Business Email, Collaboration, and Virtualization Experts

VMware vSphere 5 Quick Start Guide

This document is created to provide some basic information about VMware, and allow you, the customer, to determine when and how to engage us for support or other needs related to your VMware environment.

In general, we always recommend that our customers contact us before making any changes that could put their systems at risk of data loss or production downtime. We can typically help you resolve issues, including configuration changes, updates, etc, and save the frustration of an unplanned outage. VMware is a complex system, and it is easy to get in over your head.

Note: This is not intended to be an in-depth technical document. It is an introduction to some of the key components that any system administrator needs to understand for typical day to day operation of the system.

Marvin Huffaker Consulting, Inc.
1311 W Chandler Blvd Ste 160A
Chandler, AZ 85224
Phone: 480-988-7215
http://www.redjuju.com

Business Email, Collaboration, and Virtualization Experts

Table of Contents

About the VMware ESXi vSphere Server

vSphere Overview

This section details some of the basic information related specifically to the host system.

VMware ESXi vSphere

VMware ESXi (vSphere) is a hypervisor that runs directly on the server hardware. It provides the platform that allows you to run multiple virtual operating systems. VMware manages the interaction between the guest OS and the hardware, primarily the RAM, CPU, and Disk Storage.

Virtual Host vs. Virtual Guest Definitions

We refer to the Virtual Host as the Physical server running the VMware ESXi vSphere hypervisor.

We refer to a Virtual Guest, Guest OS, Virtual Machine, and / or Virtual Guest OS as the Operating System(s) running on top of the VMware hypervisor. These are your Windows and Linux servers that run your corporate services and applications.

VMware Installation Mode

We typically install VMware ESXi in "Embedded" mode, meaning that a USB Flash Drive is installed in your server(s), and the entire VMware ESXi hypervisor is installed on the USB Flash Drive. This is important to understand for future support needs. If Disk Drives and/or Disk Arrays are present in the server (Direct Attached Storage), they contain the actual VMware datastore, which contains the Virtual Operating Systems and associated data. It should be noted that a Best Practice is to not use Direct Attached storage, but to instead use a centralized SAN or other shared network storage for the datastore. This provides better functionality, and allows you to take advantage of some of the advanced features of VMware.

Making Changes to the VMware Hypervisor or Infrastructure

It should not normally be necessary to make any changes to the VMware hypervisor. On the surface, VMware VSphere is a simple, easy to understand interface that handles several basic tasks. However, there are numerous elements and considerations that may not be completely apparent or obvious. We recommend that you do not make any changes to the system without first consulting with us first so that you will understand the ramifications.

Business Email, Collaboration, and Virtualization Experts

Routine VMware Maintenance

Generally speaking, VMware does not require any day to day maintenance. It typically just runs unless instructed otherwise. In most cases, once the system is operational, the underlying hypervisor (VMWARE) is mostly forgotten.

VMware Patches and Updates

Like any other software manufacturer, VMware releases patches and other updates on a regular basis. Updating VMware requires a maintenance window where all Guest OS's are shut off. We recommend contacting us to perform any required updates. As a side note, we publish a quarterly "Baseline" showing the versions that all software, Windows, VMware, and Novell should be running. When it is time to update a system, the information will be in the baseline report. Our baseline document can be found here: http://www.redjuju.com/tech-resources/

Proper Shutdown / Startup of the Entire VMware Server

In most cases, it is not necessary to routinely reboot the entire VMware server. More specifically, there is no need whatsoever to reboot it on a regular basis (as is required in some cases with Windows). If you find that a situation commands a reboot, it is critical to do a correct shutdown on the system. Failure to follow these steps will result in data loss and/or data corruption.

MARVIN HUFFAKER
C O N S U L T I N G

Business Email, Collaboration, and Virtualization Experts

VMware vSphere Server Shutdown Procedure

- DO NOT ever power off the server using the power switch on the server while VMware is running.
- DO NOT ever initiate a shutdown directly on the VMware system console (at the monitor and keyboard) while any Guest OS's are running.

