Introduction To .NET Framework 3.5

What is .Net Framework

Microsoft .Net Framework is a programming infrastructure created by Microsoft for building, deploying, and running applications and services that use .NET technologies, such as desktop applications and Web services. The Microsoft .NET Framework is a software framework that can be installed on computers running Microsoft Windows operating systems. It includes a large library of coded solutions to common programming problems and a virtual machine that manages the execution of programs written specifically for the framework.

Microsoft .Net Framework 3.5

What's new in .Net Framework 3.5

- .net Compact Framework
  The .NET Compact Framework version 3.5 expands support for distributed mobile applications by including the Windows Communication Foundation (WCF)
technology, new language features such as LINQ, new APIs based on community feedback, and improves debugging with updated diagnostic tools and features.

- **New language features in C# 3.0 and VB.NET 9.0 compiler**
  Visual C#, Visual C++ 2008, Visual Basic Language Three Microsoft programming languages explicitly target the .NET Framework so to achieve this some new changes are carried out for it.

- **Language-Integrated Query (LINQ)**
  Language-Integrated Query (LINQ) is a new feature in Visual Studio 2008 and the .NET Framework 3.5. LINQ adds native data querying capability to C# and VB.NET along with the compiler and Intellisence support. This technology can be extended to support potentially any kind of data store. The .NET Framework 3.5 includes LINQ provider assemblies that enable the use of LINQ for querying .NET Framework collections, SQL Server databases, ADO.NET Datasets, and XML documents.

- **Adds support for expression trees and lambda methods**
  Expression trees are new in the .NET Framework 3.5, and provide a way to represent language-level code in the form of data. Expression trees are used extensively in LINQ queries that target remote data sources such as a SQL database. These queries are represented as expression trees, and this representation enables query providers to examine them and translate them into a domain-specific query language. Lambda expressions are a great way to write simple anonymous delegates in a concise way.

- **Extension methods**
  A new feature made available in Visual Basic 2008, however, lets you extend any existing type’s functionality, even when a type is not inheritable. And these extension methods play a crucial role in the implementation of LINQ.

- **Expression trees to represent high-level source code at runtime**
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- **Anonymous types with static type inference**
  Anonymous types provide a convenient way to encapsulate a set of read-only properties into a single object without having to first explicitly define a type. The type name is generated by the compiler and is not available at the source code level. The type of the properties is inferred by the compiler.
- **Paging support for ADO.NET**
  Provides paging functionality for data-bound controls that implement the IPageableItemContainer interface, such as the ListView control. The best advantage is that you need not have to keep it ‘tied’ with the control on which the paging is being done. You can keep it anywhere on the page. DataPager gives you a consistent way of paging with the controls that support it.

- **ADO.NET synchronization API to synchronize local caches and server side datastores**

- **Asynchronous network I/O API**
  The Socket class has been enhanced for use by applications that use asynchronous network I/O to achieve the highest performance. A series of new classes have been added as part of a set of enhancements to the Socket namespace. These classes provide an alternative asynchronous pattern that can be used by specialized high-performance socket applications. These enhancements were specifically designed for network server applications that require the high-performance.

- **Peer-to-peer networking stack**
  Several features in networking also get improved in .NET 3.5. Peer to peer networking is a server-less networking technology that allows several network devices to share resources and communicate directly with each other and get improved. The Socket class has been enhanced for use by applications that use asynchronous network I/O to achieve the highest performance. These enhancements were specifically designed for network server applications that require the high-performance.

- **Managed wrappers for Windows Management Instrumentation and Active Directory APIs**
  Windows Management Instrumentation (WMI) (or Windows Management Interface) is a set of extensions to the Windows Driver Model that provides an operating system interface through which instrumented components provide information and notification. WMI is Microsoft's implementation of the Web-Based Enterprise Management (WBEM) and Common Information Model (CIM) standards from the Distributed Management Task Force (DMTF).

- **Enhanced WCF and WF runtimes**
  Which let WCF work with POX (Plain Old XML) and JSON (JavaScript Object Notation) data, and also expose WF workflows as WCF services. WCF services can be made stateful using the WF persistence model.
JSON, short for JavaScript Object Notation, is a lightweight computer data interchange format. It is a text-based, human-readable format for representing simple data structures and associative arrays (called objects).

- **Support for HTTP pipelining and syndication feeds.**
  HTTP pipelining is a technique in which multiple HTTP requests are written out to a single socket without waiting for the corresponding responses. A web feed (or news feed) is a data format used for providing users with frequently updated content. Content distributors syndicate a web feed, thereby allowing users to subscribe to it. Making a collection of web feeds accessible in one spot is known as aggregation, which is performed by an aggregator. A web feed is also sometimes referred to as a syndicated feed.

