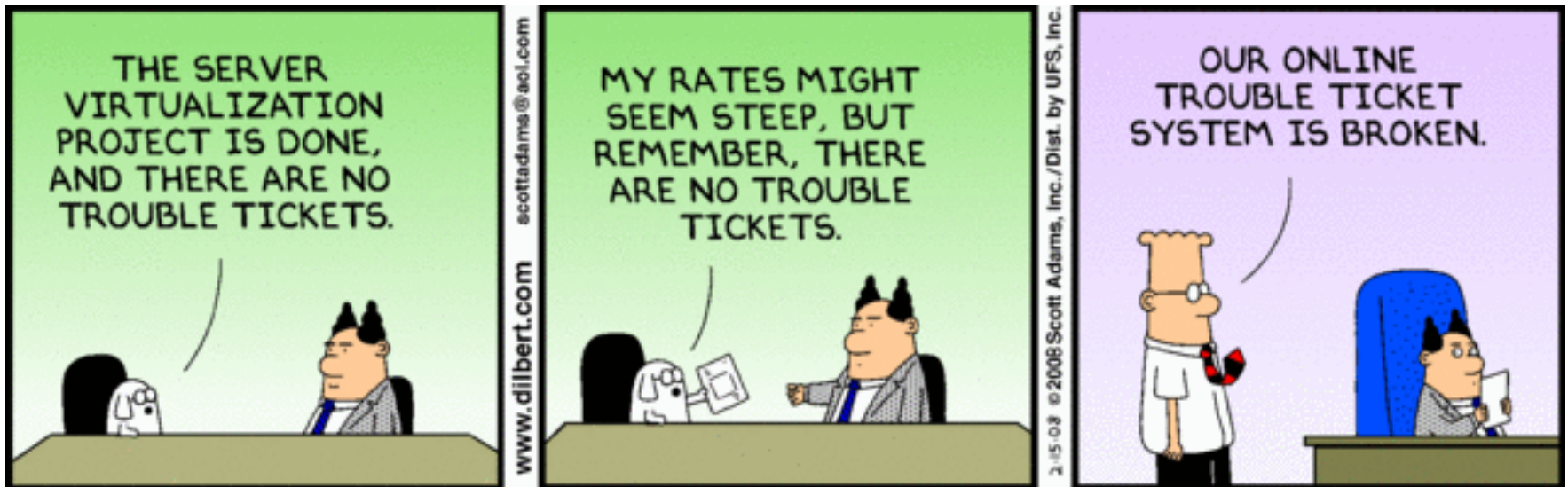
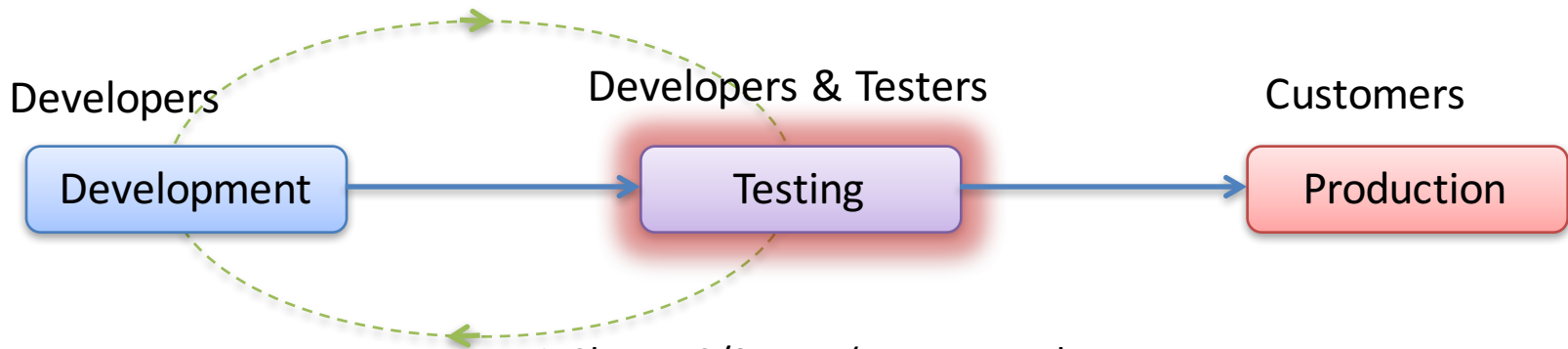




