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Update on PRIMEFLEX for VMware EVO:RAIL

Fast track to a hyper-converged IT infrastructure

CompuWay

vmware EVO RAIL™

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News on EVO:RAIL

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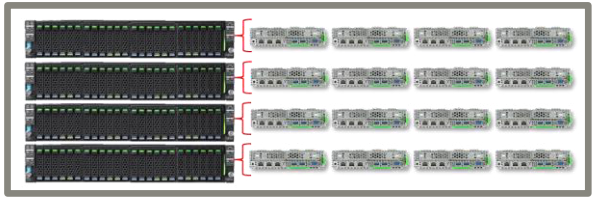
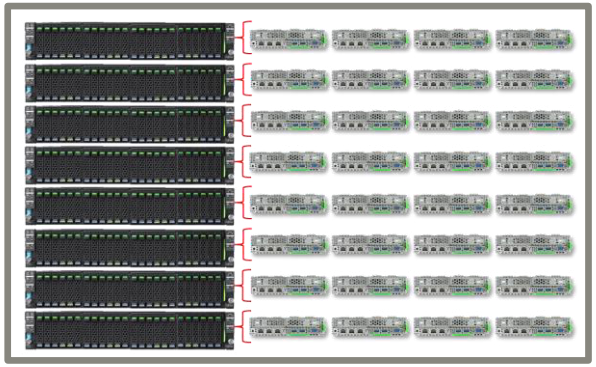
- Status quo

~400 VMs / ~1.000 Desktops on 64 Nodes (vSphere 5.5)

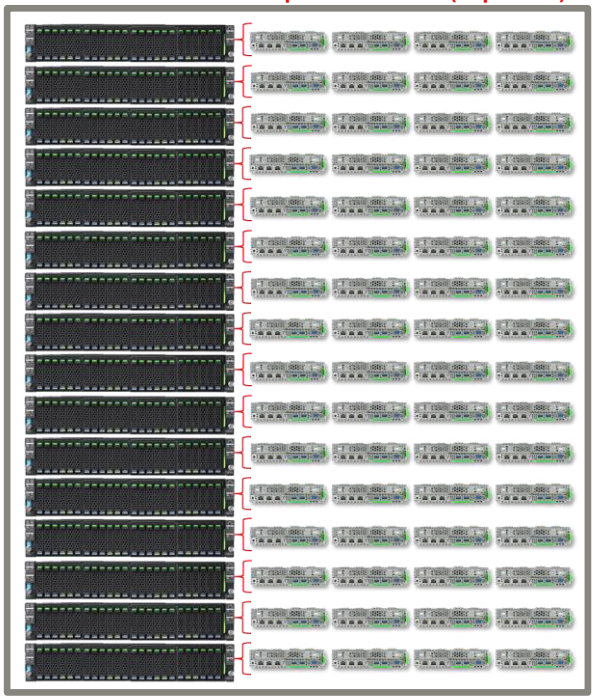


~800 VMs / ~2.000 Desktops on 64 Nodes (vSphere 5.5)



- Comes with 2.0; stay tuned

~1.600 VMs / ~4.000 Desktops on 64 Nodes (vSphere 6)



More Flexibility in Configurations: PRIMEFLEX for VMware EVO:RAIL™

Software for the new edge

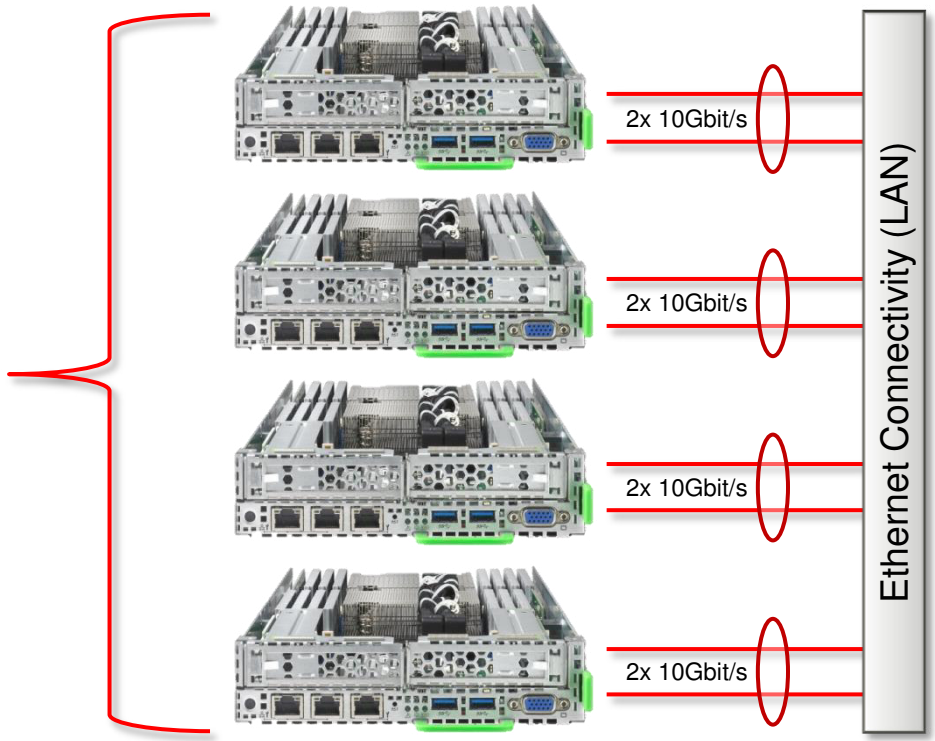
- Compute, Network and Storage virtualization with **vSphere** and **VSAN**
- VMware Support & Services (SnS)

FUJITSU Server PRIMERGY CX400 M1

One smart enclosure with 4 nodes and **flexible configurations**:

- **CPUs:** 2x E5-2600v3; each from 6 up to 18 Cores
- **RAM:** From192 up to 512 GB of Memory
- **HDD** System: 1x 400GB SSD, 1x 300GB; improvement planned
- 2x 10GBit/s Ethernet Connectivity

For each node; all with same configration.

