Yi's Solutions

Microsoft Windows 11 24H2 and 25H2

PACKAGING TUTORIAL: 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

Table of contents

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:\dgreadiness_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:\dgreadiness_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:\dgreadiness_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.

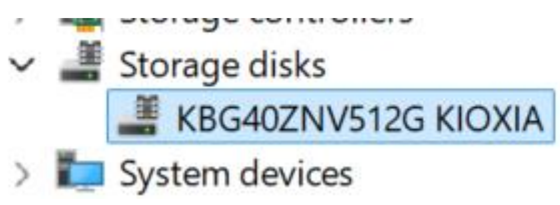
Windows Safe Mode does not load this NVMe driver by default, so you need to execute the following command to load it. After it takes effect, Safe Mode will work normally.

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

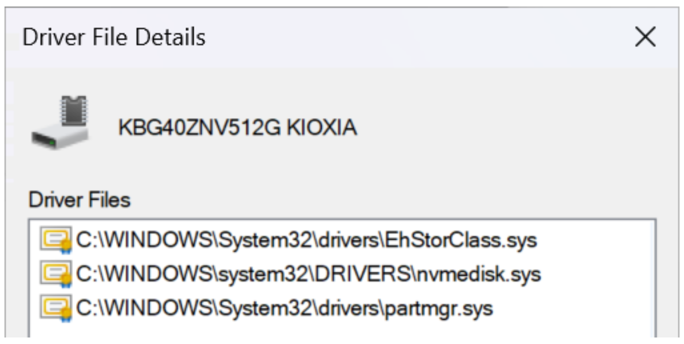
```
reg add HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\SafeBoot\Network\{75416E63-5912-4DFA-AE8F-3EFACCAFFB14}
```

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:



C:\WINDOWS\System32\drivers\EhStorClass.sys
C:\WINDOWS\system32\DRIVERS\nvmedisk.sys
C:\WINDOWS\System32\drivers\partmgr.sys

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 tools

   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. When creating Windows 11 24H2 and 25H2, please use the initial build of Windows 11 24H2 (26100.1742);

   1.1.2. Please recreate the image with each version update. For example, when upgrading from (22H2 and 23H2) to (24H2 and 25H2), avoid creating the new image based on the old one to prevent compatibility issues;

   The language packs for 22H2 and 23H2 are interchangeable, as are those for 24H2 and 25H2. InBox Apps can use the latest version directly.

   Microsoft's official documentation "Add languages to Windows 11 Enterprise images", already categorizes the downloads in the provided links.

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

1.1.4. 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;

1.1.5. 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.

1.1.6. Evolution history:

1.1.6.1. Evolved to 24H2: Microsoft Windows 11 24H2, Build 26100.1742 +

- Initial version cumulative update (KB5043080) +
- Service Stack Update (SSU) + Cumulative Update (KB5074105)

= OS Build 26100.7705

1.1.6.2. Evolved to 25H2: Microsoft Windows 11 24H2, Build 26100.1742 +

- Checkpoint Update (KB5054156) +
- Initial version cumulative update (KB5043080) +
- Service Stack Update (SSU) + Cumulative Update (KB5074105)

= OS Build 26200.7705

Default creation is 25H2. If you need to create 24H2, please go to the Windows Update directory and download the corresponding cumulative update for 24H2.

1.2. Prepare to download the initial or developer version

1.2.1. x64

1.2.1.1. Filename: en-us_windows_11_consumer_editions_version_24h2_x64_dvd_1d5fcad3.iso

List of files: https://files.rg-adguard.net/file/1ebf9c88-803f-636e-ad8a-5b60966dcd64

1.2.1.2. Filename: en-us_windows_11_business_editions_version_24h2_x64_dvd_59a1851e.iso

List of files: https://files.rg-adguard.net/file/4bfa831a-0073-3bb4-5dde-6c07df68d7e3

1.2.1.3. Filename: en-us_windows_11_iot_enterprise_version_24h2_x64_dvd_3a99b72b.iso

List of files: https://files.rg-adguard.net/file/d8ee9445-b9eb-5f45-f75e-e92a057820bf

1.2.1.4. Filename: en-us_windows_11_enterprise_ltsc_2024_x64_dvd_965cfb00.iso

List of files: https://files.rg-adguard.net/file/142ca376-487f-e858-a606-e120e70b9d02

1.2.1.5. Filename: en-us_windows_11_iot_enterprise_ltsc_2024_x64_dvd_f6b14814.iso

List of files: https://files.rg-adguard.net/file/9160d5cf-f480-a1c9-a62c-b75ab0708d2c

1.2.2. arm64

1.2.2.1. Filename: en-us_windows_11_consumer_editions_version_24h2_arm64_dvd_4cc70bf6.iso

List of files: https://files.rg-adguard.net/file/9f751f60-0919-4a5a-8fb5-7bd6340a5df6

1.2.2.2. Filename: en-us_windows_11_business_editions_version_24h2_arm64_dvd_ad92e9d8.iso

List of files: https://files.rg-adguard.net/file/cfb08972-7f11-f3a5-ae7c-8f084dc1996e

1.2.2.3. Filename: en-us_windows_11_iot_enterprise_version_24h2_arm64_dvd_e9155a10.iso

List of files: https://files.rg-adguard.net/file/bacf17e5-a307-5a01-1a35-71268dc0c2e3

1.2.2.4. Filename: en-us_windows_11_iot_enterprise_ltsc_2024_arm64_dvd_ec517836.iso

List of files: https://files.rg-adguard.net/file/de2234af-1514-ff50-50af-5a3395549c42

1.3. After the sample download en-us_windows_11_consumer_editions_version_24h2_x64_dvd_1d5fcad3.iso, Unzip to: D:\en-us_windows_11_consumer_editions_version_24h2_x64_dvd_1d5fcad3

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_11_consumer_editions_version_24h2_x64_dvd_1d5fcad3 change to D:\ISOTEMP

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

1.5.1. After downloading en-us_windows_11_business_editions_version_24h2_x64_dvd_59a1851e.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_11_iot_enterprise_version_24h2_x64_dvd_3a99b72b.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, 3. Add command:

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

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

1.5.3. After downloading en-us_windows_11_enterprise_ltsc_2024_x64_dvd_965cfb00.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_11_iot_enterprise_ltsc_2024_x64_dvd_f6b14814.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 all of them. Known index numbers: 2, 3. Add command:

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

```
Export-WindowsImage -SourceImagePath "H:\sources\install.wim" -SourceIndex 3 -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.

1.8. Report

Check the installed image package: language packs, associated language pack components, pre-installed InBox Apps applications and other detailed information. After downloading the report, use Excel software to open the .xlsx.

1.8.1. Report: Overview

Contains: ISO system installation package, image version, region, region association, associated language pack components, etc.

Report.Overview.xlsx

- \Expand\Install\Report.Overview.xlsx
- https://raw.githubusercontent.com/ilikeyi/solutions/main/_Learn/Packaging.tutorial/OS.11/24H2/Expand/Install/Report.Overview.xlsx

1.8.2. Report: Complete

Inclusion: ISO system installation package, image version, region, region association, associated language pack components, installed InBox Apps pre-installed applications, etc.

en-us, ar-sa, bg-bg, cs-cz, da-dk, de-de, el-gr, en-gb, es-es, es-mx, et-ee, fi-fi, fr-ca, fr-fr, he-il, hr-hr, hu-hu, it-it, ja-jp, ko-kr, lt-lt, lv-lv, nb-no, nl-nl, pl-pl, pt-br, pt-pt, ro-ro, ru-ru, sk-sk, sl-si, sr-latn-rs, sv-se, th-th, tr-tr, uk-ua, zh-cn, zh-tw

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 11 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 11 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. Download: https://software-static.download.prss.microsoft.com/dbazure/888969d5-f34g-4e03-ac9d-1f9786c66749/26100.1.240331-1435.ge_release_amd64fre_CLIENT_LOF_PACKAGES_OEM.iso

List of files: https://files.rg-adguard.net/file/025cfc5d-f5fa-7d00-246e-76c04a40e210

3. InBox Apps

3.1. Download the latest InBox Apps installation package.

Download: https://software-static.download.prss.microsoft.com/dbazure/888969d5-f34g-4e03-ac9d-1f9786c66749/26100.6584.250904-1728.ge_release_svc_prod1_amd64fre_InboxApps.iso

List of files: https://files.rg-adguard.net/file/ada764e8-717a-d080-099b-d3aa44b84dab

3.2. Fix missing items and rollback to older versions

3.2.1. Microsoft.SecHealthUI

The installation package Microsoft.SecHealthUI_8wekyb3d8bbwe.x64.appx in the file 26100.6584.250904-1728.ge_release_svc_prod1_amd64fre_InboxApps.iso contains version number 1000.26100.6584.00. Installing this version will prevent localization; you must use version 1000.26100.1.0. You can obtain this version through the following methods:

3.2.1.1. Download from Github

3.2.1.1.1. Microsoft.SecHealthUI_8wekyb3d8bbwe.x64.appx

https://github.com/ilikeyi/Solutions/raw/refs/heads/main/_Learn/Download.Package/Windows.11.25H2/Microsoft.SecHealthUI_8wekyb3d8bbwe.x64.appx

3.2.1.1.2. Microsoft.SecHealthUI_8wekyb3d8bbwe.arm64.appx

https://github.com/ilikeyi/Solutions/raw/refs/heads/main/_Learn/Download.Package/Windows.11.25H2/Microsoft.SecHealthUI_8wekyb3d8bbwe.arm64.appx

3.2.1.2. Search and download from uupdump.net

After opening https://uupdump.net: Select Windows 11 in the menu bar, select 24H2 in the drop-down menu, and search for "26100.2" in the search bar. If no results are found, please search for other versions. After displaying all files, search for the name "SecHealthUI". Note whether the SHA1 is the same. If not, search for other versions.

3.2.1.2.1. x64

- Opening https://uupdump.net/getfile.php?id=f85d43a4-60e9-4607-8997-a761beb7ef77&file=Microsoft.SecHealthUI_8wekyb3d8bbwe.appx displays the result: "Microsoft.SecHealthUI_8wekyb3d8bbwe.appx | SHA1: 81e1da943d518a7eddc92fa1bc572b42aa458e28 | 7.01 MiB".

- Select this file and download it. After downloading, you will get the file "5bf271eb-c77f-4760-b6c8-08de575abc24". Rename it to: Microsoft.SecHealthUI_8wekyb3d8bbwe.x64.appx

3.2.1.2.2. arm64

- Opening https://uupdump.net/getfile.php?id=a7c6c75e-5d2b-4d77-b7dd-5588614da877&file=Microsoft.SecHealthUI_8wekyb3d8bbwe.appx displays the result "Microsoft.SecHealthUI_8wekyb3d8bbwe.appx | SHA1: b1daf2046d448e9d0504661cf4cfdbb7e4cdbea2 | 8 MiB".

- Select this file and download it. After downloading, you will get the file "1fb6d544-e4ee-470a-8402-76fdc849d97c". Rename it to: Microsoft.SecHealthUI_8wekyb3d8bbwe.arm64.appx

3.2.2. Microsoft.HEVCVideoExtension

26100.6584.250904-1728.ge_release_svc_prod1_amd64fre_InboxApps.iso does not contain the Microsoft.HEVCVideoExtension_8wekyb3d8bbwe.appxbundle installation package file, you must use this version: 2.4.13.0, which can be obtained in the following ways:

3.2.2.1. If the file cannot be obtained, please download it manually:

3.2.2.1.1. Microsoft.HEVCVideoExtension_8wekyb3d8bbwe.appxbundle

3.2.2.1.1.1. Direct download

https://github.com/ilikeyi/Solutions/raw/refs/heads/main/_Learn/Download.Package/Windows.11.25H2/Microsoft.HEVCVideoExtension_8wekyb3d8bbwe.appxbundle

3.2.2.1.1.2. Open the website: https://store.rg-adguard.net

3.2.2.1.1.2.1. a). Select a URL (link). b). Select a channel (Retail). c). Enter keywords: https://www.microsoft.com/store/productId/9N4WGH0Z6VHQ

3.2.2.1.1.2.2. Search results: Microsoft.HEVCVideoExtension_2.4.13.0.*.appxbundle

3.2.2.1.1.2.3. After downloading, save it to the "Desktop" and rename it: Microsoft.HEVCVideoExtension_8wekyb3d8bbwe.appxbundle

3.2.2.1.2. License

3.2.2.1.2.1. Pre-saved licenses

Copy {location}:\YiSolutions_Learn\Packaging.tutorial\OS.11\25H2\Expand\License\15a6383d188a454ca98e15931ce48dc4_License1.xml to the desktop. If it is not available locally, download it online.

3.2.2.1.2.2. After downloading the file through the online download link, save it to the desktop

https://github.com/ilikeyi/Solutions/raw/refs/heads/main/_Learn/Download.Package/Windows.11.25H2/15a6383d188a454ca98e15931ce48dc4_License1.xml

3.2.3. After downloading through the above method, you will get the following 4 files:

3.2.3.1. Microsoft.SecHealthUI_8wekyb3d8bbwe.x64.appx

3.2.3.2. Microsoft.SecHealthUI_8wekyb3d8bbwe.arm64.appx

3.2.3.3. Microsoft.HEVCVideoExtension_8wekyb3d8bbwe.appxbundle

3.2.3.4. 15a6383d188a454ca98e15931ce48dc4_License1.xml

3.2.4. Use ISO editing tools to edit 26100.6584.250904-1728.ge_release_svc_prod1_amd64fre_InboxApps.iso and add the prepared files to the [ISO]:\packages directory;

B. Language Pack: Extract

I. Language pack: Ready

Mount 26100.1.240331-1435.ge_release_amd64fre_CLIENT_LOF_PACKAGES_OEM.iso or unzipped to any location;

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

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.11/24H2/Expand/Extract.ps1
- Copy the code

```
Function Extract_Language {
  param($Act, $NewLang, $Expand, $ISO, $SaveTo)
  Function Match_Required_Fonts {
    param($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 = "Laoo"; }; @{ 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 = @( "LanguagesAndOptionalFeatures\Microsoft-Windows-LanguageFeatures-Fonts-{DiyLang}-
Package~31bf3856ad364e35~AMD64~~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-Client-Language-Pack_x64_{Lang}.cab";
"LanguagesAndOptionalFeatures\Microsoft-Windows-LanguageFeatures-Basic-{Lang}-Package~31bf3856ad364e35~AMD64~~.cab";
"LanguagesAndOptionalFeatures\Microsoft-Windows-LanguageFeatures-Handwriting-{Lang}-Package~31bf3856ad364e35~AMD64~~.cab";
"LanguagesAndOptionalFeatures\Microsoft-Windows-LanguageFeatures-OCR-{Lang}-Package~31bf3856ad364e35~AMD64~~.cab";
"LanguagesAndOptionalFeatures\Microsoft-Windows-LanguageFeatures-Speech-{Lang}-Package~31bf3856ad364e35~AMD64~~.cab";
"LanguagesAndOptionalFeatures\Microsoft-Windows-LanguageFeatures-TextToSpeech-{Lang}-Package~31bf3856ad364e35~AMD64~~.cab";
"LanguagesAndOptionalFeatures\Microsoft-Windows-InternetExplorer-Optional-Package~31bf3856ad364e35~AMD64~{Lang}~.cab";
"LanguagesAndOptionalFeatures\Microsoft-Windows-Notepad-FoD-Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-
Notepad-FoD-Package~31bf3856ad364e35~wow64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-Notepad-System-FoD-
Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-Notepad-System-FoD-
Package~31bf3856ad364e35~wow64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-MediaPlayer-Package~31bf3856ad364e35~AMD64~{Lang}~.cab";
"LanguagesAndOptionalFeatures\Microsoft-Windows-MediaPlayer-Package~31bf3856ad364e35~wow64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-
MSPaint-FOD-Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-MSPaint-FOD-
Package~31bf3856ad364e35~wow64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-PowerShell-ISE-FOD-
Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-PowerShell-ISE-FOD-
Package~31bf3856ad364e35~wow64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-Printing-PMCPPC-FoD-
Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-StepsRecorder-Package~31bf3856ad364e35~AMD64~{Lang}~.cab";
"LanguagesAndOptionalFeatures\Microsoft-Windows-StepsRecorder-Package~31bf3856ad364e35~wow64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-
Windows-WMIC-FoD-Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-WMIC-FoD-
Package~31bf3856ad364e35~wow64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\HyperV-OptionalFeature-VirtualMachinePlatform-Client-Disabled-FOD-
Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-DirectoryServices-ADAM-Client-FOD-
Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-DirectoryServices-ADAM-Client-FOD-
Package~31bf3856ad364e35~wow64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-EnterpriseClientSync-Host-FOD-
Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-EnterpriseClientSync-Host-FOD-
Package~31bf3856ad364e35~wow64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-ProjFS-OptionalFeature-FOD-
Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-SenseClient-FoD-
Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-SnippingTool-FoD-
Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-SimpleTCP-FOD-
Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-SmbDirect-FOD-Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-Telnet-Client-FOD-Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-TerminalServices-AppServer-Client-FOD-Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-TerminalServices-AppServer-Client-FOD-Package~31bf3856ad364e35~wow64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-TFTP-Client-FOD-Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-VBSCRIPT-FoD-Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-VBSCRIPT-FoD-Package~31bf3856ad364e35~wow64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-WinOcr-FOD-Package~31bf3856ad364e35~AMD64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-WinOcr-FOD-Package~31bf3856ad364e35~wow64~{Lang}~.cab"; "LanguagesAndOptionalFeatures\Microsoft-Windows-InternationalFeatures-{Specific}-Package~31bf3856ad364e35~amd64~~.cab"; ) }; @{ Path = "Install\WinRE"; Rule = @( "Windows Preinstallation Environment\x64\WinPE_OCs\WinPE-FontSupport-{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\lp.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-securestartup_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-atbroker_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-audiocore_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-audiodrivers_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-connectivity_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-enhancedstorage_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-narrator_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-scripting_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-speech-tts_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-srh_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{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"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-appxdeployment_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-appxpackaging_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-storagewmi_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-wifi_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-windowsupdate_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-rejuv_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-opcservices_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-hta_{Lang}.cab"; ) }; @{ Path = "Boot\Boot"; Rule = @( "Windows Preinstallation Environment\x64\WinPE_OCs\WinPE-FontSupport-{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\lp.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\WinPE-Setup_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\WINPE-SETUP-CLIENT_{Lang}.CAB"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-securestartup_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-atbroker_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-audiocore_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-audiodrivers_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-enhancedstorage_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-narrator_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-scripting_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-speech-tts_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{Lang}\winpe-srh_{Lang}.cab"; "Windows Preinstallation Environment\x64\WinPE_OCs\{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 $NewLang
  Foreach ($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); }
        Extract_Process -NewSaveTo $itemList.Path -Package $Language -Name $item
      }
    }
  }
}
$Extract_language_Pack = @(
  @{ Tag = "zh-CN"; Act = "Add"; Scope = @( "Install\Install"; "Install\WinRE"; "Boot\Boot" ) }
  @{ Tag = "en-US"; Act = "Del"; Scope = @( "Install\Install"; "Install\WinRE"; "Boot\Boot" ) }
)

