

The world's longest link in a public mobile phone network

CommScope and Aviat Networks team up to turn a dormant volcano island into an active microwave communications link for the Kingdom of Tonga.

Challenge

The Kingdom of Tonga in Oceania is home to more than 100,000 people. It has grown a great deal economically since gaining independence in 1970, and its population is eager to share in the convenience and power of modern mobile communications. However, reliance on satellite connections was insufficient for their growing needs.

Aviat Networks, a leading manufacturer of microwave radios, was chosen by Digicel Pacific, the region's wireless operator, to deploy a solution—and they turned to CommScope to provide the best antenna solution for the harsh environment and extremely long links involved.

CommScope Solution

As a longtime antenna partner, Aviat Networks knew that the answer was CommScope's ExtremeLine microwave antenna solution, built to provide reliable, high performance in the world's most unforgiving environments.



Story

Because the Kingdom of Tonga includes 36 populated islands scattered over 700,000 square kilometers of the southern Pacific Ocean, many of Tonga's citizens were forced to rely on limited satellite communications. It was too expensive to lay fiber-optic cable between the islands, so reliable backhaul was a major obstacle for Digicel Pacific.

The solution was to build a microwave link that included a repeater site at a central location—Kao Island, home to an ancient volcano—where it could relay traffic from islands 100km away or further, including one single link of 189km. As the highest

point available, it offered the longest possible links since the curvature of the earth itself becomes an obstacle over longer microwave links.

Aaron Prior, a Senior Sales Engineer and Regional Manager for Aviat Networks, assessed the situation. "Aviat has already successfully designed and installed several long links over 100 km in the South Pacific using CommScope microwave antennas therefore, by analysing the performance of these earlier links against their initial calculations, it enabled us to carefully characterise the atmospheric conditions in Tonga and allowed us to gain an intimate knowledge of the expected refraction, diffraction, and multipath."

The site presented some unique engineering challenges, including the use of antennas that could deliver optimal RF performance and cyclone-wind survivability—plus the reliability to operate with minimal maintenance. Aviat Networks installed ExtremeLine antennas because of their superior engineering, precise radiation.

Challenge

The Kingdom of Tonga in Oceania is home to more than 100,000 people. It has grown a great deal economically since gaining independence in 1970, and its population is eager to share in the convenience and power of modern mobile communications. However, reliance on satellite connections was insufficient for their growing needs.

Aviat Networks, a leading manufacturer of microwave radios, was chosen by Digicel Pacific, the region's wireless operator, to deploy a solution—and they turned to CommScope to provide the best antenna solution for the harsh environment and extremely long links involved.



ExtremeLine® microwave antennas: performance, durability, reliability

CommScope designs the ExtremeLine solution to operate in marine, industrial and even volcanic environments. They are also engineered to provide superior wind survivability, even in hurricanes and cyclones, in wind speeds up to 250 km/h, and gusts even higher than that. Nothing less could survive in such a volatile environment as this one.



ExtremeLine HSX antennas delivered greater than 99.999% availability over a 189-km link—the longest in any public mobile phone network in the world.

“Aviat combined their high power ODU 600 with CommScope’s high XPD, high windload WEHSX antennas which are designed for operation in some of the world’s most severe environments with a survival windspeed of 250km/h. This allowed the antenna diameters to be kept to a minimum, reducing the loading on the tower infrastructure.”

Aaron Prior

**Senior Sales Engineer and Regional Manager
Aviat Networks**

CommScope pushes the boundaries of communications technology with game-changing ideas and ground-breaking discoveries that spark profound human achievement. We collaborate with our customers and partners to design, create and build the world's most advanced networks. It is our passion and commitment to identify the next opportunity and realize a better tomorrow. Discover more at [commscope.com](https://www.commscope.com)



COMMSCOPE®

[commscope.com](https://www.commscope.com)

Visit our website or contact your local CommScope representative for more information.

© 2020 CommScope, Inc. All rights reserved.

Unless otherwise noted, all trademarks identified by © or ™ are registered trademarks or trademarks, respectively, of CommScope, Inc. This document is for planning purposes only and is not intended to modify or supplement any specifications or warranties relating to CommScope products or services. CommScope is committed to the highest standards of business integrity and environmental sustainability, with a number of CommScope's facilities across the globe certified in accordance with international standards, including ISO 9001, TL 9000, and ISO 14001. Further information regarding CommScope's commitment can be found at www.commscope.com/About-Us/Corporate-Responsibility-and-Sustainability.

CU-112114.1-EN (09/20)