

PRIMEFLEX SDx Offering

High performance, tailored
to your needs and de-
risking growth

Claes Carlstedt
Senior Solution Architect
Nordic Region



What is happening in the service providers market



■ The good message

- More and more customers looking at service providers
- Lack of resources and skills

■ Shady side

- Tough market and competition
- Costs and margins under pressure

■ Objective

- Superior services for new and existing customers
- Outstanding value for money
- Absolute reliability

■ IT services require the right infrastructure



Demand: Low investment risk, fast to bill, efficient to operate.

Building a DC infrastructure is complex

■ Tasks to be completed

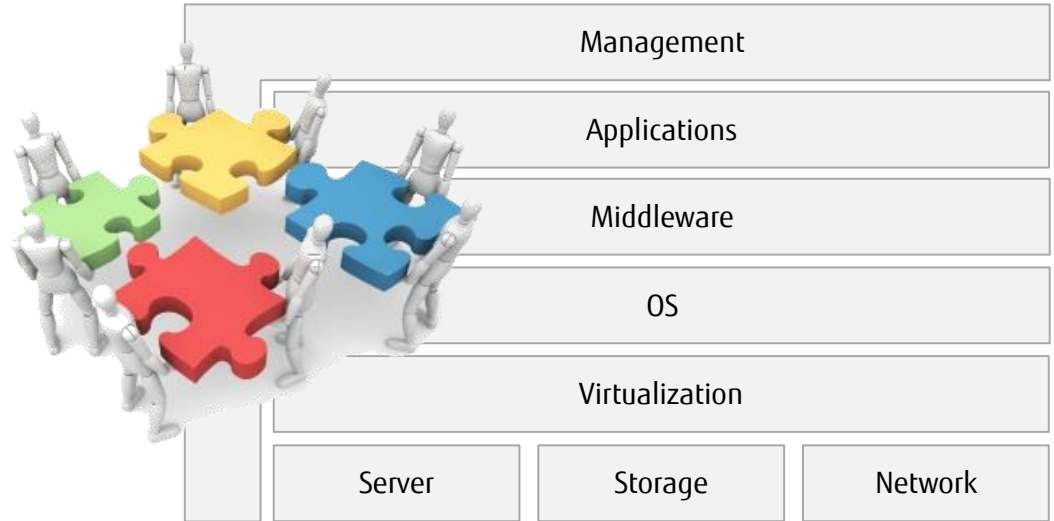
- Select, procure, integrate components
- Tedious coordination among admins
- Work off complex test matrix
- Compatibility of (multi-vendor) components
- Integrate into production environment

■ Deep knowledge and skills

- Less focus on business

■ High maintenance effort

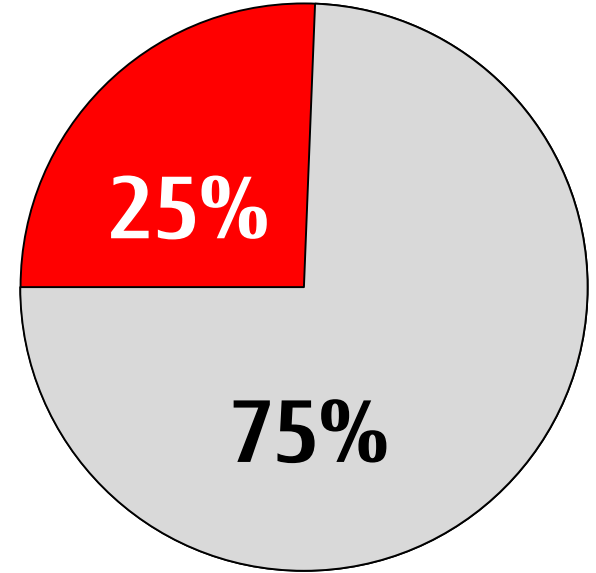
- Each installation is different



DIY (Do-it-Yourself) can be error-prone, time-consuming, risky, expensive.

