# Who Survives Disasters and Why, Part 2: Organizations

Keith Parris, HP

The cost of downtime goes beyond dollars lost

- 93 percent of companies that suffer a significant data loss are out of business within five years

  - U.S. Bureau. of Labor

- 43 percent of U.S. businesses never reopen after a disaster, and 29 percent (more) close within two years.

  - University of Wisconsin

- "Two out of five companies that experience a catastrophe or an extended system outage never resume operations, and of those that do, one-third go out of business within two years"

  - GartnerGroup
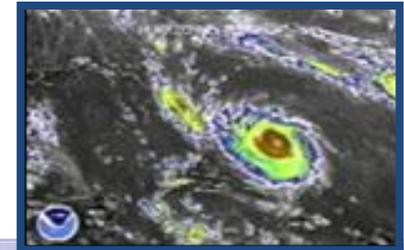
Amazingly enough…

- "More than 60% of businesses in the U.S. do not have a basic plan to mediate the effects of a disaster should they occur. "
  - Gartner Group

- "90% of European enterprises with global revenues in excess of €100M have no formal business continuity plans in place. "
  - International Data Corporation

So What Companies Have Survived Disasters?

- And how did they do it?

Alfred P. Murrah Building, Oklahoma City

Alfred P. Murrah Building, Oklahoma City

- Truck-bomb attack April 19, 1995
- Most destructive act of terrorism on American soil until the September 11, 2001 attacks
- 168 deaths and more than 680 injured
- Estimated damage of $652 million

Federal Employees Credit Union

- Located on 3rd floor of Alfred P. Murrah Building
- Lost in the attack:
  - All IT systems, all records and all files
  - Hundreds of thousands of dollars of checks, travelers checks, and cash
  - Worst of all: Staff — 18 of the 33 employees of the credit union died, and 5 were hospitalized, and many of the remaining survivors were too traumatized to return to work.
- With only 3 employees, plus many volunteers, the credit union opened for business on Friday, April 21st, just over 48 hours after the disaster

FECU Recovery

- CEO Florence Rogers, VP/Comptroller Raymond Stroud, and data processing specialist Brad Grant all survived.

- Grant and Stroud were both out of town at the time.

- Florence Rogers was in the building but miraculously survived.

- Despite the horrific loss of employees, FECU did have the three key people it needed for recovery there to help restore it.

FECU Recovery

- Oklahoma's other credit unions volunteered help, providing facilities and additional staff.

- FECU had a DR strategy in place, which saved their data.

- Backups were stored off-site.

- A hot site had been arranged with a company in Pennsylvania, which handled the bulk of the computer recovery work, off-loading the FECU staff

FECU Recovery

Lessons learned:

- Off-site backups were essential. Without them, FECU would have been lost.

- Outside assistance was crucial, offloading traumatized employees

- Public relations and media relations were crucial, assuring members they would have prompt access to their funds, and reassuring local businesses that checks drawn on FECU would be honored

FECU Recovery

Lessons learned:

- Communications was essential. Cellphones had to be quickly acquired to take the place of FECU's phones which had all been destroyed. 800 numbers had to be re-routed.

- Backup tapes were not copied before being shipped to the recovery site. None were lost, but in retrospect the risk was great.

- The business was tempted to restore IT systems exactly as they had been, but finally decided to use the need to purchase replacements as a chance to upgrade its technology at the same time.

Cantor Fitzgerald, 9/11

Cantor Fitzgerald on 9/11

- Cantor Fitzgerald occupied floors 101 to 105 of One World Trade Center

- This was 2 floors above the impact zone of the first hijacked airliner to hit the Towers

- These offices housed a datacenter as well as facilities for brokers and traders

Cantor Fitzgerald on 9/11

First alert:

- Immediately after the first 9/11 attack, at approximately 8:46:46 AM, six seconds after the first plane hit the tower, a Goldman Sachs server sent out an alert page stating that a Goldman Sachs trading system server had gone offline because it was unable to interface with a Cantor Fitzgerald server

Cantor Fitzgerald on 9/11

- The impact destroyed all 3 exit stairways at the crash zone

- At the time of the 1993 WTC bombing incident, some people had been airlifted from the roof, but after stunts in later years, the doors to the roof were locked

- Cantor Fitzgerald lost all of the employees in that building at the time of the attacks, 658 employees (about two-thirds of its workforce)

- These included brokers, traders, technology specialists, and secretaries

Cantor Fitzgerald on 9/11

- CEO and Chairman Howard Lutnick, whose brother was among those killed, vowed to keep the company alive

- A recently-developed electronic trading system had to be immediately pressed into active service to replace the human brokers and traders who were lost

- The company was able to bring its trading markets back online within a week

- Even their competitors assisted them

Cantor Fitzgerald on 9/11

- On September 19, Cantor Fitzgerald made a pledge to distribute 25 percent of the firm's profits for the next five years, and committed to paying for ten years of health care, for the benefit of the families of its 658 former employees (profits which would otherwise have been distributed to the Cantor Fitzgerald partners).

- In 2006 the company completed its promise, having paid a total of more than $180 million

Cantor Fitzgerald on 9/11

- Before the attacks, Cantor handled about one-quarter of the daily transactions in the multi-trillion dollar Treasury securities market.

- Cantor has since rebuilt its infrastructure and now has its headquarters in midtown Manhattan. It now has more employees than before the attacks.

- The company's effort to regain its footing is the subject of Tom Barbash's 2003 book *On Top of the World: Cantor Fitzgerald, Howard Lutnick, and 9/11: A Story of Loss and Renewal*

Cantor Fitzgerald on 9/11

- "Lutnick, who lived because he was taking his son to his first day of kindergarten, calls the recovery 'miraculous' and credits those whose lives were spared and stayed with Cantor. 'The normal course of events is you have a crisis, and you go for weeks sorting it out. But in the fall of 2001, we'd have a crisis at nine and another at eleven and then another at one. We were in crisis mode for basically a year.'

