Microsoft Windows 10

不同的系统版本，有着不同的封装方式，封装过程中包含："语言包：添加、关联、删除"、"驱动：添加、删除"、"累积更新：添加、删除"、"InBox Apps：添加、更新、标记"等。

在这背后藏着很多的隐藏故事，想解开这些，你准备好开始尝试封装了吗?

摘要

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章节 1　　部署映像

A.　先决条件

II　ISO 工具

准备一款可编辑 ISO 文件的软件，例如：PowerISO、DAEMON Tools、ISO Workshop；

III　要求

1.　系统安装包

关键词：迭代、跨版本、大版本、累积更新、初始版本

1.1.　说明

1.1.1.　每版本更新时请重新制作镜像，例如从 21H1 跨越到 22H2 时，应避免出现其它兼容性问题请勿在旧镜像基础上制作；

1.1.2.　该条例已经在某些 OEM 厂商，通过各种形式向封装师明确传达了该法令，不允许直接从迭代版本里直接升级；

1.1.3.　制作中请使用 "初始版本"、"开发者版" 制作。微软官方文档里曾短暂的出现过在制作中必须使用初始版本，后来这句在官方文档里却被删除了；

1.1.4.　安装语言包后，必须重新添加累积更新（可同一版本号），不添加累积更新会出现"乱码"、"界面闪退"等问题。

1.1.5.　进化过程：Windows 10 22H2, Build 19045.2006 + KB5027215 = OS Build 19045.3086

1.2.　准备下载初始版本或开发者版本

1.2.1.　en-us_windows_10_business_editions_version_22h2_x64_dvd_8cf17b79.iso

1.2.2.　en-us_windows_10_consumer_editions_version_22h2_x64_dvd_8da72ab3.iso

1.3.　示例下载 en-us_windows_10_business_editions_version_22h2_x64_dvd_8cf17b79.iso 后，解压到：D:\en-us_windows_10_business_editions_version_22h2_x64_dvd_8cf17b79

1.4.　解压完成后，将目录 en-us_windows_10_business_editions_version_22h2_x64_dvd_8cf17b79 更改为 D:\OS_10

1.5.　所有脚本、所有路径，已默认设置为 D:\OS_10 为映像来源。

2.　语言包

2.1.　学习

阅读时，请了解"蓝色"重要突出部分。

2.1.1.　语言概述

2.2. 语言包：下载

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

2.3. 功能包：下载

X64: https://software-download.microsoft.com/download/pr/19041.1.191206-1406.vb_release_amd64fre_FOD-PACKAGES_OEM_PT1_amd64fre_MULTI.iso

3. InBox Apps

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

IV   Windows 安全中心

- 在处理封装任务时，将产生大量的临时文件，安装 InBox Apps 里的应用时会释放大量的安装文件；

- 开启 Windows 安全中心会扫描文件、会占用大量的 CPU。

- 测试中：未关闭前耗时 1 小时 22 分，关闭后耗时 20 分钟。

如何关闭：

绿色为命令行，按住 Windows 键并按 R 键启动"运行"。

1. 打开"Windows 安全中心"或运行：windowsdefender:

2. 选择"病毒和威胁防护"或运行：windowsdefender://threat

3. 找到"病毒和威胁防护设置"，点击"管理设置"或运行：windowsdefender://threatsettings，建议您关闭部分功能：

   3.1. 实时保护

   3.2. 云提供的保护

   3.3. 自动提交样本

   3.4. 篡改防护

4. 未处于封装时，建议您开启 Windows 安全中心。

V   命令行

1. 可选"Terminal"或"PowerShell ISE"，未安装"Terminal"，请前往 https://github.com/microsoft/terminal/releases 后下载；

2. 以管理员身份打开"Terminal"或"PowerShell ISE"，设置 PowerShell 执行策略：绕过，PS 命令行：

   Set-ExecutionPolicy -ExecutionPolicy Bypass -Force

3. 在本文中，绿色部分属于 PS 命令行，请复制后，粘贴到"Terminal"对话框，按回车键（Enter）后开始运行；

4. 有 .ps1 时，点击文件右键，选择以 PowerShell 运行，或复制路径，粘贴到"Terminal "或"PowerShell ISE"里运行，带冒号的路径，在命令行添加 & 字符，示例：& "D:\Yi.Solutions_Encapsulation_SIP.ps1"

B.　　语言包：提取

II　　语言包：准备

1.　　语言包：挂载

　　挂载 19041.1.191206-1406.vb_release_CLIENTLANGPACKDVD_OEM_MULTI.iso 或解压到任意位置；

2.　　功能包：挂载

　　请正确选择架构版本，提取错误的语言包，安装会报错误。

　　X64: 19041.1.191206-1406.vb_release_amd64fre_FOD-PACKAGES_OEM_PT1_amd64fre_MULTI.iso

III　　语言包：提取方案

1.　　添加

　　1.1.　　语言名称：简体中文 - 中国，区域：zh-CN，适用范围：Install.Wim，Boot.Wim，WinRE.Wim

2.　　删除

　　2.1.　　语言名称：英语 - 美国，区域：en-US，适用范围：Install.Wim，Boot.Wim，WinRE.Wim

3.　　架构：x64

IV　　执行提取命令

- Auto = 自动搜索本地所有磁盘，默认；

- 自定义路径，例如指定为 E 盘：$ISO = "E:\"

- Extract.ps1

  o　　\Expand\Extract.ps1

  o　　https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Extract.ps1

- 复制代码

```powershell
$ISO = "Auto"

$SaveTo = "D:\OS_10_Custom"

$Extract_language_Pack = @(

  @{ Tag = "zh-CN"; Arch = "AMD64"; Act = "Add"; Scope = @("Install\Install"; "Install\WinRE"; "Boot\Boot") }

  @{ Tag = "en-US"; Arch = "AMD64"; Act = "Del"; Scope = @( "Install\Install"; "Install\WinRE"; "Boot\Boot" ) }

)

Function Extract_Language

{

  param($NewArch, $Act, $NewLang, $Expand)

  Function Match_Required_Fonts

  {

    param($Lang)

    $Fonts = @(

      @{ Match = @("as", "ar-SA", "ar", "ar-AE", "ar-BH", "ar-DJ", "ar-DZ", "ar-EG", "ar-ER", "ar-IL", "ar-IQ", "ar-JO", "ar-KM", "ar-KW", "ar-LB", "ar-LY", "ar-MA", "ar-MR", "ar-OM", "ar-PS", "ar-QA", "ar-SD", "ar-SO", "ar-SS", "ar-SY", "ar-TD", "ar-TN", "ar-YE", "arz-Arab", "ckb-Arab", "fa", "fa-AF", "fa-IR", "glk-Arab", "ha-Arab", "ks-Arab", "ks-Arab-IN", "ku-Arab", "ku-Arab-IQ", "mzn-Arab", "pa-Arab", "pa-Arab-PK", "pnb-Arab", "prs", "prs-AF", "prs-Arab", "ps", "ps-AF", "sd-Arab", "sd-Arab-PK", "tk-Arab", "ug", "ug-Arab", "ug-CN", "ur", "ur-IN", "ur-PK", "uz-Arab", "uz-Arab-AF"); Name = "Arab"; }

      @{ Match = @("bn-IN", "as-IN", "bn", "bn-BD", "bpy-Beng"); Name = "Beng"; }

      @{ Match = @("da-dk", "iu-Cans", "iu-Cans-CA"); Name = "Cans"; }

      @{ Match = @("chr-Cher-US", "chr-Cher"); Name = "Cher"; }

      @{ Match = @("hi-IN", "bh-Deva", "brx", "brx-Deva", "brx-IN", "hi", "ks-Deva", "mai", "mr", "mr-IN", "ne", "ne-IN", "ne-NP", "new-Deva", "pi-Deva", "sa", "sa-Deva", "sa-IN"); Name = "Deva"; }

      @{ Match = @("am", "am-ET", "byn", "byn-ER", "byn-Ethi", "ti", "ti-ER", "ti-ET", "tig", "tig-ER", "tig-Ethi", "ve-Ethi", "wal", "wal-ET", "wal-Ethi"); Name = "Ethi"; }

      @{ Match = @("gu", "gu-IN"); Name = "Gujr"; }

      @{ Match = @("pa", "pa-IN", "pa-Guru"); Name = "Guru"; }

      @{ Match = @("zh-CN", "cmn-Hans", "gan-Hans", "hak-Hans", "wuu-Hans", "yue-Hans", "zh-gan-Hans", "zh-hak-Hans", "zh-Hans", "zh-SG", "zh-wuu-Hans", "zh-yue-Hans"); Name = "Hans"; }

      @{ Match = @("zh-TW", "cmn-Hant", "hak-Hant", "lzh-Hant", "zh-hak-Hant", "zh-Hant", "zh-HK", "zh-lzh-Hant", "zh-MO", "zh-yue-Hant"); Name = "Hant"; }

      @{ Match = @("he", "he-IL", "yi"); Name = "Hebr"; }

      @{ Match = @("ja", "ja-JP"); Name = "Jpan"; }

      @{ Match = @("km", "km-KH"); Name = "Khmr"; }

      @{ Match = @("kn", "kn-IN"); Name = "Knda"; }

      @{ Match = @("ko", "ko-KR"); Name = "Kore"; }

      @{ Match = @("de-de", "lo", "lo-LA"); Name = "Laoo"; }
```

```powershell
      @{ 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") {
```

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

            ForEach ($item in $Package) {

                $TempFilePath = Join-Path -Path $_.Root -ChildPath $item -ErrorAction SilentlyContinue

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

                    Write-host "`n  Find: " -NoNewLine; Write-host $TempFilePath -ForegroundColor Green

                    Write-host "  Copy to: " -NoNewLine; Write-host $NewSaveTo

                    Copy-Item -Path $TempFilePath -Destination $NewSaveTo -Force

                }

            }

        } else {

            ForEach ($item in $Package) {

                $TempFilePath = Join-Path -Path $ISO -ChildPath $item -ErrorAction SilentlyContinue