The Proper Shutdown Procedure:

1. Ensure all Guest OS's are shutdown completely and according to normal procedures for the applicable operating system. Basic procedures are outlined in this document.
2. From within the VMware vSphere Client, right click on the server host, then choose "Shutdown"
3. You may receive a warning about not being in Maintenance Mode. If all Guest OS's are shut down, this warning can be ignored.
4. Refer to the picture below.
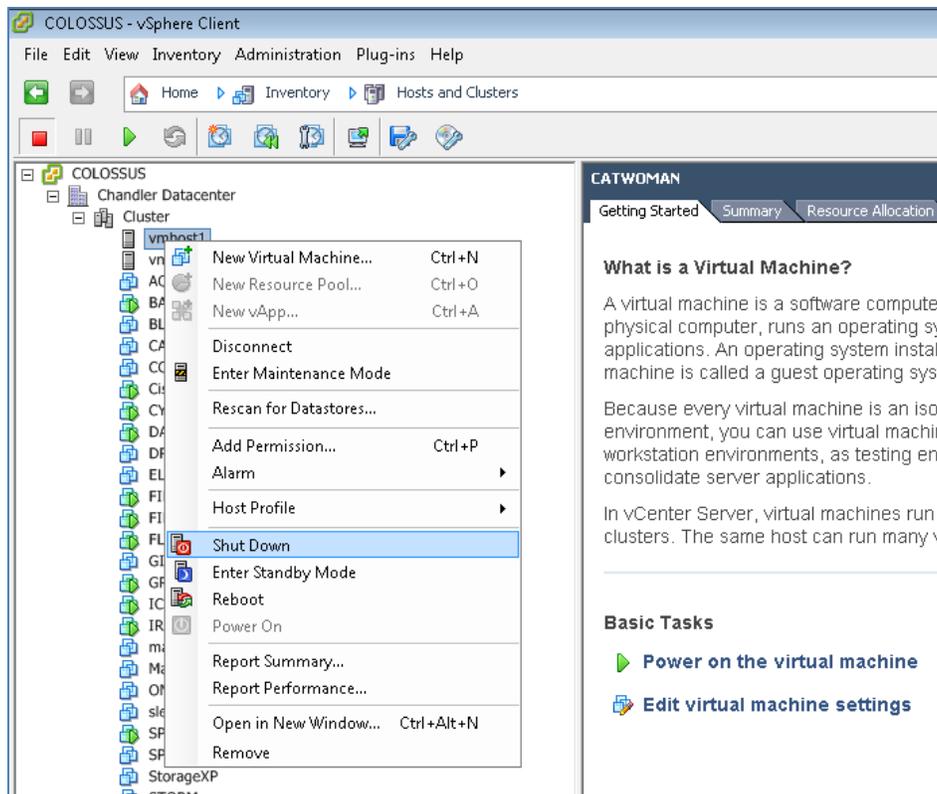
Figure 1 - Depiction of the VMware Host Shutdown Process

Marvin Huffaker Consulting, Inc.
1311 W Chandler Blvd Ste 160A
Chandler, AZ 85224
Phone: 480-988-7215
http://www.redjuju.com

Business Email, Collaboration, and Virtualization Experts

VMware vSphere Startup Procedure

Assuming the entire VMware server is powered off; starting the system is a simple and straightforward process.

