



## CASE STUDY

# CHOCTAW NATION



### Location

North America

### Industry

Healthcare, Government

### Company

Choctaw Nation

### Use Case

- Database – RPMS
- VSI – VMware® vSphere®
- VDI – VMware® Horizon

### Business Transformation

Care providers see sharply reduced response times when accessing patient records and other vital healthcare information. And capital and operating costs are slashed by standardizing on an IT infrastructure that can be upgraded over the long term without forklift upgrades.

### Challenges

- Lagging storage performance resulted in high latencies and long wait times for routine file requests.

- Video production demands overtaxed the IT infrastructure.
- Legacy spinning-disk storage was expensive and time-consuming to maintain.

### IT Transformation

- Responds instantly to file requests and emails through virtual desktops.
- Native replication allows dual data centers to operate in parallel for optimal load balancing and performance.
- Time required for routine storage management tasks is slashed by up to 95%.



### Choctaw Nation Improves Infrastructure Performance and Efficiency

Given its strong sense of history and deep cultural pride, the Choctaw Nation continues to focus on the needs of its people today and economic growth for tomorrow. The nation has more than 1 billion USD in annual revenues from gaming, retailing, and other businesses. With tribal enrollment of more than 220,000, the nation has its government headquarters in Durant, Oklahoma (and more than a third of its population in the state). It also operates its own medical care

system, Choctaw Nation Health Services, which has a hospital in Talihiina and eight clinics spread across southeastern Oklahoma. The Choctaw Nation was the first indigenous tribe in the United States to build its own self-funded hospital.

Central to the nation’s economic and healthcare strategy is investment in information technology. It recently built a state-of-the-art data center in Durant, and has an advanced IT infrastructure for Health Services.

“We’re very fortunate that our leadership has been so supportive

of building out an IT infrastructure that delivers superior performance for both patients and employees,” said Daniel Dickerson, Systems Engineer for Health Services, who oversees its data-center design and hardware infrastructure.

Health Services operates a primary data center at the hospital in Talihiina, purchases space in a co-location facility in Allen, Texas, and has access to the nation’s main data center in Durant.

Health Services was an early adopter of all-flash storage from Pure Storage, purchasing its first FlashArray™ to support

*“If I can get the performance of all-flash at an affordable price, then I will guarantee that storage will never be a bottleneck in the future.”*

**DANIEL DICKERSON**  
Systems Engineer





its electronic medical record (EMR) system. Ironically, for an organization that values the latest in technology, the tribe's EMR system has its roots in the early 1980s and came to the Choctaw Nation from the Department of Veterans Affairs through the Indian Health Service. Despite its age, Dickerson said, the RPMS database on which it runs "is solid as a rock."

What wasn't solid, he noted, was the storage infrastructure for Health Services.

*"Pure Storage is so oriented toward their customers and their financial needs. They help move forward rather than start from scratch over and over."*

**DANIEL DICKERSON**  
Systems Engineer

**'Night-and-day' improvement in application performance**

"Spinning disk is expensive," Dickerson said. "It costs a fortune, and they charge you an arm and a leg for every little incremental feature. You'd be surprised how much of my time I spend driving to the co-lo facility, which is three hours away, to meet someone just so they can switch out a spinning disk that has failed. And we're talking about at least eight spinning disks in the last two months that have failed across our two locations."

"Spinning disk is a thing of the past. When we started looking for an alternative, my thinking was that if I can get the performance of all-flash at an affordable price, then I will guarantee that storage will never be a bottleneck in the future."

Dickerson was especially concerned about the interface. "Our spinning-disk system was SATA, and while it was OK, we knew we needed Fibre Channel,"

he said. "We have had a big issue with I/O on our legacy arrays because they are getting beaten to death with the workloads we're putting on them. Migrating data off these machines is really difficult because of SATA. So, I look forward to finishing the process of moving all production onto Pure arrays."

Dickerson investigated several vendors and consulted Gartner's Magic Quadrant for storage. In the end, Dickerson chose Pure Storage.

