CUSTOMER PROFILE
As the U.S. Department of Defense's (DOD’s) premiere land-based homeland defense response force, U.S. Army North is a team of highly skilled professionals that interoperates with federal, state, tribal, and local partners to respond to America’s security and civil support challenges. Army North’s charter is to be a responder to security threats and natural disasters throughout North America, and its services are called on when the states ask the president for help.

“We are the DOD’s liaison to the Federal Emergency Management Agency (FEMA) for homeland defense and homeland security,” explains Chris Miller, chief of Army North’s Network Operations Branch. “We augment or assist FEMA, providing additional resources as needed. We have field offices around the country that are co-located with FEMA regional offices. At each one of those offices, we have assets prepositioned for emergency response.”

THE CHALLENGE
Limited communication capability
To support DOD, FEMA, and other emergency responders, Army North sends equipment and personnel to disaster sites to provide expertise and critical communications capabilities. Initially, Army North relied on a modular stack of servers and storage that personnel would transport to these sites using a van, pallets, and transit cases. That, along with a very small network of laptops, was the extent of the mobile IT environment.

“For anything outside of this immediate footprint, we would have to turn to outside organizations to provide long-haul connectivity or satellite communications or phone service,” explains Miller. “We would meet at an emergency site and hope we could interconnect on the fly when we got there. Sometimes it could take days or even a week to get things working.”

Miller indicates that Hurricane Katrina was the last major disaster Army North supported with this limited environment. “Hurricane Katrina validated a lot of the lessons that we were already tracking and the challenges we knew we had to overcome,” he says.

In 2006, Army North commissioned a fleet of semi vehicles known as Sentinels to operate as Operational Command Posts (OCPs) for their homeland defense missions. The Sentinels were configured with networking and communications equipment, although they initially lacked a data infrastructure. So the responders were still limited to mobile communications, which were often compromised in disaster environments.

Success Story

U.S. Army North Delivers Homeland Security and Emergency Response with NetApp Technology

KEY HIGHLIGHTS

Industry
Government/military

The challenge
Enable critical communications for a fleet of mobile emergency-response command-and-control centers.

The solution
Turn mobile command-and-control vehicles into full tactical data centers with NetApp® business continuity solution for Microsoft® Exchange.

Benefits
• Reduced time to deploy from days to minutes
• Enabled critical communications capabilities for emergency responders with no downtime
• Delivered enterprise functionality and reliability in a small footprint
• Created self-sufficient field operations with no training

NetApp™
Go further, faster
“NetApp delivered the capability and the size we needed in our platform. There was just no comparison to the ease of administration that NetApp could deliver.”

Chris Miller
Chief of Network Operations Branch, U.S. Army North

“We all tend to take cell phones and wireless Internet connections for granted,” says Miller. “But when you have a disaster, either manmade or natural, you have no idea what infrastructure will be functioning. If a communications infrastructure is available, it’s usually completely saturated.”

Army North needed robust data exchange capabilities to ensure consistent messaging and collaboration in both secure and non-secure environments, along with full data protection and recovery.

At the time, Army North’s headquarters data center at Fort Sam Houston in San Antonio, Texas, had a disparate collection of servers with direct-attached storage (DAS), no centralized management, and a cumbersome server-to-tape backup process. As most of the installed equipment was at end of life, Army North was looking for a technology refresh of the entire data infrastructure. Miller wanted a solution that would enable a synergized, reliable, and easy-to-manage data exchange between the primary data center, the Sentinels, and a disaster recovery (DR) site.

Vision for efficient data exchange
Over the years of operating within the limitations of the data center and the small remote footprint, Miller and team determined that they could be much more effective with the right equipment and capabilities. Miller developed a vision for a self-sufficient data communications network using satellite connections, and he researched what it would take to create a comprehensive and fully contained data exchange environment.

Miller’s vision would require a storage solution that could provide SAN and NAS functionality to address classified and unclassified data as well as integrate with key messaging and collaboration applications and deliver high reliability. He determined that a unified NetApp storage infrastructure was the only solution that could provide all of the capabilities needed to accomplish this vision, and he gained the agreement of Army North command. Then, in 2006, Miller architected the infrastructure and worked with his team to install, configure, and manage NetApp systems and software at each site and on each of the Sentinel trucks.

THE SOLUTION
Turn Sentinels into full tactical data centers with NetApp’s flexible storage infrastructure
Today, equipped with NetApp FAS270 storage systems, each Sentinel operates as a full tactical data center. All data from the trucks is replicated over IP SAN using NetApp SnapMirror® software to NetApp FAS3020 systems in the headquarters data center as well as the DR site.