Virtualization





Typically the Developers Personal Computer with Database, Web Server and Programming Software

A Clean PC/Server (or a network with PCs and Servers) where you install and test your Software. Today we typically set-up a **Virtual** Test Environment

The Customers environment where you uninstall the final software (Servers and Clients)



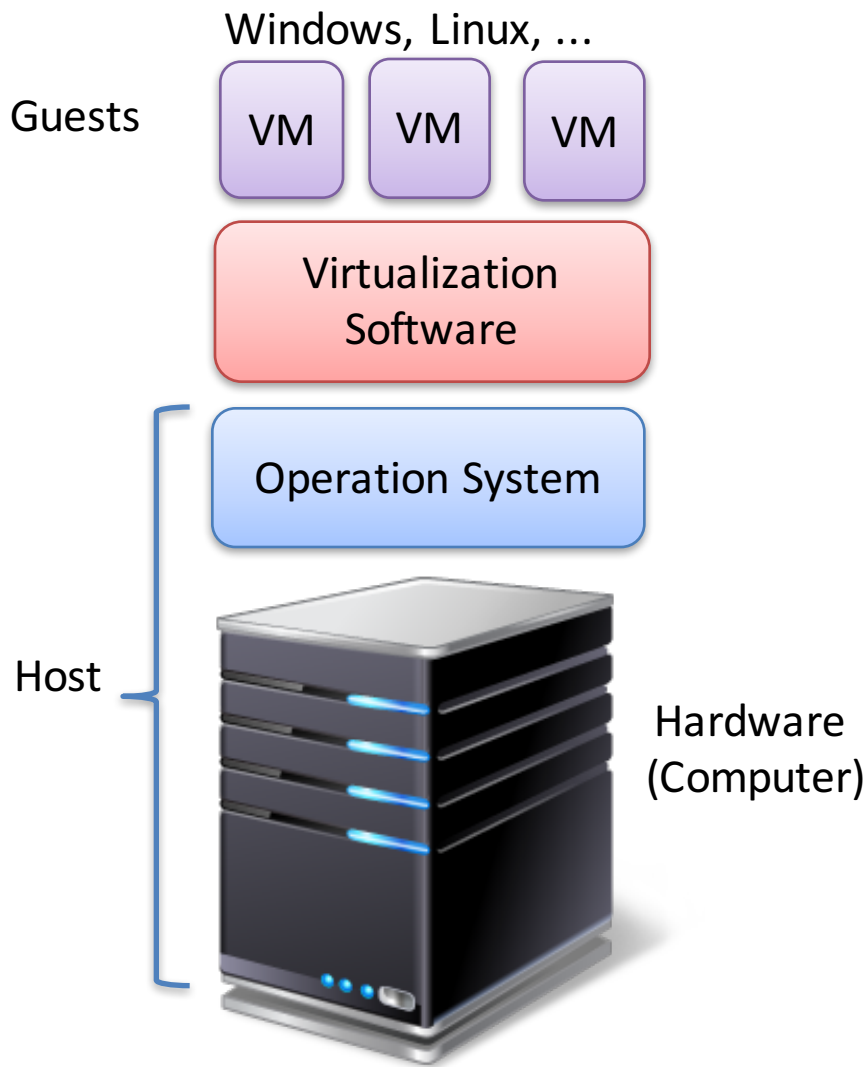
Programming environments such as Visual Studio, etc. should not be installed in this environment. You need to create .exe files etc. in order to make your software run.

What is Virtualization?

- Virtualization, in computing, refers the act of creating a virtual (rather than actual) version of something, including but not limited to a virtual computer hardware platform, operating system (OS), storage device, or computer network resources.
- Hardware virtualization or platform virtualization refers to the creation of a virtual machine that acts like a real computer with an operating system.
- In hardware virtualization, the **host machine** is the actual machine on which the virtualization takes place, and the **guest machine** is the virtual machine.

