



Yi's SOLUTIONS

MICROSOFT WINDOWS 10 22H2

Different system versions have different packaging methods. The packaging process includes: "Language pack: add, associate, delete", "Drive: add, delete", "Cumulative update: add, delete", "InBox Apps: add, Update, mark" etc.

There are many hidden stories hidden behind this. If you want to unlock these, are you ready to start trying to encapsulate them?

Learn more about previous versions

https://github.com/ilikeyi/Solutions/tree/main/_Learn/Packaging.tutorial

Summary

Chapter 1	Encapsulation
Chapter 2	DEPLOY
Chapter 3	LEARN
Chapter 4	Common problem
Chapter 5	Known issues

Table of contents

Chapter 1	Encapsulation	Page 7
A.	Prerequisites	Page 7
I.	Running system	Page 7
1.	Check if the running system is healthy	Page 7
2.	When using DISM commands	Page 7
3.	N ways to speed up Windows operating system	Page 8
3.1.	Turn off Windows Defender	Page 8
3.2.	Disable Device/Credential Guard on your computer	Page 8
3.3.	Enable the native Windows NVMe storage stack.	Page 9
4.	Disable security warnings for common file types	Page 11
5.	Virtual memory disk	Page 12
6.	ISO tool	Page 13
7.	Compression software	Page 13
8.	Command line	Page 11
II.	Requirements	Page 13
1.	System installation package	Page 13
2.	Language pack	Page 16
2.1.	Learn	Page 16
2.2.	Language pack: Download	Page 18
2.3.	Feature pack: Download	Page 19
3.	InBox Apps	Page 19
B.	Language Pack: Extract	Page 20
I.	Language pack: Ready	Page 20
II.	Language pack: Scheme	Page 20
III.	Execute the extract command	Page 21
C.	Custom encapsulation	Page 23

I.	Custom encapsulation: Install.wim	Page 23
1.	View Install.wim details	Page 23
2.	Specify the path to mount Install.wim	Page 23
3.	Start mounting Install.wim	Page 23
3.1.	Custom encapsulation: WinRE.wim	Page 24
3.1.1.	View WinRE.wim details	Page 24
3.1.2.	Specify the path to mount WinRE.wim	Page 24
3.1.3.	Start mounting WinRE.wim	Page 24
3.1.4.	Language pack: WinRE	Page 24
3.1.4.1.	Language pack: add	Page 25
3.1.4.2.	Offline image language: change	Page 25
3.1.4.2.1.	Change default language, regional settings, and other international settings	Page 25
3.1.4.2.2.	View available language settings	Page 26
3.1.4.3.	Components: All packages installed in the image	Page 26
3.1.5.	Cumulative updates	Page 26
3.1.5.1.	Add	Page 26
3.1.5.2.	Solid update	Page 27
3.1.5.2.1.	Clean components after curing and updating	Page 27
3.1.6.	Drive	Page 27
3.1.7.	Save image	Page 27
3.1.8.	Unmount image	Page 27
3.1.9.	After rebuilding WinRE.wim, the file size can be reduced	Page 27
3.1.10.	Backup WinRE.wim	Page 28
3.1.11.	Replace WinRE.wim within the Install.wim image	Page 28
4.	Language pack	Page 28
4.1.	Language pack: add	Page 29
4.2.	Offline image language: change	Page 31
4.2.1.	Change default language, regional settings, and other international settings	Page 31
4.2.2.	View available language settings	Page 31

4.3.	Components: All packages installed in the image	Page 31
5.	InBox Apps	Page 32
5.1.	Learn	Page 32
5.2.	InBox Apps: Pre-install the application	Page 32
5.3.	InBox Apps: Installed	Page 34
5.4.	Remove all installed pre-applications	Page 34
5.5.	Installing "Local Language Experience Packs (LXPs)" to offline images marks: installed languages	Page 35
5.6.	Offline image has language tag installed: How to add it	Page 35
5.7.	InBox Apps: Install	Page 38
5.8.	Offline image has language tag installed: Remove	Page 41
5.9.	InBox Apps: optimization	Page 41
6.	Cumulative updates	Page 42
6.1.	Feature enablement package	Page 42
6.2.	Initial version	Page 43
6.3.	Other versions	Page 44
6.4.	Solidify Updated	Page 45
6.4.1.	Clean components after curing and updating	Page 45
7.	Drive	Page 45
8.	Deployment engine: Add	Page 45
9.	Health	Page 45
10.	Replace WinRE.wim	Page 46
11.	Save image: Install.wim	Page 46
12.	Unmount image: Install.wim	Page 46
13.	How to batch replace WinRE.wim in all index numbers in Install.wim	Page 46
13.1.	Obtain WimLib	Page 46
13.2.	How to extract and update WinRE.wim in Install.wim	Page 46
14.	Rebuilding Install.wim reduces file size	Page 47
15.	Split, merge, compress, and convert	Page 47
15.1.	Splitting and merging	Page 47

15.1.1.	Splitting	Page 47
15.1.2.	Merge	Page 48
15.2.	Solid compressed ESD format and WIM format conversion	Page 48
15.2.1.	Solid compression	Page 48
15.2.2.	Convert compressed files to WIM file format	Page 49
II.	Custom encapsulation: boot.wim	Page 49
1.	View Boot.wim details	Page 49
2.	Specify the path to mount Boot.wim	Page 49
3.	Start mounting Boot.wim	Page 49
4.	Language pack: Boot	Page 50
4.1.	Language pack: Add	Page 50
4.2.	Offline image language: change	Page 51
4.2.1.	Change default language, regional settings, and other international settings	Page 51
4.2.2.	View available language settings	Page 51
4.3.	Components: All packages installed in the image	Page 51
4.4.	Language: Repair	Page 51
4.5.	Language packs: sync to ISO installer	Page 52
4.6.	Regenerate Lang.ini	Page 52
4.6.1.	Regenerate the mounted directory lang.ini	Page 52
4.6.2.	After regenerating lang.ini, sync to the installer	Page 52
5.	Cumulative updates	Page 52
5.1.	Add	Page 52
5.2.	Solid update	Page 53
5.2.1.	Clean components after curing and updating	Page 53
6.	Drive	Page 53
7.	Save image: Boot.wim	Page 53
8.	Unmount image: Boot.wim	Page 53

III.	Deployment engine	Page 53
1.	Add method	Page 54
2.	Deployment Engine: Advanced	Page 57
D.	Generate ISO	Page 59
Chapter 2	DEPLOY	Page 60
A.	Precautions before deployment	Page 60
1.	When choosing the location to install Windows 11	Page 60
2.	When running the installer	Page 60
B.	Deploying the operating system to the physical device	Page 60
1.	Prerequisites for preparing the installation program	Page 60
1.1.	Create a bootable installation physical storage medium	Page 61
1.2.	CD-ROM	Page 61
1.3.	Install via network (PXE boot)	Page 61
2.	Physical device system installation guide	Page 61
C.	Deploy to a system that is currently in use, and add the native boot VHD to the existing boot menu	Page 62
1.	Create VHD/VHDX files	Page 62
1.1.	Interactive Disk Management	Page 62
1.2.	Command Line Creation	Page 62
2.	Apply the system from Install.wim to the VHD/VHDX file.	Page 62
3.	Add native boot VHD to the existing Windows 10/11 boot menu	Page 62
D.	Deploy to virtual machine	Page63
E.	Advanced deployment	Page 64
Chapter 3	LEARN	Page 66
A.	Additional Edition	Page 66

1.	Additional Edition: Only the main required version ID needs to be created	Page 67
2.	Additional Edition: Comparison of attachable version IDs and required version IDs	Page 67
3.	Additional Edition: Sorting	Page 67
4.	Additional Edition: Events	Page 68
Chapter 4	Common problem	Page 69
A.	Clean all mounts to	Page 69
B.	Fix the problem of abnormal mounting	Page 69
C.	Clean up	Page 69
Chapter 5	Known issues	Page 70

Chapter 1 Encapsulation

A. Prerequisites

I. Running system

1. Check if the running system is healthy

Checking the health of the running system is crucial. If the scan indicates that repairs are needed, adding cumulative updates to the offline image and performing other operations will result in errors. To check the system health, run: `sfc /scannow`

After the verification process is complete, if problems were found and corrected, you will see something similar to the following in the command prompt window:

1.1. Windows Resource Protection did not find any integrity violations.

Pending: `No repair needed.`

1.2. Windows Resource Protection found corrupted files but was unable to repair some of them.

Pending: `Requires repair.` You can try repairing it using the following command:

`Dism /Online /Cleanup-Image /CheckHealth`

`Dism /Online /Cleanup-Image /ScanHealth`

`dism /Online /Cleanup-Image /RestoreHealth`

Note: If the problem cannot be fixed, please reinstall the system.

2. When using DISM commands

2.1. Learning the DISM Overview

<https://learn.microsoft.com/en-us/windows-hardware/manufacture/desktop/what-is-dism>

DISM Limitations: When using DISM to maintain Windows images, administrators must be aware of its inherent limitations. One of these is that it does not support the Resilient File System (ReFS). ReFS is a new file system for Windows Server 2022, Windows Server 2019, Windows Server 2016, Windows Server 2012 R2, and Windows Server 2012 operating systems. It scales efficiently to large datasets and provides higher data availability and performance than older file systems.

Please be aware that performing certain DISM commands after partitioning a disk and mounting an offline image to an ReFS disk partition may cause errors. Disk partitions formatted with NTFS are not affected by this issue.

When the operating system is Windows 10 or earlier than Windows 11 25H2, using the DISM command to create a higher version image may cause some unknown problems in certain situations. For example, when running the DISM command in Windows 10 to process a Windows Server 2025 offline image, you might receive an error message during the packaging process: "This app can't run on your PC." Solution:

- 1) Upgrade the currently running operating system or reinstall to a higher version (recommended);
- 2) Upgrading or installing a new version of ADK or PowerShell (not recommended)
 - You can try upgrading to the latest version of PowerShell 7 or later;

- Installing the latest version of ADK and replacing the DISM command can resolve the issue of an outdated DISM version, however: the deployment script primarily uses PowerShell commands, so we do not recommend using the above method. The best solution is to upgrade your current operating system or reinstall a higher version.

3. N ways to speed up Windows operating system

When processing packaging tasks, installing cumulative updates, installing drivers, and installing applications in InBox Apps, a large number of temporary files will be generated. The following methods can be used to speed up the system:

3.1. Turn off Windows Defender

- Turning on Windows Defender will scan files and take up a lot of CPU.
- During the test: It took 1 hour and 22 minutes before it was turned off, and 20 minutes after it was turned off.

How to turn off:

Green is the command line, hold down the Windows key and press R to launch Run.

- 3.1.1. Open Windows Security or run: `windowsdefender:`
- 3.1.2. Select "Virus & threat protection" or run: `windowsdefender://threat`
- 3.1.3. Find "Virus and Threat Protection Settings", click "Manage Settings" or run: `windowsdefender://threatsettings`. It is recommended that you turn off some features:
 - 3.1.3.1. Real-time protection
 - 3.1.3.2. Cloud-provided protection
 - 3.1.3.3. Automatically submit samples
 - 3.1.3.4. Tamper Protection
- 3.1.4. When not in the package, it is recommended that you turn on Windows Defender.

3.2. Disable Device/Credential Guard on your computer

Even with Windows Security Center disabled, if virtualization-based security is running, the system performance will be significantly impacted. Since Microsoft updated Windows 11 to version 24H2, Device/Credential Guard (or rather, VBS) is enabled by default with every clean installation or update. This causes problems with VMware Workstation and other virtualization software that use nested virtualization, leading to malfunctions and performance degradation.

However, Microsoft provides a tool called the Device Guard and Credential Guard hardware readiness tool to disable Device/Credential Guard. Here's how to disable it:

3.2.1. Download Device Guard and Credential Guard hardware readiness tool

Open the link: <https://www.microsoft.com/en-us/download/details.aspx?id=53337> and click the download button. After downloading, you will get the `dgreadiness_v3.6.zip` file. Extract it to the C drive (if you extract it to another location, please replace the path when executing the program).

3.2.2. Execute the shutdown command

Open the [Terminal](#) and run the following commands in order:

```
Set-ExecutionPolicy -ExecutionPolicy Bypass -Scope LocalMachine -Force
```

```
C:\dgreaddiness_v3.6\DG_Readiness_Tool_v3.6.ps1 -Disable
```

3.2.3. After running the program, restart your computer

After restarting, Windows will enter the [Credential Guard Opt-out Tool](#). At this point, press the [Windows](#) logo key or [F3](#), then press Enter to continue.

3.2.4. Check status

After restarting your computer, run [Msinfo32](#) and check the "Virtualization-based security" status in the System Summary, or check the status after running the program:

```
C:\dgreaddiness_v3.6\DG_Readiness_Tool_v3.6.ps1 -Ready
```

3.2.5. How to recover

After running the command line, restart your computer for the changes to take effect.

```
C:\dgreaddiness_v3.6\DG_Readiness_Tool_v3.6.ps1 -Enable
```

The Device Guard and Credential Guard hardware readiness tool cannot be disabled, or you can try using the tool from LDPlayer emulator: <https://res.ldmnq.com/test/HyperV-off.exe>. Download it and run it as an administrator, then restart your computer after completion.

3.3. Enable the native Windows NVMe storage stack.

Read the official Microsoft news: [Announcing Native NVMe in Windows Server 2025: Ushering in a New Era of Storage Performance](#)

Enabling the native Windows NVMe storage stack can deliver up to an 80% increase in IOPS performance. If you are using an NVMe drive, it is recommended that you enable this feature. Before enabling, please ensure you meet the following requirements: Windows Server 2025 or Windows 11 build 26100.6899 / 26200.6899 or later. This feature is only effective for NVMe SSDs; please check if your current hard drive meets the requirements.

Activation steps:

3.3.1. Ensure that the currently used storage controller is the standard NVM Express controller included with Windows. If you are currently using a driver other than the one included with Windows, it is recommended that you uninstall it.

3.3.2. Ensure that the currently used operating system version is [26100.6899](#) / [26200.6899](#) or a higher version.

3.3.3. The following two methods (from Microsoft's official website, essentially the same operation, choose either one)

3.3.3.1. Run PowerShell (as administrator), execute the following command, and then restart your computer.

```
reg add  
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Policies\Microsoft\FeatureManagement\Overrides /v  
1176759950 /t REG_DWORD /d 1 /f
```

3.3.3.2. Alternatively, download, extract, and install the following Group Policy MSI file, set it to enabled, and then restart your computer.

https://download.microsoft.com/download/123547b0-bff7-419d-96ba-d1cfee92f442/Windows%2011%2024H2,%20Windows%2011%2025H2%20and%20Windows%20Server%202025%20KB5066835%20251014_21251%20Feature%20Preview.msi

After installation, it can be found at: Group Policy > Computer Configuration > Administrative Templates > KB5066835 251014_21251 Feature Preview > Windows 11, version 24H2, 25H2

3.3.4. The method for enabling this feature in Windows 11 is slightly different from Windows Server, and requires adding and executing the following commands in PowerShell (as administrator):

```
reg add HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Policies\Microsoft\FeatureManagement\Overrides /v 1853569164 /t REG_DWORD /d 1 /f

reg add HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Policies\Microsoft\FeatureManagement\Overrides /v 156965516 /t REG_DWORD /d 1 /f

reg add HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Policies\Microsoft\FeatureManagement\Overrides /v 735209102 /t REG_DWORD /d 1 /f
```

3.3.5. If you have already used the above commands and restarted your computer but are still unable to enable the feature, you can also use the ViveTool command to force enable it.

You need **ViveTool**. Go to: <https://github.com/thebookisclosed/ViVe/releases> to download it. After downloading, run the program:

```
vivetool.exe /enable /id:48433719,49453572,5536923

For values above 28020, the following steps are also required: vivetool.exe /enable /id:48613417
```

3.3.6. Troubleshooting issues preventing access to Safe Mode.

Windows Safe Mode does not load this NVMe driver by default, so you need to execute the following command to load it. After it takes effect, Safe Mode will work normally.

```
reg add HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\SafeBoot\Minimal\{75416E63-5912-4DFA-AE8F-3EFACCAFFB14}

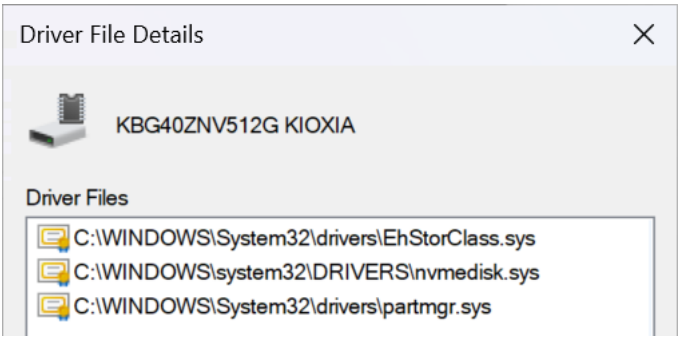
reg add HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\SafeBoot\Network\{75416E63-5912-4DFA-AE8F-3EFACCAFFB14}
```

3.3.7. The method for checking if this feature has been successfully enabled is the same as the method for disabling it.

3.3.7.1. After successfully enabling Windows native NVMe mode, your NVMe SSD will be categorized under the new "Storage disks" path in Device Manager, as shown in the image:



- 3.3.7.2.
- After successfully enabling Windows native NVMe mode, in Device Manager, right-click on your NVMe SSD and select Properties, then go to Driver > Driver Details. You will see that the driver files include the new nvmedisk.sys, as shown in the image:



- 3.3.7.3.
- Closing method

Run `regedit` (Registry Editor), navigate to the path `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Policies\Microsoft\FeatureManagement\Overrides`, change the values of the four keys `1176759950`, `156965516`, `1853569164`, and `735209102` to 0, or simply delete them. Then restart your computer.

Enabled using Vivetool `vivetool.exe /disable /id:48433719,49453572,5536923`

For values above 28020, the following steps are also required: `vivetool.exe /disable /id:48613417`

4. Disable security warnings for common file types

- Why is it closing? A "security warning" pops up every time I try to work with any ISO file, which is very annoying.
- After adding or restoring the default policies, remember to restart the Explorer.exe process for the changes to take effect immediately.

4.1. How to add it?

- 4.1.1.
- Step one: Select the rules.

Common file type rules and a rule specifically for *.ISO files are provided:

- 4.1.1.1.
- Common file type rules

```
$SafetyWarningsExclude = ".exe;.reg;.msi;.bat;.cmd;.com;.vbs;.hta;.scr;.pif;.js;.iso;"
```

- 4.1.1.2.
- .iso files only

```
$SafetyWarningsExclude = ".iso;"
```

- 4.1.2.
- Step two: Add it to the system policy.

```
if ((Test-Path -LiteralPath "HKCU:\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\Associations") -ne $true)
{ New-Item "HKCU:\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\Associations" -force -ErrorAction
SilentlyContinue | Out-Null }; New-ItemProperty -LiteralPath
'HKCU:\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\Associations' -Name 'LowRiskFileTypes' -Value
$SafetyWarningsExclude -PropertyType String -force -ErrorAction SilentlyContinue | Out-Null
```

4.2. How to restore the default policy?

```
Remove-Item -Path "HKCU:\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\Associations" -Force -Recurse -ErrorAction SilentlyContinue | Out-Null
```

4.3. Restart the Explorer.exe process for the changes to take effect immediately.

```
Stop-Process -ProcessName explorer -force -ErrorAction SilentlyContinue; Start-Sleep 5; $Running = Get-Process explorer -ErrorAction SilentlyContinue; if (-not ($Running)) { Start-Process "explorer.exe" }
```

5. Virtual memory disk

What is a memory disk? Memory disk, also known as virtual memory disk, is a technology that improves quick access to computer memory and files. However, the memory disk will cause data loss after the computer is shut down. The memory disk is a relatively unsafe setting.

Even so, I don't think so. During the encapsulation process, installation package files will be frequently released, logs will be generated, etc. When mounting to a virtual disk, this has many benefits, including quick formatting.

When adding language packs, cumulative updates, and InBox Apps, the installation package is stored in a memory virtual disk, which will occupy a large amount of memory. It is recommended that you store it in a non-virtual memory disk.

5.1. Software recommendation

- 5.1.1. Ultra RAMDisk | <http://ultraramdisk.com>
- 5.1.2. ImDisk | <https://sourceforge.net/projects/imdisk-toolkit>
- 5.1.3. AMD Radeon RAMDisk | <http://www.radeonramdisk.com>
- 5.1.4. Primo Ramdisk | <https://www.romexsoftware.com/en-us/primo-ramdisk/index.html>
- 5.1.5. SoftPerfect RAM Disk | <https://www.softperfect.com/products/ramdisk>
- 5.1.6. StarWind RAM Disk | <https://www.starwindsoftware.com/high-performance-ram-disk-emulator>

5.2. How to create

When creating a memory disk, you should calculate the unused rate of physical memory, open "Task Manager", "Performance", and check the remaining memory rate. Suggestions:

- 5.2.1. When the physical memory is 16G and the system has 10G remaining, it is recommended to divide it into: 6G memory + 40G swap file, and keep more than 4G of remaining memory;
- 5.2.2. When the physical memory is 32G: When the system has 26G remaining, it is recommended to divide it into: 20G memory + 40G swap file, and keep more than 6G of remaining memory;
- 5.2.3. When the physical memory is 64G: When the system has 54G remaining, only divide 40G memory, no need to create a swap file, and keep more than 8G of remaining memory;
- 5.2.4. When the physical memory is 128G: When the system has 115G remaining, divide it into 40G memory, and no need to create a swap file.

Note: Insufficient memory can cause problems during the encapsulation process.

6. ISO tool

Use a software that can edit ISO files, such as: [PowerISO](#), [DAEMON Tools](#), [ISO Workshop](#);

7. Compression software

Prepare a commonly used compression software: [7-Zip](#), [WinRAR](#), or others. We recommend downloading and installing [7-Zip](#). Choose the appropriate software based on your system architecture.

