Fujitsu World Tour 2016

Paradigm shift in the Data Center – From Hardware- to Software Defined

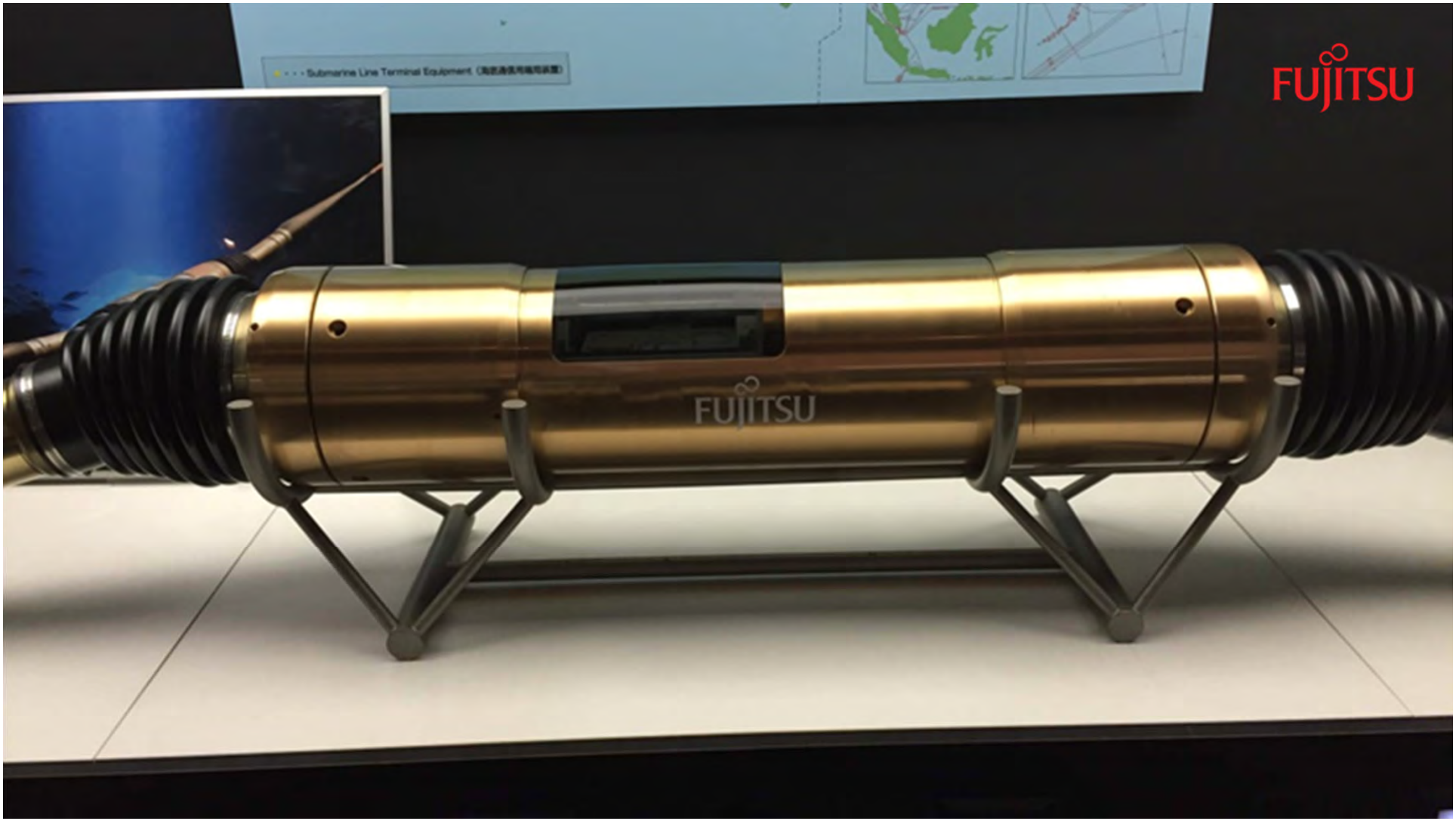
Udo Würtz

Chief Evangelist Data Center Business EMEIA

FUJITSU

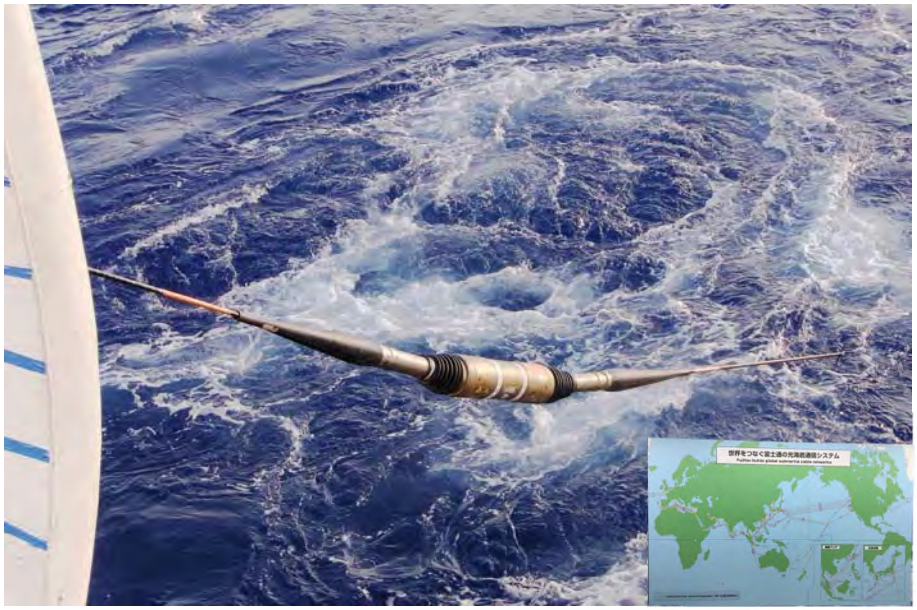
shaping tomorrow with you

Human Centric Innovation in Action


Submarine Line Terminal Equipment
FUJITSU
FUJITSU

Deep Sea Data Connectivity

Fujitsu has supplied more than 2,500 Repeaters and <u>has never experienced a single failure</u> of a repeater in commercial service in almost 40 years of sub-marine networks operating worldwide.

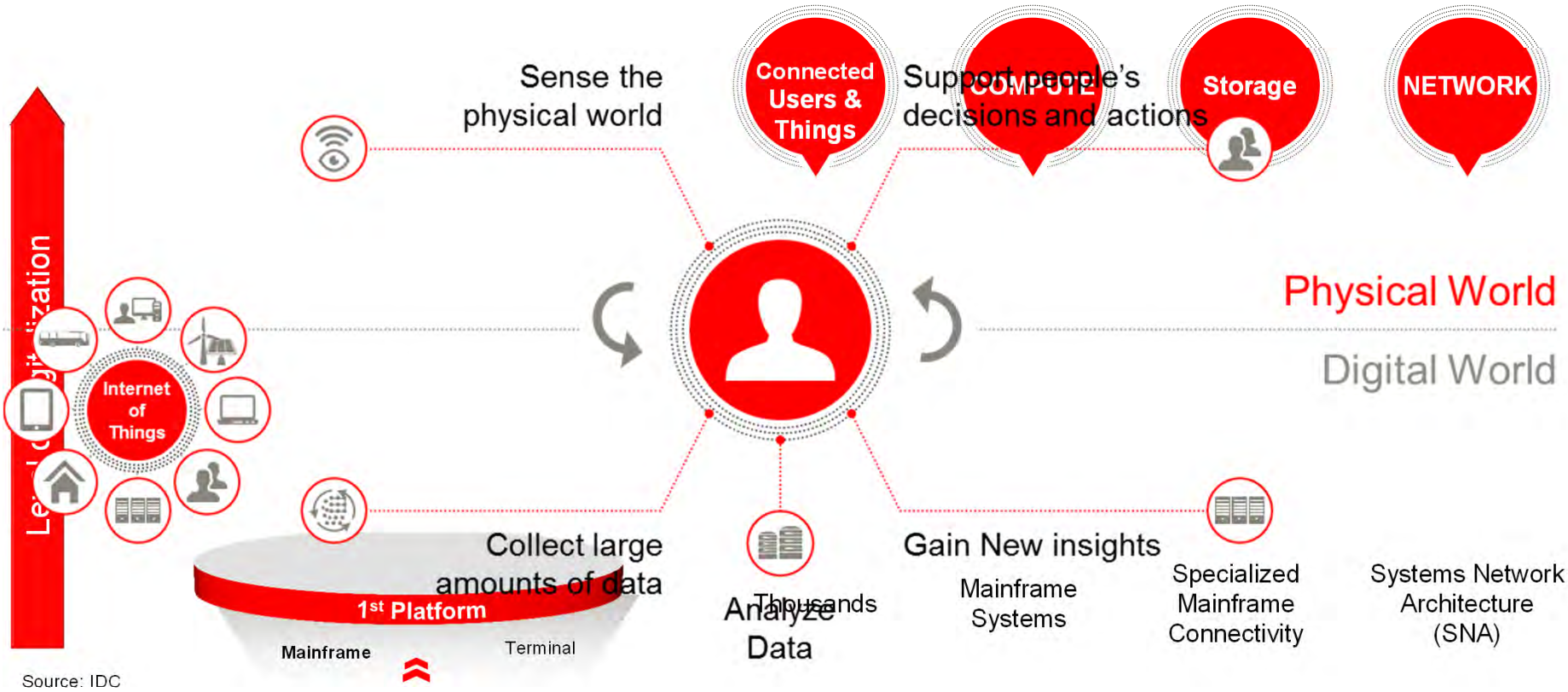


Copyright 2016 FUJITSU

Fusion of the Physical and Digital Worlds - Data Center Trends and Predictions

FUJITSU

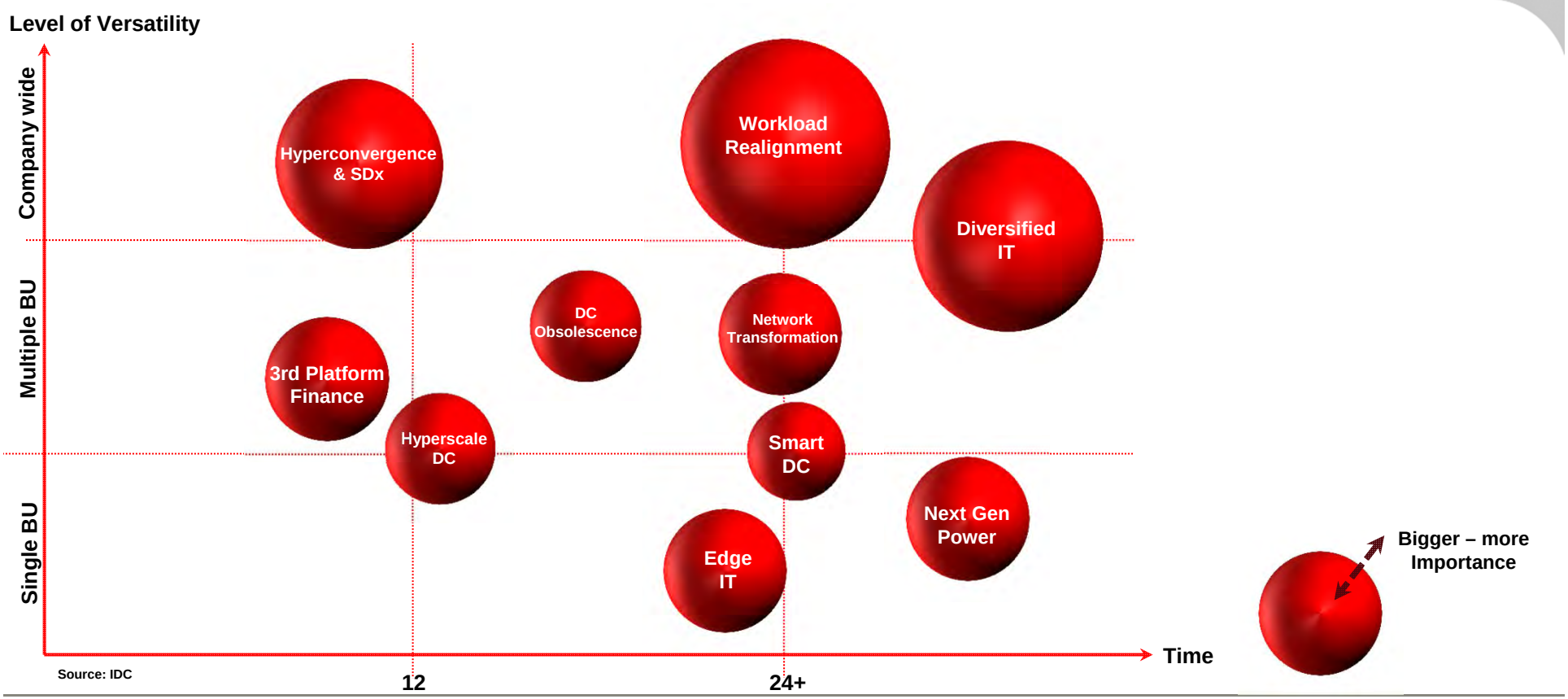
The Impact of Digitalization
Fusion of the Physical and Digital Worlds on Data Center Architectures



