Disaster Preparedness to the Rescue

By Jesse Cryderman

I was a Boy Scout as a young man, filled with adventurous dreams of mountain summits and extreme weather survival. I idolized Zane Grey, Sir Edmund Hillary, Hemingway, and Eric Ryback, the first person to hike the 2,663-mile Pacific Crest trail at the ripe age of 17. My personal wilderness feats weren't groundbreaking, but they did shape my development and hey, I survived.   And while I have forgotten how to tie 25 different knots, and my memory of bird calls is spotty, I've never forgotten the Boy Scout motto which informed all of the merit badges and survivalism: Be Prepared.

It seems like every month over the past year, news of a natural disaster streams across the airwaves and dominates our global consciousness for several days. From hurricanes to floods to earthquakes, an unrelenting recent cascade of natural phenomena

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appears bent on disrupting our communication networks. Whether Mother Nature is truly angry or we're just paying more attention, the fact remains that networks have had to face great challenges in the recent past, and have (hopefully) learned how to prepare for disasters. They must be prepared.

Disasters certainly come in many forms, but sometimes it's something as simple as a backhoe that severs critical data pipes, or a large-scale DoS attack that cripples infrastructure. No matter the form, most would agree that a persistent loss of communication and networking qualifies a disaster in and of itself, especially for businesses that deal in time-sensitive areas, like credit card processing or emergency healthcare. As a result, it is crucial that network providers have a plan in place that ensures reliability and resiliency through thick and thin.

So what are carriers doing to prepare for disaster situations? In this article we'll take a look from both the macro level—the availability of solutions—and the micro level, specific preparedness scenarios in different regions around the world.

Preventative Medicine

There are many methods carriers employ to ensure communications networks can weather disaster. Some, like routing undersea cabling away from fault lines and areas of seismic activity, are intuitive. Others, such as mobile cell towers, or COLTs (Cell towers on Light Trucks), are more creative. But a large component of the preparedness plan includes establishing plans ahead of time, testing networks for redundancy, simulating disasters, and integrating with the communities and businesses served to put strategies in place so that when disaster strikes the affected groups are ready with a plan of action.

Planning is crucial, because without a plan for recovery, chaos floods in. Gayle Rose, CEO of Memphis-based Electronic Vaulting Services, commented on the importance of planning for disaster in the Memphis Daily News. "The statistics that came out after Katrina were amazing," Rose said. "When a business suffers catastrophic loss, 43 percent never reopen their doors. Another 51 staggered on and closed within two years. Just 6 percent remained open."

Following disasters, carriers should, and in many cases do, coordinate with local communities to determine the best locations for temporary cell phone towers. Many providers also waive charges in affected areas for a period of time, enable mobile giving, and rapidly provision and distribute new devices to help family members find one another and maintain contact.

Disaster simulation is one way carriers determine what their networks can handle, giving them hard data to use internally and with local and national agencies. In April 2010 and 2011, Verizon held large-scale disaster simulations for both wireless and wireline operations. Similarly, AT&T conducted a full-scale disaster recovery simulation in Detroit last May, which simulated the loss of network operations due to manmade or natural disasters, and in October the carrier

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But beyond simulations, carriers also have valuable location data that can be critical in both the planning and response to a disaster situation. NTT Docomo recently (May 24, 2011) completed two disaster prevention planning studies in conjunction with Japanese universities that "utilize(d) mobile spatial statistics to estimate the distribution of people in a given time period who would have difficulties returning home on foot if a major earthquake centered on Tokyo were ever to occur."

Most Tier 1 carriers now provide disaster response media kits in their online newsrooms, which serve as central repositories for general disaster preparedness information, or compile all relevant data about a specific threat, such as Sprint's Hurricane Season 2011 Press Kit. Most of these useful kits include a printable document that helps customers prepare for disasters. (For a good example, click here: http://sprint.tekgroupweb.com/images/9004/SprintHurricanePrepTipsforConsumers2010.pdf)

When the Levee Breaks

Flood waters not only wreak havoc on homes and businesses, they also can disrupt underground networks and knock down cell towers. Recent flooding along the Mississippi River drove water levels to unseen heights, posing serious challenges for carriers. Cellular South builds towers on high platforms and employs service-area overlaps to ensure call volume is maintained even if a tower is damaged. In preparation for the possibility of a levee break, the carrier launched their Emergency Response Plan to guide deployment of resources and get fuel, air boats, and generators to compromised towers. "These steps by Cellular South will help ensure that essential communications continue for our consumer and business customers even when we experience flooding or other life-threatening situations," said Trey Howard, director of Network Operations for Cellular South.

