Docusnap 6.3 - Configuration Manual

English Version

Table of Contents

Part

1 Introduction

We have pre-configured Docusnap for the majority of tasks required by our users. If you need features that add to the default configuration, Docusnap provides a number of options for this purpose:

- Changing and creating reports
- Adding additional columns and tables to the Docusnap database
- Defining additional views for data evaluation
- Defining additional structures in the Inventory, Licenses, Permissions and Organization tree views
- Creating new or extending existing data entry screens
- Adding additional types for SNMP, licenses and extensions
- Extend classes and properties of IT Assets

A license for the Customizing module is necessary to extend the database structure, add new meta objects and create data entry screens. Modified settings can easily be transferred to other Docusnap installations.

Important note: With the exception of reports, the customizations in Docusnap are limited to adding new elements to existing structures or defining new elements. Elements that already exist in Docusnap cannot be deleted, since this would lead to uncontrollable application behavior.

This manual is subdivided into the following sections:

Part 1: File Structure of a Docusnap Installation

Docusnap uses certain directory structures and database information to represent custom settings. This section introduces these structures and mechanisms and serves as the basis for the following sections.

Part 2: Management

The Docusnap Management can be used to create additional types and customize Docusnap.

Part 3: Reporting

This section explains how to create new reports, use the Docusnap Report Designer and assign reports to an object in the tree view.

Part 4: Database Structures

This section illustrates the structure of the Docusnap database and shows you how to extend the existing data structures.

Part 5: Meta Objects

Meta objects represent individual elements in the different tree hierarchies. For information on how to define or extend existing meta objects, see this part of the manual.

Part 6: Data Entry Screens

Data entry screens are user interface elements that allow the users to enter data. You can extend existing data entry screens or define new ones.

Part 7: Distributing Customizations

In Docusnap, you can export your customizations and import them to other environments. This way, it is possible to make customizations of the database structure, the meta objects and data entry screens available to other databases or even other Docusnap installations without much effort.

1.1 Conventions

In order to improve the readability of this document, the following conventions apply:

Normal text uses the Calibri font. Names of buttons, checkboxes, etc. are written in *italics*.

Code samples are formatted in `Courier New`.

Some sections feature tips for using Docusnap. These tips are indicated by a light bulb.

Warning sections are highlighted by a warning sign. Warnings refer to issues that should be taken into consideration when working with Docusnap.

Text that contains additional information is highlighted by an information sign.

1.2 Organization of a Docusnap Installation

Docusnap is a multi-user software that requires a certain network directory structure in order to function properly. As part of the default Docusnap installation process, the following directories will be created in the program directory:

\bin	Tools and script files
\DataEdit	Data entry screen definition files (.des) defined by the software manufacturer
\Reporting	Predefined report files (.mrt) in German and English, and styles including report assignments (.xml)
\Help	Help system
\Schema	Files defining database structures, the ADS scanning process, and other definition files (*.dss,*.xml,*.xsd)
\De	Language resource files for the German user interface
\En	Language resource files for the English user interface
\Templates	Visio stencil files (*.vss) for map creation
\Mibs	Standard MIB files for the SNMP scanning process
\Dictionaries	Spell Check Dictionaries for the Concepts
\Design	Design Schema
\ITConceptTemplates	Predefined Templates for Concepts
\Tools	Executable Files for DocusnapScript and DocusnapLink

Please note the following: All these directories have been defined by the software manufacturer and the corresponding files are provided automatically during the Docusnap installation or update process. Under no circumstances change these directories, since otherwise, the proper execution of Docusnap cannot be guaranteed.

Introduction

As part of the initial Docusnap configuration, each user must specify a local settings folder. Once you have specified this folder, Docusnap creates the necessary directories.

If you also specify a team settings folder, the same directories will be created in that folder as well.

In the event that custom modifications have been made, the definition files will always be saved in the team settings folder, or, if it is not available, in the local settings folder. Docusnap will never create custom definition files within the program directory.

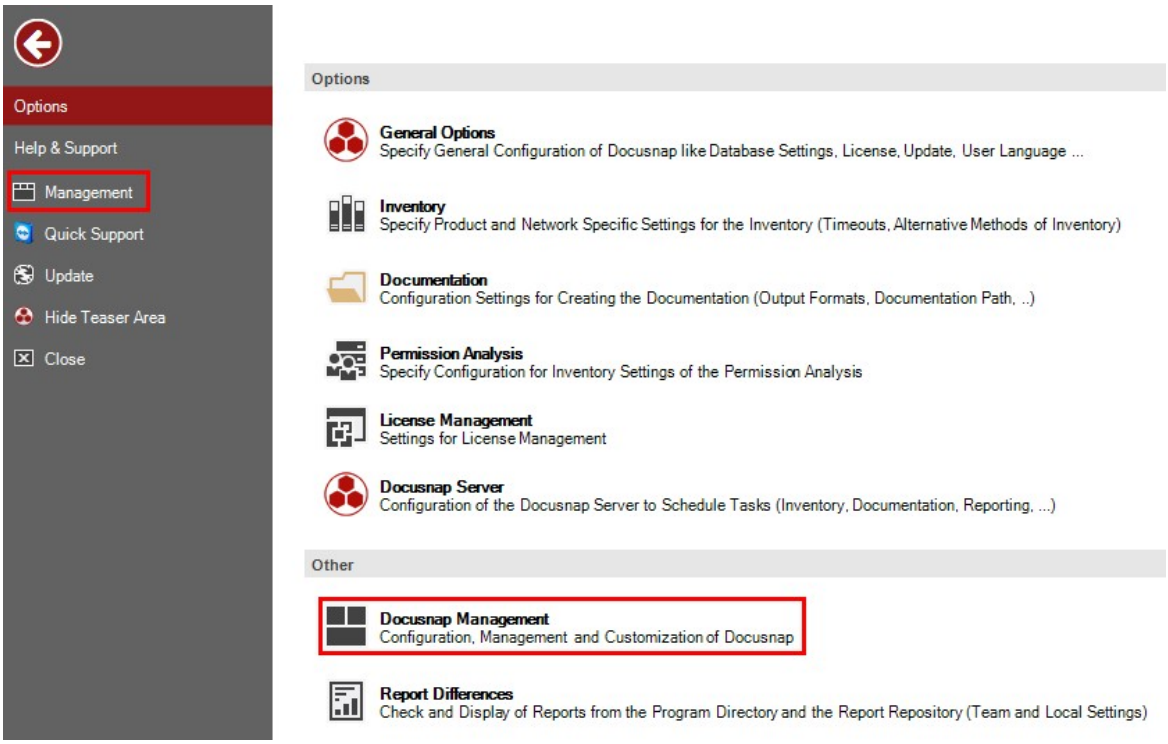
When Docusnap starts, it first checks if a team settings folder is available. If so, the definition files from that folder will be used. If a team settings folder has not been specified or the network path cannot be reached, the local settings folder will be used. If that folder is not available either, the predefined settings from the program directory will be used.

If you save user-defined settings to a file, the letter "u" will always be appended to the last letter of the file extension. For example, definition files for custom data entry screens always have a .deu file extension.

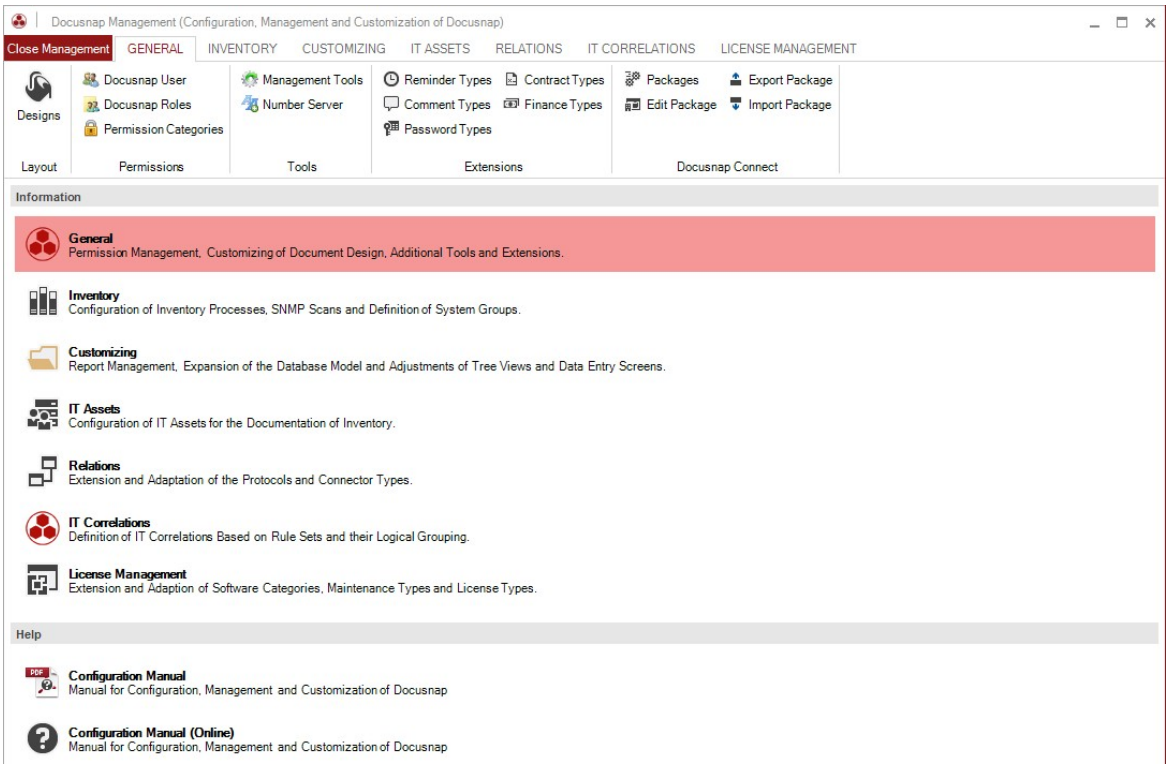
Part

2 Management

Use the *Docusnap Management* to create additional types and customize Docusnap.



Click the *Management* button in the *Docusnap Menu* to open the *Docusnap Management*.



The following settings and types can be extended and modified:

General

- Designs: In Design you can add new design colors and adjust the styles for the reports.
- The features in Docusnap can be enabled or disabled.
  Docusnap Roles: All buttons available in the user interface are listed in the roles management. These buttons can then be enabled or disabled for the individual roles.
  Docusnap Users: By clicking the *Users* button, you can assign domain users to the defined roles.
  Permission Categories: You can use the Categories to control access to extensions.
- Management Tools: Click the Management Tools button to set up external programs that can then be started from within Docusnap using the *Execute* button.
- Number Server: By means of the number server, you can define a sequential number that will be used when you create data entry screens.
- Extensions: Extensions provide the ability to store comments, financial data, passwords, contracts and reminders for selected objects in the tree view. Each extension has a type that describe the associated extension. To open the tabs where you can add extension types, click the button for the desired type.
- Docusnap Connect: Use the Packages and the Edit Package buttons to specify which data should be exported. The buttons Export Package and Import Package provide the possibility to import existing packages into other Docusnap databases.

Inventory

- Software Search: In the *Software Search* tab, you can define software that cannot be scanned automatically due to a missing registry entry.
- Server Roles: During the server scanning process, all services that define the roles of the servers will be inventoried. Use the *Server Roles* to define which service corresponds to which role.
- Additional Tools: Docusnap allows you to execute previously defined additional tools when performing a Windows system inventory scan.
- Active Directory: Click the *Active Directory* button to open the *ADS Classes*, *ADS Properties* and *ADS Assignments* tabs. These tabs allow you to modify the scope of the ADS inventory process. For detailed explanations of this topic, refer to the Active Directory section.