7.1. 7-Zip

x64: <https://www.7-zip.org/a/7z2501-x64.exe>

x86: <https://www.7-zip.org/a/7z2501.exe>

arm64: <https://www.7-zip.org/a/7z2501-arm64.exe>

8. Command line

8.1. Optional "Terminal" or "PowerShell ISE", if "Terminal" is not installed, please go to: <https://github.com/microsoft/terminal/releases>
After downloading;

8.2. Open "Terminal" or "PowerShell ISE" as administrator, it is recommended to set the PowerShell execution policy: bypass, PS command line:

`Set-ExecutionPolicy -ExecutionPolicy Bypass -Scope LocalMachine -Force`

8.3. In this article, PS command line, green part, please copy it, paste it into the "Terminal" dialog box, press Enter and start running;

8.4. When there is `.ps1`, right-click the file and select Run with PowerShell, or copy the path and paste it into Terminal to run, the path with a colon, add the & character in the command line, example: `& "D:\YiSolutions_Encapsulation_SIP.ps1"`

II Requirements

1. System installation package

Keywords: [iteration](#), [cross-version](#), [major version](#), [cumulative update](#), [initial release](#)

1.1. illustrate

1.1.1. Please remake the image when each version is updated, for example, when crossing from 21H1 to 22H2, avoid other compatibility problems, and do not make the image based on the old image;

1.1.2. The regulation has been clearly communicated to packagers in various forms by some OEMs, and direct upgrades from iterative versions are not allowed;

1.1.3. Please use "Initial Version" and "Developer Edition" for production. There was a brief appearance in the official Microsoft documentation that the initial version must be used in production, but this sentence was later deleted in the official documentation;

1.1.4. After installing the language pack, you must re-add the cumulative update (the same version number), and if you do not add the cumulative update, problems such as "garbled characters" and "interface flashback" will occur.

1.1.5. Evolutionary process: Microsoft Windows 10 22H2, Build 19045.2006 +

- Feature enabler package (KB5015684)
- Service Stack Update (SSU) + Cumulative Update (KB5066791)

= OS Build 19045.6465

1.2. Prepare to download the initial or developer version

1.2.1. x64

1.2.1.1. Filename: [en-us_windows_10_consumer_editions_version_22h2_x64_dvd_8da72ab3.iso](#)

List of files: <https://files.rg-adguard.net/file/cbafa23b-cef5-6401-d0e2-da1533785c71>

1.2.1.2. Filename: [en-us_windows_10_business_editions_version_22h2_x64_dvd_8cf17b79.iso](#)

List of files: <https://files.rg-adguard.net/file/b4901318-96a5-3755-c26d-c8cb5c816092>

1.2.1.3. Filename: [en-us_windows_10_iot_enterprise_version_22h2_x64_dvd_51cc370f.iso](#)

List of files: <https://files.rg-adguard.net/file/8fe3555c-9e65-138a-e204-53e90c57c20d>

1.2.1.4. Filename: [en-us_windows_10_enterprise_ltsc_2021_x64_dvd_d289cf96.iso](#)

List of files: <https://files.rg-adguard.net/file/19a36b7b-269b-ebf8-105b-a375f70b7ae2>

1.2.1.5. Filename: [en-us_windows_10_iot_enterprise_ltsc_2021_x64_dvd_257ad90f.iso](#)

List of files: <https://files.rg-adguard.net/file/d4af271c-9bfb-7457-fba3-b600a921d9cc>

1.2.2. x86

1.2.2.1. Filename: [en-us_windows_10_consumer_editions_version_22h2_x86_dvd_90883feb.iso](#)

List of files: <https://files.rg-adguard.net/file/09710916-5ec1-9526-f67e-87ab8c929be4>

1.2.2.2. Filename: [en-us_windows_10_business_editions_version_22h2_x86_dvd_186a68c3.iso](#)

List of files: <https://files.rg-adguard.net/file/19fd5653-1ca5-2160-7572-7e3313babacf>

1.2.2.3. Filename: [en-us_windows_10_enterprise_ltsc_2021_x86_dvd_9f4aa95f.iso](#)

List of files: <https://files.rg-adguard.net/file/dad92dcb-222d-c6ca-ebe2-3e12c6bcb22b>

1.2.3. arm64

1.2.3.1. Filename: en-us_windows_10_iot_enterprise_version_22h2_arm64_dvd_39566b6b.iso

List of files: <https://files.rg-adguard.net/file/5f90028e-6a65-3ece-5b90-7c7e30f0fadc>

1.2.3.2. Filename: en-us_windows_10_iot_enterprise_ltsc_2021_arm64_dvd_e8d4fc46.iso

List of files: <https://files.rg-adguard.net/file/a9e8ed40-8540-f309-0065-b9060cbd47ac>

1.3. After the sample download en-us_windows_10_consumer_editions_version_22h2_x64_dvd_8da72ab3.iso,Unzip to: D:\en-us_windows_10_consumer_editions_version_22h2_x64_dvd_8da72ab3

Note: Before decompressing to disk D, you should check whether it is a ReFS partition. If it is a ReFS partition, some DISM commands will fail. Solution: Please use a disk partition in NTFS format.

1.4. After decompression is complete, change the directory D:\en-us_windows_10_consumer_editions_version_22h2_x64_dvd_8da72ab3 change to D:\ISOTEMP

1.5. How to merge multiple image versions? Merge suggestions:

1.5.1. After downloading en-us_windows_10_business_editions_version_22h2_x64_dvd_8cf17b79.iso, select this file and "Double-click" or right-click and select "Mount," for example, mount the drive letter as E:\: (Please replace if it's not the correct one), It is recommended to add all of them. Known index numbers: 3, 4. Add command:

```
Export-WindowsImage -SourceImagePath "E:\sources\install.wim" -SourceIndex 3 -DestinationImagePath "D:\ISOTEMP\sources\install.wim" -CompressionType Max -CheckIntegrity
```

```
Export-WindowsImage -SourceImagePath "E:\sources\install.wim" -SourceIndex 4 -DestinationImagePath "D:\ISOTEMP\sources\install.wim" -CompressionType Max -CheckIntegrity
```

1.5.2. After downloading en-us_windows_10_iot_enterprise_version_22h2_x64_dvd_51cc370f.iso, select this file and "Double-click" or right-click and select "Mount," for example, mount the drive letter as F:\: (Please replace if it's not the correct one), It is recommended to add all of them. Known index numbers: 2. Add command:

```
Export-WindowsImage -SourceImagePath "F:\sources\install.wim" -SourceIndex 2 -DestinationImagePath "D:\ISOTEMP\sources\install.wim" -CompressionType Max -CheckIntegrity
```

1.5.3. After downloading en-us_windows_10_enterprise_ltsc_2021_x64_dvd_d289cf96.iso, select this file and "Double-click" or right-click and select "Mount," for example, mount the drive letter as G:\: (Please replace if it's not the correct one), It is recommended to add all of them. Known index numbers: 1, 2. Add command:

```
Export-WindowsImage -SourceImagePath "G:\sources\install.wim" -SourceIndex 1 -DestinationImagePath "D:\ISOTEMP\sources\install.wim" -CompressionType Max -CheckIntegrity
```

```
Export-WindowsImage -SourceImagePath "G:\sources\install.wim" -SourceIndex 2 -DestinationImagePath "D:\ISOTEMP\sources\install.wim" -CompressionType Max -CheckIntegrity
```

1.5.4. After downloading en-us_windows_10_iot_enterprise_ltsc_2021_x64_dvd_257ad90f.iso, select this file and "Double-click"

or right-click and select "Mount," for example, mount the drive letter as H:\: (Please replace if it's not the correct one), It is recommended to add index number 2 and the following command:

```
Export-WindowsImage -SourceImagePath "H:\sources\install.wim" -SourceIndex 2 -DestinationImagePath "D:\ISOTEMP\sources\install.wim" -CompressionType Max -CheckIntegrity
```

Note: When merging multiple image versions, Ei.Cfg must be added.

1.6. Installation configuration

1.6.1. Learn: [Windows Setup Edition Configuration and Product ID Files \(Ei.cfg and PID.txt \)](#)

1.6.2. Known issues

1.6.2.1. When there is no Ei.cfg, ISO boot installation will report an error when selecting certain versions, prompting: **Windows cannot find the Microsoft Software License terms. Make sure the insttallation sources are valid and restart the installation.**

1.6.2.2. How to solve it? Add ei.cfg to D:\ISOTEMP\Sources and create ei.cfg:

```
@"  
  
[Channel]  
  
volume  
  
  
[VL]  
  
1  
  
"@ | Out-File -FilePath "D:\ISOTEMP\sources\EI.CFG" -Encoding Ascii
```

1.7. All scripts and all paths are set to D:\ISOTEMP as the image source.

2. Language pack

2.1. Learn

As you read, please understand the important highlights of "Blue".

2.1.1. [Languages overview](#)

2.1.2. [Add languages to a Windows 10 image](#)

2.1.3. [Language and region Features on Demand \(FOD\)](#)

2.1.3.1. Fonts

- When adding a language pack, when the corresponding region is triggered, the required font functions need to be added, download "[List of all available language FODs](#)" learn more.
- In "Language Pack: Extract", the automatic recognition function has been added, and you can understand the functions: [Function Match_Required_Fonts](#)

2.1.3.2. Regional association

What are regional connections?

- When the image language is only in English, after adding the zh-HK language pack, the image language will not be added. You should install zh-TW first, and then install zh-HK to obtain the corresponding association.

Known regional associations:

2.1.3.2.1. Region: ar-sa, Optional associated areas: en-US, associated installation package:

Microsoft-Windows-LanguageFeatures-Basic-es-us-Package~*~.cab
Microsoft-Windows-LanguageFeatures-OCR-en-us-Package~*~.cab

2.1.3.2.2. Region: bg-bg, Optional associated areas: en-US, associated installation package:

Microsoft-Windows-LanguageFeatures-Basic-es-us-Package~*~.cab
Microsoft-Windows-LanguageFeatures-OCR-en-us-Package~*~.cab

2.1.3.2.3. Region: da-dk, Optional associated areas: en-US, associated installation package:

Microsoft-Windows-LanguageFeatures-Basic-es-us-Package~*~.cab
Microsoft-Windows-LanguageFeatures-OCR-en-us-Package~*~.cab

2.1.3.2.4. Region: el-gr, Optional associated areas: en-US, associated installation package:

Microsoft-Windows-LanguageFeatures-Basic-es-us-Package~*~.cab
Microsoft-Windows-LanguageFeatures-OCR-en-us-Package~*~.cab

2.1.3.2.5. Region: fr-ca, Optional associated areas: en-US, fr-fr, associated installation package:

Microsoft-Windows-LanguageFeatures-Basic-es-us-Package~*~.cab
Microsoft-Windows-LanguageFeatures-OCR-en-us-Package~*~.cab
Microsoft-Windows-LanguageFeatures-Basic-fr-fr-Package~*~.cab
Microsoft-Windows-LanguageFeatures-Handwriting-fi-fi-Package~*~.cab

2.1.3.2.6. Region: he-il, Optional associated areas: en-US, associated installation package:

Microsoft-Windows-LanguageFeatures-Basic-es-us-Package~*~.cab
Microsoft-Windows-LanguageFeatures-OCR-en-us-Package~*~.cab

2.1.3.2.7. Region: ru-ru, Optional associated areas: en-US, associated installation package:

Microsoft-Windows-LanguageFeatures-Basic-es-us-Package~*~.cab

Microsoft-Windows-LanguageFeatures-OCR-en-us-Package~*~.cab

2.1.3.2.8. Region: **th-th**, Optional associated areas: **en-US**, associated installation package:

Microsoft-Windows-LanguageFeatures-Basic-es-us-Package~*~.cab

Microsoft-Windows-LanguageFeatures-OCR-en-us-Package~*~.cab

2.1.3.2.9. Region: **uk-ua**, Optional associated areas: **en-US**, associated installation package:

Microsoft-Windows-LanguageFeatures-Basic-es-us-Package~*~.cab

Microsoft-Windows-LanguageFeatures-OCR-en-us-Package~*~.cab

2.1.3.2.10. Region: **zh-TW** , Optional associated areas: **zh-HK**, associated installation package:

Microsoft-Windows-LanguageFeatures-Basic-zh-hk-Package~*~.cab

Microsoft-Windows-LanguageFeatures-Speech-zh-hk-Package~*~.cab

Microsoft-Windows-LanguageFeatures-TextToSpeech-zh-hk-Package~*~.cab

2.1.3.3. Other region-specific requirements

When triggering a known area, a specific "package" needs to be added.

2.1.3.3.1. Region: **zh-TW**

Package: **Microsoft-Windows-InternationalFeatures-Taiwan-Package~31bf3856ad364e35~amd64~*.cab**

Description: **Supplemental support for Taiwan date formatting requirements. Package will be provided to customers located in Taiwan.**

Recommendation: **Preinstall only on devices shipping to the Taiwan market. Not installing this capability on devices causes any API calls to that use the Taiwan calendar to fail.**

THERE IS CONTROVERSY:

- During the test, it was found that this package was not installed in the original image of Microsoft's official original Windows 10 However, there are known issues in the recommended items. In the end, it is consistent with the official Microsoft original version, and the packager can freely choose to install it. or not.

2.2. Language pack: Download

2.2.1. x64, x86

2.2.1.1. Filename: <https://software-download.microsoft.com/download/pr/19041.1.191206->

[1406.vb_release_CLIENTLANGPACKDVD_OEM_MULTI.iso](#)

List of files: <https://files.rg-adguard.net/file/5a38c0c8-036a-e4e8-fa4a-c1d3ecd073d6>

2.3. Feature pack: Download

2.3.1. ARM64

2.3.1.1. Filename: https://software-static.download.prss.microsoft.com/pr/download/19041.1.191206-1406.vb_release_arm64fre_FOD-PACKAGES_OEM_PT1_arm64fre_MULTI.iso

List of files:

2.3.2. X64

2.3.2.1. Filename: https://software-download.microsoft.com/download/pr/19041.1.191206-1406.vb_release_amd64fre_FOD-PACKAGES_OEM_PT1_amd64fre_MULTI.iso

List of files: <https://files.rg-adguard.net/file/16fccb80-0d4c-3d94-2a7c-b0bf020f6422>

2.3.3. X86

2.3.3.1. Filename: https://software-static.download.prss.microsoft.com/pr/download/19041.1.191206-1406.vb_release_x86fre_FOD-PACKAGES_OEM_PT1_x86fre_MULTI.iso

List of files: <https://files.rg-adguard.net/file/7758afd0-e097-e9f3-86ee-ebef4deff834>

3. InBox Apps

3.1. Download: https://software-static.download.prss.microsoft.com/dbazure/888969d5-f34g-4e03-ac9d-1f9786c66749/19041.3031.230508-1728.vb_release_svc_prod3_amd64fre_InboxApps.iso

Due to version issues and inability to run the program, the following installation package files need to be replaced: [Microsoft.WindowsMaps](#), [Microsoft.Wallet](#), and [Microsoft.BingWeather](#).

3.2. Download from Github website

3.2.1. Microsoft.BingWeather

3.2.1.1. https://github.com/ilikeyi/Solutions/raw/refs/heads/main/_Learn/Download.Package/Windows.10.22H2/x64/Microsoft.BingWeather_8wekyb3d8bbwe.appxbundle

3.2.1.2. https://github.com/ilikeyi/Solutions/raw/refs/heads/main/_Learn/Download.Package/Windows.10.22H2/x64/Microsoft.BingWeather_8wekyb3d8bbwe.xml

3.2.2. Microsoft.Wallet

3.2.2.1. https://github.com/ilikeyi/Solutions/raw/refs/heads/main/_Learn/Download.Package/Windows.10.22H2/x64/Microsoft.Wallet_8wekyb3d8bbwe.appxbundle

3.2.2.2. https://github.com/ilikeyi/Solutions/raw/refs/heads/main/_Learn/Download.Package/Windows.10.22H2/x64/Microsoft.Wallet_8wekyb3d8bbwe.xml

- 3.2.3.

Microsoft.WindowsMaps

3.2.3.1.

https://github.com/ilikeyi/Solutions/raw/refs/heads/main/_Learn/Download.Package/Windows.10.22H2/x64/Microsoft.WindowsMaps_8wekyb3d8bbwe.appxbundle

3.2.3.2.

https://github.com/ilikeyi/Solutions/raw/refs/heads/main/_Learn/Download.Package/Windows.10.22H2/x64/Microsoft.WindowsMaps_8wekyb3d8bbwe.xml

3.3.

Download: https://software-download.microsoft.com/download/pr/19041.1.191206-1406.vb_release_amd64fre_InboxApps.iso

After selecting the "Mount Image" or "Open and Browse with ISO Tool", locate and save the architecture directory:

3.3.1.

Microsoft.BingWeather

3.3.1.1.

[Microsoft.BingWeather_8wekyb3d8bbwe.appxbundle](#)

3.3.1.2.

[Microsoft.BingWeather_8wekyb3d8bbwe.xml](#)

3.3.2.

Microsoft.Wallet

3.3.2.1.

[Microsoft.Wallet_8wekyb3d8bbwe.appxbundle](#)

3.3.2.2.

[Microsoft.Wallet_8wekyb3d8bbwe.xml](#)

3.3.3.

Microsoft.WindowsMaps

3.3.3.1.

[Microsoft.WindowsMaps_8wekyb3d8bbwe.appxbundle](#)

3.3.3.2.

[Microsoft.WindowsMaps_8wekyb3d8bbwe.xml](#)

3.4.

Using an ISO editing tool, edit [19041.3031.230508-1728.vb_release_svc_prod3_amd64fre_InboxApps.iso](#) and add the extracted files to the `[ISO]:\{architecture}` directory;

B. Language Pack: Extract

I. Language pack: Ready

1. Language pack: Mount

Mount [19041.1.191206-1406.vb_release_CLIENTLANGPACKDVD_OEM_MULTI.iso](#) or unzipped to any location;

2. Feature pack: Mount

Please select the schema version correctly, extract the wrong language pack, and the installation will report an error.

ARM64: [19041.1.191206-1406.vb_release_arm64fre_FOD-PACKAGES_OEM_PT1_arm64fre_MULTI.iso](#)

X64: [19041.1.191206-1406.vb_release_amd64fre_FOD-PACKAGES_OEM_PT1_amd64fre_MULTI.iso](#)

X86: [19041.1.191206-1406.vb_release_x86fre_FOD-PACKAGES_OEM_PT1_x86fre_MULTI.iso](#)

II. Language pack: Scheme

1. Add
- 1.1. Language name: Simplified Chinese - China, Region: zh-CN, Scope of application: Install.Wim, Boot.Wim, WinRE.Wim
2. Delete
- 2.1. Language name: English - United States, Region: en-US, Scope of application: Install.Wim, Boot.Wim, WinRE.Wim
3. Architecture: x64

