Deployment Part 2

Working with the Project Deployment Model

Stacia Misner
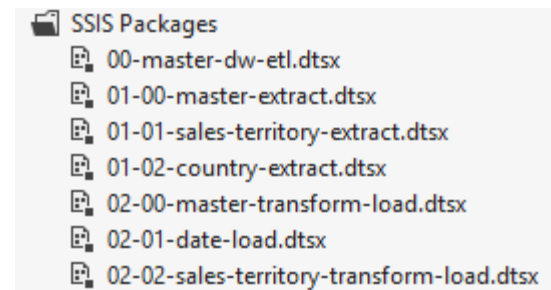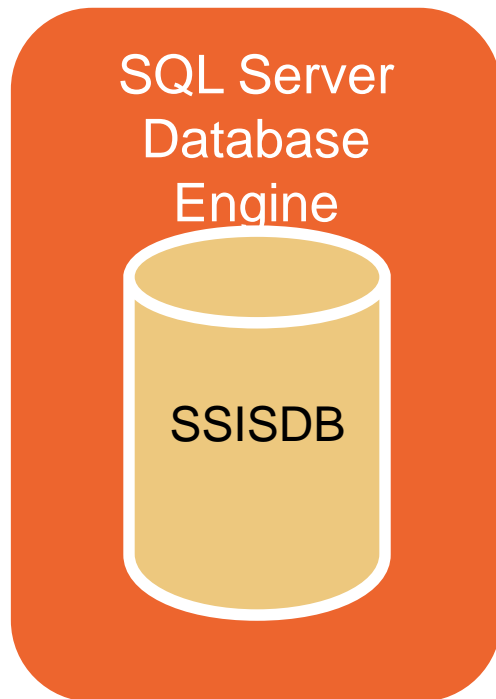blog.datainspirations.com
@StaciaMisner

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Overview

- **SSIS Catalog**

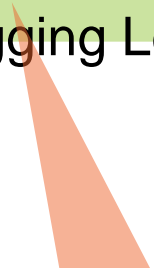- **Deployment Options**

- **Environments**

- **Package Execution**

Integration Services Catalog

SQL Server Database Engine

SSISDB

SSIS Packages
- 00-master-dw-etl.dtsx
- 01-00-master-extract.dtsx
- 01-01-sales-territory-extract.dtsx
- 01-02-country-extract.dtsx
- 02-00-master-transform-load.dtsx
- 02-01-date-load.dtsx
- 02-02-sales-territory-transform-load.dtsx

Integration Services Catalog Properties

Operations Log:
- Clean Logs Periodically
- Retention Period
- Logging Level

Project Versioning:
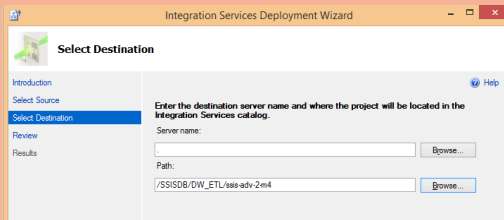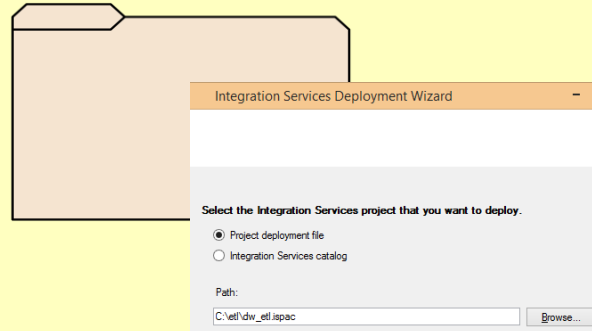- Maximum Versions per Project
- Remove Old Versions

None
Basic (default)
Performance
Verbose

Deployment Options

SSDT + Wizard

ISPAC + Wizard

```
DECLARE @ProjectBinary as varbinary(max)
DECLARE @operation_id as bigint
Set @ProjectBinary = (SELECT * FROM OPENROWSET(BULK
'C:\etl\dw_etl.ispac', SINGLE_BLOB) as BinaryData)

Exec catalog.deploy_project @folder_name =
'DW_ETL_copy', @project_name = 'dw_etl', @Project_Stream
= @ProjectBinary, @operation_id = @operation_id out
```

