

# 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-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:

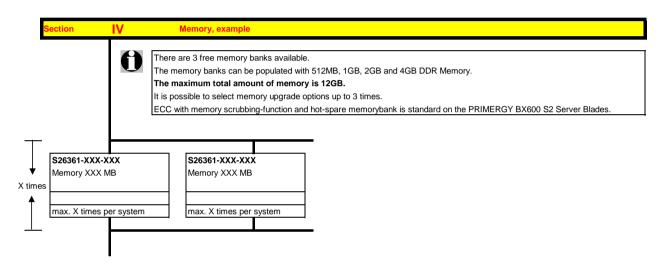
**BX924 S3** 

**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.



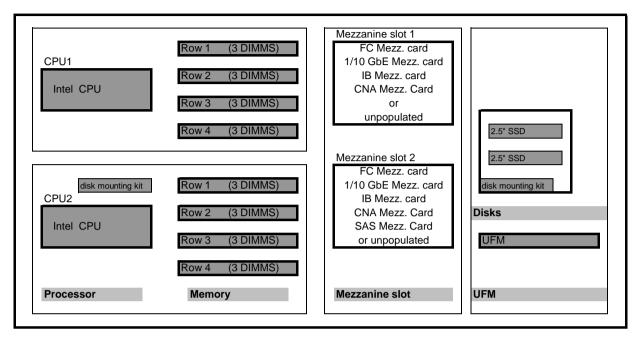
#### For further information see:

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

 $\underline{\text{https://partners.ts.fujitsu.com/com/order-supply/configurators/primergy\_config/Pages/Currentconfigurators.aspx} \qquad \qquad \textbf{(extranet)}$ 

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

#### Configuration diagram Dual Server Blade BX924 S3

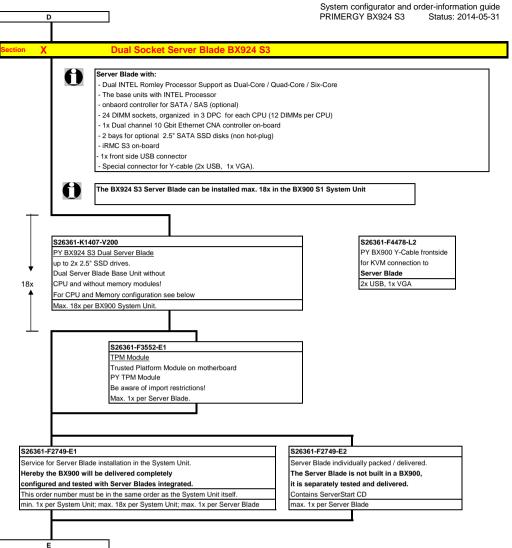


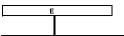
Key:

Included in basic 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)







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 s	ink
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 ambient

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Max. two CPU's can be selected per basic unit	
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Xeon E5-2609 4C/4T 2.40GHz 10MB 6.40GT/s 1066MHz 80W	S26361-F4548-E240
Standard Turbo 6C CPU's	
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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
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Xeon E5-2680 8C/16T 2.70GHz 20MB 8.00GT/s 1600MHz 130W	S26361-F4550-E270
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, , , , , , , , , , , , , , , , , , , ,	
1333/1600 MHz DDR3 Bus; 7,20/8,00 GT/s QPI Bus and passive heat sink	
	C2C2C1 E4EE2 F200
occupies socket for one CPU  Xeon E5-2630L 6C/12T 2.00GHz 15MB 7.20GT/s 1333MHz 60W  Xeon E5-2650L 8C/16T 1.80GHz 20MB 8.00GT/s 1600MHz 70W	S26361-F4552-E200 S26361-F4552-E180

