THE POSSIBILITIES ARE INFINITE FUJITSU

Blade Servers & Virtualization

Specifications are subject to change without notice.
For the latest detailed information, contact your local representative.

First edition, January 2008

FUJITSU LIMITED
http://www.fujitsu.com

Fujitsu adopts a comprehensive policy of utilizing recycled materials, energy savings and other measures aimed at conserving resources and safeguarding the environment.

We make every activity green
Fujitsu considers the environment throughout the product life cycle by promoting efforts from resource and energy saving to recycling.

BK0150-1AP

Developing the Right IT Infrastructure: An Ongoing Business Challenge

Developing flexible IT systems that are matched to your specific business needs while holding down costs is necessary to respond quickly to changing market demands and business opportunities. An IT team that is both proactive and efficient in managing the diverse complexities of computer networks, hardware, Operating systems, and software applications can ensure reliable delivery and the right balance of IT and business services.

Infrastructure optimization
Consolidation of IT, application and infrastructure performance metrics integration, and management from a business service perspective are essential to meeting ever changing business requirements and optimize IT infrastructure.

Business continuity
Continuity is vital for enterprise-critical business processes, to achieve control of their IT infrastructure and consolidate IT resources, which will minimize costs and reduce complexity.

Business agility
Your infrastructure also needs flexibility, to enable your IT team to allocate resources to meet current and future service demands.

Fujitsu's Blade Server Solution

– Optimization through integration of multiple servers into a single, versatile platform –

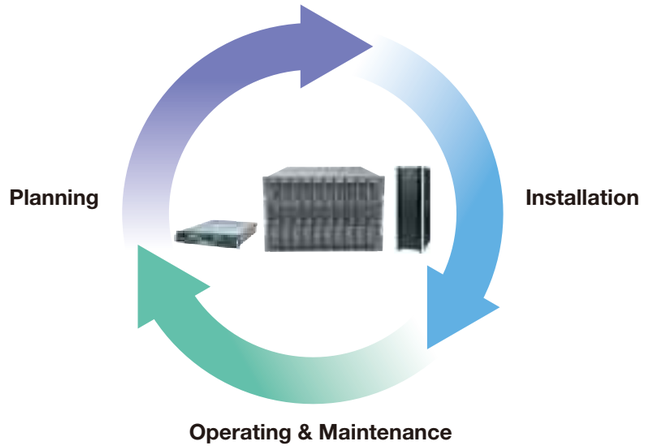
To set your ever-expanding IT demands on the right course, it is vital that your infrastructure generates maximum return from even the smallest investment. It should also incorporate flexibility for on-the-spot expansion whenever sudden or subtle changes occur in your business environment.

However, many corporate IT systems are optimized at the departmental level, which often hinders efforts to achieve flexibility and expandability due to the increase in investment and maintenance costs over time.

Fujitsu is committed to creating both systems and solutions that will help your business grow by maximizing the benefits from your IT investments. Applying its extensive expertise in IT and engineering skills, Fujitsu has created a blade server system that can function as a secure, reliable, and flexible core infrastructure for your business, based on virtualization and automation.

Virtualization
By removing previously imposed physical limitations, Fujitsu virtualization technology can help your organization share IT resources to reduce costs, while making your IT infrastructure more flexible and ensuring that supply will be automatically tailored to meet demand.

Automation
Automating IT can increase your business agility, improve performance, mitigate risk, and maximize return. Rather than IT systems that operate in the conventional ad-hoc manner, Fujitsu believes such systems should function on their own, the way an automatic transmission operates in a car.



PRIMERGY Blade Server

PRIMERGY BX620 S4 provides a range of future-oriented technologies: with processors (Dual- or Quad-Core), memory (FBD, extended mirroring), and 2.5 inch SAS hard disk drives. Innovative use of such capabilities enables PRIMERGY BX620 S4 customers to run much larger applications than on previous Dual- or Quad-Core Server Blades. SAS hard disk drives with RAID1 also provide you with increased security for your data.

