DBSignOff

User Manual

Software Version 0.9.20

Table of Contents

Introduction

Welcome to DBSignOff, an evolution in the database change management process. It is the intent of the engineering team at Logic for Data to create software to simplify database development and maintenance. This tool will hopefully bring this goal closer to realization by enhancing the process by which database modifications are handled. We will explain how this is a methodology that the DBSignOff tool enforces and also automates.

Source control tools are vital in keeping track of source code changes. Generally however, standard source control principles cannot be applied to database changes. Source code is a stateless representation of objects in the form of classes. Only the latest version of a class matters when compiling the code, i.e. it will either compile or it will not. Once it's in a working state the compiler doesn't care how the latest version of the code came to be, nor does the target environment where the compiled code will be deployed.

Databases on the other hand are live systems with their current state represented by the data stored in tables. Changing the table schema can have implications on the data itself, not just the structure. Deleting a column would remove all the data in that column for instance. Changing a column type or size could also result in data loss. There are myriads of modifications that could inadvertently or unknowingly affect the integrity of the data. Migrating a column from one table to another would involve a series of steps, i.e. create new column, move data, delete old column. In a database it is just as important to know how the latest schema was achieved in addition to what the latest schema is. In other word we need to know how we got there as well as where we are. DBSignOff will help answer the question of “how we got there?”.

It is common practice to use a database comparison tool to try and establish the differences between a production system and the development environment. The difference in schema and/or data will be the changes developers have made over the course of the release cycle which may or may not be relevant. This is not a process that can guarantee a correct interpretation of the deltas because it is sometimes unclear what changes were intended to be released to production. It is even more difficult to interpret what data changes are to be explicitly propagated to production and how to script these data changes.

A development team armed with DBSignOff will have the tools to overcome the issues mention above.

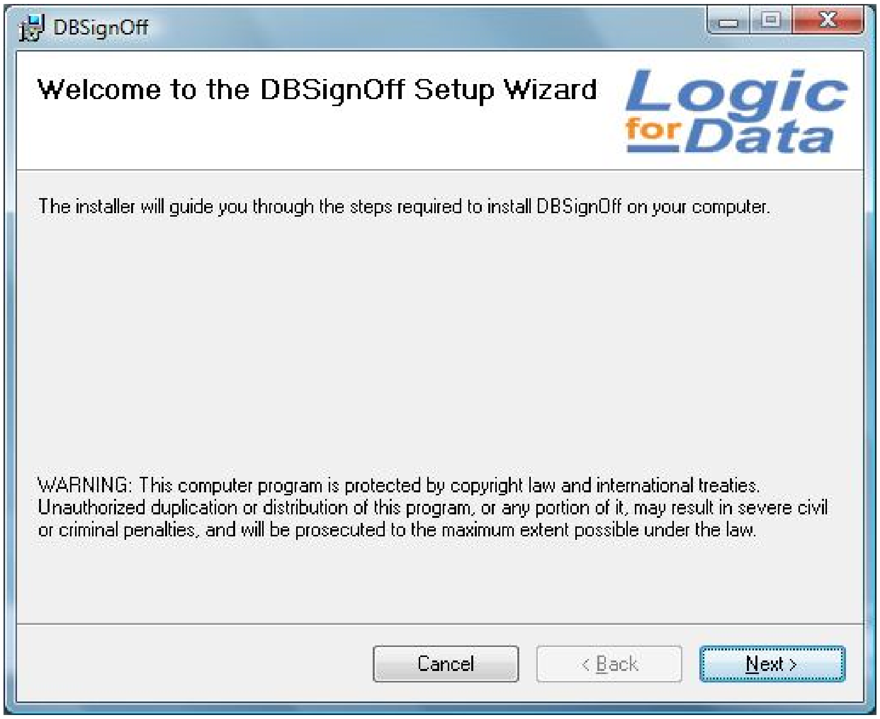
Minimum System Requirements

These are the system requirements for software version 0.9.20:

- 1 GHz 32-bit (x86) or 64-bit (x64) processor
- 512 MB of system memory
- 20 GB hard drive with at least 5 GB of available space
- .NET Framework 2.0
- Target database or data repository supporting OLEDB

Installation

Start the installation by running the setup.exe file. The installation wizard screen will appear, click Next to continue.

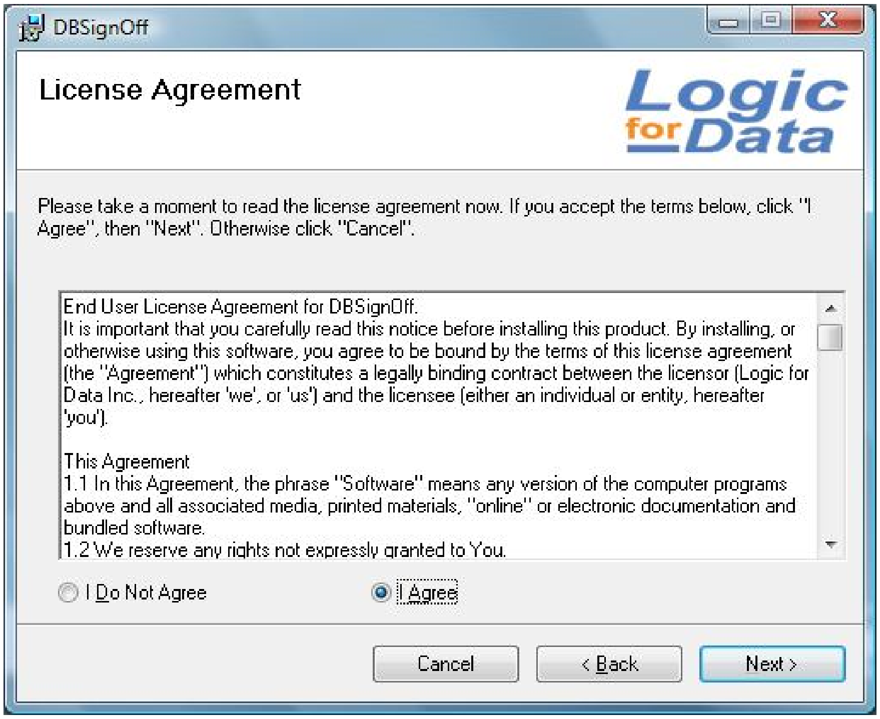


Welcome to the DBSignOff Setup Wizard

The installer will guide you through the steps required to install DBSignOff on your computer.

WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.

Read over and agree to the license agreement and click Next to continue.



License Agreement

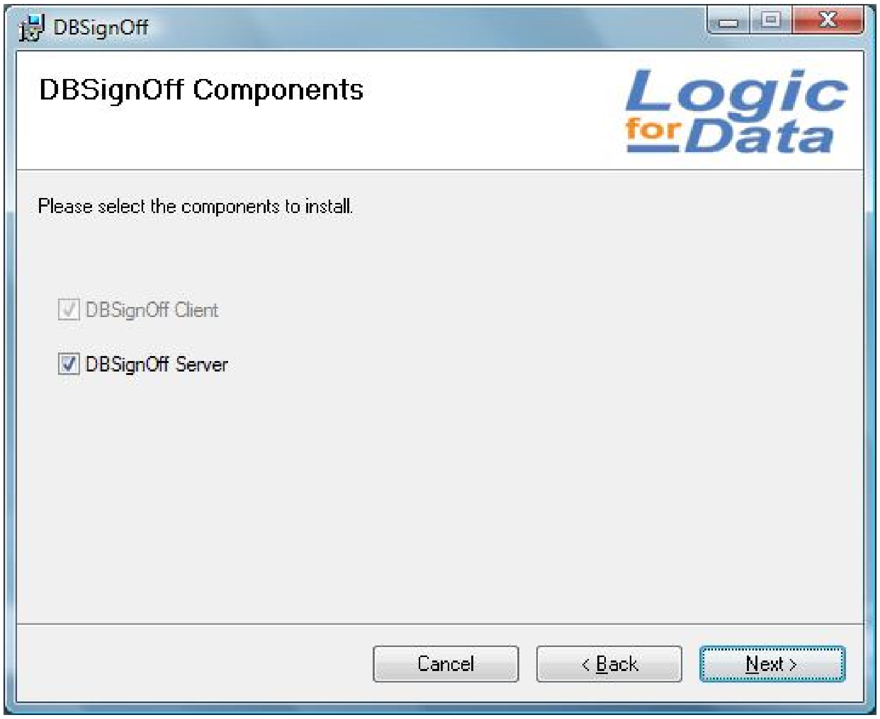
Please take a moment to read the license agreement now. If you accept the terms below, click "I Agree", then "Next". Otherwise click "Cancel".

End User License Agreement for DBSignOff.
It is important that you carefully read this notice before installing this product. By installing, or otherwise using this software, you agree to be bound by the terms of this license agreement (the "Agreement") which constitutes a legally binding contract between the licensor (Logic for Data Inc., hereafter 'we', or 'us') and the licensee (either an individual or entity, hereafter 'you').

This Agreement
1.1 In this Agreement, the phrase "Software" means any version of the computer programs above and all associated media, printed materials, "online" or electronic documentation and bundled software.
1.2 We reserve any rights not expressly granted to You.

○ I Do Not Agree ● I Agree

Select the components to install and click Next to continue. The DBSignOff server component should only be installed on one machine for every server license provided.



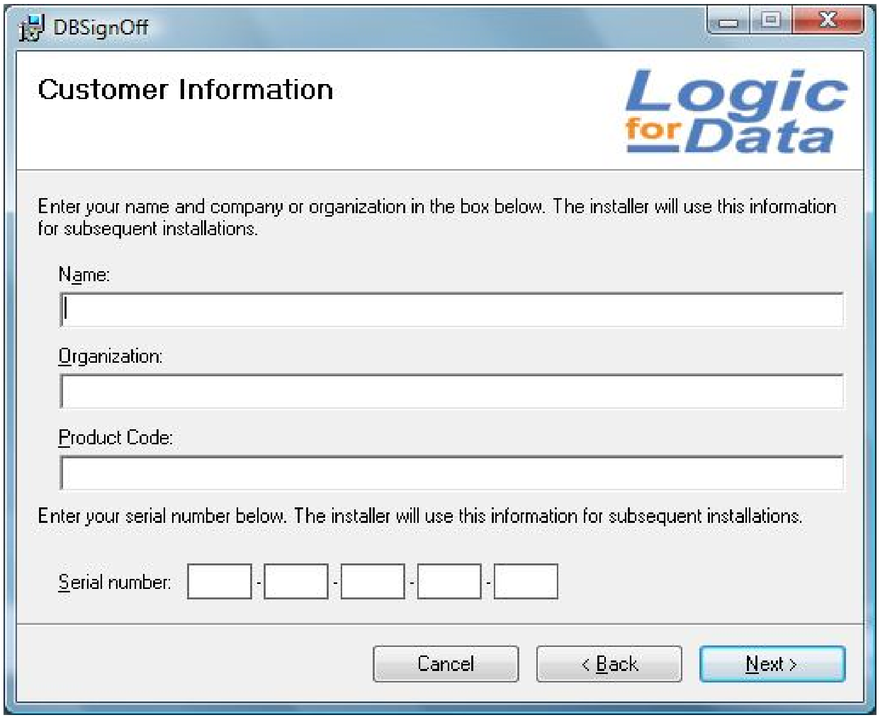
DBSignOff Components

Please select the components to install.

☑ DBSignOff Client

☑ DBSignOff Server

Enter the provided registration information and click Next to continue.



Customer Information

Enter your name and company or organization in the box below. The installer will use this information for subsequent installations.

