Data sheet
FUJITSU Server BS2000 SE300, SE500 and SE700

The powerful business servers
from entry level to high performance range

BS2000 Mainframes

BS2000 mainframes have been synonymous with reliability and innovative power for more than 40 years. Focused on innovation, openness, integration, cost efficiency and continuity, Fujitsu safeguards the investments of its mainframe customers on different hardware technology platforms and at the same time ensures that market developments and the associated customer requirements can always be covered in full.

The new FUJITSU Server BS2000 SE Series

The new FUJITSU Server BS2000 SE series is the continuation and integration of technologies from the previous Fujitsu mainframe lines of the S and SQ series as regards HW features and SW functions. Designed as hybrid systems, the SE servers bring a new quality of openness and integration ability from various server and peripheral systems together with comprehensive, cross-system manageability.

As a basic element every BS2000 SE server contains a server unit, which is used as a platform for the operating system package BS2000 OSD/XC and the customer applications, which run on top. These server units are either provided as an SU /390 in classic mainframe architecture or as an SU x86 on the basis of a high-end x86 server. A significant increase in performance over earlier server lines results in a very far-reaching scalability of the BS2000 SE servers, thus enabling tailor-made configurations with high growth potential.

As an option, it is also possible to integrate further server units, additional application units and peripheral devices in SE servers. This integration offers a common view to the SE components and to these further products and enables their administration, monitoring and operation using a consistent graphical user interface.
Every SE server contains a management unit (MU) running the SE manager providing this browser based view and management functions.
LAN connections between the SE Server components and to the customer's network are realized by the SE net unit (NU) as a part of the SE server.

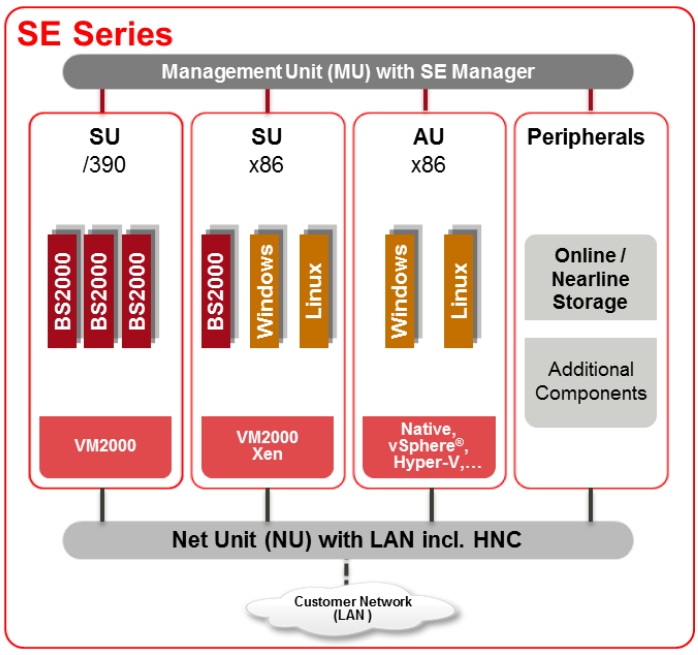
In a following development step high-availability concepts for SE server clusters will be offered, which thanks to their ease of handling will also enable relocation of guest systems in the event of a fault and interrupt-free live migration of guest systems in the case of planned interruptions.

Features and benefits of SE servers

Main features	Benefits
Server Units ■ SU500 and SU700 based on /390 technology, clear increase in monoprocessor and overall performance, new high-performance I/O system with 8 Gbit/s Fibre Channel channels ■ SU300 based on x86 Intel technology, several SU300s possible in one server, object-compatible to /390 applications	■ Business flexibility due to easy upgrading, i.e. performance as required ■ High productivity and quality levels for mainframe operation ■ Coverage of growing performance demands in the mid to upper performance range. ■ Optimal utilization of resources on the respective platform
Application Units ■ Use of Linux and Windows applications on high-end x86 servers, which are integrated in the SE server	■ Very stable operation of customer applications due to the use of redundant components as well as the quality assurance and service concept of the SE servers, which is extended to cover application units. ■ Ideal AU adaptation to the application to be run due to flexible sizing and the use of both native and virtualized operating systems. ■ Overall picture of all units, clusters and virtual machines through integration into the SE Manager. ■ Common service concept including remote service for AUs and the other SE units.
Management Unit with SE Manager ■ Modern browser-based graphical user interface ■ Uniform interface for administration, monitoring and operation ■ Overview of system components	■ Single point of operation ■ User-oriented IT management ■ Efficient distribution of applications ■ Optimum cost control and efficiency
Variety of uses ■ Classic mainframe usage ■ Support of various operating systems and platforms in one server	■ Excellent security and service concept for the highest standards ■ Identical runtime environment for production, as well as testing and development
Complete package ■ All the components of the SE servers and the additionally integrated devices are preconfigured and tested as a complete package ■ Combination of mainframe and open world technology ■ Best-fit platform for every mainframe application	■ Low operating and administration costs, excellent automation features. ■ Flexible and comprehensive response of the customer to current and future market trends ■ Cost-efficient optimization through the use of the best possible platform for production and T&D applications

Structure and functions of SE servers

The figure shows a schematic view of the structure of an SE server.



