
FUJITSU
shaping tomorrow with you
Fujitsu World Tour 2015
Connected Infrastructure
Human Centric Innovation

Big Data - Fresh ideas for your business value

Andrea Sappia – Sales Consultant Manager – Fujitsu


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FUJITSU
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digital business

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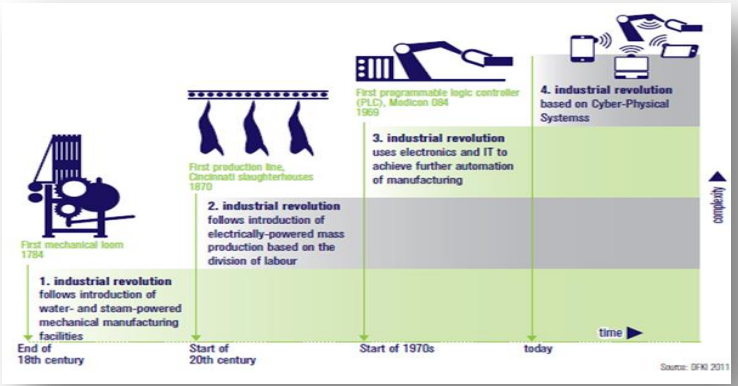
digitalized business

Digitalized Industry Value Chain

- Europe is at a crossroads

- New phase → **INDUSTRY 4.0** → Digitalized Industry Value Chain
  - Next Industrial Revolution: Smart and Integrated Factories
    Digitalisation will instigate efficiency gains, plus new ways of creating value and novel business models

- Fourth transformation:
  - 1st: 200 years ago – steam engine
  - 2nd: 100 years ago – electricity
  - 3rd: 50 years ago – electronics
  - 4th: today – Digitalized Industry value chain



Information: Create Insights from Collected Data

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The Promise of Big Data

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- Discover hidden secrets
- Predict opportunities
- Identify and minimize unknown risks
- Take better and faster decisions
- Accelerate business processes
- Increase performance and productivity
- Improve efficiency and effectiveness
- Profitability and competitive advantage
- Better utilize our planet's resources

A convincing value proposition – For business and society.

Big Data matters to every industry

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New opportunities, new values for enterprises and society.

Example: Big Data in Retail
Coupon distribution in Real Time

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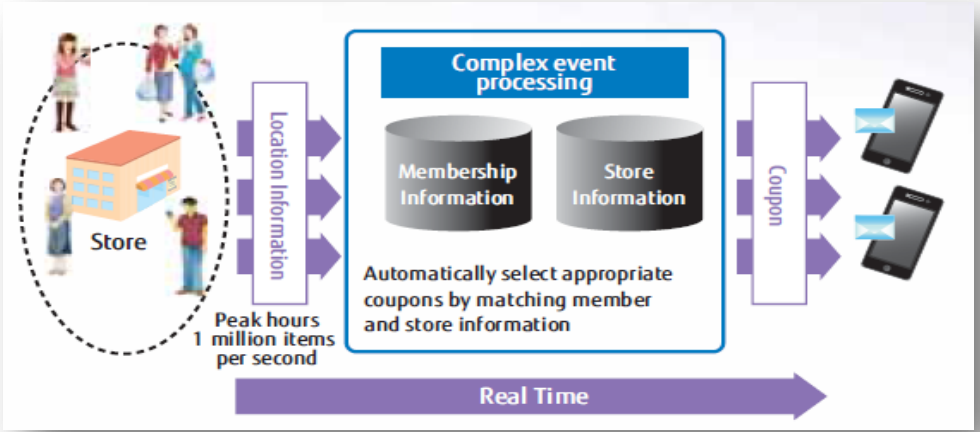
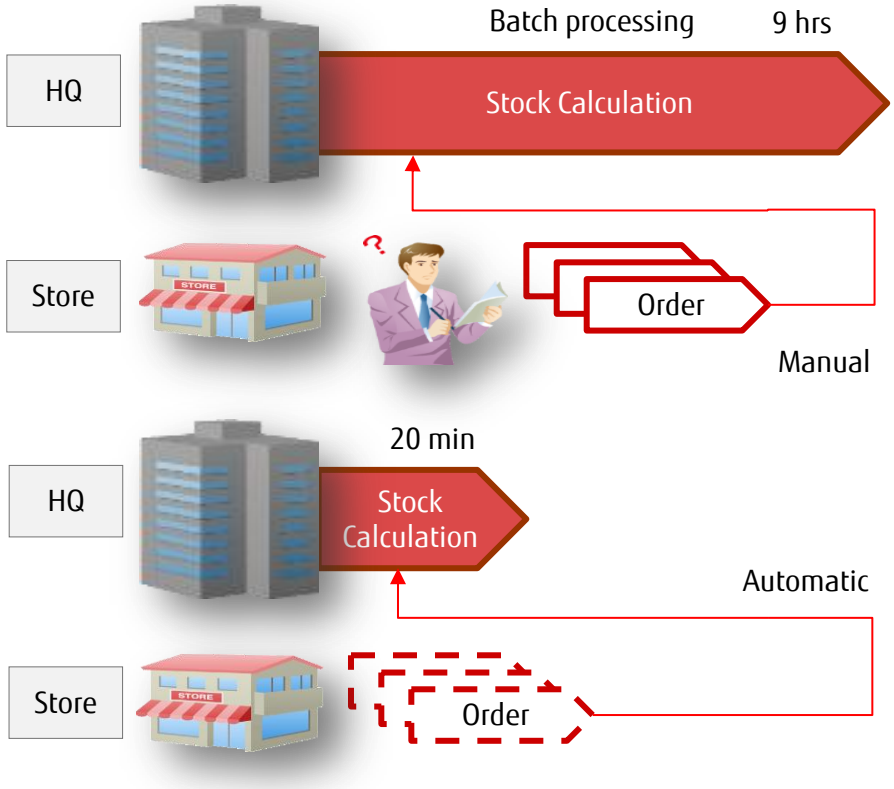
- **Challenge**
  - Recommendations based on current location and taste by e-mail in real-time
- **Solution**
  - Identify customer location
  - Compare location against membership information
  - Distribute e-mails
  - Recommendations for purchase nearby
- **Benefits**
  - Improve convenience and satisfaction of members
  - Create new customers for stores
  - Attract customers during off peak seasons



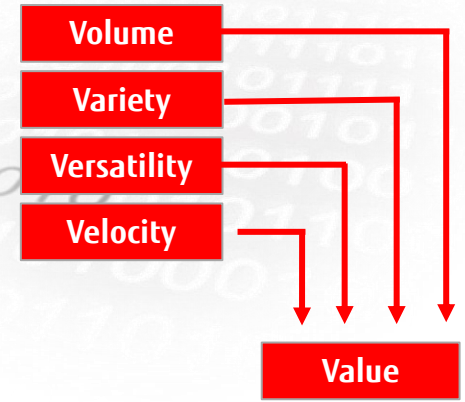
Example: Big Data in Retail
Value: Stock optimization

- **Challenges**
  - 200 million products (stock items)
  - To be sorted by store, product category, date (over 4 months period)
  - Reduce time to calculate stock requirements (9 hrs)
  - From manual to automatic order placement
- **Solution**
  - Parallelize calculation process
  - Interstage BDPP (file sharing instead of data transfer)
- **Benefits**
  - Automatic order placement
  - Increased accuracy
  - Accelerate stock calculation (from 9 hrs to 20 min)
  - Reduced stock



