Alfamart Store, Indonesia

5GHz Base Station

- Integrated 18dBi dual-pol 90deg sector antenna
- IEEE 802.11 a/n MIMO 2x2
- Supports Bridge, Route operating mode

5GHz 20dBi CPE

- Integrated 20dBi dual-pol directional panel antenna
- IEEE 802.11 a/n MIMO 2x2
- H-pol / V-pol: 16 / 16 deg
- Support PTP & PTMP

5GHz 23dBi CPE

- Integrated 23dBi dual-pol directional panel antenna
- IEEE 802.11 a/n MIMO 2x2
- H-pol / V-pol: 6 / 7 deg
- Support PTP & PTMP
- IP-67 certification

Site Photos

Retail Therapy – Wireless Style!

Connecting national retail chain of stores with a secure wireless broadband network

Project Background

Alfamart is a nationwide chain of general stores and is one of the leading retailers in Indonesia, serving more than 3 million customers daily through 10,300 outlets. As the number of stores is getting larger, Alfamart is migrating its network model from leasing to ownership, thus reducing longterm network OPEX costs.

To connect all their stores, they require a robust wireless broadband technology which would enable them to provide point-of-sales ternminals (POST), an integrated service for financial transactions, inventory management and common public payments such as electrical bills and mobile phone top-ups.

In order to meet this requirement, Comba provided a field proven and cost-effective wireless network solution which included outdoor wireless base station and CPE that supports point-to-point (PTP) and point-to-multipoint (PTMP) networks.
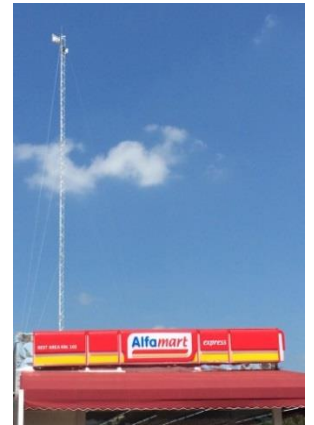
Solution

In this project, Comba proposed to use 5GHz radio for both base station - client operation (PTMP) and wireless backhaul (PTP). The outdoor CPE's have an integrated 20dBi or 23dBi high gain panel antenna with up to 29dBm output power to provide high speed and reliable PTP/PTMP data connection. A PTMP configuration with base stations and 20dBi CPE are deployed at locations within a line-of-signt (LOS) distance of 5km. And PTP configuration with 20dBi or 23dBi CPE are deployed for 25km or more at interference condition.
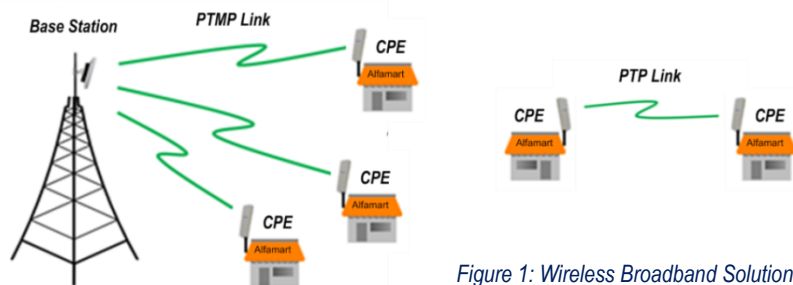

Figure 1: Wireless Broadband Solution

There can be a maximum of 64 CPEs under 1 base station, however typical PTMP deployments comprise of 8 CPEs per base station due to environmental limitation. The maximum data rate that both base station and CPE can achieve is ~300Mbps while the throughput per CPE in live network is usually 2~4Mbps.

To ensure a secure network, the radio itself has a proprietary communication protocol and supports other security protocol standards. There is also a firewall router before the radio that is connected to the POST for the 2nd line of security (app layer).

An ongoing project, Comba has thus far supplied more than 1,000 units of 5GHz wireless radios to create a robust wireless network

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Enhancing Communications