



# Navicat

## Data Modeler

Version 2.1 User Guide



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# Chapter 1 - Introduction

## About Navicat Data Modeler

**Navicat Data Modeler** is a powerful and easy-to-use GUI tool for creating and manipulating database models. It enables users to design database structures, reverse engineer, forward engineer, generate SQL files and print models to files, etc.

Navicat Data Modeler is available on three platforms - Microsoft Windows, macOS and Linux. Here are some highlights of Navicat Data Modeler:

- Create and manipulate conceptual/logical/physical models.
- Support various database systems: MySQL, MariaDB, Oracle, PostgreSQL and SQLite (including Amazon RDS and Amazon Redshift).
- Reverse engineer databases/schemas or tables/views to a model.
- Forward engineer a physical model to a SQL file or a database/schema.
- Create and edit table structures directly.
- Support Navicat Cloud.

For details, visit our website: <https://www.navicat.com>

### System Requirements

#### Windows

- Microsoft Windows Vista, Windows 7, Windows 8, Windows 8.1, Windows 10, Server 2008, Server 2012, Server 2016

#### macOS

- Mac OS X 10.10 Yosemite, Mac OS X 10.11 El Capitan, macOS 10.12 Sierra, macOS 10.13 High Sierra

#### Linux

- Ubuntu 12.04, Ubuntu 14.04, Ubuntu 16.04, Ubuntu 18.04, CentOS 6.7, CentOS 7, Fedora 22, Fedora 23, Fedora 26, Linux Mint 13, Linux Mint 17.3, openSUSE 13.2, openSUSE 42.1, Debian 9

### Supported Databases

- MySQL - 3.23, 4.0, 4.1, 5.0, 5.1, 5.5, 5.6
- MariaDB - 5.1, 5.2, 5.3, 5.5, 10.0, 10.1

- Oracle - 8i Release 1, 8i Release 2, 8i Release 3, 9i Release 1, 9i Release 2, 10g Release 1, 10g Release 2, 11g Release 1, 11g Release 2, 12c Release 1
- PostgreSQL - 7.3, 7.4, 8.0, 8.1, 8.2, 8.3, 8.4, 9.0, 9.1, 9.2, 9.3, 9.4, 9.5
- SQLite 3

## Installation

We strongly suggest that you shut down any opened applications. This will help ensure a smooth installation.

**Note:** For user who has been trying our unregistered version, just simply key in the **Registration Key** (16 digit) on the pop up Registration screen.

### Installation for Download Version

1. Download Navicat Data Modeler Linux version.
2. Open the **gzip** file.
3. Extract the file into anywhere you wish.
4. Run the **start\_modeler** file to start your Navicat Data Modeler. Please note that it would take a while for starting-up.
5. A Registration screen will then pop up, key in the **Registration Key** ((16 digit) and click **Activate** to online activate the key.

### Installation for CD Version

1. Load the Navicat Data Modeler CD Installation disk into the CD-ROM drive.
2. Open the **gzip** file.
3. Extract the file into anywhere you wish.
4. Run the **start\_modeler** file to start your Navicat Data Modeler. Please note that it would take a while for starting-up.
5. A Registration screen will then pop up, key in the **Registration Key** ((16 digit) and click **Activate** to online activate the key.

### Migrate Navicat Data Modeler to new computer

1. In Navicat Data Modeler, choose **Help -> Registration** from the main menu and click **Deactivate** to online deactivate the key.
2. Uninstall Navicat Data Modeler from the existing computer.

3. Re-install Navicat Data Modeler in the new computer.

## Upgrade Navicat Data Modeler

If you want to upgrade an installed copy of Navicat Data Modeler to the latest release, please choose **Help -> Check For Updates** to start the Updater. It will automatically check your installed version. If there is a new version, simply follow the steps in the Updater to upgrade your Navicat Data Modeler. It will replace your previous Navicat Data Modeler and your current settings will remain unchanged.

Or, you can submit your registered email address on the [Customer Center](#) to download the latest version installer.

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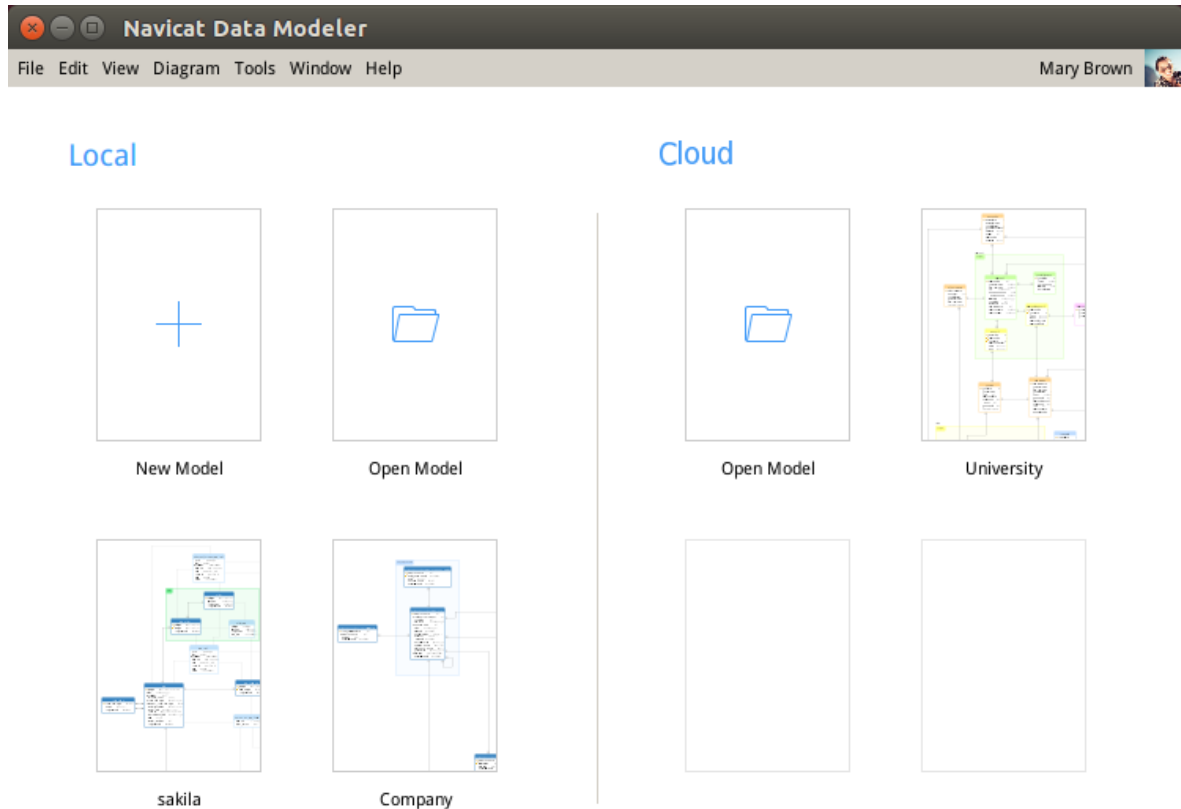
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# Chapter 2 – User Interface

## Welcome Window

When you start Navicat Data Modeler, a Welcome Window will pop up. In this window, you can choose to create a new model, open an existing model file, etc. After logged into [Navicat Cloud](#), the Welcome Window divided into two parts: **Local** and **Cloud**. You can access or save models in the local computer and Navicat Cloud.



### Create a new model

1. Click **New Model** in the Welcome Window.
2. Select the model type and other settings.


### Open an existing model

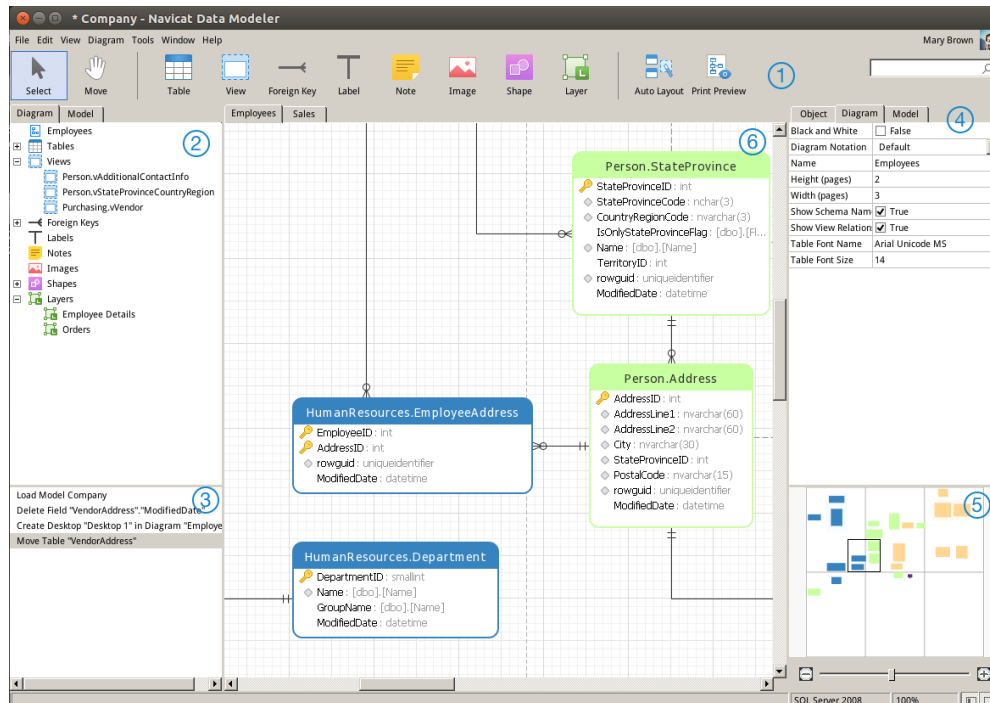
1. Click **Open Model** in the Welcome Window.
2. Choose a model file to open.

### Clear the history of the recent opened models

1. Choose **File -> Recent Models -> Clear History** from the main menu.

# Main Window

The Main Window consists of a toolbar, several panes and a diagram canvas for you to design your model. A model file can have more than one diagram. Each diagram is represented by a tab in the model. To create a new diagram, choose **File ->  New Diagram** from the main menu.



## 1 Toolbar

The **Toolbar** is located near the top of the Main Window. The buttons display in the toolbar depend on the model type (physical, logical and conceptual). You can use the toolbar to perform some basic tasks, such as adding tables, entities or views, applying Auto Layout feature, etc.

## 2 Explorer Pane

The Explorer pane has two tabs: **Model** and **Diagram**. Model tab holds all tables, views or entities in the model, including those used in each individual diagram. You can simply drag an object from the Model tab and drop to the active diagram canvas. Diagram tab holds all the objects (tables, views, layers, notes, images, relations, etc) added to the active diagram. If the Explorer pane is hidden, choose **View -> Show Explorer** from the main menu.

## 3 History Pane

The History pane shows all the actions that you have taken. Simply click an action to restore that state. If the History pane is hidden, choose **View -> Show Explorer** and **Show History** from the main menu.

## 4 Properties Pane

The Properties pane includes the **Model**, **Diagram** and **Object** tabs for setting default properties for your model. You can edit the properties settings of the model, the active diagram and the selected objects quickly. If the Properties pane is hidden, choose **View -> Show Properties** from the main menu.