1. Use the server Power Button to start the server boot process.
2. Watch the monitor screen as the system boots. When the VMware Hypervisor arrives at the standard information/status screen as depicted below, the hypervisor itself is fully booted. The screenshot below depicts ESXi version 5.0 Update 1. Other versions are very similar.
3. Login to the vSphere Client from your Windows system.
4. Typically, all Guest OS's should start automatically (We should have configured them as such, but it depends on your exact system architecture), however this is not a required configuration, nor is it a default configuration. If after several minutes, the Guest OS's do not show powered on, you can start them manually.
5. After all of your Guest OS's are started, ensure all components, services, and applications are working as expected.

```
VMware ESXi 5.0.0 (VMKernel Release Build 515841)

Dell Inc. PowerEdge R710

Intel(R) Xeon(R) CPU E5620 @ 2.40GHz
24 GiB Memory




Download tools to manage this host from:
http://vmhost2/
http://192.168.0.161/ (STATIC)




<F2> Customize System/View Logs                          <F12> Shut Down/Restart
```
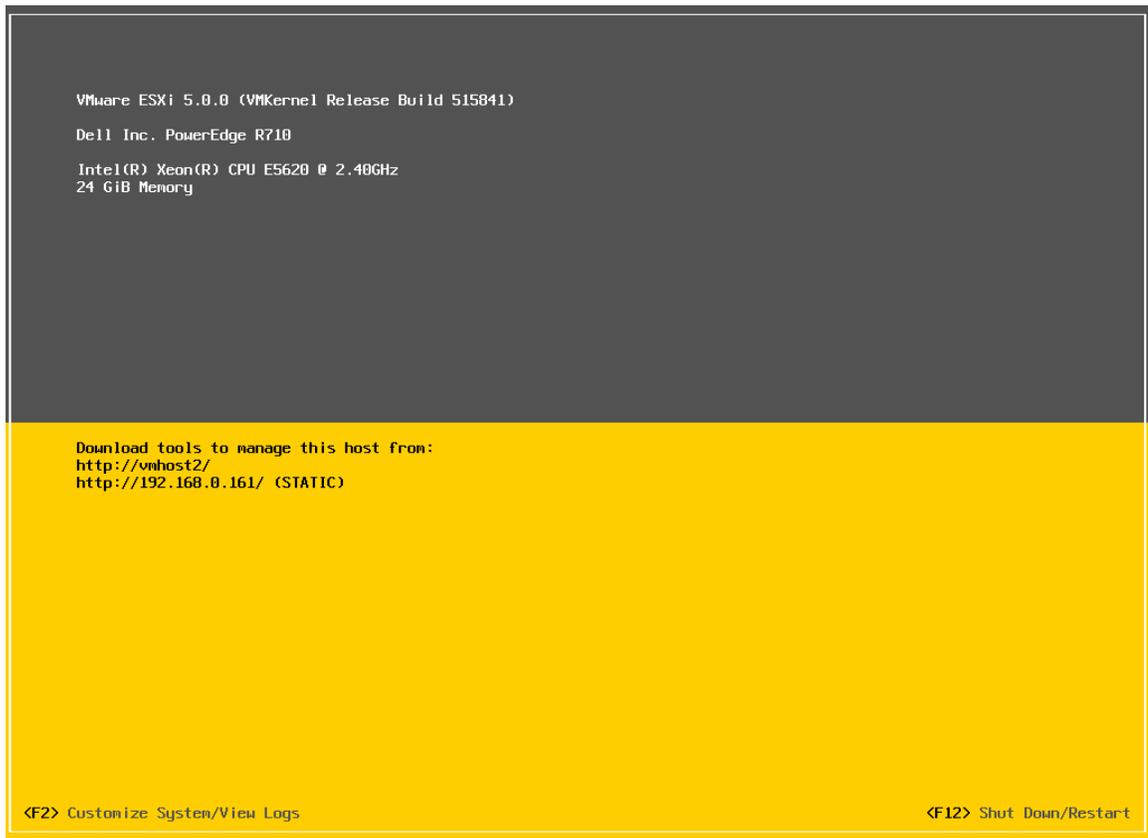
Figure 2 - Depiction of the VMware Host Startup Screen - Ready Status

Marvin Huffaker Consulting, Inc.
1311 W Chandler Blvd Ste 160A
Chandler, AZ 85224
Phone: 480-988-7215
http://www.redjuju.com

Business Email, Collaboration, and Virtualization Experts

About the vSphere Client (Workstation Component)