ForEach ($item in $Extract_language_Pack) { Extract_Language -Act $item.Act -NewLang $item.Tag -Expand $item.Scope -ISO "Auto" -SaveTo "D:\ISOTEMP_Custom"; }
```

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.11/24H2/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 = "*WinPE-appxdeployment*"; File = "winpe-appxdeployment_zh-CN.cab"; }; @{ Match = "*WinPE-AppxPackaging*"; File = "winpe-appxpackaging_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 = "*connectivity*"; File = "winpe-connectivity_zh-CN.cab"; }; @{ Match = "*EnhancedStorage*"; File = "winpe-enhancedstorage_zh-CN.cab"; }; @{ Match = "*hta*"; File = "winpe-hta_zh-CN.cab"; }; @{ Match = "*Narrator*"; File = "winpe-narrator_zh-CN.cab"; }; @{ Match = "*opcservices*"; File = "winpe-opcservices_zh-CN.cab"; }; @{ Match = "*rejuv*"; File = "winpe-rejuv_zh-CN.cab"; }; @{ Match =
```

```
"*scripting*"; File = "winpe-scripting_zh-CN.cab"; }; @{ Match = "*SecureStartup*"; File = "winpe-securestartup_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 = "*StorageWMI*"; File = "winpe-storagewmi_zh-CN.cab"; }; @{ Match = "*wds-tools*"; File = "winpe-wds-tools_zh-CN.cab"; }; @{ Match = "*WiFi*"; File = "winpe-wifi_zh-CN.cab"; }; @{ Match = "*windowsupdate*"; File = "winpe-windowsupdate_zh-CN.cab"; }; @{ Match = "*WinPE-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; }}}
```

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=KB5070186, 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.sf.dl.delivery.mp.microsoft.com/filestreamingservice/files/4bbd25e0-ac80-41bc-bd38-1bdba0bb63d6/public/windows11.0-kb5070186-x64_71c4a1f083355193e464c0bd3e538dd34753f8dd.cab

- Install

  ```
  Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\WinRE\Mount" -PackagePath "D:\ISOTEMP_Custom\Install\WinRE\Update\windows11.0-kb5070186-x64_71c4a1f083355193e464c0bd3e538dd34753f8dd.cab"
  ```

3.1.5.1.2. arm64

- Direct download

  https://catalog.sf.dl.delivery.mp.microsoft.com/filestreamingservice/files/842afa37-e29b-435c-9c22-36f32e81e5c3/public/windows11.0-kb5070186-arm64_04864c55245d82fec095d6677bc26b4ed70cb1bf.cab