The central components of an SE server are the 1-3 server units (SU), on which the operating system package BS2000 OSD/XC (native or in VM2000 guest systems) and the customer applications run.
An SE server SE500 or SE700 always includes a Server unit SU500 respectively SE700 based on /390 mainframe technology. As an option, it can also have one or two SU300 server units on the basis of x86 processor technology. Additional server units with /390 technology are not offered in the same SE server.
SE500 and SE700 differ in terms of capability and upgradability of the Server Unit /390, but they are composed in the same way and offer the same features.

An SE300 SE server always includes an SU300 server unit based on /86 mainframe technology. As an option, it can also have one or two further SU300 server units. Server units with /390 technology cannot be used in SE300.

Application units (AU), which are all based on x86 technology, are optional. Hypervisors such as VMware vSphere®, operating systems like Linux or Windows and customer applications that use these systems run on the AUs.
As an option, you can also install a series of peripheral devices (disk and tape), e.g. ETERNUS DX600, in the SE server.

All these components are managed by the management unit (MU). The SE Manager (SEM) with its modern browser-based GUI enables the joint management of all units under a common interface.

Connecting all units to each other and to the customer network is made possible by the net unit (NU), which consists of LAN switches and implements the networks required to operate the SE server. These networks are connected to the customer networks by means of uplinks in the switches. The basic configuration of the net unit takes place during system installation in the factory.
As a result of their isolation private, internal SE networks increase the security of network operations and enable high-performance data throughput regardless of any faults in the customer network. The simple configuration of internal server data connections increases the flexibility significantly.

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As with the S servers, the LAN connection of an SU500 or SU700 is implemented by means of a new high-speed Net Connect (HNC), which is then regarded as an integral part of the net unit.
An extension to the net unit, which provides a bandwidth of 10 Gbit/s per port for internal and external data connections, is offered as an option.
Beside the net units data and management network, a connection of the customer network to the SE server is possible via LAN controllers inside HNC or SU x86. This is another possibility for 10 Gbit/s data connections.

All the components of the SE business servers are supplied in a system rack. If additional space is required for optional server units, application units, peripherals or other components, the system rack can be supplemented with up to three expansion cabinets. Depending on the overall configuration of the system, further components may also be necessary for these additional units, e.g. additional or larger-scaled net units.
The parts of a SE server offer the same lifecycle: Server Unit, Net Unit, Managemnent Unit and all of their components are released together and will reach their common end of service.
To offer additional components like application units or new peripherals in time, these products have their own lifecycle; their release date and end of service date may differ from the SE server dates.

SE Server Unit SU700

Compared to the previous system S210, the new SU700 server units are characterized by a newly developed processor module with 8 BS2000 CPUs. An SU700 has one or two system boards - each with one of these processor modules. Depending on the configuration of the SU700, one or all the CPUs of this module(s) are active.
The 8 CPUs of a system board now share a joint 2nd-level cache of 24 MB. Furthermore, the memory accesses within a system board are accelerated by the memory controller integrated in the processor chip. On the whole, both the monoprocessor performance and the performance of the SU700 with several BS2000 CPUs have been greatly improved compared with the previous generations S200 and S210.
The I/O system of the SU700 has been redesigned. The Fibre Channel channels now offer a significantly increased throughput of 8 Gbit/s and are installed in channel boxes, which are connected to the IOPs on the system boards via PCIe. It is now also possible to address up to 4096 devices (LUNS) instead of the previous 256 for each channel path of a control system.
Up to 15 CPUs are supported in a VM2000 guest system on an SU700.
All SU700 models are equipped with a standby processor which is activated dynamically if a processor fails and serves as a replacement for the defective processor. The applications can continue running without any interruption and without reduction in performance.
The optional CoD (Capacity on Demand) feature can be used to temporarily attach or detach additional CPUs without any system interruption. This enables the available performance to be flexibly matched to the changing needs of the application.
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Model upgrades can easily be performed onsite.

The SU700 models support programs using virtual 31 or 24-bit addresses as well as ESA data spaces. The Real Address Extension Feature is used to convert virtual data addresses (31-bit) with hardware support into extended real addresses (40-bit) of the main memory. This enables memory expansion of up to 256 GB in the SE700 business servers and also makes it possible to run several applications in parallel with large address spaces without any performance bottlenecks caused by intensive paging.

The network connection (LAN) of SE700 servers is implemented via the redundant net unit and one to four HNCs, of which one is already included in the server's basic configuration.

The management unit, which also provides the functionality of the external service console processors (SKP 3970) that were needed in previous business servers, is used for the operation, monitoring, administration, diagnostics and service of the SE700 business servers. Remote service for SE business servers is implemented via AIS Connect, which is integrated in the management unit.
A management unit is already included in the basic configuration of the SE700.

The new modular design of the SE700 with a system cabinet on a standard rack basis saves considerable space and energy, while at the same time allowing additional components, such as the net unit, HNC and management unit to be integrated.