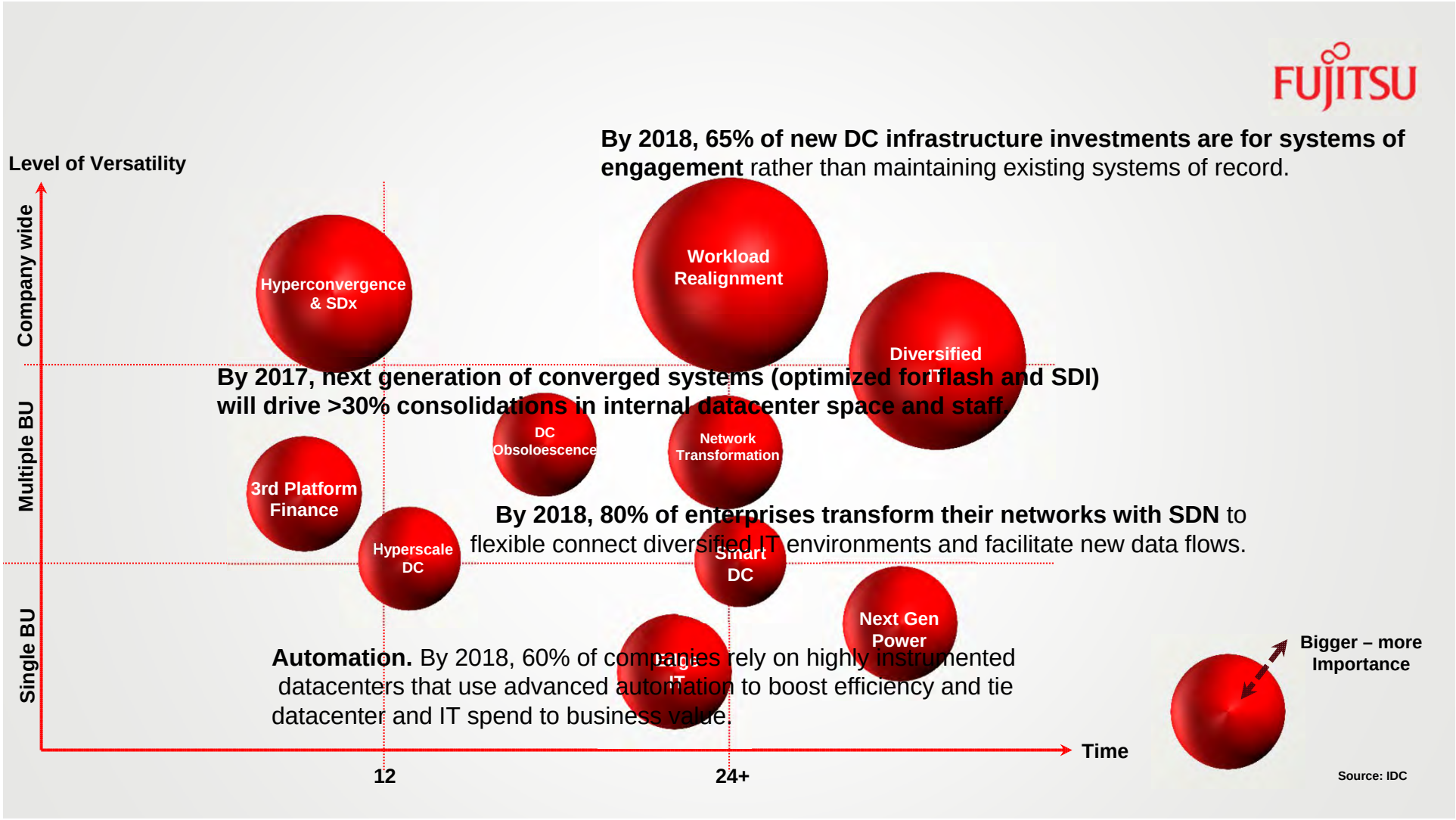
Source: IDC

Copyright 2016 FUJITSU

Data Center Trends 2016 and beyond



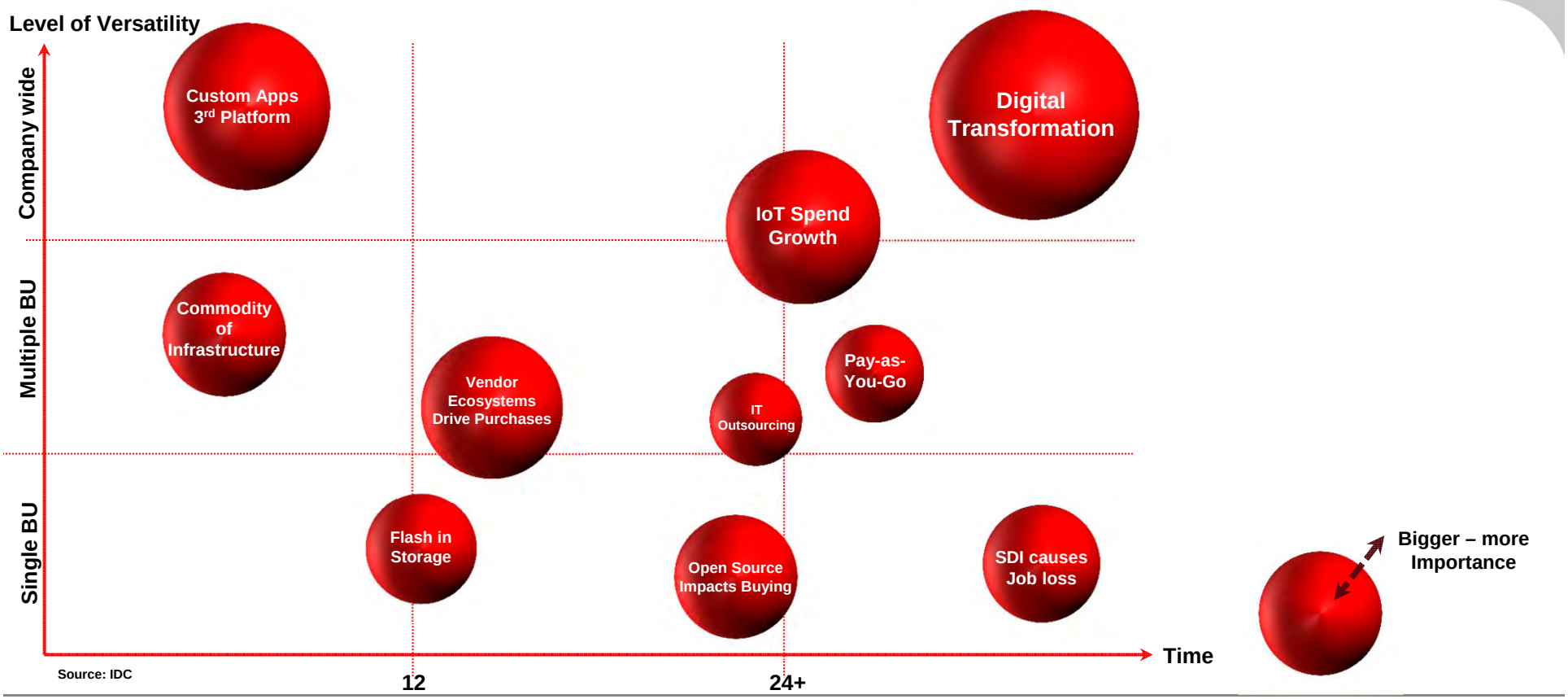
Copyright 2016 FUJITSU


FUJITSU
By 2018, 65% of new DC infrastructure investments are for systems of engagement rather than maintaining existing systems of record.
Level of Versatility
Company wide
Multiple BU
Single BU
Hyperconvergence & SDx
Workload Realignment
Diversified IT
By 2017, next generation of converged systems (optimized for flash and SDI) will drive >30% consolidations in internal datacenter space and staff.
DC Obsoloescence
Network Transformation
3rd Platform Finance
By 2018, 80% of enterprises transform their networks with SDN to flexible connect diversified IT environments and facilitate new data flows.
Hyperscale DC
Smart DC
Next Gen Power
Automation. By 2018, 60% of companies rely on highly instrumented datacenters that use advanced automation to boost efficiency and tie datacenter and IT spend to business value.
Bigger – more Importance
Time
12
24+
Source: IDC

Enterprise Infrastructure Predictions

FUJITSU

Enterprise Trends 2016 and beyond



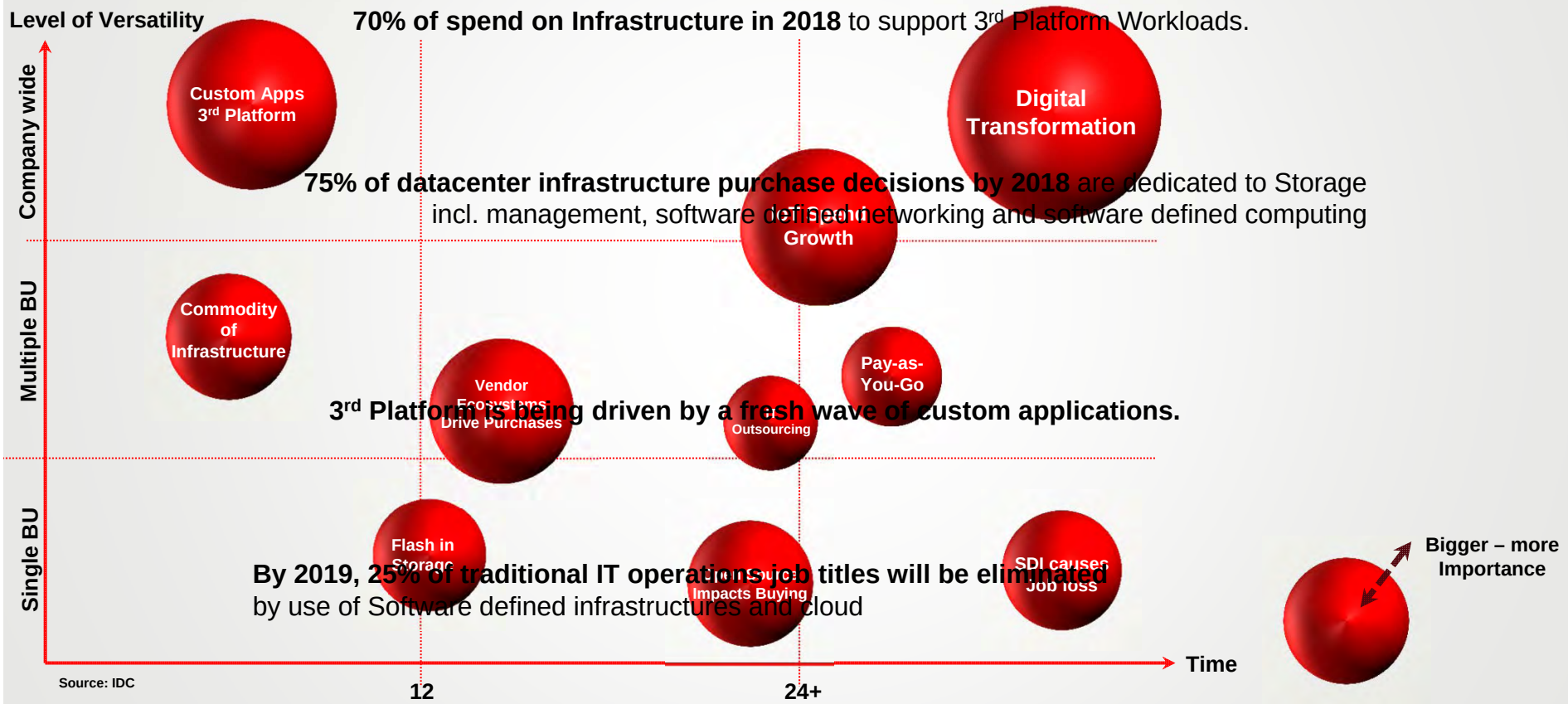
Copyright 2016 FUJITSU

70% of spend on Infrastructure in 2018 to support 3rd Platform Workloads.

75% of datacenter infrastructure purchase decisions by 2018 are dedicated to Storage incl. management, software defined networking and software defined computing

3rd Platform is being driven by a fresh wave of custom applications.

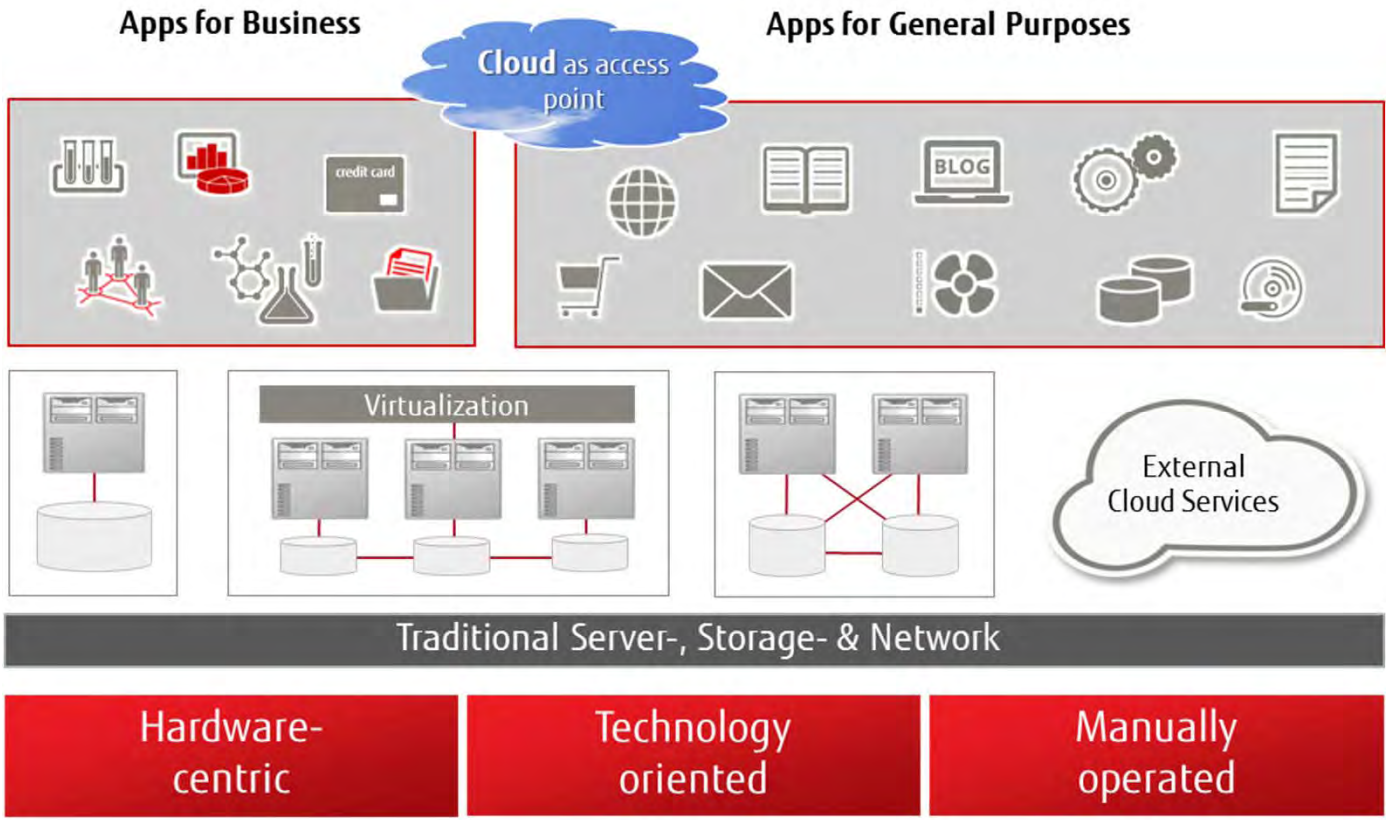
By 2019, 25% of traditional IT operations job titles will be eliminated by use of Software defined infrastructures and cloud



