Windows 11 PE Audiophile Creation Guide

by samotc

Introduction

I.Tools that we will need:

Win10XPE App

https://github.com/ChrisRfr/Win10XPE https://sourceforge.net/projects/win10xpe/ https://www.tenforums.com/software-apps/182581-win10xpe-build-yourown-rescue-media-2-a.html

Win10PE Strelec:

https://mega.nz/file/E9d1gALR#87OpVpOgZuBQ8dri-c-NTcgliBkgexgEK7oxVpH_Hbl

Bootice Dism++ Remote Registry Ultraiso WinNTsetup

(all of them contained in win10 PE Strelec)

RegistryChangesView v1.28

https://www.nirsoft.net/utils/registry changes view.html

II. Implementation sequence:

Basic Win11XPE creation (.ISO file)

ISO ---> USB pendrive (check that it starts and works fine)

Win11XPE "flatboot" installation

Application boot.wim image from ISO file to VHD / USB Pen

Copy ISO boot files to VHD / USB Pen

Add VHD boot to system BCD and check that it boots and works.

Drivers and applications install

Registry Export-Import

Boot VHD / USB Pen and check that everything works

System refinement (disable network if not needed, processes and services

removal and clean, according to your needs).

Boot VHD to check functionality.

Mount VHD and save new boot.wim image with Dism ++

Open basic .ISO file with Ultraiso.

Change basic boot.wim to the new one created with Dism ++

ISO ---> USB pendrive (check that it starts and works fine)

Done.

1. Basic Win11XPE creation (.ISO file)

Download the file **Win10XPE_2021-10-27.7z** from any of the links provided in tools section, and unzip it in a folder. It should look like this:



Here we can see the file Win10XPE - How To Quick Start Guide.pdf highlighted, which can be consulted to learn more about the subject. Select Win10XPE.exe and double click to run It will show like this:

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Win 10XPE	Script 🖳 Source 📄 Code Box	Play Refresh Tool
Build Core Basic Build Apps Additions Create ISO Duild Utilities	Win10XPE Win10XPE Build Win10XPE by using an Original Windo The build is based on the Winre.wim recover	wis 10, Windows 11 ISO x86 or x64 ery environment.
	Hount Windows 10, 11 ISO or Extract the ISO in a Folder Select the Windows 10, 11 Source Folder No Need To Use The Source Tab, Source Directory Chones Image	
	6 - Windows 11 Pro	Support Win10XPE Dev
	EditionID Professional Version 10.0.22000.194 Buld 22000 Architecture x64 Language ex-55 FellBack Language en-U5	United Support Log
	Check Building Building The Bin Blue Arrow (Blast) Butter Or	

Select Win10XPE box

Now we must mount the file.iso according to windows version/edition we

want to load (Win11 or Win10)



Once source is selected, press the button "Select the Windows 10, 11 folder". Now the program performs a bunch of tasks to prepare the necessary Windows 11 or 10 file upload. Highlight Build Core in the left panel, and then select Main Interface in the right panel. It should show this:

Image: Source intervention of the second	Build Win10XPE by using an Original W WinBuild Course	ndows 10 ISO x86 or x64 Ҽ ſ					2	□ ×
Main Interface Additional Options Network Options Build Options Shell :		Script Source Code I	Box Song Log Core OXPE Core based of	n WinRE.wim Recovery	r Environment with Fe	Play R	efresh ons and	Tools
Mundows Apps Mike Windows Installer Microsoft .NETFx4 ∏Imbik Randisk B;Temp Add Host Net Drivers		Frain Interface Add Shell : • Explorer WinXSh Keyboard HostOS Format HostOS TimeZone HostOS WinPE Cache Size 1024 //>MB Run ALL Programs From RAM Add Your Custom Folder Windows Installer Files (Setup.exe VC++ 8-9 Runtime Accessibility Wolf-6 Basic Display Dri Network Additions Network D Audio System Ev Windows Apps Msi Windo Mindows Apt Msi Windo Mindows Apps Msi Windo Mindows Apps Msi Windo	ell	Copy Wallpape Copy User Logo Copy User Logo Copy (Startup Copy (Startup Coby Containe), F Combine When Tas Never Combine Autays Combine Autays Combine Autays Combine Integrate Drivers Copy Drivers H Add Host Net Drive	anns Bi ar (img0.jpg) Here (user-200.png) Here (

Check the boxes of your interest, here shows checked the ones I selected for my project. I'm trying to be as minimalist as possible, because in sound stuff "less is more". In "Shell" WinXShell takes up less than explorer.

If you want to integrate drivers, check "integrate drivers" and then click "Copy Drivers Here". They must be in .inf format, setup.exe is not supported.

I don't use it because it doesn't support exact drivers for my DACs or my NVIDIA graphics card.

Anyway, I only install the Windows Display Basic Drivers because they need fewer resources, processes and services, and I think they are enough for an only audio system.

Anybody who wants to change the default wallpaper, can do it by clicking the "Copy Wallpaper (img0.jpg) Here" button. Any image file you choose must be renamed to img0.jpg.

Same with "Copy User Logon" (file "user-200.png") and "Copy (Startup.mp3) Here".

As for "Edit pecmd.ini" and "PecmdAdmin.ini", it is not necessary to configure them now, it can be done later, so it will be explained later too, since it will be easier to see the changes according to our modifications in those .ini files. Checking "Msi Windows Installer" may be necessary for the installation of some drivers / applications. Finally, check the box "Run All Programs for RAM", as this is the most interesting thing about Windows PE, it is able to run applications in RAM, specially audio ones.