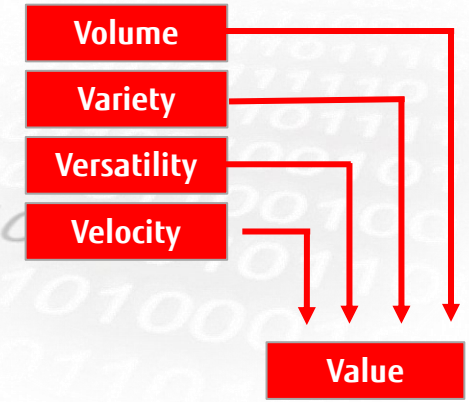
Entering new dimensions …

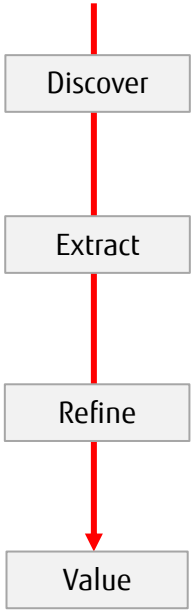
- Versatile data sources – internal and external
  - DB
  - Text
  - Mail
  - Multi-media
  - Machine logs
  - Web logs
  - Social media
  - Internet
  - Sensors (GPS, RFID, …, IoT)
  - …
- Various data types
  - Structured
  - Unstructured
  - Semi-structured
  - Poly-structured
- Large data volumes
  - TB to PB
- High velocity
  - Generation and processing
  - Real-time demands

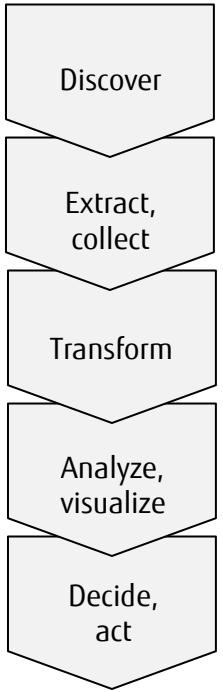


Generate new value by correlation of data and new ways of analytics.

Big Data is the new oil







You need an infrastructure and services to make it happen

Big Data technologies at a glance

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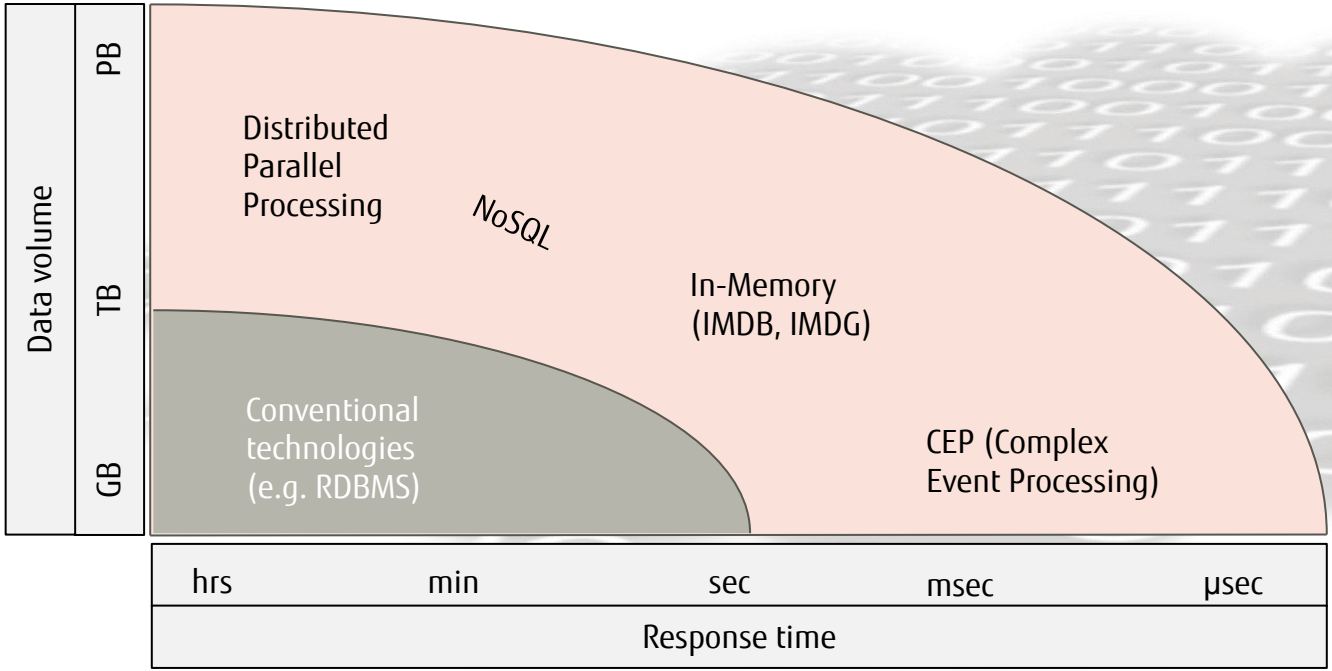


Select the right technology depending on volume and time requirements.

How FUJITSU can help

- Optimum solution for every situation
  - Combination of technologies
  - Infrastructure products
  - SW (OSS, Fujitsu, ISV)
  - Integrated Systems
- End-to-end services
  - Assessment, consulting
  - Solution design
  - Deployment, integration, maintenance
  - Attractive financing options
- Sourcing options
  - Self-managed (on-premise)
  - Managed services (on- / off-premise)
  - Fujitsu Cloud

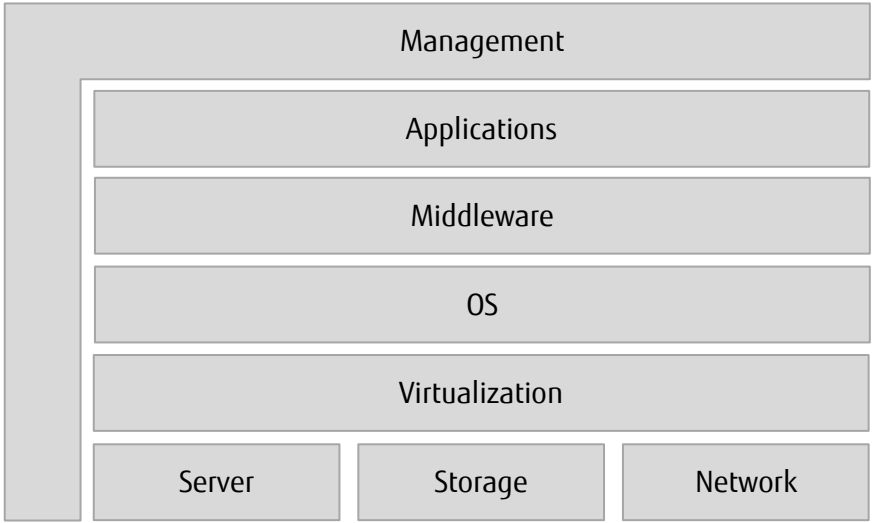
Experience across industries

FUJITSU PRIMERGY
ETERNUS cloudera NetApp
hadoop SAP
Datameer software AG SERVICES
...
financial services FUJITSU FUJITSU Interstage

One-stop shop for Big Data: Reduce complexity, time and risk.

