

PRIMERGY BX600 S3

Advanced Blade Ecosystem – the ideal platform for the Dynamic Data Center

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The PRIMERGY Blade Ecosystem is a perfect choice for today's datacenter solutions, where the key demand is a reliable and innovative platform for performance and connectivity. Blade Servers provide high performance and maximum redundancy with minimum rack space, power consumption and cabling effort. The Blade Ecosystem BX600 is designed for a broad range of application areas, from Web server or terminal server farms with lower performance demands all the way to high performance database or application server configurations. And if your business changes, PRIMERGY Blade Servers can grow easily in order to match new demands. They can even change their software configuration during operation if the load profiles vary. And they can be combined with all other rack-mounted devices without limits.

The PRIMERGY Advanced Blade Ecosystem BX600 is characterized by flexibility, allowing dynamic software reconfiguration and full control with a redundant single point of administration. The extensive software support for control, management and deployment minimizes administrative costs and frees you from time-consuming tasks to focus on your business. Our build-to-order process ensures that only fully built and pre-tested solutions are delivered to the customer, tailored to your requirements and ready to grow with your business needs.



Advanced Blade Ecosystem PRIMERGY BX600 S3

The PRIMERGY BX600 Blade Server is a highly scalable 19-inch rack server system that occupies 7 height units (U) and has a modular infrastructure for accommodating highly compact server units (Server Blades).

Due to their high performance PRIMERGY BX600 Blade Servers are qualified for sophisticated tasks in datacenter environments, such as database or application servers, web servers or communication servers with heavy load profiles.

The BX600 today offers performance and scalability for tomorrow with 64-bit processor-technology by Intel and AMD and a chassis that supports future technologies.

The broad range of usable processor configurations and flexible scaling options (Dual or Quad socket, Dual- or Quad-Core) enable the PRIMERGY BX600 to meet nearly all requirements in typical datacenter applications.

Satisfaction of ever growing demand for I/O capacity is a primary target with BX600 S3.

The enhancements already introduced

- trebled number of possible Ethernet connections
- higher throughput for FibreChannel traffic

allow for more lanes to each destination.

- Highest end-to-end communication performance is possible with the 10 Gbit/s Ethernet Switch Blades and belonging daughter cards within the Server Blades.

In addition, the Dual and the Quad Socket Server Blade BX630 S2 in the AMD area offer besides performance enhancements through Dual- and Quad-Core CPUs a doubled number of Ethernet ports as well as support of software based virtualization with the AMD virtualization technology AMD-V™.

Enhancement of local storage capacity easily may be realized with the Storage Blade BX650, connected to Server Blade BX620 S4: Up to 730 Gbyte additional disk capacity are made usable hereby.

Advanced Blade Ecosystem PRIMERGY BX600 - Key Features and Benefits

Key Features BX600 S3	Benefits BX600 S3
<ul style="list-style-type: none"> ■ Up to 10 hot-plug Dual Socket Server Blades per chassis: each with 1 - 2 64-Bit Dual- or Quad-Core Intel® Xeon® or AMD Opteron™ processors ■ Up to 5 hot-plug Quad Socket Server Blades per chassis: each with 4 Dual- or Quad-Core AMD Opteron™ MP 64-Bit processors 	<ul style="list-style-type: none"> ■ All Server Blades may be mixed in one chassis, protecting investments and offering high growth rates. ■ The flexibility of mix and match of different Blade versions enable the Blade Ecosystem to fulfill mainly all tasks in the data center.
<ul style="list-style-type: none"> ■ Scaling option to build a Quad Socket server out of 2 Dual- or Quad-Core Dual Socket Blades, based on AMD Opteron™ 82xx / 83xx MP processors, using AMD's "Direct Connect" technology with standard chipsets. 	<ul style="list-style-type: none"> ■ Dual- and Quad-Core AMD Opteron™ processors and on site scalability from Dual to Quad Socket Blades (up to 16 cores) for all performance needs.
<ul style="list-style-type: none"> ■ Two redundant Management Blades. ■ Redundant I/O Connection Blades for FC and GbE connectivity: <ul style="list-style-type: none"> ■ With the GbE Switch Blade 30/12 the six or four resp. onboard LAN channels per BX620 S4 or BX630 S2 resp. Server Blades are supported. ■ Support of 4 Gbit/s FibreChannel in case of 4Gbit FC switch and Pass-Thru Blades. ■ 10 Gigabit Ethernet Switch Blade and 10 GbE LAN I/O module. ■ Integrated Cisco Ethernet Switch Blade CBS3040 for customers primarily using Cisco components. ■ Gigabit Ethernet Intelligent Blade Panels as well as 4 Gbit/s FibreChannel Access Gateway as hardware foundation for I/O virtualization in LAN and SAN environments with ServerView Virtual-I/O Manager. 	<ul style="list-style-type: none"> ■ Ensured trouble-free operation and minimum server downtimes. ■ Highly flexible network integration and reliable management. ■ More lanes to fulfill I/O traffic requirements of today and tomorrow. ■ Doubled throughput vs. models with 2 Gbit/s; optimized scalability, manageability and interoperability by Access Gateway mode. ■ Realization of „high-speed“ Local Area Networks, future sustainable due to support of virtualization features of upcoming versions of virtualization software. ■ Easy integration in market relevant network infrastructure environments. ■ Elimination of interoperability issues between internal switch Blades and external switches from diverse vendors (e. g. CISCO, Nortel, Brocade) due to protocol independency of these Connection Blades. ■ Cost reduction by decreased number of connection cables compared to pass-thru Blades. ■ Separation of server and network administration domains.
<ul style="list-style-type: none"> ■ The "Digital KVM Switch" offers enhanced comfort and extended usability compared to the former "Advanced KVM Switch". 	<ul style="list-style-type: none"> ■ A set of powerful server management tools decreases administration and maintenance efforts. ■ The single point of administration reduces external equipment costs.
<ul style="list-style-type: none"> ■ Between 4 and 6 onboard Gigabit Ethernet channels per Dual Socket Server Blade, optionally extendable by a 2-channel GbE daughter card and a PCI riser card option (Intel Server Blades) in addition ■ Optional 2 (Dual Socket Server Blade) or 2x 2 (Quad Socket Server Blade) FibreChannel ports. 	<ul style="list-style-type: none"> ■ High I/O throughput within the smallest Server Blade already, tailor-made for the enhanced performance of the Blade Server at all. ■ Efficient and stable communication paths enhance reliability. Less space and power consumption compared to conventional rack server farms reduce operational costs.
<ul style="list-style-type: none"> ■ Tried-and-tested, easy-to-use server management software (local or remote operation). 	<ul style="list-style-type: none"> ■ Carefree and convenient operation. Solutions for automated operating system deployment and load balancing adapt the server configurations to the current load profile, giving optimized response times. ■ Many solution templates for Blades are available e.g. terminal services, virtualization, SAP, SAN-Boot ...
<ul style="list-style-type: none"> ■ 1 to 2 hot-plug hard disks per Dual Socket Server Blade in RAID 0 or 1 configuration. 	<ul style="list-style-type: none"> ■ Integrated data security easily achievable.
<ul style="list-style-type: none"> ■ Storage Blade SX650 with up to five (5) hot-plug SAS or SATA hard disk drives connectable to one Server Blade BX620 S4 ■ Supports RAID levels 0, 1, 5 and 6, BBU and 512 MB cache ■ Up to five (5) combinations "Server Blade plus Storage Blade" in a chassis ■ Details to be taken from the separate datasheet PRIMERGY SX650 	<ul style="list-style-type: none"> ■ Supports easy and cost effective server consolidation from Rack or Tower to Blade Servers through simply extendable local disk capacity for Server Blades ■ High degree of data security achievable through use of several RAID levels, battery backup unit and large cache ■ Variable and segregated use for different scenarios within one Blade Server enclosure

