SANGFOR

Hyper-converged Infrastructure Technical Competition Analysis

HCI

Cheney

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sales@sangfor.com

www.sangfor.com

Well, we have to admit this market is getting hyper-competitive, but…

We're Different

Sangfor has the world's first and only 3rd gen HCI solution in the market !

Integrated and Highly Automated Management UI

Resource Pool

Compute

Storage

Network

NFV

Sangfor HCI is a revolution of IT infrastructure architecture, which improves IT infrastructure efficiency and significantly reduces overall IT operation complexity.

A Glimpse of Competitors

Market Scope

Figure 1. Magic Quadrant for Integrated Systems

Source: Gartner (October 2016)

Figure 1. Magic Quadrant for x86 Server Virtualization Infrastructure

Source: Gartner (August 2016)

Nutanix

Nutanix – The Enterprise Cloud Company

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Make datacenter infrastructure invisible, elevating IT to focus on applications and services

7800+ customers

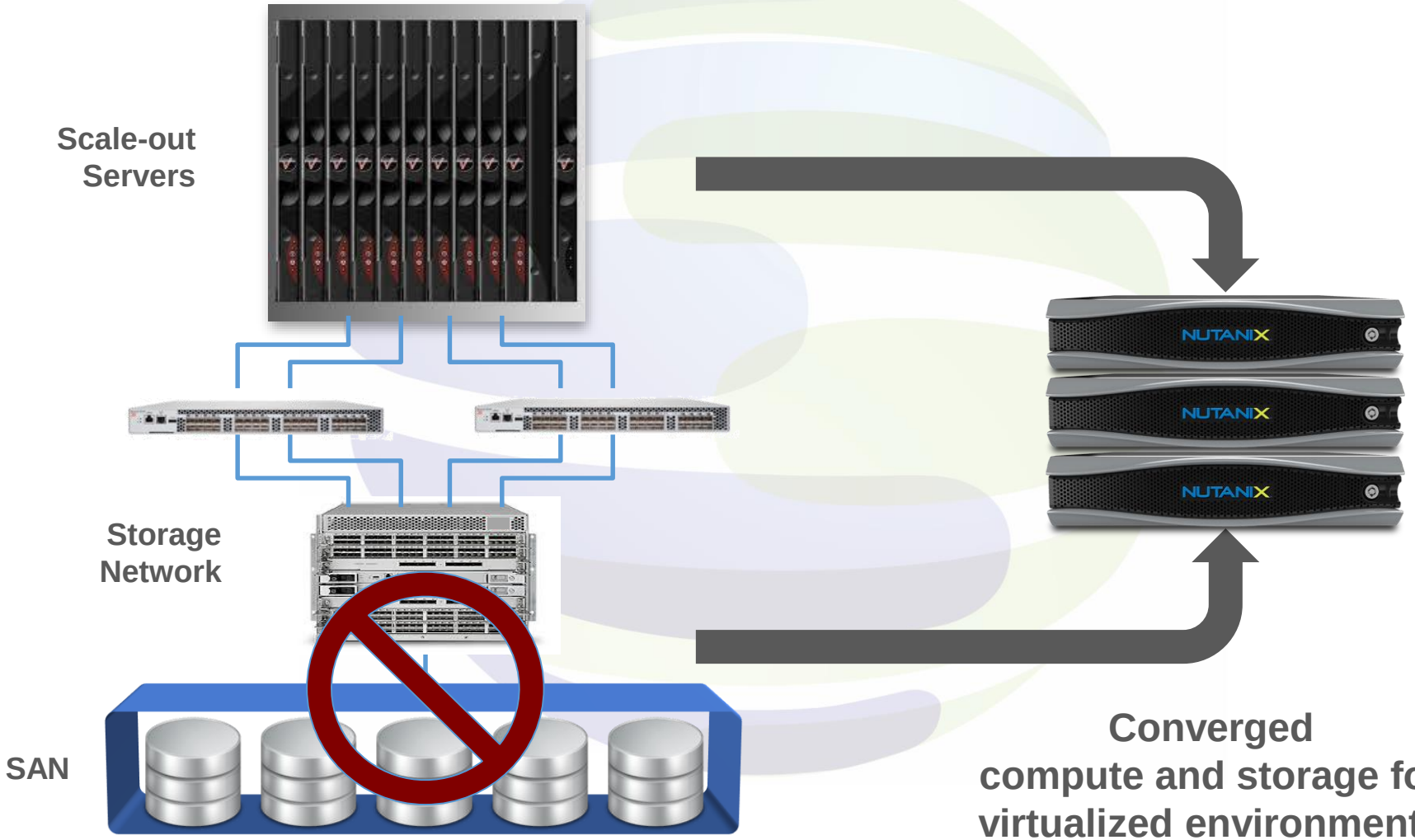
Over **70** countries

6 continents

Founded in 2009

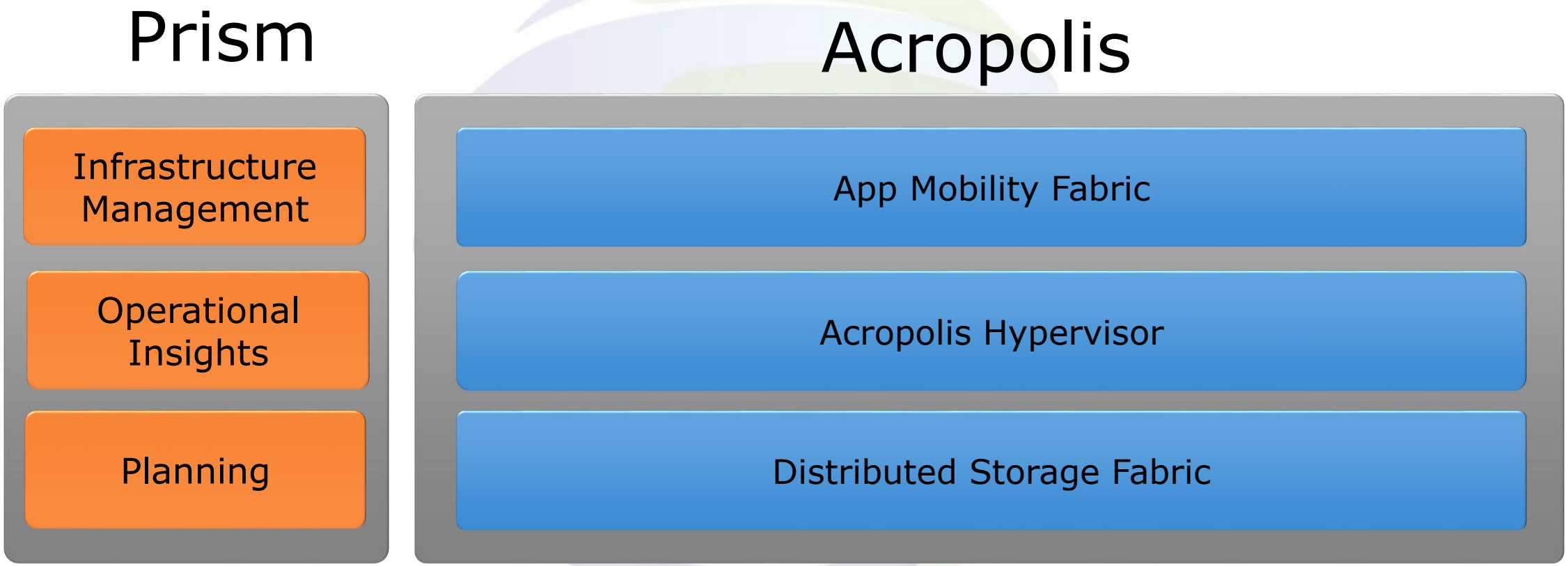
3,000+ employees

Power of Convergence



Converged compute and storage for virtualized environments

Nutanix Products



Nutanix Solution Makeup

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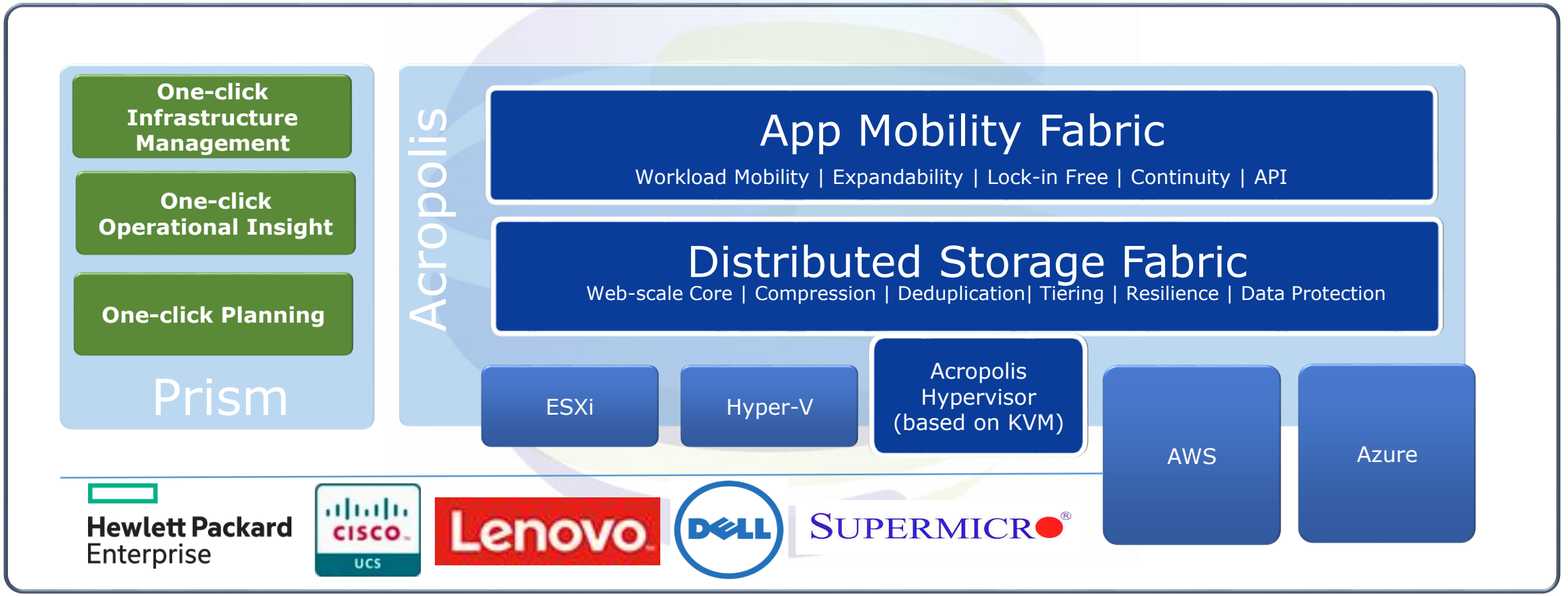
Enterprise Cloud Platform (ECP)



* Nutanix unilateral announced its ECP is certified to run on HPE Proliant servers, coming in Q4, 2017