ISPAC + T-SQL

SSDT + Wizard Deployment

ISPAC + Wizard Deployment
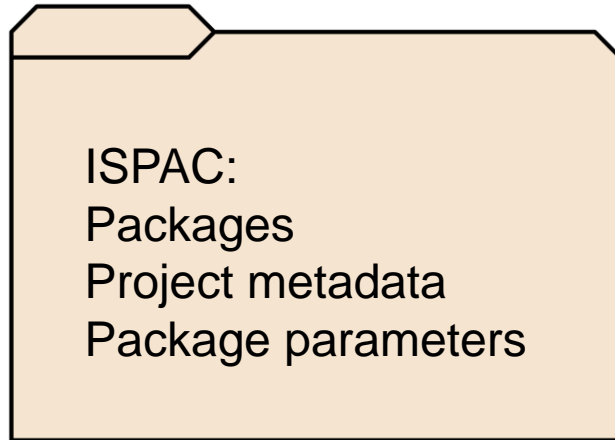
ISPAC:
Packages
Project metadata
Package parameters

Create ISPAC
- SSDT – Build Project
- SSMS – Export Project

Integration Services Deployment Wizard   – ☐

Select the Integration Services project that you want to deploy.

◉ Project deployment file

○ Integration Services catalog

Path:

C:\etl\dw_etl.ispac   Browse...

ISPAC path
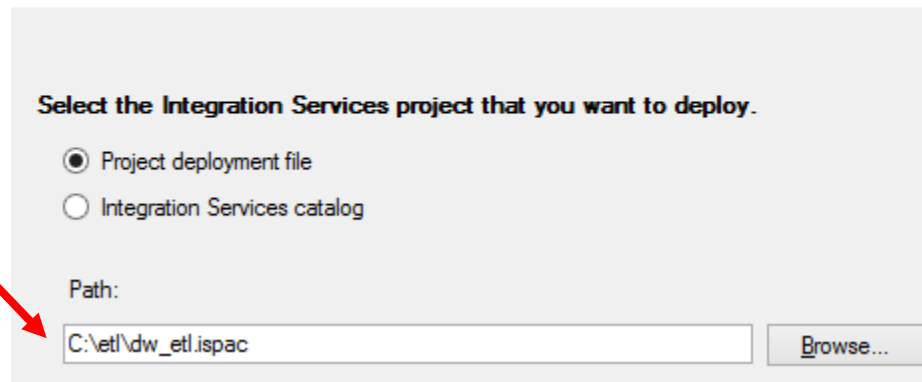
ISPAC + Wizard Deployment

Silent

ISPAC Source Path

```
IsDeploymentWizard /S /SP:"C:\etl\dw_etl.ispac"
/DS:"<myServerName>\<Instancename>" /DP:"/SSISDB/DW_ETL"
```

Destination Server

Destination Path =
SSISDB +
Folder Name

ISPAC + T-SQL Deployment

```
DECLARE @ProjectBinary as varbinary(max)
DECLARE @operation_id as bigint
Set @ProjectBinary = (SELECT * FROM OPENROWSET(BULK
'C:\etl\dw_etl.ispac', SINGLE_BLOB) as BinaryData)

Exec catalog.deploy_project @folder_name = 'DW_ETL_copy',
@project_name = 'dw_etl', @Project_Stream = @ProjectBinary,
@operation_id = @operation_id out
```

