



Product Documentation

Embarcadero® DB Change Manager™ XE and DB Change Manager™ 5.6

Quick Start Guide

Includes Installation and What's New Information, and Tutorials for Key Features

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More recent updates, if any, are posted at: <http://docs.embarcadero.com/>

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INTRODUCING DB CHANGE MANAGER

Embarcadero® DB Change Manager™ helps database administrators and developers to:

- Simplify and automate database change management.
- Streamline development cycles.
- Ensure availability, performance and compliance.

DB Change Manager provides comparison, synchronization, data masking, and auditing capabilities that let you track and report on changes, roll out new releases, and pinpoint problems resulting from changes at the data, schema, and database configuration levels.

By comparing a live database to a schema or configuration “snapshot”, administrators can quickly identify changes and correct problems. By monitoring configuration settings, administrators can ensure compliance with regulatory policies and performance standards and maintain overall database performance and availability.

- [Key Features of DB Change Manager](#)
- [Technical Requirements](#)
- [Database Support](#)
- [Installing and Upgrading DB Change Manager](#)
- [Key Concepts of DB Change Manager](#)
- [Additional Product Information](#)

KEY FEATURES OF DB CHANGE MANAGER

DB Change Manager provides features to help you manage databases from development to deployment and maintenance cycles. These features include:

- [Data Comparison and Synchronization](#)
- [Schema Comparison and Synchronization](#)
- [Database Configuration Management](#)
- [Reports, Notifications, and Change History](#)
- [Data Masking](#)
- [Source Control System Integration](#)

For a video overview, see [DB Change Manager XE](#).

DATA COMPARISON AND SYNCHRONIZATION

DB Change Manager can **analyze and compare** the data in two different data sources. It generates a SQL script that can **update one data source so that it matches** another. You can modify the SQL and run it as you wish. You can even define a comparison and synchronization process, called a **job**, and set it to run automatically. These features help you better manage common scenarios, such as:

- Keeping primary and backup data in sync
- Keeping up with data changes during the development and testing cycles, and later on to deployment environments
- Managing data migrations during upgrade activities

SCHEMA COMPARISON AND SYNCHRONIZATION

DB Change Manager can **capture and compare** the database schema in your enterprise. Over the lifecycle of a single schema, you can capture a baseline or **archive schema** and analyze changes through time. In addition, DB Change Manager generates a SQL script that can **update a target schema** so that it matches a standard. You can modify the SQL and execute it as needed.

For more information, see the video demos [Schema Compare with Auto-Synchronization](#) and [Cross-DBMS Schema Compare](#). The demos were made for the 5.1 release and are still relevant.

DATABASE CONFIGURATION MANAGEMENT

In addition to schema, there are configuration settings that can vary across an enterprise. DB Change Manager can **capture the configuration settings** of a data source. You can capture a baseline or **archive configuration** and analyze changes through time. You can create a **configuration standard** that defines the norms for your enterprise and against which you can compare your databases.

For more information, see the video demo [Monitoring for Change](#). The demo was made for the 5.1 release and is still relevant.

REPORTS, NOTIFICATIONS, AND CHANGE HISTORY

DB Change Manager supports your data management activities with **notifications** when processes execute, **reports** that capture key information, and **change history** tracking.

For more information, see the video demo [Monitoring for Change](#). The demo was made for the 5.1 release and is still relevant.

DATA MASKING

There are specific scenarios when you need to hide the true values of the data in a database. For example, during development you need to protect personal or proprietary data, yet you still need to work with data that accurately represents the source. By combining data synchronization with data masking features, such as **randomization** or **shuffling**, you can duplicate source data and use the masked copies in non-production or non-secure environments.

For more information, see the video demo [Data Masking](#). The demo was made for the 5.1 release and is still relevant.

SOURCE CONTROL SYSTEM INTEGRATION

You can integrate DB Change Manager with source control systems such as Concurrent Versions System (CVS), Visual Source Safe (VSS), or Eclipse plugins. The **Navigator** in DB Change Manager is the interface for accessing files under source control. Job files and archive versions are stored as XML files and synchronization scripts are stored as text files. You perform all source code control actions using the source control system.

For more information, see the video demo [Developer Versioning Database and Code](#). The demo was made for the 5.1 release and is still relevant.

TECHNICAL REQUIREMENTS

Before installing DB Change Manager, verify that your environment meets the following requirements:

- 1.2 Ghz processor
- 1 GB of RAM
- 500 MB of hard disk space (more space is recommended for large data source comparisons)
- High resolution monitor (1024 x 768), 16-bit display (or greater)
- Operating systems:
 - Microsoft Windows 7 (x86-32, Win32), Windows 2008 (x86-32, Win32), Windows XP (x86-32, Win32), Windows Vista (x86-32, Win32), or Windows Server 2003
 - Red Hat Enterprise Linux 5.0 (x86-32), GTK 2, or SuSe Linux Enterprise Server (x86) GTK+ 2.x
- If you choose to install the Eclipse plugin version, you need:
 - Eclipse version 3.3 or newer
 - Sun Java Standard Edition 5.0 Update 11 or newer

DATABASE SUPPORT

DB Change Manager supports the following database platforms:

- IBM DB2 LUW 8.0 - 9.5
- Oracle 8i - 11g
- Microsoft SQL Server 2000, 2005, and 2008
- Sybase ASE 12.5 - 15, 15.0.1, and 15.0.2
- Firebird® 1.5, 2.0
- InterBase® 2007, 2009

DB Change Manager supports data sources that use the Unicode format.

INSTALLING AND UPGRADING DB CHANGE MANAGER

To install DB Change Manager 5.x, see [Installing DB Change Manager](#).

To install DB Change Manager XE, see [Installing DB Change Manager XE](#).

When needed, DB Change Manager provides an upgrade process for moving jobs and other information from an existing DB Change Manager installation to the new version. For information about upgrading, see the *Read Me* file at [the DB Change Manager documentation site](#).

KEY CONCEPTS OF DB CHANGE MANAGER

To use DB Change Manager most effectively, first learn about how it represents and stores reusable processes that help you manage your data, and the features of its user interface.

- [Understanding Jobs and Scripts in DB Change Manager](#)
- [Understanding The DB Change Manager User Interface](#)

UNDERSTANDING JOBS AND SCRIPTS IN DB CHANGE MANAGER

DB Change Manager uses the concept of a job to organize reusable processes. A job uses objects of the following types:

- **Data source:** A data source is a data repository or database.

- **Configuration standard:** A standard is a customized set of properties with threshold operators that help you create optimal configurations against which you can compare other data source configurations.
- **Schema or configuration archive:** An archive is a snapshot of a configuration or schema. You can use this archive to compare against other schemas or configurations.

There are two types of jobs in DB Change Manager:

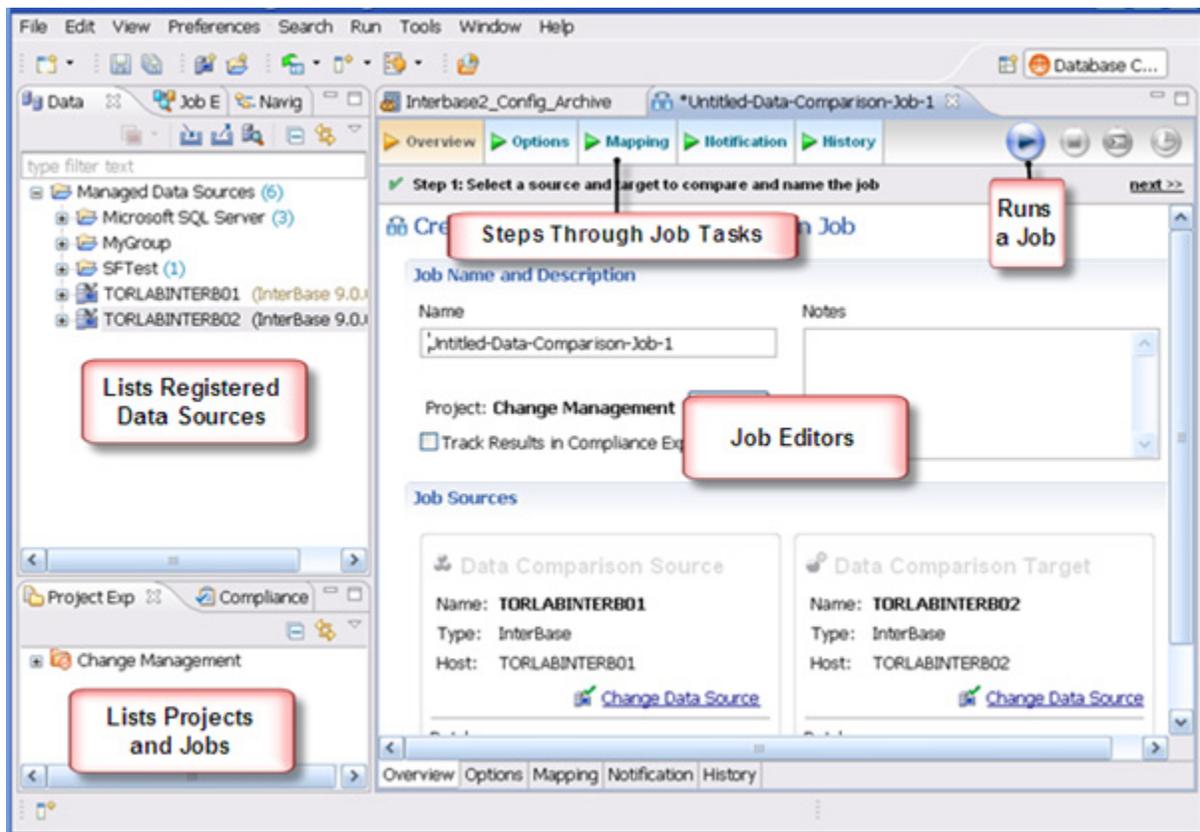
- **Object creation jobs:** Some jobs create objects that are used in other jobs. You use a job to create configuration standards and archives.
- **Comparison jobs:** A comparison job processes **source** and **target** objects and provides information describing their similarities and differences. This comparison is then used to generate SQL scripts. A comparison job can be of the following types:
 - **Data comparison:** A data comparison job looks at the data repositories of two data sources and determines their differences. You can use this information to determine whether to update a target data source.
 - **Data masking:** A data masking job is a special kind of data comparison job that creates a copy of sensitive data, which masks the true values of specified fields.
 - **Configuration comparison:** A configuration comparison job determines whether the configuration settings between a source and a target are the same. This information helps you quickly diagnose problems.
 - **Schema comparison:** A schema comparison job lets you compare the schemas of different data sources or archives. It helps you manage schema changes through development, testing, and production cycles.

Once it has run a comparison job, DB Change Manager can generate an **SQL synchronization script** that will update target data, configurations, or schemas. You can modify a script before you run it. For example, you can use a DB Change Manager script to synchronize data between development and testing environments. Once you are comfortable with the job's specifications, you can let it automatically run the script and synchronize the data.

You can group jobs and scripts into projects, which are visible in the **Project** explorer and in the **Navigator** view. The **Navigator** view provides a way to interact with files in a source control system.

UNDERSTANDING THE DB CHANGE MANAGER USER INTERFACE

The **Workbench** is the DB Change Manager development environment. It provides you with an interface to create, manage, and navigate comparison jobs through interaction with views, editors, and menus. If you are familiar with Eclipse you will recognize many elements of the interface.



The **Welcome Page** is the first screen you see when you initially launch the application. The screen provides links to information that may be of value to new users.

