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OpenSpan Core Training

Runtime and Project Deployment

01 December 2013

This core training module includes these chapters:

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Contents

Chapter 15, Building and Deploying Projects

Chapter 16, Distributing Project Deployment Files

Chapter 17, Configuring and Using OpenSpan Runtime

Chapter 18, Using Configuration Project Items

Chapter 19, Performing Diagnostics and Troubleshooting

Chapter 15: Building and Deploying Projects

This course describes how to promote OpenSpan projects from the design environment, OpenSpan Studio, to the runtime environment OpenSpan Runtime. OpenSpan Runtime is a desktop application specifically created for running compiled OpenSpan projects. The key topics covered in this course are:

- Project Properties used in Building and Deploying Projects
- Project Deployment Process and Deployment Package Files
- Distributing Project Deployment Package Files
- Loading Projects in OpenSpan Runtime
- Configuration Project items and Deployment
- Diagnostics and Troubleshooting Runtime Projects

This chapter includes these topics:

Note While many of the concepts in this course are useful when deploying projects that reference other OpenSpan projects, please see the advanced training module: *OpenSpan Project to Project References*. Also, the topics covered in this course do not include working with non-OpenSpan projects (such as C# or VB) that reference OpenSpan projects. See the Knowledge Base for more information on these types of solutions.

Objectives

When you finish this chapter, you will be able to:

- Set project properties for building and deploying projects
- Set project properties for specific solution configurations
- Create OpenSpan project deployment packages
- Understand the types of files which comprise a deployment package
- Understand how OpenSpan Runtime loads projects

Prerequisites

This course requires the successful completion of the OpenSpan Studio Basics training module. You will need a working knowledge of OpenSpan Studio and the ability to create basic Windows and web-based projects.

The course requires the following:

- OpenSpan Studio version 5.2.
- OpenSpan Runtime 5.2 installed as part of OpenSpan Studio.

For Studio	OpenSpan.Runtime.exe is in this folder by default:
Standalone	C:\Program Files\OpenSpan\OpenSpan Studio for Visual Studio 2010\Application
Plug-in	C:\Program Files\OpenSpan\OpenSpan Plug-in for Microsoft Visual Studio 2010

Note If you are using the OpenSpan Studio plug-in, change the extensions of the sample solution files from *.ossln* to *.sln*.

- Microsoft Internet Explorer. These versions are supported:
  - Internet Explorer version 6 with Service Pack 1
  - Internet Explorer version 7 (32- or 64-bit)
  - Internet Explorer version 8 (32- or 64-bit)
  - Internet Explorer version 9 (32-bit)

  For more information on OpenSpan Studio system requirements, see the OpenSpan Studio Installation Instructions.

This chapter describes the steps for creating deployment versions of OpenSpan projects for use with the OpenSpan Runtime application. It also provides details on the OpenSpan project properties used in creating a runtime version of the project. The chapter includes suggested steps for testing a deployed project before promoting the project to production.

Project Properties

OpenSpan projects have design properties that display key information about the project and let you specify project behavior at runtime. Project properties are located in the Properties window (Project Design properties) and the Project Property pages:

- Application
- Build
- Deployment

The Project Property pages apply whenever you build, run, or deploy a project. The Build and Deployment project properties are set for a specific Solution Configuration. For example, the Build properties can differ between the Debug Solution Configuration and the Release Solution Configuration.

Solution Configurations

When you select Build in OpenSpan Studio, the following actions occur:

- Project files are compiled.
- Project assembly files (along with associated files) are created.

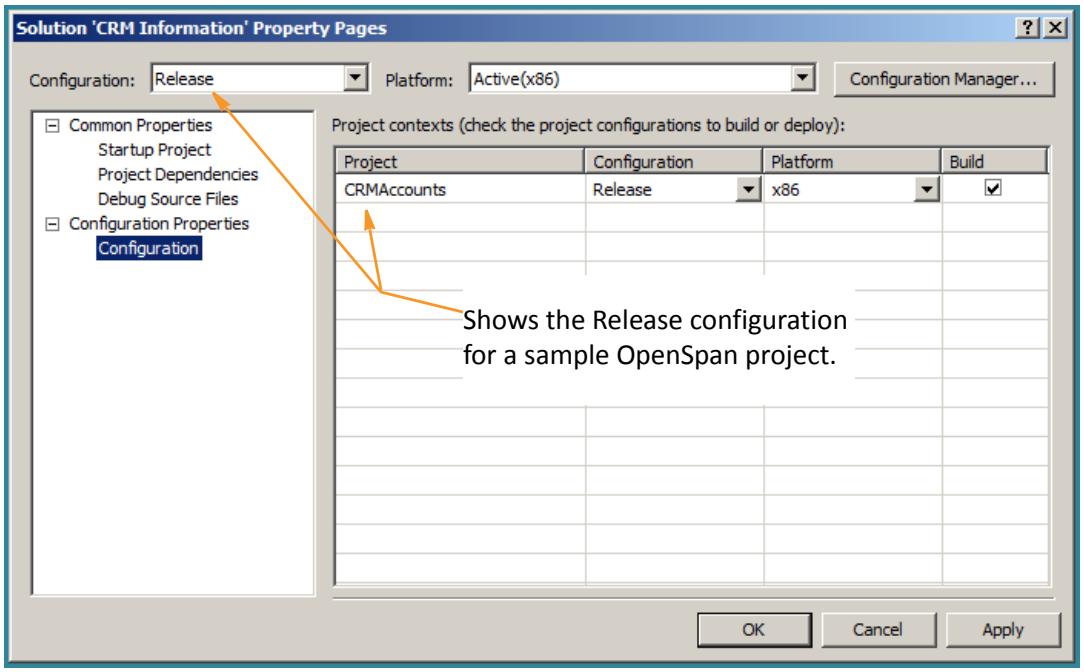
Selecting Start in OpenSpan Studio compiles and builds the project and then:

- Launches the locally installed version of the OpenSpan Runtime application.
- Loads the project assembly in OpenSpan Runtime.
- Runs the project.

Running a project through OpenSpan Studio lets you test and debug the project. See the *OpenSpan Studio Diagnostics and Debugging* training module for more information.

Visual Studio, the framework for OpenSpan Studio, contains Solution Configurations. You define Solution Configurations using the Solution Property Pages (View | Property Pages) option.

Here is an example of the Solution Property Pages dialog:



By default, there are two solution configurations:

- Debug
- Release

For OpenSpan projects, building an OpenSpan project using the either the Debug or Release configuration *does not* create a project deployment package which can be run on standalone OpenSpan Runtime installations. These builds are suitable only for use within the design environment.

Use the OpenSpan Studio Deployment functions to create the files required by standalone OpenSpan Runtime installations:

- Deploy Project with Current Configuration
- Deploy Project with All Configurations

OpenSpan includes the translators in the runtime project file when the Deployment functions are used. The translators are required when running the project using a standalone OpenSpan Runtime installation. The translator files are not included when a runtime project file is created through the Start and/or Build functions in OpenSpan Studio as these translators are not required by the OpenSpan Runtime version installed as part of OpenSpan Studio.

Release and Debug Files

By default, these files are created during the build process for the Debug and Release configurations:

Release

Creates the following files in the bin\release folder:

- *Projectname*.dll
- *Projectname*.xml
- *Projectname*_Release.manifest
- *Projectname*_Release.OpenSpan
- *Projectname*_Screenshots.dll

Debug

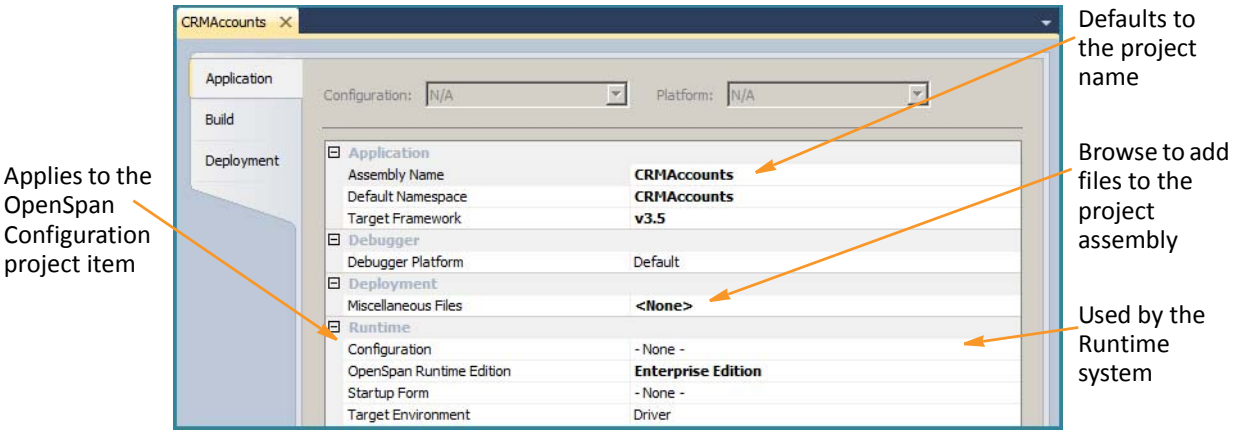
Creates the following files in the bin\debug folder:

- *Projectname*.dll
- *Projectname*.pdb
- *Projectname*.xml
- *Projectname*_Debug.manifest
- *Projectname*_Debug.OpenSpan
- *Projectname*_Screenshots.dll

Note Additional files are created depending on the Build References property setting (for more information, see Chapter 15, *Project Property – Build Page* on page 15-9.

Project Property – Application Page

The Application properties apply to all Solution Configurations. OpenSpan Studio uses these properties when creating OpenSpan deployment files. The properties define fundamental aspects of the compiled project, such as the name of the resulting project assembly, inclusion of additional files, and assembly file security. Here is an example of a completed Project Property – Application page:



Key properties on the project Application page are shown here:

This property	Specifies the...
Configuration	OpenSpan Configuration project item for the resulting deployment. Configuration project items are detailed in Chapter 18, *Using Configuration Project Items* on page 18-1.
OpenSpan Runtime Edition	Target version of OpenSpan Runtime for use with the deployment. The functions and capabilities differ between OpenSpan Runtime editions.

The differences between the OpenSpan Runtime editions are explained in this table:

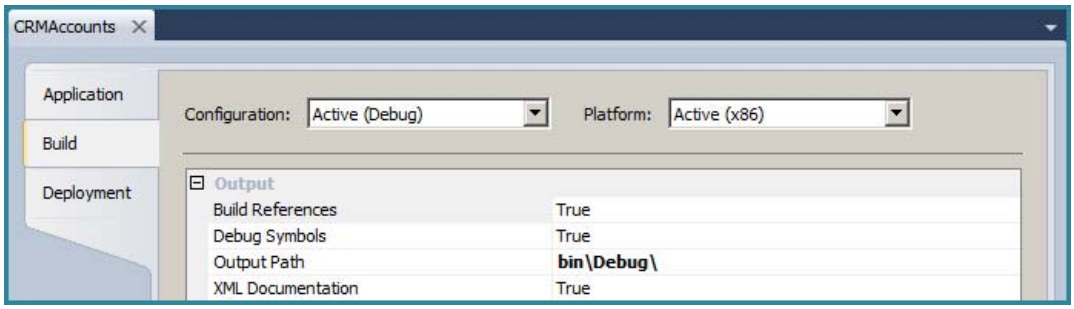
Feature	Runtime Enterprise	Runtime Events
Windows and Web Application Integration	✓	✓ *
Terminal Emulator/Mainframe/DOS Application Integration	✓	✓ *
Java Application and Applet Application Integration	✓	✓ *
Windows Forms and Application Bars Project Items	✓	na
Automation Project Items	✓	✓
Custom and Generic Event monitoring Windows/Web applications	✓	✓
Web Service Enablement (SOA)	✓	na
Web Service Consumption (Service Client)	✓	✓

* You cannot change state of interrogated controls.

Project Property – Build Page

OpenSpan applies the Build properties when you build and/or deploy a project. These properties depend on the Solution Configuration selected (Release, Debug, and so on). For example, you can set the Build property Debug Symbols to *False* for the Release Solution Configuration and *True* for the Debug Solution Configuration.

Here is an example of a completed Project Property – Build Page, which show the default entries for the Debug solution configuration:



Consult the OpenSpan Help for more information on Build Page properties. For most projects, the default values of the properties can be used. The Build References property depends on how the OpenSpan project is used.

This property	Specifies whether...
Build References	OpenSpan reference files are copied to the Output folder during the build. Set this to *True* to copy the files. The reference files include assemblies required to use OpenSpan projects on systems that do not have OpenSpan Studio or OpenSpan Runtime installed, such as when a C# project references an OpenSpan project.

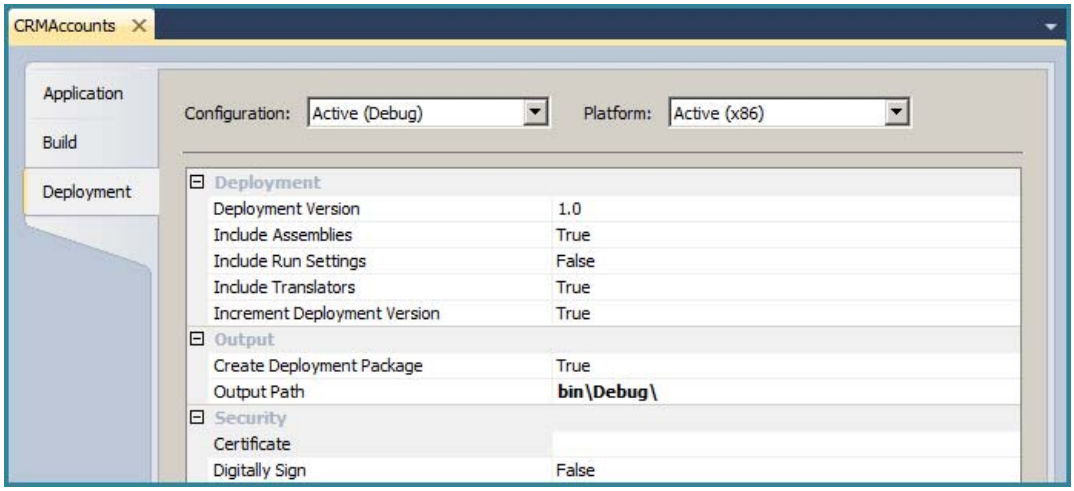
For single OpenSpan projects that are targeted for deployment to OpenSpan Runtime installations, set the Build References property to *False* for both the Debug and Release Solution Configurations.

Project Property – Deployment Page

The Deployment project properties apply to project deployment files – the files used by OpenSpan Runtime both on the designer system (Studio) and on end-user systems (Runtime). OpenSpan uses these properties whenever you build and/or deploy a project.

