Microsoft Connectivity Pack Guide

HP Vertica Analytics Platform

Software Version: 7.0.x

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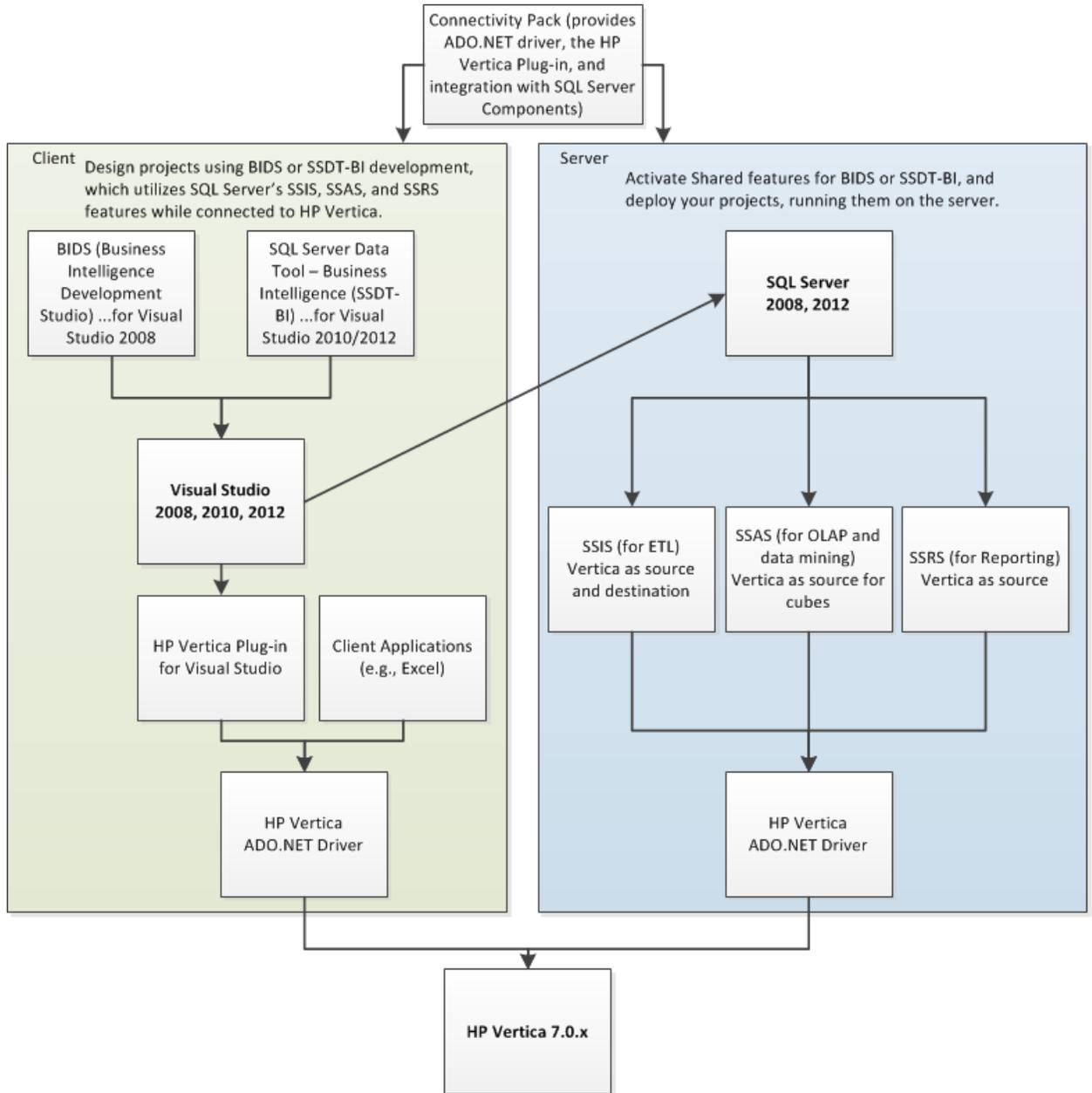UNIX® is a registered trademark of The Open Group.

Contents

Introduction

HP Vertica's Microsoft Connectivity Pack allows you to integrate your HP Vertica server with an environment that includes Microsoft components previously installed on your system. The Connectivity Pack includes the ADO.NET client driver and additional tools for integration with Microsoft Visual Studio and Microsoft SQL Server.

