SSISTester
SSIS Unit & Integration Testing

# Unit & Live Testing for SSIS

- SSIS Tester is the framework that makes unit and integration testing of SSIS packages possible
- Test implementation follows common methodology as seen in MS Test or Nunit
- Use any .Net language to implement tests
- No need to change existing packages

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# System Requirements

- Visual Studio 2008
- Testing Tools for Visual Studio 2008
- SQL Server Integration Services 2008
- .NET Framework 3.5

Or

- Visual Studio 2010 / 2012
- Testing Tools for Visual Studio 2010
- SQL Server Integration Services 2008
- .NET Framework 3.5

Or

- Visual Studio 2010 / 2012
- Testing Tools for Visual Studio 2010 / 2012
- SQL Server Integration Services 2012 / 2014
- .NET Framework 4.0

# Framework

- Test Engine
- Monitoring UI
- Pipeline Components – Data Tap, Fake Source & Fake Destination

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# Framework - Test Engine

- Loads packages and tests into repositories
- Executes tests, packages, single tasks or precedence constraints
- Exposes testing API

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# Framework - Monitoring UI

- Real time test execution progress
- Detailed error explanation  of failed tests
- Filter test outcomes
- Export results to HTML
- Cancel test execution

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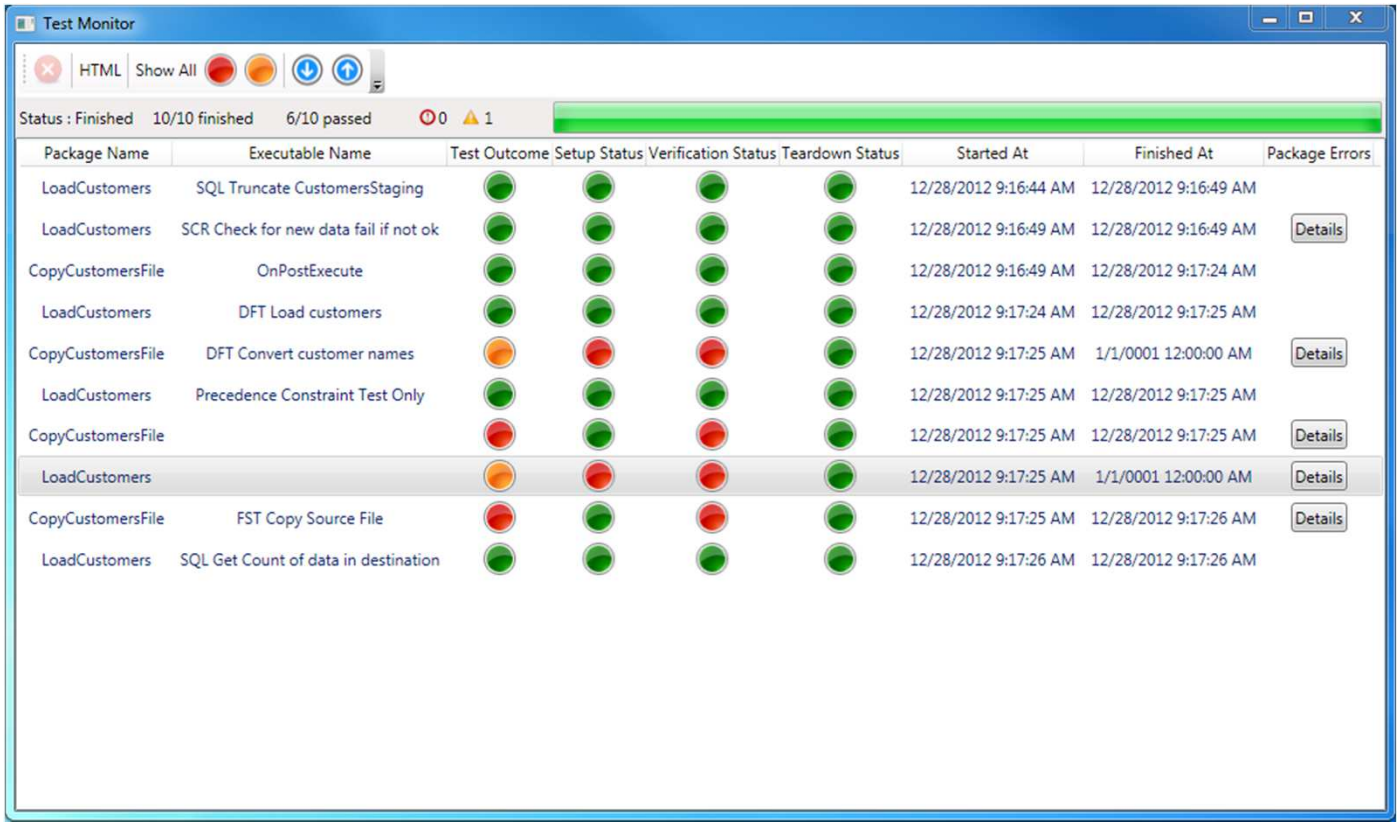
# Framework - Monitoring UI