Name:

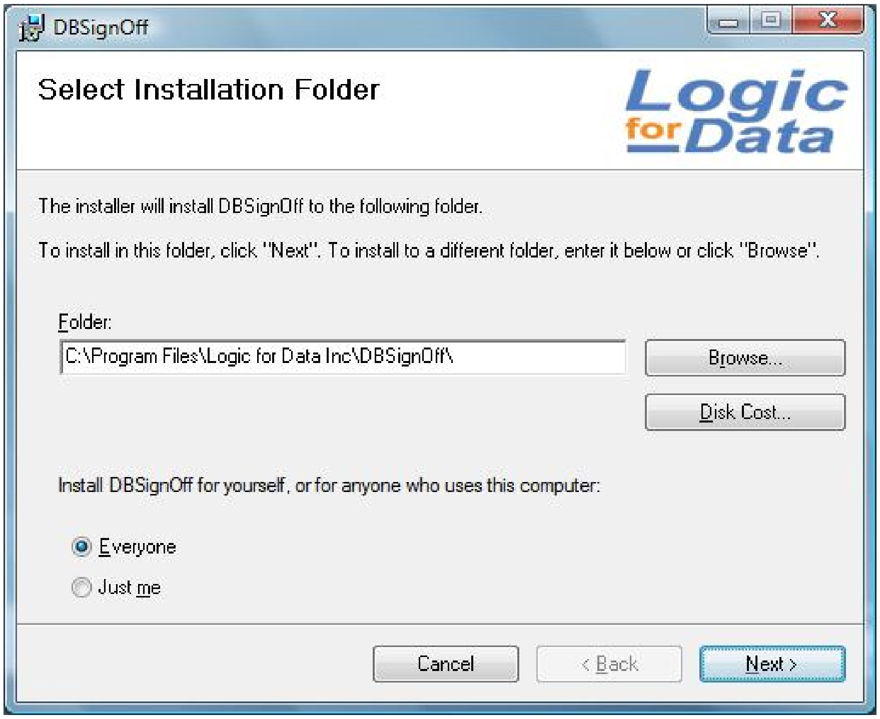
Organization:

Product Code:

Enter your serial number below. The installer will use this information for subsequent installations.

Serial number: ____ - ____ - ____ - ____ - ____

Select the destination folder for the installation and click Next to continue.



DBSignOff

Select Installation Folder

The installer will install DBSignOff to the following folder.

To install in this folder, click "Next". To install to a different folder, enter it below or click "Browse".

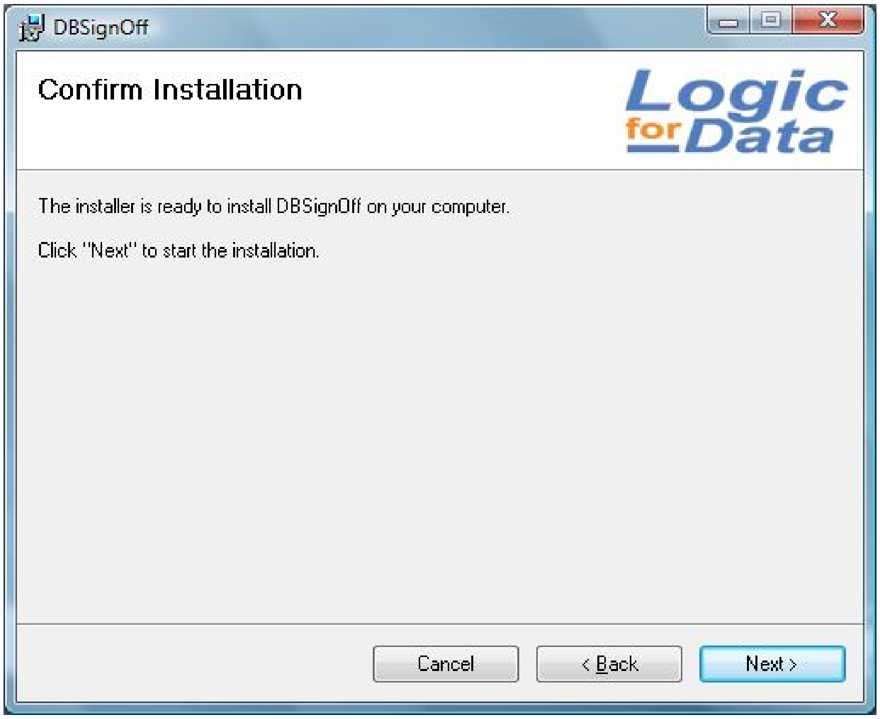
Folder: C:\Program Files\Logic for Data Inc\DBSignOff\

Install DBSignOff for yourself, or for anyone who uses this computer:

● Everyone

○ Just me

The confirmation screen will appear, click Next to continue.



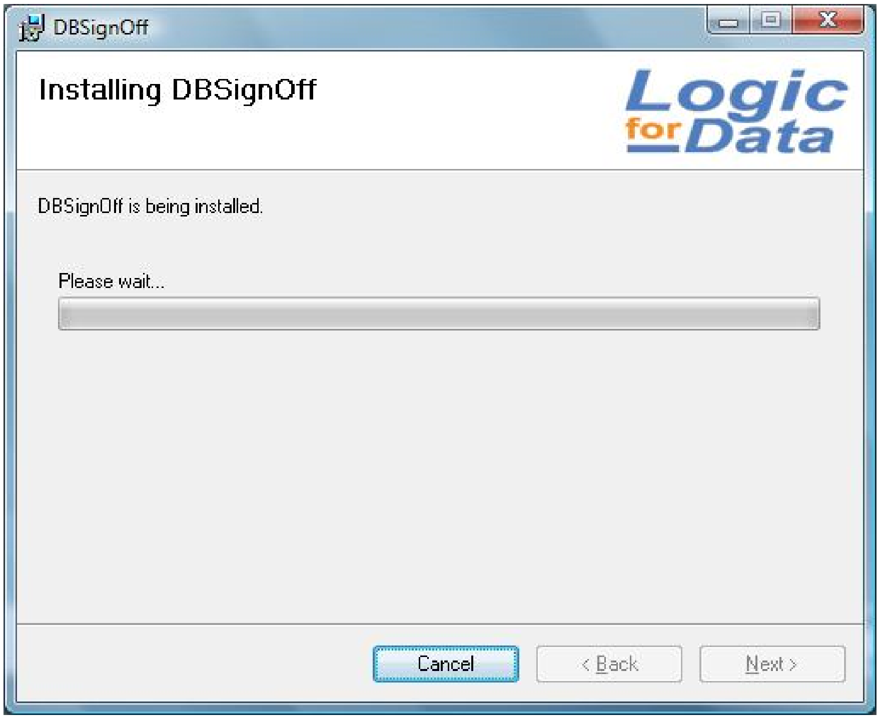
DBSignOff

Confirm Installation

The installer is ready to install DBSignOff on your computer.

Click "Next" to start the installation.

The installation progress screen will appear. To cancel installation click Cancel, otherwise wait for the installation to complete.

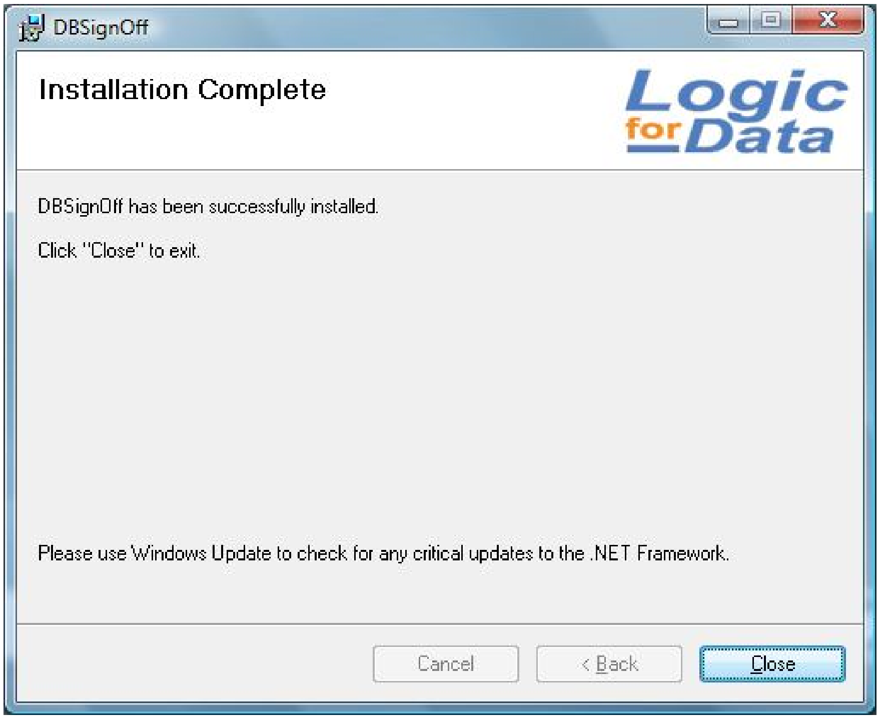


Installing DBSignOff

DBSignOff is being installed.

Please wait...

Once installation is complete click Close to exit the installation wizard.



Installation Complete

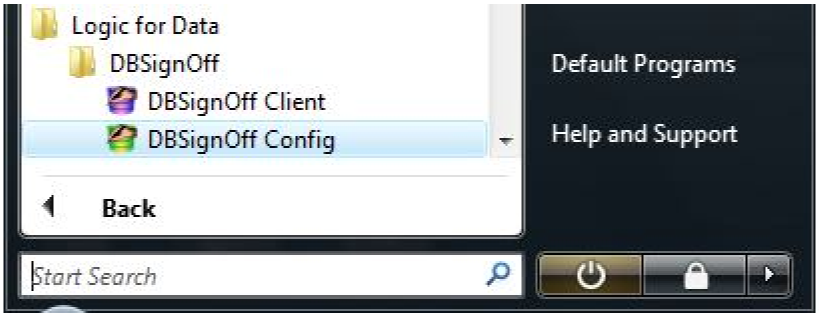
DBSignOff has been successfully installed.

Click "Close" to exit.

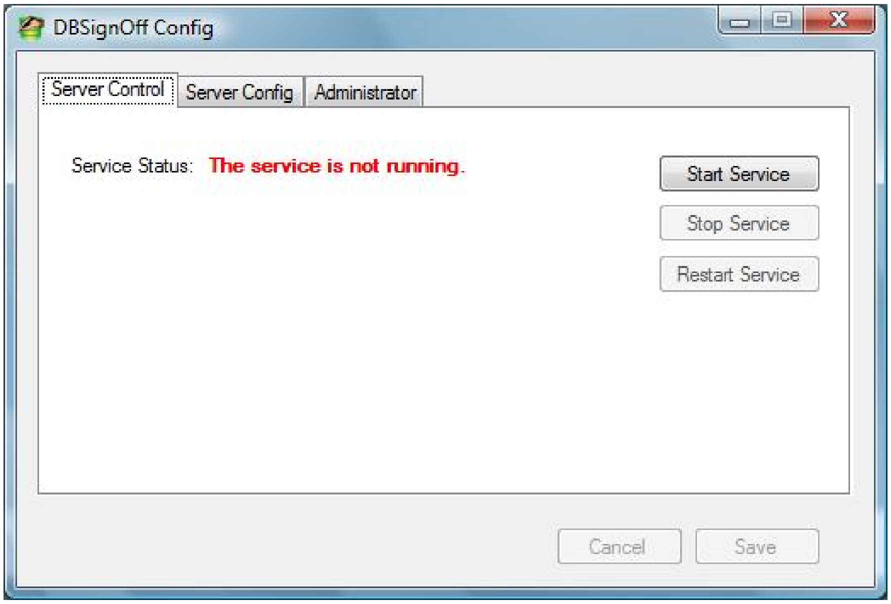
Please use Windows Update to check for any critical updates to the .NET Framework.

