

Texas Universities Recover from Hurricane Ike
University of Texas Medical Branch Galveston and Texas A&M University
Galveston

Business Continuity and Disaster Recovery

State of Texas

Executive Summary

On September 12, 2008, Hurricane Ike, one of the most devastating storms to ever strike the state of Texas, hit Galveston Island and for two plus days pummeled the region. The subsequent flood waters prevented access to many parts of the city while leaving even undamaged buildings uninhabitable. Two Texas institutes of higher education, the University of Texas Medical Branch (UTMB) and its associated John Sealy Hospital and Texas A&M University Galveston (TAMUG) were both rendered inoperable following the storm. On the heels of Hurricanes Katrina and Rita, staff at both institutions reviewed business continuity and disaster recovery plans, altered them to reflect lessons learned and had the unfortunate opportunity to activate these plans when Hurricane Ike hit. Each responded using very different business continuity and disaster recovery models with each achieving successful outcomes that have a positive impact on the community's ability to recover from the devastation.

UTMB, recognizing the responsibility it has to provide not only the teaching facilities but also critical care for local citizens, chose to remain on the Island and acted accordingly. A well practiced plan with pre-positioned resources having appropriately configured telecommunications and networking infrastructure, allowed UTMB to restore critical IT services within hours of the storm subsiding. Communication with staff was restored through mobile phones, land lines and university e-mail that were functional within one day. Within several days clinics were re-opened to again serve the needs of the wounded Galveston community. In the following weeks the IT team worked tirelessly to restore all IT services in a predetermined priority sequence for the facility. Today UTMB continues to recover as does the entire Island. With an eye toward the next hurricane season, the lessons learned from Ike are already integrated into the IT business continuity and disaster recovery plans.

TAMUG focused on the needs of students and faculty for continuity of operations. After surveying the extent of damage to the Galveston campus and the lack of city infrastructure following Hurricane Ike, university officials determined the best course of action was to relocate campus services to the main Texas A&M University campus in College Station through the end of the fall, 2008 semester. Within one week, arrangements were made to move all necessary equipment for classrooms, secure housing for faculty, staff and students and on September 24th, ten days after Hurricane Ike moved off shore, 1,600 students and 350 faculty and staff had moved to the main campus and were back in class. Overcoming challenges like simple communications with 2,000 people who had evacuated and transferring office computer equipment from the Galveston campus when the roadways were impassable was simplified by a well tested Disaster Recovery Plan. Today, TAMUG is back to normal operations, students did not lose a semester of work, faculty and staff were able to retain salaries, and an important institution of higher education continues to be viable in Galveston.

Many organizations have written and tested Business Continuity and Disaster Recovery Plans, but in Texas two universities were put to the test and successfully implemented their plans.

Description of the Business Problem and Solutions

Galveston Texas has a long history of dealing with hurricanes and floods. Throughout its existence, the city has suffered tremendous loss of human life and property damage. Emergency preparedness is a requirement for survival of both businesses and people within the region, including coastal universities like UTMB and TAMUG.

Hurricane Ike came ashore in Texas at 2:10 a.m. CDT, Sept. 13, and brought a wall of water over 13 feet high, sweeping through Galveston Island. Ike made landfall with sustained winds near 110 mph, just 1 mph short of a Category 3 hurricane.

By 10 p.m. the evening before, telephone outages were reported throughout the city followed by loss of power which caused radio repeaters to fail. At midnight water was rising on all first floors of UTMB buildings and those with basements were flooded. By the next day there was no cellular service, a generator had failed resulting in the loss of emergency phones and the depth of water on the first floor of the John Sealy Hospital was 2 ½ feet. At 9:30 a.m. there was no power, few operational generators and no water pressure but the storm surge began to subside. By 3 p.m. clean-up activities were initiated. Final assessments set the damage to the campus at \$710 million.

If good news was possible, emergency power and air conditioning were working in the primary data center and an IT command center was up and running in the Arlington regional data center as part of a University of Texas System disaster response. In planning for disaster recovery, UTMB located the primary data center on an upper floor of the administration building and tested generators weekly. Twenty critical UTMB staff members relocated to Arlington prior to the storm and had access to the technical environment that would support the restoration of services without the limited physical access and dangers the campus itself was experiencing. By September 14, mobile cell phone service, land lines and Internet services including university email was restored, giving staff access to status and expectations over the short term. Tier 1 computer systems began being restored on September 15 and all Tier 1 and 2 systems were operational within 10 days.

The information technology team was prepared with a business continuity and disaster recovery plan that:

- prioritized technology recovery,
- built resilient space for local resources,
- contracted for and used remote data center space,
- created and tested plans for remote staff deployment,
- documented plans and kept them current, and
- ran weekly and monthly tests of the backup power supplies.

