

Fujitsu Server BS2000

SE330 and SE730



FUJITSU

Fujitsu Server BS2000

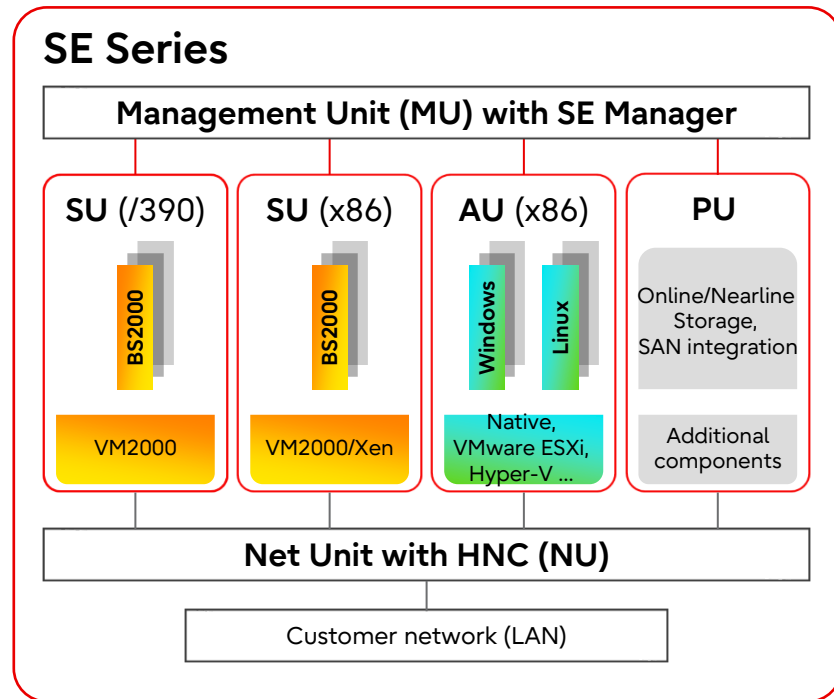
SE Infrastructure SE330 and SE730

- **SE Infrastructure – architecture and components**
- SE Infrastructure – application scenarios
- The new SE Servers – SE330 and SE730
- x86 applications in the SE Infrastructure – Application Units
- Server, Software and Services for BS2000

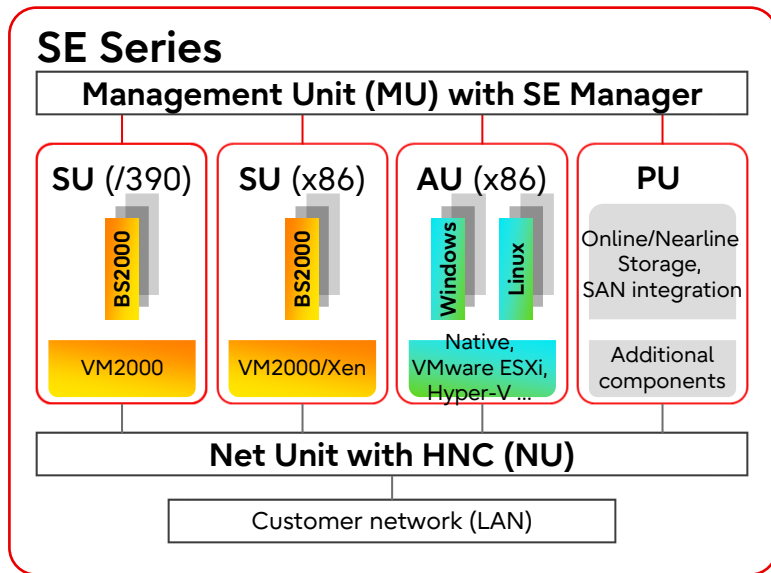


„Best fit“ Architecture for every requirement

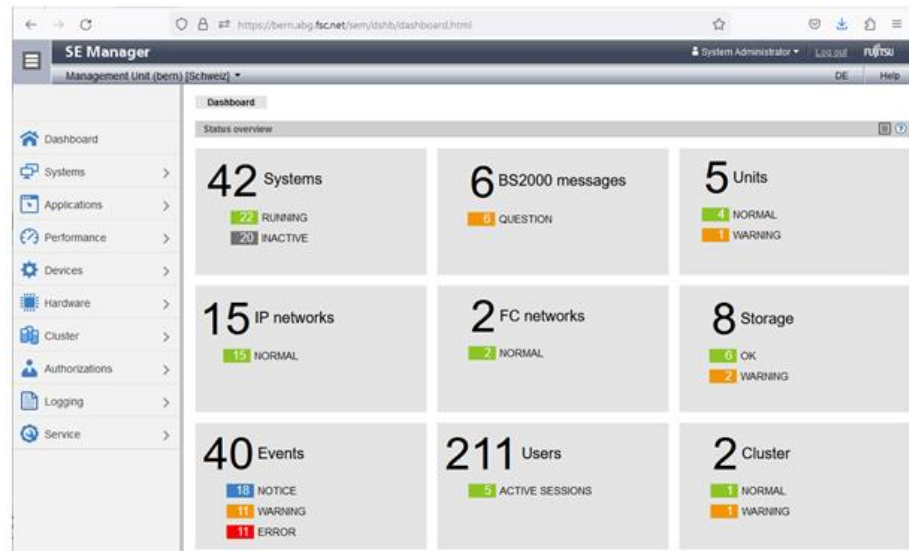
- SU /390: Server Unit in SE730
 - Top performance; Best scale up
- SU x86: Server Unit in SE330
 - Optimal use in lower and medium performance range
- MU: Management Unit
 - Easy, central & comfortable Mgt
 - Central carrier for additive software
- NU: Net Unit „Ready & Easy to use“
 - Top performance and security
- AU x86: Application Unit
 - Any OS (Native / Hypervisor) and x86-applications
- Integration Disk, Tape, Switch,...



SE Infrastructure – Data Center of the future



- Components of the SE infrastructure
- Integration of /390 and x86
- One platform for all application scenarios