Installing the vSphere Client

To install the vSphere client on your own workstation, simply use your Internet browser to open a web page to the IP Address of the VMware vSphere server. The client download link is displayed on the welcome page as depicted below.
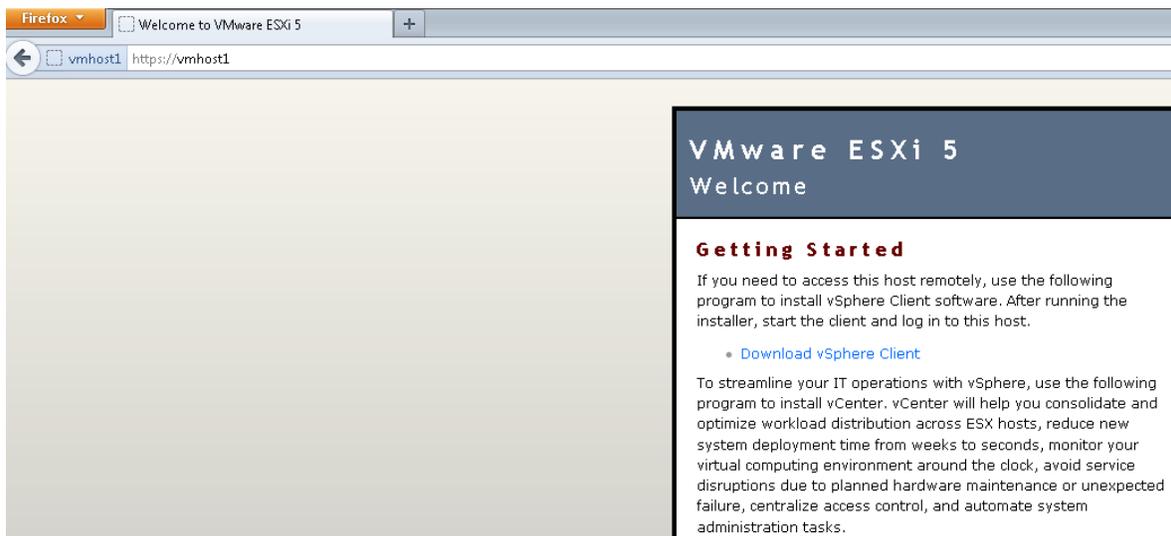
Figure 3 - Depiction of the VMware vSphere Web Interface for Downloading the vSphere Client

Marvin Huffaker Consulting, Inc.
1311 W Chandler Blvd Ste 160A
Chandler, AZ 85224
Phone: 480-988-7215
http://www.redjuju.com

Business Email, Collaboration, and Virtualization Experts

Using the vSphere Client to Login to the VMware vSphere Server

One you have installed the vSphere client, launch the shortcut from your desktop or start menu. Enter the IP Address (or DNS Name) of the server, as well as the designated User ID and Password.

Note: In basic single server environments, it is customary to login directly to the VMware vSphere server. However, in multiple server environments, you would likely be using a VMware vCenter management server. In this case, you login to the vCenter server to manage all VMware hosts.

Regardless of whether you login to a vCenter server or a single VMware host, you use the same VMware vSphere client.
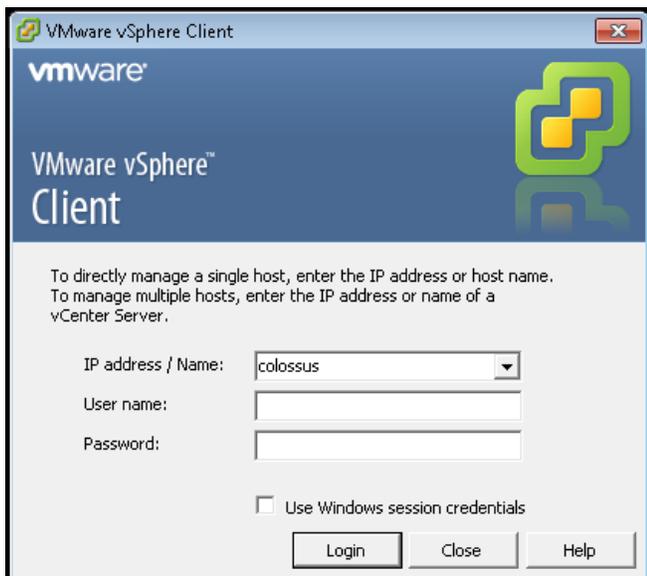
Figure 4 - Depiction of the vSphere Client Login Dialog

Marvin Huffaker Consulting, Inc.
1311 W Chandler Blvd Ste 160A
Chandler, AZ 85224
Phone: 480-988-7215
http://www.redjuju.com