Server Configuration

The DBSignOff server must be configured after installation. The configuration tool can be opened from the start menu under Logic for Data -> DBSignOff.



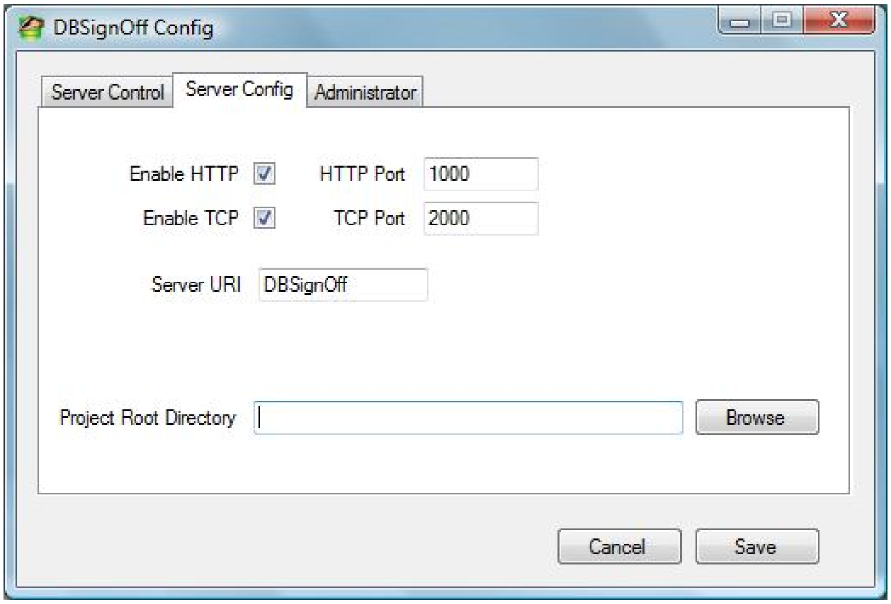
The Server Control tab indicates the DBSignOff service status and has control buttons to start, stop, or restart the service. Do not start the service until you have finished configuring the DBSignOff server.



Service Status: The service is not running.

The Server Config tab is used to configure the listening ports for client connections. The client can use HTTP, TCP, or IPC protocols to connect to the DBSignOff server. The Server URI is used to distinguish the server listening on the ports and must be set identically on the client.

The Project Root Directory is the location of all the data managed by the DBSignOff server including the project hierarchy, database change scripts, and user information. This must be set to a valid path before the server can be started.



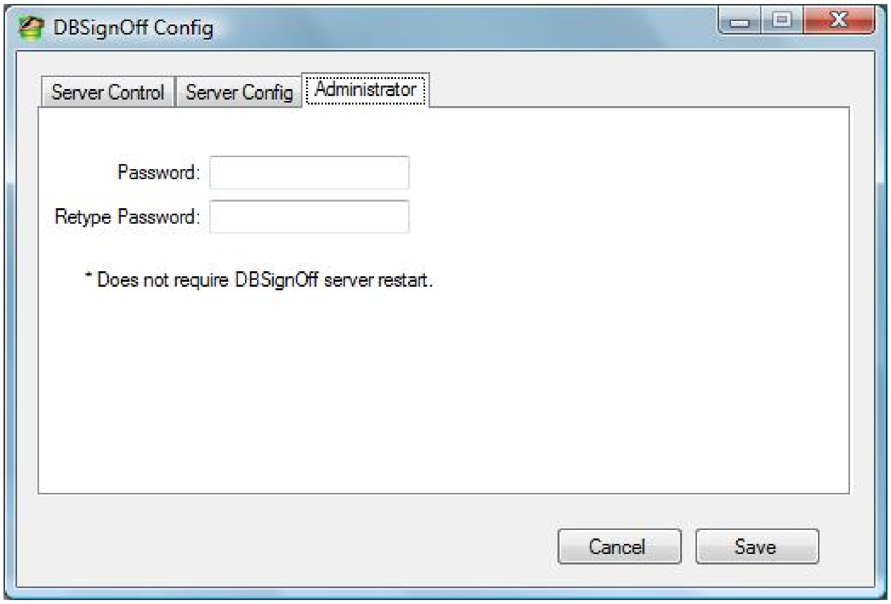
Enable HTTP ☑ HTTP Port 1000

Enable TCP ☑ TCP Port 2000

Server URI DBSignOff

Project Root Directory

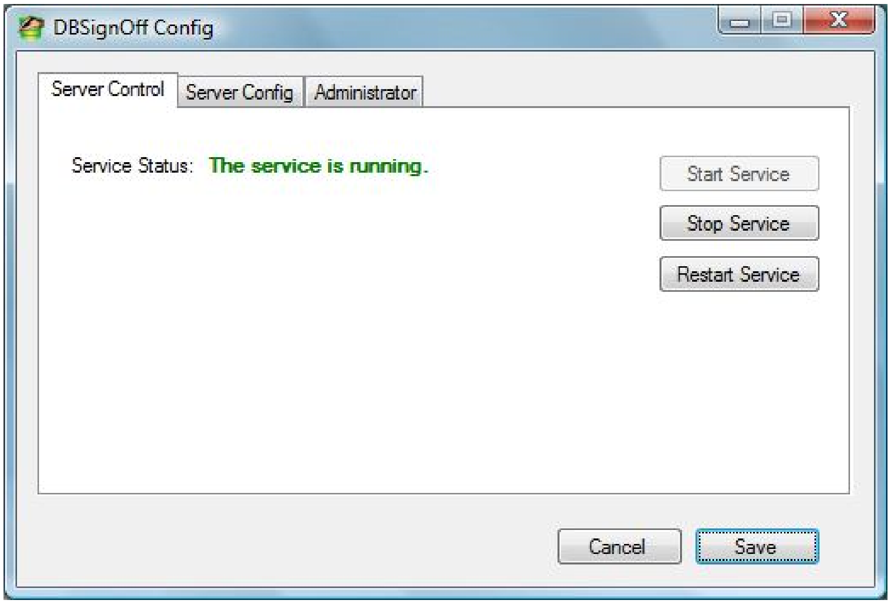
The Administrator tab allows the user to set the password for the built-in administrator account. This must be done before the administrator can login via the client tool. The administrator can also add additional DBSignOff login accounts to the system.



* Does not require DBSignOff server restart.

Click on Save at any time to persist your changes. If the service is running when you make changes you may need to restart the service for the changes to take effect. The exception is changing the administrator password which will take effect immediately.

After you are satisfied with the configuration and saved the changes you can start the service from the Server Control tab by clicking on the Start Service button. The status text should update to indicate that the service is running.

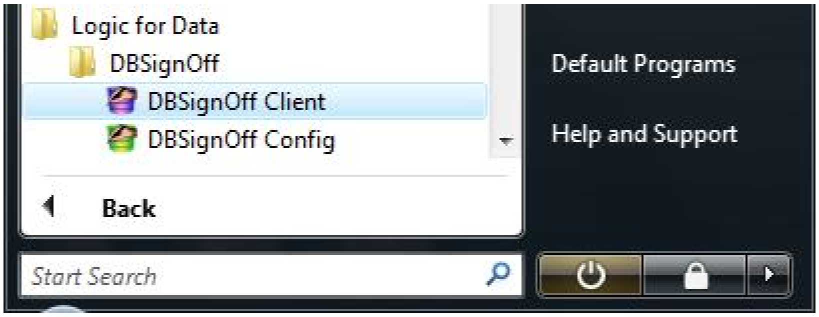


Service Status: The service is running.

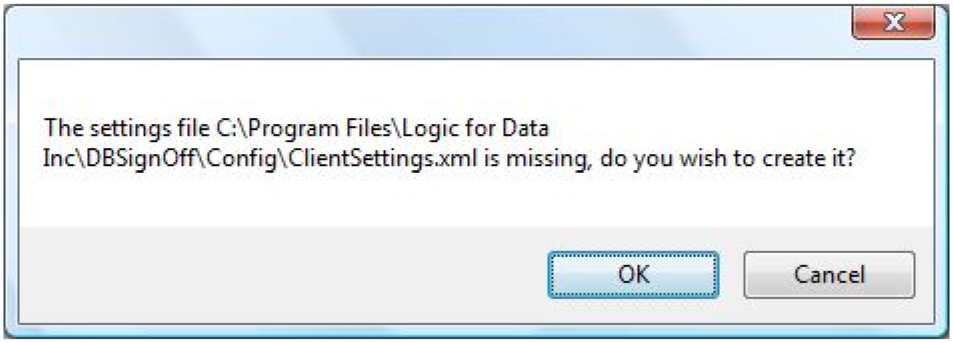
You are now ready to interact with the DBSignOff server thought the client tool.

Client Tool

Start the DBSignOff client tool from the start menu.

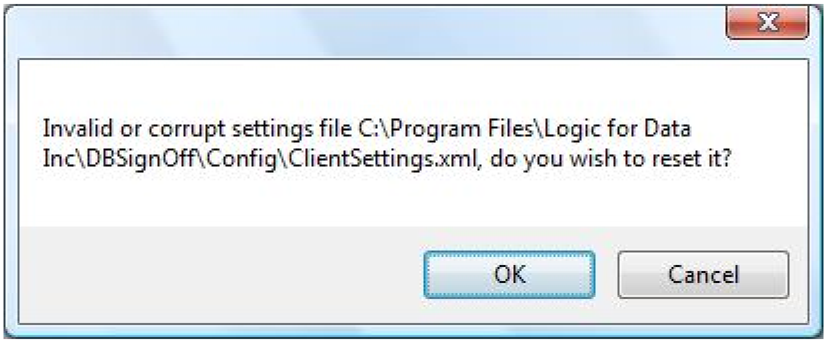


When the tool is opened for the first time a message will appear indicating that the settings file is missing and asks whether to create it. Click on OK to create the file.



The settings file C:\Program Files\Logic for Data Inc\DBSignOff\Config\ClientSettings.xml is missing, do you wish to create it?

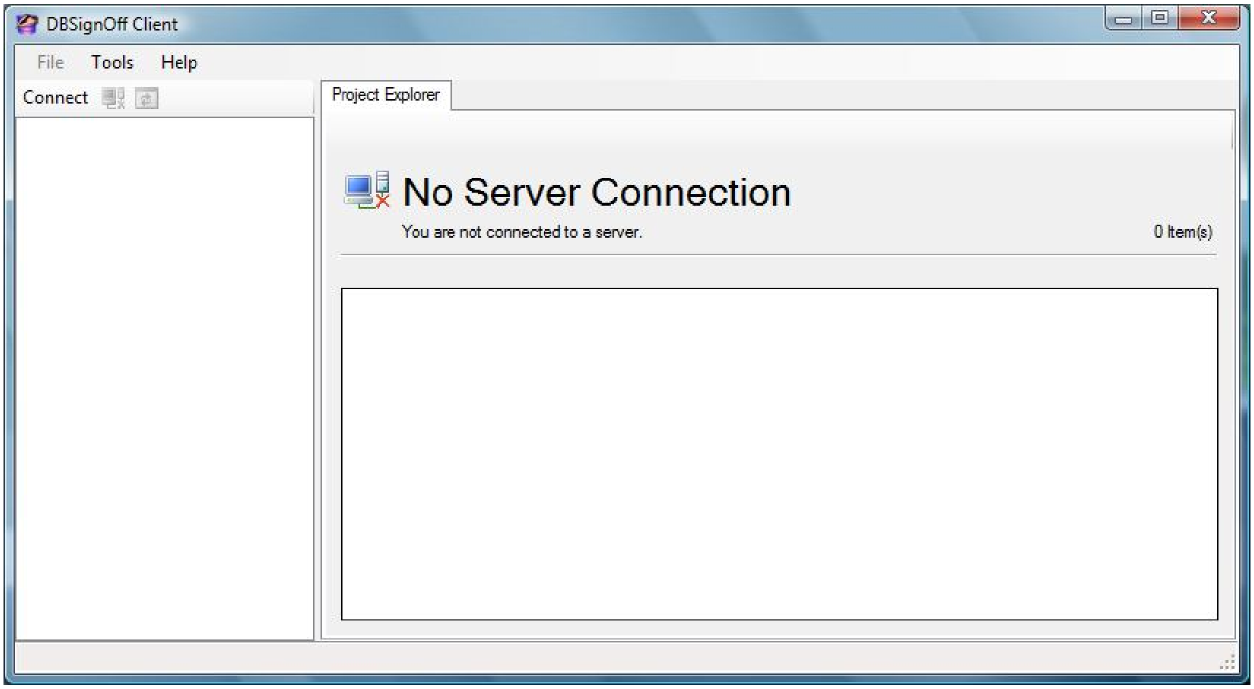
The next message will indicate that the settings file is not valid, click on OK to reset it with the default settings.