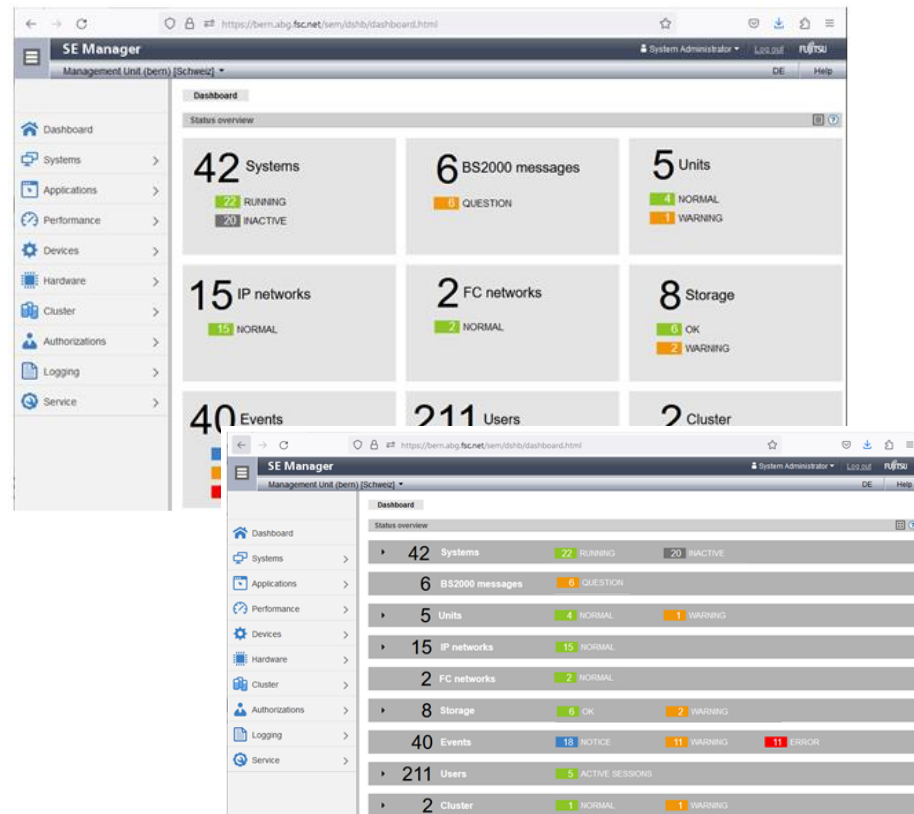


- Central monitoring, operating and administration of all SE units
- Modern GUI

SE Series – SE Manager Dashboard

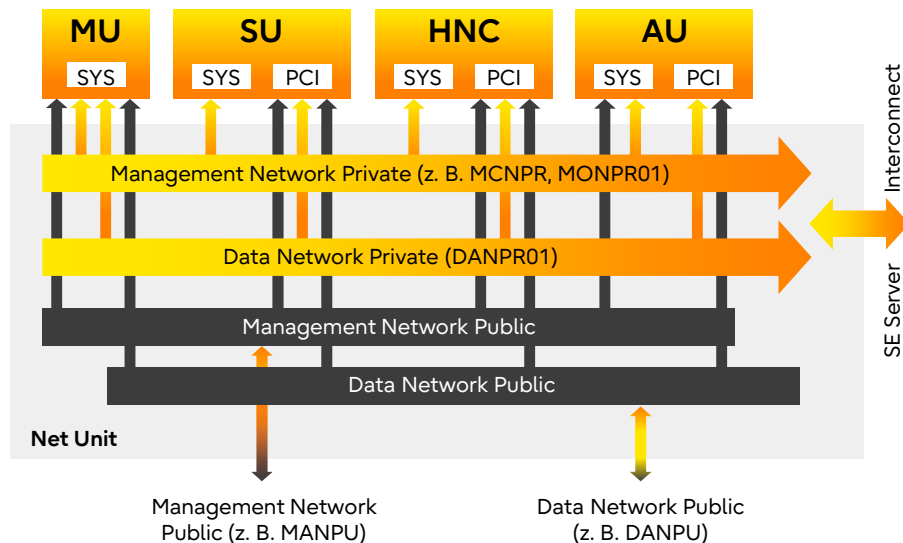
Gallery view / List view

- SEM entry page
 - Current status displays (real-time analysis)
 - Intuitive user interface
- Overview information about
 - systems (BS2000, BS2-VM's, systems of the AU's)
 - units (SU /390, MU, SU x86, AU)
 - IP networks
 - FC networks
 - storage (intern, extern)
 - user
 - incidents



„Network from the power socket“

- „Ready to use“
 - All components already integrated
 - Fully wired and preconfigured
 - Full redundancy
 - Latest network technology
 - „Easy to use“
 - Easy configuration via SEM
- Reduction of firewalls & administration
- Highest security through virtualization / isolated, differentiated networks
- Top performance

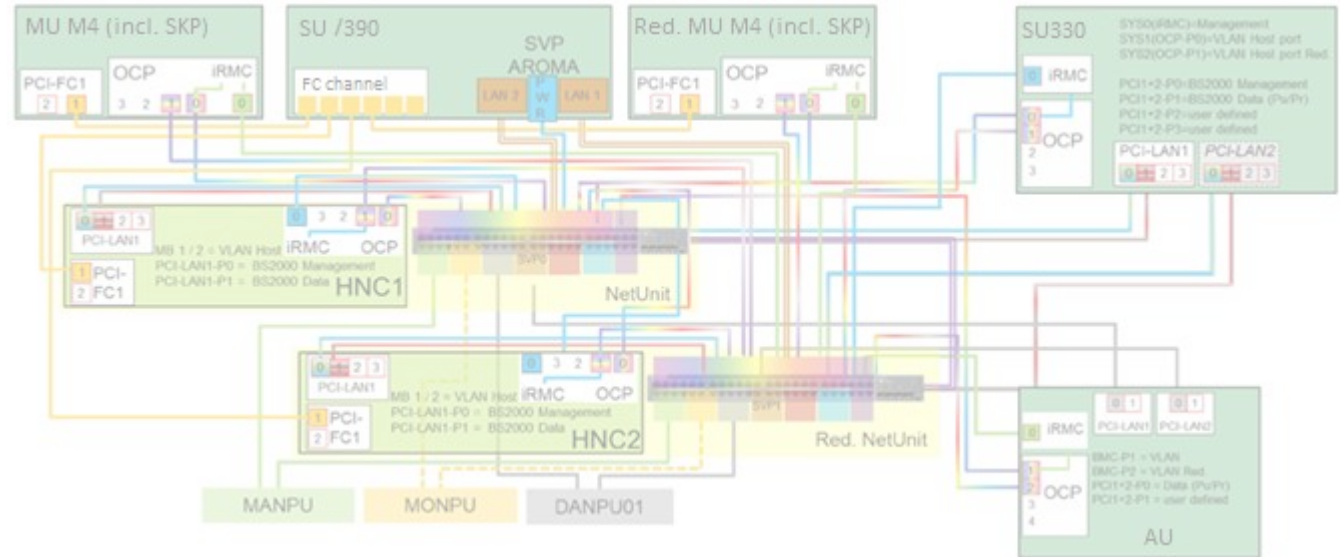


Adaptive Network-Infrastructure – LAN

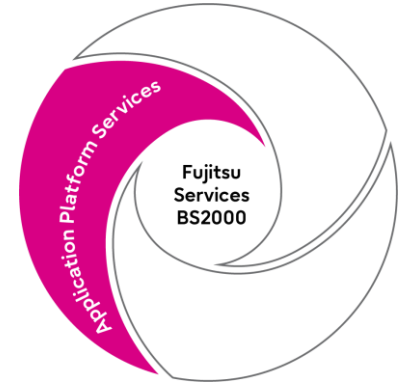
„ Network from the power socket“

Complex network configuration, that's why:

Pre-installation and configuration at the factory and not at the customer's site!



