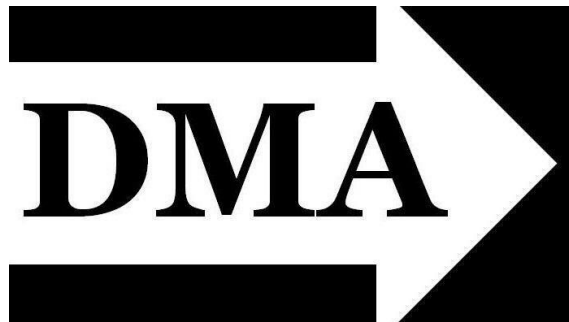


A COMPARISON OF FREE "VIRTUAL MACHINE PROGRAMS" FOR YOUR REAL "WINDOWS.." COMPUTER

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Web location for this
presentation:

<http://aztcs.org>

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SUMMARY

At the present time, you have a choice between running three free programs for creating and running virtual machines in a real "Windows.." computer: **"VMware Player"**, **"Oracle VM VirtualBox"**, and **"Hyper-V"**. There are differences in USB support, host operating system requirements, virtual sound card support, and virtual networking.

TOPICS

- INTRODUCTION TO THE THREE FREE PROGRAMS FOR CREATING "VIRTUAL MACHINES"
- DIFFERENCES IN HOST OPERATING SYSTEM REQUIREMENTS

TOPICS (continued)

- DIFFERENCES IN USB SUPPORT
- DIFFERENCES IN SOUND CARD SUPPORT
- DIFFERENCES IN NETWORKING SUPPORT
- DIFFERENCES IN VIRTUAL GRAPHICS ADAPTERS

**"INTRODUCTION TO
THE THREE FREE
PROGRAMS FOR
CREATING "VIRTUAL
MACHINES"**

INTRODUCTION TO THE THREE FREE PROGRAMS FOR CREATING "VIRTUAL MACHINES"

- Three free "virtual machine programs" are available for a real "Windows.." computer:

VMware Workstation Player

Oracle VM VirtualBox

and

**Hyper-V (also known as "Desktop
Hyper-V")**

INTRODUCTION TO THE THREE FREE PROGRAMS FOR CREATING "VIRTUAL MACHINES" (continued)

- By "free" we mean "private in-home use"
- None of these three programs are actually free for use by organizations or businesses

INTRODUCTION TO THE THREE FREE PROGRAMS FOR CREATING "VIRTUAL MACHINES" (continued)

- **"VMware Workstation Player" is a free, closed-source program. When its capabilities and features are compared to "Oracle VM VirtualBox and Hyper-V, "VMware Workstation Player" usually is the superior "virtual machine program".**

INTRODUCTION TO THE THREE FREE PROGRAMS FOR CREATING "VIRTUAL MACHINES" (continued)

- **"Oracle VM VirtualBox"** is a free, open-source program. It's weak point is low-end virtual graphics adapters which severely limit it's multimedia playing and editing capabilities.

INTRODUCTION TO THE THREE FREE PROGRAMS FOR CREATING "VIRTUAL MACHINES" (continued)

- **Oracle VM VirtualBox's** strong point is its flexibility in dealing with virtual hard drive files: **"..VirtualBox"** can create or utilize hard drive files that have been or can be recognized by other virtual machine programs.

INTRODUCTION TO THE THREE FREE PROGRAMS FOR CREATING "VIRTUAL MACHINES" (continued)

- "Hyper-V" is bundled with "Windows 8.1 Pro 64-bit", "Windows 8.1 Enterprise 64-bit, and the "Pro", "Enterprise", and "Education" editions of "Windows 10". It uses Microsoft's "VMBus" which makes it faster than any other virtual machine program.

