

Fujitsu PRIMEQUEST 1800E Server

The mission critical open system Fujitsu PRIMEQUEST provides high-end server functionality using superior Fujitsu technology, long cultivated and refined over generations of computer system development.

The most cost-efficient enterprise server

The Mission Critical x86 server "PRIMEQUEST" is a high-end data center system focused on the needs of the growing enterprise. Based on technologies and innovations Fujitsu has refined over generations of highly reliable mainframe and UNIX servers, it provides mission critical class high-performance, excellent service availability and the openness of x86 servers.

Global standard Linux® and/or Microsoft® Windows® operating systems, with highly advanced Fujitsu reliability, stability and manageability technologies, make PRIMEQUEST 1800E a highly cost effective mission critical open platform.

Customer investment is fully secured by:

- Ability to operate a 24 hour, 365 day business.
- Outstanding performance and reliability.
- Excellent flexibility and scalability in an open server.
- A radically improved cost/performance profile.
- Use optimization and scalability for the future.

Platform of standard and high availability

With outstanding redundancy, PRIMEQUEST 1800E provides the high uptime required with true enterprise platforms. The heart of the server, the system boards including CPUs and memory modules, can be instantly recovered on failure, enabling smooth operation of mission-critical workloads. In fact almost every component can be redundantly configured.

Using Intel® Xeon® processor 7500 series and Fujitsu's super fast I/O technologies, PRIMEQUEST 1800E has already hit high-ranked performance scores in the large systems server arena. This is further proof that Fujitsu can deliver best-matched products, conforming to open systems standards for handling enterprise workloads.

Based on state-of-the art technologies such as smart cooling, Intel processors and other components PRIMEQUEST 1800E provides the best cost-efficiency in the enterprise server arena. It also reduces data center costs by lowering power consumption and minimizing the server footprint.

PRIMEQUEST 1800E can also free you from the risks and complicated steps of system virtualization. Hardware partitioning does not require performance testing or a "Plan B". New partitions can be mixed with software virtualization environments such as VMware, Hyper-V, and Kernel-based Virtual Machine with Red Hat Enterprise Linux 6.

PRIMEQUEST 1800E with its high availability, performance scalability, cost-efficiency, and risk-free virtualization can lift the Return on Investment of your IT system.

High availability for the total system

With PRIMEQUEST and PRIMECLUSTER, you can also eliminate downtime caused by applications, OS, or hardware. This:

- Ensures recovery of the failed resources.
- Includes storage mirroring and network redundancy for total system high availability.
- Minimizes the affects of failures by enabling recovery of just the portion that failed.



Features and benefits

Main features	Benefits
Almost every component redundant <ul style="list-style-type: none">■ Almost all the components can be redundant■ The unique redundancy at the heart of server including system boards and system interconnect offers even greater protection	<ul style="list-style-type: none">■ Systems on PRIMEQUEST 1800E can continue operation even if a component fails■ Suffering such a central component failure is fatal for continued system operation. PRIMEQUEST's unique levels of redundancy even in the enterprise server arena can eliminate such causes of major system failure.
Only grow as you need, only buy for that growth <ul style="list-style-type: none">■ Performance has leaped by around 50% compared with former PRIMEQUEST model■ Affordable application performance as an enterprise server	<ul style="list-style-type: none">■ Upgrading to PRIMEQUEST 1800E will dramatically lift cost-efficiency and performance reducing the operational costs of every application you run.
Lower power consumption <ul style="list-style-type: none">■ PRIMEQUEST 1800E can reduce power consumption across the total range of application workloads	<ul style="list-style-type: none">■ While server resource utilization changes, power consumption of PRIMEQUEST 1800E stays low. In particular, PRIMEQUEST 1800E consumes power according to application workload.
Simplified server lifecycle management <ul style="list-style-type: none">■ An integrated suite of tools takes care of servers and their component products in your datacenter over the entire life of the server	<ul style="list-style-type: none">■ Reduced human resource costs for server management, including: installation, integration, monitoring, maintenance, and upgrading
Wide variety of virtualization options <ul style="list-style-type: none">■ Hardware partitioning of up to four partitions is available■ Hardware partitions and software virtualization products can be mixed in one server■ Standard virtualization products such as VMware vSphere 4, Hyper-V, and Kernel-based Virtual Machine with Red Hat Enterprise Linux 6 are supported.	<ul style="list-style-type: none">■ For customers undertaking system virtualization for the first time, hardware partitioning is the best entry strategy. It has no performance overheads and no incompatibilities with applications.■ Once confident with virtualization, customers can then integrate other standard virtualization products onto the same system■ A wide variety of ISV products are available including the major and popular virtualization products. Hardware partitioning even allows you to compare such environments side by side.
Total-system high availability with PRIMECLUSTER <ul style="list-style-type: none">■ Forcible switching can ensure recovery of failed servers■ Disk mirroring setup and operations are simplified by intuitive naming and automatic configuration capability■ When integrated with virtualization products from VMware and Red Hat Enterprise Linux, only failed Guest OS or Host OS need to be switched. Other not-failed Guest OS and Host OS can continue their operations.	<ul style="list-style-type: none">■ Swift and predictable fail-over can minimize downtime■ Simple operation can eliminate wrong operation■ As only the specific portion is recovered, the influence of such failures is minimized

