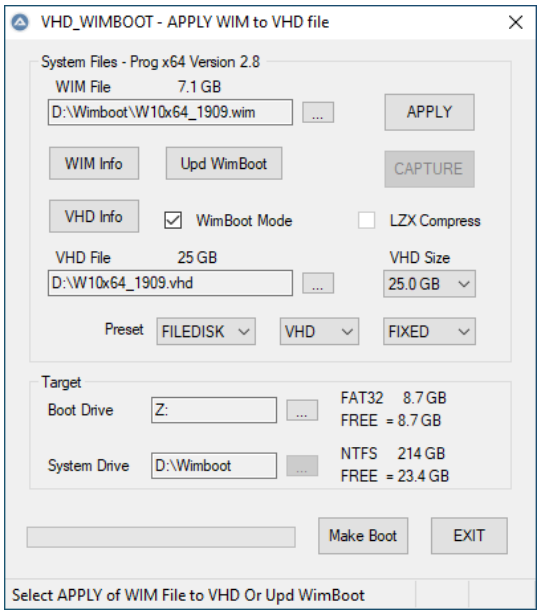
How to Boot VHD + WIM from Internal SSD and from USB Portable SSD as FILEDISK and with Grub4dos from RAMDISK

June 06, 2020

Download: VHD_WIMBOOT and WinNTSetup and wimb GitHub - More Info: VHD_WIMBOOT and Win10XPE and UEFI_MULTI

1. Use **WinNTSetup** to do **Fresh** Install of Win10x64 in 25 GB VHD located on Internal System Drive C: - use page 2 of this pdf **Manual**
2. Boot with Win10XPE Or other Win10 and use **VHD_WIMBOOT** to select System Drive C: and VHD File and use **CAPTURE** to make WIM File
3. Make USB Portable SSD as described below and Copy the Captured WIM File to **Wimboot** folder on NTFS System Drive of Portable SSD
4. Use VHD_WIMBOOT to **APPLY** that Captured WIM File to New Created Fixed VHD Size 25 GB on NTFS System Drive of Portable SSD
5. When Target Boot Drive is Selected, then APPLY will make VHD boot entry in Boot Manager Menu on FAT32 Boot Drive of Portable SSD
6. Reboot and use F8 menu to Boot in BIOS mode with Portable SSD and Select that New VHD from Boot Manager Menu and boot as FILEDISK
   Install of SVBus driver will FAIL when booting in UEFI mode with testsigning off as always occurs for Win 10x64 version 2004
7. BIOS mode Install of SVBus driver use R-mouse menu to Run as admin file **instx64.exe** of SVBus bin folder - Driver for booting RAMDISK
8 . After install of extra programs and Windows Update you can boot on various hardware to collect drivers
9. Boot normal and do CAPTURE and APPLY to regain Free Space Or APPLY to 3.9 GB Expand VHD for booting with Grub4dos from RAMDISK

The Button **WIM Info** will give useful info about your WIM file - wimboot compatible WIM File contains only Index 1
The Button **Upd WimBOOT** can be used after copy of VHD + WIM set to other NTFS drive to make the set bootable again
The Button **Make Boot** will make the boot entries on Target Boot Drive - FAT32 partition of USB Portable SSD as described below
- VHD boot entry in Boot Manager Menu for booting VHD as **FILEDISK** - in BIOS mode and in UEFI mode
- VHD boot entry in **Grub4dos** Menu for booting VHD from **RAMDISK** - in BIOS mode only and using SVBus driver
- Booting from USB with Portable SSD needs after BIOS beep to press F8 Or F11 to arrive at BIOS Boot Menu and then select your boot device
After Install of SVBus driver then UEFI booting requires in Boot Manager Menu to press F8 where you can allow unsigned drivers
When file **grldr.mbr** is Not found at Boot Drive, then **Make Boot** and **APPLY** will make Grub4dos entry in Boot Manager Menu on Boot Drive
LZX Compression can be used in CAPTURE to make WIM files of smaller size - **Switch Defender Off** for Faster Capture
Roughly with LZX the time to CAPTURE is doubled and the WIM Size is 30% smaller so that it saves for a 9 GB WIM file about 3 GB
An **Expandable** VHD will load much faster into RAMDISK, since only the space occupied by files of 600 MB needs to be loaded
It Expands then to the maximum **VHD Size** of 3.9 GB and gives the RAMDISK of that size a lot of FREE Space