Source: IDC

The Challenge of Infrastructure

CIO Perspective: Today´s Data Center



Staff needed

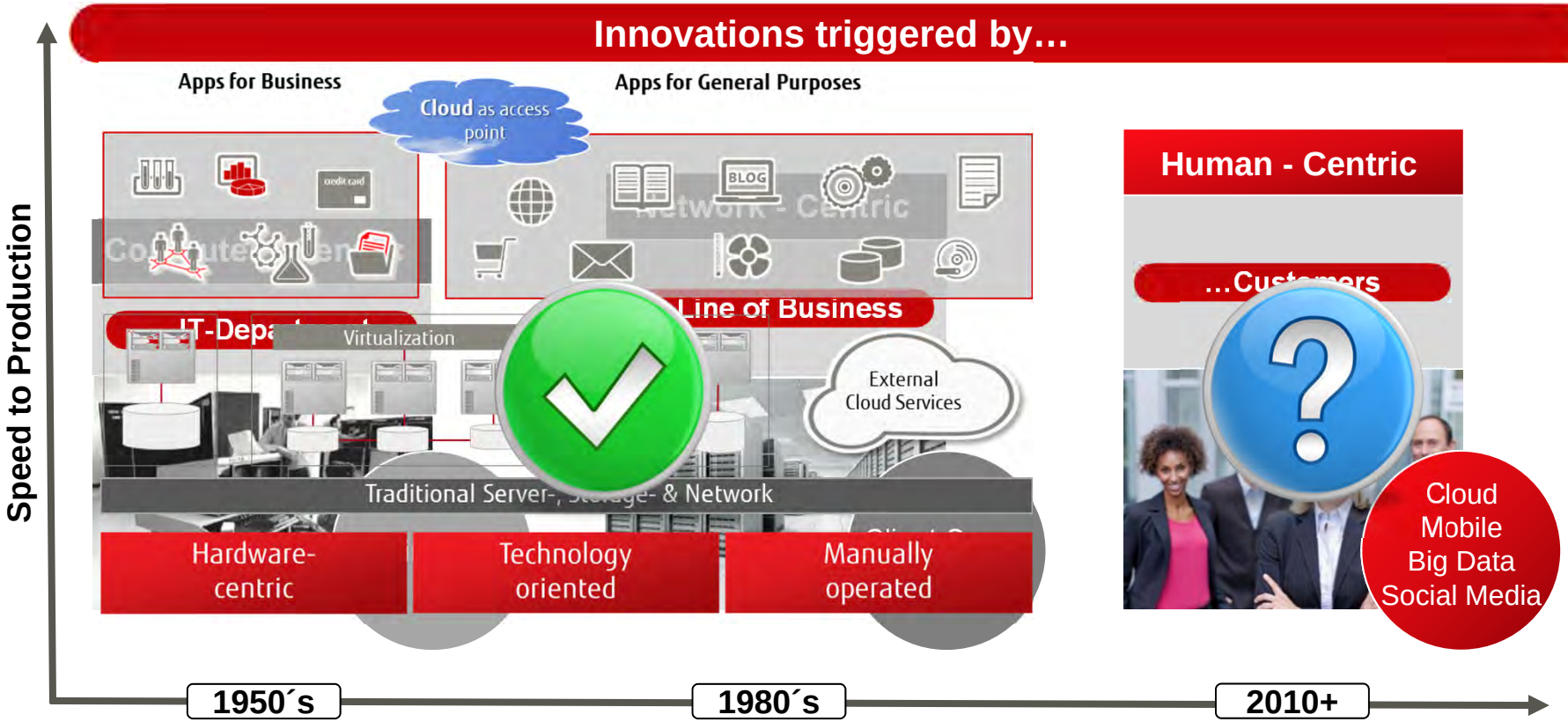
Complex, historical grown structures

Lifecycle

Continuous change

Copyright 2016 FUJITSU

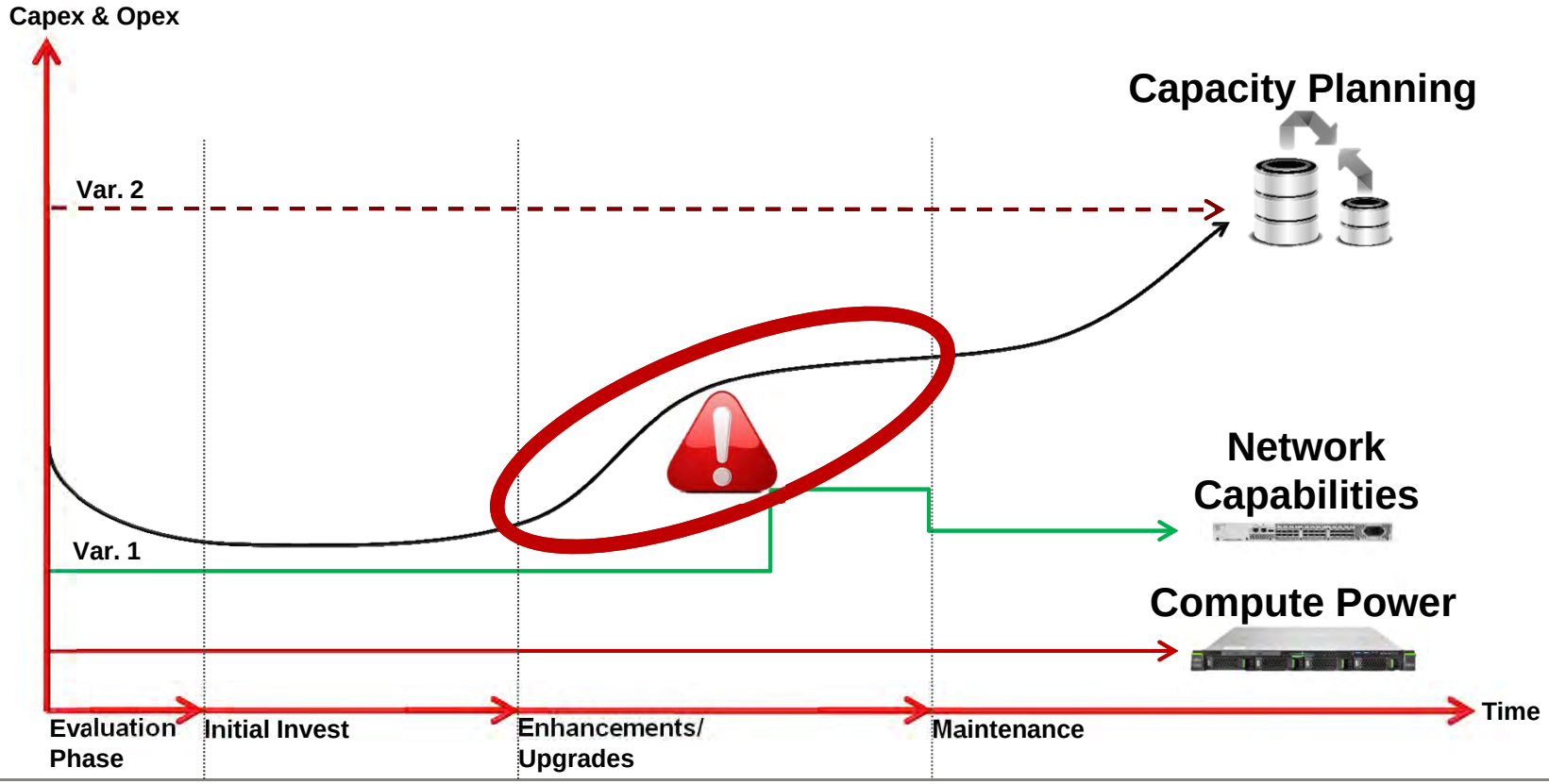
Innovations triggered by…



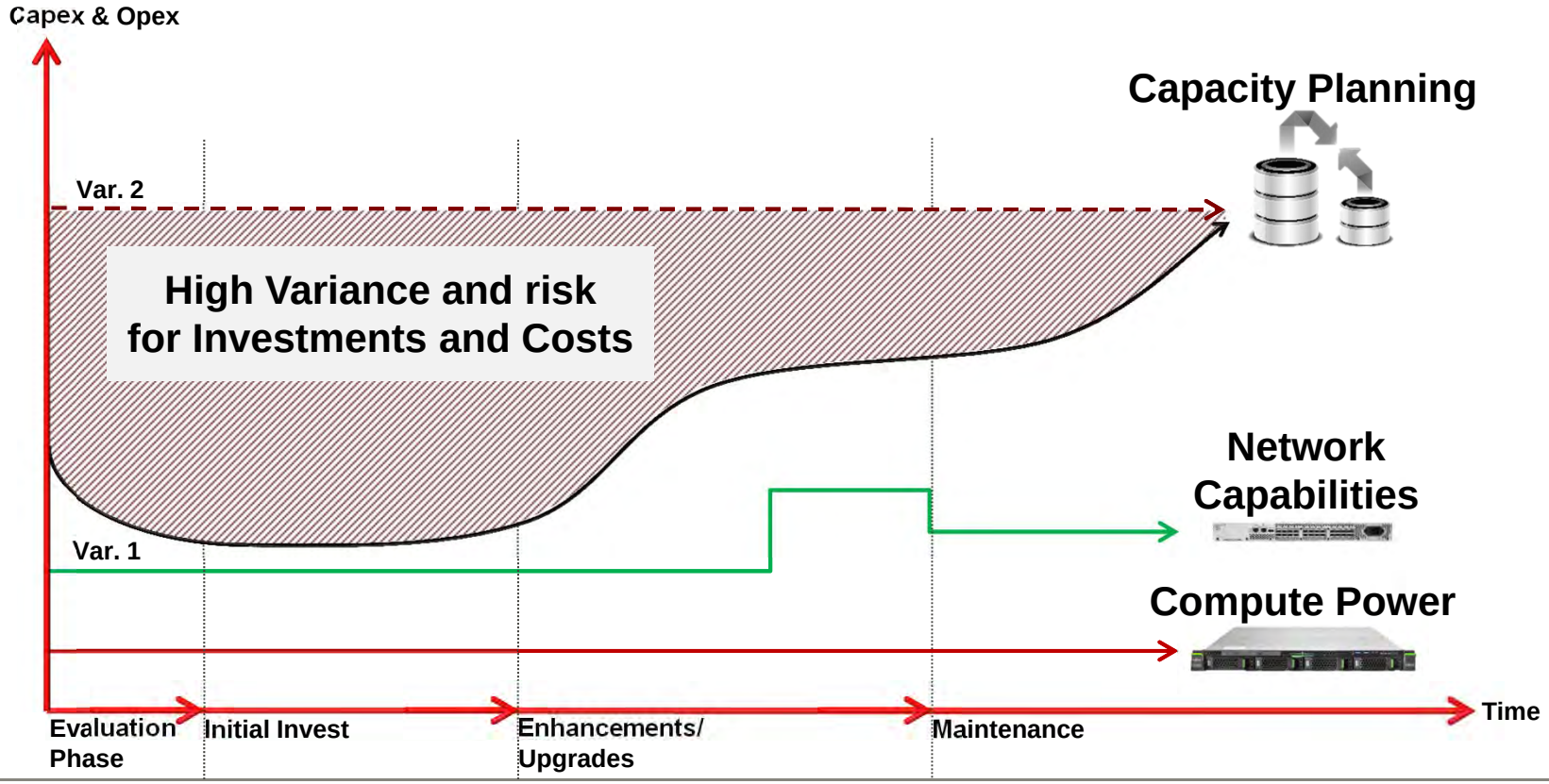
Copyright 2016 FUJITSU

Digital Transformation and How it Affects IT-Strategy

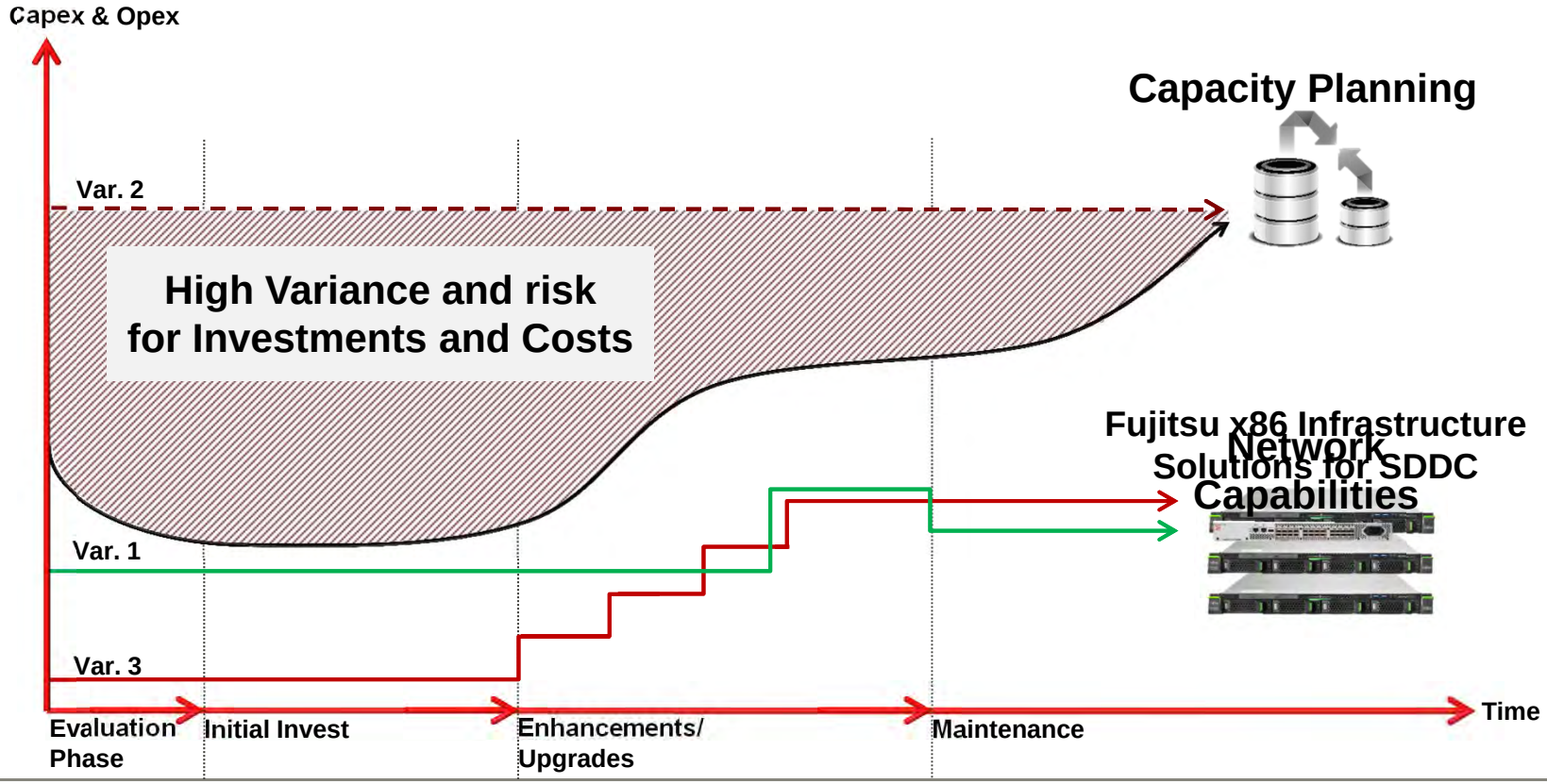
FUJITSU



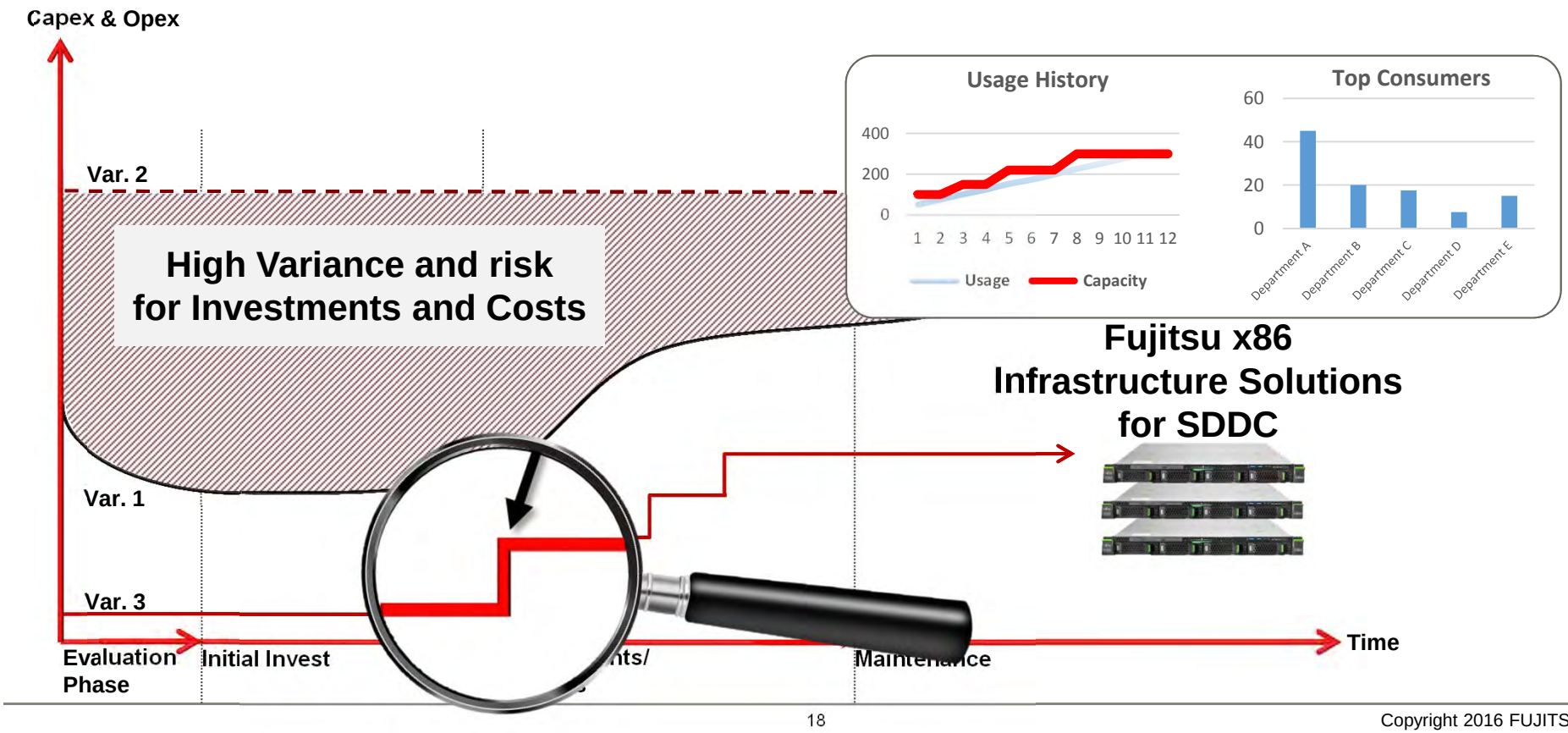
Copyright 2016 FUJITSU



Copyright 2016 FUJITSU



Copyright 2016 FUJITSU



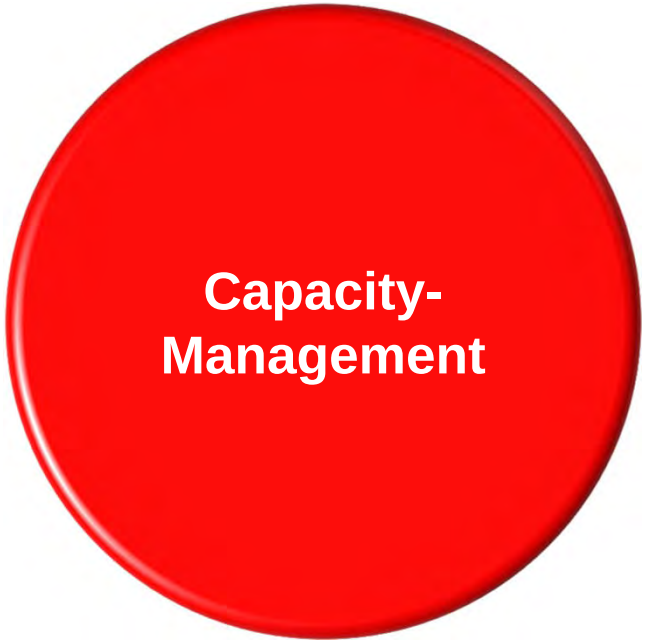
Copyright 2016 FUJITSU

Software Defined and Hybrid IT - Strategy

FUJITSU

Ressourcemanagement.

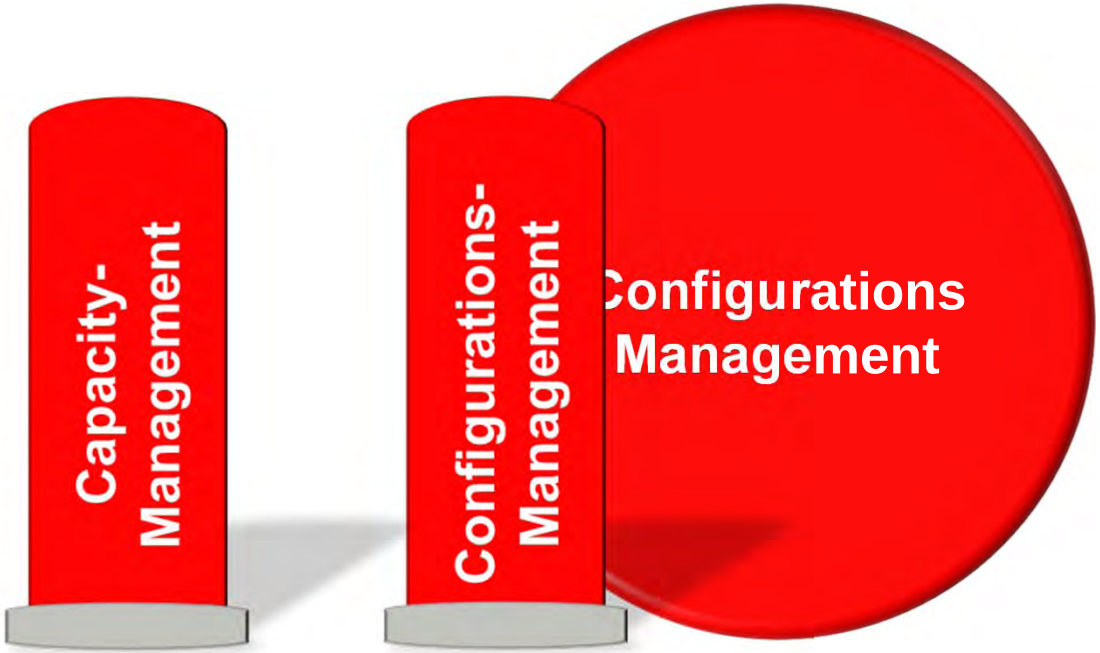
In-Time Readiness of IT-Services, requested by the Business



Copyright 2016 FUJITSU

Automation.