Once the options we wanted have been established in the Main Interface, we display "Additional Options" by clicking on that button. This screen should show:

	CIEL Script 🔍 Source 📄 Code Box 🧭 Log	Play Refresh	Tools
Build Core Baic Build Greate Build Greate ISO Greate ISO Create ISO Greate ISO	Build Core Build Win 10XPE Core based Options	on WinRE.wim Recovery Environment with Features additions an	▶ d v.:
	Main Interface Additional Options Display Computer on Desktop Explorer Dark Theme Theme Shortcut Theme Shortcut Display Computer on Desktop Explorer Dark Theme Theme Shortcut Theme Shortcut Display Computer on Desktop Explorer Show Ribbon Auto Hide The Taskbar Show Touch Keyboard Button StarttsBack Skin: Windows 7 Opaque StarttsBack Display as Flyout Henu Fit Walpaper: Fit	Network Options Build Options Power Options On Battery Plugged In Turn Off Display (Minutes): 10 0 0 Turn Off Hard Disk (Minutes): 20 0 0 0 Disable USB Selective Suspend: 0 0 0 Administrator Name Administrator Ask to Switch to Administrator for 5 Sec Sec	
	Window Title Bars Color: 9 Have 1 Aub 2 3 4 5 7 9 Have 1 Aub 2 3 4 5 7 1 4 5 8 1 4 5	System Volume At Startup: 33 (*) Mute The System Volume At Startup Computer Name Ocustom Name Win10XPE-??++	

Choose the options that suit you best, that you need, by checking corresponding boxes. In "Project Name" put the name you want or more suitable for you. After this, we go to "Network Options" by pressing the corresponding button:



I didn't check anything, because I choose not to have network connection, I don't need it, and I think it would add "noise" to the audio, but that's my opinion.

Anyway, the network is installed by default, so this is only to customize the "PENetwork" and "Windows IExplorer" settings.



I left the checked default options. To obtain more information, you can check the pdf with the Guide in program folder.

Now is the time to highlight the "Apps" box on the left panel and display/expand them by clicking on the + sign on the left. This allows us to browse the apps and choose the ones we want to install.



Due to my minimalist endeavor, I only installed XPE Startup, which adds XPEStartup.cmd and XPEstartup.ini to the root of the USB unit, allowing you to customize some tasks without having to rebuild the project.

After install your chosen apps, we only have to check the "Create ISO" box on the left panel. I will not talk about "Tweaks" and "Utilities" boxes as they are not necessary for my purpose at hand.

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⊡⊽o Win 10XPE	🍪 Script 🖳 Source	e 📄 Code Box 🧭 I	Log		^{Fle} Run the sele	cted project
	@	Build Core Build Win 10XPE Core b	ased on Wir	nRE.wim Recovery Environme	nt with Features additions and	I Options
File Tasks	Main Interface	Additional Opt	tions	Network Options	Build Options	
AgentRansack Everything Q-Dir Q-Dir Q-Dir Q-Dir HW Info WultiMedia V.C Media Player V.C Media Player V.C Media Player V.C Media Player V.C Media Player V.C Media Player Recovery Recovery Registry System Tools Recovery System Tools Servitiv Vic System Tools Servitiv Vic System Tools Servitiv Vic Startup VersionTabXP	Buld type Full Winre.wim Full Winre.wim with Use this ListFiles Add All Win 10 Catali Add All National Lan Add All Keyboards Delete Speech Fold Delete SysWOW641 Delete Edge Web Pk Delete WMI Reposit	h light WinSxS (default) Edit ListFiles here ogs guage Support (NLS) Files er in Builds Without 'Access Folder in x64 Builds Withou ateform ory folder	Use F	ull Win 10 Software hive rch in Target and ISO Folders DrvInst.exe Controller.dll to Get the Crec h Remote Desktop and Switch rre lassic' Feature	: Names lentials Window to Admin Enabled	

And finally, we only have to press the "play" button, blue arrow head, and see how the application is building our Win11 or 10, basic XPE, which takes several minutes. Created iso is saved in Win10XPE folder.

Now we have created a basic Win11PE.iso that will boot both in MBR and UEFI, it's time to take the next step, create a bootable USB pendrive to verify that the project works.

2. Creation of the Bootable USB Pendrive Win11XPE Basic

Objective is to verify that the startup and operation of our Win11XPE are correct, before continuing with the tasks that we have pending.

I have used Rufus 3.15, there are other tools, but this is the one I know best.

We have 2 options: MBR / BIOS UEFI (CSM), which will work on most PCs, or GPT UEFI, which will only boot on UEFI systems.

🖋 Rufus 3.15.1812		×	🖋 Rufus 3.15.1812	- 0	×
Drive Properties —			Drive Properties		
Pevice			Device		
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Boot selection			Boot selection		(CL)
Win11XPE_x64.ISO	V SELECT	-	Win11XPE_x64.ISO	✓ Ø SELECT	-
Partition scheme	Target system		Partition scheme	Target system	-
MBR ~	BIOS (or UEFI-CSM)	~ ?	GPT ~	UEFI (non CSM)	~
 Hide advanced drive properties 			 Hide advanced drive properties 		
List USB Hard Drives			List USB Hard Drives		
Add fixes for old BIOSes (extra partition	n, align, etc.)		Add fixes for old BIOSes (extra partition	, align, etc.)	
Use Rufus MBR with BIOS ID	0x80 (Default)	~	Use Rufus MBR with BIOS ID	0x80 (Default)	
Format Options					
Format Options ——			Format Options		
Volume label			Volume label		
WINTUXPE_X64			Win10XPE_x64		
File system	Cluster size	_	File system	Cluster size	
NTFS	4096 bytes (Default)	~	FAT32 ~	4096 bytes (Default)	~
 Hide advanced format options 			 Hide advanced format options 		
Quick format			Quick format		
Create extended label and icon files			Create extended label and icon files		
Check device for bad blocks	1 pass	~	Check device for bad blocks	1 pass	~
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1 device found			1 device found		

Make your choice, then press "SELECT" button and select the .iso file corresponding to our newly created Win11XPE, then press "START" and wait for the program to copy the files contained in the Win11XPE.iso to the USB Pendrive.

