



SECURITY NOW!



Transcript of Episode #53

VMware

Description: Steve and Leo briefly recap the concepts and technology of Virtual Machine (VM) technology, then thoroughly explore the free and commercial offerings of the earliest company to pioneer Intel-based high-performance virtual machines, VMware. They focus upon the free VMware Player which allows Virtual Machine "Appliances" to be "played" on any supported platform. They examine the value of these VMware solutions for creating highly secure "sandbox" containment environments as well as for cover-your-tracks privacy.

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It's Thursday, and you know what that means. It's time to find out what's going on in the world of security with our good friend Steve Gibson, the security czar. I'm naming you the czar of security now.

Steve Gibson: Well, and now I'm the birthday czar.

Leo: Happy birthday!

Steve: To Security Now!. This is the official anniversary, being Episode No. 53.

Leo: Hallelujah.

Steve: Yup.

Leo: Wow, that's great. Congratulations.

Steve: It really has gone quickly, Leo.

Leo: It has. It doesn't seem like a year.

Steve: No. No.

Leo: I'm really pleased. So that's great. And I expect we will go on for many years to come. I certainly hope so. Gosh knows security isn't going to go anywhere.

Steve: No, I think we said, was it the week before last, we've got Vista coming out. That's going to keep us really busy, I think.

Leo: Plenty to talk about. Plenty.

Steve: Yup.

Leo: So we had started – and it's now been two weeks, three weeks back...

Steve: Yup.

Leo: ...talking about virtualization. Shall we recap a little bit of...

Steve: Oh, yeah.

Leo: ...what we talked about?

Steve: Yeah, I want to for sure. I actually – I was a little concerned that people might not be interested in our walk down memory lane, which was, you know, really talking about where it first began and really covering a broad spectrum. But I got a bunch of really positive feedback from people who like to know things they didn't know about the history of virtual machine technology and, you know, emulators and UCSD Pascal and all that. And a lot of people who had been around but hadn't thought about it for a long time and were saying, oh, yeah, I remember that. And so, anyway...

Leo: And gosh knows we've been around a long time, and we can talk about it, can't we, Steve.

Steve: Exactly.

Leo: Really sometimes we – you and I are the same age and go back to kind of the earliest years of personal computing. And sometimes I really do feel like an old guy when I – yeah, I remember, we had 4.77 megahertz, and we were happy! We were glad to have it!

Steve: We knew we'd never need more.

Leo: Never need more than 640K. So virtualization is what?

Steve: Well, the best definition, I think, is it is software pretending to be a computer. So it's a computer running within a computer, essentially. And there are many different flavors because there are many ways to accomplish a computer within a computer. The traditional sort of older fashioned way was known as like a pure emulator. And in fact, for example, even the original Basic language, Basic was a language that was interpreted by a computer. You could consider that a virtual machine; and, in fact, Basic was often compiled down into something called "byte code," which was a sort of a pseudomachine language that the interpreter then executed as if it were actually the hardware interpreting that byte code. So there have been many implementations of this. But essentially the idea is you have a computer that sort of is creating another computer.

Now, the tremendous advantage of that, and the reason we're talking about this at all, is from a security standpoint it means that the software running in the computer's computer, that is, that virtual computer, thus the name, it isn't actually running on the raw hardware in an unconstrained fashion. So constraints can be put around it. Essentially, and this is the term that we'll be using, "sandboxing" is the term that's been used to describe the idea of creating a restricted environment in which software runs so that it's able to do useful things, but it's not able to do harmful, malicious, and completely uncontrolled things. So essentially a virtual computer is a computing environment of some sort. It maybe purely software, it may be a hybrid, or even purely hardware, in theory, although we really haven't seen anything like that before. But it's certainly possible theoretically to have a virtual computer that is sort of a – that is running only on hardware which is doing the virtualization. In most cases you have some software that's involved, too. So that's sort of the broad brush background of virtual computers.

Leo: And its real use in security. In fact, what's interesting is because nowadays all of the new Intel processors, for instance, support this kind of stuff in hardware, there is much less of a penalty paid for virtualization.

Steve: Well...

Leo: People are more interested in it.