DIY can be quantified

*IT organizations spend
~ 25% of their
time and resources
on pre-deployment.*

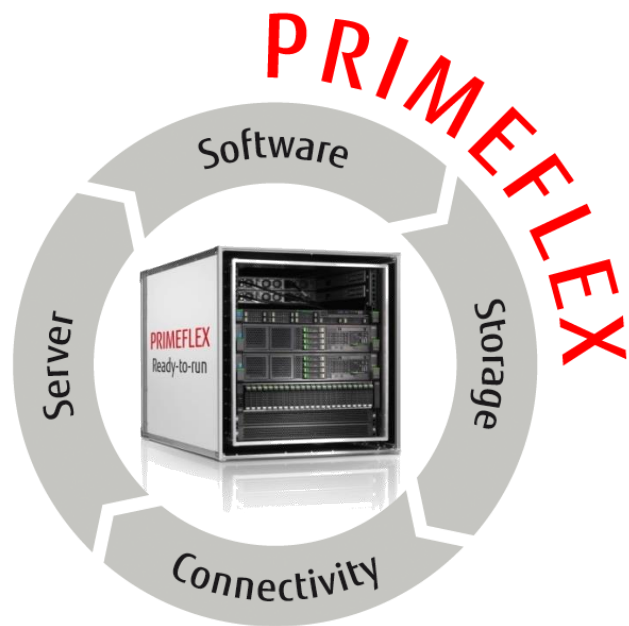


Source: Various studies



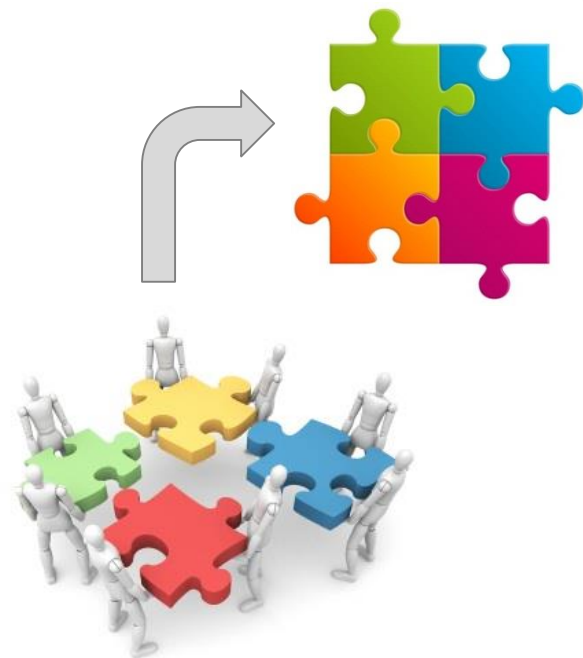
Is there a way out?

Take the fast track to your DC infrastructure: FUJITSU Integrated System PRIMEFLEX



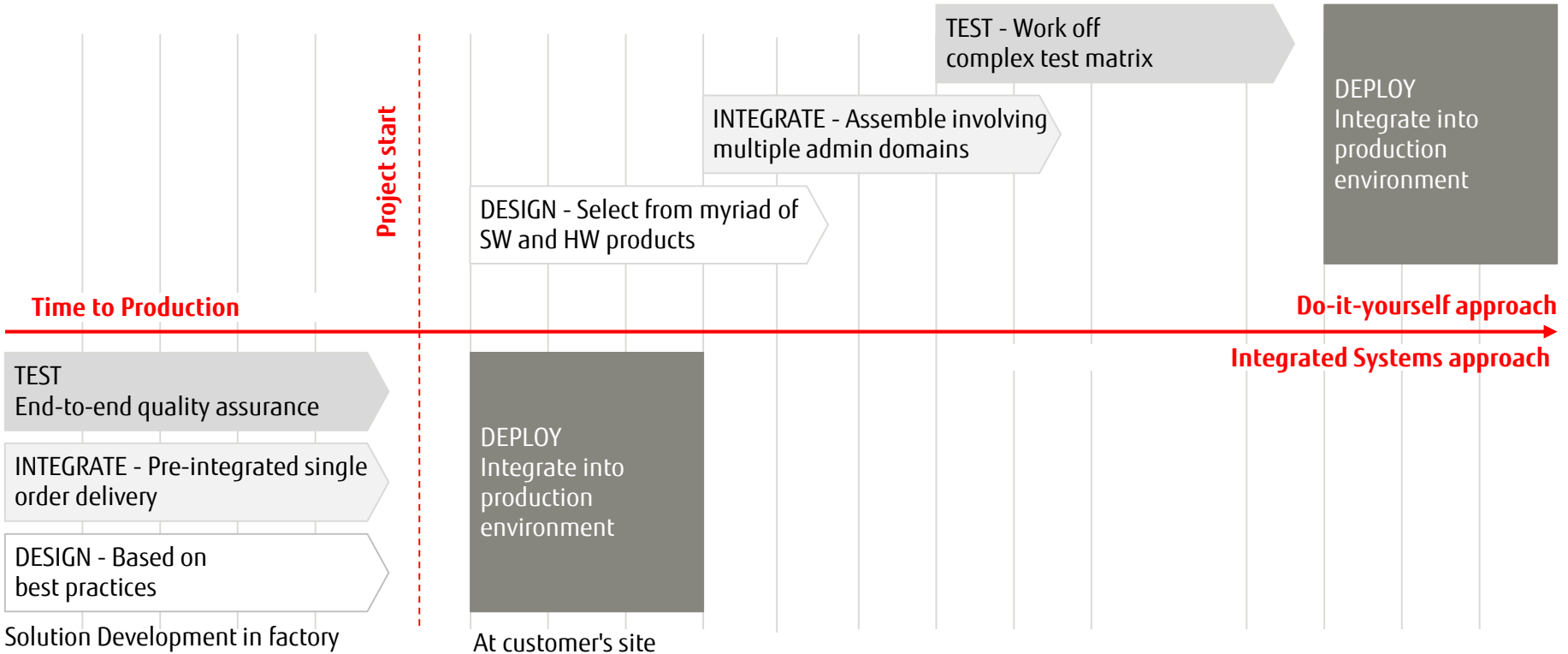
- Pre-configured
- Pre-integrated
- Pre-tested

*Ready-to-run or
Reference Architecture*



Reduce complexity, time, risk and cost. Increase operational efficiency.

