



RUNAS RADIO



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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

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**Wes Miller on our 64-bit Future
May 16, 2007**



Carl Franklin: From runasradio.com, you're listening to RunAsRadio – The weekly Internet talk show for IT professionals with Richard Campbell and Greg Hughes. This is Carl Franklin, introducing show #6, with guest Wes Miller, recorded Thursday May 3rd, 2007. RunAs Radio is produced each week by Pwop Productions – Offering professional media and Podcasting services, online at pwop.com.

Richard Campbell: Hey, it's Richard Campbell, and you are listening to RunAs Radio and with me as always, Greg Hughes.

Greg Hughes: Hello, Richard how are you doing today?

Richard Campbell: I am having a great time man, and here we are into our second month of RunAs and things are going really well.

Greg Hughes: We have been speaking to some really smart people with a lot of great information; having a good time getting the information out and hearing from the audience.

Richard Campbell: Indeed! And I have an email that is very relevant to that. It says, hi Richard and Greg, great show! Are there any plans to get the feed on iTunes. If I have to use another of downloading a podcast, I tend to miss shows but if it's in iTunes, I'll get them all. Thanks, John Myer.

Greg Hughes: Problem solved.

Richard Campbell: Yeah, we dealt with that.

Greg Hughes: Yeah, in fact actually on, I believe it was May the 4th, we received notification from Apple that we have been successfully added to iTunes - and Richard, I believe you have even fired it up and made sure that it works properly.

Richard Campbell: Yes. I fired up iTunes -- I am not a huge fan of iTunes myself.

Greg Hughes: Yeah, me either, but I understand that a lot of people like to use it - and I understand why,

Richard Campbell: One of the things that Pwop has done - so Carl Franklin is Pwop Productions and does all our editing and makes everything sound so good, all of the shows are perfectly tagged; our pictures are on it, the podcast tags and so forth now, so, the iTunes experience is great. If you can find RunAs -- and I just tried searching podcasts for the word 'RunAs' and up came a show, I subscribed to it and all of the past

shows are there for you to download. Very, very easy to deal with.

Greg Hughes: Sounds like they have made some improvements over the iTunes factory.

Richard Campbell: Things seem to be working well there now, so.

Greg Hughes: That's good to know.

Richard Campbell: It is good; and it's definitely more challenging to do those things without iTunes. You know, iTunes has got its problems but it seems to be better than everything else that's out there.

Greg Hughes: Well, I may just have to fire that up and give it another try.

Richard Campbell: And if you want to send us an email, fire it to info@runasradio.com and we will be happy to read your email on the air if you've got ideas for shows, you want to change some things, you'd like stuff to be different, we are listening. All right Greg, let's introduce Wes Miller. Wes Miller, a former Microsoft employee from '97 to 2004 worked as a Program Manager for the Windows Core OS development team on Windows Setup - also involved with Windows PE, a very cool product, one of my favorites too, and the Program Manager responsible for the WIM Image Format and ImageX, the Imaging Tool. Involved with Windows Deployment Services and also briefly involved with Longhorn. Left in 2004 to work with the guys at Winternals - and then it was acquired by Microsoft; looks like you couldn't get away from them - and now with pluck.com in Austin, Texas, and currently a Contributing Editor for Microsoft TechNet Magazine. Welcome Wes!

Greg Hughes: Hi! How you are doing Wes?

Wes Miller: Good to chat with you guys this morning.

Richard Campbell: Glad to talk to you. So, spent sometime with Microsoft?

Wes Miller: Yeah, I was up there for just a little over seven years, almost seven and a half years, and just decided it was time for a change and headed down to Texas to work for Mark Russinovich at Winternals for a while.

Richard Campbell: I guess without knowing that less than two years later they would be a part of Microsoft.

Wes Miller: Yeah, that was definitely not part of the plan -- not a horrible plan but still was a great experience working with Mark and I've learnt an



immense amount, so it was a fun thing to do and that was interesting to be on the 'acquisition' side of Microsoft Acquisition, so see how things happen on that side too.

Richard Campbell: Oh sure; I am sure you had the experience on the other side being inside of Microsoft before.

Wes Miller: Yeah, you see a lot of a different story.

