Small cells boost network capacity by 67.5% on Australia’s most famous beach.
The reason Optus wanted to improve the network on Bondi beach was the City2Surf run event, that brought over 200,000 runners, spectators and beach goers to Bondi beach. As Bondi is a popular location for events it was deemed that improving the network using permanent small cells was smarter than bringing a ‘cell on wheels’ to do the job.

To further ensure the best performance for large events, Multi Band Load Balancing, Mass Event Handler & Voice Call Prioritization during High Traffic Load features* were used.

How we got it done

Analysis

The first step was geo-location analysis. The idea was to locate the key traffic hotspots – that is, understand the main locations in the Optus network where customers were using their mobiles. This required the use of a high resolution 3D map and post-processing of data from Nokia’s 3D GeoLocator.

The results from this step were cross-checked with social media data from the same area. The social media data covered all mobile networks – not just the Optus network. The results showed good correlation, but also revealed a ‘hidden’ hotspot located in a park to the north of the beach.

Implementation

The results of the analysis showed that the beach itself was challenging for small cell Flexi Lite deployment as the macro coverage was strong, with about 80% of the samples having RSCP -85 dBm or above. As small cells have low power, the use of directional antennas with optimized settings was crucial to best improve the network in the identified hotspots. The small cells were mainly installed on lampposts so that they were out of sight of the general public.

Nokia engineers also performed ‘walk tests’ around the beach area, capturing detailed signal measurements from the existing macro base stations to aid radio planning for the new layer of small cells.

Results

The small cells made a very positive impact on the Optus network. The main result was a 67.5% capacity gain, with the overlapping macro and small cell layers allowing additional resources in the network to be shared among the same amount of subscribers. Small cells helped to offload 35% of the traffic from the macro layer, decreasing the number of subscribers per cell by 9%.

Customer experience was also boosted for Optus subscribers by locating small cells close to the areas of highest demand.

In other words Optus could now provide a more reliable network and better experience for their subscribers in the Bondi beach area.