

# Dell™ One Identity Manager 7.1.3




## Web Designer Reference Guide



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#### Legend

-  **CAUTION:** A CAUTION icon indicates potential damage to hardware or loss of data if instructions are not followed.
-  **WARNING:** A WARNING icon indicates a potential for property damage, personal injury, or death.
-  **IMPORTANT, NOTE, TIP, MOBILE, or VIDEO:** An information icon indicates supporting information.

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# Contents

<b>Web Designer Editor</b> .....	<b>8</b>
<b>Web Designer Structures and Functions</b> .....	<b>9</b>
Starting the Web Designer .....	9
Setting up or Installing a Web Application .....	9
Selecting and Editing a Web Application .....	10
The User Interface Layout .....	12
Start Page .....	13
Title Bar .....	14
Status Bar .....	14
Menu bar .....	15
Toolbar .....	18
Navigation Overview .....	20
Navigation Menu Functions .....	21
Definition Tree View .....	23
The Node Editor .....	24
Global settings .....	25
<b>The Web Designer Object Model</b> .....	<b>28</b>
Web Application .....	28
Web projects .....	28
Subprojects .....	29
Modules .....	29
Start Module .....	29
Session Module .....	29
Menu Structure .....	30
Structure of Breadcrumb Navigation .....	30
Current User .....	30
Session module instances .....	31
Components .....	31
Form types .....	31
Local Components .....	31
Controls .....	32
Functions .....	32
Layout Objects .....	32
Using the Web Designer Object Model .....	32

<b>Working with the Web Designer</b> .....	<b>34</b>
Search and replace .....	34
Sharing the Web Project .....	35
Working with Tabs .....	36
Context Menu Functions .....	36
Working with the Preview .....	37
Preview Functions .....	38
Debugging Mode Support Functions .....	39
Footer Toolbar Functions .....	40
Object state .....	40
Viewing Generated Code .....	41
Bookmarks .....	41
Command list .....	42
Properties .....	43
Multilingual Captions .....	44
Import object .....	47
Related applications .....	47
Check model integrity .....	48
Check accessibility .....	49
Object Properties .....	49
Change Labels for Web Projects .....	49
File-Based Workflow in Web Designer .....	51
Exporting a Module from the Database to the Hard Drive .....	52
Importing from a Solution to the Database .....	54
<b>Web Project Configuration Options</b> .....	<b>55</b>
Project Configuration - Web Project Tab .....	55
Selecting a Database Object .....	55
Configuring a Web Project .....	56
Finding a Specific Configuration Key .....	56
Finding References to a Configuration Key .....	57
Calling up the "Settings" view .....	58
Parameter Type "Boolean Value" .....	58
Parameter Type "SQL filter condition" .....	58
Parameter Type "Selection from value list" .....	59
Parameter Type "Free text" .....	59
Parameter Type "Property list" .....	60
Parameter Type "Image" .....	62
Parameter Type "Configuration Object" .....	63
Parameter Type "Color value" .....	66

Parameter Type "Color dictionary" .....	67
Project Configuration - Customization .....	68
Project Configuration - Search Fields .....	69
Column-dependent references .....	70
Using a column dependent reference .....	71
Defining a new Column-Dependent Reference .....	71
Dynamic References .....	74
Object reference .....	75
Defining Reference Types and References .....	75
Defining a new Object-Dependent Reference .....	76
<b>Customizing the Web Portal .....</b>	<b>78</b>
Create new project .....	78
Create New Module .....	80
Adding New Components .....	82
Customizing Object Definitions .....	83
Creating Object Copies with the Wizard .....	84
Extensions .....	85
How Extensions Work .....	85
Extension Rules .....	86
Creating New HyperViews .....	88
Adding New Nodes .....	89
Create Data Display .....	90
Displaying Single Objects .....	90
Grid Display for Collection Data .....	91
Generating Mapping Definitions .....	93
Embedding Reports .....	93
Linking to a Page .....	94
<b>Basics of Web Designer Programming .....</b>	<b>95</b>
Node Types .....	95
Defining with Web SQL .....	95
Web SQL functions .....	96
Loading Collections .....	97
Querying Data from a Collection .....	97
Filtering Data from a Collection .....	98
Collections .....	99
"Database Objects" as a collection .....	100
Working with a Database based Collection .....	100
Loading Database Object through Relations .....	102
Loading Database Objects from Multiple Tables .....	103

Using the Database Query Wizard .....	103
Editing Database Queries .....	106
Loading a Historical Object State .....	106
Loading a Change History .....	107
View Definitions .....	108
Collections as Data Sources for Controls .....	108
Collection Events .....	108
Assigning Collections to Components .....	109
Declaring Configuration Keys in Modules and Components .....	110
Declaring Context Parameters .....	111
Microsoft® .NET Framework Executing Code .....	112
Runtime API .....	112
Integrating Code in Object Definitions .....	113
Integrating C# Code into a Web SQL Expression .....	114
Access to Environmental Data .....	114
Referencing Controls .....	114
Referencing Collections .....	115
Customizing Documentation .....	115
<b>Compiling and Debugging .....</b>	<b>117</b>
Compiling a Web Application .....	117
Compiling with the Database Compiler .....	118
Viewing Error Messages .....	118
Querying a Web Application .....	119
Evaluating the Web SQL Expression of a Property .....	120
Viewing Information Specific to One Database Object Only in the Query Window .....	121
Debugging .....	121
Setting Breakpoints .....	122
Call stack .....	122
<b>Monitoring .....</b>	<b>123</b>
Status .....	123
Sessions .....	124
Assemblies .....	124
Log Files .....	125
Exceptions .....	125
Web Portal Performance Indicators in Windows® Performance Monitoring .....	125
<b>Frequent Tasks in the Web Portal .....</b>	<b>126</b>
Editing Captions .....	126
Adding Functions .....	127

Pasting in Texts or Captions .....	128
Pasting in Grids .....	129
Presets for Grouping Grids .....	130
Visualizing Exceptions in the Web Portal .....	130
Replacing Images from Resource Files .....	131
Settings for Increased Accessibility .....	132
<b>About Dell .....</b>	<b>134</b>
Contacting Dell .....	134
Technical support resources .....	134

# Web Designer Editor

The Web Designer is a development environment for One Identity Manager web applications. The web application resulting from a web project is based on ASP.NET. Web Designer uses a simplified development model which helps you to quickly develop a robust web application without any prior knowledge in Microsoft® .NET Framework.

The development module use by the Web Designer forms the basis of the web project. A web project represents the later web application and is made up of reusable modules and components amongst other things.

The installation already contains numerous default modules and components as well as a default web project that uses them. You can configure and extend the default web project to create your own web application. You can also add a new web project where you can reuse default modules and components.

The Web Designer development environment contains an editor with which you can program your web application.

In addition, Web Designer has a compiler to compile your web project. Compiling is a prerequisite so that the web project can run as a web application. You can debug a web project running as a web application with the help of the integrated debugger in Web Designer.



# Web Designer Structures and Functions

The Web Designer is used to configure and expand a Web Portal. It has an extensive GUI in which the web application functions can be brought together.

Each Web Designer interface element and its functions are described in detail in the following chapters.

## Starting the Web Designer

### *To start the Web Designer*

1. Select **Start | Dell | One Identity Manager | Configuration | Web Designer**.
2. Select the database connection data and the authentication procedure.
3. Log in to the program.

## Setting up or Installing a Web Application

- ① **NOTE:** Certain key Web Designer functions, such as web project preview or debugging, can only work if a web application is installed. An important prerequisite for ensuring that the web application will work, is a functioning WCF connection.
- ① **NOTE:** To set up a new web application, a web application must already be installed.

Perform one of the following tasks.

- Install a new web application
- Select a web application

For more information, see [Selecting and Editing a Web Application](#) on page 10.

### *To install a new web application*

1. Select **Web applications | Install new web applications** on the left-hand side of the start page.  
If applicable, the **User account control** window opens when the corresponding option is enabled.

2. Click **Yes** to execute the file.

This opens the **One Identity Manager Web Installer** window.

3. Select a database connection and click **Next**.
4. Select an install destination by entering an application name in the text field.
5. Click **Next** until you see an option box.
6. Select the application you entered in **Change in**.
7. Click **Next** and then **Finish**.

① **NOTE:** After you have created a new web application, important settings must be made in the database. You can configure the settings in the Web Designer. The exact procedure is explained in **To edit web application settings**. You can also configure the setting in the Web Designer Configuration Editor. For more information about settings, see the Dell One Identity Manager Installation Guide.

## Selecting and Editing a Web Application

### *To select a web application*

1. Select **Web applications | Select web application**.

This displays a list of existing web applications.

2. Select the web application of your choice from the list.

The selected web application is loaded and display under **Manage your web portal environment** on the start page.

### *To edit web application settings*

① **NOTE:** A web application must be selected.

1. Click **Edit web application settings**.

This opens the dialog box **Edit web application settings**.

① **NOTE:** The **URL** text field shows you the address where the web application can be found. This value cannot be edited and serves as a key for the matching set in the database.

2. Select in **Web project** the web project to be shown in your web application.

① **NOTE:** The project you selected in "Web project" must be stored in the database. Otherwise, you cannot select it. Ensure that you have saved the web project.

The selected web shown in the menu.

3. Select the module the web application user will use for authentication in future in **Authentication module**.
4. Select a module in **Try single sign-on, use the following module if single sign-on fails:**

If the module selected under **Authentication module** supports *Single sign-on*, you have the option to enter an alternative authentication method. This is used as a fall-back if single sign-on fails for any reason. For more detailed information on authentication modules, see the Dell One Identity Manager Installation Guide.

5. Click **Debugging**.

The debugging environment is enabled and you can use it. For more information, see [Debugging](#) on page 121.

① **NOTE:** Test your web application with this setting before you generate a web project compilation via **Release**.

### To edit web application settings with an OAuth authentication module

① **NOTE:** If you use OAuth authentication, you can enter an ID in the text field provided. This automatically identifies the web application. This authentication ID is assigned in the OAuth system and must be added to the configuration in Web Designer. If you do not use OAuth authentication, ignore this text field.

1. Follow the steps 1 to 3 described in the step-by-step **To edit web application settings**.
2. Select one of the following modules in **Authentication module**
  - a. OAuth 2.0 / OpenID Connect
  - b. OAuth 2.0 / OpenID Connect (role-based)

Enter values for your web application in the **OAuth** section of the **Edit web application settings** dialog box. These fields are normally preset with values from global configuration parameters.

The following values can be entered.

**Table 1: Values for Using an Authentication Module**

Values	Description
Client ID for OAuth authentication	If this is empty, the value from "QER\Person\OAuthenticator\ClientID\Web" is used. For example, "urn:IdentityManager/Web".
Thumb print for the OAuth certificate	This is used to find the certificate in the certificate store. Either the thumb nail or the issuer of the certificate is required. For example, "7612FF79D99FCC56BEDDOC758412025B284DC327".
Issuer information for the OAuth certificate	This is used to find the certificate in the certificate store. Either the thumb nail or the issuer of the certificate is required. For example, "O=[Firmenname], OU=[Organisationseinheit], CN=[IP des Servers]".
Resource	Is only required if the OAuth service needs this value. The value entered here is passed as a URL parameter "Resource" to the OAuth server.
Certificate endpoint	Supplies the URL from which to download the certificate. The certificate's thumb print or issuer information is required for validating the downloaded certificate. For example, "https://certificateServer/certificate.crt".

## Detailed information about this topic

- For more detailed information about enabling authentication modules, see the Dell One Identity Manager Installation Guide.
- For more detailed information about custom authentication modules, see the Dell One Identity Manager Configuration Guide.

# The User Interface Layout

You can control the Web Designer graphical user interface with a mouse and key combinations. A minimum screen resolution of 1280 x 1024 pixels is recommended with at least 16 bit color in order to optimize the user interface graphics. A display size of at least 9.7 inches is recommended for mobile displays, for example, when using a tablet.

- ① **NOTE:** You can customize the Web Designer's default layout, as in the other One Identity Manager tools, by moving, closing or hiding to suit your requirements. You can set the hide mode with the **Auto Hide** button.

After you have logged in, you are presented with an empty start page. This page contains a title bar, a status bar, menu bar, a toolbar, a navigation view, and other edit options, as described below.

### A. Title Bar

In the title bar you can see the program icon, program name, and connected database.

### B. Menu bar

The menu bar gives you different menus and menu items.

### C. Toolbar

Each program component comes with its own toolbar.

### D. Start page

On the start page you can see various functions and information on the status of the currently selected web project and for other web projects.

### E. Navigation view

The navigation view is on the left-hand side of the screen and organizes database objects into different categories.

### F. Preview

The preview window shows how a specific web application will look and respond in the browser.

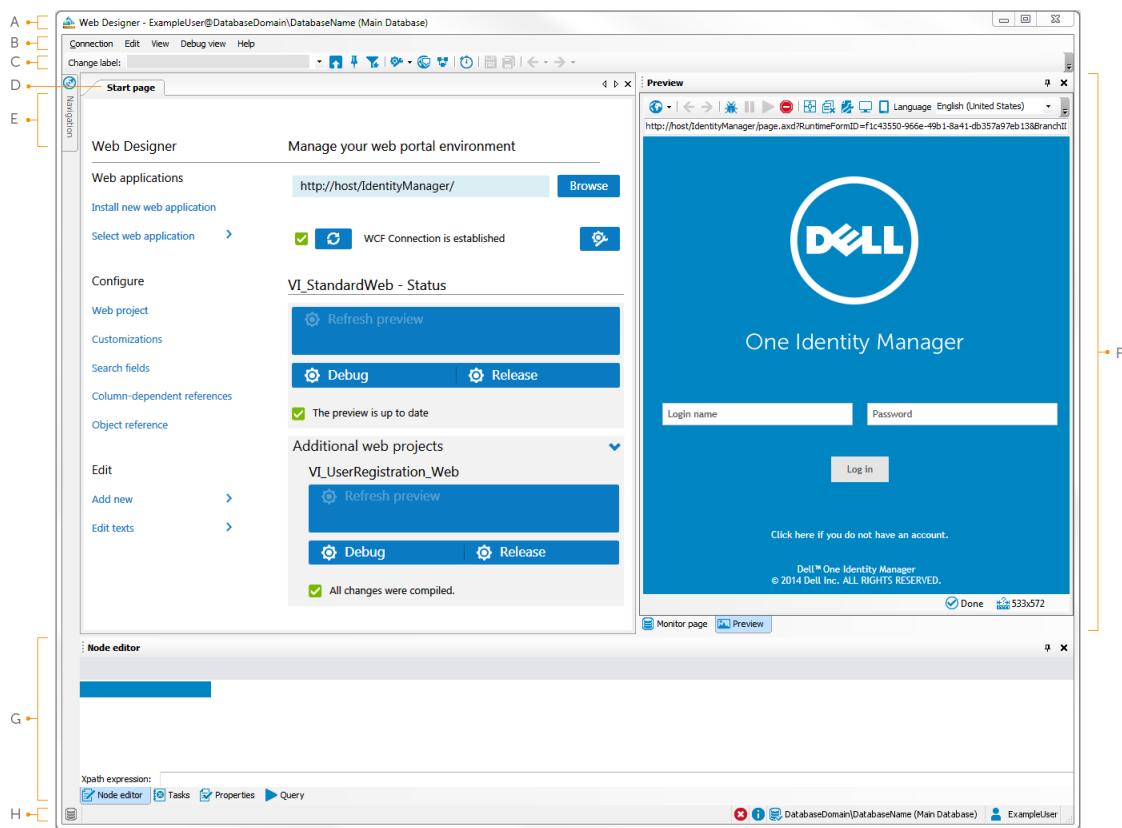
### G. Window in lower area

More edit options are available in the lower area of the screen. Some of these options, such as the **Node editor** view are open by default.

### H. Status bar

The status bar displays the connected database among other things.

**Figure 1: Web Designer user interface**



## Start Page

In the middle of the start page, you can see various functions and information about the status of the currently selected web project and for other web projects. For more information, see [Web projects](#) on page 28.

On the left-hand side of the start page different tasks are available concerning web project installation, configuration and editing.

**Table 2: Tasks on the start page**

Task area	Task	Description
Web applications	Install new web applications	Installs a new web application for Web Designer. You can install several web applications.
	Select a web application	Selects a web application. You work on this selected web application.
Configuration	Web project	Configures a web project. Defined configuration keys are available for web project configuration.

Task area	Task	Description
	Customizations	For creating or editing substitution rules for module copies.
	Search fields	For establishing database columns in which to execute searches.
	Column-dependent references	For configuring column-dependent references. These are used as a reference for a component's column definition.
	Object reference	For configuring object-dependent references. These are part of dynamic references.
Edit	Add new	Edits the web application. You can create new modules and projects, column- or object-dependent references and object copies.
	Edit texts	Edits control element texts.

### Detailed information about this topic

- [Selecting and Editing a Web Application](#) on page 10
- [Web Project Configuration Options](#) on page 55
- [Customizing the Web Portal](#) on page 78
- [Multilingual Captions](#) on page 44

### To reopen a closed start page

- Select **Start page** in the **View** menu.  
The **Start page** tab is displayed as an empty page with the usual selection options and settings.

## Title Bar

In the title bar you can see the program icon, program name and connected database in the following notation:  
Web Designer - <User>@<Database server>\<Database (Description)> - ...project

## Status Bar










The status bar shows various items of status information. Some status data is shown by way of icons. Which icons are displayed is partially dependent on the program settings selected.

The status bar comes in different colors.


**Table 3: Meaning of the Colors**

Color	Meaning
none	Development environment database is connected.
Red	Simulation mode is enabled.
Green	Test environment database is connected.
Yellow	Productive environment database is connected.

**Table 4: Status bar icons**

Icon	Meaning
	Current user.
	Shows information about the project.
	The database is connected.
	Shows database access.
	Quick edit is enabled.
	The database must be compiled.
	The program is in simulation mode.
	A warning has been written to the error log.
	An error message has been written to the error log.

In the status bar, you can additionally see the connected database under <Server>\<Database (Description)>.

 **TIP:** When you double-click the connected database in the status bar, you can copy the database path to the clipboard. If you double-click the current user symbol, you can access further information about the current user.

## Menu bar

You can use the menu bar menus to call up submenus and quickly access and execute many functions in Web Designer. The menus are described in more detail in the following table.

**Table 5: Menu items in the menu bar**

Menu	Menu item	Description
Connection	Settings...	Opens the Web Designer <b>Global Settings</b> dialog box. For more information, see <a href="#">Global settings</a> on page 25.
	Exit	Closes the program.

Menu	Menu item	Description
Edit	Refresh preview	Refreshes the Web Designer preview.
	Publish	Opens a submenu with other options. For more information, see <a href="#">Sharing the Web Project</a> on page 35.
	Configure project	Opens a submenu with other options. For more information, see <a href="#">Web Project Configuration Options</a> on page 55.
	Copy objects	Opens the <b>Copy objects</b> dialog box. For more information, see <a href="#">Creating Object Copies with the Wizard</a> on page 84.
	Create new module	Opens the <b>Create new module</b> dialog box. For more information, see <a href="#">Create New Module</a> on page 80.
	Create new project	Opens the <b>Create new project</b> dialog box. For more information, see <a href="#">Create new project</a> on page 78.
	Search	Opens the <b>Search and replace</b> dialog box. You can also access the search function using the <b>CTRL + F</b> shortcut. For more information, see <a href="#">Search and replace</a> on page 34.
	Search next	Performs the search with the search parameters specified in the <b>Search and replace</b> dialog box. The search continues without reopening the dialog box. Use <b>F3</b> to continue searching.
	Captions	Opens the <b>Create new module</b> dialog box. For more information, see <a href="#">Multilingual Captions</a> on page 44.
	Import object	Opens the <b>Please select a source file</b> Windows default dialog. For more information, see <a href="#">Import object</a> on page 47.
	Related applications	Opens the <b>Related applications</b> dialog box. For more information, see <a href="#">Related applications</a> on page 47.
	Check model integrity	Checks the current web project. For more information, see <a href="#">Check model integrity</a> on page 48.












Menu	Menu item	Description
	Check accessibility	Checks the web project's accessibility. For more information, see <a href="#">Check accessibility</a> on page 49.
View	Tabs...	Opens the <b>Tabs...</b> Dialog box. For more information, see <a href="#">Working with Tabs</a> on page 36.
	Restore default layout	Restores the default layout.
	Restore default layout (size inclusive)	Adjusts the default layout and the window size.
	Restore saved layout	Restores the saved layout.
	Save layout	Saves the Web Designer layout after you have modified it.
	Start Page	Opens the home page. The tab is open by default. For more information, see <a href="#">Home page</a> .
	Object state	Opens the <b>Object status</b> tab in the preview. For more information, see <a href="#">Object state</a> on page 40.
	Node editor	Opens or enables the <b>Node editor</b> view. The view is open by default and displayed in the lower area of the Web Designer.
	Task	Opens or enables the <b>Tasks</b> view. The view is open by default and displayed in the lower area of the Web Designer. For more information, see <a href="#">Viewing Error Messages</a> on page 118.
	Command list	Opens the <b>Command list</b> view. The view is opened in the lower area of the Web Designer. For more information, see <a href="#">Command list</a> on page 42.
	Bookmarks	Opens the <b>Bookmarks</b> view. The view is opened in the lower area of the Web Designer. For more information, see <a href="#">Bookmarks</a> on page 41.
	Navigation	Opens the navigation view. The navigation control is at the top left of the Web Designer screen by default. For more information, see <a href="#">Navigation Overview</a> on page 20.



Menu	Menu item	Description
Debug views	Monitor page	Opens the monitor page. The monitor page is displayed on a page that is separate from the Web Designer page. For more information, see <a href="#">Monitoring</a> on page 123.
	Preview	Opens the preview. The view is open by default and displayed at the top right of the Web Designer screen. For more information, see <a href="#">Working with the Preview</a> on page 37.
	Properties	Opens the <b>Properties</b> view. The view is open by default and displayed in the lower area of the Web Designer. For more information, see <a href="#">Properties</a> on page 43.
	Query	Opens the <b>Query</b> view. The view is open by default and displayed in the lower area of the Web Designer. For more information, see <a href="#">Querying a Web Application</a> on page 119.
	Call stack	Opens the <b>Call stack</b> view. The view is opened in the lower area of the Web Designer. For more information, see <a href="#">Call stack</a> on page 122.
	Compiling	Opens the <b>Compiling</b> view. You can view the compilation log here. The view is opened in the lower area of the Web Designer.
	Compiled objects	Opens the <b>Compiled objects</b> view. All compiled objects are listed here with more details. The view is opened in the lower area of the Web Designer.
	Help	Info

## Toolbar

The Web Designer has a toolbar. This toolbar cannot be configured.

**Table 6: Toolbar Functions**

Icon	Description
Change Label:	<p>Selects change labels.</p> <p>You can select a change label in this option box. Changes in the One Identity Manager database are stored under the change labels that are selected here.</p>
	<p>Change label administration</p> <p>You can insert, modify or delete change labels in the <b>Change labels</b> dialog box. For more detailed information about working with change labels, see Dell One Identity Manager Configuration Guide.</p>
	<p>Uses the current change label as default and selects it automatically later.</p> <p>This function sets the currently selected change label as a default label that will be selected automatically when Web Designer is restarted. The selection is client-specific and has no impact on other One Identity Manager database users.</p>
	<p>Applies a change label to the entire web project.</p> <p>You can assign a special change label to all referenced objects in a web project in the <b>Change Labels for Web Projects</b> dialog box. Some web projects can be moved completely and independently of previously selected assignments.</p>
	<p>Configures a web project.</p> <p>For more information, see <a href="#">Web Project Configuration Options</a> on page 55.</p>
	<p>Opens the <b>Create new module</b> dialog box.</p> <p>For more information, see <a href="#">Multilingual Captions</a> on page 44.</p>
	<p>Opens the <b>Hyper View wizard</b> dialog box.</p> <p>For more information, see <a href="#">Creating New HyperViews</a> on page 88.</p>
	<p>Enables/disables background actions.</p> <p>Use this button to suspend and start actions running in the background. These actions are defined through nodes of type <b>Timer</b>. This results in the web application executing these actions are regular intervals. The behavior may be disturbing when debugging.</p>
	<p>Save.</p> <p>This button is enabled if you have modified a database object. Use this button to save changes to the current database object. If you want to save changes to other database objects, you must select the corresponding tab in the definition tree view and click the button again.</p>
	<p>Save all.</p> <p>Use this button to save all database objects that have been modified.</p>

Icon	Description
	One node back/forward.
	<p>Use this button to navigate back or forwards in the history of the selected object. This displays the selected object in the definition tree view.</p> <p>If an object or node was deleted, the next existing object is shown. If an object is selected in the history which no longer exists, the previous object is shown.</p> <p>The number of objects displayed in the history can be specified in the settings in the menu bar under <b>Connection   Global settings</b>. You can delete the history using <b>Delete history</b> in the context menu.</p>

## Navigation Overview

- ① **NOTE:** The navigation view is hidden by default if you are not currently using it. This feature is designed to provide ease of use.

In the default view, you can find the navigation view on the left of the screen.

### *To show and hide the navigation view*

1. Proceed as follows.
  - a. Click or mouse over the **Navigation** control in the left sidebar.
  - b. Select **Navigation** in the **View** menu.

① **NOTE:** Use the **Auto Hide** button in the navigation view toolbar to set the navigation view.

① **NOTE:** If the **Navigation** control is not visible where it should be, you can select **Restore default layout** or **Restore saved layout** instead of **Navigation**.

The navigation view is displayed.

