**Endpoints: Addresses, Bindings, and Contracts**

All communication with a Windows Communication Foundation (WCF) service occurs through the *endpoints* of the service. Endpoints provide clients access to the functionality offered by a WCF service.

Each endpoint consists of four properties:

* An address that indicates where the endpoint can be found.
* A binding that specifies how a client can communicate with the endpoint.
* A contract that identifies the operations available.
* A set of behaviors that specify local implementation details of the endpoint.

This topic discusses this endpoint structure and explains how it is represented in the WCF object model.

**The Structure of an Endpoint**

Each endpoint consists of the following:

* Address: The address uniquely identifies the endpoint and tells potential consumers of the service where it is located. It is represented in the WCF object model by the [EndpointAddress](http://msdn.microsoft.com/en-us/library/system.servicemodel.endpointaddress.aspx) class. An **EndpointAddress** class contains:
  + A [Uri](http://msdn.microsoft.com/en-us/library/system.servicemodel.endpointaddress.uri.aspx) property, which represents the address of the service.
  + An [Identity](http://msdn.microsoft.com/en-us/library/system.servicemodel.endpointaddress.identity.aspx) property, which represents the security identity of the service and a collection of optional message headers. The optional message headers are used to provide additional and more detailed addressing information to identify or interact with the endpoint.

For more information, see [Specifying an Endpoint Address](http://msdn.microsoft.com/en-us/library/ms733749.aspx).

* Binding: The binding specifies how to communicate with the endpoint. This includes:
  + The transport protocol to use (for example, TCP or HTTP).
  + The encoding to use for the messages (for example, text or binary).
  + The necessary security requirements (for example, SSL or SOAP message security).

For more information, see [Windows Communication Foundation Bindings Overview](http://msdn.microsoft.com/en-us/library/ms734662.aspx). A binding is represented in the WCF object model by the abstract base class [Binding](http://msdn.microsoft.com/en-us/library/system.servicemodel.channels.binding.aspx). For most scenarios, users can use one of the system-provided bindings. For more information, see [System-Provided Bindings](http://msdn.microsoft.com/en-us/library/ms730879.aspx).

* Contracts: The contract outlines what functionality the endpoint exposes to the client. A contract specifies:
  + What operations can be called by a client.
  + The form of the message.
  + The type of input parameters or data required to call the operation.
  + What type of processing or response message the client can expect.

For more information about defining a contract, see [Designing Service Contracts](http://msdn.microsoft.com/en-us/library/ms733070.aspx).

* Behaviors: You can use endpoint behaviors to customize the local behavior of the service endpoint. Endpoint behaviors achieve this by participating in the process of building a WCF runtime. An example of an endpoint behavior is the [ListenUri](http://msdn.microsoft.com/en-us/library/system.servicemodel.description.serviceendpoint.listenuri.aspx) property, which allows you to specify a different listening address than the SOAP or Web Services Description Language (WSDL) address. For more information, see [ClientViaBehavior](http://msdn.microsoft.com/en-us/library/aa738571.aspx).

**Defining Endpoints**

You can specify the endpoint for a service either imperatively using code or declaratively through configuration. For more information, see [How to: Create a Service Endpoint in Configuration](http://msdn.microsoft.com/en-us/library/ms734786.aspx) and [How to: Create a Service Endpoint in Code](http://msdn.microsoft.com/en-us/library/ms731080.aspx).

**In This Section**

This section explains the purpose of bindings, endpoints, and addresses; shows how to configure a binding and an endpoint; and demonstrates how to use the **ClientVia** behavior and **ListenUri** property.

[Endpoint Addresses](http://msdn.microsoft.com/en-us/library/aa751841.aspx)

Describes how endpoints are addressed in WCF.

[Windows Communcation Foundation Bindings](http://msdn.microsoft.com/en-us/library/ms733027.aspx)

Describes how bindings are used to specify the transport, encoding, and protocol details required for clients and services to communicate with each other.

[Contracts](http://msdn.microsoft.com/en-us/library/aa702732.aspx)

Describes how contracts define the methods of a service.

[How to: Create a Service Endpoint in Configuration](http://msdn.microsoft.com/en-us/library/ms734786.aspx)

Describes how to create a service endpoint in configuration.

[How to: Create a Service Endpoint in Code](http://msdn.microsoft.com/en-us/library/ms731080.aspx)

Describes how to create a service endpoint in code.

[How to: Use Svcutil.exe to Validate Compiled Service Code](http://msdn.microsoft.com/en-us/library/aa702751.aspx)

Describes how to detect errors in service implementations and configurations without hosting the service using the [ServiceModel Metadata Utility Tool (Svcutil.exe)](http://msdn.microsoft.com/en-us/library/aa347733.aspx).