PRIMERGY RX4770 M3
4-way / 4U Rack Server

Chapter	Folder	Content
	Cover	configurator, abbreviations
	Description	System Description for easier understanding
1	Base	describes base unit of RX4770 M3
2		describes rack mount kits and services
3	CPU	Order code and Infos of E7-x800v4 series processors
4	RAM	DDR4 System memory (RAM) and memory modes
5	RAID	SAS / RAID Controller and components
6	ODD	optical disk drives (DVD, DVD-rw, Blu ray)
7	PCIe Flash SSD	PCIe Flash dev. (2.5" SFF SSD and PCIe AIC SSD)
8	HD_SSD	Storage drives - PCIe SSD - SAS/SATA SSD & HDD
9	LAN_FC_IB	LAN Components
10		Fibre Channel Controller
11		Infiniband Controller
12	PSU	Power supply units, power cables
13	USB_devices	Keyboards, Mice, USB devices
14	others	System Management, ATD, RS232 port, TPM module

Instructions

This document contains basic product and configuration information that supports you in more complicated configurations.
In any case we recommend to use the PC-/SystemArchitect to make sure, that you configure a valid system.

This System configurator is divided into several chapters. They are identical to the current price list and PC-/SystemArchitect.

Please follow this document step by step from the top to the bottom.

Chapter xx - description of chapter

Text fields with grey color offer extra information for related topics (e.g prerequesites, technical back ground, configuration rules, limitations, ...

S26361-F4610-E2	<-- order code E-part (bold) --
S26361-F4610-L3	<-- order code L-part (bold)
PLAN 2x1Gb Ethern. Controller	<-- "name" of this part
i350-T2 chip (based on Intel Powerville) offers 2x1Gb RJ45 connectors	<--description of this part, in same cases as well description of content
PCIe Gen2 x4 full height card	<--requires a free PCIe slot --> means total amount of PCIe slots reduced
max. 6x per system	<--indicates how often this part can be configured in the related Server

For further information see:

Link to datasheet:
http:// xxx

http://ts.fujitsu.com/products/standard_servers/index.html
(internet)

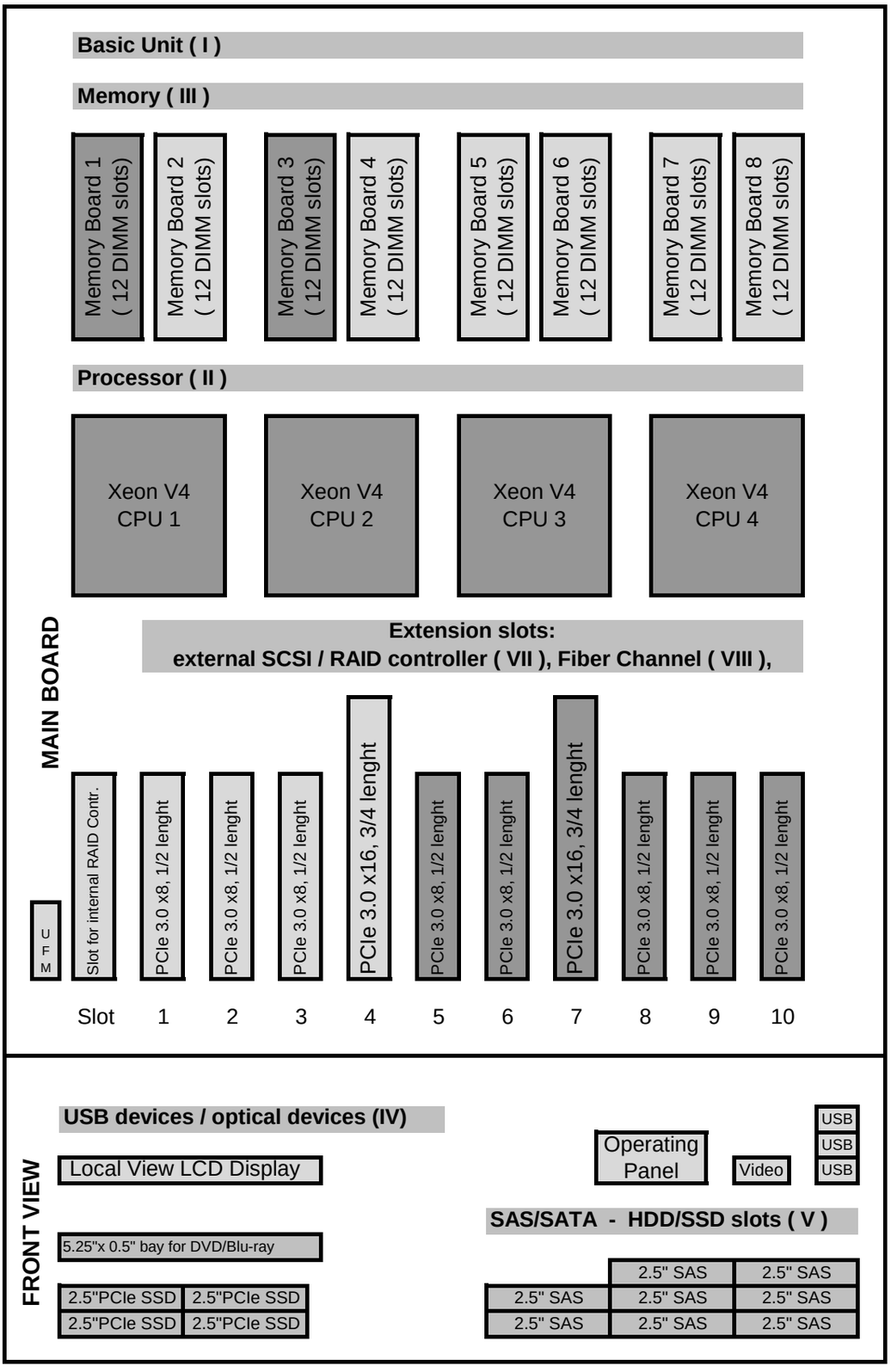
https://partners.ts.fujitsu.com/com/order-supply/configurators/primergy_config/Pages/default.aspx
(extranet)

Fujitsu is providing the content of this document with very high accuracy. In case you identify a mistake, we would kindly encourage you to inform us. We kindly ask for understanding, that errors still may occur and that Fujitsu may change this document without notice

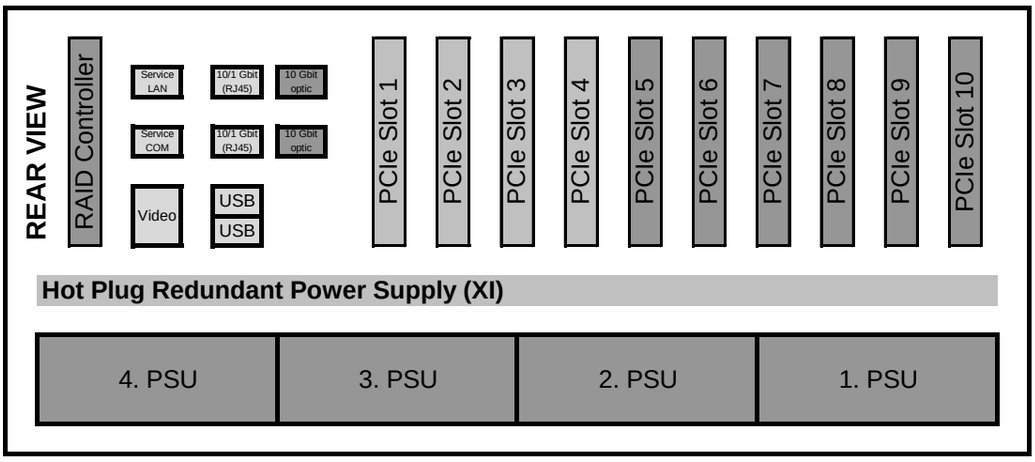
Abbreviations

SAS	Drives, RAID	Serial attached SCSI Device (HDD, SSD, LTO drives); SAS2.0 = 6GBit/s; SAS3.0 = 12GBit/s
SATA	Drives, RAID	Serial ATA (HDD, SSD) current SATA speed = 6GBit/s
HDD	Drives	Hard disk drive (Non volatile storage device), 2.5" (SFF) or 3.5" (LFF)
SSD	Drives	Solid state disk (Non volatile storage device), 2.5" (SFF)
SFF	Drives	small form factor (=2.5")
LFF	Drives	large form factor (=3.5")
CPU	Processor	central processing unit ("processor")
RAID	Drives, RAID	RAID 0 = max speed, RAID 1 = mirroring, RAID 5 = 1 out of x drives is spare
Spaces	OS	Microsoft spaces, optimized in Win2012 R2 offers software RAID and storage tiering
vSAN	OS	
storage tiering	RAID	offers optimized storage allocation (fast area for "hot data"; slower area for "cold data")
hot data	Drives	Data which are currently being processed
cold data	Drives	Data which are currently not processed (only stored)
ODD	Drives	optical disk drive (i.e. DVD-player, DVD-burner, Blu ray player, blu ray burner)
OS	operating system	OS=operating system - required for running, organize and administrating the server
E-Part	"Einbau-Part"	"e.g. S26361-F1234-**E**240" ordercode with "E" means it is either integrated into to Server (CPU, Mem, ..) or integrated in the shipping box /Keyboard, Mouse, ..)
L-Part	"Lose Lieferung-Part"	"e.g. S26361-F1234-**L**240" ordercode with "L" means, the part will be shipped with extra package, may be as well with extra shipment

