom operators, is owned by the state-run multi-utility Empresas Públicas de Medellín (EPM) and Millicom, a leading international telecommunications and media company dedicated to emerging markets in Latin America and Africa, primarily under the Tigo brand. UNE offers fixed telephony, cable TV and fixed broadband throughout Colombia and is its leading supplier of fixed telephony services, with more than 1.9 million lines. It ranks second in broadband services with 1.4 million subscribers, and also in cable TV services with 1.1 million households. Moreover, it has deployed the first large-scale 4G LTE network in Latin America. Thanks to a recent merger with Millicom, UNE will now begin to integrate its operations with Tigo's Colombian unit, adding mobile services to its portfolio and over 8.3 million mobile telephone users to its customer base. UNE has significantly upgraded Colombia's national broadband infrastructure through the deployment of a 100 gigabit-per-second (Gbps) backbone connecting all of the country's major urban areas and international submarine cables. UNE and Tigo will combine their geographic coverage areas and utilize the new ultra-broadband backbone to offer a full range of branded mobile and fixed services to citizens and organizations at all levels, serving approximately 13 million people.

CHALLENGES

- Meeting the increased demand and capacity needs of UNE's rapidly growing customer base, the Colombian economy and the digital lifestyle of its citizens
- Addressing the national government's programs that aim to close the digital gap
- Deploying a 100Gbps network over uncompleted fiber spans of up to 180 kilometers in length, while dealing with physical and power limitations and the migration of legacy systems to the new network
- Finding a trusted partner to provide experience-based technical and business guidance, with future-proven technology for assured strategic growth capability.

SOLUTIONS

- 1830 Photonic Service Switch (PSS), supporting 100Gbps for exceptional capacity, flexibility and speed when transporting very large amounts of data over long distances
- Multilayer network planning, control and photonic service management using Wavelength Tracker
- Traffic-specific service grooming at the most economical layer, with integrated, versatile and reliable Layer 2 transport
- Installation of new fiber-optic cable where needed
- Alcatel-Lucent design and management assistance during the deployment and launch process, working seamlessly with UNE engineers as a group to meet all goals on schedule

BENEFITS

- 8.8 terabits per second (Tbps) of effective capacity to handle the enormous projected demands of Colombian individuals and organizations for Internet access, 4G LTE connectivity, TV services, data center connectivity, as well as the addition of new services, for the foreseeable future
- Full utilization of Colombia's fiber and international transport agreements
- Quick provision of new services that now can be implemented in a few days, instead of months.
- More efficient network utilization to provide a higher return on investment and lower total cost of ownership

"UNE always has been an innovative company. We were the first to bring 4G networks to Colombia. We have the second-largest commercial 4G operation in Latin America. And now we are the first to offer new-generation 100Gbps network in the country, and access to a new cable system."

Alejandro Toro, Network Engineering and Operations Director, UNE

THE CHALLENGES

Colombia's Plan Vive Digital, a national program that aims to close the digital gap, has sought to extend the country's national fiber-optic network to connect 1,053 municipalities, 50 percent of small- and medium-sized enterprises, and 50 percent of households to the Internet by the end of 2014. By December 2013, Colombia's connectivity levels had grown by 300 percent over the previous 2.5 years, to 6.2 million, with a total of 8.8 million connections targeted by the end of 2014, according to the Global Information Technology Report. Faced with this rapidly expanding customer base and increasing demand for ultra-broadband access from both mobile and fixed-line customers in urban areas, UNE had to find a way to sustain its upward momentum while assuring reliable services with high flexibility and the capacity to expand going forward.

"We need to provide quality telecommunications services to many different segments in order to give our users access to the digital lifestyle," says UNE Network Engineering and Operations Director Alejandro Toro. "In almost all of these markets we've seen an increase in traffic driven by the bandwidth required by applications, plus the increase in our customer base, and that demanded a cost-effective solution that was just not possible with the infrastructure we had." In late 2013, UNE embarked on an ambitious initiative to quickly deploy Colombia's first 100Gbps ultra-broadband backbone network to interconnect the country's major cities and key submarine cable access points. The project faced many challenges. Though fiber already existed between urban centers, the network would have to bridge spans of up to 180 kilometers with fiber optic installed in the past. Additionally, some of the nodes on the network did not have the required power availability or had severe restrictions of physical space, and legacy systems would have to be seamlessly migrated to the new network – all while maintaining uninterrupted service to millions of customers.

WHY ALCATEL-LUCENT?

Although UNE initially offered a project RFP, Alcatel-Lucent ultimately became the clear choice as a partner to deploy the new network. "We needed integration for the management system that we had been using for several years, and we were able to gain peace-of-mind knowing that the previous technology, which also had been deployed by Alcatel-Lucent, and had served us well, would be easier to integrate with the new network," notes Toro. "Other considerations, such as the maturity of the platform, capacity, and power efficiency, posed even bigger challenges, and Alcatel-Lucent exceeded the qualifications of other providers for addressing those."