- Flexible, redundant connection of SE units to each other and to the customer network
 - Data and administration networks based on CISCO switches
 - 10 Gbit/s data connections – SE internally and to the customer network
 - Use of tagged VLANs for logically separated networks
 - Physically separated data networks
 - High connectivity and performance for particular large SE infrastructures
 - Network administration with the CISCO tools
 - Integration in SE-Manager: Launch, HW overview, maintenance
- Fujitsu service offer
 - Cooperative development of the optimal network connection for the customer's specific requirements
 - Installation, cabling and preconfiguration in the factory in accordance with customer specifications
 - Integration of switches into the customer network, lifecycle management



- Currently supported Cisco switches as part of the SE Infrastructure
 - Cisco Nexus 93180YC-FX
 - Cisco Nexus 9348GC-FXP
 - both with NX-OS operating system
- Support in the Management Unit
 - launch, configuration of connections according to customer
 - HW overview, network overview, status monitoring
 - remote service, configuration backup, firmware updates



SE Series – Storage Management



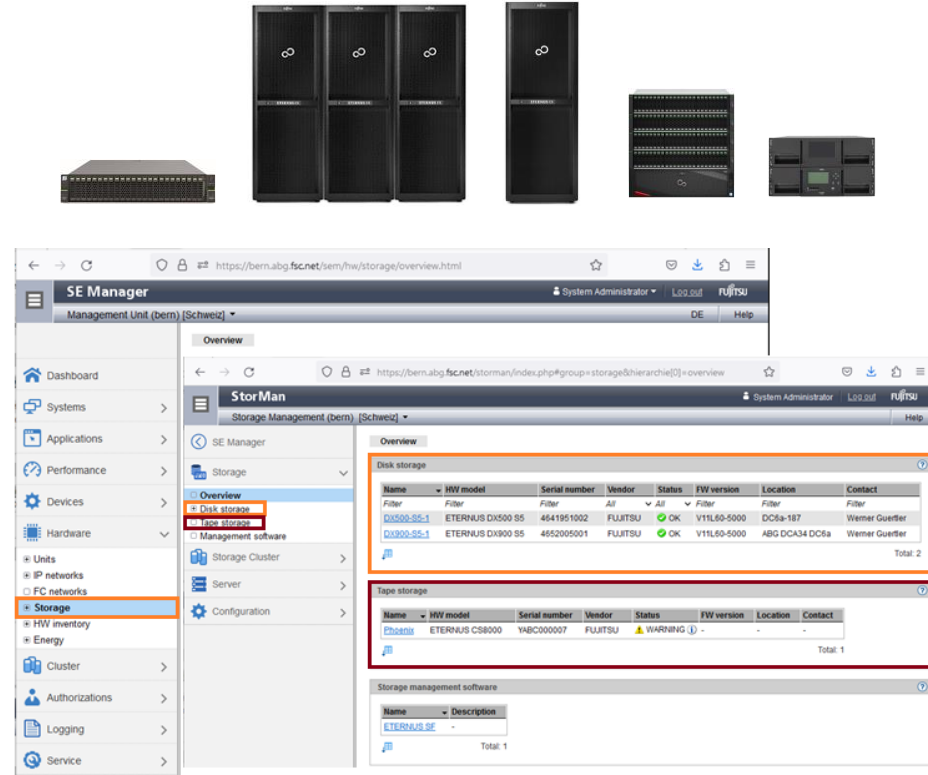
Administration and Automation

StorMan

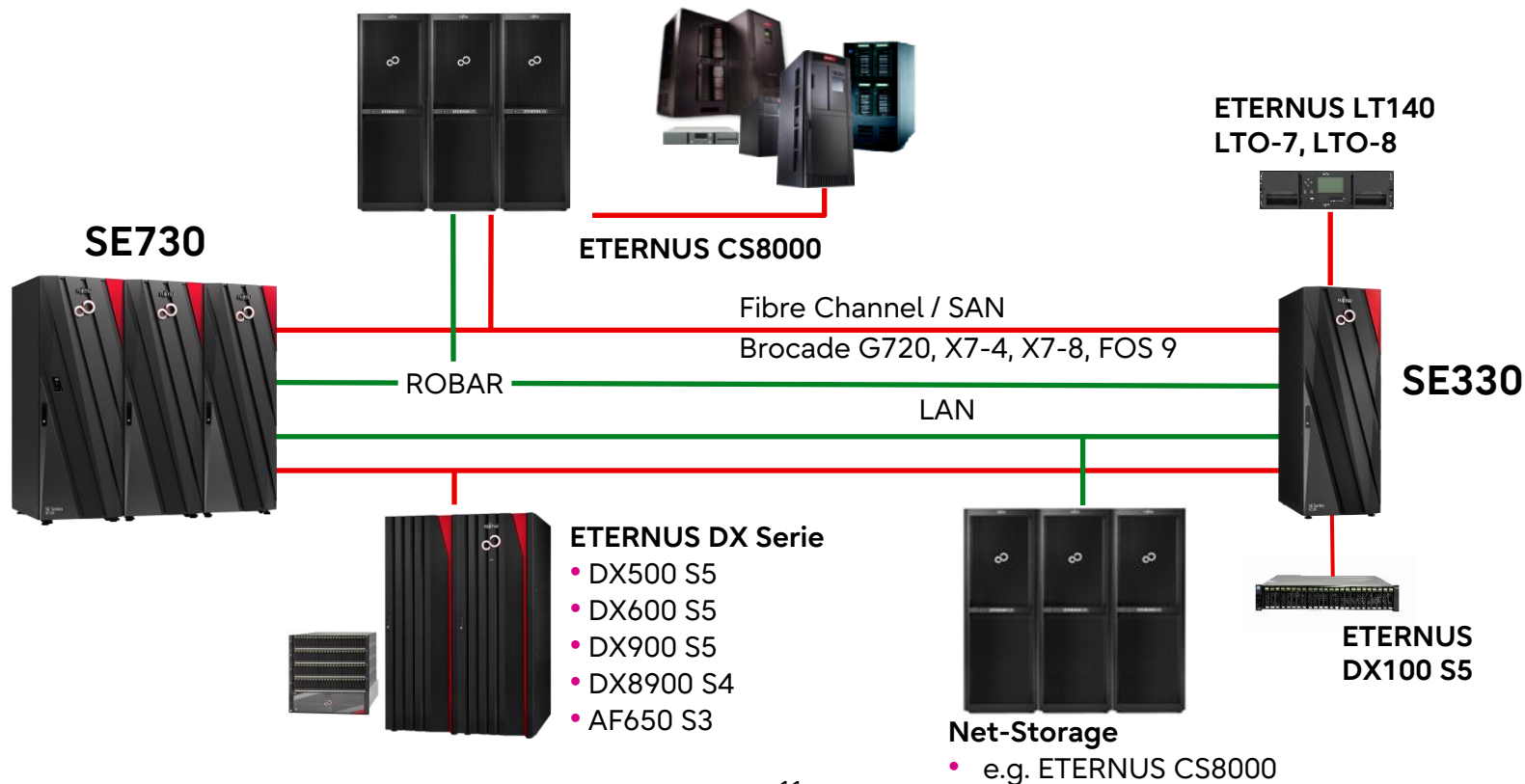
- Administration of the peripherals of all SE units
- Disk Storage
 - Information, Monitoring, Provisioning, Replication
 - Virtualization with server specific pools
- Tape Storage
 - Information and Monitoring
- Links to the Storage Management SW
- StorMan add-on uses MU as execution platform

