SPK
and Associates

www.spkaa.com
Ph: 888-310-4540

SPK and Associates
900 E Hamilton Ave, Ste.100
Campbell, CA 95008

Be Careful of Workarounds:

Sometimes it's Best to Just Tackle the Larger Problem

Josh Tuttle, Systems Integration Specialist, SPK and Associates

May 9, 2013

One of the benefits of being an employee at a small consulting firm is that I get the benefits of a small organization combined with the resources of a the large organization I am assigned to. I don’t have to deal with much bureaucracy to get things done (and our clients benefit from this), and I still have the large IT budgets I need to get the tools required for my work. It is important, however, to remember not to think of these resources as magic pools of ... magic… that will include whatever I want, or worse, what I think I already have.

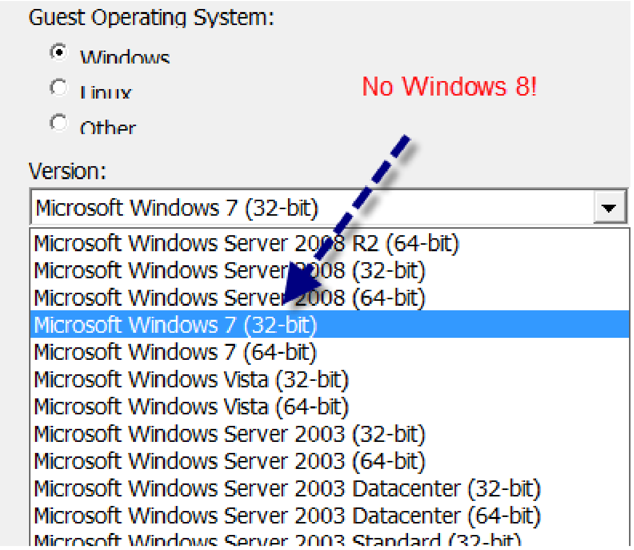
A few weeks ago a user asked me to spin up a Windows 8 Professional VM for him to do some development work on. This was an intriguing request, so I asked him why. He told me that he wanted to see if his program would interface with a Microsoft Surface Pro tablet as a client, but he wasn’t able to get funding for the actual tablet. Virtualization was the answer.

The user in question sits on the other side of a WAN from me, but our development network has a site-to-site VPN between our two sites, so this was not a problem. There is a VMware cluster on each side, each managed by a vCenter Server. (At one time the two clusters were managed by the same vCenter Server instance, which would have made this request simpler to deliver, but for our unique situation separating the clusters between two vCenter Server instances was a net benefit.) The user requested that the VM be on his cluster for networking reasons on his end, as the VM would have to communicate with a network that only existed in his building in addition to the multi-site development network.

I set off enthusiastically, and informed the user I could have it done in an hour. I assumed this would be no problem, as it would easily have been the case for a Windows 7 VM. This is where my problems began. Read on to see what problems I ran into and how I fixed them.

Problem 1: I leapt before I looked, and told the client it would be done in an hour when I had not done my homework yet.

I logged into his cluster with vSphere and went about the process of setting up a new VM while I downloaded the Windows 8 Professional ISOs from a network share a colleague had helpfully dumped them into. The first inkling I had of trouble was when I saw that there was no Windows 8 OS option when creating a new VM.



Guest Operating System:

● Windows
○ Linux
○ Other

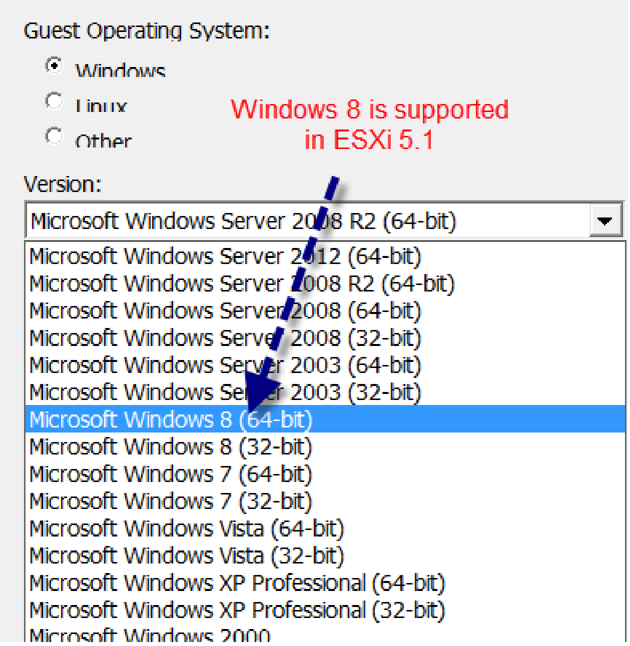
No Windows 8!