Specifically, the Connectivity Pack is an enhanced .NET data provider package and provides integration with the following Microsoft components:

- Business Intelligence Development Studio (BIDS) for Visual Studio 2008 for use with SQL Server 2012. BIDS is a client-based application used to develop business intelligence solutions and based on the Microsoft Visual Studio development environment; BIDS includes additional project types specific to SQL Server Business Intelligence. Developers use BIDS to develop business solutions.

- SQL Server Data Tool - Business Intelligence (SSDT-BI) for Visual Studio 2010/2012 for use with SQL Server 2012. SSDT-BI replaces BIDS for Visual Studio 2010 and 2012. It serves the same purpose as BIDS, providing a development environment for developing business intelligence solutions.

- SQL Server Analysis Services (SSAS) for SQL Server 2008 and 2012. Use SSAS for OLAP and data mining, using HP Vertica as source for cube creation.

- SQL Server Integration Services (SSIS) for SQL Server 2008 and 2012, which provides SQL Server Type Mappings to map data types between HP Vertica and SQL Server. Use SSIS for data migration, data integration and workflow, and ETL.

- SQL Server Reporting Services (SSRS). Use SSRS to generate reports.

The following illustration displays component relationships.

Connectivity Pack (provides ADO.NET driver, the HP Vertica Plug-in, and integration with SQL Server Components)

Client Design projects using BIDS or SSDT-BI development, which utilizes SQL Server's SSIS, SSAS, and SSRS features while connected to HP Vertica.

BIDS (Business Intelligence Development Studio) ...for Visual Studio 2008

SQL Server Data Tool – Business Intelligence (SSDT-BI) ...for Visual Studio 2010/2012

Visual Studio 2008, 2010, 2012

HP Vertica Plug-in for Visual Studio

Client Applications (e.g., Excel)

HP Vertica ADO.NET Driver

Server Activate Shared features for BIDS or SSDT-BI, and deploy your projects, running them on the server.

SQL Server 2008, 2012

SSIS (for ETL) Vertica as source and destination

SSAS (for OLAP and data mining) Vertica as source for cubes

SSRS (for Reporting) Vertica as source

HP Vertica ADO.NET Driver

HP Vertica 7.0.x

HP Vertica's Microsoft Connectivity Pack is available in both 32-bit and 64-bit versions. Download the Connectivity Pack that matches the bitness of your operating system.
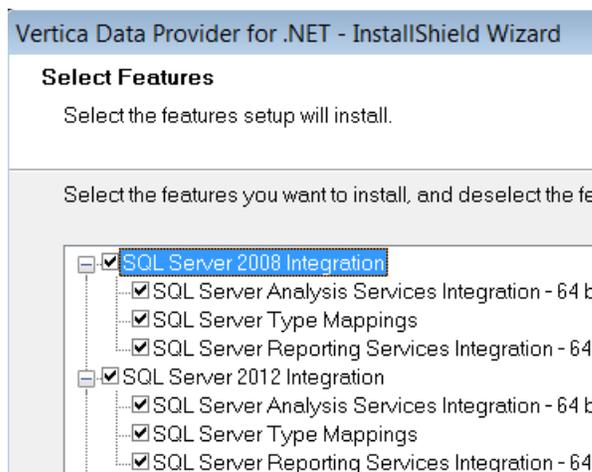
Installation

Both client and server side components are necessary to develop and implement the Microsoft Business Intelligence capabilities.

When you download and install the HP Vertica Microsoft Connectivity Pack for Windows systems and launch the installer, the installer detects the Microsoft components that are installed on your system, and lets you to choose the integration features from the Connectivity Pack that you want to install. If you do not have a version of Visual Studio or SQL Server installed on your system, the installer does not give you the option of installing the Connectivity Pack features associated with those Microsoft products. If you have neither Visual Studio nor SQL Server on your system, the installer installs only the ADO.NET driver; in that case, other optional contents within the Connectivity Pack are not visible when you install.

> **Note**: The InstallShield Wizard for the HP Vertica Microsoft Connectivity Pack is itself entitled *Vertica Data Provider for .NET*.

When you install, you see only those items related to the Microsoft products installed on your system.