SHC-OSD

- Furthermore automation basis for BS2000 based storage management

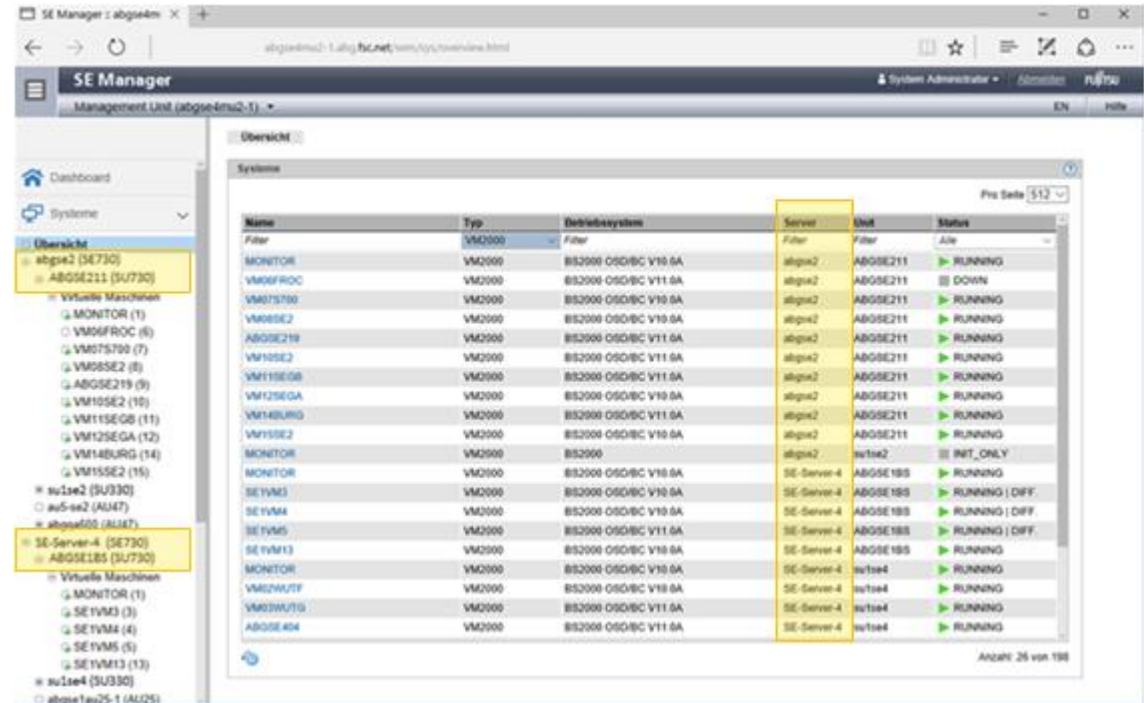


SE Series: Online & Nearline Periphery



Single Point of Administration for several SE Infrastructures

- Central overview and administration for the units and systems of the SE infrastructures
- Significant contribution also in the context of high availability (overview and management across all components)
- Requirement for SE Live Migration

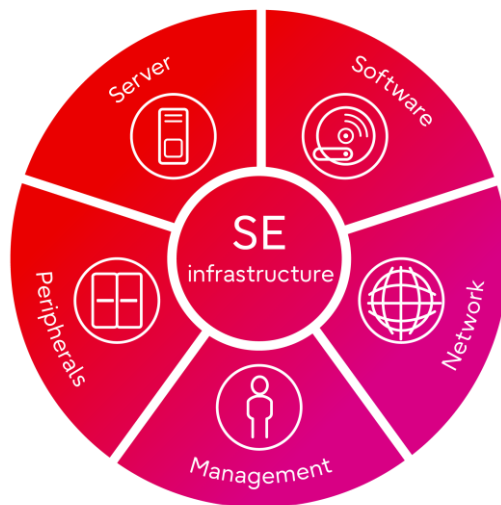


The screenshot shows the SE Manager web interface. On the left is a navigation menu with options like Dashboard, Systeme, and an 'Übersicht' (Overview) section. The main area displays a table of systems. The table has columns for Name, Typ, Betriebssystem, Server, Unit, and Status. The 'Server' column is highlighted in yellow. The table lists various virtual machines (VMs) and their associated servers and units, along with their current status (e.g., RUNNING, DOWN, INIT_ONLY).

Name	Typ	Betriebssystem	Server	Unit	Status
MONITOR	VM2000	BS2000 OS/IBC V10 SA	abgsx2	ABGSE211	RUNNING
VM06PROC	VM2000	BS2000 OS/IBC V11 SA	abgsx2	ABGSE211	DOWN
VM07S700	VM2000	BS2000 OS/IBC V10 SA	abgsx2	ABGSE211	RUNNING
VM08SE2	VM2000	BS2000 OS/IBC V10 SA	abgsx2	ABGSE211	RUNNING
ABGSE219	VM2000	BS2000 OS/IBC V11 SA	abgsx2	ABGSE211	RUNNING
VM10SE2	VM2000	BS2000 OS/IBC V11 SA	abgsx2	ABGSE211	RUNNING
VM11SE08	VM2000	BS2000 OS/IBC V11 SA	abgsx2	ABGSE211	RUNNING
VM12SEGA	VM2000	BS2000 OS/IBC V10 SA	abgsx2	ABGSE211	RUNNING
VM14BURG	VM2000	BS2000 OS/IBC V11 SA	abgsx2	ABGSE211	RUNNING
VM15SE2	VM2000	BS2000 OS/IBC V10 SA	abgsx2	ABGSE211	RUNNING
MONITOR	VM2000	BS2000	abgsx2	xy1se2	INIT_ONLY
MONITOR	VM2000	BS2000 OS/IBC V10 SA	SE-Server-4	ABGSE185	RUNNING
SE IVM3	VM2000	BS2000 OS/IBC V10 SA	SE-Server-4	ABGSE185	RUNNING DIFF.
SE IVM4	VM2000	BS2000 OS/IBC V10 SA	SE-Server-4	ABGSE185	RUNNING DIFF.
SE IVM5	VM2000	BS2000 OS/IBC V11 SA	SE-Server-4	ABGSE185	RUNNING
SE IVM13	VM2000	BS2000 OS/IBC V10 SA	SE-Server-4	ABGSE185	RUNNING
MONITOR	VM2000	BS2000 OS/IBC V10 SA	SE-Server-4	xy1se4	RUNNING
VM02WUTP	VM2000	BS2000 OS/IBC V10 SA	SE-Server-4	xy1se4	RUNNING
VM03WUT9	VM2000	BS2000 OS/IBC V11 SA	SE-Server-4	xy1se4	RUNNING
ABGSE404	VM2000	BS2000 OS/IBC V11 SA	SE-Server-4	xy1se4	RUNNING

What LM offers

- **Smooth relocation of systems** and their applications
- Full transaction integrity
- Supplements the high availability for plannable changes
- Integrated operation in SE Manager



Benefits

- Business continuity without downtime for planned actions
- Diverse application scenarios
 - Infrastructure maintenance
 - HW/FW maintenance or upgrade
 - Return after HA-Failover
 - Workload-Management
- Easy and secure execution of live migration