- Install

  ```
  Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\WinRE\Mount" -PackagePath "D:\ISOTEMP_Custom\Install\WinRE\Update\windows11.0-kb5070186-arm64_04864c55245d82fec095d6677bc26b4ed70cb1bf.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: WinRE.wim

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

3.1.8. Unmount image: WinRE.wim

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
  - \Expand\Install\WinRE\WinRE.Rebuild.ps1
  - https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.11/24H2/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.11/24H2/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.11/24H2/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 = @();
    if (Test-Path $Mount -PathType Container) { Get-WindowsPackage -Path $Mount | ForEach-Object { $Initl_install_Language_Component += $_.PackageName }; } else { Write-Host "Not mounted: $($Mount)"; return; }
    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:Init_Folder_All_File_Match_Done = @(); $Script:Init_Folder_All_File_Exclude = @();
    $Script:Search_File_Order = @(
        @{ Name = "Fonts"; Description = "Fonts"; Rule = @( "*Fonts*"; ); }
        @{ Name = "Basic"; Description = "Basic"; Rule = @( "*LanguageFeatures-Basic*"; "*Client*Language*Pack*"; ); }
        @{ Name = "OCR"; Description = "Optical character recognition"; Rule = @( "*LanguageFeatures-OCR*"; ); }
        @{ Name = "Handwriting"; Description = "Handwriting recognition"; Rule = @( "*LanguageFeatures-Handwriting*"; ); }
        @{ Name = "TextToSpeech"; Description = "Text-to-speech"; Rule = @( "*LanguageFeatures-TextToSpeech*"; ); }
        @{ Name = "Speech"; Description = "Speech recognition"; Rule = @( "*LanguageFeatures-Speech*"; ); }
        @{ Name = "RegionSpecific"; Description = "Other region-specific requirements"; Rule = @( "*InternationalFeatures*"; ); }
        @{ Name = "Retail"; Description = "Retail demo experience"; Rule = @( "*RetailDemo*"; ); }
        @{ Name = "Features_On_Demand"; Description = "Features on demand"; Rule = @( "*InternetExplorer*~x86~*"; "*InternetExplorer*~x64~*"; "*InternetExplorer*~amd64~*"; "*InternetExplorer*~wow64~*"; "*InternetExplorer*~arm64.x86~*"; "*InternetExplorer*~arm64~*"; ; "*MSPaint*~x86~*"; "*MSPaint*~x64~*"; "*MSPaint*~amd64~*"; "*MSPaint*~wow64~*"; "*MSPaint*~arm64.x86~*"; "*MSPaint*~arm64~*”; "*Notepad-FoD-Package*~x86~*"; "*Notepad-FoD-Package*~x64~*";
"*Notepad-FoD-Package*~amd64~*"; "*Notepad-FoD-Package*~wow64~*"; "*Notepad-FoD-Package*~arm64.x86~*"; "*Notepad-FoD-Package*~arm64~*"; ; "*Notepad-
System-FoD-Package*~x86~*"; "*Notepad-System-FoD-Package*~x64~*"; "*Notepad-System-FoD-Package*~amd64~*"; "*Notepad-System-FoD-Package*~wow64~*";
"*Notepad-System-FoD-Package*~arm64.x86~*"; "*Notepad-System-FoD-Package*~arm64~*”; "*MediaPlayer*~x86~*"; "*MediaPlayer*~x64~*";
"*MediaPlayer*~amd64~*";  "*MediaPlayer*~wow64~*";  "*MediaPlayer*~arm64.x86~*";  "*MediaPlayer*~arm64~*"; ; "*PowerShell*ISE*~x86~*";
"*PowerShell*ISE*~x64~*"; "*PowerShell*ISE*~amd64~*"; "*PowerShell*ISE*~wow64~*"; "*PowerShell*ISE*~arm64.x86~*"; "*PowerShell*ISE*~arm64~*”;
"*StepsRecorder*~x86~*"; "*StepsRecorder*~x64~*"; "*StepsRecorder*~amd64~*"; "*StepsRecorder*~wow64~*"; "*StepsRecorder*~arm64.x86~*";
"*StepsRecorder*~arm64~*”; "*SnippingTool*~x86~*"; "*SnippingTool*~x64~*"; "*SnippingTool*~amd64~*"; "*SnippingTool*~wow64~*"; "*SnippingTool*~arm64.x86~*";
"*SnippingTool*~arm64~*”; "*WMIC*~x86~*"; "*WMIC*~x64~*"; "*WMIC*~amd64~*"; "*WMIC*~wow64~*"; "*WMIC*~arm64.x86~*"; "*WMIC*~arm64~*”;
"*WordPad*~x86~*"; "*WordPad*~x64~*"; "*WordPad*~amd64~*"; "*WordPad*~wow64~*"; "*WordPad*~arm64.x86~*"; "*WordPad*~arm64~*”; "*Printing-WFS*~x86~*";
"*Printing-WFS*~x64~*"; "*Printing-WFS*~amd64~*"; "*Printing-WFS*~wow64~*"; "*Printing-WFS*~arm64.x86~*"; "*Printing-WFS*~arm64~*”; "*Printing-PMCPPC*~x86~*";
"*Printing-PMCPPC*~x64~*"; "*Printing-PMCPPC*~amd64~*"; "*Printing-PMCPPC*~wow64~*"; "*Printing-PMCPPC*~arm64.x86~*"; "*Printing-PMCPPC*~arm64~*”;
"*Telnet-Client*~x86~*"; "*Telnet-Client*~x64~*"; "*Telnet-Client*~amd64~*"; "*Telnet-Client*~wow64~*"; "*Telnet-Client*~arm64.x86~*"; "*Telnet-Client*~arm64~*”;
"*TFTP-Client*~x86~*"; "*TFTP-Client*~x64~*"; "*TFTP-Client*~amd64~*"; "*TFTP-Client*~wow64~*"; "*TFTP-Client*~arm64.x86~*"; "*TFTP-Client*~arm64~*”;
"*VBSCRIPT*~x86~*"; "*VBSCRIPT*~x64~*"; "*VBSCRIPT*~amd64~*"; "*VBSCRIPT*~wow64~*"; "*VBSCRIPT*~arm64.x86~*"; "*VBSCRIPT*~arm64~*”; "*WinOcr-FOD-
Package*~x86~*"; "*WinOcr-FOD-Package*~x64~*"; "*WinOcr-FOD-Package*~amd64~*"; "*WinOcr-FOD-Package*~wow64~*"; "*WinOcr-FOD-Package*~arm64.x86~*";
"*WinOcr-FOD-Package*~arm64~*”; "*ProjFS-OptionalFeature-FOD-Package*~x86~*"; "*ProjFS-OptionalFeature-FOD-Package*~x64~*"; "*ProjFS-OptionalFeature-FOD-
Package*~amd64~*"; "*ProjFS-OptionalFeature-FOD-Package*~wow64~*"; "*ProjFS-OptionalFeature-FOD-Package*~arm64.x86~*"; "*ProjFS-OptionalFeature-FOD-
Package*~arm64~*”; "*ServerCoreFonts-NonCritical-Fonts-BitmapFonts-FOD-Package*~x86~*"; "*ServerCoreFonts-NonCritical-Fonts-BitmapFonts-FOD-Package*~x64~*";
"*ServerCoreFonts-NonCritical-Fonts-BitmapFonts-FOD-Package*~amd64~*"; "*ServerCoreFonts-NonCritical-Fonts-BitmapFonts-FOD-Package*~wow64~*";
"*ServerCoreFonts-NonCritical-Fonts-BitmapFonts-FOD-Package*~arm64.x86~*"; "*ServerCoreFonts-NonCritical-Fonts-BitmapFonts-FOD-Package*~arm64~*”;
"*ServerCoreFonts-NonCritical-Fonts-Support-FOD-Package*~x86~*"; "*ServerCoreFonts-NonCritical-Fonts-Support-FOD-Package*~x64~*"; "*ServerCoreFonts-NonCritical-
Fonts-Support-FOD-Package*~amd64~*"; "*ServerCoreFonts-NonCritical-Fonts-Support-FOD-Package*~wow64~*"; "*ServerCoreFonts-NonCritical-Fonts-Support-FOD-
Package*~arm64.x86~*"; "*ServerCoreFonts-NonCritical-Fonts-Support-FOD-Package*~arm64~*”; "*ServerCoreFonts-NonCritical-Fonts-TrueType-FOD-Package*~x86~*";
"*ServerCoreFonts-NonCritical-Fonts-TrueType-FOD-Package*~x64~*"; "*ServerCoreFonts-NonCritical-Fonts-TrueType-FOD-Package*~amd64~*"; "*ServerCoreFonts-
NonCritical-Fonts-TrueType-FOD-Package*~wow64~*"; "*ServerCoreFonts-NonCritical-Fonts-TrueType-FOD-Package*~arm64.x86~*"; "*ServerCoreFonts-NonCritical-Fonts-
TrueType-FOD-Package*~arm64~*”; "*SimpleTCP-FOD-Package*~x86~*"; "*SimpleTCP-FOD-Package*~x64~*"; "*SimpleTCP-FOD-Package*~amd64~*"; "*SimpleTCP-FOD-
Package*~wow64~*"; "*SimpleTCP-FOD-Package*~arm64.x86~*"; "*SimpleTCP-FOD-Package*~arm64~*”; "*VirtualMachinePlatform-Client-Disabled-FOD-
Package*~x86~*"; "*VirtualMachinePlatform-Client-Disabled-FOD-Package*~x64~*"; "*VirtualMachinePlatform-Client-Disabled-FOD-Package*~amd64~*";
"*VirtualMachinePlatform-Client-Disabled-FOD-Package*~wow64~*"; "*VirtualMachinePlatform-Client-Disabled-FOD-Package*~arm64.x86~*"; "*VirtualMachinePlatform-
Client-Disabled-FOD-Package*~arm64~*”; "*DirectoryServices-ADAM-Client-FOD-Package*~x86~*"; "*DirectoryServices-ADAM-Client-FOD-Package*~x64~*";
"*DirectoryServices-ADAM-Client-FOD-Package*~amd64~*"; "*DirectoryServices-ADAM-Client-FOD-Package*~wow64~*"; "*DirectoryServices-ADAM-Client-FOD-
Package*~arm64.x86~*"; "*DirectoryServices-ADAM-Client-FOD-Package*~arm64~*”; "*EnterpriseClientSync-Host-FOD-Package*~x86~*"; "*EnterpriseClientSync-Host-
FOD-Package*~x64~*"; "*EnterpriseClientSync-Host-FOD-Package*~amd64~*"; "*EnterpriseClientSync-Host-FOD-Package*~wow64~*"; "*EnterpriseClientSync-Host-FOD-
Package*~arm64.x86~*"; "*EnterpriseClientSync-Host-FOD-Package*~arm64~*”; "*SenseClient-FoD-Package*~x86~*"; "*SenseClient-FoD-Package*~x64~*";
"*SenseClient-FoD-Package*~amd64~*"; "*SenseClient-FoD-Package*~wow64~*"; "*SenseClient-FoD-Package*~arm64.x86~*"; "*SenseClient-FoD-Package*~arm64~*”;
"*SmbDirect-FOD-Package*~x86~*"; "*SmbDirect-FOD-Package*~x64~*"; "*SmbDirect-FOD-Package*~amd64~*"; "*SmbDirect-FOD-Package*~wow64~*"; "*SmbDirect-
FOD-Package*~arm64.x86~*"; "*SmbDirect-FOD-Package*~arm64~*”; "*TerminalServices-AppServer-Client-FOD-Package*~x86~*"; "*TerminalServices-AppServer-Client-
FOD-Package*~x64~*"; "*TerminalServices-AppServer-Client-FOD-Package*~amd64~*"; "*TerminalServices-AppServer-Client-FOD-Package*~wow64~*";
"*TerminalServices-AppServer-Client-FOD-Package*~arm64.x86~*"; "*TerminalServices-AppServer-Client-FOD-Package*~arm64~*"; ); })

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

 $ExcludeNameItem = @( "Fonts"; "RegionSpecific"; )

 ForEach ($WildCard in $Script:Init_Folder_All_File) {

   ForEach ($item in $Script:Search_File_Order) {

     ForEach ($NewRule in $item.Rule) {

       if ($WildCard -like "*$($NewRule)*") {

         Write-host "`n   Fuzzy matching: " -NoNewline; Write-host $NewRule -ForegroundColor Green

         Write-host "   File name: " -NoNewline; Write-host $WildCard -ForegroundColor Green
```

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

                    $TempSave = @{ Match_Name = $NewRule; FileName = $WildCard }

                    $new = $OSDefaultUser + $TempSave

                    if ($item.name -Contains $ExcludeNameItem) { Write-host "   Do not match, install directly" -ForegroundColor Yellow; New-Variable -Name "Init_File_Type_$($item.Name)" -Value $new -Force; $Script:Init_Folder_All_File_Match_Done += $WildCard; } else { ForEach ($Component in $Initl_install_Language_Component) { if ($Component -like "*$($NewRule)*") {  Write-host "   Component name: " -NoNewline; Write-host $Component -ForegroundColor Green; New-Variable -Name "Init_File_Type_$($item.Name)" -Value $new -Force; $Script:Init_Folder_All_File_Match_Done += $WildCard; break; }}}}}}

