CASE STUDY

Empowered by Innovation NEC

Lycoming County Department of Public Safety

NEC Fault Tolerant Servers Keep Lycoming County Emergency Services Up and Running

Challenges

- Outdated manual dispatch operation
- Dependence on human knowledge and maps sometimes meant unreliable dispatches
- Unincorporated areas and coverage of neighboring county often slowed dispatch

Solution

- NEC Express 5800/300 Series Fault Tolerant (FT) Server
- Logistic Systems, Inc. NorthStar Computer Aided Dispatch (CAD) System

Results

- A state-of-the-art, automated 911 Computer Aided Dispatch solution
- A robust, fault tolerant and scalable infrastructure for demanding, mission-critical 24/7/365 emergency response 911 communications center use
- Improved dispatch times from three- down to sub-minute dispatches
- Achieved significant acquisition cost reduction and long term operational savings
- No unplanned downtime since installation in July 2007

Powered by Intel® Xeon® Processors

About Lycoming County Department of Public Safety

The mission of the Lycoming County Department of Public Safety, 911 Sector, is to dispatch the appropriate police, fire, emergency medical services and personnel to individuals in need of assistance in Lycoming and Sullivan counties in central Pennsylvania.

At a Glance

- **Industry:** Government / Law Enforcement
- **Headquarters:** Montoursville, PA
- **Employees:** 26 full time, 1 part time
- **Service Area:** 133,000 population, surging to between 400,000 to 435,000 during the yearly Little League World Series, 1696 square miles
- **Calls Processed:** 52,800 calls to 911 and 96,000 non-emergency calls processed annually
- **Lycoming County Website:** http://www.lyco.org/dotnetnuke/Home/PublicSafety/tabid/139/Default.aspx

Challenges—Highly Available Decision Support in a Fraction of the Time

What it all comes down to is having the information to make a critical decision. Quickly. Reliably. Information that you know will be there when you need it, allowing dispatchers to send assistance in an emergency situation.

The power to respond to any 911 call is delivered today through sophisticated Computer Aided Dispatch (CAD) software that relies on high performance, fault tolerant servers that always deliver information, with no exceptions. What was futuristic only a few years ago is now becoming a required solution for communications centers in metropolitan and rural areas. The combination of advanced decision management software with bulletproof servers is allowing public safety departments throughout the country to analyze information and send help in a fraction of the time required by earlier systems, without the risk of the system becoming unavailable due to equipment failures.

■■■ After we really got into the nuts and bolts of it, we decided that NEC was the best choice.

Connie Turner, Deputy Director
Lycoming County Department of Public Safety

Take, for example, the Lycoming County Communications Center in Montoursville, Pennsylvania. The 911 center handles calls for Lycoming County as well as neighboring Sullivan County—an area of covering 1,696 square miles—dispatching 49 fire and EMS, and 12 police agencies, plus the typical normal county agencies that include Sheriff, Probation, and Detective divisions. Lycoming County averages about 4,400 911 calls per month and 8,000 non-emergency calls per month, with incidents averaging about 1,600 fire and EMS responses, and 3,400 police responses per month.

Lycoming County had a human-based dispatch system—the dispatchers working in the communications center were local residents with a strong knowledge of the nooks and crannies of county locations, and this, augmented with local maps when needed, formed the core of their dispatch operations. But, there were swaths of unincorporated land without traditional numbering that were difficult to dispatch—the Pine Creek Rail Trail for bikers and hikers that runs 62 miles through what is called the Pennsylvania Grand Canyon, for example—which slowed response. And when Lycoming County took over dispatch operations for neighboring Sullivan County—and its expanses of open spaces—the Department of Public Safety knew that they needed to move to a Computer Aided Dispatch (CAD) system to provide decision support for dispatch operations.

"The county used an AS400 system, with individual PCs on the network that also worked back to the courthouse main system," said Connie Turner, deputy director, Lycoming County Department of Public Safety. "We didn't have Computer Aided Dispatch and everything we did was pretty much manual. We accessed the computer for a lot of resource information, but not for any decision making."

"Within our county, because we're so large, we have a lot of response areas. Between the two counties we have 320 different response zones, and that's just for fire and EMS," continued Turner. "It's very difficult to use a manual system and a map to try and make fast, life-saving decisions."

