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Hong Kong | 2013

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# Using SQL Server Integration Services with Oracle

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# Agenda



Introduction to SSIS



Connectivity



Change Data Capture

# SQL Server Integration Services

High performance ETL platform  
Heterogeneous data access  
Workflow and data flow design  
Easy to use

“SQL Server Integration Services (SSIS) ETL product was by far the ***least likely to require external SI support*** according to our survey, with only 9% of respondents saying that they used an SI for implementation, compared with IBM’s users employing an SI more than 50% of the time.”  
– Forrester: *Enterprise ETL: Evolving and Indispensable To Your Data Management Strategy* (May 2010 )





Developer productivity  
Visual Studio based designer  
Drag and drop content creation

“Customer references cite the overall low total cost of ownership, speed of implementation, ease of use, and the ability to integrate with the rest of the Microsoft SQL Server capabilities as the main reasons for choosing SSIS over alternatives.”

- Gartner, 2010



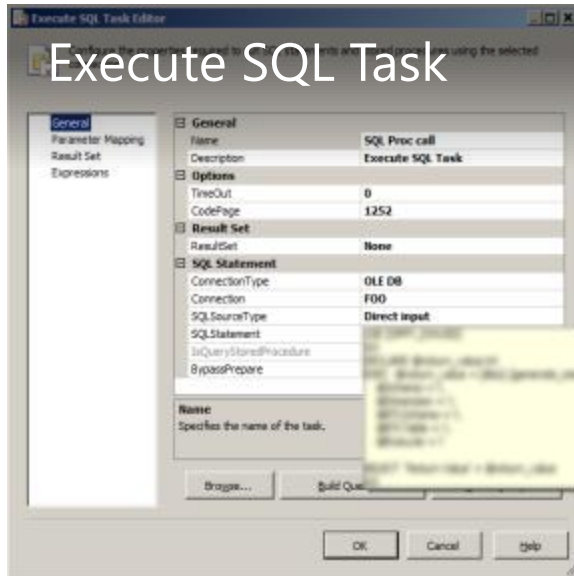
# SQL Server Integration Services (SSIS)

Overview

# Connecting to Oracle

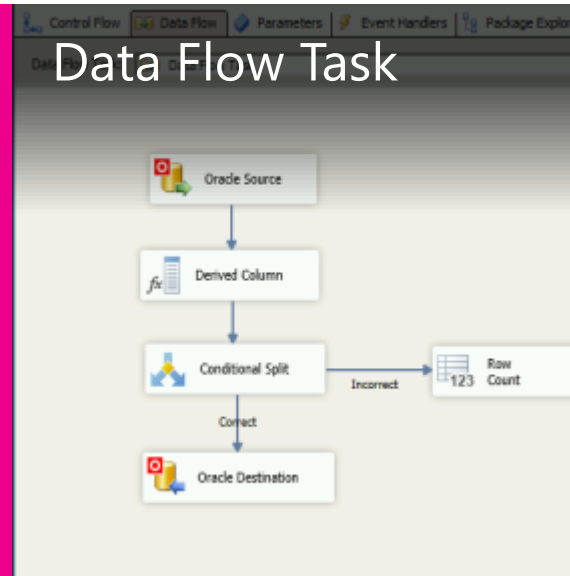


# Integration Services with Oracle



SSIS supports multiple types of database providers

Picking the right one is important for performance and usability



# Connectivity options

## High speed connectors for Oracle

Created through OEM partnership with Attunity

Full support from Microsoft, download from Microsoft.com

Included free with the SQL Server Enterprise license

**Recommended** for best overall performance and compatibility

## OLE DB, ODBC, and ADO.NET connectors

Available from Microsoft, and Oracle

## Third-party connectors

Many SSIS partners provide Oracle connectivity options

# Differences between providers

## Performance

Read performance is similar, but write performance varies  
Support for bulk loading

## Data type compatibility

Not all providers support LOB types  
Handling of NUMBER types  
Metadata support