Once this is done, boot your PC from USB Pendrive.

If boot works, we are ready to create the VHD, mandatory for the next step.

3. Win11 XPE Flatboot Installation

Windows PE usually boots from a boot.sdi file that loads boot.wim and creates an **X: drive in RAM** and works from there.

This means that every modification we make to the system, adding or changing files, installing applications, drivers, etc., will be lost when it is turned off; as well as changes made to the registry or configuration. To avoid this, this is why the flatboot installation is necessary A **flatboot installation** consists of Windows located on the X: drive, running from HD, that is, it is not loaded into RAM.

In fact, any Windows PE needs at least 2 GB of RAM to work, while in flatboot mode it only needs 512 MB.

This installation mode preserves the new files introduced into the system, which are not lost on the next restart, and allows the installation of new drivers and applications. The only downside is that the Windows PE registry is volatile by Microsoft's design, and any changes made to it ARE LOST on the next reboot.

In any case, this problem will be easily solved as we will explain later.

a. VHD Creation:

The first step is to create a VHD where to install the Wi11XPE, this can be done through the bootpart commandline, diskmgr.msc, or through an application, **WinNTSetup**, (<u>https://msfn.org/board/topic/149612-</u><u>winntsetup-v512/</u>) which is an easier and faster way to do it. We start by executing WinNTSetup, appearing the following screen:



We click on "VHD >>>" and select "Create": Now we will see the following screen:



Now we select the size of the VHD, location, and partition style (MBR, MBR-BIOS / UEFI or only UEFI) as it suits us.

A fixed size of 3GB is enough for our purpose.

We click "OK" and then this will appear:



We already have the VHD created and mounted, ready to use and take the next step.

b. Application boot.wim image from ISO file to VHD

We previously mounted the Win11XPE.iso image, boot.wim localized into folder sources. We can do it through the command "**dism.exe**", typing "Dism /apply-image /imagefile:boot.wim /index: 1 /ApplyDir: Z:\" putting the full path to boot.wim file, and where Z: is the letter corresponding to the drive of the VHD created earlier.

Another easier way is to use the **Dism ++** app, contained in Windows PE Strelec, or it can be downloaded from here: <u>https://www.chuyu.me/es/index.html</u>

💑 Modo experto-Dism++x64 10.1.1	002.1 Bios Firmware	– – ×
Archivo Recuperar Opciones A	yuda	
*Windows Server 2019 Standard x64 C: Disco local Listo	Windows PE 10.0.22000.1 x64 Z: VHD montado Compactar Esto	
	Abrir sesión	
IMPORTANT:		
Activate "expe	ert mode" (options >> more options >	>> expert mode)

Run DISM ++, you will see the following:

Click on **open session** and then go to menu> file> apply image, it should look like this:

chivo Recuperar Opciones	Ayuda					
Aplicar imagen	Ctrl+N	/s PE 10.0.22000.1 x64				
Montar imagen	Ctrl+Mayús+N					
Añadir ruta		ontado Compactar				
Abrir archivo de imagen	Ctrl+O	-				
Guardar imagen	Ctrl+S					
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Recargar		Contacto				
Cancelar tarea	Ctrl+C	Sitio oficial	Grupos oficiales	Correo electrónico		
Controladores						
Programas y características		Soporte				
Características opcionales		Código abierto	Comentarios	Ayuda		
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Click on **apply image**, this will appear:

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Optimizador del sistema Dotado 2/11/2021 21:3:302 Controladores Espado extendido 2/1 GB Programas y características Destino: 11: Windows PE 10.0.22000.104 Características opcionales L: (sources (boot. wim Buscar L: (sources (boot. wim Buscar Introduct la ruta de la instalación de la imagen. Por ejemplo, C:\ Buscar Configurar WinPE WIMBoot Compactar mplementación Aceptar Cancelar	Optimizador del sistema 20/11/2021 2135002 Controladores 2/11 68 Programas y características Destino: Características opcionales 1: Windows PE 10.0.22000.1(inidable) Actualizaciones Introducir la ruta de la instalación de la imagen. Por ejemplo, C:\ Región e idioma WiMBoot Configurar WinPE Aceptar Cancelar Mindows ToGo	anel de control	Arquitectura	x64	
Controladores Programas y características Características opcionales Actualizaciones Región e idioma Configurar WinPE Implementación Asociaciones predeter.	Controladores Programas y características Ceracterísticas opcionales Actualizaciones Región e idioma Configurar WinPE Implementación Asociaciones predeter.	Ontimizador del sistema	Creado Essenia entreadida	20/11/2021 21:36:02	
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Características opcionales Actualizaciones Región e idioma Configurar WinPE mplementación Asociaciones predeter.	Características opcionales Actualizaciones Región e idioma Configurar WinPE mplementación Associaciones predeter.	Programas y características	Destino:	1: Windows PE 10.0.22000.1(Iniciable)	
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Región e idioma Introducir la ruta de la instalación de la imagen. Por ejemplo, C:\ V Buscar Configurar WinPE WIMBoot Compactar WindowsToGo Añadir inicio Formato Implementación Acceptar Cancelar	Región e idioma Introducir la ruta de la instalación de la imagen. Por ejemplo, C:\ Buscar Configurar WinPE WIMBoot Compactar WindowsToGo Añadir inicio Formato Implementación Acceptar Cancelar	Actualizaciones			
Región e idioma Configurar WinPE Implementación Asociaciones predeter.	Región e idioma Configurar WinPE Implementación Asociaciones predeter.		Introducir la ruta de la	instalación de la imagen. Por ejemplo, C:\ 🗸 Buscar	
Configurar WinPE Implementación Asociaciones predeter.	Configurar WinPE Implementación Asociaciones predeter.	Región e idioma	WIMBoot	Compactar WindowsToGo Añadir inicio Formato	
Asociaciones predeter.	Implementación Aceptar Cancelar	Configurar WinPE			
Asociaciones predeter.	Asociaciones predeter.			Aceptar Cancelar	
Asociaciones predeter.	Asociaciones predeter.	nplementación			
Asociaciones predeter.		Associaciones predeter			
		Asociaciones predeten.			
Pre-respuesta	Pre-respuesta	Pre-respuesta			

Now you should enter the **full path** to the boot.wim file of the mounted iso, in the case of the screenshot "L:\sources\boot.wim".

