

Net Admin Weekly

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Feature**Server Consolidation Using VMware GSX Server 2.0**[to top](#)

How many servers do you have sitting around your building? Maybe you manage the IT infrastructure for a small-to-medium sized business and you have 10 Windows 2000 Servers in different locations. The server hardware is the typical off-the-shelf stuff and you constantly worry about disaster recovery. You've asked for additional equipment to help your fault tolerance design, but there just doesn't seem to be enough money to support redundancy for all the servers in your organization.

Maybe you work with a larger organization and you are responsible for rolling out mail servers, file servers, domain controllers, and database servers at the remote offices. Each time a new office comes online, you have to fire up new boxes for the branch offices and hope that someone on site can get them going without you having to spend a weekend going there and doing it yourself.

One solution to these problems might be server consolidation using VMware's GSX Server 2.0. VMware's GSX Server allows you to install multiple virtual machines on a single server and manage those virtual machines remotely. You can even create a virtual machine while off site and get it working on the GSX Server in no time.

VMware GSX Server 2.0 runs on top of another operating system that is installed on an x86 platform machine. GSX 2.0 can be installed on Windows 2000, Windows NT 4.0, Windows 2003 and Linux. The operating system on which you install the GSX 2.0 Server software is called the "host" operating system. I've only used Windows 2000 as the host operating system and it's been rock solid. I've read the same thing about GSX 2.0 on Linux operating systems as well. I haven't read anything on GSX 2.0 on pre-release versions of Windows 2003, but I'll let you know what I find out.

Once GSX 2.0 is installed, you can install multiple "guest" operating systems. Each guest operating system uses a dedicated chunk of the system's RAM. The memory that's devoted to a guest operating system is not available to the host operating system, and is not available to other Guest operating systems. Through a memory sleight of hand, GSX 2.0 Server is able to transform multiple physical computers into a "pool" of virtual machines. Needless to say, this is quite cool.

To give you an idea of what you can do, we converted several of our production servers over to virtual machines. We used this project as a test to see what level of stability and performance we could get with virtual machines on a GSX 2.0 server. The server hardware was very modest: a Dell PowerEdge500SC with a Pentium III 1.4 GHz processor. There were two 120 GB IDE hard disks and 2 GB of PC133 SDRAM.

Onto this modest hardware we wanted to consolidate the following servers that were running on separate machines:

- Exchange 2000 Server with 60 active accounts and a 15 GB Message Store that was also running Outlook Web Access and Exchange Conferencing Server.
- IIS 5.0 Web Server hosting 15 publicly accessible Web sites.

- Two DNS servers that acted as the primary and secondary DNS servers for the publicly hosted domains; these two DNS servers also acted as SMTP relays that accept mail for these domains.
- An SMTP spam relay server that "cleans" mail forwarded to it by the SMTP relay servers; the SMTP spam relay forwards clean mail to the Exchange Server.

In total, we wanted to move the functions of all five machines onto the Dell PowerEdge running the VMware GSX 2.0 Server software. This is how we partitioned the memory:

- Exchange Server 768MB
- Web Server 256MB
- DNS/SMTP Relay 1 128MB
- DNS/SMTP Relay 2 128MB
- SMTP Spam Relay 128MB

Total memory dedicated to the GSX 2.0 virtual machines was 1798MB. The Host operating system had 2GB of physical RAM and a 2 GB Pagefile. The machine was also configured with the /3GB switch so that user mode processes could take advantage of up to 3 GB of physical RAM. Although we didn't have that much RAM in the box, it would allow our VMs to leverage as much physical memory as possible.

What was the result? Total stability and reliability. The GSX 2.0 VMs have been as stable as any Windows 2000 physical machine. Not a single blue screen, not a single freeze up. The virtual machines have been running smooth as silk for over three weeks. The processor does peak at 100% for a few minutes at a time, but none of the virtual machines or the processes running in those virtual machines are any worse for wear. The DNS server, mail relays, spam whacker, and Exchange Server have been running flawlessly.

But stability and reliability wasn't the reason for this server consolidation project. What I was most concerned with was easy disaster recovery. If one of the virtual machines died, I wanted to be able to bring it back ASAP. If the entire server died, I wanted to get all the virtual machines back quick.

It's easy to back up a virtual machine. All you need to do is shut it down (which you can do from a Windows XP or Windows 2000 Pro machine via the remote console), and then copy the virtual machine's files to a backup location. Once the files are copied, restart the virtual machine and all is well. I performed this backup for each of the virtual machines. Note that you can also perform conventional backups using the built-in ntbacup in each virtual machine. For example, we performed backups of the Exchange Message store on a nightly basis and did the same for the Web server.