ISPAC to varbinary variable

Built-in catalog stored procedure
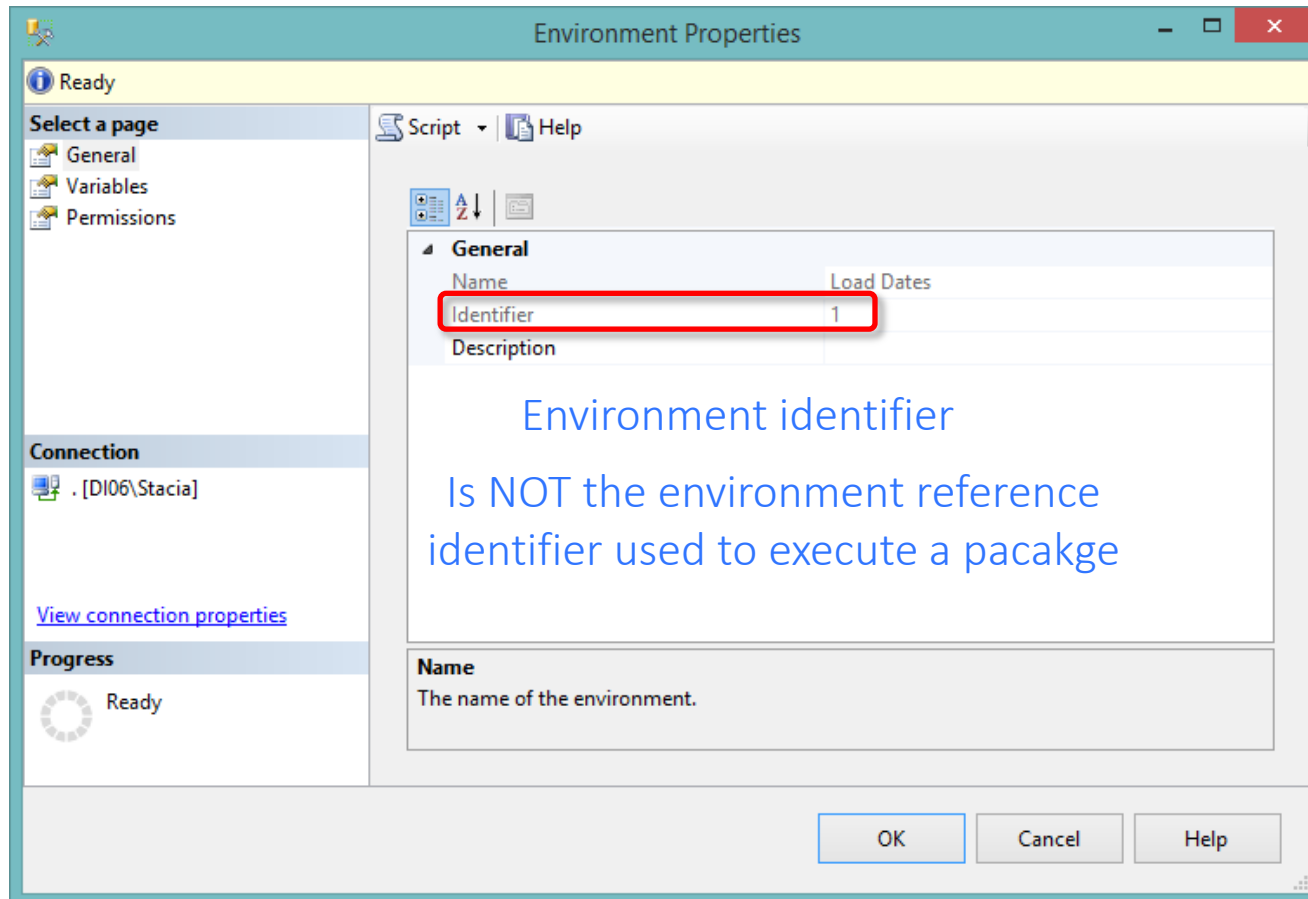
Environments

T-SQL approach:
create_environment stored procedure

Environments

Environment variables replace values for:
- Project parameters
- Package parameters
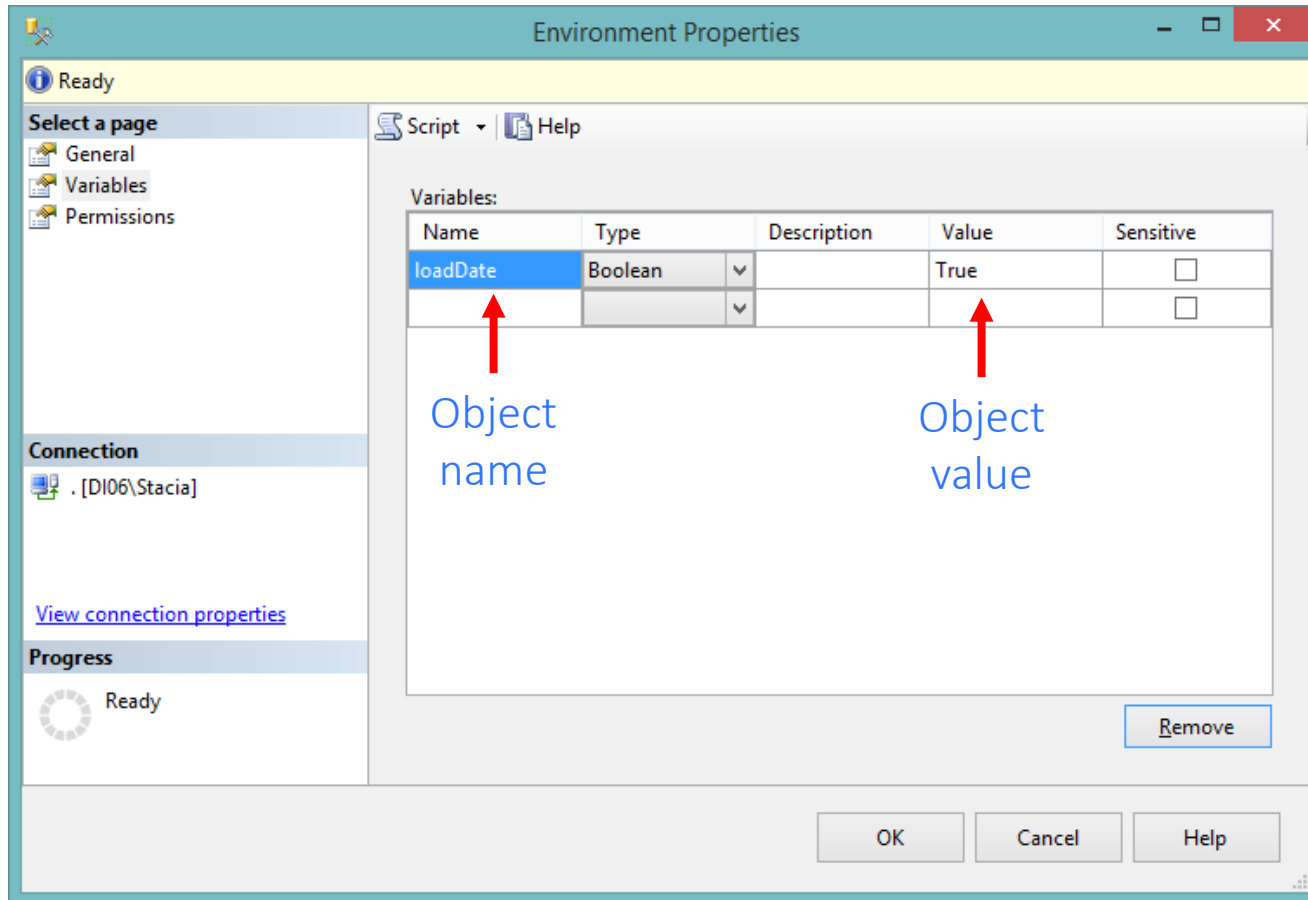- Connection manager properties

