

UAE USAR

MESH CAPABILITIES IN SKYSCRAPER



OBJECTIVE

In a 92-story building, with 6 underground basement parking levels, customer required live video transmission, along with clear PTT voice comms, from the B6 parking level and from the 92nd roof top level. The floors in the basement parking levels are 3m thick concrete. The customer wanted only battery-operated radios and as few relay radios as possible.

The C2 location was in the Security Control Room, at the lobby level, with window to the plaza outside. The roof top level is enclosed, not open to the atmosphere.

EQUIPMENT USED

All PTT IP Mesh radios were 500mW RF power, with 0dBi gain, operating in L Band (1475MHz) at 5MHz bandwidth with ~5mbps throughput.

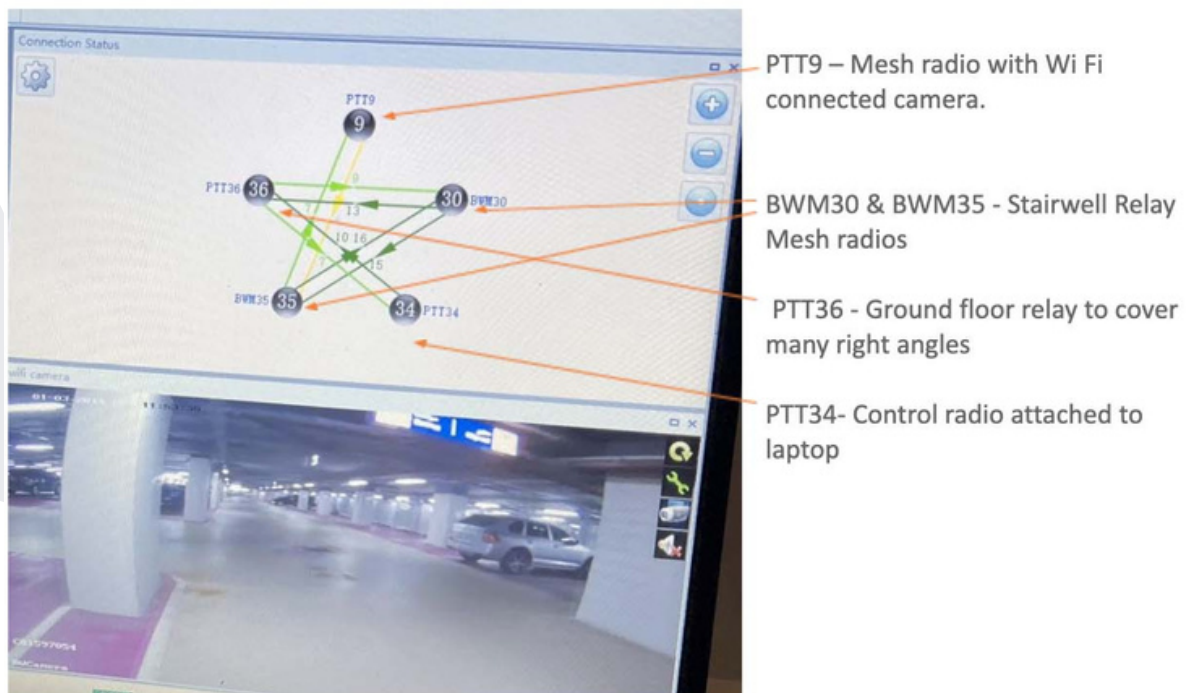
Two of our Body Worn Mesh radios (BWM30 & BWM35), also 500mW RF power, with 2dBi gain omni antennae, were used as relay radios, operating at the same frequency and bandwidth.

Video feed was provided by a WiFi enabled camera, connected to the WiFi hotspot of the PTT Mesh radio. Distances from the camera to the PTT Mesh radio varied throughout the test from being worn by the same operator holding the PTT Mesh radio to, at times, being 20 metres distant on the roof top level 92.

POC OPERATION - UNDERGROUND B6 VIDEO & AUDIO

Following a quick survey of the ground level and basement access, we decided to use the emergency exit stairwell as the transmission path from B6. There were many right angles between the Security Control Room and the entrance to the stairwell so a relay radio was placed to ensure connectivity to the top of the stairwell.