These properties depend on the Solution Configuration selected (Release, Debug, and so on). For example, you can set the Digitally Sign property to *True* for the Release Solution Configuration and *False* for the Debug Solution Configuration.

Here is an example of a completed Project Property – Deployment page:



Consult the OpenSpan Help for more information on the Deployment page properties. Basic definitions of the key deployment properties are:

This property	Specifies whether...
Include Run Settings	The Run Actions set for project items in Solution Explorer apply to the deployed version of the project. If you set this property to *True*, the project items set to *Not Run* do not execute in OpenSpan Runtime. Otherwise, all project items are loaded and run when the project executes in OpenSpan Runtime.
Create Deployment Package	Project deployment files are created for use with OpenSpan Runtime. If you set this property to *False*, the project cannot be loaded in either the version of OpenSpan Runtime installed as part of OpenSpan Studio or the standalone OpenSpan Runtime installations.
Digitally Sign	Additional security is applied to the deployment files. OpenSpan uses certificates to sign deployment files. If you set this to *True*, you must select a certificate on this page. The certificate binary is added to the project assembly and must be available on the OpenSpan Runtime system to load the project.

Project 1: Setting Project Properties for Debug Configuration

Follow these steps to set the Project Properties commonly used with the Debug solution configuration. This exercise requires the following setup:

- OpenSpan Extras - Training solutions and CRM.msi setup application must be installed.
- CRM.exe must be installed on your computer in this location:

  C:\Program Files\OpenSpan\CRM Setup

  The installation file CRM.msi is included in the Extras folder for OpenSpan Studio.
- Internet Explorer versions 6, 7, 8, or 9 installed and access to the OpenSpan Training web site:

  http://training.openspan.com/index.html

Follow these steps:

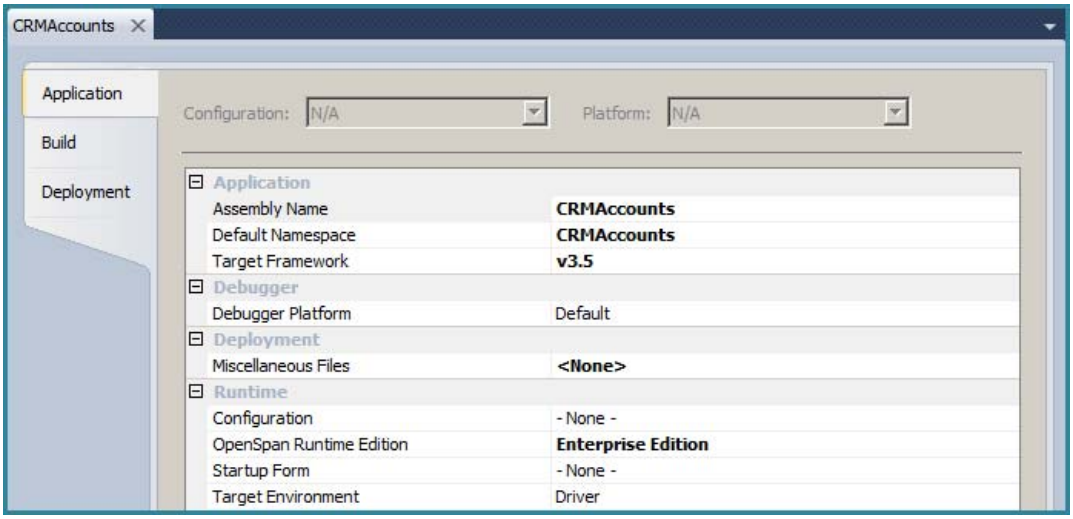
1. If you are using the OpenSpan plug-in, rename the solution file to:

   CRM Information.sln

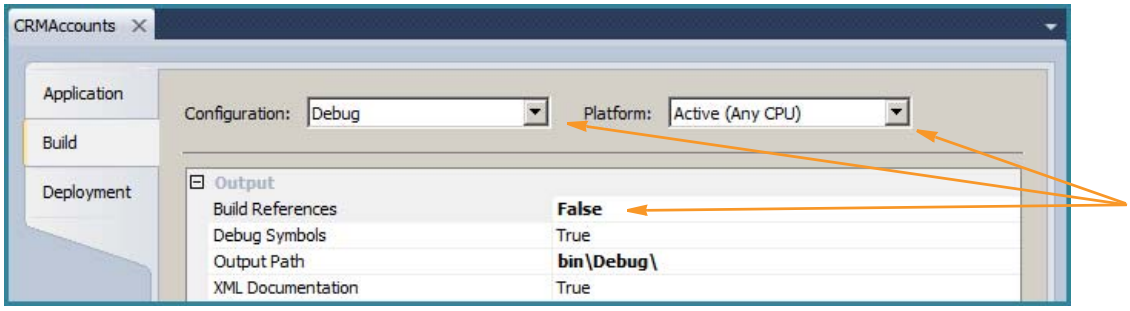
2. In OpenSpan Studio, open the CRMAccounts.osproj project file (located under the solution folder ….OpenSpan Studio for VS 2010\Projects\CRM Information\CRMAccounts).

3. Complete the Visual Studio Conversion wizard to update the project (if necessary). The CRMAccounts project displays in Solution Explorer.

4. Right-click on the CRMAccounts project and select Properties. The Project Property pages appear in the Designer:



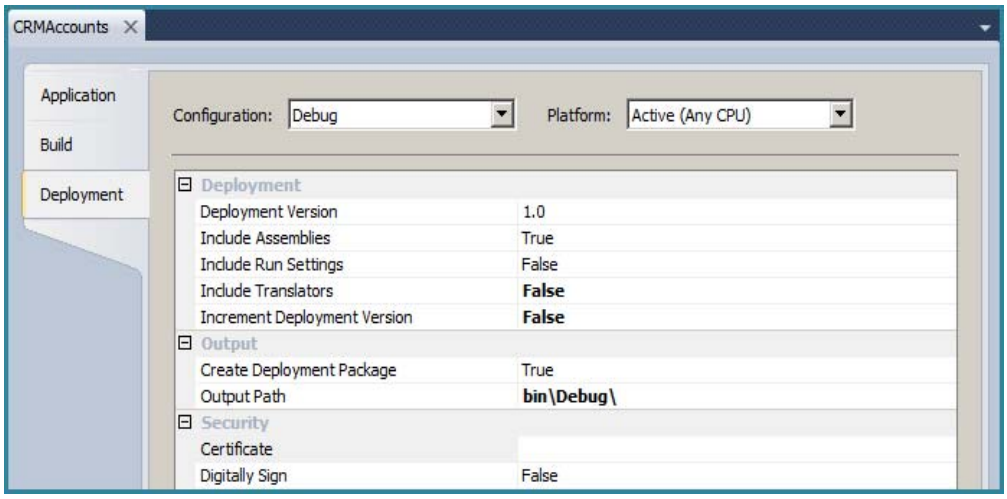
5. Click Build and select Debug in the Configuration field. The default build properties for the debug solution configuration appear.



6. Set the Build References property to False. The Build References property applies when using an OpenSpan project as a reference from a C# or other non-OpenSpan project.

   When building and running single OpenSpan projects, it is not necessary to copy the build references for the project to the Debug output folder since these files are included with the OpenSpan Studio and OpenSpan Runtime installations.

7. Open the Deployment page and make sure the properties are set, as shown here:

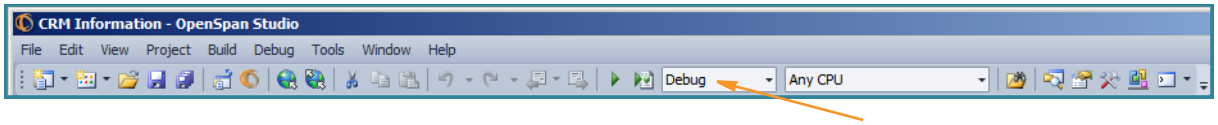


Keep in mind you…

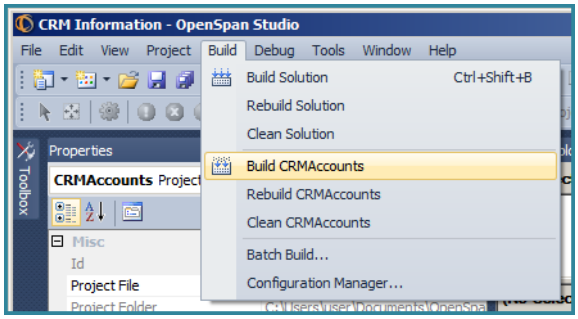
- Usually do not increment the version when running the project in Debug mode
- Must set the Create Deployment Package property True to run the project
- Usually omit package security when running in Debug mode

8. Save the solution.

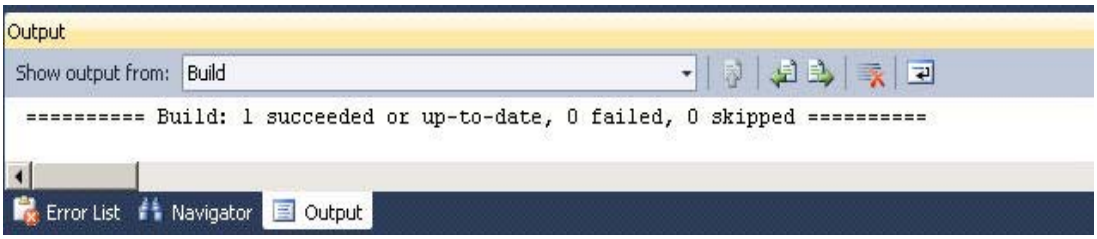
9. Select Debug on the Solution Configuration toolbar.



10. Then, select Build | Build CRMAccounts from the main menu. OpenSpan Studio compiles and builds the project.



The *Build Succeeded* message appears in the information bar at the bottom of the window:



11. Explore the project bin\Debug folder (CRM Information\CRMAccounts\bin\Debug) to view the files created as a result of the build process:

Name	Date modified	Type	Size
CRMAccounts.dll	2/13/2014 2:04 PM	Application extension	184 KB
CRMAccounts.pdb	2/13/2014 2:04 PM	PDB File	248 KB
CRMAccounts.ScreenShots.dll	2/13/2014 2:04 PM	Application extension	844 KB
CRMAccounts.xml	2/13/2014 2:04 PM	XML Document	5 KB
CRMAccounts_Debug.manifest	2/13/2014 2:04 PM	MANIFEST File	1 KB
CRMAccounts_Debug.OpenSpan	2/13/2014 2:04 PM	OPENSPAN File	117 KB

Project 2: Setting Project Properties for Release Configuration

Use these steps to set the Project Properties commonly used with the Release solution configuration. This exercise requires the following:

- CRM.exe must be installed on your computer in this location:

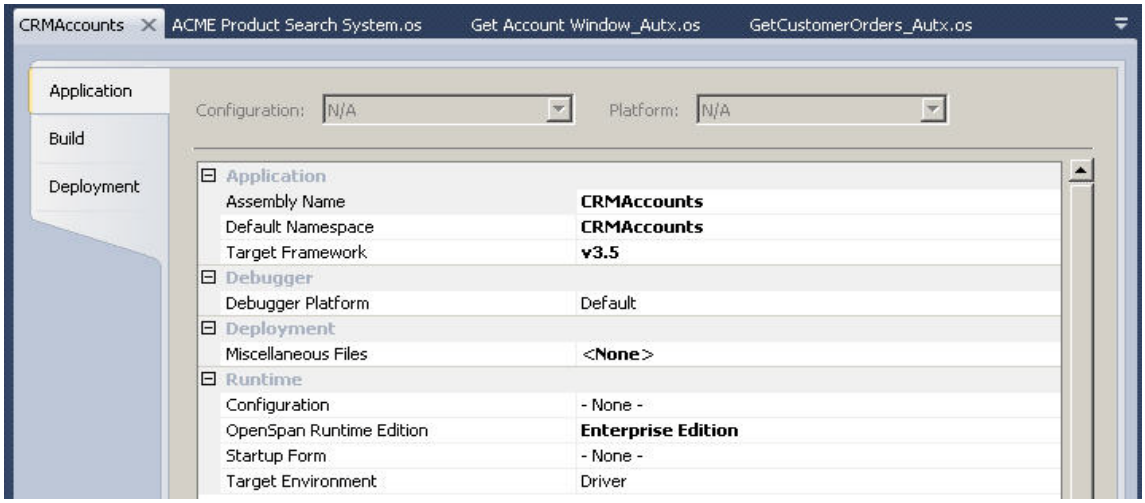
  C:\Program Files\OpenSpan\CRM Setup

  The installation file CRM.msi is included in the Extras folder for OpenSpan Studio.
- Internet Explorer versions 6, 7, 8, or 9 and access to the OpenSpan Training web site:

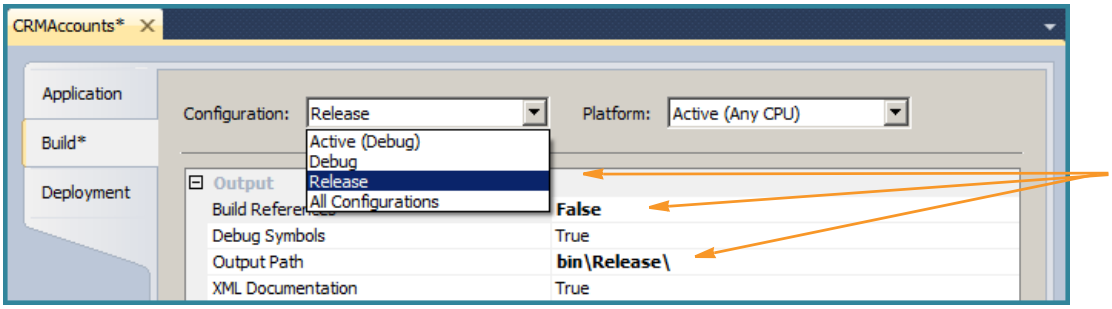
  http://training.openspan.com/index.html

Follow these steps:

1. Return to the CRM Information project in OpenSpan Studio.
2. Right-click on the CRMAccounts project and select Properties. The Project Property pages appear in the Designer window:

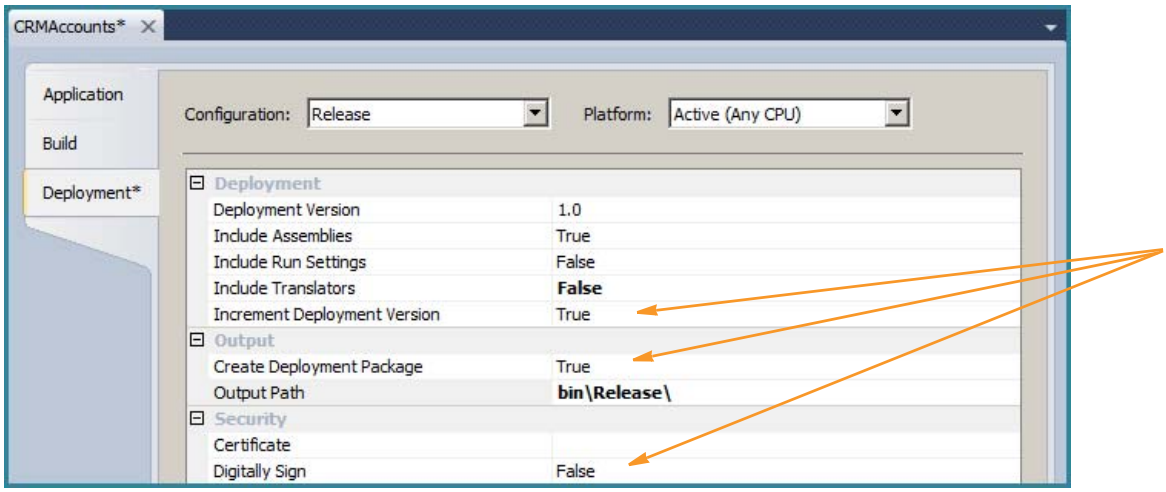


3. Open the Build page and select Release for the Configuration. Set the Build Reference property to False. Change the Output Path to **bin\Release**. The default Build properties for the release solution configuration appear.



