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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 #065*  
(Transcription services provided by [PWOP Productions](#))



**Mark Minasi on Networking in Windows Server 2008!**  
**July 9, 2008**



[Music]

**Brandon Wenn:** From [runasradio.com](http://runasradio.com), you're listening to RunAs Radio, the Internet audio talk show for IT professionals with Richard Campbell and Greg Hughes. This is Brandon Wenn, announcing show #65, with guest Mark Minasi, recorded live Thursday, June 26, 2008. RunAs Radio is produced each week by PWOP Productions, providing professional media and podcasting services online at [pwop.com](http://pwop.com).

**Richard Campbell:** Hi, you're listening to RunAs Radio and I'm your host, Richard Campbell. With me as always, my co-host, Greg Hughes.

**Greg Hughes:** As always, good to talk to you again, Richard.

**Richard Campbell:** Nice to be back in the saddle again after the craziness at TechEd.

**Greg Hughes:** Yeah, you know, it was a fun show. It was pretty crazy. We sort of twisted things around a little bit, and did things a little different, but I thought things turned out pretty darn well.

**Richard Campbell:** Yeah, and for the second year of the Fish Bowl at least in the US and things that evolved there too.

**Greg Hughes:** Sure.

**Richard Campbell:** I felt very comfortable. We seem to feel like we knew what we're doing anyway.

**Greg Hughes:** Yeah, certainly, you've been through a number of things like Speaker Idol and whatnot and I've helped a little bit here and there.

**Richard Campbell:** Sure.

**Greg Hughes:** And, you know, we've learned from that. It's quite a bit of fun.

**Richard Campbell:** And had a lot of listeners drop by the Fish Bowl to say hi which was really cool. It was great to talk to everyone and glad people are enjoying the show.

**Greg Hughes:** Yeah. It was really good to meet people and also have the opportunity to record a couple of shows which, of course, have already been published. Those are most of our recent shows that are out there and in a lot more contacts for possible shows in the future.

**Richard Campbell:** You bet and, of course, we're now working on going to TechEd Europe in the fall again. I believe it's back in Barcelona one more time

and with any luck, once the paperwork is all done, we'll be there again this fall.

All right, Greg, let's introduce our guest, and I love this bio. When Mark Minasi attended his first lecture about computers in 1973, he learned two things. First, computers are neat. Second, many technical people are very nice folks... but they can put you to sleep in an instant while explaining technical things. Mark transformed those two insights into a career making computers easier and more fun to understand. He's done that by writing over a thousand popular computer columns, several dozen best-selling technical books, and explaining operating systems and networking to crowds from two to two thousand. Awarded "Favorite Technical Author" by CertCities four times out of four, Mark is probably best known for his "Mastering Windows Server" and "Complete PC Upgrade and Maintenance" books, both of which have seen more than 12 editions and sold over a million copies. An audience member at a recent talk remarked that he believed that Mark could "do a talk on watching paint dry that would be so good that people would be motivated to go home and paint a wall just to experience the joy of watching paint dry." While this led to many very tempting offers from Sherwin-Williams, he's decided to stay with his first and best love... technology. I hope this bio conveys to our listeners the seriousness of the conversation we're about to have.

**Greg Hughes:** Hey Mark.

**Mark Minasi:** Hey guys. So, tell me, why is this RunAs? It should be UAC at this point, User Account Control.

**Richard Campbell:** Oh nice, yes.

**Mark Minasi:** User Account Control is the replacement for RunAs.

**Greg Hughes:** You know how hard it is once you established an identity and a domain, you can't go back.

**Richard Campbell:** Oh no, no, this is where we're going, okay.

**Mark Minasi:** Oh, tell me about it. I write for this magazine, I started writing like for 13 years ago, it was called Windows NT Magazine and at one point we had 130,000 people in subscription but that was too many people, so we changed our name to Windows 2000 Magazine and most of them went away, but then they found us eventually and so we said, "Okay, you know what? If we change our name to Windows and .NET Magazine, then maybe they won't come back," but they did and then finally we became Windows IT Pro Magazine and that hasn't



changed much so I guess the circulation hasn't got large enough that we have to come up with another name.

**Greg Hughes:** And our audience is the same audience, IT pros, so we're talking to the same people.

**Mark Minasi:** Well, good.

**Richard Campbell:** I'm just enjoying the fact that you're trying to avoid an audience. What is that?

**Mark Minasi:** Well, you know, if you get too many of them, they start sending you emails and they want to hire you and stuff. There's only five working days in a week and there are the other two working days where you can't return phone calls, you know.

**Greg Hughes:** If it wasn't for their people, the job would be great, right?

**Mark Minasi:** Exactly right, exactly right.

**Richard Campbell:** Oh man.

**Mark Minasi:** So, what do you guys normally talk about? I mean what was the last bunch of speaker types you had? What did they talk about? What's the topic your audience wants to hear about? Vista? 2008? My cool new laptop, what?

