

Customer type: Government
Country/Region: San Luis, Argentina
Application: Broadband Internet



Highlights

The customer

The government of San Luis province, Argentina.

The challenge

Provide seamless internet access to the community, schools and students, in order to bridge the digital gap between the rural and urban areas.

The solution

A Wi-Fi based access network, covering large areas of the San Luis province, providing Wi-Fi internet connectivity directly to the students' laptops in their schools and homes.

The result

The Wi-Fi network bridged the digital gap in more way than one - it provided internet access in areas where no other option existed and provided the citizens and university students the opportunity to take part in the deployment of a large scale access network.

The customer

The San Luis province, Argentina, in a pioneering initiative, decided to build a province-wide Wi-Fi network that will provide free broadband connectivity and eliminate the digital divide between the rural and urban areas. This initiative was part of a larger project, aiming to increase computer penetration and internet access to the residents, businesses, schools and hotels in the province of San Luis.

The challenge

The San Luis government decided to create a "digital agenda" so as to widespread the use of information technologies and communications. The agenda had the following key goals:

- **Accessible Infrastructure:** The goal was to bring affordable broadband access and related services to all residents, workers and visitors of San Luis, regardless of their physical location – be it a center of a large town or a small rural village.
- **Electronic Government:** The goal was to make as many government services as possible accessible to the citizens through the network.

- **Educational and training:** The goal was to promote digital education to all students, from elementary school through university, by the use of computers and internet communication, as well as by their actual involvement in the deployment and maintenance of the network itself.

The solution

The solution was based on several layers:

Infrastructure:

To provide ubiquitous coverage of the province, 500 WBS-2400 base stations were installed in the San Luis cities and towns. The base stations were installed on light poles and rooftops of various government buildings such as schools, libraries, offices, etc. They were all connected to the San Luis High Speed Network (Autopista de la Informacion - AUI), either directly into the fiber ring or wirelessly through a backhaul link.

The WBS-2400 base stations provide indoor connectivity to laptops up to 200 meters and with a USB dongle up to 500 meters. Customers who were further away from the nearest Wi-Fi base station are using an outdoor CPE to connect to the access network.

PC penetration

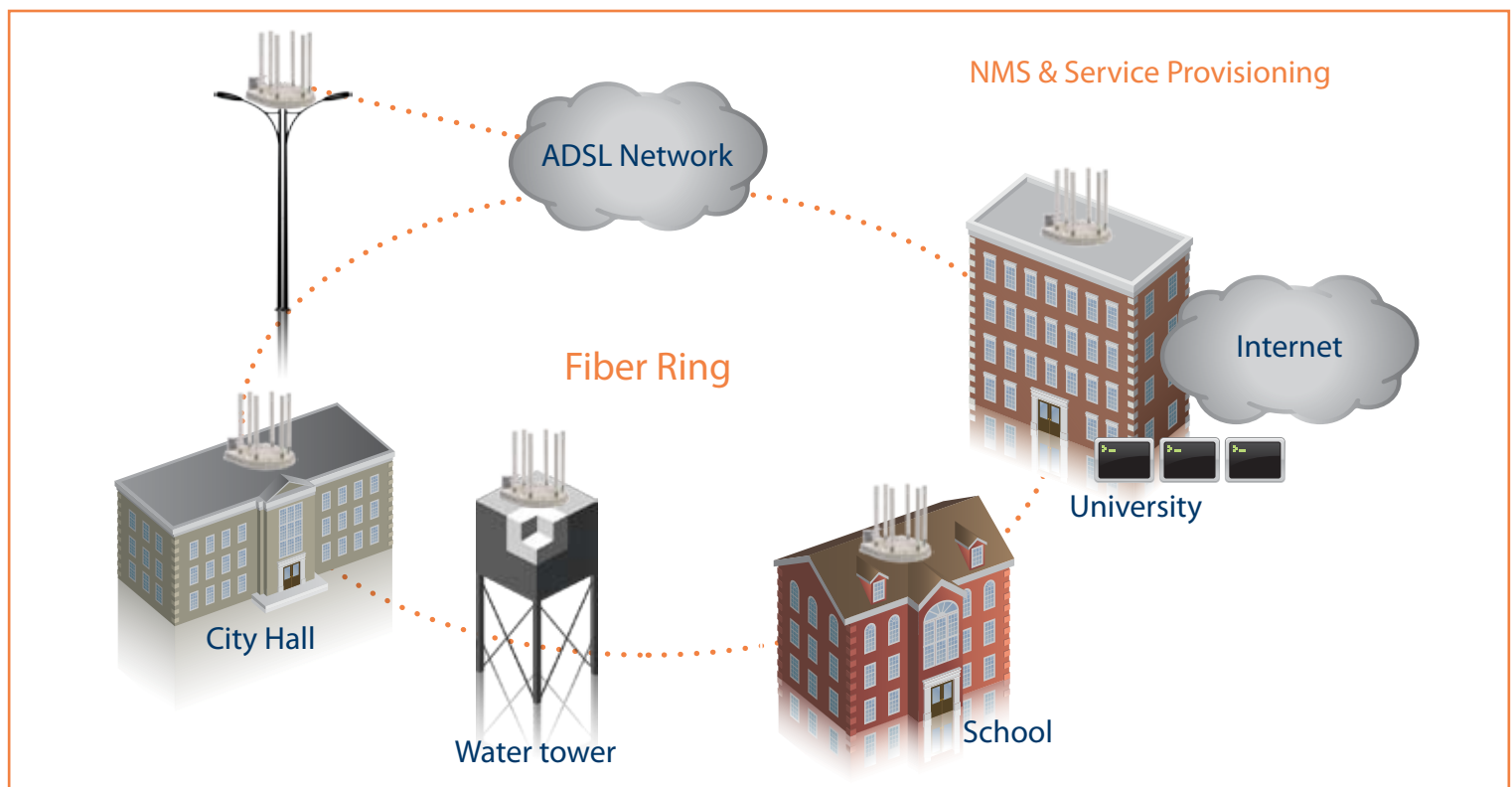
To increase PC penetration, the government of San Luis has acted in two ways:

- a. School students received an Intel "ClassMate" laptop for free or significantly subsidized by the government. This was part of an education program which included courses in using computers, software applications and the internet.
- b. The entire population was encouraged to purchase PCs and laptops through tax refunds and rebates for specific models. The goal was to increase computer and internet penetration to the entire population and to small businesses in the province.
- c. To this end, a special site was launched to educate the public on the services available and on the various ways to register to the free Wi-Fi service.

Deployment and maintenance:

To deploy and maintain the solution, the government decided to involve the local University of La Punta (ULP). The program was developed and deployed by the university and the network is maintained by the students in the faculty of technology.

San Luis' network concept





The "All Kids online" website - Part of the San Luis Wi-Fi project

Services

- Internet access
- VoIP Telephony
- Justice systems
- Proceeding systems
- Email Services
- Web Services
- Income Systems
- Civil Registration Databases
- New local e-Commerce platform and services

A student in class with the "Class Mate" laptop



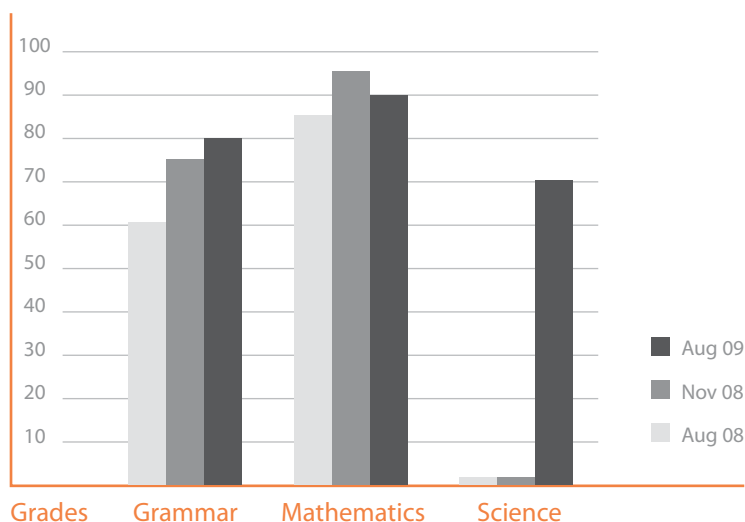
The result

The project has made significant achievements in every aspect including internet access availability throughout the province, PC penetration, students achievements and new opportunities to the citizens of San Luis.

Improved students achievements

The student achievements were measured throughout the period of the project, from its beginning before the distribution of laptops to the students, right until one year after the completion of the second phase, which included free Wi-Fi for all and Intel "ClassMate" distribution to the students.

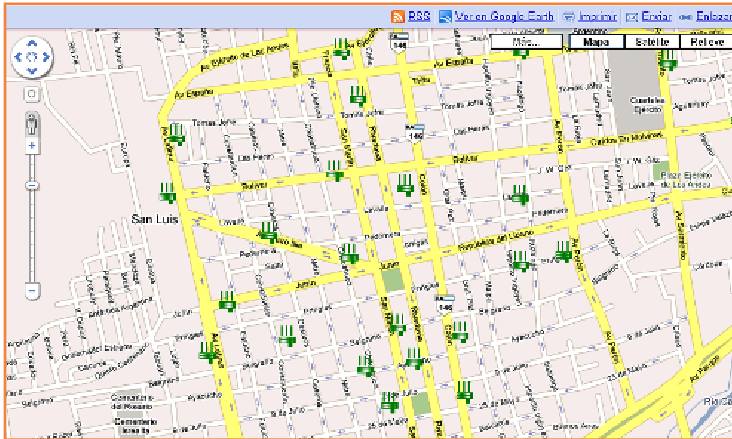
The results are shown below:



Ubiquitous Coverage:

The result was a ubiquitous broadband network that provided free internet access to the citizens in 84 towns throughout the province. The network provides access directly to laptops and PCs inside the houses of and inside the schools, or indirectly through outdoor CPEs, in case the house was too far away from the Wi-Fi base station. The CPEs were subsidized by the government.

