Building Ice Applications for .NET

This page provides important information for .NET developers.

On this page:

Building Ice Applications for .NET with Visual Studio

Install the following software and then refer to the Ice Builder for Visual Studio instructions:

1. A supported version of Visual Studio

   With Visual Studio 2017, you can optionally install the .NET Core cross-development toolset to create applications for .NET Core 2.0.
2. The Ice Builder for Visual Studio extension
3. The `zeroc.ice.net` NuGet package, described later on this page

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Building Ice Applications for .NET with the .NET Core SDK

Install the following software and then refer to the Ice Builder for MSBuild instructions:

1. The .NET Core 2.0 SDK for your operating system
2. The `zeroc.ice.net` NuGet package, described later on this page
3. The `slice2cs` compiler

   `slice2cs` is a command-line tool written in C++ and available on most platforms

Platform	Distribution	Package with slice2cs
Ubuntu	apt packages	zeroc-ice-compilers ⚠ You need to install zeroc-ice-compilers from the 3.7.1 beta repo, as it includes a fix to the generated code for optional. The corresponding bug affects only Linux applications.
RHEL	RPMs	ice-compilers ⚠ You need to install ice-compilers from the 3.7.1 beta repo, as it includes a fix to the generated code for optional. The corresponding bug affects only Linux applications.
Windows	NuGet	`zeroc.ice.net`

On Windows, you can use Ice Builder for Visual Studio to configure Ice Builder for MSBuild, and the resulting projects can be used on any platform.

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Programming Language

You can use any .NET programming language with Ice, however, the preferred programming language for Ice .NET applications is C# since:

- the only Slice language mapping for .NET is Slice to C#
- the only Slice compiler for .NET, `slice2cs`, generates C# code
- Ice for .NET is itself written in C#

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zeroc.ice.net NuGet Package

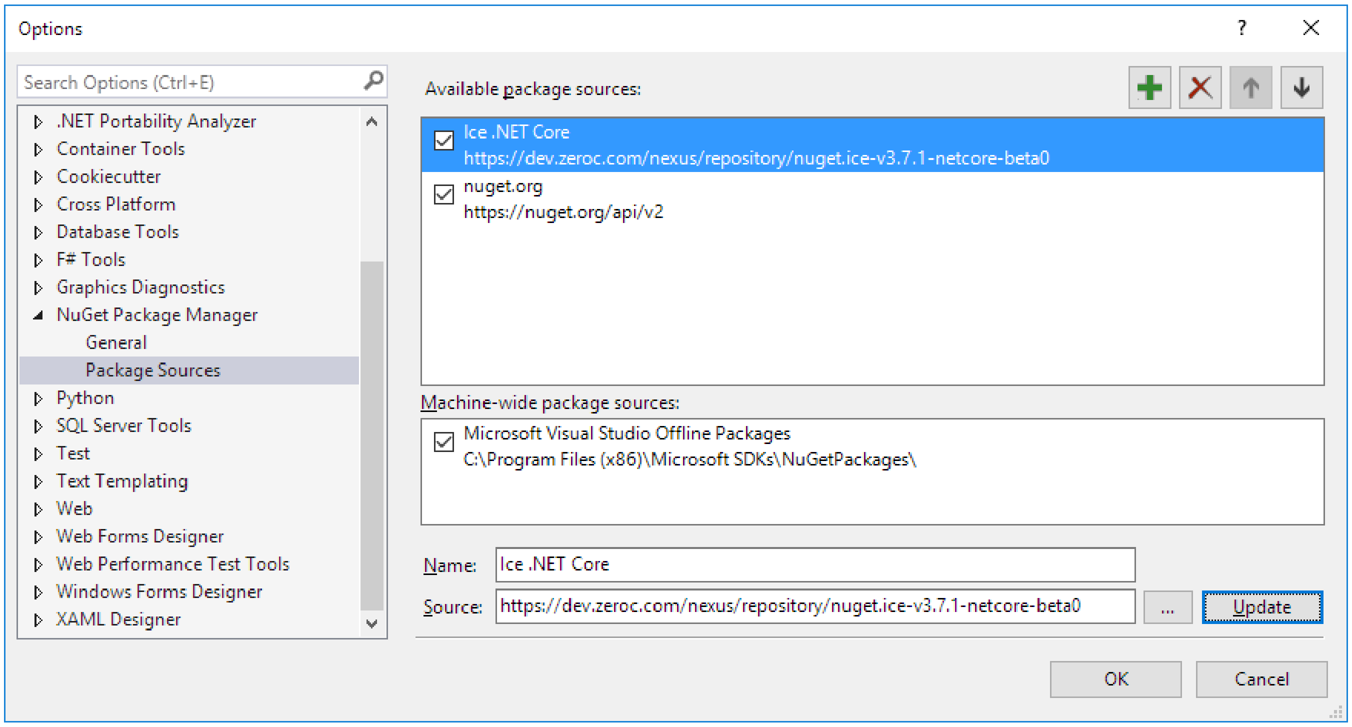
⚠ Upgraded on February 9, 2018 to version 3.7.1-beta1, compatible with the latest Ice Builder.