Environments

□ 🗃 SSISDB
  □ 📁 DW_ETL
    □ 📁 Projects
      □ 🗃 ssis-adv-2-m4
        □ 📁 Packages
          📄 00-master-dw-etl.dtsx
          📄 01-00-master-extract.dtsx
          📄 01-01-sales-territory-extract.dtsx
          📄 01-02-country-extract.dtsx
          📄 02-00-master-transform-load.dtsx
          📄 02-01-date-load.dtsx
          📄 02-02-sales-territory-transform-load.dtsx
    □ 📁 Environments
      🌐 Load Dates
      🌐 Do Not Load Dates
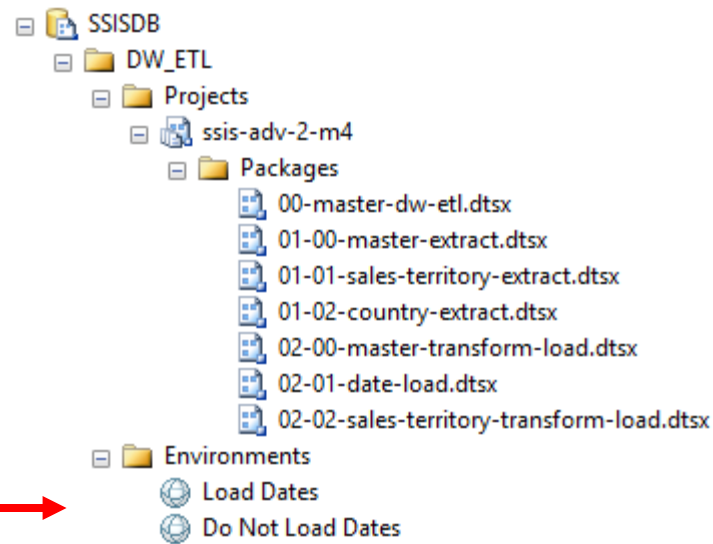
Multiple environments per folder →

