

# PRIMERGY BX924 S3

## *System configurator and order-information guide*

June 2014

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**PRIMERGY Server**

# Instructions

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

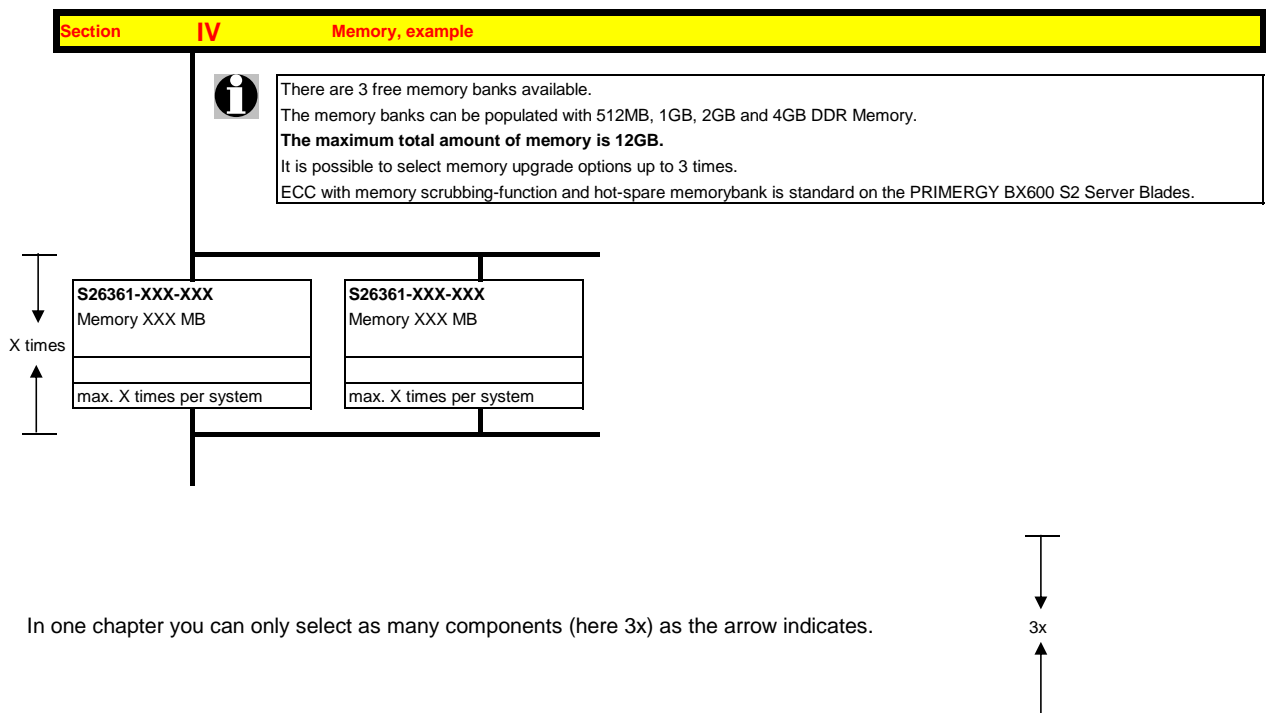
**Only the tool "System-Architect" will ensure a fast and proper configuration of your PRIMERGY server or your complete PRIMERGY Rack system.**

**Please pay attention to the naming conventions:** BX924 S3 Dual Server Blade S3

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.