III. Execute the extract command

- Auto = automatically search all local disks, default;
- Customize the path, for example, specify the E drive: \$ISO = "E:\"
- Extract.ps1
 - \Expand\Extract.ps1
 - https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging/tutorial/OS.10/22H2/Expand/Extract.ps1
- Copy the code

```
$ISO = "Auto"; $SaveTo = "D:\ISOTEMP_Custom";
Function Extract_Language {
    param($NewArch, $Act, $NewLang, $Expand)
    Function Match_Required_Fonts {
        param($Lang)
        $Fonts = @(
            @{ Match = @(
                "as", "ar-SA", "ar", "ar-AE", "ar-BH", "ar-DJ", "ar-DZ", "ar-EG", "ar-ER", "ar-IL", "ar-IQ", "ar-JO", "ar-KM", "ar-KW", "ar-LB", "ar-LY", "ar-MA",
                "ar-MR", "ar-OM", "ar-PS", "ar-QA", "ar-SD", "ar-SO", "ar-SS", "ar-SY", "ar-TD", "ar-TN", "ar-YE", "arz-Arab", "ckb-Arab", "fa", "fa-AF", "fa-IR", "glk-Arab", "ha-Arab", "ks-
                Arab", "ks-Arab-IN", "ku-Arab", "ku-Arab-IQ", "mzn-Arab", "pa-Arab", "pa-Arab-PK", "pnb-Arab", "prs", "prs-AF", "prs-Arab", "ps", "ps-AF", "sd-Arab", "sd-Arab-PK", "tk-
                Arab", "ug", "ug-Arab", "ug-CN", "ur", "ur-IN", "ur-PK", "uz-Arab", "uz-Arab-AF"); Name = "Arab"; };
            @{ Match = @(
                "bn-IN", "as-IN", "bn", "bn-BD", "bpy-Beng"); Name = "Beng"; };
            @{ Match = @(
                "da-dk", "iu-Cans", "iu-Cans-CA"); Name = "Cans"; };
            @{ Match = @(
                "chr-Cher-US", "chr-Cher"); Name = "Cher"; };
            @{ Match = @(
                "hi-IN", "bh-Deva", "brx", "brx-Deva", "brx-IN", "hi", "ks-Deva", "mai", "mr", "mr-IN", "ne", "ne-IN", "ne-NP", "new-Deva", "pi-Deva", "sa", "sa-Deva", "sa-IN"); Name = "Deva"; };
            @{ Match = @(
                "am", "am-ET", "byn", "byn-ER", "byn-Ethi", "ti", "ti-ER", "ti-ET", "tig", "tig-ER", "tig-Ethi", "ve-Ethi", "wal", "wal-ET", "wal-Ethi"); Name = "Ethi"; };
            @{ Match = @(
                "gu", "gu-IN"); Name = "Gujr"; };
            @{ Match = @(
                "pa", "pa-IN", "pa-Guru"); Name = "Guru"; };
            @{ Match = @(
                "zh-CN", "cmn-Hans", "gan-Hans", "hak-Hans", "wuu-Hans", "yue-Hans", "zh-gan-Hans", "zh-hak-Hans", "zh-Hans", "zh-SG", "zh-wuu-Hans", "zh-yue-Hans"); Name = "Hans"; };
            @{ Match = @(
                "zh-TW", "cmn-Hant", "hak-Hant", "lzh-Hant", "zh-hak-Hant", "zh-Hant", "zh-HK", "zh-lzh-Hant", "zh-MO", "zh-yue-Hant"); Name = "Hant"; };
            @{ Match = @(
                "he", "he-IL", "yi"); Name = "Hebr"; };
            @{ Match = @(
                "ja", "ja-JP"); Name = "Jpan"; };
            @{ Match = @(
                "km", "km-KH"); Name = "Khmr"; };
            @{ Match = @(
                "kn", "kn-IN"); Name = "Knda"; };
            @{ Match = @(
                "ko", "ko-KR"); Name = "Kore"; };
            @{ Match = @(
                "de-de", "lo", "lo-LA"); Name = "Lao"; };
            @{ Match = @(
                "ml", "ml-IN"); Name = "Mlym"; };
            @{ Match = @(
                "or", "or-IN"); Name = "Orya"; };
            @{ Match = @(
                "si", "si-LK"); Name = "Sinh"; };
            @{ Match = @(
                "tr-tr", "arc-Syrc", "syr", "syr-SY", "syr-Syrc"); Name = "Syrc"; };
            @{ Match = @(
                "ta", "ta-IN", "ta-LK", "ta-MY", "ta-SG"); Name = "Taml"; };
            @{ Match = @(
                "te", "te-IN"); Name = "Telu"; };
            @{ Match = @(
                "th", "th-TH"); Name = "Thai"; }
        )
        ForEach ($item in $Fonts) { if (($item.Match) -Contains $Lang) { return $item.Name; } }
        return "Not_matched"
    }
    Function Match_Other_Region_Specific_Requirements {
        param($Lang)
        $RegionSpecific = @(
            @{ Match = @(
                "zh-TW"); Name = "Taiwan"; }
        )
        ForEach ($item in $RegionSpecific) { if (($item.Match) -Contains $Lang) { return $item.Name; } }
        return "Skip_specific_packages"
    }
}
```

```
Function Extract_Process {  
    param($Package, $Name, $NewSaveTo)  
  
    $NewSaveTo = "$($SaveTo)\$($NewSaveTo)\Language\$($Act)\$($NewLang)"; New-Item -Path $NewSaveTo -ItemType Directory -ErrorAction SilentlyContinue |  
Out-Null;  
  
    if ($ISO -eq "Auto") { Get-PSDrive -PSProvider FileSystem -ErrorAction SilentlyContinue | ForEach-Object { ForEach ($item in $Package) { $TempFilePath = Join-Path  
-Path $_.Root -ChildPath $item -ErrorAction SilentlyContinue; if (Test-Path $TempFilePath -PathType Leaf) { Write-host "`n Find: " -NoNewLine; Write-host  
$TempFilePath -ForegroundColor Green; Write-host " Copy to: " -NoNewLine; Write-host $NewSaveTo; Copy-Item -Path $TempFilePath -Destination $NewSaveTo -  
Force; }} } else {  
        ForEach ($item in $Package) { $TempFilePath = Join-Path -Path $ISO -ChildPath $item -ErrorAction SilentlyContinue; Write-host "`n Find: " -NoNewline; Write-  
host $TempFilePath -ForegroundColor Green; if (Test-Path $TempFilePath -PathType Leaf) { Write-host " Copy to: " -NoNewLine; Write-host $NewSaveTo; Copy-Item -  
Path $TempFilePath -Destination $NewSaveTo -Force; } else { Write-host " Not found"; }}  
    }  
  
    Write-host "`n Verify the language pack file"  
  
    ForEach ($item in $Package) { $Path = "$($NewSaveTo)\$([IO.Path]::GetFileName($item))"; if (Test-Path $Path -PathType Leaf) { Write-host " Discover: " -  
NoNewLine; Write-host $Path -ForegroundColor Green; } else { Write-host " Not found: " -NoNewLine; Write-host $Path -ForegroundColor Red; }}  
}  
  
$AdvLanguage = @(  
    @{ Path = "Install\Install"; Rule = @( "Microsoft-Windows-LanguageFeatures-Fonts-{DiyLang}-Package~31bf3856ad364e35~AMD64~~.cab";  
"{ARCHC}\langpacks\Microsoft-Windows-Client-Language-Pack_x64_{Lang}.cab"; "Microsoft-Windows-LanguageFeatures-Basic-{Lang}-  
Package~31bf3856ad364e35~AMD64~~.cab"; "Microsoft-Windows-LanguageFeatures-Handwriting-{Lang}-Package~31bf3856ad364e35~AMD64~~.cab"; "Microsoft-  
Windows-LanguageFeatures-OCR-{Lang}-Package~31bf3856ad364e35~AMD64~~.cab"; "Microsoft-Windows-LanguageFeatures-Speech-{Lang}-  
Package~31bf3856ad364e35~AMD64~~.cab"; "Microsoft-Windows-LanguageFeatures-TextToSpeech-{Lang}-Package~31bf3856ad364e35~AMD64~~.cab";  
"Microsoft-Windows-InternetExplorer-Optional-Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "Microsoft-Windows-MSPaint-FoD-  
Package~31bf3856ad364e35~wow64~{Lang}~.cab"; "Microsoft-Windows-MSPaint-FoD-Package~31bf3856ad364e35~{ARCH}~{Lang}~.cab"; "Microsoft-Windows-  
Notepad-FoD-Package~31bf3856ad364e35~{ARCH}~{Lang}~.cab"; "Microsoft-Windows-Notepad-FoD-Package~31bf3856ad364e35~wow64~{Lang}~.cab";  
"Microsoft-Windows-PowerShell-ISE-FOD-Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "Microsoft-Windows-PowerShell-ISE-FOD-  
Package~31bf3856ad364e35~wow64~{Lang}~.cab"; "Microsoft-Windows-Printing-PMCPPC-FoD-Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "Microsoft-  
Windows-Printing-WFS-FoD-Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "Microsoft-Windows-StepsRecorder-  
Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "Microsoft-Windows-StepsRecorder-Package~31bf3856ad364e35~wow64~{Lang}~.cab"; "Microsoft-Windows-  
WordPad-FoD-Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "Microsoft-Windows-WordPad-FoD-Package~31bf3856ad364e35~wow64~{Lang}~.cab";  
"Microsoft-Windows-InternationalFeatures-{Specific}-Package~31bf3856ad364e35~amd64~~.cab"); } )  
  
    @{ Path = "Install\WinRE"; Rule = @( "Windows Preinstallation Environment\x64\WinPE_OC\WinPE-FontSupport-{Lang}.cab"; "Windows Preinstallation  
Environment\x64\WinPE_OC\{Lang}\lp.cab"; "Windows Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-securestartup_{Lang}.cab"; "Windows  
Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-atbroker_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-  
audiocore_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-audiodrivers_{Lang}.cab"; "Windows Preinstallation  
Environment\x64\WinPE_OC\{Lang}\winpe-enhancedstorage_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-narrator_{Lang}.cab";  
"Windows Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-scripting_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-  
speech-tts_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-srh_{Lang}.cab"; "Windows Preinstallation  
Environment\x64\WinPE_OC\{Lang}\winpe-srt_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-wds-tools_{Lang}.cab"; "Windows  
Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-wmi_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-  
appxpackaging_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-storagewmi_{Lang}.cab"; "Windows Preinstallation  
Environment\x64\WinPE_OC\{Lang}\winpe-wifi_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-rejuv_{Lang}.cab"; "Windows  
Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-opcservices_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-  
hta_{Lang}.cab"); } )  
  
    @{ Path = "Boot\Boot"; Rule = @( "Windows Preinstallation Environment\x64\WinPE_OC\WinPE-FontSupport-{Lang}.cab"; "Windows Preinstallation  
Environment\x64\WinPE_OC\{Lang}\lp.cab"; "Windows Preinstallation Environment\x64\WinPE_OC\{Lang}\WinPE-Setup_{Lang}.cab"; "Windows Preinstallation  
Environment\x64\WinPE_OC\{Lang}\WINPE-SETUP-CLIENT_{Lang}.CAB"; "Windows Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-  
securestartup_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-atbroker_{Lang}.cab"; "Windows Preinstallation  
Environment\x64\WinPE_OC\{Lang}\winpe-audiocore_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-audiodrivers_{Lang}.cab";  
"Windows Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-enhancedstorage_{Lang}.cab"; "Windows Preinstallation  
Environment\x64\WinPE_OC\{Lang}\winpe-narrator_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-scripting_{Lang}.cab";  
"Windows Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-speech-tts_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-  
srh_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OC\{Lang}\winpe-srt_{Lang}.cab"; "Windows Preinstallation
```



```
Environment\x64\WinPE_OCs\{Lang}\winpe-wds-tools_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-wmi_{Lang}.cab"; ) }
)
$NewFonts = Match_Required_Fonts -Lang $NewLang; $SpecificPackage = Match_Other_Region_Specific_Requirements -Lang $NewLang; $NewArchC =
$NewArch.Replace("AMD64", "x64");
Foreach ($item in $Expand) {
    $Language = @()
    Foreach ($itemList in $AdvLanguage) {
        if ($itemList.Path -eq $item) {
            Foreach ($PrintLang in $itemList.Rule) { $Language += "$($PrintLang)".Replace("{Lang}", $NewLang).Replace("{DiyLang}", $NewFonts).Replace("{Specific}",
$SpecificPackage).Replace("{ARCH}", $NewArch).Replace("{ARCHC}", $NewArchC) }
            Extract_Process -NewSaveTo $itemList.Path -Package $Language -Name $item
        }
    }
}
$Extract_language_Pack = @(
    @{ Tag = "zh-CN"; Arch = "AMD64"; Act = "Add"; Scope = @("Install\Install"; "Install\WinRE"; "Boot\Boot") }
    @{ Tag = "en-US"; Arch = "AMD64"; Act = "Del"; Scope = @("Install\Install"; "Install\WinRE"; "Boot\Boot") }
)

Foreach ($item in $Extract_language_Pack) { Extract_Language -Act $item.Act -NewLang $item.Tag -NewArch $item.Arch -Expand $item.Scope }
```

C. Custom encapsulation

I. Custom encapsulation: Install.wim

1. View Install.wim details

Before mounting, you should analyze the content structure of the Windows image. It usually contains multiple different versions (such as Home, Enterprise, Education, etc.). You can use the view command to display: image name, image description, image size, architecture, version, index number, etc. Then you can customize the required "index number" for mounting.

```
$ViewFile = "D:\ISOTEMP\Sources\Install.wim"; Get-WindowsImage -ImagePath $ViewFile | Foreach-Object { Get-WindowsImage -ImagePath
$ViewFile -index $_.ImageIndex ;}
```

Before proceeding with the loop operation, please read the following: Additional Edition: Comparison of attachable version IDs and required version IDs. It is recommended that you only create the following IDs: Core, CoreN, Professional, ProfessionalN, EnterpriseS, and EnterpriseSN before proceeding with the addendum.

LOOP OPERATING AREA, START,

2. Specify the path to mount Install.wim

```
New-Item -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -ItemType directory
```

3. Start mounting Install.wim

Default index number: 1

```
Mount-WindowsImage -ImagePath "D:\ISOTEMP\sources\install.wim" -Index "1" -Path "D:\ISOTEMP_Custom\Install\Install\Mount"
```


- Verify Mount Status

After mounting, check the "Mounted Windows Image Information," including mount directory, image name, and status, by running the command:

Get-WindowsImage -Mounted

PROCESS FILES WITHIN THE INSTALL.WIM IMAGE, OPTIONALLY, START,

3.1. Custom encapsulation: WinRE.wim

WARNING:

- WinRE.wim is a file within the Install.wim image;
- When Install.wim has multiple index numbers, only process any WinRE.wim;
- Synchronize to all index numbers to reduce the size of Install.wim, learn "[How to batch replace WinRE.wim in all index numbers in Install.wim](#)".

3.1.1. View WinRE.wim details

Image name, image description, image size, architecture, version, index number, etc.

\$ViewFile = "D:\ISOTEMP_Custom\Install\Install\Mount\Windows\System32\Recovery\WinRE.wim"; Get-WindowsImage -ImagePath \$ViewFile | Foreach-Object { Get-WindowsImage -ImagePath \$ViewFile -index \$_.ImageIndex };

3.1.2. Specify the path to mount WinRE.wim

New-Item -Path "D:\ISOTEMP_Custom\Install\WinRE\Mount" -ItemType directory

3.1.3. Start mounting WinRE.wim

Default index number: 1

Mount-WindowsImage -ImagePath
"D:\ISOTEMP_Custom\Install\Install\Mount\Windows\System32\Recovery\WinRE.wim" -Index "1" -Path
"D:\ISOTEMP_Custom\Install\WinRE\Mount"

- Verify Mount Status

After mounting, check the "Mounted Windows Image Information," including mount directory, image name, and status, by running the command:

Get-WindowsImage -Mounted

3.1.4. Language pack: WinRE

- Automatically install language packs: Get "Component: All installed packages in the image" and match them. After matching the corresponding names, install the local corresponding language pack files.
- When adding languages, different schema versions must be corresponded, and if not, errors are reported during the addition process.

3.1.4.1. Language pack: add

- WinRE.Instl.lang.ps1
 - `\Expand\Install\WinRE\WinRE.Instl.lang.ps1`
 - https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Install/WinRE/WinRE.Instl.lang.ps1
- Copy the code

```
$Mount = "D:\ISOTEMP_Custom\Install\WinRE\Mount"; $Sources = "D:\ISOTEMP_Custom\Install\WinRE\Language\Add\zh-CN"; $Initl_install_Language_Component = @();

Get-WindowsPackage -Path $Mount | ForEach-Object { $Initl_install_Language_Component += $_.PackageName; }

Add-WindowsPackage -Path $Mount -PackagePath "$($Sources)\WinPE-FontSupport-zh-CN.cab"

$Language = @( @{ Match = "*WinPE-LanguagePack-Package*"; File = "lp.cab"; }; @{ Match = "*SecureStartup*"; File = "winpe-securestartup_zh-CN.cab"; }; @{ Match =
"*ATBroker*"; File = "winpe-atbroker_zh-CN.cab"; }; @{ Match = "*AudioCore*"; File = "winpe-audiocore_zh-CN.cab"; }; @{ Match = "*AudioDrivers*"; File = "winpe-
audiodrivers_zh-CN.cab"; }; @{ Match = "*EnhancedStorage*"; File = "winpe-enhancedstorage_zh-CN.cab"; }; @{ Match = "*Narrator*"; File = "winpe-narrator_zh-CN.cab"; };
@{ Match = "*scripting*"; File = "winpe-scripting_zh-CN.cab"; }; @{ Match = "*Speech-TTS*"; File = "winpe-speech-tts_zh-CN.cab"; }; @{ Match = "*srh*"; File = "winpe-srh_zh-
CN.cab"; }; @{ Match = "*srt*"; File = "winpe-srt_zh-CN.cab"; }; @{ Match = "*wds-tools*"; File = "winpe-wds-tools_zh-CN.cab"; }; @{ Match = "*-WMI-Package*"; File = "winpe-
wmi_zh-CN.cab"; }; @{ Match = "*WinPE-AppxPackaging*"; File = "winpe-appxpackaging_zh-CN.cab"; }; @{ Match = "*StorageWMI*"; File = "winpe-storagewmi_zh-CN.cab"; };
@{ Match = "*WiFi*"; File = "winpe-wifi_zh-CN.cab"; }; @{ Match = "*rejuv*"; File = "winpe-rejuv_zh-CN.cab"; }; @{ Match = "*opcservices*"; File = "winpe-opcservices_zh-
CN.cab"; }; @{ Match = "*hta*"; File = "winpe-hta_zh-CN.cab"; } )

ForEach ($Rule in $Language) {

    Write-host "`n Rule name: $($Rule.Match)" -ForegroundColor Yellow; Write-host "  $('-' * 80)";

    ForEach ($Component in $Initl_install_Language_Component) {

        if ($Component -like "*$($Rule.Match)*"){

            Write-host "  Component name: " -NoNewline; Write-host $Component -ForegroundColor Green; Write-host "  Language pack file: " -NoNewline; Write-host
"$($Sources)\$($Rule.File)" -ForegroundColor Green; Write-Host "  Installing ".PadRight(22) -NoNewline;

            try{

                Add-WindowsPackage -Path $Mount -PackagePath "$($Sources)\$($Rule.File)" | Out-Null

                Write-host "Finish" -ForegroundColor Green

            } catch { Write-host "Failed" -ForegroundColor Red; Write-host "  $($_) " -ForegroundColor Red; }

            break

        }

    }

}
```

3.1.4.2. Offline image language: change

3.1.4.2.1. Change default language, regional settings, and other international settings

Region: zh-CN

```
Dism /Image:"D:\ISOTEMP_Custom\Install\WinRE\Mount" /Set-AllIntl:"zh-CN"
```

3.1.4.2.2. View available language settings

```
Dism /Image:"D:\ISOTEMP_Custom\Install\WinRE\Mount" /Get-Intl
```

3.1.4.3. Components: All packages installed in the image

3.1.4.3.1. View

```
Get-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\WinRE\Mount" | Out-GridView
```

3.1.4.3.2. Export to csv

```
$SaveTo = "D:\ISOTEMP_Custom\Install\WinRE\Report.Components.$(Get-Date -Format
"yyyyMMddHHmmss").csv"; Get-WindowsPackage -Path
"D:\ISOTEMP_Custom\Install\WinRE\Mount" | Export-CSV -NoType -Path $SaveTo; Write-
host $SaveTo -ForegroundColor Green
```

3.1.5. Cumulative updates

3.1.5.1. Add

Go to the download page: <https://www.catalog.update.microsoft.com/Search.aspx?q=KB5073933>, download and save to: [D:\ISOTEMP_Custom\Install\WinRE\Update](#), or download directly, selecting the appropriate download path based on your system architecture.

3.1.5.1.1. x64, default

- Direct download

```
https://catalog.s.download.windowsupdate.com/c/msdownload/update/software/crup/2026/01/windows10.0-kb5073933-x64\_c3c0f57f3d716ecbc314bd66413d72ff3659e9ea.cab
```

- Install

```
Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\WinRE\Mount" -PackagePath
"D:\ISOTEMP_Custom\Install\WinRE\Update\windows10.0-kb5073933-
x64_c3c0f57f3d716ecbc314bd66413d72ff3659e9ea.cab"
```

3.1.5.1.2. x86

- Direct download

```
https://catalog.s.download.windowsupdate.com/c/msdownload/update/software/crup/2026/01/windows10.0-kb5073933-x86\_0b69266727047a8170632a9a1714c8f59907dca9.cab
```

- Install

```
Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\WinRE\Mount" -PackagePath
"D:\ISOTEMP_Custom\Install\WinRE\Update\windows10.0-kb5073933-
x86_0b69266727047a8170632a9a1714c8f59907dca9.cab"
```

3.1.5.1.3. arm64

- Direct download

```
https://catalog.s.download.windowsupdate.com/c/msdownload/update/software/crup/
2026/01/windows10.0-kb5073933-
arm64_4797d349f42674d6b2043c6aad76baf56304c76e.cab
```

- Install

```
Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\WinRE\Mount" -PackagePath
"D:\ISOTEMP_Custom\Install\WinRE\Update\windows10.0-kb5073933-
arm64_4797d349f42674d6b2043c6aad76baf56304c76e.cab"
```

3.1.5.2. Solid update

It cannot be uninstalled after curing, which cleans the recovery image and resets the basis of any superseded components.

```
Dism /image:"D:\ISOTEMP_Custom\Install\WinRE\Mount" /cleanup-image /StartComponentCleanup
/ResetBase
```

3.1.5.2.1. Clean components after curing and updating

```
$Mount = "D:\ISOTEMP_Custom\Install\WinRE\Mount"; Get-WindowsPackage -Path $Mount -
ErrorAction SilentlyContinue | ForEach-Object { if ($_.PackageState -eq "Superseded") { Write-
Host " $($_.PackageName)" -ForegroundColor Green; Remove-WindowsPackage -Path
$Mount -PackageName $_.PackageName | Out-Null; }}
```

3.1.6. Drive

3.1.7. Save image

```
Save-WindowsImage -Path "D:\ISOTEMP_Custom\Install\WinRE\Mount"
```

3.1.8. Unmount image

Close any applications that may be accessing files in the image, including File Explorer.

```
Dismount-WindowsImage -Path "D:\ISOTEMP_Custom\Install\WinRE\Mount" -Discard
```

3.1.9. After rebuilding WinRE.wim, the file size can be reduced

- WinRE.Rebuild.ps1

- [\Install\WinRE\WinRE.Rebuild.ps1](#)
- https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Install/WinRE/WinRE.Rebuild.ps1

- Copy the code

```
$FileName = "D:\ISOTEMP_Custom\Install\Install\Mount\Windows\System32\Recovery\WinRE.wim"; Get-
WindowsImage -ImagePath $Filename -ErrorAction SilentlyContinue | ForEach-Object { Write-Host " Image name: " -
NoNewline; Write-Host "$($_.ImageName)" -ForegroundColor Yellow; Write-Host " The index number: " -NoNewline;
Write-Host "$($_.ImageIndex)" -ForegroundColor Yellow; Write-Host "`n Under reconstruction ".PadRight(28) -
NoNewline; try { Export-WindowsImage -SourceImagePath "$($Filename)" -SourceIndex "$($_.ImageIndex)" -
DestinationImagePath "$($FileName).New" -CompressionType max | Out-Null; Write-Host "Finish" -ForegroundColor
Green; } catch { Write-Host $_ -ForegroundColor Yellow; Write-host $Failed -ForegroundColor Red; }; Write-Host "`n
Rename: " -NoNewline -ForegroundColor Yellow; if (Test-Path "$($FileName).New" -PathType Leaf) { Remove-Item -
Path $Filename; Move-Item -Path "$($FileName).New" -Destination $Filename; Write-Host "Finish" -ForegroundColor
Green; } else { Write-host "Failed" -ForegroundColor Red; }
```

3.1.10. Backup WinRE.wim

- WinRE.Backup.ps1
 - [\Expand\Install\WinRE\WinRE.Backup.ps1](#)
 - https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Install/WinRE/WinRE.Backup.ps1

- Copy the code

```
$WimLibPath = "D:\ISOTEMP_Custom\Install\Install\Update\Winlib"

$FileName = "D:\ISOTEMP_Custom\Install\Install\Mount\Windows\System32\Recovery\WinRE.wim"

New-Item -Path $WimLibPath -ItemType Directory

Copy-Item -Path $FileName -Destination $WimLibPath -Force
```

3.1.11. Replace WinRE.wim within the Install.wim image

- After each mount Install.wim ["Replace WinRE.wim"](#);
- Learn ["Get all index numbers of Install.wim and replace the old WinRE.wim"](#).

[Process the files in the Install.wim image and end.](#)

4. Language pack

- Automatically install language packs: Get "Component: All installed packages in the image" and match them. After matching the corresponding names, install the local corresponding language pack files.
- When adding languages, different schema versions must be corresponded, and if not, errors are reported during the addition process.