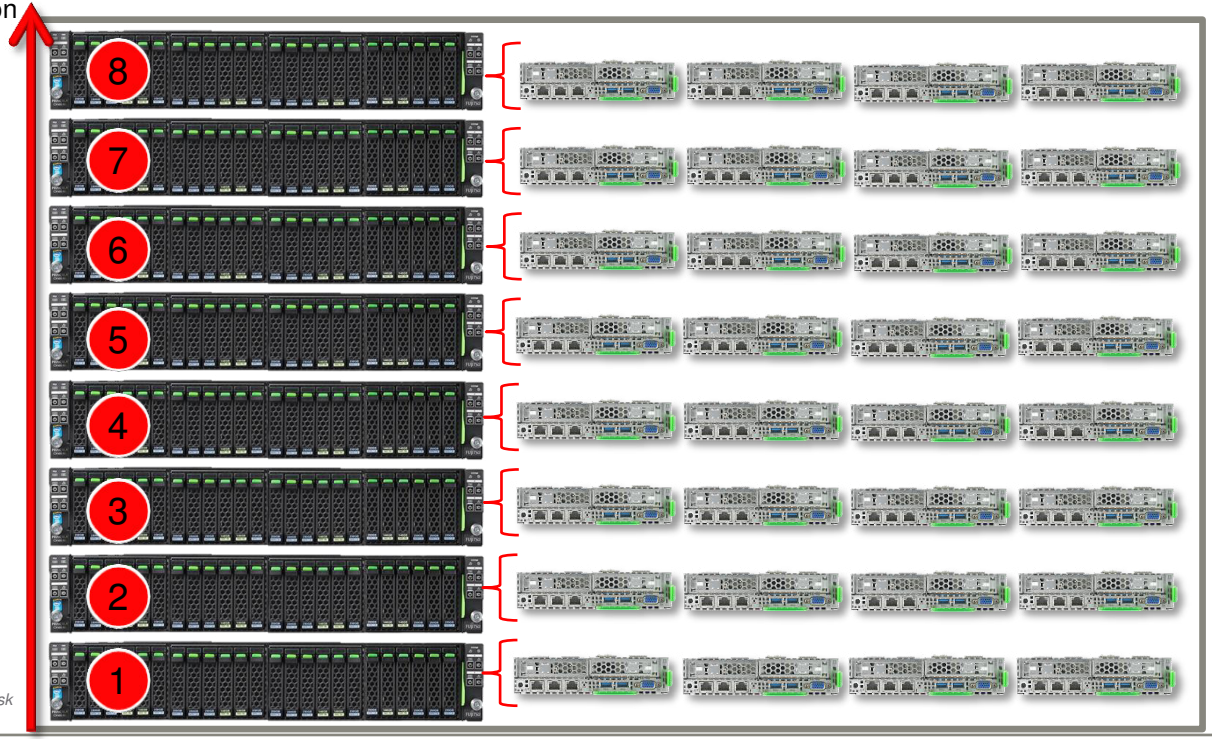


More Performance, Ready for 6.x - Version

- Up to 32 Nodes provided by 8 Appliances in one Cluster
- Up to 1.152 Cores in one Cluster
- Up to 16 TB of Memory in one Cluster
- Today: Up to 116 TB of Storage (total) in actual Version
- Up to 64x 10 Gbit/s Ethernet Connectivity

Linear and Predictable Scalability

- **From ~100VMs / 250 VDIs**
  on a single Appliance base
- **UpTo ~800VMs / 2.000 VDIs**
  on an eight Appliance base



VMs – Average of 2 vCPUs, 6GB vMEM, 60GB virtual disk

Desktops – Average of 2 vCPUs, 2GB vMEM, 30GB virtual disk

Software and Hardware at its Best: PRIMEFLEX for VMware EVO:RAIL

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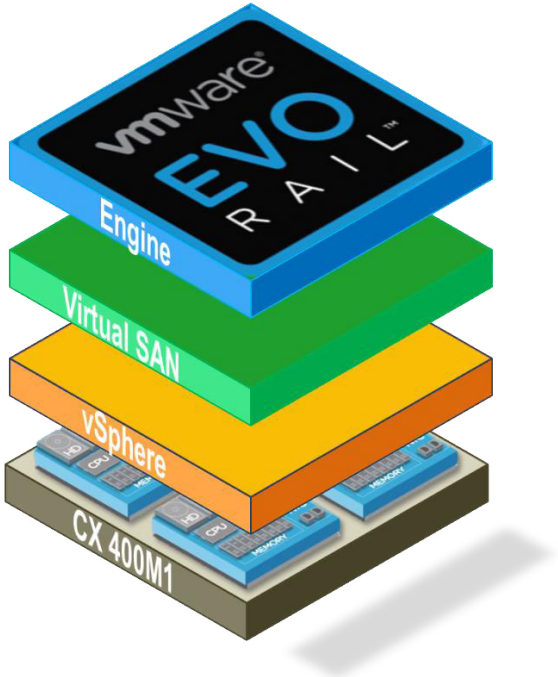
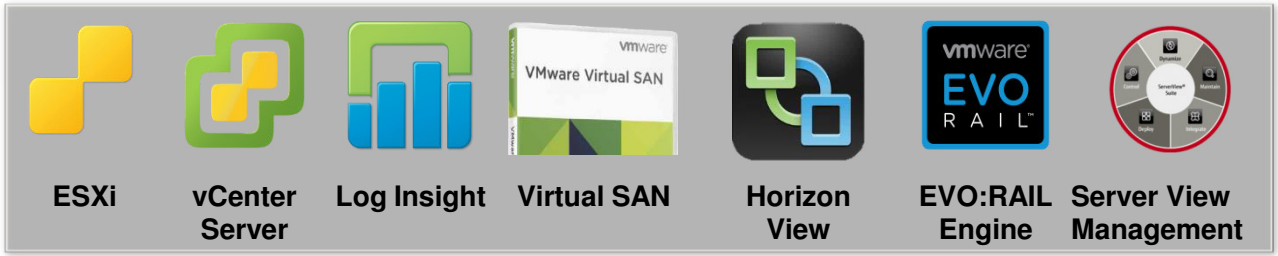
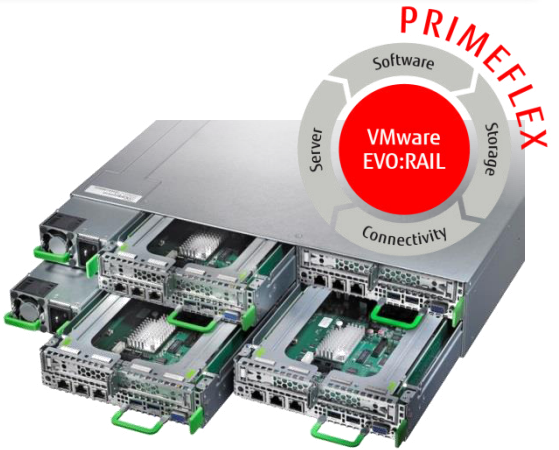






New Options

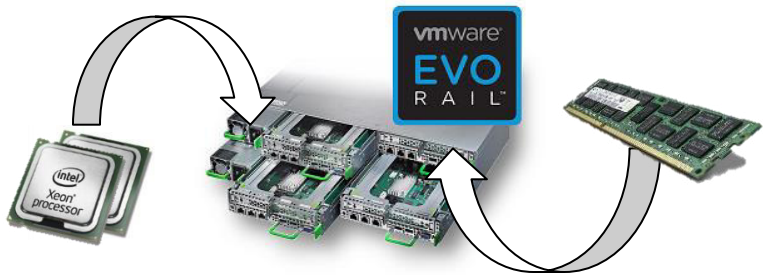
Horizon View Add-On licenses

- VMware Horizon Advanced and Enterprise
- Orderable Now

vmware Horizon View

Flexible Configurations

- Full configurability – not only T-shirt sizes - for:
  - CPU (6 up to 18 cores)
  - Memory (192GB up to 512GB)
- Optimized offerings based on virtual machine profile
- Optimized software license usage