    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 "   File name: " -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 A: Core, CoreSingleLanguage

- Group B: CoreN

- Group C: Education, Professional, ProfessionalEducation, ProfessionalWorkstation, Enterprise, IoTEnterprise, IoTEnterpriseK, ServerRdsh, ServerStandard, ServerDatacenter
- Group D: EducationN, ProfessionalN, ProfessionalEducationN, ProfessionalWorkstationN, EnterpriseN, EnterpriseGN, EnterpriseSN, CloudN, CloudEN, CloudEditionLN, StarterN

SN	Package Name	Product ID	Group	Regional Scope
1	Microsoft.AV1VideoExtension	9MVZQVXJBQ9V	A, C	All
2	Microsoft.AVCEncoderVideoExtension	9PB0TRCNRHFX	A, C	All
3	Microsoft.GamingApp	9MV0B5HZVK9Z	A, C	All
4	Microsoft.HEIFImageExtension	9PMMSR1CGPWG	A, C	All
5	Microsoft.HEVCVideoExtension	9NMZLZ57R3T7	A, C	All
6	Microsoft.RawImageExtension	9NCTDW2W1BH8	A, C	All
7	Microsoft.VP9VideoExtensions	9N4D0MSMP0PT	A, C	All
8	Microsoft.WebMediaExtensions	9N5TDP8VCMHS	A, C	All
9	Microsoft.WebpImageExtension	9PG2DK419DRG	A, C	All
10	Microsoft.MPEG2VideoExtension	9N95Q1ZZPMH4	A, C	All
11	Microsoft.Windows.DevHome	9N8MHTPHNGVV	A, C	
12	Microsoft.WindowsSoundRecorder	9WZDNCRFHWKN	A, C	All
13	Microsoft.Xbox.TCUI	9NKNC0LD5NN6	A, C	All
14	Microsoft.XboxGamingOverlay	9NZKPSTSNW4P	A, C	All
15	Microsoft.ZuneMusic	9WZDNCRFJ3PT	A, C	All
16	Microsoft.CrossDevice	9NTXGKQ8P7N0	A, C, D	All
17	MSTeams	XP8BT8DW290MPQ	A, C, D	AD;AE;AF;AG;AI;AL;AM;AO;AQ;AR;AS;AT;AU;AW;AX;AZ;BA;BB;BD;BE;BF;BG;BH;BI;BJ;BL;BM;BN;BO;BQ;BR;BS;BT;BV;BW;BY;BZ;CA;CC;CD;CF;CG;CH;CI;CK;CL;CM;CO;CR;CU;CV;CW;CX;CY;CZ;DE;DJ;DK;DM;DO;DZ;EC;EE;EG;ER;ES;ET;FI;FJ;FK;FM;FO;FR;GA;GB;GD;GE;GF;GG;GH;GI;GL;GM;GN;GP;GQ;GR;GS;GT;GU;GW;GY;HK;HM;HN;HR;HT;HU;ID;IE;IL;IM;IN;IO;IQ;IR;IS;IT;JE;JM;JO;JP;KE;KG;KH;KI;KM;KN;KP;KR;KW;KY;KZ;LA;LB;LC;LI;LK;LR;LS;LT;LU;LV;LY;MA;MC;MD;ME;MF;MG;MH;MK;ML;MM;MN;MO;MP;MQ;MR;MS;MT;MU;MV;MW;MX;MY;MZ;NA;NC;NE;NF;NG;NI;NL;NO;NP;NR;NU;NZ;OM;PA;PE;PF;PG;PH;PK;PL;PM;PN;PR;PS;PT;PW;PY;QA;RE;RO;RS;RU;RW;SA;SB;SC;SD;SE;SG;SH;SI;SJ;SK;SL;SM;SN;SO;SR;SS;ST;SV;SX;SY;SZ;TC;TD;TF;TG;TH;TJ;TK;TL;TM;TN;TO;TR;TT;TV;TW;TZ;UA;UG;UM;US;UY;UZ;VA;VC;VE;VG;VI;VN;VU;WF;WS;XK;YE;YT;ZA;ZM;ZW
18	MicrosoftCorporationII.MicrosoftFamily	9PDJDJS743XF	A, B	All
19	Microsoft.UI.Xaml.2.8		A, B, C, D	All
20	Microsoft.WindowsAppRuntime.1.5		A, B, C, D	All
21	Microsoft.WindowsAppRuntime.1.6		A, B, C, D	All
22	Microsoft.WindowsAppRuntime.1.7		A, B, C, D	All

SN	Package Name	Product ID	Group	Regional Scope
23	Microsoft.NET.Native.Framework.2.2		A, B, C, D	All
24	Microsoft.NET.Native. Runtime.22		A, B, C, D	All
25	Microsoft.VCLibs.140.00		A, B, C, D	All
26	Microsoft.VCLibs.140.00.UWPDesktop		A, B, C, D	All
27	Microsoft.Services.Store.Engagement		A, B, C, D	All
28	Microsoft.DesktopAppInstaller	9NBLGGH4NNS1	A, B, C, D	All
29	Microsoft.WindowsStore	9WZDNCRFJBMP	A, B, C, D	All
30	MicrosoftWindows.Client.WebExperience	9MSSGKG348SP	A, B, C, D	All
31	Clipchamp.Clipchamp	9P1J8S7CCWWT	A, B, C, D	All
32	ApplicationCompatibilityEnhancements	9PCSD6N03BKV	A, B, C, D	All
33	Microsoft.BingNews	9WZDNCRFHVFW	A, B, C, D	All
34	Microsoft.BingSearch	9NZBF4GT040C	A, B, C, D	All
35	Microsoft.BingWeather	9WZDNCRFJ3Q2	A, B, C, D	All
36	Microsoft.Copilot	9NHT9RB2F4HD	A, B, C, D	AD;AE;AF;AG;AI;AL;AM;AO;AQ;AR;AS;AT;AU;AW;AX;AZ;BA;BB;BD;BE;BF;BG;BH;BI;BJ;BL;BM;BN;BO;BQ;BR;BS;BT;BV;BW;BZ;CA;CC;CD;CF;CG;CH;CI;CK;CL;CM;CO;CR;CV;CW;CX;CY;CZ;DE;DJ;DK;DM;DO;DZ;EC;EE;EG;ER;ES;ET;FI;FJ;FK;FM;FO;FR;GA;GB;GD;GE;GF;GG;GH;GI;GL;GM;GN;GP;GQ;GR;GS;GT;GU;GW;GY;HK;HM;HN;HR;HT;HU;ID;IE;IL;IM;IN;IO;IQ;IS;IT;JE;JM;JO;JP;KE;KG;KH;KI;KM;KN;KR;KW;KY;KZ;LA;LB;LC;LI;LK;LR;LS;LT;LU;LV;LY;MA;MC;MD;ME;MF;MG;MH;MK;ML;MM;MN;MO;MP;MQ;MR;MS;MT;MU;MV;MW;MX;MY;MZ;NA;NC;NE;NF;NG;NI;NL;NO;NP;NR;NU;NZ;OM;PA;PE;PF;PG;PH;PK;PL;PM;PN;PR;PS;PT;PW;PY;QA;RE;RO;RS;RW;SA;SB;SC;SD;SE;SG;SH;SI;SJ;SK;SL;SM;SN;SO;SR;SS;ST;SV;SX;SZ;TC;TD;TF;TG;TH;TJ;TK;TL;TM;TN;TO;TR;TT;TV;TW;TZ;UA;UG;UM;US;UY;UZ;VA;VC;VE;VG;VI;VN;VU;WF;WS;XK;YE;YT;ZA;ZM;ZW
37	Microsoft.GetHelp	9PKDZBMV1H3T	A, B, C, D	All
38	Microsoft.MicrosoftOfficeHub	9WZDNCRD29V9	A, B, C, D	All
39	Microsoft.MicrosoftSolitaireCollection	9WZDNCRFHWD2	A, B, C, D	All
40	Microsoft.StickyNotes	9NBLGGH4QGHW	A, B, C, D	All
41	Microsoft.OutlookForWindows	9NRX63209R7B	A, B, C, D	AD;AE;AF;AG;AI;AL;AM;AO;AQ;AR;AS;AT;AU;AW;AX;AZ;BA;BB;BD;BE;BF;BG;BH;BI;BJ;BL;BM;BN;BO;BQ;BR;BS;BT;BV;BW;BY;BZ;CA;CC;CD;CF;CG;CH;CI;CK;CL;CM;CO;CR;CU;CV;CW;CX;CY;CZ;DE;DJ;DK;DM;DO;DZ;EC;EE;EG;ER;ES;ET;FI;FJ;FK;FM;FO;FR;GA;GB;GD;GE;GF;GG;GH;GI;GL;GM;GN;GP;GQ;GR;GS;GT;GU;GW;GY;HK;HM;HN;HR;HT;HU;ID;IE;IL;IM;IN;IO;IQ;IR;IS;IT;JE;JM;JO;JP;KE;KG;KH;KI;KM;KN;KP;KR;KW;KY;KZ;LA;LB;LC;LI;LK;LR;LS;LT;LU;LV;LY;MA;MC;MD;ME;MF;MG;MH;MK;ML;MM;MN;MO;MP;MQ;MR;MS;MT;MU;MV;MW;MX;MY;MZ;NA;NC;NE;NF;NG;NI;NL;NO;NP;NR;NU;NZ;OM;PA;PE;PF;PG;PH;PK;PL;PM;PN;PR;PS;PT;PW;PY;QA;RE;RO;RS;RU;RW;SA;SB;SC;SD;SE;SG;SH;SI;SJ;SK;SL;SM;SN;SO;SR;SS;ST;SV;SX;SY;SZ;TC;TD;TF;TG;TH;TJ;TK;TL;TM;TN;TO;TR;TT;TV;TW;TZ;UA;UG;UM;US;UY;UZ;VA;VC;VE;VG;VI;VN;VU;WF;WS;XK;YE;YT;ZA;ZM;ZW
42	Microsoft.Paint	9PCFS5B6T72H	A, B, C, D	All
43	Microsoft.PowerAutomateDesktop	9NFTCH6J7FHV	A, B, C, D	All