BX620 S4

Up to 10 industry-standard LAN ports

These servers come standard with six ports, but can be expanded with a pair of LAN ports or Fibre Channel ports for greater flexibility in highly concentrated systems, plus a pair of front-side LAN ports, enabling up to a maximum of ten.
This simplifies blades server network configuration and supports greater network flexibility.

Optional 4 Gbps Fibre Channel expansion board

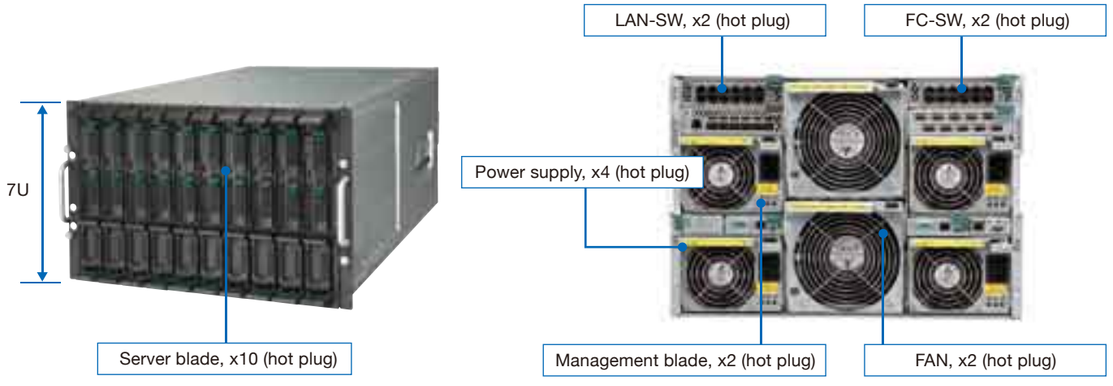
Fibre Channel expansion board provides two ports capable of high-speed data transfer up to a maximum of 4Gbps.

New low-power consumption quad-core processor

The latest Intel® Xeon® processors driving these new blade servers reduce energy demands by as much as 60% compared to the previous generation of equivalent-performance processors.

PRIMERGY BX600 S3 chassis

The advanced chassis features a high-bandwidth midplane that easily operates with PRIMERGY BX620 S4 blade servers, with up to 10 LAN ports each. The throughput between the blade server and the embedded switch is 4.3 times greater than existing models, achieving communication speeds of 10 Gbps and enabling the flexible network configurations required for server consolidation.



Blade server benefits

Results of blade server reduction

-87% Cables reduced by 87%

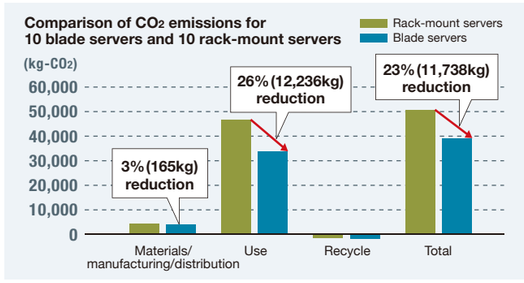
Blade servers can reduce the number of cables*1 required in your datacenter to one-eighth, eliminating many connection headaches and associated problems. System maintenance is also significantly improved, thanks to the simpler setup.

*1 Based on comparison between cables required for 10 PRIMERGY RX200 S3 rack-mount servers and 10 PRIMERGY BX620 S4 blade servers.

-23% CO_2 emissions reduced 23%

With their improved power efficiency, blade servers cut energy usage, meaning reduced CO_2 emissions*2. Fujitsu blade servers are designed to lower the environmental load as well as cut your power bills.

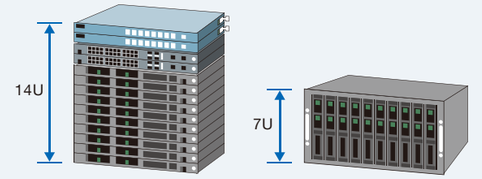
*2 Based on comparing CO_2 emissions from 10 PRIMERGY RX200 S3 rack-mount servers and 10 PRIMERGY BX620 S4 blade servers covering Fujitsu's LCA (Life Cycle Assessment). This includes the entire product lifecycle (Materials, manufacturing, transportation, use [5 years x 24 hours x 365 days] and recycling).



