Fujitsu Storage Strategy

OSL Technologietage 2009

Berlin, 16.09.2009

Agenda

FUJITSU

About Fujitsu

- At a glance
- Portfolio and business composition
- Globalization strategy
- Our value proposition

Fujitsu Storage Strategy

- Integrated IT solutions for dynamic infrastructures
- Dynamic Storage infrastructures
- Managed Storage
- Our global Storage portfolio

About Fujitsu

Fujitsu at a glance

FUJITSU

Headquarters:	Tokyo, Japan
President:	Kuniaki Nozoe
Established:	June 1935
Net Sales:	US$47,888 million
R&D Expenditure:	US$2.6 billion
Employees worldwide:	175,000 in 70 countries
Datacenters:	80 datacenters in 16 countries

Fujitsu in the region Europe, Middle East & Africa:

Employees:	35,000
R&D and Data Centers:	Germany, UK, Finland, Sweden, Denmark, Netherlands, Spain, South Africa

Fujitsu: The world's fourth largest IT services company

Note: Consolidated net sales and R&D expenditure for fiscal year ended March 31, 2009.
US$1 = ¥98 . WW employees as of September 2008.

Products & solutions portfolio

FUJITSU

Technology Solutions

System Platforms
- Servers (mainframe, UNIX, x86 Server, PC)
- Storage Systems
- Software (operating system, middlewa
- Optical Transmission Systems
- Mobile Phone Base Sta

Services
- Consulting
- Systems Integration
- Outsourcing Services
- Network Services
- System Support Services
- System Installation/Network Construction
- Dedicated Terminal Systems & Equipment (ATMs, PoS)

Ubiquitous Product Solutions

- Personal Computers
- Mobile Phones*
- Storage Equipment (hard disk drives, magneto-optical disk drives)
- Optical Transceiver Modules
- Other Products

Device Solutions

- Logic LSI Devices (system LSI, ASICs, microcontrollers, FRAM-embedded lo
- System Memory Devices (flash memory, FCRAM)
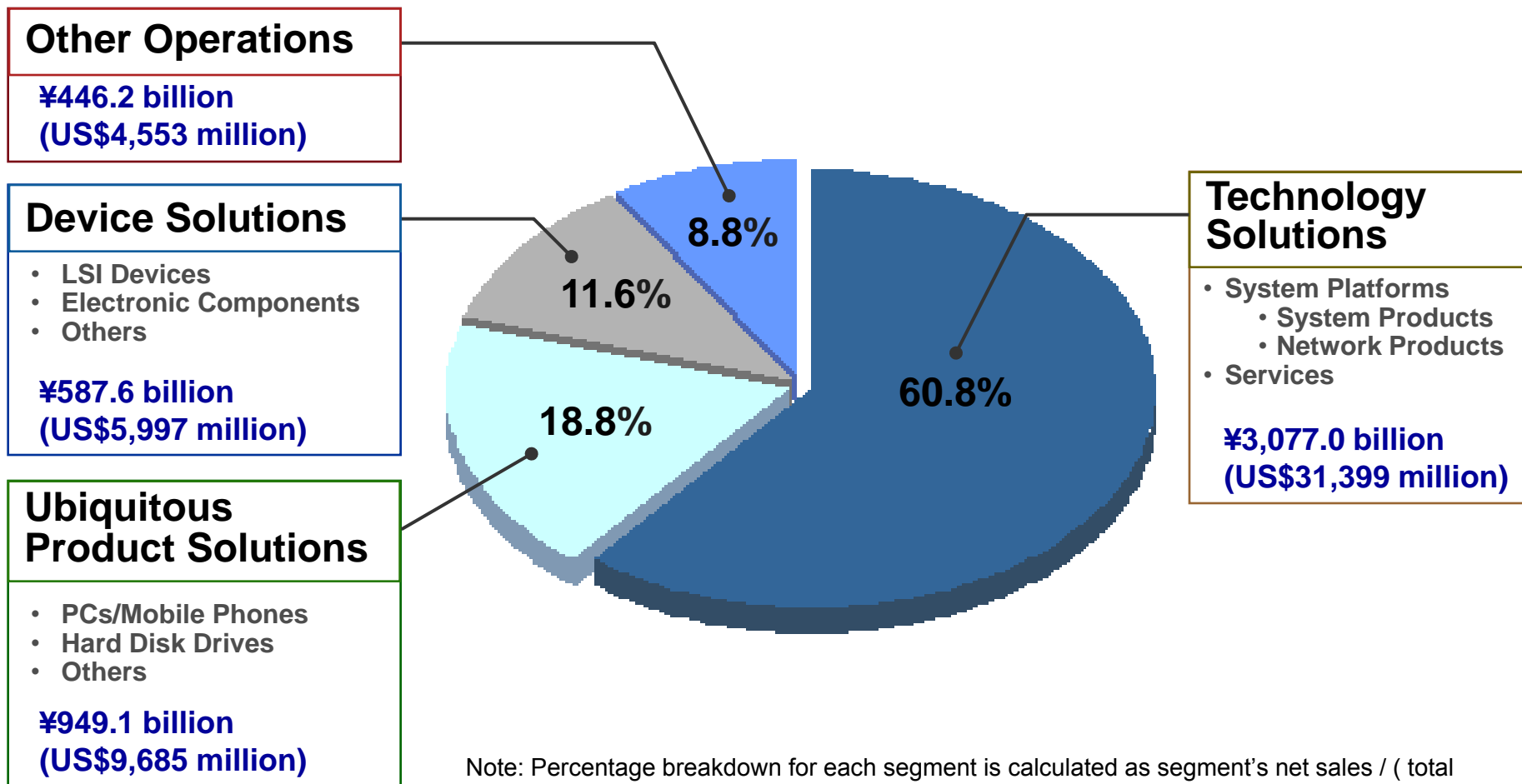- Semiconductor Packages
- SAW Devices
- Other Electronic Components

Note: *Japan market only
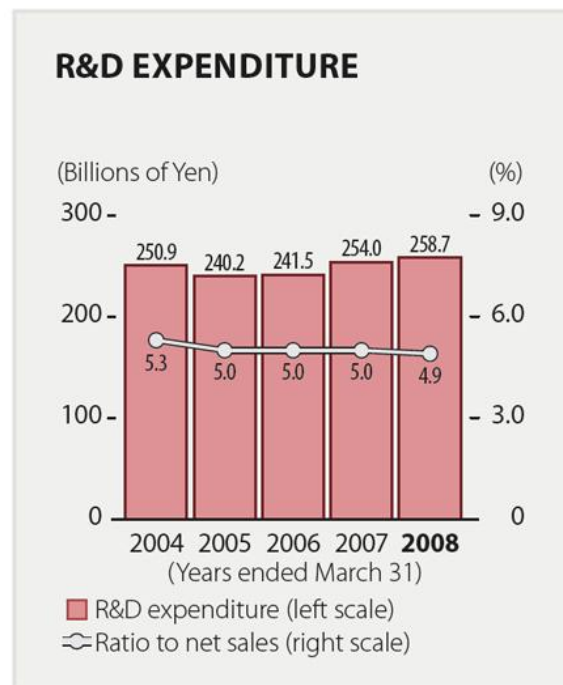
Focus on technology solutions

FY 2008 Revenue by Business Segment
Consolidated Net Sales by Business Segment, Including Intersegment Sales

Other Operations

**¥446.2 billion
(US$4,553 million)**

Device Solutions

- LSI Devices
- Electronic Components
- Others

**¥587.6 billion
(US$5,997 million)**

Ubiquitous Product Solutions

- PCs/Mobile Phones
- Hard Disk Drives
- Others

**¥949.1 billion
(US$9,685 million)**

Technology Solutions

- System Platforms
  - System Products
  - Network Products
- Services

**¥3,077.0 billion
(US$31,399 million)**

8.8%
11.6%
18.8%
60.8%

Note: Percentage breakdown for each segment is calculated as segment's net sales / (total consolidated net sales + elimination). US$1 = ¥98. FY 2008 is fiscal year ended March 31, 2009.