Architecture Comparison

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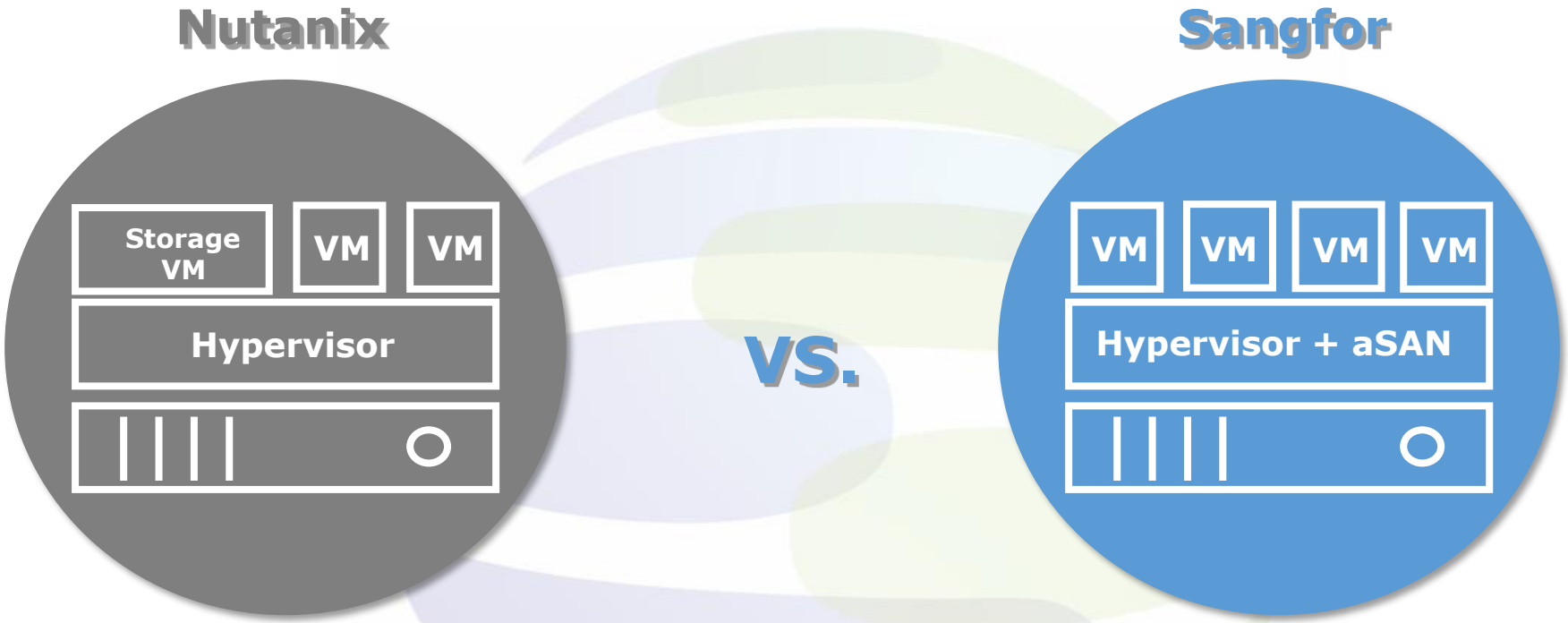


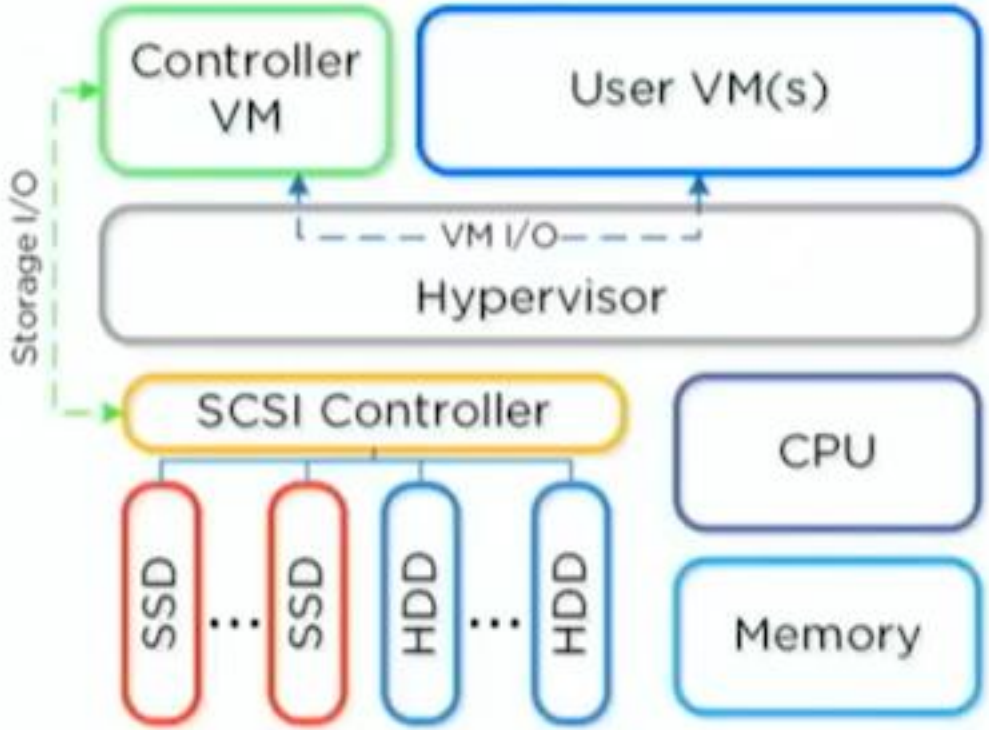
- ⊗ Overhead of virtual appliance
- ⊗ Long data paths
- ⊗ Bolted-on integration
- ⊗ Separate management (3rd party hypervisor)

- ✓ Kernel-embedded for optimized I/O data path
- ✓ Better CPU/memory utilization
- ✓ All features work natively
- ✓ Single management

The HCI Tax: Overhead Dedicated to Operations

First gen HCI requires overhead to provide data services

- 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



Nutanix Data Locality Pain Point

In dynamic environments where VMs move to different hosts on a frequent basis, data locality on Nutanix in most cases requires a lot of data to be copied between nodes in order to maintain the physical VM-data relationship, this will cast heavy burden on storage network.