DIFFERENCES IN HOST OPERATING SYSTEM REQUIREMENTS

<p>VMWARE WORKSTATION PLAYER 16</p>	<p>"WINDOWS 10" HOME OR PRO (64-BIT) "WINDOWS 8.1" HOME OR PRO (64-BIT)</p>
<p>ORACLE VM VIRTUALBOX 6</p>	<p>"WINDOWS 10" HOME OR PRO (64-BIT) "WINDOWS 8.1" HOME OR PRO (64-BIT) macOS 10.13/10.14/10.15</p>

DIFFERENCES IN HOST OPERATING SYSTEM REQUIREMENTS

(continued)

HYPER-V
("role" is
bundled
with some
versions of
Windows)

"WINDOWS 10 PRO" 64-BIT

"WINDOWS 8.1 PRO" 64-BIT

"WINDOWS 10 ENTERPRISE" 64-BIT

"WINDOWS 8.1 ENTERPRISE" 64-BIT

"WINDOWS 10 EDUCATION" 64-BIT

"WINDOWS 8.1 ENTERPRISE" 64-BIT

DIFFERENCES IN HOST OPERATING SYSTEM REQUIREMENTS (continued)

- Since 95+ percent of the "Windows 10.." and "Windows 8.1" computers that are sold in stores have the low-end "core" edition of "Windows 10.." and "Windows 8.1", you will probably have to buy the "Windows 10 Pro Upgrade" or the "Windows 8.1 Pro Upgrade" before you can run "Hyper-V".

**DIFFERENCES IN
USB SUPPORT
FOR THE THREE
VIRTUAL MACHINE
PROGRAMS:**

**VMWARE
WORKSTATION
PLAYER 16**

**YOU CAN CONNECT VIRTUAL
MACHINES TO REAL USB 3
DEVICES THAT ARE CONNECTED
TO REAL USB 3 PORTS**

**YOU CAN CONNECT VIRTUAL
MACHINES TO REAL USB 3
DEVICES THAT ARE CONNECTED
TO REAL USB 2 PORTS**

**YOU CAN CONNECT VIRTUAL
MACHINES TO REAL USB 2
DEVICES THAT ARE CONNECTED
TO REAL USB 2 OR REAL USB 3
PORTS**

YOU CAN CONNECT VIRTUAL
MACHINES TO REAL USB 3 DEVICES
THAT ARE CONNECTED
TO REAL USB 3 PORTS

YOU CAN CONNECT VIRTUAL
MACHINES TO REAL USB 3 DEVICES
THAT ARE CONNECTED
TO REAL USB 2 PORTS

YOU CAN CONNECT VIRTUAL
MACHINES TO REAL USB 2 DEVICES
THAT ARE CONNECTED
TO REAL USB 2 OR REAL USB 3 PORTS

ORACLE
VM
VIRTUAL-
BOX 6

HYPER-V

YOU CANNOT CONNECT VIRTUAL MACHINES TO REAL USB 3 DEVICES THAT ARE CONNECTED TO REAL USB 3 PORTS

YOU CANNOT CONNECT VIRTUAL MACHINES TO REAL USB 3 DEVICES THAT ARE CONNECTED TO REAL USB 2 PORTS

YOU CANNOT CONNECT VIRTUAL MACHINES TO REAL USB 2 DEVICES THAT ARE CONNECTED TO REAL USB 2 OR REAL USB 3 PORTS

DIFFERENCES IN USB SUPPORT

(continued)

- Workaround for some USB devices in Hyper-V:
For sharing and moving files and folders, you can use conventional file sharing.
For USB devices that do not act like hard drives, you cannot use the "Hyper-V" virtual machine program.

DIFFERENCES IN USB SUPPORT (continued)

- In other words, "Hyper-V" has no direct support for real USB 2 devices or real USB 3 devices:
When you create a virtual machine in "Hyper-V", it is like obtaining a computer that has no USB ports!