                Write-host "`n  Find: " -NoNewline; Write-host $TempFilePath -ForegroundColor Green

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

                    Write-host "  Copy to: " -NoNewLine; Write-host $NewSaveTo

                    Copy-Item -Path $TempFilePath -Destination $NewSaveTo -Force

                } else {

                    Write-host "  Not found"

                }

            }

        }

        Write-host "`n  Verify the language pack file"

        ForEach ($item in $Package) {

            $Path = "$($NewSaveTo)\$([IO.Path]::GetFileName($item))"

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

                Write-host "  Discover: " -NoNewLine; Write-host $Path -ForegroundColor Green

            } else {

                Write-host "  Not found: " -NoNewLine; Write-host $Path -ForegroundColor Red

            }

        }

    }

    $AdvLanguage = @(

        @{
```

```
      Path = "Install\Install"

      Rule = @(

        "Microsoft-Windows-LanguageFeatures-Fonts-{DiyLang}-Package~31bf3856ad364e35~AMD64~~.cab"

        "{ARCHC}\langpacks\Microsoft-Windows-Client-Language-Pack_x64_{Lang}.cab"

        "Microsoft-Windows-LanguageFeatures-Basic-{Lang}-Package~31bf3856ad364e35~AMD64~~.cab"

        "Microsoft-Windows-LanguageFeatures-Handwriting-{Lang}-Package~31bf3856ad364e35~AMD64~~.cab"

        "Microsoft-Windows-LanguageFeatures-OCR-{Lang}-Package~31bf3856ad364e35~AMD64~~.cab"

        "Microsoft-Windows-LanguageFeatures-Speech-{Lang}-Package~31bf3856ad364e35~AMD64~~.cab"

        "Microsoft-Windows-LanguageFeatures-TextToSpeech-{Lang}-Package~31bf3856ad364e35~AMD64~~.cab"

        "Microsoft-Windows-InternetExplorer-Optional-Package~31bf3856ad364e35~AMD64~{Lang}~.cab"

        "Microsoft-Windows-MSPaint-FoD-Package~31bf3856ad364e35~wow64~{Lang}~.cab"

        "Microsoft-Windows-MSPaint-FoD-Package~31bf3856ad364e35~{ARCH}~{Lang}~.cab"

        "Microsoft-Windows-Notepad-FoD-Package~31bf3856ad364e35~{ARCH}~{Lang}~.cab"

        "Microsoft-Windows-Notepad-FoD-Package~31bf3856ad364e35~wow64~{Lang}~.cab"

        "Microsoft-Windows-PowerShell-ISE-FOD-Package~31bf3856ad364e35~AMD64~{Lang}~.cab"

        "Microsoft-Windows-PowerShell-ISE-FOD-Package~31bf3856ad364e35~wow64~{Lang}~.cab"

        "Microsoft-Windows-Printing-PMCPPC-FoD-Package~31bf3856ad364e35~AMD64~{Lang}~.cab"

        "Microsoft-Windows-Printing-WFS-FoD-Package~31bf3856ad364e35~AMD64~{Lang}~.cab"

        "Microsoft-Windows-StepsRecorder-Package~31bf3856ad364e35~AMD64~{Lang}~.cab"

        "Microsoft-Windows-StepsRecorder-Package~31bf3856ad364e35~wow64~{Lang}~.cab"

        "Microsoft-Windows-WordPad-FoD-Package~31bf3856ad364e35~AMD64~{Lang}~.cab"

        "Microsoft-Windows-WordPad-FoD-Package~31bf3856ad364e35~wow64~{Lang}~.cab"

        "Microsoft-Windows-InternationalFeatures-{Specific}-Package~31bf3856ad364e35~amd64~~.cab"

      )

    }

    @{

      Path = "Install\WinRE"

      Rule = @(

        "Windows Preinstallation Environment\x64\WinPE_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-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-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-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

        $NewArchC = $NewArch.Replace("AMD64", "x64")

        Foreach ($item in $Expand) {

            $Language = @()

            Foreach ($itemList in $AdvLanguage) {

                if ($itemList.Path -eq $item) {

                    Foreach ($PrintLang in $itemList.Rule) {

                        $Language += "$($PrintLang)".Replace("{Lang}", $NewLang).Replace("{DiyLang}", $NewFonts).Replace("{Specific}",
$SpecificPackage).Replace("{ARCH}", $NewArch).Replace("{ARCHC}", $NewArchC)

                    }

                    Extract_Process -NewSaveTo $itemList.Path -Package $Language -Name $item

                }

            }

        }

    }

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

C.   自定义部署映像

II   自定义部署映像：Install.wim

1.   查看 Install.wim 详细信息

映像名称、映像描述、映像大小、架构、版本、索引号等；

```
$ViewFile = "D:\OS_10\Sources\Install.wim"

Get-WindowsImage -ImagePath $ViewFile | Foreach-Object { Get-WindowsImage -ImagePath $ViewFile -index $_.ImageIndex }
```

循环操作区域，开始，

2.   指定挂载 Install 路径

```
New-Item -Path "D:\OS_10_Custom\Install\Install\Mount" -ItemType directory -ea SilentlyContinue
```

3.   开始挂载 Install.wim

默认索引号：1

Mount-WindowsImage -ImagePath "D:\OS_10\sources\install.wim" -Index "1" -Path "D:\OS_10_Custom\Install\Install\Mount"

处理 Install.wim 映像内的文件，可选项，开始，

3.1. 自定义部署映像：WinRE.wim

注意：

- WinRE.wim 属于 Install.wim 映像内的文件；

- Install.wim 有多个索引号时，仅处理任意一个 WinRE.wim 即可；

- 同步至所有索引号即可减少 Install.wim 体积，学习"如何批量替换 Install.wim 里的所有索引号里的 WinRE.wim"。

3.1.1. 查看 WinRE.wim 详细信息

映像名称、映像描述、映像大小、架构、版本、索引号等；

$ViewFile = "D:\OS_10_Custom\Install\Install\Mount\Windows\System32\Recovery\WinRE.wim"

Get-WindowsImage -ImagePath $ViewFile | Foreach-Object { Get-WindowsImage -ImagePath $ViewFile -index $_.ImageIndex }

3.1.2. 指定挂载 WinRE.wim 路径

New-Item -Path "D:\OS_10_Custom\Install\WinRE\Mount" -ItemType directory -ea SilentlyContinue

3.1.3. 开始挂载 WinRE.wim

默认索引号：1

Mount-WindowsImage -ImagePath "D:\OS_10_Custom\Install\Install\Mount\Windows\System32\Recovery\WinRE.wim" -Index "1" -Path "D:\OS_10_Custom\Install\WinRE\Mount"

3.1.4. 语言包

- 自动安装语言包：获取"组件：映像中已安装的所有包"后进行匹配，匹配到对应的名称后，再安装本地对应的语言包文件，查看报告"语言安装包适用于 WinRE.wim"。

- 添加语言时，须对应不同的架构版本，未对应时，添加过程中报错等提示。

3.1.4.1. 语言包：添加

- WinRE.lnstl.lang.ps1

  o \Expand\Install\WinRE\WinRE.lnstl.lang.ps1

  o https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Inst

- 复制代码

```
$Mount = "D:\OS_10_Custom\Install\WinRE\Mount"

$Sources = "D:\OS_10_Custom\Install\WinRE\Language\Add\zh-CN"

$Initl_install_Language_Component = @()

Get-WindowsPackage -Path $Mount | ForEach-Object {

    $Initl_install_Language_Component += $_.PackageName

}

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

$Language = @(

    @{ Match = "*WinPE-LanguagePack-Package*"; File = "lp.cab"; }

    @{ Match = "*SecureStartup*"; File = "winpe-securestartup_zh-CN.cab"; }

    @{ Match = "*ATBroker*"; File = "winpe-atbroker_zh-CN.cab"; }

    @{ Match = "*AudioCore*"; File = "winpe-audiocore_zh-CN.cab"; }

    @{ Match = "*AudioDrivers*"; File = "winpe-audiodrivers_zh-CN.cab"; }

    @{ Match = "*EnhancedStorage*"; File = "winpe-enhancedstorage_zh-CN.cab"; }

    @{ Match = "*Narrator*"; File = "winpe-narrator_zh-CN.cab"; }

    @{ Match = "*scripting*"; File = "winpe-scripting_zh-CN.cab"; }

    @{ Match = "*Speech-TTS*"; File = "winpe-speech-tts_zh-CN.cab"; }

    @{ Match = "*srh*"; File = "winpe-srh_zh-CN.cab"; }

    @{ Match = "*srt*"; File = "winpe-srt_zh-CN.cab"; }

    @{ Match = "*wds-tools*"; File = "winpe-wds-tools_zh-CN.cab"; }

    @{ Match = "*-WMI-Package*"; File = "winpe-wmi_zh-CN.cab"; }

    @{ Match = "*WinPE-AppxPackaging*"; File = "winpe-appxpackaging_zh-CN.cab"; }

    @{ Match = "*StorageWMI*"; File = "winpe-storagewmi_zh-CN.cab"; }

    @{ Match = "*WiFi*"; File = "winpe-wifi_zh-CN.cab"; }

    @{ Match = "*rejuv*"; File = "winpe-rejuv_zh-CN.cab"; }

    @{ Match = "*opcservices*"; File = "winpe-opcservices_zh-CN.cab"; }

    @{ Match = "*hta*"; File = "winpe-hta_zh-CN.cab"; }

)

ForEach ($Rule in $Language) {

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

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

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

                        Write-host "  Component name: " -NoNewline; Write-host $Component -ForegroundColor Green

                        Write-host "  Language pack file: " -NoNewline; Write-host "$($Sources)\$($Rule.File)" -
                    ForegroundColor Green

                        Write-Host "  Installing ".PadRight(22) -NoNewline

                        try {

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

                          Write-host "Finish" -ForegroundColor Green

                        } catch {

                          Write-host "Failed" -ForegroundColor Red

                          Write-host "  $($_)" -ForegroundColor Red

                        }

                        break

                      }

                    }

                  }
```