Version:

Microsoft Windows 7 (32-bit)

Microsoft Windows Server 2008 R2 (64-bit)
Microsoft Windows Server 2008 (32-bit)
Microsoft Windows Server 2008 (64-bit)
Microsoft Windows 7 (32-bit)
Microsoft Windows 7 (64-bit)
Microsoft Windows Vista (32-bit)
Microsoft Windows Vista (64-bit)
Microsoft Windows Server 2003 (32-bit)
Microsoft Windows Server 2003 (64-bit)
Microsoft Windows Server 2003 Datacenter (32-bit)
Microsoft Windows Server 2003 Datacenter (64-bit)
Microsoft Windows Server 2003 Standard (32-bit)

I was confused by this, as I had checked briefly on my own cluster to make sure that VMware supported Windows 8 on ESXi 5.1.



Guest Operating System:

● Windows
○ Linux
○ Other

Windows 8 is supported
in ESXi 5.1

Version:

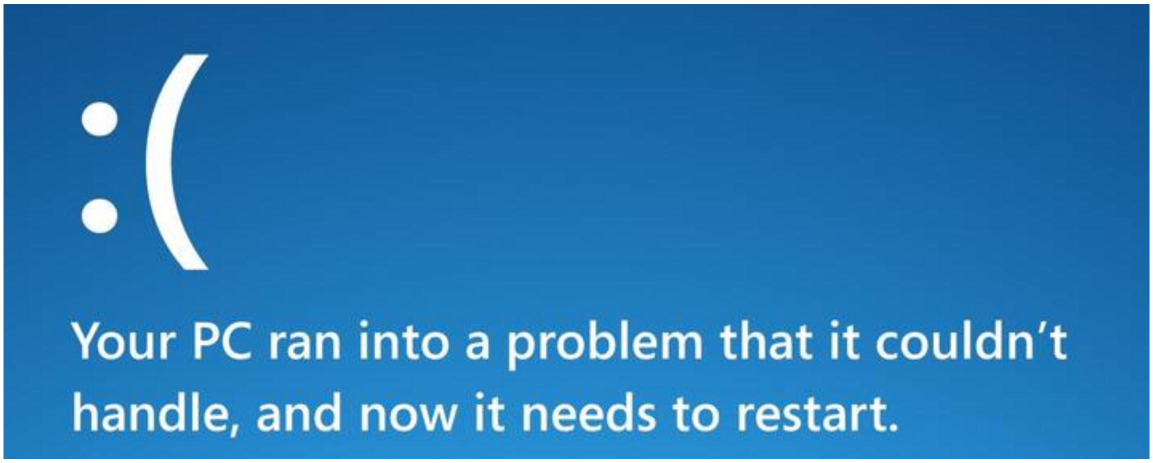
Microsoft Windows Server 2008 R2 (64-bit)

Microsoft Windows Server 2012 (64-bit)
Microsoft Windows Server 2008 R2 (64-bit)
Microsoft Windows Server 2008 (64-bit)
Microsoft Windows Server 2008 (32-bit)
Microsoft Windows Server 2003 (64-bit)
Microsoft Windows Server 2003 (32-bit)
Microsoft Windows 8 (64-bit)
Microsoft Windows 8 (32-bit)
Microsoft Windows 7 (64-bit)
Microsoft Windows 7 (32-bit)
Microsoft Windows Vista (64-bit)
Microsoft Windows Vista (32-bit)
Microsoft Windows XP Professional (64-bit)
Microsoft Windows XP Professional (32-bit)
Microsoft Windows 2000

Problem 2: I made an assumption about the VMware environment the user was in.

