

# Fujitsu PRIMERGY BX Blade Server

Driving your success  
with unbeatable performance  
and efficiency

shaping tomorrow with you

**FUJITSU**

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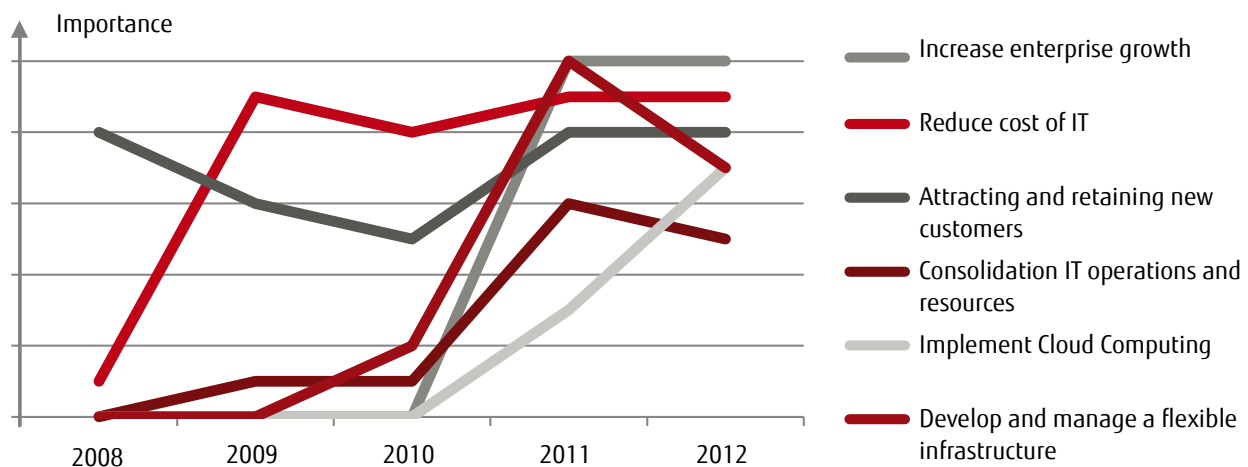
- Use the Fujitsu PRIMERGY BX Blade Servers as a basis for the consolidation and virtualization of applications. With independently proven higher performance than comparable products, especially in virtualized environments, it is possible to increase the utilization of resources.
- Maximum performance, minimum costs, greater efficiency. The intelligent system design of Fujitsu's PRIMERGY Blade Servers reduces downtimes to a minimum. This is ensured by a wide range of connection options, complete redundancy and innovative management tools.
- Scalable PRIMERGY Blade Servers offer modular and flexible upgrade options so that new technologies can be integrated into existing environments, thus protecting existing IT investments.
- Fujitsu's patented Cool-safe™ cooling concept, combined with power supply units certified with 80Plus Platinum and holistic power management, also reduce your costs, ensuring a more efficient use of energy and cooling capacity.
- Reduce the complexity of your infrastructure and control the growth of your company. Users are able to add, replace and recover server blades on the fly, without impacting networks or requiring multiple experts at each step. A process that provides resources automatically thus improves work processes and reduces operating costs.
- Fujitsu's PRIMERGY Blade Server offering is enhanced by a comprehensive set of packaged services that support your IT team throughout the implementation process. Our services help you realize the full potential of your technology and keep your environment up and running. Your infrastructure can even be expanded using individually configurable server, storage and backup resources in a Fujitsu data center

# IT requirements and challenges

Customers, in today's competitive market, increasingly look at how they can design their IT organization more efficiently in order to add value for their company. One of the greatest challenges is having to meet constantly stricter service levels with a very restricted budget yet still retain the high availability and flexibility levels required for the applications. In order to meet such requirements IT managers must set up their infrastructures on platforms which ensure operational efficiency and also provide the flexibility that is required to react quickly to future changes in business strategy. Furthermore, data center operations are now very closely integrated in daily business operations.

Companies are thus placing an ever greater emphasis on the operation of IT environments, not only to gain competitive market advantages but also because IT services and applications have become a critical element in daily business and employee productivity.

The priorities are thus clearly defined: they must meet the challenges of a dynamic market while reducing costs; the same objectives must be attained with fewer IT experts and new profit-making technologies must be implemented within their company. In short: you must align your IT organization and infrastructure to achieve company success.