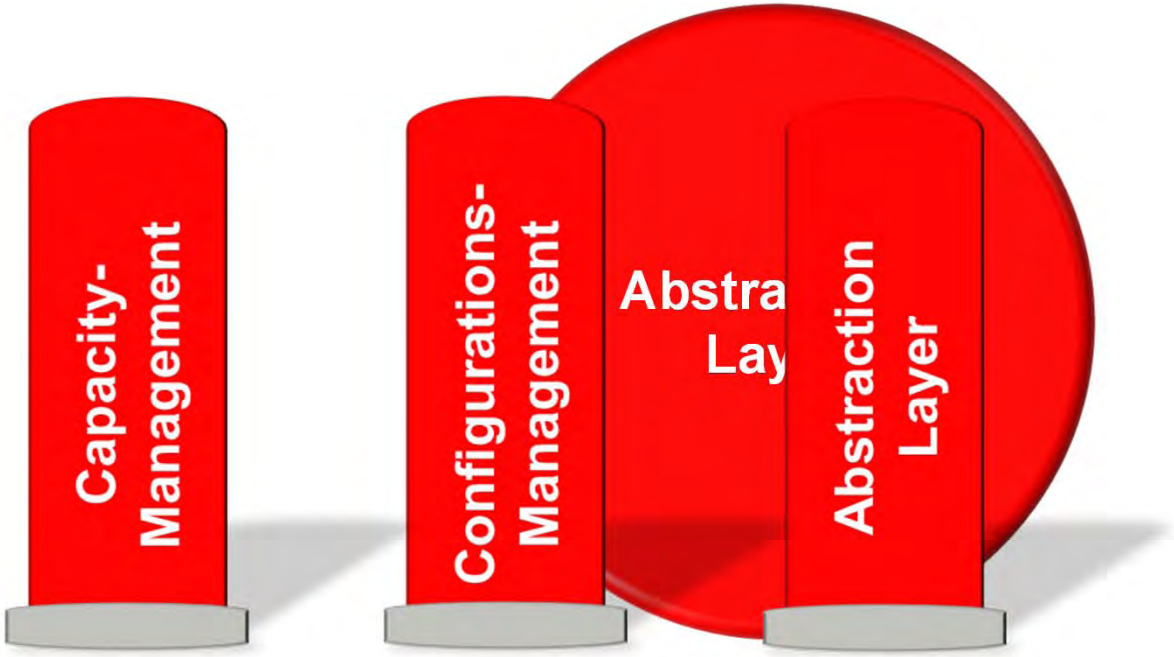
Migration from Manual-Provisioning to Automated-Provisioning of IT-Ressources



Copyright 2016 FUJITSU

Standardisation.

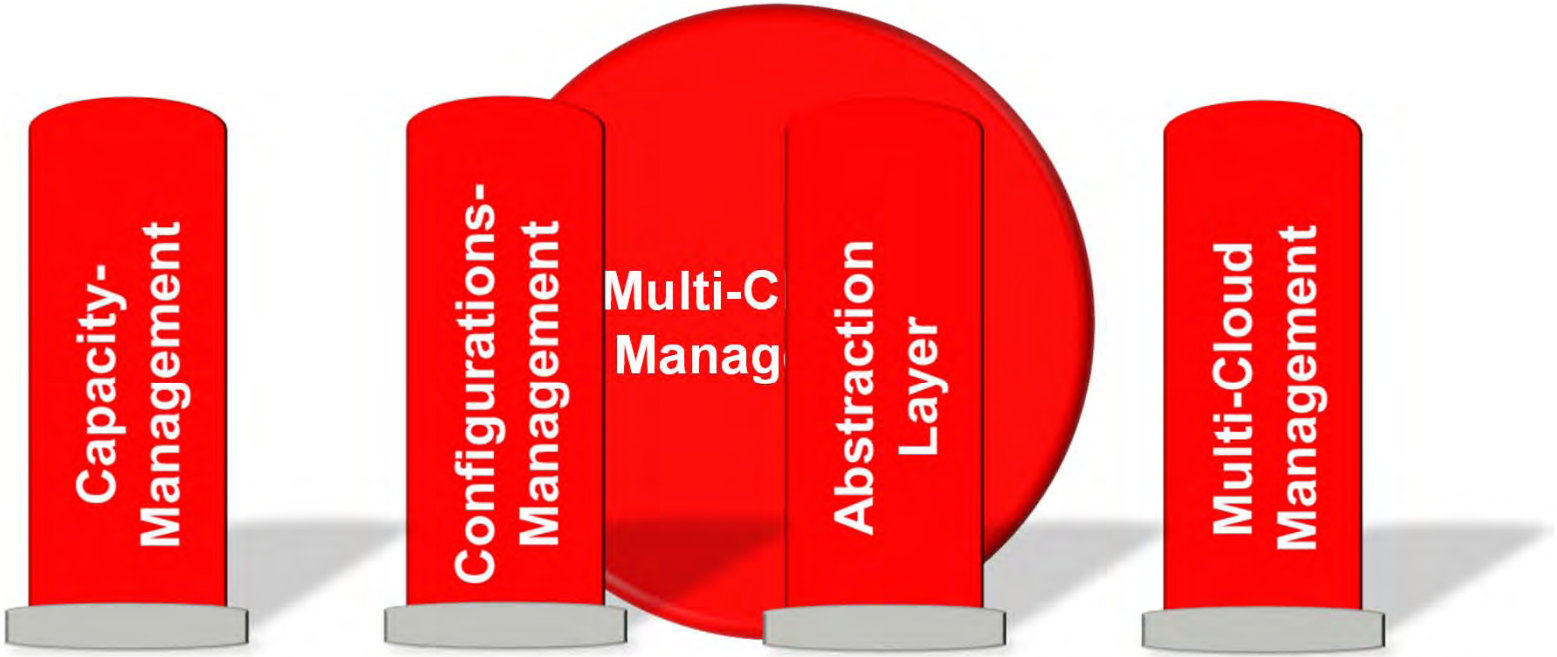
Abstract the Software from the Hardware



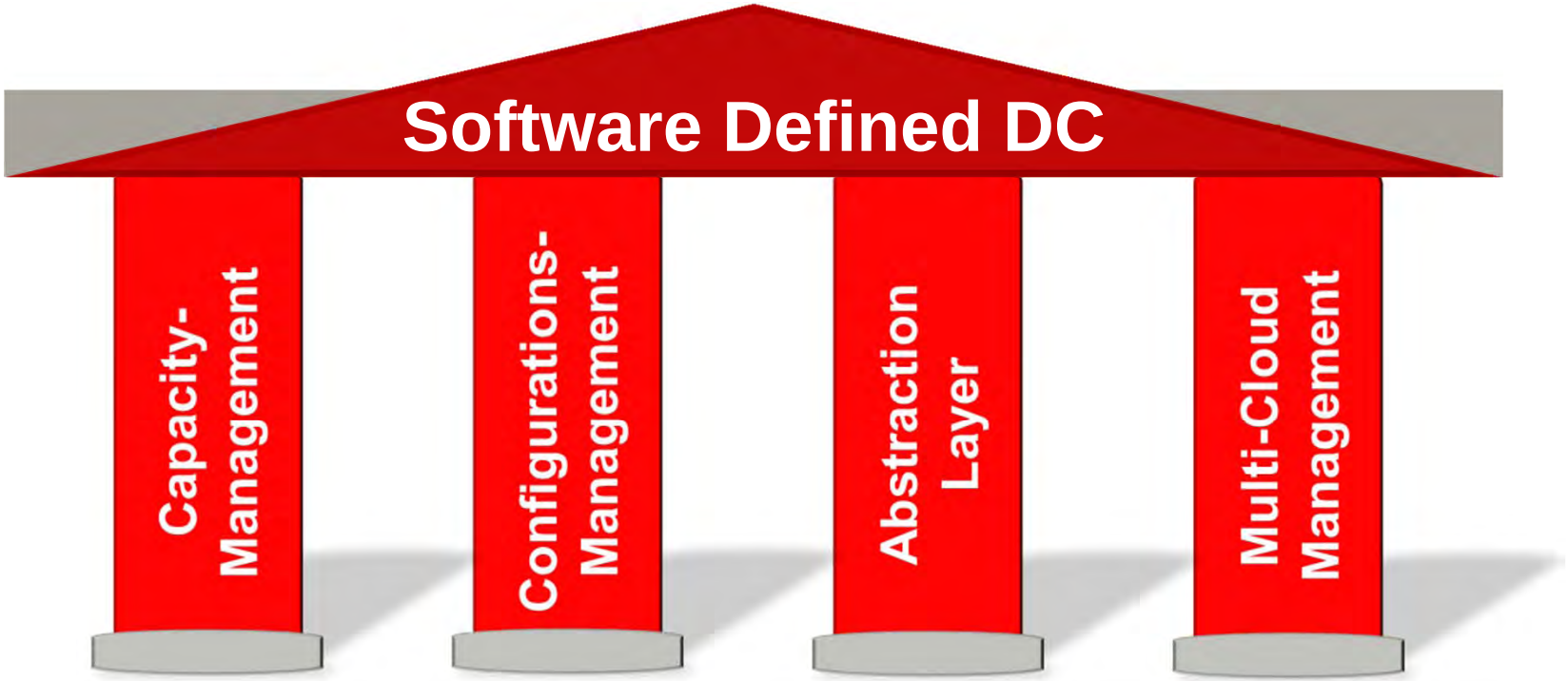
Copyright 2016 FUJITSU

Cloud Ready.