## Platform and version support

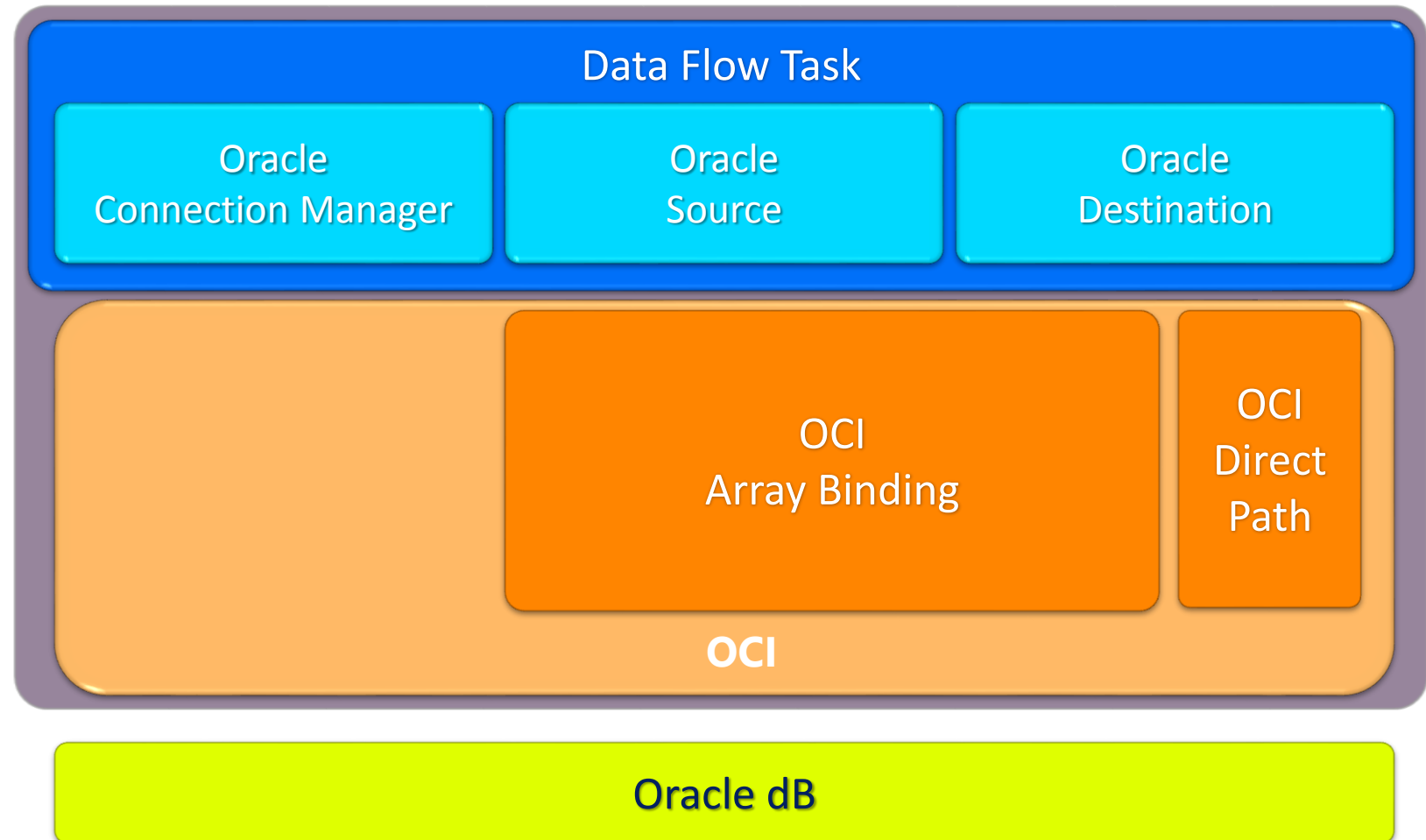
Microsoft Oracle provider (MSDAORA) 32bit only