**Richard Campbell:** Absolutely, I mean I think 2008 is weighing heavily on people's minds. I mean I'm looking up at my Mastering Windows 2000 Server book right now actually and it's high up on my shelf. I think that book is one of my most book-eared, banged up book. It has been opened a lot.

**Mark Minasi:** I'm glad to hear that because the first -- you know, the Mastering Server 2003 book became too big, so we had to buff it into three books and the Mastering Sever 2008 will be three books. The first one just hit the stands this week.

**Richard Campbell:** Oh yeah.

**Mark Minasi:** It's Mastering Windows Server 2008: Networking Foundations or something like that. So, if you have a friend that's just getting into the business, that's the book they want to pick up.

**Richard Campbell:** You know, I don't think people are paying enough attention to the fact that both Vista and 2008 are running on a totally new network stack.

**Mark Minasi:** There's some cool stuff there. I did a newsletter on that on my site just a couple of months ago. The stuff that's neat is first of all there's that thing that automatically tunes TCP. What's

interesting is some of these new tweaks that Microsoft's got in the TCP stack, basically what they do is they adjust window sizes in a more intelligent fashion.

**Richard Campbell:** Right.

**Mark Minasi:** So that without buying anymore hardware, you get better throughput and especially you get better throughput over wide area network links, ones with higher and higher delay rates. That's some pretty cool stuff. There's some anti-congestion stuff. There are about five settings that are really neat and it's insane not to look at that stuff because you've already paid for the hardware, you've paid for the software, you might as well just get the most out of it. There's IPv6. We were just at TechEd, Richard and I, and...

**Richard Campbell:** Greg was there too.

**Mark Minasi:** I was privileged enough to do a number of talks and one of them was called "Wait, Don't Turn Off IPv6: A Guide for the Reluctant," and it did pretty well. It was one of the top-rated talks at TechEd and what was interesting was they stuck me in a little tiny room because I think they were pretty sure that no one cared about IPv6, but it all comes back to making it relevant for people and those of you who are listening, if you are a networking person now and if you've been looking at IPv6 and saying, "Nah, I don't have to do it for 10 years," you have to do it. This is important. Everyone should know this stuff because the thing is for a lot of us in North America, we've sort of heard we're going to run out of IP addresses at some point, right?

**Richard Campbell:** Right.

**Mark Minasi:** But NAT, Network Address Translation, back in 1995 kind of made that sort of go away and we think it was not a problem and the reason is in North America, we have something like, you know, between up there in Canada and down here in the States, we've got something like 65% of the routable IP addresses and we take some of Europe, then that's like another piece. Now, the problem is that speaking not for Canadians but for Americans, as Americans it's our duty, our birthright, to be completely unaware of any countries outside of our own except for the ones that we're bombing.

**Richard Campbell:** Oh, very nice.

**Mark Minasi:** And so, most people don't realize this, but I heard of a rumor, and you guys can check me on this because I know you Canadian guys are a little better at the internationalization stuff, I heard a rumor that on the other side of Europe,



there's this thing called, hang on, I'll get it right, Azia or Asia or something like that...

**Greg Hughes:** Yeah, yeah, yeah.

**Mark Minasi:** And they have this country I've heard of, I may get the pronunciation wrong, it's Cahina or something like this and this Cahina place has 1.3 billion people and 0.2% of the routable IP addresses and they are pissed and so, you know, China is out there in front and they're saying, "We are the world economic power and the only way to solve our address problems is we're embracing IPv6 in a big way," and they're saying that by the time the Olympics happen -- have they started already?

**Richard Campbell:** Not yet but it's coming.

**Mark Minasi:** They said that by the time the Olympics happen, they will have a countrywide v6 internet and they're going to turn off IPv4. Now, you know what that means. That means that every business, pretty much in any country wants to deal with China. So, I think you're going to see the pop, the inflection point. So, if you don't know about v6, now is the time. Are you guys broadcasting your podcast on v6 here, pal?

**Richard Campbell:** I'm afraid not, but that's more of an issue of the ISP than it is us.

**Mark Minasi:** Absolutely.

**Richard Campbell:** I do get a sense that a lot of businesses even in North America, the first real contact with IPv6 is going to be their ISP coming there and saying, "Hey, we want to feed you an IPv6 address now."

**Mark Minasi:** That may be, that may be and if that happens I think what will end up happening there, that will be a different sort of thing where the ISP is going to say, "We decided it's easier to run v6 than v4 and we know that you don't want to change anything so here's a little cable converter box."

**Richard Campbell:** Yeah, "Here's your bridge."

**Mark Minasi:** Yes, so your analog TV can still see digital cable. It's basically going to be like the computer version of that.

**Richard Campbell:** Yeah.

**Mark Minasi:** And when that happens, people should embrace that because v6 makes your life so much easier.

**Richard Campbell:** There are really a lot of really good things that come out of that. I don't want to go

away from this NT window thing because for folks who don't know about this, this feature has been in IPv4 forever. It's just that...

