



SUCCESS STORY
Government



CITY OF HOUSTON | PROBLEM SOLVED

The City of Houston cut costs, streamlined workflows, and consolidated data centers using a reliable NetApp cloud solution. This resulted in the City's ability to deliver efficient, highly responsive services to its citizens.

Providing World-Class Services to One of America's Biggest Cities

Reliability and responsiveness are keys to supporting the City of Houston's citizens. To further its mission and optimize service delivery, Houston adopted a private cloud powered by the NetApp® FlexPod® platform and the NetApp® ONTAP® operating system.



22,000 employees in 22 departments serve the city's 2.2 million residents



Around-the-clock access to systems is crucial

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THE CITY OF HOUSTON SAVED

\$1 MILLION

BY CONSOLIDATING

7 DATA CENTERS TO **1** PRIVATE CLOUD COMBINING COLOCATION WITH ON-PREMISES HOSTING



IMPROVING URBAN LIFE FOR MILLIONS

Supporting one of the most populous cities in Texas and the fourth largest in the United States is a tall order. Yet, with teams of committed city workers empowered by a state-of-the-art IT infrastructure, the City of Houston's citizens can count on it all—whether it's benefiting from EMTs with telehealth capabilities; getting to trial faster despite one million cases filed annually; or relying on responsive emergency services when massive flooding ravaged Houston neighborhoods in early 2015.

Poised as a model for other local governments to follow, the City of Houston enhances urban life and saves time and money by using technology as an innovation enabler. In fact, its recent IT transformation is bringing new levels of service responsiveness, reliability, and efficiency to the 2.2 million people who call this vibrant port city their home.

"Citizens need our services to be there for them every day, whether they are taking care of routine business or dealing with a disaster," says Tina Carkhuff, a former police officer who serves as CIO/ Interim Director for the City of Houston. "We needed to have systems in place to meet any demand at any time."

CHALLENGE

Finding better ways to serve

Keeping systems operational and responsive is essential for enabling the City's 22,000 employees to do their jobs. Many require around-the-clock access to systems to reliably deliver critical community services. The Municipal Courts Department, for example, requires 24/7 system uptime to enable police officers to quickly produce and ensure the accuracy of electronic warrants. First responders need fast and reliable communications to coordinate rescue efforts, especially in a region that has had its share of damaging

BUSINESS BENEFITS

- Keeps vital city services operating in all situations
- Streamlines court processes and increases revenue and collections
- Eases burden on emergency rooms and ambulances
- Extends impact of limited tax dollars

weather-related events. Even the Parks Department relies on the City's IT services to support a vital summer food program that feeds thousands of children who would not otherwise have meals.

Operating in the most efficient way possible is also essential for stretching citizens' tax dollars further.

“Everyone on our team feels like they’ve contributed to helping our world-class city run more efficiently. And through it all, we’ve been happy to have NetApp as our partner.”

Tina Carkhuff
CIO/Interim Director, City of Houston

To better meet these requirements, the City needed a new IT strategy. “With 22 departments, we were challenged by a lot of systems sprawl,” says Carkhuff. “To provide the level of service and uptime the City requires, we set out to standardize, centralize, and modernize our infrastructure.”

SOLUTION

A new private cloud

The City’s strategy was to consolidate seven data center facilities into a private cloud combining on-premises hosting with colocation. A FlexPod solution was chosen to support the new private cloud, providing a prevalidated, tightly integrated infrastructure. The solution is built with NetApp storage running NetApp ONTAP operating system, Cisco UCS servers, and Cisco Nexus switches. “Choosing a NetApp solution not only allows us to significantly reduce deployment time and project risk, but also gives us the flexibility to innovate and grow,” says Carkhuff.

[NetApp SnapMirror® software efficiently replicates changed data between the tier 3 facilities for citywide disaster recovery,](#)  while ONTAP operating system

technology facilitates nondisruptive operations. This approach enables the IT team to both maximize uptime and be more responsive to departmental needs. Existing applications and workloads, especially those related to SAP, are now seamlessly adjusted and optimized, and quality in-house solutions—vetted for security, cost, and compliance—can be quickly deployed.

