Clean Windows 7 Installation

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Abstract

This manual will guide you through a clean Windows 7 installation process. It will also focus on the creation of an installation medium as well as installing common software. Most recommendations described in this manual are personal preferences of the author. Even though this manual is aimed to install Windows on a virtual machine, it can also be used for *real* machines.

Contents

1 Crafting an Installation Image

For this clean installation you will create an installation image which already contains service pack 1 and windows updates. Doing this will speedup the whole installation process.

1.1 Getting the base Installation Image / Medium

As starting point a Windows 7 installation image or disk is required. It should not be that hard to find one. 64 bit Ultimate edition is recommended, although this manual should work for 32 bit and other editions too.

The following process will require you to insert or mount the disk in order to extract the containing files.

1.2 Acquiring Windows Updates

Of course in order to integrate windows updates (and service packs) into your installation medium you have to download these updates first. A tool going by the name of Windows Updates Downloader[1] will take care of this. Download and launch this program.

To let the program know for what edition you want to get updates for you have to provide one or more ''Updated Lists''. Use these two lists:

- Windows 7 Service Pack 1[2]
- Windows 7 Updates Extra Updates ULZ[3]

Go ahead and download <u>all</u> updates offered by these two lists to a dedicated download folder.

1.3 Combine Base Installation and Updates

There are multiple ways of doing this, the one I commonly use is by using a tool called NTLite[4]. This tool is free (of charge) for personal use and allows you to create a new installation image based on an existing one plus integrating windows updates and service packs.

Before starting the repackaging process you may want to set the programs temp folder to some place offering enough disk space. You can find the corresponding option in `File ⟫ Settings ⟫ Temporary files directory`. Restart NTLite after changing the temp directory.

Although NTLite offers a lot of features even in the free version, I do not recommend altering the installation image in any way except for integrating windows updates, service packs and additional drivers.

Extract the original Windows 7 installation image so NTLite can write to it. After adding the extracted file location in NTLite you should be able to select and load the desired edition. After loading select the windows update folder using `Updates ⟫ Update queue ⟫ Add ⟫ Folder and subfolders found packages`. Repeat the same process for drivers under the `Drivers` tab.

Check `Apply ⟫ Post-process automation ⟫ Create ISO image` and click the `Apply ⟫ Start` button.

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[1]http://www.windowsupdatesdownloader.com
[3]listed here: http://www.windowsupdatesdownloader.com/UpdateLists.aspx
[3] 64 Bit: https://www.raymond.cc/blog/download/did/3131/
    32 Bit: https://www.raymond.cc/blog/download/did/3132/
[4]https://www.ntlite.com

1.4 Installation Medium

The resulting installation image will be a lot bigger than the original base image, therefore you should choose to create a bootable USB drive if you plan to install Windows 7 on a dedicated computer. A virtual machine will boot the image just fine.

1.4.1 Setup USB drive

1. grab a USB drive which fits your installation image

2. backup the data on the USB drive

3. format the USB drive with NTFS ("quick format" is okay)

4. mount / extract your newly crafted installation image

5. run `DISKPART` from a command prompt

6. use `LIST VOL` to list attached volumes

7. use `SELECT VOL` to select the USB drive

8. use `ACTIVE` to mark the volume as active

9. use `EXIT` to quit `DISKPART`

10. run `BOOTSECT /NT60 x:` located inside the `BOOT` folder on your installation image where `x:` is the drive letter of the USB drive.

11. lastly copy *all* data from the installation image to the USB drives' root folder

Your USB drive should now be bootable and can be used to run your windows 7 installation image.

2 Installation Process

This section will go through the base installation of Windows 7. Here we will use a virtual machine utilising VirtualBox[5].

