



Create a Virtual Test

Environment





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Why Do We Need a Test Environment?

Why cant we just use our own PC?

JUST IN CASE YOU'RE STILL NOT SURE WHETHER YOU'RE IN A SOFTWARE PROJECT

WAIT UNTIL YOU HEAR THIS:



Why Test Environment?

- "It works on my PC" says the Developer
- Clean Environment
- On the Developers PCs we have all kind of Software installed that the Customer dont have, e.g. Development Tools like Visual Studio, etc.
- We need to test on different Platforms and Operating Systems
- Customers may use different Web Browsers
- Deployment: Test of Installation packages
- Make the software available for Testers
- etc.

Developers

Development

Developers & Testers

Testing

Customers Production

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

Software <

Development Environment 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

Test Environment



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. The Customers environment where you unstall the final software (Servers and Clie**Pito**duction Environment



Virtualization Software

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

- VMware Workstation Player (We will use this in this exercise)
- VMware Workstation
- VMware vSphere
- VMware Fusion (Mac)
- Parallells Desktop (Mac)
- Microsoft Hyper-V
- VirtualBox
- etc.

Virtualization



VM = Virtual Machines



A Hypervisor can run directly on the computer without a Host OS

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.

Note! Make sure you have enough free space on your harddrive!

VMware is a company that has been specializing within virtualization software. <u>http://www.vmware.com</u>



Exercises

- Install VMware Workstation Player (or similar software)
- Download and Install OS (e.g., Windows 10) from DreamSpark
- Install/Configure Server Software, e.g.:
 - Install the **Database System** (SQL Server or other)
 - Configure the Web Server (IIS or other) (only if you create Web pages, etc.)

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- Install Your Software (Database, Desktop App/Web App)
- Start Testing!

Software

- 1. Install VMware Player
 - If you have 64bit OS: Install VM ware Player 7
 - If you have 32bit OS: Install VM ware Player 6
- 2. Install **OS** of your choice inside Player
 - Windows 7 or Windows 8.1 (choose different within the Team)
- 3. Install SQL Server Express with Tools inside your VM
 - You may need to install .NET Framework 3.5 SP1 first
- 4. Install your Software inside your VM
 - 1. Database Tables, Views, etc.
 - 2. Your App

Note! Make sure you have enough free space on your harddrive!





VMWare Workstation

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VMware Workstation Player



- Download and Install VMware Workstation Player (or similar software)
- Download and Install Software (.iso Files) needed from Dreamspark
 - Windows OS (e.g., Windows 10). Get License Key from DreamSpark
 - SQL Server (Express or Full version)
 - ...
 - Note! Developer Tools shall not be installed in Test/Production Environment!
- Download other Software if needed
- ⇒ Make sure to keep all the software installation files in one place for next time
- ⇒ Make a copy of the VM for later use ("Clean Installation") (if you have enough free space on your harddrive, or use a memory stick)

Create New Virtual Machine VMware Player (Non-commercial use only) Player - 📄 - 🔂 🧮 🦏



Windows Server 2012

A Home

Windows 8

Windows 7

Welcome to VMware Player Create a New Virtual Machine Create a new virtual machine, which will then be added to the top of your library.



Open a Virtual Machine

Open an existing virtual machine, which will then be added to the top of your library.

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Upgrade to VMware Workstation

Get advanced features such as snapshots, developer tool integration, and more.



Help

View VMware Player's help contents.



This product is not licensed and is authorized for non-commercial use only. For commercial use, purchase a license. Buy now.



| Welcome to the New Virtual Nachine Wizzd Artial nachine tike a physical computer; it needs an operating system? Install from: Select to the Be; OS . isoo File for the OS you want to install Installer dac: | New Virtual Machine Wizard | New Virtual Machine Wizard |
|---|---|---|
| Install from: Installer disc: Installer disc: Instal | Welcome to the New Virtual Machine Wizard A virtual machine is like a physical computer; it needs an operating system. How will you install the guest operating system? | Easy Install Information This is used to install Windows Server 2012. |
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| Virtual machine name: Windows Server 2012 Windows Server 2012 Computer's physical disk. These file(s) start small and become add applications, files, and data to your virtual machine. Location: C:\Virtual Machines\Windows Server 2012 Browse Browse Select proper Name and Location Split virtual disk into multiple files Splitting the disk makes it easier to move the virtual machine with very large < Back | Name the Virtual Machine What name would you like to use for this virtual machine? | Specify Disk Capacity How large do you want this disk to be? |
| Location: C:\Virtual Machines\Windows Server 2012 Browse Browse Browse Recommended size for Windows Server 2012: 60 GB Store virtual disk as a single file Store virtual disk into multiple files Splitting the disk makes it easier to move the virtual max computer but may reduce performance with very large < Back | Virtual machine name: Windows Server 2012 | The virtual machine's hard disk is stored as one or more files of computer's physical disk. These file(s) start small and become add applications, files, and data to your virtual machine. |
| Store virtual disk as a single file Select proper Name and Location < Back Next > Cancel Store virtual disk as a single file Split virtual disk into multiple files Splitting the disk makes it easier to move the virtual ma computer but may reduce performance with very large Help < Back Next | Location: C:\Virtual Machines\Windows Server 2012 Browse | Maximum disk size (GB): 60.0 = Recommended size for Windows Server 2012: 60 GB |
| Select proper Name and Location < Back | | O Store virtual disk as a single file |
| <back next=""> Cancel Help < Back Next</back> | Select proper Name and Location | Split virtual disk into multiple files Splitting the disk makes it easier to move the virtual machin computer but may reduce performance with very large dis |
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| asy Insta This is | all Information used to install Windows Server 2012. | |
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| on of Wine | dows to install | |
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| ximum dis | sk size (GB): 60.0 🚔 | |
| commende | ed size for Windows Server 2012: 60 GB | |
| Store virt | tual disk as a single file | |
| Split virtu | ual disk into multiple files | |
| Splitting t | the disk makes it easier to move the virtual machine to another r but may reduce performance with very large disks. | |
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Next >