Seemless Integration and Management of Cloud-Services from various Vendors

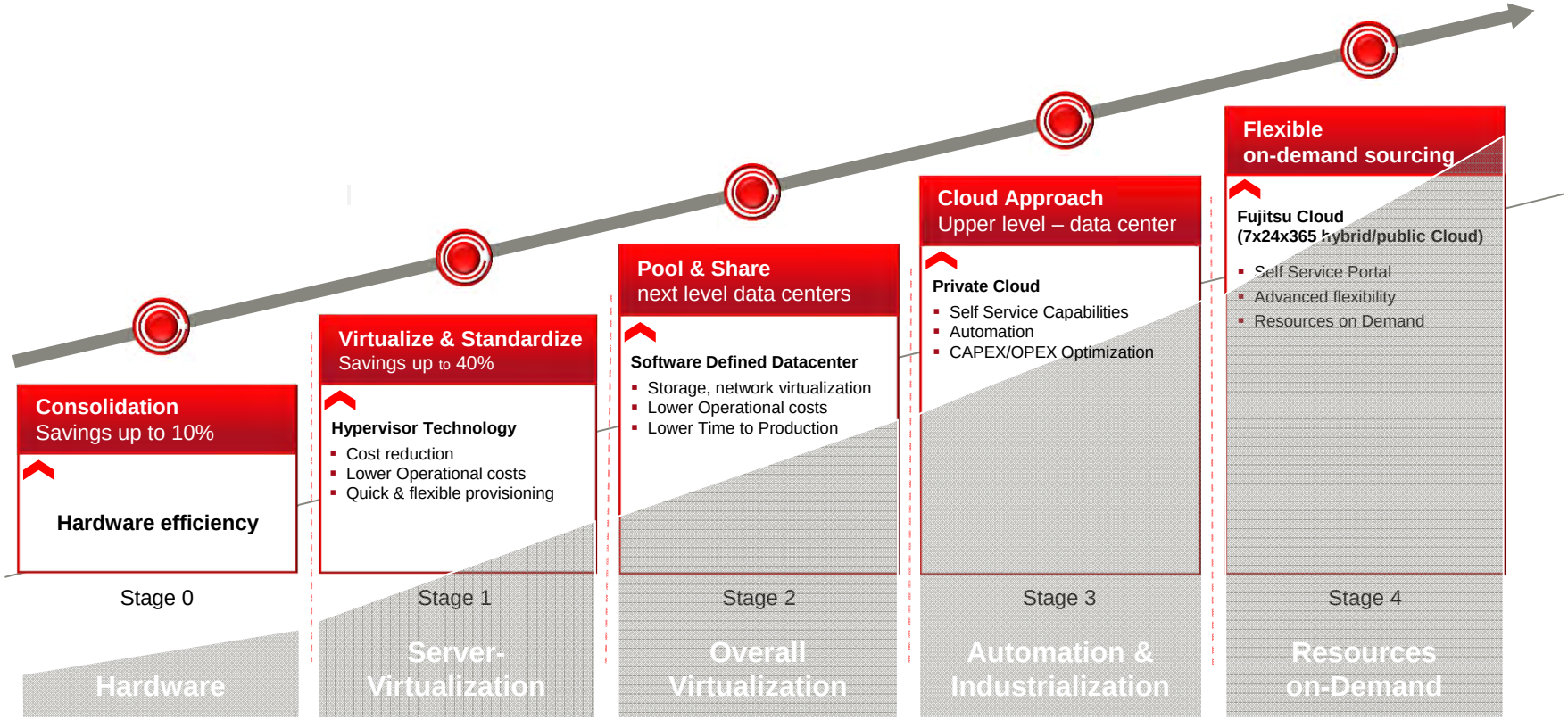


Copyright 2016 FUJITSU



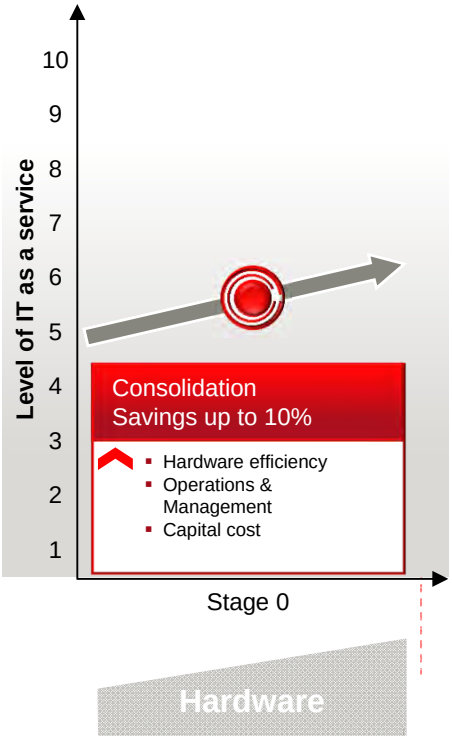
Copyright 2016 FUJITSU

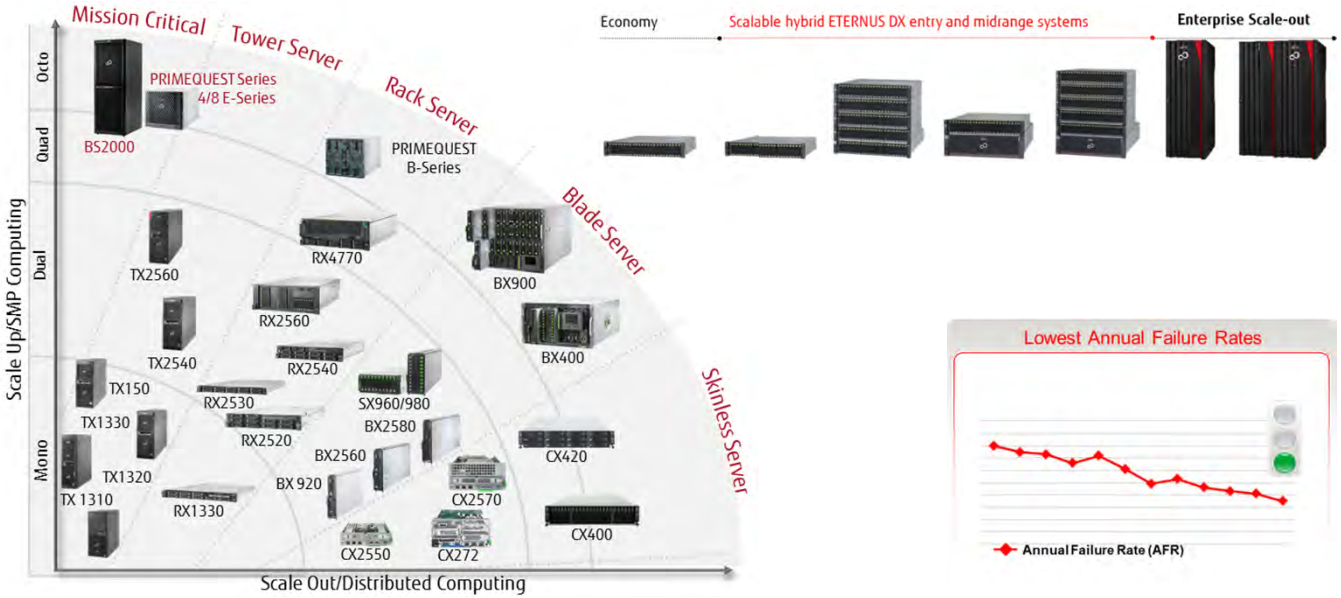
Level of IT as a Service



Copyright 2016 FUJITSU

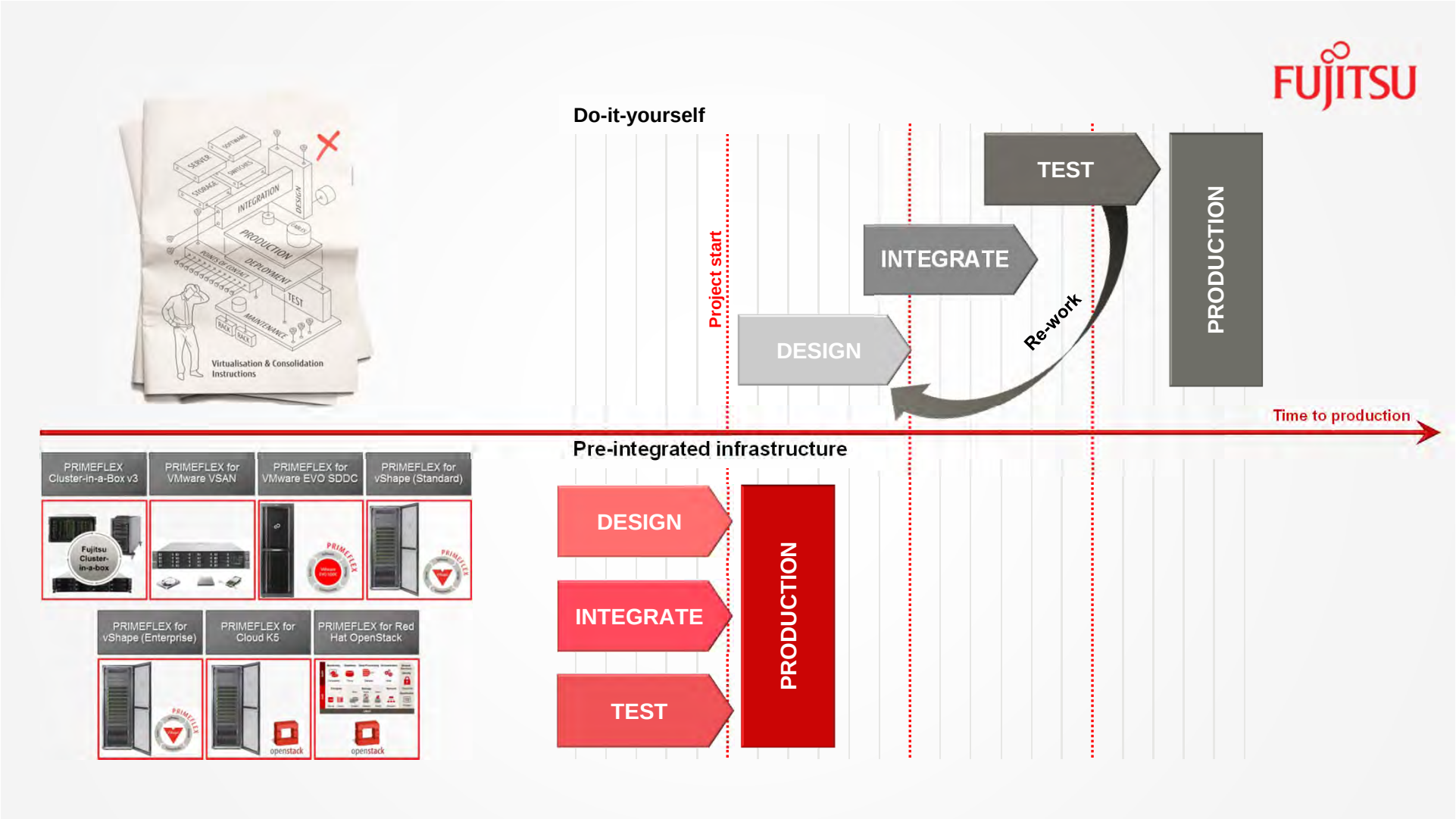
Data Center - Portfolio





Outstanding Products for the next Level - Data Center

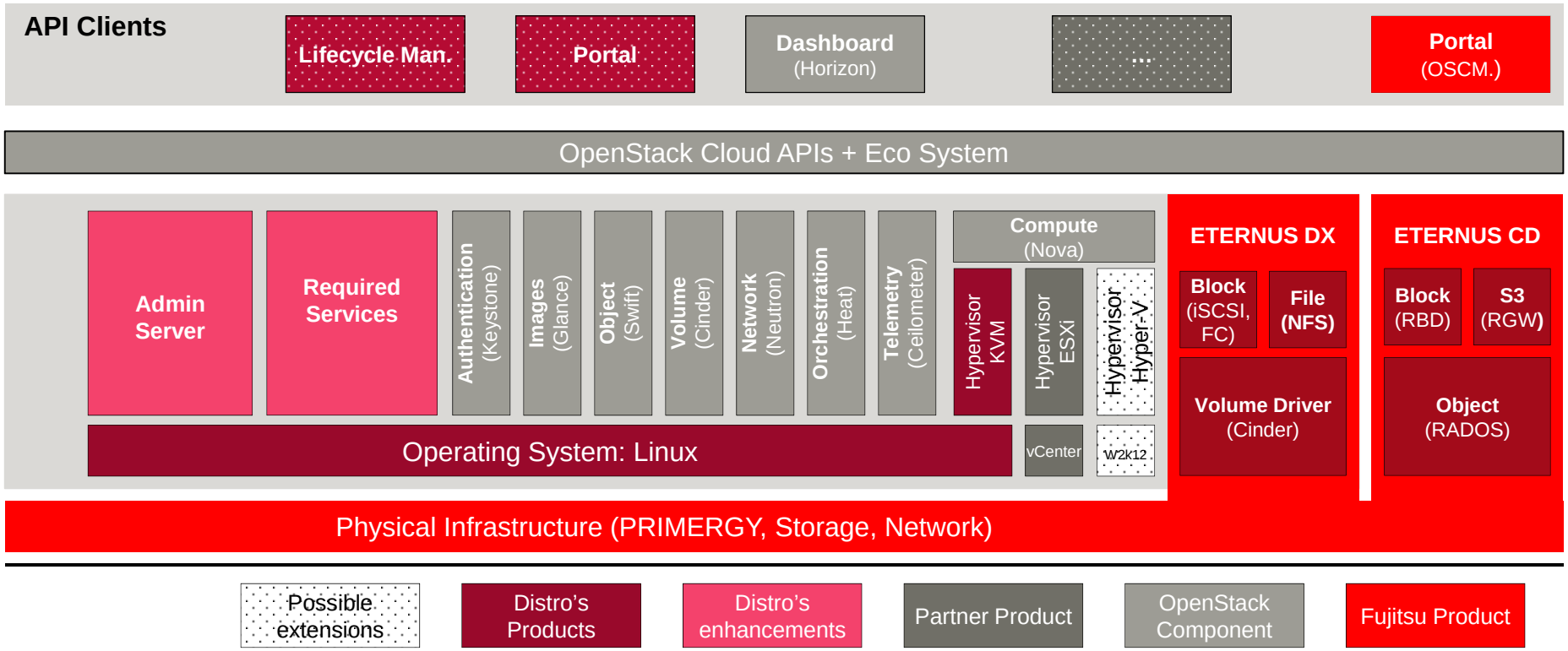
Copyright 2016 FUJITSU


FUJITSU
Do-it-yourself
Virtualisation & Consolidation Instructions
Project start
DESIGN
INTEGRATE
TEST
Re-work
PRODUCTION
Time to production
Pre-integrated infrastructure
PRIMEFLEX Cluster-in-a-Box v3
PRIMEFLEX for VMware VSAN
PRIMEFLEX for VMware EVO SDDC
PRIMEFLEX for vShape (Standard)
Fujitsu Cluster-in-a-box
PRIMEFLEX for vShape (Enterprise)
PRIMEFLEX for Cloud K5
PRIMEFLEX for Red Hat OpenStack
DESIGN
INTEGRATE
TEST
PRODUCTION

Example: DIY vs. Pre-Integrated OpenStack Private Cloud Deployment

FUJITSU

OpenStack
Technical Cloud Reference Architecture



Copyright 2016 FUJITSU

DIY is possible, but complex

- **Requires significant expertise and effort to**
  - Install
  - Maintain
  - Upgrade

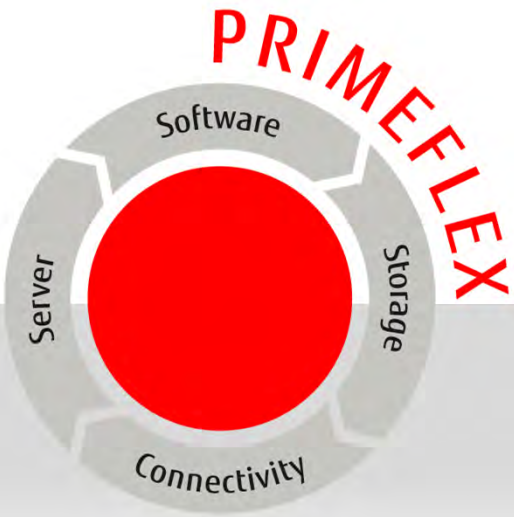
- **Customer's own responsibility for**
  - Release management
  - Maintenance
  - Support

Easily; it can be error-prone, time-consuming and expensive

Copyright 2016 FUJITSU

PRIMEFLEX Benefits

Reduce complexity, time, effort, risk and cost in data center infrastructure deployment



Fast time to market

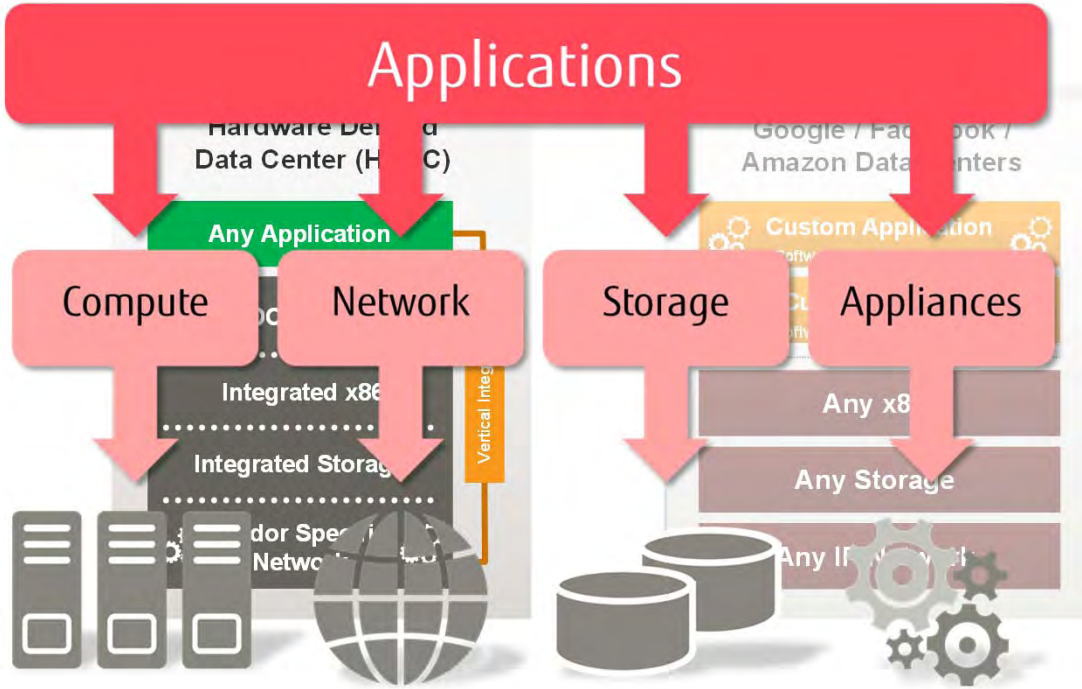
Increased productivity

Reduced TCO

Copyright 2016 FUJITSU

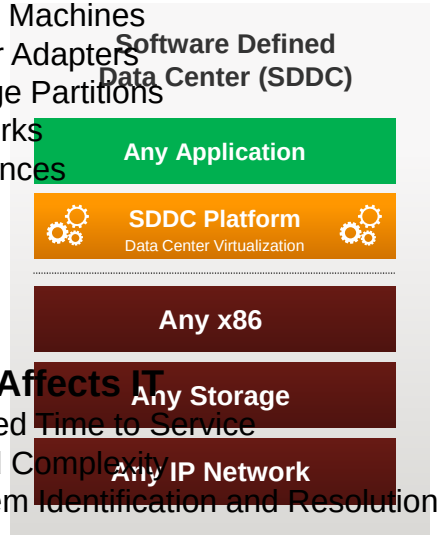
From Hardware- to Software Defined

FUJITSU



Independent Provisioning and Support

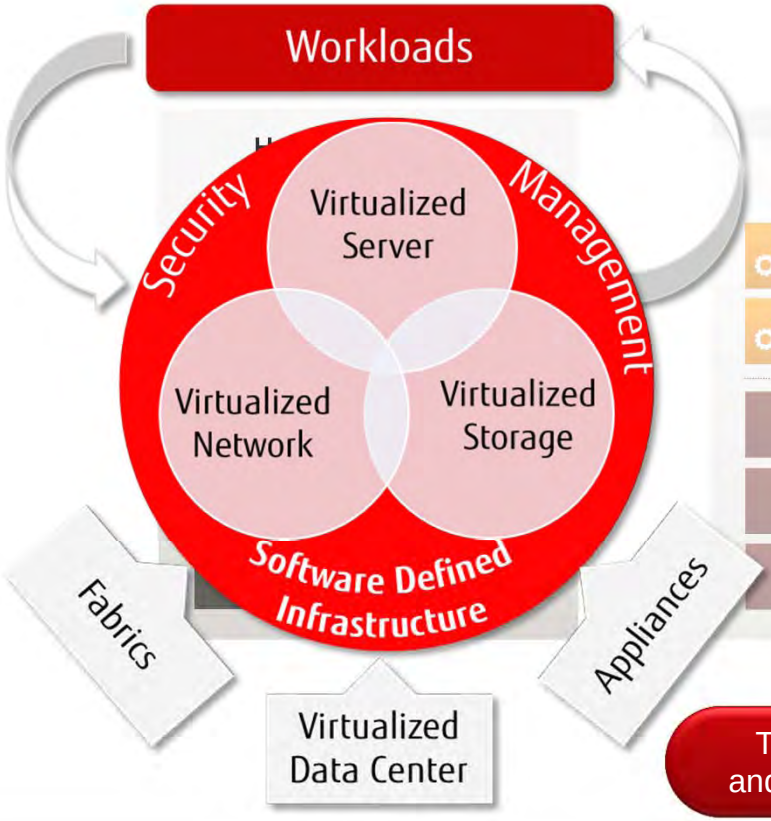
- Virtual Machines
- Server Adapters
- Storage Partitions
- Networks
- Appliances



How it Affects IT

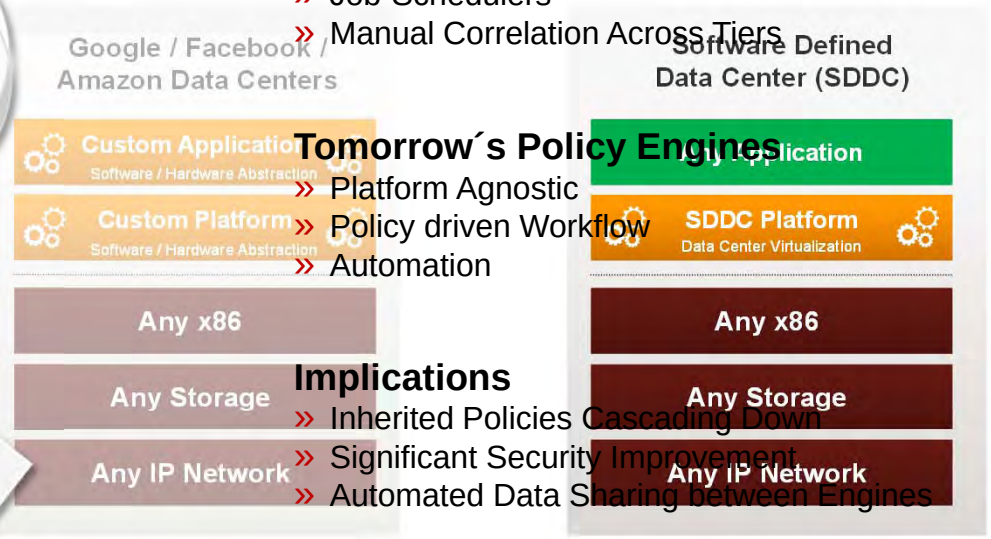
- Delayed Time to Service
- Added Complexity
- Problem Identification and Resolution

Copyright 2016 FUJITSU



Today´s Policy Engines

- Platform-Specific
- Job-Schedulers
- Manual Correlation Across Tiers



Tomorrow´s Policy Engines

- Platform Agnostic
- Policy driven Workflow
- Automation

Implications

- Inherited Policies Cascading Down
- Significant Security Improvement
- Automated Data Sharing between Engines

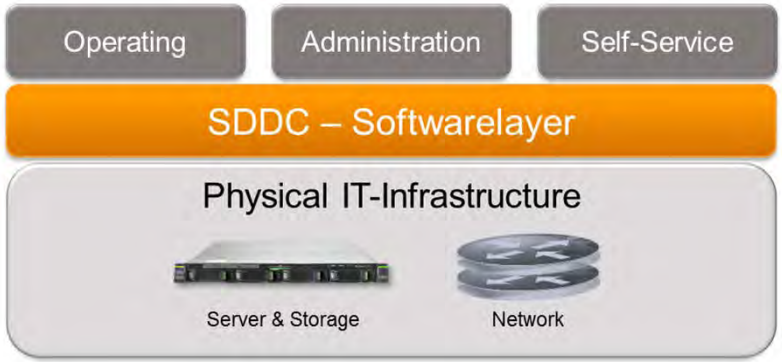
The Future Data Center will **Not Focus on Workload, but on Workflow** and **NOT on Where the Work is Located, but on What the Work is Doing**

Copyright 2016 FUJITSU

Traditional IT

vs.

