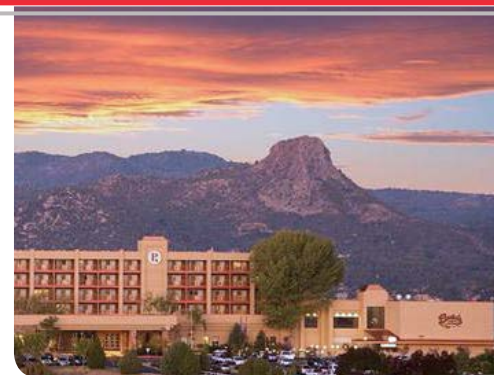




## Yavapai-Prescott Indian Tribe Gains 40% Performance Increase with Gridstore HyperConverged Appliances, Reduces Live Migration Times by 50% High Performance Virtually Eliminates “Boot Storms”



### Customer Overview

One of Northern Arizona's largest employers, the Yavapai-Prescott Indian Tribe (YPIT) is home to a 162-room resort, two casinos, a business park and shopping center. With visitors coming from around the world, the IT manager, Chad Dixon, is serious about providing 24x7 availability with fast performance across its data network. The YPIT required an easily scalable Hyper-V solution with a small footprint, maximum performance and fault tolerance. With many business units, each requiring its own finance system, the YPIT has various structured and unstructured systems supporting the day-to-day operations, including Microsoft Exchange, SQL and SharePoint services, along with traditional file services and a number of support systems, such as Microsoft Active Directory Services and System Center.

### Challenge: Deploy a Hyper-V solution that addresses performance and fault tolerance

During many years of researching and evaluating Hyper-V storage solutions, YPIT discovered the majority of marketed solutions either provided high performance storage arrays but compromised fault tolerance, or addressed their fault-tolerance needs but at the expense of ultimate storage performance. They were also seeking a solution to reduce or eliminate the crippling effect of virtual machine (VM) boot storms; the spindle-based disk arrays of centralized storage and internal storage solutions could not provide the I/O operations per second (IOPS) necessary during multiple VM reboots.

“Over the years of running our Hyper-V farm in various configurations, we’ve spent a lot of time researching and learning,” said Chad Dixon. “Hyper-converged solutions began to hit the market a couple years ago and my team saw them as the pot of gold at the end of the rainbow...multiple nodes with internal storage that could be clustered together and presented to the hypervisor. It was quite literally ‘having your cake and eating it too!’ But those early solutions didn’t support Hyper-V.”

During an evaluation of a flash-cache solution, YPIT discovered that their IOPS were lower than what was required to keep the cache “warmed up.” Realizing that a cached-based system would not perform well in their environment, they looked to hyper-converged flash only solutions to give them high performance, fault tolerance and easy scalability.



### Solution Highlights

- Three Gridstore HyperConverged Appliances (HCAs) with 51.8TB of flash storage
- Highly scalable Hyper-V environment
- Dramatically improved fault tolerance



YPIT quickly discovered that Dell, EMC and similar vendors didn't have the same definition for "hyper-converged" as they did. For some vendors, it meant various pieces of disparate equipment in the same rack, which was clearly not a hyper-converged solution. When they came across Gridstore HyperConverged Infrastructure, they quickly set up a proof-of-concept project.

## Solution: Gridstore enables YPIT to stretch their IT dollars while delivering the right service

Installing a demo all-flash HCA, YPIT staff ran a full barrage of tests. They even ran the demo HCA in degraded mode for a time and discovered that the performance was on par with the HCA when it ran in optimal mode. This convinced them that they were looking at the right solution to meet their performance needs, while the three-HCA cluster model ensured a fault-tolerant solution even at the chassis level.

In addition to finding a Hyper-V solution that met performance and fault-tolerant needs, "we wanted a solution with a reasonable price point for the amount of usable storage made available." Based on price/TB (usable), YPIT determined that Gridstore was "very competitive with others in this sector."

Moreover, YPIT staff were impressed with the level of support offered by Gridstore to install the three-HCA cluster. After two demos and a number of conference calls, Gridstore support staff learned the precise configuration YPIT required and ensured a working solution.

## Result: Gridstore allows YPIT to have their cake and eat it too!

Once the Gridstore HCAs were installed, YPIT concluded that the solution was very robust and able to handle their entire workload "without breaking a sweat". The all-flash-based HCAs provide the best of both worlds, giving them very high performance and very real fault tolerance.

For example, when compared to their previous, spindle-based centralized storage solution, they conservatively see double the performance with the Gridstore all-flash HyperConverged Infrastructure solution. They've seen an increase of approximately 40% when compared with their Microsoft Server 2012 stand-alone hosts. YPIT has also seen Live Migrations time lowered by 50%.

VM boot storms, which occur during a monthly maintenance window when servers are updated and patched, are now practically non-existent. Previously, it could take 30-45 minutes per host to complete the reboot of the VMs using scripted VM reboots. With the Gridstore HyperConverged Infrastructure solution, YPIT can start every VM on the host at the same time and every server is up and running in well under 60 seconds, with every device started and synchronized with its dependencies; no scripting required.



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**"GRIDSTORE'S ALL-FLASH SOLUTION ERASED ALL OF OUR ISSUES AND BEAT THE COMPETITION ON PERFORMANCE, FAULTTOLERANCE, AND PRICES. AS FAR AS I'M CONCERNED, GRIDSTORE'S HCA IS PERFECT FOR EVERYBODY."**

Chad Dixon, IT Manager  
Yavapai-Prescott Indian Tribe

### Results Highlights

- High performance eliminates boot storm issues, saving 30-45 minutes per host (to complete the reboot of the VMs)
- Live migrations reduced by 50% (or more with Gridstore's support of Microsoft Failover Clustering and CSVs)
- Approximately 40% performance increase when compared with their Microsoft Server 2012 stand-alone hosts

**"DUE TO THE DRAMATIC INCREASE IN IOPS FROM USING ALL-FLASH STORAGE, OUR BOOT STORM ISSUES ARE GONE! LOTS OF VENDORS CLAIM HUGE IOPS, BUT IF THEY ARE THE RESULT OF CACHING THEY MIGHT NOT ALWAYS BE AVAILABLE."**

Carl Sund, IT Engineer  
Yavapai-Prescott Indian Tribe

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