Then you must find the target where this image is going to be applied, the letter of the mounted VHD drive (in this case Z:\)

Vindows Server 2019 Standard x64	Windows PE 10.0	.22000.1 x64							
sco local	VHD montado C	ompactar							
sto	Listo								
Utilidades	Aplicar imagen-Máxim	10					×		
Limpiar disco	Nombre	Valor					^		
Inicio	Nombre de imagen	Windows	PE 10.0.22000.1						
	Descripción de imagen	Windows	PE 10.0.22000.1						
Apps de Microsoft Store	Nombre a mostrar	Windows	PE 10.0.22000.1						
Herramientas	Descripción en pantalla	Windows	PE 10.0.22000.1						
	Edición	Windows	PE						
anel de control	Arquitectura	x64							
	Creado	20/11/20	21 21:36:02						
Optimizador del sistema	Espacio extendido	2,71 GB							
Controladores	Varción da SO	10 0 220	n 104						
Programas y características	Destino:	1: Windows PE 10	.0.22000.1(Iniciable)				~		
Características opcionales	L:\sources\boot.wim	(~	Buscar			
Actualizaciones	Z:\				~	Buscar			
Región e idioma	WIMBoot	Compactar				Formato			
Configurar WinPE		✓] compactar	windows1000			ormato	_		
Implementación				Acept	ar	Cancelar			
10 10 10 10 10 10 10 10 10 10 10 10 10 1	·								
Asociaciones predeter.									
Pre-respuesta									
Pre-respuesta									

Finally check the compact checkbox and press Accept button.

c. Copy boot files ISO to VHD

Copy boot and efi folders, and the BOOTMGR, bootmgr.efi, bootmgr.exe files.

DO NOT COPY, CDUsb.y, XPEStartup.cmd, or XPEStartup.ini

The boot.sdi file, contained in the boot folder, does not need to be copied either.

d. Add boot VHD to system BCD

The objective is to be able to start the VHD to verify that it works and continue with the steps that remain. For that we need a small program, **Bootice**, which is included in WinPE Strelec, or it can be downloaded from here:

https://reboot.pro/files/file/592-bootice-v1332/

Run Bootice, click on the BCD tab select "another BCD file"; go to the boot folder of the VHD and select the BCD file.

Edit or create a new VHD entry in both BCDs located on boot partition of your HD or USB device, in accordance with attached pictures:

BCD VHD:

hysical disk	Disk image	BCD	Utilities	UEFI	Command line	About		
Description You can vie rely on the	ew/edit your B(BCDEDIT.EXE,	CD of W so it wil	indows NT I also funct	6.x with ion und	BOOTICE. Since t er 2000/XP/2003 o	his featur r PE.	re doesi	n't
BCD file								
BCD of a	urrent system		Othe	r BCD fil	e			
BCD of c	current system		Othe	r BCD fil	e			

Select "**Easy mode**" and click the button, then the following screen will appear, it has to look exactly like this (except boot language):

BCD (Boot Configuration Data)				×
Win10XPE x64	[Boot Device]		
	Туре	Partition	RamDisk	VHD(X)
	Disk:	BOOT(WIM) / LC	CATE(VHD)	~
	Partition:			÷.
	File			
	CDI CI-			
	SUITIle:	-		
	┌[Options]-			
	OS GUID	{7619dcc9-fafe-	11d9-b411-000476eba	25f}
	OS title:	Win10XPE x64		
	Boot file:	\windows\system	m32\boot\winload.exe	2
	Sys root:	\windows		
	Language:	es-ES		~
Up Down Default Add Del		Č.		
Global settings	SafeBoot:	Normal mode		<u> </u>
Timeout(s)	PAE:		<u>~</u> NX:	~
Boot language: es-ES V	Detect H	AL and kernel	🗹 Boot into W	/inPE
	Metro Bo	ot Manager (Win8)) 🗹 Test Mode	(testsigning)
Display boot menu				
✓ No integrity checks	Save Glob	oals Sav	ve current system	Close

Now we go to the **BCD** of the **system**:

weical disk	Dick image	BCD	Utilities	LIEEL	Command line	About		
ysical ulsk	Disk image	DCD	oundes	ULII	Command line	About		
escription fou can vice	ew/edit your B BCDEDIT.EXE,	CD of Win so it will	ndows NT also funct	6.x with ion unde	BOOTICE. Since t r 2000/XP/2003 o	his featu r PE.	re doesr	ľt
BCD of o	urrent system	ŝ	Othe	r BCD fil	•			
	cd							
Z:\boot\b						12		

We select "Easy mode", it has to look exactly like this (except boot language):

Windows Server 2019 DB	SKTOP	[Boot Device]		
Windows 7 Ultimate SP	I (VHD)	Туре	Partition	RamDisk	VHD(X)
Windows PE SE x64 ISO		Dicks	BOOT(WIM) / LOC	ATE(VHD)	Ý
Windows Server 2022 DB	ESKTOP (VHD)	D			223
AUDIOPE_XT (VHD)		Partition:			Ĭ
GRUB4DOS MENU		File:	\W11XPE.vhd		
Boot from VHD		SDI file:			
		[Options] —			
		OS GUID	{8f42863b-b414-4	:07-82f1-af11e3190a	a2d}
		OS title:	Boot from VHD		
		Boot file:	\Windows\system	32\boot\winload.ex	(e
		Sys root:	Windows		
Lin Down Defa	ult Add Del	Language:	es-ES		
Global settings		SafeBoot:	Normal mode		v
✓ Timeout(s)	30	PAE:] NX:	
Boot language:	es-ES 🗸 🗸	Detect H	AL and kernel	🗹 Boot into V	VinPE
🗹 Display boot menu	i)	Metro Bo	ot Manager (Win8)	🗹 Test Mode	(testsigning)
No integrity check	s	Save Glob	als Save	current system	Close

Look carefully, this is very important:

Edit on the Boot\BCD the bootfile to point to: \windows\system32\boot\winload.exe for MBR / CSM booting.

