



*Title: Nevada Department of Motor Vehicles Taking the Thruway to  
Virtualization*

*Category: Data, Information and Knowledge Management*

*State: Nevada*

**Executive Summary: Nevada Department of Motor Vehicles Taking the Thruway to Virtualization**

The State of Nevada has one of the fastest growing populations in the nation. The Nevada Department of Motor Vehicles (DMV) is growing as a result of this phenomenal growth in the State of Nevada. The result was server sprawl and rising costs, facts which were noted by the network group which was responsible for 1,400 desktops and notebooks along with 108 servers at the DMV's Carson City headquarters.

The IT department consisted of 60 people with a Network Support Team of 13, which managed the department hardware, applications and data for the 29 offices with 1,400 users and 108 servers.

The maintenance requirements of these servers also increased with the growing physical number of servers. However, the DMV did not have the resources to bring in more people to do the job.

The funding and maintenance costs fell on the taxpayers. And the Network Support Team members were taxpayers, too. They needed a remedy for this unchecked growth. Fortunately, there was a remedy at hand: virtualization.

DMV is taking the thruway to virtualization. Virtualization is the ability to isolate a server (computer) from the physical hardware. Many "virtual" servers can reside on one physical box. Server virtualization is the masking of server resources, including the number and identity of individual physical servers, processors, and operating systems, from server users.

The DMV explored and implemented a virtualized infrastructure using Dell™PowerEdge™ servers running VMware® ESX Server. A Dell/EMC SAN is providing virtualized storage capacity and a second Dell/EMC SAN provides replicated disaster recovery and production capabilities at one of the DMV's Las Vegas sites.

The DMV is virtualizing 41 servers, with the possibility of 60 to 80 server mark in the next two to four years. As we virtualize servers, the requested server replacements are removed from the budget with a net savings to the taxpayer.

Virtualization is to benefit DMV in disaster recovery and business continuity processes, it reduces complexity especially for management, saves costs on the duplication of hardware, saves cost on power including heating and cooling requirements, allows for more efficient use of existing equipment, provides for a real time testing environment, and supports future department innovations.

**Project Description:**

The DMV explored a virtualized infrastructure using Dell™PowerEdge™ servers running VMware® ESX Server over 2007. A Dell/EMC SAN is providing virtualized storage capacity and a second Dell/EMC SAN provides replicated disaster recovery and production capabilities at one of the DMV's Las Vegas sites. The actual project timeline commenced on January 14th and concluded on February 8<sup>th</sup>, 2008 and was implemented as planned.

The DMV virtualized 41 servers with full implementation, with the possibility of 60 to 80 servers in the next two to four years. As we virtualize servers, the requested server replacements are removed from the budget with a net savings to the taxpayer.

"We provision a new server in about 10 minutes," DMV management states "In the past it would have taken us four hours." One of the greatest benefits the Network Support Team is noticing is its ability to manage the virtual servers remotely with VMware Virtual Center, while achieving the highest levels of efficiency, automation, simplicity and security. With Virtual Center, the DMV can rapidly provision virtual machines as well as monitor performance of physical servers and virtual machines.

Being able to go to one place and look at all of your virtual machines, and manage those machines is an end product of the project with high availability, dynamic resource scheduling, all of those things that come with virtualization are available through the Virtual Center.

Server management is also now easier and faster with virtualization. "Every month we have to do Windows updates, and it takes quite a bit of time," says management. "We don't have whole racks of test servers to practice on. We get things into production quickly with VMware. We take a snapshot of a server, which gives us a bridge to retreat to. This is all during production so users are not affected. We now apply updates, and if everything is working fine then we just continue on. But if something's not right, we have a snapshot to go back to. Now we can do updates in 15 minutes with Virtual Center; before this process it would take 2 hours."

Virtual machines are now run on the SAN; this is to ensure high availability. A virtual machine becomes a file on a shared SAN resource and can be run on any of the four physical hosts. Virtual machines can be moved from host to host in the event of a physical server malfunction without users knowing. The ability to run a virtual server on the SAN and move it to any of the hosts is a direct benefit from the project.

The State of Nevada is now saving quite a bit of money with the Dell and VMware solution; with an enterprise solution a future possibility as additional agencies review the positive results. This solution should be looked at anybody who has numerous servers, and Dell services have made this transition painless and seamless for us.”

**Significance to the operations of government:**

Virtualization benefits DMV in disaster recovery and business continuity processes, it reduces complexity especially for management, saves costs on the duplication of hardware, saves cost on power including heating and cooling requirements, allows for more efficient use of existing equipment, provides for a real time testing environment, and supports future department innovations.

The virtual servers are more resilient to hardware failure, viruses, and system changes than traditional servers. A benefit observed with the virtual servers is that, in most cases, there is no degradation in performance with virtual servers and, in some cases; the virtual servers have out performed the standalone server.

By eliminating the requirement that every operating system have its own hardware platform, few servers needed to be purchased reducing funding requirements.

The DMV power consumption also went down and reducing cooling requirements to keep the equipment running.

**Public Value of Project:**

- 83% faster deployment — project completed in 6-weeks vs. anticipated 9 months thanks to help from Dell Services (as well as savings realized in ramp up and ongoing project costs)
  
- Ability to maintain and deploy servers without disrupting users
- 96% faster rollout of new servers (10 minutes vs. 4 hours)
- 88% faster server updates (15 minutes vs. 2 hours)
- 99% faster responses to questions with Dell services (1 hour vs. 4 days)
  
- 26 replacement servers at a minimum removed from 2010 budget (roughly \$150,000 in savings for the year)
- Reduction in power and cooling use

**Project Details:**

Hardware:

- Dell™ PowerEdge™ 2900 servers with Intel® Xeon® processors

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- Dell/EMC CX3-40 SAN
- Dell/EMC CX400 SAN

### Software

- VMware® ESX Server 3.02
- Double-Take® replication software

### Services used

- Dell Global Infrastructure and Consulting Services
    - VMware Infrastructure Workshop
    - Virtualization Readiness Assessment
    - Design Services
    - Implementation Services
- And Ongoing Vendor Support

### Project Timeline:

Commenced on January 14<sup>th</sup>, 2008

Concluded on February 8<sup>th</sup> 2008

WEB ADDRESS: [www.dmvnv.com](http://www.dmvnv.com)