Steve: Yes. And in fact that's sort of – that's a nice segue into talking about VMware and where they've come from and where they're going. What's happening is, I predict we are on the cusp of a substantial rise in virtual computing. I think that virtual machine technology, and it's one of the reasons I'm glad we're talking about it and covering it, this is something that is with us and is, I mean, it's funny, too, because it was something done a long time ago. Then it sort of died out, and no one was really talking about virtual machines for a period of a couple decades. And then it began to see a comeback as RAM got large enough, as hard drives got large enough, as systems got fast enough, because normally, just exactly as you said, Leo, there's some penalty paid for this extra layer. You've got a wrapper. You've got, you know, this thing doing the

sandboxing does have some overhead of varying degrees.

Well, VMware was early in the game, VMware Corporation, early in the game of taking the Intel processor, which really wasn't designed to do virtualization, but figuring out how to sandbox it and trap the privileged instructions which are normally not trappable, how to do this in order to create virtual machines. What is happening now is, because of this resurgence of virtual technology, Intel, and I'm sure AMD will be following, is now making it easier to do this. So VMware Corporation is being a little concerned because one of their competitive advantages was that they had a bunch of patents – I don't know, they've got, like, 20 or 30 patents on ways to solve these problems where the hardware is still a little hostile to doing it completely, they came up with workarounds. What is happening is the hardware is now evolving in a direction to make virtual machines much easier to implement. So some of the competitive advantage that VMware Corporation had is being lost.

Leo: Hmm, interesting.

Steve: The other thing, the other evolution here, is that we are beginning to see virtual machine technology because it's so useful, it's being subsumed by the operating system. I think we're – in a very short time we're going to be seeing Linuxes with increasing virtual machine technology. Even FreeBSD already has something called "jails," which is an OS-level supported sandboxing technology that allows multiple users to basically feel like they've got an entire FreeBSD machine to themselves, but they can't get out of jail. They are not actually talking with full privileges. Even though you can log in as root, you're a jailed root user. So...

Leo: I like that.

Steve: Yeah, it's very cool.

Leo: Yeah. I imagine Windows will do this at some point. And there have been rumors that Apple would be doing this with their next OS X Leopard, which will be out next spring. They did talk a little bit about Leopard at the Worldwide Developers Conference, but didn't mention that, so I don't know if that will be part of it or not. They did mention there's a lot of stuff we're not showing you, so...

Steve: Well, and interestingly, the Worldwide Developers Conference was just last week.

Leo: Right.

Steve: Or two weeks ago. And Apple – I'm sorry, VMware introduced VMware for Mac.

Leo: Oh.

Steve: So it still – you're able to sign up for an early beta. But, you know, we've talked a couple times about Parallels. And...

Leo: Yeah. We both use that. That's how...

Steve: Yup.

Leo: ...how we run Windows on our Intel Macs.

Steve: Exactly.

Leo: And I'm very happy with it, I have to say.

Steve: Well, and in fact it's very VMware-like. When I was installing and setting it up, it was like, wow, I mean, the icons even look sort of similar. And so, I mean, I felt immediately at home with it. The one thing, and we're going to talk about it in this episode, is that – that is very cool is that all of the VMware products across their product line are compatible. So you could create a Windows virtual machine, do all the work there, and you're able to package these things up. And that's in fact what the free VMware player plays.

Leo: We should explain that most of the time, at least in my experience, all of these programs, instead of having a hard drive or taking a partition on your hard drive, they just create a large file which is – which appears to be a hard drive to the software as it's running. So, for instance, with Parallels set up on my Intel Mac, I have a big file that that's my Windows operating system, and all the files on it, and all the documents in it. So you're saying I could take that one big file, copy it to another system, a Linux system, say, using VMware, and run it as if I were running the same version of Windows.

Steve: Yes. And...

Leo: Wow.

Steve: And in fact what I love, because – see, I've been a long-term VMware user. I have used it in the past – okay. I guess we ought to – I'm getting a little bit ahead of myself here. I've used it in the past to evaluate lots of different personal software firewalls.

Leo: Great way to do that. So you don't have to...

Steve: So, yes.

Leo: ...mess up your machine.

Steve: Wait, well, exactly. And all, I mean, a firewall is inherently an invasive thing to install. You know, it's going in and sinking its roots down into your kernel, putting in drivers, patching things, doing all kinds of stuff. And so you, on one hand, you know, you could, sure, you could reformat your drive, you could uninstall it. But you're never really sure if you got it all out of there.

