FUJITSU

PRIMERGY BX920 S3

System configurator and order-information guide

June 2014

Contents

PRIMERGY Server

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.

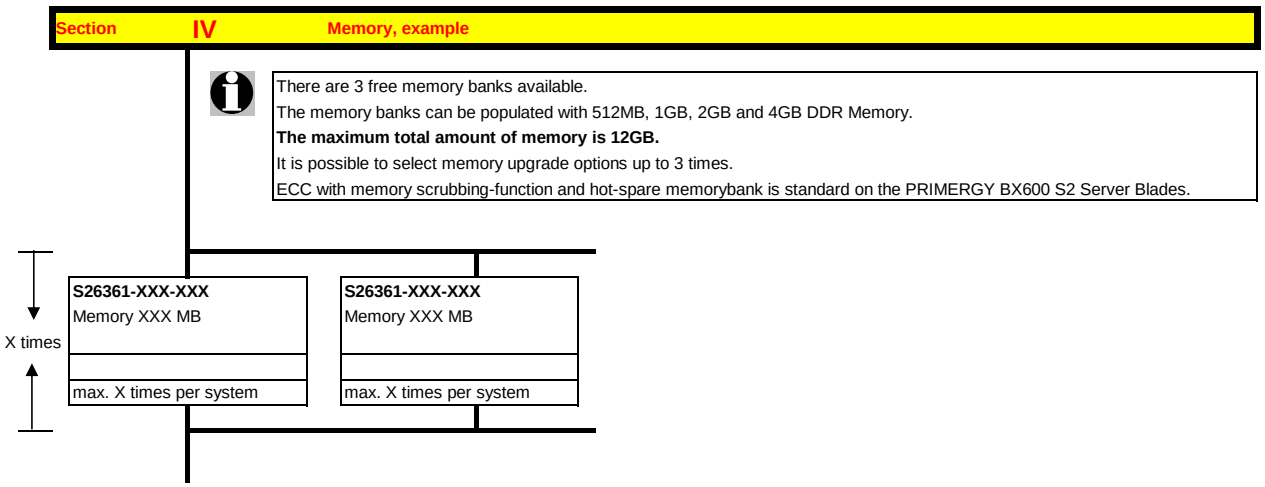
Please pay attention to the naming conventions:

BX900 S1	System unit 1nd generation
BX920 S2	Dual Server Blade S2

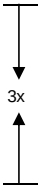
You can configure your individual PRIMERGY server in order to adjust your specific requirements.

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.

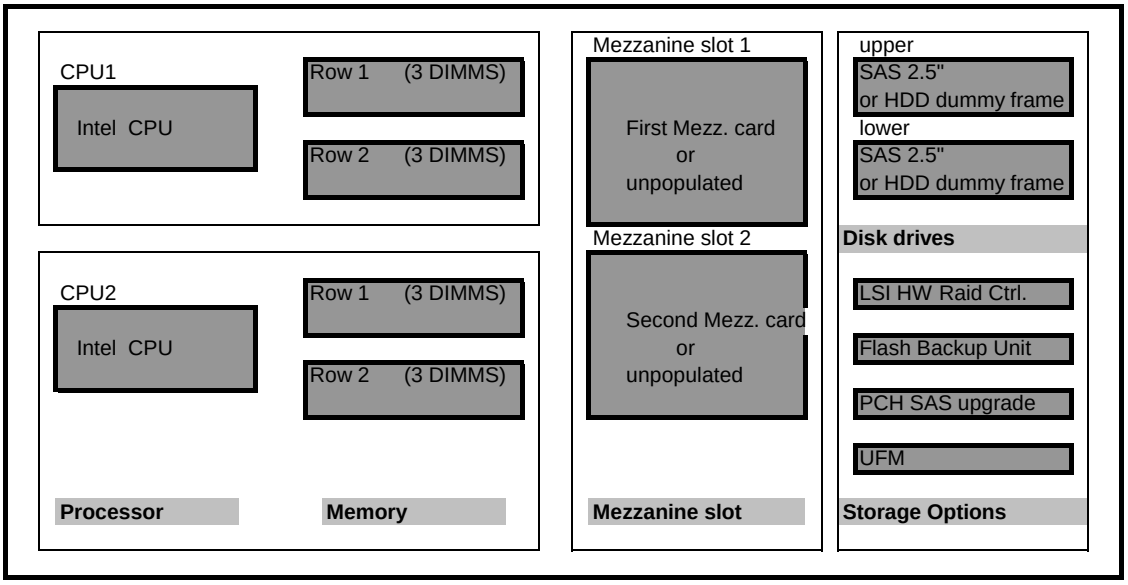
For further information see:

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 BX920 S3

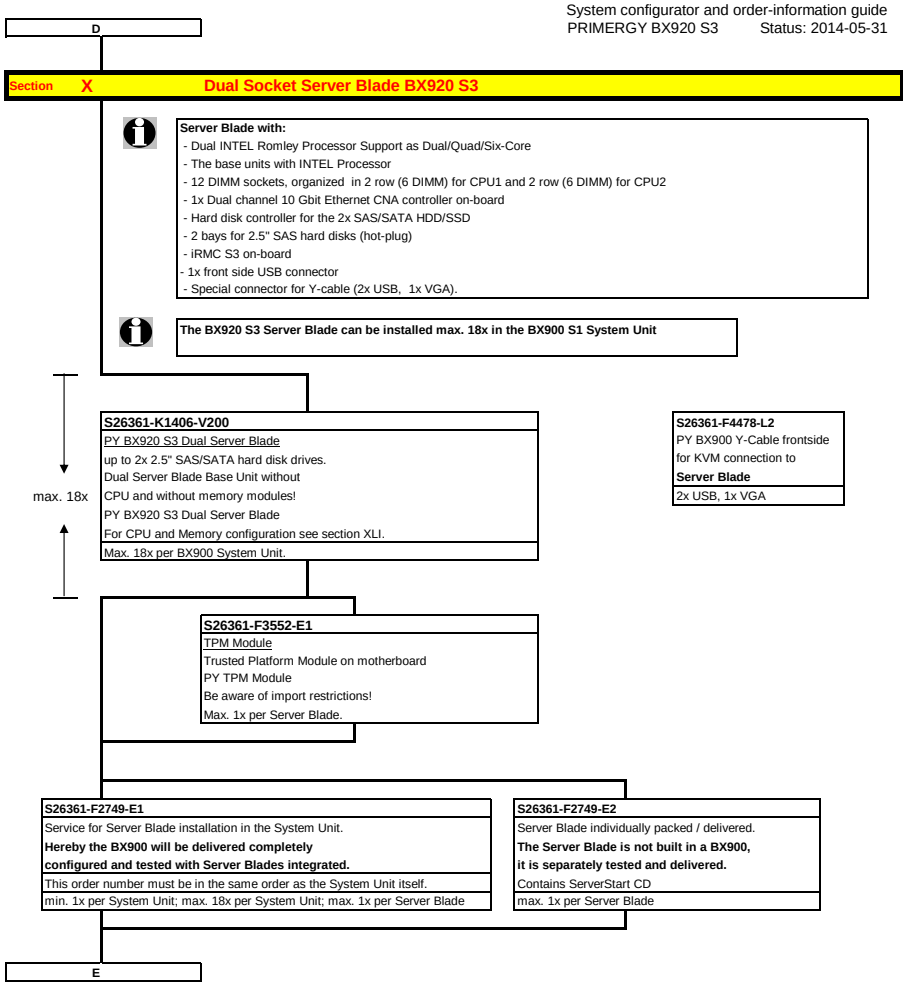


Key:

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)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Section X
Dual Socket Server Blade BX920 S3
Server Blade with:
- Dual INTEL Romley Processor Support as Dual/Quad/Six-Core
- The base units with INTEL Processor
- 12 DIMM sockets, organized in 2 row (6 DIMM) for CPU1 and 2 row (6 DIMM) for CPU2
- 1x Dual channel 10 Gbit Ethernet CNA controller on-board
- Hard disk controller for the 2x SAS/SATA HDD/SSD
- 2 bays for 2.5" SAS hard disks (hot-plug)
- iRMC S3 on-board
- 1x front side USB connector
- Special connector for Y-cable (2x USB, 1x VGA).
The BX920 S3 Server Blade can be installed max. 18x in the BX900 S1 System Unit
max. 18x
S26361-K1406-V200
PY BX920 S3 Dual Server Blade
up to 2x 2.5" SAS/SATA hard disk drives.
Dual Server Blade Base Unit without
CPU and without memory modules!
PY BX920 S3 Dual Server Blade
For CPU and Memory configuration see section XLI.
Max. 18x per BX900 System Unit.
S26361-F4478-L2
PY BX900 Y-Cable frontside
for KVM connection to
Server Blade
2x 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 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,
it is separately tested and delivered.
Contains ServerStart CD
max. 1x per Server Blade
E

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Section XI Processor

There are 2 processor sockets available.
The first socket is always equipped with the **first CPU** which can be selected via configurator
It is also possible to upgrade a dual-processor system later on with a **second CPU**
For the second CPU there are different order numbers, due to the different Heatsink.
Two processors with different clock frequencies are not possible
A multi-processor operating system is required for a dual-processor system.

1x

Max. two CPU`s can be selected per basic unit	
One of following CPU`s has to be selected as first CPU for an orderable basic unit	
Optional second CPU has to be the same type like the first CPU	
Basic 4C CPU's	
- 1x 64-bit Intel Xeon (10MB shared TLC = Third Level Cache) 1066 MHz DDR3 Bus, 6,40 GT/s QPI Bus and passive heat sink occupies socket for one CPU	
Xeon E5-2403 4C/4T 1.80GHz 10MB 6.40GT/s 1066MHz 80W	**S26361-F4560-E180**
Xeon E5-2407 4C/4T 2.20GHz 10MB 6.40GT/s 1066MHz 80W	**S26361-F4560-E220**
Standard Turbo 6C CPU's	
- 1x 64-bit Intel Xeon (15MB shared TLC = Third Level Cache); Hyper-Threading (HT); 1333 MHz DDR3 Bus, 7,20 GT/s QPI Bus and passive heat sink occupies socket for one CPU	
Xeon E5-2420 6C/12T 1.90GHz 15MB 7.20GT/s 1333MHz 95W	**S26361-F4561-E190**
Xeon E5-2430 6C/12T 2.20GHz 15MB 7.20GT/s 1333MHz 95W	**S26361-F4561-E220**
Xeon E5-2440 6C/12T 2.40GHz 15MB 7.20GT/s 1333MHz 95W	**S26361-F4561-E240**
Advanced Turbo+ 8C CPU`s	
- 1x 64-bit Intel Xeon (20MB shared TLC = Third Level Cache); Hyper-Threading (HT); 1600 MHz DDR3 Bus, 8,00 GT/s QPI Bus and passive heat sink occupies socket for one CPU	
Xeon E5-2450 8C/16T 2.10GHz 20MB 8.00GT/s 1600MHz 95W	**S26361-F4562-E210**
Xeon E5-2470 8C/16T 2.30GHz 20MB 8.00GT/s 1600MHz 95W	**S26361-F4562-E230**
Low Power 6C/8C CPU's	
- 1x 64-bit Intel Xeon (15/20MB shared TLC = Third Level Cache); Hyper-Threading (HT); 1333/1600 MHz DDR3 Bus, 8,00 GT/s QPI Bus and passive heat sink occupies socket for one CPU	
Xeon E5-2430L 6C/12T 2.00GHz 15MB 7.20GT/s 1333MHz 60W	**S26361-F4563-E200**
Xeon E5-2450L 8C/16T 1.80GHz 20MB 8.00GT/s 1600MHz 70W	**S26361-F4563-E180**