Configuration diagram PRIMERGY RX4770 M3

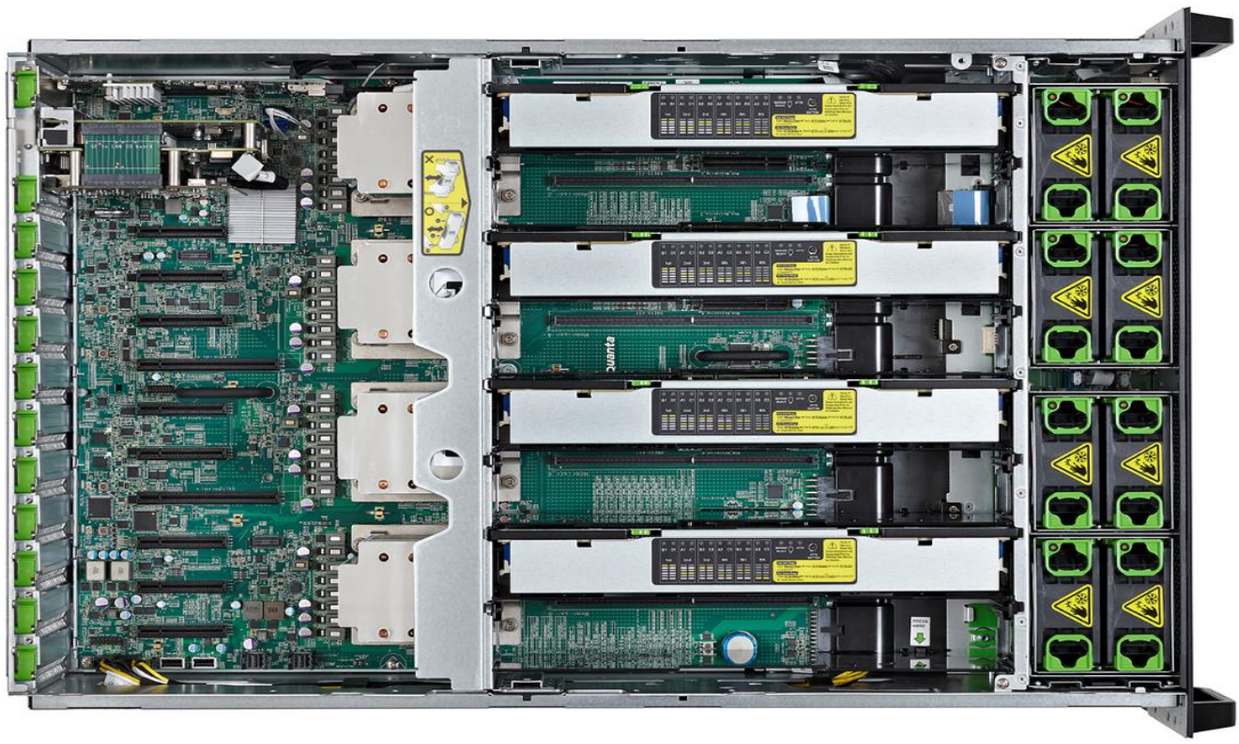


Configuration diagram PRIMERGY RX4770 M3



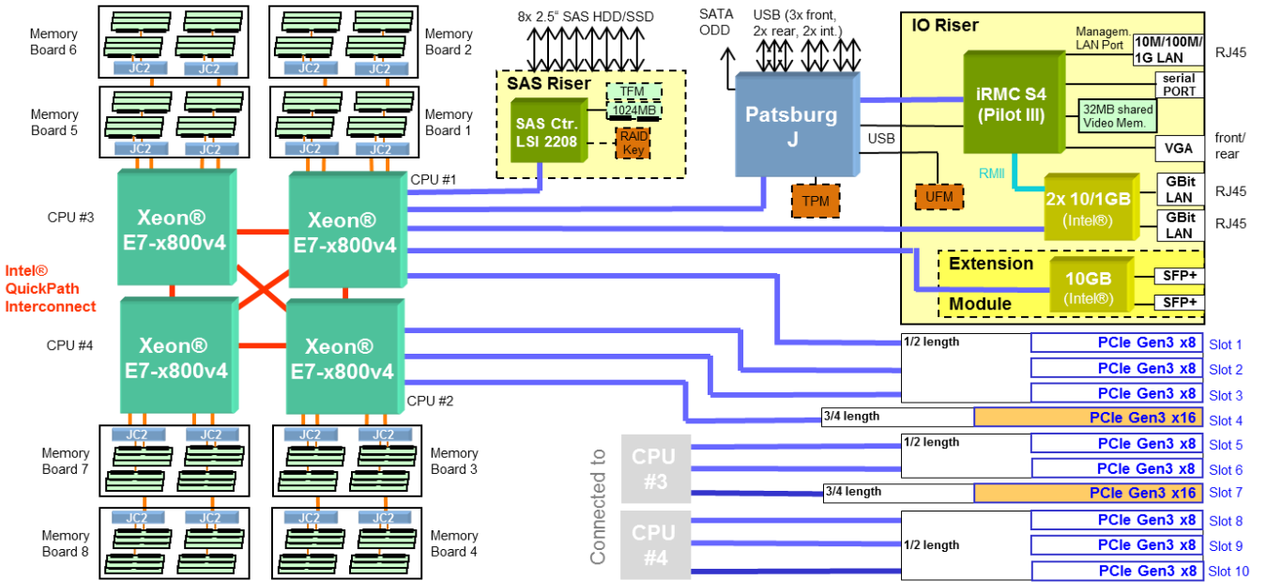
Key: Included in basic unit

Option



min. components for RX4770 M3	**#**
Base Unit (includes 2 Memory Boards)	1x
Processor	2x
.....Memory Mode installation	1x
DDR4 DIMM Order (each 2 DIMMs)	2x
Region kit APAC/EMEA/India or other	1x
iRMC S4 advanced pack	1x
Modular PSU 1200W or 1600W, platinum hot plug	2x

RX4770 M3 Architecture

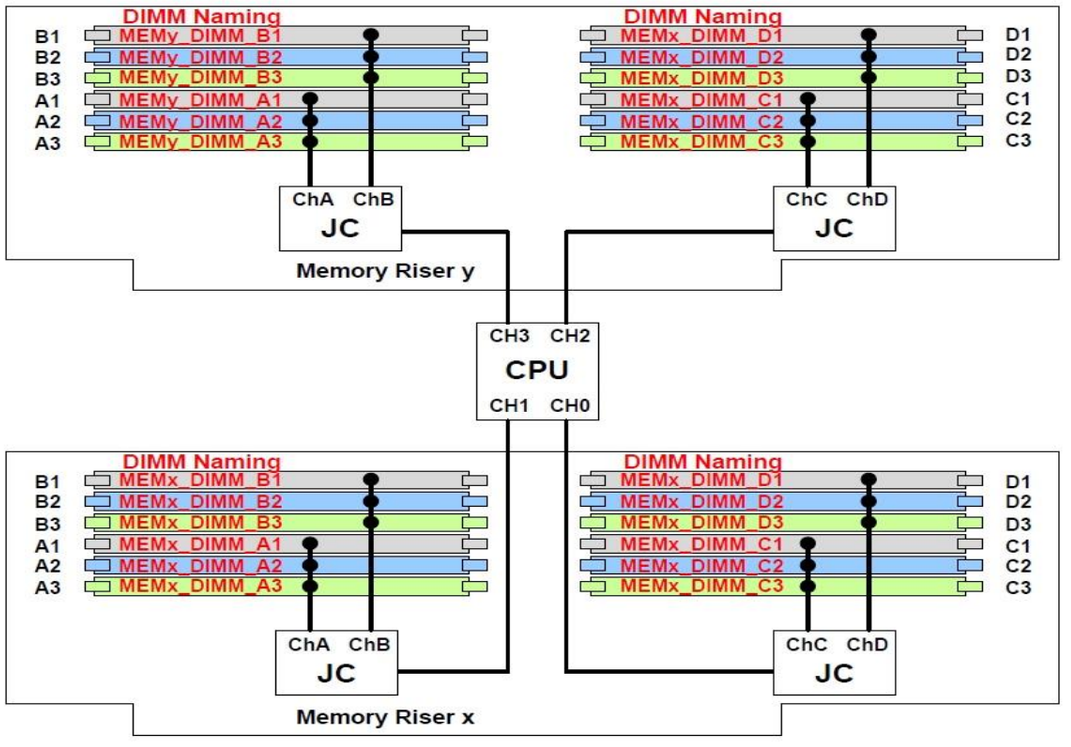


RX4770 M3 Processor Information's and Rules

Two CPU must be configured as minimum, as maximum 4 CPU´s are possible.
Empty CPU slots will be populated with CPU airflow dummy's.
Only 2 CPU or 4 CPU configurations are allowed, only same version, no mix!
Later upgrading to a 4 processor system is also possible, but may require adding of PSU and Memory modules.

RX4770 M3 Memory Information's and Rules

Basically DIMM population orders:
DIMM population order for each CPU is done by DIMM pair (2x DIMMSs) using Round Robin scheme (e.g. CPU1, CPU2, CPU3, CPU4, CPU1...)



Memory Configuration Rules (DIMM installation order)
- All DIMMs must be DDR4 DIMMs (RDIMM and LRDIMM) that support ECC. Non Buffered (UDIMMs) and Non-ECC DIMMs are not supported.
- Mixing of DDR4 operating frequencies is not validated within a socket or across sockets. If DIMMs with different frequencies are mixed, all DIMMs will run at the common lowest frequency.
- Mixing of LRDIMM with any other DIMM type is not allowed within a socket or across sockets and is not validated.
- Mixing of LRDIMM rank multiplication mode and direct mode is not supported within the same DDR4 channel. The rank multiplication factor needs to be the same for LRDIMMs on the same channel.
- Mixing of Intel SMI 2 Performance Mode (2:1) and Lockstep Mode (1:1) of operation is not validated within a socket or across sockets.
- DIMMs with different timing parameters can be installed on different slots within the same DDR4 channel, but only timings that support the slowest DIMM will be applied to all. As a consequence, faster DIMMs will be operated at timings supported by the slowest DIMM populated.
- When one DIMM is used, it must be populated in DIMM slot0 (farthest away from the Memory Buffer) of a given channel.
- A maximum of 8 logical ranks (ranks seen by the host iMC) per channel is allowed. Support for greater than 8 physical ranks is supported via LRDIMM rank multiplication.
- When single, dual and quad rank DIMMs are populated for 2DPC or 3DPC, always populate the higher number rank DIMM first (starting from the farthest slot), for example, first quad rank, then dual rank, and last single rank DIMM (not in 3DPC).
- Mixing of Independent and Lockstep channel mode is not allowed per platform.
- Mixing of Non-Mirrored and Mirrored mode is not allowed per platform.
- Mixing of Sparing and Non-Sparing mode is not allowed per platform.

Memory configuration modes with minimum need of DIMMs per CPU and further Stepping (see Population #):

Memory-Mode / Memory pieces	**2 CPU**		**4 CPU**	
Mode	First population/ Minimum DIMMs (Order-Bundles)	Additionally Step DIMMs (Order-Bundles)	First population/ Minimum DIMMs (Order-Bundles)	Additionally Step DIMMs (Order-Bundles)
Independent	4 (2)	2 (1)	8 (4)	2 (1)
Independent with Mirroring	4 (2)	2 (1)	8 (4)	2 (1)
Independent with Sparing	8 (4)	4 (2)	16 (8)	4 (2)
Lockstep	8 (4)	4 (2)	16 (8)	4 (2)
Lockstep with Mirroring	8 (4)	4 (2)	16 (8)	4 (2)
Lockstep with Sparing	16 (8)	8 (4)	32 (16)	8 (4)

Server Rules for Combination CPU and Memory Boards:
- A minimum of one Memory Board per each CPU must be populated.
- If two Memory Boards per CPU will be used, each CPU have to be populated with two Memory Boards.
- Following Configurations of CPU and Memory Boards per Server are possible:
--- Two CPU with two Memory Boards.
--- Two CPU with four Memory Boards.
--- Four CPU with four Memory Boards.
--- Four CPU with eight Memory Boards

Memory example Table for one CPU with two Memory Boards:

		CPU#n							
		Memory Riser#x				Memory Riser#y			
DIMM Slot#		MEMx_ DIMM_A1	MEMx_ DIMM_B1	MEMx_ DIMM_C1	MEMx_ DIMM_D1	MEMx_ DIMM_A1	MEMx_ DIMM_B1	MEMx_ DIMM_C1	MEMx_ DIMM_D1
		MEMx_ DIMM_A2	MEMx_ DIMM_B2	MEMx_ DIMM_C2	MEMx_ DIMM_D2	MEMx_ DIMM_A2	MEMx_ DIMM_B2	MEMx_ DIMM_C2	MEMx_ DIMM_D2
		MEMx_ DIMM_A3	MEMx_ DIMM_B3	MEMx_ DIMM_C3	MEMx_ DIMM_D3	MEMx_ DIMM_A3	MEMx_ DIMM_B3	MEMx_ DIMM_C3	MEMx_ DIMM_D3
Independent		3	1	3	1	4	2	4	2
		7	5	7	5	8	6	8	6
		11	9	11	9	12	10	12	10
Lockstep		1	1	1	1	2	2	2	2
		3	3	3	3	4	4	4	4
		5	5	5	5	6	6	6	6

SMI2 Channel modes, Independent or Lockstep, are selectable in BIOS setup menu.

Lockstep Mode with DDR4:
- **Lockstep --> default mode**, parallel Throughput to both MEM Lines of one SMI2.
- Bus frequency ratio SMI2 to MEM Line is 1:1
- Max. SMI2 frequency are 3200 MHz, means in Lockstep-Mode **1866 MHz DIMMs can also used with 1866 MHz**
- Memory Interleaving function ate only via 2 level, required for interleaving are same - Memory capacity on DDR channels.
- **Mirror Mode or Sparing Mode can be combined with Lockstep Mode.**
- In Lockstep Channel Mode, each memory access is a 128-bit data access that spans Channel 0 and Channel 1, and Channel 2 and Channel 3. Lockstep Channel mode allows SDDC/DDDC. **Lockstep Channel Mode requires that Channel 0 and Channel 1, and Channel 2 and Channel 3 must be populated identically** with regards to size and organization. DIMM slot populations within a channel do not have to be identical but the same DIMM slot location across Channel 0 and Channel 1 and across Channel 2 and Channel 3 must be populated the same.