2. Click or move the mouse outside of the navigation view to close the navigation view again.

Now, only the **Navigation** control is visible in the program's sidebar.

In the navigation view, select the database object that you wish to edit in Web Designer. Database objects are grouped into different categories. The different categories have different functions which you see depending on what you select. The following categories are available:

- Modules
- Components
- Web projects
- Project files
- Form types
- Layout definitions

The structure of displayed database objects varies within each category. The following table describes the different category display structures individually. Categories with similar display structures are described together.

**Table 7: Display structure of database objects in the different categories**

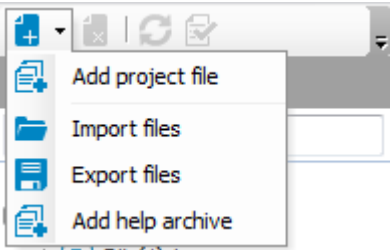



Category	Description
Display structure in the “Modules” category	<p>Database objects are displayed in a tree structure.</p> <p>Database objects are found in the <b>Custom</b> and <b>Default</b> root nodes.</p> <p>Objects grouped under the <b>Default</b> node cannot be edited in a custom installation of One Identity Manager and are part of a default installation of Web Designer. You have the option to copy these objects and extensions.</p> <p>All custom objects in the <b>Modules</b> category are grouped in the <b>Custom</b> node. Modules, that are added to a custom installation are automatically groups under these root nodes.</p> <p><b>Custom</b> root nodes are displayed above the <b>Default</b> root nodes in the tree structure.</p>
Display structure in the “Component” and “Layout definitions” categories	<p>Database objects form individual groups of objects.</p> <p>Database objects from these categories are not grouped within the <b>Custom</b> and <b>Default</b> root nodes but form individual groups of objects.</p> <p>Each group of objects can contain custom as well as default objects that have been available since initial installation.</p>

To make database objects easier to find, they are displayed in **Search results** and **Recent files** groups. For more information, see [Navigation Menu Functions](#) on page 21.

Extensions are displayed as subnodes for the module or component for which they were created. You also see these subnodes under groups, search results, and recent files. For more information, see [Extensions](#) on page 85.

## Navigation Menu Functions


**Table 8: Functions in the navigation view toolbar**


Icon	Description
	You can select a function in this context menu. The functions available depend on which database object you selected beforehand.
	You can delete a database object with this button.
	You can load a new database object with this button.
	You can display database object properties with this button.

### ***To execute a function***

1. Mark either a module, component, project file, form type, layout definition, or test script in the category you want.

① | **NOTE:** You cannot add a web project through this context sensitive submenu. You can add new modules using the corresponding wizard. This procedure also applies to creating new web projects.

Depending on your choice, other functions are available in the context sensitive submenu displayed using the  button.

2. Click  in the navigation view toolbar.
3. Select the function you want from the submenu.


You can execute the following functions in the **Project files** category.

- Add project files
- Import files
- Export files
- Add help archive

### ***To delete a database object***

- Select the relevant database object in the navigation view and click .

This deletes the selected object after confirming the security prompt from the database.


① | **NOTE:** The  is only enabled if you have selected a database object.

① | **NOTE:** The delete process cannot be undone.

### ***To load new database objects***

- Click the database objects in the appropriate category to refresh the database.

### ***To view database object properties***

- Mark the relevant database object in the navigation view and click .

This display the database object properties.

### ***To search in the navigation view***

1. Select the category in which you want to search for database objects in the navigation view.  
The selected category is displayed in the navigation view.
2. Enter the search term in the text field and click RETURN.  
The search results are listed under the text box.

### **Detailed information about this topic**

- [Create New Module](#) on page 80
- [Create new project](#) on page 78

# Definition Tree View










Web Designer's graphic user interface, which you can use to edit data objects in your web application, is displayed as a definition tree view. The definition tree view is displayed as a tab next to the home page. You open the definition tree view by selecting a database object from the navigation view for example.

Almost all database objects consist of several nodes that are shown as a tree structure in the definition tree view and can be edited. If you add a new database object (web project, module, component) to your web application, this database object is created with a predefined number of nodes in the object definition. The object definition is a view in the definition tree view. For more information, see [Menu bar icons in the definition tree view](#) on page 23.

The predefined nodes of a database object provide the foundation for an XML document in your web application and, as a result, cannot be deleted. You can add additional nodes in addition to the predefined nodes using the context menu. These additional nodes can be removed again. When a database object is being edited, the user is always located at a defined position in the definition tree view.

A database object generally consists of several sub-documents that can be edited in separate views in the definition tree view. You can switch between different views using the toolbar in the definition tree view. The toolbar is explained in the following table.

**Table 9: Menu bar icons in the definition tree view**

Icon	Description
	Object definition (read-only). This view is mainly used to view existing database object nodes. This view is preset when you switch to the definition tree view. If the database object comes from the standard version of Web Designer, the view is called <b>Object definition (read-only)</b> . For more information, see <a href="#">Customizing Object Definitions</a> on page 83.
	Configuration (read-only).
	Configuration (custom).
	Generated code (read-only).
	Settings.
	Search and replace.
	Help for displaying selected node type.
	Create object copy.
	Compiles a single object without writing the changes to the database.

## Detailed information about this topic

- [Customizing Object Definitions](#) on page 83
- [Web Project Configuration Options](#) on page 55













- [Viewing Generated Code](#) on page 41
- [Project Configuration - Web Project Tab](#) on page 55
- [Search and replace](#) on page 34

## The Node Editor





The **Node editor** window allows you to edit the properties of a node that you have selected in the definition tree view. Each node type has a special set of properties that are listed in the **Node editor**. Therefore, the list of properties varies depending on which node type you have selected.

The functions in the toolbar are listed in the following table.

**Table 10: Functions in the "Node editor" Toolbar**

Button	Description
Node name / node type icon	Show the node identifier and the node type icon that marks it in the definition tree view. This cannot be edited.
 Database	Displayed if a database object is selected. This cannot be edited.
 and name / icon of the base object	Displayed if a file-based object is selected. When you hover over  , the custom object's local path is displayed in a tool tip. When you hover over  and click the right mouse button, your Windows® Explorer context menu opens. For more information, see <a href="#">File-Based Workflow in Web Designer</a> on page 51.
	Filters the current settings. Only the settings are filtered, not the settings' values. Enter at least part of a setting's name to display the settings whose names contain this string.
	Sorts the settings alphabetically in ascending order within each category. If this is enable the icon's border is highlighted. If sorting is enabled, it follows by default, a logical order that is graded by importance. Compulsory fields have the highest priority and are displayed at the top.
	Sorts the settings alphabetically in descending order within each category. See the entry about sorting in ascending alphabetical order when sorting disabled.
	Enables/disabled settings groups in the node editor window. This means the settings are not divided into categories.
	Expands the category contents. These buttons are only active when categories are grouped. You can use  to expand a group separately.
	Collapses grouped categories. These buttons are only active when categories are grouped. You can use  to collapse them separately.



Button	Description
	Highlights setting that have had an extension added to them. Use  to switch to the extension. A node that has had an extension added to it, is labeled in the definition tree view with  .  is highlighted if the function is enabled.

The node editor is divided into several categories. These categories could be the following. Which categories are shown, depends on the type of node selected.

Table 11: Categories in the "Note editor" window.

Category	Description
General settings	Settings in this category include node ID, node type, viewing condition or condition for executing. Not all settings are not listed here. Which settings are shown, depends on the type of node selected. This applies to all categories.
Workflow control	This category is available for module or container nodes, for example. You can edit the data <b>Identifier of the associated menu item</b> for a module node. For a container node, you can edit the data <b>Display node for enter key</b> and <b>Expression to trigger an AJAX update</b> .
Style	Menu for selecting a layout that you can modify with an editor. First check the box to enable this function and add a condition to the layout.
Advanced settings	In this category, there can be a control ID that you can overwrite.
Viewing options	This category is available for nodes of type "Chart", for example. You can change styles or set heights and width of charts.
Source data collection	This category is available for nodes of type "Combobox". You want to make source data from other collections available to the current collection. This means the user can select the collection with the desired source data over the menu.

## Global settings

Establish basic settings for Web Designer in the **Global settings** dialog box. The settings are sometimes preset. You can adapt the settings to your needs.

### To adjust Web Designer settings

1. Select **Connection | Settings** in the menu bar.  
The **Global settings** dialog box opens. Detailed information concerning global settings is described in the following table.
2. Open the relevant settings area and apply any necessary changes.
3. Save the changes.

**Table 12: Global settings for Web Designer**

Settings area	Setting	Description	Default setting
General	Language	Sets the language used.	German
	Resolution	Sets the screen resolution.	1280 X 1024
	Maximum history length	Sets the maximum number of history items displayed.	25
	Maximum number of recently opened elements	Sets the maximum number of recently opened items displayed.	10
Editor	Use colors to distinguish data, display, and action	Enables color differentiation.	Enabled
	Shorten long property values	Enables a shortened display.	Enabled
	Show XPath navigation	Enables XPath navigation.	Not set
	Show messages after syntax errors are found after editing	Enables message display.	Not set
	Check for problems before publishing	Enables checking.	Enabled
	Save and load Web Designer parameters with layout	Enables Web Designer to be saved and loaded with layout.	Enabled
	Show message, if new assemblies are available	Enables information on new assemblies to be displayed.	Enabled
	Check if web is not published, when closing	Enables checking.	Enabled
Saving and restoring	Ask for change label if none is selected	Enables queries.	Enabled
	Keep backup of unsaved objects on the local machine	Enables caching.	Not set
Compiling and Debugging	Show warnings of this database modules	Manual input of the module displaying the warnings.	empty field
	Perform enhanced check	Enables enhanced checking.	Not set
	Suppress background actions	Disables background actions.	Not set
Keyboard layout	Zoom in on preview	Zooms in on the preview.	Ctrl + D
	Recompile	Recompiles the web application.	F6
	Display next bookmark	Displays the next bookmark.	F2
	Enable/Disable the debugger	Enables or disables the debugger.	F9
	Resume debugging	Resumes debugging after stoppage.	F7
	Debugger - Step Into	Locates the error at debugging.	F11
	Suppress background actions	Enables or disables background actions.	F8

***To switch the keyboard layout back to the default layout***

- Click the **Default layout** button in **Keyboard layout** settings.  
Resets the settings to the default layout.

# The Web Designer Object Model

In Web Designer, database objects, such as modules, components, or styles, are saved as XML files in the database. They are shown as nodes in a tree structure in the Web Designer definition tree view. Different nodes are labeled with icons to provide a better overview and to distinguish between them more easily.

For more information, see the Dell One Identity Manager Web Designer Object Model Documentation.

## Web Application

Web Portal is a web application. A web application is a published and live website on a web server, which interacts with the One Identity Manager database. For more detailed information, see the Web Portal in the Dell One Identity Manager Web Portal User Guide.

A web application manages web projects and all other database objects. Functions, such as editing or saving colleague or order data are available. A web application is a published web project with its subprojects, if these have been defined.

Each web application has a dedicated intranet or Internet address.

## Web projects

In Web Designer you can define and manage as many web projects as you want. Generally, a web project includes a web application and a web portal. However, the link between the `VI_StandardWeb` and `VI_RegistrationWeb` web projects is a special case. These web projects are already in the database and are part of the business workflow. `VI_RegistrationWeb` becomes a subproject of `VI_StandardWeb` and must be published separately.

You can view a web project as a web application before publishing it in the Web Designer preview.

A web project is generally made up of modules, components and other database objects. You can add or edit database objects in Web Designer. Modules with and without parameters are linked in the web project.

To assign a web project to a web application that is on the web server, use the web application configuration file. For more detailed information about the web server, see the Dell One Identity Manager Installation Guide.

In every web project there is a set of specific data to be maintained in the definition tree view. For more information, see [Definition Tree View](#) on page 23.

# Subprojects

You can also select another web project as an additional web project. You can update or compile this project on the start page in the same way as the web project `VI_StandardWeb`. `VI_RegistrationWeb` is an example of a subproject. Subprojects are required to operate several web projects from within an installed web application. Without subprojects, you would need to install as many web applications as there are web projects. In addition, a subproject enables a part of the web application, for example with different authentications, to control another menu structure or layout.

# Modules

A module is a logically closed unit within a web project. A module can only contain one web page with a short welcome text (as in the start page) but can also map a comprehensive workflow, which stretches over several web pages (such as, ordering products).

Modules contain at least one form or main page. They can contain components, which are required for defining nodes visible in the browser. This allow the contents of a form node to be rendered in a start-up module or on the browser's start page if the start page is displayed to the user. The size of the module or number of modules is not limited.

① | **NOTE:** A good and structured mapping of a web application's target functionality in modules, makes any debugging and later implementation of other functions easier.

# Start Module

The start module for a web project is a special module. It can configured and is called `VI_Start`. It specifies which main content page is displayed first. Each module can have a start module, assuming the **Allow quick navigation to this module with a URL parameter** option is enabled. You cannot pass any parameters.

# Session Module

The `VI_Session` session module is a special module. Exactly one session module is used in each web project. It can be used by several web projects.

The lifetime of a module is a deciding factor. As long as the session is valid on the web server, you can always access the session module data.

This module contains data about the current user and other session related data.

A session module is initially loaded at the start of a session and retains its data during the entire lifetime of the session. A session module must contain information about the current user. To do this, a session module must contain:

- Collections with the name `User`
- `UserRuntimeModule`
- `UserMenu`
- `UserNavigation`

**NOTE:** The collections `UserRuntimeModule`, `UserMenu` and `UserNavigation` are Microsoft® .NET Framework object collections.

You can define your own user groups for the web application, for example, by assigning an employee to an organizational unit. These current users assignments are determined once in the session module after logging into the web application and are available for the period of the session thereafter, to hide or show menu items or parts of forms.

## Menu Structure

The collection `UserMenu` contains data about the user's enabled menu items. Data in this collection may not be changed because changes can be overwritten on recalculation.

## Structure of Breadcrumb Navigation

The collection `UserNavigation` contains information about the user's navigation breadcrumb trail. Each entry corresponds to a generated form object. The following collection properties are available:

**Table 13: `UserNavigation` collection properties**

Property	Description
<code>UidForm</code>	Provides the main key.
<code>UidModule</code>	References the entry in the <code>&lt;UserRuntimeModule&gt;</code> collection containing the associated module entry.
<code>UidModulePrevious</code>	References the entry in the <code>&lt;UserRuntimeModule&gt;</code> collection corresponding to the previous module in the navigation path. This information is also used for building up the breadcrumb trail.
<code>UidFormPrevious</code>	References the entry in the <code>&lt;UserNavigation&gt;</code> collection corresponding to the previous form. This information is used for building up the breadcrumb trail.
<code>Title</code>	Specifies the form title.
<code>CanReturnToThis</code>	Boolean value specifying whether this form can be opened or not.
<code>SkipInNavigation</code>	Boolean value specifying whether this form in the breadcrumb trail should be skipped.
<code>Number</code>	Specifies the sequential number of this form in the breadcrumb trail.
<code>FormName</code>	Specifies the form identifier.

## Current User

The collection `User` contains the database of type `Person` that corresponds to the current user.

# Session module instances

The `UserRuntimeModule` collection contains all module instances generated during a session. A module can be called up several times. Every time a module is called up, a new instance is generated. A module instance is a fixed instance of a module definition.

Table 14: `UserRuntimeModule` collection properties

Property	Description
<code>UidModule</code>	This property provides the main key for the module instance.
<code>ContextID</code>	This property contains the name of the corresponding Web Designer module.
<code>LinkObjectID</code>	This property contains the menu item identifier triggering the generation of this module instance.
<code>TimeStamp</code>	This property contains the time the module instance was generated.

# Components

A component is a part of a module, which has been separated out. The module references these component using cross-references. It can be use by several modules and components and rendered multiple times in a browser, simultaneously. Instances arise from components that are used more than once. To differentiate various instances from each one another, each instance is given an automatically generated suffix at runtime. All nodes of this instance have the same suffix.

Apart from that, components are part of the definition tree and keep it free from redundancies. This property reduces the effort of programming and ensure a uniform appearance as well as homogeneous functionality of the web application. Another feature is the different component type. The position of the component in the definition tree determines, which component type can be referenced.

# Form types

A form type specifies the structure of HTML pages, which are rendered in the browser. It defines the available form parts and their positions in the HTML tree structure. The **Form types** area is found in the navigation view and the form definitions are found as `DialogAEDS` objects in the database.

The default version supplies different VI objects as templates. To edit a form type, you must make a copy of the object. For more information, see [Creating Object Copies with the Wizard](#) on page 84. Each form type is made up of the form parts `Title` and `Main` and other output nodes. Form types are often differentiated by mobile and desktop view.

# Local Components

A local component is a node in the tree structure of a module and a component. It provides a better overview for programming and can be referenced in other modules and components.

# Controls

The same applies to a control as to a local component. They are defined within a module and are only found there.

As a result, a reference to a control can only be set in the module in which the control was defined. A benefit of controls is simple referencing.

# Functions

A function provides a better overview and is suitable for checking readability. That ensures increased quality. Functions are available only in the respective module or component.

① | **NOTE:** Functions defined in a session module are an exception. These functions can be implemented everywhere.

# Layout Objects

Layout objects are layout definitions and describe the appearance of display nodes (nodes of type `View`) which are rendered in the browser. There is at least one layout variation defined for each display node where possible. Layouts with the ending `default` are used by the associated node type without having to be entered on individual nodes.

Each object in the layout definition list corresponds to a CSS class and is linked to a node type. This layout definition is therefore available for each node of a particular node type. You can set up more new layout definitions in this list. A wizard is available to you to customize a default layout definition. For more information, see [Project Configuration - Customization](#) on page 68.

For a better overview, layout definitions are divided into type and group in the navigation view.

# Using the Web Designer Object Model

## *To select a web project*

- Double-click the relevant web project in the **Web project** category in the navigation view.  
The selected web project is displayed as a tab in the definition tree view.

## *To select an additional web project*

① | **NOTE:** Your web project must already be selected and open in the definition tree window.

1. Open the **Display settings** node in the **Object definition** view.  
This displays subnodes.
2. Mark the **Subprojects1** subnode and select **Web project** from the context menu.  
The view switches to the **Configuration (custom)** view in the definition tree view and the **Web project** node is marked.



3. Select the relevant subproject in the **Identifier\*** option box in the **Node editor** view.

This selects the subproject of your choice.

### ***To navigate to a specific module***

Quick navigation can be used for opening a link in an email for example.

**NOTE:** The relevant module must already be selected and opened in the definition tree view.

1. Mark the main node for the module in the **Object definition** view.
2. Enable the **Allow quick navigation to this module with a URL parameter** option in the **Node editor** view.

The option **Allow direct navigation to this module with an URL parameter** allows you to navigate directly to a specific module. For example, with the help of defined passing parameters, you can navigate directly to the overview page of a particular database object or approve an order.

### ***To open the VI\_Session session module***

- Open the session module in the navigation view search box.  
The session module is shown as a tab in the definition tree view.

### ***To see UserNavigation collection properties***

1. Click the **Query** view in the lower area of the Web Designer window.
2. Click the **VI\_Session** node on the left-hand side of the query window and double-click the **UserNavigation** collection.

The properties and content of the collection are displayed at the bottom left of the query window.

### ***To add and edit form elements***

**NOTE:** The relevant module or component must already be selected and opened in the definition tree view.

1. Mark the **Form** node in the **Object definition** view.
2. Select **Object in extension | Form** from the context menu.  
The view switches to **Configuration (custom)** and the new added node is selected.
3. Enter a name for the new form element in the **Identifier\*** text field in the **Editor node** and adjust the settings.




You can also add talking selectors.

# Working with the Web Designer

In the following, you will be shown in detail, how to work with the Web Designer.

## Search and replace

### To run a search

1. Select **Edit | Search**.  
This opens a dialog box with search options.
2. Enter a search term in the **Search** text field and select the relevant entry from the **Search as** list to narrow down your search.
3. Enter the relevant information in the **Replace with** text field and select the relevant entry from the **Search scope** list.
4. Click the  button under **Search options** and enable any necessary criteria in the **Search options** view.
5. Enable the **Filter by type** option under **Search options**, if required, and select the relevant node types.  
 **TIP:** Select a node type to filter the search by the selected node type.
6. Click **Search** or **Search all**.  
The search results are displayed.
7. Click the  button under **Search options** and double-click a result in the results list.  
This marks and displays the corresponding nodes in the definition tree view.
8. Mark the result in the result list you want to replace.
9. Click **Replace** or **Replace all**.

To conduct a more detailed search, you can select the following entries to narrow down your search.

**Table 15: “Search scope” entries**

Entry	Description
Current document	Only the current document is included in the search.

Entry	Description
Current document and its extensions	The current document and its extensions are included in the search.
Current web project	The current web project is included in the search.
Objects below current object	Only the objects that are below the current object are included in the search.
All Web Designer objects	All objects are included in the search.

You can use the following settings for searching. Multi-select is possible.

**Table 16: “Search options” options**

Option	Description
Upper/lower case	Upper/lower case are included in the search.
Whole word	The whole word is included in the search.
Search for complete value	The complete value is included in the search.

## Sharing the Web Project

You can share web applications that depend on a web project for debugging or release. These functions are available on the start page in the **Edit** menu. Both procedures are identical. In the steps below, the menu bar procedure is described. On the start page, you can access the functions using the **Debug** and **Release** buttons.

### *To share a web project for debugging*

1. Click the **Edit** menu in the menu bar and select **Share**.  
This displays a context menu containing other menu items.
2. Select the **Debug** menu item.  
The **Selected web applications** dialog box is opened with a list of relevant web applications.
3. Confirm the prompt with **OK**.  
This starts the compilation process. At the end of the compiling process, the log is shown in the **Compiling** view.

### *To share a web project for release*

1. Click the **Edit** menu in the menu bar and select **Share**.  
This displays a context menu containing other menu items.
2. Select the **Release** menu item.  
The **Selected web applications** dialog box is opened with a list of relevant web applications.
3. Confirm the prompt with **OK**.

This starts the compilation process. At the end of the compiling process, the log is shown in the **Compiling** view.

## Working with Tabs

You can call up the **Tabs...** dialog box via the **View** menu. This provides you with an overview of tabs open in Web Designer.

### *To get an overview of open tabs*

1. Select **Tabs...** from the **View** menu.  
This opens the **Tabs...** dialog box with a list of open tabs.
2. Mark the relevant tab you want to work with in the list and select one of the following actions:
  - a. Enable
  - b. Save
  - c. Close tab

① | **TIP:** You can select several tabs from the list by pressing the CTRL key as you mark each tab.
3. Close the dialog box.

## Context Menu Functions

To call up the context menu, right-click any node. The content of the menu depends on the type of node clicked (“context sensitive”). The top section of the context menu contains the node types and all available wizards that can be inserted into the currently selected node type.

The following wizards are available:

- **Insert bundling node**  
Eases the task of structuring nodes hierarchically later on. A **container**-type node is generated above the currently selected node and the currently marked node is pasted into the new container.
- **Create Data Display**  
This wizard creates forms, form elements, or grid views from available data. You will find this wizard on a **Container**-type node, for example. For more information, see [Create Data Display](#) on page 90.
- **Create/Embed Report**  
Generates views from previously generated reports that are stored in the database. This wizard is available on action nodes. For more information, see [Embedding Reports](#) on page 93.

If a defined number of node types is exceeded, the nodes will be re-bundled beforehand. Some node types do not allow pasting of additional node types. In such cases, the context menu begins with the **Cut** function. All other functions are either available or grayed out, depending on the type of node and its position in the definition tree view.

**Table 17: Functions in the Context Menu**

Function	Description
Cut	This function is available insofar as the node in question was not added automatically to the definition tree. All nodes that are subordinate to the selected node are likewise cut.
Copy	This function is always available. All subordinated nodes are likewise copied.
Paste	This function is available if the clipboard contains a node that is also in the list of nodes that can be inserted in the currently selected node.
delete	This function is available insofar as the node in question was not added automatically to the definition tree. All nodes that are subordinate to the selected node are likewise deleted. You can multi-select nodes with the CTRL key to apply the function just once to all selected nodes.
Set breakpoint	This function is available for controls and action nodes. Use this function in debugger mode to halt rendering at the selected points. You can multi-select nodes with the CTRL key to apply the function just once to all selected nodes.
Set bookmark	This function opens a dialog box, in which to add a description of the bookmark. The object is then labeled with a bookmark in the definition tree view. For more information, see <a href="#">Bookmarks</a> on page 41.
Export	This function opens the <b>Save as</b> dialog box. In this process, the XML definition of the selected node and all of its subordinate nodes are saved in the file.
Import	This function opens the <b>File selection</b> dialog box, where a previously exported definition tree structure can be selected. If the structure that is to be imported is compatible with the selected node, the structure will be inserted below the selected node.
Move up and Move down	This functions shift the position of the selected node within its branch. These functions are available if the node in question was not inserted automatically and if the current position of the selected node allows for the realization of the relevant action.
Undo and Redo	This functions are available if the relevant actions were carried out. The <b>Undo</b> function undoes the previous action, whereas the <b>Redo</b> function restores the state that existed prior to the realization of the <b>Undo</b> action.
Search object references	Search all references, which reference the current object. If the search is successful, the object references are displayed with position, module and object type. If the search is for a reference within a collection, the results are grouped by related columns.
Search	This function opens a dialog in which various search parameters can be entered (CTRL + F). For more information, see <a href="#">Search and replace</a> on page 34.
Search next	This function continues the current search using the current search parameters and in so doing marks the next relevant node. The search can also be carried out without opening the <b>Search</b> dialog box.