[Wikipedia]

Virtualization



VM = Virtual Machines



Virtualization Software

A lot of Virtualization Software exists. Here are some examples:

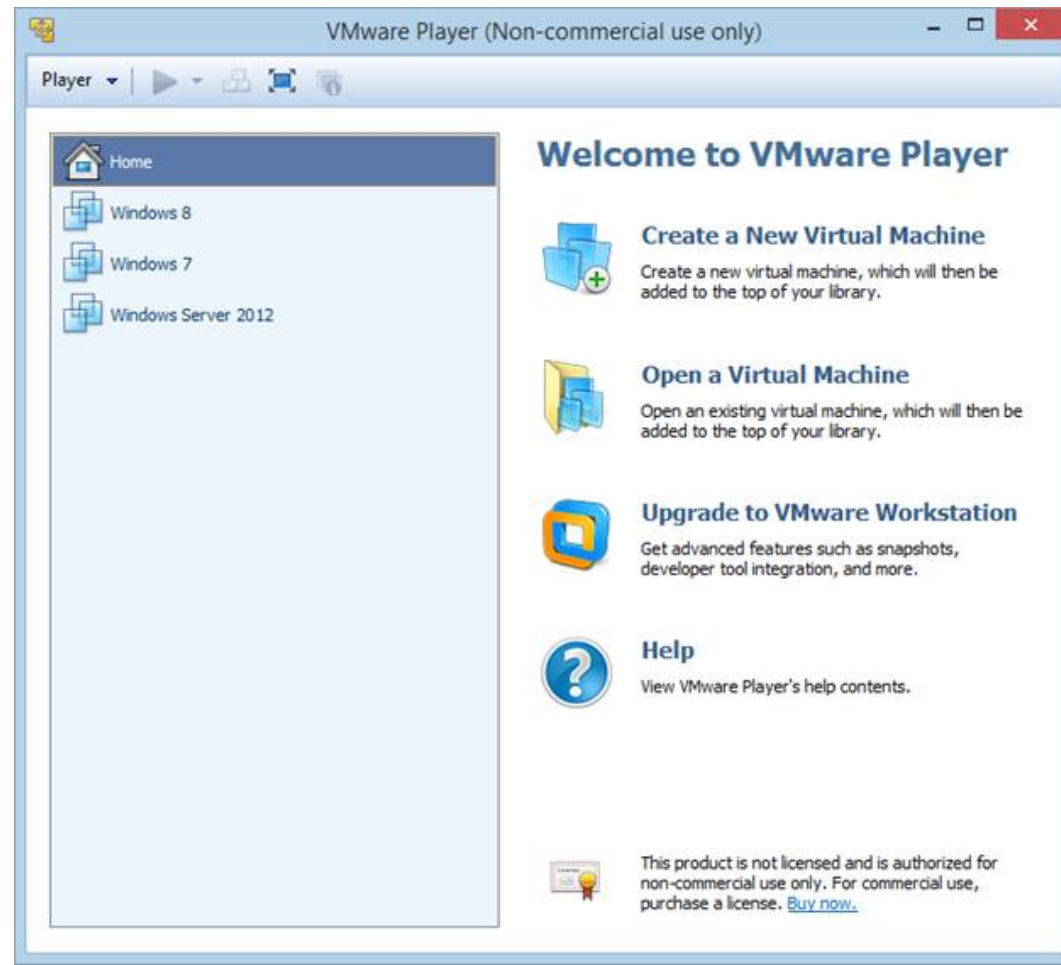
- VMware Workstation Player
- VMware Workstation
- VMware vSphere
- VMware Fusion (Mac)
- Parallels Desktop (Mac)
- Microsoft Hyper-V
- VirtualBox
- etc.