Comparison of Nutanix/Sangfor HCI

	Nutanix	Sangfor HCI
Architecture	Virtualization, server and storage convergence	Architecture innovation through server/storage/network/NFV
Network virtualization	None	Yes
Hardware Platform	SuperMicro, Dell, Lenovo & UCS, HPE	Sangfor HCI Appliance or 3rd party server
Solution	Appliance or software	Appliance or Software
NFV	No, rely on 3rd party	Yes
Cluster Configuration	3 Nodes at least for data center	2 Nodes at least
Overhead	16G Memory/8 Cores(CVM) for one host	1 Core/8G Memory for one host
CDP	No	Yes
Instant recovery	No	Yes
Automated Hot Add (CPU/Memory)	No (Only manual hot add)	Yes

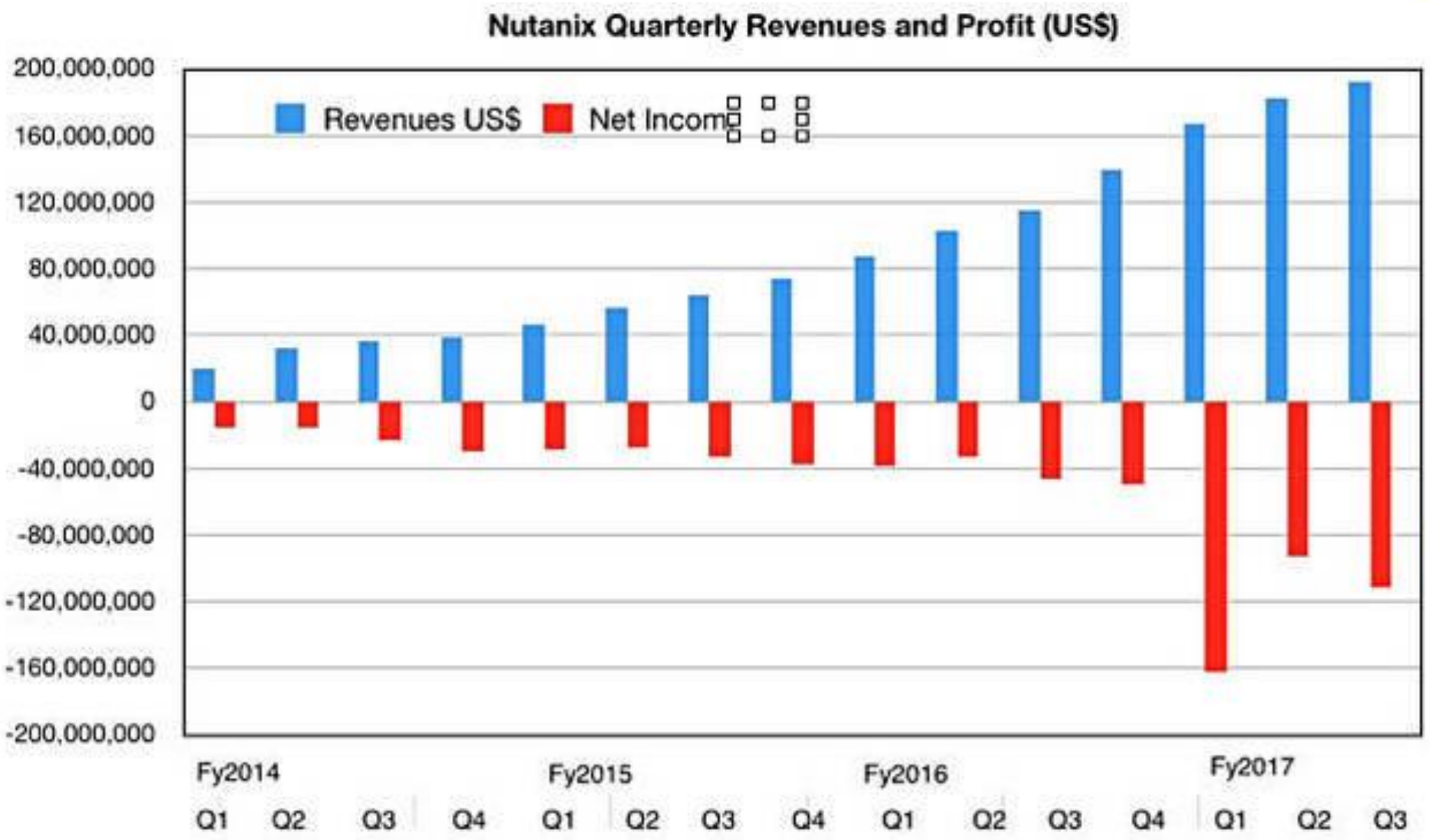
Nutanix Shortcomings

We have to admit that Nutanix has done a great job on SDS(software-defined storage), but...