- SNMP Mibs: In the *SNMP MIBs* tab, you can manage your own or third-party MIBs.
  SNMP Types: Click the *SNMP Types* button to open the *SNMP Types* tab. There, you can define additional types for SNMP devices.
  Edit Switch: Use the *Edit Switch* tab to add MAC addresses, which were not recognized in the SNMP Inventory as a learned MAC addresses, to inventoried switches.
  MAC Filter: In the *MAC Filter* tab learned MAC addresses can be defined as a phone, as a device, or as virtual, or MAC addresses can be excluded from the topology map.
- Wizard Configuration: Use the *Wizard Configuration*, to combine the inventory of various systems in one wizard as desired.
- System Groups: Systems that have been scanned can be assigned to system groups to define logical groupings. For each group, specific maps can be generated.

Customizing

- Manage Reports: You can open the tab for creating and deleting reports by clicking the *Manage Reports* button. The designer for editing the reports can be started by clicking the *Designer* button.
- Extending Docusnap: In the *Extending Docusnap* group, the database structure can be extended and new meta objects are created.

IT Assets

- IT Assets Structure: The *IT Assets* tab can be used to create and edit IT assets.
- Import/Export Schema: Click the Import / Export Schema button to open the tabs for the import and export of IT asset structures.

Relations

- Protocols: With each connector, an entry screen allows you to select the protocol to be used for that connection. Clicking the *Protocols* button opens a tab where you can manage and add protocols.
- Connector Types: Every connection between two components is assigned to a relation type. New relation types can be added in the *Connector Types* tab.

IT Correlations

- Relations: Use the *Relations* tab to define IT Correlations.
- Groups: In the *Groups* tab the existing IT Correlations can be grouped.
- Import and Export of Definitions: Click the Import / Export Schema button to

import or export IT Correlations.

License Management

- Software Category: Software categories are used to group the software products for license management. Docusnap provides predefined categories.
- Maintenance Types: In addition to the license contracts, the associated software maintenance agreements can also be defined. There are various types of software maintenance agreements.
- License Types: Docusnap provides pre-defined license types. If additional types of licenses are needed, you can add and administer them from the *Manage License Types* tab. Examples of licenses types include: OEM, volume licenses and package licenses.

2.1 Designs

You can add to the predefined designs by creating your own designs.

Edit Design Colors

Select *General* in the *Company Selection* tab to show the designs of the current system. Otherwise select the *Company* so save the customized designs to the database and make them available to every user, who is connected to this database.

Click the *New* button to create a new design for which you need to specify a name in English and German. You can then define colors for the various levels of your design. Click the *Save* button to save the design.

Click the Add General Design Colors button to copy the custom designs from the general settings to the selected company.

Then, to use your own design, select it in the *Layout (CI)* dialog in Docusnap.

Report Templates

On the *Report Templates* tab, you can modify the formatting of each style or create new styles.

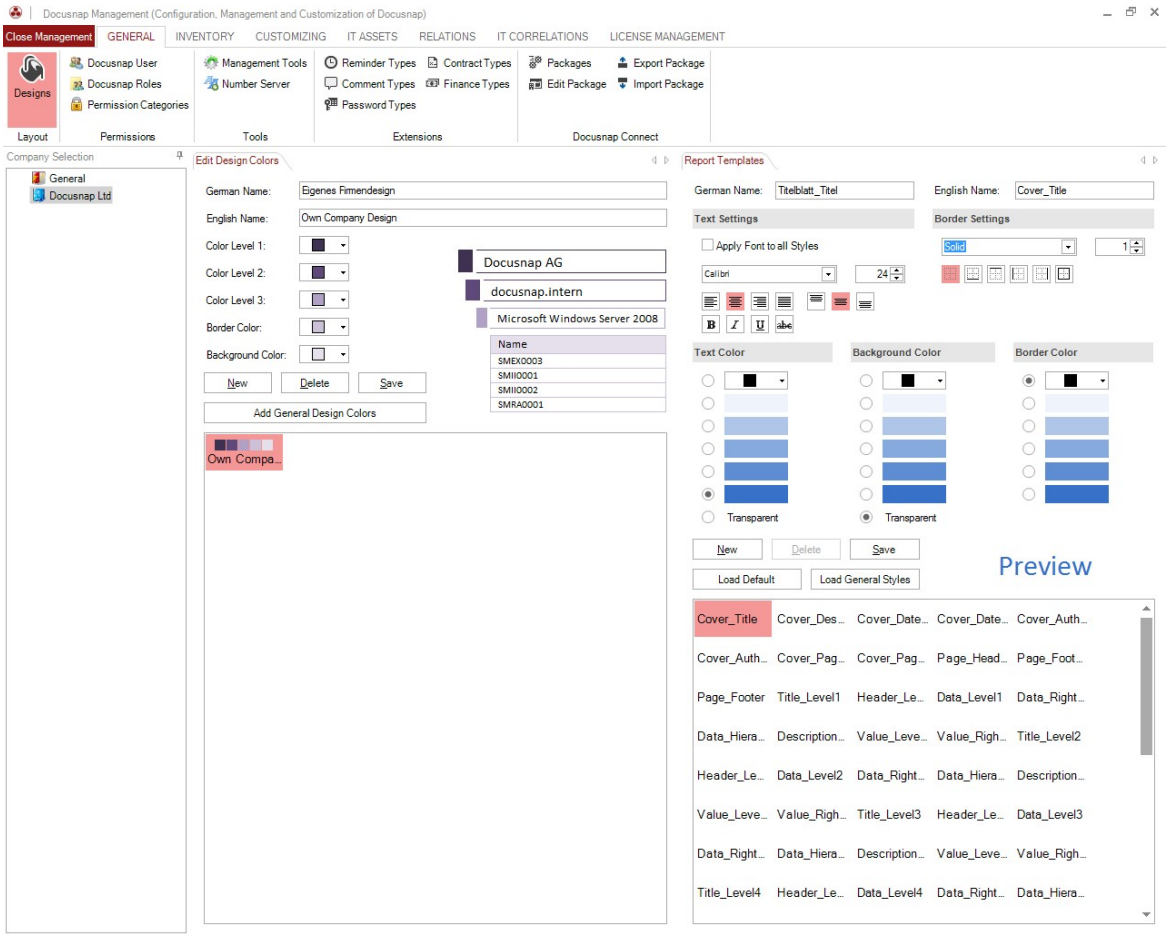
You can define text settings, border settings, and colors for your styles. The settings are saved for the style that is currently selected in the dropdown list. If desired, you can apply the selected font to all styles. For the border, you can set the type and the border style to be applied.

The color can be set to the various shades available for the selected design. A shade set as the color for the text, the background, or the border will still be used when you select another design. The color defined through the drop-down list will still be

used when you select another design.

To save modifications to existing styles, click the *Apply* button. Clicking the *Load Default* button deletes all custom styles and restores the original design settings.

Click the *New* button to create a new style. After assigning a name for the design in English and in German, you can save the style and then define its formatting.



2.2 User Management

Docusnap features an integrated user management. The User Management feature enables you to grant users access to the Docusnap controls and features and allows them to use extensions. User management will be enabled once you have created and saved the first user. If no users have been defined, any user who connects to this database may use all of the controls and the entire Docusnap functionality.

Users

In the *Users* tab, you can create users and assign roles to them. Once you have created and saved the first user, User Management will be enabled. When you create users, make sure that at least one of them has a role that allows this user to open the *User Management*. Otherwise, it will no longer be possible to access this feature.

Roles

In the *Docusnap Roles* tab, you can create and edit roles that can later be assigned to a user. Roles define which user interface controls will be enabled or disabled. Docusnap provides predefined roles. You may, however, create your own roles.

Categories

Categories control which extensions are visible to which users. First, create the desired categories in the *Manage Categories* dialog. Then, these categories are available for assignment to the extensions.

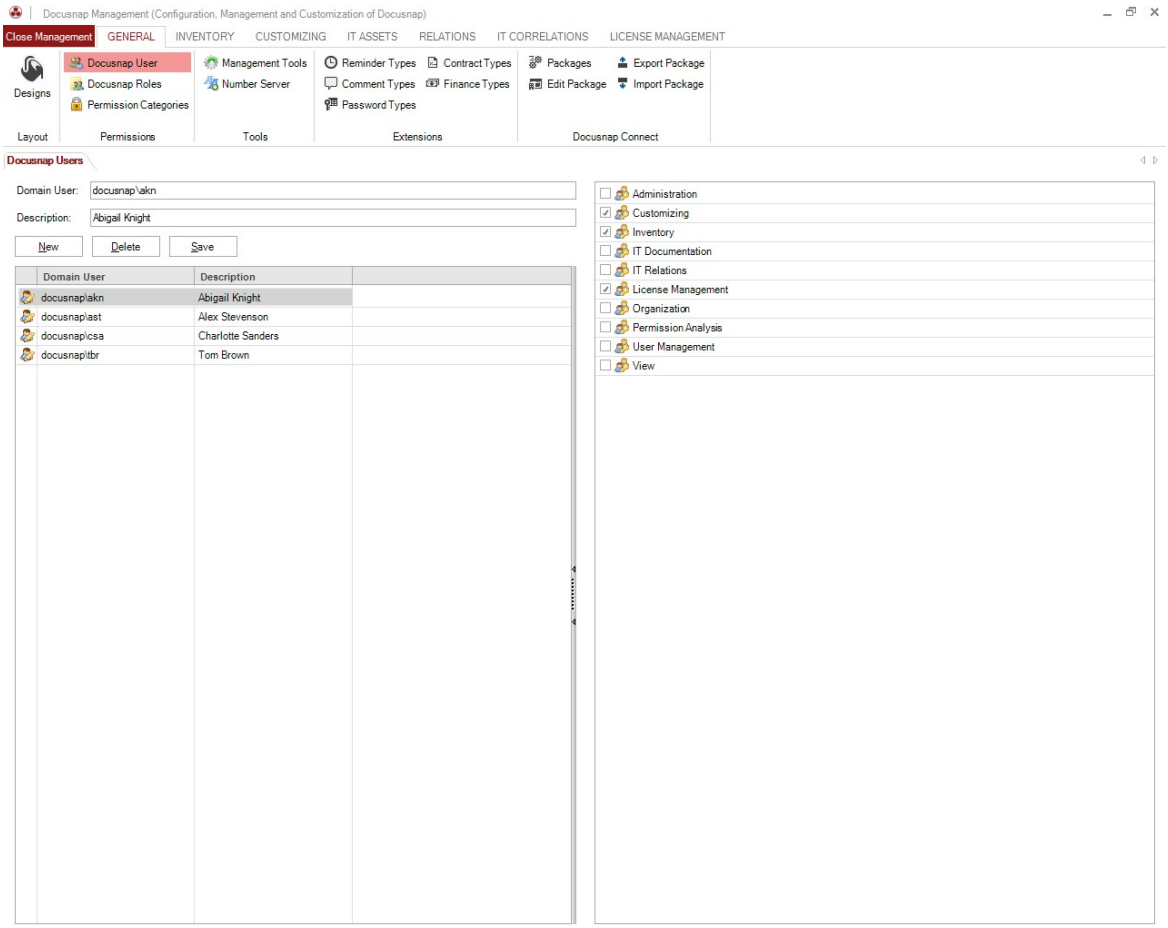
2.2.1 Users

In the *Docusnap Users* tab, you can assign different roles that have been previously created, to individual domain users or domain groups.

If no users or groups have been defined, any user who connects to this database may use all of the controls and the entire Docusnap functionality. Once the first user or group has been created, the User Management feature will be enabled.

The left pane lists the users or groups to whom roles can be assigned. Make sure to specify the user names in the following format: **domain\username**. To define a group, enter its name as follows **domain\groupname**. The right pane lists the individual roles that can be assigned to the users or groups. To assign a role to a user or a group, select the desired entry in the left pane and tick the desired checkbox in the right pane. Please note that role assignments are additive. This means that the controls enabled for the individual roles add to each other.

When creating users or groups, make sure to assign at least one user or group a role that has permission to open the user management, otherwise the User Management will no longer be accessible.



