FUJITSU

PRIMERGY BX924 S4

System configurator and order-information guide

Contents

Instructions

This document contains basic product and configuration information that will enable you to configure your system via System-Architect.

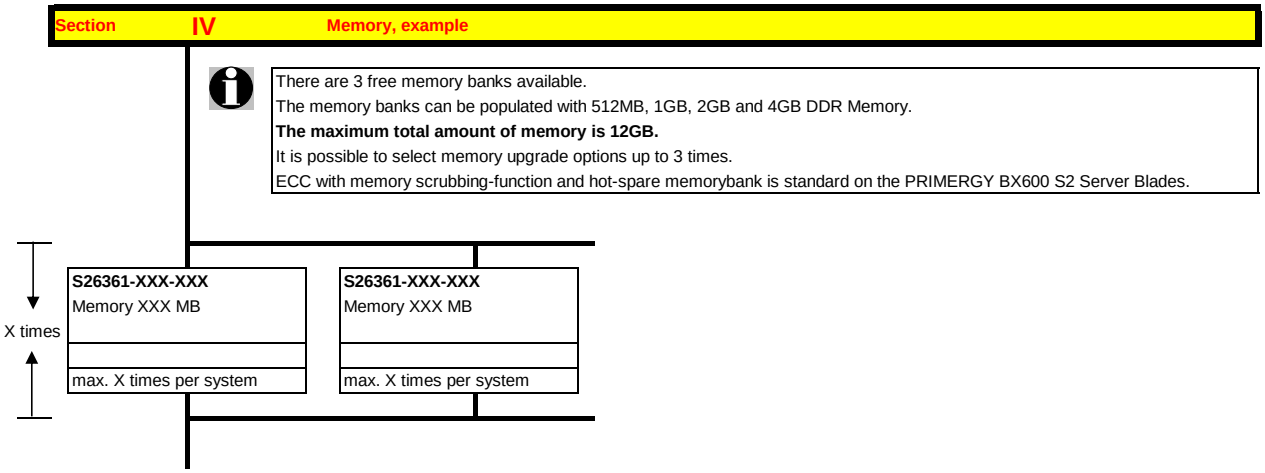
Only the tool "System-Arcitect" will ensure a fast and proper configuration of your PRIMERGY server or your complete PRIMERGY Rack system.

Please pay attention to the naming conventions: **BX924 S4** Dual Server Blade S4

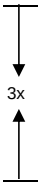
You can configure your individual PRIMERGY server in order to adjust your specific requirements.

The System configurator is divided into several chapters that are identical to the current price list and PC-/ System-Architect.

Please follow the lines. If there is a junction, you can choose which way or component you would like to take. Go through the configurator by following the lines from the top to the bottom .



In one chapter you can only select as many components (here 3x) as the arrow indicates.



Please note that there are information symbols which indicate necessary information.

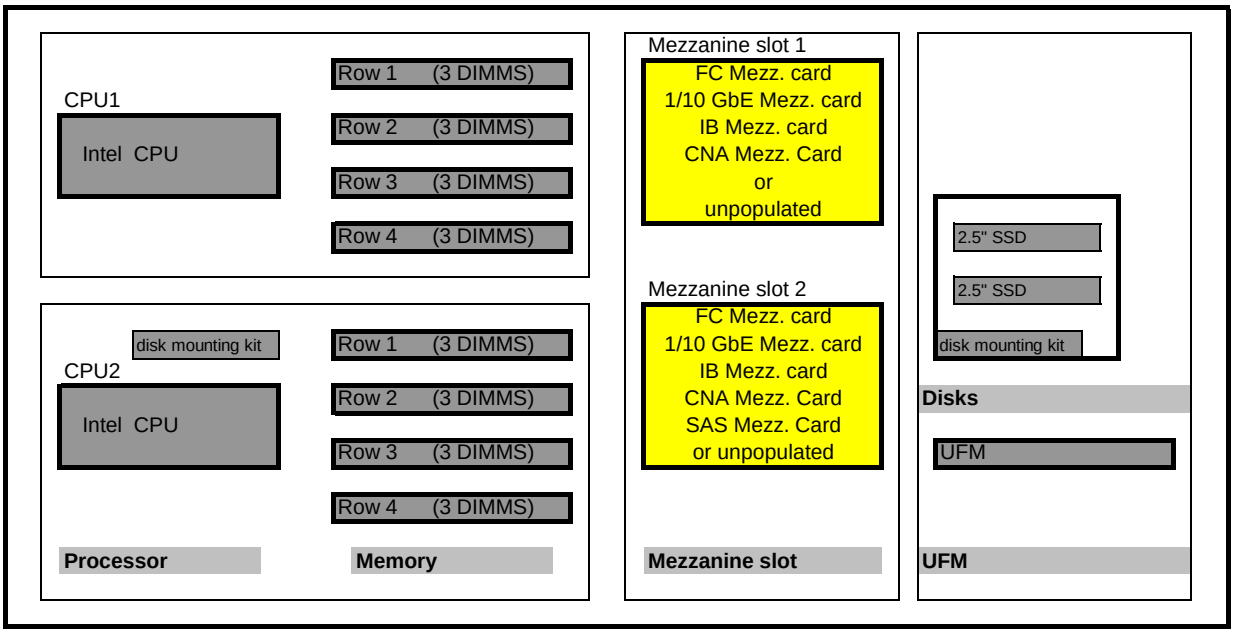
For further information see:

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

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

Prices and availability see price list and PC-/ System-Architect
Subject to change and errors excepted

Configuration diagram Dual Server Blade BX924 S4



Key:

Included in basic unit Option

The population order for the CPU is: CPU1 first, then CPU2

The population order for the DIMMs: for each CPU, the DIMM row 1 (DIMMS 1A 1B 1C) (DIMMS 1D 1E 1F) first, then row 2 (DIMMs 2A, 2B, 2C) (DIMMs 2D, 2E, 2F)

D

Section X **Dual Socket Server Blade BX924 S4**

Server Blade with:
- Dual INTEL Romley Processor Support as Dual-Core / Quad-Core / Six-Core
- The base units with INTEL Processor
- onbaord controller for SATA / SAS (optional)
- 24 DIMM sockets, organized in 3 DPC for each CPU (12 DIMMs per CPU)
- 1x Dual channel 10 Gbit Ethernet CNA controller on-board
- 2 bays for optional 2.5" SATA SSD disks (non hot-plug)
- iRMC S4 on-board
- Special connector for Y-cable (4x USB, 1 x serial 1x VGA).

The BX924 S4 Server Blade can be installed max. 18x in the BX900 System Unit
The BX924 S4 Server Blade can be installed max. 8x in the BX400 System Unit

18x

S26361-K1451-V100
PY BX924 S4 Dual Server Blade
up to 2x 2.5" SSD drives.
Dual Server Blade Base Unit without
CPU and without memory modules!
For CPU and Memory configuration see below
Max. 18x per BX900 System Unit.
Max. 8x per BX400 System Unit.

S26361-F4478-L2
PY BX900 Y-Cable frontside
for KVM connection to
Server Blade
4x USB, 1x VGA

S26361-F3552-E1
TPM Module
Trusted Platform Module on motherboard
PY TPM Module
Be aware of import restrictions!
Max. 1x per Server Blade.

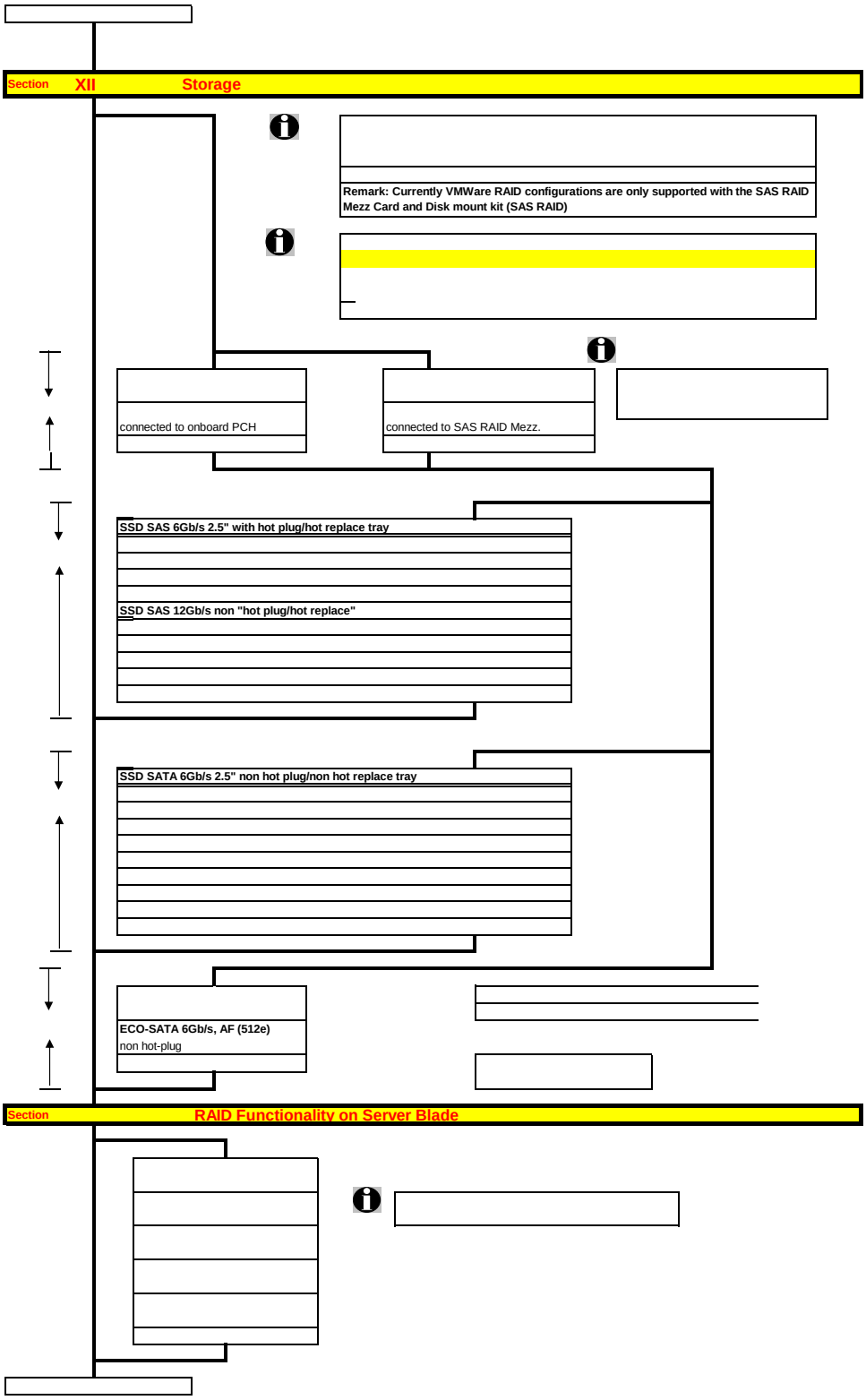
S26361-F2749-E1
Service for Server Blade installation in the System Unit.
Hereby the BX900 S1 will be delivered completely
configured and tested with Server Blades integrated.
This order number must be in the same order as the System Unit itself.
min. 1x per System Unit; max. 18x per System Unit; max. 1x per Server Blade

