YI'S SOLUTIONS

DEPLOY

When deploying an operating system, learning how to deploy it is very important.

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Chapter 1 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, all remaining disk space, can be used for storing temporary files and backup data.

  Partition 2, allocate 16GB of disk space to store Windows system installation files.

  Partition 3: 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:\OS_11\Sources\Install.wim, Index number: 1, Apply to drive letter: Q, Command line:

   ```
   Expand-WindowsImage -ImagePath "D:\OS_11\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. 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.

2.1.1. 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>
```

2.1.2. 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.

2.1.2.1. Delete

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

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

2.1.2.2. Replace

From the beginning <OOBE> to </OOBE>

```
<OOBE>
  <ProtectYourPC>3</ProtectYourPC>
  <HideEULAPage>true</HideEULAPage>
  <HideWirelessSetupInOOBE>true</HideWirelessSetupInOOBE>
</OOBE>
```

YI'S SOLUTIONS

This copy of the autonomous driving configuration solution belongs to Yi's Solutions content, learn more:

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

Author: Yi

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

Document Version: 1.1

Translation: Chinese to English version

All scripts included in the document, last test time: 12 / 2025

Document last updated: 12 / 2025

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