Hurricane Ike was just as devastating to TAMUG when it hit. With staff and students evacuated to locations throughout Texas and the Gulf coast, most evacuating without course materials and notes, recovery came with significant challenges; however, a

strong and well tested business continuity and disaster recovery plan that called for the relocation of students, faculty and staff to the main TAMU campus 150 miles inland resulted in 90 percent of the affected students completing the semester.

Moving an entire campus is not a simple matter under the best of circumstances, and Hurricane Ike hit at a time when both TAMUG and the main campus were experiencing record enrollment numbers and housing shortages. Additionally the TAMUG staff had to deal with communicating with a far-flung constituency, the transfer of classroom and office computer equipment, lack of access to the Galveston area campus due to impassable roads, and the lack of power and running water leaving first responders entering dark buildings to retrieve office equipment and files for relocation.

Unique factors in the Texas A&M and the Texas A&M at Galveston relationship made this relocation feasible. The branch campus relationship, pre-storm integration of several key systems, redundant systems already located in College Station and tremendous support from the main campus staff enabled the relocation. In addition, TAMU staff configured a server to support the files from the TAMUG file server to make faculty and staff files available in College Station for relocated employees.

Communications are a critical part of disaster recovery. While local land line phones in Galveston were down for months, cellular services returned quickly. With disaster recovery in mind, TAMUG had collected cell phone numbers of students and used a commercial mass notification system to keep the lines of communication open. Already using the main campus email services, students, faculty and staff were able to keep abreast with developments and each other without interruption.

Significance

Two Texas universities faced the challenges of business continuity and disaster recovery following the direct hit to Galveston Island by Hurricane Ike and applied well thought out and well tested plans to continue operations. While choosing very different courses of action, both continued to serve their students, faculty and staff immediately following the storm and both continue to contribute to the economic stability of the Island.

At UTMB the IT recovery enabled the timely delivery of necessary and critical clinical services to the City of Galveston and surrounding areas including:

- regional maternal/child clinics opened within 2 days of landfall,
- mainland clinics re-opened on September 18,
- Sealy Hospital opened for limited patient use on October 13
- campus clinics began opening on November 24, and
- hospital beds opened for adult patients including operating rooms on January 5, 2009.

In addition, much of the faculty and staff of UTMB continued their normal jobs or aided in the remediation efforts and were able to collect much needed pay checks, aiding in

their personal recovery. Medical students were able to continue their studies thanks to partnerships with other UT System medical schools and available and reliable technology enabled the necessary access for those students during the time the school was closed due to the damage.

The relocation of TAMUG to the College Station campus is unique in the annals of university disaster recovery. Unlike other universities that either changed to a different delivery mode for their classes or dispersed the students to other institutions where students were enrolled as members of that campus, TAMU System used the strength of its main campus to keep the students, faculty and staff together. This eliminated the financial strain on the university from loss of the student base and students did not lose a semester of work. Also significant is the cooperation and yeoman support given to the students, faculty and staff of TAMUG by their sister schools.

It takes more than a plan of action to recover from the fierce beating Galveston took from Hurricane Ike – it takes a group of dedicated people who are willing to risk their personal safety and put the needs of the community they serve before their own recovery efforts. Texas was fortunate to have these people working in information technology throughout two university systems.

Experience is a good teacher, and as the business continuity and disaster recovery plans went from strategy to tactical implementation, lessons were learned. These have been applied at each location, shared throughout the state and the nation to improve response when the next disaster strikes.

Benefit of the Project

IT resources are a critical component in response to a natural disaster as communications channels are compromised, bricks and mortar crumble and basic infrastructure like power and water collapse. The ability to create redundant IT systems, transfer information with the click of a button and retrieve critical information via remote access starts the process of recovery quickly and gives a sliver of hope for normalcy during the first days after the storm. In the cases of two Texas universities, the benefits were numerous.

For UTMB IT resources enabled the institution to meet its mission of education, patient care, research and public service. With the strong plan, heroic actions of staff and assistance by other system universities, the UTMB community was kept informed about the status of the storm and their workplace. Students, faculty and staff were able to continue their work and receive much needed pay checks because IT resources were quickly reestablished. Perhaps most importantly, the community had an avenue for clinical care that would not have been possible without the planning, testing and implementation of the business continuity and disaster recovery plan.

At TAMUG a completely unique solution was implemented that allowed the school to continue with its dedication to students, faculty and staff, retain the income from the

semester and continue to provide an economic base for Galveston. It was a gutsy move to make, that proved successful in keeping a campus viable following the devastation of Hurricane Ike.

Many business continuity and disaster recovery plans sit on shelves only to be dusted off when someone else suffers a major catastrophe. For two Texas universities the constant review, testing and application of lessons learned proved crucial to rapid recovery from the terrible storm called Ike.