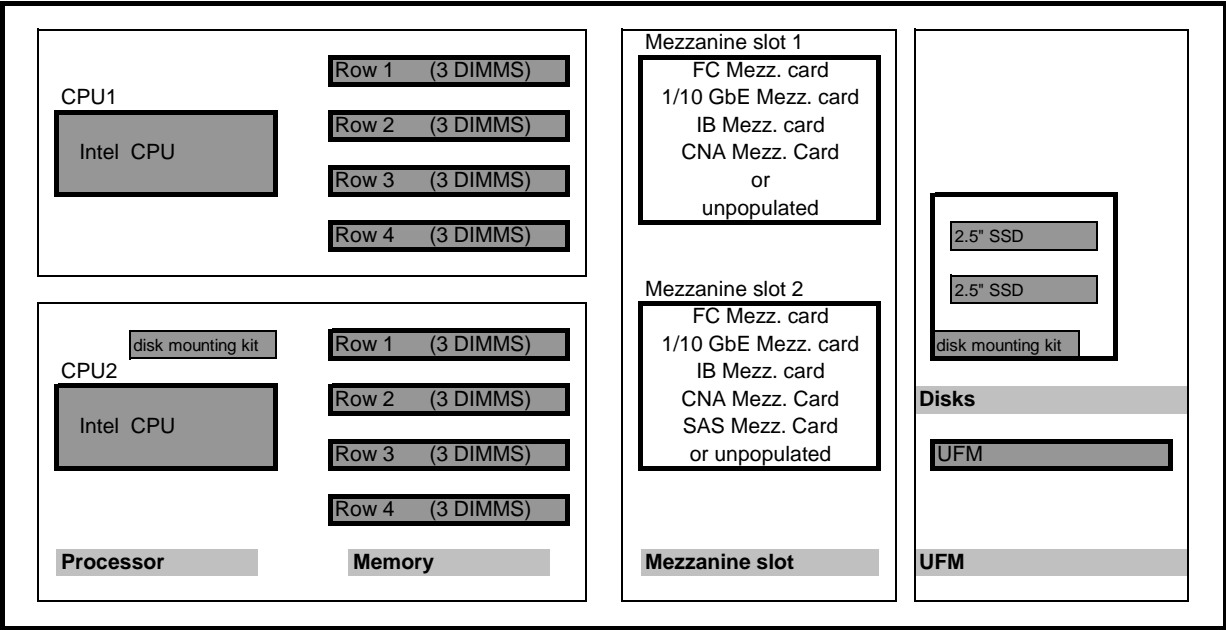
**For further information see:**

[http://ts.fujitsu.com/products/standard\\_servers/index.html](http://ts.fujitsu.com/products/standard_servers/index.html) (internet)

[https://partners.ts.fujitsu.com/com/order-supply/configurators/primergy\\_config/Pages/Currentconfigurators.aspx](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 S3

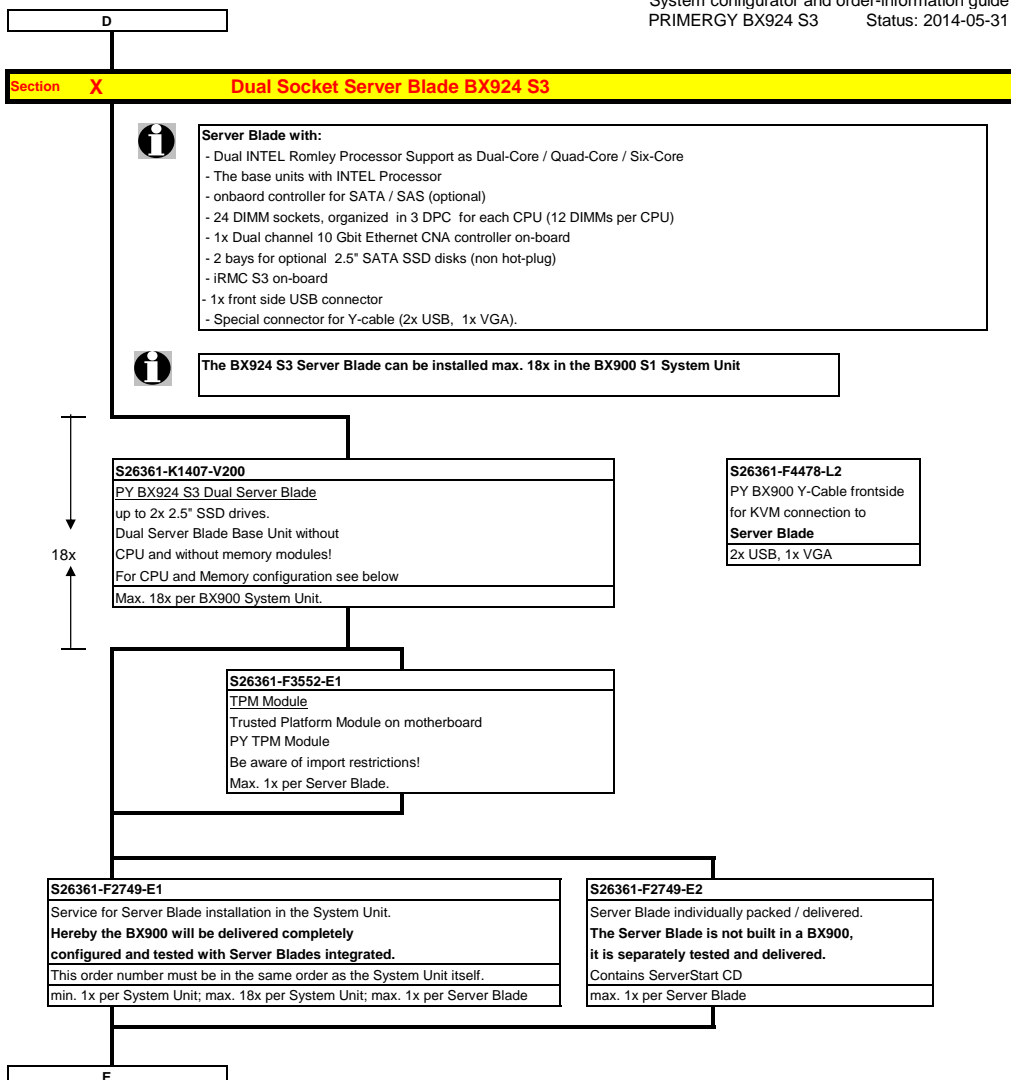


Key:

Included in basic unitOption

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)



**Section XI Processor**

There are 2 processor sockets available.  
A multi-processor operating system is required for a dual-processor system.



