



# MISSION-CRITICAL DISASTER MANAGEMENT

MAXIMIZE NETWORK UPTIME  
DURING CATASTROPHES







In October 2015, South Carolina experienced one of the most prolific rainstorms ever recorded in modern U.S. history. The event would later be described as the 1,000-year flood. Catastrophic flooding occurred statewide, causing severe destruction that totaled more than \$2.2 billion.<sup>1</sup> Neighborhoods, roads, bridges, dams and utilities were underwater. Public-safety personnel who were called upon to aid with evacuations and rescues required reliable communications to effectively coordinate operations.

First responders depend on mission-critical networks for seamless communication. These networks are designed to be resilient, but they are not exempt from faults. During the South Carolina storms, the state's public-safety network radio sites and their components were impacted. In this instance, the benefits of Motorola Solutions' Premier Services were fully realized with a dedicated, managed services team working around the clock to ensure network uptime, resolve all issues and continuously support evolving operational needs in real time. As a result, the communication among first responders was not compromised during the disastrous flood.

#### **SITUATION**

Major Floods

#### **NETWORK CHALLENGES**

- Intermittent network coverage
- Backhaul and link failures
- Busy signals

#### **SOLUTION**

Premier Services



# PLANNING FOR UNPREDICTABLE OUTAGES

Regardless of how resilient your mission-critical communication network is, outages do occur. Eighty percent of government IT leaders surveyed reported that they have experienced at least one critical network outage in the last three months.<sup>2</sup> These outages can multiply during catastrophic events: Eleven percent of all network outages and 62 percent of network downtime are the results of natural disasters.<sup>3</sup>

Network outages are inescapable. In a catastrophic situation—where every second counts—being prepared to rapidly respond to and resolve unforeseen critical network outages is imperative. Through the duration of South Carolina's 1,000-year flood, impact to mission-critical communications and restoral time were minimal as a result of the disaster management procedures and actions taken by our managed services team.

A state of emergency was declared before the storm arrived, which triggered our Network Operations Center (NOC) to follow pre-established emergency management procedures. Leading up to the storm's arrival, NOC team members continuously monitored the weather and implemented disaster management procedures including:

- Performing routine onsite physical checks at radio tower sites
- Monitoring generator fuel levels
- Verifying dedicated talkgroup plans and assignments

The plan also employed redundant NOC protocols, with a remote, out-of-state facility ready to take over if needed.



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## LEVERAGING MANAGED SERVICES FOR RAPID RESPONSE

While the network stayed operational throughout the storm, outages did occur. From our NOC, the managed services team quickly identified and addressed these critical network events—ensuring communication among first responders in impacted areas was not compromised.

Two days into the storm, flood waters swamped electrical transformers, one of which supplied power to a T1 pedestal holding all the equipment for public-service connectivity links. In another area of the network, a T1 pedestal flooded, and repairs could not be made until the water receded.

### HOW MANAGED SERVICES HELPED

**Maximizing uptime with onsite support.** While the NOC immediately detected the loss of power to the radio site, its generator automatically took over as the primary power source. Onsite field support was dispatched to ensure the generator worked flawlessly and always had enough fuel until the power company was able to access the flooded transformer for repairs a few days later.

**Enabling coverage in a “fail soft” mode.** The area supported by the flooded T1 pedestal lost trunked coverage, leaving radio sites disconnected from the Master Zone Controller. This incident populated a “Link Fail” critical network event alert at the NOC. This initiated our Premier Services team to immediately work with first responders in the affected coverage area. Conventional trunking communication was established until the pedestal could be repaired.

Communities were also underwater. In one community, the network was overwhelmed from the volume of calls made by the public-safety personnel—federal, state and county—that converged to help save lives. The quantity and rapid surge of calls resulted in busy signals for those using the network.

### HOW MANAGED SERVICES HELPED

**Optimizing the network for continued coverage.** The busy signals were immediately detected and the root cause isolated to a single radio site by our NOC. After consulting with the customer, it was determined this site was not critical to operations. As a result, talkgroup profiles assigned to this location were provisioned to remote radio sites using dynamic regrouping. The ground operations team was instructed to use the network for emergency traffic only. System busies were reduced 94 percent, eliminating network congestion and improving availability for mission-critical communications.

In the aftermath of the storm, when the floods subsided and power was restored, our managed services and field teams accessed all the equipment impacted by storms remotely and physically to verify that everything was operating to the correct performance threshold. Customer devices altered during the emergency were also restored to original talkgroups.

With the mission-critical networks fully operational, public-safety agencies and personnel moved into the next stage of recovery, cleaning up the storm's devastation and helping citizens return safely home.



## RAPID SUPPORT WHEN EVERY SECOND COUNTS

As the 1,000-year storm exemplifies, maintaining vital communications among first responders during catastrophes poses more challenges due to the likelihood of unforeseen network outages. In these situations, Motorola Solutions Premier Services proves invaluable. With state-of the art tools and 24x7x365 mission-critical protocols, our customers can be assured that their mission-critical communication networks are ready to meet the challenges of a high-alert situation when every second counts. Our managed services team will remain focused on enabling efficient and seamless communication to ensure that the mission-critical operations crucial for saving lives and resources are not disrupted.

### SOURCES:

- 1 South Carolina Emergency Management Division, October, 2015 Statewide Flooding Incident, <http://www.scmd.org/component/content/article/21-home-page/public-information/219-severe-floodin>
- 2 Center for Digital Government Issue Brief: Survey Says: Government IT System Outages Are Painful, Not Uncommon
- 3 DPS Telecom, Do You Know These 8 Outage Statistics? <http://www.dpstele.com/network-monitoring/outage/8-startling-statistics.php>
- 4 Center for Digital Government Issue Brief: Survey Says: Government IT System Outages Are Painful, Not Uncommon

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