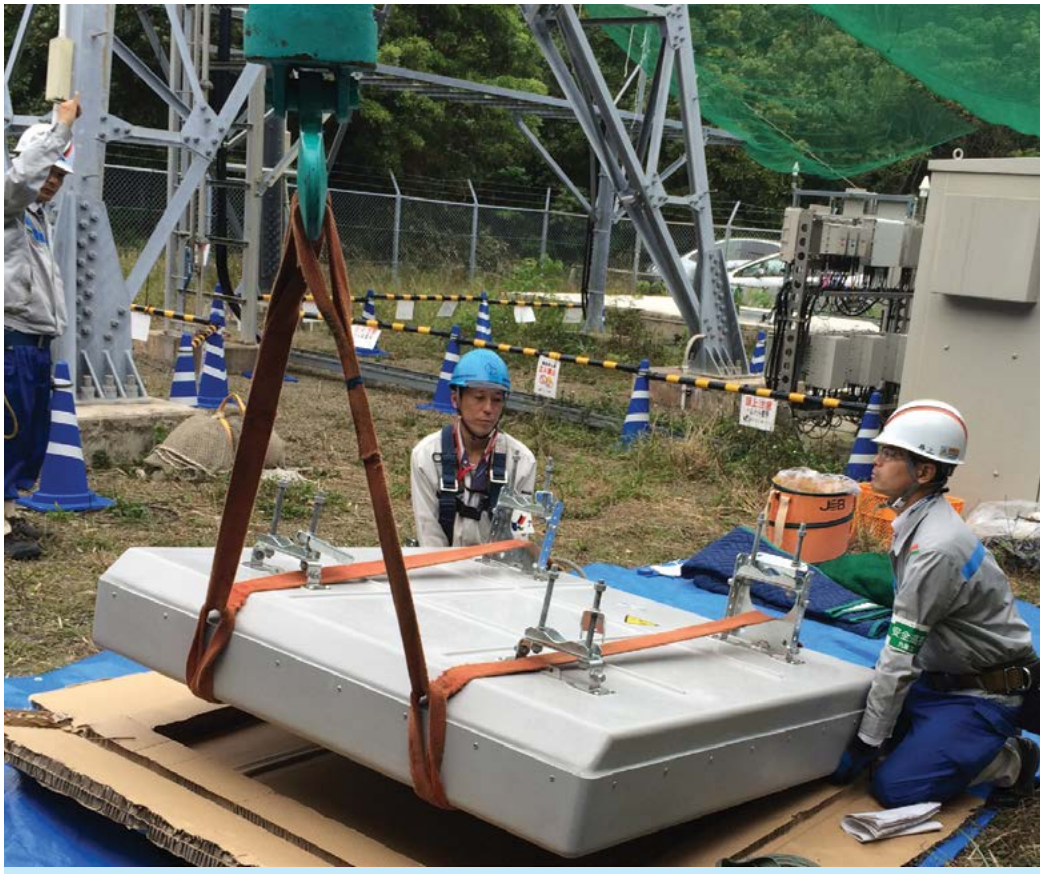
Thanks to KDDI and CommScope, visitors can now use their mobile devices to share the wonders of Yakusugi Forest



Customer

KDDI Fukuoka Engineering Center

Country

Japan

Challenges

To preserve the Yakusugi Forest's pristine condition as an official Natural World Heritage Site, operators were forbidden from erecting unsightly base stations within its borders. None of the natural beauty captured by visitors could be shared in real time.

CommScope solution

Since no antennas could be placed on Yakushima Island, KDDI engineers decided to deploy CommScope's five-beam antenna on neighboring Tanegashima Island, roughly 22 miles northwest of Yakusugi Forest, providing an innovative wireless solution.

"CommScope's five-beam antenna solution and innovative sector sculpting technique enabled us to overcome a huge technical hurdle at Yakusugi Forest. We're so happy to share our excitement by allowing our customers to use their cell phones on the island."

Masanori Fushimi,
KDDI Fukuoka Engineering Center

Off the southern tip of Kyushu, Japan, lies the subtropical Yakushima Island, a prominent tourist location that attracts more than 300,000 visitors every year—for one very important reason: trees.