Update: VMmark – Benchmark for Virtualization and Cloudpower

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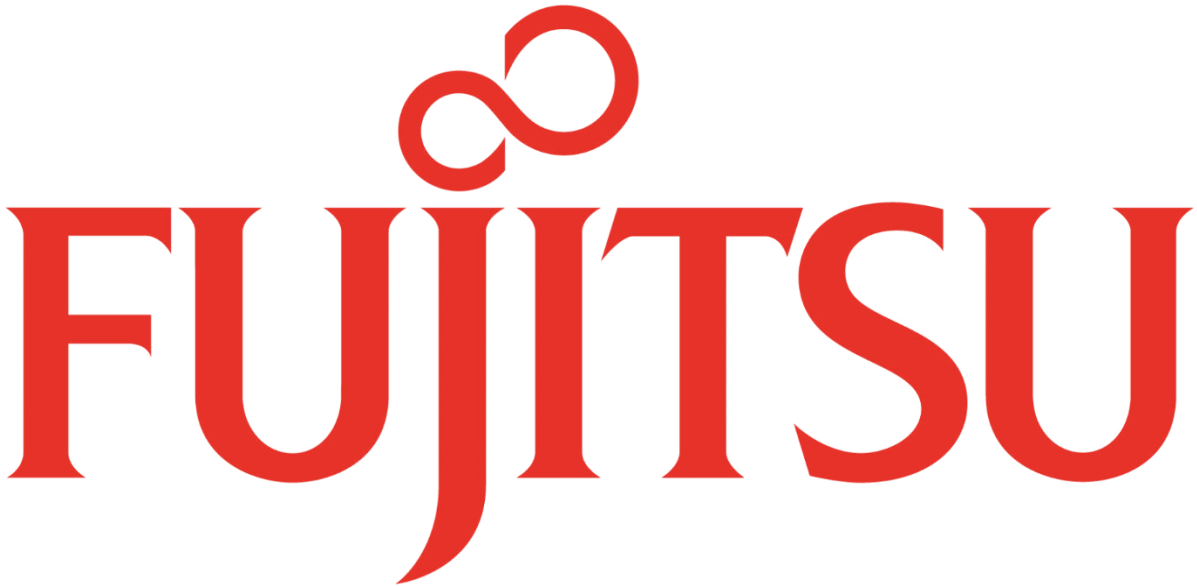

Update: Power Consumption Benchmark

	Hardware Vendor	System	Result	Published
1	Fujitsu	FUJITSU Server PRIMERGY RX2560 M1	10699	Mar 2015
2	Fujitsu	FUJITSU Server PRIMERGY TX2560 M1	10685	Mar 2015
3	Fujitsu	FUJITSU Server PRIMERGY RX2540 M1	10654	Oct 2014
	Non-Fujitsu		10206	Jan 2015
	Non-Fujitsu		10103	Mar 2015
4	Fujitsu	FUJITSU Server PRIMERGY CX2550 M1	9971	Dec 2014
5	Fujitsu	FUJITSU Server PRIMERGY RX2530 M1	9811	Jan 2015
	Non-Fujitsu		9749	Mar 2015
	Non-Fujitsu		9472	Jun 2015
6	Fujitsu	FUJITSU Server PRIMERGY TX1320 M1	7535	Dec 2014

Status: Jul 28, 2015; based on x86 Tower and Rackservers; no Bladecenter. If no Publish date is given, test date is used as reported.

PRIMERGY servers hold 6 out of 10 top positions of all major vendors!

PRIMERGY servers continuously provides leading scores in SPECpower_ssj2008

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Update on: PRIMEFLEX for VMware EVO:SDDC

Fast track to your VMware software-defined data center

FROM RAIL to SDDC

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	Virtualized Infrastructure Appliance	Data Center-Scale Cloud Infrastructure
Softwarestack	ESX, VSAN, vCenter, EVO:RAIL Engine, vRealize Log Insight, FJ ServerView	ESX, VSAN, NSX, vCenter, EVO:SDDC Manager, vRealize Ops/Log Insight, FJ PlugIns
Managed Hardware	Server + Built-in Storage	Server + Built-in Storage + ToR Leaf/Spine Switch + JBOD or DAS Storage
Server Specs	2U / 4N Appliance; ability to stack appliances	Rack-mounted servers, Ready2Use
Scalability	Up to 8 appliances	Multiple racks
Key Use Cases	HCI in DC, Retail or Branch Office, VDI	SDDC, VDI, IaaS

PRIMEFLEX for VMware EVO:SDDC Software Stack

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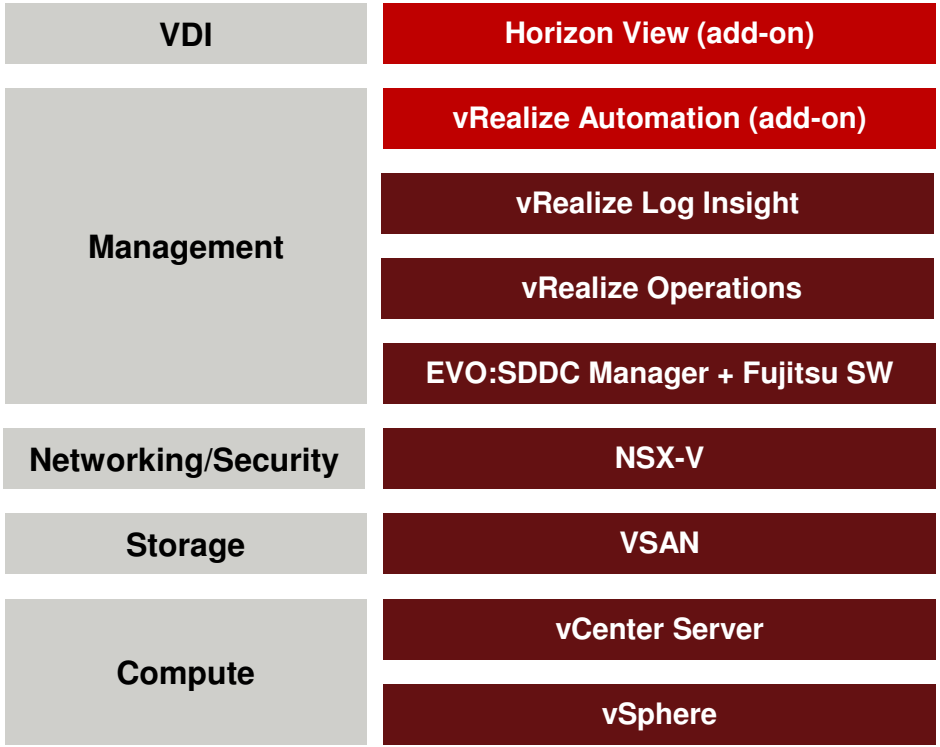
Key features

