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**Supported Windows versions**

- Windows 10 and Windows Server 2016
- Windows 8.1 and Windows Server 2012 R2
- Windows 8 and Windows Server 2012
- Windows 7 and Windows Server 2008 R2
- Windows Vista and Windows Server 2008

**Unsupported Windows versions**

- Windows XP and Windows Server 2003

**See also**

- [Download the .NET Framework](#)
- [Troubleshoot blocked .NET Framework installations and un installations](#)
- [Install the .NET Framework for developers](#)
- [Deploy the .NET Framework for developers](#)
The .NET Framework is required to run many applications on Windows. The instructions in this article should help you install the .NET Framework versions that you need. The .NET Framework 4.8 is the latest available version.

You may have arrived on this page after trying to run an application and seeing a dialog on your machine similar to the following one:

![Application.exe - This application could not be started.](image)

This application requires one of the following versions of the .NET Framework:
- .NET Framework Version=v4.7.1

Do you want to install this .NET Framework version now?

[Yes] [No]

.NET Framework 4.8

The .NET Framework 4.8 is included with:

- Windows 10 May 2019 Update

.NET Framework 4.8 can be used to run applications built for the .NET Framework 4.0 through 4.7.2.

You can install .NET Framework 4.8 on:

- Windows 10 October 2018 Update (version 1809)
- Windows 10 April 2018 Update (version 1803)
- Windows 10 Fall Creators Update (version 1709)
- Windows 10 Creators Update (version 1703)
- Windows 10 Anniversary Update (version 1607)
- Windows Server 2019
- Windows Server, version 1809
- Windows Server, version 1803
- Windows Server 2016

The .NET Framework 4.8 is not supported on:

- Windows 10 1507
- Windows 10 1511

If you’re using Windows 10 1507 or 1511 and you want to install the .NET Framework 4.8, you first need to upgrade to a later Windows 10 version.
.NET Framework 4.6.2

The .NET Framework 4.6.2 is the latest supported .NET Framework version on Windows 10 1507 and 1511.

The .NET Framework 4.6.2 supports apps built for the .NET Framework 4.0 through 4.6.2.

.NET Framework 3.5

Follow the instructions to install the .NET Framework 3.5 on Windows 10.

The .NET Framework 3.5 supports apps built for the .NET Framework 1.0 through 3.5.

Additional information

.NET Framework 4.x versions are in-place updates to earlier versions. That means the following:

- You can only have one version of the .NET Framework 4.x installed on your machine.
- You cannot install an earlier version of the .NET Framework on your machine if a later version is already installed.
- 4.x versions of the .NET Framework can be used to run applications built for the .NET Framework 4.0 through that version. For example, .NET Framework 4.7 can be used to run applications built for the .NET Framework 4.0 through 4.7. The latest version (the .NET Framework 4.8) can be used to run applications built with all versions of the .NET Framework starting with 4.0.

For a list of all the versions of the .NET Framework available to download, see the .NET Downloads page.

Help

If you cannot get the correct version of the .NET Framework installed, you can contact Microsoft for help.

See also

- .NET Downloads
- Troubleshoot blocked .NET Framework installations and uninstallations
- Install the .NET Framework for developers
The .NET Framework is required to run many applications on Windows. You can use the following instructions to install it. You may have arrived on this page after trying to run an application and seeing the following dialog on your machine.

These instructions will help you install the .NET Framework versions you need. The .NET Framework 4.8 is the latest version. It is supported on Windows 8.1 and Windows Server 2012 R2 and is included with the Windows 10 May 2019 Update.

**.NET Framework 4.8**

The .NET Framework 4.8 can be used to run applications built for .NET Framework 4.0 or later.

**.NET Framework 3.5**

Follow the instructions to install the .NET Framework 3.5 on Windows 8.1 and 10.

The .NET Framework 3.5 supports apps built for .NET Framework 1.0 through 3.5.

**Help**

You can contact Microsoft for help if you cannot get the correct version of the .NET Framework installed.

**See also**

- Download the .NET Framework
- Troubleshoot blocked .NET Framework installations and uninstallations
- Install the .NET Framework for developers
The .NET Framework is required to run many applications on Windows. You can use the following instructions to install it. You may have arrived on this page after trying to run an application and seeing the following dialog on your machine.

These instructions will help you install the .NET Framework versions you need. The .NET Framework 4.8 is the latest version. It is supported on Windows Server 2012 but is not supported on Windows 8. It is included with the Windows 10 May 2019 Update).

**.NET Framework 4.8**

The .NET Framework 4.8 is supported on Windows Server 2012. It is not supported on Windows 8.

The .NET Framework 4.8 can be used to run applications built for .NET Framework 4.0 or later.

**.NET Framework 4.6**

The .NET Framework 4.6 is the latest supported .NET Framework version on Windows 8.

The .NET Framework 4.6 supports apps built for .NET Framework 4.0 through 4.6.

**.NET Framework 3.5**

Follow the instructions to install the .NET Framework 3.5 on Windows 8 and 10.

The .NET Framework 3.5 supports apps built for .NET Framework 1.0 through 3.5.

**Help**

You can contact Microsoft for help if you cannot get the correct version of the .NET Framework installed.

**See also**

- Download the .NET Framework
- Troubleshoot blocked .NET Framework installations and uninstallations
- Install the .NET Framework for developers
The .NET Framework is required to run many applications on Windows. You can use the following instructions to install it. You may have arrived on this page after trying to run an application and seeing the following dialog on your machine.