**DIFFERENCES IN
SOUND CARD
SUPPORT
FOR THE THREE
VIRTUAL MACHINE
PROGRAMS:**

DIFFERENCES IN SOUND CARD SUPPORT

VMWARE
WORKSTATION
PLAYER 16

YOU CAN CONNECT A VIRTUAL MACHINE TO A REAL PCIe SOUND CARD, A REAL MOBO SOUND CARD OR REAL USB SOUND CARD

ORACLE VM
VIRTUALBOX 4.X

YOU CAN CONNECT A VIRTUAL MACHINE TO A REAL PCIe SOUND CARD, A REAL MOBO SOUND CARD OR REAL USB SOUND CARD

HYPER-V

YOU CAN CONNECT A VIRTUAL MACHINE RUNNING "WINDOWS 10" OR "WINDOWS 8" OR UBUNTU 18.04 TO A REAL PCIe SOUND CARD OR A REAL MOBO SOUND CARD

DIFFERENCES IN USB SUPPORT

(continued)

- Microsoft has modified some versions of Ubuntu Linux so that they support sound cards via "Enhanced Session Mode" as explained at <https://www.zdnet.com/article/windows-10-tip-run-ubuntu-linux-in-an-enhanced-hyper-v-session/>

DIFFERENCES IN USB SUPPORT

(continued)

- I was able to get sound working in Hyper-V virtual machines that run Microsoft's modified versions of Ubuntu Linux 18.04
- However, I was unable to get sound working in Hyper-V virtual machines that run Microsoft's modified versions of Ubuntu that were greater than 18.xx

DIFFERENCES IN USB SUPPORT

(continued)

- In other words, in Hyper-V, if a virtual machine is running "Windows 10.." or "Window 8.1" or Ubuntu 18.04, you will be in "Enhanced Session Mode" where you can get speaker sound and microphone sound to work if you make the correct selections during the power-up of the virtual machine..

DIFFERENCES IN USB SUPPORT

(continued)

- If you have no speaker audio or no microphone audio in a "Hyper-V" virtual machine that is supposed to have these features, follow the advice at <https://www.itexperience.net/enable-microphone-hyperv-vm-rdp/>

DIFFERENCES IN USB SUPPORT

(continued)

- ..If you are not running "Windows 10.." or "Window 8.1" or Ubuntu 18.04 inside an Hyper-V virtual machine, it is like getting computer that has no sound: no speaker sound and no microphone sound

**DIFFERENCES IN
NETWORK SUPPORT
FOR THE THREE
VIRTUAL MACHINE
PROGRAMS:**

DIFFERENCES IN NETWORK SUPPORT

VMWARE
WORKSTATION
PLAYER 16

YOU CAN CONNECT VIRTUAL MACHINES TO YOUR REAL LOCAL AREA NETWORK BY MEANS OF A VIRTUAL NETWORK ADAPTER THAT IS SUPPLIED BY "VMWARE WORKSTATION PLAYER.."

YOU CAN CONNECT VIRTUAL MACHINES DIRECTLY TO YOUR REAL LOCAL AREA NETWORK BY MEANS OF A VIRTUAL CONNECTION TO A EITHER A REAL USB-TO-Wi-Fi DONGLE OR A REAL USB-TO-ETHERNET DONGLE

DIFFERENCES IN NETWORK SUPPORT (continued)

<p>ORACLE VM VIRTUAL- BOX 4.X</p>	<p>YOU CAN CONNECT VIRTUAL MACHINES TO YOUR REAL LOCAL AREA NETWORK BY MEANS OF A VIRTUAL NETWORK ADAPTER THAT IS SUPPLIED BY "ORACLE VM VIRTUALBOX"</p>
	<p>YOU CAN CONNECT VIRTUAL MACHINES DIRECTLY TO YOUR REAL LOCAL AREA NETWORK BY MEANS OF A VIRTUAL CONNECTION TO A EITHER A REAL USB-TO-Wi-Fi DONGLE OR A REAL USB-TO-ETHERNET DONGLE</p>

DIFFERENCES IN NETWORK SUPPORT (continued)

HYPER-V

YOU CAN CONNECT VIRTUAL MACHINES TO A VIRTUAL ETHERNET NETWORK SWITCH. THIS VIRTUAL WIRED NETWORK SWITCH THEN CONNECTS TO YOUR REAL NETWORK.