## Working with the Preview







The preview window shows how a specific web application will look and respond in the browser. This means that the preview window can be used to test out the entire functionality of all buttons, links and so on. The displayed view is rendered using Internet Explorer, which is installed in the current client. The preview is displayed in the Web Designer preview area.

- ① **NOTE:** Other browsers or other versions of the same browser can generate views other than that you see in the preview. To avoid display errors, conduct layout tests for the web application with specific browsers and browser versions.
- ① **NOTE:** The preview function also writes data to the database or deletes database objects if this function is performed by the user. You need to be careful when you test the corresponding functions.

The preview window integrates a toolbar of its own, most of whose functions are used to manage debugging mode. When the debugger is activated, program functions are realized step by step rather than dynamically, thus enabling you to see which program step is actually being realized and the results yielded by the step. In addition, with the debugger activated, you can navigate at will to the query or data schema window.

## Preview Functions

Table 18: Additional Toolbar Functions in the Preview

Icon	Function
	One node back/forward.
	Use the <b>Back</b> and <b>Forward</b> buttons to navigate backwards or forwards between selected objects in the history in Web Portal preview mode. However, the history is not shown here.
	Zoom in on preview.  The preview window switches to full screen mode. All other Web Designer windows are covered. The resolution defined for the preview window is disregarded here. This button is only active with the window in a docked state.
	View HTML source.  The button is enabled after compiling has successfully completed. It opens a popup window containing the html source code generated by Web Designer. You can debug directly in the source code.
Window size: 1024 x 768	Customize window size.  This option is only available when the window is not docked. You can open the list with the arrow and select a value from the listed monitor resolutions. After selecting a resolution, the preview is automatically set to this size. This makes it possible to estimate whether the web application required scrollbars. The available space in the web browser to be used also plays a significant role as well as the number of items shown in the menu bar.
	Use this button to swap from the mobile view to the desktop view.
	Use this button to swap from the desktop to the mobile view.
Language	The <b>Language</b> option allows you to set the language for the preview. You can choose from the languages in which you have logged in to Web Designer or other One Identity Manager tools. For more detailed information on login languages, see the Dell One Identity Manager Configuration Guide.
Address bar	In the address bar, you can see the web application URL as in a browser. You can enter additional URL parameters either here or in the browser in which you opened the web application. Parameter examples: <ul style="list-style-type: none"> <li>• d1im_layout: The values “tablet” and “desktop” are options for this parameter.</li> <li>• d1im_culture: The values “de-DE” and “en-US” are options for this parameter.</li> </ul>




### To enter a parameter with a value

1. Click the address bar next to the URL in the preview window.
2. Enter the following data, for example:

```
&dlim_layout=tablet
```

3. Press **Return**.

You preview changes to mobile view.

 **NOTE:** Entering a URL parameter works in the same way as the  and  buttons as well as the **Language** options box.

## Debugging Mode Support Functions






 **NOTE:** A WCF connection must be established for functions which support debugging mode.

Table 19: Function Supporting Debug Mode in the Preview

Icon	Function
	<p>Updating the preview.</p> <p>The Web Portal start page is displayed on update. This button has varying displays. The following visuals are possible:</p> <ul style="list-style-type: none"><li>• If the button is displayed in combination with the start icon, modifications made to the web project in the definition tree view have not been compiled. After you click the button, the modifications are compiled and displayed in the preview .</li><li>• The button is combined with a question mark if it is unsure whether modifications have been made to the web project.</li></ul> <p>You can use the arrow next to this button to select other menu items. The following menu items are available:</p> <ul style="list-style-type: none"><li>• Create new predefined connections: You can add any amount of login data for different users. Predefined login data is listed under this menu item. If you are one of the users in this list, you can login simple by mouse click. You save yourself the work of entering your login name and password on the start page of the preview window. Predefined connections are deleted the moment you close the Web Designer.</li><li>• Copy to clipboard: If you select this menu item, you copy the link to your web project start page that you see in the preview.</li><li>• The browsers you use on your computer are automatically inserted into the menu as extra menu items. The preview is displayed with the browser of your choice.</li></ul>
	<p>Suppress action execution.</p> <p>Use this button to prevent action execution in the preview. This can be helpful when you want to view a certain node in the definition tree view in more detail, for example.</p>
	<p>One node back/forward.</p>
	<p>Use the <b>Back</b> and <b>Forward</b> buttons to navigate backwards or forwards between selected objects in the history in Web Portal preview mode. However, the history is not shown here.</p>

Icon	Function
------	----------



**Enable debugger.**

Use this button to toggle the debugger on and off. If the button is blue highlighted, the debugger is enabled. All actions are executed in succession (for example one node at a time) when the debugger is enabled.

If the debugger is stopped in “Pause” mode, click **Resume execution** to restart the debugger.



**Single step mode.**

The single step mode button is only enabled when the debugger is enabled. If single step mode is enabled, the executed action is suspended at every execution step in the definition tree view. If single step mode is disabled, the action continues on to the next break point (break points are inserted on action nodes in the definition tree view using the context menu).



**Resume execution**

This button is enabled when the debugger is enabled insofar as any program steps remain to be carried out, for example no user entries are anticipated. Clicking this button launches execution of the next program command.

## Footer Toolbar Functions

In addition to a toolbar, the preview window also has a footer toolbar. The following functions are available to you.

Table 20: Functions in the Preview Window Status Bar

Icon	Function
------	----------



**Status display.**

Here, “Done” means that compilation and rendering of the current project state have been completed and that entries can be made in the relevant pages.



769x485

**Pixel lines.**

The pixel line count indicates the dimensions of the window area that is available for the display of rendered HTML code. This information obviates the need for scroll bars during programming in cases where the amount of available browser space is known. This is influenced by the screen resolution and the number of menu bars displayed in the browser.



Use this button to switch from the preview to the monitor page.






Use this button to switch from the monitor page to the preview.

## Object state


You can call up object status from the **View** menu. The database objects are listed in a tab in the preview. This list gives you information about the database and local computer status. The following table shows the actions you can execute in the **Object status** tab.




Table 21: “Object status” tab actions

Button	Description
	Refreshes the list of database objects.
	Reloads selected objects.
	Marks all modified objects to be refreshed.

## Viewing Generated Code

You can view and copy generated code with help of the  buttons from the database object toolbar in the definition tree view. This function is particularly useful if you are looking at C# code in detail and want to reuse parts of the code or want to examine an error in more detail.

 **NOTE:** If you want to search for a specific point in the code, you can use the shortcut **CTRL + F**.

### To copy generated code

1. Mark the position in the code in the definition tree view and select **Copy** from the context menu.  
The code is copied into the clipboard.
2. Inset the copied code at another point.


### Detailed information about this topic

- [Viewing Error Messages on page 118](#)
- [Microsoft® .NET FrameworkExecuting Code on page 112](#)

## Bookmarks

You can set bookmarks for custom and defined objects at any place in the definition tree view.

### To set a bookmark

 **NOTE:** The relevant data object must already be selected and opened in the definition tree view.

1. Mark the relevant node in the definition tree view.
2. Select the **Set bookmark** function from the context menu and enter a description for the bookmark.
3. Click **OK** to confirm.

### To remove a bookmark


- Delete the bookmark from the definition tree view context menu.  
This removes the bookmark.

## To manage bookmarks

1. Select **Bookmarks** in the **View** menu bar.






The **Bookmarks** pane is displayed in the lower area of the Web Designer. This lists bookmarked objects in chronological order.

2. Double-click an object in the **Bookmarks** pane.

 **NOTE:** The marked object is also shown in the definition tree view. Navigate between bookmarks by pressing F2.

The **Bookmarks** pane has its own toolbar which is described in the table below.

Table 22: Toolbar for "Bookmarks"

Icon	Function
	Delete all bookmarks. All bookmarks are permanently deleted from the list after the security prompt is confirmed.
	Edit description. This opens a dialog box in which a description can be entered for the bookmark. The description can be extended, changed or delete. This function can also be called by right clicking on the selected object.
	Delete current bookmark. This deletes the current bookmark permanently from the list after the security prompt is confirmed. All bookmarks of the marked modules or components are deleted when modules/components are grouped together. This function can also be called by right clicking on the selected object.
	Group by module/component. Bookmarked objects are grouped by their respective affiliation under modules or components and are listed in alphabetical order.
	Show bookmarks for current web project only. This filters bookmarks found in the compiled web project only. Hidden bookmarks are shown again by clicking on the button.



## Command list

The command list shows all modifications carried out on the current object in the definition tree view. A command list is kept for each object in the definition tree view. You can use the buttons in the toolbar to undo or redo commands.

Implemented commands are flagged with the  icon in the list. This icon is missing for commands that were undone.


The use of wizards allows for automatic implementation of numerous commands, which in the command list are displayed as composite commands and the individual commands are shown at a second level. However, these commands can only be undone through the composite command.

Table 23: Functions in the Command List

Icon	Function
	Undo. Undoes the last implemented command in the list.
	Redo. Redoes the last implemented command in the list.


## Properties

Once you have successfully compiled a web project, you can call up important information on individual nodes in the **Properties** view. In this view, you can check the property values of controls during application runtime.

 **NOTE:** A WCF connection must be created for this function.

The **Properties** view is divided into three sections. On the left, the ASP.NET control hierarchy is displayed as it was on the web server when the web page was created. The associated database objects and IDs are also listed with the controls. The properties and property values for the controls are displayed on the right.


To view properties of a node you can, for example, click a point in the preview window to view it in more detail in the **Properties** view. The point is highlighted in the **Properties** view.

 **NOTE:** This is only possible with display nodes, since only they are displayed in the preview window. Data and action node properties are only displayed in debug mode.

### To display a definition object

1. Click the point in the preview you want to see in more detail.

The clicked object is marked in the **Properties** hierarchy.

 **NOTE:** The items **Show definition object** and **Query here** are shown in the context menu if the marked object is a control. No context menu is available if you selected another object type.


2. Click the marked object with the right mouse button in **Properties**.



The items **Show definition object** and **Show query** are shown in the context menu.

3. Click **Show definition object**.

The definition object is marked in the definition tree view.

Table 24: Toolbar functions in the “Properties” view

Icon	Function
	Marks superordinate nodes. After clicking this button, the parent nodes for the definition object are marked in the <b>Properties</b> view.

Icon	Function
	<p>Marks subordinate nodes.</p> <p>Use this button to navigate in the view to a subordinate node in the node tree structure. On the right-hand side of the view in the <b>Property</b> column, the property associated with the node marked is highlighted in color.</p>
	<p>Closes all nodes and subnodes.</p> <p>You can close all nodes and sub-nodes in the view with <b>Collapse all entries</b>. Only the root node is visible.</p>
	<p>Opens all nodes and subnodes.</p> <p>Use <b>Expand all nodes</b> to expand all nodes and sub-nodes. This displays all levels in the hierarchy.</p>
	<p>Displays more details.</p> <p>Use this button to mark the definition object in the definition tree view and view more details.</p>

## Multilingual Captions

In the **Multilingual captions** dialog box you can add and edit multilingual captions and generate references to nodes in the definition tree view. The dialog box is called up via **Edit | Captions** in the menu bar.




Multilingual captions are standalone objects and are not saved in web project files. Instead, a reference to the multilingual caption is created in the web project nodes.


Before adding or editing multilingual captions, in your web project you need to define objects that output captions in your web application. Keys are created for these objects. These keys contain a caption for each language. This means that the keys are translated into the different languages you wish to use.

### Adding and editing multilingual captions

To add and edit keys and translations, use the **Captions** tab in the dialog box. Here, the toolbar displays the different functions available. These are listed and described in the table below.

**Table 25: Toolbar functions for the “Multilingual captions” dialog box**

Icon	Function
	<p>Add</p> <p>Adds a new caption.</p>
	<p>Delete.</p> <p>Deletes from the database the caption that is active in the edit view after confirming the security prompt.</p>
	<p>Save.</p> <p>Saves a new or modified caption in the database.</p>

Icon	Function
	<p>Assign caption.</p> <p>This button is only enabled if the dialog box was called via a node in the definition tree view. Clicking this button assigns the caption that is active in the <b>Edit</b> view to the node.</p>

**NOTE:** If you open the dialog box **Multilingual Captions** when editing a node in the node editor, it contains an extra tab **Quick edit** with additional settings. In this case, the selected caption is assigned to the relevant node in the same work step.

The following properties are edited to add and edit multilingual captions in the **Captions** tab.

**Table 26: Multilingual captions properties**

Property	Description
Language	Indicates the language in which the caption is written.
Key	A unique value assigned for object referencing.
Text	The caption to be displayed in the corresponding language.
Custom caption	<p>Custom caption that replaces the standard caption displayed.</p> <p>With custom captions, it is possible to modify captions in the standard modules without having to create a custom module.</p>

**NOTE:** You can set the regional language for captions via the **Language** option box. For example, for the “English” language option, you can select “English - United Kingdom [en-GB]” or “English - United States [en-US]”. The settings for the web browser in which you open your web application also play an important role when adding captions in different languages. If a translation into the selected language or regional language is not available in your web browser, a translation from the next family of languages above is sought.

The key that outputs the caption in the web application can be entered and edited manually in an SQL editor. If the node does not have a key, the SQL editor is empty. If a caption exists for a key, the following SQL expression appears in the SQL editor:

```
translate ("#LDS#<Key>")
```

In this case, `translate` stands for calling the associated Web Designer SQL function. `#LDS#` means that a key containing the caption follows.

If no appropriate translation for a key in the language you want to offer is found, you can create a new caption. The SQL input field in the **Quick edit** tab is empty when there is no translation. You can manually enter the translation as an SQL expression in the input field.

**NOTE:** If there is no translation for a language, the preview and web application display the caption that is saved in the **Key** input field.

### Example:

```
translate("#LDS#Hello World!")
```

This SQL expression appears as `Hello World!` in your web application. There is no translation or caption for the key in the database.

This function is particularly useful during the initial phases of a project, when captions are frequently modified. Until the customer initially accepts the text, only its key is kept updated. Once the text has been accepted, the captions and all necessary translations are implemented.


The **Translate** function also allows for the use of parameters. When several parameters are used, you do not need to enter the parameter references (`{0}`) in the key. It is sufficient to enter the parameter references in the caption. If you want to display the parameter reference in the caption, you need to enter the relevant parameters in the function. The following example shows what this variation looks like.

### Example with two parameters:

```
translate('#LDS#Please fill in the field "{0}" on the request "{1}".', datacaption  
(shoppingcartitem, currentcolumn), from shoppingcartitem select current displayvalue  
(uid_accproduct))
```

How to add a caption to a **Label**-type node is described below.

### *To add a node directly to a caption*

1. Select a **Label**-type node in the definition tree view to which you want to add a caption.
2. Select the **Node editor** view.
3. Click  next to the **Caption** input field.  
This opens the **Multilingual Captions** dialog box.
4. Select **Quick edit**.
5. Perform one of the following tasks.
  - a. Enter an SQL expression.
  - b. Edit the SQL expression.
6. Save the changes.

## Searching for captions

To edit existing multilingual captions, a search function with several options is available at the top of the dialog box.

**Table 27: Search options in the “Multilingual captions” dialog box**


Option	Description
Search key and value	Searches keys and captions.
Search for key only	Searches only in keys.
Search for value only	Searches captions only.
Search in all available languages	Searches all existing languages.

During caption searches, both the standard and custom captions are searched. The search results are shown in the result list, where they can be selected for editing by clicking them.

### *To search for a caption*

1. Open the **Multilingual captions** dialog box from the web project menu bar or from the node of choice in the definition tree view.
2. Narrow your search down using one of the options.
3. Select a language or regional language to be applied to the search in the **Language** option box.

① **NOTE:** In the Web Portal, captions and other values, such as numbers or dates, are displayed dependent on the regional language settings of the browser you use. When maintaining multilingual captions, you must specify a language which applies for all captions. For more detailed information on languages, see the Dell One Identity Manager Configuration Guide.

4. Enter part or all of the caption in the search box and click .

All captions matching the search string are displayed.

① **NOTE:** If one of the **Search key and caption** or **Search for key only** options is set, the keys shown in the result list are labeled with an asterisk (\*).

## Import object

You can import modules and components into Web Designer, to using the standard Windows file import dialog. The function recognizes automatically whether complete modules or components are involved and imports them as such. In all other cases the selected file is loaded as a project file.

### *To import an object*

1. Select **Object** in the **Edit** menu.  
The standard Windows dialog box **Please select a source file** opens.
2. Select the object you want and click **Open**.  
The object is imported.

## Related applications

This function can insert, delete and edit external web applications which are shown in the Web Portal menu bar under **Applications**.

### *To edit related applications*

1. Select **Related applications** in the **Edit** menu.  
This opens the **Related applications** dialog box.
2. Select the relevant application from the list of displayed applications.  
The name of the selected application is shown in the **Related application\*** text field. This name is the unique key for the application.

① **NOTE:** Fields marked with \* are compulsory.

3. Make any necessary changes to application settings.
4. Save the changes.

The following settings are available.

**Table 28: Settings for a related application**

Property	Sub Property	Meaning
Language-dependent text	Regional language	Language selection.
	Display name	Enter a name for the application. This application name is displayed. It does not have to be the actual name of the related application.
	Description	Enter a description.
URL		Enter a base URL.
Type of display		Display type selection.
Parent application		Parent application selection. The parent application entry serves as a reference and enables sub-forms of a main application to be accessed directly.
Image		Uploads an image file. Image uploading is optional.

### ***To add a new related application***

1. Click the **Add** button in the **Related applications** dialog box.
2. Enter a unique key for the web application in the **Related applications\*** text field.
3. Fill in the additional fields as described in the table.
4. Save the changes.

### ***To delete a related application***

1. Select the relevant application from the list of displayed applications in the **Related applications** dialog box.
2. Click **Delete**.  
The application is deleted from the list.
3. Save the changes.

## Check model integrity

This function check references, function calls and other details of the current web project. Any errors found do not result in compiler errors but should be corrected for the sake of the web applications's stability.



### *To check your project for model integrity*

- Select **Check model integrity** in the **Edit** menu.

Your web project is checked. This can take a few minutes. When the check is finished, a message is shown with the results of the check.

## Check accessibility

This function checks the web project to ensure rules meet current standards for web application accessibility. A rule violation example is, when no alternative text is given for missing visuals. Violations of accessibility rules do not generate compilation errors.

### *To check your project for accessibility*


- Select **Check accessibility** in the **Edit** menu.

Your web project is compiled. After compiling, a log is shown in the **Compiling** window. If there is an inconsistency, a detailed warning message is shown in the task view.

## Object Properties

The **Object properties** dialog box shows the properties of the files that are generated by Web Designer and that are saved as objects in the `DialogAEDS` table. Each module, component, project file and web project is represented as a separate file.


### *To open object properties*

1. Select the relevant object in the navigation view.
2. Click  in the toolbar.







This opens the **Object properties** dialog box. There are three tabs available. You can edit the data on the tabs **Properties** and **Access permissions** if you have the right access permissions.

## Change Labels for Web Projects




With change labels for web projects, you can move a web project to another database. To do this, all web project database objects are booked to a change label. Database Transporter is used for moving the web project. You can create and edit change labels in different One Identity Manager tools.

In the Web Designer toolbar, you can use  to open the dialog box for managing change labels. The following functions are available here.

**Table 29: Functions for managing change labels**

Icon	Function
	Open/close edit view. Displays the edit fields for the change label. You can edit the change label.
	Create a change label. Is the only button enabled after clicking  . Opens the edit fields for a new change label.
	Delete change label. This button is enabled once you have selected a change label. After clicking  the message “Do you really want to delete the change label?” is shown. Confirm with <b>Yes</b> or <b>No</b> .
	Save change label. This button is only enabled when you have modified change label settings or created a new change label.

### To create or edit change labels

1. Click  next to the **Change labels** list.  
A dialog box for creating and editing change labels opens.
2. Perform one of the following tasks.
  - a. Create a new change label using .
  - b. Select a change label from the list and open the edit view using .
3. Enter the change label data.



**Table 30: Properties of change labels**

Property	Meaning
Change label	Change label name. This name is used to select the change label for allocating the changes or creating a customer transport package.
Description	Detailed description of the change label.
Parent change label	Option to enter a specific parent change label.
Status	Status of object changes, for example: development, test, production.
Status comments	Additional status comments
Comment	Additional information about changes made to a change label.
Label type	Label type for further classification. Label type “Change” is used by default.
Locked	Indicates if the change label is locked. If a change label is locked, you can no longer make changes to it.


4. Save the changes.

This closes the dialog box. The change label is preselected in the **Change label**.

### **To delete a change label**

1. Click  next to the **Change labels** list.  
A dialog box for creating and editing change labels opens.
2. Select the change label you want to delete and click the  button.
3. Confirm the security prompt with **Yes**.
4. Close the dialog box using **Cancel**.
5. Click **OK** to close the **Edit change labels...** dialog box.

### **To apply a change label to a web project**

1. Click  in the toolbar.
2. Select the group of database objects you want to link to a change label:
  - a. **Modules, components and configuration**  
This option links database objects generated by Web Designer to a change label.
  - b. **Captions**  
This option links all required multilingual captions required by the web project to a change label. For more information, see [Multilingual Captions](#) on page 44.  
If any of the selected objects are already linked to one or more change labels, these links are not changed or deleted. In fact, another link is added.
3. Click **Next**.
4. Select a change label and click **OK**.  
The change label is copied.


### **Detailed information about this topic**

- Dell One Identity Manager User Guide for One Identity Manager Tools User Interface and Default Functions

## **File-Based Workflow in Web Designer**

With Web Designer, custom objects can be edited locally on your computer. To do this, export all existing custom objects from the database. All object types are taken into account and copied to the hard drive.

After exporting these objects, they can be edited, removed, or supplemented by additional objects on your computer. Object editing on your computer is no different from editing in the database project.

-  **NOTE:** You can only export complete objects for file-based editing. A default object can be custom configured on the hard drive. A hybrid type of single object is not provided for.


### **To edit files in Web Designer**

1. Start Web Designer and click the **Solution project** option in the **Select project save type** dialog box.
2. Select the **Load existing work folder** option.
3. Perform one of the following tasks.
  - a. In the Windows dialog box, Select the `MyWebDesignerSolution.wds` file from the folder in which the solution is stored.
  - b. Select the name of the last opened solution project.
4. Select the file you want to work on from the navigation options.

① | **NOTE:** Files that come from the local system are found in the **From file system** node.
5. Edit the objects that you want to change and save the modified objects to the hard drive.

### **To open the folders of the edited file**


① | **NOTE:** The custom module you want to change must be open in the Web Designer.

1. Mark the tab for your custom module and select the **Node editor** view.
2. Open Windows® Explorer and click .

The associated folders for the edited file are show in your Windows® Explorer.

### **To open the Windows® Explorer's context menu in the Web Designer**

① | **NOTE:** The custom module you want to change must be open in the Web Designer.

1. Mark the tab for your custom module and select the **Node editor** view.
2. Mouse over  and open the context menu with right mouse button.

This displays the Windows® Explorer's context menu.

### **Detailed information about this topic**

- [Exporting a Module from the Database to the Hard Drive on page 52](#)
- [Importing from a Solution to the Database on page 54](#)

## **Exporting a Module from the Database to the Hard Drive**

To export data from the database to a local computer, you require read permissions for specific database tables. Read permissions are needed for the following tables.

- DialogAeds
- DialogAedsAction
- DialogAedsActionType
- DialogAedsActionHasObject

① | **NOTE:** If these database tables do not have read permissions, the wizard will not open.

During export, all objects in the selected module are copied to the hard drive. This includes the following objects.

- Modules
- Components
- Layout definitions
- Web projects
- Project files
- Form types

In the steps below, the **Create new work folder** option is selected.

### ***To export files to a local computer***

1. Start Web Designer and select the **Solution-Project** option in the dialog box as the type of storage for the project.

The following options are displayed under the **Solution-Project** option.

**Table 31: Selection options for Solution-Project**

Option	Description
Create a new work folder	Creates a new work folder containing all the necessary objects.
Load existing work folder	Loads an existing work folder.
File path to MyWebDesignerSolution.wds	Opens the file containing the solution settings.

2. Create a new work folder using the **Create new work folder** option.
3. Select the file path for the new work folder via the **Path to output folder** option on the **Export current project** page and enter a name in the **Work folder name** text field.
4. Create the new work folder with **Next**.

The work folder is created containing the following objects.

**Table 32: New work folder objects**

Object	Description
Export module objects	All custom files
MyWebDesignerSolution.wds	Solution settings
Project.xml	Project file, for organizing individual files
ActionTypes.xml	File for references

5. Close the wizard using **Finish**.

When the wizard is closed, you can continue working with the Web Designer as before. In addition, you can perform other tasks for file-based editing.

**NOTE:** If you enable **Use selected project as default**, the same project is opened when you next launch the Web Designer.

### *To disable the “Use selected project as default” setting*

1. Open the **Global settings** dialog box in **Menu | Settings**.
2. Open **Editor** and enable **Ask for save type after every start up**.

When you next start up, **Select project save type** is displayed.

## Importing from a Solution to the Database

To use the wizard for importing, the solution must manage database module objects. If this is not the case, you must import using another method.