2.2.2 Roles

In the *Docusnap Roles* tab, you can create and edit roles that can later be assigned to a user or a group. Roles define which user interface controls will be enabled or disabled.

The left pane lists the existing roles and the right pane contains a list of the controls that have been enabled or disabled for the selected role. To enable a control for a role, tick the checkbox in the *Enabled* column. You can add new roles or edit or delete existing roles as desired.

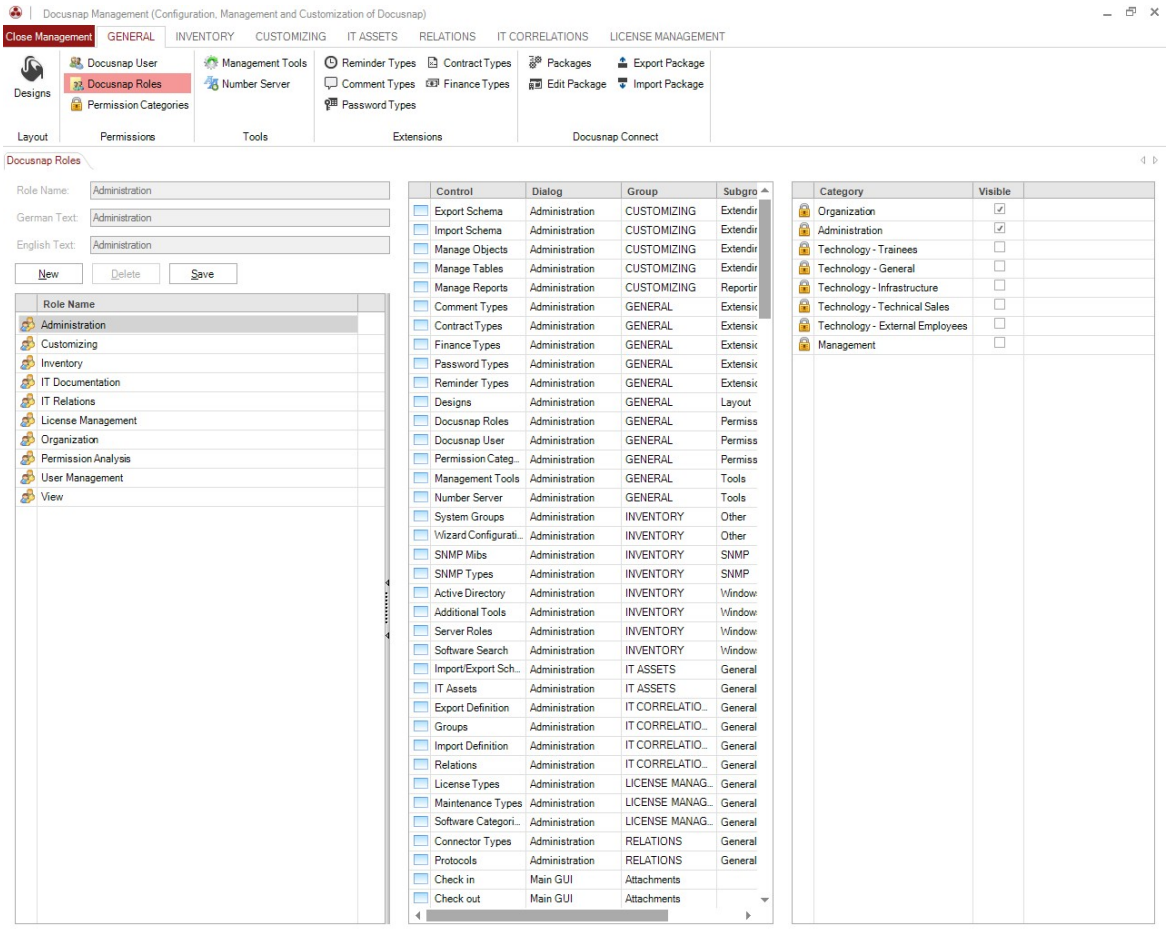
Predefined Roles:

Role	Description
Administration	Includes all controls, users or groups with this role have access to entire Docusnap functionality.
Customizing	Includes only the controls needed for customization tasks.
IT Documentation	Includes only the controls required to create documentation.
Inventory	Includes the controls required to perform inventory scans.
License Management	Includes the controls required for license management.
Organization	Includes the controls required for administrative tasks.
Permission Analysis	Includes the controls required to perform permission analyses.
Relations	Includes the controls required for the definition of relations.
User Management	Includes the controls required for user management.
View	Includes only the controls that turn Docusnap into a viewer. This means that users with this as their one and only role can do nothing but view existing data.

For extensions it is possible to determine, which users and groups are allowed access to this entry.

In the *Categories* list, the existing categories are listed. For each role you can determine, which categories of extensions should be visible. If the logged in user is assigned to a role for which the extension is to be visible, the extensions are displayed, otherwise the extension is hidden.

If you select <No Selection> instead of a category for an extension, this extension remains visible to all users.

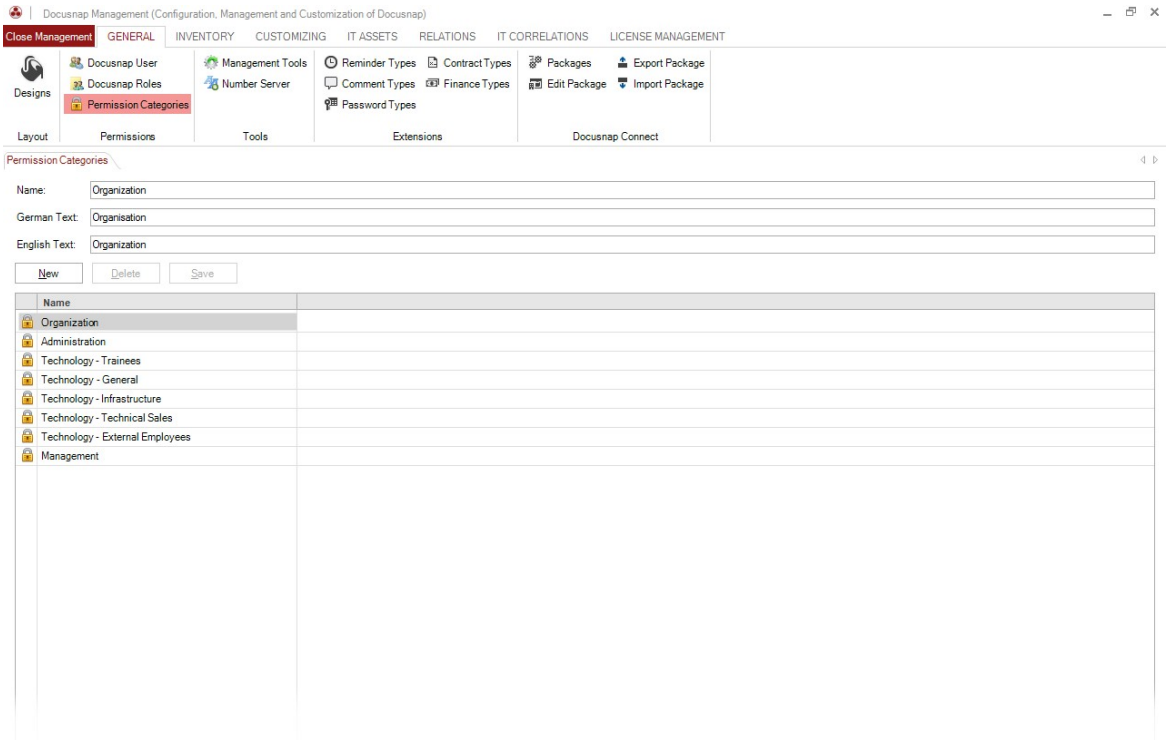


2.2.3 Category

When creating Extensions it is possible to assign categories defining which user or user group may access this extension.

You can create as many categories as desired in the *Permission Categories* tab. Some categories are predefined. In addition, you can add your own categories, for example *High priority*, *Medium priority*, and *Low priority*.

To create a new category, click the *New* button. For each category, enter a name and a designation (text) in English and German to be displayed with the extensions. For each extension type, the categories you created are displayed in the *Category* drop-down list. Whether or not a category is visible, depends on the role to which it was assigned.



2.3 Management Tools

Using the Management Tools feature, you can embed external programs into Docusnap or start them from there. During the Docusnap installation process, the Remote Desktop Connection has already been established.

Click the *New* button to add more management tools. For each tool, you must enter a name as well as an English and a German designation. This designation will be displayed in the currently active language in the context menu or in the *Execute* options available from the ribbon.

To specify the program path for the tool, either enter it directly in the text field or click the ... button to browse for it.

Enter optional call parameters for the external program in the *Parameters* field.

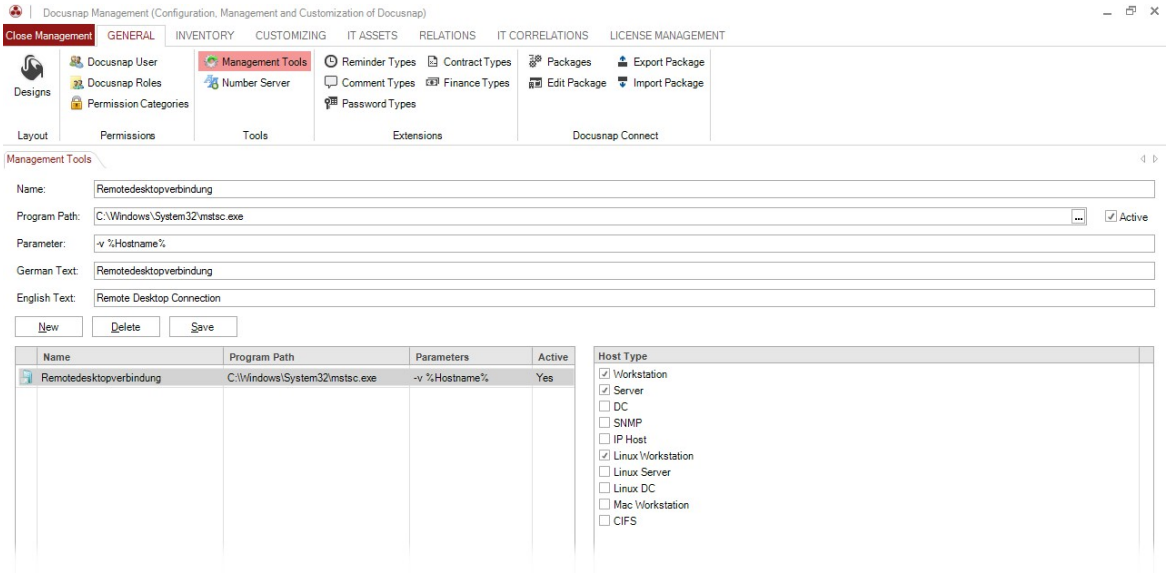
The following parameters are available:

%Hostname%	Computer name
%IPAddress%	IP address(es) for the system

The *-v* parameter is used for Remote Desktop connections and specifies the computer to connect to.

Please note that only tools for which the *Active* flag has been set will be displayed.

