High Speed Graphics Meets Web-Scale Software Defined Infrastructure

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Why Move Power Graphics to new Infrastructure?

Legacy Platform

- Typically bare metal
- Dedicated, single – purpose
- Zero Leverage

INTEGRATED PRIVATE CLOUD

Provision compute, storage and networking into single entity at a granular level (VM)

SECURITY & MULTI-TENANCY

Keep data separate for different business units via a software defined infrastructure

MANAGEABILITY

Use the same monitoring and management tools you know and love

ELASTICITY

Reclaim power, cooling, and rack space and use & buy only what you need, when you need it.

NUTANIX

Web-scale Datacenters Are Simple, Scalable & Efficient

Best Practices for Mainstream Enterprises

Design Goals

- No single point of failure
- No single point of bottleneck
- **Always-on** systems
- Deep **Analytics** across all SW/HW components
- Interactive **visualization** of entire datacenters

Fundamental Assumptions

- Unbranded x86 servers: **fail-fast** systems
- No special purpose appliances
- All intelligence and services in software
- Linear, predictable **scale-out**

Microsoft Azure

facebook

amazon web services™

Google™

Web-Scale IT at any Scale - with Nutanix

- ✓ Founded in 2009
  - ✓ Now on fourth gen of Nutanix OS
- ✓ Core team from industry leaders
  - ✓ Strong background in distributed system and enterprise architectures
- ✓ Great customer adoption
  - ✓ Hundreds of customers world wide Including Global 500 organizations
  - ✓ Global support and enterprise services

Web-Scale Converged Infrastructure is Proving to be Even More Effective in the Enterprise

“50 per cent of global enterprises will be taking an architectural approach to web-scale IT by 2017”

- Gartner 03/10/2014

Asia Pacific Customers

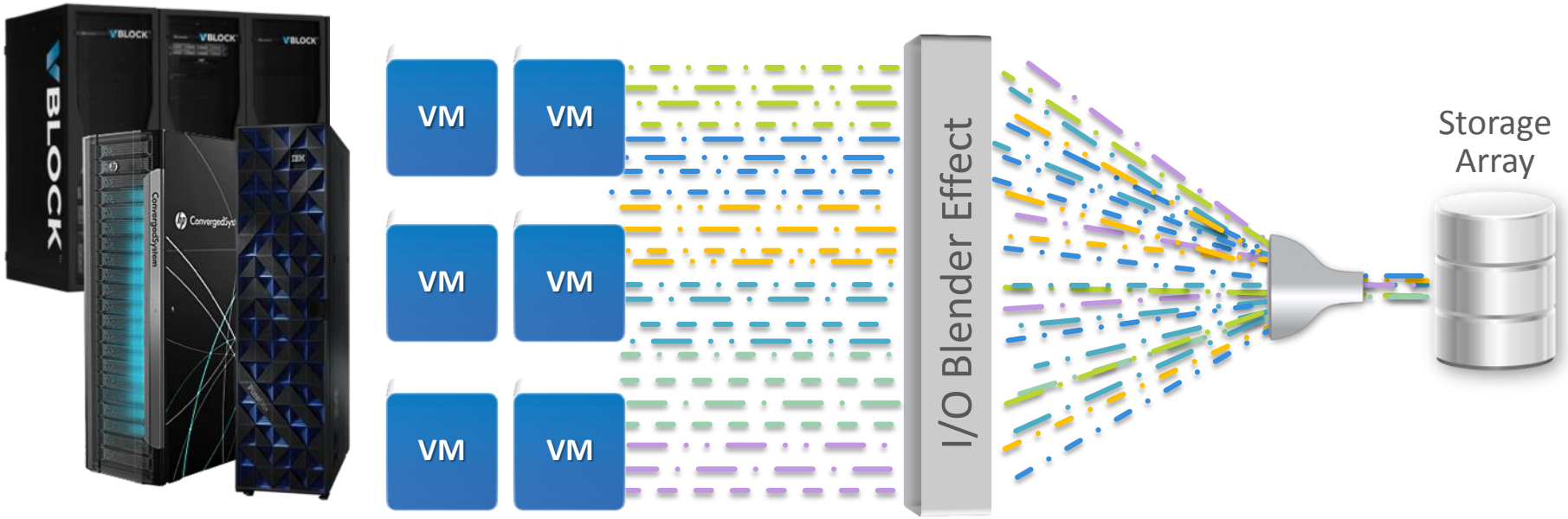
Yiqufei

The “Google Like” approach is now Available to the Enterprise

Virtual Computing Platform

- ✓ Predictable Scale
- ✓ High Availability
- ✓ Efficiency
- ✓ Simplicity

Traditional Architecture:
Complexity is the Enemy of Uptime



Diminished Performance

- I/O bottleneck at storage controller
- Placing flash in the array underutilizes faster media

Inflexible Scalability

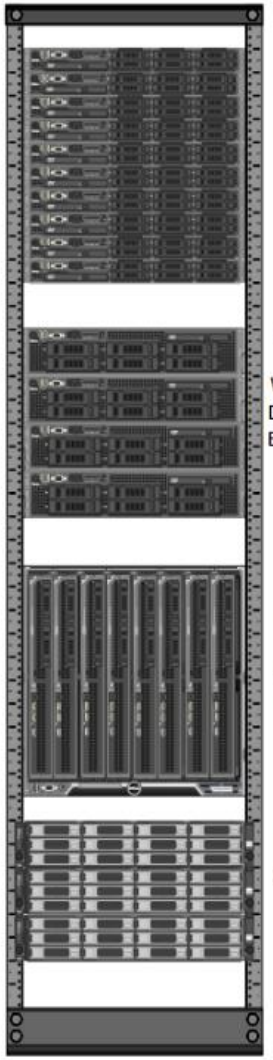
- Must buy capacity ahead of need
- Fork lift upgrades required over time

Complex Management

- Need for specialized iSCSI, FC, NFS skills
- Data management policies lack context

