



Microsoft Visual Studio

File Edit View Debug Team Tools Test Analyze Window Help

New ▶

Open ▶

Close



Close Solution



Save Selected Items

Ctrl+S

Save Selected Items As...



Save All

Ctrl+Shift+S

Export Template...

Source Control ▶



Page Setup...



Print...

Ctrl+P

Account Settings...

Recent Files ▶

Recent Projects and Solutions ▶



Exit

Alt+F4



Project...

Ctrl+Shift+N



Web Site...

Shift+Alt+N



Team Project...



File...

Ctrl+N

Project From Existing Code...

New Project

?

×

Recent

.NET Framework 4.5.2

Sort by: Default

Search Installed Templates (Ctrl+E)

Installed

Windows

Classic Desktop

Web

Android

Cloud

Extensibility

iOS

Silverlight

Test

WCF

Workflow

Visual Basic

Visual F#

ASP.NET MVC

C#

WCF Service Library

Visual C#

C#

WCF Service Application

Visual C#

C#

WCF Workflow Service Application

Visual C#

C#

Syndication Service Library

Visual C#

Click here to go online and find templates.

Type: Visual C#

A project for creating a host-independent WCF service class library (.dll)

Name: WCFServiceMEP

Location: C:\Users\LENOVO\Documents\Visual Studio 2015\Projects\Lec 07\

Solution name: WCFServiceMEP

Browse...


☒ Create directory for solution

☐ Add to Source Control


OK


Cancel

- References
- App.config
- IService1.cs
- Service1.cs**


 Open

Open With...


 View Code F7


 View Class Diagram


Scope to This


 New Solution Explorer View


Exclude From Project

 Cut Ctrl+X


 Copy Ctrl+C

 **Delete Del**


 Rename


 Properties Alt+Enter

- ▶  Properties
- ▶  References
-  App.config
-  IService1.cs


 Open

Open With...


 View Code F7


 View Class Diagram


Scope to This


 New Solution Explorer View


Exclude From Project

 Cut Ctrl+X

 Copy Ctrl+C

 Delete Del

 Rename

 Properties Alt+Enter

The screenshot displays the Visual Studio environment. On the left, the 'Add' menu is open, showing options like 'Build', 'Rebuild', 'Clean', 'View', 'Analyze', 'Publish...', 'Scope to This', 'New Solution Explorer View', 'Add', 'Manage NuGet Packages...', 'Set as StartUp Project', 'Debug', 'Initialize Interactive with Project', 'Source Control', 'Cut', 'Paste', 'Remove', 'Rename', 'Unload Project', 'Open Folder in File Explorer', and 'Properties'. The 'Add' menu is highlighted. On the right, the 'Add New Item' dialog is open, showing a list of items to add, including 'New Item...', 'Existing Item...', 'New Folder', 'Azure API App Client...', 'Reference...', 'Service Reference...', 'Connected Service...', 'Analyzer...', 'Windows Form...', 'User Control...', 'Component...', and 'Class...'. The 'New Item...' option is selected, and the keyboard shortcut 'Ctrl+Shift+A' is displayed next to it.

Add New Item - WCFServiceMEP

Installed

Sort by: Default



Search Installed Templates (Ctrl+E)



Visual C# Items

- Code
- Data
- General
- Web
 - Windows Forms
 - WPF
 - SQL Server
 - Workflow

Online



Class

Visual C# Items



Interface

Visual C# Items



Windows Form

Visual C# Items



User Control

Visual C# Items



Component Class

Visual C# Items



User Control (WPF)

Visual C# Items



About Box

Visual C# Items



ADO.NET Entity Data Model

Visual C# Items



Application Configuration File

Visual C# Items

[Click here to go online and find templates.](#)