PRIMEFLEX: Fast track to your DC infrastructure



PRIMEFLEX: Own and partner technologies



NetApp™



Datameer®



MAPR



BROCADE

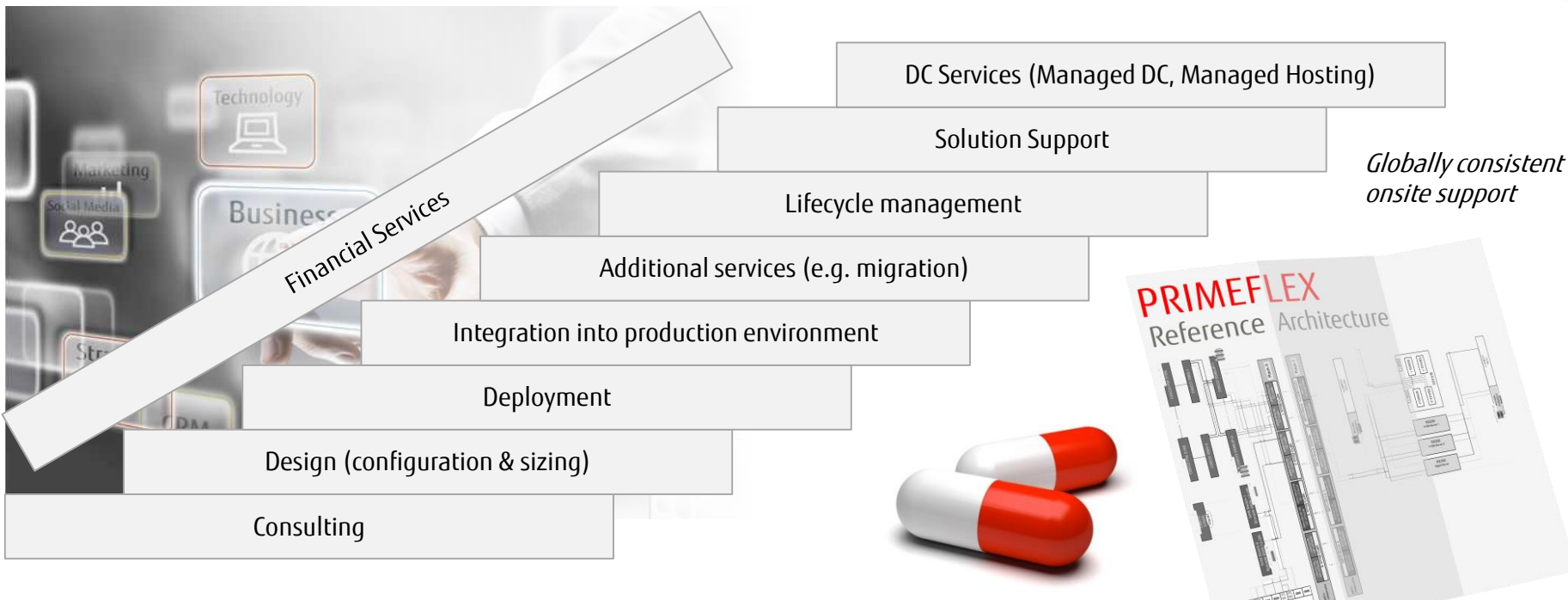


CISCO



Best-in-class components. Best practices. Project experience.

PRIMEFLEX: Supported by flexible service options



Any guidance and support you need.

PRIMEFLEX - Benefits for service providers



- Fast to bill
- Minimize risk of delays
- Focus on superior services
 - Freed from pre-deployment
 - Freed from lifecycle management
- Increase performance
 - Fast components
 - Optimally harmonized
 - Serve more customers
 - Make more revenue and margin
- Improve service levels
 - Make operation more efficient
 - Responsive to new requirements
 - Satisfy end customers
 - Improve reputation
 - Attract more customers
- CAPEX and OPEX savings
 - Space, energy, cooling
 - Reduced maintenance efforts
- Shift CAPEX to OPEX
- Tailored to your needs
 - Reference architecture
 - Choice across the board
 - Flexible service options



Reduce complexity, time, risk and cost. Increase operational efficiency.

