

# Gigabit Wireless Blasts University of Mwaro to the Fast Lane



“The deployment of this state-of-the-art, end-to-end solution is a major accomplishment for the University of Mwaro. Digitalization of education is already in sight and empowering the university to provide a reliable platform to the students is an important step.”

NIRAGIRA OLYMPE,  
ADVANCED RF ENGINEER,  
AXIOM NETWORKS



CS Burundi 02202020

## Overview

**E-LEARNING IS STILL IN ITS EARLY STAGES IN BURUNDI.** Recently, the Ministry of Education in Burundi allowed online education throughout the country. Now, healthcare students at the rural University of Mwaro have equal access to educational information with a Cambium Networks Gigabit wireless network. With Wi-Fi access, students doing clinical studies can access a vast amount of information on the internet. Another plus: students no longer have to deal with the hassle of moving closer to the router in the administrative office if they need a connection.

## The Challenge

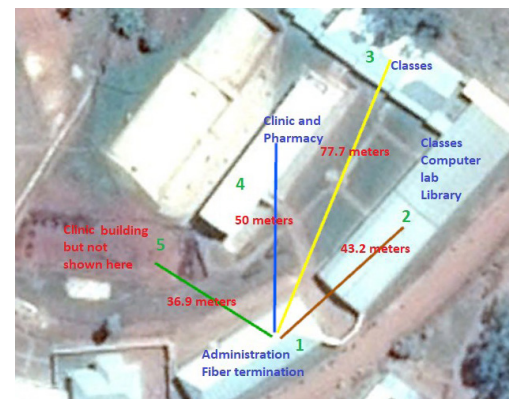
**THE UNIVERSITY OF MWARO OPENED ITS DOORS** on December 1, 2001. It was created by the *Collective of the Municipal Development Associations of the Province of Mwaro* (CAD), nine municipalities of the bordering provinces, intellectuals and other community members. These groups' shared goal was to create another higher education institution for Burundi.

A total of 1,284 students attend the university. Since its establishment 15 years ago, the University of Mwaro has graduated 1,606 students, most of whom work in different parts of the country, other countries and in various fields; many of their graduates work in healthcare. Currently, there are five training streams: Paramedical Sciences & Techniques, Nursing Sciences, Midwives, Laboratory, and Anesthesia & Resuscitation.

Niragira Olympe, an advanced RF engineer with Axiom Networks, saw the need for better connectivity at the school. “I am a Burundian residing in Rwanda, and I want to improve the connectivity in local schools. The institution has fiber internet connectivity sponsored by the government of Burundi, but the internet coverage is limited.” Niragira contacted Cambium Networks to see what could be done with wireless broadband wide area distribution (WAN) and Wi-Fi access to improve the quality of education at the school.



Axiom Networks helped bring wireless connectivity to students and staff at the University of Mwaro.



The area above is covered by ePMP and cnPilot solutions.

## The Solution

**WORKING WITH CAMBIUM NETWORKS' FIELD ENGINEERS,** Niragira and his team identified areas where coverage was needed. The team developed a network architecture so that an all-wireless solution could provide connectivity to the classrooms, dormitories and common areas. The design takes the high throughput from the fiber core to switches that connect two access points (AP) to distribute the signal across the campus in a hub-and-spoke design. Wi-Fi APs are located throughout the buildings to provide high capacity coverage in each classroom.

The entire network is managed by one system administrator. Through cnMaestro™, Cambium Networks' end-to-end monitoring and management software, the system administrator has a detailed view of the entire network. Niragira and his team in Burundi are available to assist the system administrator if needed, and there have been no issues with the network since its installation.

