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Superstorm Sandy Survivors

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Superstorm Sandy, with its high winds and severe storm surge, hit the New Jersey and New York shores and lower Manhattan with devastating force on Monday, October 29, 2012. It flooded streets, tunnels, and subway lines in New York City. It disrupted power in and around the city for weeks and cut communications when they were most needed. Sandy leveled homes, businesses, and even entire communities along the shoreline.



Melissa Delaney, writing for Biztech Magazine, has published an insightful series of case studies describing how three companies in Superstorm Sandy's path weathered the disaster relatively unscathed.¹ These companies relied on multilayered disaster-recovery plans and business continuity strategies. They remained in operation even though they never anticipated the length of the outage, the disruption to power and communications, and the length that some of their facilities remained dark.

In this article, we review Delaney's case studies. They provide valuable guidance for other companies that are reviewing their business-continuity plans in the light of recent disasters such as Hurricane Sandy, the Oklahoma City tornadoes, and the California wildfires.

Structure Tone

<http://twitter.com/?status=@availabilitydig> Superstorm Sandy Survivors <http://bit.ly/19iO4gX>

Structure Tone is an international construction management firm headquartered at 770 Broadway in New York City. It has offices throughout the United States and in England, Ireland, and Hong Kong.

Six years ago, the company set out to unify its disparate IT systems so that it could implement a broader set of construction-industry business applications and could ensure that its corporate systems were highly reliable and resilient in the face of disasters. As part of this upgrade, it centralized its IT operations in its New York City headquarters.

It created a virtualized environment of 27 HP Proliant servers running 170 virtual machines under VMware. It centralized all of its data storage onto an EMC Clariion CX4-120 storage area network (SAN).

Structure Tone set up a backup data center in Dallas, Texas. It used VMware's vCenter Site Recovery Manager to provide failover between sites and EMC's RecoverPoint appliances to replicate data between the production and backup SANs. Replication was scheduled every fifteen minutes so that data at the backup site was never more than fifteen minutes old.

All of its offices are interconnected via a redundant Multiprotocol Label Switching (MPLS) mesh network so that the offices can back up each other. Structure Tone's northeast offices are backed up at the New York City data center, and its Texas offices are backed up by its Dallas center.

¹ Melissa Delaney, [How 3 Companies Disaster-Proofed Their IT Ahead of Superstorm Sandy](#), *Biztech*; May 29, 2013.

The primary data centers in New York City and Dallas back each other up. In the event of problems at the production center in New York, the New York servers can be pointed to the SAN in Dallas. If the New York servers are down, the entire IT operation can be failed over to Dallas.

To improve resiliency, Structure Tone uses EMC's Avamar deduplication system to provide tape image backup to virtual disk. Prior to this upgrade, all data was backed up daily to magnetic tape. This meant that up to a day's worth of data could be lost, and it could take two to three days to recover a failed system. With the Avamar system, no more than five minutes of data will be lost; and a failed system can be recovered in a half hour.

As Sandy approached, Structure Tone sent its staff home at 1 PM on Monday, Oct. 29th. Little did management realize that they would not be able to get back into their New York offices until a week later, Saturday, November 3rd, because of the flooding and the power outages in Manhattan.

However, the company's disaster planning paid off. They had allowed themselves sixty minutes to fail over to the Dallas data center. When power went out at their New York City headquarters, they completed the failover in thirty minutes and provided near-seamless services to their IT users.

Structure Tone found that communications with its employees and customers over the next week was its primary problem. Even though the company was successful in rapidly recovering their IT systems, its biggest problem was getting people connected.

Structure Tone had planned for this. Before Sandy hit, it emailed staff with conference bridge numbers that executive teams and department heads used to communicate with each other in the days following the storm.

However, the company had made some employee mobility assumptions that didn't hold. It had supplied all users of its IT services with a notebook computer to communicate remotely with the company. However, many employees viewed the storm warnings as being overhyped and did not bring their notebooks home with them.

Those that did should have been able to connect to Structure Tone's IT services through its Cisco Systems virtual private network (VPN), but many employees had lost their home Internet services. The cellular systems were flooded with traffic and were virtually useless.

The company set up mini-command centers at some larger job sites, where it distributed notebooks to provide IT services to its employees. With power in lower Manhattan out for days below 14th Street, many of the company's clients had severe flooding. Using smartphone texting and VPN access to communicate with its field teams, Structure Tone helped many clients assess damage and perform any necessary recovery work.

Atalanta

Atalanta is a national food distributor headquartered in Elizabeth, New Jersey. Its IT environment includes HP servers, a Cisco Systems network, and a Citrix virtualization environment.

As part of its Disaster Recovery Plan, Atalanta has established a hot-site backup environment in a colocation facility about a thirty-minute drive from its headquarters. Atalanta's IT infrastructure is replicated in a private cloud at the backup site. Atalanta periodically backs up its production environment, including its data and business applications, to the private cloud.