- ✓ No network virtualization while Sangfor has it
- ✓ No CDP for business-critical application protection
- ✓ No NFV security functionalities while Sangfor can provide comprehensive security features on Sangfor HCI platform
- ✓ Only ultimate version comes with full features, and it's extremely costly

… And do not compete against them on storage head to head

Financially Unoptimistic Future



VMware

VMware Overview

VMware, Inc. is a subsidiary of Dell Technologies, that provides cloud and virtualization software and services, and claims to be the first to successfully virtualize the x86 architecture commercially. Founded in 1998, VMware is based in Palo Alto, California. In 2004, it was acquired by and became a subsidiary of EMC Corporation.

vSphere 4, May. 21, 2009
vSphere 6.5, Oct. 18, 2016

Acquire Nicira, June 23, 2012
NSX 6.3, 2016

First Launch, 2014
vSAN 6.5, 2016

VMware SDDC Architecture

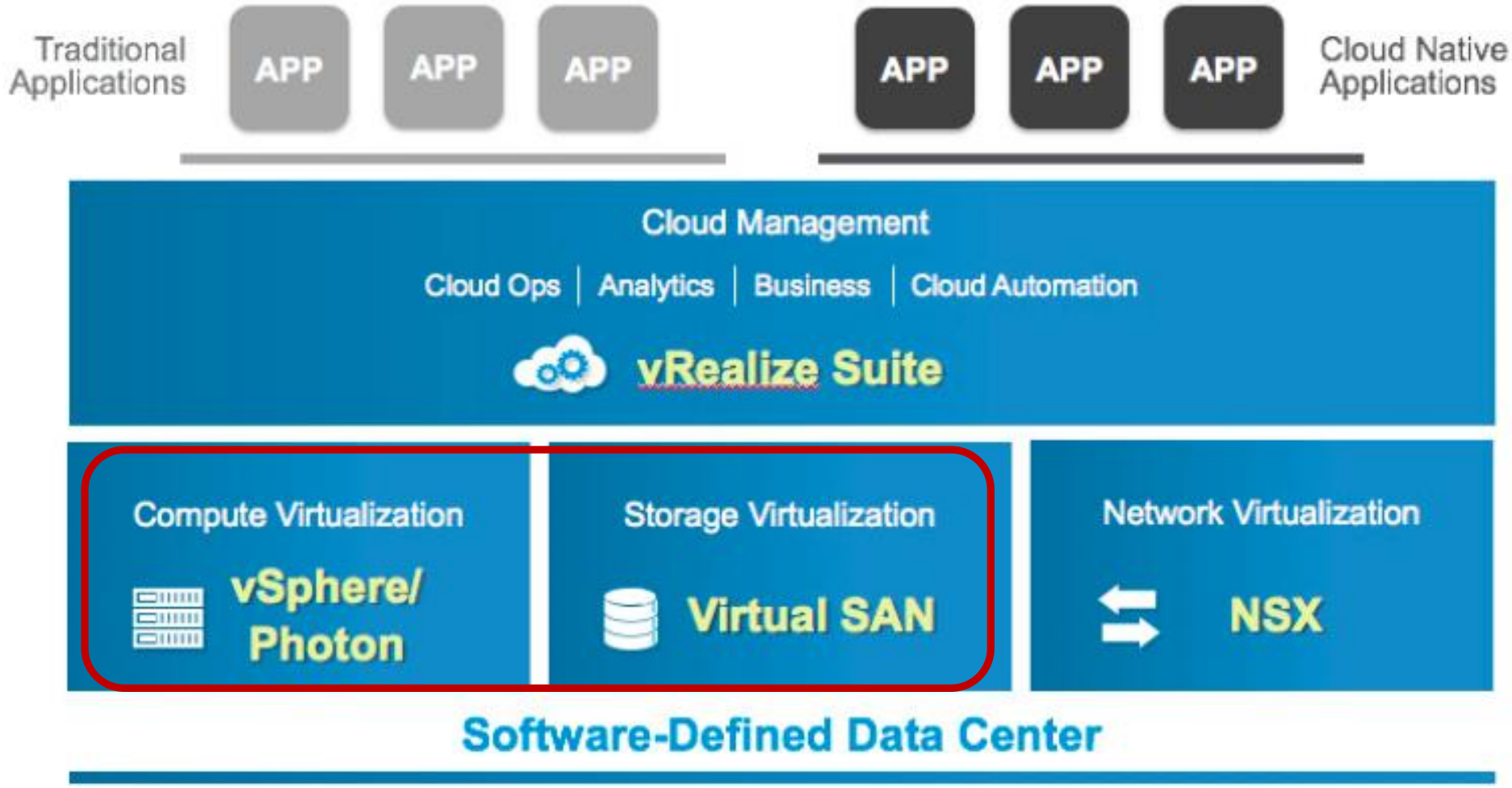
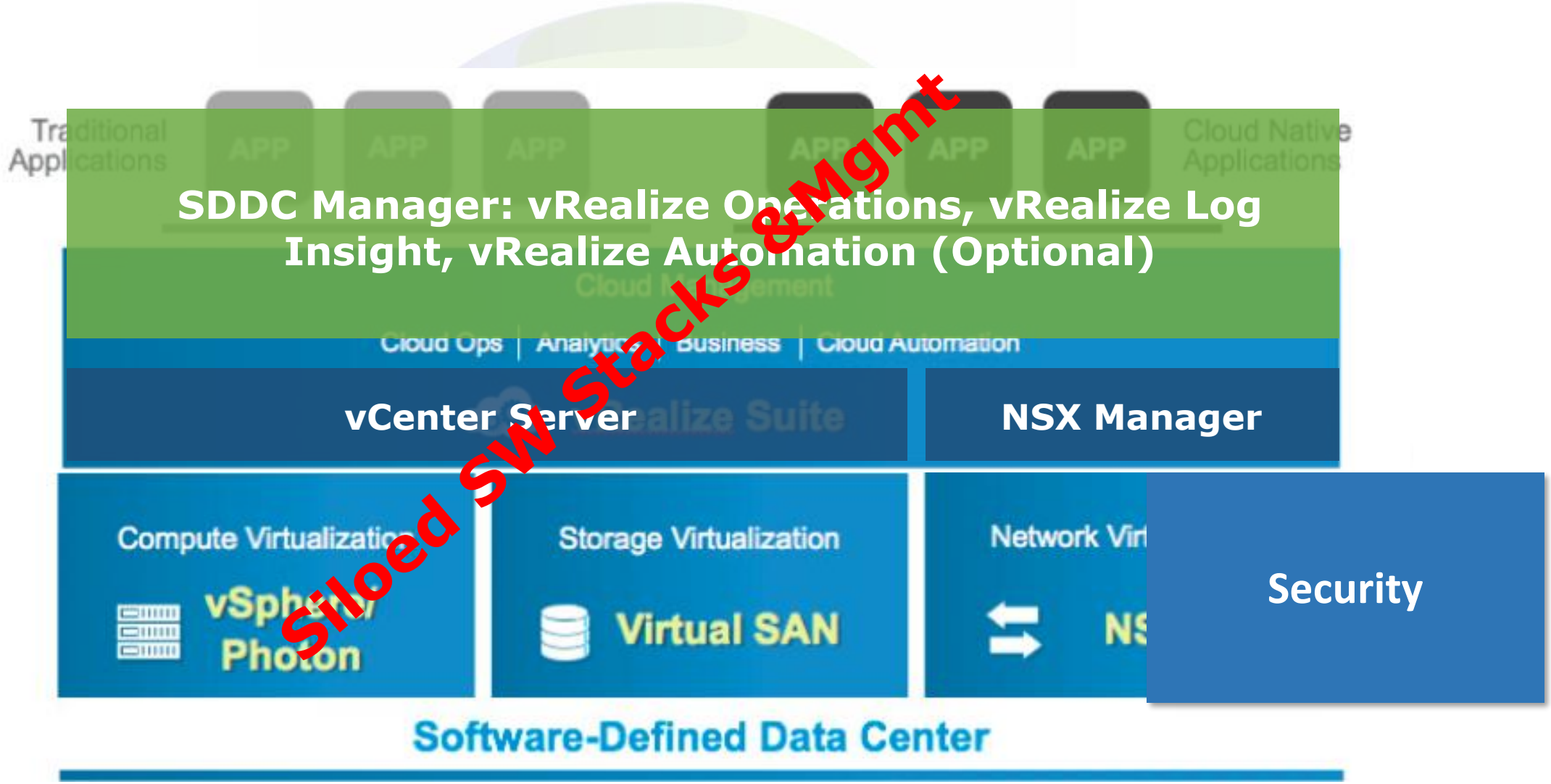