VMware Workstation Player

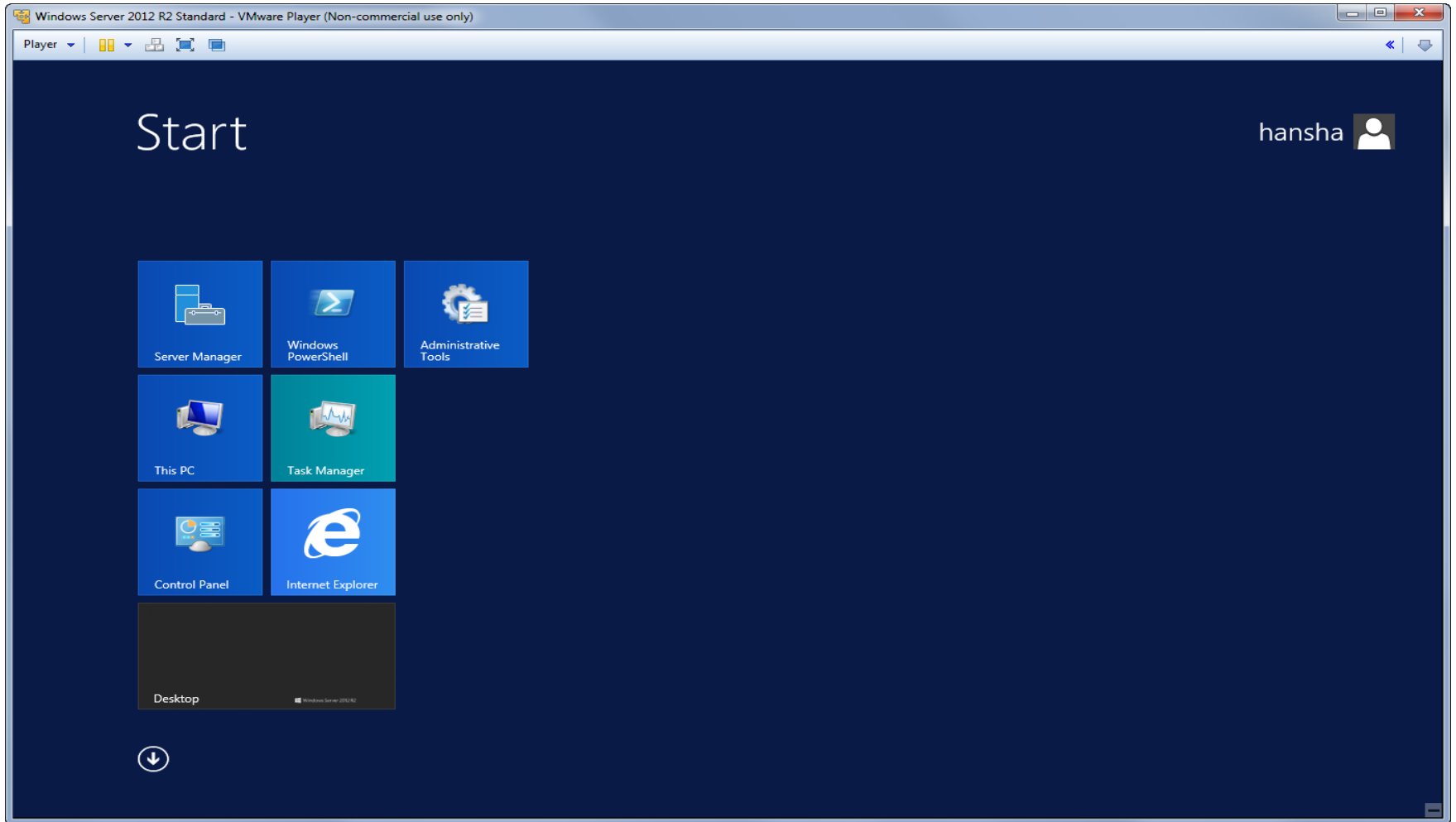
VMware Workstation Player is for personal use on your own PC. VMware Workstation Player is free of charge for personal non commercial use.

VMware is a company that has been specializing within virtualization software.

