

# Cisco Networks Improve Emergency Response during Colorado Wildfire



Cisco brings wireless networks and communications to help El Paso County coordinate efforts to fight Waldo Canyon Fire.

## EXECUTIVE SUMMARY

**Customer Name:** El Paso County  
**Industry:** Government  
**Location:** County seat in Colorado Springs, Colorado  
**Number of Employees:** 2289  
**Population:** 640,000

### TECHNICAL CHALLENGE:

- Establish communications and wireless network to support firefighting and evacuation efforts during Waldo Canyon Fire
- Provide both secure network for incident management purposes and open network for use by first responders
- Deploy network as quickly as possible to help enable communications

### NETWORK SOLUTION:

- Cisco Tactical Operations deployed team with the Cisco Network Emergency Response Vehicle (NERV) to act as mobile communication center and incident command post
- Cisco wireless solutions established reliable network to connect hundreds of personnel and promote fast exchange of information

### TECHNICAL RESULTS:

- Promoted smooth exchange of information between agencies to aid firefighting efforts
- Aided evacuation through up-to-date mapping and app-sharing emergency information with locals
- Helped enable first responders to communicate with others outside the fire zone with open wireless network

## Technical Challenge

On June 23, 2012, a forest fire started only a few miles northwest of Colorado Springs, Colorado. The Waldo Canyon Fire would eventually become the most destructive fire in Colorado state history, burning 18,000 acres of land, prompting evacuation of more than 32,000 local residents, destroying 346 homes, and causing two deaths. El Paso County, which governs most of the area affected by the fire, immediately mobilized to begin firefighting and disaster recovery efforts.

First responder teams, including law enforcement, firefighting, emergency medical services, and other public agencies, established an incident command post (ICP) in a local middle school. With hundreds of personnel coordinating fire containment and evacuation efforts, agencies needed to quickly and reliably communicate critical information such as the scope of the fire, weather conditions, evacuation orders, and emergency medical requests with local and remote agencies. Just as importantly, the incident management team (IMT) needed a reliable way to communicate safety information to citizens in the line of fire.

---

Imad Karaki, director of support services with El Paso County, and his IT team immediately became critical members of the IMT. The IT team had to provide a secure network to support voice, video, and wireless communications for coordination efforts. Due to the danger of the situation and potential for sensitive information being exchanged, security was a necessity for the IMT network.

In addition, the IT team wanted an open wireless network for personnel staying at the ICP. Some fire-fighting and law enforcement staff stayed at the ICP up to two and a half weeks dealing with the fire, and the open wireless network would be a critical way for the personnel to keep in touch with friends and family.

But the biggest challenge, according to Karaki, was that the networks would need to be established almost immediately. “We needed to support first responders by giving them the information that they needed so that they could focus on fighting the fire,” says Karaki. “The school didn’t have the networks that we needed, so we were starting from scratch. We needed help.”

### Network Solution

Karaki contacted Cisco Tactical Operations for support. Cisco quickly deployed a team armed with equipment, expertise, and the Cisco® Network Emergency Response Vehicle (NERV) out of San Jose, California. Working with CenturyLink, a local telecommunications services provider, to connect fiber into the school, Cisco helped Karaki’s team create the network backbone for critical communications in the ICP. “The Cisco team was key to setting up and troubleshooting the network on such a short notice,” says Karaki. “With their help, we quickly established a network in a completely new environment.”

Cisco NERV is a mobile communication center that is designed to establish communications for first responders and critical infrastructure in emergency situations. With a satellite antenna, the NERV truck establishes a reliable network connection even when other infrastructure is affected to help keep emergency services running.

The Cisco team working with the NERV brought a full array of integrated Cisco devices to establish communications around the ICP. Three Cisco Aironet® 1522 Outdoor Mesh Access Points were positioned high on rooftops and masts to provide maximum coverage for the facility. A Cisco Aironet 1242 Access Point was also installed in the cafeteria, a high traffic area where many briefings were held.

“The most important goal of the Cisco wireless network was to help first responders focus on their jobs. A large disaster like the Waldo Canyon Fire generates a massive amount of data, and by helping to create and share this data, we improved emergency response.”

— Imad Karaki, Director of Support Services, El Paso County

A Cisco 5508 Wireless Controller connected and managed the access points over a reliable 802.11n network, with a Cisco Integrated Services Router (ISR) streamlining security and management. To help secure the IMT network, the Cisco team deployed an extensive security architecture, including firewall, Dynamic Multipoint Virtual Private Network (DMVPN), intrusion monitoring system, and a Cisco ASA 5510 Adaptive Security Appliance for backend security. The security devices helped the IT team monitor the health of the network and quickly resolve anomalies.