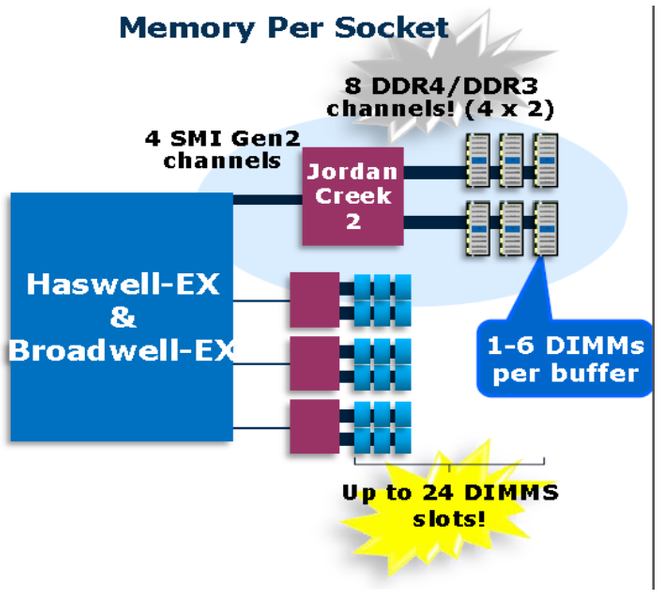
Intel Independent (Performance) Mode with DDR4:
- Bus frequency ratio SMI2 to MEM Line is 2:1
- Max. SMI2 frequency are 3200 MT/s, means in Independent -Mode fast 1866 MHz - **DIMMs can be used with Max. with 1600 MHz**
- Memory Interleaving function ate via all 3 memory level what will be **result in faster memory throughput than Lockstep Mode,** required for interleaving are same Memory capacity on DDR channels.
- **Mirror Mode or Sparing Mode can be combined with Independent Mode.**
- **Channels can be populated in any order in Independent Channel Mode**. All four channels may be populated in any order and have no matching requirements. All DDR channels must run at the same interface frequency but individual channels may run at different DIMM timings (RAS latency, CAS latency, and so forth) Independent Channel mode allows SDDC.

Max Capacity / Features
The system can be equipped with up to 96 DIMMs (distributed on 8 memory boards)
Each DIMM slot can optionally be equipped with 8GB, 16GB DDR4 RDIMM or 32GB, 64GB DDR4 LV DIMM modules, so the maximal memory size is 6144 GB with 64GB modules.

Max. Memory Speed depends on CPU QPI Speed and Memory Type, but is limited to 1866 MHz.
See also description above!

Memory Controller Independent Mode and Lockstep Mode can be switched by BIOS setup menu.
Independent Mode (higher I/O, B/W)
Lockstep Mode (highest DDR4 speeds)
Can be combined with in ordering Mirroring Mode or Spare Mode!

Memory Mirroring Mode:
In Mirrored Channel Mode, the memory contents are mirrored between SMI2 Channel 0 and SMI2 Channel 1 and also between SMI2 Channel 2 and SMI2 Channel 3. **As a result of the mirroring, the total physical memory available to the system is half of what is populated**. Mirrored Channel Mode requires that SMI2 Channel 0 and SMI2 Channel 1, and SMI2 Channel 2 and SMI2 Channel 3 must be populated identically with regards to size and organization



Memory Sparing Mode:
Sparing will be done by Rank Sparing within the same Memory Line (DDR channel).
For Ivy-Bridge Processors, Rank Sparing can be achieved if there are 2Ranks in each DDR channel.
DIMM number is unrelated.
Memory Controller on CPU can handle up to 8 logical RANKs per DDR4 channel. Requirement to configure RANK-sparing is as follows.
- In case of 1R/2R RDIMM, at least two DIMMs should be populated on the DDR4 channel.
- In case of 4R RDIMM or LR-DIMM, one DIMM population is allowed.
In Spare Mode the used Ranks as Spare Ranks shrinked the direct access able Memory:
Example: Rank Information in Memory Order Number description: xxGB (2xxxGB) **2R**x4 L DDR4-1600 R ECC

The total number of spared physically rank on a DDR channel withby one Rank Sparing			
	Populated DIMM slots in Channel:		
	1DPC	2DPC	3DPC
8 GB R DIMM(1pr)	Not possible,	1	1
16 GB R DIMM(2pr)	1	1	1
32GB LR DIMM(4pr)	1	1	2
64GB LR DIMM(4pr)	tbd	tbd	tbd

Date of change	Folder / order code / description	Name	What has been changed / comment
21.06.2017	Base	Klaus-Dieter Ruf	Hint on maybe SATA DOM changed to currently unused
13.06.2017	RAID	Fabian Seil	description of FBU options changed
06.06.2017	S26361-F5243-E6, -L506, -E5, -L505	Fabian Seil	description changed
06.06.2017	HDD_SSD / F5588-E120 / F5525-E240/E480	Sudou, Tatsuya	removed
06.06.2017	HDD_SSD / Note / F5666/F5670-*	Sudou, Tatsuya	updated / added
03.05.2017	RAID	Fabian Seil	EP440i for SafeStore info changed
27.04.2017	USB Devices update	M.Maridakis	New ext. ODD added
27.04.2017	T26139-Y1757-E/L10	Fabian Seil	powercord for Taiwan added
24.03.2017	HDD_SSD / Note / F5583-* / F3817-E500	Sudou, Tatsuya	updated / removed
22.03.2017	RAID	Fabian Seil	comments added
08.03.2017	RAID	Johannes Linne	added Cable Upgrade Kit partnumber: S26361-F5243-L770
09.02.2017	S26361-F5243-E6	Fabian Seil	comment added
07.02.2017	HDD_SSD / SED / S26361-F5632-L240	Sudou, Tatsuya	note for SED updated / order code corrected
24.01.2017	S26361-F5243-E5, E205, L505, E6, E206, L506	Fabian Seil	Included PRAID EP440i + EP440i for Safestore + Cable Set
16.01.2017	FC page Update	Klaus-Dieter Ruf	Always 8 FC controllers are allowed
11.01.2017	S26361-F3896-E494/L494	Fabian Seil	added
04.01.2017	HDD_SSD / SED	Sudou, Tatsuya	added
23.12.2016	PLAN EP X550-T2 2x10GBASE-T	Ulrich Lösch	Added
21.12.2016	HDD_SSD / S26361-F5632-*	Sudou, Tatsuya	added
21.12.2016	HDD_SSD / S26361-F5298-E200/E160	Sudou, Tatsuya	removed
02.12.2016	PCIe Flash SSD, FC	Klaus-Dieter Ruf	PCI Slot 10 also available if PCI-Switch is used
24.11.2016	FC page Update	Fabian Seil	New Channel Controller added, view changed
03.11.2016	S26341-F103-L140	Fabian Seil	added
29.09.2016	S26361-F3898-E647/L647	Fabian Seil	added
27.09.2016	HDD_SSD	Klaus-Dieter Ruf	Mixed use of SAS & SATA HDD drives corrected
25.07.2016	S26361-F3718-E1/-L1	M.Maridakis	Availability extended to APAC
15.07.2016	S26361-F5614/F5617-*	Sudo, Tatsuya	added
14.07.2016	S26361-F5608-*	Sudo, Tatsuya	added
12.07.2016	S26361-F5600-*	Sudo, Tatsuya	added
14.06.2016	S26361-F4475-Exyz		40 Gb IB controller cancelled
14.06.2016	S26361-F5540-E99		new PIP EP EMI Capsule
14.06.2016	S26361-F5580-E1/E2		new 16Gb FC controller
14.06.2016	RX4770 M3	Risse	First Release
05.08.2014	Initial Configurator	Your Name	Start

Chapter 1 - base unit

Start | A

Power supply units & cooling
The PRIMERGY RX4770 M3 offer up to 4x bays for direct attached hot plug (opt. redundant and opt. DPF) power supply units of 1200W or 1600W with up to 96% efficiency.

Server Management
iRMC S4 (integrated Remote Management Controller) on-board with dedicated (or shared) 10/100/1000 Service LAN-port and integrated graphics controller. With the integrated onboard indicators and controls You can highlight easily failed components via LEDs. The LEDs can be displayed during service even without mains connection by simply pressing the "indicate CSS" button.

Platform
Fujitsu Systemboard D3349 made in Germany based on Intel®C602J chipset
> 3 serial QPI links (Quick Path Interconnect)
> Up to four Xeon E7-4800 v4 or E7-8800 v4 series CPUs
Slots:
- One dedicated PCIe slot for internal SAS RAID Controller are active.
Additionally PCIe slots:
- Within 2 CPU populated 4 PCIe slots are on Board active (in Summery 1 + 4 -> 5 PCIe slots).
- Within 4 CPU populated 10 PCIe slots are on Board active (in Summery 1 + 10 -> 11 PCIe slots).
Please see schematics in "description" too.
Dedicated PCIe slot for internal SAS RAID Controller (- supports modular RAID functions) @ to first CPU
> additionally 4 slots on Board Full height @ first and second CPU:
Slot 1 PCIe-Gen3 x8, 1/2 lengh
Slot 2 PCIe-Gen3 x8, 1/2 lengh
Slot 3 PCIe-Gen3 x8, 1/2 lengh
Slot 4 PCIe-Gen3 x16, 3/4 lengh
> additionally 6 slots on Board Full height @ third and fourth CPU:
Slot 5 PCIe-Gen3 x8, 1/2 lengh
Slot 6 PCIe-Gen3 x8, 1/2 lengh
Slot 7 PCIe-Gen3 x16, 3/4 lengh
Slot 8 PCIe-Gen3 x8, 1/2 lengh
Slot 9 PCIe-Gen3 x8, 1/2 lengh
Slot 10 PCIe-Gen3 x8, 1/2 lengh

System RAM up to DDR4-1866 MHz
8x Memory Boards with 12x DDDR4 DIMM slots each, based on Intel® C114 Scalable Memory Buffer.
96 memory slots for max. 6TB DDR4 RAM available (24 slots per CPU). Memory speed depends on CPU and configuration.

LAN
LAN on Motherboard based on high performance Chip Intel X540 with 2 port 10/1 Gbit copper.
Optional expansion for LAN on Motherboard submodule, Chip Intel 82599 Niantic with 2 port 10 Gbit optic SFP+.

Software
* ServerView Suite Software incl. ServerStart, ServerBooks, Management Software and Updates

Connectivity

Interfaces at rear side	Interfaces at front
- 1 service LAN RJ45 (1 Gbit)	- 2x USB 2.0 no USB wakeup
- 1 service serial COM	Interfaces internal
- 1x VGA (15 pins)	- 2x internal SATA connectors
- 3x USB 2.0 on, no USB wakeup	----1x for OOD device
LoM with these options:	----1x currently unused
- fix: RJ45: 2x10/1Gbit, copper	- 2x USB 2.0, 1x UFM
- optional: SFP+: 2x10Gbit	

S26361-K1504-V200
RX4770 M3 Rack based Server with 4 RU
Rack base unit with D3349 systemboard
- 1 System Board
- 2 memory boards (up to 6 additional boards optional)
- 8 bays for 2.5" SAS/SATA HDD´s/SSD´s
- 4 bays for SFF(2.5") PCIe SSD´s
- 1 bay (0,5" height) for optical disc drives
- LCD-Display for LocalView (Service Display)
- w/o Power supply units
- w/o Power cord for rack mounting (ICE 320 C14->C13 plug)
- no Rack- mounting kit included

B

Chapter 2 - Rack architecture

PRIMECENTER Rack

S26361-F2735-E111
No Rackmount-Kit

No rackmount. Upgrade later possible with L-part

max. 1x per system

S26361-F2735-E285
S26361-F2735-L285
RMK-F2_DI_CMA_QRL_LV

telescopic drop-in rail, full extractical, supports 1-hand-mounting

Rackmount Kit ex factory
> 1 pair of vario carrier with variable length & quick release lever support
> 1 pair of telescopic drop-in rails with Cable Management Arm (CMA) adapter

1x per system

without CMA adapter
S26361-F2735-L286

S26361-F4530-E13
S26361-F2735-L31
Bracket 4U in asymmetrical racks

S26361-F4530-E10
Mounting of RMK in symmetrical racks (no support brackets needed)

S26361-F2735-E71
S26361-F2735-L7
Lateral cable management for 2U servers or higher

for mounting in **asymmetrical** PRIMECENTER M1 racks - 1 bracket PC M1 Rack asym

1x per system

S26361-F2735-E82
S26361-F2735-L82
2U cable management arm (CMA) for 2U server or higher

for mounting in **symmetrical** PRIMECENTER M1 racks
- 1 bracket PC M1 Rack

1x per system

S26361-F2201-L20
Cable arm
for asymmetrical and symmetrical racks
Has to be mounted above the RMK.