Figure 1. Software-Defined Data Center Architecture


SDDC Manager: vRealize Operations, vRealize Log Insight, vRealize Automation (Optional)
Siloed SW Stacks &Mgmt
vCenter Server
NSX Manager
Compute Virtualization
vSphere/ Photon
Storage Virtualization
Virtual SAN
Security
Software-Defined Data Center

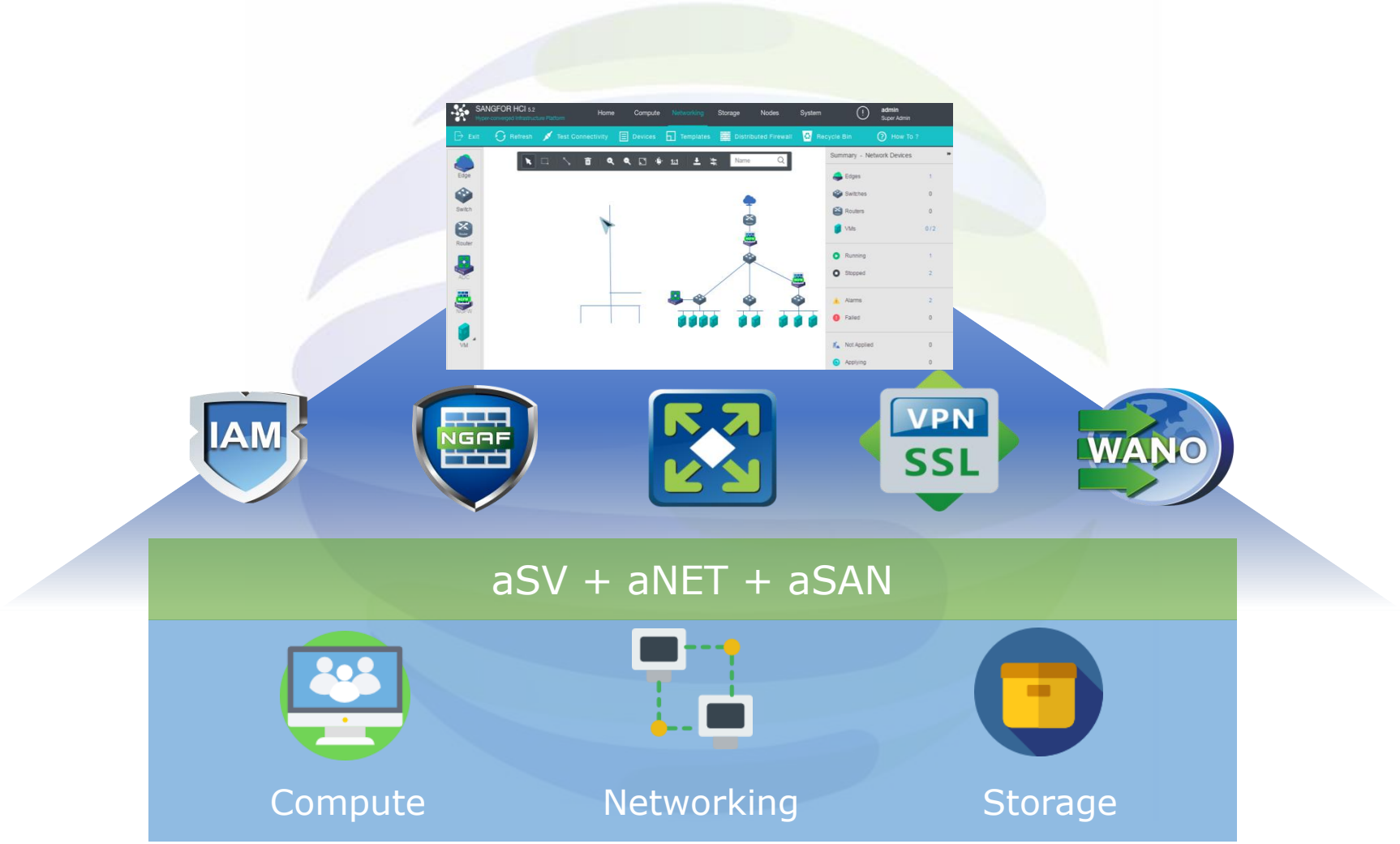
Comparison of Resources Taken by Software

