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Richard
Campbell

RunAs Radio is a weekly Internet Audio Talk Show for IT Professionals working with Microsoft products. The full range of IT topics is covered from a Microsoft-centric viewpoint.



Greg
Hughes

Text Transcript of Show #017
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**Stephen Rose on the State of Server Virtualization
August 1, 2007**



Stephen Rose on the State of Server Virtualization August 1, 2007

[Music]

Carl Franklin: From runasradio.com, you're listening to RunAs Radio, the weekly Internet audio talk show for IT professionals with Richard Campbell and Greg Hughes. This is Carl Franklin, introducing show #17, with guest Stephen Rose, recorded Thursday, July 19, 2007. RunAs Radio is produced each week by PWOP Productions, offering professional media and podcasting services online at pwop.com.

Richard Campbell: Hi there. This is Richard Campbell and you're listening to RunAs Radio with me and my co-host, Greg Hughes.

Greg Hughes: Hey everybody. How are you Richard?

Richard Campbell: I'm loving summer, man.

Greg Hughes: Me too. It's yet another beautiful day in the pacific northwest and sitting indoors as usual on a weekday.

Richard Campbell: That's weird.

Greg Hughes: Something about computers don't live well outside.

Richard Campbell: No, they really don't.

Greg Hughes: I wish they did.

Richard Campbell: We all have to work inside. I'm looking at our fall lineup and we've got a lot to do. Of course, the big show for us is going to be the IT Forum at TechEd in Europe in Barcelona.

Greg Hughes: Yeah. That will be a whole lot of fun.

Richard Campbell: But there's a bunch of other opportunities coming up too and I guess we'll have to put some announcements together for those, but it's great to get out in front of live folks too, to try and do some IT-related panels if we can get it all together.

Greg Hughes: Yeah, it will be a lot of fun. One of the great things about being able to travel around and maybe pick up some conversations with people around the world is getting that broader and

bigger global perspective on things. It's really easy in North America to stay focused in the little trips and the closer conversations, but this is a global universe that we're operating in here and IT is a universal truth.

Richard Campbell: And it's a very interesting challenge to interoperate across those bigtime spaces and across languages as well.

Greg Hughes: Absolutely. Both in terms of conversation, just interacting people wise across languages, but even technically across languages there are probably some interesting conversations they have there.

Richard Campbell: A lot of subtlety on making all of that work.

Greg Hughes: You bet.

Richard Campbell: I got an email for you and this one's from John Dyer and he has no preamble. He's just right into it. Obviously an IT guy and he's busy. "Okay. I think you guys need to get Charlie Russell and John Savill to discuss the pros and cons of each method of running an app. I would like to know when one is better than the other. The company I work at uses Citrix to handle the issues of getting a standard client server app distributed out to the users. I see that this can only go so far. I'm thinking application virtualization might be a better idea because it uses all those spare CPU cycles on the user's desktop without the hassles of getting the app installed and maintained on hundreds of workstations, but maybe remote app has a few tricks up its sleeve. Or how about getting someone that is thinking that client server is dead and the web is here to stay? Jeff Atwood is having these thoughts," and he gave a link to codinghorror.com, one of my favorite blogs.

Greg Hughes: Yeah. Jeff's not only a brilliant guy, but a great guy and he's a whole lot of fun to read.

Richard Campbell: I shrinksterized it if you want to read this particular blog entry. It's at shrinkster.com/rei.

Greg Hughes: Not a trademark.

Richard Campbell: No. Not the mountain gear store.



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Greg Hughes: I didn't know Jeff Atwood work for REI.

Richard Campbell: He does not! He works for Scott Stanfield in Vertigo.

Greg Hughes: Oh.

Richard Campbell: Now, Scott owes me a buck. The blog post from back in March is about web interfaces being good enough and he's really doing that whole Pareto's law. This is at least 80% of the way for 20% of the effort. We should go with it. It's a great discussion.

Greg Hughes: Yeah. It's welcome to our bipolar discussion of it's either web-based or it's *fat client*.

Richard Campbell: Right. There's no other way.

Greg Hughes: It really is a great world people.

Richard Campbell: Let me finish up John's email here. "So, Joel Spolsky seems to be firmly in the web world and I have to agree."

Greg Hughes: Now, there is somebody who has absolutely no opinions.

Richard Campbell: None at all. Not one.

Greg Hughes: No. Very smart guy.

Richard Campbell: Very smart. "I also think the days of installing client server apps on each workstation are numbered." Do you see a theme here? Do you see John's pain?

Greg Hughes: Yeah and I can totally appreciate that pain, the overhead associated with administering and managing and just designing large scale distribution of applications. I mean even Carl put together the Pwopcaster.

Richard Campbell: Right.

Greg Hughes: That's a click-once application and that's what I use every time that we do a show. It's no work for me. I have no software installed other than I go to a webpage and click one button and

everything else is just auto magical and it works really, really well.