4.1. Language pack: add

- Install.Instl.lang.ps1
 - `\Expand\Install\Install.Instl.lang.ps1`
 - https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging/tutorial/OS.10/22H2/Expand/Install/Install.Instl.lang.ps1
- Copy the code

```
Function Language_Install {

    param($Mount, $Sources, $Lang)

    $Initl_install_Language_Component = @(); $Script:Init_Folder_All_File_Match_Done = @(); $Script:Init_Folder_All_File_Exclude = @();

    if (Test-Path $Mount -PathType Container) { Get-WindowsPackage -Path $Mount | ForEach-Object { $Initl_install_Language_Component += $_.PackageName }; } else { Write-Host "Not mounted: $($Mount)"; return; }

    $Script:Init_Folder_All_File = @()

    if (Test-Path "$($Sources)\$($Lang)" -PathType Container) {

        Get-ChildItem -Path $Sources -Recurse -Include "*.cab" -ErrorAction SilentlyContinue | ForEach-Object { $Script:Init_Folder_All_File += $_.FullName; }

        Write-host "`n Available language pack installation files";

        if ($Script:Init_Folder_All_File.Count -gt 0) { ForEach ($Item in $Script:Init_Folder_All_File) { Write-host " $($Item)"; } } else { Write-host "There are no language pack files locally"; return; }

    } else { Write-Host "Path does not exist: $($Sources)\$($Lang)"; return; }

    $Script:Search_File_Order = @(

        @{ Name = "Fonts"; Description = "Fonts"; Rule = @( @{ Match_Name = "*Fonts*"; IsMatch = "No"; Capability = ""; } ) }

        @{ Name = "Basic"; Description = "Basic"; Rule = @( @{ Match_Name = "*LanguageFeatures-Basic*"; IsMatch = "Yes"; Capability = "Language.Basic~~~$($Lang)~0.0.1.0"; }; @{ Match_Name = "*Client*Language*Pack*"; IsMatch = "Yes"; Capability = "Language.Basic~~~$($Lang)~0.0.1.0"; } ) }

        @{ Name = "OCR"; Description = "Optical character recognition"; Rule = @( @{ Match_Name = "*LanguageFeatures-OCR*"; IsMatch = "Yes"; Capability = "Language.OCR~~~$($Lang)~0.0.1.0"; } ) }

        @{ Name = "Handwriting"; Description = "Handwriting recognition"; Rule = @( @{ Match_Name = "*LanguageFeatures-Handwriting*"; IsMatch = "Yes"; Capability = "Language.Handwriting~~~$($Lang)~0.0.1.0"; } ) }

        @{ Name = "TextToSpeech"; Description = "Text-to-speech"; Rule = @( @{ Match_Name = "*LanguageFeatures-TextToSpeech*"; IsMatch = "Yes"; Capability = "Language.TextToSpeech~~~$($Lang)~0.0.1.0"; } ) }

        @{ Name = "Speech"; Description = "Speech recognition"; Rule = @( @{ Match_Name = "*LanguageFeatures-Speech*"; IsMatch = "Yes"; Capability = "Language.Speech~~~$($Lang)~0.0.1.0"; } ) }

        @{ Name = "RegionSpecific"; Description = "Other region-specific requirements"; Rule = @( @{ Match_Name = "*InternationalFeatures*"; IsMatch = "No"; Capability = ""; } ) }

        @{ Name = "Retail"; Description = "Retail demo experience"; Rule = @( @{ Match_Name = "*RetailDemo*"; IsMatch = "Yes"; Capability = ""; } ) }

        @{ Name = "Features_On_Demand"; Description = "Features on demand"; Rule = @( @{ Match_Name = "*InternetExplorer*"; IsMatch = "Yes"; Capability = ""; }; @{ Match_Name = "*MSPaint*amd64*"; IsMatch = "Yes"; Capability = "Microsoft.Windows.MSPaint~~~0.0.1.0"; }; @{ Match_Name = "*MSPaint*wow64*"; IsMatch = "Yes"; Capability = "Microsoft.Windows.MSPaint~~~0.0.1.0"; }; @{ Match_Name = "*Notepad*amd64*"; IsMatch = "Yes"; Capability = "Microsoft.Windows.Notepad~~~0.0.1.0"; }; @{ Match_Name = "*Notepad*wow64*"; IsMatch = "Yes"; Capability = "Microsoft.Windows.Notepad~~~0.0.1.0"; }; @{ Match_Name = "*MediaPlayer*amd64*"; IsMatch =
```

```
"Yes"; Capability = "Media.WindowsMediaPlayer~~~~0.0.12.0"; }; @ { Match_Name = "*MediaPlayer*wow64*"; IsMatch = "Yes"; Capability =
"Media.WindowsMediaPlayer~~~~0.0.12.0"; }; @ { Match_Name = "*PowerShell-ISE-FOD-Package*amd64*"; IsMatch = "Yes"; Capability =
"Microsoft.Windows.PowerShell.ISE~~~~0.0.1.0"; }; @ { Match_Name = "*PowerShell-ISE-FOD-Package*wow64*"; IsMatch = "Yes"; Capability =
"Microsoft.Windows.PowerShell.ISE~~~~0.0.1.0"; }; @ { Match_Name = "*Printing*PMCPPC*amd64*"; IsMatch = "Yes"; Capability = "Print.Management.Console~~~~0.0.1.0"; };
@ { Match_Name = "*Printing*WFS*amd64*"; IsMatch = "Yes"; Capability = "Print.Management.Console~~~~0.0.1.0"; }; @ { Match_Name = "*StepsRecorder*amd64*"; IsMatch
= "Yes"; Capability = "App.StepsRecorder~~~~0.0.1.0"; }; @ { Match_Name = "*StepsRecorder*wow64*"; IsMatch = "Yes"; Capability = "App.StepsRecorder~~~~0.0.1.0"; };
@ { Match_Name = "*WordPad*amd64*"; IsMatch = "Yes"; Capability = "Microsoft.Windows.WordPad~~~~0.0.1.0"; }; @ { Match_Name = "*WordPad*wow64*"; IsMatch = "Yes";
Capability = "Microsoft.Windows.WordPad~~~~0.0.1.0"; }; @ { Match_Name = "*WMIC*FoD*Package*amd64*"; IsMatch = "Yes"; Capability = "WMIC~~~~"; }; @ { Match_Name =
"*WMIC*FoD*Package*wow64*"; IsMatch = "Yes"; Capability = "WMIC~~~~"; }; )

ForEach ($item in $Script:Search_File_Order) { New-Variable -Name "Init_File_Type_$( $item.Name )" -Value @() -Force }

ForEach ($Wildcard in $Script:Init_Folder_All_File) {

    ForEach ($item in $Script:Search_File_Order) {

        ForEach ($NewRule in $item.Rule) {

            if ($Wildcard -like "$($NewRule.Match_Name)*") { Write-host "`n  Fuzzy matching: " -ForegroundColor Green; Write-
host "  Language pack file: " -ForegroundColor Green; $OSDefaultUser = (Get-Variable -Name "Init_File_Type_$( $item.Name )" -ErrorAction
SilentlyContinue).Value; $TempSave = @ { Match_Name = $NewRule.Match_Name; Capability = $NewRule.Capability; FileName = $Wildcard }; $new = $OSDefaultUser +
$TempSave; if ($NewRule.IsMatch -eq "Yes") { ForEach ($Component in $Init_install_Language_Component) { if ($Component -like "$($NewRule.Match_Name)*") { Write-host
"  Component name: " -ForegroundColor Green; New-Variable -Name "Init_File_Type_$( $item.Name )" -Value $new -Force;
$Script:Init_Folder_All_File_Match_Done += $Wildcard; break; } } } else { Write-host "  Do not match, install directly" -ForegroundColor Yellow; New-Variable -Name
"Init_File_Type_$( $item.Name )" -Value $new -Force; $Script:Init_Folder_All_File_Match_Done += $Wildcard; } }

        }

    }

}

Write-host "`n  Grouping is complete, pending installation" -ForegroundColor Yellow; Write-host "  $('-' * 80)";

ForEach ($Wildcard in $Script:Search_File_Order) {

    $OSDefaultUser = (Get-Variable -Name "Init_File_Type_$( $Wildcard.Name )" -ErrorAction SilentlyContinue).Value

    Write-host "`n  $($Wildcard.Description) ( $($OSDefaultUser.Count) item )"

    if ($OSDefaultUser.Count -gt 0) { ForEach ($item in $OSDefaultUser) { Write-host "  $($item.FileName)" -ForegroundColor Green; } } else { Write-host "  Not available" -
ForegroundColor Red; }

}

Write-host "`n  Not matched, no longer installed" -ForegroundColor Yellow; Write-host "  $('-' * 80)";

ForEach ($item in $Script:Init_Folder_All_File) { if ($Script:Init_Folder_All_File_Match_Done -notcontains $item) { $Script:Init_Folder_All_File_Exclude += $item; Write-host "
$($item)" -ForegroundColor Red; } }

Write-host "`n  Install" -ForegroundColor Yellow; Write-host "  $('-' * 80)";

ForEach ($Wildcard in $Script:Search_File_Order) {

    $OSDefaultUser = (Get-Variable -Name "Init_File_Type_$( $Wildcard.Name )" -ErrorAction SilentlyContinue).Value

    Write-host "`n  $($Wildcard.Description) ( $($OSDefaultUser.Count) item )"; Write-host "  $('-' * 80)";

    if ($OSDefaultUser.Count -gt 0) {
```

```
ForEach ($item in $OSDefaultUser) {  
  
    Write-host "  Language pack file: " -NoNewline; Write-host $item.FileName -ForegroundColor Green; Write-Host "  Installing " .PadRight(22) -NoNewline;  
  
    if (Test-Path $item.FileName -PathType Leaf) {  
  
        try {  
  
            Add-WindowsPackage -Path $Mount -PackagePath $item.FileName | Out-Null  
  
            Write-host "Finish`n" -ForegroundColor Green  
  
        } catch { Write-host "Failed" -ForegroundColor Red; Write-host "  $($_) " -ForegroundColor Red; }  
  
        } else { Write-host "Does not exist`n"; }  
  
    }  
  
    } else { Write-host "  Not available`n" -ForegroundColor Red; }  
  
}  
  
}  
  
Language_Install -Mount "D:\ISOTEMP_Custom\Install\Install\Mount" -Sources "D:\ISOTEMP_Custom\Install\Install\Language\Add" -Lang "zh-CN"
```

4.2. Offline image language: change

- Starting Windows 11, the [default System UI Language](#) set by DISM is left unaltered on all editions except for Home edition. For [all commercial editions](#) the language chosen during the Out-of-Box Experience (OOBE) is set as the [System Preferred UI language](#) and Windows will be displayed in this language and for Home edition the language chosen at OOBE will continue to be the default System UI Language.
- As of Windows 10, version 2004, if an .appx-based Language Experience Pack (LXP) backed language is passed as an argument then the language will be set as the System Preferred UI language and its parent language will be set as the Default System UI language. In prior versions only .cab based language packs were supported.

4.2.1. Change default language, regional settings, and other international settings

```
Region: zh-CN  
  
Dism /Image:"D:\ISOTEMP_Custom\Install\Install\Mount" /Set-AllIntl:zh-CN
```

4.2.2. View available language settings

```
Dism /Image:"D:\ISOTEMP_Custom\Install\Install\Mount" /Get-Intl
```

4.3. Components: All packages installed in the image

4.3.1. View

```
Get-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" | Out-GridView
```

4.3.2. Export to csv


```
$SaveTo = "D:\ISOTEMP_Custom\Install\Install\Report.Components.$(Get-Date -Format "yyyyMMddHHmmss").csv";  
Get-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" | Export-CSV -NoType -Path $SaveTo; Write-  
host $SaveTo -ForegroundColor Green
```

5. InBox Apps

5.1. Learn

5.1.1. [DISM App Package \(.appx or .appxbundle\) Servicing Command-Line Options](#)

Important:

DISM /add-provisionedappxpackage Starting in Windows 10 version 1803, when using this option, you can preinstall apps without pinning them to the Start menu /region. When preinstalling an app, you can choose to exclude the app from LayoutModification.xml so that the app will install successfully and not appear as a Start menu tile. If no region list is specified, the app will only be provisioned when it is pinned to the Start layout.

Again, you are warned that using the command line to add must add the parameter: /Region

5.2. InBox Apps: Pre-install the application

- Group abbreviations
 - Group A: Core, CoreSingleLanguage, Education, Professional, ProfessionalEducation, ProfessionalWorkstation, Enterprise, IoTEnterprise, ServerRdsh
 - Group B: EnterpriseN, EnterpriseGN, EnterpriseSN, ProfessionalN, CoreN, EducationN, ProfessionalWorkstationN, ProfessionalEducationN, CloudN, CloudEN, CloudEditionN, CloudEditionLN, StarterN

SN	Package Name	Product ID	Group	Region Scope
1	Microsoft.HEIFImageExtension	9PMMSR1CGPWG	A	
2	Microsoft.MixedReality.Portal	9NG1H8B3ZC7M	A	
3	Microsoft.SkypeApp	9WZDNCRFJ364	A	
4	Microsoft.VP9VideoExtensions	9N4D0MSMP0PT	A	
5	Microsoft.WebMediaExtensions	9N5TDP8VCMHS	A	
6	Microsoft.WebpImageExtension	9PG2DK419DRG	A	
7	Microsoft.WindowsSoundRecorder	9WZDNCRFHWKN	A	
8	Microsoft.Xbox.TCUI	9NKNC0LD5NN6	A	
9	Microsoft.XboxGamingOverlay	9NZKPSTSNW4P	A	
10	Microsoft.ZuneMusic	9WZDNCRFJ3PT	A	
11	Microsoft.ZuneVideo	9WZDNCRFJ3P2	A	
12	Microsoft.UI.Xaml.2.0		A, B	

SN	Package Name	Product ID	Group	Region Scope
13	Microsoft.UI.Xaml.2.1		A, B	
14	Microsoft.UI.Xaml.2.3		A, B	
15	Microsoft.Advertising.Xaml		A, B	
16	Microsoft.NET.Native.Framework.1.7		A, B	
17	Microsoft.NET.Native.Framework.2.2		A, B	
18	Microsoft.NET.Native.Runtime.1.7		A, B	
19	Microsoft.NET.Native.Runtime.2.2		A, B	
20	Microsoft.VCLibs.140.00		A, B	
21	Microsoft.VCLibs.140.00.UWPDesktop		A, B	
22	Services.Store.Engagement		A, B	
23	Microsoft.Cortana	9NFFX4SZZ23L	A, B	
24	Microsoft.BingWeather	9WZDNCRFJ3Q2	A, B	
25	Microsoft.DesktopAppInstaller	9NBLGGH4NNS1	A, B	
26	Microsoft.GetHelp	9PKDZBMV1H3T	A, B	
27	Microsoft.Getstarted	9WZDNCRDTBJJ	A, B	
28	Microsoft.Microsoft3DViewer	9NBLGGH42THS	A, B	
29	Microsoft.MicrosoftOfficeHub	9WZDNCRD29V9	A, B	
30	Microsoft.MicrosoftSolitaireCollection	9WZDNCRFHWD2	A, B	
31	Microsoft.MicrosoftStickyNotes	9NBLGGH4QGHW	A, B	
32	Microsoft.MSPaint	9NBLGGH4QGHW	A, B	
33	Microsoft.Office.OneNote	XPFFZHVGQWWLHB	A, B	
34	Microsoft.People	9NBLGGH10PG8	A, B	
35	Microsoft.ScreenSketch	9MZ95KL8MR0L	A, B	
36	Microsoft.Wallet	9NBLGGH52CKV	A, B	
37	Microsoft.StorePurchaseApp	9NBLGGH4LS1F	A, B	
38	Microsoft.Windows.Photos	9WZDNCRFJBH4	A, B	
39	Microsoft.WindowsAlarms	9WZDNCRFJ3PR	A, B	
40	Microsoft.WindowsCalculator	9WZDNCRFHVN5	A, B	
41	Microsoft.WindowsCamera	9WZDNCRFJB BG	A, B	

SN	Package Name	Product ID	Group	Region Scope
42	Microsoft.Windows.CommunicationsApps	9WZDNCRFHVQM	A, B	
43	Microsoft.WindowsFeedbackHub	9NBLGGH4R32N	A, B	
44	Microsoft.WindowsMaps	9WZDNCRDTBVB	A, B	
45	Microsoft.WindowsStore	9WZDNCRFJBMP	A, B	
46	Microsoft.XboxApp	9MV0B5HZVK9Z	A, B	
47	Microsoft.XboxGameOverlay	9NBLGGH537C2	A, B	
48	Microsoft.XboxIdentityProvider	9WZDNCRD1HKW	A, B	
49	Microsoft.XboxSpeechToTextOverlay	9P086NHDB9W	A, B	
50	Microsoft.YourPhone	9NMPJ99VJBVV	A, B	

5.3. InBox Apps: Installed

```
$custom_array = @(); Get-AppXProvisionedPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" | ForEach-Object
{ $custom_array += [PSCustomObject]@{ DisplayName = $_.DisplayName; PackageName = $_.PackageName; Version = $_.Version;
Architecture = $_.Architecture; ResourceId = $_.ResourceId; Regions = $_.Regions; } }
```

- After executing the above PS code first, you can select the following "View" or "Export to CSV".
- Check the installed InBox Apps and understand the region binding. Unbound regions will not appear in the application after executing OOBE.

5.3.1. View

```
$custom_array | Out-GridView
```

5.3.2. Export to Csv

```
$SaveTo = "D:\ISOTEMP_Custom\Install\Install\Report.InBox.Apps.$(Get-Date -Format "yyyyMMddHHmmss").csv";
$custom_array | Export-CSV -NoType -Path $SaveTo; Write-host $SaveTo -ForegroundColor Green
```

5.4. Remove all installed pre-applications

- Install.InBox.Apps.Clear.all.ps1
 - \Expand\Install\Install.InBox.Apps.Clear.all.ps1
 - https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Install/Install.InBox.Apps.Clear.all.ps1
- Copy the code

```
Get-AppXProvisionedPackage -path "D:\ISOTEMP_Custom\Install\Install\Mount" -ErrorAction SilentlyContinue | ForEach-Object { Write-host "`n  $($_.DisplayName)"; Write-Host "  Deleting".PadRight(22) -NoNewline; try { Remove-
```

```
AppxProvisionedPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackageName $_.PackageName -ErrorAction
SilentlyContinue | Out-Null; Write-host "Finish" -ForegroundColor Green; } catch { Write-host "Failed" -ForegroundColor Red; }}
```

5.5. Installing "Local Language Experience Packs (LXPs)" to offline images marks: installed languages

Before you learn about installed language tags, first understand the list of languages available in the ZuneMusic app: **en-us**, en-gb, as-in, az-latn-az, bs-latn-ba, bn-in, cs-cz, cy-gb, ar-sa, de-de, af-za, am-et, da-dk, el-gr, es-es, es-mx, ca-es, ca-es-valencia, eu-es, fi-fi, bg-bg, ga-ie, et-ee, gl-es, gu-in, gd-gb, fil-ph, fr-ca, fr-fr, hy-am, fa-ir, hu-hu, id-id, it-it, ja-jp, hr-hr, ka-ge, is-is, he-il, hi-in, kk-kz, lo-la, km-kh, lt-lt, kn-in, kok-in, ko-kr, mk-mk, lv-lv, ms-my, mi-nz, mr-in, mt-mt, ne-np, nl-nl, nb-no, ml-in, nn-no, lb-lu, or-in, ro-ro, sk-sk, ru-ru, pl-pl, quz-pe, pt-br, pt-pt, sq-al, ta-in, th-th, sv-se, pa-in, sr-cyrl-ba, sr-cyrl-rs, sr-latn-rs, ur-pk, ug-cn, tr-tr, uk-ua, tt-ru, **zh-cn**, vi-vn, uz-latn-uz, sl-si, zh-tw, te-in

View installed languages for offline images

```
Dism /Image:"D:\ISOTEMP_Custom\Install\Install\Mount" /Get-Intl
```

View results for installed languages: **en-US**, **zh-CN**, When installing the ZuneMusic app, the installer will match "Installed Languages" and automatically filter the list of uninstalled languages, This is the language tag.

