

Navigating Table Relationships

Only in DbVisualizer Pro

This feature is only available in the DbVisualizer Pro edition.

A powerful way to study database data is to navigate between the tables in a schema by following table relationships declared by Primary and Foreign Keys. DbVisualizer includes a **Navigator** feature for this purpose, visualizing the relationships graphically while making the data for each navigation case easily accessible in a data grid.

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Opening the Navigator

To launch the **Navigator**:

1. Locate the table you want to start the navigation from in the **Databases** tab tree,
2. Double-click the table node to open its **Object View** tab,
3. Select the **Navigator** sub tab.

The screenshot shows the DbVisualizer interface for the 'Table: DEPARTMENTS' in the 'Ora12C_HR/Schemas/HR/Tables/DEPARTMENTS' schema. The 'Navigator' tab is active, displaying a graphical view of relationships. The 'DEPARTMENTS' table is connected to two 'EMPLOYEES' tables. The first relationship is for 'Human Resources' (DEPARTMENT_NAME) with DEPARTMENT_ID 40. The second relationship is for 'IT' (DEPARTMENT_NAME) with DEPARTMENT_ID 60. Below the graphical view is a data grid for the 'DEPARTMENTS' table with columns: DEPARTMENT_ID, DEPARTMENT_NAME, MANAGER_ID, and LOCATION_ID. The grid contains 13 rows of data. At the bottom, there are status bars for 'Max Rows: 1000', 'Max Chars: -1', 'Pattern: n/a', and performance metrics: '124.663/0.000 sec', '27/4', and '1-13'.

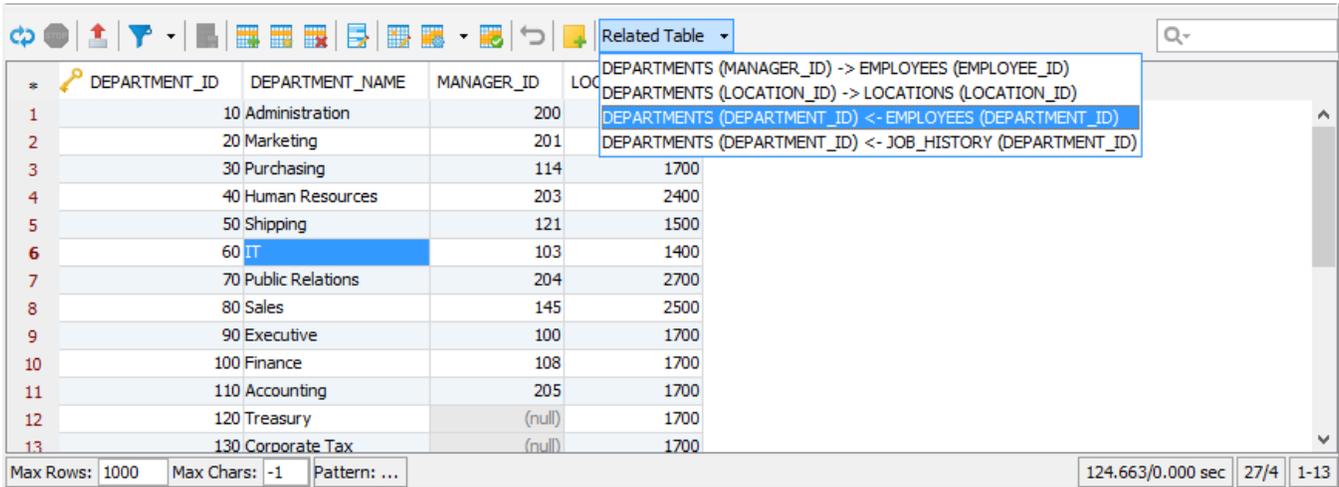
DEPARTMENT_ID	DEPARTMENT_NAME	MANAGER_ID	LOCATION_ID
1	10 Administration	200	1700
2	20 Marketing	201	1800
3	30 Purchasing	114	1700
4	40 Human Resources	203	2400
5	50 Shipping	121	1500
6	60 IT	103	1400
7	70 Public Relations	204	2700
8	80 Sales	145	2500
9	90 Executive	100	1700
10	100 Finance	108	1700
11	110 Accounting	205	1700
12	120 Treasury	(null)	1700
13	130 Corporate Tax	(null)	1700

The **Navigator** tab has two parts: a graphical view and a data grid. Initially, the graphical view shows just the selected start table, and the data grid shows the data for the start table.