Invalid or corrupt settings file C:\Program Files\Logic for Data Inc\DBSignOff\Config\ClientSettings.xml, do you wish to reset it?

Configuring the Client Tool

Once the client tool is started the only thing remaining before interacting with the DBSignOff server is to configure the connection settings. From the menu bar select Tools -> Server Connection to open the connection configuration screen.

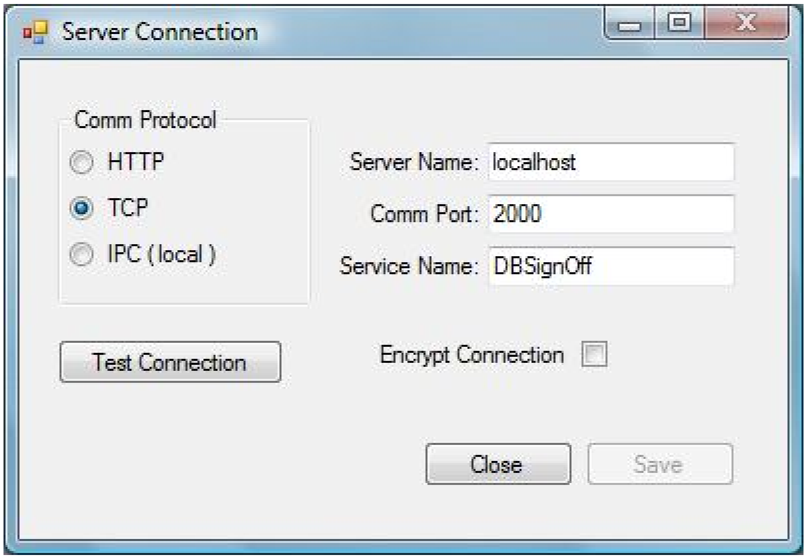


No Server Connection

You are not connected to a server.

0 Item(s)

Each client must select the communication protocol used to interact with the server. If the client and server reside on the same machine then the IPC protocol is sufficient. The Server Name, Comm Port, and Service Name properties only apply to HTTP and TCP protocols. Only one protocol can be configured on the client at any one time and the settings must match those on the server. For added security the connection can be encrypted by selecting the Encrypt Connection check box.

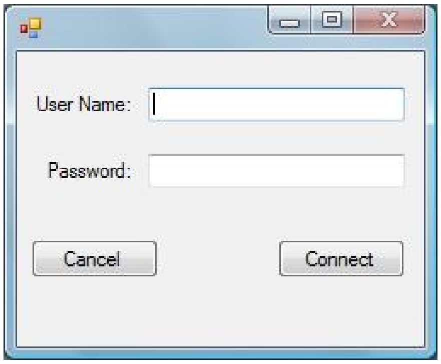


Comm Protocol
○ HTTP
● TCP
○ IPC (local)

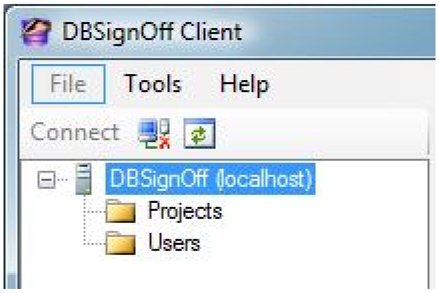
Server Name: localhost
Comm Port: 2000
Service Name: DBSignOff

Encrypt Connection ☐

The user can login by clicking on Connect and entering their credential. The first user to login would be the administrator by using the built-in login name **admin** and the password entered through the configuration tool.

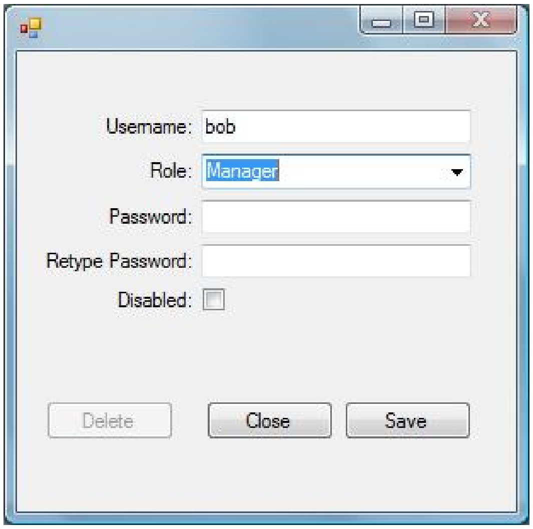


After logging in the user will be presented the project hierarchy in the left pane. Administrators and Managers will also see the Users folder.



Managing Users

Only administrators can manage user logins through the client tool. To add a new user right click on the Users folder and select Add User. Enter the unique login name in the Username field and proceed to set the role and password of the account. Click on Save to persist the changes.



Username: bob
Role: Manager

User Roles

The following table lists the permissions matrix for the available user roles. Users can be assigned the appropriate role based on their function within the project. Administrators, including the built in admin, can Add/Modify/Delete users. Managers can only view the list of users. Administrators and managers have full control over the project hierarchy. Developers can Add/Modify/Delete scripts. Viewers can only view the hierarchy. All users have the ability to execute scripts.

	Users	Project Folder	Project	Project Version	Script	Script Execution
Admin	W	C	W	W	W	Yes
Manager	R	C	W	W	W	Yes
Developer	N/A	R	R	C	W	Yes
Viewer	N/A	R	R	R	R	Yes

R – Read only

C – Add/Delete/Reorder/Rename immediate children

W – Add/Delete/Rename

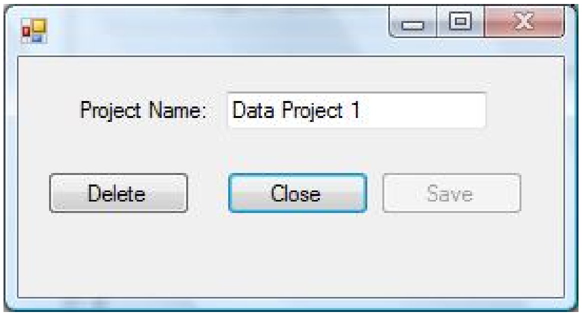
Project Hierarchy

DBSignOff organizes the scripts in a project based hierarchy. The hierarchy maps as following:

- -> **Server Root** [Represents a connection to a DB Sign-Off server
  - -> **Projects Folder** [All projects reside under this folder]
    - -> **Project** [A logical grouping of scripts]
      - -> **Project Version** [A set of scripts related to a project release cycle]
        - -> **Script** [An SQL change script to be executed on a database]
          - -> OR **Script Version** [An active, i.e. version to be executed, or inactive version of a script]

Projects

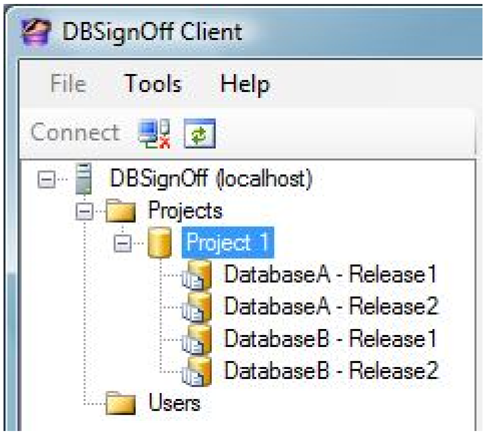
Projects are logical groupings to help organize and distinguish database scripts. A project may represent an actual project being developed, or it can represent a discrete component within the project. Once you are ready to add a project to the hierarchy right click on the Projects folder and select Add Project. Create a unique name for the project and click on Save.


Project Name: Data Project 1

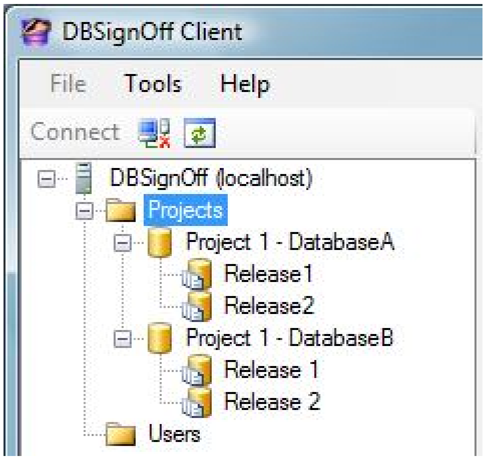
Project Versions

Project Versions represent stages of a project's development. A project version can map to a production release cycle for instance. As an example all the change scripts that are to be released to the production environment can be grouped together under the same project version. Please note that a Project Version is meant to support a single database since all the scripts are executed in a batch. If there are multiple distinct databases within a project then the same number of project versions should be created. Alternatively each database can have a separate project created so that the project versions under each project relate to the same database. The following example demonstrates two ways of segregating multiple databases within DBSignOff. Each project team would need to determine the most logical way to organize the project hierarchy.

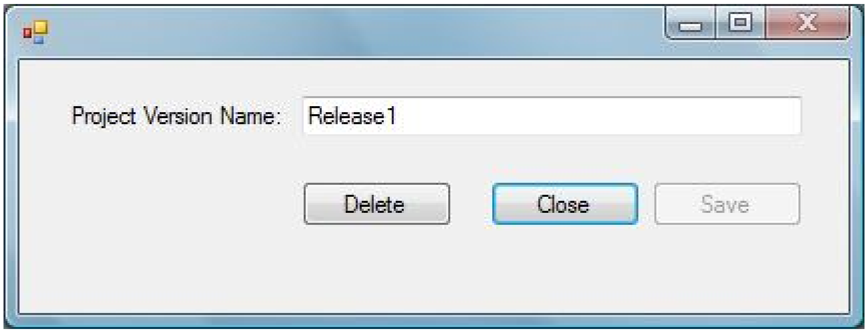
Example of one project with multiple target databases organized directly underneath.



Example of each database represented by a separate project.



After determining the project hierarchy a Project Version can be added by right clicking on a Project and selecting Add Project Version. Enter a project version name that is unique to the parent project. Click save to persist the changes.



