20486B: Developing ASP.NET 4.5 MVC Web Applications

Microsoft® Hyper-V Classroom Setup Guide

Contents

[Introducing Microsoft Hyper-V 3](#_Toc360465708)

[Windows 8 Virtual Machine Activation 3](#_Toc360465709)

[Setup Overview 3](#_Toc360465710)

[Classroom Requirements 3](#_Toc360465711)

[Hardware 3](#_Toc360465712)

[Software 3](#_Toc360465713)

[Classroom Configuration 3](#_Toc360465714)

[Instructor Computer Checklist 3](#_Toc360465715)

[Instructor Computer Setup 3](#_Toc360465716)

[1. Install the Hyper-V Server Role 3](#_Toc360465717)

[2. Create a Private Virtual Network 3](#_Toc360465718)

[3. Install the Virtual Machine Files 3](#_Toc360465719)

[4. Create a Setup Share 3](#_Toc360465720)

[5. Copy the Virtual Machine Files to the Student Computer 3](#_Toc360465721)

[6. Run the VM-Pre-Import script 3](#_Toc360465722)

[7. Import the Virtual Machines on the Instructor Computer 3](#_Toc360465723)

[8. Configure the Virtual Machines on the Instructor Computer 3](#_Toc360465724)

[9. Install the PowerPoint Slides 3](#_Toc360465725)

[10. Install Adobe Flash (if needed) 3](#_Toc360465726)

[11. Install Adobe Reader (if needed) 3](#_Toc360465727)

[Student Computer Checklist 3](#_Toc360465728)

[Student Computer Setup 3](#_Toc360465729)

[1. Install the Hyper-V Server Role 3](#_Toc360465730)

[2. Install the Base Image / Virtual Machine Files 3](#_Toc360465731)

[Appendix A Keyboard Layout 3](#_Toc360465732)

[Appendix B Activating the Windows 8 3](#_Toc360465733)

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# Introducing Microsoft Hyper-V

Important Note: This setup requires Windows Server 2012 Hyper-V. To import virtual machines successfully to Windows Server 2012 Hyper-V you will have to run the VM-Pre-Import scripts which will create symbolic links to the Base/Middle-Tier images in the C:\Program Files\Microsoft Learning\20486\20486-SEA-DEV13\Virtual Hard Disks\ folders.

This learning product is designed using Microsoft® Hyper-V running on Windows Server 2012. Hyper-V is a virtualization technology that allows a single computer to act as a host for one or more virtual machines. The virtual machines use a set of virtual devices that might or might not map to the physical hardware of the host computer.

The software that is installed onto the virtual machine is unmodified, full-version, retail software that operates exactly as it does when it is installed onto physical hardware.

The following definitions will help you with the remainder of this document:

* **Hyper-V**: Hyper-V is a server application that enables users to run a broad range of operating systems simultaneously on a single physical server.
* **Host Computer**: The physical computer onto which an operating system and the Hyper-V server role have been installed.
* **Host Operating System**: The operating system that is running on the physical computer. For this course, the only supported host operating system is Windows Server 2012.
* **Virtual Machine**: The computer that is running inside Hyper-V. In this document, “Hyper-V” refers to the application running on the host, while “virtual machine” refers to the guest operating system and any software that is running inside the Hyper-V application.
* **Guest Operating System**: The operating system that is running inside the virtual machine.

Note:Pressing CTRL+ALT+DELETE while working with a virtual machine will display the Windows Security dialog box for the host operating system. To close the dialog box, press ESC. To access the Windows Security dialog box for a guest operating system, press CTRL+ALT+END. Other than this difference, software on a virtual machine behaves as it would behave on a physical computer.

You can configure virtual machines to communicate with the host computer, other virtual machines on the same host computer, other host computers, virtual machines on other host computers, other physical computers on the network, or any combination thereof.

The setup instructions that you will follow as part of this classroom setup guide configure Hyper-V and the Virtual Machines that run on the host. Changing any of the configuration settings may render the labs for this learning product unusable.

Delete any of the following sections (Windows 8 or Windows Server 2012) that do not apply to this course. <Delete this comment>

# Windows 8 Virtual Machine Activation

You have to activate virtual machines used in this course that are based on Windows 8; instructions for doing this are in the section **Configure the Virtual Machines on the Instructor Computer**.