If you are installing on a system that includes all of the Microsoft components, all of the following are pre-selected during installation; deselect those items that you did not want to install.

```
SQL Server 2008 Integration
    SQL Server Analysis Services Integration – 64 bit
    SQL Server Type Mappings
    SQL Server Reporting Services – 64 bit
SQL Server 2012 Integration
    SQL Server Analysis Services Integration – 64 bit
    SQL Server Type Mappings
    SQL Server Reporting Services – 64 bit
Visual Studio 2008 Shell Integration
    Business Intelligence Development Studio Integration
Visual Studio 2010 Shell Integration
```

```
    SQL Server Data Tool Integration
Visual Studio 2012 Shell Integration
    SQL Server Data Tool Integration
ADO.NET Driver
```

A Note on ADO.NET: The ADO.NET driver is but one of the contents of the HP Vertica Connectivity Pack. Developers use ADO.NET in a number of different ways to access data; that is, developers also use ADO.NET independently of Visual Studio and SQL Server. For general information regarding programming ADO.NET applications, see "Programming ADO.NET Applications" in the Programmer's Guide.

System Prerequisites

The HP Vertica Microsoft Connectivity Pack released with HP Vertica Release 7.0 or later has basic system prerequisite requirements. The HP Vertica Microsoft Connectivity Pack also requires that specific Microsoft components be installed for full integration.

Operating System

The HP Vertica Microsoft Connectivity Pack 7.0.x requires a supported Windows operating system. Find the list of supported Windows versions in the Supported Platforms document at http://www.vertica.com/documentation.

.NET Framework

The requirements for the .NET framework for the HP Vertica Microsoft Connectivity Pack can be found in the Supported Platforms document at http://www.vertica.com/documentation.

Note: The .NET framework is not bundled into the HP Vertica Microsoft Connectivity Pack, but during Connectivity Pack installation a web installer launches if Microsoft .NET 3.5 SP1 is not detected on your system. See .NET Framework for more information.

Note the following in regards to Microsoft .NET framework.

- If you have Visual Studio 2010 or 2012 installed, your system already includes Microsoft .NET Framework 4.0 or 4.5 respectively. You also need Microsoft .NET 3.5 SP1 in order to use the HP Vertica Microsoft Connectivity Pack integration features.

- During Connectivity Pack installation (for any supported version of Visual Studio) a Web installer launches if Microsoft .NET 3.5 SP1 is not detected on your system, giving you the opportunity to download .NET 3.5 SP1. Note that, if your operating system version includes .NET 3.5 SP1, but it is not turned on, the installer turns the feature on.

Links to download the .NET framework directly from Microsoft are provided here for your convenience.

- For .NET Framework 3.5 SP1:

  http://www.microsoft.com/en-us/download/details.aspx?id=22

- For .NET Framework 4.0:

  http://www.microsoft.com/en-us/download/details.aspx?id=17851

- For .NET Framework 4.5:

  http://www.microsoft.com/en-us/download/details.aspx?id=17851

Microsoft Visual Studio

The HP Vertica Microsoft Connectivity Pack installer provides a Visual Studio plugin called *Visual Studio <version> Shell Integration*. The plugin allows you to use HP Vertica as a Visual Studio Data Source. Use Visual Studio 2008, 2010, or 2012. The connection properties for the plugin are the same as ADO.NET connection properties.

> **Note:** For Visual Studio 2012, you can use the Ultimate, Premium, or Professional editions.

You must have Visual Studio and the appropriate SDK installed in order to use the Visual Studio plugin. Once the plugin is installed, you can use it to access your HP Vertica database from within Visual Studio. If you do not have the SDK installed, download the SDK specific to your version of Visual Studio.

- For the Microsoft Visual Studio 2008 SDK:

  http://www.microsoft.com/en-us/download/details.aspx?id=508

- For the Microsoft Visual Studio 2008 SP1 SDK:

  http://www.microsoft.com/en-us/download/details.aspx?id=21827

- For the Microsoft Visual Studio 2010 SDK:

  http://www.microsoft.com/en-us/download/details.aspx?id=2680

- For the Microsoft Visual Studio 2010 SP1 SDK:

  http://www.microsoft.com/en-us/download/details.aspx?id=21835

- For the Microsoft Visual Studio 2012 SDK:

  http://www.microsoft.com/en-us/download/details.aspx?id=30668

The HP Vertica Microsoft Connectivity Pack installer provides BIDS (Visual Studio 2008) or SSDT-BI (Visual Studio 2010 or 2012) integration. To use BIDS or SSDT-BI:

1. Install the BIDS or SSDT-BI development tool add-on for Visual Studio.

2. Ensure that SQL Server is installed on the same or a different machine.

3. Ensure that the SQL Server Shared Features for BIDS or SSDT-BI have been activated.

4. Ensure that the HP Vertica Microsoft Connectivity Pack has been installed.

   You can then develop packages using BIDS or SSDT-BI development to create your projects utilizing SQL Server's SSIS, SSAS, SSRS features while connected to HP Vertica through the HP Vertica ADO.NET driver.

Microsoft SQL Server

Use SQL Server 2008 or 2012. The HP Vertica Microsoft Connectivity Pack installer provides an enhanced HP Vertica .NET data-provider that enables support for the following:

- SQL Server Analysis Services (SSAS) from SQL Server 2008 and 2012

- SQL Server Integration Services (SSIS) from SQL Server 2008 and 2012

- SQL Server Reporting Services (SSRS) from SQL Server 2008 and 2012

- Business Intelligence Development Studio (BIDS) if developing packages with with SQL Server using Visual Studio 2008

- SQL Server Data Tool - Business Intelligence (SSDT-BI) if developing packages with SQL Server using Visual Studio 2010 and 2012

> **Note:** For SQL Server 2012, you can use either SQL Server 2012 or SQL Server 2012 SP1.

To use the enhanced HP Vertica.NET data provider, SQL Server must be installed prior to installing the Microsoft Connectivity Pack, and the following components must be installed on the SQL server:

- For SSAS functionality - install the Analysis Services Instance Feature

- For SSRS - install the Reporting Services Instance Feature

- For SSIS (Data Type Mappings) - install the SQL Server Integration Services Shared Feature

- For BIDS (for Visual Studio 2008) - install the Business Intelligence Development Studio Shared Feature (Microsoft Visual Studio 2008 must be installed first)

- For SSDT-BI (Visual Studio 2010/2012) - install the SQL Server Data Tool - Business Intelligence Shared Feature (Microsoft Visual Studio 2010/2012 must be installed first)

Downloading and Installing the Connectivity Pack

This topic details how to download and install the HP Vertica Microsoft Connectivity Pack for Windows systems.

Read System Prerequisites before you proceed.

Downloading the HP Vertica Microsoft Connectivity Pack

32-bit and 64-bit installers are available. Use the correct installer for your operating system.

1. Open a Web browser and logon to the myVertica portal.

2. Click the Download tab and select the HP Vertica Microsoft Connectivity Pack installer that you want to install (32-bit or 64-bit) and follow the on-screen prompts to download the installer. **Use the 64-bit version on 64-bit Windows machines and the 32-bit installer on 32-bit Windows machines.**

Installing the HP Vertica Microsoft Connectivity Pack

1. As a Windows Administrator, double-click the installer to start the install process.

2. The introduction screen appears. Click **Next** to begin the installation.

3. Optionally change the installation directory and click **Next**. The default directory is C:\Program Files\Vertica Systems\.

> **Note:** You must have the appropriate Visual Studio SDK on your system in order to use the integration pack features for Visual Studio (i.e., to use the HP Vertica plugin). During installation, if the SDK is not detected on your system, you are given the choice of continuing installation without the SDK (in this case you do not plan to use Visual Studio integration features), or stopping installation and installing the appropriate Visual Studio SDK.

4. Ensure that the integration features you want to install are selected, and click **Next**. Features are selected for installation depending on which Microsoft components are already installed on the server; whether features appear as options during installation depends upon the Microsoft components installed on your server. If the prerequisite software is not installed, then the additional Connectivity Pack features are not shown. See System Prerequisites for details on optional prerequisites for the HP Vertica Microsoft Connectivity Pack.

5. Click **Install** to install the options you selected.

6. Click **Finish**.

> **Note:** The ADO.NET driver is installed in the ADO.NET folder of the installation directory. The driver is also installed into the Windows Global Assembly Cache (GAC).