Views help you navigate a hierarchy of information, open editors, or display the properties of various application elements. For example, the **Data Source Explorer** view provides a tree of all data sources in the environment and the comparison jobs associated with each. You can launch these jobs directly, modify the connection properties of data sources, or create and edit configuration archives from the view.

Editors help you perform various tasks, such as running a job. For example, you use the **Schema Comparison Job** editor to define and execute schema comparison jobs.

The **Menu Bar** and **Command Toolbar** options provide various functions, such as launching views and editors, navigating, and setting preferences.

ADDITIONAL PRODUCT INFORMATION

Embarcadero Technologies web sites are an excellent source for additional product information, including white papers, articles, FAQs, discussion groups. Visit these sites:

- [The DB Change Manager product home page](#)
- [The Embarcadero Technologies Documentation site](#)
- [The online DB Change Manager demos](#)

WHAT IS NEW IN DB CHANGE MANAGER

See the *DB Change Manager User Guide* at http://docs.embarcadero.com/products/change_manager/ or the online help for details about the new features.

Changes in the 5.6/XE release include:

- Schema comparison job user interface improvements let you easily browse and filter results and review a summary of object types and actions before you run a sync script. These features also improve performance and scalability.
- You can specify how schema or configuration archive versions are kept on disk. Versions can be deleted based on how old they are, how many there are, or how much disk space they consume.
- Schema comparison jobs include new objects by default. You can modify this setting in the **Preferences**.
- A **Split reports** feature breaks large reports into smaller sections and limits the number of objects per section. By default the number is 1000. This improves performance for very large reports.
- Schema comparison and archive job **Refinements** tab activities now perform faster.
- In SQL Editor, if a SQL script is larger than 3 MB, it will open and a message will say that parsing was deactivated.
- The format in which schema comparisons are saved has changed. Use the import feature to import pre-5.6 schema comparison jobs.

Changes in the 5.5.3/XE release included:

- Various bugfixes; in particular, a fix to how database platform licenses were handled by All-Access ToolCloud

Changes in the 5.5.2/XE release included:

- You can post notification reports on a web server

Changes in the 5.5/XE release included:

- The product name "Change Manager" changed to "DB Change Manager".
- There is an XE version for use with Embarcadero ToolCloud.
- DB Change Manager runs on Microsoft Windows 7 (x86-32, Win32).

DB Change Manager XE and 5.5 contain usability improvements including:

- Support for Windows Task Scheduler to schedule comparison, configuration, and schema jobs
- Ability to clone schema comparison jobs
- Ability to switch workspaces between versions of DB Change Manager

- New toolbars for **Data Sources** and **Layout & Preferences**
- New **Preference** and **View** main menu items and an updated **File** menu
- Elapsed and remaining time estimates for in-progress jobs in the **Results** tab
- Datasource target names are links that open the individual results of schema comparison jobs
- Individual archived objects now have history, which is useful for comparisons
- Ability to ignore selected objects and properties in a comparison job
- Schema comparison jobs can now automatically include dependent objects for a table
- For Oracle, the mapping page can show all users, including those without schemas in the target
- Cross-platform comparison and synchronization between Firebird and InterBase
- For SQL Server and Sybase databases:
 - `USE <DATABASE NAME>` statements added to scripts generated by DB Change Manager
 - Option to `SET QUOTED IDENTIFIER ON` and `OFF`
- New, easier to understand icons for **Compliance** range preferences
- Easier to use **Email Notification** preferences
- Reports now include the creation date of an archive
- Quality updates for SQL scripts and schemas

DB Change Manager XE and 5.5.x contain performance enhancements including:

- Faster schema archive jobs and reports
- Option to turn off DDL in schema archive and comparison reports
- Faster automatic data synchronization jobs

UPGRADING DB CHANGE MANAGER FROM PREVIOUS VERSIONS

The format in which schema comparisons are saved changed in release 5.6. Use the import feature to import pre-5.6 schema comparison jobs.

For information about upgrading, see the *Read Me* file at [the DB Change Manager documentation site](#).

INSTALLING DB CHANGE MANAGER

This section includes:

- [Technical Requirements](#)
- [Installing DB Change Manager](#)
- [Licensing DB Change Manager](#)
 - [Registering a Trial or Workstation License at Application Startup](#)
 - [Registering a Workstation License after Application Startup](#)
 - [Registering by Phone](#)

TECHNICAL REQUIREMENTS

Before installing DB Change Manager, verify that your environment meets the requirements listed at [Technical Requirements](#).

INSTALLING DB CHANGE MANAGER

To install DB Change Manager, run the installer and follow the prompts provided by the Installation Wizard. The notes below provide information on parts of the installation process that are not self-explanatory. When the installation is complete, it is advised that you review the ReadMe file to check if it contains any known issues or advisory notes that will affect your installation of the product.

LICENSING DB CHANGE MANAGER

DB Change Manager supports the following types of licenses:

- **Trial licenses:** A license for a time-limited, full-featured trial version of the product. You must register the trial license before you can use the product. For more information, see [Registering a Trial or Workstation License at Application Startup](#).
- **Workstation licenses:** A license or set of licenses that is tied to a particular workstation. The product can only be used on that workstation. For more information, see [Registering a Workstation License after Application Startup](#).

If you have problems registering, see [Registering by Phone](#).

REGISTERING A TRIAL OR WORKSTATION LICENSE AT APPLICATION STARTUP

Shortly after downloading a trial version of an Embarcadero product, you should receive an email from Embarcadero Technologies containing a serial number, which must be registered. These instructions also apply if you have purchased a product and received a serial number prior to running the application for the first time, or if the trial period has expired.

To register a serial number at application startup

- 1 Start the application.

The **Embarcadero License Registration** dialog appears.

- 2 Copy the serial number from the email, and then paste it into the **Serial Number** field.
- 3 Enter your Embarcadero Developer Network (EDN) account credentials in the **Login or Email** and **Password** fields.

If you have not previously created an EDN account, or have forgotten your password, click **I need to create ...** or **I've lost my password**.

- 4 Click **Register**.

The activation file should automatically download and install. If this does not happen, click the **Trouble Connecting? Try Web Registration** link and follow the prompts. If you still have problems, see [Registering by Phone](#).

REGISTERING A WORKSTATION LICENSE AFTER APPLICATION STARTUP

The following instructions assume that you have received a workstation license by email and that you currently have a valid trial license. If you did not install a trial version or if the trial period has expired, follow the instructions in [Registering a Trial or Workstation License at Application Startup](#) instead.

To register a serial number after application startup

- 1 Click **Help > Launch License Manager**.
- 2 In the **License Manager** dialog, click **Serial > Add**.
- 3 Copy the serial number from the email and paste it into the **Add Serial Number** dialog.
- 4 Click **OK**.
- 5 Expand **Unregistered Serial Numbers**, right-click the serial number just added, and then click **Register**.

A registration dialog appears.

NOTE: The **Registration Code** box shows a machine-specific identifier required with other registration methods.

- 6 Ensure that **Register using Online Registration** is selected.
- 7 Provide Developer Network credentials in the **Login name** or **Email** and **Password** fields.
- 8 Click **Register**.

The activation file should download and install automatically. If this does not happen, click the **Trouble Connecting? Try Web Registration** link and follow the prompts. If you still have problems, see [Registering by Phone](#).

REGISTERING BY PHONE

If you have problems with either of the above procedures, you can register licenses by phone. You must provide the following information:

- Developer Network credentials
- The registration code displayed in the **Embarcadero License Registration** dialog that appears when you start an unlicensed application
- The product base license serial number
- The license serial numbers for any additional features you have purchased

For North America, Latin America, and Asia Pacific: call (415) 834-3131 option 2, and then follow the prompts. The hours are Monday to Friday, 6:00 A.M. to 6:00 P.M. Pacific time.

For Europe, Africa, and the Middle East: Call +44 (0)1628-684 494. The hours are Monday to Friday, 9 A.M. to 5:30 P.M. U.K. time.

After phoning in, you will receive an email containing an activation file to import into DB Change Manager.

To import an activation file

- 1 Save the activation file from the email to the desktop or to a scratch directory such as `c:\temp`.
- 2 From within the application, click **Help > Launch License Manager**.
- 3 Click **License > Import**.
- 4 Navigate to the directory where you saved the activation file and then double-click the activation file.
- 5 Click the **Import** button to import the activation file.
- 6 Click **Finish**.

INSTALLING DB CHANGE MANAGER XE

This section includes:

- [Technical Requirements](#)
- [Installing DB Change Manager XE For ToolBox Users](#)
- [Installing ToolCloud and DB Change Manager XE For Administrators](#)

TECHNICAL REQUIREMENTS

Before installing DB Change Manager XE, verify that your environment meets the requirements listed at [Technical Requirements](#). In addition, if you will be installing the ToolCloud on the same machine, verify the requirements listed at [ToolCloud Requirements for XE](#).

TOOLCLOUD REQUIREMENTS FOR XE

The ToolCloud has these minimum requirements:

- Intel Pentium III 1.2 GHz processor or higher
- 1 GB of RAM
- 100 MB of hard disk space for the ToolCloud
- At least 8 GB is recommended for the repository of initial and future product downloads
- High resolution monitor (1024 x 768), 16-bit display or greater
- Microsoft Windows XP Professional (x86-32, Win32), Microsoft Windows Server 2003, or Microsoft Windows Vista
- Internet Explorer 7 or later, or Mozilla Firefox
- Java Runtime Environment, version 1.5 (provided by the installer if you do not already have it installed)
- The ToolCloud requires ports 8005 and 9001 for Tomcat and other internal processes

INSTALLING DB CHANGE MANAGER XE FOR TOOLBOX USERS

If you are a DB Change Manager user and your System Administrator is already providing you with Embarcadero ToolBox, then DB Change Manager XE will become available in your ToolBox. Consult your System Administrator and *ToolBox User Guide* for details.

INSTALLING TOOLCLOUD AND DB CHANGE MANAGER XE FOR ADMINISTRATORS

This section tells you how to install Embarcadero ToolCloud, including the Embarcadero License Center (ELC), and get them up and running for use with DB Change Manager XE and other XE products.

If you are already using the ToolCloud, go to [Step 4: Setting Up Licenses in the ToolCloud](#).

NOTE: For complete information on using the ToolCloud, see the *ToolCloud Administration Guide*, *Embarcadero License Center Administration Guide*, and *ToolBox User Guide*, available from the **Start** menu after you install the applications. For wiki FAQs, see http://docwiki.embarcadero.com/AllAccess/en/Main_Page.

Steps for installing the ToolCloud include:

- [Step 1: Obtaining the ToolCloud Installer](#)
- [Step 2: Installing the ToolCloud and ELC](#)
- [Step 3: Logging in to the ToolCloud Administration Web Console](#)
- [Step 4: Setting Up Licenses in the ToolCloud](#)
- [Step 5: Named or Concurrent Licenses?](#)
- [Step 6: Setting Up Named Network Licenses in ToolCloud](#)
- [Step 7: Setting Up Named Network Users in the ELC](#)
- [Step 8: Downloading XE Applications to the Product Repository](#)
- [Step 9: Distributing the ToolBox to Product Users](#)
- [Step 10: Configuring Product Catalog Updates](#)
- [Step 11: Change the ToolCloud Administrator Password](#)

STEP 1: OBTAINING THE TOOLCLOUD INSTALLER

In most situations, you will receive an email containing instructions, including how to download the installer.

STEP 2: INSTALLING THE TOOLCLOUD AND ELC

- 1 Quit all programs.
- 2 Launch the ToolCloud installer and click **Next**.
- 3 Read the terms of the license agreement and if you agree select **I Agree** and click **Next**.

