Network Interns
Volunteer Support After Katrina
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ABSTRACT

The effectiveness of college internships often vary dramatically. Sometimes an internship can provide excellent work experiences but on other occasions work may be less than satisfactory. When an internship comes along that provides an excellent opportunity for learning, leadership, and contributions to society, it is quite rewarding to all involved. Just such an internship was provided soon after Hurricane Katrina struck the Mississippi gulf coast on August 29, 2005.

INTRODUCTION

A volunteer organization known as Radio Response was organized, in the wake of the storm by Mac Dearman, a Wireless Internet Service Provider (WISP) in Rayville, Louisiana, to provide desperately needed communications support. Radio Response organized and delivered much needed communication services at the center of the storm’s landfall, Waveland and Bay St. Louis, Mississippi. The call for help brought some of the most skilled communications specialists in the country to help rapidly build a WISP network that was strung from water towers and trees. Likewise, the call for equipment was answered by many companies around the country.

Two very special University of Southern Mississippi students, Matt Justice and Peyton Gwinn, volunteered to assist with the implementation and management of the WISP and fulfill a University of Southern Mississippi’s (USM) School of Computing internship requirement. By mid October, 2005, the volunteers from around the country had left and Matt Justice, a USM senior, was left in charge of managing and maintaining a vital system for the citizens of the effected area. After Matt Justice’s graduation in December 2005, Peyton Gwinn stepped up to continue Matt’s outstanding work. This opportunity provided these interns with real-world experience and responsibility for managing a vital wireless network.

AN UNPRECEDENTED GULF STORM

As Hurricane Katrina stormed onto the Mississippi Gulf Coast on August 29, 2005, it soon became the story of the year. The disaster left utter destruction in its wake. Severe damage existed across all of south Mississippi and portions of Alabama and Louisiana. The catastrophe in south Mississippi was unprecedented. Katrina has been estimated to be responsible for over $81 billion in damages, making it the costliest natural disaster in U. S. history. When many people think of Katrina, they think of the decimation New Orleans. But New Orleans was not destroyed by a direct hit from Hurricane Katrina, rather by the effects of high water in Lake Pontchartrain breaking the levees that protected the historic, below sea level, city.

Katrina made its way on shore in the morning at the twin coastal cities of Waveland and Bay St. Louis, Mississippi. It lashed the shores with winds and waves for more than 6 hours. Concrete bridges spanning bays and inlets were destroyed, beach front homes vanished, highways and streets washed away, and forests lay flat as Katrina made her way inland. More that 6 miles inland, water marks, much like a dirty ring in a bath tub, marked the overpass of Interstate-10 at over 20 feet. In the Gulfport harbor, containers from moored ships road the crest of waves and slammed into everything in their path. The off-shore casinos of Biloxi which once resided just a few feet over the gulf were deposited into the middle of nearby thoroughfares. Everywhere one looked the world appeared distorted and twisted as though viewed through a piece of bad glass.
After the storm there was much confusion everywhere. Anyone who watched the media circus for days afterwards knows of the confusion that surrounded the delivery of goods and services to the area. Governors, congressional delegations, FEMA, and The President were assailed for their failure to respond to the needs of the desperate masses. FEMA was, and still is, singled out for its poor performance. The citizens of south Mississippi were without food and water. Public services were nearly non-existing immediately after the storm. Homes had large trees blown down in their yards, across their driveway and streets, and in many cases large pine trees looked like knives slicing across the roofs. There was little or no gasoline and electric. Chain saws and electric generators were in high demand. Citizen had to cut open their driveway, streets, and sometime highways to allow the movement of people, goods, and services. To make matters worst, the oppressive heat and humidity made working outside very difficult. There was little water to drink, no water to take a shower or wash clothes, and no electricity for fans or air conditioners. Creativity and ingenuity abound. Did you know that a swimming pool can be a great source for water for flushing your commode?

As the storm approached, most citizens fled the area. People, 120 miles or more from the gulf coast, were packing up and joining the crowded highways. In Rayville, Louisiana, about 300 miles from the Katrina’s landfall, a local resident noticed the influx of refugees from Hurricane Katrina into his hometown and decided to become involved. Mac Dearman, a local Wireless Internet Service Provider (WISP) in Rayville, traveled to Waveland/Bay St. Louis, Mississippi and recognized the critical need for communication services in the area. There was no phone service, cell or landline, much less computer access. The citizens needed to contact their friends and loved ones to tell them of their condition. In addition, no one could call FEMA for assistance with their losses. FEMA had requested that citizens should contact them online to fill out applications for support. I guess that FEMA failed to realize that the area had no communications services.