Richard Campbell: I bet, yeah, no kidding. And the Winternals guys, I mean, remarkable products, great stuff certainly for folks like us, who have to keep Windows up and running, those were essential tools as far as I am concerned. And now pluck.com -- and I have never been really sure exactly what it is Pluck does?

(00:05:02)

Wes Miller: Well, it's what are we doing this year -- and we actually started out with RSS Reader, which is actually what most people know us for. But we actually had a different genre, we were looking at last year and the thing we actually had an immense amount of success with, we've have been doing for just a little over year now, we do one product called BlogBurst, which is basically Blog Syndication. And then the product that I am actually the development manager for, is our SiteLife product which is a product that lets, what you think of as maybe static content publishers, traditional online media, pretty easily inject more of a social aspect into their site - so blogs, forums, comments that kind of thing.

Richard Campbell: I see. So, of course, when I think about those kinds of components, I think DotNetNuke and Community Server, but it seems like you are more -- working with the existing site to just add some functionality.

Wes Miller: Right. We work instead as more of a box product. We are definitely an ASP model and we are working on trying to make their technology really easily injected, so we are actually in a -- I guess, you'd sort of say, a different spot of the marketplace versus community server. I definitely appreciate what the guys at Telligent do, but definitely, it's a different market, and the funny thing is, we are still very much a .NET shop as well; so .NET, all 64-bit, very, very much Microsoft still.

Richard Campbell: And of course, you mentioned 64-bit because my first contact with you was reading a great piece you did, in the TechNet magazine about 64-bit deployment, and it's certainly been a bug in my ear to why we just

don't seem to find 64-bit machines on the desktop the way we thought we would.

Wes Miller: Yeah. And it has definitely been something interesting for me to watch; that era I worked at Microsoft was over the epoch when they began making the migration from 32 to 64, and actually when I joined Windows in 2000, they were writing the beginnings of 64 Itanium.

Richard Campbell: And I often wonder about how much the Itanium ultimately hurt the 64-bit deployment.

Wes Miller: I think it didn't really hurt it per se but it hurt the thoughts that a lot of people have of what is 64-bit. I think if anybody actually stepped in, put their foot in the water and looked at the Itanium and said, oh wow, this is 64-bit computing, they were really kind of intimidated and scared. And AMD saw the same opportunity when they came out with their original AMD64 Architecture; the more and more I worked with people from AMD way back when we first started hearing about AMD64 Architecture within Microsoft, you really got a sense -- at least, I got a sense having done a lot of corporate deployments that a lot of enterprises were going to look at this and say, wow, this is really interesting, because I can run on my old apps, I can run on my new apps. If I don't want to go to 64 yet, I can run 32, I can run 64 where I need to. You can really mix and match a lot more versus the Itanium, it was very -- you deploy it there and you had to have a very specific set of applications designed for Itanium to...

Richard Campbell: You got to jump over the wall.

Wes Miller: Exactly.

Greg Hughes: So, things have improved pretty significantly since those days, I know -- it would be interesting, I have been looking forward to speaking with you and getting your take on the 64-bit desktop and where we stand today. I know that having installed 64-bit Vista for example, there is some frustrations that I have experienced right off the bat with this machine that I have running Vista under 64-bit, just in terms of compatibility.

Wes Miller: Oh absolutely. Well, you know, it's actually kind of interesting, you mentioned that Vista -- you all had mentioned earlier the article which I wrote, and I think that there is actually an interesting opportunity here for Vista to take hold in a market where people wouldn't have historically thought it could, which is in the 64-bit space. So, as I mentioned in the article which we spoke about earlier and then the TechEd session



I'll actually be doing in Orlando this summer, are both based on the discussion of x64 as a move forward. And definitely mentioning the fact that Vista is sort of an interesting opportunity there because a lot of companies I know are looking at Vista as far as a hardware refresh because in order to really take advantage of it, you are going to have to look at new hardware anyway. And the interesting thing for me has been doing the research, both for the article and for the TechEd session I am doing this summer. I've actually come to the point that, versus two years ago, when we started looking at x64 work within Winternals, and thinking about the direction for x64, what do we needed to care about it for our products, it's interesting to note that today 100% of Intel's products are 64-bit capable - and almost 100% of AMD's products are. So we've gone from the place where the CPUs themselves were nichey to the point that any processor you buy today now is x64 capable...

Greg Hughes: Exactly.

