This page is specific to

Microsoft Visual Studio 2010/.NET Framework 4

**Comparing ASP.NET Web Services to WCF Based on Purpose and Standards Used**

ASP.NET Web services was developed for building applications that send and receive messages by using the Simple Object Access Protocol (SOAP) over HTTP. The structure of the messages can be defined using an XML Schema, and a tool is provided to facilitate serializing the messages to and from .NET Framework objects. The technology can automatically generate metadata to describe Web services in the Web Services Description Language (WSDL), and a second tool is provided for generating clients for Web services from the WSDL.

WCF is for enabling .NET Framework applications to exchange messages with other software entities. SOAP is used by default, but the messages can be in any format, and conveyed by using any transport protocol. The structure of the messages can be defined using an XML Schema, and there are various options for serializing the messages to and from .NET Framework objects. WCF can automatically generate metadata to describe applications built using the technology in WSDL, and it also provides a tool for generating clients for those applications from the WSDL.

The standards supported by ASP.NET Web services are documented in [XML Web Services Created Using ASP.NET](http://go.microsoft.com/fwlink/?LinkId=94872). The more extensive list of standards supported by WCF are listed at [Web Services Protocols Supported by System-Provided Interoperability Bindings](http://msdn.microsoft.com/en-us/library/ms730294.aspx).

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**Benefits of XML Web Services Created Using ASP.NET**

**This topic is specific to a legacy technology. XML Web services and XML Web service clients should now be created using** [Windows Communication Foundation](http://go.microsoft.com/fwlink/?LinkID=127777) .

ASP.NET allows you to build and publish Web services using familiar programming constructs, such as methods, primitive types, and user-defined complex types. The .NET Framework also contains infrastructure and tools to create Web service clients that can call any standards-compliant Web service.

With ASP.NET, you can build Web services that use industry-wide standards for implementation. Since Web services are built on industry-wide standards, they can be communicated with across the Web using any client on any platform that adheres to these standards. Specifically, Web services employ the industry standards listed in the following table.

|  |  |
| --- | --- |
| **Industry standard** | **Use in Web services created using ASP.NET** |
| XML | The text format used when communicating with Web services using the SOAP protocol. When communicating with Web services using the HTTP-GET and HTTP-POST protocols, XML is used to encode responses. |
| SOAP | An XML-based message exchange protocol used for communication between Web services and their clients. |
| Web Services Description Language (WSDL) | Describes the contract of messages that a Web service can interpret when communicating with a Web service client. |
| XSD | Provides a universal type system, allowing data types to be defined and passed across platforms. For a Web service, XSD defines the structure and data types for the XML encapsulated within a SOAP message sent to and from a Web service. |
| application/x-www-form-urlencoded | A MIME type used for encoding parameters on a URL. This encoding is used for encoding request parameters to Web services using the HTTP-GET and HTTP-POST protocols. |

With Web services you can take advantage of the features of ASP.NET to build Web services that adhere to industry-wide standards. Specifically, ASP.NET not only takes advantage of performance enhancements found in the .NET Framework and the common language runtime, it has also been designed to offer significant performance improvements over ASP and other Web development platforms. All ASP.NET code is compiled, rather than interpreted, which allows early binding, strong typing, and just-in-time (JIT) compiling to native code, to name a few of its benefits. ASP.NET is also easily factorable, meaning that developers can remove modules (session modules, for instance) that are not relevant to the application they are developing.