- 4 If you do not have Embarcadero License Center (ELC) installed on your machine click **Next**. Otherwise, clear the box and click **Next**.
- 5 The ELC installer opens. Click **Next**.
 - a Select **I accept the terms of the License Agreement** and click **Next**.
 - b Accept the default installation folder and click **Next**.
 - c Accept the default **Typical** installation and click **Next**.
 - d Install the Java VM specifically for ELC. Note: The host name of the Java VM is the name used when creating `.slip` license files for Embarcadero products.
 - e Accept the default **Program Group** for the icons and click **Next**.
 - f Review the **Summary** and click **Install**.
 - g When the installer prompts for configuration, click **Next**.
 - h Accept the check box to enable logging in ELC and click **Next**.
 - i Select the check box to run the ELC as a Windows service and click **Next**.
 - j The installer displays the **Server Host Name** and **Server IP Address**, which are later used by the license hosting site to create configuration files to manage licenses. **Important:** *Write down this information for later use* and click **Next**.
 - k Select the check box to start the ELC and click **Next**.
 - l You want to configure the Reporting Engine, so click **Next**.
 - m The final ELC installation screen displays the directory where the application was installed. Note this for future reference. Click **Done**. The ToolCloud installer returns.
- 6 Accept the default installation directory and click **Next**.
- 7 Provide a new valid listening port for network communication. Write down the port number for later use.

NOTE: Do not use ports 8005 or 9001; use other port numbers. The ToolCloud uses ports 8005 and 9001 for Tomcat and other internal processes.
- 8 The ToolCloud distributes products through a shared repository created during installation. The Installer grants read-only access rights to everyone in order to provide a shared network directory from which products can be distributed. Normally you should accept the default and click **Next**. If there are specific restrictions for creating share directories, you can choose an existing shared directory.
- 9 The installer is ready to install. Click **Next**.
- 10 The installer prompts you to enable automatic updates. **Important:** *Do not enable updates at this time*. You can configure this option later. Click **Next**.
- 11 Click **Next** to install the ToolCloud. Click **Finish** to complete.

STEP 3: LOGGING IN TO THE TOOLCLOUD ADMINISTRATION WEB CONSOLE

- 1 From the machine onto which you installed the ToolCloud, open a browser and go to the URL:

`http://localhost/aaserver`

If you gave it a port number other than 80 during installation, use:

`http://localhost:<port_number>/aaserver`

- 2 At the top of the ToolCloud **HOME** page, click **ADMIN**.
- 3 Enter your login credentials. By default, the initial login is "admin" and the password is "admin".
- 4 Click **Login**. The **ADMIN** page opens.

STEP 4: SETTING UP LICENSES IN THE TOOLCLOUD

- 1 In the **LICENSES** menu of the **ADMIN** page, click **Retrieve Licenses**.

Retrieve License

* Login Name

* Password

Certificate Number(s)

Leaving this field empty will retrieve all network licenses assigned to your account and associate them with this machine. If you have been assigned multiple license certificates and would like to enable only a subset on this server, then you may enter one or more comma-separated Certificate numbers, to retrieve just those licenses.

ELC Host Address

In case the server Host Name cannot be resolved to an IP address on your company network, enter either a fully qualified address (e.g. hostname.hostdomain.com) or an IP address (e.g. 123.123.12.21). This address will be used by clients to send licensing requests to the server.

- 2 Enter your login ID and password, as supplied to you by Embarcadero.
- 3 Enter the license certificate number, as supplied to you by Embarcadero.
- 4 Enter the ELC host address name or IP number, as you previously noted.

5 Click **Retrieve**.

The license or licenses will be registered with the ToolCloud and the ELC.



STEP 5: NAMED OR CONCURRENT LICENSES?

If you have named network licenses, proceed to Steps 6 and 7. You must set up users in both the ToolCloud and the ELC.

If you have concurrent network licenses, you do not need to set up specific users. When a user connects to the ToolCloud from the ToolBox, the ToolCloud will provide access to its concurrent licenses. You can skip to Step 8.

STEP 6: SETTING UP NAMED NETWORK LICENSES IN TOOLCLOUD

For named network licenses, you add a user or users to the ToolCloud.

- 1 On the **ADMIN** page, click **Import Users**.
- 2 Select **Create user**.

- 3 Enter a network domain and user name.
- 4 If you are using All-Access licensing, select an All-Access level to match the type of license you want to provide to the user. If you select the default, **None**, then the default access level specified in the **Current Licenses** page will apply.
- 5 Click **Create User**. The ToolCloud displays the user you have created.

STEP 7: SETTING UP NAMED NETWORK USERS IN THE ELC

For named network licenses, you need to add the exact same user or users to the ELC as you added to the ToolCloud in Step 6.

- 1 On the **ADMIN** page, click **Embarcadero License Center**.
- 2 Enter your login credentials. By default, the initial login is "admin" and the password is "admin".
- 3 Select **Named Users**.
- 4 Click **Add entry**.

The screenshot shows the 'Named Users' interface with a modal window for adding a new entry. The modal contains the following fields and values:

User name:	sqlninja
Host name:	ANY
Product title:	DBArtisan XE Professional
Product id:	14002
Sku id:	64
Version:	0
Offline usage:	1 day

Buttons: Add, Cancel

Background interface buttons: Add entry, Save to file, Undo changes, Import from LDAP

- 5 Enter a user name that matches one in Step 5.
- 6 Click **Add**.
- 7 Click **Save to file**.

STEP 8: DOWNLOADING XE APPLICATIONS TO THE PRODUCT REPOSITORY

In the ToolCloud, the **ADMIN** page lists products along with their status.

- 1 Click the name of the product you want. The **Product** page opens.
- 2 Click **Cache Product version** or **Cache all versions**.

STEP 9: DISTRIBUTING THE TOOLBOX TO PRODUCT USERS

Product users access software from the ToolCloud using the ToolBox. Have them follow these instructions, and substitute the correct values for the ToolCloud host name and port:

- 1 Connect to the ToolCloud at:

```
http://<serverhostname>:<portnumber>/aaserver
```
- 2 The ToolCloud **HOME** page lists the ToolBox. Click **Download**.
- 3 Save the ToolBox InstantOn to disk; the location depends on your browser setting.
- 4 After the copy completes, click **Yes** to launch the ToolBox. Subsequent launches will originate from the local machine.

Products that are not available are grayed out in the ToolBox interface.

Click the wrench icon to configure the InstantOn launch and installation options.

STEP 10: CONFIGURING PRODUCT CATALOG UPDATES

Set the ToolCloud behavior for obtaining product updates from Embarcadero.

Product catalog updates

Embarcadero regularly releases new versions of All-Access subscription products. Please choose how to update them.

- Automatic (recommended)**
- Notify me but don't automatically download updates
- Turn off Automatic updates

Do this at

- 1 In the **PRODUCTS** menu of the ToolCloud **ADMIN** page, click **Update Product Catalog**.
- 2 Select the option you want for getting updates.
- 3 If you select **Automatic** or **Notify...**, specify the frequency and time for notifications.
- 4 Click **Save**. If you selected **Automatic** or **Notify...**, the **NOTIFICATIONS** button will display the number of new messages in red text. Click **NOTIFICATIONS** to see the messages.

STEP 11: CHANGE THE TOOLCLOUD ADMINISTRATOR PASSWORD

Most commonly, you will have internal policies about software passwords. Using your company guidelines, change the Administrator password.

- 1 At the top of the ToolCloud **HOME** page, click **CHANGE PASSWORD**.
- 2 Enter the new password.
- 3 Click **Save**.

NOTE: Do not forget the Administrator password, as the system cannot recover it for you. Write it down and store it in a secure location.

DB CHANGE MANAGER QUICK START TUTORIALS

This document guides you through the key features of DB Change Manager using these step-by-step tutorials:

- [Tutorial 1: Comparing Data](#)
- [Tutorial 2: Synchronizing Data](#)
- [Tutorial 3: Comparing Configurations](#)
- [Tutorial 4: Defining a Configuration Standard](#)
- [Tutorial 5: Comparing and Synchronizing Schemas](#)
- [Tutorial 6: Defining a Schema Archive](#)
- [Tutorial 7: Masking Data](#)
- [Tutorial 8: Defining and Running Automated Scripts](#)

Before you begin, identify two data sources that you can use in the tutorials. These data sources should not be live or mission-critical, and they should be similar in schema and data.

TUTORIAL 1: COMPARING DATA

Data comparison jobs automate the process of comparing and correcting data between data sources at the database, table, and row level. You select a source and a target data source from **Data Source Explorer**, map databases and tables between the two selections, and then run the comparison job.

Change Manage compares the information and returns a results screen with details including:

- An overall percentage of the data that is the same between the source and target
- Discrepancies between the two databases, such as data values that exist on only one

Once a data comparison job has run, you can then correct any synchronization issues by running an automatically-generated SQL script that will add missing rows and update out-of-sync values. You can modify the SQL script prior to running it, and store it for future use.

To start Change Manager

- From the **Start** menu, click **Programs > Embarcadero Change Manager > Change Manager**.

When DB Change Manager first starts, it prompts you to discover data sources. Click **No** for now and you will do that later in this tutorial.

ADDING DATA SOURCES

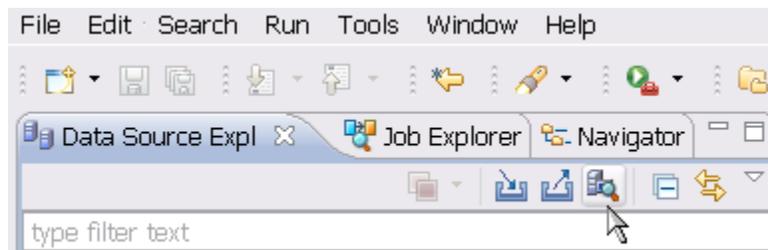
In order to define and run jobs, you first register data sources by providing connection information and other details to DB Change Manager. Once a data source has been registered, it remains stored in a catalog and does not need to be reregistered each time you open DB Change Manager. You can use a single registered data source in multiple jobs.

Data Source Explorer shows the registered data sources and their associated jobs, if any.

Before registering a data source, gather the information about the repository location and connectivity permissions.

To add a data source

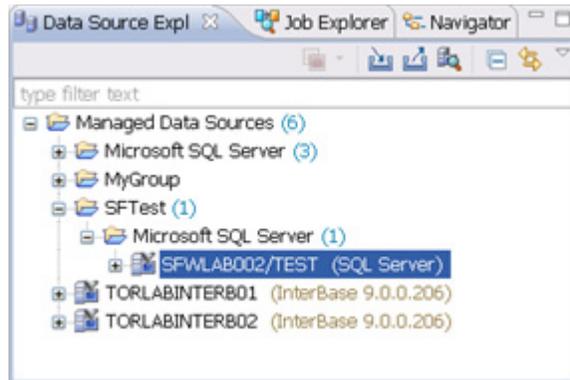
- 1 Click the **Discover Data Sources** icon at the top of the **Data Source Explorer** view.



- 2 In the **Discover Data Sources** wizard, select the locations to search for data sources and click **Next**.

