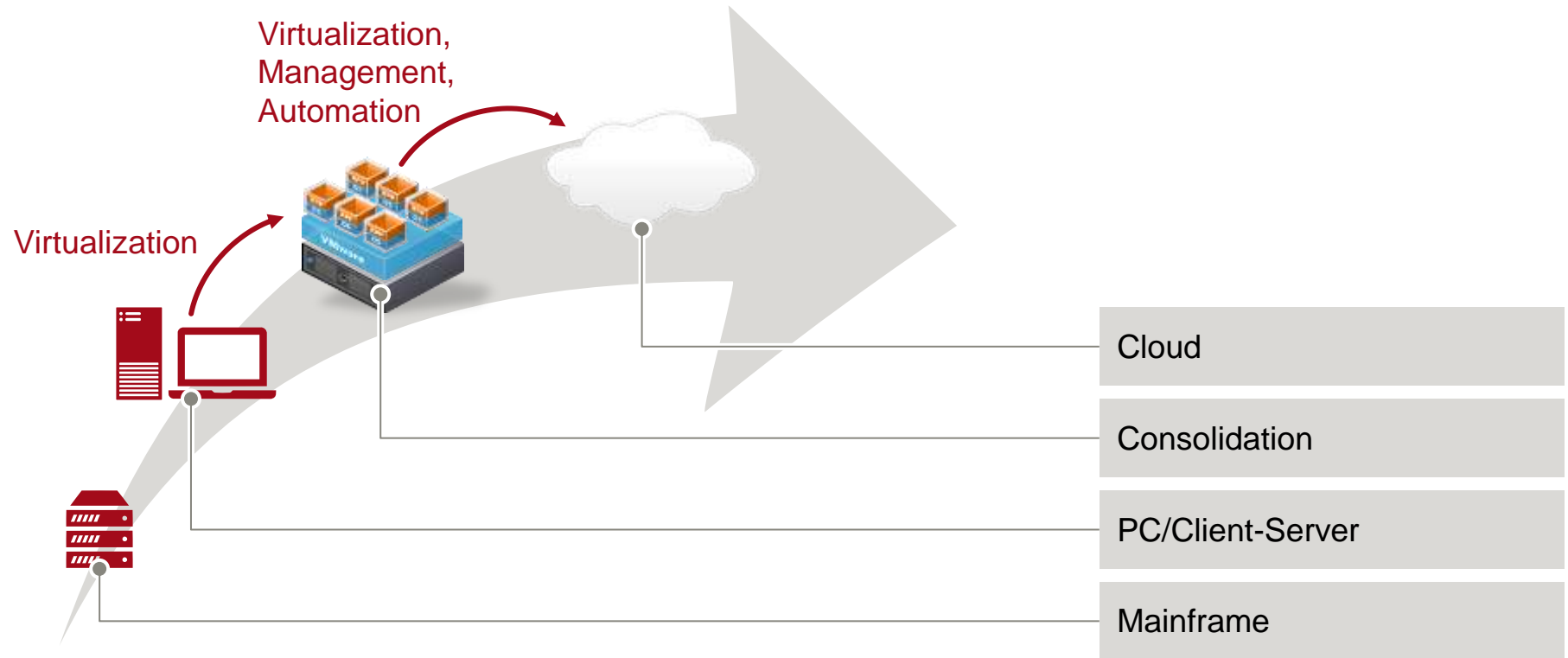


Fujitsu Enterprise Products & Solutions

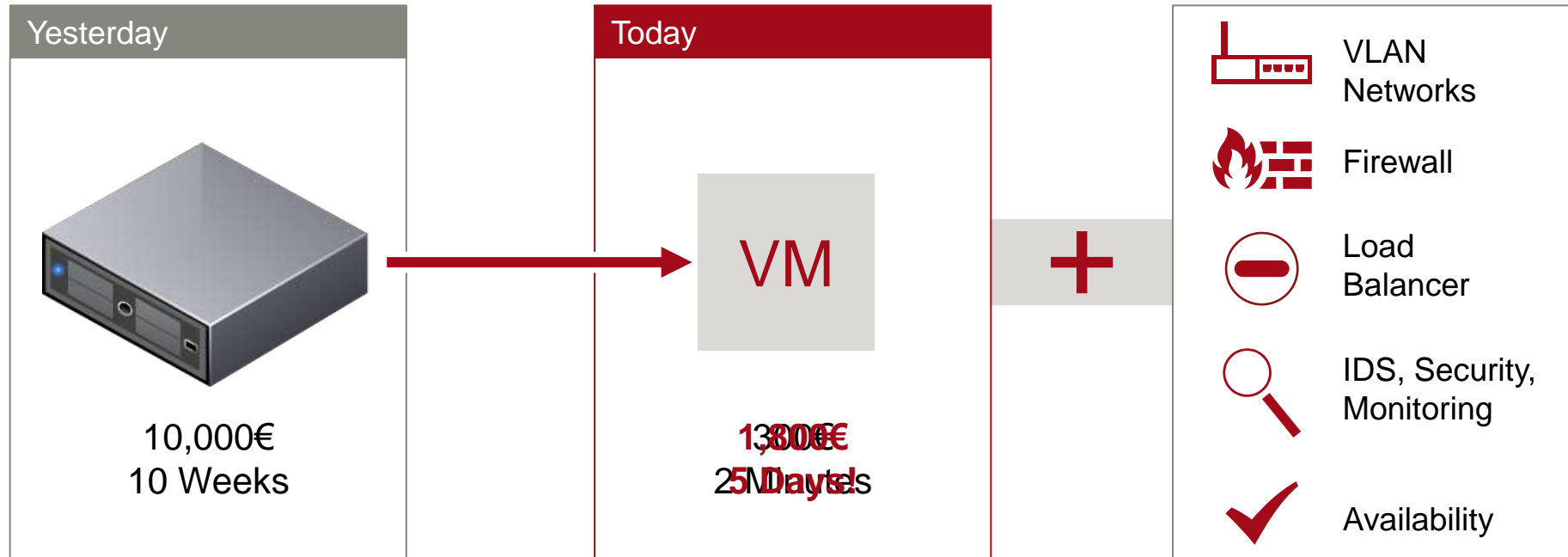
How we envision the future

- The virtual datacenter and beyond ...

The path that leads to a new era of IT



Putting a VM to work is hard on your knees

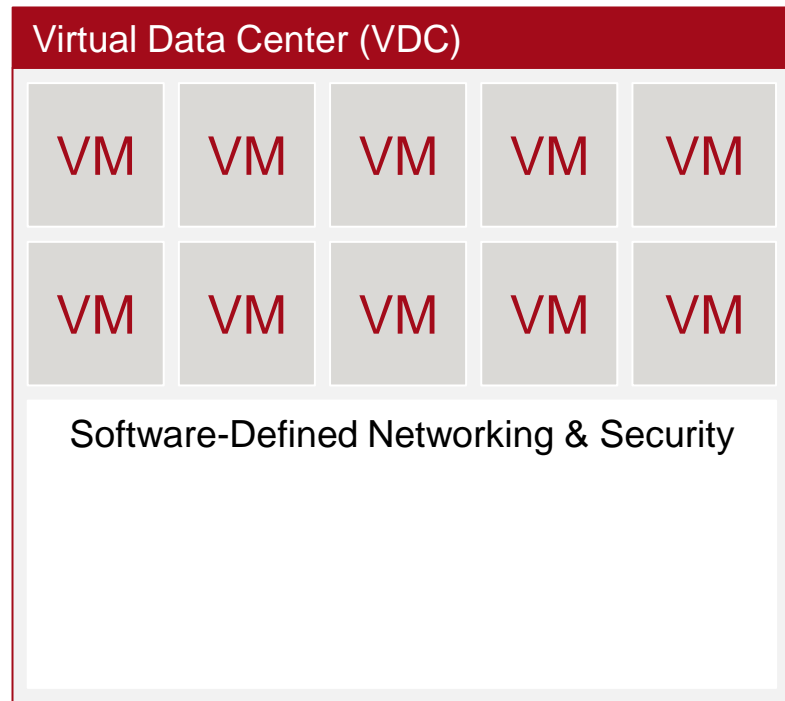


Creating a VM is done easy & fast, but connecting it with non-virtualized resources in the DC requires time, skill & effort.

... why not virtualize everything?

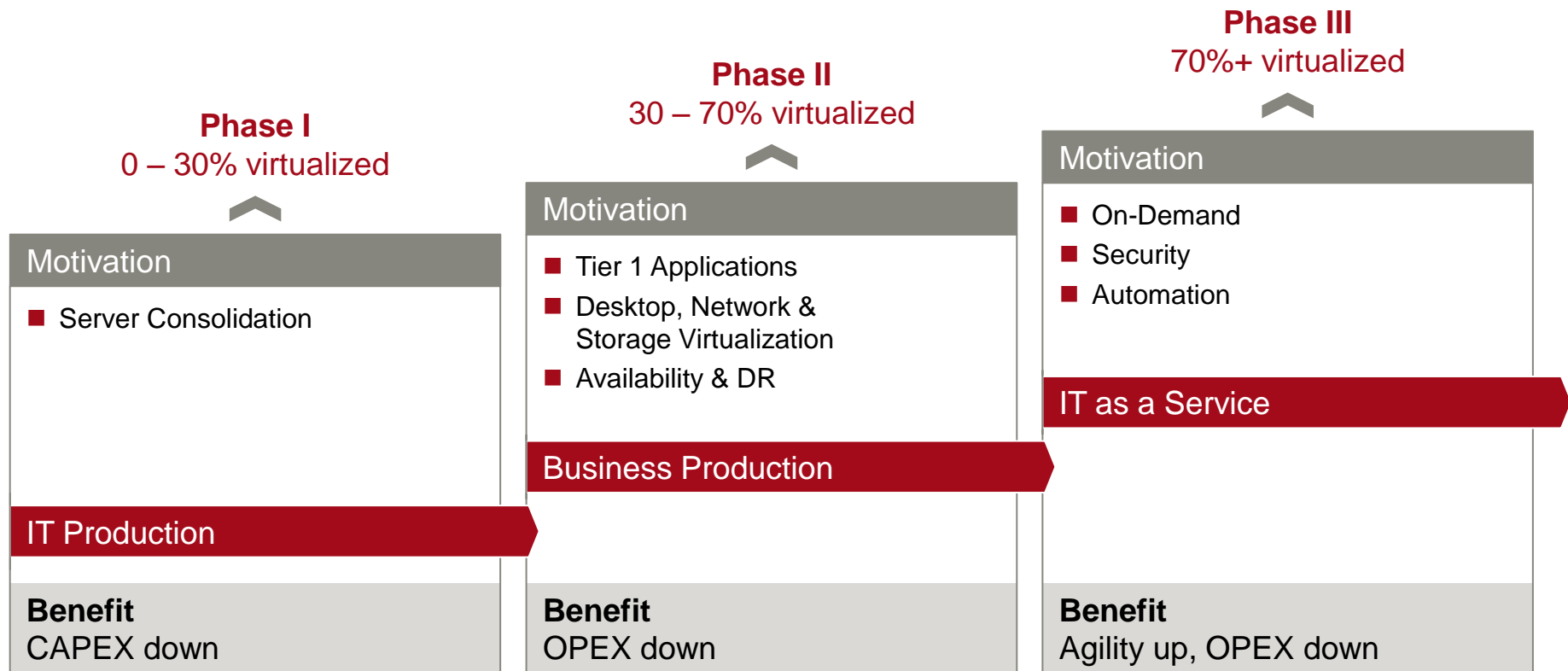


5 days



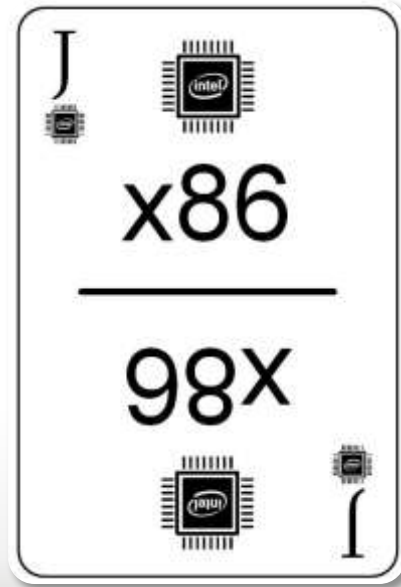
3 minutes

What's needed beyond 70%+ Virtualization?