Leo: Well, there's another advantage, which is that you can – the systems are identical.

You can start from scratch, fresh, each time with an identical system.

Steve: That's – but in fact – so, for example, what I do is I use VMware Workstation, and I create a new instance of virtual machine. And what's really funny, I mean, the first time I used it, I installed VMware Workstation, started it up, and you literally – you push, like, the power on button for this virtual machine, and you see, like, a black-and-white screen booting. I mean, it's got...

Leo: I know, it's kind of weird.

Steve: It's got the BIOS in there, you know, counting up how much memory it has. And it's exactly like, you know, turning on a computer and watching it boot. Because, I mean, it is – it is, to that level, it's a virtual machine. It's a computer running on your screen. And so then I install Windows into that, get Windows all configured the way I want to and, you know, install some other apps and things, sort of to get the environment ready. And then you're able to save it, and you can then stamp them out like cookies so that then I'll have, for example, ten identical virtual machines. I then name them, you know, ZoneAlarm, Kerio, Personal, Symantec, Norton, McAfee, you know, give them all names. And then I go to each one, turn, you know, basically turn it on again, and then install that personal firewall in that instance of the virtual machine. And the beauty of that is – and in fact, well, VMware has really got this nailed. You end up with, like, a tabbed interface where you can just click on tabs, and it jumps you immediately between entirely separate instances of the installed and set-up Windows. I mean, it is just – it's very cool. And so what...

Leo: It's serious magic, I must say.

Steve: It is deep voodoo, yeah.

Leo: Yeah, yeah.

Steve: I mean, and it works. They have networking working; so you're able to, if you want to, you can make these machines communicate with each other, communicate to the host machine, sort of your own little private network in order to connect and do filesharing, and you can even do drag-and-drop sort of operations. So it's extremely cool. And for me, the advantage, then, is if I come back a day later because there was something I forgot to test, well, I've got all of these – it's like having ten machines literally running inside of one. So I'm able to say, oh, I forgot to test something. And I just click through all the different machines running different personal firewalls in order to test them in a way that, you know, with something that I'd forgotten.

Leo: Of course, you must have had a big hard drive because...

Steve: Oh, I mean, yes. These things are hungry for, you know, you can't run it on your grandmother's computer.

Leo: No.

Steve: It does need to be run on a contemporary machine.

Leo: And lots of RAM, too, because remember, you're running essentially two operating systems simultaneously.

Steve: Well, yes, it is RAM-hungry. And there are things you're able to do. I mean, you're able to, like, shut down the machine. You can pause the machine. You can suspend it using the OS's own suspension mechanism. I mean, it is really feature-packed. Now, the cool thing is that, once you've done all that, you end up with this file, I think it's VMX, which is like the master file for the virtual machine. You can take that to any other copy of VMware, whether the full Workstation, whether the free player, or even now VMware, for example, on Linux, or soon to be on the Mac. And all of them are compatible at that file level. I mean, you're probably talking about, you know, many hundreds of megabytes, maybe 3 or 400 megs. So, you know, burn onto a CD. But what you end up with is this portable, sort of this module, which any other VMware system will run. And the player is free. So if what you've created is also free, I mean, you can't go stomp, you know, stamping Microsoft Windows, your own personally licensed copies of Microsoft Windows all over the place. That's obviously a violation of Microsoft's copyright. But if you were to build something with open source software, then you end up with something that will run anywhere.

Leo: Well, and we should point out – well, maybe I shouldn't, but I'm going to – that the Windows activation is done within the virtual machine. So if you make a copy on a Mac of a VMware Windows installation and move it to your Linux box, you're not really changing machines, so the activation goes right with it.

Steve: Right. VMware used to only be hosted on top of another operating system. But they've even got a version called ESX which you install, like the first operating system, you install this VMware ESX on raw hardware, and they actually started with...

Leo: Wow. You don't need any operating system?

Steve: Nope.

Leo: Wow.