3.1.4.2. 组件：映像中已安装的所有包

3.1.4.2.1. 查看

```
Get-WindowsPackage -Path "D:\OS_10_Custom\Install\WinRE\Mount" | Out-GridView
```

3.1.4.2.2. 导出到 Csv

```
$SaveTo = "D:\OS_10_Custom\Install\WinRE\Report.$(Get-Date -Format
"yyyyMMddHHmmss").csv"

Get-WindowsPackage -Path "D:\OS_10_Custom\Install\WinRE\Mount" | Export-CSV -NoType
-Path $SaveTo

Write-host $SaveTo -ForegroundColor Green
```

3.1.5. 保存映像 WinRE.wim

```
Save-WindowsImage -Path "D:\OS_10_Custom\Install\WinRE\Mount"
```

3.1.6. 卸载映像 WinRE.wim

关闭所有可能正在访问映像中文件的应用程序，包括文件资源管理器。

```
Dismount-WindowsImage -Path "D:\OS_10_Custom\Install\WinRE\Mount" -Discard
```

3.1.7. 重建 WinRE.wim 后，可缩小文件大小

- WinRE.Rebuild.ps1

  - \Expand\Install\WinRE\WinRE.Rebuild.ps1

  - https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Install/WinRE/WinRE.Rebuild.ps1

- 复制代码

```
$FileName = "D:\OS_10_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  Rebuild".PadRight(28) -NoNewline

  Export-WindowsImage -SourceImagePath $Filename -SourceIndex $_.ImageIndex -DestinationImagePath "$($FileName).New" -CompressionType max

  Write-Host "Finish`n" -ForegroundColor Green

}

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

}
```

3.1.8. 备份 WinRE.wim

- WinRE.Backup.ps1

  - \Expand\Install\WinRE\WinRE.Backup.ps1

  - https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Install/WinRE/WinRE.Backup.ps1

- 复制代码

```
$WimLibPath = "D:\OS_10_Custom\Install\Install\Update\Winlib"

$FileName = "D:\OS_10_Custom\Install\Install\Mount\Windows\System32\Recovery\WinRE.wim"
```

```
New-Item -Path $WimLibPath -ItemType Directory -ea SilentlyContinue

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

3.1.9.　替换 Install.wim 映像内的 WinRE.wim

- 每次挂载 Install.wim 后"替换 WinRE.wim"；

- 学习"获取 Install.wim 所有索引号后并替换旧的 WinRE.wim"。

处理 Install.wim 映像内的文件，结束。

4.　语言包

- 自动安装语言包：获取"组件：映像中已安装的所有包"后进行匹配，匹配到对应的名称后，再安装本地对应的语言包文件，查看报告"语言安装包适用于 Install.wim"。

- 添加语言时，须对应不同的架构版本，未对应时，添加过程中报错等提示。

4.1.　语言包：添加

- Install.Instl.lang.ps1

  o \Expand\Install\Install.Instl.lang.ps1

  o https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Install/Install.Instl.lang.ps1

- 复制代码

```
Function Language_Install

{

  param($Mount, $Sources, $Lang)

  $Initl_install_Language_Component = @()

  if (Test-Path $Mount -PathType Container) {

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

  } else {

    Write-Host "Not mounted: $($Mount)"

    return

  }

  $Script:Init_Folder_All_File = @()

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

    Get-ChildItem -Path $Sources -Recurse -Include "*.cab" -ErrorAction SilentlyContinue | ForEach-Object {

      $Script:Init_Folder_All_File += $_.FullName
```

```powershell
    }

    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 = @(

            @{ Match_Name = "*Fonts*"; IsMatch = "No"; Capability = ""; }

        )

    }

    @{

        Name = "Basic"

        Description = "Basic"

        Rule = @(

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

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

        )

    }

    @{

        Name = "OCR"
```

```
        Description = "Optical character recognition"

        Rule = @(

            @{ Match_Name = "*LanguageFeatures-OCR*"; IsMatch = "Yes"; Capability = "Language.OCR~~~$($Lang)~0.0.1.0"; }

        )

    }

    @{

        Name = "Handwriting"

        Description = "Handwriting recognition"

        Rule = @(

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

        )

    }

    @{

        Name = "TextToSpeech"

        Description = "Text-to-speech"

        Rule = @(

            @{ Match_Name = "*LanguageFeatures-TextToSpeech*"; IsMatch = "Yes"; Capability = "Language.TextToSpeech~~~$($Lang)~0.0.1.0"; }

        )

    }

    @{

        Name = "Speech"

        Description = "Speech recognition"

        Rule = @(

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

        )

    }

    @{

        Name = "RegionSpecific"

        Description = "Other region-specific requirements"

        Rule = @(

            @{ Match_Name = "*InternationalFeatures*"; IsMatch = "No"; Capability = ""; }

        )

    }
```

```powershell
@{
    Name = "Retail"

    Description = "Retail demo experience"

    Rule = @(

        @{ Match_Name = "*RetailDemo*"; IsMatch = "Yes"; Capability = ""; }

    )

}

@{

    Name = "Features_On_Demand"

    Description = "Features on demand"

    Rule = @(

        @{ Match_Name = "*InternetExplorer*"; IsMatch = "Yes"; Capability = ""; }

        @{ Match_Name = "*MSPaint*amd64*"; IsMatch = "Yes"; Capability = "Microsoft.Windows.MSPaint~~~~0.0.1.0"; }

        @{ Match_Name = "*MSPaint*wow64*"; IsMatch = "Yes"; Capability = "Microsoft.Windows.MSPaint~~~~0.0.1.0"; }

        @{ Match_Name = "*Notepad*amd64*"; IsMatch = "Yes"; Capability = "Microsoft.Windows.Notepad~~~~0.0.1.0"; }

        @{ Match_Name = "*Notepad*wow64*"; IsMatch = "Yes"; Capability = "Microsoft.Windows.Notepad~~~~0.0.1.0"; }

        @{ Match_Name = "*MediaPlayer*amd64*"; IsMatch = "Yes"; Capability = "Media.WindowsMediaPlayer~~~~0.0.12.0"; }

        @{ Match_Name = "*MediaPlayer*wow64*"; IsMatch = "Yes"; Capability = "Media.WindowsMediaPlayer~~~~0.0.12.0"; }

        @{ Match_Name = "*PowerShell-ISE-FOD-Package*amd64*"; IsMatch = "Yes"; Capability =
"Microsoft.Windows.PowerShell.ISE~~~~0.0.1.0"; }

        @{ Match_Name = "*PowerShell-ISE-FOD-Package*wow64*"; IsMatch = "Yes"; Capability =
"Microsoft.Windows.PowerShell.ISE~~~~0.0.1.0"; }

        @{ Match_Name = "*Printing*PMCPPC*amd64*"; IsMatch = "Yes"; Capability = "Print.Management.Console~~~~0.0.1.0"; }

        @{ Match_Name = "*Printing*WFS*amd64*"; IsMatch = "Yes"; Capability = "Print.Management.Console~~~~0.0.1.0"; }

        @{ Match_Name = "*StepsRecorder*amd64*"; IsMatch = "Yes"; Capability = "App.StepsRecorder~~~~0.0.1.0"; }

        @{ Match_Name = "*StepsRecorder*wow64*"; IsMatch = "Yes"; Capability = "App.StepsRecorder~~~~0.0.1.0"; }

        @{ Match_Name = "*WordPad*amd64*"; IsMatch = "Yes"; Capability = "Microsoft.Windows.WordPad~~~~0.0.1.0"; }

        @{ Match_Name = "*WordPad*wow64*"; IsMatch = "Yes"; Capability = "Microsoft.Windows.WordPad~~~~0.0.1.0"; }

        @{ Match_Name = "*WMIC*FoD*Package*amd64*"; IsMatch = "Yes"; Capability = "WMIC~~~~"; }

        @{ Match_Name = "*WMIC*FoD*Package*wow64*"; IsMatch = "Yes"; Capability = "WMIC~~~~"; }

    )

}

)

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

ForEach ($WildCard in $Script:Init_Folder_All_File) {
```

```
ForEach ($item in $Script:Search_File_Order) {

  ForEach ($NewRule in $item.Rule) {

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

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

      Write-host "  Language pack file: " -NoNewline; Write-host $WildCard -ForegroundColor Green

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

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

      $new = $OSDefaultUser + $TempSave

      if ($NewRule.IsMatch -eq "Yes") {

        ForEach ($Component in $Initl_install_Language_Component) {

          if ($Component -like "*$($NewRule.Match_Name)*") {

            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

          }

        }

      } else {

        Write-host "  Do not match, install directly" -ForegroundColor Yellow

        New-Variable -Name "Init_File_Type_$($item.Name)" -Value $new -Force

        $Script:Init_Folder_All_File_Match_Done += $WildCard

      }

    }

  }

}

Write-host "`n  Grouping is complete, pending installation" -ForegroundColor Yellow

Write-host "  $('-' * 80)"

ForEach ($WildCard in $Script:Search_File_Order) {

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

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

  if ($OSDefaultUser.Count -gt 0) {

    ForEach ($item in $OSDefaultUser) {

      Write-host "  $($item.FileName)" -ForegroundColor Green
```

```powershell
        }

      } else {

        Write-host "  Not available" -ForegroundColor Red

      }

    }

    Write-host "`n  Not matched, no longer installed" -ForegroundColor Yellow

    Write-host "  $('-' * 80)"

    ForEach ($item in $Script:Init_Folder_All_File) {

      if ($Script:Init_Folder_All_File_Match_Done -notcontains $item) {

        $Script:Init_Folder_All_File_Exclude += $item

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

      }

    }

    Write-host "`n  Install" -ForegroundColor Yellow

    Write-host "  $('-' * 80)"

    ForEach ($WildCard in $Script:Search_File_Order) {

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

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

      if ($OSDefaultUser.Count -gt 0) {

        ForEach ($item in $OSDefaultUser) {

          Write-host "  Language pack file: " -NoNewline; Write-host $item.FileName -ForegroundColor Green