S26361-F2749-E2
Server Blade individually packed / delivered.
The Server Blade is not built in a BX900 S1,
it is separately tested and delivered.
Contains ServerStart CD
max. 1x per Server Blade

Section XI Processor

- 1x 64-bit Intel Xeon (10MB Smart Cache)
- 1x 64-bit Intel Xeon (15/20MB Smart Cache); Hyper-Threading (HT);
- 1x 64-bit Intel Xeon (20/25MB Smart Cache); Hyper-Threading (HT);
- 1x 64-bit Intel Xeon (15/25/30MB Smart Cache); Hyper-Threading (HT);
- 1x 64-bit Intel Xeon (15/25MB Smart Cache); Hyper-Threading (HT);

- 1x 64-bit Intel Xeon (10MB Smart Cache)
- 1x 64-bit Intel Xeon (15/20MB Smart Cache); Hyper-Threading (HT);
- 1x 64-bit Intel Xeon (20/25MB Smart Cache); Hyper-Threading (HT);
- 1x 64-bit Intel Xeon (15/25/30MB Smart Cache); Hyper-Threading (HT);
- 1x 64-bit Intel Xeon (15/25MB Smart Cache); Hyper-Threading (HT);


Section XII Storage
Remark: Currently VMWare RAID configurations are only supported with the SAS RAID Mezz Card and Disk mount kit (SAS RAID)
connected to onboard PCH
connected to SAS RAID Mezz.
SSD SAS 6Gb/s 2.5" with hot plug/hot replace tray
SSD SAS 12Gb/s non "hot plug/hot replace"
SSD SATA 6Gb/s 2.5" non hot plug/non hot replace tray
ECO-SATA 6Gb/s, AF (512e)
non hot-plug
Section RAID Functionality on Server Blade

F

Section III Memory

- **There are 12 memory slots per CPU for max.**
  768GB LRDIMM (12x 64GB 8R)
  192GB RDIMM (12x 16GB 2R)
  => max. 1.536GB for two CPU`s (768GB per CPU), using LRDIMM
- The memory area is divided into 4 channels per CPU with 3 slots per channel
- Slot 1 of each channel belongs to memory bank 1, the slot 2 belongs to memory bank 2, slot 3 belongs to memory bank 3

Registered, LR DIMMs and unbuffered memory modules can be selected
No mix of registered, load reduced and unbuffered modules allowed.
Memory can be operated at 1.5V or 1.35V, even if the modules are of low voltage type.
Memory operating voltage can be set within BIOS (**1.5V is default** setting for max. speed).
In a single DIMM per channel configuration, following frequencies are supported:
- 1.5V - 1866MHz max (depending on CPU)
- 1.35V - 1600MHz max (depending on CPU, up to two LRDIMM per channel)
- 1.35V - 1333MHz max (up to two UDIMM or RDIMM per channel)

In a 3 DIMMs per channel configuration, memory will operate at 1.35V or 1.5V (no UDIMM allowed).
SDDC (Chipkill) is supported for registered / load redueced x4 organized memory modules only

1.) In the "Independent Channel Mode" is following configuration possible
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 channels must run at the same interface frequency but individual channels may run at different DIMM timings (RAS latency, CAS latency, and so forth)
No mix of registered, load reduced and unbuffered modules allowed.

2.) "Rank Sparing Mode" configuration
- Within a memory channel, one rank is a spare of the other ranks.

The Spare Rank is held in reserve and is not available as system memory
For the effective memory capacity, please refer to the spreadsheet below.
The BIOS is set to the rank sparing setting.
Minimum configuration is: 2x 1R, 2x 2R or 1x4R DDR3 module per channel
This mode is not supported by x8 organized memory modules

3.) "Performance Mode" configuration
- In this configuration, the memory module population ex factory is spread across all channels.