Almost every component redundant

With PRIMEQUEST 1800E, your most important business operations can be strictly protected from errors as follows:

- Partitions using multiple system boards (SB), can continue operation even if one full system board fails. Service may degrade a little, but the failed system board can be immediately replaced by a reserved System Board. This means normal service levels can be very quickly resumed.
- Memory can be mirrored. This means that even if a memory failure occurs the application will continue using the correct data. System Interconnect, called Quick Path Interconnect (QPI), provides multiple access routes. This ensures continued operation even if one route fails.

Component redundancy:

- FANs, PCI Express switches, PCI Express cards, and Ethernet ports, are redundant as standard
- HDD can be configured redundant using hardware or software RAID
- Management Boards (MMB) and Power Supply Units (PSU) can be optionally configured as redundant.

Only grow as you need, only buy for that growth

With up to 64 cores and maximum 2TB of memory, PRIMEQUEST 1800E has the resources to accommodate hundreds of workloads. Performance has leaped by around 50% ⁽¹⁾ ensuring PRIMEQUEST 1800E capability as an enterprise workload platform continues to expand. Further proof is shown by the 18,310 SAP SD benchmark users for the SAP enhancement package 4 for the SAP ERP 6.0 (Unicode) application running SQL Server 2008 Enterprise Edition and Microsoft Windows Server 2008 R2 Datacenter Edition on the two-tier SAP® Sales and Distribution (SD) Standard Application Benchmark ⁽²⁾.

Outstanding performance from such a compact chassis ⁽³⁾ means PRIMEQUEST 1800E is the "platform for success" when you really need to improve performance and cost-efficiency.

*1 Based on Fujitsu performance testing of PRIMEQUEST 1800E and 580A.

*2 Results on the two-tier SAP® SD Standard Application Benchmark (As of 22nd March, 2011) of the PRIMEQUEST 1800E (8 processors, 64 cores, 128 threads) running Xeon X7560 processor 2.26 GHz, L1 cache 64 KB per core, L2 cache 256KB per core, L3 cache 24MB per processor, 768 GB memory, SQL Server 2008 Enterprise Edition, and SAP enhancement package 4 for SAP ERP 6.0 (Unicode).

*3 PRIMEQUEST 1800E has one-third the height and half the footprint of a PRIMEQUEST 580A. Dimensions (H x W x D (mm)) of PRIMEQUEST 1800E and 580A are as follows.

- PRIMEQUEST 1800E : 530 x 482 x 800
- PRIMEQUEST 580A : 1800 x 738 x 1100

Much lower datacenter costs

With rising demand for Green technologies, most server vendors are addressing the energy efficiency of their products. But despite this Green wave, customers are little wiser when looking for the best energy efficient servers to fit their data centers.

The current problem with Green servers is there is no standard methodology for power efficiency. For instance, power consumption changes according to the application workload. Application workloads also change. However, some vendors only disclose power consumption at peak workloads and maximum configurations, while others disclose them at a peak and zero workloads.

To enable customers to choose the Greenest servers, Fujitsu discloses power consumption for both peak and zero workloads, proving PRIMEQUEST 1800E can save power even at low workload.