1x

Max. two CPU`s can be selected per basic unit	
One of following CPU`s has to be selected as second CPU for an orderable basic unit	
Optional second CPU has to be the same type like the first CPU	
Basic 4C CPU's	
- 1x 64-bit Intel Xeon (10MB shared TLC = Third Level Cache) 1066 MHz DDR3 Bus, 6,40 GT/s QPI Bus and passive heat sink occupies socket for one CPU	
Xeon E5-2403 4C/4T 1.80GHz 10MB 6.40GT/s 1066MHz 80W	**S26361-F4564-E180**
Xeon E5-2407 4C/4T 2.20GHz 10MB 6.40GT/s 1066MHz 80W	**S26361-F4564-E220**
Standard Turbo 6C CPU's	
- 1x 64-bit Intel Xeon (15MB shared TLC = Third Level Cache); Hyper-Threading (HT); 1333 MHz DDR3 Bus, 7,20 GT/s QPI Bus and passive heat sink occupies socket for one CPU	
Xeon E5-2420 6C/12T 1.90GHz 15MB 7.20GT/s 1333MHz 95W	**S26361-F4565-E190**
Xeon E5-2430 6C/12T 2.20GHz 15MB 7.20GT/s 1333MHz 95W	**S26361-F4565-E220**
Xeon E5-2440 6C/12T 2.40GHz 15MB 7.20GT/s 1333MHz 95W	**S26361-F4565-E240**
Advanced Turbo+ 8C CPU`s	
- 1x 64-bit Intel Xeon (20MB shared TLC = Third Level Cache); Hyper-Threading (HT); 1600 MHz DDR3 Bus, 8,00 GT/s QPI Bus and passive heat sink occupies socket for one CPU	
Xeon E5-2450 8C/16T 2.10GHz 20MB 8.00GT/s 1600MHz 95W	**S26361-F4566-E210**
Xeon E5-2470 8C/16T 2.30GHz 20MB 8.00GT/s 1600MHz 95W	**S26361-F4566-E230**
Low Power 4C/6C/8C CPU's	
- 1x 64-bit Intel Xeon (15/20MB shared TLC = Third Level Cache); Hyper-Threading (HT); 1333/1600 MHz DDR3 Bus, 8,00 GT/s QPI Bus and passive heat sink occupies socket for one CPU	
Xeon E5-2430L 6C/12T 2.00GHz 15MB 7.20GT/s 1333MHz 60W	**S26361-F4567-E200**
Xeon E5-2450L 8C/16T 1.80GHz 20MB 8.00GT/s 1600MHz 70W	**S26361-F4567-E180**

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Section XII Storage

Mixed configurations with ECO SATA drives and SAS drives are not allowed
Mixed configurations BC-SATA/BC-SAS drives with SAS 10K (S26361-F4482-E130, S26361-F4482-E145, S26361-F4482-E160) not allowed.
Configurations with Eco SATA can only be mixed with BC SATA HDD type
All combinations of SSD, BC SATA and SAS are possible - but not in same logical drive (RAID array)

Both hard disks are plugged in directly connected to the onboard controller.

One UFM can be configured in addition to the Hard Disks
Remark: UFM is part of the VMWare Embedded solution (S26361-F2341-E431)
Remark: Currently VMWare RAID configurations are not supported with the onboard PCH controller

SAS Drives require the SAS Option to enable PCH SAS connection or the SAS RAID Option

Solid State Disk, Mainstream Endurance*

SSD SATA 6Gb/s 2.5" with hot plug/hot replace tray		
100GB, Mainstream Performance	**S26361-F5303-E100**	as soon as available
200GB, Mainstream Performance	**S26361-F5303-E200**	as soon as available
400GB, Mainstream Performance	**S26361-F5303-E400**	as soon as available
800GB, Mainstream Performance	**S26361-F5303-E800**	as soon as available
SSD SAS 12Gb/s 2.5" with hot plug/hot replace tray		as soon as available
200GB, Enterprise Performance	**S26361-F5297-E200**	Interface SAS12Gb/s and SAS 6Gb/s.
400GB, Enterprise Performance	**S26361-F5297-E400**	SAS 12Gb/s support is not released
800GB, Enterprise Performance	**S26361-F5297-E800**	
1.6TB, Enterprise Performance	**S26361-F5297-E160**	
		*) SSD Mainstream Endurance 10DWPD over 5y
max. 2x per base unit		

as long as stock

S26361-F5225-E100
SSD SATA 100GB, MLC
Solid State Disk
SATA 6Gb/s
Mainstream Perfomance
hot plug/hot replace tray
max. 2x per base unit

as long as stock

S26361-F5225-E200
SSD SATA 200GB, MLC
Solid State Disk
SATA 6Gb/s
Mainstream Perfomance
hot plug/hot replace tray
max. 2x per base unit