These instructions will help you install the .NET Framework versions you need. The .NET Framework 4.8 is the latest version. It is supported on Windows 7 SP1 and Windows Server 2008 R2 and is included with Windows 10 May 2019 Update.

.NET Framework 4.8

The .NET Framework 4.8 can be used to run applications built for .NET Framework 4.0 or later.

.NET Framework 3.5

The .NET Framework 3.5 is included with Windows 7.

The .NET Framework 3.5 supports apps built for .NET Framework 1.0 through 3.5.

Help

You can contact Microsoft for help if you cannot get the correct version of the .NET Framework installed.

See also

- Download the .NET Framework
- Troubleshoot blocked .NET Framework installations and uninstallations
- Install the .NET Framework for developers
Install the .NET Framework on Windows Vista and Windows Server 2008

2 minutes to read • Edit Online

The .NET Framework is required to run many applications on Windows. You can use the following instructions to install it. You may have arrived on this page after trying to run an application and seeing the following dialog on your machine.

These instructions will help you install the .NET Framework versions you need. The .NET Framework 4.8 is the latest version. It is not supported on Windows Vista and Windows Server 2008. It is included with Windows 10 May 2019 Update.

.NET Framework 4.6

The .NET Framework 4.6 is the latest supported .NET Framework version on Windows Vista and Windows Server 2008.

The .NET Framework 4.6 supports applications built for .NET Framework 4.0 through 4.6.

.NET Framework 3.5

You can install the .NET Framework 3.5 on Windows Vista.

The .NET Framework 3.5 supports apps built for .NET Framework 1.0 through 3.5.

See also

- Download the .NET Framework
- Troubleshoot blocked .NET Framework installations and-uninstallations
- Install the .NET Framework for developers
Install the .NET Framework on Windows XP and Windows Server 2003

2 minutes to read • Edit Online

NOTE
Windows XP is no longer supported by Microsoft. We recommend you upgrade to Windows 10, which is supported and includes the latest version of the .NET Framework. This document is provided solely as a helpful troubleshooting guide.

The .NET Framework is required to run many applications on Windows. You can use the following instructions to install it. You may have arrived on this page after trying to run an application and seeing the following dialog on your machine.

These instructions will help you install the .NET Framework versions you need. The .NET Framework 4.8 is the latest version. It is not supported on Windows XP and Windows Server 2003. It is included with Windows 10 May 2019 Update.

.NET Framework 4.0.3

The .NET Framework 4.0.3 is the latest supported .NET Framework version on Windows XP and Windows Server 2003. The .NET Framework 4.0.3 requires that the .NET Framework 4 is installed first. Both of these .NET Framework versions are no longer supported by Microsoft.

.NET Framework 4

You can install the .NET Framework 4 on Windows XP. It’s no longer supported by Microsoft.

.NET Framework 3.5

You can install the .NET Framework 3.5 on Windows XP.

The .NET Framework 3.5 can be used to run applications built for .NET Framework 1.0 through 3.5.

See also

- Download the .NET Framework
- Troubleshoot blocked .NET Framework installations and uninstallations
- Install the .NET Framework for developers
Install the .NET Framework for developers
12 minutes to read • Edit Online

.NET is an integral part of many apps running on Windows and provides common functionality for those apps to run. For developers, the .NET Framework provides a comprehensive and consistent programming model for building apps that have visually stunning user experiences and seamless and secure communication.

NOTE
This topic is intended for developers who either want to install the .NET Framework on their own system or who want to install it with their applications. For users interested in installing the .NET Framework, see the individual topics that discuss installing the .NET Framework on specific operating systems, such as Install the .NET Framework on Windows 10 and Windows Server 2016.

This article provides links for installing all versions of the .NET Framework from .NET Framework 4.5 to .NET Framework 4.8 on your computer. If you’re a developer, you can also use these links to download and redistribute the .NET Framework with your apps. For information on deploying a version of the .NET Framework with your app, see .NET Framework deployment guide for developers.

IMPORTANT
All .NET Framework versions since .NET Framework 4 are in-place updates, so only a single 4.x version can be present on a system. In addition, particular versions of the .NET Framework are pre-installed on some versions of the Windows operating system. This means that:

- If there's a later 4.x version installed on the machine already, you can't install a previous 4.x version.
- If the OS comes pre-installed with a particular .NET Framework version, you can't install a previous 4.x version on the same machine.
- If you install a later version, you don't have to first uninstall the previous version.

For more information about versions of the .NET Framework and how to determine which versions are installed on a computer, see Versions and Dependencies and How to: Determine Which .NET Framework Versions Are Installed.

NOTE
For information on the .NET Framework 3.5, see Install the .NET Framework 3.5 on Windows 10, Windows 8.1, and Windows 8.