Building a DC infrastructure is complex

- Many tasks
  - Select, procure, integrate components
  - Tedious coordination
  - Complex test matrix
  - Compatibility of (multi-vendor) components
  - Integrate into production environment
- Deep knowledge and skills
  - Less focus on business
- High maintenance effort
  - Every installation is different



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

The new way: Integrated Systems

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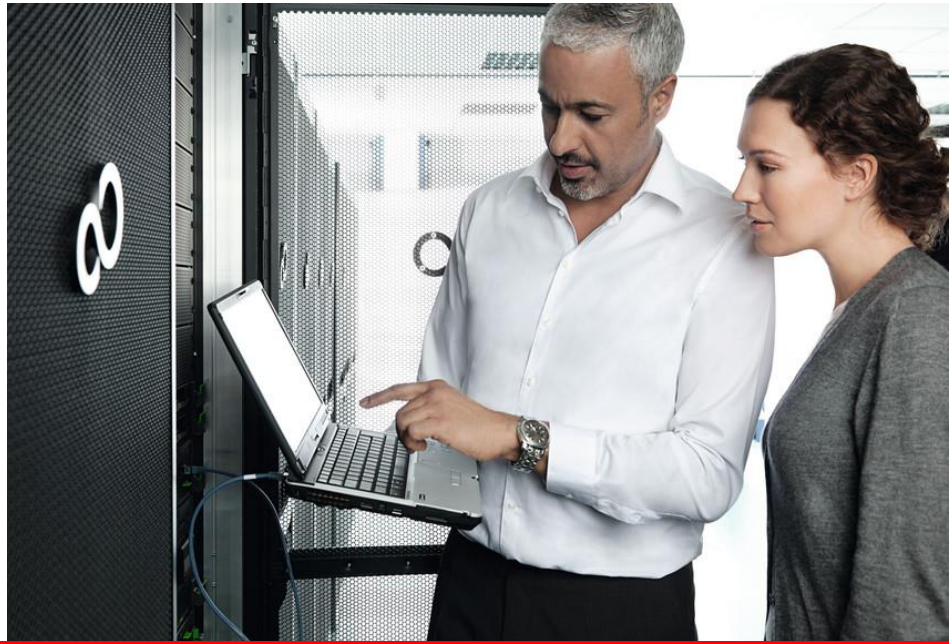
Definition

- Pre-defined, pre-integrated and pre-tested combination of DC components
  - Servers
  - Storage
  - Network connectivity
  - Software
    - Management (mandatory)
    - Virtualization
    - Automation, orchestration, portal
    - DB and apps



Optimally designed, based on project experience.

Integrated Systems for Big Data Infrastructures

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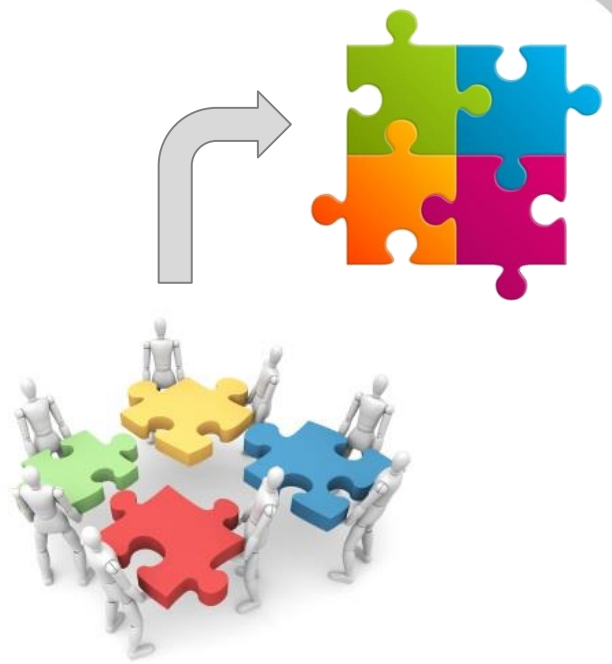
- PRIMEFLEX for Hadoop

Hadoop / Datameer Services
Analytical apps / templates
Datameer (Visual Analytics)
Hadoop (HDFS, MapReduce)
Linux OS
PRIMERGY RX / CX
Brocade switches

- PRIMEFLEX for SAP HANA

Fujitsu HANA Services
SAP HANA DB
Linux OS
PRIMERGY / PRIMEQUEST
Persistent storage
NW switches (multi-node only)



Pre-integrated, pre-tested, ready-to-run: Fast deployment, short time to production.

IT demands of enterprises processing big data

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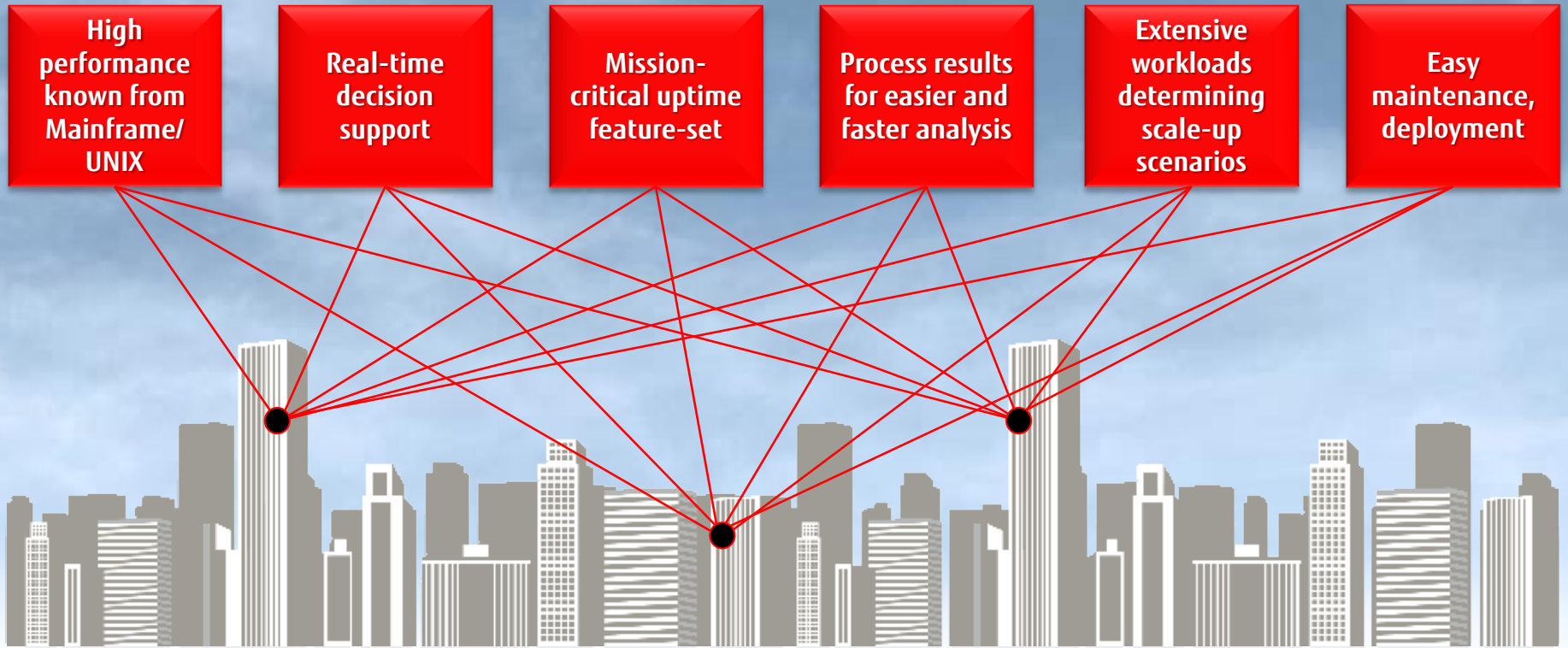
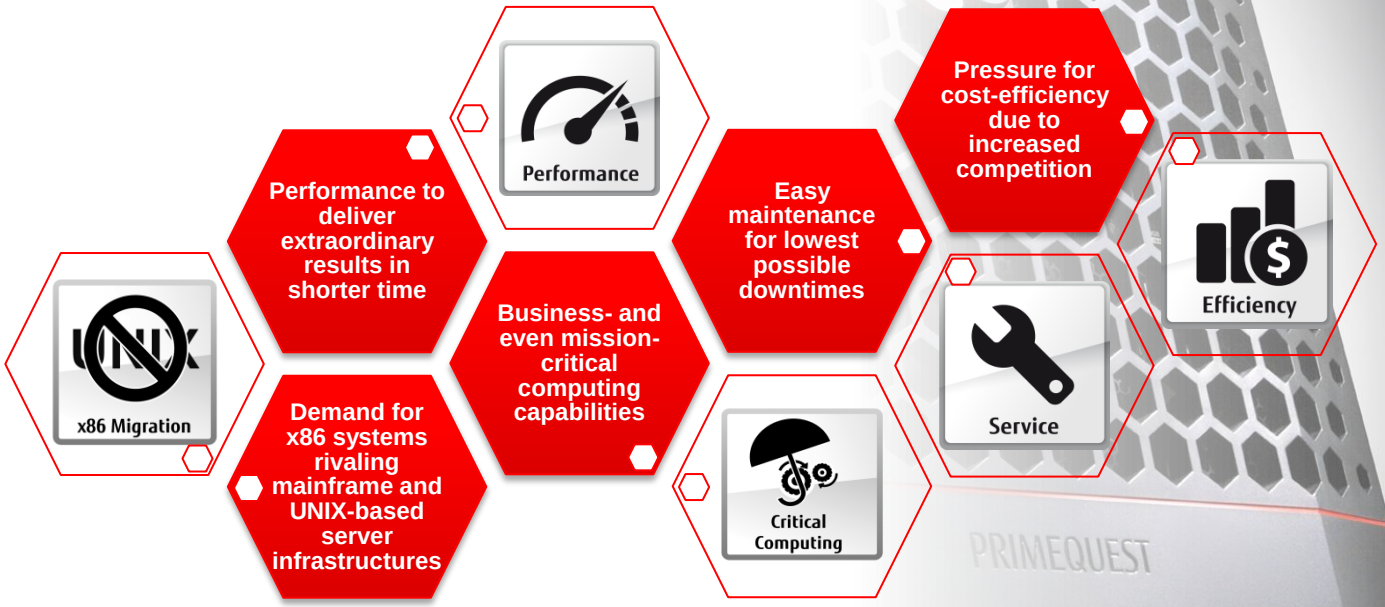