  Survivors are quick to share stories of 90-hour weeks, of adrenaline-fueled problem-solving, and of an unshakable belief in one another. Work was not just a distraction; most say it healed them."
  - Business Week, "A Tale of Renewal," Sept. 11, 2006

- eSpeed, the IT arm of Cantor Fitzgerald, had OpenVMS systems in place

- A disaster-tolerant OpenVMS cluster was in place, with data shadowed to a datacenter across the Hudson River, in Rochelle Park, NJ

- A triangular network of DS-3 links connected the WTC, Rochelle Park, and London, England. When the WTC corner went down, the other two kept going.

Commerzbank, 9/11

Commerzbank background

- Before 1995, they used an outside vendor for their hot site
- After 1995, they used their own facility as their hot site

- This is a trend we have seen at many businesses since

- (A survey from the Federal Reserve showed that banks that had their own DT sites handled September 11 much better than those that didn't.)

Commerzbank background

- Servers were 8 nodes of Alphaserver GS-160 partitions using Galaxy technology to migrate CPUs between soft partitions, with 4 GS-160 nodes per site

- Storage was on Fibre Channel SAN; just under 1 TB

- Two Alphaserver 4100s at the Business Continuity site were members of the cluster at the Production Site and MSCP-served the remote disks to the main site.

- Storage was shadowed between sites with HBVS

- Inter-site link was DS-3

Commerzbank Business Continuity Site

Under normal circumstances, BC facility was used for:

- An alternate site for business users holding meetings or undergoing training

- Disaster Recovery simulation testing

- Conducting mandatory testing for New York Clearing House and Federal Reserve

- Testing for Systems, Applications, Network

- Application Development

Commerzbank's Disaster Experience

This was not Commerzbank's first disaster.

- First Interstate Building fire in Los Angeles, 1988
    - Commerzbank LA Branch was located on 36th floor. Fire started several floors below but was contained within 4 floors.

- Chicago Flood, 1992
    - Commerzbank Chicago was on 46th Floor of Mid Continental Plaza. Retaining wall of Chicago River broke; building had no electricity and was inaccessible for a day.

Commerzbank's Disaster Experience

- World Trade Center Bombing: 1993
    - Commerzbank had presence on 40th Floor of WTC Tower 1. Terrorists blew up a truck in the WTC parking garage.

- NYC Metro Blizzard: 1996
    - Record 20+ inch snowfall made most roads impassable. Only emergency vehicles allowed on road for cleanup. Arranged for staff to work from home on critical processes.

Commerzbank on 9/11

- Commerzbank was located on floors 31 to 34 at the World Financial Center, west of the World Trade Center, across the West Side Highway, only 100 yards away.

- When the second jet hit, the bank personnel evacuated the area immediately.

Commerzbank on 9/11

- The primary site was well-protected, with its own generator, fuel storage tank, cooling tower, UPS, batteries, and fire suppression system.

- As a result, when the World Trade Center area lost power, the generator and cooling tower kicked in, so none of the systems were down initially.

- However, dust and debris from the collapse of the World Trade Center towers caused the A/C units to fail during the day.

Commerzbank on 9/11

- Because of the intense heat in the data center, all systems crashed except for one hard partition of the AlphaServer GS160.

- One hard partition was lost in this system due to the heat, which was reported as 104 degrees in the QBBs (Quad Building Blocks).

- The other partition kept on running with remote drives only, since the local drives became unavailable as well.

- OpenVMS wide-area clustering and volume shadowing technology kept the primary system running off the drives at the remote site 30 miles away.

Commerzbank on 9/11

- While most computers were having difficulties in the data center, the OpenVMS Galaxy configuration and the AlphaServer GS160 were so robust that even though one of the hard partitions, housed in the upper two QBBs, crashed due to heat, the other hard partition, housed in the lower two QBBs, kept on running multiple instances of OpenVMS.

- The money transfer system never went down and they actually remained operational that day.

Commerzbank on 9/11

- Main challenge that day was to get people from downtown to Rye; subways, trains and bridges were all closed.

- In a pinch, the bank can operate with only 10 people for about 2 days. They were able to get 16 people out to Rye that day.

- More came on later days as transportation became available.

Commerzbank after 9/11

- For the next eight months, approximately two-thirds of the bank's staff worked in Rye, and the other third worked at a subsidiary in mid-town Manhattan until the primary site was ready for re-occupancy in mid-May 2002.

Commerzbank after 9/11

Things which really helped a lot:

- Decision had been made to just shadow everything, rather than excluding some storage from the protection of shadowing; made recovery much simpler

- Regular testing had been done

- Follow-the-sun personnel staffing model meant help was available from around the world

Real-Life Example:
Credit Lyonnais, Paris

Real-Life Examples

- Credit Lyonnais fire in Paris, May 1996

- Volume Shadowing of data to a remote site using an OpenVMS Cluster saved the data

- The fire occurred over a weekend, and the DR site plus quick procurement of replacement hardware allowed the bank to reopen on Monday

Real-Life Examples:
Online Stock Brokerage

- 2 a.m. on Dec. 29, 1999, an active stock market trading day

- UPS Audio Alert alarmed security guard on his first day on the job, who pressed emergency power-off switch, taking down the entire datacenter

- Disaster-tolerant cluster continued to run at opposite site; no disruption
  - Ran through that trading day on one site alone
  - Performed shadow full-copy to restore redundancy in the evening, after trading hours
  - Procured replacement for the failed security guard by the next day

Questions?

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