Use the following table for quick links, or read further for details. To view the system requirements for the .NET Framework before installation, see System Requirements. For help with troubleshooting, see Troubleshooting.
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<th>DEVELOPER INSTALLATION</th>
<th>REDISTRIBUTABLE INSTALLATION</th>
<th>PLATFORM SUPPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.8</td>
<td>.NET Framework 4.8 Developer Pack</td>
<td>Download Center 4.8 web installer</td>
<td>Included in: Windows 10 May 2019 Update</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Download Center 4.7.2 offline installer</td>
<td>You can install on: Windows 10 Fall Creators Update Windows 10 Creators Update Windows 10 Anniversary Update Windows 8.1 and earlier Windows Server, version 1709 and earlier (for a full list, see system requirements)</td>
</tr>
<tr>
<td>.NET FRAMEWORK VERSION</td>
<td>DEVELOPER INSTALLATION</td>
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<td>PLATFORM SUPPORT</td>
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<tr>
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</tr>
<tr>
<td>4.7.1</td>
<td>NET Framework 4.7.1 Developer Pack</td>
<td>Download page for 4.7.1 web installer</td>
<td>Included in: Windows 10 Fall Creators Update Windows Server, version 1709 You can install on: Windows 10 Creators Update Windows 10 Anniversary Update Windows 8.1 and earlier Windows Server 2016 and earlier (for a full list, see system requirements)</td>
</tr>
<tr>
<td>4.7</td>
<td>NET Framework 4.7 Developer Pack</td>
<td>Download page for 4.7 web installer</td>
<td>Included in: Windows 10 Creators Update You can install on: Windows 10 Anniversary Update Windows 8.1 and earlier Windows Server 2016 and earlier (for a full list, see system requirements)</td>
</tr>
<tr>
<td>4.6.2</td>
<td>NET Framework 4.6.2 Developer Pack</td>
<td>Download page for 4.6.2 web installer</td>
<td>Included in: Windows 10 Anniversary Update You can install on: Windows 10 November Update Windows 10 Windows 8.1 and earlier Windows Server 2012 R2 and earlier (for a full list, see system requirements)</td>
</tr>
<tr>
<td>.NET FRAMEWORK VERSION</td>
<td>DEVELOPER INSTALLATION</td>
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</tr>
<tr>
<td>4.6.1</td>
<td>NET Framework 4.6.1 Developer Pack</td>
<td>Download page for 4.6.1 web installer Download page for 4.6.1 offline installer</td>
<td>You can install on: Windows 10 Windows 8.1 and earlier Windows Server 2012 R2 and earlier (for a full list, see system requirements)</td>
</tr>
<tr>
<td>4.6</td>
<td>Included in Visual Studio 2015. Microsoft .NET Framework 4.6 targeting pack</td>
<td>Download page for 4.6 web installer Download page for 4.6 offline installer</td>
<td>Included in: Windows 10 Visual Studio 2015 You can also install on: Windows 8.1 and earlier Windows Server 2012 R2 and earlier (for a full list, see system requirements)</td>
</tr>
<tr>
<td>4.5.2</td>
<td>Microsoft .NET Framework 4.5.2 Developer Pack For use with Visual Studio 2013, Visual Studio 2012, or other IDEs</td>
<td>Download page for 4.5.2 web installer Download page for 4.5.2 offline installer</td>
<td>You can install on: Windows 8.1 and earlier Windows Server 2012 R2 and earlier (for a full list, see system requirements)</td>
</tr>
<tr>
<td>4.5.1</td>
<td>Microsoft .NET Framework 4.5.1 Developer Pack For use with Visual Studio 2013, Visual Studio 2012 or other IDEs</td>
<td>Download page for 4.5.1 web installer Download page for 4.5.1 offline installer</td>
<td>Included in: Windows 8.1 Windows Server 2012 R2 Visual Studio 2013 You can also install on: Windows 8 and earlier Windows Server 2012 and earlier (for a full list, see system requirements)</td>
</tr>
</tbody>
</table>
You can install the **Developer Pack** for a specific version of the .NET Framework, if one is available, on all supported platforms.

You can install the **Web or Offline installer** on:

- Windows 8.1 and earlier
- Windows Server 2012 R2 and earlier

For a full list, see [System Requirements](#).

For a general introduction to the .NET Framework for both users and developers, see [Getting Started](#). For information about deploying the .NET Framework with your app, see the [deployment guide](#). To read about the architecture and key features of the .NET Framework, see the [overview](#).

**Installation choices**

Install a developer targeting pack to develop against the most recent version of the .NET Framework in Visual Studio or another development environment, or download the .NET Framework redistributable for distribution with your app or control.

**To install the .NET Framework Developer Pack or Targeting Pack**

A targeting pack lets your app target a specific version of the .NET Framework when developing in Visual Studio and some other development environments. A developer pack includes a specific version of the .NET Framework and its accompanying SDK along with its corresponding targeting pack.

The developer pack for .NET Framework 4.5.1 or 4.5.2, the targeting pack for .NET Framework 4.6, and the developer pack for .NET Framework 4.6.1, 4.6.2, 4.7, 4.7.1, 4.7.2, or 4.8 provides a particular .NET Framework’s version of the reference assemblies, language packs, and IntelliSense files for use in an integrated development environment such as Visual Studio. If you are using Visual Studio, the developer pack or targeting pack also adds the installed version of the .NET Framework to the target choices when you create a new project. Choose one of the following:

- **Microsoft .NET Framework 4.8 Developer Pack**
- **Microsoft .NET Framework 4.7.2 Developer Pack**
- **Microsoft .NET Framework 4.7.1 Developer Pack**
- **Microsoft .NET Framework 4.7 Developer Pack**
To install or download the .NET Framework redistributable

- **Microsoft .NET Framework 4.6.2 Developer Pack**
- **Microsoft .NET Framework 4.6.1 Developer Pack**
- **Microsoft .NET Framework 4.6 Targeting Pack**
- **.NET Framework 4.5.2 Developer Pack** to install version 4.5.2 on Windows 8.1 or earlier, Visual Studio 2013, Visual Studio 2012, or other IDEs.
- **.NET Framework 4.5.1 Developer Pack** to install version 4.5.1 on Visual Studio 2012 or other IDEs.