Software Defined Infrastructures



Copyright 2016 FUJITSU

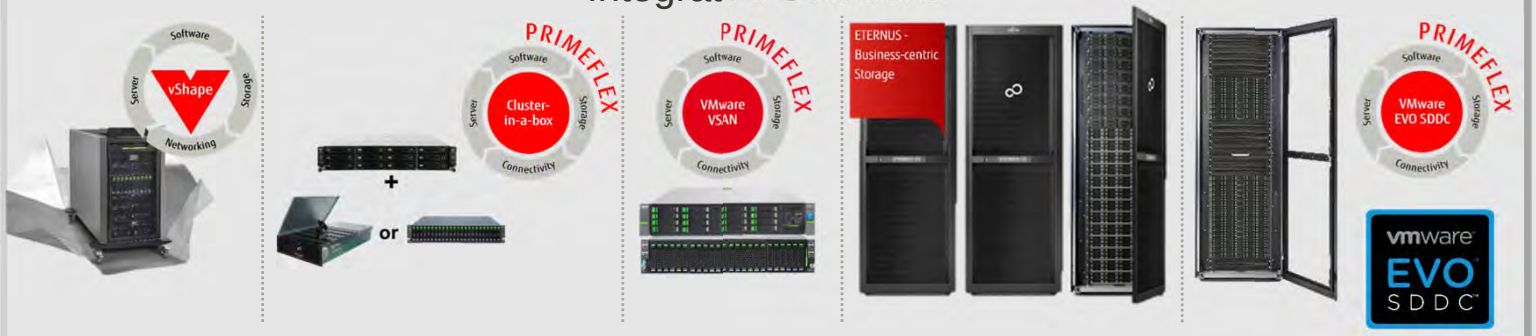
A short story about Business growth through Hybrid IT

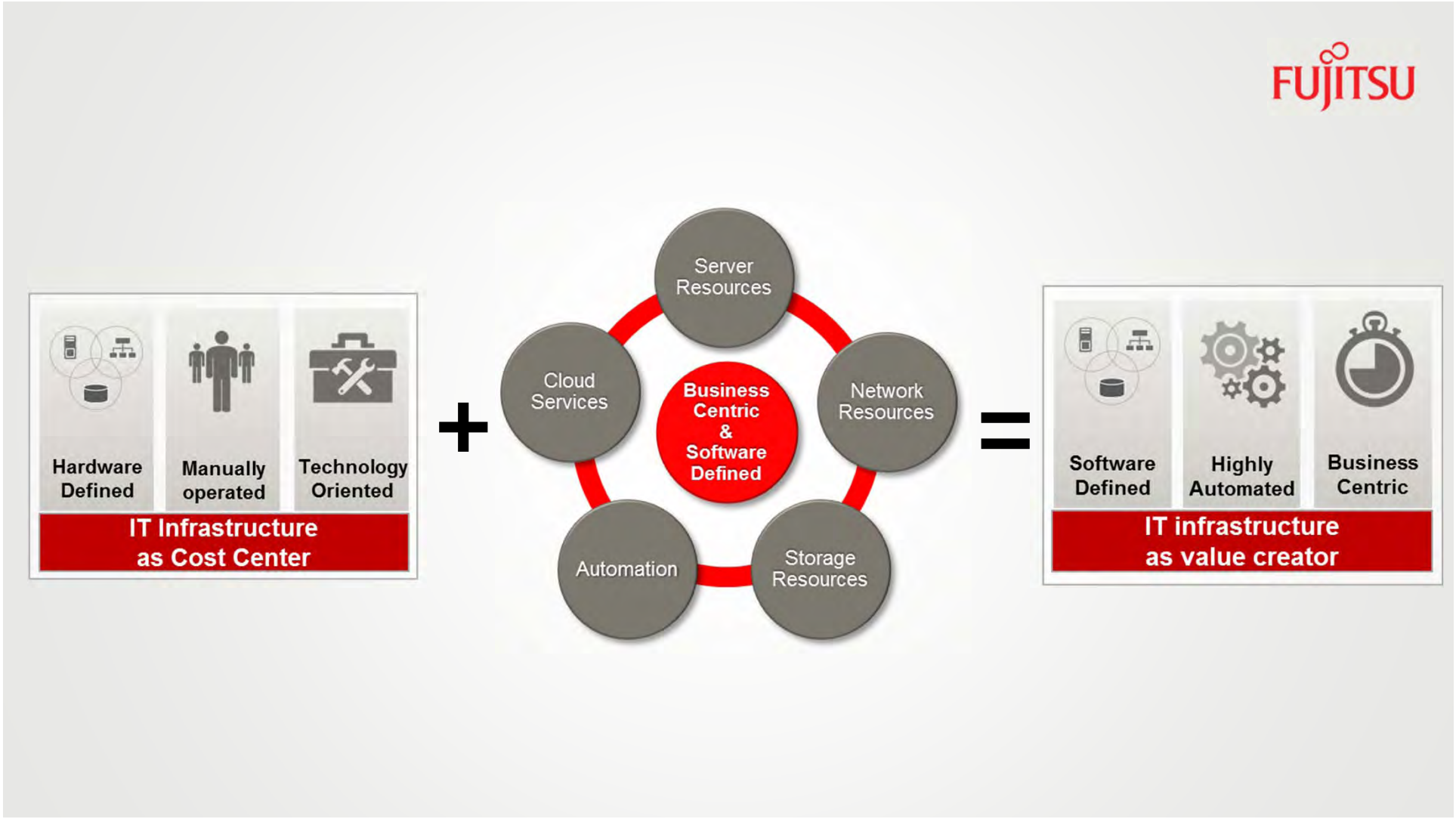
PRIMEFLEX

Solutions for Infrastructure

On-Premise

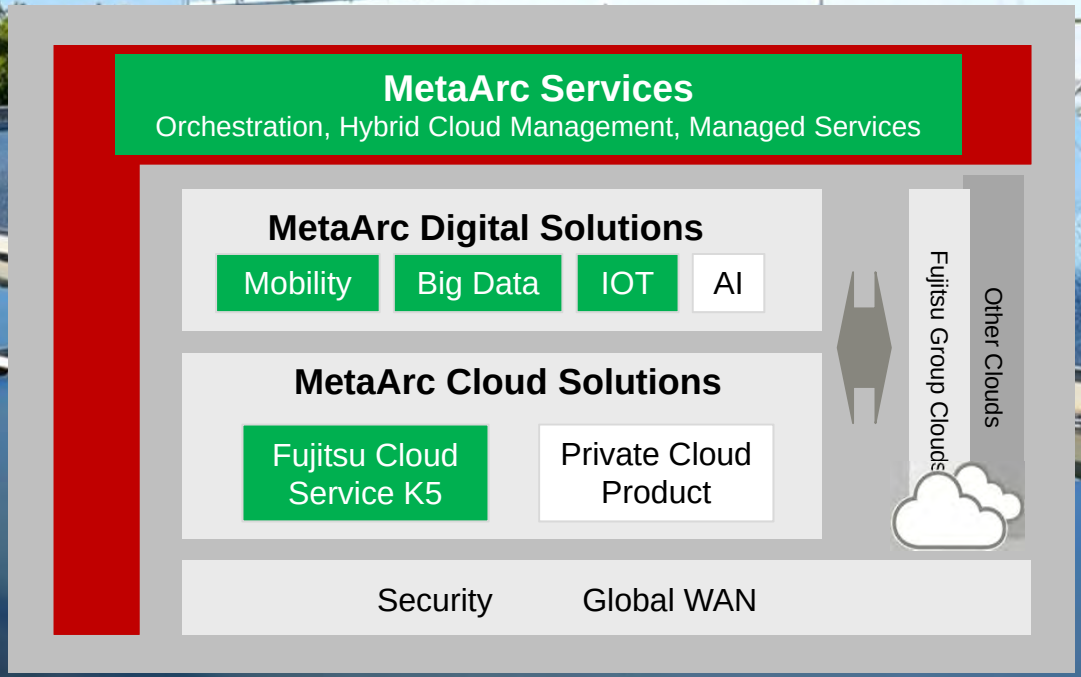
Integrated Solutions




FUJITSU
Hardware Defined
Manually operated
Technology Oriented
IT Infrastructure as Cost Center
+
Server Resources
Cloud Services
Business Centric & Software Defined
Network Resources
Automation
Storage Resources
=
Software Defined
Highly Automated
Business Centric
IT infrastructure as value creator

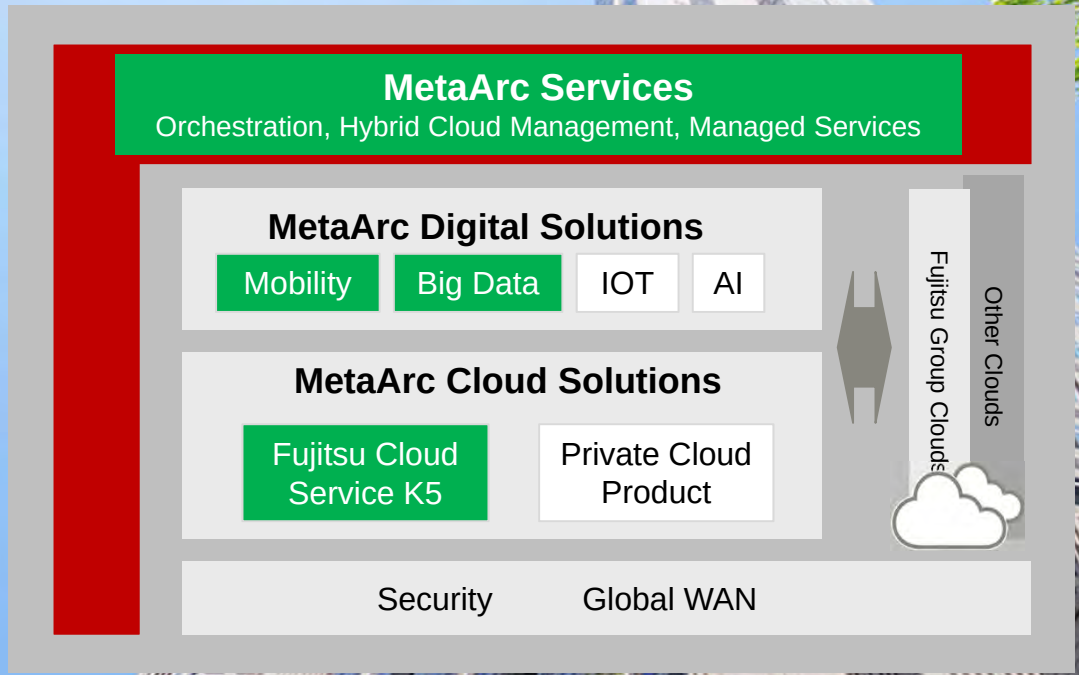
Case Study: Optex (Global sensor business)

- **IoT solution for wide variety of fields:** from crime prevention through to water quality measurement.
- Platform utilised for collecting data from mobile water quality measurement sensors.
  - Full production solution for Optex customers
- **Platform enables:**
  - Processing 'Big Data' in real time
  - IoT - Apps



Case Study: Nanto (Japanese Bank)

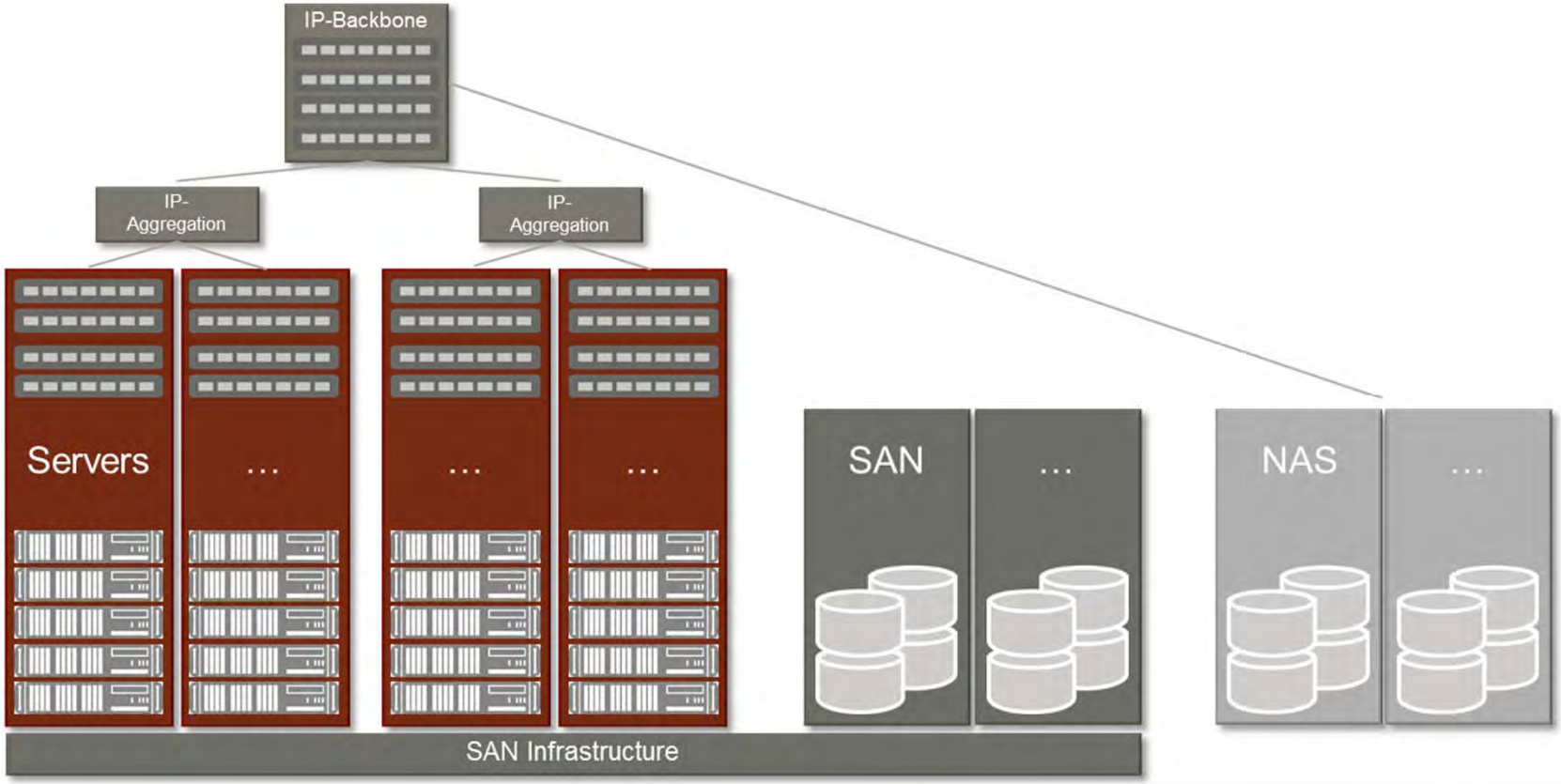
- Integrated management of multi-vendor smartphone applications
- Compliant with Banking and Related Financial Institutions Security Guidelines
- APIs used to build commonly used functions in smartphone app; possible achievements:
  - Up to 70% savings in terms of development and operations cost
  - Speed up the development process by as much as 80%