To test how long it would take to bring all these servers back on line, I shut down the PowerEdge Server. I brought online a backup machine with similar specs, installed Windows 2000, and then installed the VMware GSX 2.0 Server software. That took about 20 minutes (note that the disks were already formatted; formatting two 120 GB disks can take

some time). Then I copied the backed up virtual machine files to the new GSX 2.0 server machine, made a small tweak to the VM config files to make sure they worked on the new machine, and powered them up.

Total time from full simulated meltdown to up and running? Less than 90 minutes. Try rebuilding 5 physical boxes from scratch in that amount of time. Even if you use disk imaging, you know that something isn't going to work, because the hardware won't be the same and the images often are corrupt or something goes whack. With the VMware backups, it doesn't matter what the actual hardware of the new machines is, because the hardware is virtualized – the virtual machines always see the *same* hardware, regardless of the actual physical hardware on the new box.

I don't worry about my Exchange Server, my Web Server, my DNS and SMTP servers going down any more. I have full system backups that can be restored on a per virtual server basis in less than 15 minutes. Even if the Exchange Server virtual machine somehow becomes corrupted, I can restore from the weekly virtual machine backup, and then use the message store backups to bring the machine almost completely up to date. I'll tell you, life doesn't get much easier than this.

If you want a cost-effective, high-availability solution that allows you to easily increase your capacity without buying new systems, then you should give VMware GSX Server 2.0 a good look. You can learn more about GSX 2.0 [here](#).

If you have any questions about our VMware GSX 2.0 experiences, feel free to write me at insider@tacteam.net

This week's feature article by
Thomas W Shinder MD
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ISA Server and Beyond!
<http://tinyurl.com/1qmw>

Q & A

To Wire or to Wireless?



Question:

Dear Sgt. Deb,
I have a small business (3 employees) that we just moved into two adjacent offices, a reception area and conference room in an older office building that is not wired with Ethernet. I'd like to avoid the cost and hassle of having someone wire the offices, but we need to be able to access one another's files and to connect all the computers to the Internet through one DSL connection. I've heard a lot about wireless networking and I'm wondering if that would be a good solution. What can you tell me about the pros and cons of wireless networks? What about the phone line and power line networking kits I've heard about? --
Unwired

Answer:

Dear Unwired,

Wireless technologies are all the rage these days, and offer both advantages and disadvantages when compared with a traditional wired Ethernet network. If cost is your primary concern, you might find that by the time you buy the necessary equipment (wireless NICs for each computer, a wireless access point or wireless router), having someone run a few Ethernet cables might actually be cheaper, depending on labor costs in your area. I would at least get an estimate so as to have a basis for comparison.

On the other hand, if you have a situation such as a lease that doesn't allow you to alter the infrastructure, or you just don't want to deal with getting someone to come out and do the work, an 802.11 wireless network (also referred to as Wi-Fi) is fairly easy to set up and you can get up and running without having to wait on someone to come out and do the work. The biggest advantage of wireless, though, is the mobility it provides. If you anticipate moving the computers around to different locations, for example, you wouldn't have to have new wires dropped. And wireless is great for connecting a laptop to the network. You could take the laptop to the conference room, or down the hall to the kitchenette, and stay connected even if there are no Ethernet jacks in those locations.

There are indeed kits that let you network through your phone (HPNA) or power lines. However, your mobility is somewhat limited by the locations of phone jacks and power plugs. Also, the quality of the phone line ("dirty" lines) may cause problems, and power line-based networks can suffer from interference caused by appliances and such. It becomes even more problematic when you're working with two different buildings, because the HPNA networks must be on the same circuit.

If you do implement a wireless network, you'll want to consider some security issues. Because wireless uses radio transmission, it's easy for "war drivers" (people who roam around with a wireless-equipped laptop looking for open networks) to use your network's bandwidth and even access your files. Consider using WEP (Wired Equivalent Privacy) encryption to protect your data from hackers. WEP is not enabled by default on most wireless access points. Also, be sure to change the default administrative password. Choose a WAP that allows some level of access control over who can join the wireless network. Even with WEP, wireless networks are considered less secure than traditional wired networks, so if you're in a business where you require a secure environment, you might want to go ahead and run traditional Ethernet.