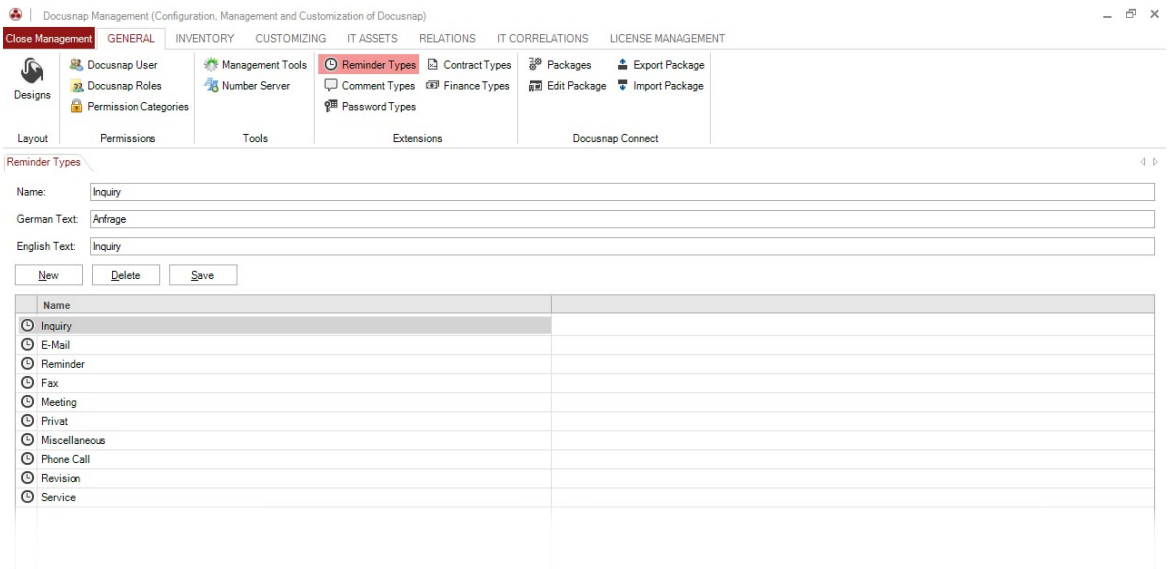
For each management tool must be defined for which host types it should be available. In the *Host Type* list all possible types are listed.



2.4 Extensions

The extensions Comments, Reminders, Passwords, Contracts and Finances offer types which can be used to define the content of the extension more precisely. In Docusnap, predefined types are available that can be extended as required.

In each respective tab for extensions more types can be added using the *New* button. You can choose any name you like. The names of the types will be displayed in English in the data entry screen. If the user interface language is German, the types will be displayed in German. To edit a type highlight it. Then, you can edit the English or German designation in the text fields.



2.5 Docusnap Connect

Data from Docusnap can be exported and made available for processing in other applications.

You can either export the data to an SQL or MySQL database or save it as an XML, CSV or Excel file.

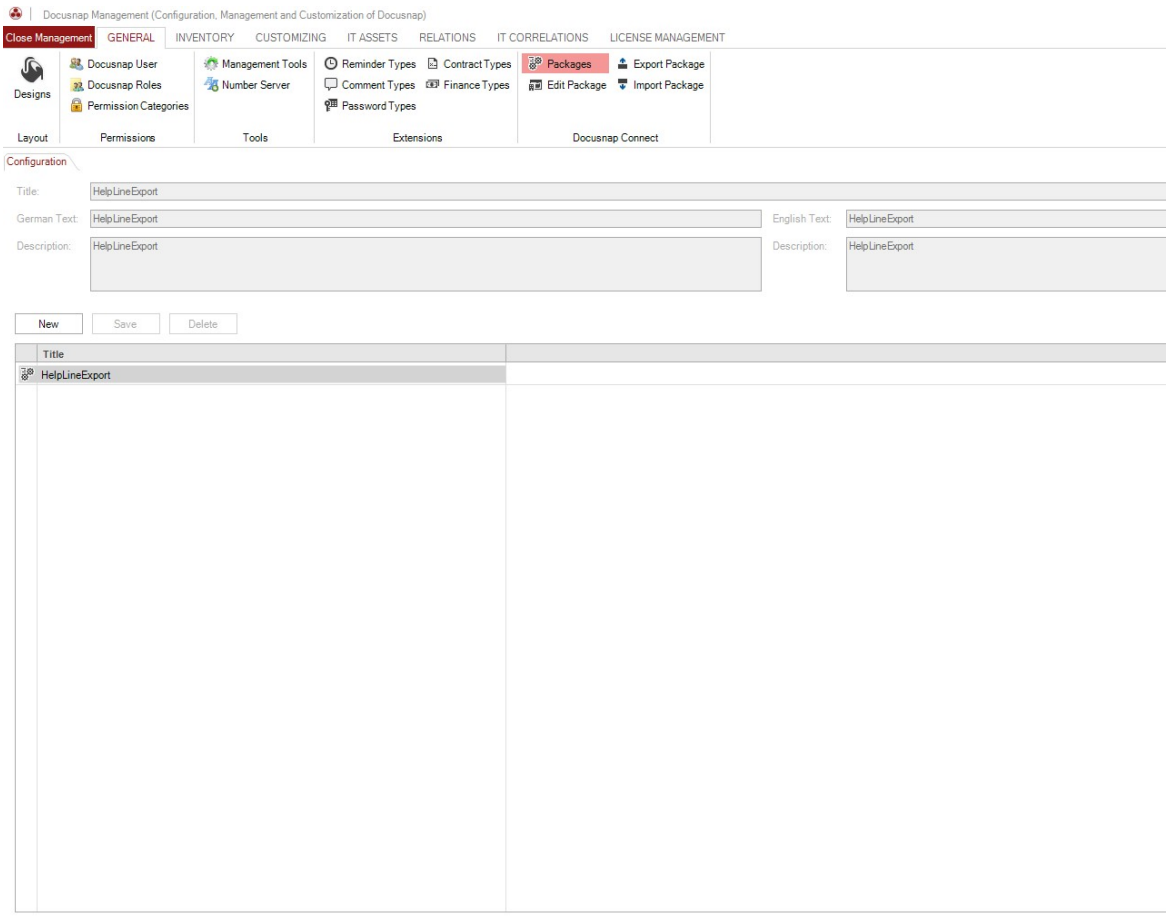
When you create a new database, a package for HelpLine is generated. It contains data on the systems inventoried by Docusnap that can then be processed by HelpLine.

2.5.1 Packages

Click the *Packages* button in the *Docusnap Connect* group of the *General* ribbon to open the tab for creating the Docusnap Connect packages.

To create a new package, click the *New* button. For each package, an English and a German name must be assigned. In addition, you can enter a description.

Click the *Save* button to save the Docusnap Connect package.



2.5.2 Edit Package

Click the *Create Package* button in the *Docusnap Connect* group of the *General* ribbon to open the tab for configuring the Docusnap Connect packages.

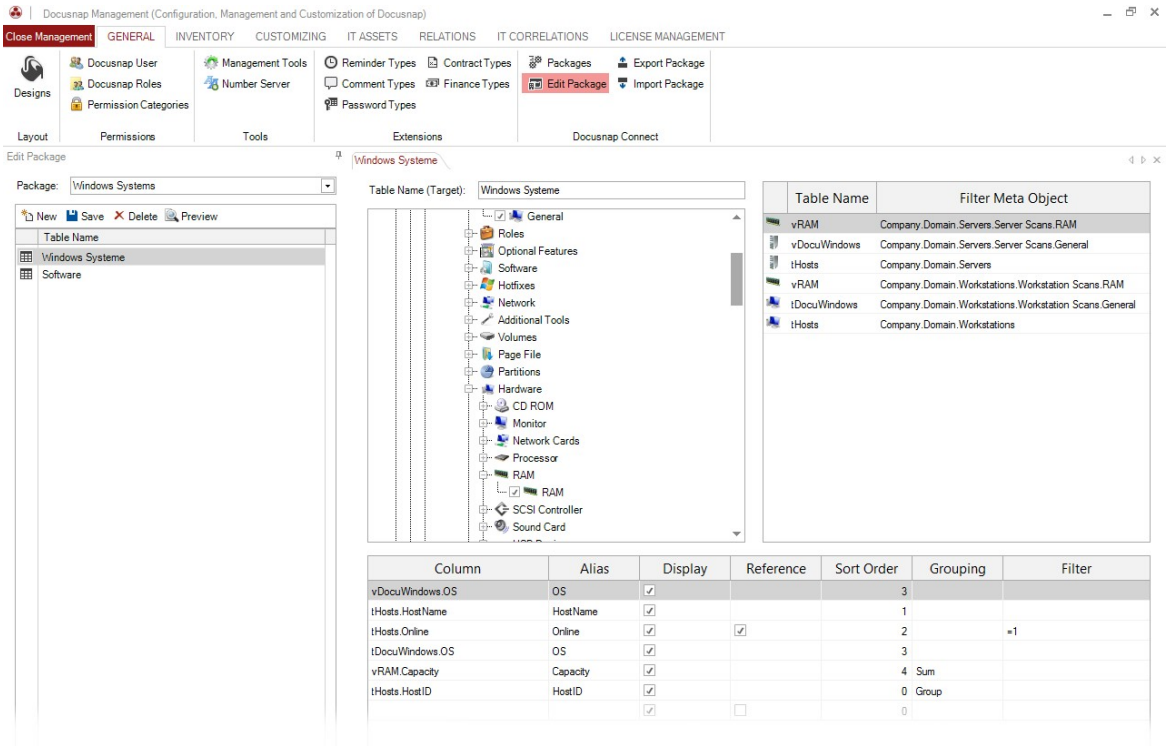
The combo box *Package* all the defined packages are listed. After you select a package the content of this package can be configured.

In the *Table Name* list all already defined tables are displayed. When you first open a package an empty table named *TableName* is already created. Enter the name to be assigned to the table after the export in the *Table Name (Target)* field.

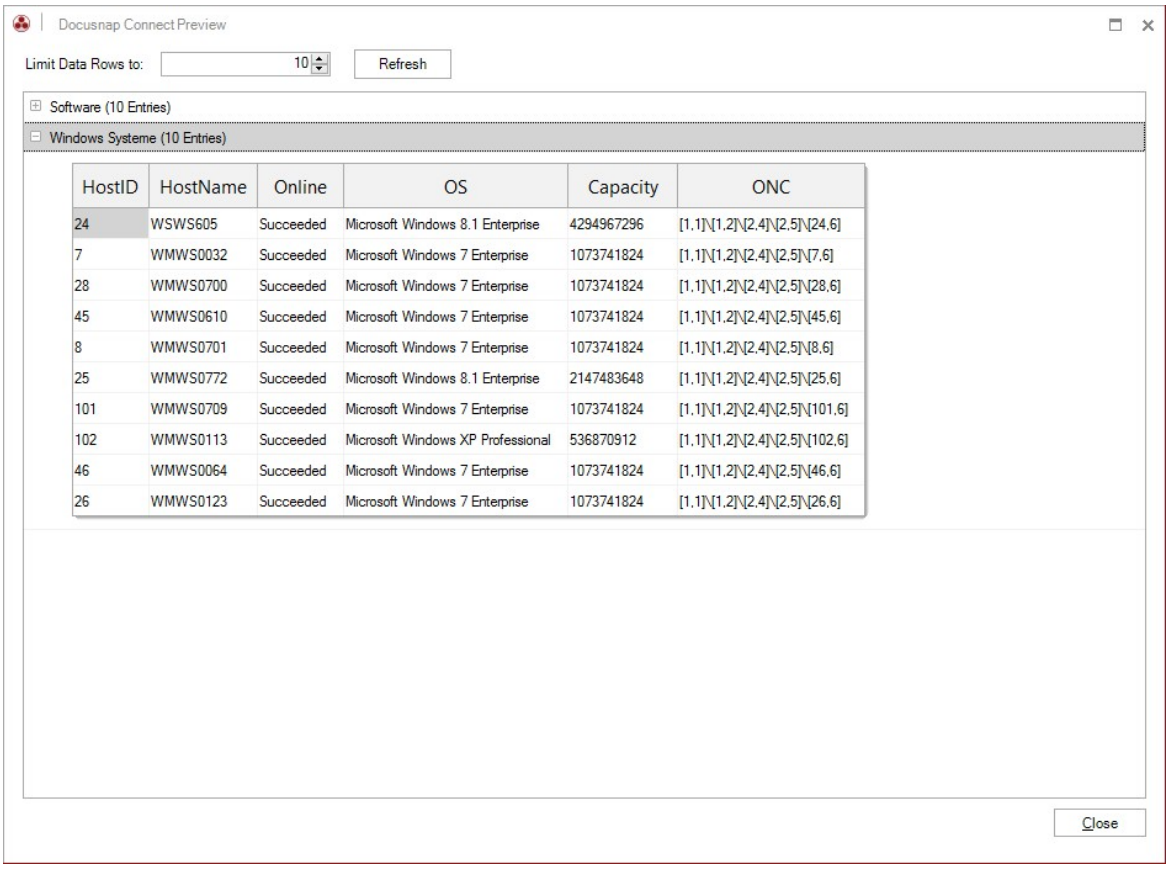
The tree structure displays all entries from the *Inventory* explorer. Tick the checkbox to the left of each table that you want to select for export. The selected tables are listed in an overview table.