More information on this new requirement and steps on how to obtain product keys for activation can be found at: <http://go.microsoft.com/fwlink/?LinkId=270851>.

# Setup Overview

The host computers must be set up with a 64 bit version of Windows Server 2012 and must be running on 64 bit hardware. For more information on the supported hardware for Hyper-V, please see the follow web site: http://www.microsoft.com/hyper-v. For the purposes of this learning product, it is not necessary for the host computers to be able to communicate with another network. However, allowing them to communicate with each other is recommended to make setup easier. The setup procedures below assume that the host computers can communicate with each other for setup purposes. You should note the administrator’s user name and password for the host computers and provide this information to the instructor.

# Classroom Requirements

This learning product requires a classroom with a minimum of one computer for the instructor and one for each student. Before class begins, use the following information and instructions to install and configure all computers.

## Hardware

The classroom computers require the following hardware and software configuration.

Select the appropriate Hardware Level below, and delete Hardware Level that you do not use.

**Hardware Level 6**

* Processor: Intel Virtualization Technology (Intel VT) or AMD Virtualization (AMD-V)
* Hard Disk: Dual 120 GB hard disks 7200 RM SATA or better (Striped)
* RAM: 4 GB expandable to 8GB or higher
* DVD/CD: DVD drive
* Network adapter
* Video Adapter/Monitor: 17-inch Super VGA (SVGA)
* Microsoft Mouse or compatible pointing device
* Sound card with amplified speakers

In addition, the instructor computer must be connected to a projection display device that supports SVGA 1024 x 768 pixels, 16 bit colors.

**Hardware Level 7**

* Processor: 64 bit Intel Virtualization Technology (Intel VT) or AMD Virtualization (AMD-V) processor (2.8 Ghz dual core or better recommended)
* Hard Disk: Dual 500 GB hard disks 7200 RPM SATA or faster (striped)
* RAM: 16 GB or higher
* DVD/CD: DVD; dual layer recommended.
* Network Adapter
* Sound Card with amplified speakers
* Monitor: Dual SVGA monitors 17” or larger supporting 1440X900 minimum resolution

In addition, the instructor computer must be connected to a projection display device that supports SVGA 1024 x 768 pixels, 16 bit colors

## Software

Please note that, unless otherwise indicated, this software is not included in the Trainer Materials disc. This learning product was developed and tested on supported Microsoft software, which is required for the classroom computers.

Also required, but not included in the Training Materials: Microsoft Office PowerPoint® 2007 (instructor computer only).

# Classroom Configuration

Insert a paragraph to describe the classroom configuration, customized for the learning product. This is also a great place to diagram any complex network environments.

For example:

Each classroom computer will serve as the host for one virtual machine that will run in Hyper-V. Domain or workgroup membership does not matter. The network configuration of the host computers does not matter. After completion of the setup, all computers will be configured to run the virtual machine named GEN-DEV.

#### Estimated Time to Set up the Classroom: 60 Minutes

If your course Windows Azure accounts, include information similar to this Note.

**Note:** This course is designed to use an Internet connection inside the virtual machine. The Internet connection is required for downloading components from NuGet within Visual Studio, and to access Windows Azure.  If there is no Internet connection present, this course will need to be modified to be delivered from a disconnected student machine.  Student trial accounts for Windows Azure should be provisioned in advance of the first day of class and provisioning can take up to 48 hours.  Windows Azure accounts for students can be acquired from the MSL Campaign Factory.  (<http://www.mslcampaignfactory.com/>)

# Instructor Computer Checklist

* 1. Install the Hyper-V Server Role.
* 2. Create a Private Virtual Network
* 3. Install the Virtual Machine Files.
* 4. Create a Setup Share.
* 5. Copy the Virtual Machine Files to the Student Computer
* 6. Run the VM-Pre-Import script
* 7. Import the Virtual Machines on the Instructor Computer
* 8. Configure the Virtual Machines on the Instructor Computer
* 9. Install the PowerPoint Slides. (if needed)
* 10. Install Adobe Flash (if needed).
* 11. Install Adobe Reader (if needed).

# Instructor Computer Setup

Use the instructions in the following section to set up the classroom manually. Before starting the installation of the instructor computer, a supported operating system and Microsoft Office Power Point® 2007 must be installed on the computer.