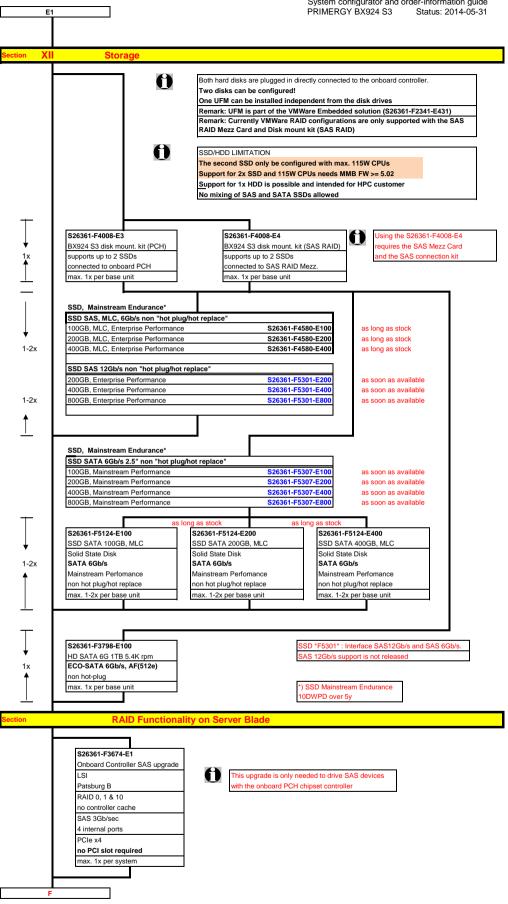
On special release only

limited to max 30°C ambient

limited to max 30°C ambient

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E1



F

Section Memory



#### - There are 12 memory slots per CPU for max.

384GB LRDIMM (12x 32GB 4R) 192GB RDIMM (12x 16GB 2R)

### 32GB UDIMM (8x 4GB) => max. 768GB for two CPU's ( 384GB 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 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.

SDDC (Chipkill) is supported for registered / load reducced 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  $\ensuremath{\mathsf{max}}$  , 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.

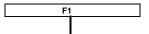
In channel B / D is always the mirrored memory of channel A / C of CPU 1

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



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-F1 **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.

1x per CPU Requires min 2x 1R/2R or 1x 4R modules per CPU

> S26361-F3694-F2 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

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



Effe	Effective Memory capacity / Rank Sparing Mode, 1 Channel populated											
	U	MM			RDIN	LRDIMM						
	2GB 1	R	2GB	2R	4GB	1R	8GB	2R	16GB 2R	16GB 4R	32GB 4R	
1DPC	na		na		na	na			na	12GB	24GB	
2DPC	na		na		4GB		12G	В	24GB	28GB	56GB	
3DPC	na		na		8GI	W	20G	В	40GB	40GB	80GB	



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

#### Unbuffered Memory (UDIMM) no SDDC (chipkill) support

one DDR3 unbuffered ECC mem. Module, 1.35V

Choose up to 8 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 12x for 1R/2R or 8x for 4R 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

#### Registered Memory (RDIMM) with SDDC (chipkill) support

one DDR3 registered ECC mem. Module, 1.35V

1333MHz supported with up to 2DPC (8 modules/CPU)

#### Choose up to 12 order codes per CPU

4GB (1x4GB) 1Rx4 L DDR3-1333 R ECC S26361-F3696-E614 8GB (1x8GB) 2Rx4 L DDR3-1333 R ECC S26361-F3696-F615

#### 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

8/12x per

CPU, max.

2/3 modules

per channel

2/3 modules per channel

#### Choose up to 12 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-F616

#### 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

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

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

new due to supply new due to supply



Mix of memory modules is only possible within the same group

#### **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 alloved.

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

Mode	Configuration	UDIMM	RDIMM	RDIMM	Application
		ODIIVIIVI	KDIIVIIVI	LRDIMM	
		х8	х8	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 *)	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

<sup>\*)</sup> 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					
Voltage setting (BIOS)	1.5\	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	-
CPU With 1600MH2 DDR3 Bus	1600		-	1333	1000	-	1000	1000	1000	1333	1333	-	1333	1333	1000	1000	1000	-
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 II black sockets
Bank III blue sockets
Bank III green sockets

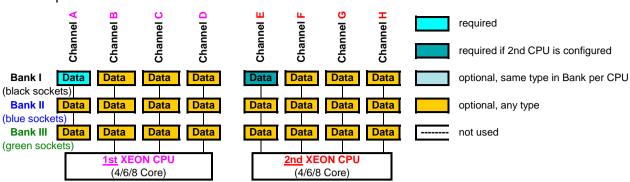
- A so called Bank consits of 1 memory module on every Channel available on one CPU (examples see below)