Steve: Nope. They started with a version of UNIX – sorry, Linux – years ago. They're migrating more away from Linux into their own code. So this ESX, the VMware ESX is actually not hosted on any other OS. It itself is installable directly on empty hardware. So you take a machine, you install this VMware ESX, and then it creates virtual machines in which you install whatever operating systems you want. So it, I mean, it allows, for example, commercial companies who want to provide hosted servers to install, for example, lots of copies of UNIX or Linux, give each one to a different company, and you really, you know, each OS is sandboxed and has its controlled access to the hard drive. Apparently they'll install up to 128 virtual machines on a single server, and they can all be running at once.

Leo: Now, that's amazing.

Steve: And so, you know, and so a client leaves, you just delete their virtual machine and then

stamp out another one ready to go for your next customer off of your master template. So this notion of having templates is incredibly cool because it affords you the ability to set up basically a completely configured computer of, you know, whether it's Windows or Linux or FreeBSD, basically you install whatever operating system you want into this empty virtual machine. And, I mean, and you've got something that runs at near full speed.

Leo: So that's another question. You say "near." How near?

Steve: Well, it's getting better all the time. In my experience, on good hardware you really can't tell the difference. I mean, it is snappy, and it's just like you're using Windows.

Leo: Now, in Parallels – and I have 2GB on a MacBook, so it's not the highest end Intel dual core, but it's still pretty fast, it's a 2GHz, dual 2GHz – it does seem to run pretty snappily. I haven't tried running games on it, but I am able to run Adobe Audition with many tracks, and I use voice dictation software. That seems to work fine.

Steve: And now from a security standpoint, here's where this all comes in, is it is super secure. And in fact, one of the things that people are doing is they're using a virtual machine for doing anything on the 'Net where they care about, not only security, but privacy. Because that's the other thing that a virtual machines affords you. Since you're able to tell – in VMware you're able to say, do not save any state changes of the virtual machine while I'm using it. That is, they have this notion of snapshotting, where every time you boot or turn it on, it starts out the way it originally was. And so, you know...

Leo: That's interesting.

Steve: It's very cool.

Leo: So it throws out any changes you make.

Steve: Exactly. It'll save them during your session, but it will not save them across sessions. And so, you know, many people are concerned about leaving tracks when they're using a browser because browsers are saving cookies, they're caching images and caching web pages you've gone to. Basically it's, I mean, it's a lot of work to clean out any, you know, to make sure you've left no debris behind from your use of a computer. Doing anything in a virtual machine that is set up correctly in this way absolutely guarantees that, when you shut it down, it has not modified your main machine, your exterior computer, at all. And even turning it back on again starts it from its master image, losing any changes that were made last time.

Leo: Well, I can see the real security advantage of that. Of course it's not the ideal way to operate on a computer where you actually want to do any work long term. Be nice to save some stuff.

Steve: True. True. And it's worth saying, too, that, I mean, this VM player, it's interesting, VMware Corporation is showing all the signs of a company that recognizes, you know, it got an early lead, but the world is catching up. You know, of course, Microsoft bought Connectix, I think was the name of the company...

Leo: Right.

Steve: ...and acquired a very similar virtual machine technology from them. That, of course, is now Microsoft's, you know, Virtual PC product line. And Microsoft is giving a player away also for free. Oh, I should mention that VMware's will also run Microsoft Virtual PC images. So...

Leo: Really.

Steve: Yes. You're even able to use Microsoft Virtual PC virtual machines and run them in VMware.

Leo: That's interesting. Wow.

Steve: So it's, you know...

Leo: So the images are close enough that they can do that, wow.

Steve: Well, I think what they've done is they've really...

Leo: Reverse engineered it.

Steve: They went in and, yes, they went in and deeply reverse engineered what Microsoft had. But so VMware, you know, they're giving things away for free, they're...

Leo: Now, you say you get the player. But what can you do with a – you can't create a new image. You'd have to use somebody else's created image.

Steve: Well, no, but there is a couple very cool things. As I was researching this, I was excited to be telling our audience about some of this because, first of all, the player is about 30MB. It's not huge in size, but it does deeply install on your machine. It creates some virtual network adapters that will show up under your network properties. I mean, it's – it takes a while to install because, I mean, it's – and you do have to do a reboot afterward. So, I mean, installing the player itself is not something that you do casually, just like, oh, I'm going to quickly, you know, run this little program and see what it does. I mean, it's really putting some serious technology on your machine.