From the developer pack download page, choose **Download**. Next choose **Run** or **Save**, and follow the instructions when prompted. You can also install the developer pack or targeting pack for a specific version of the .NET Framework by selecting it from the optional components in the **.NET desktop development** workload in the Visual Studio Installer, as the following figure shows.

![Visual Studio Installer](image)

When you target a particular version of the .NET Framework, your application is built by using the reference assemblies that are included with that version's developer pack. At runtime, assemblies are resolved from the Global Assembly Cache, and the reference assemblies are not used.

When building an application from Visual Studio or using MSBuild from the command line, MSBuild may display error MSB3644, "The reference assemblies for framework "framework-version" were not found." To address the error, download the developer pack or the targeting pack for that version of the .NET Framework.

**To install or download the .NET Framework redistributable**

Installers download the .NET Framework components for an app or control that targets those versions of the .NET Framework. These components must be installed on each computer where the app or control runs. These installers are redistributable, so you can include them in the setup program for your app.

The download page is provided in several languages, but most of the downloads are provided in English only. For additional language support, you must install a language pack.

Two types of redistributable installers are available:

- **Web installer** (web bootstrapper) downloads the required components and the language pack that matches the operating system of the installation computer from the web. This package is much smaller than the offline installer but requires a consistent Internet connection. You can download the **standalone**
language packs to install additional language support.

- **Offline installer** (standalone redistributable) contains all the required components for installing the .NET Framework but doesn't contain language packs. This download is larger than the web installer. The offline installer doesn't require an Internet connection. After you run the offline installer, you can download the standalone language packs to install language support. Use the offline installer if you can't rely on having a consistent Internet connection.

Both web and offline installers are designed for x86-based and x64-based computers (see system requirements), but do not support Itanium-based computers.

1. Open the download page for the .NET Framework version you want to install:
   - .NET Framework 4.8 (web installer or offline installer)
   - .NET Framework 4.7.2 (web installer or offline installer)
   - .NET Framework 4.7.1 (web installer or offline installer)
   - .NET Framework 4.7 (web installer or offline installer)
   - .NET Framework 4.6.2 (web installer or offline installer)
   - .NET Framework 4.6.1 (web installer or offline installer)
   - .NET Framework 4.6 (web installer or offline installer)
   - .NET Framework 4.5.2 (web installer or offline installer)
   - .NET Framework 4.5.1 (web installer or offline installer)
   - .NET Framework 4.5

2. Select the language for the download page. This option does not download the localized resources of the .NET Framework; it only affects the text displayed on the download page.

3. Choose **Download**.

4. If prompted, select the download that matches your system architecture, and then choose **Next**.

5. When the download prompt appears do **ONE** of the following:
   - If you want to install the .NET Framework on your computer, choose **Run**, and then follow the prompts on your screen.
   - If you want to download the .NET Framework for redistribution, choose **Save**, and then follow the prompts on your screen.

6. If you want to download resources for additional languages, follow the instructions in the next section to install one or more language packs.

**NOTE**
If you encounter any problems during the installation, see Troubleshooting.

**Installation notes:**
- .NET Framework 4.5.1 and 4.5.2, as well as .NET Framework 4.6, 4.6.1, 4.6.2, 4.7, 4.7.1, 4.7.2, and 4.8 are in-place updates to .NET Framework 4.5.
- .NET Framework 4.5, its point releases, .NET Framework 4.6 and its point releases, .NET Framework 4.7
To install language packs

Language packs are executable files that contain the localized resources (such as translated error messages and UI text) for supported languages. If you don’t install a language pack, .NET Framework error messages and other text are displayed in English. Note that the web installer automatically installs the language pack that matches your operating system, but you can download additional language packs to your computer. The offline installers don’t include any language packs.

1. Open the language pack download page for the .NET Framework version you’ve installed:
   - .NET Framework 4.8 language packs
   - .NET Framework 4.7.2 language packs
   - .NET Framework 4.7.1 language packs
   - .NET Framework 4.7 language packs
   - .NET Framework 4.6.2 language packs
   - .NET Framework 4.6.1 language packs
   - .NET Framework 4.6 language packs
   - .NET Framework 4.5.2 language packs
   - .NET Framework 4.5.1 language packs
   - .NET Framework 4.5 language packs

2. In the language list, choose the language you want to download, and wait a few seconds for the page to reload in that language.

3. Choose Download.
The following table lists the supported languages.

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<tr>
<th>LANGUAGE</th>
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<td>Czech</td>
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<tr>
<td>Danish</td>
<td>da</td>
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<tr>
<td>Dutch</td>
<td>nl</td>
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<tr>
<td>Finnish</td>
<td>fi</td>
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<tr>
<td>English (USA)</td>
<td>en-US</td>
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<tr>
<td>French</td>
<td>fr</td>
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<tr>
<td>German</td>
<td>de</td>
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<tr>
<td>Greek</td>
<td>el</td>
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<tr>
<td>Hebrew</td>
<td>he</td>
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<tr>
<td>Hungarian</td>
<td>hu</td>
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<tr>
<td>Italian</td>
<td>it</td>
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<tr>
<td>Japanese</td>
<td>ja</td>
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<td>Korean</td>
<td>ko</td>
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<tr>
<td>Norwegian</td>
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<td>Polish</td>
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<td>Portuguese (Brazil)</td>
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<td>Portuguese (Portugal)</td>
<td>pt-PT</td>
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<tr>
<td>Russian</td>
<td>ru</td>
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<tr>
<td>Simplified Chinese</td>
<td>zh-CHS</td>
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<tr>
<td>Spanish</td>
<td>es</td>
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<tr>
<td>Swedish</td>
<td>sv</td>
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<tr>
<td>Traditional Chinese</td>
<td>zh-CHT</td>
</tr>
<tr>
<td>Turkish</td>
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</tbody>
</table>
Next steps

- If you’re new to the .NET Framework, see the overview for an introduction to key concepts and components.

