



Case Study

City of Riverside gains a flexible, more agile storage foundation with CDCT's help

The client: City of Riverside

Known as the City of Arts and Innovation, Riverside is tasked with providing high-quality municipal services that ensure a safe, inclusive, and livable community for more than 317,000 citizens. Based on the awards it has received, the city appears to be doing an excellent job living up to this mission.

In the past few years, Riverside was recognized as the most intelligent community in the world by the Intelligent Community Forum (ICF). It's also routinely ranked at the top of Digital City surveys, with a nod to such efforts as the city's Virtual City Hall (which offers a large portion of the city's services online), the Engage Riverside web portal (which allows the public to view much of the city's data and documents), and its SmartRiverside Digital Inclusion Program (which gives low-income families access to free computers and eight hours of free computer training).

The challenges: Create future-proof infrastructure and find a qualified services provider

At the backbone of the city's innovative, award-winning services is the organization's own innovation and technology department, led by Chief Innovation Officer Lea Deesing and her team. Though the department had done much in recent years to further Riverside's thriving digital services, it was time to migrate to a scalable, high-performance storage platform to support known and anticipated future needs.

At the center was a several-year-old enterprise storage area network (SAN) that was fast approaching its own end of life. It was also starting to run out of storage capacity for the various mission-critical applications it supported, let alone new and expanding innovative applications the city planned for its 2,300 internal users and several hundred thousand external constituents.

Beyond choosing the right storage platform for the city's current and future needs, the city also had something broader in mind. It was time to augment its local data protection and recovery efforts to include faster failover and offsite disaster recovery, a critical component given the city's earthquake-prone locale.

Central to the future success of both initiatives was not only choosing the right foundational platforms, but also finding the right services partner with the appropriate mix of technical resources and services to transition from the city's prior storage infrastructure to the new one. The project required in-depth expertise in design, planning, and deployment. "Our objective was to be sure we had a reliable solution as well as a strong data center services partner that would take the lead and see the project through to successful completion," said Deesing.

Industry:
Government

Solution:

- Migrated from aging SAN to NetApp®, running clustered Data ONTAP® at the primary data center
- Deployed second NetApp system for offsite disaster recovery

CDCT services:

- Design
- Implementation
- Migration
- Project management
- Support

The solution: A next-generation storage platform

Several considerations led Deesing and her team to award the contract to Cloud + Data Center Transformation (CDCT). A key point in CDCT's favor was its ability to offer a more complete, full lifecycle approach that encompassed not only hardware and software but also relevant services. This included the expertise to design the solution, implement it, provide migration services, manage the overall project lifecycle, and offer ongoing support and follow-up aftercare. In short, what we offered was a full-service partner with expertise in the key areas Riverside needed to feel confident in the move.

After assessing Riverside's current and future needs, as well as the required outcomes and benefits to the city and its residents who use city services, we recommended two NetApp next-generation storage platforms. The NetApp solutions featured software-defined clustered Data ONTAP operating systems, which deliver performance gains and allow for flexible scaling, both up and out, without disruption to end-user services. The solution has a more affordable licensing model than what was available from the prior storage vendor. "We found that the solutions offered the best overall value to the city based on our current storage needs and anticipated future growth," said Deesing.

Our project management team scoped and mapped out the entire engagement, from site preparations and deployment, to data migration and knowledge transfers to the city's internal IT team. Central to the success of the engagement was minimizing disruption to the city's personnel and its residents.

We architected and deployed storage platforms to support the needs of several hundred VMware-based virtual machines and several database applications based on Oracle®, Microsoft® SQL Server, and IBM Informix. In addition, we leveraged the NetApp technology to replicate data from the production facility to the city's remote disaster recovery (DR) location, providing the city with enhanced business continuity capabilities.

Our dedicated data migration practice team planned the people, processes, and technologies needed for a trouble-free transition of the city's half-petabyte of data from its outgoing storage system. The planned data migration was scheduled off-hours and on weekends to minimize impact to critical systems hosted on the underlying storage, such as the city's core financial system, utilities and billing systems, and supporting systems for the city's virtual city hall and associated fire, police, and dispatch systems.

Insight OneCall™ Support Services ensures the city can maximize its IT investment and enhance the experience of its residents and personnel who leverage technology-dependent city services.

"Our upper management wanted to know when we were going to do the upgrade. They were amazed when we told them it was already done."