Research & development

Strong investment

- Fujitsu invested US$ 2.6 billion for R&D in FY08
- 1,500 research scientists and 14,000 development engineers worldwide
- Laboratories in Japan, US, Europe, China and Germany
- Award-winning research with over 34,000 patents
- Collaboration with leading independent research institutes

R&D EXPENDITURE

(Billions of Yen)   (%)

Year	2004	2005	2006	2007	2008
R&D expenditure	250.9	240.2	241.5	254.0	258.7
Ratio to net sales	5.3	5.0	5.0	5.0	4.9

(Years ended March 31)

■ R&D expenditure (left scale)
≎ Ratio to net sales (right scale)

R&D highlights

Palm vein technology – unique biometric authentication technology

Robot project: HOAP Series – neural network-powered robots

Business Information navigation technology

E-paper

Key research goals and themes

- Organic and grid computing
- High-density data storage
- Next-generation web services
- Photonic and wireless networks
- Bioinformatics, biometrics and other security technologies
- Environmental technology

Fujitsu's global growth strategy

> **"Fully integrating Fujitsu Siemens Computers into the Fujitsu Group fits perfectly into our global growth strategy."**
> Kuniaki Nozoe, President of Fujitsu

Fujitsu's global growth strategy focuses on

Field Innovation:

Improve the customer's business, not just the IT business

Global Expansion:

Shift the focus from Japan to global business

Environmental Contributions:

Preserve the environment for future generations.

Fujitsu's global growth strategy

**Fujitsu Technology Solutions:
A catalyst for Fujitsu's global growth strategy**

FTS is a catalyst for Fujitsu's transformation and global growth strategy

- Developing business outside Japan
- Delivering profit and growth through the services business
- Developing innovative products through the hardware business

Fujitsu and FTS will create new synergies

- Expanded scope of product and service offerings
- Integrated products and services
- Delivered globally

R&D at the heart of Europe

Close to your business: Global responsibility for technology solutions business centralized in Europe

- PRIMERGY x86 server business
- Storage business under the ETERNUS brand
- Fujitsu invests in R&D centers in Munich, Augsburg & Paderborn

Your benefits:

→ Globally unified portfolio

→ Close to our customers and their needs

→ Short response times and direct contact to R&D

→ Better time to market through consolidated manufacturing in Europe

→ Strengthening cooperation with our storage partners NetApp and EMC

Think global, act local

Supporting your business where you need it!

Local presence: Business responsibilities in transnational regions and in the countries

→ Sales, Services and Marketing close to our customers provides an offering tailored to regional needs

→ Integrated FTS and Fujitsu Services organizations in Europe: One face to the customer

→ Build complementary know-how on regional basis to support our customers' business across EMEA

→ Fast decision making and short response times to our customer needs

Global scale: Global delivery of FTS products

→ 175,000 employees worldwide and sales and service operations in more than 70 countries ensure optimum support for global IT projects

→ 80 datacenters in 16 countries for seamless global services delivery

Fujitsu Storage Strategy

Q1 2009 Enterprise VAR survey

„Storage continues to be seen as the strongest category for IT spending in 2009, in line with previous surveys.
… Within storage, customers looking to cut costs by maximizing resource utilization through technological innovation (i.e. virtualization and data deduplication)"

Baird, Computer Hardware & Storage Research, April 2009

IDC annual holistic view of the Western European Storage market 2008-2012

- Storage software and services markets are still forecast to grow, as storage capacity continues to increase, driving the need for software and services to deal with the complexities of growing storage environments
- Server virtualization moving into the mainstream is a major driver for continued storage investment even in tough economic times

IDC, Feb 2009

Dynamic Storage Infrastructures

A turbulent business needs Dynamic Infrastructures

FUJITSU

Business needs

Requirements to the IT infrastructure

- Integrating the value chain with new suppliers, partners, and customers
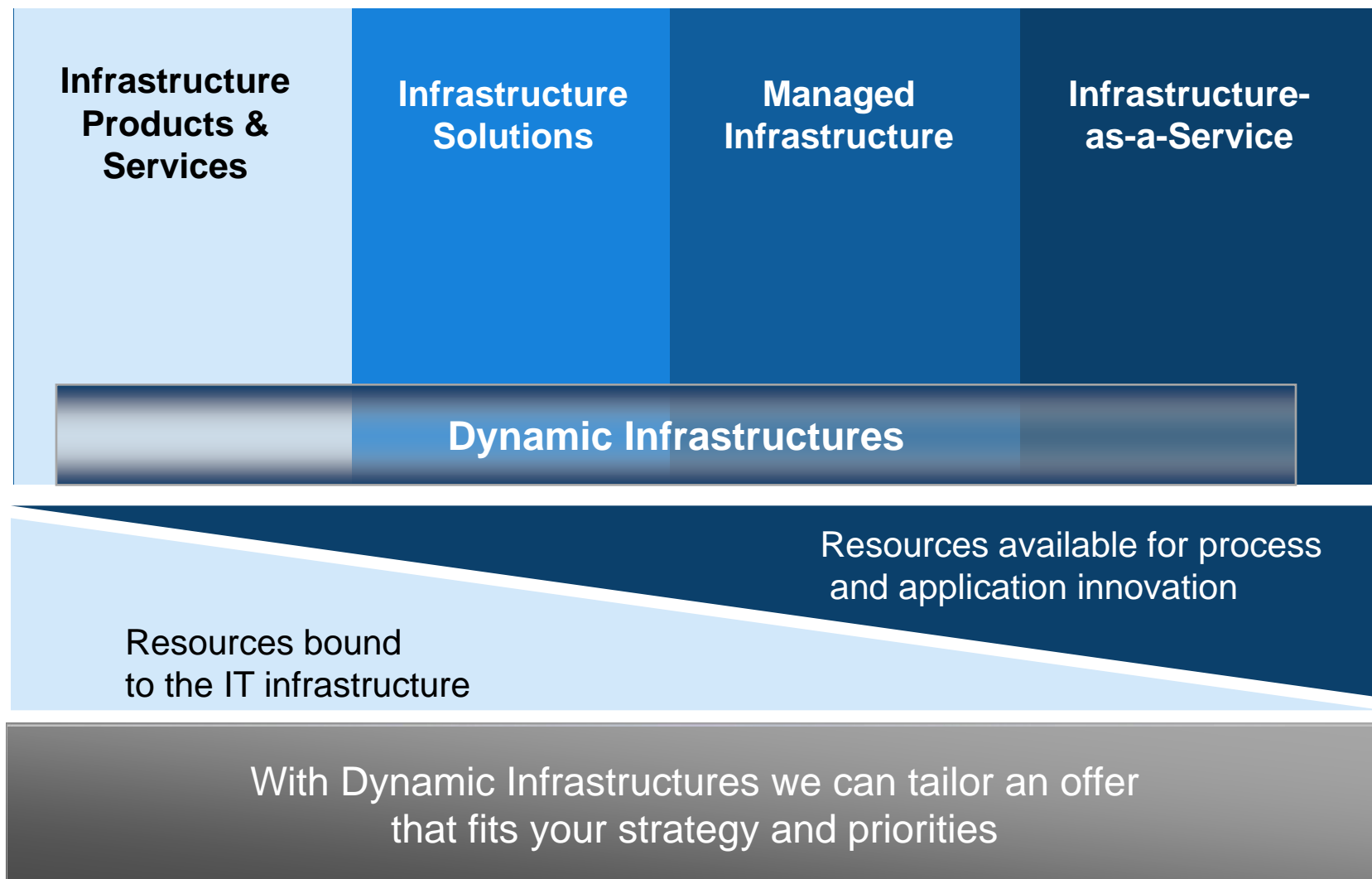- Business processes and applications must respond to new demands

