SSIS Framework Community Edition  
Documentation and User Guide

Andy Leonard

**Revision History:**

19 Jan 2016 Andy Leonard Initial release

17 Jul 2017 Andy Leonard Added Literal Override and execute\_catalog\_parent\_package scripts.

07 Jul 2018 Andy Leonard Updated for ADFv2 Integration Runtime and SSIS 2017

20 Mar 2019 Andy Leonard Updated for v1.3

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The SSIS Framework Community Edition is free and subject to the GNU GENERAL PUBLIC LICENSE Version 3, 29 June 2007. You can find a copy in [Appendix A - GNU GENERAL PUBLIC LICENSE Version 3, 29 June 2007](#_Appendix_A_-).

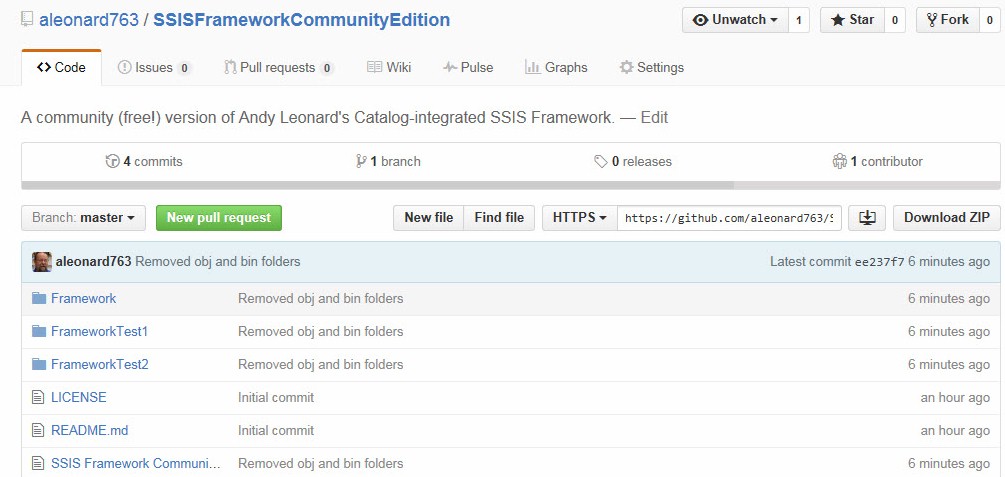
# General

In summary, the steps for installing SSIS Framework Community Edition are:

* [Obtain the code](#_Obtain_the_Code)
* [Add an SSIS Catalog](#_Add_an_SSIS) to a SQL Server instance
* [Execute the SSIS Framework Community Edition T-SQL scripts](#_Execute_the_SSIS)
* [Deploy the SSIS Framework Community Edition SSIS projects](#_Deploy_the_SSIS)
* [Test!](#_Test)

# Obtain the Code

To obtain the code, connect to GitHub at <https://github.com/aleonard763/SSISFrameworkCommunityEdition>:

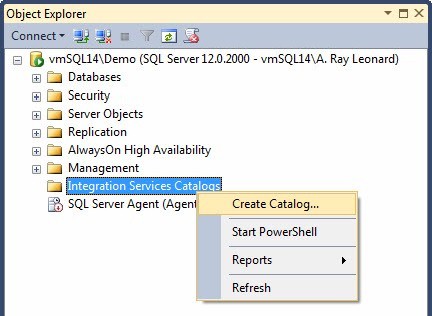


Save the code to a location you can readily access.

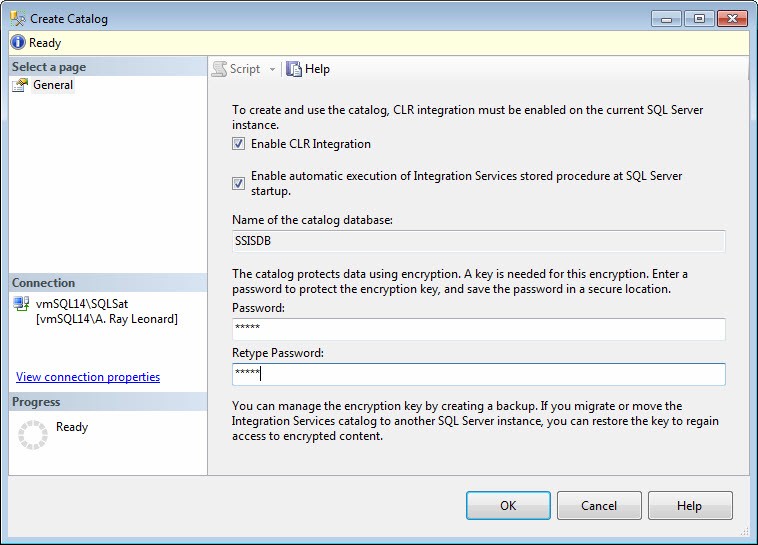
# Add an SSIS Catalog

If you already have an SSIS Catalog configured on an instance of SQL Server, you may skip this step.

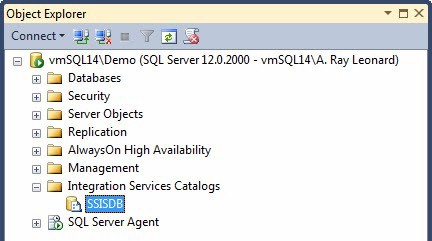
Use SQL Server Management Studio (SSMS) to connect to the instance of SQL Server and open Object Explorer. Right-click the Integration Services Catalogs node and click Create Catalog:



When the Create Catalog window displays, Check the “Enable CLR Integration” checkbox to enable additional controls on the page. You don’t have to, but I recommend you check the “Enable automatic execution of Integration Services stored procedure at SQL Server startup” checkbox. You will need to supply a password (twice):



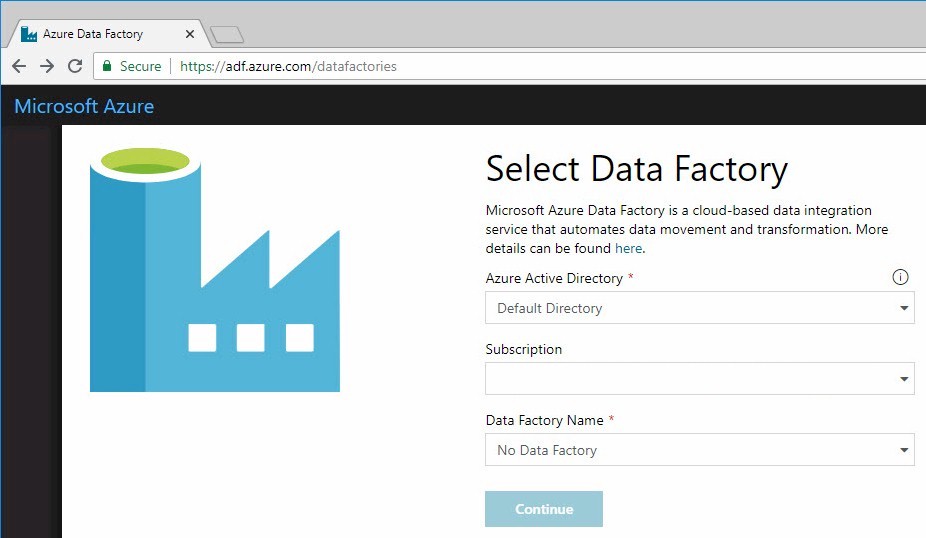
Once created, the SSIS Catalog will appear as shown below:



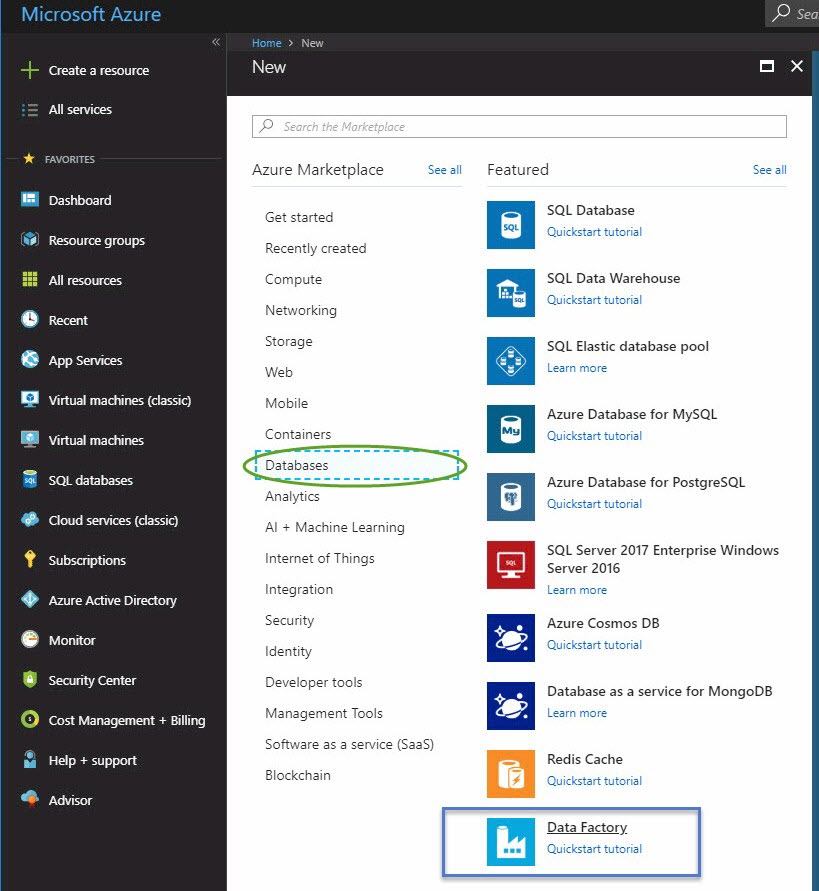
## Create an SSIS Catalog in the Cloud

Note: As of May 2018, you can also create an SSIS Catalog in Azure Data Factory version 2. You could actually create an ADFv2 SSIS Integration Runtime Catalog as early as September 2017, but the functionality was in preview until May 2018.

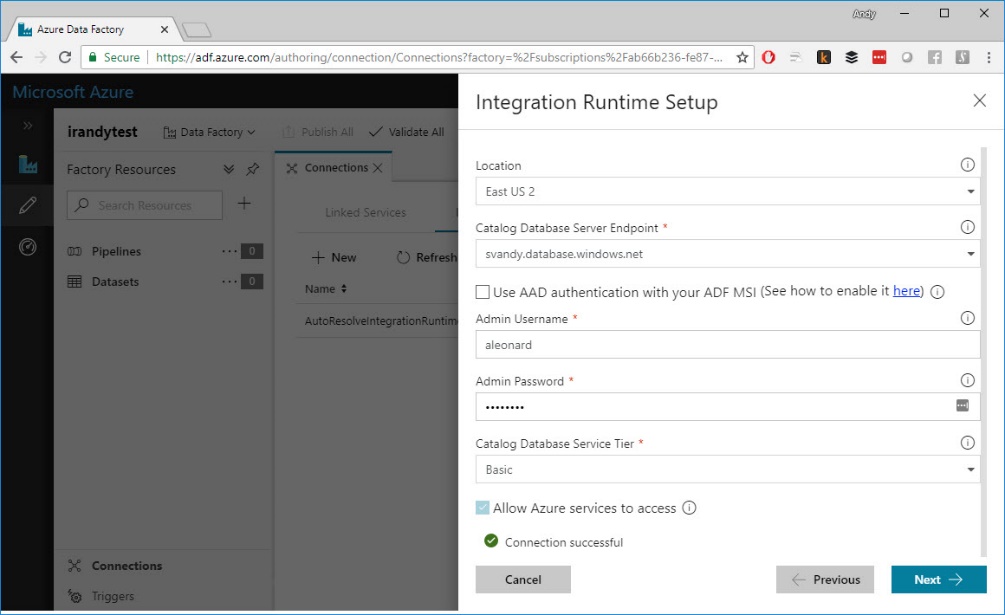
There are a couple ways to navigate to Azure Data Factory. One way is to navigate to [Azure Data Factory](https://adf.azure.com) (adf.azure.com) and select your Active Directory, Subscription, and Data Factory:



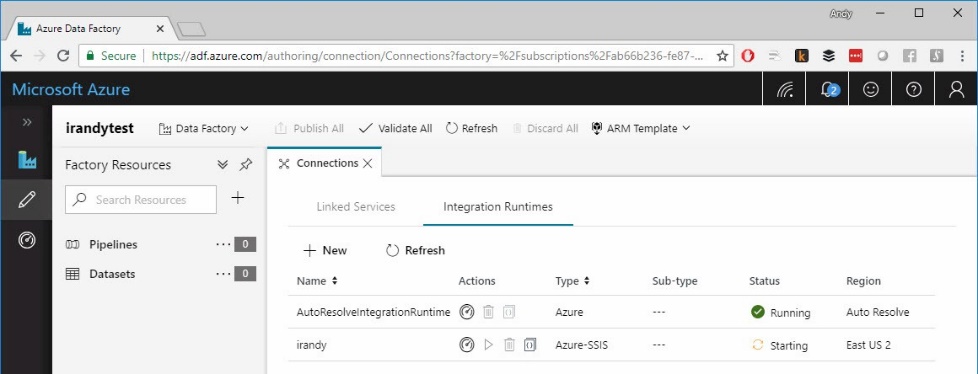
Another way to create an Azure Data Factory is from the Azure Portal (portal.azure.com). Click “Create a resource,” then select Databases, and then click Data Factory (or search for Data Factory):



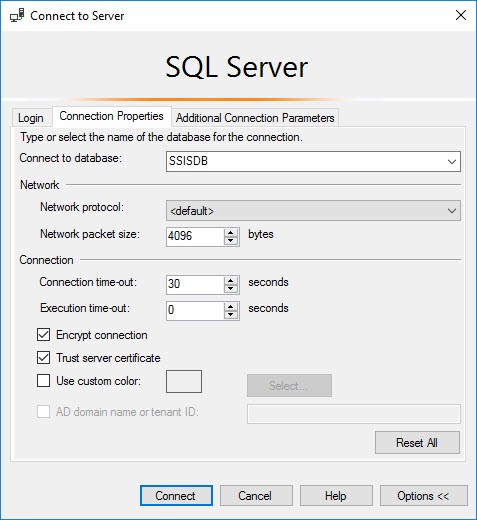
Configure the location and endpoint (an Azure SQL database), then test the connection:



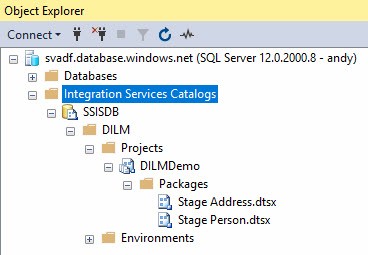
Once configuration is complete, it takes 20-30 minutes (at the time of this writing) for the Azure Data Factory Integration Runtime to start:



Once the ADFIR starts, you can connect to it using SQL Server Management Studio (SSMS). To do so, you must remember to specify a default database in the connection options:



Once connected, SSMS will not appear as when connecting to a local resource:



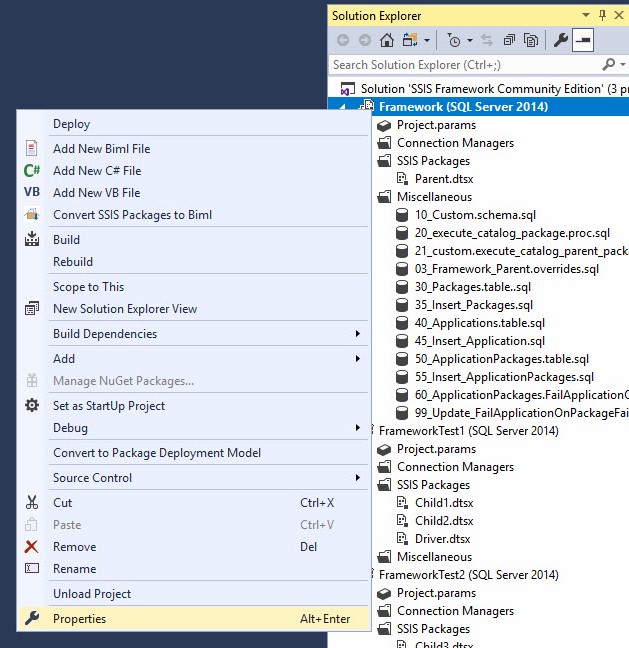
As shown above, you will only see the Databases and Integration Services Catalogs nodes.