**Mark Minasi:** RFC 1323 changed the nature of TCP windows and it was released in April of 1992. This was a year-and-a-half before Microsoft ever shipped a TCP stack and it wasn't until 1998 that Microsoft's v4 stack supported this stuff even a tiny bit and it was only two years ago that we finally have complete support of RFC 1323.

**Richard Campbell:** What worries me about the current implementation of it is this is all by default because I think there are a certain number of devices that just count on that 1534 size MTU window. I mean I think that was a bold decision that has just not been talked about.

**Mark Minasi:** With respect, Richard, let me tweak something in there, the MTU stuff you're talking about, those are IP block sizes and a given TCP block can be implemented in any number of IP packets. Granted your MTU is probably not going to get above 1500, although it can on some networks...

**Richard Campbell:** Right.

**Mark Minasi:** But bear in mind that the TCP deal isn't so much block by block. It's the how much time I have to check a bunch of blocks and respond with them.

**Richard Campbell:** Right and making bigger block size just is great when you're moving large volumes of data.

**Mark Minasi:** Right. Also, you're going to find that on an awful lot of websites, there's a basic retardedness in HTTP such that most websites really don't want to see TCP blocks bigger than 5k.

**Richard Campbell:** Right.

**Mark Minasi:** So, even going to 64k makes something troublesome. What you'll find is when you're doing big transfer like you're downloading a service pack or something like that, then because you know one of the big files that we download besides pornographic movies, you know, that would be like the big service packs or...

**Richard Campbell:** Yes!

**Mark Minasi:** Those guys can actually kick into some pretty big blocks. I think what you're thinking though, and quite correctly, is if you have all of a sudden an operating system that understands this 1992 RFC, you may find that your network runs very slowly or you get a lot of disconnects and people



say, "Oh, this is a Microsoft bug." Hey, look, I'm the guy who's first to explain Microsoft is screwing up. This is a case where if that's the problem, you got network hardware that's retarded.

**Richard Campbell:** Yeah, that's right, stuff that isn't compliant and I think especially when Vista first hit in the homes, there was a lot of cheapo \$40 NAT routers that could not deal with that.

**Mark Minasi:** Absolutely. I was at a conference about a year-and-a-half ago. I'm not sure if you've ever had Todd Lamely on, but Todd is like the smartest guy in the world about Cisco and that sort of stuff and Todd and I were hanging at this conference and the router was dying on a regular basis and it's like March, I think a month after Vista had been released, and I thought I knew what it was, so Todd and I looked at the network traces and sure enough this WRT54G, when a Vista laptop will try to say, "Oh, let's do big windows," then the WRT54G would just pull up and die, you know.

**Richard Campbell:** Boom!

**Greg Hughes:** It would just choke, yeah.

**Richard Campbell:** Thanks for playing see you.

**Greg Hughes:** I have experienced that as well.

**Mark Minasi:** Exactly, and I'm trying to find right now, I've got a newsletter about that that people can go look at and they can find out more about this. Give me just a second and if you find out some more, because it's a kind of ugly thing to explain, but I did some math on it with hope it has made it a little clear and ah, here we are, if they go to my site and...

**Greg Hughes:** Which is?

**Mark Minasi:** [www.minasi.com](http://www.minasi.com), M-I-N-A-S-I, and they go to the issue of newsletter #67, February of 2008, if you go to [www.minasi.com](http://www.minasi.com), they will see a reference to my free newsletter and issue 67 has all the worked out math and stuff like that if you want to learn some more about it, but here's the important thing. The important thing is that if you find that you're running Vista or less likely Server 2008 and you're getting a problem, you're getting disconnected when you don't expect them, your system is a lot slower than you expect, everybody get out a pencil and paper because I got a long command for you to type here, first of all, from Vista 2008, you're going to open up an elevated command prompt when you start command prompt. So, just click it, right click it, say run as administrator.

**Richard Campbell:** Wait, wait, wait. Run as? Did you say run as?

**Mark Minasi:** There's some legacy wording there but no, really, I think you guys have to upgrade. You should become UAC.NET or something like that.

**Greg Hughes:** I checked, that was taken.

**Mark Minasi:** Here is the command, Netsh, N-E-T-S-H, that's short for netshell, space Int, I-N-T, which is short for interface, space TCP which is short for TCP, space Set, space Global, just the word global, then all one word AutotuningLevel, Autotuninglevel=disabled. So, Netsh Int TCP Set Global AutotuningLevel=Disabled. That will tell your network stack act as dumb as the Server 2003 and XP network stack...

**Richard Campbell:** Nice.

**Greg Hughes:** Right.

**Mark Minasi:** And you will get the complete goodness, the wholeness and goodness. That should do the job to make your system run better til you'll get your network hardware upgraded.

**Greg Hughes:** I actually had to do the same thing. I had a -- it was a WRT54G and another relatively archaic piece of hardware and I actually had to do that exact thing in order to get things to run smoothly over time.