**Need for
dynamic data center
infrastructures**

- The same workforce must achieve more
- Roles and responsibilities of people constantly change
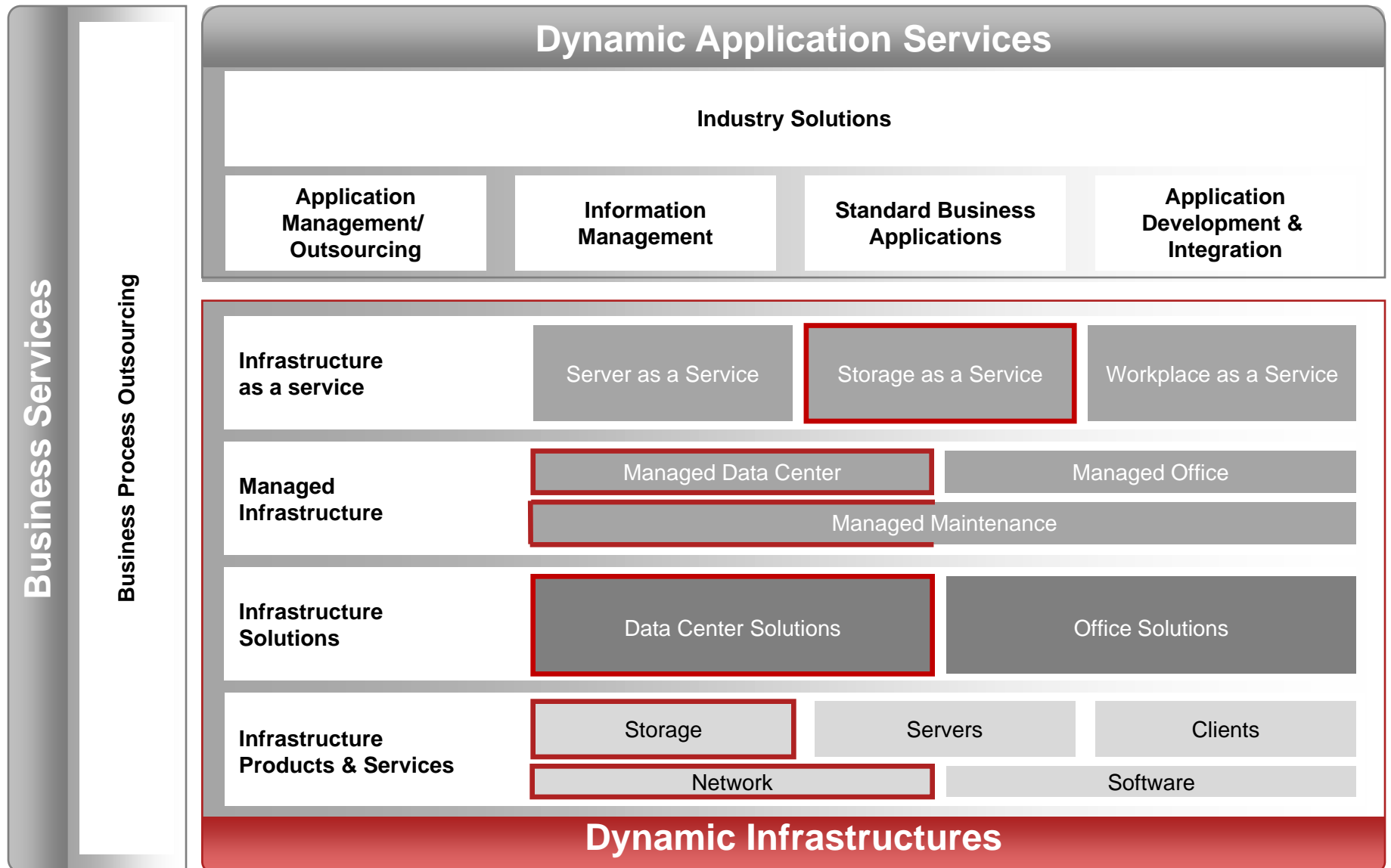
**Need for
dynamic client
infrastructures**

Dynamic Infrastructures

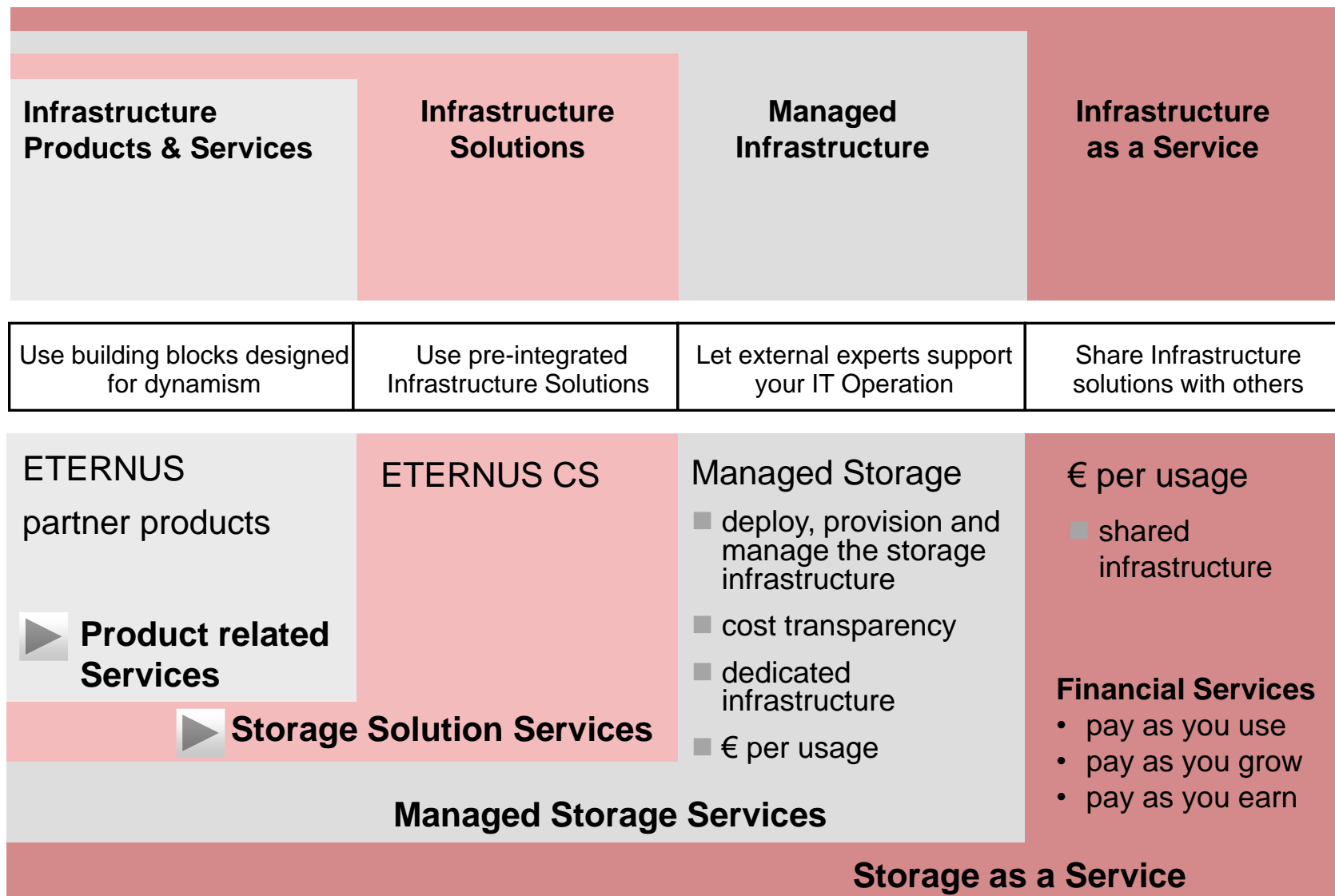**Our Dynamic Infrastructures are tailor-made to your questions**