Business Email, Collaboration, and Virtualization Experts

Inside the VMware vSphere Client

Once you login to the vSphere Client, you are presented with a list of your Virtual Guest systems. From here, you can do many basic tasks as outlined in this document. You're also able to see visual indicators of basic system status and/or alarms, which would suggest further investigation is needed.
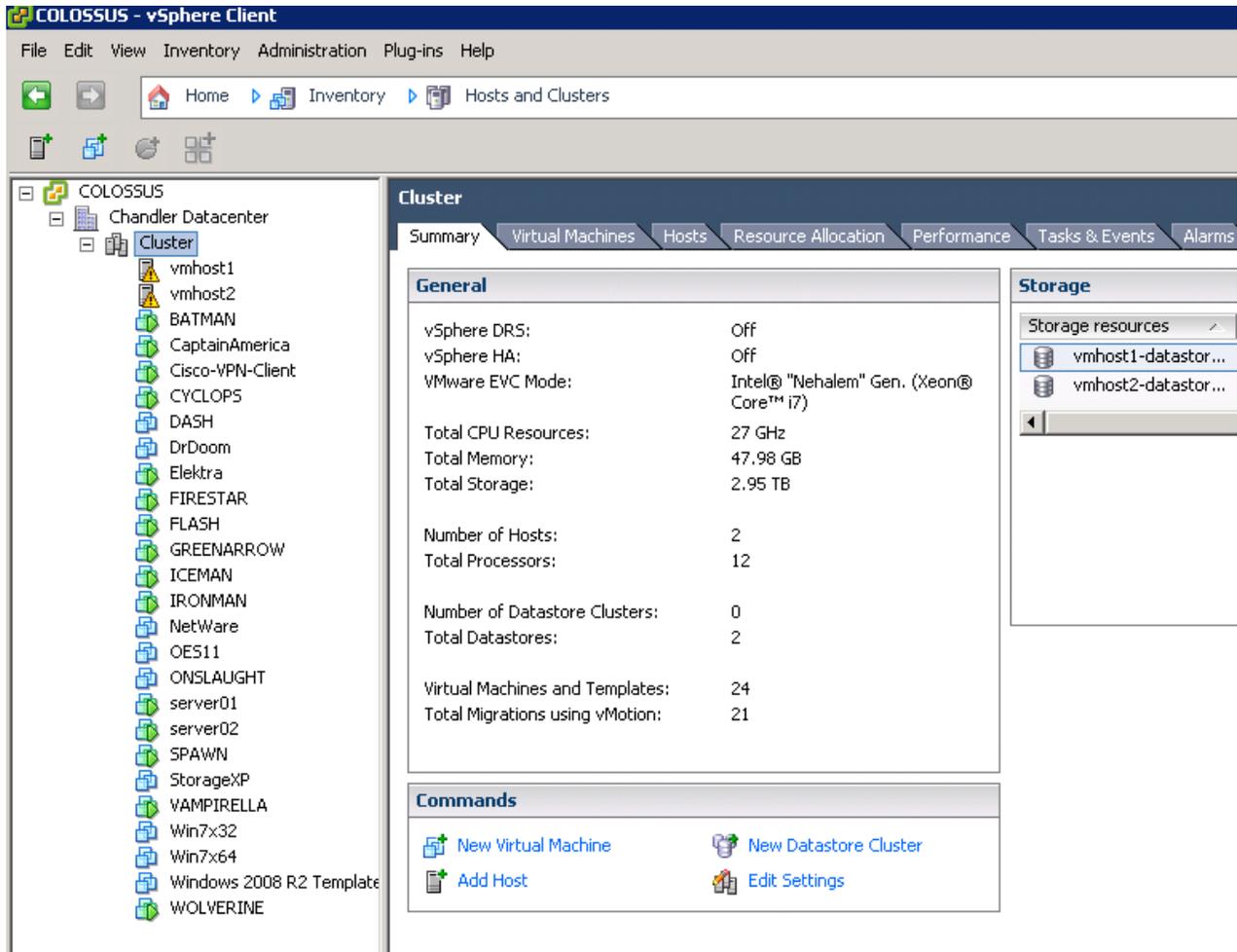
Figure 5 - Depiction of the VMware vSphere Client Main Window

Business Email, Collaboration, and Virtualization Experts

Virtual Machine States

The following image depicts the primary states of a virtual machine: Powered On, Powered Off, and Suspended. Many operations require that a virtual machine be in the Powered Off state, and understanding the icon and power status is critical.

- Powered On: System is running as normal
- Powered Off: System has been shut down and is not running
- Suspended: System is in a suspended state, but not running. It is similar to when a workstation is on standby. We recommend Powering Off a system as an alternative to suspending the OS.

