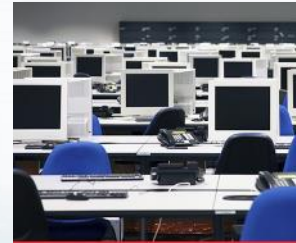**Gridstore solves IT challenges at Yavapai-Prescott Indian Reservation**

HYPERCONVERGED ALL-FLASH INFRASTRUCTURE

George Symons, CEO
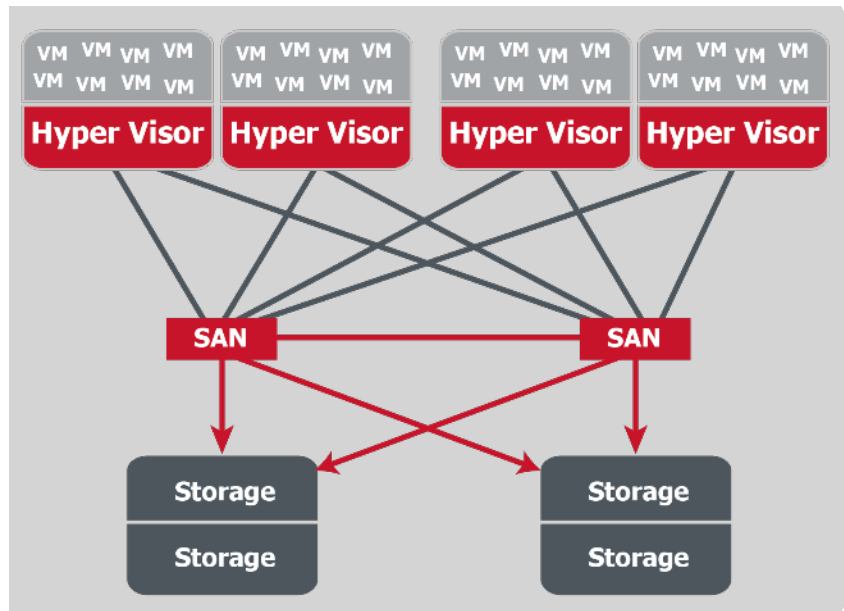
VDI

Cloud

STORAGE MAGAZINE
PRODUCTS OF THE YEAR 2014
SILVER

Microsoft SQL Server
SQL Server Consolidation

Dev/Test

Simplify Your Data Center

Eliminate layers of cost and complexity

Management Points, Bottlenecks and Complexity Grow with Scale

All-Flash HyperConverged.

Simple and Powerful Infrastructure.

Combine Compute, SAN, Storage into one tier.

- Simplify and reduce infrastructure managed
- Eliminates cost and management points
- High performance All-Flash Infrastructure

GRIDSTORE

Yavapai-Prescott Indian Reservation

- **Numbers are misleading**
  - 292 Tribal Members
  - 68 of which work in public administration
  - Hundreds of addition workers from outside
- **Supporting a city and more**
  - Human Resources, Finance Administration, Police Department, Facilities Maintenance, Community Services, Social Services, Planning & Economic Development, Procurement, Environmental Health, Environmental Protection, Culture Research, Records & Archives, Tribal Library, Tribal Attorney, Tribal Education Department, Grants Administration
  - The YPIT also have a number of Enterprise ventures which include a Resort & Conference Center, Casino and a retail shopping center

GRIDSTORE

Yavapai-Prescott Indian Reservation

- Wide variety of applications / services
  - Microsoft Exchange, SQL, and SharePoint services along with traditional file services and a myriad support systems such as Microsoft Active Directory Services and System Center. No less than four (4) finance systems

- Challenge
 - Provide enterprise level services on a smaller scale (and budget)

Infrastructure Evolution

- Evolution of a Virtualized Environment
  - Individual servers with direct attached storage
    - Worked until VM sprawl outgrew the storage capacity
  - Moved to an iSCSI NAS
    - Worked, but performance suffered to a point it was not usable
  - With the release of MS Server 2012 came Shared-Nothing-Migrations. Moved to new hosts with very large internal storage arrays.
    - Excellent performance, but no fault-tolerance

- Needed a solution without compromising on performance or fault-tolerance. Also, needed to find a solution with a reasonable price point

GRIDSTORE
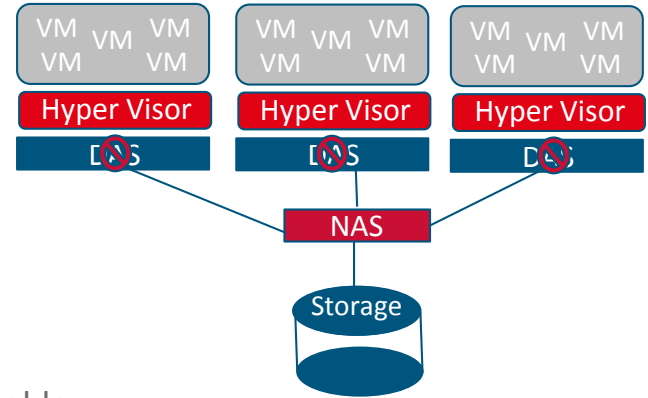
- First and foremost designed around Windows Hyper-V

- A small IOPs load (average is 3-4K during normal operations with higher spikes during sequential writes due to backups)

- Support for boot storms of VM's
  - These would cripple their centralized storage and internal storage solutions…the spindle based disk arrays could not provide the IOPs necessary during multiple server reboots

- Learned through testing that their IOPs were lower than what was required to keep the cache "warmed up" in hybrid solutions
  - Made the choice to seek out flash only solutions.

- Maximum performance, fault-tolerance, easily scalable, small foot print…the usual suspects.

GRIDSTORE

- Hyper-Converged gave multiple nodes with internal storage that could be clustered together and presented to the hypervisor

- Testing concluded that the Gridstore HCA was very robust and able to handle their entire workload without breaking a sweat. The flash based HCA was the best of both worlds…very high performance and very real fault-tolerance

- 40% to 200% performance improvement over previous solutions

- Rebooting all VMs after maintenance window went from 30 – 45 minutes per host to 60 seconds for all VMs

- Live migration time lower by 50%

The Price/Performance Advantage of All-Flash HCI
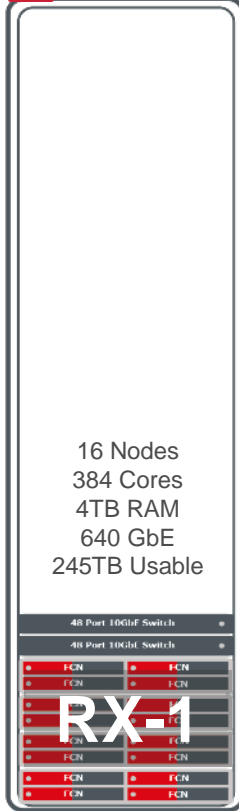
366 VMs @ $5,022

VCE

600 VMs @ $4,348

CPS(Dell)

600 VMs @ $1,576

GRIDSTORE

16 Nodes
384 Cores
4TB RAM
640 GbE
245TB Usable

48 Port 10GbE Switch
48 Port 10GbE Switch

10U

RX-1

14X Price / Performance.

- 5 Yr NPV cost per VM

- 75% smaller footprint

- 4X faster VM's

- 64% lower cost VM's

- Not including OPEX savings

Source: Value Prism Consulting – CPS Price Performance Whitepaper, Oct-14
Avg. Server VM = 3.5GB RAM, 2 vCPUs, 250 GB Disk. Constrained on cores.

Thank You