Soon volunteers arrived in the area and began setting up camps in any ballpark, campground or other open piece of land. The volunteers assisted with debris clean up, repairs, social services and soup kitchens. Some of these volunteers were individuals that just drove up and ask how they could help, however, most volunteers were members of organizations that came with specific tasks to perform. These volunteers also needed contact with their families and host organizations. The need for phone and internet communications was everywhere.

Radioresponse.Com

A plan began to formulate in the mind of Mac Dearman. The name of the support organization that he created was called RadioResponse.org [1]. This website and a website called TheChurchOfThe.net were utilized to send out the message that resources were needed to help the people of Waveland/Bay St. Louis. He spoke with the Wireless Internet Service Providers Association (WISPA) [5] and other professionals about putting a WISP in place in Waveland/Bay St. Louis. As he formulated his plans, resources began to appear from everywhere. Equipment was donated from companies such as Cisco, Tranzeo, Trango, and many others. Most importantly was a donation of free Internet Backbone access by MCI. Without this donation the network could not have been sustained. Soon wireless experts from around the country began arriving to help build the network. They drove in from Oregon, California, Pennsylvania, Illinois, and elsewhere. As the equipment and people arrived, the task of creating the wireless network began. The network signal started at the MCI location in Gulfport and was “shot” to the Mississippi Power Company tower and then across the bay to a Bay St. Louis water tower. From the water tower the signal was sent out to the tops of trees, the side of buildings and tents, and other water towers. In the devastated area, anything that could be used to complete a link was considered.

As the local backbone network was developing, attention moved to distributing the services to the people. The plan was to build a subscriber network that provided Voice over IP (VoIP) phone services and workstations sites for citizens and volunteers to utilize. These subscriber locations were in churches, cafes, a family store, the FEMA trailer park, a micro brewery, a train station, a sewage treatment plant, and most volunteer tent cities. Within many of these sites, local LAN networks were created so that workstation, printers, and VoIP phones could be connected.
Interns Become A Part Of The Big Story

As the network plans were being put together, USM’s Information Technology (ITC) program was contacted about supplying an intern to help put the network together. Students in the ITC program have an option of a concentration in networking or software development. As an element of the capstone courses, students must either produce a project or work on an internship. The requirements of the internship are for the student to perform 300 hours of approved work, maintain a log of activities, write a paper describing their internship, and make a presentation about their internship to the faculty. The internship is a graded course.

Matt Justice, a senior student with the networking concentration, volunteered for the Radio Response internship. Matt did not realize that he was becoming involved in a life changing enterprise. Matt was in his last semester at USM. The Radio Response internship was unpaid plus he had to drive 90 miles (one-way) each weekend to work. During this last semester, Matt was not only working on the internship but he was still enrolled in classes. Matt was a little apprehensive as he began with Radio Response, since all of the courses he had taken were in LAN/WAN networks with no exposure to wireless networks.

Matt had no hint of what his life would be like for the next four months. The volunteers putting the network together came in and got to work right away. Most of the volunteers were unprepared for the scenes of destruction before them. They wanted to complete the project as quickly as they could so that some order could be re-established in the area. The network volunteers knew that Matt was the rookie on the job but when he arrived on weekends, they treated him like just another member of the crew and put him to work. Often their work continued well into the night. This rapid exposure to the construction and configuration process allowed Matt to learn the network very quickly.

By the middle of October, 2005, the volunteers began leaving. Mac Dearman was 300 miles away in Rayville, Louisiana running his WISP business. That’s right, Matt Justice was the last man standing. The student intern was responsible for maintaining the entire network. This included the backbone from MCI in Gulfport and the local LANs with workstations, printers, VoIP phones, routers, switches, and radios. He had it all. With his trusty cell phone, the notes left behind by the creators of the network, and lots of good people that told him to call anytime he needed help, he not only kept the network up, but excelled at it.

Internship Ends – New Internship Begins

Matt’s internship presentation in December to the faculty was expected to be about 10 minutes. It was over 30 minutes before he completed. Those present were captivated by the experiences he described. It was difficult to believe what he had accomplished! Members of the faculty decided this service did not need to end because of his graduation. After meetings with Matt and Mac Dearman, the ITC faculty established another internship to continue this valuable work. The new intern was Peyton Gwinn, another graduating senior. Peyton was excited about becoming involved. He talked with Matt and studied the notes, diagrams, and a Wiki created for network developers to communicate. Just like other modern project development efforts, the tools of the internet were very important for maintaining communications with the group. Since Peyton was not there as the network was built, he had to rely on Mac, 300 miles away, to answer many of his questions when the notes didn’t supply all the answers. These calls were often at night and usually on weekends. Peyton worked very hard to learn the network and be helpful to the people that depended on him. By January 2006 when he began, most of his clients were volunteers and volunteer organizations. What these two networking interns accomplished is very noteworthy indeed. They made a difference, not just to themselves, but for the people of the stricken Waveland/Bay St. Louis area. Few will likely ever know what they did, but those who were connected to the project will not forget.