Hurricane Season

Another good example of a disaster preparedness strategy in full effect is carrier response in anticipation of the 2011 Atlantic Hurricane Season. Sprint has invested heavily to prepare its networks for potential disaster: $21 Million in Alabama, $133 Million in Florida, $58 Million in Georgia, $35 Million in Louisiana, $5 Million in Mississippi, $17 Million in North Carolina, $17 Million in South Carolina, and a whopping $230 Million in Texas. According to their

media kit, in each case Sprint is spending to provide a multitude of strategies:

- Hundreds of portable to provide power to Sprint network assets when local power is unavailable.

- Satellite Cell on Light Trucks (SatCOLTS) and Cell Sites on Wheels (COWs) to provide immediate restoration of service and to help facilitate wireless and IP communications among disaster relief and emergency response agencies.

- Experienced and well-trained technicians and engineers who can readily access and maintain the resiliency of Sprint network assets.

Sprint also has permanent generators – automatic cutover switches to immediately neutralize any loss of commercial power – installed at:

- All of its wireless and wireline switches – the network components where wireless data and calls are routed to their final destination.

- The company's network Points of Presence (POP)

- the facilities where traffic enters and leaves the company's global IP network, which facilitates dedicated data services for Sprint's corporate and government customers, as well as other critical communications.

Cyclones in Joplin

Tornadoes have done serious damage in the Southern United States this year, claiming hundreds of lives. Following a recent bought of twisters in Joplin, Missouri, Verizon set up temporary cell phone towers to maintain wireless communications. According to an announcement, The Verizon Wireless Network team worked with local emergency management personnel to determine the best locations for the temporary cell towers. Additional temporary resources, including a mobile charging station and a temporary store, were also sent to the Joplin area.

Looking to the Stars for Answers

Detecon Al Saudi, a telecommunications and IT service provider based servicing Saudi Arabia and the Middle East, has taken a different approach to network preparedness. Detecon has eschewed terrestrial solutions entirely, opting to launch a satellite-based service. According to their announcement May 24, their geo-redundant satellite service will "be able to restore a customer link in as few as 120 seconds should it go down. This capability is attracting customers to adopt the service, including a prominent bank based in Saudi Arabia, which plans to back-up that nation's largest ATM network. "

It's certainly forward thinking, and may evolve into a standard solution, but whether or not the satellite can back-up huge networks is the topic for a different article. Lucky for you, we've got you covered in this issue of Pipeline: (link to Satellite article).

Japanese Disaster

No discussion of disaster preparedness is complete without reviewing some of the data that came out of the Japanese Earthquake and resultant Tsunami. Several undersea cables were damaged, and the earthquake severely impacted wireless service provided by the three largest carriers, NTT Docomo, KDDI, and Softbank. The damage was widespread; for NTT Docomo, "facilities were damaged and commercial power supply was disrupted at exchange offices, among other things, impacting approximately

1.5 million circuits for fixed-line services, approximately 6,700 mobile base station equipment, approximately 15,000 circuits for corporate data communication services and others."

NTT had previously defined backup cable routes to maintain uninterrupted services, and as a result there was no impact on the carrier's overseas communication services. NTT engaged its Disaster Countermeasures Office following the earthquake, which employs over 10,000 staff. The carrier described their efforts: "Through such efforts as its provision of the Disaster Emergency Message Dial and the Disaster Message Board service, deployment of mobile base station vehicles (approximately 30 vehicles) and satellite mobile phones (approximately 870 handsets) and installation of special public telephones (approximately 2,300 telephones), NTT Group is making efforts to secure a means of communication for those who were affected by the earthquake."

Are We Prepared?

As we've seen here, Communication Service Providers are keenly aware of their crucial role in society, and have taken great steps to ensure they are prepared for disasters. And soon their respective preparedness plans might be more than corporate strategy—they may be legally regulated. A recent inquiry revealed the FCC is considering regulatory requirements for carriers, as part of the National Broadband Plan. And there are also many third-party emergency backup solutions on the market to fill in any gaps left by the carriers. (A recent survey by Forrester Consulting predicted 660% market growth in backup services.)

Despite all of this preparedness, there are natural and manmade forces that can and will disrupt communications networks. Until geo-redundant, high-bandwidth, non-terrestrial solutions are in play, downtime is inevitable. What is manageable is resiliency and response time, and it appears that for now, carriers are following the Boy Scout motto: Be Prepared.