The data grid is of the same type as you encounter in other parts of DbVisualizer, such as in the **Data** tab, but extended with a **Related Table** list and a **Tag** button.

Navigating Relationships

Data navigation in DbVisualizer means following table relationships declared by Primary and Foreign Keys, using a unique key value. In the example schema shown in the screen shots in this section, there is a table named `DEPARTMENTS` with a primary key named `DEPARTMENT_ID`. Another table named `EMPLOYEES` has a foreign key constraint, declaring that values in its `DEPARTMENT_ID` column refer to primary key values in the column with the same name in the `DEPARTMENTS` table.



The screenshot shows the DbVisualizer interface. A data grid displays the `DEPARTMENTS` table with columns `DEPARTMENT_ID`, `DEPARTMENT_NAME`, `MANAGER_ID`, and `LOCATION_ID`. Row 6, corresponding to `DEPARTMENT_ID = 60` (IT), is selected. A dropdown menu titled 'Related Table' is open, showing three related tables:

- `DEPARTMENTS (MANAGER_ID) -> EMPLOYEES (EMPLOYEE_ID)`
- `DEPARTMENTS (LOCATION_ID) -> LOCATIONS (LOCATION_ID)`
- `DEPARTMENTS (DEPARTMENT_ID) <- EMPLOYEES (DEPARTMENT_ID)` (highlighted)
- `DEPARTMENTS (DEPARTMENT_ID) <- JOB_HISTORY (DEPARTMENT_ID)`

At the bottom of the interface, the status bar shows: Max Rows: 1000, Max Chars: -1, Pattern: ..., 124.663/0.000 sec, 27/4, 1-13.

If you use `DEPARTMENTS` as your start table, you can easily navigate to the `EMPLOYEES` table for different `DEPARTMENT_ID` values. In the data grid, select one or more columns in the row that holds the `DEPARTMENT_ID` you want to use for navigation. In the figure above, the `DEPARTMENT_NAME` column in the row for `DEPARTMENT_ID = 60` is selected.

Next, bring up the **Related Table** list. It lists all tables the `DEPARTMENTS` table is related to through Primary and Foreign Keys, with the key columns within parenthesis. A forward arrow (`->`) between the table names means that the `DEPARTMENTS` table has a foreign key relation to the named table. A backward arrow (`<-`) means that the named table has a foreign key relation to the `DEPARTMENTS` table.

Table: DEPARTMENTS
Ora12C_HR/Schemas/HR/Tables/DEPARTMENTS

Info Columns Data Row Count Primary Key Row Id References Navigator Grants

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Related Table

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION
103	Alexander	Hunold	AHUNOLD	590.423.4567	2006-01-03 00:00:00	IT_PROG	9000	
104	Bruce	Ernst	BERNST	590.423.4568	2007-05-21 00:00:00	IT_PROG	6000	
105	David	Austin	DAUSTIN	590.423.4569	2005-06-25 00:00:00	IT_PROG	4800	
106	Valli	Pataballa	VPATABAL	590.423.4560	2006-02-05 00:00:00	IT_PROG	4800	
107	Diana	Lorentz	DLORENTZ	590.423.5567	2007-02-07 00:00:00	IT_PROG	4200	

Max Rows: 1000 Max Chars: -1 Pattern: n/a 0.000/0.000 sec 5/11 1-5

When you select "DEPARTMENTS (DEPARTMENT_ID) <- EMPLOYEES (DEPARTMENT_ID)" in the **Related Table** list, a node is added to the graph for the EMPLOYEES table, with an arrow from the DEPARTMENTS table node to show the navigation direction. We call this a navigation case.