The system can be equipped with two SSDs  
The first optional SSD is mounted under the Mezz. Card 1 slot  
The second optional SSD is mounted on top of the front CPU

**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 Smart Cache)  
1066 MHz DDR3 Bus; 6,40 GT/s QPI Bus and passive heat sink  
occupies socket for one CPU

**Xeon E5-2603 4C/4T 1.80GHz 10MB 6.40GT/s 1066MHz 80W S26361-F4543-E180****Xeon E5-2609 4C/4T 2.40GHz 10MB 6.40GT/s 1066MHz 80W S26361-F4543-E240****Standard Turbo 6C CPU's**

- 1x 64-bit Intel Xeon (15MB Smart Cache); Hyper-Threading (HT);  
1333 MHz DDR3 Bus; 7,20 GT/s QPI Bus and passive heat sink  
occupies socket for one CPU

**Xeon E5-2620 6C/12T 2.00GHz 15MB 7.20GT/s 1333MHz 95W S26361-F4544-E200****Xeon E5-2630 6C/12T 2.30GHz 15MB 7.20GT/s 1333MHz 95W S26361-F4544-E230****Xeon E5-2640 6C/12T 2.50GHz 15MB 7.20GT/s 1333MHz 95W S26361-F4544-E250****Advanced Turbo+ 8C CPU's**

- 1x 64-bit Intel Xeon (20MB Smart Cache); Hyper-Threading (HT);  
1600 MHz DDR3 Bus; 8,00 GT/s QPI Bus and passive heat sink  
occupies socket for one CPU

**Xeon E5-2650 8C/16T 2.00GHz 20MB 8.00GT/s 1600MHz 95W S26361-F4545-E200****Xeon E5-2660 8C/16T 2.20GHz 20MB 8.00GT/s 1600MHz 95W S26361-F4545-E220****Xeon E5-2665 8C/16T 2.40GHz 20MB 8.00GT/s 1600MHz 115W S26361-F4545-E240****Xeon E5-2670 8C/16T 2.60GHz 20MB 8.00GT/s 1600MHz 115W S26361-F4545-E260****Xeon E5-2680 8C/16T 2.70GHz 20MB 8.00GT/s 1600MHz 130W S26361-F4545-E270****Xeon E5-2690 8C/16T 2.90GHz 20MB 8.00GT/s 1600MHz 135W S26361-F4545-E290****Frequency Optimized Turbo 2C, 4C & 6C CPU's**

- 1x 64-bit Intel Xeon (5/10/15MB Smart Cache); Hyper-Threading (HT);  
1600 MHz DDR3 Bus; 6,40/7,20 GT/s QPI Bus and passive heat sink  
occupies socket for one CPU

**Xeon E5-2637 2C/4T 3.00GHz 5MB 6.40GT/s 1600MHz 80W S26361-F4546-E300****Xeon E5-2643 4C/8T 3.3GHz 10MB 6.40GT/s 1600MHz 130W S26361-F4546-E330****Xeon E5-2667 6C/12T 2.90GHz 15MB 7.20GT/s 1600MHz 130W S26361-F4546-E290****Low Power 4C/6C/8C CPU's**

- 1x 64-bit Intel Xeon (15/20MB Smart Cache); Hyper-Threading (HT);  
1333/1600 MHz DDR3 Bus; 7,20/8,00 GT/s QPI Bus and passive heat sink  
occupies socket for one CPU

**Xeon E5-2630L 6C/12T 2.00GHz 15MB 7.20GT/s 1333MHz 60W S26361-F4547-E200****Xeon E5-2650L 8C/16T 1.80GHz 20MB 8.00GT/s 1600MHz 70W S26361-F4547-E180****Note: Max. DDR3 Bus Speed depends on:**

- max. DDR3 Bus Speed from the CPU and
- max. DDR3 Memory Speed and
- max. memory modules on one memory channel

On special release only

Special Heatsink required- max 10 DIMMs  
limited to max 30°C ambientSpecial Heatsink required- max 10 DIMMs  
limited to max 30°C ambient**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 Smart Cache)  
1066 MHz DDR3 Bus; 6,40 GT/s QPI Bus and passive heat sink  
occupies socket for one CPU

**Xeon E5-2603 4C/4T 1.80GHz 10MB 6.40GT/s 1066MHz 80W S26361-F4548-E180****Xeon E5-2609 4C/4T 2.40GHz 10MB 6.40GT/s 1066MHz 80W S26361-F4548-E240****Standard Turbo 6C CPU's**

- 1x 64-bit Intel Xeon (15MB Smart Cache); Hyper-Threading (HT);  
1333 MHz DDR3 Bus; 7,20 GT/s QPI Bus and passive heat sink  
occupies socket for one CPU

**Xeon E5-2620 6C/12T 2.00GHz 15MB 7.20GT/s 1333MHz 95W S26361-F4549-E200****Xeon E5-2630 6C/12T 2.30GHz 15MB 7.20GT/s 1333MHz 95W S26361-F4549-E230****Xeon E5-2640 6C/12T 2.50GHz 15MB 7.20GT/s 1333MHz 95W S26361-F4549-E250****Advanced Turbo+ 8C CPU's**