The BIOS is set to the max. performance for memory.
Minimum configuration is: 4x identical modules

4.) In the "Mirrored Channel Mode" is following configuration possible
- Each memory bank can optionally be equipped with 4x registered or load reduced

In each memory bank channel A and B / C and D of CPU 1 or channel E and F / G and H of CPU 2 have to be equipped with identical modules for mirrored channel mode.
In channel B / D is always the mirrored memory of channel A / C of CPU 1
In channel F / H is always the mirrored memory of channel E / G of CPU 2
Minimum configuration is: 4x identical modules
This mode is not supported by x8 organized memory modules

F1

F1

1x per CPU

S26361-F3694-E10 Independent Mode
Independent Channel Mode allows all channels to be populated in any order. No specific Memory RAS features are defined
Requires min 1 memory Module per CPU

S26361-F3694-E1 Rank Sparing Mode Installation
BIOS Setup factory preinstalled to this mode. One Rank is spare of other ranks on the same channel. Spare Rank is not shown in System Memory.
For effective capacity within a channel, please have a look below.
Supported for RDIMM / LRDIMM only.
Requires min 2x 1R/2R or 1x 4R modules per CPU

S26361-F3694-E2 Performance Mode Installation
BIOS Setup factory preinstalled for max. Performance, LV memory might be set to 1.5V operation. Four identical memory modules will be equipped in one memory bank to achieve highest memory performance. All four modules are active and full capacity can be used.
Multiple of 4 identical modules to be configured per CPU

S26361-F3694-E3 Mirrored Channel Mode Installation
BIOS Setup factory preinstalled to this mode. Four identical memory modules are always equipped in one memory bank to use the Mirrored channel Mode. Only two modules contain active data, the remain two modules contain mirrored data
Supported for RDIMM / LRDIMM only.
Multiple of 4 identical modules to be configured per CPU

Effective Memory capacity / Rank Sparing Mode, 1 Channel populated

	RDIMM				LRDIMM	
	4GB 1R	8GB 1R	8GB 2R	16GB 2R	32GB 4R	64GB 8R
1DPC	na	na	na	na	24GB	48GB
2DPC	4GB	8GB	12GB	28GB	56GB	112GB
3DPC	8GB	16GB	20GB	44GB	80GB	160GB

Minimum one memory module or order code per CPU = first memory

12x per CPU, max. 3 modules per channel

2 mod/chan

Unbuffered Memory (UDIMM) no SDDC (chipkill) support
- one DDR3 unbuffered ECC mem. Module, 1.35V
Choose up to 8 order codes per CPU

8GB (1x8GB) 2Rx8 L DDR3-1600 U ECC	S26361-F3807-E515

special release only

Registered Memory (RDIMM) with SDDC (chipkill) support
- one DDR3 registered ECC mem. Module, 1.35V
1333MHz supported with up to 2DPC (8 modules/CPU) and 1.35V
1600MHz supported with up to 2DPC (8 modules/CPU) and 1.5V
Choose up to 12 order codes per CPU

4GB (1x4GB) 1Rx4 L DDR3-1600 R ECC	S26361-F3781-E614
8GB (1x8GB) 1Rx4 L DDR3-1600 R ECC	S26361-F3781-E615
16GB (1x16GB) 2Rx4 L DDR3-1600 R ECC	S26361-F3781-E616

Note 1)
Max. DDR3 memory speed depends on the memory configuration (No of mem modules per channel) as well as on the CPU type.
The memory channel with the lowest speed defines the speed of all CPU channels in the system, also for the channels of the second CPU if configured.
For real memory speed (depending on memory type / population), please check the spreadsheet "Memory speed" below

Registered Memory (RDIMM) with SDDC (chipkill) support
- one DDR3 registered ECC mem. Module, 1.5V
1866MHz supported with up to 2DPC (8 modules/CPU)
Choose up to 12 order codes per CPU

16GB (1x16GB) 2Rx4 DDR3-1866 R ECC	S26361-F3793-E616

Registered Memory (RDIMM) no SDDC (chipkill) support
- one DDR3 registered ECC mem. Module, 1.5V
No mix with any other types of memory modules possible
1866MHz supported with up to 2DPC (8 modules/CPU)
Choose up to 12 order codes per CPU

8GB (1x8GB) 2Rx8 DDR3-1866 R ECC	S26361-F3793-E615

Load Reduced Memory (LRDIMM) with SDDC (chipkill) support
- one DDR3 load reduced ECC mem. Module, 1.35V
Choose up to 12 order codes per CPU

32GB (1x32GB) 4Rx4 L DDR3-1600 LR ECC	S26361-F3782-E617
64GB (1x64GB) 8Rx4 L DDR3-1333 LR ECC	S26361-F3783-E618

Note 2)
Mix of memory modules is only possible within the same group

G

Memory Configuration PRIMERGY BX924 S4

Each CPU offers 12 **Slots** for DDR3 Memory Modules organised in **3 Banks and 4 Channels.**
If you need more than 12 Slots you have to configure the 2nd CPU.
Depending on the amount of memory configured you can decide between 4 basic modes of operation (see explanation below).

There are 2 different kinds of DDR3 Memory Modules available: RDIMM and LRDIMM
RDIMM / LRDIMM offer different functionality. Mix of RDIMM / LRDIMM is not alloved.

If 1.5V and 1.35V DIMMs are mixed, the DIMMs will run at 1.5V

Mode	Configuration	RDIMM	RDIMM / LRDIMM	Application
		x8	x4	
SDDC (chipkill) support	any	no	yes	detect multi-bit errors
Independant Channel Mode	1, 2 or 3 Modules per Bank	yes	yes	offers max. flexibility, upgradeability, capacity
Mirrored Channel Mode *)	4 identical Modules / Bank	no	yes	offers maximum security
Performance Mode	4 identical Modules / Bank	yes	yes	offers maximum performance and capacity
Rank Sparing Mode *)	min. 2 Ranks / Channel	no	yes	balances security and capacity

*) For the delivery ex works the system will be prepared with dedicated BIOS setting.

