

# Installing Integration Services

For the free video please see  
<http://itfreetraining.com/lab#integration-services>

Integration Services is additional software that can be installed on a Hyper-V virtual machine which adds additional features. This video will look at how to install Integration Services on Windows and Ubuntu. Integration Services is the functional equivalent of VMWare Tools from VMWare.

# What is Integration Services?

- Software that runs on the virtual machine
- Allows unrestricted mouse movements
- Improves video performance and features
- Heartbeat service
- Guest/Host data exchange
- Time synchronization
- Improved snapshot performance
- Remote Desktop Virtualization

## **What Is Integration Services**

Integration Services adds software to the virtual machine including device drivers. The device drivers it adds allows the virtual machine to communicate with the host. In some cases the device driver may be missing from the virtual machine and this will install those device drivers. Most noticeably, the network adapter will often not work until Integration Services is installed. The additional software that is added also adds additional functionality. For example, without Integration Services installed, the mouse pointer will often be sluggish in the virtual machine and Ctrl-Alt-Left arrow will need to be pressed to release the mouse pointer from the virtual machine. Other features include heartbeat service, data exchange, time synchronization and improved snapshot performance.

Heartbeat service allows the host to send a heartbeat message to the virtual machine. If the virtual machine does not response to this heartbeat message the host knows the virtual machine has crashed. Data exchange allows the host to obtain information from the virtual machine, such as which operating system is running.

Time synchronization syncs the time in the virtual machine to the same time on the local time clock on the host computer. If you are using time synchronization software on the virtual machine you should disable this.

Improved snapshot performance will reduce the sluggishness of the virtual machine when a snap shot is performed. Although taking a snap shot will reduce the performance of the virtual machine, without this feature the virtual machine will stall when a snapshot is taken.

Remote Desktop virtualization allows Windows Server 2012 to perform administration on the virtual machine using server manager, assuming the virtual machine supports it

# Operating Systems Supported

- Windows Servers
  - Windows Server 2012/2008 R2/2008 with SP2/2003 with SP2/Windows Home Server 2011/Windows Small Business Server 2011
- Windows Clients
  - Windows 8/7/Vista with SP2/XP with SP3/XP x64 with SP2
- Linux
  - CentOS 5.7,5.8, 6.0 to 6.3/Red Hat Enterprise 5.7,5.8,6.0 to 6.3/Suse Linux Enterprise Server 11 SP2/Open SUSE 12.1/Ubuntu 12.04

## **Operating System Supported**

Windows Server 2003 with SP2 and above

Windows XP SP3 or Windows XP x64 with SP2 and above

Linux, the following are supported: CentOS 5.7,5.8, 6.0 to 6.3/Red Hat Enterprise

5.7,5.8,6.0 to 6.3/Suse Linux Enterprise Server 11 SP2/Open SUSE 12.1/Ubuntu 12.04

# Windows Demonstration

## **Demonstration Windows Install**

To access Hyper-V manager, open Server Manager and select Hyper-V Manager from the tools menu.

Without Integration Services installed, in some cases, when you click on the virtual machine desktop the mouse pointer will be captured by the virtual machine. To release the mouse pointer, you need to press the button ctrl, alt and left arrow.

To install Integration Services, double click on the virtual machine you want to install it on and select the action menu and then select the option "Insert Integration Services Setup Disk". This will place the setup software in the virtual optical drive and it is just a matter of running it to install the software. In some operating systems, Integration Service may already be pre-installed. For example, Windows Server 2012 Integration Services is pre-installed. This may be an older version than the version that is available on Hyper-V so it is still a good idea to install Integration Services to ensure that the virtual machine has the latest version that is available.

To see the settings that can be configured with Integration Services, right click the virtual machine and select the option "settings". From the settings, select the option Integration Services at the bottom. The features that Integration Services adds is at the right. To enable or disable a feature is just a matter of ticking or clearing the option. The options are as follows.

**Operating system shutdown:** This runs a script on the virtual machine to shut down the operating system cleanly rather than powering off the virtual machine.