Key Features BX620 S4 (Intel CPUs)	Benefits BX620 S4
<ul style="list-style-type: none"> ■ Dual- and Quad-Core Intel® Xeon® processors of latest generation with cache capacity enhancement of 50% ■ Dual-Core CPU also as low-voltage version with 40W power consumption (TDP) ■ Quad-Core Intel® Xeon® processors as low-voltage (50W), standard and high performance variants 	<ul style="list-style-type: none"> ■ High performance with max. 4 processor cores for large data center applications. ■ CPUs with 4 or 6 Mbyte shared (2x 4 / 2x 6 Mbyte non-shared with Quad-Core) SLC for highest performance, combined with very low power consumption for an optimum ratio of performance per energy consumption.
<ul style="list-style-type: none"> ■ "Fully Buffered DIMM" (FBD) memory technology combined with powerful 4-channel architecture. 	<ul style="list-style-type: none"> ■ High data throughput with FBD, supported by large bandwidth memory controllers.
<ul style="list-style-type: none"> ■ Max. memory configuration of 64 Gbyte with 8 Gbyte FBDIMM modules 	<ul style="list-style-type: none"> ■ Actual memory technology providing top performance ■ Strong improvement of virtual machine support through large memory scalability for higher number of guest operating systems
<ul style="list-style-type: none"> ■ Extensive and easy to use mirroring mode memory configuration. 	<ul style="list-style-type: none"> ■ High-end data security with mirroring of memory modules over different memory channels.
<ul style="list-style-type: none"> ■ Maximum modularity with pluggable modules driving the hard disk drives and – optional – additional I/O. 	<ul style="list-style-type: none"> ■ Customer's choice for different application scenarios: <ul style="list-style-type: none"> - Cost sensitive SATA (RAID 0 or 1) or standard SAS (RAID 1) module for HDD - SAS module with PCI-X or PCIe slot for HDD plus one low profile PCI card for additional communication. - SAS module with RAID 0 or 1 and iTBBU/cache for HDD providing a high security level. ■ Lower maintenance costs by intelligent mounting cage from the front of the Server Blade (no top cover opening needed for storage module installation).
<ul style="list-style-type: none"> ■ 2.5 inch hard disk technology for SAS and SATA drives. 	<ul style="list-style-type: none"> ■ Future oriented 2.5 inch HDD technology with the high quality SAS interface in parallel to cost sensitive SATA architecture
<ul style="list-style-type: none"> ■ 6 onboard Gigabit Ethernet LAN channels with iSCSI support 	<ul style="list-style-type: none"> ■ Large headroom for standard LAN connectivity with the choice to connect and/or boot from iSCSI storage subsystems