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occupies socket for one CPU

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- 1x 64-bit Intel Xeon (5/10/15MB Smart Cache); Hyper-Threading (HT);  
1600 MHz DDR3 Bus; 6,40/7,20 GT/s QPI Bus and passive heat sink  
occupies socket for one CPU

**Xeon E5-2637 2C/4T 3.00GHz 5MB 6.40GT/s 1600MHz 80W S26361-F4551-E300****Xeon E5-2643 4C/8T 3.3GHz 10MB 6.40GT/s 1600MHz 130W S26361-F4551-E330****Xeon E5-2667 6C/12T 2.90GHz 15MB 7.20GT/s 1600MHz 130W S26361-F4551-E290****Low Power 4C/6C/8C CPU's**

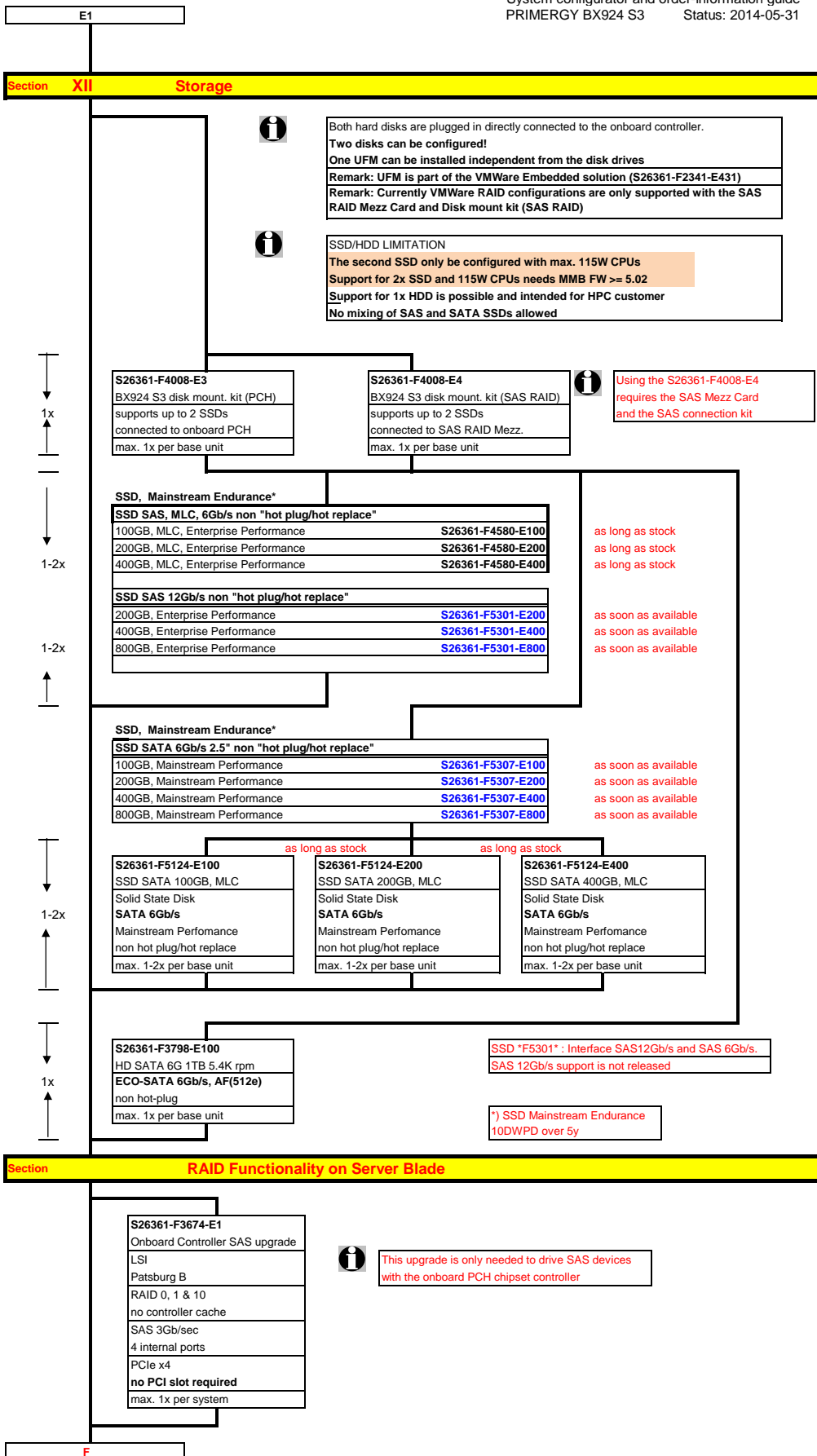
- 1x 64-bit Intel Xeon (15/20MB Smart Cache); Hyper-Threading (HT);  
1333/1600 MHz DDR3 Bus; 7,20/8,00 GT/s QPI Bus and passive heat sink  
occupies socket for one CPU

**Xeon E5-2630L 6C/12T 2.00GHz 15MB 7.20GT/s 1333MHz 60W S26361-F4552-E200****Xeon E5-2650L 8C/16T 1.80GHz 20MB 8.00GT/s 1600MHz 70W S26361-F4552-E180**