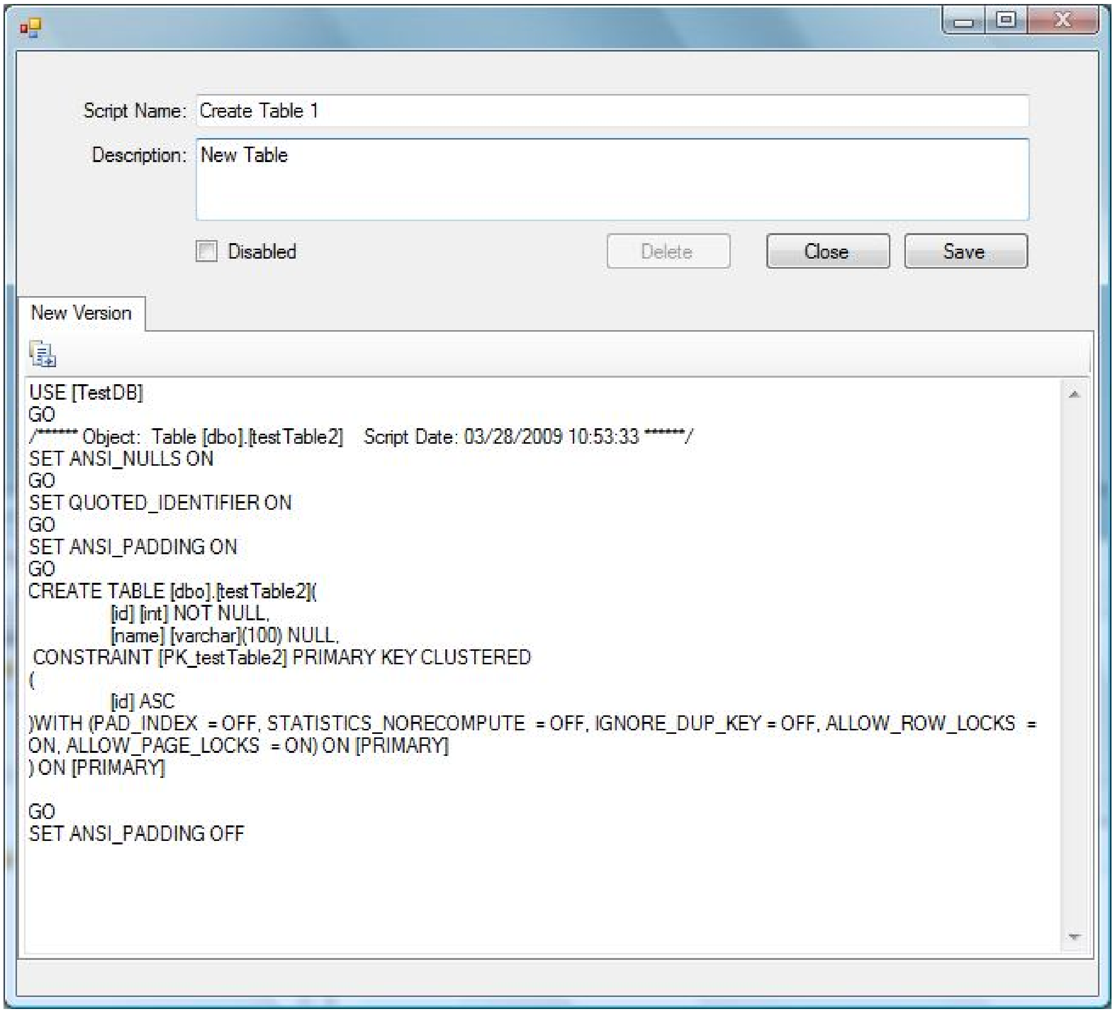
Project Version Name: Release1

Scripts

Scripts are the workhorses of project hierarchy and the basis of DBSignOff. As a release cycle progresses the database will evolve and change as developers make modification. It is important that all these changes are captured and it is the main purpose of DBSignOff to do so.

As developers apply a change to their development environment they need to reproduce the change in the form of a change script. This script can then be added to a Project Version along with all the other scripts to form a batch. At time to time the batch needs to be executed to test whether the scripts are valid and in the correct order. If a batch runs with no errors it is a good indication that all the changes have been captured and scripted properly.

To add a new script right click on a Project Version, select Add Script, provide the script name and description. Add the new script text under the New Version tab. The script text can be pasted, typed in, or imported from a file by clicking on the file import icon. Click save and version 1 of the script will be created and made visible under the tab labelled 1.



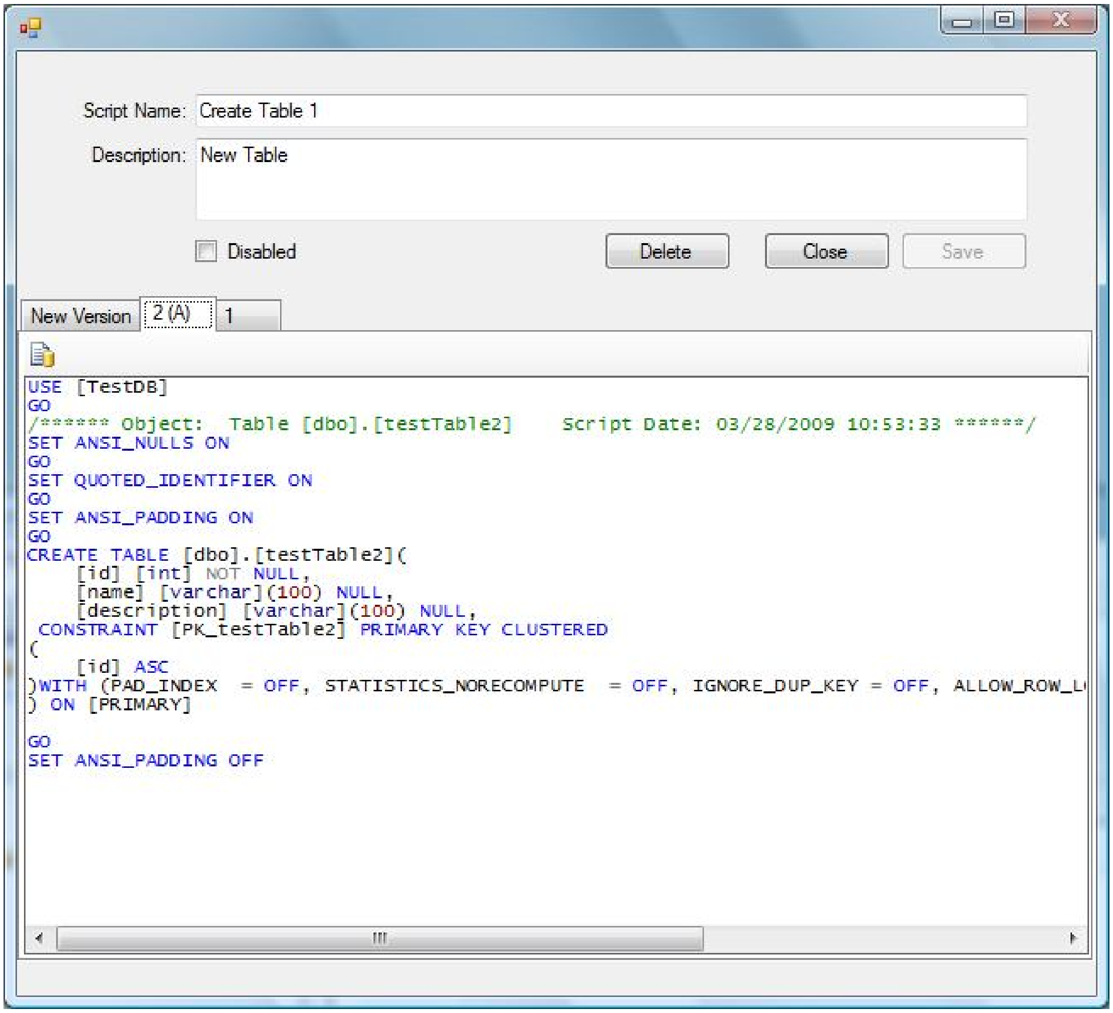
Script Name: Create Table 1

Description: New Table

☐ Disabled

```
USE [TestDB]
GO
/****** Object:  Table [dbo].[testTable2]    Script Date: 03/28/2009 10:53:33 ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
SET ANSI_PADDING ON
GO
CREATE TABLE [dbo].[testTable2](
	[id] [int] NOT NULL,
	[name] [varchar](100) NULL,
 CONSTRAINT [PK_testTable2] PRIMARY KEY CLUSTERED
(
	[id] ASC
)WITH (PAD_INDEX  = OFF, STATISTICS_NORECOMPUTE  = OFF, IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS  =
ON, ALLOW_PAGE_LOCKS  = ON) ON [PRIMARY]
) ON [PRIMARY]

GO
SET ANSI_PADDING OFF
```

The script can be changed by providing the new script text in the New Version tab again and then saving. The (A) indicator marks the active script version which is what will be executed. When making changes the new version will always be set as the active version by default. Any other version can be set as the active version by selecting the appropriate version tab, clicking on the active version icon and then saving.



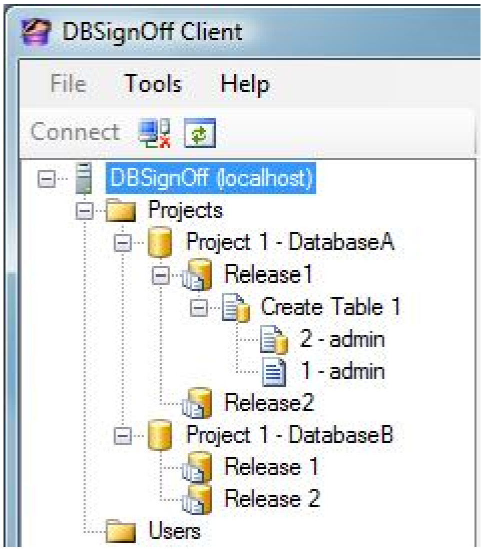
Script Name: Create Table 1

Description: New Table

☐ Disabled

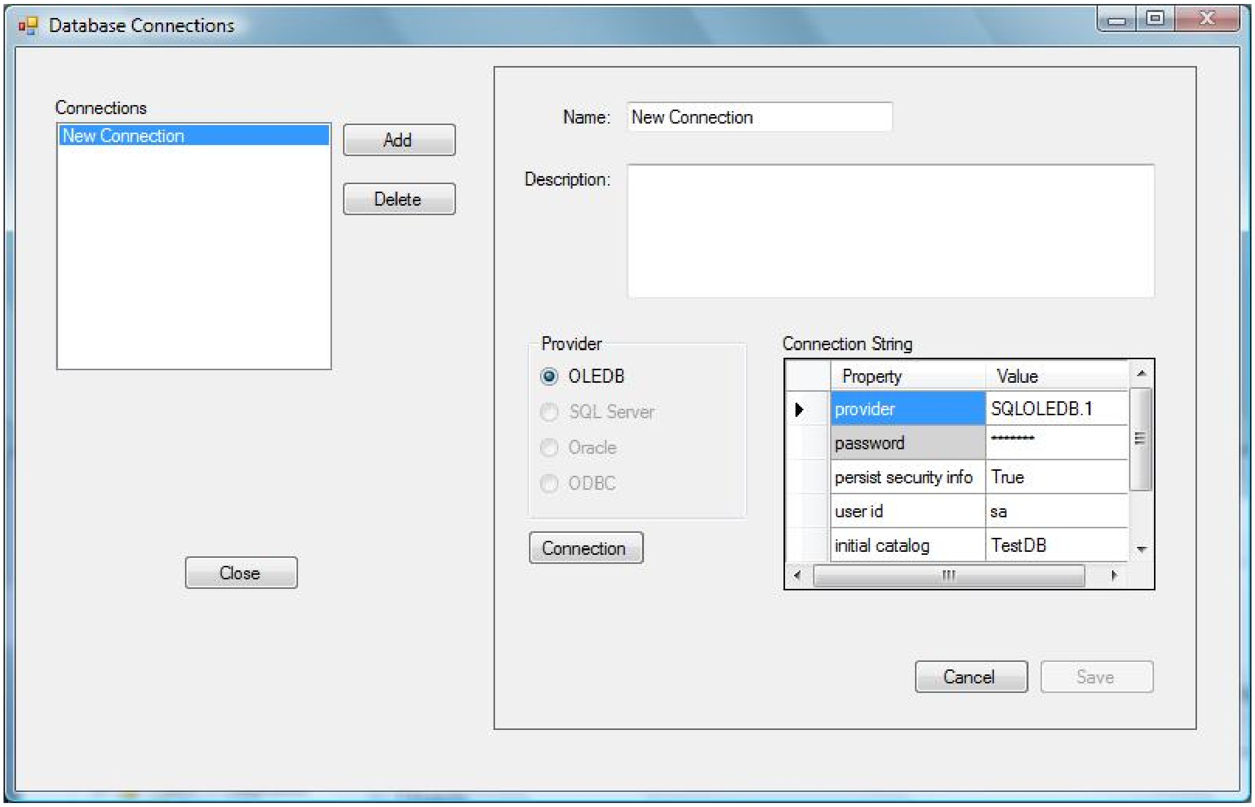
```
USE [TestDB]
GO
/****** Object:  Table [dbo].[testTable2]    Script Date: 03/28/2009 10:53:33 ******/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
SET ANSI_PADDING ON
GO
CREATE TABLE [dbo].[testTable2](
    [id] [int] NOT NULL,
    [name] [varchar](100) NULL,
    [description] [varchar](100) NULL,
 CONSTRAINT [PK_testTable2] PRIMARY KEY CLUSTERED
(
    [id] ASC
)WITH (PAD_INDEX  = OFF, STATISTICS_NORECOMPUTE  = OFF, IGNORE_DUP_KEY = OFF, ALLOW_ROW_L
) ON [PRIMARY]

GO
SET ANSI_PADDING OFF
```