### *To import files into the database*

1. Perform one of the following tasks.
  - a. Open the **Import data object into database** dialog box on the **Start** page or in the **Edit** menu.
  - b. Publish your project in the database and confirm the import object prompt.
  - ① **NOTE:** If you enable the **Do not ask again** option in the dialog box, this box will not open again. If you want to display this box again, enable the **Ask after publishing import** setting in the **Global settings** box, accessed via the **Edit** menu.
2. Select the objects you wish to import into the database from dialog box on the **Object selection** page.
  - ① **NOTE:** If the **Import object-dependent references** option is enabled, files used by references can no longer be deselected, thus avoiding inconsistencies.
  - ① **NOTE:** If the **Remove deleted objects from the database** option is enabled, objects that are not on the hard drive are removed from the database.
  - ① **TIP:** Only deselect objects you know have not been modified or are not needed to publish your project. Otherwise, files may be missing during compilation or assemblies created later may be incomplete.

# Web Project Configuration Options

You can customize the default Web Portal. You can modify filters for searching employees or products, enable and disable functions and change properties displayed in result lists.

These changes are made by entering custom values for the corresponding configuration keys. It is not necessary to program new modules or components to do this.

## Project Configuration - Web Project Tab

A web project is defined through the configuration key under the root node **Configuration**. This definition only applies for this web project. They can consist of modules and components that are used by several web projects and can also contain their own configuration key definitions. The web project uses default configuration keys, if none are defined under the root node **Configuration (custom)** or within the web project used by a module's configuration key.

- ① **NOTE:** The configuration keys are declared directly in the modules or components under the **Configuration** node.

## Selecting a Database Object

### *To select a database object*

1. Select the category in the navigation view.  
The selected category is listed with the corresponding database objects .
2. Proceed as follows.
  - a. Double-click the desire database object.
  - b. Enter the name of the database object in the navigation view search field.

This displays the selected database object in the definition tree view.

- ① **NOTE:** The assignment of a configuration key with a value is always applied to the module or component. These configuration keys are shown when you click the **Configuration** or **Configuration (custom)** button in the definition tree view. All configuration keys that are not listed here, are not given a value.

# Configuring a Web Project

To configure a web project, you edit configuration keys in **Settings...** in the definition tree view.

## To configure a web project

1. Click **Edit** in the menu bar.
2. Select **Web project** in the **Configure project** sub-menu.

The **Configure project** tab is displayed with the existing configuration sections.

① | **NOTE:** If the debugging environment is disabled or the web application does not run properly, you may have to compile the web project first before the data can be displayed.



① | **NOTE:** The **Configure project** view is the same as the view you see in the definition tree view under **Settings...**

3. Open the relevant configuration section.

This displays the configuration key stored under the configuration section.

# Finding a Specific Configuration Key

## To find a special configuration key


1. Perform one of the following tasks.
  - a. Enter part or the entire search term on the **Configure project** tab and click .
  - b. Open **Options** by clicking on .

A select of options is displayed, which you can use for searching. The following options are available:

**Table 33: Configuration key search options**


Option	Description
parameter	Searches in parameters only.
Key	Searches in keys only.
Description	Searches in descriptions only.
File Name	Searches in file names only
Only from type	Searches in a specific parameter-type only.





① | **NOTE:** The option **Only from type** also has a menu from which you can select a parameter type.


2. Enable one or more options or edit a setting in the option box and click .
3. Mark the configuration key of your choice.


More information concerning the selected configuration key can be found under **Details**.



 **NOTE:** In the **Details** view you can find more detailed information on the configuration key for the configuration section implemented in the **Object definition** view in the definition tree view. Depending on which parameter type is used for the configuration key, different entry options for editing configuration keys are available in the **Settings...** view.

4. Enter the  value - **Is equivalent to standard value** in the **Value (custom)** column, by clicking .
5. Perform one of the following tasks.
  - a. Open the wizard and click .
  - b. Click  to jump to the definition object.

A new tab is opened in the definition tree view and the corresponding node is marked in the **Object definition** view.
  - c. Set the custom value back to default by clicking  and confirming the prompt.

 **NOTE:** Different editing options for the configuration key values are described in more detail in the following sections on individual parameter types.

The following parameter type can be assigned to a configuration key:

- Boolean value
- SQL filter condition
- Selection from value list
- Free text
- Property list
- Image
- Color value
- Color dictionary

## Finding References to a Configuration Key

Web Designer can display all the places where a specific configuration key is used.

### *To view references for a configuration key*

1. Mark a configuration key in the **Configure project** tab.

For more information, see [Finding a Specific Configuration Key](#) on page 56.
2. Click **Show definition object** under **Details**.

The definition object in which the configuration key is defined is marked in the definition tree view.
3. Click the marked definition object and select **Search object references** from the context menu.

The object references corresponding to the search are listed in a dialog box.
4. Double-click a reference to access more details in the **Node editor** view.

# Calling up the “Settings” view

## *In the “Settings...” view Call*

① | **NOTE:** A database object must be selected to be edited in the definition tree view.

- Click the **Settings...** button in the definition tree view.

① | **NOTE:** If several configuration keys exist, they are grouped together in one configuration section. You can expand the configuration sections to go to the configuration key of your choice.

## Parameter Type "Boolean Value"

Configuration keys of the type “Boolean value” can be used to configure “Yes” or “No” questions. An example for such a question would be to allow navigation with keyboard shortcuts.

This chapter describes how to edit a configuration key value. Declaring a configuration key is covered in another section of this guide. For more information, see [Declaring Configuration Keys in Modules and Components](#) on page 110.

### *To edit a configuration key value of the “Boolean value” parameter type in the “Settings...” view*

① | **NOTE:** Before you can edit the values in a database column, you must add a matching entry in the **Configuration (custom)** view. You can recognize this entry because it is marked with X in the **Value (custom)** column in the configuration key list in the **Settings...** view of the selected database object.

1. Open the required database object in the definition tree view and select the **Settings...** view.
2. Mark, in the **Settings...** view, the configuration key of the “Image” parameter type that you previously added in the **Object definitions** view.
3. Enter the **X** value - **Is equivalent to standard value** in the **Value (custom)** column, by clicking **+**.
4. Enable or disable the configuration key option under **Details**.


## Parameter Type "SQL filter condition"

You can use the configuration key of the “SQL filter condition” parameter type to, for example, query database objects with certain properties.

This chapter describes how to edit a configuration key value. Declaring a configuration key is covered in another section of this guide. For more information, see [Declaring Configuration Keys in Modules and Components](#) on page 110.

### *To edit a configuration key value of the “SQL filter condition” parameter type in the “Settings...” view*

① | **NOTE:** Before you can edit the values in a database column, you must add a matching entry in the **Configuration (custom)** view. You can recognize this entry because it is marked with X in the **Value (custom)** column in the configuration key list in the **Settings...** view of the selected database object.

1. Open the required database object in the definition tree view and select the **Settings...** view.
2. In the **Settings...** view, mark the configuration key of the “SQL filter condition” parameter type that you previously added in the **Object definitions** view.
3. Enter the **X** value - **Is equivalent to standard value** in the **Value (custom)** column, by clicking **+**.
4. Perform one of the following tasks.
  - a. Enter the filter condition in the text field.
    - ① | **NOTE:** You can only use SQL to formulate your expression. Web SQL cannot be used.
  - b. Open the Web SQL editor by clicking .
5. Enter an SQL condition and close the Web SQL editor using the **Apply** button.

## Parameter Type "Selection from value list"

A use case for the configuration key of parameter type “Selection from value list” would be gender data. For example, the values `male`, `female` and `other` can be chosen.

This chapter describes how to edit a configuration key value. Declaring a configuration key is covered in another section of this guide. For more information, see [Declaring Configuration Keys in Modules and Components](#) on page 110.

**To edit a configuration key value of the “Selection from value list” parameter type in the “Settings..” view**

① | **NOTE:** Before you can edit the values in a database column, you must add a matching entry in the **Configuration (custom)** view. You can recognize this entry because it is marked with X in the **Value (custom)** column in the configuration key list in the **Settings...** view of the selected database object.

1. Open the required database object in the definition tree view and select the **Settings...** view.
2. In the **Settings...** view, mark the configuration key of the "Selection from value list" parameter type that you previously added in the **Object definitions** view.
3. Enter the **X** value - **Is equivalent to standard value** in the **Value (custom)** column, by clicking **+**.
4. Select the the preset value of your choice in the **Details** option box.

The selected value is displayed in the **Key** column in the **Configure project** view.



## Parameter Type "Free text"

The configuration key of the “Free text” parameter type is used when you want to provide several links. You can enter a link to the company’s home page, for example.

This chapter describes how to edit a configuration key value. Declaring a configuration key is covered in another section of this guide. For more information, see [Declaring Configuration Keys in Modules and Components](#) on page 110.

**To edit a configuration key value of the “Free text” parameter type in the “Settings...” view**

① | **NOTE:** Before you can edit the values in a database column, you must add a matching entry in the **Configuration (custom)** view. You can recognize this entry because it is marked with X in the **Value (custom)** column in the configuration key list in the **Settings...** view of the selected database object.

1. Open the required database object in the definition tree view and select the **Settings...** view.
2. In the **Settings...** view, mark the configuration key of the “Free text” parameter type that you previously added in the **Object definitions** view.
3. Enter the  value - **Is equivalent to standard value** in the **Value (custom)** column, by clicking .
4. Enter the text you want in the **Details** text field.


The entered text is shown next to the edited configuration key in the **Value (custom)** column in the **Configure project** tab.

## Parameter Type "Property list"



The configuration key for the “Property list” parameter type can, for example, be used to modify columns in the **White pages** view that is displayed in the Web Portal.




This chapter describes how to edit a configuration key value. Declaring a configuration key is covered in another section of this guide. For more information, see [Declaring Configuration Keys in Modules and Components](#) on page 110.

### *To edit a configuration key value for the “Property list” parameter type in the “Settings...” view*


 **NOTE:** Before you can edit the values in a database column, you must add a matching entry in the **Configuration (custom)** view. You can recognize this entry because it is marked with X in the **Value (custom)** column in the configuration key list in the **Settings...** view of the selected database object.

1. Open the required database object in the definition tree view and select the **Settings...** view.
2. In the **Settings...** view, mark the configuration key of the “Property list” parameter type that you previously added in the **Object definitions** view.

 **NOTE:** If you want to see more details for a configuration key without editing the value, open the **Configure dashboard display** dialog box by clicking  without converting the value in the **Value (custom)** column beforehand. This read mode is available for configuration keys with “Configuration object” and “Property list” parameter types.

3. Enter the  value - **Is equivalent to standard value** in the **Value (custom)** column, by clicking .
4. Open the **Database column selection** dialog box by clicking .

On the left-hand side, all selectable columns of the preset table are displayed. On the right-hand side, all columns in use are displayed.




2. Mark the relevant entry in the list of available columns and click .

The marked entry is displayed in the list of used columns. The following input fields and option boxes for editing selected columns are displayed in the lower part of the dialog box.

**Table 34: Settings for Database Columns**


Setting	Description
Condition	SQL input field specifying the condition.

Setting	Description
Property	This setting makes properties available. Enable the setting and select a property.
Expression	SQL input field for entering an expression.
Database table for simulated foreign key references	SQL input field for entering a database table for simulated foreign key references.
Name of column for simulated foreign keys	SQL input field for entering a column name for simulated foreign key references.
Comment	Text field for entering a comment on using a database column.
Component for editing a value	This setting makes components for editing a value available. Enable the setting and select a component.
Component for displaying a value	This setting makes components for displaying a value available. Enable the setting and select a component.
Foreign key candidate filter	SQL input field for entering a foreign key candidate filter.
Expression for display values	SQL input field for entering an expression for a display value.
Descriptive text	SQL input field for entering a descriptive text.
Name	SQL input field for entering a caption.
Property values are not editable	SQL input field for entering non-editable property values.
Maximum number of characters	Text field for imposing a maximum on the number of characters used.
Minimum number of characters	Text field for imposing a minimum on the number of characters used.
Control-ID*	Text field for entering a Control-ID*.

 **NOTE:** Using the  button, you can specify that the database column display name be used. If you click  again, the original database column name is displayed.

3. Configure your settings.
4. Save the changes.




### **To add a validation node to a database column**



1. Select the relevant database column in the **Database column selection** dialog box.
2. Click  in the toolbar and select **Validation** from the context menu.

A new validation node is added under the marked entry and a number of edit boxes are displayed. For more information, see [Table 34](#) on page 60.

3. Configure your settings.
4. Save the changes.

### To add a parameter to a database column

1. Select the relevant database column in the **Database column selection** dialog box.
2. Click  in the toolbar and select **Parameter** from the context menu.  
A new parameter is added under the marked entry and a number of edit boxes are displayed.
3. Enter an identifier for the new parameter in the **Identifier\*** text field using the  button.
4. Enter a value for the new parameter in the **Value\*** text field using the  button.
5. Save the changes.


 **NOTE:** Added validation nodes or parameters can be deleted using the  button. This button is only enabled if you have added new properties.




## Parameter Type "Image"

You can use the configuration key of the "Image" parameter type for logos, for example.


This chapter describes how to edit a configuration key value. Declaring a configuration key is covered in another section of this guide. For more information, see [Declaring Configuration Keys in Modules and Components](#) on page 110.

### To edit a configuration key value of the "image" parameter type in the "Settings..." view

 **NOTE:** Before you can edit the values in a database column, you must add a matching entry in the **Configuration (custom)** view. You can recognize this entry because it is marked with X in the **Value (custom)** column in the configuration key list in the **Settings...** view of the selected database object.

1. Open the required database object in the definition tree view and select the **Settings...** view.
2. In the **Settings...** view, mark the configuration key of the "image" parameter type that you previously added in the **Object definitions** view.
3. Enter the  value - **Is equivalent to standard value** in the **Value (custom)** column, by clicking .
4. Perform one of the following tasks.
  - a. Select an image in the **Use image from resource** option box.  
Your selection is shown in the **Image** preview.  
 **NOTE:** Only images that have already been loaded once are available in **Use image from resource**.
  - b. Select an image in the **Use stock image** option box.
5. Select the image size in the **Size** option box.

In the **Configure project** tab, you can see the file name of the selected image and the method of loading the image, in the **Value (custom)** column.

 **NOTE:** Use **Delete** to remove your selection again.

# Parameter Type "Configuration Object"


The configuration key of the "Configuration Object" parameter type is used when you want to add or remove statistics.




This chapter describes how to edit a configuration key value. Declaring a configuration key is covered in another section of this guide. For more information, see [Declaring Configuration Keys in Modules and Components](#) on page 110.

## To edit the configuration key value for the "Configuration object" parameter type in the "Settings..." view

**NOTE:** Before you can edit the values in a database column, you must add a matching entry in the **Configuration (custom)** view. You can recognize this entry because it is marked with X in the **Value (custom)** column in the configuration key list in the **Settings...** view of the selected database object.





1. Open the required database object in the definition tree view and select the **Settings...** view.
2. In the **Settings...** view, mark the configuration key of the "Configuration object" parameter type that you previously added in the **Object definitions** view.

**NOTE:** If you want to see more details for a configuration key without editing the value, open the **Configure dashboard display** dialog box by clicking  without converting the value in the **Value (custom)** column beforehand. This read mode is available for configuration keys with "Configuration object" and "Property list" parameter types.



3. Enter the  value - **Is equivalent to standard value** in the **Value (custom)** column, by clicking .
4. Open the **Configure dashboard display** dialog box by clicking .

In this window, you can view the statistics and heatmaps for the selected element. The following functions are available in this dialog box.

**Table 35: Functions in the "Configure dashboard display" dialog box**

Function	Description
	Opens the <b>Select statistics</b> dialog box. You can select and add statistics in the list of available statistics. Multi-select is possible.
	Deletes marked statistics from the list of statistics used.
	Moves the marked statistics higher in the list of statistics used.
	Moves the marked statistics lower in the list of statistics used.

**Table 36: Functions in the "Select statistics" dialog box**

Function	Description
	Shows you all the global statistics from the list of available statistics.
	Shows you all object-related statistics from the list of available statistics.

**TIP:** You can use multi-select by selecting items in the list whilst holding the CTRL key.

2. Select a function from the toolbar.
3. Close the dialog box after editing the relevant settings.

### **To edit chart settings**

① | **NOTE:** You have enabled the **Chart** option.

1. Select the chart type in the **Type** option box.
2. Enter a title for the chart in the **Title** or **Text** text fields. This is displayed later for the organizational unit in the web application.

For more detailed information on organizational units, see the Dell One Identity Manager Web Portal User Guide.

① | **NOTE:** The available text fields that you need to edit depends on the chart type you selected in the **Type** option box. The properties **Title**, **Text** and **Tooltip** in this view use an SQL editor. Enter the captions for the organizational units shown in the web applications. For more information, see [Multilingual Captions](#) on page 44.

3. Configure the selected statistic with the available input fields and menus.
4. Click **OK**.

Your settings are saved. The number of selected columns is displayed under **Details** and in the **Settings..** view in the column **Value (custom)**.

### **To edit heatmap settings**

① | **NOTE:** You have enabled the **Heatmap** option. The dialog box mask changes and divides into three parts, **General**, **Current database** and **Historical data**.

① | **NOTE:** Statistics that need to be represented in heatmaps must return values for the `ElementValueZ` column from a query.



- Configure the selected statistic with the available input fields and menus.

**Table 37: Heatmap configurations**

Area	Setting	Description
General known issues	Additional Where clause	Used when loading a heatmap.
	Title	Replaces the statistic's display value. Parameters available in this expression are documented in the <code>ChartTitleInfo</code> class.
	Measurement parameters represented by rectangles	Display name for measurement parameters represented by rectangles.
	Measurement parameters represented by colored rectangles	Display name for measurement parameters represented by rectangles.
Data	Text	Specifies the caption for rectangles. Parameters available in this expression are documented in the <code>HeatmapDataPoint</code> class.
	Tooltip	Specifies the tooltips for rectangles. Parameters available in this expression are documented in the <code>HeatmapDataPoint</code> class.
	Limit	Specifies the color of rectangles according to data values. The color spectrum goes from red to yellow to green. Red means a critical value, green an uncritical value and yellow a neutral or average value. Limits can be assigned to data values directly using double values. Alternatively, maximum and minimum values can be set for the outer colors. The corresponding data value is then dynamically assigned. For neutral values a value can be optionally configured.




Area	Setting	Description
historical data	Statistics for monthly historical data	Used to calculate historical comparison values. You can select one of the statistics available in the option box to be used to calculate historical comparison values.
	Statistics for annual historical data	Used to calculate historical comparison values. You can select one of the statistics available in the option box to be used to calculate historical comparison values.
	Text	Specifies the caption for tiles.  Parameters available in this expression are documented in the <code>HeatmapDataPoint</code> class.
	Tooltip	Specifies the tooltips for tiles.  Parameters available in this expression are documented in the <code>HeatmapDataPoint</code> class.
	Limit	Specifies the color of tiles according to data values.  The color spectrum goes from red to yellow to green. Red means a critical value, green an uncritical value and yellow a neutral or average value.  Limits can be assigned to data values directly using double values. Alternatively, maximum and minimum values can be set for the outer colors. The corresponding data value is then dynamically assigned.  For neutral values a value can be optionally configured.

## Parameter Type "Color value"

You can use the configuration key of the "Color value" parameter type to change all the colors used.

This chapter describes how to edit a configuration key value. Declaring a configuration key is covered in another section of this guide. For more information, see [Declaring Configuration Keys in Modules and Components](#) on page 110.

### *To edit a configuration key value of the "Color value" parameter type in the "Settings..." view*

1. Open the required database object in the definition tree view and select the **Settings...** view.
2. In the **Settings...** view, mark the configuration key of the "Color value" parameter type that you previously added in the **Object definitions** view.
3. Enter the  value - **Is equivalent to standard value** in the **Value (custom)** column, by clicking .
4. Open the **Color** edit view by clicking .
5. Select the settings from the available options and click **Add colors**.  
The selected colors are displayed under **Custom colors**.
6. Click **OK**.

The selected color values are displayed in the **Settings...** view. in the column **Value (custom)** and under **Details**.


## Parameter Type "Color dictionary"

The configuration key of the "Color dictionary" parameter type is used to determine the color scheme of statistical values. If the same values occur in different statistics, the values should be viewable in consistent colors. Thus, the "Approved" value is always "green" irrespective of the statistic in which this value appears.

This chapter describes how to edit a configuration key value. Declaring a configuration key is covered in another section of this guide. For more information, see [Declaring Configuration Keys in Modules and Components](#) on page 110.

### *To edit a configuration key value of the "Color dictionary" parameter type in the "Settings..." view*

**NOTE:** Before you can edit the values in a database column, you must add a matching entry in the **Configuration (custom)** view. You can recognize this entry because it is marked with X in the **Value (custom)** column in the configuration key list in the **Settings...** view of the selected database object.

1. Open the required database object in the definition tree view and select the **Settings...** view.
2. In the **Settings...** view, mark the configuration key of the "Color dictionary" parameter type that you previously added in the **Object definitions** view.
3. Enter the **X** value - **Is equivalent to standard value** in the **Value (custom)** column, by clicking **+**.
4. Open the **Change color dictionary** dialog box by clicking .


You can add and remove color values in **Numbered values** and in **Predefined values**.

5. Click **+** in the relevant area.  
A new color bar is shown below the corresponding area.
6. Click the color surface of the new bar.
7. Select a color in the **Color** window.
8. Click **Add colors**.  
This displays the selected color under **Custom colors**.
9. Close the color window with **OK**.
10. Perform one of the following actions with the new color bar in the **Change color dictionary** view.
  - a. Assign the color bar to a position in the statistics by moving the mouse over the striped surface of the relevant color bar in the **Numbered values** area. Drag this bar to the position of choice whilst holding down the mouse button.  
  
The color bar is now in the right position. If the color bar is in the first position, it will appear in the first position of the statistics. This bar represents the value with the highest priority. The importance of the other bars is set according to their position in the list of color bars.
  - b. Enter a name for the color bar in the corresponding text field.  
  
The color bar is now named. For example, the green color bar is called "Approved".
11. Close the **Change color dictionary** dialog box using **Apply**.

Your settings are saved. The number of selected columns is displayed under **Details** and in the **Settings..** view in the column **Value (custom)**.

## Project Configuration - Customization

This dialog box allows you to create and edit substitution rules for module copies. Substitution rules are listed that were added with the **Copy objects** wizard.

 **NOTE:** Substitution rules have higher priority than references in the definition tree. References in the definition tree are not changed in this case.



For example, a substitution rule from both the `VI_Delegation` module and the `Custom_Delegation` module copy can exist. The modules are mentioned by way of example in the steps below.

### To edit a substitution rule


1. Select **Configure project | Customization** in the **Edit** menu.

This displays the **Configure project - Customization** dialog box. If substitution rules already exist, they are listed here. The following editing options are available in this dialog box.

**Table 38: Functions in the “Configure project - Customization” dialog box**

Function	Description
	Creates a new substitution rule.  <b>Module name</b> (no name) is shown in the column and the <b>Module name</b> and <b>Replace by</b> text fields are empty.
	Deletes the marked substitution rules from the list.
<b>Module name</b> text field	Specifies the module name.  When you create a substitution rule the text field is empty. Enter the module manually. Edit a substitution rule, overwrite the module name (in our example, <code>VI_Delegation</code> ) with another module name.
<b>Replace by</b> text field	Specifies the module copy.  When you create a substitution rule the text field is empty. Enter the module copy manually. Edit a substitution rule, overwrite the module copy name (in our example, <code>Custom_Delegation</code> with another module copy name.

2. Create an edit rule or modify an existing edit rule.
3. Save the changes.

 **NOTE:** If a module is no longer needed, the substitution rules can simply be deleted.

### Detailed information about this topic

- [Creating Object Copies with the Wizard on page 84](#)

# Project Configuration - Search Fields


Use this dialog box to define the database columns in which a search is to be applied.

- ① **NOTE:** The dialog box shows the full list of database tables. In the default version, each database table determines its own display pattern.
- ① **NOTE:** This configuration dialog in the Web Designer will not be required in future versions. The settings affected here have no effect on the full-text search in the Web Portal. This can only be configured through the column configuration in the Designer. For more detailed information about configuring columns for full-text search, see the Dell One Identity Manager Configuration Guide.

## To modify the search in a database column









1. Select **Configure project | Search fields** in the **Edit** menu.








The **Project configuration - Search fields** dialog box is opened with a list of all database tables.

2. From the list, Select the database table for which you want to modify the search settings.
3. Open the **Database column selection** dialog box using the  button.

The following settings are available in this dialog box.

Table 39: Editing options available in the “Database column selection” dialog box


Setting	Description
	Adds a custom column.
	Displays the original database column names. Enables the displaying of original database column names. If this option is disabled, display names are shown.
If this option is not set, display names are shown.	Shows all existing database columns.
Columns in use	Shows all selected database columns.
	Adds a marked database column from the list "Available columns" to the list "Used columns".
	Adds all marked database columns from the list "Available columns" to the list "Used columns".
	Adds a marked database column from the list "Used columns" to the list "Available columns".
	Adds all marked database columns from the list "Used columns" to the list "Available columns".
	Moves a marked database column upwards. If you want to move a database column higher in the list of selected database columns, click  as many times as necessary to move to the desired position.

Setting	Description
	Moves a marked database column downwards. If you want to move a database column down in the list of selected database columns, click  as many times as necessary to move to the desired position.
	Adds a property. The properties validate  and parameters  are displayed when you click on  .
	Removes a property.

- Adjust any settings as required and then click **Apply**.  
The selected data columns are listed in the **Search fields** text field.
- Close the dialog box with **OK**.

### Example for modifying a search

Let's say `%InternalName%` is stored as the display pattern for the **Person** database table. You can modify the search with the wizard, if you want to show other database columns.

