



# 5 Questions to Ask About Server Virtualization and High Availability

Part 1

Is Now the Right Time to Virtualize My Critical Production Applications?

---

The ebook with answers:

- ◆ Is now the right time to virtualize my critical production applications?
- ◆ Which critical production apps can be virtualized safely?
- ◆ Won't virtualization add more complexity?
- ◆ What happens to my virtual machines if the physical server fails?
- ◆ Will virtualization software alone give me enough high availability?



First of a five-part series from Stratus Technologies

## SERVER VIRTUALIZATION AND HIGH AVAILABILITY

### Is Now the Right Time to Virtualize my Critical Production Applications?

**More and more often, the answer is yes.**

However, it's obvious that production applications will be more demanding than the non-essential applications where your organization began using x86 server virtualization. And keeping those demands front and center makes all the difference to virtualizing production applications effectively and safely, as we will see.

Let's get going with some context: For years, adding new computing hardware was the path of least resistance when companies wanted to run a new application or support more users. Physical servers proliferated as a result. Power, cooling and facilities costs rose to support all that gear. At the same time, improvements in processor technology produced server hardware

that was increasingly powerful. Too much computing capacity went idle as hardware sprawl met Moore's Law. A tipping point arrived, and server virtualization was in the right place at the right time.

Server virtualization gained traction fast as an accepted way to deliver IT services and applications in the enterprise. The early adopters of x86 virtualization focused on consolidating servers that were lightly utilized. The typical workload was neither performance-sensitive, nor critical in nature.

### Production apps go virtual

Now IT executives — perhaps you're among them — are looking at the next wave of applications to virtualize: extending to business-critical applications such as e-mail, messaging and database servers, and business services including online transactions and credit card authorization.

Many such applications that weren't viable candidates for using server virtualization before can now be considered as virtualization software matures. For example, VMware's vSphere™ 4 offers numerous performance and scalability improvements for resource-intensive applications compared with its predecessor, VMware® Infrastructure 3.

### Due diligence first

Still, anywhere that companies recognize a need for high availability or better, IT executives are called on to perform due diligence. Before you move critical production applications to a virtualized environment, you need to know your service level agreements (SLAs) will continue to be met or surpassed.

New concerns come up, for instance, when you concentrate multiple production applications on a physical server. Some IT managers liken the effect to putting many eggs in one basket.

## VIRTUALIZATION, HIGH AVAILABILITY AND ROI



“The bottom line is that with a well-architected virtualization solution, a 6 to 18 month ROI is highly likely.”

- *Chris Wolf*  
Senior Analyst / Burton Group

Explains industry analyst Dan Kuznetsky, vice president of research operations at The 451 Group, “When you think about it — the more workloads that you stack on a single machine — when something does go wrong, the more pain an organization is going to feel because all those applications have dropped on the floor.”

### Burton Group’s Chris Wolf on Virtualization 2009

Economic pressures are prompting more organizations to use x86 server virtualization to support production applications, says senior analyst Chris Wolf of Burton Group in a virtualization podcast for Stratus Technologies.

“Organizations, up until now, have just been starting to virtualize their production applications. With the budget constraints IT is under in 2009, they are going to be under even more pressure to virtualize more production applications. As you virtualize production applications, availability of those virtualized applications becomes an even more critical issue,” says Wolf.

“The thing that’s in virtualization’s favor is that from an ROI perspective, it continues to be an absolute no-brainer. It allows you to remove hardware from your data center, so I’m reducing my hardware maintenance costs. I’m reducing my energy cost associated with that hardware as well. There could be some human resources cost reduction in terms of junior-level IT staff that might be doing some of that hardware maintenance.

“The bottom line is that with a well-architected virtualization solution, a 6 to 18 month ROI is highly likely. Many organizations have already made the initial investments for virtualization — at least in the large enterprises — so it’s an incremental investment.”

**Hear the entire two-part podcast:**

<http://community.stratus.com/podcasts/virtualization>

## SERVER VIRTUALIZATION AND HIGH AVAILABILITY

Using x86 virtualization for disaster recovery is another situation in which production applications are highly dependent on uptime and performance. Then there are the classic mission-critical applications where any downtime or data loss has the potential for devastating effects.

Wherever “high availability” matters, you’ll want to dive deeper into what that means with respect to your particular production applications and the virtualization solutions you are considering: Will you be protected from downtime and data loss in the manner you thought? What skills and effort will be required of your IT staff to deploy and manage the solution to make sure it all works?

### More about this ebook

In this e-book, we discuss these and other essential considerations to help you decide when and how to move your critical production applications to a virtualized environment.

Upcoming ebook chapters cover:

- Which Critical Production Apps Can Be Virtualized Safely?
- Won’t Virtualization Add More Complexity?
- What Happens to My Virtual Machines If the Physical Server Fails?
- Will Virtualization Software Alone Give Me Enough High Availability?

### About Stratus Technologies

Stratus Technologies focuses exclusively on helping its customers keep critical business operations online without interruption. Business continuity requires resiliency and superior availability throughout the IT infrastructure, including virtual environments.