-50% Space requirements reduced 50%

Blade server deployment occupies 50% less space*3 than typical rack servers, enabling added savings in office space.

*3 Based on comparison between space requirements for 10 PRIMERGY RX200 S3 rack-mount servers and 10 PRIMERGY BX620 S4 blade servers.



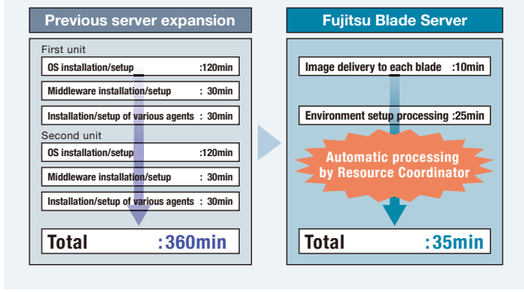
Results of automated operation

PRIMERGY blade servers can be fully optimized using Fujitsu's "Systemwalker Resource Coordinator" middleware. Providing automatic systems operation, this reduces blade server installation workload, significantly lowering your TCO while providing operational stability round-the-clock, year after year.

-90% 90% less time, server addition

Enables you to quickly match increases in workloads and application expansion. Cloning and other techniques allow rapid addition of new servers in 90% less time*4 than previously.

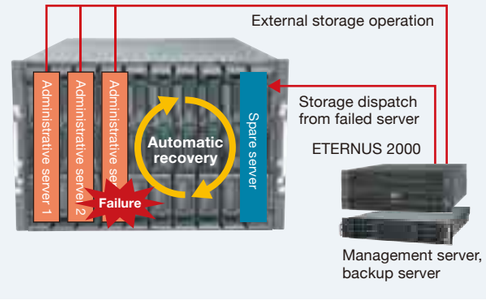
*4 Based on comparison between time required to add two servers with and without using Systemwalker Resource Coordinator.



-75% Recovery time reduced by 75%

When a failure is detected, the system automatically switches the defective server to a substitute.*5

*5 Based on comparison between the times required with and without Systemwalker Resource Coordinator. Required time may vary according to system configurations.



What is VMware?

VMware is software that harnesses virtualization technology to optimize PC servers used in offices and datacenters. Fujitsu's latest VMware version, "VMware Infrastructure 3," can improve your IT service levels by providing virtual infrastructure matched to management functions.

High-performance and highly reliable PRIMERGY servers are certified by VMware, making them the most suitable for virtualized systems.

To consolidate your widely dispersed servers using VMware and then manage the new server infrastructure more effectively requires a high-performance server. In addition, since hardware problems can have a significant impact on multiple virtualized systems running on the same server, hardware must be highly reliable.

Features

Server consolidation

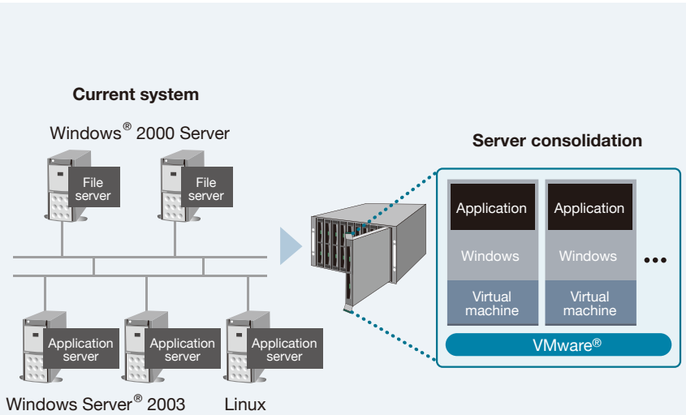
Current Issues

- Wasted resources and higher management costs due to server fragmentation across different divisions.
- Difficulty in achieving timely introduction of new systems.