On special release only

limited to max 30°C ambient

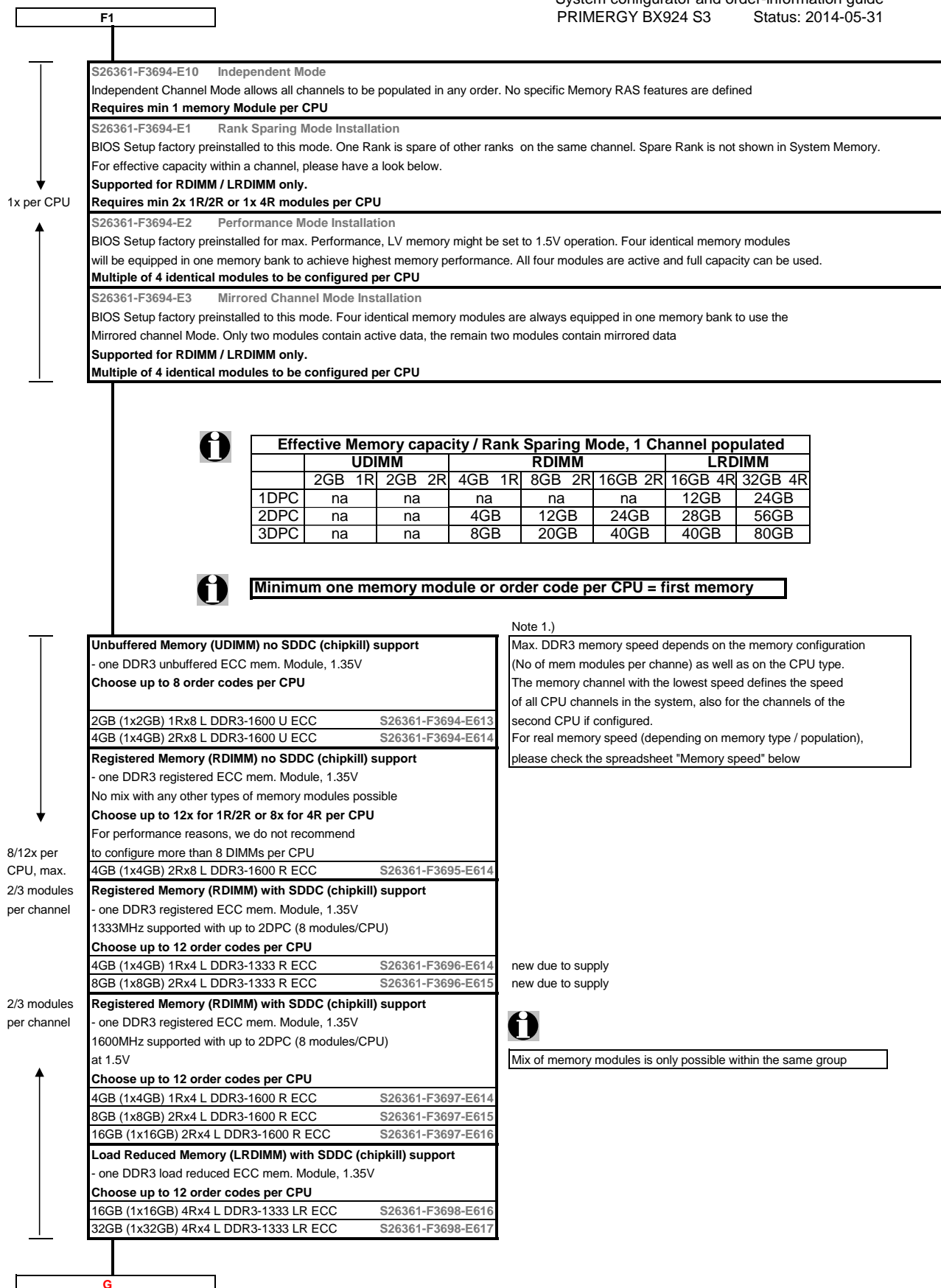
limited to max 30°C ambient



Section III Memory



<p>- <b>There are 12 memory slots per CPU for max.</b> 384GB LRDIMM (12x 32GB 4R) 192GB RDIMM (12x 16GB 2R) 32GB UDIMM (8x 4GB) <b>=&gt; max. 768GB for two CPU's ( 384GB per CPU ), using LRDIMM</b></p> <p>- The memory area is divided into 4 channels per CPU with 3 slots per channel</p> <p>- 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</p>
<p><b>Registered, LR DIMMs and unbuffered memory modules can be selected</b> <b>No mix of registered, load reduced and unbuffered modules allowed.</b> 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 (<b>1.5V is default</b> 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) In a 3 DIMMs per channel configuration, memory will operate at 1.5V only. <b>SDDC (Chipkill) is supported for registered / load reduced x4 organized memory modules only</b></p>
<p><b>1.) In the "Independent Channel Mode" is following configuration possible</b> 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) <b>No mix of registered, load reduced and unbuffered modules allowed.</b></p>
<p><b>2.) "Rank Sparing Mode" configuration</b> - 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. <b>Minimum configuration is: 2x 1R, 2x 2R or 1x4R DDR3 module per channel</b> <b>This mode is not supported by x8 organized memory modules</b></p>
<p><b>3.) "Performance Mode" configuration</b> - In this configuration, the memory module population ex factory is spread across all channels. The BIOS is set to the max. performance for memory. <b>Minimum configuration is: 4x identical modules</b></p>
<p><b>4.) In the "Mirrored Channel Mode" is following configuration possible</b> - Each memory bank can optionally be equipped with 4x registered or load reduced <b>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.</b> 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 <b>Minimum configuration is: 4x identical modules</b> <b>This mode is not supported by x8 organized memory modules</b></p>