What PRIMEFLEX customers have achieved



80% reduction in provisioning new services
5x faster time to market
5x more services deployed per year

Cluster setup within **30 min** instead of 3 days
99% reduction in setup time
72x faster to operation



From 0 to VM within **10 min**

40% less time needed for system maintenance
60% of IT shifted from maintenance to innovation



25% reduction in power and cooling
40% reduction in DC footprint
45% improvement in resource utilization
90% reduction in unplanned downtime



70% reduction in deployment cost
30% reduction of infrastructure cost
35% less annual operation expenses
30% savings on overall IT budget

2x more productivity and revenue

Figures may vary across PRIMEFLEX line-up and projects

- 53%** less time and labor cost to deploy apps
- 65%** less time and labor cost to deploy infrastructures
- 35%** less DC infrastructure costs
- 64%** less DC operations time and labor cost

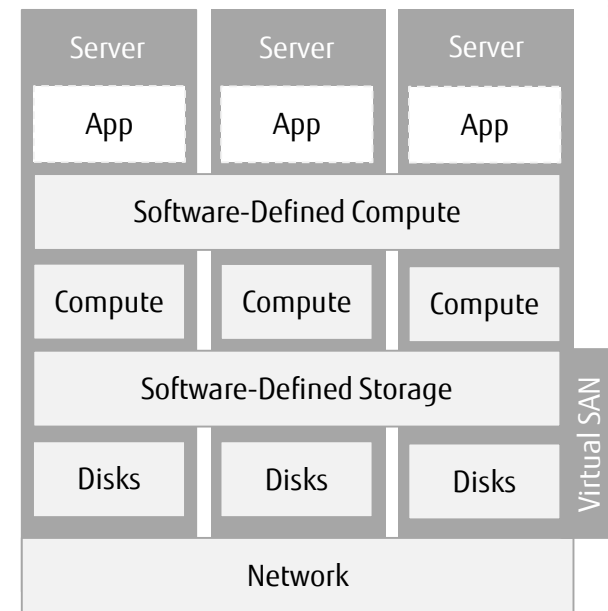
Source: IDC, 2016

PRIMEFLEX includes hyper-converged systems



■ Characteristics

- Interconnected standard servers
- Local DAS, no external storage
- Virtual instead of physical SAN
- Data services (e.g. replication, deduplication)
- HA / DR built-in
- Unified central management
- Scale-out (performance, capacity)
- Auto-discovery
- SW-defined



Meeting the growth demands of service providers.

PRIMEFLEX includes hyper-converged systems

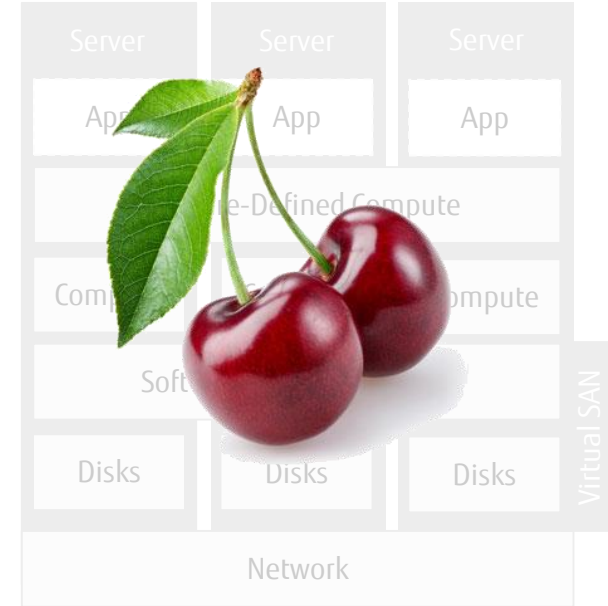


■ Characteristics

- Interconnected standard servers
- Local DAS, no external storage
- Virtual instead of physical SAN
- Data services (e.g. replication, deduplication)
- HA / DR built-in
- Unified central management
- Scale-out (performance, capacity)
- Auto-discovery
- SW-defined

■ Benefits for service provider

- Less components, less space
- Less energy and cooling
- Efficient operation
- Start small and grow as you go
- Flexible alignment to business
- Fast growth without risk
- Business continuity
- Lower TCO



Meeting the growth demands of service providers.

PRIMEFLEX includes hyper-converged systems

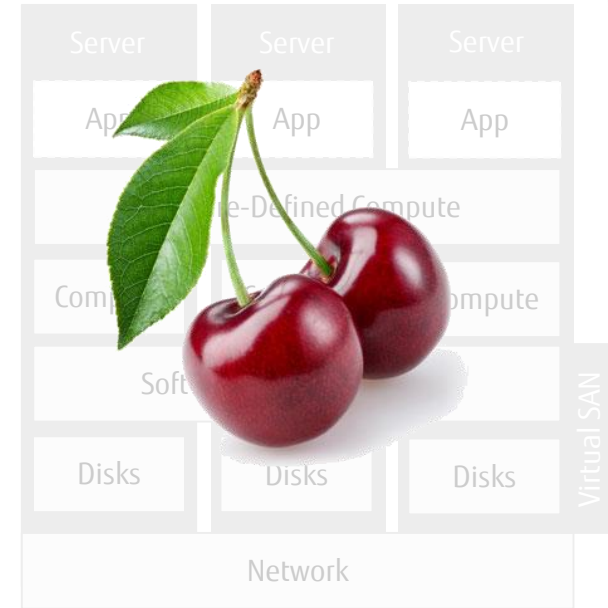


■ Characteristics

- Interconnected standard servers
- Local DAS, no external storage
- Virtual instead of physical SAN
- Data services (e.g. replication, deduplication)
- HA / DR built-in
- Unified central management
- Scale-out (performance, capacity)
- Auto-discovery
- SW-defined

■ Benefits for service provider

- Less components, less space
- Less energy and cooling
- Efficient operation
- Start small and grow as you go
- Flexible alignment to business
- Fast growth without risk
- Business continuity
- Lower TCO



Hyper-converged – Silver bullet of IT?