The Solution—Examining Options

Turner began discussions about CAD options in 1995 with Charlie Stortz, vice president of Logistic Systems Inc. (LogiSYS), whose firm is one of the pioneers in deploying CAD systems for public safety. Talking year after year over the course of a decade, Stortz built a great relationship with Lycoming County and helped them evaluate approaches to take and determine the capabilities needed for the project.

Together Turner and Stortz reviewed alternatives to support dispatch activity for the two counties, and Stortz came back with recommendations to address call volumes for normal activities and supported the surge of visitors that came into the county to watch the Little League World Series held yearly in Williamsport. Family participation is huge: the estimated crowd for the entire series over the nine days in August brings an additional 275,000 to 325,000 people into Lycoming County.

The one stumbling block in moving to a CAD solution was funding, and finding monies in the County budget for the system was a challenge. One of the things that helped Lycoming County was that Pennsylvania had started to gather money through a wireless cell phone tariff, where every wireless subscriber paid a dollar to the state. Every 911 center could then submit for funding to the state, and through this fund Lycoming had an opportunity to move to a CAD solution.

■■■ Lycoming County's solution had to be very highly available and that's where the NEC's solution excels over everything else out there.

Charlie Stortz, Vice President
Logistic Systems Inc.

Finally, a formal request for proposal (RFP) opened the floodgates for bids. One of the key requirements of the RFP was that the proposed solution offer high availability. The proposal did not specify whether it had to be hardware or software based, but the CAD 911 system needed an availability solution to ensure that it would stay up-and-running even in the event of a server failure, which is inevitable at some point during the life of the system. The county looked at all the different solutions in their search, and even held internal discussions focused on whether to go with a software or hardware approach.

"We looked at EMC Legato and various other software solutions, but we also knew that NEC's fault tolerant hardware solutions were very robust and very cost effective and it just fit right in line with what the county needed," said Stortz.

"Lycoming County's solution had to be very highly available and that's where NEC's solution excels over everything else out there. Dollar per feature, there was nothing that could touch the NEC fault tolerant server," continued Stortz. "And, if you look at long-term costs, not just the initial outlay of the investment for the server but also the ongoing maintenance of the system, NEC is highly available and very cost effective."

NEC's Express5800/300 Series Fault Tolerant servers bring a high-performance answer for enterprises with demanding, mission critical applications. Designed with Dual Modular Redundancy (DMR), NEC's FT servers feature the full performance of Hyper-Threading enabled Intel Xeon® processors, allowing processing to support heavy workloads with greater overall performance.

By using fully redundant and hot-swappable hardware server modules—including redundant memory, CPUs, motherboards, and more—operating in lockstep across two complete server modules, the Express5800 achieves up to 99.999% ("five nines") continuous uptime. In other words, the operation of the server approaches less than one minute per year of potential downtime per year on average. In the event that a hardware component fails, the active redundant server module continues to run the application software and allows for the repair of the affected module without interrupting the running of the software application. Since failover is virtually instantaneous, and there is no single point of failure, downtime is nearly eliminated.

Lycoming County's IT and communications departments looked at the NEC fault tolerant server solution, and determined that the high level of high availability is the only way to go. Not only did the server provide continuous operation, but they also liked the fact that the FT server can be serviced without bringing down the application, since the repaired module will re-sync automatically once re-inserted.

"Charlie and his folks had given us their recommendation," continued Turner, "and after we really got into the nuts and bolts of it, we decided that NEC was the best choice."

Results—Deployed in Half the Time

Lycoming Lycoming signed a contract with LogiSYS for their NorthStar CAD System and NEC fault tolerant hardware in June 2006, and had an internal kickoff meeting in August 2006. The hardware and software installation was quick and straightforward. Turner had allotted two years to be up and running. The job was completed in half the time with the system on-line one year from the kickoff date.

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Charlie Stortz, Vice President
Logistic Systems Inc.

"Everyone told us that it would take two years to get a CAD system on-line. We actually started operations with the new CAD system on July 17, 2007," continued Turner. "I'd say we made pretty good time."

Results—Processing Power and Flexibility

The CAD solution has 12 total workstations allowing room for the three to five dispatchers to address workload in the communications center. The county has three overflow positions at their main 911 center and the remainder at their backup site.