Benefits

(by combining PRIMERGY and VMware)

- Different business applications and operating systems can be consolidated into the latest servers, while virtualization technology maximizes use of those resources and reduces administrative costs.
- Server virtualization also simplifies ongoing introduction of new servers.



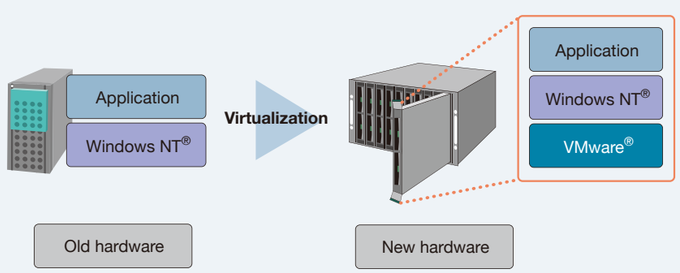
Migration of old system to the new hardware

Current Issues

- Difficulty in migrating the current old system to the new hardware due to lack of OS support.

Benefits

- Can continue to use the system on the latest hardware with no change in usability.
- Old system can be migrated gradually by temporary extension of old OS on the new hardware.



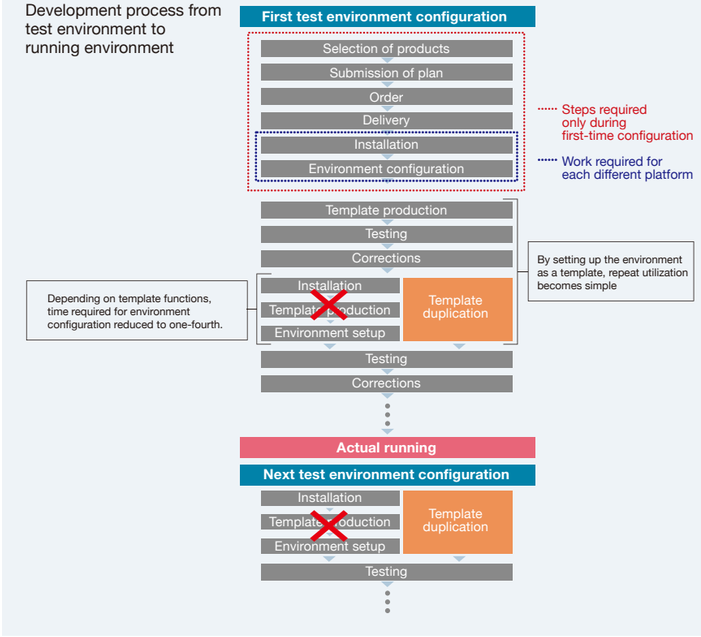
VMware adoption for development and test environments

Current Issues

- Takes too long to start new system developments due to procurement needs and the building of development and testing environments for each new system.
- Requires testing of the new system for every OS running under it.

Benefits

- Quick start to new system development by building virtualized test environments.
- More effective testing of new systems because they can be tested in identically virtualized test environments.
- No need to reconstruct test environments as VMware can host reusable test environments.



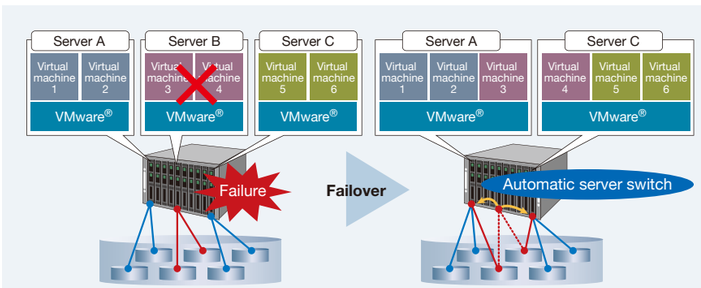
Improved business continuity

Current Issues

- Too costly to build fully clustered systems system for high availability.

Benefits

- Can create a cold-standby system without building an expensive clustered system.
- Virtual system restart on another server following system failure minimizes system downtime.