Option	Description
Begin Arrow Style	The style of the arrow's back.
Black and White	Check this box to change the diagram color to black and white.
Bold	Check this box or press CTRL+B to bold the table, view, entity, foreign key, relation or shape.
Border Color	The color of the shape's border.
Cap Style	The cap style of the line/arrow.
Case Sensitivity	The case sensitivity of the table or view names. Available only for MySQL and MariaDB physical models.
Color	The color of the object.
Dash Style	The dash style of the line/arrow.
Database Type	The database type of the model.
Database Version	The database version of the model.
Diagram Notation	The notation of the diagram. The notation options are depended on the model type.
End Arrow Style	The style of the arrow's front.
Entity Font Name	The font name of the entities.
Entity Font Size	The font size of the entities.
Font Bold	Check this box to bold the note/label font.
Font Color	The font color of the note, label or layer.
Font Italic	Check this box to apply an italic style to the note or label font.
Font Name	The font name of the note, label or layer.
Font Size	The font size of the note, label or layer.
Height	The height of the object.
Height (pages)	The height of the diagram (number of papers).
Join Style	The join style of the line/arrow.
Left	The number of pixels from the object to the left side of the canvas.
Model Type	The type of the model.
Name	The name of the object.
Opacity	The transparency of the image/shape. The value for this can be between 0 and 100. Use 100 for opacity and 0 for transparent.
Referenced Cardinality	The foreign key/relation cardinality of the referenced (parent) table or entity.
Referencing Cardinality	The foreign key/relation cardinality of the referencing (child) table or entity.
Schema Name	The schema names of the table/view.
Show Name	Check this box to show the name of the foreign key, relation or shape.
Show Schema Name	Check this box to show the schema names of the tables/views in the diagram.
Show View Relationships	Check this box to show the relationship line of the view.
Table Font Name	The font name of the tables.
Table Font Size	The font size of the tables.
Top	The number of pixels from the object to the top of the canvas.
Visible	Check this box to show the foreign key/relation lines.
Width	The width of the object.

Width (pages)	The width of the diagram (number of papers).
---------------	--

## ⑤ Overview Pane

The Overview pane displays the whole active diagram in the canvas. To zoom in or zoom out the selected area of the diagram, adjust the slider. If the Overview pane is hidden, choose **View -> Show Properties** and **Show Overview** from the main menu. Same effect can be achieved with keyboard shortcuts:

Zoom In: [CTRL++] or [CTRL+Mousewheel Up]

Zoom out: [CTRL+-] or [CTRL+Mousewheel Down]

## ⑥ Diagram Canvas

You can design your diagram on the Diagram Canvas.



# Chapter 3 – Navicat Cloud

## About Navicat Cloud

**Navicat Cloud** provides a cloud service for synchronizing model files and virtual group information from Navicat Data Modeler, other Navicat family members, different machines and different platforms. All the Navicat Cloud objects are located under different projects. You can share the project to other Navicat Cloud accounts for collaboration.

Navicat Cloud could not connect and access your databases. By which it means, it could only store your connection settings, queries, model files, and virtual group; your database passwords and data (e.g. tables, views, etc) will not be stored to Navicat Cloud.

**Note:** PremiumSoft will keep all synchronized files strictly confidential, and all employees are prohibited from viewing/accessing content of files you may store in your Navicat Cloud account.

### Create a new account

1. In the Welcome Window, click **Create Navicat ID**. Or, in the Main Window, click **Sign In** and click **Create Navicat ID**.
2. Enter the required information and click **Sign Up** button. A verification email will send to your email address.
3. Click the link in the email to verify the new account.

**Hint:** You can sign in with the same Navicat ID you use for the Navicat Customer Center.

### Sign in Navicat Cloud

1. In the Welcome Window, enter your **Navicat ID** and **Password**. Or, in the Main Window, click **Sign In** and enter your **Navicat ID** and **Password**.
2. Click **Sign In** button.
3. If you enabled two-step verification in [Navicat Cloud Portal](#) site, a code will be sent to your phone via your mobile app. Enter the received code to sign in.

### Open a model from Navicat Cloud

1. Choose **File -> Open from Navicat Cloud** from the main menu.
2. Select a model file and click **Open**.

### Save a model to Navicat Cloud

1. Choose **File -> Save to Navicat Cloud** from the main menu.
2. Enter the **Model Name**.

3. Click **Save**.

### Save a cloud model to local machine


1. Choose **File** -> **Save to Local** from the main menu.
2. Enter the file name and choose the saving path.
3. Click **Save**.

### Sign out Navicat Cloud

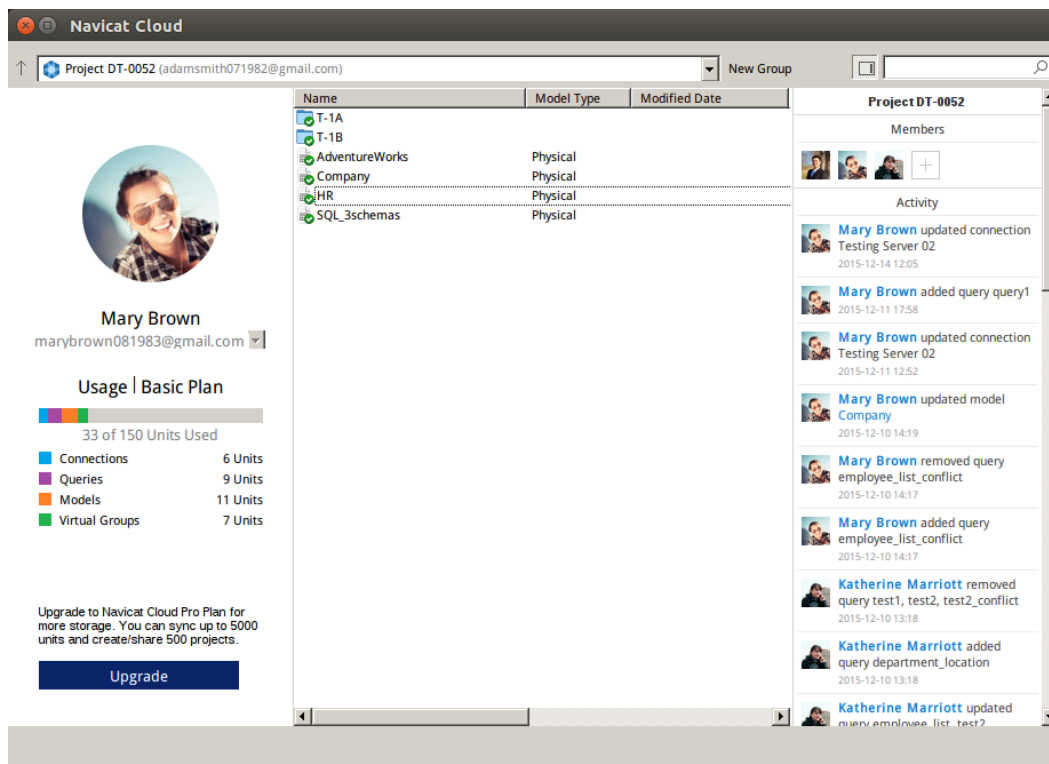
1. Choose **File** -> **Navicat Cloud** from the main menu.
2. Click your email in the User Info pane and choose **Sign Out**.

## Manage Navicat Cloud

After logged into Navicat Cloud, you can open the Navicat Cloud window by choosing **File** -> **Navicat Cloud** from the main menu. In the Navicat Cloud window, you can view the account details and manage the models and virtual groups that stored in Navicat Cloud.

The left **User Info** pane shows the account details and the cloud usage. The right **Navicat Cloud Activity** pane shows the project members and activities. If the Navicat Cloud Activity pane is hidden, you can click the  button to show it.

**Note:** A model file or a virtual group counts for one unit.



### Change your avatar

1. Click the avatar in the User Info pane.

2. Choose an image file.

### Manage your Navicat Cloud account

1. Click your email in the User Info pane and choose **Manage Account**.
2. A browser will open with [Navicat Cloud Portal](#) site.

### Upgrade the Navicat Cloud plan

1. Click **Upgrade**.
2. A browser will open with [Navicat Cloud Portal](#) site.

### Create a project

1. Select Navicat Cloud.
2. Click **New Project**.

### Add members to a project

1. Select a project.
2. Right-click it and choose **Collaborate with**.
3. Click **Add Members**.
4. Enter the members' Navicat ID.
5. Select the member role.
6. Click **Add**.

Member Roles	Privileges
Owner	Read Objects, Write Objects, Manage Members and Delete Project
Admin	Read Objects, Write Objects and Manage Members
Member	Read Objects and Write Objects
Guest	Read Objects

**Note:** Each time can add up to 10 members. Use comma or enter to separate the members in the edit box.

### Manage members in a project

1. Select a project.
2. Right-click it and choose **Collaborate with**.
3. Click **Apply** after changes.

**Note:** If you are the Owner or Admin, you can click the **x** button to remove the member.

### **Rename a project**

1. Select a project.
2. Right-click it and choose **Rename**.
3. Enter the project name.

### **Quit a project**

1. Select a project.
2. Right-click it and choose **Quit Project**.

### **Delete a project**

1. Select a project.
2. Right-click it and choose **Delete Project**.

### **Rename a model**

1. Select a model file.
2. Right-click it and choose **Rename**.
3. Enter the model name.

### **Delete a model**

1. Select a model file.
2. Right-click it and choose **Delete Model**.

### **Create a virtual group**

1. Click **New Group**.
2. Enter the group name.

### **Move a model to a virtual group**

1. Select a model file.
2. Right-click it and choose **Manage Group -> Move To**.

### **Move a model to the top-level from a virtual group**

1. Right-click the selected model.

2. Choose **Manage Group** -> **Exclude From Group**.

### **Rename a virtual group**

1. Select a virtual group.
2. Right-click it and choose **Rename Group**.
3. Enter the group name.

### **Delete a virtual group**

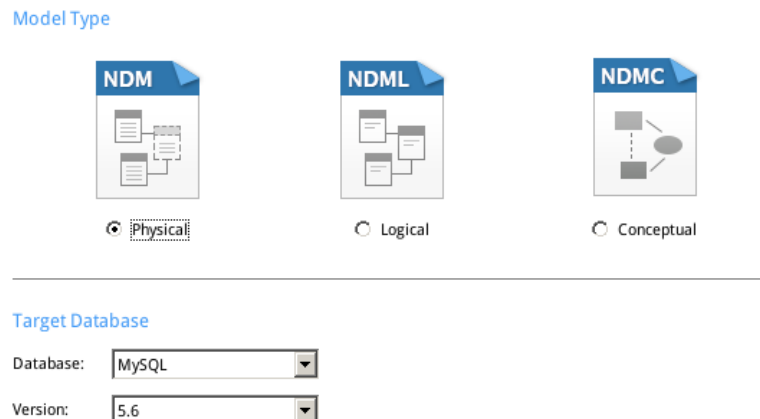
1. Select a virtual group.
2. Right-click it and choose **Delete Group**.

# Chapter 4 – Physical Models

## Create a Physical Model

Navicat Data Modeler allows you to create physical models, including tables, fields, views, foreign key constraints and other physical properties of the database/schema.

To create a physical model, select **File -> New Model** from the main menu. In the **New Model** window, choose **Physical** as **Model Type** and select the target **Database** and **Version**.






You can also use the following features to create a physical model:

- [Import from Database](#) - reverse engineer from existing databases/schemas.
- [Model Conversion](#) - convert from a logical/conceptual model.

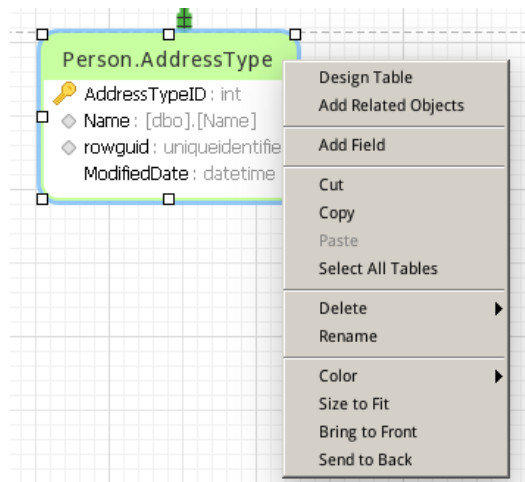
After creating a physical model, you can [compare and synchronize](#) it to an existing database/schema or [export](#) it to a SQL file.

## Add a Table to a Physical Model

To add a new table, click the  **Table** button from the toolbar and click anywhere on the canvas. To add an existing table from the Explorer's Model tab, simply drag and drop the selected table from the Model tab to the canvas.

For Default diagram notation, the  icon means the field is a primary key. The  icon indicates that the field serves as an index.

**Note:** If you right-click a field, you can choose to add, insert, delete, rename the field and set the field as primary key.