Key Features BX630 S2 (AMD CPUs)	Benefits BX630 S2
<ul style="list-style-type: none"> ▪ Dual and Quad Socket Server Blades (with the option of combining two Dual Socket Server Blades with Dual- or Quad-Core MP CPUs to a Quad Socket Server Blade) 	<ul style="list-style-type: none"> ■ Support of server consolidation and virtualization ■ Free choice targeted to customer demands: ordering of a Dual or Quad Socket Server Blade
<ul style="list-style-type: none"> ▪ Supports Dual-Core AMD Opteron™ processors with a power consumption of 68W and 95W 	<ul style="list-style-type: none"> ■ Choice aiming at power consumption and / or performance requirements
<ul style="list-style-type: none"> ▪ Supports Quad-Core AMD Opteron™ processors with a power consumption of either 55W (High Efficiency CPUs) or 75W 	<ul style="list-style-type: none"> ■ Optional high performance or maximum efficiency with up to 8 or 16 CPU cores on one Dual or Quad Socket Server Blade
<ul style="list-style-type: none"> ▪ High performing DDR2 memory modules for a capacity of 64 (Dual Socket) or 128 GB (Quad Socket) with 8 GB DIMMs for Quad-Core CPUs 	<ul style="list-style-type: none"> ■ Actual memory technology providing top performance ■ Strong improvement of virtual machine support through large memory scalability for higher number of guest operating systems
<ul style="list-style-type: none"> ▪ Four onboard 1 Gbit/s LAN channels with iSCSI support per Dual Socket Server Blade 	<ul style="list-style-type: none"> ■ Convincing LAN connectivity without additional effort ■ Choice of operation and / or booting from storage subsystems via iSCSI
<ul style="list-style-type: none"> ▪ Integrated Remote Management Controller (iRMC) 	<ul style="list-style-type: none"> ■ Comprehensive Server Management advantages
<ul style="list-style-type: none"> ▪ 2,5 inch hard disk technology for SAS and SATA drives 	<ul style="list-style-type: none"> ■ Future oriented 2.5 inch HDD technology with the high quality SAS interface in parallel to cost sensitive SATA architecture

PRIMERGY BX600 S3 - Blade Server Chassis	
Chassis	Chassis in 7 U for 19-inch racks (1 U = 1 height unit = 44,45 mm)
Rack installation kits for	PRIMECENTER racks, Fujitsu racks,
Midplane	Connection of the Server Blades with the infrastructure components via SerDes Midplane
Management-Blade	2x hot-plug (rear), redundant
Power supply	2x 2,100W hot-plug (rear) max. 4
Fans	2x hot-plug modules with 2 fans each (redundant); additional 3 fans per power supply module
Free bays	
Front	10x for hot-plug Server Blades
Rear	2x for additional hot-plug power supply 1x for standard KVM module, or for Digital KVM Switch Blade 4x for Switch and Pass-Thru Blades
External interfaces (rear)	
Per Management Blade	1x RS-232-C, 1x RJ45 (10/100 Mbit Ethernet LAN)
For further interfaces see optional components.	
Cable (standard)	
For Server Blades	1 x special cable with 2x USB and 1x VGA
For Standard KVM module / Digital KVM Switch Blade	1 x special cable with 2x PS/2 and 1x VGA
Power supply	2x Power supply cables (16A IEC320 C19 -> 16A IEC320 C20) are part of the standard delivery
Power supply	
2 – 4 hot-plug power supply modules with 2,100 W each (Two power supply modules standard). The 3 rd and 4 th power supply modules are necessary for 2+1, 3+1 or 2+2 redundancy. Phase redundancy is possible in regions where a single phase (i.e., a phase to neutral connection) provides 200 - 240VAC. In other regions with lower single phase voltage, two phases must be coupled (i.e., a phase to phase connection); therefore, complete phase redundancy is not possible unless two completely independent sources of main power are available.	
Rated mains voltage	200-240 V / 50-60 Hz
Max. mains current	13.1 A per module at 200 Volt 11.4 A per module at 230 Volt 11.1 A per module at 240 Volt
Max. output power	2,100 W per module
Max. apparent power	2,680 VA per module
Max. active power	2,670 W per module
Max. heat dissipation	570 W/h, 2,050kJ/h per module

Temperatures/Sound/dimensions	
Ambient temperature	IEC 721-3-3 class 3K2 (10 - 35°C)
Environmental Conditions	ETSI 300 019-2-3 Class 3.1 (T3.1) ETSI compliance for BX600 S3, BX620 S4 and BX630 S2
Air flow rate: Low fan speed	ca. 500 m ³ /h

Mid fan speed	ca. 700 m ³ /h
High fan speed	ca. 800 m ³ /h
Sound pressure level L _{pAm}	59 dB(A) (ISO9296)
Acoustic Power level L _{WAd}	<= 7,0 B (ISO9296)
Acoustic Noise	ETSI 300 753 Class 3.1
Dimensions	307 x 446 x 735 mm (H x B x T)
Rack installation Rack cable depth	7 Height Units (U); 100 mm (1,000 mm rack recommended)
Weight/power consumption	
Rack installation kit	inclusive (ca. 8,5 kg)
Weight	ca. 127 kg (with all components) thereof ca. 43 kg (Chassis incl. all fans, 2 PS units and 2 Management-Blades) (Please note that the max. load per rack is 1,000kg)
Power consumption typical	320 W – 360 W (without Server Blades)

Compliance with Norm and Standards	
Product safety	
Global	IEC 6950 / EN 60950 / UL 60950 / CSA 60950
Electro magnetic compatibility	
This product and the released accessories are in compliance with emission class A. In certain cases measures have to be taken to reduce the electro magnetic influence to other equipment.	
Global	CFR 47, Part 15, Subpart B, FCC class A (USA) ICES 003 (Canada) EN 55022 class A EN 61000-3-2 EN 61000-3-3 ETSI EN 300 386 V1.3.1 EN 55024 Immision VCCI class A CISPR22 class A (Australia / New Zealand) CNS 13438 class A (Taiwan)
Approvals	
Product safety	
Global / Europe	CB / CE
USA / Canada	ULus /ULc
Germany	GS
There is general compliance with the safety requirements of all European countries and North America. National approvals required in order to satisfy statutory regulations or for other reasons can be applied for on request.	