In VHD_WIMBOOT the First Selection is the **System Drive**.
System Drive is NTFS partition for VHD + WIM Operating System files.
VHD **Capture** will make WIM file in Wimboot folder on System Drive.
WIM **Apply** will use WIM file to Install Windows on VHD file.
Boot Drive is FAT32 partition for Boot Manager and Grub4dos Boot files.
On Internal Harddisk the System Drive is Drive C: and the Boot drive is Hidden.
Run VHD_WIMBOOT_x64 so that Hidden Boot partition is mounted as drive Z:
On USB Portable SSD the Boot and System Drive are made as described below.
Win10XPE environment is advised for faster Capture of WIM file from VHD.
UEFI_MULTI is used to Add Win10XPE as Boot Option to your Internal SSD Or USB.
wimlib is used for Capture and Apply of wimboot compatible WIM files.
VHD Capture involves replacing Windows\System32\WimBootCompress.ini
in Captured WIM file by the WimBootCompress.ini file supplied in makebt folder.
[PrepopulateList] is used to Apply as real files in VHD instead of as WOF pointers.
Entries **\Boot\BCD** and **\bootmgr** in the [PrepopulateList] section are
needed to allow Grub4dos booting VHD from RAMDISK and so to avoid Error 13.

Make USB Portable SSD 250 GB - SAMSUNG Portable SSD T5 250 GB with UEFI/MBR Partitioning
- 1st partition 20 GB FAT32 Set Active used for Boot Manager and Grub4dos Boot files and 2nd partition NTFS used for VHD + WIM System files
1. In **Disk Management** remove existing exFat Volume and Create new partitions
2. MBR partitioning with 1st partition 20 GB FAT32 Set Active used as Boot Drive and 2nd partition NTFS used as System Drive
3. In **admin command** window run **DiskPart** - Instead of step 3 and 4 you can use VHD_WIMBOOT to Set Active the USB FAT32 Boot Drive
4. In DiskPart type **list volume** and **select volume** *<FAT32 volume nr>* and **active** and **exit**

BIOS mode booting requires Active partition with BOOTMGR bootsector
UEFI mode booting requires FAT32 partition with x64 file efi\boot\bootx64.efi Or x86 file efi\boot\bootia32.efi

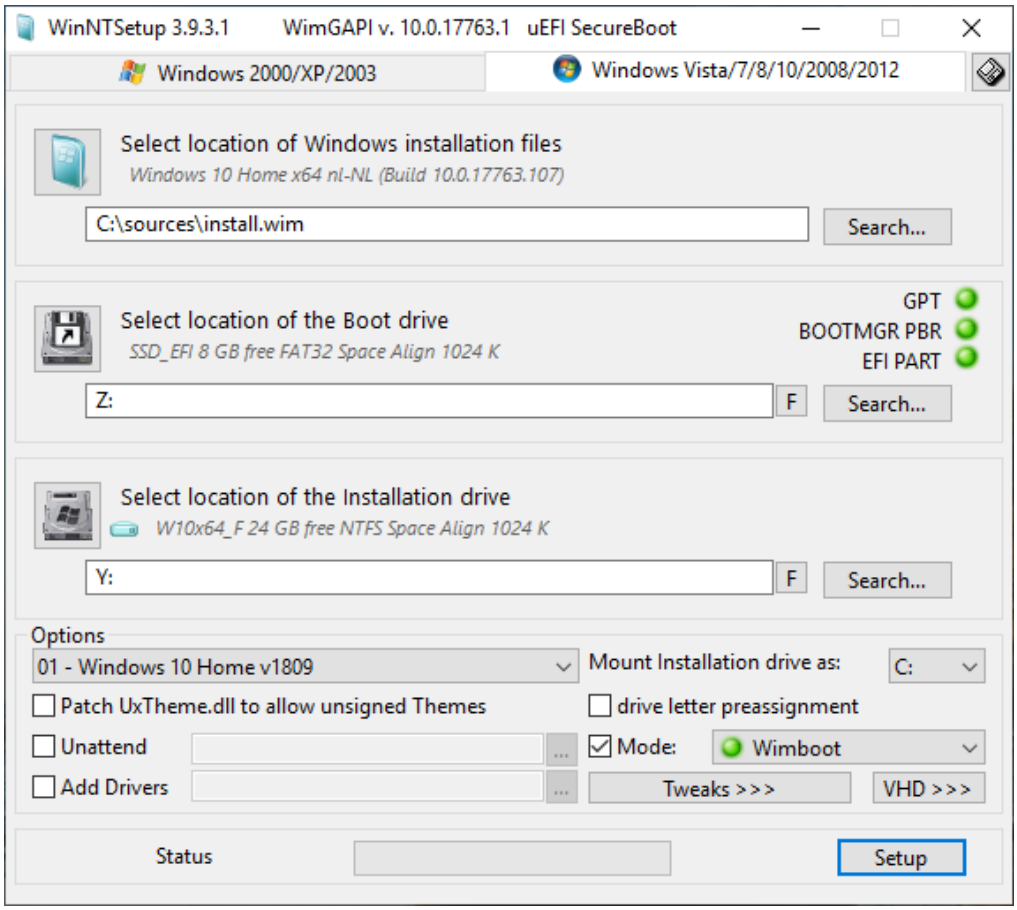
Step 1 is use WinNTSetup to do Fresh Install of Win10x64 in VHD located on Internal System Drive C:

Download Win10_1903_English_x64.iso Or Win10 x64 Setup ISO in your language from TechBench Or using Windows-ISO-Downloader Tool
Mount the ISO with double-click and Copy file **sources\install.wim** to folder **sources** created on your internal harddisk drive C:

Download WinNTSetup and run WinNTSetup_x64.exe for the first time to collect some Tools
Download BOOTICE v1.3.3.2 and Add file BOOTICEx64.exe to the Tools\x64 folder

Create W10x64_F.vhd using WinNTSetup x64 for Install of Win10 x64 in 25 GB Fixed VHD

1. Start up with Windows 10 x64 Or 10XPE and Start WinNTSetup x64
2. Use VHD Create and make file **W10x64_F.vhd** Size 25 GB Fixed VHD on internal hard disk NTFS partition drive C:
3. Select EFI Boot Drive (Z :) and Installation Drive (Y: Mounted VHD) for Win10x64 Installation
4. Select location Windows Installation files - Select your sources\install.wim file
5. Choose Win10 Edition e.g. Home or Professional and Select Tweaks **Disable Hibernate**
6. Select Setup and prepare VHD for installation of Win10x64 - choose OK and not Reboot
7. Run BOOTICEx64.exe from Upper Right Icon - Choose BCD of current system file Z:\efi\microsoft\boot
8. Professional mode - Choose Windows 10 (VHD) entry - **BootMenuPolicy** set value **Legacy**
9. Use R-mouse to create New element - **AllowPrereleaseSignatures** - Yes - only needed for SVBus driver for booting from RAMDISK
10. Reboot and install Win10x64 in VHD with Offline Account and Install missing drivers using MotherBoard driver CD
11. If not done set **Hibernate Off** - in admin command window type: **powercfg -h off**
12. After Restart Install 7-zip using file 7z1900-x64.exe
    In 7-zip File Manager menu Tools > Options - select file associations, such as zip 7z rar wim
13. Install Updates and Programs such as Office, VLC player for DVD support
14. Connect Printer and after auto Installation Set as Default Printer
15. Disable LAN Network Adapter and Disable Connect Automatically WiFi for protection and Reboot computer
16. Start > Windows System > Configuration > System > Advanced system > Settings > Startup
    Select as **Standardsystem** your normal Windows 10 and **Reboot** computer

