

Windows 11 S Mode Image

Overview

This guide walks through creating a Windows 11 **Home** image with **S mode** enabled, adding the Manufacturing Mode key for Audit Mode customizations, removing the key, and preparing the image for deployment.

Key rules

- Use a **Windows 11 Home** image only.
 - Never ship a device with the Manufacturing Mode key still present.
 - Secure Boot must be enabled on the target hardware.
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1. Prerequisites

- Windows Assessment and Deployment Kit (ADK) + WinPE add-on
 - Official Windows 11 ISO → extract install.wim and full ISO
 - Technician PC
 - Reference PC (for Audit Mode)
 - USB drive for WinPE (recommended)
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2. Create the unattend.xml (Enable S Mode)

Option A - Using Windows System Image Manager (recommended)

1. Open **Windows System Image Manager**.
2. File → Select Windows Image → choose your install.wim → select **Windows 11 Home**.
3. Create the catalog when prompted.
4. File → New Answer File.
5. In the Windows Image pane, expand **Components**.
6. Right-click amd64_Microsoft-Windows-CodeIntegrity → **Add Setting to Pass 2 offlineServicing**.
7. Set SkuPolicyRequired = **1**.

8. Save as unattend.xml.

Option B - Manual XML (copy-paste ready)

XML

```
<?xml version="1.0" encoding="utf-8"?>
<unattend xmlns="urn:schemas-microsoft-com:unattend">
  <settings pass="offlineServicing">
    <component name="Microsoft-Windows-CodeIntegrity"
      processorArchitecture="amd64"
      publicKeyToken="31bf3856ad364e35"
      language="neutral"
      versionScope="nonSxS"
      xmlns:wcm="http://schemas.microsoft.com/WMIConfig/2002/State"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
      <SkuPolicyRequired>1</SkuPolicyRequired>
    </component>
  </settings>
</unattend>
```

3. Mount the Image and Enable S Mode + Manufacturing Mode

Open an elevated **Deployment and Imaging Tools Environment** (or Command Prompt).

cmd

```
:: Create mount folder
mkdir C:\mount\windows

:: Mount the image (use correct Index for Windows 11 Home)
DISM /Mount-Image /ImageFile:C:\path\to\install.wim /Index:1 /MountDir:C:\mount\windows
```

```
:: Create Panther folder and copy unattend.xml
mkdir C:\mount\windows\Windows\Panther
copy unattend.xml C:\mount\windows\Windows\Panther\unattend.xml

:: Apply unattend (enables S mode)
DISM /Image:C:\mount\windows /Apply-Unattend:C:\mount\windows\Windows\Panther\unattend.xml

:: Add Manufacturing Mode registry key
reg load HKLM\Windows10S C:\mount\windows\Windows\System32\config\SYSTEM
reg add HKLM\Windows10S\ControlSet001\Control\CI\Policy /v ManufacturingMode /t REG_DWORD /d 1
/f
reg unload HKLM\Windows10S
```

4. (Optional) Add Drivers / Language Packs / UWP Apps

While the image is still mounted:
cmd

```
:: Example – add drivers
DISM /Image:C:\mount\windows /Add-Driver /Driver:C:\Drivers /Recurse

:: Example – add language pack
DISM /Image:C:\mount\windows /Add-Package /PackagePath:C:\LanguagePacks\Microsoft-Windows-
Client-Language-Pack_x64_de-de.cab
```

Only use supported (signed / Store / MSIX) components.

5. Unmount and Commit

cmd

```
DISM /Unmount-Image /MountDir:C:\mount\windows /Commit
```

6. Deploy Image to Reference PC and Boot into Audit Mode

1. Boot the reference PC from WinPE.

How to Boot the Reference PC into WinPE

You need a **bootable WinPE USB** (created with the Windows ADK). Then force the reference PC to boot from that USB instead of the internal drive.

Part 1: Create a Bootable WinPE USB (on your Technician PC)

1. Install the **Windows ADK + Windows PE add-on** (if you haven't already).
2. Open **Deployment and Imaging Tools Environment** as **Administrator**.
3. Create the working files:
cmd

```
copy /b amd64 C:\WinPE_amd64
```

(Use arm64 instead of amd64 if the reference PC is ARM-based.)

4. Plug in a USB drive (8 GB or larger is recommended). **Warning:** The next step will erase everything on the USB.
5. Create the bootable USB:
cmd

```
MakeWinPEMedia /UFD C:\WinPE_amd64 X:
```

- Replace X: with the actual drive letter of your USB stick.
- On newer ADK versions (December 2024+), you can add /bootex for the newer UEFI 2023 signing:
cmd

```
MakeWinPEMedia /UFD C:\WinPE_amd64 X: /bootex
```

6. When finished, safely eject the USB. It is now bootable.

Optional - Multi-partition USB (recommended if you want to store large WIM files > 4 GB): Create a small FAT32 partition for WinPE and a larger NTFS partition for images. See Microsoft's "Create a multipartition USB drive" documentation for the exact DiskPart commands.