Collapsing the Datacenter – Software Defined

Before – All Physical Hosts



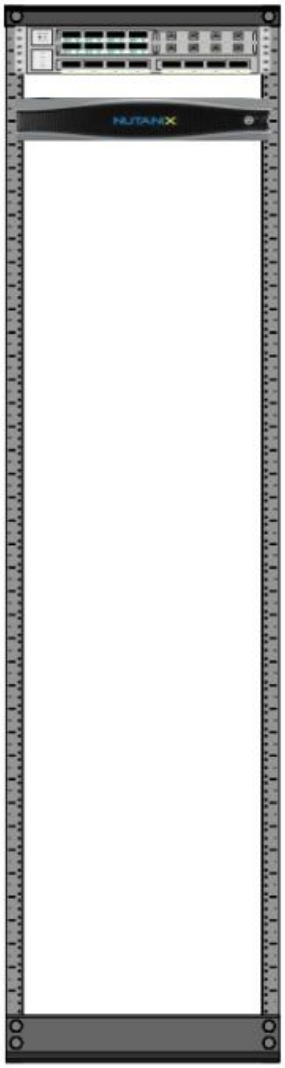
Dell PowerEdge 1u Servers Windows 2008R2 Providing Infrastructure support

Dell PowerEdge 2u Server Windows 2008R2 Database Services Exchange Services Sharepoint Services

Dell PowerEdge Blades Windows 2008R2 Citrix XenApp Farm

Dell Equalogic Shared storage for physical servers 2.5TB Capacity

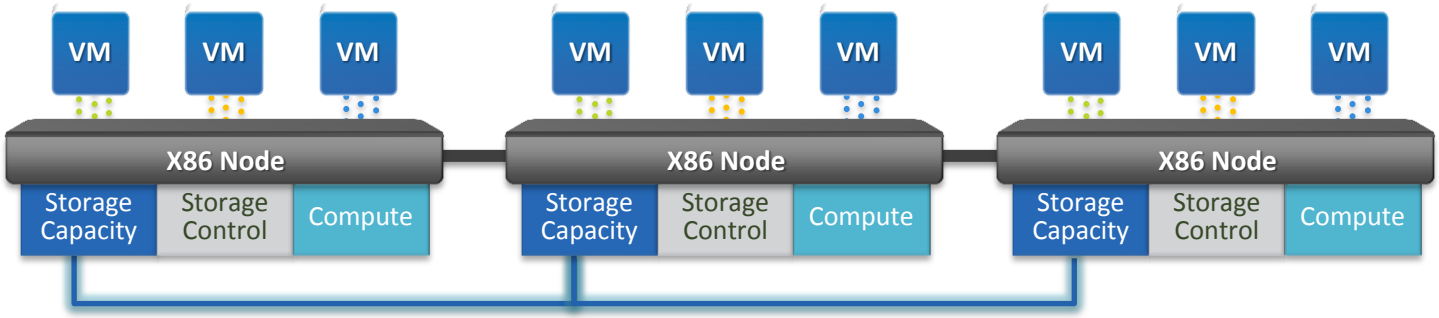
After with VMware and Nutanix



Cisco 4900m

Nutanix NX-2400 with ESXi 5.5 48 Cores CPU 768GB RAM 8TB Capacity

Disruptive Web-Scale Architecture



BEST PERFORMANCE

- Convergence eliminates bottlenecks
- Linear performance at scale
- Localization, Auto Tiering, Compression, Deduplication

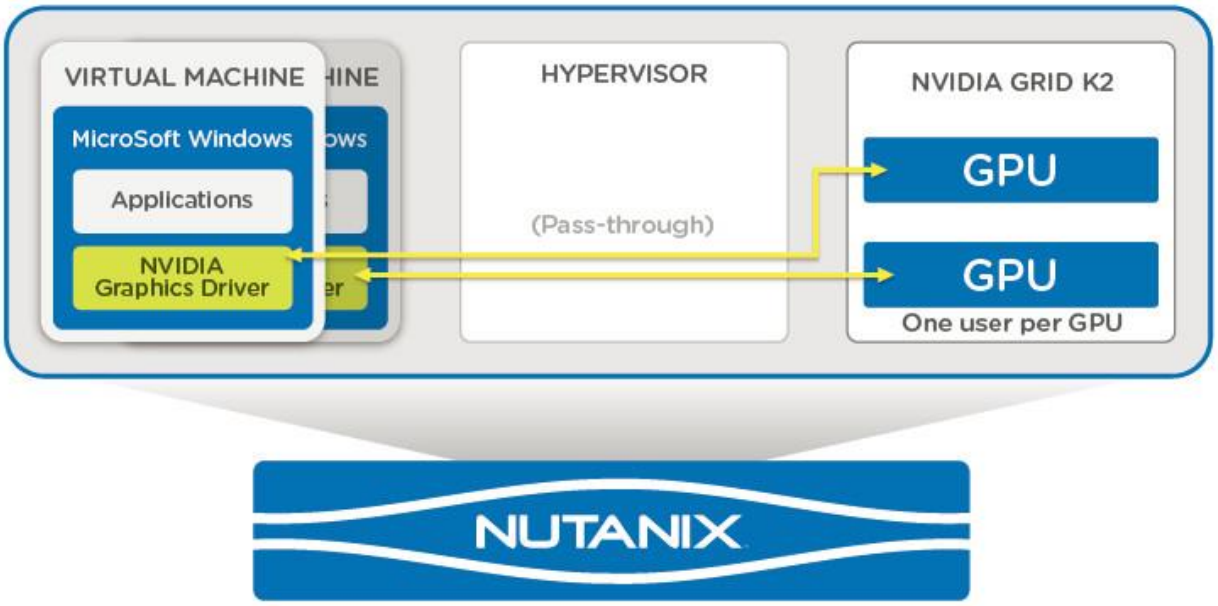
OPTIMAL SCALABILITY

- Scale one node at a time
- Cluster expansion with zero downtime
- Hypervisor Agnostic – Vshpere, Hyper-V, KVM

