FULTON COUNTY

Integrated EMC backup and recovery solution enables faster backups and cost savings

ESSENTIALS

Industry

County Government

Company Size

45 departments, 200 locations, and 6,000 employees

Business Challenges

- Disparate, tape-based backup systems
- Lengthy and inefficient backup and recovery processes

Solution

- EMC Avamar deduplication backup software and system
- EMC Data Domain
- EMC Data Domain Boost
- EMC Data Protection Advisor
- Oracle; Microsoft SQL Server

OVERVIEW

Fulton County is Georgia's most populated county, with close to one million residents and encompassing most of Georgia's capital city, Atlanta. The county government has 6,000 employees, scattered among 45 departments in more than 200 locations. Fulton County relies heavily on its 145-member IT staff to ensure maximum uptime for enterprise systems and enable business continuity.

BUSINESS CHALLENGES

In the face of exponential data growth and an increasingly complex IT environment, Fulton County's outmoded and inefficient data backup and recovery processes were falling far short of stated service objectives and goals.

The county was utilizing a tape-based backup and recovery system and replication, with multiple, disparate systems for mainframe application backup and image backups. In this environment, Fulton County could not meet its eight-hour backup window; full backups often took up to three days and some servers were never completely backed up. In addition, a typical restore operation could take up to a week, requiring IT staff to physically retrieve and manually identify tapes that were often stored offsite.

Fulton County wanted to implement a single-vendor solution for all backup and recovery functions that would address these issues by eliminating tape and its accompanying costs and inefficiencies, and reducing the amount of storage and network overhead required for backups.

SOLUTIONS

To meet these requirements, Fulton County replaced its disparate backup systems with an integrated backup and recovery solution from EMC. EMC® Avamar® deduplication software and system manages enterprise backup, recovery, and DR, and leverages EMC Data Domain® deduplication storage systems for the county's large, high change-rate databases via EMC Data Domain Boost (DD Boost) software.

Avamar backs up 370 virtualized Oracle and Microsoft SQL Server databases—representing more than 80 TB of data. Because Fulton County is highly virtualized with VMware® vSphere™, and can take advantage of Avamar's deep integration with VMware in order to protect more than 500 virtual machines (VMs). Avamar also handles all backups for the remaining physical servers containing unstructured data; thus Fulton County has a single pane of glass to streamline its entire backup and recovery process.

Mirrored EMC Symmetrix® VMAX® enterprise storage systems provide redundant data storage and automatic storage tiering in Fulton County's main data center and DR data center. The county uses EMC unified storage to store vSphere VMs as well as non-production applications and development initiatives.

CUSTOMER PROFILE

EMC²®

Results

- Reduced backup times from three days to less than eight hours
- Achieved data deduplication rate of 99 percent
- Reduced data restore times from up to a week to a few minutes
- Reduced backup storage requirements by 99.2 percent
- Estimated three-year net savings of $2.1 million

"Our main objective was to find a solution that could meet our backup windows. And advanced deduplication technology was also a driving force—less data sent across the network means more efficient backups and better overall network performance," says Ryan Fernandes, chief information officer, Fulton County.

MEETING BACKUP WINDOWS

With the powerful combination of Avamar and Data Domain, Fulton County has implemented a backup strategy that leverages deduplication and purpose-built backup appliances. The most noticeable benefit is the reduction in network traffic, since Avamar only needs to send unique changed data on a daily basis. Even though Fulton County anticipates data growth, deduplication will enable the county to leverage existing network bandwidth and reduce costs.

In this manner, Fulton County now performs a daily full backup of all 500 virtual and physical servers in six to eight hours, as opposed to the previous process that required at least three days and often yielded incomplete results. Working together, Avamar and Data Domain also have enabled Fulton County to reduce its backup storage requirements by 99.2 percent.

"By integrating Avamar with Data Domain, we're able to take advantage of the systems' scale and high throughput for backing up our very large databases. And the more we work with both products, the more functionality we uncover. We finally have a true enterprise strategy for backup and recovery, grounded by leading-edge technology."