Stratus delivers a range of solutions that includes software-based high availability, fault-tolerant servers, availability consulting and assessment, and remote systems management services. Based on nearly 30 years of expertise in product and services

technology for total availability, Stratus is a trusted solutions provider to customers in manufacturing, financial services, health care, public safety, transportation & logistics, and other industries.

**For more information, visit [www.stratus.com](http://www.stratus.com)**



COMING NEXT!

### Chapter 2

- ◆ Which critical apps can be virtualized safely?

*Stay tuned to this five-part series from Stratus Technologies*



# 5 Questions to Ask About Server Virtualization and High Availability

Part 2

Which Critical Production Apps Can Be Virtualized Safely?

---

The ebook with answers:

- ◆ Is now the right time to virtualize my critical production applications?
- ◆ Which critical production apps can be virtualized safely?
- ◆ Won't virtualization add more complexity?
- ◆ What happens to my virtual machines if the physical server fails?
- ◆ Will virtualization software alone give me enough high availability?



Second of a five-part series from Stratus

### Which Critical Production Apps Can Be Virtualized Safely?

As we mentioned in the previous chapter, using x86 server virtualization is now possible with many applications that weren't realistic candidates in the past. Attention to a number of guidelines will help you determine which production applications, particularly critical ones, will run in virtual machines (VMs) with the availability and performance needed by your business processes and your users.

### Know your application

First things first: Does your application software vendor or ISV support the virtualization solution you plan to use? The good news is the number of supported applications has grown quickly and continues to climb. For example, some of the global software vendors with support policies in place for VMware® products are listed on the company's site.

Today production application support extends to an increasing number of mission-critical applications that were not appropriate to run in VMs before. Application support is expanding even in rigorous environments that include computer-aided dispatch (CAD) for public safety, and health information systems used in patient care.

It remains a must to consult with your application vendor(s) to be clear about exactly what is supported regarding the specific virtualization technology you plan to use, and to understand the nuances of running your application in VMs.

Issues around application software licensing come to mind first, but they're just one factor. For instance, in certain cases the application vendor may limit support to approved hardware and software configurations that have been pre-tested.

Your software vendor may in addition be a knowledgeable source of advice about specific application characteristics that have an impact on availability and performance.

When you need to go deeper to understand how your application will work with VMs, engaging a professional services provider with expertise in virtualization and availability can help you avoid mistakes that would cost your business dearly.

Among the examples is when you have a reliable legacy application and want to complete a physical-to-virtual migration without destabilizing the environment.

### Identify resource dependencies

In any case, you need to understand which resources your production application depends on, and when.

# SERVER VIRTUALIZATION AND HIGH AVAILABILITY



*Application support is expanding even in rigorous environments that include message switching in travel and transportation environments, computer-aided dispatch (CAD) for public safety, and health information systems used to support patient care.*

## FAA Virtualizes Critical International Communication Application on Stratus Servers

The Federal Aviation Administration's William J. Hughes Technical Center in Atlantic City is building a virtual computing environment for its operations-critical international message switching system with systems and services from Stratus Technologies.

The project will start with two guest operating systems running on VMware ESX™ software, data center edition. The first guest operating system will run a message switching application for sending flight plans, weather information and other messages to international airports from FAA control centers in Salt Lake City and Atlanta.

The second will run a Windows® application being used as a generic proxy server. Two fault-tolerant Stratus® ftServer® systems and Stratus ftScalable™ storage units will be located in Atlantic City, with another server located in each of the two control centers.

## SERVER VIRTUALIZATION AND HIGH AVAILABILITY

Staying clear about resource dependencies can get challenging in a virtual environment, where services and applications are abstracted away from the physical IT infrastructure that supports them. Hitting a bottleneck or a capacity limit will degrade performance and cause your application to become unavailable, provide unacceptable response time or both. You have to be aware of how latency-sensitive the application is, and if it is bound by CPU, memory and/or I/O.

Because peak workload is a key consideration, VM placement matters — especially for resource-intensive production applications. Keep in mind that these applications may benefit from virtualization for purposes of disaster recovery and live migration (see Chapter 3), even when the applications still ought to be hosted on non-consolidated, dedicated physical server(s).

When your application uses specialized hardware services or features, be sure

not to overlook these in your planning. For example, supervisory control and data acquisition (SCADA) systems in manufacturing may depend on legacy or proprietary I/O cards to access specialized plant equipment networks.

### Virtualization software matters

The virtualization software you use makes a difference. Each vendor's server virtualization software has its specific traits; even various editions of the same vendor's software don't necessarily have the same characteristics. Many of those variations have a direct impact on production applications. One straightforward example: VMs that run on “bare metal” — that is, directly on the server — are subject to less latency than those running on top of a host operating system.

You will also want to determine whether it's suitable to run the virtualization software on server hardware you already have. Using the virtualization software's high-availability or fault-tolerant features

in some cases requires a primary and secondary physical server with identical hardware configurations right down to the CPU revision level.

Although high availability and disaster recovery drive many virtualization projects, you also have to determine whether your “high-availability” or “fault-tolerant” virtualization software leaves you exposed to the risks of application downtime and data loss. We'll expand on this point in Chapters 4 and 5.



## COMING NEXT!

### Chapter 3

- ◆ Won't Virtualization Add More Complexity?

*Stay tuned to this five-part series from Stratus Technologies*