Wes Miller: In the ones that they are showing today, there is lots of them in the channel, but the new ones are all 64-bit, so you can explore going this way with Vista versus you wouldn't have if you were doing XP because you couldn't find machines that could do it.

(00:10:04)

Greg Hughes: And with the more common place hardware and software, the operating system being 64-bit, I know -- I have spoken with others and experienced myself that the benefits -- one of the big places we have seen 64-bit benefits is in Server Virtualization, and just being able to, you know, for that core baseline OS, to run a bunch of virtual machines on, that we have seen great value in that area.

Wes Miller: Most definitely; you know, the thing that 64-bit is a lot better at or specifically handling a lot more tasks with the additional registers it's got, but also being able to handle significantly more RAM.

Richard Campbell: Yeah, I thought it was all about the memory really.

Wes Miller: When you come down to it, it really is all about the memory, unless you've got an app that specifically knows how to take advantage of that extra functionality.

Richard Campbell: Yeah, of course, I spent so much time on the database side of the equation and we are the first guys that ran out of memory, so we are first guys who needed 64-bit so desperately.

Wes Miller: Right.

Richard Campbell: But I found an interesting challenge to all of this was, I know we have had 64-bit processors forever, but it's the rest of the architecture that really hasn't been 64-bit savvy -- and I am talking mostly about BIOS problems, memory holes and things like that to actually address more than three gigs of RAM.

Wes Miller: Yeah, the interesting thing is, actually within the OS and then stretching, like you said on top of the BIOS. One of the advantages actually on that same area is Windows -- the Microsoft Windows team actually took the opportunity when implementing x64 to say, from here on out, everything is ACPI compliant. So, instead of the sixth house, you could have the four plus custom house, you got one - everything is either ACPI unit processor or ACPI multiprocessor. So you got a little bit better guarantee, but of course you are still at the mercy of the BIOS implementation.

Richard Campbell: Well, who's going to have a unit processor machine going forward now, really?

Wes Miller: Realistically, almost no one, because when you are talking about -- in an era of Multi-Core, my laptop machine, which is a Generic Inspiron Machine is a Multi-Core, hence a actual multiprocessor machine from the perspective of Windows. So, in an era of Dual going into Quad and Hex, Oct core by, what next year, the way we are going now. Yeah, unit processor machines or single processor machines are effectively I think a thing of the past especially as we are looking at 64-bit.

Richard Campbell: I think quite completely obsolete. And so, I am thinking these motherboard issues are one of the big stumbling blocks when we try and take 64-bit to the desktop, that we are not getting the results we expect.

Wes Miller: I think that is a significant part of it. I mean, you are definitely at the mercy of the motherboard up to really take advantage of the architecture. And I think the other huge thing is, we are a shop that we don't plan on jumping into Vista or Longhorn in particular any time soon. So we are actually working with what was effectively the Windows Server 2003 Service Pack 1.0 and now Service Pack 2.0 code base. So, all of our servers are running 64-bit and then we spoke of the virtualization and stacking machines up, so we are definitely taking advantage of the extra memory there. And then on the client side, I personally have felt the pain, it's less the BIOS



issue and it's actually more -- for XP 64, it's defining drivers...

Greg Hughes: Exactly.

Wes Miller: There is whole communities out there that are devoted just to this today, so...

Richard Campbell: I find it fascinating to find folks that say, you know what, this driver here for this product, it's actually for the same chipset as this other product. So you can use this driver, it will work.

Wes Miller: Exactly Brain foo will work with Brain bar, you just have to twist this in a little bit. So, yeah, it's definitely something you've seen and -- one of the nice things that Microsoft actually did for the x64 ecosystem was in Vista, and hence for Longhorn servers it goes forward. You basically, as a driver vendor -- for one they have to re-architect their drivers anyway, but they have to do a 64-bit first and they can have an x86 if they want to -- of course, they'll want to because the market is not just going to go away tomorrow; but the neat thing is, that make sure that there is a whole ecosystem that's ready for 64, for companies like -- there is a lot of CAD/CAM/CAE shops out there that can immediately take advantage of this. And those are the kind of companies that were clamoring for 64-bit forever anyway.