# Fujitsu PRIMERGY Blade Server

## Your infrastructure-in-a-box

Fujitsu PRIMERGY BX Blade Servers provide a faster, simpler and lower-cost way to build and run an IT infrastructure in your medium-sized company, branch office or large data center.

PRIMERGY Blade Servers help you to reduce the number of servers, components and simultaneously your investment costs. Fewer servers are also easier, faster and cheaper to run and manage, reducing operating costs. They also provide more performance in virtualized environments than competitive products.

Business agility is achieved through simple, modular design and a large number of useful features that help reduce deployment time to hours or even only minutes. You can use thousands of applications and a large number of certified operating systems, and you can arrange your own individual combinations of virtual machines, storage and server blades together with a wide-ranging selection of internal and external connections, such as Ethernet, Fibre Channel, SAS and InfiniBand.



Managing virtualization with a Fujitsu Blade Servers infrastructure gives us even greater flexibility and, at the same time, is a highly available solution for the protection of our business-critical applications and services.



At first we didn't quite understand why we should migrate from our old servers to compact PRIMERGY Blade Servers. After all, there was no shortage of space. But we then realized that the new systems feature exceptional performance, reliability and flexibility. Administration has been simplified, and we consume significantly less electricity than previously. That all pays off for us.

Riccardo Verni,  
Manager IT Systems, Gilmar Group

Pascal Fuckerieder, Team Manager,  
Database Applications, Munich City Utilities





## Server consolidation and centralization

Fujitsu PRIMERGY BX Blade Servers contain all the required infrastructure components, such as power supply units and fans, servers, network switches as well as management components. Internal storage blades can also be integrated. Those are the main differences in comparison to standard rack or tower servers. PRIMERGY BX Blade Servers can be used to meet increasing compute performance requirements without suffering from an explosion of costs and increased administration complexity.

- Blade servers do not need as much space as traditional tower or rack servers. Fujitsu PRIMERGY BX Blade Servers use 55% less space than standard 1U rack servers. A small company using a tower servers can reduce the amount of space used by up to 82% with a PRIMERGY BX400 floorstand version.
- The blade server concept simplifies server cabling. Each extra rack server requires additional power cables as well as network and storage system connections. Additional blade servers are integrated into the existing blade housing without any additional cables. Cable savings can be as much as 90%. Furthermore adding and removing server blades physically is much easier compared to rack servers as they just need to be connected to the existing free slots and can thus be easily replaced.
- Fujitsu PRIMERGY BX Blade Servers offer modular upgrade options so that new technologies can be integrated into the existing environments. This protects your investment for a long period and the migration procedures - from old to new technology - can be easily implemented.
- The PRIMERGY BX900 Blade Server with a total of 18 slots in a 10U rack provides the highest commercial blade density. It offers more than 10% chassis extendability and performance compared to similar products.



# A perfect supplement for server virtualization

Another server consolidation option is offered by server virtualization. In this situation, consolidation arises by operating several virtual servers on one hardware platform. The Fujitsu PRIMERGY BX Blade Servers are a perfect supplement for x86 server virtualization and also have additional advantages, such as improved management, greater availability and operational efficiency through a shared infrastructure and virtual input/output.

■ Fujitsu blade servers enable additional system management optimization especially with regard to virtualization concepts. I/O virtualization, where the identity of the server blades is completely mapped within the network and no longer stored in the server, enables new and easier deployment and replacement scenarios.

- Server virtualization reduces the amount of cabling work as fewer physical servers and connections are required. PRIMERGY BX Blade Servers improve the situation even more as the server blades share the infrastructure integrated in the chassis.
- The reliability is increased compared to rack servers because PRIMERGY Blade Servers have a fully redundant configuration. Internal cabling is also less susceptible to faults and manual problems. PRIMERGY BX Blade Servers enable simple management, thus reducing administration costs: the consolidation and centralization of resources simplifies the provision of servers as well as server management and administration.

Fujitsu PRIMERGY BX Blade Servers offer more performance in virtualized environments compared to other products. This improves competitiveness and thus generates potential for better business results. A result of "40.86@30tiles" means that the PRIMERGY BX924 S2 Server Blade is the most powerful dual-socket server in the 12-core class from the VMWare VMmark viewpoint. (publication date: October 19th, 2010)



Fujitsu's PRIMERGY BX400 blade servers work very well and they are perfectly suited for virtualizations with VMware. Extensions and updates can now be done during ongoing operations – we basically have no more downtime.

