Customer
Aviat Networks

Country
Papua New Guinea

CommScope “climbs the mountain” with Aviat Networks to deploy robust wireless capabilities across Papua New Guinea

With a rugged, generally inhospitable terrain, Papua New Guinea is one of the world’s most remote, least explored countries. Not quite the size of the state of California, it is home to approximately 7 million people and hundreds of yet-to-be-discovered species of plants and animals. It’s also one of the most culturally diverse nations in the world: nearly 850 languages are spoken within its borders.

At the heart of the island lies Mount Otto, a peak rising 11,634 feet above the Pacific Ocean. Only the most experienced mountain climbers have succeeded in scaling Mount Otto, and for good reason. Steep slopes, a pinhead summit and virtually no useable nearby roads make it one of the country’s least accessible mountains.

“Given the sheer technical, geographical and logistical challenges overcome by Aviat, CommScope and the various teams on this project, I’d call this a truly memorable achievement.”

Jim Syme, product line manager, wireless, CommScope

Deploying high capacity atop extreme topography

When one of our customers, Aviat Networks, Inc. (NASDAQ: AVNW), realized a need to deploy a high-capacity backbone network on the island—one that included microwave radios and antenna systems secured to Mount Otto’s peak—they came to CommScope.

Headquartered in Santa Clara, CA, Aviat has installed approximately 750,000 systems in more than 100 countries and has remained a leading global provider of microwave networking solutions for the past 50 years. For the Papua New Guinea project, they needed to design the ultimate future-ready system—one that could withstand the mountain’s unique weather conditions while providing peak performance with minimal-to-zero maintenance requirements for years to come.

“The installers and the customer were very familiar with the CommScope name,” said Richard Malley, regional manager for Aviat Networks. “We’ve used CommScope for all large projects like this because we know we can install it and forget it for 10 years.”
Careful project considerations included:

- **Capacity optimization**: Achieved by transmitting over eight channels in both vertical and horizontal polarizations using XPIC functionality with link distances of up to 56 miles.

- **Extreme topography**: Excellent propagation conditions and many high mountains combined with powerful radios, XPIC, adaptive modulation and an all-Ethernet architecture allowed huge capacity of up to 4 Gbps.

- **Spatial diversity**: To ensure continued service and optimal throughput despite the curvature of the Earth over such long links, spatial diversity configurations with two antennas at each end of the link were required.

- **Antenna reliability**: Aviat expected little or no site supervision for long periods of time. Since return visits would also prove difficult and expensive, they needed an extremely high degree of confidence in the long-term durability and reliability of the products employed.

- **Spectrum reuse**: Antennas with high-quality radiation pattern envelopes were needed for side lobe suppression to maximize the use of available spectrum.

- **Transport/shipping**: The sheer size of the antennas—coupled with the need to deliver each active component on-site—made a well-established supply chain and smooth transport vital.

- **Power**: Although solar panels were ideal for the remote location, on-site generators were also required as a contingency plan for extended periods of cloudy weather.

In our HSX microwave antennas, Aviat finds the ideal technical solution

After taking each of these factors into consideration, Aviat selected CommScope’s Andrew® HSX-series microwave antennas and ancillary solutions for the links. Microwave radio is regarded as the ideal solution for transmitting information over long distances in remote areas where access to cell sites may be difficult. Microwave antennas have been deployed in a wide variety of extreme environments—from the most arid deserts to the entire length of the Trans-Siberian Railway.

The extremely high cross-polar discrimination (XPD) and excellent radiation pattern performance of the HSX antennas made them the ideal choice for high-capacity links over long distances.

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Over the valley and through the woods, to say the least

By comparison, purchasing the necessary equipment was easy. Delivering it to various remote locations was something altogether unique—a serious feat of transport prowess.

In order to keep shipping costs to a minimum, CommScope supplied the 8-, 10- and 12-foot antennas with split reflectors as opposed to traditional one-piece reflectors. There was only one way to get all required materials on site: via helicopter. Completing the installation required dozens of specialized personnel and material air-lifts. The supply of the antennas with split reflectors also made sure flights and equipment transfers to the treacherous summit went as smoothly as possible.

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*Richard Malley, regional manager, Aviat Networks*
In addition, CommScope’s ability to supply the entire microwave antenna system (including antennas, elliptical waveguides, connectors, pressurization equipment and flex-twists) from one central location prior to delivery significantly reduced the logistical burden of the entire project.

“The ability of CommScope to consolidate all the materials required at one location is a real help as we then split the material when we ship to site,” said Malley. “All of the installers and customers are also very familiar with the CommScope name and Andrew brand.”

“CommScope providing true end-to-end support is vital,” said Jim Syme, product line manager at CommScope. “There’s nothing worse than arriving on site only to find out that components from different suppliers don’t fit together.”

In scaling Mt. Otto, Aviat reaches new heights

Papua New Guinea’s premier wireless network is beginning to take shape. Designed and installed by Aviat with equipment supplied by CommScope and powered by Andrew®, more links are already in the works—this time with distances reaching 88 miles, including a few over water.

“Given the sheer technical, geographical and logistical challenges overcome by Aviat, CommScope and the various teams on this project,” Syme concluded, “I’d call this a truly memorable achievement.”

Everyone communicates. It’s the essence of the human experience. How we communicate is evolving. Technology is reshaping the way we live, learn and thrive. The epicenter of this transformation is the network—our passion. Our experts are rethinking the purpose, role and usage of networks to help our customers increase bandwidth, expand capacity, enhance efficiency, speed deployment and simplify migration. From remote cell sites to massive sports arenas, from busy airports to state-of-the-art data centers—we provide the essential expertise and vital infrastructure your business needs to succeed. The world’s most advanced networks rely on CommScope connectivity.