5.6. Offline image has language tag installed: How to add it

To mark the offline image: Language has been installed, there are two methods. The first is to install Microsoft-Windows-Client-Language-Pack_x64_zh-cn.cab, and the second is to install "Local Language Experience Pack (LXPs)". Microsoft official Windows 10 provides Local Language Experience Pack (LXPS) installation files, but Windows 11 no longer provides them. If you want to get them:

5.6.1. Download using the Windows Local Language Experience Packs (LXPs) Downloader

learn: <https://github.com/ilikeyi/LXPs>

After downloading, save to: **D:\ISOTEMP_Custom\Install\Install\Inbox.apps**

File format: **LanguageExperiencePack.zh-CN.Neutral.Appx**

5.6.2. Manual download

5.6.2.1. Region

Region	Product ID
en-US	C9PDSCC711RVF
ar-sa	9N4S78P86PKX
be-by	9MXPBGNNDW3L
bn-in	9P1M44L7W84T
ca-es-valencia	9P9K3WMFSW90
cy-gb	9NKJ9TBML4HB

Region	Region
af-za	9PDW16B5HMXR
as-in	9NTJLXMX35J
bg-bg	9MX54588434F
bs-latn-ba	9MVFKLJ10MFL
chr-cher-us	9MX15485N3RK
da-dk	9NDMT2VKSNL1

Region	Product ID
am-et	9NGL4R61W3PL
az-latn-az	9P5TFKZHQ5K8
bn-bd	9PH7TKVXGGM8
ca-es	9P6JMKJQZ9S7
cs-cz	9P3WXZ1KTM7C
de-de	9P6CT0SLW589

el-gr	9N586B13PBLD
es-mx	9N8MCM1X3928
fa-ir	9NGS7DD4QS21
fr-ca	9MTP2VP0VL92
gd-gb	9P1DBPF36BF3
ha-latn-ng	9N1L95DBGRG3
hr-hr	9NW01VND4LTW
id-id	9P4X3N4SDK8P
it-it	9P8PQWNS6VJX
kk-kz	9PHV179R97LV
kok-in	9MV3P55CMZ6P
ky-kg	9P7D3JJGZM48
lt-lt	9NWWD891H6HN
mk-mk	9P1X6XB1K3RN
mr-in	9MWXCKHJVR1J
nb-no	9N6J0M5DHCK0
nn-no	9PK7KM3Z06KH
pa-arab-pk	9NJRL03WH6FM
prs-af	9P3NGC6X5ZQC
quc-latn-gt	9P2V6MNNQZ0B
ru-ru	9NMJCX77QKPX
si-lk	9NVF9QSLGTL0
sq-al	9MWLRGNMDGK7
sr-latn-rs	9NBZ0SJDPPVT
ta-in	9PDZB1WT1B34
th-th	9MSTWFRL0LR4
tn-za	9NFSXM123DHT
ug-cn	9P52C5D7VL5S
uz-latn-uz	9P5P2T5P5L9S
xh-za	9NW3QWSLQD17
zh-tw	9PCJ4DHCQ1JQ

en-gb	9NT52VQ39BVN
et-ee	9NFBHFMCR30L
fi-fi	9MW3PQ7SD3QK
fr-fr	9NHMG4BJKMDG
gl-es	9NXRNBRNJN9B
he-il	9NB6ZFND5HCQ
hu-hu	9MWN3C58HL87
ig-ng	9PG4ZFJ48JSX
ja-jp	9N1W692FV4S1
km-kh	9PGKTS4JS531
ko-kr	9N4TXPCVRNGF
lb-lu	9N0ST1WBZ9D9
lv-lv	9N5CQDPH6SQT
ml-in	9NWDTV8FFV7L
ms-my	9NPXL8ZSDDQ7
ne-np	9P7CHPLWDQVN
nso-za	9NS49QLX5CDV
pa-in	9NSNC0ZJX69B
pt-br	9P8LBDM4FW35
quz-pe	9NHTX8NVQ04K
rw-rw	9NFW0M20H9WG
sk-sk	9N7LSNN099WB
sr-cyrl-ba	9MXGN7V65C7B
sv-se	9P0HSNX08177
te-in	9PMQJJGF63FW
ti-et	9NC8C9RDNK2S
tr-tr	9NL1D3T5HG9R
uk-ua	9PPPMZRSGHR8
vi-vn	9P0W68X0XZPT
yo-ng	9NGM3VPPZS5V
zu-za	9NNRM7KT5NB0

es-es	9NWVGWLHPB1Z
eu-es	9NMCHQHZ37HZ
fil-ph	9NWM2KGTDSSS
ga-ie	9P0L5Q848KXT
gu-in	9P2HMSWDJDQ1
hi-in	9NZC3GRX8LD3
hy-am	9NKM28TM6P67
is-is	9NTHJR7TQXX1
ka-ge	9P60JZL05WGH
kn-in	9NC6DB7N95F9
ku-arab-iq	9P1C18QL3D7H
lo-la	9N8X352G5NZV
mi-nz	9P2GDFB3JPSX
mn-mn	9PG1DHC4VTZW
mt-mt	9PDG96SQ6BN8
nl-nl	9PF1C9NB5PRV
or-in	9NTHCXCSJDH
pl-pl	9NC5HW94R0LD
pt-pt	9P7X8QJ7FL0X
ro-ro	9MWXGPJ5PJ3H
sd-arab-pk	9NB9JSCXW9X5
sl-si	9NV27L34J4ST
sr-cyrl-rs	9PPD6CCK9K5H
sw-ke	9NFF2M19DQ55
tg-cyrl-tj	9MZHLBPPT2HC
tk-tm	9NKHQ4GL6VLT
tt-ru	9NV90Q1X1ZR2
ur-pk	9NDWFTFW12BQ
wo-sn	9NH3SW1CR90F
zh-cn	9NRMNT6GMZ7

Download Region: zh-CN, application ID: 9NRMNT6GMZ70, Store link: <https://www.microsoft.com/store/productId/9NRMNT6GMZ70>

5.6.2.2. Open the website: <https://store.rg-adguard.netS>

5.6.2.2.1. a). Select a URL (link). b). Select a channel (RP). c). Enter keywords:
<https://www.microsoft.com/store/productId/9NRMNT6GMZ70>

5.6.2.2.2. Search 22621 content in the web page, search results:
[Microsoft.LanguageExperiencePackzh-CN_22621.*.neutral_8wekyb3d8bbwe.appx](#)

5.6.2.2.3. After downloading, save it to the

[D:\ISOTEMP_Custom\Install\Install\Inbox.apps](#) directory and rename it:
[LanguageExperiencePack.zh-cn.Neutral.Appx](#)

5.6.3. Execute the installation command to install the local language experience package (LXPs)

After understanding how to add zone tags, obtain [LanguageExperiencePack.zh-cn.Neutral.appx](#), execute the installation command:

```
Add-AppxProvisionedPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackagePath  
"D:\ISOTEMP_Custom\Install\Install\Inbox.apps\LanguageExperiencePack.zh-cn.Neutral.appx" -SkipLicense
```

5.6.4. Regional tag: New changes

The installed language of the offline image will become the default. For example, if the installed languages are en-US and zh-CN, when you reinstall or update the InBox Apps application, the installed language will be referenced for matching and the corresponding language pack will be automatically added. You can view the changes in the following ways.

5.6.4.1. InBox Apps: An installed application package

```
$custom_array = @(); Get-AppXProvisionedPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" |  
ForEach-Object { $custom_array += [PSCustomObject]@{ DisplayName = $_.DisplayName; PackageName  
= $_.PackageName; Version = $_.Version; Architecture = $_.Architecture; ResourceId = $_.ResourceId;  
Regions = $_.Regions; } }
```

○ After executing the above PS code first, you can select the following "View" or "Export to CSV".

5.6.4.1.1. View

```
$custom_array | Out-GridView
```

5.6.4.1.2. Export to Csv

```
$SaveTo = "D:\ISOTEMP_Custom\Install\Install\Report.InBox.Apps.$(Get-Date -Format  
"yyyyMMddHHmmss").csv"; $custom_array | Export-CSV -NoType -Path $SaveTo; Write-  
host $SaveTo -ForegroundColor Green
```

5.6.4.2. View available language settings

Dism /Image:"D:\ISOTEMP_Custom\Install\Install\Mount" /Get-Intl

5.7. InBox Apps: Install

5.7.1. Mount or decompress the InBox Apps installation file

Mount 19041.3031.230508-1728.vb_release_svc_prod3_amd64fre_InboxApps.iso or extract to any location;

5.7.2. After executing the installation command, install InBox Apps to: Install.wim

- Auto = Automatically search all local disks, default;
- Custom path, e.g. specify F drive: \$ISO = "F:\packages"
- Install.Inst.Inbox.apps.ps1
 - \Expand\Install\Install.Inst.InBox.Apps.ps1
 - https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Install/Install.Inst.InBox.Apps.ps1
- Copy the code

\$ISO = "Auto"; \$Mount = "D:\ISOTEMP_Custom\Install\Install\Mount"; \$Allow_Install_App = @();

```
try { Write-host "`n Offline image version: " -NoNewline; $Current_Edition_Version = (Get-WindowsEdition -Path $Mount).Edition; Write-Host $Current_Edition_Version -ForegroundColor Green; } catch { Write-Host "Error" -ForegroundColor Red; Write-Host " $($_) " -ForegroundColor Yellow; return; }
```

```
$Pre_Config_Rules = @( @{ Name = @"Core"; "CoreN"; "CoreSingleLanguage"; }; Apps = @( "Microsoft.UI.Xaml.2.3"; "Microsoft.UI.Xaml.2.4"; "Microsoft.UI.Xaml.2.7"; "Microsoft.NET.Native.Framework.2.2"; "Microsoft.NET.Native.Runtime.2.2"; "Microsoft.VCLibs.140.00"; "Microsoft.VCLibs.140.00.UWPDesktop"; "Microsoft.HEIFImageExtension"; "Microsoft.HEVCVideoExtension"; "Microsoft.SecHealthUI"; "Microsoft.VP9VideoExtensions"; "Microsoft.WebplImageExtension"; "Microsoft.WindowsStore"; "Microsoft.GamingApp"; "Microsoft.Sticky.Notes"; "Microsoft.Paint"; "Microsoft.PowerAutomateDesktop"; "Microsoft.ScreenSketch"; "Microsoft.WindowsNotepad"; "Microsoft.WindowsTerminal"; "Clipchamp.Clipchamp"; "Microsoft.Solitaire.Collection"; "Microsoft.WindowsAlarms"; "Microsoft.WindowsFeedbackHub"; "Microsoft.WindowsMaps"; "Microsoft.ZuneMusic"; "Microsoft.BingNews"; "Microsoft.DesktopAppInstaller"; "Microsoft.WindowsCamera"; "Microsoft.Getstarted"; "Microsoft.Cortana"; "Microsoft.BingWeather"; "Microsoft.GetHelp"; "Microsoft.MicrosoftOfficeHub"; "Microsoft.People"; "Microsoft.StorePurchaseApp"; "Microsoft.Todos"; "Microsoft.WebMediaExtensions"; "Microsoft.Windows.Photos"; "Microsoft.WindowsCalculator"; "Microsoft.Windows.CommunicationsApps"; "Microsoft.WindowsSoundRecorder"; "Microsoft.Xbox.TCUI"; "Microsoft.XboxGameOverlay"; "Microsoft.XboxGamingOverlay"; "Microsoft.XboxIdentityProvider"; "Microsoft.XboxSpeechToTextOverlay"; "Microsoft.YourPhone"; "Microsoft.ZuneVideo"; "MicrosoftCorporationII.QuickAssist"; "MicrosoftWindows.Client.WebExperience"; "Microsoft.RawImageExtension"; "MicrosoftCorporationII.MicrosoftFamily"; } ); @ { Name = @"Education"; "Professional"; "ProfessionalEducation"; "ProfessionalWorkstation"; "Enterprise"; "IoTEnterprise"; "ServerRdsh"; }; Apps = @( "Microsoft.UI.Xaml.2.3"; "Microsoft.UI.Xaml.2.4"; "Microsoft.UI.Xaml.2.7"; "Microsoft.NET.Native.Framework.2.2"; "Microsoft.NET.Native.Runtime.2.2"; "Microsoft.VCLibs.140.00"; "Microsoft.VCLibs.140.00.UWPDesktop"; "Microsoft.HEIFImageExtension"; "Microsoft.HEVCVideoExtension"; "Microsoft.SecHealthUI"; "Microsoft.VP9VideoExtensions"; "Microsoft.WebplImageExtension"; "Microsoft.WindowsStore"; "Microsoft.GamingApp"; "Microsoft.Sticky.Notes"; "Microsoft.Paint"; "Microsoft.PowerAutomateDesktop"; "Microsoft.ScreenSketch"; "Microsoft.WindowsNotepad"; "Microsoft.WindowsTerminal"; "Clipchamp.Clipchamp"; "Microsoft.Solitaire.Collection"; "Microsoft.WindowsAlarms"; "Microsoft.WindowsFeedbackHub"; "Microsoft.WindowsMaps"; "Microsoft.ZuneMusic"; "Microsoft.BingNews"; "Microsoft.DesktopAppInstaller"; "Microsoft.WindowsCamera"; "Microsoft.Getstarted"; "Microsoft.Cortana"; "Microsoft.BingWeather"; "Microsoft.GetHelp"; "Microsoft.MicrosoftOfficeHub"; "Microsoft.People"; "Microsoft.StorePurchaseApp"; "Microsoft.Todos"; "Microsoft.WebMediaExtensions"; "Microsoft.Windows.Photos"; "Microsoft.WindowsCalculator"; "Microsoft.Windows.CommunicationsApps"; "Microsoft.WindowsSoundRecorder"; "Microsoft.Xbox.TCUI"; "Microsoft.XboxGameOverlay"; "Microsoft.XboxGamingOverlay"; "Microsoft.XboxIdentityProvider"; "Microsoft.XboxSpeechToTextOverlay"; "Microsoft.YourPhone"; "Microsoft.ZuneVideo"; "MicrosoftCorporationII.QuickAssist"; "MicrosoftWindows.Client.WebExperience"; "Microsoft.RawImageExtension"; }); @ { Name = @"EnterpriseN"; "EnterpriseGN"; "EnterpriseSN"; "ProfessionalN"; "EducationN"; "ProfessionalWorkstationN"; "ProfessionalEducationN"; "CloudN"; "CloudEN"; "CloudEditionN"; "CloudEditionLN"; "StarterN"; }; Apps = @( "Microsoft.UI.Xaml.2.3"; "Microsoft.UI.Xaml.2.4"; "Microsoft.UI.Xaml.2.7"; "Microsoft.NET.Native.Framework.2.2"; "Microsoft.NET.Native.Runtime.2.2"; "Microsoft.VCLibs.140.00"; "Microsoft.VCLibs.140.00.UWPDesktop"; "Microsoft.SecHealthUI"; "Microsoft.WindowsStore"; "Microsoft.Sticky.Notes"; "Microsoft.Paint"; "Microsoft.PowerAutomateDesktop";
```



```
"Microsoft.ScreenSketch"; "Microsoft.WindowsNotepad"; "Microsoft.WindowsTerminal"; "Clipchamp.Clipchamp"; "Microsoft.Solitaire.Collection"; "Microsoft.WindowsAlarms";
"Microsoft.WindowsFeedbackHub"; "Microsoft.WindowsMaps"; "Microsoft.BingNews"; "Microsoft.DesktopAppInstaller"; "Microsoft.WindowsCamera"; "Microsoft.Getstarted";
"Microsoft.Cortana"; "Microsoft.BingWeather"; "Microsoft.GetHelp"; "Microsoft.MicrosoftOfficeHub"; "Microsoft.People"; "Microsoft.StorePurchaseApp"; "Microsoft.Todos";
"Microsoft.Windows.Photos"; "Microsoft.WindowsCalculator"; "Microsoft.Windows.CommunicationsApps"; "Microsoft.XboxGameOverlay"; "Microsoft.XboxIdentityProvider";
"Microsoft.XboxSpeechToTextOverlay"; "Microsoft.YourPhone"; "MicrosoftCorporationII.QuickAssist"; "MicrosoftWindows.Client.WebExperience"; ) }
```

```
ForEach ($item in $Pre_Config_Rules) { if ($item.Name -contains $Current_Edition_Version) { Write-host "`n Match to: "-NoNewline; Write-host $Current_Edition_Version -
ForegroundColor Green; $Allow_Install_App = $item.Apps; break; } }
```

```
Write-host "`n The app to install ( $($Allow_Install_App.Count) item ) "-ForegroundColor Yellow; Write-host " $('-' * 80)";
```

```
ForEach ($item in $Allow_Install_App) { Write-host " $($item)" -ForegroundColor Green; }
```

```
$InBoxApps = @( @{ Name = "Microsoft.UI.Xaml.2.3"; File = "Microsoft.UI.Xaml.x64.2.3.appx"; License = ""; }; @{ Name = "Microsoft.UI.Xaml.2.4"; File =
"Microsoft.UI.Xaml.x64.2.4.appx"; License = ""; }; @{ Name = "Microsoft.UI.Xaml.2.7"; File = "Microsoft.UI.Xaml.x64.2.7.appx"; License = ""; }; @{ Name =
"Microsoft.NET.Native.Framework.2.2"; File = "Microsoft.NET.Native.Framework.x64.2.2.appx"; License = ""; }; @{ Name = "Microsoft.NET.Native.Runtime.2.2"; File =
"Microsoft.NET.Native.Runtime.x64.2.2.appx"; License = ""; }; @{ Name = "Microsoft.VCLibs.140.00"; File = "Microsoft.VCLibs.x64.14.00.appx"; License = ""; }; @{ Name =
"Microsoft.VCLibs.140.00.UWPDesktop"; File = "Microsoft.VCLibs.x64.14.00.UWPDesktop.appx"; License = ""; }; @{ Name = "Microsoft.WindowsStore"; File =
"Microsoft.WindowsStore_8wekyb3d8bbwe.msixbundle"; License = "Microsoft.WindowsStore_8wekyb3d8bbwe.xml"; }; @{ Name = "Microsoft.HEIFImageExtension"; File =
"Microsoft.HEIFImageExtension_8wekyb3d8bbwe.appxbundle"; License = "Microsoft.HEIFImageExtension_8wekyb3d8bbwe.xml"; }; @{ Name =
"Microsoft.HEVCVideoExtension"; File = "Microsoft.HEVCVideoExtension_8wekyb3d8bbwe.x64.appx"; License = "Microsoft.HEVCVideoExtension_8wekyb3d8bbwe.x64.xml"; };
@{ Name = "Microsoft.SecHealthUI"; File = "Microsoft.SecHealthUI_8wekyb3d8bbwe.x64.appx"; License = "Microsoft.SecHealthUI_8wekyb3d8bbwe.x64.xml"; }; @{ Name =
"Microsoft.VP9VideoExtensions"; File = "Microsoft.VP9VideoExtensions_8wekyb3d8bbwe.x64.appx"; License = "Microsoft.VP9VideoExtensions_8wekyb3d8bbwe.x64.xml"; };
@{ Name = "Microsoft.WebplImageExtension"; File = "Microsoft.WebplImageExtension_8wekyb3d8bbwe.x64.appx"; License =
"Microsoft.WebplImageExtension_8wekyb3d8bbwe.x64.xml"; }; @{ Name = "Microsoft.GamingApp"; File = "Microsoft.GamingApp_8wekyb3d8bbwe.msixbundle"; License =
"Microsoft.GamingApp_8wekyb3d8bbwe.xml"; }; @{ Name = "Microsoft.Sticky.Notes"; File = "Microsoft.MicrosoftStickyNotes_8wekyb3d8bbwe.msixbundle"; License =
"Microsoft.MicrosoftStickyNotes_8wekyb3d8bbwe.xml"; }; @{ Name = "Microsoft.Paint"; File = "Microsoft.Paint_8wekyb3d8bbwe.msixbundle"; License =
"Microsoft.Paint_8wekyb3d8bbwe.xml"; }; @{ Name = "Microsoft.PowerAutomateDesktop"; File = "Microsoft.PowerAutomateDesktop_8wekyb3d8bbwe.msixbundle"; License =
"Microsoft.PowerAutomateDesktop_8wekyb3d8bbwe.xml"; }; @{ Name = "Microsoft.ScreenSketch"; File = "Microsoft.ScreenSketch_8wekyb3d8bbwe.msixbundle"; License =
"Microsoft.ScreenSketch_8wekyb3d8bbwe.xml"; }; @{ Name = "Microsoft.WindowsNotepad"; File = "Microsoft.WindowsNotepad_8wekyb3d8bbwe.msixbundle"; License =
"Microsoft.WindowsNotepad_8wekyb3d8bbwe.xml"; }; @{ Name = "Microsoft.WindowsTerminal"; File = "Microsoft.WindowsTerminal_8wekyb3d8bbwe.msixbundle"; License =
"Microsoft.WindowsTerminal_8wekyb3d8bbwe.xml"; }; @{ Name = "Clipchamp.Clipchamp"; File = "Clipchamp.Clipchamp_yxz26nhyzhsrt.msixbundle"; License =
"Clipchamp.Clipchamp_yxz26nhyzhsrt.xml"; }; @{ Name = "Microsoft.Solitaire.Collection"; File = "Microsoft.MicrosoftSolitaireCollection_8wekyb3d8bbwe.msixbundle"; License
= "Microsoft.MicrosoftSolitaireCollection_8wekyb3d8bbwe.xml"; }; @{ Name = "Microsoft.WindowsAlarms"; File = "Microsoft.WindowsAlarms_8wekyb3d8bbwe.msixbundle";
License = "Microsoft.WindowsAlarms_8wekyb3d8bbwe.xml"; }; @{ Name = "Microsoft.WindowsFeedbackHub"; File =
"Microsoft.WindowsFeedbackHub_8wekyb3d8bbwe.msixbundle"; License = "Microsoft.WindowsFeedbackHub_8wekyb3d8bbwe.xml"; }; @{ Name = "Microsoft.WindowsMaps";
File = "Microsoft.WindowsMaps_8wekyb3d8bbwe.msixbundle"; License = "Microsoft.WindowsMaps_8wekyb3d8bbwe.xml"; }; @{ Name = "Microsoft.ZuneMusic"; File =
"Microsoft.ZuneMusic_8wekyb3d8bbwe.msixbundle"; License = "Microsoft.ZuneMusic_8wekyb3d8bbwe.xml"; }; @{ Name = "MicrosoftCorporationII.MicrosoftFamily"; File =
"MicrosoftCorporationII.MicrosoftFamily_8wekyb3d8bbwe.msixbundle"; License = "MicrosoftCorporationII.MicrosoftFamily_8wekyb3d8bbwe.xml"; }; @{ Name =
"Microsoft.BingNews"; File = "Microsoft.BingNews_8wekyb3d8bbwe.msixbundle"; License = "Microsoft.BingNews_8wekyb3d8bbwe.xml"; }; @{ Name =
"Microsoft.DesktopAppInstaller"; File = "Microsoft.DesktopAppInstaller_8wekyb3d8bbwe.msixbundle"; License = "Microsoft.DesktopAppInstaller_8wekyb3d8bbwe.xml"; };
@{ Name = "Microsoft.WindowsCamera"; File = "Microsoft.WindowsCamera_8wekyb3d8bbwe.msixbundle"; License = "Microsoft.WindowsCamera_8wekyb3d8bbwe.xml"; };
@{ Name = "Microsoft.Getstarted"; File = "Microsoft.Getstarted_8wekyb3d8bbwe.msixbundle"; License = "Microsoft.Getstarted_8wekyb3d8bbwe.xml"; }; @{ Name =
"Microsoft.Cortana"; File = "Microsoft.CortanaApp_8wekyb3d8bbwe.appxbundle"; License = "Microsoft.CortanaApp_8wekyb3d8bbwe.xml"; }; @{ Name =
"Microsoft.BingWeather"; File = "Microsoft.BingWeather_8wekyb3d8bbwe.appxbundle"; License = "Microsoft.BingWeather_8wekyb3d8bbwe.xml"; }; @{ Name =
"Microsoft.GetHelp"; File = "Microsoft.GetHelp_8wekyb3d8bbwe.appxbundle"; License = "Microsoft.GetHelp_8wekyb3d8bbwe.xml"; }; @{ Name =
"Microsoft.MicrosoftOfficeHub"; File = "Microsoft.MicrosoftOfficeHub_8wekyb3d8bbwe.appxbundle"; License = "Microsoft.MicrosoftOfficeHub_8wekyb3d8bbwe.xml"; };
@{ Name = "Microsoft.People"; File = "Microsoft.People_8wekyb3d8bbwe.appxbundle"; License = "Microsoft.People_8wekyb3d8bbwe.xml"; }; @{ Name =
"Microsoft.StorePurchaseApp"; File = "Microsoft.StorePurchaseApp_8wekyb3d8bbwe.appxbundle"; License = "Microsoft.StorePurchaseApp_8wekyb3d8bbwe.xml"; }; @{ Name
= "Microsoft.Todos"; File = "Microsoft.Todos_8wekyb3d8bbwe.appxbundle"; License = "Microsoft.Todos_8wekyb3d8bbwe.xml"; }; @{ Name = "Microsoft.WebMediaExtensions";
File = "Microsoft.WebMediaExtensions_8wekyb3d8bbwe.appxbundle"; License = "Microsoft.WebMediaExtensions_8wekyb3d8bbwe.xml"; }; @{ Name =
"Microsoft.Windows.Photos"; File = "Microsoft.Windows.Photos_8wekyb3d8bbwe.appxbundle"; License = "Microsoft.Windows.Photos_8wekyb3d8bbwe.xml"; }; @{ Name =
"Microsoft.WindowsCalculator"; File = "Microsoft.WindowsCalculator_8wekyb3d8bbwe.appxbundle"; License = "Microsoft.WindowsCalculator_8wekyb3d8bbwe.xml"; };
@{ Name = "Microsoft.Windows.CommunicationsApps"; File = "Microsoft.WindowsCommunicationsApps_8wekyb3d8bbwe.appxbundle"; License =
```



```
"Microsoft.WindowsCommunicationsApps_8wekyb3d8bbwe.xml"; }; @{{ Name = "Microsoft.WindowsSoundRecorder"; File =
"Microsoft.WindowsSoundRecorder_8wekyb3d8bbwe.appxbundle"; License = "Microsoft.WindowsSoundRecorder_8wekyb3d8bbwe.xml"; }; @{{ Name = "Microsoft.Xbox.TCUI";
File = "Microsoft.Xbox.TCUI_8wekyb3d8bbwe.appxbundle"; License = "Microsoft.Xbox.TCUI_8wekyb3d8bbwe.xml"; }; @{{ Name = "Microsoft.XboxGameOverlay"; File =
"Microsoft.XboxGameOverlay_8wekyb3d8bbwe.appxbundle"; License = "Microsoft.XboxGameOverlay_8wekyb3d8bbwe.xml"; }; @{{ Name = "Microsoft.XboxGamingOverlay"; File
= "Microsoft.XboxGamingOverlay_8wekyb3d8bbwe.appxbundle"; License = "Microsoft.XboxGamingOverlay_8wekyb3d8bbwe.xml"; }; @{{ Name =
"Microsoft.XboxIdentityProvider"; File = "Microsoft.XboxIdentityProvider_8wekyb3d8bbwe.appxbundle"; License = "Microsoft.XboxIdentityProvider_8wekyb3d8bbwe.xml"; };
@{{ Name = "Microsoft.XboxSpeechToTextOverlay"; File = "Microsoft.XboxSpeechToTextOverlay_8wekyb3d8bbwe.appxbundle"; License =
"Microsoft.XboxSpeechToTextOverlay_8wekyb3d8bbwe.xml"; }; @{{ Name = "Microsoft.YourPhone"; File = "Microsoft.YourPhone_8wekyb3d8bbwe.appxbundle"; License =
"Microsoft.YourPhone_8wekyb3d8bbwe.xml"; }; @{{ Name = "Microsoft.ZuneVideo"; File = "Microsoft.ZuneVideo_8wekyb3d8bbwe.appxbundle"; License =
"Microsoft.ZuneVideo_8wekyb3d8bbwe.xml"; }; @{{ Name = "MicrosoftCorporationII.QuickAssist"; File = "MicrosoftCorporationII.QuickAssist_8wekyb3d8bbwe.appxbundle";
License = "MicrosoftCorporationII.QuickAssist_8wekyb3d8bbwe.xml"; }; @{{ Name = "MicrosoftWindows.Client.WebExperience"; File =
"MicrosoftWindows.Client.WebExperience_cw5n1h2txyewy.appxbundle"; License = "MicrosoftWindows.Client.WebExperience_cw5n1h2txyewy.xml"; }; @{{ Name =
"Microsoft.RawImageExtension"; File = "Microsoft.RawImageExtension_8wekyb3d8bbwe.appxbundle"; License = "Microsoft.RawImageExtension_8wekyb3d8bbwe.xml"; }}
```

```
Function Install_Appx {

    param($File, $License)

    Write-host "  $('-' * 80)"; Write-host "  Installing: " -NoNewline; Write-host $File -ForegroundColor Yellow;

    if (Test-Path -Path $File -PathType Leaf) {

        if (Test-Path -Path $License -PathType Leaf) {

            Write-host "  License: " -NoNewline; Write-host $License -ForegroundColor Yellow; Write-host "  With License".PadRight(22) -NoNewline -ForegroundColor Green; Write-
host "  Installing".PadRight(22) -NoNewline;

            try{

                Add-AppxProvisionedPackage -Path $Mount -PackagePath $File -LicensePath $License -ErrorAction SilentlyContinue | Out-Null

                Write-Host "Done" -ForegroundColor Green

            } catch { Write-Host "Failed" -ForegroundColor Red; Write-Host "  $($_) " -ForegroundColor Yellow; }

        } else {

            Write-host "  No License".PadRight(22) -NoNewline -ForegroundColor Red; Write-host "  Installing".PadRight(22) -NoNewline;

            try{

                Add-AppxProvisionedPackage -Path $Mount -PackagePath $File -SkipLicense -ErrorAction SilentlyContinue | Out-Null

                Write-Host "Done" -ForegroundColor Green

            } catch { Write-Host "Failed" -ForegroundColor Red; Write-Host "  $($_) " -ForegroundColor Yellow; }

        }

    } else { Write-host "  The installation package does not exist" -ForegroundColor Red; }

}

ForEach ($Rule in $InBoxApps) {

    Write-host "`n  Name: " -NoNewline; Write-host $Rule.Name -ForegroundColor Yellow; Write-host "  $('-' * 80)";

    if($Allow_Install_App -contains $Rule.Name) {

        Write-host "  Search for apps: " -NoNewline; Write-host $Rule.File -ForegroundColor Yellow; Write-host "  Search for License: " -NoNewline; Write-host $Rule.File -
ForegroundColor Yellow;

    }

}
```

```
if ($ISO -eq "Auto") {

    Get-PSDrive -PSProvider FileSystem -ErrorAction SilentlyContinue | ForEach-Object {

        $AppPath = Join-Path -Path $_.Root -ChildPath "packages\${$Rule.File}" -ErrorAction SilentlyContinue; $LicensePath = Join-Path -Path $_.Root -ChildPath
"packages\${$Rule.License}" -ErrorAction SilentlyContinue;

        if (Test-Path $AppPath -PathType Leaf) {

            Write-host "  $('-' * 80)"; Write-host "  Discover apps: " -NoNewLine; Write-host $AppPath -ForegroundColor Green;

            if (Test-Path $LicensePath -PathType Leaf) {; Write-host "  Discover License: " -NoNewLine; Write-host $LicensePath -ForegroundColor Green; } else { Write-host "
License: " -NoNewLine; Write-host "Not found" -ForegroundColor Red; }

            Install_Appx -File $AppPath -License $LicensePath

            return

        }

    }

} else { Install_Appx -File "$($ISO)\${$Rule.File}" -License "$($ISO)\${$Rule.License)"; }

} else { Write-host "  Skip the installation" -ForegroundColor Red; }

}
```