Jean-Pierre Gouwy,  
ICT Manager, AZ Groeninge Hospital

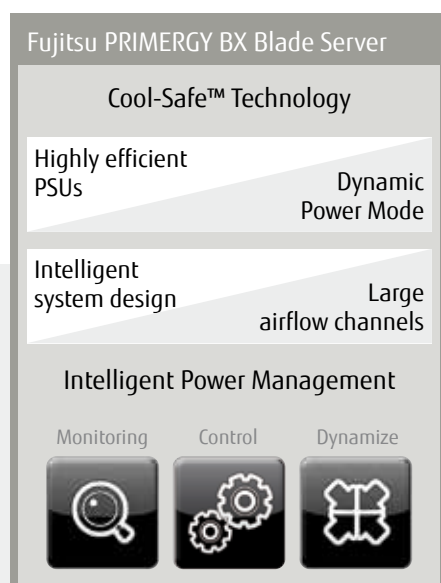


# More efficient use of energy and cooling

Fujitsu has an excellent name when it comes to developing energy-saving hardware and is constantly adding new environmentally friendly products to its portfolio. The Fujitsu PRIMERGY BX Blade Servers are no exception. In particular, the design of the system drastically reduces power consumption and the necessary cooling. Furthermore, Fujitsu provides the system with highly-efficient components, advanced cooling technology and powerful energy management tools.

## These include

- Power supply units with proven 94% efficiency and which are thus certified with 80Plus Platinum. In other words, only 6% of the energy is lost due to the power supply units. That saves money and minimizes the effects on the environment. The "Dynamic Power Mode" automatically improves power consumption as any power supply units not required are set to standby without impairing power supply unit redundancy or efficiency levels.
- Sufficiently large air channels within the chassis and server blades prevent the system from overheating as cool air is fed to the system and warm air is extracted. This increases reliability, simultaneously ensuring quiet and intelligent system cooling.
- Fujitsu's patented Cool-safe™ technology with its honeycomb design at the front of the servers allows to flow more air into the servers, reducing the system temperature by up to 10° C. These measures alone double the lifespan of all electronic components.
- End-to-end energy management helps companies to understand thermal effects and to control the energy levels more efficiently via intelligent monitoring. The PRIMERGY Blade Servers can thus be used in various operating modes that work in a similar way to the programs and parameters used when driving modern cars. For example, power consumption and fan operations can be reduced in "Low Noise" mode so that the device noise levels do not exceed 45 dB(A).



The impressive energy efficiency of the PRIMERGY BX900 Blade Servers has been confirmed by the standard benchmark SPECpower\_ssj2008, the resulting 3,220 overall ssj\_ops/Watt makes the Fujitsu Blade Server with 18 PRIMERGY BX920 S2 server blades the most energy-efficient system in the traditional blade server segment.

(Version: October 6th, 2011)



# Easier installation and administration

Two redundant management blades form the central interface for the administration of the system unit and all its components. In order to simplify the setup and administration, Fujitsu provides each PRIMERGY BX Blade Server with a set of powerful and intuitively operated management tools. The basis for these tools is the PRIMERGY ServerView® Suite, a comprehensive module software package which covers all aspects of a server's lifecycle.

The Fujitsu ServerView® Suite provides management functions to cover the installation, monitoring and administration of servers including basic remote management - and this is all free-of-charge. All the ServerView® products come from one source - one that knows data center structures and processes. This is particularly important for those customers aiming to benefit from the latest virtualization and server technologies and thus improve the efficiency and flexibility of their IT. The Fujitsu ServerView® Suite minimizes downtimes, improve lifespans and increases service quality thanks to its optimized deployment, end-to-end status monitoring and extensive control options - even when there is a technical malfunction. Furthermore, the seamless integration of PRIMERGY servers in corporate management solutions fully protects your investments.

Each PRIMERGY Blade Server also has numerous functions designed to simplify administration tasks.