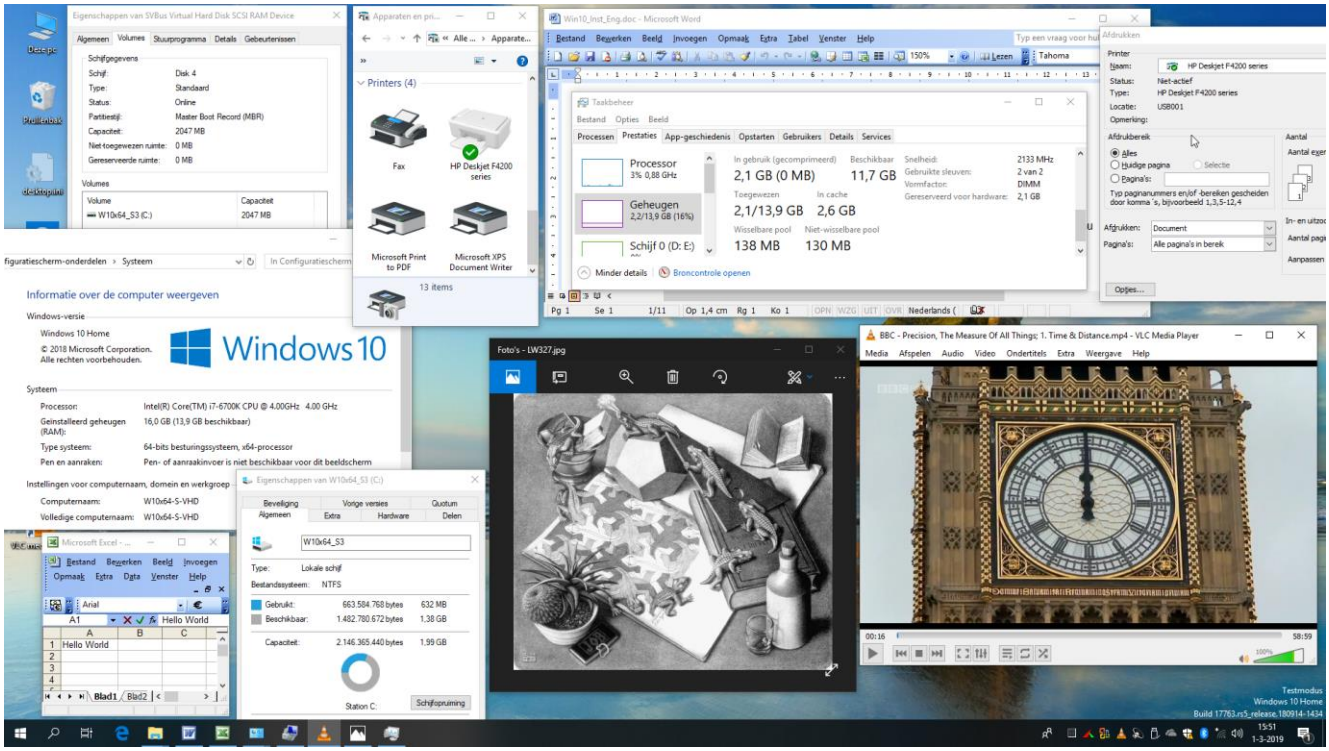


VHD_WIMBOOT - Apply and Capture of WIM Files for OS in VHD - Background Info and Details

APPLY of WIM File in wimboot mode to VHD gives Operating System with only variable and boot essential files total about 1 GB in VHD.
The VHD contains also pointers to the non variable files in the WIM archive, so that it seems that the complete OS is present in the VHD.
The VHD content can be generated in 2 minutes from the WIM archive of about 9 GB, so that a backup of the system is always available.
The VHD + WIM set can be copied to any drive so that we have a portable Operating System (needs to use supplied WimBootCompress.ini).
The WIM file cannot be changed by viruses or other malware so that the system is reliable and if needed it is easy to generate new VHD.
The VHD can boot as 25 GB FILEDISK from Portable SSD to allow changes, but also booting always Fresh from 3.9 GB RAMDISK is possible.
Grub4dos booting from RAMDISK requires VHD file, since VHDX files are Not compatible with Grub4dos.
WIMBOOT needs wof.sys driver present in Win 10 and 8.1 Or the wofadk.sys driver as installed by WinNTSetup in Windows 7.
Boot Manager files of Windows 7 cannot be used for booting VHD as WIMBOOT and VHDX files cannot be used in Windows PE Or 7 OS.
WinNTSetup 4.0 Menu > Local Windows Installations allows to Capture WIM of a running Windows System using WIMLIB Engine.
WimBootCompress.ini file cannot be modified in this case, which is needed for APPLY as Portable OS Or for Grub4dos booting from RAMDISK.
Microsoft WimGAPI tool cannot be used as Engine, since it will make mistakes in uncompressing drivers needed for Portable Operating System.
VHD WIMBOOT has support for Office and Printer and any program can be installed, which is all not possible in case of WinPE
In case of VHD WIMBOOT on each machine it takes extra boottime and space to adjust the drivers for that machine
The VHD WIMBOOT solution is Portable, but not as flexible as Win10XPE, where boottime is not dependant on machine hardware
File **makebt\WimBootCompress-W10X.ini** gives minimal used space for VHD, but Portable OS requires the supplied WimBootCompress.ini

Add 25 GB Fixed VHD as personalised UEFI VHD WIMBOOT Operating System to your Internal SSD
- In Windows 10 x64 Or 10XPE run VHD_WIMBOOT_x64 so that Hidden EFI partition is in VHD_WIMBOOT Selectable as Boot drive Z:
- Or use R-mouse to open **admin cmd** window and mount the EFI partition using **mountvol Z: /s**
- You can use R-mouse menu to **run as administrator** Explorer-x64.exe of Explorer++ for file management on EFI partition
- Use VHD_WIMBOOT to **APPLY** Captured WIM File to New Created VHD Fixed Size 25 GB on NTFS System Drive of Internal SSD
- In case of UEFI VHD WIMBOOT it is better that SVBus driver is NOT installed, since otherwise F8 menu is needed to allow unsigned drivers
- Boot 25 GB VHD as Filedisk from UEFI Boot Manager Menu and Switch to Microsoft Account for personalisation
- Make Links for Documents, Downloads and Pictures to folders elsewhere on Harddisk partition

More Info: VHD_WIMBOOT and UEFI_MULTI Win10XPE and given by **alacran** in WIMBOOT Topic and Compression and RAMBOOT Topic
More Info: WinCmd and bcdedit and bcdboot and bootsect and DiskPart en DISM and Win10_Inst_Eng.pdf and VHDX and Native Boot
Final Result - Windows 10 x64 in VHD booting from RAMDISK by using Grub4dos menu and SVBus driver



How to make Win10XPE WIM file for booting from RAMDISK

Download: Win10XPE Builder - More Info: Win10XPE and Quick Guide and UEFI_MULTI

Download Win10_1803_English_x64.iso or recent ISO from TechBench Or using Windows-ISO-Downloader Tool

Mount the ISO using double-click and **Copy** the content to Folder **Win10_1803_English_x64** on your Harddisk

In WinBuilder > Build Core > Select **Run ALL Programs From RAM** to get WIM file with all Programs integrated