          Write-Host "  Installing ".PadRight(22) -NoNewline

          if (Test-Path $item.FileName -PathType Leaf) {

            try {

              Add-WindowsPackage -Path $Mount -PackagePath $item.FileName | Out-Null

              Write-host "Finish`n" -ForegroundColor Green

            } catch {

              Write-host "Failed" -ForegroundColor Red

              Write-host "  $($_)" -ForegroundColor Red

            }

          } else {

            Write-host "Does not exist`n"

          }

        }
```

```
    } else {

      Write-host "  Not available`n" -ForegroundColor Red

    }

  }

}

Language_Install -Mount "D:\OS_10_Custom\Install\Install\Mount" -Sources "D:\OS_10_Custom\Install\Install\Language\Add" -Lang "zh-CN"
```

4.2. 组件：映像中已安装的所有包

4.2.1. 查看

```
Get-WindowsPackage -Path "D:\OS_10_Custom\Install\Install\Mount" | Out-GridView
```

4.2.2. 导出到 Csv

```
$SaveTo = "D:\OS_10_Custom\Install\Install\Report.$(Get-Date -Format "yyyyMMddHHmmss").csv"

Get-WindowsPackage -Path "D:\OS_10_Custom\Install\Install\Mount" | Export-CSV -NoType -Path $SaveTo

Write-host $SaveTo -ForegroundColor Green
```

5. InBox Apps

5.1. InBox Apps：已安装

5.1.1. 查看

```
Get-AppXProvisionedPackage -Path "D:\OS_10_Custom\Install\Install\Mount" | Out-GridView
```

5.1.2. 导出到 Csv

```
$SaveTo = "D:\OS_10_Custom\Install\Install\Report.$(Get-Date -Format "yyyyMMddHHmmss").csv"

Get-AppXProvisionedPackage -Path "D:\OS_10_Custom\Install\Install\Mount" | Export-CSV -NoType -Path $SaveTo

Write-host $SaveTo -ForegroundColor Green
```

5.2. 删除已安装的所有预应用程序

- Install.InBox.Appx.Clear.all.ps1

  o \Expand\Install\Install.InBox.Appx.Clear.all.ps1

  o https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Install/Install.InBox.Appx.Clear.all.ps1

- 复制代码

```
Get-AppXProvisionedPackage -path "D:\OS_10_Custom\Install\Install\Mount" -ErrorAction SilentlyContinue | ForEach-Object {

  Write-host "`n  $($_.DisplayName)"

  Write-Host "  Deleting ".PadRight(22) -NoNewline

  try {

    Remove-AppxProvisionedPackage -Path "D:\OS_10_Custom\Install\Install\Mount" -PackageName $_.PackageName -ErrorAction
SilentlyContinue | Out-Null

    Write-host "Finish" -ForegroundColor Green

  } catch {

    Write-host "Failed" -ForegroundColor Red

  }

}
```

5.3. 区域标记：添加方式

5.3.1. 执行"语言包：添加"

5.3.2. 安装"本地语言体验包（LXPs）"

微软官方向 Windows 10 提供了本地语言体验包（LXPS）安装文件，Windows 11 不再提供，想获取：

5.3.2.1. 使用"Windows 本地语言体验包（LXPs）下载器"下载

了解：https://github.com/ilikeyi/LXPs

下载后保存到：D:\OS_10_Custom\Install\Install\InBox.Appx，文件格式：LanguageExperiencePack.zh-CN.Neutral.Appx

5.3.2.2. 手动下载

5.3.2.2.1. 区域

下载区域：zh-CN，应用程序 ID：9NRMNT6GMZ70，商店连接：
https://www.microsoft.com/store/productId/9NRMNT6GMZ70

5.3.2.2.2. 打开网站：https://store.rg-adguard.net

5.3.2.2.2.1. 搜索关键词：

https://www.microsoft.com/store/productId/9NRMNT6GMZ70

5.3.2.2.2.2. 网页内搜索 22621 内容，搜索结果：

Microsoft.LanguageExperiencePackzh-CN_22621.*.neutral__8wekyb3d8bbwe.appx

下载后保存到 D:\OS_10_Custom\Install\Install\InBox.Appx 目录里，重命

名：LanguageExperiencePack.zh-cn.Neutral.Appx

5.3.2.3. 执行安装命令安装本地语言体验包（LXPs）

了解区域标记添加方式后，获得 LanguageExperiencePack.zh-cn.Neutral 后，执行安装命令：

Add-AppxProvisionedPackage -Path "D:\OS_10_Custom\Install\Install\Mount" -PackagePath
"D:\OS_10_Custom\Install\Install\InBox.appx\LanguageExperiencePack.zh-cn.Neutral.appx" -SkipLicense

5.3.2.4. InBox Apps：已安装的应用程序包

5.3.2.4.1. 查看

Get-AppXProvisionedPackage -Path "D:\OS_10_Custom\Install\Install\Mount" | Out-GridView

5.3.2.4.2. 导到出 Csv

$SaveTo = "D:\OS_10_Custom\Install\Install\Report.$(Get-Date -Format
"yyyyMMddHHmmss").csv"

Get-AppXProvisionedPackage -Path "D:\OS_10_Custom\Install\Install\Mount" | Export-CSV -
NoType -Path $SaveTo

Write-host $SaveTo -ForegroundColor Green

5.4. InBox Apps：安装

5.4.1. 挂载或解压 InBox Apps 安装文件

挂载 19041.3031.230508-1728.vb_release_svc_prod3_amd64fre_InboxApps.iso 或解压到任意位置；

5.4.2. 执行安装命令后安装 InBox Apps 到：Install.wim

- Auto = 自动搜索本地所有磁盘，默认；

- 自定义路径，例如指定为 F 盘：$ISO = "F:\packages"

- Install.Inst.InBox.Appx.ps1

  o \Expand\Install\Install.Inst.InBox.Appx.ps1

  o https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Install/Install.Inst.InBox.Appx.ps1

- 复制代码

$ISO = "Auto"

$Mount = "D:\OS_10_Custom\Install\Install\Mount"

```powershell
try {

  Write-host "`n   Offline image version: " -NoNewline

  $Current_Edition_Version = (Get-WindowsEdition -Path $Mount).Edition

  Write-Host $Current_Edition_Version -ForegroundColor Green

} catch {

  Write-Host "Error" -ForegroundColor Red

  Write-Host "  $($_)" -ForegroundColor Yellow

  return

}

$Pre_Config_Rules = @(

  @{

    Name = @("Core"; "CoreN"; "CoreSingleLanguage";)

    Apps = @(

      "Microsoft.UI.Xaml.2.3"; "Microsoft.UI.Xaml.2.4"; "Microsoft.UI.Xaml.2.7"; "Microsoft.NET.Native.Framework.2.2";
"Microsoft.NET.Native.Runtime.2.2"; "Microsoft.VCLibs.140.00"; "Microsoft.VCLibs.140.00.UWPDesktop";
"Microsoft.HEIFImageExtension"; "Microsoft.HEVCVideoExtension"; "Microsoft.SecHealthUI";
"Microsoft.VP9VideoExtensions"; "Microsoft.WebpImageExtension"; "Microsoft.WindowsStore"; "Microsoft.GamingApp";
"Microsoft.Sticky.Notes"; "Microsoft.Paint"; "Microsoft.PowerAutomateDesktop"; "Microsoft.ScreenSketch";
"Microsoft.WindowsNotepad"; "Microsoft.WindowsTerminal"; "Clipchamp.Clipchamp"; "Microsoft.Solitaire.Collection";
"Microsoft.WindowsAlarms"; "Microsoft.WindowsFeedbackHub"; "Microsoft.WindowsMaps"; "Microsoft.ZuneMusic";
"Microsoft.BingNews"; "Microsoft.DesktopAppInstaller"; "Microsoft.WindowsCamera"; "Microsoft.Getstarted";
"Microsoft.Cortana"; "Microsoft.BingWeather"; "Microsoft.GetHelp"; "Microsoft.MicrosoftOfficeHub"; "Microsoft.People";
"Microsoft.StorePurchaseApp"; "Microsoft.Todos"; "Microsoft.WebMediaExtensions"; "Microsoft.Windows.Photos";
"Microsoft.WindowsCalculator"; "Microsoft.Windows.CommunicationsApps"; "Microsoft.WindowsSoundRecorder";
"Microsoft.Xbox.TCUI"; "Microsoft.XboxGameOverlay"; "Microsoft.XboxGamingOverlay"; "Microsoft.XboxIdentityProvider";
"Microsoft.XboxSpeechToTextOverlay";

 "Microsoft.YourPhone"; "Microsoft.ZuneVideo"; "MicrosoftCorporationII.QuickAssist";
"MicrosoftWindows.Client.WebExperience"; "Microsoft.RawImageExtension"; "MicrosoftCorporationII.MicrosoftFamily";

    )

  }

  @{

    Name = @("Education"; "Professional"; "ProfessionalEducation"; "ProfessionalWorkstation"; "Enterprise";
"IoTEnterprise"; "ServerRdsh";)

    Apps = @(

      "Microsoft.UI.Xaml.2.3"; "Microsoft.UI.Xaml.2.4"; "Microsoft.UI.Xaml.2.7"; "Microsoft.NET.Native.Framework.2.2";
"Microsoft.NET.Native.Runtime.2.2"; "Microsoft.VCLibs.140.00"; "Microsoft.VCLibs.140.00.UWPDesktop";
"Microsoft.HEIFImageExtension"; "Microsoft.HEVCVideoExtension"; "Microsoft.SecHealthUI";
"Microsoft.VP9VideoExtensions"; "Microsoft.WebpImageExtension"; "Microsoft.WindowsStore"; "Microsoft.GamingApp";
"Microsoft.Sticky.Notes"; "Microsoft.Paint"; "Microsoft.PowerAutomateDesktop"; "Microsoft.ScreenSketch";
"Microsoft.WindowsNotepad"; "Microsoft.WindowsTerminal"; "Clipchamp.Clipchamp"; "Microsoft.Solitaire.Collection";
"Microsoft.WindowsAlarms"; "Microsoft.WindowsFeedbackHub"; "Microsoft.WindowsMaps"; "Microsoft.ZuneMusic";
"Microsoft.BingNews"; "Microsoft.DesktopAppInstaller"; "Microsoft.WindowsCamera"; "Microsoft.Getstarted";
"Microsoft.Cortana"; "Microsoft.BingWeather"; "Microsoft.GetHelp"; "Microsoft.MicrosoftOfficeHub"; "Microsoft.People";
```