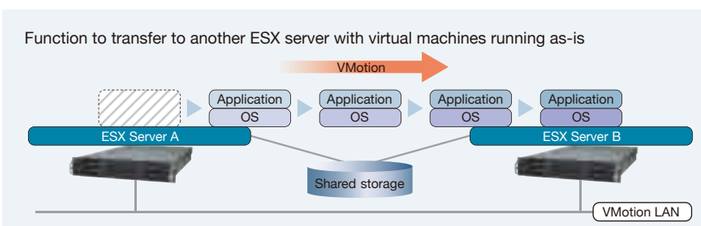
Migration to another ESX Server without server downtime

Current Issues

- System shutdown necessary when performing periodic maintenance.

Benefits

- IT service levels are improved as no system downtime required for hardware maintenance.



Systemwalker Resource Coordinator Virtual server Edition (RCVE)

Systemwalker Resource Coordinator Virtual Server Edition is lifecycle management software for both physical and virtual blade servers and delivers these benefits to your enterprise IT administrators.

- **Unified administration and visualization of blade servers** → ***Reduced operational errors.***
- **Automated recovery of server hardware failure** → ***Reduced IT management workload, less down time.***
- **Simplified server addition** → ***Reduced workloads for system enhancement.***
- ***Simple backup of system image from a remote environment*** → ***Less down time, lower risk of data loss.***

Features

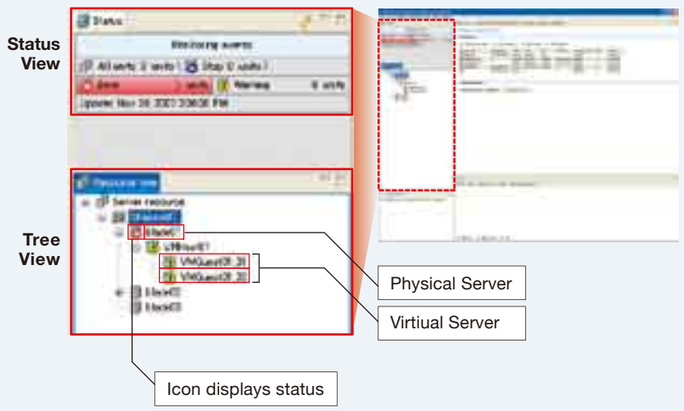
Unified administration and visualization of blade servers

Current Issues

- Mix of physical and virtual servers complicates system management operations, generating too many operational errors.

Benefits

- Unified system administration of both physical and virtual servers means fewer operational errors, greater control.



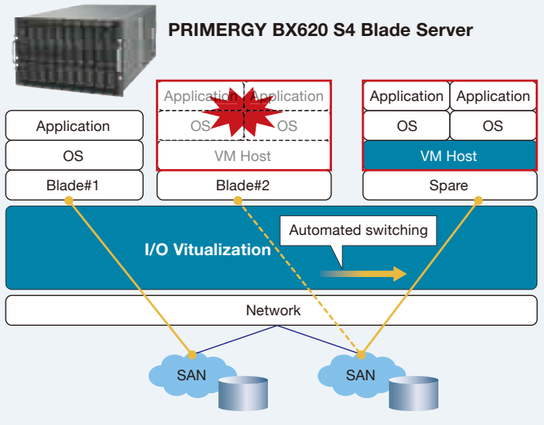
Automated recovery of server hardware failure

Current Issues

- SAN reconfiguration required in event of server failure.

Benefits

- Quick automated recovery of failed server by I/O virtualization.