Richard Campbell: And it is a client-side app.

Greg Hughes: It's a client-side app, but it's a web-based delivery and so it's a hybrid kind of thing. Right there, there's a great example.

Richard Campbell: Right.

Greg Hughes: The software that I'm using to record this show right now is a perfect example of that.

Richard Campbell: Yeah. I think it really does work that way and it's exactly what John says. He says, "What is needed is for developers to understand the issues about installing and maintaining an app on the multitude of workstations that are the typical office scenario. I think a lot of developers just think, install it, and you're done. They don't really have a good feel for the real world of desktops. And then there's the issue of getting patches installed when the bugs start rolling in the service packs."

Greg Hughes: Yeah. And then the developers, they get into that murky world of maintenance of an existing...

Richard Campbell: Right.

Greg Hughes: Everything is great until you have customers.

Richard Campbell: Yes.

Greg Hughes: And you get it installed, not just on desktops but on servers, and then all of a sudden you have to start dealing with the real world, the mistakes and the bugs and the things that you didn't think of.

Richard Campbell: Yeah. Are you prepared for having clients running four different versions of your product?

Greg Hughes: And if you need to roll out a new version of the product, then what does that look like? That's where, you know, that remote delivery or sort of that abstracted layer of delivery, maybe there's some real value there.



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Richard Campbell: Yeah. Absolutely. All right, Greg. Let's introduce Stephen Rose.

Stephen is the CTO and Partner with Odyssey Consulting Group in Southern California. They specialize in Infrastructure Design and .NET application development. As a consultant Stephen has worked with many companies like Ford Motor Company, IBM, 5th 3rd Bank Corp, McDonald's, Pacific Western, OSI Systems, Rapiscan Systems, ADP, PGA, St. John's Medical Center, Apple Computers, UCLA Medical Center, DMB&B, Pacific Western, iDocs Technologies, and the Miller Brewing Company. Now, there's a list for you. His technical certificates include, MCSE, MCT, MCSA, MCP+I as well as a myriad of CompTia certs. Stephen was just named a Microsoft MVP for Networking. In fact, I believe I was there for that, Stephen.

Stephen Rose: Yes, you were.

Richard Campbell: Ah, yeah. I was with Daniel who's your partner too, right?

Stephen Rose: Yeah. Daniel was also named once again the MVP in ASP.NET.

Richard Campbell: Awesome. I'm an MVP in ASP.NET as well. So, we're just a happy bunch of MVPs today.

Stephen Rose: Absolutely. I get to hang out with all the cool kids like you and Michèle Bustamante and all the fun folks.

Richard Campbell: We met down in the SoCal Code Camp a few weeks back and had a good time there. That was really a great Code Camp, two days, I think it was as many as 10 rooms running? It's amazing and a huge group of people. So, we're talking virtualization, which seems to be taking over the universe these days.

Stephen Rose: It very much is. It's interesting. I attended a CIO conference last year that was done by one of the major magazine companies and it was just amazing to watch company after company after company and large ones like AT&T, Fox Network, etc., talk about the amount of machines that they had virtualized over and probably the funniest thing was a lot of them is they start to virtualize machines didn't

tell management and had management actually working on them and they said, "Well, how's it gonna be?" and they go, "Remember that server used for this everyday? It's already virtualized."

Richard Campbell: Yeah. You don't even know it happened. It's invisible.

Stephen Rose: Yeah. Exactly. It's magic.

Greg Hughes: In a lot of cases, I think we've experienced that here where I work. We have hundreds of virtualized servers and machines and I think that there has been some trial and error over the last two to three years especially in terms of performance optimization, but it's come a long, long way. Some of the hardware extensions that are available now, it all ties together. You can really get some pretty incredible flexibility in performance when you do machine virtualization.

Stephen Rose: Exactly. It's interesting because I walk into a lot of clients now and we go, "Why are you buying 10-15 blades? Why aren't you buying a really good beefy server?" One of the ones that I'm a big fan of is HP has a G5 series server that supports four dual-core processors and up to 64 gigabytes of RAM.

Greg Hughes: Right.

Richard Campbell: So, 16 processors, 64 gigs of RAM, you can run a lot of virtual machines on that.

Stephen Rose: Exactly and what's great is they drop in two processors, they drop in X amount of RAM, they decide that they want to handle another 10,000 clients that we can literally order a processor and RAM overnight, spin up one or two new machines with literally very little cost, but almost no time. You can spin up a machine in 15-20 minutes in your server and you're immediately ready to go and you can handle the changing needs of companies. Incredibly effectively much faster than ordering a new blade server, getting it in, installing your operating system, configuring it, joining it to Active Directory, and going through all those steps which is cumbersome and time is money. It's difficult.