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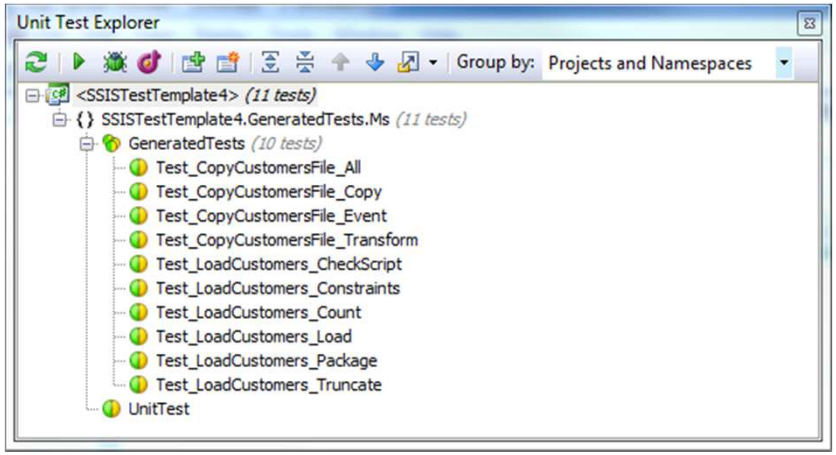
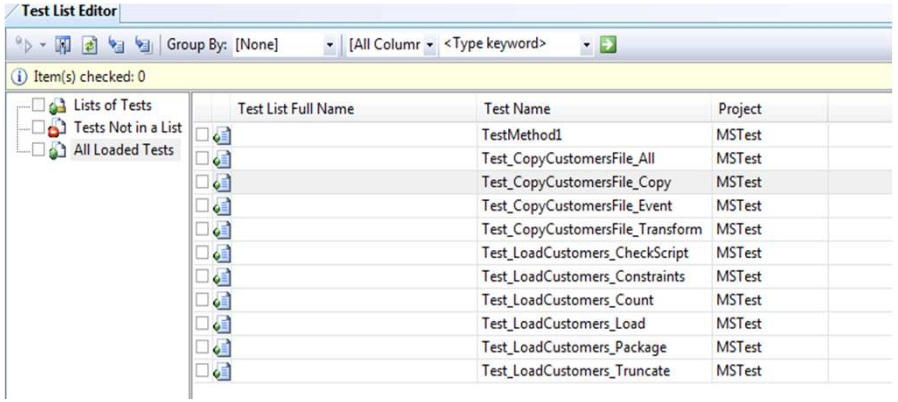
# Framework - Visual Studio