Infrastructure Products & Services	Infrastructure Solutions	Managed Infrastructure	Infrastructure-as-a-Service

Dynamic Infrastructures

Resources available for process and application innovation

Resources bound to the IT infrastructure

With Dynamic Infrastructures we can tailor an offer that fits your strategy and priorities

How to build and run Dynamic Infrastructures

|		
Infrastructure as a Service	Run your applications on a shared environment	Cut your IT costs down leveraging economies of scale by accessing a centrally shared infrastructure.
Managed Infrastructure	Delegate the responsibility to run your IT	Utilize our expert support services for the operation of your dynamic infrastructure
Infrastructure Solutions	Use pre-tested Infrastructure Solutions	Benefit from evaluation and integration experience out of many projects
Infrastructure Products & Services	Use building blocks designed for dynamism	Products and services designed for virtualized and automated environments

Dynamic Infrastructures

Fujitsu IT Portfolio Overview

FUJITSU

Business Services

Business Process Outsourcing

Dynamic Application Services

Industry Solutions

| Application Management/ Outsourcing | Information Management | Standard Business Applications | Application Development & Integration |

Infrastructure as a service	Server as a Service	Storage as a Service	Workplace as a Service
Managed Infrastructure	Managed Data Center		Managed Office
	Managed Maintenance		
Infrastructure Solutions	Data Center Solutions		Office Solutions
Infrastructure Products & Services	Storage	Servers	Clients
	Network		Software

Dynamic Infrastructures

Dynamic Storage Infrastructures

Infrastructure Products & Services	Infrastructure Solutions	Managed Infrastructure	Infrastructure as a Service
Use building blocks designed for dynamism	Use pre-integrated Infrastructure Solutions	Let external experts support your IT Operation	Share Infrastructure solutions with others
ETERNUS partner products ▶ **Product related Services**	ETERNUS CS	Managed Storage ■ deploy, provision and manage the storage infrastructure ■ cost transparency ■ dedicated infrastructure ■ € per usage	€ per usage ■ shared infrastructure **Financial Services** • pay as you use • pay as you grow • pay as you earn

▶ **Storage Solution Services**

Managed Storage Services

Storage as a Service

Managed Storage

Managed Storage = Deploy, provision and manage online + backup storage, infrastructure on a €/GB basis with defined SLAs

Managed Storage embraces 3 central elements:

Managed Storage

Billing Model

Operational Model

Technology
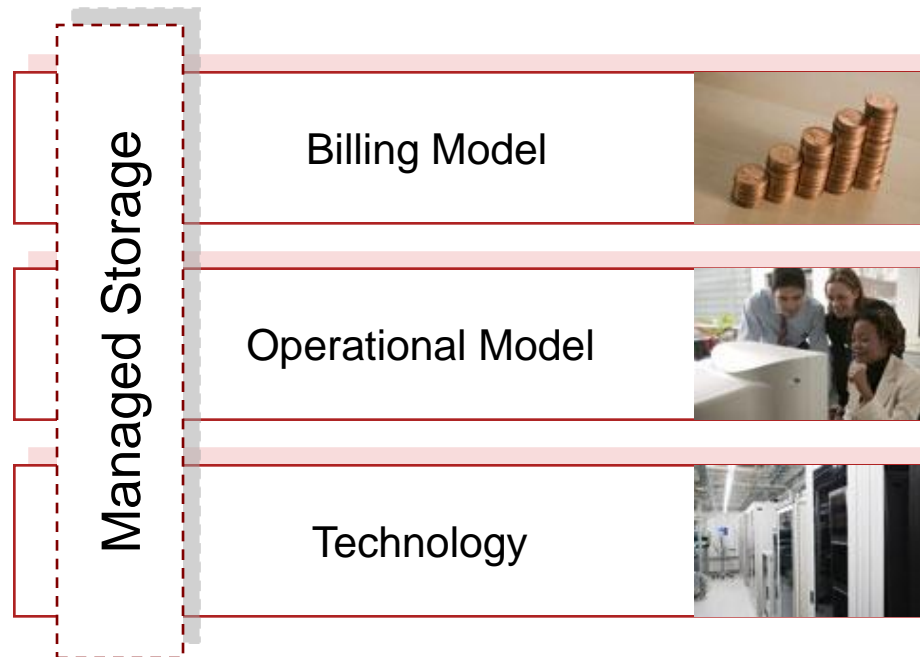
„Receiving only one invoice and one report a month!"

Managed Storage: Setup of services
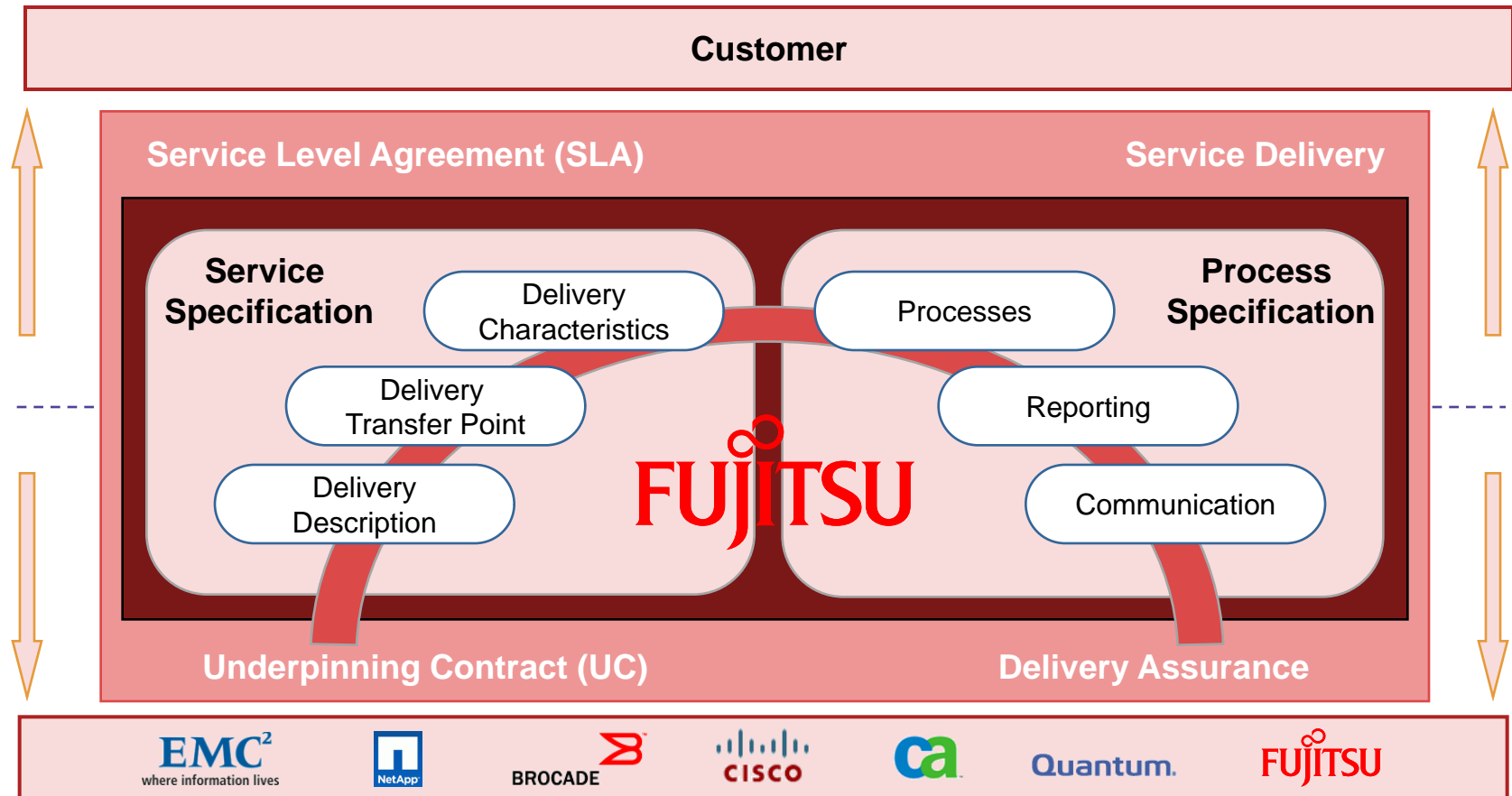
Managed Storage Services Portfolio