Fujitsu Strategies for Server, Storage & Networking

Server Strategy



New Generation FUJITSU PRIMERGY Server



PRIMERGY TX300 S8

Our Champion
Tower-Serversystem

PRIMERGY RX200, RX300, RX350 S8

Our three most attractive
Rack-Serversystems

PRIMERGY BX924 S4

High-End Blade Server
for native & converged
networks

PRIMERGY CX400, CX250, CX270 S2

Scale-Out smart
for HPC, VDI
and Cloud Computing

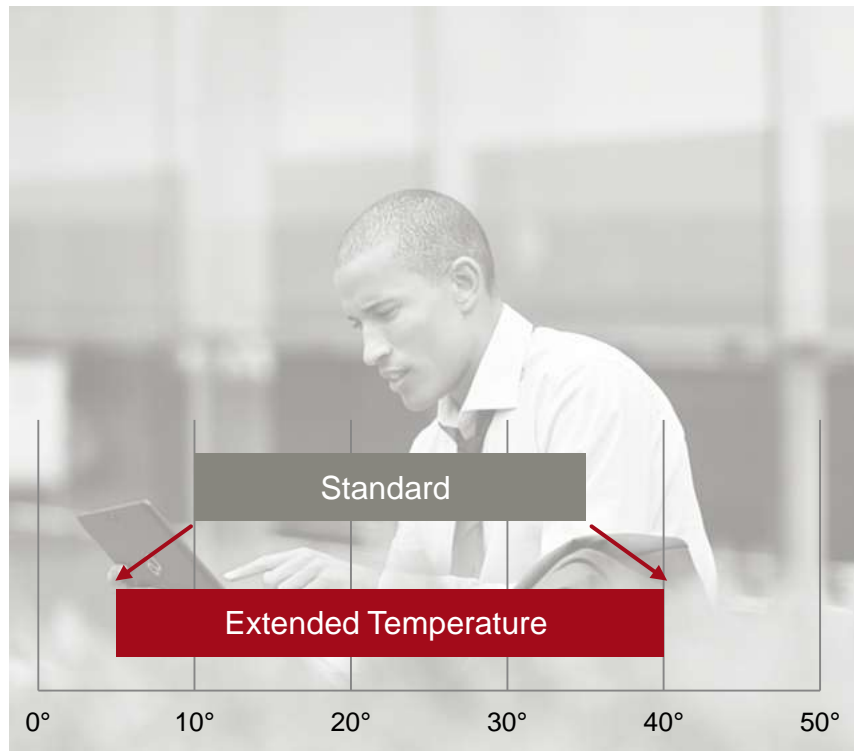
Highlights of the Dual S8 Generation



Highlights of the new generation

- Cool-safe™ Advanced Thermal Design
 - Support higher temperature range of 5 – 40°C
- New PSU with 80Plus Titanium Energy Efficiency
- Performance Boost for databases and BI
 - 12G SSD and 12G RAID controller w/ 2GB Cache
- State-of-the-Art performance thanks to next Intel processor generation with up to 12 cores per CPU
- Enhanced ServerView management and iRMC S4
 - ServerView will become agentless
 - ServerView will strategically integrate with Nagios, VMware vCenter & MS SystemCenter

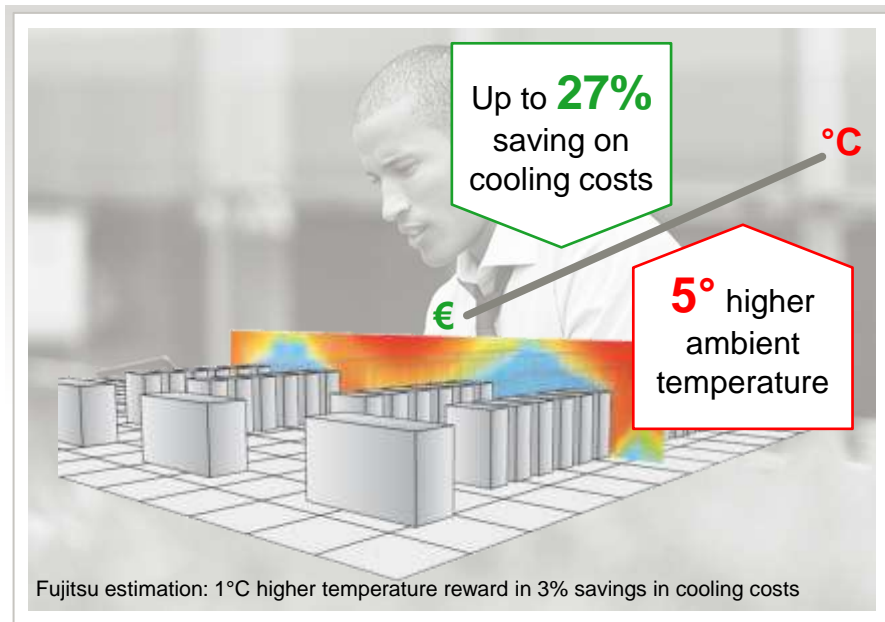
Cool-safe® Advanced Thermal Design



At a glance

- Extended temperature range of
 - 5° Celsius/41° Fahrenheit to
 - 40° Celsius/104° Fahrenheit
- Impact on system
 - Very few limitations (e.g. choice of CPU, no tape support)
 - No restriction on operation time
- Released for
 - Fujitsu PRIMERGY RX300/RX200/RX100 S8

Cool-safe Advanced Thermal Design



Business Benefits

- Up to 27% saving on energy costs for cooling
- Reduced infrastructure costs for new data centers
- "Chiller-less" data center
- System availability guarantee, even under extreme conditions – without any operating time limitation
 - Warm environment of up to 40° Celsius
 - Fresh-air DC cooling (no air conditioning)
 - Extreme weather conditioning (particular for container solutions)

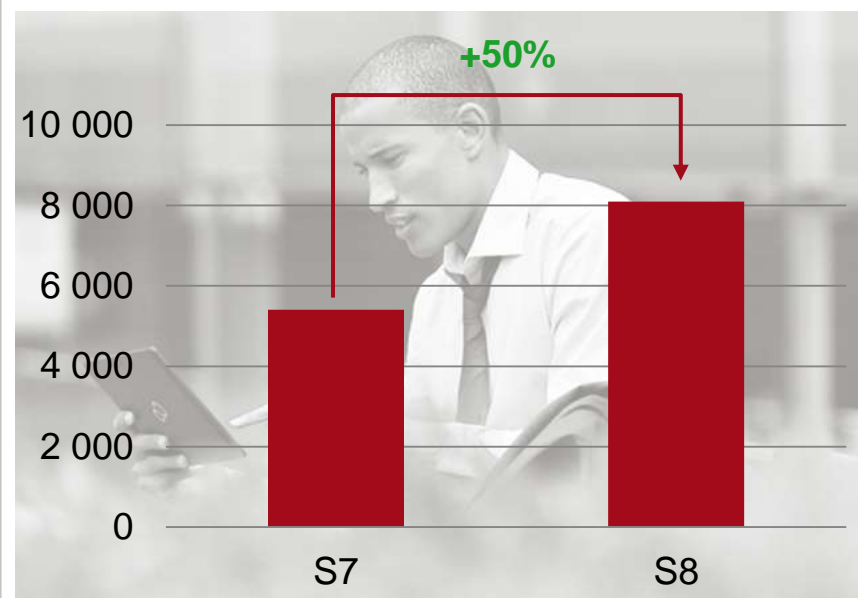


Cool-safe™ Advanced Thermal Design enables saving on cooling costs of up 27%, while ensuring system availability – even under extreme conditions.

New Levels of Energy Efficiency

Energy efficiency

Measured by no. of java operation per watt
(SPECpower_ssj2008)



Energy Efficiency enhancements

- New 800W power supply units with 96% efficiency (80Plus Titanium)
- System improvements (e.g. power and BIOS tunings)
- Simplified power management in ServerView™



Business Benefits

- Run up to 50% more performance per watt overall
OR
- Having the same workload, up to 35% less power is required

Intel confirms new benchmark records



Energy Efficiency

- Most energy efficient system:
PRIMERGY RX300 S8
- **2x World record** in
 - SPECpower_ssj2008¹
 - SAP SD Power²

System Performance

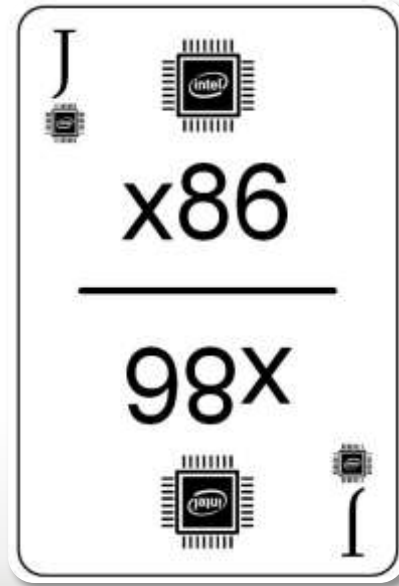
- Most powerful system:
PRIMERGY RX350 S8
- **World record** in
SPECfp_base2006³

Application Performance

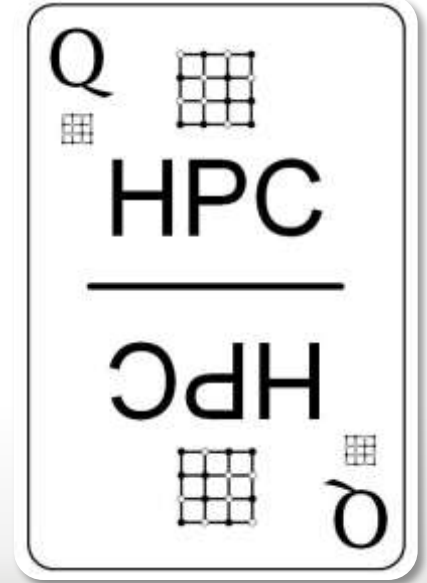
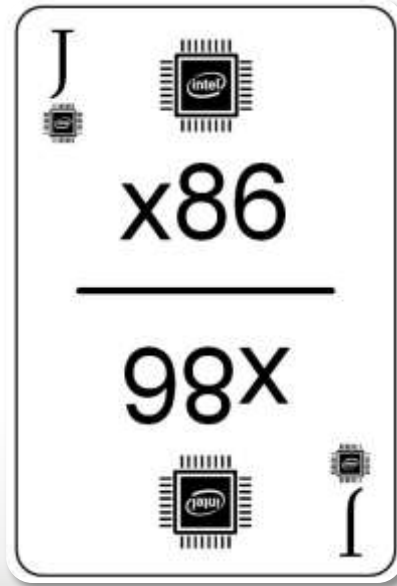
- Best 2-socket SAP SD System:
PRIMERGY RX300 S8
- **Best-in-class** in SAP SD
2tier benchmark⁴

<http://www.intel.com/content/www/us/en/benchmarks/server/xeon-e5-2600-v2/xeon-e5-2600-v2-summary.html> *as of September 10th 2013

Server Strategy



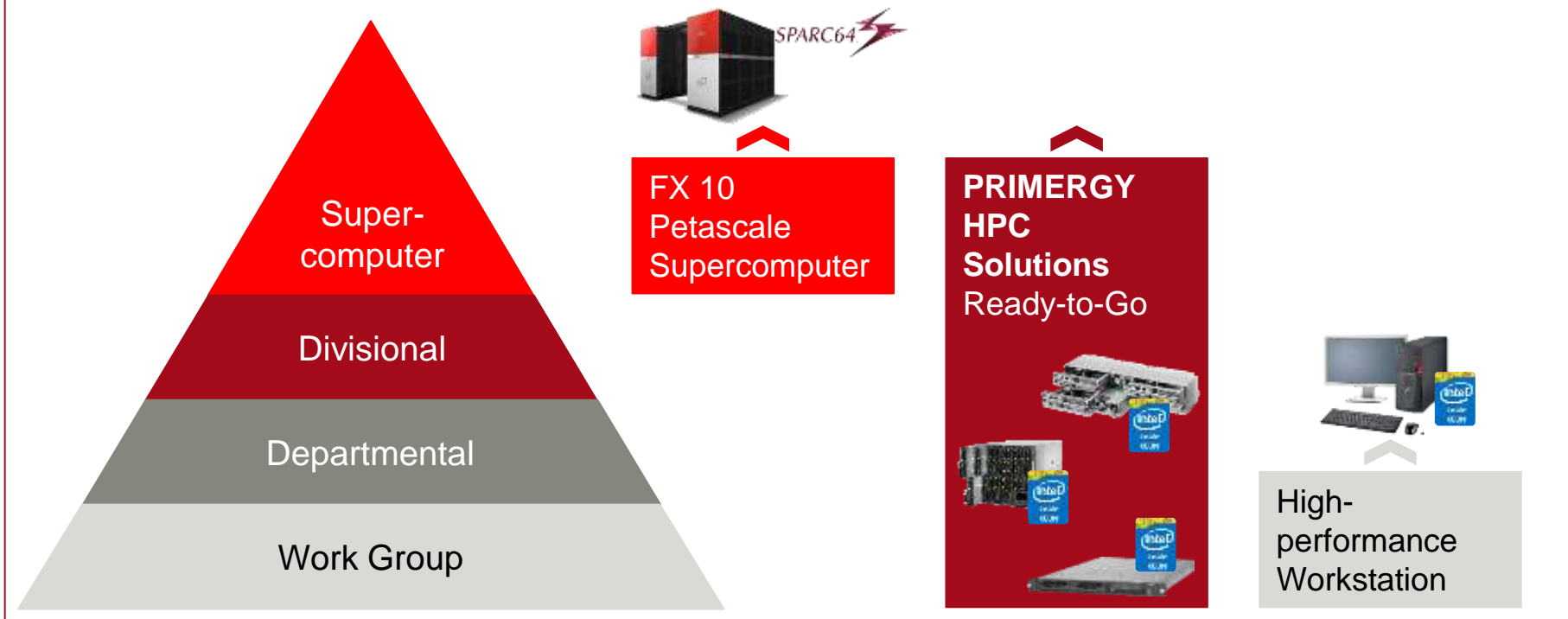
Server Strategy



Fujitsu HPC Platforms



Tailored to Customer Needs



Ready-to-Go Cluster – Your fast track to HPC



Accelerate the implementation of your HPC solution

Predefined Building Blocks

- A budgetary offer can be submitted very fast
- Configuration is verified by benchmarks and provides best price/performance

