

VMWARE VIRTUAL SAN TOI

- PART 1

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Agenda

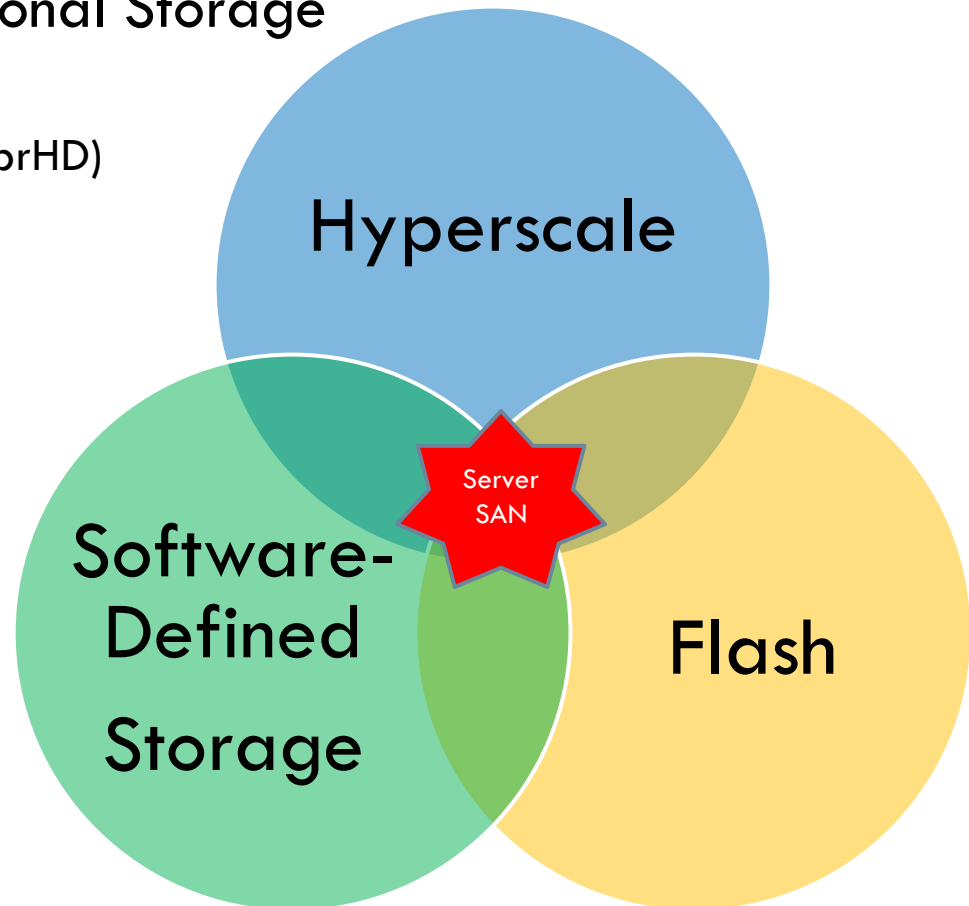
- Background
- Industry Problems
- VSAN Solution Analysis
- Market Analysis

Hyperscale (Webscale)

- An datacenter infrastructure which is created by web companies and cloud providers such as Google, Amazon, and Facebook
 - ▣ Commodity hardware
 - x86 server
 - ▣ Software defined
 - Computing - Virtualization based(Docker, VM)
 - Network - SDN(software defined network)
 - Storage - SDS(software defined storage)
 - ▣ Everything is a service - (Cloud: IaaS/PaaS/SaaS)
 - Scale out and elastic – Distributed design
 - High availability - Self-Healing Design
 - Automation and orchestration - API-based control and rich analytics