Standard Components for PRIMERGY BX600 S3

Management Blade MMB S3	
Number per BX600	Max. 2 (hot-plug, redundant)
Upgrade Kit	Upgrade from MMB S2 to MMB S3 possible on site
LAN	1x 10/100 Mbit/s Ethernet (RJ45)
COM port	1x RS-232-C (serial)
RS232C and I2C	Connection to every Server Blade via passive SerDes Midplane
Power supply	At all times with stand-by power
Weight	~ 1 kg

Extension Components for PRIMERGY BX600 S3

Standard KVM Module, pluggable on the rear	
Number per BX600	Max. 1
Interfaces	Special cable (Y-Cable): 1x keyboard (PS/2), 1x mouse (PS/2), 1x VGA (15 pin)
Function	For connecting external KVM switches and Rack console
Weight	~ 0,25 kg

Digital KVM Switch Blade, pluggable on the rear	
Number per BX600 S2/S3, Not for BX600 S1	Max. 1 (alternative to Standard KVM Module or Advanced KVM Switch Blade)
Interfaces	Special cable (Y-Cable): 1x keyboard (PS/2), 1x mouse (PS/2), 1x VGA (15 pin) 1x 10/100 Mbit/s Ethernet (RJ45)
Function	Graphical Console Re-direction per Server Blade (resolution up to 1600x1200 local, 1280x1024 remote); Java client for viewer and virtual media application instead of Active-X enables for Windows and Linux operation; Browsers: IE, Mozilla, Firefox; USB Storage Emulation (FDD, CD, DVD, USB stick, ISO image) per Server Blade; Local: OSD menu OSCAR (as for all ext. FSC KVM switches); Languages: EN, DE, FR, SP, IT; Connecting external KVM switches and Rack console
Weight	~ 0,3 kg

Optional Components for PRIMERGY BX600 S3 (Pluggable on the rear of the system unit)

Gbit Ethernet Pass-Thru Blade 10/10	
Number per BX600 S3	Max. 4 hot-plug GbE Pass-Thru Blades, in NET1/2/3/4 bays.
Ports per Pass-Thru Blade	10x 1 Gbit downlink to Server Blades; 10x 1 Gbit uplink port (external RJ45)
Port type	1000 Base-T Full-duplex only
Weight	~ 0,8 kg

Gbit Ethernet Switch Blade 10/6 (Cisco CBS3040)	
Number per BX600 S3	Max. 4 hot-plug GbE Switch Blades, layer 2; in NET1/2/3/4 bays.
LAN channels per Switch Blade	10x 1 Gbit downlink to Server Blades; 2x 1 Gbit uplink port (RJ45) plus 4x 1 Gbit uplink port copper (10/100/1000Base-T) or fiber (1000Base-SX) for Cisco SFPs 1 external console port (RJ45)
Weight	~ 0.9 kg
Power requirements	Max.: 36 W
(See more in the separate data sheet)	

Gbit Ethernet Switch Blade 10/6 and 10/6+2 (SB9)	
Number per BX600 S3	Max. 4 hot-plug Switch Blades, layer 2/3/4; in NET1/2/3/4 bays
LAN channels per Switch Blade	10x 1 Gbit downlink to Server Blades Variants with 6x 1 Gbit uplink port (RJ45) or 6x 1 Gbit plus 2x 10 Gbit uplink port (1x XFP + 1x CX4 copper)
Weight	~ 1 kg
Power requirements	Typical/max.: 19.5 / 24 W or 34 / 43.5 W (w. 10Gbit ports)
(See more in the separate data sheet)	

Gbit Ethernet Switch Blade 30/12 (SB9F)	
Number per BX600 S3	Max. 2 hot-plug Switch Blades; layer 2/3 in NET1/2 bays
LAN channels per Switch Blade	30x 1 Gbit downlink to Server Blades 12x 1 Gbit uplink port (RJ45)
Weight	~ 1.5 kg
Power requirements	Typical/max.: 21 / 26 W
Two Switch Blades support 60 downlink ports (6 per Server Blade) in fabric 1 only.	

10 Gbit Ethernet Switch Blade 10/2	
Number per BX600 S3	Max. 2 hot-plug Switch Blades; layer 2 in NET3/4 bays
LAN channels per Switch Blade	10x 10 Gbit downlink to Server Blades 2x 10 Gbit uplink port for X2 modules: Copper, X2-CX4 (10GBASE-CX4 MID-PAK) or FO, X2-fiber (10GBASE-SR multi-mode MID-PAK))
Features	Layer 2 switch
Weight	~ 1 kg
Power requirements	Typical/max.: 30 / 40 W
Two Switch Blades support 20 downlink ports (2 per Server Blade) in fabric 2 only; operation in failover mode.	
(see more in the separate data sheet)	

Gbit Ethernet Intelligent Blade Panel 10/6 (IBP 10/6)	
Number per BX600 S3	Max. 4 hot plug GbE IBP 10/6 in NET1/2/3/4 slots
LAN channels per module	10x 1 Gbit Downlink to Server Blades 6x 1 Gbit uplink port (RJ45)
Weight	~ 1,5 kg
Power requirements	Typical/max.: 21 / 26 W
I/O Connection Blade without switch functionality, usable from Server Blades BX620 S3 ff. and BX630 ff. Valid for BX620 S4, BX630 S2 Dual Socket: Ready for Virtual-I/O with ServerView VIOM in Fabric 1; in addition with BX630 S2 Quad Socket and also in Fabric 2 with second step of SV VIOM	
(see more in the separate data sheet)	