Upgrading the Connectivity Pack

As of HP Vertica Release 7.0, you no longer need to uninstall previous versions of the ADO.NET driver before installing the new HP Vertica Microsoft Connectivity Pack. The current installer automatically uninstalls previous versions of the ADO.NET driver during the installation process and installs the newest version. Previous versions required that you use the Windows uninstall utility to first uninstall the ADO.NET driver; this is no longer necessary.

> **Note:** If you are installing the SSAS, SSIS, or SSRS components and the server contains more than one instance of SQL Server, then the HP Vertica installer installs the Connectivity Pack integration components on the **last** instance of SQL Server based on the order provided in the Windows registry.

Microsoft Components

This section describes the Microsoft Business Intelligence components you can use with Microsoft Visual Studio and Microsoft SQL Server. Once configured, you can use these Microsoft components to develop business solutions using your HP Vertica server.

BIDS and SSDT-BI

Business Intelligence Development Studio (BIDS) is Microsoft Visual Studio 2008 with additional project types that are specific to SQL Server business intelligence. BIDS is the primary environment that you use to develop business solutions that include Analysis Services, Integration Services, and Reporting Services projects.

SQL Server Data Tool - Business Intelligence (SSDT-BI) replaces BIDS for Visual Studio 2010 and 2012. It serves the same purpose as BIDS, providing a development environment for developing business solutions.

Both BIDS and SSDT-BI are client-based applications that include additional project types specific to SQL Server Business Intelligence.

The Visual Studio Shell Integration plugin allows you to browse an HP Vertica database from within Visual Studio's Server Explorer outside of BIDS or SSDT-BI development (e.g., to list tables or insert data). When Visual Studio is used in BIDS or SSDT-BI mode, you can develop business solutions using the data in your HP Vertica database (e.g., to create cubes or open tables).

Note that the following configurations are not supported by Microsoft.

- You cannot use Microsoft Visual Studio 2008 with BIDS development to create a SQL Server 2012 Business Intelligence solution.

- You cannot use Microsoft Visual Studio 2010/2012 with SSDT-BI development to create a SQL Server 2008 Business Intelligence solution.

SQL Server Analysis Services (SSAS) Support

BIDS or SSDT-BI includes the Analysis Services project for developing online analytical processing (OLAP) for business intelligence applications. This project type includes the templates for cubes, dimensions, data sources, and data source views, and provides the tools for working with these objects.

SQL Server Integration Services (SSIS) Support

BIDS or SSDT-BI includes the Integration Services project for developing ETL solutions. This project type includes the templates for packages, data sources, and data source views, and provides the tools for working with these objects.

Support for using HP Vertica as a data source and target is available from both SSIS and the import/export wizard. HP Vertica specific mapping files must be installed on the Integration Server

and BIDS or SSDT-BI workstation in order to enable this capability. The HP Vertica Microsoft Connectivity Pack installs these mapping files as the "SQL Server Type Mappings" component(s) (both 32-bit and 64-bit versions).

SQL Server Reporting Services (SSRS) Support

BIDS or SSDT-BI includes the Report projects for developing reporting solutions.

Support for using HP Vertica as a data source is available for Reporting Services. The installer implements various configuration file modifications to enable this capability on both the BIDS or SSDT-BI workstation and the Reporting Services server.

Compatibility Issues and Limitations

This section lists compatibility issues and limitations for Connectivity Pack integration with Microsoft Visual Studio and Microsoft SQL Server.

BIDS and SSDT-BI Limitations

BIDS and SSDT-BI not designed to run on Itanium 64-bit

BIDS and SSDT-BI are 32-bit development environments for Analysis Services, Integration Services, and Reporting Services projects, are not designed to run on the Itanium 64-bit architecture, and are not installed on Itanium servers.

SSAS Limitations

Restart SSAS after installing the HP Vertica Microsoft Connectivity Pack.

If, after installing the HP Vertica Microsoft Connectivity Pack, an SSAS cube build fails, restart the SSAS service.

Tabular Model not supported

The ADO.NET driver does not support use of the SSAS Tabular Model.

SSIS Limitations

Data Type Limitations

Consider the following data type limitations when using SQL Server Integration Services (SSIS).

- **Transferring Time Data**

  When transferring time data, SSIS uses the TimeSpan data type that supports precision greater than six digits. The HP Vertica ADO.NET driver treats TimeSpan as an Interval data type that supports up to six digits. The Interval type is not converted to the TimeSpan type during transfer. As a result, if the time value has a precision of more than six digits, the data is truncated (not rounded).