**Mark Minasi:** Now, if you had an actual WRT54G, you really had to go buy new hardware.

**Greg Hughes:** Yeah, which is exactly what I did.

**Mark Minasi:** If you Google HyperWRT, that's all one word, H-Y-P-E-R-W-R-T...

**Greg Hughes:** Yeah.

**Mark Minasi:** There's a guy who has a replacement flash for your WRT54G that makes it wonderful and among other things you could now open the doors up and you can have it run at full speed.

**Greg Hughes:** And I've seen that in play. There's a number of -- you know, the WRT54G is a really common home router and to people who don't know whether it's HyperWRT or open WRT or a variety of other free firmware out there that replace the stock links out there, there are some pretty great stuff out there.



**Richard Campbell:** Yeah, the WRT54G is a very cool router just in terms of all the neat things people have done with firmware on it.

**Mark Minasi:** As a matter of fact, it's a really cool one. I want to play around with -- we were talking about getting our ISPs to understand that they need to do v6. Here in the States, almost none have. I've sent emails to Cox Cable and Comcast and Charter, those are the guys I work with, and no one has responded. It's like they wouldn't even take the time to say, "Hey buddy, go away," but EarthLink, believe it or not, is really interested in this and if you get on the EarthLink site, they have a replacement flash for your WRT54G and they will give you 18 quintillion of your own IPv6 addresses, 18 quintillion. Is that cool or what? So, if you come to my house and you fire up your computer and it's a Vista box, you're going to find that you have a routable IPv6 address. You can ping China from it.

**Greg Hughes:** Ha. You know, we talked with Sean Siler on the show what, a couple of months ago, Richard?

**Richard Campbell:** Yes.

**Greg Hughes:** About IPv6 and Sean Siler from Microsoft is kind of their IPv6 guru. People who are interested in finding out more on the detail side about that should probably go back and listen to that show. It was a really good one and part of what Sean talked about was he was giving some visualizations or explanations about just how many routable addresses there are in IPv6 address space compared to IPv4. It's not even a whole different world. It's different than a whole different universe. It's amazing.

**Mark Minasi:** Did he talk about why there's so many bits?

**Richard Campbell:** Don't they embed the Mac into the address now?

**Mark Minasi:** That's the thing. IPv6 is supposedly a 128-bit address space. It really isn't. It's a 64-bit address space and the reason is the original thought was, "You know what? We need an easy way to configure computers," because our IT pro audience I'm sure will know about DHCP and annoying things like that and it's just such a kluge and our audience will probably know that when you go to an ISP, if you've got a big bag of money and you say, "I need a bunch of routable addresses," how many are you going to get? Well, I don't know. If you're IBM, you'll get 16 million of them. If you're Apple, you'll get 16 million of them. If you're Microsoft, you'll get 65,536. That must keep Bill up nights knowing that Apple has got an A network and he's got a B.

**Richard Campbell:** Yeah, that's true.

**Greg Hughes:** Well, at least for a couple of more days, yeah.

**Mark Minasi:** The reason it's 128 bits in v6, why so many bits, the answer is so we can waste them.

**Richard Campbell:** Yes.

**Mark Minasi:** The nice thing about this is that there are so many bits in v6 that first of all it makes routing easier. You know, in the v4 world, if you look at the 34 bits in your address, well, you know for some networks you control 24 of them and the ISP controls 8. For small networks, maybe the ISP control 30 and you only control 4. IPv6, there's so many bits, they say the heck with it. Everybody gets a range of 128-bit addresses and with almost everyone, the ISP controls 40 bits, just 40 bits, and you get 80. That means you have support for 65,536 subnets and you look and say, "I don't need that. I'm just Joe's Doughnuts." You know what? It doesn't matter. The idea is that they built a one size fits all. How many companies you know has 65,536 subnets? I don't know, maybe Exxon, but the point is by having enough bits to waste them, you get this one size fits all stuff which means you never have to worry about subnetting ever again.

**Richard Campbell:** Yeah and we forget now, most folks have grown up in an IPv4 subnet world, they forget how much simpler routing was.

**Mark Minasi:** Oh God, yeah. Again, they want it to be easy for a computer to configure itself and if you think about it back in the Novell days, how did computers configure their addresses? It's very simple. They just exploited their Mac address which was unique and so V6 tried this and they took it a step further because believe it or not, the IP mandarins, you know, the network mandarins realized that with only 48 bits, we're going to run out of Mac addresses by the year 2100. I don't know about you, but I'm not that worried about that, so they are expanding Mac addresses to 64 bits so I'm greatly simplifying here, greatly simplifying. An RFC3140 which came out in 2001 changes a little bit but basically the original plan was the way that you'd give yourself an IP address is you just look down and you use your Mac address. So, I mean, really, the bottom 64 bits really identifies you. The top 64 bits, all it really does, it says where do you live, are you part of the RunAs empire, are you part of ExxonMobil, whatever.

**Richard Campbell:** It's cool. It's interesting to see that we're really going back to that now just by giving ourselves enough address space to play in.