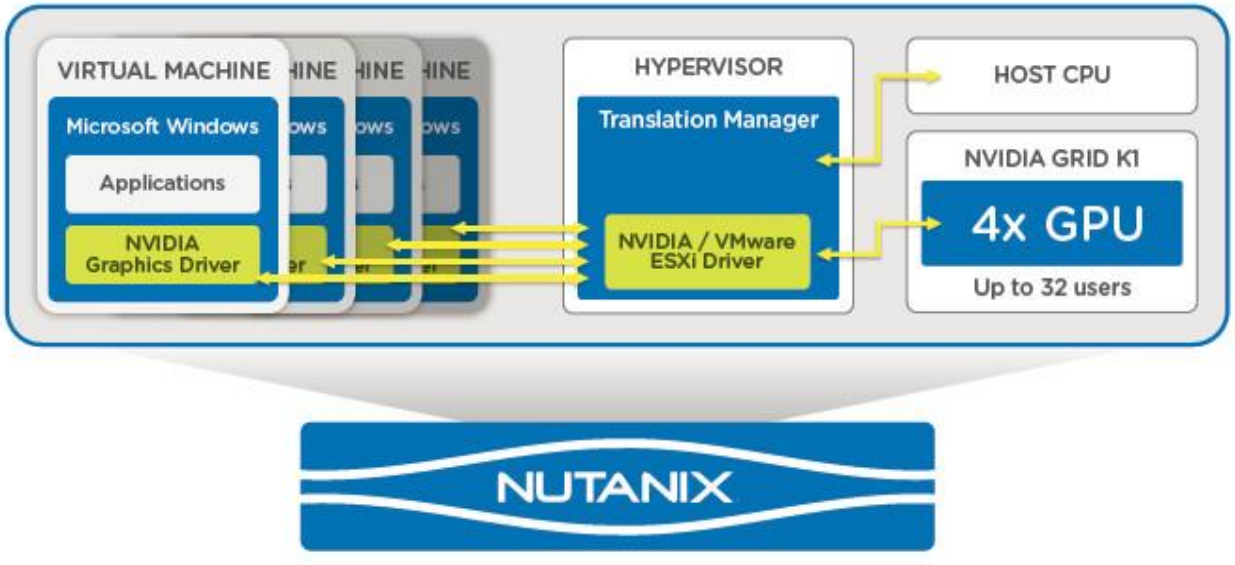
HIGHLY RELIABLE

- No single point of failure
- Self healing
- VMcaliber

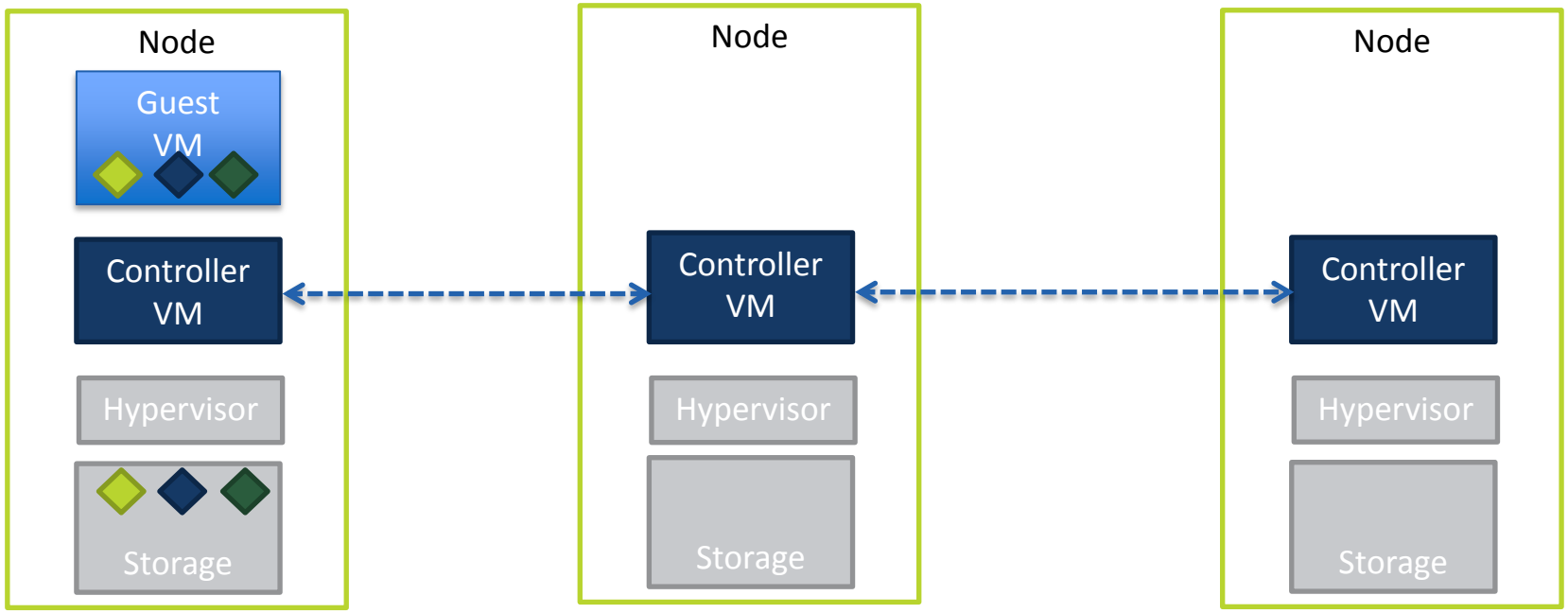
Dedicated GPU Pass-through (vDGA)



Virtual Shared Graphics Acceleration (vSGA)