Environments
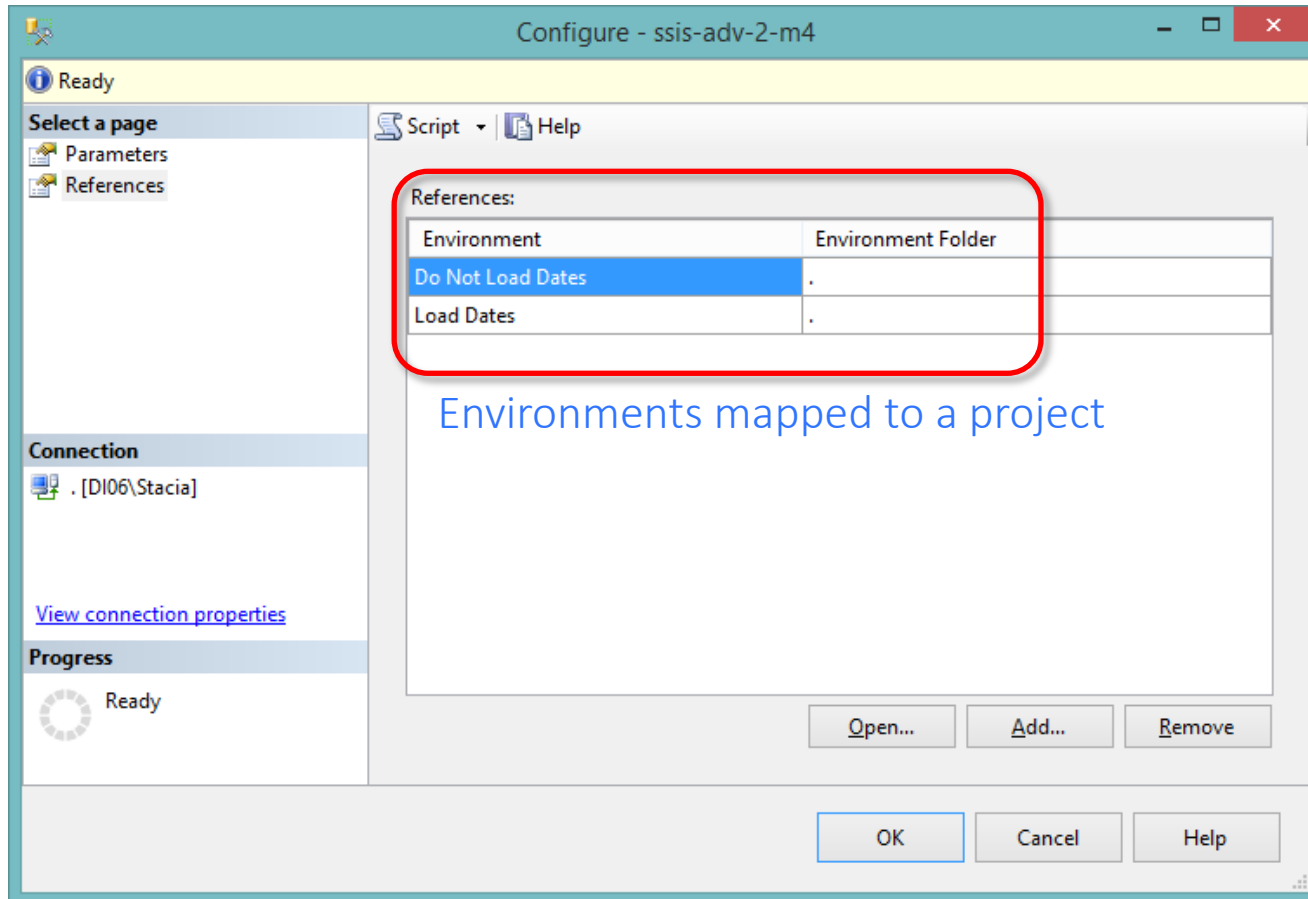
Environments

Package Execution

User Interface

T-SQL
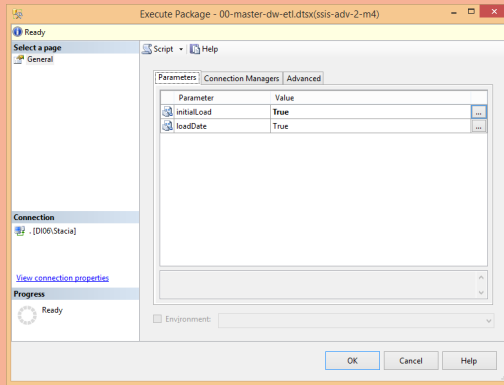
```
Declare @execution_id bigint
EXEC [SSISDB].[catalog].[create_execution] @package_name=N'00-master-
dw-etl.dtsx', @execution_id=@execution_id OUTPUT,
@folder_name=N'DW_ETL',
@project_name=N'ssis-adv2-m4', @use32bitruntime=False,
@reference_id=1

Select @execution_id
DECLARE @firstLoad smallint = 0
EXEC [SSISDB].[catalog].[set_execution_parameter_value]
@execution_id,  @object_type=20, @parameter_name=N'initialLoad',
@parameter_value=@firstLoad

EXEC [SSISDB].[catalog].[start_execution] @execution_id
GO
```


Scheduled Job

```
DTExec /ISSERVER
"\SSISDB\DW_ETL\ssis-adv-2-m4\00-master-dw-etl.dtsx" /SERVER "." /Envreference 2 /Par
"$Project::initialLoad(Int32)";1
/Par "CM.AdventureWorksDW_demo.Servername";.
/Par "$ServerOption::SYNCHRONIZED(Boolean)";True
```