SN	Package Name	Product ID	Group	Regional Scope
44	Microsoft.ScreenSketch	9MZ95KL8MR0L	A, B, C, D	All
45	Microsoft.SecHealthUI	9NK0JLZT7JD0	A, B, C, D	All
46	Microsoft.StorePurchaseApp	9NBLGGH4LS1F	A, B, C, D	All
47	Microsoft.Todos	9NBLGGH5R558	A, B, C, D	All
48	Microsoft.Windows.Photos	9WZDNCRFJBH4	A, B, C, D	All
49	Microsoft.WindowsAlarms	9WZDNCRFJ3PR	A, B, C, D	All
50	Microsoft.WindowsCalculator	9WZDNCRFHVN5	A, B, C, D	All
51	Microsoft.WindowsCamera	9WZDNCRFJBBG	A, B, C, D	All
52	Microsoft.WindowsFeedbackHub	9NBLGGH4R32N	A, B, C, D	All
53	Microsoft.WindowsNotepad	9MSMLRH6LZF3	A, B, C, D	All
54	Microsoft.WindowsTerminal	9N0DX20HK701	A, B, C, D	All
55	Microsoft.XboxIdentityProvider	9WZDNCRD1HKW	A, B, C, D	All
56	Microsoft.XboxSpeechToTextOverlay	9P086NHDNB9W	A, B, C, D	All
57	Microsoft.YourPhone	9NMPJ99VJBWV	A, B, C, D	All
58	MicrosoftCorporationII.QuickAssist	9P7BP5VNWKX5	A, B, C, D	All

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.11/24H2/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 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
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

Region	Region
af-za	9PDW16B5HMXR
as-in	9NTJLXMXX35J
bg-bg	9MX54588434F
bs-latn-ba	9MVFKLJ10MFL
chr-cher-us	9MX15485N3RK
da-dk	9NDMT2VKSNL1
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

Region	Product ID
am-et	9NGL4R61W3PL
az-latn-az	9P5TFKZHQ5K8
bn-bd	9PH7TKVXGGM8
ca-es	9P6JMKJQZ9S7
cs-cz	9P3WXZ1KTM7C
de-de	9P6CT0SLW589
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	9NTHCXCXSJDH
pl-pl	9NC5HW94R0LD
pt-pt	9P7X8QJ7FL0X
ro-ro	9MWXGPJ5PJ3H
sd-arab-pk	9NB9JSCXW9X5
sl-si	9NV27L34J4ST
sr-cyrl-rs	9PPD6CCK9K5H
sw-ke	9NFF2M19DQ55

ta-in	9PDZB1WT1B34
th-th	9MSTWFRL0LR4
tn-za	9NFSXM123DHT
ug-cn	9P52C5D7VL5S
uz-latn-uz	9P5P2T5P5L9S
xh-za	9NW3QWSLQD17
zh-tw	9PCJ4DHCQ1JQ

te-in	9PMQJJGF63FW
ti-et	9NC8C9RDNK2S
tr-tr	9NL1D3T5HG9R
uk-ua	9PPPMZRSGHR8
vi-vn	9P0W68X0XZPT
yo-ng	9NGM3VPPZS5V
zu-za	9NNRM7KT5NB0