Cluster built-up in factory

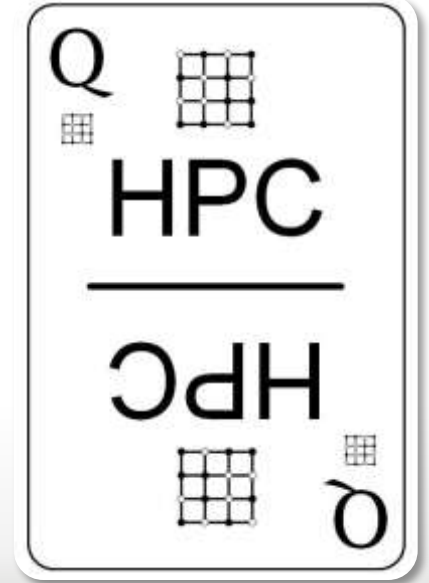
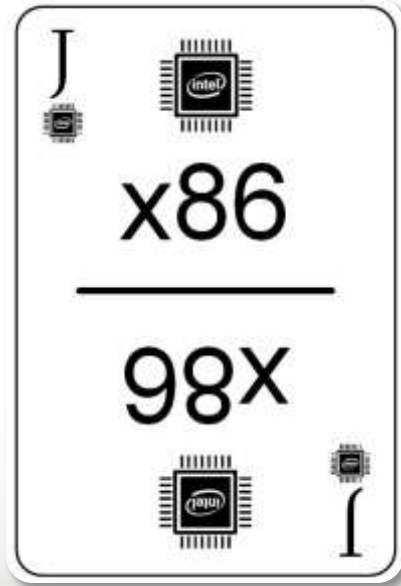
- Automated cluster production
- All HPC components are installed, fine-tuned and tested
- ICR Certification ensures interoperability with ICR certified apps
- Validation of cluster performance
- Short delivery time

Delivery of a Ready-to-go Cluster

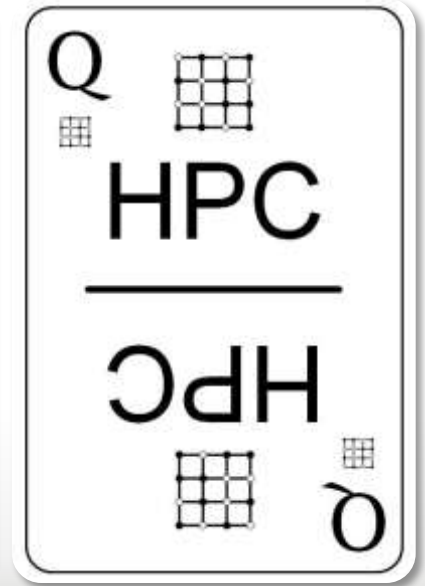
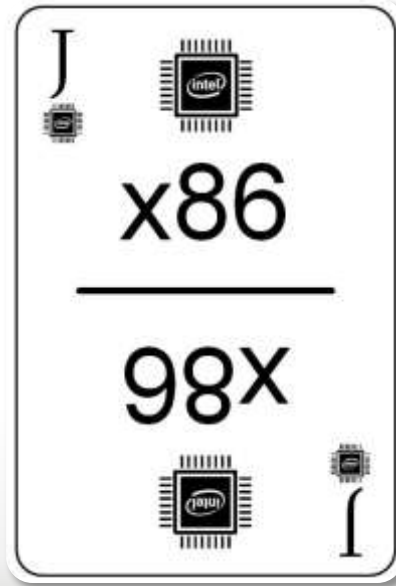
- No Integration/Test at customer site needed
- Easy installation routines
- No administration know-how required
- Fast time to operation, reduced TCO



Server Strategy



Server Strategy



Going Mission Critical? On Linux or Solaris?



PRIMEQUEST Server

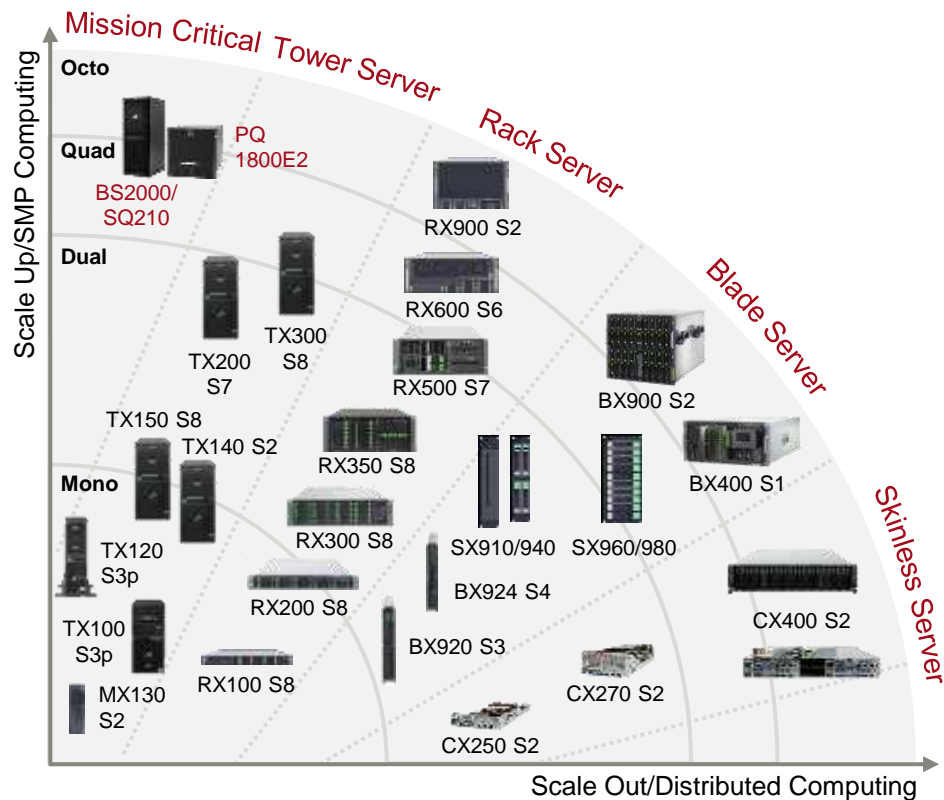
Mission-critical continuity with up to four x86 DualSocket Systemboards, Net- & Storage units



Fujitsu M10 Server

Mission-critical operation with LPAR, Software-on-Chip and latest M10 SPARC processor technology

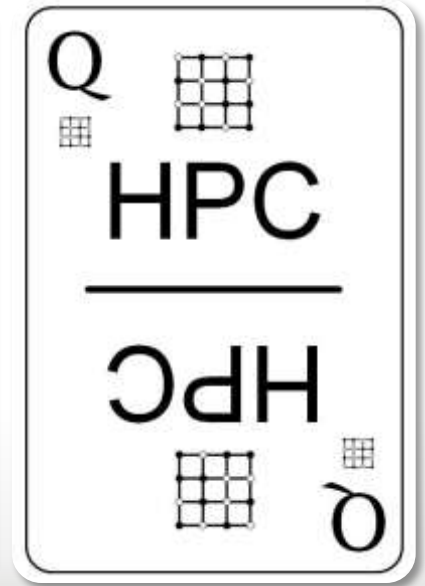
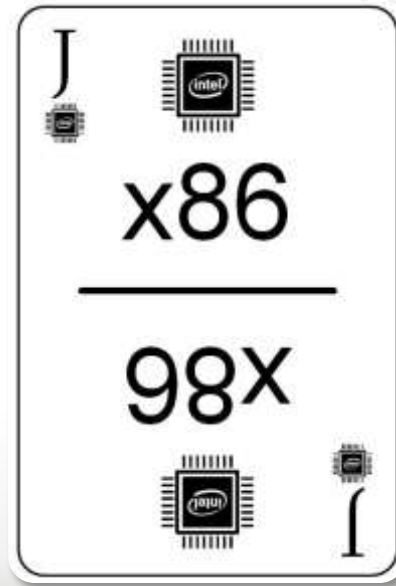
Industry's Most Complete Portfolio



Fujitsu provides the widest reach with x86 Open Standards

- The only vendor to provide Mainframe on x86 technology (BS2000 SQ series)
- Micro-Server to x86 MC & Mainframe
- SME to Fortune 500 customers
- **Complete PRIMERGY HW & Ecosystem**
- Solutions from SBS to Cloud

Server Strategy



Storage Strategy

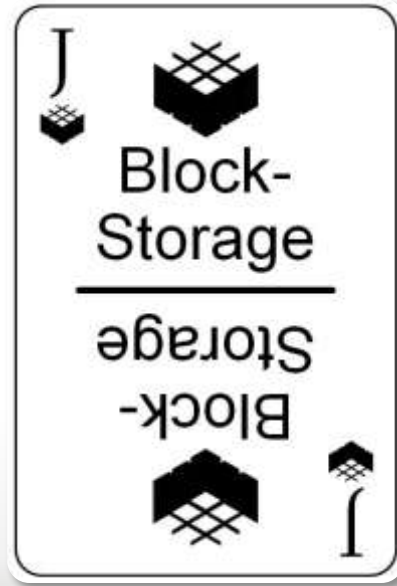


Fujitsu PCIe Flash Storage Strategy



	Technology	Tech-Partner	Best Practice Scenarios
<p>Performance & Cost per allocatable GByte</p>	PCIe Flash Card		Desktop- & Storage-Virtualization where highest local IO and minimum latencies for many, parallel running instances are required
	PCIe Flash Array		Scale-out host infrastructure connected via fibrechannel running a mixed physical & virtualized server environment
	PCIe SSD		Hot-plugable 2.5" drive best used for local, IO-intensive, but single instanced application or database environments

Storage Strategy



Storage Strategy



Cooperation Fujitsu & NetApp



Online Storage Alternatives

Server



ETERNUS DX



Block

Server



ETERNUS DX
NetApp FAS
& NetApp FAS



Unified

Server



NetApp FAS



File

ETERNUS DX – What's new?