Greg Hughes: Yeah, especially a lot of organizations, for example, that run large professional services where they are doing custom work on



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custom software for their clients and with the lack of predictability in what you might need when, virtualizing is certainly a way to go. Interesting you bring up blades. One of the things that we have some experience with is actually using blades to be those virtualization hosts with my experiences with the latest IBM blade center stuff, but with the hardware extensions and some of the newer stuff that's out there, we're getting huge capacity in a very, very compact rack space with terrific performance out of virtualized servers even in that environment.

Stephen Rose: And that's exactly -- you're consolidating your servers by running all your apps on a single server which is going to reduce the hardware, the power, the cooling. I've had clients that have reduced their floor space by 50%, 60%, even 70% virtually overnight by doing this as their servers rather than replacing them or as they come off of lease, starting to migrate that over and it also makes that in just deployment and testing of software. It's great when you've got application developers and you say, "No problem. Let me spin up a virtual server for you. If you break it, I don't care."

Greg Hughes: Yeah. I have loaded up somewhere around probably 20 U's of space or 24 U's of space, a single rack, what used to take several racks of pizza boxes, the one-U servers in order to go from separate hardware to a virtualized. A lot of improvements on that virtualization software both on the Microsoft side and also on the VMware side and others that have made a real difference in terms of bringing it into the mainstream and being able to really run high availability applications as opposed to basically just being a glorified virtualization toy.

Stephen Rose: Absolutely. I agree 100%.

Richard Campbell: Well, you guys, you got all kinds of love here for virtualization.

Stephen Rose: We do.

Richard Campbell: But for me, I'm still worrying about the failover solutions. That tank machine goes down and I've taken down a lot of servers. You talk about clustering across these things. This is between two different machines both running virtual machines.

Stephen Rose: And that's what's great now is that clustering services for SQL and for servers are

now supported by Microsoft's Virtual Server 2007 and by the VMware products you now can support clustering which gives you much greater levels of redundancy. The other nice thing is, you know, we're going to assume that most people are backing up images and what's great is if that whole box does fail, we're looking at redundant power supplies. In the new servers, it's actually separate motherboards for the processors so you can actually on these new HPs have one of your two motherboards go down and you're only losing half your processors, half your RAM.

Richard Campbell: You know, I'd actually lose the machine at all and yeah, I mean you bring up a very powerful point here Stephen which is that hardware these days is pretty darn reliable.

Stephen Rose: Yeah. If it goes down, somebody was not doing their job for a very long time.

Richard Campbell: Yeah. You've had lots of warning.

Stephen Rose: Exactly. One of the things that we really love about this and what a lot of our clients are chatting about is they're going to web 1.0 and web 2.0, we're looking at a lot of companies now going to infrastructure 2.0. We now want to bulk up our servers. We're ready to buy our second RAM. We want to get thinner. That storage has dropped so much that now they're looking at moving into one and two 4-8 terabytes of NAS or of storage space.

Greg Hughes: Right. The cost of running multiple locations and having your redundancy, not just meaning that you have redundant hardware, but you have redundant physical locations, the cost of everything has gone down substantially and certainly with a lot of the physical disaster and other disaster type events that have happened over the last, say, seven years or eight years or so, a lot of companies are taking very seriously how do I manage these machines across multiple locations, what if I need to failover to another location. Distributed systems architecture has certainly come a long way and all of this stuff really dovetails together.

Stephen Rose: That is an excellent point. I think also just the way that people think of networks -- I think one of my favorite conversations with a client here -- and I was born in Montreal, I was raised in



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Chicago so I don't know much about earthquakes. They scare the crap out of me.

Richard Campbell: And now, let me get to Southern California.

Stephen Rose: The earth opens up every once in a while. I had a client who turned around to me and said, "Well, we have everything on tape." I said, "Okay. That's great. Well, these machines you have are 3 and 4 years old so when you buy new servers, what are you going to do with that tape image when none of the hardware that now you purchased, not even the processors match up."

Richard Campbell: Yeah.

Greg Hughes: Exactly. And the real answer is absolutely nothing.

Stephen Rose: Exactly. There's a great product out that I really like that's from a company called Acronis.

Richard Campbell: Love Acronis.

Stephen Rose: Yeah.

Greg Hughes: Yeah, they're a great company.

Stephen Rose: Amazing. Their true image restore which allows you to take an image of any machine and move it over to a new machine with dissimilar hardware and it will pick up and allow you to install all the new drivers so you can take an image that is literally on a Dell blade and move it to an HP box or vice versa without any problems as you start to move into, you know, from SCSI to iSCSI, dual mix from single mix, whatever your hardware is and to be able to move into that. That's just added whole new levels for people to be able to work with disaster recovery and making a much better case for working with virtualization moving into those aspects or taking those images and moving them right into a virtualized server.