In a 4 nodes vSAN cluster: 4CPU & 32GB RAM

Function	vCPU Requirements	vRAM Requirements
VSAN	4 (As shown in VMWs tests)	16GB (per host)
Total VSAN	16 vCPUs	64GB RAM
vCenter	4 (Small)	16GB (Small)
Platform Services Controller	2	2GB
vSphere Web Client	4	2GB
Update Manager	2	2GB
vRealize Ops Mgr.	4 (Small)	16GB (Small)
vSphere Data Protection	4 (Minimum requirements)	4GB
vSphere Replication	2	4GB
SQL Server	2	8GB
Note: The above is the minimum required for equivalent functionality and excludes components required to make management highly available.		
Total Management	24 vCPUs	54GB RAM
Grand Total	**40vCPUs**	**118GB RAM**

Lightest Ever!

One Software Stack with Unified Mgmt



VMware Shortcomings

VMware is the leader in virtualization, however…

- ✓ Separate software stacks to compose a full SDDC solution with management silos, even backup requires additional virtual appliance
- ✓ Management requires separate software & license
- ✓ Complex license structure, only the highest version comes with full features
- ✓ No data locality to save network traffic across nodes
- ✓ User unfriendly management UI and long learning curve for newbies
- ✓ No single point of support for hardware/software, hardware requires separate support
- ✓ Extremely high cost on license, training and support

…

Conclusion

You want VMware? You want Nutanix? You'll love Sangfor HCI, it has the best of them.

VS. Simplivity OminiStack

- Not truly software-defined solution, hardware requires purpose-built PCI-e card
- SimpliVity DVP currently supports 32 nodes maximum within a single Federation.
- Cannot provide iSCSI block storage that acts as one or more targets for Windows or Linux operating systems running on a bare metal (physical) server
- No flash pinning, cannot assign SSDs to high priority VMs in priority
- De-deduplication & compression is always on, waste of resources for de-deduplication & compression unfriendly applications like database
- Data that is already present before adding a node is not rebalanced across all nodes within a Federation
- Uncertainty remains in the future after acquisition by HPE

Don’t compete against Simplivity on storage efficiency & data protection head-on

VS. Cisco HyperFlex

- 3 nodes minimum for a cluster
- 8 nodes maximum in one cluster
- No data locality & flash pinning
- Heterogeneous nodes deployment is not supported in a cluster
- The HyperFlex capacity tier uses 10K SAS HDDs which are more expensive and lower capacity than 7.2K SATA/ NL SAS HDDs used in most hyper-converged systems.
- No native backup, backup frequency for VDP (vSphere data protection) is 24-hour
- Deduplication & compression is always on even if the dataset cannot take advantage of these features
- Separate management, UCS manager & vCenter
- Hypervisor from VMware, storage virtualization from SpringPath, hardware from Cisco UCS, totally fragmented solution

VS. Dell EMC VxRAIL

- 3 nodes minimum for a cluster
- No data locality
- Management platform requires additional vCenter server
- Can’t support external FC SAN storage
- Multiple service layers, Dell EMC for appliance, VMware for virtualization
- Just package VMware vSphere & vSAN with Dell EMC PowerEdge server platform, not cheap at all

Sangfor HCI Highlights

- World's first and only 3rd Gen HCI Platform
  - ✓ Comprehensive E2E & one stop solution which deeply integrates compute, storage, networking and security in one software stack
  - ✓ A single-pane-of-glass unified web-based management platform with intuitive ''what you draw is what you get'' feature to easily create data center topology and achieve visualized management
  - ✓ One step to cloud with smooth evolution, best building block for future-proof IT