The pop-up menu options of the table object in canvas include:

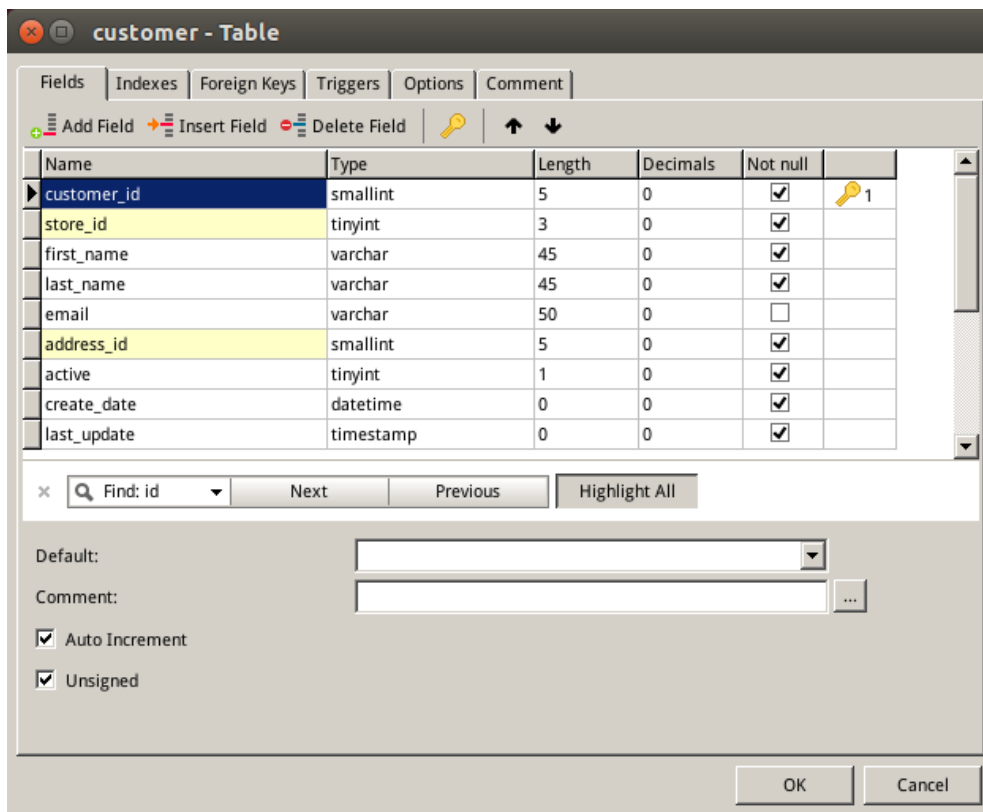
Option	Description
Design Table	Edit the table structure in a <b>Table Designer</b> , e.g. fields, indexes, foreign keys, etc.
Add Related Objects	Add all related tables/views to the selected table.
Add Field	Add fields to the existing table.
Cut	Remove the table from the diagram and put it on the clipboard.
Copy	Copy the table from the diagram to the clipboard.
Paste	Paste the content from the clipboard into the diagram.
Select All Tables	Select all tables in the diagram.
Delete	Delete a table from the diagram or from both diagram and model.
Rename	Change the name of the table.
Color	Change the color of the table.
Size to Fit	Resize the table automatically to fit its contents.
Bring to Front	Bring the table to the foreground.
Send to Back	Move the table to the background.

## Table Designer

**Table Designer** is the basic Navicat Data Modeler tool for working with tables. It allows you to create, edit and drop table's fields, indexes, foreign keys, and much more.


**Note:** The tabs and options in the designer depend on the diagram database type and version you are chosen.

In the **Fields** tab, you can search a field name by pressing CTRL+F.

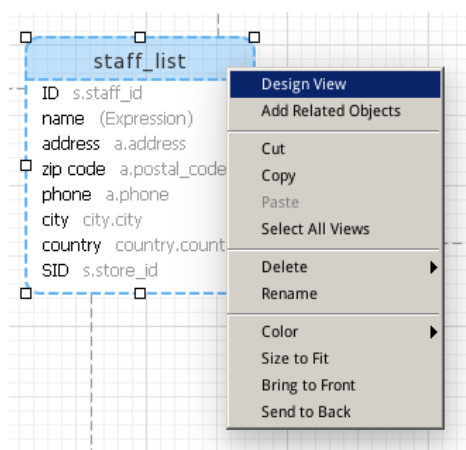


## Add Views

### Add a View to a Physical Model

To add a new view, click the  **View** button from the toolbar and click anywhere on the canvas. To add an existing view from the Explorer's Model tab, simply drag and drop the selected view from the Model tab to the canvas.

**Note:** If you right-click the view connector, you can choose to add or delete vertices and change its color, or go to the source view or the target table.



The pop-up menu options of the view object in canvas include:

Option	Description
Design View	Edit the view structure in a <b>View Designer</b> .
Add Related Objects	Add all related tables/views to the selected view.
Cut	Remove the view from the diagram and put it on the clipboard.

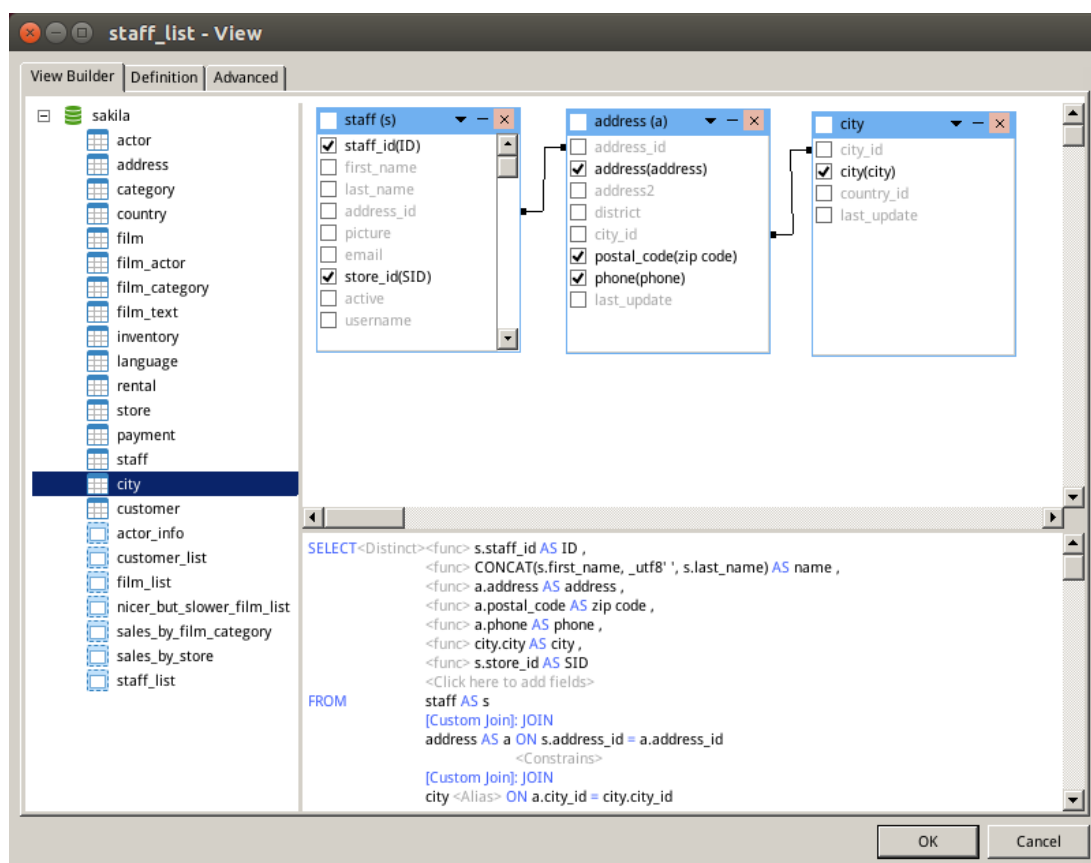


Copy	Copy the view from the diagram to the clipboard.
Paste	Paste the content from the clipboard into the diagram.
Select All Views	Select all views in the diagram.
Delete	Delete a view from the diagram or from both diagram and model.
Rename	Change the name of the view.
Color	Change the color of the view.
Size to Fit	Resize the view automatically to fit its contents.
Bring to Front	Bring the view to the foreground.
Send to Back	Move the view to the background.

## View Designer

**View Designer** is the basic Navicat Data Modeler tool for working with views. In View Designer, you can build the views visually using [View Builder](#) or edit the view's [Definition](#) directly.

**Note:** The tabs and options in the designer depend on the diagram database type and version you are chosen.



## Work with View Builder

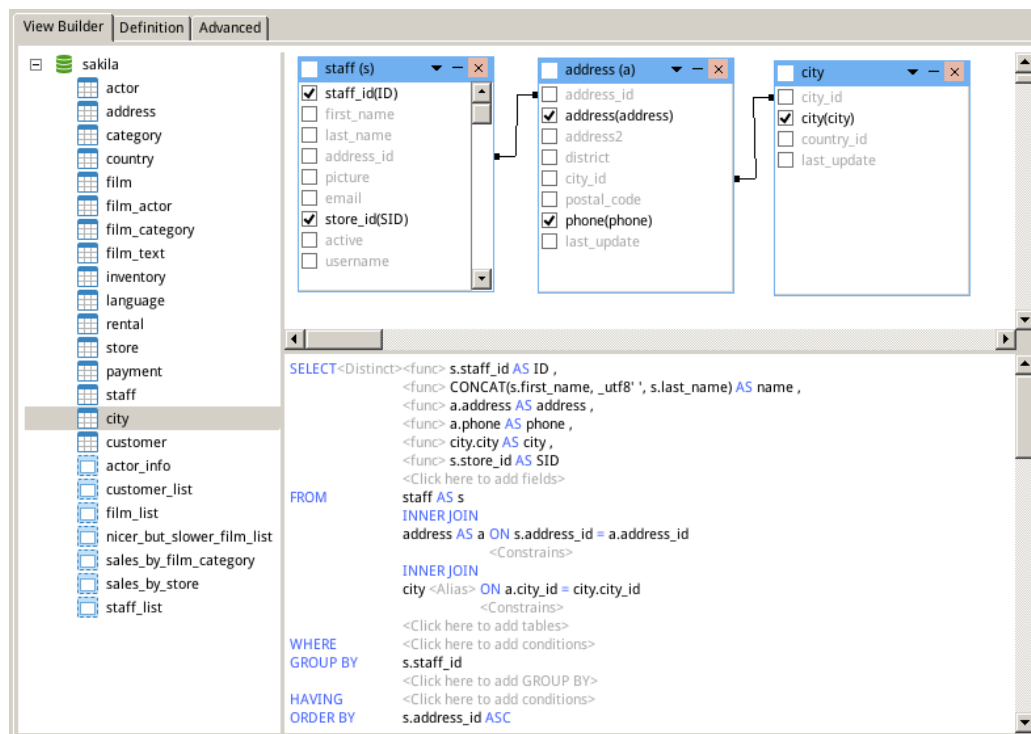
Navicat Data Modeler provides a useful tool called **View Builder** for building views visually. It allows you to create and edit views without knowledge of SQL. The database objects are displayed in left pane. Whereas in the right pane, it is divided into two portions: the upper **Diagram Design** pane, and the lower **Syntax** pane.

Drag a table/view from the left pane to the Diagram Design pane or double-click it to add it to view. To include a field in the view, check the left of the field name in the Diagram Design pane. To include all the fields, click at the left of the object caption.

To remove the object from the Diagram Design pane, click the cross button at the object caption.

To add the table/view alias, simply double-click the table/view name and enter the alias in the Diagram Design pane.

**Hint:** You are also allowed to set criteria by right-click any fields from the Diagram Design pane.



## Setting Field Association

To associate database objects by two fields, just drag one field from the object list to another and a line will appear between the linked fields.

**Hint:** To delete all the links of some object, click button '-' next to the object alias.

Go to the Syntax pane to change the association between the links, click the operator and choose the properties item from the pop-up menu. You can change the association condition by choosing it from the list (=, <>, <, <=, >, >=). Click **OK** to confirm the changes you made. Also you can change the type of Join.