5.8. Offline image has language tag installed: Remove

- After completing the installation of the InBox Apps application, the Region tag is no longer important and can be deleted or not deleted. Delete "Local Language Experience Package (LXPs), Simplified Chinese - China)" and uniquely identify the Region tag: **zh-CN**, can be changed to other Region tag.
- Install.Clear.Flag.ps1
 - [\Expand\Install\Install.Clear.Flag.ps1](#)
 - https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Install/Install.Clear.Flag.ps1

- Copy the code

```
$Lang = "zh-CN"; Get-AppXProvisionedPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" | Foreach-object { if
($_.DisplayName -Like "*LanguageExperiencePack*${$Lang}*") { Write-host "  ${$_}.DisplayName)"; Write-Host "  Deleting
".PadRight(22) -NoNewline; try { Remove-AppxProvisionedPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -
PackageName $_.PackageName -ErrorAction SilentlyContinue | Out-Null; Write-host "Finish" -ForegroundColor Green; } catch
{ Write-host "Failed" -ForegroundColor Red; }}}
```

5.9. InBox Apps: optimization

After the app is installed, provisioning the Appx package should be optimized to reduce the app's disk usage by replacing identical files with hard links, only for offline images.

```
Optimize-AppXProvisionedPackages -Path "D:\ISOTEMP_Custom\Install\Install\Mount"
```

6. Cumulative updates

- When upgrading different versions or old versions to the latest version, you need to add the "Function Enablement Package" first before adding the latest cumulative update;
- After adding a language pack, you can install the same cumulative update as the initial version to resolve a known issue where the "Components: All packages installed in the image" status is not refreshed after installation;
- To stay up to date, it is recommended that you download the latest version.

6.1. Feature enablement package

- Learn: [KB5015684: Featured update to Windows 10, version 22H2 by using an enablement package](#)
- Note: When using the same version as Windows 10 22H2 19045.2006 and above, the feature enablement package can be skipped.
- When making Windows 10 versions 2004, 20H2, 21H1, and 21H2, you need to install the "Feature Enablement Package" in advance before you can install the cumulative update of 19045.*. After downloading, save it to: [D:\ISOTEMP_Custom\Install\Install\Update](#), select according to the architecture download:

6.1.1. x64, default

- Direct download

https://catalog.s.download.windowsupdate.com/c/upgr/2022/07/windows10.0-kb5015684-x64_523c039b86ca98f2d818c4e6706e2cc94b634c4a.msu

- Install

```
Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackagePath  
"D:\ISOTEMP_Custom\Install\Install\Update\windows10.0-kb5015684-  
x64_523c039b86ca98f2d818c4e6706e2cc94b634c4a.msu"
```

6.1.2. x86

- Direct download

https://catalog.s.download.windowsupdate.com/c/upgr/2022/07/windows10.0-kb5015684-x86_556015f4260dd75ca30b3e84484ea5b3ec97fa08.msu

- Install

```
Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackagePath  
"D:\ISOTEMP_Custom\Install\Install\Update\windows10.0-kb5015684-  
x86_556015f4260dd75ca30b3e84484ea5b3ec97fa08.msu"
```

6.1.3. Arm64

- Direct download

<https://catalog.s.download.windowsupdate.com/c/upgr/2022/07/windows10.0-kb5015684->

[arm64_a4cc6e95084da14adb972e1d67cf573a244ed7a3.msu](#)

- Install

```
Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackagePath
"D:\ISOTEMP_Custom\Install\Install\Update\windows10.0-kb5015684-
arm64_a4cc6e95084da14adb972e1d67cf573a244ed7a3.msu"
```

6.2. Initial version

- Note: This option is provided to create the same version. If you are installing other versions, please skip downloading the cumulative updates required for the initial version.
- Cumulative update [KB5017308](#) cannot be searched from <https://www.catalog.update.microsoft.com/Search.aspx?q=KB5017308>. Download it through direct connection and save it to: [D:\ISOTEMP_Custom\Install\Install\Update](#), choose to download according to the architecture:

6.2.1. x64, default

- Direct download

https://catalog.s.download.windowsupdate.com/c/msdownload/update/software/secu/2022/09/windows10.0-kb5017308-x64_2027053968a06948b45d139d95475ab4feee5654.msu

- Install

```
Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackagePath
"D:\ISOTEMP_Custom\Install\Install\Update\windows10.0-kb5017308-
x64_2027053968a06948b45d139d95475ab4feee5654.msu"
```

6.2.2. x86

- Direct download

https://catalog.s.download.windowsupdate.com/d/msdownload/update/software/secu/2022/09/windows10.0-kb5017308-x86_ec788348202c33b871c8af028d045debd273576c.msu

- Install

```
Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackagePath
"D:\ISOTEMP_Custom\Install\Install\Update\windows10.0-kb5017308-
x86_ec788348202c33b871c8af028d045debd273576c.msu"
```

6.2.3. Arm64

- Direct download

https://catalog.s.download.windowsupdate.com/d/msdownload/update/software/secu/2022/09/windows10.0-kb5017308-arm64_1ca51a0b3abdab7ee891bd1e1e6d3f03bc15e324.msu

- Install

```
Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackagePath
"D:\ISOTEMP_Custom\Install\Install\Update\windows10.0-kb5017308-
arm64_1ca51a0b3abdab7ee891bd1e1e6d3f03bc15e324.msu"
```

6.3. Other versions

Check "[Windows 10 version information](#)", for example, download the cumulative update: [KB5066791](#), Version: [19045.6465](#), go to the download page: <https://www.catalog.update.microsoft.com/Search.aspx?q=KB5066791>, and save it to: [D:\ISOTEMP_Custom\Install\Install\Update](#), or download through direct connection, select download according to the architecture:

6.3.1. x64, default

- Direct download

```
https://catalog.s.download.windowsupdate.com/c/msdownload/update/software/secu/2025/10/windows10.0-
kb5066791-x64_3210d264091be5effb3253d05397c4daefba44c8.msu
```

Install [7Zip](#) compression software first. After downloading, select the file, [right-click](#), and then select the menu: [7Zip](#) -> [Extract here](#).

- Add to
 - Service Stack Update (SSU)

```
Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackagePath
"D:\ISOTEMP_Custom\Install\Install\Update\SSU-19041.6449-x64.cab"
```

- Cumulative updates

```
Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackagePath
"D:\ISOTEMP_Custom\Install\Install\Update\windows10.0-kb5066791-
x64_3210d264091be5effb3253d05397c4daefba44c8.cab"
```

6.3.2. x86

- Direct download

```
https://catalog.s.download.windowsupdate.com/c/msdownload/update/software/secu/2025/10/windows10.0-
kb5066791-x86_c8f251a7b071fa63c27db04105d7b3cd5ef683c1.msu
```

Install [7Zip](#) compression software first. After downloading, select the file, [right-click](#), and then select the menu: [7Zip](#) -> [Extract here](#).

- Add to
 - Service Stack Update (SSU)

```
Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackagePath
"D:\ISOTEMP_Custom\Install\Install\Update\SSU-19041.6449-x86.cab"
```

- Cumulative updates

```
Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackagePath
"D:\ISOTEMP_Custom\Install\Install\Update\windows10.0-kb5066791-
x86_c8f251a7b071fa63c27db04105d7b3cd5ef683c1.cab"
```

6.3.3. Arm64

- Direct download

```
https://catalog.s.download.windowsupdate.com/c/msdownload/update/software/secu/2025/10/windows10.0-
kb5066791-arm64_28dfd4874e2cd23882608cdcba89a9cc2132d677.msu
```

Install 7Zip compression software first. After downloading, select the file, right-click, and then select the menu: 7Zip
-> Extract here.

- Add to
 - Service Stack Update (SSU)

```
Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackagePath
"D:\ISOTEMP_Custom\Install\Install\Update\SSU-19041.6449-arm64.cab"
```

- Cumulative updates

```
Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackagePath
"D:\ISOTEMP_Custom\Install\Install\Update\windows10.0-kb5066791-
arm64_28dfd4874e2cd23882608cdcba89a9cc2132d677.cab"
```

6.4. Solidify Updated

It cannot be uninstalled after curing, which cleans the recovery image and resets the basis of any superseded components.

```
Dism /Image:"D:\ISOTEMP_Custom\Install\Install\Mount" /cleanup-image /StartComponentCleanup /ResetBase
```

6.4.1. Clean components after curing and updating

```
$Mount = "D:\ISOTEMP_Custom\Install\Install\Mount"; Get-WindowsPackage -Path $Mount -ErrorAction
SilentlyContinue | ForEach-Object { if ($_.PackageState -eq "Superseded") { Write-Host " $($_.PackageName)" -
ForegroundColor Green; Remove-WindowsPackage -Path $Mount -PackageName $_.PackageName | Out-Null; }}
```

7. Drive

8. Deployment engine: Add

- Learn "Deployment Engine", if added to ISO installation media, can skip adding to mounted.
- After adding the deployment engine, continue at the current location.

9. Health

Before saving, check whether it is damaged. If the health status is abnormal, stop saving.

```
Repair-WindowsImage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -ScanHealth
```

10. Replace WinRE.wim

WinRE.wim in all index numbers in Install.wim has been replaced in batches. Please skip this step.

```
$WinRE = "D:\ISOTEMP_Custom\Install\Install\Update\Winlib\WinRE.wim"
```

```
$CopyTo = "D:\ISOTEMP_Custom\Install\Install\Mount\Windows\System32\Recovery"
```

```
Copy-Item -Path $WinRE -Destination $CopyTo -Force
```

11. Save image: Install.wim

```
Save-WindowsImage -Path "D:\ISOTEMP_Custom\Install\Install\Mount"
```

12. Unmount image: Install.wim

Close any applications that may be accessing files in the image, including File Explorer.

```
Dismount-WindowsImage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -Discard
```

LOOP OPERATING AREA, END.

13. How to batch replace WinRE.wim in all index numbers in Install.wim

13.1. Obtain WimLib

After going to the official website of <https://wimlib.net>, select a different version: [arm64](#), [x64](#), [x86](#), and extract it to: [D:Wimlib](#) after downloading

13.2. How to extract and update WinRE.wim in Install.wim

13.2.1. Extract the WinRE.wim file Install.wim from Install.wim

- Install.WinRE.Extract.ps1
 - [\Expand\Install\Install.WinRE.Extract.ps1](#)
 - https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Install\Install.WinRE.Extract.ps1
- Copy the code

```
$Arguments = @( "extract", "D:\ISOTEMP\sources\install.wim", "1", "\Windows\System32\Recovery\Winre.wim",  
"--dest-dir=""D:\ISOTEMP_Custom\Install\Install\Update\Winlib"""); New-Item -Path  
"D:\ISOTEMP_Custom\Install\Install\Update\Winlib" -ItemType Directory; Start-Process -FilePath  
"d:\wimlib\wimlib-imagex.exe" -ArgumentList $Arguments -wait -nonewwindow;
```

13.2.2. Get all index numbers of Install.wim and replace the old WinRE.wim

- Install.WinRE.Replace.wim.ps1
 - [\Expand\Install\Install.WinRE.Replace.wim.ps1](#)
 - https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Install/Install.WinRE.Replace.wim.ps1

- Copy the code

```
Get-WindowsImage -ImagePath "D:\ISOTemp\sources\install.wim" -ErrorAction SilentlyContinue | ForEach-Object { Write-Host " Image name: " -NoNewline; Write-Host "$($_.ImageName)" -ForegroundColor Yellow; Write-Host " The index number: " -NoNewline; Write-Host "$($_.ImageIndex)" -ForegroundColor Yellow; Write-Host "`n Replacement "; $Arguments = @( "update", "D:\ISOTemp\sources\install.wim", "$($_.ImageIndex)", "--command=""add 'D:\ISOTemp_Custom\Install\Install\Update\Winlib\WinRE.wim' '\Windows\System32\Recovery\WinRe.wim'" ); Start-Process -FilePath "d:\wimlib\wimlib-image.exe" -ArgumentList $Arguments -wait -newwindow; Write-Host " Finish`n" -ForegroundColor Green; }
```

14. Rebuilding Install.wim reduces file size

- Install.Rebuild.wim.ps1
 - [\Expand\Install\Install.Rebuild.wim.ps1](#)
 - https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Install/Install.Rebuild.wim.ps1

- Copy the code

```
$InstallWim = "D:\ISOTEMP\sources\install.wim"; Get-WindowsImage -ImagePath $InstallWim -ErrorAction SilentlyContinue | ForEach-Object { Write-Host " Image name: " -NoNewline; Write-Host $_.ImageName -ForegroundColor Yellow; Write-Host " The index number: " -NoNewline; Write-Host $_.ImageIndex -ForegroundColor Yellow; Write-Host "`n Under reconstruction".PadRight(28) -NoNewline; Export-WindowsImage -SourceImagePath $InstallWim -SourceIndex $_.ImageIndex -DestinationImagePath "$($InstallWim).New" -CompressionType max | Out-Null; Write-Host "Finish`n" -ForegroundColor Green; }; if (Test-Path "$($InstallWim).New" -PathType Leaf) { Remove-Item -Path $InstallWim; Move-Item -Path "$($InstallWim).New" -Destination $InstallWim; Write-Host "Finish" -ForegroundColor Green; } else { Write-host "Failed" -ForegroundColor Red; }
```

15. Split, merge, compress, and convert

Solid compression is in ESD file format. If the file exceeds 4GB, it cannot be split and cannot be copied to a FAT32 disk. This is a disadvantage.

Using FAT32 format to store Windows installation boot is the best solution. If the Install.wim file exceeds 4GB and cannot be copied to a FAT32 disk, you need to split the Install.wim file and copy it to a FAT32 disk after the file size is less than 4GB.

It is particularly important to learn how to split and merge, solid compression and conversion.

15.1. Splitting and merging

15.1.1. Splitting

After splitting Install.wim into 4GB file sizes and getting new file names Install.*.swm, delete the old Install.wim.

- Install.Split.ps1

- [\Expand\Install\Install.Split.ps1](#)
- https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Install/Install.Split.ps1

- Copy the code

```
Write-host "Split Install.wim into Install.*.swm"; Write-host "Splitting" -NoNewline; Split-WindowsImage -
ImagePath "D:\ISOTEMP\sources\install.wim" -SplitImagePath "D:\ISOTEMP\sources\install.swm" -FileSize "4096"
-CheckIntegrity -ErrorAction SilentlyContinue | Out-Null; Write-Host "Split Complete`n" -ForegroundColor Green;
Write-host "`nVerify completion and delete old files"; if (Test-Path -Path "D:\ISOTEMP\sources\install.swm" -
PathType leaf) { Remove-Item -Path "D:\ISOTEMP\sources\install.wim"; Write-Host "Done" -ForegroundColor
Green; } else { Write-Host "Failed" -ForegroundColor Red; }
```

15.1.2. Merge

After merging all Install.*.swm into Install.wim, delete the old Install.*.swm.

- Install.Merging.ps1
 - [\Expand\Install\Install.Merging.ps1](#)
 - https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Install/Install.Merging.ps1

- Copy the code

```
Write-host "Merge all Install.*.swm files into Install.wim"; Get-WindowsImage -ImagePath
"D:\ISOTEMP\Sources\install.swm" -ErrorAction SilentlyContinue | ForEach-Object { Write-Host "Image Name: " -
NoNewline; Write-Host $_.ImageName -ForegroundColor Yellow; Write-Host "Index Number: " -NoNewline;
Write-Host $_.ImageIndex -ForegroundColor Yellow; Write-Host "Exporting".PadRight(28) -NoNewline; dism
/export-image /SourceImageFile:"D:\ISOTEMP\Sources\install.swm" /swmfile:"D:\ISOTEMP\sources\install*.swm"
/SourceIndex:"$($_.ImageIndex)" /DestinationImageFile:"D:\ISOTEMP\Sources\install.wim" /Compress:"Max"
/CheckIntegrity; Write-Host "Export Complete`n" -ForegroundColor Green; }; Write-host "`nVerify completion and
delete old files"; if (Test-Path -Path "D:\ISOTEMP\Sources\install.wim" -PathType leaf) { Get-ChildItem -Path
"D:\ISOTEMP\sources" -Recurse -include "*.swm" | ForEach-Object { Write-Host "Delete: $($_.Fullname)" -
ForegroundColor Green; Remove-Item -Path $_.Fullname; }; Write-Host "Done" -ForegroundColor Green; } else
{ Write-Host "Falied" -ForegroundColor Green; }
```

15.2. Solid compressed ESD format and WIM format conversion

15.2.1. Solid compression

After solid compression, you can edit version information and application files, etc.; you cannot mount images, etc. After obtaining the new file install.esd, delete the old Install.wim.