Entry



DX60

New scalable ETERNUS DX entry and midrange systems



DX100



DX200



DX500



DX600

High-end



DX8700

New ETERNUS SF V16 storage management software

- Entry and midrange models base on a new performance architecture
- **Deliver unified block and file access**
- The high-end segment has been enhanced for peak loads up to 1 Mio. IOPS
- New management functions across the line for better business support

New ETERNUS DX Performance Architecture



5x

I/O Performance

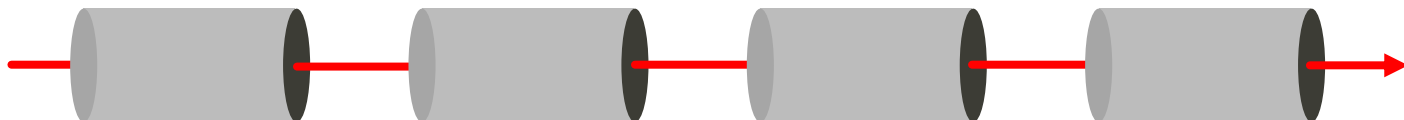
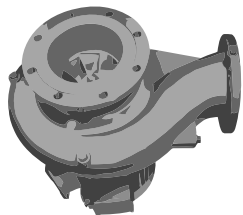
3x

Bandwidth

2x

Bus Performance

Faster Pumps, Bigger Pipes



Multicore
Multithread
SMP 64 Bit

More
DRAM
Cache

SSDs as
additional
cache

SAS3
drive interface

16G
FibreChannel
Infiniband

The ETERNUS DX Formula



New ETERNUS Performance Architecture

5x

I/O Performance

3x

Bandwidth

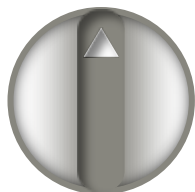
2x

Bus Performance

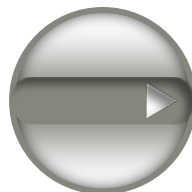
Business-centric resource utilization



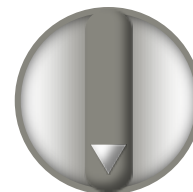
Prio 1



Prio 2



Prio 3



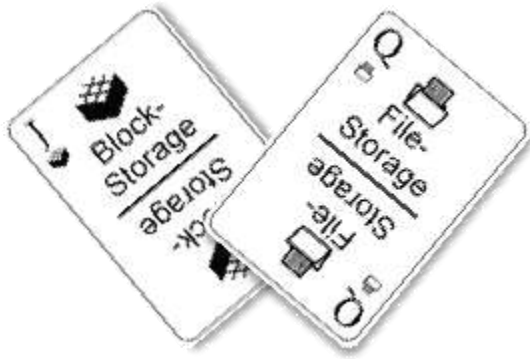
40% higher utilization rates (go from 50% to 90%)

Flexible family architecture for data growth

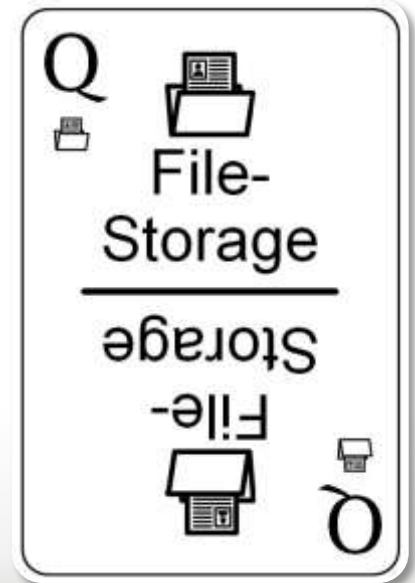
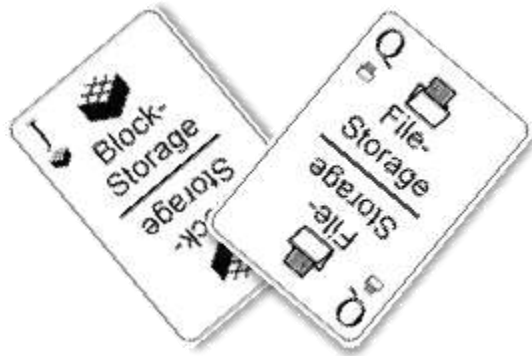
- ➡ A seamless family design allows to grow with the business
 - ETERNUS DX offers extensive scalability within a model
 - ETERNUS DX allows to scale by upgrading to bigger model within the range
- ➡ **Maximum investment protection, minimum operational efforts**



Storage Strategy



Storage Strategy



The Market for Storage Virtualization

✓ Symantec

DataCore ✓



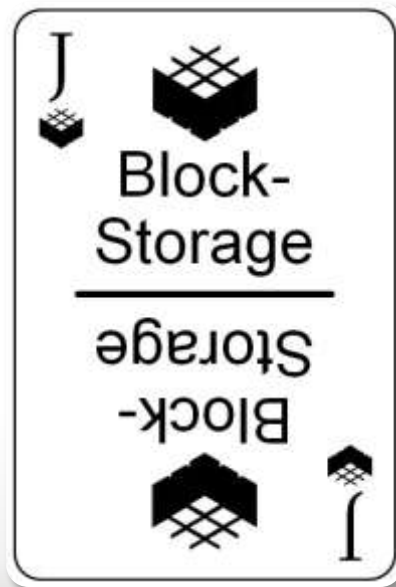
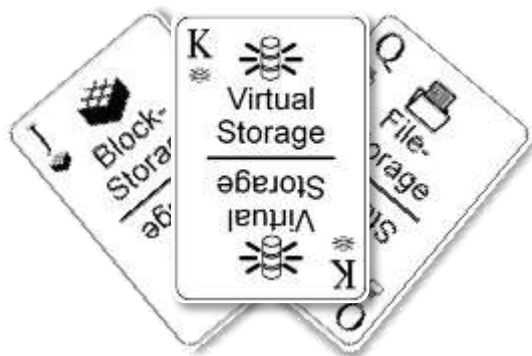
✓ FalconStor



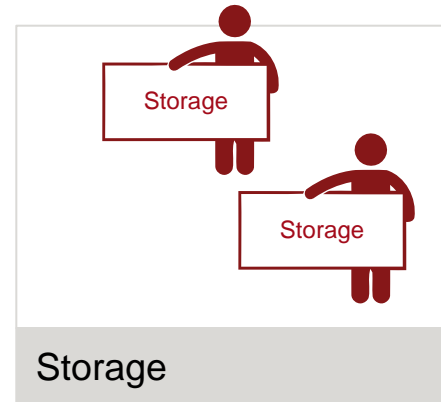
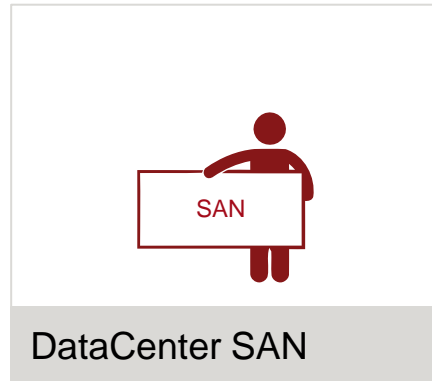
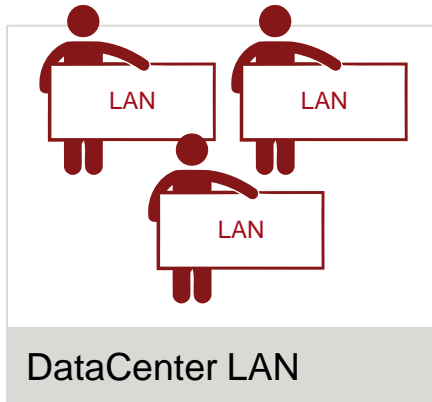
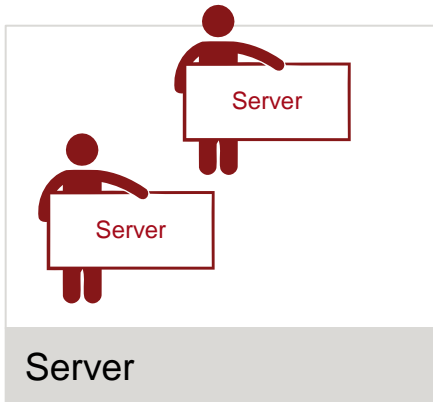
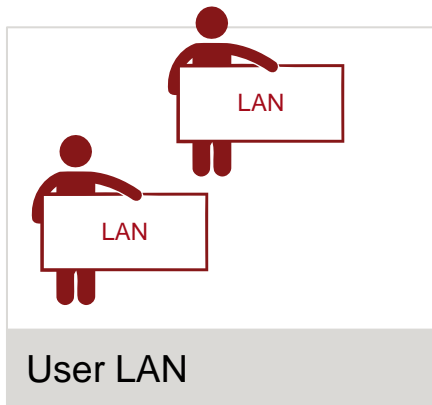
NetApp V-Series ✓



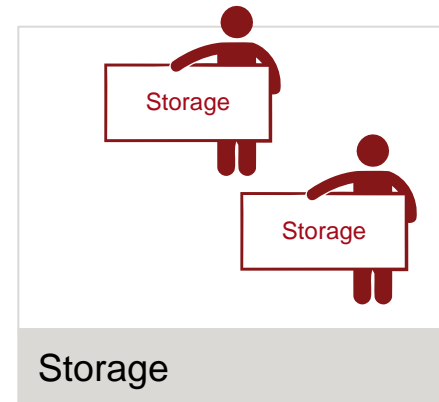
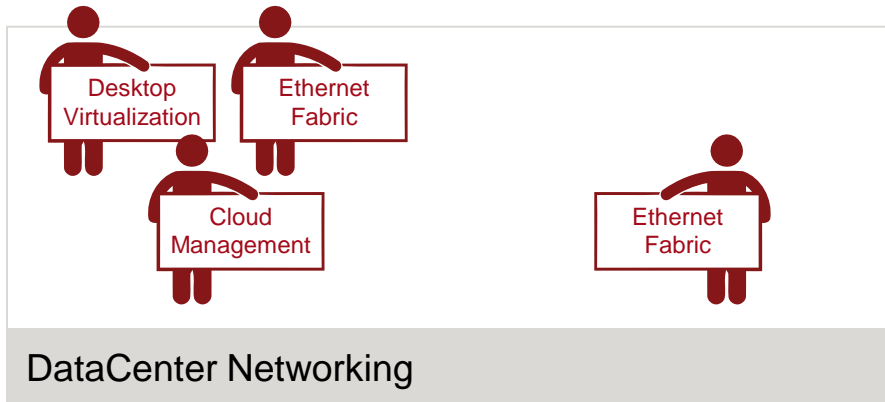
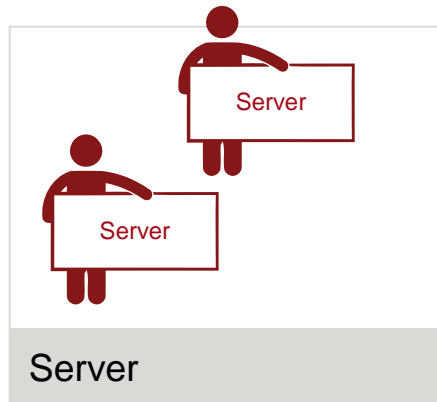
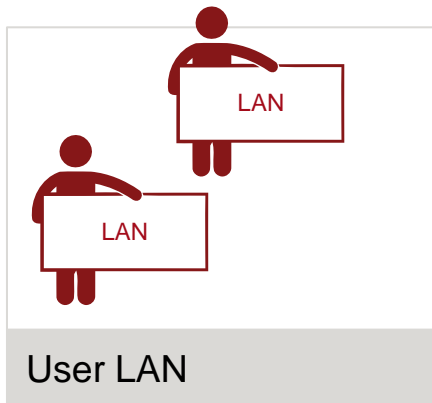
Storage Strategy



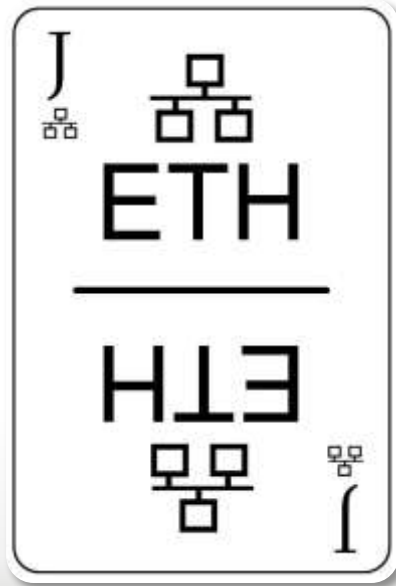
Networking Strategy



Networking Strategy



Networking Strategy



Brocade Ethernet Networking



Standard Ethernet

- Cloud-Optimized Routing
- SDN at Scale
- Efficiency and Visibility
- HyperEdge Architecture
 - 50% lower cost of ownership with investment protection
- OpenFlow at 40GbE and 100GbE
- Hybrid mode to ease SDN transition
- Network telemetry



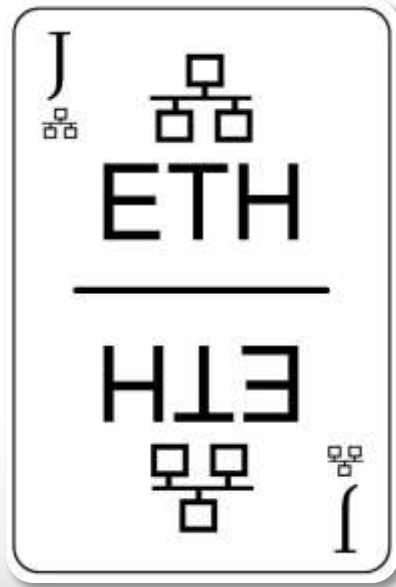
Software Networking

- Early Market Leadership
- Performance & Scale
- Open Architecture
- NFV: Vyatta vRouter
 - Multitenant routing + firewall + VPN
- SDN: Open, Complimentary
- Orchestration
 - OpenStack: Corporate Sponsor
 - OpenDayLight: Platinum member
 - Partner Orchestration

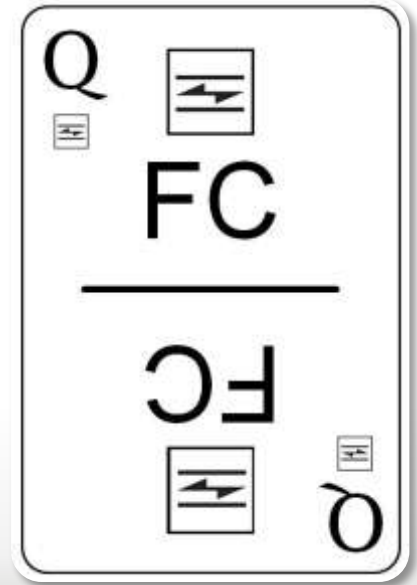
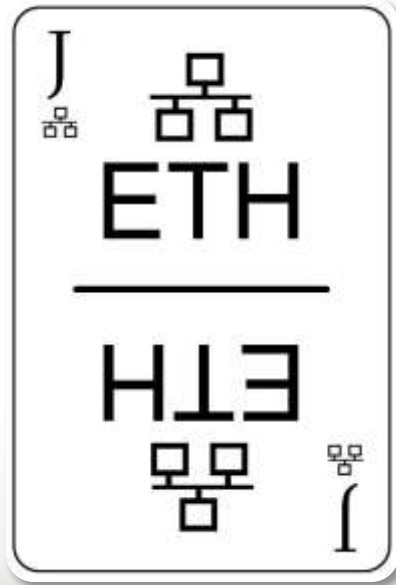


Industry's Most Complete Multitenant Data Center Solution.