DTExec

Package Execution with User Interface
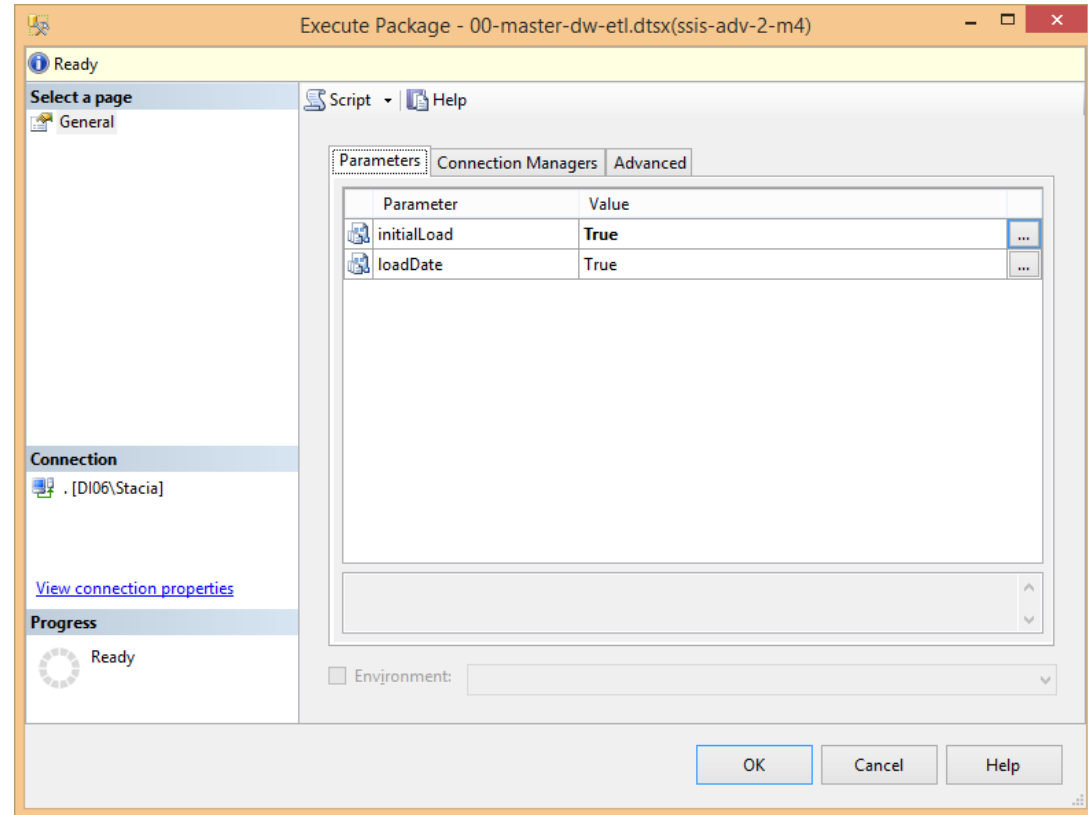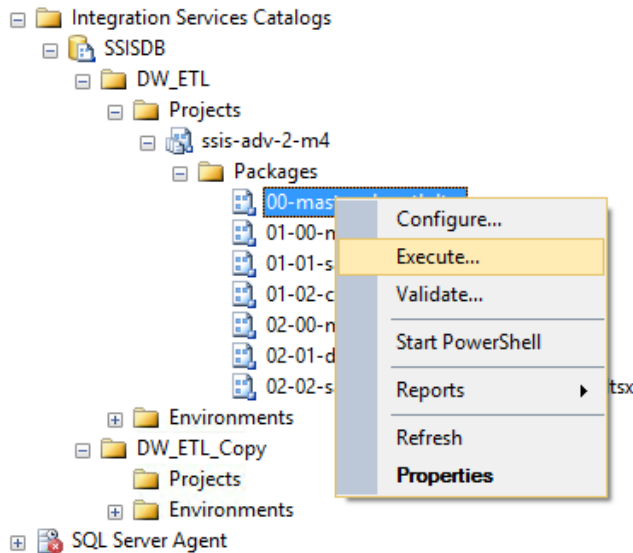
Configure execution:
- Parameter values
- Connection managers
- Property overrides
- Logging
- Environment

Package Execution with T-SQL
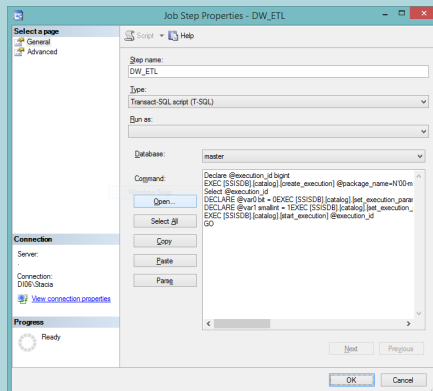
```
Declare @execution_id bigint
EXEC [SSISDB].[catalog].[create_execution] @package_name=N'00-master-dw-etl.dtsx',
@execution_id=@execution_id OUTPUT, @folder_name=N'DW_ETL',
@project_name=N'ssis-adv-2-m4', @use32bitruntime=False, @reference_id=2

Select @execution_id
DECLARE @firstLoad smallint = 0
EXEC [SSISDB].[catalog].[set_execution_parameter_value] @execution_id,
@object_type=20, @parameter_name=N'initialLoad', @parameter_value=@firstLoad

EXEC [SSISDB].[catalog].[start_execution] @execution_id
GO
```