The solutions and their benefits include:

### 2 ePMP™ 5 GHz APs with Smart Antennas and Sector Antennas

- 2x2 MIMO OFDM technology
- Intelligent filtering
- Frequency reuse
- Beamforming Antenna
- Three-level priority with Broadcast, Multicast and Station



### 4 ePMP Subscriber Modules (SM) With a Reflector Dish

- 200 Mbps
- 25 dBi antenna
- Low 2 - 3 ms latency

### 11 e600 Enterprise Indoor Wi-Fi APs

- Gigabit speed
- 4x4 MU-MIMO
- 802.11ac Wave 2



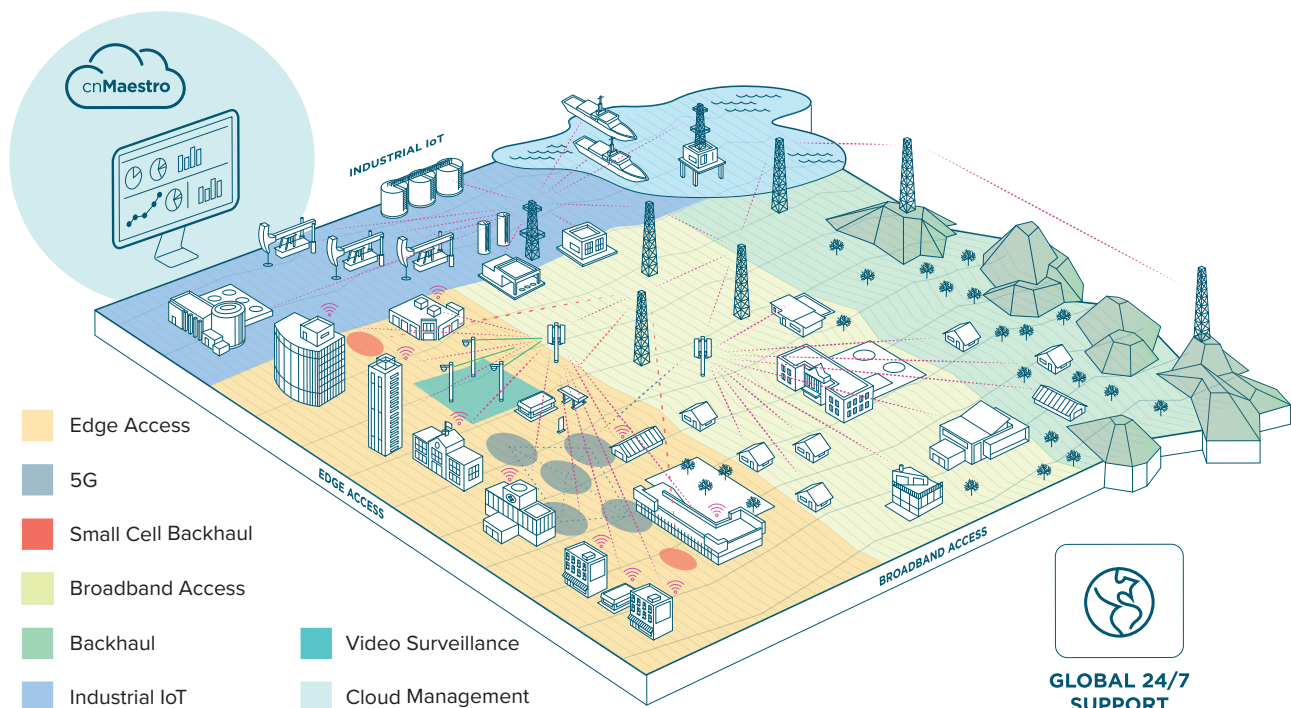
### 2 cnMatrix™ EX2010-P Switches

- 20 Gbps throughput
- 8 PoE enabled ports
- cnMaestro cloud management

## The Results

**ADMINISTRATION IS IMPRESSED** that the classrooms, lecture halls, library, administrative offices and clinic now have Wi-Fi access. The University of Mwaro is the first university campus outside the major city of Bujumbura that has total Wi-Fi coverage. Their network was made fully operational during a break in classes. Once the academic year starts in March 2020, students will return from academic internships to a completely connected campus, and the Wi-Fi network will deliver its full potential.

ePMP APs and ePMP SMs provide WAN distribution. e600 Wi-Fi APs support applications that demand high capacity and coverage while supporting high user density. cnMatrix EX2010-P switches simplify the access network deployment and operation. Combined with cnMaestro end-to-end monitoring and management, these solutions offer a highly unified wireless network. This combination of solutions deepens the well of information that the future healthcare workers of Burundi can draw from.



*Cambium Networks' Wireless Fabric of technology solutions enables network operators to tailor connectivity solutions to meet exact requirements and grow as needs evolve.*