

Government vertical

Creative data disaster recovery

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An SC Magazine publication

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Backup plans

The IT infrastructure of government, military and enterprise bodies needs to keep running after a disaster, reports Stephen Lawton.

When discussions turn to disaster recovery today, often the first thought is about oil catastrophe in the Gulf of Mexico. The Gulf States' coastlines and barrier islands are being devastated as state ecologists work to clean and restore natural treasures.

But what happens when the lost treasures are classified government data, military or personnel files, or just the day-to-day operational documents from a municipality or county, and the disasters are caused by hurricanes, floods, earthquakes or human error?

The most obvious parallel that can be drawn between the gulf oil spill and data disasters is how resources are expended to improve production versus investments in evolving disaster recovery. Rachel Dines, an infrastructure and operations analyst at Forrester Research, notes that a lot of companies and government agencies invest in building more efficient data centers, but many of the smaller federal agencies, along with state and local governments, might not necessarily spend enough to protect their data.

"[The underfunded agencies] know they have problems, but they can't make a business case for disaster recovery," she says. "It's an expensive insurance policy."

In the financial sector, it is relatively easy to justify comprehensive disaster recovery facilities, since there are a myriad of formulas that can determine how much a given number of minutes of downtime will cost an investment bank in lost income from stock transactions, but it is far more difficult to make the case for a government agency that is not revenue-centric. How do you determine the value of lost work for a small office in the Agriculture Department or a county government office if its servers are down for an hour, a day, or weeks on end?

"Disaster recovery is one of those things that people don't appreciate until they need it," she says.

Several states have been investing heavily in new data centers and disaster recovery facilities recently. Earlier this year, Massachusetts broke ground on

a \$110 million, 115,000-square-foot data center in Springfield, which will consolidate nearly 100 IT operations. That facility is due to open in 2012.

California, hard hit by the recession, is in the process of moving into a new data center in Vacaville, roughly 35 miles southwest of the capitol in Sacramento. Several leased facilities are being decommissioned, as is some of the old hardware infrastructure. The Vacaville data center will be managed entirely as a remote facility, with no on-site systems administrators, according to PowerPoint presentations from the California Department of Technical Services.

Indiana's Office of Technology last year opened a new data center, reducing its number of systems administrators by more than half from more than 100 to just 48.

In North Carolina, officials in Stanly County decided that they needed to enhance their local disaster recovery capabilities. Chad Coble, IT director for the county, says he built a backup data center in a secure computer facility provided by the Stanly Regional Medical Center some two miles from the primary data center in the county seat of Albemarle. The new data center provides full backup for all of the county's Windows-based systems, although it does not provide any backup for the county's IBM AS 400 systems or its Alpha servers from Digital Equipment Corp. running OpenVMS.

While the North Carolina IT services office already provides county governments with some services, such as hosted Microsoft Exchange Servers, BlackBerry servers, and anti-virus software, the county is still responsible for all of its other IT needs, Coble says. Currently the county uses two software as a service (SaaS) applications – EMS Charts to support its emergency medical services operations, and Google Postini, an email security and archiving application. Coble says he is looking at other SaaS applications that would aid in data disaster recovery, but he is concerned about privacy and security.

"The real value of the cloud is business continuity," he says, noting that once additional applications are moved into the cloud, county employees will be better able to adapt to potential disasters, such as working from home or other remote locations. "[Disaster recovery] is a great challenge," he continues. "We have very limited resources in human and

Government

\$287k

average cost of implementing disaster recovery plans for each downtime incident in the United States

– Symantec Global IT Disaster Recovery survey

financial capital. Not only are we trying to maintain [our disaster recovery capabilities], we're trying to inch forward and progress."

In Florida's Brevard County, home of NASA's Kennedy Space Center at Cape Canaveral, Michael Bowen, information systems director for the Brevard County Clerk of the Court, also built a backup data center. The primary data center in the county seat of Titusville is capable of surviving a Category 3 hurricane; the secondary site is 26 miles south in Viera and is built to survive a Category 5 hurricane, the most powerful of the storms.