## The main modules and components are:

- A ServerView Local Service display at the front of the chassis can be used for local diagnostics and administration. It also supplies basic status information about the components in the blade system.
- The service display can also be used for the initial configuration of management blades. The "Base Configuration Wizard" guides administrators through the system set-up and helps them to set configuration parameters one-by-one. These initial procedures can either be done locally via the LCD or can be started via a standard browser on a decentral system.
- As soon as the system is in operation, administrators activate the ServerView Dashboard for additional tasks. The Dashboard is part of the ServerView® Suite and offers status information as well as detailed monitoring and management options for the PRIMERGY BX400 Blade Server and its individual components. Such an intuitive interface enables less experienced IT employees to implement all the general server management tasks and keep all the main functions in view.







## “Wire Once” towards a flexible infrastructure

One of the biggest barriers when changing to a small or decentral IT environment is the time needed to provide, upgrade or customize the server and its LAN and SAN connections. For this purpose, the ServerView Virtual I/O Manager assigns previously defined virtual network addresses to the individual server blades, defines the interfaces for LAN or SAN connections as well as how they are to be booted. For this to function, the module stores all the specific information about the servers in one separate hardware-independent profile which is kept in a central directory outside the server.

As a result, individual applications can be started without any further configuration work because the administrator assigns a specific profile to a server blade using the address previously defined for this purpose. Ultimately, the ServerView Virtual I/O Manager creates a separate domain for blade server management, thus separating it completely from LAN or SAN management.

Any conflicts and overlaps between server, LAN and storage management are now ruled out as there are no changes in LAN and SAN management as a result of using constant virtual addresses.

Since “role allocation” does not depend on the operating system, problems no longer occur here, either. This means that IT departments can very quickly do those tasks that were previously time-consuming as they were complex and prone to errors. They simply allocate the previously defined configuration parameters but do not have to define the configuration themselves. This applies for tasks, such as installing new server blades, moving workloads, configuring failover solutions to protect against downtimes as well as maintaining and replacing servers.



## Uniform management with cost-effective high availability

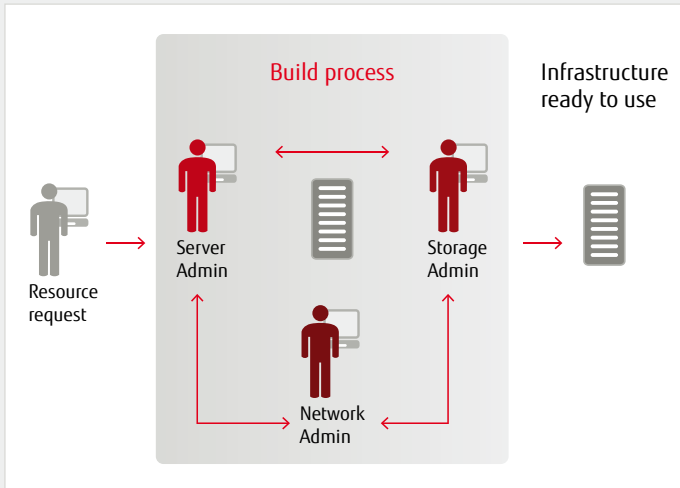
Fujitsu PRIMERGY Blade Servers and virtualization technologies are ideal for consolidating IT infrastructures and form the ideal bases of using server resources in a more flexible manner. However, a look inside a data center shows that just as many applications run directly on physical servers as before - and will probably continue to do so. This means that a mixed operation of physical and virtual servers in data centers will remain a long-term reality. And this is exactly why server management tools must enable optimization in physical as well as in virtual environments.

The situation is even more critical in those IT organizations that use server virtualization products from different manufacturers. There is a great danger of creating isolated virtualization silos. ServerView Resource Orchestrator Virtual Edition is used by IT organizations to get the administration of their physical and virtual server environments under one roof.