Edit on the EFI\Microsoft\Boot\BCD the bootfile to point to: \windows\system32\boot\winload.efi for UEFI booting.

With this, when we restart the PC the start of the VHD will have been added to our start menu.

If we do **not want to touch the system's BCD**, we have another possibility, safer if we do not have experience in these matters, it consists in **applying the BOOT.WIM** image on a **USB Pen** formatted in NTFS, or FAT32, being the PRIMARY AND ACTIVE partition, and boot from USB Pen. It must be 3.0 or 3.1, USB 2.0 is very slow.

The steps for this are the same as for the VHD, **don't forget to modify the BCD of the USB Pen** as described for the BCD of the VHD. The **system BCD does not need to be modified**. Now we start the VHD or the USB Pen and verify that it is indeed the case, and it works.

Now we start the VHD or the USB Pen and verify that it is indeed the case, and it works.

Well, whether in VHD or USB Pen, we are ready for the next step, which will be the installation of all the drivers and audio applications that we want or need.

e. Installation of drivers and applications:

Before installing anything, we must run the "RegistryChangesView v1.28" program that can be downloaded from here:

https://www.nirsoft.net/utils/registry_changes_view.html

The first thing you see is this:

jistry Change Type	Value Name	Value Data	Value Type	Data Length	Value Data Changed To	Value T
	RegistryChange	View Options		×		
	Registry Data Source	e 1				
	Saved Registry Sn	ipshot ~	Create Reg	jistry Snapshot		
	Snapshot Folder:	E: Programas Tregistrychangesview-w649Reg5napshot20	211121024030	~		
	Shadow Copy Path:					
	Registry Data Source	e 2				
	Saved Registry Srv	ipshot v	Create Reg	istry Snapshot		
	Snapshot Folder:	E: Programas/registrychangesview-w64Reg5napshot20	211121024454	-		
	Shadow Copy Path:	[
	Direction:	Registry Data Source 1 => Registry Data Source 2		Ŷ		
	Hives to compare					
	HKEY JOCAL)	ACHDE'Software	RENT_USER			1
	HIEY LOCAL)	wowe/system	RRENT_USER\Softw	are VClasses		
	HIMEN TOCAT)	ACHENE'BCD0000000	BRSLOEFAULT			
	HKEY JOCAL)	ACHINE'SAM				
	HKEY_LOCAL J	AC/B€Security				
		_				
			OK .	Cancel		

You must have the executable and its folder outside the VHD or USB Flash Drive.

Now in the heading "**Registry Data Source 1**", press the button "**Create Registry Snapshot**", this will capture the status of the pre-install registration.

Now you can minimize the application, and begin with the installation of all the applications and drivers that you need.

Finished the process of all the installations **DO NOT RESTART THE PC**, now you must take the **second snapshot**, in the section corresponding to "**Registry Data Source 2**".

This will capture the registry status after all installs.

NOTE.- If an error appears after capturing, **ignore it and proceed**, the snapshot has been taken and saved. You can check this by seeing that a regsnapshotxxxxx folder, with content, has been created in the program folder.



This would look like this:

	er 2 - 7						
try Change Type	Value Name		Value Data	Value Type	Data Length	Value Data Changed To	Value Ty
	RegistryChanges ¹	/iew Options			×		
	Registry Data Source	1					
	Saved Registry Sna	oshot	~	Create Regi	stry Snapshot		
	Snapshot Folder:	E: Programas (registry	vchangesview-x64\RegSnapshot20	211121092243	~		
	Shadow Copy Path:						
	Registry Data Source	2					
	Saved Registry Sna	oshot	~	Create Regis	stry Snapshot		
	Snapshot Folder:	E:\Programas\registry	vchangesview-x64\RegSnapshot20	211121092319	~		
	Shadow Copy Path:						
	Direction:	Registry Data Source 1 =	=> Registry Data Source 2		~		
	Hives to compare						
	HKEY_LOCAL_M	ACHINE\Software	HKEY_CU	RENT_USER			
	HKEY_LOCAL_M	ACHINE\System	HKEY_CUR	RENT_USER\Softwa	re\Classes		
	HKEY_LOCAL_M	ACHINE/BCD00000000	HKEY_USE	RSDEFAULT			
	HKEY_LOCAL_M	ACHINE\SAM					
	HKEY_LOCAL_M	ACHINE\Security					1
				OK	Cancel		
				OR	Cartes		

After the second snapshot, before pressing OK, check that the numbers of the regsnapshot folder of "Registry Data Source 1" and "Registry Data Source 2" that appear in the boxes where the path is seen, correspond to the folders "regsnapshotxxxxxxx" contained in the program folder.



If not, you must copy the lowest number (corresponding to the first capture) in

"Registry Data Source 1" and the highest in "Registry Data Source 2".