These aren't just any trees; they're ancient Japanese cedars known as "Yakusugi." Many of these trees have existed for over a thousand years; a few are believed to be several thousand years old.

Local residents and tourists alike enjoy hiking through the breathtaking Yakusugi Forest.

More than 1,900 species of flora and local wildlife—including monkeys and deer—call the forest home. When visiting Yakusugi, hikers often snap pictures and capture video with friends and family to keep as treasured memories.

But there's a catch to the Yakusugi tourist experience: to preserve its pristine condition as an official Natural World Heritage Site, operators were forbidden from erecting unsightly base stations within its borders. Unfortunately, none of the natural beauty captured by visitors could be shared in real time.

That meant absolutely no wireless coverage

So, while Yakusugi remains a haven for nature lovers, until recently it was a barren desert for cell signals. That all changed in March 2014, when one of Asia's top telecommunications carriers, KDDI Corporation, assumed the challenge of providing comprehensive 4G LTE coverage within and around the majestic island forest.

Beyond aesthetic restrictions, the island's dense vegetation also made it impossible to successfully place any structures in locations high enough to be of any real value. So experts at KDDI's Fukuoka Engineering Center thought "outside the island," preferring instead to deploy an innovative wireless solution on neighboring Tanegashima Island, roughly 22 miles northwest of Yakushima.

Just like Yakusugi's ancient trees, this solution was much more than your average wireless antenna. To ensure LTE signals could reach Yakushima from Tanagashima, KDDI needed a special narrow-beam, high-gain antenna.

Thinking "outside the island"

Since no antennas could be placed on Yakushima Island, KDDI engineers decided to deploy CommScope's five-beam antenna on neighboring Tanegashima Island, roughly 22 miles northwest of Yakusugi Forest.

One critical beam from a five-beam powerhouse

KDDI had prior experience ensuring wireless coverage over a maximum radius of only six miles. To achieve a reliable 22-mile radius, KDDI sought out CommScope's five-beam antenna—a special solution that emits a 14-degree narrow beamwidth and 20 dBi gain.

Originally designed to improve wireless traffic and capacity primarily at stadiums and large live events, the antenna is capable of emitting five narrow beams using CommScope's innovative sector sculpting technique. This increases capacity five-fold without increasing interference levels—a crucial advantage for 4G LTE systems.

But Yakusugi Forest isn't a stadium, and KDDI had never used CommScope's base station antenna solutions before. Would the combination of powerful technique and innovative antenna work as intended?

Five beams in just 8 weeks

KDDI needed to capitalize on Golden Week, a popular Japanese vacation holiday. From start to finish, the entire deployment was completed in less than two months.

Pervasive, reliable wireless reception—in a mere two months

While hardware performance and reliability were vital factors in KDDI's decision to partner with CommScope, the implementation timeframe was essential. The team at KDDI needed to go live before Golden Week, a major holiday in Japan when many visitors visit Yakushima Island. That required a two-month sprint from start to finish.

Once the antenna was deployed, the KDDI team hiked deep into the forest to test signal reliability at the oldest remaining tree, called the Jomon Sugi, 4,265 feet above sea level. Having traversed the trail many times, their local guide explained there would be no cell phone reception from that point onward.

However, once the team arrived at the ancient tree, everyone quickly checked their cell phones and were elated to see a reliable 4G LTE signal. The trail guide was so surprised and impressed by the coverage availability at the Jomon Sugi tree that, when he discovered KDDI was the operator, he vowed to switch as soon as possible.

Ever since that moment, the mysteries of Yakusugi Forest can now be shared with friends and family in real time. As a result, KDDI has strengthened its reputation as one of Japan's premier wireless service providers.

Yakusugi trail guide vows to switch to KDDI

The trail guide was so surprised and impressed by the coverage availability at the Jomon Sugi tree that, when he discovered KDDI was the operator, he vowed to switch as soon as possible.

After completing the eight-week Yakusugi Forest project, KDDI's Masanori Fushimi confirms it was a success by checking the signal strength on his smart phone.

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