

database

TRENDS AND APPLICATIONS

Luminex Channel Gateways Replace Orange County's Mainframe Physical Tape Infrastructure

Government data centers are facing increasing pressure to cut spending to the bone and seek more innovative ways to increase value to the taxpayer. And at no place is this truer than in cash-strapped California.

Despite being one of California's wealthiest counties, Orange County has been feeling the pinch as well. The county, situated just to the south and east of Los Angeles, is the state's third-largest in terms of population, with 3.1 million residents occupying 798 square miles. The county government has an annual budget of \$6.7 billion, out of which it spends about \$52 million on IT operations,¹ a number it seeks to reduce as incoming revenues have softened due to the economic downturn. Close to \$5 million of these IT expenditures are for mainframe maintenance and operations within the government's central IT department.² The county's large Sun/StorageTek Tape Silo system and the thousands of physical tapes it produced was no longer meeting the county's requirements and was far too costly.

While actively pursuing IT cost reduction, the county is also committed to expanding information delivery to its

constituents and data sharing between agencies and departments. To address this dual mandate, the county government has been streamlining its IT delivery system into its centralized operations. In doing so, various agencies and departments affiliated with the county will now be able to benefit from economies of scale, while money is saved through centralized purchasing of equipment. County agency and department data is more secure through a centralized disaster recovery and business continuity service as well.

INFRASTRUCTURE AS A SERVICE

To accomplish these goals to centralize IT functions, reduce overall cost and modernize its data center, the county contracted with Govplace, a premier provider of enterprise IT solutions for the public sector, to design, build and manage IT storage and backup. Govplace, a Luminex value added reseller and integrator, implemented Luminex's Channel Gateway Modern Mainframe Virtual Tape solution and Data Domain's deduplication storage for the county's central IT

operations. "We replaced most of their legacy mainframe tape infrastructure, their open systems storage infrastructure and backup technology," says Damon Brown, chief technology officer for Govplace.

The county leveraged Govplace's "Infrastructure as a Service" (IaaS) offering, a managed service model in which Govplace owns and maintains infrastructure within the county's data center. The Orange County government is charged on a "pay per use" model for various IT capabilities, and is no longer required to lay out capital expenditures for system updates, upgrades, refreshes, or expansion. The government can also now quickly take advantage of new innovations focused around hardware, including virtual server and storage services, network access, and basic operating systems. In addition, the county is realizing savings from freeing up considerable floor space occupied by the previous storage system.

Govplace's IaaS offering is targeted at the county's centralized IT storage and backup service needs. Govplace has staff at the county's on-site data center, and guarantees predetermined

¹ From *FY 2009-10 Orange County Annual Budget*, Information Technology Internal Service Fund-289; http://bos.ocgov.com/finance/2010FN/p4_frm.htm

² From *FY 2009-10 Orange County Annual Budget*, IBM Maintenance-039; http://bos.ocgov.com/finance/2010FN/p4_frm.htm

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levels of performance, support and reliability to meet these requirements. This arrangement enables the county to scale up IT storage and backup needs quickly, without large start-up expenses, and only pay for resources used.

In the process, the central IT operation can absorb new workloads from various departments and agencies. "This is a service model for the agencies in Orange County that is cost-effective. Offloading infrastructure services frees up agency IT resources to focus on innovations that have unique value to them," Brown explains. "For instance, if an agency needs more storage, they have a choice. They can go out and purchase their own storage, go through the RFP, purchasing, installation, training, and integration process. Or they can simply purchase required storage from their in-house central IT. The more the county government can centralize, the more it can benefit from economies of scale. The goal is to maximize the efficiency of the taxpayer dollar—which the Luminex/Govplace laaS solution provides."

MAINFRAME MODERNIZATION

Mainframe virtual tape with deduplication is at the heart of Orange County's laaS program, which enables the county government to continue to leverage its mainframe environment, and even increase performance, while greatly reducing operating and backup costs. With the new Luminex Channel Gateway Modern Disk-Based Mainframe Virtual Tape solution, Orange County will reduce its IT media (tape) and storage expenses, provide faster backup and restores, and reduce manpower needs for the county.

Orange County's mainframe modernization was enabled by the deployment of Luminex Channel Gateway virtual tape that emulates mainframe tape

drives with FICON channels. When the Luminex Channel Gateway receives a tape volume from the mainframe, it streams the data straight to the Data Domain data deduplication storage system, leveraging the up to 20x or more compression benefits of inline deduplication storage. Virtual tape and data deduplication work in conjunction with each other to provide intelligent data protection and archiving capabilities.