 **NOTE:** In order for the search settings to be implemented, the `SQLSEARCH()` function must be used in the expression. This function requires the `table name` and `search string` parameters.

### An Example of a Search function

- `sqlsearch("Person", from Variable select Searchstring)`

This search function is used by default in modules and components.

## Column-dependent references

A column-dependent reference references a component's column definition. This reference can be used everywhere where contents of a specific database table is shown or edited. An instance of the component is generated, depending on which data type and other metadata is linked to the column.

By default, the following components are used as column-dependent references for editing.

**Table 40: Overview of components as column-dependent references for editing**

Type	Component name
String	VI_Edit_Default
	VI_Edit_TextLong (if the column is multi-row defined)
Int32	VI_Edit_Int
DateTime	VI_Edit_Date
Foreign key	VI_Edit_FK
Dynamic foreign key	QBM_Edit_FKDynamic

Type	Component name
Limited value columns	VI_Edit_LimitedValues
Multi-value columns	VI_Edit_MultiValueProperty
Multi-value columns with limited values	VI_Edit_MultiLimitedValues (for parameter objects)
Multi-value foreign key columns	VI_Edit_MultiFK (for parameter objects)
Numeric value range	VI_Edit_NumericRange (for parameter objects)
Date range	VI_Edit_DateRange (for parameter objects)
Boolean	VI_Edit_Checkbox
Double	VI_Edit_Double
Decimal	VI_Edit_Decimal

By default, the following components are used as column-dependent references for visualizing.

**Table 41: Overview of components as column-dependent references for visualizing**

Type	Component name
Default	VI_Edit_View_Default
Binary column with contents "Picture"	VI_Edit_View_Picture
Column with contents "URL"	VI_Edit_View_URL

## Using a column dependent reference

**NOTE:** A cursor must be on the collection to be able to add a column-dependent reference.

### To add a column-dependent reference

1. Select a control node (a container, for example) with the right mouse button.
2. Select **Column-dependent references**.
3. Assign the added node to the collection and the edited property.

## Defining a new Column-Dependent Reference

A column-dependent reference is a conditional reference to a component. The type of column in a database table (for example, `Bool`, `DateTime` or `String`) determines which component is used to edit the relevant content. To this end, the standard scope of delivery includes VI components which cover all possible column types and finds them automatically.

**NOTE:** There are also custom entries in the web project file. You can tell which of the various tabs an entry belongs to by the prefix.

## To open the "Column-Dependent References" tab

1. Select **Configure project | Column-dependent references** in the **Edit** menu.

This opens the **Column-dependent references** tab in the definition tree view. The tab lists all existing columns with the corresponding default components, which are each given their own tab.

2. Select the desired tab.


The following tabs are available.

**Table 42: "Column-dependent references" Tab**

<b>Tab</b>	<b>Description</b>
Edit values by column	<p>Select columns whose data can be edited in components.</p> <p>For example, you want to use these components when you add a new employee in the Web Portal.</p> <p>The prefix "ColumnEditor_" indicates that the entry belongs on the tab <b>Edit values by column</b>.</p>
Display values by column	<p>Select columns whose data can only be viewed in components and not edited.</p> <p>For example, you want to use a specific component for displaying an image.</p> <p>The prefix "ColumnViewer_" indicates that the entry belongs on the tab <b>Display values by column</b>.</p>
Foreign key filters	<p>Create a filter to limit the number of foreign key values.</p> <p>An example of a filter would be, for the user to limit the number of departments an employee can use in the Web Portal. In this case, the filter should be set in the column "UID_Department" in the "Person" table.</p> <p>The list of filters includes the filters given on the tab <b>Editor</b> tab as well as the filters that can be used without components.</p> <p>The prefix "Filter_ColumnEditor_" indicates that the entry belongs on the tab <b>Foreign key filters</b>.</p>
Edit foreign key values	<p>Specifies a component for all foreign key references to a table.</p> <p>This means the user enters a combination of tables and components. The selected components are used in the Web Portal when the table is referenced by foreign key. In the case of the table "Person", this means that the same component is always used if an employee and a group owner or request recipient is selected, irrespective of whether a manager is selected.</p> <p>The prefix "FkColumnEditor_" indicates that the entry belongs on the tab <b>Edit foreign key values</b>.</p>



Tab	Description
Edit multi-valued foreign key values	<p>Specifies a component for all multi-value foreign key references to a table.</p> <p>The user enters a combination of tables and components. The selected components are used in the Web Portal when the table is referenced by multi-value foreign key.</p> <p>An example for using a multi-value foreign key would be a request for multiple employees. In the case of the table "Person", this means that the component "AutoComplete" is not only used to select the first recipient but also for subsequent recipients that are selected in the same request procedure.</p>

 **NOTE:** You can only delete entries that you added yourself. Default entries are write-protected. The table and columns of a reference can only be edited if the entry does not have any default values.

### *To edit a component for editing*

1. Open the **Column-dependent references** tab and select the desired entry on the **Edit values by column** tab.
2. Enable the check box for the selected entry.



If there is a custom value for this entry, the value is shown in the **Component (Customized)**.

When you enable the entry a custom value is added, as in configuring the web project, which corresponds to the default value.

The control box cannot be disabled if the foreign key is customized.

3. Edit the selected component by selecting another one from the **Component** menu.

The selected component is the one to be used in the default web application.

 **NOTE:** Instead of selecting a component, you can delete the configured entry using .

4. Specify a filter by clicking  in the **Filter** on and create a filter.

You can limit foreign key values with the help of the filter.

### *To edit a component for viewing*

1. Open the **Column-dependent references** tab and select the desired entry on the **Display values by column** tab.
2. Enable the check box for the selected entry.



If there is a custom value for this entry, the value is shown in the **Component (Customized)**.

When you enable the entry a custom value is added, as in configuring the web project, which corresponds to the default value.


The control box cannot be disabled if the foreign key is customized.

3. Edit the selected component by selecting another one from the **Component** menu.



The selected component is the one to be used in the default web application.

 **NOTE:** Instead of selecting a component, you can delete the configured entry using .


### To edit a filter for foreign keys

1. Open the **Column-dependent references** tab and select the desired entry on the **Foreign key filters** tab.
2. Enable the check box for the selected entry.  
If there is a custom value for this entry, the value is shown in the **Component (Customized)**.  
When you enable the entry a custom value is added, as in configuring the web project, which corresponds to the default value.  
The control box cannot be disabled if the foreign key is customized.
3. Specify a filter by clicking  in the **Filter on** and create a filter.  
You can limit foreign key values with the help of the filter.

### To edit foreign key values

1. Open the **Column-dependent references** tab and select the desired entry on the **Edit foreign key values** tab.
2. Enable the check box for the selected entry.  
If there is a custom value for this entry, the value is shown in the **Component (Customized)**.  
When you enable the entry a custom value is added, as in configuring the web project, which corresponds to the default value.  
The control box cannot be disabled if the foreign key is customized.
3. Edit the selected component by selecting another one from the **Component** menu.  
The selected component is the one to be used in the default web application.  
 | **NOTE:** Instead of selecting a component, you can delete the configured entry using .

### To edit multi-value foreign key values


- Proceed as in the step-by-step for 'To edit foreign key values'.  
 | **NOTE:** Use the **Edit multi-valued foreign key values** tab to offer components in the same context in the Web Portal any number of times.

### Detailed information about this topic

- [Adding New Components](#) on page 82

## Dynamic References

A component can be referenced in two ways. Normally, a static reference is used to reference components directly using their names. An example of a static reference is calling the component `VI_Popup`.

-  | **NOTE:** It is not possible to use object-dependent references on the login page if the web application is executing against an application server.

The second way of referencing components is dynamically. Dynamic references can reference more than one component at a time. A specified criteria is used to determine which component will effectively be referenced at runtime. This method of referencing makes it easier to build extendable generic components.

## Object reference

Components are referenced on the basis of two factors in the case of object-dependent references:

- Reference type specified on the reference node
- Reference object identified by its object key

## Defining Reference Types and References

Object-dependent references are divided into reference type, which define each area of application.

These reference types are defined in the table `DialogAEDSActionType`. The following reference types are defined by default.

**Table 43: Reference type overview**

Reference Type	Use Case	Reference Table	Interface	Default component
Clone_ ShoppingCartItem	Duplicate an item in the shopping cart	AccProduct	VI_Interfaces_ ObjectSwitch_ Clone_ ShoppingCartItem	VI_Clone_ ShoppingCartItem_ Default
Details_AccProduct	Detailed information about a requestable product	AccProduct	VI_Interfaces_ ObjectSwitch_ Details_AccProduct	VI_Details_ AccProduct_Default
Details_ PersonWantsOrg	Detailed information about a request	AccProduct	VI_Interfaces_ ObjectSwitch_ Details_ PersonWantsOrg	VI_Details_ PersonWantsOrg_ Default
Details_ ShoppingCartItem	Detailed information about an item in the shopping cart	AccProduct	VI_Interfaces_ ObjectSwitch_ Details_ ShoppingCartItem	VI_Details_ ShoppingCartItem_ Default
Insert_ ShoppingCartItem	Adding an item to the shopping cart	AccProduct	VI_Interfaces_ ObjectSwitch_ Insert_ ShoppingCartItem	VI_Object_Overview
Object_Overview	Overview of an object	DialogTable	VI_Interfaces_ ObjectSwitch_ Object_OverView	VI_Object_ Overview_Default
Select_ DialogDashboardDef	Selecting a data point in a statistics overview	DialogDashboardDef	VI_Interfaces_ ObjectSwitch_ Select_ DialogDashboardDef	VI_Select_ DialogDashboardDef_ Default
Verify_ ShoppingCartItem	Checking an item in the shopping cart	AccProduct	VI_Interfaces_ ObjectSwitch_ Verify_ ShoppingCartItem	VI_Verify_ ShoppingCartItem_ Default

The references are defined in the table `DialogAEDSAction`. Such a reference is defined by:

- A reference type
- An assigned component
- A list of assigned objects from the reference type's reference table

The list of assigned objects is stored in the table `DialogAEDSActionHasObject`.

## Defining a new Object-Dependent Reference

In this section, you will find out using an example, how a component, displaying detailed information about a request, can be defined for a specific service item or entire service category request. This component is required if detailed information about requesting this service item should be displayed without taking into account, which page of the web application is currently open.


### ***To assign an object-dependent reference of reference type `Details_PersonWantsOrg` to a service item***


1. Open the **Object-dependent references** tab from the **Edit | Configure project | Object-dependent references** menu item.

The tab is divided into two parts. References are shown under reference types and grouped in a hierarchical structure on the left-hand side.

2. Open the reference type `Details_PersonWantsOrg` and select the reference you want from the grouped entries, for example, "Group request".
3. Edit the input data on the right-hand side of the **Object-dependent references** tab.

- a. Select custom components for `Details_PersonWantsOrg_Default`, which apply to the service categories in your web application.

- b. Select the service items under the objects by double-clicking on .

If the object is correctly selected,  appears meaning that this reference applies to the selected object.

4. Save the changes.

Recompile the Web Designer so that the setting take effect in the web application.

### ***To add a new object-dependent reference***

1. Open the **Object-dependent references** tab from the **Edit | Configure project | Object-dependent references** menu item.

2. Open the reference type `Details_PersonWantsOrg` and add a new reference.

- a. Mark the reference type and open the context menu with the right mouse button,

- b. Click **Add object-dependent reference**.


This add a new reference with no data.

3. Enter the data and configure the following settings.


- a. Give the new reference a name.

- b. Enter a description about how to use the reference if you wish.

- c. Select a component to which the reference applies.

- d. Select the object by double-clicking on . An object can be a service item from a service category, for example.

Object can be grouped in a similar way to references and displayed in a hierarchy. This means, the service item is under a service category.

If the object is correctly selected,  appears meaning that this reference applies to the selected object.

4. Save the changes.

Recompile the Web Designer so that the setting take effect in the web application.

#### **Detailed information about this topic**

- [Adding New Components](#) on page 82

# Customizing the Web Portal

The Web Portal has many options for customizing the application according to its uses and your requirements. One possible configuration is to change predefined settings with the Web Designer configurator.

The second possible configuration provides customization of the object definition for requirements without predefined configuration settings.

## Detailed information about this topic

- [Create new project](#) on page 78
- [Create New Module](#) on page 80
- [Adding New Components](#) on page 82
- [Customizing Object Definitions](#) on page 83
- [Creating New HyperViews](#) on page 88
- [Adding New Nodes](#) on page 89
- [Create Data Display](#) on page 90
- [Displaying Single Objects](#) on page 90
- [Grid Display for Collection Data](#) on page 91
- [Generating Mapping Definitions](#) on page 93
- [Embedding Reports](#) on page 93
- [Linking to a Page](#) on page 94

## Create new project

If properties that are defined in the web project (languages, display settings, menu structure) are going to be changed, you must make a copy of the default web project.

- ① **NOTE:** This task is different to creating an object copy. For more information, see [Creating Object Copies with the Wizard](#) on page 84.

### *To create a new project*

1. Select **Create new project** in the menu bar under **Edit**.
2. Enter the name of the new web project in the **Identifier** text field.
3. Select the template you want in **Templates**.

① **NOTE:** Other projects are available to you as templates, not just the default project. You will see different menu items and workflow for use in your new project, depending on which web project you took as a template.

4. In the option box, Select the menu items or modules from the web project you selected as the template and want to use in your copy.

The modules are still referenced from the customized web project.

① **NOTE:** Check the modules options in the tree selection. To add the modules to a new project, you must set the option next to the module. Simply disable or do not enable the modules you do not want to have in the web project. Use the **Select all/deselect all** option to select or deselect all modules at once.

5. Click **Next**.

Continue to add the new module. Next, the **Create new project - New project** view shows all changes made.

6. Click **Finish**.

Details of the new web project are displayed in the definition tree view.

7. click **Save**.

The web project is added as a new file.

### ***To view the new web project***

1. Select the **Start page** tab in the definition tree view.

2. Click .

This opens the dialog box **Edit web application settings**.

3. Select the newly created web project in the **Web project** option box.

4. Click **OK**.

5. Click **Update preview** on the start page.

The new web project is loaded in the preview.

6. Click **Debug** or **Release** on the start page.

This publishes the web project.

### ***To copy configuration settings from another project***

1. Select the node containing the web project in the definition tree view.

2. Enable **Inherit configuration settings from** in the **Node editor** view.

3. Select the web project whose configuration settings you want to copy in the options box.

### ***To add a new menu item to web project***

1. Select the **Menu structure** node in the new web project in the definition tree view.

2. Select **Menu item** in the context menu.

This adds a new subnode under the **Menu structure** node.

### To hide a menu without submenu.

1. Select the new subnode.
2. Enable the **Hide if no subnodes exist** option in the **Node editor** view.

The menu is not displayed in the web project if it has no submenu.

## Create New Module

Use this wizard to execute all the necessary steps to add a new module and reference it in a web project.

Enter the identifier for the new module in the first step. You can also enter a title for the new page. If you have added the identifier as well as the title, a new `Label`-type node is automatically added under the `Form` node type in the definition tree view.

A corresponding caption object is not added. A warning is output the next time the project is compiled and the caption can then be added including any translations required.

### To create a new module


1. Select **Create new module** in the **Edit** menu.  
This display the dialog box **Wizard for creating a new module**.
2. Enter the following information on the page, **General module settings**, and click **Next**.
  - a. A name for the new module
  - .
  - b. A title for the new page.

The general data for a module page closes and the **Navigation** page is displayed.

Here, you can set whether a menu item is created for the new module or not. If this option is set, you will see more settings for defining the position of the menu item in the menu bar and its caption.


3. Apply the following settings to the **Navigation** page and click **Next**.

**Table 44: Navigation settings for the new module**

Setting	Description
Add a menu item	Adds a new menu item.
Menu item caption	Displays the title on a new page. A title is only displayed if you entered one on the first page of the wizard. You can override this title and add a caption object.
Above the selected item	Options for selecting those which specify the position of the menu item.
Below the selected item	With the option "A hierarchy level under the selected item" you can first select the main view in the Web Portal and then open the sub menu items by clicking on  and continue selecting.
A hierarchy level under the selected item	



4. On the **Security** page, define the group of employees who can use this menu item.
  - ① **NOTE:** You can multi-select employees in the editor tree structure with the option **Only for employees in specific roles**. The new menu item is available in the web application to all employees that are assigned to at least one of these selected structures.
  - ① **NOTE:** If the **Employees matching a given filter condition** option is selected, the usual SQL wizard for formulating an SQL query is started. In this case the query always refers to the **Person** table. Therefore, this must not be entered again.
5. Select one of the following options on the **Permissions** page and click **Next**.
  - **Visible to everyone**  
No viewing restrictions are applied to the new menu item if this option is selected.
  - **Configuration parameter**  
Select this option to add a new configuration parameter. A predefined value is suggested for the key. These options are also available:
    - a) Only for employees in specific roles
    - b) Employees matching a given SQL query

The visibility settings are closed. The new module is added.
6. Close the dialog box using **Finish** and save all the changes made to your web project by clicking  in the toolbar.  
The new module is shown as a tab in the definition tree view.


## Use case

You want to add a new menu item, which can only be seen by users who belong to a particular department. In this example, only the menu item of the department "Sales" should be visible. This example is described in detail in the following step-by-step instructions.


### *To add a new menu item, which can only be seen by certain users*

1. Work through the steps in **To add a new module** until you get to step 5.
2. Select the options **Configuration parameters** and **Employees matching a given filter condition** on the **Security** page
3. Perform one of the following tasks.
  - a. Enter the following text in **Value**.

```
(UID_Person='%userid%')
AND (EXISTS
(
SELECT 1 FROM
(SELECT UID_Department FROM Department WHERE DepartmentName =
N'Sales') as X
Where X.UID_Department = Person.UID_Department
))
```

- b. Open the WHERE clause wizard by clicking on  and use the link **Add expression** to set the following properties.

**Table 45: WHERE clause wizard filter conditions**

Setting	Description
References to other objects	Object selection in a hierarchical structure. Open the hierarchy by clicking on  and select the item <b>Primary department</b> .
At least one recordset exists / Add expression	Link under the new condition for select an additional condition. Click on the link and select <b>Department</b> from the <b>Value comparison</b> .
The following applies to the value in the Department column: The value contains equals ""	Use the link "" to open a text box and enter "Sales".



4. Create the new module and click **Next**.

This generates the new module and displays it as a new tab in the definition tree view.


## Adding New Components



You can add new components in the following ways. If you want to create a new component for an object dependent reference, you use a wizard to add the object dependent reference as well as the new component conveniently. The wizard can also help you set up column-dependent references. Both variations are described in the steps below.

### *To add new components using the navigation view*

1. Select **Components** in the navigation view.
2. Click  in the navigation view toolbar.
3. Select .

The new component is shown in a new tab in the definition tree view.

 **NOTE:** New components are automatically prefixed. You can change the name later. Text boxes with \* are mandatory.

4. Select The component root node in the definition tree view.
5. Select the **Node editor** view for the root node and edit the predefined name.
6. Click  or  in the toolbar.

This renames the component.

7. Select the **Definition** node in the component's definition tree view.

The selection **Type** is show in the **Node Editor**. Use the selection to define which type of nodes the new component will have.

8. Select a type in the **Type** option box.  
This displays the selected node type under **Definition** and you can continue editing.
9. Select the new node in the definition tree view to modify other settings.  
You can specify conditions, rules and extensions.

### *To create a new component through object-dependent references.*

1. Click **Edit | Add new | Create component for object-dependent reference** on the start page.
2. Click **Next** in the **Create component for object-dependent reference** dialog box.
3. Enter a name in the **Reference name** text field on the **Entering a name for the new reference** page and click **Next**.
4. Select a reference type on the **Select a reference type** page and click **Next**.  
**NOTE:** Depending on which reference type is marked, before you confirm with the **Create component for object-dependent reference** button, this reference type is preset.
5. Select one or more objects to be displayed via the **Select object** page and click **Next**.  
**NOTE:** The nodes are grouped on the basis of the reference type's grouping column. You can select products and product groups from the `AccProduct` table. If you have selected the product group, its products do not have to be selected explicitly.
6. Enter a name for the component on the **Enter the component name** page and click **Next**.  
The object-dependent reference and the component are generated.
7. Close the dialog box with **Finish**.  
The reference and component are added and shown on a new tab.

### *To create a new component through column-dependent references*


1. Click **Edit | Add new | Create component for column-dependent reference** on the start page.
2. Click **Next** in the **Create component for column-dependent reference** dialog box.
3. Enter a name in **Component name** on the **the Create a component name** page and click **Next**.
4. Select an interface on the **Select an interface** page and click **Next**.
5. Select a table and a column on the **Select tables and columns** page and click **Next**.  
Your settings are processed and the fitting elements are generated.
6. Close the dialog box with **Finish**.  
The reference and component are added and shown on a new tab.

## Customizing Object Definitions



Copy existing objects with Web Designer and customize them. Not only is there a wizard to help you here, but you can also copy the desired object directly in the definition tree view.

Another possibility to customize objects is to use extensions. For more information, see [Extensions](#) on page 85.

### To create an object copy

1. Select an object in the definition tree view.
2. Click .  
This opens the dialog box **Copy object**.
3. Click the text field in the **Copy name\*** column on the **Object copy settings** page and overwrite the preset name.
4. Click the text field in the **Description** column and enter an optional description for the copied object.
5. Enable the **Add substitution rule for current object** option if required and click **Next**.  
Your entries and settings are processed and displayed on the **Processing** page.
6. Close the dialog box with **Finish**.

The object copy is displayed in the definition tree view.

- ① **NOTE:** In the definition tree view, if you call an object for which a substitution rule was defined, a header with a corresponding comment is shown above the object.
- ① **NOTE:** After an object has been assigned a substitution rule, a  button is added in the **Node editor** view providing further information. Click  to display the object being substituted in the definition tree view.
- ① **NOTE:** If you copied a default object, future changes to the default object are not transferred to the object copy. This is the case after a migration, for example.

## Creating Object Copies with the Wizard

You must make a copy of a default object if you want to add new functionality to it that cannot be added in the configurator. The **Copy objects** wizard helps you with this.

### To add a copy of an object with the wizard

1. Select **Edit | Copy objects** in the menu bar.  
The the dialog box **Copy objects...** is opened after compiling. All existing database objects are ordered by different object types into a hierarchical structure.
2. Enable the option next to the database object you want to copy.
  - ① **NOTE:** The database objects cannot be multi-selected.
  - ① **NOTE:** The wizard automatically adds substitution rules for the objects used for copying if the option **Add substitution rule for current object** is set. The copies are automatically referenced instead of the default objects. The Web Designer does not generate substitution rules if custom database objects are used as copy templates. You can use the configurator to enter these substitution rules manually. For more information, see [Project Configuration - Customization](#) on page 68.
3. Enter a name for the copy in the **Copy name\*** column, if required.  
A custom prefix stored in the database is automatically prefixed to the entered or suggested name.
4. Click **Next**.

A copy of the selection is created and a conformation prompt is displayed. After you have closed the wizard, new tabs are created in the definition tree view displaying the copies.

5. Save the copy manually from the toolbar.

## Extensions

In some cases, it is sufficient to add or delete a node, to change single properties within an object. In such cases, extensions are best suited to configuring the web application. This method of configuration allow you to describe changes to an object.

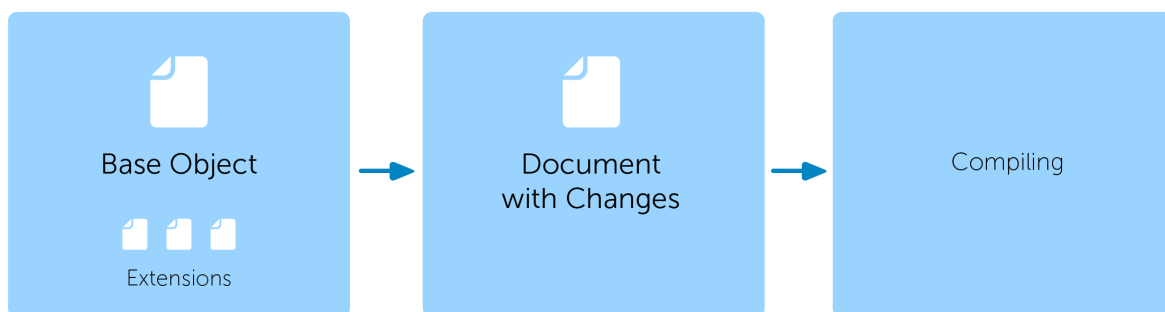
## How Extensions Work

You can add any number of extensions to the Web Designer's base object module, component and web project. Some default extensions are already supplied when the database modules are installed. You can add custom extensions yourself.


Extensions are edited when you configure the base objects. That means you add an extension to the object and change the property value. You then compile the base object and the modification resulting from the extension is highlighted in the Web Designer.



You can identify base objects, which you want to extend, by their colored nodes in the **Objects definitions** view in the definition tree view. You edit extensions in the **Configuration (custom)** view.

Figure 2: Workflow in the Web Designer



### To overwrite a single property in an extension

① **NOTE:** An edited extension node is labeled with in the Object definition  view in the definition tree view.

1. Mark the extension node you want in **Object definition**.
2. Click **Zeige erweiterte Werte** in the Node editor's toolbar. This highlights the extension node's setting being edited.
3. Click  at the marked place.  
This swaps you to the **Configuration (custom)** view and marks the node with the modified property value.
4. By clicking on  in the Node editor you switch back to the **Object definition** view.

① | **NOTE:** You can swap between **Configuration (custom)** and **Object definition** views with the button, if the extension is found under the **Add node** or **Remove node** node.