*Note: You will not be able to deploy SSIS Framework Community Edition artifacts unless you are connected to the SSISDB and SSMS Object Explorer appears as shown above.*

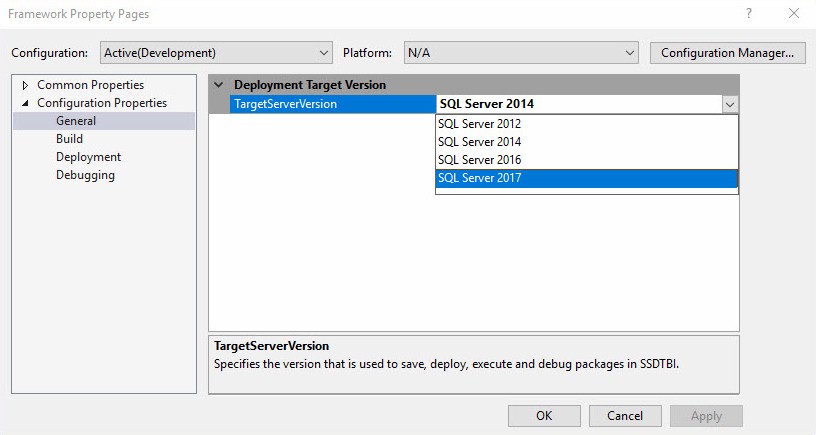
# Update the SSIS Framework Community Edition SSIS Projects

The SSIS Framework Community Edition SSIS projects were written for SSIS 2014. If you are currently using SSIS 2014, you will not need to update the SSIS projects. If you are using a version of SSIS after 2014, however, I recommend you update the SSIS projects.

To update the Framework project, right-click the name of the Project in Solution Explorer and then click Properties:

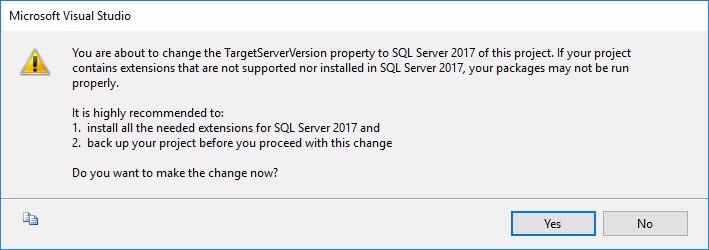


When the Framework Project Property Pages display, click Configuration Properties. Next, change the TargetServerVersion project property from SQL Server 2014 to the version of the SQL Server hosting your SSIS Catalog:



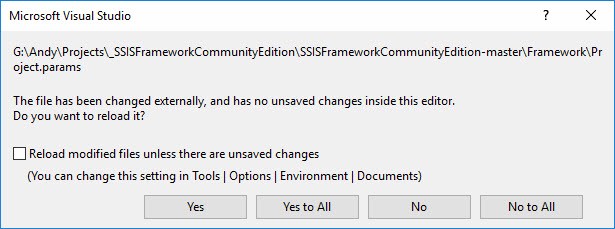
At the time of this writing, the TargetServerVersion for the Azure Data Factory version 2 Integration Runtime SSIS Catalog is SQL Server 2017.

Click the OK or Apply button (it doesn’t matter which, the results will be the same). SQL Server Data Tools (SSDT, aka Visual Studio) warns you thus:



Click Yes.

The update changes the packages and SSDT needs to reload them:

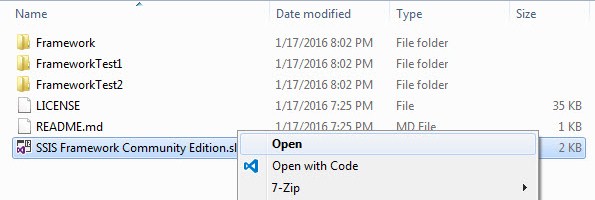


Click Yes to All.

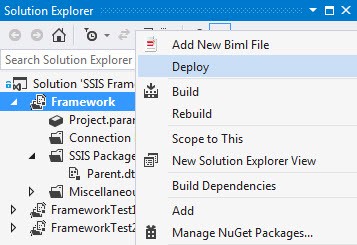
Done.

# Deploy the SSIS Framework Community Edition SSIS Projects

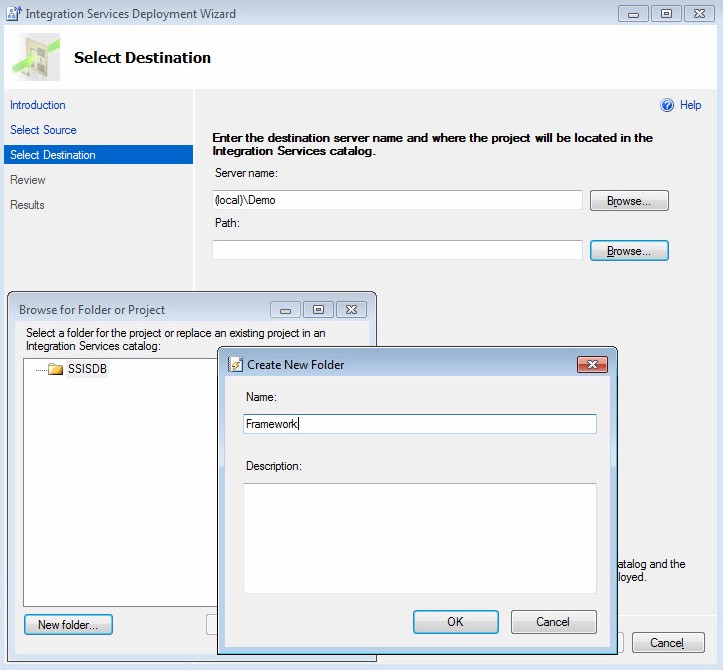
Open the SSIS Framework Community Edition Visual Studio solution file from the SSISFrameworkCommunityEdition GitHub project folder:



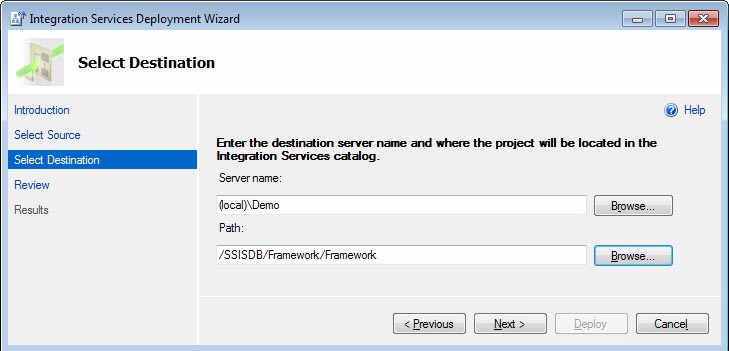
Deploy the projects to the SSIS Catalog hosted on your SQL Server instance:

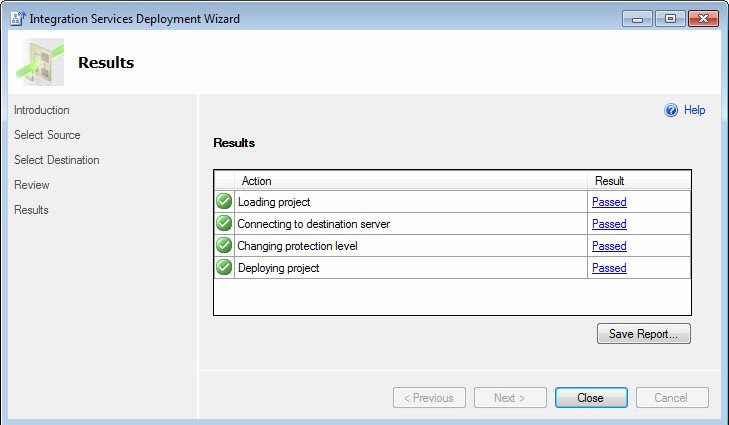


To align the deployments with the SSIS Framework Community Edition metadata you deployed by executing the T-SQL scripts, deploy the Framework project to an SSIS Catalog Folder named “Framework”:

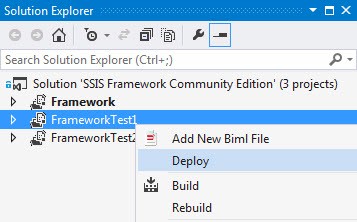


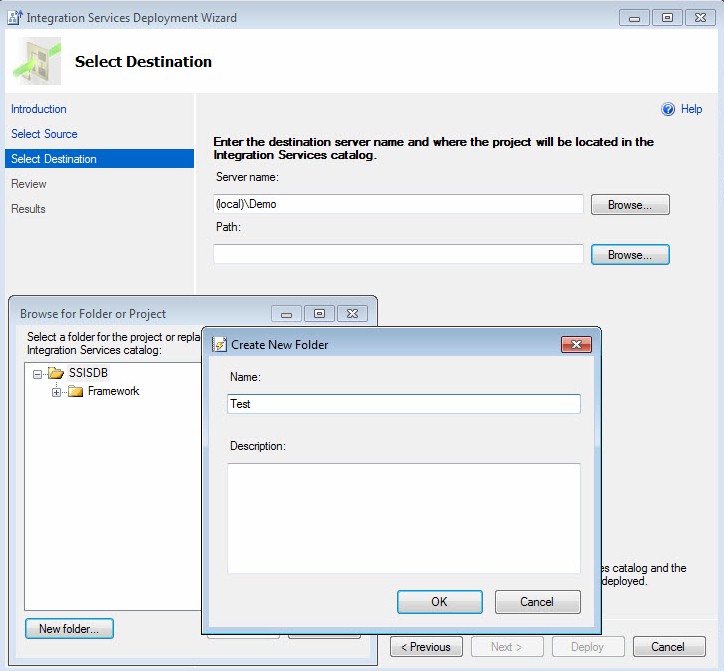
Follow the steps of the Integration Services Deployment Wizard until the Framework SSIS project is deployed:

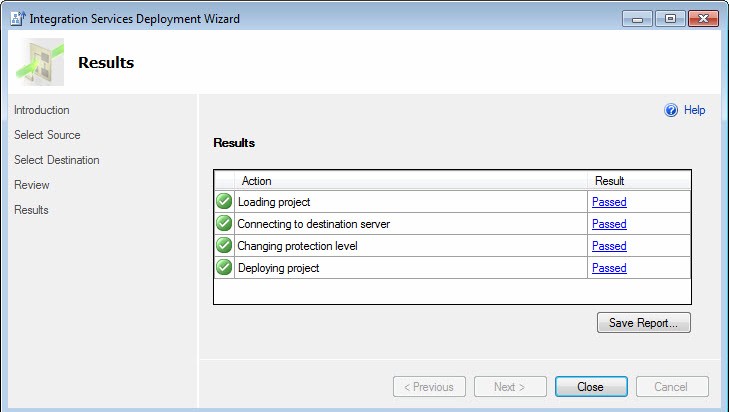




Once the Framework SSIS project is deployed, deploy the FrameworkTest1 and FrameworkTest2 SSIS projects. To align the deployments with the SSIS Framework Community Edition metadata you deployed by executing the T-SQL scripts, deploy the Framework project to an SSIS Catalog Folder named “Test”:

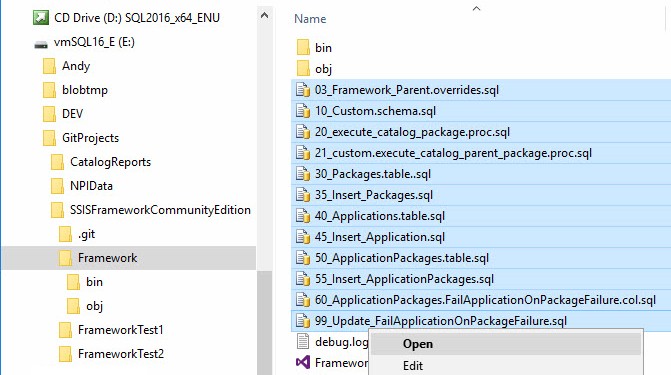




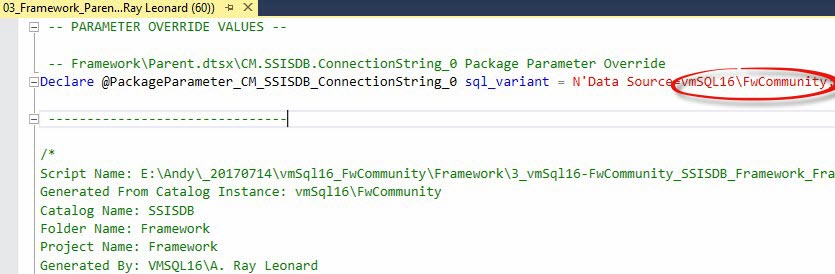


# Execute the SSIS Framework Community Edition T-SQL Scripts

Navigate to the location you stored the SSISFrameworkCommunityEdition GitHub project. Open the Framework folder and then open the T-SQL scripts:



Execute the scripts in numerical order (by the number at the beginning of each file name):

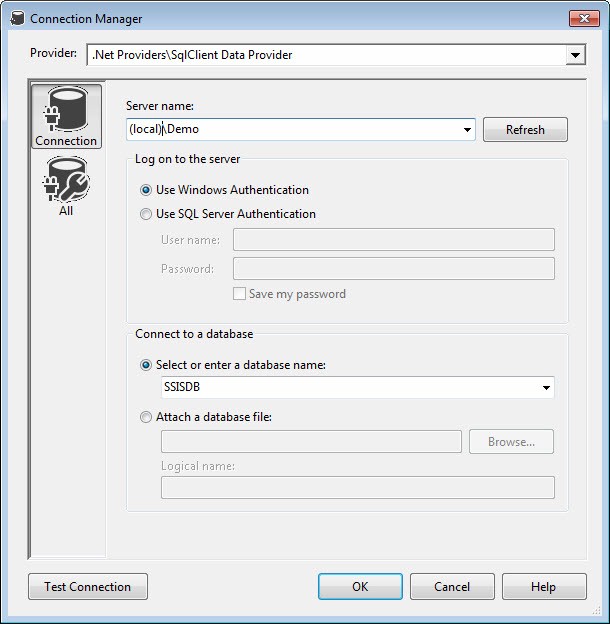


When executing the “03\_Framework\_Parent.overrides.sql” script, *take care to update the Data Source portion of the connection string parameter so that it “points” to your instance of the SSIS Framework*.

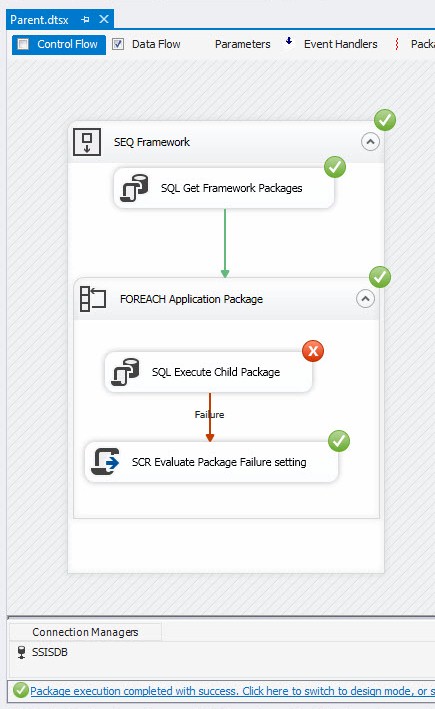
# Test

To test the deployment, execute the Parent.dtsx package in the Framework SSIS project.

Your first test will likely fail, unless you first configure the SSISDB connection manager to connect to your instance of SQL Server:

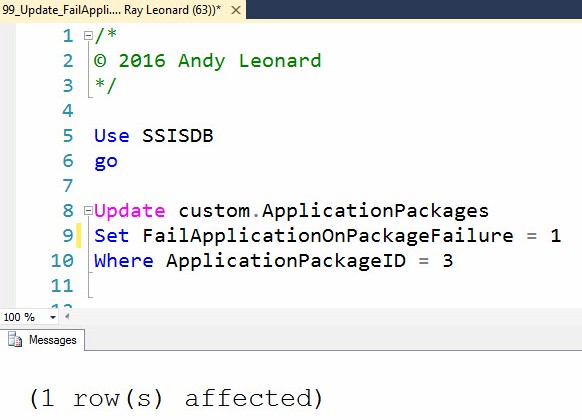


A successful test should appear as shown here:

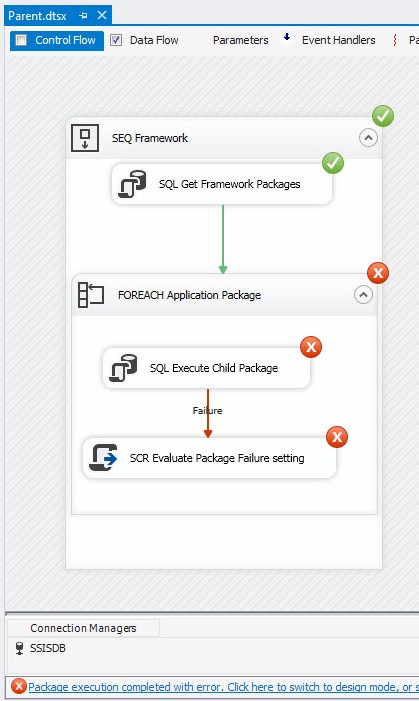


Wait. The execution failed. Well, the execution of a single package failed, but that is the default configuration. Note the Parent package execution succeeded. Why? The FailApplicationonPackageFailure bit is configured to allow the package that failed to be fault tolerant.