Capacity	Configuration	RDIMM	LRDIMM	Notes
Min. Memory per CPU	1 Module / CPU	1x4GB	1x32GB	with one CPU
Max. Memory per CPU	8/12 Modules / CPU	12x16GB	12x64GB	with one CPU
Max. Memory per System	16/24 Modules / System	384GB	1536GB	if second CPU is configured

Memory-Speed:
Max. DDR3 memory speed depends on the memory configuration on one memory channel and the speed of the CPU
The memory channel with the lowest speed defines the speed of all CPU channels in the system

Mem. Speed provided by CPU	Real maximum memory-bus speed depending on CPU type, memory configuration (DPC) and voltage setting (BIOS)											
	RDIMM 1866MHz						LRDIMM 4R 1866MHz					
Voltage setting (BIOS)	1.5V [default]			1.35V			1.5V [default]			1.35V		
	1 DPC	2 DPC	3 DPC	1 DPC	2 DPC	3 DPC	1 DPC	2 DPC	3 DPC	1 DPC	2 DPC	3 DPC
CPU with 1866MHz DDR3 Bus	1866	1866	1066	1333	1333	800	1866	1600	1066	1600	1600	1066
CPU with 1600MHz DDR3 Bus	1600	1600	1066	1333	1333	800	1600	1600	1066	1600	1600	1066
CPU with 1333MHz DDR3 Bus	1333	1333	1066	1333	1333	800	1333	1333	1066	1333	1333	1066

1R - Single Rank 4R - Quad Rank
2R - Dual Rank 8R - Eight Rank

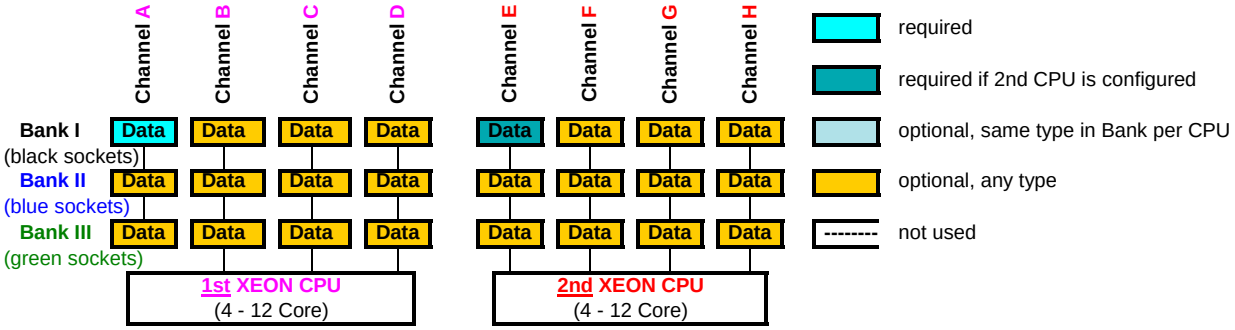
1DPC = 1 DIMM per Channel
2DPC = 2 DIMM per Channel
3DPC = 3 DIMM per Channel

Configuration hints:

- The memory sockets on the systemboard offer a color coding:
  Bank I black sockets
  Bank II blue sockets
  Bank III green sockets

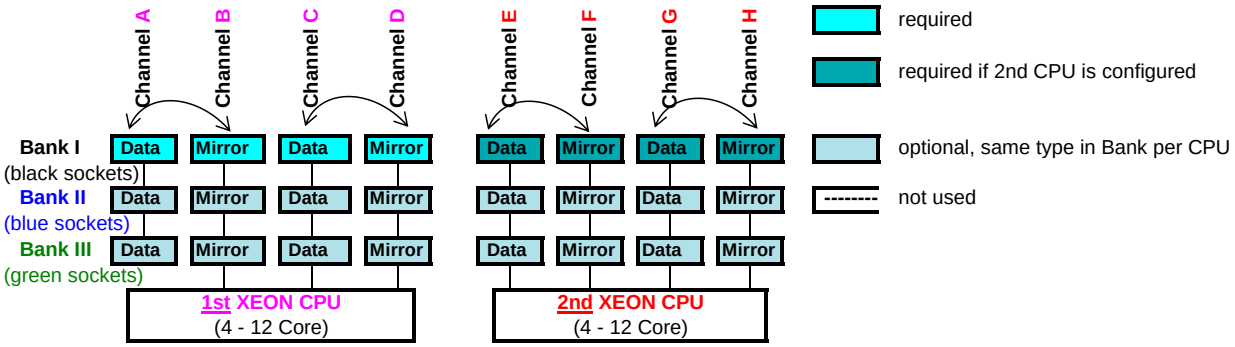
- A so called Bank consits of 1 memory module on every Channel available on one CPU (examples see below)
  Bank I on CPU 1/2 up to 4 memory modules connected to Channel A - H on the 1st/2nd CPU
  Bank II on CPU 1/2 up to 4 memory modules connected to Channel A - E on the 1st/2nd CPU
  Bank III on CPU 1/2 up to 4 memory modules connected to Channel A - E on the 1st/2nd CPU
  (can not be populated by UDIMM or 4R RDIMM memory modules)
- See below and next page for a detailed descriptions of the memory configuration supported.