Server SAN

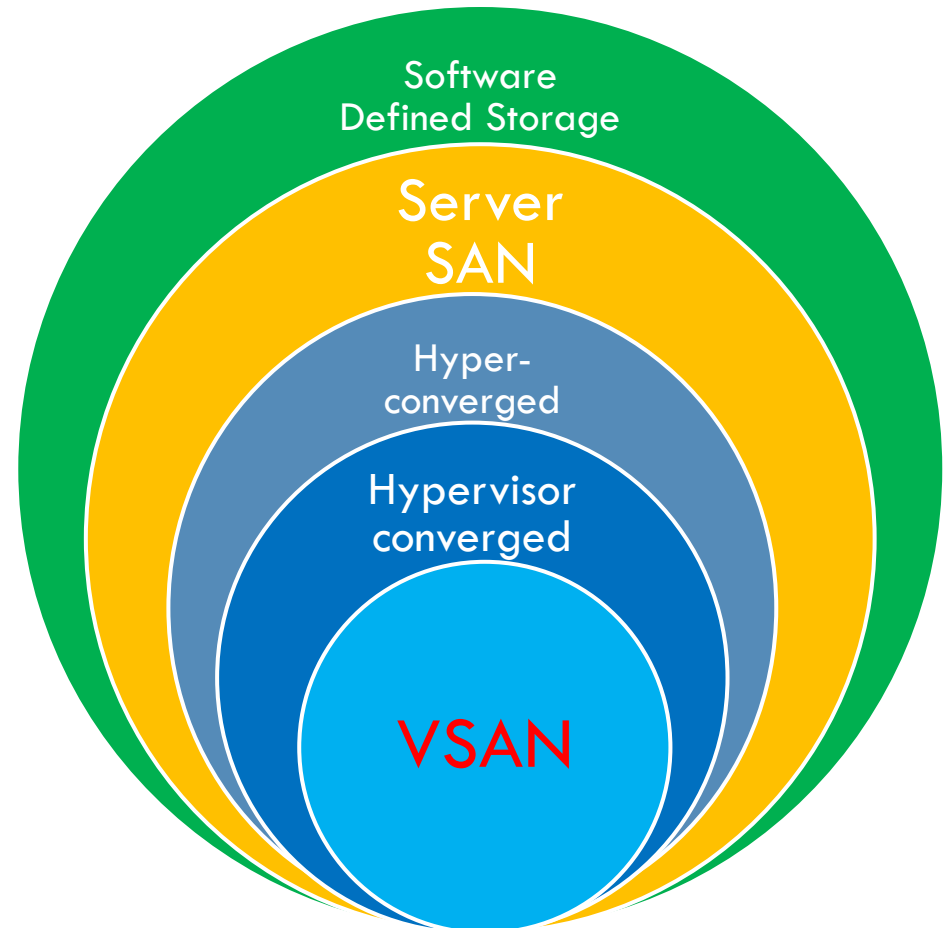
- Software Defined Storage
 - ▣ Software Defined Traditional Storage
 - Control path only
 - EMC ViPR Controller (CoprHD)
 - ▣ Virtual Appliance
 - Data & control path
 - vVNX, DD VE
 - ▣ **Server SAN**
 - Data & control path
 - VSAN, Scale IO



Server SAN is a new infrastructure architecture built on high-growth trends of hyperscale, SDS and flash.

Hyper-converged Storage

- Server SAN vs HCI
 - ▣ Server SAN
 - Storage only solution
 - ▣ Hyper-converged storage
 - Part of infrastructure: HCI
 - Compute + Net + Storage
- Hyper-converged
 - ▣ Hypervisor agnostic
 - Nutanix
 - ▣ Hypervisor built-in
 - VSAN



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Customer Pain Points - I

- Can't meet virtualization/cloud requirements
 - ▣ Cloud/virtualization gives agility, flexibility and automation
 - Host VM deployment and workload change are faster and flexible