S26361-F5225-E400
SSD SATA 400GB, MLC
Solid State Disk
SATA 6Gb/s
Mainstream Perfomance
hot plug/hot replace tray
max. 2x per base unit

as long as stock

S26361-F4581-E100
SSD SAS 100GB, MLC
Solid State Disk
SATA 6Gb/s
Mainstream Perfomance
hot plug/hot replace tray
max. 2x per base unit

as long as stock

S26361-F4581-E200
SSD SAS 200GB, MLC
Solid State Disk
SAS 6Gb/s
Enterprise Perfomance
hot plug/hot replace tray
max. 2x per base unit

S26361-F4581-E400
SSD SAS 400GB, MLC
Solid State Disk
SATA 6Gb/s
Mainstream Perfomance
hot plug/hot replace tray
max. 2x per base unit

max 2x

S26361-F3708-E250
HD 250GB 7.2krpm 2.5"
7200rpm,<9,5ms, 64MB Cache
BC SATA 6Gb/s
hot plug/hot replace tray
max. 2x per base unit

S26361-F3708-E500
HD 500GB 7.2krpm 2.5"
7200rpm,<9,5ms, 64MB Cache
BC SATA 6Gb/s
hot plug/hot replace tray
max. 2x per base unit

S26361-F3708-E100
HD 1000GB 7.2krpm 2.5"
7200rpm,<9,5ms, 64MB Cache
BC SATA 6Gb/s
hot plug/hot replace tray
max. 2x per base unit

S26361-F4482-E573
HD 73GB 15krpm 2.5"
15000rpm,<4,5ms, 8MB Cache
SAS 6Gb/s
hot plug/hot replace tray
max. 2x per base unit

S26361-F4482-E514
HD 146GB 15krpm 2.5"
15000rpm,<4,5ms, 8MB Cache
SAS 6Gb/s
hot plug/hot replace tray
max. 2x per base unit

S26361-F4482-E530
HD 300GB 15krpm 2.5"
15000rpm,<4,5ms, 8MB Cache
SAS 6Gb/s
hot plug/hot replace tray
max. 2x per base unit

S26361-F5247-E130
HD 300GB 10krpm 2.5"
10000rpm,<4,5ms, 64MB Cache
SAS 6Gb/s
hot plug/hot replace tray
max. 2x per base unit

S26361-F5247-E145
HD 450GB 10krpm 2.5"
10000rpm,<4,5ms, 64MB Cache
SAS 6Gb/s
hot plug/hot replace tray
max. 2x per base unit

S26361-F5247-E160
HD 600GB 10krpm 2.5"
10000rpm,<4,5ms, 64MB Cache
SAS 6Gb/s
hot plug/hot replace tray
max. 2x per base unit

S26361-F4482-E190
HD 900GB 10krpm 2.5"
10000rpm,<4,5ms, 8MB Cache
SAS 6Gb/s
hot plug/hot replace tray
max. 2x per base unit

S26361-F5247-E190
HD 900GB 10krpm 2.5"
10000rpm,<4,5ms, 64MB Cache
SAS 6Gb/s
hot plug/hot replace tray
max. 2x per base unit

S26361-F5228-E500
HD 500GB 7.2krpm 2.5"
7200rpm,<4,5ms, 64MB Cache
BC SAS 6Gb/s
hot plug/hot replace tray
max. 2x per base unit

S26361-F5228-E100
HD 1TB 7.2krpm 2.5"
7200rpm,<4,5ms, 64MB Cache
BC SAS 6Gb/s
hot plug/hot replace tray
max. 2x per base unit

S26361-F5247-E112
HD 1.2TB 10krpm 2.5"
10000rpm,<4,5ms, 64MB Cache
SAS 6Gb/s
hot plug/hot replace tray
max. 2x per base unit

as soon as available

S26361-F4482-E130
HD 300GB 10krpm 2.5"
10000rpm,<4,5ms, 8MB Cache
SAS 6Gb/s
hot plug/hot replace tray
max. 2x per base unit

S26361-F4482-E145
HD 450GB 10krpm 2.5"
10000rpm,<4,5ms, 8MB Cache
SAS 6Gb/s
hot plug/hot replace tray
max. 2x per base unit

S26361-F4482-E160
HD 600GB 10krpm 2.5"
10000rpm,<4,5ms, 8MB Cache
SAS 6Gb/s
hot plug/hot replace tray
max. 2x per base unit