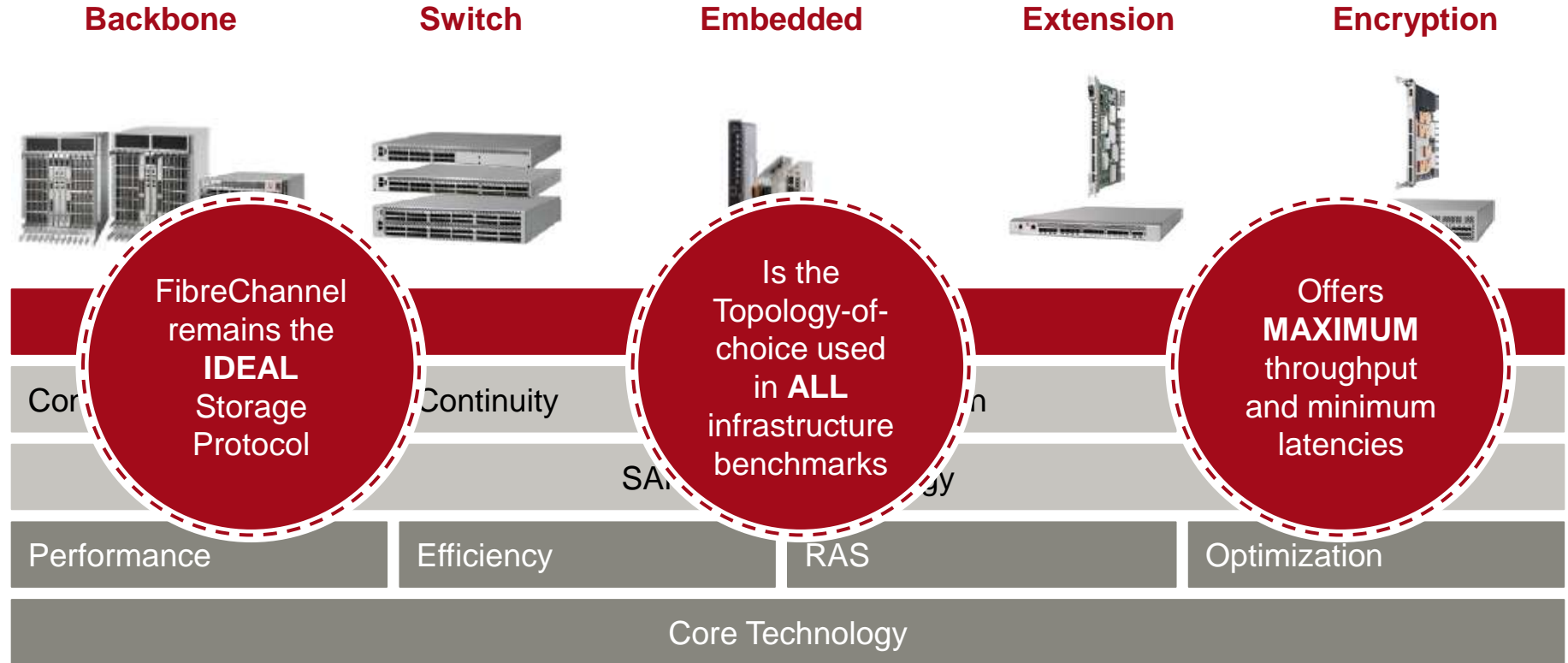
Networking Strategy



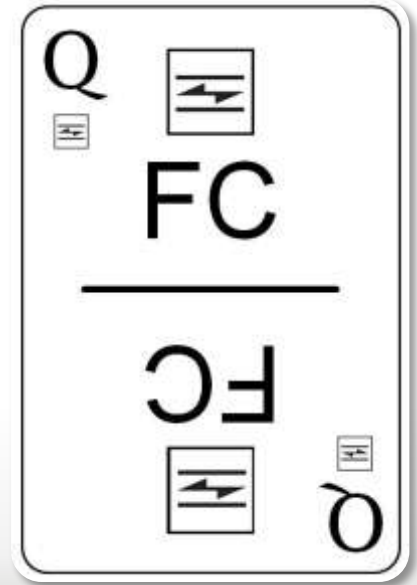
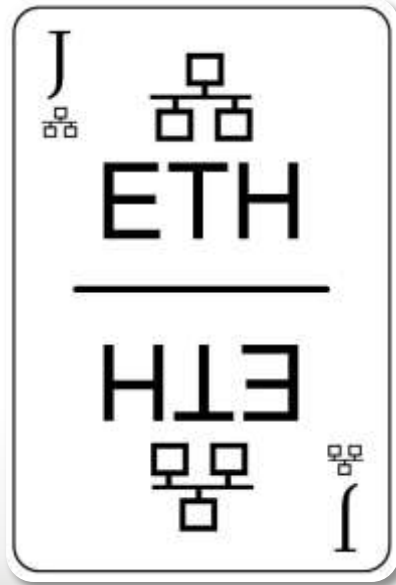
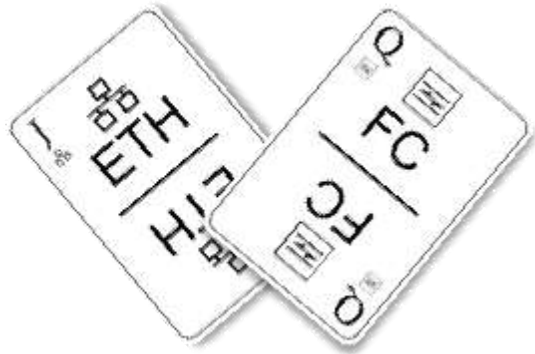
Networking Strategy



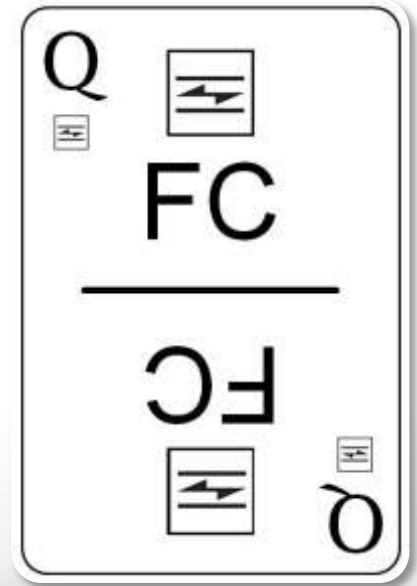
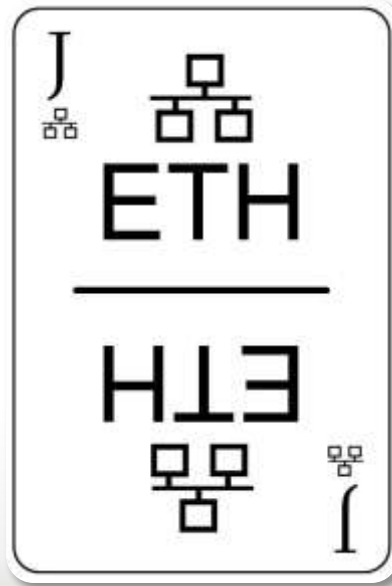
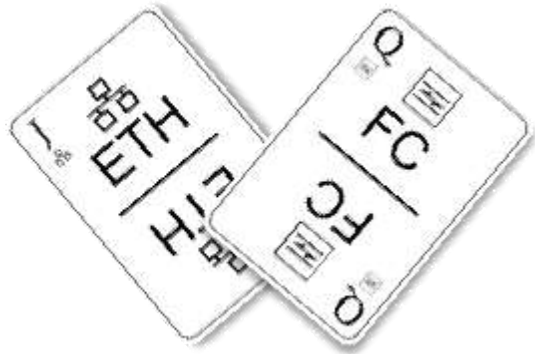
The consistent FC Roadmap 8>16>32 Gbit/s