 - ▣ Traditional storage requires can match the host changes
 - Static class of devices
 - Matching right storage to app is not flexible and limited by silos boundary
 - Rigid provisioning
 - Lack of automation
 - Lack of granular control
 - Frequent data migrations

Customer Pain Points - II

- High OPEX caused by multiple storage silos
 - Needs dedicate storage administration teams
 - Requires vendor specific skillsets
 - Fragment management process per different silos
 - AFA block, SAN block, NAS file, DAS SSD, Data Protection...
 - Time consuming process
 - Slow reaction to request
- High TCO from purpose built storage
 - Exponential data growth from 3rd platform apps, but IT budget is flat
 - Purpose built storage is expensive for scaling, upgrade and replacement
 - Not commodity
 - Low utilization
 - Over-provisioning and over-purchasing

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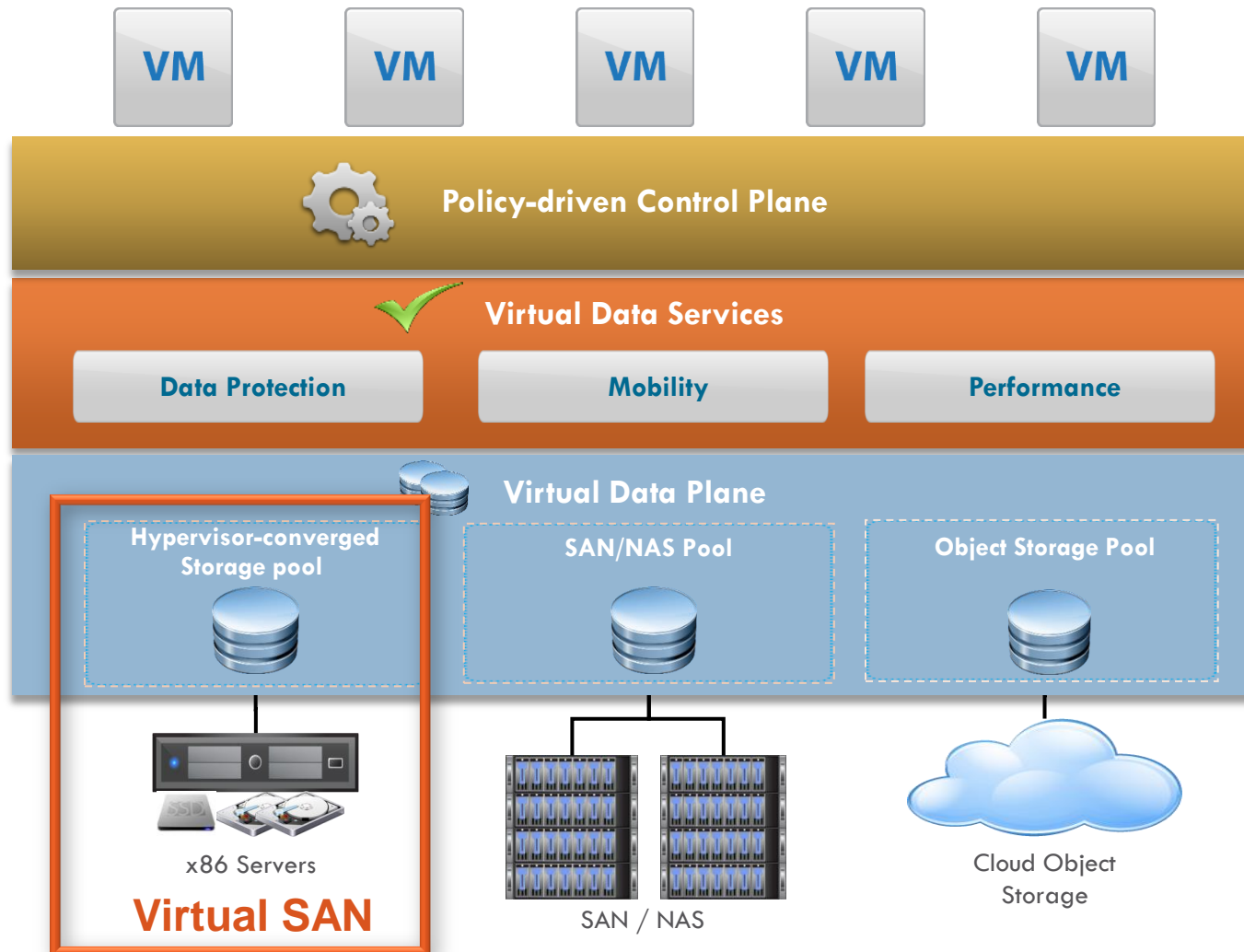
Related Solutions