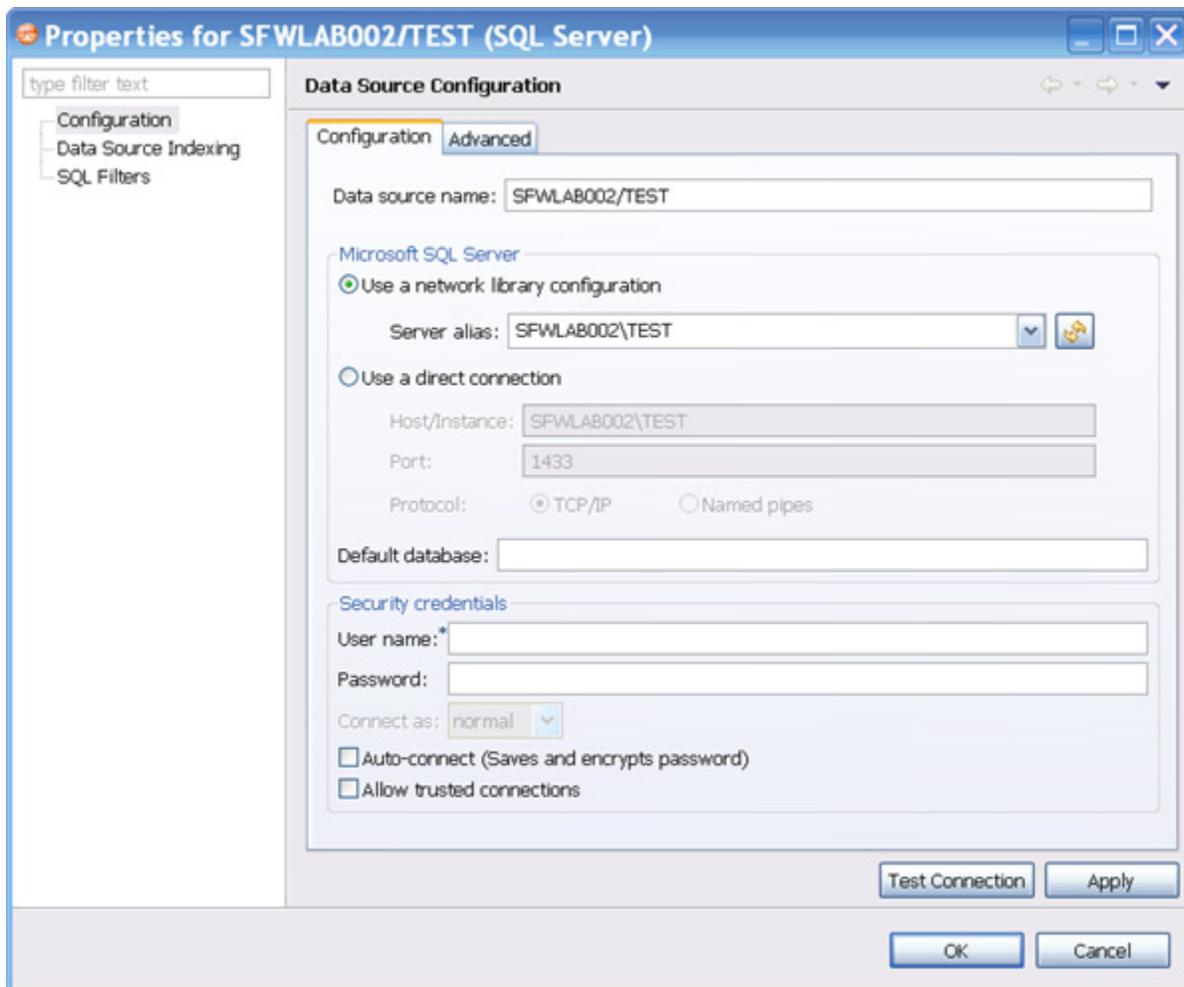


- 3 Select the data sources you want to add to the DB Change Manager environment and click **Finish**.



The new data source or sources appear in the **Data Source Explorer**.

Right-click on an entry to set its connection properties.

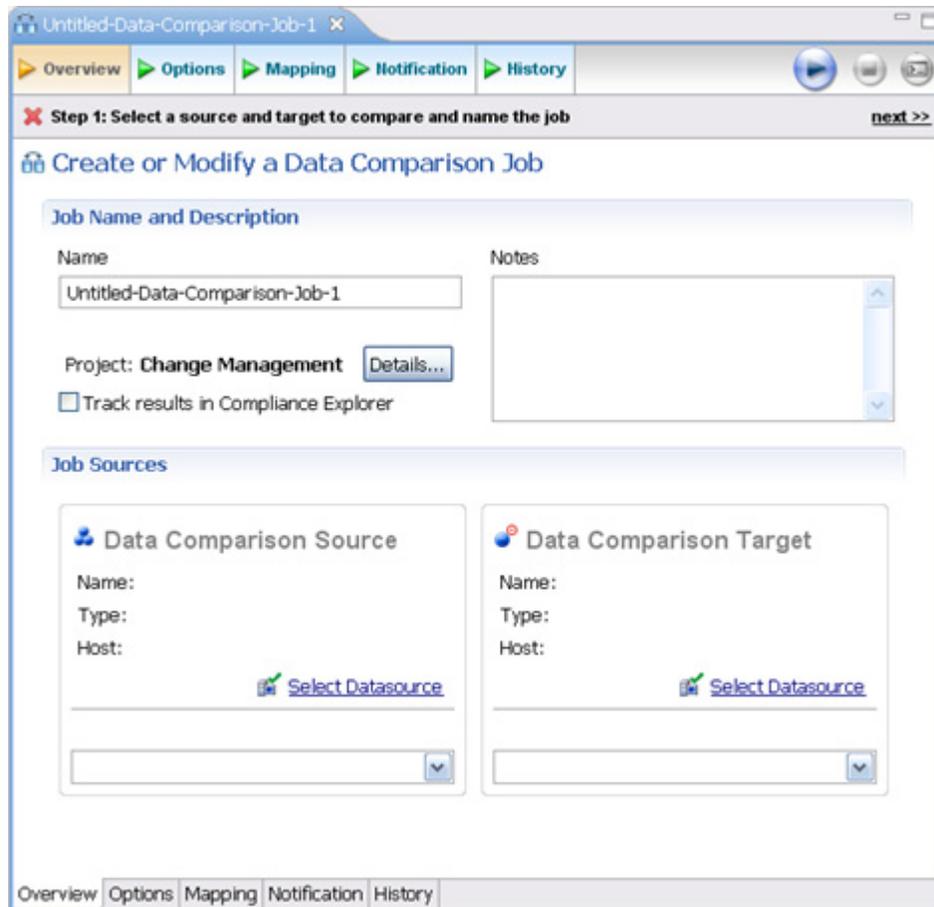


CREATING A DATA COMPARISON JOB

Prior to performing the following steps, make sure you have at least two data sources registered in DB Change Manager. Ideally these two data sources are similar in schema and content, so that the comparison is meaningful to you.

To create a data comparison job in the Overview tab

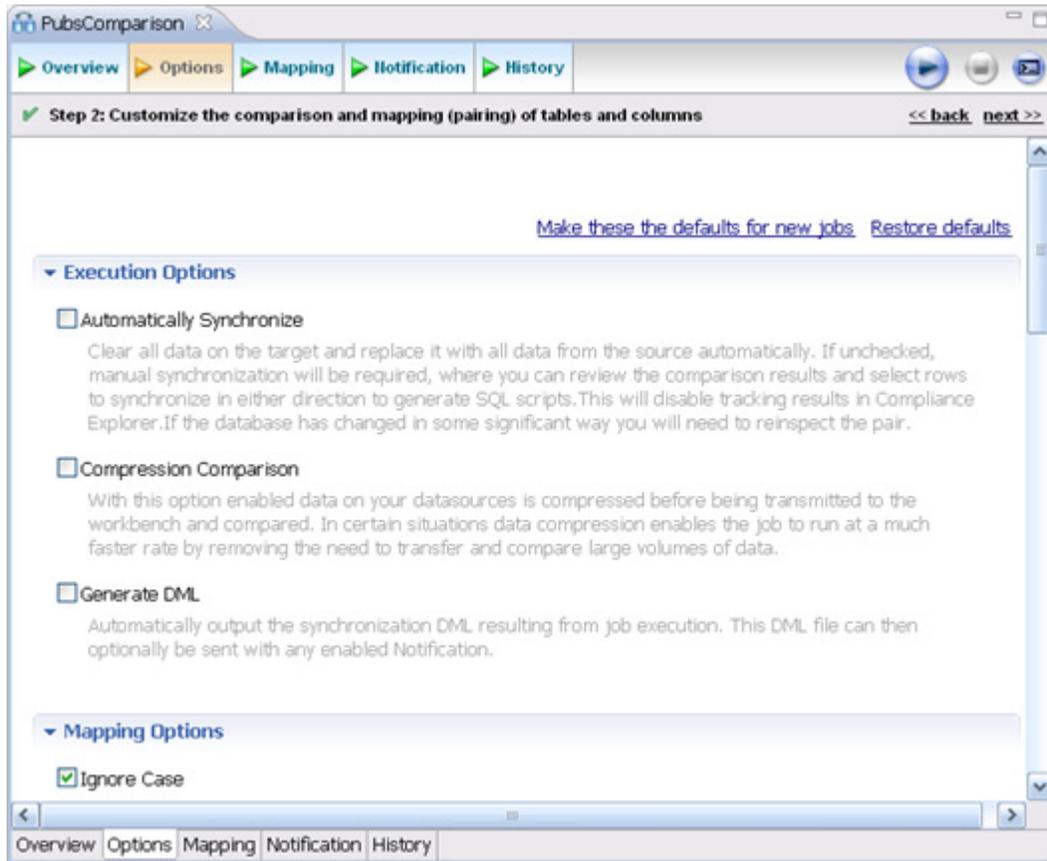
- 1 Click **File > New > Data Comparison Job**.



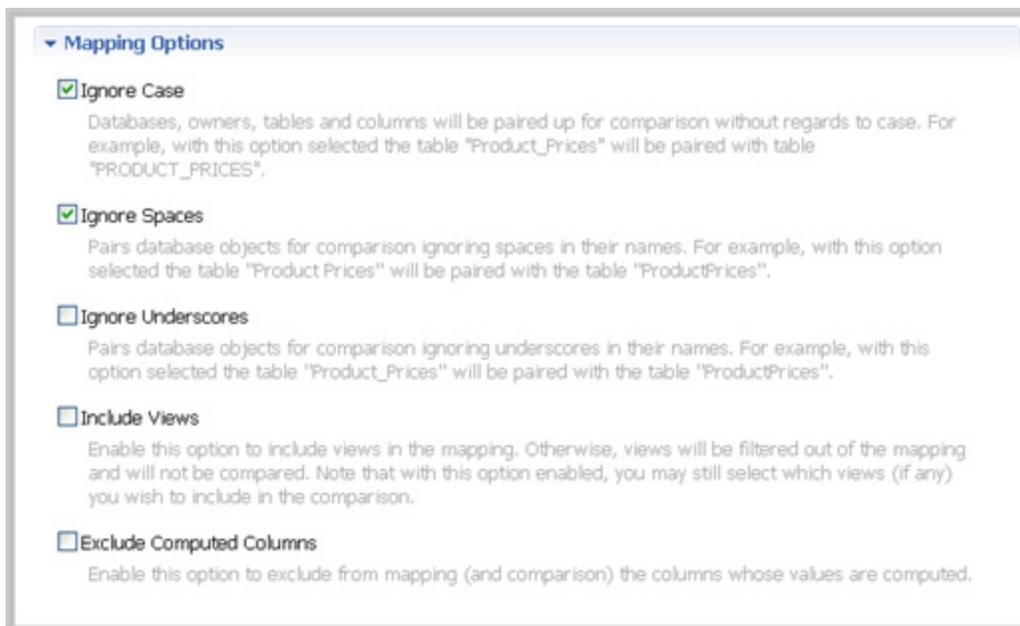
- 2 In the **Overview** tab of the **Data Comparison Job** editor, type the name of the job in the **Name** field.
- 3 Click and drag a data source from **Data Source Explorer** to the **Data Comparison Source** box.
By default, all databases in the data source are selected. If you prefer, use the pulldown to specify a single database.
- 4 Click and drag a data source from **Data Source Explorer** to the **Data Comparison Target** box.
- 5 Click **File > Save** or type **Ctrl-S** to save the job.