Richard Campbell: I chaired a panel discussion at one point where a group of guys was talking about orphan servers, using Acronis to image off these orphaned NT 4.0 boxes that were running an app that nobody knew how to take care of anymore and sticking them into VMs and it was a campaign. One

guy in particular and I'll leave his name out because A) I don't remember it and B) he probably doesn't want me to talk about it, he was with a healthcare organization and he went on this rampage for three months hunting down all these old orphaned servers stuffed in corners, imaging them and running them all off of one big box because the load on the individual machine was minute. They were old, old machines and so the horsepower of these machines was phenomenal, but the big thing for him was, "I don't have to worry about keeping that crappy old gear alive anymore. I've got an image of this and if for some reason we break it, I have a backup of the image of it."

Stephen Rose: That's exactly it. It gets rid of a lot of those headaches. I mean when you take a look at machines, you're finding that most companies on the server are only using on average about 40% of the RAM and maybe about 20-30% of the processor power.

Richard Campbell: Right.

Stephen Rose: And that's it and they're running 10 servers at that point, which literally means 50% of your cost is absolutely lost and when you get into that, when you can put two or three or four servers onto a single box, your ROI shoots through the roof and it pays for itself very, very quickly. Solutions like VMware, EMO, and when you look at the Microsoft end of it, when you start to take a look at their live to virtual products, it's absolutely great. That's where the key is at the migration tool that VMware has put out, that Microsoft is to take you from a live machine to a virtual image have now become much more reliable and much more easy to use making it a valid choice for a lot of people starting to look at it. That was really the issue is you could create virtual machine, but how do I get my live machines in that.

Greg Hughes: Those P2V or Physical to Virtual software packages that are available have really made it possible to go in the real world to a virtualized environment. If people haven't given those a shot, pretty much any of them are either free or else you can try them for free and it will really rock your world when it comes to doing virtualization.

Stephen Rose: Absolutely. The two big ones out there is of course with VM is the VMware



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Converter and what's really great about that one is you can do multiple conversions with a centralized management console and if you're using Microsoft Virtual PC or Virtual Server or even if you have Backup Exec from Symantec Images or Ghost 9.0, you virtualize all of those into a VM machine.

Richard Campbell: That's pretty awesome.

Stephen Rose: And you can restore it and you can clone it and that's what's really great. On the Microsoft end, you do have their Virtual Server Migration Toolkit, their VSMT, which also is great for taking a live image and doing that, not quite as much flexibility but it's free and that's what's certainly in Microsoft's corner is it's absolutely free. The VM product is great and it does have some features that Microsoft doesn't have. I've chatted with some of the guys that work in the virtualization areas and they do have new toolkits and things like that that they're working on and I'm very, very excited about, but now that you have these migration tools, it just absolutely makes it great and the fact that I can take those tape backups or those Ghost images and I can directly bring that into a virtual really starts to take away a lot of those people that starts to get a little bit hinky about touching live machines and going that route.

Richard Campbell: Now, VMware really defined this market in the first place. Microsoft does come in a little later on. Is VMware still the product of choice?

Stephen Rose: You know, from my experience, I do find that a lot of companies find that if you're going to start to play with virtualization and you want to see how it's going to work, use the Microsoft product because all you're going to need to pay for is the license thing. Microsoft has a very, very nice, clear licensing area where you can take a look where it tells you how many licenses you need based upon processors and cores and things like that.

Richard Campbell: Right.

Stephen Rose: But it's very, very low cost, which is great. It's a great way to play with it, but I am finding that a lot of my clients when they get up into more of an enterprise level when they're starting to run multiple machines in multiple locations that they immediately want to start taking a look at the VMware product, specifically either the GSX or ESX and a lot of people like the ESX which is more expensive

because it does have one feature that Microsoft does not which is reallocate memory and CPUs when it's needed amongst the various virtual machines.

Greg Hughes: Right, the Dynamic Reallocation.

Stephen Rose: Exactly. It needs much less space memory to run. It has a smaller footprint customer kernel. It's literally self-optimizing and I think that that's one of those areas which if you only got 5-10 virtual machines it's fine, but when you start running into 50, 60, 100 and I was talking with the guys from AT&T that are running several hundred, self-optimization becomes key to make sure that as the users and needs of those various servers change, that they'll always keep that performance level that your users expect.

Greg Hughes: At the same time, there is, you know, I mean I can speak from our experience here in the job that I do as well as a number of other compadres that I have across the industry that are relying on the Microsoft virtualization to do Enterprise class virtualization, we do some of both. We do the Microsoft and the VMware. We've played with a few of the other probably I would say lesser known technologies out there, but when properly optimized and properly set up, the Microsoft virtualization technology is also very strong.

Stephen Rose: I agree. If you can get in there and you can tweak; my only issue and the one thing that I really want to see Microsoft change and it's again one of those things that I've got luckily by becoming an MVP I've been able to get some ears is the issue that their SANs access is still done through guest access that you actually have to mount the pointer drive letter on the operating system to do it and it creates some latency and that's one of the things that they're going to be changing and there are going to be some plug-ins and that will really make a difference because I have so many more clients that are now utilizing SAN, not just as a backup but actually as a live FileShare or as a SharePoint repository, things along that line.