To export multiple tables, click the *New* button to add more tables for which the data can be configured.

- Column: By double-clicking a field in the *Column* list, you can display the columns of the selected table. Select the desired column there. If you no longer need a column, you can remove it by either selecting *Delete* from the context menu or select the line and press the *Del* key on your keyboard.
  Constant values can be exported, in addition to the values from the table. In this case input the desired text in ' ' and numbers just as a number in the *Column* field. The name of the column after the export is defined in the *Alias* column.
- Alias: In the *Alias* column, you can specify the name of the column in the exported table. Each name in the *Alias* column must be unique.
- Display: If you enable the *Display* checkbox, the column will be displayed in the exported table. By disabling it, you can hide fields that are only used for data filtering.
- Reference: For columns with a reference specified, the reference can be added to the export. If you enable the *Reference* checkbox, the number in the column will be replaced with the corresponding reference text. When exporting, you can select the language in which you want the reference to appear.
- Sort Order: Using the *Sort Order* column, you can define the column order.
- Grouping: Here, you can select whether the respective column will be used for grouping or whether to calculate the count, maximum, minimum, sum, or average of the column.
- Filter: Here, you can enter any valid SQL condition (e.g. = 1). The clause can further be extended by additional fields or conditions. To hide the column used for filtering, you can disable the *Display* checkbox for this column.



Once you have selected the tables and columns, you can click the *Preview* button to check the table output. By default, the first ten data rows of the table are shown in the preview. You can change this value in the *Limit Data Rows to:* field.



For the export, an additional column named *ONC* will be added to the data. This column identifies each object unambiguously so that, during an update of the SQL database, the objects can be mapped without problems. This column is also used for *DocusnapLink* when switching from another application to this Docusnap node.

Special Features

ADS

When exporting ADS users, the system will add another table to the table selected for export. This table, with the _Values suffix, contains the additional properties of the users, such as account options, first name and last name, etc. The *ADSObjectID* column can be used to establish the corresponding relation.

IT Assets

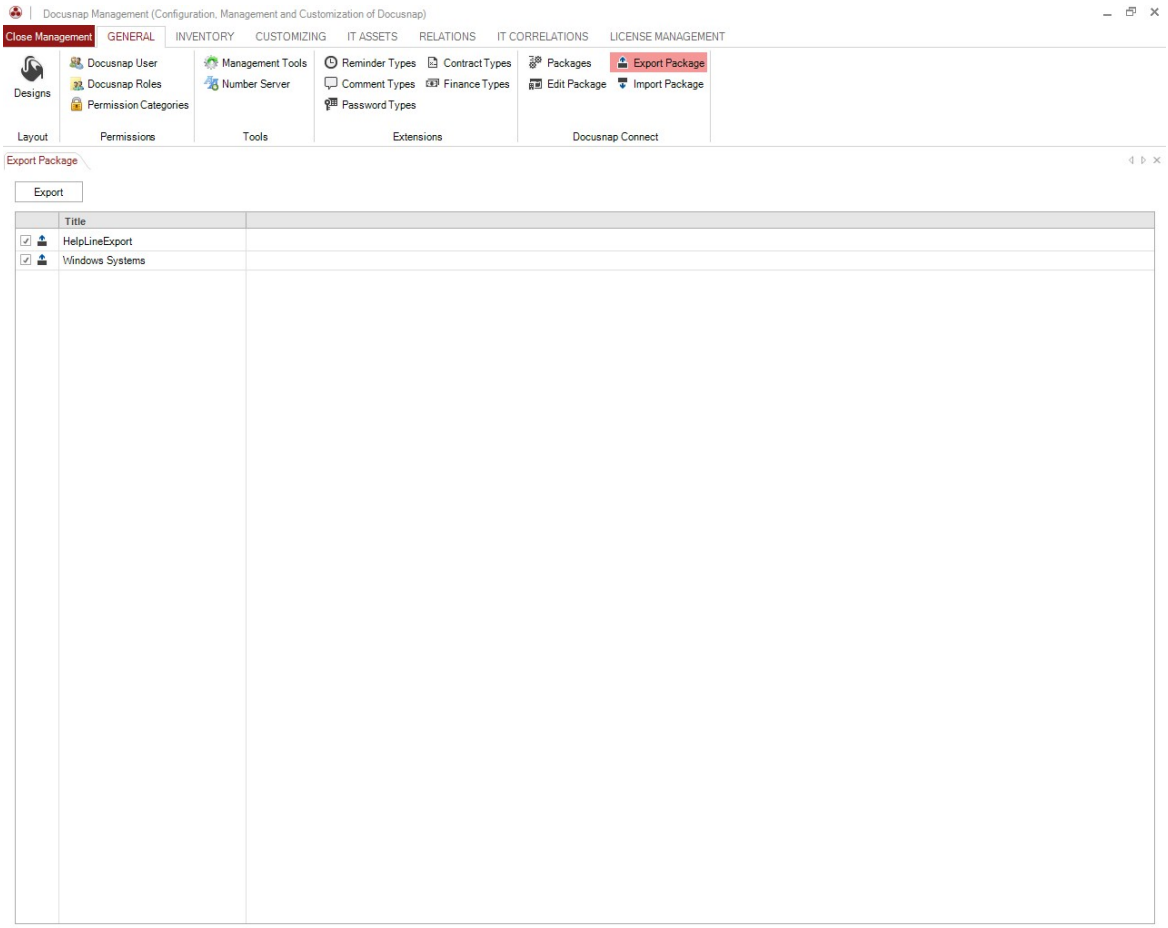
When exporting IT assets, the system will also export two tables. The first one contains the values of the IT assets class. The *ParentID* column is used to map an existing hierarchy. The second table, with the _Values suffix, contains the values of the properties of each IT asset. The *ITAssetID* column is used to establish the relation between the two tables.

2.5.3 Import Export

The packages you configured can be exported and then be imported to another Docusnap database. By importing the configuration, you can export data from the current database without having to create the configuration again.

Export

Click the *Export Package* button on the *General* ribbon to open the *Export Package* tab. It lists all configured packages. Tick the checkboxes for all packages to be exported. Then, click the *Export* button and specify the name and path for the exported file. The Docusnap Connect packages included in this file can subsequently be imported into a different database.



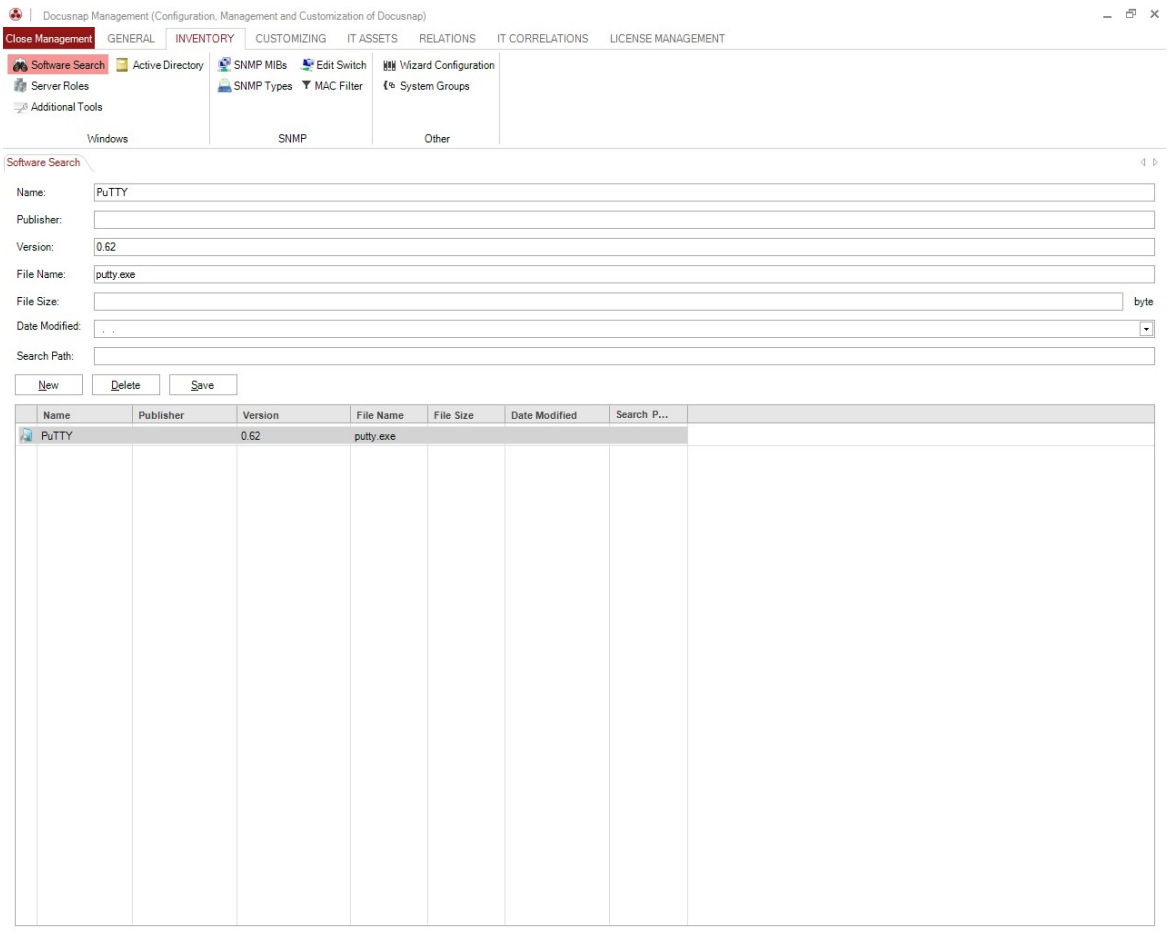
Import

Click the *Import Package* button on the *Scheduling* ribbon to import a file in which Docusnap Connect packages have been previously exported. If one of the packages to be imported have already been imported, then a message will be shown. There you can choose to overwrite the already existing packages or not.

2.6 Software Search

The Software Search feature enables you to search for Windows software that has not been registered using the Windows Installer. Software Search is one of the steps executed as part of the inventory process for Windows Systems.

This tab can be used to add software entries for the Software Search. Click the *New* button to add a new entry. Enter the required information and confirm by clicking *Save*. Now, the entry will be listed in the table. The *Software Name* and *File Name* fields are mandatory. You can enter any information in the *Software Name*, *Publisher* and *Version* fields. Their content is only used for display in Docusnap and does not affect the search. The *File Name* field, however, must exactly match the name of the file you are looking for. The *File Size* and *Date modified* fields can be used to limit the search results. If you know that multiple files with the same file name exist in a system, it would be a good idea to use these fields because Docusnap terminates the search for a certain system as soon as one file matching the search criteria has been found. Specify the file size in bytes. The search path is optional, but if specified, it may significantly reduce the search time in some cases. To remove one or more entries from the list, select them and click the *Delete* button.