Radioresponse.Org

The RadioResponse.org website is a BLOG. It contains a running log of events and notes. It provides very interesting reading about how the network unfolded. Below are a few notes from the BLOG that may give a flavor to the activities of the project. (Note: St. Bernard Parish is suburban New Orleans)
Morrel, Calvary, and Matt the Repo-man: “I spent this morning at Morrel figuring out what has gone wrong ... Since they have real power, it is now feasible to reconnect them. I replaced the dead Trango power supply but I only got the power light on the POE injector ... To test the Trango, I used Jeff’s trick of connecting my inverter directly to the Trango on the tree ... I start to check if the cable has been damaged. I traced where I thought the cable was buried until I came to a wire popping out of the ground. It was severed. A ten foot by ten foot power station complete with a concrete foundation, has been installed right beside the wire run ... I fixed the problem ... with two couplers and duct tape. Morrel has an internet connection (again) ... The Deliberant at the apex of the tent is dead now and I brought a Tranzeo to replace it ... asked for some help with a forty foot ladder ... I got about halfway up the ladder and chickened out ... How do you do it, Don? ... [later] I called Mac ... and he informed me to go get our stuff from Waveland Cafe. ... our equipment has already left for St. Bernard Parish. Mac told them that we needed the equipment back ... Once in St. Bernard Parish (Chalmette to be exact) I couldn’t find the place ... By the way, my heart goes out to all the people that live in this area. ... the entire area has been flooded by ocean water mixed with oil. This has made for a very horrible environment to live ... I finally found where I needed to be ... I found our equipment on a palette inside a tent. I took ... all the equipment (with no one around) and stuffed it into my Taurus. I felt kind of dirty going in and just taking it, but it was OURS to begin with, so the feelings of guilt soon left me ... so I just took the equipment with me to Hattiesburg. So if anyone wonders where it is, I have it in Hattiesburg and will be returning it Saturday when I come back to the coast.” [sic] [2]

Matt’s Last Weekend: “... I heard that Morrel has gone down again ... As soon as I got there ... they have cut my wire again. ... they have cut it to the point of no repair ...suggested that we run the wire through the air to avoid any more confrontations with the backhoes ... they will not be bringing semi trucks through [again]... After we got it working ... To my surprise, they have moved the computers ... The rest of the day was spent setting the computer lab back up ...” [sic] [3]

BLOG Responses to Matt’s ‘Last Weekend’: ‘Matt, been watching what you have been doing and for someone with little experience with wireless technology, you ’done good’ grasshopper. ...been in Harrison County getting service to these sites, you were getting the service to Hancock County. Not many people could of done what you have with so little. The people in BSL thank you for your unwavering service. Best reards, Joe Miller www.dslbyair.com” [sic] [3]

Interns’ Evaluation from Mac Dearman: “... both interns, Matt Justice and Peyton Gwinn, were more than capable of keeping up the wireless infrastructure as well as the many networks that were attached. Neither of the two interns knew much about wireless when they came on board, but after finding themselves alone in the wireless world of wonders - - they soon had everything figured out and began making improvements to the individual networks.” [sic] [4]

CONCLUDING REMARKS

The story as told only relays a fraction of the events that occurred. The working conditions, problems solved, and the personal joys of those that labored to build and support this network may never be fully appreciated. South Mississippi in August and September can be unbearable with heat and humidity. The lack of electricity meant that cool air conditioning and nice showers were a luxury. The bedroom provide for the intern was an air mattress on the floor of the International Aid tent. The bedroom was used as an office by day. Since 20 feet of water moved thru the town, the most readily accessible food was found at the tent cities’ soup kitchens. There was little entertainment available in the distressed area, but they worked late most nights anyways. They both are left with wonderful stories to tell of their experiences building a support network for the people of Waveland and Bay St. Louis, Mississippi.

Interns of the ITC program are requested to include a statement of lessons learned from their internship in their report. Likewise, the author has some observations and new insights from this project. Specifically, one cannot truly understand what a student is capable of achieving from a classroom situation. We seldom can see the human spirit. Sometimes we hear of students’ successes after graduation and wonder, “Were they really capable of accomplishing that?” It is the author’s belief that when a challenge is presented and a desire is invoked, unexpected results are likely to be attained.

REFERENCES