The EMPLOYEES node contains the key columns (just one in this example) and their values.

The arrow between the nodes is labeled with the key column name. In addition, the arrow label also shows the name and value of the column that you selected in the DEPARTMENTS table when you created this navigation case, i.e., the DEPARTMENT_NAME column. If you select multiple columns when you create a navigation case, all non-key column names and values are included in the arrow label. This can make it easier to see at a glance what a navigation case represents.

The grid is also updated when you create a navigation case, to show all rows in the table you navigated to that has a key value corresponding to the selected key value in the table you navigated from. In this case, it shows all rows in the EMPLOYEES table with DEPARTMENT_ID equal to 60.

You can edit the grid values, but be aware that if you change the value of a key in the grid for a navigation case, the row will disappear from the grid since the grid only shows rows with keys matching the navigation case key value.

You can continue to create more navigation cases from any node in the graph. For instance, if the schema contains a table with job history information for employees, you can navigate to the history for an employee from the EMPLOYEES node. Or, you can select the DEPARTMENTS node in the graph to navigate to the EMPLOYEES table for a different department. Just click on the DEPARTMENTS node, select another row in the data grid and then the same **Related Table** list entry.

Table: DEPARTMENTS Actions ▾

Ora12C_HR/Schemas/HR/Tables/DEPARTMENTS

Info Columns Data Row Count Primary Key Row Id References Navigator Grants Column

DEPARTMENTS

DEPARTMENT_ID
DEPARTMENT_NAME Human Resources

EMPLOYEES
DEPARTMENT_ID 40

DEPARTMENT_ID
DEPARTMENT_NAME IT

EMPLOYEES
DEPARTMENT_ID 60

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Related Table

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_P
1	203 Susan	Mavris	SMAVRIS	515.123.7777	2002-06-07 00:00:00	HR_REP	6500	

Max Rows: 1000 Max Chars: -1 Pattern: n/a 0.000/0.000 sec 1/11 1-1

If you want to create multiple navigation cases from one table to another using the same relationship, you can select columns in multiple rows in the first table. When you make a selection in the **Related Table** list, one navigation case per row is created.

Every time you select a node in the graph, the data grid is updated to show the corresponding data. The grid settings for one node are independent of the settings for another node. For instance, if you define a filter for one node, the filter is only associated with the grid for that node.

Adding Context Information to the Graph

The navigation node always shows the key columns and their values, but sometimes you may want to add other columns to the node to better describe what it represents. This is called tagging the node. There are two ways to do so: drag and drop cells from the grid to any node, or use the **Tag** button in the grid toolbar to tag the currently selected node with the currently selected cells in the grid.

To drag and drop cells to a node, select one or more cells in the grid. With the left mouse button pressed and the mouse positioned over one of the selected cells, drag the cells over a node in the graph and release the mouse button. The cells are added to the node.

Table: DEPARTMENTS
Ora12C_HR/Schemas/HR/Tables/DEPARTMENTS

Info Columns Data Row Count Primary Key Row Id References Navigator Grants Columns Comment Indexes Constrains

DEPARTMENTS

DEPARTMENT_ID
DEPARTMENT_NAME Human Resources

EMPLOYEES
DEPARTMENT_ID 40
FIRST_NAME Susan
LAST_NAME Mavris

DEPARTMENT_ID
DEPARTMENT_NAME IT

EMPLOYEES
DEPARTMENT_ID 60

Powered by yFiles

Related Table

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID	DEPARTMENT_ID
1	203	Susan	Mavris	SMAVRIS	515.123.7777	2002-06-07 00:00:00	HR_REP	6500	(null)	101

Max Rows: 1000 Max Chars: -1 Pattern: n/a 0.000/0.000 sec 1/11 1-1

Alternatively, you can select the cells in the grid and click on the Tag button  to add the cell values to the currently selected node.