Non-technical factors also influenced UNE's choice of partners. "When you look at this type of project, obviously you want to make sure that it proceeds on

schedule, and will be able to stay ahead of the ongoing evolution in technology, so you need a trusted partner – one that understands your business needs and your view of the long-term strategic goals," Toro says. "We were confident that Alcatel-Lucent would be able to deliver the final product, fully meeting all of the requirements. It was the right company with the right solution at the right price."

THE SOLUTIONS

Alcatel-Lucent's 1830 Photonic Service Switch (PSS) platform proved to be a key network component for addressing UNE's unique challenges, thanks to its exceptional capacity, flexibility and speed when transporting very large amounts of data over long distances. Using the advanced network intelligence and management enabled by agile photonics, PSS provides a flexible transport layer with multilayer switching and services, traffic-specific service grooming at the most economical layer and integrated, versatile and reliable Layer 2 transport. Efficiency and long-term ROI is further ensured with throughput of 8.8Tbps at 100Gbps, with a non-disruptive path to 400Gbps, and a service-agnostic matrix powered by a 1Tbps OTN chip.

"We need to keep growing every day, and this platform assures that we will be able to support increases in capacity demands for many years."

Alejandro Toro, Network Engineering and Operations Director, UNE

Working with Alcatel-Lucent, UNE deployed the transformational new network in four phases covering distinct geographical areas, beginning in December of 2013, and finishing the following summer. The network now connects submarine cable landing points in Cartagena, Barranquilla and Tolú with the major cities of Bogotá, Medellín, Bucaramanga, Cúcuta, Cali, Ibagué, Neiva, Pereira and Popayán.

Thanks to the advanced optics technology provided by the PSS solution, UNE was able to bridge the longest fiber optic cable spans, delivering high capacity through the most challenging nodes while using less space and energy. "The PSS platform gives us substantially higher bandwidth capacity over the same fiber, so it allows us to reduce the variable cost associated with gigabit service growth over the existing platform," Toro notes. "Also, the flexibility it provides allows us to deploy services rapidly, and at short notice. That reduces operational costs and allows us to react quickly to traffic changes and requirements."

Alcatel-Lucent provided close consultation and management assistance throughout the project, including the critical migration of legacy systems to the network. That allowed UNE to manage the network migration and ongoing operations without major investment in new staff. "We have always received the full support of the Alcatel-Lucent management team," says Toro. "They have a thorough understanding of our network, which makes it easy to communicate with them, and that facilitates getting our solutions into the real world. They teamed up closely with our engineers to meet the goals."

THE BENEFITS

The new 100Gbps network has allowed UNE to reach unprecedented levels of capacity and flexibility. "Alcatel-Lucent was contracted to deliver the network in 130 days, and we met our planned schedules, even overcoming some delays associated with the need to install some new fiber," Toro notes. "Not only did Alcatel-Lucent demonstrate that they were up to the challenges of the project, but they also had the flexibility to quickly accommodate those changes in requirements."

He adds, "By deploying this network we're making better use of existing fiber, allowing us to finally take advantage of all of the capacity that we have contracted through agreements with other suppliers, and we are benefiting even further from our new long-term international transport agreements and advanced connections to submarine cables. New services can be implemented in a few days, as compared to the previous situation where we had to wait for months. Overall, this provides a high return on investment that allows us to more effectively manage the total cost of ownership."

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Toro points out that the new goals of the merged UNE and Millicom Tigo will require both companies to maintain their pace of growth. "As our president, Esteban Iriarte, says, now UNE expects to increase market share in all of its lines of business, and is working to become the Colombian's first choice in telecom services."

SUMMARY

UNE's new 100Gbps ultra-broadband backbone is ready to transport the enormous projected demands of the Colombian population and businesses for Internet access, 4G LTE connectivity, TV services, data center connectivity, as well as the addition of new services, for the next decade and beyond. "We need to keep growing every day, and this platform assures that we will be able to support increases in capacity demands for many years," says Toro. "As our national transport backbone it will be key to maintaining our operational cost load. That efficiency will ultimately translate to reaching more customers at attractive prices."

He adds that UNE's new network fits perfectly with its reputation as an innovator, while also securing the digital future for Colombia. "We were the first provider to bring IPTV and 4G LTE networks to Latin America. Now we are the first to provide a new-generation 100Gbps network in Colombia and access to a new cable system. Internet access is spreading quickly across the country, and we know that the demand for faster speeds will continue to accelerate as the Internet becomes increasingly essential to how Colombians lead their lives. With this new upgrade to our network, UNE will be able to meet that demand for a long time to come."

Now, after merging with Tigo, UNE is paving the way to become Colombia's second-largest telecom operator, offering a fully integrated portfolio of branded mobile and fixed services supported by the best technological infrastructure in the world.

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