Once this is done, you can now press the **OK** key, the program now compares the 2 snapshots and will detect the differences of the pre and post installation record, which will be displayed on a screen:

🚜 Registry	/ChangesView					- 0	×
File Edit	View Options Hel	p					
🖃 🕥 🎬		· 🖻 📲					
Reg 🔻	Change Type	Value Name	Value Data	Value Type	Data Length	Value Data Changed To	Value Ty
BB HKEY	Modified Value	\Device\HarddiskVolume1\Windows\System3	F7 62 AB 05 AF DE D7 01	REG_BINARY	24	2B 43 F6 01 B1 DE D7 01	REG_BIN
BB HKEY	Added Value	\Device\HarddiskVolume1\Program Files\J Riv	2F AC 76 05 B1 DE D7 01	REG_BINARY	24		
HKEY	Modified Value	SequenceNumber	23	REG_DWORD	4	25	REG_DW
BB HKEY	Modified Value	LCD	80 05 1B 05 56 54 D4 25 5	REG_BINARY	64	A1 11 C9 EA 49 76 9F 23	REG_BIN
HKEY	Modified Value	MediaCore Running	0	REG_DWORD	4	1	REG_DW
ab HKEY	Modified Value	Last Loaded Streaming Configuration	44470,8739863657392561	REG_SZ	46	44521,3911161805517622	REG_SZ
HKEY	Modified Value	Install - Number Runs Total	369	REG_DWORD	4	370	REG_DW
BB HKEY	Modified Value	Install - Number Runs After Last Install	58	REG_DWORD	4	59	REG_DW
BE HKEY	Removed Value	Action Window - Minimized	0	REG_DWORD	4		
ab HKEY	Modified Value	Last Backup Date	44457,780868055553583	REG_SZ	44	44521,3912152777775191	REG_SZ

We can save these changes in a file that can later be incorporated into the Win11XPE offline registry, where they will no longer be lost, and when the system starts up again, that information is already in the registry permanently. We will select **all the values**, and we will go to menu> file> **export selected items to .Reg file**.

NirSoft Freeware. http://www.nirsoft.net

We will save this ".reg file" in a folder external to the VHD or to the USB Pendrive, for later OFFLINE import.

💑 RegistryChangesView	392 - 10						×
File Edit View Options Help	0						
RegistryChangesView Option	s F9	1					
Create Registry Snapshot	F8		Value Data	Value Tune	Data Longth	Value Data Changed Te	Value Tu
Open In RegEdit		CONTRACTOR CONTRACTOR			Data Length	28 42 55 01 81 DE DZ 01	PEC PIN
Export Selected Items To .Reg	File Ctrl+E	ne I \ Windows \ Systems	2E AC 76 05 R1 DE D7 01	REG_BINARY	24	28 43 F6 01 B1 DE D7 01	REG_BIN
		ner (Program Pries () Kiv	23	REG DWORD			REG DW
Save Selected Items	Ctri+5		80 05 1B 05 56 54 D4 25 5	REG_BINARY	64	A1 11 C9 EA 49 76 9F 23	REG_BIN
Properties	Alt+Enter			REG_DWORD			REG_DW
Exit		Configuration	44470,8739863657392561	REG_SZ		44521,3911161805517622	REG_SZ
HKEY Modified Value	Install - Number Run	s Total		REG_DWORD			REG_DW
HKEY Modified Value	Install - Number Run	s After Last Install		REG_DWORD			REG_DW
HKEY Removed Value	Action Window - Mir	nimized		REG_DWORD			
HKEY Modified Value	Last Backup Date		44457,780868055553583	REG_SZ	44	44521,3912152777775191	REG_SZ
٢					_		>
10 item(s), 10 Selected			Nir Soft Fr	eeware. http://www	.nirsoft.net		1.14

f. Offline import to the VHD or USB Pendrive Registry

We restart the PC with Windows PE Strelec and then mount the VHD or insert the USB Pen that contains our Win11XPE.

Win PE Strelec can be downloaded from here:

https://mega.nz/file/E9d1gALR#87OpVpOgZuBQ8dri-c-NTcgliBkgexgEK7oxVpH_Hbl

https://www.majorgeeks.com/files/details/sergei strelecs winpe.html

Once started, we go to start menu> programs> utilities> remote registry and we open.

Then we go to the drive corresponding to the mounted VHD, or to the USB Pen, we open it and look for the Windows folder, select it and open it. This screen will appear:

Import			
Export	Туре	Data	
Load Hive Unload Hive			
Connect Network Registry Disconnect Network Registry			
Print Ctrl+			
Exit			

We select menu> file> **import registry file** and we look for the location where we save the .reg file that we had exported before exiting Win11XPE.

mport Registry File → × ↑ 🕳 → Thi	s PC → NFILES (D:) →	v ♂ Searc	h NFILES (D;)	×
ganize 👻 New folde	r			0
Quick access Desktop Documents Documents Downloads Downloads STRELEC This PC Network	Name SRECYCLE.BIN BOOT.WIM Capturas audiope_v5a MP3 Nuestros ficheros RECYCLER REGFILES System Volume Info- System Volume Info	e created: 10/21/202 z 7.94 MB ders: ASIO.REG, DIVI s: disable_proc.reg,	Date modified 11/20/2021 10:40 11/21/2021 10:45 10/19/2021 8:29 PM 2/6/2021 1:00 PM 11/4/2021 1:00 PM 11/4/2021 1:43 AM 9/3/2021 9:55 PM 11/21/2021 4:46 AM 215 5:11 AM NHK REG. OSDTRANSC disable_UMFD-0.reg	Type File fol File f
	Crear WinPE enHD.txt		10/9/2021 1:55 PM	Text Di 🗸
	<			>