Gbit Ethernet Intelligent Blade Panel 30/12 (IBP 30/12)	
Number per BX600 S3	Max. 4 hot plug GbE IBP 30/12 in NET1/2/3/4 slots
LAN channels per module	30x 1 Gbit Downlink to Server Blades 12x 1 Gbit uplink port (RJ45)
Weight	~ 1,5 kg
Power requirements	Typical/max.: 21 / 26 W
I/O Connection Blade without switch functionality, usable from Server Blades BX620 S3 ff. and BX630 ff. Valid for BX620 S4, BX630 S2 Dual Socket: Ready for Virtual-I/O with ServerView VIOM in Fabric 1; in addition with BX630 S2 Quad Socket and also in Fabric 2 with second step of SV VIOM	

**Optional Components for PRIMERGY BX600 S3
(Pluggable on the rear of the system unit)**

4 Gbit Fibre Channel Pass-Thru Blade 10/10	
Number per BX600 S3	Max. 2 hot-plug FC Pass-Thru Blades; 4-Gbit Fibre Channel. In NET3/4 bays.
FC ports per FC Pass-Thru Blade	10x 4 Gbit downlink to Server Blades, 10x 4 Gbit uplink port for GBIC/SFP modules
GBIC/SFP modules	MMF, for the FC ports, connection with LC connector cable
Weight	~ 1 kg (w/o GBIC/SFP module)
Requires 4Gbit FC I/O module on Server Blade with PCIe interface and HBA BX600-FC42E	

4/4 Gbit Fibre Channel Switch Blade 10/6 (Brocade SilkWorm 4016 D4) Operates either in Switch mode or as Access Gateway	
Number per BX600 S3	Max. 2 hot-plug FC Switch Blades; 1/2/4 Gbit Fibre Channel. In NET3/4 bays.
FC ports per FC switch Blade	10x 4 Gbit downlink to Server Blades, 6x 4 Gbit uplink port for GBIC/SFP modules
GBIC/SFP modules MMF	For the FC ports, connection with LC connector cable
Weight	~ 1.15 kg (w/o GBIC/SFP module)
Power requirements	Typical/max.: 22 / 31 W
Support of max. 4Gbit FC internal and external (4/4). Requires 4Gbit FC I/O module on Server Blade with PCIe interface and HBA BX600-FC42E. Valid for BX620 S4, BX630 S2 Dual Socket; Ready for Virtual-I/O with ServerView VIOM; in addition with BX630 S2 Quad Socket with second step of SV VIOM	

PRIMERGY BX620 S4 - Dual	
Type	Dual Socket Server Blade
Number per BX600S3	Up to 10 hot-plug Server Blades
Number per BX600S2	Up to 8 hot-plug Server Blades (not in slots 4 and 10)
System board	D2571
Processors	1 – 2x Intel® Xeon® 5000 sequence (Dual-Core 5100 or 5200 series or Quad-Core 5300 or 5400 series) DP CPU
Model #:	5148: 2.33 / 1x 4 / 1,333 / 40
Clock frequency (GHz)/	L5310: 1.60 / 2x 4 / 1,066 / 50
SLC in Mbyte/	L5335: 2.00 / 2x 4 / 1,333 / 50
FSB frequency (MHz)/	L5240: 3.00 / 1x 6 / 1,333 / 40
Power consumption TDP (W)	E5205: 1.86 / 1x 6 / 1,066 / 65
	X5260: 3.33 / 1x 6 / 1,333 / 80
	L5410: 2.33 / 2x 6 / 1,333 / 50
	L5420: 2.50 / 2x 6 / 1,333 / 50
	E5405: 2.00 / 2x 6 / 1,333 / 80
	E5420: 2.50 / 2x 6 / 1,333 / 80
	E5430: 2.66 / 2x 6 / 1,333 / 80
	E5440: 2.83 / 2x 6 / 1,333 / 80
	E5450: 3.00 / 2x 6 / 1,333 / 80
	X5460: 3.16 / 2x 6 / 1,333 / 120
Chipset	Intel® 5000P (Blackford)
Main memory	1 Gbyte to max. 64 Gbyte FBD 667 MHz (PC2-5300F), 4x2 DIMM sockets, 2 banks with 2 channels each, 2 memory controllers; memory mirroring mode and SDDC
Flash EPROM	BIOS update per USB floppy disk, USB CD-ROM or via LAN (MMB)

Interfaces	
6x Gbit Ethernet via Midplane at GbE Switch or Pass-Thru Blade or at GbE IBP; 1x VGA and 2x USB at the front via special cable; connection to KVM switch via Midplane; optional via Midplane at FC or GbE switch or Pass-Thru Blade, FC Access Gateway or GbE IBP; 2x 2 or 4 Gbit Fibre Channel or 2x 1 Gbit Ethernet port	
Onboard controllers	
SAS (IME LSI1068)	2-channel SAS (RAID 1 (opt. also 0)) as pluggable storage module
SATA (from ESB2)	2-channel SATA (RAID 0 and 1) as pluggable storage module
Graphics	ATI ES1000, 16Mbyte RAM
LAN (BCM5715S)	3x 2-channel Gbit Ethernet, iSCSI/iBoot ¹ support
Server management	Baseboard management controller (BMC)
Hard disk drives	
Type	- 2.5 inch SAS or SATA (hot-plug)
# per Server Blade	1-2
Capacities	- SAS: 73 / 146 Gbyte (10000 rpm) - SAS: 36 / 73 Gbyte (15,000 rpm) - SATA: 120 Gbyte (5,400 rpm)
Dimensions/Weight	
Dimensions (W x H x D) in mm	286 x 43 x 470 (520 with connectors and handles), occupies one Server Blade slot in system unit
Weight	~ 7 kg (max. configuration)
Power requirements	Approx. 385 W (max. configuration)

Storage modules (max 1x per Server Blade) required for hard disk operation. Pluggable on motherboard from the front side of the Server Blade.