“We have two Sentinel vehicles that are configured with Sun™ Fire 4100 servers and NetApp FAS270 systems. We boot from SAN and run Fibre Channel for secure data and iSCSI for everything else. We run everything on VMware®, which has enabled us to consolidate from six down to two physical servers, and all data is stored in the NetApp FAS270 systems,” says Miller.

To streamline storage management, backup, and recovery, Army North uses NetApp SnapManager® for Microsoft Exchange, NetApp SnapManager for Microsoft SQL Server®, and NetApp Single Mailbox Recovery. In addition, they recently purchased a NetApp SnapManager for SharePoint® portal. “We are in the process of a complete refresh of our portal infrastructure, and that product will be integral to the new infrastructure.”

For point-to-point encryption, U.S. Army North is using AES 256-bit encryption and Type 1 encryption, a crucial measure since the data often falls within multiple levels of classified access. For data at rest, Army North plans to implement NetApp DataFort, an appliance that encrypts data in hardware, providing levels of performance and security not attainable with software. NetApp DataFort’s compartmentalization capability will allow Army North to encrypt individual data sets with different encryption keys on the same device.
BUSINESS BENEFITS
The right capabilities/the right size
The NetApp solution has allowed Army North to achieve the full extent of its mission. The benefit of the infrastructure has been evident in Army North’s support of numerous disaster events. For example, during the fall 2007 firestorm in Southern California, Sentinel vehicles provided a communication center that enabled Army North to accomplish its command and control mission in support of local responders. During the I-35 bridge collapse in Minnesota and for Hurricanes Gustav and Ike, deployable communications vehicles provided critical reachback to the NetApp infrastructure at the Army North headquarters. The communications capabilities available during these emergencies made it clear that Miller and his team have delivered a solution that overcomes the challenges experienced during Hurricane Katrina.

Once on site, the Sentinels were operational in as little as 20 minutes and operated throughout each emergency with no downtime. The small form factor, reliability, and ease of use of the NetApp FAS systems, combined with the replication, encryption, and centralized management capabilities of the NetApp software, made it possible for Army North to put enterprise tools in a small environment and deliver the full complement of communication capabilities needed. In addition, replication enabled Army North to completely eliminate the need for cumbersome tape-based backup.

Fitting 20 pounds into a 5-pound bag
“When we designed our architecture around NetApp solutions, we looked at how we could build in the most functionality in the smallest footprint. I specifically looked to see how much equipment I could consolidate and how much overhead I could eliminate while achieving the SAN and NAS functionality we needed. NetApp delivered the capability and the size we needed in our platform. There was just no comparison to the ease of administration that NetApp could deliver.”

Miller points out that with almost any other vendor, he would need additional equipment to accomplish the same thing. Army North has to keep the footprint especially small—and light. The Sentinel platform is air-freight rated because it is actually loaded on C17 aircraft for various missions. “So to minimize weight, we need to pack 20 pounds of gear into a 5-pound bag. Inside the vehicle itself, we have to minimize power, space, and cooling,” Miller says.

Uncompromising reliability
Reliability and continuity of operations were among Army North’s key considerations in selecting NetApp. In a disaster site that could be unstable, it is essential to be able to replicate data to another location in case something occurs at the disaster site. “It ensures that we are able to maintain the continuity of our critical communications. Looking back at my experience with NetApp over many years, I have never had any issues. I find NetApp to be a very consistent solution.”

Ease of use = self-sufficiency
“Another reason I chose NetApp was because of the ease of administration. I’ve had IT administrators come on board who’ve never seen a NetApp system before, and yet they’ve been able to quickly pick up the administration without the need for days or weeks of extensive training. This easy learning curve along with rapid deployment and provisioning capabilities is critical for our limited staff, especially since they support the footprint in multiple locations and have many other areas of responsibility.”

In fact, the self-sufficiency that NetApp’s simplicity has afforded Army North is an important measure of the solution’s success, according to Miller: “It would not be very
“It would not be very effective for us to have to rely on an elaborate support contract and expect a technician to come out to a hazardous site to resolve issues. To have a platform that we can deploy, operate, and maintain on our own—I would say that’s probably our biggest return on investment. We are self-sufficient with the NetApp platform from initial deployment—something we can now accomplish remotely in as little as 20 minutes—throughout an entire mission.”

Chris Miller
Chief of Network Operations Branch, U.S. Army North

In establishing a full, remote data exchange capability between field and headquarters operations, Miller and his team have positioned Army North to deliver a quicker response to homeland security and natural disaster events with more accurate, timely communication and collaboration.

SOLUTION COMPONENTS

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NetApp creates innovative storage and data management solutions that accelerate business breakthroughs and deliver outstanding cost efficiency. Discover our passion for helping companies around the world go further, faster at www.netapp.com.

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