The following table describes the basic configuration of the /390 server unit in the various SE700 models:

Basic configuration SE700

Model	Number of BS2000 processors[1)]	Number of system boards [2)]	Main memory in the basic configuration	Number of channel boxes[3)]	FC channels[3)]
SE700-20	2	1	12 GB	2	14
SE700-30	3	1	16 GB	2	14
SE700-40	4	1	24 GB	2	14
SE700-50	5	1	24 GB	2	14
SE700-60	6	1	32 GB	2	18
SE700-70	7	1	32 GB	3	18
SE700-100	10	2	48 GB	3	22
SE700-120	12	2	48 GB	3	22
SE700-140	14	2	64 GB	3	22
SE700-150	15	2	64 GB	3	22
SE700-160[4)]	16	2	64 Gb	3	22

1) All SE700 models except SE700-160 are also equipped with a spare processor ("Hot Spare CPU")
2) Each system board has 2 IOPs, up to 8 BS2000 CPUs and up to 128 GB main memory.
3) Up to 8 channel modules, each with 2 FC channels, can be installed in each channel box; exception: the first slot in the first channel box is used by the system. Up to 8 channel boxes and up to 126 FC channels can be configured in an SE700.
4) Available as special release only

SE Server Unit SU500

Compared to the previous system S175, the new SU500 server units are characterized by a newly developed processor module with 4 BS2000 CPUs. An SU500 has one system board with one of these processor modules. Depending on the configuration of the SU500, one or all CPUs of this module(s) are active.
The 4 CPUs of a system board now share a joint 2nd-level cache of 20 MB. Furthermore, the memory accesses within a system board are accelerated by the memory controller integrated in the processor chip. On the whole, both the monoprocessor performance and the performance of the SU500 with several BS2000 CPUs have been greatly improved compared with the previous generations S165 and S175.
The I/O system of the SU500 has been redesigned. The Fibre Channel channels now offer a significantly increased throughput of 8 Gbit/s and are installed in channel boxes, which are connected to the IOPs on the system boards via PCIe. It is now also possible to address up to 4096 devices (LUNS) instead of the previous 256 for each channel path of a control system.
All SU500 models are equipped with a standby processor which is activated dynamically if a processor fails and serves as a replacement for the defective processor. The applications can continue running without any interruption and without reduction in performance.
The optional CoD (Capacity on Demand) feature can be used to temporarily attach or detach additional CPUs without any system interruption. This enables the available performance to be flexibly matched to the changing needs of the application.
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Model upgrades can easily be performed onsite.

The SU500 models support programs using virtual 31 or 24-bit addresses as well as ESA data spaces. The Real Address Extension Feature is used to convert virtual data addresses (31-bit) with hardware support into extended real addresses (40-bit) of the main memory. This enables memory expansion of up to 64 GB in the SE500 business servers and also makes it possible to run several applications in parallel with large address spaces without any performance bottlenecks caused by intensive paging.

The network connection (LAN) of SE500 servers is implemented via the redundant net unit and one to four HNCs, of which one is already included in the server's basic configuration.

The management unit, which also provides the functionality of the external service console processors (SKP 3970) that were needed in previous business servers, is used for the operation, monitoring, administration, diagnostics and service of the SE500 business servers. Remote service for SE business servers is implemented via AIS Connect, which is integrated in the management unit.
A management unit is already included in the basic configuration of the SE700.

The new modular design of the SE500 with a system cabinet on a standard rack basis saves considerable space and energy, while at the same time allowing additional components, such as the net unit, HNC and management unit to be integrated.

The following table describes the basic configuration of the /390 server unit in the various SE500 models:

Basic configuration SE500

Model	Number of BS2000 processors[1)]	Number of system boards [2)]	Main memory in the basic configuration	Number of channel boxes[3)]	FC channels[3)]
SE500-10A	1	1	2 GB	2	10
SE500-10B	1	1	4 GB	2	10
SE500-10C	1	1	4 GB	2	12
SE500-10D	1	1	4 GB	2	12
SE500-10E	1	1	6 GB	2	12
SE500-20B	2	1	6 GB	2	12
SE500-20C	2	1	8 GB	2	14
SE500-20D	2	1	8 GB	2	14
SE500-20E	2	1	8 GB	2	14
SE500-30E	3	1	12 GB	2	14
SE500-40E[4)]	4	1	16 GB	2	14

1) All SE500 models except SE500-40E are also equipped with a spare processor ("Hot Spare CPU")
2) The system board has 2 IOPs, up to 4 BS2000 CPUs and up to 64 GB main memory.
3) Up to 8 channel modules, each with 2 FC channels, can be installed in each channel box; exception: the first slot in the first channel box is used by the system. Up to 6 channel boxes and up to 94 FC channels can be configured in an SE500.
4) Available as special release only

SE Server Unit SU300

The basis of the new SU300 server unit is formed by a high-end x86 server with two or four Intel® Xeon® E7-8857 V2 processors with 12 cores and a frequency of 3.0 GHz. In addition to very high performance and scalability, this processor family also offers the best RAS features. As with the SQ business servers, an additional firmware layer from Fujitsu ensures both the running of BS2000 OSD/XC on these servers and the fully object-compatible support of BS2000 customer applications. Under VM2000 up to 32 BS2000 guest systems can be used on one SU300.
It is also possible to run Linux and/or Windows as Xen guest systems parallel to BS2000 / VM2000 on the SU300.
And finally, the SU300 firmware also provides the connection of the necessary peripherals for BS2000 and the other systems.