Type: Visual C# Items

An empty interface definition

Name: IServiceMEP

Add

Cancel

ServiceClassMEP.cs

IServiceMEP.cs

WCFServiceMEP

WCFServiceMEP.IServiceCallBack

```
7
8 namespace WCFServiceMEP
9 {
10     [ServiceContract(CallbackContract = typeof(IServiceCallBack))]
11     public interface IServiceMEP
12     {
13         [OperationContract(IsOneWay = true)]
14         void hello();
15     }
16     public interface IServiceCallBack
17     {
18         [OperationContract]
19         void helloback(string name);
20     }
21 }
```



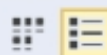
Don't annotate with
ServiceContract

Add New Item - WCFServiceMEP



Installed

Sort by: Default



Search Installed Templates (Ctrl+E)

Visual C# Items

- Code
- Data
- General
- Web
- Windows Forms
- WPF
- SQL Server
- Workflow

	Class	Visual C# Items
	Interface	Visual C# Items
	Windows Form	Visual C# Items
	User Control	Visual C# Items
	Component Class	Visual C# Items
	User Control (WPF)	Visual C# Items
	About Box	Visual C# Items
	ADO.NET Entity Data Model	Visual C# Items
	Application Configuration File	Visual C# Items

[Click here to go online and find templates.](#)

Type: Visual C# Items
An empty class definition

Name: ServiceClassMEP.cs

Add

Cancel


```
ServiceClassMEP.cs x IServiceMEP.cs
WCFServiceMEP WCFServiceMEP.ServiceClassMEP hello()

4 using System.Text;
5 using System.Threading.Tasks;
6 using System.Threading;
7 using System.ServiceModel;
8 namespace WCFServiceMEP
9 {
10     [ServiceBehavior(ConcurrencyMode = ConcurrencyMode.Reentrant)]
11     public class ServiceClassMEP : IServiceMEP
12     {
13         public void hello()
14         {
15             Thread.Sleep(50);
16             string name = "Windows Communication Foundation";
17             OperationContext.Current.GetCallbackChannel<IServiceCallBack>().helloback(name);
18         }
19     }
20 }
```

Establish a channel from service to client



WCFServiceMEP - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Test Analyze Window Help



Build Solution

Ctrl+Shift+B

Rebuild Solution

Clean Solution

Run Code Analysis on Solution

Alt+F11



Build WCFServiceMEP

Rebuild WCFServiceMEP

Clean WCFServiceMEP



Publish WCFServiceMEP

Run Code Analysis on WCFServiceMEP

Batch Build...

Configuration Manager...

ServiceClassMEP.cs

C# WCFServiceMEP

6 using

7 using

8 namespace

9 {

10











11

12


13

14

Recent

-  WCFWinFormHostFC
-  WCFServiceFaultContract
-  Faults
-  WCFClientFC
-  WCFConsoleHostFC
-  EmployeeClient
-  EmployeeServiceHostConsole
-  EmployeeLibrary
-  WCFServiceHostWinForm
-  WCFServiceMsg

 Visual Studio 2015

 Unpin this program from taskbar

 Close window



Run as administrator

Unpin from Taskbar

Properties



Microsoft Visual Studio (Administrator)

File

Edit

View

Debug

Team

Tools

Test

Analyze

Window

Help

New



Open



Close



Close Solution



Save Selected Items

Ctrl+S

Save Selected Items As...



Save All

Ctrl+Shift+S

Export Template...

Source Control



Page Setup...



Print...

Ctrl+P

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Recent Files



Recent Projects and Solutions



Exit

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Project...

Ctrl+Shift+N



Web Site...

Shift+Alt+N



Team Project...



File...

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Project From Existing Code...

New Project

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.NET Framework 4.5.2

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Windows

Web

Android

Cloud

Extensibility

iOS

Silverlight

Test

WCF

Workflow

Visual Basic



Windows Forms Application

Visual C#



WPF Application

Visual C#



Console Application

Visual C#



Shared Project

Visual C#



Class Library (Portable for iOS, Android and Windows)

Visual C#



Class Library

Visual C#



Class Library (Portable)

Visual C#

[Click here to go online and find templates.](#)

Type: Visual C#

A project for creating an application with a Windows Forms user interface

Name: WCFWinFormHostMEP

Location: C:\Users\LENOVO\Documents\Visual Studio 2015\Projects\Lec 07\

Browse...

