

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

by Francis Chao
fchao2@yahoo.com

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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

- VIRTUAL MACHINES IN GENERAL
- 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

"VIRTUAL MACHINES" IN GENERAL

BASIC CONCEPT

**Real, host computer runs the
"host operating system"**

"virtual machine program"

**"virtual machine" runs the
"guest operating system"**

TYPICAL IMPLEMENTATION "1"

**Real computer runs "Windows 7"
host operating system"**

**"VMware Player"
virtual machine program"**

**"virtual machine" runs
"Linux Mint" as a
"guest operating system"**

TYPICAL IMPLEMENTATION "2"

Real computer runs "Windows 10 Pro Technical Preview"

**"Hyper-V"
virtual machine program"**

**"virtual machine" runs
"Ubuntu" as a
"guest operating system"**

"VIRTUAL MACHINES" IN GENERAL

- A "virtual machine" consists of an entire computer that is simulated by a software program.
- The software program is called a "virtual machine program".

**"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 Player

Oracle VM VirtualBox

and

Hyper-V

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

- **"VMware Player"** is a free, closed-source program.
When its capabilities and features are compared to **"Oracle VM VirtualBox and Hyper-V, "VMware Player"** usually ends up as the superior 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 inconsistent support for "USB 3" devices.

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 Pro 64-bit", "Windows 8 Enterprise 64-bit", "Windows 8.1 Pro 64-bit", "Windows 8.1 Enterprise 64-bit, and the all of the 64-bit **"..Previews"** of "Windows 10".

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

- **"Hyper-V"** is bundled with "Windows 8 Pro 64-bit", "Windows 8 Enterprise 64-bit", "Windows 8.1 Pro 64-bit", "Windows 8.1 Enterprise 64-bit, and the all of the 64-bit **"..Previews"** of "Windows 10".

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

- Hyper-V's strong point is its ability to simulate the "Secure Boot" feature in the virtual "UEFI" firmware of a virtual machine: No other virtual machine program can simulate "Secure Boot".

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

- "Hyper-V" running in "Windows Technical Preview 64-bit" build 9879 OR "Windows Technical Preview for Enterprise 64-bit build 9879 OR "Windows 10 Pro 64-bit build 9926 and later OR "Windows 10 Enterprise 64-bit build 9926

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

is the only virtual machine program that can provide a virtual machine with a UEFI with "Secure Boot" for a distro of Linux that supports "Secure Boot".

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

- Since "Hyper-V" only runs inside the above-mentioned "Windows.." operating systems, this means that at the present time (January 2015), only a "Windows.." host computer can provide a working virtual machine with "Secure Boot" for a "Linux" distro that supports "Secure Boot".

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

- See

http://aztcs.org/meeting_notes/winhardsig/virtualmachines/SecureBoot/SecureBoot-basics.pdf

and

http://aztcs.org/meeting_notes/linuxsig/Fedora-HyperV/Fedora-HyperV.pdf

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

- Hyper-V's weak point is the lack of support for USB 2 and USB 3 devices.

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

- **"Hyper-V"** also has poor sound card support.
- **"Hyper-V"** has Microsoft's "VMBus" technology which allows virtual machines to run faster than virtual machines in other virtual machine programs.

**DIFFERENCES IN
HOST OPERATING
SYSTEM
REQUIREMENTS
FOR THE THREE
VIRTUAL MACHINE
PROGRAMS:**

DIFFERENCES IN HOST OPERATING SYSTEM REQUIREMENTS

VMWARE
PLAYER 5, 6,
7

"WINDOWS XP", "WINDOWS VISTA", "WINDOWS 7", "WINDOWS 8", OR "WINDOWS 8.1"

ORACLE VM
VIRTUALBOX
4.X

"WINDOWS XP" WITH SERVICE PACK 3, "WINDOWS VISTA", "WINDOWS 7", "WINDOWS 8", OR "WINDOWS 8.1"

DIFFERENCES IN HOST OPERATING SYSTEM REQUIREMENTS

(continued)

HYPER-
V

"WINDOWS 8 PRO" 64-BIT
OR
"WINDOWS 8.1 PRO" 64-BIT
OR
"WINDOWS 8 ENTERPRISE" 64-BIT
OR
"WINDOWS 8.1 ENTERPRISE" 64-
BIT
OR THE 64-BIT EDITIONS OF THE
"PREVIEWS" OF "WINDOWS 10"

DIFFERENCES IN HOST OPERATING SYSTEM REQUIREMENTS (continued)

- Since 99+ percent of the "Windows 8.." and "Windows 8.1" computers that are sold in stores have the low-end "core" edition of "Windows 8.." and "Windows 8.1", you will probably have to buy the Windows 8 or 8.1 "Pro Pack" (~\$100) before you can run "Hyper-V".

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

**VMWARE
PLAYER
7.X**

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

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

**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 4.X

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

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

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

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

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

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

HYPER-V

DIFFERENCES IN USB SUPPORT

(continued)

- In other words, "Hyper-V" has no direct support no support for real USB 2 devices or real USB 3 devices:

DIFFERENCES IN USB SUPPORT

(continued)

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

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

DIFFERENCES IN SOUND CARD SUPPORT

VMWARE
PLAYER 5, 6,
7

CAN CONNECT A VIRTUAL
MACHINE TO YOUR REAL
SOUND CARD

ORACLE VM
VIRTUALBOX
4.X

CAN CONNECT A VIRTUAL
MACHINE TO YOUR REAL
SOUND CARD

HYPER-V

IN ORDER TO CONNECT A
VIRTUAL MACHINE TO YOUR
REAL SOUND CARD, YOU
HAVE TO USE "REMOTE
DESKTOP CONNECTION"

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

DIFFERENCES IN NETWORK SUPPORT

VMWARE
PLAYER
5, 6, 7

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

CAN CONNECT VIRTUAL MACHINES DIRECTLY TO YOUR REAL LOCAL AREA NETWORK BY MEANS OF A VIRTUAL WIRED NETWORK ADAPTER OR A REAL USB WiFi ADAPTER

DIFFERENCES IN NETWORK SUPPORT (continued)

ORACLE
VM

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

VIRTUAL-
BOX 4.X

CAN CONNECT VIRTUAL MACHINES DIRECTLY TO YOUR REAL LOCAL AREA NETWORK BY MEANS OF A VIRTUAL WIRED NETWORK ADAPTER OR A REAL USB WiFi ADAPTER

DIFFERENCES IN NETWORK SUPPORT (continued)

CONNECTS VIRTUAL MACHINES TO A VIRTUAL WIRED NETWORK SWITCH. THIS VIRTUAL WIRED NETWORK SWITCH THEN CONNECTS TO YOUR REAL NETWORK.

HYPER-V

AFTER THE VIRTUAL WIRED NETWORK SWITCH IS CREATED, YOUR PHYSICAL HOST COMPUTER ALSO CONNECTS TO THE REAL NETWORK THROUGH THIS VIRTUAL WIRED NETWORK SWITCH

DIFFERENCES IN NETWORK SUPPORT (continued)

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