1. Independent Channel Mode



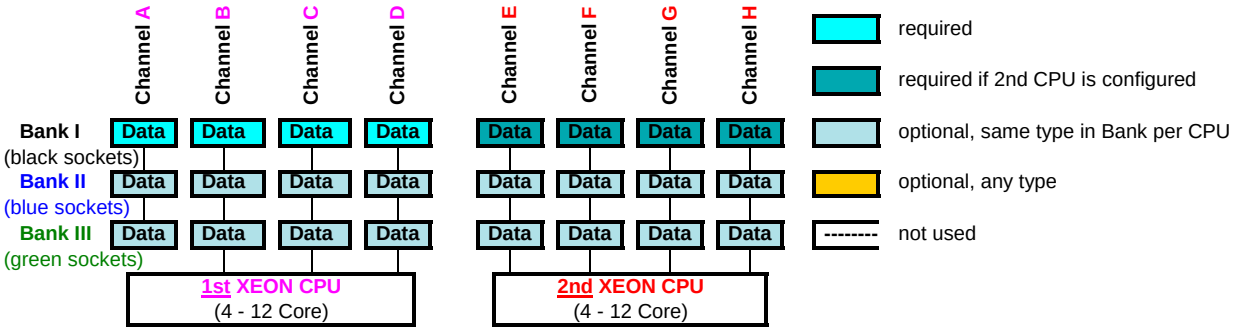
Independent Channel Mode allows all channels to be populated in any order
Can run with differently rated DIMMs and use the settings of the slowest DIMM installed in the system

2. Mirrored Channel Mode



Mirrored Channel Mode requires identical modules on channel A,B, C, D (1st CPU) or channel E, F, G and H (2nd CPU)
50% of the capacity is used for the mirror => the available memory for applications is only half of the installed memory
If this mode is used, a multiple of 4 identical modules has to be ordered.

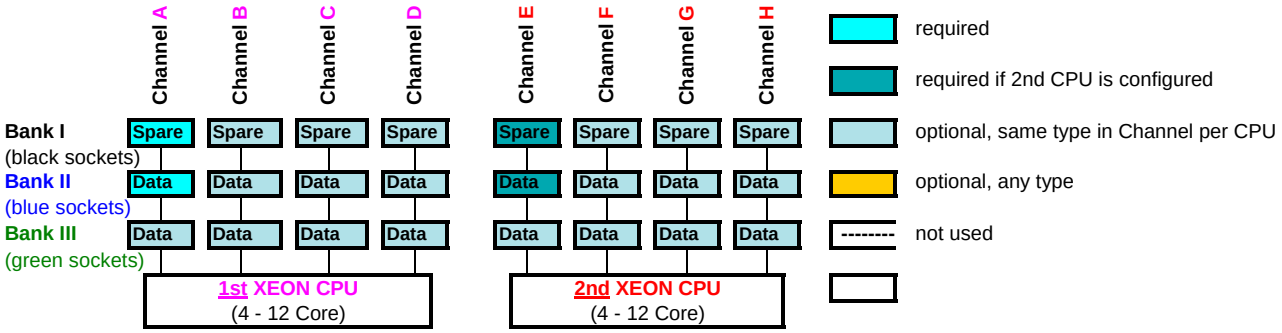
3. Performance Channel Mode



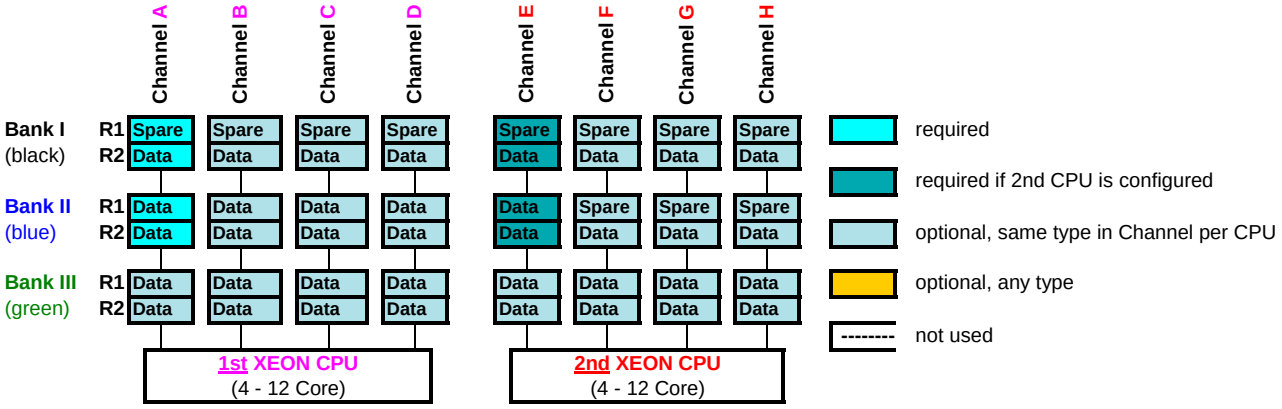
Performance Channel Mode requires identical modules on all channels of each Bank per CPU.
If this mode is used, a multiple of 4 identical modules has to be ordered.