## Setting Output Fields

The fields you have selected in the Diagram Design pane will be displayed in the Syntax pane which allows you to set their displaying order and modify the output fields of the view using **Distinct**, **func** and **Alias**.

### Distinct

Enable this option if you wish the repeated records are not included into the view result.

## func

Set the aggregate functions (SUM, MAN, MIX, AVG, COUNT) for each field.

## Alias

Change the output field name.

## Setting Criteria

To add a condition, click the <--> = <--> from the **WHERE** clause in the Syntax pane. Click <--> to choose the field from the list of all the table fields, available in the view. To define your own criteria, type your values directly in the Edit Tab. Clicking = to set condition operator.

## Setting Grouping Criteria

You can set the conditions for grouping view records from the **GROUP BY** clause in the Syntax pane. They are set in the same way as setting criteria. The conditions will be included into the **HAVING** statement of the current view.

## Setting Sorting Criteria

In View Builder, you can set the way of sorting view records from the **ORDER BY** clause in the Syntax pane. To change the sorting direction, click on either **ASC** or **DESC**.

## Setting Limit Criteria

**LIMIT** clause is used to limit your view results to those that fall within a specified range. You can use it to show the first X number of results, or to show a range from X - Y results. It is phrased as Limit X, Y and included at the end of your view. X is the starting point (remember the first record is 0) and Y is the duration (how many records to display).

**Note:** Available only for MySQL, PostgreSQL, SQLite and MariaDB.

## Edit View's Definition

In **Definition** tab, you can create and edit the SELECT statement SQL for a view. Navicat Data Modeler provides a wide range advanced features for editing the view definition, such as compelling code editing capabilities, smart code-completion, sql formatting, and more.

**Hint:** SELECT statement will be automatically generated while you build in View Builder.

## Beautify SQL

To format messy SQL code into a well-structured script, you can click the **Beautify SQL** button.

## Code-Completion

Code-completion displays information in drop-down lists as you type your SQL statement in the editor, it assists you with statement completion and the available properties of database objects, for example schemas, tables, fields, views etc with their appropriate icons.

To activate the code-completion, just simply press '.' for the available properties of database object currently in the scope.

```
1 SELECT
2   film.film_id AS FID,
3   film.title AS title,
4   film.description AS description,
5   category.
6 FROM   category_id
7   categ last_update
8 LEFT JO name id = film_category.category_id
9 LEFT JOIN film ON film_category.film_id = film.film_id
10 JOIN film_actor ON film.film_id = film_actor.film_id
11 JOIN actor ON film_actor.actor_id = actor.actor_id
```

**Hint:** You may invoke code-completion by typing two characters or pressing CTRL+SPACE on your keyboard for SQL keywords/database objects.

```
1 SELECT
2   film.film_id AS FID,
3   film.title AS title,
4   film.description AS description
5 FROM
6   category
7 LEFT JOIN film_category ON category.category_id = film_category.category_id
8 LEFT JOIN film ON film_category.film_id = film.film_id
9 JOIN film_actor ON film.film_id = film_actor.film_id
10 JOIN actor ON film_actor.actor_id = actor.actor_id
11 WH
WHERE
WHEN
WHILE
```

**Hint:** Smart code-completion will pop up a list of variants for the word completion automatically.

## Brace Highlight

Navicat Data Modeler supports to highlight the matching brace in the editor, i.e. (), Begin...End .

**Hint:** The cursor must be on a brace to show the highlight.

```
1 SELECT
2   `s`.`staff_id` AS `ID`,
3   CONCAT(
4     s.first_name,
5     _utf8 '',
6     s.last_name
7   ) AS `name`,
8   `a`.`address` AS `address`,
9   `a`.`phone` AS `phone`,
```

## Zoom In/Zoom Out


Navicat Data Modeler has the ability to zoom in or zoom out the SQL in the editor.

Zoom In: [CTRL++] or [CTRL+Mousewheel Up]

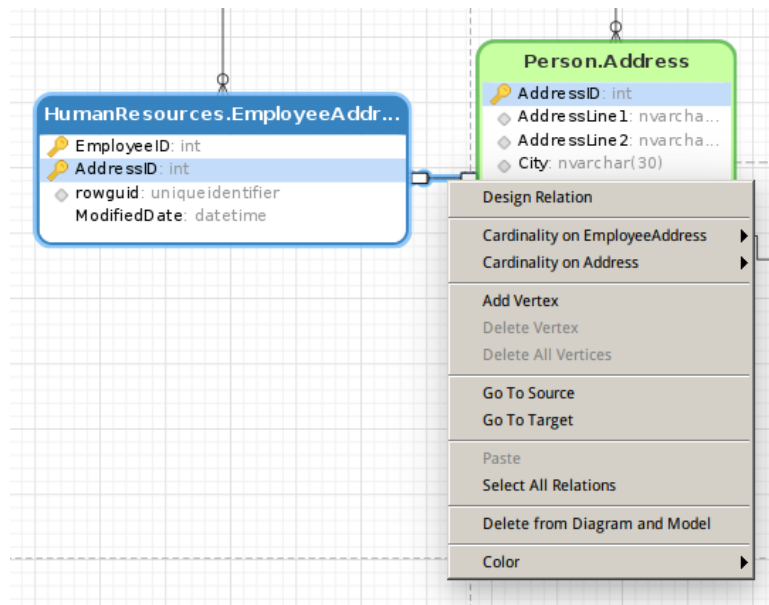
Zoom out: [CTRL+-] or [CTRL+Mousewheel Down]

Reset: [CTRL+0]

## Add a Foreign Key to a Physical Model

To add a foreign key, click the  **Foreign Key** button from the toolbar and drag and drop a field from the child table to the parent table. To show/hide the linked name label, simply check/uncheck the **Show Name** option in Properties pane.

When you move your mouse over a foreign key connector, the border of the parent and the child tables turn to green and blue respectively. Also, the referenced fields and the referencing fields are highlighted.



The pop-up menu options of the foreign key in canvas include:

Option	Description
Design Relation	Edit the foreign key in a <a href="#">Table Designer</a> .
Cardinality on table_name1	Set the cardinality on table_name1: None, One and Only One, Many, One or Many, Zero or One, Zero or Many.
Cardinality on table_name2	Set the cardinality on table_name2: None, One and Only One, Many, One or Many, Zero or One, Zero or Many.
Add Vertex	Add a vertex on a foreign key connector.
Delete Vertex	Delete a vertex on a foreign key connector.
Delete All Vertices	Delete all vertices on a foreign key connector.
Go to Source	Go to and select the source (child) table.
Go to Target	Go to and select the target (parent) table.
Paste	Paste the content from the clipboard into the diagram.
Select All Relations	Select all foreign keys in the diagram.
Delete from Diagram and Model	Delete a foreign key from both diagram and model.
Color	Change the color of the foreign key.

# Chapter 5 – Logical Models

## Create a Logical Model

Navicat Data Modeler allows you to create logical models, including entities, attributes and relations.

To create a logical model, select **File -> New Model** from the main menu. In the **New Model** window, choose **Logical** as **Model Type**.


Model Type





You can also use the following features to create a logical model:

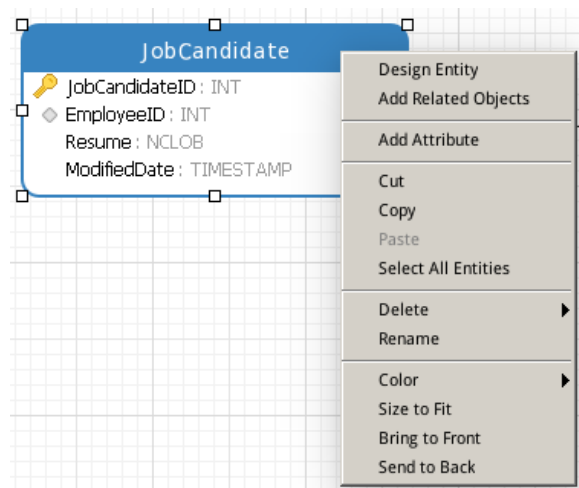
- [Import from Database](#) - reverse engineer from existing databases/schemas.
- [Model Conversion](#) - convert from a physical/conceptual model.

## Add an Entity to a Logical Model

To add a new entity, click the  **Entity** button from the toolbar and click anywhere on the canvas. To add an existing entity from the Explorer's Model tab, simply drag and drop the selected entity from the Model tab to the canvas.

For Default diagram notation, the  icon means the attribute is a primary key. The  icon indicates that the attribute serves as an index.

**Note:** If you right-click an attribute, you can choose to add, insert, delete, rename the attribute and set the attribute as primary key.



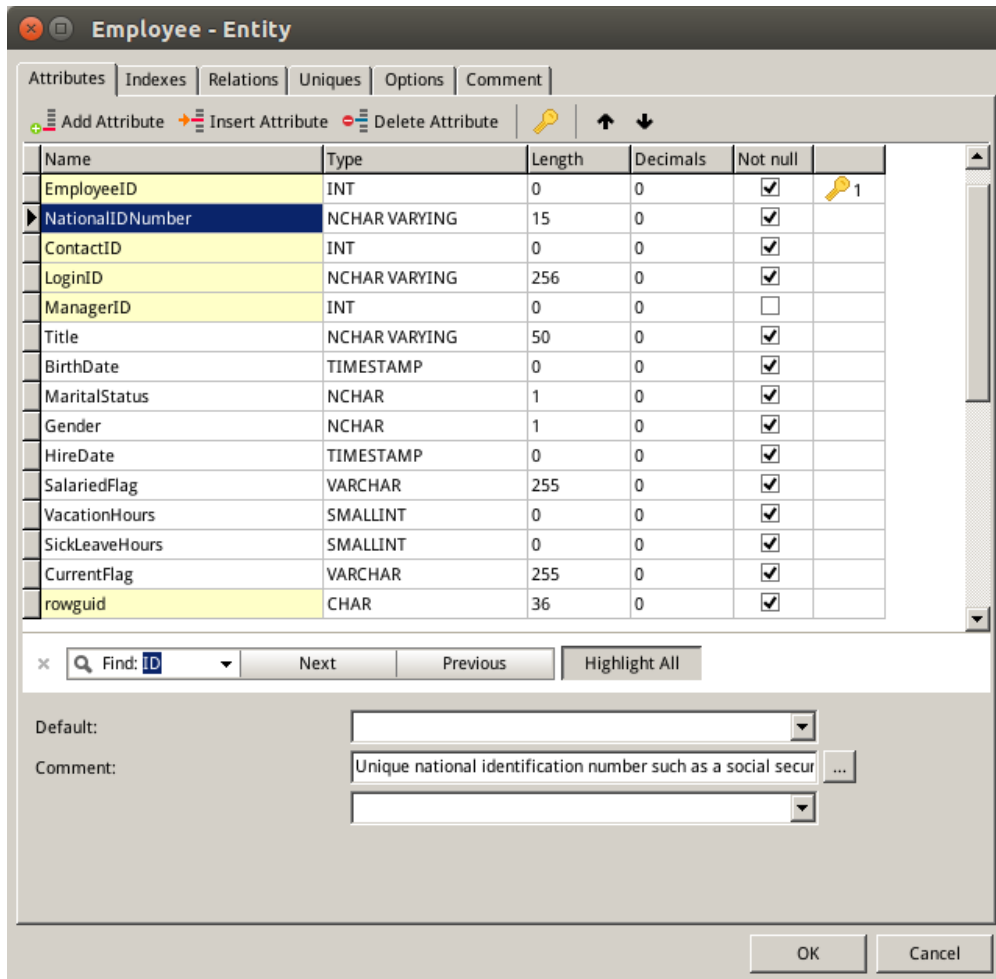
The pop-up menu options of the entity object in canvas include:

Option	Description
Design Entity	Edit the entity structure in an <b>Entity Designer</b> , e.g. attributes and relations.
Add Related Objects	Add all related entities to the selected entity.
Add Attribute	Add attributes to the existing entity.
Cut	Remove the entity from the diagram and put it on the clipboard.
Copy	Copy the entity from the diagram to the clipboard.
Paste	Paste the content from the clipboard into the diagram.
Select All Entities	Select all entities in the diagram.
Delete	Delete an entity from the diagram or from both diagram and model.
Rename	Change the name of the entity.
Color	Change the color of the entity.
Size to Fit	Resize the entity automatically to fit its contents.
Bring to Front	Bring the entity to the foreground.
Send to Back	Move the entity to the background.