4. Set the Build References and Debug Symbols property to False. See Chapter 15, *Project Property – Build Page* on page 15-9 topic for more information on this property.

5. On the Deployment page, make sure the properties are set as shown here:

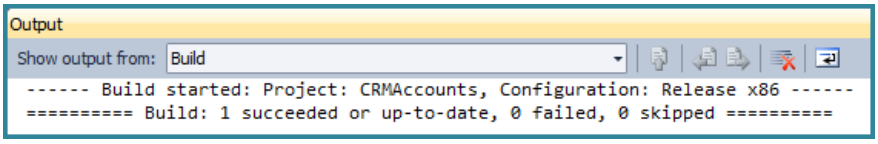


Be sure to set the…

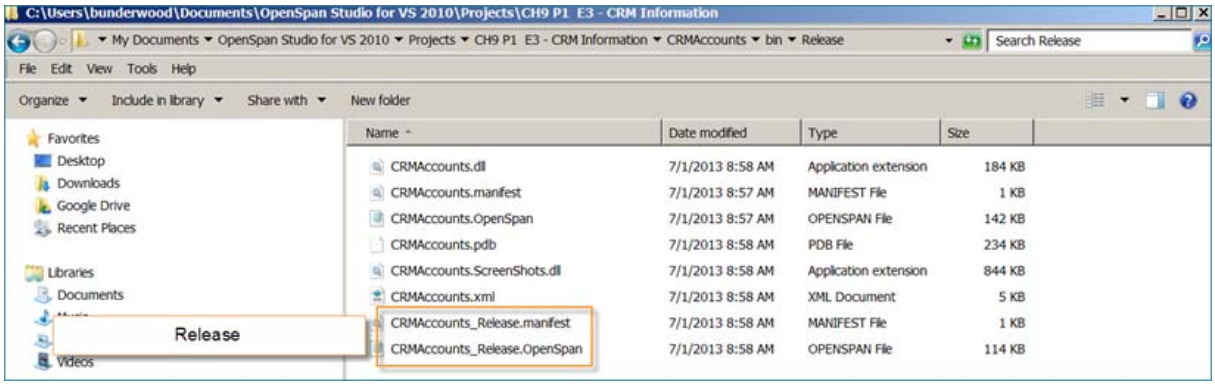
- Increment Deployment Version property to True so the version is updated when you use the Deployment function
- Create Deployment Package property to True so you can run the project
- Digitally Sign property to True and select a certificate *if* you want to include security when you use the Deployment function

Then save the solution.

6. With Release selected from the Configuration menu, select Build | CRMAccounts from the main menu. OpenSpan Studio compiles and builds the project. The message *Build Succeeded* appears in the information bar at the bottom of the window:



7. Explore the project bin\Release folder (….OpenSpan Studio for VS 2010\Projects\CRM Information\CRMAccounts\bin\Release) to view the files created as a result of the build process:



Note The Program Database (PDB) file *will not* be created for the Release configuration if the Debug Symbols property on the Build page is set to False.

Deploying Projects

Once you have created a project and set the Project Property pages, you are ready to begin the process of deploying the project to the end-user environment, OpenSpan Runtime. The suggested preparation for creating Runtime projects includes:

- Testing project by running in OpenSpan Studio
- Creating Project Deployment Package for the project
- Installing and Configuring OpenSpan Runtime on pilot systems for testing the project
- Running and testing the project in pilot OpenSpan Runtime environment
- Establishing a file deployment strategy

A prerequisite to running a project in OpenSpan Runtime is making sure the OpenSpan Runtime systems have access to all of the applications required by the project and that the paths to the applications are the same as those used in the project.

Any drivers or supporting files used by OpenSpan and by the applications must be installed on these computers as well. In general, the computers running OpenSpan Runtime must be able to run the project applications the same way that the OpenSpan Studio designer workstation does.

Testing in OpenSpan Studio

Before preparing a deployment package for use with OpenSpan Runtime, you should thoroughly test the solution in OpenSpan Studio. Some suggested test areas include:

- Login authentication (if required)
- Application navigation and target matching
- Data entry validation
- Error trapping
- Application shutdown and restart

Using Deployment Package Files

OpenSpan Runtime loads and runs OpenSpan project deployment packages. These packages are created in OpenSpan Studio when you choose one of these options:

- Project | Deploy Project with Current Configuration
- Project | Deploy Project with All Configurations

A deployment package consists of these files:

File type	Contains
.openspan	The compiled project file along with all referenced assemblies and translators.
.manifest	A list of the .openspan file contents along with project version information.

For example, the CRMAccount project, when deployed, results in two files:

- CRMAccount.manifest

- CRMAccount.openspan

Here is an example of the .manifest file for the CRMAccount project:

```
<DeploymentManifest version="4.0">
  <CompositeStudioProject name="CRMAccounts" fileName="CRMAccounts.dll"
assemblyName="CRMAccounts.dll" id="Project-8CECE8183C2FA38" version="5.2.112.0"
deploymentVersion="1.0" configuration="" deploymentSecurity="None" obfuscated="False"
runtime="True" digest="C53FEAC691438C05094FBC9CB6A72B">
    <Assemblies>
      <Assembly value="CRMAccounts.dll" digest="81C7E5F44B93E525E224AECCC35785" />
      <Assembly value="CRMAccounts.pdb" digest="99DB6B24752EC00BB8A049615C3C3F" />
    </Assemblies>
  </CompositeStudioProject>
</DeploymentManifest>
```

Note that the manifest lists the following information about the project assembly:

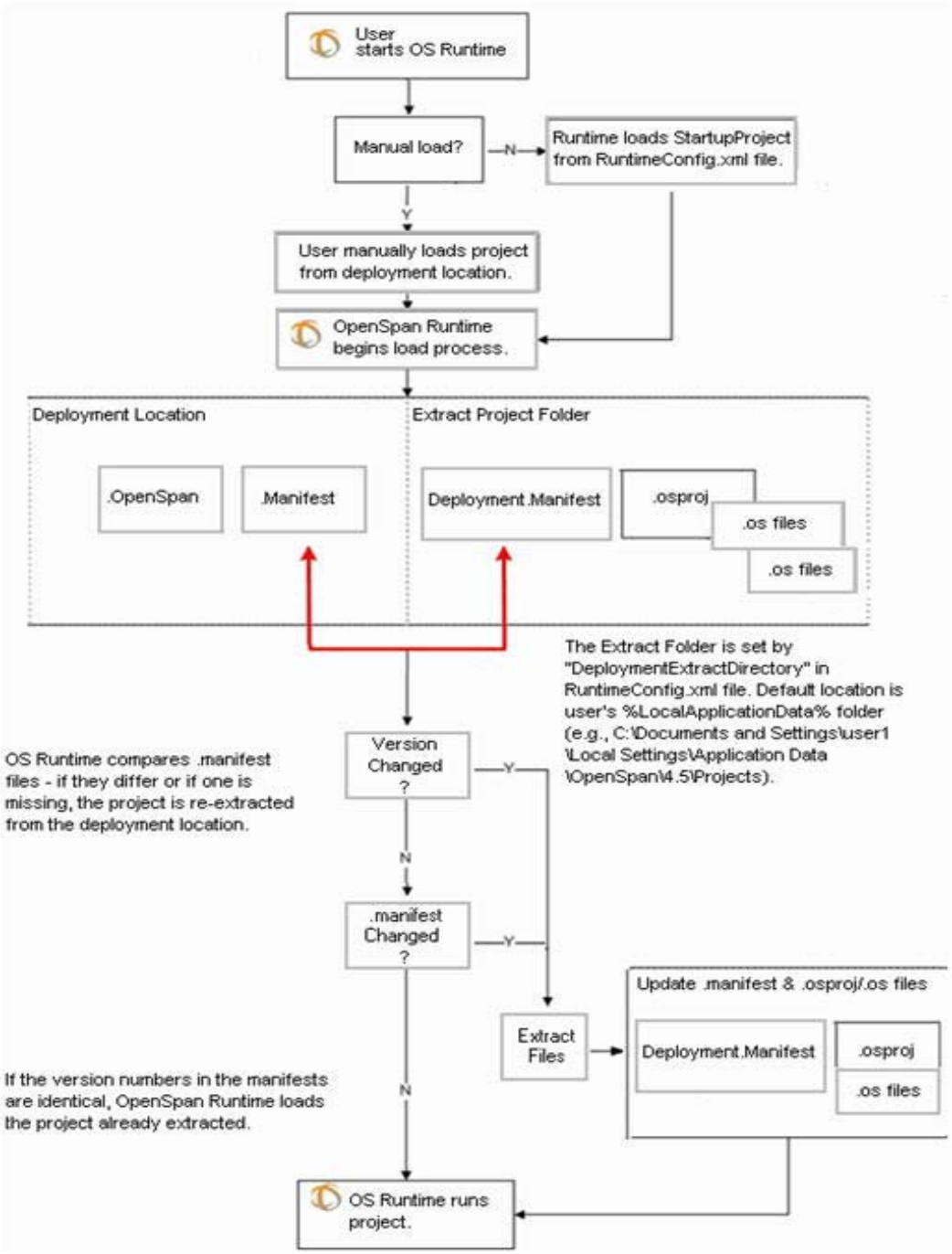
Manifest Item	Description
Compiled Project File Name	Based on the Project Name.
Deployed Project File Name	Based on the Project Properties - Application page, Assembly Name property setting.
Project ID	Created when the project is created (this property displays in the OpenSpan Properties window for the project). The ID is used to name the folder the solution is extracted to when the deployment package is opened in Runtime.
OpenSpan Studio version	Version used to create deployment files.
Deployment Version	The version of the deployment package from the Project Properties - Deployment page, Deployment Version property.
Configuration project item used (if any)	The Configuration project item used when deploying the project as set on the Project Properties - Application page, Configuration property.
Deployment Package Security options (if any)	Indicates security settings, certificates, for the deployment package.
Runtime Project Assemblies	Name of deployed project assemble file (based on the Project Properties - Application page, Assembly Name property setting).
Runtime Project Translators	List of OpenSpan translators required by the project.

OpenSpan Runtime Project Load Process

OpenSpan Runtime uses the project manifest file when loading the Runtime project as follows:

1. Deployment package files (.openspan and .manifest) copied to a designated location based on the method used to distribute projects to OpenSpan Runtime systems (file share, web site, local folder).
2. OpenSpan Runtime is launched and loads the project configured in the RuntimeConfig.xml file StartupProject setting. If the StartupProject is not set, a project can be manually selected by using the Load Local Project or Load Web Project options in OpenSpan Runtime.
3. When the OpenSpan Runtime application runs a project for the first time, the DeploymentExtractDirectory folder is created. The default location for the folder is: "%LocalApplicationData%" - user's profile, local Application data folder.
4. For the initial load of the project, OpenSpan Runtime extracts the project files from the .openspan file into the extract directory (specified by the RuntimeConfig.xml file "DeploymentExtractDirectory"). A sub folder is created for the project. The name of the folder is specified by the project ID (as listed in the .manifest).
5. OpenSpan Runtime runs the project from the Extract Directory/Project folder.
6. For subsequent runs of the project, OpenSpan Runtime compares the source .manifest file to the existing .manifest files in the extract directory for the project. If the deployment versions in the .manifest files are not exactly the same, OpenSpan Runtime downloads the new deployment package and re-extracts the files from the deployment file, overwriting the contents of the extract directory.

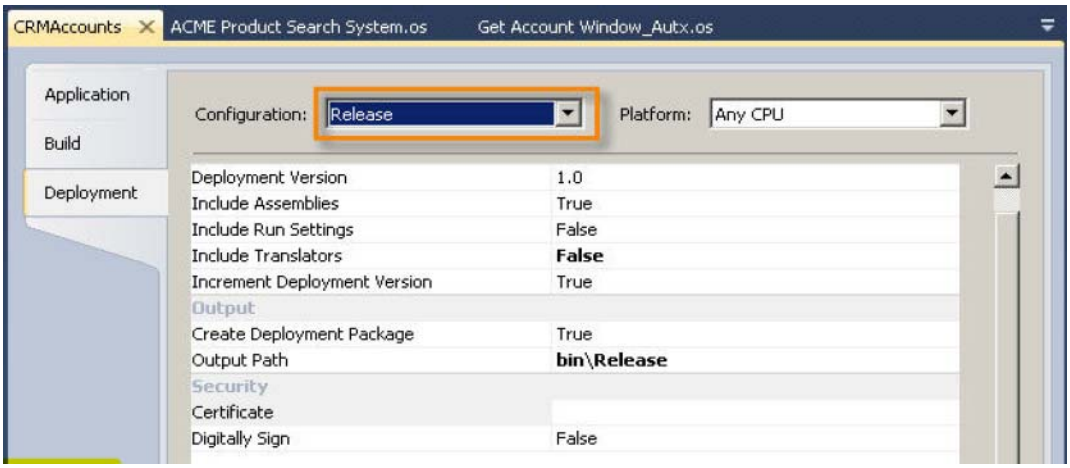
Project Load Process



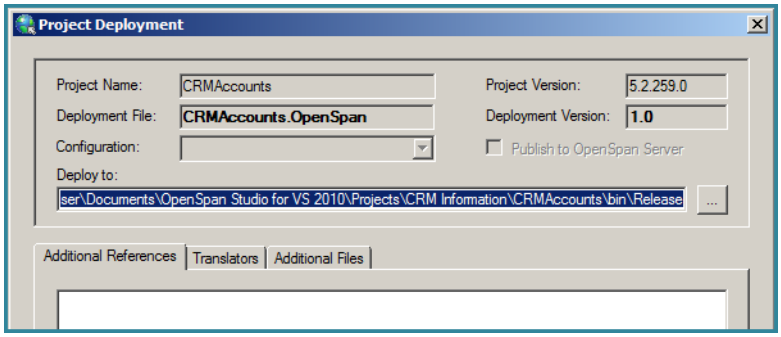
Project 3: Creating a Deployment Package

These steps show how to create a deployment package using a default configuration project item. In this case, there are no OpenSpan Configuration project items associated with the project (the Configuration property on the Property Page – Application is set to *None*).