Richard Campbell: Sure, I need my 8-gig desktop machine right now. So, a whole bunch of stuff has got to work in 64-bit for that to happen, and CAD/CAM is terrible for that because there is so many unusual peripherals involved - very, very challenging. And I wonder -- you suggested that Vista is this great opportunity for 64-bit, and I went out and got myself a Dell M90 Laptop, which was 64-bit because I didn't want to deal with the issues; I figured, let Dell fix it. But Microsoft has gone to the trouble of adding this extra problem with the 64-bit Vista applications which require certified drivers - and requiring it, won't work without it.

(00:15:09)

Wes Miller: Yeah, and it's actually -- it's one of those, I guess you could say mixed blessings. It's great from a security perspective, but it's bad because your drivers have to have been run through the driver signing gauntlet. So, the reality is, drivers for Vista are -- we are all honestly at sort of the same place we were with Windows XP a long time ago. I remember people, when XP first came out, clamoring that there is no drivers, no device support for anything; and eventually we did start to see it. But I think the drivers signing requirement will make 64-bit harder, but I think

you will find, because they require 64 in front of 32, it will actually make it, so drivers themselves may lag a little bit for Vista overall - we will see what happens.

Richard Campbell: I am also, I mean, one of the big concerns you have with signing is, getting those new versions of drivers out become a much larger ordeal.

Wes Miller: Absolutely.

Richard Campbell: And it makes me worry that we are going to finally get a driver, it's going to be pretty minimalist and it's going to take a long time to get it upgraded.

Wes Miller: Right.

Greg Hughes: I think the other thing to consider is, how do those drivers get enhanced and improved over time? Certainly, that's one thing with Windows drivers that we've seen a lot of is, it's not perfect when it first comes out; so with the signing in each iteration of the driver, how does that impact the ability of us to even see new drivers on the market if they have to be signed each time.

Wes Miller: Yeah, I think it's definitely putting the onus back on the driver vendor since they can at least still do testing internally, but there is definitely going to be a higher bar they are going to have to cross in order to get those drivers out. So I think you are probably right that it's going to be longer between each iteration and -- it's a classic thing we saw with Windows XP where you got the signed driver, and the signed driver included 'N' functionality and if you actually went out, you looked at the driver that came with the thing, or that you could find it was unsigned, it came with 'N' plus, lots of new 'one' type functionalities you couldn't get anywhere else.

Greg Hughes: And really it's a good thing; I mean, raising the bar is probably a good thing. If you give two different paths, then you know, your driver vendor or really anybody, doing whatever they do is going to take that path of least resistance, and so, closing the easier path and putting one in place that does have a higher standard is not necessarily a bad thing, but it's does seem to mean that the 64-bit version of the desktop operating system, from a practical usability standpoint, is a slower adoption rate, just as result.

Wes Miller: Yeah. You actually bring up a really interesting point. And I think, one of the things that I may not have driven home in my article well enough but I am definitely doing in this summer's TechEd session, is the idea that x64 will be



capable, or will be successful in the server market much sooner than it will be in the client market. In fact, one could argue today that x64 has already got the baby steps of being successful...

Greg Hughes: Absolutely.

Wes Miller: We are using it -- Exchange, but the Form on it for the conversion, so I mean, to your point of databases, you will see the same kind of moves from every major team inside Microsoft because they need that room in order to move.

Richard Campbell: Well I think -- I mean exchange your SQL server - if you are considering buying new servers and you are not considering 64-bit, you got to take a thought again, because that's what they are meant for.

Wes Miller: Absolutely.

Richard Campbell: IIS is a funny beast actually, because I just haven't seen a lot of traction around 64-bit for IIS.

Wes Miller: Yeah, and I think it actually has more to do -- I am not sure what interesting work they may have done for example in IIS7 and Longhorn Server. I should poke around that a little bit actually, it's an interesting topic, to see if maybe they have taken advantage of some of the register work functionality there - there are some things they could do. Memory isn't as big of a problem for them until you start involving the .NET framework - and then, it would be interesting to see if the .NET framework guys have done much work for that kind of memory utilization. But I can't recall seeing web projects that can get that colossal.

Richard Campbell: You are exactly right; it's not the IIS team that's going to be interested in 64-bit, it's the ASP.NET guys; and that requires a version of the framework that's really going to take advantages of those large blocks in memory.

Wes Miller: Right. So maybe one of the things we will see -- I am sure there will be a Service Pack or something due out after Longhorn Server, and the work they are doing on Orcas, there is probably some work they are doing -- looking at doing in there, there may be x64 optimization.