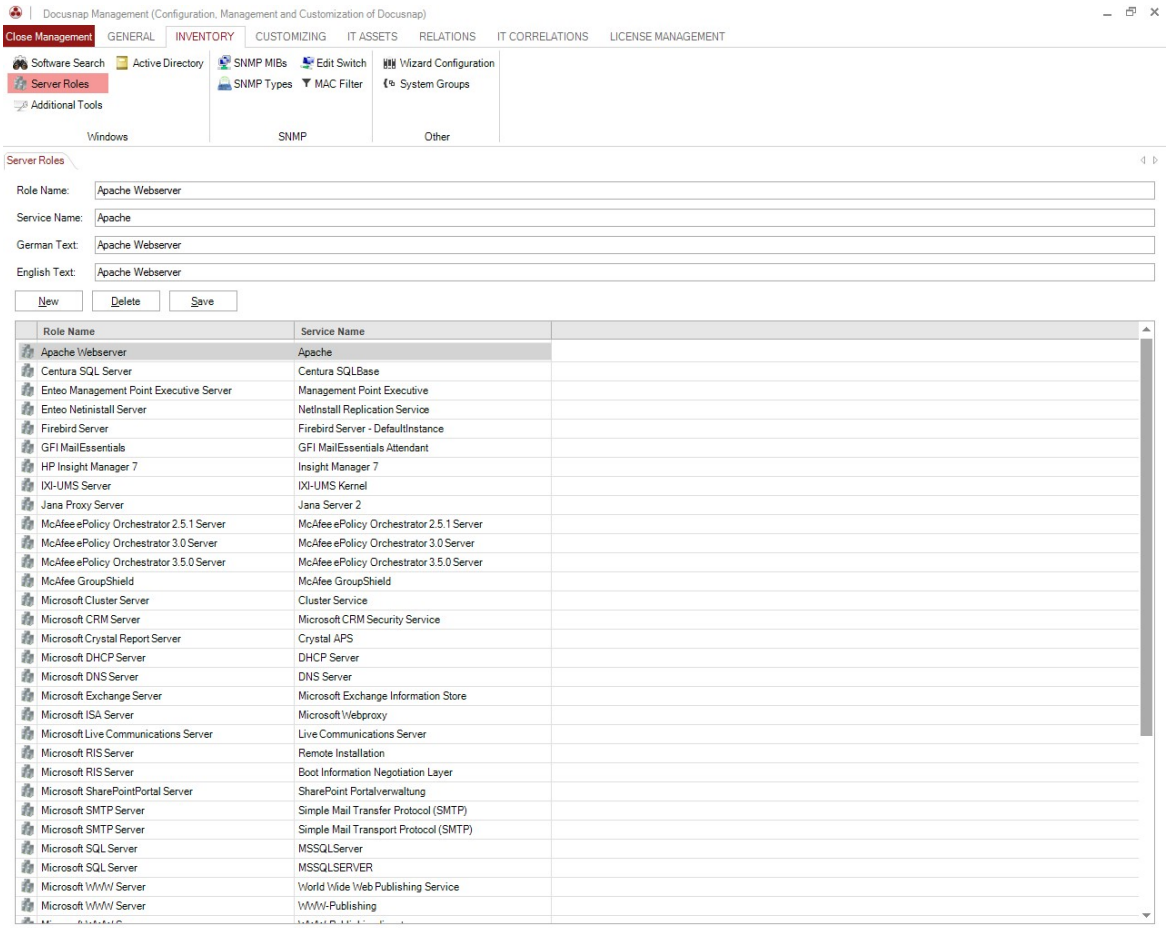
2.7 Server Roles

Servers may have various roles. These roles can be defined in the *Server Roles* tab. When you perform an inventory scan of the servers, all services are retrieved that are present on the server at the time of the scan. By having a look at the services that have been started, you can see which tasks they fulfill.

In the *Server Roles* tab, you can enter the role name and the service that defines it. Enter any meaningful name for the role and English and German designations.

When displaying the server roles in the tree view the defined service name is matched to the inventoried service name. If the display name of the inventoried services contains one of the defined service names, this role will be displayed for this system.

If the user interface language is English, the role name will be displayed in English. When you switch to German, the German name will be shown.



2.8 Additional Tools

Docusnap allows you to execute certain additional tools when performing a Windows system inventory scan.

An example of such an additional tool is the *Systeminfo.exe* application. Docusnap will start *Systeminfo.exe* after using the defined arguments after completion of the inventory scan. The result data returned by the tool will be saved in the database.

To add a desired tool, click the *New* button. You can choose the name freely. The name you specify will also be used as the results file name. Enter the name and path of the executable in the *Program Path* field or select it by clicking the  button. The parameters you specified will be provided to the tool upon execution. Indicate optional parameters by square brackets ("[ ]").

For the *Type* field, two options are available:

- File
  When you select *File*, the tool will create a temporary file on the hard disk where the returned results will be saved. When the inventory scan has completed, this file will be imported and saved in the database.
  You can use the %targetfile% parameter to redirect the data into a results file. For example: "Systeminfo.exe > %targetfile%" causes the resulting data to be saved in the results file defined in the text field.
- Stream
  If you select the *Stream* option, the results from the standard output will be written to the database immediately. In this case, however, the cmd.exe program will be visible for a short time.

In the *Timeout* field, you can indicate how much time the tool may take to complete. If this period is exceeded, the tool will be terminated by Docusnap.

In the *Open with* field, you can define the program to be used for opening the results file.

Before you can select additional tools for the inventory process, the *Additional Tools* checkbox in the *Configuration - Inventory* dialog must be enabled.

Docusnap provides the following environment variables:

- %Hostname%, %Computername%
- %Ipadress%, %Ipadresse%
- %Domainname%, %Domain%, %Domäne
- %Username%, %Benutzer%

- %Password%, %Passwort%
- %Targetfile%, %Zieldatei%
- %Description%, %Beschreibung%
- %Tool%, %Toolname%
- %accountname%
- %accountid%
- %domainid%
- %hostid%
- %docuid%

Exception: single sign-on:

If a user name and password are not entered for logging onto the domain in the Authentication step (single sign-on), you should declare the %username% and %password% parameters as optional parameters in square brackets. This ensures that no empty user name or empty password will be used.

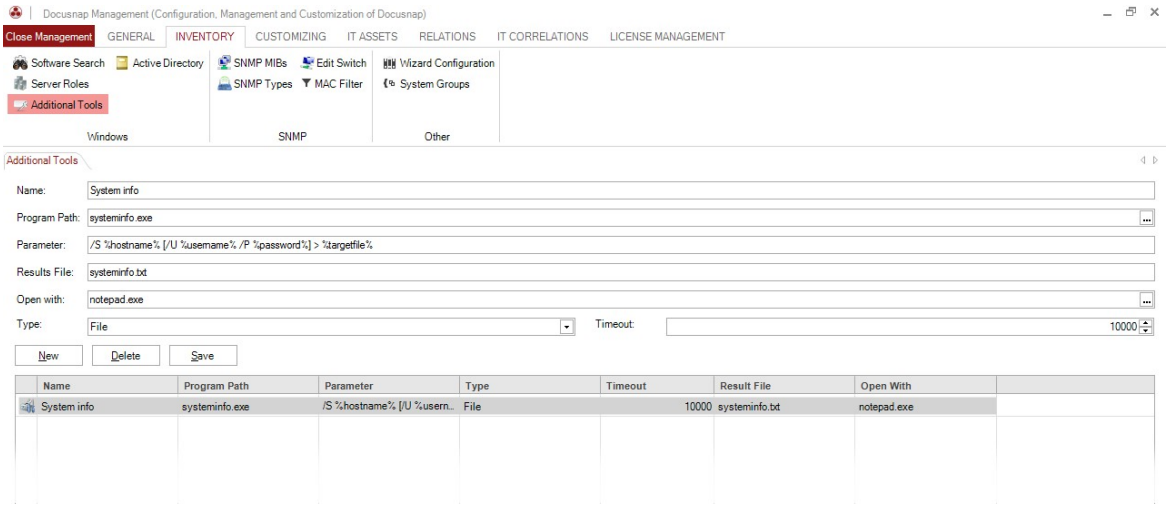
Examples:

A:

Description: System info
Program Path: systeminfo.exe
Parameters: /S %hostname% [/U %username% /P %password%] > %targetfile%
Type: File
Results File: systeminfo.txt
Open with: notepad.exe

B:

Description: System info
Program Path: systeminfo.exe
Parameters: /S %hostname% [/U %username% /P %password%]
Type: Stream
Results File: systeminfo.txt
Open with: notepad.exe



2.9 Active Directory

In the *Active Directory* tab, it is possible to customize the scope of the ADS inventory process and the Active Directory data output. The classes, properties and assignments are available when inventorying the Active Directory.

ADS Classes

Docusnap provides a number of predefined ADS classes. If required, you can add more classes. To add new items, click the *New* button. Then, enter the required information and confirm by clicking the *Save* button. To delete an item, select it and click the *Delete* button.

You can only delete classes that have not been used yet in an inventory scan. You can only change or delete user-defined classes.

You need to fill in all text fields when creating a new item. Specify any class name you like. When setting the filter, make sure that it exactly matches the designation used in the Active Directory. If the name and the designation are not identical, it will not be possible to scan the desired information.

Classes for which the *Active* checkbox has been ticked will be taken into account when scanning the Active Directory.

ADS Properties

On the ADS Properties page of the dialog, you can define attributes. Here again, you can only change or delete user-defined entries.

The name of the property must exactly match the designation of that property or attribute in the Active Directory. The selected type must be the same as the

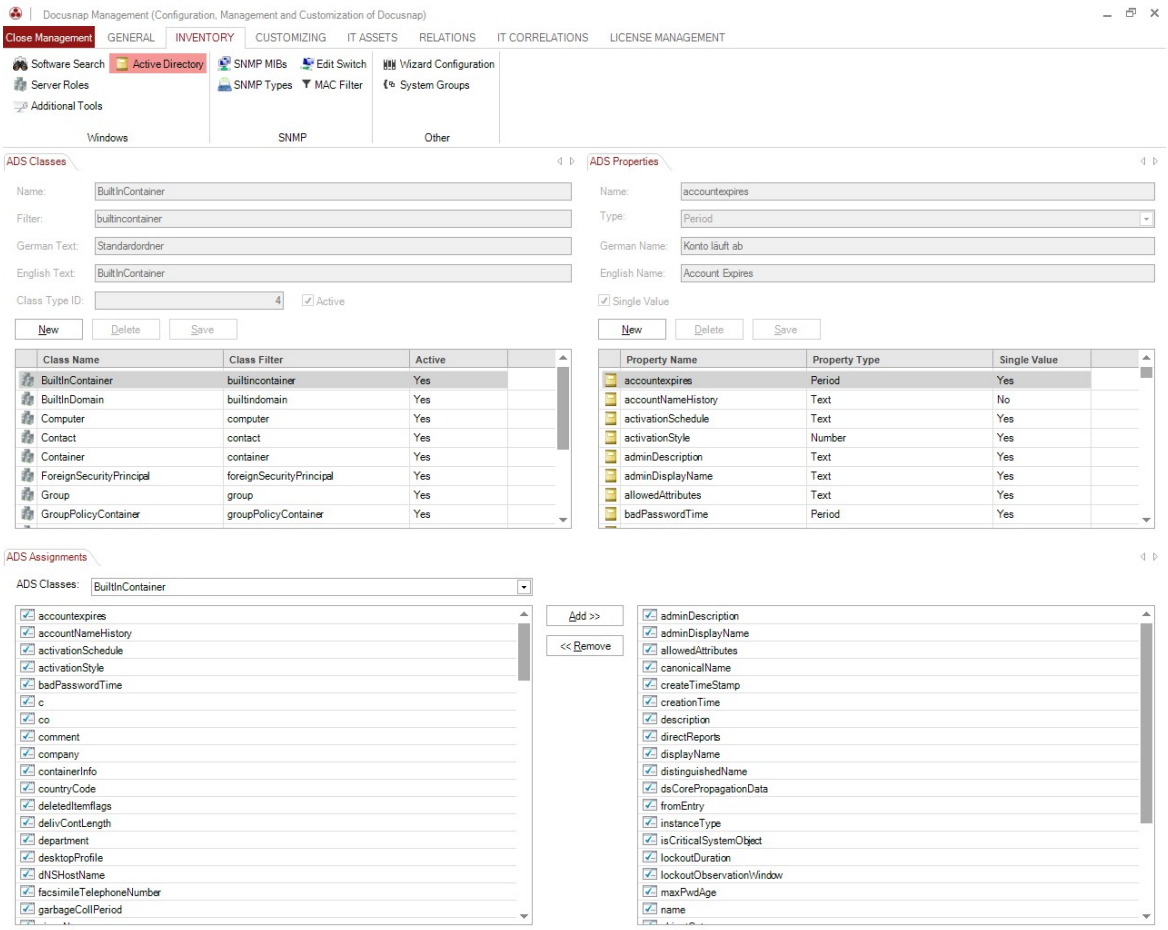
property type.