  For information on ADO.NET data types, refer to the Programmer's Guide, specifically the section, *ADO.NET Data Types*.

- **DATE and DATETIME**

  The range for DATE and DATETIME, in order to function without errors, falls between 0001-01-01 00:00:00.0000000 and 9999-12-31 23:59:59.999999.

  In SSIS, the DATETIME type (DT_TIMESTAMP) only supports a scale up to three decimal places for the seconds. Any decimal places after that are automatically discarded. Derived

column transformations can only be performed on DATETIME values between January 1, 1753 through December 31, 9999.

- **Numeric**

  The maximum and minimum decimal allowed is:

  Max: +79,228,162,514,264,337,593,543,950,335

  Min: -79,228,162,514,264,337,593,543,950,335

  For example, if the scale is 16, the range of values is:

  +/- 7,922,816,251,426.4337593543950335

  The valid scale range is any number that is smaller than 29 and greater than 38. Using a scale between 29 and 38 does not generate an error.

  See : http://msdn.microsoft.com/en-us/library/system.decimal.maxvalue.aspx

- **Character**

  The CHAR and VARCHAR data type used in SSIS is DT_WSTR; it has a maximum length of 4000 characters.

  In SSIS, HP Vertica strings are converted to Unicode strings in SSIS to handle multi-lingual data. The strings can be converted to ASCII using a Data Conversion Task.

- **Floating Point**

  SQL Server does not support the values NaN, Infinity, or –Infinity. These values work when you use SSIS to transfer between HP Vertica instances, but they do not work with a SQL Server Destination.

- **Scale**

  Whenever a scale greater than 38 is used, SSIS replaces it with a value of 4.

- **Interval**

  SSIS does not support interval types. It converts them to TIME and strips off the day component. Any package that has interval types greater than a day fails with truncation.

Data Mapping when Using the SQL Server Import and Export Wizard

When creating an Integrated Services package (SSIS), certain data types do not automatically map correctly if you use the SQL Server Import and Export Wizard. Mapping issues have occurred when using the wizard with the SQL Server Native OLE DB Provider for SQL Server 2008 or 2012, or the SQL Server Native Client 10.0/11.0 Provider for SQL Server 2010/2012. To avoid this issue, you can manually change the type mappings using either BIDS or SSDT-BI.

Data Transfer of Certain Data Types

When using an Integrated Services package (SSIS) with the SQL Server OLE DB Provider for SQL Server 2008 or 2012, certain data type transfers can fail when transferring from HP Vertica to SQL Server. To avoid this issue, use either BIDS or SSDT-BI when transferring data.

Batch Insert of Varbinary or Long Varbinary Data Types

If one row of a batch insert of varbinary or long varbinary data types exceeds the data type limit (i.e., 65k for varbinary, 32M for long varbinary), all rows are rejected, not just the one row whose length exceeds the type limit. The batch insert fails with the message, "row(s) are rejected". To avoid this issue, use a predicate to filter out rows from the source that will not fit into the receiving database.
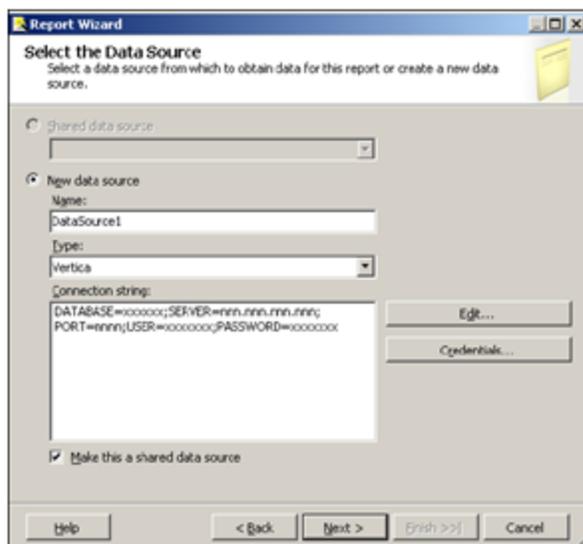
Boolean Queries in SQL Server Query Designer

When issuing a boolean query in SQL Server Query Designer, you must enclosed boolean column values in quotes. Otherwise you receive a SQL execution error (e.g., `someboolean = 'true'`).