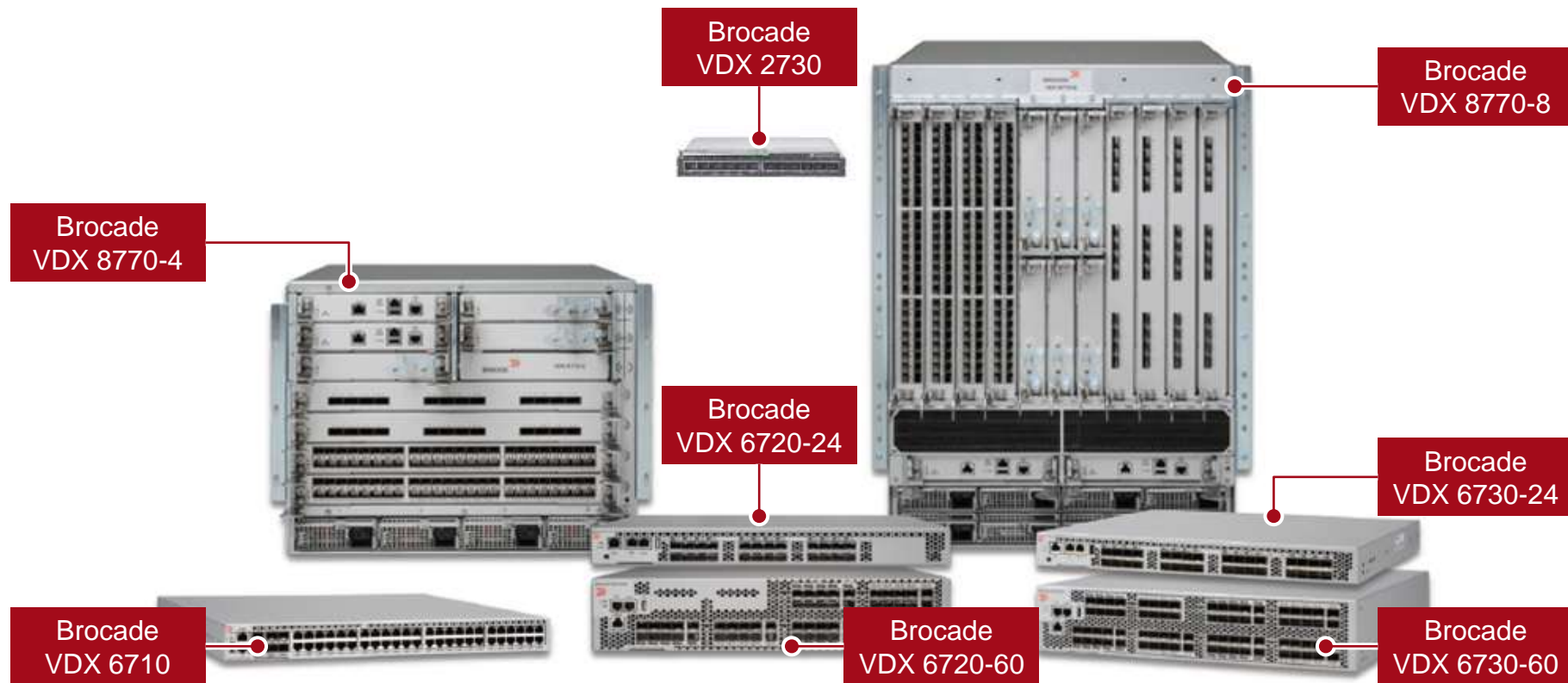
Networking Strategy



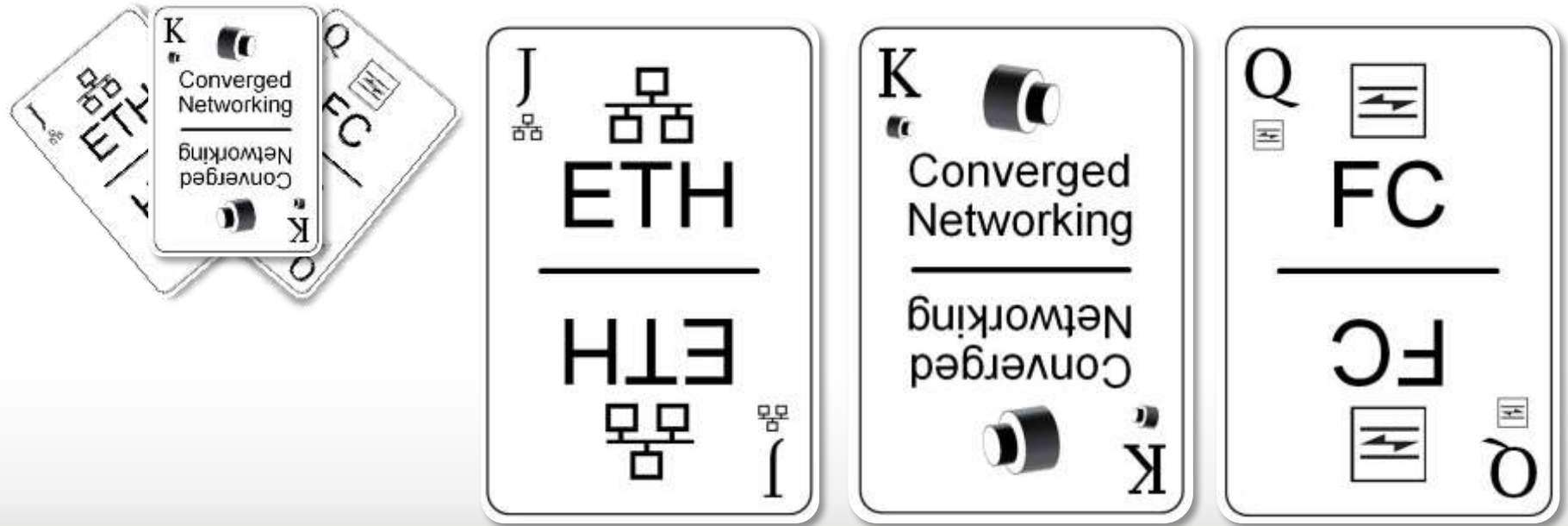
Networking Strategy



The Ethernet Fabric Productline VDX



Networking Strategy



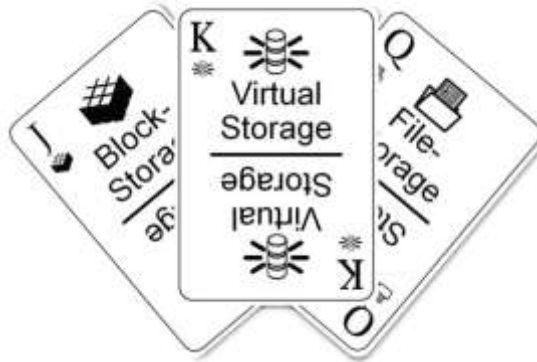
Fujitsu Enterprise Products Strategy



Server

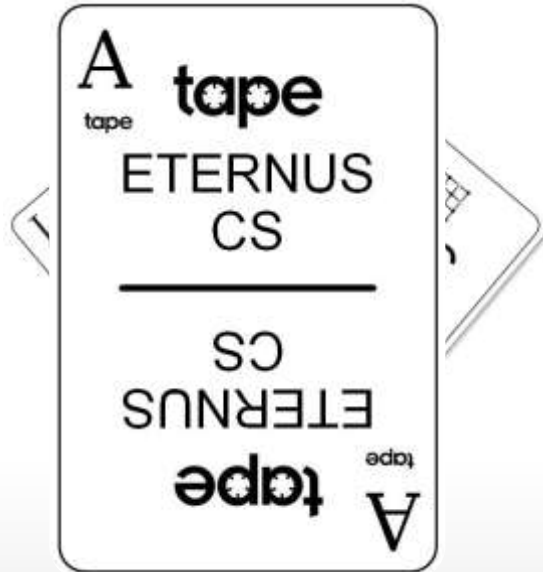


Storage

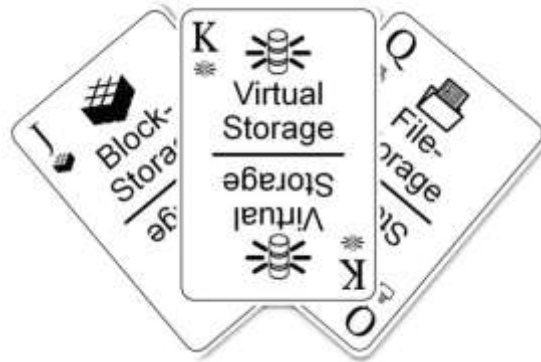


Networking





Storage



Networking



Why to think about data protection?

1

Round about 75% of data are backup data



2

Backup data keep your business up and running after data loss, helps to keep your SLAs



⇒ Lower SLAs to save money is no option

Now the question rises

- If data protection is a must...
- And if saving money is a must...

How to save your Data ...

...and your Budget?



An efficient data protection solution is the answer!

Data protection requirements are different...

Example for data protection classification:

Bronze

Backup topology

- 1 Location
- 1 copy is enough (tape or disk)

Low SLA:
Focus on fast Backup

Silver

Backup topology

- 1 or 2 Locations
- 1 or 2 copies on disk
- At least 1 copy on tape

High SLA:
Align backup
and recovery

Gold

Backup topology

- 2 Locations
- At least 2 copies on disk
- At least 2 copies on tape
- 1 tape copy to a safe (vaulting)

Highest SLA:
Focus on maximum
Data Availability and
fast Recovery

Data protection based on business priorities

Example for data protection classification:

Bronze

Backup topology

- 1 Location
- 1 copy is enough (tape or disk)

ETERNUS CS800 – dedup appliance

Silver

Backup topology

- 1 or 2 Locations
- 1 or 2 copies on disk
- At least 1 copy on tape

Gold

Backup topology

- 2 Locations
- At least 2 copies on disk
- At least 2 copies on tape
- 1 tape copy to a safe (vaulting)

ETERNUS CS8000 – unified data protection appliance

ETERNUS CS800 – Easy Backup to Disk



- ➔ Simplifying backup to disk
- ➔ Easy setup
- ➔ Reduce disk capacity requirements
- ➔ Basic disaster protection
- ➔ Tape connectivity for economical long term storage

ETERNUS
CS800

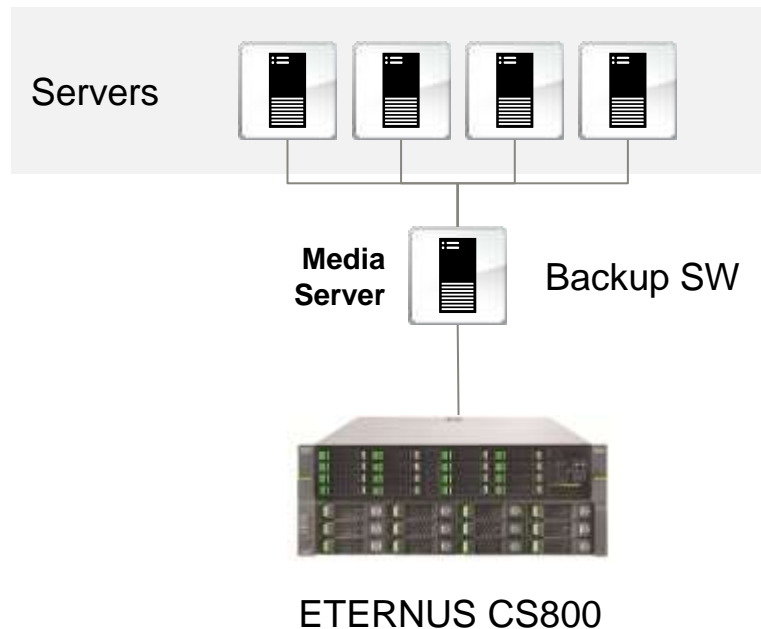


Backup to disk (NAS/VTL)

Deduplication

Replication

Bronze classification



Ensure the Service Level

- 1 Location
- 1 copy on disk

Benefits with ETERNUS CS800

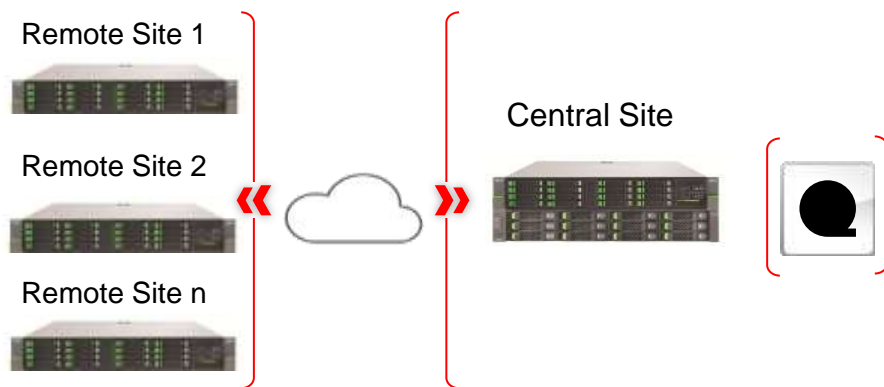
- Avoid tape management
- VTL/NAS interface
- Global deduplication

Silver classification



Ensure the Service Level

- 1 or 2 Locations
- 1 or 2 copies on disk
- 1 copy on tape

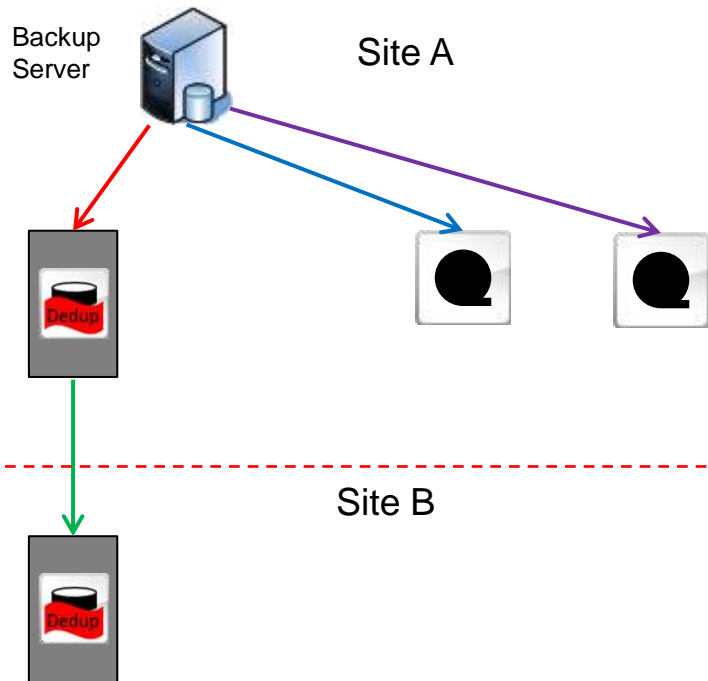


Benefits with ETERNUS CS800

- Integrated replication
- Reduced bandwidth
- Branch office concept

Gold classification?

Typical dedup appliance solution



Ensure the Service Level

- 2 Locations
- At least 2 copies on disk
- At least 2 copies on tape

If complexity rises – then costs explode

- Backup window
- Network burden



ETERNUS CS8000 – unified data protection



ETERNUS CS8000

Virtualizes all target systems creating one logical platform

- Radically consolidates IT infrastructure
- Simplify backup, accelerate processes and provide flexible service levels regarding speed, capacity and costs

Black box



Production Data

Mainframes

UNIX Servers

x86 Servers



ETERNUS CS8000 Unified Data Protection Appliance

Target system virtualization for
backup, archive, compliant archive, second-tier file storage



Disk



Tape



Dedup
Disk



WORM
Disk



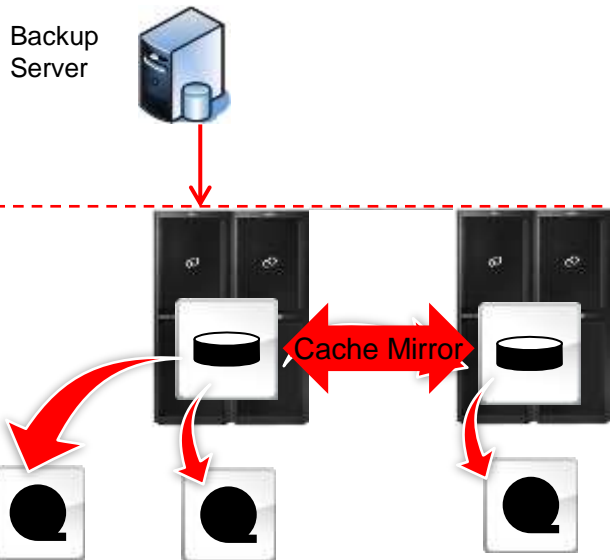
WORM
Tape



(Cloud)

Gold classification!