Richard Campbell: You know, SAN is really the virtualization of disk storage as well, so we've got this virtualized drive environment and you sort just grazed over across this, but the density of storage now with those terabyte SATA drives, I'm talking about 12-15



terabytes in three U's like a massive amount of capacity and then fewer higher density machines, everything running virtually. The challenge is going to be managing all of this in such a tight space and also the ROI issues that you addressed, well, I can see where ESX is the huge bonus there that you were consolidating this set of systems because you wanted to cut down on the waste of processors, but if you've got to fix a certain amount of memory and a certain number of processors to every VM, you're going to be back to square one again in terms of utilization when the numbers get that high.

Stephen Rose: That's exactly it. It was amazing. I got brought in to a meeting that I was actually sitting with, speak of the devils, Daniel and Michèle, early on a project and they were going to bring in six servers for this client. I said, "You're insane. You're going to be spending all of this money. We can go with one server. We can bring this together." But, again, it's still only five to six servers so a single Control Panel is very, very easy to manage. When you move into those bigger spaces and you start to manage 100 virtual machines -- you know, it's funny. We spent the early years in computers doing mainframes and then we did everything in our power to get away from them.

Richard Campbell: Right.

Stephen Rose: Now, we're going to Thin Client, which is basically mainframe computing again.

Richard Campbell: Yes.

Stephen Rose: It's a single source that's pumping everything out and we have dumb terminals and we've literally come full circle on that. I have a lot of clients that are using not only terminal services, but are using virtual images as those Thin Client images and, again, it's starting to change the way that we're viewing that and managing that, but we're walking away finally with what every IT manager dreams of, which is standardization across the board of users and images and what we see on each one no matter how much of a turnover there has been in an IT department.

Richard Campbell: Is everything virtualizable? Does it make sense to virtualize the database servers? Does it make sense to virtualize a web farm?

Stephen Rose: You know, you really have to take a look. With SQL, it can be really funky. I have one client we're dealing with where they're clustering SQL and went back and forth in virtualization and when we took a look at the task and the way that it was being used because it was clients that were coming in via the web and were making donations. It's for non-profit group that I'm working with. There were lots of tiny little hits and it was constantly doing a lot of disk trashing, things like that. We actually saw, again, a bit of a slowdown when we moved from the regular physical machine to the virtual and had to start pumping up the RAM. We find that for stuff that's not accessed as much where when you're getting into things like exchange, domain controllers, things like that that it was absolutely much better in the virtual environment. We actually got better performance than when it was on a single box.

Richard Campbell: Right.

Stephen Rose: You know, the way that it was being used so I think you really have to look at each client separately and how it comes together and what their final needs were in clustering because of the replication between SQL databases can really start to eat up a lot of bandwidth as you start to move through it.

Richard Campbell: And it occurs to me that when you get into these master machines with multiple VMs, the one thing you're sharing is network connectivity. So, that's going to be a limiting factor. I mean it's fast, but it's not that fast. You could saturate it.

Stephen Rose: Absolutely, but one of the nice features is the new version, one of my favorite things when I was looking at the Microsoft Virtual Server 2007 is it finally supports the teaming of NICs.

Richard Campbell: Right.

Stephen Rose: Which is great because I have machines where we've teamed two, three, four NICs together. It reduces the redundancy but it really starts to open up pipes and when you're dealing with SQL, especially when it's SQL that has another third party application on top of it that can really take a long time to do queries and searches and things like that, it really starts to open up that pipe and I think that was



one of those keys in virtualization was can we tile these NIC cards together to open up that pipe and I think that that's something that's finally been realized and seems to be working very well for the clients that I have been working with.

Richard Campbell: So, the big thing that I saw missing from the Microsoft virtualization option that I figured was really why people were going to end up at VMware for much of the cases was Client 64-bit OS implementation.

Stephen Rose: Yes.

Richard Campbell: I guess if you're dependent on that, if you want to run Exchange in a VM, Exchange 2007, you have no choice but to go to VMware at this point.

Stephen Rose: It was interesting. I was chatting with the guys from Acronis today and I think when are you going to get some 64-bit support because you're exactly right, the new version of Exchange is only going to run in 64-bit platforms, so it's not going to run on the 64- or 32-bit chips. I was amazed when I first started reading the documents coming out that there's going to be no upgrade path to Exchange 2007. Everybody was like, "What are you talking about? It's 64-bit only," but I think what's going to be great about that is I have a ton of clients running SQL 2005 and they are very excited about having a secondary excuse to go to those pure chips to truly get the optimization aspects out of SQL 2005. Acronis is about to come out with a later on, they said this year, with a 64-bit conversion that will actually take your 32-bit machines and allow you to move them into a 64-bit environment.