Richard Campbell: Another thought occurred to me while we were going through this process, maybe think, 64-bit on the desktop is going to be an Enterprise product, not a consumer product.

Wes Miller: Absolutely. The end of the day, it's not like a lot of us had a Nintendo 8-Bit system, replaced it with Nintendo 16-Bit systems etcetera, etcetera. You don't go out, get a new one, bring it home -- my mom and dad won't have a 64-bit machine at home running -- a 64-bit Operating System 4.0, I would bet - may be five, may be ten years.

(00:20:03)

Richard Campbell: That long!

Wes Miller: I think it's going to honestly be a Vista plus one thing. I am not even going to attach whatever code names they've got to them this year, but it's going to be the major release, not the minor release following Vista, where you are going to have a real kick start in the 64-bit in the home. Because OEM's are really interested in -- for logical reasons, whatever makes them the most money fastest, and consumers at home just aren't clamoring for 64 because, well, they don't have anything that's going to eat that kind of data.

Richard Campbell: But the Enterprise for the most part isn't clamoring for those features either; but you look at what they are doing in 64-bit with the control over drivers and so forth, the sort of restrictions on changing things in the machine, that is stuff that Enterprise cares about.

Wes Miller: Yeah, and it's not necessarily something that an Enterprise might care about initially, but they may look at it and go, wow, I scratch my head and I think about it for a second, it's probably not a bad idea to have that there. And the beauty of -- having worked in the Enterprise deployment side of Microsoft for as long as I did, we came to the realization that customers -- as a general rule, there are some who do, but customers don't generally take old machines, upgrade Windows on them - literally use the Classic Upgrade of Windows and then run them again with the new operating system on them. They will do a wipe and reload or they will do a hardware refresh at the same time, or they are leasing that actually for the old hardware, get the new hardware from the leasing vendor. The point is, they are doing hardware refresh, at the same time they are taking Windows, at the same time they are taking Office which you will see why, Office and Windows came out at the same time together.

Richard Campbell: Yes.

Wes Miller: But I think you find some companies who were looking at that -- you know, they may have spent too much time in the past with one image for x86 for non-ACPI, one for ACPI



etcetera, etcetera. They spent all this time managing images and trying to keep cost down, and the beauty of x64 is a deployment engine -- there is really -- there is one image for everything; you don't have to worry about all the - how gunk, you had to worry about the past.

Richard Campbell: Microsoft has touted the 64-bit edition -- it's just a 64-bit edition, but there is a bunch of underlying changes that have larger consequences, long term.

Wes Miller: Most definitely; you got the security changes, you got the performance enhancements for the additional memory, there is aspects of the OS that the average consumer will never see, dealing with memory and things that are in there, but at the end of the day, within an enterprise, you are going to find a very small segment of the Enterprise desktop that will go 64 just to go 64. Again, it's going to be back to CAD/CAM shops. I distinctly remember, I can place the year, but I remember an email that crossed in a discussion list, it was probably five years ago at Microsoft from insert automaker vendor -- auto vendor here, and it was saying, my customer is really upset because they can no longer load this gigantic CAD Drawing on their 32-bit workstations -- when are we going to be able to extend 32 to hold this much memory; and the answer really was, 'never'.

Richard Campbell: Never, yeah.

Wes Miller: So, for customers like that, if you got -- you know you've got at least three customers in the United States who are interested in 64-bit on the desktop, at least in certain segments of their organization -- the big three and your truck vendors, anyone using CAD/CAM, Pro/E that kind of architecture, a product that knows how to use that amount of memory to its advantage is still going to have logical move in the workstation market.

Richard Campbell: So, I think you have got a significant chunk of the market, although, I still think, probably single digit percentage of the overall market, they genuinely need the horse power in both memory and processing that 64-bit offers; but for your average Office Enterprise guy, there is no reason to move to 64-bit.

Wes Miller: No, this is the same, why would I move to the next version of insert product name here; why would I go to Office, why would I go to Office 2003. It's the same argument, and unless you've got a specific need, it may not make sense for you.

Richard Campbell: I think it's interesting; I don't think Microsoft's articulated this message that

this secure memory model, the secure driver models that are in the 64-bit OS provide some incentive in the IT side of the world for deploying this into the Enterprise.

