Fault Tolerant Server

NEC Express5800/ft series

The ultimate choice for business continuity

NEC Express5800 fault tolerant servers

For further information, please contact:

NEC Express5800
http://www.nec.com/express/

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Fully Redundant Components are Highly Resistant to Failures. High-availability Servers for Nonstop Systems

NEC Express5800/ft Series

A single moment of downtime is not an option in today’s business environment — a single server failure could affect a company’s system as a whole, resulting in enormous loss of business opportunities. System administrators, therefore, focus their efforts on minimizing risk of downtime and keeping their systems up and running. Equipped with fully redundant components designed to run in lockstep, the Intel® architecture-based NEC Express5800/ft series fault tolerant servers address planned and unplanned downtime and deliver exceptional availability.

Hardware Redundancy in All Primary Components

High-availability by redundancy chipset GeminiEngine™

GeminiEngine™ is a chipset specially engineered for transparent failover and system integrity. In NEC’s FT servers, main hardware components are replicated and modularized for full hardware redundancy. The GeminiEngine™ controls these redundant modules to process the same instructions simultaneously, delivering so-called “lockstep” processing. When a fault is detected, the faulty module is isolated and is allowed to be removed while the other remains online and continues operation. After replacement, the pair modules are automatically synchronized and resume normal operation. Through the whole process, the GeminiEngine™ ensures continuous processing without any interruption or loss of data.

Easy to Deploy

Seamless deployment and operation — no complexities

The NEC Express5800/ft series servers, though replicated in architecture, perform as single servers running a single operating system*, allowing configuration without any special considerations for the fault tolerant capabilities. Its user-transparent features eliminate the need to modify any middleware or applications. System availability is significantly improved just by replacing general servers with NEC FT servers.

* VMware models can run multiple operating systems by virtualization.

Simplified Management

The NEC Express5800/ft series servers feature LED status indicators allowing instant identification of failed components. This feature is controlled by EXPRESSSCOPE Engine2, an integrated baseboard management controller. In tandem with the bundled NEC ESMPRO Agent monitoring software that alerts failures to the management PC, it allows centralized remote management of the hardware and power supply.

Lower TCO

The FT server can deliver a lower total cost of ownership over the life of a server as compared to alternative high availability solutions, such as software clusters. To run in redundant mode, the FT server only requires one copy of the operating system and application software license and no professional services to setup or configure the server. It’s simple to setup, simple to use, and simple to manage.
Fully-Redundant and Hot-Swappable Modules Achieve Continuous Availability

Minimum Downtime

Normal operation
Powered by GeminiEngine™, replicated modules run in lockstep as one logical server.

Fault detection
In case of hardware malfunction, the faulty module is instantly isolated and the server continues operation on the other healthy module. The hot-swappable modules enable repair and replacement without interrupting processing.

Back to normal operation
Following the repair or replacement, both modules are automatically resynchronized and resume normal operation. There is no need to stop/re-boot the system, and both the OS and the applications are unaffected, achieving continuous processing throughout the whole process.

High-Availability Technology

Rapid Disk Resync (RDR)
The Rapid Disk Resync (RDR) redundancy software is used for hard disk drive synchronization, ensuring excellent reliability during normal operation. In addition, after a hard drive has stopped as a result of a failure, RDR copies only data changes to update it, thereby minimizing the time that the system runs with only one of the redundant disk drive modules.

Active Upgrade™
The Active Upgrade™ feature minimizes the planned downtime required to install security patches and software upgrades. The synchronized modules are separated and patches are applied to one module while the other remains online and continues operations. The operating module is then switched, keeping downtime to a minimum (approximately 10 seconds).

For More Availability and Reliability

A Reliable Platform for Virtualization

FT Servers + VMware
Server consolidation enhanced by virtualization can significantly lower the TCO by reducing distributed servers and much of the maintenance related workloads and costs. NEC’s VMware-compatible FT servers support VMware Infrastructure3, enabling users to smoothly build such favorable virtualized environments with utmost reliability. In a virtualized environment, multiple virtual servers are built on a physical server and its downtime can cause unprecedent damage. NEC FT servers reduce these costly risks by its fully redundant hardware and offer continuous operation of your virtualized setting.

A High-Availability Database System

FT Servers + Large Storage Capacity
The NEC Express5800/ft series support NEC’s SAN-compatible disk array devices NEC Storage D series for catering to specific capacity needs. The redundant data path between the FT server and storage ensures instant operation switching and continuous availability in the event of a failure, regardless of where the malfunction occurs. This solution is ideal for customer-facing, production and sales management systems, electronic patient record and knowledge management systems, and other environments requiring large volume, high availability and high-speed response.

Ensuring Software Fault Tolerance for Higher Availability

FT Server Clustering
Cluster systems utilizing NEC FT servers provide continuous availability in the event of both software and hardware failures. NEC’s FT servers and EXPRESSCLUSTER X clustering software allow customers to build cluster systems. When a hardware component fails, the NEC FT server isolates the faulty module and continues to operate. If a software failure interrupts server operation, the faulty server fails over to one in another node and continues processing. Compared to the general IA server clusters, the FT server cluster delivers superior robustness and availability by eliminating system downtime caused by switching between nodes in the event of a hardware failure. The FT server cluster is ideal for mission-critical systems that require higher availability and reliability.

*: only compatible with NEC Storage

(ACTIVE UPDATE™ is available only with the Windows model)
Windows Models

**NEC Express5800/R320a-M4**
- Intel® Xeon® processor X5570 (two sockets)
- Up to 96GB DDR3-1066 Registered DIMM with ECC
- Up to 2-4TB SAS internal hard disk drives
- x 4 PCI Express
- Microsoft® Windows Server® 2008 Enterprise x64 supported
  - Active Upgrade™, Rapid Disk Resync

**NEC Express5800/R320a-E4**
- Intel® Xeon® processor E5405 (two sockets)
- Up to 96GB DDR3-1066 Registered DIMM with ECC
- Up to 2-4TB SAS internal hard disk drives
- x 2 PCI Express
- Microsoft® Windows Server® 2008 Enterprise x64 supported
  - Active Upgrade™, Rapid Disk Resync

Red Hat Enterprise Linux Models

**NEC Express5800/S20Fd-MR**
- Intel® Xeon® processor E5450 (two sockets)
- Up to 32GB DDR2-667 FB-DIMM with ECC
- Up to 900GB SAS internal hard disk drives
- x 1 PCI Express, 2 x PCI-X
- Red Hat Enterprise Linux Advanced Platform 5.2 (EM64T)

**NEC Express5800/S20Fd-LR**
- Intel® Xeon® processor E5405 (two sockets)
- Up to 32GB DDR2-667 FB-DIMM with ECC
- Up to 900GB SAS internal hard disk drives
- x 1 PCI Express, 2 x PCI-X
- Red Hat Enterprise Linux Advanced Platform 5.2 (EM64T)

VMware Models

**NEC Express5800/S20Fd-MR**
- Intel® Xeon® processor E5450 (two sockets)
- Up to 24GB DDR2-667 FB-DIMM with ECC
- Up to 900GB SAS internal hard disk drives
- x 1 PCI Express, 1 x PCI-X
- SAN boot is required
- VMware® ESXi™ 3.2

**NEC Express5800/S20Fd-LR**
- Intel® Xeon® processor E5405 (two sockets)
- Up to 24GB DDR2-667 FB-DIMM with ECC
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