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**Web Services Protocols Supported by System-Provided Interoperability Bindings**

Windows Communication Foundation (WCF) is built to interoperate with Web services that support a set of specifications known as Web services specifications. To simplify service configuration for interoperability best practices, WCF introduces three interoperable system-provided bindings: [System.ServiceModel.BasicHttpBinding](http://msdn.microsoft.com/en-us/library/system.servicemodel.basichttpbinding.aspx), [System.ServiceModel.WSHttpBinding](http://msdn.microsoft.com/en-us/library/system.servicemodel.wshttpbinding.aspx), and [System.ServiceModel.WSDualHttpBinding](http://msdn.microsoft.com/en-us/library/system.servicemodel.wsdualhttpbinding.aspx). For interoperability with Organization for the Advancement of Structured Information Standards (OASIS) standards, WCF includes one interoperable system-provided binding: [System.ServiceModel.WS2007HttpBinding](http://msdn.microsoft.com/en-us/library/system.servicemodel.ws2007httpbinding.aspx). For metadata publication, WCF includes two interoperable system-provided bindings: [<mexHttpBinding>](http://msdn.microsoft.com/en-us/library/aa967390.aspx) and [<mexHttpsBinding>](http://msdn.microsoft.com/en-us/library/aa967391.aspx). This topic lists specifications that system-provided interoperable bindings support.

**Web Services Protocols Supported by basicHttpBinding, wsHttpBinding, ws2007HttpBinding, and wsDualHttpBinding Bindings**

**All Bindings**

The [basicHttpBinding](http://msdn.microsoft.com/en-us/library/ms731361.aspx), [wsHttpBinding](http://msdn.microsoft.com/en-us/library/ms731299.aspx), and [ws2007HttpBinding](http://msdn.microsoft.com/en-us/library/bb675188.aspx) bindings support the following protocols.

|  |  |  |
| --- | --- | --- |
| **Description: noteNote:** | | |
| For information about bindings used to publish metadata, see the "System-Provided Metadata Bindings" section later in this topic. | | |
| **Category** | **Protocol** | **Specification and Usage** |
| Transport | HTTP 1.1 | [HTTP 1.1](http://go.microsoft.com/fwlink/?LinkId=84048)  **BasicHttpBinding**, **WSHttpBinding**, and **WS2007HttpBinding** use the HTTP and HTTPS transports. |
| Messaging | MTOM | [MTOM](http://go.microsoft.com/fwlink/?LinkId=95326)  **basicHttpBinding**, **wsHttpBinding**, and **ws2007HttpBinding** support Message Transmission Optimization Mechanism (MTOM). Not used by default. To use MTOM, set the messageEncoding attribute to "Mtom".  Example:  [Copy Code](javascript:CopyCode('ctl00_MTCS_main_ctl13_code');" \o "Copy Code)  <wsHttpBinding>  <binding messageEncoding="Mtom"/>  </wsHttpBinding> |
| Metadata | WSDL 1.1 | [WSDL 1.1](http://go.microsoft.com/fwlink/?LinkId=94859)  WCF uses Web Services Description Language (WSDL) to describe services. |
| Metadata | WS-Policy | [WS-Policy](http://go.microsoft.com/fwlink/?LinkId=94864)  WCF uses the WS-Policy specification together with domain-specific assertions to describe service requirements and capabilities. |
| Metadata | WS-Policy 1.5 | [WS-Policy 1.5](http://go.microsoft.com/fwlink/?LinkId=95327)  WCF uses the WS-Policy specification together with domain-specific assertions to describe service requirements and capabilities. |
| Metadata | WS-PolicyAttachment | [WS-PolicyAttachment](http://go.microsoft.com/fwlink/?LinkId=95328)  WCF implements WS-PolicyAttachment to attach policy expressions at various scopes in Web Services Description Language (WSDL). |
| Metadata | WS-MetadataExchange | [WS-MetadataExchange](http://go.microsoft.com/fwlink/?LinkId=94868)  WCF implements WS-MetadataExchange to retrieve XML Schema, WSDL, and WS-Policy. |