- 4,000 Watts for max. configuration at peak workload

Simplified server lifecycle management

During a server's life cycle you must undertake a variety of actions including installation, integration, monitoring, maintenance, and upgrading of all servers in your datacenter. To do this you have to use different tools for different actions. It can be a nightmare. So fully integrated tools through the lifecycle are what you and other customers are probably demanding.

Fujitsu provides an integrated suite of tools that take care of server products at your datacenter for the entire life of the server. ServerView Suite, a bundled product with PRIMEQUEST and PRIMERGY, can help ease the pain in dealing with servers. This includes:

- Automated OS installation on multiple servers
- Automated RAID configuration
- Automated driver updates, hot fixes and security patch applications
- Integrated monitoring of multiple PRIMEQUEST and PRIMERGY servers
- Simplified setup and monitoring of disk array controllers, HDD, and logical drives

The suite also enables early problem detection and resolution via intuitive diagnostics, look-and-feel operation and pro-active error alerts.

Risk-free virtualization

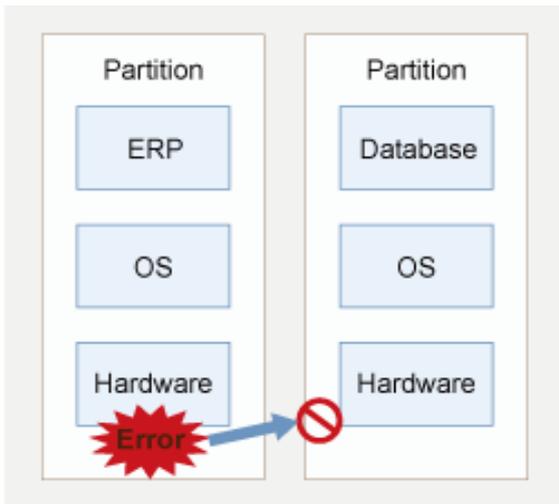
Using PRIMEQUEST and industry standard virtualization, such as VMware vSphere™ 4, Hyper-V, and Kernel-based Virtual Machine with Red Hat Enterprise Linux 6, lets you more easily create the right platform for your demands. It means, simple migration using hardware partitioning with no performance overheads. High reliability guaranteed by hardware partitioning as failures in one partition can never spread to other partitions.

With VMware vSphere™ 4, hundreds of virtual machines can be created on one server with 256 virtual CPUs and 64 physical CPU cores.

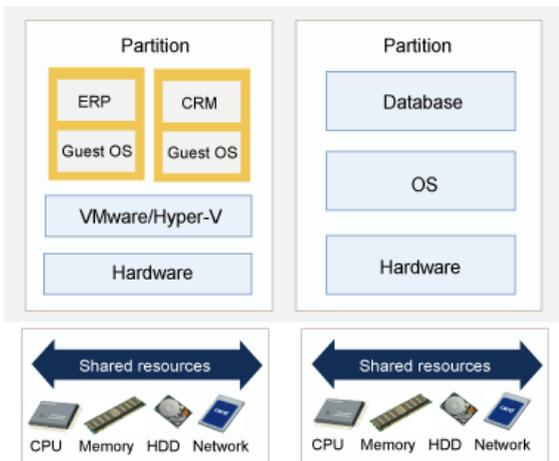
* For the detail, please visit "Datasheet for VMware ESX and VMware ESXi" below.

<http://www.vmware.com/files/pdf/VMware-ESX-and-VMware-ESXi-DS-EN.pdf>

PRIMEQUEST hardware partitioning delivers risk-free and reliable virtualization. Such partitioning without performance overheads also requires no elaborate performance testing on your application environments. Further your main mission critical applications, such as databases, can be fully isolated from failures in all other partitions.