The *Single Value* checkbox indicates whether this property may exist more than once in each class (e.g. e-mail addresses) or whether it exists only once (e.g. a name).

ADS Assignments

In the Active Directory, properties or attributes are assigned to the respective classes. An attribute may be assigned to several classes.

The assignment is made for the class selected in the list box. All available properties are displayed in the list on the left. The pane on the right contains the properties that have already been assigned.



2.10 SNMP

For the SNMP inventory additional MIBs and SNMP Types can be added.

2.10.1 SNMP MIBs

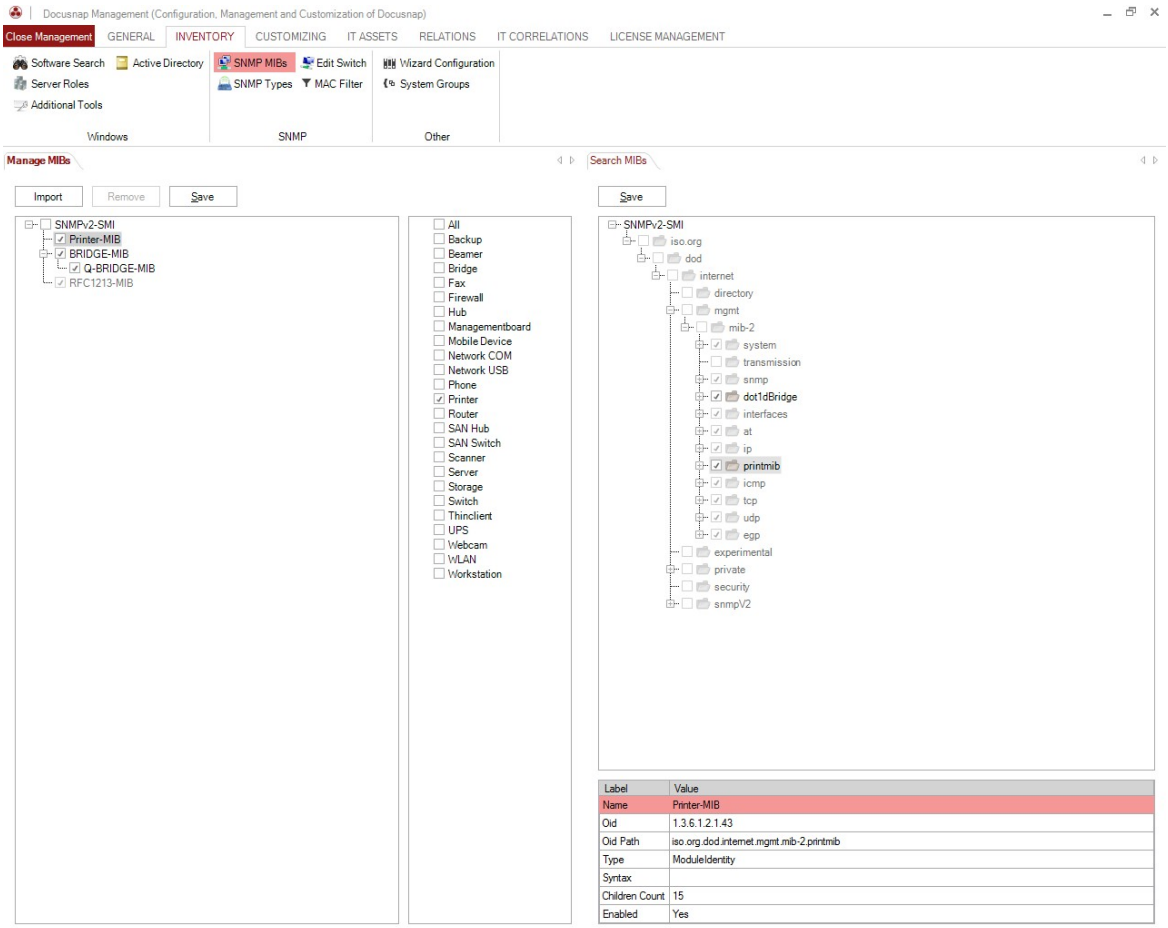
In Docusnap, you can include your own or third-party MIBs in the SNMP Inventory.

By adding, importing and enabling different MIBs, you can restrict SNMP systems

scans to certain device types for which manufacturer information should be considered during the scan.

The *Manage MIBs* tab allows you to manage the MIBs. There, you can add MIBs to the list by clicking the *Import* button. In addition, you can export the entire schema and import it into a new database. Thus, it is possible to reuse the schema elsewhere.

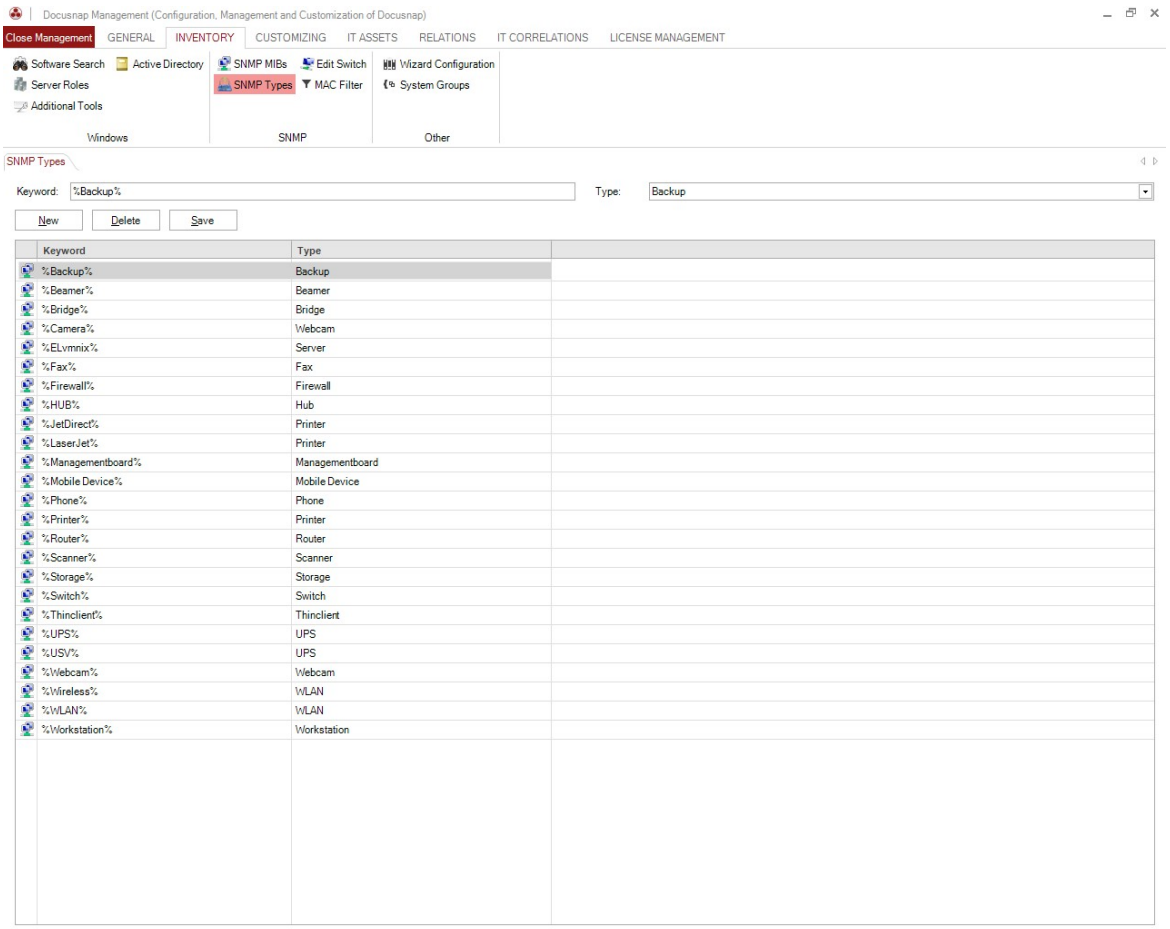
First select a MIB, then use the checkboxes next to the entries to determine the manufacturer information to be retrieved for the individual systems.



2.10.2 SNMP Types

When performing an SNMP inventory scan, Docusnap looks for the available SNMP devices. However, no information is returned on the type of the identified device, for example, whether it is a switch, a router or a printer. In the *SNMP Types* tab, you can define keywords that will be compared with the identified SNMP equipment. Then, Docusnap is able to indicate the correct type in the tree view and reports. The value that will be used for comparison with the keyword is specified in the *Description* column of scanned devices.

The *SNMP Types* tab lists predefined keywords that are often used for SNMP devices. Click the *New* button to add a new keyword for SNMP types. Enclose the keyword in percentage symbols (%). These symbols are placeholders; they replace the remaining words in the description. The keyword you enter must exist in the description of the SNMP device. Otherwise, the correct type will not be found.

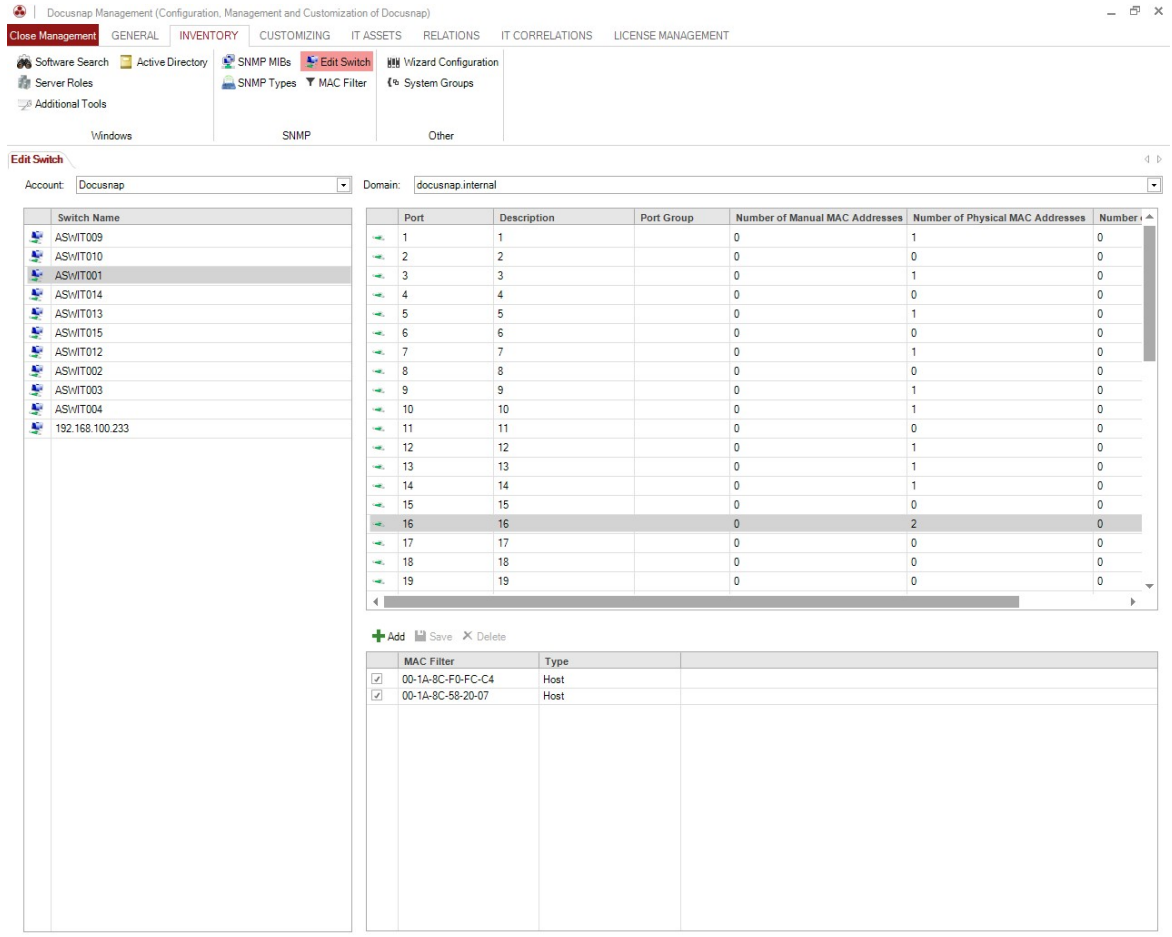


2.10.3 Edit Switch

Use the *Edit Switch* tab to add MAC addresses, which were not recognized in the SNMP inventory as learned MAC addresses, to inventoried switches. By manually adding the MAC addresses, the devices are considered in the topology map.