Fujitsu Server BS2000

SE Infrastructure SE330 and SE730

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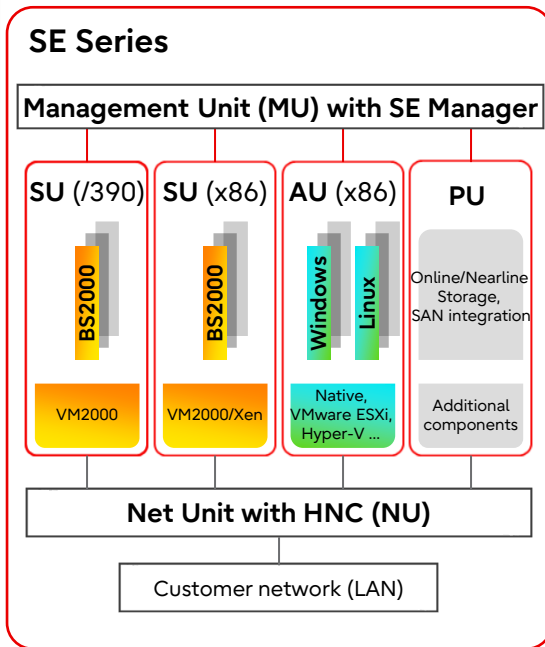


SE Server as consolidation platform



Consolidation of multiple operating systems and applications (BS2000, Linux, Windows) on server units and application units

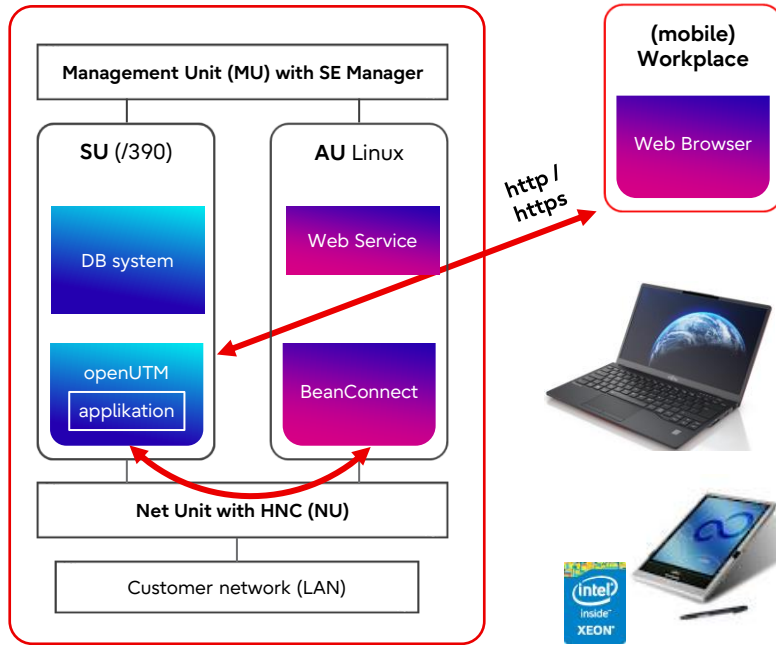
- The consolidation of different applications from the mainframe world and the open world creates advantages for the performance and utilization of the SE server.
- Central and convenient operation and administration of all applications on the SE server with a web-based interface
- Uniform SLA and service management with central remote service access increases data security
- Cost reduction through optimization of required infrastructure and energy demand



/390 Mainframe with the open world

- With up to 256 Application Units (AU) x86
 - For any OS (Native) / Hypervisor
- SE Manager as Single Point of Administration across all units
- Connections SU <-> AU with top performance and safety via Net Unit
- „Ready & Easy to use“ network
- IPerfect infrastructure for various additive application scenarios; e.g.
 - consolidation Linux®/Windows®
 - Application integration
 - Offloading scenarios

SE Series – Best fit Data Center architecture



Transaction Processing

- Integration into SE Infrastructure
 - Hybrid System SU /390 and AU
 - Communication via SE Net Unit
- Web-based, innovative UI for openUTM applications
 - Comfortable & effective use of BS2 applications for users
 - Excellent connectivity to the latest IT technologies
 - Investment protection through superior MF interoperability

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Fujitsu Server BS2000 – SE Series



SE730

360 up to 6.000 RPF



SE330

from 20 RPF

Performance range 1:300 or 20 RPF - 6.000 RPF

SE730 – Performance features

- 1 - 2 system boards with each 8 BS2000 CPU, 2 IOP and 64 oder 128 GB main memory
 - 18 models with 1 - 16 CPUs, Hot Spare CPU, CoD CPUs
 - Max. 256 GB main memory
 - Max. 8 CHE boxes with 8 FC installation slots each, Max. 126 FC-channels with 16 GBit/s
- Management Unit with SE Manager
- Redundant Net Unit with 48 Ports 1 Gbit/s and HNC
- SE730 Rack with 42 HE, KVM, rack console
- Expansion options
 - 10 Gbit/s NU Expansion, redundant HNCs, MU
 - Application Units (number per type)
 - Periphery ETERNUS CS8000, DX500/DX600/DX900/DX8900, AF650



SE730 – models and performance data

SE730 model	-10A	-10B	-10C	-10D	-20A	-20B	-20C	-20D	-30
RPF	360	430	520	630	700	840	1010	1220	1800

SE730 model	-40	-50	-60	-70	-100	-120	-140	-150	-160*
RPF	2350	2800	3200	3600	4400	4900	5400	5700	6000

*on request

**monoprocessor
performance**

630

SE730 Server – system board and processor

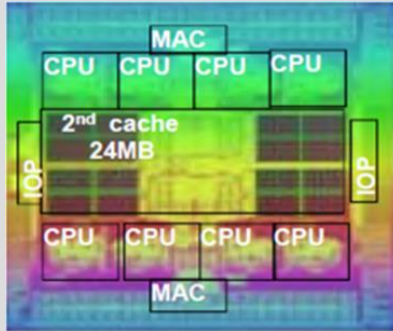
System board



The system board

- 1 or 2 boards for SE730
- 1 processor-chip per system board
- (1) CPU module, (2) main memory up to 128 Gbyte, (3) PCI switch 0, (4) PCI switch 1

Processor



The processor – the „heart“ of the SE730

- Current CMOS technology with 28nm
- Processor module with 8 BS2000 CPU's
- Increased performance of the individual CPU cores
- Highest integration on the processor chip (CPU, IOP, MAC)
- Short communication paths and shared L2 cache

SE730 – Highlights



- Higher system performance
 - More powerful processor
 - Fast connection of memory and I/O system
- Higher I/O performance
 - Up to 26 FC channels with 16 Gbit/s
 - More parallel FC connections to the HNC
 - FastDPAV
- Easier operation and administration and additional automation options
 - Enhanced Functionality in the SE Manager
 - Realization of Change Requests



SE330 – performance features



- One system board with 4 processors Intel® Xeon® 6328H
 - Models with 1 - 16 BS2000 processors
 - monoprocessor performance 300 RPF, maximum performance around 2500 RPF
 - 128 GB main memory in basic configuration, expandable up to 512 GB
 - 11 PCI slots, 4 of them for LAN and 6 of them for FC configurable
- Management Unit with SE Manager
- Net Unit with 48 Ports 1 Gbit/s RJ45
- SE330 Rack with 42 HE, KVM, rack console
- Expansion options
 - Redundant NU and MU
 - Application Units (number per type)
 - Periphery ETERNUS CS8000, DX500/DX600/DX900/DX8900, AF650, DX100, LT140



SE330 – Models and performance data



SE330 model	-10A	-10B	-10C	-10D	-10E	-10F
RPF	20	42	80	130	200	300

SE330 model	-20	-40	-80	-160
RPF	tbd.	tbd.	tbd.	tbd.

monoprocessor
performance

300



New system base for MU, NU und HNC

Management Unit MU M4

- The use of more powerful processors enables administration and monitoring even for particular large SE infrastructures.