"I was very impressed with Pure Storage. They have built a rock-solid array with high performance at a reasonable price. If I had a choice between Pure and my legacy vendor any day of the week, I would always pick Pure."

Instead of a proof-of-concept trial, Dickerson opted for the Pure Storage Love Your Storage™ Guarantee in which a prospective customer can use a Pure array for up to 30 days and, if not satisfied,





return it at no cost. A FlashArray was installed at both the primary and co-lo data center.

“And we saw immediate results, especially in our VDI,” Dickerson noted. “With spinning-disk, you’d see 30 seconds go by to open a file or email. After moving to the Pure array - with the same equipment running the virtual machines — they would open in the snap of a finger.”

To learn if clinicians experienced an improvement, Dickerson moved the EMR system onto the Pure Storage arrays without telling any end-users and then visited care providers in numerous locations. That includes the remote

clinics, which are supported by the Talihina data center.

“Without them knowing anything had changed, they said everything was working better,” Dickerson added.

**Consolidating key workloads on all-flash**

Consistent with the nation’s leading-edge approach to IT, Dickerson sought to blend best-in-class elements into a cohesive solution. The nation has been a long-time user of Cisco UCS® servers, running four fully populated chassis to support all its IT and communication services. And it has virtualized its server and desktop environments with VMware software. When he installed Pure Storage arrays, he had all the elements of what is now offered by Pure Storage and Cisco as the FlashStack™ converged infrastructure solution.

FlashStack combines the latest in compute, network, storage hardware, and virtualization

software, into a single, integrated architecture. This speeds time to deployment, lowers overall IT costs, and reduces deployment risk. Highly efficient components cut costs associated with power, cooling, and data center space.

“At the time we implemented this converged infrastructure, there wasn’t a FlashStack offering per se,” Dickerson noted, “but we saw the benefits of the tight integration between Cisco, Pure Storage, and VMware, and how it simplifies planning, deployment, and day-to-day operation.”

A FlashStack infrastructure also simplifies upgrades to the latest technology. Health Services has been running B Series UCS server blades, but will soon replace some of them with C Series blades. “We’re buying C Series for VDI, because we need GPU (graphics processing unit) for better graphics processing,” Dickerson said. “We produce a lot of videos for employees to watch, and from a VMware Horizon session, it was a struggle at times to render a video

*“If I had a choice between Pure Storage and my legacy vendor any day of the week, I would always pick Pure.”*

**DANIEL DICKERSON**  
Systems Engineer





smoothly to some desktops. With the C Series, we can use the NVIDIA GRID K1 and K2 cards, which offer exceptional video performance.”

Health Services also plans to upgrade its FlashArray-420s to //M20 arrays, a change that will be simplified by its subscription to the Pure Evergreen™ Storage program. In this way, storage can be deployed once and upgraded as needed for a decade or more. Components can be mixed and matched — all online and without performance disruption — to keep storage dense, efficient, and modern.