SNP:SY-F1647E301-P
Installation ex factory in a PRIMECENTER Rack
Fujitsu will deliver the PRIMERGY RX2560 mounted in a Rack System and all wired connections are tested with PRIMECENTER M1 16U, 24U, 42U rack - Systems and components will be delivered installed in the rack

Only together with a PC M1 rack (S26361-K827-Vxxx)

max. 1x per System

B

Chapter 3 - CPU

B

There are 4 processor sockets available. Please configure minimum 2 Processor, maximum 4 processors (step of 3 is not released).
>> All processor must be the same processor version.
>> To first two processors LOM, iRMC, dedicated SAS RAID Card slot and additionally 4 PCIe slots are useable
>> Only with population four processors all PCIe slots are useable.
>> Each empty CPU slot have to fill up with CPU Dummy!

Intel Xeon processor E7-4800v4 / E7-8800v4 series

XEON E7-48xxv4 Series Basic & Standard		
Xeon E7-4809v4 8C/16T 2.10GHz 20MB 6.40GT/s 115W	**S26361-F3896-E409**	**S26361-F3896-L409**
Xeon E7-4820v4 10C/20T 2.00GHz 25MB 6.40GT/s 115W	**S26361-F3896-E420**	**S26361-F3896-L420**
Xeon E7-4830v4 14C/28T 2.00GHz 35MB 8.00GT/s 115W	**S26361-F3896-E430**	**S26361-F3896-L430**
Xeon E7-4850v4 16C/32T 2.10GHz 40MB 8.00GT/s 115W	**S26361-F3896-E450**	**S26361-F3896-L450**
XEON E7-88xxv4 Series Advanced		
Xeon E7-8860v4 18C/36T 2.20GHz 45MB 9.60GT/s 140W	**S26361-F3896-E460**	**S26361-F3896-L460**
Xeon E7-8870v4 20C/40T 2.10GHz 50MB 9.60GT/s 140W	**S26361-F3896-E470**	**S26361-F3896-L470**
Xeon E7-8880v4 22C/44T 2.20GHz 55MB 9.60GT/s 150W	**S26361-F3896-E480**	**S26361-F3896-L480**
Xeon E7-8890v4 24C/48T 2.20GHz 60MB 9.60GT/s 165W	**S26361-F3896-E490**	**S26361-F3896-L490**
Xeon E7-8894v4 24C/48T 2.40GHz 60MB 9.60GT/s 165W	**S26361-F3896-E494**	**S26361-F3896-L494**
XEON E7-88xxv4 Series Segment Optimized		
Xeon E7-8867v4 18C/36T 2.40GHz 45MB 9.60GT/s 165W	**S26361-F3896-E467**	**S26361-F3896-L467**
Xeon E7-8891v4 10C/20T 2.80GHz 60MB 9.60GT/s 165W	**S26361-F3896-E491**	**S26361-F3896-L491**
Xeon E7-8893v4 4C/8T 3.20GHz 60MB 9.60GT/s 140W	**S26361-F3896-E493**	**S26361-F3896-L493**

Dummy		
CPU airflow Dummy	**S26361-F5295-E999**	----------

C

Chapter 4 - DDR4 System memory

C

The Systemboard of RX4770 M3, D3349, offers 8 slots for Memory Board, each Memory Board offer 12 DIMM slots.
Up to 6 TB Memory per Server possible by use of 64 GB DIMMs.
3 TB GB DDR4 LRDIMM with by use of 2 CPU (4 Memory Board x 48 DIMM slots x 64GB 4R)
6 TB GB DDR4 LRDIMM with by use of 4 CPU (8 Memory Board x 96 DIMM slots x 64GB 4R)
The memory area is divided into 4 channels (SMI2) per CPU with 1 JC2 Memry Buffer each and 2 Memory Lines per JC2, 3 DIMM slots each
Intel SMI2 max. 3200MT/s
- Performance Mode (IntelSMI2 @ 2X DDR speed) DDR4 Support: 1333 MT/s; 1600 MT/s, depending on DIMMs per Line and CPU type
- Lockstep Mode (Intel SMI 2 runs at DDR speed) DDR4 Support: 1333 MT/s, 1600 MT/s, 1866MT/s, depending on DIMMs per Line and CPU type
DDR4 memory is operated at 1.2V
Registered and load reduced DIMM cannot be operated together in one Server.
Further Memry Rules are defined in chapter Description.

S26361-F5295-E1
Memory Lockstep Mode
BIOS setup for Memory Lockstep Mode
Pre-Installation ex factory
max. 1x per system

S26361-F5295-E4
Memory Independent Mode
BIOS setup for Memory Independent Mode
Pre-Installation ex factory
max. 1x per system

S26361-F5295-E2
Memory Mirror Mode
BIOS setup for Mirrored Mode
Pre-Installation ex factory
max. 1x per system
Not released by use of SLES12SP1

S26361-F5295-E3
Memory Spare Mode
BIOS setup for Spare Mode
Pre-Installation ex factory
max. 1x per system
Not released by use of 64GB LR-DIMM (S26361-F3897-E645)

The total number of spared physically rank on a DDR channel			
	Populated DIMM slots in Channel:		
	1DPC	2DPC	3DPC
8 GB R DIMM(1pr)	Not possible,	1	1
16 GB R DIMM(2pr)	1	1	1
32GB LR DIMM(4pr)	1	1	2
64GB LR DIMM(4pr)	tbd	tbd	tbd

Be aware that Memory Spare Mode is not released with LR-DIMMs (32GB dimm and 64 GB DIMM)!
Only released with R-DIMMs (8 GB DIMM and 16 GB DIMM)!

Mix of memory, RDIMMs and LR-DIMMs are not allowed.
Frequency Mix is not validated, all DIMMs run on lowest frequency.

Min. - Max. Memory Boards Rules:
Minimum Memory board rules:
--- One Memory Board for each CPU
--- By step to two Memory Boards per CPU all CPUs have to populated with two Memory Boards.
Per CPU max. 2 Memory Boards can be installed
- with 2 CPU = max. 4 Memory boards (two included in the Base unit)
- with 4 CPU = max. 8 Memory boards
- on each CPU must be populated a minimum of Memory defined by rules of specific Memory Mode.
Default in Base Unit included two Memory Boards can be populated with 12 DIMMs (6 Memory Order Numbers) each!
Server populated with 8 Memory Boards an be populated with 96 DIMMs (48 Memory Order Numbers)!

Registered Memory (RDIMM) with SDDC (chipkill) and ECC support			
16GB (2x8GB) 1Rx4 DDR4-2400 R ECC	Single rank	S26361-F3898-E640	S26361-F3898-L640
32GB (2x16GB) 1Rx4 DDR4-2400 R ECC	Dual rank	S26361-F3898-E641	S26361-F3898-L641
64GB (2x32GB) 2Rx4 DDR4-2400 R ECC	Dual rank	S26361-F3898-E642	S26361-F3898-L642

Registered Memory (RDIMM 3DS)			
128GB (2x64GB) 4Rx4 DDR4-2400 3DS ECC	Quad rank	S26361-F3898-E647	S26361-F3898-L647

Load Reduced Memory (LRDIMM) with SDDC (chipkill) and ECC support			
Load Reduced Memory (LRDIMM) not allowed to use with Memory Sparing Mode!			
128GB (2x64GB) 4Rx4 DDR4-2133 LR ECC	Quad rank	S26361-F3897-E645	S26361-F3897-L645
256GB (2x128GB) 8Rx4 DDR4-2400 LR ECC late availability expe	Quad rank	S26361-F3898-E644	S26361-F3898-L644

Additionally Memory Board			
Memory Board RX4770 M2-M3	With 12 DIMM slots	S26361-F5295-E200	S26361-F5295-L200
Up to 6 additionally Memory Boards can be ordered per server.			

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Detailed information

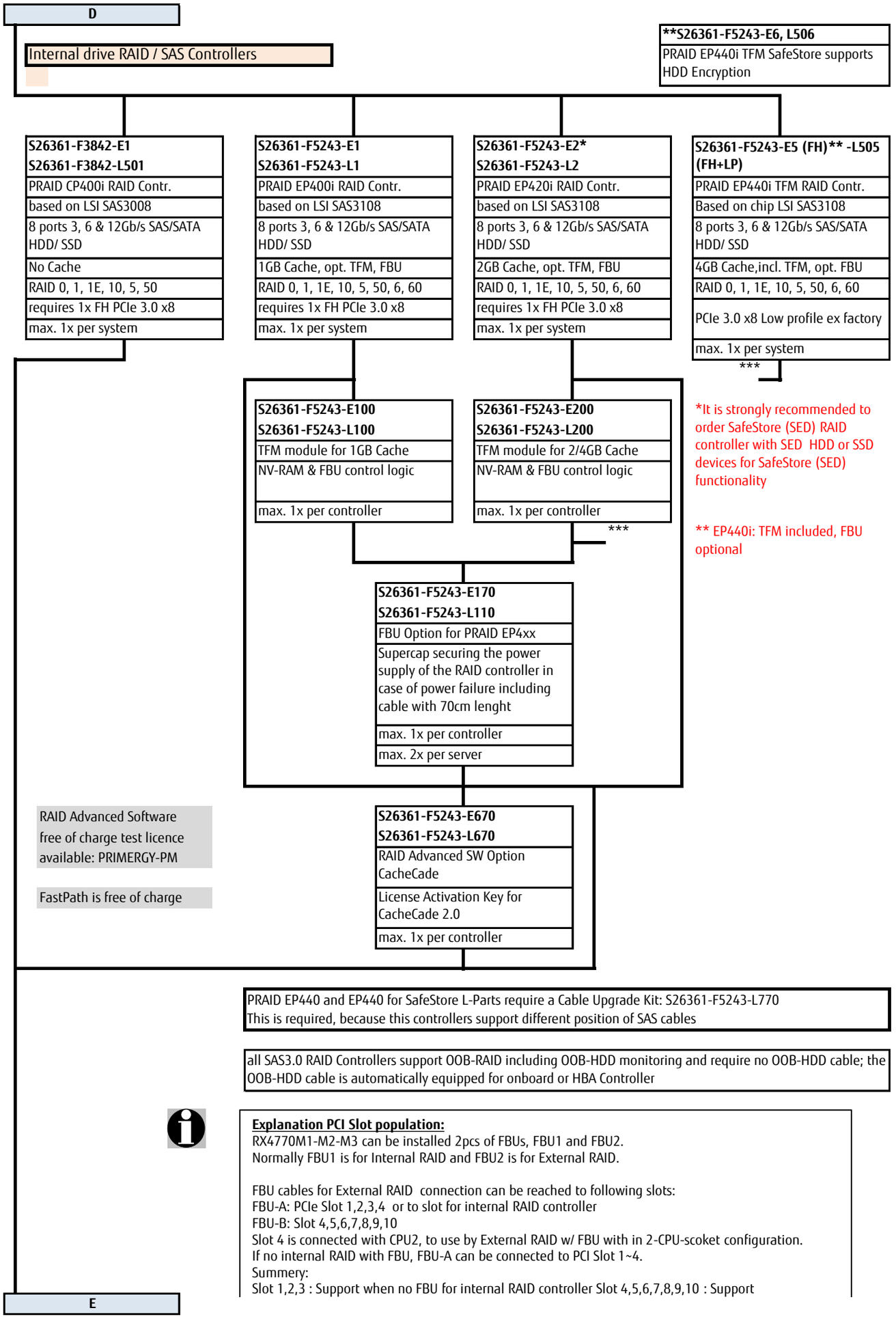
Min. - Max. Memory DIMM Rules:
Minimum Memory DIMM rules:
- Two Memory DIMMs are ordered with one order number, but following description will talk about DIMM pieces.
- Minimum DIMM population differenced by Memory Mode will be informed by table below.
- Because each CPU can be populated with 1 or 2 Memory Boards homogenous, for each CPU same, DIMM population on Memory Boards should be homogenous too.