PRIMEQUEST pairing IT demands

What unites businesses running large scale databases i.e. SAP or Oracle, financial institutions, telecommunication companies, and enterprises processing huge amounts of data in times of IoT and scale-up architectures for big data processing in a hyper-connected world?

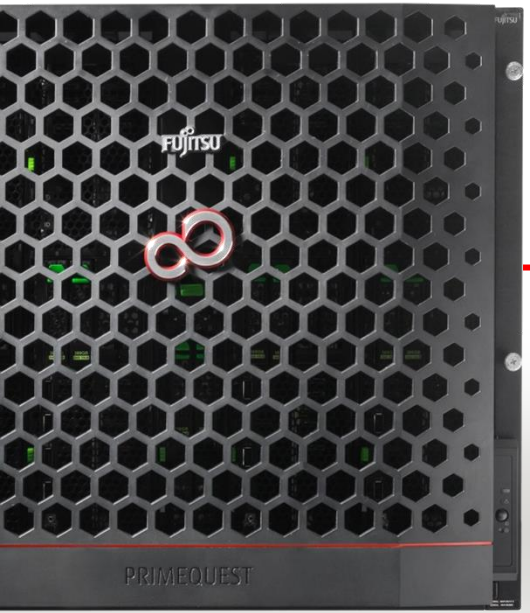


FUJITSU Server PRIMEQUEST

Ambidextrous, rack-optimized enterprise systems making Mainframe/UNIX available on a x86-platform for more operational efficiency while maintaining critical computing abilities

PRIMEQUEST 2800 B2	PRIMEQUEST 2400 E2	PRIMEQUEST 2800B2
		
Grow your business with vast performance and business-critical reliability on x86	No time for downtime	Critical workload processing revolutionized

FUJITSU PRIMEQUEST 2x00E/B2 at a glance



Big-data and in-memory computing

Faster to business results thanks to Intel® Xeon® E7-8800 v3 processors and DDR4 memory – the right performance for database applications, telecommunication infrastructures and real-time analytics

Advanced RAS-features

Resilience at its best with highest redundancy and failure detection as well as failure correction taken to a new level in an x86-industry standard system

Innovations for critical applications

The **Extended Partitioning*** function allows you to allocate resources within one system as required and to utilize resources optimally while maintaining the necessary fault tolerance

Dynamic Reconfiguration* allows to reconfigure the system while it is running. Stay flexible and react to changes in workload without downtimes

*not available with initial system release

PRIMEQUEST and its facets of efficiency

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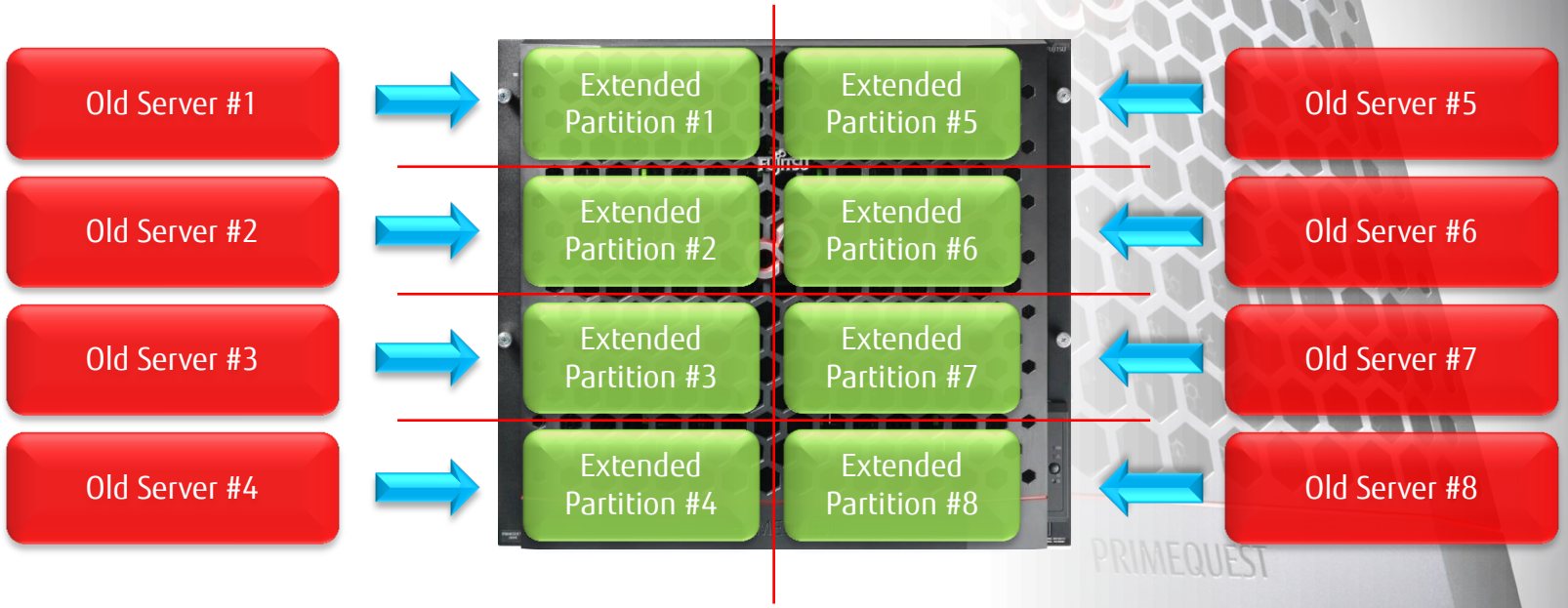
Pressure for cost-efficiency due to increased competition

- PQ 2x00E2 with PPAR, Extended partitioning and Extended Socket can consolidate up to **eight** separate, physical systems
- Operational costs can thus be reduced effectively