Write I/O Technique

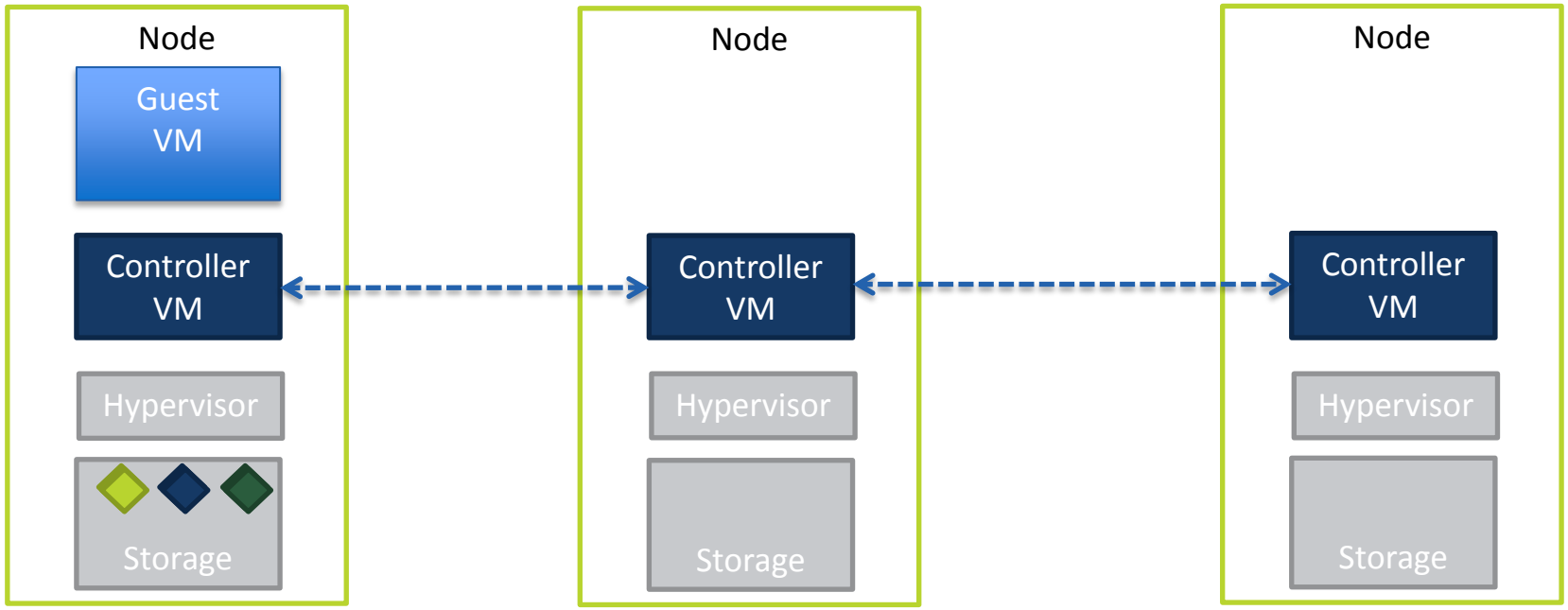


Data is written locally

Replicated on other nodes for high availability

Replicas are spread across cluster for high performance

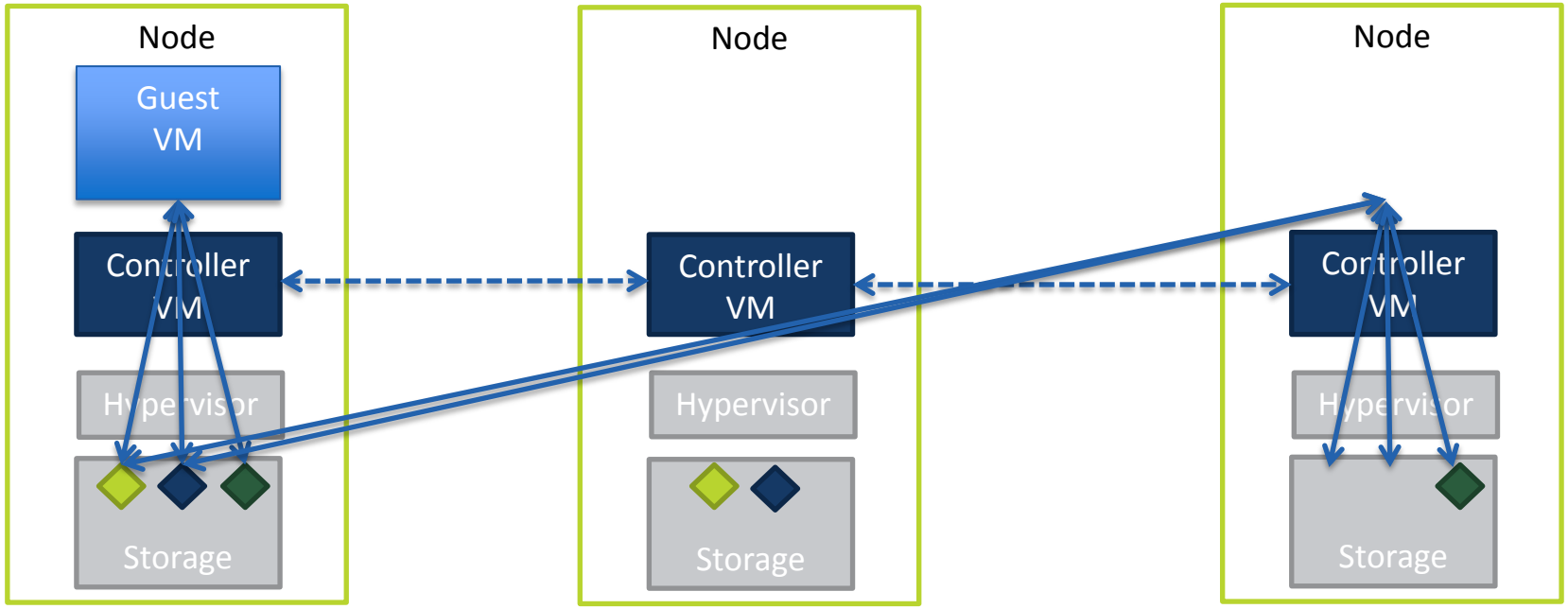
Read I/O Technique



Data is read locally

Remote access only if data is not locally present

Support for vMotion and DRS



Metadata service can access data from anywhere

Locality improves over time

Return

High Density Virtualization

Clustering simplified

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4 Independent Compute/Storage Nodes

Storage

8x 400GB SSDs
16x 1TB HDDs
4x virtualized storage controllers

* Data based on NX-3450

Compute

4x Independent server compute nodes
8x Intel CPUs (64 cores)
Up to 1TB of RAM
Dual 10Gbit Ethernet

4 Nodes in 2U

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Nutanix Extensible Platform with GPU + APEX

Centralizing | Mobilizing | Virtualizing - Desktops

NX-7110 Platform

- 100% SW-defined solution offers rapid time to market for new capabilities
- 3x PCIe slots offer multiple configs of Nvidia K1, K2 and Teradici APEX cards
- Supports the most graphics intensive users within a single virtualized solution
- Plugs into existing environment to run multiple business applications in parallel

High performance VDI delivery for ALL applications & services

- ☐ Video Streaming
- ☐ CAD Design
- ☐ Geospatial Apps
- ☐ 3D Rendering Apps

NX-7110 HW Overview

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NVIDIA

TERADICI™

	NX-7110 (1 node per appliance)
Compute	20 cores 2.8 GHz (Ivy Bridge)
Flash capacity	2x 400GB
Memory	128GB RAM (base) 256GB RAM (max)
PCIe Expansion	3 slots (supporting K1, K2, APEX)
HDD capacity	6x 1 TB
Networking	2x 10GE, 2x 1GE