**Mark Minasi:** Yeah, that's absolutely true. It's some great stuff.

**Greg Hughes:** I really like the fact that I'm running a variety of different operating systems at home, quite a bit of Vista and other stuff, but IPv6 is just turned on and I have different devices or computers that are just auto magically talking IPv6 on the network.

**Mark Minasi:** Oh, really? I'm not a Mac guy. Do the Macs do 6 now?

**Greg Hughes:** You know what? That's a good question. Since mine is turned off, I can't fire it up and look, but I'm going to do that after we're done recording. You got me going. I think I have seen some v6 stuff in there, but all the Vista stuff, the Media Center and the different newer stacks are all just sort of automatically, like the Vista machine that I use to record this show, I have an IPv4 address but I also have an IPv6 address and it leverages the IPv6 whenever it can.

**Mark Minasi:** Neat, neat.

**Richard Campbell:** Yeah, I've set up a group of machines all at once all with 2008 and you know going through the usual routine of having an isolated demo rig where I was going to use host files to map everything out and in the time it took me to get prepped, IPv6 had negotiated between them and identified all the names.

**Greg Hughes:** Right.

**Mark Minasi:** That is neat and it does it without broadcast. Right now, Minasi's fifth law of networking is that everything works in the Microsoft world on a single segment network. So, if you're going to test things, you have to be very careful about making sure that you've got a routable environment; otherwise, you're not really discovering anything. IPv6 in contrast is very interesting. IPv6 uses multicast rather than broadcast and it's got this thing called Link-local Multicast Name Resolution. RFC 4795 that Microsoft wrote and is being adopted by more and more vendors. It's kind of cool. It's sort of like a low impact answer to the old NetBIOS broadcast, broadcast, broadcast stuff.

**Greg Hughes:** Your China point -- it's pronounced China by the way, Mark.

**Mark Minasi:** Oh, is it? Thank you.

**Greg Hughes:** Yeah, your China point is a good one. It quite often takes a great, big, mass move by where there's a real need. I know another area where there has been a strong need and

therefore a big move towards IPv6 at least on the corporate network side of things. This has been with some of the mobile telephone operators where they have so many freaking handsets out there now that they've jumped over and actually gone to IPv6 on their network in order to better enable their systems.

**Mark Minasi:** Many of our listeners will not know until I say this that if you purchase a car next year and it's made by a European manufacturer, Bimmer, Benz, whatever, it will have what's called a /64 IPv6 network. It will have 18 quintillion IPv6 addresses and so when you put your foot on the brake, then the way that the brake pedal will tell the brakes in the back to brake will be through an IPv6 communication which scares the living crap out of me but still...

**Greg Hughes:** That's kind of cool.

**Mark Minasi:** The other idea too is that I guess cars will be able to be equipped with this low power wireless networks and so the theory is that if you've ever driven in Europe, they have a lot of these narrow winding roads and you can't see what's around the bend and the theory is that because I've got this wireless network in my car that leaks out a little bit, that it will detect the other car coming.

**Greg Hughes:** That's awesome.

**Mark Minasi:** The thing that I like about that is that we could then add voice over IP and I don't know about you, but I have been talking to the other drivers for years and years. The idea that they could hear me sort of rocks, you know, although my fear is the more we automate cars. You know that Microsoft auto PC stuff?

**Richard Campbell:** Yeah.

**Mark Minasi:** The Windows CE on the dashboard, that's the last thing we need, I've always feared that when it became widespread, it would be this feature where if you actually speed, the car will pull itself over and lock the doors and use your cell phone to call the cops.

**Richard Campbell:** Nice.

**Mark Minasi:** And they will split the fines with Microsoft. That's my fear.

**Greg Hughes:** It will probably take your picture and send it off to the local government because it will be able to figure out what the local government is and then of course in your snail mail from the government, you'll get your picture along with your speeding fine ticket.



**Mark Minasi:** Fortunately, the local government won't actually have that implemented for another 40 years.

**Richard Campbell:** Nice.

**Greg Hughes:** That's a good point.

**Mark Minasi:** I'm sorry. I didn't mean that for the local government people that are listening. I meant other local government.

**Greg Hughes:** The enlightened few are of course listening to the show.

**Richard Campbell:** Naturally.

**Mark Minasi:** There we go.

**Richard Campbell:** Other elements of the network stack? I find it interesting to see where AD is sort of gone and definitely having some challenges in configuring everything and mixing 2003 and 2008.

**Mark Minasi:** I haven't had too much trouble with that. Well, here is the interesting thing, remember I told that you had that long command, the Netsh Int TCP Set Global AutotuningLevel=Disabled.

**Richard Campbell:** Yeah.

**Mark Minasi:** You know what the opposite of disabled is? Normal. That seems awfully judgmental.

**Richard Campbell:** Yes.

**Mark Minasi:** Doesn't that, you know?

**Richard Campbell:** Well, it's part of the spec. It should have been there all along.

**Mark Minasi:** There is another setting, by the way, in that Netsh Int TCP Set Global thing called 1323 Timestamps. The 1323 Timestamps should be turned on and the reason is the stack now attempts to figure out how big the roundtrip delays are when you're pulling data off of, let's say, a server that's 3000 miles away. That would be 5000 kilometers for people in Canada.