<http://www.vmware.com>

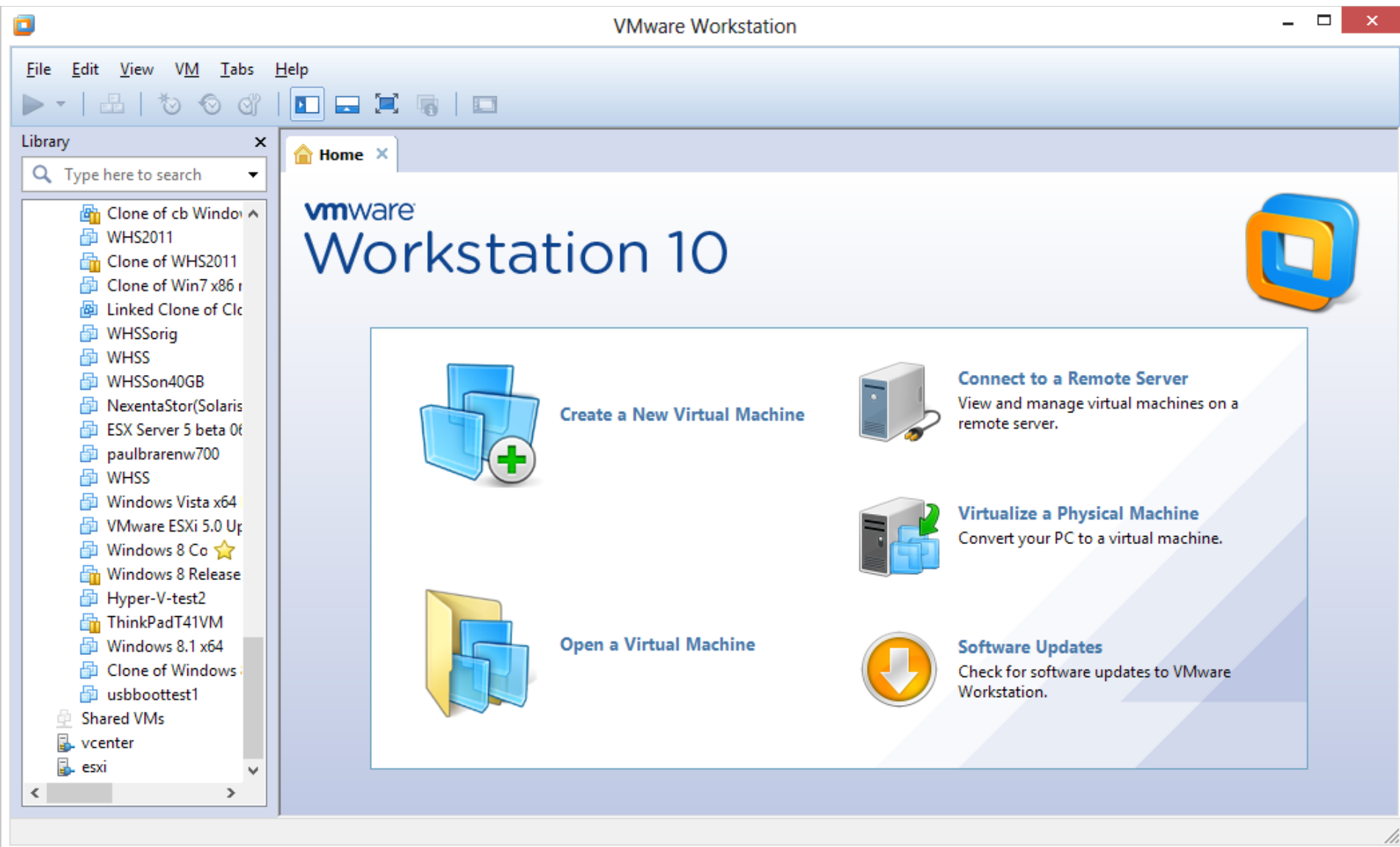


VMware Workstation Player



Above we see Windows Server 2012 R2 running within the VMware Player.

VMware Workstation



Microsoft Hyper-V

Hyper-V is the virtualization solution from Microsoft.