- VMWare Virtual San
 - ▣ Certificated generic x86 server + VSAN stack
- EVO:RAIL
 - ▣ Engineered appliance
 - Certificated EVO:RAIL hardware
 - Pre-installed VSAN software stack
 - Vendor specific value-add software
 - ▣ Major players in market
 - EMC VSPEX BLUE (1st market share)
 - Dell Engineered Solutions, NetApp EVO:RAIL, Supermicro EVO:RAIL
 - HP CS 200-HC EVO:RAIL (Discontinued, replaced by in-house HCI product)
- EVO:SDDC (EVO:RACK)
 - ▣ Rack Scale
 - Rack mounted hardware: Server + Network switch + DAE(Disk Array Enclosure)
 - Pre-installed VMWare cloud software

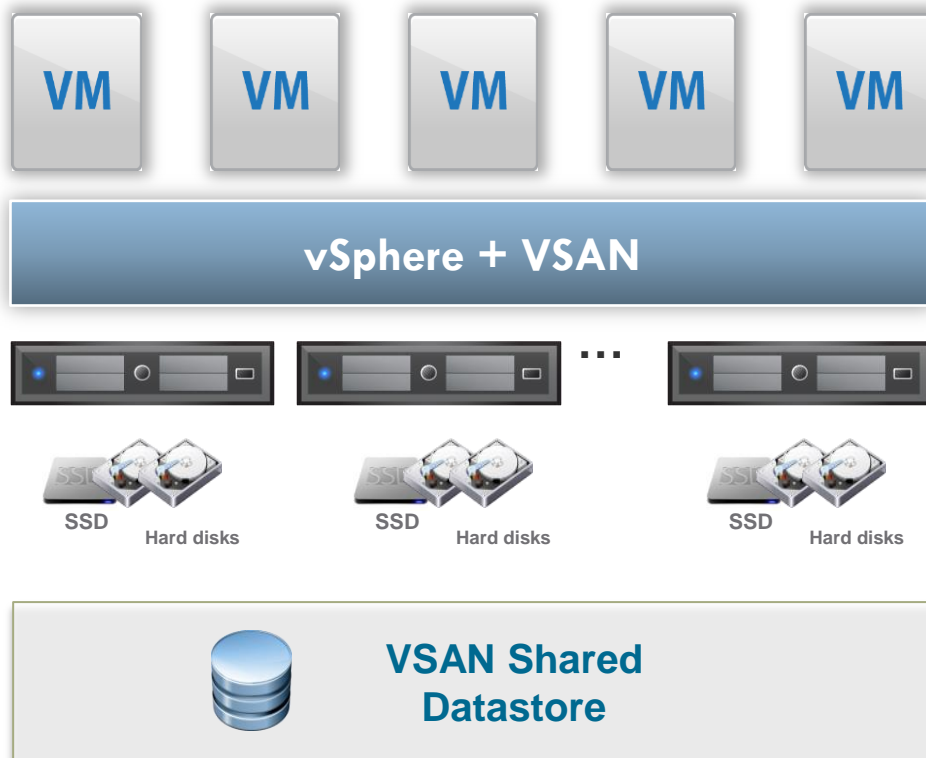
Software vs Appliance



VMware SDS Solution - SBPM



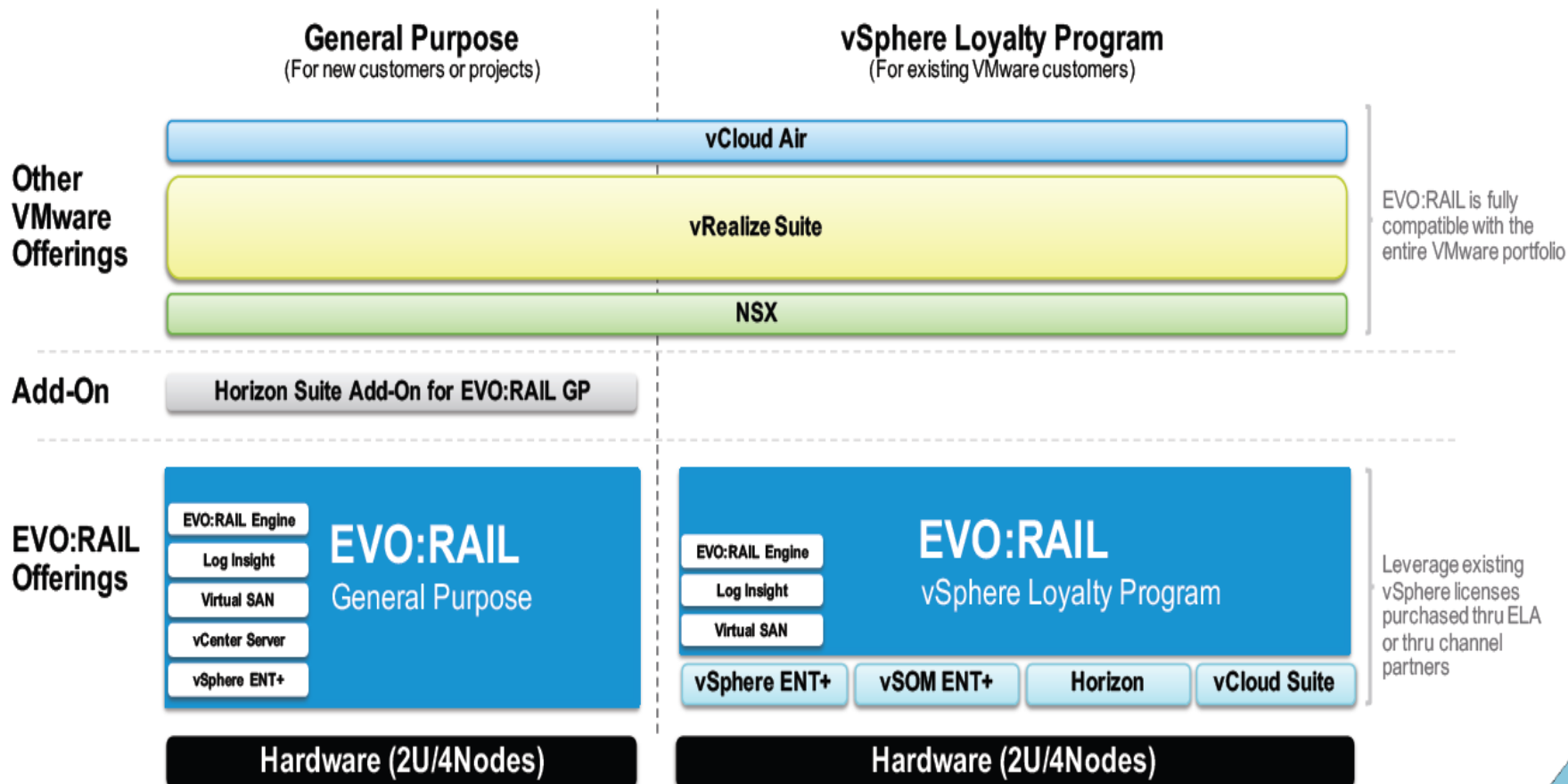
VSAN Architecture



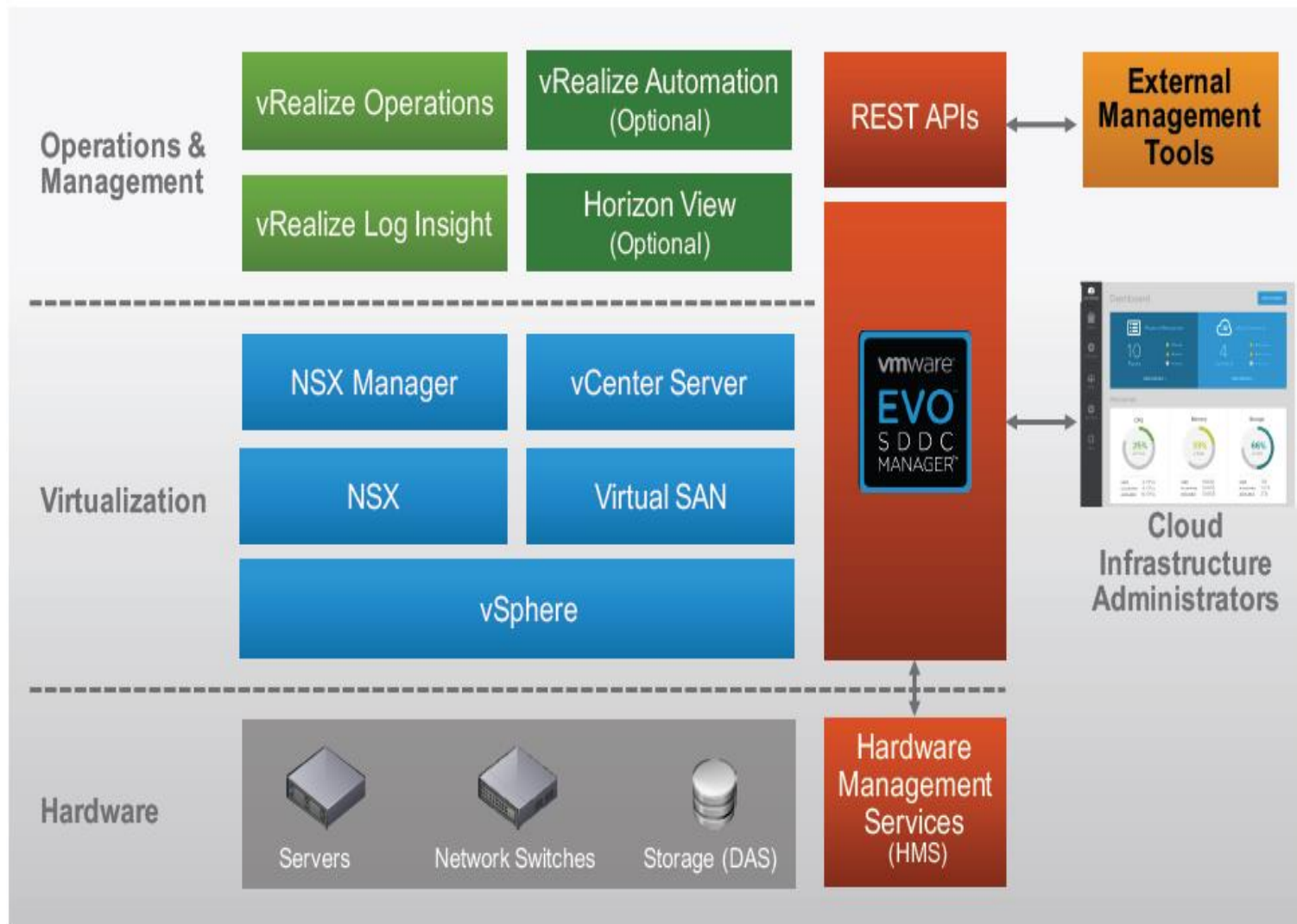
The Basics

- Runs on any standard x86 server
- Policy-based management framework
- Embedded in vSphere kernel
- High performance flash architecture
- Built-in resiliency
- Deep integration with VMware stack

EVO:RAIL Packaging Summary



EVO:SDDC (EVO:RACK)



EVO:RAIL vs EVO:SDDC



Solution	Virtualized Infrastructure Appliance	Data Center-Scale Cloud Infrastructure
VMware Software	vSphere 6.0, Virtual SAN 6.0, EVO:RAIL Engine	Full vCloud Suite, Virtual SAN 6.1, NSX, Integrated Virtual + Physical Networking, EVO SDDC Manager
Managed Hardware	Server + Built-in Storage	Server + ToR Leaf/Spine Switch + JBOD or DAS Storage
Server Specifications	2U / 4N Appliance ability to stack appliances	Rack-mounted servers
Deployment Scalability	Up to 16 appliances	Multiple racks
Key Use Cases	Prod, VDI, ROBO, PrivCloud	IaaS, VDI

VSAN Advantages

Radically Simple

- Integrated with VMware stack
- Managed directly through vSphere Web Client
- Two click Install
- Simplified storage configuration
- No LUNs
- Automated VM provisioning
- Simplified capacity planning