Efficiency



FUJITSU Server PRIMEQUEST

MF/UNIX-like
- Reliability
- Robustness

Open System Advantages
- High Performance
- Latest Technology

In One Box

Mission Critical Features
- Expandable Hardware Platform
- Reserved SB
- Physical Partitioning
- Huge MEM, Huge IO

Large Scale DB

- High performance with the latest Intel technology, I/O and rich memory at affordable cost
- High reliability : Almost zero system outage since 2005

Real time analysis (in Memory)

- High performance with rich Memory max12TB
- Easy Scale-up from SAP HANA S to L size matching workload
- Product/Evaluate/Develop in One Box

Server Consolidation

- Offer optimized server consolidation with hardware partitioning and virtualization technologies

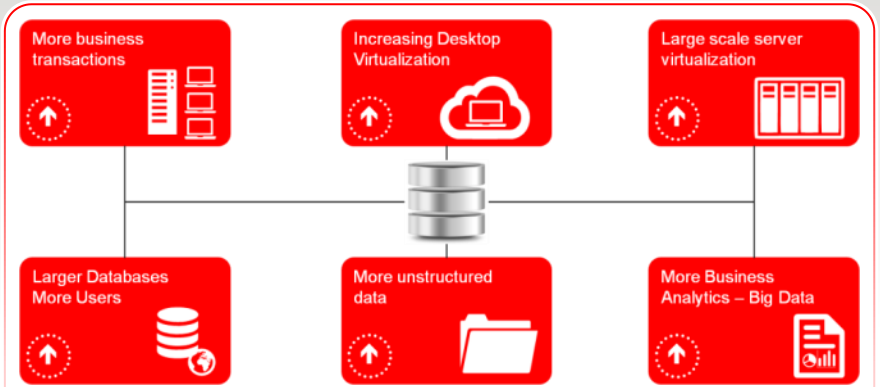
Our world in 60 seconds and beyond

Driving forces

- Access to everything, all the time, from any device, from anywhere
- Huge growth in smart devices
- Applications Acceleration
- The Internet of Things
- Big Data

Challenging times for storage professionals

Applications increase data traffic



The impact on storage

What storage is needed for which scenario ?

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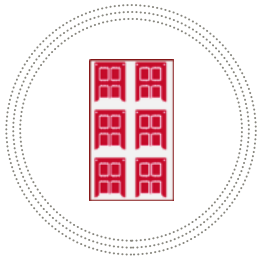
Accelerate!

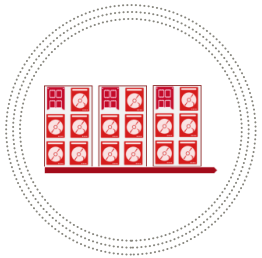


Flash Storage

Consolidate!

Hybrid RAID Storage

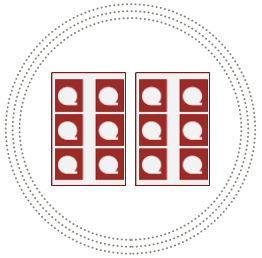
Hyperscale!



Software defined Storage

Protect!

Backup Appliances



Tape Libraries

Storage for all usage scenarios

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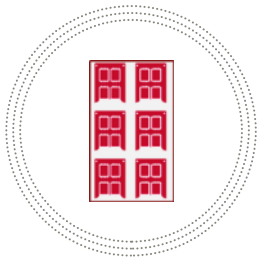
Accelerate!



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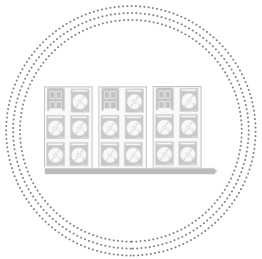

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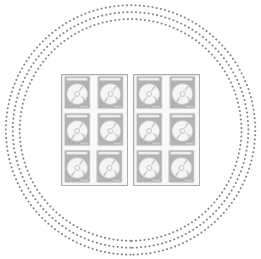
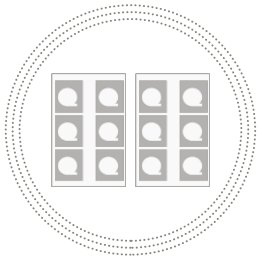


Backup Appliances

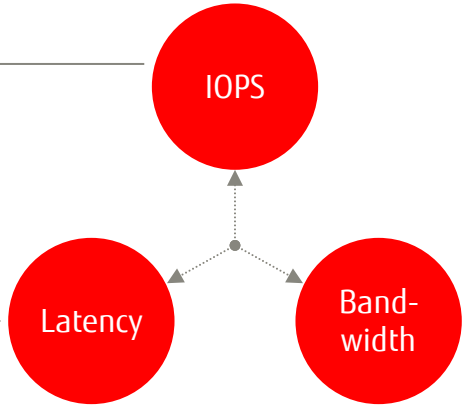


Tape Libraries

All-Flash System from Fujitsu

200,000[1]

Application Scalability



0.63ms[1]

Application Acceleration

12,000 MB/s

Batch Throughput

Fujitsu delivers a new all flash system ETERNUS DX200F

Up to 38.4 TB SSD storage

Derived from a general purpose design, optimized for flash usage

At the costs of hybrid systems with SSDs ($0.77/SPC-1 IOPS™)

Delivering impressive performance at significant lower cost level

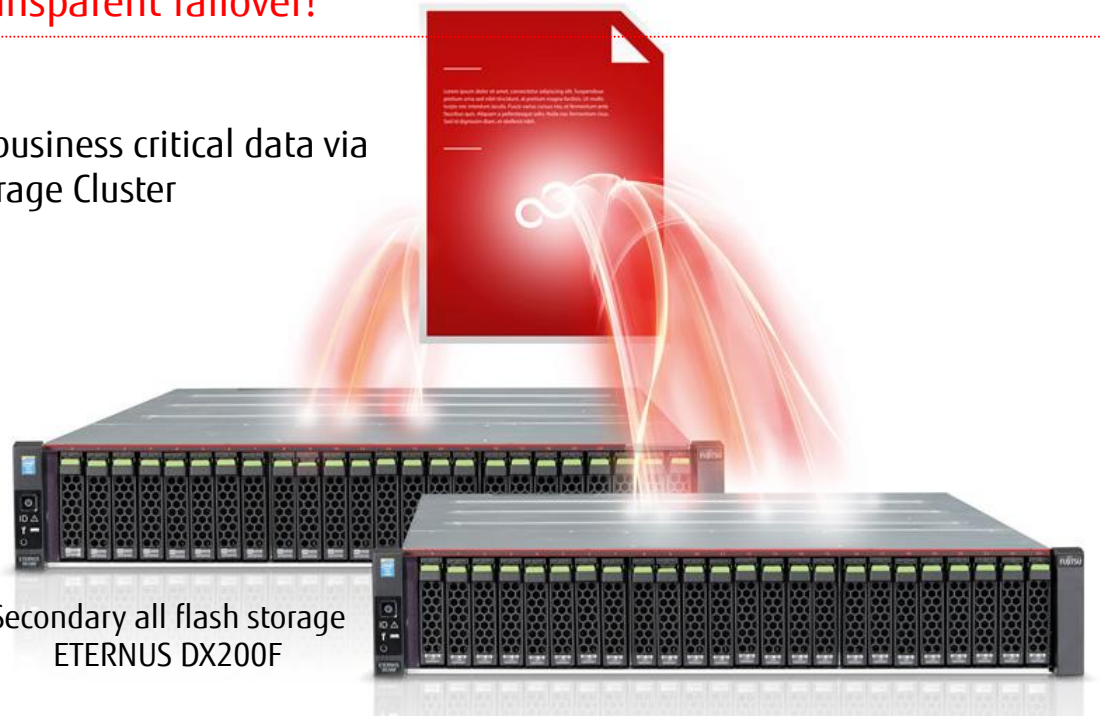
[1] Official SPC1 figures

ETERNUS DX200F with full business continuity

FUJITSU

The only All-flash array providing transparent failover!

