



## CITY OF NORTH LAS VEGAS TRANSFORMS ITSELF INTO A HUB OF ECONOMIC GROWTH WITH HELP FROM VMWARE



**INDUSTRY**  
GOVERNMENT

**LOCATION**  
NEVADA, USA

### ORGANIZATION OVERVIEW

North Las Vegas is a city in Clark County, Nevada, located in the Las Vegas Valley. The city was incorporated in 1946 and is home to 240,000 full-time residents.

### KEY CHALLENGES

- Modernize technology to improve services to residents and local businesses
- Provide emergency services with more mobile, flexible information access
- Give IT staff “force multiplier” tools to improve productivity without adding headcount
- Reduce operating expenditures (OpEx) for IT

In 2013, the City of North Las Vegas faced a financial crisis following a period of rapid growth in the early 2000s, then the crash of the Great Recession. Faced with a \$152 million long-term budget deficit, the city was at risk of losing its charter and having its land split between Clark County and greater Las Vegas. But newly elected Mayor John Lee, who took office in July 2013, had different plans for the city where he had grown up. He began actively courting economic development and looking for ways to improve efficiency in a city government that had lost more than half its workforce.

Lee knew that turning the city around would require creative use of technology to cut costs, deliver better services to businesses and residents, and enable employees to be more productive. The city worked with VMware to virtualize servers, desktops, storage, and firewalls, and in less than four years, it recovered with a fully funded, fully balanced budget and no long-term deficit. North Las Vegas can now support public services and departments in ways that would never have been possible before. The efficiencies enabled North Las Vegas to realize a 7,000 percent increase in jobs, a 2,000 percent increase in new business space, and a 4,000 percent increase in new capital investment.

### The Challenge

Information technology is crucial to the city’s day-to-day operations, and as more residents and businesses move to the area, IT will become even more critical. Building permits, emergency services such as police and fire departments, water and sewer utilities, public libraries, city offices, and even parks and recreation all rely on IT systems. To cope with the reduction in headcount, the city needed performance, efficiency, and cost savings.

With approximately 100 square miles of city for which to manage infrastructure and many departments and offices 30 minutes or more from each other, systems administrators and support staff were challenged to keep up. Providing desktop support for physical PCs was time consuming, and the city regularly had a backlog of more than 100 desktop trouble tickets, impacting overall employee efficiency. The city also wanted to expand computer access in public libraries and recreation facilities for students, seniors, and other residents who don’t own computers.

“By industry standards, we would have needed six more desktop technicians to support the city’s desktop computers: a salary investment well into the six figures that wouldn’t have added any additional value other than cleaning up our support backlog,” says Adam Cohen, IT manager, City of North Las Vegas.

## SOLUTION

After a trying recession, the City of North Las Vegas turned to virtualization technology to improve operations efficiency. The vast majority of the city's servers are now virtualized and serve police, fire, utilities, and public library functions. Virtual networking enhances security for servers. Virtual desktop and SAN technologies improve how the city handles end-user computing. The public library, firefighters, and conference rooms all rely on virtual desktops. The software-defined data center leverages multiple VMware® solutions, including VMware vSphere®, VMware Horizon®, VMware NSX®, and VMware vSAN™, to deliver responsive, high-quality services.

## BUSINESS BENEFITS

- Becoming a national leader in business recruitment and economic development
- Empowering police and firefighters to be more effective and efficient
- Enabling a 22-person division to perform IT operations when similar sized municipalities have 70+ IT employees
- Gaining estimated savings of \$100,000 over a three-year period for every 125 PCs moved to virtual desktops

Security is always a focus for municipalities, and the city wanted stronger defenses within its network perimeter without having to deploy and maintain separate software firewalls around every server. It also wanted to improve disaster recovery (DR) for its critical applications. Although data was backed up locally, if a disaster were to occur, it would take several days or potentially weeks to get the city operational again. Using purely physical standby infrastructure was cost prohibitive, however, and would limit DR to only a few systems. The city needed a different approach.

## The Solution

The city decided to use virtualization as a force multiplier for its employees both in and out of IT, helping them be more productive with less effort. It began by virtualizing most of its servers with VMware vSphere, running nearly 300 virtual machines (VMs) on Dell PowerEdge hosts. Instead of using a traditional storage area network (SAN), in some environments the city used VMware vSAN to provide enterprise performance with virtualized commodity hardware. Two all-flash vSAN clusters provide storage for the city's virtual desktop environment, while other vSAN clusters support public libraries and a DR site.

"We chose vSAN because it eliminates the need for expensive disk arrays and controllers while providing greater reliability and performance," explains Ken Todd, senior systems administrator for the City of North Las Vegas. "Because it's part of the VMware ESXi kernel, vSAN is very fast with little overhead. It's also included with our enterprise license agreement. Compared with competing products, it is very easy to administer and provides great cost savings."