The SU300 has and supports the following components and features:

Processor

- Two or four Intel® Xeon® E7-8857 V2, 12 cores, 3.0 GHz

Main memory

32 GB to 1504 GB on 2 to 8 memory boards, built of the following DIMMs (mixing is possible):

- 16GB (2x8GB) 1Rx4 L DDR3-1600 R ECC
- 32GB (2x16GB) 2Rx4 L DDR3-1600 R ECC

PCIe slots

In the case of 2 processors:

- 3x PCI-Express Gen3 x 8, ½ length, 2 of which are hot-pluggable
- 1x PCI-Express Gen3 x16, ¾ length

In the case of 4 processors:

- 8x PCI-Express Gen3 x 8, ½ length, 3 of which are hot-pluggable
- 2x PCI-Express Gen3 x 16, ¾ length, 1 of which is hot-pluggable

One of these slots is used for a 4-port, 1 Gbit/s Cu controller; 2 of these ports are always used to connect the BS2000 systems to the net unit. 2 further ports are optionally required to connect Linux/Windows guest systems to the net unit. This 2 ports are free for customer individual use in case no Linux/Windows guest systems running on the SU. If the net unit is designed to be redundant, an additional 4-port, 1 Gbit/s Cu controller is necessary.

SU300 models with one BS2000 processor have 2 physical processor chips; as an option, they can - without changing the BS2000 performance - be upgraded with 2 further processor chips, thus enabling additional Linux and/or Windows guest systems to be run and the use of more PCIe slots.

Supported PCIe controllers

- Fibre Channel: 2 ports, 8 Gbit/s and 2 ports, 16 Gbit/s
- Ethernet: 4 ports, 1 Gbit/s, Cu
  2 ports, 10 Gbit/s, including 2 SFPs
  2 ports, 10 Gbit/s, Cu
- SAS RAID: 8 ports, 6 Gbit/s for ETERNUS JX40
- SAS: 8 ports, 6 Gbit/s for ETERNUS LT40

Disks, drives and others

- 2 integrated RAID-SAS 2.5" system disks with 600 GB each, mirrored in pairs, hot-pluggable
- DVD-RW writer
- 8 hot-plug fans (redundant)
- 4 hot-plug power supplies per1600 W (phase redundant)

Interfaces and onboard controllers

Available for internal server use:

- VGA: For connection to KVM
- SATA: For DVD writer
- SAS RAID: For system disks
- iRMC: Integrated Remote Management Controller
- LAN: 2 x 10/100/1000 Mbit/s Ethernet

Internal server peripherals (optional)

- Storage subsystem ETERNUS JX40 (SAS RAID):
  For technical data see the ETERNUS JX40 data sheet
- Magnetic tape cartridge system ETERNUS LT40 S2 with:
  1-2 drives LTO5/SAS or
  1-2 drives LTO5/FC or LTO6/FC
  For technical data see the ETERNUS LT40 S2 data sheet

These peripheral systems can only be used by SU300 or AU, but not by SU500 or SU700. Their lifecycle corresponds to the SU300 lifecycle.

The following table describes the basic configuration of the first x86 server unit in the various SE300 models.
The same basic configuration is available for up to two additional SU300-xxx server units that can be used within SE300, SE500 or SE700 as an option.

Basic configuration SE300

Model	BS2000 CPUs	Processor chips / Cores	Memory boards	Main memory in the basic configuration	Main memory portion for BS2000	Maximum main memory[1)]	PCIe slots
SE300-10A	1	2 / 24	2	32 GB	14.4 GB	736 GB	4
SE300-10B	1	2 / 24	2	32 GB	14.4 GB	736 GB	4
SE300-10C	1	2 / 24	2	32 GB	14.4 GB	736 GB	4
SE300-10D	1	2 / 24	2	32 GB	14.4 GB	736 GB	4
SE300-10E	1	2 / 24	2	32 GB	14.4 GB	736 GB	4
SE300-10F	1	2 / 24	2	32 GB	14.4 GB	736 GB	4
SE300-20A	2	4 / 48	4	64 GB	28.8 GB	1472 GB	10
SE300-20F	2	4 / 48	4	64 GB	28.8 GB	1472 GB	10
SE300-30F	3	4 / 48	4	64 GB	28.8 GB	1472 GB	10
SE300-40F	4	4 / 48	4	64 GB	28.8 GB	1472 GB	10
SE300-50F	5	4 / 48	4	64 GB	28.8 GB	1472 GB	10
SE300-60F	6	4 / 48	4	64 GB	28.8 GB	1472 GB	10
SE300-80F	8	4 / 48	4	64 GB	28.8 GB	1472 GB	10
SE300-100F	10	4 / 48	4	96 GB	48 GB	1504 GB	10
SE300-120F	12	4 / 48	4	96 GB	48 GB	1504 GB	10
SE300-160F	16	4 / 48	4	96 GB	48 GB	1504 GB	10

1) If several guest systems are used on SU300, the memory of the basic configuration must be suitably extended. When dimensioning a memory extension, the fact that approx. 25% of the memory, but at most 16 GB, is used by the SU300 firmware and about 40% of the rest for BS2000 guest systems is needed for the JIT should be taken into account. Thus, the BS2000 net memory is about 45% of the total memory.