We have 3 different alternatives:

- Windows Server with Hyper-V
- Hyper-V Server
- Windows 8 Client Hyper-V

Windows Server with Hyper-V

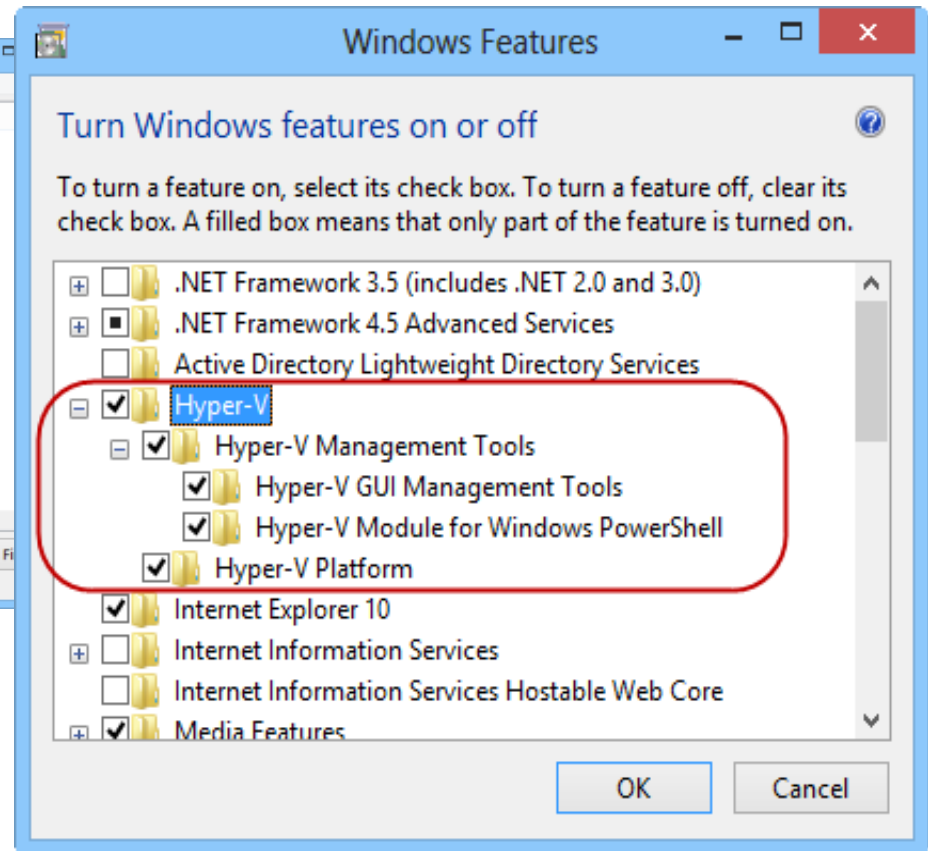
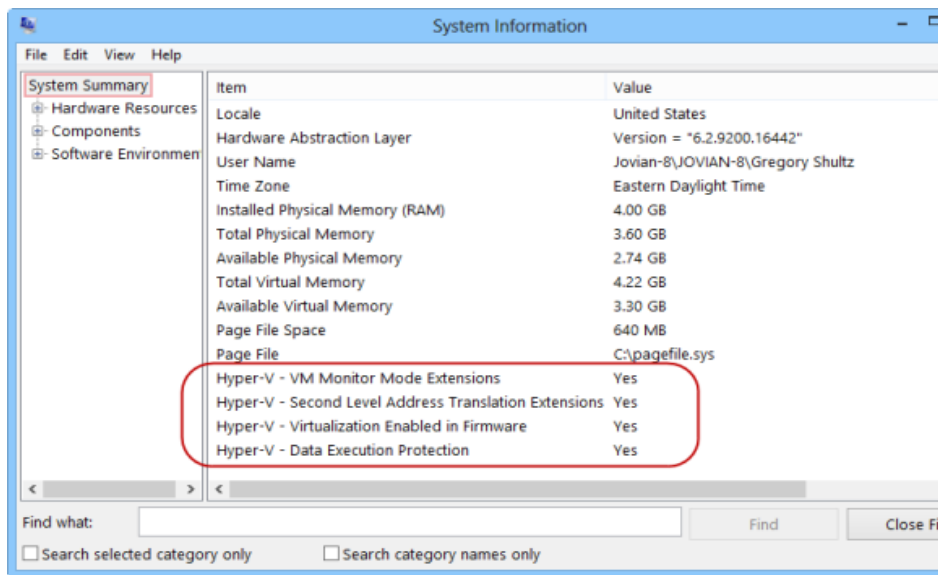
- Here you need “Windows Server XXXX” as the host operating system.
- Windows Server Standard edition gives the purchaser the rights to run 2 virtual instances of Windows Server
- The Datacenter Edition has unlimited virtualization rights.