Modern Disk-Based Mainframe Virtual Tape solutions are proven to dramatically increase data centers' throughput performance and eliminate reliance on cumbersome physical tape within their data centers. While their systems still "see" tape drives, data is actually sent to disk-based storage. This enables faster access to data as well as more streamlined operations for daily tape operations, backup and recovery.

The solution is modernizing and streamlining the county government's IT operations, eliminating legacy systems that had been built up over the years, with a complicated and diverse network of storage systems. The county's mainframe data center was originally supported by Sun/StorageTek tape-based storage systems, with 60,000 physical tapes in constant rotation at any given time. "There were a couple of people on the data center floor moving crates of tapes, every day," Brown says. "Luminex is also providing the tape migration tools and engineering services to migrate the county's legacy physical tapes to the new virtual tape solution. The migration to virtual tape is expected to be completed by the second quarter of 2010. By that time," he adds, "the county's IT department will be a 'tapeless' environment for day to day operations."

The Luminex Channel Gateways emulate 3490/3590 tape mechanisms but actually write to fully redundant disk drives in the storage system. It looks

and feels exactly like the old tape silo to the mainframe, but without the extra cost of maintenance, media and staff time, so no host application or tape management changes are needed. Throughput and response times are improved, enabling data volumes to be restored in minutes, versus hours. The new configuration also supports up to 4,096 devices per Channel Gateway.

The Orange County government is realizing numerous benefits that will enable it to meet the fiscal crisis head-on, while increasing services to its constituents. Powered by Luminex Channel Gateways that move data to virtual tape, Govplace's laaS solution is lowering the county's operating costs, capital outlays and staffing expenses.

Govplace's laaS and the Luminex-based virtual tape solution is also improving the county's data backup efforts, by providing for speedier and more secure recovery of data. Information is also reaching constituents and agencies in a more timely manner—the county's mainframe environment is no longer constrained by the need to batch-load information to tapes.

As one example of the improvements in data management with the Luminex/Govplace solution, the county recently conducted a disaster recovery exercise at its DR site. The county was given only 24 hours to complete the exercise. Under the replaced legacy Sun/StorageTek tape system, the previous DR exercise recovered from physical tape and took about 16 hours just to restore the county's data before it could even begin testing its systems. Needless to say, the results were less than satisfactory. With new Luminex Channel Gateway and de-dupe technology, the county's IT staff was able to recover all of their data in just a couple of hours, as well as successfully complete all of their system tests ahead of schedule.

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THE LUMINEX SOLUTION

Luminex's Channel Gateways, combined with Data Domain's data deduplication storage systems, allow mainframe customers to reduce or even eliminate their physical tape systems and use a more reliable, faster and cost-effective virtual tape backup and recovery solution, leveraging the advantages of Data Domain's industry-leading data deduplication technology.

The Channel Gateway is the breakthrough product that enables mainframe users to unlock the proprietary boundaries that have kept the mainframe from leveraging the storage and networking technology advancements available to open systems environments. Through the Channel Gateway, every type of open

systems disk, virtual tape library, physical tape and tape library (Fibre Channel, iSCSI and NAS) can be channel-attached to the mainframe via native ESCON and FICON. And, with the Channel Gateway's innovative technology that allows mainframe enterprises to take advantage of open systems advancements, the Channel Gateway offers another significant advantage to data centers like Orange County—a single data management and backup and disaster recovery system for both mainframe and open systems data.

The Channel Gateway presents itself to the mainframe as native ESCON or FICON channel-attached devices (such as 3480, 3490 or 3590 tape drives). Mainframe applications and tape management

software read and write, to and from the Channel Gateway, without change. ESCON and FICON traffic is translated at wire speed to the open systems protocol (Fibre Channel, iSCSI and/or NAS) with no MIPS overhead, no bottlenecks and no impact to the mainframe.

Luminex Modern Virtual Tape with deduplication from Data Domain provides the answers to the traditional problems, challenges and costs of managing and storing mainframe data on physical tape, Disk-Cache Physical tape, and primary disk remote replication. With the Luminex Channel Gateway, mainframe enterprises can eliminate costly and cumbersome physical tape as Orange County is doing, and realize significantly improved performance. ■

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