Classical or hyper-converged? – Aspects to be considered

- Workloads need scale-out / scale-up?
 - Compute & storage needs scale in tandem?
 - Granular expansion on component level?
- Bare-metal, multi-hypervisor
- ROBO
- Benefit from built-in data services?
- Expected growth
- Benefit from unified management?
 - Existing skills, staff roles
- Utilize or replace existing storage?
- Storage capacity
- Predictable network performance
- SW licensing
- CAPEX and OPEX

*Recommendation: Decide per each use case;
Go for hyper-converged, if benefits outweigh drawbacks.*



Use cases matter. Business requirements determine the optimum approach.

Savings customers achieved with hyper-converged

DC space	50%
Power consumption	50%
Cooling requirements	25%
Initial support cost	25%
Maintenance cost	40%
Time to expand infrastructure	85%
Upgrade time (SW, firmware)	65%
Time to deploy VM (from request to delivery)	60%
Travel time (ROBO)	99%

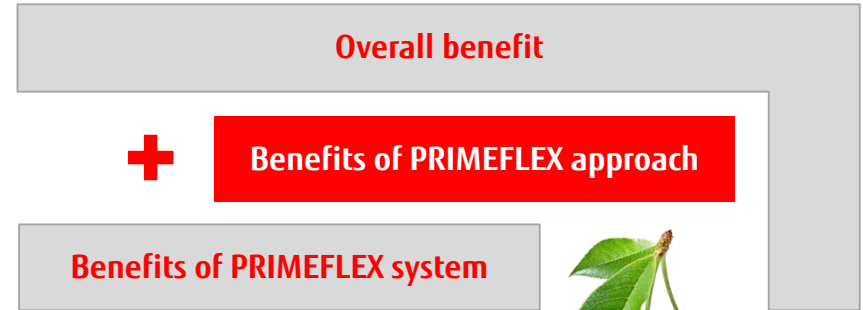


Advantages of hyper-converged may translate to savings in cost and time.

PRIMEFLEX systems provide many more benefits

- Benefits of PRIMEFLEX approach
 - Reduced complexity, project time, risk & cost
 - Operational efficiency
 - Peace of mind
- Each PRIMEFLEX system is built for certain purpose with all its benefits
 - Improve service quality
 - Increase flexibility & speed
 - Reduce cost
 - ...

- PRIMEFLEX approach adds value to the value the respective system is designed for



It's not just about the benefits during design and deployment.

PRIMEFLEX: Addressing our customers' needs

General Purpose

Virtualization and Cloud

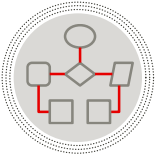
- PRIMEFLEX for VMware vSphere
- PRIMEFLEX for VMware vSAN
- PRIMEFLEX for VMware Cloud Foundation
- PRIMEFLEX for Microsoft Storage Spaces Direct
- PRIMEFLEX for OpenStack