## Memory Configuration PRIMERGY BX924 S3

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 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 allowed.

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
Independent 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 *)	4 identical Modules / Bank	no	no	yes	offers maximum security
Performance Mode	4 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	8/12 Modules / CPU	8x4GB	12x16GB	12x 32GB	with one CPU
Max. Memory per System	16/24 Modules / System	64GB	384GB	768GB	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					
	1.5V [default]			1.35V			1.5V [default]			1.35V			1.5V [default]			1.35V		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
	DPC	DPC	DPC	DPC	DPC	DPC	DPC	DPC	DPC	DPC	DPC	DPC	DPC	DPC	DPC	DPC	DPC	DPC
CPU with 1600MHz DDR3 Bus	1333	1333	-	1066	1066	-	1600	1600	1066	1333	1333	-	1333	1333	1066	1066	1066	-
	1600	-	-	1333	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CPU with 1333MHz DDR3 Bus	1333	1333	-	1066	1066	-	1333	1333	1066	1333	1333	-	1333	1333	1066	1066	1066	-
CPU with 1066MHz DDR3 Bus	1066	1066	-	1066	1066	-	1066	1066	1066	1066	1066	-	1066	1066	1066	1066	1066	-

1R - Single Rank

2R - Dual Rank

4R - Quad Rank

on special release  
as soon as available

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 consists of 1 memory module on every Channel available on one CPU (examples see below)

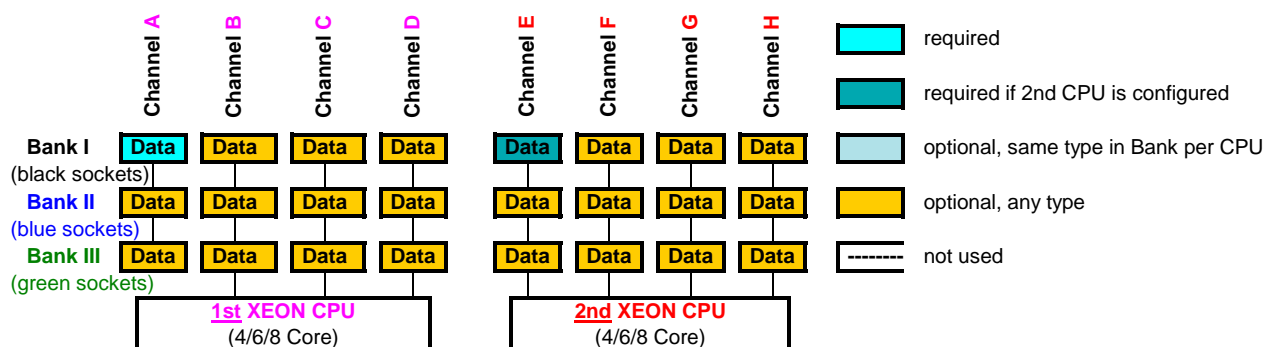
**Bank I on CPU 1/2** up to 4 memory modules connected to Channel A - H on the 1st/2nd CPU

**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)

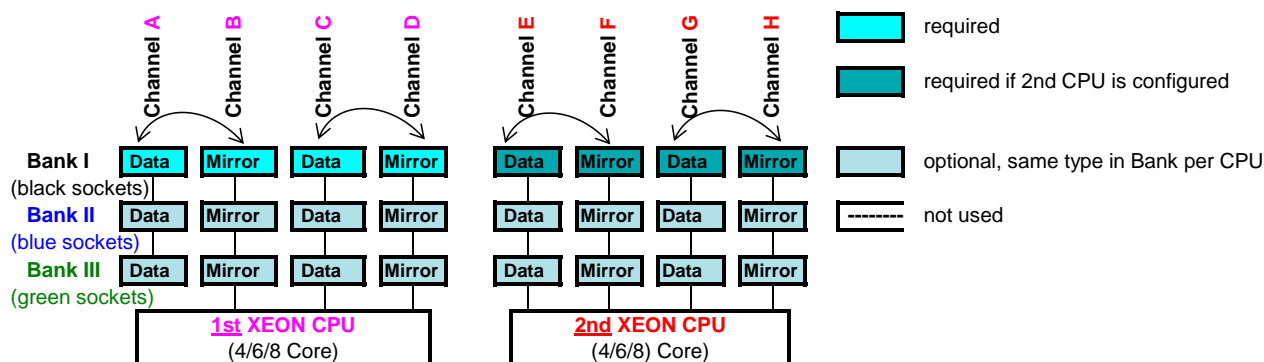
- See below and next page for a detailed descriptions of the memory configuration supported.