4. Rank Sparing Mode

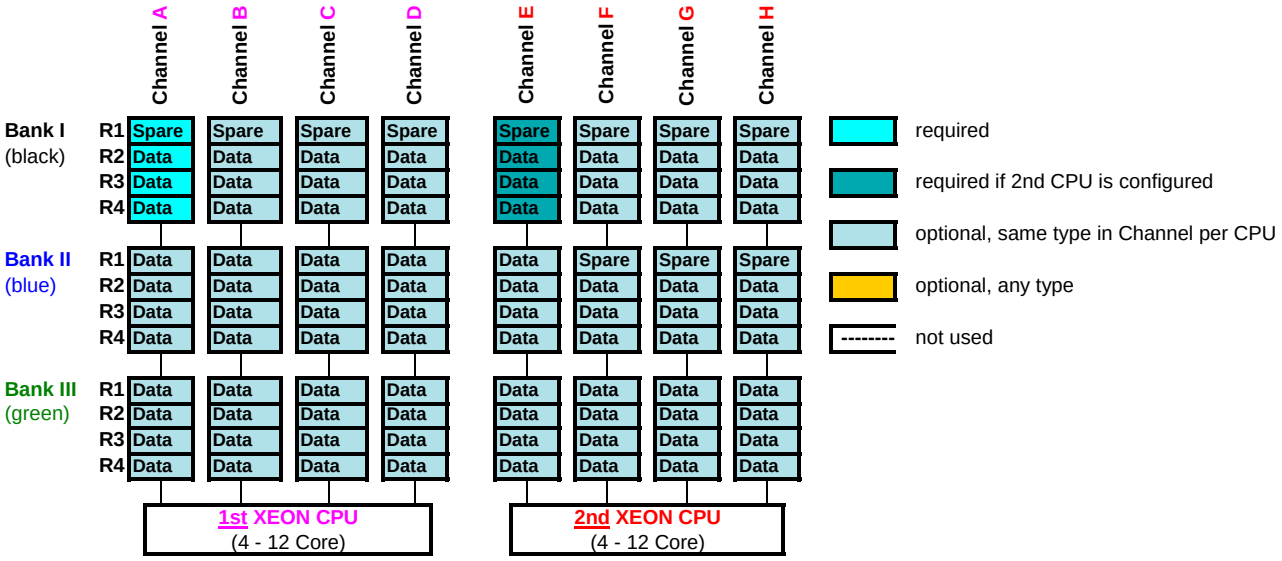
1-Rank Memory modules (RDIMM)



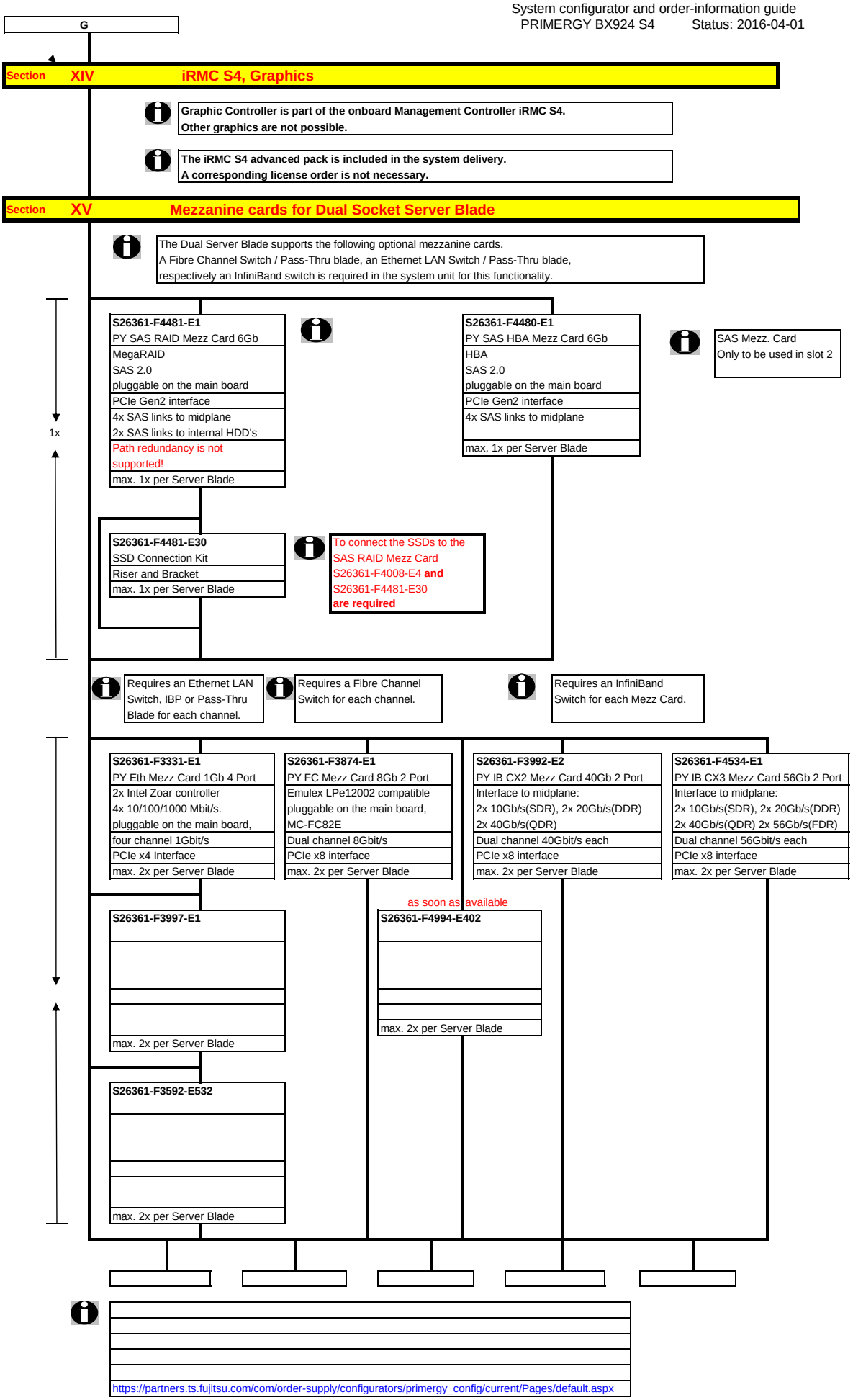
2-Rank Memory modules (RDIMM)