Important:The operating systems installed on the virtual machines in this learning product have **not** been activated and each virtual machine is in the Notification state.

As stated earlier, the Windows 8 client virtual machines **need** to be activated as per the steps outlined below. The Windows Server 2012 virtual machines **do not need** to be activated but they will need to be placed in a grace period by running **slmgr –rearm** at the administrative command prompt.

You may be prompted to restart the computer when the VM is started for the first time. This is because of the hardware differences on the Host computer. You can restart if you wish or just click Restart Later to close the message.

1.

## 1. Install the Hyper-V Server Role

In this task, you will install the Hyper-V server role on the Windows Server 2012 host computer.

Important:If Hyper-V is already installed, you can skip this procedure.

1. In the Server Manager console, on the **Manage** menu, click **Add Roles and Features**.
2. On the **Before you begin** page of the Add Roles and Features Wizard, click **Next**.
3. On the **Select installation type** page, select **Role-based or feature-based installation**, and then click **Next**.
4. On the **Select destination server** page, ensure that the local computer is selected, and then click **Next**.
5. On the **Select** **Server Roles** page, select **Hyper-V**.
6. In the **Add Roles and Features Wizard** dialog box, click **Add Features**.
7. On the **Select Server Roles** page of the Add Roles and Features Wizard, click **Next**.
8. On the **Select features** page, click **Next**.
9. On the **Hyper-V** page, click **Next**.
10. On the **Create** **Virtual Switches** page, verify that no selections have been made, and then click **Next**.
11. On the **Virtual Machine Migration** page, click **Next**.
12. On the **Default Stores** page, review the location of **Default Stores**, and then click **Next**.
13. On the **Confirm Installation Selections** page, select **Restart the destination server automatically if required**.
14. In the **Add Roles and Features Wizard** dialog box, review the message about automatic restarts, and then click **Yes**.
15. On the **Confirm Installation Selections** page, click **Install**.
16. Ensure that you restart the machine.
17. After the final restart, log on using administrator credentials.

## 2. Create a Private Virtual Network

This section lists the networks created for this learning product. These steps are required if you do not have a private virtual network created.

1. In **Server Manager**, click **Tools**, and then click **Hyper-V Manager**.
2. In **Hyper-V Manager**, click the local computer, and then on the **Actions** pane, click **Virtual Switch Manager**.
3. In the **Virtual Switch Manager** dialog box, select **New virtual network switch**. Ensure that **Private** is selected, and then click **Create Virtual Switch**.
4. In the **Virtual Switch Properties** area of the **Virtual Switch Manager** dialog box, specify the following information, and then click **OK**:

* Name: **Private Network**
* Connection type: **Private network**

## 3. Configure the MSL-TMG1 Virtual Machine

1. Set up the MSL-TMG1 virtual machine. The MSL-TMG1 virtual machine and its related setup guide can be downloaded from the MCT Download Center in the Base Virtual Hard Disks – Mid-Tiers (ENGLISH) folder. The TMG VM requires **Base11A-WS08R2SP1.VHD** and **MT11-MSL-TMG1.vhd** which are also available on the MCT Download Center.
2. Configure the MSL-TMG1 virtual machine to use dynamic memory. In the Hyper-V Management console, access the MSL-TMG1 virtual machine settings. Click **Memory**, select **Enable** **Dynamic Memory**, and set **Minimum RAM** to **1024 MB** and **Maximum RAM** to **4096 MB**.

Note: MSL-TMG1 setup guide refers to configured DNS server Virtual Machine located in Private network. If none present, classroom network DNS server, local ISP DNS server or any publicly available DNS server should be configured in Virtual Machines.

## 4. Install the Virtual Machine Files

After installing the Hyper-V server role, you will need to follow the following steps to copy the base images, middle tiers and virtual machine files to the server and then configure the virtual machines.

**Extract the Course Images**

**To Extract the Base Images:**

1. From the courseware source files location, double-click Base14E-W81U1-Office2013.exe.
2. In the **Official Microsoft Learning Product License Terms** window, click **Accept** to indicate that you accept the terms in the license agreement.
3. In the WinRAR self-extracting archive window, in the **Destination folder** text box, ensure that **C:\Program Files\Microsoft Learning\Base** is listed, and then click **Extract**. Please wait while the base virtual hard disk file is extracted. This might take a few minutes.