Locate in catalog.environment_references view

20: Project parameter
30: Package parameter
50: Logging parameters

Package Execution with DTExec

```
DTExec /ISSERVER                    Path and  package name           Server name
"\SSISDB\DW_ETL\ssis-adv-2-m4\00-master-dw-etl.dtsx" /SERVER "."
/Envreference 1 /Par "$Project::initialLoad(Int32)";1           Parameter
/Par "CM.AdventureWorksDW_demo.Servername";.          Connection Manager
                                                       Properties
/Par "$ServerOption::SYNCHRONIZED(Boolean)";True
```
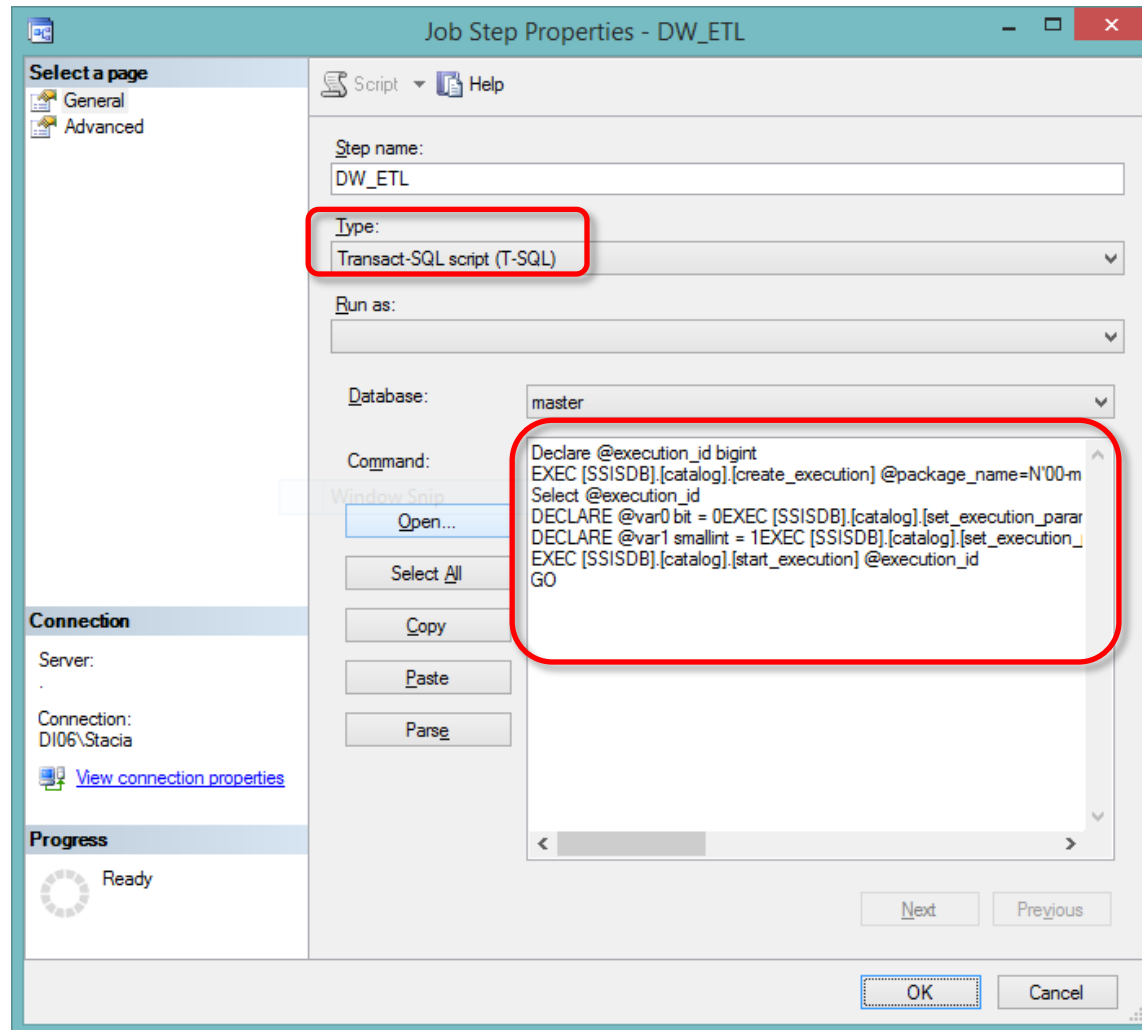
Instruction for DTEXEC to wait for results
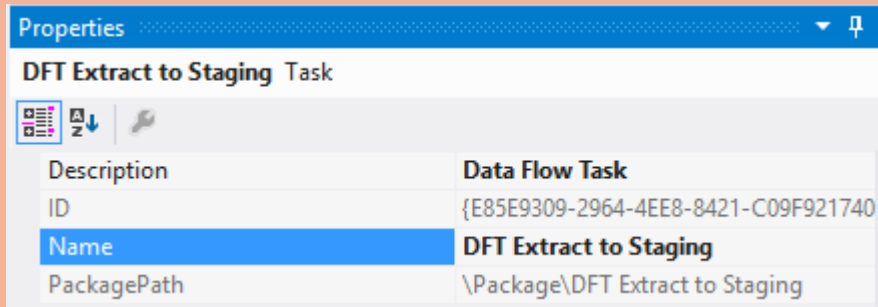
Package Execution with SQL Server Agent