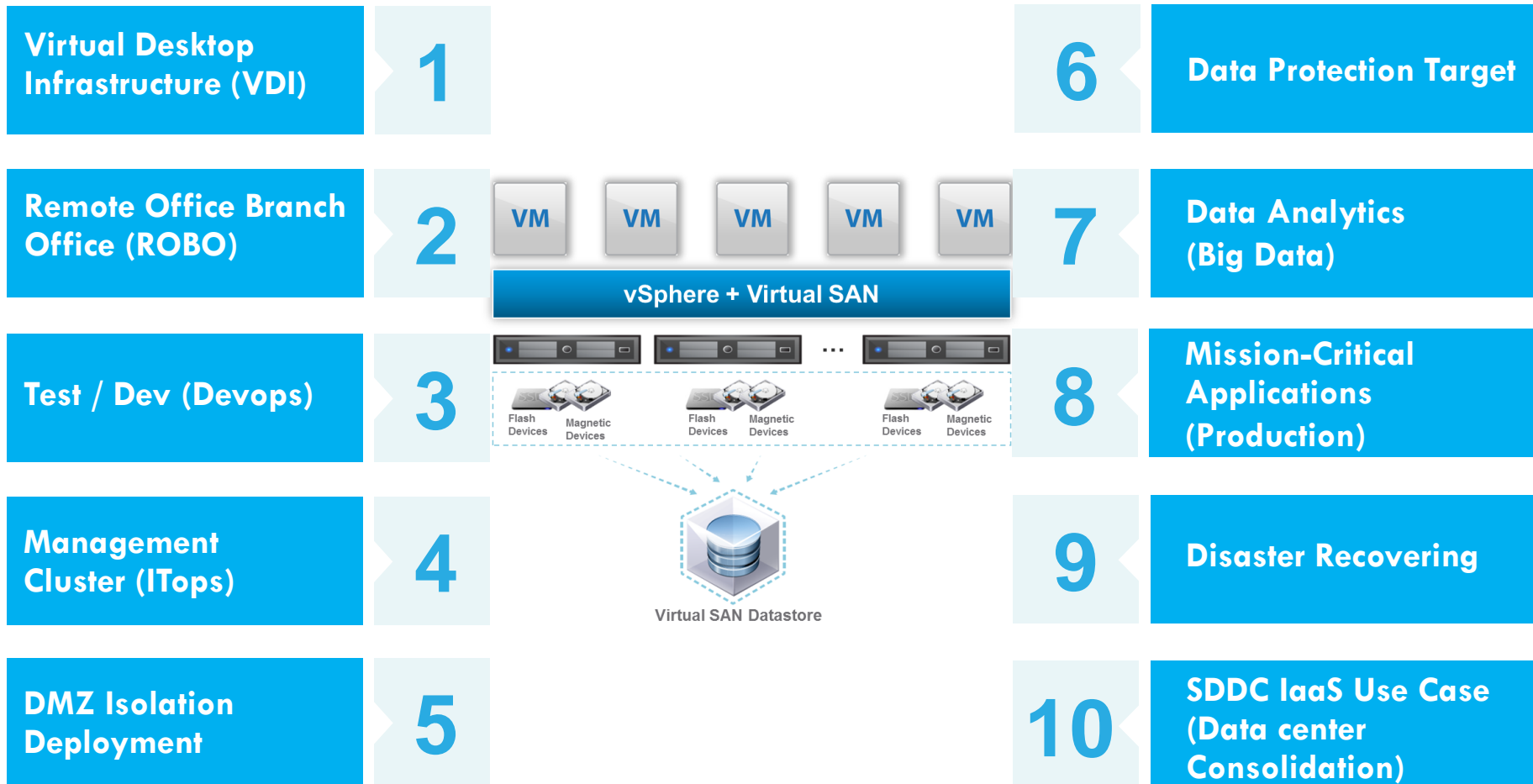
High Performance

- Embedded in vSphere kernel
- Flash-accelerated
- Up to 2M IOPs from 32 nodes cluster
- Granular and linear scaling