**To Extract the Middle Tier Images:**

1. From the courseware source files location, double-click MT14-W81U1-VS-CL1.exe.
2. In the **Official Microsoft Learning Product License Terms** window, click **Accept** to indicate that you accept the terms in the license agreement.
3. In the WinRAR self-extracting archive window, in the **Destination folder** text box, ensure that **C:\Program Files\Microsoft Learning\Base\Drives** is listed, and then click **Extract**.

Please wait while the middle tier virtual hard disk file is extracted. This might take a few minutes.

**To Extract the Virtual Machines:** (if required for disk space, you can extract the course specific files to a different drive as long as the Base images and the Middle-Tiers are located in the default path)

1. From the courseware source files location, double-click 20486-SEA-DEV131.exe.
2. In the Official Microsoft Learning Product License Terms window, click **Accept** to indicate that you accept the terms in the license agreement.
3. In the WinRAR self-extracting archive window, in the **Destination folder** text box, ensure that **C:\Program Files\Microsoft Learning\20486\Drives** is listed, and then click **Extract**.
4. Repeat steps 1 through 3 for the following virtual machines:

* 20486-SEA-DEV132.exe

Note: After completing the extraction of all of the classroom files, you should have the following files installed.

|  |  |
| --- | --- |
| **File** | **In Folder** |
| Base14E-W81U1-Office2013.vhd | C:\Program Files\Microsoft Learning\Base |
| MT14-W81U1-VS-CL1.vhd | C:\Program Files\Microsoft Learning\Base\Drives |
| VM-Pre-Import-20486- 20486-SEA-DEV13Name.bat | C:\Program Files\Microsoft Learning\20486\drives\20486-SEA-DEV13 |
| 20486-SEA-CL1.vhd | C:\Program Files\Microsoft Learning\20486\20486-SEA-DEV13\Virtual Hard Disks |
| <GUID>.exp | C:\Program Files\Microsoft Learning\20486\20486-SEA-DEV13\Virtual Machines |

## 5. Create a Setup Share

In this task, you will share virtual machine files for copying to student computers.

1. Share the C:\Program Files\Microsoft Learning\Base folder using a share name of Base\_Drives.
2. Share the C:\Program Files\Microsoft Learning\**20486**\Drives folder using a share name of **20486\_Drives**.

Note: For information on how to set up a share in Windows Server 2012, see the topic “Share a Resource” in Windows Help and Support.

## 6. Copy the Virtual Machine Files to the Student Computer

Note: You must perform the file copy prior to importing the virtual machines. Once you import the virtual machines, you will not be able to import them again.

1. From the student computer, copy all of the files from the Base\_Drives share on the instructor computer to **C:\Program Files\Microsoft Learning\Base**.
2. Copy all of the files from the **20486**\_Drives share on the instructor computer to **C:\Program Files\Microsoft Learning\20486\Drives.**

**Note:** Ensure that all files are copied.

* C:\Program Files\Microsoft Learning\**20486** and all included folders and files
* C:\Program Files\Microsoft Learning\Base

1. Ensure that you have copied the files using a permission retaining software such as RoboCopy or XCopy.
2. Check that all permissions have been retained, by looking at the directories above and making sure they are not **Read-Only**.
3. Add the virtual machines to the Hyper-V management console. For detailed instructions see the instructor computer setup.

## 7. Run the VM-Pre-Import script

In this task, you will run the VM-Pre-Import-20486-*20486-SEA-DEV13Name*.bat file. This script will create links to the Base and Mid-Tier images in the import folder necessary for importing each VM.

1. Double-click C:\Program Files\Microsoft Learning\20486\drives\*20486-SEA-DEV13Name* \VM-Pre-Import-20486-*20486-SEA-DEV13Name*.bat (root of the virtual machine import folder).
2. Verify the links are created in the appropriate C:\Program Files\Microsoft Learning\20486\*20486-SEA-DEV13Name*\Virtual Hard Disks\ folders.
3. Repeat the steps above for each virtual machine that will be imported.