1. With the CRMAccounts project open in OpenSpan Studio, select the *Release* solution configuration option from the Deployment tab.



2. Select Project | Deploy with Current Configuration from the main menu or click the corresponding toolbar button. The Project Deployment dialog appears:



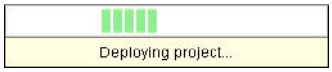
See Chapter 15, *Project Deployment Dialog* on page 15-24 for more information on this dialog.

3. In the Deploy To field, browse to the solution folder of the project:

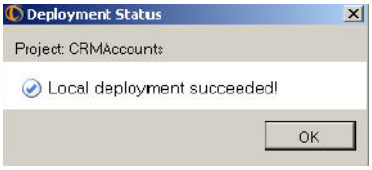
   ...OpenSpan Studio for VS 2010\Projects\CRM Information\CRMAccounts\bin\Release

   Then save the deployment package files.

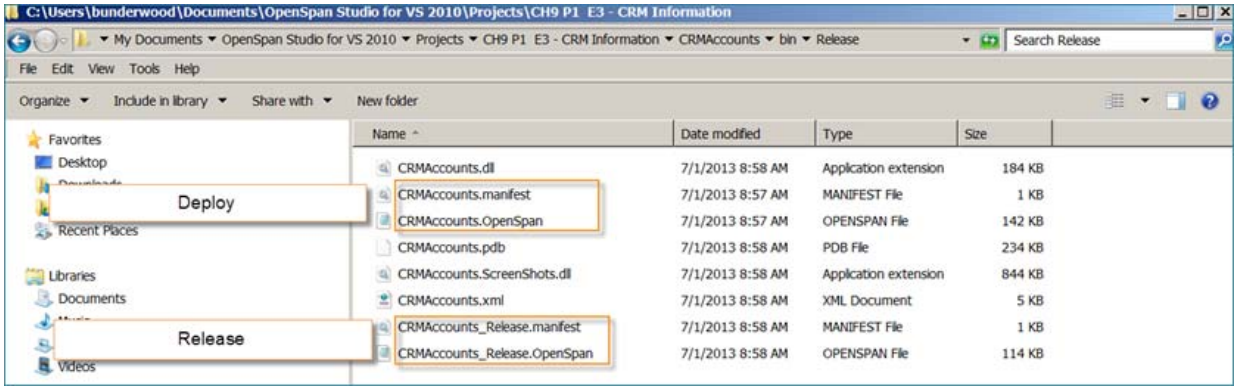
4. Click OK to generate the deployment package. A progress bar displays as OpenSpan creates the deployment files.



When complete, a message appears to indicate the process has completed successfully:



5. Click OK to continue and Save the solution.
6. Go to the deployment location chosen in the Deploy To field. These files are listed:
   - CRMAccounts.Manifest
   - CRMAccounts.OpenSpan



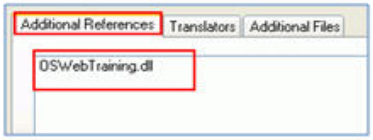
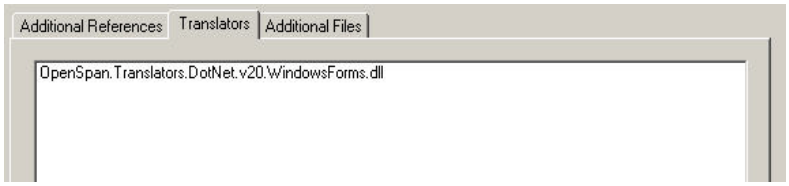
The next part of the procedure is copying the .OpenSpan and .Manifest files to the deployment distribution location for the pilot OpenSpan Runtime workstations. This is covered in Chapter 16, on page 16-1.

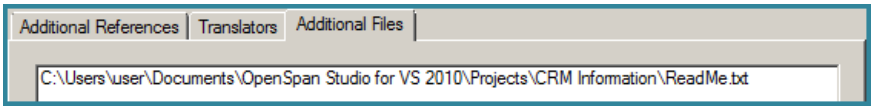
Project Deployment Dialog

This table explains the fields on the Project Deployment dialog:

Field	Description
Project Name	Shows the name of the project as it appears in Solution Explorer.
Project Version	Shows the version of OpenSpan Studio under which the project was last saved/deployed.
Deployment File	Shows the name of the Project Deployment file (with OpenSpan extension) which will be created upon successful completion of the deployment.
Deployment Version	Shows the current deployed version from the Project Properties - Deployment page, Deployment Version property.
Configuration	Lists all profiles created for this project. The field is active only if the Deploy the Project with all Configurations option is selected. In this case, you can select all project configurations to deploy or select individual Configurations to be deployed to selected locations. If Deploy the Project with the Current Configuration is selected, this field is inactive. The Configuration project item used for this deployment is set on the Project Properties - Application page, Configuration property.
Deploy To	Specifies the full path to where Studio saves the deployment files for the project.

This tables explains the tabs on the Project Deployment dialog:

Tab	Description
Additional References	Lists the assembly files for any references added to the deployed project. For example, if you are deploying an OpenSpan project that references another OpenSpan project, the name of the referenced project's assembly file displays here. In the following example, the deployed project references the OSWebTraining.dll. 
Translators	Lists all Translator assembly files associated with the project Translators are used by OpenSpan to integrate with specific technologies, such as .NET. The example below shows the Translators tab for an OpenSpan project that contains a .NET Windows form: 

Tab	Description
Additional Files	Displays the names (including paths) of files added to the deployment package, such as text documents, PDF files, and custom built components. To add files to the deployment package, use the Miscellaneous Files property on the Project Property - Application tab. Here is an example: 

Project 4: Deploying a Project with a Readme.txt File

The Additional Files tab displays the names and paths of files added to the deployment package, such as text documents, PDF files, and custom built components. To add files to the deployment package, use the Miscellaneous Files property on the Project Property – Application page. This exercise requires the following setup:

- CRM.exe must be installed on your computer in this location:

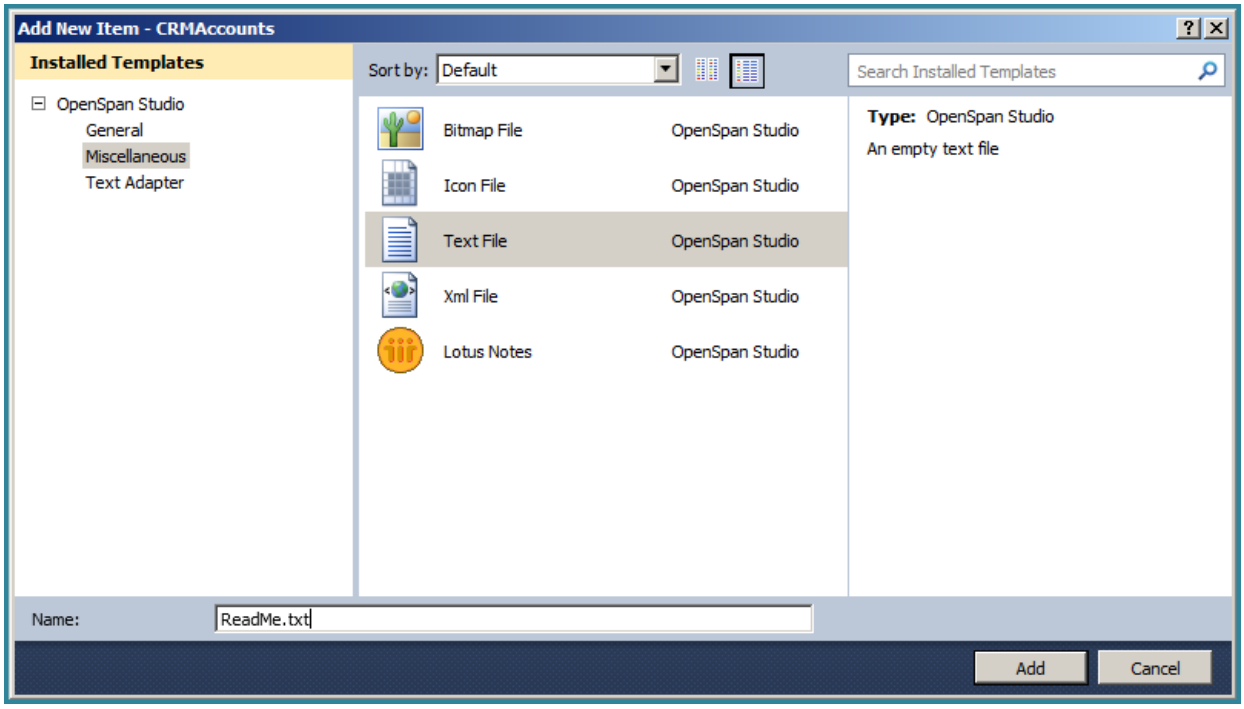
  C:\Program Files\OpenSpan\CRM Setup

  The installation file CRM.msi is included in the Extras folder for OpenSpan Studio.
- Internet Explorer versions 6, 7, 8, or 9 and access to the OpenSpan Training web site:

  http://training.openspan.com/index.html

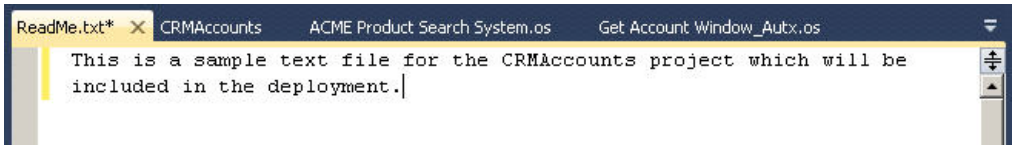
Follow these steps:

1. Return to the CRMAccounts project in OpenSpan Studio used in Chapter 15, *Project 2: Setting Project Properties for Release Configuration* on page 15-15.
2. Select Release from the Configuration menu on the Deployment tab.
3. Right-click on the CRMAccounts project in Solution Explorer and select Add | New Item. The Add New Item dialog appears.



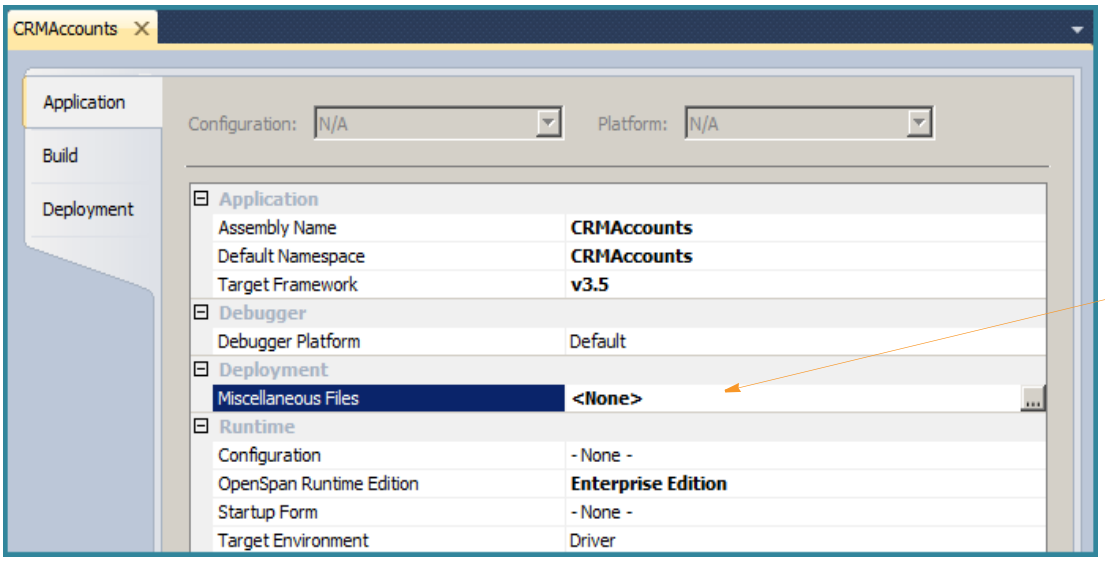
4. Select Miscellaneous and Text File template and enter **ReadMe** for the item name. Click Add to continue. The text file is added under the solution in Solution Explorer and opens in the Designer.

5. In the Designer window, type some text for the ReadMe.txt file. Here is an example:



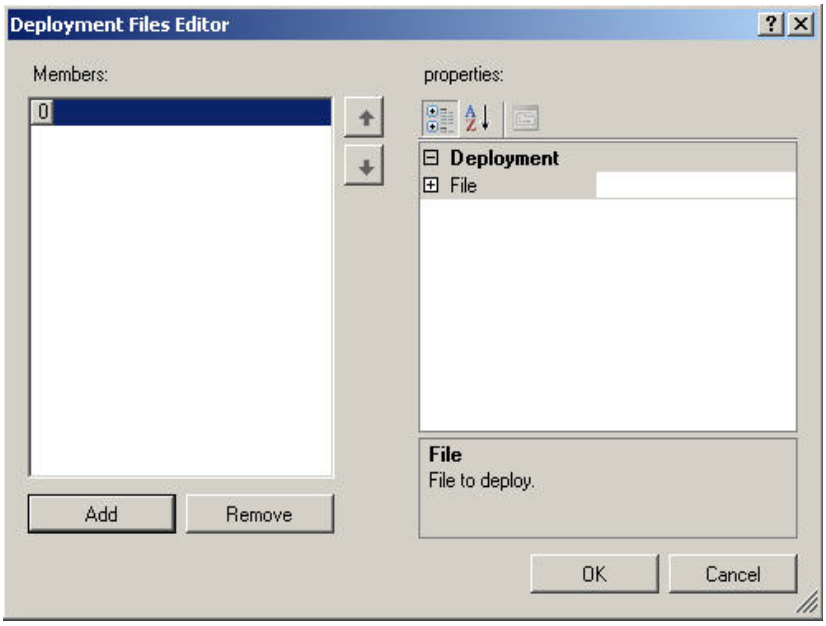
6. Save the solution.