Hyper-V Server

- Hyper-V Server is a separate standalone product that is a free download. Hyper-V Server is a Hypervisor-based, meaning you don't need to install it on top of an existing Windows Server.
- Hyper-V Server only installs the Core Server features needed to run virtualization, you cannot have other Roles like Active Directory, etc and you don't have a graphical interface.
- The normal way is to use Windows 8/10 and the Hyper-V Manager to manage the VMs remotely (create new VM, edit VMs, etc.).

Windows 8/10 Client Hyper-V

In Windows 8/10 you can install the “Client Hyper-V” feature meaning you can run VMs inside Windows 8/10.



All these settings need to be Yes. In general, if either the “Virtualization Enabled in Firmware” or the “VM Monitor Mode Extensions” are set to No, you can enable those features in the firmware. However, if the “Second Level Address Translation Extensions” or the “Data Execution Protection” settings are set to No, then you will not be able to use Windows Client Hyper-V.

Hyper-V Manager

Use the Hyper-V Manager to create and maintain the VMs

The screenshot displays the Hyper-V Manager interface. The main window shows a list of virtual machines under the heading "Virtual Machines". The table below lists the VMs with their names, states, CPU usage, and uptime.

Name	State	CPU Usage	Uptime	Operations
FedoraCore8	Running	0%	00:07:30	
NT40UKWS	Running	0%	00:07:33	
Vista01	Running	34%	00:07:34	
Vista02	Running	0%	00:07:32	
W2K3VM001	Running	0%	00:07:31	
W2K3VM002	Running	1%	00:07:32	
WS08VM001	Running	0%	00:07:36	
WS08VM002	Running	0%	00:07:32	
WS08VM003	Running	0%	00:07:34	
WS08VM004	Running	0%	00:07:35	
WS08VM005	Running	0%	00:07:35	
WS08VM100	Running	0%	00:07:30	
XPx86VM001	Running	0%	00:07:35	

Below the table, there is a "Snapshots" section showing a snapshot for WS08VM001 created on 1/22/2008 at 3:01:13 PM. At the bottom, the details for the selected VM (WS08VM001) are shown, including its creation date (1/10/2008 9:49:20 PM), heartbeat status (OK), and memory usage (512).

The right-hand side of the interface features an "Actions" pane with various options for managing the selected VM, such as "New", "Import Virtual Machine...", "Hyper-V Server Settings...", "Virtual Network Manager...", "Edit Disk...", "Inspect Disk...", "Stop Service", "Remove Server", "Refresh", "View", "New Window from Here", "Help", "Connect...", "Settings...", "Turn Off...", "Shut Down...", "Save", "Pause", "Reset", "Snapshot", "Revert...", "Rename...", and "Help".

