The Maldive Islands

Cellular coverage goes island hopping in the Maldives

Case Study

The most important thing we build is trust

Overview

When Dhiraagu, the Maldives largest mobile operator, needed to extend their coverage to remote islands their main requirement was to accomplish this while lowering their Capital and Operational Expenditure.

Challenge

To enhance coverage for at least 35 scarcely populated islands distant from each other and the nearest base stations and which had only marginal coverage from those base stations. This had to be achieved for the lowest cost possible but still produce an effective solution.





The Challenge

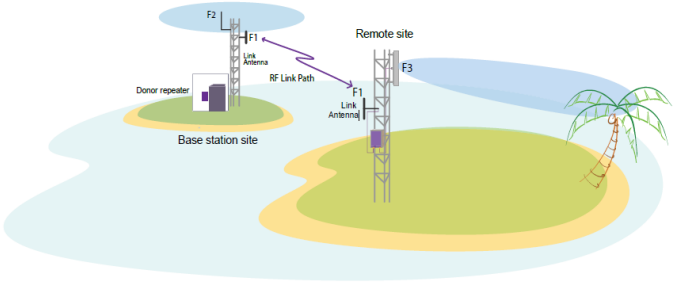
The Maldives, known as a one of the most beautiful places in the world, consists of 1,192 islands, atolls and islets spread over a large area of the Indian Ocean. When Dhiraagu, the Maldives largest mobile operator, needed to extend their coverage to remote islands their main requirement was to accomplish this while lowering their Capital and Operational Expenditure.

The challenge faced by Dhiraagu was to enhance coverage for at least 35 scarcely populated islands distant from each other and the nearest base stations and which had only marginal coverage from those base stations. This had to be achieved for the lowest cost possible but still produce an effective solution.

The Solution

Amongst the solutions that Dhiraagu evaluated were the use of spare capacity from sectors that already provided coverage to the sea. Another solution they evaluated was a micro BTS but as most remote islands had unreliable mains, no shelter or transmission available, deploying a micro BTS would turn into an infrastructure development that couldn't be justified and certainly wouldn't meet the requirement of implementing a low Capital Expenditure Solution.

Alternatively, Dhiraagu saw a possibility to create a "fake sector" and provide coverage and dedicated capacity to more than one island using the capacity from that sector. Dhiraagu knew that a frequency translating repeater has that type of capability. The basic concept of using a frequency translating repeater that creates a "fake sector" is illustrated below.



Frequency translation technology allows the use of an omni directional antenna at the repeater site. By shifting the frequency, the isolation requirements are reduced and lower masts can therefore be used. This also enables high output powers, in other words, large areas can be covered at a minimised cost.

The donor unit is installed next to the base station where the signal is coupled off via a directional coupler. Following frequency translation, the signals are transmitted on a link antenna and received at the remote site where signals are converted back to the original frequencies. Finally, the signals are amplified in the remote unit and then transmitted on a server antenna.

Dhiraagu saw further advantages with the Cobham Wireless Frequency Translating Repeater solution as they could use both available GSM bands. Frequencies on the 900MHz band were used for the serving cell and frequencies on the 1800 MHz band was used as the link frequencies. This allowed Dhiraagu to better manage their frequency plan.

As a result the Cobham Wireless frequency translating repeater solution was seen as the ideal option and it was selected for the majority of the islands. Cobham Wireless repeaters are sealed to IP65 standard and need no special shelter thus enabling them to be installed in an outdoor environment. The site solution was designed with an outdoor UPS/rectifier and repeater which were installed directly onto a mast.

The Benefit

Dhiraagu initially bought 2-channel repeaters which were upgraded to 4-channel units, which they saw as an advantage for areas requiring more capacity.

"Cobham Wireless' CSFT is a reliable piece of equipment and the failure rate is low"

Mohamed Shaafeu, Operations Manager, Dhiraagu

Mohamed Shaafeu, Operations Manager at Dhiraagu: "One of the main reasons we chose Cobham Wireless CSFT (Channel Selective Frequency Translating repeaters) is because of their reliability and low power consumption."

Cobham Wireless' comprehensive remote control and monitoring software application The Active Element Manager (AEM) was used for monitoring all repeaters. The AEM is a fully featured and user friendly tool permitting the remote control and monitoring of repeaters in a network, either by PC or from a higher level, external control system via fixed line or wireless modems.

Mr. Shaafeu continues: "The deployment turned out to be a success and the support engineers that came over to assist in the implementation and upgrade of the AEM were very experienced and knew the system well. The training program held after installation of the AEM was very useful and made deployment of our repeaters much easier. The repeater sites are working fine and we are satisfied with its performance and availability. We have been working with Cobham Wireless for a long time and the relation was excellent."