7. Right-click on the CRMAccounts project in Solution Explorer and select Properties. Click the Application tab.

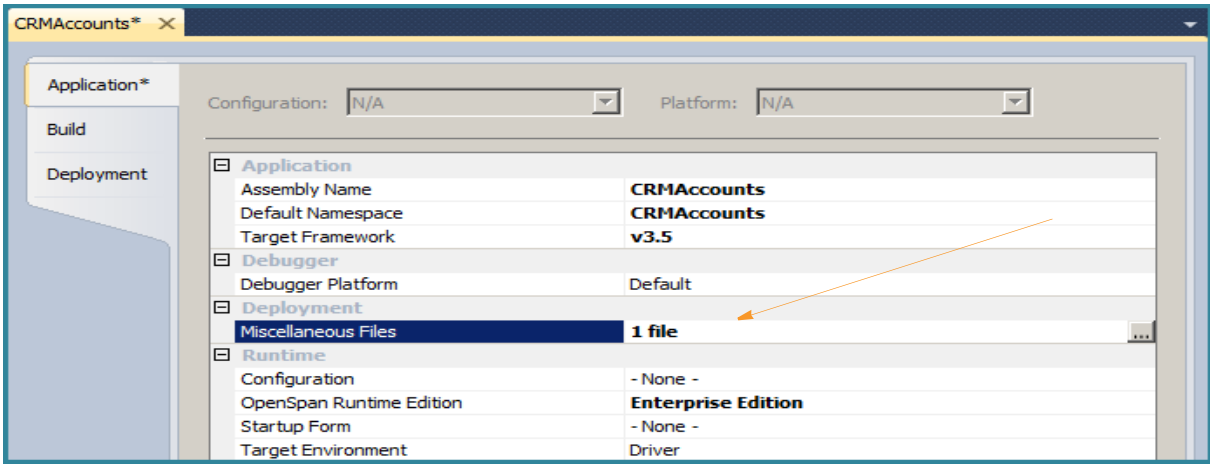


8. Click the browse button in the Miscellaneous Files property. The Deployment Files Editor appears.

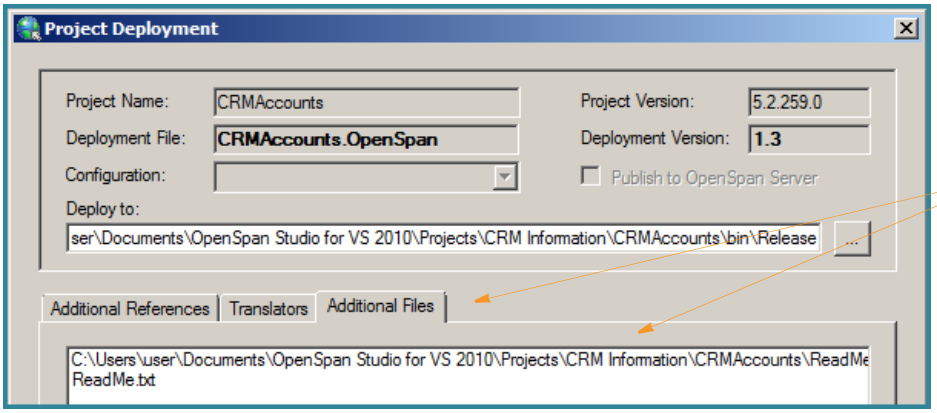
9. Click the Add button to add a member for specifying a file to add to the project:



10. Browse the File property and go to the ReadMe.txt file located in the solution folder. The file name for the new member displays the full path to the ReadMe.txt file.
11. Click OK to save the settings and return to the Application page. The Miscellaneous Files property now displays: *1 File.*

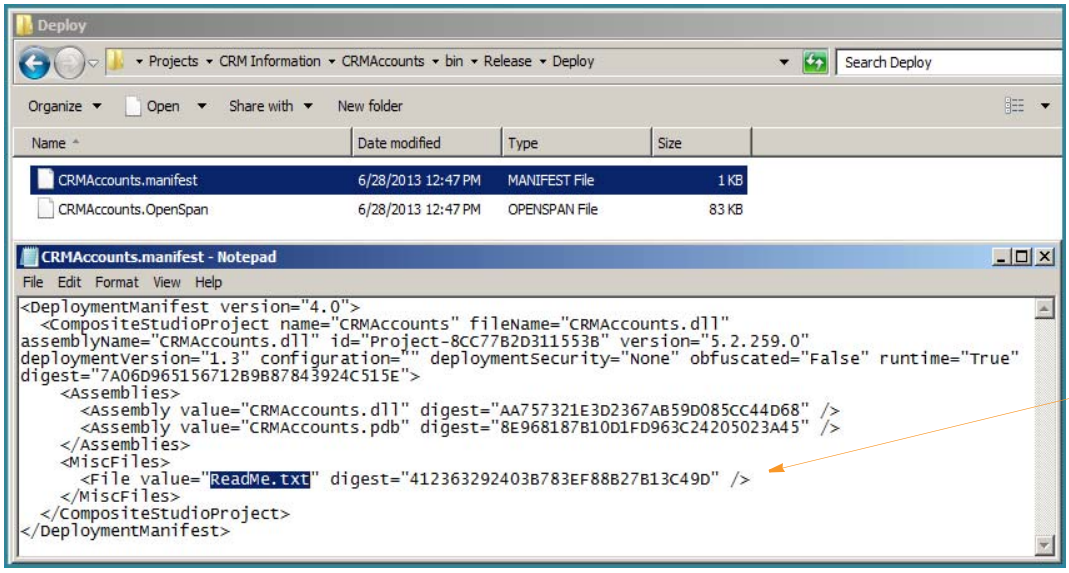


12. Save the solution.
13. Select Project | Deploy Project with Current Configuration. The Project Deployment dialog appears.
14. Use the Deploy To field to specify a location for the deployment files. Use the default location, the project *bin\Release* folder.
15. Click the Additional Files tab to view the ReadMe.txt file added to the project.



16. Click OK to continue with the deployment. When the deployment files are successfully created, a message displays the status. Click OK to continue.

17. Go to the Deploy To location and open the .manifest file in Notepad. The MiscFiles section lists the ReadMe.txt file.



18. Close Notepad *without* modifying the .manifest file.

19. Save the solution.

Chapter 16: Distributing Project Deployment Files

After creating the deployment package locally on your OpenSpan Studio computer, you copy the files to a location from which the OpenSpan Runtime pilot or production installations will retrieve the project.

Note Whenever a user runs a project using OpenSpan Runtime, the deployment package files are used. Every user must have access to these files and the correct versioning of these files must be maintained.

When you finish this chapter, you will be able to:

- Distribute deployment packages using a network share
- Distribute deployment packages using a web server
- Distribute deployment packages locally

This chapter includes these topics

Project Distribution Options

There are several ways you can distribute the OpenSpan projects deployment files:

Option	Description
Network Share	Deployment files are saved to a network share that can be accessed by the OpenSpan Runtime desktops/users.
Web Server	Deployment files are saved to a Web server that can be accessed by the OpenSpan Runtime desktops/users.
Local System	Deployment files are copied to each OpenSpan Runtime user's workstation.
OpenSpan Server	Deployment files are automatically uploaded from OpenSpan Studio to OpenSpan Server for further assignment to end users.

The following topics explain these options in greater detail:

Distributing from a Network Share Location

When using a network share to deploy OpenSpan projects, you copy or deploy the deployment package to a network share that can be accessed by OpenSpan Runtime users. Here are the basic steps for distributing OpenSpan projects using a file share:

1. Copy the deployment package files to a folder on the network server.
2. Enable sharing for the folder and set appropriate user access permissions to the file share.
3. Publish the network address of the file share to the OpenSpan Runtime users or set the RuntimeConfig.xml configuration files to autoload the project from the share.
4. Maintain version control of the deployment package files.

Distributing from a Web Server

To use a web server to distribute OpenSpan projects, copy the deployment package to a web site location that can be accessed by OpenSpan Runtime users. Here are the basic steps for distributing OpenSpan projects using a web server:

1. Verify that the OpenSpan extension is enabled on the web server.
2. Upload the deployment package files to the appropriate location on the web server.
3. Grant access to the web server to the appropriate users.
4. Publish the URL of the deployment package web site location to the OpenSpan Runtime users or set the RuntimeConfig.xml configuration files to autoload the project from the web site.
5. Maintain version control of the deployment package.

Distributing using a Local Folder

Another deployment method is to copy the package directly to OpenSpan Runtime workstations. This method is commonly used during the QA and UAT process for new projects.

In this case, you copy the deployment package to one or a small number of OpenSpan Runtime installations. (The examples and exercises in this course use this method of project deployment.)

OpenSpan Runtime users can either load the project manually or the RuntimeConfig.xml file can be modified to autoload the project from the local folder.

Distributing using OpenSpan Server

Note This is not used in these training exercises.

OpenSpan version 5.2 supports direct connectivity between OpenSpan Studio and OpenSpan Server. You can upload deployment files in multiple configurations to OpenSpan Server, where they are assigned to users and groups for download and execution on user desktops.

To make sure users of OpenSpan Studio are updating the correct version of a solution that is administered via OpenSpan Server, a toolbar appears with these list choices:

Field	Description
Project Configuration	The Configuration Project Item assigned to the package in OpenSpan Studio.
Run as Group	The User Group assigned to the packaged on OpenSpan Server.
Promotion Level	Refers to the level (Development or Production) assigned to the package on OpenSpan Server.

For more information, refer to the *OpenSpan Server 5.2 Administration and User Guide*.

Project 1: Using Local Folder Distribution

Use these steps to create a folder for OpenSpan deployment package files for use with OpenSpan Runtime on your computer. This file distribution location will be used in subsequent exercises in this course.

1. Using Windows Explorer, create this folder:

   C:\OpenSpanDeploymentFiles

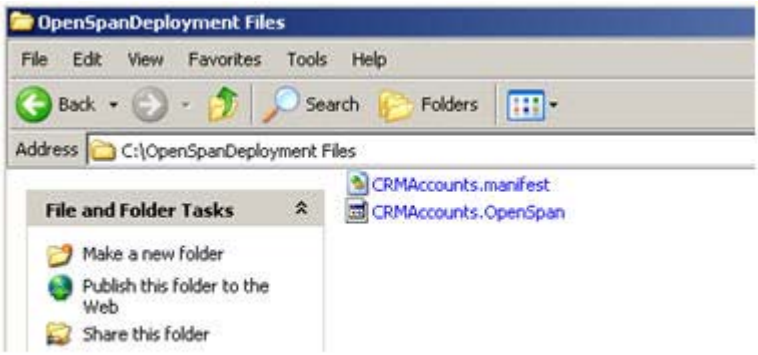
2. In Windows Explorer, locate these files, which were created in Chapter 15, *Project 4: Deploying a Project with a Readme.txt File*:

   - CRMAccounts.OpenSpan
   - CRMAccounts.Manifest

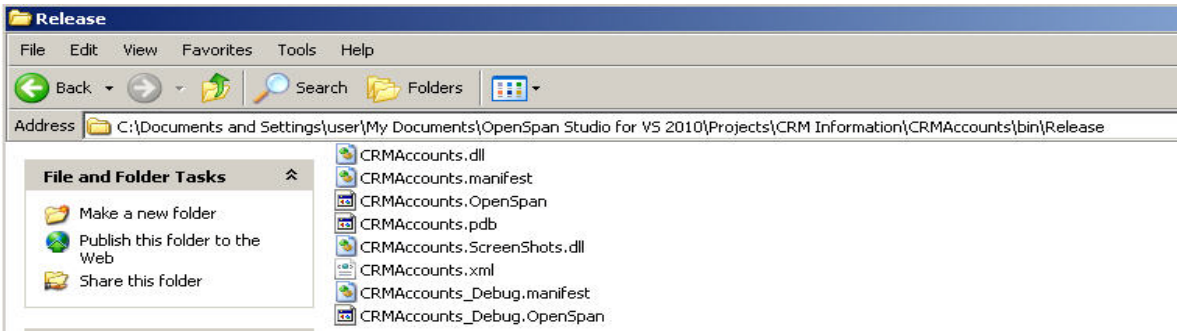
3. Copy these files into this folder:

   C:\OpenSpanDeploymentFiles

   Your Windows Explorer window should look similar to the following:



   Note that there are several .openspan and .manifest files in the \bin\Release folder:



   The files with *_Release* appended to the file name can only be used when running the project through OpenSpan Studio. The project assembly *_Release.OpenSpan* does not include all of the files required by a standalone installation of OpenSpan Runtime (note the file size differences).

This completes this exercise.

Chapter 17: Configuring and Using OpenSpan Runtime

The *OpenSpan Runtime Installation Instructions* provides detailed information for installing and configuring OpenSpan Runtime. This chapter describes some of the common tasks related to installation and configuration which apply when testing new projects and promoting projects ready for production.

When you complete this chapter, you will be able to:

- Prepare systems to run OpenSpan projects
- Set commonly customized RuntimeConfig.xml keys
- Run OpenSpan Runtime and load projects both manually and automatically
- Run OpenSpan Runtime and load project from command line

This chapter includes these topics:

Note OpenSpan Server is a management environment for OpenSpan Runtime deployment packages. It adds many options and additions to OpenSpan Runtime such as automatic download and distribution and user features such as the Process toolbar. Those features are beyond the scope of these instructions but information is available in the *OpenSpan Server 5.2 Administration and User Guide*.

Preparing Systems to Run OpenSpan Projects

OpenSpan Runtime has specific system requirements for general application use. Refer to the OpenSpan Installation documentation for more information on the system requirements and installation instructions. Beyond the general application requirements, deployed OpenSpan projects have system requirements as well. These requirements depend on the nature of the project. Before deploying a projects to a specific OpenSpan Runtime desktop, consider the following:

- Does the system and logged-in users have access to the distribution location of project deployment files?
- Does the system and logged-in users have access to all of the applications used in your project? Are the application versions the same?
- What is the best location of the extracted deployment files on the local computer?
- Should the project load automatically when OpenSpan Runtime is launched or should the user manually load the project?

Distribution Location Access

In order for OpenSpan Runtime to open a new deployment package, the application must be able to access the distribution location when run under the logged-in user's credentials. Test accessing the distribution location outside of OpenSpan Runtime to confirm that the deployment files are accessible.

Application Access

Any application used in a deployed project must be accessible from the end user's system. In environments where the installation locations of applications differ among end-user desktops, you must adapt your OpenSpan projects so that the executable, starter application, or web site is accessible to any user running the project.