DIFFERENCES IN NETWORK SUPPORT

(continued)

- For information on the “virtual networks” that are provided by “VMware Player”, see http://aztcs.apcug.org/meeting_notes/winhardsig/virtualmachines/vmware/Virtual_Networks_in_VMware--Windows.pdf

DIFFERENCES IN NETWORK SUPPORT (continued)

For information on the “virtual networks” that are provided by “Oracle VM VirtualBox”, see http://aztcs.apcug.org/meeting_notes/winhardsig/virtualmachines/virtualbox/Virtual_Networks_in_VirtualBox--Windows.pdf

**DIFFERENCES IN
VIRTUAL GRAPHICS
ADAPTERS
FOR THE THREE
VIRTUAL MACHINE
PROGRAMS:**

DIFFERENCES IN VIRTUAL GRAPHICS ADAPTERS

VMWARE
WORKSTATION
PLAYER 16

MAXIMUM OF 8 GIGABYTES OF
GRAPHICS MEMORY

Maximum resolution of any one monitor:

3840 x 2160
640 x 480
800 x 600
1024 x 768
1280 x 1024
1600 x 1200
1920 x 1080
2560 x 1600
3840 x 2160

Warning icon (triangle with exclamation mark) is present to the left of the resolution list.

DIFFERENCES IN VIRTUAL GRAPHICS ADAPTERS (continued)

ORACLE VM VIRTUAL- BOX 4.X	MAXIMUM OF 128 MEGABYTES OR 256 MEGABYTES OF GRAPHICS MEMORY
	RESOLUTION OF THE VIRTUAL MONITOR IS DETERMINED BY THE "GUEST ADDITIONS VIDEO DRIVER" OF THE VIRTUAL MACHINE OR THE LINUX "VMSVGA" DRIVER VIRTUAL MACHINE AS DESCRIBED AT https://www.virtualbox.org/wiki/Guest_resizing

DIFFERENCES IN VIRTUAL GRAPHICS ADAPTERS (continued)

HYPER-V

RESOLUTION OF THE VIRTUAL MONITOR FOR A VIRTUAL MACHINE THAT IS RUNNING WINDOWS 10, WINDOWS 8, OR UBUNTU 18.04 AS A GUEST OPERATING SYSTEM IS USUALLY SET FROM THE "DISPLAY SETTINGS" OF THE GUEST OPERATING SYSTEM

DIFFERENCES IN VIRTUAL GRAPHICS ADAPTERS

- <https://docs.microsoft.com/en-us/virtualization/community/team-blog/2017/20170202-editing-vmconnect-session-settings>

DIFFERENCES IN NETWORK SUPPORT

(continued)

- For information on the “virtual networks” that are provided by “VMware Player”, see http://aztcs.apcug.org/meeting_notes/winhardsig/virtualmachines/vmware/Virtual_Networks_in_VMware--Windows.pdf

DIFFERENCES IN NETWORK SUPPORT

(continued)

- For information on the “virtual networks” that are provided by “VMware Player”, see http://aztcs.apcug.org/meeting_notes/winhardsig/virtualmachines/vmware/Virtual_Networks_in_VMware--Windows.pdf

ADDITIONAL ADVICE

- <https://www.makeuseof.com/tag/virtualbox-vs-vmware-vs-hyper-v/>
- <https://phoenixnap.com/kb/virtualbox-vs-vmware#ftoc-heading-13>
- <https://itigic.com/virtualbox-vs-vmware-vs-hyper-v-differences-best-program/>

ADDITIONAL ADVICE (continued)

- <https://www.altaro.com/vmware/vmware-vs-virtualbox/>
- <https://www.softwaretestinghelp.com/virtualbox-vs-vmware/>
- https://en.wikipedia.org/wiki/Comparison_of_platform_virtualization_software

ADDITIONAL ADVICE (continued)

- <https://windowsreport.com/virtual-machine-software/>
- <https://www.techradar.com/best/best-virtual-machine-software>
- <https://www.extrabux.com/en/guide/5381940>
- <https://tipsmake.com/compare-virtualbox-vmware-and-hyperv>