Comprehensive and objective consulting
services to identify your specific storage needs

Consult

A storage concept
that is tailor-made to your requirements

Design

Integration Services

Successful transfer
of your storage infrastructure into regular operation

Build

24/7 proactive management
and maintenance of the storage infrastructure

Operate/ Maintain

Operational Services
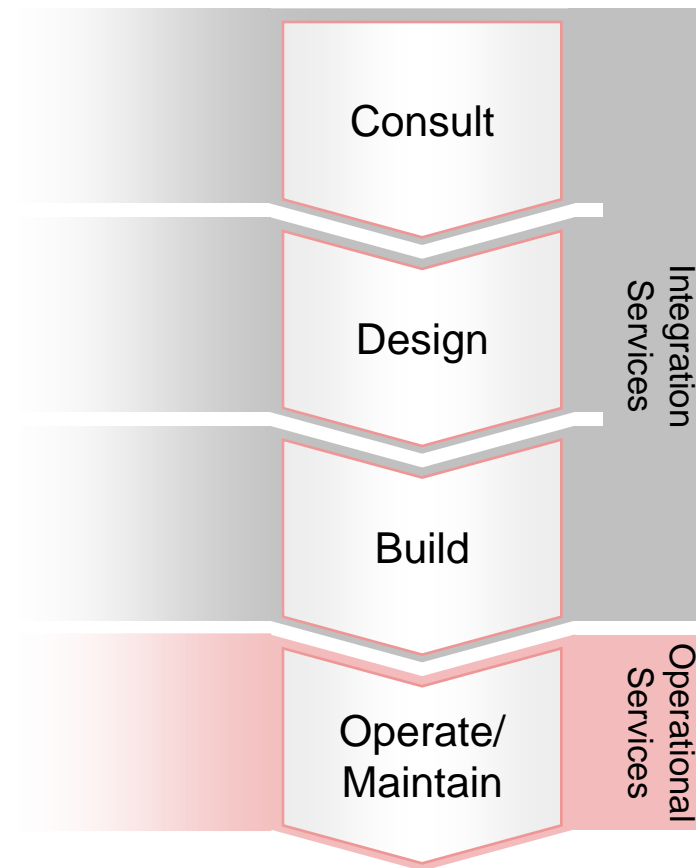
Get the most of your investment: The integration and consulting knowledge of Fujitsu Technology Solutions guarantees a smooth project execution.

Systems Management Center

Centralized approach

- Customer allows full remote access to all IT-infrastructure components
- Complete SMC portfolio is delivered centrally

Combined approach

- Limited access to IT-infrastructure and/or onsite presence
- Satellite SMC installed on site – full access to central SMC capabilities (e.g. back level support)
- Central SMC provides services for dedicated IT-Infrastructure directly (remote)

Decentralized approach

- Customer allows no remote access
- SMC needs to be set up fully decentralized on site
- Central SMC acts as process and tool owner and 3rd level support for decentralized SMC

CENTRAL SMC

centralized

Delivery Scenario 1

Satellite-SMC

combined

Delivery Scenario 2

Tools & Processes

Satellite-SMC

decentralized

Delivery Scenario 3

Customer's secure IT environment

Customers' Benefits
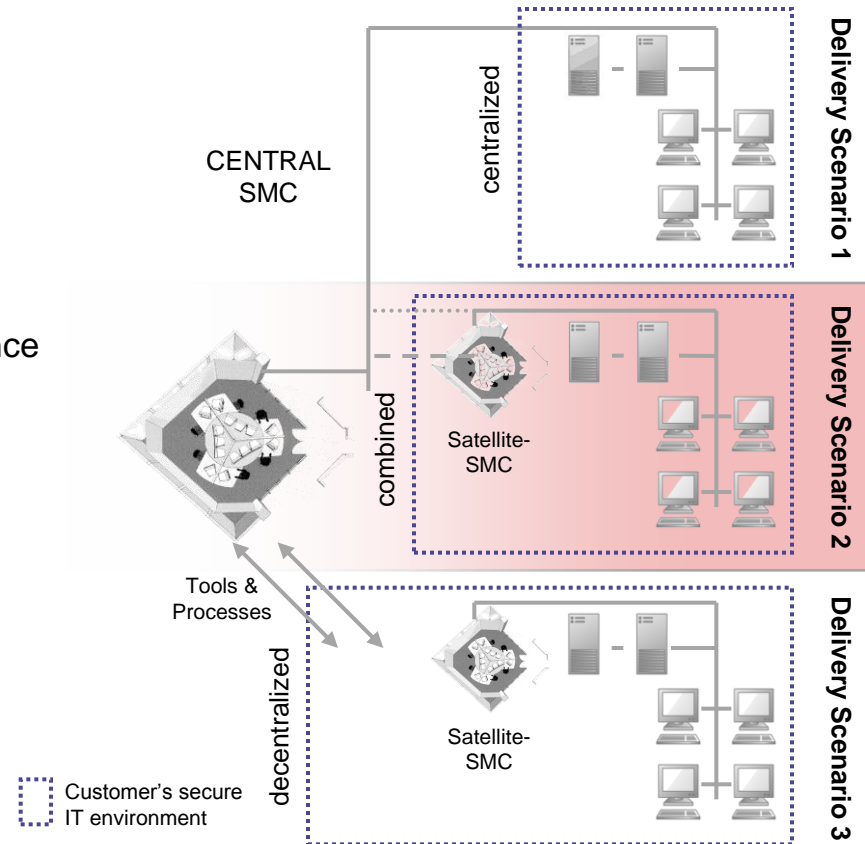
Flexibility

- System and Service availability according to growth plan and project specific demand
- No over-capacities
- Growth per work order
- Predefined buffered capacities

Efficiency

- Freeing up expert capacity for core competencies
- Access to certified professionals and experts
- Overall system consolidation
- Acceleration of procurement processes and efficiency in system utilization

Improved Return on Equity as assets are no longer part of the balance sheet

Customers' Benefits

FUJITSU

Transparency

- Online Storage and Backup as a service – not as a technology

- SLAs supporting business requirements

- Defined interfaces and operation processes, implementation of standardized Service Levels

- Monitoring and reporting of resources and services

- Tailor-made billing modules enable efficient cost accounting

➜ Just one report and one invoice

Cost Transparency through precise planning of backup costs, early anticipation of future capacity requirements and "pay-as-you-grow" concepts

Dynamic Storage Infrastructures

FUJITSU

Infrastructure Products & Services	Infrastructure Solutions	Managed Infrastructure	Infrastructure as a Service
Use building blocks designed for dynamism	Use pre-integrated Infrastructure Solutions	Let external experts support your IT Operation	Share Infrastructure solutions with others

ETERNUS

partner products

ETERNUS CS

Managed Storage
- deploy, provision and manage the storage infrastructure
- cost transparency
- dedicated infrastructure
- € per usage