**basicHttpBinding**

|  |  |  |
| --- | --- | --- |
| **Category** | **Protocol** | **Specification and Usage** |
| Messaging | SOAP 1.1 | [SOAP 1.1](http://go.microsoft.com/fwlink/?LinkId=90520)  In accordance with Basic Profile 1.1, the **basicHttpBinding** element implements the SOAP 1.1 message protocol. |
| Security | WSS SOAP Message Security 1.0 | [WSS SOAP Message Security 1.0](http://go.microsoft.com/fwlink/?LinkId=94684)  In accordance with the Basic Security Profile, the **basicHttpBinding** element implements the Web Services Security (WSS) SOAP Message Security 1.0 specification for user name/password and X.509-based security.  [Copy Code](javascript:CopyCode('ctl00_MTCS_main_ctl21_code');" \o "Copy Code)  <basicHttpBinding>  <binding name="Binding1">  <security mode="TransportWithMessageCredential |  "Message" .../>  </binding>  </basicHttpBinding> |
| Security | WSS SOAP Message Security UsernameToken Profile 1.0 | [WSS SOAP Message Security UsernameToken Profile 1.0](http://go.microsoft.com/fwlink/?LinkId=95334)  [Copy Code](javascript:CopyCode('ctl00_MTCS_main_ctl23_code');" \o "Copy Code)  <basicHttpBinding>  <binding name="Binding1">  <security mode="TransportWithMessageCredential">  <transport clientCredentialType="Basic"/>  </security>  </basicHttpBinding> |
| Security | WSS SOAP Message Security X.509 Certificate Token Profile 1.0 | [WSS SOAP Message Security X.509 Certificate Token Profile 1.0](http://go.microsoft.com/fwlink/?LinkId=95335)  [Copy Code](javascript:CopyCode('ctl00_MTCS_main_ctl25_code');" \o "Copy Code)  <basicHttpBinding>  <security mode="Message">  <message clientCredentialType="Certificate"/>  </security>  </basicHttpBinding> |