Richard Campbell: That does sound like voodoo though, boy oh boy.

Stephen Rose: Yeah. I'll believe it when I see it and I get a chance to play with it. They made a believer out of me when they told me that they could take a Gateway, somebody actually bought a Gateway server at one point for the company I was working with and it was like literally six or seven years old and they want to move it into a brand new HP and I said, "No way," and it did it beautifully. I was absolutely amazed.

Richard Campbell: That is amazing.

Stephen Rose: I have faced that they may be able to do it, but I agree. I think Microsoft needs to start getting that out. I'm running Longhorn into a 32-bit version because I can't run the 64-bit properly and I really want to see that sort of support because that change that they're making is going to affect a lot of people across the board and it's going to affect a lot of budgets.

Greg Hughes: Microsoft's been putting some effort into provisioning and optimization around managing and provisioning virtual machines. I know they have the system center like it's called the System Center Virtual Machine Manager. That's in beta right now. What's going on in that regard? The more virtual machines you put into a datacenter or a test environment, the more the overhead goes up just in terms of managing and maintaining and keeping track of those machines. What are people thinking about?

Stephen Rose: It's really all over the place. A lot of my clients I say, "You know, you want a dedicated domain controller that's going to manage all this," but I think as we're moving into that, there needs to become better and smarter ways to manage it. I can't sit there and click at every machine and check the heartbeat and go through all of that. There needs to be a really great piece of software and there are some good third party companies that are making some, I'm actually evaluating several right now, that's really going to sit on top and give me a high level and I would love to be able to say when a machine drops below this in bandwidth, in processor use, in I/O, and disk writes, when it gets above this, creates these kinds of messages or it starts to run certain action scripts that are going to get in there and make the appropriate changes.

Richard Campbell: Aren't you describing Systems Operation Manager?

Stephen Rose: More than that, something that gets even more granular, down to those levels that can actually start to, again, self-adjust itself to a much higher level of not only just what resources are free, but actually to set if-then-else statements kind of thing. If this happens, then do this unless this isn't available, then I want you -- something that's imminently more complex and I think there are companies working towards that and, again, because we're seeing large data farm migrations because of



companies wanting to become more green, looking to find ways to cut cost, to take those massive air-cooled machine rooms they're doing and find better, more effective ways to work with that and get rid of some of that space.

Richard Campbell: Did we actually get a chance to talk about web farms? Because I think web farms are a special case.

Stephen Rose: Okay.

Richard Campbell: I mean I've built them as big as 20 pizza boxes, all identical. We're using all of those imaging tricks to make them identical, keep them in sync and so forth and it strikes me that this is really -- is this a good candidate for VMing? I would admit that you don't build web servers out of the biggest hardware because you run into thread pool issues before you run out of processing power.

Stephen Rose: Yes.

Greg Hughes: Right.

Richard Campbell: And you run into .NET's memory issues before you run out of RAM.

Stephen Rose: Yeah. I know people that have taken all their old desktops as they start to spin them out and start to cluster them and turn them into web farms and just buy themselves a good Barracuda box that's going to load balance that whole thing out.

Richard Campbell: Yeah, based on asymmetrical performance.

Stephen Rose: Exactly and to make sure that no one server gets certainly tanked on too hard. At this point, for a large web farm, it's really, really hard considering that most companies are using those small little boxes to say, "We could go out and buy these little \$400 boxes and buy 50 of them and just keep stacking them up and exponentially bring out our power than to go spend \$10,000 or \$15,000 plus licensing \$20,000 or \$30,000 on a much larger one when the performance will be negligible." I think that that really turns into a cost issue. Most of the clients that have web farms, at least that I've dealt with, their budgets are nowhere near as large as application development or larger product service companies. What have you run into with that?

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Richard Campbell: Well, I think some of it, it's a money issue. I'm always thinking more in the \$1000 to \$1500 range for my pizza boxes, but I'm still talking new and you're talking older, really the Google model of "any old piece of junk will do" mentality.

Stephen Rose: Exactly. Yes, a motherboard placed into a piece of cork.

Richard Campbell: Yeah, where the case isn't worth the cost.

Greg Hughes: Right.

Stephen Rose: Right.

Richard Campbell: Which is an interesting place and interesting way to build machinery.

Greg Hughes: Well, where you're going to distribute the application deployment whether it's multiple datacenter or single datacenter and your applications support that and you're buying a bunch of one-U Dell boxes or HP boxes or whatever it is you're buying and you're dropping those in there, there comes a point when the cost that we're talking about aren't just about the machine itself. It's also about heating, cooling, even power capacity. There's a management cost associated with it as well and how much time does it take to manage and to roll it out. one of the beauties of working with virtual machines and especially both on the VMware and the Microsoft side with the Virtual Machine Manager 2007 is that you have the ability to maintain a standardized library, to keep that up-to-date, patch it in one place, roll it out to multiple places, and to do quick provisioning and bring things up and sometimes I know that our experience has been time that you saved in the provisioning process that time is money. We use virtualization a lot in our development environments and test environments and what that allows us to do is to be very flexible. We can bring them up, roll them out very quickly. The time that we saved and the ability to be very agile and very quick in terms of continuing to get the work done quickly, there's some real value associated with that. Dealing with individual boxes especially if we're talking about old boxes and just adding them to a web farm when one goes down then you have to deal with that, it can get pretty expensive.