**Richard Campbell:** Nice.

**Mark Minasi:** So, if the timestamps, when TCP is communicating, it sends timestamps and that allows intelligent routers and such on the other side to compute the roundtrip delays and based on that information, it can then make the block sizes bigger or smaller. That's what we're looking at.

**Greg Hughes:** That's pretty cool.

**Mark Minasi:** There's also all the stuff about the chimney stuff with the so-called offload boards and I honestly haven't had much of a chance to play with that, but looking at the documentation, and I want to be very honest at this point that we're now in white paper land rather than something that Mark actually tried to land, it's supposed to be pretty darn cool.

**Richard Campbell:** I use TCP offload for high scaling sites and things like that, but it was quite a complex task. The fact that it's now -- in some ways, that was easier because it was just driver-based. Now, the fact that we've got it in the core stack of Windows, it's going to be interesting to see how that behaves. For folks who've never played with offload, the whole idea here is that it's a nontrivial part of the overhead of, say, a website to negotiate those TCP connections over and over and over again. So, if you could offload that work from your machine, things go faster.

**Mark Minasi:** You will additionally see I think a little bit better performance there on a 2008-based web server because a little known fact, that is, the completely unknown fact until Microsoft 'fess up to it was that through 2003 and XP, let's say that you had, I don't know, 16 NICs on your computer, all of the protocol processing is done on a single thread. It is not possible to multithread for the whole processing. So, let's imagine that we have a web server as you said that's got a whole bunch of NICs and each of those NICs has got zillions of TCP connections, all that TCP processing has to be done on a single thread which is crazy. One of the benefits to 2008 that doesn't get a lot of press is that now it can be spread across many processors as you have. So, if you're doing a lot of protocol processing, it may be that the offload boards aren't even as completely necessary. If you do have an offload board, you probably know by now there was a patch that came out about six months ago that didn't work so well. It disabled your offload board then Microsoft sent out a notice saying, "Get the patch." You said, "Well, I can't get the patch because the board is not working anymore."

**Richard Campbell:** That's the one area you don't want to break things on is network drivers because it really impairs everything else after that.

**Mark Minasi:** Well, I found my old 5O3C or whatever the heck it was and plugged it into the ISO slot. That gave me enough power to pull down the patch.

**Richard Campbell:** Yeah, these days I keep a USB NIC in my pocket for exactly the same reason.



**Mark Minasi:** Excellent idea. You know what's interesting? We should talk about the offload stuff too. I wonder how long it's going to be before that shows up as being part of the standard motherboard chipset.

**Richard Campbell:** Yeah, I think that's coming as well.

**Mark Minasi:** That would be really cool.

**Greg Hughes:** That would be a good idea.

**Mark Minasi:** Here's a big surprise though and if any of our listeners are going to start trying to play around with these bigger TCP windows, have you tried running a network monitor, Richard, to find out exactly how big the blocks you're getting are?

**Richard Campbell:** No, I haven't.

**Mark Minasi:** You'd be surprised. I have found that in 99 cases out of 100, you get a 64k block size and that's it even if you do have the stuff enabled.

**Richard Campbell:** But, you know, I think you're right in the sense that there's really only two modes that matter, either you're dealing with really small files or little communication packets and it sticks with the 1.5k one or you're hauling something big, a stream or a file or something as big as can be is all that matters and anything in between is simply a transitory state to one or the other.

**Mark Minasi:** Still, you would -- you know, I would expect that if I'm pulling down one of these ISOs or one of these 4 gigabyte ISOs for Server 2008, but it's interesting even Microsoft and they got pretty state of the art stuff there because they're probably one of the most trafficked sites, certainly one of the 10 most trafficked sites on the internet, you would think that they would have the ability to support bigger windows. I haven't really seen them but it's odd, now and then you'll get this anomaly. RFC 1323 specifies that you can have a TCP block size of up to 1 gigabyte but Microsoft in their code said, "You know what? We're going to hold it to 16 megs max," which would still be pretty darn oppressive. Well, there's a setting. Instead of saying normal or disabled, you can say experimental. It's really great because the network stack is laid out on the table. There's thunder outside. Igor has gone for the brain. You throw the switch, the lighting goes through it, and in general nothing is different but my sweetie Rhonda was just downstairs from me so we're all in the same network and she's doing some Vista stuff too and I'm sitting on our network monitor and I'm watching and all of a sudden we get a browser announcement and the

block size got set to 133 megabytes for that one browser announcement.

**Richard Campbell:** Wow.

**Mark Minasi:** That was it. It's going to be a pointless use of 133 megabytes. See, I was able to do that because -- are you ready? This is the jealousy-inducing section of this presentation. I found the perfect laptop. If you don't like Vista, it's because you don't have the right hardware.