With a sinking feeling, I remembered the reason the hosts in my cluster were running ESXi 5.1 was that I had upgraded it myself a few months prior. I went back to check the ESXi version of hosts in the user's cluster. He was running ESXi 4.1.

No problem, I thought! Surely I can simply build the VM anyway! Who cares what those stuffy old men down the road in Palo Alto think I should be able to do. I do what I want! Yes, well…



:(

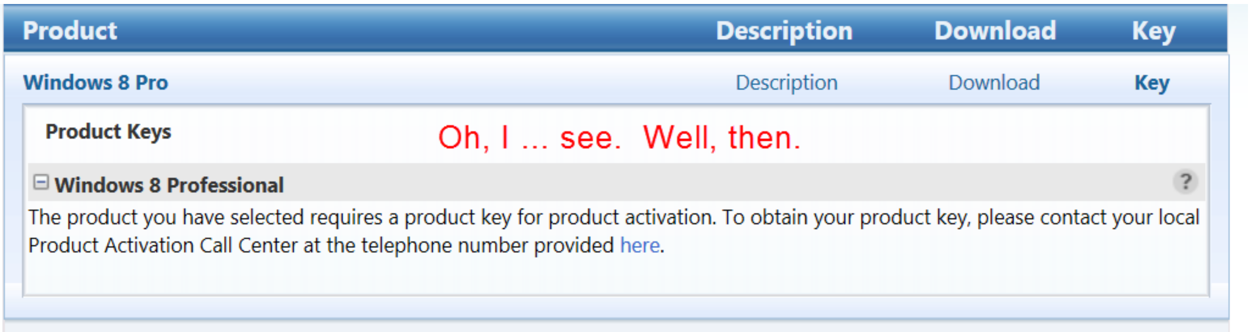
Your PC ran into a problem that it couldn't handle, and now it needs to restart.

So maybe the men in Palo Alto know what they are talking about after all. Undaunted, I called the user to give him the good news (always be positive and upbeat, remember this!): I could still deliver him the VM on time, but it would have to be on my cluster instead. We talked for a moment and decided that though this was not ideal, the situation was what it was and could not be helped. He thanked me, I hung up the phone, and I went to spin up the VM on my cluster. Due to the very quick install time of Windows 8, I had the VM up in a few minutes. Then I ran into another problem.

Problem 3: I didn't think things all the way through, and promised the user (again) that I could meet an unrealistic deadline.

When it came time to activate the VM, I was only mildly concerned when it could not reach our KMS server. That was to be expected, as the development network on my side of the WAN was isolated from the main corporate network (which is good, because we break things all the time on the test network. R&D is the best!). Fear not, I thought to myself, for thou art a trusted employee with the password to our Microsoft portal! I logged in with the intention of simply grabbing a MAK key.

Problem 4: I made assumptions about what software licenses we had through Microsoft.



Product	Description	Download	Key
Windows 8 Pro	Description	Download	Key

Product Keys

Oh, I ... see. Well, then.

⊟ Windows 8 Professional

The product you have selected requires a product key for product activation. To obtain your product key, please contact your local Product Activation Call Center at the telephone number provided here.

Unfortunately, we don't have any MAK keys for Windows 8 Professional. Nuts. I called the user, told him I was finished, and that I would start the long and beuracratic process of getting Windows 8 Professional licenses added to our agreement with Microsoft. In the meantime, he could use the VM without activation, but after a month it would enter degraded mode and I could not predict what the implications of that would be on his development efforts. I didn't hear back from him. I assumed this initiative was suitably killed for the time being.

Problem 5: I assumed the initiative was suitably killed for the time being.

I put it out of my mind, and several weeks later began to wonder whatever had happened. Then I got an email from the user. He was having problems, as expected. I was able to help with some of the problems, but the lack of activation was preventing something else from working. We were frustrated, but there was other work he could do. He asked if I could move the VM to his cluster so that he could put it on a domain that has no presence in my building and no routes set up that would allow a member of that domain to live in my cluster. I said yes.

Problem 6: I forgot that we'd gone through this process six weeks prior and already realized it couldn't be done.