```
        "Microsoft.StorePurchaseApp"; "Microsoft.Todos"; "Microsoft.WebMediaExtensions"; "Microsoft.Windows.Photos";
        "Microsoft.WindowsCalculator"; "Microsoft.Windows.CommunicationsApps"; "Microsoft.WindowsSoundRecorder";
        "Microsoft.Xbox.TCUI"; "Microsoft.XboxGameOverlay"; "Microsoft.XboxGamingOverlay"; "Microsoft.XboxIdentityProvider";
        "Microsoft.XboxSpeechToTextOverlay"; "Microsoft.YourPhone"; "Microsoft.ZuneVideo";
        "MicrosoftCorporationII.QuickAssist"; "MicrosoftWindows.Client.WebExperience"; "Microsoft.RawImageExtension";

        )

    }

    @{

        Name = @("EnterpriseN"; "EnterpriseGN"; "EnterpriseSN"; "ProfessionalN"; "EducationN"; "ProfessionalWorkstationN";
"ProfessionalEducationN"; "CloudN"; "CloudEN"; "CloudEditionN"; "CloudEditionLN"; "StarterN";)

        Apps = @(

            "Microsoft.UI.Xaml.2.3"; "Microsoft.UI.Xaml.2.4"; "Microsoft.UI.Xaml.2.7"; "Microsoft.NET.Native.Framework.2.2";
        "Microsoft.NET.Native.Runtime.2.2"; "Microsoft.VCLibs.140.00"; "Microsoft.VCLibs.140.00.UWPDesktop";
        "Microsoft.SecHealthUI"; "Microsoft.WindowsStore"; "Microsoft.Sticky.Notes"; "Microsoft.Paint";
        "Microsoft.PowerAutomateDesktop"; "Microsoft.ScreenSketch"; "Microsoft.WindowsNotepad";
        "Microsoft.WindowsTerminal"; "Clipchamp.Clipchamp"; "Microsoft.Solitaire.Collection"; "Microsoft.WindowsAlarms";
        "Microsoft.WindowsFeedbackHub"; "Microsoft.WindowsMaps"; "Microsoft.BingNews"; "Microsoft.DesktopAppInstaller";
        "Microsoft.WindowsCamera"; "Microsoft.Getstarted"; "Microsoft.Cortana"; "Microsoft.BingWeather"; "Microsoft.GetHelp";
        "Microsoft.MicrosoftOfficeHub"; "Microsoft.People"; "Microsoft.StorePurchaseApp"; "Microsoft.Todos";
        "Microsoft.Windows.Photos"; "Microsoft.WindowsCalculator"; "Microsoft.Windows.CommunicationsApps";
        "Microsoft.XboxGameOverlay"; "Microsoft.XboxIdentityProvider"; "Microsoft.XboxSpeechToTextOverlay";
        "Microsoft.YourPhone"; "MicrosoftCorporationII.QuickAssist"; "MicrosoftWindows.Client.WebExperience";

        )

    }

)

$Allow_Install_App = @()

ForEach ($item in $Pre_Config_Rules) {

    if ($item.Name -contains $Current_Edition_Version) {

        Write-host "`n  Match to: "-NoNewline

        Write-host $Current_Edition_Version -ForegroundColor Green

        $Allow_Install_App = $item.Apps

        break

    }

}

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

Write-host "  $('-' * 80)"

ForEach ($item in $Allow_Install_App) {

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

}

$InBoxApps = @(
```

```
@{ Name = "Microsoft.UI.Xaml.2.3"; File = "Microsoft.UI.Xaml.x64.2.3.appx"; License = ""; }

@{ Name = "Microsoft.UI.Xaml.2.4"; File = "Microsoft.UI.Xaml.x64.2.4.appx"; License = ""; }

@{ Name = "Microsoft.UI.Xaml.2.7"; File = "Microsoft.UI.Xaml.x64.2.7.appx"; License = ""; }

@{ Name = "Microsoft.NET.Native.Framework.2.2"; File = "Microsoft.NET.Native.Framework.x64.2.2.appx"; License = ""; }

@{ Name = "Microsoft.NET.Native.Runtime.2.2"; File = "Microsoft.NET.Native.Runtime.x64.2.2.appx"; License = ""; }

@{ Name = "Microsoft.VCLibs.140.00"; File = "Microsoft.VCLibs.x64.14.00.appx"; License = ""; }

@{ Name = "Microsoft.VCLibs.140.00.UWPDesktop"; File = "Microsoft.VCLibs.x64.14.00.UWPDesktop.appx"; License = ""; }

@{ Name = "Microsoft.WindowsStore"; File = "Microsoft.WindowsStore_8wekyb3d8bbwe.msixbundle"; License = "Microsoft.WindowsStore_8wekyb3d8bbwe.xml"; }

@{ Name = "Microsoft.HEIFImageExtension"; File = "Microsoft.HEIFImageExtension_8wekyb3d8bbwe.appxbundle"; License = "Microsoft.HEIFImageExtension_8wekyb3d8bbwe.xml"; }

@{ Name = "Microsoft.HEVCVideoExtension"; File = "Microsoft.HEVCVideoExtension_8wekyb3d8bbwe.x64.appx"; License = "Microsoft.HEVCVideoExtension_8wekyb3d8bbwe.x64.xml"; }

@{ Name = "Microsoft.SecHealthUI"; File = "Microsoft.SecHealthUI_8wekyb3d8bbwe.x64.appx"; License = "Microsoft.SecHealthUI_8wekyb3d8bbwe.x64.xml"; }

@{ Name = "Microsoft.VP9VideoExtensions"; File = "Microsoft.VP9VideoExtensions_8wekyb3d8bbwe.x64.appx"; License = "Microsoft.VP9VideoExtensions_8wekyb3d8bbwe.x64.xml"; }

@{ Name = "Microsoft.WebpImageExtension"; File = "Microsoft.WebpImageExtension_8wekyb3d8bbwe.x64.appx"; License = "Microsoft.WebpImageExtension_8wekyb3d8bbwe.x64.xml"; }

@{ Name = "Microsoft.GamingApp"; File = "Microsoft.GamingApp_8wekyb3d8bbwe.msixbundle"; License = "Microsoft.GamingApp_8wekyb3d8bbwe.xml"; }

@{ Name = "Microsoft.Sticky.Notes"; File = "Microsoft.MicrosoftStickyNotes_8wekyb3d8bbwe.msixbundle"; License = "Microsoft.MicrosoftStickyNotes_8wekyb3d8bbwe.xml"; }

@{ Name = "Microsoft.Paint"; File = "Microsoft.Paint_8wekyb3d8bbwe.msixbundle"; License = "Microsoft.Paint_8wekyb3d8bbwe.xml"; }

@{ Name = "Microsoft.PowerAutomateDesktop"; File = "Microsoft.PowerAutomateDesktop_8wekyb3d8bbwe.msixbundle"; License = "Microsoft.PowerAutomateDesktop_8wekyb3d8bbwe.xml"; }

@{ Name = "Microsoft.ScreenSketch"; File = "Microsoft.ScreenSketch_8wekyb3d8bbwe.msixbundle"; License = "Microsoft.ScreenSketch_8wekyb3d8bbwe.xml"; }

@{ Name = "Microsoft.WindowsNotepad"; File = "Microsoft.WindowsNotepad_8wekyb3d8bbwe.msixbundle"; License = "Microsoft.WindowsNotepad_8wekyb3d8bbwe.xml"; }

@{ Name = "Microsoft.WindowsTerminal"; File = "Microsoft.WindowsTerminal_8wekyb3d8bbwe.msixbundle"; License = "Microsoft.WindowsTerminal_8wekyb3d8bbwe.xml"; }

@{ Name = "Clipchamp.Clipchamp"; File = "Clipchamp.Clipchamp_yxz26nhyzhsrt.msixbundle"; License = "Clipchamp.Clipchamp_yxz26nhyzhsrt.xml"; }

@{ Name = "Microsoft.Solitaire.Collection"; File = "Microsoft.MicrosoftSolitaireCollection_8wekyb3d8bbwe.msixbundle"; License = "Microsoft.MicrosoftSolitaireCollection_8wekyb3d8bbwe.xml"; }

@{ Name = "Microsoft.WindowsAlarms"; File = "Microsoft.WindowsAlarms_8wekyb3d8bbwe.msixbundle"; License = "Microsoft.WindowsAlarms_8wekyb3d8bbwe.xml"; }

@{ Name = "Microsoft.WindowsFeedbackHub"; File = "Microsoft.WindowsFeedbackHub_8wekyb3d8bbwe.msixbundle"; License = "Microsoft.WindowsFeedbackHub_8wekyb3d8bbwe.xml"; }
```

```
  @{ Name = "Microsoft.WindowsMaps"; File = "Microsoft.WindowsMaps_8wekyb3d8bbwe.msixbundle"; License =
"Microsoft.WindowsMaps_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.ZuneMusic"; File = "Microsoft.ZuneMusic_8wekyb3d8bbwe.msixbundle"; License =
"Microsoft.ZuneMusic_8wekyb3d8bbwe.xml"; }