**Richard Campbell:** Oh okay.

**Mark Minasi:** Let me practice by saying that I like Vista and I guess I have to apologize for it because people are hating me. I'm getting emails from people saying, "You know, I've been reading your books for 20 years and I really like you, but I hate you now. Vista sucks. You should be saying mean things about Vista." Hey, look, I'm the first guy to beat up on a product when I don't like it, but I like Vista. It does a lot of cool stuff, but I like it probably for reasons that other people wouldn't. It's sort of like when I first saw XP. My first thought was, "Oh, look, Windows 2000 with a Fisher Price interface."

**Richard Campbell:** Nice.

**Mark Minasi:** How exciting, but you know, when you get to know XP, it's like what kinds of great stuff are under the hood for us IT pros? In the same way, Vista is a Christmas tree! It is like all the presents under the Christmas tree. If you look beyond the stupid Aero Glass stuff which I turn off immediately, there's some really neat stuff under the hood, but you need the hardware to support it. If you're trying to run it on 2-year-old hardware, you're going to be really, really sorry. So, I originally got this one laptop from HP that did not work very well for me and couldn't use all my memory and of course I'm running 64-bit Vista because it's very manly to be running a 64-bit operating system.

**Richard Campbell:** Absolutely.

**Greg Hughes:** That's right.

**Mark Minasi:** I do a lot of virtual machine stuff so I need big memory, so I got this Lenovo T61p.

**Greg Hughes:** Good machine.

**Mark Minasi:** And I thought I'm the first person to discover how cool this is. The funny thing is though it's like this meme that overnight -- a friend of mine, Steve Riley, who is a Microsoft guy, a speaker like me, we hadn't been together for a few -- I run into Steve at the regular shows and so we're sitting down because we're going to do this talk together and I



opened up my laptop bag and I said, "I got this great new laptop," and he says, "Me too," and we both put the same laptop down on the table. One of my friends, Sean Deuby, he's a very smart guy, he was the guy who designed the Active Directory for Intel, the third largest Active Directory in the galaxy. He is now with Advaiya doing some interesting stuff. I said, "So, Sean, I found this great laptop." He says, "Me too," and we both opened up -- so somehow the Chinese have put something in the water so that we all came upon the same laptop at the same time but here is the really cool part. The cool part is even though they advertised you can only put 4 gigs of RAM in it, I just bought a couple of 4 giggers and I popped them in the laptop and I've got 8 gigs of RAM on the laptop.

**Richard Campbell:** Nice.

**Greg Hughes:** Really? That's nice.

**Mark Minasi:** Oh, oh, it is all the difference, my friends, because you know when I'm doing something like researching or demonstrating or testing or something with, say, Vista, you know, Vista in theory runs in 512 megs of RAM and in theory 2008 runs in 512 megs of RAM, but they're really not happy doing it.

**Richard Campbell:** No.

**Mark Minasi:** With 8 gigs, oh...

**Greg Hughes:** Yeah, they scream.

**Mark Minasi:** Now, I can give them all 1.5 gig and they run beautifully. That's why I'm telling you...

**Richard Campbell:** Yeah, the dramatic...

**Greg Hughes:** So, that was the T61p, huh?

**Mark Minasi:** You don't like Vista because you don't have the right hardware.

**Richard Campbell:** So, the Lenovo T61p has got 8 gigs, the Dell 6300 also an 8 gig laptop.

**Mark Minasi:** Does it? Will it give you all 8 gigs if you put a 64-bit OS on it?

**Richard Campbell:** It actually will. In fact, they'll even ship it from the factory with 8 gigs in it.

**Mark Minasi:** Sweet! Sweet!

**Richard Campbell:** Yeah. So, that's the only two I know of so far.

**Mark Minasi:** Well, here's an interesting alternative there. If you are looking for -- if you kind of like the idea of Vista but Vista drives you crazy, again, this is something I thought I made up but other people are doing, run Server 2008 as your desktop operating system.

**Richard Campbell:** No, I've seen -- you know, who I've seen doing that a lot? The Microsoft guys.

**Greg Hughes:** Yeah, that's pretty nice.

**Mark Minasi:** Microsoft guys and if you know the magic tricks, you can make all of Aero Glass run on the server. I did it just for chuckles.

**Richard Campbell:** But I kind of like it having it all off, I mean Server 2008, very familiar feeling.

**Mark Minasi:** You want to hear something amazing too? I've got both operating systems on my laptop. If I boot Vista 64 and I don't run anything except the desktop, PerfMon tells me that I'm using 1.08 gigs of RAM. That's okay. That's fine. Please don't think Vista needs a gig. It just means that Vista is smart enough to say, "Oh look, 8 gigs, I'll just spread out a bit." Then I did the same thing on Server 2008, same machine, same drivers, it only wants 750 megs even though I've got Aero Glass turned on.