€ per usage
- shared infrastructure

▶ **Product related Services**

▶ **Storage Solution Services**

Managed Storage Services

Financial Services
- pay as you use
- pay as you grow
- pay as you earn

Storage as a Service

Fujitsu storage solution approach

Our global storage portfolio
Our partner strategy

Storage environment

Business Efficiency

Business Continuity

Virtualisation

Auto-mation

Integ-ration

Server

Software & Solutions

Network

Storage

Services

Business Agility
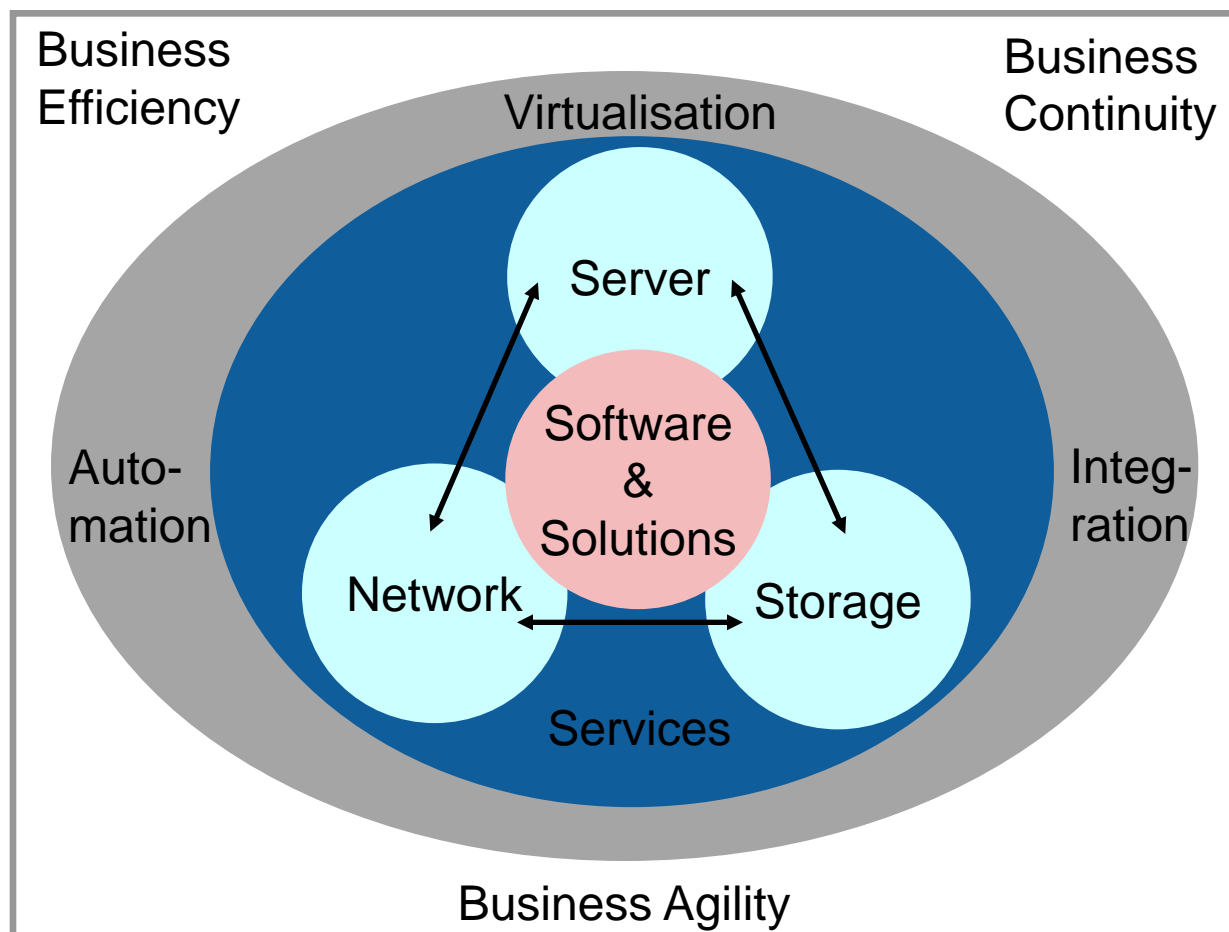
- Storage is an important part of our Dynamic Infrastructures Strategy
- Customers increasingly expect their server, storage and networking infrastructure to deliver value as a whole, not as islands
- Strong storage partners help us to complete the portfolio and support us in market access
- High performance IP (internet protocol) drives convergence of the data center

Our storage solutions approach

- We provide superior storage solutions based on partners´ and own best-in-class products and integrate with our servers - also addressing our customers´ multivendor environments

- We create strategic alliances with the suppliers of selected BiC products

- We integrate the selected products to prepackaged storage solutions

- We build up the regional ability to deliver fully customized solutions to our customers

- We deliver professional services to optimize technology within IT-solutions

Our partner strategy

On combination with partner products we cover the full range.

| Disk Storage | FUJITSU | EMC² where information lives | NetApp Go further, faster |

| Tape Storage | FUJITSU | Quantum. | STORAGETEK Sun Microsystems |

| Storage Management Software | FUJITSU | ca Computer Associates | EMC² where information lives | symantec. |

| Data Center Network | | | BROCADE | CISCO |

| **Services** | ▪ Analyse ▪ Consult ▪ Design ▪ Build ▪ Operate ▪ Maintain | FUJITSU |
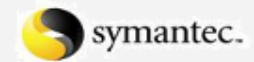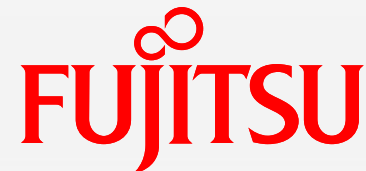
The broadest portfolio

of storage hardware and solutions

Online Storage	Nearline Storage	Storage Software	Networking
Disk storage systems for critical data	Market leading virtual tape appliance and powerful tape systems	Data protection, archiving and business continuity	SAN and NAS infrastructures for enterprises and SME

Best in class products from Fujitsu and strategic partners

ETERNUS DX
entry and midrange external disk systems

EMC and **NetApp**
midrange and high-end disk systems

ETERNUS CS
Virtual Tape Appliance

ETERNUS LT
tape systems

Quantum, Sun/STK
midrange and high-end tape systems

Integrated storage solutions for
- Backup
- E-Mail Archiving
- Business Continuity

IP Switches
- **CISCO**
  Catalyst and Nexus

SAN Switches
- **Brocade**
- **CISCO** MDS

Solutions Integration and Professional Service
Analysis, Technical Design, Implementation, Training

Our Online Storage Portfolio

High End Storage

Symmetrix V-Max
Symmetrix DMX
Filer FAS6000/3100
FibreCAT CX4-960
Celerra NS-960
Celerra NS-G8