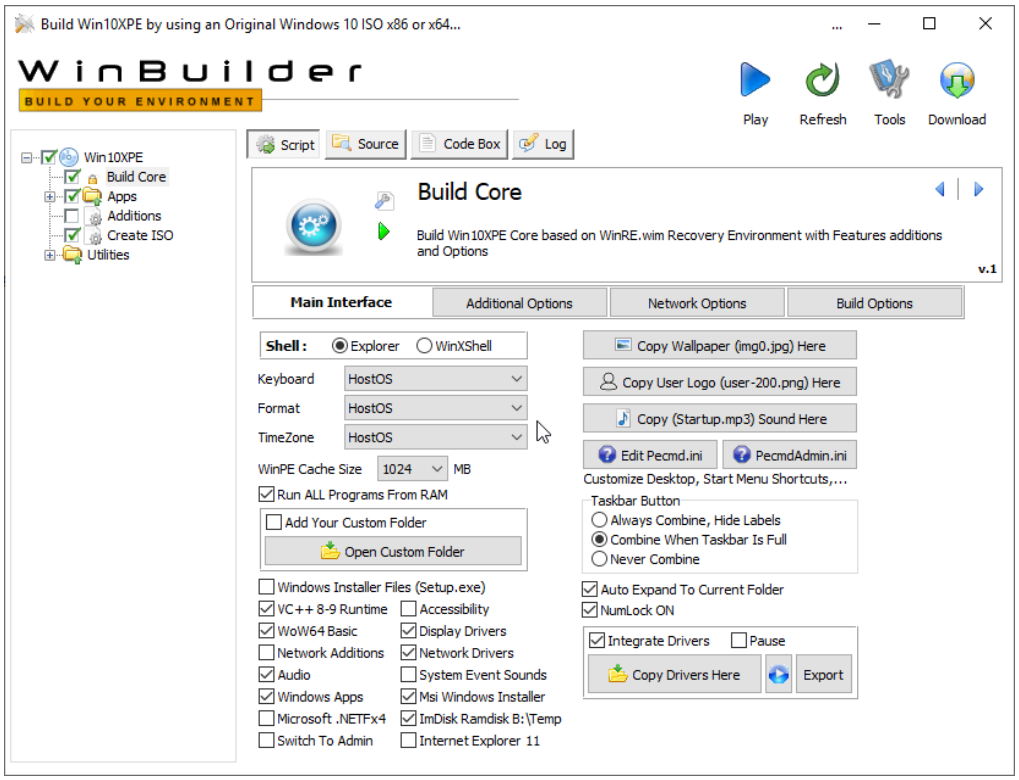
In WinBuilder > Apps > System Tools DeSelect XPE Startup (when Selected build fails)

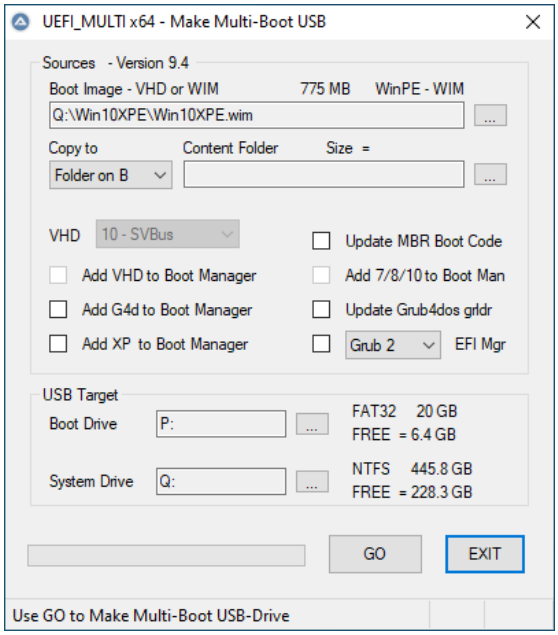
In WinBuilder Select the Folder Win10_1803_English_x64 on your Harddisk and Start building with **Play** button

Copy Win10XPE\ISO\sources\boot.wim and Win10XPE\boot\boot.sdi files to folder Win10XPE on FAT32 USB-Stick 32 GB Or Portable SSD

Use UEFI_MULTI to make USB bootable with Boot Manager entry for the Win10XPE\Win10XPE.wim or other PE boot.wim File

More Info: Win10_Inst_Eng.pdf Manual in Forums MSFN and Reboot.pro and UEFI_MULTI





Next 3 Pages is Old description NOT needed to be used anymore !!

wimlib-clc can be used to CAPTURE Wimboot Image File from Mounted VHD

Download wimlib-clc and wimlib 64-bit - Extract wimlib to x64 folder of wimlib-clc so that Program is auto recognized

From Mounted W10x64_F.vhd file, browse to it's Windows\system32 folder and copy file WimBootCompress.ini to wimlib-clc folder.