Instead of continuing to invest in desktop computing hardware and support personnel, the city deployed virtual desktops at its public library and community recreation centers. After trying a multivendor solution based on Citrix and Nutanix, it decided to standardize on VMware Horizon and vSAN for enterprise virtual desktop infrastructure (VDI). "Getting Horizon deployed on vSAN was so much cleaner and easier than what we experienced with our Citrix XenDesktop environment," says Todd.

The city decided to extend virtual desktops to employees at City Hall as well as firefighters, giving them easy access to computing resources from thin client terminals or their laptops and tablets in the field. Police cars use mobile data terminals that connect using a VPN client. The VPN host is virtualized, and many police department applications are also virtualized via vSphere.

The fire department emergency services VDI solution is hosted on a Dell EMC VxRail appliance, giving the city a pretested foundation for virtualization in critical environments. To simplify profile management and give users access to applications faster, the city uses VMware User Environment Manager™ and VMware App Volumes™. VMware vRealize® Operations™ monitors the infrastructure and sends proactive alerts.

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ADAM COHEN  
IT MANAGER  
CITY OF NORTH LAS VEGAS

#### VMWARE FOOTPRINT

- VMware vSphere Enterprise Plus 6.5
- VMware NSX 6.3 Advanced
- VMware Horizon 7.2
- VMware vSAN 6.6
- VMware vRealize Operations
- VMware vRealize Log Insight
- VMware App Volumes
- VMware User Environment Manager

#### APPLICATIONS VIRTUALIZED

Police, fire, and utility applications; back-office applications; SQL databases

#### PLATFORMS

Dell PowerEdge  
Dell EMC VxRail  
Dell Wyse thin clients

To improve its security posture and save time for administrators, the city deployed VMware NSX for network micro-segmentation and uses VMware vRealize Log Insight™ to analyze network traffic and build effective firewall rules. “Using NSX with Log Insight, I can protect all our servers with just a few clicks and meet compliance requirements without setting up and managing hundreds of software firewalls for different applications,” says Todd.

As the city continues to modernize its data center, it will replace physical networking equipment with software-defined networking in NSX, reducing costs and management requirements. A hybrid vSAN cluster at a DR site provides standby infrastructure, requiring only four host servers for the city’s most critical virtualized applications.

#### Business Results & Benefits

Virtualizing its infrastructure with VMware has been very beneficial for the city, allowing it to be more responsive to residents and businesses. In less than four years, North Las Vegas has transformed itself into a truly global city, offering a recovery model for any beleaguered municipality to follow.

“Our digital transformation with VMware allows our employees to serve our citizens much more efficiently and with quicker time to market,” says Todd. “When we need to roll out a new application for business licenses or building permits, for example, we can do that very quickly.”

Streamlining permitting and licensing has reduced developers’ wait times by months, leading to millions of square feet of new development. As a result, the city has recruited companies that will pump billions of dollars into the local economy, including Hyperloop One; Fanatics; and Bed, Bath & Beyond. The Horizon virtual desktops perform much better than aging desktop hardware, making departmental staff more efficient. The virtual desktops are also easier to update and maintain, reducing the need to increase IT headcount.

“If we had gone with traditional desktops, it would have cost us over \$100,000 more over a three-year lifecycle for every 125 PCs we’re moving to VDI because we would have had to hire more support staff,” says Cohen. “VMware allows us to be more agile, enabling a 22-person North Las Vegas IT division compared to 70 or more IT staff at similar sized municipalities.”

Firefighters are much happier with their virtual desktops because they can spend more time making a difference in the community and less time on paperwork. Because each firefighter has their own VDI profile, they no longer need to depend on their captain to log them in to fire station computers. Access to dispatch and callers is likewise streamlined, helping officers and firefighters be more responsive.

“Virtualization has been so important in enabling us to get out from behind our desks and into the community, yet still securely access information when we need it,” says Joseph Calhoun, fire chief for the City of North Las Vegas. “We can access floor plans from our devices in the field and quickly strategize about how to attack a fire, saving more property and lives.”

Using NSX for micro-segmentation will greatly enhance the city's security posture and strengthen compliance with HIPAA, PCI, and CJIS regulations. Over time, network virtualization will bring even more flexibility, stability, and cost efficiencies.

"Ultimately, NSX will help accelerate our journey to hybrid cloud, making it easy to apply networking and security policies to cloud-based workloads," says Cohen.

### Looking Ahead

As the city gains a reputation as a technology and innovation hub, it is expanding VDI to administrative staff and more city departments. Moving forward, it will transition all virtual desktops to Horizon and all storage to vSAN, giving the city a single vendor to simplify, standardize, and streamline its technology.

"We get more value by going with a single vendor for virtualization, and VMware is the clear leader," says Cohen. "They've also demonstrated a strong commitment to our city and a belief that we would succeed, which you can't put a price on."