SATA	Bridge board (SATA controller from ESB2) for up to 2 SATA hard disks (RAID 0 or 1)
Standard SAS	Controller card with LSI1068 for up to 2 SAS hard disks (RAID 1)
SAS plus PCI-X slot	Controller card with LSI1068 for up to 2 SAS hard disks (RAID 1), plus riser card (PCI-X 64bit/133MHz) for low-profile PCI-X host bus adapter card (LAN, FC, RAID)
SAS plus PCIe slot	Controller card with LSI1068 for up to 2 SAS hard disks (RAID 1), plus riser card (x4 PCIe interface, x8 PCIe connector) for low-profile PCI Express host bus adapter card (LAN, FC)
SAS / MegaRAID	Controller card with LSI1068 and RAID 0 or 1 support; IOP plus 256Mbyte cache and iTBBU, for up to 2 SAS hard disks
Weight	~ 280 - 340 g

¹ iBoot via 2nd channel of 3rd controller with Microsoft™ Windows Server™ 2003; iBOOT via all 6 channels with SLES 10 SP2

The following optional GbE and FC modules (daughter cards) can be installed once per Server Blade each and cannot be mixed within a single BX600 system unit.

Optional 2 Gbit/s Fibre Channel I/O module (PCI-X) BX600-FC22Q	
QLA2342 compatible, QLogic chip ISP2312 onboard	
Number per server	Max. 1 (2 Gbit/s FC module);
Supported Storage Subsystems	Connection to several FC storage subsystems with corresponding releases
FC ports (internal)	2-channel 2 Gbit/s each
Weight	~ 60 g

Optional 4 Gbit/s Fibre Channel I/O module (PCIe) BX600-FC42E	
Emulex Light Pulse® LPe1105 compatible	
Number per server	Max. 1 (1/2/4 Gbit/s FC module); To be combined with FC switch Blade SW4016 D4
Supported Storage Subsystems	Connection to several FC storage subsystems with the corresponding releases
FC ports (internal)	2-channel 1/2/4 Gbit/s each
Weight	~ 65 g
Ready for Virtual-I/O with ServerView VIOM; (See more in the separate data sheet)	

Optional Gigabit Ethernet I/O module (PCIe)	
Number per server	Max. 1
Form factor:	Board dimension: 120 x 90 (mm)
Core Chip:	2x Broadcom 5708S
PCI Interface:	PCI-Express x4
I/O Interface:	2x 1 Gbit/s Ethernet (SerDes)
Functions:	TCP/IP Acceleration and iSCSI/iBoot ^{2,3} supported
LAN ports (internal)	2-channel 1 Gbit/s each
Weight	~ 65 g
Ready for Virtual-I/O with ServerView VIOM second step	

Optional 10 Gigabit Ethernet I/O module (PCIe): Blade Engine™	
Number per server	Max. 1
Form factor:	Board dimension: 15 x 110 x 108 mm (H x W x D)
PCI Interface:	PCI-Express x8
I/O Interface:	2x 10 Gbit/s Ethernet (SerDes)
Functions:	TCP/IP Acceleration and iSCSI- / iBoot ² supported
LAN ports (internal)	2-channel each 10 Gbit/s, operation in failover mode for connection to two 10 GbE Switch Blades
Weight	~ 60 g
Power requirements	Typical / Max.: 10 / 15W