We required only 2 further “hops” to the bottom of the stairwell, with the second hop at the start of a 60 metre long “tunnel” to the door leading in to the B6 car park. The objective was to deliver live video from deep within the car park and not just from the entrance to the car park at the emergency exit stairwell.



Video screenshot from B6 basement car park

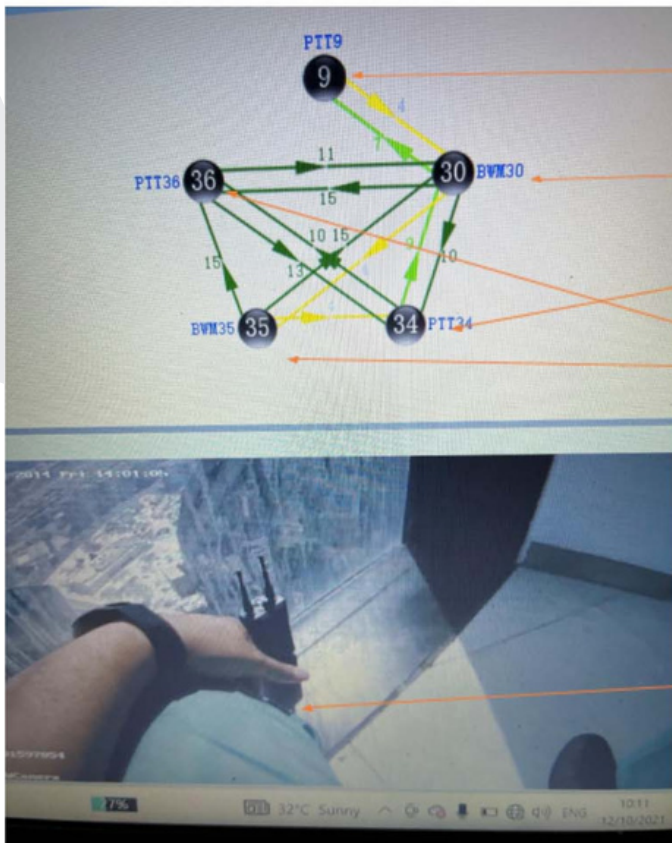
IN A 92-STORY BUILDING, WITH 6 UNDERGROUND BASEMENT PARKING LEVELS, CUSTOMER REQUIRED LIVE VIDEO TRANSMISSION, ALONG WITH CLEAR PTT VOICE COMMUNICATIONS

POC OPERATION - LEVEL 92 ROOFTOP VIDEO & AUDIO

For the rooftop test we decided to position the BWM30 outside, at Ground floor level, to provide connectivity from the rooftop radio to the C2 station in the Security Control room. We left the other radios in the stairwell while doing the rooftop test just to show the mesh performing across all extremes in the building.



View from level 39 en route to Level 92, via level 88



PTT9 – Mesh radio with Wi Fi connected camera

BWM30 – Ground Floor relay Mesh Radio

PTT34 - Control radio attached to laptop

PTT36 & BWM35 – Radios in stairwell to Basement car park

PTT9 – Mesh radio with Wi Fi connected camera

The Mesh links between PTT9, BWM30 and PTT34 can be clearly seen in the network diagram, demonstrating that the network required only one hop via BWM30 to connect with the control radio, 92 floors below it. Strong SNR levels can also be seen in screenshot.

This demonstrates the superior digital signal processing of the Ace6 Technology IP Mesh technology, with only 500mW of RF output power.

CONCLUSION

"We tested a number of Mesh technologies in Abu Dhabi, in very challenging RF environments, including in deep basements and in collapsed structure training simulations and the only Mesh radios to completely satisfy our demands was the Sovereign Systems mMesh radios.

We streamed live video, audio and data across the Mesh network and we were very pleased with the performance from such a small, easy to deploy Mesh radio."

~ Major Rashid Al Shaya, Command Support Officer, United Arab Emirates Search & Rescue Team (UAE USAR), Heavy Classification from the United Nations - International Search & Rescue Advisory Group (INSARAG) unit



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