



BACKUP/RECOVERY/ARCHIVING ■  
 CLUSTERING ■  
 CONSOLIDATION ■  
 DATABASE ■  
 MANAGEMENT/UTILITIES ■  
 MESSAGING ■  
 VIRTUALIZATION ■

#### COMPANY OVERVIEW

Forté Incorporated is an Alabama-based computer services firm specializing in custom software design and development as well as consulting services. [www.forteonline.com](http://www.forteonline.com)

#### CHALLENGE

Forté was tasked with building a reliable, groundbreaking emergency communications system that would provide real-time routing information for trauma and stroke victims

#### SOLUTION

Forté deployed Dell™ PowerEdge™ servers running Microsoft® SQL Server 2005 to support a central trauma communications center database; the hospitals use Dell OptiPlex™ desktops running Microsoft SQL Server 2005 Express Edition to support an emergency room communications and routing system

#### BENEFIT

By turning to Dell, Forté could count on reliable, easy-to-manage systems that help about 2,400 first responders use LifeTrac to deliver trauma patients to the most appropriate hospital for timely critical care; improved routing has helped participating hospitals reduce the fatality rate from traumatic injuries by 12 percent<sup>1</sup>, benefiting more than 28,000 critical trauma and stroke patients

# Saving Lives

Dell products and services provide a stable IT platform to build a state-of-the-art medical communications center

**F**or victims of traumatic injuries, prompt medical attention can make the difference between life and death. So when officials with Birmingham Regional Emergency Medical Services System (BREMSS) learned that less than half of severe trauma patients in their region were transported to an emergency room that was appropriate to their injuries, they decided to create a better system.

In 1996, they enlisted technology services company Forté Incorporated to help build a groundbreaking patient routing system. Forté and BREMSS built LifeTrac, a multi-hospital communications system that provides first responders with real-time reports of hospital resources. The system covers a six-county area around Birmingham, Alabama, where BREMSS oversees pre-hospital care.

Glenn Phillips, president of Forté, said the architects of LifeTrac faced special challenges because they were charting new territory. "We were approached to do something very innovative," Phillips says. "BREMSS wanted to connect the hospital emergency departments and collect data to help the paramedics make decisions about routing trauma patients. In the past, money had been spent on 911 systems to get emergency service to someone in need, but then we left those emergency services responders on their own to figure out where to go. They typically went to the closest hospital, whether it could help that patient right away or not—and then the patient might, after extensive evaluation, get transferred. That wasted precious time during life-or-death moments."





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— **Glenn Phillips**, President, Forté Incorporated

Emergency medical responders needed a system that provided more relevant routing information for their patients in real time. But when Forté began to design the system, it quickly discovered that cobbling together the different computing platforms from multiple hospitals and agencies threatened to create a cacophony of disparate systems. So while Forté focused on designing custom features for the communications center, it needed to count on a standard technology platform.

The system called for the hardware to be reliable and rugged enough to function around the clock in hectic hospital emergency rooms as well as a central communication center. “We started out with a hodgepodge of equipment from the hospitals,” Phillips says. “So the first decision we made was to standardize on Dell products. We went with Dell because we realized we needed a solution that is going to work. If we have a problem, we need a partner that can rapidly provide real support.”

The reliability of Dell hardware and the expertise that comes with Dell services further convinced Forté to opt for Dell. “We are helping paramedics route severe trauma and stroke patients in real time when time is absolutely of the essence, so we are not casual in our selection of equipment,” Phillips says. “We picked Dell products because we knew they would stand up to the demanding conditions that emergency healthcare and communications were placing them in.”

### **Dell Services allows project developers to focus on critical care issues**

In order to get the trauma communications center off the ground, Forté turned to Dell Services to collaborate and troubleshoot issues. “We called on Dell Services because we were doing some unique things with LifeTrac as we built entirely new systems, which naturally led to some interesting problems,” Phillips says. “Dell Services professionals were the ones who consistently helped us find out what was going on, even when the problem was not related to the Dell equipment.”

### **Dell PowerEdge servers underpin LifeTrac architecture**

When it came time to construct the LifeTrac systems architecture, Phillips wanted an environment that used Dell PowerEdge servers running an integrated network. “We made the decision that instead of distinct computer systems, we wanted a single integrated data and communications

network. So, essentially, we have built a private wide area network using a hub and spoke approach. At the hub of that architecture are our Dell PowerEdge servers.”

On the systems side, LifeTrac is built using a two-tier server architecture. “On the front end, a Dell PowerEdge 750 with an Intel® Pentium® 4 processor acts as the communications server—sending, receiving, and coordinating network traffic with the hospitals. And on the back end, we have a Dell PowerEdge 850 server with an Intel Pentium 4 processor running Microsoft SQL Server 2005, which serves as a central data repository,” says Phillips. “We also have a Dell PowerEdge 2850 server with an Intel® Xeon® processor that collects data from OnStar systems installed in vehicles that may have been involved in accidents. OnStar provides data on impact measurements and location. Finally, a Dell PowerEdge SC1425 server with an Intel Xeon processor resides offsite to provide complete data protection in the event that something goes wrong with the primary instance of SQL Server.”

While Phillips explains why he trusts Dell PowerEdge servers powering LifeTrac to perform reliably in a demanding and life-critical environment, he singles out the ease of installation and maintenance as a primary benefit. “What we’re doing is very complicated, and anything that makes our work easy is a big plus,” he claims. “Dell is very smart about server installation and maintenance. With its reliance on industry standards, Dell enables us to easily add a component, swap out a drive, or add a system to the environment.”