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Stephen Rose: Absolutely and it really comes into sort of when are you walking in. The problem that I run into is saying, "Hey, we need to go spend X amount of dollars on a box," and like "Well, if this one breaks, we're only..." and they look at it as one-off. That's only \$1000 to fix this and you want me to spend a much larger amount. It gets hard for some of those clients that are really, really financially stuck. You're right. When you turn around and you take a look at, "Look, this is what you're spending," and it's really about gathering your data, how much are you spending on cooling, how much are you spending on power, what is your physical footprint, how much is it costing you to manage that physical footprint, how much time is being spent by your IT people slowly buying RAM and the problem is a lot of companies are not really good at looking at that 2 gig of RAM chip that gets ordered from CDW every four weeks and then this little thing that comes in and this little fix that it really does start to add up and if you can take some time and really do a good project plan, really get your numbers together, the numbers really do start to pay for themselves very quickly and virtualization for that aspect does absolutely start to make sense from time and labor but it's hard to convince people.

Greg Hughes: Well, in companies, I mean I work with banks a lot and even in large, huge companies like these financial institutions, spending \$5000 on a piece of hardware is a great big deal.

Stephen Rose: Yes, it is.

Greg Hughes: If it's a capital expenditure, it's going to be hard to do and I'm sure there's a lot of listeners that have heard that before or have experienced that and have probably been just as frustrated as me when it comes down to that. One of the beauties of doing virtualization, again, is that you're not necessarily doing many, many, many overtime capital expenses. You may do one larger capital expense possibly, but you can realize the benefit of multi-purposing that capital expense in order to gain all of those other flexibility benefits.

Stephen Rose: And that's exactly correct. It is funny because IT departments spend money. That's all we do. That's all we're good for is how much money do I have to give you this year and they look at this big pothole that you throw large bags of money into.

Greg Hughes: Right. Never mind the fact that everything works.

Stephen Rose: That's exactly it. You're like, "Okay. You were able to make your sales calls today and able to access your email and able to access your sales management product and you were able to print and you closed X amount of deals today." I always equate IT and mothers and that is when they do their job well no one notices, but when they're not doing their job well there's always a finger pointed.

Richard Campbell: I found sometimes it's necessary to just turn off a server for an hour or so and let everybody know just how important you are to their lives.

Stephen Rose: How much do you love me now? Exactly.

Richard Campbell: Because I noticed that when I do my job well, none of you call me, but the moment I shut a server off, I get phone calls like you wouldn't believe.

Stephen Rose: Yeah. I get to feel all the love.

Greg Hughes: Yes.

Richard Campbell: All that love.

Stephen Rose: Exactly.

Greg Hughes: It's the beauty of managing from behind, right? That's the way it works.

Stephen Rose: It's interesting because the role of an IT manager or systems administrator over the last five years has really dramatically changed from someone who really, you know, back in the NT 4.0 days it was really just about understanding technology and could you network this stuff together and putting in a switch on a hub and just getting computers to talk to each other and then with Windows 2000 it was Active Directory and making it easier for people to find resources. Now, my job is really half of how to do stuff, the other stuff has really become much more of a business specialist and understanding business, how is this going to benefit, where is the ROI coming in, TCO, how are we going to get this back. I know more about leasing and dollar buyouts than any IT



guys have to know. The landscape is I'm going to spend money, but it's not how much I'm going to spend, here's so much I'm going to save yet.

Richard Campbell: Right.

Greg Hughes: Yeah. The other thing that we really are I think focused on as IT professionals nowadays is we're focused on the customer.

Stephen Rose: Sure.

Greg Hughes: Gone are the days, although we still see it and it's really unfortunate actually that we still see it, but at least somewhat gone or going by the wayside, are the days of the IT guys in their silos rolling their eyes and cursing under their breath. My job as the VP of IT here is to make sure that our team is making sure that everybody else is able to do their job really, really well. If I'm doing my job well, then everybody else is able to do their job well.

Stephen Rose: Absolutely. Well, it's funny because I still roll my eyes, but what's great is I'm usually logged in through Terminal Services and nobody sees me roll my eyes.

Greg Hughes: We're remoted in. That's the beauty of working from your kitchen in your boxer shorts.