### Entity Designer

**Entity Designer** is the basic Navicat Data Modeler tool for working with entities. It allows you to create, edit and drop entity's attributes, relations, etc.

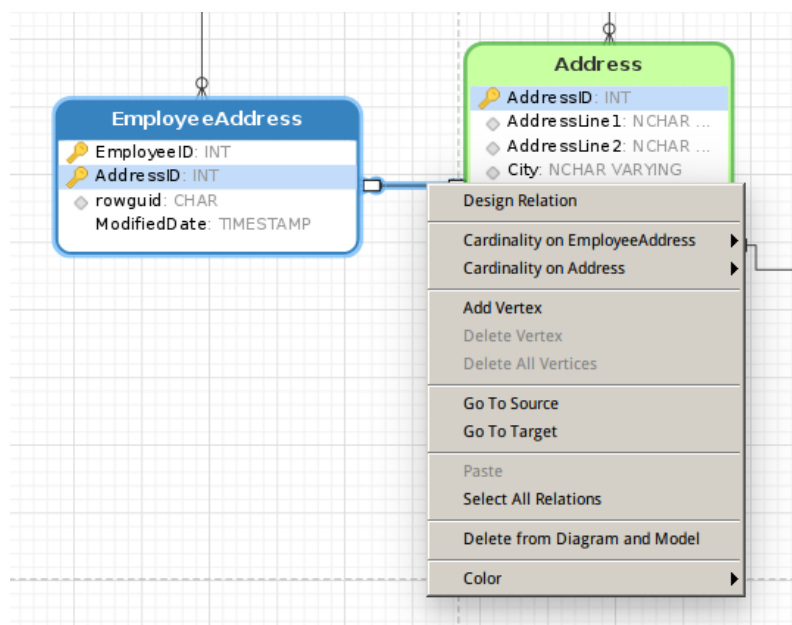
In the **Attributes** tab, you can search an attribute name by pressing CTRL+F.



## Add a Relation to a Logical Model

To add a relation, click the **Relation** button from the toolbar and drag and drop an attribute from the child entity to the parent entity. To show/hide the linked name label, simply check/uncheck the **Show Name** option in Properties pane.

When you move your mouse over a relation connector, the border of the parent and the child entities turn to green and blue respectively. Also, the referenced attributes and the referencing attributes are highlighted.





The pop-up menu options of the relation in canvas include:

Option	Description
Design Relation	Edit the relation in an <a href="#">Entity Designer</a> .
Cardinality on entity_name1	Set the cardinality on entity_name1: None, One and Only One, Many, One or Many, Zero or One, Zero or Many.
Cardinality on entity_name2	Set the cardinality on entity_name2: None, One and Only One, Many, One or Many, Zero or One, Zero or Many.
Add Vertex	Add a vertex on a relation connector.
Delete Vertex	Delete a vertex on a relation connector.
Delete All Vertices	Delete all vertices on a relation connector.
Go to Source	Go to and select the source (child) entity.
Go to Target	Go to and select the target (parent) entity.
Paste	Paste the content from the clipboard into the diagram.
Select All Relations	Select all relations in the diagram.
Delete from Diagram and Model	Delete a relation from both diagram and model.
Color	Change the color of the relation.

# Chapter 6 - Conceptual Models

## Create a Conceptual Model

Navicat Data Modeler allows you to create conceptual models, including entities and relations.

To create a conceptual model, select **File -> New Model** from the main menu. In the **New Model** window, choose **Conceptual** as **Model Type**.


Model Type

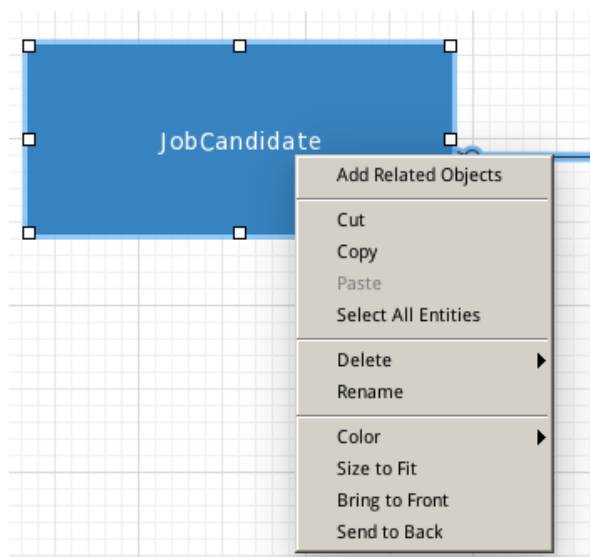


You can also use the following features to create a conceptual model:

- [Import from Database](#) - reverse engineer from existing databases/schemas.
- [Model Conversion](#) - convert from a physical/logical model.

## Add an Entity to a Conceptual Model

To add a new entity, click the  **Entity** button from the toolbar and click anywhere on the canvas. To add an existing entity from the Explorer's Model tab, simply drag and drop the selected entity from the Model tab to the canvas.




The pop-up menu options of the entity object in canvas include:

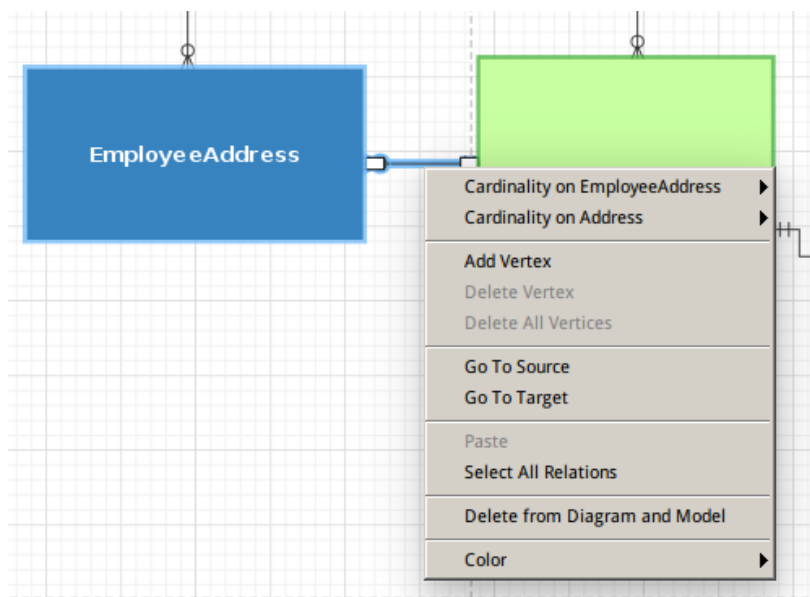
Option	Description
Add Related Objects	Add all related entities to the selected entity.
Cut	Remove the entity from the diagram and put it on the clipboard.
Copy	Copy the entity from the diagram to the clipboard.

Paste	Paste the content from the clipboard into the diagram.
Select All Entities	Select all entities in the diagram.
Delete	Delete an entity from the diagram or from both diagram and model.
Rename	Change the name of the entity.
Color	Change the color of the entity.
Size to Fit	Resize the entity automatically to fit its contents.
Bring to Front	Bring the entity to the foreground.
Send to Back	Move the entity to the background.

## Add a Relation to a Conceptual Model

To add a relation, click the  **Relation** button from the toolbar and drag the child entity and drop to the parent entity. To show/hide the linked name label, simply check/uncheck the **Show Name** option in Properties pane.

When you move your mouse over a relation connector, the border of the parent and the child entities turn to green and blue respectively.



The pop-up menu options of the relation in canvas include:

Option	Description
Cardinality on entity_name1	Set the cardinality on entity_name1: None, One and Only One, Many, One or Many, Zero or One, Zero or Many.
Cardinality on entity_name2	Set the cardinality on entity_name2: None, One and Only One, Many, One or Many, Zero or One, Zero or Many.
Add Vertex	Add a vertex on a relation connector.
Delete Vertex	Delete a vertex on a relation connector.
Delete All Vertices	Delete all vertices on a relation connector.
Go to Source	Go to and select the source (child) entity.
Go to Target	Go to and select the target (parent) entity.

Paste	Paste the content from the clipboard into the diagram.
Select All Relations	Select all relations in the diagram.
Delete from Diagram and Model	Delete a relation from both diagram and model.
Color	Change the color of the relation.

# Chapter 7 – Diagram Layout

## Work with Diagram Canvas

### Show Grid

To turn the grid on in the diagram canvas, choose **View -> Show Grid** from the menu.

### Snap to Grid

To align objects on the canvas with the grid, choose **View -> Snap To Grid** from the menu.

### Change Diagram Notation

To change the notation of the diagram, choose **Diagram -> Diagram Notation** from the menu.

**Note:** The options depend on the diagram type you are chosen.

Option	Description
Default	The default notation style used in Navicat Data Modeler.
Simple	A simple notation style. The table, view or entity objects will only show the name.
IE (Crow's Foot)	Crow's Foot notation style.
IDEF1X	The ICAM DEFinition language information modeling method.
UML	Universal Modeling Language style.
Classic	A classic notation style.
Black and White	Change the color of the diagram to black and white.
Show Schema Name	Show the schema names of the tables and views in the diagram.

### Change Diagram Dimensions

To change the number of pages used in the diagram, choose **Diagram -> Diagram Dimensions** from the menu and set the **Width** and the **Height**.

### Align Objects

To align objects on the canvas, select more than one object (tables, entities, views, notes, labels, images or shapes), then right-click and choose **Alignment -> Align Left, Align Center, Align Right, Align Top, Align Middle or Align Bottom**.

### Change Objects Distribution

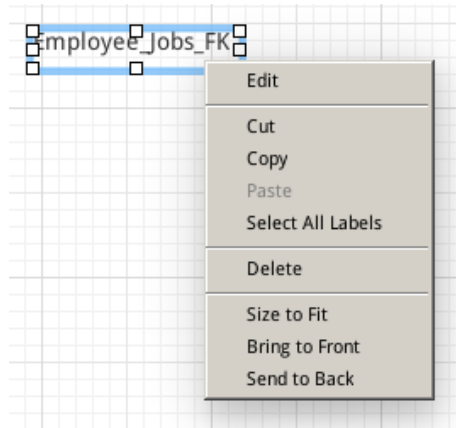
To distribute objects on the canvas, select more than one object (tables, entities, views, notes, labels, images or shapes), then right-click and choose **Distribute -> Horizontal or Vertical**.

### Change Page Setup

To change paper size, orientation and margins, choose **File -> Page Setup**.

## Add Labels


Labels are typically used to help document the diagram design process. For example, to explain a grouping table objects. To add a new label, click the **T Label** button from the toolbar and click anywhere on the canvas.

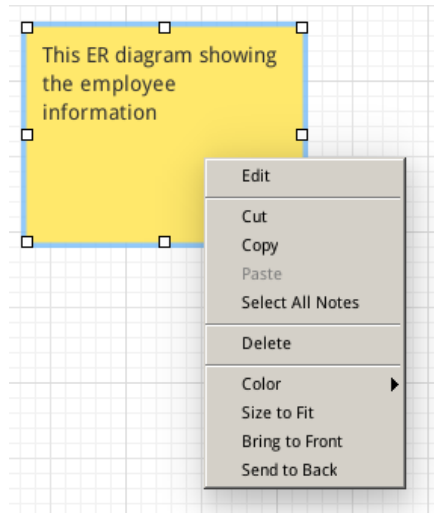


The pop-up menu options of the label object in canvas include:

Option	Description
Edit	Change the content of the label.
Cut	Remove the label from the diagram and put it on the clipboard.
Copy	Copy the label from the diagram to the clipboard.
Paste	Paste the content from the clipboard into the diagram.
Select All Labels	Select all labels in the diagram.
Delete	Delete a label from the diagram.
Size to Fit	Resize the label automatically to fit its contents.
Bring to Front	Bring the label to the foreground.
Send to Back	Move the label to the background.

