Instructor Notes:

Instructor Notes:

Options for Hosting a WCF Service

- WCF doesn't come with its own host, but instead comes with a class called ServiceHost that allows you to host WCF services in your own application easily
- WCF is flexible because its services can be hosted in different types of applications
- The main responsibility of the host is to provide a Windows worker process and an application domain to the WCF ServiceHost
- The following lists several common scenarios for hosting WCF services:
  - IIS
  - WAS
  - Self-hosting
  - Managed Windows Service

Depending on the requirements you have for your host, there are four general categories for hosting your WCF services, as follows:
• Self-hosting in a managed .NET application
• Hosting in a Windows service
• Hosting in different versions of IIS
• Hosting on the Windows Azure platform

Instructor Notes:

Self Hosting

- WCF services can be hosted inside any managed application, such as console applications and Windows Forms or Windows Presentation Foundation (WPF) graphical applications
- The developer has to write the code that starts and stops the Host.
- The application code can then use an instance of System.ServiceModel.ServiceHost to make the service available at a particular Uniform Resource Identifier (baseAddress in the following code example)
  - ServiceHost myHost = new ServiceHost(typeof(MyService), baseAddress);
- The service is started by calling the Open method on the host:
  - myHost.Open();

The most flexible and easiest way to host WCF services is by self-hosting. To be able to self-host your services, you have to meet two requirements:
• You need the WCF runtime.
• You need a managed .NET application in which you can host ServiceHost.
A developer creates a class that implements a WCF service contract interface, and specifies binding information in the application configuration file

Instructor Notes:

Client

- Like almost all other distributed technologies, clients use proxies to access WCF services
- Proxies can be created in one of two ways:
  - at design time by using the svcutil.exe command line tool or
  - dynamically at runtime by using a ChannelFactory

Instructor Notes:

Creating Proxy at Design Time

- The svcutil.exe command line tool can create a proxy and configuration file from WCF service metadata
- SvcUtil.exe is a metadata import tool for producing WCF client code
- It downloads WSDL and generates WCF code and configuration
- The proxy has no reference to the service implementation, but does reference the contract that is exposed by the service
- The configuration file can be used to provide the address and the binding
- The service is accessed by creating a proxy object and then by calling service operations

Note that each proxy instance points at exactly one endpoint, and the endpoint is provided to the proxy at construction time

Instructor Notes:

Creating Proxy at Design Time

- The proxy class implements IDisposable, so in C# a using statement can be used to control the lifetime of the proxy. The constructor argument refers to the endpoint to be used by this proxy:

```
using (TestProxy tp = new TestProxy("default"))
{       // use tp to call service    }
```

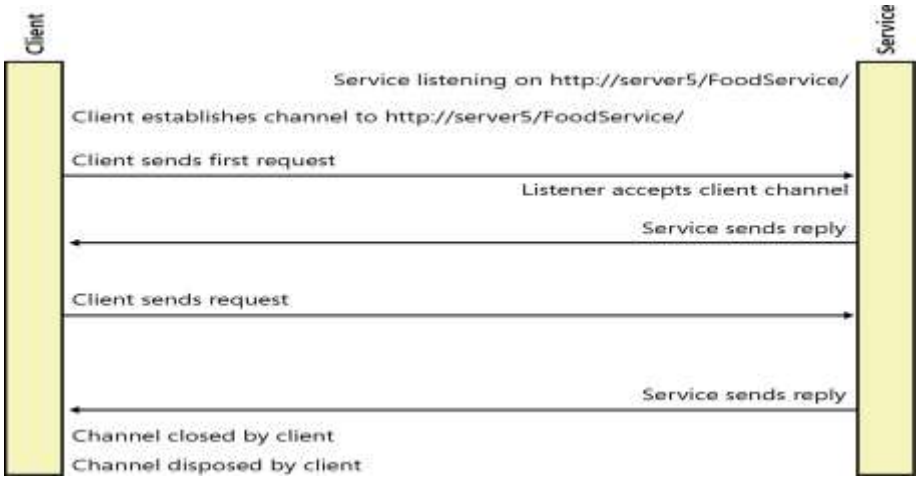
Instructor Notes:

Creating Proxy at Runtime

- A ChannelFactory provides a flexible way to create proxies at runtime, by creating a factory from the address, binding details, and contract details, and then calling CreateChannel on the factory
- The underlying channel can be accessed from both the proxy and channel objects

Instructor Notes:

WCF Channels



Channels are the highways over which messages travel. Before two programs can exchange messages, a channel must be established between them. The base Indigo channel types implement simplex input, simplex output, duplex, and request-reply messaging patterns. A client creates a channel to a service endpoint, specifying the type of channel desired and an address. If a service is listening at that same address, a channel can be established and messaging can take place. Once communication is completed, the channel can be torn down. Note that the channel is not actually established until the first message is sent. The first message from client to service is special in a number of ways: the channel is actually established at this time, and any negotiation needed for security features also takes place. For these reasons, the first message a client sends to a service can take longer to process than subsequent messages.

Instructor Notes:

None

WCFTestClient

- Windows Communication Foundation (WCF) Test Client (WcfTestClient.exe) is a GUI tool that enables users to input test parameters, submit that input to the service, and view the response that the service sends back. It provides a seamless service testing experience when combined with WCF Service Host.
- You can find the WCF Test Client (WcfTestClient.exe) in the following location: C:\Program Files\Microsoft Visual Studio 9.0\Common7\IDE\

WCF Service Host Starts WCF Test Client with a Single Service

After you create a new WCF service project and press F5 to start the debugger, the WCF Service Host begins to host the service in your project. Then, WCF Test Client opens and displays a list of service endpoints defined in the configuration file. You can test the parameters and invoke the service, and repeat this process to continuously test and validate your service.

WCF Service Host Starts WCF Test Client with Multiple Services

You can also use WCF Test Client to help debug a service project that contains multiple services. When WCF Test Client opens, it automatically iterates the list of services in your project and opens them for testing.

Outside Visual Studio

You can also invoke the WCF Test Client (WcfTestClient.exe) outside Visual Studio to test an arbitrary service on the Internet. To locate the tool, go to the following location:

C:\Program Files\Microsoft Visual Studio 9.0\Common7\IDE\

To use the tool, double-click the file name to open it from this location, or launch it from a command line.

WCF Test Client takes an arbitrary number of URIs as command line arguments. These are the URIs of services that can be tested.

wcfTestClient.exe URI1 URI2 …

After the WCF Test Client window is opened, click **File->Add Service**, and enter the endpoint address of the service you want to open.

Instructor Notes:

None

Demonstration

- Accessing the WCF Service

Instructor Notes:

Additional notes for instructor

Summary

- WCF 4.5 we can implement different hosting mechanisms.

Add the notes here.

Instructor Notes:

Answers for the Review Questions:Service Contract Data Contract Message Contract
True

Review Questions

- Question 1:Identify the different types of Hosting mechanisms in WCF
  - IIS
  - WAS
  - MSMQ
  - Self Hosting

Add the notes here.