Mid Range Storage

FibreCAT CX4-240/-480
Filer 3100
Celerra NS-480
Celerra NS4G

Entry Level

FibreCAT CX4-120
Celerra NS-120
Celerra NX4
Filer FAS2000
ETERNUS DX80

SME

ETERNUS DX60
FibreCAT SX60/SX80/
SX88/SX100
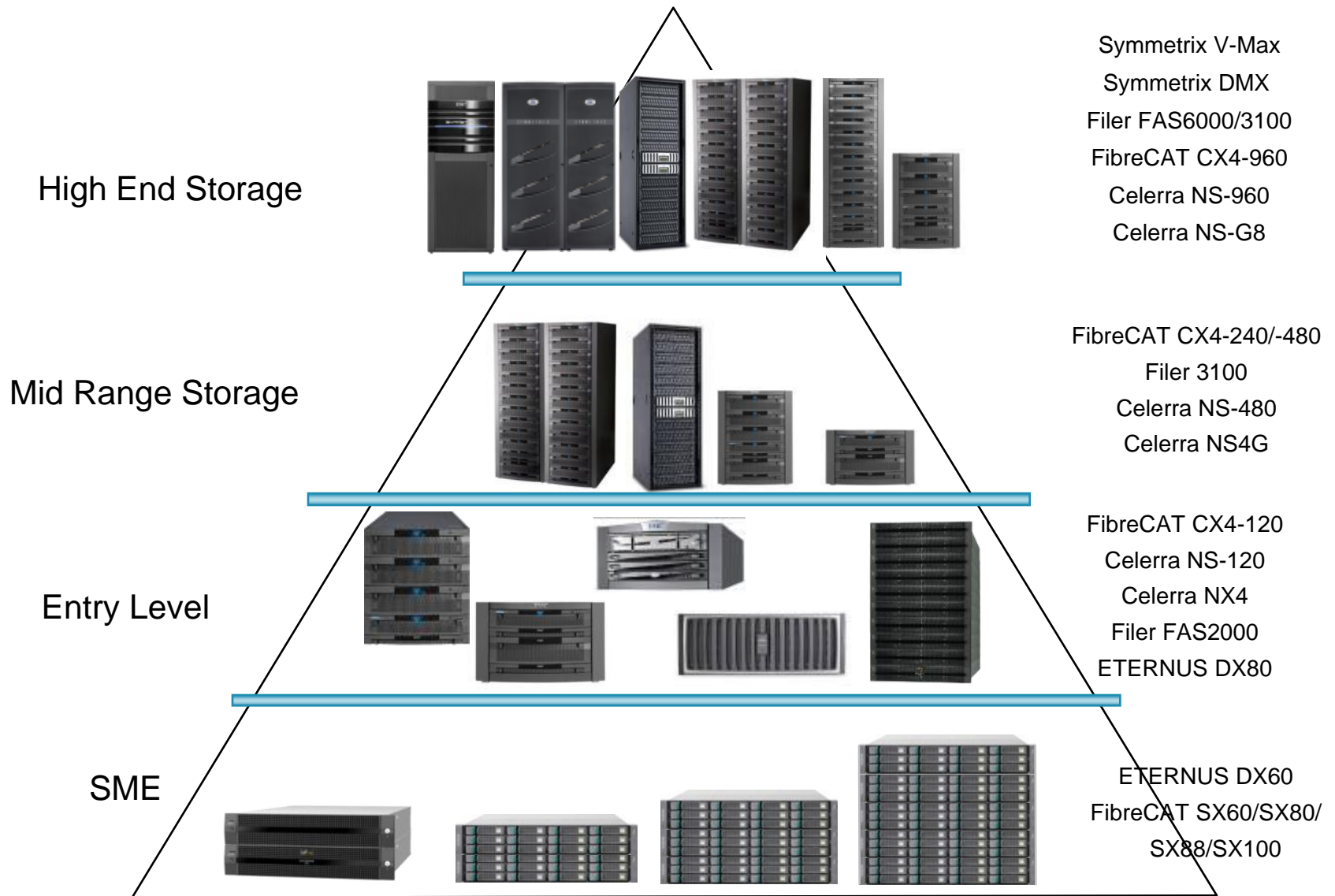
Data Protection Solution Portfolio

Virtual Tape Appliance	**Tape Storage** Best in class Tape-Libraries	**Backup Solutions** Backup/Recovery, DeDuplication	**HSM and Archiving**
Best in class products from FUJITSU and our partners			
FUJITSU **ETERNUS CS** Virtual Tape Appliance **ETERNUS CS DiskLibrary Edition** Entry solution for Backup to Disk	**FUJITSU ETERNUS** • LT20 • LT40 • LT60 **Quantum:** • SC i500, • SC i2000 • SC 10k **SUN/STK:** • SL 500 • SL 3000 • SL 8500	**FUJITSU NetWorker** + add-on Module **Avamar on PRIMERGY** Backup with deduplication **Partner Products** • EMC NetWorker • Symantec NetBackup • CA ARCserve	**HSM and E-Mail-Archiving Software** • EMC SourceOne • EMC DiskXtender • Symantec Enterprise Vault
Management Solutions (Data Protection Advisor)			
Services: Analyse, Consult, Design, Build, Operate, Maintain			
Managed Storage / Backup on Demand Concepts			

Storage Entry Products

Entry Storage products of FUJITSU…

…meet storage requirements of small and midrange customers

- Are leading in terms of speed and capacity: up to 120 TB capacity

- High levels of reliability:

- CacheProtector, RAID Level, Redundant Copy, 1024 Snapshots, Encryption

- Are affordable

- Are simple to set up and operate : easy-to-use GUI

- Work fast and reliably over distances: 1st A-vendor with 8 Gb/s FC

- Support compliance requirements: ETERNUS LT20/LT40/LT60

- Store data in an energy efficient way:
  Enhanced EcoMode, tapes vs. disks

This value proposition is true for …   **… Storage Entry Products**

ETERNUS DX60 and DX80 – Line-up

Optimized storage for Small & Medium Enterprise business

Affordable entry
in network storage

Max. 24 drives

**Max. 120 drives
Supports FC 8Gbps**

For higher performance
and more expandability

ETERNUS DX60

ETERNUS DX80

	DX60	DX80	Note
No. of drives	24	120	
Storage capacity	10.8 TB	54.0 TB	With 450 GB SAS drives
	24.0 TB	120.0 TB	With 1 TB Nearline SAS drives
Cache capacity	2 GB	4 GB	In configurations with two controllers
Host ports	4x FC 4 Gb/s	4x FC 4 Gb/s or 8 Gb/s	+ SAS + iSCSI as of 09/2009

ETERNUS DX60/80 – reliable storage

ETERNUS DX60

- **Up to 24 disks**
  - **24 TB (NearLine SAS)**
    - **4 Gb/s FC**
    - **2 GB cache**
- **RAID 0, 1, 1+0, 5, 5+0, 6 support**
  - **64 connectable hosts**
  (Windows, Solaris, Linux, VMware)

ETERNUS DX80

- **up to 120 disks**
  - **120 TB (NL SAS)**
    - **8 Gb/s FC**
    - **4 GB cache**
- **RAID 0, 1, 1+0, 5, 5+0, 6 support**
  - **128 connectable hosts**
  (Windows, Solaris, Linux, VMware)

Outstanding Benefits

- **CacheProtector**
- **Redundant Copy**
- **Data block guard**
- **RAID migration**