## Add Notes


Notes are typically used to help document the diagram design process. For example, to explain a grouping table objects. To add a new note, click the  **Note** button from the toolbar and click anywhere on the canvas.

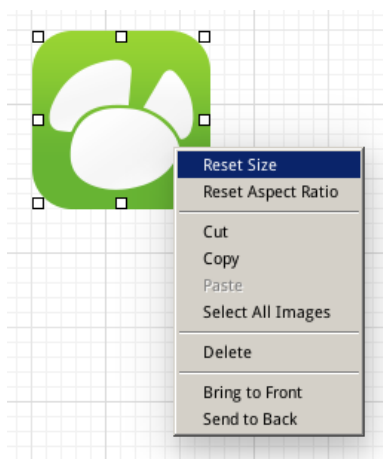


The pop-up menu options of the note object in canvas include:

Option	Description
Edit	Change the content of the note.
Cut	Remove the note from the diagram and put it on the clipboard.
Copy	Copy the note from the diagram to the clipboard.
Paste	Paste the content from the clipboard into the diagram.
Select All Notes	Select all notes in the diagram.
Delete	Delete a note from the diagram.
Color	Change the color of the note.
Size to Fit	Resize the note automatically to fit its contents.
Bring to Front	Bring the note to the foreground.
Send to Back	Move the note to the background.

## Add Images


To add a new image, click the  **Image** button from the toolbar and click anywhere on the canvas. Then, select an image file in the Open dialog box.

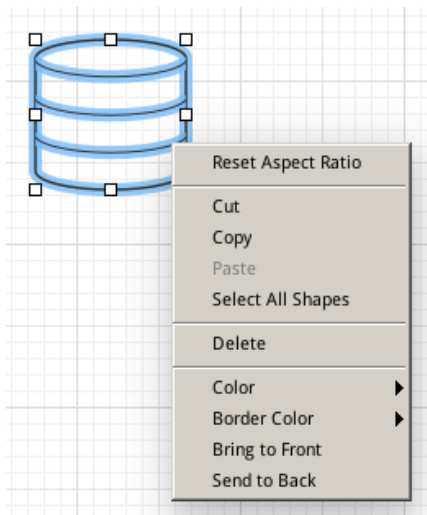


The pop-up menu options of the image object in canvas include:

Option	Description
Reset Size	Reset the size of the image to its original size.
Reset Aspect Ratio	Maintain the image original width to height ratio.
Cut	Remove the image the diagram and put it on the clipboard.
Copy	Copy the image from the diagram to the clipboard.
Paste	Paste the content from the clipboard into the diagram.
Select All Images	Select all images in the diagram.
Delete	Delete an image from the diagram.
Bring to Front	Bring the image to the foreground.
Send to Back	Move the image to the background.

## Add Shapes

To add a new shape (line, arrow, rectangle, ellipse, user, database, cloud, trigger, server, desktop or mobile), click the  **Shape** button from the toolbar and choose the type of shape. Then, click anywhere on the canvas.




The pop-up menu options of the shape object in canvas include:

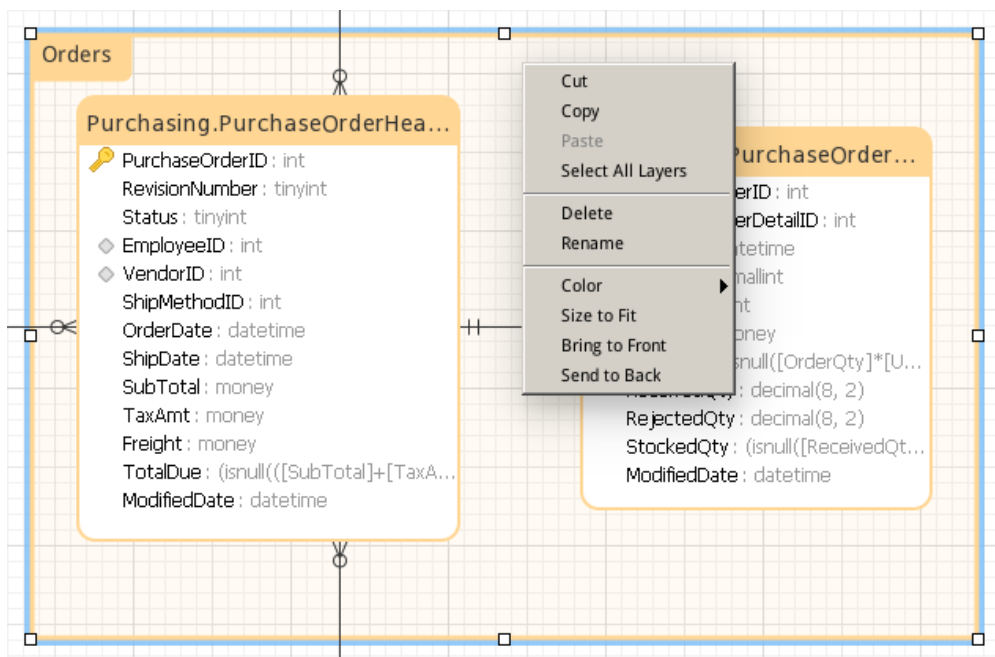
Option	Description
Reset Aspect Ratio	Maintain the shape original width to height ratio. Only for rectangle, ellipse, user, database, cloud, trigger, server, desktop and mobile.
Cut	Remove the shape from the diagram and put it on the clipboard.
Copy	Copy the shape from the diagram to the clipboard.
Paste	Paste the content from the clipboard into the diagram.
Select All Shapes	Select all the shapes in the diagram.
Delete	Delete a shape from the diagram.
Color	Change the color of the shape.
Border Color	Change the color of the shape's border. Only for rectangle, ellipse, user, database, cloud, trigger, server, desktop and mobile.



Begin Arrow Style	Change the style of the arrow's back. Only for arrow.
End Arrow Style	Change the style of the arrow's front. Only for arrow.
Add Vertex	Add a vertex on a line or arrow. Only for line and arrow.
Delete Vertex	Delete a vertex on a line or arrow. Only for line and arrow.
Delete All Vertices	Delete all vertices on a line or arrow. Only for line and arrow.
Bring to Front	Bring the shape to the foreground.
Send to Back	Move the shape to the background.

## Add Layers

Layers are used to help organize objects (e.g. tables, notes, images, etc) on the canvas. You can add all related objects to the same layer. For example, you may choose to add all your sales related tables to one layer. To add a new layer, click the  **Layer** button from the toolbar and click anywhere on the canvas.



The pop-up menu options of the layer object in canvas include:

Option	Description
Cut	Remove the layer from the diagram and put it on the clipboard.
Copy	Copy the layer from the diagram to the clipboard.
Paste	Paste the content from the clipboard into the diagram.
Select All Layers	Select all layers in the diagram.
Delete	Delete a layer from the diagram.
Color	Change the color of the layer.

Size to Fit	Resize the layer automatically to fit its contents.
Bring to Front	Bring the layer to the foreground.
Send to Back	Move the layer to the background.

# Chapter 8 - Reverse Engineering (Available only in Full Version)

## Import from Database

The **Import from Database** feature allows you to load already existing database structures to create new diagrams. It supports to import MySQL, MariaDB, PostgreSQL, Oracle, SQLite tables/views. If the model is logical or conceptual, all views will convert to entities after the import process. To start the Import from Database wizard, select **Tools -> Import from Database** from the main menu.

If it is the first time you open the wizard, you require to establish your server connection before selecting the connection.

Click the **Manage Connection** button to create, edit or delete connections.

### Create Connection

Choose **Manage Connections -> New Connection** to start the setup.

- [MySQL/MariaDB/PostgreSQL/Oracle/SQLite](#)

**Note:** Navicat Data Modeler authorizes you to make connection to remote server running on different platform, i.e. Windows, macOS, Linux and UNIX.

### Edit Connection

To edit a connection information

- Select an existing connection.
- Choose **Manage Connections -> Edit Connection**.

### Delete Connection

To delete a connection

- Select an existing connection.
- Choose **Manage Connections -> Delete Connection**.

### Import Connection Settings

To import Navicat (e.g. [Navicat Premium](#)) connection settings

- Choose **Manage Connections -> Import Connections from Navicat**.
- Select the connections and click **OK**.

**Note:** Available only when Navicat (e.g. Navicat Premium) is installed in the current machine. If the connection exists, the newly created connection will be named as e.g. "connection\_name Copy #".

After selecting the connection, you are allowed to choose databases, schemas, tables or views to import. If your diagram is logical and conceptual, views will be imported as entities. Click **Start** to start the import process.

## Database Connections

### Create a Connection to a Server

You can create a connection to connect your server: MySQL, MariaDB, PostgreSQL, Oracle, SQLite.

**Note:** The tabs in the connection properties window depend on the database type you are chosen.

- [General Settings](#)
- [Advanced Settings](#)
- [SSL Settings](#)
- [SSH Settings](#)
- [HTTP Settings](#)

### General Settings

To successfully establish a new connection to local/remote server - no matter via SSL, SSH or HTTP, set the connection properties in the General tab. If your Internet Service Provider (ISP) does not provide direct access to its server, Secure Tunneling Protocol (SSH) / HTTP is another solution. Enter a friendly name to best describe your connection in **Connection Name** text box.

After you logged in [Navicat Cloud](#) feature, you can choose to save the connection to **My Connections** or the projects in **Navicat Cloud** from **Add To** drop-down list. If you choose **My Connections**, its connection settings are stored in the local machine. When editing a connection in Navicat Cloud, you can choose to synchronize the user name to cloud by enabling the **Sync User Name with Navicat Cloud** option.

### MySQL and MariaDB Connections

You can connect to your MySQL server remotely however for security reasons native remote direct connections to the MySQL server are disabled. Therefore, you cannot use Navicat Data Modeler or other similar MySQL admin applications running on your computer to connect to the remote server directly unless the [User Privileges](#) has been configured.

By default, MySQL gives "root" as username and leave the password field blank.

#### Host Name/IP Address

A host name where the database is situated or the IP address of the server.

## Port

A TCP/IP port for connecting to the database server.

## User Name

User name for connecting to the database server.

## Password

Password for connecting to the server.

## Oracle Connection

Navicat Data Modeler supports **Basic** connection type for Oracle server. In **Basic** mode, Navicat Data Modeler connects to Oracle through the Oracle Call Interface (OCI). OCI is an application programming interface that allows an application developer to use a third-generation language's native procedure or function calls to access the Oracle database server and control all phases of SQL statement execution. OCI is a library of standard database access and retrieval functions in the form of a dynamic-link library.

By default, Oracle created a number of user accounts upon installation. Administrative accounts: SYS, SYSTEM, SYSMAN, and DBSNMP. Sample schema accounts: SCOTT, HR, OE, OC, PM, IX and SH.

## Connection Type

Connection type for connecting to the server: **Basic**.

## Host Name/IP Address

A host name where the database is situated or the IP address of the server.

## Port

A TCP/IP port for connecting to the database server.

## Service Name/SID

Set the Service Name/SID which the user connects when making connection. Select the corresponding radio button.

## User Name

User name for connecting to the database server.

## Password

Password for connecting to the server.

See also:

[OCI options](#)

## PostgreSQL Connection

For security reasons native remote direct connections to the PostgreSQL server are disabled. Therefore, you may not be able to use Navicat Data Modeler or other similar PostgreSQL admin applications running on your computer to connect to the remote server. By default, PostgreSQL only allows connections from the local machine using TCP/IP connections. Other machines will not be able to connect unless you modify `listen_addresses` in the `postgresql.conf` file, enable host-based authentication by modifying the `$PGDATA/pg_hba.conf` file, and restart the server. For more information: [Client Authentication](#).

By default, PostgreSQL gives "postgres" as username and leave the password field blank.

### Host Name/IP Address

A host name where the database is situated or the IP address of the server.

### Port

A TCP/IP port for connecting to the database server.

### Initial Database

The initial database to which user connects when making connection.

### User Name

User name for connecting to the database server.

### Password

Password for connecting to the server.

## SQLite Connection

You can choose the **Type** of the SQLite database and specify the file path.