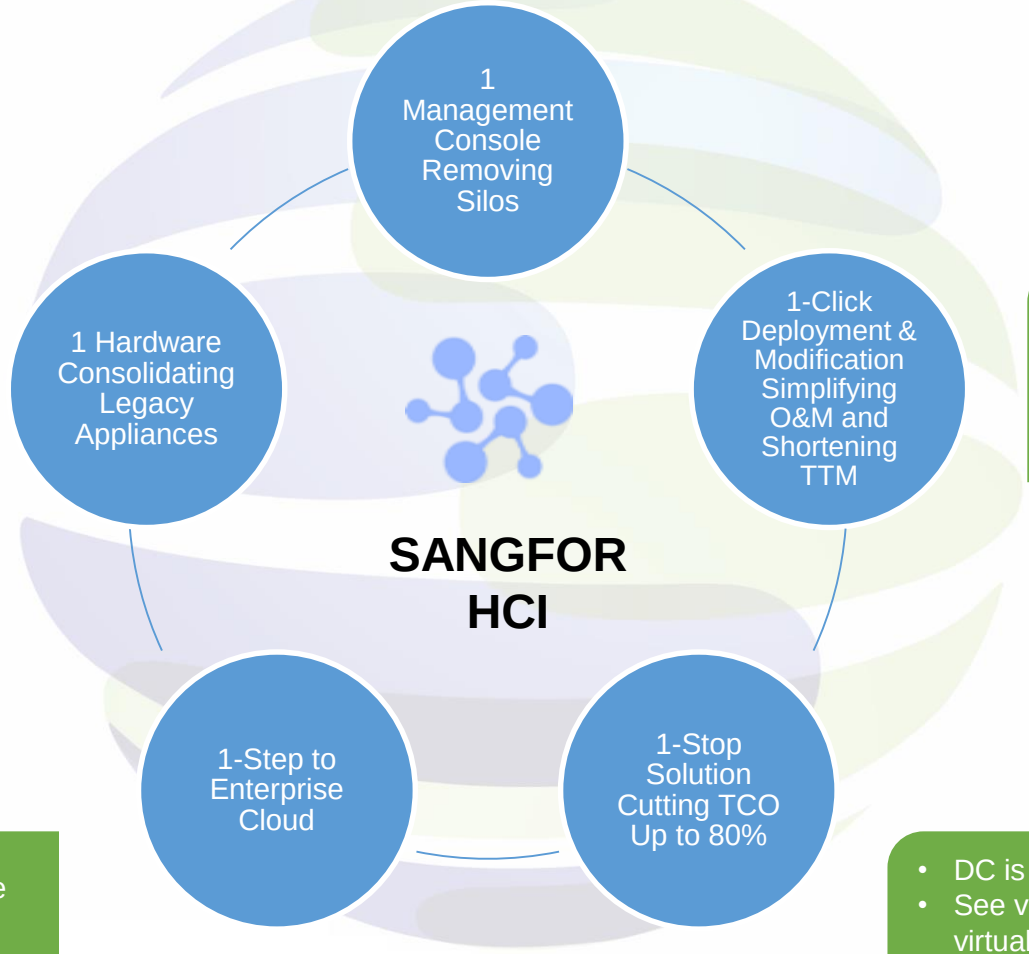
- Unprecedented Flexibility and Simplicity
  - ✓ Appliance or Software, your choice!
  - ✓ 2 nodes to start a cluster, best choice for SME and ROBO
  - ✓ One single unified platform with single vendor support
  - ✓ One license suite with all features included
  - ✓ Build data center with commodity Layer-2 switch and x86 servers
  - ✓ Pay as you grow

- Best cost-effective HCI solution in the market
  - ✓ Significant TCO reduction through hardware& software consolidation
  - ✓ Requires no specialist on O&M

- Thorough and professional local support
  - ✓ Dedicated local sales and engineers in SEA region, comprehensive CTI remote support from Malaysia
  - ✓ Guaranteed support SLA, customer-oriented service

IN GARTNER MAGIC QUADRANT

- The world's first & only 3rd gen HCI
- Deeply integrates compute, storage, networking & security
- A truly software-defined data center
- 1 platform from 1 single vendor



- Cloud facing and future proof
- Opentack-based cloud platform under development
- Enabling customers to focus only on core competency

GUI
- Manage all the resources on HCI at will
- "What you draw is what you get" topology
- Radically simplified, visualized &

- Flexible and cost-efficient
- Start a cluster with 2 nodes and scale out when needed
- Choose either pure software & reuse existing servers or HCI appliance for fast 1-stop delivery

- DC is viewed as a whole
- See virtual firewall, virtual router, virtual WAN optimization & other NFV components as well as compute & storage

Thank you !

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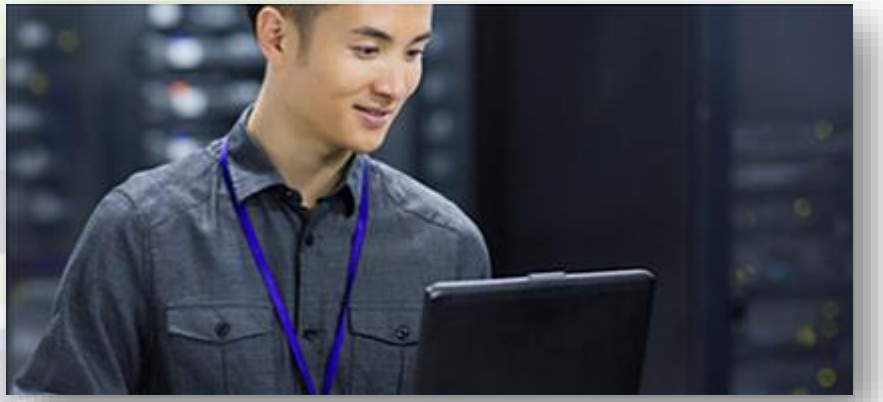
Your Future-Proof IT Enabler



Sangfor Technologies (Headquarters)
Block A1, Nanshan iPark, No.1001
Xueyuan Road, Nanshan District,
Shenzhen, Guangdong Province,
P. R. China (518055)