In addition, Cisco boosted communications with Cisco Unified IP Phone 7960 to deliver voice over IP service. “The cell phone infrastructure was affected by the disaster, making it unreliable, and the school had a limited number of phones that could be used,” says Karaki. “Cisco Unified IP Phones became key lines of communication to liaison with U.S. Northern Command.” Cisco rounded out communications at the ICP with videoconferencing through Cisco TelePresence®.

“During an emergency, the need to connect is strong: from phones and computers to printing and web services. We even developed and updated a simple app to provide evacuation updates to citizens,” says Karaki. “By collaborating with the Cisco team, we were able to quickly deploy a communications network that became a cornerstone of the disaster efforts.”

With streamlined, easy management, the Cisco solutions helped the IT team deploy the network faster and manage it easier. Because the high-density network was deployed quickly, interference from rogue access points had the potential to cause communication issues. The Cisco Wireless Controller gave the IT team visibility into the network to help fine-tune infrastructure performance and identify sources of interference.

The Cisco wireless network architecture, designed to connect to many devices and support Bring Your Own Device (BYOD) initiatives, also helped the emergency network run smoothly. Unlike traditional networks, literally every device on the emergency wireless network would be described as BYOD. The Cisco access points provided fast and reliable performance for all of the devices, and by running the open wireless network through a perimeter network, Cisco could establish the security required for IMT collaboration while providing the flexibility for connecting personal devices.

## Technical Results

“The most important goal of the Cisco wireless network was to help first responders focus on their jobs,” says Karaki. “A large disaster like the Waldo Canyon Fire generates a massive amount of data, and by helping to create and share this data, we improved emergency response.”

For example, accurate and up-to-date maps were essential to fighting the fire and coordinating evacuations. Local law enforcement needed an accurate view of transportation routes and potential hazards, whether they were fire or flooding, to safely evacuate citizens. The U.S. Forest Service created maps using infrared technology to determine the location and behavior of fires to help predict future movements.

PRODUCT LIST
<b>Cisco Network Emergency Response Vehicle (NERV)</b>
<b>Wireless</b>
<ul style="list-style-type: none"><li>• Cisco Aironet 1522 Outdoor Mesh Access Points</li><li>• Cisco Aironet 1242 Access Points</li><li>• Cisco 5508 Wireless Controller</li></ul>
<b>Routing and Switching</b>
<ul style="list-style-type: none"><li>• Cisco Integrated Services Router (ISR)</li></ul>
<b>Security and VPN</b>
<ul style="list-style-type: none"><li>• Cisco ASA 5510 Adaptive Security Appliance (ASA)</li></ul>
<b>Voice and IP Communications</b>
<ul style="list-style-type: none"><li>• Cisco Unified IP Phone 7960</li></ul>

“Using the reliable Cisco networks, we were able to share maps analyzing movement of the fire and recommend evacuation or pre-evacuation areas,” says Karaki. “With such a fast-moving and destructive fire, timely evacuations saved the lives of many.”

The Cisco team also acted as an excellent resource, from troubleshooting to bringing expert technical knowledge to help establish a reliable network quickly. With help from Cisco, the emergency network ran smoothly. “The Cisco team also brought something much more intangible: moral support,” says Karaki. “The incident team was relieved to know that we had the best network team in the country helping us out.”

---

## Future Steps

Knowing the impact that communications had on the incident response efforts, El Paso County managers are looking at other ways that they can take advantage of Cisco technology to improve information-sharing for first responders. In particular, the county is working with Cisco to outfit its own Mobile Command Vehicle to create its own NERV to allow the county to be prepared for any future disasters. The IT team is also working with Cisco on ways that first responders can become engaged before even arriving at a site. For example, the IT team could establish accounts for related agencies ahead of time to streamline configuration time and enable agencies to connect to the ICP remotely. The IT team is also looking at making video briefs available on the network to help first responders communicate vital information more efficiently.

## For More Information

To find out more about the Cisco Wireless, go to: <http://www.cisco.com/go/wireless>.




---

Americas Headquarters  
Cisco Systems, Inc.  
San Jose, CA

Asia Pacific Headquarters  
Cisco Systems (USA) Pte. Ltd.  
Singapore

Europe Headquarters  
Cisco Systems International BV Amsterdam,  
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at [www.cisco.com/go/offices](http://www.cisco.com/go/offices).

 Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: [www.cisco.com/go/trademarks](http://www.cisco.com/go/trademarks). Third party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)