Rename WimBootCompress.ini as WimBootCompress_BCD.ini and Edit this new ini file as follows:

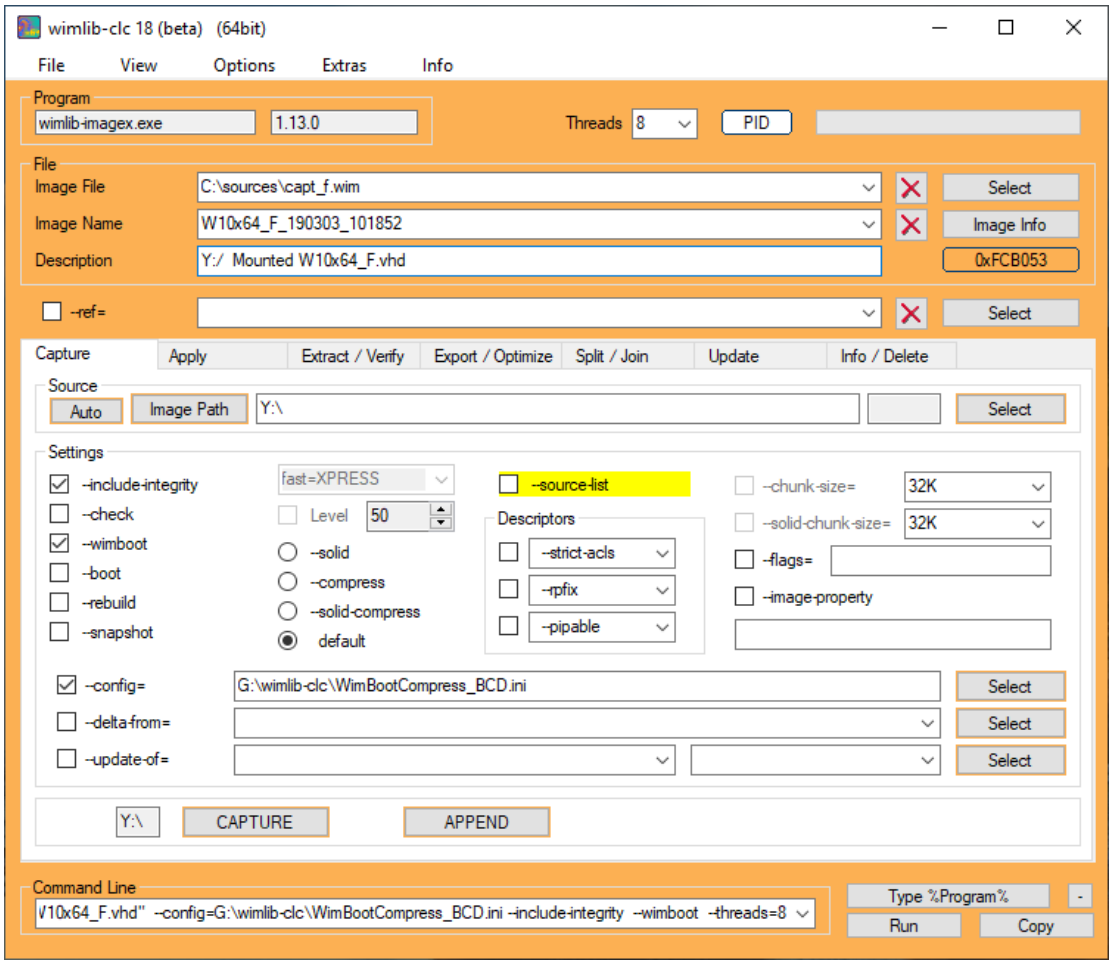
- Add entries **\Boot\BCD** and **\bootmgr** to the **[PrepopulateList]** so that these files are copied as file instead of as pointers
- Remove or disable with ; the **[PinningFolderList]** since it will give wimlib WARNING Unrecognized Section, which is safe to ignore

The modified WimBootCompress_BCD.ini file is needed to allow Grub4dos booting VHD from RAMDISK and so to avoid Error 13

In Win10 x64 OS Run **wimlib-clc** and Select Image file C:\sources\capt_f.wim using Mounted W10x64_F.vhd as Source Y:\

Select **--wimboot** and Select custom WimBootCompress_BCD.ini file Selected as **--config**

Select **CAPTURE** to make sources\capt_f.wim Image file from Mounted W10x64_F.vhd



Download UEFI_MULTI Tool to make USB Bootable from Boot Manager menu with VHD file in BIOS and UEFI Secure mode

UEFI_MULTI can make Grub4dos menu entry for VHD booting with SVBus driver as FILEDISK or as RAMDISK

UEFI_MULTI makes entry in Windows Boot Manager for booting VHD as FILEDISK using Microsoft vhdmp.sys driver

Make Portable SSD 250 GB - SAMSUNG Portable SSD T5 250 GB with UEFI/MBR Partitioning