Cancel

×

| he virtual machine | will be created with the following settings: | |
|--------------------|--|---|
| Name: | Windows Server 2012 | ~ |
| Location: | C:\Virtual Machines\Windows Server 2012 | |
| Version: | Workstation 10.0 | |
| Operating System: | Windows Server 2012 | |
| Hard Disk: | 60 GB, Split | |
| Memory: | 2048 MB | |
| Network Adapter: | NAT | 1 |
| Other Devices: | CD/DVD, USB Controller, Printer, Sound Card | ~ |

Software Updates
 The following software is available for download:
 VMware Tools for Windows 2000 and later - version 9.6.1
 If you do not download VMware Tools, Easy Install will
 not fully complete.
 What would you like to do?
 Download and Install
 Remind Me Later

Tools that the virtualization environment needs to work properly.

Click Finish





You are finished with the Exercise





VMVare Player Installation of Software in a Virtual Machine

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Virtual Machine Settings

| Windows 8 - VMware Player (Non- | -commercial use only) – 🗆 🔀 | |
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| Player - 🔛 - 🕰 💓 | > = 6 % = 4 Ø = | |
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| Tell Screen Ctrl+Alt+Enter | Virtual Mae | chine Settings |
| Manage Mail Exit Mail Desktop Mail Desktop Calendar Calendar Calendar Calendar Down Y 16.06 Reading List Stype Pople Down Y 16.06 Piste 100 Nickte 1225 Y 14.21 Finance | Hardware Options Device Summary Memory 2 GB Processors 1 Hard Disk (SCSI) 60 GB CD/DVD (SATA) Auto detect Network Adapter NAT USB Controller Present Sound Card Auto detect Printer Present Display Auto detect | Device status Connected Connection Use physical drive: Auto detect (D:) Use ISO image file: C:\Temp\Visual Studio 2013 Ultir V Browse Advanced |
| Note! You have access to Network, | | |
| Printers, USB Ports, Sound Card, | | |
| Camera, etc. on your Host PC | Add Remove | |
| | 1 | OK Cancel Help |

Installing Software using .iso Files

| | Virtual Ma | chine Settings |
|---|---|---|
| Hardware Options | | |
| Hardware Options Device Memory Processors Hard Disk (SCSI) CD/DVD (SATA) Network Adapter USB Controller Sound Card Printer Display | Summary 2 GB 1 60 GB Auto detect NAT Present Auto detect Present Auto detect | Device status Connected Connect at power on Connection Use physical drive: Use ISO image file: C:\Temp\Visual Studio 2013 Ultir Browse Advanced Just locate the .ISO File that is located on the Host PC |
| | Add Remove | |
| | | OK Cancel Help |

Installing/Copying from a USB Memory Stick

Click to Connect to a USB Memory stick that is connected to the Host PC



Copying Files into the VM

Just use "Ctrl + C" and "Ctrl + V" in order to copy files between your Host PC and the VM





You are finished with the Exercise





Database ເງິງ Step by Step

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Database Microsoft[®] SQL Server[®]

- You should create one SQL Script that installs all the necessary stuff (Tables, Stored Procedures, Views, Scripts, etc...)
- Run the Script using the SQL Server Management Studio (or similiar)

Database Script Generator

Folder structure:

- Functions
- Scripts
- Stored Procedures

- This Tool generates one SQL Script that contains all SQL files in the Folder structure including subfolders (recursive).
 - Useful when installing the Database you need only to execute one single SQL file.

- Tables
- Triggers
- Views



Download from http://home.hit.no/~hansha/?page=software_development

Microsoft SQL Server – Management Studio





You are finished with the Exercise





Web Server ඊඊ Step by Step

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Web Server



- Configure/setup/install the Web Server
 IIS (Internet Information Services), Apache, ...
- Install Web Services (if any)
- Install your Web App

Deploy/Publish Web Service to **IIS**

Copy Web Service Files (Project) to default IIS Directory: C:\inetpub\wwwroot



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|---|
| File View Help |
| The resp Connection |
| |



You are finished with the Exercise



Desktop App

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Install your Desktop App (if any)

- Manually Copy your App Files to the VM and make sure you can start it (Create a shortcut on the Desktop)
- It is recommended to create an .exe App

Note!

We will learn to create Setup Packages in the next Topic: "Deployment and Maintenance"



You are finished with the Exercise



Start Testing

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Testing

- Test you software according to the Requirements and Design Documents and the Software Test Plan
- Report Bugs as Work Items in TFS



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