For example, OpenSpan projects that contain Windows applications use the Path property to executable or starter application used in the project. If the path to the application differs on the OpenSpan Runtime systems from the path used in the development environment, the project will not be able to load the target application.

OpenSpan Runtime Configuration Files and Settings

When installing and using OpenSpan Runtime for testing new projects, it is common to use different application configuration settings than those used for the production environment. For example, while testing projects you could change the diagnostic publishing settings to enable more verbose error reporting. See Chapter 19, for more information.

The main configuration files for OpenSpan Runtime are discussed in this table:

File	Description
openspan.ini	Modify the settings in this file only when using SuperTrace or Control Regions.
OpenSpan.Runtime.exe.config	This file contains settings for customizing the OpenSpan Runtime splash screen, selecting the local directory to use for the OpenSpan Runtime configuration files, and enabling remote debugging.
RuntimeConfig.xml	This file contains settings for OpenSpan Runtime diagnostics, setting a Startup Project, defining the Deployment Extract Directory, and enabling the use of the Last Good Local Package.

See the OpenSpan Help and Knowledge Base for detailed information on the configuration files. For this course, two settings in the RuntimeConfig.xml file are described — Deployment Extract Directory and the Startup Project — as these settings commonly require customization.

Project 1: Setting the Local Project File Extract Directory

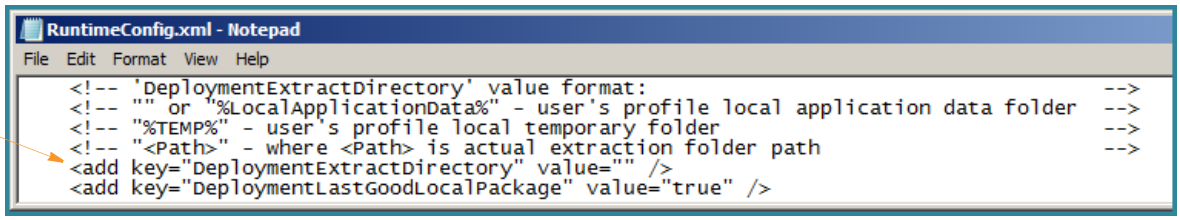
By default, OpenSpan Runtime is configured such that the Extract directory is under each OpenSpan Runtime user's Application Data folder. It is *strongly* recommended that you change this setting so all OpenSpan Runtime project files are extracted to a common directory location. To change the directory location, follow these steps:

1. Locate the RuntimeConfig.xml file in the installation folder on the OpenSpan Runtime workstation.

For Studio	OpenSpan.Runtime.exe is in this folder by default:
Standalone	C:\Program Files\OpenSpan\OpenSpan Studio for Visual Studio 2010\Application
Plug-in	C:\Program Files\OpenSpan\OpenSpan Plug-in for Microsoft Visual Studio 2010

2. Make a backup copy of the file (*RuntimeConfig.bak*).

3. Open the RuntimeConfig.xml file using Notepad. Locate the Deployment section as follows:



4. Note that the DeploymentExtractDirectory key is blank. By leaving this setting blank, the Local Application Data path is used. Change this path to a common folder which is used for all users of this computer when running OpenSpan Runtime projects.

   This avoids having to search the system files for the extracted projects for each OpenSpan Runtime user and limits the project copies on the system to one.

5. Once you make changes to the DeploymentExtractDirectory setting (or any of the RuntimeConfig.xml settings), save the RuntimeConfig.xml file and restart OpenSpan Runtime for the changes to take effect.

Setting the Project Load Method

You have the option of enabling OpenSpan Runtime to automatically load a project when the Runtime is launched rather than having the end user manually load an OpenSpan project. Any time OpenSpan Runtime is started, the application applies the StartupProject setting. If the setting is blank, then end users must manually select a project to load and run. If a project is specified in the StartupProject setting, OpenSpan Runtime automatically loads the project. Note that the project must be identified by the fully delimited file name.

Whether projects are loaded manually or automatically loaded using the StartupProject setting, OpenSpan Runtime compares manifest files and re-extracts deployment files if required.

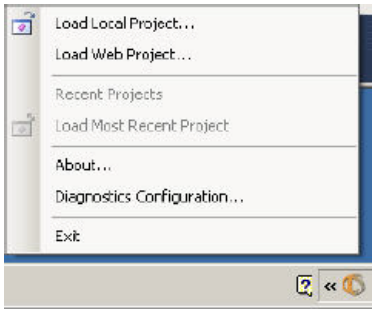
For testing new projects, the StartupProject is usually left blank and the project is manually loaded. This chapter describes both manually loading projects and modifying the configuration to automatically load projects.

Launching OpenSpan Runtime

When OpenSpan Runtime is installed alone, you can launch the application by selecting OpenSpan Runtime from the Start menu. When running in the design environment, OpenSpan Studio, start OpenSpan Runtime by double-clicking on the executable: OpenSpan.Runtime.exe located in:

For Studio	OpenSpan.Runtime.exe is in this folder by default:
Standalone	C:\Program Files\OpenSpan\OpenSpan Studio for Visual Studio 2010\Application
Plug-in	C:\Program Files\OpenSpan\OpenSpan Plug-in for Microsoft Visual Studio 2010

A small OpenSpan icon displays in the application tray when OpenSpan Runtime is running. Right-click on the icon to view the OpenSpan Runtime menu:



Option	Choose this option to...
Load Local Project	Display the Open Project window and load a project from your local deployment folder. OpenSpan stores the name of the project you choose. The next time you want to load the project through OpenSpan Runtime, you can quickly do so by selecting it from the Recent Projects of Load Most Recent Project options.
Load Web Project	Display the Web Project URL window where you can enter the URL of the web project you want to load. After you type the URL, including *http://* or *https://*, click Validate to check the link. Once this link is validated, click OK.
Recent Projects	See a list of the most recent projects you have loaded.
Load Most Recent Project	Load the last project you ran.
About	See information about this version of OpenSpan Runtime.

Option	Choose this option to...
Diagnostics Configuration	Display the Diagnostics Configuration window. This window contains the Diagnostics Settings Log Categories, and Tracing Options tabs which let you specify the types of messages to generate and how these messages are published, such as whether the messages are saved to a file or displayed in the output window. Your choices are saved in the RuntimeConfig.xml file. For more information on diagnostics configuration, see the OpenSpan Help.
Report a Problem	Start a wizard which guides you through the process of capturing dump files and reporting a problem.
Exit	Close OpenSpan Runtime.

Project 2: Loading Local Project

This exercise provides detailed steps for loading a deployed project created earlier in this training module. This exercise requires the following setup:

- The CRMAccounts.manifest and CRMAccounts.OpenSpan files must be in the C:\OpenSpanDeploymentFiles folder. These files are created in Chapter 15, *Project 4: Deploying a Project with a Readme.txt File*.
- The CRM.exe must be installed on your computer to the following location:

  C:\Program Files\OpenSpan\CRM Setup

  The installation file CRM.msi is included in the Extras folder for OpenSpan Studio.
- Internet Explorer versions 6, 7, 8, or 9 and access to the OpenSpan Training web site:

  http://training.openspan.com/index.html
- OpenSpan Runtime standalone installation.

Begin this exercise by launching OpenSpan Runtime from the Start menu.

1. Once the OpenSpan Runtime icon appears in the application tray, right-click on the icon to open the OpenSpan Runtime menu.
2. Select the Load Local Project option. The Open Project dialog appears.
3. Go to the C:\OpenSpanDeployment folder.
4. Select the CRMAccounts.OpenSpan file and click Open to continue. The OpenSpan Runtime splash screen appears and then the project is loaded in OpenSpan Runtime.
5. Verify that as the project loads the following open:
   - Application Bar (top of screen) containing the Current Account text box (among other controls)
   - Internet Explorer showing the OpenSpan Web Adapter Certification Course login page (http://training.openspan.com/index.html)
   - CRM application showing the New Call 1 window
6. Right-click on the OpenSpan Runtime icon and choose Exit to unload the project and close Runtime.

Note Closing the individual project applications and windows does not unload or stop the project.

7. Go to the extract directory. This directory is in your local application data folder unless you changed the ExtractDirectory setting in the RuntimeConfig.xml file. Here is an example:

For	Look in...
Windows XP	C:\Documents and Settings*myname*\Local Settings\Application Data\OpenSpan\5.2 \Projects
Windows 7	C:\Users*myname*\AppData\Local\OpenSpan\5.2\Projects

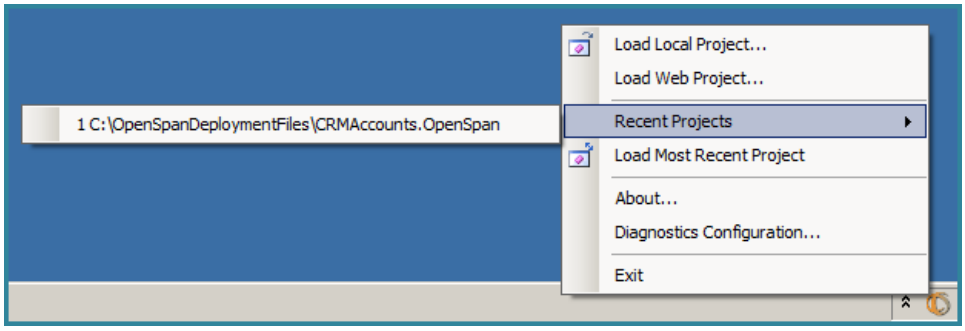
8. Open the most recently created folder under the Projects folder (the folder name starts with Project- followed by the project ID). The project folder contains the deployment package files and the extracted project files:

This file	Is included
CRMAccounts.dll	In all deployments.
CRMAccounts.OpenSpan	In all deployments.
Deployment.manifest	In all deployments.
ReadMe.txt	In all deployments, when selected as a Miscellaneous File.
CRMAccounts.pdb	If you set the Debug Symbols property to True.
OpenSpan.Translators.DotNet.v20.WindowsForms.dll	If you set the Include Translators property to True.

The next time you load this project in OpenSpan Runtime, OpenSpan will check the manifest to see if it differs from the manifest in the extract directory folder. If the manifest files do not differ, the CRMAccounts.dll will be loaded and the extracted project files will remain unchanged. If the manifest files differ, then OpenSpan will re-extract the project files from the deployment package and overwrite the files in the extract directory folder.

Load Local versus Load Recent

Loading a project saves the project name in a *recent* list. The next time you want to load the project through OpenSpan Runtime, you can quickly do so by selecting it from the Recent Projects or Load Most Recent Project options:



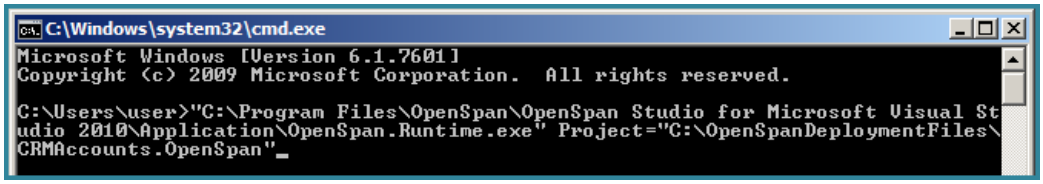
When you select a project from either of these options, OpenSpan Runtime goes through the process of comparing the deployment package manifest with the manifest in the local Extract directory. If the versions differ, or if one or both of the manifest files are missing, the deployment package is re-extracted. Otherwise, the currently extracted version of the project is immediately loaded.

If a new version of the product has been deployed, changes will not take effect until the old project is manually unloaded and the new project is loaded.

Loading Project from Command Line

You can start OpenSpan Runtime and load a project from the command line. To do so enter, enclosed in quotation marks, the full path to the Runtime program executable file, followed by a space, the command *Project=* and finally, also in quotation marks, the full path to the project deployment file. Here is an example of the syntax:

"*program executable path*" Project="*data path*"



For example, to load the CRMAccounts.openspan project deployed as part of this course's exercises:

C:*{install location}*\OpenSpan.Runtime.exe Project
"C:\OpenSpanDeploymentFiles\CRMAccounts.OpenSpan"

Project 3: Loading Projects from the Command Line

Use these steps to load the CRMAccounts project in OpenSpan Runtime from the command line.

This exercise requires the following setup:

- The CRMAccounts.manifest and CRMAccounts.OpenSpan files must be in the C:\OpenSpanDeploymentFiles folder. These files are created in Chapter 15, *Project 4: Deploying a Project with a Readme.txt File* (if you have not completed this exercise, use the files attached to this document).
- CRM.exe must be installed on your computer to the following location:

  C:\Program Files\OpenSpan\CRM Setup

  The installation file CRM.msi is included in the Extras folder for OpenSpan Studio.
- Internet Explorer versions 6, 7, 8, or 9 and access to the OpenSpan Training web site:

  (http://training.openspan.com/index.html)
- OpenSpan Runtime standalone installation.

If OpenSpan Runtime is open, right-click on the icon and select Exit to close the application. Then follow these steps:

1. From the Start Menu select Run. The Run dialog opens.
2. Type **cmd** in the Run dialog and click OK. A command window opens.
3. Go to the OpenSpan Runtime installation folder, which is typically in this folder:

   C:\Program Files\OpenSpan\OpenSpan Studio for Visual Studio 2010\Application
4. Enter the following:

   OpenSpan.Runtime.exe Project="C:\OpenSpanDeploymentFiles\CRMAccounts.OpenSpan"

   OpenSpan Runtime launches and the project loads.
5. If OpenSpan Runtime is open, right-click on the icon and select Exit to close the application. The project is unloaded and OpenSpan Runtime shuts down.

Project 4: Automatically Load Project on OpenSpan Runtime Start

Using the CRMAccounts.OpenSpan project, use the following steps to configure OpenSpan Runtime to automatically open the project when the application starts.

This exercise requires the following setup:

- CRMAccounts.manifest and CRMAccounts.OpenSpan files must be in the C:\OpenSpanDeploymentFiles folder. These files are created in Chapter 15, *Project 4: Deploying a Project with a Readme.txt File* (if you have not completed this exercise, download the file from the OpenSpan Support Center web site).
- CRM.exe must be installed on your computer to the following location:

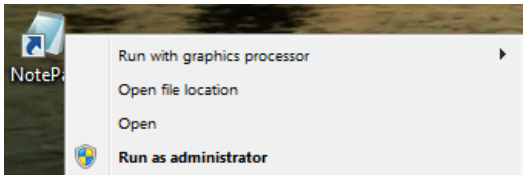
  C:\Program Files\OpenSpan\CRM Setup

  The installation file CRM.msi is included in the Extras folder for OpenSpan Studio.
- Internet Explorer versions 6, 7, 8, or 9 and access to the OpenSpan Training web site:

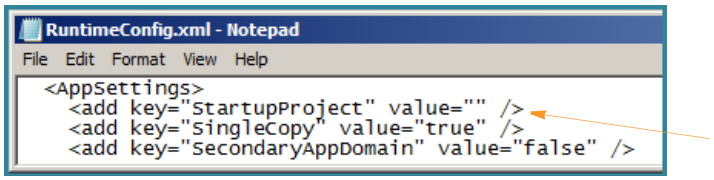
  http://training.openspan.com/index.html
- OpenSpan Runtime standalone installation.