Purpose Built

SAP

- PRIMEFLEX for SAP Landscapes
- PRIMEFLEX for SAP HANA

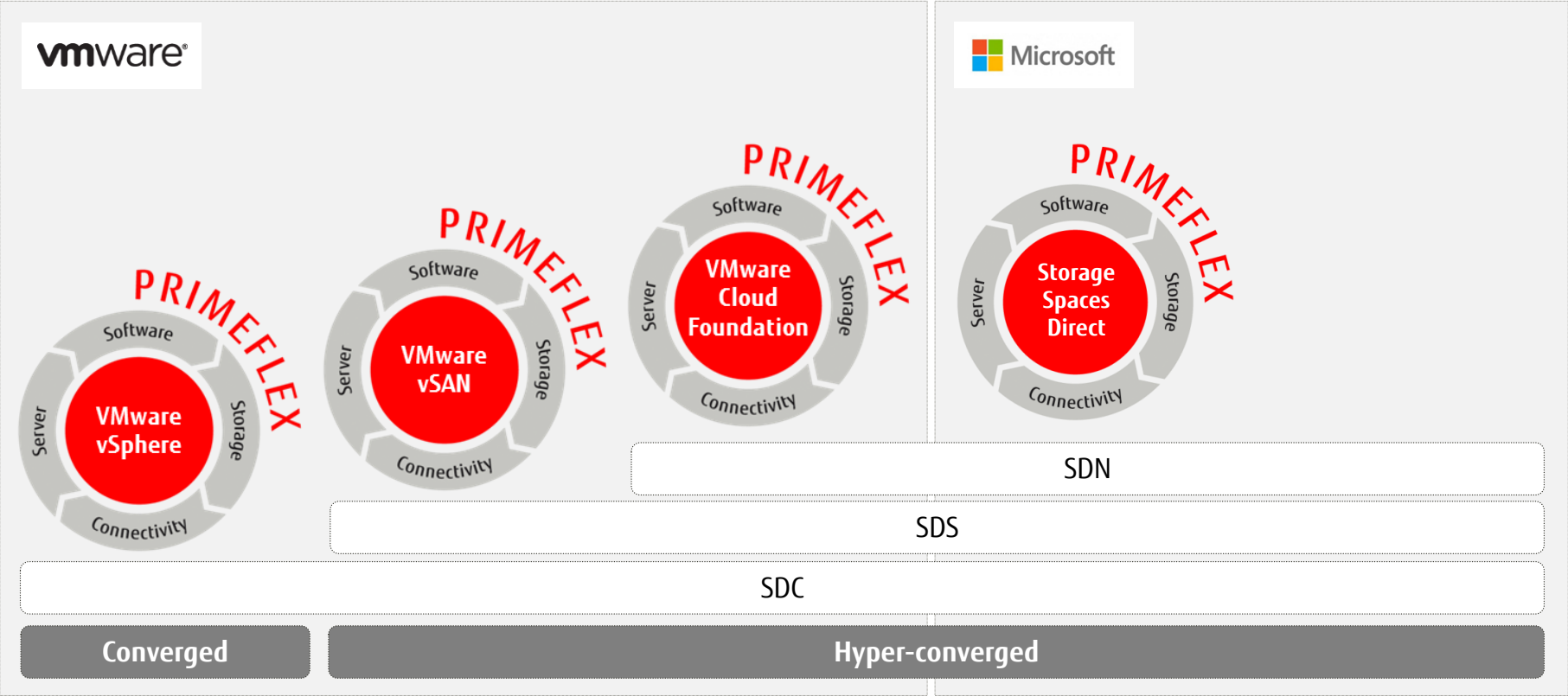


Analytics

- PRIMEFLEX for Hadoop
- PRIMEFLEX for HPC



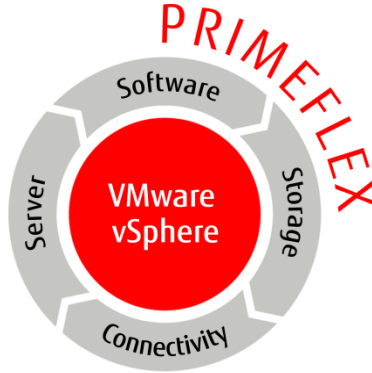
PRIMEFLEX for Virtualization



PRIMEFLEX for VMware vSphere

■ Reference architecture

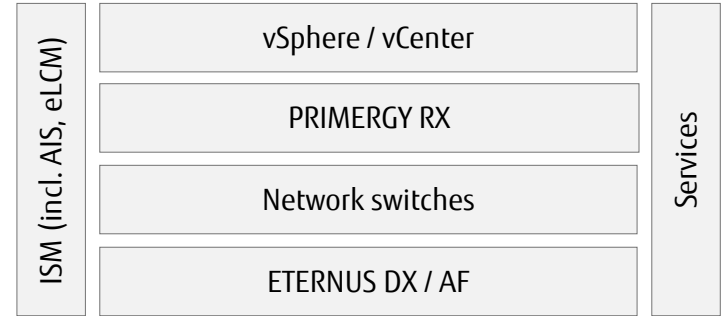
- Designed for mixed workloads
- Rack & cabling included
- Different flavours [ECO and HA]
- No solution pre-load
- On-site deployment included
- 2x ToR, 1x management switch



■ Various sizes

- 2-8 (16) x RX2530, 2-8 x RX2540
- DX100-600, AF250-650 (flexible storage)
- iSCSI and FC

Flexible



Your fast track to flexible virtualization, the traditional converged way, using Fujitsu storage.

PRIMEFLEX for VMware vSAN

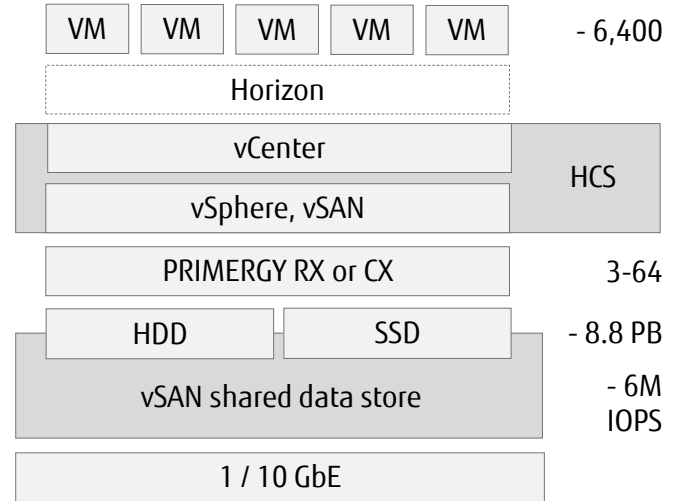
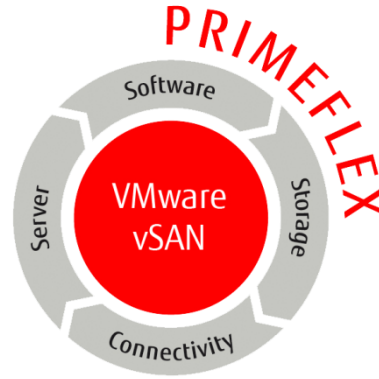