⊢ → ∽ ↑ 📙 « NF	ILES (D:) > REGFILES > 🗸 🗸	Search REGFILES	P
Organize 👻 New folde	ar -		1 ()
 ✓ Quick access ✓ Desktop ✓ Documents ✓ Downloads ✓ Pictures ✓ STRELEC 	Name NVIDIA.REG SVBUS.REG disable_proc.reg disable_UMFD-0.reg disableservices.reg disableservices.reg disableservices.reg disableservices.reg	Date modified 10/22/2021 3:05 PM 10/19/2021 6:29 PM 11/18/2021 2:05 AM 11/21/2021 4:46 AM 11/17/2021 8:43 PM 11/17/2021 10:22 11/17/2021 10:49	Type File fo File fo Regist Regist Regist Regist
This PC	foobar2k.reg	11/17/2021 9:48 PM	Regist
Petwork Network	 ifi_USBAUDIO.reg lista.reg moredisableservices.reg moredisableservices_2.reg moredisableservices_3.reg moredisableservices_4.reg moredisableservices_5.reg moredisableservices_5.reg 	11/17/2021 9:06 PM 11/17/2021 8:55 PM 11/18/2021 1:43 PM 11/19/2021 9:40 AM 11/19/2021 10:11 11/19/2021 10:31 11/19/2021 3:32 PM 11/19/2021 11:54	Regist Regist Regist Regist Regist Regist Regist
	<	11/15/2021 11.54	> Negist
File na	ame: ifi_USBAUDIO.reg	 Registration Files (*.reg) 	~

We select the .reg file that we want to import

we press OPEN, and the changes we made to the registry with the installation of drivers and applications are already imported.

Another alternative is to do the individualized export-import process for each driver and application that we install, it is slower, but if something goes wrong, it will be easier to locate the fault.

It also has the advantage that if we create another future Win11XPE, and we are not interested in any of the drivers or installed applications, we may not install it.

This is the method that I have applied, and it is the one that I advise, although it takes a few minutes to complete the process.

Well, now we have a VHD or a USB Pen with a fully operational "Flatboot" installation of Win11XPE Audiophile, but we must check that it works, and we will restart the PC from it.

g. Tweaks:

Now that we have the system operational, we can tune it a little more if we want, and change some settings, disable some processes and services, etc.

For this there are 2 ways, edit offline "pecmd.ini" located in Windows\System32\ and execute "taskmgr.exe" and/or "services.msc"

A very complete information can be seen here:

https://www.isunshare.com/blog/detailed-explanation-for-pecmd-in-winpe-pecmd-ini-file-configuration-1/

Pecmd.ini determines what pecmd.exe will load when Windows PE starts, drivers, network, desktop, start menu, etc.

We can edit it offline with notepad and make modifications that will persist on all Win11XPE boots.

1. DISABLING THE NETWORK

I must thank seeteeyou, partner of the forum, who told me how to do it, and a link where there is more information:

https://serverfault.com/questions/866479/disable-network-connection-in-windowspe

In outline, it consists of creating an unattend.xml file, modifying the **winpeshl.ini** file by editing it with notepad, offline of course.

[LaunchApps]

wpeinit /unattend="%SystemRoot%\system32\Unattend.xml"

This is how it should look

This is how the **unattend.xml** file looks

Copy both files to \windows\system32 of the VHD or USB Pendrive and in the next reboot the network will be disabled.

```
<?xml version="1.0" encoding="utf-8"?>
```

<unattend xmlns="urn:schemas-microsoft-com:unattend">

<settings pass="windowsPE">

<component name="Microsoft-Windows-Setup" publicKeyToken="31bf3856ad364e35" language="neutral" versionScope="nonSxS" processorArchitecture="AMD64">

2. EDIT PECMD.INI

With this we can prevent unwanted programs from starting, shortcuts on the desktop that we do not want, etc, we do it with notepad, obviously offline.

An advantage is that if the result of the changes we do not like, it is easy to reverse

Pecmd.ini sample:

_SUB NetInit

//=Load Network drivers at startup

//=EXEC =@!%WinDir%\System32\Drvload.exe %WinDir%\inf\athw8x.inf
%WinDir%\inf\netathr10x.inf %WinDir%\inf\netathrx.inf %WinDir%\inf\netbc63a.inf
%WinDir%\inf\netbc64.inf %WinDir%\inf\netrtwlane.inf %WinDir%\inf\netrtwlane_13.inf
%WinDir%\inf\netrtwlanu.inf %WinDir%\inf\netwbw02.inf %WinDir%\inf\netwew00.inf
%WinDir%\inf\netwew01.inf %WinDir%\inf\netwlan92de.inf %WinDir%\inf\netwlv64.inf
%WinDir%\inf\netwns64.inf %WinDir%\inf\netwsw00.inf %WinDir%\inf\netwtw02.inf
%WinDir%\inf\netwtw04.inf %WinDir%\inf\netwtw06.inf

//=EXEC !=SetWG.exe WORKGROUP

//=EXEC @!%WinDir%\System32\Net.exe Start Wlansvc

//=EXEC @!%WinDir%\System32\Net.exe Start WinHttpAutoProxySvc

//= Launch PENetwork

//= EXEC X:\Program Files\PENetwork_x64\PENetwork.exe

// Remote Desktop Server Connect (Uncommented By RDC Plugin)

//=EXEC @!%WinDir%\System32\mstsc.exe /v:

To cancel lines insert at the beginning of the same the pair of characters "// =", without quotation marks, as this example shows.

I will not go into more detail, as this would take up many pages, I only show what is essential to change the most important settings. Whoever wants to go deeper I advise you to go to the page cited at the beginning of section g.

h. Adjust processes and services

It is always better for the audio to run as few processes and services as possible in the background, the limit is in the extra functions of the system that we want to keep.

The only method that I know of, and have used, is to disable processes and services (seeing their dependencies), and see if this affects the functionality, first of the system, and after the audio, if that is the case, I do not disable.

To make these changes permanent, if they are not harmful, we can only use "RegistryChangesView", and take snapshot prior to the change, post change, export changefile.reg, restart with Win PE Strelec> remote registry> offline import of changefile .reg,

That is, the same as to install drivers and applications. I advise that each change we make has its corresponding changefile.reg, even if it is slower.