## 1. Independent Channel Mode



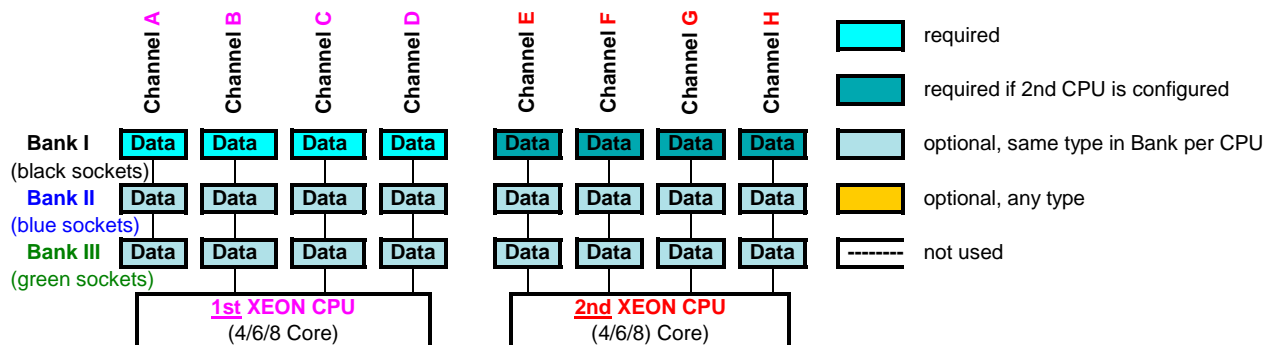
Independent Channel Mode allows all channels to be populated in any order  
Can run with differently rated DIMMs and use the settings of the slowest DIMM installed in the system