– **Brian McArtor**
Systems Manager, City of Riverside

The benefits: A flexible foundation that's ready for future needs and new directions

Most of the city's mission-critical software applications reside on the NetApp solutions. The new solutions have resulted in reductions in floor space, as well as power and cooling consumption. The NetApp system's simplified management tools and combined license have also led to savings in daily operational time and required resources. Just as important, the city can now bolster its maturing disaster recovery framework while providing a more flexible, affordable storage foundation for its emerging needs.

Data migration without hitches and headaches

Complex migrations of large amounts of data are not small endeavors. If handled incorrectly, these types of projects can be fraught with unexpected costs, snags, and significant disruption to end users. Thankfully, Riverside's experience with us was just the opposite.

"Our upper management wanted to know when we were going to do the upgrade," recounts Brian McArtor, Systems Manager, City of Riverside. "They were amazed when we told them it was already done." The half-petabyte migration occurred off-hours, with hardly an impact felt across the organization. "The fact that [CDCT] was able to complete the migration on time, on budget, and quietly in the background without any unplanned downtime is a real accomplishment for a wholesale overhaul of a major back-end system," said Deesing.

Innovative storage to fuel future city innovation

"Government agencies need to be more agile than ever to meet the changing needs of our citizens, businesses, visitors, and internal departments," said Deesing. "Our back-end systems must provide the scalability and flexibility to adjust to the front-end demand for applications and services of all types." Deesing cites examples of future growth needs, such as new data collected from the "Internet of Things," which might include water/electric utility information collected from advanced future smart grids or automated metering systems.

Based on his experience thus far, McArtor sees the NetApp system being well up to the task. "Deesing can ask for something – whatever the technology, product, or change of direction may be – and we don't have to be the people saying, 'Oh, you can't do that with our existing infrastructure,'" he said. "Now, we can say, 'Okay, when do you want it? How big do you want it? How fast do you want it?' It's all doable. We didn't paint ourselves into a corner with this equipment."

Easy, powerful disaster recovery that scales

We helped the city design and implement a multiphased approach to disaster recovery. Now at the start of the process, the city looks forward to working on subsequent phases with other groups, such as incorporating more application- and database-aware snapshots for faster local and offsite recovery of application data.

How important is this disaster recovery endeavor? Very, according to Deesing. "Most of our mission-critical systems are running on NetApp. If these applications go down, it not only prevents our departments from doing their jobs, but it also impacts the city's 24x7 Virtual City Hall, whereby almost all services a citizen can experience in person are also offered online." The NetApp system seems up to the challenge. Deesing notes that uptime and performance have been very good and consistent thus far.

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Benefits:

Mitigated risk:

.5 PB

migrated seamlessly, off-hours with imperceptible disruption to users



Implemented a new offsite disaster recovery architecture.

Transformed IT to accommodate growth:

Nearly doubled

the data storage capacity to support mission-critical and emerging applications.



The overall experience: CDCT's partnership and expertise never faltered

"During the implementation, our relationship with [CDCT] felt more like a strategic partnership than a typical customer/vendor relationship. We were all on the same team and it showed. The seamless transition from the old system to the new – without unplanned disruption to the users – was remarkable," she said.

Our team guiding the work included a project manager, design and implementation engineers, as well as advanced services personnel who handled the data migration. We also provided technical support through our OneCall service, which is staffed by two U.S.-based support centers to ensure redundancy and compliance with service-level agreements (SLAs). Since the implementation, McArtor has had a few occasions to use the OneCall service. His experience? "It's been outstanding," he said. "They even contacted me before I contacted them."

On the partnership between CDCT and her own IT staff, Deesing noted, "It was very important for [CDCT's] project manager and our technical lead to work as a team, retain excellent communication, and seamlessly work together through project completion. We feel this was an exemplary implementation in all of these areas."

McArtor concurred, noting, "I view [CDCT] as a partner in this. I am on a first-name basis with the players involved, and I wholeheartedly trust them," said McArtor. "It was a great experience. I'd recommend them to other agencies, for sure. If an agency is changing vendor platforms, I would suggest they bring a partner on-board like [CDCT]. It's money well spent and makes it so much easier."

Benefits:

Reduced costs and gained efficiencies:



Reduced requirements for daily operational resources, floor space, and power and cooling

Realized time savings via simplified storage management tools



Improved system performance:



Achieved excellent uptime and accelerated database systems and VMware® platform performance via a NetApp SSD-enabled storage tier.

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