- Install.Compress.ps1
 - [\Expand\Install\Install.Compress.ps1](#)
 - https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Install/Install.Compress.ps1

- Copy the code

```
Write-host "Solid compressed Install.wim"; Get-WindowedImage -ImagePath "D:\ISOTEMP\Sources\install.wim" -
ErrorAction SilentlyContinue | ForEach-Object { Write-Host "Image Name: " -NoNewline; Write-Host
$_.ImageName -ForegroundColor Yellow; Write-Host "Index Number: " -NoNewline; Write-Host $_.ImageIndex -
ForegroundColor Yellow; Write-Host "Compressing".PadRight(28) -NoNewline; dism /export-image
/SourceImageFile:"D:\ISOTEMP\Sources\install.wim" /SourceIndex:"$($_.ImageIndex)"
/DestinationImageFile:"D:\ISOTEMP\Sources\install.esd" /Compress:recovery /CheckIntegrity; Write-Host
"Compression completed`n" -ForegroundColor Green; }; Write-host "`nVerify completion and delete old files"; if
(Test-Path -Path "D:\ISOTEMP\Sources\install.esd" -PathType leaf) { Remove-Item -Path
"D:\ISOTEMP\Sources\install.wim"; Write-Host "Done" -ForegroundColor Green; } else { Write-Host "Falied" -
ForegroundColor Green; }
```

15.2.2. Convert compressed files to WIM file format

- Install.Convert.ps1
 - [\Expand\Install\Install.Convert.ps1](#)
 - https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Install/Install.Convert.ps1

- Copy the code

```
Write-host "Convert ESD to WIM"; Get-WindowedImage -ImagePath "D:\ISOTEMP\Sources\install.esd" -ErrorAction
SilentlyContinue | ForEach-Object { Write-Host "Image Name: " -NoNewline; Write-Host $_.ImageName -
ForegroundColor Yellow; Write-Host "Index Number: " -NoNewline; Write-Host $_.ImageIndex -ForegroundColor
Yellow; Write-Host "Exporting".PadRight(28) -NoNewline; try { Export-WindowedImage -SourceImagePath
"D:\ISOTEMP\Sources\install.esd" -SourceIndex $_.ImageIndex -DestinationImagePath
"D:\ISOTEMP\Sources\install.wim" -CompressionType "Max" -CheckIntegrity -ErrorAction SilentlyContinue | Out-
Null; Write-Host "Done`n" -ForegroundColor Green; } catch { Write-Host $_ -ForegroundColor Yellow; Write-host
"Falied`n" -ForegroundColor Red; }}; Write-host "`nVerify completion and delete old files"; if (Test-Path -Path
"D:\ISOTEMP\Sources\install.wim" -PathType leaf) { Remove-Item -Path "D:\ISOTEMP\Sources\install.esd"; Write-
Host "Done" -ForegroundColor Green; } else { Write-Host "Falied" -ForegroundColor Green; }
```

II. Custom encapsulation: boot.wim

1. View Boot.wim details

Image name, image description, image size, architecture, version, index number, etc.

```
$ViewFile = "D:\ISOTEMP\Sources\Boot.wim"; Get-WindowedImage -ImagePath $ViewFile | Foreach-Object { Get-WindowedImage -ImagePath
$ViewFile -index $_.ImageIndex };
```

2. Specify the path to mount Boot.wim

```
New-Item -Path "D:\ISOTEMP_Custom\Boot\Boot\Mount" -ItemType directory
```

3. Start mounting Boot.wim

Default index number: 2

```
Mount-WindowsImage -ImagePath "D:\ISOTEMP\sources\boot.wim" -Index "2" -Path "D:\ISOTEMP_Custom\Boot\Boot\Mount"
```

- Verify Mount Status

After mounting, check the "Mounted Windows Image Information," including mount directory, image name, and status, by running the command:

```
Get-WindowsImage -Mounted
```

4. Language pack: Boot

- Automatically install language packs: Get "Component: All installed packages in the image" and match them. After matching the corresponding names, install the local corresponding language pack files.
- When adding languages, different schema versions must be corresponded, and if not, errors are reported during the addition process.

4.1. Language pack: Add

- Boot.Instl.lang.ps1
 - `\Expand\Boot\Boot.Instl.lang.ps1`
 - https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging/tutorial/OS.10/22H2/Expand/Boot/Boot.Instl.lang.ps1
- Copy the code

```
$Mount = "D:\ISOTEMP_Custom\Boot\Boot\Mount"; $Sources = "D:\ISOTEMP_Custom\Boot\Boot\Language\Add\zh-CN"; $Initl_install_Language_Component = @();
```

```
Get-WindowsPackage -Path $Mount | ForEach-Object { $Initl_install_Language_Component += $_.PackageName; }
```

```
Add-WindowsPackage -Path $Mount -PackagePath "$($Sources)\WinPE-FontSupport-zh-CN.cab"
```

```
$Language = @( @{ Match = "*WinPE*Setup*Client*Package*"; File = "WINPE-SETUP-CLIENT_zh-CN.CAB"; }; @{ Match = "*WinPE*Setup*Package*"; File = "WinPE-Setup_zh-CN.cab"; }; @{ Match = "*WinPE-LanguagePack-Package*"; File = "lp.cab"; }; @{ Match = "*SecureStartup*"; File = "winpe-securestartup_zh-CN.cab"; }; @{ Match = "*ATBroker*"; File = "winpe-atbroker_zh-CN.cab"; }; @{ Match = "*AudioCore*"; File = "winpe-audiocore_zh-CN.cab"; }; @{ Match = "*AudioDrivers*"; File = "winpe-audiodrivers_zh-CN.cab"; }; @{ Match = "*EnhancedStorage*"; File = "winpe-enhancedstorage_zh-CN.cab"; }; @{ Match = "*Narrator*"; File = "winpe-narrator_zh-CN.cab"; }; @{ Match = "*scripting*"; File = "winpe-scripting_zh-CN.cab"; }; @{ Match = "*Speech-TTS*"; File = "winpe-speech-tts_zh-CN.cab"; }; @{ Match = "*srh*"; File = "winpe-srh_zh-CN.cab"; }; @{ Match = "*srt*"; File = "winpe-srt_zh-CN.cab"; }; @{ Match = "*wds-tools*"; File = "winpe-wds-tools_zh-CN.cab"; }; @{ Match = "*-WMI-Package*"; File = "winpe-wmi_zh-CN.cab"; } )
```

```
ForEach ($Rule in $Language) {
```

```
    Write-host "`n Rule name: $($Rule.Match)" -ForegroundColor Yellow; Write-host "  $('-' * 80)"
```

```
    ForEach ($Component in $Initl_install_Language_Component) {
```

```
        if ($Component -like "$($Rule.Match)*"){
```

```
            Write-host "  Component name: " -NoNewline; Write-host $Component -ForegroundColor Green; Write-host "  Language pack file: " -NoNewline; Write-host "$($Sources)\ $($Rule.File)" -ForegroundColor Green; Write-Host "  Installing ".PadRight(22) -NoNewline;
```

```
            try{
```

```
                Add-WindowsPackage -Path $Mount -PackagePath "$($Sources)\ $($Rule.File)" | Out-Null
```

```
                Write-host "Finish" -ForegroundColor Green
```

```
} catch { Write-host "Failed" -ForegroundColor Red; Write-host " $($*)" -ForegroundColor Red; }  
  
break  
  
}  
  
}  
  
}
```

4.2. Offline image language: change

4.2.1. Change default language, regional settings, and other international settings

Region: zh-CN

```
Dism /Image:"D:\ISOTEMP_Custom\Boot\Boot\Mount" /Set-AllIntl:"zh-CN"
```

4.2.2. View available language settings

```
Dism /Image:"D:\ISOTEMP_Custom\Boot\Boot\Mount" /Get-Intl
```

4.3. Components: All packages installed in the image

4.3.1. View

```
Get-WindowsPackage -Path "D:\ISOTEMP_Custom\Boot\Boot\Mount" | Out-GridView
```

4.3.2. Export to csv

```
$SaveTo = "D:\ISOTEMP_Custom\Boot\Boot\Report.Components.$(Get-Date -Format "yyyyMMddHHmmss").csv"  
  
Get-WindowsPackage -Path "D:\ISOTEMP_Custom\Boot\Boot\Mount" | Export-CSV -NoType -Path $SaveTo  
  
Write-host $SaveTo -ForegroundColor Green
```

4.4. Language: Repair

4.4.1. Extract

Open: D:\ISOTEMP_Custom\Install\Install\Language\Add\zh-CN\Microsoft-Windows-Client-Language-Pack_x64_zh-CN.cab, enter the directory: Setup\sources\zh-cn\cli, and copy the following files to the deskto:

- 4.4.1.1. arunres.dll.mui
- 4.4.1.2. spwizres.dll.mui
- 4.4.1.3. w32uires.dll.mui

4.4.2. Copy

Copy the extracted files to: D:\ISOTEMP_Custom\Boot\Boot\Mount\sources\zh-CN

4.5. Language packs: sync to ISO installer

Copy-Item -Path "D:\ISOTEMP_Custom\Boot\Boot\Mount\sources\zh-CN" -Destination "D:\ISOTEMP\sources\zh-CN" -Recurse -Force

4.6. Regenerate Lang.ini

After regeneration, you can adjust the "Installation Interface", the order when selecting "Language", open lang.ini, the default preferred value = 3, non-default value = 2.

4.6.1. Regenerate the mounted directory lang.ini

Regenerated Lang.ini file location: D:\ISOTEMP_Custom\Boot\Boot\Mount\Sources\lang.ini

Dism /image:"D:\ISOTEMP_Custom\Boot\Boot\Mount" /gen-langini /distribution:"D:\ISOTEMP_Custom\Boot\Boot\Mount"

4.6.2. After regenerating lang.ini, sync to the installer

Regenerated Lang.ini file location: D:\ISOTEMP\Sources\lang.ini

Dism /image:"D:\ISOTEMP_Custom\Boot\Boot\Mount" /gen-langini /distribution:"D:\ISOTEMP"

5. Cumulative updates

5.1. Add

5.1.1. KB5062682

Go to the download page: <https://www.catalog.update.microsoft.com/Search.aspx?q=KB5062682>, and save the downloaded file to: D:\ISOTEMP_Custom\Boot\Boot\Update, or download directly, selecting the download based on your system architecture:

5.1.1.1. x64, Default

- Direct download

https://catalog.s.download.windowsupdate.com/d/msdownload/update/software/crup/2025/07/windows10.0-kb5062682-x64_c75730b6769533f9095651973482e541b99c366c.cab

- Install

Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Boot\Boot\Mount" -PackagePath "D:\ISOTEMP_Custom\Boot\Boot\Update\windows10.0-kb5062682-x64_c75730b6769533f9095651973482e541b99c366c.cab"

5.1.1.2. x86

- Direct download

https://catalog.s.download.windowsupdate.com/d/msdownload/update/software/crup/2025/07/windows10.0-kb5062682-x86_a57817d950844e7bd31ba059062176ff8dd42176.cab

- Install

```
Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Boot\Boot\Mount" -PackagePath
"D:\ISOTEMP_Custom\Boot\Boot\Update\windows10.0-kb5062682-
x86_a57817d950844e7bd31ba059062176ff8dd42176.cab"
```

5.1.1.3. arm64

- Direct download

https://catalog.s.download.windowsupdate.com/d/msdownload/update/software/crup/2025/07/windows10.0-kb5062682-arm64_0139af354cf895bf9a6ec2185adcf595b1cde661.cab

- Install

```
Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Boot\Boot\Mount" -PackagePath
"D:\ISOTEMP_Custom\Boot\Boot\Update\windows10.0-kb5062682-
arm64_0139af354cf895bf9a6ec2185adcf595b1cde661.cab"
```

5.2. Solid update

It cannot be uninstalled after curing, which cleans the recovery image and resets the basis of any superseded components.

```
Dism /image:"D:\ISOTEMP_Custom\Boot\Boot\Mount" /cleanup-image /StartComponentCleanup /ResetBase
```

5.2.1. Clean components after curing and updating

```
$Mount = "D:\ISOTEMP_Custom\Boot\Boot\Mount"; Get-WindowsPackage -Path $Mount -ErrorAction SilentlyContinue |
ForEach-Object { if ($_.PackageState -eq "Superseded") { Write-Host " $_.PackageName)" -ForegroundColor Green;
Remove-WindowsPackage -Path $Mount -PackageName $_.PackageName | Out-Null; }}
```

6. Drive

7. Save image: Boot.wim

```
Save-WindowsImage -Path "D:\ISOTEMP_Custom\Boot\Boot\Mount"
```

8. Unmount image: Boot.wim

Close any applications that may be accessing files in the image, including File Explorer.

```
Dismount-WindowsImage -Path "D:\ISOTEMP_Custom\Boot\Boot\Mount" -Discard
```

III. Deployment engine

- Learn about "Automatically Adding Languages Installed in Windows Systems", learn: <https://github.com/ilikeyi/Multilingual>, how to download:

- After entering the website, click "Code", "Download Compressed Package", and after the download is completed, you will get the [main.zip](#) compressed package file.
- Go to the <https://github.com/ilikeyi/Multilingual/releases> download page, select the available version: [1.1.1.1](#), select the download source code format: zip, and get the [Multilingual-1.1.1.1.zip](#) compressed package file after the download is completed;
- Unzip the downloaded [main.zip](#) or [Multilingual-1.1.1.1.zip](#) to: [D:\Multilingual-1.1.1.1](#), and rename: [D:\Multilingual](#)
- Learn "[Unattended Windows Setup Reference](#)", Intervene in the installation process by leaving it unattended.

1. Add method

1.1. Add to ISO installation media

1.1.1. Unattended

1.1.1.1. Add to: [\[ISO\]:\Autounattend.xml](#)

Autounattend.xml interferes with the WinPE installer when booting an ISO installation.

Copy [D:\Multilingual_Learn\Unattend\Mul.Unattend.xml](#) to [D:\ISOTEMP\Autounattend.xml](#)

```
Copy-Item "D:\Multilingual\_Learn\Unattend\Mul.Unattend.xml" -Destination
"D:\ISOTEMP\Autounattend.xml" -Force
```

1.1.1.2. Add to: [\[ISO\]:\Sources\Unattend.xml](#)

When mounting or unpacking an ISO, after running the [\[ISO\]:\Setup.exe](#) installer, [\[ISO\]:\Sources\Unattend.xml](#) will intervene in the installation process.

Copy [D:\Multilingual_Learn\Unattend\Mul.Unattend.xml](#) to [D:\ISOTEMP\Sources\Unattend.xml](#)

```
Copy-Item "D:\Multilingual\_Learn\Unattend\Mul.Unattend.xml" -Destination
"D:\ISOTEMP\Sources\Unattend.xml" -Force
```

1.1.1.3. Add to: [\[ISO\]:\sources\\\$OEM\\$\\\$\\$\Panther\unattend.xml](#)

Copy it to the system disk during the installation process, copy to: [{system disk}\Windows\Panther\unattend.xml](#)

1.1.1.3.1. Create \$OEM\$ path

```
New-Item -Path "D:\ISOTEMP\sources\`$OEM$\`$$\Panther" -ItemType Directory
```

1.1.1.3.2. Copy

Copy [D:\Multilingual_Learn\Unattend\Mul.Unattend.xml](#) to [D:\ISOTEMP\Sources\\\$OEM\\$\Panther\Unattend.xml](#)

```
Copy-Item "D:\Multilingual\_Learn\Unattend\Mul.Unattend.xml" -Destination
"D:\ISOTEMP\sources\`$OEM$\`$$\Panther\Unattend.xml" -Force
```

1.1.2. Deployment engine: add

Add "Automatically add installed languages for Windows systems" to D:\ISOTEMP\sources\OEM\$\1\Yi\Engine in the directory.

1.1.2.1. Deployment Engine: Copy

Copy D:\Multilingual\Engine to D:\ISOTEMP\Sources\OEM\$\1\Yi\Engine

```
Copy-Item "D:\Multilingual\Engine" -Destination "D:\ISOTEMP\sources\`$OEM$\`$1\Yi\Engine" -Recurse -Force
```

1.1.2.2. Deployment engine: custom deployment tags

```
$Flag = @(

    "Is_Mark_Sync" # Allow global search and synchronization of deployment tags

    # Prerequisite deployment

    # "Auto_Update" # Allow automatic updates

    # "Use_UTF8" # Beta: Global language support using Unicode UTF-8

    "Disable_Network_Location_Wizard" # Network Location Wizard

    "Disable_Cleanup_Appx_Tasks" # Appx Cleanup and maintenance tasks

    "Disable_Cleanup_On_Demand_Language" # Prevent cleanup of unused on-demand feature language packs

    "Disable_Cleanup_Unsed_Language" # Prevent cleaning of unused language packs

    "Prerequisites_Reboot" # Restart your computer

    # Complete first deployment

    # "Popup_Engine" # Allow the deployment engine main interface to pop up for the first time

    # "Allow_First_Pre_Experience" # Allow first preview, as planned

    "Reset_Execution_Policy" # Restore PowerShell execution policy: Restricted

    "Clear_Solutions" # Delete the entire solution

    "Clear_Engine" # Delete the deployment engine and keep the others

    # "First_Experience_Reboot" # Restart your computer

)

ForEach ($item in $Flag) {

    Write-host " $($item)" -ForegroundColor Green

    New-Item -Path "D:\ISOTEMP\sources\`$OEM$\`$1\Yi\Engine\Deploy\Allow" -ItemType Directory -ErrorAction SilentlyContinue | Out-Null

    Out-File -FilePath "D:\ISOTEMP\sources\`$OEM$\`$1\Yi\Engine\Deploy\Allow\$( $item)" -Encoding utf8 -ErrorAction SilentlyContinue

}
```


1.2. Add to mounted

Through "Custom encapsulation: Install.wim", execute "Start mounting Install.wim" and mount to:
D:\ISOTEMP_Custom\Install\Install\Mount

1.2.1. Unattended

Copy D:\Multilingual\Learn\Unattend\Mul.Unattend.xml to
D:\ISOTEMP_Custom\Install\Install\Mount\Panther\Unattend.xml

```
Copy-Item "D:\Multilingual\Learn\Unattend\Mul.Unattend.xml" -Destination  
"D:\ISOTEMP_Custom\Install\Install\Mount\Panther" -Force
```

1.2.2. Deployment engine: add

Add "Automatically add languages installed on Windows systems" to the
D:\ISOTEMP_Custom\Install\Install\Mount\Yi\Engine directory.

1.2.2.1. Deployment Engine: Copy

Copy D:\Multilingual\Engine to D:\ISOTEMP_Custom\Install\Install\Mount\Yi\Engine

```
Copy-Item "D:\Multilingual\Engine" -Destination "D:\ISOTEMP_Custom\Install\Install\Mount\Yi\Engine" -  
Recurse -Force
```

1.2.2.2. Deployment engine: custom deployment tags

```
$Flag = @(

    "Is_Mark_Sync" # Allow global search and synchronization of deployment tags

    # Prerequisite deployment

    # "Auto_Update" # Allow automatic updates

    # "Use_UTF8" # Beta: Global language support using Unicode UTF-8

    "Disable_Network_Location_Wizard" # Network Location Wizard

    "Disable_Cleanup_Appx_Tasks" # Appx Cleanup and maintenance tasks

    "Disable_Cleanup_On_Demand_Language" # Prevent cleanup of unused on-demand feature language  
packs

    "Disable_Cleanup_Unsed_Language" # Prevent cleaning of unused language packs

    "Prerequisites_Reboot" # Restart your computer

    # Complete first deployment

    # "Popup_Engine" # Allow the deployment engine main interface to pop up for the first time

    # "Allow_First_Pre_Experience" # Allow first preview, as planned

    "Reset_Execution_Policy" # Restore PowerShell execution policy: Restricted
```

```
"Clear_Solutions" # Delete the entire solution

"Clear_Engine" # Delete the deployment engine and keep the others

# "First_Experience_Reboot" # Restart your computer

)

ForEach ($item in $Flag) {

    Write-host "  $($item)" -ForegroundColor Green

    New-Item -Path "D:\ISOTEMP\sources\`$OEM$\`$1\Yi\Engine\Deploy\Allow" -ItemType Directory -
    ErrorAction SilentlyContinue | Out-Null

    Out-File -FilePath "D:\ISOTEMP\sources\`$OEM$\`$1\Yi\Engine\Deploy\Allow\${$item}" -Encoding utf8 -
    ErrorAction SilentlyContinue

}
```

2. Deployment Engine: Advanced

2.1. Deployment engine: adding process

After copying the deployment engine, you can add deployment tags to intervene in the installation process.

2.2. Unattended solution

When the customization is unattended, please modify it simultaneously if the following files exist:

- [D:\ISOTEMP\Autounattend.xml](#)
- [D:\ISOTEMP\Sources\Unattend.xml](#)
- [D:\ISOTEMP\sources\OEM\\$\`\\$1\Yi\Engine\Deploy\Allow\unattend.xml](#)
- [D:\ISOTEMP_Custom\Install\Install\Mount\Panther\Unattend.xml](#)

2.2.1. Multilingual or monolingual

In multi-language and monolingual, you can switch between each other. When replacing, please replace all the same ones in the file.

2.2.1.1. Multi-language

```
<UILanguage>%OSDUILanguage%</UILanguage>

<InputLocale>%OSDInputLocale%</InputLocale>

<SystemLocale>%OSDSysLocale%</SystemLocale>

<UILanguage>%OSDUILanguage%</UILanguage>

<UILanguageFallback>%OSDUILanguageFallback%</UILanguageFallback>

<UserLocale>%OSDUserLocale%</UserLocale>
```

2.2.1.2. Monolingual

A single language needs to specify a Region tag, for example, specify a Region tag: **zh-CN**

```
<UILanguage>zh-CN</UILanguage>

<InputLocale>zh-CN</InputLocale>

<SystemLocale>zh-CN</SystemLocale>

<UILanguage>zh-CN</UILanguage>

<UILanguageFallback>zh-CN</UILanguageFallback>

<UserLocale>zh-CN</UserLocale>
```

2.2.2. User plan

By default, the self-created user **Administrator** is used and logged in automatically. It can be switched by modifying the following configuration: self-created or customized user.