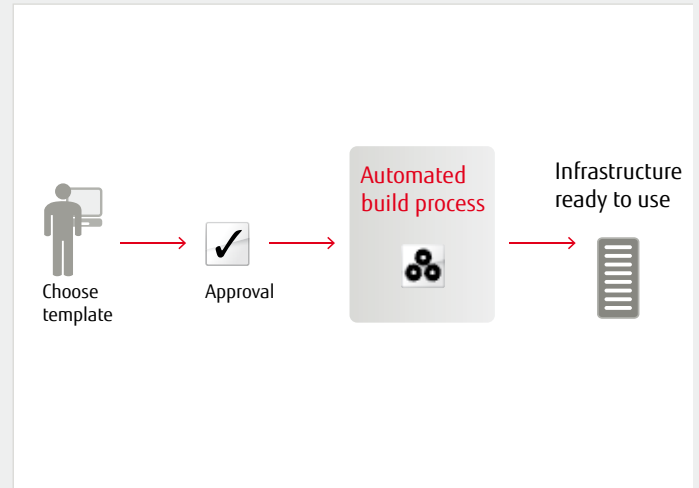
It is in particular the integration of physical and virtual server administration that enables IT organizations to meet the challenges involved in managing heterogeneous environments.

ServerView Resource Orchestrator Virtual Edition offers not only centralized monitoring of a physical and virtual environment but also low-priced N+1 high-availability levels. IT organizations can now protect more servers without paying a premium for dedicated high-availability tools like cluster software. By assigning one or more spare servers to a pool of production servers, it is possible to automatically failover any production servers to the spare server in the event of hardware or operating system failures. In the event of a fault, applications then run automatically again without any administrator intervention. Compared to manual procedures, servers are recovered much more quickly after an error; this applies both for physical as well as virtual environments.

# On the road to dynamic IT environments



Today



Tomorrow

ServerView Resource Orchestrator Cloud Edition offers all the functions required to build a dynamic IT environment as well as a Private Cloud infrastructure where end-users can quickly order their IT infrastructure via a self-service portal.

One of the great advantages of the ServerView Resource Orchestrator Cloud Edition is the range of automated provisioning processes used in data center operations. Providing IT resources usually requires many administrators, a great deal of coordination regarding administration tasks and many manual activities. The result in practice is lengthy delivery times and consequently dissatisfied users. Automated provisioning processes for server, storage and network resources help to provide new server systems much more quickly.

ServerView Resource Orchestrator Cloud Edition saves time regarding the various administration steps and also enables a comprehensive optimization of the entire provision process. For example, ServerView Resource Orchestrator Cloud Edition ensures that the delays caused by getting various administration groups to agree are reduced, indeed are even eliminated altogether. Automation accelerates not only the provision of IT infrastructures - it also takes on routine tasks thus creating more time for other tasks and innovation work.

If companies combine the reduction in resources for users and the automated provisioning processes in the data center, then they have everything needed to provide "self-service". The self-service portal has a catalog with pre-defined services and uses a clearly defined order process. Inquiries are thus dynamically approved as defined by the IT administration approval regulations and policies. As soon as the resources are provided, ServerView Resource Orchestrator Cloud Edition offers the users various control and modification options for the provided IT infrastructure.

Furthermore, the end-users and IT administrators can see resource status and usage overviews via the self-service portal. ServerView Resource Orchestrator Cloud Edition provides consumption data for those companies requiring cross-charging models.

# Fujitsu PRIMERGY BX Blade Server Portfolio

## Fujitsu PRIMERGY BX400

The Fujitsu PRIMERGY BX400 is a versatile, fully-featured blade server built from the ground up to be user-friendly and versatile, helping you meet large-scale computing and storage requirements. The system offers a perfect combination of up to eight server or storage blades in one small housing, together with a comprehensive offer of solutions and services. It combines state-of-the-art technology, such as a completely integrated virtual storage appliance with impressive I/O flexibility and bandwidth. Its modular design makes the PRIMERGY BX400 more affordable than other blade servers, while also maximizing the use of limited office space with a compact footprint. The PRIMERGY BX400 comes in two different system versions aimed at meeting a very wide range of requirements.

The rack version can be integrated in standard 19-inch racks. The floor version with its low noise level of only 45 dB can be placed under a desk or in a lobby without disturbing employees when working. The PRIMERGY BX400 is thus one of the quietest blade servers on the market.

## Fujitsu PRIMERGY BX900

The PRIMERGY BX900 "Dynamic Cube" is a complete dynamic server infrastructure in one single blade chassis. The blade server can be dynamically modified for various IT requirements: it reduces costs and makes IT more flexible. The PRIMERGY BX900 has space for up to 18 server blades in a 10U chassis. This is the leader in its class for density and multiple application services in a compact form factor. The innovative and registered Cool-safe™ cooling concept from Fujitsu, combined with 94% efficient power supplies certified with 80Plus Platinum and the embedded ServerView Power Management software, ensures real dynamic power & cooling which helps you to save money. Your investment is protected when your business grows, as up to four BX900 chassis units can be operated in a shared management and I/O administration domain.