With ETERNUS CS8000



Ensure the Service Level

- 2 Locations
- At least 2 copies on disk
- At least 2 copies on tape

Benefits with ETERNUS CS800

Radical consolidation and simplification

- Backup window
- Network burden

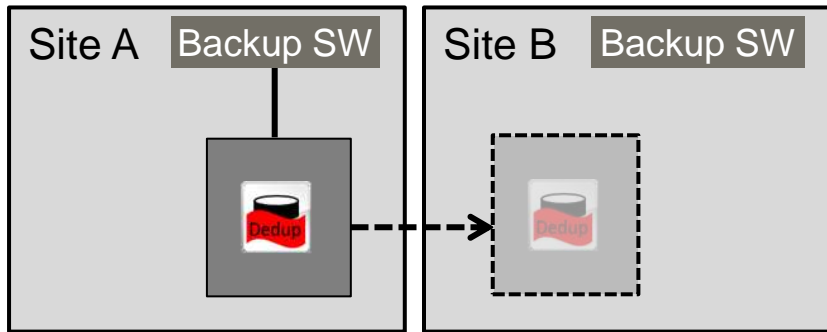


Worldwide unique split-site system:

- One logical and intelligent system
- Multiple copies automatically managed

Replication vs. Cache Mirror

Typical dedup appl.: Replication

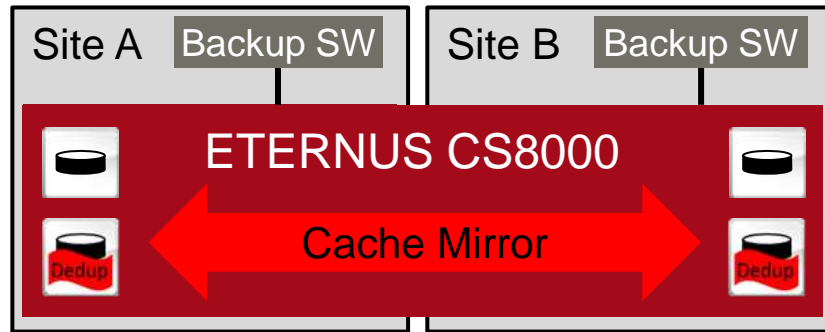


■ Two different Systems

- Replication initiated by Backup SW
- Dedup appl. executes and forgets

⇒ No access to the copy at the second site without complex manual administration tasks

ETERNUS CS8000: Cache Mirror



■ One logical and intelligent system

- Automated copy management; transparent for Backup SW; access at both sites

⇒ System runs even after complete site failure
⇒ Dramatically reduced administration efforts



The only one system in the entire world which can do this

Exponential annual data growth

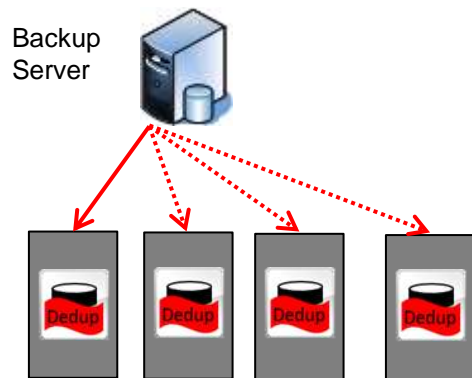
The challenge

- 75 % of data are backup data
- Pressure in providing enough storage capacity
- Higher data protection requirements make data growth even worse
- Limited backup windows
- Performance and organization issues in restore processes



Data growth

Typical dedup appliance solution

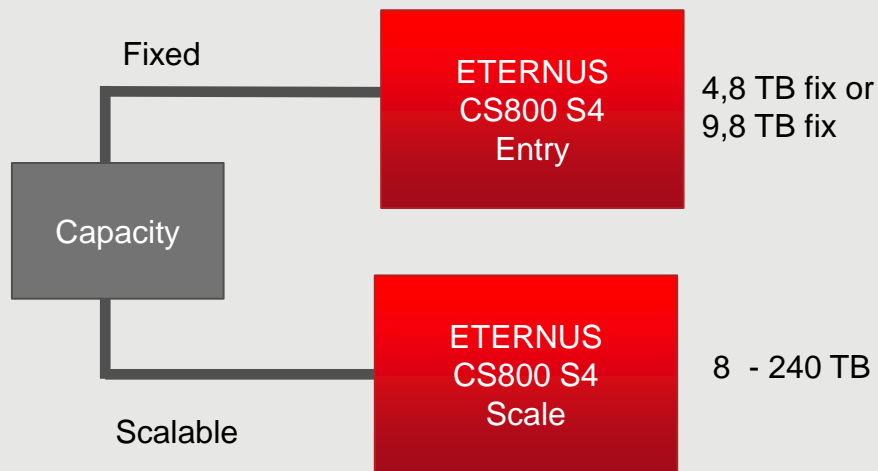


If more deduplication appliances are necessary (capacity/performance)

- Admin effort (**12 admins**)
- Infrastructure cost
- Capacity utilization



ETERNUS CS800: Leading scale-up architecture



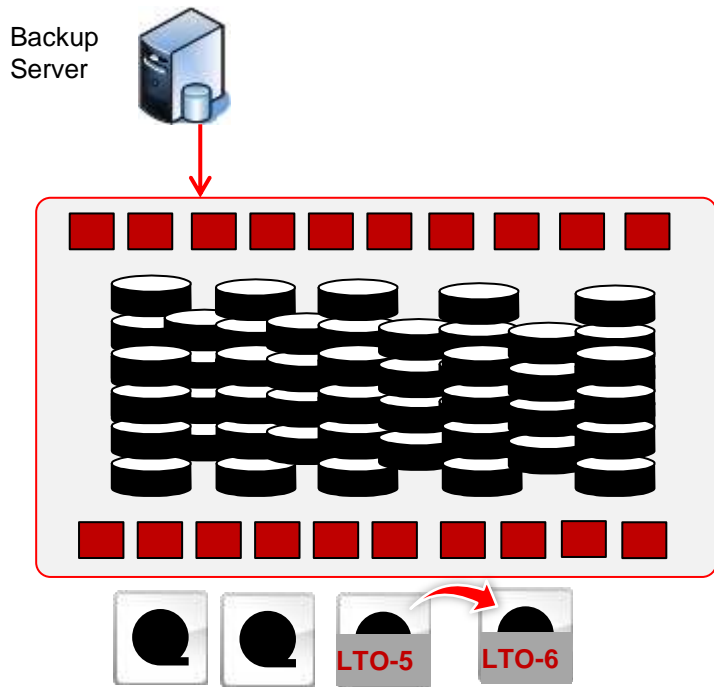
Investment protection

- Start with the capacity that fits to your environment
- No unnecessary pre-investments
- Simply add more capacity if needed
- No need to migrate to bigger model

ETERNUS CS8000:

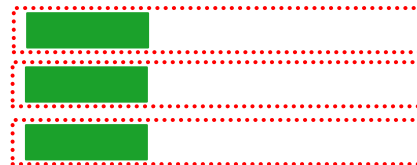
Unique scale-out grid architecture

With ETERNUS CS8000



If more capacity/performance is necessary

- Admin effort (**1 admin**)
- Infrastructure cost
- Capacity utilization



- Disk: From 7 TB up to 15 petabyte
- Tape: Up to the exabyte magnitude
- Automated tape migration
- Up to 141 TB/h

One system – providing all Service Levels at lowest possible costs

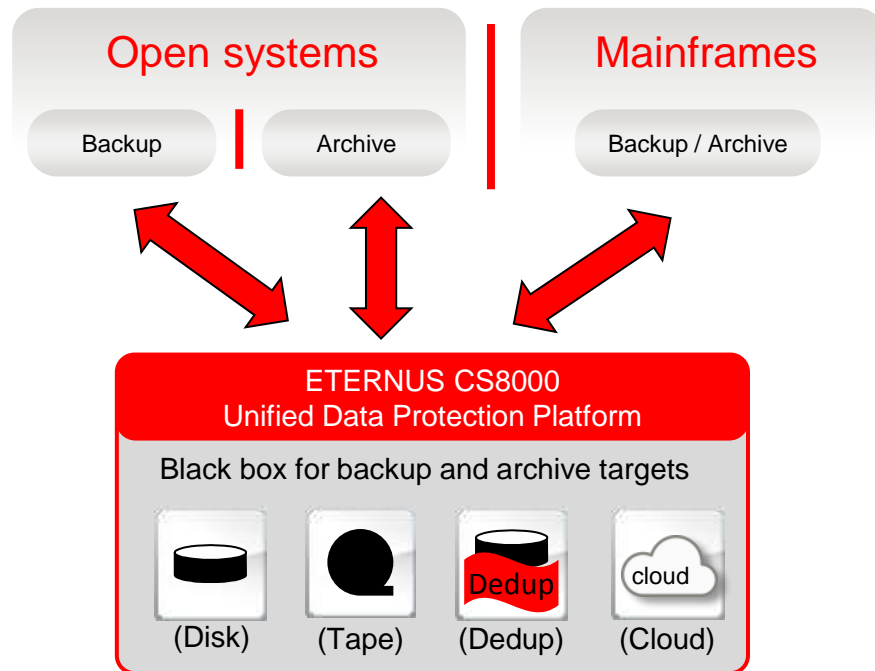
Furthermore: Optimize archive and second-tier file storage

■ Unified Data Protection Platform

- All backup and archiving data are written on ETERNUS CS8000

■ Optimized archive platform

- Second-Tier Storage
- Archive
- Compliant Archive
- Stores data on disk, tape, WORM media
- KPMG AG Certification
- HSM for the right media mix for various SLAs
- Integration of SecDocs for trusted long term storage



Why ETERNUS CS800

Why ETERNUS CS8000



ETERNUS CS800



Backup to disk
(NAS / VTL)

Deduplication

Replication

- Cost efficient backup to disk through data deduplication
 - Easy integration of remote locations
 - Easy to setup and operate
- ⇒ **Ideal solution for SMB**
for a backup to disk strategy with deduplication

ETERNUS CS8000



ETERNUS CS8000
Unified Data Protection Platform

Black box for backup and archive targets



(Disk)



(Tape)

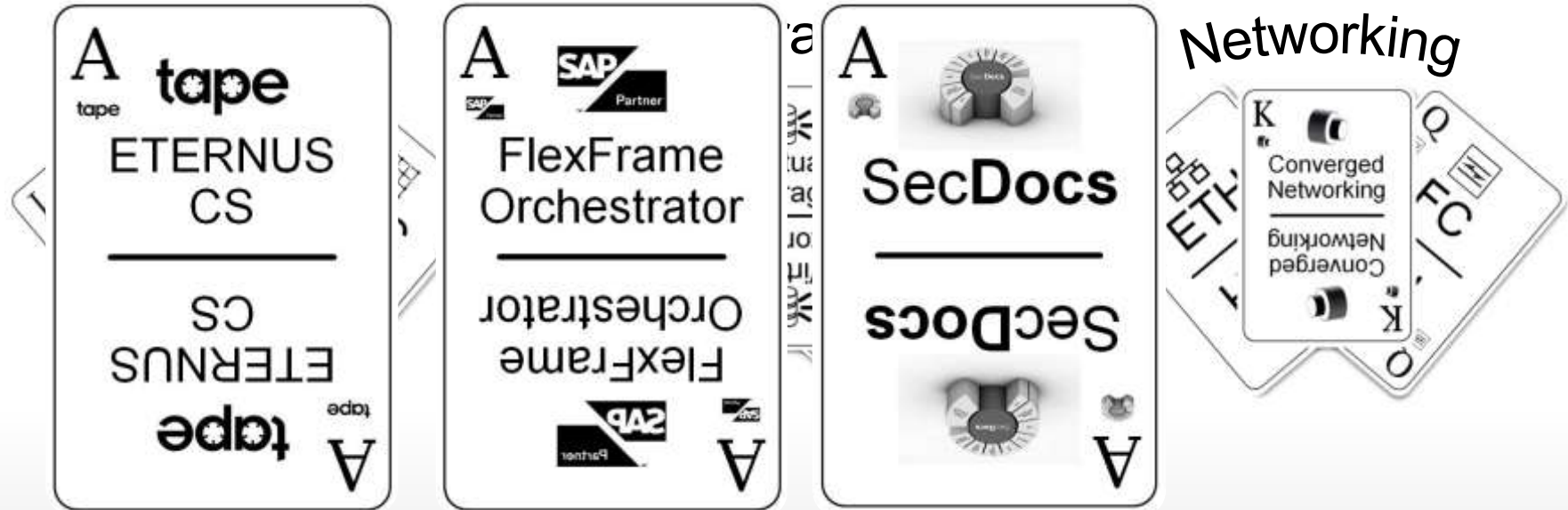


(Dedup)



(Cloud)

- Complete virtualization and consolidation of backup and archiving infrastructures
 - Unified management of disk, dedup disk and tape targets
 - Comprehensive high availability and disaster recovery capabilities
- ⇒ **Ideal solution for larger mid-size to enterprise**
with high requirements on the availability of data
and/or to save expenses with consolidation and automation