- **EcoMode (MAID)**
- **Disk Encryption**
- **Nearline SAS and SAS drives**
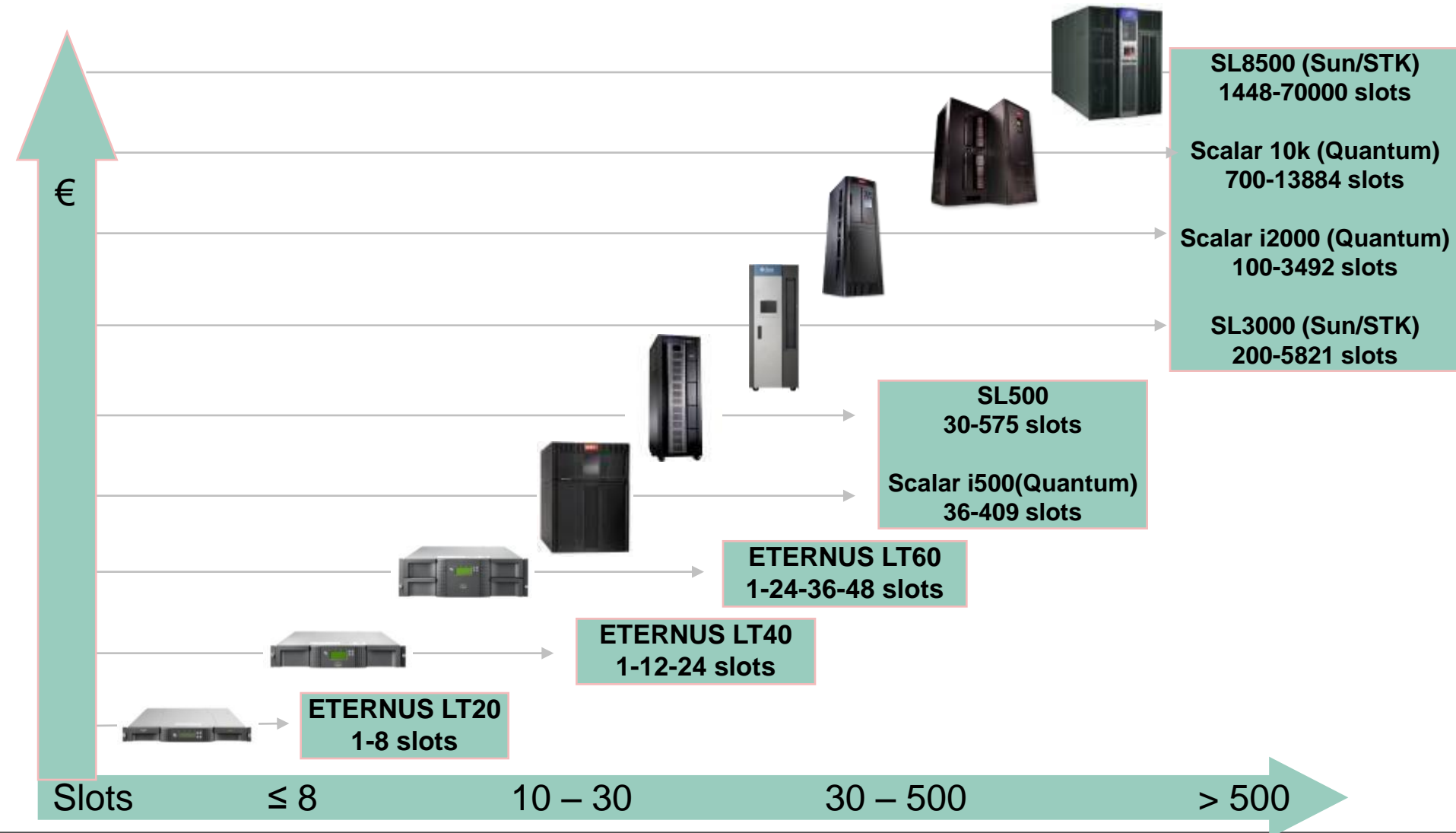
ETERNUS LT family

LTO Ultrium technology

- ■ high capacity and performance

- ■ LTO Ultrium Tape Drive (Desktop)

- ■ 1U LTO autoloader ETERNUS LT20

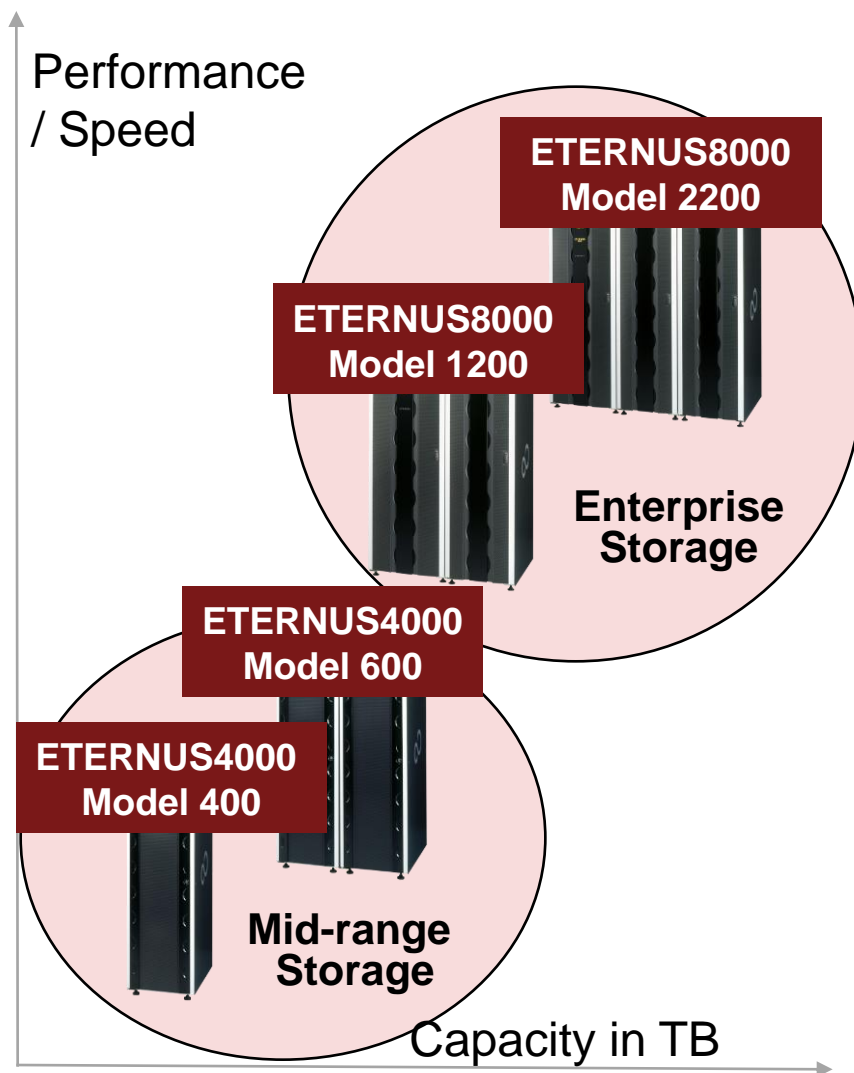- ■ 2U LTO tape library ETERNUS LT40

- ■ 4U LTO tape library ETERNUS LT60

Desktop device → entry level automation

Magnetic Tape Systems for all Requirements

€

SL8500 (Sun/STK)
1448-70000 slots

Scalar 10k (Quantum)
700-13884 slots

Scalar i2000 (Quantum)
100-3492 slots

SL3000 (Sun/STK)
200-5821 slots

SL500
30-575 slots

Scalar i500(Quantum)
36-409 slots

ETERNUS LT60
1-24-36-48 slots

ETERNUS LT40
1-12-24 slots

ETERNUS LT20
1-8 slots

Slots   ≤ 8   10 – 30   30 – 500   > 500

ETERNUS4000 / ETERNUS8000 models

Performance / Speed

ETERNUS8000 Model 2200

ETERNUS8000 Model 1200

Enterprise Storage

ETERNUS4000 Model 600

ETERNUS4000 Model 400
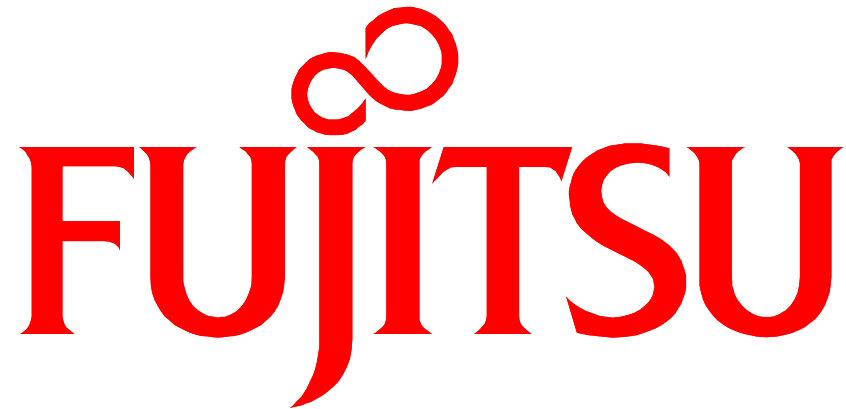
Mid-range Storage

Capacity in TB

- ■ Quality and reliability
  - ■ proven HW + SW
  - ■ RAID migration
  - ■ Storage based data encryption
  - ■ Redundant copy
- ■ Innovation, scalability and speed
  - ■ Reduce cost with high efficient storage systems
  - ■ Ideal platform for extensive and massive storage consolidation
  - ■ EcoMode with MAID functionality
- ■ Versatility
  - ■ Suitable for a large range of applications

"Only invest in tested storage solutions from a single source"