2.2.2.1. Self-created user Administrator

By default, the self-created user: **Administrator** is used and logged in automatically, inserted between **<OOBE>** and **</OOBE>**.

```
<UserAccounts>

<LocalAccounts>

<LocalAccount wcm:action="add">

<Password>

<Value></Value>

<PlainText>true</PlainText>

</Password>

<Description>Administrator</Description>

<DisplayName>Administrator</DisplayName>

<Group>Administrators</Group>

<Name>Administrator</Name>

</LocalAccount>

</LocalAccounts>

</UserAccounts>

<AutoLogon>

<Password>

<Value></Value>
```

<PlainText>true</PlainText>

</Password>

<Enabled>true</Enabled>

<Username>Administrator</Username>

</AutoLogon>

2.2.2.2. Custom user

After setting up a custom user and installing the system, in OOBE, you can choose settings such as local and online users.

2.2.2.2.1. Delete

Username: Removed from start <UserAccounts> to </UserAccounts>

Autologin: Remove from start <AutoLogon> to </AutoLogon>

2.2.2.2.2. Replace

From the beginning <OOBE> to </OOBE>

<OOBE>

<ProtectYourPC>3</ProtectYourPC>

<HideEULAPage>true</HideEULAPage>

<HideWirelessSetupInOOBE>true</HideWirelessSetupInOOBE>

</OOBE>

D. Generate ISO

1. Download OScdimg

Select the Oscdimg version according to the architecture, and save it to: D:\ after downloading. To save in other paths, please enter the absolute path of OScdimg.exe;

1.1. x64

https://github.com/ilikeyi/Solutions/raw/refs/heads/main/_Encapsulation/Modules/AIO/Oscdimg/amd64/oscdimg.exe

1.2. x86

https://github.com/ilikeyi/Solutions/raw/refs/heads/main/_Encapsulation/Modules/AIO/Oscdimg/x86/oscdimg.exe

1.3. arm64

https://github.com/ilikeyi/Solutions/raw/refs/heads/main/_Encapsulation/Modules/AIO/Oscding/arm64/oscding.exe

2. Use the oscding command line to generate an ISO file and save it to: **D:\ISOTEMP.iso**

- ISO.ps1
 - [\Expand\ISO.ps1](#)
 - https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/ISO.ps1

- Copy the code

```
$Oscding = "D:\Oscding.exe"; $ISO = "D:\ISOTemp"; $Volume = "ISOTemp"; $SaveTo = "D:\ISOTemp.iso"; $Arguments = @("-m", "-o", "-u2", "-udfver102", "-l" "$( $Volume )" , "-bootdata:2#p0,e,b" "$( $ISO )\boot\etfsboot.com" "#pEF,e,b" "$( $ISO )\efi\microsoft\boot\efisys.bin" , "" "$( $ISO )" , "" "$( $SaveTo )" ); Start-Process -FilePath $Oscding -ArgumentList $Arguments -wait -nonewwindow;
```

Chapter 2 Deploy

A. Precautions before deployment

1. When choosing the location to install Windows 11

First select "**Disk Partition**", then select "**Format Partition**", and then click "**Next**". If the disk is not formatted, an overwrite installation will cause known problems:

- Using the Administrator user:
 - The application icon will display a UAC security warning;
 - Right-clicking and running PS1 as administrator does not work;

2. When running the installer

- You must not run Setup.exe from the ISO on a system you are currently using to enter the installer, otherwise it will cause an error during the copying of the \$OEM\$ directory. This problem is a bug in the installer.
- When installing the system onto a physical device, you can only access the installation program using a **USB flash drive**, **CD-ROM**, **PE**, or **network installation (PXE boot)**, and a "**clean install**" is required.

B. Deploying the operating system to the physical device

Before the physical device can boot into the system, you must select one of the following options in "**Preparing prerequisites for booting the installation program**": "**Create a bootable physical storage medium**, **CD-ROM**, or **install over a network (PXE boot)**" and complete the process.

1. Prerequisites for preparing the installation program

When deploying system installation files to physical storage devices, you should prepare a removable drive or CD-ROM to store the Windows operating system installation files.

1.1. Create a bootable installation physical storage medium

If you plan to store more than 16GB of storage in a portable hard drive or USB drive, when purchasing the portable drive, you should choose one with dual interfaces (Type-C and USB 3.1). The advantages of choosing a drive with both Type-C and USB 3.1 interfaces are:

- If drivers are missing during system installation: You can download them via your mobile phone, then plug in a Type-C removable drive for file management and copy the downloaded drivers to the removable drive.
- In daily use, you can use the Type-C connection to your phone to store temporary files and back up data.

1.1.1. Disk Partitioning

- For installing Windows on macOS (excluding M series) or PC, storing the Windows installation files in FAT32 format is the best solution.
- If the storage device is less than 16GB, it is recommended that you create a single partition.
- For storage devices larger than 32GB, it is recommended that you partition them into 3 partitions. Partitioning scheme:

Partition 1, after allocating 6 GB to Partition 2, the remaining disk space is used for: storing Windows system installation files (customizable deployment after extracting Yi.Deploy.Rule.iso), and for daily operations such as storing temporary files and backup data.

Partition 2: Allocate 6GB of disk space for storing the PE system. Recommended.

- Sergei Strelec | <https://sergeistrelec.name/winpe-10-8-sergei-strelec-english>
- Hiren's BootCD | <https://www.hirensbootcd.org>

1.1.2. Copy the system installation files to the disk partition.

To format the partition, select Fat32, then copy all files from the ISO to the root directory of the USB drive to complete the creation process.

1.2. CD-ROM

1.2.1. Prepare a CD/DVD burner.

1.2.2. Prepare a blank CD.

1.2.3. After selecting "ISO file", right-click and select the "burn" function, then click Start burning and wait for it to complete.

1.3. Install via network (PXE boot)

Each software has a different usage method; please learn it before use. You can choose from the following:

1.3.1. Serva | <https://www.vercot.com/~serva>

1.3.2. TinyPXE Server | http://labalec.fr/erwan/?page_id=958

1.3.3. iventory | <https://www.iventoy.com>

2. Physical device system installation guide

- When powering on, press different keys depending on the motherboard to enter the "Boot Menu" and then select disk boot from the BIOS menu. Common BIOS boot hotkeys include: **F2**, **F8**, **F9**, **F11**, **F12**, and **ESC**.
- Choose the appropriate menu based on the boot medium: **CD-ROM**, **PXE**, or select the partition that has been recognized by the USB drive.

C. Deploy to a system that is currently in use, and add the native boot VHD to the existing boot menu

1. Create VHD/VHDX files

1.1. Interactive Disk Management

Open "**Disk Management (diskmgmt.msc)**", select "**Actions**", select "**Create VHD**", and the "**Create or Attach Virtual Disk**" dialog box will pop up:

- Set "Location: **D:\OS.vhdx**"
- Set "Virtual disk size: **120**, selection: **GB**"
- Select "Virtual Disk Format: **VHDX**"
- Select "**Dynamically Expand**"

After clicking "**OK**", a new disk will be added to the disk area, in the following order:

- Select "Disk 2" (please ensure you select the correct disk before selecting), then right-click and select "**Initialize Disk**".
- After selecting "Disk 2 Partition", right-click and select "**New Simple Volume Wizard**" to complete.

1.2. Command Line Creation

Quickly create (save to: **D:\OS.vhdx**, virtual disk size: **120GB**, **dynamically expandable**, drive letter assigned: **Q**), command line:

- Type **Diskpart** and press Enter. In this dialog box, run the following commands in sequence:

Create Vdisk File="D:\OS.vhdx" Maximum=122880 Type=expandable

Select Vdisk file="D:\OS.vhdx"

Attach Vdisk

Create Partition Primary

Format Fs=NTFS Label="VOS" Quick

Assign Letter=Q

Exit

2. Apply the system from Install.wim to the VHD/VHDX file.

After completing the "**Create VHD/VHDX file**" step, you can apply the index number specified in **Install.wim** to the specified drive letter. The settings are: Image file: **D:\ISOTemp\Sources\Install.wim**, Index number: **1**, Apply to drive letter: **Q**, Command line:

Expand-WindowsImage -ImagePath "D:\ISOTemp\Sources\install.wim" -ApplyPath "Q:\" -Index 1

3. Add native boot VHD to the existing Windows 10/11 boot menu

3.1. Backup BCD

Use the BCDedit tool with the /export option to back up your BCD storage. At the command prompt, run: `bcdedit /export c:\bcdbackup`

3.2. Copy an existing Windows 10/11 installation boot entry. Then modify the copy to use it as the VHD boot entry. At the command prompt, run:

`bcdedit /copy {default} /d "VHD New Windows 11"`

When the BCDedit command completes successfully, it returns {GUID} as output in the command prompt window.

3.3. 3.3. Locate {GUID} in the command prompt output of the previous command. Copy the GUID (including the curly braces) for use in subsequent steps.

3.4. Configure the device and operating system device options for the VHD boot entry; you must replace {GUID}. At the command prompt, run:

`bcdedit /set {default} device vhd="[D:]\OS.vhdx"`

`bcdedit /set {default} osdevice vhd="[D:]\OS.vhdx"`

3.5. Optional:

3.5.1. Set VHD as the default boot option. After the computer restarts, the boot menu will display all Windows installations on the computer, and VHD will start after the operating system selection countdown ends. At the command prompt, type:

`bcdedit /default {guid}`

3.5.2. Some x86-based systems require kernel boot configuration options to detect certain hardware information and successfully boot locally from the VHD. At the command prompt, type:

`bcdedit /set {guid} detecthal on`

For more information on how to use the BCDedit tool, please see this [Microsoft website](#).

D. Deploy to virtual machine

Common examples include Windows' built-in Hyper-V, VMware Workstation Pro, and VirtualBox.

1. Enable Hyper-V

- Ensure your system meets the requirements: Windows 10/11 Professional or Enterprise edition, equipped with a 64-bit processor with Second-Level Address Translation (SLAT), and at least 4 GB of memory. Hyper-V is not available for Windows Home edition.
- Once Hyper-V is enabled, you can use Hyper-V Manager or PowerShell commands to begin creating virtual machines.
- Hyper-V is a virtualization platform built into Windows that allows you to create and manage virtual machines. Here's how to enable Hyper-V on your system.

1.1. Using PowerShell

Open Windows PowerShell as administrator: Press **Win + S**, type "**PowerShell**", right-click, and select "**Run as administrator**". Run the

following command to enable Hyper-V:

```
Enable-WindowsOptionalFeature -Online -FeatureName Microsoft-Hyper-V -All
```

When prompted by the system, type **Y** to restart your computer to complete the installation. When prompted by the system again, restart your computer.

1.2. Select "Turn Windows features on or off"

1.2.1. Open the "Turn Windows features on or off" dialog box

1.2.1.1. After running **OptionalFeatures**, a "Turn Windows features on or off" message pops up.

1.2.1.2. Use Control Panel

- Open Control Panel: Press **Win + S**, type "Control Panel", and then open it.
- Navigate to **Programs > Programs and Features > Turn Windows features on or off**.

1.2.2. After opening, check the **Hyper-V** checkbox and then click OK.

1.2.3. Restart your computer to complete the installation.

2. VMware Workstation Pro

Official website | <https://www.vmware.com/products/desktop-hypervisor/workstation-and-fusion>

3. VirtualBox

Official website | <https://www.virtualbox.org>

E. Advanced deployment

1. Fully automatic installation

- To achieve fully automated installation during batch deployment, it is necessary to modify the pre-configuration.
- Multiple hard drives

Batch installation prioritizes determining the number of hard drives and initializing them, then implements different solutions based on the different hard drive requirements.

2. Deployment Engine

If you've added a deployment engine (**Multilingual**, **YiSuite**), you can customize the deployment process. Download the template: **Yi.Engine.Deploy.Rule.iso**. After downloading, extract it to any disk, or mount the ISO or modify its contents during the initial deployment. Learn more:

- Multilingual | <https://github.com/ilikeyi/Multilingual>
- YiSuite | <https://github.com/ilikeyi/YiSuite>

2.1. Custom Office Deployment

After downloading the template [Yi.Engine.Deploy.Rule.iso](#), extract it to any drive (example: [D:\Yi](#)), select the version, and then run the download script.

2.1.1. Office 365

& "D:\Yi\Office\365\amd64\Download.Office.amd64.ps1"

& "D:\Yi\Office\365\amd64\Download.Office.x86.ps1"

2.1.2. Office 2024

& "D:\Yi\Office\2024\amd64\Download.Office.amd64.ps1"

& "D:\Yi\Office\2024\amd64\Download.Office.x86.ps1"

2.1.3. Office 2021

& "D:\Yi\Office\2021\amd64\Download.Office.amd64.ps1"

& "D:\Yi\Office\2021\amd64\Download.Office.x86.ps1"

Before installation, please download the Office installation package. After downloading, search in this order: [365](#), [2024](#), [2021](#);

If a usable installation package is found: the first deployment will search for the [Yi.ps1](#) file and execute the Office installation process;

To run manually: navigate to D:\Yi\Office\{ [365](#) | [2024](#) | [2021](#) }\{ [amd64](#) | [x86](#) }\Office\Install.Office.ps1 to start the installation process.

Sustainability:

Custom deployment: By using a portable USB drive, you can save the [Yi](#) directory to a partition on the USB drive. Keep the USB drive connected throughout the system installation process, and the custom deployment strategy will run automatically.

2.2. User solutions should be provided in advance.

The default setting uses the self-created user Administrator and logs in automatically. You can switch between self-created and custom users by modifying the following configuration.

2.2.1. Self-created user Administrator

The default user is Administrator, who will log in automatically. This user name is inserted between [<OOBE>](#) and [</OOBE>](#).

<UserAccounts>

<LocalAccounts>

<LocalAccount wcm:action="add">

<Password>

<Value></Value>

<PlainText>true</PlainText>

</Password>

<Description>Administrator</Description>

```
<DisplayName>Administrator</DisplayName>

<Group>Administrators</Group>

<Name>Administrator</Name>

</LocalAccount>

</LocalAccounts>

</UserAccounts>

<AutoLogon>

  <Password>

    <Value></Value>

    <PlainText>true</PlainText>

  </Password>

  <Enabled>true</Enabled>

  <Username>Administrator</Username>

</AutoLogon>
```

2.2.2. OOBE interactive creation of new users

After setting up a custom user and completing the system installation, you can select local or online user settings in OOBE.

2.2.2.1. Delete

Username: Delete from the beginning of <UserAccounts> to </UserAccounts>

Automatic Login: Delete from the beginning of <AutoLogon> to </AutoLogon>

2.2.2.2. Replace

From the beginning <OOBE> to </OOBE>

```
<OOBE>

  <ProtectYourPC>3</ProtectYourPC>

  <HideEULAPage>true</HideEULAPage>

  <HideWirelessSetupInOOBE>true</HideWirelessSetupInOOBE>

</OOBE>
```

steps during the creation process, you can create the desired version first and then add it to the other versions.

1. Additional Edition: Only the main required version ID needs to be created

Version IDs: [Core](#), [CoreN](#), [Professional](#), [ProfessionalN](#), [EnterpriseS](#), [EnterpriseSN](#). Differences: Different built-in InBox Apps are included, etc.

2. Additional Edition: Comparison of attachable version IDs and required version IDs

Group	Required version ID	Optional version ID	Remark
1	Core	Core , CoreSingleLanguage , ProfessionalN , EducationN , ProfessionalEducationN , ProfessionalWorkstationN , EnterpriseN , CloudEditionN	
2	CoreN	CoreN , CoreSingleLanguage , Professional , Education , ProfessionalCountrySpecific , ProfessionalEducation , ProfessionalSingleLanguage , ProfessionalWorkstation , Enterprise , IoTEnterprise , IoTEnterpriseK , ServerRdsh , CloudEdition	
3	Professional	Professional , Education , ProfessionalCountrySpecific , ProfessionalEducation , ProfessionalSingleLanguage , ProfessionalWorkstation , Enterprise , IoTEnterprise , IoTEnterpriseK , ServerRdsh , CloudEdition	
4	ProfessionalN	ProfessionalN , EducationN , ProfessionalEducationN , ProfessionalWorkstationN , EnterpriseN , CloudEditionN	
5	EnterpriseS	EnterpriseS , IoTEnterpriseS , IoTEnterpriseSK	
6	EnterpriseSN	EnterpriseSN	

3. Additional Edition: Sorting

Order	Operating system name	Required version ID	Allow Additional Edition ID	Remark
1	Windows 10 Home	Core	Core	
2	Windows 10 Home N	CoreN	CoreN	
3	Windows 10 Home Single Language	Core	CoreSingleLanguage	
4	Windows 10 Education	Professional	Education	
5	Windows 10 Education N	ProfessionalN	EducationN	
6	Windows 10 Pro	Professional	Professional	
7	Windows 10 Pro N	ProfessionalN	ProfessionalN	
8	Windows 10 Pro Education	Professional	ProfessionalEducation	
9	Windows 10 Pro Education N	ProfessionalN	ProfessionalEducationN	

Order	Operating system name	Required version ID	Allow Additional Edition ID	Remark
10	Windows 10 Pro for Workstations	Professional	ProfessionalWorkstation	
11	Windows 10 Pro N for Workstations	ProfessionalN	ProfessionalWorkstationN	
12	Windows 10 Enterprise	Professional	Enterprise	
13	Windows 10 Enterprise multi-session / Virtual Desktops	Professional	ServerRdsh	
14	Windows 10 Enterprise N	ProfessionalN	EnterpriseN	
15	Windows 10 IoT Enterprise	Professional	IoTEnterprise	
16	Windows 10 IoT Enterprise Subscription	Professional	IoTEnterpriseK	
17	Windows 10 Enterprise LTSC	EnterpriseS	EnterpriseS	
18	Windows 10 Enterprise N LTSC	EnterpriseS	IoTEnterpriseS	
19	Windows 10 IoT Enterprise LTSC	EnterpriseS	IoTEnterpriseSK	
20	Windows 10 IoT Enterprise Subscription LTSC	EnterpriseSN	EnterpriseSN	

4. Additional Edition: Events

4.1. Rule

The script creation rules are as follows: Based on the order specified in "Addendum: Sorting," append the index numbers from install.wim to Install.AE.Temp.wim. The process is as follows:

- 1) Mount
- 2) Change version ID offline
- 3) Change serial number offline
- 4) Unmount after saving

After completing the above steps in sequence:

- 1) Rebuild the Install.AE.Temp.wim file.
- 2) Move Install.wim to the backup directory.
- 3) Rename Install.AE.Temp.wim to Install.wim

4.2. Additional Edition: Start

It requires Wimbli to generate the output; code copying is not provided.

- Install.Additional.Edition.ps1

- [\Expand\Install\Install.Additional.Edition.ps1](#)
- https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Install/Install.Additional.Edition.ps1

- Copy the following code into the text editor, then enter the absolute path before copying it to the terminal and running it.

& "D:\YiSolutions_Learn\Packaging.tutorial\OS.10\22H2\Expand\Install\Install.Additional.Edition.ps1"

Chapter 4 Common problem

A. Clean all mounts to

Close any applications that may be accessing files in the image, including File Explorer.

Dismount-WindowsImage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -Discard

Dismount-WindowsImage -Path "D:\ISOTEMP_Custom\Install\WinRE\Mount" -Discard

Dismount-WindowsImage -Path "D:\ISOTEMP_Custom\Boot\Boot\Mount" -Discard

B. Fix the problem of abnormal mounting

1. View mounted

Get-WindowsImage -Mounted

2. Delete the DISM mount record saved in the registry

Remove-Item -Path "HKLM:\SOFTWARE\Microsoft\WIMMount\Mounted Images*" -Force -Recurse -ErrorAction SilentlyContinue

3. Delete all resources associated with the corrupted mounted image

Clear-WindowsCorruptMountPoint

Dism /cleanup-wim

C. Clean up

A large number of temporary files will be generated during the packaging process. Installation files will be temporarily released when installing InBox Apps applications, installing cumulative updates, and installing language packs. Therefore, unscheduled cleaning of outdated ones will occupy a large amount of disk space for a long time. It is recommended that you try the following methods to achieve this. Cleanup plan to free up more space:

1. Common logs

1.1. Clean using the command line

```
$TempPaths = @( $env:Temp; "$($env:SystemRoot)\Logs\DISM"; ); foreach ($TempPath in $TempPaths) { if (Test-Path -Path $TempPath) { write-host " $($TempPath)" -ForegroundColor Green; Get-ChildItem -Path $TempPath -Recurse -Force | ForEach-Object { try { Remove-Item $_.FullName -Force -Recurse -ErrorAction SilentlyContinue | Out-Null; } catch { write-host $_ -ForegroundColor Red; } }}
```

	1.2.	Manual deletion	
	1.2.1.	DISM log	
		Using the "Disk Cleanup" function, the logs generated by DISM cannot be cleaned and need to be deleted manually. Path: {system disk}\Windows\Logs\DISM	
	1.2.2.	Temporary directory	
		Using the "Disk Cleanup" function, files in the temporary directory cannot be cleaned and manual operation is required. Run: %Temp% to quickly locate and open the temporary directory. Path: {system disk}\Users\{username}\AppData\Local\ Temp	
	1.2.3.	Clear the command line records of "Terminal"	
		Remove-Item -Path (Get-PSReadlineOption).HistorySavePath -ErrorAction SilentlyContinue	
		After cleaning up command line records, you need to restart the "Terminal" to take effect.	
	2.	Disk cleanup	
		Run cleanmgr, selecting the disks and types to clean.	
Chapter 5	Known issues		
	None yet		



Yi's SOLUTIONS

This copy packaging tutorial is part of Yi's Solutions content, learn more:

- Yi's official website | <https://fengyi.tel/solutions>
- Github | <https://github.com/ilikeyi/solutions>

Author: Yi

Email: 775159955@qq.com, ilikeyi@outlook.com

Document version: 5.0

Translation: Chinese to English version

Initial public offering time: 4 / 2023

All scripts included in the document, last tested: 1 / 2026

Document last updated: 1 / 2026

Suggestions or feedback: <https://github.com/ilikeyi/solutions/issues>