New Solutions

Closing the IT Availability Gap

New options for traditional and virtualized
IT environments

Stratus
AVANCE™

Stratus®
Technologies

The Evolution of Business-Critical Availability

Over the last decade the electronic transaction has emerged as the basic element of commerce, with IT-driven applications and services supporting nearly every customer-facing and internal operation. As market reach expands across geographies, networks and time zones and "business hours" are reset to "on-demand" status, the availability of IT operations becomes even more fundamental to a business' ability to compete and survive.

The trend toward server virtualization is also driving the need for higher levels of availability and has significantly altered the perception of what is considered business-critical. **In fact, when you virtualize, every server becomes critical.** Even when a company runs several non-critical applications on the same server a temporary outage can put a halt to business operations and incur substantial loss of data. As a result, availability is fast becoming a prerequisite to capitalizing on the many benefits of virtualization.

Traditional or virtualized, most businesses will agree the pain of IT system downtime can quickly cripple operations and profitability. How much risk an organization is willing to accept varies tremendously — throughout the functional units of a single company and from business to business — resulting in a range of availability needs.

Availability Options

At the top of the availability spectrum, Stratus® Continuous Availability servers are operational more than 99.999% of the time, resulting in less than 5 minutes of downtime per year. In fact, for more than 28 years, businesses have relied on Stratus' fault-tolerant servers and 24/7 services to support mission-critical environments where even a short outage can result in catastrophic losses. Critical applications such as voice transmission, online stock trades, credit card validation and air traffic control typically require the always-on, real-time computing that Stratus ftServer® systems deliver. Run VMware® Infrastructure 3 on Stratus ftServer systems and you'll automatically get the same levels of continuous availability for virtualized mission-critical Windows® and Linux® application environments.

At the other end of the spectrum, conventional systems, standby servers, data replication and high-availability clusters offer varying degrees of availability protection — with widely varying cost and support structures. Historically, the next best availability option below the Stratus ftServer family was the high-availability cluster. But the time, complexities and costs incurred in building and managing these temperamental solutions make them impractical for businesses without large IT budgets or trained on-site IT specialists. Even environments with ample funding and staff often rate their return on investment (ROI) for clusters as less than satisfactory.

The Unmet Need

Faced with a growing number of business-critical applications and services to support, small to medium businesses (SMBs) and enterprises with distributed/remote "edge" environments, are experiencing a real need for high-availability. Until now, no solution has provided even 99.9% reliability at a price/ease-of-use point that is acceptable to SMBs and edge environments. As a result, they've been forced to settle for inferior IT availability — a gap that leaves their businesses exposed to tremendous risk.

Closing the IT Availability Gap

Backed by nearly three decades of IT availability innovations and expertise, no company is better equipped to close this "availability gap" than Stratus Technologies. Stratus began the effort as part of the Company's vision and overall strategy to address the total availability requirements of its customers and the industry as a whole. The result, Stratus® Avance™ software, is a superior HA solution that's affordable for any business. Designed to run on a pair of standard x86 servers, Avance software delivers automatic uptime that exceeds 99.99% and comes fully equipped with a value-added bonus for users − built-in virtualization. This unique combination enables SMBs and edge environments to experience the benefits of server consolidation within a hardened HA environment in less than 25 minutes − without specialized knowledge of either of these advanced technologies.

Figure 2: Stratus Avance Software Closes the Availability Gap
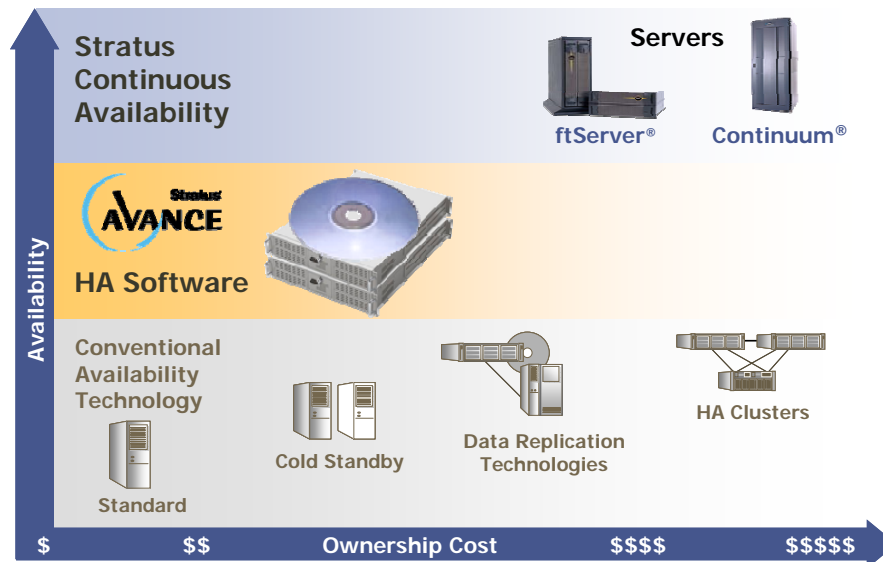
Until now, there was no cost-justifiable, easy-to-use high-availability solution that could support the business-critical needs of organizations using standard x86 servers. Stratus Avance software closes this availability gap for SMBs and larger enterprises with distributed/remote Windows and Linux computing environments.