- **Software-defined server, storage and networking**
  - VMware ESX, vCenter, VSAN and NSX
- Simplified SDDC configuration & provisioning
  - vRealize Operations/Log Insight provides operations and real-time log management across physical, virtual and cloud environments
  - vRealize Automation accelerates the deployment and management of applications and compute services
- Integrated SDDC lifecycle management
  - EVO:RACK Manager provides non-disruptive patching & upgrading
- Virtual Desktop Infrastructure
  - Horizon View – single platform for virtual desktop and application delivery



Introducing PRIMEFLEX for VMware EVO:SDDC

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Hyper-converged, distributed multi-rack infrastructure for your software-defined data center

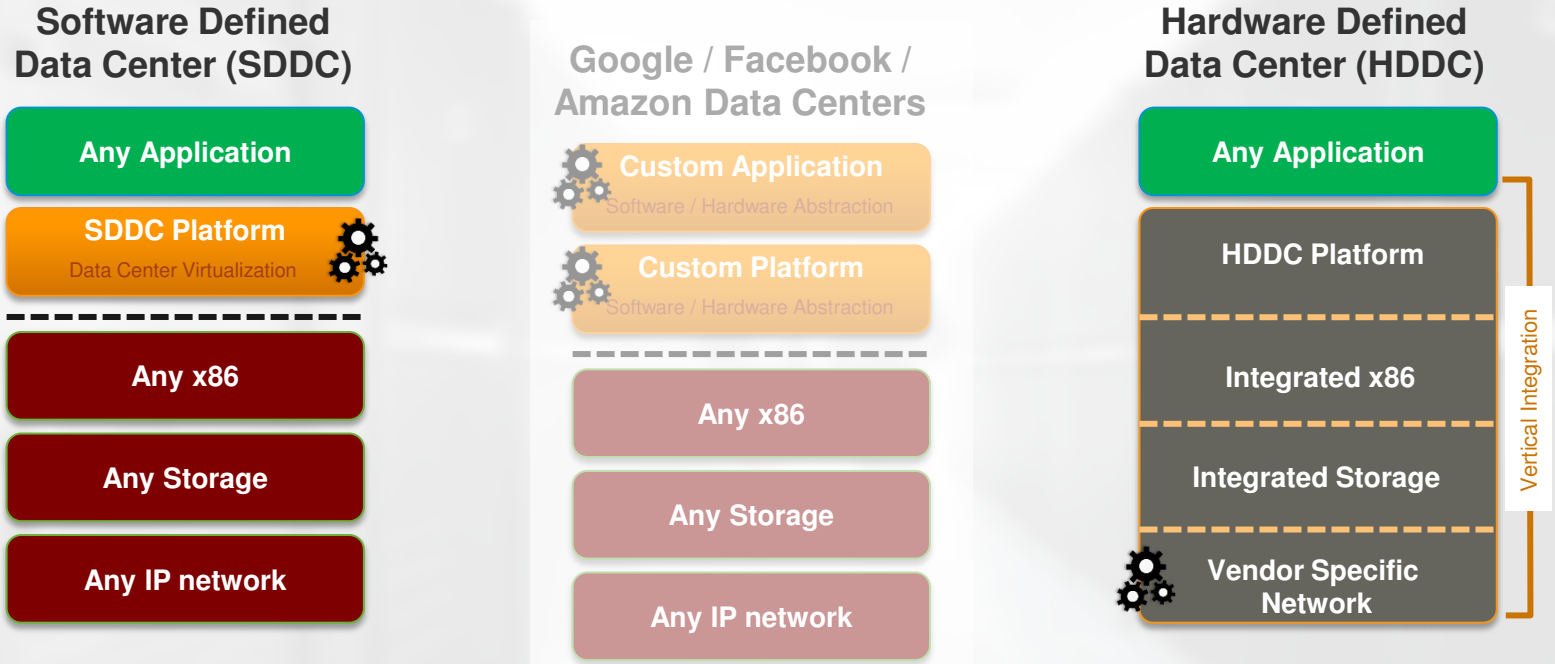
- Next-generation data center platform providing software-defined compute, storage and network (scales up to ten racks)
- Applies the EVO concept to the full line-up of software solutions for the SDDC to provide customers with a single virtual rack impression
- Includes EVO software specifically developed to simplify the deployment and ongoing lifecycle management of the SDDC software
- Ready-to-run hardware/software/services solution including Fujitsu deployment service and solution maintenance

vmware EVO SDDC™

Dramatically simplifies how companies buy, deploy, and operate large scale Software-Defined Data Centers

What´s different in SDDC?

From HDDC to SDDC



Hyper Converged Infrastructures
SDDC vs. HDDC

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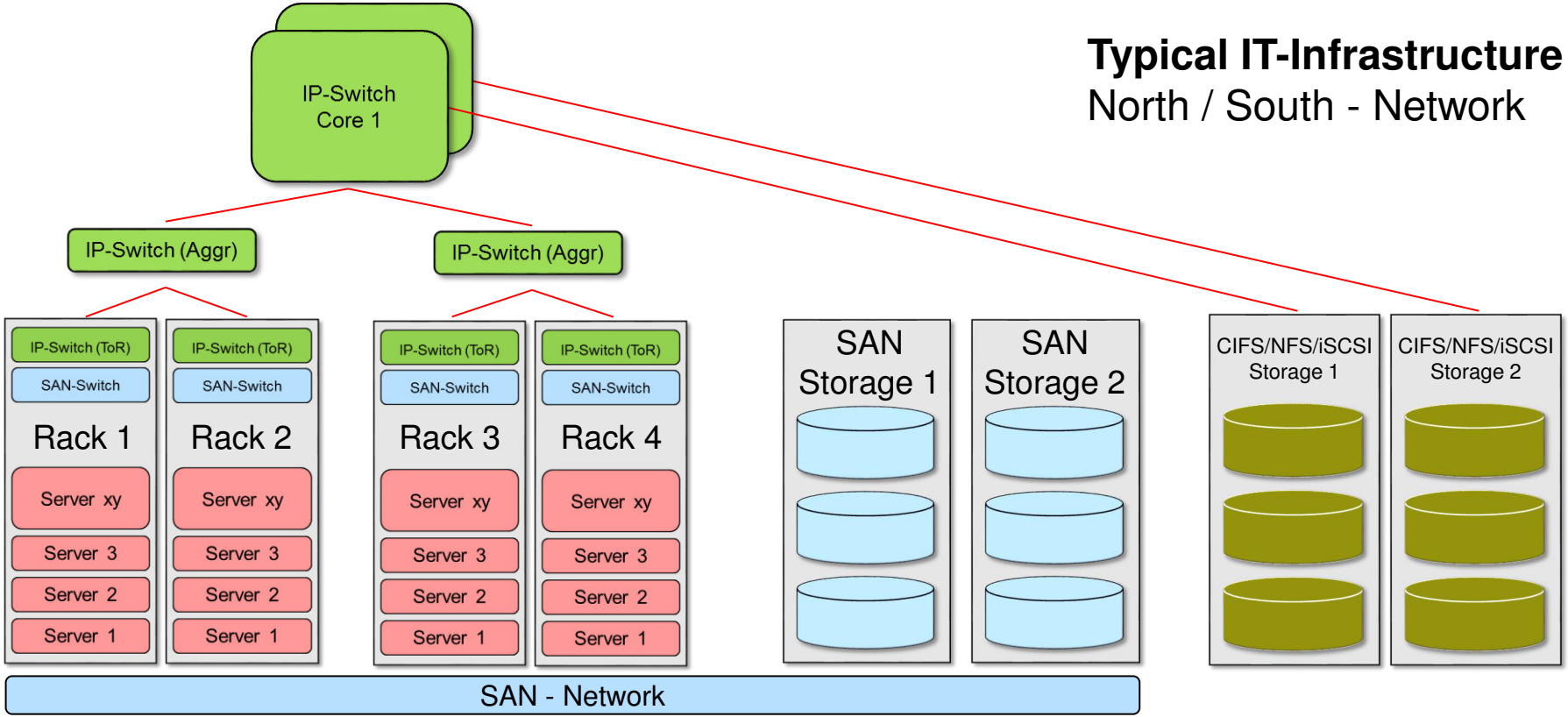