Bowen says that during tests of the backup data center, users were unable to notice when one facility was disconnected and the other brought online. Data is replicated in both directions, so both centers have current data at all times, he adds. Future plans call for even faster connections between the two facilities (currently they are connected via fibre channel). Additionally, data is backed up offsite, providing a third disaster recovery option.

“Disaster recovery is one of those things that people don't appreciate until they need it.”
— Rachel Dines, infrastructure and operations analyst, Forrester Research

Many of the county's legacy system are being moved to cloud-based backup facilities in order to reduce hardware and storage costs and to make the data more accessible should a natural disaster strike. Brevard County, on Florida's east coast, is often hit by hurricanes.

Bowen says he is less concerned with privacy issues of data stored in the cloud because the vast majority of the data is court records, which are already in the public domain by law. Rather, he is more concerned with deletion of records or modification of files.

Although counties in Florida do not have formal programs to share infrastructure resources, Bowen says there are a lot of informal discussions among the 67 court clerks statewide. One of the challenges faced

by IT managers across the state, he says, is the lack of interoperability among much of the hardware.

The City Hall in Hayward, Calif., sits almost astride the Hayward Fault, which runs along the densely populated eastern corridor of San Francisco Bay from its northernmost end in San Pablo Bay southeast through the cities of Richmond, Berkeley, Oakland, San Leandro, Hayward, Fremont, and eventually ending in northeast San Jose.

From his city hall office two blocks from the fault, Clancy Priest, Hayward's technical services director, is building out the city's disaster recovery operations. In order to ensure business continuity, Priest says he is designing the IT infrastructure to survive a major quake. To that end, he is installing a point-to-point wireless system and revamping the public safety radio system to ensure that the city's operations can continue. Since the public safety radio system is the backbone of the first-responders' operation, Priest is leveraging that system as new microwave towers are built.

By simply adding a \$600 box to each microwave antenna, Priest says he can add data transmissions to the signal while improving the radio system. "RoIP (radio over IP) will change the way radio is done, just as VoIP (voice over IP) has changed telephones," he says.

As nearly 80 percent of the city's budget is designated for public safety, taking advantage of that system is the most cost-efficient way of building out his disaster recovery system, he says. In addition to the microwave towers, Hayward has installed some 30 point-to-point radio towers on city-owned property. Each radio has its own battery and generator backup so even if the power grid fails, all of the towers will continue to operate, he says.

For backup internet service, the city purchased a self-aligning satellite dish with built-in GPS capability for \$7,000. Should the city buildings move during an earthquake – the city of Calexico moved nearly 2.5 feet recently after a moderate earthquake near the California/Mexico border – the satellite can realign itself and provide enough service for email and web browsing, Priest says.

Additionally, Priest is working with his counterpart in neighboring Union City, discussing ways the two cities can work together to provide offsite backup

\$149b

revenue the global cloud service market is expected to grow by 2014

— Gartner

for each other. While no decision has been made yet, Priest says it is one way to leverage secure offsite facilities that are further from the fault than two blocks.

In order to pay for these improvements, he convinced the Hayward City Council to take all the income that the city gets from leased cell towers on city property and put that money into a fund to pay for future IT improvements.

Although Hayward currently does not use web-based services, Priest says the city can tap into the 100 Mbps fiber optic connection of the Bay Area Rapid Transit (BART) district that runs through the city. He also is reviewing cloud applications for city use.

Into the wild blue yonder

Federal government organizations are not immune to the budget crunch either. The United States Air Force (USAF), for example, is working closely with other U.S. Department of Defense (DoD) organizations in a project called Warfighter, a DoD-wide information infrastructure that includes joint data center operations, such as the Defense Enterprise Computing Centers, says an Air Force spokesman, a colonel and a commander in USAF IT operations, who asked not to be identified. The USAF architecture supports the employment of DoD and USAF assets and resources for storage and associated mission applications.

“As cyberspace capabilities are an essential element to our Air Force operational missions, we recognize the importance of ensuring information availability to provide complete mission assurance,” said the spokesman, who has considerable knowledge of the service’s IT operations. “The 24th Air Force, under Air Force Space Command, provides centralized operational control of our network and its assets, including enterprise storage management. We continue to see combat information requirements growing, so increasing storage is a constant challenge. To meet this challenge, we are partnering with government, industry and academia to employ best practices for more efficient and secure methods to protect our mission critical data.”