IT – Landscapes will Change
Example: Network

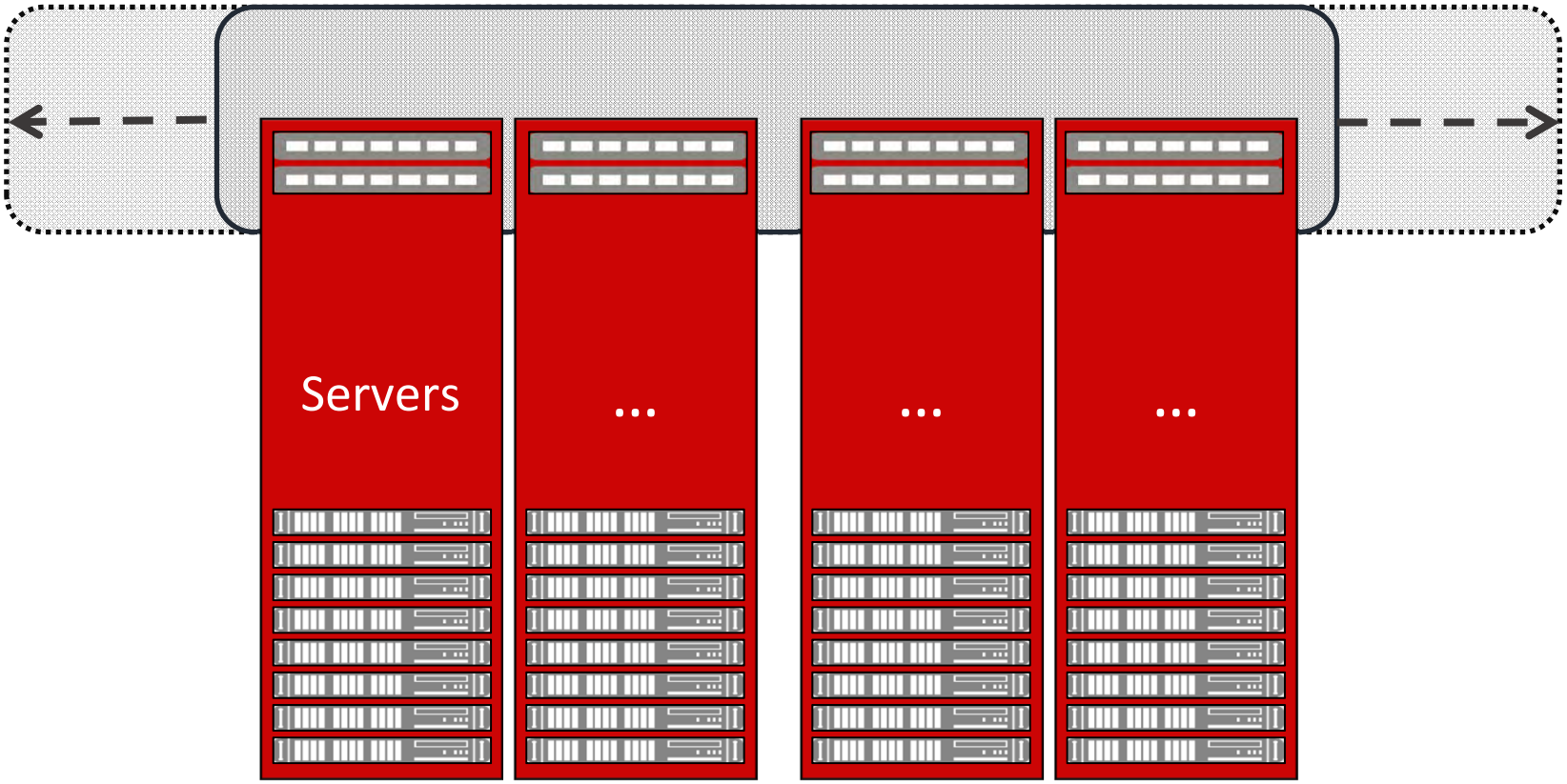
FUJITSU

IP-Network Topology: North / South



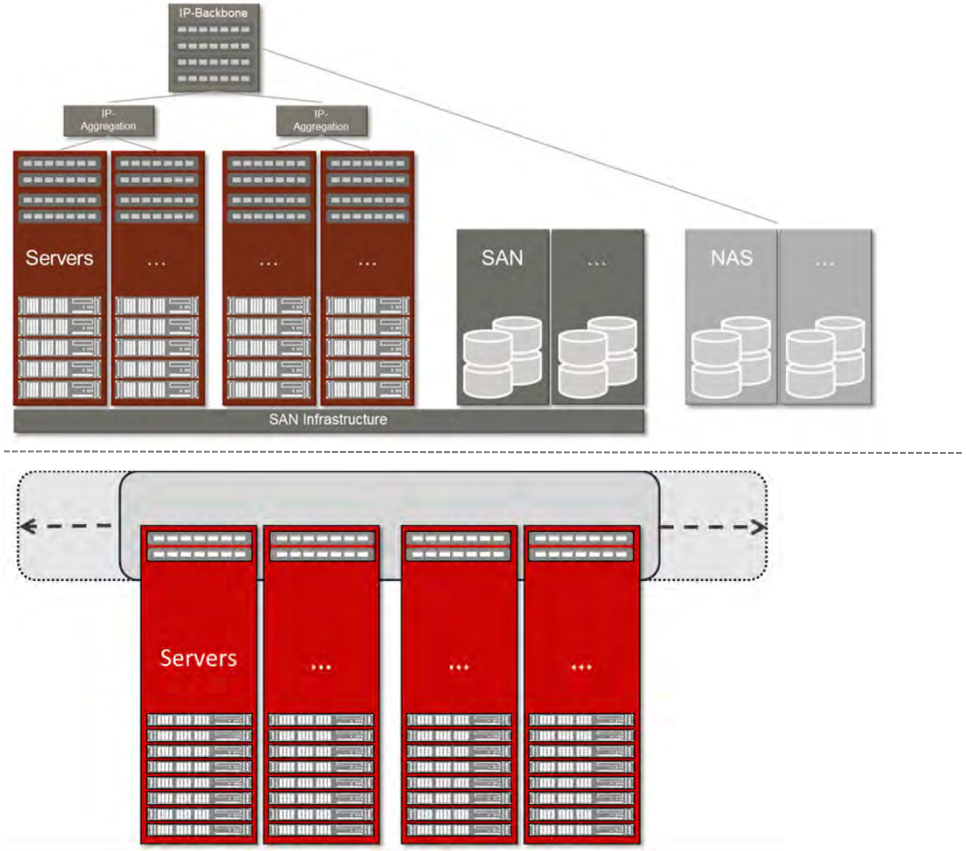
Copyright 2016 FUJITSU

IP-Network Topology: East / West



Copyright 2016 FUJITSU

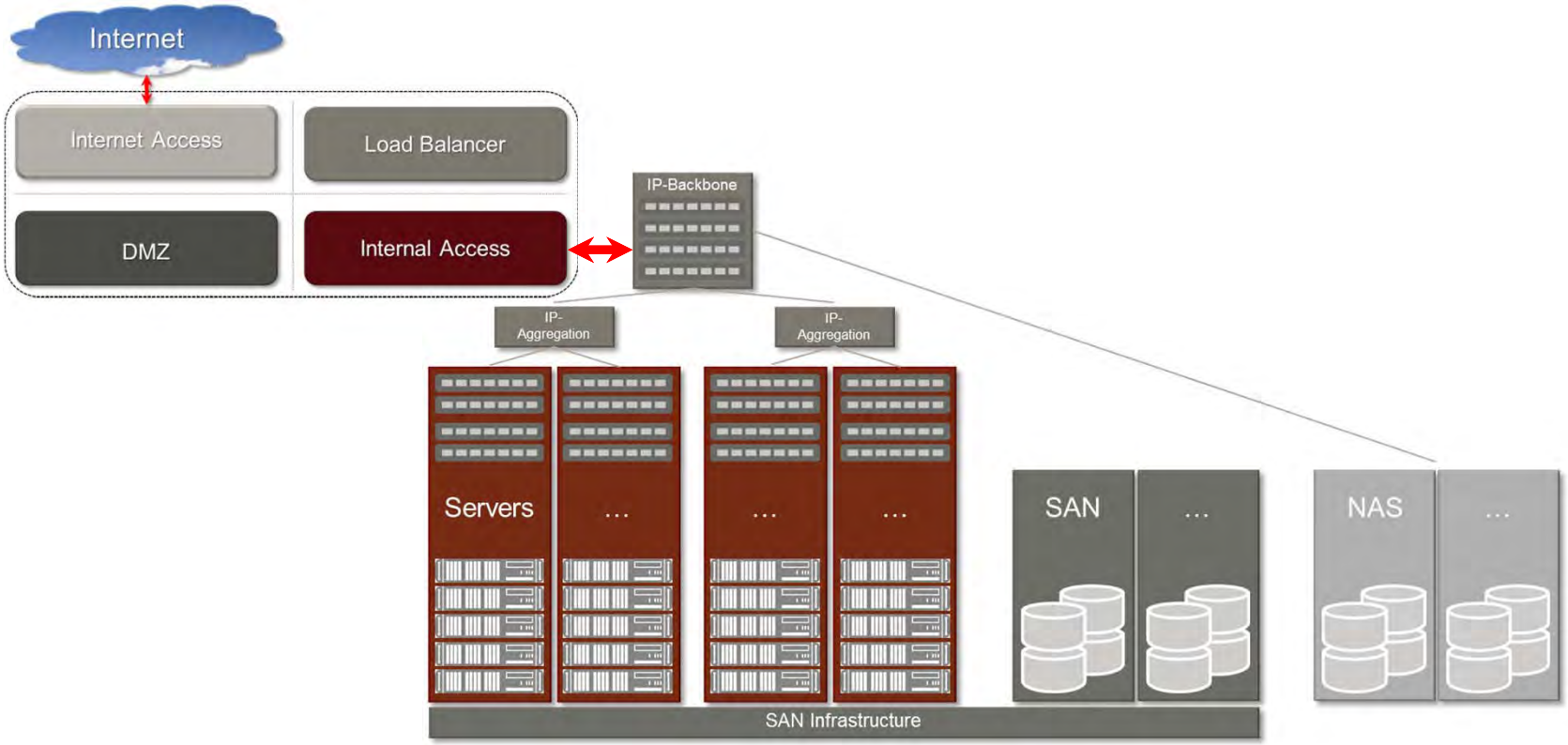
Aspects



- **Less components**
  - Lower (re-) investments
  - Lower operational costs (opex)
    - Staff & Skills
    - Maintenance
- **Less complexity**
  - Reduced administration efforts
  - Shorten time for problem solving
- **Software Defined**
  - Controlled conditions for Updates & Upgrades
  - Strengthen Standardization approach
- **Scale-Up versus Scale-Out**

Copyright 2016 FUJITSU

Security: Traditional IT



Copyright 2016 FUJITSU

Joana.

Characteristics:

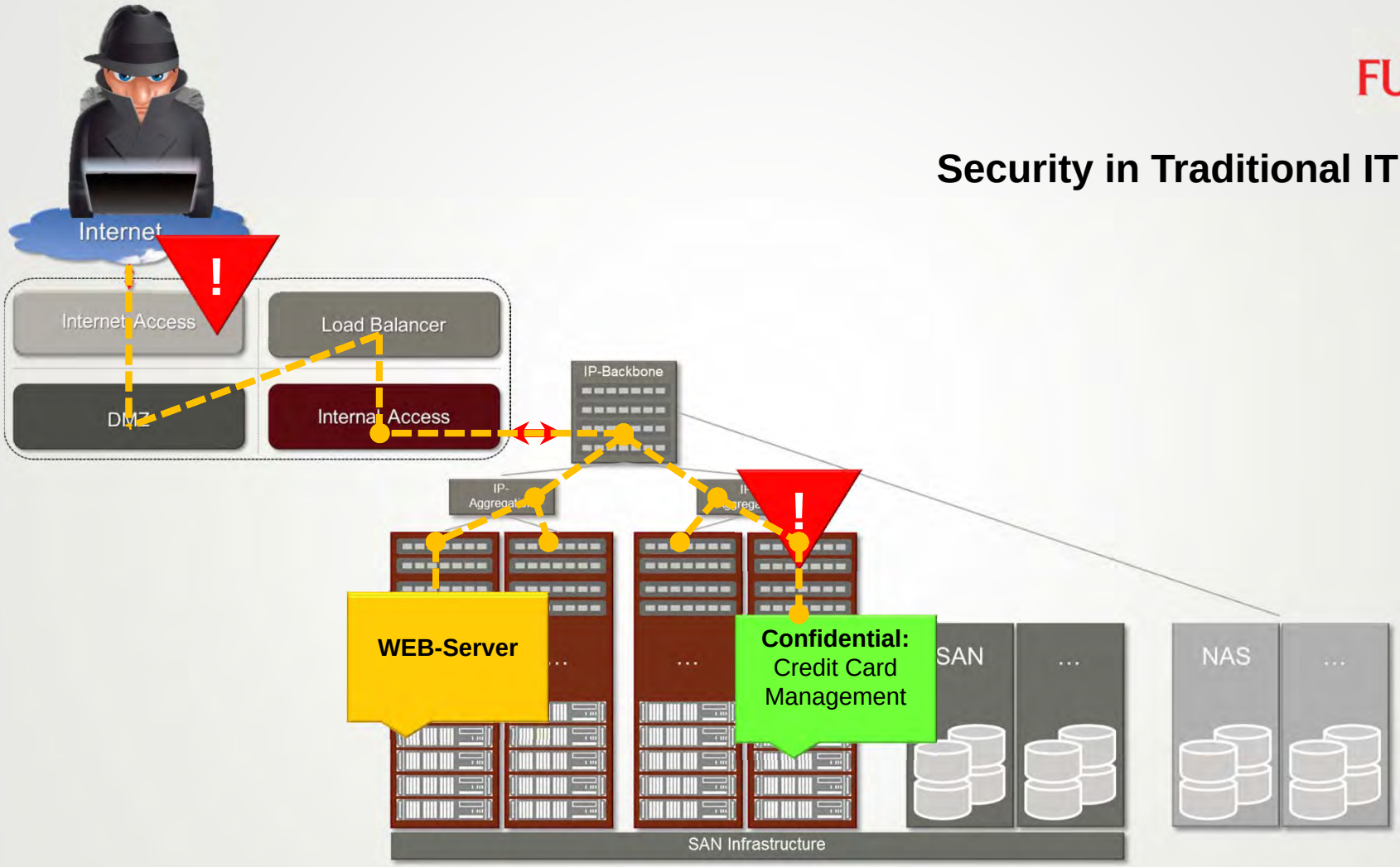
- **Consumer**

- **Mobile Computing**
  - Banking
  - Search engines
  - Shopping
  - Social Networks

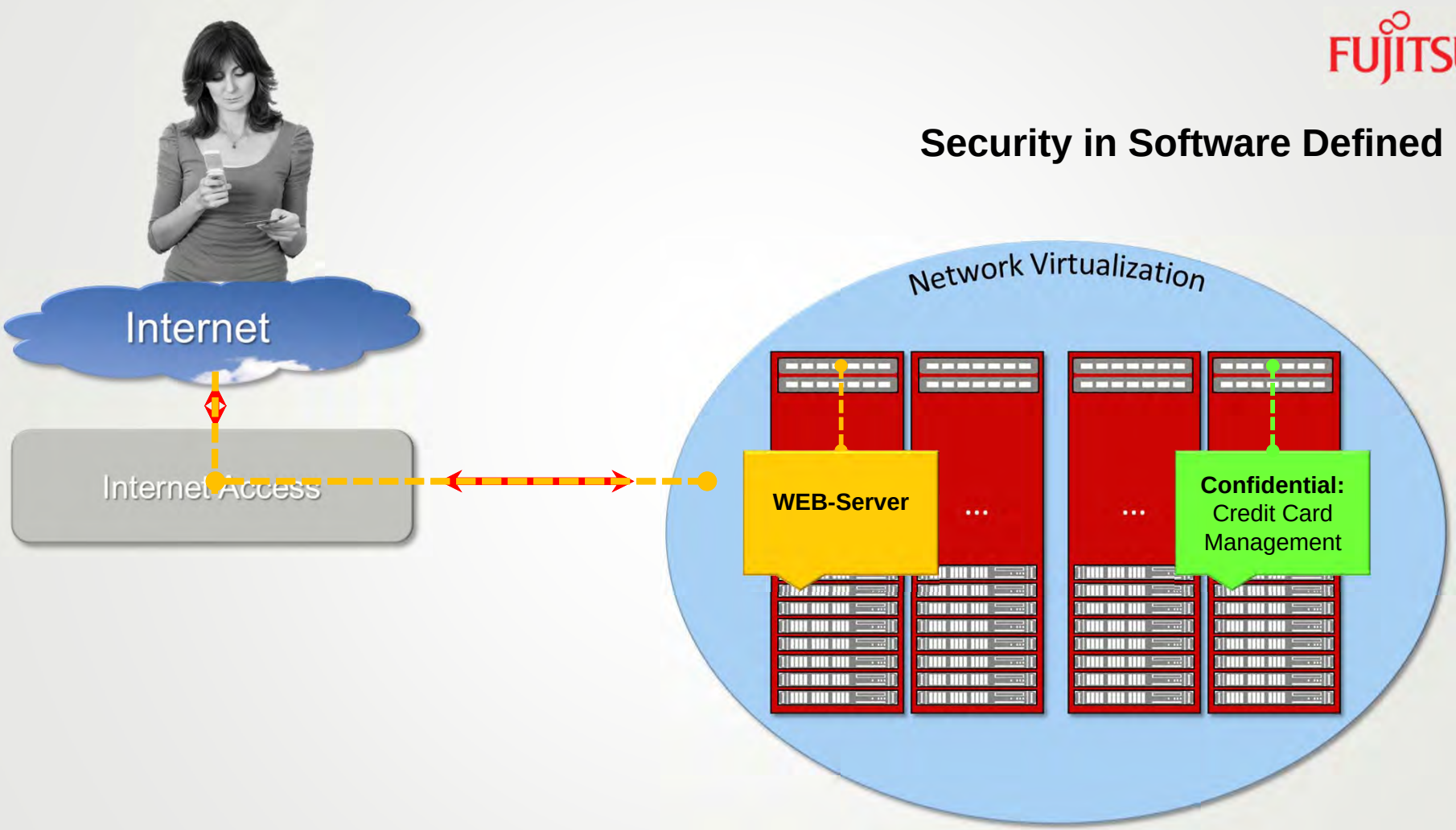
- Contributes input for accumulation of **Big Data**

- Own´s a lawn mower – robot
  - Consumes **IoT**-offerings

Security in Traditional IT



Security in Software Defined



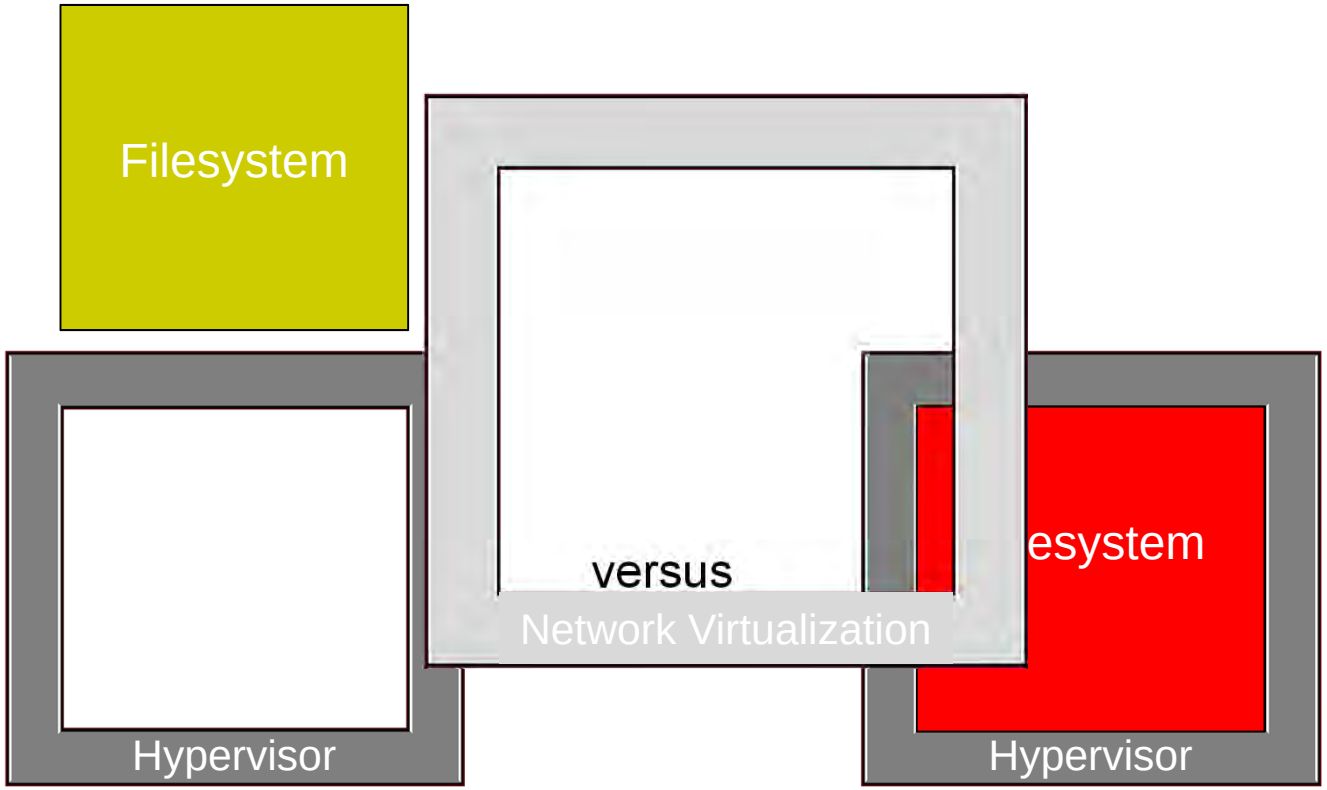
Starting into the SDDC-Era
General Concepts