Net Unit NU M3

- The new NU generation always uses 48-port switches with 1 Gbit/s RJ45 connections.
- 4 ports for SFP/SFP+ enable optical uplinks and cluster connections
- Net Unit extension with 1/10 Gbit/s Cisco switches as an option.

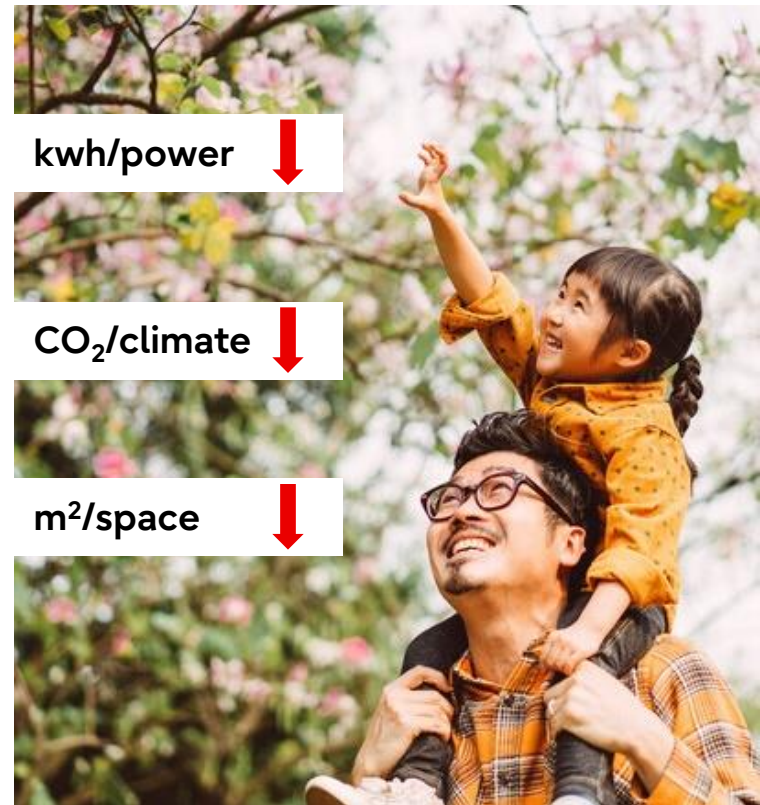
High-speed Net Connect HNC M4

- 4-port Ethernet controllers with 10 Gbit/s (RJ45 or SFP+) are supported as external connections.



Protection of the environment and the budget FUJITSU

- High energy efficiency
 - Significantly increased system performance with SE330
 - At the same time lower energy consumption
 - More power per unit of energy
 - Significantly reduced energy costs for server and cooling
- Environmentally friendly
 - Environmental and climate protection through excellent energy efficiency
- Small footprint and maintenance area of the SE infrastructure
 - System rack SE730 with 42 HE contains SU730, MU, NU and HNC
 - Minimum space requirement with higher performance and functionality at the same time



- Functions to further simplify system support, e.g.:
 - Extended role concept, additional information about fiber channel networks
- Performance measures, e.g.:
 - Performance improvement for the connection between M2000 and the BS2000 subsystem REWAS
- Extended resilience and diagnosability, e.g.:
 - Automatic verification of the iRMC SNMP configuration of a registered AU
- Update of the software base for M2000, HNC, X2000 and add-ons
 - New Linux version SLES 15 SP4, adaptation of the appliances to the new system interfaces, system hardening according to CIS rules
- Support of a new SE server generation: SE330 and SE730
 - New HW base systems for Management Unit, Net Unit, HNC and Server Unit SU330
- Support of current application units AU254 M6 and AU47 M6
 - with support for ESXi 8.0
- Realization of customer change requests
 - e.g. from the BS2000 Expert Community within Fujitsu NEXT e.V.



SE V6.5: extended role concept

- ID-dependent access protection for defined areas of activity (roles)
- Predefined base roles
- Previously existing roles
- Fine-grained new roles with access only to associated windows in SEM
- User-defined roles as a combination of base roles

Add a new role

Name ⓘ

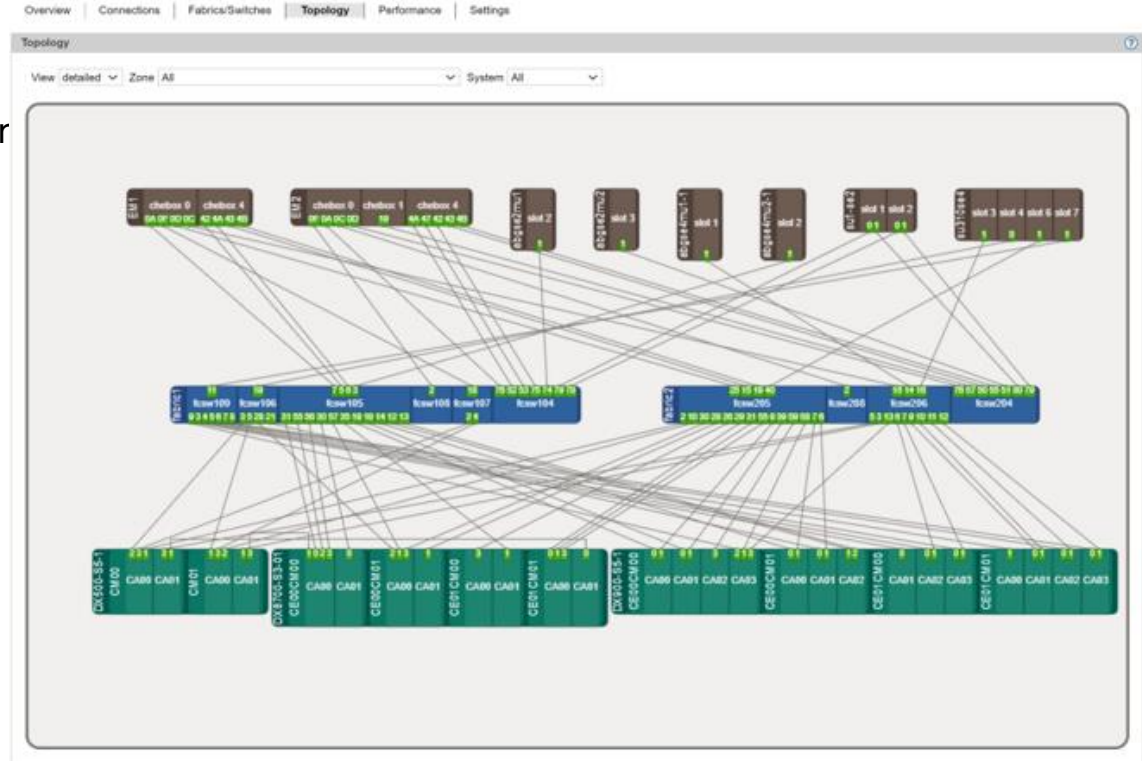
Base roles

- ☐ BS2000 operator
- ☐ BS2000 administrator
- ☐ AU administrator
- ☐ Read-only administrator
- ☐ Security administrator
- ☐ Hardware administrator
- ☐ Storage administrator
- ☐ Power operator
- ☐ IP network administrator
- ☒ FC network administrator
- ☐ Shadow terminal operator
- ☐ OPENSMT administrator
- ☐ OPENSMT information
- ☐ OPENUTM administrator
- ☐ OPENUTM operator
- ☐ OPENUTM information
- ☐ ROBAR administrator
- ☐ ROBAR operator
- ☒ STORMAN administrator
- ☐ STORMAN information