BATMAN	Powered On	✓	Normal
IRONMAN	Powered On	✓	Normal
FIREFLY	Powered On	✓	Normal
DASH	Suspended	✓	Normal
StorageXP	Powered Off	✓	Normal
BLACKWIDOW	Powered Off	✓	Normal
ELEKTRA	Powered Off	✓	Normal

Figure 6 - Depiction of the VMware Guest OS Status Options

Business Email, Collaboration, and Virtualization Experts

Virtual Machine Console

A console is available for viewing each running Guest OS. This console is very similar to a sitting at the monitor and keyboard of a physical server. To access the console for a Guest OS, do the following:

1. Login to the vSphere Client.
2. Select the Guest OS you wish, and Right Click.
3. From the Right-Click menu, choose "Open Console"
4. A window will open as depicted containing the running operating system.
5. Use the OS within the window as required.
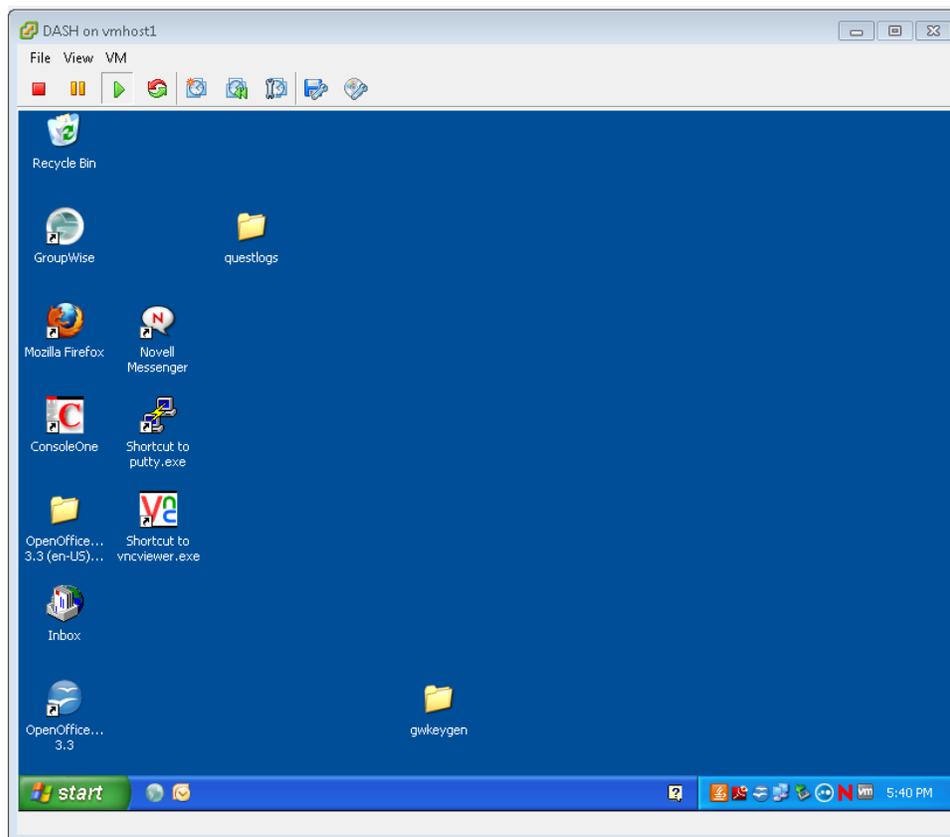
Figure 7 - Depiction of the VMware Guest Console

Marvin Huffaker Consulting, Inc.
1311 W Chandler Blvd Ste 160A
Chandler, AZ 85224
Phone: 480-988-7215
http://www.redjuju.com

Business Email, Collaboration, and Virtualization Experts

Making VMware Level Changes to a Virtual Machine (Guest OS)

Occasionally you may find that it is necessary to make a configuration change to a running Virtual Machine. The most common example would be adding disk storage or RAM. You should reference the documentation to ensure that you understand the process. The following items are applicable for making changes at the VMware Level:

1. The Guest OS should generally be shut down first and be in the Powered Off state before adding new hardware or making any configuration changes.
2. Edit the Settings of the Virtual Machine as required. To do so, in the vSphere client, right click on the Virtual Machine, and select "Edit Settings." This will launch the Virtual Machine Properties, as depicted below.
3. After you have made changes, save the settings by closing the properties dialog.
4. Start the Guest OS as you normally would.
5. The Guest OS will recognize the new hardware and will generally configure it automatically, as in the case of CPU or RAM. However, you will have to format/allocate any disk storage just as you would if you added a physical hard drive to a PC.
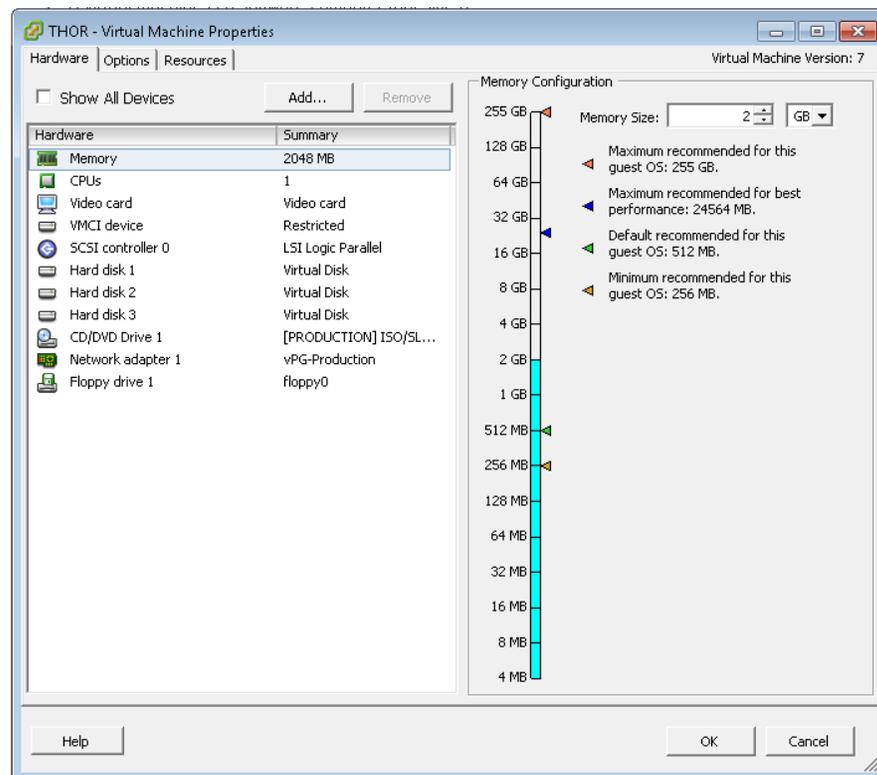
Figure 8 - Depiction of the Virtual Machine Properties Page

Business Email, Collaboration, and Virtualization Experts

Making OS Level Changes to a Virtual Machine

Within a running operating system, it is completely acceptable and normal to make any software or application changes as required by your company. As a rule of thumb, you treat the OS and any running services or applications the same as if it was running on a physical server.

Virtual Guest System Shutdown

A common task with VMware is the need to shut down or reboot a Guest OS. It's critical to perform a correct shutdown. Incorrectly power cycling the server or one of the Guest OS's is just as bad as pulling the power cord out of a server while it is running. To shut down a Guest OS correctly, we recommend the following:

1. From within the Guest Operating System, shut down any critical applications
2. From within the Guest Operating System, perform a normal shutdown via
   - Windows: Start → Shutdown (Or Reboot)
   - Linux Command Line: shutdown now –h
   - Linux GUI (SLES): Computer → Shutdown → Shutdown
3. You can watch the system go through the shutdown process using the VSphere Client Console to the Guest OS.
4. Confirm within the VSphere Client that the Guest OS has reached the "Powered Off" State

Virtual Guest System Startup

When you need to start a Guest OS that is currently powered off:

1. In the vSphere Client, confirm that the Guest OS is actually in the "Powered Off" state by checking the status in the VSphere Client.
2. Click on the Virtual Machine, and then click the Green "Power On" button on the taskbar. You can also choose the Power On option from the Right-Click menu.
3. Open a Console to the Guest OS to see the system booting up.
4. Once the system is booted, confirm all applications are running as expected.
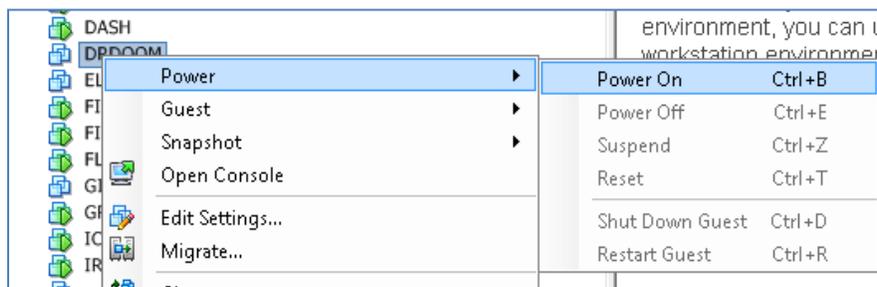
Figure 9 - Depiction of Guest OS Startup Procedure

