Create a Virtual Test Environment

Step by Step Exercises
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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:

ON MY MACHINE IT WORKS
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.
Typically the Developers Personal Computer with Database, Web Server and Programming Software.

Development Environment

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

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

The Customers environment where you uninstall the final software (Servers and Clients).

Production 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.
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)
- Parallels Desktop (Mac)
- Microsoft Hyper-V
- VirtualBox
- etc.
Virtualization

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

VM = Virtual Machines

Windows, Linux, ...

VM

VM

VM

Hardware (Computer)

Operating System (OS)

Virtualization Software

Guests

Host

Windows, Linux, ...

VM

VM

VM

Hypervisor
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.

http://www.vmware.com
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.)

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

1. Install **VMware Player**
   – If you have 64bit OS: Install VMware Player 7
   – If you have 32bit OS: Install VMware 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 Player

Step by Step

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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

Example of existing Virtual Machines
Select the OS .iso File for the OS you want to install.

Select proper Name and Location.

Select the version you want to install.
Tools that the virtualization environment needs to work properly.

Click Finish
Congratulations!

It works!

Note! It is recommended that you change the **Computer Name** before you start installing lots of Software on it.
You are finished with the Exercise
VMWare Player

Installation of Software in a Virtual Machine
Virtual Machine Settings

Note! You have access to Network, Printers, USB Ports, Sound Card, Camera, etc. on your Host PC
Installing Software using .iso Files

Just locate the .ISO File that is located on the Host PC
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

Step by Step

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Database

• 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 similar)
Database Script Generator

Folder structure:
- Functions
- Scripts
- Stored Procedures
- Tables
- Triggers
- Views

- 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.

Download from http://home.hit.no/~hansha/?page=software_development
Microsoft SQL Server – Management Studio

1. Your SQL Server
2. Your Database
3. Your Tables
4. Write your Query here
5. The result from your Query
You are finished with the Exercise
Web Server

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