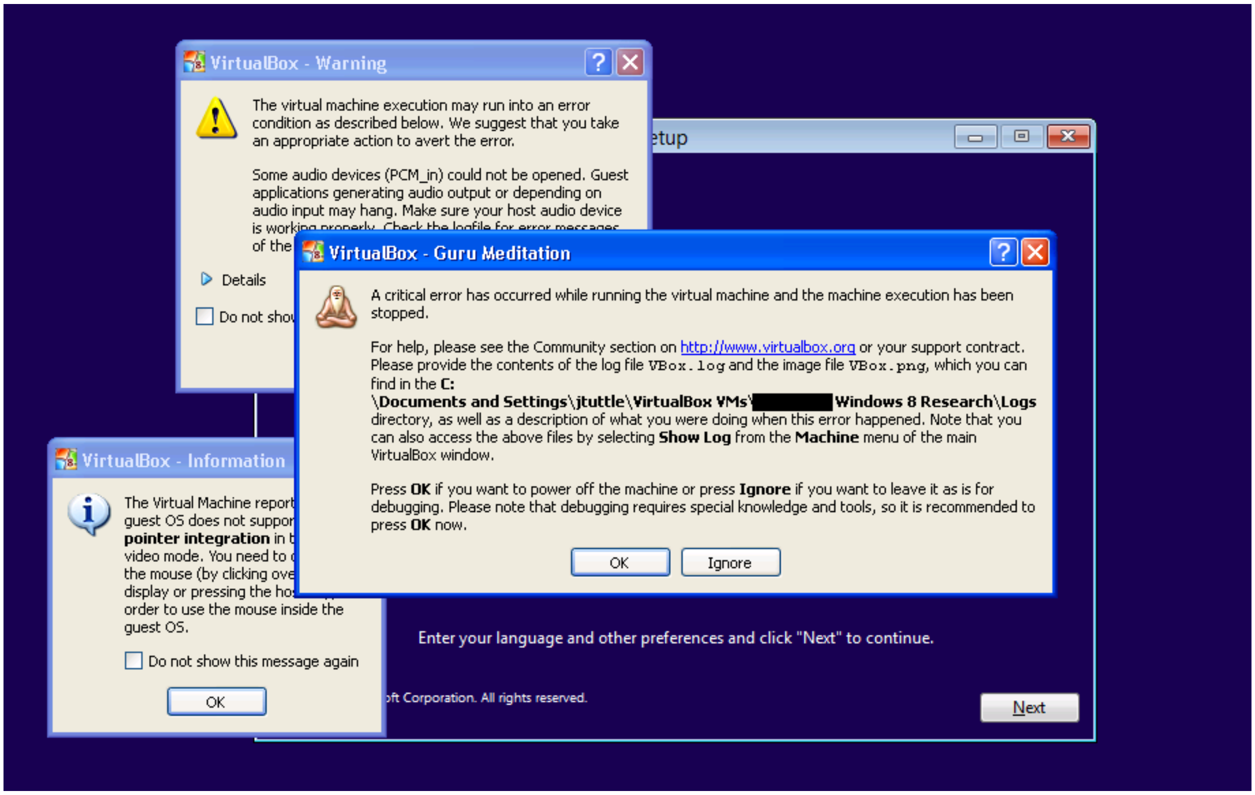
When we split up the two clusters and managed them from separate vCenter Servers on each side of the WAN, we gave up certain capabilities. vMotioning the VMs between our two clusters was one of those things. But I had a plan. An elaborate plan.

When we got the funding to build up the cluster on my end with new hosts a few months ago, I insisted that we keep one of the hosts clear of all VMs so that it could be used as a sort of test bed, ready rack, and "free cell" to make management easier. The PM blessed off on that, though I had to argue with him to get what I wanted. I was excited! I was finally going to be vindicated! I called up the PM and let him know that our words and dollars had not been wasted; I was about to do something that would not have been easily possible if we hadn't kept the spare host empty. He sounded relieved, and I felt good that I'd extinguished any lagging doubts or second guesses he'd had and had allowed him to feel better about his decision.

