RAJANT

CASE STUDY

# SITECH Deploys Rajant Kinetic Mesh® Network Following Maui Wildfires


The Maui wildfires destroyed parts of the island of Maui in the U.S. state of Hawaii in the early days of August 2023. The historic resort town of Lahaina, located on Maui's western peninsula, was most hit by the flames, which broke out on August 8. Most of the town was reduced to ash and wreckage. The Lahaina wildfire was one of the deadliest on record, with 98 people dying from smoke and fire. The fire either damaged or destroyed about 3,000 structures. To escape the fast-moving fire, many residents jumped into the sea to escape the flames. Many drowned in the process.

Nine police officers and 18 firefighters from Lahaina lost their homes while trying to serve their community. The worst version of a "perfect storm" caused the entirety of West Maui to lose power, water, and internet, resulting in grocery stores closing once their stock was sold. Many neighborhoods and communities that didn't burn suffered from a lack of utilities/ food. The heavy winds have caused cell towers to topple, while emergency services were also affected as a direct result.

## The Challenge

Wireless providers scrambled to restore service and fix their damaged network equipment in the following days and weeks. According to the Federal Communications Commission (FCC), 19 of the 21 wireless cell sites serving Kapalua, Napili-Honokowai, Kaanapali, Lahaina, Launiupoko, and Olowalu were out of service. The FCC emphasizes that networks are built with overlapping cell sites to prevent outages. A weakness of LTE is every cell site requires its own telco/internet connection. This is usually provided by fiber. All of the intelligence is located in a regional office of the cell carrier. If the telco/internet connection is interrupted, the entire cell site goes offline, which is why the

### Location

- Maui, Hawaii

### Customer

- Lahaina Community

### The Partners

- **Rajant -** Pioneers of peer-to-peer radio communications enabling real-time voice, video, and data to connect machines, robots, and people as part of a secure private mobile network.
- **SITECH Solutions Hawaii LLC -** A Rajant Kinetic Mesh Partner (KMP) headquartered in Waipahu, HI is the leader in construction technology solutions delivering an outstanding portfolio of easy-to-use and reliable construction technology systems. SITECH provides comprehensive technology solutions for heavy civil construction customers.

### Kinetic Mesh Components

- LX5-2255C BreadCrumbs®

### Impact Statistics

- Per user bandwidth improved – Multiple Rajant BreadCrumb radios were set up as an AP. Within the Wi-Fi protocol, each user only gets an equal share of the AP's bandwidth they are connected to. The Rajant team was able to multiply the APs at a given location.

Lahaina fire interrupted cell service for all of West Maui. Still, much of Maui was cut off from the rest of the world, with concerned family and friends unable to connect with loved ones in the fire-ravaged region.

A private company based in Maui took it upon itself to set up a community Wi-Fi project. They deployed diesel-powered trucks and vans as mobile charging stations, along with satellite terminals for Wi-Fi. Two major providers deployed "Cell on Wheels" (COW) mobile cell towers to provide temporary enhanced cellular coverage. This is common during such use cases as emergency communications during natural disasters. The COWs, however, ran off satellite connections and didn't have the much-needed bandwidth. At the same time, Rajant Engineers were constantly communicating with partners in the area, discussing options to assist in any way possible to enable communications for first responders and the community quickly.

## The Solution

The Rajant LX5-2255C BreadCrumb was the obvious choice for this situation. With an IP67 rating, it's ideal for rapidly deploying a resilient network to relay transmissions via the best available traffic path and frequency in real time. The LX can seamlessly scale a Kinetic Mesh network to this environment. Rajant's Kinetic Mesh networks use a set of nodes for connectivity that relay information and data to establish multiple redundant wireless connections. SITECH Solutions Hawaii LLC and Rajant personnel worked with the local company sponsoring the Community Wi-Fi effort to deploy Rajant's LX5-2255C BreadCrumbs in conjunction with the satellite data terminals they had previously deployed to dramatically expand the Wi-Fi coverage.  This expanded coverage not only helped displaced people from Lahaina but also provided critical connectivity to businesses and residents of West Maui.

Wireless mesh networking creates self-sustaining connectivity, even when some nodes are lost or damaged. It ensures that first responders have more dependable communication channels during disasters, enabling them to coordinate their efforts effectively when most needed.

> "With Rajant's BreadCrumbs and the quick response from their team, we were able to deploy and increase Wi-Fi range for communications by 10x in a matter of days."
>
> **— Joey Walker**
> Technology Manager SITECH HI

The self-sustaining part of wireless mesh networking makes it so innovative. Maintaining coverage while technical issues affect parts of the network is critical to large ground operations. Redundant infrastructure, backup power systems, and intelligent routing algorithms ensure that communication remains functional despite infrastructure damage or power outages.

Enhanced coverage created by wireless technology, which supports voice, video, and data, allows first responders to share critical information in real-time. They can share dynamic insights across agencies, which improves interoperability, resourcing, and exacting protocols, thus providing more comprehensive situational awareness to enhance public safety

## The Results

SITECH's engineers equipped with Rajant Kinetic Mesh technology successfully implemented a ruggedized, high-speed wireless solution utilizing BreadCrumbs to provide much-needed connectivity to a region reeling from massive communication failures. SITECH and Rajant helped to reconnect a region devastated by fire.

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