  @{ Name = "MicrosoftCorporationII.MicrosoftFamily"; File =
"MicrosoftCorporationII.MicrosoftFamily_8wekyb3d8bbwe.msixbundle"; License =
"MicrosoftCorporationII.MicrosoftFamily_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.BingNews"; File = "Microsoft.BingNews_8wekyb3d8bbwe.msixbundle"; License =
"Microsoft.BingNews_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.DesktopAppInstaller"; File = "Microsoft.DesktopAppInstaller_8wekyb3d8bbwe.msixbundle";
License = "Microsoft.DesktopAppInstaller_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.WindowsCamera"; File = "Microsoft.WindowsCamera_8wekyb3d8bbwe.msixbundle"; License =
"Microsoft.WindowsCamera_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.Getstarted"; File = "Microsoft.Getstarted_8wekyb3d8bbwe.msixbundle"; License =
"Microsoft.Getstarted_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.Cortana"; File = "Microsoft.CortanaApp_8wekyb3d8bbwe.appxbundle"; License =
"Microsoft.CortanaApp_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.BingWeather"; File = "Microsoft.BingWeather_8wekyb3d8bbwe.appxbundle"; License =
"Microsoft.BingWeather_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.GetHelp"; File = "Microsoft.GetHelp_8wekyb3d8bbwe.appxbundle"; License =
"Microsoft.GetHelp_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.MicrosoftOfficeHub"; File = "Microsoft.MicrosoftOfficeHub_8wekyb3d8bbwe.appxbundle"; License
= "Microsoft.MicrosoftOfficeHub_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.People"; File = "Microsoft.People_8wekyb3d8bbwe.appxbundle"; License =
"Microsoft.People_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.StorePurchaseApp"; File = "Microsoft.StorePurchaseApp_8wekyb3d8bbwe.appxbundle"; License =
"Microsoft.StorePurchaseApp_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.Todos"; File = "Microsoft.Todos_8wekyb3d8bbwe.appxbundle"; License =
"Microsoft.Todos_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.WebMediaExtensions"; File = "Microsoft.WebMediaExtensions_8wekyb3d8bbwe.appxbundle";
License = "Microsoft.WebMediaExtensions_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.Windows.Photos"; File = "Microsoft.Windows.Photos_8wekyb3d8bbwe.appxbundle"; License =
"Microsoft.Windows.Photos_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.WindowsCalculator"; File = "Microsoft.WindowsCalculator_8wekyb3d8bbwe.appxbundle"; License
= "Microsoft.WindowsCalculator_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.Windows.CommunicationsApps"; File =
"Microsoft.WindowsCommunicationsApps_8wekyb3d8bbwe.appxbundle"; License =
"Microsoft.WindowsCommunicationsApps_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.WindowsSoundRecorder"; File =
"Microsoft.WindowsSoundRecorder_8wekyb3d8bbwe.appxbundle"; License =
"Microsoft.WindowsSoundRecorder_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.Xbox.TCUI"; File = "Microsoft.Xbox.TCUI_8wekyb3d8bbwe.appxbundle"; License =
"Microsoft.Xbox.TCUI_8wekyb3d8bbwe.xml"; }
```

```
  @{ Name = "Microsoft.XboxGameOverlay"; File = "Microsoft.XboxGameOverlay_8wekyb3d8bbwe.appxbundle"; License =
"Microsoft.XboxGameOverlay_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.XboxGamingOverlay"; File = "Microsoft.XboxGamingOverlay_8wekyb3d8bbwe.appxbundle"; License
= "Microsoft.XboxGamingOverlay_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.XboxIdentityProvider"; File = "Microsoft.XboxIdentityProvider_8wekyb3d8bbwe.appxbundle";
License = "Microsoft.XboxIdentityProvider_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.XboxSpeechToTextOverlay"; File =
"Microsoft.XboxSpeechToTextOverlay_8wekyb3d8bbwe.appxbundle"; License =
"Microsoft.XboxSpeechToTextOverlay_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.YourPhone"; File = "Microsoft.YourPhone_8wekyb3d8bbwe.appxbundle"; License =
"Microsoft.YourPhone_8wekyb3d8bbwe.xml"; }

  @{ Name = "Microsoft.ZuneVideo"; File = "Microsoft.ZuneVideo_8wekyb3d8bbwe.appxbundle"; License =
"Microsoft.ZuneVideo_8wekyb3d8bbwe.xml"; }

  @{ Name = "MicrosoftCorporationII.QuickAssist"; File =
"MicrosoftCorporationII.QuickAssist_8wekyb3d8bbwe.appxbundle"; License =
"MicrosoftCorporationII.QuickAssist_8wekyb3d8bbwe.xml"; }

  @{ Name = "MicrosoftWindows.Client.WebExperience"; File =
"MicrosoftWindows.Client.WebExperience_cw5n1h2txyewy.appxbundle"; License =
"MicrosoftWindows.Client.WebExperience_cw5n1h2txyewy.xml"; }

  @{ Name = "Microsoft.RawImageExtension"; File = "Microsoft.RawImageExtension_8wekyb3d8bbwe.appxbundle"; License
= "Microsoft.RawImageExtension_8wekyb3d8bbwe.xml"; }

)

Function Install_Appx

{

  param($File, $License)

  Write-host "  $('-' * 80)"

  Write-host "  Installing: " -NoNewline; Write-host $File -ForegroundColor Yellow

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

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

      Write-host "  License: " -NoNewline; Write-host $License -ForegroundColor Yellow

      Write-host "  With License".PadRight(22) -NoNewline -ForegroundColor Green

      Write-host "  Installing".PadRight(22) -NoNewline

      try {

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

        Write-Host "Done" -ForegroundColor Green

      } catch {

        Write-Host "Failed" -ForegroundColor Red

        Write-Host "  $($_)" -ForegroundColor Yellow

      }
```

```
      } else {

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

        Write-host "  Installing".PadRight(22) -NoNewline

        try {

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

          Write-Host "Done" -ForegroundColor Green

        } catch {

          Write-Host "Failed" -ForegroundColor Red

          Write-Host "  $($_)" -ForegroundColor Yellow

        }

      }

    } else {

      Write-host "  The installation package does not exist" -ForegroundColor Red

    }

  }

  ForEach ($Rule in $InBoxApps) {

    Write-host "`n  Name: " -NoNewline

    Write-host $Rule.Name -ForegroundColor Yellow

    Write-host "  $('-' * 80)"

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

      Write-host "  Search for apps: " -NoNewline

      Write-host $Rule.File -ForegroundColor Yellow

      Write-host "  Search for License: " -NoNewline

      Write-host $Rule.File -ForegroundColor Yellow

      if ($ISO -eq "Auto") {

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

          $AppPath = Join-Path -Path $_.Root -ChildPath "packages\$($Rule.File)" -ErrorAction SilentlyContinue

          $LicensePath = Join-Path -Path $_.Root -ChildPath "packages\$($Rule.License)" -ErrorAction SilentlyContinue

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

            Write-host "  $('-' * 80)"

            Write-host "  Discover apps: " -NoNewLine; Write-host $AppPath -ForegroundColor Green

            if (Test-Path $LicensePath -PathType Leaf) {; Write-host "  Discover License: " -NoNewLine

              Write-host $LicensePath -ForegroundColor Green

            } else {
```

```
                    Write-host "  License: " -NoNewLine

                    Write-host "Not found" -ForegroundColor Red

                  }

                  Install_Appx -File $AppPath -License $LicensePath

                  return

                }

              }

            } else {

              Install_Appx -File "$($ISO)\$($Rule.File)" -License "$($ISO)\$($Rule.License)"

            }

          } else {

            Write-host "  Skip the installation" -ForegroundColor Red

          }

        }
```

5.5.   InBox Apps：优化

在安装应用后，应优化预配 Appx 包，通过用硬链接替换相同的文件来减少应用的磁盘使用量，仅针对脱机映像。

Dism /Image:"D:\OS_10_Custom\Install\Install\Mount" /Optimize-ProvisionedAppxPackages

6.   累积更新

- 不同版本、旧版本升级到最新版时，需优先添加"功能启用包"后才能添加最新版累积更新；

- 添加语言包后，可安装与初始版本相同的累积更新，以解决安装后未刷新"组件：映像中已安装的所有包"状态的已知问题；

- 为保持最新，推荐您下载最新版。

6.1.   功能启用包

  o   学习：KB5015684：使用启用包对 Windows 10 版本 22H2 的特别推荐更新

  o   注意：使用 Windows 10 22H2 19045.2006 相同版本和以上版本号时，可跳过功能启用包。

  o   制作 Windows 10 版本 2004、20H2、21H1、21H2 时，需提前安装"功能启用包"后才能安装 19045.* 的累积更新，下载后保存到：D:\OS_10_Custom\Install\Install\Update，根据架构选择下载：

6.1.1.   x64，默认

  - 直连下载

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

- 安装

$KBPath = "D:\OS_10_Custom\Install\Install\Update\windows10.0-kb5015684-x64_523c039b86ca98f2d818c4e6706e2cc94b634c4a.msu"

Add-WindowsPackage -Path "D:\OS_10_Custom\Install\Install\Mount" -PackagePath $KBPath

6.2.　　初始版本

累积更新 KB5017308 已无法从 https://www.catalog.update.microsoft.com/Search.aspx?q=KB5017308 里搜索到，通过直连方式下载后保存到：D:\OS_10_Custom\Install\Install\Update，根据架构选择下载：

6.2.1.　　x64，默认

- 直连下载

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

- 安装

$KBPath = "D:\OS_10_Custom\Install\Install\Update\windows10.0-kb5017308-x64_2027053968a06948b45d139d95475ab4feee5654.msu"

Add-WindowsPackage -Path "D:\OS_10_Custom\Install\Install\Mount" -PackagePath $KBPath

6.3.　　其它版本

查阅"Windows 10 版本信息"，例如下载累积更新：KB5032278，前往下载页面：
https://www.catalog.update.microsoft.com/Search.aspx?q=KB5032278，下载后保存到：D:\OS_10_Custom\Install\Install\Update，
或通过直连下载，根据架构选择下载：

6.3.1.　　x64，默认

- 直连下载

https://catalog.s.download.windowsupdate.com/d/msdownload/update/software/updt/2023/11/windows10.0-kb5032278-x64_3a2b384f690eaa92c5030c535ac4a7e47c71a635.msu

- 添加

$KBPath = "D:\OS_10_Custom\Install\Install\Update\windows10.0-kb5032278-x64_3a2b384f690eaa92c5030c535ac4a7e47c71a635.msu"

Add-WindowsPackage -Path "D:\OS_10_Custom\Install\Install\Mount" -PackagePath $KBPath

6.4. 固化更新，可选项

固化后不可卸载，固化时将清理恢复映像并重置任何被取代的组件的基础。

Dism /Image:"D:\OS_10_Custom\Install\Install\Mount" /cleanup-image /StartComponentCleanup /ResetBase

6.4.1. 固化更新后清理组件，可选项