Solution name: WCFWinFormHostMEP

☒ Create directory for solution

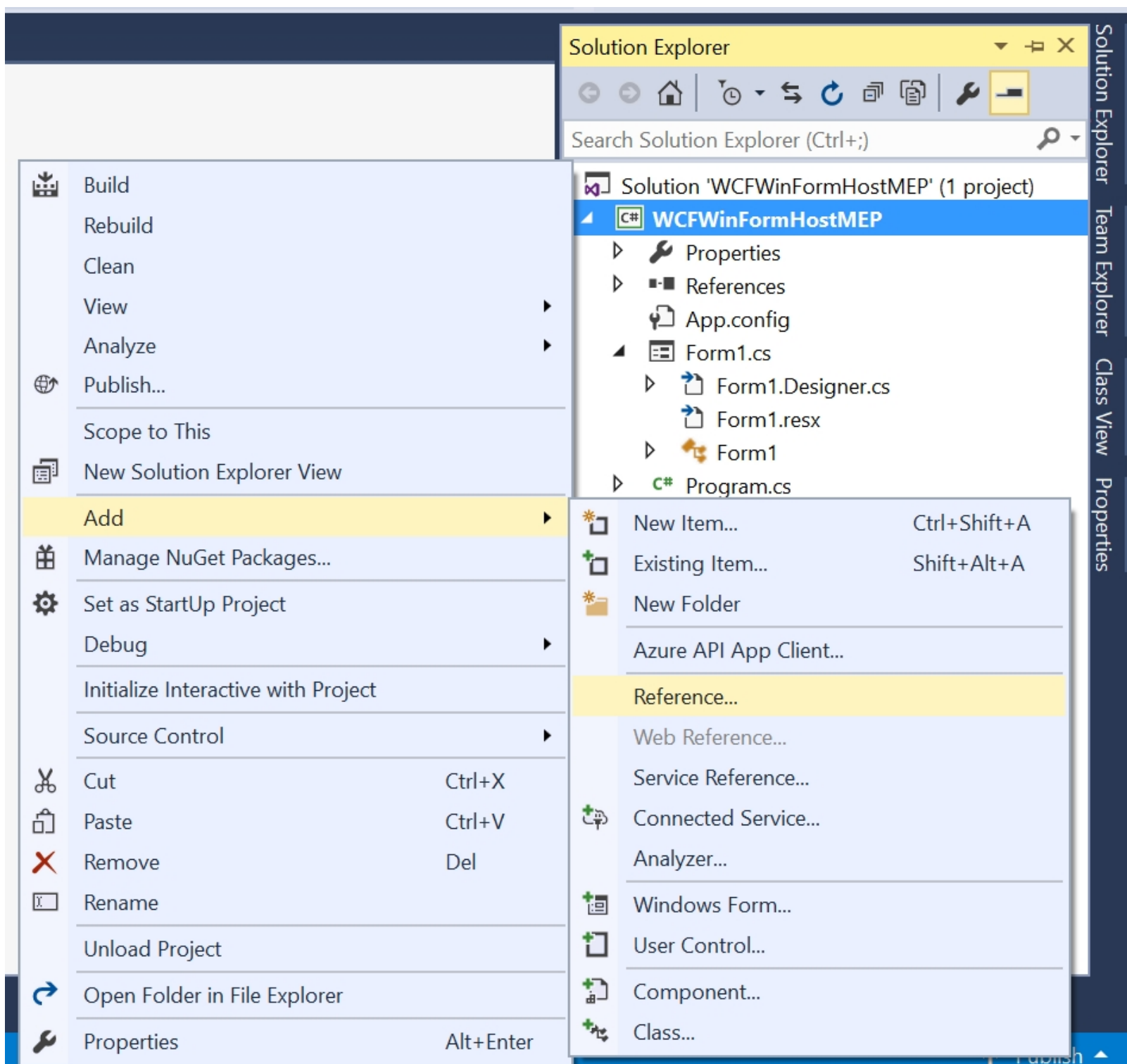
☐ Add to Source Control

OK

Cancel

Form1

label1



Assemblies

Targeting: .NET Framework 4.5.2

Search Assemblies (Ctrl+E)