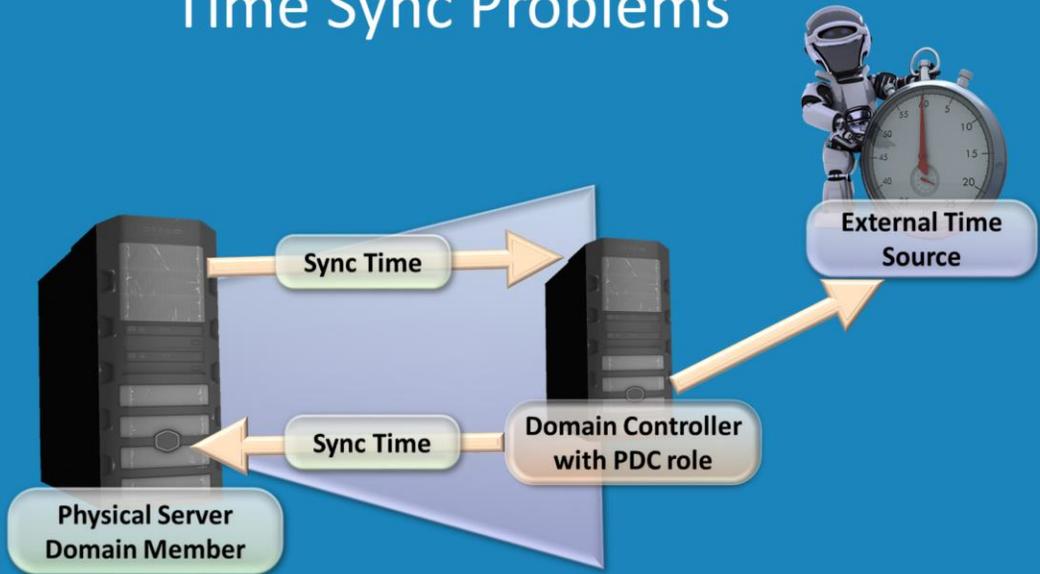
**Time Synchronization:** Syncs the virtual machine time with the physical host's time. See below for problems that may occur.

**Data Exchange:** This allows the host to read information on the virtual machine like which operating system is running and which version of that operating system.

**Heartbeat:** This allows the host to send a message like a ping to the virtual machine to determine if the virtual machine is still running.

**Backup (volume snapshot):** This allows the host to communicate better with the virtual machine when performing snapshots. This helps prevent the virtual machine from stalling when a snapshot is performed.

# Time Sync Problems



## Time Sync Problems

If the virtual machine and the physical machine are both performing time syncing this can cause problems. In a Windows environment, the PDC is the top of the time hierarchy. If the server hosting is a member of the domain, this server will attempt to sync its time from the PDC or another Domain Controller. This can cause problems as the physical machine will attempt to sync from the virtual machine and the virtual machine will often be configured to sync from an external time server. In this case, you would most likely switch off time synchronization on the virtual machine.

# Ubuntu Demonstration

## Demonstration Ubuntu Install

In some cases, a download is available from Microsoft in order to enable Integration Services in Linux. In other cases Integration Services is pre-installed in Linux and only needs to be enabled.

To install, right click on the top left icon and select applications and then do a search for terminal and open it.

To make the changes, run “sudo pico /etc/initramfs-tools/modules”. Sudo performs the following command with root access. Pico is a text editor and the last option is the configuration file that needs to be edited. In order to enable Integration Services, the initial operating system that boots Linux needs to be modified since Integration Services works at a very low level in the operating system. Four lines need to be added to the file as shown below.

```
hv_vmbus  
hv_storvsc  
hv_blkvsc  
hv_netvsc
```

Once the changes are made, the command “sudo update-initramfs -u” needs to be run. This will update the image that is read on boot.

To complete, the operating system needs to be reinstalled.

See <http://YouTube.com/ITFreeTraining> or <http://itfreetraining.com> for our always free training videos. This is only one video from the many free courses available on

YouTube.

#### References

“Understanding and Installing Hyper-V Integration Services”

[http://www.virtuatopia.com/index.php/Understanding\\_and\\_Installing\\_Hyper-V\\_Integration\\_Services](http://www.virtuatopia.com/index.php/Understanding_and_Installing_Hyper-V_Integration_Services)

“Windows Server 2012 Hyper-V Integration Services”

<http://social.technet.microsoft.com/wiki/contents/articles/16715.windows-server-2012-hyper-v-integration-services.aspx>

“How to install Hyper-V Integration Services (ICs) in Ubuntu 12.04 LTS”

<http://baudlabs.com/how-to-install-hyper-v-integration-services-in-ubuntu-12-04-lts/>