To reconfigure the project, open the T-SQL script named 99\_Update\_FailApplicationOnPackageFailure.sql. If you edit the script to change the value of the FailApplicationOnPackageFailure bit value for the Application-Package identified as ApplicationPackageID 3, and then execute the edited script, you can have a failure of the one package to cause the application to fail:



A second test execution results in a failed execution, as shown here:



# Adding an Application to SSIS Framework Community Edition

You may look at what you’ve built and ask, “How do I add an SSIS project to the SSIS Framework Community Edition?” That’s an excellent question. Adding a new SSIS Application to the SSIS Framework Community Edition consists of three steps and a test:

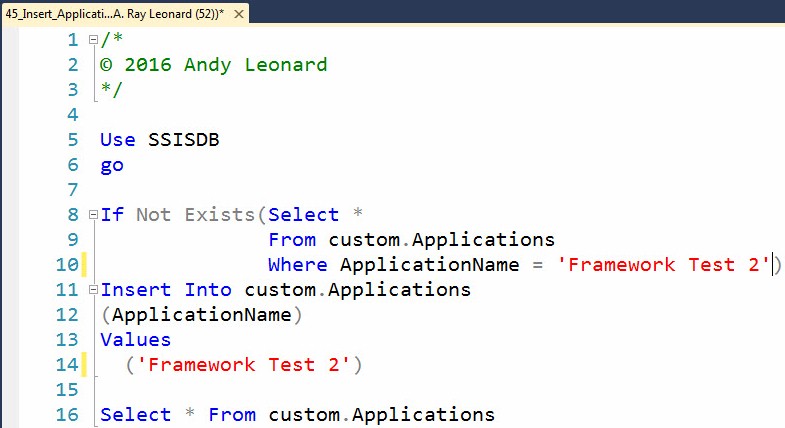
* Add an SSIS Application
* Add Package metadata (if needed)
* Create Application-Package mappings
* Test

## Manually Add an SSIS Application

Adding an SSIS Application to SSIS Framework Community Edition is a fairly straightforward exercise. And, you’ve already done it when you executed the T-SQL scripts. Each “5” script – 35\_Insert\_Packages.sql, 45\_Insert\_Application.sql, and 55\_Insert\_ApplicationPackages.sql – was used to build the metadata for the “Framework Test” SSIS Application you just executed in the test.

Let’s use those same T-SQL scripts as templates for our next SSIS Application.

Begin by adding the metadata for the SSIS Application, which we will name “Framework Test 2” (because I’m feeling very creative as I type this ☺). Open 45\_Insert\_Application.sql and edit the T-SQL so that it appears as shown below:



You may be reading this and asking, “Andy, couldn’t you have included text I could copy and paste?” the answer is definitely, “Yes. Yes I could have.” I omitted it intentionally. I want you to become extremely familiar with the metadata management required for using SSIS Framework Community Edition. There’s no better way to learn than by doing.

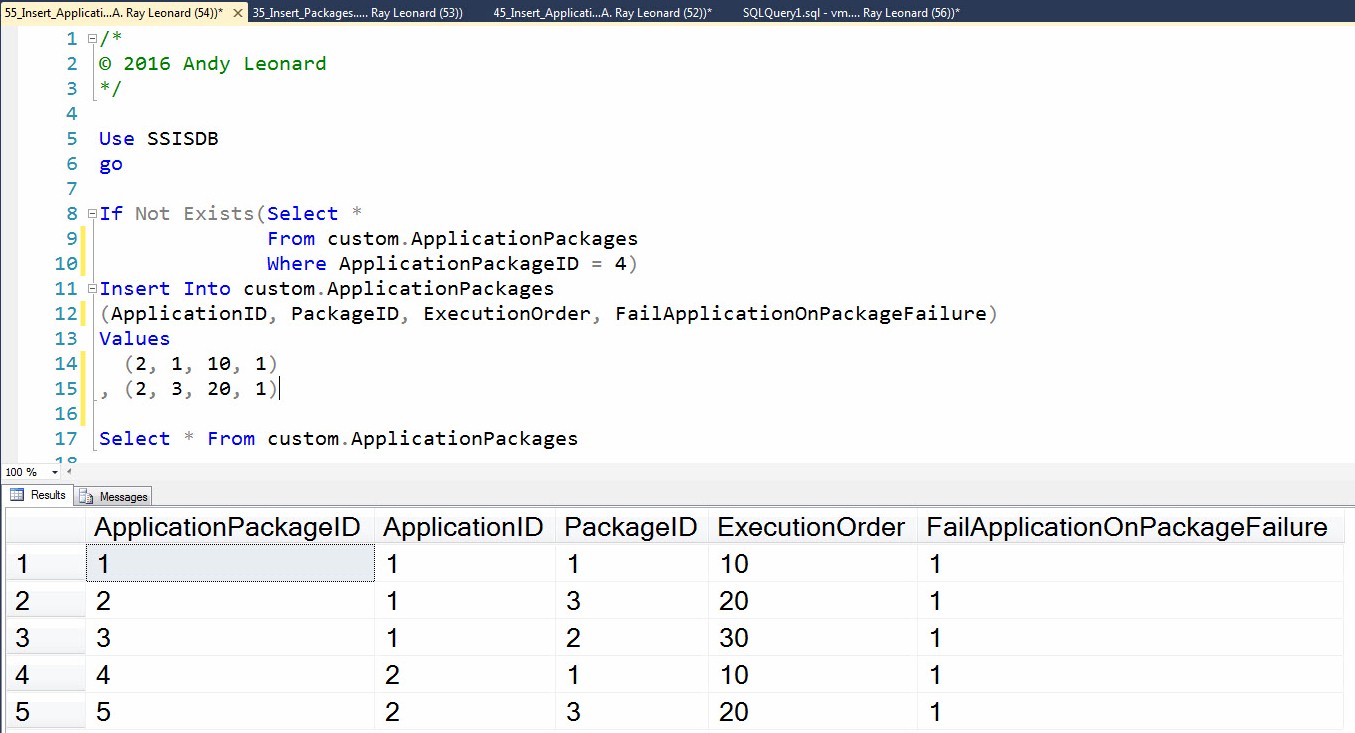
I recommend you do this first. Then skip to the section on adding an SSIS Application automatically.

## Create Application-Package Mappings

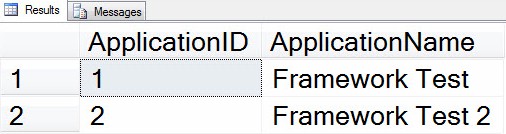
The next step in creating a new SSIS Application in the SSIS Framework Community Edition is to create Application-Package mappings.

In the SSIS Framework Community Edition, an SSIS Application executes a collection of SSIS packages stored in the SSIS Catalog in a sequential order. Open the 55\_Insert\_ApplicationPackages.sql T-SQL script and modify it as shown in the screenshot below. Note we add the FailApplicationOnPackageFailure bit to the list of fields to INSERT, and we include FailApplicationOnPackageFailure bit values of 1 for each row inserted in the list of VALUES.