- Tests can be executed by using VS Test Editor or ReSharper



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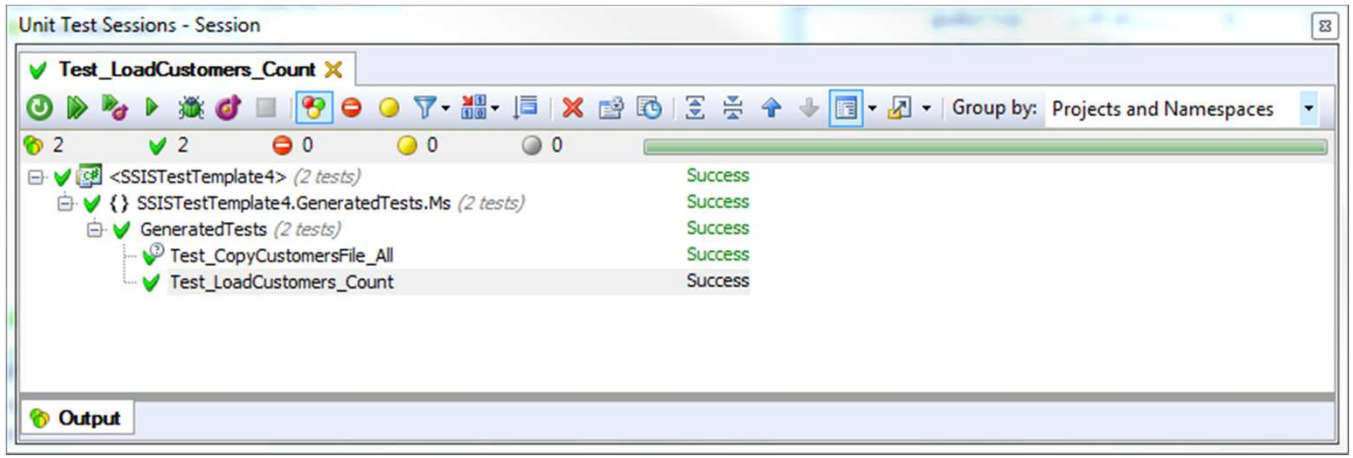

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# Framework – Pipeline Components

- Data Tap
  - taps data between components in a data flow
  - captured data can be used in a test to make assertions
  - the goal is to precisely test passing data
  - works with unit & live tests
  - works with SQL Server 2008, 2012 & 2014

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# Framework – Pipeline Components

- Fake Source
  - replaces a source component and channels in data defined in a unit test
  - columns and data types are inherited from the original source
  - the goal is to avoid external source dependencies
  - works with unit tests
  - works with SQL Server 2008, 2012 & 2014

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# Framework – Pipeline Components

- Fake Destination
  - replaces a destination component and captures data from upstream components
  - columns and data types are inherited from the original destination
  - the goal is to avoid external destination dependencies
  - works with unit tests
  - works with SQL Server 2008, 2012 & 2014

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# Anatomy of Unit Test

- Implemented as a single class
- Three steps - Setup, Verify and Cleanup
- Setup prepares package „environment“ – sets connection strings, variables, creates source files…
- Verify performs assertions after the package executed - checks values of variables, whether data has been copied to db…
- Cleanup resets the state of the testing environment like it was before test execution
- Targets one package, task or precedence constraint
- Lives in a single repository

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# Unit Test Execution

1. Test engine loads unit test definition & target package
2. Setup step is executed
3. Package is executed
4. Verify step is executed
5. Clean-up step is executed
6. Target package and test are unloaded