System software for SE Server Units SU300 and SU700/SU500

BS2000 Operating system	BS2000 OSD/XC V10.0 native or virtual or BS2000 OSD/XC V9.5 native or virtual or BS2000 OSD/XC V8.5 only as a guest system under VM2000
VM2000 (optional)	VM2000 V10.0 (SEM integration with restrictions) or VM2000 V11.0
X2000 (for SU300)	X2000 V6.0 or V6.1 as part of the Server Unit SU300 is installed on the SU and delivered without extra order.
Xen guest systems (for SU300)	Microsoft Windows Server 2008 R2 or higher Suse Linux Enterprise Server as of SLES 11 (Usage within Xen V4.2 of SLES 11 SP3)

Management Unit (MU)

- Processor Intel® Xeon® E5-2620v2 6C/12T 2.10GHz 15MB
- 32 GB main memory
- 2 integrated RAID SAS 2.5" system disks with 600 GB each, mirrored, hot-pluggable
- RAID Ctrl SAS 6G 8 internal ports (LSI2108)
- DVD-RW supermulti slimline SATA writer
- 4 hot-plug double fans (redundant)
- 2 redundant power supplies with 450 W each
- Interfaces and controllers (only for internal server use):

LAN	2 * 1Gbit/s Ethernet controller onboard
VGA	For connection to KVM
SATA	For the DVD writer
SAS RAID	For the mirrored system disks
iRMC	Integrated Remote Management Controller
FC for SE700	1x FC Ctrl 8Gbit/s 2-channel LPe12002 MMF LC

- An FC controller for SE300 and a second FC controller for SE500/SE700 are necessary if a Quantum Scalar library is to be controlled via ROBAR on the MU.
- As an option, a second management unit can be used (redundancy, full SW support to be released in a later version). Therefore one FC connection to the configuiration raw device is necessary; recommended is a 2-path connection to the CRD for each MU.

Software for the Management Unit

- MU software:
  M2000 V6.0 or V6.1 as part of the Management Unit is installed on the MU and delivered without extra order.
- Add-on packs:
  - StorMan V6.0 or V7.0 is part of the basic configuration of the SE server; if required by new peripheral devices, newer StorMan versions should be retrofitted later.
  - openSM2 V10.0 web interface to measure performance, optional, part of openSM2 (BS2000)
  - ROBAR Server V7.0 to control the tape library, optional
  - open UTM V6.3 WebAdmin to administer openUTM, optional

Net Unit (NU)

- LAN switch ICX6450 with 24 or 48 10/100/1000 Mbit/s ports RJ45
- A redundant additional switch is part of the basic configuration for SE500/SE700, but optional for SE300.
- The net unit is connected to every server or application unit in the SE server via their onboard and PCI controllers (pre-configuration in the factory).
- 4x 1/10 Gbit/s SFP/SFP+ ports for stacking of net unit extensions.
- 1 Gbit/s Cu ports (untagged) as uplinks to the customer data network, the administration network and a separate operator network (optional).

Net Unit 10Gbit/s Extension (optional)

- LAN-Switch ICX7750 with 48 Ports for 10Gbit/s SFP+ controller (optical cable). Basic configuration NU and extension NU connected via 1 Gbit/s (SFP Twinax).
- Redundancy of the 10Gbit/s NU Extension as option; 40 Gbit/s connection between 10Gbit/s NU extension (QSFP+ Twinax).
- Redundant connection of Server - and Application Units via 10Gbit/s SFP+ controller with optical cable to each ICX7750 Switch possible.
- Preparation of a 10Gbit/s Uplink into the customer's data networks for every 10Gbit/s public network..
- SFP+ controller for more connection have to be ordered extra.
- The Net Unit 10 Gbit/s Extension requires M2000 V6.1.