As Sandy approached, Atalanta closed its main office before the storm hit. One of the company's executives later remarked that as he dodged billboards blowing around the highway on his drive to work the next day, he had never anticipated anything like the destruction wrought by Sandy.

Atalanta's DR site sits at a higher elevation than most of the towns around it, and it fared well during the storm. Atalanta successfully moved its operations to this backup site, and business went on as usual. The delivery of food products to warehouses and customers around the country proceeded uninterrupted.

The company rented space in a hotel near its headquarters so that employees could work there. However, those few employees that had communications at home worked from home.

As with Structure Tone, Atalanta's major problem was communications with many of its employees. Many phone lines were down for weeks. To maintain employee communications, the company rerouted calls to a sister company in Los Angeles. When another sister company in Paramus, New Jersey, regained power, it moved its VoIP phone system there.

Atalanta used text messaging to employee smart phones to get around the network loading that prevented efficient voice communications, and it sent emails to both personal and work accounts to advise employees that the company was still up and running and to inform them of procedural changes.

Atalanta has a bring-your-own-device policy. Though this policy requires additional security and management, it became invaluable in ensuring the mobility of its employees. Atalanta states that this policy helped immensely in the disaster.

ConnectOne Bank

ConnectOne Bank is a local New Jersey bank with eight branches. It is headquartered in Englewood Cliffs, New Jersey, and maintains its production IT systems at that location.

The production systems are mirrored at its branch in Hackensack, New Jersey. At this branch, the bank maintains the same operations center and the same phone systems as at its production site. However, the sites are powered by different power grids and telephone networks.

In an emergency, telephone calls are automatically rerouted to the other office. If both the production and backup locations lose telephone service, each branch has backup cellphone numbers.

When Sandy hit, the phones went out in the bank's Englewood Cliffs headquarters. To make matters worse, staff had trouble accessing core IT services. Therefore, the bank's operations were moved to its backup site in Hackensack; and all telephone calls were rerouted to that branch.

All of the bank's branches were opened the day after the storm. Englewood Cliffs had lost power but remained in service with an emergency generator. All branches had emergency generators, and ConnectOne had contractors onsite to ensure that the generators were operating properly. The bank instituted relaxed policies such as extending the time to cover overdrafts to accommodate the challenges that its customers were facing.

As part of the DR plan, communication problems were anticipated. A disaster-recovery team dialed in to a conference call each morning to discuss the situation and to determine the next steps to implement a full recovery. The DR team was broken into groups that focused on different aspects of the business, such as IT, retail, compliance, operations, and loans.

According to Elizabeth Magennis, executive vice president and chief lending officer of ConnectOne Bank, community banks were able to rise to the challenge, responding better than their larger peers. "We're smaller organizations that are simply more nimble than larger ones," she says. "We probably have a better handle on what happens in any part of the bank."

Summary

John McLennan, the CIO of Atalanta, summed up the situation nicely when he said “Think bigger. Mother Nature is pretty powerful.”

There are many lessons to be learned from Sandy. One is the importance of a well-thought-out and tested disaster-recovery plan.

Another is that in a disaster, communication with employees, contractors, suppliers, and customers can be difficult or even nonexistent. Even though each of the companies in these case studies succeeded nicely in recovering their IT systems, many had difficulty with communications. The experience following the 9/11 attacks showed how critical communications are to a DR plan. Despite extensive planning following the 9/11 disaster, many companies still struggled with communications.

In her article, Melissa Delaney suggests several points that should be taken into account in a DR plan. Her “Don’t Forget List” includes:

Create a tiered approach

A company’s operations contain a wide range of services, some much more critical than others. These should be organized into tiers for Service Level Agreement (SLA) purposes. For instance, Structure Tone included Enterprise Resource Planning (ERP), file storage, email, and marketing data in its first tier with a thirty minute SLA. Included in its second tier with a 24-hour SLA were Customer Resource Management (CRM), administration, and financial planning.

Look at how clients will be affected by a disaster

There may be opportunities to help customers out in a disaster and win customer loyalty. For instance, ConnectOne gave clients extra time to make deposits if their accounts were overdrawn. They also let customers charge their cell phones, tablets, and notebook computers and access Wi-Fi at their branches.

Build in the time needed to get operations fully back to normal

When Structure Tone was able to get back into its New York City office a week after Sandy hit, it used EMC’s RecoverPoint and VMware’s Site Recovery Manager to fail back IT services from its Dallas data center to its New York City data center. It recovered its server farm within three hours, which began running using the Dallas SAN. It resynchronized all data between the SANs within 24 hours, and IT operations were back to normal.

Carve out time to test your plan

An untested DR plan is nothing more than notes on paper. It must be periodically updated and tested. Likely, every time it is tested, something that has fallen through the cracks will be discovered.