## 8. Import the Virtual Machines on the Instructor Computer

1. On the Instructor computer, on the host machine, click **Start**, point to **Administrative Tools**, and click **Hyper-V Manager**.
2. In the **Actions** pane, click **ImportVirtual Machine**.
3. In the **Import Virtual Machine** dialog box, click **Browse**. Browse to **C:\Program Files\Microsoft Learning\20486\Drives**, click **20486-SEA-DEV13**, and then click **Select Folder**, click **next**.
4. In **Select Virtual Machine** dialog box, click **next**.
5. In **Choose Import Type** dialog box, ensure **Register the virtual machine in-place (use the existing unique ID)** selected, click **next**.
6. In the **Complete Import Wizard**, click **Finish**.

## 9. Configure the Virtual Machines on the Instructor Computer

1. Right-click 20486-SEA-DEV13, and click **Start**.
2. Right-click 20486-SEA-DEV13, and click **Connect**.
3. Verify that the computer boots. Log on as **Admin**, using a password of **Pa$$w0rd**. Verify that the logon is successful.
4. In the Windows 8.1 **Start** screen, click the **Desktop** tile.
5. On the Windows desktop, in the Task bar, click the Windows Explorer icon.
6. In Windows Explorer, right-click **Network** and then click **Properties**
7. In the Network and Sharing Center, click Change adapter settings
8. In the **Network Connections** window, right-click the **Ethernet** **3** connection and click **Properties**
9. In the Properties window select Internet Protocol Version 4 (TCP/IPv4) and then click Properties.
10. In the **Internet Protocol Version 4 (TCP/IPv4)** window, click Use the following IP address, then configure the connection setting according to the following values, and then click **OK**.
    * 1. IP address: 10.10.0.10
      2. Subnet mask: 255.255.0.0
      3. Default gateway: 10.10.0.1
      4. Preferred DNS server: Specify the IP address of the DNS server used by the MSL-TMG1 virtual machine acting as the gateway
11. If a **Networks** flyout appears, do not enable finding other PCs on the network by clicking **No**.
12. Close the Network Connections window.
13. Close the Network and Sharing Center
14. Start Internet Explorer and verify that you can open a web site such as www.bing.com. If not, verify that you have configured the MSL-TMG1 server networking settings and enabled the appropriate firewall rules in MSL-TMG1 as specified in the MSL-TMG1 setup guide.
15. **For Server 2012:** Open an administrative command prompt, and type **slmgr –rearm**, and restart the computer. After the computer restarts, sign in as **Adatum\Administrator** using a password of **Pa$$w0rd**.
16. **For Windows 8:** For information on activating and steps on how to obtain product keys for activation can be found at: <http://go.microsoft.com/fwlink/?LinkId=270851> and Appendix x
17. On the **Action** menu, click **Shut Down.**
18. Under **Virtual Machines**, right-click 20486-SEA-DEV13, and then click **Snapshot**.
19. Wait for the Snapshot process to finish. In the **Snapshots** pane, right-click the snapshot name, and click **Rename**.
20. Type **StartingImage** and press ENTER.

## 10. Install the PowerPoint Slides

Install the PowerPoint slides for the learning product by extracting the files included in:

**20486B**-ENU-Beta-PowerPoint.exe

**20486B**-ENU-MCT-Only-PowerPoint.exe

**20486B**-ENU-PowerPoint.exe

## 11. Install Adobe Flash (if needed)(if needed)

In this task, you will install Adobe Flash by running the installation file.

Note:You must download the installation file for Adobe Flash from http://www.adobe.com and copy this file to the instructor computer.

Visit the Adobe Web site at http://www.adobe.com to download and install the latest version.

## 12. Install Adobe Reader (if needed)

## (if needed)

Please note that the Adobe Acrobat Reader cannot be shipped either on the Trainer DVD or in the Virtual Machines.

In this task, you will install Adobe Reader by running the installation file.

Note:You must download the installation file for Adobe Acrobat Reader from http://www.adobe.com and copy this file to the instructor computer.

Visit the Adobe Web site at <http://www.adobe.com> to download and install the latest version.

# Student Computer Checklist

* 1. Install and configure Hyper-V
* 2. Install the Base Image/ Virtual Machine Files.

# Student Computer Setup

Use the instructions in the following section to set up the classroom manually. Before starting the installation of the student computer, a supported operating system must be installed on the computer. You can check the supported systems list at:  [http://](%20http://go.microsoft.com/fwlink/?LinkId=94481)www.microsoft.com/hyper-v.