- 1st partition 20 GB FAT32 Set Active for Boot Manager and Grub4dos Boot files and 2nd partition NTFS for VHD + WIM System files

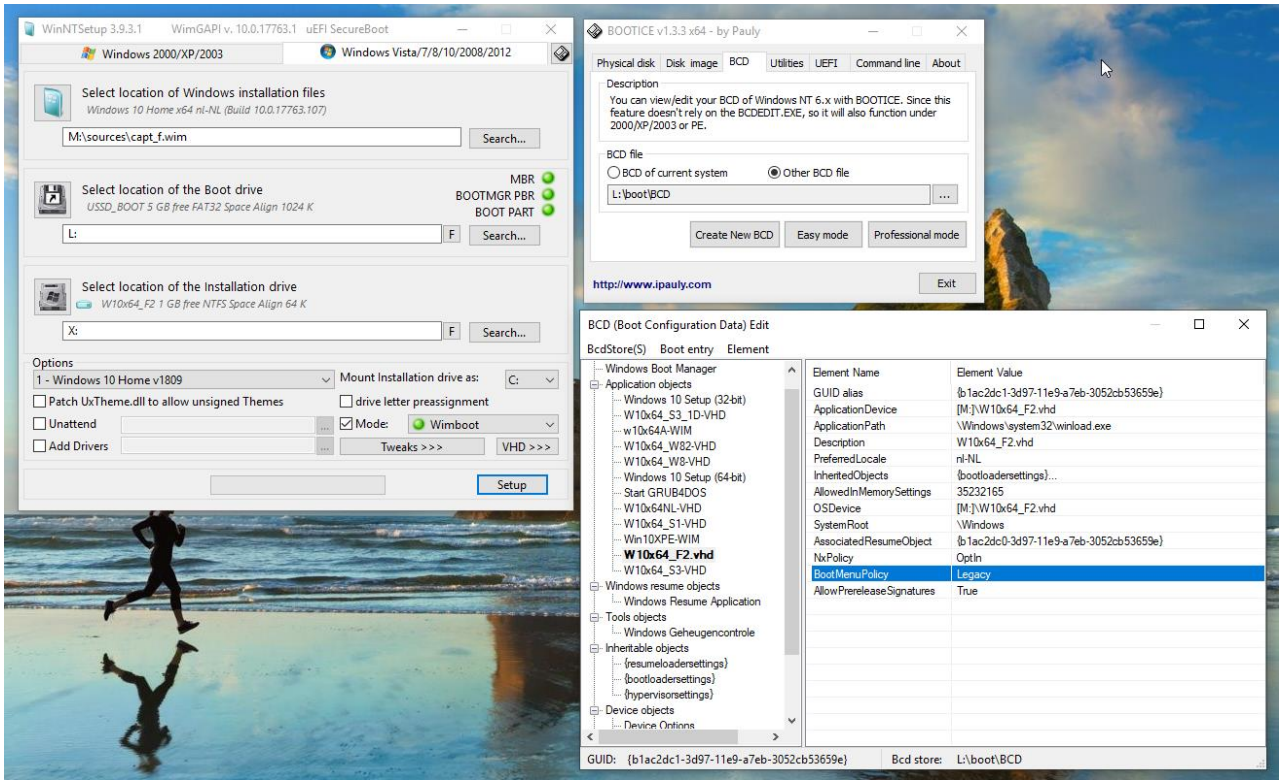
1. In **Disk Management** remove existing exFat Volume and Create new partitions
2. MBR partitioning with 1st partition 20 GB FAT32 Set Active and 2nd partition NTFS
3. In **admin command** window run **DiskPart**
4. In DiskPart type **list volume** and **select volume** *<FAT32 volume nr>* and **active** and **exit**

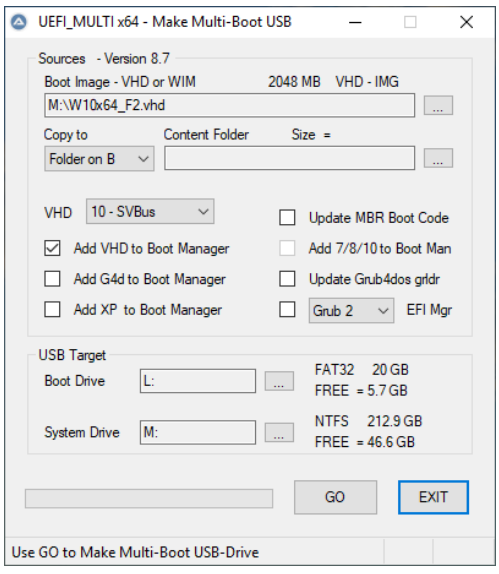
BIOS mode booting requires Active partition with BOOTMGR bootsector

UEFI mode booting requires FAT32 partition with x64 file efi\boot\bootx64.efi Or x86 file efi\boot\bootia32.efi