Typical IT-Infrastructure
North / South - Network

Hyper Converged Infrastructures
SDDC vs. HDDC

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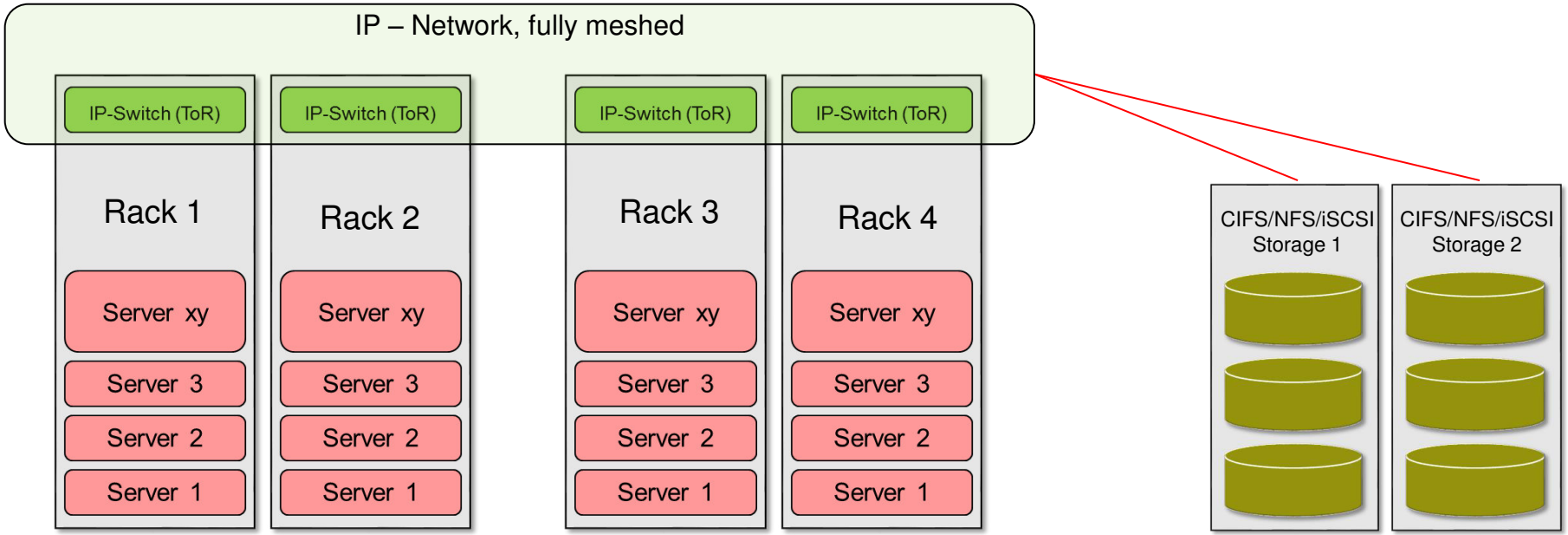
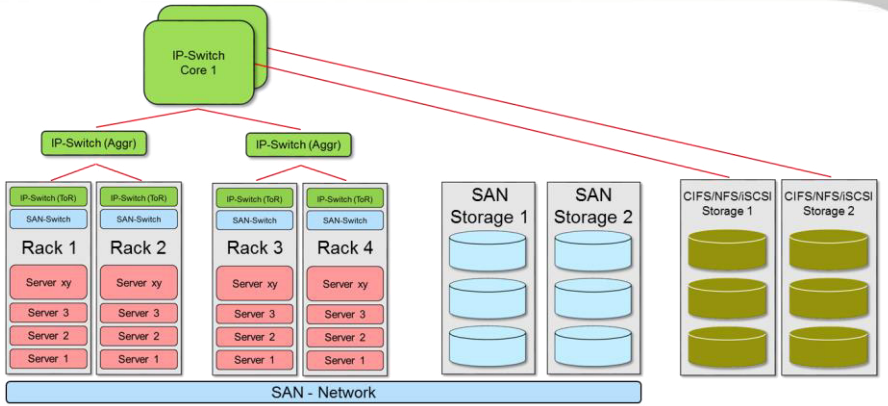
Hyper Converged IT-Infrastructure
East / West – IP based Network



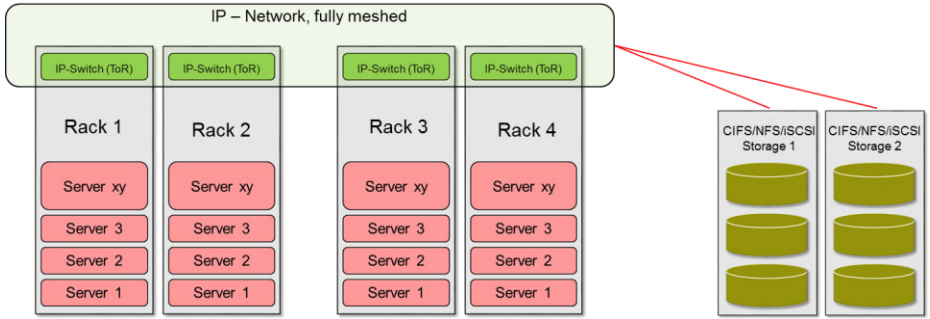
Hyper Converged Infrastructures
Changes at a glance

Typical IT-Infrastructure
North / South - Network



vs.