# Microsoft Connector for Oracle by Attunity

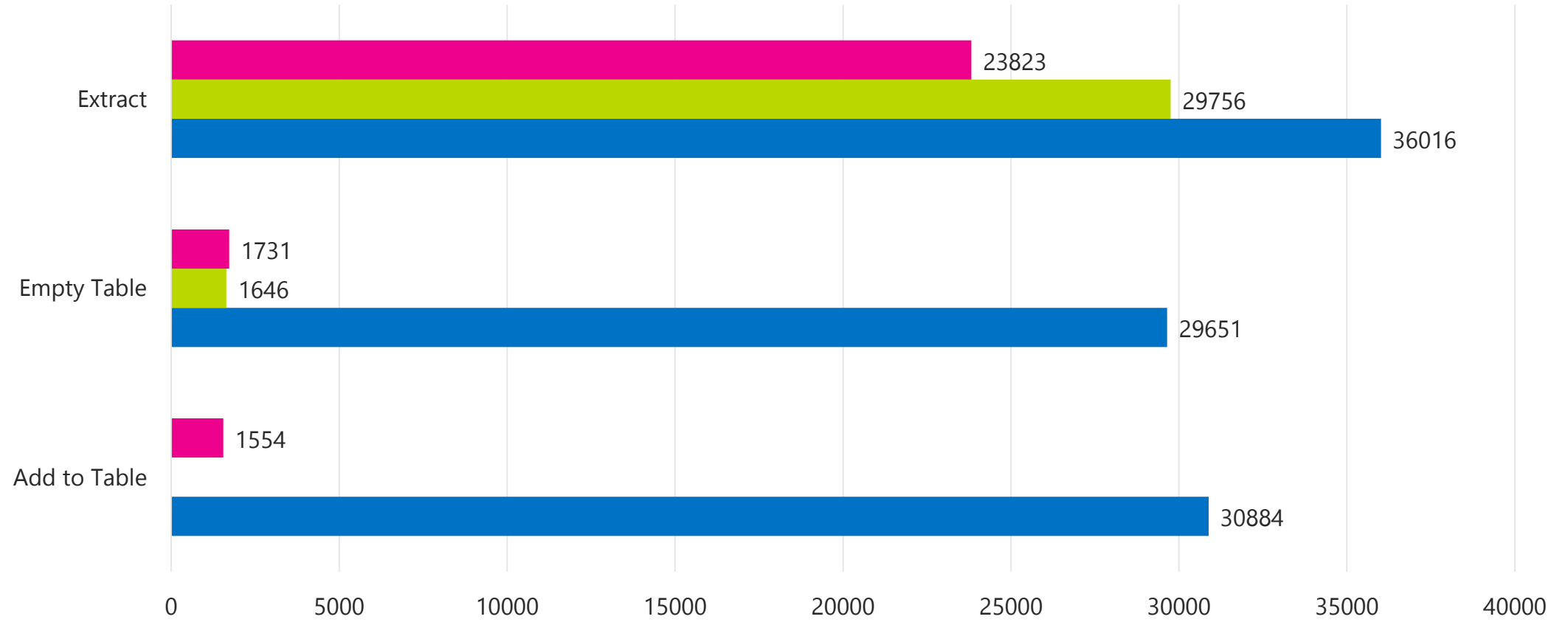
Custom built connector for SSIS

Uses Oracle Call Interface (OCI) API for high performance, low level data access

Provides Source, Destination and Connection Manager for the SSIS Data Flow



# Performance



	Add to Table	Empty Table	Extract
Oracle OLE DB	1554	1731	23823
Microsoft OLE DB		1646	29756
Connector for Oracle (by Attunity)	30884	29651	36016



# Using SSIS with Oracle

# Summary

## Data Flow

Use the Microsoft Connector for Oracle by Attunity (2008, 2012)  
ODBC Destination (2012) provides comparable performance

## Execute SQL Task

OLE DB, ODBC or ADO.NET

Difference in syntax for stored procedures / parameter mapping

Pick one and be consistent

# Change Data Capture



# Change Data Capture (CDC)

Retrieve incremental changes from your source

Reducing the amount of data you move reduces processing time

Automatic tracking of changes

Based on log readers

No need to modify source schema

Rollup of changes for "net" processing

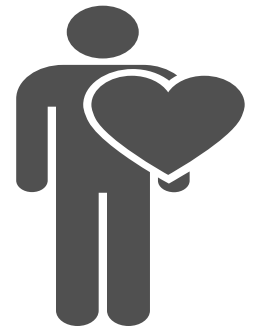
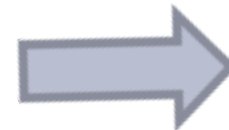
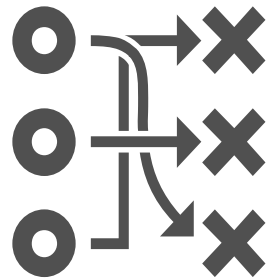
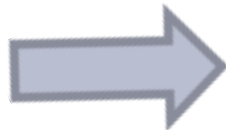
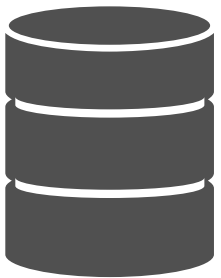
Key for data warehousing and migration scenarios