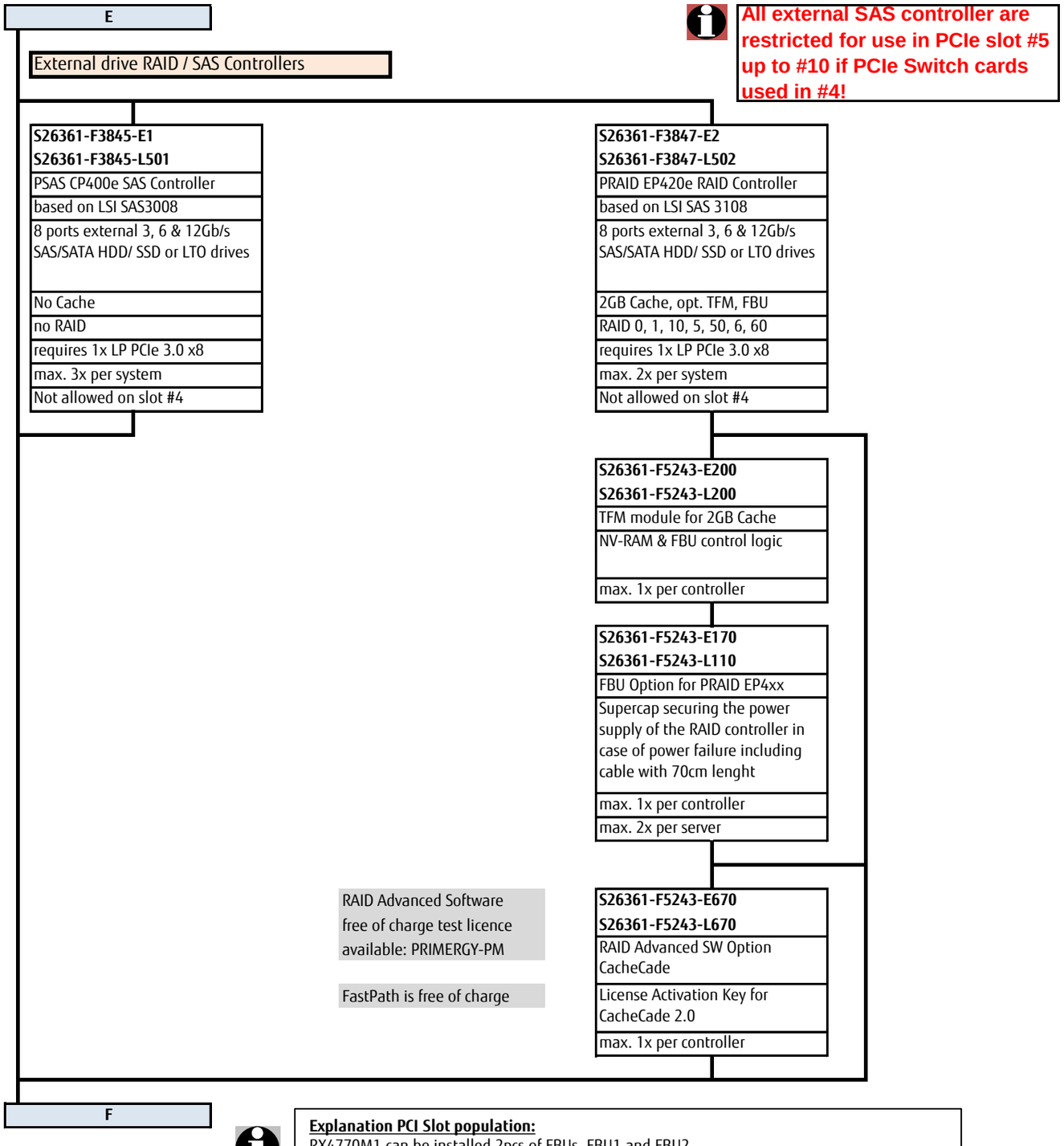
Board for each CPU
- By step to two Memory Boards per CPU all CPUs have to populated with two Memory Boards.

Per CPU max. 2 Memory Boards can be installed
- with 2 CPU = max. 4 Memory boards (two included in the Base unit)
- with 4 CPU = max. 8 Memory boards
- on each CPU must be populated a minimum of Memory defined by rules of specific Memory Mode.

Memory-Mode / Memory pieces	**2 CPU**		**4 CPU**	
Mode	First population/ Minimum DIMMs (Order-Bundles)	Additionally Step DIMMs (Order-Bundles)	First population/ Minimum DIMMs (Order-Bundles)	Additionally Step DIMMs (Order-Bundles)
Independent	4 (2)	2 (1)	8 (4)	2 (1)
Independent with Mirroring	4 (2)	2 (1)	8 (4)	2 (1)
Independent with Sparing	8 (4)	4 (2)	16 (8)	4 (2)
Lockstep	8 (4)	4 (2)	16 (8)	4 (2)
Lockstep with Mirroring	8 (4)	4 (2)	16 (8)	4 (2)
Lockstep with Sparing	16 (8)	8 (4)	32 (16)	8 (4)

Chapter 5 - SAS / RAID Controller



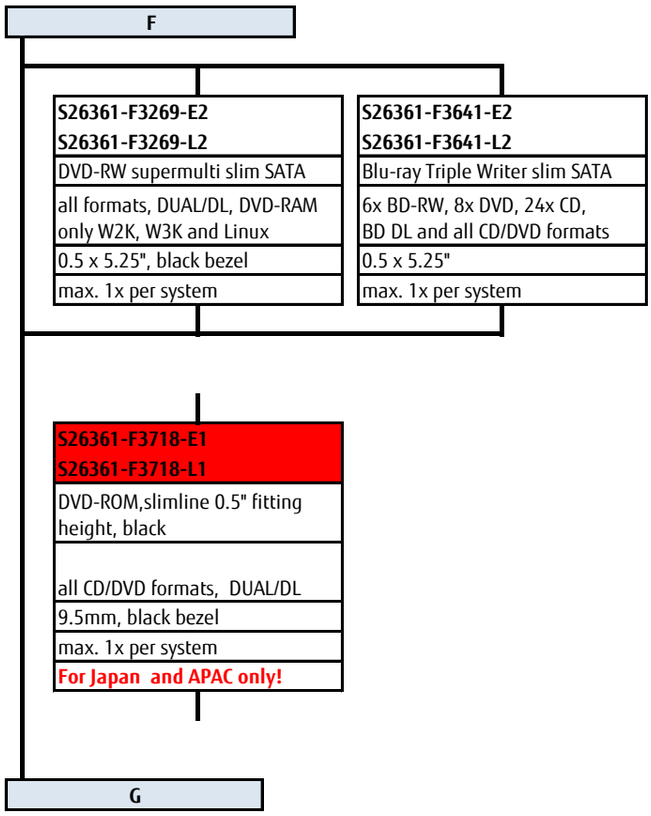


Explanation PCI Slot population:

RX4770M1 can be installed 2pcs of FBUs, FBU1 and FBU2.
Normally FBU1 is for Internal RAID and FBU2 is for External RAID.

FBU cables for External RAID connection can be reached to following slots:
FBU-A: PCIe Slot 1,2,3,4 or to slot for internal RAID controller
FBU-B: Slot 4,5,6,7,8,9,10
Slot 4 is connected with CPU2, to use by External RAID w/ FBU with in 2-CPU-scoket configuration.
If no internal RAID with FBU, FBU-A can be connected to PCI Slot 1~4.
Summery:
Slot 1,2,3 : Support when no FBU for internal RAID controller Slot 4,5,6,7,8,9,10 : Support

Chapter 6 - ODD optical disk drives



Chapter 7 - PCIe Flash SSD storage drives

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S26361-F5267-E1
S26361-F5267-L501
PPCI EP x16 Switch
devides PCIe3.0 x16 lanes into 4x x4 lanes
supports up to 4x 2.5" PCIe-SSD SFF
No HW RAID, No Cache
PCIe3.0 x16 occupies a PCIe3.0 x16 slot
max. 1x per system **(Pcie slot #4 only!)**

Restrictions for PCIe Slot #5, #6, #7, #8 and #9

If PCIe switch Card is used on PCIe Slot #4, following PCIe Cards can NOT used on PCIe slot #5 up to #9:

S26361-F3845-E1	PSAS CP400e SAS Controller
S26361-F3847-E2	RAID Ctrl SAS 12G 8port external
S26361-F5313-E1	16GBit/s FC Controller
S26361-F5313-E2	16GBit/s FC Controller
S26361-F3631-E1	8GBit/s FC Controller
S26361-F3631-E2	8GBit/s FC Controller
S26361-F3961-E1	8GBit/s FC Controller
S26361-F3961-E2	8GBit/s FC Controller
S26361-F4994-E1	16GBit/s FC Controller
S26361-F4994-E2	16GBit/s FC Controller
S26361-F5580-E1	PFC EP QLE2690 1x 16Gb
S26361-F5580-E2	PFC EP QLE2692 2x 16Gb
S26361-F5596-E1	PFC EP LPe31000 1x 16Gb
S26361-F5596-E2	PFC EP LPe31002 2x 16Gb
S26361-F4044-E1	PFC EP LPe32000 1x 32Gb
S26361-F4044-E2	PFC EP LPe32002 2x 32Gb
S26361-F5250-E1	10GBit/s PCNA Standard
S26361-F5536-E2	10GBit/s NIC

S26361-F5295-E630
S26361-F5295-L630
PCIe cable set for PCIe switch to SFF 2.5" SSD backplane (PCIe Cable from Controller to internaly SFF SSD bay)
max. 1x per Controller

PCIe SFF 2.5" SSD devices are NOT supported by Cool Safe!

PCIe-SSD 2.5" (SFF) with hot plug/hot replace tray

capacity	*Formfactor*	*PCIe*	*Endurance*	*dwpd*	*order code E-part*	*order code L-part*
800GB	2.5" (SFF)	Gen 3 x4	mainstream	10	**S26361- F5534-E800**	**S26361- F5534-L800**
1.6TB	2.5" (SFF)	Gen 3 x4	mainstream	10	**S26361- F5534-E161**	**S26361- F5534-L161**

max. 4 per system

PCIe card Flash SSD

Occupies PCIe Card slots!

Mix of PX600 cards with PCIe switch "PPCI EP x16 Switch" is not allowed!

S26361-F5546-E131 **S26361-F5546-L131**
PACC EP PX600 1.3TB
Fusion ioMemory series PCIe 2.0 25nm Lithography PCIe x8, Low Profile Endurance 6 DWPD
max. 4x per system
Allowed only in slots #1, #4, #8, #10

S26361-F5546-E261 **S26361-F5546-L261**
PACC EP PX600 2.6TB
Fusion ioMemory series PCIe 2.0 25nm Lithography PCIe x8, Low Profile Endurance 6 DWPD
max. 4x per system
Allowed only in slots #1, #4, #8, #10

S26361-F5546-E521 **S26361-F5546-L521**
PACC EP PX600 5.2TB
Fusion ioMemory series PCIe 2.0 25nm Lithography PCIe x8, Low Profile Endurance 6 DWPD
max. 4x per system
Allowed only in slots #1, #4, #8, #10

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Chapter 8 - SAS/SATA storage drives

SAS drives and SATA drives can be mixed, but cannot be used in one logical RAID volume.
2.5" SAS & SATA drives require a dedicated SAS / RAID Controller
When using SSDs with VMware ESXi, select the SSDs that meet the endurance requirement described in KB2145210 below.
https://kb.vmware.com/kb/2145210
SED (=Self Encrypting Drives) require either a RAID controller with ®SafeStore (SED) support or an HBA and in addition a software instance, supporting SED Key Management.
It is strongly recommended to order SafeStore (SED) RAID controller with SED HDD or SSD devices for SafeStore (SED) functionality.
Hard Disk Sector Format Information:
512n HDD: 512 byte sectors on the drive media.
512e (e=emulation) HDD: 4K physical sectors on the drive media with 512 byte logical configuration.
512e HDD Disk Drives: VMware 6.0 or earlier is not supported.
HDD Classes:
Business-Critical (BC) -SATA=Nearline SATA Enterprise Drives / 7.2Krpm, SATA 6G.
Business-Critical (BC) -SAS=Nearline SAS Enterprise Drives / 7.2Krpm, SAS 6G or SAS 12G.
Mission-Critical (MC)=SAS 10K and SAS 15K Enterprise Drives with max. performance and reliability.
SSD Information:
dwpd (5y): drive writes per day over 5 years.
Warranty:
SSD has a built-in Wear-Out indicator. In this case the warranty for such a component, as an exception to the system warranty, is restricted to the time period until the indicator reaches the exhaust level.