```
$Mount = "D:\OS_10_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. 部署引擎：添加，可选

- 了解"部署引擎"，如果添加到 ISO 安装介质，可跳过添加到已挂载；

- 如果添加部署引擎到已挂载里，请继续在当前位置执行下一步。

8. 健康

保存前应检查是否损坏，健康状态异常时，中止保存

Repair-WindowsImage -Path "D:\OS_10_Custom\Install\Install\Mount" -ScanHealth

9. 替换 WinRE.wim

已批量替换 Install.wim 里的所有索引号里的 WinRE.wim 请跳过该步骤。

$WinRE = "D:\OS_10_Custom\Install\Install\Update\Winlib\WinRE.wim"

$CopyTo = "D:\OS_10_Custom\Install\Install\Mount\Windows\System32\Recovery"

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

10. 保存映像 Install.wim

Save-WindowsImage -Path "D:\OS_10_Custom\Install\Install\Mount"

11. 卸载映像 Install.wim

关闭所有可能正在访问映像中文件的应用程序，包括文件资源管理器。

```
Dismount-WindowsImage -Path "D:\OS_10_Custom\Install\Install\Mount" -Discard
```

循环操作区域，结束。

12. 重建 Install.wim 后可缩小文件大小

- Install.Rebuild.wim.ps1

    o \Expand\Install\Install.Rebuild.wim.ps1

    o https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/Install/Install.Rebuild.wim.ps1

- 复制代码

```
$InstallWim = "D:\OS_10\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

}
```

13. 如何批量替换 Install.wim 里的所有索引号里的 WinRE.wim

    13.1. 获取 WimLib

          前往 https://wimlib.net 官方网站后，选择不同的版本：arm64, x64, x86，下载完成后解压到：D:\Wimlib

    13.2. 如何在 Install.wim 里提取和更新 WinRE.wim

13.2.1. 从 Install.wim 里提取 WinRE.wim 文件 Install.wim

- Install.WinRE.Replace.wim.ps1

  - \Expand\Install\Install.WinRE.Replace.wim.ps1

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

- 复制代码

```
$Arguments = @(

  "extract",

  "D:\OS_10\sources\install.wim", "1",

  "\Windows\System32\Recovery\Winre.wim",

  "--dest-dir=""D:\OS_10_Custom\Install\Install\Update\Winlib"""

)

New-Item -Path "D:\OS_10_Custom\Install\Install\Update\Winlib" -ItemType Directory -ea SilentlyContinue

Start-Process -FilePath "d:\wimlib\wimlib-imagex.exe" -ArgumentList $Arguments -wait -nonewwindow
```

13.2.2. 获取 Install.wim 所有索引号后并替换旧的 WinRE.wim

- Install.WinRE.Replace.wim.ps1

  - \Expand\Install\Install.WinRE.Replace.wim.ps1

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

- 复制代码

```
Get-WindowsImage -ImagePath "D:\OS_10\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:\OS_10\sources\install.wim", $_.ImageIndex,

    "--command=""add 'D:\OS_10_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
```

```
                                    }
```

III   自定义部署映像：boot.wim

1.   查看 Boot.wim 文件信息

映像名称、映像描述、映像大小、架构、版本、索引号等；

```
$ViewFile = "D:\OS_10\Sources\Boot.wim"

Get-WindowsImage -ImagePath $ViewFile | Foreach-Object { Get-WindowsImage -ImagePath $ViewFile -index $_.ImageIndex }
```

2.   指定挂载 Boot.wim 路径

```
New-Item -Path "D:\OS_10_Custom\Boot\Boot\Mount" -ItemType directory -ea SilentlyContinue
```

3.   开始挂载 Boot.wim

默认索引号：2

```
Mount-WindowsImage -ImagePath "D:\OS_10\sources\boot.wim" -Index "2" -Path "D:\OS_10_Custom\Boot\Boot\Mount"
```

4.   语言包

- 自动安装语言包：获取"组件：映像中已安装的所有包"后进行匹配，匹配到对应的名称后，再安装本地对应的语言包文件，查看报告"语言安装包适用于 Boot.wim"。

- 添加语言时，须对应不同的架构版本，未对应时，添加过程中报错等提示。

4.1.   语言包：添加

- Boot.Instl.lang.ps1

  - \Expand\Boot\Boot.Instl.lang.ps1

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

- 复制代码

```
$Mount = "D:\OS_10_Custom\Boot\Boot\Mount"

$Sources = "D:\OS_10_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"
```

```powershell
$Language = @(

    @{ Match = "*WinPE*Setup*Client*Package*"; File = "WINPE-SETUP-CLIENT_zh-CN.CAB"; }

    @{ Match = "*WinPE*Setup*Package*"; File = "WinPE-Setup_zh-CN.cab"; }

    @{ Match = "*WinPE-LanguagePack-Package*"; File = "lp.cab"; }

    @{ Match = "*SecureStartup*"; File = "winpe-securestartup_zh-CN.cab"; }

    @{ Match = "*ATBroker*"; File = "winpe-atbroker_zh-CN.cab"; }

    @{ Match = "*AudioCore*"; File = "winpe-audiocore_zh-CN.cab"; }

    @{ Match = "*AudioDrivers*"; File = "winpe-audiodrivers_zh-CN.cab"; }

    @{ Match = "*EnhancedStorage*"; File = "winpe-enhancedstorage_zh-CN.cab"; }

    @{ Match = "*Narrator*"; File = "winpe-narrator_zh-CN.cab"; }

    @{ Match = "*scripting*"; File = "winpe-scripting_zh-CN.cab"; }

    @{ Match = "*Speech-TTS*"; File = "winpe-speech-tts_zh-CN.cab"; }

    @{ Match = "*srh*"; File = "winpe-srh_zh-CN.cab"; }

    @{ Match = "*srt*"; File = "winpe-srt_zh-CN.cab"; }

    @{ Match = "*wds-tools*"; File = "winpe-wds-tools_zh-CN.cab"; }

    @{ Match = "*-WMI-Package*"; File = "winpe-wmi_zh-CN.cab"; }

)

ForEach ($Rule in $Language) {

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

    ForEach ($Component in $Initl_install_Language_Component) {

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

            Write-host "  Component name: " -NoNewline; Write-host $Component -ForegroundColor Green

            Write-host "  Language pack file: " -NoNewline; Write-host "$($Sources)\$($Rule.File)" -ForegroundColor Green

            Write-Host "  Installing ".PadRight(22) -NoNewline

            try {

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

                Write-host "Finish" -ForegroundColor Green

            } catch {

                Write-host "Failed" -ForegroundColor Red

                Write-host "  $($_)" -ForegroundColor Red

            }

            break

        }

    }
```

```
                }
```

4.2. 组件：映像中已安装的所有包

4.2.1. 查看

```
Get-WindowsPackage -Path "D:\OS_10_Custom\Boot\Boot\Mount" | Out-GridView
```

4.2.2. 导出到 Csv

```
$SaveTo = "D:\OS_10_Custom\Boot\Boot\Report.$(Get-Date -Format "yyyyMMddHHmmss").csv"

Get-WindowsPackage -Path "D:\OS_10_Custom\Boot\Boot\Mount" | Export-CSV -NoType -Path $SaveTo

Write-host $SaveTo -ForegroundColor Green
```

4.3. 语言包：同步到 ISO 安装程序

```
Copy-Item -Path "D:\OS_10_Custom\Boot\Boot\Mount\sources\zh-CN" -Destination "D:\OS_10\sources\zh-CN" -Recurse -Force
```

4.4. 重新生成 Lang.ini

重新生成后，可调整"安装界面"，选择"语言"时的顺序，打开 lang.ini，默认首选值 = 3，非默认值 = 2。

4.4.1. 重新生成已挂载目录 lang.ini

重新生成的 Lang.ini 文件位置：D:\en-us_windows_server_2022_x64_dvd_620d7eac_Custom\Boot\Boot\Mount\Sources\lang.ini

```
Dism /image:"D:\OS_10_Custom\Boot\Boot\Mount" /gen-langini /distribution:"D:\OS_10_Custom\Boot\Boot\Mount"
```

4.4.2. 重新生成 lang.ini 后，同步到安装程序

重新生成的 Lang.ini 文件位置：D:\en-us_windows_server_2022_x64_dvd_620d7eac\Sources\lang.ini

```
Dism /image:"D:\OS_10_Custom\Boot\Boot\Mount" /gen-langini /distribution:"D:\OS_10"
```

5. 保存映像 Boot.wim

```
Save-WindowsImage -Path "D:\OS_10_Custom\Boot\Boot\Mount"
```

6. 卸载映像 Boot.wim

关闭所有可能正在访问映像中文件的应用程序，包括文件资源管理器。

```
Dismount-WindowsImage -Path "D:\OS_10_Custom\Boot\Boot\Mount" -Discard
```

IV   部署引擎

- 了解"自动添加 Windows 系统已安装的语言"，学习：https://github.com/ilikeyi/Multilingual，如何下载：

  o 进入网站后，点击"代码"，"下载压缩包"，下载完成后得到 main.zip 压缩包文件。

  o 前往 https://github.com/ilikeyi/Multilingual/releases 下载页面，选择可用版本：1.1.1.1，选择下载源代码格式：zip，下载完成后得到 Multilingual-1.1.1.1.zip 压缩包文件；

- 将已下载的 main.zip 或 Multilingual-1.1.1.1.zip，解压到：D:\Multilingual-1.1.1.1，重命名：D:\Multilingual