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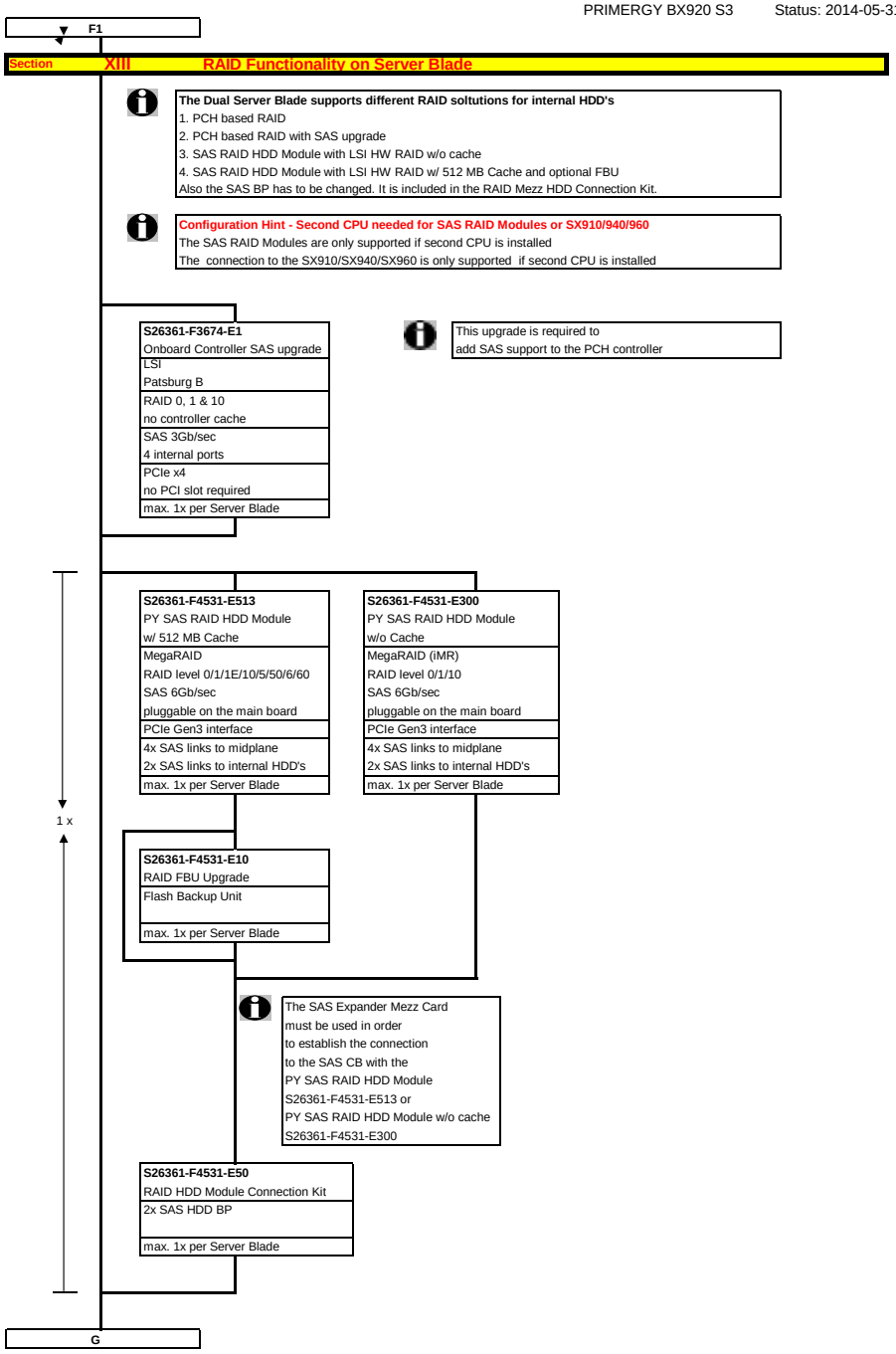
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Section XIII RAID Functionality on Server Blade
The Dual Server Blade supports different RAID soltutions for internal HDD's
1. PCH based RAID
2. PCH based RAID with SAS upgrade
3. SAS RAID HDD Module with LSI HW RAID w/o cache
4. SAS RAID HDD Module with LSI HW RAID w/ 512 MB Cache and optional FBU
Also the SAS BP has to be changed. It is included in the RAID Mezz HDD Connection Kit.
Configuration Hint - Second CPU needed for SAS RAID Modules or SX910/940/960
The SAS RAID Modules are only supported if second CPU is installed
The connection to the SX910/SX940/SX960 is only supported if second CPU is installed
S26361-F3674-E1
Onboard Controller SAS upgrade
LSI
Patsburg B
RAID 0, 1 & 10
no controller cache
SAS 3Gb/sec
4 internal ports
PCIe x4
no PCI slot required
max. 1x per Server Blade
This upgrade is required to
add SAS support to the PCH controller
1 x
S26361-F4531-E513
PY SAS RAID HDD Module
w/ 512 MB Cache
MegaRAID
RAID level 0/1/1E/10/5/50/6/60
SAS 6Gb/sec
pluggable on the main board
PCIe Gen3 interface
4x SAS links to midplane
2x SAS links to internal HDD's
max. 1x per Server Blade
S26361-F4531-E300
PY SAS RAID HDD Module
w/o Cache
MegaRAID (iMR)
RAID level 0/1/10
SAS 6Gb/sec
pluggable on the main board
PCIe Gen3 interface
4x SAS links to midplane
2x SAS links to internal HDD's
max. 1x per Server Blade
S26361-F4531-E10
RAID FBU Upgrade
Flash Backup Unit
max. 1x per Server Blade
The SAS Expander Mezz Card
must be used in order
to establish the connection
to the SAS CB with the
PY SAS RAID HDD Module
S26361-F4531-E513 or
PY SAS RAID HDD Module w/o cache
S26361-F4531-E300
S26361-F4531-E50
RAID HDD Module Connection Kit
2x SAS HDD BP
max. 1x per Server Blade
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Section XIV iRMC S3, Graphics

Graphic Controller is part of the onboard Management Controller iRMC S3.
Other graphics are not possible.

The iRMC S3 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.

SAS Mezz Cards require an SAS switch for each SAS link
SAS Mezz Cards have to be installed in Mezz Card slot 2 on Server Blade

1x

S26361-F4480-E1
PY SAS HBA Mezz Card 6Gb
HBA
SAS 2.0
PCIe Gen2 interface
4x SAS links to midplane
max. 1x per Server Blade

S26361-F4531-E30
PY SAS Expander Mezz. Card
for connectivity between
SAS RAID HDD Module and
SAS Connection Blade
4x SAS links to midplane
max. 1x per Server Blade

SAS Expander Mezz Card
can only be used with
PY SAS RAID HDD Module
S26361-F4531-E513

S26361-F4531-E60
PY Enhanced Mezz Bracket/Riser
max. 1x per Server Blade

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.