Caution: These instructions assume network connectivity between the instructor computer and the student computers. If you do not have connectivity, Microsoft Learning recommends copying the activated virtual machines to the student computers by means of a manually created DVD or universal serial bus (USB) drive.

## 1. Install the Hyper-V Server Role

Note: If Hyper-V is already installed, you can skip this procedure.

For detailed instructions see the instructor computer setup.

## 2. Install the Base Image / Virtual Machine Files

Note: Ensure that all extracted courseware virtual machine files were copied from the Instructor computer during the Instructor Computer setup.

* **C:\Program Files\Microsoft Learning\**20486 **and all included folders and files**
* **C:\Program Files\Microsoft Learning\Base**

1. Check that all permissions have been retained, by looking at the directories above and making sure they are not Read Only.
2. Run the VM-Pre-Import script. For detailed instructions see the instructor computer setup.
3. Add the virtual machines to the Hyper-V management console. For detailed instructions see the instructor computer setup.

# Appendix A Keyboard Layout

For Localization use only: This Appendix should be updated for each language, so that the bitmaps below refer to the layout installed in the virtual machine. You can find all layouts in <http://www.microsoft.com/globaldev/reference/keyboards.mspx>. Also, the reference to the English (United States) layout should be updated accordingly as well.

The virtual machines were developed using the English (United States) layout shown below.





If your physical keyboard doesn’t match the above layout, you may need to refer to the above layout for the character positions used to logon. For future logons and usage throughout the labs, you may want to install your keyboard layout in the virtual machine.

# Appendix B Activating the Windows 8

#### Obtaining Product Keys for Activation

To receive product keys that you will use to activate the Windows 8 virtual machines accompanying this course, please follow the guidelines described here: <http://go.microsoft.com/fwlink/?LinkId=270851>

#### Activating a Windows 8 Virtual Machine

You must first ensure that the TMG virtual machine and any domain controller (if required for the course) have been started and that the TMG virtual machine has internet connectivity. Then perform the following steps to activate the Windows 8 Virtual Machine:

1. On the Windows start page, type **cmd**.
2. Right-click **Command Prompt**, and then click **Run as Administrator**.
3. If prompted, click **Yes** on the **User Account Control** dialog box.
4. On the command prompt, type **slmgr /ipk** **<product key>**, and press Enter.
5. Click **OK** on the dialog box.
6. On the command prompt, type **slmgr /ato**, and press Enter.

**Note:** In order for you to be able to activate the virtual machine successfully, the virtual machine must have internet connectivity.

1. Click **OK** on the dialog box.

**NOTE:** The Windows 8 client virtual machines will need Internet access to allow activation. This is provided through the use of the **MSL-TMG1** virtual machine, the virtual machine and associated setup guide is available from the MCT Download Center. High level details are included here below.

**To Configure the MSL-TMG1 Virtual Machine**

1. Set up the MSL-TMG1 virtual machine. The MSL-TMG1 virtual machine and its related setup guide can be downloaded from the MCT Download Center in the Base Virtual Hard Disks – Mid-Tiers (ENGLISH) folder. The TMG VM requires **Base11A-WS08R2SP1.VHD** which is also available on the DLC in the Base Virtual Hard Disks (ENGLISH) folder.
2. Configure the MSL-TMG1 virtual machine to use dynamic memory. In the Hyper-V Management console, access the MSL-TMG1 virtual machine settings. Click **Memory**, click **Dynamic**, and set **Startup RAM** to **1024 MB** and **Maximum RAM** to **4096 MB**.
3. Perform the following additional configuration changes on MSL-TMG1:
   1. Change the IP address of the virtual machine to be **172.16.0.1**,subnet mask: **255.255.0.0**,DNS: **172.16.0.10**.
   2. Open **ForeFront TMG Management**, click **Networking**, click the **Networks** tab, click **Internal**, and then click **Edit Selected Network**. In the **Internal Properties** dialog box, click the **Addresses** tab, and then click **Add Adapter button**, select **Private**, and then click **OK**. Click **OK**, and then click the **Apply** button. Click **Apply** one more time and then click **OK**.
   3. Click the **Web Access Policy** node, and enable the **Allow Web access for All Users** access rule.