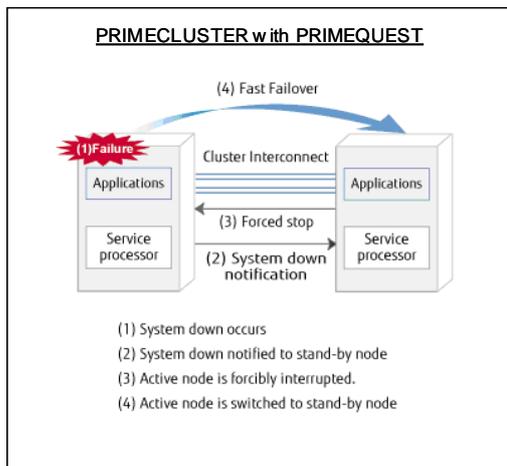


If you are planning to accommodate greater numbers of workloads, you can mix standard virtualization products with hardware partitioning. Such state-of-art virtualization means applications can share system resources more flexibly, while main systems remain fully protected.



Total-system high availability with PRIMECLUSTER

By inter-working with PRIMECLUSTER, PRIMEQUEST can swiftly detect any failure and fast switch the applications to an alternative server. PRIMEQUEST contains, as standard, dedicated and independent hardware monitoring processors, called Management Boards(MMB). This means that even if a server hangs, the monitoring processors keep operating and assist the system administrator to diagnose the problem. The necessary system recovery operation quickly continues in the background.



In virtual environments using VMware or Red Hat Enterprise Linux, PRIMECLUSTER can minimize the portion that is switched. If an application or a guest OS fails, its operation can be quickly resumed just by switching the corresponding Guest OS to another server. All other Guest OS, unaffected by the problem, remain where they are and continue to operate as before.

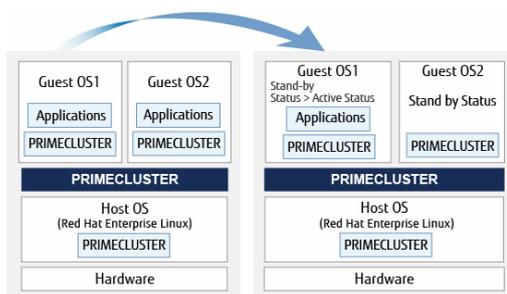
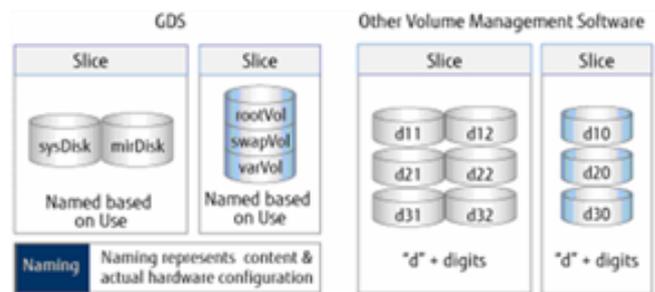


Figure 3. Guest OS switch triggered by application failure (Dual nodes)
 * Red Hat Enterprise 5.4 or later and 6.0 are usable as Guest OS

PRIMECLUSTER GDS simplifies the configuration of mirrored disks by its intuitive naming and automatic configuration capability. From PRIMECLUSTER version 4.3 A10 onwards, customers using PRIMEQUEST servers can enjoy this cost-efficiency. In addition, PRIMECLUSTER can also mirror internal HDDs in guest or host OS environments in Red Hat Enterprise Linux environment.

This solution has easy-to-understand disk and volume naming to avoid potential operational mistakes. In other automatic naming systems, other disks and the volume management software may create confusion in ensuring correct disk specification.

With a maximum of 1024 logical volumes, GDS can help you manage very large scale storage in a cost-efficient manner.



Technical details

Mainboard

Processor quantity and type	1-8 x Xeon processor 7500 series
Processor options	1 x Xeon processor X7560 (8 cores, 2.26GHz, 24MB L3 cache per chip) 1 x Xeon processor E7540 (6 cores, 2.00GHz, 18MB L3 cache per chip)
Memory slots	128
Memory slot type	DDR3
Memory capacity (min.- max.)	8GB-2TB
Memory protection	ECC Extended ECC Memory Patrol Memory Mirroring
Memory modules	4 x 2GB DIMM 4 x 4GB DIMM 4 x 8GB DIMM 4 x 16GB DIMM