Hyper Converged IT-Infrastructure
East / West – IP based Network



Technical Overview – Details

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PRIMEFLEX for VMware EVO:SDDC Hardware Stack– Single System View

8-24 * Fujitsu Server PRIMERGY RX2530 M1

2 * Brocade VDX 6940 (Spine Switch)

2 * Brocade VDX 6740 (ToR Switch)

1 * Brocade VDX 6740T-1G (Admin Switch)

EVO:SDDC Ingridients

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EVO:RACK Software

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BROCADE

Management Switch

ToR Data Switches

Inter Rack Spine Switches

Rack Mount Servers with Storage

Rack Power Distribution

EVO:RACK Hardware

Physical Infrastructure: What's In A Rack?

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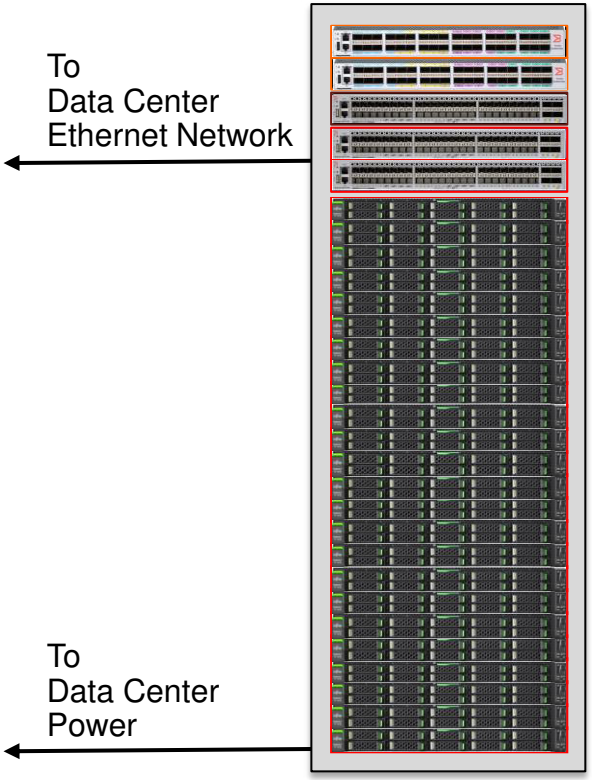


Two 32 x 40GE Inter Rack Spine Switches (first rack only)

One GE Management Switch for Out of Band Connectivity

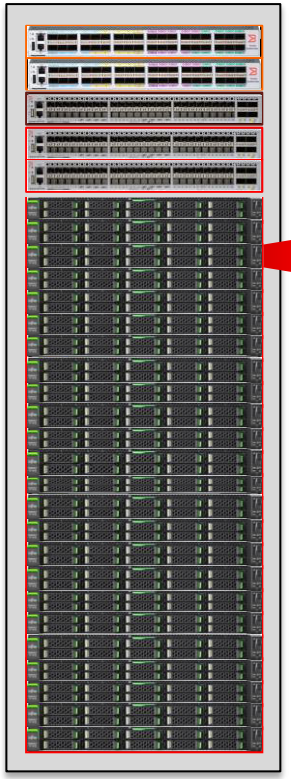
Two 10 GE ToR Switches for Data Connectivity
4 x 40GE uplinks from each switch to existing data center LAN

up to 576 CPU Cores, 12 TB of Memory, 300TB of Raw Storage

24 x 2 CPU Servers with 24* 512 GB

- Pre-racked and pre-cabled equipment
- Power distribution built-in
- Drops for power and network uplinks

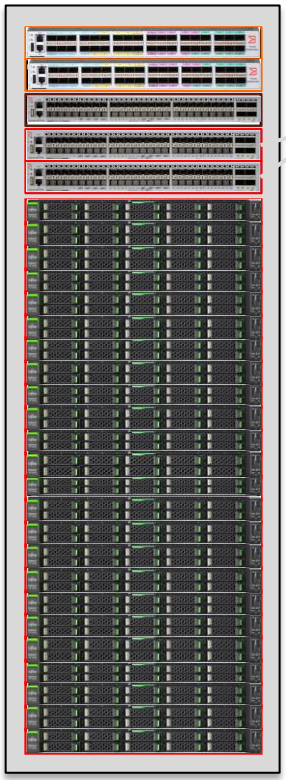
Physical Infrastructure: Server



Fujitsu Server PRIMERGY RX2530

- 2 x Intel XEON E5-26xx v3 CPUs
- 512GB RAM
- 2 x 10 GE Ethernet Network Interfaces
- 1GE Out-of-Band Management Interface
- On-board 8 HDDs
- On-board 2 SSDs

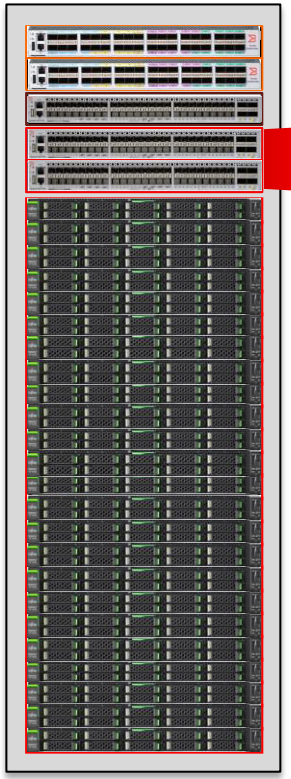
Physical Infrastructure: Storage



- Ethernet based external storage connected through Data Center Network
- External Ethernet storage visible to ESX hosts but not managed by EVO:SDDC

- **Physical DAS Storage – combination of HDDs and SSDs**
- **Presented using VSAN as virtual storage capacity**
- **Automated creation of VSAN clusters through EVO:SDDC Manager**
- **Uses performance best practices on HDD:SSD ratios for VSAN**
- **Redundant VSAN disk groups per physical server**
- **Approximate storage capacity per rack is 300TB raw**
- **VSAN capacity is fully managed through EVO:SDDC Manager**

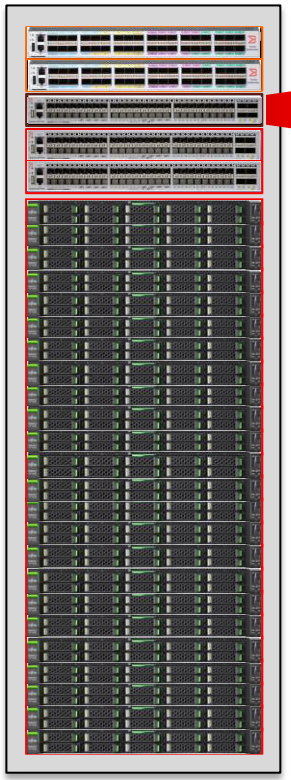
Physical Infrastructure: ToR Switch



2 * Brocade VDX 6740 (ToR Switch)