Wes Miller: Now, they definitely haven't messaged that and you haven't seen the message from either of the two chip vendors out there either as far as, why would I want to go 64-bit? So, it's something at least on a personal tour, I'm definitely trying to talk about because it's definitely something that's one of the reasons why you might think about it.

Richard Campbell: And it does strike me that it isn't ripe yet anyway.

Wes Miller: No; it's early, and you know, it's funny because you look at the other predominant architecture out there, you look at the Mac, and you look at their 64-bit and they are still very much doing baby steps as well trying to figure out where it makes sense. They have had a little bit better, more of a smooth transition that customers generally don't feel. But I've definitely been noticing the same sort of -- we are not really sure where it would make sense, so we are not pushing it.

(00:25:13)

Richard Campbell: Not going to push too hard on it yet. Also seems to me if this is really the direction we are ultimately going to go in, that you are going to see a class of workstations for the Enterprise built by the major vendors that deals with the Hewlett Packards and so forth that are 64-bit through and through and aimed at the business customer, the Enterprise customer, totally separate from the consumer -- and we haven't had that in quite a while.

Wes Miller: Right, it's probably something -- now let me think about it, it's probably been a good eight, nine years since I know, Deck was definitely a company that used to do that -- high-end workstation and then, that was a consumer class machine, but you know, a lower end machine from more of a smaller office and it's definitely something that - you are right, you are going to see sort of a breakdown in the market there where engineering workstations are a little bit ahead. But looking back, it's actually sort of the same thing that that was going on with the Itaniums, because the Itanium -- I am not sure I ever heard anyone say, they thought it would be a home machine, but it definitely was off in the corner and it was going to be its own architecture for the high-end of the market. I think it's run up a lot higher in the market than anybody expected it to be.



Richard Campbell: Yeah, so high, nobody could breathe up there.

Wes Miller: Exactly; it's become all but the very high-end data center, not even about the workstation any more. But I think you will still see the high-end workstation occupied by x64 for quite some time.

Richard Campbell: So, we are getting towards the end of the show here; maybe we got to talk about -- what I've got to do as an IT guy in my business right now, to consider 64-bit - because I think about what we've talked about so far and for the most part I'm thinking, "Oh good, I don't need to think about this yet."

Wes Miller: Well, yeah and that's actually probably a dangerous thing to put off. It's a lot like your visit to the dentist; you want to think about when you want to do it. And the reason why I decided to write this article for TechNet was specifically because I think a lot of people who are investigating Vista need to think about this, because as far as minimizing your expenses, now is honestly the right time to at least have it in the back of your head as far as, 'when do I need to care?' kind of thing.

Richard Campbell: So if you are going to move to Vista, you really should be thinking about moving to Vista 64?

Wes Miller: At least I think it's something you should be thinking about, or at least within certain segments of your organization, you should think about, is there some place where this makes sense? I worked a lot with some Enterprise customers who -- their whole story was about, "How do I get down to one image?", some to the degree that they were doing incredible engineering exercises to get there and probably saving money in the process, but for going to into Vista, if you are going to have x64 anywhere, then you might want to think about having it everywhere - or at least having it in a certain geographical area of your organization.

Richard Campbell: But that sounds to me like all new hardware - very few machines I can upgrade to Vista 64 successfully.

Wes Miller: Now the interesting thing is, you could look that same argument and take the same exact point about Vista itself, because if you want Aero Glass, or if you want to take advantage of BitLocker, you need to start talking about having a TPM for example. So there is a lot of things in Vista, that if you really want -- if you want good enough, you can upgrade relatively recent hardware and get there, but if you want the real true Vista best-of-breed experience, you

got to pretty much have to have at least a year old or less hardware anyway, in which case it probably runs 64-bit bit as well.

Richard Campbell: Well anything that's less than a year old right now came with a certificate to upgrade to Vista.

Wes Miller: Yeah, that's true; there's the upgradeability aspect of it. So you have had that opportunity to upgrade and think about it in the sense of the certificate, maybe I should just go ahead and use that to move to Vista as well, and move to 64-bit at the same time.

Richard Campbell: Yeah, makes sense to do -- move it all at once, if you are going to move it at all. And we touch on this only briefly - on the server side, this really isn't a debate anymore. I wonder if we are finally going to get to this point with the workstations in another year or two; I am totally comfortable saying, if you are talking about mainstream server products from Microsoft like Exchange and SQL server, 64-bit really is the only choice.