Alternative Options for VMware Guest OS Shutdown

As an alternative to an OS driven shutdown as described above, there are various options for shut down within the vSphere client. Refer to the image below:
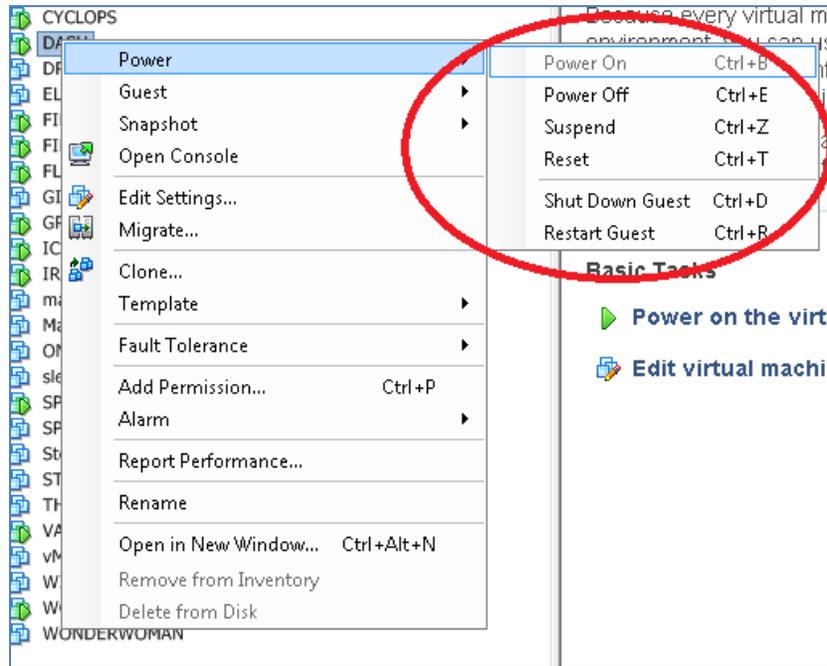
Figure 10 - Depiction of the Power Options for a Virtual Machine

Power Off – This option kills the power to the Virtual Guest and does not shut it down cleanly. Using this method is only appropriate for a system that is hung or won't respond to other shutdown methods. It should be a last resort for shutting down a virtual machine guest.

Suspend – This option 'pauses' the running Virtual Guest. The Virtual Guest is not usable in this state, and use of this option is not very common.

Reset – This option is similar to pressing the Reset button on a physical server. It does not provide a clean shutdown, it simply cycles the virtual guest. Data Loss is likely to occur if this option is used, so we recommend that it only be used if the Guest is unresponsive.

Shut Down Guest – When the VMware Tools are installed on the Guest OS, the "Shut Down Guest" option is available. This option can be used to gracefully shut down a Guest. We suggest caution and discretion when using this option, but it is generally considered safe. Before relying on this option, you should try it to see if the Virtual Machine shuts down correctly and as expected. If not, you should rely on the standard OS shutdown procedures.

© 2011-2012 Marvin Huffaker Consulting, Inc.

Business Email, Collaboration, and Virtualization Experts.

Marvin Huffaker Consulting, Inc.
1311 W Chandler Blvd Ste 160A
Chandler, AZ 85224
Phone: 480-988-7215
http://www.redjuju.com

Business Email, Collaboration, and Virtualization Experts

Restart Guest – When the VMware Tools are installed, the "Restart Guest" option is available. This is the same as the "Shut Down Guest" option, except that it gracefully shuts down the system and then cycles it and starts it up again.

Useful Resources & Links:

Marvin Huffaker Consulting, Website:	http://www.redjuju.com
VMware Knowledgebase:	http://kb.VMware.com
VMware VSphere ESXi 5.0 Resources	http://www.VMware.com/support/pubs/vsphere-esxi-vcenter-server-pubs.html

Copyright Notice