FUJITSU

General System Architectures of Software Defined Infrastructures

FUJITSU

Various vendors



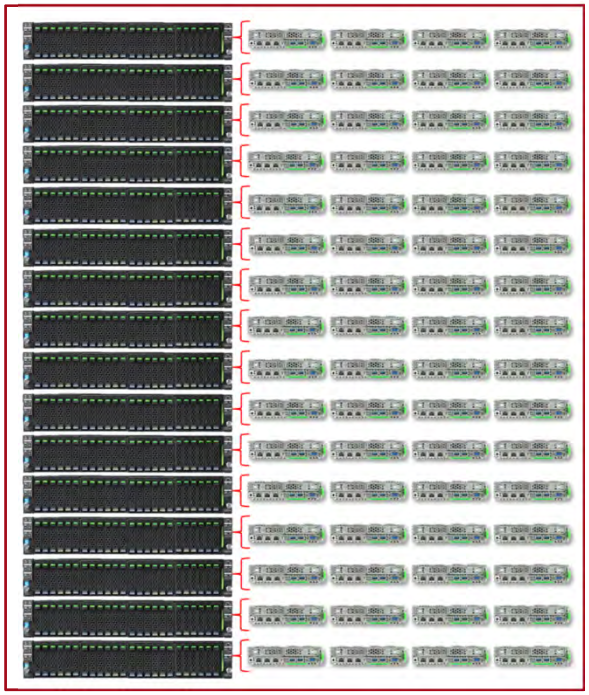
vmware

Microsoft

openstack
CLOUD SOFTWARE

Copyright 2016 FUJITSU

Example: VSAN Scalability



64 Hosts	**1536** Cores	**3000** Server-VMs	**6000** VDI-VMs
384 TB Raw Storage	**>6Mio** IOPS/Cluster	**<1ms** Latency w/ Flash	**>100k** IOPS/VM w/ Flsh 40k IOPS HY

VMs *– Average of 2vCPUs/VM, 4 vCPUs/core, 6GB vMEM, 60GB virtual disk /* ***VDIs*** *– Average of 1 vCPU/VM, 5 vCPUs/core, 2GB vMEM, 30GB virtual disk*

Linear and predictable scalability from 100 VMs / 250 VDIs to 3.000 VMs / 6.000 VDIs

Copyright 2016 FUJITSU

Example: VSAN
Server Technology

PRIMERGY CX Family

- Compute density optimized
  - Cloud
  - HPC
  - Large scale-out computing

An unparalleled mix of quality, efficiency and agility

Copyright 2016 FUJITSU

Example: VSAN Certified Systems

PRIMERGY CX Family

Compute Density Optimized

- Cloud
- HPC
- Large scale-out computing

PRIMERGY RX Family

Rack Optimized

- Versatile
- Efficient
- All-rounder

Vendor	AF4	AF6	AF8	HY2	HY4	HY6	HY8	Total
Fujitsu	■	■	■	■	■	■	■	■
…		■	■	■	■	■	■	
…		■		■	■	■	■	
…							■	
…		■			■	■	■	
…		■		■		■	■	
…				■		■	■	
…		■	■	■	■	■	■	
…				■				
…				■		■		
…	■	■	■	■	■	■	■	■

Source: http://www.vmware.com/resources/compatibility/search.php?deviceCategory=vsan

Copyright 2016 FUJITSU

VSAN
Customer Business Objectives

FUJITSU

FUJITSU

COST REDUCTION (OPEX)

+ Consolidation & Standardization
+ Improved Performance
+ Replacing legacy Storage
+ Optimizing IT - Landscape
+ Lower Risk for Enhancements
+ Deeper Integration into Infrastructure

= First Step towards SDDC

Customer Business: Travel

- VSAN – Version: 6.x
- Node Type: RX 25xx – Series
- Clustersize: ~100 Nodes
- Installation in 2015 and 2016

Comments and Customer considerations:

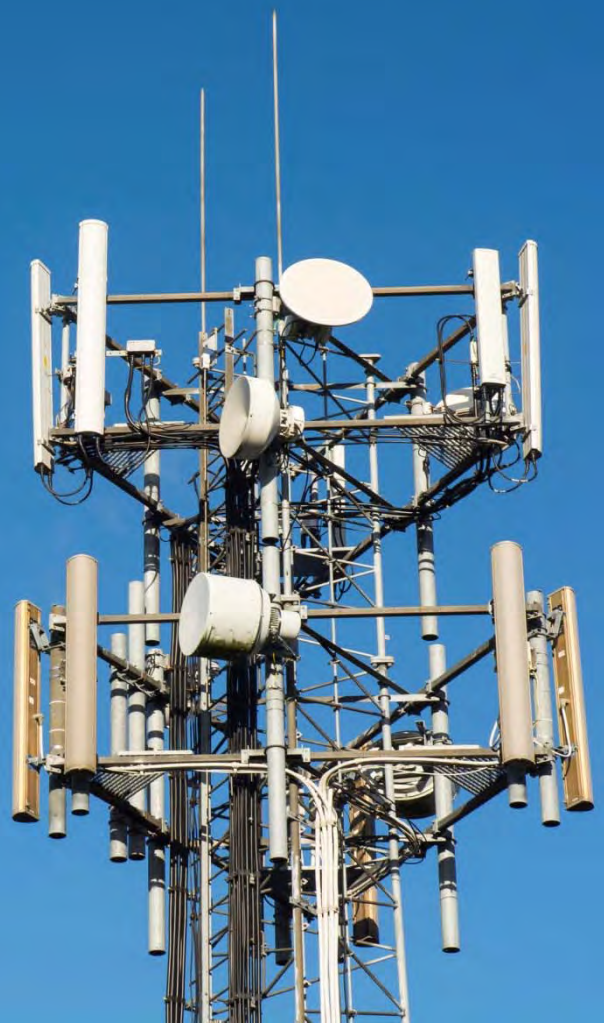
- Won against other major Competitor
- 40% lower costs per VM than other HCI
- FJ convinced in terms of
  - Data Center - Technology,
  - Performance
  - Energy – Efficiency
- Need for massive cost reduction
- VSAN implementation replaces Storage Solution

Customer Business: Telco

- VSAN – Version: 6.x
- Node Type: RX 300S8 – Series
- Clustersize: 128 Nodes
- Installation in 2015
- Full Production

Comments and Customer considerations:

- Focus on Cost reduction and Consolidation
- Replacing Legacy Server/Storage – Landscape
- FJ provided lowest Price



Customer Business: Automotive

- VSAN – Version: 6.x
- Node type: RX 2540 – Series,
- Installation in 2016
- Clustersize:
  Starting with 5 Nodes (fully featured) for VDI.

Comments and Customer considerations:

- Focus on Cost reduction and Consolidation
- Optimizing VDI – Landscape
- FJ provided lowest Price

Customer Business: Healthcare

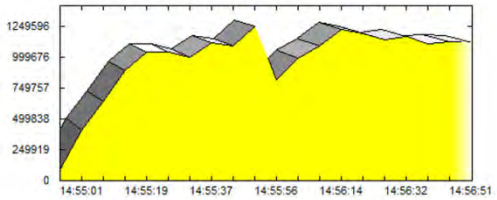
- VSAN – Version: 6.x
- Node type: RX 2540 – Series
- Installation in 2016
- Remote Office / Branch Office (ROBO)
- Over 60 Locations
- Including Networkdevices

Comments and Customer considerations:

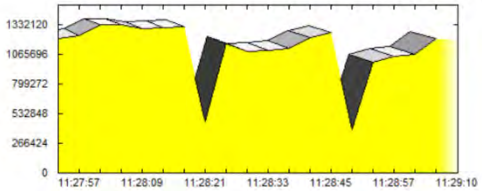
- Focus on Cost reduction and Consolidation
- Centralised Management and Upgradebility
- Reliable Solution

Customer Performance Benchmark: VSAN and Traditional SAN performing equal

1.12M Transactions/pm



1.13M Transactions/pm



Copyright 2016 FUJITSU

VSAN and Traditional SAN performing equal - but with different technologies

Copyright 2016 FUJITSU

Limitations of Software Defined

FUJITSU

1. Licensing of 3rd Party Applications

- Check the appropriate Licensing of f.e. Databases such as Oracle and others
- Complete environment including Cloud-connectivity has to be considered

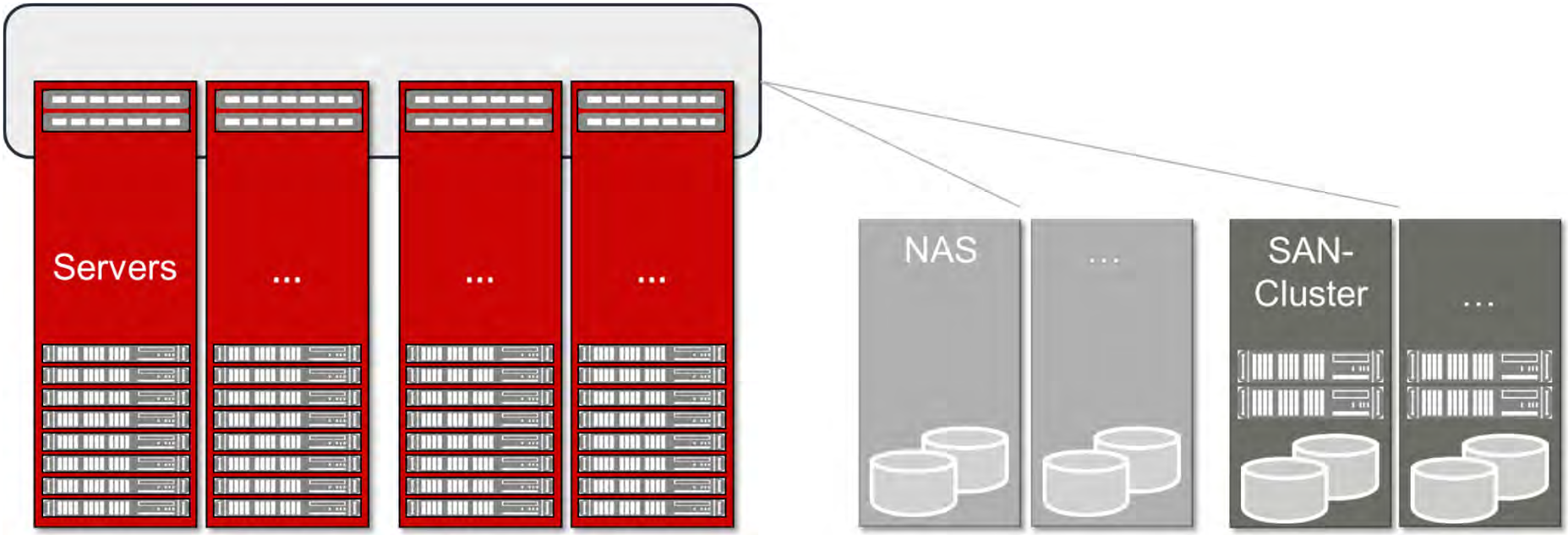
2. Applications with the need for high-amount of resources

- Evaluate the useful implementation of f.e. in-memory Apps such as SAP HANA
- Dedicated and specialised infrastructures for those Apps might be a better idea

3. Driving a clear strategy in terms of Software Defined

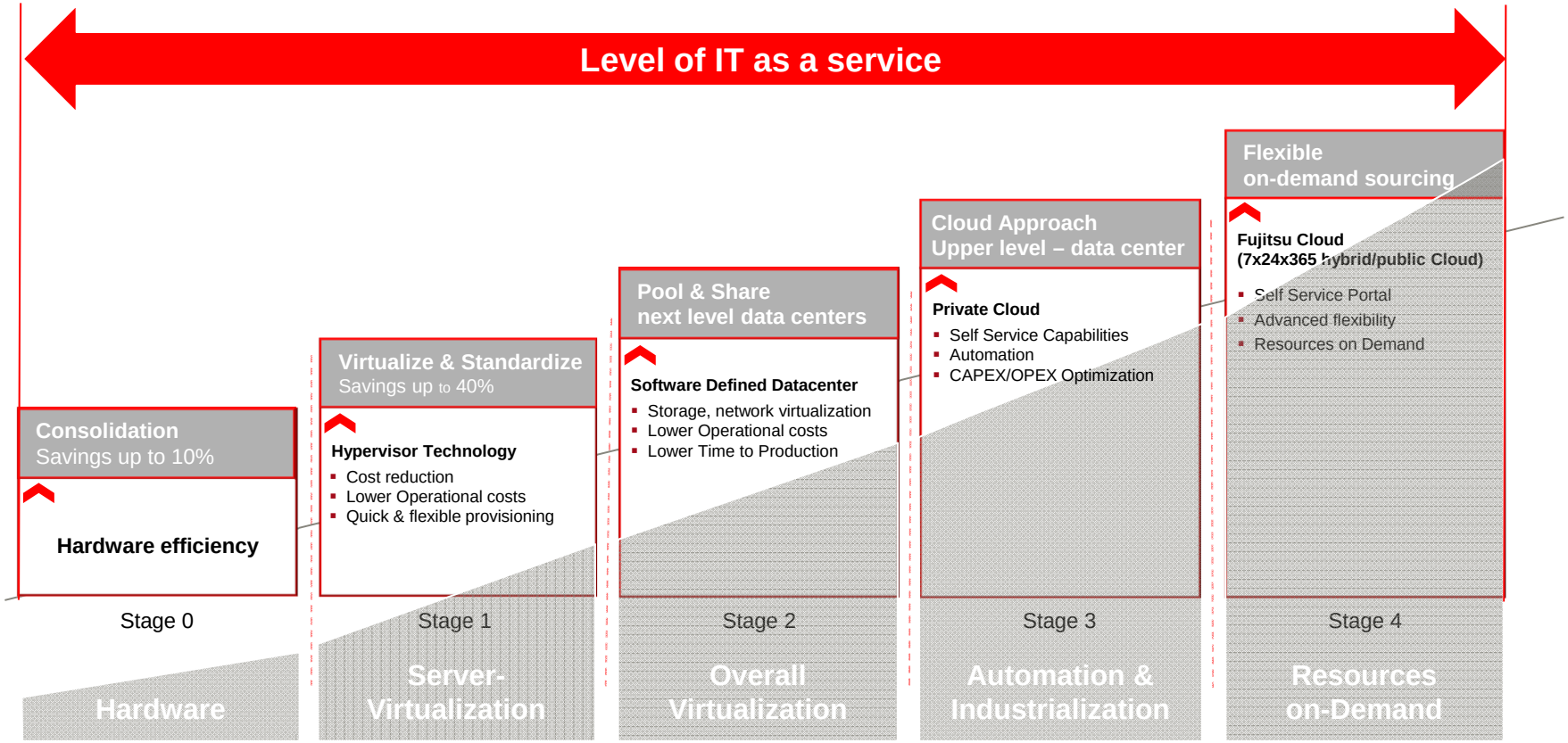
- Software Defined will affect the organization, as well, and is taken place at executive level
- Choose the platform, which fits best for your needs and go straight forward

Phase of Technology transformation
100% SDI? Not yet.



Copyright 2015 FUJITSU

We support you at any Level of IT as a Service



Copyright 2015 FUJITSU

Why Fujitsu?

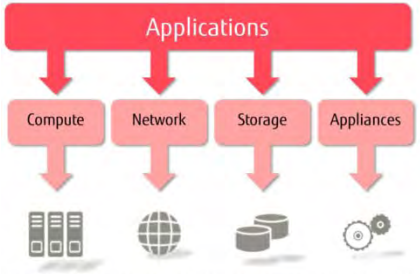
Why Fujitsu?

- Providing best climate solutions for our planet
- Acting compliant to Human Rights and Social Standards
- Major Footprint in x86 High Performance Computing
- 4th largest Service Provider on a global base
- Lowest Annual failure rates in the market
- Dominating the VMmark – Benchmark for Virtualization and Cloud computing
- Best positions in power efficiency

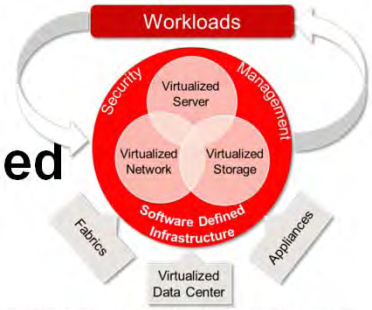
Copyright 2015 FUJITSU

Summary

From Data Center Silos



To Software Defined



Robust IT

Fast IT

The Digital Transformation Will Not Only Enable The Business Centric Data Center – The Result of the Digital Transformation <u>Will Be</u> the Business Centric Data Center

Copyright 2016 FUJITSU

FUJITSU

shaping tomorrow with you