



Software Performance Systems, Inc.

THE VIEW FROM SPS

High Availability / High Performance

SPS Helps Clients Achieve High Availability and High Performance for Mission Critical Systems

High transaction rates, large and distributed user bases, and huge data stores characterize today's business systems. Serving users worldwide, these systems require "five nines" availability. Welcome to the realm of high availability/high performance ("HA/HP") engineering.

Many SPS clients demand HA/HP systems. SPS can help provide the skills and experience required to design and deploy this technology. Our approach is to assign a team of HA/HP specialists to "design in" HA/HP for every business system. Clients can then quickly adapt to evolving load and availability requirements.

We maintain an HA/HP lab to prove out new ideas, test performance requirements, and validate proposed designs. Many of our customers' production systems were modeled in the lab prior to design approval, resulting in predictable results and proven systems.

About the Technology

High availability is often measured relative to a goal of 100% operational status, with 99.999% availability (five nines) expected in practice (without resorting to extremely expensive and specialized systems). This equates to system down-time less than 5 minutes per year!

Generally, we achieve high availability through a combination of redundancy technologies. Hardware components, such as network adapters and local disk storage can be made redundant so that a server remains operational in the event of a hardware failure. At the network level, switching and communication links can be deployed redundantly. Storage Area Networks (SAN) are commonly deployed to allow organizations to perform online backups, expand storage, and mirror data to an off-site Continuity of Operations (COOP) location. Even entire servers are commonly deployed redundantly using failover technologies such as server clustering.

High performance refers to high processing capacity, relative to other systems of the same type. Historically, high performance referred to CPU-intensive mathematical and scientific processing. However, today's business systems, high performance refers to very fast transaction processing, emphasizing network and server performance.

As with high availability, scalable, high performance systems are achieved through a combination of technologies. Multiple CPUs increase server capacity, load balancing and pooling can distribute transactions across multiple servers, and many technologies are available to increase database performance.

In real world scenarios, often a combination of HA/HP technologies are used. In many cases, technical solutions overlap. For example, load balancing multiple web servers can result in improved performance, and also increase availability. If a web server fails, the remaining servers continue to process the load.



"Due to a sudden and steep growth in enterprise-wide web-applications, our Intranet Applications hosting platform was fast approaching saturation. Besides, due to the addition of critical applications, the platform needed to be enhanced to provide for high availability.

Systems Development Service hired a team of SPS engineers to analyze the current platform in light of new requirements and design a new architecture that was scalable and provided high availability. SPS engineers did an outstanding job of analyzing gaps and designing new architecture that not only met the requirements but exceeded our expectations.

The SPS team proposed consolidation of existing applications based on criticality and technologies and designed a cost-effective solution to provide load-balancing and fail-over. The team is very knowledgeable, dependable, and thorough with attention to detail. The team brought a lot of enthusiasm and positive energy, and added a lot of value to the project"

—Ashok Sharma,
Assistant Director,
Systems Development Service,
U.S. Department of Justice

Profiled SPS Projects

System: eDesignate
Client: U.S. Department of Justice,
Office of the Federal Detention Trustee

Requirement: High availability, scalable high performance

The DOJ Office of the Federal Detention Trustee is preparing to deploy a business process management application to hundreds of users across the country. The system must be highly available in all US time zones, and handle increasing performance requirements as it is deployed to its full user base. SPS engineers designed and deployed an HA/HP server and network infrastructure featuring fault-tolerant server hardware, redundant network paths, application server pooling and load balancing, and database server clustering with fail-over. The infrastructure was deployed in the DOJ data center, and was built-out in cooperation with data center staff and contractors. The eDesignate system is scheduled to go into full production in late 2005.

“SANs provide simplified, enhanced business continuity and data protection, reducing downtime, meeting regulatory compliance and increasing business efficiency.”

—*Communications News; 5/1/2004; Barkley, Patty*

System: SDS Intranet Applications System
Client: U.S. Department of Justice,
Systems Development Service
Requirement: High availability, consolidation

The DOJ Justice Management Division's Systems Development Staff serves as an internal service bureau for application development and hosting. The SDS Intranet Applications System is a collection of dozens of applications that serve many DOJ business units. In early 2005, SPS engineers designed a new architecture for high availability and server consolidation that features server clustering and pooling, blade servers, and SAN technologies. The new architecture is scheduled for implementation later this year.

System: SPS Commercial Products
Client: SPS Commercial Products Division
Requirement: High availability, high performance

The Commercial Products division of SPS operates several commercial web-based applications centered around the hospitality industry, including golf course, yacht charter, villa, and restaurant management systems. With a large and growing Internet user base, SPS turned to its in-house team of engineers to design and deploy a new HA/HP server infrastructure. The new system, deployed in late 2004, features multi-application server pooling and database failover clustering with SAN technology.

ABOUT SPS

Software Performance Systems, Inc. (SPS), a small business based in Northern Virginia, is a privately held information technology services provider. Established in 1995, SPS specializes in the design and integration of large web-based solutions for Federal, State, and Local Governments and commercial clients worldwide. SPS has been honored with many national awards, including: #10 ranking in the Computerworld Top 100 Best Places to Work in IT, Deloitte's Virginia Technology Fast 50 and North America Technology Fast 500, and as a SBA Exporter of the Year. More importantly, SPS solutions helped our clients win prestigious awards, including the Grace Hopper Federal Government Technology Leadership Award, the E-Gov Pioneer Award, the Excellence.gov Grand Prize Award, and the Government IT Agency Award for Excellence in Government. **SPS...proven over time.**

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