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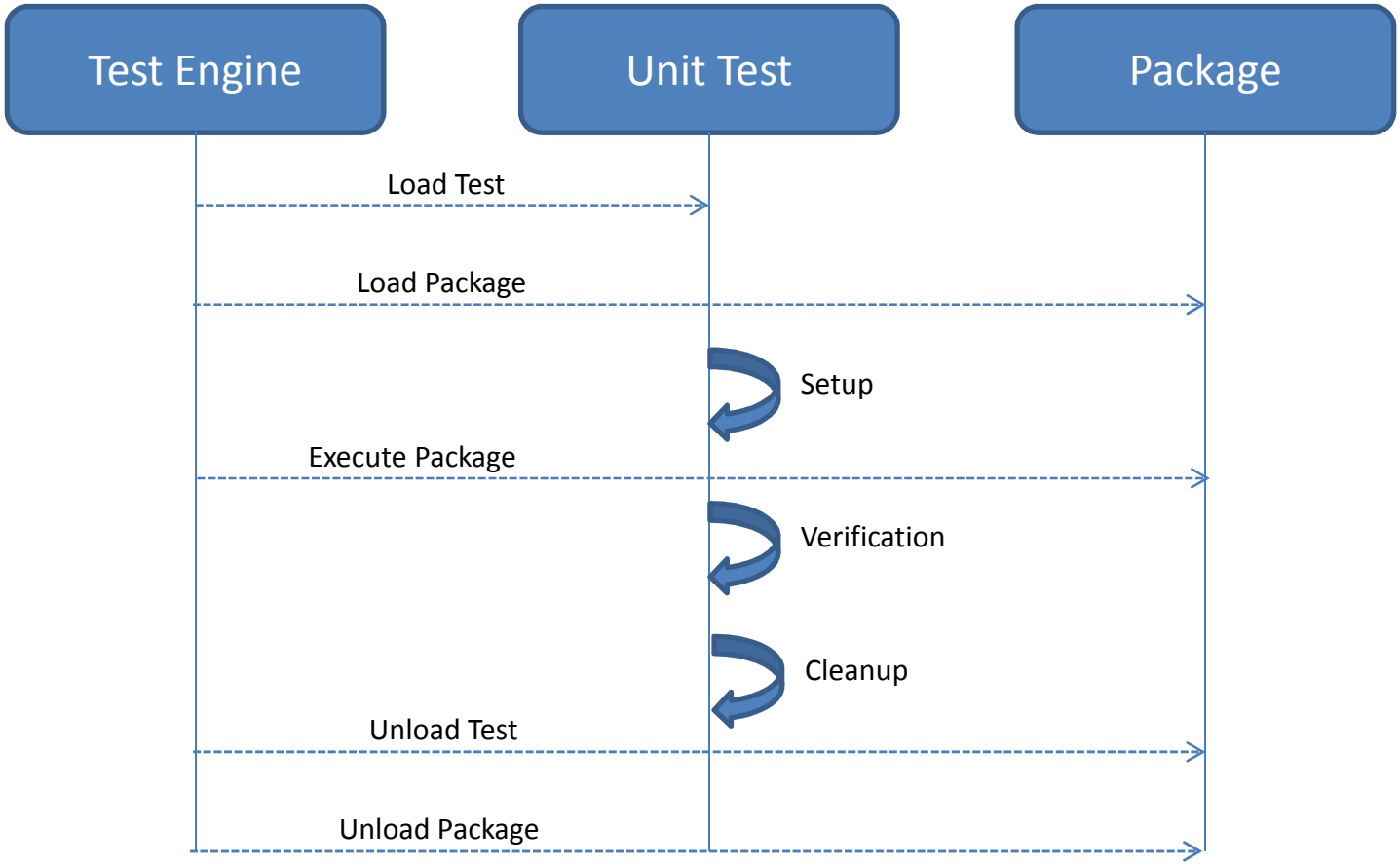


Steps implemented by developer

Steps without developer control

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# What is Unit Test for

- Isolated tests of single „units of work“ (tasks, precedence constraints) at the package level
- Isolated tests of single packages
- Behaviour of packages, tasks and precedence constraints in the prepared (Setup step) environment

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# Anatomy of Live Test

- Implemeted as a single class
- Class can contain more „action methods“ that validate state of tasks or precedence constraints
- „Action methods“ can access database, file system, package variables, properties, connections…
- „Action methods“ validate state after the particular package, task or precedence constraint has executed
- You do not control if and when the „action method“ is executed – it depends on the package execution

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# Live Test Execution

1. Test Engine loads live tests
2. Test Engine loads, prepares & starts the „main“ package – entry point of your ETL
3. „Main“ package executes all sub-packages via „Execute Package Tasks“
4. Live test is executed for each target package and/or single task and/or precedence constraint
5. Live test validate state after the target has executed