² iBoot with Microsoft™ Windows Server™ 2003

³ iBoot with SLES 10 SP2

PRIMERGY BX630 S2 - Dual	
Type	Dual Socket Server Blade (with MP processors scalable to Quad Socket Server Blade)
Number per BX600 S3 Number per BX600 S2	Up to 10 hot-plug Server Blades Up to 8 hot-plug Server Blades (not in slots 4 and 10)
System board	D2537
Processors	2x 64-bit Dual-Core (22xx, 82xx) or AMD Opteron™ DP or MP
Model #:	2216: 2.40 / 2x 1 / 95
Clock rate (GHz) /	2218: 2.60 / 2x 1 / 95
SLC (Mbyte) /	2218 HE: 2.60 / 2x 1 / 68
Power consumption TDP (W)	2222: 3.00 / 2x 1 / 95
	8216: 2.40 / 2x 1 / 95
	8218: 2.60 / 2x 1 / 95
	8218 HE: 2.60 / 2x 1 / 68
	8222: 3.00 / 2x 1 / 95
Processors	2x 64-bit Quad-Core (23xx, 83xx) AMD Opteron™ DP or MP
Model #:	2344HE: 1.70 / 4x 0.5 / 1x 2 / 55
Clock rate (GHz) /	2346HE: 1.80 / 4x 0.5 / 1x 2 / 55
SLC / TLC (Mbyte) /	2347HE: 1.90 / 4x 0.5 / 1x 2 / 55
Power consumption TDP (W)	2350: 2.00 / 4x 0.5 / 1x 2 / 75
	2352: 2.10 / 4x 0.5 / 1x 2 / 75
	2354: 2.20 / 4x 0.5 / 1x 2 / 75
	2356: 2.30 / 4x 0.5 / 1x 2 / 75
	8347HE: 1.90 / 4x 0.5 / 1x 2 / 55
	8350: 2.00 / 4x 0.5 / 1x 2 / 75
	8354: 2.20 / 4x 0.5 / 1x 2 / 75
	8356: 2.30 / 4x 0.5 / 1x 2 / 75
Chipset	ServerWorks HT2100, HT1000
Main memory for Dual-Core CPU versions	1 Gbyte to max. 32 Gbyte Registered 2-way interleaved ECC DDR2 667-SDRAM PC2-5300, 4 memory banks with module pairs of 1 / 2 / 4 / 8 Gbyte configurable; 16 Gbyte dedicated to each processor socket; Memory Scrubbing and SDDC (Chipkill™) support
Main memory for Quad-Core CPU versions	1 Gbyte to max. 64 Gbyte Registered 2-way interleaved ECC DDR2 667-SDRAM PC2-5300, 4 memory banks with module pairs of 1 / 2 / 4 / 8 / 16 Gbyte configurable; 32 Gbyte dedicated to each processor socket; Memory Scrubbing and SDDC (Chipkill™) support
Flash-EPROM	BIOS-Update per USB Floppy Disk, USB CD-ROM or via LAN
Interfaces	4x Gigabit Ethernet channel via Midplane at GbE Switch, GbE Pass-Thru Blade or GbE IBP; 1x VGA and 2x USB at the front via special cable; connection to the KVM switch via the Midplane; optional via Midplane at FC Switch or Pass-Thru Blade or at FC Access Gateway; 2x 4-Gbit FibreChannel port or at GbE Switch, Pass-Thru Blade or GbE IBP; 2x 1-Gbit Ethernet channel

Onboard controllers	
SATA controller	1x 4-port SATA II on HT-1000 HyperTransport™ SystemI/O™ Hub
SAS controller	1x 2 active SAS channels (LSI1064E) with RAID Level 0 and 1 (hot replace function) for 2x SAS HDD
Graphics	Integrated within iRMC
LAN (BCM 5715S)	2x 2-channel Gbit Ethernet, iSCSI/iBoot ⁴ supported

Server Management	Integrated Remote Management Controller (iRMC)
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Hard disk drives	
Type	2.5 inch SAS or SATA (hot-plug)
# per Server Blade	1-2
Capacities	SAS: 73 / 146 Gbyte (10,000 rpm), SAS: 36 / 73 Gbyte (15,000 rpm) SATA: 120 Gbyte (5,400 rpm)

Dimensions/Weight	
Dimensions (W x H x D) in mm	286 x 43 x 470 (520 with connectors and handles), occupies one Server Blade slot in system unit
Weight	~ 6 kg
Power requirements	Max. 388W

The following optional GbE and FC modules (daughter cards) can be installed once per Server Blade each and cannot be mixed within a single BX600 system unit.

Optional 4 Gbit/s FibreChannel I/O module (PCIe) BX600-FC42E	
Emulex Light Pulse® LPe1105 compatible	
Number per server	Max. 1 (1/2/4 Gbit/s FC module); To be combined with FC Switch Blade SW4016 D4
Supported Storage Subsystems	Connection to various FC storage subsystems with respective releases
FC ports (internal)	2 ports 1/2/4 Gbit/s each
Weight	~ 65 g

Ready for Virtual-I/O with ServerView VIOM;
(See more in the separate datasheet)

Optional Gigabit Ethernet I/O module (PCIe)	
Number per server	Max. 1
Formfactor:	Board dimension: 120 x 90 (mm)
Core Chip:	2x Broadcom 5708S
PCI interface:	PCI-Express x4
I/O interface:	2x 1 Gbit/s Ethernet (SerDes)
Features:	TCP/IP Acceleration and iSCSI/iBoot ⁴ supported
LAN ports (internal)	2 channels each 1 Gbit/s
Weight	~ 65 g

Ready for Virtual-I/O with ServerView VIOM second step
(See more in the separate datasheet)

⁴ iBoot with Microsoft™ Windows Server™ 2003 and SLES 10 SP2

Optional 10 Gigabit Ethernet I/O module (PCIe): Blade Engine™	
Number per server	Max. 1
Form factor:	Board dimension: 15 x 110 x 108 mm (H x W x D)
PCI Interface:	PCI-Express x8
I/O Interface:	2x 10 Gbit/s Ethernet (SerDes)
Functions:	TCP/IP Acceleration and iSCSI/iBoot ⁵ supported
LAN ports (internal)	2-channel each 10 Gbit/s, operation in failover mode for connection to two 10 GbE Switch Blades
Weight	~ 60 g
Power requirements	Typical / Max.:10 / 15W