GRID K1

GRID K2

GPU/APEX Configurations
3x K2
2x K2
2x K2 + 1x APEX
1x K1
2x K1
2x K1 + 1x APEX

Mixed configurations of K1 & K2 will not be supported

Additional configurations may be supported based on customer demand

Different Platforms to Meet Your Needs

Meeting Different Price/Performance Requirements

NX-1000

- 40% lower price point
- Balanced resources for branch office, retail stores, & remote offices
- Power and space savings up to 80%
- Single management interface

NX-3000

- Fastest performance for compute-intensive workloads (e.g. VDI)
- Expanded flash capacity for large working sets
- Highest supported VM density

NX-6000

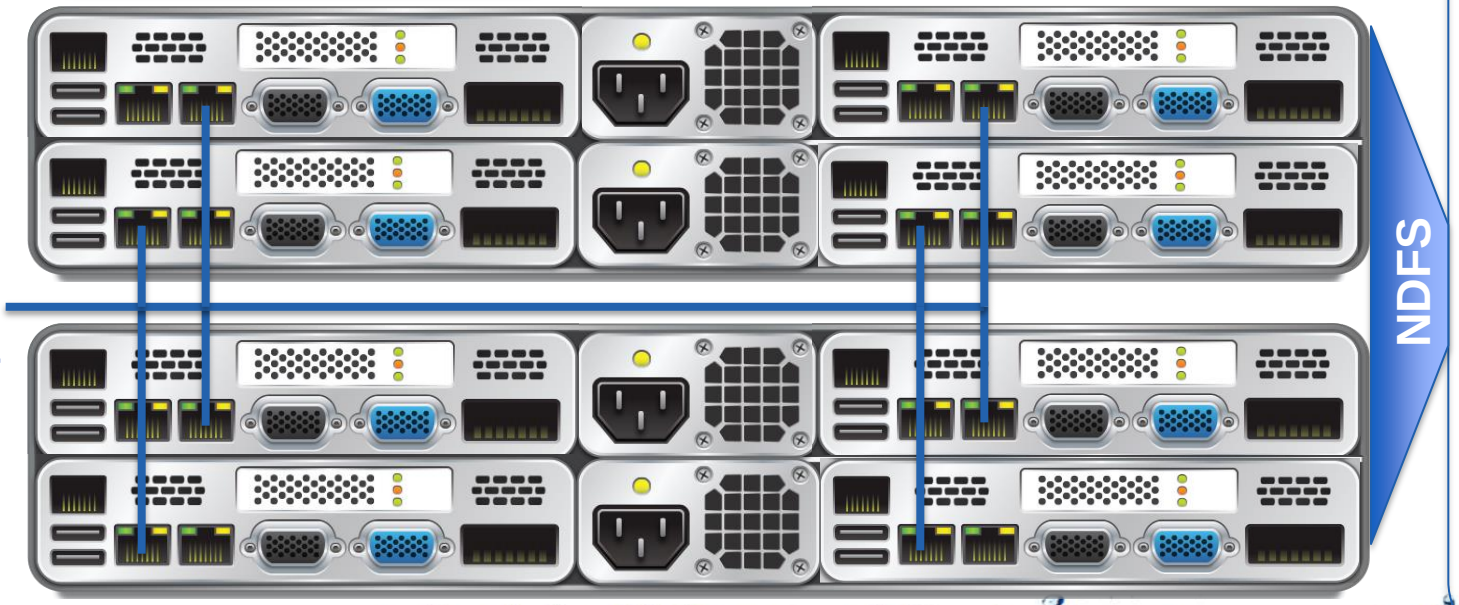
- Ideal for data-intense applications
- 3x more storage capacity than general purpose offering
- 2x server flash capacity for large working sets

NX-7000

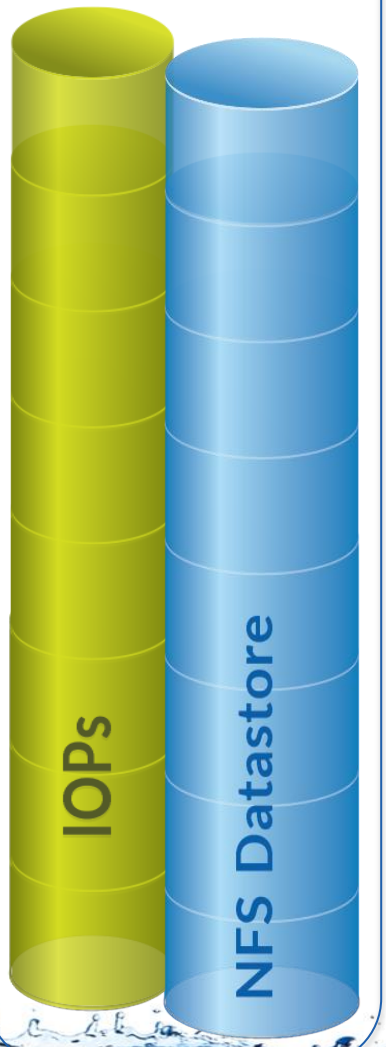
- GPU and PCoIP offload seamlessly integrates graphics intensive users in VDI deployments
- Ideal for any user currently running workstations with GPU cards installed

Scale Out

SINGLE NODE
Compute:16 Cores
Storage:
Flash: 800GB SSD
HDD: 4TB
Controller: Nutanix Storage controller



NDFS
Pooled resources



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Langs Building Supplies Demolishes IT Infrastructure Costs by 53% with Nutanix

Company Background

Langs Building Supplies, based in Stapylton, Queensland in Australia, is a supplier of timber and hardware products and a fabricator of roof trusses, wall frames, floor systems as well as operating a door and aluminium windows joinery for the contruction industry. Langs is privately owned and has about 250 employees.

Virtualize Everything

53% Lower TCO

The Virtual Computing Platform now hosts all business-critical applications, including ERP, SQL Servers, web servers, content filtering, human resources, payroll and VMware Horizon View. All task, power and design users access Windows dekstops running in Horizon View, mostly with thin clients. A branch office office 100 km away from the main site in Stapylton accesses desktops over a wide-area network.

