



Virginia Department of Motor Vehicles

EMC Avamar protects records for millions of Virginia drivers

The Virginia Department of Motor Vehicles (DMV) processes thousands of license and vehicle registration applications each day in 73 field offices around the state. It also issues non-driving identification cards, sells vanity plates, and provides voter registration services. Every year, over 4.5 million licensed Virginia drivers must pass through the department's doors or opt to mail in renewal forms, making the DMV Virginia's most visible and profitable department.

To facilitate efficient customer visits, information collected by the department, including transactions and drivers' personal data, must be protected in case of a regional disaster or other cause of data loss. It also needs to be reliable and accessible to other state agencies including the highway patrol, treasury, and transportation agency. A reliable backup and data protection strategy is essential to ensure this level of security and availability.

The DMV's existing traditional backup software and tape backup solution could not provide the level of performance or data protection the department needed. The system was difficult to manage and slow, reducing the chances that backups would be completed within their windows each night. It was also costly, draining both the DMV's small storage budget and management resources at the Virginia Information Technology Agency (VITA), the services and solutions provider for the state's government agencies.

"We were really risking failure," says VITA's Todd Gallagher, lead computer engineer for the department's UNIX systems. "Many of the backups were not successful, leaving us susceptible to permanent data loss."

Gallagher estimates that at least 10 percent of the daily tape backups that were performed in each of the 73 field offices failed. This left that day's data unprotected in case of data loss, which was unacceptable. If one field office loses data from one day alone, every driver who had a transaction that day, whether it was a license renewal or new vehicle registration, would have to return to the DMV to re-conduct their business. In addition to creating an inconvenience for customers, the department would have to spend taxpayer dollars on direct mailings to inform the populace of the data loss and possible overtime for tellers who would have to reprocess the transactions.

However, perhaps the most dangerous and costly result of permanent data loss would be the unreliability and inconsistency of DMV data. A motorist pulled over by the police could show up on the cruiser's display as delinquent, while the motorist insists he filed the paperwork and paid the fees on time.

Backups were also taking a toll on the business staff who, while untrained, were required to load tapes, clean drives, and maintain networking equipment. At least 10 minutes of backup duty was required in each office every day, resulting in an estimated 3,800 productive hours lost by the business staff each year.

“Our existing tape backup process was not only a strain on IT and business resources, but also did not provide the level of security we needed in a data protection solution,” says Gallagher. “For basic business continuity, we needed to change the way we did backups and introduce geography into our disaster protection plans.”

EMC Avamar delivers remote office data protection

VITA replaced its traditional backup software and tape libraries in all 73 field offices with an intelligent data protection solution from EMC® Avamar. EMC Avamar® software provides incremental remote backups from a UNIX server in each office to disk storage housed in a centralized data center in the department’s Richmond headquarters.

“It’s truly amazing how EMC Avamar works. Where it used to be a gamble whether we could finish all our backups in the ten hours we are allotted each night, our cycles are now as short as three hours.”

Todd Gallagher, lead computer engineer, UNIX systems

Through a series of patented algorithms, the software only backs up data that is new or has changed since the last backup cycle. This reduces the amount of raw data sent over the network, dramatically shortening the backup window and ensuring the reliability of archived data. While Gallagher still does nightly backups for 80 servers with five gigabytes of data each, only three to 10 percent of the data actually travels over the wide area network (WAN). The rest is already stored in the archive, having been backed up during previous cycles.

EMC Avamar’s more efficient backup cycle reduces the amount of raw data that has to be backed up each night, allowing for faster, more reliable, and more consistent backup over distance. As a result, the department knows that customer records in all offices are protected and are recoverable.

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Eighty EMC Avamar clients were deployed, one in each office, plus several in the main data center on refurbished PCs running Red Hat. Working 17 at a time, the clients back up the day’s data overnight over T1 lines. Restores are done similarly. The entire UNIX server is usually restored, about five gigabytes, locally in the main data center and is then sent over the WAN to the remote server. VITA has had to restore servers three times since EMC Avamar was deployed in January, and the entire process never took longer than 17 minutes. Previously, restores from tape were a management nightmare and not even attempted. Minor data losses were just an accepted part of the department’s data protection policy.

The Windows systems also are backed up by EMC Avamar, protecting the DMV’s business data and file storage that helps run the operations of the department, including file storage, Web serving, and e-mail for 7,000 employees. Backups can be conducted from

the DMV's headquarters from a central management console that the EMC Avamar software populates with monitoring data, progress reports, and realtime alerts. The business staff can focus on what they do best—managing the business and providing services to customers—not performing IT services.

Reliable backup and disaster recovery

As a result of the EMC Avamar data protection solution, the Virginia DMV has a reliable and consistent backup and disaster recovery system. Data in all 73 field offices is protected in a central location, ensuring lost records can be restored seamlessly when necessary in the most efficient manner. In the rare case that data is lost, the entire remote server can be restored in minutes, shortening time to recovery and guaranteeing business continuity.

Customers will never have to be contacted again by the DMV saying their records have been lost and they need to return to the back of the line to re-register. This saves DMV management and public officials from embarrassment and saves tens of thousands of dollars per incident.

The DMV can also comply with legislation that requires the department to keep all data for 180 days and some data indefinitely. EMC Avamar makes archiving simple and recovering requested data even easier. While it would take days, even weeks to restore and find a file from tape, EMC Avamar has a search function that does it in minutes—and sometimes even seconds.

The DMV's improved data protection was also cost-effective for the department's IT resources and the state's treasury. By using EMC Avamar's more efficient backup solution, VITA can save a large portion of its storage budget since purchasing tape and tape drives is not necessary and only one backup administrator can do the job now, rather than two. The additional IT staff has since been reassigned to more proactive IT projects. In addition, networking resources and bandwidth are better used for business applications rather than backup cycles, resulting in improved application performance for tellers and customer service agents in the field offices.

Currently, VITA still uses traditional backup software to migrate the backed up data in Richmond to tape, which is manually transported to a remote storage facility. In the future, VITA plans to use the EMC Avamar solution to automatically migrate the data to disk in a new disaster recovery facility, again saving the department on tape costs. By replicating data remotely, the DMV will be further protected from regional disasters affecting the Richmond area, and the data will never leave the department's network either with a courier or in the trunk of someone's car.



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