### Existing Database File

Connect an existing database in the **Database File**.

### New SQLite 3

Create a new SQLite 3 database in the **Database File**.

### New SQLite 2

Create a new SQLite 2 database in the **Database File**.

### Database File

Specify the initial database file. If the HTTP Tunnel is enabled, you need to enter an absolute file path of the database file in your web server.

### **User Name**

User name for connecting to an existing database file.

### **Password**

Password for connecting to an existing database file.

## Advanced Settings

### MySQL and MariaDB Connections

#### **Encoding**

Choose a codepage to communicate with MySQL Server while MySQL character set not being employed.

#### **Use Compression**

This option allows you to use compression protocol. It is used if both client and server support zlib compression, and the client requests compression.

#### **Use Named Pipe, Socket**

With this option on, Navicat Data Modeler uses socket file for localhost connection.

### Oracle Connection

#### **Role**

Indicate that the database user is connecting with either the Default, SYSOPER or SYSDBA system privilege.

#### **OS Authentication**

With this option on, Oracle Database uses OS user login credentials to authenticate database users.

### SQLite Connection

#### **Encrypted**

Enable this option and provide **Password** when connecting to an encrypted SQLite database.

#### **Attached Databases**

To attach or detach databases in the connection.

## SSL Settings

Secure Sockets Layer (SSL) is a protocol for transmitting private documents via the Internet. To get a secure connection, the first thing you need to do is to install OpenSSL Library and download Database Source.

**Note:** Available only for MySQL, PostgreSQL and MariaDB. Support from PostgreSQL 8.4 or later.

### MySQL and MariaDB Connections

To provide authentication details, enable **Use Authentication** and fill in the required information:

#### Client Key

The SSL key file in PEM format to use for establishing a secure connection.

#### Client Certificate

The SSL certificate file in PEM format to use for establishing a secure connection.

#### CA Certificate

The path to a file in PEM format that contains a list of trusted SSL certificate authorities.

#### Verify CA Certificate Name

Check the server's Common Name value in the certificate that the server sends to the client.

#### Specified Cipher

A list of permissible ciphers to use for SSL encryption.

### PostgreSQL Connection

Choose the **SSL Mode**:

require	Only try an SSL connection.
verify-ca	Only try an SSL connection, and verify that the server certificate is issued by a trusted CA.
verify-full	Only try an SSL connection, verify that the server certificate is issued by a trusted CA and that the server hostname matches that in the certificate.

To provide authentication details, enable **Use Authentication** and fill in the required information:

#### Client Key

The path of the client private key.

#### Client Certificate

The path of the client certificate.



## CA Certificate

The path of the trusted certificate authorities.

## Certificate Revocation List

The file path of the SSL certificate revocation list (CRL).

## SSH Settings

**Secure SHell (SSH)** is a program to log in into another computer over a network, execute commands on a remote server, and move files from one machine to another. It provides strong authentication and secure encrypted communications between two hosts, known as **SSH Port Forwarding (Tunneling)**, over an insecure network. Typically, it is employed as an encrypted version of Telnet.

In a Telnet session, all communications, including username and password, are transmitted in plain-text, allowing anyone to listen-in on your session and steal passwords and other information. Such sessions are also susceptible to session hijacking, where a malicious user takes over your session once you have authenticated. SSH serves to prevent such vulnerabilities and allows you to access a remote server's shell without compromising security.

**Note:** Available only for MySQL, Oracle, PostgreSQL and MariaDB.

Please make sure that the parameter - "AllowTcpForwarding" in the Linux server must be set to value "yes", otherwise, the SSH port forwarding will be disabled. To look for the path: /etc/ssh/sshd\_config. By default, the SSH port forwarding should be enabled. Please double check the value settings.

Even the server support SSH tunnel, however, if the port forwarding being disabled, Navicat Data Modeler cannot connect via SSH Port 22.

## Host Name/IP Address

A host where SSH server is activated.

**Note:** The host name in the General tab should be set relatively to the SSH server which provided by your database hosting company.

## Port

A port where SSH server is activated, by default it is 22.

## User Name

A user on SSH server machine. (It is not a user of database server.)

## Authentication Method

Password	Provide the SSH server user <b>Password</b> .
Public Key	<b>Private Key</b>

	<p>It is used together with your public key. The private key should be readable only by you.</p> <p><b>Passphrase</b></p> <p>A passphrase is exactly like a password, except that it applies to the keys you are generating and not an account.</p>
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**Note:** HTTP Tunnel and SSH Tunnel cannot be function simultaneously. The SSH Tunnel is disabled when you select the HTTP Tunnel and vice versa.

## HTTP Settings

HTTP Tunneling is a method for connecting to a server that uses the same protocol (http://) and the same port (port 80) as a web server does. It is used while your ISPs do not allow direct connections, but allows establishing HTTP connections.

**Note:** Available only for MySQL, PostgreSQL, SQLite and MariaDB.

### Uploading the Tunneling Script

To use this connection method, first thing you need to do is to upload the tunneling script to the web server where your server is located.

**Note:** `ntunnel_mysql.php` (for both MySQL and MariaDB), `ntunnel_pgsql.php` or `ntunnel_sqlite.php` is available in the Navicat Data Modeler installation folder.

### Setting up HTTP Tunnel

The following instruction guides you through the process of configuring a HTTP connection.

1. Select the HTTP tab and enable **Use HTTP Tunnel**.
2. Enter URL of the tunneling script, e.g. `http://www.navicat.com/ntunnel_mysql.php`.
3. If your server installed a Web Application Firewall, you can check the **Encode outgoing query with base64** option.
4. If the tunneling script is hosted in a password protected server or you have to access internet over a proxy server, you can provide the required authentication details in **Authentication** or **Proxy** tab.

**Note:** HTTP Tunnel and SSH Tunnel cannot be function simultaneously. The SSH Tunnel is disabled when you select the HTTP Tunnel and vice versa.

# Chapter 9 - Forward Engineering (Available only in Full Version)

## Forward Engineer Physical Model

Navicat Data Modeler provides two forward engineering tools for you to generate physical databases or a script file from a physical model.

- [Synchronize to Database](#) - compare and synchronize to an actual database.
- [Export SQL](#) - generate a SQL file with customized settings.

## Synchronize to Database

The **Synchronize to Database** feature allows you to compare a model with an existing database or schema, states the differences between their structures, and offers synchronizing the structures in model to the target connection. To start the Synchronize to Database wizard, select **Tools -> Synchronize to Database** from the main menu.

**Note:** This feature is only available for Physical Models.

### Select Synchronization Type

#### Sync with selected schemas

Set the synchronization to work on all objects in the selected schemas.

#### Sync with selected objects

Set the synchronization to work on the selected objects only.

### Select Schemas/Objects and Connection

In this step, choose one or more schemas or objects in model to compare to the target schemas or objects. If objects in model are from existing schemas, you can select the existing schemas. Otherwise, enter a target schema name in **Objects without schema will synchronize to this schema** for the source model objects to compare to.

Then, choose target connection and database from existing connections. You can click the **Manage Connection** button to view and edit connections in Navicat Data Modeler. See [Database Connections](#) for details.

### Select Compare and Advanced Options

**Note:** The following options depend on the diagram database type you are chosen.

#### Compare Tables

Check this option if you want to compare tables.

### **Compare Identifier With Case Sensitive**

Check this option if you want to compare table identifier with case sensitive option.

### **Compare Primary Keys**

Check this option if you want to compare table primary keys.

### **Compare Foreign Keys**

Check this option if you want to compare table foreign keys.

### **Compare Indexes**

Check this option if you want to compare indexes.

### **Compare Triggers**

Check this option if you want to compare triggers.

### **Compare Character Set**

Check this option if you want to compare the character sets of tables.

### **Compare Auto Increment Value**

Check this option if you want to compare the auto increment values of tables.

### **Compare Uniques**

Check this option if you want to compare uniques.

### **Compare Checks**

Check this option if you want to compare checks.

### **Compare Excludes**

Check this option if you want to compare excludes.

### **Compare Rules**

Check this option if you want to compare rules.

### **Compare Collation**

Check this option if you want to compare the collations of tables.

### **Compare Views**

Check this option if you want to compare views.

## Compare Definers

Check this option if you want to compare the definers of views.

## SQL for objects to be created

Check this option to include all related SQL statements if new database objects will be created in the target.

## SQL for objects to be changed

Check this option to include all related SQL statements if database objects will be changed in the target.

## SQL for objects to be dropped

Check this option to include all related SQL statements if database objects will be dropped from the target.

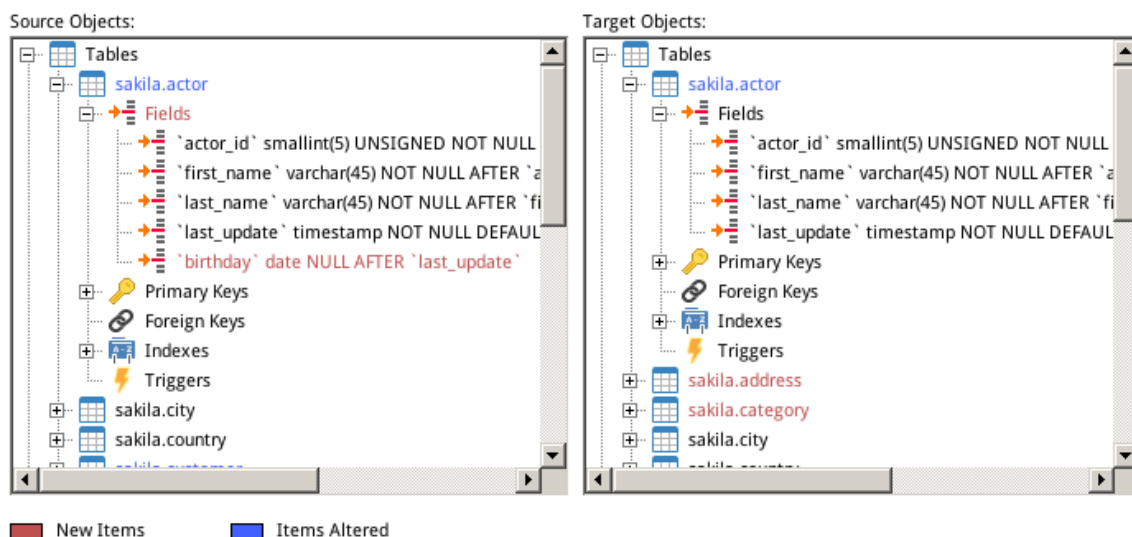
## Continue on error

Ignore errors that are encountered during the synchronization process.

## View Comparison Result

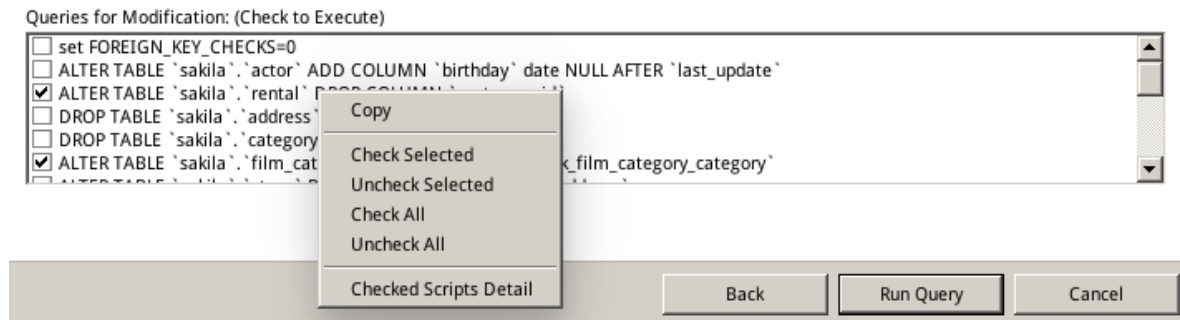
The **Source Objects** and **Target Objects** views show the differences between model and database/schema objects after the comparison of their structures, providing with the detailed SQL statements shown in the **Queries for Modification** list.

The red item represents the non-existence for the other database/schema. The blue item represents the existence for the other database/schema, but different definition detected.