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

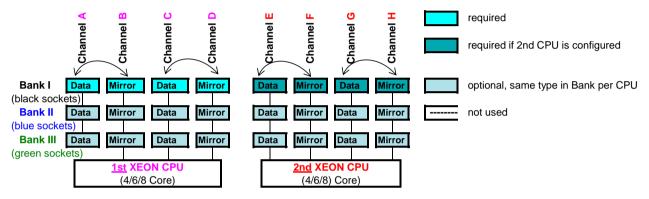
#### 1. Independent Channel Mode

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



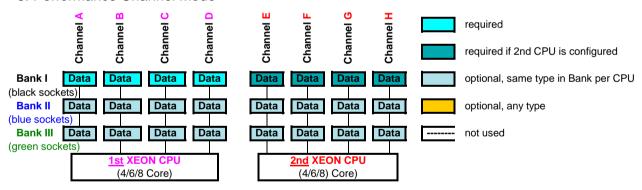
Independent Channel Mode allows all channels to be populated in any order Can run with differently rated DIMMs and use the settings of the slowest DIMM installed in the system

#### 2. Mirrored Channel Mode



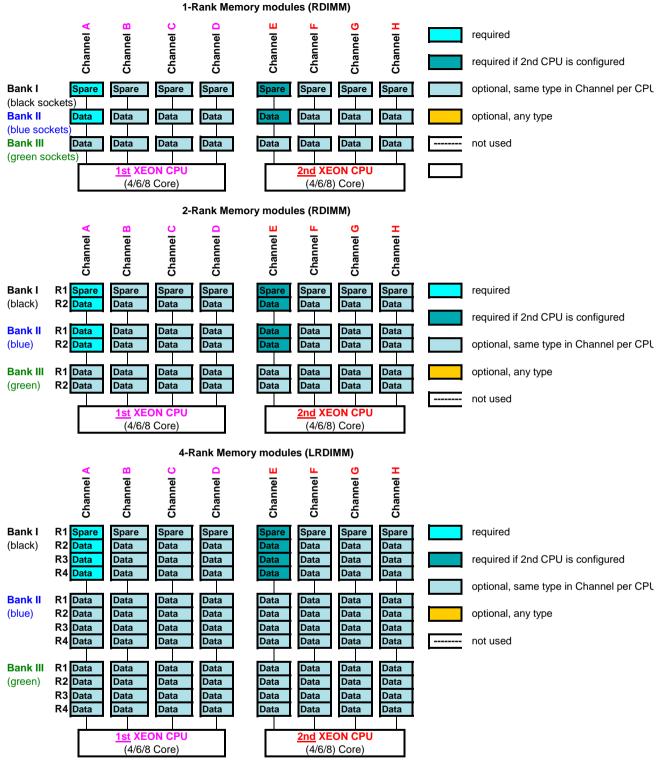
Mirrored Channel Mode requires identical modules on channel A,B, C, D (1st CPU) or channel E, F, G and H (2nd CPU) 50% of the capacity is used for the mirror => the available memory for applications is only half of the installed memory If this mode is used, a multiple of 4 identical modules has to be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

#### 3. Performance Channel Mode



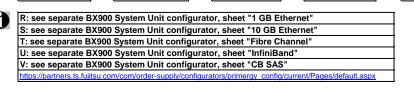
Performance Channel Mode requires identical modules on all channels of each Bank per CPU. If this mode is used, a multiple of 4 identical modules has to be ordered.

#### 4. Rank Sparing Mode



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



max. 2x per Server Blade

### **Change Report**

Date	Order number	Changes
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
2013-06-19	S26361-F3674-E1	Corrected SAS Speed to 3 Gb/s
2013-05-13	S26361-F3798-E100	2.5" ECO-SATA 1TB HDD added
2013-05-13	S26361-F3747-*	2.5" ECO-SATA HDD removed
2012-10-08		changed product picture
2012-10-02		changed USB info
2012-07-23		SSD with 115W allowed with MMB update
2012-07-23		SSD order codes update
2012-06-28	S26361-F4478-L2	New Y Cable 2 end
2012-04-24	S26361-F4481-E1/E30	SAS RAID Mezz - not yet released for BX924 S3
2012-04-20		Memory voltage / frequency spreadsheet, 3DPC at 1.5V only
2012-03-23		Removed link from SAS HBA Mezz. to SSD Connection Kit.
2012-03-21		Added CPU /SSD limitation
2012-03-21	S26361-F4481-E10	removed iBBU
2012-03-16		Added 1x SATA HDD
2012-03-08		limited special HS ambient 30°C temperature
2012-03-07	S26361-F4582-E64/E32	New SSD Ordercodes
2012-02-29		First release