0 - 2x

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

S26361-F3997-E1
PY Eth Mezz Card 10Gb 2 Port
Intel 82599EB LAN Controller
2x 10Gbit/s.
pluggable on the main board,
Dual channel 10Gbit/s
PCIe x8 Interface
max. 2x per Server Blade

S26361-F3592-E532
PY CNA Mezz Card 10Gb 2 Port
Emulex OCe11102 compatible
pluggable on the main board
MC-CNA112E
Dual channel 10Gbit/s
PCIe x8 Interface
max. 2x per Server Blade

R S T U V

R: see separate BX900 System Unit configurator, sheet "1 GB Ethernet"
S: see separate BX900 System Unit configurator, sheet "10 GB Ethernet"
T: see separate BX900 System Unit configurator, sheet "Fibre Channel"
U: see separate BX900 System Unit configurator, sheet "InfiniBand"
V: see separate BX900 System Unit configurator, sheet "CB SAS"
https://partners.ts.fujitsu.com/com/order-supply/configurators/primergy_config/current/Pages/default.aspx

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Section III Memory

- There are 6 memory slots per CPU for max.
192GB LRDIMM (6x 32GB 4R)
96GB RDIMM (6x 16GB 2R)
24GB UDIMM (6x 4GB)
=> max. 384GB for two CPU`s (192GB per CPU), using LRDIMM
- The memory area is divided into 3 channels per CPU with 2 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 2 DIMMs per channel configuration, following frequencies are supported:
- 1.5V - 1600MHz max (depending on CPU, special memory modules)
- 1.35V - 1333MHz max (depending on CPU)
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: 3x 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 is always the mirrored memory of channel A of CPU 1
In channel E is always the mirrored memory of channel D of CPU 2
Minimum configuration is: 2x identical modules
This mode is not supported by x8 organized memory modules

G1

G1

1x per CPU

S26361-F3695-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-F3695-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-F3695-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 3 identical modules to be configured per CPU

S26361-F3695-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 2 identical modules to be configured per CPU

Effective Memory capacity / Rank Sparing Mode, 1 Channel populated

	UDIMM		RDIMM			LRDIMM	
	2GB 1R	2GB 2R	4GB 1R	8GB 2R	16GB 2R	16GB 4R	32GB 4R
1DPC	na	na	na	na	na	12GB	24GB
2DPC	na	na	4GB	12GB	24GB	28GB	56GB

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

6x per CPU, max.
2/3 modules per channel

Unbuffered Memory (UDIMM) no SDDC (chipkill) support
- one DDR3 unbuffered ECC mem. Module, 1.35V
Choose up to 6 order codes per CPU

2GB (1x2GB) 1Rx8 L DDR3-1600 U ECC	S26361-F3694-E613
4GB (1x4GB) 2Rx8 L DDR3-1600 U ECC	S26361-F3694-E614

Registered Memory (RDIMM) no SDDC (chipkill) support
- one DDR3 registered ECC mem. Module, 1.35V
No mix with any other types of memory modules possible
Choose up to 6x for 2R per CPU
For performance reasons, we do not recommend
to configure more than 8 DIMMs per CPU

4GB (1x4GB) 2Rx8 L DDR3-1600 R ECC	S26361-F3695-E614

Registered Memory (RDIMM) with SDDC (chipkill) support
- one DDR3 registered ECC mem. Module, 1.35V
1333MHz supported with up to 2DPC (6 modules/CPU)
Choose up to 6 order codes per CPU

4GB (1x4GB) 1Rx4 L DDR3-1333 R ECC	S26361-F3696-E614	new due to supply
8GB (1x8GB) 2Rx4 L DDR3-1333 R ECC	S26361-F3696-E615	new due to supply

2 modules per channel

Registered Memory (RDIMM) with SDDC (chipkill) support
- one DDR3 registered ECC mem. Module, 1.35V
1600MHz supported with up to 2DPC (8 modules/CPU)
at 1.5V
Choose up to 6 order codes per CPU

4GB (1x4GB) 1Rx4 L DDR3-1600 R ECC	S26361-F3697-E614
8GB (1x8GB) 2Rx4 L DDR3-1600 R ECC	S26361-F3697-E615
16GB (1x16GB) 2Rx4 L DDR3-1600 R ECC	S26361-F3697-E616

Load Reduced Memory (LRDIMM) with SDDC (chipkill) support
- one DDR3 load reduced ECC mem. Module, 1.35V
Choose up to 6 order codes per CPU

16GB (1x16GB) 4Rx4 L DDR3-1333 LR ECC	S26361-F3698-E616
32GB (1x32GB) 4Rx4 L DDR3-1333 LR ECC	S26361-F3698-E617

Note 1.)
Max. DDR3 memory speed depends on the memory configuration
(No of mem modules per channe) 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

Mix of memory modules is only possible within the same group

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Memory Configuration PRIMERGY BX920 S3

Each CPU offers 6 **Slots** for DDR3 Memory Modules organised in **2 Banks and 3 Channels.**
If you need more than 6 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 3 different kinds of DDR3 Memory Modules available: UDIMM / RDIMM and LRDIMM
UDIMM / RDIMM / LRDIMM offer different functionality. Mix of UDIMM / RDIMM / LRDIMM is not alloved.