High-speed Net Connect (HNC)

- Every SE500/SE700 server is supplied with a HNC, which is connected to the net unit. A further 1-3 HNCs can be configured to increase throughput and redundancy as well as for additional LAN ports.
- Processor Intel® Xeon® E5-2620v2 6C/12T 2.10GHz 15MB
- 32 GB main memory
- 2 integrated RAID SAS 2.5" system disks with 600 GB each, mirrored, hot-pliggable
- RAID Ctrl SAS 6G 8 internal ports (LSI2108)
- DVD-RW supermulti slimline SATA writer
- 4 hot-plug double fans (redundant)
- 2 redundant power supplies with 450 W each
  Interfaces and controllers (only for internal server use)

LAN	2 Gbit/s Ethernet controller onboard
VGA	For connection to KVM
SATA	For the DVD writer
SAS RAID	For the mirrored system disks
iRMC	Integrated Remote Management Controller
FC	1x FC Ctrl 8Gbit/s 2-channel LPe12002 MMF LC

- As standard, a HNC is directly connected to an FC port of the SE700/SE500 via a single path; as an option, a second FC connection is possible.
- The connection to the net unit is via the two ports of an Ethernet controller with four ports, 1 Gbit/s, Cu. This controller is part of the integrated HNC and of the first additional HNC for redundancy.
- The following Ethernet controllers can be configured:
  - 4-port, 1 Gbit/s, Cu (max. 1 controller, including the controller used for the net unit connection)
  - 2-port, 10 Gbit/s, including 2 SFPs, (max. 2 controllers)
  - 2-port, 10 Gbit/s, Cu, (max. 2 controllers)

  Max. 2 ethernet controllers per HNC are possible.

Software for the HNC:

- HNC software: HNC V6.0 or V6.1 is installed on the HNC and delivered without extra order.

Application Unit (AU47M1) (optional)

- High-end x86 server, based on PRIMERGY RX4770 M1
- System board for 2 or 4 Intel® Xeon® E7-4800/8800 v2 processors
- 2-8 memory boards for 12x DDR3 LV DIMM modules each
- 8 slots for hot-plug 2.5" SAS/SATA HDDs/SSDs
- 8 hot-plug fans (7 + 1 redundancy)
- Up to 4 power supplies (redundancy)
- DVD-RW writer
- 4 / 10 PCI express slots depending on configuration (2 / 4 CPUs)
- Each AU requires a performance-related number of integration lisences
- For more details see the RX4770 M1 data sheet
- Max. 20 AUs per SE server

Application Unit (AU47M2) (optional)

- High-End x86 Server, based on PRIMERGY RX4770 M2
- System board for 2 or 4 Intel® Xeon® E7-4800/8800 v3 processors
- 2 - 8 memory boards for 12x DDR4 LV DIMM modules each
- 8 slots for hot-plug 2.5" SAS/SATA HDD/SSD
- 8 hot-plug fans (7 + 1 redundancy)
- Up to 4 power supplies (redundancy)
- DVD-RW writer
- 4 / 10 PCI express slots depending on configuration (2 / 4 CPUs)
- Each AU requires a performance-related number of integration lisences
- For more details see the RX4770 M2 data sheet
- Max. 20 AUs per SE server

Application Unit (AU25M1) (optional)

- Dual socket x86 rack server, based on PRIMERGY RX2530 M1 with long lifecycle option
- System board for 1 or 2 Intel® Xeon® E5-2600 v3 processors
- 1 - 2 memory boards for 12x DDR4 LV DIMM modules each
- 4 or 8 slots for hot-plug 2.5" SAS HDD/SSD
- 4 hot-plug fans per CPU
- 2 power supplies (redundancy)
- DVD-RW writer
- 4 PCIe Gen3 slots
- Each AU requires a performance-related number of integration lisences
- For more details see the RX2530 M1 data sheet
- Max. 20 AUs per SE server

Hints:

- Application Units are discrete products with their own lifecycle. Their release dates and end of service dates may differ from the SE server dates.

Application Unit (AU87E2) (optional)

- High-end x86 server, based on PRIMEQUEST PQ2800 E2
- 2 – 4 system boards for je 1 - 2 Intel® Xeon® E7-8800 v3 processors
- Up to 8 processors with up to 144 cores
- 1 -12 Memory module per CPU, up to 12 TB main memory per system
- 1 – 4 I/O units with 2 LAN ports each and 3 PCIe slots per 10Gbit/s I/O Unit resp. 4 PCIe slots per 1 Gbit/s I/O Unit
- 3 – 6 power supplies, free slots filled up witf fans
- Each AU requires a performance-related number of integration lisences
- For more information see PQ2800 E2 data sheet
- Max. 10 AU87 per SE Server
- An AU87E2 requires M2000 V6.1 running on the MU.

Database Unit (DB87E2) (optional)

- High-end x86 server, based on PRIMEQUEST PQ2800 E2
- The base system is an AU87E2 with fixed hardware configuration (SB, CPU, memory, I/O Units, controller, ...). The DB Unit is customized in relation to the customer specific database application and required performance.
- The DB Unit contains the customer specific software configuration and the required service related to preparation and maintenance of the system base for the database environment requested from the customer.
- For the DB Unit also a performance-related number of integration lisences is required.
- A DB87E2 requires M2000 V6.1 running on the MU.

Software for Application Units

- SUSE Linux Enterprise Server 11 or 12
- Red Hat Enterprise Linux 5, 6 or 7
- Microsoft Windows Server from 2008 R2 with Hyper-V as part of Windows Server
- VMware vSphere® 5.x
- More operating systems and virtualization products for use on application units on demand.