After execution, the results should appear similar to those shown below:



Once you execute the modified script, you should see results akin to those shown below:

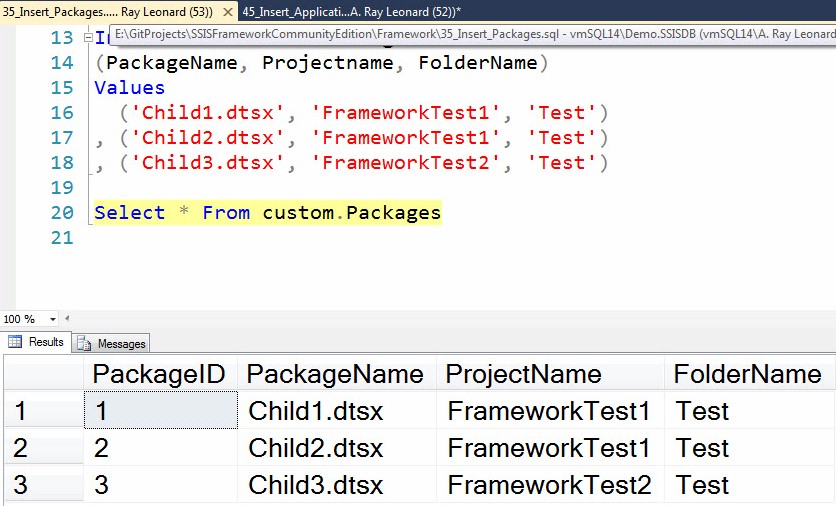


There are now two SSIS Applications listed in the custom.Applications table. Awesome. On to Packages. Remember the ApplicationID value for our new SSIS Application. We will need it in a later step.

## Add Package Metadata

The next step is to add Package metadata (if needed). In our case, we are going to create a new SSIS Application from existing SSIS packages, so we will not need to add any package metadata. We will, however, make use of the T-SQL script named “35\_Insert\_Packages.sql.”

Open the 35\_Insert\_Packages.sql T-SQL script. Highlight the T-SQL SELECT statement at the end of the script and execute the query. The SELECT statement should execute and return results similar to those shown below:



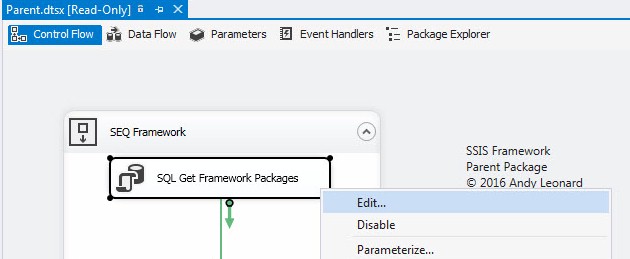
Remember the PackageID values for package we want to execute as part of our new SSIS Application. We will need them in a later step.

## Testing

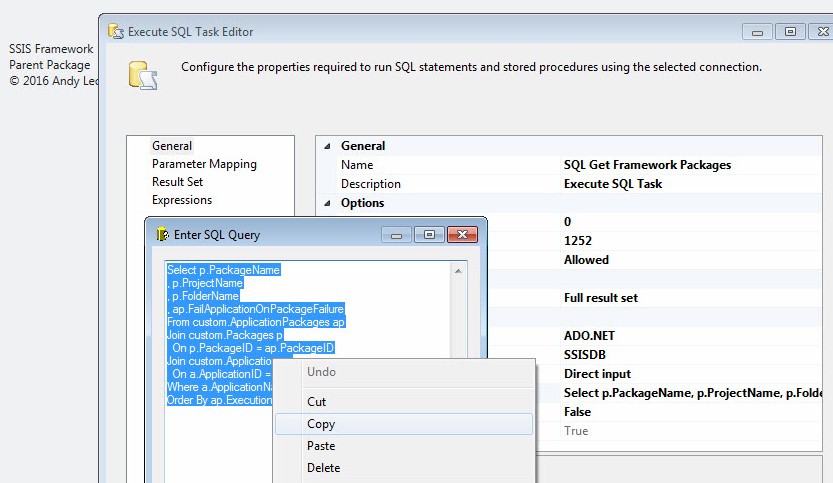
I create two tests for the functionality; a unit test and a functional / system test. The unit test checks the new SSIS Application’s data and the functional / system test checks the execution of the SSIS Framework Community Edition with the new SSIS Application.

### Unit Test

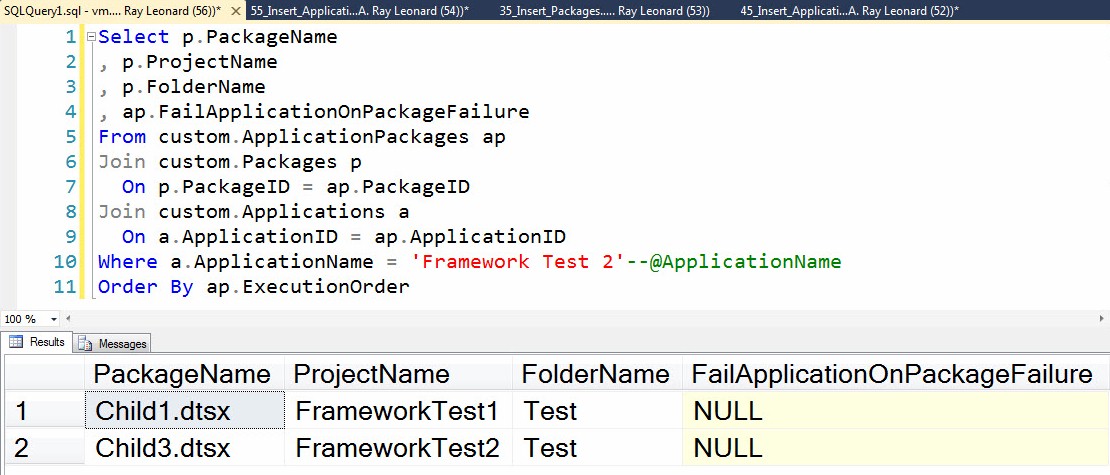
We are now ready to test to be sure we’ve entered the SSIS Application metadata correctly for use with SSIS Framework Community Edition. The easiest way to accomplish this is to use the query used by the Parent SSIS Package in the Framework SSIS Project (since this query will be used by the Framework). To access that query, open the “SSIS Framework Community Edition” SSIS solution. Expand the Framework project, and edit the Parent.dtsx SSIS package. Right-click the “SQL Get Framework Packages” Execute SQL Task and click Edit, as shown below:



Click the ellipsis beside the SQLStatement property and copy the T-SQL statement to the clipboard:



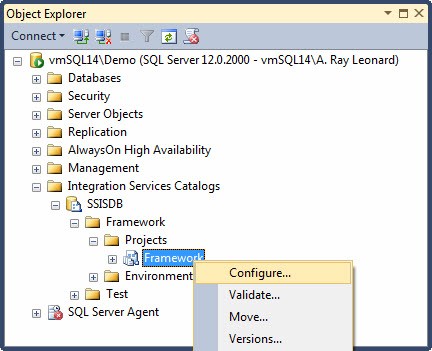
In SSMS, open a new query window and paste the clipboard contents into it. Change the WHERE clause so that the T-SQL statement returns only the rows for the “Framework Test 2” SSIS Application. Your results should appear similar to those shown below:



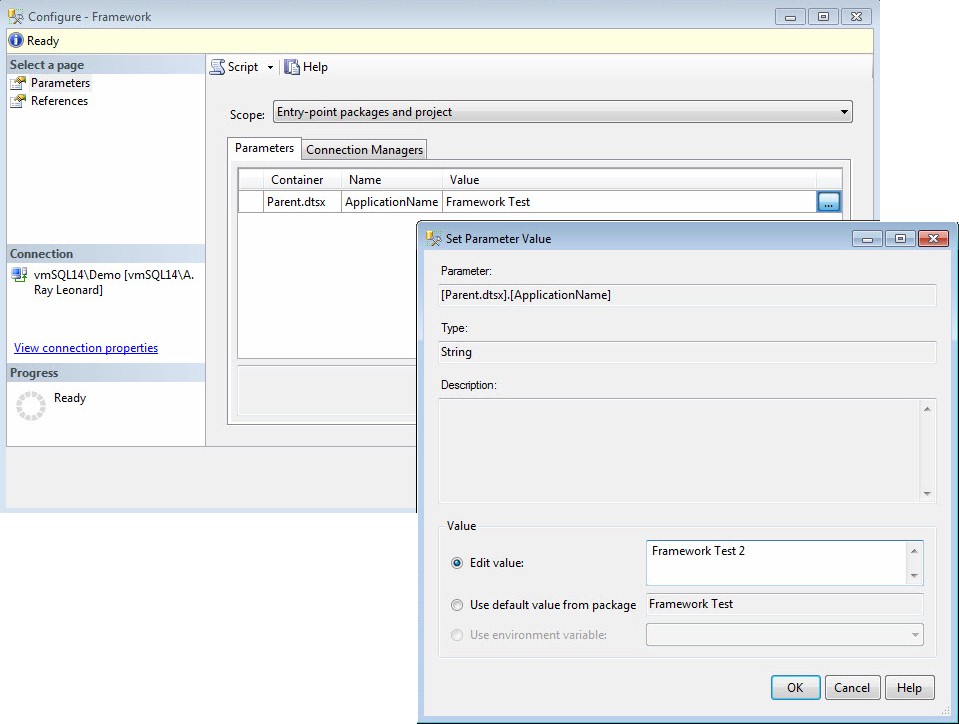
### Functional / System Test

The functional / system test will execute the Framework Test 2 SSIS Application in the SSIS Framework Community Edition.