- For new features and improvements in the .NET Framework 4.5 and all later versions, see What's New.

- For detailed information about deploying the .NET Framework with your app, see Deployment Guide for Developers.

- For changes that affect the deployment of the .NET Framework with your app, see Reducing System Restarts During .NET Framework 4.5 Installations.

- For information about migrating your app from the .NET Framework 4 to .NET Framework 4.5 or one of its point releases, see the migration guide.

- See .NET Framework Reference Source to browse through .NET Framework source code online. The reference source is also available on GitHub. You can download the reference source for offline viewing and step through the sources (including patches and updates) during debugging. For more information, see the blog entry A new look for .NET Reference Source.

See also

- Deployment Guide for Developers
- Deployment Guide for Administrators
- Install the .NET Framework 3.5 on Windows 10, Windows 8.1, and Windows 8
- Troubleshoot Blocked .NET Framework Installations and Uninstallations
In some situations, your .NET Framework installation can become damaged and require repairs. This might be the case if your app crashes right after you try to start it or if you cannot install newer .NET Framework versions.

You can repair your .NET Framework install using the .NET Framework Repair Tool.

If your app still isn’t starting after repairing the .NET Framework, then the app might have a problem. In that case, you should contact the app publisher.
Troubleshoot blocked .NET Framework installations and uninstallations

When you run the web or offline installer for the .NET Framework 4.5 or later versions, you might encounter an issue that prevents or blocks the installation of the .NET Framework. The following table lists possible blocking issues and provides links to troubleshooting information.

In Windows 8 and above, the .NET Framework is an operating system component and cannot be independently uninstalled. Updates to the .NET Framework appear in the Installed Updates tab of the Control Panel Programs and Features app. For operating systems on which the .NET Framework is not preinstalled, the .NET Framework appears in the Uninstall or change a program tab (or the Add/Remove programs tab) of the Program and Features app in Control Panel. For information on the Windows versions on which the .NET Framework is preinstalled, see System Requirements.

IMPORTANT

Because the 4.x versions of the .NET Framework are in-place updates, you cannot install an earlier version of the .NET Framework 4.x on a system that already has a later version installed. For example, on a system with Windows 10 Fall Creators Update, you cannot install the .NET Framework 4.6.2, since the .NET Framework 4.7.1 is preinstalled with the operating system.

You can determine which versions of the .NET Framework are installed on a system. See How to: Determine Which .NET Framework Versions Are Installed for more information.

In this table, 4.5.x refers to the .NET Framework 4.5 and its point releases, 4.5.1, and 4.5.2, 4.6.x refers to the .NET Framework 4.6 and its point releases, 4.6.1 and 4.6.2, 4.7.x refers to the .NET Framework 4.7 and its point releases, 4.7.1 and 4.7.2, and 4.8 refers to .NET Framework 4.8.