- 48 x 10 GE
- 4 x 40 GE uplinks

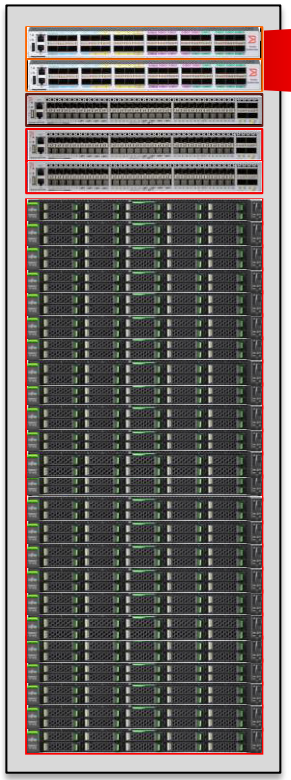
Physical Infrastructure: Admin Switch

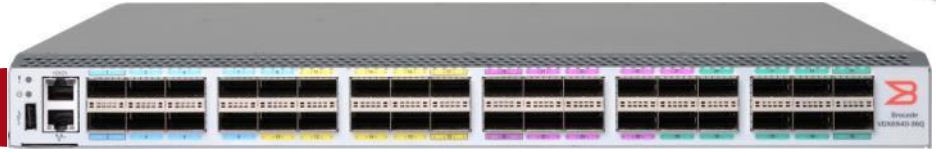


1 * Brocade VDX 6740T-1G (Admin Switch)

- 48x 1GbE, 4x 10GbE

Physical Infrastructure: Spine Switch





2 * Brocade VDX 6940 (Spine Switch)

- 36 x 40 GE

Physical Infrastructure: Procurement Options

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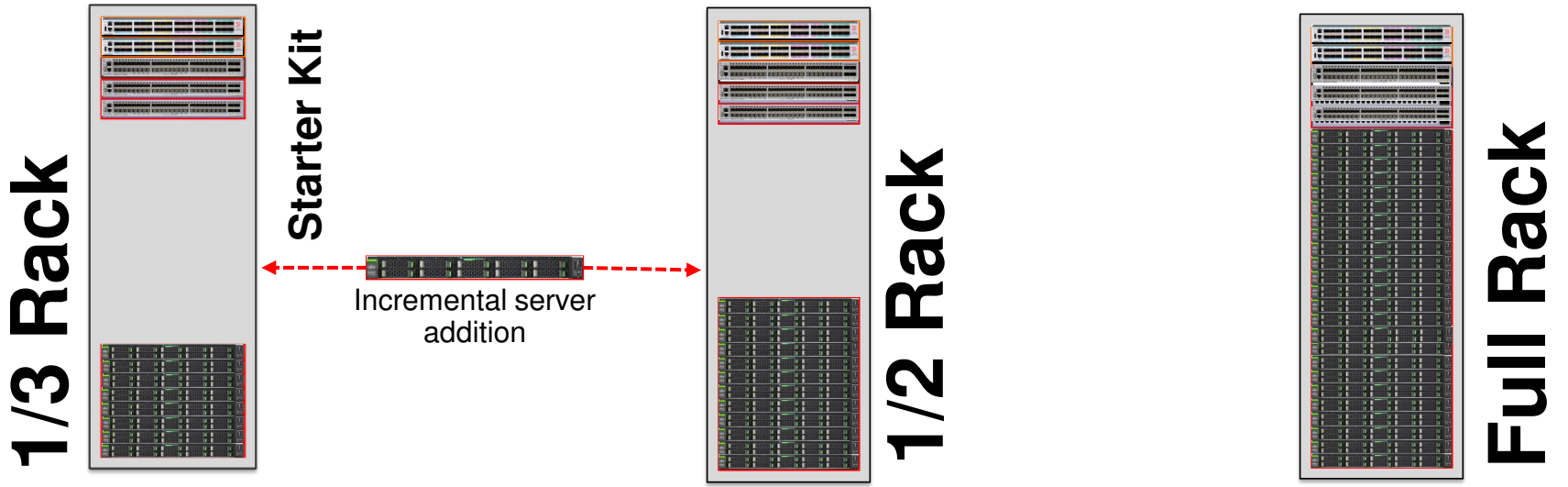


- 8 x 2 CPU Servers with 512GB/Server
- 192 Cores, 4TB Memory,
- 100TB Storage (raw)
- Approx. 230 x VMs, 800 Desktops

- 12 x 2 CPU Servers with 512GB/Server
- 288 Cores, 6TB Memory,
- 150TB Storage (raw)
- Approx. 350 x VMs, 1200 Desktops

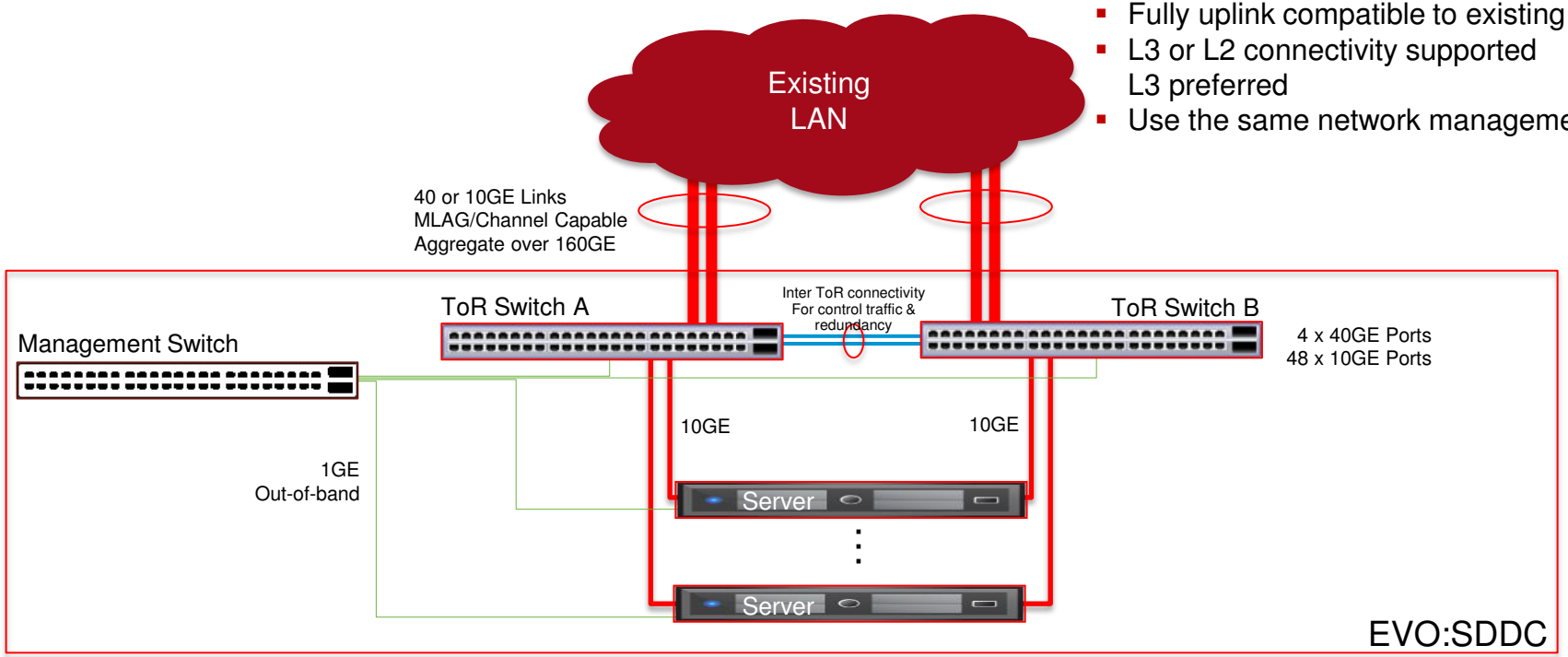
- 24 x 2 CPU Servers with 512 GB/Server
- 576 Cores, 12TB Memory,
- 300TB Storage (raw)
- Approx. 700 x VMs, 2400 Desktops