# How it works

Enable it on the Source Database

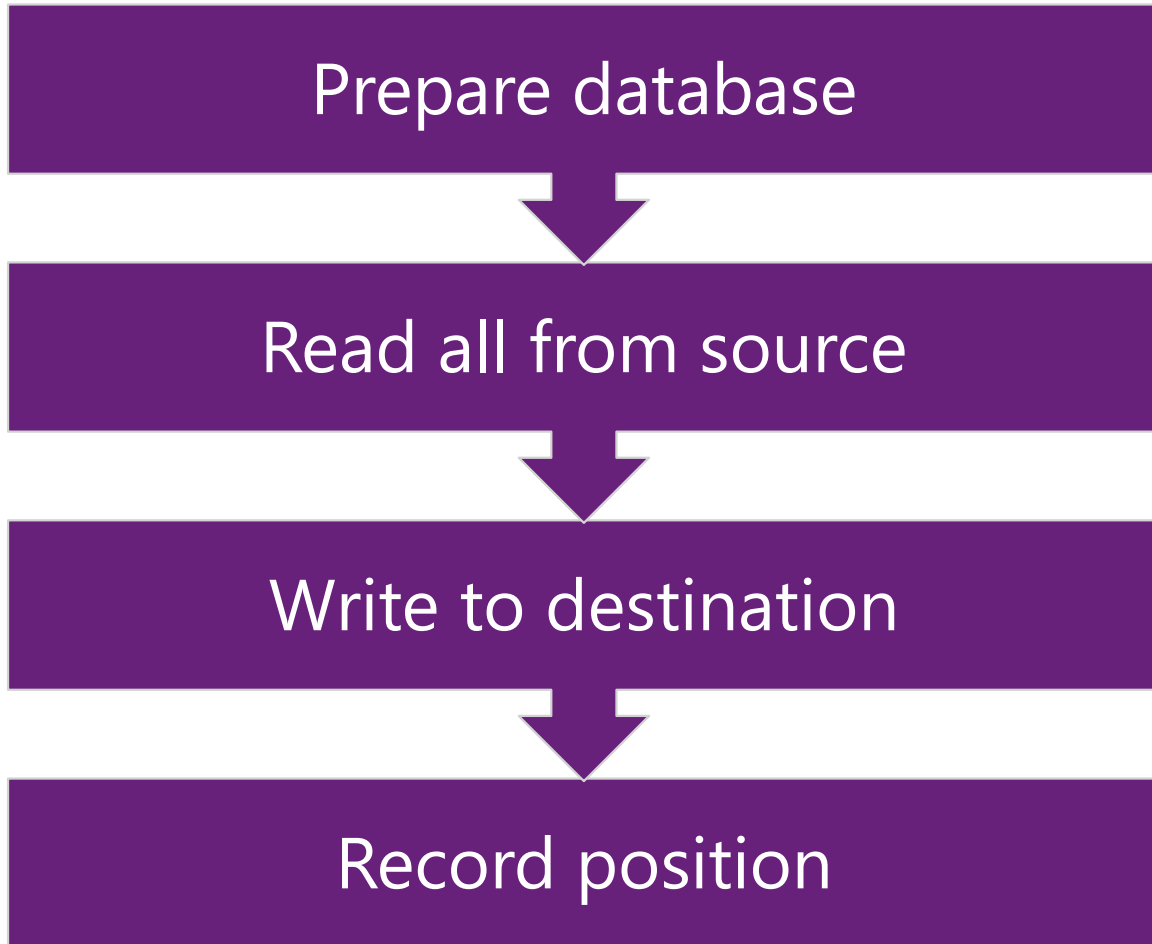
Inserts, Updates, and Deletes are automatically tracked