Framework

Extensions

Recent

Projects

Shared Projects

COM

Browse

	Name	Version
	System.Runtime.Remoting	4.0.0.0
	System.Runtime.Serialization	4.0.0.0
	System.Runtime.Serialization.Formatters.Soap	4.0.0.0
	System.Security	4.0.0.0
<input checked="" type="checkbox"/>	System.ServiceModel	4.0.0.0
	System.ServiceModel.Activation	4.0.0.0
	System.ServiceModel.Activities	4.0.0.0
	System.ServiceModel.Channels	4.0.0.0
	System.ServiceModel.Discovery	4.0.0.0
	System.ServiceModel.Routing	4.0.0.0
	System.ServiceModel.Web	4.0.0.0
	System.ServiceProcess	4.0.0.0
	System.Speech	4.0.0.0
	System.Transactions	4.0.0.0
	System.Web	4.0.0.0
	System.Web.Abstractions	4.0.0.0
	System.Web.ApplicationServices	4.0.0.0
	System.Web.DataVisualization	4.0.0.0
	System.Web.DataVisualization.Design	4.0.0.0
	System.Web.DynamicData	4.0.0.0
	System.Web.DynamicData.Design	4.0.0.0
	System.Web.Entity	4.0.0.0
	System.Web.Entity.Design	4.0.0.0
	System.Web.Extensions	4.0.0.0
	System.Web.Extensions.Design	4.0.0.0
	System.Web.Mobile	4.0.0.0

Name:

System.ServiceModel

Created by:

Microsoft Corporation

Version:

4.0.0.0

File Version:

4.0.30319.34211 built by:

FX452RTMGDR

Browse...

OK

Cancel

▸ Assemblies

▸ Projects

▸ Shared Projects

▸ COM

▴ Browse

Recent

Search Browse (Ctrl+E)



	Name	Path
<input type="checkbox"/>	WCFSERVICE.dll	C:\Users\LENOVO\Docum
	WCFSERVICE.dll	C:\Users\LENOVO\Docum
	EmployeeLibrary.dll	C:\Users\LENOVO\Docum
<input checked="" type="checkbox"/>	WCFSERVICE.dll	C:\Users\LENOVO\Docum

Name:

WCFSERVICE.dll

Created by:**File Version:**

1.0.0.0

Browse...

OK

Cancel

```
App.config  Form1.cs  Form1.cs [Design]
6  <system.serviceModel>
7  <services>
8  <service name="WCFServiceMEP.ServiceClassMEP" behaviorConfiguration="metadataSupport">
9  <host>
10 <baseAddresses>
11 <add baseAddress="http://localhost:8000/WCFServiceMEP/" />
12 </baseAddresses>
13 </host>
14 <endpoint address="" binding="wsDualHttpBinding" contract="WCFServiceMEP.IServiceMEP" />
15 </service>
16 </services>
17 <behaviors>
18 <serviceBehaviors>
19 <behavior name="metadataSupport">
20 <serviceMetadata httpGetEnabled="True" />
21 </behavior>
22 </serviceBehaviors>
23 </behaviors>
24 </system.serviceModel>
25 </configuration>
```

Full Duplex (Two Channels)

netTcpBinding or netNamedPipeBinding

Full Duplex (Two Channels) **Half Duplex (Single Channel) Bi-directional**

```
11
12 namespace WCFWinFormHostMEP
13 {
14     public partial class Form1 : Form
15     {
16         ServiceHost sh = null;
17         private void Form1_Load(object sender, EventArgs e)
18         {
19             sh = new ServiceHost(typeof(WCFServiceMEP.ServiceClassMEP));
20             sh.Open();
21             label1.Text = "Service Running!";
22         }
23         private void Form1_FormClosing(object sender, FormClosingEventArgs e)
24         {
25             sh.Close();
26         }
27         public Form1()
28         {
29             InitializeComponent();
30         }
31     }
```