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SSD SAS 2.5" (SFF) Enterprise performance with hot plug/hot replace tray

capacity	*Formfactor*	*SAS 12G*	*Endurance*	*dwpd*	*order code E-part*	*order code L-part*	
400GB	2.5" (SFF)	SAS 3.0	mainstream	10	**S26361-F5298-E400**	**S26361-F5298-L400**	
800GB	2.5" (SFF)	SAS 3.0	mainstream	10	**S26361-F5298-E800**	**S26361-F5298-L800**	
400GB	2.5" (SFF)	SAS 3.0	Write Intensive	10	**S26361-F5608-E400**	**S26361-F5608-L400**	
800GB	2.5" (SFF)	SAS 3.0	Write Intensive	10	**S26361-F5608-E800**	**S26361-F5608-L800**	
1.6TB	2.5" (SFF)	SAS 3.0	Write Intensive	10	**S26361-F5608-E160**	**S26361-F5608-L160**	
400GB	2.5" (SFF)	SAS 3.0	Write Intensive	10	**S26361-F5611-E400**	**S26361-F5611-L400**	SED
800GB	2.5" (SFF)	SAS 3.0	Write Intensive	10	**S26361-F5611-E800**	**S26361-F5611-L800**	SED
1.6TB	2.5" (SFF)	SAS 3.0	Write Intensive	10	**S26361-F5611-E160**	**S26361-F5611-L160**	SED
max. 8x devices per server							

SSD SAS 2.5" (SFF) 3DWPD Enterprise performance with hot plug/hot replace tray

capacity	*Formfactor*	*SAS 12G*	*Endurance*	*dwpd*	*order code E-part*	*order code L-part*	
480GB	2.5" (SFF)	SAS 3.0	Mixed Use	3	**S26361-F5614-E480**	**S26361-F5614-L480**	
960GB	2.5" (SFF)	SAS 3.0	Mixed Use	3	**S26361-F5614-E960**	**S26361-F5614-L960**	
1.92TB	2.5" (SFF)	SAS 3.0	Mixed Use	3	**S26361-F5614-E192**	**S26361-F5614-L192**	
3.84TB	2.5" (SFF)	SAS 3.0	Mixed Use	3	**S26361-F5614-E384**	**S26361-F5614-L384**	
400GB	2.5" (SFF)	SAS 3.0	Mixed Use	3	**S26361-F5666-E400**	**S26361-F5666-L400**	as soon as available
800GB	2.5" (SFF)	SAS 3.0	Mixed Use	3	**S26361-F5666-E800**	**S26361-F5666-L800**	as soon as available
1.6TB	2.5" (SFF)	SAS 3.0	Mixed Use	3	**S26361-F5666-E160**	**S26361-F5666-L160**	as soon as available
3.2TB	2.5" (SFF)	SAS 3.0	Mixed Use	2,3	**S26361-F5666-E320**	**S26361-F5666-L320**	as soon as available
max. 8x devices per server							

SSD SAS 2.5" (SFF) Read Intensive Enterprise with hot plug/hot replace tray

capacity	*Formfactor*	*SAS 12G*	*Endurance*	*dwpd*	*order code E-part*	*order code L-part*	
480GB	2.5" (SFF)	SAS 3.0	Read Intensive	1	**S26361-F5617-E480**	**S26361-F5617-L480**	
960GB	2.5" (SFF)	SAS 3.0	Read Intensive	1	**S26361-F5617-E960**	**S26361-F5617-L960**	
1.92TB	2.5" (SFF)	SAS 3.0	Read Intensive	1	**S26361-F5617-E192**	**S26361-F5617-L192**	
3.84TB	2.5" (SFF)	SAS 3.0	Read Intensive	1	**S26361-F5617-E384**	**S26361-F5617-L384**	
480GB	2.5" (SFF)	SAS 3.0	Read Intensive	1	**S26361-F5670-E480**	**S26361-F5670-L480**	as soon as available
960GB	2.5" (SFF)	SAS 3.0	Read Intensive	1	**S26361-F5670-E960**	**S26361-F5670-L960**	as soon as available
1.92TB	2.5" (SFF)	SAS 3.0	Read Intensive	1	**S26361-F5670-E192**	**S26361-F5670-L192**	as soon as available
3.84TB	2.5" (SFF)	SAS 3.0	Read Intensive	1	**S26361-F5670-E384**	**S26361-F5670-L384**	as soon as available
max. 8x devices per server							

SSD SATA 2.5" (SFF) 10DWPD Enterprise performance with hot plug/hot replace tray

capacity	*Formfactor*	*SATA 6G*	*Endurance*	*dwpd*	*order code E-part*	*order code L-part*
200GB	2.5" (SFF)	6GBit/s	mainly write	10	**S26361-F5592-E200**	**S26361-F5592-L200**
400GB	2.5" (SFF)	6GBit/s	mainly write	10	**S26361-F5592-E400**	**S26361-F5592-L400**
800GB	2.5" (SFF)	6GBit/s	mainly write	10	**S26361-F5592-E800**	**S26361-F5592-L800**
1200GB	2.5" (SFF)	6GBit/s	mainly write	10	**S26361-F5592-E120**	**S26361-F5592-L120**
max. 8x devices per server						

SSD SATA 2.5" (SFF) 3DWPD Enterprise performance with hot plug/hot replace tray

capacity	*Formfactor*	*SATA 6G*	*Endurance*	*dwpd*	*order code E-part*	*order code L-part*
240GB	2.5" (SFF)	6GBit/s	read / write	3	**S26361-F5588-E240**	**S26361-F5588-L240**
480GB	2.5" (SFF)	6GBit/s	read / write	3	**S26361-F5588-E480**	**S26361-F5588-L480**
960GB	2.5" (SFF)	6GBit/s	read / write	3	**S26361-F5588-E960**	**S26361-F5588-L960**
1920GB	2.5" (SFF)	6GBit/s	read / write	3	**S26361-F5588-E192**	**S26361-F5588-L192**
max. 8x devices per server						

SSD SATA 2.5" (SFF) Read Intensive Enterprise with hot plug/hot replace tray

capacity	*Formfactor*	*SATA 6G*	*Endurance*	*dwpd*	*order code E-part*	*order code L-part*
120GB	2.5" (SFF)	6GBit/s	read intensive	0.3	**S26361-F5525-E120**	**S26361-F5525-L120**
800GB	2.5" (SFF)	6GBit/s	read intensive	0.3	**S26361-F5525-E800**	**S26361-F5525-L800**
max. 8x devices per server						

SSD SATA 2.5" (SFF) Read Intensive Enterprise with hot plug/hot replace tray

capacity	*Formfactor*	*SATA 6G*	*Endurance*	*dwpd*	*order code E-part*	*order code L-part*
240GB	2.5" (SFF)	6GBit/s	read intensive	1	**S26361-F5632-E240**	**S26361-F5632-L240**
480GB	2.5" (SFF)	6GBit/s	read intensive	1	**S26361-F5632-E480**	**S26361-F5632-L480**
800GB	2.5" (SFF)	6GBit/s	read intensive	1	**S26361-F5632-E800**	**S26361-F5632-L800**
960GB	2.5" (SFF)	6GBit/s	read intensive	1	**S26361-F5632-E960**	**S26361-F5632-L960**

1.2TB	2.5" (SFF)	6GBit/s	read intensive	1	**S26361-F5632-E120**	**S26361-F5632-L120**
1.6TB	2.5" (SFF)	6GBit/s	read intensive	1	**S26361-F5632-E160**	**S26361-F5632-L160**
max. 8x devices per server						

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HDD SAS 2.5" 15K (SFF) Mission Critical Enterprise performance with hot plug/hot replace tray							
capacity	*RPM*	*SAS*	*Cache*	*sector*		*order code E-part*	*order code L-part*
300GB	15.000	SAS 3.0	128MB	512n		**S26361-F5531-E530**	**S26361-F5531-L530**
450GB	15.000	SAS 3.0	128MB	512n		**S26361-F5531-E545**	**S26361-F5531-L545**
600GB	15.000	SAS 3.0	128MB	512n		**S26361-F5531-E560**	**S26361-F5531-L560**
max. 8x devices per server							

HDD SAS 2.5" 10K (SFF) Mission Critical Enterprise performance with hot plug/hot replace tray							
capacity	*RPM*	*SAS*	*Cache*	*sector*		*order code E-part*	*order code L-part*
600GB	10.000	SAS 3.0	128MB	512e		**S26361-F5543-E160**	**S26361-F5543-L160**
900GB	10.000	SAS 3.0	128MB	512e		**S26361-F5543-E190**	**S26361-F5543-L190**
1.2TB	10.000	SAS 3.0	128MB	512e		**S26361-F5543-E112**	**S26361-F5543-L112**
1.8TB	10.000	SAS 3.0	128MB	512e		**S26361-F5543-E118**	**S26361-F5543-L118**
1.8TB	10.000	SAS 3.0	128MB	512e	SED	**S26361-F5582-E118**	**S26361-F5582-L118**
max. 8x devices per server							

HDD SAS 2.5" 10K (SFF) Mission Critical Enterprise performance with hot plug/hot replace tray							
capacity	*RPM*	*SAS*	*Cache*	*sector*		*order code E-part*	*order code L-part*
300GB	10.000	SAS 3.0	128MB	512n		**S26361-F5550-E130**	**S26361-F5550-L130**
600GB	10.000	SAS 3.0	128MB	512n		**S26361-F5550-E160**	**S26361-F5550-L160**
900GB	10.000	SAS 3.0	128MB	512n		**S26361-F5550-E190**	**S26361-F5550-L190**
1.2TB	10.000	SAS 3.0	128MB	512n		**S26361-F5550-E112**	**S26361-F5550-L112**
300GB	10.000	SAS 3.0	128MB	512n	SED	**S26361-F5581-E130**	**S26361-F5581-L130**
600GB	10.000	SAS 3.0	128MB	512n	SED	**S26361-F5581-E160**	**S26361-F5581-L160**
1.2TB	10.000	SAS 3.0	128MB	512n	SED	**S26361-F5581-E112**	**S26361-F5581-L112**
max. 8x devices per server							

HDD SAS 2.5" 7.2K (SFF) Business critical (BC) with hot plug/hot replace tray							
capacity	*RPM*	*SAS 6G*	*Cache*	*sector*		*order code E-part*	*order code L-part*
1.0TB	7.200	SAS 2.0	64MB	512n		**S26361-F3817-E100**	**S26361-F3817-L100**
max. 8x devices per server							

HDD SAS 2.5" 7.2K (SFF) Business critical (BC) with hot plug/hot replace tray							
capacity	*RPM*	*SAS 12G*	*Cache*	*sector*		*order code E-part*	*order code L-part*
1.0TB	7.200	SAS 3.0	128MB	512n		**S26361-F5600-E100**	**S26361-F5600-L100**
2.0TB	7.200	SAS 3.0	128MB	512n		**S26361-F5600-E200**	**S26361-F5600-L200**
1.0TB	7.200	SAS 3.0	128MB	512e		**S26361-F5573-E100**	**S26361-F5573-L100**
2.0TB	7.200	SAS 3.0	128MB	512e		**S26361-F5573-E200**	**S26361-F5573-L200**
max. 8x devices per server							