To increase the awareness of the public to the network, it was aggressively advertised in the mass media. In order to facilitate the registration of the public to Wi-Fi network, a special map was created, where each citizen was able to input his address and get details about the closest Wi-Fi base station and network name (BSSID) he should connect to.



The Google map with the Wavion base station locations

The network also opened new opportunities beyond the free and seamlessly connectivity to the internet. New job opportunities were created - people became CPE installers and offered their services to those residents who lived too far from a Wi-Fi base station and required a high gain CPE to get connected.

As a by product, this huge network, managed by the San Luis university, also provided an excellent opportunity for the computer science students to get experience in network maintenance and analysis. Using the WavioNet NMS tool, hands-on experience in a real commercial network was facilitated.

“We are very proud of being a part of this pioneering and visionary project”, said **Ariel Scaliter**, CEO of Xiden Networks, the project’s System Integrator.

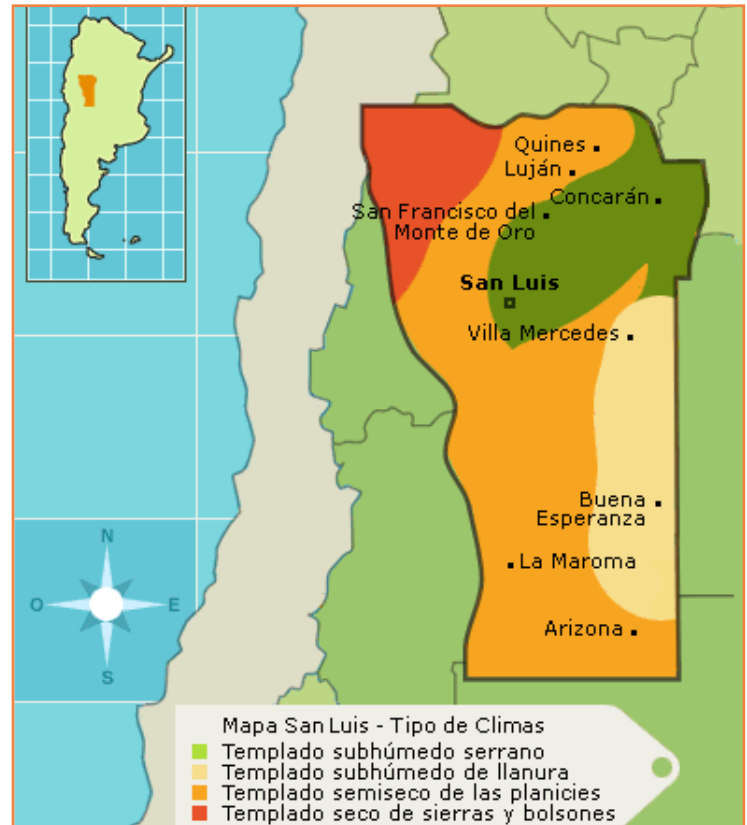
“We are confident that this project will serve as a role model for other provinces in Argentina and other parts of the world in providing internet connectivity to their rural communities”.



Typical village coverage in rural San Luis

Project Achievements:

- 74% Internet penetration
- 14% of children with laptops (total of 60,000 – all children in school age)
- 84 cities / locations/ with 100% Wi-Fi coverage
- 500 WBS-2400 Base Stations installed all over the province
- 28,000 concurrent Wi-Fi clients connected to the 500 Wavion base station network
- 300 trained people for professional Wi-Fi CPE installation
- More than (600) Linksys Wi-Fi indoor AP installed in schools and Ciber AUI
- There is at least one Ciber AUI per Location/town/city connected to the Wi-Fi network with a CPE
- Services: VoIP telephony, Full internet access



San Luis country located in rural Argentina

Future Expansion

As usage of the network grows daily, additional capacity will soon become a necessity. Wavion's unique and powerful SDMA technology enables doubling the downlink capacity via simple remote software upgrade of the base stations.

The SDMA technology enables the Wavion base station to transmit two different data streams to two different standard 802.11b/g Wi-Fi clients at the same time over the same frequency. This effectively doubles the capacity of the Wavion base station, without any hardware change!

It is just a matter of time before this pioneering project be replicated in other provinces in Argentina and other rural parts of the world.

Why Wavion

Several vendors and products were evaluated. The two finalists were Motorola's MotoMESH and Wavion's WBS product line. Wavion was chosen due to several winning factors:

- Significantly larger radius of coverage - double radius - validated in field trials
- Better indoor penetration to laptops and PDAs
- Much greater throughput & capacity when a large number of users are connected (80 users per WBS station)
- Easier management and configuration
- Much simpler installation

The above advantages of the Wavion product, demonstrated during the pilot phase, were critical in the decision making since they imply not only better quality of service but also a significant lower investment in CAPEX and OPEX and simpler installation, commissioning and maintenance.