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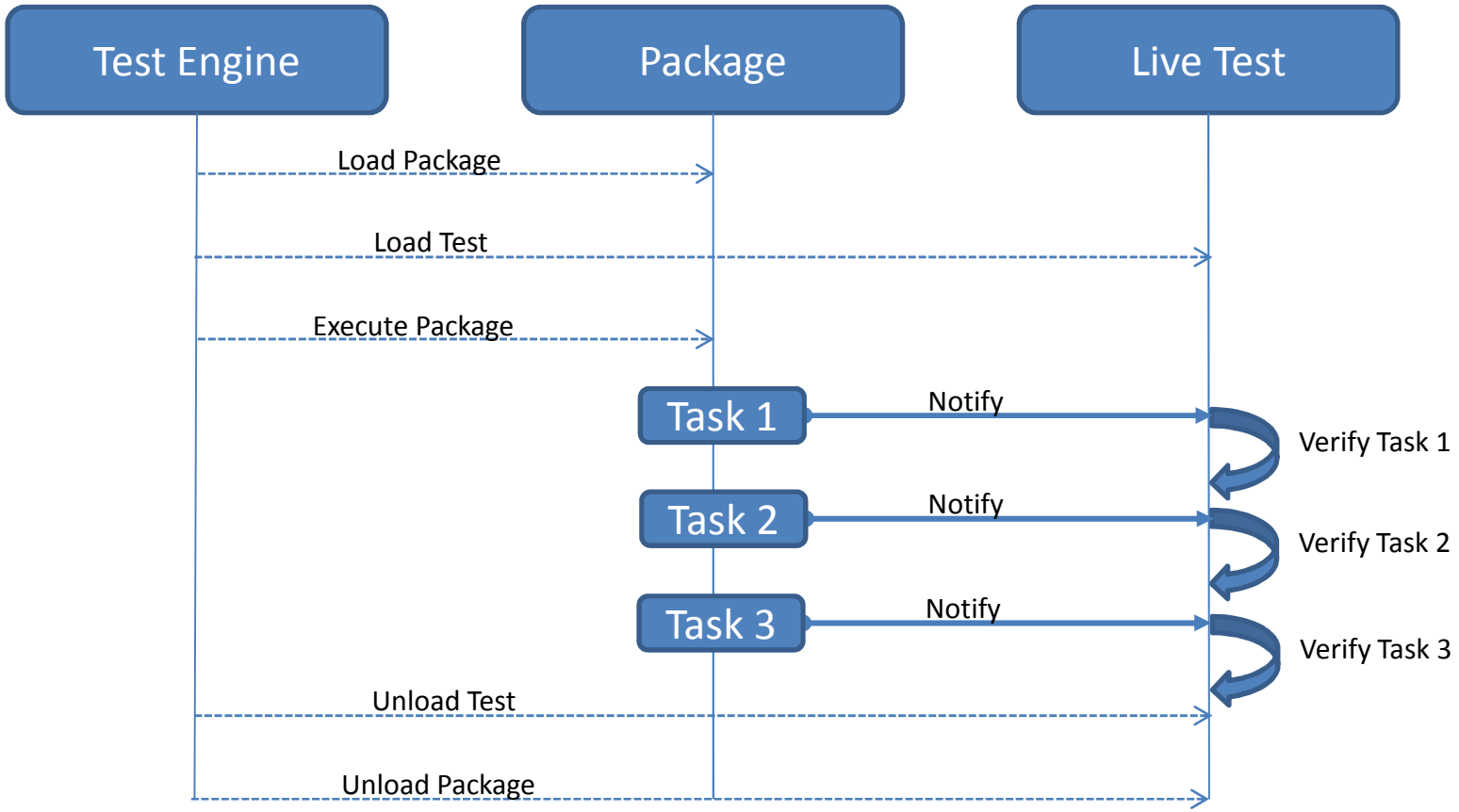


Steps implemented by developer

Steps without developer control

# What is Live Test for

- Verify functional, performance and other aspects of an ETL process
- Tests packages, their dependancies and their behaviour in the ETL process
- Tests in a real, non-prepared environment (no Setup step)