

Indonesia's biggest cellular operator, Telkomsel, chooses Infinet Wireless Solutions to provide better connectivity, establishing a 180 km link in challenging terrain



Telekomunikasi Selular, known by the trade name Telkomsel, is one of the biggest cellular telecommunication operators in Indonesia and the sixth largest operator in the world, operating a system of 233,000 BTS (Base Transceiver Stations) with more than 170 million subscribers in cities, remote islands, outlying and border areas.

Most of the BTS used IP microwave technology, VSAT and optical cable. In line with current developments, Telkomsel came to need large bandwidth while using more cost-efficient technological solutions.

Infinet Wireless' orthogonal frequency-division multiplexing (OFDM) radio equipment was used in this project, ticking the box for the most cost-efficient way for a wireless carrier which provides coverage in rural areas. It became possible to provide connectivity over distances of up to 180 km, whilst overcoming obstacles such as obstructive hills in the area, the ocean and the islands.

The company's technological partner, KISEL Group, a telecommunications services infrastructure provider, supplied the equipment, designed deployment of the links, and carried out support for the deployment OFDM backhaul. KISEL Group planned to rely on a more cost-efficient solution by taking advantage of the unlicensed 5 GHz frequency

band — a steady, carrier-class product, providing high-throughput performance and capable of working in nearLOS / NonLOS conditions.

When comparing vendors' solutions, KISEL Group representatives spotted Infinet Wireless products' top-notch technology and necessary resilience to work in extreme weather conditions. Added to this was a high level of user-friendliness when it came to engineers' work, and of course the fact that Infinet Wireless solutions are highly cost-effective.

The first phase of the project covered 116 locations in Indonesia, using the Quanta 5-E and Quanta 5-23 solutions, combined with the InfiMUX Network switch.

Telkomsel requested a symmetric service up to 100 Mbps to provide high-performing, stable internet connectivity. However, the nature of the terrain meant that terrestrial infrastructure, such as fiber optic cables, wasn't an option. The distance (about 180 km) and inaccessible position of the location required the connectivity upgrade, from the mountain of Sopotinjak to the Island of Hibala across the sea. It was a real challenge to establish a network there, given Sopotinjak Mountain is 1,600m high, and Hibala Island, where power often fails, is 26 m above sea level. Factoring in the extreme weather, mountainous areas with protected forests which are often foggy and full of wild animals, at first glance, the mission seemed almost impossible.

Despite this, the requirements of Telkomsel were exceeded, thanks to the network design and high performing solutions. Wirakom Sistem successfully designed a network that with the help of Infinet Wireless solutions delivered the aggregated 108 Mbps service with the longest link ever, which at 180 km is a record-breaking length.

In Indonesia's extraordinarily diverse landscape, Infinet Wireless technology, especially that of OFDM radio, is proving to be a truly valuable solution, which is why Telkomsel, together with KISEL Group, is planning to expand the current framework. Taking into account the fact that Infinet Wireless solutions have already proven their productivity, the evolution promises to be even more exciting and profitable.

After having seen Infinet Wireless solutions in action, the client gave some very positive feedback. KISEL confirmed that, thanks to these products' exploitation, the need for solutions providing mobile connection in rural areas was met. The added value is the cost efficiency, as previously the connectivity provider had limited bandwidth issues and high costs when using VSAT.

"We were impressed with Infinet OFDM as one of our rural transmission solutions, especially the new Quanta range, which covers nLOS terrestrial transmission in hilly terrain with good quality and at an affordable price. Thanks also to the Kisel & Wirakom team, which has been supporting us as an intermediary company. It has delivered the service in several projects in Telkomsel, especially related to reducing satellite cost and special area development projects. Infinet has made the impossible propagation possible, delivering sufficient capacity and good quality," said **Teddy Indira Permana**, General Manager Transport, Passive & Power Planning Division, PT Telkomsel.

"The Project was challenging due to the remote locations and long distance of the area we wanted to cover — more than 180 kilometers; but we are more than happy with the

Infinet solution deployed. We managed to provide regular and terrestrial areas with the required bandwidth capability needed for the telco systems to run smoothly with high availability performance. In addition, we have also future-proofed the whole wireless infrastructure network for further expansion,” Umar Syatri, Chief Operation Officer / Deputy Chairman of KISEL Group, concluded.

“We are proud to introduce the best Point-to-Point solutions to our partner and customer, which have met the requirements. We have delivered a hundred links of Infinet Wireless products, and anticipate Quanta 5 will exceed expectations,” Wiwit Ratno Ongko, CEO of Wirakom Sistem, a distributor of Infinet Wireless solutions in Indonesia, summed up.

Requirements

- Provide connectivity over distances of up to 180 km
- Connecting locations across the sea between the mountain and islands with a variety of challenging environments
- Cost-efficiency

Solutions

- Quanta 5 Q5-E, 5 GHz Point-to-Point unit, net throughput up to 650 Mbps, 2x N-type (F) connectors for external antenna
- The InfiMUX Link Aggregator
- Disk Parabolic 34 dBi Generic Dual Pole 5GHz
- InfiPLANNER, Infinet Wireless’ radio planning tool

Benefits

- Meeting the need for a transport system on cellular networks in rural areas
- The limited bandwidth issues and high costs when using VSAT were made cost-effective by using Infinet Wireless solutions.
- Up to 10,000 people of the Hibala island now benefit from reliable enhanced connectivity and expanded bandwidth. A survey carried out in the surrounding community in Hibala showed that locals not only get better communication, but also enjoy increased economic turnover