■ Reference architecture

- Hyper-converged
- VMware certified
- UFM with vSphere / vSAN pre-installed
- Flexible SW licensing (bundled, BYOL)

■ Various configuration variants

- Hybrid (\$/GB, mixed r/w workload)
- All Flash (\$/IOPS, write-intensive, latency)
- High density (CX)
- Flexible configuration (CPU, RAM, storage)



Your fast track to a VMware-based hyper-converged infrastructure.

PRIMEFLEX for VMware Cloud Foundation



■ Ready-to-run

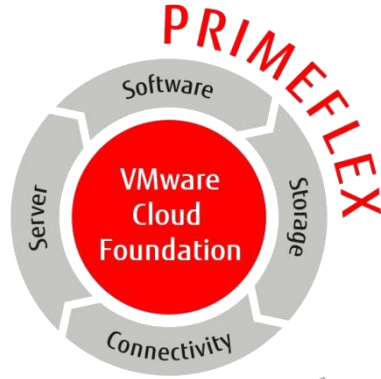
- Multi-rack SDDC
- Hyper-converged
- Everything virtualized

■ VMware Cloud Foundation

- Integrated SW bundle for SDDC
- Flexible licensing (BYO)

■ SDDC Manager

- Virtual and physical resources
- Automation engine (Provision, monitor, LCM)



1 vCenter license
for all VCF instances

	Horizon
	vRealize
Cloud Foundation	SDDC Manager
	NSX Standard
	vSAN Advanced
	vSphere Enterprise +
	4-256 PRIMERGY RX
	NW switches



The fast track to large-scale SDDC. Ready to operate within 2 hours.

SDDC Benefits

■ Operational simplicity

- Skills, training
- Avoid human error
- Time for innovation

■ Agility, speed

- Adaptation to new demands
- Respond to business needs
- Any workload, anywhere

■ Service quality

- Business continuity
- Maintain service levels

■ CAPEX

- Resource utilization
- Less servers & storage
- Less ports, less switches
- Less management tools
- Commodity HW

■ OPEX

- HW support cost
- Energy, cooling
- DC floor space
- Admin effort, productivity



Radical paradigm shift for IT: From a reactive service provider to a proactive change agent.

PRIMEFLEX for VMware Cloud Foundation at Akademiska Hus



FUJITSU

■ Customer

- One of Sweden's largest property companies
- Build, develop, manage environments for education, research, innovation
- Properties across Sweden

■ Objectives

- Digitize every aspect of IT estate
- Become more efficient and flexible
- Provide real-time information services
- Migrate to VDI
- Lower cost



AKADEMISKA HUS



PRIMEFLEX for VMware Cloud Foundation at Akademiska Hus



■ Solution

- PRIMEFLEX for VMware Cloud Foundation
- 14x PRIMERGY R2540
- 2 CPU, 384GB RAM, 2TB SSD storage / server
- NVIDIA Tesla M10 for CAD 3D apps
- Factory integrated, plug-and-play
- Running VDI with thin clients in offices
- 450 users in 16 locations
- Managed from any location via a single console
- New virtual desktops at touch of a button

■ Benefit

- Double efficiency and performance
- Workspace access anywhere
- Grow on demand
- Cut cost by 50%
- Less energy consumption (SEK400k saved in 1 year)

It quickly became clear that Fujitsu could provide all the technology we need and scale easily to a hybrid cloud solution. Moreover, in terms of cost, Fujitsu delivered the best bang for our buck.

Per Brantsing Karlsson, IT Manager Akademiska Hus

https://www.youtube.com/watch?v=jrw9zS2kful&index=4&list=PLq25m9dYDwWjRj1oD4uW_HISUQu89jbsJ&t=0s

PRIMEFLEX for Microsoft Storage Spaces Direct

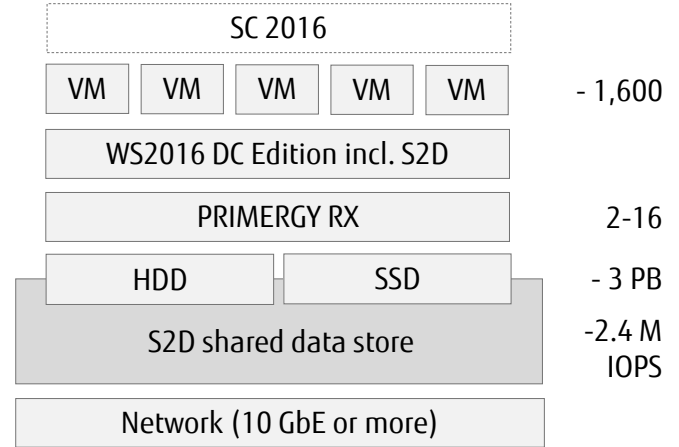
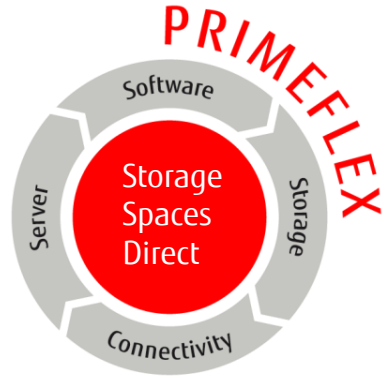