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<th>BLOCKING MESSAGE</th>
<th>FOR MORE INFORMATION OR TO RESOLVE THE ISSUE</th>
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<tr>
<td>Uninstalling the Microsoft .NET Framework may cause some applications to cease</td>
<td>In general, you should not uninstall any</td>
</tr>
<tr>
<td>function.</td>
<td>versions of the .NET Framework that are</td>
</tr>
<tr>
<td></td>
<td>installed on your computer, because an</td>
</tr>
<tr>
<td></td>
<td>application you use may depend on a specific</td>
</tr>
<tr>
<td></td>
<td>version of the .NET Framework. For more</td>
</tr>
<tr>
<td></td>
<td>information, see The .NET Framework for</td>
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<td></td>
<td>users in the Getting Started guide.</td>
</tr>
<tr>
<td>.NET Framework 4.5.x/4.6.x/4.7.x (ENU) or a later version is already installed on</td>
<td>No action necessary.</td>
</tr>
<tr>
<td>this computer.</td>
<td>To determine which versions of the .NET</td>
</tr>
<tr>
<td></td>
<td>Framework are installed on a system, see</td>
</tr>
<tr>
<td></td>
<td>How to: Determine Which .NET Framework</td>
</tr>
<tr>
<td></td>
<td>Versions Are Installed.</td>
</tr>
<tr>
<td>The .NET Framework 4.5.x/4.6.x/4.7.x (language) requires the .NET Framework</td>
<td>You must install the English version of the</td>
</tr>
<tr>
<td>4.5.x/4.6.x/4.7.x/4.8. Please install the .NET Framework 4.5.x/4.6.x/4.7.x/4.8</td>
<td>specified .NET Framework release before</td>
</tr>
<tr>
<td>from the Download Center and rerun Setup.</td>
<td>installing a language pack. For more</td>
</tr>
<tr>
<td></td>
<td>information, see the section on To install</td>
</tr>
<tr>
<td></td>
<td>language packs in the installation guide.</td>
</tr>
<tr>
<td>BLOCKING MESSAGE</td>
<td>FOR MORE INFORMATION OR TO RESOLVE THE ISSUE</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Cannot install the .NET Framework 4.5.x/4.6.x/4.7.x/4.8. Other applications on your computer are not compatible with this program.</td>
<td>The most likely cause of this message is that a preview or RC version of the .NET Framework was installed. Uninstall the preview or RC version and rerun Setup.</td>
</tr>
<tr>
<td>-or-</td>
<td></td>
</tr>
<tr>
<td>Other applications on your computer are not compatible with this program.</td>
<td>The package you are installing doesn't uninstall preview or RC releases of the .NET Framework.</td>
</tr>
<tr>
<td>.NET Framework 4.5.x/4.6.x/4.7.x/4.8 cannot be uninstalled using this package. To uninstall .NET Framework 4.5.x/4.6.x/4.7.x/4.8 from your computer, go to Control Panel, choose Programs and Features, choose View installed updates, select Update for Microsoft Windows (KB2828152) and then choose Uninstall.</td>
<td>Uninstall the preview or RC release from Control Panel.</td>
</tr>
<tr>
<td>Cannot uninstall the .NET Framework 4.5.x/4.6.x/4.7.x/4.8. Other applications on your computer are dependent on this program.</td>
<td>In general, you shouldn't uninstall any versions of the .NET Framework from your computer, because an application you use may depend on a specific version of the .NET Framework. For more information, see The .NET Framework for users in the Getting Started guide.</td>
</tr>
<tr>
<td>The .NET Framework 4.5.x/4.6.x/4.7.x/4.8 redistributable does not apply to this operating system. Please download the .NET Framework 4.5.x/4.6.x/4.7.x/4.8 for your operating system from the Microsoft Download Center.</td>
<td>You may be trying to install .NET Framework 4.5.1, 4.5.2, 4.6, 4.6.1, 4.6.2, 4.7, 4.7.1, 4.7.2, or 4.8 on a platform that isn't supported, or you have chosen the installation package that does not include the components for all supported operating systems. Run the installation again by using the offline installer (for 4.5.1, for 4.5.2, for 4.6, for 4.6.1, for 4.6.2, for 4.7), for 4.7.1, for 4.7.2, or for 4.8. For more information, see the installation guide and system requirements for supported operating systems.</td>
</tr>
<tr>
<td>The update corresponding to KB&lt;number&gt; needs to be installed before you can install this product.</td>
<td>Installation of the .NET Framework requires that a KB update be installed before installing the .NET Framework. Install the update, and then begin the .NET Framework installation again.</td>
</tr>
<tr>
<td></td>
<td>For example, installation of updated versions of the .NET Framework on Windows 8.1, Windows RT 8.1, and Windows Server 2012 R2 requires that the update corresponding to KB 2919355 be installed.</td>
</tr>
<tr>
<td>Your computer is currently running a Server Core installation of the Windows Server 2008 operating system. The .NET Framework 4.5.x requires a later release of the operating system. Please install Windows Server 2008 R2 SP1 or higher and rerun .NET Framework 4.5.x setup.</td>
<td>The .NET Framework 4.5.1 and 4.5.2 are supported in the Server Core role with Windows Server 2008 R2 SP1 or later. See System Requirements.</td>
</tr>
<tr>
<td>You do not have sufficient privileges to complete this operation for all users of this computer. Log on as an administrator and rerun Setup.</td>
<td>You must be an administrator on the computer to install the .NET Framework.</td>
</tr>
<tr>
<td>BLOCKING MESSAGE</td>
<td>FOR MORE INFORMATION OR TO RESOLVE THE ISSUE</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>Setup cannot continue because a previous installation requires your computer to be restarted. Please restart your computer and rerun Setup.</td>
<td>A restart is sometimes required to fully complete an installation. Follow the instructions to restart your computer and rerun Setup. In rare cases, you may be asked to restart your system more than once if Windows has detected a number of missing updates and is restarting to install the next update in the queue.</td>
</tr>
<tr>
<td>.NET Framework Setup cannot be run in Program Compatibility Mode.</td>
<td>See the Program Compatibility Issues section later in this article.</td>
</tr>
<tr>
<td>.NET Framework 4.5.x/4.6.x/4.7.x/4.8 has not been installed because the component store has been corrupted.</td>
<td>See Fix Windows Update errors by using the DISM or System Update Readiness tool for more information.</td>
</tr>
<tr>
<td>Setup cannot run because the Windows Installer Service is not available on this computer.</td>
<td>See &quot;The Windows Installer Service Could Not Be Access ed&quot; error when you try to install a program in Windows 7 or Windows Vista on the Microsoft Support website.</td>
</tr>
<tr>
<td>Setup may not run properly because the Windows Update Service is not available on this computer.</td>
<td>The computer may be configured to use Windows Server Update Services (WSUS) instead of Microsoft Windows Update. For more information, see the section for error code 0x800F0906 in .NET Framework 3.5 installation error: 0x800F0906, 0x800F081F, 0x800F0907. Also see How to update the Windows Update Agent to the latest version on the Microsoft Support website.</td>
</tr>
<tr>
<td>Setup may not run properly because the Background Intelligent Transfer Service (BITS) is not available on this computer.</td>
<td>See An update is available to fix a Background Intelligent Transfer Service (BITS) crash on a Windows Vista-based computer on the Microsoft Support website.</td>
</tr>
<tr>
<td>Setup may not run properly because Windows update encountered an error and displayed error code 0x80070643 or 0x643.</td>
<td>See .NET Framework update installation error: &quot;0x80070643&quot; or &quot;0x643&quot; on the Microsoft Support website.</td>
</tr>
<tr>
<td>The .NET Framework 4.5.x/4.6.x/4.7.x/4.8 is already a part of this operating system. You do not need to install the .NET Framework 4.5.x/4.6.x/4.7.x/4.8 redistributable.</td>
<td>No action. To determine which versions of the .NET Framework are installed on a system, see How to: Determine Which .NET Framework Versions Are Installed. See System Requirements for supported operating systems.</td>
</tr>
<tr>
<td>The .NET Framework 4.5.x/4.6.x/4.7.x/4.8 is not supported on this operating system.</td>
<td>See System Requirements for supported operating systems. For failed installations of the .NET Framework on Windows 7, this message typically indicates that Windows 7 SP1 is not installed. On Windows 7 systems, the .NET Framework requires Windows 7 SP1. If you are on Windows 7 and have not yet installed Service Pack 1, you will need to do so before installing the .NET Framework. For information on installing Windows 7 SP1, see Learn how to install Windows 7 Service Pack 1 (SP1).</td>
</tr>
</tbody>
</table>
Your computer is currently running a Server Core installation of Windows Server 2008 operating system. The .NET Framework 4.5.x requires a full release of the operating system or Server Core 2008 R2 SP1. Please install the full version of Windows Server 2008 SP2 or Windows Server 2008 R2 SP1 or Server Core 2008 R2 SP1 and rerun .NET Framework 4.5.x Setup.