*Average VM size: 2 vCPUs, 8GB Memory, 160GB Storage

EVO:SDDC Network Deployment Model

Preserve Existing Data Center LAN

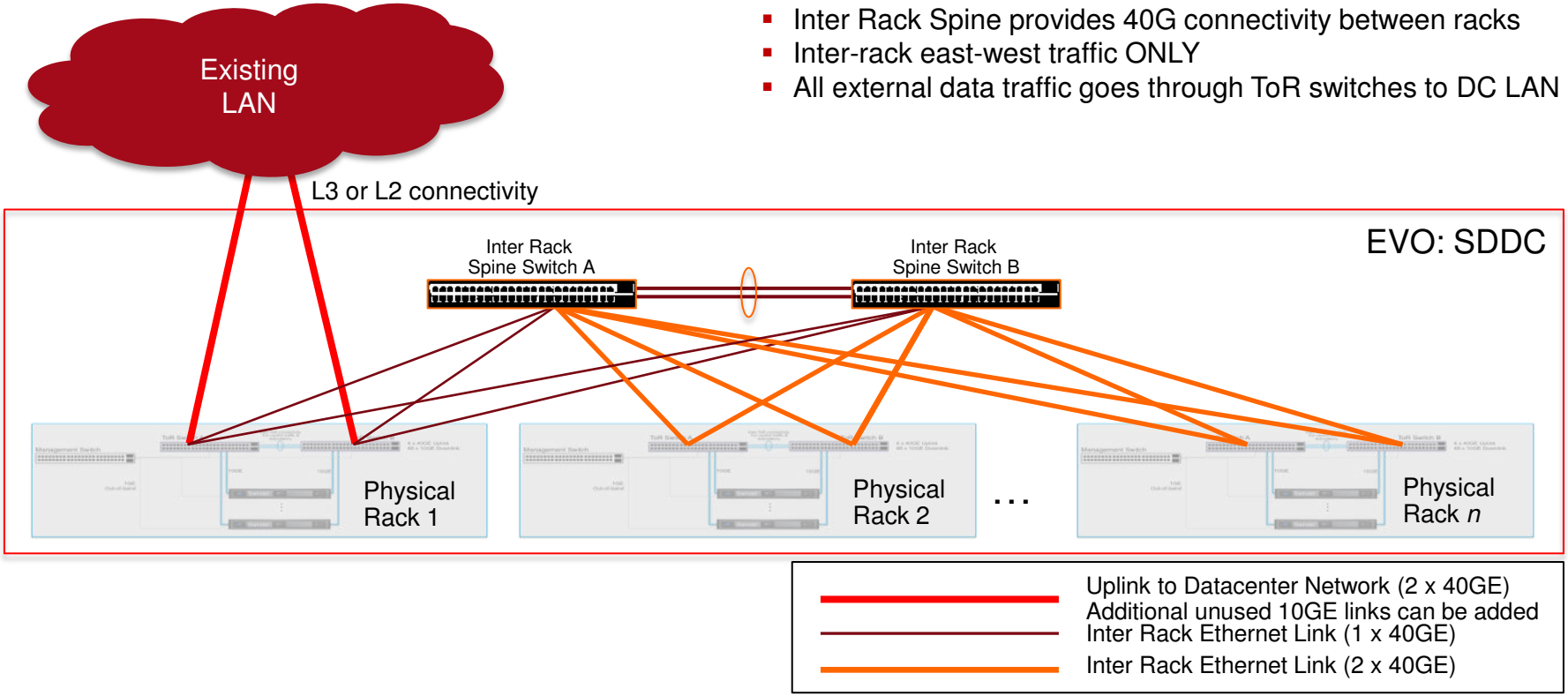
- Integrates to existing DC network infrastructure
- Fully uplink compatible to existing switches
- L3 or L2 connectivity supported
  L3 preferred
- Use the same network management tools



Expanding The Physical Infrastructure

Multi Rack Scaling – Networking InSights

- Inter Rack Spine provides 40G connectivity between racks
- Inter-rack east-west traffic ONLY
- All external data traffic goes through ToR switches to DC LAN



EVO:SDDC Availability

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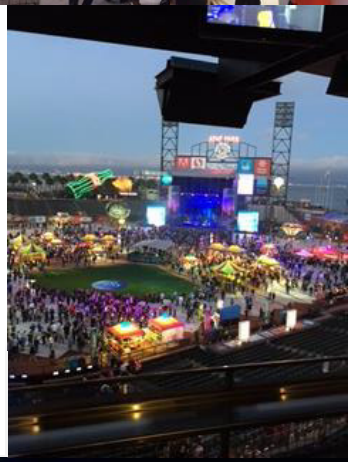
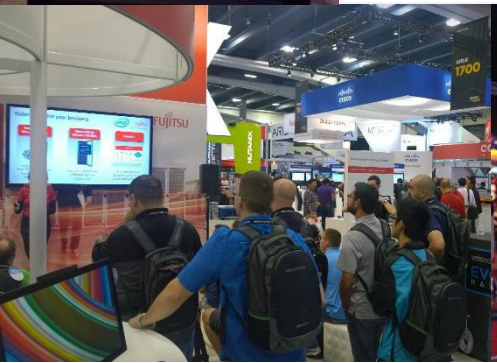
Network	•Redundant 10GE connections from ToR to each server •Redundant uplink connectivity from ToR to Data Center network •Redundant Inter Rack connectivity from ToR to Inter Rack Spines •MLAG for grouping of links for increased bandwidth and availability
Storage	•VSAN based DAS clustering for increased data redundancy •Per server dual VSAN disk groups to reduce fault domains •Dual network data paths throughout fabric for storage connectivity
Compute	•Cross rack clustering* for spread of compute footprint •Support for maintenance mode, host evacuation and re-hosting •DRS, FT, SRM work above the Virtual Rack layer as always
Management	•Distributed EVO:SDDC Manager with internal distributed database •Resilient management stack protected through VM high availability •EVO:SDDC stack backups

* Multi rack clusters subject to the ESX and VSAN sizing and compatibility requirements





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