■ Reference architecture

- Microsoft certified
- License included in WS2016 DC
- SDN included

■ Various configuration variants

- Mix of HDD, SSD, NVMe
- 2-tier and 3-tier storage infrastructure
- Choice between \$ / GB and \$ / IOPS



Switches not included; RA relates to individual node; no relation among servers or to rack.



Your fast track to Microsoft HCI.

Customer example:



■ Customer

- Innovative IT products and services
- Founded in 2000
- www.make-it.se

■ Objective

- Tech refresh of DC environment

■ Solution: PRIMEFLEX for Microsoft Storage Spaces Direct

- 4x RX2540M2
- 2x RX2540M2 (management node)
- Brocade VDX6740

<https://www.youtube.com/watch?v=kwe5CRtHIdE>



Fujitsu has always been there for us. Thanks to our long-term partnership we got involved in the game early, even before FUJITSU Integrated System PRIMEFLEX® for Microsoft Storage Spaces Direct was officially launched.

Andreas Tärnegård, CEO Make IT

Virtual infrastructures require the right hardware



PRIMEFLEX and virtualization: Tailored to your needs

Architecture

- Classic
- Hyper-converged

Scalability

- Scale-out
- Scale-up

Delivery model

- Ready-to-run
- Reference architecture
- Combination of both

Virtualization SW

- VMware
- Microsoft

Storage (classic only)

- ETERNUS DX / AF
- NetApp FAS / AFF

Expandable to cloud

- VMware vRealize
- Fujitsu ESCM

Size

- Performance
- Capacity

DR

- Sync
- Async



PRIMEFLEX means choice for service providers.

Why PRIMEFLEX?

Choice

- Architecture
- Virtualization technology
- Storage



Proven hardware

- Performance
- Reliability
- Efficiency



Flexible reference architectures

- Treated like products
- Deployment guidelines by default
- Ready-to-run option



Flexible services options

- Throughout all lifecycle phases
- Globally consistent onsite support
- Attractive financing options



Flexible configurability in real-time

- Same tool for all systems
- Easy to use
- All details considered (e.g. cabling)



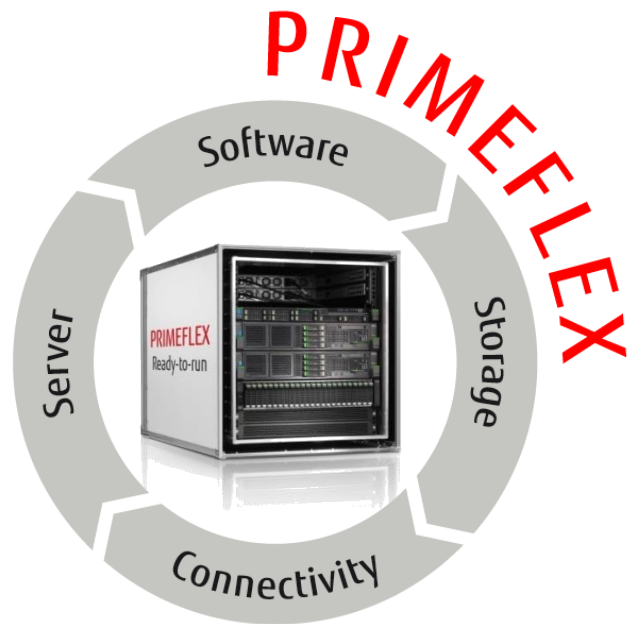
Many customer references

- Across portfolio
- Across industries
- Across regions



A sound foundation for co-creating your ideal solution.

So what makes the difference?



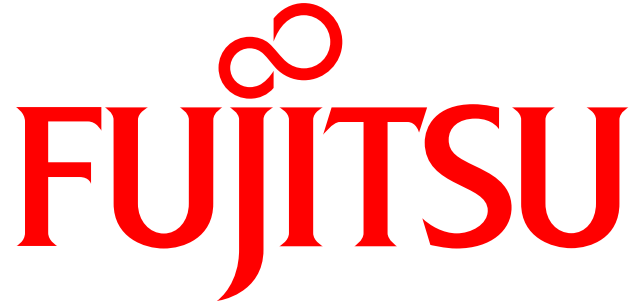
Higher Performance

Tailored to Your Needs

De-risking Growth



Fujitsu can help make the difference.



shaping tomorrow with you