Description ⓘ *optional*

SE V6.5: Representation of FC networks

- Better overview by restructuring the Fiber Channel displays
- New wizards for easy configuration of the switches
- Quick detection of errors: generation / zoning / connections
- Advanced topology view
- Performance data in the SAN



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Customer benefit: added value of an AU in an SE Infrastructure

- Shared infrastructure with BS2000 server in the rack
- Net Unit with SE-internal, connections isolated from the outside
- Complete overview of all units, clusters and virtual machines through integration into SE Manager
- Common service concept
- Common lifecycle for SE components
- "Mainframe stability", e.g. through extended QA
- "Data Center in a Box": Independence from network administration, storage administration



SE Application Units: High-End x86 Server



AU47: 4 socket Server with 2 or 4 CPUs

usage scenarios (i.a.):
virtualisation, server
consolidation, databasis



AU25: 2 socket Server with 1 or 2 CPUs

Usage scenarios (i.a.):
virtualisation,
management software,
backup server



Customer benefit - added value of an AU integrated in the SE infrastructure

- Common monitoring for all parts of a customer application
- Common service concept for SE components
- Fujitsu pre-installation and HW integration service

Highlights of the AUs: AU25

Application Unit AU25 M6

- Based on PRIMERGY RX2540 M6
- Dual Socket Rack Server with 2U
- 1-2 processors of the Intel® Xeon® family
- Up to 12 TB of DDR4 memory
- 8x PCIe Slot, DynamicLoM OCP connector

An uncompromising standard for the data center

Universally usable, e.g. as administration or backup server or in scale-out scenarios



Highlights of the AUs: AU47

Application Unit AU47 M6

- Based on PRIMERGY RX4770 M6
- 3U Quad Socket Rack Server
- 2 or 4 processors of the Intel® Xeon® family
- Up to 15 TB of DDR4 memory
- 11x PCIe Slot, DynamicLoM OCP connector

Performance for the backend of digitization

Universally applicable, e.g. for in-memory solutions such as SAP HANA®, virtualisation, consolidation, databases





On AU25 and AU47 the following systems are approved:

- SUSE Linux Enterprise Server
- Red Hat Enterprise Linux
- Microsoft Windows Server
- VMware vSphere® ESXi
- Microsoft Windows Hyper-V Server

The SE Manager supports the display of up to 1500 virtual machines of application units.

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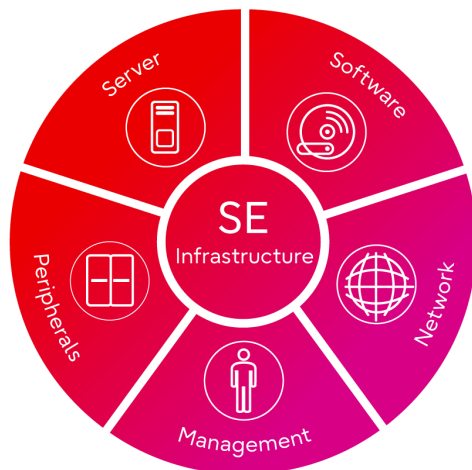
Made for the digital era

Data center consolidation

- Optimization of resources and costs
- Increased flexibility
- Simplified management
- Increased efficiency

Best platform for BS2000, Linux and Windows

- Production
- Development and testing
- Disaster recovery



Data center optimization

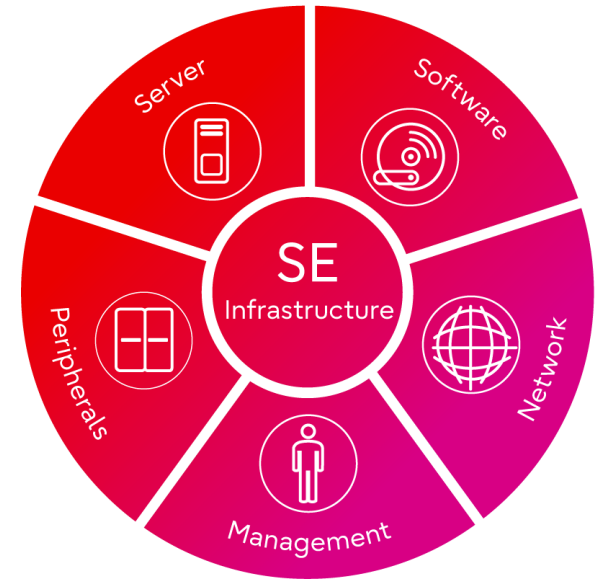
- Perfect collaboration between BS2000 and open systems
- Integration of IT processes and procedures
- Off-Load / BI
- UI development environment

Best in class

- HW/SW technologies
- Ideal for all platforms, systems and applications
- Enables smooth innovation

The innovation platform

- Hybrid IT infrastructure that integrates seamlessly with digital ecosystems
- Everything in one rack
- Operate mainframe applications as well as applications under Linux, Windows and in virtualized environments with one solution