What's cool about it, though, is that there are now what VMware calls "appliances." And there's a directory, again, we've got links on the show notes page for this, to VMware's page. They're collecting – there's, like, I don't know, maybe 50 or 60 what they call "appliances," which are virtual machines that other people have already created. And some of the coolest ones are various flavors of UNIX and Linux. And so what people could do is, I mean, it's a very easy way to just screw around with FreeBSD or with – is it called Ubuntu? Is that...

Leo: Ubuntu, yeah. That's the...

Steve: Yeah.

Leo: ...Linux, in fact, that's the one I use and love.

Steve: Is it a derivative of Debian?

Leo: It is. It's a Debian...

Steve: I thought so.

Leo: Nicely packaged. Mark Shuttleworth, who made quite a bit of money in the dotcom boom, is basically funding it. And it's free. They'll send you a disk. Ubuntu.com.

Steve: Well. So for example, you install VMware's player. They have a ready-to-go, Firefox-based Ubuntu.

Leo: Oh, a little – so you just could load that in...

Steve: Oh, now, you absolutely do, and it works perfectly. I was playing around with it.

Leo: Oh ho ho ho ho. Because Ubuntu is free, so all of that...

Steve: Yes.

Leo: ...is free, so you don't have to worry about licensing and all that. They can just give it to you as a blob. How big is the blob?

Steve: Now, that's the problem.

Leo: Oh.

Steve: It's a big blob to download. It's 271MB.

Leo: Well, that's not that bad.

Steve: Well, until you unzip it, and it's a gig.

Leo: Yeah. Because it's going to be a whole operating system.

Steve: Well, it's a whole operating system, and it's got a whole bunch of apps installed. The reason I thought...

Leo: Now, what does it run on? It runs on anything that the VMware player will run on.

Steve: Exactly.

Leo: Wow.

Steve: So, yeah, I mean, it is really cool, Leo. I mean, so it is – it comes with, I think it's the GNOME desktop.

Leo: That's right. That's the default.

Steve: And it looks great. It's very Windows-like. I was playing around with it, and I installed the calculator app, which it didn't already have, because it's got a very nice application...

Leo: Isn't that installer great?

Steve: Yes. And in fact, I saw that it was a .deb file, so I figured, oh, that – I remembered that from my own playing with Debian.

Leo: It uses apt-get. I think Ubuntu is incredible. I actually put it – I have an old Mac PowerBook because, when I went to the Intel, my year-old PowerBook was suddenly obsolete, and I put...

Steve: Right.

Leo: ...Ubuntu on it, and it's great, it's just wonderful. But I didn't need to because it sounds like I could have just downloaded the VMware version. That would have been a lot easier.

Steve: Well, and that's what's so cool. And it's what I wanted to really expose our listeners to is that, you know, I mean, we've talked about Linux and UNIX and all this. And, I mean, for most people it's like, oh, you know, I don't have a spare machine, I don't want to do dual booting and, like, mess with my partitions and all that. But wouldn't it be cool just to be able to play with some of this stuff?

Leo: So if – or if, for instance, you wanted to surf safely on, I mean, really safely on Windows...

Steve: Well, yes.

Leo: ...you'd download the player. They have a blob, I presume, for – oh, it doesn't matter, it's cross-platform. So as long as they have a player for Windows, you're okay.

Steve: Yup.

Leo: And you download the blob, and when you surf, you surf in Ubuntu. And even if you were to get a virus, is it – now, this is the question a lot of people ask me. Can it go across the barrier from the virtual environment into your real environment?

Steve: Well, you still need to be careful that you don't pull programs out of the VM, out of the virtual machine, out onto your real machine.

Leo: So you could actually see it. I mean, you can see your drive, and you could copy stuff over and stuff.

Steve: Yeah, yes. You are able to do that. By default it is disabled, so you're unable to have any contact with your external drive, although the technology does support drag-and-drop of files and content.

Leo: That's...

Steve: So, I mean, if this is interesting to people, I encourage them to try it. It is weird when you see this thing boot. And in fact, that's exactly the experience I had with the VMware, you know, just the free player. Downloaded the free player, 31MB I think it was, and then I downloaded the...

Leo: They call it the "browser appliance."

Steve: ...the browser appliance, exactly, 271MB. And then I unzipped it into a directory – I've created a little appliances directory under my VMware directory, where I unzip that. And then...