LANGS BUILDING SUPPLIES

Industry

Building Construction

Business Needs

Virtualized server and storage infrastructure to host business-critical applications and virtual desktops for all task, power and design users.

Solution

- Nutanix NX-3000 and NX-7000 Series
- VMware Horizon View

Benefits

- Virtual desktop performance fast enough for 3D CAD users
- 96% reduction in power costs
- 83% reduction in rack space
- 53% lower TCO than alternative solutions
- Save 350,000 AUD in 5 years on staffing
- Better security and availability with linear scalability

Lang's Key Statistics

- 64 RU to 6 RU (3 Racks to ½ Rack)
- 2x NX7110 + 1x NX3000
- Replaced 2 SAN's
- 54 Amps to 8 Amps
- 53% Lower TCO
- 145 VM's
- Local and Remote Users
- 3D CAD – Autodesk
- SQL, ERP, Website, etc
- ESXI 5.5
- Boot Storm 100 Desktops without any effect

"The system's resiliency was immediately apparent when it lost power during a massive storm. "Over 100 VMs were running, and the whole thing was back up and running in 20 minutes. It's a very resilient solution," – Matthew Day

NUTANIX

"In terms of IT Infrastructure, I can stand up a new site in less than a day with Nutanix. I'd challenge anyone to do that with traditional technologies".

- Matthew Day
IT Manager, Langs Building Supplies

Nutanix 7110 node with K1 vSGA user quick demo

Page on YouTube | Updated 4 months ago
http://www.youtube.com/watch?v=-FTkqqnXAs8

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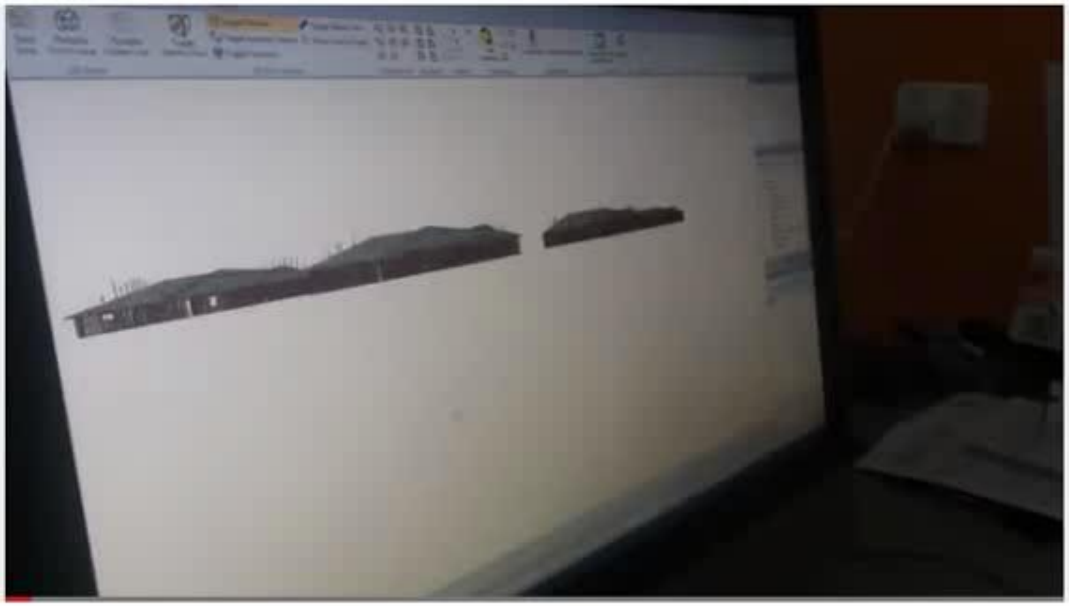

Simple demo from VDI user running 3D app using Nutanix/Horizon. Application shown is MiTek Sapphire (www.miteksapphire.com.au)

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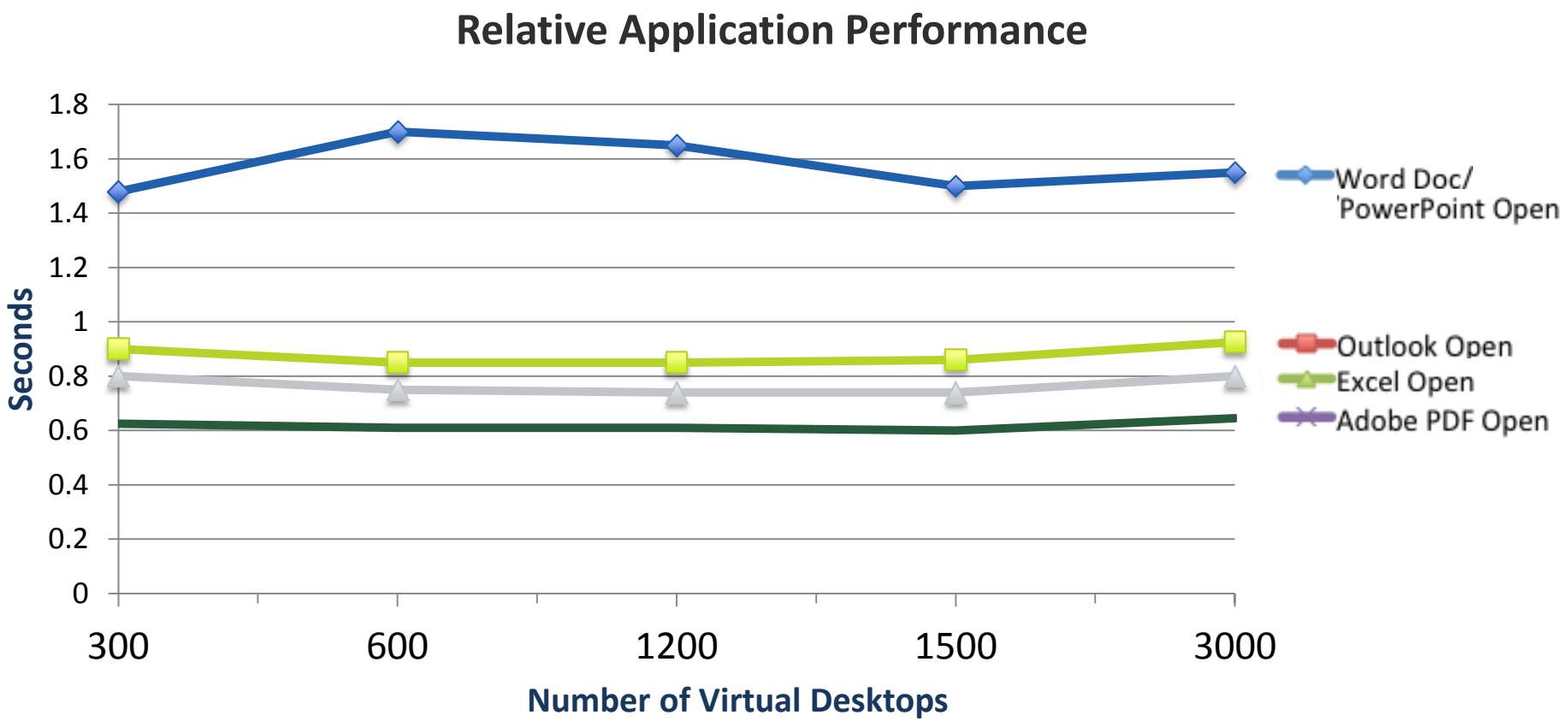
Linear Scalability