High available



Secure



Efficient

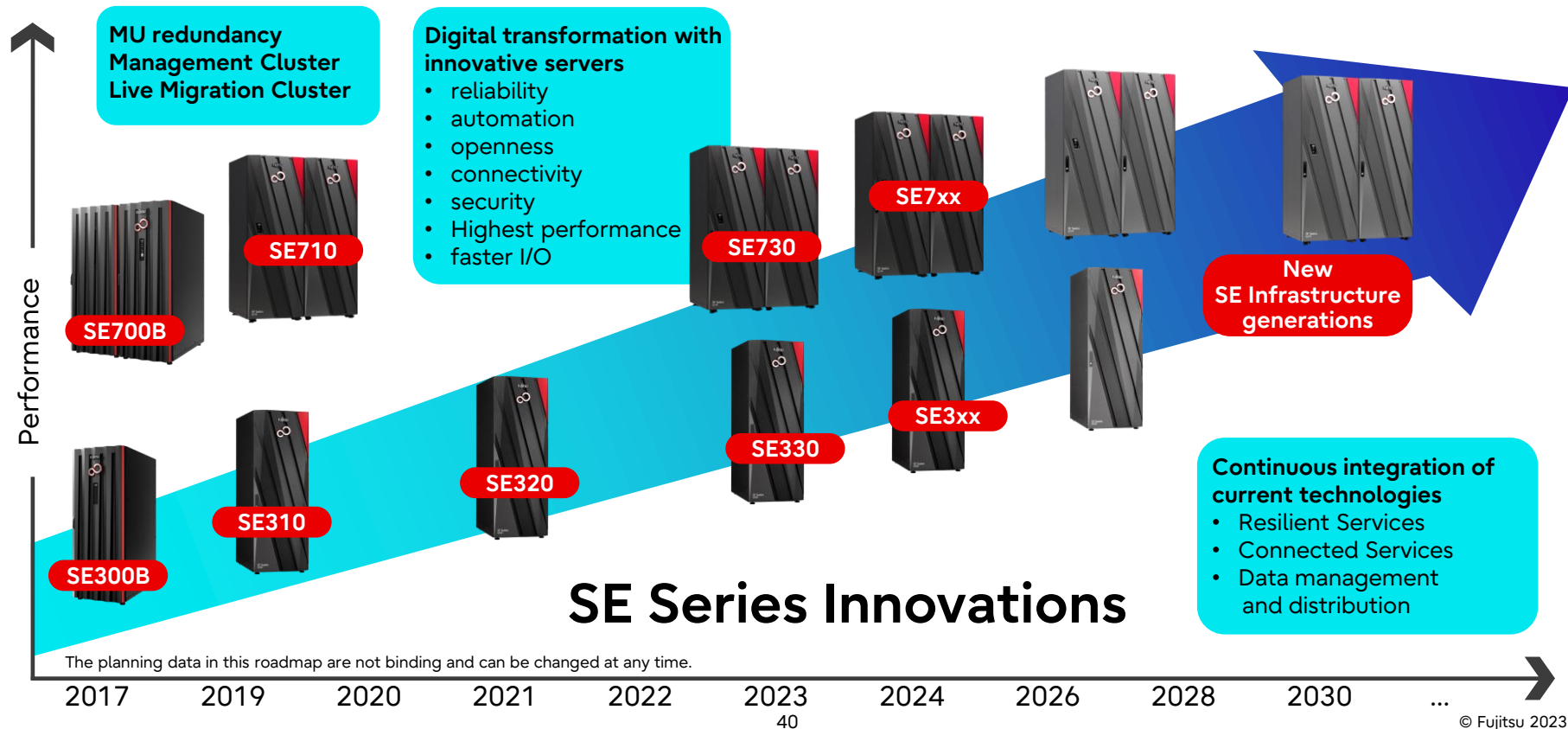


Economically



Future proof

Fujitsu Server BS2000 – Roadmap



Future-proof foundation for the digital age

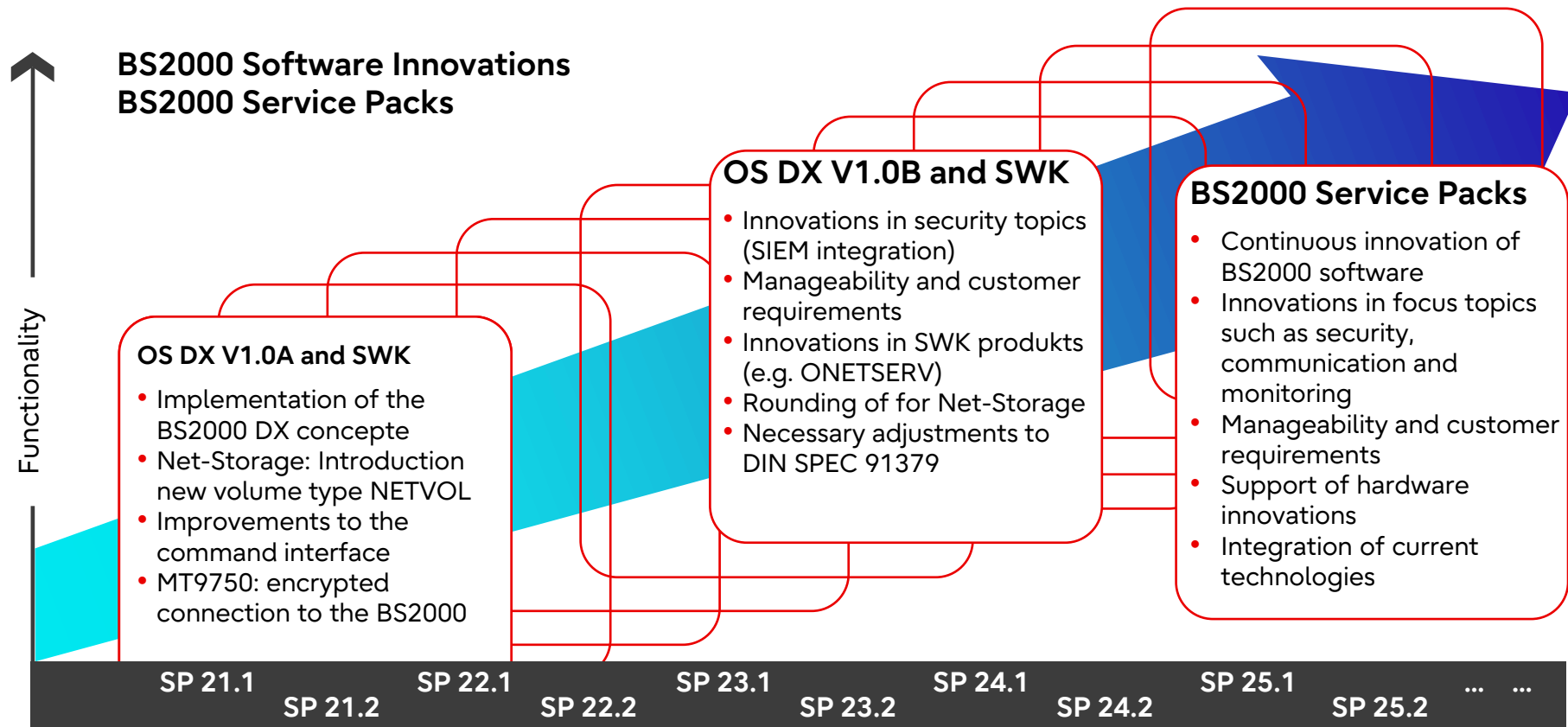
- Highest availability, scalability and performance
- Compatible across many versions
- Future-proof thanks to a long-term roadmap and open APIs
- Complete software portfolio for all data center topics



Unique worldwide: Live Migration between /390 server

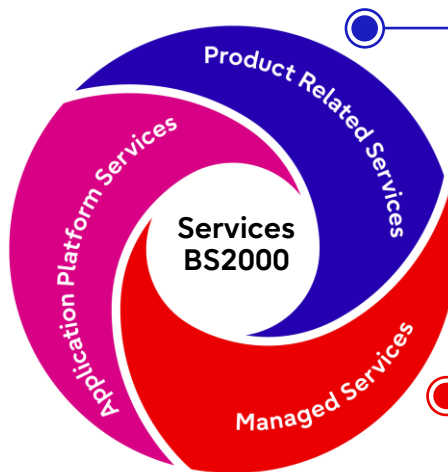


Fujitsu Software BS2000 – Roadmap



Future security and efficiency for BS2000 infrastructures

Our offer for the commissioning and optimization of IT environments ensures reliable interoperability and innovation of your systems.



Services for all BS2000 products as well as rollout and IMACD services help ensure the continuity of your business processes and save time and money.

The operational management of BS2000 infrastructures opens up completely new possibilities for you when designing IT operations.



Optimizing performance, availability and economy



Always use up-to-date know-how and efficient processes



Relieve your own staff of routine tasks

Customers from all industries rely on us

Examples



Rechenzentrum der
Finanzverwaltung des
Landes Nordrhein-Westfalen



IT.Niedersachsen



Federale Politie
Police Fédérale



Rheinland-Pfalz
FINANZVERWALTUNG



Deutsche
Rentenversicherung



Join us in
building the
bridge to the
future

Thank you!