2.1 Setting up the Virtual Machine

Fire up VirtualBox and create a new VM, making the following adjustments:

- a minimum of 1024 MB of memory
- a minimum of 50 GB of hard drive storage
- a minimum of 64 MB of video memory
- enable 3D acceleration
- enable 2D video acceleration
- set network adapter to "bridged" if "NAT" results in connection problems
- insert the installation image into the virtual disk drive

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[5]http://virtualbox.org

2.2 Base Installation

1. leave language and time format on "English (United States)" for now
2. you may change the keyboard layout if you are not comfortable with US keyboard
3. select "Windows 7 Ultimate" when prompted
4. click "Custom (advanced)" on the next screen
5. select the desired disk for your system

Next click through the setup assistant:

1. click skip on the "Windows product key" page
2. click "Ask me later" on the next screen
3. click "Public network" on the "current location" page

After your installation booted for the first time, add / remove the following features:

Control Panel ⟩⟩ Programs and Features ⟩⟩ Turn Windows features on or off

Note that this manual always refers to bullet names under "Small icons" in the control panel.

- uncheck "Games"
- uncheck "Internet Explorer"
- uncheck "Media Features"
- uncheck "Tablet PC Components"
- check "Telnet Client"
- uncheck "Windows Gadget Platform"

If you use Internet Explorer to download additional software (see section 6) do not uncheck the corresponding entry.

Click "Restart now" when prompted.

2.3 Additional Windows Updates

Windows Updates can also be access via Win + r entering "control update". The first time accessing windows updates, you will be asked to choose your settings. Select "Never check for updates" after clicking "Let me choose my settings". Install all (including optional) updates available next, reboot after the update process has completed. Rinse and repeat until no more updates are available.

You can skip language packs and updates related to Windows Defender, Microsoft Security Essentials, Bing, Silverlight, Skype and similar crap if you want.

3 Drivers

Install all drivers required by your system, most of them should have been downloaded by Windows Updates automatically. Check the device manager (see section 4.1) to see if there are still components not recognized by your system.

4 Fine Tuning

This will probably the most important part of the whole setup process. In here we will fine tune various windows settings to fit a power users needs. Again these are my personal preferences, adjust things to your needs.

4.1 Shortcuts

Following shortcuts may help you access settings more quickly:

Control panel
　　hit `Win`+`r` enter ''control''

Services
　　hit `Win`+`r` enter ''services.msc''

Computer Management
　　hit `Win`+`r` enter ''compmgmt.msc''

Advanced system settings
　　hit `Win`+`pause` select ''Advanced system settings''

Device Manager
　　hit `Win`+`r` enter ''devmgmt.msc''

4.2 Visuals

Switch theme to classic and disable visual effects to achieve better performance.

- `rightclick on desktop` 》 `Personalize` 》 `Windows Classic`
- `Advanced system settings` 》 `Advanced` 》 `Performance` 》 `Settings...` 》 `Adjust for best performance`

4.3 Disable Page file

1. `Advanced system settings` 》 `Advanced` 》 `Performance` 》 `Settings...` 》 `Advanced` 》 `Virtual memory` 》 `Change...`
2. uncheck the first checkbox
3. go through all drives and set ''No page file''

4.4 No Automatic Restart on BSOD

1. `Advanced system settings` 》 `Advanced` 》 `Startup and Recovery` 》 `Settings...`
2. uncheck ''Automatic restart''

4.5 Disable System Restore

1. `Advanced system settings` 》 `System Protection` 》 `Configure...`
2. select ''Turn off system protection''
3. click ''Delete'' before closing this window

4.6 Disable Remote Assistance

1. `Advanced system settings` `Remote`

2. uncheck "Allow Remote Assistance..."

4.7 Disable Action Center Stuff

1. `Control Panel` `Action Center` `Change Action Center settings`

2. uncheck everything

4.8 Disable AutoPlay

1. `Control Panel` `AutoPlay`

2. uncheck the first checkbox

4.9 Show Hidden Files

1. `Control Panel` `Folder Options` `View`

2. select "Show hidden files, folder and drives"

3. uncheck "Hide empty drives in the Computer folder"

4. uncheck "Hide extensions for known file types"

4.10 Disable Indexing

1. `Control Panel` `Indexing Options` `Modify`

2. click "Show all locations"

3. select an entry in the lower box

4. uncheck the corresponding checkbox in the upper box

5. repeat for all entries

4.11 Fix Network Settings

1. `Control Panel` `Network and Sharing Center` `Change advanced sharing settings` `Public`

2. select "Turn on network discovery"

3. select "Turn on file and printer sharing"

4. select "Turn off Public folder sharing"

5. select "Use 128-bit encryption ..."