## Extension Rules

Each extension is its own object in the Web Designer. The advantage of extensions is that database objects that have been extended are updated by migration without the database objects being overwritten. This does not apply in the case of object copies. In that case, the copy is not updated on migration.

The following extension rules are listed in the table.

**Table 46: Overview of extension rules**

Extension rule	Description
Inserting a node	Adds a new node to the read-only base object.
Moving a Node	Removes a node from the base document and places it in an extension.
Editing a property	Modifies a node property in the read-only base object.
Deleting a node	Deletes a node from the read-only base object. A deletion is carried out, for example, when you want to delete a bookmark on the Web Portal start page.

① | **NOTE:** You recognize an extension node by the colored bar marking it.

### *To add a new node*

You add a new node in the definition tree view using the context menu on your selected node. The entries in the context menu vary and depend on which type of node you are adding the extension node to. You can, for example, add new form or component nodes.

Because there are numerous types of node, which can be added to, the example of how to add a node is based on a node of type title.



1. Double-click the relevant base object in the navigation view.

The selected base object is displayed in the **Object definition (read-only)** view in the definition tree view.

2. Mark the node, for example 'Title' and select the **Object in extension | New node** from the context menu.

① | **NOTE:** You can also select another item as **New node** if you know on which node type to base the extension.


3. Select the node type **button** from the list in the dialog box **New nodes** and confirm with **OK**.

The new node is added with a custom prefix and a mark in form of a bar under the selected node.  is displayed at the bottom of the definition tree view. Use  to go to the definition object.

4. Edit the new node in the **Node edit** view. You might configure the following settings.


 **NOTE:** Fields marked with \* are compulsory.

- Enter a name for the button in the **Text** box.

 **NOTE:** The text must be enclosed in quotes.

The button is displayed in the definition tree view with the name you entered.

### ***To modify the position of an extension node.***

1. Mark the nodes you added in the step-by-step "To add a new node", in the **Object definition** view in the definition tree view.
2. Switch to the definition object by click  in the definition tree view.

The edited new node is displayed in the **Configuration (custom)** view in the definition tree.

In the custom configuration view, you can, for example, edit the position of the button. This is how you do this.

3. Mark the node **Add node** above the node you added in the **Configuration (custom)**.
4. Enter the value "0" in **Sort order** in the Node editor view.

The value is displayed after the **Add node** node (sort order: 0). You will see the change after compiling the preview. When you swap back to the **Object definition (read-only)** view, you will see that your added node is placed above the extension you marked.


### ***To move a node***

You can move nodes, which are on a parent node in an extension. This assumes that the node to move is on a custom object which is not write protected. An example of this would be objects found in a container node. Other examples of moveable extension nodes are columns in a collection or parameters of a configuration parameter section.

 **NOTE:** The menu item **Move to extension** is only available to custom objects.

1. Double-click the relevant base object in the navigation view.

The selected base object is displayed in the **Object definition** view in the definition tree view.

2. Enable the view in the definition tree view using .
3. Mark a node and select **Move to extension** from the context menu.

The node is marked in color as in the extension mode.


### ***To edit a property***

A change can take the form of extending viewing conditions for a container, for example, as explained below. Other changes are not gone into here. For more information, see [How Extensions Work](#) on page 85.

1. Click  next to **Viewing condition** in the **Node editor** view.

The view switches to **Configuration (custom)** and the **Modify property value** extension is selected. You can edit the extension.

2. Enter the value "1=1" in **Condition** in the Node editor view.

The edited extension is displayed with the modification in the definition tree view and in the preview. The edited node is marked with  in the definition tree view.

### To create a deletion rule

Before you can delete the node, you must create a deletion rule for the node in question. You can only add a deletion rule to a node that does not contain an extension.


A use case would be if you want to remove a container node from a write protected base object.

- Mark the node to delete in the **Object definition** view and select **Delete node as an extension** from the context menu.

The node changes its colored mark and you can see the message, **Remove node** in the **Node editor**. You can also see this message on the extension when you swap to the **Configuration (custom)** view.

### To remove a deletion rule

1. Mark the node **Remove node** in the **Configuration (custom)** view when you want to remove the extension again, and select **Delete** from the context menu.

 | **NOTE:** The menu item **Delete** is only available to custom objects.

2. Delete the extension from the definition tree view by selecting **Yes**.


## Creating New HyperViews

You can use this wizard to create new Hyper Views or Hyper View shapes or to import existing ones.

Table 47: Options available in the “Hyper View wizard” dialog box


Option	Description
Import a complete Hyper View	Imports a complete Hyper View definition from the database dialog structure to be used in the Web Portal.
Import one or more Hyper View shapes	Adds one or more shapes, imported from the database dialog structure, to a Hyper View.
Define a new Hyper View shape	Adds a new shape, which can represent data from any table, to a Hyper View.

### To import an complete Hyper View

1. Click  in the toolbar.
2. Select the **Import a complete Hyper View** option in the **Hyper View wizard** dialog box.
3. Select an element from the list on the **Select central element** page and click **Next**.
4. Disable the dependent elements you do not wish to display on the **Select dependent elements** page and click **Next**.
5. Enter the component identifier in the text field on the **Details and layout** page and click **Next**.  
The **Wizard closed** page is shown and the component is created.
6. Close the dialog box with **Finish**.




### To import one or more Hyper View shapes

1. Click  in the toolbar.
2. Select the **Import one or more Hyper View shapes** option in the **Hyper View wizard** dialog box.
3. Select a Hyper View from the list on the **Extend an existing Hyper View** page and click **Next**.
4. Disable the dependent elements you do not wish to display on the **Select dependent elements** page and click **Next**.

The **Wizard closed** page is shown and the component is created.

5. Close the dialog box with **Finish**.

### To define a new Hyper View shape

1. Click  in the toolbar.
2. Select the **Define a new Hyper View shape** option in the **Hyper View wizard** dialog box.
3. Select a Hyper View from the list on the **Extend an existing Hyper View** page and click **Next**.
4. Select a database table in the **Base table** selection box on the **Information on new Hyper View shape** page.
5. Enter a definition in the **WHERE-clause SQL** input field and enter a name in the text field for the new shape.

The **Wizard closed** page is shown and the component is created.

6. Close the dialog box with **Finish**.

## Adding New Nodes

### To add a new node

1. Select a database object in the navigation view.

The selected database object is displayed in its own tab in the definition tree view.

① **NOTE:** The procedure for adding new nodes differs somewhat if the database objects are standard objects or custom objects. In the case of standard objects, you must first move the node to the extension using the context menu before you add a new node. You have additional write permissions for custom objects and you can add a node directly under the node in the definition tree view.

2. Mark a **Container**-type node, for example, in the definition tree view and select the **New node** entry from the context menu.

① **NOTE:** You will see different submenu structures in the context menu depending on which database object or which node types you have selected.

3. Select the node type you want from the list in the **New Node** dialog box or enter the node type in the search text box.
4. Close the dialog box with **OK**.

The new node is displayed in the definition tree view.

# Create Data Display

The core task of a web application created with Web Designer is targeted visualization and manipulation of database objects.

① | **NOTE:** The wizard is only available for node types to which corresponding displays can be added.

You can create the following data display types with the wizard.

- Create detailed display and input fields for single objects  
This results in a list of single database objects and allows you to change (overwrite) selected properties.
- Grid Display for Collection Data  
The resulting table shows all properties of database objects. Relations between single database objects can be displayed in hierarchical form.

## Detailed information about this topic

- [Displaying Single Objects](#) on page 90
- [Grid Display for Collection Data](#) on page 91

# Displaying Single Objects

Use this wizard to include an edit mask into your web project. You can edit several properties of individual data set as a bundle. Use filters to limit how many objects are displayed. Data objects are not mapped in tables but in sections. Each individual data object from the selected or new collection is displayed in such a section (iteration). Therefore, each individual data object produces a data set and is displayed in a list.

## To view the object details


① | **NOTE:** You must have already selected a database object. If you have selected an object, which belongs to the default version, you will find the wizard in the context menu under **Element in extension**.

1. Mark a `Container`-type node, for example, and select **Wizard | Create a grid display** from the context menu.
2. Mark **Create detailed display and input fields for single objects** in the **Display wizard** dialog box and click **OK**.

This opens the **Source selection** page. You can apply the following settings.

**Table 48: Settings for selecting source data**

Option	Setting	Description
Use existing collection		Selection box with a list of available collections.
	Filter on	Input field for filter conditions.
Create a new collection		Adds a new collection.

Option	Setting	Description
	Use display names	Enables/Disables displaying of database names.
	Base table	Database table selection.
	Collection name	Input field for the collection name. The data object to be displayed are saved in this collection.
	WHERE clause	SQL input box for setting filter conditions. Use  to open the filter condition setting wizard and narrow down a search.

① **NOTE:** The WHERE clause can also contain an internal variable as in the rest of Web Designer (keyword “Web SQL”). In this case the SQL syntax editor cannot be used. The WHERE clause can still be added or edited after the wizard is closed.

3. Apply the required settings on the **Source selection** page and click **Next**.

① **NOTE:** If the option **Read-only** is disabled, the property in the web application can only be edited with special permissions. You need to add another button once the wizard is complete, so that the changes can be saved in the database. The displayed columns are written as value list directly under the function node **PropertyList()**.

4. Select the database columns for which you want to display detailed information on the **Select details** page.

5. Close the dialog box with **Finish**.

① **NOTE:** The list of editors is displayed on the web page under each other. To view individual data sets, you must change the container style in the definition tree view, which encloses the component **VI\_Common\_PropertyEditor**.

## Grid Display for Collection Data

This part of the wizard creates a grid view for data from one or more collections.


You can assign data object hierarchically in the process. This means that data objects which are defined as dependent (foreign key relation) on another database object stored in the same or another collection can be displayed in another layer.

### *To create a grid display for collection data*

1. Mark a **Container**-type node, for example, and select **Wizards | Create a grid display** from the context menu.
2. Mark **Create a grid display for collection data** in the **Display wizard** dialog box and click **OK**.

This displays the **Collection** page. You can apply the following settings.




**Table 49: Collection settings**

Option	Setting	Description
Use foreign key relation		Selection box with a list of available foreign key relations.
Use existing collection		Selection box with a list of available collections.
Create a new collection		Adds a new collection.
	Base table	Database table selection.
	Collection name	Input field for a collection name.
	WHERE clause	SQL input box for setting filter conditions. Use  to open the wizard for setting filter conditions.

3. Apply the required settings on the **Collection** page and click **Next**.
4. Select the database columns for which you want to display detailed information on the **Columns** page and click **Next**.
5. Configure the following details on the **Layout** page and enter a name for the layer.

**Table 50: Layout settings**

Setting	Description
Layer name (Identifier)	Gives the layer a name. The layer caption is only used help the search for properties that you may want to change later.
Display title	Enables/Disables the title display.
Enable the user to sort columns	Allows the user to sort data objects in their own way. Grid contents can be resorted by clicking the column title bar.
Sort collection	Sorts the collection according to a set criterion. The criterion is set using both selection boxes.

6. Close the dialog box with **Finish**.  
This data completes the definition of the first grid layer. Another window opens. This window displays the grid layers that are already defined.
7. Perform one of the following tasks.
  - a. Add another grid using .
  - b. Mark the existing grid and edit it using .
  - c. Mark the existing grid and delete it using .
8. Confirm the **Create a new grid - layers** pane with **Ok**.

# Generating Mapping Definitions

Use the node type from the category **Component references** to reference new components. Normally, you have to define additional information, which is expected by the referenced components, on the child nodes of type `Node mapping`, `Function mapping` and/or `Collection mapping`.

① **NOTE:** If all the mapping nodes expected by the component are not defined it results in compiling errors.

The **Mapping generator** wizard reads the expected mapping nodes for the component to be referenced and creates a component reference. As a result, the user does not need to check the mapping nodes. The mapping nodes added by the wizard may only be partly configured. You therefore need to rework these automatically generated mapping nodes.

For example, if you switch components, the mapping is automatically modified. In a dialog box, you are prompted as to whether you want to modify the mapping or not.

Use the wizard when the mapping nodes required for the called up component have been modified so much that manually adjusting the structure is too time-consuming. The wizard generates the new node.

① **NOTE:** When you use the **Mapping generator** wizard, all existing nodes are overwritten. Values from defined nodes are deleted.

You can start the **Mapping generator** wizard from the context menu but it is only available for **Component references** nodes and `Call action` nodes.

## To create a mapping

1. Mark a `Container (reference)`-type node, for example, and select **Wizards | Mapping generator** from the context menu.

The wizard runs automatically and generates a mapping node below the component without displaying a dialog box.

2. Mark this related node in the definition tree view.

In the lower area of the definition tree view, the `Mapping node` is displayed in the **Node editor** view next to the node label. You can add more information about the referenced component in the next step.

3. Select the relevant settings in the **Virtual node\*** and **Type\*** option boxes.

## Detailed information about this topic

- [Assigning Collections to Components](#) on page 109

# Embedding Reports


You can create a report to be saved in the database with the **Embed report** wizard. This wizard can be found in the context menu of the action node. The web application determines values for the report parameter, if required. The calculated report is displayed in the web application.

## To embed a report

1. Select **Wizards | Embed report** from the context menu of the web project's action node in the definition tree view.

The **Embed report** wizard is opened with a list of reports.

① | **NOTE:** Reports are created and edited with the Report Editor tool.

2. Select a report from the list and click **Next**.
3. Click the  button on the **Allocate Parameters** page next to the input field you want to edit.

① | **NOTE:** The data you enter depends on the report you selected. Normally, there is one primary key per parameter. Other, quite different types of parameter are also possible. If no parameters are required for the report, the wizard displays a corresponding message.

4. Define the parameter used in the SQL input box and click **Apply**.

Your entry is displayed on the Allocate parameters page.

5. Repeat steps 3 and 4 until all the parameters have been assigned.
6. Close the dialog box with **Finish**.

As a result, the wizard creates a **Compile report** node and a **Forwarding** node.

Forwarding is based on a default component. This takes over the task of displaying the compiled report.

① | **NOTE:** The Web SQL expressions used when the parameters were defined are saved under the **Compile report** node in the definition tree view and can be edited in the **Node editor** at any time.

## Linking to a Page

Links can be set for certain Web Portal modules. Use the following template for setting a link:

```
<BasisURL>/page.axd?ContextID=<Module name>
```

### To set a hyperlink to a specified page in the Web Portal

1. Use the base URL of the Web Portal instead of <BaseURL>.

① | **NOTE:** The base URL is saved in the system under the configuration parameter QER\WebPortal\BaseURL.

2. Use the name of the target module instead of <module name>.

① | **NOTE:** If there are mandatory parameters, you must give values for these parameters.

Context parameters can be attached as parameters to the URL, for example:

```
<BasisURL>/page.axd?ContextID=<Module name>&<parameter name>=<parameter value>
```

① | **NOTE:** If a user is not yet authenticated when the link is called, the Web Portal opens the login page before the linked page is called.

### Detailed information about this topic

- [Declaring Configuration Keys in Modules and Components](#) on page 110

# Basics of Web Designer Programming

This section is all about the basics of Web Designer programming. Collections are explained here in detail, amongst other things.

## Detailed information about this topic

- [Node Types on page 95](#)
- [Defining with Web SQL on page 95](#)
- [Collections on page 99](#)
- [Collection Events on page 108](#)
- [Assigning Collections to Components on page 109](#)
- [Declaring Configuration Keys in Modules and Components on page 110](#)
- [Declaring Context Parameters on page 111](#)
- [Microsoft® .NET Framework Executing Code on page 112](#)
- [Customizing Documentation on page 115](#)

## Node Types

You will find a detailed description of node types in the Dell One Identity Manager Web Designer Object Model Documentation.

## Defining with Web SQL

You can or must select or customize data on many of the Web Designer node types. This data often comes from the database. However, you will not have direct access to the database due to the Model-view-controller architecture of the Web Designer programming model. Instead, you access it through the Web Designer's data layer. You can query this data layer with Web SQL, an SQL-related language.

Web SQL limits to access to `SELECT` statements. `INSERT`, `UPDATE` or `DELETE` are not supported. `JOINS` are not supported either in Web SQL.

### Query example with Web SQL

You want to view the employees in your department in a grid.

## To view data

1. Load the necessary data from the database table `Person` into a Web Designer collection.
2. Create this collection on the grid node.
3. Using the following Web SQL query, create the individual employee fields you want to display.

```
FROM Colleages SELECT CURRENT LastName
```

## Detailed information about this topic

- [Web SQL functions](#) on page 96
- [Loading Collections](#) on page 97
- [Querying Data from a Collection](#) on page 97
- [Filtering Data from a Collection](#) on page 98

# Web SQL functions

Web SQL provides a large number of functions. The most important functions are described briefly in the following. See the Web Designer for a full description.

Table 51: Overview of the most important Web SQL functions

Function	Description
CanDelete, CanInsert	These functions allow collection delete and insert permissions to be queried.
CanEdit, CanSee	These functions allow edit and view permissions for individual columns of collection rows to be queried.
Count(*)	This function queries the number of rows in a collection.
DbCount, Exists	Queries the number and existence of rows in a database table. This can be limited with a WHERE clause.
Display, DisplayValue, DisplayValueLong	Queries the display values of a complete collection row or a specific column of a collection row.
Format	This function formats a string by entering a mask with wild cards and insert values.
GetConfigParm	Returns the configuration parameter value with the given path.  <b>NOTE:</b> To use the configuration parameter function, the session must be authenticated. This function cannot be used until the after the login page if the Web Portal is being used against an application server.
IsNull, IsNullOrEmpty	Checking for undefined values or empty strings is allowed.
PrimaryKey	This function queries the primary key value for a row from a collection.
Translate	Translates a string.
SqlCompare, SqlAnd, SqlOr	This function allows conditions to be written in database SQL.
Try	This function allows alternative values, if an error occurs during evaluation of a Web SQL expression.



# Loading Collections

Web SQL is the SQL language in Web Designer. This language is used when loading and populating collections with data from the database.

- ① **NOTE:** A filter expression is used when loading collections. A filter expression is a Web SQL expression. This filter expression must be able to interpret the Web SQL expression for a string which is valid in the database SQL language.  
When collections are loaded, the result must be a valid condition in the `WHERE` clause of a `SELECT` statement for the queried database table. The same Web SQL expression can be invalid for loading another table.

## Example

An example of an invalid Web SQL expression could be using the `LastName` column in the `Department` table. The `LastName` column does not exist in the `Department` table.

### To create a “Define database collection” collection type

1. Select the database table from which to load the data.
2. Use a filter expression.

```
sqlcompare ("LastName", "Schm*", "string", "LIKE")
```

This expression defines which data should be loaded.

The view- OR -

```
format(("LastName like '%{0}%", FROM Var SELECT searchString)
```

This expression avoids the problem of loading an invalid Web SQL expression.

Generally, Web SQL functions are prefixed by `Sql`. You can create an optional condition for the collection or `Load collection` node. For more information, see [Web SQL functions](#) on page 96.

### To load data from a database table into a collection with the help of the “Load collection” action node

- Specify the collection into which to load the data.
  - ① **NOTE:** To limit the data to load, you can enter an optional condition for a `WHERE` clause. You can specify this on the `Load collection` node. A `WHERE` clause on the action takes precedence over a `WHERE` clause on the collection. The `WHERE` clause on the collection is only used if there is no `WHERE` clause on the action node.
  - ① **TIP:** In the query window, you can query the `WHERE` clause used for the last loading with the Web SQL function `WhereClause("CollectionName")`.

# Querying Data from a Collection

You can query the collection at any point where you can enter a Web SQL expression. The collection must be visible to you.

The following collections are visible to you in modules and components.

- Self-defined collections
- Virtual collections
- Collections in session modules

### To define a Web SQL query

```
FROM <Collection> SELECT [CURRENT] <Column>
```

- OR -

```
SELECT [CURRENT] <Column> FROM <Collection>
```

The query listed first is advantageous in terms of auto completion because both the collection name and the columns of the collection can be auto-completed.

**IMPORTANT:** If you query several columns, you must enclose the column names in curved brackets.

### Example for a multi-column query

Query with Web SQL:

```
FROM Persons SELECT FirstName
```

```
FROM Persons SELECT (FirstName, LastName)
```

The Web SQL query relates to the collection. `Persons` is the name of the collection. `LastName` and `FirstName` are properties of a collection in Web SQL.

To show several rows (the names of all loaded employees for example) from a collection there are several Web Designer node types that are iterated through a collection. If you want to reference the current data set within one of these iterations, use the Web SQL keyword `CURRENT`.

### Example for a multi-row query

```
FROM Persons SELECT CURRENT FirstName
```

There are also aggregate functions, which group rows of a collection together into a single value.

### Example of querying a single value of a collection

This query returns the number of rows of the collection `Persons`

```
FROM Persons SELECT Count(*)
```

This query returns the minimum, maximum and average number of days

```
FROM AttestationPolicies
SELECT (Min(SolutionDays), Max(SolutionDays), Avg(SolutionDays))
```

## Filtering Data from a Collection

You can limit a query to the relevant rows by using a filter condition when querying a collection with Web SQL. Enter the keyword `WHERE` and a condition in the Web SQL `SELECT` statement. The condition is a comparison of one or more columns with a preset value.

### Example of a simple filter

```
FROM AttestationPolicies SELECT Count(*) WHERE SolutionDays > 4
```

### Example of a filter with nested Web SQL expressions

```
FROM AttestationPolicies SELECT Count(*)
WHERE SolutionDays >
(FROM AttestationPolicies SELECT Avg(SolutionDays))
```

### Example of a filter to use within an iteration

You can also combine a filter with the keyword `CURRENT` if you are in an iteration.

```
FROM AttestationCase SELECT Display()
WHERE UID_AttestationPolicy >
(FROM AttestationPolicy SELECT CURRENT UID_AttestationPolicy)
```

### Example of a filter with a condition

There are several places where you can only enter a filter condition with Web SQL.

If all employees are loaded in the collection "Persons" and you want to display men and women separately, proceed as follows:

- Define two grids that iterate on "Persons" and only differ in the filter condition ba:
  - a. Gender = 1
  - b. Gender = 2

## Collections

Collections play an important role when you are using the Web Designer. The data contained in a collection is required for working the components. Data in a collection is stored in rows and columns as in database tables.

A collection is referenced by name within a component or module. You can query collections with Web SQL. For more information, see [Defining with Web SQL](#) on page 95.

A component's data model defined with collections server as the basis for displays and further processing of data. The contents of collection can be loaded from the database but other data sources are also possible.

### Detailed information about this topic

- ["Database Objects" as a collection](#) on page 100
- [Working with a Database based Collection](#) on page 100
- [Loading Database Object through Relations](#) on page 102
- [Loading Database Objects from Multiple Tables](#) on page 103
- [Using the Database Query Wizard](#) on page 103
- [Loading a Historical Object State](#) on page 106
- [Loading a Change History](#) on page 107
- [View Definitions](#) on page 108
- [Collections as Data Sources for Controls](#) on page 108

## “Database Objects” as a collection

In most use cases, the database is the best data source for collections. All table defined in One Identity Manager can be used as data source for collections. Not all database table entries must be loaded in this case. Normally, you need to limit which data sets are loaded from the database with a WHERE clause on performance grounds.

**TIP:** An object from a collection based on a database behaves no differently than other objects. All the database object's templates, formatting rules and access permissions are apply.

### *To load a simple database based collection*

1. Open the module or component to which to add the collection.
2. Select the **Collections** node with a right click.
3. Select the **Database object** option.
4. Click the new node.
5. Select the database table in the **Node editor** window, under **Object type**.
6. Enter the name of the new collection under **Identifier**.

### *To load the contents of a database table*

1. Select the **Initializer** node of the component with a right click.
2. Select the option **Load collection** in the submenu **Data actions**.
3. Click the new node.
4. Select the relevant collection under **Collection** in the **Node editor** view.
5. Using the **Filter condition** property, enter an filter condition expression if you wish.

## Working with a Database based Collection

Working with a database based collection includes adding properties or object as well as removing and delete objects from a collection or database.

All important procedures for managing database-based collections are described below:

### *To add a proxy property to a database based collection*

Proxy properties allow transparent use of database columns (base property) with modified metadata. Metadata includes:

- Name
- Description
- Specifying a property as mandatory or optional
- Structure for displaying the property value
- Component selection for displaying and editing property values

You can modify a property within a component to match the requirements of the component exactly using proxy properties. Ensure the database of a proxy property is always the base property value. Updating the value through proxy properties always have additional effects on the base property.

1. Select a collection with a right click.
2. Select **Proxy property**.  
A proxy property is added under the selected collection node.
3. Select a property in the **Base property** field in the **Node editor** view.
4. Enter a name for the proxy property in the **Identifier** text field.

### ***To add more proxy properties to a database based collection***

1. Select a collection with a right click.
2. Select the option **Property**.
3. Enter at least a name and data type for this property.

**NOTE:** Each object, which is in the collection at runtime, now has an additional property. You can handle this like a database based property, for example, to store temporary data.

### ***To add a new object to a collection***



1. Select an action node with a right click.  
This could be the **Initializer** node of the component, for example.
2. Select **Paste** and click the newly generated node.
3. Select the relevant collection under **Collection** in the **Node editor** view.
4. Using the **Filter condition** property, enter an filter condition expression if you wish.

**NOTE:** Ensure the object is only added in the collection.

### ***To modify a property in a database-based collection***

In the steps below, the display value in the **Entry date** column in the **White pages** view is modified from `<dd.MM.yy>` to `<yyyy-MM-dd>` as an example.