Consume the changes

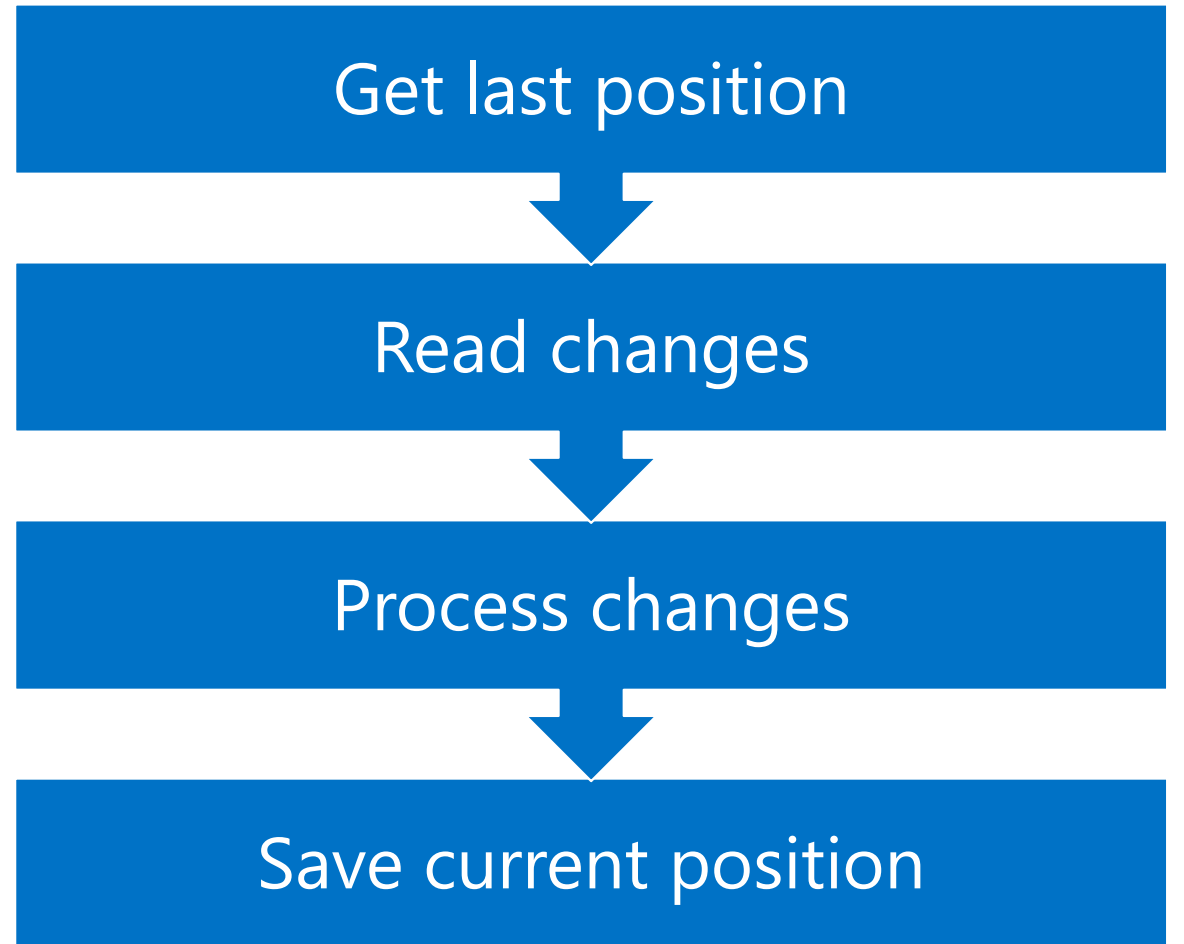


# Workflow

## Initial Load



## Incremental Load



# CDC Components for SSIS 2012

## CDC Control Task

Retrieve and persist state

Use before and after your data flow



CDC Control Task

## CDC Source

Reads change data from change table