Like private-sector enterprises, the USAF is looking to the cloud to provide cost savings and business continuity. “The Air Force recognizes the value and

Planning: Disaster preparedness

Five years have passed since Hurricane Katrina and seven other storms struck the Gulf Coast and Southeast in one of the most devastating hurricane seasons on record, but some areas of the Gulf Coast and adjoining states are still repairing the damage. Now, the National Oceanic and Atmospheric Administration’s (NOAA) Climate Prediction Center is warning of a 2010 hurricane season eerily similar to 2005. Citing all-time high sea surface temperatures in key areas of the Atlantic Ocean, as well as the El Nino cycle, NOAA predicts that the 2010 season will most likely produce 14 to 23 named storms, eight to 14 hurricanes, and three to seven major hurricanes (Category 3 or stronger).

Faced with these alarming predictions, many government officials are asking what they can do to keep their cities and states functioning during a major business disruption, such as a hurricane. A well-managed disaster preparedness plan can help prevent costly downtime and help maintain important citizen services. Here are seven recommendations that government officials can adopt to best prepare their IT systems for a hurricane:

Assess your current plan. Conduct a business impact assessment that prioritizes critical processes for the entire organization. For example, processes that need to continue immediately to prevent serious mission impact, such as essential citizen services, could receive an “A” rating. Processes that can be continued within 24 hours could receive a “B” rating, and so on.

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53%

cited a lack of storage management tools as the top challenge in “protecting mission-critical data and applications in virtual environment”

– Symantec Global IT Disaster Recovery survey

79%

of those surveyed in 26 countries said data backup and recovery was “somewhat/absolutely important.”

– 2010 State of the Data Center report, Symantec Corp.

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Take steps to protect data. Agencies should back up data to ensure that data integrity and apps are not jeopardized. Agencies should also store multiple copies of data offsite, at a remote location, a long distance from the primary data center.

Review power options. Agencies should add uninterrupted power supplies to keep the most essential applications running. In addition, cooling systems should be supported by backup generators. Temperature spikes can cause unplanned interruptions when operations are most critical.

Identify and appoint a cross-functional preparedness team. Create a team to design and test the disaster recovery plan, as well as a recovery team to participate in recovery activities after any disaster.

Document, test and update. The disaster preparedness plan should include logistical details and who has spending authority for emergency needs. The plan should be tested in an environment that simulates an actual emergency.

Consider telecommunications alternatives. Following Hurricane Katrina, many organizations lost access to reliable telecommunications equipment for days. Alternative communications vehicles, including wireless phones and satellite phones, should be considered.

Form tight relationships with vendors. Hardware, software, network and service vendors can help expedite recovery, can ensure priority replacement of telecommunications equipment, computers, servers, and hardware in the event of a disaster.

Source: CDW-G

promise in cloud computing technologies, including IaaS [infrastructure as a service]. We are always seeking to refine our operational concepts and procedures to align with new technologies,” he added.

The service has developed use cases to help prove the concepts associated with cloud computing. It is looking to commercial, DoD and USAF data centers to provide IaaS to the Air Force’s functional applications. Beyond IaaS, the service has an initiative underway to offer platform and software as a service (PaaS, SaaS) as part of a standard catalog of enterprise services.

“The Air Force recognizes the critical importance of information to our joint warfighting operations,” the spokesman said. “In that context, we continuously seek to identify and implement industry best commercial practices and rigorously employ Information Technology Infrastructure Library processes across many areas, including disaster recovery/continuity of operations planning (DR/COOP).

“Today, we are taking steps to provide this capability as an enterprise service to Air Force application owners,” he continues. “The USAF will look to commercial, organic and DoD-level solutions, including our Defense Information Systems Agency (DISA) partners, to deploy disaster recovery, continuity of operations, redundancy and replication capabilities.”

In each case cited, the county, state and federal IT staffs have begun deploying virtual servers to cut additional hardware costs. However, all of the IT managers expressed concern about storing sensitive data on virtual servers in the cloud due to security and privacy concerns. In many cases, they agreed, their data would be more secure by storing it on single-purpose servers at hosting sites – an option that could diminish the value of “cloud storage.” ■

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