- **ASP.NET AJAX is included New System.CodeDom namespace.**
  In ASP.NET 2.0 to use AJAX we have to download the extensions and install it. However in ASP.NET 3.5, ASP.NET AJAX is integrated into the .NET Framework. The Microsoft AJAX Library supports client-centric, object-oriented development, which is browser-independent. By using the library classes in your ECMAScript (JavaScript) you can enable rich UI behaviors without roundtrips to the server. Visual Web Developer includes improved IntelliSense support for JavaScript and support for the Microsoft AJAX Library.

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### Journey of .net framework

**.NET Framework 1.0**
- The old .NET Framework logo
- This is the first release of the .NET Framework, released on 13 February 2002
- Available for Windows 98, NT 4.0, 2000, and XP.
- Mainstream support by Microsoft for this version ended 10 July 2007, and extended support ends 14 July 2009

**.NET Framework 1.1**
- This is the first major .NET Framework upgrade.
- It was published on 3 April 2003. It is also part of the second release of Microsoft Visual Studio .NET (released as Visual Studio .NET 2003).
• This is the first version of the .NET Framework to be included as part of the Windows operating system, shipping with Windows Server 2003.
• Mainstream support for .NET Framework 1.1 ended on 14 October 2008, and extended support ends on 8 October 2013.
• Since .NET 1.1 is a component of Windows Server 2003, extended support for .NET 1.1 on Server 2003 will run out with that of the OS - currently 30 June 2013.

**Changes in 1.1 on comparison with 1.0**
• Built-in support for mobile ASP.NET controls.
• Security changes - enable Windows Forms assemblies to execute in a semi-trusted manner from the Internet, and enable Code Access Security in ASP.NET applications.
• Built-in support for ODBC and Oracle databases.
• .NET Compact Framework
• Internet Protocol version 6 (IPv6) support.

**.NET Framework 2.0**
• It was published on 2006-01-22.
• It is included as part of Visual Studio 2005 and Microsoft SQL Server 2005.
• Version 2.0 is the last version with support for Windows 2000, Windows 98. It shipped with Windows Server 2003 R2 (not installed by default).

**Changes in 2.0 in comparison with 1.1**
• SQL Server Integration
• Full 64-bit support
• Language support for generics built directly into the .NET CLR.
• Anonymous Methods
• Nullable Types
• Iterators
• Partial Classes
• New data controls with declarative data binding.
• New personalization features for ASP.NET, such as support for themes, skins and webparts.

**.NET Framework 3.0**
• .NET Framework 3.0, formerly called WinFX,
• includes a new set of managed code APIs that are an integral part of Windows Vista and Windows Server 2008 operating systems.
• It is also available for Windows XP SP2 and Windows Server 2003 as a download.
• There are no major architectural changes included with this release.
**Windows Presentation Foundation (WPF)**
- formerly code-named **Avalon**
- a new user interface subsystem
- API based on XML and vector graphics, which uses 3D computer graphics hardware and Direct3D technologies.

**Windows Communication Foundation (WCF)**
- formerly code-named **Indigo**
- a service-oriented messaging system which allows programs to interoperate locally or remotely similar to web services.
- is Microsoft's unified framework for building secure, reliable, transacted, and interoperable distributed applications.

**Windows Workflow Foundation (WF)**
- allows for building of task automation and integrated transactions using workflows.
- It is the programming model, engine and tools for quickly building workflow enabled applications.
- WF radically enhances a developer's ability to model and support business processes.

**Windows CardSpace**
- formerly code-named **InfoCard**
- a software component which securely stores a person's digital identities and provides a unified interface for choosing the identity for a particular transaction, such as logging in to a website.
- In the physical world we use business cards, credit cards and membership cards. Online with CardSpace we use a variety of virtual cards to identify ourselves, each retrieving data from an identity provider.

**.NET Framework 3.5**
- Version 3.5 of the .NET Framework was released on 19 November 2007, but it is not included with Windows Server 2008.
- As with .NET Framework 3.0, version 3.5 uses the CLR of version 2.0. In addition, it installs **.NET Framework 2.0 SP1**, **.NET Framework 2.0 SP2 (with 3.5 SP1)** and **.NET Framework 3.0 SP1**, which adds some methods and properties to the BCL classes in version 2.0

**Changes since version 3.0**
- As discussed above.
Future Release of .net:

.NET Framework 4.0

- Microsoft announced the .NET Framework 4.0 on September 29, 2008.
- One focus of this release is to improve support for parallel computing, which target multi-core or distributed systems.
- plan to include technologies like PLINQ (Parallel LINQ)
- a parallel implementation of the LINQ engine, and Task Parallel Library, which exposes parallel constructs via method calls.
- they plan to support a subset of the .NET Framework and ASP.NET with the "Server Core" variant of Windows Server 2008’s successor.
- And the Visual Studio 2010 and .NET Framework 4 Release Candidate is now available