

Customer type: University campus

Country/Region: Nigeria, Enugu State

Application: Digitized University, E-Learning, Wireless Internet for students, staff and visitors

End-to-End Wi-Fi Coverage in University Campuses



Highlights

The customer

University of Nigeria, Nsukka and Enugu campuses.

The integrator

Business Connexion (BCX) Networks, a system integrator of innovative business solutions, specializing in information and communications technology.

The challenge

Providing Wi-Fi coverage to tens of thousands of users located in challenging conditions.

The solution

A Wi-Fi network based on 100 Wavion WBS-2400 and WBS-5800 base stations, providing high capacity and unmatched performance in Non-Line-of-Sight (NLOS) environments.

The result

A great success. 2000 users have connected during the initial trial period. To support this unexpected large demand, the backbone bandwidth was increased from 6Mbps to 50Mbps.

The customer

The University of Nigeria, Nsukka (UNN), is the largest government university in Nigeria. The Digitized University project, funded by Google and the Nigerian government, is designed to provide wireless Internet and Intranet access to tens of thousands of students and staff. The Intranet access is designed to enable and facilitate E-learning, a key goal of the University administrators.

UNN is spread over several campuses. Nsukka campus (8 km²) and Enugu campus (4 km²) are the first campuses to be covered by Wavion's Wi-Fi solution.



The challenge

Campuses are known for their large green areas surrounding a large number of scattered buildings, classrooms and offices. The purpose of the digitized university envisioned by UNN was to provide wireless Internet and Intranet connectivity in these buildings and in the open areas between them. This required both outdoor and indoor coverage, as well as supporting tens of thousands of users with dynamically varying density around the campus. Meeting these challenges required a high density of WiFi base stations. This, in turns, resulted in a potential high level of inter-base station interferences, which had to be addressed and mitigated.

Moreover, all Wi-Fi base stations installations were required to be solar-powered with no power grid connection.

The solution

The WiFi access solution was based on 75 WBS-2400 base stations working in the 2.4 GHz band. Leveraging Wavion's unique and powerful Beamforming and Spatial Division Multiple Access (SDMA) technologies, these base stations provide extended coverage area with good indoor penetration and enable to support thousands of users.

The potential inter-base stations interferences is addressed by Wavion's unique capability to work effectively with 15MHz channel separation was used in conjunction with its Dynamic Interference Handling (DIH) capability.

The backhaul network was based on Wavion's 5.8GHz solution. The solution is based on 25 WBS-5800 Sector base stations connected wirelessly to 5.8GHz Wavion CPEs.

The solution included Wavion's NMS (WavionNet), which enables to monitor and control the entire Wavion network.

All WBS installations were designed with full solar powering system. The solar-power planning and implementation was done by BCX.

Future expansion

Further expansions to additional UNN campuses around the country are planned for 2011. Moreover,

introduction of additional services including Wireless VoIP telephony and CCTV surveillance are expected.

Why Wavion and BCX

Out of the eight companies who have bided for this project, the proposal by BCX and Wavion won thanks to Wavion's unique radio performance and complete end-to-end offering as well as BCX's vast experience in integration and support.

From the Press

"He (the Vice Chancellor of the University of Nigeria Nsukka - UNN), said UNN had entered into about 20 partnerships and agreements with leading academic and private sector institutions locally and internationally to improve the teaching and learning environment in the university.

The VC disclosed President Goodluck Ebele Jonathan would formally launch the Wireless Infrastructure project that provides always-on wireless internet connectivity across the four campuses of the university. The project is lead-sponsored by Google Inc and involves work by MTN, HP, **Wavion Inc**, Cisco Systems and other major ICT organizations."

The Daily Sun. Oct 4, 2010



Solar-powered WBS-2400 base station