Predictable performance for 300 to 3000+ desktops



Application response time while incrementally scaling blocks

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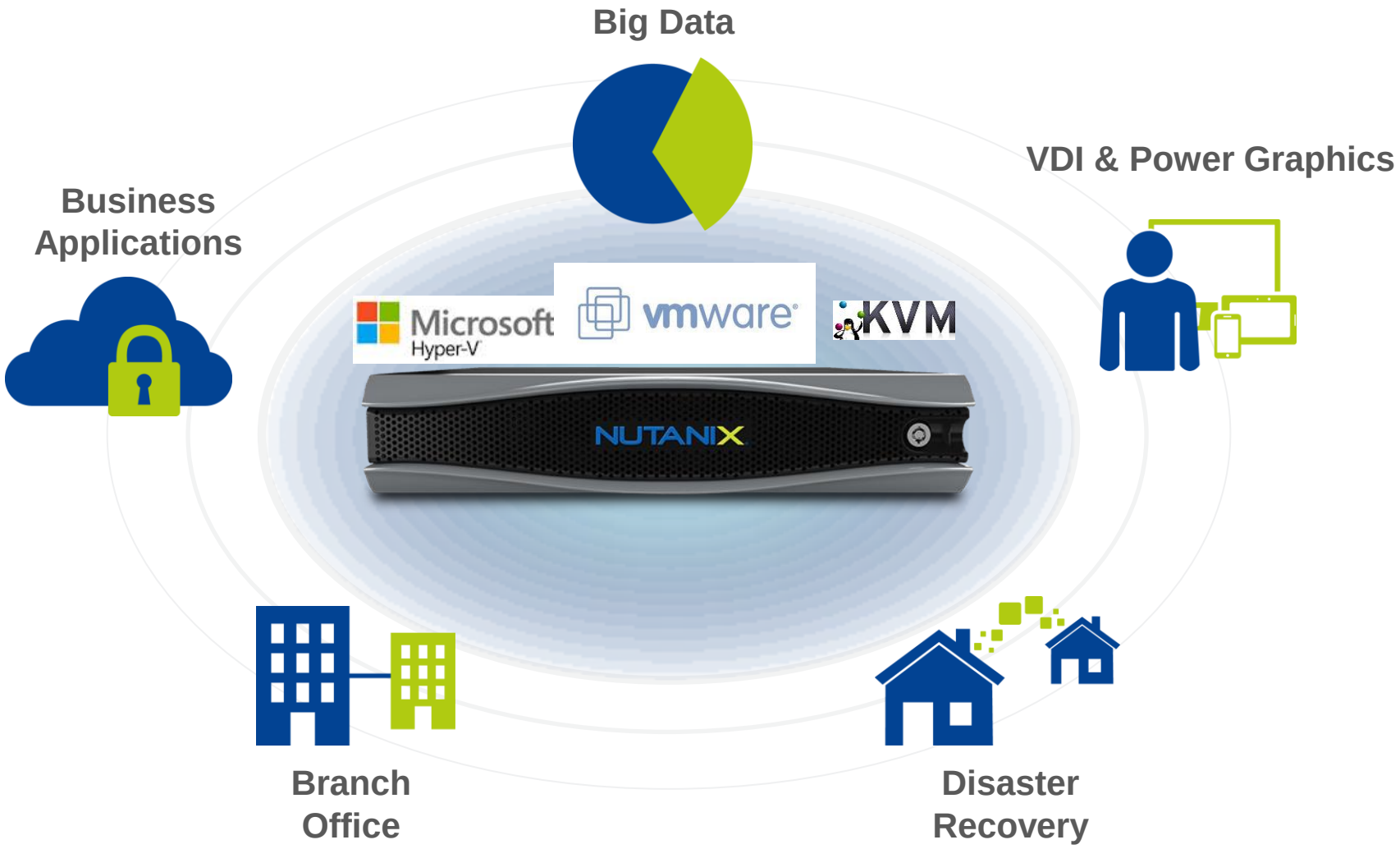
Web-Scale Is For All Use Cases