Mirroring of business critical data via
ETERNUS Storage Cluster



Primary all flash storage
ETERNUS DX200F

Secondary all flash storage
ETERNUS DX200F

ETERNUS DX200F – Superior performance and functionality at reasonable cost.

Storage for all usage scenarios

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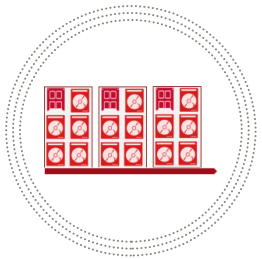
Accelerate!

Flash Storage

Consolidate!

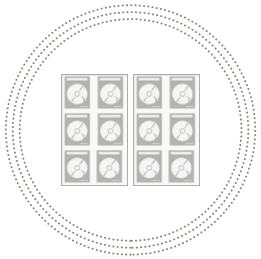
Hybrid RAID Storage

Hyperscale!

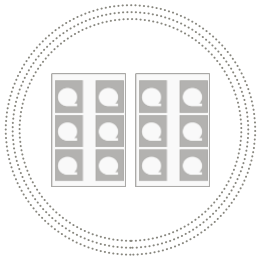


Software defined Storage

Protect!

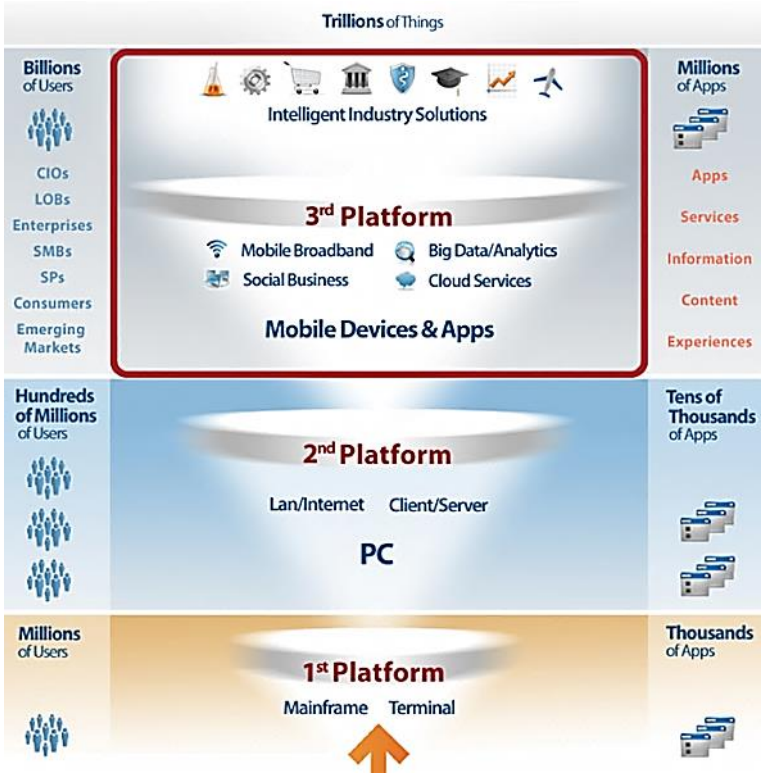


Backup Appliances



Tape Libraries

3rd Platform: a new Dimension of Data Growth



- From 2013 through 2020, 90% of IT industry growth will be driven by third platform technologies (today 22%)
- Increasing data services trough
  - Big Data / Analytics
  - mobile broadband
  - social media
  - cloud services
  - internet of things
- 3rd platform provided services will produce a huge amount of data growth in the upcoming future

Source: IDC 12/12

Third platform implications challenges for storage

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Third platform – Distributed software-defined scale-out storage
Big Data Analytics/Social Business/Mobile Broadband/Cloud Services

Scalability

- Practically unlimited scalability in terms of performance & capacity
- No bottlenecks
- No hot spots

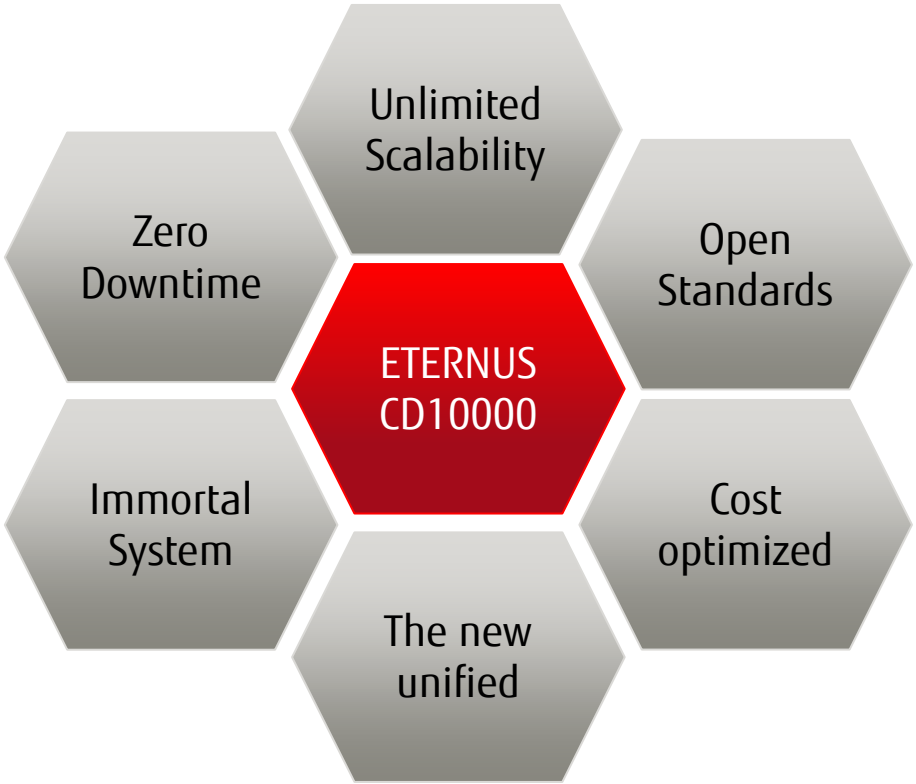
Reliability

- Full redundancy
- Self healing
- Geographical dispersion
- Fast rebuild

Manageability

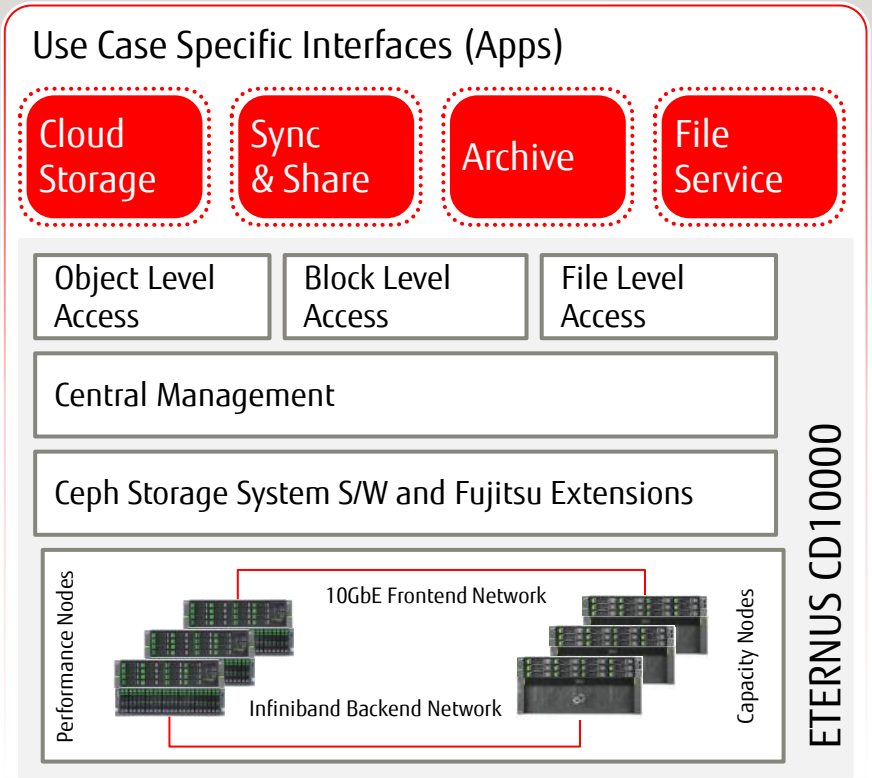
- Central management of huge storage amounts
- Unified multi-protocol access (block, file, object)
- Seamless introduction of new storage