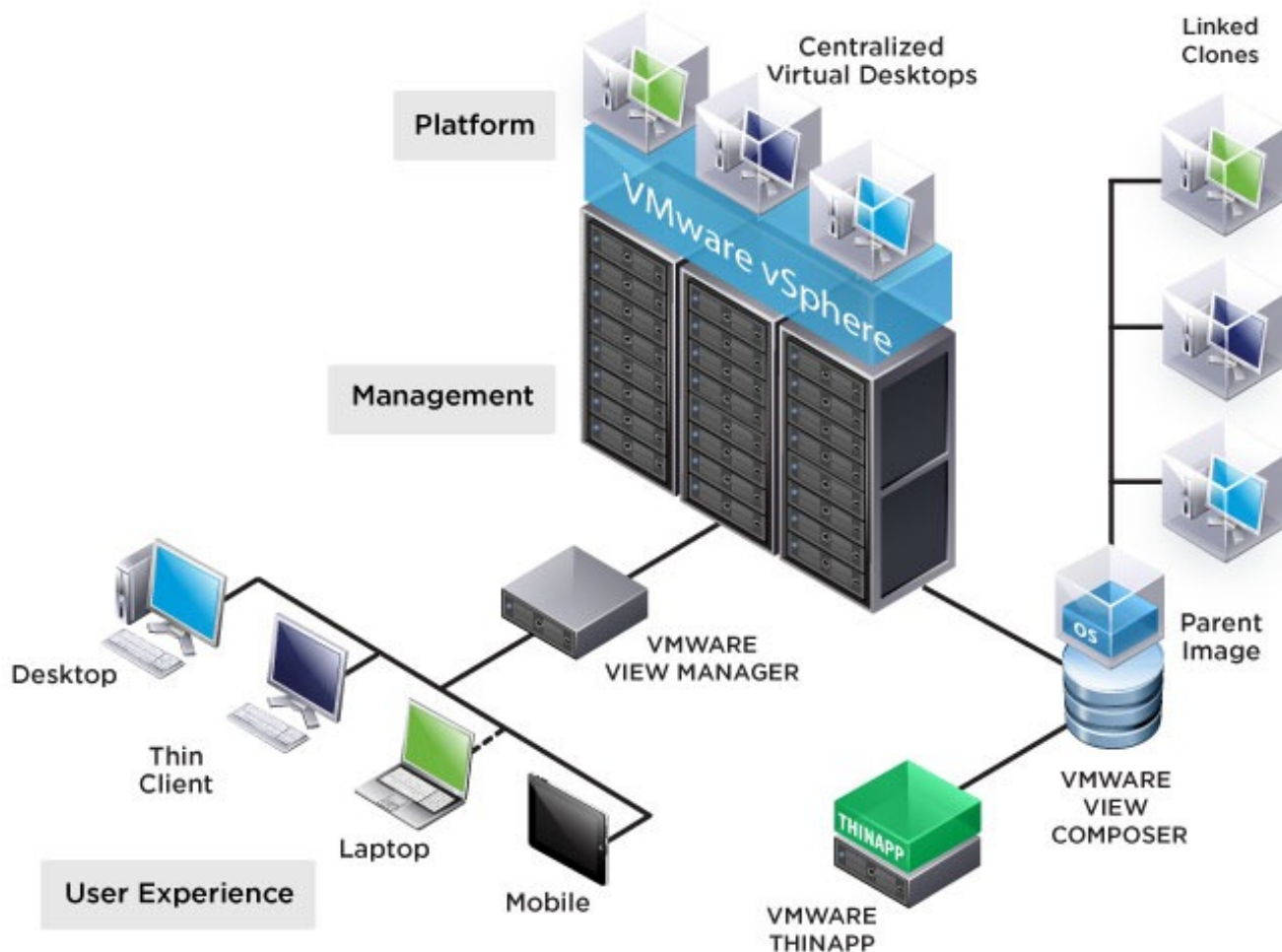
Mac and OS X

If you have a Mac and want to run Windows or other OS you have different options here as well.

- BootCamp
 - BootCamp is built into the Mac OS X. It is actually not a virtualization technique, but rather a method to run Windows on a Mac computer
- VMware Fusion
- Parallels Desktop
- VirtualBox

VMware vSphere

Enterprise Virtualization Solution from VMware



VirtualBox

- VirtualBox is originally created by Sun Microsystems, but is now maintained by Oracle.
- VirtualBox is freely available as Open Source Software.
- VirtualBox is available for Windows, Mac OS X and Linux/UNIX.
- Web site: <https://www.virtualbox.org>

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