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

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

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

Capacity	Configuration	UDIMM	RDIMM	LRDIMM	Notes
Min. Memory per CPU	1 Module / CPU	1x2GB	1x4GB	1x 16GB	with one CPU
Max. Memory per CPU	4/6 Modules / CPU	6x4GB	6x16GB	6x 32GB	with one CPU
Max. Memory per System	8/12 Modules / System	48GB	96GB	384GB	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)																	
	UDIMM 1600MHz						RDIMM 1600MHz						LRDIMM 1333MHz					
Voltage setting (BIOS)	1.5V [default]			1.35V			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	1 DPC	2 DPC	3 DPC	1 DPC	2 DPC	3 DPC
CPU with 1600MHz DDR3 Bus	1333	1333	-	1066	1066	-	1600	1600	-	1333	1333	-	1333	1333	-	1066	1066	-
	1600		-	1333		-			-			-			-			-
CPU with 1333MHz DDR3 Bus	1333	1333	-	1066	1066	-	1333	1333	-	1333	1333	-	1333	1333	-	1066	1066	-
CPU with 1066MHz DDR3 Bus	1066	1066	-	1066	1066	-	1066	1066	-	1066	1066	-	1066	1066	-	1066	1066	-

on special release
as soon as available

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

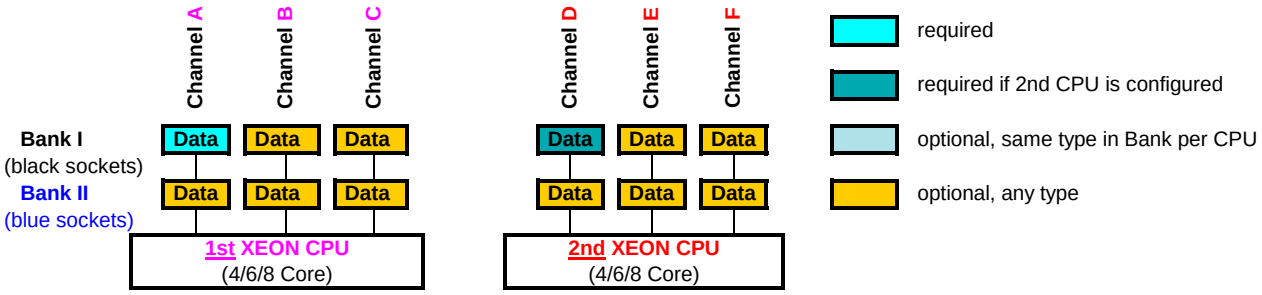
1DPC = 1 DIMM per Channel
2DPC = 2 DIMM per Channel
3DPC = 3 DIMM per Channel

Configuration hints:

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

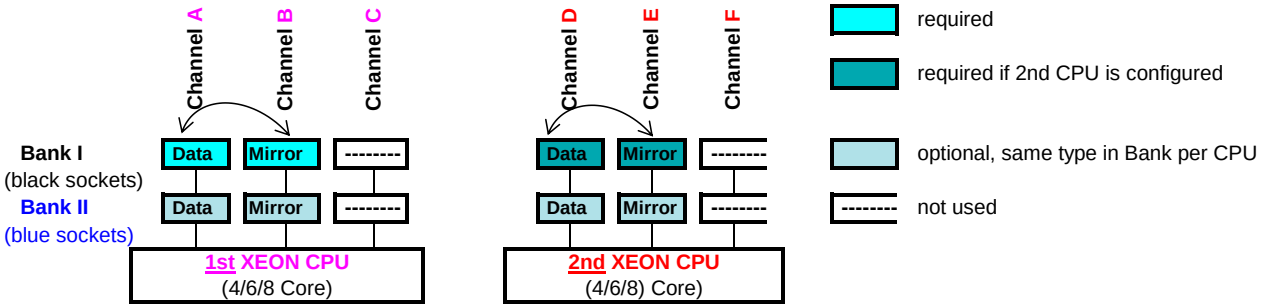
- A so called Bank consits of 1 memory module on every Channel available on one CPU (examples see below)
  Bank I on CPU 1/2 up to 3 memory modules connected to Channel A - F on the 1st/2nd CPU
  Bank II on CPU 1/2 up to 3 memory modules connected to Channel A - F on the 1st/2nd CPU
- See below and next page for a detailed descriptions of the memory configuration supported.

1. Independent Channel Mode



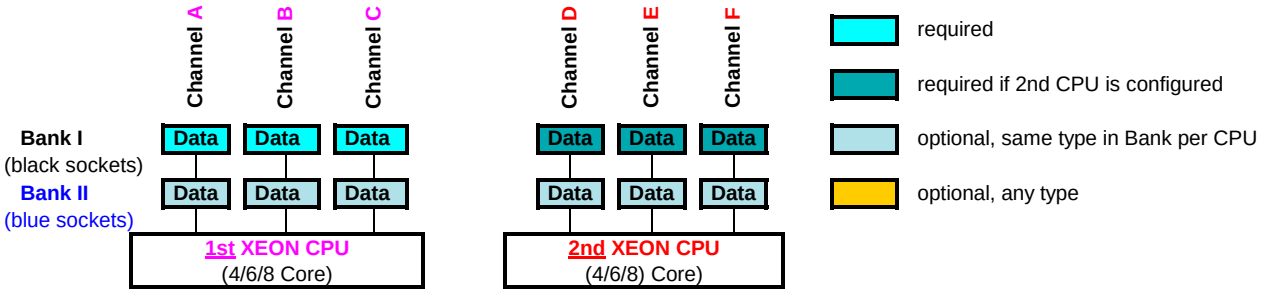
Independent Channel Mode allows all channels to be populated in any order
Can run with differently rated DIMMs and use the settings of the slowest DIMM installed in the system