Next Generation Storage from Fujitsu



ETERNUS CD10000

Hyperscale, software-defined storage: ETERNUS CD10000



- Up to 224 connected storage nodes deliver up to 56 PB capacity in minimum space
- Host interface: 10GB Ethernet
- Storage nodes interconnect: Infiniband
- Software-defined storage: Ceph/Open Stack
- Software enhancements for efficient mgmt.
- **Appliance approach makes open source based storage enterprise ready**
  - Productive delivery of hardware and software, tested for full compatibility, optimized for performance and HA
  - Full maintenance and support with Fujitsu responsibility
  - Service packs / upgrades for secure lifecycle management after purchase

Based on Open Standards

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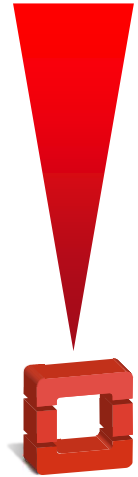
Ceph

- ETERNUS CD10000 based on Ceph
- Ceph is an open source, **software-defined storage platform**
- Designed to present object, block, and file storage from a distributed × 86 compute cluster, scalable to the Exabyte level
- Delivery self-healing and self optimizing storage functionalities

OpenStack

- Ceph is a the core storage element within the OpenStack project
- OpenStack enables IT organizations building private and public cloud environments with open source software

ceph



openstack™

ETERNUS CD10000 bases on leading open standards and open source software

ETERNUS CD10000 = Ceph++

ceph Cloud Storage

- Hardware / Software Integration **by Fujitsu**
  up to 224 nodes with > 56 PB
- E2E Solution Contract **by Fujitsu**
  based on Red Hat Ceph Enterprise

- Lifecycle Management for Hardware & Software **by Fujitsu**
- Easy Deployment / Management **by Fujitsu**

Typical usage scenarios

ETERNUS CD10000 for enterprise environments

- High capacity demand
- Unexpected data growth
- Keep high volumes even of historical data online
- Always-on requirements
- Cost pressure
- Professional support and maintenance




Storage for all usage scenarios

FUJITSU

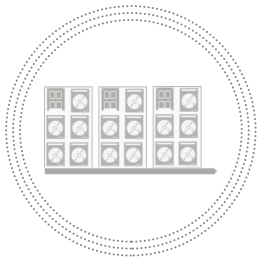
Accelerate!

Flash Storage

Consolidate!

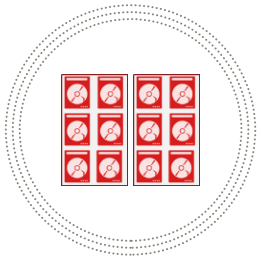
Hybrid RAID Storage

Hyperscale!

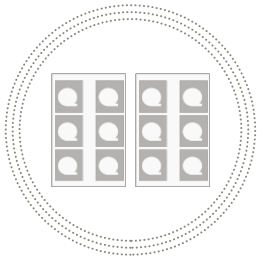


Software defined Storage

Protect!

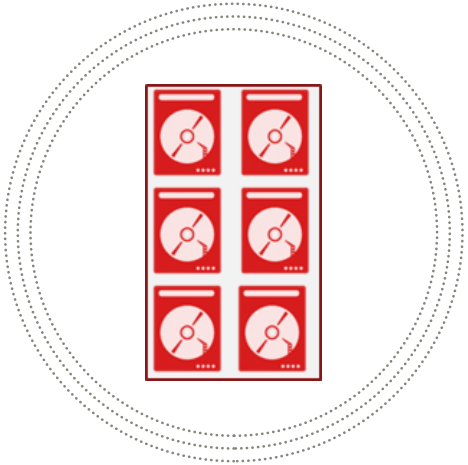


Backup Appliances



Tape Libraries

Protect with Backup Appliances



Objectives

- Reduce backup and restore time with backup to disk
- Reduce costs of capacity by data deduplication
- Secure backup IT against failures

Challenges

- Complexities of point solutions for disk and tape backup
- Scalability limits drive migration costs
- Silos for backup and archiving