Fujitsu SecDocs

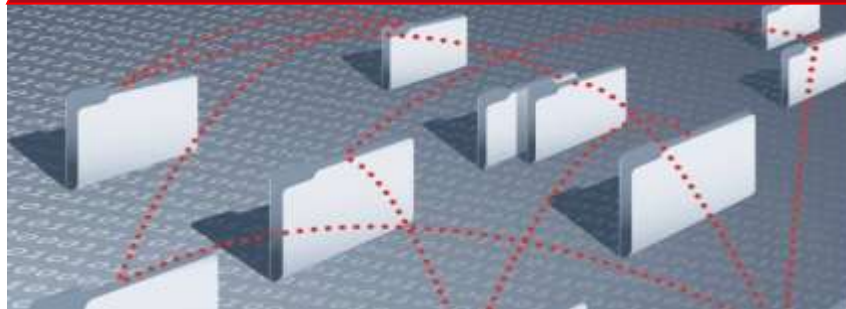


Enabling customers to
replace paper archives with digital ones

Paper Archive

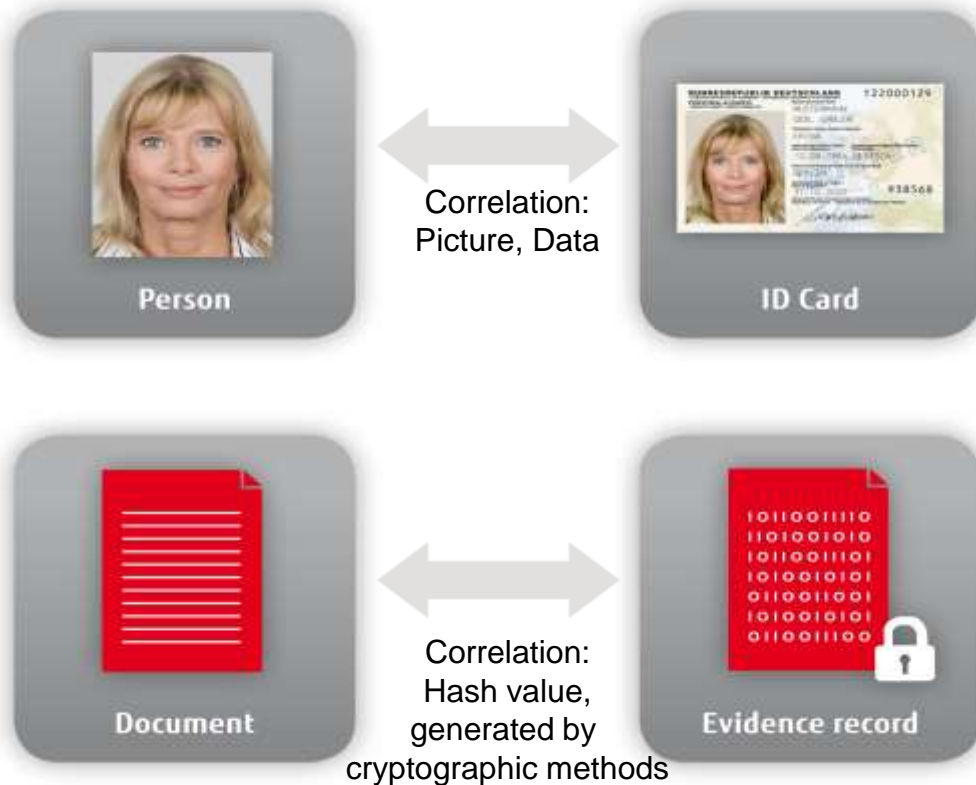


Digital Archive



Even where provable document integrity and authenticity are essential

How to prove evidence?



- Issued by an authorized organisation
- Must be renewed every 10 years
- Hash value of document, and timestamp issued by a certified timestamp provider
- Must be renewed before the regulation authority declares the weakness of the algorithm

Global drivers

Governance, Risk & Compliance

- Economic aspects, consequences in case of nonobservance (e.g. Siemens, Morgan Stanley, Deutsche Bahn)

Compliance

- SOX (US)
- J-SOX (Japan)
- EURO-SOX (EU)
- Basel II (Finance)
- Solvency II (Insur.)

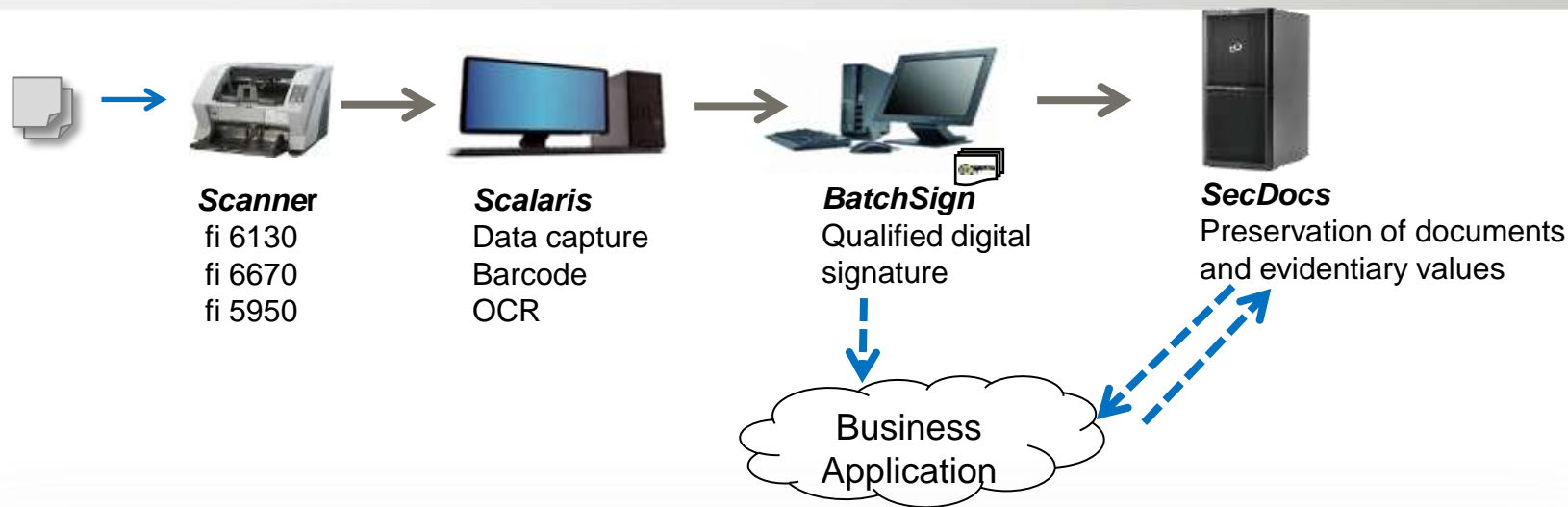
Business Processes

- e-Invoicing
- e-Balance Sheet
- XBRL

Fujitsu Initiatives

- Governance J-SOX/SOX Company guidelines

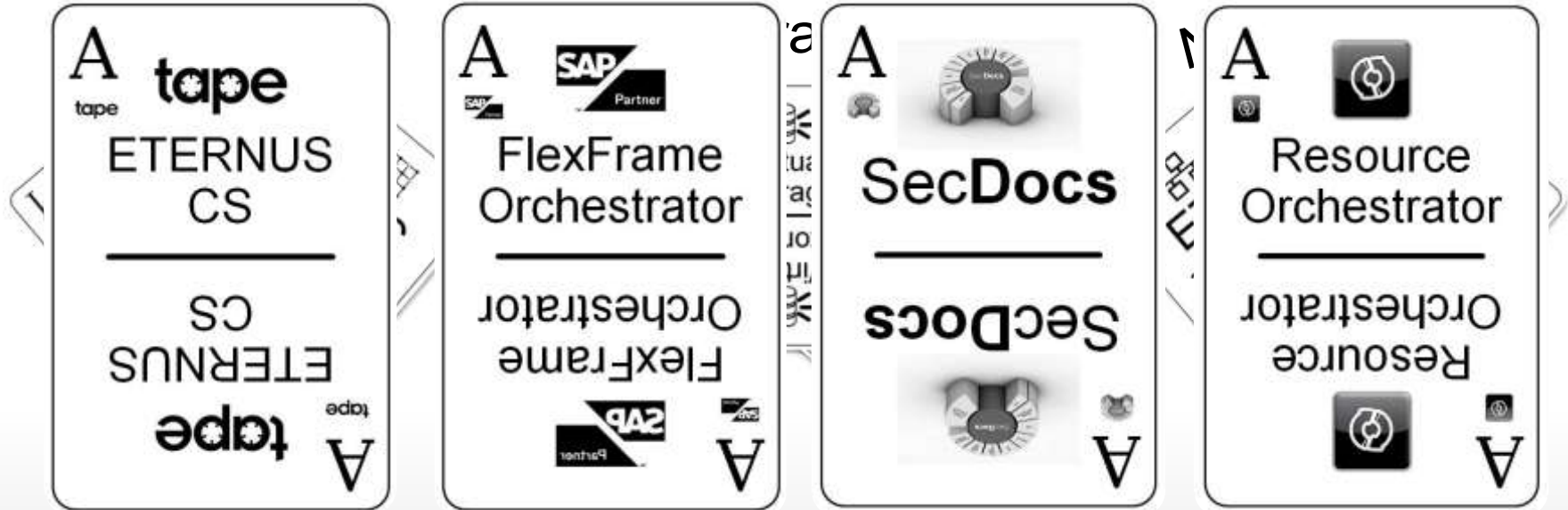
Use case: Digital mailroom automation



■ Long-Term – Preservation:

- From scan to storage: Consistent processes without media breaks
- Proven authenticity and integrity of digital documents
- Reduce Cost: Dispose of paper-bound archives

■ Optional : Archiving/Preservation as a service



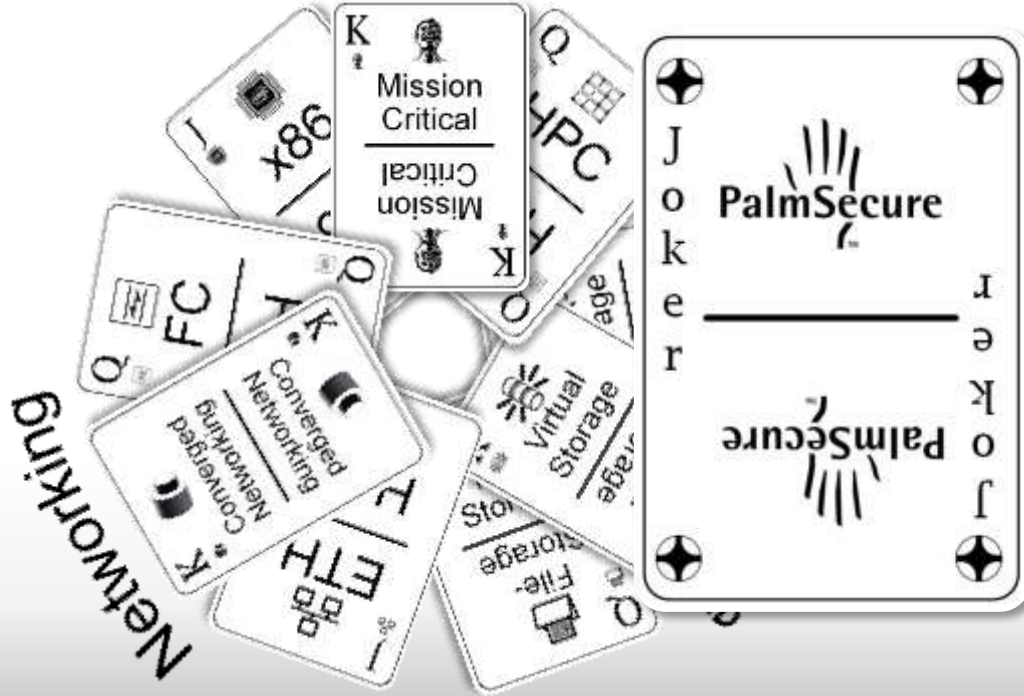
Summary

FUJITSU

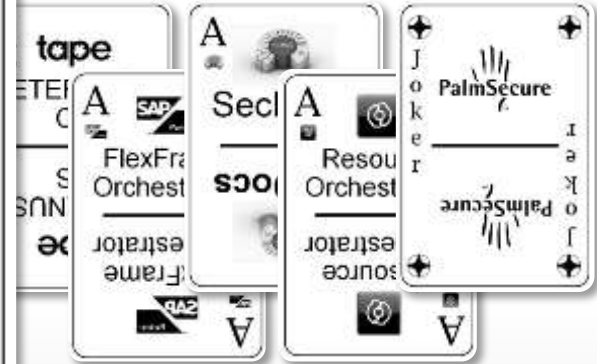
We bring you all the winning cards!



Server



Solutions





shaping tomorrow with you