Introducing Affordable High Availability with Effortless Virtualization

Highly automated, the Stratus Avance solution far outperforms clusters and other competitive alternatives in reliability, operational simplicity and cost, delivering unprecedented business value to users. Avance software leverages everything Stratus has learned about fault-tolerant hardware and failsafe software design and takes it one step further − to uniquely address availability and virtualization requirements for x86 servers. Stratus Avance software transforms these standard servers into an affordable, easy-to-use, high availability solution that focuses on failure prevention and provides virtualization at no additional cost. After a 15-minute installation onto a pair of x86 servers, Avance software immediately delivers greater than 99.99% uptime, running business-critical applications unchanged in a hardened HA environment.

Like its ftServer family, Stratus Avance software is architected specifically to prevent failure and data loss. These underlying design features continue to set Stratus solutions apart from other IT availability products on the market today.

Every aspect of Avance HA and virtualization technology was designed for availability and ease-of-use. Avance software is pre-configured to automatically handle critical subsystem failures, without the addition of third-party products or the intervention of highly skilled operators typically required by other solutions. Full resource sharing between the nodes enables applications to run normally during fault-handling and live migration procedures. If there is a disk problem, for example, Avance enables the system to use unaffected disk resources on the other node, without the need for a restart. Live migration is then initiated to make the faulty node available for servicing.

Availability is assured by sophisticated internal diagnostics and automated fault-handling and reporting procedures, while users benefit from the software's astonishingly simple operation. In fact, Avance software is fully pre-configured and highly automated from its one-command HA installation to its easy set up of highly available virtual machines to its single, web-based console enabling remote monitoring and management. As a result, setup, operation and maintenance are easily handled by local staff.

Prompting users through a few simple steps, the built-in Avance Virtualization Wizard makes it possible to create virtual machines in minutes — there's nothing else to buy and no special expertise required. By leveraging Avance software's easy-to-use virtualization capabilities, businesses can consolidate applications onto a virtualized x86 high-availability environment that delivers greater than 99.99% reliability. And, with remote monitoring and management of the virtual machines, physical x86 servers and network interfaces, your Avance solution is just as easy and straightforward to manage.

Figure 3: The Avance Virtualization Wizard: Built-in and Pre-configured

Prompting users through a few simple steps, the built-in Avance Virtualization Wizard makes it possible to create virtual machines in minutes.

The cost of ownership for an Avance solution is competitive with standby server configurations — and substantially lower than other HA solutions. This revolutionary software mitigates business risk for resource-constrained SMBs and enterprise edge environments — eliminating the chaos that often follows a server outage — while enabling users to capitalize on virtualization. The Avance solution offers tremendous value to business environments such as satellite distribution centers, healthcare clinics, retail stores, small companies, bank branches and remote manufacturing facilities.
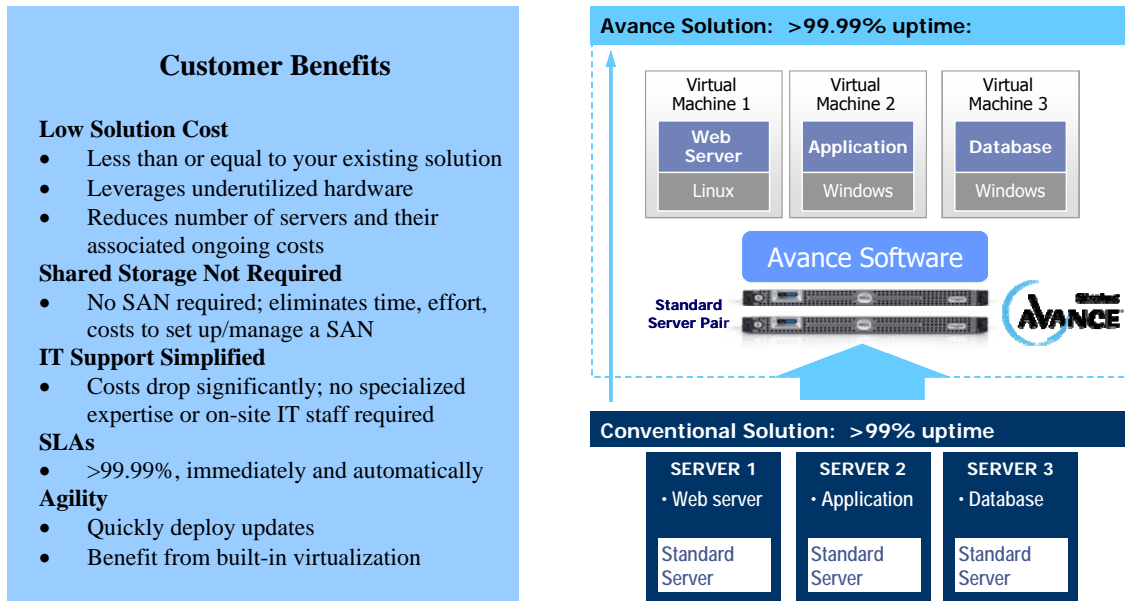
Stratus Avance Software Transforms Your Business in Minutes

