goTenna

CASE STUDY

Operation Phoenix Stays Connected During Disaster Recovery Training with goTenna Mesh

In a mountainous region prone to loss of cell service, the nonprofit tested how goTenna Mesh could enable off-grid messaging and location tracking

Challenge

Operation Phoenix is a nonprofit organization that arrives within the first 96 hours of a natural disaster and helps communities recover. Once the team of about 2-4 disaster recovery specialists arrive, they provide crisis management support, construction, and on-ground reconnaissance in order to save lives and restart the local economy. During historically significant storms like Hurricanes Zeta, Rita and Maria, their teams can grow to about 10-15 specialists per deployment. The organization often works in areas with low-level coastlines and waterways where cell service and satellite connectivity is typically unavailable upon their arrival for the next 24-48 hours due to power outages and demolition of core infrastructure.

Prior to learning about goTenna Mesh, the team would often rely on commercial GPS tracking devices or voice radios. During these deployments, GPS devices typically succumbed to loss of satellite connectivity and voice radios often relied on ground infrastructure which was either destroyed or unavailable during disaster recovery missions.

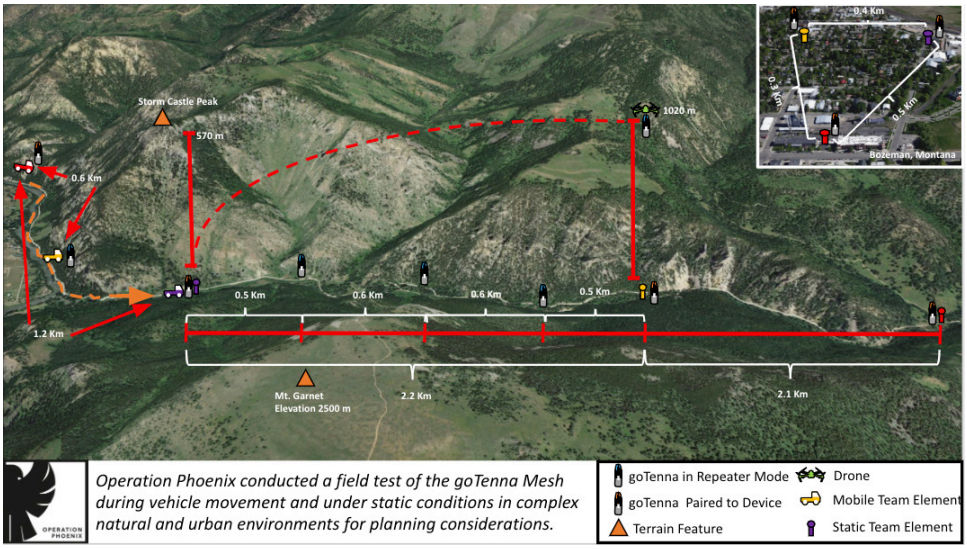
The Operation Phoenix team wanted to find an inexpensive communications device that could get up and running within minutes upon their arrival at the scene. They also wanted to find a product that allowed for synchronized comms and did not have to rely on satellite or ground infrastructure. Having stumbled across goTenna Mesh in an internet forum, they realized that goTenna was the best solution for their needs: it provided a redundant form of communication at a lower cost than other alternatives in the market.

Solution

In order to replicate a disaster scenario where the team had no access to cell service, the team set out to Storm Castle Peak in Montana and set up a base for the one-day test at the bottom of the mountain. They tested the goTenna Mesh devices by distributing them along the trail within the valley, starting at the base. For this particular test, they also wanted to see how goTenna Mesh would perform against other devices in their technology communications stack: a commercial satellite GPS tracker as well as a VHF voice radio.

Each member of Operation Phoenix test group was equipped with their own personal smartphone as well as a goTenna Mesh device. Using the free iOS or Android goTenna Mesh app, they paired their smartphone to their respective goTenna Mesh devices. When the smartphones connected to the goTenna Mesh devices, they become "nodes" in a mobile, ad hoc mesh network where text messages and location data can be shared from device to device. They did not require a hotspot or Wifi connectivity to get up and running because they already had the app pre-downloaded to their phones.

The goal of the test was to replicate a disaster scenario where the team had no access to cell service. At various points during the experiment, the goTenna Mesh devices were attached to drones, trees, carried by the end-user as well as attached to a drone. This allowed the team to test out the goTenna Mesh range at various heights and speeds.



Results

As a result of the test, the Operation Phoenix team decided that goTenna Mesh would serve as the primary source of communication in cellular dead zones.

"We were able to establish a robust network with goTenna Mesh repeaters placed approximately 0.5 kilometers (0.3 mi) apart in both urban and mountainous terrain," said Adam Thuen, President of Operation Phoenix.

The test group was able to easily maintain and extend connectivity to the test group participants distributed along the trail. There was no loss in signal whenever team members sent text messages to each other, or shared their location using the goTenna Mesh network.

Although all ground-level devices on the team stayed in touch when they were kilometer (0.3 mi) apart, a mesh device attached to a drone and put it into relay mode, extended their communications bubble to a radius of 2 km (1.2 mi). The test effectively proved that users standing 4.3 km (2.6 mi) apart can still message each other and see each other using the goTenna app as long as they planted additional goTenna Mesh devices in between other nodes in a "breadcrumb" fashion.

> "It's plug and play which is really nice when there's a lot of chaos. Especially when there's a place that got hammered by something like a storm. It's pretty seamless and quick. We were able to get up and running quickly."
>
> — Adam Thuen, President of Operation Phoenix.

Going forward, the team would instruct all of their partners to download the goTenna app in advance of a mission deployment. This way, as soon as their partners arrive at the scene, they can be up and running in minutes even when there's no cell service.

They are currently looking into testing the goTenna Pro which allows for longer-lasting battery life, greater distances between nodes as well as more frequent location updates. If you're interested in using goTenna Pro for your nonprofit, visit the Resilience Network page here. •