The decision support system, like all CAD systems, requires an intensive amount of processing power to deliver information to dispatchers. And information in the system is constantly updated, through mapping and addressing changes, to the addition of landmarks that fall outside of marked streets.

"In just landmarks alone we're up near the 4500 entry mark," said Mike Holdren, CAD coordinator for Lycoming County. "Take the Pine Creek rail trail, for example—it's a bike path and walking trail that wasn't previously addressed. Now we have landmarks in the automated system. If there's an emergency near the Rattlesnake Rock landmark, the system will automatically find it, give us the right response, and generate directions to get there."

And the speed associated with generating a response? "We didn't want to be entering data and have to wait," continued Holdren. With NEC, it's all fast."

To address the surge associated with the Little League World Series, the communications center sets up a secondary onsite dispatcher and CAD workstations at each game to handle incidents that go on at that site. This remote workstation ties into the NEC server via VPN to provide critical logistics information to the dispatcher.

Results—No Unplanned Downtime for Two Years

The NEC-based solution has been running since June 2007 without any unplanned downtime. In fact, at one point, the power cord had not been inserted correctly into the power socket and it fell out.

"We had a power cord pull out and the server failed over, like it was supposed to do, and kept on running," said Holdren. "The alert from the server noted a power failure. It took us a bit of time to figure out that it was the power cord. You're always looking for something bigger. We just had to plug in the cord. The NEC server was working even when it wasn't plugged into the outlet. That's what it's all about!"

■■■ We didn't want to be entering data and have to wait. With NEC, it's all fast.

Mike Holdren, CAD Coordinator
Lycoming County Department of Public Safety

About Logistic Systems, Inc.

Logistic Systems, Inc. (LogiSYS) is a leader in the public safety industry. Founded and based in Missoula, MT in 1988 to provide a host of Graphical Information System (GIS) tools to Law Enforcement, Fire and Emergency Management Service providers. LogiSYS is a pioneer in the use of mapping and a Graphical User Interface (GUI) in a Computer Aided Dispatch System and Records Management Systems. LogiSYS is categorized as a tier-one systems provider with demonstrated ability to provide products to enhance the efficiency of local and state government agencies.

Logistic Systems, Inc. and its sister company Education Logistics, Inc. have successfully implemented more than 1,600 systems in the fields of public safety, transportation management, and boundary planning. LogiSYS' successes are due primarily to its innovative and powerful system designs and extensive client support. Our policy is to provide as much support as is needed for a successful system implementation. LogiSYS enjoys one of the highest client satisfaction ratings in the industry.

LogiSYS is a member of the National Emergency Number Association (NENA), the Association of Public Safety Communication Officers (APCO), the International Association of Chiefs of Police (IACP), and the International Association of Fire Chiefs (IAFC). LogiSYS' staff are members in a variety of professional associations, including IEEE, ACSM, APA, and URISA. LogiSYS is also an ESRI Authorized Business Partner.

About NEC's Dynamic IT Infrastructure

NEC Express5800 series of servers are part of NEC's Dynamic IT Infrastructure—a solution that includes servers, storage, virtual desktop solutions, and system software which are smart, flexible, adaptive to change, scalable, resilient, and continuously evolving.

Along with NEC's broad range of services, the NEC Dynamic IT Infrastructure provides an ideal platform for virtualization, consolidation and business continuity and is ideal for driving greater value and efficiencies in solutions for physical security, law enforcement, emergency response, travel and entertainment, education, high performance computing, and business.

This type of infrastructure allows IT organizations to move forward confidently and meet changing and growing business needs in an efficient manner. To learn more about NEC's Dynamic IT infrastructure, visit www.necam.com/DynamicIT.

About NEC Corporation of America

Headquartered in Irving, Texas, NEC Corporation of America is a leading provider of innovative IT, network and communications products and solutions for service carriers, Fortune 1000 and SMB businesses across multiple vertical industries, including healthcare, government, education and hospitality. NEC Corporation of America delivers one of the industry's broadest portfolios of technology solutions and professional services, including unified communications, wireless, voice and data, managed services, server and storage infrastructure, optical network systems, microwave radio communications and biometric security. NEC Corporation of America is a wholly-owned subsidiary of NEC Corporation, a global technology leader with operations in 30 countries and more than $42 billion in revenues. For more information, please visit www.necam.com.

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