When we have already achieved the minimum of processes and services in the background that we want, or can, we are ready to restart the PC from the Win11XPE flatboot VHD or USB Pendrive. If everything works fine, we are ready for the last two steps.

i. Create new boot.wim image

With the Win11XPE already updated with the drivers and applications, processes and services that we want, we must go from Win11XPE "flatboot" to "normal" WinXPE.

We start the PC with our host OS, mount the VHD or insert the USB Pen where the Win11XPE flatboot installations are and execute the **DISM ++** app

🗬 Modo experto-Dism++x64 10	.1.1002.1 Bios Firmw	are			 <u></u>	×
Archivo Recuperar Opciones	Ayuda	_				
Aplicar imagen	Ctrl+N	/s PE 10.0.22000.1 x64				
Montar imagen	Ctrl+Mayús+N					
Añadir ruta		ontado Compactar				
Abrir archivo de imagen	Ctrl+O					
Guardar imagen	Ctrl+S					
Guardar imagen como	Ctrl+Mayús+S					
Desmotar imagen	Supr					
WIM<>ESD/SWM						
ESD>ISO		Acerca de Dism++				
Desencriptar ESD		📕 ¡La primera aplicación	con interfaz gráfica para Disr	n basada en CBS del mundo!		
Recargar		Contacto				
Cancelar tarea	Ctrl+C	Sitio oficial	Grupos oficiales	Correo electrónico		
Controladores						
Programas y características		Soporte				
Características opcionales		Código abierto	Comentarios	Ayuda		
Actualizaciones		Gracias				
Región e idioma		Traductores	Patrocinadores	Terceras partes		
Configurar WinPE						
Implementación						
Asociaciones predeter.						
Pre-respuesta						
Guardar cambios a otra imagen WI	м.					

Open the program, in the upper ribbon it will show the windows detected, among them will be the Win11 XPE flatboot, which we will select, it will be highlighted in blue.

Then go to menu> file> "**Save image as**", indicate the path where we want to save the image.wim, give it a name, and save.

🔗 Modo experto-Dism++x64 10.1.1002.1 Bios	Firmware			\Rightarrow	×
Archivo Recuperar Opciones Ayuda					
*Windows Server 2019 Standard x64 C: Disco local Listo	Windows PE 10.0.22000.1 x64 Z: /HD montado Compactar Listo				
Utilidades Limpiar disco Inicio Apps de Microsoft Store Herramientas Panel de control Optimizador del sistema Controladores Programas y características Características opcionales Actualizaciones Región e idioma Configurar WinPE Implementación Asociaciones predeter.	Guardar imagen como × Nombre Valor Nombre de i Windows PE 10.0.22000.1 Descripción Windows PE 10.0.22000.1 Descripción Windows PE 10.0.22000.1 Descripción Windows PE 10.0.22000.1 Descripción Windows PE 10.0.22000.1 Edición Windows PE 10.0.22000.1 D:/BOOT.WIM\boot2a.wim Buscar VSS Iniciable Aceptar	io!			

Once this is done, we only have one last step, to replace the raw ISO Win11XPE boot.wim file that we created at the beginning, with the new one, completely to our liking or convenience.

j. Change initial boot.wim to the new one created with Dism ++

It can be done in several ways, I do it with **Ultraiso** because it verifies the changes and creates .md5 files, for greater security. If we have Ultraiso installed in our host OS we open it and start, if we do not have it we can use Win10 PE Strelec.

F:\Programas\Win10XPF	78 7-Zip		- 🗆 X
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2 📙 🗟	Enviar a XRECODE 3	Soogle Chrome	
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💭 Este equipo 🔨 🔤 Custom	Enviar a	> WinRAR archiver	
🕹 Descargas	Cortar	Buscar en Microsoft Store	
Desktop ProgCache	Copiar	Elegir otra aplicación	
Documentos	Crear acceso directo	— <u> </u>	
Imágenes Temp	Fliminar		
Música Support Win 10XPE d	Cambiar nombre		
💼 Objetos 3D 🛛 🙀 Win10XPE.exe			
Vídeos 💿 Win11XPE_x64.ISO	Propiedades		
VHDs (B:)	Quick Start Guide.pdf		
SFRVFR19 (C)			
Win10XPE.ini			
AI MACEN (E)			
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Seagate Backup			
A Unidad de CD (I:			
Manual de DVD (
12 elementos 1 elemento seleccionado 659 MB E	stado: 🎎 Compartido 丨		188 📼

We look for the ISO image of the initial Win11XPE and open it:

UltralSO - E:\Programas\Win10X	PE\Win11XPE_x64.ISO		– 🗆 X
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iang	allang	Folder	2020-11-17 12:53
Documents	✓ History.txt	45 KB Text Document	2020-07-30 15:37
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nage: Bootable EFI		Path: //sources	
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Documents	History.txt	45 KB Text Document	2020-07-30 15:37
>	isoshell.dll	78 KB Application Extension	2020-07-13 09:10
Convright (c)2002-2	020 EZB Systems, Inc.	Image: 1 files, 633 MB	Local: 9 files, 6826 KB

We go to the **sources** folder, and select boot.wim



Now we go to the folder where we have saved the new boot.wim and select it

and we copy it into the sources folder of the open ISO

UltralSO - E:\Programas\Win10XPE\Win11XPE_	54.ISO		- 🗆 🗙
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Copyright (c)2002-2020 EZB System:	Inc. Image: 1 file:	s, 1216 MB L	.ocal: 9 files, 6826 KB

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To finish we **rename** the new copied file.wim as boot.wim

Finally we rename the ISO label and save the newly modified file, with the name we want.

We already have our brand new Win11XPE.iso just created and functional with all the applications and drivers installed and working.

Now it only remains to transfer the ISO to a USB Pen, with Rufus or similar, restart the PC with it and check that everything works as expected.

Enjoy the music!!

Acknowledgments:

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