Data Taps in Package Execution

```
EXEC [SSISDB].[catalog].[add_data_tap]
@execution_id=@execution_id,
@task_package_path=N'\Package\DFT Extract to Staging',
@dataflow_path_id_string=N'Paths[OLEDB Source.OLE DB Source
Output]', @data_filename='mydatatap.csv'
```

Properties

DFT Extract to Staging Task

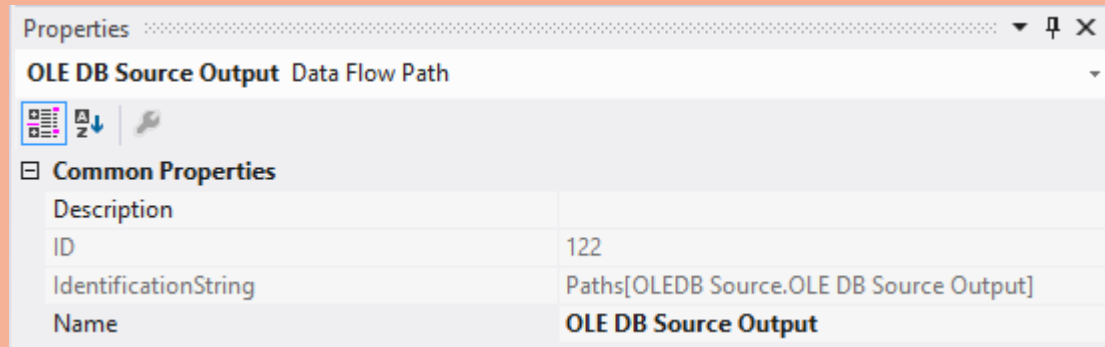| Description	Data Flow Task
ID	{E85E9309-2964-4EE8-8421-C09F921740
Name	**DFT Extract to Staging**
PackagePath	\Package\DFT Extract to Staging

Data Taps in Package Execution

```
EXEC [SSISDB].[catalog].[add_data_tap]
@execution_id=@execution_id,
@task_package_path=N'\Package\DFT Extract to Staging',
@dataflow_path_id_string=N'Paths[OLEDB Source.OLE DB Source
Output]', @data_filename='mydatatap.csv'
```

Data Taps in Package Execution

```
EXEC [SSISDB].[catalog].[add_data_tap]
@execution_id=@execution_id,
@task_package_path=N'\Package\DFT Extract to Staging',
@dataflow_path_id_string=N'Paths[OLEDB Source.OLE DB Source
Output]', @data_filename= 'sourcedatatap.csv'
```

SQL Server 2014
Program Files\Microsoft SQL Server\120\DTS\DataDumps

SQL Server 2012
Program Files\Microsoft SQL Server\110\DTS\DataDumps

Summary

- **SSIS Catalog**
  - Catalog creation, configure properties for logging and package versioning

- **Deployment Options**
  - Deployment Wizard, ISPAC

- **Environments**
  - Environment creation, environment variables, environment references

- **Package Execution**
  - User interface, T-SQL, DTExec, SQL Server Agent job, data taps

Resources

- **Create the SSIS Catalog**
  - http://tinyurl.com/ka4lgpa

- **Deploy Projects to Integration Services Server**
  - http://tinyurl.com/kjmshck

- **Deploy and Execute SSIS Packages Using Stored Procedures**
  - http://tinyurl.com/pogzoeh

- **Create and Map a Server Environment**
  - http://tinyurl.com/m9cw9uo

- **DTExec Utility**
  - http://tinyurl.com/mmvntkn

- **Data Flow Taps**
  - http://tinyurl.com/kf53fks