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.net

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 26200 content in the web page, search results: Microsoft.LanguageExperiencePackzh-CN_26200.*. 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 26100.6584.250904-1728.ge_release_svc_prod1_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"
- Architecture: x64
- Install.Inst.Inbox.apps.ps1
  - \Expand\Install\Install.Inst.Inbox.apps.ps1
  - https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.11/24H2/Expand/Install/Install.Inst.InBox.Apps.ps1
- Copy the code

```
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ForegroundColor Green; } catch { Write-Host "Error" -ForegroundColor Red; Write-Host "   $($_)" -ForegroundColor Yellow; return; }
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"Microsoft.VCLibs.140.00.UWPDesktop"; "Microsoft.Services.Store.Engagement"; "Clipchamp.Clipchamp"; "Microsoft.ApplicationCompatibilityEnhancements";
"Microsoft.AV1VideoExtension"; "Microsoft.AVCEncoderVideoExtension"; "Microsoft.BingNews"; "Microsoft.BingSearch"; "Microsoft.BingWeather"; "Microsoft.Copilot";
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"Microsoft.Xbox.TCUI"; "Microsoft.XboxGamingOverlay"; "Microsoft.XboxIdentityProvider"; "Microsoft.XboxSpeechToTextOverlay"; "Microsoft.YourPhone";
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SM;SN;SO;SR;SS;ST;SV;SX;SY;SZ;TC;TD;TF;TG;TH;TJ;TK;TL;TM;TN;TO;TR;TT;TV;TW;TZ;UA;UG;UM;US;UY;UZ;VA;VC;VE;VG;VI;VN;VU;WF;WS;XK;YE;YT;ZA;ZM;ZW"; Dependencies
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    @{ Name = "Microsoft.YourPhone"; Match = "YourPhone"; License = "YourPhone"; Region = "All"; Dependencies = @("Microsoft.WindowsAppRuntime.1.4", "Microsoft.VCLibs.140.00", "Microsoft.VCLibs.140.00.UWPDesktop"); }
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  )
}
$Allow_Install_App = @()
ForEach ($item in $Pre_Config_Rules.Edition) { if ($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 }
Function Match_InBox_Apps_Install_Pack {
  param ( $NewPath )
  $NewArch  = $Arch; $NewArchC = $Arch.Replace("AMD64", "x64"); $NewArchCTag = $Arch.Replace("AMD64", "x64");
  if ($Arch -eq "arm64") { $NewArchCTag = "arm" }
  if ($Pre_Config_Rules.Rule.Count -gt 0) {
    ForEach ($itemInBoxApps in $Pre_Config_Rules.Rule){
      $InstallPacker = ""; $InstallPackerCert = ""; $SearchNewStructure = $itemInBoxApps.Match.Replace("{ARCH}", $NewArch).Replace("{ARCHC}",
$NewArchC).Replace("{ARCHTag}", $NewArchCTag); $SearchNewLicense = $itemInBoxApps.License.Replace("{ARCH}", $NewArch).Replace("{ARCHC}",
$NewArchC).Replace("{ARCHTag}", $NewArchCTag);
      Get-ChildItem -Path $NewPath -Filter "*$($SearchNewStructure)*" -Include "*.appx", "*.appxbundle", "*.msixbundle", "*.msix" -Recurse -Force -ErrorAction
SilentlyContinue | ForEach-Object {
        if (Test-Path -Path $_.FullName -PathType Leaf) {
          $InstallPacker = $_.FullName
          Get-ChildItem -Path $NewPath -Filter "*$($SearchNewLicense)*" -Include *.xml -Recurse -Force -ErrorAction SilentlyContinue | ForEach-Object { $InstallPackerCert =
$_.FullName; }
          $Script:InBoxAppx += @{ Name = $itemInBoxApps.Name; Depend = $itemInBoxApps.Dependencies; Region = $itemInBoxApps.Region; Search =
$SearchNewStructure; InstallPacker = $InstallPacker; Certificate = $InstallPackerCert; CertificateRule = $SearchNewLicense; }
          return
        }}}}}
Write-host "`n   InBox Apps: Installation packages, automatic search for full disk or specified paths" -ForegroundColor Yellow; Write-host "   $('-' * 80)"; $Script:InBoxAppx = @();
if ($ISO -eq "Auto") { Get-PSDrive -PSProvider FileSystem -ErrorAction SilentlyContinue | ForEach-Object { $AppPath = Join-Path -Path $_.Root -ChildPath "packages" -
ErrorAction SilentlyContinue; Match_InBox_Apps_Install_Pack -NewPath $AppPath;  }} else { Match_InBox_Apps_Install_Pack -NewPath $ISO }
Write-host "   Search Complete" -ForegroundColor Green; Write-host "`n   InBox Apps: Installer Match Results" -ForegroundColor Yellow; Write-host "   $('-' * 80)"
if ($Script:InBoxAppx.Count -gt 0) { Write-host "   Match successful" -ForegroundColor Green; } else { Write-host "   Failed match" -ForegroundColor Red; return; }
Write-host "`n   InBox Apps: Details of the application to be installed ( $($Script:InBoxAppx.Count) item )" -ForegroundColor Yellow; Write-host "   $('-' * 80)";
ForEach ($Rule in $Script:InBoxAppx) { Write-host "   Apps name: ".PadRight(22) -NoNewline; Write-host $Rule.Name -ForegroundColor Yellow; Write-host "   Region:
".PadRight(22) -NoNewline; Write-host $Rule.Region -ForegroundColor Yellow; Write-host "   Apps installer: ".PadRight(22) -NoNewline; Write-host $Rule.InstallPacker -
ForegroundColor Yellow; Write-host "   License: ".PadRight(22) -NoNewline; Write-host $Rule.Certificate -ForegroundColor Yellow; Write-host ""; }
Write-host "`n   InBox Apps: Installation" -ForegroundColor Yellow; Write-host "   $('-' * 80)";
ForEach ($Rule in $Script:InBoxAppx) {
  Write-host "   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.InstallPacker -ForegroundColor Yellow; Write-host "   Search for License: " -NoNewline; Write-host
$Rule.Certificate -ForegroundColor Yellow;
    if (Test-Path -Path $Rule.InstallPacker -PathType Leaf) {
      Write-host "   Region: " -NoNewline; Write-host $Rule.Region -ForegroundColor Yellow
      if ([string]::IsNullOrEmpty($Rule.Certificate)) {
        Write-host "   No License".PadRight(22) -NoNewline -ForegroundColor Red; Write-host "   Installing".PadRight(22) -NoNewline;
        try {
          Add-AppxProvisionedPackage -Path $Mount -PackagePath $Rule.InstallPacker -SkipLicense -Regions $Rule.Region -ErrorAction SilentlyContinue | Out-Null
          Write-Host "Done`n" -ForegroundColor Green
        } catch { Write-Host "Failed" -ForegroundColor Red; Write-Host "   $($_)`n" -ForegroundColor Red; }
      } else {
        if (Test-Path -Path $Rule.Certificate -PathType Leaf) {
          Write-host "   License: " -NoNewline; Write-host $Rule.Certificate -ForegroundColor Yellow; Write-host "   With License".PadRight(22) -NoNewline -ForegroundColor
Green; Write-host "   Installing".PadRight(22) -NoNewline;
          try {
            Add-AppxProvisionedPackage -Path $Mount -PackagePath $Rule.InstallPacker -LicensePath $Rule.Certificate -Regions $Rule.Region -ErrorAction SilentlyContinue |
Out-Null
            Write-Host "Done`n" -ForegroundColor Green
          } catch { Write-Host "Failed" -ForegroundColor Red; Write-Host "   $($_)`n" -ForegroundColor Red; }
        } else {
          Write-host "   No License".PadRight(22) -NoNewline -ForegroundColor Red; Write-host "   Installing".PadRight(22) -NoNewline;
          try {
            Add-AppxProvisionedPackage -Path $Mount -PackagePath $Rule.InstallPacker -SkipLicense -Regions $Rule.Region -ErrorAction SilentlyContinue | Out-Null
            Write-Host "Done`n" -ForegroundColor Green
          } catch { Write-Host "Failed" -ForegroundColor Red; Write-Host "   $($_)`n" -ForegroundColor Red; }}}
    } else { Write-host "   The installation package does not exist" -ForegroundColor Red }
  } else { Write-host "   Skip the installation`n" -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.11/24H2/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 older versions to the latest version, you need to add the "checkpoint update" first before adding the latest cumulative update;
- After adding the language pack, you can install the same cumulative update as the initial version to solve the known issue that the "Component: 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

- Before you add the latest cumulative update, you need to add the feature enablement package first, otherwise you cannot add the latest cumulative update. Go to the download page: https://www.catalog.update.microsoft.com/Search.aspx?q=KB5054156, and save it to: D:\ISOTEMP_Custom\Install\Install\Update, or download through direct connection, select download according to the architecture:

6.1.1. x64 eKB, default

- Direct download

  https://catalog.sf.dl.delivery.mp.microsoft.com/filestreamingservice/files/67731ce0-1988-426a-afa3-044a032eb6c6/public/windows11.0-kb5054156-x64_9fd13360d2c5af23ec4f591b86f1c1db37aada37.msu

- Add to

  ```
  Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackagePath "D:\ISOTEMP_Custom\Install\Install\Update\windows11.0-kb5054156-x64_9fd13360d2c5af23ec4f591b86f1c1db37aada37.msu"
  ```

6.1.2. Arm64 eKB

- Direct download

  https://catalog.sf.dl.delivery.mp.microsoft.com/filestreamingservice/files/2e42e2b9-993c-4cc5-a8c5-6e20fc64b17e/public/windows11.0-kb5054156-arm64_e57cf6837a8b9877786ec3e7a366503a6072f5e5.msu

- Add to

  ```
  Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackagePath "D:\ISOTEMP_Custom\Install\Install\Update\windows11.0-kb5054156-arm64_e57cf6837a8b9877786ec3e7a366503a6072f5e5.msu"
  ```

6.2. Initial release cumulative update

- Installing this update offline results in error code 0x80070228. Ignore this error; if you don't reinstall this update, you may encounter issues when trying to install other cumulative updates.
- Cumulative update KB5043080 can no longer be found at https://www.catalog.update.microsoft.com/Search.aspx?q=KB5043080. Download it directly and save it to: D:\ISOTEMP_Custom\Install\Install\Update. Select the appropriate path based on your architecture:

6.2.1. x64, default

- Direct download

  https://catalog.sf.dl.delivery.mp.microsoft.com/filestreamingservice/files/d8b7f92b-bd35-4b4c-96e5-46ce984b31e0/public/windows11.0-kb5043080-x64_953449672073f8fb99badb4cc6d5d7849b9c83e8.msu

- Add to

  ```
  Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackagePath "D:\ISOTEMP_Custom\Install\Install\Update\windows11.0-kb5043080-x64_953449672073f8fb99badb4cc6d5d7849b9c83e8.msu"
  ```

6.2.2. Arm64

- Direct download

  https://catalog.sf.dl.delivery.mp.microsoft.com/filestreamingservice/files/f263aa64-f367-42f0-9cad-328f342b93f7/public/windows11.0-kb5043080-arm64_df540a05f9b118e339c5520f4090bb5d450f090b.msu

- Add to