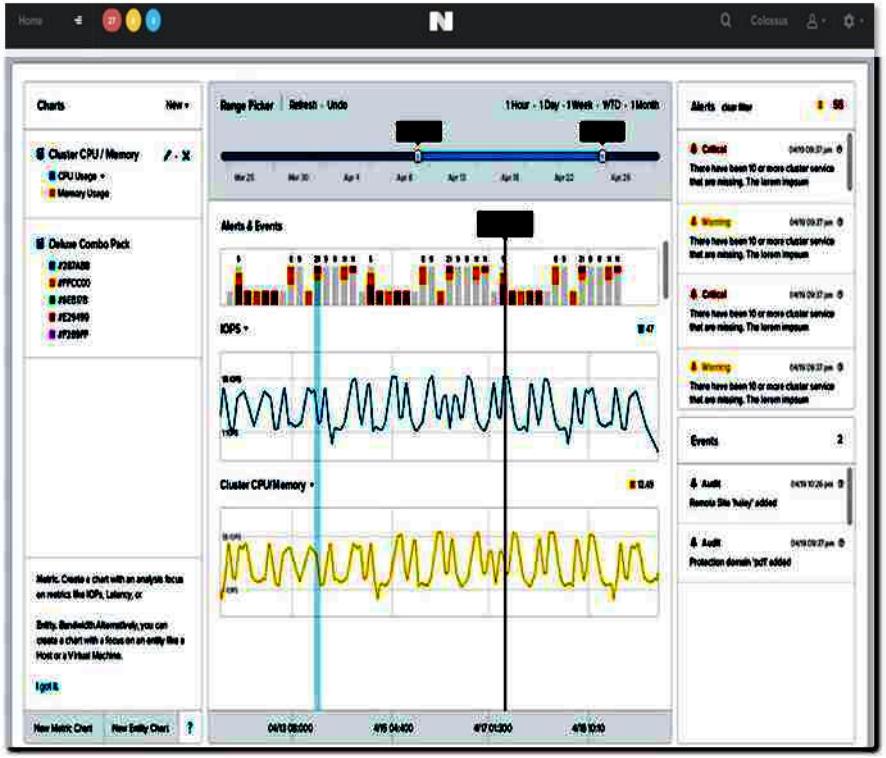


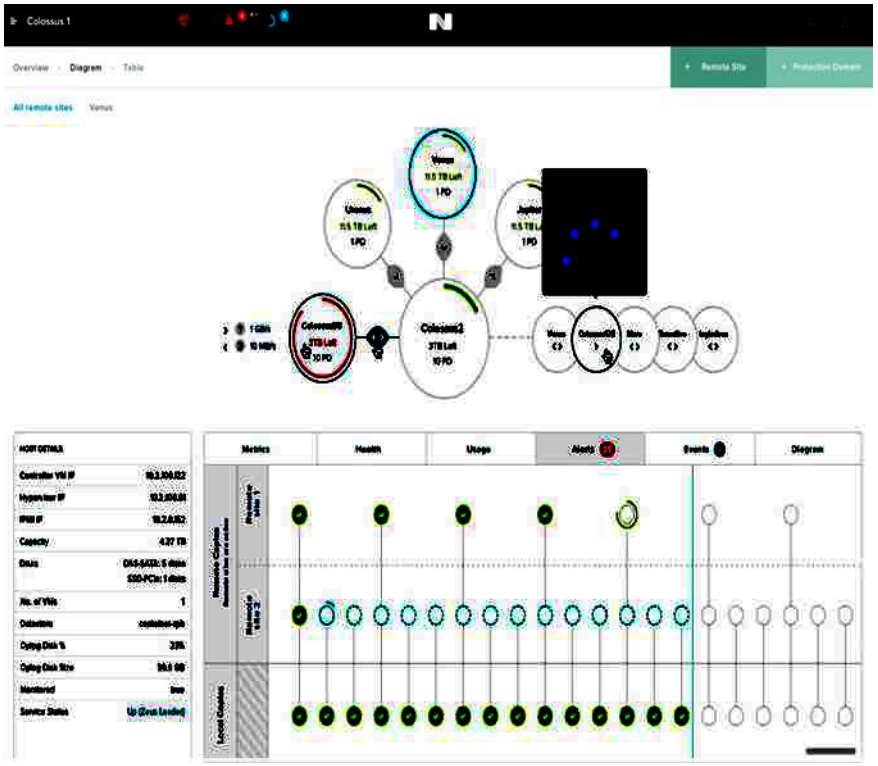
Radically Simplify Deployment

- Portfolio of Turnkey Appliances that Installs In Less Than 30 Minutes
- 100% Software-defined Architecture

✓ Rapid Time To Value
✓ Flexibility And Choice

Intelligence + Automation thru Analytics
Single Pane of Glass





Configuration **Health** **Risk** **Efficiency**

Nutanix Summary

The Best Platform for the Software Defined Data Center

Integrate not just consolidate – reduce cost, footprint, heat, electrical, management, etc.

Gain Resiliency and Linear Scale-Out

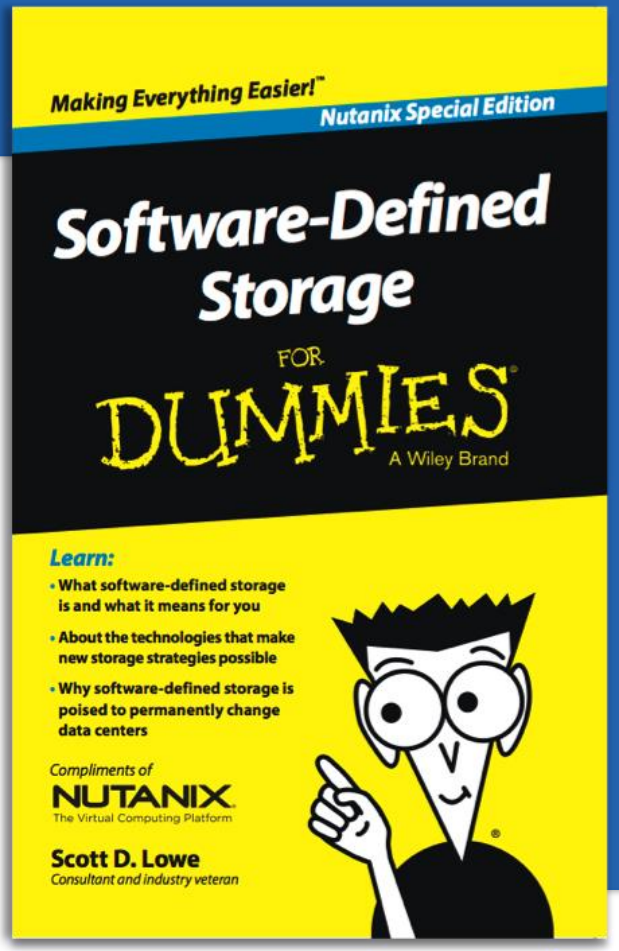
Deliver Consistent and Predicable Performance

Gain Flexibility to Adopt a Hypervisor of Choice

Radically Simplify Deployment

Software-Defined Storage for Dummies

Understanding SDS
FREE DOWNLOAD



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The Fastest Growing Infrastructure Company of the Last Decade