To customize the job in the Options tab

- 1 Click the **Options** tab.

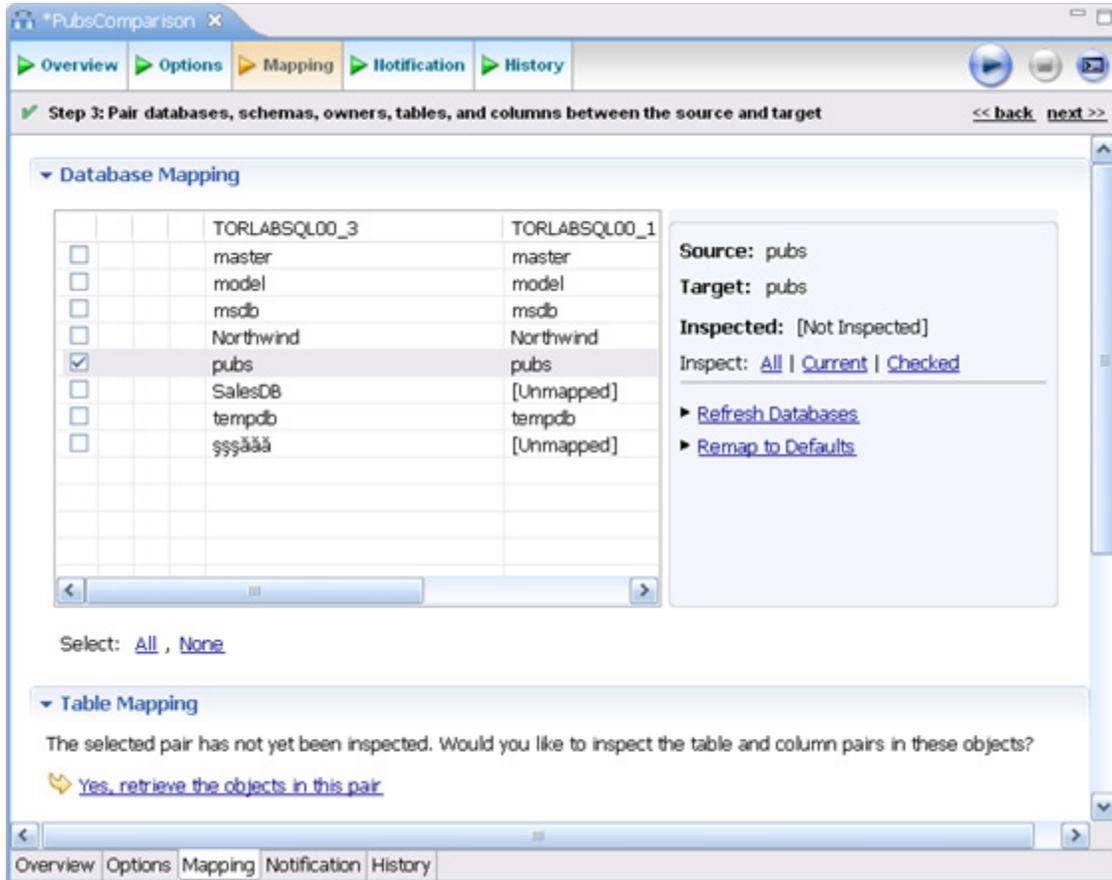


- 2 In the **Options** tab, review the various settings available to you. In particular, select or de-select the check boxes in the **Mapping Options** section.



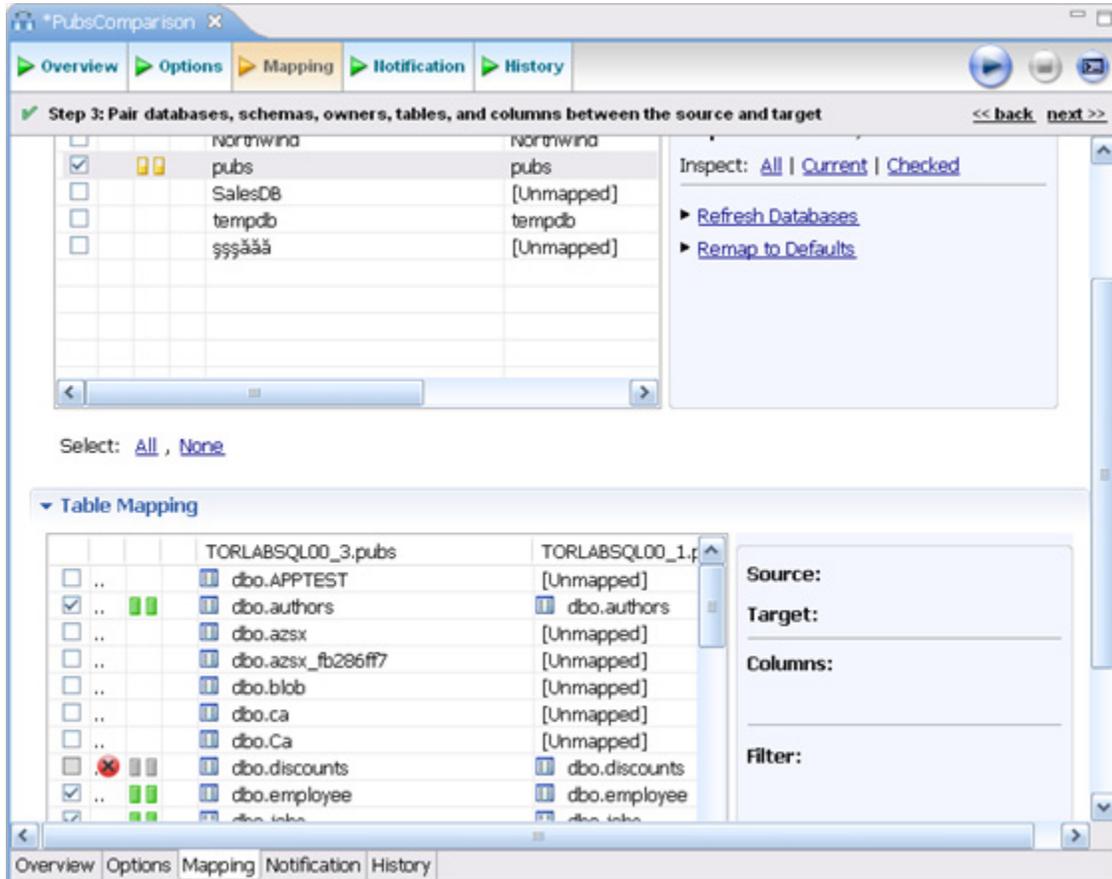
To refine comparisons in the Mapping tab

- 1 Click the **Mapping** tab.
- 2 Select the database you want to compare; usually they would have the same or a similar name.

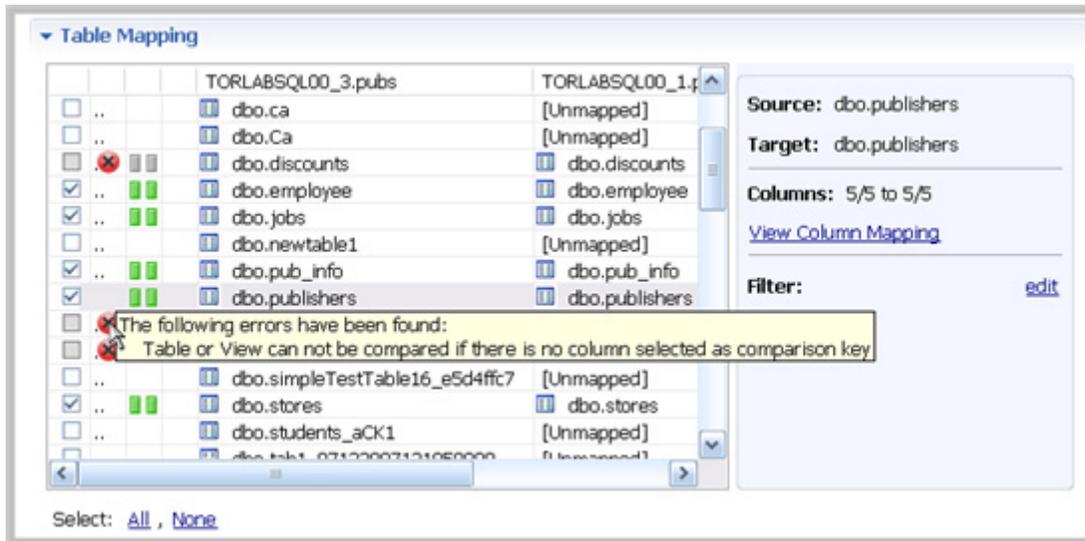


TIP: Use the **All** and **None** commands at the bottom of the pane to select all or none of the databases.

- 3 By default DB Change Manager does not show the table mappings. To see them, select the **Inspect: Checked** option. The progress bar displays in the lower right corner. Then the **Table Mapping** pane shows how and whether the tables map to each other in the two databases.



The **Data Comparison Job** editor automatically maps and selects databases and tables between the source and target when it detects correspondences. It indicates when there is no mapping and displays information when it cannot make a match.

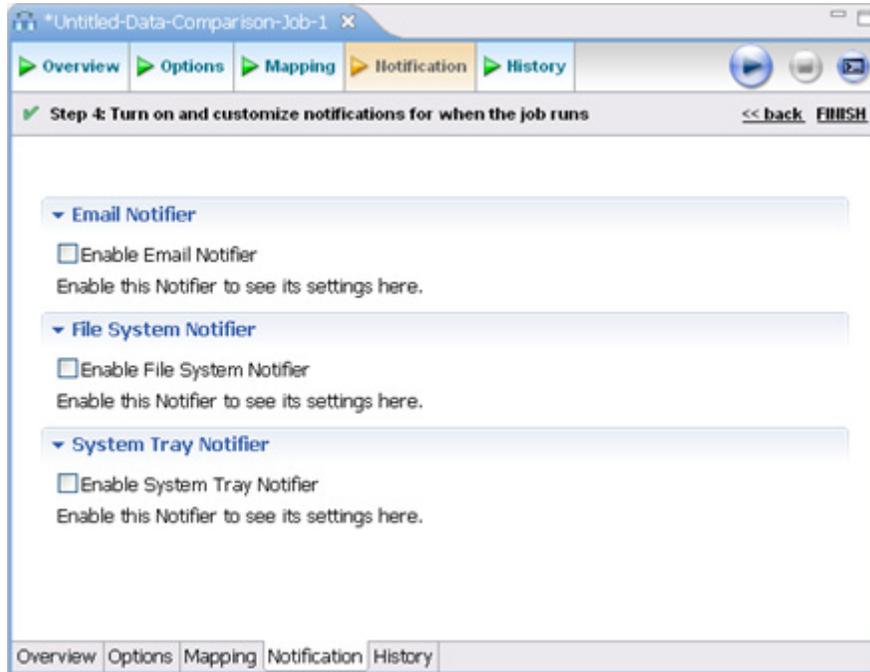


- Select or de-select the check box beside each mapping, as needed. You can adjust incomplete mappings before running the job. Click undefined items in the **Target data source** column and use the drop down menu to map them.