**Richard Campbell:** The difference is configuration because core OS is the same.

**Mark Minasi:** Exactly. We're talking 99.5% the same.

**Richard Campbell:** Yeah.

**Mark Minasi:** To the point where Server 2008 claims to be Service Pack 1.

**Richard Campbell:** Yeah.

**Mark Minasi:** They only did that because they know that you won't buy it until Service Pack 1 comes up.

**Greg Hughes:** Of course, you don't have the Media Center and all the other stuff running in there or the server, so maybe that's where you're saving some space.

**Mark Minasi:** I don't know if I have -- I mean I've never run Media Center. Are you saying there's like Media Center stuff running on the background?

**Greg Hughes:** Yeah. Well, I mean Media Center might be one guess, but I mean I can imagine on the client operating system, there's probably some extra services that are running that are real specific to



client usability that you don't necessarily get under the hood by default at least on your Server 2008 instance.

**Mark Minasi:** Could be, could be. It's all fun stuff so...

**Richard Campbell:** It is fun.

**Greg Hughes:** You know, Mark, before we let you go, since you're like the server guy, there's one thing -- so, for the people that are listening out there, I've had a couple of people actually in just the last couple of weeks say, "Should I deploy Server 2003 for this small business?" for their server on their network, "or should I be looking at 2008 even though it's brand new?" I have opinions about that but I'm curious what you would tell somebody that asked you that question today.

**Mark Minasi:** Okay. Well, two answers there, Greg, is that if we are talking small business and I know that you didn't mean small business server, but...

**Greg Hughes:** Correct.

**Mark Minasi:** A small business server in terms of price, I'm not a huge fan of small business server because it doesn't really let you have multiple domain controllers. I know it does but if you move the fismal roles up, it gets all pissy and shuts itself off.

**Greg Hughes:** Yeah.

**Mark Minasi:** So, these things I don't like about small business server. However, now that Susan Bradley will hunt me down and kill me having said that, if you like SBS, understand that of course SBS 2008 is not out yet or if it has shipped, it was last week. It's coming very soon. I think there's an awful lot of real cool things about Exchange 2007 and so if I were deploying to a small business, I would be thinking strongly about saying, "Oh, wait a minute, let's just wait until Cougar," which is the codename for Small Business Serve 2008, "comes out." B is if you are thinking about *spec'ing* out a system for a client, please, please, please, please, please understand that Microsoft is going 64-bit. If you're buying 32-bit server hardware now, you're locking yourself into some really bad legacy stuff and even Small Business Server 2008, you can't even load it on 32-bit. There's not even an option.

**Richard Campbell:** Yeah, that's it.

**Mark Minasi:** Buy a 64-bit hardware.

**Richard Campbell:** It's all 64-bit now.

**Mark Minasi:** What's that?

**Richard Campbell:** It's all 64-bit now.

**Mark Minasi:** Absolutely, absolutely.

**Greg Hughes:** All the software.

**Mark Minasi:** The server itself will run on 32-bit legacy.

**Greg Hughes:** Are there really 32-bit servers out there very much anymore? I guess if you find one used or something like that that a small business might typically do is find a second-hand one that's in decent shape that you can end up with 32-bit, but I think that's a good point, you know, that it is a 64-bit world and we have really entered that phase of our lifecycle here.

**Mark Minasi:** There's just so many little doodads in the Vista/08 kernel that I really like. It's just more intelligent when it comes to multitasking. There's that beautiful HyperV stuff. I mean the fact that Microsoft is selling at this point a really interesting hypervisor for 28 bucks, I mean ESX is great, let's be clear, but it ain't 28 bucks.

**Richard Campbell:** Yeah, that's true.

**Mark Minasi:** So, I would go with the new stuff, I really would, because the thing to remember also is that we're going to see a big sea change. I don't know what's going to happen, but Microsoft has got us all head up over the years and expecting a new operating system every two to three years. I think the big mistake they're making now with XP is that I'm sorry, the world has changed. If we never had anything past XP Service Pack 3, we'd have a pretty darn good operating system.

**Richard Campbell:** Yes.

**Mark Minasi:** The world would keep turning. We keep making money. The fact that Microsoft isn't shipping XP Service Pack 3 anymore -- excuse me, they said they're not going to sell XP is insane. It would be like, okay, fine. They want to push Vista, but if people like XP for God's sake, this would be like McDonald's not selling Big Macs or Toyota shutting down the Camry factory or Coke changing its -- okay, that happened, but still it would be a huge... I think Microsoft needs to understand that operating systems at this point are going to have usable lives not of 10 years but perhaps of 20.

**Richard Campbell:** Yeah.

**Mark Minasi:** I think that if for some reason Microsoft didn't release any new operating systems, that there would be lots of people still using 2003, still



using XP 20 years from now. Microsoft needs to understand that and exploit it. Obviously, they have to deal with their revenue model issue, but that's their concern, you know, something should be done along those lines.

**Richard Campbell:** Yeah, a different issue. We got to stop, guys. I know we could go all day.

**Greg Hughes:** Yeah, what a great conversation, Mark. We really appreciate it.

**Mark Minasi:** Hey, it's been fun. Thanks a lot, guys.

**Richard Campbell:** You bet and we'll see you next week on RunAs Radio.