**wsHttpBinding, ws2007HttpBinding, and wsDualHttpBinding**

|  |  |  |
| --- | --- | --- |
| **Category** | **Protocol** | **Specification and Usage** |
| Messaging | SOAP 1.2 | [Primer](http://go.microsoft.com/fwlink/?LinkId=48282)  [Messaging framework](http://go.microsoft.com/fwlink/?LinkId=94664)  [Adjuncts (including HTTP binding)](http://go.microsoft.com/fwlink/?LinkId=95329) |
| Messaging | WS-Addressing 2005/08 | [Web Services Addressing 1.0 - Core](http://go.microsoft.com/fwlink/?LinkId=90574)  [Web Services Addressing 1.0 - SOAP](http://go.microsoft.com/fwlink/?LinkId=95330)  The **wsHttpBinding**, **ws2007HttpBinding**, and **wsDualHttpBinding** implement the World Wide Web Consortium (W3C) WS-Addressing recommendation to enable asynchronous messaging, message correlation, and transport-neutral addressing mechanisms.   |  | | --- | | **Description: WarningCaution:** | | WCF does not support encryption of WS-Addressing headers although this is allowed by the WS-\* specifications. | |
| Messaging | WS-Addressing 1.0 - Metadata | [WS-Addressing 1.0 Metadata](http://www.w3.org/2007/05/addressing/metadata) Support for this protocol is enabled by setting the policy version in ServiceMetadata behavior - with policyversion set to 1.2 (the default), The wsdl description is compliant with WS-Addressing wsdl, with policyversion set to 1.5, the wsdl description is compliant with ws-addressing metadata.   |  | | --- | | **Description: WarningCaution:** | | WCF does not support encryption of WS-Addressing headers although this is allowed by the WS-\* specifications. | |
| Security | WSS SOAP Message Security 1.0 | [WSS SOAP Message Security 1.0](http://go.microsoft.com/fwlink/?LinkId=94684)  Use when the **securityMode** attribute is set to "wsSecurityOverHttp" (default) and parameters are configured using a **wsSecurity** child element.  [Copy Code](javascript:CopyCode('ctl00_MTCS_main_ctl35_code');" \o "Copy Code)  <wsHttpBinding>  <binding name="myBinding">  <security mode="Message" .../>  </binding>  </wsHttpBinding> |
| Security | WSS SOAP Message Security UsernameToken Profile 1.1 | [WSS SOAP Message Security UsernameToken Profile 1.0](http://go.microsoft.com/fwlink/?LinkId=95331)  Use when the **wsSecurity** element's **authenticationMode** attribute is set to "Username".  [Copy Code](javascript:CopyCode('ctl00_MTCS_main_ctl37_code');" \o "Copy Code)  <wsHttpBinding>  <binding name="MyBinding">  <security mode="Message>  <message  clientCredentialType="UserName  negotiateServiceCredential="false"  establishSecurityContext="false"/>  </security>  </binding>  </wsHttpBinding> |
| Security | WSS SOAP Message Security X.509 Certificate Token Profile 1.1 | [WSS SOAP Message Security X.509 Certificate Token Profile 1.1](http://go.microsoft.com/fwlink/?LinkId=95332)  Use for message protection when the **wsSecurity** element’s **authenticationMode** attribute is set to "Username", "Certificate", or "None". Additionally, use this for client authentication when the **wsSecurity** element’s **authenticationMode** attribute is set to "Certificate".  [Copy Code](javascript:CopyCode('ctl00_MTCS_main_ctl39_code');" \o "Copy Code)  <wsHttpBinding>  <binding name="MyBinding">  <security mode="Message>  <message  clientCredentialType="Certificate"  negotiateServiceCredential="false"  establishSecurityContext="false"/>  </security>  </binding>  </wsHttpBinding> |
| Security | WSS SOAP Message Security Kerberos Token Profile 1.1 | [WSS SOAP Message Security Kerberos Token Profile 1.1](http://go.microsoft.com/fwlink/?LinkId=95333)  Use for authentication and message protection when the **wsSecurity** element’s **authenticationMode** attribute is set to "Windows".  [Copy Code](javascript:CopyCode('ctl00_MTCS_main_ctl41_code');" \o "Copy Code)  <wsHttpBinding>  <binding name="MyBinding">  <security mode="Message>  <message  clientCredentialType="Windows"  negotiateServiceCredential="false"  establishSecurityContext="false"/>  </security>  </binding>  </wsHttpBinding> |
| Security | WS-SecureConversation | [WS-SecureConversation](http://go.microsoft.com/fwlink/?LinkId=95317)  Use to provide a secure session when the **security/@mode** attribute is set to "Message" and the **message/@establishSecurityContext** attribute is set to "true" (default). |
| Security | WS-Trust | [WS-Trust](http://go.microsoft.com/fwlink/?LinkId=95318)  Used by WS-SecureConversation (see above). |
| Reliable Messaging | WS-ReliableMessaging | [WS-ReliableMessaging](http://go.microsoft.com/fwlink/?LinkId=95322)  Use when the binding is configured to use **reliableSession**.  [Copy Code](javascript:CopyCode('ctl00_MTCS_main_ctl45_code');" \o "Copy Code)  <wsHttpBinding>  <binding name="myBinding">  <reliableSession/>  </binding>  </wsHttpBinding> |
| Transactions | WS-AtomicTransaction | [WS-AtomicTransaction](http://go.microsoft.com/fwlink/?LinkId=95323)  Use for communication between transaction managers. WCF clients and services always use local transaction managers. |
| Transactions | WS-Coordination | [WS-Coordination](http://go.microsoft.com/fwlink/?LinkId=95324)  Use to flow the transaction context when the **flowTransactions** attribute is set to "Allowed" or "Required".  [Copy Code](javascript:CopyCode('ctl00_MTCS_main_ctl48_code');" \o "Copy Code)  <wsHttpBinding>  <binding transactionFlow="true"/>  </wsHttpBinding> |

**wsFederationHttpBinding and ws2007FederationHttpBinding**

The [wsFederationHttpBinding](http://msdn.microsoft.com/en-us/library/ms731374.aspx) and [ws2007FederationHttpBinding](http://msdn.microsoft.com/en-us/library/bb675190.aspx) elements are introduced to provide support for federated scenarios, where a third party issues a token used to authenticate a client. In addition to the protocols used by **wsHttpBinding**, **wsFederationHttpBinding** leverages:

* **WS-Trust** for token issuance.
* WSS Security Assertions Markup Language (SAML) Token Profile 1.0 and 1.1 for the most commonly issued token format.