4-Rank Memory modules (LRDIMM)



Rank Sparing Mode requires identical modules (same capacity and technology) within the same channel.
The available memory for applications will vary depending on configuration. Please refer to the spreadsheet above "Effective Memory capacity with active Rank Sparing Mode". Population rule for Rank sparing mode is to achieve max. available memory, e.g. 6 DIMMs will be spread across two channels, each with 3DPC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Section XIV iRMC S4, Graphics
Graphic Controller is part of the onboard Management Controller iRMC S4.
Other graphics are not possible.
The iRMC S4 advanced pack is included in the system delivery.
A corresponding license order is not necessary.
Section XV Mezzanine cards for Dual Socket Server Blade
The Dual Server Blade supports the following optional mezzanine cards.
A Fibre Channel Switch / Pass-Thru blade, an Ethernet LAN Switch / Pass-Thru blade,
respectively an InfiniBand switch is required in the system unit for this functionality.
1x
S26361-F4481-E1
PY SAS RAID Mezz Card 6Gb
MegaRAID
SAS 2.0
pluggable on the main board
PCIe Gen2 interface
4x SAS links to midplane
2x SAS links to internal HDD's
Path redundancy is not supported!
max. 1x per Server Blade
S26361-F4480-E1
PY SAS HBA Mezz Card 6Gb
HBA
SAS 2.0
pluggable on the main board
PCIe Gen2 interface
4x SAS links to midplane
max. 1x per Server Blade
SAS Mezz. Card
Only to be used in slot 2
S26361-F4481-E30
SSD Connection Kit
Riser and Bracket
max. 1x per Server Blade
To connect the SSDs to the SAS RAID Mezz Card S26361-F4008-E4 and S26361-F4481-E30 are required
Requires an Ethernet LAN Switch, IBP or Pass-Thru Blade for each channel.
Requires a Fibre Channel Switch for each channel.
Requires an InfiniBand Switch for each Mezz Card.
S26361-F3331-E1
PY Eth Mezz Card 1Gb 4 Port
2x Intel Zoar controller
4x 10/100/1000 Mbit/s.
pluggable on the main board,
four channel 1Gbit/s
PCIe x4 Interface
max. 2x per Server Blade
S26361-F3874-E1
PY FC Mezz Card 8Gb 2 Port
Emulex LPe12002 compatible
pluggable on the main board,
MC-FC82E
Dual channel 8Gbit/s
PCIe x8 interface
max. 2x per Server Blade
S26361-F3992-E2
PY IB CX2 Mezz Card 40Gb 2 Port
Interface to midplane:
2x 10Gb/s(SDR), 2x 20Gb/s(DDR)
2x 40Gb/s(QDR)
Dual channel 40Gbit/s each
PCIe x8 interface
max. 2x per Server Blade
S26361-F4534-E1
PY IB CX3 Mezz Card 56Gb 2 Port
Interface to midplane:
2x 10Gb/s(SDR), 2x 20Gb/s(DDR)
2x 40Gb/s(QDR) 2x 56Gb/s(FDR)
Dual channel 56Gbit/s each
PCIe x8 interface
max. 2x per Server Blade
as soon as available
S26361-F3997-E1
max. 2x per Server Blade
S26361-F4994-E402
max. 2x per Server Blade
S26361-F3592-E532
max. 2x per Server Blade
https://partners.ts.fujitsu.com/com/order-supply/configurators/primergy_config/current/Pages/default.aspx

Change Report

Date	Order number	Changes
24.04.2015	S26361-F3783-E618	Release of 3DPC
2014-05-14	S26361-F4481-E1	Added hint for non supported redundant path
2014-03-20	S26361-F4994-E402	Added 16 Gb FC Mezz Card
2014-01-31	S26361-F5307-*	New SATA SSDs added.
2014-01-31	S26361-F5301-*	New SAS SSDs added.
2013-10-18	optional USB Comps	no longer available
2013-10-16	S26361-F3783-E618	Restriction to 2 DIMM / channel
2013-10-01		First release