**NOTE:** The steps for this function can be used for the **Child relation column** and **Foreign key relation column** functions. For more information about these functions, see the Dell One Identity Manager Web Designer Object Model Documentation.

1. Log in to the Web Portal with your user information and select the **White pages** view.
2. Select the corresponding **Entry date** column, if this is not displayed, and look at the current display value.  
In our example, we presume that the `<dd.MM.yy>` display value is set.
3. Click the **White pages** view title and switch to Web Designer.
4. Open the **Properties** view and click  to switch to the definition object in the definition tree view.
5. Open the **Collections** node using  and mark the **Person** data object.
6. Select **Object in extension | Modify property** in the context menu.  
The display in the definition tree view switches to **Configuration (custom)**.
7. Select `EntryDate` in the **Base property\*** option field in the node editor view and enter the new display value expression in the **Expression for display value** text field.

In our example, the following expression could be used.

```
FormatDate(EntryDate, "yyyy-MM-dd")
```

8. Switch to preview mode and re-compile the web application.
9. Select The **White pages** view and the corresponding **Entry date** column.  
In the **Entry date** column, the display value is `yyyy-MM-dd`.

#### ***To remove objects from the collection or delete them from the database***

1. Select an action node with a right click.  
This could be the **Initializer** node of the component, for example.
2. Click **Delete** and select the newly generated node.
3. Select the relevant collection under **Collection** in the **Node editor** view.
4. Perform one of the following tasks.
  - a. Select the value **Delete row only from collection** under **Delete type** if you want to delete the object from the collection.
  - b. Select the value **Delete database object and save** under **Delete type**.
5. Using the **Filter condition** property, enter an filter condition expression if you wish.

#### ***To save objects in the database***

1. Select an action node with a right click.  
This could be the **Initializer** node of the component, for example.
2. Select **Save** and click the newly generated node.
3. Select the relevant collection under **Collection** in the **Node editor** view.
4. Using the **Filter condition** property, enter an filter condition expression if you wish.

## Loading Database Object through Relations

Data is linked in a database by relations to each other. You can use these relations to load data from the database in the simplest way.

Prerequisite for using such a collection is a collection containing source data.

There are different type of relations for defining a collection:

- Defining with a foreign key relation:  
A foreign key relation helps automatically load those objects in a database view that were referenced by objects from another collection through a foreign key relation.
- Defining with child relation:  
A child relation helps automatically load those objects in a database view that reference objects from another collection through a child relation.

#### ***To define a collection with a foreign key relation***

1. Open the module or component to which to add the collection.
2. Select the **Collections** node with a right click.

3. Select the **Database view by foreign key relation** option.
4. Select the collection with the source data in **Source data collection**.
5. Select the foreign key column to create the relation to the target table in **Foreign key column**.
6. Enter the name for the new collection in **Identifier**.

You do not have to trigger loading for this type of collection. The moment the data is available in the source data collection, the foreign key referenced objects are automatically loaded.

#### *To define a collection with a child relation*

1. Open the module or component to which to add the collection.
2. Select the **Collections** node with a right click.
3. Select the **Database view by child relation** option.
4. Select the database table from which to load the objects in **Object type**.
5. Select the collection containing the objects to be referenced in **Source data collection**.
6. Select the foreign key column to create the relation to the target table in **Child relation column**.
7. Enter the name for the new collection in **Identifier**.

You do not have to trigger loading for this type of collection. The moment the data is available in the source data collection, the referenced objects are automatically loaded.

## Loading Database Objects from Multiple Tables

For different use cases, it is necessary to examine database objects from multiple tables together. The special collection type `Database objects from multiple tables` in the object model is available for this.

#### *To define a collection with the option "Database objects from multiple tables"*

1. Open the module or component to which to add the collection.
2. Select the **Collections** node with a right click.
3. Select the option **Database objects from multiple tables**.
4. Enter the name for the new collection in **Identifier**.

A collection like this is database based, but can accept objects from multiple database tables.

For more information, see ["Database Objects" as a collection](#) on page 100. You must explicitly provide the database table from which the objects will be loaded.


## Using the Database Query Wizard

- ① **NOTE:** You can use the database query wizard in a module or component of a collection or when you want to add a new module or component.

You cannot execute SQL expressions directly in Web Designer for security reasons. Instead, this wizard helps you create SQL expressions which are stored in the `QBMLimitedSQL` table and linked to at least one permissions group in the `QBGroupHasLimitedSQL` table. Your own collection node is added for the query.

## To create a database query

1. Perform one of the following tasks.
  - a. Select a module or a component in the navigation view.
  - b. Create a new module or component.
2. Mark the **Collections** node in the **Object definition** view in the definition tree view and select **Wizards | Database query wizard** or **Object in extension | Wizards | Database query wizard** from the context menu.

 **NOTE:** The navigation depends on whether you have selected a custom module/component or a default module/component. Default database objects first require an object extension. For more information, see [Extensions](#) on page 85.

The **Wizard for creating or selecting a database query** page is displayed for an SQL expression to be entered or selected.

3. Select the **New** option.

This displays following input and text fields are displayed.



**Table 52: SQL expression settings**

Setting	Description
Collection name	If necessary, overwrite the standard name for the collection that you are adding with this query.
Identifier	In this input field, enter a unique identifier that is used later to identify the entry.
SQL expression	Enter the complete expression in this text field. You can also declare parameters.
Description	Enter a description of this entry here. This makes it easier for other users to understand and classify this expression.


4. Configure the settings and click **Next**.

Specify the dialog groups that can execute the SQL snippet in the **Wizard for creating or selecting a database query** page. All dialog groups are selected.


5. Specify the relevant dialog groups.

- Disable the relevant dialog group by double-clicking .
- Disable **Select/Deselect all** to deselect all listed dialog groups and to enable the relevant dialog groups one by one.
- Enable the relevant dialog groups by double-clicking .

6. Specify the parameters you wish to select and set the values in the following **Wizard for creating or selecting a database query** page.

- If necessary, disable parameter columns you do not want to include in the query or that were recognized by the parser as parameters but are not correct.
- Disable **Select/Deselect all** to select parameter columns one by one.
- Enter a value for the parameter by clicking  next to the corresponding parameter column.




 **NOTE:** You can check your database query with **Test statement**. As soon as the database processes running in the background are complete, you can test the new expressions.

This display the **Processing** page and generates the new collection and SQL expression.

7. Close the wizard using **Finish**.

### To select a database query

1. Perform one of the following tasks.
  - a. Select a module or a component in the navigation view.
  - b. Create a new module or component.
2. Mark the **Collections** node in the **Object definition** view in the definition tree view and select **Wizards | Database query wizard** or **Object in extension | Wizards | Database query wizard** from the context menu.

 **NOTE:** The navigation depends on whether you have selected a custom module/component or a default module/component. Default database objects first require an object extension. For more information, see [Extensions](#) on page 85.

The **Wizard for creating or selecting a database query** page is displayed for an SQL expression to be entered or selected.

3. Select the **Existing** option.

This displays the following input and text fields.



**Table 53: Settings for an existing SQL expression**

Setting	Description
Collection name	If necessary, overwrite the standard name for the collection that you are adding with this query.
SQL snippet	Select an existing snippet in the options box that you can then use and edit in the <b>SQL expression</b> field.
SQL expression	If necessary, extend the selected snippet and preset parameters in the text field.

4. Configure the settings and click **Next**.

Specify the dialog groups that can execute the SQL snippet in the following **Wizard for creating or selecting a database query** page.


5. Specify the relevant dialog groups.


- Enable the relevant dialog groups by double-clicking .
- Disable the relevant dialog group by double-clicking .

 **NOTE:** Dialog groups already in a standard module collection cannot be deselected.

- Disable **Select/Deselect all** to select or deselect all listed dialog groups and to enable or disable the relevant dialog groups one by one respectively.

6. Specify the parameters you wish to select and set the values in the following **Wizard for creating or selecting a database query** page.

- If necessary, disable parameter columns you do not want to include in the query or that were recognized by the parser as parameters but are not correct.
- Disable **Select/Deselect all** to select parameter columns one by one.
- Enter a value for the parameter by clicking  next to the corresponding parameter column.

 **NOTE:** You can check your database query with **Test statement**. As soon as the database processes running in the background are complete, you can test the new expressions.

This display the **Processing** page and generates the new collection and SQL expression.

7. Close the wizard using **Finish**.

## Editing Database Queries

You do not have to select a node to edit database queries using this dialog box. You can create new expressions or delete and edit existing expressions.

### *To select a database query*

1. Select **Edit database query** in the **Edit** menu.
2. Mark a database query list on the left-hand side of the **Edit database queries** dialog box.
3. Perform one of the following tasks.
  - a. Overwrite the database expression name in the **Identifier**.
  - b. Enter explanatory text in **Description**.
  - c. Edit the SQL expression.
  - d. Select or deselect other dialog groups.
  - e. Select all dialog groups or deselect them all.
  - f. Test the expression by clicking on **Test statement...** and enter a parameter value in the next dialog box.
4. Save the changes.

## Loading a Historical Object State

You can reset the state of a database object in a collection if you have enable recording of historical data in the database.

### *To reset a database object to a previous state*

1. Enter a database collection.  
For more information, see [“Database Objects” as a collection](#) on page 100.
2. Add the action **Load objects including history** to an action node.
3. Select the collection on this node.

4. Select between two variations:
  - a. Select **Load a single object with its history** to load the historical data for a single object.  
Here, you can enter an object key (`XObjectKey`), which uniquely identifies the object.
  - b. Select **Load table with history** to load the historical table data.  
You can enter a column name and its value as limiting criterion here.

① **NOTE:** Once historical object states are loaded as described, you can simply set the collection to any point in time within the loaded time period.

5. Add the action **Set object to historical state** on the action node.
6. Select the collection.
7. Enter the date under **Date**.  
The collection is set to the state, which was current at that time.

## Loading a Change History

A change history contain a list of all operations recorded on a defined amount of data. You can load a change history into a special collection type designed for the purpose.

### *To define a collection for a change history*

1. Open the module or component to which to add the collection.
2. Select the **Collections** node with a right click.
3. Select **Change history**.
4. Enter the name for the new collection in **Identifier**.
5. Select the type of change history in **Type**.

### *To load a change history*

1. Select an action node with a right click.
2. Select **Load change history**.
3. Select the collection you want under **Collection**.
4. Select the type of change history defined on the collection in **Type**.
5. Enter the date up to which you want to load the change history in **Load historical data back to (date)**.
6. Select one of the following variations to continue:
  - a. Enter the Web SQL expression for the (`XObjectKey`) object key of the relevant object. This loads the change history for an individual object.
  - b. Enter the relevant table name to load the change history for a table or an assignment object.

① **NOTE:** The setting in **Type** must be identical for the collection and the change history to be loaded.

① **TIP:** Column-dependent references are recommended for displaying historical data. For more information, see [Column-dependent references](#) on page 70.

# View Definitions

A collection layer view behaves in the same way as a database layer view. The content of the view is defined via a Web SQL expression. The view is updated during runtime. The view is automatically updated if the source data changes.

## To add a view

1. Select the **Collections** node with a right click.
2. Select the action **Add collection data view**.
3. Enter the name for the new collection in the **Identifier** text field.
4. Enter the Web SQL expression for representing the view content in the **View expression** field.

📘 | **NOTE:** Add a property with the matching data type for every view property in Web Designer.

# Collections as Data Sources for Controls

Some control types can load required data from the database themselves, assuming `Database` was selected as data source.

- The control type `Tree` load data from a database table depending on hierarchy level. First of all, the root level is loaded; the second level is loaded by expanding a node and so on.
- The control type `Grid` loads data depending on the selected page. If, for example, 20 entries are displayed per page, then initially only the first 20 database objects are loaded from the database.

This reduces memory usage and the control can be displayed faster.

# Collection Events

You can define actions to be executed if a specified operation is applied to the collection data. Events can be triggered by the following.

**Table 54: Overview of the operations used**


Operation	Description
Insert	A single row was added to the collection.
Delete	A single row was deleted from the collection.
Update	A single collection data value was updated.
Bulk	A set of rows was added to the collection or deleted from it.


## To define an event

1. Select a module or component in the navigation view.
2. Mark the `Events` node in the definition tree view and select **Object in extension | Event handling** from the context menu.

The view switches to **Configuration (custom)** and the new `Insert` subnode is selected. In the **Node editor** view, you can manage the following settings.

**Table 55: Settings for event handling**



Setting	Description
Identifier (optional)	Enter the name for the event.
Operation*	Select one of the operations listed above.
Collection*	Select a collection in the option box. You can navigate to the selected collection using  and apply further settings if necessary.
Control-ID*	A Control-ID is preset. You can overwrite this.

3. Adjust any settings you need to and then click  in the toolbar.

### **To define an expression-based event**

1. Select a module or component in the navigation view.
2. Mark the `Events` node in the definition tree view and select **Object in extension | Expression-based event** from the context menu.

The view switches to **Configuration (custom)** and the new subnode is marked. In the **Node editor** tab, you can manage the following settings.

3. Open the SQL input field at the **Value\*** box using .
4. Enter a value for the expression-based event and click **Apply**.
5. Save with .

## Assigning Collections to Components

Before you can assign a collection to a component, you must prepare the custom component to make it suitable for the collection.

To do this, the component requires a “virtual collection”, which you will find under the component’s **Property** node in the definition tree view. Collections are assigned in the “virtual collection”.

“Virtual collections” defined on components are marked as compulsory or optional.

Compulsory “virtual collections” must be assigned to a location collection. This assignment is made where the component’s usage is defined.

Before you assign a collection to a component, a node must be configured under **Collection mapping** under the component.

**Collection mapping** nodes are automatically assigned when a component reference is added. These nodes are added automatically but not configured. You configure them in the **Node editor** view. You can also add a **Collection mapping** node with the help of a wizard that you can call from the context menu. Another option for adding these nodes, is to add a single node that you can also access through the context menu of your component in the definition tree view.

 **NOTE:** The following instruction steps are based on an example of a direct container reference.

### *To assign a collection to a component*


1. Select the tab of the component or module in the definition tree view, in which you want to use a **Container**-type component.
2. Mark a **Container**-type node and select **Component reference | Container (reference)** from the context menu.
  - ① **NOTE:** If you add a component reference, the subnodes for collection mapping are automatically added. If more nodes are required for collection mapping, you can either add a **Collection mapping** type node yourself or by using the wizard. Other nodes may be added when you add a node with the wizard. You can delete these afterward.
3. Select the component you want to reference in the **Identifier** option box in the **Node editor** view.
4. Select the **Collection mapping** node in the definition tree view.
5. Select the relevant collection under **Virtual collection** in the **Node editor** view.
6. Select the collection you want in the **Map to local collection** box.

### *To define a virtual collection for a user defined component*

1. Select a custom component to which you want to assign a collection.  
This displays the object in the definition tree view.
2. Mark the **Properties** node in the definition tree view and select **Virtual collection** from the context menu.  
A new virtual collection is added in the definition tree view.
3. Enter a name for the virtual collection in the **Identifier** box in the **Node editor** view.
  - ① **NOTE:** Use the **Object type** and **Cursor required** options to limit collection assignment further. Use the **Object type** option to ensure that the assigned collection must be a database collection of the given type. Use the **Cursor required** option to specify the point of the assigned collection which must be within an iteration above this.

## Declaring Configuration Keys in Modules and Components

### *To declare a configuration key for a module or a component*

1. Click  in the definition tree view and select the **Configuration** node.
2. Select **Configuration section** in the context menu.
3. Mark the new configuration section in the definition tree view.  
You can see that the new configuration section is selected with empty fields in **Node editor**.
4. Enter the name for the new configuration section in the **Identifier** and **Description** input fields in **Node editor** view.  
The configuration section is displayed with its name in the definition tree view.
5. Mark the configuration section.

6. Select **Parameter** from the context menu.  
The new parameter is added under the configuration section.
7. Mark the new parameter.
8. Enter a name for the configuration key in the **Key** text field.
  - Example of a configuration key name: `CCC_ConfigParm_Hyperview_HR`
9. Enter the name given in the **Key** input field in the **Identifier** text field as follows:
  - Example for input: `translate('#LDS#HR_Hyperview_Columns')`
10. In the **Description** text field, enter the following text that should appear in the **Settings...** view under **Details**.
  - Example for input: `translate('#LDS#Choose Columns for HR-Hyperview')`
11. Select the parameter type in **Type** and edit the configuration key as in the sections about parameter types.
  - ① | **NOTE:** You may have to edit further settings depending on which parameter type you selected.

### Detailed information about this topic

- [Parameter Type "Boolean Value" on page 58](#)
- [Parameter Type "SQL filter condition" on page 58](#)
- [Parameter Type "Selection from value list" on page 59](#)
- [Parameter Type "Free text" on page 59](#)
- [Parameter Type "Property list" on page 60](#)
- [Parameter Type "Image" on page 62](#)
- [Parameter Type "Configuration Object" on page 63](#)
- [Parameter Type "Color value" on page 66](#)
- [Parameter Type "Color dictionary" on page 67](#)

## Declaring Context Parameters

- ① | **NOTE:** You can only declare context parameter in modules.


Context parameters are utilized in things like automatically generated emails. These emails contain a link referencing a fixed point in the web application. This option removes step-by-step navigation in the application from the user.

### Example: Approving a request

A manager receives an email that an employee has been added and can request permissions. The email contains a link to a custom request page with preset data of the new employee.


### *To disable a context parameter for a module*

- ① | **NOTE:** You have already selected a module. In the above example, the `CCC_ITShop_Approvals` module is used.

1. Click  in the definition tree view and open the **Configuration** node.
2. Select the data object `UID_PersonWantsOrg` in the subnode `Context` parameters.  
Now you can edit the following settings for this context parameter in **Node editor**.

**Table 56: Context parameter settings**

Setting	Description
Identifier	The name of the selected data object is preset.
Option "Mandatory parameter".	If this option is enabled, the parameter is mandatory.
Type	Parameter type selection.
Comment	Specifies how the parameter is used.

3. Modify settings, and then click .

### Detailed information about this topic

- [Linking to a Page](#) on page 94

# Microsoft® .NET Framework Executing Code

The web project defined in the Web Designer is translated by the compiler in C# language. This compiles the complete logic of the definition document into a directly executable Microsoft® .NET Framework assembly. It is possible to incorporate your own C# source code into this procedure. This way, you have access to the complete functionality of various execution layers. In this section, it will be explained how you incorporate your own C# source code.

## Runtime API

Web Designer objects written in C# code can be integrated directly into the object definition. This makes customizing the web application very flexible.

The web project code uses the Web Designer runtime API. The runtime API supplies the following functionality, which is required for the web project.

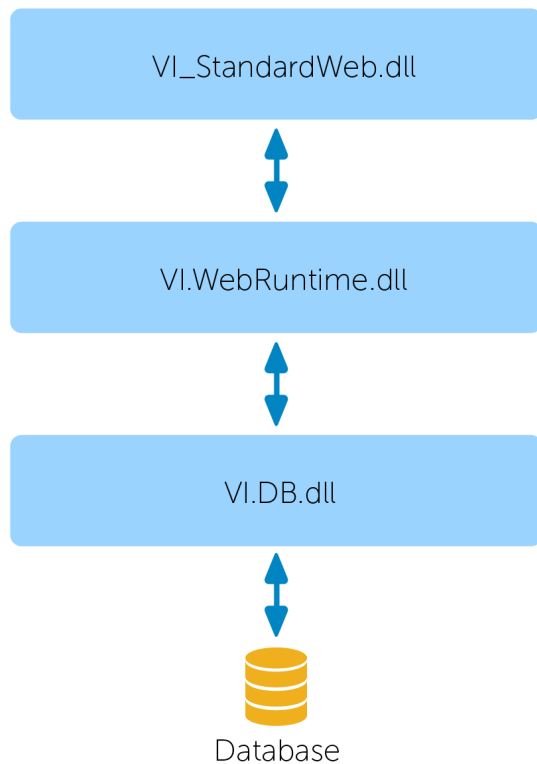
- Managing database connections with VI.DB.dll
- Authenticating and authorizing HTTP traffic
- Web controls
- Debugging Web Designer interfaces

The following diagram exemplifies the layer structure of components from the web project to the database.

For detailed information about runtime API classes, see the `D1IM_QBM_WebRuntime.chm` file.



Figure 3: Structure from the web project to the database



## Integrating Code in Object Definitions

In Web Designer you can insert a C# code snippet in an object's code using the `Code snippet` node type.

```
//-----  
// <auto-generated>  
// This code is tool generated  
// Runtime version:4.0.30319.34209  
//  
// Changes to this file may cause incorrect behavior and be overwritten when  
// the code is regenerated.  
// </auto-generated>  
//-----
```

① **NOTE:** Changes to the code remain intact even on regeneration, when you make them in the Web Designer.

# Integrating C# Code into a Web SQL Expression

You can integrate C# code into every Web SQL expression. This can be either a C# expression or a command string.

To integrate a C# expression into a Web SQL expression, enclose it in double curly brackets, as in the example:

## To integrate a C# expression into a Web SQL expression

- Enter the expression in double curly brackets.

```
format ("The database user is: {0}",  
      {{ _Connection.User.Display }} )
```

**NOTE:** More complex commands are also enclosed in double curly brackets. The return value of the embedded expression is labeled with the keyword `@return`.

## To integrate multiple C# expressions into a Web SQL expression

- Enter the expression in double curly brackets and use the keyword `@return`.

```
format ("User is: {0}",  
      {{ string display = _Connection.User.Display;  
        @return display; }} )
```

**NOTE:** The keyword `@return` must always be the last command in the embedded expression in this case.

# Access to Environmental Data

The following statistical member variables are defined in all classes that can be modified by code. You can use these to gain access to the execution environment.

Table 57: Member variables overview

Name	Type	Description
<code>_UserSession</code>	<code>VI.WebDesigner.Runtime.IUserSession</code>	User session
<code>_Form</code>	<code>VI.WebDesigner.Runtime.IForm</code>	Form on which the code is executed
<code>_Module</code>	<code>VI.WebDesigner.Runtime.IModule</code>	Module in which the code is executed.
<code>_Connection</code>	<code>VI.DB.IConnection</code>	Actual database connection

# Referencing Controls

The generated Microsoft® .NET Framework code creates a structure of ASP.NET controls. A local variable is defined for each control. The name of this variable corresponds to the identifier given to the Web Designer node.

The local variable can be accessed directly from within the same method.

Furthermore, all controls coming from the base class `System.Web.UI.Control` have an identifier (ID), which also corresponds to the Web Designer node identifier. This makes it easier to locate controls outside the visible range of the local variable.

## Referencing Collections

Data values can be loaded from or changed in collections using C# code.

Local collections of a module or component are defined in the component's `TableStore`.

### Example:

```
TableStore.GetTable("SomeCollection")
```

① **NOTE:** Virtual collections must use a slightly different call. Virtual collections are member variable of the class and can be accessed directly from the C# code using their name.

## Customizing Documentation

There is a **Help** button in the Web Portal menu bar. The Dell One Identity Manager Web Portal User Guide can be opened from this help function.

Web Designer gives you the option to extend the guide and to modify it with your Web Portal custom modifications. You can add text content as well as visuals and logos. To add a help archive, copy the current ZIP files (`Help_WebPortal_DE.zip` and/or `Help_WebPortal_EN.zip`) into the Web Designer directory. Automatic updating keeps these up-to-date. Custom help is maintained as a ZIP file under the project files.

If you are in the **Project files** area of the navigation view, the **Add help archive** function is available in the toolbar. This archive is required to make changes or extensions to existing default Dell One Identity Manager Web Portal User Guide. A new help archive is added in the definition tree view when you select this function.

Select the project to which to assigned the help archive in the top part of the view. All existing projects are listed under **Projects**. Then enter the language of your choice. A file name is generated from the selected project and language.

This file name cannot be configured. The lower part lists HTML documents, CSS documents and default help mappings. By double-clicking (or right-clicking from the context menu) on an HTML document, for example, you can assigned the custom help.

The selected file can be edited using the function **Export....** You cannot edit directly in the Web Designer.





After you have finished editing the file, you must import it again into the Web Designer. The imported file is immediately available. You can even add your own HTML documents to the help archive. Custom help files replace the files from the default help archive after processing. You cannot delete default help files.

The help folders are regenerated if the help function is called in the Web Portal or if a help file is changed is one of the help archives default or custom).

Existing help files are updated if a new version is loaded. Custom help files are not overwritten.

You have the same function available to you when you right-click on a selected file as in the menu bar. You also have the option to change the file name.

**Table 58: Functions in the Help Archive Menu Bar**

Icon	Function
	Delete. Deletes the selected file after confirming the security prompt.
	Export. Opens the default Windows dialog box for saving the selected file to a data storage medium.
	Import. Opens the default Windows dialog box to select a file for importing.
	Adds a new folder in the selected directory. You can add files to the folder with <b>Import....</b>

# Compiling and Debugging

Before you can execute a web project created with the Web Designer in a browser, you must compile with the Web Designer compiler.

## Detailed information about this topic

- [Compiling a Web Application](#) on page 117
- [Querying a Web Application](#) on page 119
- [Debugging](#) on page 121

## Compiling a Web Application

The Web Designer compiler can be called from the Web Designer as well as from the Database Compiler. For more detailed Database Compiler information, see the [Dell One Identity Manager Configuration Guide](#).

You must compile a web project in the following cases.

- After changing a definition (module, component, or similar) in Web Designer.
- After changing the Web Designer configurator For more information, see [Web Project Configuration Options](#) on page 55.
- After changing system settings, which required the Database Compiler to be run.