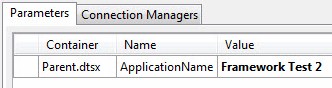
Open Object Explorer in SSMS, browse to the Integration Services Catalogs node, and expand until you reach the Framework SSIS project. Right-click the project and click Configure, as shown below:



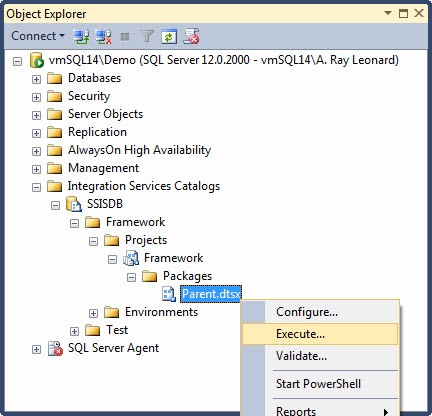
Click the ellipsis beside the ApplicationName parameter value and edit the value by selecting the “Edit value” option. Enter “Framework Test 2” into the “Edit value” textbox as shown below:



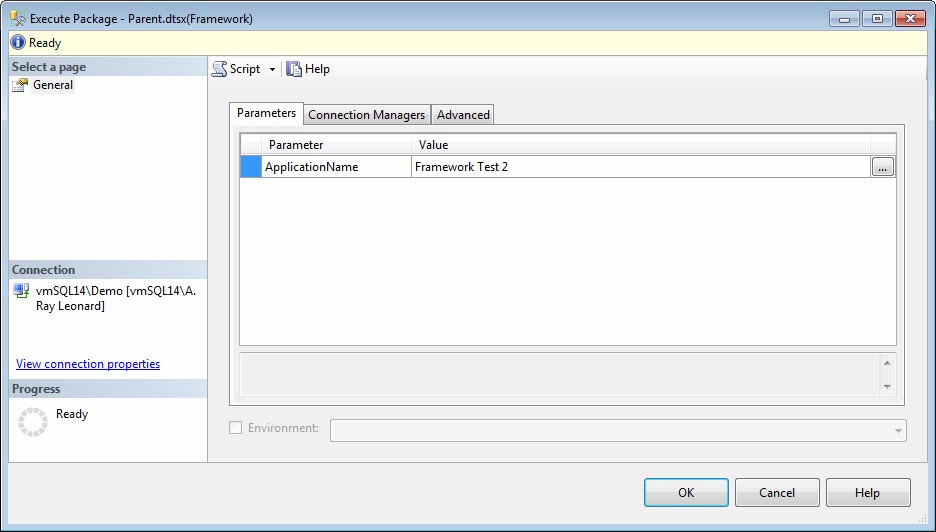
When you click the OK button, the ApplicationName parameter value will display “**Framework Test 2**” with a **bold** text decoration to indicate the value has been manually overridden in the SSIS Catalog configuration for the Framework SSIS Project and Parent.dtsx SSIS Package:



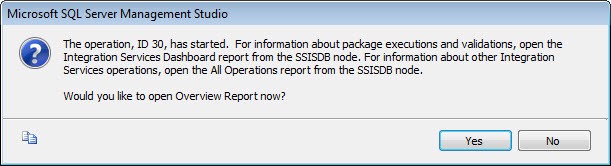
Click OK to return to SSMS’s Object Explorer. Expand the Framework project node and the Packages virtual node. Right-click Parent.dtsx and click Execute, as shown below:



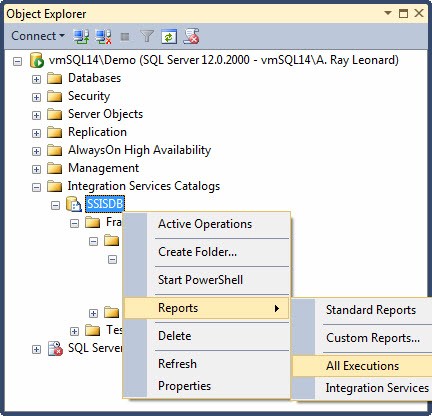
When the Execute Package dialog displays, click the OK button to execute Parent.dtsx:



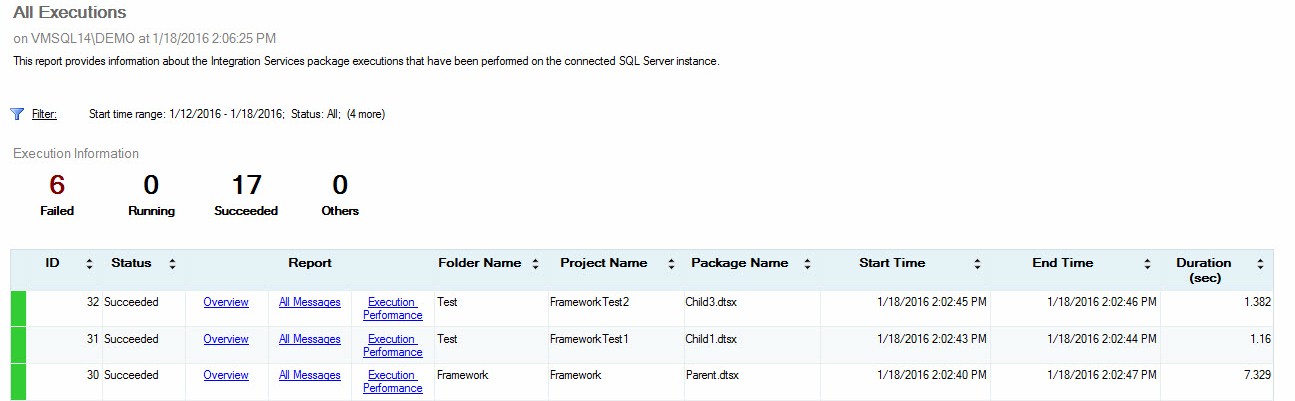
An SSMS dialog will display asking if you want to view the Overview report. Click No to continue:



Return to SSMS Object Explorer and right-click the SSISDB node, hover over Reports, hover over Standard Reports, and click All Executions, as shown below:



The All Executions report should appear similar to that shown below, which indicates the last three SSIS packages that executed were the Parent, Child1, and Child3 SSIS packages; which was how we configured the Framework Test 2 SSIS Application in the SSIS Framework Community Edition:



If All Executions appears similar to what is shown above, consider the functional / system test a success. If not, please review the test conditions and setup to see if you missed or misinterpreted a step.

# Executing an Application via Stored Procedure

You can execute an SSIS Framework Application by calling the execute\_catalog\_parent\_package stored procedure:

exec custom.execute\_catalog\_parent\_package @application\_name = 'Framework Test'

# Adding an SSIS Application automatically

I originally posted [Adding an SSIS Application to SSIS Framework Community Edition](https://andyleonard.blog/2017/07/adding-an-ssis-application-to-ssis-framework-community-edition/) on [my blog](https://andyleonard.blog). I’m not going to repeat the entire post here – go read the post because it has important details.

I shared a script in that post that will iterate through the SSIS packages deployed to an SSIS Catalog project in an SSIS Catalog folder. As it iterates, the script will store metadata in the SSIS Framework Community Edition tables. You simply provide three parameters to the script:

1. The named of SSIS Application you desire to create in the Framework;
2. The SSIS Catalog folder that contains the SSIS Catalog project; and
3. The name of the SSIS Catalog project.

After execution of this script, verify the order of the package execution matches your desired execution order. The script iterates the packages in the order they are stored in the SSIS Catalog.