All the scripts are unchecked in the **Queries for Modification** list by default. Check the scripts you want to apply to the target.

You can highlight multiple lines of scripts, and then right-click to show the pop-up menu. Choose **Checked Scripts Detail** to view the full SQL statements you selected.



Click **Run Query** button to execute the selected query.

## Export SQL

After finishing your model, you can save table structures and relations from the model into a script file. The **Export SQL** feature generates a SQL file for the script. To start the Export SQL feature, select **Tools -> Export SQL** from the main menu.

**Note:** This feature is only available for Physical Models.

### General Properties

#### File

Set the output file name and location.

#### Objects

Choose objects in the model you wish to export.

### Advanced Properties

**Note:** The following options depend on the diagram database type you are chosen.

#### Server Version

Select the server version for the SQL file.

#### Include Schema

Include the schema name in file with this option is on. Otherwise, only object names are included in SQL statements.

#### Default Schema

Set the schema name for the objects without schema settings.

#### Include Drop SQL

Include drop object SQL statements in file with this option in on.

#### Include Drop With CASCADE

Include drop object SQL statements with cascade option in file with this option in on.

### **Include Primary Keys**

Include primary keys in file with this option is on.

### **Include Foreign Keys**

Include foreign keys in file with this option is on.

### **Include Uniques**

Include uniques in file with this option is on.

### **Include Indexes**

Include indexes in file with this option is on.

### **Include Checks**

Include checks in file with this option is on.

### **Include Excludes**

Include excludes in file with this option is on.

### **Include Rules**

Include rules in file with this option is on.

### **Include Triggers**

Include triggers in file with this option is on.

### **Include Character Set**

Include table and field character set in file with this option is on.

### **Include auto increment**

Include table auto increment values in file with this option is on.

### **Include Collation**

Include table collation in file with this option is on.

# Chapter 10 – Other Advanced Tools

## Useful Features

Navicat Data Modeler provides variety of tools that improve user experience when working on models.

- [Model Conversion](#)
- [Auto Layout](#)
- [Preview and Print Model](#)
- [Search Filter](#)


## Model Conversion

Navicat Data Modeler allows you to convert your models from one database type to another database type and also from one model type to another model type, e.g. MariaDB 10.0 physical model to PostgreSQL 9.0 physical model, Oracle 10g physical model to a logical model, a conceptual model to MySQL 5.0 physical model.

During the conversion, all data types are converted automatically. The conversion process does not change the SQL syntax of views if converting from one database type to another. If you convert a physical model to logical/conceptual model, all views will be converted to entities. If the target database version is MySQL 4.0 or below, all views will be removed.

To convert an opened model file, choose **File -> Model Conversion**. Then, choose the **Model Type** and select the target **Database** and **Version** if necessary.

## Auto Layout (Available only in Full Version)

To automatically arrange objects on the canvas, click the  **Auto Layout** button. To change the Auto Layout format settings, simply choose **Diagram -> Auto Layout with** from the menu and set the following options:

### Auto Diagram Dimension

Choose the suitable diagram dimension automatically.

### Auto Size Tables To Fit

Resize the table to fit its content automatically.

### Quality

The quality of the auto layout output.

### Object Distance




The distance between the objects in the diagram.

## Preview and Print Model

To preview the pages before printing, simply click the  **Print Preview** button. The model can be printed to the printer or to various file formats.

### Print to a printer

Choose **File** ->  **Print** to send your diagram directly to the printer. You can set the printer option in the pop-up window.

### Print to a file

Choose **File** -> **Print As** and choose the file format to create a PDF, PNG or SVG file of your diagram.

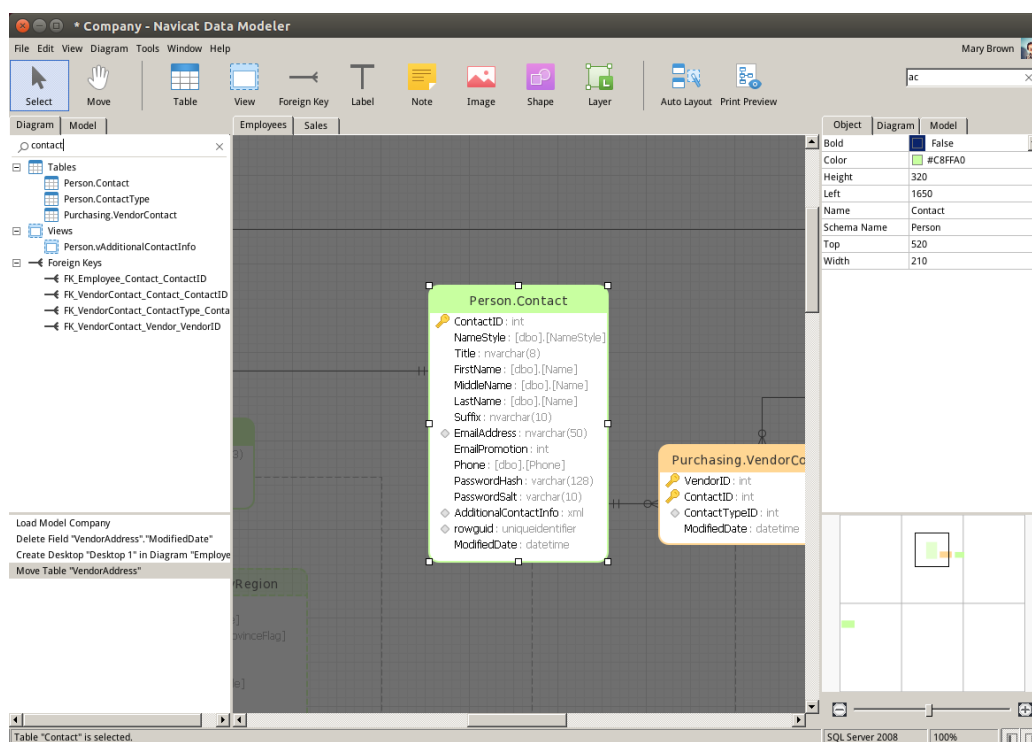
## Search Filter

**Object Filter** allows you to filter models in Navicat Cloud Window and tables, entities or views in the canvas that names contain the filter string.

Just specify a filter string in the **Search** text box. To remove the filter, simply delete the filter string.

**Tree Filter** allows you to filter tree structure in Explorer or in View Designer that names contain the filter string.

Click on the tree to focus and specify a filter string directly. To remove the filter, simply delete the filter string.



# Chapter 11 – Configurations

## Options Settings

Navicat Data Modeler provides several options for customizing its user interface and performance.

To open the Options window, choose **Tools -> Options** from the main menu.

### General

**Hint:** Restart Navicat Data Modeler to take effect.

#### Show toolbar caption

Show text on toolbar buttons in Navicat Data Modeler. Otherwise, only buttons will be presented.



### Font

#### GUI Font

Define the font and its size used by Navicat Data Modeler interface.

**Hint:** Restart Navicat Data Modeler to take effect.

#### Editor Font

Define the font and its size used by editors.

#### Anti Alias

Check this option to improve the quality of the displaying fonts.

### Model

**Hint:** Restart Navicat Data Modeler to take effect.

#### Highlight Objects

With this option is on, when a mouse cursor hovers over an object, Navicat Data Modeler will highlight its border with blue color.

#### Highlight with Relation

With this option is on, when a mouse cursor hovers over a table, a entity or a view, Navicat Data Modeler will highlight it's foreign keys, relations or view relations with blue or green color indicating relationships with other objects.

## Guess Field Type

With this option is on, Navicat Data Modeler will [predict field types](#) when you design fields/attributes in tables or entities.

## Activation & Updater

### Check for updates on startup

Check this option to allow Navicat Data Modeler checks for new version when it starts.

## Proxy

### Use Proxy

Check this option to use proxy for the activation process. Choose the **Proxy Type** and enter **Host**, **Port**, **User Name** and **Password**.

## OCI

**Hint:** Restart Navicat Data Modeler to take effect.

### OCI library (oci.dll)

Choose the **Oracle Client** / **Oracle Instant Client** folder that includes the OCI library (oci.dll) for [Basic](#) connection. It has already included in Navicat Data Modeler installation folder. You can locate it directly.

**Oracle Instant Client** is the simplest way to deploy a full Oracle Client application built with OCI, OCCI, JDBC-OCI, or ODBC drivers. It provides the necessary Oracle Client libraries in a small set of files. You can also download Oracle Client / Oracle Instant Client through -

[Oracle Client](#)

[Oracle Instant Client](#)

Download the appropriate Instant Client packages for your platform and the CPU. All installations REQUIRE the Basic or Basic Lite package. Unzip the packages and set the path points to it.

# Chapter 12 – Hints and Tips

## Model Hints and Tips

Navicat Data Modeler provides some useful hints to work on the model more effectively.

### Locate Object in the Diagram Canvas

Object selected in the Explorer's Diagram tab will be highlighted in the Diagram Canvas.

Double-click an object in the Explorer's Diagram tab will jump to the corresponding object in the Diagram Canvas.

### Delete Object from Model

Select an object in the Diagram Canvas and press SHIFT+DELETE.

### Open Table/Entity/View Designer

Double-click a table/entity/view in the Explorer's Model Tab or the Diagram Canvas.

### Get Table /View Structure (SQL Statement)

Select and copy a table /view in the Diagram Canvas, and paste it to other text editors.

### Design Field without Table/Entity Designer

Select and click a table/entity name and press TAB/DOWN ARROW to add/edit fields. Navicat Data Modeler will predict field types according to field names you entered.

**Note:** Available only for Physical Models and Logical Models.

#### **INTEGER/int/int4/NUMBER**

- suffix "id", "no" (if it is the first column, it will be predicted as a primary key)
- suffix "num"
- "qty", "number"
- exactly "age", "count"

#### **DECIMAL(10,2)/decimal(10,2)/NUMBER/REAL/money**

- suffix "price", "cost", "salary"

#### **FLOAT/double/float8/NUMBER/REAL/float**

- "size", "height", "width", "length", "weight", "speed", "distance"

## DATE/datetime/date/TEXT/datetime2

- "date", "time"


## VARCHAR(255)/varchar(255)/VARCHAR2(255)/TEXT

- other field names


Enter \* before the field name to recognize as primary key. e.g. \*itemNo:int.

Enter : between field name and field type to custom field type, e.g. itemName:varchar(255).

### Reorder Field

Select a table/entity in Diagram Canvas, then press and hold the SHIFT key. Use  to drag the field to a desired location.

### Delete Field

Select a table/entity in Diagram Canvas, then press and hold the SHIFT key. Use  to drag the desired field out of the table/entity.

### Add Vertex to Foreign Key/Relation/Line/Arrow

Select a foreign key/relation/line/arrow in Diagram Canvas. Press and hold the SHIFT key and click on it to add vertex.

### Delete Vertex on Foreign Key/Relation/Line/Arrow

Select a foreign key/relation/line/arrow in Diagram Canvas. Press and hold the SHIFT key and click on the vertex.

### Switch to Hand Mode

Press and hold the SPACE key, then move the diagram.

### Select a Page in Print Preview

Press and hold the SHIFT key, then point to a page to show the page number.

Press and hold the SHIFT key, then click a page to jump to the corresponding page in Diagram Canvas.

# Chapter 13 – Hot Keys

## Model Hot Keys

Keys	Action
CTRL+N	New Model
CTRL+D	New Diagram in Model
CTRL+S	Save Model
CTRL+Z	Undo
CTRL+Y	Redo
CTRL+X	Cut
CTRL+C	Copy
CTRL+V	Paste
CTRL+P	Print
ESC	Select
H	Move Diagram
T	New Table/Entity
V	New View
R	New Foreign Key/Relation
A	New Label
N	New Note
I	New Image
L	New Layer
CTRL+B	Bold Selected Table, Entity, View, Foreign Key, Relation or Shape
CTRL++ or CTRL+Mousewheel Up	Zoom In
CTRL+- or CTRL+Mousewheel Down	Zoom Out
CTRL+0	Reset Zoom
ALT+RIGHT	Next Diagram
CTRL+TAB	Next Window