Here is what I did: I vMotioned the Windows 8 VM onto the ready rack, pulled that host out of the cluster, and then attached it to the other vCenter server on the user's side. Now I had my Windows 8 VM on a host in the same cluster the user wanted the VM to be on. I quiesed the VM and prepared to migrate it to a host that lived in the cluster permanently. This would have copied the VM over the WAN, but even if I had simply copied the VMDK manually I still would have had to send it over the WAN; the alternative would be to leave the VM on the NAS in my building and have all HDD I/O go over the WAN, which is obviously a bad idea. Unfortunately, the events from six weeks before came back to me in an instant when I saw a big red error message informing me that the intended destination host could not support the Windows 8 VM.

I tried to contain my profanity, and called up the user to inform him that I'd forgotten we'd tried this all six weeks before. We both felt kind of silly, but it is my job to not waste time and looking silly, so I was a little bit angry with myself. We talked about the problem some more, and I offered to just build him a one-off VM using VirtualBox or something on a machine he specified. He gave me an IP address and login credentials, and I went about setting it up.

I remoted into the machine, which turned out to be Windows XP, installed the apporpriate VirtualBox software, and gathered the ISOs I would require. He had asked me to increase the RAM of the VM from 2 GB to 4 GB, which I said was fine. It wasn't fine.



The virtual machine execution may run into an error condition as described below. We suggest that you take an appropriate action to avert the error.

Some audio devices (PCM_in) could not be opened. Guest applications generating audio output or depending on audio input may hang. Make sure your host audio device is working properly. Check the logfile for error messages of the

A critical error has occurred while running the virtual machine and the machine execution has been stopped.

For help, please see the Community section on http://www.virtualbox.org or your support contract. Please provide the contents of the log file `VBox.log` and the image file `VBox.png`, which you can find in the **C:\Documents and Settings\jtuttle\VirtualBox VMs**[redacted]**Windows 8 Research\Logs** directory, as well as a description of what you were doing when this error happened. Note that you can also access the above files by selecting **Show Log** from the **Machine** menu of the main VirtualBox window.

Press **OK** if you want to power off the machine or press **Ignore** if you want to leave it as is for debugging. Please note that debugging requires special knowledge and tools, so it is recommended to press **OK** now.

The Virtual Machine report
guest OS does not suppor
pointer integration in t
video mode. You need to c
the mouse (by clicking ove
display or pressing the ho
order to use the mouse inside the guest OS.

Enter your language and other preferences and click "Next" to continue.

oft Corporation. All rights reserved.

Problem 7: I forgot something so basic that I would have failed my CompTIA A+ Certification had I forgotten it two and a half years ago.

The problem, of course, is that I'd just booted a VM that required 4 GB of memory on a host that had roughly 2 GB of memory. This won't work. At this point a friend stuck his head over the cubical wall next to me to find out why I was cursing. When I explained the problem, he told me with deadpan seriousness that I should just increase the page file on the XP host to 20 GB and try again. I knew it was obviously a terrible idea, but I got "that look in my eye" and he felt compelled to tell me "please don't do that, Josh."

I didn't do it. Instead, I did what I should have done in the first place, which was to start putting together a plan to just upgrade the other cluster's hosts to ESXi 5.1. I've got the signoffs I need, and I start that project tomorrow.

The takeaways from this experience:

1. Look before you leap. Don't assume that you can deliver a user's request in an hour unless you've done that exact thing in an hour under the same set of circumstances. Not something kind of similar under mostly similar circumstances.
2. Have all the pieces ready before you start. If I'd checked all of these compatibilities first, had my ISOs and installers ready, and my license keys gathered up front, I'd have realized all the reasons that the request could not be efficiently handled in the way I wanted to go about doing it. I wasted a lot of time doing things that were interesting to me, but the developer still doesn't have his VM.
3. When I ran into problems, I tried a continuous series of hastily thought out workarounds rather than taking a step back and realizing that I needed to just bite the bullet and plan out the larger project that I was hoping to put off until another day.
4. Don't make obvious mistakes. The fact that I'm admitting to spinning up the 4 GB VirtualBox VM on a 2 GB XP host is a testament to the forgiving nature of the place I work in. Fact is, in my previous job I could have earned a suspension for wasting valuable time on a mistake as obvious as that one. I am better than that, and I need to avoid making mistakes like that in the future.
5. Keep track of what you've done, think things through, and save yourself time.