Here is the script:

Use SSISDB

go

declare @frameworkApplicationName varchar(255) = N'Load AdventureWorks2014 Stage'

declare @catalogFolderName nvarchar(128) = N'Stage'

declare @catalogProjectName nvarchar(128) = N'AdventureWorks2014\_Stage\_Loader'

declare @packageName nvarchar(260)

declare @sql nvarchar(4000)

declare @CrLf char(2) = Char(13) + Char(10)

declare @ApplicationID int

declare @PackageID int

declare @ExecutionOrder int = 10

declare @ExecFlag bit = 1

declare curPackages Cursor For

Select p.[name] As PackageName

From [catalog].packages p

Join [catalog].projects pr

On pr.project\_id = p.project\_id

Join [catalog].folders f

On f.folder\_id = pr.folder\_id

Where pr.[name] = @catalogProjectName

And f.[name] = @catalogFolderName

And p.[name] Not Like '99\_%'

-- start a transaction

begin tran

-- build application

Set @sql = '/\* Application: ' + @frameworkApplicationName + ' \*/' + @CrLf

Set @sql = @sql + 'declare @appID int = (Select ApplicationID

From custom.Applications

Where ApplicationName = ''' + @frameworkApplicationName + ''')' + @CrLf + @CrLf

Set @sql = @sql + 'If(@appID Is NULL)

begin

Insert Into custom.Applications

(ApplicationName)

Output inserted.ApplicationID As ApplicationID

Values

(''' + @frameworkApplicationName + ''')

end' + @CrLf

Set @sql = @sql + 'Else

begin

Select @appID As ApplicationID

end' + @CrLf + @CrLf

print @sql

If(@ExecFlag = 1)

exec(@sql)

Set @ApplicationID = (Select ApplicationID

From custom.Applications

Where ApplicationName = @frameworkApplicationName)

open curPackages

fetch next from curPackages into @packageName

while(@@fetch\_status = 0)

begin

Set @sql = '/\* Package: ' + @packageName + ' \*/' + @CrLf

Set @sql = @sql + 'declare @pkgID int = (Select PackageID

From custom.Packages

Where PackageName = ''' + @packageName + '''

And ProjectName = ''' + @catalogProjectName + '''

And FolderName = ''' + @catalogFolderName + ''')' + @CrLf + @CrLf

Set @sql = @sql + 'If(@pkgID Is NULL)

begin

Insert Into custom.Packages

(FolderName

,ProjectName

,PackageName)

Output inserted.PackageID As PackageID

Values

(''' + @catalogFolderName + '''

, ''' + @catalogProjectName + '''

, ''' + @packageName + ''')

end' + @CrLf

Set @sql = @sql + 'Else

begin

Select @pkgID As PackageID

end' + @CrLf + @CrLf

print @sql

If(@ExecFlag = 1)

exec(@sql)

Set @PackageID = (Select PackageID

From custom.Packages

Where PackageName = @packageName

And ProjectName = @catalogProjectName

And FolderName = @catalogFolderName)

If(@PackageID Is Not NULL)

begin

Set @sql = '/\* ApplicationPackage: ' + @packageName + ' \*/'

Set @sql = @sql + 'declare @appPkgID int = (Select ApplicationPackageID

From custom.ApplicationPackages

Where ApplicationID = ' + Convert(varchar(12), @ApplicationID) + '

And PackageID = ' + Convert(varchar(12), @PackageID) + '

And ExecutionOrder = ' + Convert(varchar(12), @ExecutionOrder) + ')' + @CrLf + @CrLf

Set @sql = @sql + 'If(@appPkgID Is NULL)

begin

Insert Into custom.ApplicationPackages

(ApplicationID

,PackageID

,ExecutionOrder

,FailApplicationOnPackageFailure)

Output inserted.PackageID As PackageID

Values

(' + Convert(varchar(12), @ApplicationID) + '

, ' + Convert(varchar(12), @PackageID) + '

, ' + Convert(varchar(12), @ExecutionOrder) + '

, 1)

end' + @CrLf

print @sql

If(@ExecFlag = 1)

exec(@sql)

   end

  Set @ExecutionOrder = @ExecutionOrder + 10

fetch next from curPackages into @packageName

end

close curPackages

deallocate curPackages

Select a.ApplicationName

, p.FolderName

, p.ProjectName

, p.PackageName

, ap.ExecutionOrder

, ap.FailApplicationOnPackageFailure

From custom.ApplicationPackages ap

Join custom.Applications a

On a.ApplicationID = ap.ApplicationID

Join custom.Packages p

On p.PackageID = ap.PackageID

Where a.ApplicationName = @frameworkApplicationName

Order By ap.ExecutionOrder

-- commit

-- rollback

# Conclusion

This guide is intended to help you get started using the SSIS Framework Community Edition.

Please share questions and concerns with Andy Leonard at [andy.leonard@andyleonardconsulting.com](mailto:andy.leonard@andyleonardconsulting.com).

Enjoy!

:{>

# Appendix A - GNU GENERAL PUBLIC LICENSE Version 3, 29 June 2007

GNU GENERAL PUBLIC LICENSE

Version 3, 29 June 2007

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pattern of such abuse occurs in the area of products for individuals to

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To "modify" a work means to copy from or adapt all or part of the work

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earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based

on the Program.

To "propagate" a work means to do anything with it that, without

permission, would make you directly or secondarily liable for

infringement under applicable copyright law, except executing it on a

computer or modifying a private copy. Propagation includes copying,

distribution (with or without modification), making available to the

public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other

parties to make or receive copies. Mere interaction with a user through

a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices"

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the interface presents a list of user commands or options, such as a

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The "source code" for a work means the preferred form of the work

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standard defined by a recognized standards body, or, in the case of

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is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other

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"Major Component", in this context, means a major essential component

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of sections 4 and 5, provided that you also convey the

machine-readable Corresponding Source under the terms of this License,

in one of these ways:

a) Convey the object code in, or embodied in, a physical product

(including a physical distribution medium), accompanied by the

Corresponding Source fixed on a durable physical medium

customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product

(including a physical distribution medium), accompanied by a

written offer, valid for at least three years and valid for as

long as you offer spare parts or customer support for that product

model, to give anyone who possesses the object code either (1) a

copy of the Corresponding Source for all the software in the

product that is covered by this License, on a durable physical

medium customarily used for software interchange, for a price no

more than your reasonable cost of physically performing this

conveying of source, or (2) access to copy the

Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the

written offer to provide the Corresponding Source. This

alternative is allowed only occasionally and noncommercially, and

only if you received the object code with such an offer, in accord

with subsection 6b.

d) Convey the object code by offering access from a designated

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Corresponding Source along with the object code. If the place to

copy the object code is a network server, the Corresponding Source

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clear directions next to the object code saying where to find the

Corresponding Source. Regardless of what server hosts the

Corresponding Source, you remain obligated to ensure that it is

available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided

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A separable portion of the object code, whose source code is excluded

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if neither you nor any third party retains the ability to install

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The requirement to provide Installation Information does not include a

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Corresponding Source conveyed, and Installation Information provided,

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If the disclaimer of warranty and limitation of liability provided

above cannot be given local legal effect according to their terms,

reviewing courts shall apply local law that most closely approximates

an absolute waiver of all civil liability in connection with the

Program, unless a warranty or assumption of liability accompanies a

copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest

possible use to the public, the best way to achieve this is to make it

free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest

to attach them to the start of each source file to most effectively

state the exclusion of warranty; and each file should have at least

the "copyright" line and a pointer to where the full notice is found.

{one line to give the program's name and a brief idea of what it does.}

Copyright (C) {year} {name of author}

This program is free software: you can redistribute it and/or modify

it under the terms of the GNU General Public License as published by

the Free Software Foundation, either version 3 of the License, or

(at your option) any later version.

This program is distributed in the hope that it will be useful,

but WITHOUT ANY WARRANTY; without even the implied warranty of

MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the

GNU General Public License for more details.

You should have received a copy of the GNU General Public License

along with this program. If not, see <http://www.gnu.org/licenses/>.

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short

notice like this when it starts in an interactive mode:

{project} Copyright (C) {year} {fullname}

This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.

This is free software, and you are welcome to redistribute it

under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate

parts of the General Public License. Of course, your program's commands

might be different; for a GUI interface, you would use an "about box".

You should also get your employer (if you work as a programmer) or school,

if any, to sign a "copyright disclaimer" for the program, if necessary.

For more information on this, and how to apply and follow the GNU GPL, see

<http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program

into proprietary programs. If your program is a subroutine library, you

may consider it more useful to permit linking proprietary applications with

the library. If this is what you want to do, use the GNU Lesser General

Public License instead of this License. But first, please read

<http://www.gnu.org/philosophy/why-not-lgpl.html>.