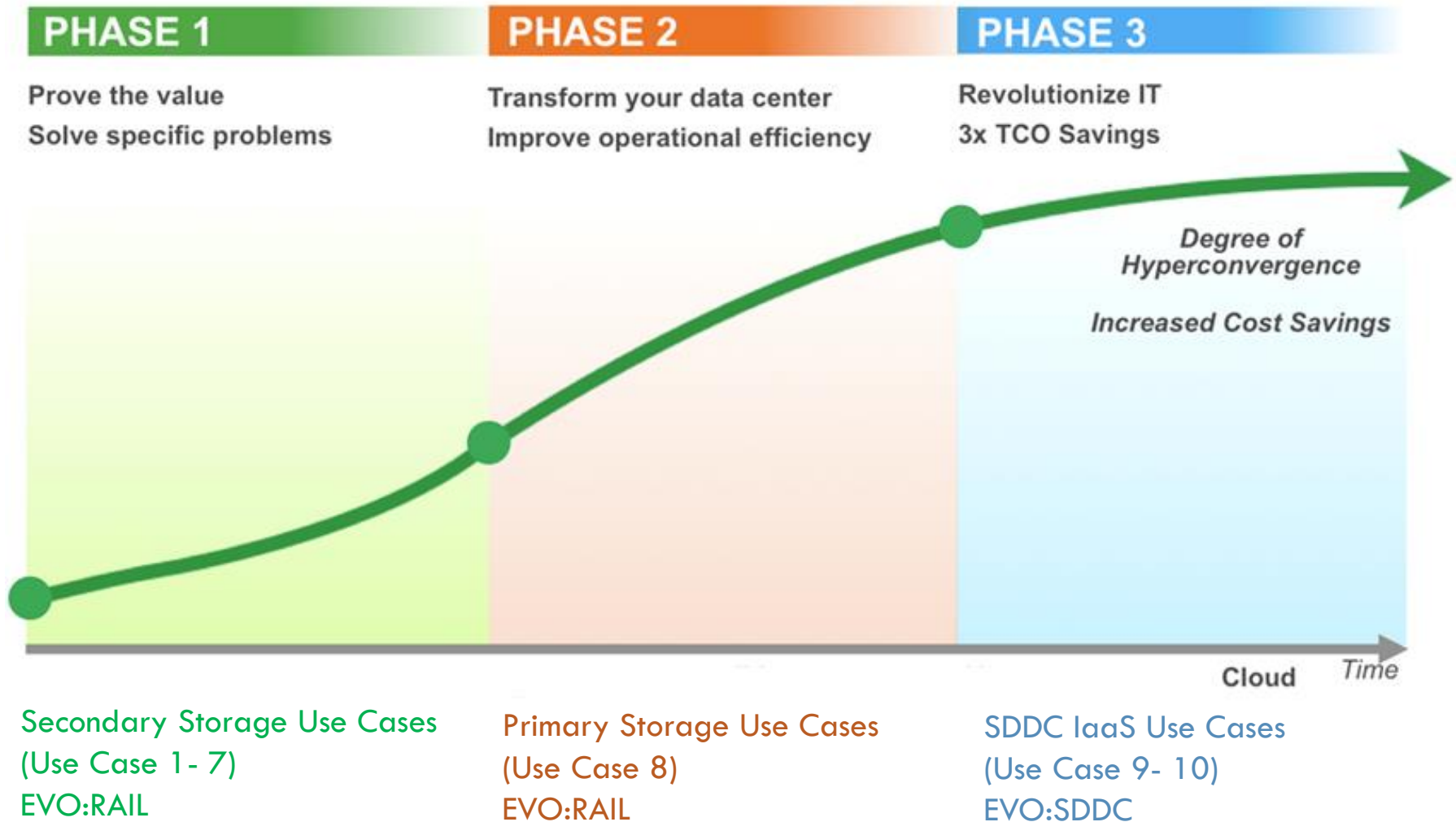
Lower TCO

- Server-side economics
- No Fiber Channel Network
- No large upfront investments
- Grow-as-you-go
- Easy to operate with powerful automation
- No specialized skillset

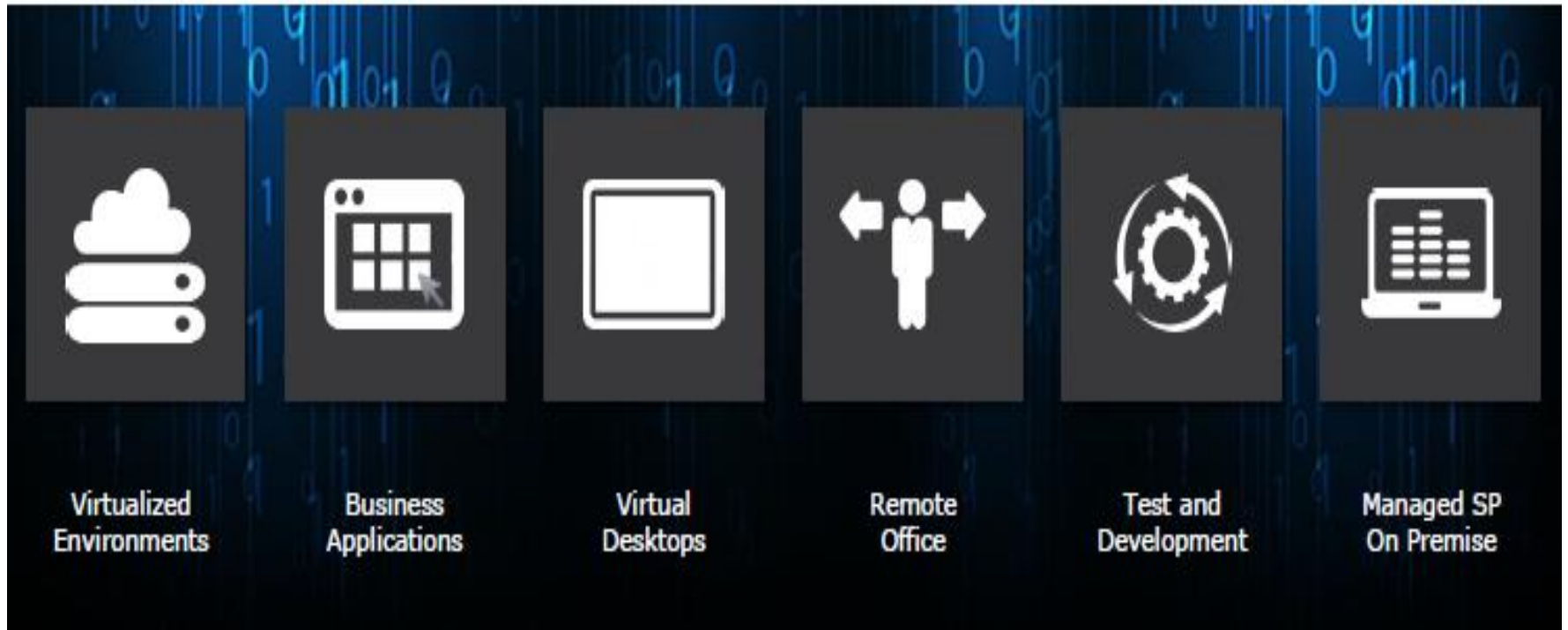
Customer Use Cases



Use Case Adoption



VSPEX BLUE Use Cases



EMC VSPEX Blue Value-add

□ Software Value-add

▣ VSPEX BLUE Manager

- Hardware monitoring, patch, software upgrade, and integrates with EMC Connect Home

▣ VSPEX BLUE Market

- Offers value-add EMC software products included with VSPEX BLUE.