Drive bays

Hard disk bay configuration	Max. 16 x 2.5-inch for SAS
Hard disk drive	73GB 2.5-inch 15,000rpm 147GB 2.5-inch 15,000rpm 300GB 2.5-inch 10,000rpm 600GB 2.5-inch 10,000rpm 64GB SSD
- Note	SSD is not available for Red Hat Enterprise Linux.
Optical drive	One internal DVD drive (Read only drive for CD and DVD)

Interfaces

LAN	16 x 1Gbps Ethernet (1000Base-T) ports
VGA	1 port

Slots

PCI Express	16x PCI-Express (x8, full-height, short)
Note	Expandable to 40 slots when using External PCI boxes

Connectable components

Fiber channel controllers	Single Channel 8Gbps Fiber Channel Card Dual Channel 8Gbps Fiber Channel Card
LAN controllers	Single Channel 1000BASE-SX Card Dual Channel 1000BASE-T Card Dual Channel 10Gbps LAN Card

Service processor

Management Board	1 x COM Port (D-SUB 9 pines) 4 x LAN ports (2 x user ports(1000Base-T/100Base-T/10Base-T), 1 x maintenance port (100Base-TX), 1 x REMCS port (100Base-TX))
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Operating system

Microsoft Windows Server® 2003	Microsoft Windows Server® 2003, Standard Edition (SP2)
	Microsoft Windows Server® 2003, Enterprise Edition (SP2)
	Microsoft Windows Server® 2003, Datacenter Edition (SP2)
	Microsoft Windows Server® 2003, Standard x64 Edition (SP2)
	Microsoft Windows Server® 2003, Enterprise x64 Edition (SP2)
	Microsoft Windows Server® 2003, Datacenter x64 Edition (SP2)
	Microsoft Windows Server® 2003 R2, Standard Edition (SP2)
	Microsoft Windows Server® 2003 R2, Enterprise Edition (SP2)
	Microsoft Windows Server® 2003 R2, Datacenter Edition (SP2)
	Microsoft Windows Server® 2003 R2, Standard x64 Edition (SP2)
	Microsoft Windows Server® 2003 R2, Enterprise x64 Edition (SP2)
	Microsoft Windows Server® 2003 R2, Datacenter x64 Edition (SP2)
Microsoft Windows Server® 2008	Microsoft Windows Server® 2008, Standard Edition (SP2) (64-bit)
	Microsoft Windows Server® 2008, Enterprise Edition (SP2) (64-bit)
	Microsoft Windows Server® 2008, Datacenter Edition (SP2) (64-bit)
	Microsoft Windows Server® 2008, Standard Edition (SP2) (32-bit)
	Microsoft Windows Server® 2008, Enterprise Edition (SP2) (32-bit)
	Microsoft Windows Server® 2008, Datacenter Edition (SP2) (32-bit)
	Microsoft Windows Server® 2008 R2, Standard Edition (64-bit)
	Microsoft Windows Server® 2008 R2, Enterprise Edition (64-bit)
	Microsoft Windows Server® 2008 R2, Datacenter Edition (64-bit)
	Microsoft Windows Server® 2008 R2 SP1, Standard Edition (64-bit)
	Microsoft Windows Server® 2008 R2 SP1, Enterprise Edition (64-bit)
	Microsoft Windows Server® 2008 R2 SP1, Datacenter Edition (64-bit)
Red Hat Enterprise Linux	Red Hat Enterprise Linux 5.4 or later (for Intel64)
	Red Hat Enterprise Linux 5.4 or later (for x86)
	Red Hat Enterprise Linux 6 (for Intel64)
	Red Hat Enterprise Linux 6 (for x86)
VMware	VMware vSphere 4
	VMware vSphere 5.0 UI +Patch03
- Note	For servers with 8 core CPU chips, Advanced or Enterprise plus edition is required. For a physical memory size over 256GB, Enterprise plus edition is required. VMware vSphere 4.0 requires one hardware partition in PRIMEQUEST 1800E with 4 or less CPU chips. Fujitsu recommends to use this OS in combination of hardware partitioning.