CDC Source

## CDC Splitter

Separate rows by operation type



CDC Splitter

# CDC with Oracle

CDC components work with SQL and Oracle

Looks the same for the SSIS components

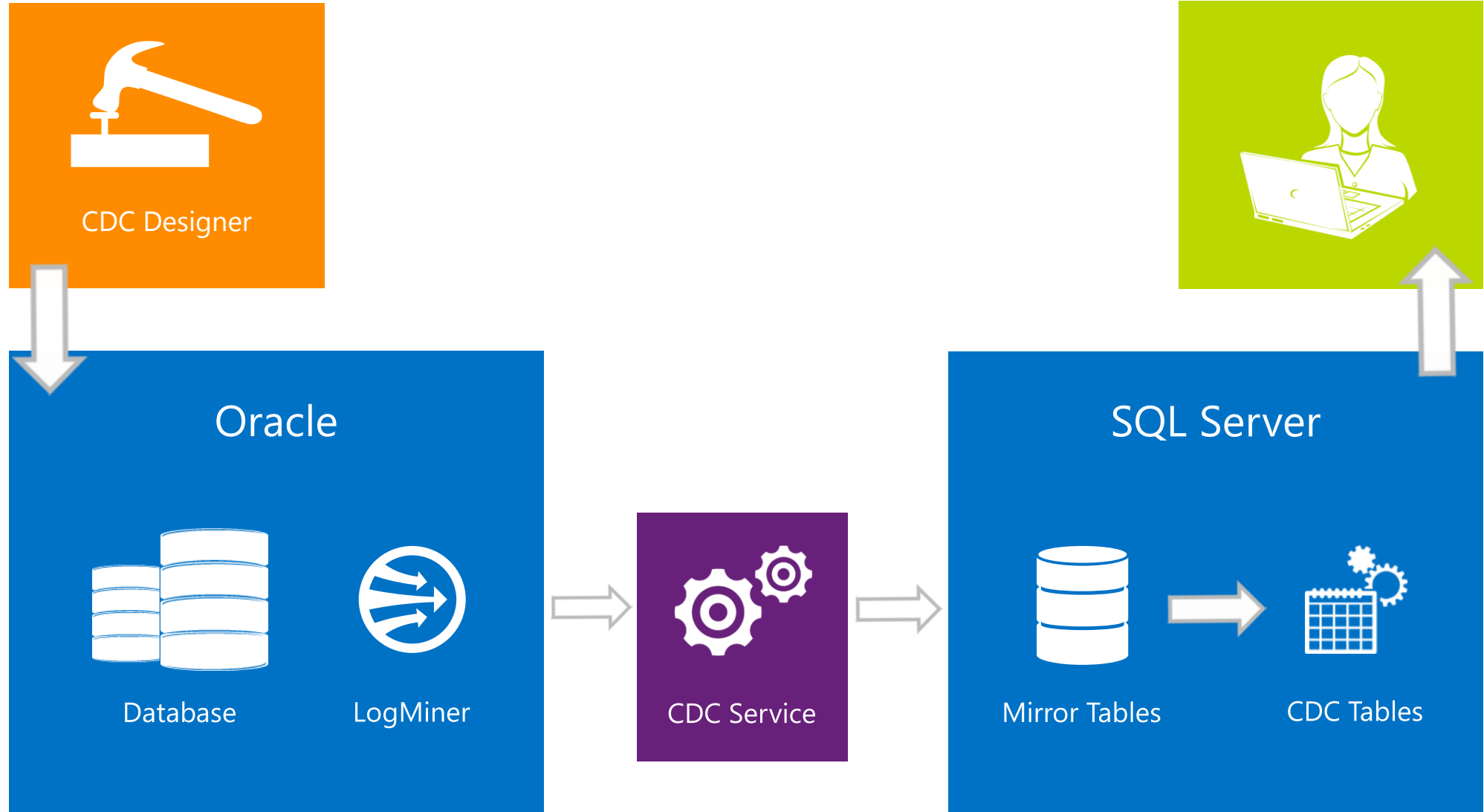
Requires installation of two additional components