Follow these steps:

1. Open the RuntimeConfig.xml file in Notepad. For best results, run Notepad as administrator.



2. Locate the *AppSettings* section of the file as follows:



3. Locate the StartupProject key. Note that the setting is blank, which is the default.Change the setting to the following:

   < ="StartupProject" value="C:\OpenSpanDeploymentFiles\CRMAccounts.OpenSpan" />

4. Save and close the RuntimeConfig.xml file.
5. Restart OpenSpan Runtime. Note that now the project automatically loads.
6. Unload the project and exit OpenSpan Runtime.
7. Open the RuntimeConfig.xml file in Notepad again and clear the StartupProject entry. The setting should be:

```
<add key="StartupProject" value="" />
```

8. Save the RuntimeConfig.xml file and close Notepad.

Chapter 18: Using Configuration Project Items

Use *configuration project items* to set control properties to several different values and then run/deploy a single project using each of the property-value configurations. This lets you use a single project to create multiple deployment versions.

For example, using a single project you can set the Path property for a Windows application to several different values and then deploy the project using the path which is applicable to the end user OpenSpan Runtime installations.

By the end of this chapter, you will be able to:

- Add configuration items to a project
- Define configuration property-value profiles for controls
- Set the Configuration property for the project
- Deploy projects with selected configurations

This chapter includes these topics:

Project 1: Adding and Defining Configuration Project Items

These steps show how to add and define configuration project items to deploy multiple versions of a project which use different Path property values for the CRM application:

Config	CRM Application path	Description
1	C:\Program Files\CRM\CRM.exe	The path for the CRM executable for a pilot group OpenSpan Runtime installation.
2	C:\Program Files\OpenSpan\CRM Setup\CRM.exe	The path for the CRM executable for the designer OpenSpan Studio installation.

Note You can follow along with the steps in this topic even if you do not have the CRM application installed.

1. Create a new OpenSpan project and assign this name to it:

   CRMAccountsConfigurations

2. In Solution Explorer, right-click on the CRMAccountsConfigurations project and select Add | New Windows Application. The Add New Item dialog appears.

3. Select the Windows Application template and name the item:

   CRM Information

   Click Add to continue. The new project item is added to Solution Explorer.

4. Right-click on the CRMAccountsConfigurations project in Solution Explorer and select Add | New Item. The Add New Item dialog appears.

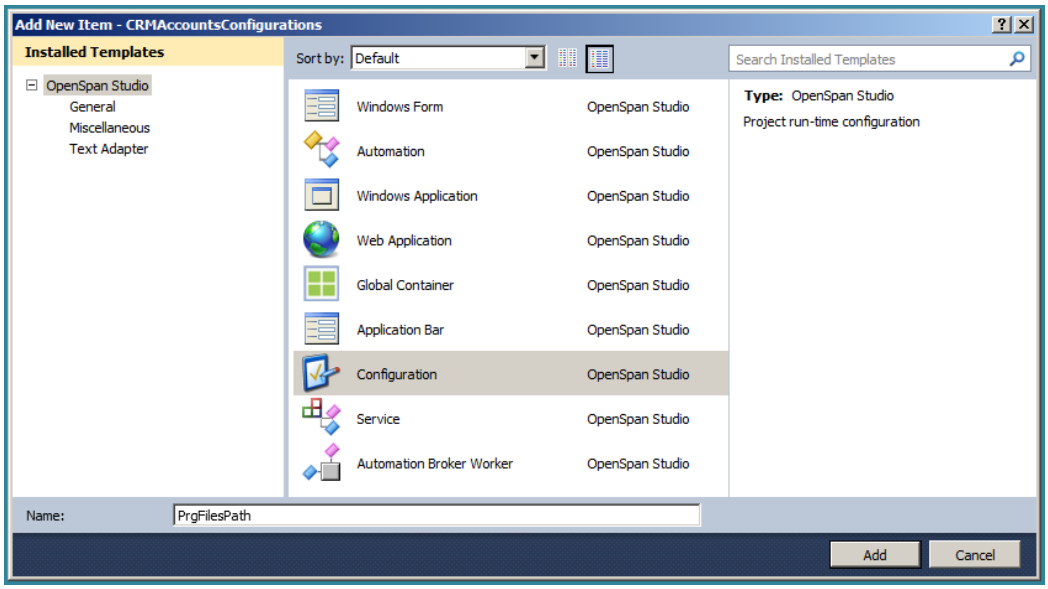
5. Select the Configuration template and assign this name to the item:

   PrgFilesPath

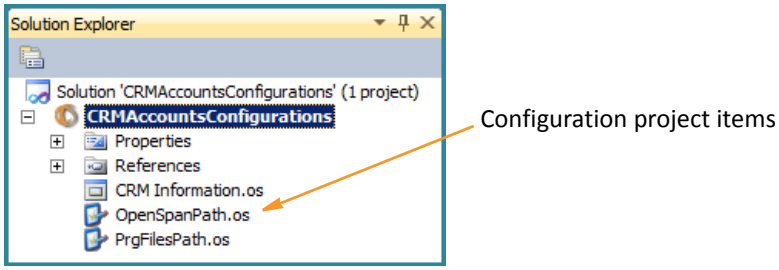
   Click Add to continue. The project item is added to Solution Explorer and opens in the Designer.

6. Repeat the previous step to add another Configuration project item. Assign this name to this item:

   OpenSpanPath

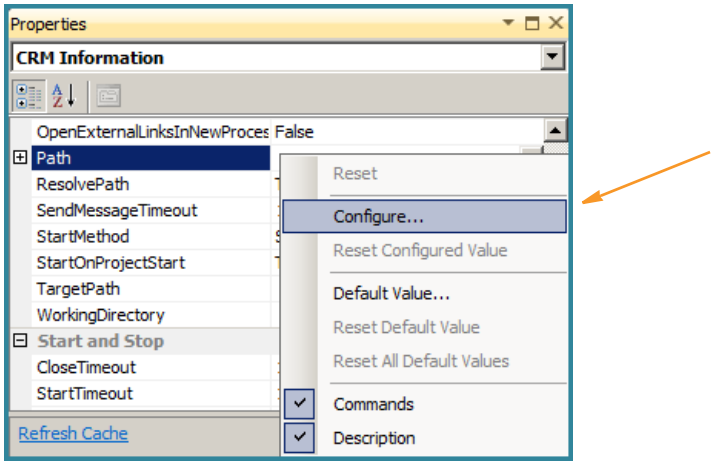


7. Your Solution Explorer should look like the following:



8. Open the CRM Information.os project item. The Match Rules Editor appears.

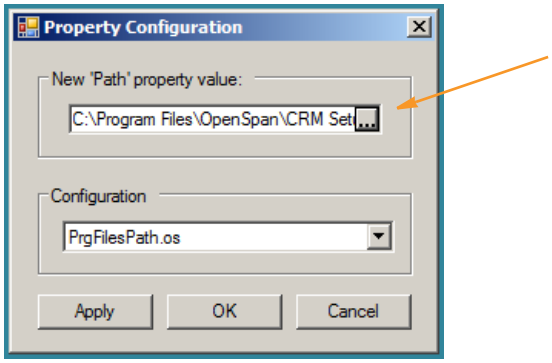
9. Right-click in the Path property for the CRM Information item and select Configure:



The Property Configuration dialog appears.

10. Select the PrgFilesPath.os configuration and enter the following for the New Path property value:

    C:\Program Files\CRM\CRM Setup\CRM.exe



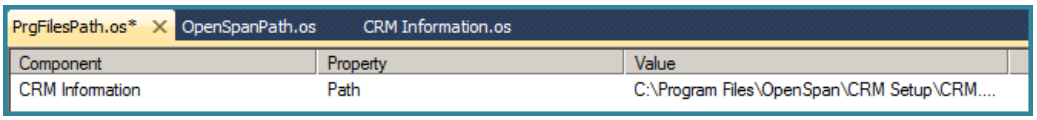
    Click OK to save the configuration assignment.

11. Right-click the Path property for the CRM Information item and select OpenSpanPath.os as the configuration. Enter the following for the property value:

    C:\Program Files\OpenSpan\CRM Setup\CRM.exe

    Click OK to save the configuration assignment.

    Opening the Configuration project items in the Designer shows the Path property values you have assigned:



12. Save the solution.

These steps show how to add and define Configuration project items. For definitions of the configuration project item designer functions, see the Configuration Project Item topic in the OpenSpan Help.

Project 2: Creating Configuration Project Item Profiles

This project provides practice in creating Configuration profiles for OpenSpan controls. This project requires the following setup:

- OpenSpan Extras - Training solutions and the CRM Application must be installed.
- CRM.exe must be installed on your computer in the following location:

  C:\Program Files\OpenSpan\CRM Setup

  The installation file CRM.msi is included in the Extras folder for OpenSpan Studio.
- The Basics - Chapter 4 - CRM Information.zip solution must be extracted to your OpenSpan Studio Projects folder.
- The CRMAccounts.osproj must be opened, updated (if necessary), and saved in OpenSpan Studio.
- Internet Explorer versions 6, 7, 8 or 9 and access to the OpenSpan Training web site:

  http://training.openspan.com/index.html

Begin this exercise by opening the CRM Information - Copy solution in OpenSpan Studio, then follow these steps:

1. Add these configuration project items to the CRMAccounts project:
   - CRMDevPath.os
   - CRMRunPath.os
2. Right-click the OSCRM project item in Solution Explorer and select Open.

Note Make sure the Path property has no value set — OpenSpan will complain, but you will specify this information via the configuration settings.

3. From the Properties window, right-click on the Path property for the CRM Information project item and select Configure. The Property Configuration dialog appears.
4. Select the CRMDevPath.os Configuration and set the property value to:

   C:\Program Files\OpenSpan\CRM Setup\CRM.exe

   Click Apply to save the definition.
5. Select the CRMRunPath.os Configuration and set the property value to:

   C:\Program Files\CRM\CRM.exe

   Click Apply to save the definition, and then click OK to return to the Designer window.
6. Save the solution.
7. Add a label to the top left corner of the Application Bar.
8. Right-click on the Text property for the label and click Configure. The Property Configuration dialog appears.
9. Enter **Test Me** in the new Text property field.

10. Double-click the CRMDevPath.os configuration project item in Solution Explorer. Then double-click the Application Bar.label1 Component to open the Property Configuration. Set the Text property to:

    CRM Development

    Click Apply to save the definition.

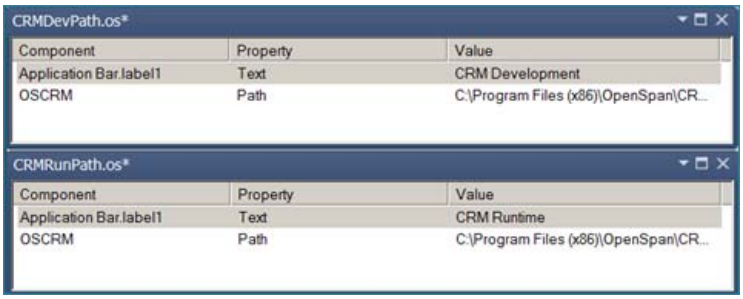
11. Double-click the CRMRunPath.os configuration project item in Solution Explorer. Then double-click the Application Bar.label1 Component to open the Property Configuration. Set the Text property to:

    CRM Runtime

    Click Apply to save the definition, and then click OK.

12. Save the solution.

13. Open the Configuration project items in the Designer to view the property-value definitions:

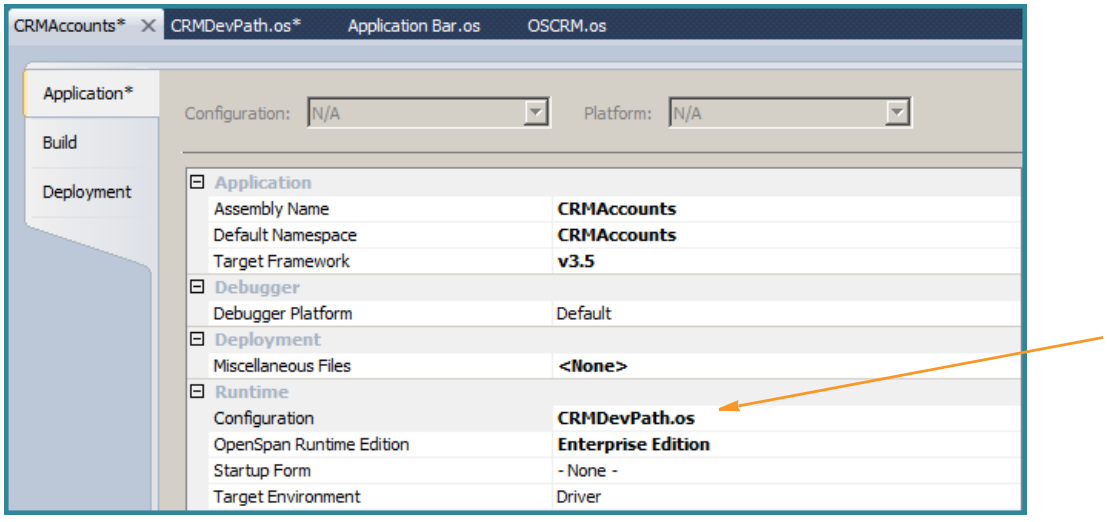


14. Right-click the project in Solution Explorer and select the Properties option. The Project Property – Application page appears.

15. Set the Configuration property to:

    CRMDevPath.os

    This is the configuration for the development environment.



16. Close the Project Properties and save the solution.

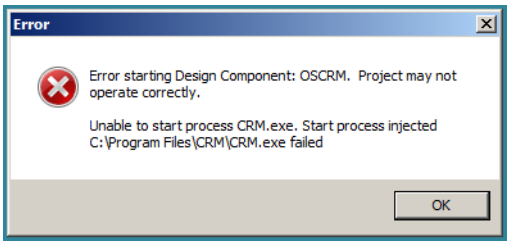
17. With Debug selected in the Solution Configurations, click the Start Debugging icon from the main toolbar.

    OpenSpan builds and compiles the project. After successfully building the project OpenSpan Runtime is launched. If the Path configuration is set correctly, the CRM.exe application runs showing the Login window. Note that the text: *CRM Development* displays in the Application Bar.

