TFDx - NetApp

NetApp HCI. Ready For Next.
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Enterprises are at a turning point
Consolidation
Virtualisation
Policy Driven Automation
The next 5 years
Hybrid Clouds
- Operational Transformation (IaaS, PaaS, SaaS, ITaaS)

You can't go from traditional to cloud overnight, you need to evaluate your apps to
see where they fit

Consumption choices as a customer
- aaS
- Converged
- Purpose-built systems
- Software-defined
From NetApp's perspective
- ONTAP Cloud
- FlexPod
- AFF / FAS
- ONTAP Select

Consumption choices connected by the NetApp Data Fabric

First Gen HCI
- one size fits all architecture
- it infrastructure consisting of software-defined compute, network and storage
- easier to manage

1st Gen Compromises
- Performance
- Flexibility - trade-offs and caveats
- Consolidation

NetApp HCI
- Guaranteed performance - deliver all your applications with confidence
- Flexibility and scale - scale on your terms
- Automated Infrastructure - transform and empower your IT operations

Built on SolidFire - maturity - version 10 of the software, version 4 of the hardware

Architecture
Integrated Data Services
- HA
- Replication

- Data assurance
- data reduction
Data Fabric Services
- file services
- object services
- backup and recovery
- replication
- data protection
Third-Party Services
- backup and recovery
- orchestration
- disaster recovery

VMware vCenter
mNode
Storage Nodes - SolidFire ElementOS - All-flash storage
Compute Nodes - VMware ESXi - NetApp Architected and designed

Building blocks
- chassis or node
- 4 nodes per chassis
- compute or storage node

Minimum Configuration
- 2 chassis, 6 nodes
- 4 storage nodes,

Guaranteed Performance
- consolidate mixed workloads
- deliver predictable performance
- provide granular level control

Dynamically allocate, manage and guarantee performance independent
eliminates noisy neighbours
effectively consolidates workloads with QoS

HCI - the simplest part to manage is the storage. It's also the most complex to implement as a foundational layer.

Provide granular control at VM level - prevent any VM from impacting performance of another
At the VMFS level or down to the individual VVol level

Flexibility and Scale - "Scale on your terms"
- optimise and protect existing investments
- scale compute and storage independently
- eliminate "HCI Tax"

"There's a difference between something that can do something, and something that can do it at scale"

3 Architectures, each built on Element OS
- SolidFire
- FlexPod SF
- NetApp HCI
Scale storage and compute together or independently

Start small - two blocks
Grow as needed - on demand - eliminate migrations and forklift upgrades
Scale non-disruptively with enterprise scale - never wait 3 years for an upgrade

T-shirt Sizes for implementation (S, M, L) -
http://www.netapp.com/us/products/converged-systems/hyper-converged-infrastruct
ure.aspx

One size fits all has its benefits for linear workloads

It's all one cluster - you can't have different tiers of storage nodes

HCI Tax - overhead to provide data services with 1st generation HCI
Controller VM
- Memory - 16 - 128GB RAM
- CPU - 4-8 cores
- Direct Path IO required

Data Services
- Dedupe - add memory
- Compression - add memory
- erasure coding - add memory
- file services - add memory

Only storage nodes have disks, the compute nodes get blanks
The disks are on the front, the nodes are stateless

6 drives associated with each storage node
No interconnects internally

HCI Tax - adding compute in lock-step with storage - this can have an impact on
your licensing as you add cores

Automated Infrastructure
- automate and streamline management
- deploy rapidly
- simplify via comprehensive APIs

NetApp Deployment Engine (NDE)
Up and running in 45 minutes, reduces 100s of inputs down to around 30
From rack and stack to ready for virtual machines

Monitoring Node is a VM

- proactive support
- 5 - 60 seconds
- events / logging
- 5 year historical

Direct hypervisor integration
Why reinvent the wheel to manage VMware?
- leverage vCenter for day to day operational tasks
- 95% of operations from primary management platform for virtualised environments

Comprehensive API
- User Interfaces
- Tools
- Plug-ins
- Custom Integrations

NetApp HCI is Data Fabric Ready

NetApp ONTAP Select vNAS on NetApp HCI

Enterprise Scale Use Cases
- Cloud
- Web infrastructure
- Databases
- End-user computing
- Workload consolidation

Start with one project - transform as you go

BYO Switch for connectivity - 10/25Gbps

Option to have segmentation between VM and storage traffic if required