Oracle CDC Service

Oracle CDC Designer

Both included with SQL Server 2012

# How it Works



# Oracle CDC Designer

## Creates and manages Oracle CDC Instances

You can have multiple instances per CDC Service

## An instance contains

Oracle database connection information

Tables and columns being tracked

Mirroring SQL Server database information

# Creating an Instance

**Change Data Capture Designer for Oracle by Attunity**

File Action View Help

Oracle CDC Services

OracleCDCService1

New Or  
Start A  
Stop Al  
View  
Refresh  
Export  
Help

**Create Oracle CDC Instance Wizard**

Select Oracle Tables and Columns

Select the Oracle Tables

Oracle Table Name  
HR.DEPARTMENT  
HR.EMPLOYEES

Add

**Create Oracle CDC Instance Wizard**

Generate mirror tables and CDC capture instances

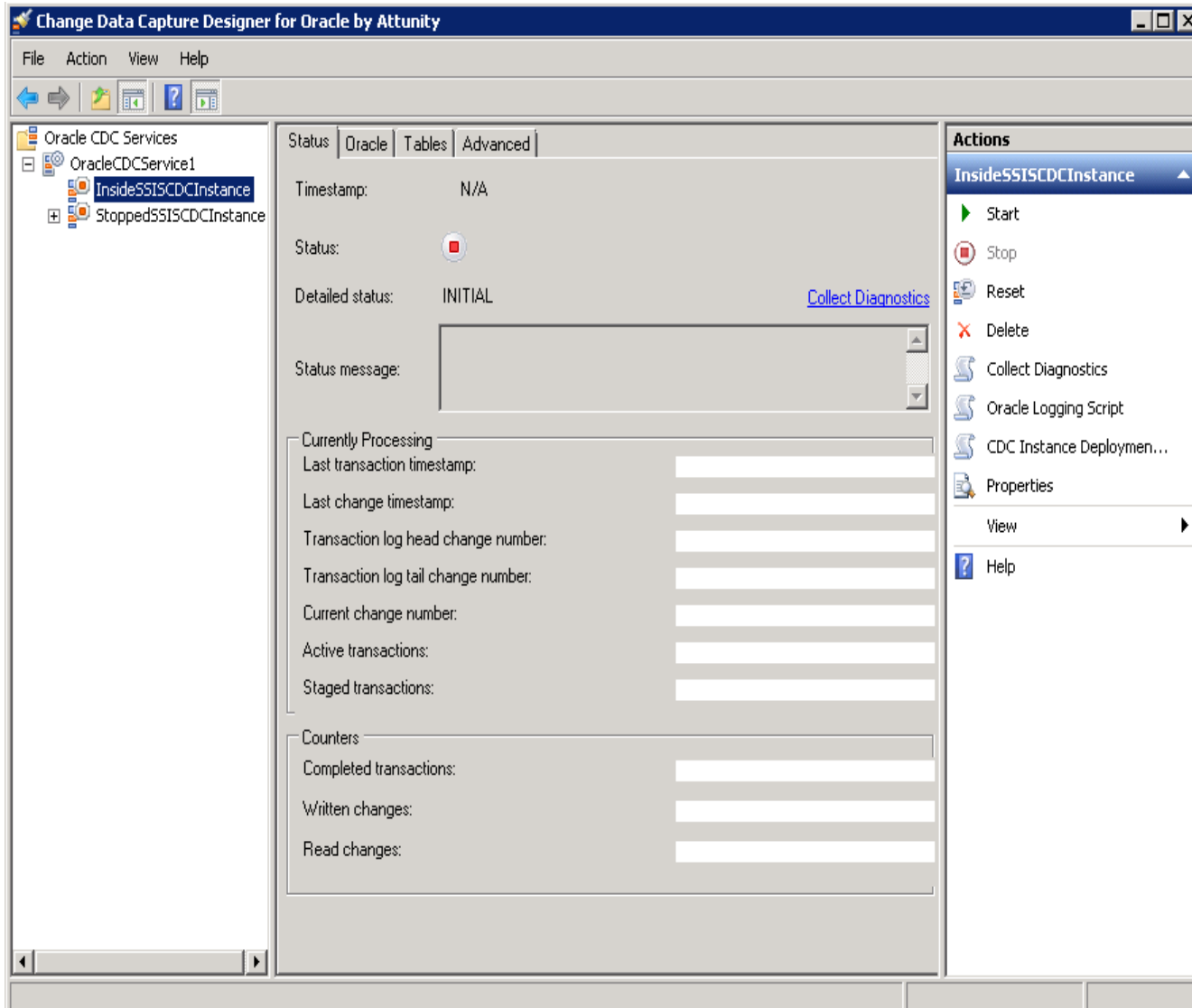
Generate empty mirror tables in the SQL Server CDC database and enable them for CDC. A capture instance is created for each table.

Step	Status	Details
Required privileges	✓	
Supplemental logging	✓	
Database compatibility version	✓	
Archive mode	✓	
Prepare CDC database	✓	
Create CDC enabled mirror tables	✓	
Drop SQL Server capture job	✓	
Save source database properties	▶	

< Previous Run Finish Cancel



# Managing an Instance



- List all of your services and CDC capture instances
- Control the instance state (start, stop, reset)
- Regenerate setup scripts

# Change Data Capture Summary

## Oracle CDC functionality included with SSIS 2012

Retrieve incremental changes from source database

Requires no schema changes

## Install and use the configuration utilities

**Oracle CDC Service** – monitors Oracle system for changes

**Oracle CDC Designer** – configures the capture instance

## Retrieve changes with SSIS, and SQL

# Summary

SSIS is a heterogeneous data access platform

An easy to use, productive platform

High performance loading and extraction with Oracle

Custom connectors and support for standard database APIs

Built in change data capture support in SQL 2012

Allows for easy migration and incremental loading

# Thank You