With NetApp’s guidance, the City also leveraged NetApp Flash Pool™ intelligent caching to overcome initial sizing and performance problems with its SAP payroll system. “We’re not SAP experts, and NetApp came through when we needed help,” says Dan Steege, assistant director for the Enterprise Infrastructure Services Division in the City of Houston. “The NetApp team brought in SSD and got us fully functional, and the flash solution helped to speed the performance of SAP. That’s important, because we have 22,000 people depending on our payroll system.”

BUSINESS BENEFITS

Weathering the storm with zero downtime

With the new solution in place, there were no systems outages

when severe flooding hit Houston in May 2015—unlike Hurricane Ike in 2008, which disrupted city e-mail and other critical communications systems. Throughout the recent disaster, the City took calls and quickly set up an emergency call center to further enhance responsiveness. Critical services, such as waste management, continued uninterrupted and city employees stayed productive, with many working from home on VPN-equipped laptops.

“When we have a disaster like this and we can keep many vital services working, we realize how great the payoff really is for our private cloud and ONTAP operating system deployment,” says Steege. “The City was able to keep safety, sanitation, and service at the forefront,” adds Carkhuff.

Efficient use of tax dollars

Now benefitting from a more compact IT footprint, the City has been able to reclaim former data center space for other needs. “Our Municipal Courts Department was able to build out an additional jury room, which is fantastic because now they can accommodate more trials concurrently,” says Carkhuff.

The ability to convert reclaimed space to office or other uses and to have fewer rental requirements has also helped the City cut costs by nearly \$1 million annually. 

Another innovative solution made possible by the new infrastructure is a time-saving SAP self-service portal. The portal enables city employees to check the status of their benefits, record time, request time off, and make changes in their enrollment.

New ways to serve and save

The City's private cloud is helping to advance paperless initiatives by automating previously paper-based processes, saving time and streamlining workflows with digital approvals and signatures.

Such is the case for a new Court System Management and Resource Technology platform (CSMART) that has enabled the courts to achieve significant improvements in speed, data integrity, and ease of use. The private cloud has also enhanced the ability to better serve citizens and

increase revenue and collections. "CSMART drives every process of the courts," says Carkhuff. "The only paper involved is a final receipt."

The private cloud has also made the nation's first Emergency TeleHealth and Navigation program (ETHAN) a reality. Easing the strain on busy emergency room and ambulance services, it enables Houston Fire Department EMTs to address non-emergencies with telemedicine physician consults. Instead of a \$1,000 ambulance ride and costly emergency room care, a patient can consult with a physician who can schedule an appointment and even arrange for non-emergency transportation. The program is expected to save millions in taxpayer dollars.

"Our private cloud based on NetApp gives us the ability to better serve citizens," says Carkhuff. "We're proud of what we've done. Everyone on our team feels like they've contributed to helping our world-class city run more efficiently. And through it all, we've been happy to have NetApp as our partner."

SOLUTION COMPONENTS

FLEXPOD ENVIRONMENT

NetApp FAS8040, FAS2552, V6250, and V3220 storage systems

Cisco Unified Computing System (UCS) servers

Cisco Nexus switches

NETAPP SOFTWARE

NetApp ONTAP 8.3

NetApp Flash Pool

NetApp Snapshot[®] and SnapRestore[®] technologies

NetApp SnapMirror

THIRD-PARTY PRODUCTS

Applications: SAP Payroll, Court System Management and Resource Technology, Microsoft Exchange Server, Bit9, Hexis

Database: Microsoft SQL Server

Virtualization: Microsoft Hyper-V

Operating System: Windows Server

PROTOCOLS

FC

NFS

CIFS

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Front photo: Visit Houston (Jim Olive)

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