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Chapter 9 - LAN Components

10 Gbit LoM interface cards

Interface card to provide the external connectors for on-board LAN			
Onboard LAN / LoM	2x dual port 10Gbit Ethernet, Intel X540, RJ45 connector	**included in Base Unit**	
2-port LoM Extension	2 port 10Gbit SFP+, Intel 82599 (Niantic)	**S26361-F5295-E500**	**S26361-F5295-L500**
1x per system possible			

1Gb Ethernet network components

1Gb Ethernet controller with RJ45 interface (1000BASE-T)					
		∑ per Sys.			
PLAN CP 2x1Gbit Cu Intel I350-T2	4x	4x	2 port, Intel	**S26361-F4610-E2**	**S26361-F4610-L502**
PLAN CP 4x1Gbit Cu Intel I350-T4	4x	4x	4 port, Intel Restriction: Not allowed PCIe slots #8, #10	**S26361-F4610-E4**	**S26361-F4610-L504**
max. 4 Controller per system					

10Gb Ethernet network components

10Gb Ethernet controller with RJ45 interface (10GBASE-T)					
		∑ per Sys.			
PLAN EP X550-T2 2x10GBASE-T		6x	2 port NIC, Intel	**S26361-F3948-E2**	**S26361-F3948-L502**
Eth Ctrl 2x10GBase-T PCIe x8 X540-T2		6x	2 port NIC, Intel	**S26361-F3752-E2**	**S26361-F3752-L502**
PLAN EP OCe14102 2x 10GBase-T	3x	6x	2 port NIC with RDMA, Emulex Restriction: - For CNA it's unable for SAN boot on PCI slot #1, #2, #3, #4 or #6.	**S26361-F5557-E1**	**S26361-F5557-L501**

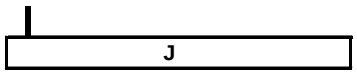
10Gb Ethernet controller with SFP+ interface (for SFP+ modules or twinax cables, Fujitsu / Intel based)				
Eth Ctrl 2x10Gbit PCIe x8 D2755 SFP+	6x	2 port NIC, Intel 82599 based Restriction: Not allowed PCIe slots #4	**S26361-F3629-E2**	**S26361-F3948-L502**
PLAN EP X710-DA2 2x10Gb SFP+	6x	2 port NIC, Intel Restriction: Waiting for Release!	**S26361-F3640-E2**	**S26361-F3640-L502**

optional 10Gb SFP+ module with LC connector for Fujitsu / Intel based controller				
SFP+ Module MMF 10GbE LC	2x	MMF / SR SFP+ module, up to 400m	**S26361-F3986-E3**	**S26361-F3986-L3**
SFP+ Module SMF 10GbE LC	2x	SMF / LR SFP+ module, up to 10km	**S26361-F3986-E4**	**S26361-F3986-L4**
Twinax Anschlussplatz Primergy	2x	virtual connector for twinax cables	**V:TWX CONNECTOR-PY**	
SFP+ active Twinax Cable Fujitsu	2x	customized cable length (best fitting cable length is defined during rack installation at the factory)	**S26361-F3989-E600**	**see table at the botton of this page**
SFP+ active Twinax Cable Brocade	2x		**S26361-F3873-E500**	
SFP+ passive Twinax Cable Cisco	2x		**S26361-F4571-E500**	
max. 2x SFP+ or Twinax Cable per controller				

10Gb Ethernet controller with SFP+ interface (for SFP+ modules or twinax cables, Emulex) Restriction: All CNA controller (FCoE) are restricted for use in PCIe slot #5 up to #10 if PCIe Switch cards used in #4!				
	∑ per Sys.			
PLAN EP OCe14102 2x10Gb	6x	6x	2 port NIC with RDMA, Emulex	**S26361-F5536-E2**	**S26361-F5536-L502**
PCNA EP OCe14102 2x 10Gb	6x	6x	2 port CNA with FCoE & RDMA, Emulex Restriction: - For CNA it's unable for SAN boot on PCI slot #1, #2, #3, #4 or #6.	**S26361-F5250-E1**	**S26361-F5250-L501**
PCNA EP OCec14102 2x 10Gb DMF	2x		2 port CNA with FCoE & DMF for PAN, Emulex Restriction: "PCNA EP OCec14102 2x10Gbit Cloud Card – Emulex Skyhawk, 2 channel" is only for Cloud Computing with expliciet FW part for Egenera PAN Manager and there is no mix with any other PCIe Controller in a server released.	**S26361-F5250-E10**	**S26361-F5250-L510**

optional 10Gb SFP+ module with LC connector for Emulex controller				
PCNA SFP+ MMF Modul OCe14102	2x	MMF / SR SFP+ module, up to 400m	**S26361-F5250-E110**	**S26361-F5250-L110**
Twinax Anschlussplatz Primergy	2x	virtual connector for twinax cables	**V:TWX CONNECTOR-PY**	
SFP+ active Twinax Cable Fujitsu	2x	customized cable length (best fitting cable length is defined during rack installation at the factory)	**S26361-F3989-E600**	**see table at the botton of this page**
SFP+ active Twinax Cable Brocade	2x		**S26361-F3873-E500**	
SFP+ passive Twinax Cable Cisco	2x		**S26361-F4571-E500**	
max. 2x SFP+ or Twinax Cable per controller				

Legend: ∑ per Sys. =^ max. summery pieces of Controller by Controller group per server (marked by same colored field background)!
Cases:
- Green Background, it is possible to install CNA OCe14102-UX and PLAN OCe14102-NX (10Gb NIC) and PLAN OCe14102-NT(10G Base-T) until six per system.
- Ocher Background, it is possible to install I350-T2 and I350-T4 until four per system.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40Gb Ethernet network components

40Gb Ethernet controller with QSFP+ interface (for QSFP+ modules or twinax cables, Emulex)				
PCNA EP OCe14401 1x 40Gb **If used, Server have NO FCC EMC class A (USA and Canada) certification!**	4x	1x QSFP+ plug for twinax or modules Restriction: Only allowed PCIe slots #1, #4, #7 and #10	**S26361-F5539-E1**	**S26361-F5539-L501**
optional 40Gb QSFP+ module with MTO connector for Emulex controller				
SFP+ Module MMF 10GbE LC	1x	MMF / SR SFP+ module, up to 400m	**S26361-F5539-E140**	**S26361-F5539-L140**
Twinax Anschlussplatz Primergy	1x	virtual connector for twinax cables	**V:TWX CONNECTOR-40**	
Break-Out Twinax cable	1x	QSFP 4x 10Gb Break-Out Twinax cable	**n.a.**	**S26361-F5539-L240**
QSFP+ active Twinax Cable	1x	customized cable length (best fitting cable length is defined during rack installation at the factory)	**S26361-F3986-E400**	**see table at the botton of this page**
QSFP+ aktives Twinax Kabel Brocade	1x		**S26361-F5317-E40**	
rmax. 1x QSFP+ or Twinax Cable per controller				
max. 1 Controller per system				

Legend: ∑ per Sys. =^ max. summery pieces of Controller by Controller group per server (marked by same colored field background)!
Cases:
- Green Background, it is possible to install CNA OCe14102-UX and PLAN OCe14102-NX (10Gb NIC) and PLAN OCe14102-NT(10G Base-T) until six per system.
- Ocher Background, it is possible to install I350-T2 and I350-T4 until four per system.

Network cables for later upgrade

Fujitsu active SFP+ Twinax 10Gb cable	
SFP+ active Twinax Cable Fujitsu 2m	**S26361-F3989-L102**
SFP+ active Twinax Cable Fujitsu 5m	**S26361-F3989-L105**
SFP+ active Twinax Cable Fujitsu 10m	**S26361-F3989-L110**

Brocade active SFP+ Twinax 10Gb cable	
SFP+ active Twinax Cable Brocade 1m	**S26361-F3873-L501**
SFP+ active Twinax Cable Brocade 3m	**S26361-F3873-L503**
SFP+ active Twinax Cable Brocade 5m	**S26361-F3873-L505**

Cisco passive SFP+ Twinax 10Gb Ethernet	
SFP+ passive Twinax Cable Cisco 1m	**S26361-F4571-L101**
SFP+ passive Twinax Cable Cisco 3m	**S26361-F4571-L103**
SFP+ passive Twinax Cable Cisco 5m	**S26361-F4571-L105**
SFP+ active Twinax Cable Cisco 7m	**S26361-F4571-L107**
SFP+ active Twinax Cable Cisco 10m	**S26361-F4571-L110**

Fujitsu QSFP+ / QSFP+ Twinax 40Gb cable	
QSFP+ passive Twinax Cable Fujitsu 2m	**S26361-F3986-L402**
QSFP+ passive Twinax Cable Fujitsu 5m	**S26361-F3986-L405**
QSFP+ active Twinax Cable Fujitsu 10m	**S26361-F3986-L410**

Brocade active QSFP+ / QSFP+ Twinax 40Gb cable	
QSFP+ active Twinax Cable Brocade 1m	**S26361-F5317-L41**
QSFP+ active Twinax Cable Brocade 3m	**S26361-F5317-L43**
QSFP+ active Twinax Cable Brocade 5m	**S26361-F5317-L45**
40GE Direct Attached QSFP-QSFP,10m,1pack	**D:QSFP-QSFP-AOC10L**
Brocade active QSFP+ / 4xSFP+ Twinax 40Gb cable	
QSFP+/4xSFP+ Breakout Cable Brocade 1m	**S26361-F5317-L401**
QSFP+/4xSFP+ Breakout Cable Brocade 3m	**S26361-F5317-L403**
QSFP+/4xSFP+ Breakout Cable Brocade 5m	**S26361-F5317-L405**
4x10GE Direct QSFP-4SFP Cable,10m,1-pack	**D:QSFP-4SFP-AOC10L**

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Chapter 10 - Fibre Channel Controller

L

32Gb Fibre Channel controller generation 6 with LC interface for 50µm optical cables (OM3 or OM4)				
These components ship with optical transceiver modules equipped for all ports. Supported line rates: 32, 16, and 8Gbps.				
PFC EP LPe32000 1x 32Gb	4x	1 port, full height, Broadcom/Emulex	**S26361-F4044-E1**	**S26361-F4044-L501**
PFC EP LPe32002 2x 32Gb	4x	2 port, full height, Broadcom/Emulex	**S26361-F4044-E2**	**S26361-F4044-L502**
PFC EP QLE2740 1x 32Gb	4x	1 port, full height, Cavium/Qlogic	**S26361-F4043-E1**	**S26361-F4043-L501**
PFC EP QLE2742 2x 32Gb	4x	2 port, full height, Cavium/Qlogic	**S26361-F4043-E2**	**S26361-F4043-L502**
16Gb Fibre Channel controller generation 6 with LC interface for 50µm optical cables (OM3 or OM4)				
These components ship with optical transceiver modules equipped for all ports. Supported line rates: 16, 8, and 4Gbps.				
PFC EP LPe31000 1x 16Gb	8x	1 port, full height, Broadcom/Emulex	**S26361-F5596-E1**	**S26361-F5596-L501**
PFC EP LPe31002 2x 16Gb	8x	2 port, full height, Broadcom/Emulex	**S26361-F5596-E2**	**S26361-F5596-L502**
PFC EP QLE2690 1x 16Gb	8x	1 port, full height, Cavium/Qlogic	**S26361-F5580-E1**	**S26361-F5580-L501**
PFC EP QLE2692 2x 16Gb	8x	2 port, full height, Cavium/Qlogic	**S26361-F5580-E2**	**S26361-F5580-L502**
16Gb Fibre Channel controller generation 5 with LC interface for 50µm optical cables (OM3 or OM4)				
Predecessor - Dual speed support - supports 16Gb and 8Gb				
PFC EP LPe16000 1x 16Gb	8x	1 port, full height, Emulex	**S26361-F4994-E1**	**S26361-F4994-L501**
PFC EP LPe16002 2x 16Gb	8x	2 port, full height, Emulex	**S26361-F4994-E2**	**S26361-F4994-L502**
PFC EP QLE2670 1x 16Gb	8x	1 port, full height, Qlogic	**S26361-F5313-E1**	**S26361-F5313-L501**
PFC EP QLE2672 2x 16Gb	8x	2 port, full height, Qlogic	**S26361-F5313-E2**	**S26361-F5313-L502**
8Gb Fibre Channel controller generation 4 with LC interface for 50µm optical cables (OM3 or OM4)				
Dual speed support - supports 8Gb and 4Gb				
FC Ctrl 8Gb/s 1x LPe1250 MMF LC	8x	1 port, full height, Emulex	**S26361-F3961-E1**	**S26361-F3961-L1**
FC Ctrl 8Gb/s 2x LPe12002 MMF LC	8x	2 port, full height, Emulex	**S26361-F3961-E2**	**S26361-F3961-L2**
FC Ctrl 8Gb/s 1x QLE2560 MMF LC	8x	1 port, full height, Qlogic	**S26361-F3631-E1**	**S26361-F3631-L1**
FC Ctrl 8Gb/s 2x QLE2562 MMF LC	8x	2 port, full height, Qlogic	**S26361-F3631-E2**	**S26361-F3631-L2**

All FC controller are restricted for use in PCIe slot #5 up to #9 if PCIe Switch cards used in #4!