The Web Designer compiler create a set of DLL files from the web project's XML definition and saves them in the database. The web application loads these DLL file and uses them to display the web interface.

There are basically two ways to compile a web project.

- Release compilation is run to release a specific version of the web project for use.
- Debug compilation is used during the development phase for testing and debugging purposes. Debug compilation creates additional code to support the Web Designer debugger. This means the DLL files are somewhat larger.


Changes within the Web Designer do not effect web application as long as there is no release compilation.

A web application loads the most recently compiled DLL file for the respective web project. If these DLL files are updated, the web project reloads the new DLL files; however, only new sessions run with the code from the newly loaded DLLs.

# Compiling with the Database Compiler

Use the Database Compiler to compile a web application outside the Web Designer. For more detailed information, see the Database Compiler in the Dell One Identity Manager Configuration Guide.

## To compile a database

1. Open the Launchpad and select **Compile database**.
2. Click **Next** on the Database Compiler start page.
3. Enter the connection data for the One Identity Manager database on the **Connect to database** page and click **Next**.
4. Select **Do not compile scripts** in the option box.  
More options are enabled in the dialog box and can be set.
5. Disabled the options you do not want to compile.  
 **NOTE:** Expand options with additional settings to edit.
6. Configure the additional settings and click **Next**.  
Compiling takes place and the progress is displayed.
7. Close compiling using **Next**.
8. Close the program with **Finish**.

## Viewing Error Messages


The **Tasks** window contains a list of compiler errors and warnings. Compiler errors preclude successful web project compiling and must be eliminated. Development states, which cannot be compiled cannot be released because the corresponding web application do not run.

Compiler warnings relate to missing extensions, or to messages concerning accessibility. If compiler warnings are the only type of message that is generated, the development state will be successfully compiled nonetheless.

If individual messages are displayed hierarchically, it means that the errors indicated occur at various places in the web project. This can happen, for example, in connection with a missing extension that is referenced by a number of nodes. In such cases, the error need only be eliminated once.

To call up the relevant node in the definition tree view, double-click a table entry; Web Designer will then automatically go to the **Node editor** window. This behavior applies if the error is in the node. If the error occurs when the resulting code is compiled, you can double-click the error to display the **Generated code (read only)** view in the definition tree view.

Table 59: Functions in the Object State Window Toolbar

Icon	Function
	Display error message. This button is only active when an error message has been highlighted in the list. By clicking this button a detailed error description is displayed. You can send an email message in the default email program using the <b>Send as Mail</b> button. The error message is automatically transferred to the email.

Icon	Function
------	----------



Errors.

By clicking this button, errors can be shown or hidden.



Warnings.

By clicking this button, warnings can be shown or hidden.

## Querying a Web Application

Web SQL expressions can be created and executed in the query window. However, in order for this to occur the compilation must be successfully completed. This window integrates a toolbar of its own. The query window is divided into three sections.

**NOTE:** A WCF connection must be created for this function.

On the left, the currently available session collections are shown. The internal currently selected session is preset in the toolbar selection. Individual collections are bundled under the modules or components in which they were originally defined. The number of rows within the collection is shown next to the collection.

If you mark a database object in the hierarchy, the following context menu items are available. Which menu items are shown, depends on the database object you have marked.

**Table 60: Context menu entries for marked collections**

Entry	Description
Show definition object	Takes you to the definition object in the definition tree view and marks the nodes with a color.
Show collection data (this entry is only available for a selected collection)	This displays an expression for the query in the SQL input box. More information about the collection is displayed below the SQL input box.
Show last used WHERE clause (this entry is only available for a selected collection)	This displays the last WHERE clause in the SQL input box. More information about the collection is displayed below the SQL input box.

On the right-hand side of the window is an SQL query window. Here you can enter a query statement to be executed. The results of the query are also displayed in the part of the window.

### *To select another session*

- Click the query window toolbar.  
This displays a list of active sessions.

### *To view the current module*

- Click in the toolbar.  
Only the module selected in the currently selected session is shown.



**NOTE:** If you click again, all module sessions are re-displayed.

### To view the collection contents

- Mark the collection in the hierarchy.
  - Select on **Show collection data** in the context menu.
  - Double-click the collection name.

The collection contents is displayed on the right side of the query window.

**Table 61: Toolbar Functions in the "Queries" View**

Icon	Function
	Sends a query.  The entered Web SQL expression is executed by clicking  . If more than one such expression has been formulated, mark the expression that is to be executed. Only one expression at a time can be executed.

The expression being executed is evaluated against the module or component currently selected in the tree structure. Use Web SQL syntax for inputting the expression to be executed.

If the queried collection is a part of a component, the suffix must be appended to the collection name. the suffix displayed on the left side of the query window must be added to the collection name.

If an asterisk (\*) is inserted in an expression as a placeholder for the columns that are to be displayed, only those columns that are needed (referenced) in the module are displayed.


### To reopen a closed query window

- Select **Query** in the **View** menu in the toolbar.

## Evaluating the Web SQL Expression of a Property

This function is a debugging extension and is only available in debug mode. The evaluable Web SQL properties of an XML node for a specific control can easily be evaluated at runtime.

The `Label` node type, for example, has **Text** and **Tooltip text** Web SQL properties. **Identifier** and **Value** are additional Web SQL properties that are stored as HTML attributes and are Web SQL-evaluable.

 **NOTE:** If Web SQL expressions are not available during runtime, these expressions are extracted from the XML definition. If the runtime code no longer corresponds to the XML definition, a different result may be obtained from Web SQL expression evaluation.

In the steps below, the evaluation is described using the `Label` node type as an example.


### To evaluate the Web SQL expression of a property

1. In the preview, mark the database object that needs to be displayed and select the properties view.  
The database object, represented as an XML node, is marked in the properties view.  
The evaluable Web SQL properties belonging to the XML node are determined in the background and are listed as entries in the context menu. These entries are selected in the next step.



2. Click the marked XML node and select **Evaluate label...** in the context menu.

All the corresponding modules are listed in the tree structure in the query window and the definition for the selected Web SQL property is displayed in the SQL input box.

3. Click  the query window toolbar.

The results are shown below the SQL input box.

## Viewing Information Specific to One Database Object Only in the Query Window

In the query window, you can use a filter to display information concerning one database object only, such as a component. This function can be applied to `Module` or `Component` database objects. By default, this filter is not enabled. If the information you require appears in several components or modules, you can open another database object with the filter enabled in the definition tree view. The information concerning the newly selected database object is displayed in the query window.


This function is available in debug mode.

### *To narrow the display in the query window to a specific database object*

- ① **NOTE:** Before using this function, select the relevant database object and the corresponding property. For more information, see [Evaluating the Web SQL Expression of a Property](#) on page 120.

- Enable the option **Filter on** in the query window.

The information displayed in the query window concerns the open component or module only.

- ① **NOTE:** If there is no information relating to the selected database object or if the selected document is not a component or module, the  icon is shown next to the filter.

## Debugging




If error messages are shown in the preview while the web application is running, Web Designer provides different forms of help.

- ① **NOTE:** A WCF connection must be created for this function.

You can set breakpoints in the definition tree view for debugging. For more information, see [Setting Breakpoints](#) on page 122.

You can use the following buttons in the preview to manage Web Designer debugging.

**Table 62: Buttons for managing debugging in the preview**

Icon	Function
	Enable debugger.
	Single step mode.
	Resume execution

For more information, see [Working with the Preview](#) on page 37.


An external program can also be used to debug the web application (for example: Visual Studio®). Debugging steps are created in the debug compilation to help you with subsequent debugging. Debugging with external programs is dependent on the environment used. This approach is therefore not referred to again here.

For internal debugging, called up methods can be displayed in the **Call Stack** view. This gives you important information on the source of the error.

For more information, see [Call stack](#) on page 122.


## Setting Breakpoints

### To set a breakpoint

1. Perform one of the following tasks.
  - a. Open the relevant module or component in the navigation view.
  - b. Select a corresponding object in the properties view and click .

For more information, see [Properties](#) on page 43.

2. Mark the node on which the breakpoint is to be set and select **Set breakpoint** from the context menu.

 **NOTE:** Not all nodes in the definition tree view can support a breakpoint. However, as a general rule, a breakpoint can be set on all nodes that can be suspended in single step mode. A breakpoint can also be set for **Container**, **Label**- or **Button**-type nodes. In these cases, a breakpoint is activated as soon as the control is rendered.

The marked node is highlighted in red.


### To remove a breakpoint

- Mark the node with a breakpoint and select **Remove breakpoint** from the context menu.

The marked node is no longer highlighted.

## Call stack

The **Call stack** view contains a list of internal action calls when the debugger is enabled and a breakpoint activated. For more information, see [Setting Breakpoints](#) on page 122. All actions executed during the breakpoint are listed. This information can be used to identify the C# methods and related DLLs causing the error.

 **IMPORTANT:** The description of the Call Stack given here only helps you to pinpoint the error source. For debugging itself, use external development tools such as Visual Studio®.

The **Call Stack** view provides the following information:

- Method  
Name of the method called up
- DLL  
DLL name. The DLL provides you with the origin of the method.


# Monitoring

A installed web application can be monitored from your own web site.

The user groups authorized to call up the monitor page are specified in the `Monitor.config` configuration file. By default, these are all the users that are members of the role `Builtin\Administrators`.

The monitor page currently has five tabs. The information shown on the monitor page or the available functions are described below. This page is currently available in the languages configured in your web browser.

## *To open the monitor page*

1. Perform one of the following tasks.
  - a. Click  on the start page.
  - b. Select **Debug views | Monitor page** from the menu bar.

The monitor page is opened in the standard browser.

## Detailed information about this topic

- [Status](#) on page 123
- [Sessions](#) on page 124
- [Assemblies](#) on page 124
- [Log Files](#) on page 125
- [Exceptions](#) on page 125

## Status

When you open the monitoring page, the contents of the **Status** tab are displayed. Different information about the web application status is shown.

It is also possible to put the web application into maintenance mode. If maintenance mode is enabled, the web server does not accept any new connections for the web application. An advice message is displayed to users that try to login.

You can update the web application, assuming new assembly files are stored in the database. If there are no new connections pending, the update can start immediately. Otherwise, updating can be delayed until there are no more active connections. This ensures that no one loses their session or any data they have entered.

The update functions of the monitor page do not depend on the settings made in the configuration file.

### ***To put a web application into maintenance mode***

- Click **Start maintenance mode** on the **Status** tab.

The web application does not accept any new connections. A warning page is shown when someone tries to connect.

### ***To update the web application immediately***

① | **NOTE:** This update only functions if there are no connections.

- Click **Update now** on the **Status** tab.

The web application is updated and the new assemblies are loaded from the database.

### ***To update the web application at a later date***

① | **NOTE:** The update can be delayed until there are no more active connections.

- Click **Update when all user sessions are closed** on the **Status** tab.

The web application is updated and the new assemblies are loaded from the database as soon as there are no more active connections.

## Sessions

The **Sessions** tab shows information about every individual active session.

### ***To display more details about individual sessions***

- Click the **Details** link next to the current session.

You can see more detailed the information about the session listed under the session.

### ***To end a session***

- Click **Terminate this session** below the current session.

## Assemblies

The web application assembly files are listed on the **Assemblies** tab along with their respective assembly and file version. Authorized employees can quickly get an overview of the development status currently in use. Using different file versions in different environments or on different servers can sometimes make it difficult to identify the source of an error.

### ***To search for assemblies***

- Enter part or the whole assembly file name you are looking for in the **Search** text field.

# Log Files

The contents of the log files of a web application are shown in the **Log Files** tab. The path for the log files stored in the configuration file (`NLog.config`) is used for this.

① **NOTE:** Configuration settings for logging messages are made in `NLog.config` by NLog. For an exact description and functionality of NLog, see the online help (<http://nlog-project.org/>).

To improve performance, the most recent 500 log entries are displayed as a maximum. The user is notified when this limit is reached. This restriction concerns only the transferred amount of data to the client.

If the search function is used on a form, all existing log entries are searched.

The **Log files** tag offers a number of filtering options, with which the content of the log files can be analyzed. The filtering options are the same as in the configuration tool. For example, if an expected entry is not listed on this page, this only means that a corresponding log entry was not written. For more information about log files, see the Dell One Identity Manager Configuration Guide.

# Exceptions

Unhandled errors are displayed in the **Exceptions** tab, if they occur during the execution of the web application. This is a view from the web application log. For more information, see [Log Files](#) on page 125.

# Web Portal Performance Indicators in Windows® Performance Monitoring

When you install a web application, performance counters are registered, which provide information about the state of the application.

Performance indicators can be installed later.

① **NOTE:** Prerequisites for this are that the web application is installed on a Windows Server® and has sufficient permissions to offer performance counters. It may be necessary to add the application pool user account to the local group **Performance monitoring user** for this. Apart from this, the web application must be running in order to select the performance indicators.

For detailed information about monitoring with help from performance indicators, see the Dell One Identity Manager Installation Guide.

# Frequent Tasks in the Web Portal

In this section you will discover, amongst others, which tasks you can expect with your successfully installed web application. Furthermore, you obtain a detailed set of instructions and useful information about each task.

## Detailed information about this topic

- [Editing Captions](#) on page 126
- [Adding Functions](#) on page 127
- [Pasting in Texts or Captions](#) on page 128
- [Pasting in Grids](#) on page 129
- [Presets for Grouping Grids](#) on page 130
- [Visualizing Exceptions in the Web Portal](#) on page 130
- [Replacing Images from Resource Files](#) on page 131

## Editing Captions

In order to customize text that is displayed in web applications, you must caption objects. Like all database objects, these are labeled either as default or custom objects. Caption objects are the only default objects that can be modified in a custom installation.

The advantage of being able to change these objects is that you do not need copy any modules. Moreover, it makes no difference whether a pre-defined caption object is referenced in a standard or custom module. The caption can be edited in both cases. Custom caption objects only occur in custom modules. For more information, see [Multilingual Captions](#) on page 44.

The following caption editing rules and procedures apply.

- Caption objects can be referenced by more than one node. If this is the case, the changes also effect these nodes. To find the corresponding nodes, you currently require a search function. To do this, enter the key and search throughout the whole project.
- In the case of multilingual web applications, you may have to modify the translations for these objects. That means, you must change several caption objects. You can find these objects with the search function in the **Captions...** dialog box.

### ***To change the caption of a caption object***

1. Select the text you want to change in the preview.  
For example "Welcome" on the start page.

2. Mark the **Label** control you want in the `Properties` window and select the entry **Show definition object** in the context menu.

The `Label` node for the marked text "Welcome" is highlighted in the **Object definition** view in the definition tree view.

3. Mark the highlighted node and select **Move to extension | Add to configuration** from the context menu.


The definition tree view switches to the **Configuration (custom)** view.

4. Select the **Node editor** view.
5. Enter a caption in the **Text** text box for the `caption` required for the label placeholder as shown in the following SQL expression example.

```
translate('#LDS#Caption required for the label')
```

6. Compile the web application.

You will see the modified `Label` control in the preview.

 **NOTE:** You must log in again if required.

## Adding Functions

It is possible to share functions that are already implemented but hidden by using the default web project configuration. If new functions should be added they need to be programmed. Operating processes that are not implemented can be programmed using new modules. For more information, see [Create New Module](#) on page 80. If an existing operating process is being dealt with the default module being used can be extended. To do this, the module or component in which the new function will be inserted has to be found first.

The following example shows you how to add a function. You want to add the name of the current user to the "Welcome" text on your start page. Before you add a new function, add a new object copy in the example.

### To add a function

1. Update the preview in the Web Designer by clicking on  and log on in the preview on the login page.

 **NOTE:** Once you have logged in to the Web Designer, the preview with the login page is loaded automatically.

For more information, see [Working with the Preview](#) on page 37.

2. Click "Welcome" link on the preview's start page and select the **Properties** window in the lower area of the Web Designer.


The `Label` control for the "Welcome" text is gray.

3. Mark the **Label** control and select the `Show definition object` entry from the context menu.

The file belonging to the control is opened as a tab in the definition tree view. In this case, it is the default object `VI_Start`.

4. Mark the `Label` node and switch to the **Copy object** view.
5. Specify the settings for the object copy and click **Next**.

A new tab is added for the object copy in the definition tree view. In addition, your web project is given a substitution rule.

6. Select the object copy tab in the definition tree view and search for the **Label** node containing the “Welcome” text.
7. Mark the **Label** control and switch to the **Node editor** view.
8. In the **Text** text box, enter `+ " "+from user select top 1 display() after translate ("#LDS#Welcome")` and click  in toolbar.

① **NOTE:** It is important not only to save the object copy with the modified function but also the default object with the automatically added substitution rule.

9. Select the **Start page** tab in the definition tree view and click **Refresh preview**.


The changes you have made are shown in the preview of your web project.

You must create an object copy to retain the predefined default object in its original state. Customer-specific modules can, of course, be edited without making a copy. For more information, see [Creating Object Copies with the Wizard](#) on page 84.

## Pasting in Texts or Captions

In order for texts or captions to be displayed on a web page, a **Label** node must be pasted into the definition tree.

### *To paste text or captions*

1. Find the place in the definition tree view that represents the desired position on the web page.  
The procedure is the same as creating a new module. For more information, see [Create New Module](#) on page 80.
2. Mark the relevant node and select **Display nodes | Label** in the context menu.  
A new **Label**-type node is inserted in the definition tree view and automatically marked.
3. Switch to the **Node editor** view and click  next to the **Text** text box.
4. Enter an SQL expression with the relevant caption.

5. Select the relevant action to be executed when text is clicked in the browser, in the **Action to execute\*** option box.

The following settings are available.

- Display only
- Execute action

① **NOTE:** With the **Execute action** option, a subordinate **Server action** node is added to the **Label** node. To execute the action defined in the browser, click the label. Normally, **Label** controls, which are dependent on actions, are displayed differently in the browser (depending on the template file entered in the web project).

6. To obtain a valid node definition, the **Label** node must contain at least one text.

The new text is shown in the preview window after compiling.



## Detailed information about this topic

- [Editing Captions](#) on page 126
- [Multilingual Captions](#) on page 44

# Pasting in Grids


A grid shows any database content desired in tabular form. To paste in a grid, first find the place in the definition tree that represents the desired grid position on the web page.

 **NOTE:** Because grids can only be inserted under `Container`-type nodes, select or insert a node of this type at the desired position.

### To insert grids

1. Find the place in the definition tree view that represents the desired position on the web page.  
The procedure is the same as creating a new module. For more information, see [Create New Module](#) on page 80.
2. Mark the required `Container`-type node and select **Wizards | Data display** from the context menu.  
For more information, see [Grid Display for Collection Data](#) on page 91.

**Table 63: Overview of grid configuration options**

Setting	Description
Enable the user to sort columns	If this option is enabled, the user can sort the columns in ascending or descending order by double-clicking the column header.  This option is generally set for all columns in this dialog box but you can also set it separately for each column in the table.
Sort collection	Use this option to specify an initial sort order in the layer.  If this option is not enabled, the data sets are shown in the order that they are in the data set. For example, data sets have a logical sort order if you entered appropriate data when the collection was loaded.
Dynamic column width	Use this option to automatically divide up the column widths based on the length of the entries in the rows by applying an internal optimization algorithm.   <b>NOTE:</b> These options relate to how the column width is fixed and can only be used alternatively.
Fixed column width	This option requires input in pixels.  All columns in the grid are given the same fixed width.
Custom column width	This option enables the width and the unit (pixel or %) to be edited individually for each column.

3. Configure your settings.

# Presets for Grouping Grids

You can use a simple code snippet to preset grouping of grids.

## To preset grouping of grids

1. Insert a new `Code snippet` node after the grid node in Web Designer.
2. Select the property `Code` on the new node and edit the value.
3. Enter the following source text:

```
var dataSource = GridBand1.DataSource;  
var col = dataSource.Table.GetColumn("UID_Department");  
if (!dataSource.GroupingColumns.Contains(col))  
    dataSource.GroupingColumns.Add(col);
```

① **NOTE:** Ensure that you select the identifier for `GridBand1`, the grid level and the column name for `UID_Department` that you want to group by.

# Visualizing Exceptions in the Web Portal

Error messages or exceptions triggered in the database layer (for example, format scripts on database columns) are displayed in a general error message in the Web Portal because exceptions normally contain too much technical detail for the end user.

If a custom error text is displayed in the Web Portal, the script must trigger an exception with exactly the same relevance for the end user. You have the following options.

- End user
- Default
- Intermediate
- Technical

① **NOTE:** However, exceptions are always saved in full in the Web application log, regardless of the relevance for the end user.

## Example of format script on a database column that cannot end with a period

```
If Value.ToString().EndsWith(".") Then  
    Throw New ViException("#LD("This property may not end in a period sign.")#",  
        ExceptionRelevance.EndUser)  
End If
```

# Replacing Images from Resource Files

You can replace images that are kept as compiled resources in one of the files `VI.ImageLibrary.dll` or `WebDesigner.ImageLibrary.dll` with project files.

- ① **NOTE:** It is not possible to use replaced images on the login page if the web application is executing against an application server.
- ① **NOTE:** Before you can replace an image, you must determine the image to be replaced and its associated information, such as, source, file name and, if necessary, size and status.

## Find source

There are different ways to obtain more information about an image's properties. You can, for example, find the required information about the image URL. Use the property view to determine the correct source. You can recognize the source `VI.ImageLibrary` by the name `stockImg`. The name `Img` stands for the source, `WebDesigner.ImageLibrary`.

## Find File

You can also find the name of the image file through the image URL. The file name is directly after the source and could look like:

```
stockImg=AssignedDirect
```

## Find Size

This value is only required for file from the `VI.ImageLibrary.Images` source. You obtain the value through the image URL. The value could look like this:

```
size=Small
```

## find state

The state is only relevant for image files from the `VI.ImageLibrary.Images` source. This value can also be found from the image URL. The state could look like this:

```
state=Normal
```

There are different rules for the file names of both types of resource file, which are explained separately in the following:

## Rules for file names of images from a `VI.ImageLibrary.dll`.

Resources are stored with the following name format in the `VI.ImageLibrary.dll` file:

```
VI.ImageLibrary.Images.<Größe>.<image name> <Pixel> <Status> p.png
```

For example:

```
VI.ImageLibrary.Images.Small.DeleteDocument 16 n p.png
```

The values for `<Size>` and `<Pixel>` of a resource file must match.

**Table 64: Possible Values for Size and Pixels**


<size>	<pixel>	Description
Small	16	Image in 16x16 pixels

<size>	<pixel>	Description
Medium	24	Image in 24x24 pixels
Large	32	Image in 32x32 pixels

This resource state can have the following values:

**Table 65: Resource State Values**

<state>	Description
d	Not set
n	Normal
h	"Highlighted", emphasized color

 **IMPORTANT:** This URL is case-sensitive.

### Rules for file names of images from a WebDesigner.ImageLibrary.dll.

Resources are stored with the following name format in the `WebDesigner.ImageLibrary.dll` file:


`VI.WebDesigner.ImageLibrary.<image name>.png`

For example:

`VI.WebDesigner.ImageLibrary.filter-small.png`

#### *To replace an image from a resource file*

1. With suitable software if necessary, identify the name of the image you want in the resource file.  
There are different name format depending on which resource file is being dealt with.
2. Create a project file with the same name in the Web Designer and save it.

 **NOTE:** Ensure that images from resource files can be cached in the browser if necessary.

## Settings for Increased Accessibility

Web Designer offers setting options for barrier-free access to the Web Portal. To protect the compatibility of existing installations, these settings must be applied explicitly. You can use the `VI_GetWebSettings` script for this. The `VI_GetWebSettings` script is called up after each successful login, as long as this script is defined in the system. The script returns several key/value pairs that can enable specific settings. These settings only apply to the current session for which you have been authenticated. Different configurations can be implemented depending on the current user.

The following keys and values can be used.

**Table 66: Possible settings**

Key	Value type	Description
BaseCssClass	String	The <code>dlim-highaccessibility</code> value enables CSS rules to improve accessibility.
GridGroupByDisabled	Bool	If the value is <code>true</code> , no grouping will be offered in the grid.
GridResizeDisabled	Bool	If the value is <code>true</code> , no column width modification will be offered in the grid control.
EnableHighAccessibility	Bool	If the value is <code>true</code> , the controls are displayed with increased accessibility.

The following example scripts tries to show how the settings should be made.

```
Public Function VI_GetWebSettings() As System.Collections.Generic.Dictionary(Of String, Object)

    Dim settings As New System.Collections.Generic.Dictionary(Of String, Object)

    settings.Add("GridGroupByDisabled", True)
    settings.Add("GridResizeDisabled", True)
    settings.Add("BaseCssClass", "dlim-highaccessibility")

    ' return settings
    VI_GetWebSettings = settings

End Function
```

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## Contacting Dell

For sales or other inquiries, visit <http://quest.com/company/contact-us.aspx> or call +1 949 754-8000.

## Technical support resources

Technical support is available to customers who have purchased Dell software with a valid maintenance contract and to customers who have trial versions. To access the Support Portal, go to <https://support.quest.com/>.

The Support Portal provides self-help tools you can use to solve problems quickly and independently, 24 hours a day, 365 days a year. In addition, the Support Portal provides direct access to product support engineers through an online Service Request system.

The Support Portal enables you to:

- Create, update, and manage Service Requests (cases)
- View Knowledge Base articles
- Obtain product notifications
- Download software. For trial software, go to <http://quest.com/trials>.
- View how-to videos
- Engage in community discussions
- Chat with a support engineer