*“Pure Storage is phenomenal. It’s the best thing ever.”*

**DANIEL DICKERSON**  
Systems Engineer

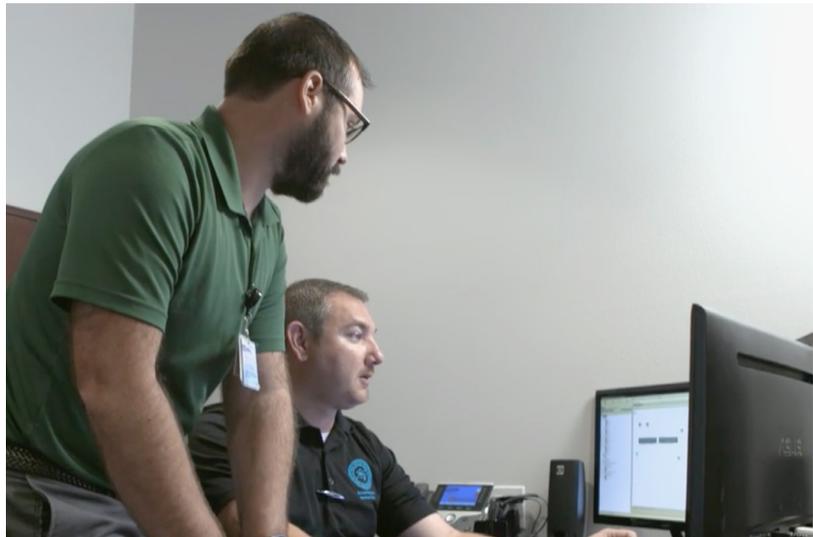


**Key features simplify storage management**

During almost two years’ experience of using Pure Storage, Dickerson has come to value many of the features Pure includes at no extra charge. Non-disruptive upgrades eliminate worries about interrupting production runs for routine hardware and software upgrades, while deduplication and data compression “give us more usable capacity, a longer lifespan, and a reduced data-center footprint, which saves operating costs,” he said. “Our legacy storage took up

“I’ve never seen a program like Evergreen Storage before. Pure Storage has taken steps well beyond any other vendor to make it seamless and affordable for a business to move into the future. Our legacy vendor would come in, tell us our existing storage was outdated after just three years, and propose a new one for \$3 to \$5 million.”

He added, “Pure Storage is so oriented toward their customers and their financial needs. They help us move forward rather than start from scratch over and over. I don’t miss forklift upgrades at all.”





four full racks, but with Pure, we are down to just 8U.” Data reduction on the array supporting the EMR is currently 8:1.

The effortless management of Pure Storage arrays also has been popular with Dickerson. “Pure has saved me hours and hours of time. The interface makes it super easy to get things done in a short amount of time. Our legacy system is so convoluted and time-intensive. Pure cuts everything down to just a few minutes, leaving me a lot more time to focus on other projects.”

### Products and Services

Unified Computing FlashStack:

- Cisco® UCS® servers
- Pure Storage FlashArray//M20
- VMware vSphere

Cisco Networking and Security Solutions:

- Cisco Nexus® switches

[flashstack@purestorage.com](mailto:flashstack@purestorage.com)

[www.cisco.com/go/flashstack](http://www.cisco.com/go/flashstack)

© 2018 Pure Storage, Inc. Pure Storage, the “P” Logo, FlashArray, and FlashStack are trademarks or registered trademarks of Pure Storage, Inc. in the U.S. and other countries. Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. Intel, the Intel logo, Xeon, and Xeon Inside are trademarks or registered trademarks of Intel Corporation in the U.S. and/or other countries. All other trademarks are the property of their respective owners.  
PS-FS-CS-Choctaw-Nation-1017-56v1

As an example, Dickerson cited the case of a radiologist who asked for a virtual machine with a certain amount of storage. “I could just jump on the Pure Storage array and provision the storage and then log into VMware and add that data store, and then create another VM. At most, it’s 15 minutes. Before, we’d be talking five or six hours.”

Another feature Dickerson values highly is native replication, a feature offered free with Pure Storage. “With other vendors, there’s a line-item charge,” he said.

He will be using replication to implement an active-active strategy that will allow dual data centers to operate in parallel for optimal load balancing and performance. “We have invested a lot of money in equipment in our data centers, and I don’t want that equipment just sitting there on a just-in-case basis,” he explained.

“We have a 10 GB pipe between the new data center in Durant and our hospital, and we’re going to be moving all the equipment from

the co-lo to Durant, running an active-active data center so the equipment at both locations will be hot and used all the time,” he added.

### Improving business continuity effortlessly

Health Services now has six Pure Storage arrays, and Dickerson has shared his success with the other two business units of Choctaw Nation — Government and Commercial. Those two units have combined their IT operations into a single entity, and between them, have purchased four arrays, three for government and one for commercial.

“I recommended Pure Storage as a great product,” said Dickerson. “Every chance I got, I asked them to come over and check it out so I could show them the interface. And when they saw the advantages of Pure, they bought some for themselves.”

“Pure Storage is phenomenal,” he added. “It’s the best thing ever.”