The .NET Framework 4.5.x is already a part of this operating system but is currently turned off (Windows Server 2012 only).

This setup program requires an x86 computer. It cannot be installed on x64 or IA64 computers.

This setup program requires x64 or x86 computer. It cannot be installed on IA64 computers.

### Program compatibility issues

The installation of the .NET Framework 4.5 or its point releases fails with a 1603 error code or blocks when it’s running in Windows Program Compatibility mode. The **Program Compatibility Assistant** indicates that the .NET Framework might not have been installed correctly and prompts you to reinstall it by using the recommended setting (Program Compatibility mode). Program Compatibility mode could also have been set by the Program Compatibility Assistant on earlier failed or canceled attempts to run the .NET Framework Setup.

The .NET Framework installer cannot run in Program Compatibility mode. To resolve this blocking issue, you must use Registry Editor to ensure that the compatibility mode setting is not enabled system-wide:

1. Choose the **Start** button, and then choose **Run**.
2. In the **Run** dialog box, type "regedit", and then choose **OK**.
3. In Registry Editor, browse to the following subkeys:
   - HKEY_CURRENT_USER\SOFTWARE\Microsoft\Windows NT\CurrentVersion\AppCompatFlags\Compatibility Assistant\Persisted
   - HKEY_CURRENT_USER\SOFTWARE\Microsoft\Windows NT\CurrentVersion\AppCompatFlags\Layers
4. In the Name column, look for the .NET Framework 4.5, 4.5.1, 4.5.2, 4.6, 4.6.1, 4.6.2, 4.7, 4.7.1, or 4.7.2 download names, depending on which version you are installing, and delete these entries. For download names, see Install the .NET Framework for developers article.
5. Rerun the .NET Framework installer for version 4.5, 4.5.1, 4.5.2, or 4.6, 4.6.1, 4.6.2, 4.7, 4.7.1, or 4.7.2.

See also

- Install the .NET Framework for developers
- How to: Determine Which .NET Framework Versions Are Installed
- Versions and Dependencies
Applications that are developed for the .NET Framework typically require that a specific version of the .NET Framework be installed on your system. In some cases, you may attempt to run an application without either an installed version or the expected version of the .NET Framework present. This often produces an error dialog box like the following:

This typically indicates one of the following conditions:

- A .NET Framework installation on your system has become corrupted.
- The version of the .NET Framework needed by your application cannot be detected.

To address this issue so that you can run your application, do the following:

1. Download the .NET Framework Repair Tool (NetFxRepairTool.exe). The tool runs automatically when the download completes.

2. If the .NET Framework Repair Tool recommends any additional action, such as those shown in the following figure, select **Next**.
3. The .NET Framework Repair Tools displays a dialog box shown in the following figure to indicate that changes are complete. Leave the dialog box open while you to try rerun your application. This should succeed if the .NET Framework Repair Tool has identified and corrected a corrupted .NET Framework installation.

4. If your application runs successfully, select the Finish button. Otherwise, select the Next button.

5. If you selected the Next button, the .NET Framework Repair Tool displays a dialog box like the following. Select the Finish button to send diagnostic information to Microsoft.
Submit additional information

The tool is unable to resolve the installation issue on your computer.
The following [log] will be sent to Microsoft for further analysis.

C:\WINDOWS\windowsupdate.log
C:\WINDOWS\log \die\die.log
C:\\Users \PETRU~1\AppData\Local (Temp)\Fxd\NetFx.log
C:\\Users \PETRU~1\AppData\Local (Temp)\Net\SetupEvents.txt
C:\\Users \PETRU~1\AppData\Local (Temp)\Id\Net\Fix\Repair Tool (1)\Decompression.log
C:\\Users \PETRU~1\AppData\Local (Temp)

To close the tool, choose Finish.