Example:

[Copy Code](javascript:CopyCode('ctl00_MTCS_main_ctl51_code');" \o "Copy Code)

<wsFederationHttpBinding>

<binding name="myBinding">

<security mode="Message">

<message issuedKeyType="Symmetric"

issuedTokenType="http://docs.oasis-open.org/wss/oasis-wss-saml-token-profile-1.1#SAMLV1.1">

<issuerMetadata address =

'http://localhost/FederationSample/HomeRealmSTS/STS.svc/mex'>

</message>

</security>

</binding>

</wsFederationHttpBinding>

For more information, see [Federation](http://msdn.microsoft.com/en-us/library/ms730908.aspx) .

**System-Provided Metadata Bindings**

The following tables describe the protocols supported by the system-provided interoperable metadata bindings exposed by the [System.ServiceModel.Description.MetadataExchangeBindings](http://msdn.microsoft.com/en-us/library/system.servicemodel.description.metadataexchangebindings.aspx) class.

**mexHttpBinding**

The [<mexHttpBinding>](http://msdn.microsoft.com/en-us/library/aa967390.aspx) binding supports the following protocols. For more information about using this binding, see [Publishing Metadata](http://msdn.microsoft.com/en-us/library/aa751951.aspx).

|  |  |  |
| --- | --- | --- |
| **Category** | **Protocol** | **Specification and Usage** |
| Transport | HTTP 1.1 | [HTTP 1.1](http://go.microsoft.com/fwlink/?LinkId=84048) |
| Messaging | SOAP 1.2 | [Primer](http://go.microsoft.com/fwlink/?LinkId=48282)  [Messaging framework](http://go.microsoft.com/fwlink/?LinkId=94664)  [Adjuncts (including HTTP binding)](http://go.microsoft.com/fwlink/?LinkId=95329) |
| Messaging | WS-Addressing 2005/08 | [Web Services Addressing 1.0 - Core](http://go.microsoft.com/fwlink/?LinkId=90574)  [Web Services Addressing 1.0 - SOAP](http://go.microsoft.com/fwlink/?LinkId=95330) |
| Metadata | WS-MetadataExchange | [WS-MetadataExchange](http://go.microsoft.com/fwlink/?LinkId=94868)  WCF implements WS-MetadataExchange to retrieve XML Schema, WSDL, and WS-Policy. |

**mexHttpsBinding**

[<mexHttpsBinding>](http://msdn.microsoft.com/en-us/library/aa967391.aspx) supports the following protocols. For more information about using this binding, see [Publishing Metadata](http://msdn.microsoft.com/en-us/library/aa751951.aspx).

|  |  |  |
| --- | --- | --- |
| **Category** | **Protocol** | **Specification and Usage** |
| Transport | HTTP 1.1 | [HTTP 1.1](http://go.microsoft.com/fwlink/?LinkId=84048)   |  | | --- | | **Description: noteNote:** | | Transport security is enabled. | |
| Messaging | SOAP 1.2 | [Primer](http://go.microsoft.com/fwlink/?LinkId=48282)  [Messaging framework](http://go.microsoft.com/fwlink/?LinkId=94664)  [Adjuncts (including HTTP binding)](http://go.microsoft.com/fwlink/?LinkId=95329) |
| Messaging | WS-Addressing 2005/08 | [Web Services Addressing 1.0 - Core](http://go.microsoft.com/fwlink/?LinkId=90574)  [Web Services Addressing 1.0 - SOAP](http://go.microsoft.com/fwlink/?LinkId=95330) |
| Metadata | WS-MetadataExchange | [WS-MetadataExchange](http://go.microsoft.com/fwlink/?LinkId=94868)  WCF implements WS-MetadataExchange to retrieve XML Schema, WSDL, and WS-Policy. |