## 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.

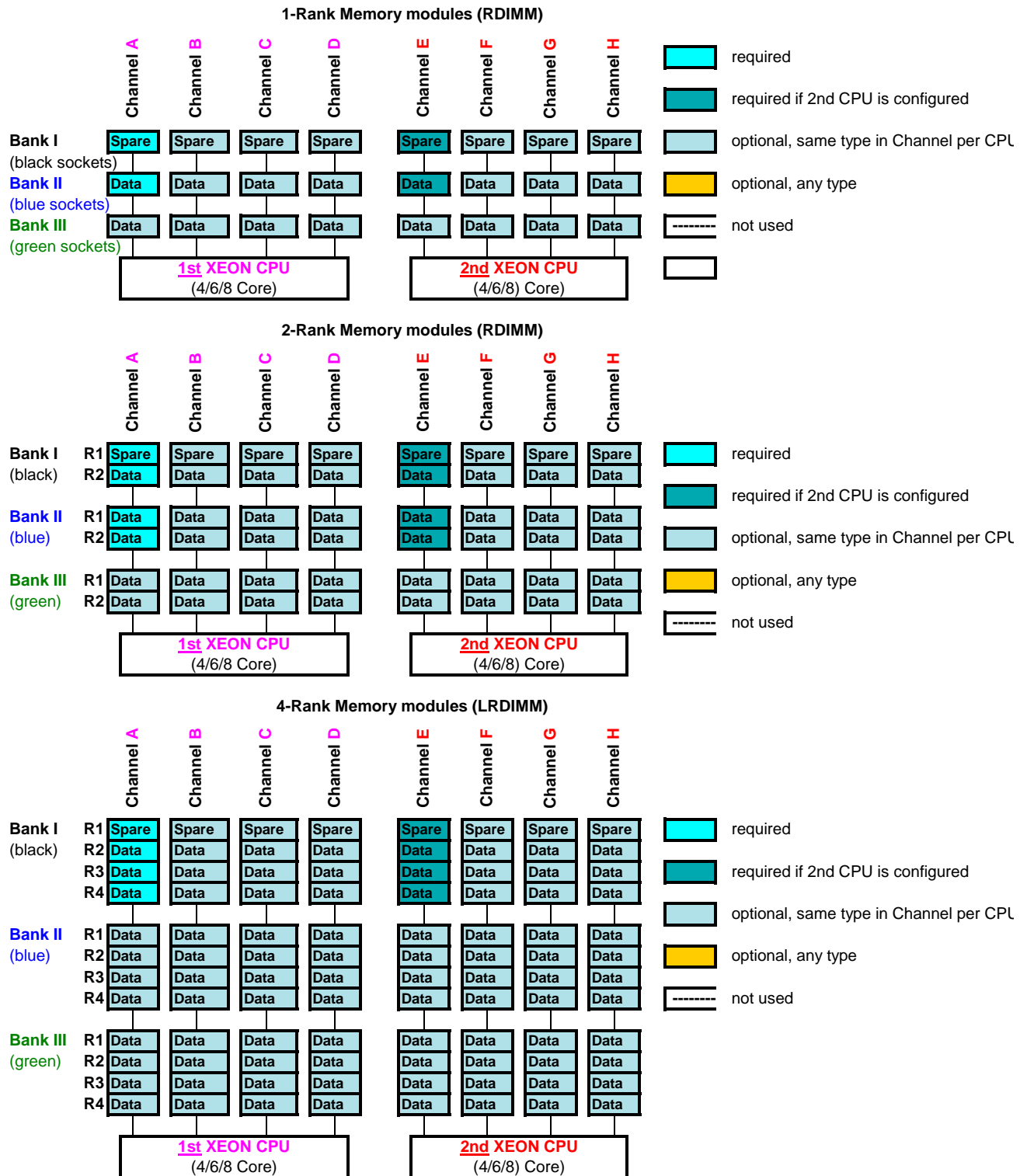
## 3. Performance Channel Mode



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

System configurator and order-information guide  
PRIMERGY BX924 S3 Status: 2014-05-31



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

G

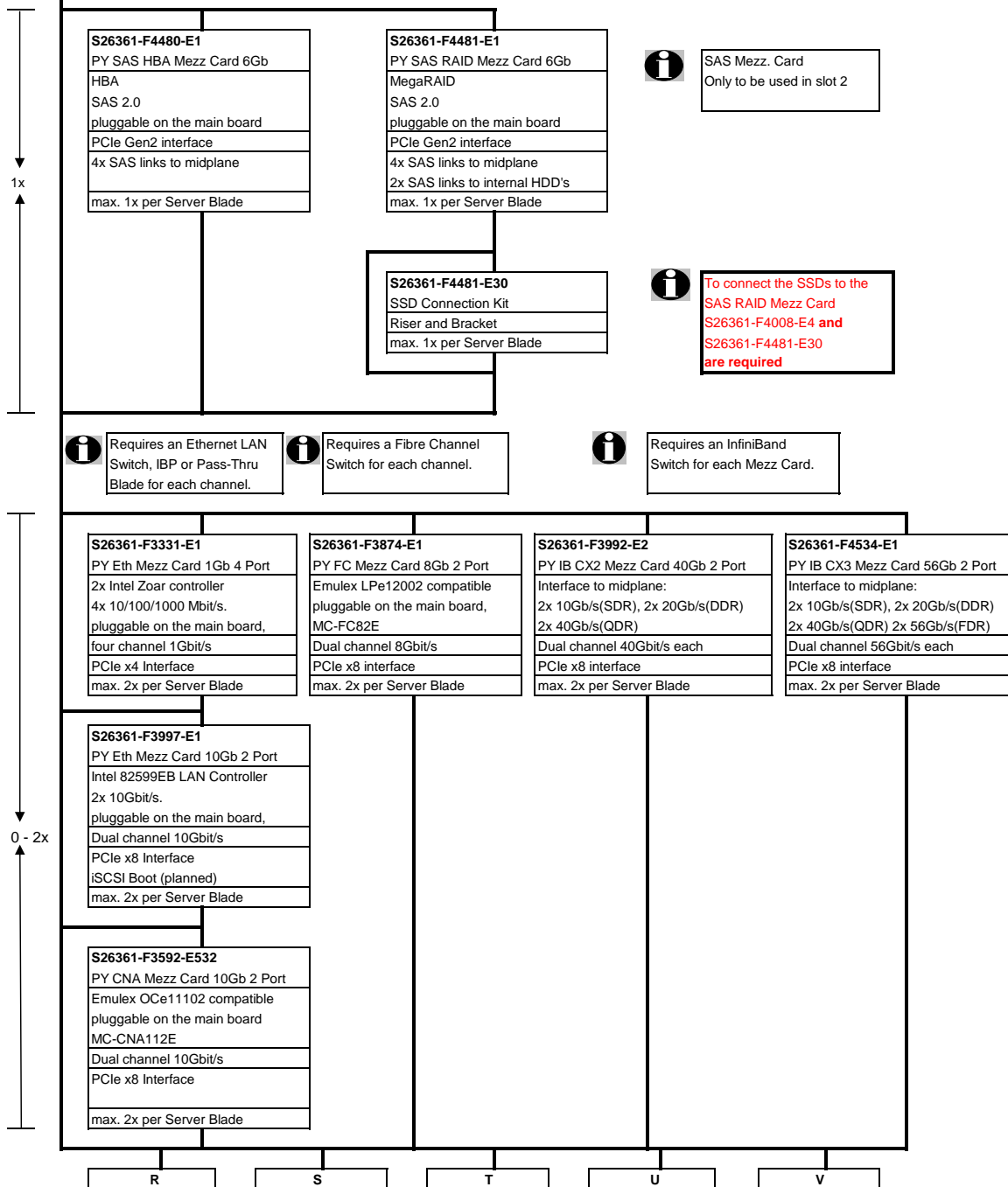
## Section XIV iRMC S3, Graphics

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

**i** 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

**i** 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.



**i** **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](https://partners.ts.fujitsu.com/com/order-supply/configurators/primergy_config/current/Pages/default.aspx)

## Change Report

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