Once the script has been added and saved it will appear in the hierarchy under the project version. Each of the script versions will also appear in the hierarchy under the parent script element. The inactive script versions will be represented by the icon 🗎. Clicking on a script version node will display the script text for that specific version in the right pane.



Target Database Connections

Before any scripts can be executed the target database connections must be configured. The connection information is stored on the client machine so the DBSignOff client does not need to be logged onto the server to create the target connections. From the menu bar select Tools -> Database Connections to open the configuration screen. Click on Add to create a new connection, enter a unique connection name, description, and set the connection string properties.



Name: New Connection

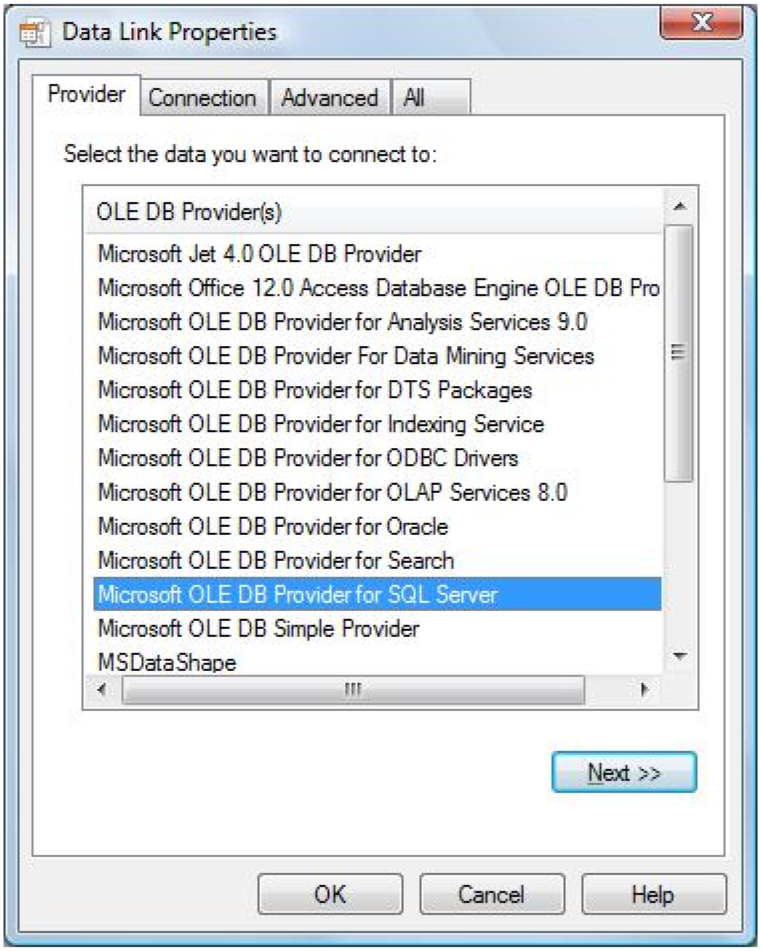
Description:

Provider: ● OLEDB

Connection String

Property	Value
provider	SQLOLEDB.1
password	*******
persist security info	True
user id	sa
initial catalog	TestDB

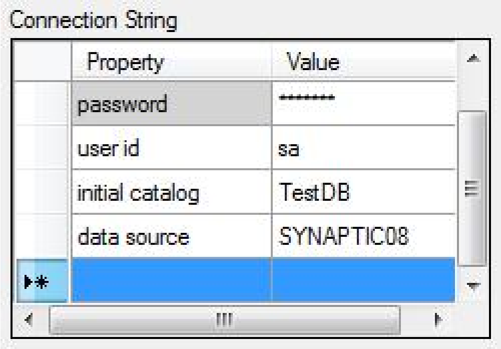
Currently the only type of target database connection supported is through an OLEDB driver. The connection properties can be manually entered or entered by using a Data Link dialog by clicking on the Connection button. The Data Link dialog can also be used to edit existing connection strings.



Select the data you want to connect to:

OLE DB Provider(s)
- Microsoft Jet 4.0 OLE DB Provider
- Microsoft Office 12.0 Access Database Engine OLE DB Pro
- Microsoft OLE DB Provider for Analysis Services 9.0
- Microsoft OLE DB Provider For Data Mining Services
- Microsoft OLE DB Provider for DTS Packages
- Microsoft OLE DB Provider for Indexing Service
- Microsoft OLE DB Provider for ODBC Drivers
- Microsoft OLE DB Provider for OLAP Services 8.0
- Microsoft OLE DB Provider for Oracle
- Microsoft OLE DB Provider for Search
- Microsoft OLE DB Provider for SQL Server
- Microsoft OLE DB Simple Provider
- MSDataShape

To manually create a property enter the property name and value in the Connection String grid in the row marked by *.

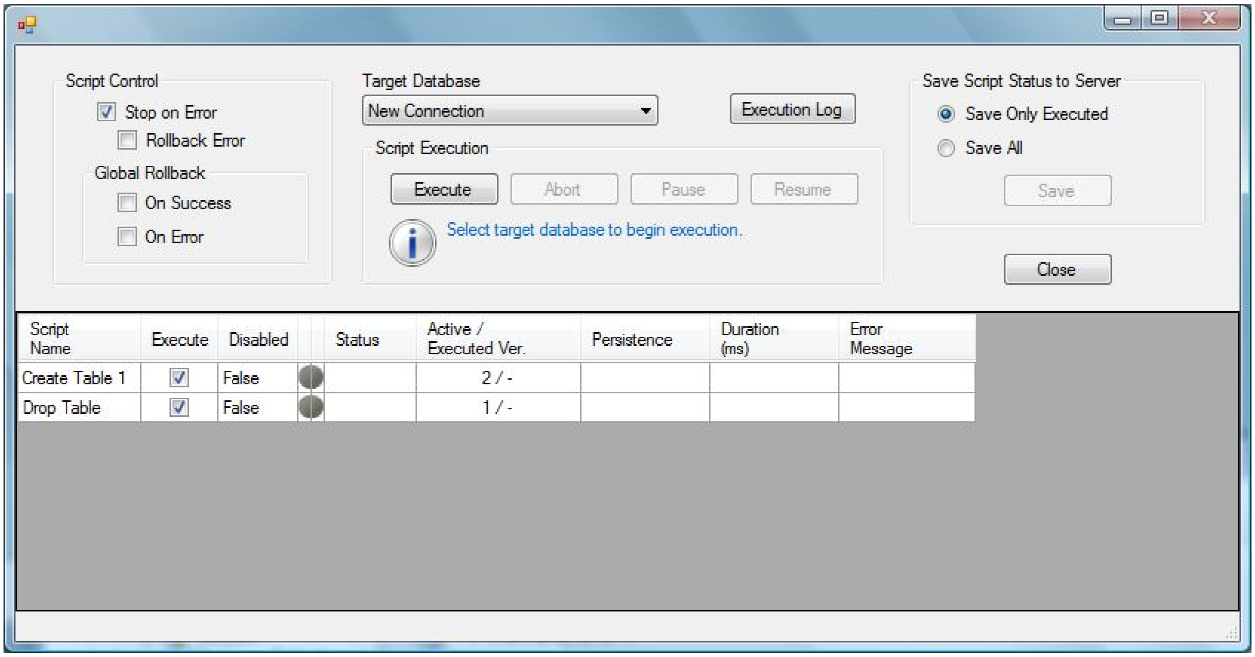

Connection String

	Property	Value
	password	*******
	user id	sa
	initial catalog	TestDB
	data source	SYNAPTIC08
▸*		

The property name and value are text fields which can be modified at any time. The one exception is password fields where the property name cannot be changed as indicated by its grey colour. The password value will be masked after it is set or changed. Any property including passwords can be deleted by selecting the appropriate property and hitting the delete key.

Script Execution

To execute scripts on a target database right click on the appropriate project version node in the hierarchy and select Execute from the context menu to open execute scripts dialog.



Script Control
☑ Stop on Error
☐ Rollback Error
Global Rollback
☐ On Success
☐ On Error

Target Database: New Connection

Select target database to begin execution.

Save Script Status to Server
● Save Only Executed
○ Save All

Script Name	Execute	Disabled		Status	Active / Executed Ver.	Persistence	Duration (ms)	Error Message
Create Table 1	☑	False	●		2 / -			
Drop Table	☑	False	●		1 / -			

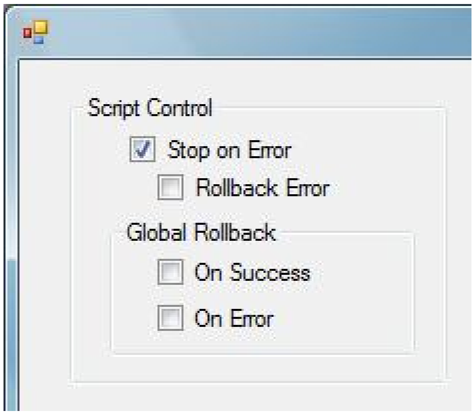
The Script Control section of the dialog indicates how to handle script errors and script persistence.

Stop on Error –> Stop batch execution on the first error that is encountered. No other scripts will be executed after the error. If Global Rollback on Error is checked then all scripts will be rolled back, otherwise all scripts that ran will be persisted on the target database.

Rollback Error -> Rollback the error that occurred in the batch. This only applies if Stop on Error is selected. If Global Rollback on Error is checked then all scripts will be rolled back, otherwise all scripts that executed successfully before the error will be persisted on the target database.

Global Rollback on Success -> If all scripts in the batch are successful then all scripts in the batch will be rolled back. If any error occurs then all scripts will be persisted.

Global Rollback on Error -> If any error occurs in the batch then all scripts in the batch will be rolled back. If all scripts are successful then all scripts will be persisted.