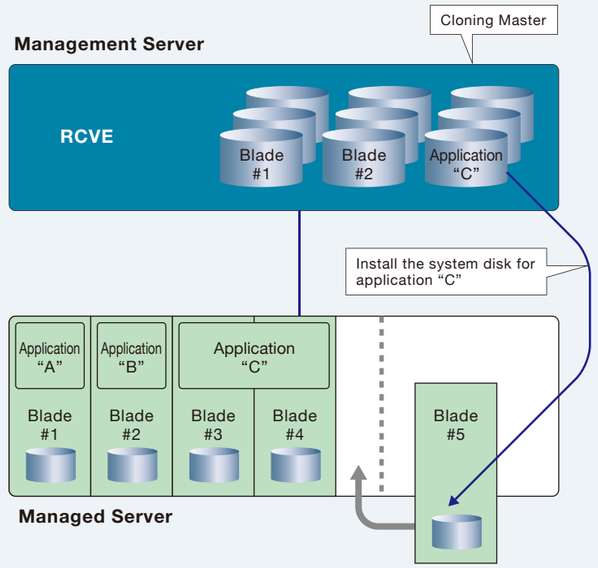
Simplified server addition

Current Issues

- Adding of blade servers increases operational workload.

Benefits

- Creation and deployment of cloning master of the system image greatly simplifies addition of new blade servers.



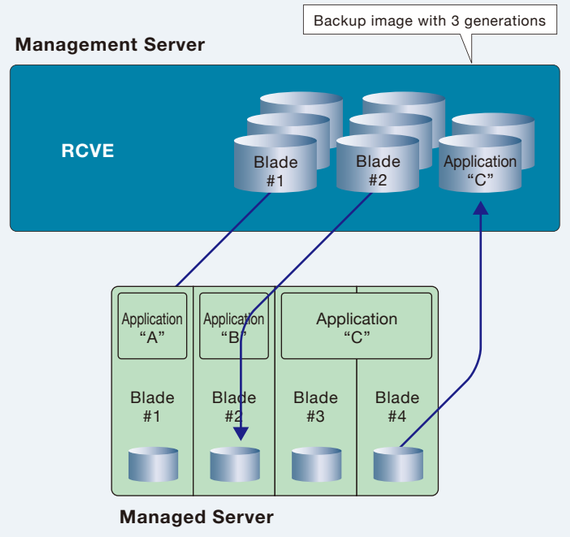
Simple backup of system image from a remote environment

Current Issues

- Requires additional time and work to create backup media and to manage them.

Benefits

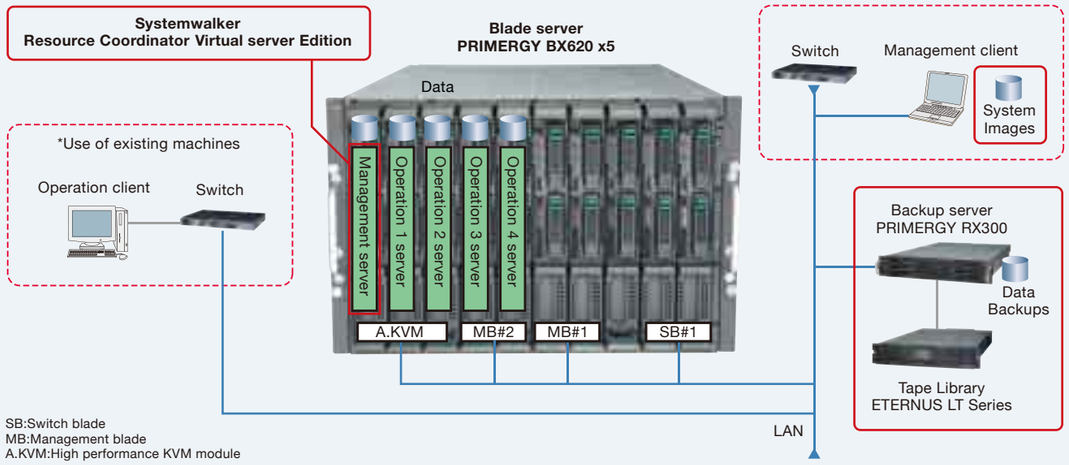
- Since 3 generations of the system image can be simply and remotely managed by visualization,
  - Remote operation is enabled.
  - Operational errors are minimized.
  - If a patch application fails, the target server can be recovered in its previous state by restoring the original backup image.