Leo: They have other appliances, by the way.

Steve: Oh, there's, like, 60 of them.

Leo: Yeah.

Steve: Yeah, I mean, there's a ton of them that various people are submitting. Many of them are really nicely preconfigured versions...

Leo: I love this.

Steve: ...of Linux and UNIX running.

Leo: In fact, I probably would not recommend the default browser appliance because it's an older version of Ubuntu, and it's just Firefox. So you might want to look at the other free virtual appliances to see which one fits you best.

Steve: Yeah, I saw some Opera, it would be able to install Opera 9 if you wanted to, and that's a relatively current one. But what was so cool, Leo, was here I'm looking at this app, and I start it, and I'm – I watch Ubuntu booting, going through its little checks, checking off, you know, starting up this, starting up that. You know, and it's literally – it's booting the first time. Now, once it had done that, when I just closed the app, because this was told to, like, save where I am, next time I ran it, it continued exactly from where I was.

Leo: That's so cool.

Steve: It really is. And then to be able to download these – all these other...

Leo: So that one saves your bookmarks, it saves every changes you make.

Steve: Yup.

Leo: And not only does it save them, you just go right to it the next time you run it.

Steve: Yes.

Leo: Wow.

Steve: Yes. And you are sandboxed. Because the idea is that, I mean, the application thinks it is – the application itself, the Ubuntu, has no idea that it is not actually booting on a real machine.

Leo: Right.

Steve: So if you got malware in there, it could be having a party, thinking, ah ha, I've got this guy now, when in fact it's a virtual party. I mean, it's not actually touching your hardware because the virtual machine technology, and that's what VMware nailed early on, that is being made easier as our hardware advances. It's able to intercept all contact to physical memory and physical hardware devices. And in fact, it's one of the – one of the cool things is that, with this VM machine, you get sort of a wrapper of compatibility. It pretends to be the most standard USB hardware, the most standard Ethernet card, the most standard everything. So there's – you don't have any, like, driver issues because the VMware, the virtualization manager, it's simulating a generic Ethernet adapter that all operating systems will support, like an old, you know, 3Com E100 or something.

Leo: As long as the player supports your real hardware, you'll have no trouble with it later.

Steve: Exactly. And so...

Leo: I mean, if you had something really oddball, I suppose the player itself might not work.

Steve: I guess potentially, sure. I mean, it is really – it is just – it's a neat...

Leo: I love this.

Steve: It's a neat thing to see it happen. Again, it's going to need a gig in order to expand the browser. And I imagine that, since the other things are varying in size, there are things that are smaller and larger than that 271 browser appliance that they offer. But, I mean, for someone to just install some apps and be able to boot, like, a virtual machine, and then install anything you want to in there – now, again, you have – the free thing, the free version, the VMware player, is a player only. It'll allow you to do this with images that other people have set up. And I think VMware itself, the whole Workstation, is version 5., you know, something or other.

Leo: And it's not cheap, as I remember.

Steve: No, it's about 199, I think.

Leo: Oh, that's not bad. That's not bad.

Steve: For the whole thing. For me it's a godsend...

Leo: It's worth it.

Steve: ...when I want – yes, when I want to do something with a machine where I want to experiment and, like, jump around between different instances of a machine. And it's making a serious dent in corporate large sort of computing infrastructures where they want to be able to run many software servers inside of a virtual server.

Leo: And of course VMware is the best known. But as you mentioned, there's Microsoft's own Virtual PC and Parallels, which is in very active development on the Mac platform, but they also have Windows and UNIX versions, as well. So...

Steve: Right.

Leo: This is not – it's getting to be a crowded field, ironically. And I think it's just exciting as heck. I think probably anybody who's really concerned about security might want to just

go get the free version of VMware, the player, and get the browser appliance and install it, just at least to have that.

Steve: Yeah, I agree. And just see how it feels. I mean, there's overhead associated with getting it launched and getting it going.

Leo: You've got – you say a gig is a must, of RAM?

Steve: I would think so because I think it actually is using a much smaller amount, and then – but it basically laid out a container for a virtual drive. And so that gig is, as I remember, it's not very full, but they wanted to basically, you know, take up that much space so that then, if you stored things in there, you know, like the browser had some caching space and so forth, basically it is that file which is pretending to be the drive.