Script Control

☑ Stop on Error

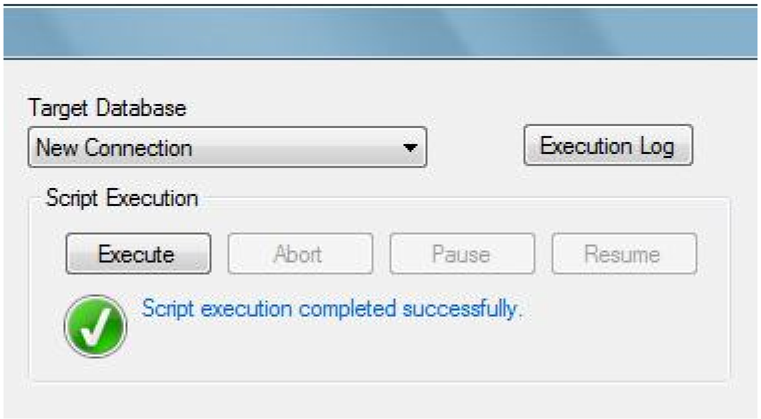
☐ Rollback Error

Global Rollback

☐ On Success

☐ On Error

To execute scripts a target database connection must be selected from the dropdown list. Clicking the Execute button will start executing the scripts as a batch. The final status of the batch will be displayed beneath the button. All previous batch executions can be viewed by clicking on the Execution Log button.

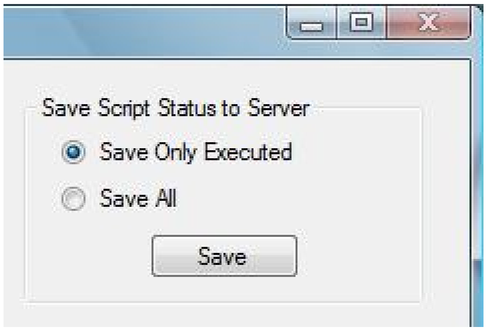


Target Database: New Connection

Script Execution

Script execution completed successfully.

Administrator and Manager roles can save the last executed script status to the server so that all other logged in clients to view. There is a option to save only the status of the scripts that executed or the execution status of all scripts in the batch.

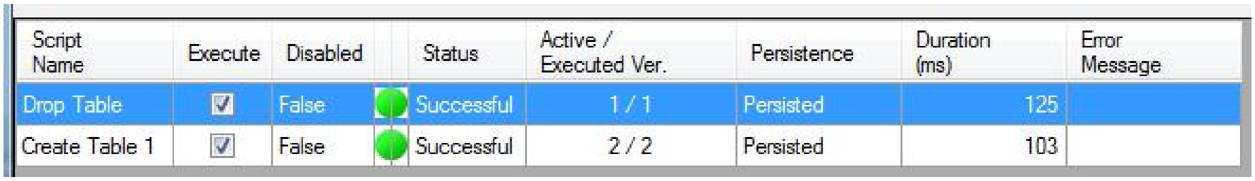


Save Script Status to Server

● Save Only Executed

○ Save All

The scripts under the project version are listed with the last execution status on the client machine. The status of each script is updated as it executes. The coloured circle is used to quickly identify the script and batch statuses. The left half of the circle represents the status of the current script and the right side the status of the batch up to that point in the batch.

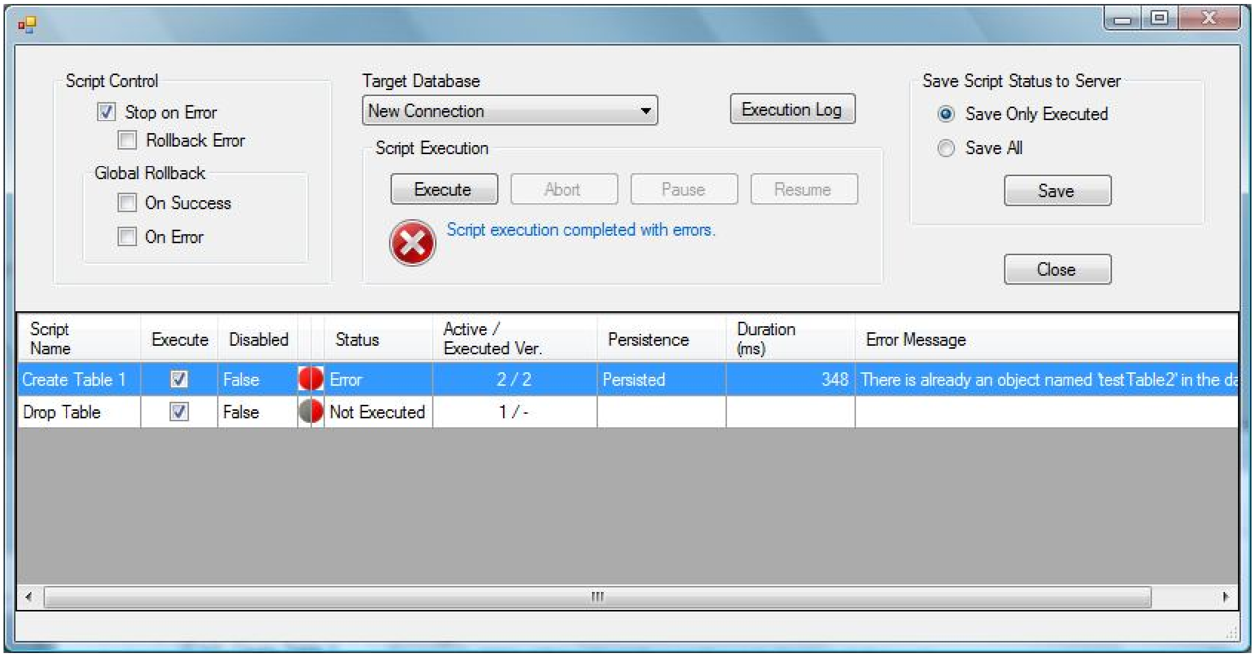


Script Name	Execute	Disabled		Status	Active / Executed Ver.	Persistence	Duration (ms)	Error Message
Drop Table	☑	False	●	Successful	1 / 1	Persisted	125	
Create Table 1	☑	False	●	Successful	2 / 2	Persisted	103	

The batch status represented by the right side of the circle is a cumulative status that follows rules of precedence in this order:

Status	Colour	Precedence
Error	Red	Highest
Warning	Yellow	
Not Executed	Grey	
Success	Green	Lowest

In the following example two scripts were set for execution in a batch with Stop on Error set. The first script failed causing the remaining script to be skipped with the error status of the batch propagating.



Script Control
☑ Stop on Error
☐ Rollback Error
Global Rollback
☐ On Success
☐ On Error

Target Database: New Connection

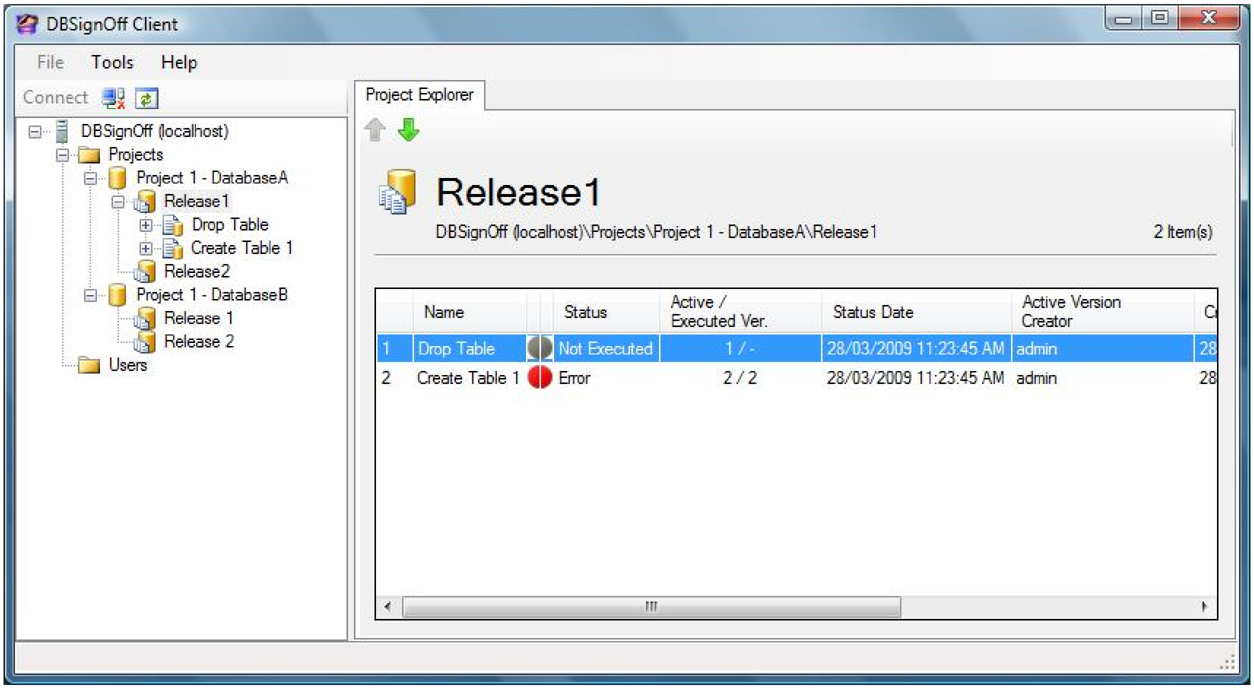
Script Execution

Script execution completed with errors.

Save Script Status to Server
● Save Only Executed
○ Save All

Script Name	Execute	Disabled		Status	Active / Executed Ver.	Persistence	Duration (ms)	Error Message
Create Table 1	☑	False	●	Error	2 / 2	Persisted	348	There is already an object named 'testTable2' in the da
Drop Table	☑	False	●	Not Executed	1 / -			

In this example an error occurred in script execution because the scripts were executed in the wrong order. The script order can be changed by selecting a script in the right pane and clicking on the arrow in the direction the script is to be moved.

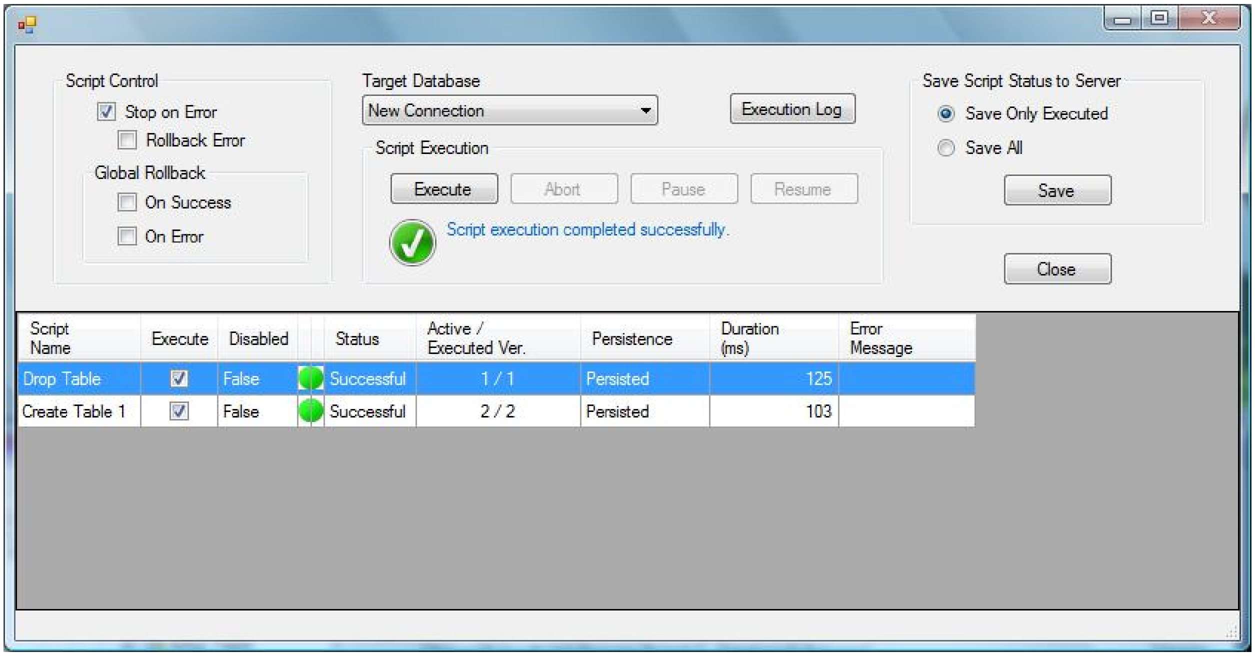


Release1

DBSignOff (localhost)\Projects\Project 1 - DatabaseA\Release1 — 2 Item(s)

	Name	Status	Active / Executed Ver.	Status Date	Active Version Creator	C
1	Drop Table	Not Executed	1 / -	28/03/2009 11:23:45 AM	admin	28
2	Create Table 1	Error	2 / 2	28/03/2009 11:23:45 AM	admin	28

Executing the scripts again results in a successful batch run.