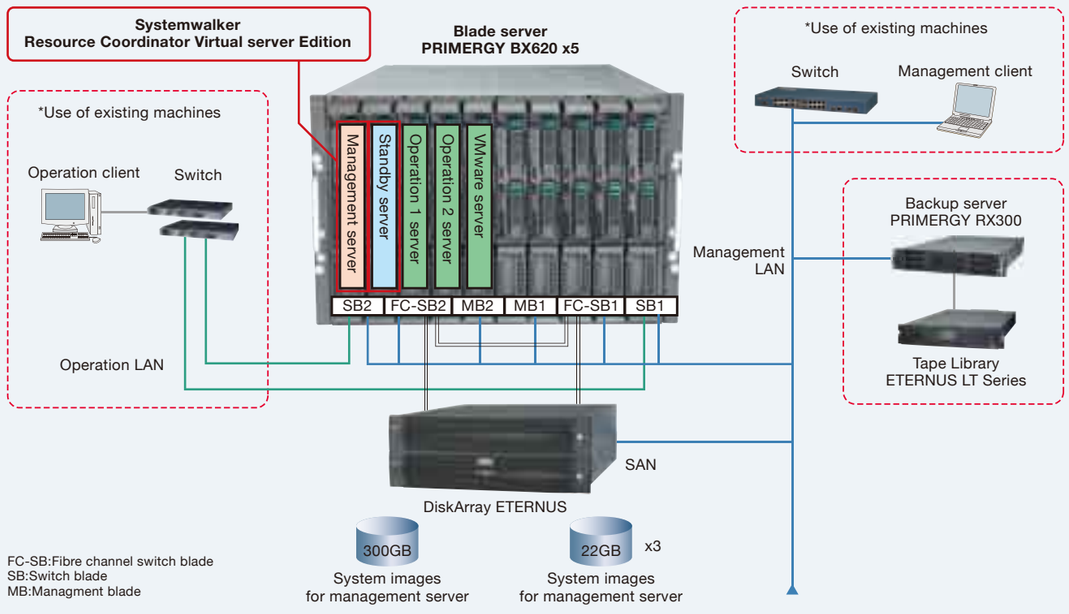
Sample System Configurations

Two main types of management configurations exist, as per the diagrams shown below.

Recommended configuration for a local boot environment



Recommended configuration for a SAN environment



Options

Switch Blade
PG-SW107

- Internal : 30ports (1Gbps)
- External : 12ports (1000BASE-T/100BASE-TX/10BASE-T)

Switch Blade
PG-SW104

- Internal : 10ports (1Gbps)
- External : 6ports (1000BASE-T/100BASE-TX/10BASE-T)

Switch Blade
PG-SW105

- Internal : 10ports (1Gbps)
- External : 6ports (1000BASE-T/100BASE-TX/10BASE-T),
  1port (10GBASE-SR),
  1port (10GBASE-CX4)

Cisco Catalyst Blade Switch 3040
PG-SW106

- Internal : 10ports (1Gbps)
- External : 2ports (1000BASE-T/100BASE-TX/10BASE)

FC Switch Blade
PG-FCS103

- without FCSW Upgrade kit:
  Port on Demand (PG-FCSU102)
  · Internal : 8ports (4Gbps)
  · External : 4ports (4Gbps, Fibre Channel)
- with FCSW Upgrade kit:
  Port on Demand (PG-FCSU102)
  · Internal :10ports(4Gbps)
  · External : 6ports (4Gbps, Fibre Channel)

GbE Pass-Thru Blade
PG-LNB102

- Internal : 10ports(1Gbps)
- External : 10ports(1000BASE-T)

Advanced KVM Module
PG-KVB102

Redundant Power Unit x2 for BX600 S2, 2100W
PG-PU121

I/O Virtualization (FC) Option
PG-FCSU106

Systemwalker Resource Coordinator Virtual server Edition V13.2"" is required for I/O Virtualization (FC) Option
One I/O Virtualization (FC) Option is available for one BX600 S3 Blade Server System Unit (PGUR4SC1)