Wes Miller: Yeah, and I think you will find for the server side -- you know, I am not going to pin a number on it, because I never know what kind of numbers to throw when Microsoft products are going to ship -- that's a dangerous game. But you know the aspect is -- the perspective is that you are going to look at the server side, and it's going to get there much, much sooner, and I think it's going to be just a number of years until, at least, when you look at Microsoft stuff, the server story is not exclusively x64, is going to be, if you don't go x64 you are going to get this really primitive version, and you are going to get the whole experience only when you go over to the x64.

(00:30:07)

Greg Hughes: One of the -- we have sort of touched on the desktop or end users of software, we have touched on the server side of things. Sort of fitting in between this, what about IT shops that have an awful lot of programmers that are compiling a lot of software, that are creating software, that is maybe used by consumers all around the servers. What are the benefits of, maybe Vista 64-bit desktop for example?

Wes Miller: It's a really interesting point too, and one of the things that -- working where I did in Windows and the Setup group, we actually worked on the build process for Longhorn -- what eventually became Vista and Longhorn. And one of the things that was really wonderful about the architecture was, it was x86 on Tuesday, it was x64 on Wednesday -- you know, it was whatever you needed it to be; and the nice thing about



modern tools like Visual Studio is, even if you don't have say, an Itanium, they'll let you program for it and compile for it. But in order to do it optimally, you got to at least know what you are doing on that architecture. So I think shops who are developing for x86, which most consumer shops are going to be doing for a good long time, still need to bear in mind the intricacies of x86, but I definitely know that within our development shop here, we have been able to appreciate x64 a lot just because the machines themselves can handle so much more memory and the workstations are developer workstations, are phenomenally fast when you start throwing that amount of memory at them.

Richard Campbell: But is it safe to develop an x64 and compile x86 apps?

Wes Miller: Yeah, I know, I mean it's more the division of the tool you are using to actually do the compilation, but now when you look within Microsoft there were guys who were developing code on x64's for x86 on x86 for Itanium, and you basically have to do some build-time compilation, but the compilation work is neutral enough that it can happen on any architecture as long as the compiler is there.

Richard Campbell: Right. So it sounds like developers are good first consumers of the 64-bit workstations just like the CAD guys are.

Wes Miller: Definitely; it's that high-end of the market where they can start appreciating it - is where it starts to make sense.

Greg Hughes: The dollar value that can be established related to a developer waiting for 50% of the build time instead of 100% of the 32-bit build time, that can really add up.

Wes Miller: Absolutely; in an era where build time is everything, it's definitely something that can decrease build time.

Richard Campbell: Yeah. More responsive machines mean more productive developers.

Wes Miller: Right.

Richard Campbell: So, we talked a little bit about what you are doing at TechEd. Any other pieces we should know about?

Wes Miller: Well, I am actually going to be doing a couple of pieces looking at some pieces on -- potentially on defragmentation, talking about some of the technologies that are near and dear to my heart after having worked at Winternals for two years.

Richard Campbell: Oh for sure.

Wes Miller: At least user privilege, things like that, related to user account control but not necessarily user account control; we developed a product, it was sort of an Enterprise type class of product that many had compared to user account control, so looking to doing an article on that space as well. Definitely I think, I may wind up having to revisit x64, it's definitely one of the more popular articles I have done and I've gotten a lot of comments and questions about it since I did it. So I think it was very timely.

Richard Campbell: Yes, absolutely; they jumped out at me, and certainly there is more to be dug in here. I think there is a whole discussion around 64-bit development environments...

Wes Miller: Definitely.

Richard Campbell: ...as well as other workstation configurations. And mixing Vista into the equation in some ways I think complicates it a great deal, but it's also an opportunity to make some bigger moves.

Wes Miller: Right. Yeah and like we were discussing, I think the server is where the big market is going to come, but thinking about Vista since -- it's on everyone's mind beginning now and going for the next couple of years, it's definitely something to have in mind.

Richard Campbell: Absolutely. Wes, thanks for your time; really appreciate the discussion and I am sure we will be revisiting it in the near future.

Wes Miller: Thanks a lot for the opportunity. Have a great day.

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