M

Chapter 11 - Infiniband Controllers

M

S26361-F4533-E102	**S26361-F4533-E202**
S26361-F4533-L102	**S26361-F4533-L202**
IB HCA 56Gb 1channel FDR	IB HCA 56Gb 2channel FDR
56GBit 1channel Infiniband Controller with FDR technology	56GBit 2channel Infiniband Controller with FDR technology
Q-SFP+ connector	Q-SFP+ connector
PCIe x8 full height Card, 170mm	PCIe x8 full height Card, 170mm
max. 4x per system	max. 4x per system

For the US market only:
Due to EMI restrictions, only **one** IB FDR HCA can be installed per system

S26361-F5540-E102	**S26361-F5540-E202**
PIB EP 100GB 1 PORT EDR	PIB EP 100GB 2 PORT EDR
100GBit 1channel Infiniband Controller with EDR technology	100GBit 2channel Infiniband Controller with EDR technology
Transceiver within cable	Transceiver within cable
PCIe x16	PCIe x16
max. 2x per system only allowed in PCIe slot #4 and #7	max. 2x per system only allowed in PCIe slot #4 and #7

Loose Delivery for EDR Controller with EMI Capsule included
S26361-F5540-L101 : PIB EP 100GB 1 PORT EDR FCC
S26361-F5540-L201: PIB EP 100GB 2 PORT EDR FCC

Japan Market only for EDR Controller with EMI Capsule included
S26361-F5540-E101 : PIB EP 100GB 1 PORT EDR FCC
S26361-F5540-E201: PIB EP 100GB 2 PORT EDR FCC

S26361-F5540-E99
PIB EP EMI CAPSULE
max. 1x per EDR controller

Due to FCC EMC Class A restrictions (USA and Canada), EDR controller has to be order with EMI Capsule.

as soon as available

S26361-F5562-E10 / L10
POP EP 100Gb 1 Channel
100GBit 1 channel Omni Path HFI Card (8.0GT/s)
1x Q-SFP+ connector
PCIe Gen3 x16 Full Hight Card, 170mm
max. 2x per system

Max. 2x Omni Path Card per System (configuration of different Controllers NOT supported)

Max. 2x IB Controller per System (configuration of different Controllers NOT supported)

Network Components, Controller and cables for later upgrade

only within a rack configuration

S26361-F3996-E556
InfiniBand Cu Cable 56Gb customized. QSFP, 1m and 3m

only loose delivery

Cables for 40Gbit and 56 Gbit Controller:
If additional length of copper cable or optical cable are needed, Copper cable are also available for loose delivery as S26361-F3996-L561, QSFP, 56Gb, 1m S26361-F3996-L563, QSFP, 56Gb, 3m

For loose delivery and in Rack customizing

Cables for 100Gbit Controller:
S26361-F5549-L561 MELLANOX COP. CABLE, 100GB/S, QSFP,LSZH, 1M
S26361-F5549-L563 MELLANOX COP. CABLE, 100GB/S, QSFP,LSZH, 3M

only within a rack configuration

Cables for 100Gbit Controller: Omni-Passive Cable
S26361-F5563-E150/-E200/-E300 QSFP,1.5m or 2m or 3m / Max 1 per Controller

loose delivery

Cables for 100Gbit Controller: Omni-Passive Cable
S26361-F5563-L150/-L200/-L300 QSFP,1.5m or 2m or 3m / Max 1 per Controller

N

Chapter 12 - Power supply unit, power cable

N

S26113-F5295-E120 **S26113-F5295-L120** 1200W platinum power supply unit	**S26113-F5295-E160** **S26113-F5295-L160** 1600W platinum power supply unit
1200W PSU module platinum 1st or 2nd PSU for redundancy and DPF. 94% efficiency 110V range: 1020W	1600W PSU module platinum PSU for redundancy and DPF. 94% efficiency
100-240V, 50-60Hz	200-240V, 50-60Hz
occupies hot plug PSU slot	occupies hot plug PSU slot
min. 2 / max. 4x per system	min. 2 / max. 4x per system
Restriction: Not to use with by Cool Safe option.	

Be aware that in worst case 1200W PSU population do not solve all configuration possibilities!
Mix of PSU Versions are not allowed!

Rack

Power cord option for Rack Server, 4m, grey (1x per PSU)	
T26139-Y1968-E100	Powercord for rack, IEC 320 C14 connector
T26139-Y1742-E10	USA, Canada, 1.8m, black
T26139-Y1757-E/L10	Taiwan, 1.8m
T26139-Y3850-E10	Option "no powercord", for Countries without specific cable orderable like e.g. China

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Accessories

USB Mouse:	
Mouse M510 Grey	S26381-K457-E101 / L101
Laser Mouse USB/PS2 Combo	S26381-K430-E100 / L100
USB sticks (FOR PROJECTS ONLY) - no standard release	
ADATA USB 3.0 Flash Stick UE700 – 32GB	S26391-F6048-L332
ADATA USB 3.0 Flash Stick UE700 – 64GB	S26391-F6048-L364
3) external optical drives: very low request --> no standard offer	
One UFM (USB Flash Module) can be configured The UFM is bundeld with VMWare offering:	
VMware vSphere Embedded UFM Device 8 GB	S26361-F2341-E433

http://www.fujitsu.com/de/products/computing/peripheral/accessories/

http://www.fujitsu.com/de/products/computing/peripheral/accessories/input-devices/mice/mouse-m510.html
http://www.fujitsu.com/de/products/computing/peripheral/accessories/input-devices/mice/laser-mouse-combo-usb-ps2.html

http://www.fujitsu.com/de/products/computing/peripheral/accessories/storage/usb3-flash-stick-ue700.html

!! changed listing:
ascending with order code

USB keyboards for floorstand versions for following countries:		
USB professional Keyboard KBPC PX ECO	**Country version**	**FUJITSU Keyboard KB521 USB (grey)**
S26381-K341-E104	Czech/Slovak	S26381-K521-E104
S26381-K341-E110	USA / international	S26381-K521-E110
S26381-K341-E120	Germany	S26381-K521-E120
S26381-K341-E122	Germany / Int	S26381-K521-E122
S26381-K341-E140	France	S26381-K521-E140
S26381-K341-E154	Sweden / Finland	S26381-K521-E154
S26381-K341-E165	United Kingdom	S26381-K521-E165
S26381-K341-E170	Switzerland	S26381-K521-E170
S26381-K341-E180	Spain	S26381-K521-E180
S26381-K341-E185	Italy	S26381-K521-E185

http://www.fujitsu.com/de/products/computing/peripheral/accessories/input-devices/keyboards/keyboard-kb521.html

USB Optical Disc Drive	
External Ultra Slim Portable DVD Writer (Hitachi-LG)	**S26341-F103-L142**

USB 3.0 adapter

S26361-F3749-E1
USB3.0 PCIe x1 adapter card (Full height) Sunrich U-720
1 port intern, 1 port extern, USB3.0A connectors
requires 1x PCIe *1
max. 1x per system

S26361-F3749-L501
USB3.0 PCIe x1 adapter card (Low profile) Sunrich U-720
1 port intern, 1 port extern, USB3.0A connectors; incl LP / FH brackets
requires 1x PCIe *1
max. 1x per system

http://www.fujitsu.com/de/products/computing/servers/primergy/components/pmod_124391.html

SX05, external Tape Box on USB

S26361-K1418-V110
19" enclosure unit 1U for max 2 HH 5.25" USB backup devices
Devices in SX05 are: - DAT72 S26361-H950-V200 - DAT160 S26361-H1023-V200 - RDXUSB3.0 S26361-F3750-E4
For SX05 internal and Rack configurability please refer to SX05 S1 Configuration Guide itself!
Connectors at RX4770: **- USB 2.0 connectors on rear side** **- USB 2.0 connectors on front side** **- USB 3.0 connector by PCIe card Sunrich U-720.**

SX05, external Tape Box on SAS

S26361-K1418-V110
19" enclosure unit 1U for max 2 HH 5.25" SAS backup devices
Devices in SX05 are: - LTO3 HH S26361-F3561-E4 - LTO4 HH S26361-F3626-E2 - LTO5 HH S26361-F3627-E1 - LTO6 HH S26361-F3787-E1
For SX05 internal and Rack configurability please refer to SX05 S1 Configuration Guide itself!
Connected to Controller CP400e

Chapter 14 - others

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S26361-F1790-E243
S26361-F1790-L244
iRMC S4 advanced pack
integrated remote Management controller activation key for graphical console redirection and remote media redirection
max. 1x per system

Executing system updates, controlling the hardware setup or running diagnostic tests on components are frequent tasks of IT administrators to ensure a continuous 24x7 server operation. ServerView embedded Lifecycle Management (eLCM) for Fujitsu PRIMERGY servers greatly supports such routine tasks by consolidating and enhancing management functions directly available (“embedded”) within the server.

S26361-F1790-E310
embedded Lifecycle Management (eLCM)
Server Online Update
OS driver Update
Hardware firmware update
Server Offline Update
Hardware update via Update Manager Express
PrimeCollect
Autonomous creation of Primecollect archives
Creation and use of PrimeCollect archives over AIS connect
Custom Image (Jukebox function)
Automatic and manual download of CD and DVD Images
Automatic and manual start of CD and DVD Images
max. 1x per system

Loose delivery
eLCM Activation Pack
(Node Locked License)
BDL:ELCM-PACK
options contains:
- 16GB SD card
- Paper with TAN for Licensekey

S26361-F3776-E101
Cool-safe ® Advanced Thermal design
enables the PRIMERGY Server to cope with temperatures from 5-40° in operating mode due to extended Fan settings
this setting can be activated ex factory only
max. 1x per system

Restrictions with by Cool-Safe Mode (up to 40°C degrees):
- CPU Throttling can generated in extremely situations.
- PCIe-SSD 2.5" (SFF) will be not supported!
- 1200 Watt PSU will be not supported!

S26361-F3552-E5
S26361-F3552-L5
TPM 1.2 Module
Trusted Platform Module on Motherboard
Use according to import restrictions
max. 1x per system

S26361-F3552-E11
S26361-F3552-L11
TPM 2.0 Module
Trusted Platform Module on Motherboard
Use according to import restrictions
max. 1x per system

S26361-F1452-E100
REGION KIT APAC/America/EMEA/India
For Shipments to Asia pacific, America, EMEA or India regions
1x per system

S26361-F1452-E110
REGION KIT JP
For Shipments to Japan regions
1x per system

S26361-F1452-E140
REGION KIT Europe
1x per system

Your Server is ready