# Fujitsu PRIMERGY BX Blade Server Overview

To stay competitive, your business needs an IT environment that drives success through cost reduction, maximum performance and enhanced agility. PRIMERGY BX Blade Servers help you achieve this for your midsize organization, branch office or large data center. The PRIMERGY BX system family is designed so that the chassis components can be used throughout the family. Server, storage and connection blades can be added or replaced without any additional cabling or administration effort. Its modular design gives the PRIMERGY Blade Servers considerable advantages, such as high density, reliability, energy savings and simplified management capabilities.



	PRIMERGY BX400 S1	PRIMERGY BX900 S2
<b>Characteristics</b>	Blade Made Easy! Tailor-made for medium-sized businesses and branches	Dynamic Cube – Complete dynamic infrastructure in a single chassis
<b>System unit type</b>	6 U chassis for 19-inch rack, or floor version	10 U chassis for 19-inch rack
<b>Dimensions (W x D x H)</b>	366 x 819 x 578 mm (floor version) 445 x 785 x 267 mm (rack)	483 mm x 778 mm x 438 mm (bezel) 445 mm x 778 mm x 438 mm (body)
<b>Weight</b>	Rack: up to 98 kg / Floor: up to 112.5 kg	Up to 191 kg
<b>Front bays</b>	8 bays for server or storage blades	18 bays for server or storage blades
<b>Midplane</b>	High-speed midplane with 3 fabrics	High-speed midplane with 4 redundant fabrics
<b>Rear bays</b>	4 x for connection blades 4 x for PSU/fan modules	8 x for connection blades 6 x for PSU modules
<b>Management blades</b>	1x hot-plug management blade as standard, redundant management blades as option	1x hot-plug management blade as standard, redundant management blade as option
<b>Fan configuration</b>	Up to 3 hot plug, redundant rear fan units (2 fans per unit)	Up to 6 hot plug, redundant fan modules (2 fan units per modules, 2 x 2 fans per unit; modules either part of PSU modules or independent components)
<b>Power supply configuration</b>	Up to 4 x hot-plug power supply modules (1 x as standard)	Up to 6 x hot-plug power supply modules, 3 x as minimum configuration (4th to 6th power supply module necessary for redundancy depending on system configuration)
<b>Standard warranty</b>	3 years	3 years
<b>Service levels</b>	On-site service (depending on country)	On-site service (depending on country)
<b>Recommended service</b>	7 x 24, on-site response time: 4h – For locations outside EMEA, please contact your local Fujitsu partner.	7 x 24, on-site response time: 4h – For locations outside EMEA, please contact your local Fujitsu partner.
<b>Service lifecycle</b>	5 years	5 years



# Fujitsu PRIMERGY BX Server Blades

PRIMERGY BX Server Blades are reliable workhorses in the PRIMERGY BX900 and PRIMERGY BX400 Blade Server systems. The dual-socket server blades combine very reliable components, scalable memory configurations with up to 24 DIMM slots and onboard network controllers for bandwidths of up to 10 Gb Ethernet. The servers can be configured with up to two local hard disks or Solid State Drives (SSDs) and two Mezzanine cards for extended external connection options. Furthermore, the new Intel® Xeon® processor E5 family offers those top performance levels required for today's operations and is simultaneously ready for future demands as well.



	PRIMERGY BX920 S3	PRIMERGY BX924 S3
<b>Characteristics</b>	The new mainstream dual socket server blade with well-balanced ratio of power, scalability, and I/O performance is a cost efficient offering.	High-end server blade for all demanding applications including highest requirements for virtualization and high performance computing.
<b>Type</b>	Dual socket server blade	Dual socket server blade
<b>Max. number per BX900</b>	18	18
<b>Max. number per BX400</b>	8	8
<b>Processor</b>	Intel® Xeon processor E5 family	Intel® Xeon processor E5 family
<b>Memory capacity</b>	2 GB - 384 GB 12 DIMM (DDR3)	2 GB - 768 GB 24 DIMM (DDR3)
<b>Hard disks</b>	Max. 2x HDD or SSD SAS, SATA (hot-plug)	Max. 2x SSD SATA or SAS
<b>On-board Ethernet controller</b>	2 x 10 Gbit Ethernet CNA	2 x 10 Gbit Ethernet CNA
<b>PCIe 3.0 Mezzanine Cards slots for</b>	2 x Quad 1Gbit Eth, Dual 10Gbit Eth, Dual 8Gbit FC, Dual 56Gbit IB, Dual 6Gbit SAS, Dual 10Gbit CNA	2 x Quad 1Gbit Eth, Dual 10Gbit Eth, Dual 8Gbit FC, Dual 56Gbit IB, Dual 6Gbit SAS, Dual 10Gbit CNA