TIP: Click **Filter: edit** while a pair is selected to use the **Columns, Comparison Key, and Filter** dialog and further refine the mappings, such as inserting a WHERE clause.

To specify notifiers in the Notification tab

- 1 Click the **Notification** tab.



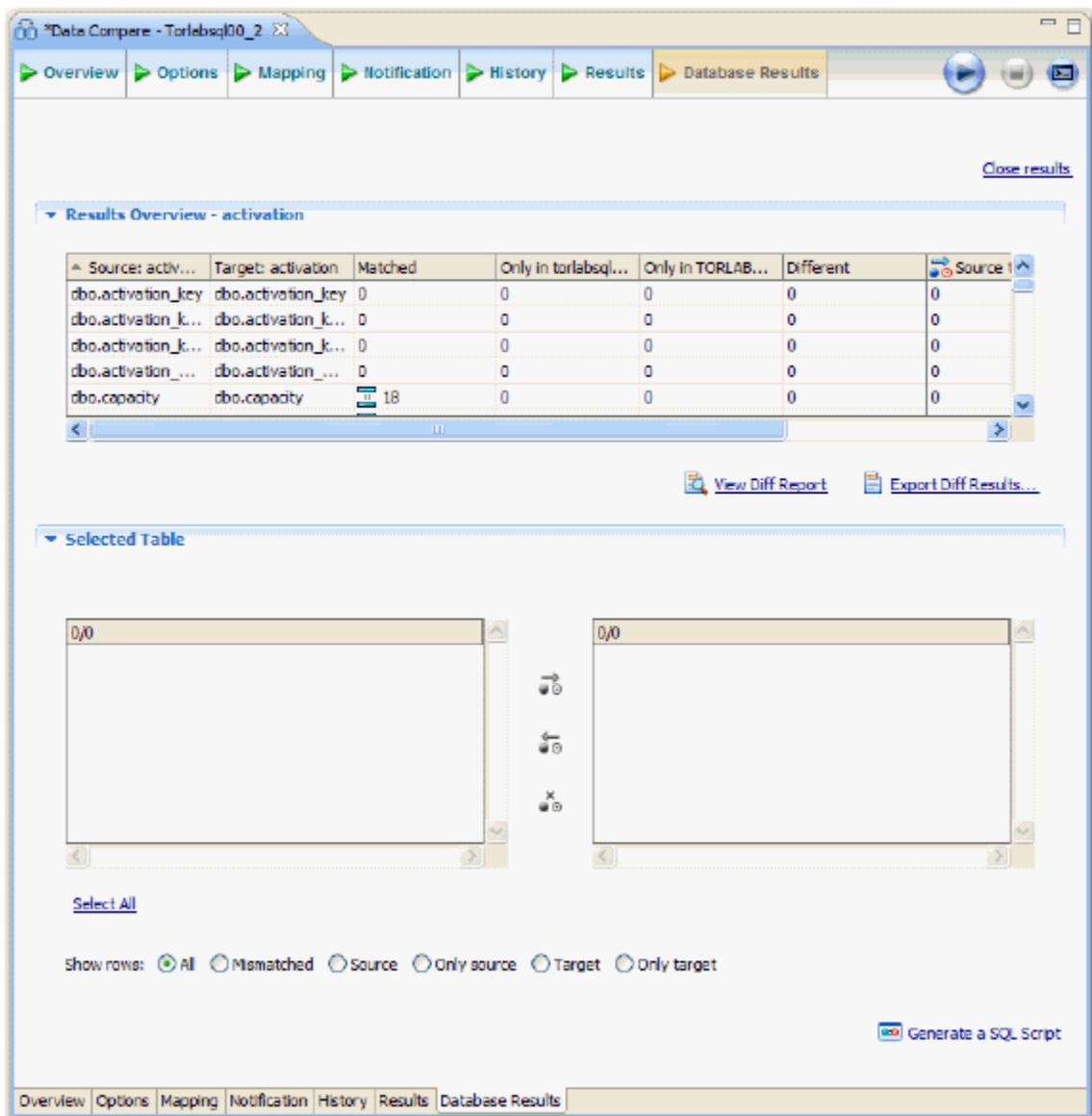
- 2 In the **Notification** tab, select where DB Change Manager will send notifications when this job is run.

To Run the Job and See the Results

- 1 In the upper right-hand corner, Click the **Run** icon.



- 2 In the **Results** tab, the job progress bar displays and the results appear. Review the job results.

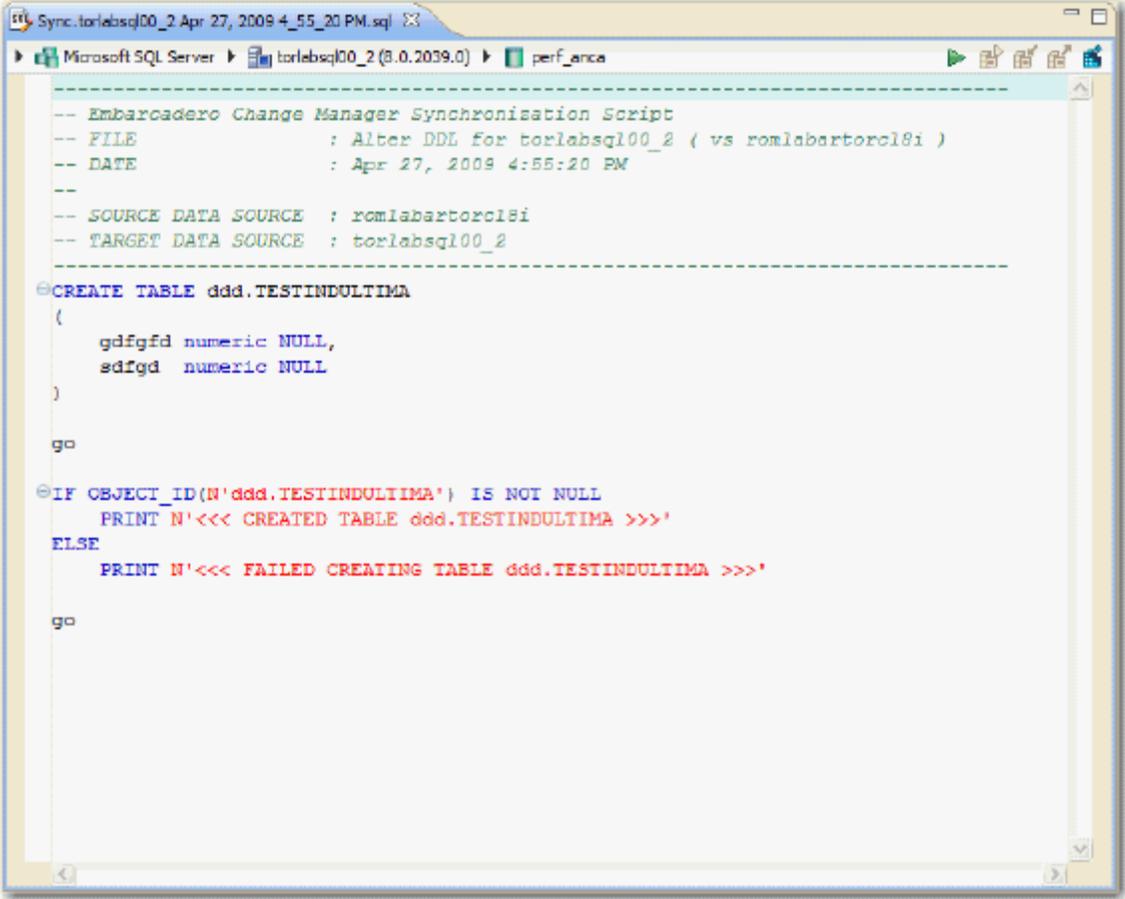


- Click the **View** command in the **Results** column on an individual pair.
- 3 In the **Database Results** tab, review the detailed results for the tables and rows of the selected databases.

TUTORIAL 2: SYNCHRONIZING DATA

To generate and run an SQL synchronization script

- 1 At the bottom of the **Database Results** tab, click one of the radio buttons, for example, **Mismatched**, to specify the type of resolution to perform.
- 2 At the lower right, click **Generate an SQL Script**.



```

Sync: torlabsql00_2 Apr 27, 2009 4_55_20 PM.sql
Microsoft SQL Server > torlabsql00_2 (8.0.2039.0) > perf_ance

-----
-- Embarcadero Change Manager Synchronisation Script
-- FILE           : Alter DDL for torlabsql00_2 ( vs romlabartorc18i )
-- DATE          : Apr 27, 2009 4:55:20 PM
--
-- SOURCE DATA SOURCE : romlabartorc18i
-- TARGET DATA SOURCE : torlabsql00_2
-----

CREATE TABLE ddd.TESTINDULTIMA
(
    gdfgfd numeric NULL,
    sdfgd  numeric NULL
)
go

IF OBJECT_ID(N'ddd.TESTINDULTIMA') IS NOT NULL
    PRINT N'<<< CREATED TABLE ddd.TESTINDULTIMA >>>'
ELSE
    PRINT N'<<< FAILED CREATING TABLE ddd.TESTINDULTIMA >>>'
go
  
```

- 3 In the **SQL Editor**, select the **Execute Script** icon to synchronize the data.

NOTE: Executing an SQL script may change the data in your data sources. Be sure to review all potential changes, and read the script, before running the script.

- 4 If you want to create a report, select the **Results** tab and click **View Diff Report**.

HIGHLIGHTED FEATURE: THE COMPRESSION COMPARISON OPTION

Comparing large repositories with many databases, tables, and rows can be a time consuming and tedious process, especially when you require row-level accuracy.

The **Compression Comparison** option enables an algorithm that causes the data comparison to initially execute at a table level instead of the row level. Each table in a pair is assigned a value and if the values match the comparison process moves to the next pair of tables. If the values do not match, the process performs a more detailed comparison at the row level. This allows for a faster comparison process in general, without losing any accuracy during the process.



To enable this feature, navigate to the **Options** tab **Execution Options** section and select **Compression Comparison**.