  ```
  Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackagePath "D:\ISOTEMP_Custom\Install\Install\Update\windows11.0-kb5043080-arm64_df540a05f9b118e339c5520f4090bb5d450f090b.msu"
  ```

6.3. Other versions

Before installing other versions, please add the following in order: Checkpoint Update (KB5054156) + Initial Version Cumulative Update (KB5043080) + Service Stack Update (SSU) + Cumulative Update (KB5074105).

Check "Windows 11 version information", for example, download cumulative update: KB5074105, Version: 26200.7705, go to the download page: https://www.catalog.update.microsoft.com/Search.aspx?q=KB5074105, download and save 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.sf.dl.delivery.mp.microsoft.com/filestreamingservice/files/1f3ba14b-3831-4dd8-8839-b63b795497e4/public/windows11.0-kb5074105-x64_74e1f93136eef7114e2bed8ff032b049ec62992a.msu

  First, install 7-Zip compression software. After downloading, select the file, right-click, and choose: 7-Zip -> Open Archive. Locate the file starting with SSU-*-x64.cab and drag it to D:\ISOTEMP_Custom\Install\Install\Update

- Add to

  Prioritize installing the servicing stack update (SSU) "SSU-26100.7704-x64.cab". This update cannot proceed if you do not prioritize installing the servicing stack update (SSU).

  - Service Stack Update (SSU)

    ```
    Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackagePath "D:\ISOTEMP_Custom\Install\Install\Update\SSU-26100.7704-x64.cab"
    ```

  - Cumulative Updates

    ```
    Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackagePath "D:\ISOTEMP_Custom\Install\Install\Update\windows11.0-kb5074105-x64_74e1f93136eef7114e2bed8ff032b049ec62992a.msu"
    ```

6.3.2. Arm64

- Direct download

  https://catalog.sf.dl.delivery.mp.microsoft.com/filestreamingservice/files/c0006a9a-e5f4-4ac8-8399-2fd5b0af9d47/public/windows11.0-kb5074105-arm64_e07308c4ec1ad810544f6cddd3e7c1cb50373e9f.msu

  First, install 7-Zip compression software. After downloading, select the file, right-click, and choose: 7-Zip -> Open Archive. Locate the file starting with SSU-*-arm64.cab and drag it to D:\ISOTEMP_Custom\Install\Install\Update

- Add to

  Prioritize installing the servicing stack update (SSU) "SSU-26100.7704-arm64.cab". This update cannot proceed if you do not prioritize installing the servicing stack update (SSU).

  - Service Stack Update (SSU)

    ```
    Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackagePath "D:\ISOTEMP_Custom\Install\Install\Update\SSU-26100.7704-arm64.cab"
    ```

  - Cumulative Updates

    ```
    Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Install\Install\Mount" -PackagePath "D:\ISOTEMP_Custom\Install\Install\Update\windows11.0-kb5074105-arm64_e07308c4ec1ad810544f6cddd3e7c1cb50373e9f.msu"
    ```

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.11/24H2/Expand/Install/Install.WinRE.Replace.wim.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.11/24H2/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-imagex.exe" -ArgumentList $Arguments -wait -nonewwindow; 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.11/24H2/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.11/24H2/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.11/24H2/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.11/24H2/Expand/Install/Install.Compress.ps1

- Copy the code

```
Write-host "Solid compressed Install.wim"; Get-WindowsImage -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.11/24H2/Expand/Install/Install.Convert.ps1

- Copy the code

```
Write-host "Convert ESD to WIM"; Get-WindowsImage -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-WindowsImage -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-WindowsImage -ImagePath $ViewFile | Foreach-Object { Get-WindowsImage -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.11/24H2/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-LanguagePack-Package*"; File = "lp.cab"; }; @{ Match = "*WinPE*Setup*Client*Package*"; File = "WINPE-SETUP-CLIENT_zh-CN.CAB"; }; @{ Match = "*WinPE*Setup*Package*"; File = "WinPE-Setup_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 = "*SecureStartup*"; File = "winpe-securestartup_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 = "*WinPE-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 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
```

4.5. 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.

4.5.1. 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"
```

4.5.2. 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

To prepare the cumulative updates file available, change the example file name: KB_Boot.cab

5.1. Add

```
Add-WindowsPackage -Path "D:\ISOTEMP_Custom\Boot\Boot\Mount" -PackagePath "D:\ISOTEMP_Custom\Boot\Boot\Update\KB_Boot.cab"
```

5.2. Delete

```
Remove-WindowsPackage -Path "D:\ISOTEMP_Custom\Boot\Boot\Mount" -PackagePath "D:\ISOTEMP_Custom\Boot\Boot\Update\KB_Boot.cab"
```

5.3. 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
```

5.3.1. 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. Other

7.1. Bypass TPM check during installation

- Boot.Bypass.TPM.ps1
  - \Expand\Boot\Boot.Bypass.TPM.ps1
  - https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.11/24H2/Expand/Boot/Boot.Bypass.TPM.ps1

- Copy the code

```
$RegSystem = "D:\ISOTEMP_Custom\Boot\Boot\Mount\Windows\System32\Config\SYSTEM"; $RandomGuid = [guid]::NewGuid(); Write-Host "   HKLM:\$($RandomGuid)"; New-PSDrive -PSProvider Registry -Name OtherTasksTPM -Root HKLM -ErrorAction SilentlyContinue | Out-Null; Start-Process reg -ArgumentList "Load ""HKLM\$($RandomGuid)"" ""$($RegSystem)""" -Wait -WindowStyle Hidden -ErrorAction SilentlyContinue; New-Item "HKLM:\$($RandomGuid)\Setup\LabConfig" -force -ea SilentlyContinue | Out-Null; New-ItemProperty -LiteralPath "HKLM:\$($RandomGuid)\Setup\LabConfig" -Name "BypassCPUCheck" -Value 1 -PropertyType DWord -Force -ea SilentlyContinue | Out-Null; New-ItemProperty -LiteralPath "HKLM:\$($RandomGuid)\Setup\LabConfig" -Name "BypassStorageCheck" -Value 1 -PropertyType DWord -Force -ea SilentlyContinue | Out-Null; New-ItemProperty -LiteralPath "HKLM:\$($RandomGuid)\Setup\LabConfig" -Name "BypassRAMCheck" -Value 1 -PropertyType DWord -Force -ea SilentlyContinue | Out-Null; New-ItemProperty -LiteralPath "HKLM:\$($RandomGuid)\Setup\LabConfig" -Name "BypassTPMCheck" -Value 1 -PropertyType DWord -Force -ea SilentlyContinue | Out-Null; New-ItemProperty -LiteralPath "HKLM:\$($RandomGuid)\Setup\LabConfig" -Name "BypassSecureBootCheck" -Value 1 -PropertyType DWord -Force -ea SilentlyContinue | Out-Null; [gc]::collect(); Start-Process reg -ArgumentList "unload ""HKLM\$($RandomGuid)""" -Wait -WindowStyle Hidden -ErrorAction SilentlyContinue; Remove-PSDrive -Name OtherTasksTPM;
```

8. Save image: Boot.wim

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

9. 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$\$$\Panther\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>%OSDSystemLocale%</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/Oscdimg/arm64/oscdimg.exe

2. Use the oscdimg 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.11/24H2/Expand/ISO.ps1

   - Copy the code

```
$Oscdimg = "D:\Oscdimg.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 $Oscdimg -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
  - Hirens 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>
```

Chapter 3 Learn

A. Additional Edition

When Install.wim contains multiple versions, the usual procedure is to mount each version sequentially and perform custom operations. To reduce repetitive 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 11 Home	Core	Core	

Order	Operating system name	Required version ID	Allow Additional Edition ID	Remark
2	Windows 11 Home N	CoreN	CoreN	
3	Windows 11 Home Single Language	Core	CoreSingleLanguage	
4	Windows 11 Education	Professional	Education	
5	Windows 11 Education N	ProfessionalN	EducationN	
6	Windows 11 Pro	Professional	Professional	
7	Windows 11 Pro N	ProfessionalN	ProfessionalN	
8	Windows 11 Pro Education	Professional	ProfessionalEducation	
9	Windows 11 Pro Education N	ProfessionalN	ProfessionalEducationN	
10	Windows 11 Pro for Workstations	Professional	ProfessionalWorkstation	
11	Windows 11 Pro N for Workstations	ProfessionalN	ProfessionalWorkstationN	
12	Windows 11 Enterprise	Professional	Enterprise	
13	Windows 11 Enterprise multi-session / Virtual Desktops	Professional	ServerRdsh	
14	Windows 11 Enterprise N	ProfessionalN	EnterpriseN	
15	Windows 11 IoT Enterprise	Professional	IoTEnterprise	
16	Windows 11 IoT Enterprise Subscription	Professional	IoTEnterpriseK	
17	Windows 11 Enterprise LTSC	EnterpriseS	EnterpriseS	
18	Windows 11 Enterprise N LTSC	EnterpriseS	IoTEnterpriseS	
19	Windows 11 IoT Enterprise LTSC	EnterpriseS	IoTEnterpriseSK	
20	Windows 11 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.11/24H2/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.11\24H2\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

1. Adding a "cumulative update" using the initial build of Windows 11 25H2 (26200.6584) causes a "health" issue when using a "fixed update".

Test file: en-us_windows_11_business_editions_version_25h2_x64_dvd_41c521e7.iso. After adding cumulative update (KB5072033 "26200.7462") during the packaging process, the component health check is normal, and there are no problems before the update is solidified.

After using the hard update command "Dism /Image:"D:\ISOTEMP" /cleanup-image /StartComponentCleanup /ResetBase", the health status is checked as "damaged". Known solutions:

- Using the initial build of Windows 11 24H2 (26100.1742) can resolve health issues after a fixed update.

2. Windows Security Center

When testing a clean install of the initial Chinese version of Windows 11 25H2 26200.6584, the image file (zh-cn_windows_11_consumer_editions_version_25h2_x64_dvd_0549fc93.iso) displayed an English version of Windows Security Center after installation, indicating the language pack was not localized. This issue has been present since the May/June images of Windows 11 24H2; updating Windows Update resolves the problem.

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

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