Any small to medium business that has a number of general-purpose servers, with each running its own application, can benefit from Avance software. At the other extreme, international companies with large numbers of remote locations are also ideal candidates for Avance software. These multiple sites often run identical business-critical applications to support local requirements or feed data to a centralized data center. In these types of "edge" environments where there is little or no field IT support, Avance software immediately reduces the difficulties and costs of improving business-critical operations and service levels.

Let's look at a typical example of how Avance software can transform your IT operations with a comprehensive integrated solution that is radically easy to use and lowers operating costs.

Today, very few SMBs or edge environments dare to take advantage of HA or virtualization technology because it is too complex and costly to set up and manage. Avance software enables these organizations to benefit from server consolidation by leveraging their underutilized x86 hardware. Example 3 illustrates how three servers running three separate applications are transformed into a virtualized HA solution that offers a single system management view and reduces the number of servers and their attendant costs. And most important, the >99.99% uptime provided by the Avance solution instantly ensures a whole new level of business continuity for SMBs and distributed/remote environments.

Figure 4: A Solution That's All Upside: Stratus Avance Software

Customer Benefits

Low Solution Cost
- Less than or equal to your existing solution
- Leverages underutilized hardware
- Reduces number of servers and their associated ongoing costs

Shared Storage Not Required
- No SAN required; eliminates time, effort, costs to set up/manage a SAN

IT Support Simplified
- Costs drop significantly; no specialized expertise or on-site IT staff required

SLAs
- >99.99%, immediately and automatically

Agility
- Quickly deploy updates
- Benefit from built-in virtualization

Avance Solution: >99.99% uptime:

Virtual Machine 1	Virtual Machine 2	Virtual Machine 3
Web Server	Application	Database
Linux	Windows	Windows

Avance Software

Standard Server Pair

Conventional Solution: >99% uptime

SERVER 1	SERVER 2	SERVER 3
· Web server	· Application	· Database
Standard Server	Standard Server	Standard Server

Delivering immediate cost savings right out of the box, Avance software combines superior availability and built-in virtualization that enables users to set up virtualized high-availability environments without specialized expertise or hardware.

Advantages of Avance Software over High-Availability Alternatives

In addition to industry-leading availability, Stratus Avance software is the first high-availability solution to offer integrated virtualization capabilities embedded within a complete low-cost product. These unique features make Avance software superior to other HA software options, which typically focus on failure recovery and require specialized IT skills or additional products to enable virtualization. Avance software is also substantially easier to install and use and is backed by a well-established, recognized industry leader in availability technology. As a result, businesses that choose Stratus Avance software benefit from reduced business risk, increased flexibility and significantly lower ownership costs. For business-critical operations in environments characterized by limited resources, the advantages of Stratus Avance software are compelling:

- Downtime is reduced by as much as ten-fold over competing HA options.
- Most hardware faults are remedied transparent to users.
- Many software issues are prevented from escalating into outages.
- Data integrity is assured.
- Setup, administration and maintenance are simplified — and comparable to that of a conventional server.
- Single web-based management console enables remote monitoring and management.
- Ownership costs are equal to standby options and are substantially lower than other HA alternatives.

See the chart in Appendix A for a summary of the challenges faced by SMBs and enterprise edge facilities in supporting business-critical operations and the various ways alternative HA approaches address each challenge.

The Stratus Difference: Ensuring Business Continuity, Optimizing Value

To meet the total availability needs of its customers and of the growing SMB market, Stratus offers a complete set of best-in-class solutions to address the availability and virtualization needs of every business. Each offering in the Stratus solutions portfolio is characterized by superior reliability, operational simplicity and outstanding value.

