Solution: HyphaMESH REX Kit ◆ **Industry:** Fire ◆ **Use Case:** Network Extension with Mesh

Wildland Fire Agencies in Los Angeles Area Test HyphaMESH in Coverage Dead Spots

HyphaMESH extends critical connectivity miles into difficult wildland terrain where cellular and radio signals are not reliable.

Communications among crew members became possible in areas that have not historically had communications."

Testing and Evaluation Highlights

Challenge – The mountains and dense forests surrounding Los Angeles, CA make for unreliable cellular and radio connectivity for emergency responders. With limited ability to access or share real-time information, wildland fire response operations can become confusing and inefficient, increasing the risk of loss of life and property.

Solution – HyphaMESH creates a secure and dedicated public safety wireless network to extend coverage or establish an independent local network. The versatile HyphaMESH product line was well equipped to connect firefighters in mountains and dense forests where LTE and LMR don't reach.

Santa Monica Mountains

Yerba Buena and Sepulveda Canyons, California

Challenge

The team went into the Santa Monica mountains at the south end of Ventura County and up into Yerba Buena Canyon. This canyon routinely causes communications problems for emergency responders – in fact, this area is always mentioned in agency discussions about communications gaps and needs. It is the site of the 2018 Woolsey Fire that burned 96,949 acres of land and destroyed 1,643 structures, killed three people, and prompted the evacuation of almost 300,000 people.

> **Everyone understood the technology with little to no training."**

> **Excited to get into the field and deploy the HyphaMESH REX kit."**

Solution

Simulating typical operations, a HyphaREX Kit with LTE backhaul from the Cradlepoint IBR900 was staged at a strategic observation and communication location identified in Standard Operating Guidelines (SOGs). The team bridged the HyphaMESH connection between Yerba Buena and Sepulveda Canyons, providing Wi-Fi access for firefighters from portable HyphaCAPs. From there, the ***first responders traveled 1.4 miles down the canyon out of sight of the SOG, maintaining secure, dedicated Wi-Fi access on their rugged smartphones.***

Benefits

Extended wireless internet access for Wi-Fi enabled devices

HyphaMESH provided wireless internet access deep into both Yerba Buena and Sepulveda Canyons, the first time either location had internet connectivity – important because this is a difficult area for LTE and VHF coverage.

Want to learn more?

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Mount Baldy Village

Icehouse Canyon Trailhead, California

Challenge

The Icehouse Canyon trail is a popular hiking destination in dense, mountainous forests near Mt. Baldy, California, and very susceptible to wildland fires. Cellular and radio coverage is limited given the terrain, and the towers in the area aim signal in the opposite direction below towards the Los Angeles Basin. As a result, responders in the area are forced to conduct rescue operations without reliable communications.

Solution

A vehicle equipped with a HyphaNODE and a Cradlepoint IBR900 providing LTE backhaul was parked at the edge of known LTE coverage. From there fire/EMS personnel took their portable HyphaCAPs with Wi-Fi access and spread out to locations with no cellular and LMR coverage. ***The HyphaCAPs maintained connectivity up to a half mile away from each other, creating a secure, encrypted wireless mesh network.***

Want to learn more?

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Benefits

Mesh network penetrates deep into dense forests

By breadcrumbing between multiple portable mesh HyphaCAPs down the trail through dense forest terrain into known coverage dead spots, responders accessed Wi-Fi enabled smartphones, tablets and laptops more than 2 miles away from the LTE backhaul at the vehicle.

No internet, no problem

HyphaMESH devices allow responders to communicate with no internet connection. With smartphones connected over Wi-Fi to the HyphaCAPs, first responders used the ATAK situational awareness application to edit and share wildland fire map perimeters and notes in real-time within the local area mesh network, communicating with each other without internet connectivity.

“Provided connectivity in areas that have never had online access before.”

Angeles National Forest

California

Challenge

Vehicles equipped with satellite terminals are valuable communications assets for first responders. However, vehicles cannot always travel to where communications are needed, and the Wi-Fi reach is limited. This impacts the ability of command staff and firefighters to maintain communications while operating in the Angeles National Forest.

Solution

A HyphaNODE was temporarily fixed in a vehicle and connected to a Cradlepoint router leveraging backhaul from a satellite communications terminal on the roof. The vehicle was positioned in a parking lot at the Chantry Flat Trailhead where fire/EMS personnel were briefed on how to use the portable mesh HyphaCAPs. One group with HyphaCAPs and a HyphaNODE went uphill 1,000 feet from the parking lot near a helipad. Then a HyphaCAP was taken 0.3 miles down a winding jeep trail, a second HyphaCAP went further down into the canyon, and a third HyphaCAP was hung from a tree to bridge the connection even further. ***At all times, team members remained connected to the satellite backhaul and were able to share incident intelligence in real-time.***

Benefits

Mesh network penetrates deep into dense forests

First responders completed voice over IP (VoIP) phone calls and sent photos via text message in all locations when connecting their smartphones to a portable mesh HyphaCAP.

Access critical information in real-time

Armed with the portable mesh HyphaCAPs, firefighters and command staff could access real-time fire incident intelligence through FIRIS and the California Highway Patrol dispatch feed in areas known for limited LTE and LMR coverage.

“Other mesh products did not produce results like the HyphaMESH in terms of performance and form factor.”

“HyphaMESH is a lot less than we paid for mesh.”

Want to learn more?

Request a Demo