The Ice for .NET (zeroc.ice.net) NuGet package is organized as follows:

Folder	Contents
`lib\net45`	Assemblies for .NET Framework 4.5.1
`lib\netstandard2.0`	Assemblies for .NET Standard 2.0
`tools`	`slice2cs.exe`, `slice2html.exe` (Windows-only native tools)
`tools\net45`	`iceboxnet.exe` app for .NET Framework 4.5.1, `bzip2.dll` Windows x64 native library
`tools\netcoreapp2.0`	`iceboxnet.dll` app for .NET Core 2.0, `bzip2.dll` Windows x64 native library
`build`	MSBuild support files
`slice`	Slice files

For the 3.7.1 beta release, `zeroc.ice.net` is available from the beta repository `https://dev.zeroc.com/nexus/repository/nuget.ice-v3.7.1-netcore-beta0`.

On Windows, you can add this repository as a new package source using Visual Studio's "Tools > NuGet Package Manager > Package Manager Settings...":



Available package sources:

☑ Ice .NET Core
https://dev.zeroc.com/nexus/repository/nuget.ice-v3.7.1-netcore-beta0

☑ nuget.org
https://nuget.org/api/v2

Machine-wide package sources:

☑ Microsoft Visual Studio Offline Packages
C:\Program Files (x86)\Microsoft SDKs\NuGetPackages\

Name: Ice .NET Core

Source: https://dev.zeroc.com/nexus/repository/nuget.ice-v3.7.1-netcore-beta0

On Linux you need to edit NuGet configuration (`~/.nuget/NuGet/NuGet.Config`) to add a new package source

```
<?xml version="1.0" encoding="utf-8"?>
<configuration>
  <packageSources>
    <add key="zeroc.com" value="https://dev.zeroc.com/nexus/repository/nuget.ice-v3.7.1-netcore-beta0/" />
    <add key="nuget.org" value="https://api.nuget.org/v3/index.json" protocolVersion="3" />
  </packageSources>
</configuration>
```

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.NET Framework and .NET Standard Assemblies

`zeroc.ice.net` includes two sets of Ice assemblies: one set of assemblies for the .NET Framework 4.5 and another set for .NET Standard 2.0.

These assemblies are the same except for the differences described below:

	.NET Framework 4.5 Assemblies	**.NET Standard 2.0 Assemblies**
Run-time platform	Windows	Windows, Linux, macOS
Target Framework	.NET Framework 4.5.1 or greater on Windows	Any implementation of .NET Standard 2.0, including .NET Core 2.0 and .NET Framework 4.6.1.
Ice properties can be read from the Windows Registry	✓	✗
Signals caught by Ice.Application	Signal catching implemented using the Windows native function SetConsoleCtrlHandler.	Signal catching implemented using the portable .NET event Console.KeyPress.

The .NET Standard 2.0 assemblies are expected to work with any .NET implementation of .NET Standard 2.0, however, they are currently tested and supported only with .NET Core 2.0 on Windows and Linux.

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Compression with bzip2

Ice for .NET supports the optional compression of Ice requests and responses using the bzip2 native library. The bzip2 native DLL for Windows x64 is included in the `zeroc.ice.net` package. You can use the bzip2 system library on Linux and macOS.

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Using the Sample Programs

Sample programs are available at the ice-demos GitHub repository. You can browse this repository to see build and usage instructions for all supported programming languages. You can clone this repository with:

```
git clone -b 3.7.1-rc https://github.com/zeroc-ice/ice-demos.git
cd ice-demos
```

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