Installation data

SE700 Basic Configuration

SE700 System Cabinet	
Width	700 mm
Depth	1100 mm
Height	1800 mm
Maintenance area	front: 740 mm, rear: 800 mm sideways right: 60 mm (to open the door completely) sideways left or right: 700 mm
Weight	550 kg
Rated voltage	200-240V±10%
Network connection options	The SE700 is connected via four 1-phase connections with a blue large CEE plug 32A. They belong to four PDUs with 8 sockets each and are part of the basic configuration. In a configuration with additional units more 1-phase connections with a blue large CEE plug 32A might be necessary, depending on the configuration. Alternatively, only these additional connections can also be configured as 1-phase connections with a blue small CEE plug, 16A or with a 3-phase connection. See below for the power consumption of optional extensions.
Power cable length	Power cable, 4 m long
Frequency	50 Hz - 60 Hz
Power consumption, max.	3,74 kVA (SE700 basic configuration with 16 CPU, 256 GB memory, 8 channel boxes with 8 FC channels each, 1 MU, 1 HNC, 1 NU24, rack infrastructure)
Heat generation, max.	13300 kJ/h
Sound pressure (LpAm)	Server Unit SU700: 60 db(A) See below for data of the other basic configuration components.
Operating temperature	10°C to 32°C
Standards	GS CE Class A CB ROHS, WEEE

SE500 Basic Configuration

SE500 System Cabinet	
Width	700 mm
Depth	1100 mm
Height	1800 mm
Maintenance area	front: 740 mm, rear: 800 mm sideways right: 60 mm (to open the door completely) sideways left or right: 700 mm
Weight	450 kg (SE500 full configuration with 1 system board, 6 Channel boxes with 8CHE cards each, 1 MU, NU, 1 HNC, KVM switch and rack console)
Rated voltage	200-240V±10%
Network connection options	The SE500 is connected via four 1-phase connections with a blue large CEE plug 32A. They belong to four PDUs with 8 sockets each and are part of the basic configuration. In a configuration with additional units more 1-phase connections with a blue large CEE plug 32A might be necessary, depending on the configuration. Alternatively, only these additional connections can also be configured as 1-phase connections with a blue small CEE plug, 16A or with a 3-phase connection. See below for the power consumption of optional extensions.
Power cable length	Power cable, 4 m long
Frequency	50 Hz - 60 Hz
Power consumption, max.	2,9 kVA (SE500 basic configuration with 4 CPU, 64 GB memory, 6 channel boxes with 8 FC channels each, 1 MU, 1 HNC, 1 NU, rack infrastructure)
Heat generation, max.	10500 kJ/h
Sound pressure (LpAm)	Server Unit SU500: 60 db(A) See below for data of the other basic configuration components.
Operating temperature	10°C to 32°C
Standards	GS CE Class A CB ROHS, WEEE

SE300 Basic Configuration

SE300 System Cabinet	
Width	700 mm
Depth	1100 mm
Height	1800 mm
Maintenance area	front: 740 mm, rear: 800 mm sideways right: 60 mm (to open the door completely) sideways left or right: 700 mm
Weight	400 kg
Rated voltage	200-240V±10%
Network connection options	The SE300 is usually connected via four 1-phase connections with a blue CEE plug 16A. In a configuration with additional units more 1phase connections with a blue CEE plug 16A might be necessary, depending on the configuration. Alternatively, 1-phase connections with a blue CEE plug, large, 32A or 3-phase connections can also be configured for SE300 and any of its built-in optional extensions. The use von APC Online UPSs is possible. See below for the power consumption of optional extensions.
Power cable length	Power cable, 4 m long
Frequency	50 Hz - 60 Hz
Power consumption, SE min. / max.	1,9 kVA (SE300 basic configuration with 16 CPU, 256 GB memory, 10 controllers, 1 MU, 1 NU24, rack infrastructure)
Heat generation, SE min. / max.	6900 kJ/h
Sound pressure (LpAm)	Server Unit: SU300: typical 51 dB(A) See below for data of the other basic configuration components.
Operating temperature	10°C to 35°C
Standards	GS CE Class A CB ROHS, WEEE

SE Optional Extensions

SE Extension Rack	This rack is used in configurations which exceed the first SE Server rack (system rack). Up to three extension racks can be used in one SE server.
Width	700 mm
Depth	1100 mm
Height	1800 mm
Maintenance area	front: 740 mm, rear: 800 mm sideways right: 60 mm (to open the door completely) sideways left or right: 700 mm
Weight	200 kg (without mounted units)
Network connection options	The electrical connections for the optional devices in the extension rack need to be configured by the customer. Available are PDUs have 1-phase connections with a blue large CEE plug (32A), 1-phase connections with a blue small CEE plug (16A) or 3-phase connections. See below for the power consumption of optional extensions.