- 学习"无人值守 Windows 安装参考"，通过无人值守来干预安装过程。

1.   添加方式

  1.1.   添加到 ISO 安装介质

    1.1.1.   无人值守

      1.1.1.1.   添加到：[ISO]:\Autounattend.xml

        引导 ISO 安装时，Autounattend.xml 干预 WinPE 安装程序。

        复制 D:\Multilingual_Learn\Unattend\Mul.Unattend.xml 到 D:\OS_10\Autounattend.xml

        Copy-Item "D:\Multilingual_Learn\Unattend\Mul.Unattend.xml" -Destination "D:\OS_10\Autounattend.xml" -Force

      1.1.1.2.   添加到：[ISO]:\Sources\Unattend.xml

        挂载或解压 ISO 时，运行 [ISO]:\Setup.exe 安装程序后，[ISO]:\Sources\Unattend.xml 将干预安装过程。

        复制 D:\Multilingual_Learn\Unattend\Mul.Unattend.xml 到 D:\OS_10\Sources\Unattend.xml

        Copy-Item "D:\Multilingual_Learn\Unattend\Mul.Unattend.xml" -Destination "D:\OS_10\Sources\Unattend.xml" -Force

      1.1.1.3.   添加到：[ISO]:\sources\$OEM$\$$\Panther\unattend.xml

        安装过程中复制到系统盘里，复制到：{系统盘}:\Windows\Panther\unattend.xml

        1.1.1.3.1.   创建 OEM 路径

          New-Item -Path "D:\OS_10\sources\`$OEM$\`$$\Panther" -ItemType Directory

        1.1.1.3.2.   复制

          复制 D:\Multilingual_Learn\Unattend\Mul.Unattend.xml 到

          D:\OS_10\Sources\OEM\Panther\Unattend.xml

```
Copy-Item "D:\Multilingual\_Learn\Unattend\Mul.Unattend.xml" -Destination
"D:\OS_10\sources\`$OEM$\`$$\Panther\Unattend.xml" -Force
```

1.1.2. 部署引擎：添加

添加"自动添加 Windows 系统已安装的语言"到 D:\OS_10\sources\$OEM$\$1\Yi\Engine 目录里。

1.1.2.1. 部署引擎：复制

复制 D:\Multilingual\Engine 到 D:\OS_10\Sources\$OEM$\$1\Yi\Engine

```
Copy-Item "D:\Multilingual\Engine" -Destination "D:\OS_10\sources\`$OEM$\`$1\Yi\Engine" -Recurse -Force
```

1.1.2.2. 部署引擎：自定义部署标记

```
$Flag = @(

    "Is_Mark_Sync" # 允许全盘搜索并同步部署标记

    # 先决部署

#   "Auto_Update" # 允许自动更新

#   "Use_UTF8" # Beta 版：使用 Unicode UTF-8 提供全球语言支持

    "Disable_Network_Location_Wizard" # 网络位置向导

    "Disable_Cleanup_Appx_Tasks" # Appx 清理维护任务

    "Disable_Cleanup_On_Demand_Language" # 阻止清理未使用的按需功能语言包

    "Disable_Cleanup_Unsed_Language" # 阻止清理未使用的语言包

    "Prerequisites_Reboot" # 重新启动计算机

    # 完成首次部署

#   "Popup_Engine" # 允许首次弹出部署引擎主界面

#   "Allow_First_Pre_Experience" # 允许首次预体验，按计划

    "Reset_Execution_Policy" # 恢复 PowerShell 执行策略：受限

    "Clear_Solutions" # 删除整个解决方案

    "Clear_Engine" # 删除部署引擎，保留其它

#   "First_Experience_Reboot" # 重新启动计算机

)

ForEach ($item in $Flag) {
```

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

New-Item -Path "D:\OS_10\sources\`$OEM$\`$1\Yi\Engine\Deploy\Allow" -ItemType Directory -ErrorAction
SilentlyContinue | Out-Null

Out-File -FilePath "D:\OS_10\sources\`$OEM$\`$1\Yi\Engine\Deploy\Allow\$($item)" -Encoding utf8 -
ErrorAction SilentlyContinue

}
```

1.2. 添加到已挂载

通过"自定义部署映像：Install.wim"，执行"开始挂载 Install.wim"，挂载到：D:\OS_10_Custom\Install\Install\Mount

1.2.1. 无人值守

复制 D:\Multilingual_Learn\Unattend\Mul.Unattend.xml 到 D:\OS_10_Custom\Install\Install\Mount\Panther\Unattend.xml

```
Copy-Item "D:\Multilingual\_Learn\Unattend\Mul.Unattend.xml" -Destination "D:\OS_10_Custom\Install\Install\Mount\Panther"
-Force
```

1.2.2. 部署引擎

添加"自动添加 Windows 系统已安装的语言"到 D:\OS_10_Custom\Install\Install\Mount\Yi\Engine 目录里。

1.2.2.1. 部署引擎：复制

复制 D:\Multilingual\Engine 到 D:\OS_10_Custom\Install\Install\Mount\Yi\Engine

```
Copy-Item "D:\Multilingual\Engine" -Destination "D:\OS_10_Custom\Install\Install\Mount\Yi\Engine" -Recurse -
Force
```

1.2.2.2. 部署引擎：自定义部署标记

```
$Flag = @(

  "Is_Mark_Sync" # 允许全盘搜索并同步部署标记

  # 先决部署

# "Auto_Update" # 允许自动更新

# "Use_UTF8" # Beta 版：使用 Unicode UTF-8 提供全球语言支持

  "Disable_Network_Location_Wizard" # 网络位置向导

  "Disable_Cleanup_Appx_Tasks" # Appx 清理维护任务

  "Disable_Cleanup_On_Demand_Language" # 阻止清理未使用的按需功能语言包

  "Disable_Cleanup_Unsed_Language" # 阻止清理未使用的语言包
```

```
        "Prerequisites_Reboot" # 重新启动计算机

        # 完成首次部署

        #   "Popup_Engine" # 允许首次弹出部署引擎主界面

        #   "Allow_First_Pre_Experience" # 允许首次预体验，按计划

        "Reset_Execution_Policy" # 恢复 PowerShell 执行策略：受限

        "Clear_Solutions" # 删除整个解决方案

        "Clear_Engine" # 删除部署引擎，保留其它

        #   "First_Experience_Reboot" # 重新启动计算机

    )
    ForEach ($item in $Flag) {

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

        New-Item -Path "D:\OS_10_Custom\Install\Install\Mount\Yi\Engine\Deploy\Allow" -ItemType Directory -
ErrorAction SilentlyContinue | Out-Null

        Out-File -FilePath "D:\OS_10_Custom\Install\Install\Mount\Yi\Engine\Deploy\Allow\$($item)" -Encoding utf8 -
ErrorAction SilentlyContinue

    }
```

2. 部署引擎：进阶

   2.1. 部署引擎：添加过程中

   在复制部署引擎后，可添加部署标记来干预安装过程。

   2.2. 无人值守方案

   自定义无人值守时，以下文件存在时请同步修改：

   - D:\OS_10\Autounattend.xml

   - D:\OS_10\Sources\Unattend.xml

   - D:\OS_10\sources\$OEM$\$$\Panther\unattend.xml

   - D:\OS_10_Custom\Install\Install\Mount\Panther\Unattend.xml

      2.2.1. 多语言或单语

      多语言时，单语时，可互相切换，替换时，请替换文件里所有相同的。

         2.2.1.1. 多语言

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

<InputLocale>%OSDInputLocale%</InputLocale>

<SystemLocale>%OSDSystemLocale%</SystemLocale>

<UILanguage>%OSDUILanguage%</UILanguage>

<UILanguageFallback>%OSDUILanguageFallback%</UILanguageFallback>

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

2.2.1.2.　单语

单语需指定区域，例如指定区域：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.　用户方案

默认使用自建用户 Administrator 并自动登录，可通过修改以下配置切换：自建、自定义用户。

2.2.2.1.　自建用户 Administrator

默认使用自建用户：Administrator 并自动登录，插入到 <OOBE> 和 </OOBE> 之间。

```
<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. 自定义用户

设置自定义用户后，安装系统完成后，在 OOBE 里，可选择本地、在线用户等设置。

2.2.2.2.1. 删除

用户名：从开始处删除 `<UserAccounts>` 到 `</UserAccounts>`

自动登录：从开始处删除 `<AutoLogon>` 到 `</AutoLogon>`

2.2.2.2.2. 替换

从开始处 `<OOBE>` 到 `</OOBE>`

```
<OOBE>

  <ProtectYourPC>3</ProtectYourPC>

  <HideEULAPage>true</HideEULAPage>

  <HideWirelessSetupInOOBE>true</HideWirelessSetupInOOBE>

</OOBE>
```

D. 生成 ISO

1. 下载 OScdimg

根据架构选择 Oscdimg 版本，下载后保存到：D:\，保存在其它路径请输入 OScdimg.exe 绝对路径；

1.1. x64

https://github.com/ilikeyi/solutions/raw/main/_Software/Oscdimg/amd64/oscdimg.exe

1.2. x86

https://github.com/ilikeyi/solutions/raw/main/_Software/Oscdimg/x86/oscdimg.exe

1.3. arm64

https://github.com/ilikeyi/solutions/raw/main/_Software/Oscdimg/arm64/oscdimg.exe

2. 使用 oscdimg 命令行生成一个 ISO 文件，保存到：D:\Win11.iso

- ISO.ps1

  o \Expand\ISO.ps1

  o https://github.com/ilikeyi/solutions/blob/main/_Learn/Packaging.tutorial/OS.10/22H2/Expand/ISO.ps1

- 复制代码

```
$Oscdimg = "D:\Oscdimg.exe"

$ISO = "D:\OS_10"

$Volume = "OS_10"

$SaveTo = "D:\OS_10.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
```

Yɪ' Sᴏʟᴜᴛɪᴏɴs

作者： Yi

网站： https://fengyi.tel

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

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