TUTORIAL 3: COMPARING CONFIGURATIONS

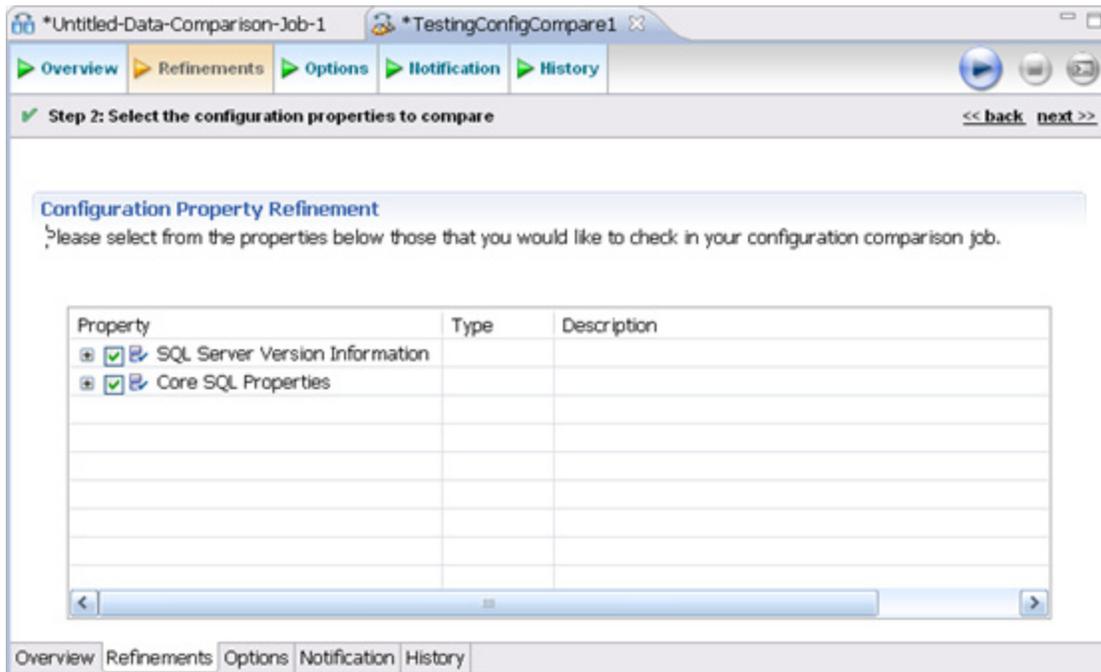
Configuration comparison jobs examine the configuration settings of two specified data sources and describe the differences between them. You select a pair of data sources from **Data Source Explorer**, refine the property comparisons, run the job, and view the results. Based on the results you can correct any issues between the pair.

You can also compare a data source against a configuration archive or standard. Archives are a snapshot of the configuration settings of a data source at a point in time. Standards are customized sets of properties with threshold operators that help you create optimal configurations, against which you can compare existing data source settings.

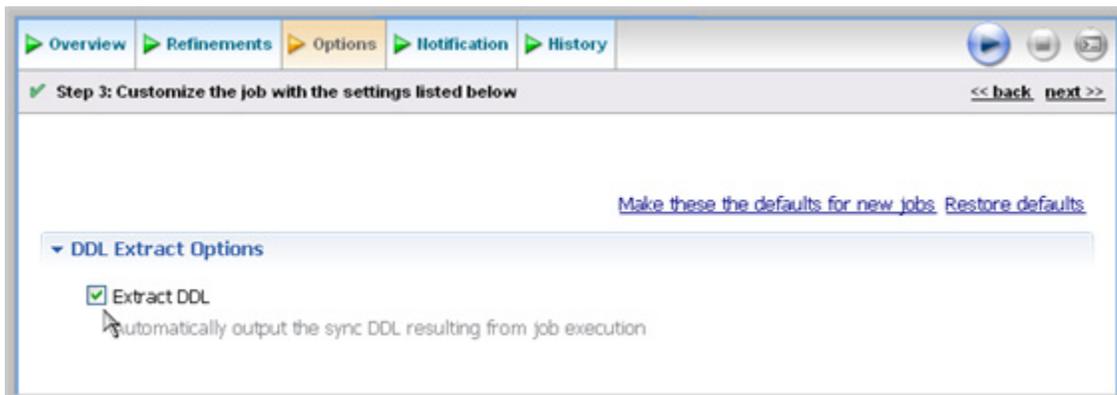
To define and run a configuration comparison job

- 1 Select **File > New > Configuration Comparison Job**.
- 2 In the **Configuration Comparison Job** editor, type the name of the job in the **Name** field.
- 3 Drag and drop a data source from **Data Source Explorer** to the **Configuration Comparison Source** box.
- 4 Drag and drop a data source from **Data Source Explorer** to the **Configuration Comparison Target** box.

- 5 Click the **Refinements** tab.

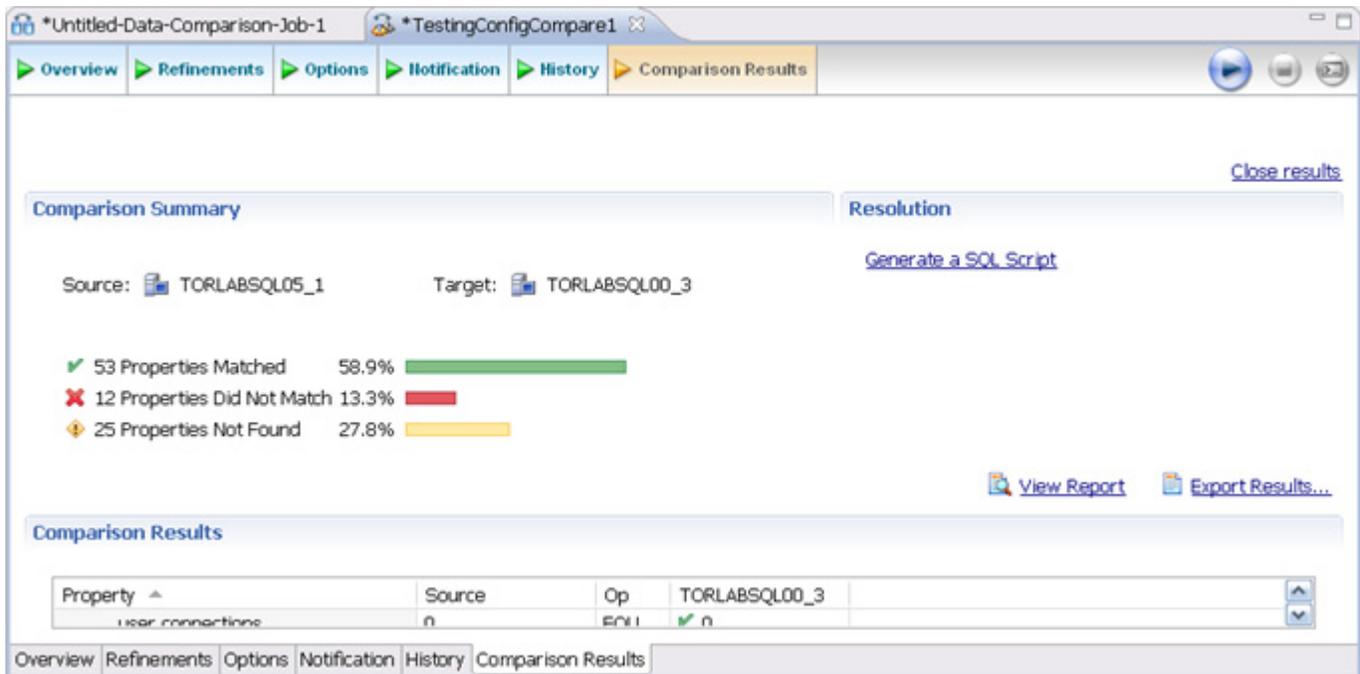


- 6 Keep the defaults in the **Refinements** tab. Click the **Options** tab.
7 In the **Options** tab, select the **Extract DDL** check box.



- 8 In the upper right, click the **Run** icon.

- 9 In the **Comparison Results** tab, the job progress bar displays and the results appear. Review the job results.



In the **Comparison Results** tab, you can generate an SQL script to synchronize the configurations just as in [Tutorial 2: Synchronizing Data](#).

HIGHLIGHTED FEATURE: COMPARING MULTIPLE TARGETS

You can compare multiple target sources against a single source. In the **Configuration Comparison Target** box of the **Overview** tab, click the **Add More Targets** option.

The box changes to a column list view, where you can drag and drop additional sources from **Data Source Explorer** to the **Configuration Comparison Target** box.

TUTORIAL 4: DEFINING A CONFIGURATION STANDARD

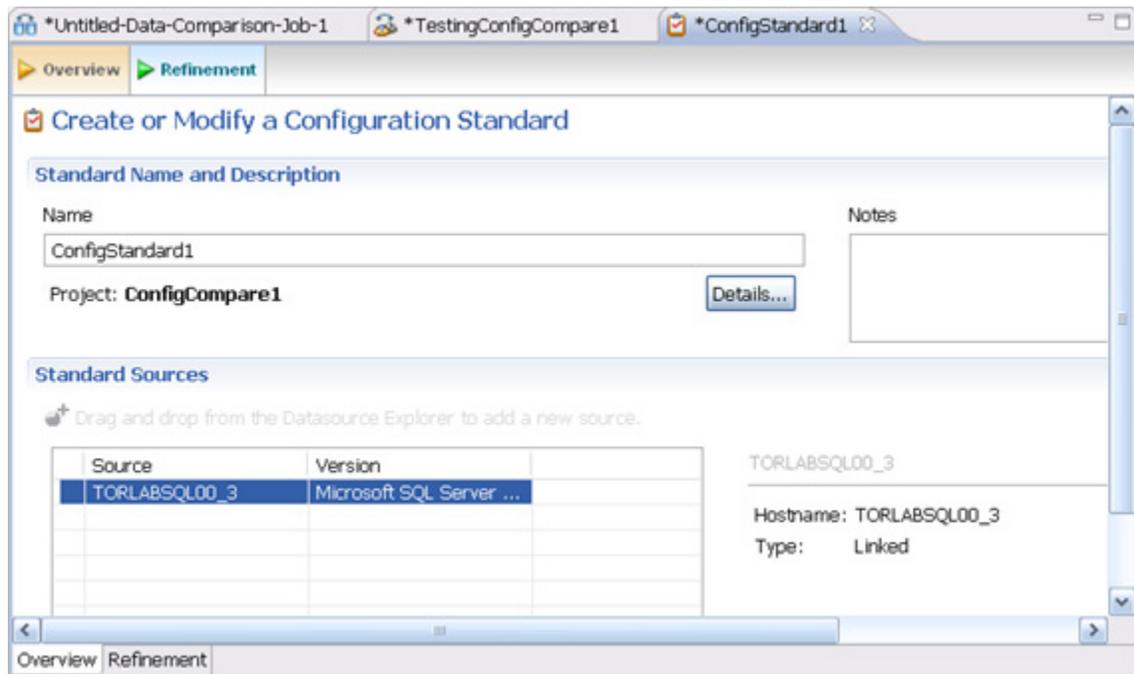
A configuration standard is composed of properties and values that you define:

- Configuration properties (static or dynamically updated based on the source values)
- Values that include threshold comparison operators (greater than, less than, falls within or is a member of a specified set, etc.)

You can use a standard in configuration comparison jobs against data sources and archives in order to determine if the target conforms to the standard. A standard can only be used as a source in comparison jobs.

To define a configuration standard

- 1 Select **File > New > Configuration Standard**.
- 2 If prompted, select a project to use.
- 3 In the **Standard Overview** tab, enter the name of the standard in the **Name** field.



- 4 Drag and drop a data source from **Data Source Explorer** to the **Standard Sources** table.
- 5 In the **Standard Refinement** tab, define each listed property as **Linked** or **Static** by clicking the appropriate row value in the **Type** column and selecting from the drop down menu.
- 6 Define each property operator by clicking the appropriate row value in the **Operator** column and selecting from the drop down menu.
- 7 Select **File > Save** to save the standard. It appears in the **Project Explorer**.
- 8 Drag and drop the new standard from **Project Explorer** to the **Comparison Source** box in the **Configuration Comparison Job** editor. You can now run a job using the standard as you would a registered data source.

TUTORIAL 5: COMPARING AND SYNCHRONIZING SCHEMAS

Once you create a baseline archive of your schema, you can compare it against the other schemas, even in live environments. Also, you can synchronize the schema of a data source with the archive using the **Schema Comparison Job** editor.