Stephen Rose: Exactly. So, they don't have to hear what I'm saying or have to see my -- all they know is I'm helping them in solving that. Between Terminal Services and products like GoToMyPC and things like that, it has made it much easier to sort of manage those desktops and to handle that and with a lot of my clients returning to, again, we have problems and this is where virtualization comes in and is using it with Thin Client. That's become a huge thing where I turn around going, you know, I went into a company that I got hired at about six months ago to do an overhaul, where we at, and I was amazed to find out how many people were streaming radio, eating the bandwidth a lot.

Richard Campbell: Right.

Stephen Rose: Although many of these people needed to listen to Dr. Laura, it probably wasn't the best use of network resources.

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Greg Hughes: Well, as long as they're listening to RunAs Radio.

Richard Campbell: Then it's fine.

Stephen Rose: Right. That would be fine because they can download that locally and listen to it. So, that's always a good thing. My personal favorite was the guy who had the Ages of Empires Expansion Pack, which meant not only did he have time to play the whole game, but to go ahead and add an expansion pack so he could continue to play it more. Phenomenal. Peer-to-peer downloads, which of course puts any company at risk because now it's redistribution of copyrighted material.

Greg Hughes: Serious risk, yeah.

Richard Campbell: Yeah.

Stephen Rose: I said, "Look, the only way that you'll manage this because you've got open terminal and you've got three different companies that are running underneath one roof was to go Thin Client," and we virtualized out with Thin Client and it was absolutely amazing because everybody had exactly the same desktop and what we found was that calls to the helpdesk dropped by nearly 70%.

Richard Campbell: Wow.

Stephen Rose: Because it was a tool, it was a Yahoo! toolbar, it was IncrediMail which I incredibly hate that product because of "My Outlook won't open. It won't do this. It can't find this," because IncrediMail is somehow messing it up or some plug-in that somebody thought would be great for remembering this or that, it just gets rid of all those aspects and rather than spend a ton of time and money locking your network down to virtualize out that perfect desktop and then to literally have that across the board, you know exactly what you're getting into and it really, really makes a difference in that. Tying that in with Thin Client solution is another way to look at because people tend to think of virtualization as a back of the house tool. It makes a great front of the house tool and if you've got customer service reps where their job is to sit their on phone calls all day long and you want to make sure they're not playing solitaire, they're limited to where they're going to go on the web, they're not installing Firefox and I love Firefox, I think it's a great product but the problem is



that it becomes people's default browsers and they go, "Why can't I put in a helpdesk ticket?"

Richard Campbell: Right.

Greg Hughes: Right.

Stephen Rose: Because our helpdesk software doesn't support that.

Richard Campbell: And if Firefox is well supported, then make it the standard for everyone.

Stephen Rose: Exactly.

Richard Campbell: The main thing you want is that consistency.

Stephen Rose: Exactly. Most companies, that's really the first thing they look into and it also gets rid of that issue of license compliancy. People who have installed software, "I brought it from home," well that doesn't do me any good. When I do a tracking, I'm using Track-It and I get a list that says that you're running Photoshop and I don't have a Photoshop license for you, that becomes our issue. It's absolutely tremendous. Another use of that and it's interesting. I was out doing the LA Master series for the LA .NET group a few weeks ago and I had all of these .NET developers who were not developing inside their virtual workstations as we were testing beta inside of the regular laptops.

Richard Campbell: Ouch. Yeah. Totally inconsistent results.

Stephen Rose: Yeah.

Richard Campbell: All right, guys. We're overtime.

Stephen Rose: Oh, perfect.

Richard Campbell: But I think we were rolling. So, I'm not going to begrudge it at all. I think we got into some very interesting stuff there and I know we're not done with virtualization. We keep coming back here. It was great to sort of get a state of where we are right now. So, let's cut it off today and plan for another one soon.

Stephen Rose: That sounds great.

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Greg Hughes: Sounds like a good idea. You know what we should do next time, Richard?

Richard Campbell: What's that?

Greg Hughes: Let's set up a show for the future and I think it would be interesting to hear from the listeners because I know they're using virtualization, but what are the secrets that make virtualization work because I can think about things like VT and AMDV technology and using 64-bit hosts and things, but what else. What are the things the absolute must do's in order to make virtualization really scream and really, really work?

Richard Campbell: Great idea.

Stephen Rose: I think that would be great. I just want to throw this and that if there are listeners that have specific questions on virtualization, not only can they email me and you can go to our website, which is ocgpros.com. You can email me directly at srose@ocgpros.com, but I have a blog. It's mcsegeek.wordpress.com and I love it when people post questions and I do some articles on virtualization or I'm having problems with this and I'm more than happy to sit there and give my 2 cents and put in some references to folks and point them in the direction of any of the products that we've talked about today or some of the other solutions or if they have things that they love, I love hearing about it because I will share that information.

Richard Campbell: Great, Steve. Thanks so much for your time.

Stephen Rose: Thank you guys.

Richard Campbell: And we'll talk to you again next week on RunAs Radio.