18. Stop the project and return to the CRMAccounts Project Properties – Application page. Change the Configuration property to:

    CRMRunPath.os

19. Save and run the project. Since the path is not correct for the design environment, an error appears when OpenSpan Runtime tries to start CRM.exe:

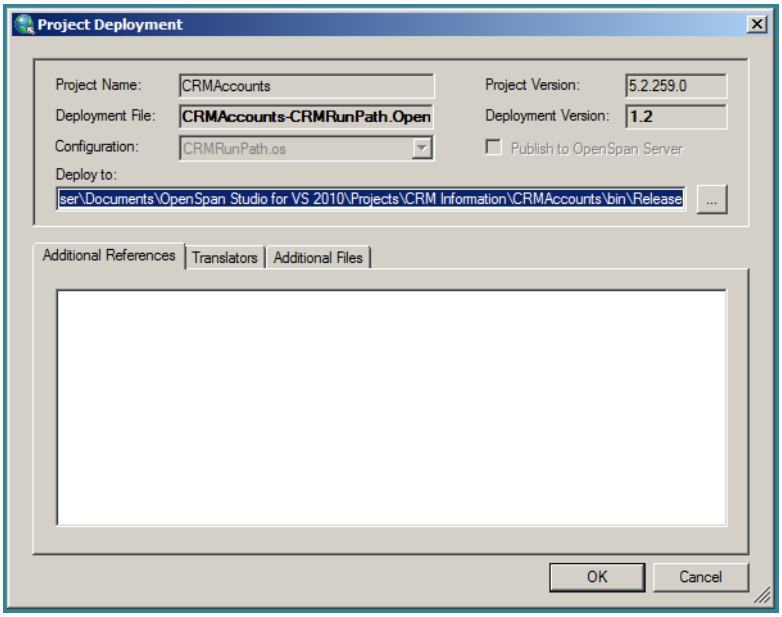


20. Stop the project.

21. Return to the Project Properties - Deployment page and change the Configuration property to:

    Release

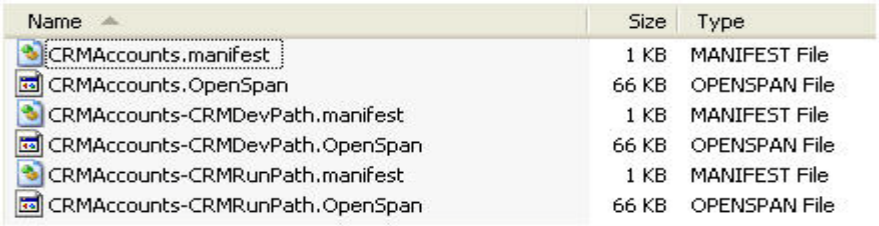
22. Click the Deploy Project with Current Configuration button on the main toolbar. The Project Deployment dialog appears.



Click OK to create the deployment package. When complete, the following files are created in the Deploy To folder:

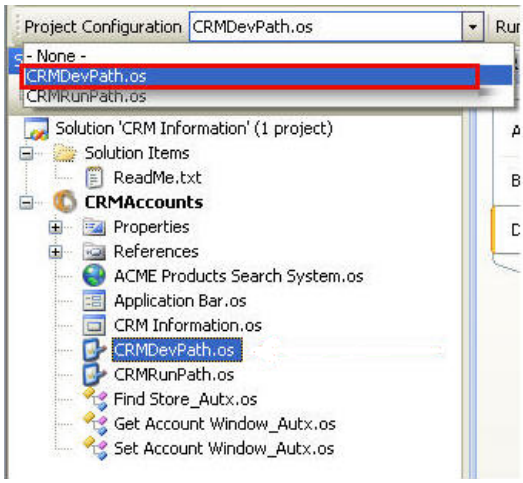
23. Return to Studio and click the Deploy Project with All Configurations button from the main toolbar. The Project Deployment dialog appears, showing the option *All* in the Configuration field:

24. Click OK to create the deployment package. When complete, the following files are created in the Deploy To folder:



Note for OpenSpan Studio/Server Users

As mentioned in a previous paragraph, users working on existing solutions that are administered by OpenSpan Server have an additional toolbar option to sync solution variants. This includes selection of configurations.



Chapter 19: Performing Diagnostics and Troubleshooting

OpenSpan Runtime contains diagnostic functions for publishing application messages generated while OpenSpan Runtime is running and while loading and running projects.

When you finish this chapter, you will be able to:

- Access OpenSpan Runtime Diagnostic Configuration functions
- Start the Diagnostic File Publisher
- Locate the Runtime Config.xml diagnostic message file
- Troubleshoot common issues

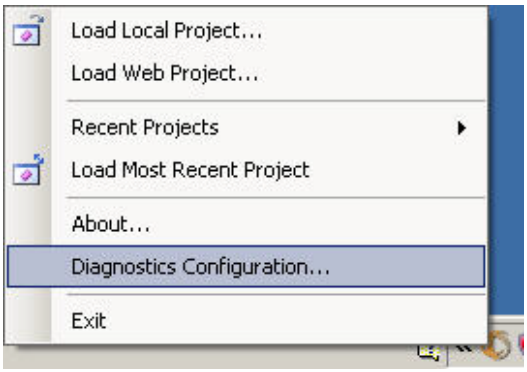
This chapter includes these topics:

Project 1: Setting Diagnostic Options

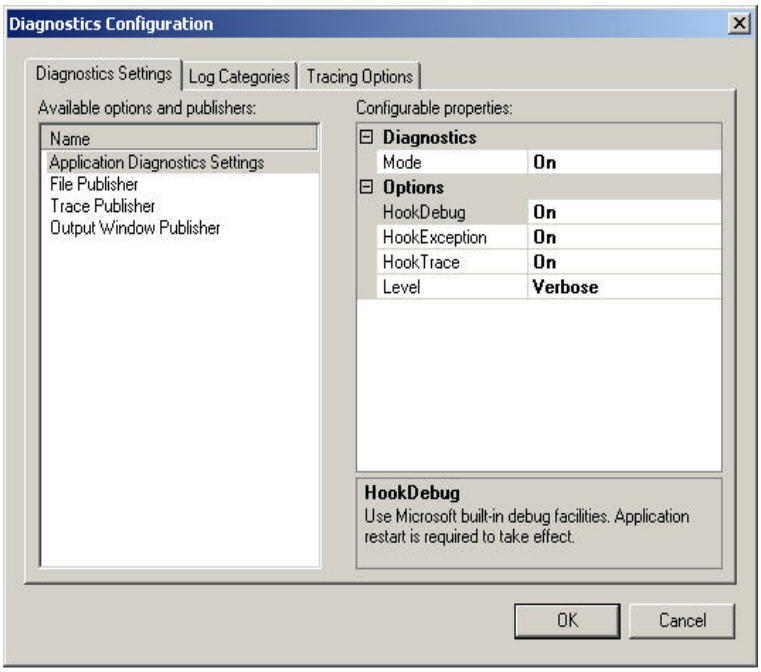
OpenSpan Runtime provides options for publishing diagnostic messages to a file, output window, trace logs, and the Windows Event Log.

The diagnostic configuration settings for the OpenSpan Runtime are selected in the Diagnostics Configuration dialog. Follow these steps to access this dialog:

1. Click the OpenSpan Runtime icon on the Start bar and choose the Diagnostics Configuration option.



The Diagnostics Configuration dialog appears.



2. Use these options to customize the diagnostic output OpenSpan Runtime produces. Typically, OpenSpan Support will guide you through this process.

Note These options are also available in OpenSpan Studio. See the OpenSpan Studio Diagnostics and Debugging training module for details on diagnostics options.

Project 2: Generating Diagnostic Messages

To generate diagnostic messages for OpenSpan Runtime, follow these steps:

1. Set the Application Mode to *On* under Application Diagnostics.
2. Specify the level of errors for which you want the publisher to generate messages. The levels are shown here:

Level	Description
Error	Only error messages are published. Sets the level in the RuntimeConfig.xml file to one (1).
Warning	Both warning and error messages are published. Sets the level in the RuntimeConfig.xml file to two (2).
Info	Informational messages along with Warning and Error messages are published. Sets the level in the RuntimeConfig.xml file to three (3).
Verbose	All messages - error, warning, and informational are published. Sets the level in the RuntimeConfig.xml file to four (4). This is the default setting.
Off	The setting turns off publishing of diagnostic messages. Sets the level in the RuntimeConfig.xml file to zero (0).

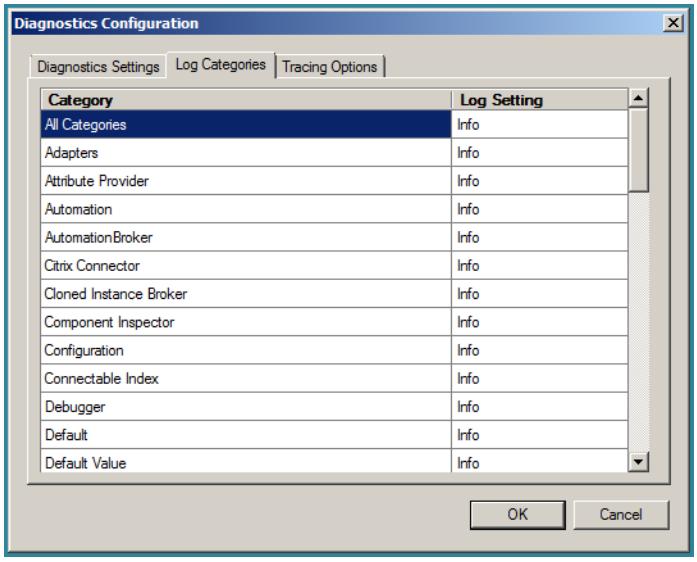
3. Select the Log Categories for which you want to generate messages and set the level or error messages to be reported for the categories.
4. Set the File Publisher Mode to On. The File Publisher creates output files of diagnostic messages. For OpenSpan Runtime, the RuntimeLog.txt file is created.

   The File Publisher writes the diagnostic messages to the RuntimeLog.txt file in the user's CommonApplicationData location. You can change this location by editing the ConfigurationFileKey in the OpenSpan.Runtime.exe.config file. You can also change the name of the file by editing Publisher -> FilePublisher file name in the RuntimeConfig.xml.
5. Enable additional diagnostic publishing as required:

Option	Description
Trace Publisher	Enables the generation of diagnostic traces, which can then be used to generate detailed application messages. Note: Use the Trace publisher as directed by OpenSpan Support.
Output Window	Displays the same information as the File Publisher but shows the information in a live window.

Log Categories

When you enable Application diagnostics, OpenSpan generates messages based on the *log level* and the *log categories*. The log categories are listed in the Diagnostics Configuration dialog, Log Categories tab:

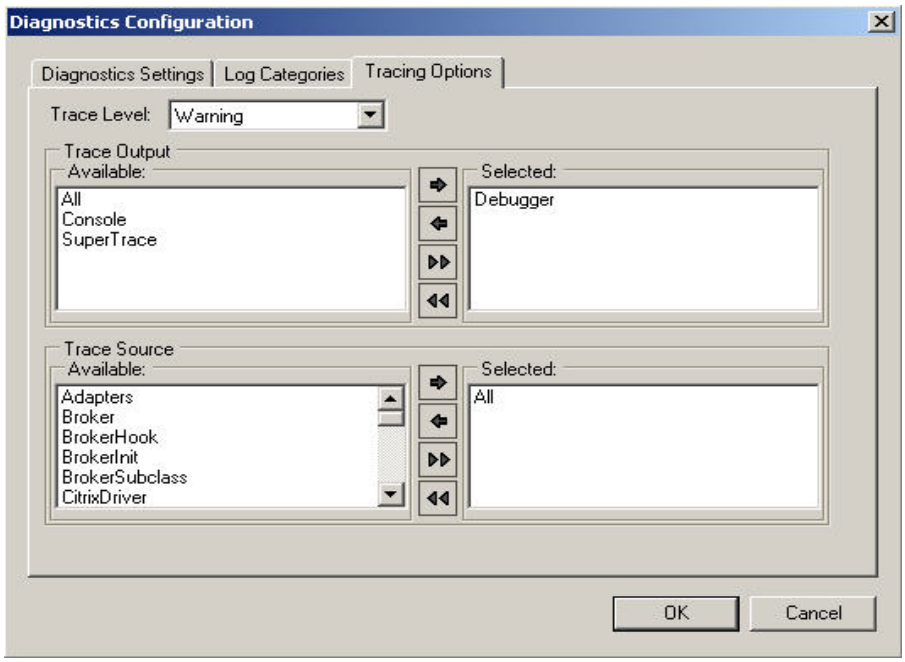


For each of these categories you can choose from the following:

- Error
- Warning
- Info
- Verbose
- Off

Tracing Options

Tracing options allow collection of detailed application thread-level messages. OpenSpan Support will provide guidance on how to configure this window, collect the log, and what the messages mean.



OpenSpan Runtime Tips and Troubleshooting

The following topics cover some common issues that may arise when working with OpenSpan Runtime.

Recent Project does not Load

Attempting to load a project using the Recent Projects or Load Most Recent Project option and you receive an invalid path error.

This indicates that the location of the deployment package has changed since the project was last loaded. You must locate the deployment package and load the project using the Load Local Project or Load Web Project (whichever is applicable) option.

Cannot Access One of the Project Applications

If one of the applications used in your project is not accessible when you run the project on the OpenSpan Runtime workstation, it could be that the path to the application differs for the workstation. Run the application on the OpenSpan Runtime workstation to make sure it runs properly. Check the path to the application and compare it to the path used in the solution.

Updated Version of Project does not Load

If you have deployed an updated version of a project but notice that it is not getting loaded in OpenSpan Runtime, it means that the wrong manifest files are being used. Make sure the old version of the deployment package is removed from the deployment location and replaced with the new version. Confirm that your OpenSpan Runtime users are loading the updated project or, if autoload is being used, the Runtime.exe.config file is correctly set to the location of the updated deployment package.

Changing the Extract Directory

By default, the Extract directory is located under the user's local Application folder. To change the location, modify the following line in the RuntimeConfig.xml file:

```
<add key=”DeploymentExtractDirectory” value=" "/>
```

Here is an example:

```
<add key="DeploymentExtractDirectory" value="C:\OpenSpan_Runtime" />
```

Automatically Loading the Project when OpenSpan Runtime Starts

Set the project in the StartupProject key in the RuntimeConfig.xml file:

```
<add key="StartupProject" value=" " />
```

Here is an example:

```
<add key="StartupProject" value="C:\OpenSpan_Runtime\Calc_Bing.openspan" />
```