2. Mirrored Channel Mode



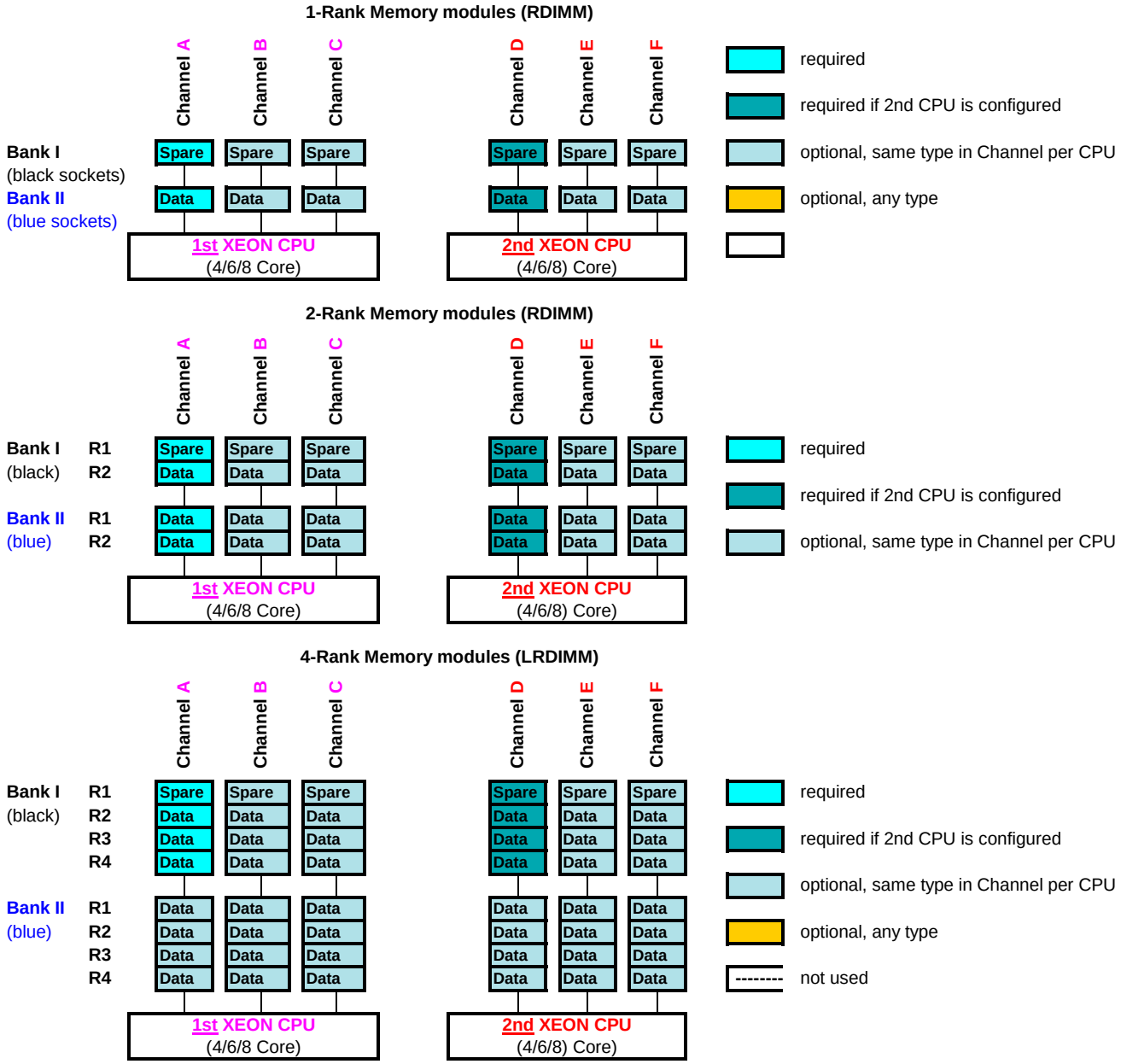
Mirrored Channel Mode requires identical modules on channel A / B (1st CPU) or channel D / E (2nd CPU)
50% of the capacity is used for the mirror => the available memory for applications is only half of the installed memory
If this mode is used, a multiple of 2 identical modules has to be ordered.

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 3 identical modules has to be ordered.

4. Rank Sparing Mode



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.

Change Report

Date	Order number	Changes
2014-01-31	S26361-F5247-E112	New 1.2TB 2.5" SAS 10K HDD added.
2014-01-31	S26361-F5303-*	New SATA SSDs added.
2014-01-31	S26361-F5297-*	New SAS SSDs added.
2013-10-18	optional USB Comps	no longer available
2013-07-18		Added comment about PCH Vmware limitation
2013-01-15	S26361-F3674-E1	Onboard Controller SAS upgrade - Speed corrected from 6GB/s to 3GB/s
2013-01-08	S26361-F5228-E***	New order number for 2.5" BC SAS 7.2K
2013-01-08	S26361-F5247-E130	New order number for SAS 10K (mix with BC-SATA supported, successor for *F5227*)
2012-10-16	hint	SX910/910/960 only with 2nd CPU modified
2012-10-09	hint	SX910/910/960 only with 2nd CPU
2012-10-02		changed USB info
2012-09-04	S26361-F3592-E532	as soon as available removed
2012-07-23	S26361-F5227-E1*	New order for 2.5” 10K SAS HDD supporting mix with 2.5” BC-SATA HDD
2012-06-28		corrected text for 2 end Y-Cable
2012-06-12	S26361-F5225-E*00	New order for SATA SSD´s
2012-05-29		Added 1333 RDIMM
2012-05-01		First Release