

**ESG Lab
Validation
Report
Summary**

NEC Express 5800/R320 Server

Simply Affordable 99.999% Availability for Virtual Server Environments

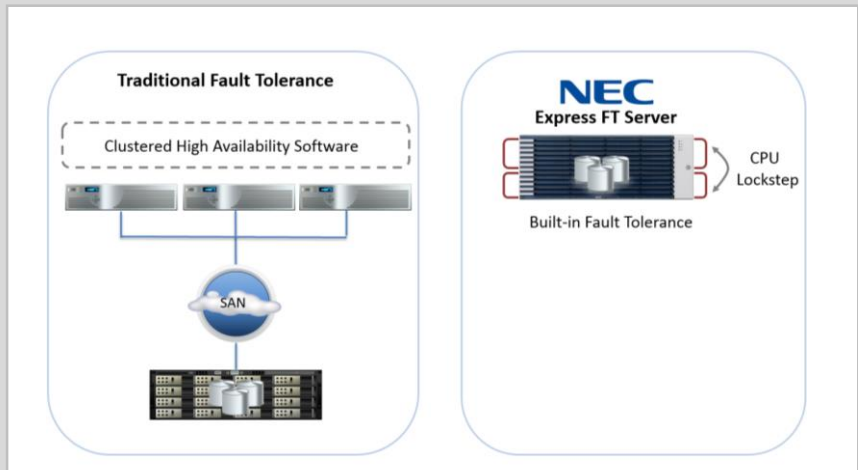
This report highlights the results of ESG Lab hands-on testing which confirmed that [NEC Express5800/320](#) servers are ideally suited for mission critical applications deployed in highly available VMware environments. A bottom line analysis reveals how the NEC Express FT cuts costs in half compared to VMware fault-tolerance.

Read the full report at:

[NEC](#)

The Product

First introduced in 2000 and now in its seventh generation, the [NEC Express5800/R320](#) is the product of a hardware partnership between NEC and Intel, and of a software partnership with Intel. With more than 10,000 systems deployed in production, this fault-tolerant solution that leverages industry-standard server technology is ideally suited for mission-critical applications and virtual server environments.



The R320 is a 4U rack-mounted server with two six- or ten-core Intel Xeon CPU modules that are kept in lockstep. The CPU lockstep design results in a fully fault-tolerant server that can endure a CPU, motherboard, network, or storage hardware failure with no interruption to applications and end-users.

Compared with traditional high-availability solutions, the Express FT server paradigm:

- Eliminates the need for expensive and complicated SAN-attached storage.
- Reduces the number of servers that need to be purchased and maintained.
- Works transparently with applications that haven't been certified as cluster-aware.
- Reduces the network resources required for cluster monitoring.
- Reduces the cost of virtualization, operating system, and software licenses.
- Provides 99.999% availability for virtualized applications with no performance penalty.

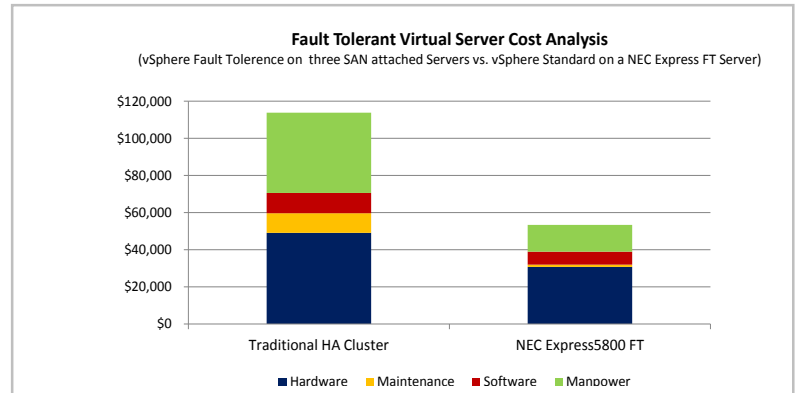
Why This Matters

Downtime hurts business productivity and can impact profitability and corporate reputations. ESG Lab has confirmed that an NEC Express FT server can be used to create a fault-tolerant platform for mission-critical and virtual server environments that's simple to deploy and manage. It starts with mature, seventh-generation technology and observes a "simple is better" paradigm: Fewer component dependencies mean less can go wrong. And that means less system downtime.

By implementing fault tolerance at the hardware level and presenting the Express FT as a single logical server, NEC reduces hardware and software dependencies, complex configuration and administration, and the license requirements associated with multi-node software cluster configurations, creating a cost-effective infrastructure for mission-critical business applications. An NEC partner confirmed this when he said, "Customers have saved millions of dollars by not having to pay for clustering software. It's a KISS (keep it simple) solution that always works."

ESG Lab Validation Highlights

- ESG Lab explored the benefits of implementing fault tolerance at the hardware level with the traditional approach of software-based clustering. The single logical server approach not only reduced the amount of hardware and software resources required for highly available systems, but also simplified configuration, administration, and maintenance.
- Ease of deployment was confirmed by installing and configuring VMware vSphere on an Express FT server. The Express FT installation media was booted, vSphere was installed, and a configuration script was run—in less than 45 minutes, the system was running in fault-tolerant mode.
- Fault-tolerant capabilities of the Express FT server were validated by removing one of the hot swappable motherboards while the system was under load. A simulated database workload and a streaming video failed over with no errors logged in Windows or vSphere.
- ESG Lab compared the costs associated with deploying a traditional VMware fault-tolerant solution with an NEC Express FT solution with built-in fault tolerance and found an overall 53% reduction in cost could be achieved with the NEC solution, with savings across the board from hardware and software to maintenance and manpower.



Issues to Consider

The Express FT server has a growing list of supported virtualization software and operating systems, but not every operation environment and not every revision is included. When considering the Express FT for a fault-tolerant environment, proper planning is required to ensure platform supportability.

Though the Express FT server delivers a reliable, mature, fault-tolerant solution, it doesn't eliminate the need for backup—compliance, regulations, site failure, and data corruption are all examples that highlight the need for data protection practices.

The Bigger Truth

Ensuring that mission-critical applications are protected from failures and available to users when needed can be a daunting task. It is especially important today when consolidating applications with server virtualization results in multiple applications being housed on each physical server; one server failure now impacts many applications and business processes. Such high availability is typically associated with expensive infrastructure, complex configurations, and countless hours of specialized administration. Traditional software-based solutions can get expensive quickly and often require access to shared storage resources, additional licenses, and specialized skills.

With the NEC Express FT solution, availability is moved from the software to the hardware. This simple approach removes dependencies from the applications through the operating system all the way down to the storage. With fault tolerance implemented transparently in hardware, an NEC Express5800 FT solution can be used to protect mission-critical applications running on physical or virtual servers. Leveraging the power and cost effectiveness of industry-standard Intel processors, ESG confirmed that a single NEC FT Express server with built-in fault tolerance reduces costs by 42.5% compared with a cluster of traditional SAN-attached servers with VMware fault tolerance implemented in software.

In today's fast-paced, always-on mobile business environment, even the smallest amount of downtime can have a major impact. ESG Lab believes the NEC Express5800 FT solution helps solve these problems, making affordable non-stop business a reality for organizations both large and small.