Figure 5: Stratus Availability Options for Traditional and Virtualized Environments

Computing Environment	→	High Availability >99.99% uptime	Continuous Availability >99.999% uptime
Traditional (Windows®/Linux®)	→	Stratus® Avance™ software for X86 servers	Stratus® fault-tolerant ftServer® system
Virtualized (Windows/Linux)	→	Avance software is powered by an embedded Citrix® XenServer™ hypervisor	ftServer system running VMware® Infrastructure 3
Stratus Value Proposition → Total Availability → Operational Simplicity → Financial Advantage			

With the introduction of Stratus Avance software, Stratus expands its portfolio of availability offerings with a high-availability solution that complements its gold-standard continuously available ftServer solution.

As the leader in continuous availability, Stratus has delivered 99.999% and greater availability to global corporations for more than 28 years. Stratus ftServer systems are a superior choice for providing uncompromising uptime for mission-critical Microsoft® Windows Server® and Red Hat® Enterprise Linux® applications. Leveraging the power of Intel multi-core processors, the ftServer family provides continuous availability for traditional IT environments of any size and offers VMware® infrastructure 3 running on ftServer systems to ensure 99.999% uptime for virtualized mission-critical applications.

Avance software addresses the previously unmet market need for an easy-to-use HA solution that is budget-friendly and offers the advantages of virtualization, eliminating the need to settle for subpar availability. By delivering greater than 99.99% availability in a solution that is amazingly simple to install and operate, and incorporating virtualization capabilities at no additional cost, Avance technology extends enterprise-class reliability and server consolidation to the masses at exceptional cost savings.

Conclusion

Stratus addresses the complete availability needs of businesses of all sizes across multiple industries running critical applications in both traditional and virtualized environments. Fault-tolerant ftServer server systems provide five nines (99.999%) and greater reliability for businesses that simply cannot tolerate downtime. Stratus Avance Software offers the best performance and price for high availability and virtualization in a single product, making enterprise-class business computing affordable and offering realistic options for SMBs and remote "edge" environments without the need for sophisticated IT skills or additional staff. With its unique focus on failure prevention, Stratus leads the industry in ensuring the highest levels of availability for the world's business applications.

Appendix A: Addressing Business Computing Needs in SMB/Edge Environments

SMB/Edge Need	Robust Server or Cold Standby	Data Replication Software	High-Availability Cluster	Stratus Avance HA & Virtualization Software
Uninterrupted processing	>99% uptime • Actual uptime dependent on components, administration, environment, severity of outage etc. • A single outage event may last hours	> 99.9% uptime • Uptime varies by product and configuration • Failover may require manual intervention and reboot of target node • Depending on product, may be deployed with traditional cluster software	>99.9% uptime • Uptime varies by product and requires meticulous setup, administration and change management procedures • Restart of database and applications essential to recovery process • Failover delays • Significant effort required for post-crash analysis and testing	>99.99% uptime • Automatic industry-leading high availability for traditional and virtualized applications • Applications ride through most system interruptions without downtime or data loss • Live upgrades; online maintenance and support; automated synchronization processes help eliminate planned downtime
I/O protection	• High-risk of data loss	• Protects data integrity	• Risk of data loss	• Protects data integrity
Ease of deployment	• Out-of-the-box operation	• Configurations setup via wizard interface; • Virtualization accommodated by add-on modules or alternative products	• Requires skilled personnel and failover scripting and testing. May require application changes to make them cluster-aware • Virtualization adds another layer of complexity	• 15-minute installation process that requires no specialized IT skills • No application modifications necessary • Embedded virtualization
Straightforward administration and support	• Standard IT management process • Server failures may require skilled IT staff	• Typically includes integrated management console or management GUI to monitor status and report failures	• Complex administration, synchronization, and maintenance of multiple server nodes; ongoing script writing / testing to ensure proper operation; post-failure maintenance and re-testing of cluster software • Scarce cluster expertise puts serviceability at risk	• Highly automated; minimal human intervention • Predictive fault monitoring; transparent live migration • Self-diagnostics isolate fault to component level and automate problem reporting • Single -system image • Single web-based management console enables remote monitoring and management of virtual machines, physical x86 systems and network interfaces
Automated recovery process	• Manual effort	• Choice of manual and automated application restart	• Must be scripted / tested to automatically fail over	• Rides through most failures; fully automated restart for catastrophic failure;
Affordable high availability and virtualization	• Aggressive initial purchase price eclipsed by costs associated with lengthy downtime	• Wide range of pricing dependent on vendor and features selected.	• Duplicate OS licenses, cluster design and implementation, incur additional upfront costs • Administration and ongoing change management incur recurring high-cost labor • Requires dedicated array or SAN connection	• **Industry's best price/ performance for high availability and virtualization in a single product** • No SAN required