Part 2: Boot the Reference PC into WinPE

1. Insert the WinPE USB into the **reference PC**.
 2. Restart (or power on) the reference PC.
 3. Immediately press the key that opens the **Boot Menu** (or Firmware/BIOS settings).
Common keys:
 - **F12, F10, F9, Esc, or Del**
 - The exact key depends on the manufacturer (Dell, HP, Lenovo, ASUS, etc.). It is usually shown briefly on the splash screen.
 4. In the Boot Menu:
 - Select the **USB drive**.
 - Prefer the **UEFI** entry if available (e.g. "UEFI: USB..." or "EFI USB Device").
 - Avoid Legacy/CSM mode if possible (modern Windows 11 deployments use UEFI).
 5. The PC should now boot into Windows PE. You will see a black command-prompt window. After a short delay, wpeinit runs automatically and initializes networking/drivers.
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Troubleshooting if it doesn't boot

Problem	Solution
USB not listed in boot menu	Try a different USB port (prefer USB 2.0 if available). Disable Secure Boot temporarily if needed.
Boots to internal Windows instead	Change boot order in BIOS/UEFI so USB is first, or use the one-time Boot Menu every time.
“No bootable device” or hangs	Recreate the USB with MakeWinPEMedia. Make sure you used the correct architecture (amd64 / arm64).
UEFI vs Legacy	Force UEFI mode in the firmware. On some systems you may need to manually select \EFI\BOOT\BOOTX64.EFI.
Secure Boot blocks it	Temporarily disable Secure Boot, or use the /bootex option with a recent ADK.

RESUME >

- 1. Apply the image (example):

Quick Tip

Once you are in WinPE you can type:

cmd

```
diskpart
list vol
```

completely wipe the disk and create clean partitions (UEFI example):

```
diskpart
select disk 0
clean
convert gpt
create partition efi size=100
format quick fs=fat32 label="System"
assign letter=S
create partition msr size=16
create partition primary
format quick fs=ntfs label="Windows_11S"
assign letter=C
exit
```

cmd

```
DISM /Apply-Image /ImageFile:D:\Images\Windows11S.wim /Index:1 /ApplyDir:W:\
W:\Windows\System32\bcdboot W:\Windows /s S:
```

3. Restart the PC. It will boot into **Audit Mode** because of the Manufacturing Mode key (and if you configured Sysprep to Audit earlier, or force it).

7. Customize in Audit Mode

You can now freely:

- Install drivers
- Install supported apps
- Run scripts
- Use cmd / PowerShell / regedit

Do all customizations now.

8. Remove the Manufacturing Mode Key (Critical)

While still in Audit Mode, open an elevated Command Prompt:

cmd

```
reg delete HKLM\SYSTEM\ControlSet001\Control\CI\Policy /v ManufacturingMode /f
```

Verify it is gone:

cmd

```
reg query HKLM\SYSTEM\ControlSet001\Control\CI\Policy
```

9. Sysprep and Capture

Still in Audit Mode:

cmd

```
:: Generalize and prepare for OOBE  
%windir%\System32\Sysprep\sysprep.exe /oobe /generalize /shutdown
```

After the PC shuts down, boot back into WinPE and capture the image:

cmd

```
DISM /Capture-Image /ImageFile:D:\Images\Windows11S-Final.wim /CaptureDir:C:\ /Name:"Windows  
11 Home S Mode"
```

you do not need to capture the image if you are only going to use it on this same machine.

10. Recovery Exclusion (Recommended) < I didn't do this

Create ExcludeManufacturingMode.xml:

XML

```
<?xml version="1.0" encoding="UTF-8"?>
<migration urlid="https://www.microsoft.com/migration/1.0/migxmlex/ExcludeManufacturingMode">
  <component type="System">
    <displayName>Exclude manufacturing regkey</displayName>
    <role role="Settings">
      <rules context="System">
        <unconditionalExclude>
          <objectSet>
            <pattern type="Registry">HKLM\SYSTEM\CurrentControlSet\Control\CI\Policy
[ManufacturingMode]</pattern>
          </objectSet>
        </unconditionalExclude>
      </rules>
    </role>
  </component>
</migration>
```

Use this file with ScanState when creating the recovery package.

Quick Reference Commands

Action	Command
Mount image	DISM /Mount-Image /ImageFile:... /Index:1 /MountDir:C:\mount\windows
Apply unattend (S mode)	DISM /Image:C:\mount\windows /Apply-Unattend:...
Add Manufacturing Mode	reg add HKLM\Windows10S\ControlSet001\Control\CI\Policy /v ManufacturingMode /t REG_DWORD /d 1 /f
Remove Manufacturing Mode	reg delete HKLM\SYSTEM\ControlSet001\Control\CI\Policy /v ManufacturingMode /f
Unmount + commit	DISM /Unmount-Image /MountDir:C:\mount\windows /Commit
Sysprep	sysprep /oobe /generalize /shutdown

End of Guide

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