6. If you still cannot run the application, install the latest version of the .NET Framework supported by your version of Windows, as shown in the following table.

<table>
<thead>
<tr>
<th>WINDOWS VERSION</th>
<th>.NET FRAMEWORK INSTALLATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows 10 Anniversary Update and later versions</td>
<td>.NET Framework 4.8 Runtime</td>
</tr>
<tr>
<td>Windows 10, Windows 10 November Update</td>
<td>.NET Framework 4.6.2</td>
</tr>
<tr>
<td>Windows 8.1</td>
<td>.NET Framework 4.8 Runtime</td>
</tr>
<tr>
<td>Windows 8</td>
<td>.NET Framework 4.6.1</td>
</tr>
<tr>
<td>Windows 7 SP1</td>
<td>.NET Framework 4.8 Runtime</td>
</tr>
<tr>
<td>Windows Vista SP2</td>
<td>.NET Framework 4.6</td>
</tr>
</tbody>
</table>

**NOTE**
.NET Framework 4.8 is preinstalled on Windows 10 May 2019 Update.

7. Attempt to launch the application.

8. In some cases, you may see a dialog box like the following, which asks you to install the .NET Framework 3.5. Select **Download and install this feature** to install the .NET Framework 3.5, then launch the application again.
An app on your PC needs the following Windows feature:

.NET Framework 3.5 (includes .NET 2.0 and 3.0)

Download and install this feature
Windows will get the files that it needs from Windows Update and complete the installation.

→ Skip this installation
Your apps might not work correctly without this feature.

Tell me more about this feature

See also

- .NET Framework System Requirements
- .NET Framework installation guide
- Troubleshoot blocked .NET Framework installations and un installations
Install the .NET Framework 3.5 on Windows 10, Windows 8.1, and Windows 8

You may need the .NET Framework 3.5 to run an app on Windows 10, Windows 8.1, and Windows 8. You can also use these instructions for earlier Windows versions.

Install the .NET Framework 3.5 on Demand

You may see the following configuration dialog if you try to run an app that requires the .NET Framework 3.5. Choose **Install this feature** to enable the .NET Framework 3.5. This option requires an Internet connection.

Why am I getting this pop-up?

The .NET Framework is created by Microsoft and provides an environment for running applications. There are different versions available. Many companies develop their apps to run using the .NET Framework, and these apps target a specific version. If you see this pop-up, you're trying to run an application that requires the .NET Framework version 3.5, but that version is not installed on your system.

Enable the .NET Framework 3.5 in Control Panel

You can enable the .NET Framework 3.5 through the Windows Control Panel. This option requires an Internet connection.

1. Press the Windows key on your keyboard, type "Windows Features", and press Enter. The **Turn Windows features on or off** dialog box appears.

2. Select the **.NET Framework 3.5 (includes .NET 2.0 and 3.0)** check box, select **OK**, and reboot your computer if prompted.
Troubleshoot the installation of the .NET Framework 3.5

During installation, you may encounter error 0x800f0906, 0x800f0907, 0x800f081f, or 0x800F0922, in which case refer to .NET Framework 3.5 installation error: 0x800f0906, 0x800f0907, or 0x800f081f to see how to resolve these issues.

If you still can’t resolve your installation issue or you don’t have an Internet connection, you can try installing it using your Windows installation media. For more information, see Deploy .NET Framework 3.5 by using Deployment Image Servicing and Management (DISM). If you don’t have the installation media, see Create installation media for Windows.

**WARNING**

If you’re not relying on Windows Update as the source for installing the .NET Framework 3.5, you must ensure to strictly use sources from the same corresponding Windows operating system version. Using a source path that doesn’t correspond to the same version of Windows won’t prevent a mismatched version of .NET Framework 3.5 from being installed. However, this will cause the system to be in an unsupported and unserviceable state.
Run .NET Framework 1.1 apps on Windows 8, Windows 8.1, or Windows 10

2 minutes to read • Edit Online

The .NET Framework 1.1 is not supported on the Windows 8, Windows 8.1, Windows Server 2012, Windows Server 2012 R2, or the Windows 10 operating systems. In some cases, the .NET Framework 1.1 is specifically identified as required for an app to run. In those cases, you should contact your independent software vendor (ISV) to have the app upgraded to run on the .NET Framework 3.5 SP1 or later version. For additional information, see Migrating from the .NET Framework 1.1.

Install the .NET Framework 1.1 from a CD or Download Center

It isn’t possible to manually install the .NET Framework 1.1 on Windows 8, Windows 8.1, Windows Server 2012, Windows Server 2012 R2, or Windows 10. It is no longer supported. If you try to install the package, the following error message is displayed: “Setup cannot continue because this version of the .NET Framework is incompatible with a previously installed one.” To solve this problem, install the .NET Framework 3.5 SP1. This version includes the .NET Framework 2.0 (the release that follows the .NET Framework 1.1), which is supported on Windows 8, Windows 8.1, and Windows 10. You should always try to install the app first to determine if it will automatically be updated to a later version of the .NET Framework. If it does not, contact your ISV for an app update.

See also

- Migrating from the .NET Framework 1.1
- Install the .NET Framework 3.5 on Windows 10, Windows 8.1, and Windows 8