# Fujitsu PRIMERGY Storage and Connection Blades

## Fujitsu PRIMERGY SX Storage Blades

PRIMERGY storage blades have been developed for use in PRIMERGY Blade Server system units together with the PRIMERGY Server Blades. Equipped with hard disks, SSDs or tape drives, the storage blades are a simple and cost-effective option for consolidating servers or for a local backup of system data.

The PRIMERGY VSX960 is an alternative and is a fully integrated virtual storage solution. Together with Fujitsu PRIMERGY Blade Servers, this is an ideal option for handling the requirements of medium-sized customers who tend towards a flexible, integrated and shared IT infrastructure solution. By leveraging the virtual storage appliance created with NetApp Data ONTAP-v, customers can benefit from proven and innovative storage capabilities to achieve greater cost savings and operational efficiencies while avoiding the complexities of separate storage controllers.

	PRIMERGY SX910	PRIMERGY SX940	PRIMERGY SX960	PRIMERGY SX980
Characteristics	Direct attached storage for easy and fast data backup	Direct attached storage for easy and cost effective server consolidation	Direct attached and, in combination with NetApp Data ONTAP-v software, shared storage solution	Centralized storage capacity via SAS connection blade
Type	Storage Blade Tape	Storage Blade Disk	Storage Blade Disk	Storage Blade Disk
Max. number per BX900	6	6	2	3
Max. number per BX400	4	4	2	6
Number of drives	1	1 – 4	1 - 10	1 - 10

## Fujitsu PRIMERGY BX Connection Blades

Connection blades simplify the network connections for PRIMERGY Blade Servers. They ensure fast and reliable access to data and storage networks. All connection blades are integrated within the blade server chassis and benefit from a high-speed midplane as well as from energy-efficient power and cooling. There are a large number of different connection blades and models developed by Fujitsu with comprehensive functions as well as the brand models from Brocade or Mellanox. Today's and future I/O requirements regarding standards can be covered based on Fibre Channel, InfiniBand, SAS and Ethernet networks.

I/O Type	Downlinks	Uplinks	Max. number per PRIMERGY BX400	Max. number per PRIMERGY BX900
Eth Switch/IBP 1 Gbit/s 18/6	18 x 1 Gb	6x1Gb (RJ45)	4	8
Eth Switch/IBP 1 Gbit/s 36/12	36 x 1 Gb	8 x 1 Gb (RJ45), 4 x 1 Gb (SFP)	4	8
Eth Switch/IBP 1 Gbit/s 36/8+2	36 x 1 Gb	8 x 1 Gb (RJ45), 2 x 10 Gb (SFP+)	4	8
Eth Switch/IBP 10 Gbit/s 18/8	18 x 10 Gb	8 x 10 Gb (SFP+)	4	6
Eth Pass-Thru 1/10 Gbit/s 18/18	18 x 1/10 Gb	18 x 1/10 Gb (SFP/SFP+)	4	6
SAS Switch 6 Gbit/s 18/6	18 x 6 Gb SAS	6 x 6 Gb SAS (SFF8088)	1	1
FC Pass Thru 8 Gbit/s 18/18	18 x 8 Gb	18 x 4/8 Gb (SFP/SFP+)	3	4
FC Switch 8 Gbit/s 18/8	18 x 8 Gb	8 x 4/8 Gb (SFP/SFP+)	3	4
IB Switch 40 Gbit/s 18/18	18 x 40 Gb	18 x 40 Gb (QSFP)	1	3
IB Switch 56 Gbit/s 18/18	18 x 56 Gb	18 x 56 Gb (FDR)	-	3

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