To define a schema comparison job

- 1 Select **File > New > Schema Comparison Job**.
- 2 In the **Schema Comparison Job** editor, type the name of the job in the **Name** field.
- 3 Drag and drop a data source from **Data Source Explorer** to the **Configuration Comparison Source** box.
- 4 Drag and drop a data source from **Data Source Explorer** to the **Configuration Comparison Target** box.
- 5 Click the **Mapping** tab.
- 6 In the **Mapping** tab, review the object mappings that are already set up for you. Change the target mappings as needed.
- 7 In the **Options** tab, select or de-select the configuration properties in the table listing.
- 8 In the upper right, click the **Run** icon.
- 9 In the **Results** tab, the job progress bar displays and the results appear. Review the job results.

To generate and run a schema synchronization script

- 1 In the **Results** tab, click **Sync All** in the **Resolution** column of the **Comparison Results** table. DB Change Manager generates a synchronization script in the **SQL Editor**.
- 2 Modify the script as needed, and save it using the **File > Save** command.
- 3 In the **SQL Editor**, select the **Execute Script** icon to synchronize the data.

NOTE: Executing the SQL script will change the schema in your target data source. Be sure to review all potential changes and read the script, before running the script.

- 4 If you want to create a report, select the **Reports** tab and click **View Report**. The report opens in a separate window where additional report options are available.

TUTORIAL 6: DEFINING A SCHEMA ARCHIVE

A schema archive contains a snapshot of the schema of a registered data source. You compare schema archives against other data sources and archives to identify possible inconsistencies.

A schema archive is generated from a single data source at a specific point in time. Like a configuration archive, a schema archive has versioning functionality and can be periodically updated with the current values of the data source. Older versions are retained and can be recalled as needed.

You create a schema archive using the **Schema Archive Job** editor. It will be listed in the **Data Source Explorer**.

To define a configuration archive

- 1 Right-click on a data source in **Data Source Explorer** and select **Archive > Configuration Archive Job**.
- 2 In the **Archive Job** editor, enter the name of the archive in the **Name** field.
- 3 Drag and drop the data source to be archived from **Data Source Explorer** to the **Configuration Archive Source** box.
- 4 In the **Refinements** tab, select properties to include in the archive.
- 5 In the upper right-hand corner, click the **Run** icon.
- 6 In the **Unsaved Version** tab, the results appear. Review the job results.
- 7 Select **File > Save**. The **Unsaved Version** tab changes to Version 1, and Version 1 with a times tamp appears in the **Archive Versions** table on the **Overview** tab.

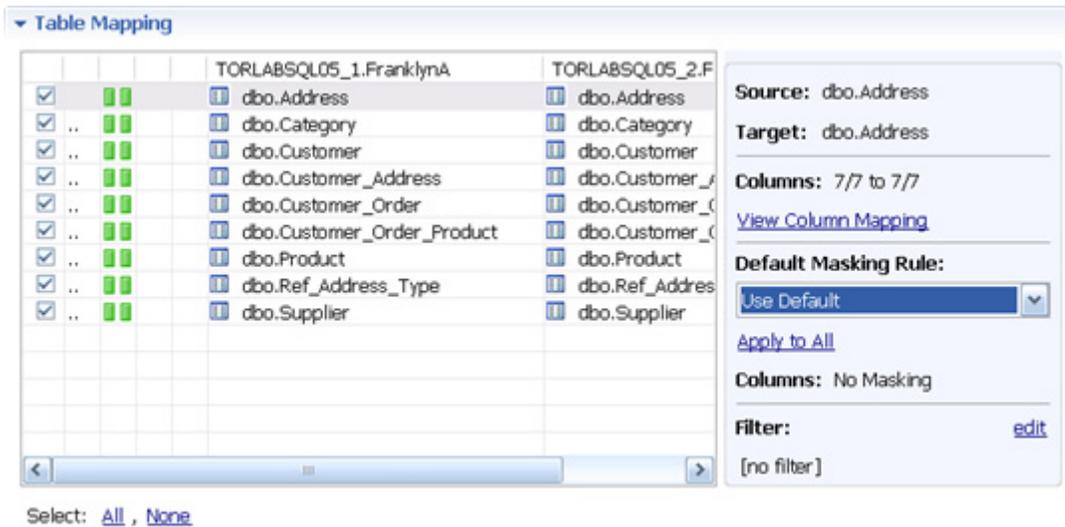
TIP: You can create more versions by clicking the **Run** icon again.

- 8 Drag and drop the new archive version from **Data Source Explorer** to the **Source** or **Target** boxes in the **Configuration Comparison Job** editor. You can now run a job using the archive just as you would use a data source.

TUTORIAL 7: MASKING DATA

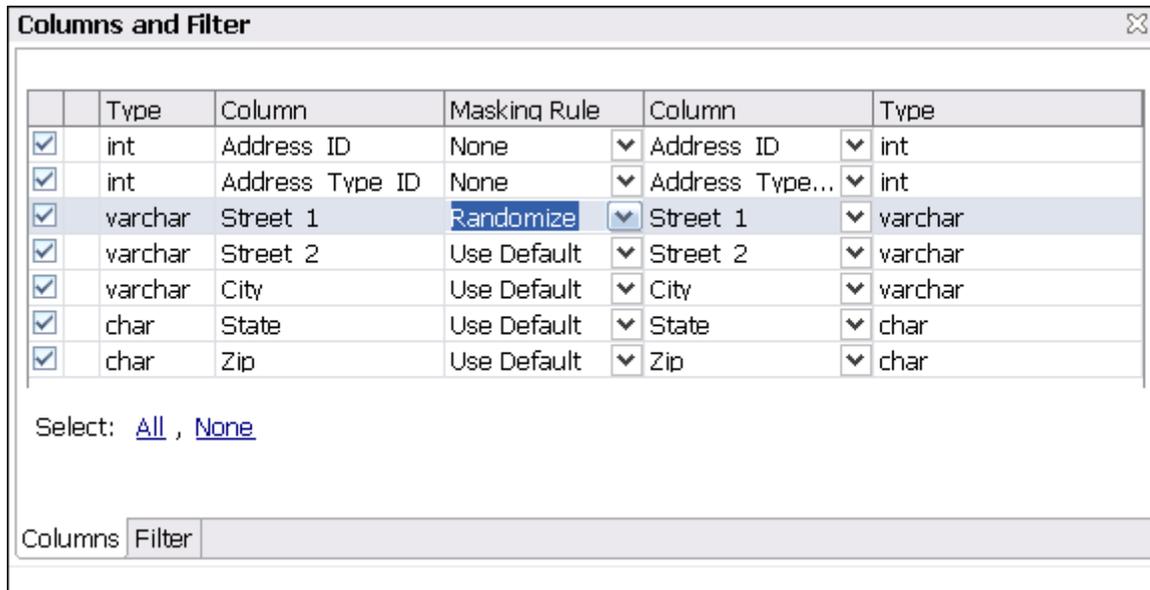
A data masking job is a type of comparison job. You set it up just as in [Tutorial 2: Synchronizing Data](#).

You specify masking rules in the **Mapping** tab.

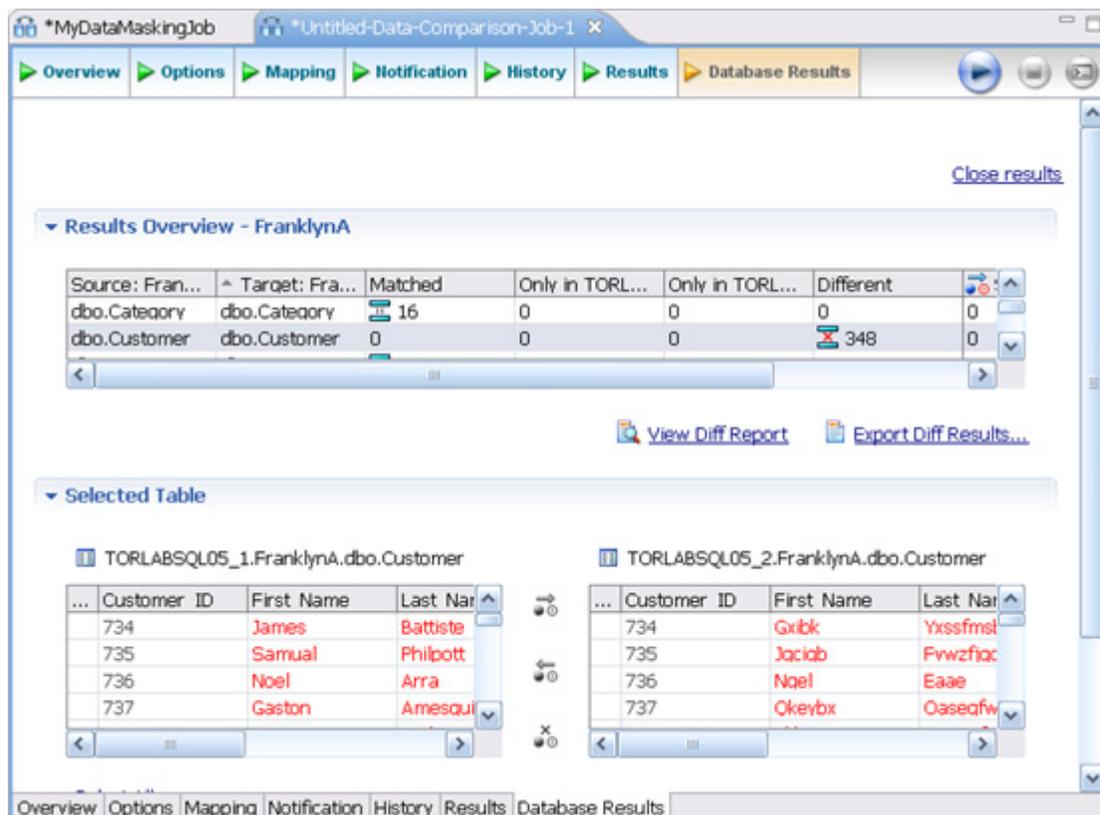


- 1 In the **Table Mapping** box, click **View Column Mapping**.
- 2 Click on the data **Masking Rule** option for the column and select from the pulldown menu one of the following:
 - **Use Default:** The default masking rule as set in the **Database Mapping** box.
 - **None:** No masking will be applied.
 - **Randomize:** Replaces characters with random other characters.
 - **Shuffle:** Reorders the values in different rows; for example, in a **First Name** column Bob, Ted, and Alice can change to Alice, Bob, and Ted.

Close the window.



- 3 Click **File > Save** to save the job.
- 4 Click the **Run Job** icon in the upper right-hand corner.



The **Database Results** tab shows the masked data.

TUTORIAL 8: DEFINING AND RUNNING AUTOMATED SCRIPTS

When you need to repeatedly run the same job, you can set up automated tasks that execute the jobs on a regular schedule. DB Change Manager helps create a command line executable for any job. You can run the command line executable on an ad hoc basis. You can also group the commands into a batch file and run them.

To define command line syntax and generate batch files

- 1 Open the job for which you want to define an execution script.
- 2 Select the **Command Line Syntax** icon in the lower-right hand corner of any tab.
- 3 In the **Script Generation Wizard**, add output report options.
- 4 Specify the **Directory** where the files will be generated.
- 5 Click **Next**.
- 6 Specify the **Location** where the batch file will be generated.
- 7 Specify the file format for the script.
- 8 Click **Finish**.
- 9 DB Change Manager generates the file and saves it to the location you specified.

If you want to add multiple jobs to the batch file, generate a batch file as normal, and then copy the script syntax to the clipboard for each job you want to add to the batch file. You can then add them to the existing batch file manually.

ADDITIONAL DOCUMENTATION

For additional instructions and reference information about DB Change Manager, see the documentation at: http://docs.embarcadero.com/products/change_manager/.