ETERNUS CS8000 – unified data protection

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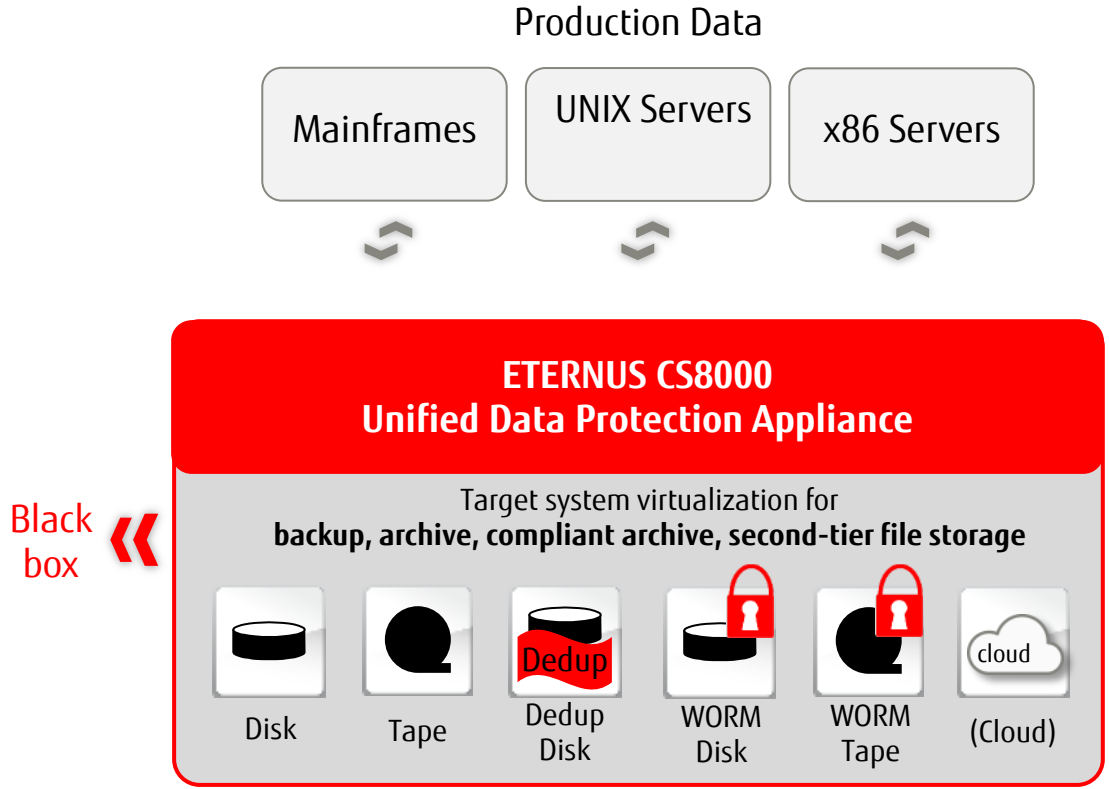
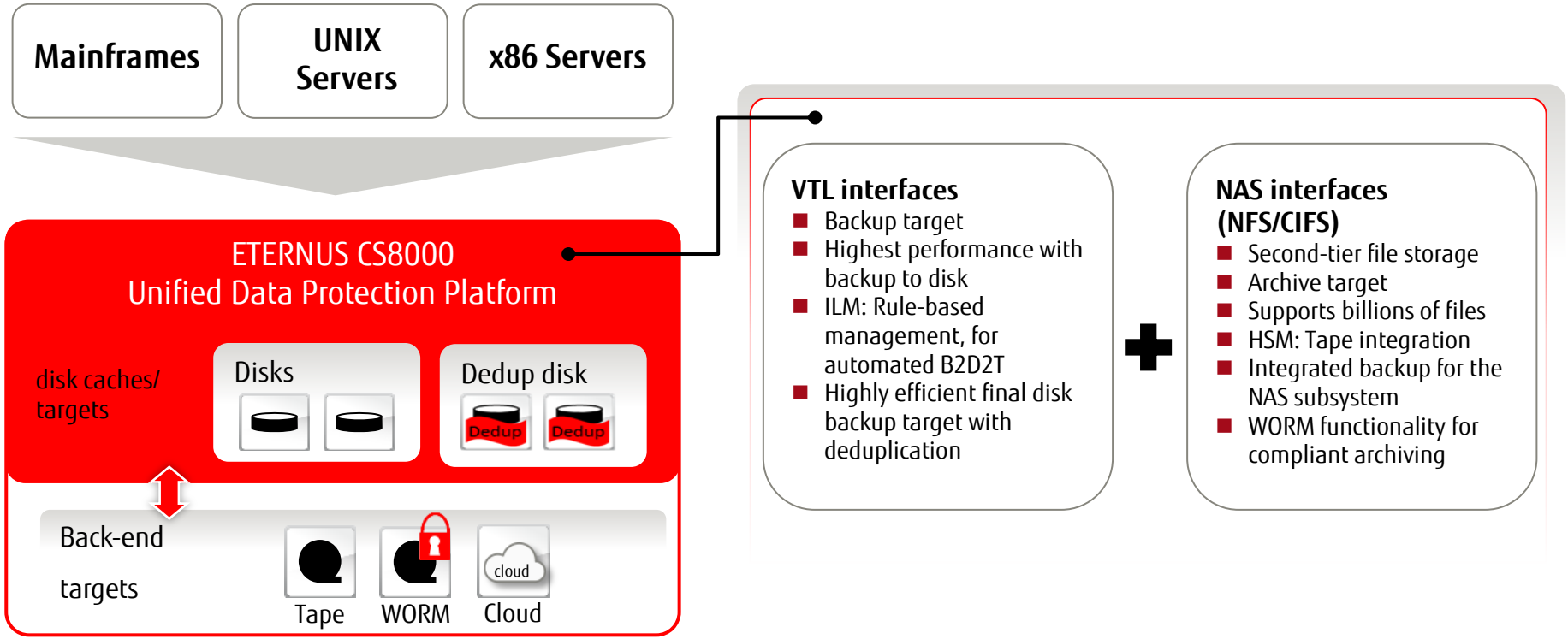
ETERNUS CS8000

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

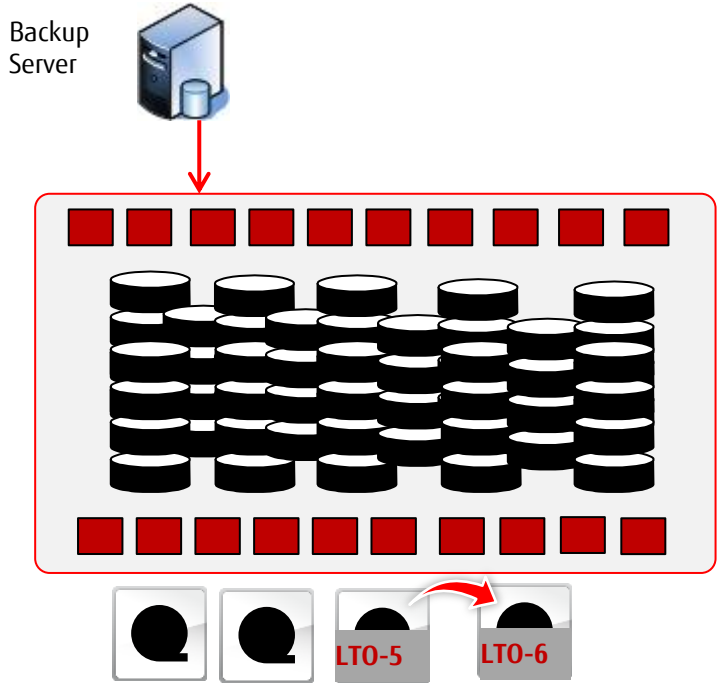


Consolidation platform for backup, second-tier file storage and archiving



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 22.2 petabyte
- Tape: Up to the exabyte magnitude
- Automated tape migration
- Up to more than 150 TB/h

One system – providing all Service Levels at lowest possible costs

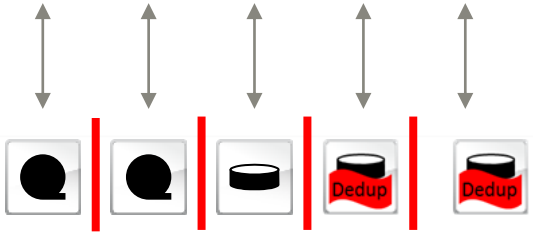
From complex data protection environments ...

FUJITSU

Open systems

E.g.: Windows, Solaris, SUSE LINUX, Red Hat LINUX, AIX, ...

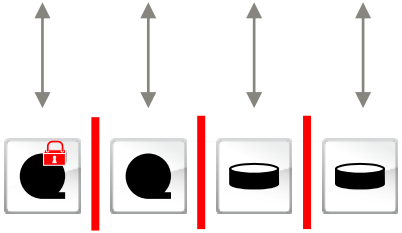
Backup software



Various islands of
Tape libraries, VTLs and Deduplication libraries

Open system
backup infrastructure

Archive software

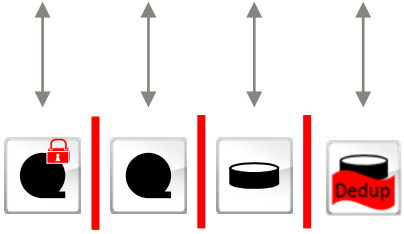


Various islands for ERP, E-Mail, File
and Compliant archives

Archive
infrastructure

Mainframes

Backup software



Various islands of Tape libraries, VTLs and
Deduplication libraries

Mainframe
backup infrastructure

… to a flexible uniform platform

FUJITSU

Open systems

E.g.: Windows, Solaris, SUSE LINUX, Red Hat LINUX, AIX, …

CommVault Simpana

Backup and Archiving Software

Mainframes

E.g.: IBM z/OS, System I, Fujitsu BS2000/OSD, …

Backup software

ETERNUS CS8000: Unified Data Protection Platform

Black box for backup and archive targets

Disk

Dedup

Tape

Cloud

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

Summary

- Big Data offers enormous potential for business opportunities and value
- If you ignore it, your competitor won't !
- It changes the way companies make decisions, do business, succeed or fail
  - New ideas and use cases
  - New types of analytics
  - New skills
  - New tools, SW and MW
  - New infrastructure concepts
  - New value
- Fujitsu – A one-stop shop for Big Data

Fujitsu – Turning fresh ideas into business value.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andrea.sappia@ts.fujitsu.com
Thank you for listening