Ryan Fernandes
Chief Information Officer at Fulton County, Georgia

"Thanks to the data deduplication capabilities of Avamar and Data Domain, we've dramatically lowered our backup disk storage requirements and network backup traffic," says Fernandes. "Also, due to the impressive deduplication, we have increased our retention periods to up to 60 days to have more backup data available for a fast one-step recovery."

Fulton County also plans to implement EMC Data Protection Advisor (DPA) to automate and centralize the collection and analysis of backup and recovery data across the county's vast IT infrastructure. By offering important intelligence and metrics on backup and restore operations, DPA will provide powerful evidence to management that the county is meeting its backup windows and achieving a return on its investment in the EMC technology.

REDUCING RESTORE TIMES

The ability of Avamar to perform file-level restores from image-level backups has yielded powerful efficiencies for Fulton County and reduced its recovery time objective (RTO) from days to hours.

Now, a typical data restore task is completed in less than 20 minutes, compared to the previous environment that took up to a week. From image-level backups, Avamar leverages Changed Block Tracking (CBT) for recovery, enabling it to rapidly restore a VM by restoring only the needed blocks from the last backup to the current state of the VM.

"Avamar's tight integration to the vStorage API for Data Protection and vCenter enables extremely fast image-level backups and provides file-level recovery in a single step. This has replaced our previous host agent backups that were very cumbersome and inefficient because they required two separate systems," explains Keith Dickie, assistant director of networks, Fulton County.

"Now, we no longer have to do both file backups and image backups; instead, we can retrieve individual files right from the VM image. And with one pane of glass, we can restore at the file as well as image level in a fraction of the time previously required. This is just one example of how Avamar has streamlined our backup and recovery process," he continues.

HIGH-PERFORMANCE ORACLE BACKUPS

Fulton County has seen great efficiencies in backing up Oracle to Data Domain using DD Boost for Avamar. Now, the county is looking forward to extending the value of DD Boost to database administrators with DD Boost for Oracle Recovery Manager (RMAN).

DD Boost for RMAN will provide even greater integration between the Data Domain system and Oracle and will enable Oracle DBAs to have complete control of backup and disaster recovery processes. By distributing part of the deduplication process to the Oracle database server, Fulton will see faster, more efficient backups and give the Oracle DBA direct control of Data Domain replication through RMAN.

Because DD Boost for RMAN only sends unique data segments over the existing network, LAN bandwidth requirements are greatly reduced between the Oracle server(s) and the Data Domain system. In fact, early testing of DD Boost for RMAN has already yielded a tenfold improvement in Fulton County's network performance for Oracle backups. For example, 131 TB of database data was deduplicated down to three TB—a 97.7 percent reduction—using DD Boost for RMAN. By reducing the size of the database backup, Fulton County will gain faster backups and reduce network and Oracle server CPU utilization.

"The Data Domain and DD Boost combination is a brilliant way to handle large databases with powerful performance and scalability benefits," says Fernandes.

A UNIFIED, SINGLE-VENDOR STRATEGY

EMC has enabled Fulton County to achieve its objective of utilizing a single-vendor solution for enterprise-wide backup and recovery. All Fulton County backup activities are managed and controlled through a single Avamar management interface.

"We now have one infrastructure for viewing and managing replication to our DR sites, and a single Avamar grid provides a 'private cloud' that encompasses backup for the main data center and DR sites," says Fernandes.

"By integrating Avamar with Data Domain, we're able to take advantage of the systems' scale and high throughput for backing up our very large databases. And the more we work with both products, the more functionality we uncover. We finally have a true enterprise strategy for backup and recovery, grounded by leading-edge technology," he continues.

With the EMC solution, Fulton County expects to save up to $2.1 million over three years from both hardware and software cost avoidance and labor efficiencies stemming from tape elimination; in fact, the county no longer requires a second and third shift in the data center after hours and on weekends.

"The key to our success was strategic planning and execution, vendor support, and measurable outcomes," says Fernandes. "EMC and our other vendor partners provided training and support to empower our staff. At the end of the day, we had quantifiable metrics like significantly reduced backup and recovery times, 98 percent deduplication rates, and a reduced physical footprint in our data center."

CONTACT US

To learn more about how EMC products, services, and solutions can help solve your business and IT challenges, **contact** your local representative or authorized reseller—or visit us at www.EMC.com.

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