▣ EMC SECURE REMOTE SUPPORT – Online support facilities

□ Hardware value-add

▣ Any storage vendor specific advantages ? TBD

- Same x86 white box as EMC ECS

□ Solution value-add

▣ EMC solutions integration

- Integrate with EMC Cloud Array for cloud storage expansion
- Integrate with EMC recover point for VM level CDP, DR, Replication
- Leverage VMWare VDPA to integrate with Avamar for backup
 - Current Data Domain DDR could be data protection target

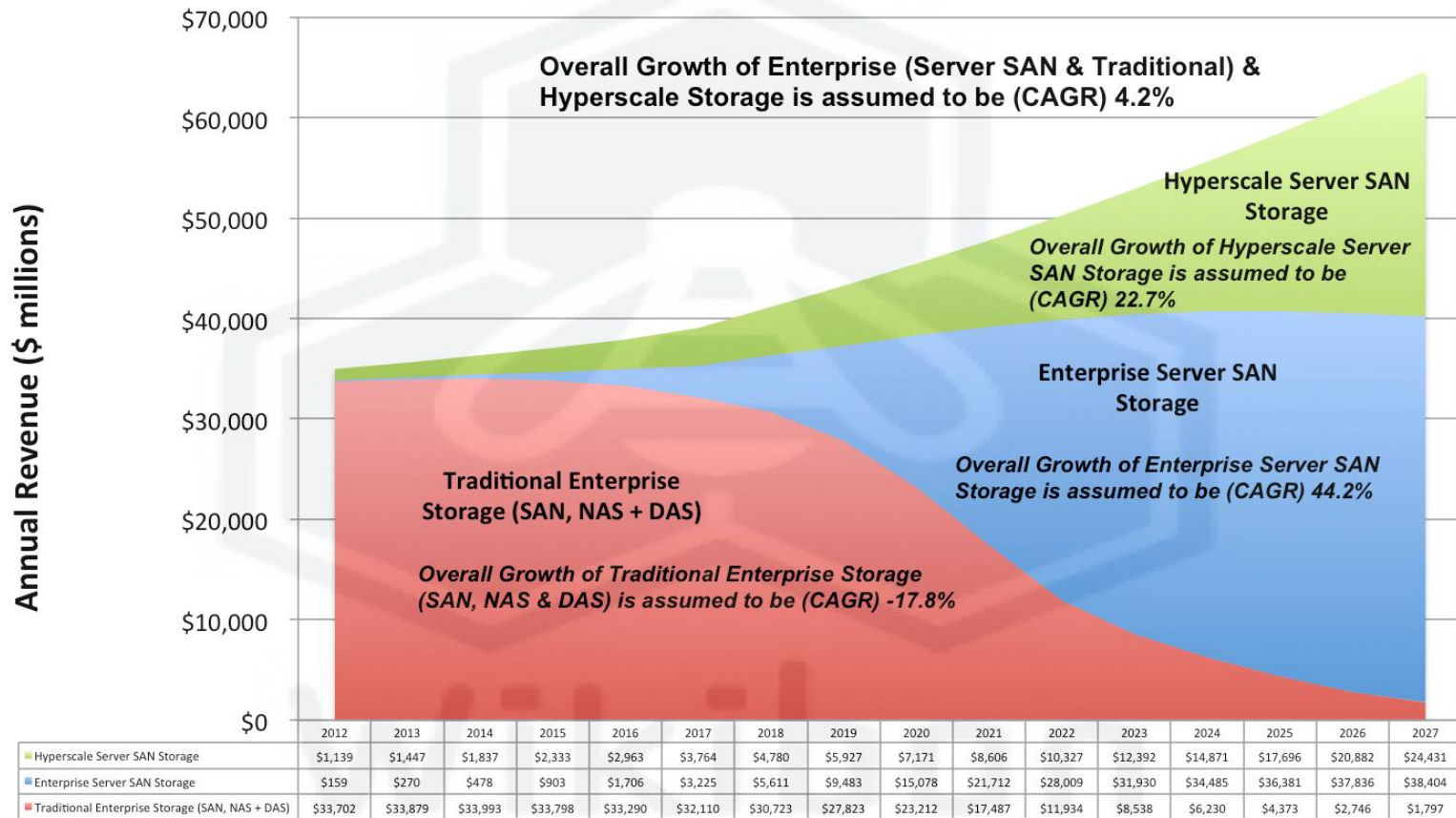
▣ PARTNER ECOSYSTEM

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Market Trend

Traditional Enterprise Storage, Hyperscale Server SAN & Enterprise Server SAN Revenue Projections 2012-2027



Market Players

Appliance Solutions

NUTANIX
The Virtual Computing Platform

SCALE
COMPUTING

simpli**v**ity™ 

Pivot 

Software-only Solutions

vmware® **VSAN**

maxta

 **SANBOLIC**

 **StoreVirtual VSA**

EMC²

ScaleIO

 **nexenta**
Global Leader in Software Defined Storage.

StorMagic® 

Data Systems

 **ceph**

 **openstack**
CLOUD SOFTWARE

 **GLUSTER**
COMMUNITY

 **Microsoft** **SMB3**

 **amazon**
web services

VSAN TCO Analysis

CAPEX

- Server-side economics
- No Fibre Channel network
- Pay-as-you-grow

OPEX

- Simplified storage configuration
- No LUNs
- Managed directly through vSphere Web Client
- Automated VM provisioning
- Simplified capacity planning



1. Full clones

2. Usable capacity

3. Estimated based on 2013 street pricing, Capex (includes storage hardware + Software License costs)

4. Source: Taneja Group

EMC Scale IO Use Cases

VSI

- Virtual Server Infrastructure

VDI

- Virtual Desktop Infrastructure

Devops

- Test & Dev

Production

- Mission Critical Applications