6. select "Turn on password protected sharing"

1. `Control Panel` `Network and Sharing Center` `Public network`

2. check "Treat all future networks ..."

3. click "Public network"

4.12 Set Power Options

1. `Control Panel` » `Power Options`
2. select ''High performance''

4.13 Disable Offline Files

1. `Control Panel` » `Sync Center` » `Manage offline files`
2. click ''Disable offline files''

4.14 Disable UAC

Also take a look at section 5.

1. `Control Panel` » `User Accounts` » `Change User Account Control settings`
2. select ''Never notify''

4.15 Setup Autologin

1. hit `Win`+`r` enter ''control userpasswords2''
2. uncheck the first checkbox
3. click ''OK''
4. enter your user's password in the provided fields

4.16 Show System Information on Boot

1. hit `Win`+`r` enter ''msconfig''
2. under ''Boot''
3. check ''OS Boot information''

4.17 Disabling Services

Some of the tweaks mentioned previously can also be achieved by disabling certain system services. Disabling certain system services may speedup your system significantly but may also render some features unusable, these are my preferences:

- disable ''Disk Defragmenter''
- disable ''Microsoft .NET Framework NGEN ...''
- disable ''Security Center''
- disable ''Volume Shadow Copy''
- disable ''Windows Defender''

Additional settings which may come in handy:

- disable ''Adaptive Brightness''
- disable ''BitLocker Drive Encryption Service''

- disable "Block Level Backup Engine Service"
- disable "Bluetooth Support Service"
- disable "Encrypted File System"
- disable "Fax"
- disable "HomeGroup Listener"
- disable "HomeGroup Provider"
- disable "Microsoft Software Shadow Copy Provider"
- disable "Offline Files"
- disable "Parental Controls"
- disable "Power" (disables Windows Audio Endpoint Builder)
- disable "Smart Card Removal Policy"
- disable "Smart Card"
- disable "Tablet PC Input Service"
- disable "Windows Backup"
- disable "Windows Biometric Service"
- disable "Windows Connect Now"
- try disabling "Superfetch" to gain better disk performance on some disks

5 Execution as Administrator

This is merely a side note if you want to have a little bit more security. Your local user is already a member of the administrator group since you used it for the setup process. Therefore this user is able to install software and alter system preferences. UAC usually guards this, requiring you to click an additional button granting a process administrative privileges which would otherwise be blocked by the UAC.

Since this manual is focused on the advanced (power) user, I assume you know what you are doing and do not require this additional click to save you. But there is also an alternative setup which is similar to Unix-like operating systems.

Instead of disabling UAC, launch computer management ("compmgmt.msc"), activate the user account "Administrator" and set a password for this user. Next remove your user from the administrators group and add it to the users group. Reboot afterwards.

Now your user runs witch sub-administrative privileges can safely fool around without damaging the entire system. Using the "Run as Administrator" entry from the context menus will invoke UAC to start something under the user administrator. It will prompt you for the administrator password.

6 Additional Software

Of course you can install software the way you want to, but there are 2 ways I recommend for installing basic components.

- Ninte[6]
- chocolatey[7]

My basic components include:

- 7-Zip
- Firefox
- Notepad++
- SysinternalsSuit
- VLC
- WinDirStats
- qBittorrent

7 Activation

Activate Windows 7 now using your favorite method.

8 VirtualBox Guest Additions

Do not forget to install guest additions if you are using VirtualBox.

9 Maintenance

Lastly, **always keep your system clean!** If you are unsure what a software will do to your setup, run it inside a virtual machine and take advantage of snapshots.

In addition you may use the Disk Cleanup assistant Windows brings along to remove leftover data from temporary files or **Windows Updates**. WinDirStats shows you a layout of all files located on a disk sorted by filesize. One could also install CCleaner to keep application data and registry clean.

I do not recommend automatic installation of windows updates, do this manually whenever time allows. Include optional updates but always check whether the updates include stuff you do not want, again, like components related to Bing, Skype, Silverglith, . . .

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[7] https://ninite.com
[7] https://chocolatey.org