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Infrastructure as a Service Helps Engineering Firm Power Through Emergencies

North Carolina isn't part of Tornado Alley. And Raleigh, the state's capital, is not especially prone to twisters. But in April 2011, the unlikely became reality. One of the largest tornado outbreaks ever to hit the southeastern United States crashed through the area and caused widespread destruction.

Among other damage, the tornados scored a direct hit on the Duke Energy substation, which powers half of downtown Raleigh, and the center of the storm passed within a half-mile radius to the Stewart engineering, design and planning firm (www.stewartinc.com). Stewart is the largest structural engineering firm between Washington, DC and Atlanta. The company is known for creative problem solving, a cross-disciplinary approach, and a strong commitment to customer service. Its clients span private and public sectors, including education, healthcare, local municipalities, and the federal government.

When the tornados struck, the Stewart Raleigh office and the Production systems it housed lost all power — and would remain offline for over 30 hours. Even though the Stewart IT staff had a plan in place to keep business-critical applications running in a disaster situation, the structural damage caused by the tornado was unprecedented. It exposed a gap in the disaster plan that no one had foreseen.

Stewart's plan had been to replicate data from the company's primary systems in Raleigh to its branch office in Charlotte. But when the Stewart IT staff regained access to the Production systems in Raleigh, some essential services were still unavailable in their offices. The result was an all-nighter, waiting for power to be restored so they could bring their servers and data back online.

By morning, the IT staff had restored access to 90 percent of the Production systems, but the message was clear. The building that housed Stewart's Production data center was not

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well-suited for business-critical infrastructure. Power was unreliable, there was no generator backup, and the cooling systems were short of state-of-the-art. Those factors posed an unacceptable risk to system uptime and to the business as a whole.

"That tornado taught us a lesson," said Matthew Price, the Manager of Information Systems for Stewart. "We had great technology, but our Production data center was inadequate and wasn't going to work for us moving forward. We needed to develop a new plan."

> "We could have been back up and fully operational in under half an hour, instead of working frantically all night —
> *if we had been with Tego Data at the time.*"
> — Matthew Price, Manager of Information Systems at Stewart

Time for a Change

The Stewart IT team went back to the drawing board to develop a new business continuity strategy. The first requirement was moving their Production environment to a purpose-built, hardened data center and replicating back to their Raleigh headquarters for disaster recovery. Leveraging a hosted site made sense because Stewart did not want to build and operate its own data center, but analysis showed that achieving the desired level of data protection at a hosted site would be very expensive and time-consuming to implement and maintain. The Stewart server hardware, shared storage, and network stacks would have to be refreshed, and the company would incur ongoing rack space, power, and bandwidth costs. Stewart had to find a solution that gave them the data protection they needed at a cost-effective price. They began to consider Infrastructure as a Service (IaaS), but knew that they had specific requirements which had to be met.

Stewart needed a cloud provider that understood the needs of a small-to-medium size business, offered exceptional customer service, and could assist not only with transitioning into a cloud environment but also with maintaining and optimizing the Stewart managed disaster recovery

environments. Most important, they needed a provider that would listen closely to their concerns and challenges, and help design and implement an elegant solution that supported their business requirements under the most demanding circumstances.

Stewart considered several providers before settling on Tego Data Systems.

An Easy Decision

Tego Data is an IT Integration and Infrastructure as a Service (IaaS) managed services provider. The company is based in Morrisville, NC, and operates data centers in Morrisville and Raleigh, NC, as well as in Austin, TX. The Tego Data Cloud is comprised of enterprise-class equipment from Fujitsu and Juniper and is built on a foundation of VMware® server virtualization software and NetApp® storage systems.

The NetApp storage element of the Tego Data infrastructure was particularly important to Stewart because it had already made a significant investment in NetApp technology. Stewart had been using NetApp® SnapMirror software to replicate large amounts of data between its sites. The SnapMirror software takes an initial snapshot of a volume to create a point-in-time copy. When data is modified, the system replicates only the changed blocks. Replicating only changed blocks allows for more aggressive recovery objectives by reducing the amount of data that must be transferred.

As a NetApp Platinum Partner, Tego Data built its cloud platform on NetApp storage technology. Tego Data can leverage SnapMirror, along with other replication technologies, for data replication to and from its cloud customers.

The Tego Data environment meshed perfectly with Stewart's IT infrastructure. "We wanted to make their platform our Production and turn what had been our Production environment into our DR site," said Price. "Everything we needed was pre-architected and available to us at an affordable price."

The technical advantages were clear, and Tego Data helped Stewart understand that it was willing to back that expertise with a high level of customer service. Price was convinced, and engaged Tego Data to provide an Infrastructure as a Service (IaaS) solution to his team.

> Stewart estimates the cost of failing to do business because of inaccessible data at tens of thousands of dollars per hour.

Fast Implementation

Compatible architectures made the transition fast and easy. In June 2013, Tego Data migrated the Stewart Production systems from the Stewart headquarters in Raleigh to the Tego Data IaaS platform, and reversed the SnapMirror mirrors so the Tego Data site became Production.

As part of Stewart's deployment, a Tego Data Cloud Engineer also provisioned a NetApp® vFiler. The NetApp vFiler is a virtual storage system that emulates the functionality of physical NetApp storage arrays entirely in software. The vFiler provided a secure target for SnapMirror replication during onboarding and gave Stewart's engineers a greater level of control. Tego Data used NetApp SnapMirror technology to replicate all of Stewart's critical data, including virtual machines, databases, and file shares. Using SnapMirror enabled Tego Data to transition hundreds of gigabytes of information with only a brief service interruption to bring systems up in the new cloud environment.

A Wise Decision

Since the switch to Tego Data, Stewart has not experienced any downtime despite numerous platform upgrades and optimizations performed by Tego Data engineers. The migration itself was entirely transparent to Stewart employees, thanks to Tego Data's High Availability design and the engineers who worked to ensure the lowest latency response times.

In fact, Stewart's IT staff has found Tego Data engineers to be an incredibly knowledgeable and collaborative resource in many ways. For example, Tego Data was happy to help when the Stewart IT team was prepping their environment for transition and had questions about their existing VMware environment. Another provider might have considered this outside the scope of the engagement and required a separate statement of work (SOW). Instead, a Tego Data engineer with VMware expertise worked with the Stewart IT team to answer their questions and make sure that the VMware environment was optimally configured. "The Tego Data engineer absolutely went above and beyond for us, and we really appreciated that effort," said Price.

The Stewart IT staff also enjoys the benefits of outsourced server, storage, and network hardware management. With Tego Data now handling day-to-day infrastructure responsibilities, the Stewart IT staff is free to focus on more strategic projects such as upgrading and customizing their accounting and customer relationship management (CRM) systems.

> Says Price, "The whole relationship with Tego Data has worked out really well for us. We've got an IaaS platform we can count on, support that we trust, and more freedom to work on the strategic projects that we need to drive business success."