⁵ iBoot with Microsoft™ Windows Server™ 2003

PRIMERGY BX630 S2 – Quad	
Type	Quad Socket Server Blade
Number per BX600 S3 Number per BX600 S2	Up to 5 hot-plug Server Blades Up to 3 hot-plug Server Blades (not in slots 4 and 10)
System board	D2537
Processors	4x 64-bit Dual-Core (82xx) AMD Opteron™ MP
Model #:	8216: 2.40 / 2x 1 / 95
Clock rate (GHz) /	8218: 2.60 / 2x 1 / 95
SLC (Mbyte) /	8218 HE: 2.60 / 2x 1 / 68
Power consumption TDP (W)	8222: 3.00 / 2x 1 / 95
Processors	4x 64-bit Quad-Core (83xx) AMD Opteron™ MP
Model #:	8347HE: 1.90 / 4x 0.5 / 1x 2 / 55
Clock rate (GHz) /	8350: 2.00 / 4x 0.5 / 1x 2 / 75
SLC / TLC (Mbyte) /	8354: 2.20 / 4x 0.5 / 1x 2 / 75
Power consumption TDP (W)	8356: 2.30 / 4x 0.5 / 1x 2 / 75
Chipset	ServerWorks HT2100, HT1000
Main memory for Dual-Core CPU versions	2 Gbyte to max. 64 Gbyte Registered 2-way interleaved ECC DDR2 667-SDRAM PC2-5300, 8 memory banks with module pairs of 1 / 2 / 4 / 8 Gbyte configurable; 16 Gbyte dedicated to each processor socket; Memory Scrubbing and SDDC (Chipkill™) support
Main memory for Quad-Core CPU versions	2 Gbyte to max. 128 Gbyte Registered 2-way interleaved ECC DDR2 667-SDRAM PC2-5300, 8 memory banks with module pairs of 1 / 2 / 4 / 8 / 16 Gbyte configurable; 32 Gbyte dedicated to each processor socket; Memory Scrubbing and SDDC (Chipkill™) support
Flash-EPROM	BIOS-Update per USB Floppy Disk, USB CD-ROM or via LAN
Interfaces	8x Gigabit Ethernet channel via Midplane at GbE Switch, GbE Pass-Thru Blade or GbE IBP; 1x VGA and 2x USB at the front via special cable; connection to the KVM switch via the Midplane; optional via Midplane at FC Switch or Pass-Thru Blade or at FC Access Gateway: 4x 4-Gbit FibreChannel port or at GbE Switch, Pass-Thru Blade or GbE IBP: 4x 1-Gbit Ethernet channel
Onboard controllers	
SATA controller	2x 4-port SATA II interface on HT-1000 HyperTransport™ SystemI/O™ Hub
SAS controller	2x 2 active SAS channels (LSI1064E) with RAID Level 0 and 1 (hot replace function) for 4x SAS HDD
Graphics	Integrated within iRMC
LAN (BCM 5715S)	4x 2-channel Gbit Ethernet, iSCSI/iBoot ^{6,7} supported
Server Management	Integrated Remote Management Controller (iRMC)

Hard disk drives	
Type	2.5 inch SAS or SATA (hot-plug)
# per Server Blade	1-4
Capacities	SAS: 73 / 146 Gbyte (10,000 rpm), SAS: 36 / 73 Gbyte (15,000 rpm) SATA: 120 Gbyte (5,400 rpm)

Dimensions/Weight	
Dimensions (W x H x D) in mm	286 x 86 x 470 (520 with connectors and handles), occupies two Server Blade slots in system unit
Weight	~ 12 kg
Power requirements	Max. 776W

The following optional GbE and FC modules (daughter cards) can be installed up to 2 times per Server Blade and cannot be mixed within a single BX600 system unit.

Optional 4 Gbit/s FibreChannel I/O module (PCIe) BX600-FC42E	
Emulex Light Pulse® LPe1105 compatible	
Number per server	Max. 2 (1/2/4 Gbit/s FC module); To be combined with FC Switch Blade SW4016 D4
Supported Storage Subsystems	Connection to various FC storage subsystems with respective releases
FC ports (internal)	2 ports 1/2/4 Gbit/s each
Weight	~ 65 g
Ready for Virtual-I/O with ServerView VIOM second step (See more in the separate datasheet)	

Optional Gigabit Ethernet I/O module (PCIe)	
Number per server	Max. 2
Formfactor:	Board dimension: 120 x 90 (mm)
Core Chip:	2x Broadcom 5708S
PCI interface:	PCI-Express x4
I/O interface:	2x 1 Gbit/s Ethernet (SerDes)
Features:	TCP/IP Acceleration and iSCSI/iBoot ^{6,7} supported
LAN ports (internal)	2 channels each 1 Gbit/s
Weight	~ 65 g
Ready for Virtual-I/O with ServerView VIOM second step	

Optional 10 Gigabit Ethernet I/O module (PCIe): Blade Engine™	
Number per server	Max. 1
Form factor:	Board dimension: 15 x 110 x 108 mm (H x W x D)
PCI Interface:	PCI-Express x8
I/O Interface:	2x 10 Gbit/s Ethernet (SerDes)
Functions:	TCP/IP Acceleration and iSCSI/iBoot ⁶ supported
LAN ports (internal)	2-channel each 10 Gbit/s, operation in failover mode for connection to two 10 GbE Switch Blades
Weight	~ 60 g
Power requirements	Typical / Max.:10 / 15W

⁶ iBoot with Microsoft™ Windows Server™ 2003

⁷ iBoot with SLES 10 SP2

Supported Server <u>operating systems</u> all Server Blades
See actual release status operating systems : e.g. Windows Server 2003; Windows Server 2008, SUSE Linux Enterprise Server , Red Hat Enterprise Linux, Ubuntu; VMware ESX (Support of Debian, Mandriva Linux and other Linux derivatives on demand)

Server Management Software all Server Blades	
Standard	PRIMERGY ServerView Suite
Optional	ServerView Deployment Manager ServerView Remote Management ServerView Virtual-I/O Manager v1.0 for BX620 S4 and BX630 S2 Dual Socket