Mike Nelson – SVD article

The Virtual Desktop Hosting Platform Migrations

One of the most common issues that I get questions about when working on VDI projects is usually around migrations and conversions. It is important for Administrators who have live datacenter virtual desktop environments, as well as local test labs, to understand about the ins and outs of converting and migrating virtual desktops between the different platforms. We won't cover how to convert virtual desktops from one VDI Broker to another (eg. VMware View to XenDesktop), but rather take a look at how we can migrate those virtual desktops between the Type-1 hypervisor hosting platforms.

There are really currently only two ways to convert an existing virtual machine to another format. One way is to use a Conversion Application, such as VMware Converter, to do a "Hot" (while the source machine is running) or "Cold" (when the source machine is powered off) conversion, which is sometimes referred to as a Clone. The other way is to convert the disk formats of the existing virtual desktop directly by using tools such as Starwind Software's V2V Converter, or Microsoft Systernal's Disk2VHD tool. Depending on what you need is for your migration will determine what type of tool you would use. If you just need to migrate, for example, a XenDesktop virtual machine to vSphere, you should use the VMware Converter tool. If you need to convert a virtual desktop template that is in VMDK disk format to VHD format, you could use the Starwind converter or the Disk2VHD tool.

All of the Type-1 hypervisor vendors I am writing about support the packaging standard of OVF, or the Open Virtualization Format. It is possible to do Importing and exporting of virtual desktops using this format, but it does not convert disk formats, only creates a package of files that support a virtual machine, including the disk files. For this article, I am focusing on the conversion of these formats, so OVF does not readily apply unless the conversion of the disk has already taken place, or the disk format is usable by both hypervisors used in the conversion.

The first thing that has to be decided is which way you're going, and by that I mean which type of VDI infrastructure you want to convert from and what type do you want to convert to. Almost all of the migrations I have been involved in, and I'm not just choosing sides on this, have been from a XenServer hosting platform to a vSphere one. Almost everyone I have worked with that deployed VDI on XenServer has already, is, or will be moving that VDI to either vSphere or Hyper-V. Again, this is just my experience and probably some other folks may have just the opposite situation. One thing to note, VMware View does not run on any other Type-1 hypervisor except for vSphere. It is the only virtual desktop product that is restricted to that platform, for whatever VMware's reasoning.

Migrations to vSphere - I have found that the easiest and most consistent conversions of virtual desktops that I have had were done with the VMware

Converter tool. The tool allows for many options that can be set for the conversion process, and it provides a lot of information during the conversion that could help troubleshoot any issues that may come up. Its biggest drawback is that it is severely limited in the types of machines it will convert (in true VMware form, of course), and the fact that you cannot schedule conversions via the GUI (vSphere Administrators have been asking for this feature for years and VMware still ignores them). Here are some key points that I have found over time that you may want to keep in mind when converting virtual desktops with this tool –

- Hyper-V conversions can be done directly as it is a supported format. Strangely enough, even though both XenServer and VirtualBox have the same disk format as Hyper-V, this tool will not convert them.
- You should be able to do a "Hot" (powered on, Converter installed) clone in almost all cases. I have yet to have been forced to do a "Cold" (powered off, CD boot) clone for these types of conversions.
- Make sure to disable the services associated with the former hypervisor (such as XenTools) in the Destination Services tab so that when the machine comes back up "on the other side" (in vSphere), those services will not start automatically.
- Change disks to "Thin" were possible if you do vSphere-side thin provisioning.
- If you change any disk allocations, you cannot do an automatic synchronization of the changed deltas at the conclusion of the conversion.
- Run the tool from the machine that is to be converted. This is the recommended best practice by VMware, even though they do give the option for a client-server type setup where you can connect to and convert remote machines.
- XenDesktop notes – If you are migrating a XenDesktop virtual machine to vSphere, here are the steps involved:
    - Remove the machine from the DDC catalog.
    - Uninstall the VD Agent.
    - Stop the Citrix System Monitoring Agent service (otherwise the Converter job will fail)
    - Install VMware Converter.
    - Be sure to set the XenTools service in the Destination Services tab to "Disabled"
    - One the conversion is done, power up the machine and install the VMware Tools. Reboot.
    - Install the VD Agent and recreate the machine in the DDC catalog.
    - Don't forget to uninstall the XenTools.

I have also had excellent luck when directly converting disk to/from Hyper-V to/from vSphere using Starwind Software's V2V Converter. This very simple GUI tool is quick and very easy to use. I have yet to have a bad disk conversion from it.

This process is different than using a tool like VMware Converter, which allows for "Hot" cloning, as this tool only allows for conversion while the machine is powered off. Other tools like Microsoft Systernals Disk2VHD tool can also be used even when the machine is running, but the process is much slower since files are in use and there are active disk reads and writes going on during the conversion.

Migrations to XenServer – Citrix supplies a tool called XenConvert. This tool is much more limited in functionality than its VMware counterpart. Until the revisions of the last year or so have come out, many had considered the product a Floccinaucinihilipilification (go ahead, Google it) that only served a very limited purpose. It has gotten better, but about the only thing that I like in this tool are the options given for the disk image output. You are allowed VHD, XVA (Xenserver disk), OVF, or Provisoned Services vDisk. This makes the conversion to XenServer much more flexible since you may want your virtual desktop to be provisioned with Provisoning Services rather than just a standalone machine. You cannot convert disks to Thin provisioning however, and the options for controlling the different parts of the conversion, such as services and throttling that the VMware Converter provides, are not available. You can also not do any "Cold" conversions. Needless to say, this offering still needs a lot of work to somewhat useful for the virtual administrator.

As I cannot find any other tools that would better assist in making the migration from a vSphere hosted virtual desktop to a XenServer platform, I have to say that making that type of transition is difficult at best. Obviously, since XenServer directly supports Hyper-V's VHD format, this type of conversion is much easier. And, since the VirtualBox hypervisor supports them all, it could be considered the easiest to migrate to. It is by far the most versatile of the Type-1 hypervisors when it comes to conversions. It is unique in that it contains its own disk image conversion tools built in, with which it can convert to and from many different formats, including vSphere, XenServer, and Hyper-V. I just wish it was more accepted as an Enterprise hosting platform for virtual desktops. You can find out more at the VitualBox documentation site.

Top 4 Type-1 Hypervisor Disk Formats Supported

Vendor	VMware	XenServer	Hyper-V	VirtualBox
Formats Supported	VMDK	VHD, XVA	VHD, VHDX	VDI, VHD, VMDK, HDD