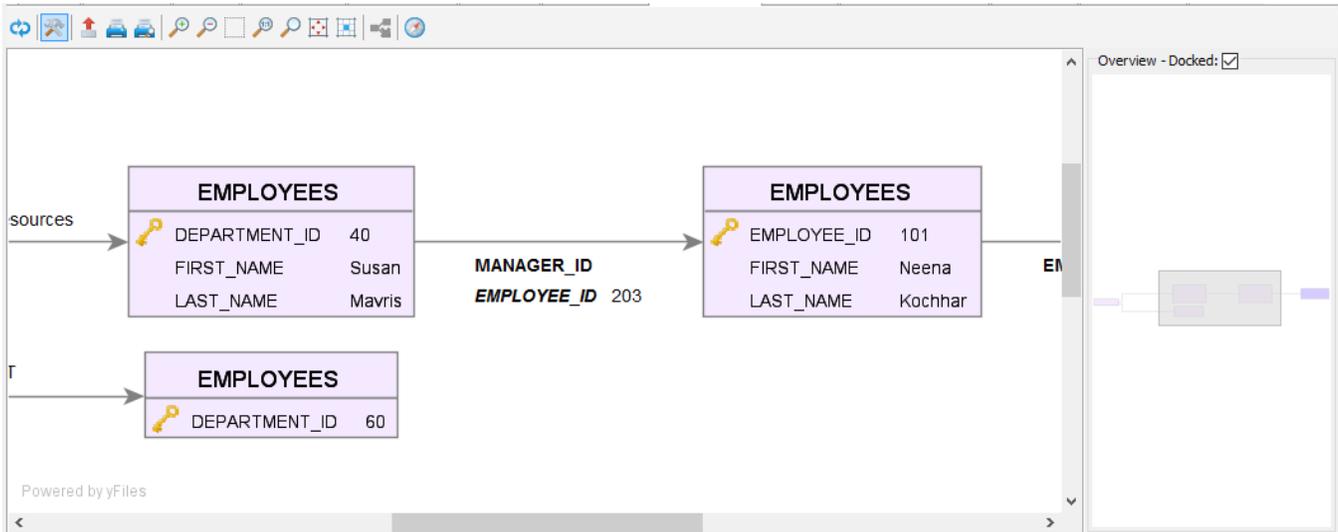
Arranging the Graph

As you add navigation cases, you may find that you need to move nodes around, remove selected nodes, zoom and move around in the graph, etc.

You can rearrange the layout of the graph by selecting a node and, with the left mouse button pressed, drag it around. The arrow and its label move with the node.

The toolbar for the graph offers a number of tools to help you with other tasks

The **Overview** control is useful for large graphs that do not fit into the display area.



The gray area in the **Overview** control indicates the portion of the graph that is currently shown in the display area. You can drag the gray area around to study other portions of the graph.

To get a larger graph display area, you can put the **Overview** control in a separate window. Just uncheck the **Docked** checkbox.

Exporting and Printing the Graph

You can also export the graph to an image file or print it. Use the corresponding toolbar buttons to do this

When you print the graph, you are prompted for information about what to print (the Graph or the View, i.e., just the portion visible in the display area) and how many rows and columns to split the printing over (one page is used for each row/column).

Opening the Navigator from the Data tab

Sometimes, you may realize that you want to analyze the relationships for a table when you are working with it in the **Data** tab. If you have configured the **Data** tab to show only filtered data, sorted in a specific way, etc. opening the **Navigator** tab and making all the same configurations there may be a bit of a hassle. A more convenient way is to just pick **Show in Navigator** in the right-click menu in the **Data** tab. It opens the table in the **Navigator** tab with all the same configurations as you made in the **Data** tab.