Optional Software

- Note	Please confirm sales representative in your region about availability of products below
PRIMECLUSTER set products	PRIMECLUSTER Enterprise Edition 4.3A10
	PRIMECLUSTER HA Server (V/L) 4.3A10
PRIMECLUSTER component products	PRIMECLUSTER Global Disk Service 4.3A10
	PRIMECLUSTER Global Link Service 4.3A10
PRIMECLUSTER optional products	PRIMECLUSTER Wizard
	PRIMECLUSTER GDS Snapshot 4.3A10
- Note	PRIMECLUSTER Wizard is a generic name for specific products which provide an integrated administration with third party products. For the details of these products, please visit below and find relevant manuals http://www.fujitsu.com/global/support/software/manual/
- Note	If you are going to use PRIMECLUSTER in a virtualized environment, you are required to purchase optional products corresponding to products above.
Server Management	ServerView Suite
	ServerView Resource Orchestrator (option)

RAS features

Redundant components	Memory (memory mirroring), HDD (RAID0/1/1E/5/6/10), Power Supply Unit (option), PCI card (option), FAN, System Board (Reserved System Board), Management Board (option), Power Supply to server (option)
- Note	For PCI card redundancy, redundancy software is required.
Hot-swap components	HDD, Power Supply Unit (option), FAN, PCI-card, DVD-RW drive, Management Board (option)
- Note	For both software and hardware RAID, only Red Hat Linux supports HDD hot swapping. For hot-swapping PCI cards, a redundant software and PCI Hot Plug are required. OS products available for PCI card hot swapping are as follows. <ul style="list-style-type: none"> ■ Red Hat Enterprise Linux (For Intel64/x86) ■ Microsoft Windows Server 2008/2008 R2(32-bit/64-bit) Please note PCI card hot swapping is not available with VMware vSphere 4
Other RAS features	Quick Path Interconnect: Data transferred between system boards protected by system interface error detection, re-transmission, and degradation. Cable-less Design in chassis: Removes cabling errors, cabling work and cable problems when changing partition configurations.

Dimensions/ weight

Weight	150kg (330 lb.)
Rack-mount (W x D x H)	482 x 800 x 530 mm, 12U

Environment

Noise emission	59 dB
Operating ambient temperature	5 – 35 degree C
Operating relative humidity	20 – 80 %
Operating relative altitude	3000 m
Operating environment	Gaseous and Particulate Contamination Guidelines for Datacenters
Operating environment link	http://www.fujitsu.com/downloads/PRMQST/documents/PQ-Gaseous-Particulate-Contamination-Guidelines-DataCenter.pdf

Electrical values

Rated operating range	200 - 240 VAC ±10%
Rated frequency range	50/60 Hz +2%, -4%
Active power max.	4000 Watts
Active apparent power max.	4210 VA
Heat emission	14,400 kJ/h[13,649 BTU/h]
Rush currency	20 or less A

Compliance

Europe	EMC Directive 2004/108/EC Low Voltage Directive 2006/95/EC RoHS Directive(2002/95/EC)
USA/Canada	FCC ICES-003
Japan	VCCI

Service link

Service link	www.fujitsu.com/support
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Fujitsu platform solution

In addition to Fujitsu PRIMQUEST, Fujitsu provides a range of platform solutions. They combine reliable Fujitsu products with the best in services, know-how and worldwide partnerships.

Dynamic Infrastructures

With the Fujitsu Dynamic Infrastructures approach, Fujitsu offers a full portfolio of IT products, solutions and services, ranging from clients to datacenter solutions, Managed Infrastructure and Infrastructure-as-a-Service. How much you benefit from Fujitsu technologies and services depends on the level of cooperation you choose. This takes IT flexibility and efficiency to the next level.

Computing Products

www.fujitsu.com/global/services/computing/

- PRIMERGY: Industrial standard server
- SPARC Enterprise: UNIX server
- PRIMQUEST: Mission-critical IA server
- ETERNUS: Storage system

Software

www.fujitsu.com/software/

- Interstage: Application infrastructure software
- Systemwalker: System management software

More information

Learn more about Fujitsu PRIMQUEST 1800E, please contact your Fujitsu sales representative, Fujitsu business partner, or visit our website.
www.fujitsu.com/primequest

Fujitsu green policy innovationINNOVATION

Fujitsu Green Policy Innovation is our worldwide project for reducing burdens on the environment. Using our global know-how, we aim to resolve issues of environmental energy efficiency through IT. Please find further information at:

www.fujitsu.com/global/about/environment/



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