WCFWinFormHostFC - Microsoft Visual Studio (Administrator)

File Edit View Project Build Debug Team Tools Test Analyze Window Help



Build Solution

Ctrl+Shift+B

Rebuild Solution

Clean Solution

Run Code Analysis on Solution

Alt+F11



Build WCFWinFormHostFC

Rebuild WCFWinFormHostFC

Clean WCFWinFormHostFC



Publish WCFWinFormHostFC

Run Code Analysis on WCFWinFormHostFC

Batch Build...

Configuration Manager...

Server Explorer SQL Server Object Explorer

Form1.cs* App.con

C# WCFWinFormHostFC

10

11

12

13

14

15

16

17



Form1



Service running!



Microsoft Visual Studio

File Edit View Debug Team Tools Test Analyze Window Help

New ▶

Open ▶

Close

Close Solution

Save Selected Items Ctrl+S

Save Selected Items As...

Save All Ctrl+Shift+S

Export Template...

Source Control ▶

Page Setup...

Print... Ctrl+P

Account Settings...

Recent Files ▶

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Exit Alt+F4

Project... Ctrl+Shift+N

Web Site... Shift+Alt+N

Team Project...

File... Ctrl+N

Project From Existing Code...

New Project

Recent

.NET Framework 4.5.2

Sort by: Default

Search Installed Templates (Ctrl+E)

Installed

Templates

Visual C#

Windows

Universal

Windows 8

Classic Desktop

Web

Android

Cloud

Extensibility

iOS

Silverlight

Test



Windows Forms Application

Visual C#



WPF Application

Visual C#



Console Application

Visual C#



Shared Project

Visual C#



Class Library (Portable for iOS, Android and Windows)

Visual C#



Class Library

Visual C#



Class Library (Portable)

Visual C#

[Click here to go online and find templates.](#)

Type: Visual C#

A project for creating an application with a Windows Forms user interface

Online

Name: WCFClientMEP

Location: C:\Users\LENOVO\Documents\Visual Studio 2015\Projects\Lec 07\

Browse...