Use WinNTSetup to Create 2GB VHD on NTFS drive of Portable SSD and Apply Captured WIM file with Setup

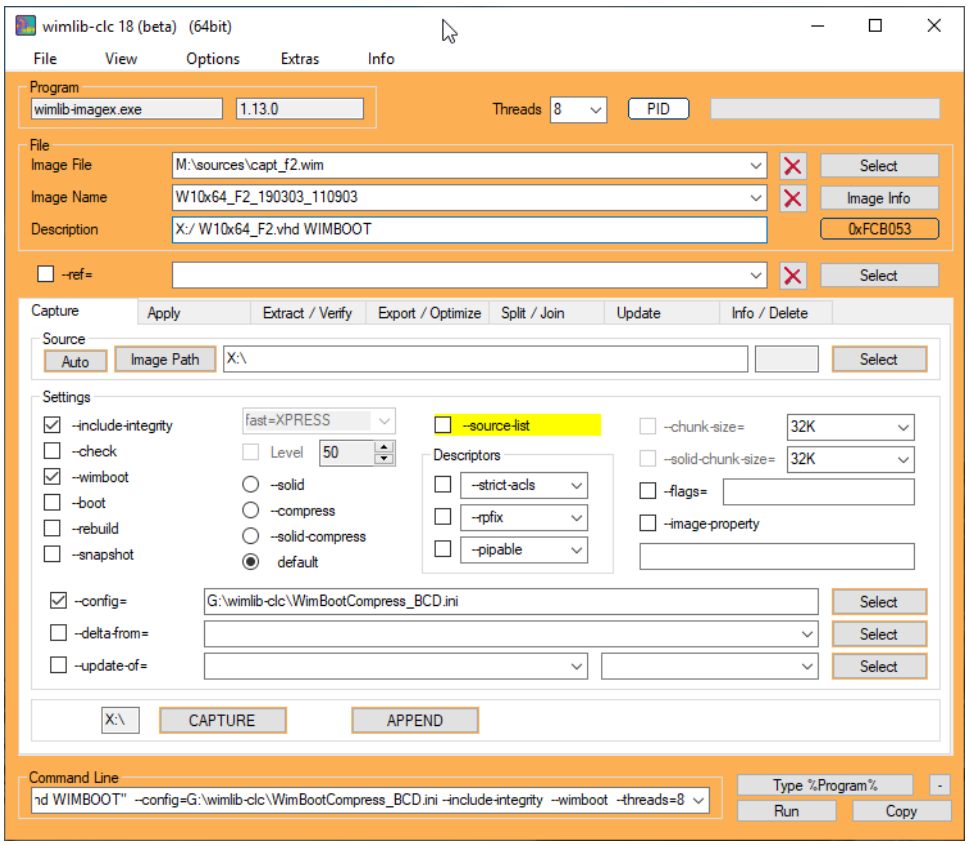
1. Copy file **capt_f.wim** to folder sources on NTFS drive of Portable SSD connected to USB
2. Start WinNTSetup x64 and use VHD Create to make 2GB file **W10x64_F2.vhd** on NTFS partition of Portable SSD
3. Select USB Boot Drive and Installation Drive (X: Mounted VHD) for Win10x64 Installation
4. Select location Windows Installation files - Select your **sources\capt_f.wim** file on USB
5. Select Mode **Wimboot** and Disable All **Tweaks** since the Capture contains them already
6. Select **Setup** and prepare VHD for installation of Win10x64 - choose OK and not Reboot
7. Run **BOOTICEx64.exe** - Choose Boot\BCD on USB Boot Drive
8. Professional mode - Choose Windows 10 (WimBoot) entry - use Description **W10x64_F2.vhd** and **BootMenuPolicy** set value **Legacy**
9. Use R-mouse to create New element - **AllowPrereleaseSignatures** - Yes - needed for SVBus driver
10. Reboot from USB with **W10x64_F2.vhd** from Boot Manager Menu
11. After booting with VHD then use R-mouse menu to Run as admin file **instx64.exe** of SVBus bin folder to install the driver
12. Reboot with Win10 x64 OS and use UEFI_MULTI to make Grub4dos menu entry for booting VHD WIMBOOT as RAMDISK
13. Reboot from USB and Select in Grub4dos menu your WIMBOOT VHD for booting from RAMDISK





After install of extra programs or after adding drivers of other machines, it will be needed to regain **FREE Size** in your VHD
CAPTURE - Format - APPLY carried out on mounted VHD results quickly in the original free space, since all file data go in the WIM file

Reboot with Win10 x64 OS and use wimlib-clc to **CAPTURE** Image file capt_f2.wim from Mounted W10x64_F2.vhd Selected as Source



After **Format** of Mounted W10x64_F2.vhd as Selected Target, then **APPLY** capt_f2.wim Image file using **--wimboot** flag