Configuring an ISA Server Test Lab for Exam 70-227

**Question:**

Dear Sgt. Deb,
I am having a very strange problem. Sometimes when I try to go to a

particular web site, or do a search, instead I get sent to www.xupiter.com. I use Internet Explorer and I'm beginning to wonder if my browser is haunted. What in the heck is going on? –Redirected

Answer:

Dear Redirected,

It's called browser hijacking, and it's not a good thing. Xupiter is a type of "spyware/adware" that probably installed itself when you visited some web site. It has a valid certificate so many users think it can be trusted, and that they need it to view the web site, so they go ahead and let it install. Then it hijacks their browser's homepage and causes problems such as you're having.

There is an uninstall link on the www.xupiter.com/uninstall/ web site, but some users report that it doesn't work for them.

You can download and install Ad-aware from www.lavasoft.de. It will find and remove spyware/adware programs on your computer, including xupiter.

You might also want to check out the "official" xupiter thread on the www.spywareinfo.com web site for more info on this pesky beast.

Security Advisories**Buffer Overrun in SmartHTML Interpreter Could Allow Code Execution**

There is a problem with a component of the FrontPage Server

extensions that could create a denial of service situation or worse. The flaw has different effects depending on what version of FrontPage extensions you're using. Check out the bulletin for details.

[Read more...](#)

Check Your Devices against the "Fritz Hit List"

If you've been around the block a couple of times, you know the biggest threats to security are standardization and centralization. Given this time tested fact, you easily recognize Palladium and LaGrande are total security disasters. But it gets worse! You may someday be imprisoned for owning a Barbie doll. Check to see if any of your devices are on the "Fritz Hit List". (LaGrande is a "Fritz" chip)

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"The writing and distribution of the tool is the offense"

Whoa. Here's a real good one to put in your security toolbox. On second thought, don't put anything in your security toolbox that can be interpreted as a hacking tool. Why? 'Cause the laws, they are a -

changing. You better get savvy on computer law, or you could be doing hard time. The first links shows someone getting nailed for writing network security tools. Check out the second link to gear up on your understanding of computers and the law.

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News Headlines and Resources



Buffer Overruns - Part One



What is a buffer overrun? We see them all the time with the IIS security patch alerts. Many other Microsoft security fixes are related to buffer overrun issues. What causes a buffer overrun and is it something that can be avoided? Read this article and find out.

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Windows 2000 RAS Server Monitor Makes RAS Auditing Easy



If you've ever tried to make sense out of the accounting logs for a Windows 2000 RAS Server, you know that its definitely not child's play. If you have the Windows 2000 Resource Kit (and what Windows 2000 admin would be without it?) you have access to the RasSrvMon.exe tool. Use this tool to see who logged on when and how. Very nice log files!

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How to Uninstall and Install Outlook Express and Keep your Data



Have you ever had to uninstall and reinstall Outlook Express? If so, you know it's not a straightforward affair. The most important procedure is to back up the data and be able to restore it. This Microsoft Q article gives you the step-by-step on how to uninstall and reinstall Outlook Express and keep your stuff intact.

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Possible Flaw in Windows PPTP Implementation



PPTP is the most popular Microsoft VPN protocol because it's so easy to implement. Just enable the Windows 2000 RRAS server and configure the VPN client and away you go. The problem is there may be a security issue with the Windows 2000 PPTP implementation. Microsoft has not commented on this yet, but you might want to read this article and consider migrating to L2TP/IPSec.

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Securing 802.11 Wireless Networks



The fact is that we're not doing enough to secure our internal networks from rogue wireless clients. One of the problems is that many of the methods used to secure wireless nets require you to use proprietary

technologies. How about using services included in the Windows 2000 box? This article shows you to secure wireless networks using built-in VPN technologies.

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Protecting Windows RPC Traffic



You've probably heard this many times: Don't use RPC over the Internet! The reason is that many consider RPC to be an inherently insecure protocol for Internet communications. Is that true? Read the excellent article by Spyros Sakellariadis and find out.

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Review of Network Infrastructure Concepts



Here is a great article on network infrastructure. Do you know what a MDF is? How about an IDF? How long has it been since you've been in your server closet? Too long! Bill Heldman does a great job in reviewing important infrastructure concepts.

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Download of the Week



VMware Workstation 3.2



We've featured VMware in the section before, and we're going to do it again! VMware is the admin's best friend, hands down. The guys at VMware have recently released an updated version that works better with Pentium 4 processors. Another cool feature is that ability to password protect the configuration. This makes it a more viable option in education environments. If you already have VMware 3.x you can upgrade for free. If you don't have VMware yet, you need to download an eval version and see why no admin should be without it.

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