Leo: So a gig of hard drive space, but also a gig of RAM. And that really is a must.

Steve: Oh, yeah. It is going to be using up RAM also.

Leo: Yeah. Very cool. Virtualization. Now that you know what it is, run out and get some of your very own.

Steve: Yup.

Leo: And I couldn't be happier using Parallels on my MacBook. It's just really a wonderful thing.

Steve: Well, and frankly, I'm probably going to switch. I own Parallels. I think I'll probably get VMware for the Mac just so that I have that cross-platform compatibility.

Leo: Yeah.

Steve: I think that'd be very cool.

Leo: I think that's worth 199 bucks. Yeah. So that is in development right now, or is it actually out? They just announced it.

Steve: They announced it at the Developers Conference. There's a signup for the beta, so that implies that the beta is not quite ready yet.

Leo: Yeah. They say later, I think later this year.

Steve: Yup.

Leo: Which could be tomorrow, or it could be December 29th.

Steve: They probably had to, like, stake their claim during the Apple Developers Conference, just to get on record.

Leo: Well, I love having the competition. And, you know, Parallels is very reasonable. I think it's only \$40. But, you know, you're right. The compatibility cross-platform, to have one copy of Windows that I could put on all of my machines would be really cool, or one copy of Linux.

Steve: It is. It is really neat.

Leo: Yeah, yeah.

Steve: There is one appliance that I saw there. It's called PC-BSD. And it's a very nice version of FreeBSD that's got the GUI all installed and running. And so if people wanted to poke around with a UNIX, FreeBSD UNIX, which of course has always been my favorite...

Leo: As is mine, yeah, yeah.

Steve: Yeah, PC-BSD is another appliance there which has been very well reviewed, and it's being maintained. And, you know, again, you can run it right on top of your Windows machine.

Leo: Steve, once again you've shined a light into a fascinating area of technology that I think a lot of people never heard of. But now they – I know now that they will be very interested in knowing more.

Steve: Well, next week we're going to talk about a different flavor of this. We're going to talk about sort of lighter weight sandboxing technologies because there are some ways to sandbox without the whole VMware, Virtual PC sort of overhead. And so that's where we're going to go next. They're VM – they're virtual machine-like stuff, but sort of lighter weight.

Leo: If people want to know more, they should go to your website, GRC.com. That's where the 16KB version of this show lives, for the bandwidth impaired, and of course Elaine's great transcripts, if you like to read along as Steve talks. And it's also the great place to find SpinRite. It's Steve's bread and butter, has been for some time. The latest version is just fantastic for all PCs. I use it all the time. It's the ultimate disk recovery and maintenance utility. If you have a hard drive, you need SpinRite. Check out SpinRite.info for great testimonials. And of course...

Steve: You know, Leo, we've – I've been lazy posting new ones because we're just getting too many. Already that page is so long, it's like, uh – and so I've been thinking, maybe I'll just put up a note and say, you know, the last one here, I think it was in April or something, and I'm getting them all the time, but I just don't want the page to become too long. So...

Leo: Well, take off the old ones and put in the new ones.

Steve: But the old ones are good, too.

Leo: They're all his babies. He doesn't want to give up any of them. We also thank our sponsor, Astaro Corporation, makers of the great Astaro Security Gateway. If your small or medium business network needs superior protection from spam, viruses, and hackers, you could put a little dog at the gate, which is apparently what's barking in the background here, or you could actually get superior protection, including complete VPN capabilities, intrusion protection, content filtering, and an industrial-strength firewall in a single, easy-to-use, high-performance appliance. Astaro. It's like a little pitbull, protecting your system – www.astaro.com or call 877-4AS-TARO, toll free, to schedule a free trial of an Astaro Security Gateway appliance in your business. Free versions for non-business users are also available at Astaro.com. We thank them so much for supporting Security Now!.

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Steve, what's next? Do you know?

Steve: Yeah, as I said, we're going to talk about lighter weight virtual machine approaches.

Leo: Oh, yeah, you did. I'm sorry.

Steve: So-called sandbox.

Leo: Sandboxing.

Steve: Yup.

Leo: We'll go play in the sandbox with your Uncle Steve next week on Security Now!. Hey, thanks so much, Steve. We'll see you next time.

Steve: Always a pleasure, Leo.

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