Script Control
- ☑ Stop on Error
- ☐ Rollback Error

Global Rollback
- ☐ On Success
- ☐ On Error

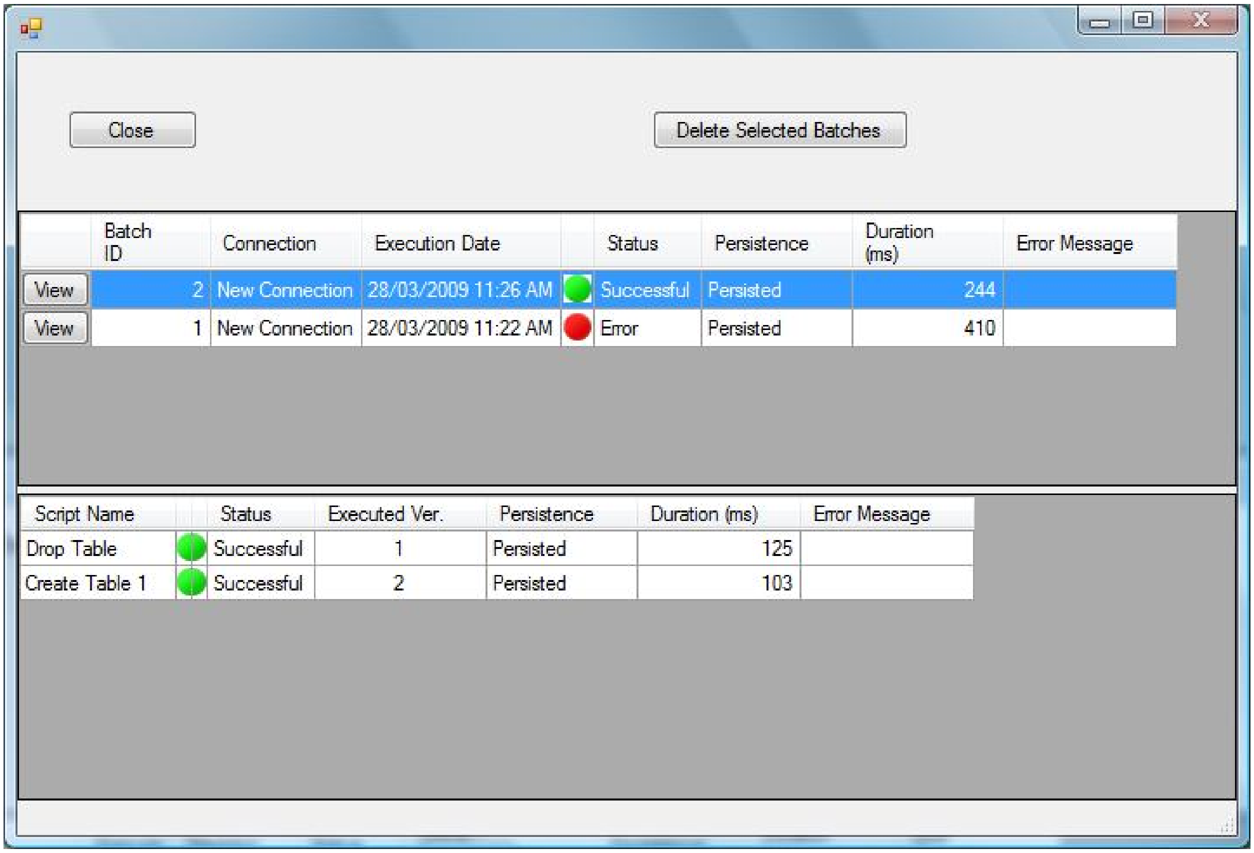
Target Database: New Connection

Script Execution: Script execution completed successfully.

Save Script Status to Server
- ● Save Only Executed
- ○ Save All

Script Name	Execute	Disabled	Status	Active / Executed Ver.	Persistence	Duration (ms)	Error Message
Drop Table	☑	False	Successful	1 / 1	Persisted	125	
Create Table 1	☑	False	Successful	2 / 2	Persisted	103	

The execution log will show all the batch executions attempted so far. The top grid is the list of batches with information on the batch execution. By clicking on the view button for a specific batch the list of scripts and their statuses will be displayed in the bottom grid. Over time as the list of batches grows the user may choose to clean some of the older information. This can be done by selecting the batches to delete and clicking on Delete Selected Batches.

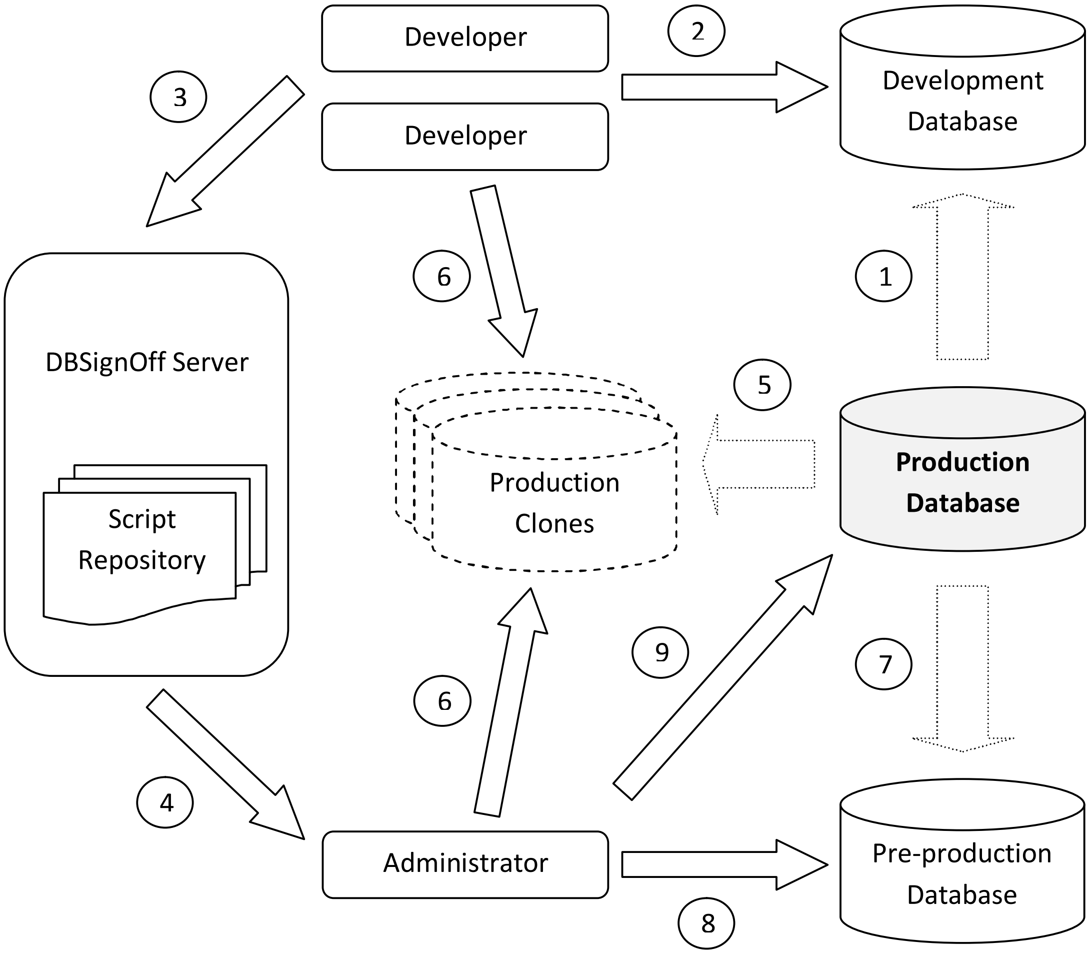


	Batch ID	Connection	Execution Date		Status	Persistence	Duration (ms)	Error Message
View	2	New Connection	28/03/2009 11:26 AM	🟢	Successful	Persisted	244	
View	1	New Connection	28/03/2009 11:22 AM	🔴	Error	Persisted	410	

Script Name		Status	Executed Ver.	Persistence	Duration (ms)	Error Message
Drop Table	🟢	Successful	1	Persisted	125	
Create Table 1	🟢	Successful	2	Persisted	103	

Database Change Management

The following diagram illustrates how DBSignOff can be integrated into a database change management program. The terms used in the figure for “Developer” and “Administrator” do not refer directly to the Developer and Administrator roles in DBSignOff. A developer is anyone involved in making database changes and administrator is an individual who has access to the production environment. In some projects the developer and administrator may be the same individual.

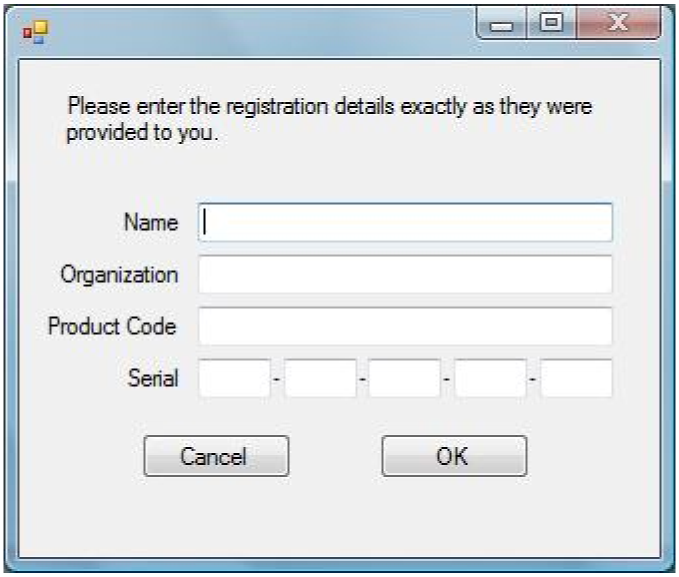


1. The production database is copied to a development environment. The development database can be centralized and shared among many developers. In this way any changes can immediately be visible to all developers. It is also possible for each developer to have a copy of their own development database.
2. Developers make database changes.
3. Developers record changes as database scripts and save them in the DBSignOff server. New scripts will be visible to all other developers so they can see what changes have already been made.

4. Administrator gets latest database change scripts.
5. The production database is cloned so that the scripts can be tested. Ideally this will be done on a regular basis to validate any new database changes.
6. Change scripts are tested in the cloned environment. Any issues that are found would be fixed and the scripts retested.
7. Close to release date a pre-production copy of the database is made to test the scripts.
8. Change scripts are tested in pre-production environment. The scripts should be executed exactly like they would be on the production environment.
9. Database change scripts are applied to production database at end of release cycle.

Product Registration

If the product registration information changes it will need to be applied on every machine DBSignOff is installed on. This can be done through the DBSignOff Client tool. From the menu bar select Help -> Register to open the product registration screen.



Please enter the registration details exactly as they were provided to you.