Server Unit SU300	
Weight	approx. 46 kg
Rated voltage range	100 – 240 V
Network connection options	as described for the basic configuration of SE300 and SE500/SE700
Rated frequency range	50 Hz – 60 Hz
Power consumption, max.	1,5 kVa
Heat generation, SE max.	5500 kJ/h
Sound pressure (LpAm)	typical 51 dB(A)
Operating temperature	10°C to 35°C
Standards	Global : CB, RoHS, WEEE Europe: CE Class A*

Application Unit AU25	
Weight	Up to 16 kg
Rated voltage range	100 – 240 V
Network connection options	as described for the basic configuration of SE300 and SE500/SE700
Rated frequency range	50 Hz – 60 Hz
Power consumption, min. / max.	120 VA / 318 VA
Heat generation, SE min. / max.	433 kJ/h / 1138 kJ/h
Sound pressure (LpAm)	typical 44 dB(A)
Operating temperature	10°C to 35 °C
Standards	Global : CB, RoHS, WEEE Europe: CE Class A*

Application Unit AU47	
Weight	approx. 46 kg
Rated voltage range	100 – 240 V
Network connection options	as described for the basic configuration of SE300 and SE500/SE700
Rated frequency range	50 Hz – 60 Hz
Power consumption, min. / max.	1,023 kVA / 2,820 kVA
Heat generation, SE min. / max.	6403 kJ/h / 10152 kJ/h
Sound pressure (LpAm)	typical 51 dB(A)
Operating temperature	10°C to 35 °C
Standards	Global : CB, RoHS, WEEE Europe: CE Class A*

Application Unit AU87 (auch DB87)	
Weight	Configuration dependant max. 150 kg
Rated voltage range	220 - 240 V
Network connection options	Jede AU87 enthält 6 Stromversorgungsmodule. Der Anschluss dieser Module an das Stromnetz erfolgt über zwei 1-phasige Steckdosenleisten mit 32A IEC309 Stecker Blau oder über eine 3-phasige Steckdosenleiste mit 32A IEC309 Stecker Rot. Bei Ausbau mit zusätzlichen AU87 sind weitere Steckdosenleisten der oben beschriebenen Art erforderlich. Stromverbrauch der optionalen Erweiterungen siehe weiter unten.
Rated frequency range	47 Hz – 63 Hz
Power consumption, min. / max.	5,354 KVA
Heat generation, SE min. / max.	19274 kJ/h
Sound pressure (LpAm)	typical 60 - 74 dB(A)
Operating temperature	Von 5°C bis 35 °C
Standards	Global : CB, RoHS, WEEE Europa: CE Class A

Management Unit	
Weight	max. 18 kg (depends on configuration)
Rated voltage range	100 – 240 V
Network connection options	as described for the basic configuration of SE300 and SE500/SE700
Rated frequency range	50 Hz – 60 Hz
Power consumption, SE min. / max.	200 VA
Heat generation, SE min. / max.	720 kJ/h
Sound pressure (LpAm)	typical 50 dB(A) both when idle and in standard operation
Operating temperature	5°C to 40 °C
Standards	Global : CB, RoHS, WEEE Europe: CE Class A*

Net Unit	24 Ports	48 Ports
Weight	approx. 4.5 kg (depends on configuration)	approx. 6.4 kg (depends on configuration)
Rated voltage range	100 – 240 V	100 – 240 V
Network connection options	as described for the basic configuration of SE300 and SE500/SE700	as described for the basic configuration of SE300 and SE500/SE700
Rated frequency range	50 Hz – 60 Hz	50 Hz – 60 Hz
Power consumption, max.	100 VA (non redundant) / 240 VA (redundant)	100 VA (non redundant) / 200 VA (redundant)
Heat generation, max.	180 / 360 kJ/h	240 / 480 kJ/h
Sound pressure (LpAm)	40 dB(A)	55 dB(A)
Operating temperature	0°C to 45°C	0°C to 45°C
Standards	RoHS, WEEE CE Class A*	RoHS, WEEE CE Class A*

Note: The mentioned values apply for net units consisting of one switch. Redundant net units and port extensions consist of additional switches, whose values need to be added.

Net Unit 10Gbit/s Extension	48 Ports
Weight	Configuration dependant ca. 9 kg
Rated voltage range	100 – 240 V
Network connection options	as described for the basic configuration of SE300 and SE500/SE700
Rated frequency range	50 Hz – 60 Hz
Power consumption, max.	250 VA (typical), 327 VA (maximal)
Heat generation, max.	725 kJ/h
Sound pressure (LpAm)	62 dB(A) (average values)
Operating temperature	-5°C to 45°C
Standards	RoHS, WEEE CE Class A

Note: The mentioned values apply for 10 Gbit/s net units consisting of one switch. Redundant net units and port extensions consist of additional switches, whose values need to be added.

HNC	
Weight	max. 18 kg (depends on configuration)
Rated voltage range	100 – 240 V
Network connection options	as described for the basic configuration of SE300 and SE500/SE700
Rated frequency range	50 Hz - 60 Hz
Power consumption, min. / max.	200 VA
Heat generation, SE min. / max.	720 kJ/h
Sound pressure (LpAm)	minimum 32dB(A), typical 50 dB(A) both when idle and in standard operation
Operating temperature	5°C to 40°C
Standards	Global : CB, RoHS, WEEE Europe: CE Class A*

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