SSRS Limitations

Data Connection Wizard Workaround

The SSRS Report Wizard provides a data connection wizard. After you select the wizard and enter all the connection information, the OK button is not clickable. Because of this, you cannot save your work and continue. The workaround is not to use the wizard and to use the following panel instead.
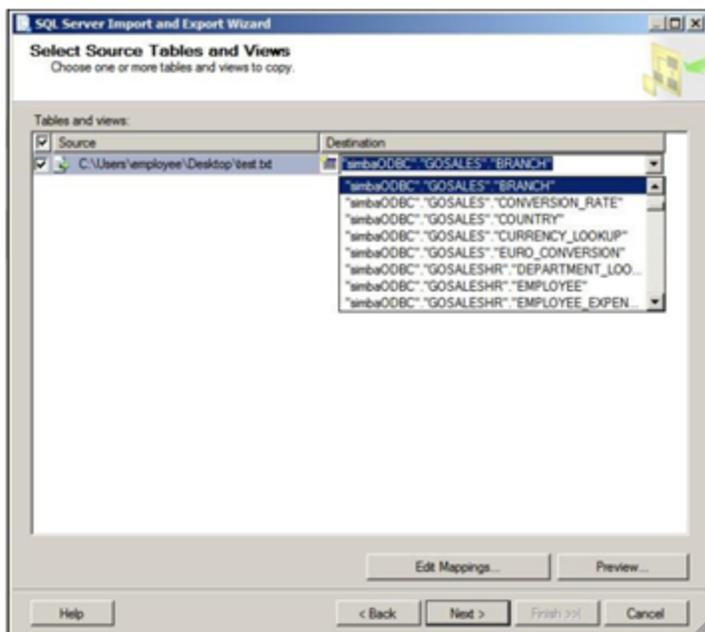

Report Wizard - Query Designer

The HP Vertica Data Provider uses the Report Wizard's Generic Query Designer. Other data sources use a Graphical Query Designer that supports visually building queries. The Graphical Query Designer is a part of a package call Visual Data Tools (VDT). The Graphical Query Designer works only with Generic OLE DB providers and the built-in providers; it cannot be used with the HP Vertica Data Provider.

Report Builder

Report Builder is a web-based report design tool. It does not support creating reports using custom data extensions, so it cannot be used with the HP Vertica Data Provider. When creating a report using Report Builder, existing HP Vertica data sources appear in the list of available data sources, but choosing an HP Vertica data source causes an error.

Schema Name not Automatically Provided when Mapping HP Vertica Destination.

Currently when mapping an HP Vertica destination, the schema name is not automatically provided. You must enter it manually or pick it from the drop-down menu as follows.

General Limitations

Visual Studio 2012 May Need Update 3

While using Visual Studio 2012, you launch Server Explorer to view and work with your HP Vertica server, but the HP Vertica data source is not visible. Or, you create a SSAS cube, connect to HP Vertica, and find either an empty list of tables or tables not functioning correctly.

To resolve this issue, install update 3 for Visual Studio 2012. Note that this is not an issue for other supported versions of Visual Studio.

Results Viewer Limited to 655 Columns

The Visual Studio results viewer cannot execute a query that includes more than 655 columns. If a table includes more than 655 columns, select specific columns (up to 655 total) rather than selecting all columns.

Manually Refresh Settings for Visual Studio

After installing the HP Vertica Microsoft Connectivity Pack, if you do not see HP Vertica listed as a data provider, manually refresh.

You can manually refresh Visual Studio by running `devenv.exe/setup`, which can be found in the Visual Studio's installation folder.

SQL Pane Issues

- **ALTER TABLE** or **CREATE TABLE**

  When using Visual Studio 2008, 2010, or 2012, when issuing the `ALTER TABLE` or `CREATE TABLE` statement in the SQL pane, a message displays telling you that the statement is not supported, but when you click **Continue**, the query executes.

- **Queries with Semicolons**

  When using Visual Studio 2008, 2010, or 2012, when executing a SQL query in the SQL pane, if you include a semicolon with your query, the query executes but the result returned is not editable. To avoid this issue, enter the same query in the SQL pane without the semicolon.

We appreciate your feedback!

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Feedback on Microsoft Connectivity Pack Guide (Vertica Analytics Platform 7.0.x)

Just add your feedback to the email and click send.

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