Additionally, Phillips credits the close relationship between Dell and Microsoft as a key enabler of the overall success of the LifeTrac system. “We have a 1.5 GB database that houses all of the patient data,” he says. “Needless to say, our SQL Server database is at the heart of our system and it houses vital patient data. The fact that Dell and Microsoft have such a close relationship provides us with a big comfort zone. When we have a question or an issue with our SQL Server deployment, we can call Dell support—Dell support has the necessary experience with SQL Server to help us track down an answer.”

Based on the success of the SQL Server on PowerEdge deployment, Phillips is currently investigating the use of a number of advanced features in SQL Server 2005 to offer additional functionality within the LifeTrac system. “We’re looking at using the reporting services features in SQL



Server 2005 to provide researchers with access to the data warehouse,” he explains. “Right now, we can offer large data dumps to researchers, but we want to be able to let them access the data in a secure manner and manipulate it so they can draw conclusions that might further improve how BREMSS responds to emergencies.”

### **Dell desktops, notebooks, and monitors allow Forté to standardize deployment**

As far as the client-side architecture is concerned, professionals at the central communication center are in constant contact with emergency rooms at the 15 member hospitals to get real-time information on hospital activity. This information helps emergency responders make more informed decisions about trauma patient routing.

To handle this information, workers at both the central communication center and at the hospitals use Dell OptiPlex GX520 desktops with Intel Pentium 4 processors, Dell flat panel monitors, and modems and packet-data radios. The systems run the Microsoft Windows XP Professional operating system and SQL Server 2005 Express Edition database software, allowing each hospital to view the status of other member hospitals.

When it came time to implement the client-side infrastructure, Forté decided to avoid trying to integrate disparate computers from its hospital partners and instead standardized on Dell OptiPlex desktops.

“In the past, there were a bunch of hand-me-down computers in the emergency rooms,” Phillips says. “Now, if you walk into the hospitals in this region and you go to the emergency department, you see a Dell OptiPlex with a flat panel monitor that allows the hospital workers to communicate their hospital’s status and view the status of other hospitals. That information is spread throughout the system, and it is used at the trauma communications center to help the paramedics make smart choices about hospital patient routing.”

BREMSS emergency workers are also using the Dell systems to handle multiple applications in the fast-paced hospital environment.

“The Dell OptiPlex desktops are allowing our workers to be highly productive and effective, which we need in this emergency environment,” Phillips says.

Forté uses Dell 1706FPV 17-inch flat panel monitors with the desktops in the hospitals and Dell 1905FP 19-inch monitors in the trauma center. Until recently, the hospitals used 15-inch monitors, which worked in the busy environment of hospital emergency rooms without problems, Phillips says. “We knew they were going to be reliable,” he adds. “We had some 15-inch monitors in our first generation that were on 24 hours a day, seven days a week, and after four years they were still very usable. However, the larger monitors allow a cost-effective means of making critical status information easier for busy hospital staff to view on the go or from a greater distance.”

In case of disaster, the trauma communications center is able to rely on just two Dell Latitude™ D610 notebooks running Microsoft Windows XP for data backup. Citing the notebook’s power and rugged chassis, Phillips says the notebooks could actually operate the center if necessary. “For instance, the notebooks could act as a mobile operations center if the region was hit by a disaster that knocked out normal communications. They could even run the whole system from a moving truck,” Phillips says. “In the event of a catastrophic failure caused by a tornado, for example, the Latitude notebooks could power the entire system.”

### **Dell allows Forté to focus on building a system that saves lives**

The reliability of Dell products, backed up by Dell Services, has made life easier for Forté developers by allowing them to concentrate on building out LifeTrac’s cutting-edge programs. “One of the reasons we stick with Dell is that we don’t have to do a lot of research about equipment and figure out how it will all work together,” Phillips explains. “We don’t have to bring Dell products in and test them and see if they are going to meet our needs. Dell has done that for years, and compatibility has



Dell is very smart about server installation and maintenance. With its reliance on industry standards, Dell enables us to easily add a component, swap out a drive, or add a system to the environment.”

— Glenn Phillips, President, Forté Incorporated



become a given for us. It may not sound like a big deal, but it is a crucial factor for us.”

By revolutionizing the efficiency of emergency care in the Birmingham region, LifeTrac is helping BREMSS better place trauma and stroke patients in the hospitals most prepared to care for them. The new system, built on the Dell platform, has helped emergency responders get 98 percent of severe trauma patients to the appropriate emergency room, up from 40 percent previously—helping reduce trauma fatalities by 12 percent.<sup>1</sup>

Phillips says the Dell platform allowed Forté to concentrate on building a system that helps BREMSS save lives. “When we offer solutions for a world-class project like LifeTrac, we need to use complementary services and equipment that are also world-class,” Phillips says. “That’s why we’ve stayed with Dell.”

## HOW IT WORKS

### HARDWARE

- Dell™ PowerEdge™ 2850 and PowerEdge SC1425 servers with Intel® Xeon® processors
- Dell PowerEdge 850 and PowerEdge 750 servers with Intel Pentium® 4 processors
- Dell PowerConnect™ 2216 and PowerConnect 2716 switches
- Dell OptiPlex™ GX520 desktops with Intel Pentium® processors
- Dell Latitude™ D610 notebooks
- Dell 1706FPV and 1905FP flat panel monitors

### SOFTWARE

- Microsoft® Windows Server® 2003 Standard Edition operating system
- Microsoft Windows® XP Professional operating system
- Microsoft SQL Server 2005 and SQL Server 2005 Express Edition database software



**Microsoft®**



<sup>1</sup> [http://www.lifetractech.com/Portals/25/download/American\\_Surgeon.pdf](http://www.lifetractech.com/Portals/25/download/American_Surgeon.pdf), page 191

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