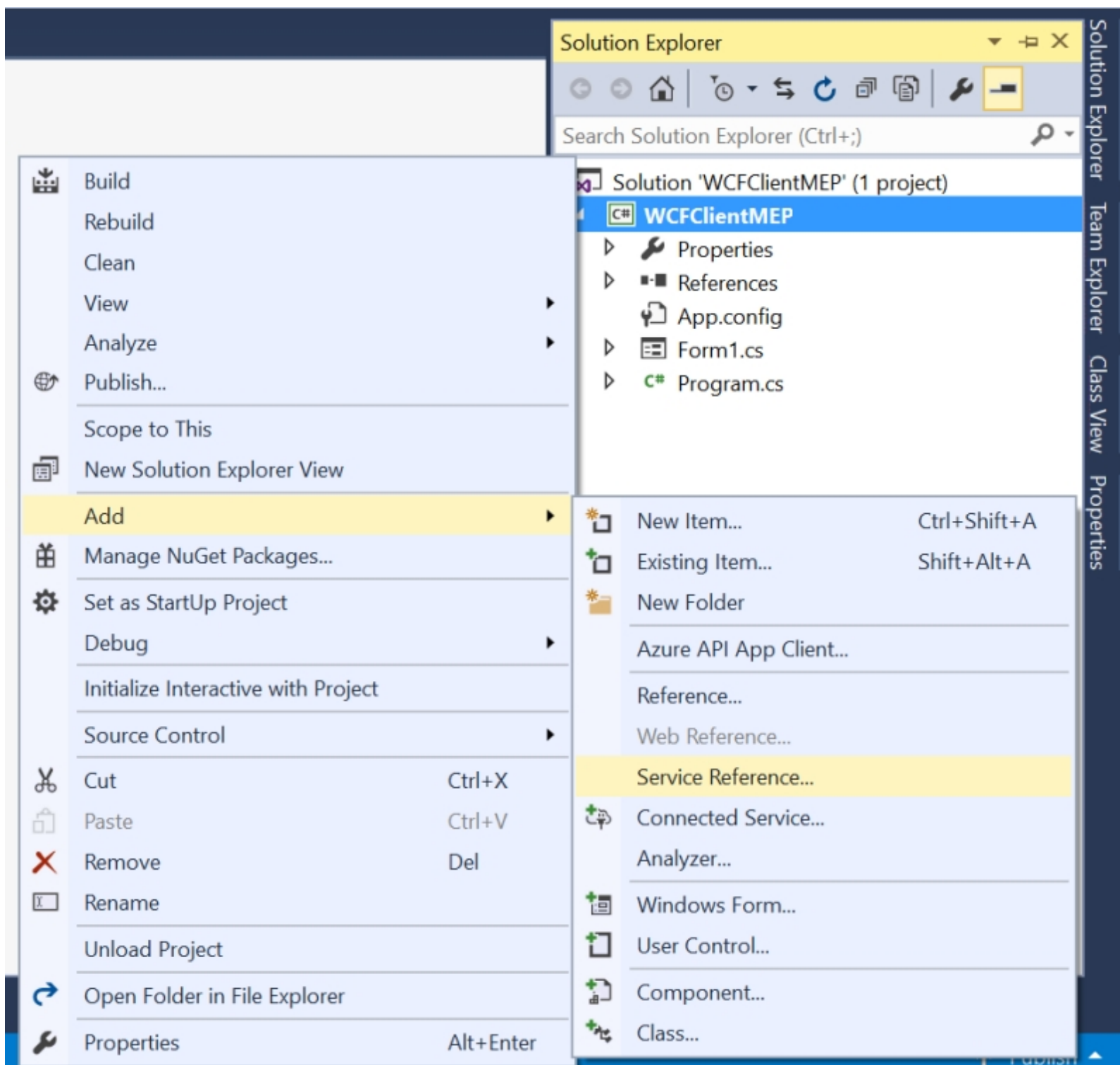
Solution name: WCFClientMEP

☒ Create directory for solution

☐ Add to Source Control

OK

Cancel



Add Service Reference





To see a list of available services on a specific server, enter a service URL and click Go. To browse for available services, click Discover.

Address:

Go

Discover

Services:

 ServiceClassMEP
 IServiceMEP

Operations:

Select a service contract to view its operations.

1 service(s) found at address 'http://localhost:8000/WCFServiceMEP/?wsdl'.

Namespace:



Advanced...

OK


Cancel

DuplexServiceClass.cs

Form1.cs

Form1.cs [Design]  

App.config

 Form1



label3

Duplex

DuplexServiceClass.cs

Form1.cs*

Form1.cs [Design]*

App.config

WCFCClientMEP

WCFCClientMEP.Form1

helloback(string name)

```
12 namespace WCFCClientMEP
13 {
14     //[CallbackBehavior(UseSynchronizationContext = false)]
15     public partial class Form1 : Form, ServiceReference1.IServiceMEPCallback
16     {
17         public void helloback(string name)
18         {
19             label3.Text = name;
20         }
21         private void button3_Click(object sender, EventArgs e)
22         {
23             //InstanceContext instance = new InstanceContext(new DuplexServiceClass());
24             InstanceContext instance = new InstanceContext(this);
25             ServiceReference1.ServiceMEPClient client = new ServiceReference1.ServiceMEPClient(instance);
26             client.hello();
27         }
28         public Form1()
29         {
30             InitializeComponent();
31         }
32     }
```



Form1



label3

Duplex



Form1



Windows Communication Foundation

Duplex