After the company is selected in the *Company* combobox and in the *Domain* combobox the respective switches are displayed. If a switch is selected, all ports and the number of MAC addresses, which have already been learned, are listed. Once a port has been selected, the learned MAC addresses are shown in the list below. Click on the *Add* button to insert an additional MAC address for the selected port and define for every entry if this MAC address belongs to a host or a switch. Only manually entered MAC addresses can also be deleted. Use the respective checkbox of the MAC address, even with addresses from the inventory, to define

whether the device should be displayed in the topology map or not.



2.10.4 MAC Filter

In the *MAC Filter* tab learned MAC addresses can be defined as a phone, as a device, or as virtual, to be then displayed with the correct icon in the topology map. If for a MAC address the type *Ignore* is selected, all devices with this MAC address are excluded from the topology map.

Click the *New* button to add a new filter. In the *Type* combobox is defined how this MAC address will be displayed. Each entry can be activated or deactivated.

It is possible to use wildcards in the *MAC filter* field to specify for example a MAC address segment as phone. All numbers 0-9 and letters A-F are allowed to define the MAC addresses.

Supported wildcard characters are "*" to specify any sequence of characters and "?" to specify exactly one character.

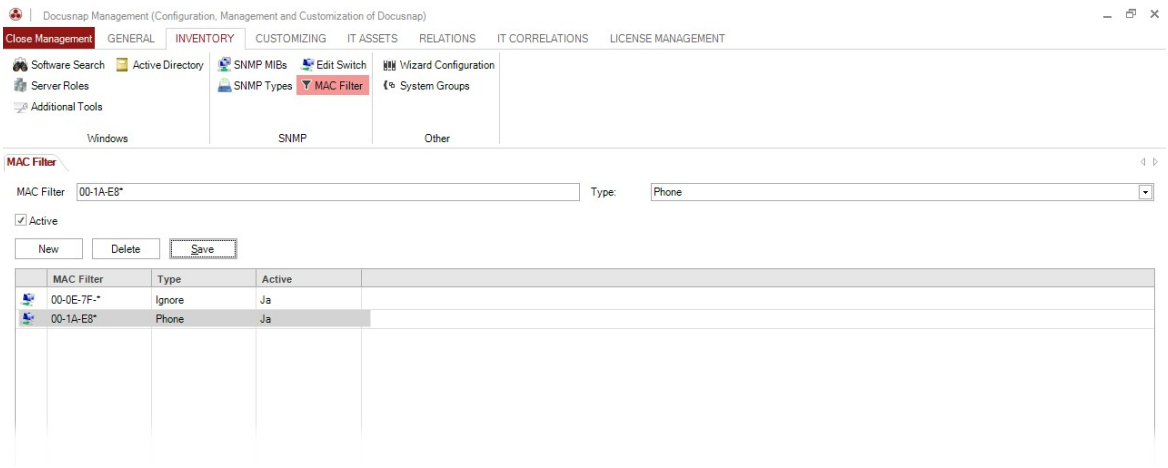
The separator between the octets of the MAC address are optional, "-" and ":" are supported. When saving the ":" are automatically converted to "-".

Examples of valid filters:

00-01-02-03-04-05: The filter is applied exactly to this MAC address

00-01-02-03-04-??: The filter is applied to all MAC addresses that begin with 00-01-02-03-04-

00-01-02*: The filter is applied to all MAC addresses that begin with 00-01-02.

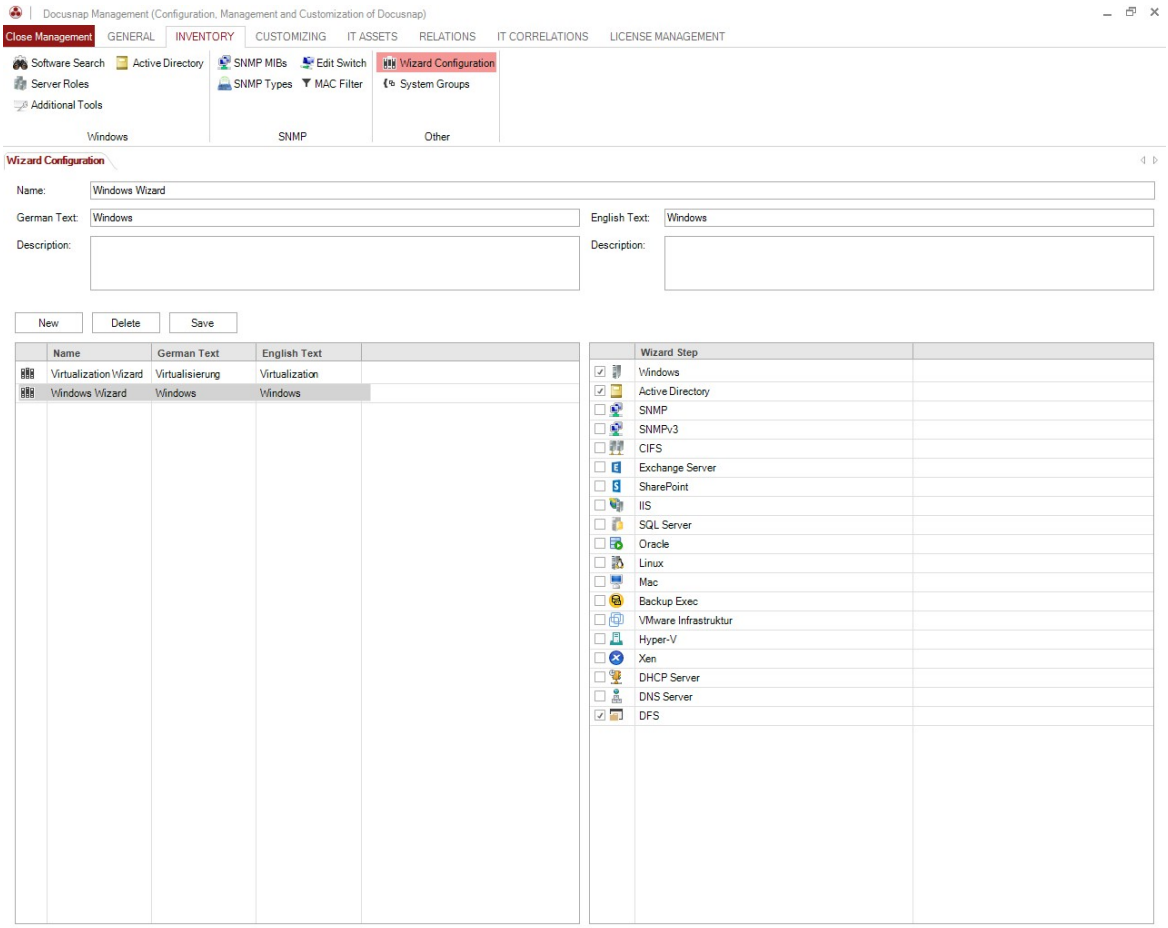


2.11 Wizard Configuration

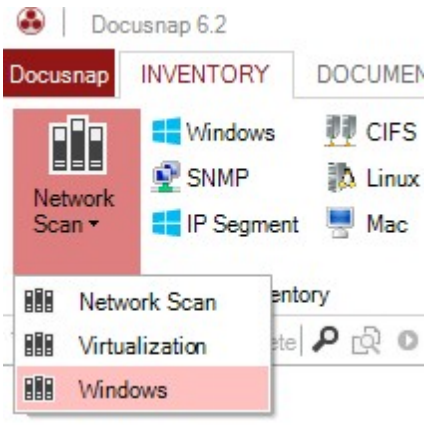
In Docusnap every system type has its own wizard (Windows Systems, Exchange Server, SQL Server etc.). Windows Systems, Active Directory, SNMP Systems and Exchange Servers can also be inventoried together with the *Network Scan* wizard.

In the *Wizard Configuration* tab you can combine several modules for the inventory process in one wizard. Thus only one wizard is needed to inventory multiple modules. If you inventory your network by means of the Docusnap Server only one job has to be configured instead of creating a job for every desired module.

Open the *Wizard Configuration* tab via the *Wizard Configuration* button in the *Inventory* ribbon. Click the *New* button to create a new wizard. Enter a name and a designation in English and German. The *Wizard Step* list contains all modules of the inventory. Specify the module which should be included in the wizard. Click the *Save* button to save this wizard.



Once a wizard has been defined, it can be selected in the main window of Docusnap in the *Inventory* ribbon by clicking on the *Network Scan* button. As the first entry of the default Network Scan is listed and then the custom wizards.



2.12 System Groups

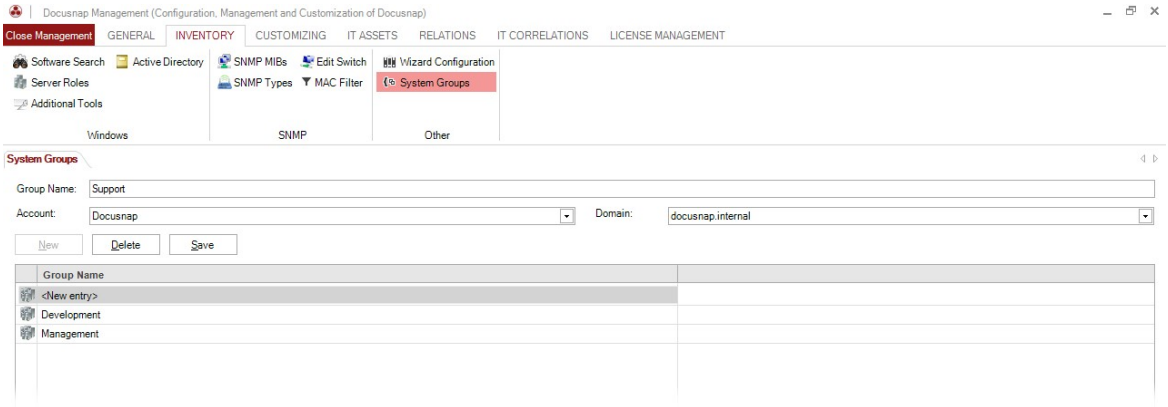
The purpose of system groups is to document individual portions of a network. When creating the documentation, you can define the groups to be included.

Click the System Groups button to open the *System Groups* tab.

To create a new group, click the *New* button. The group name can be chosen freely.

Then, select the company and the domain where the systems are currently located. Create the new group by clicking the Save button. If a group is no longer needed, you can remove it by clicking the Delete button.

The assignment of systems to system groups takes place in the main windows of Docusnap.



2.13 IT Assets

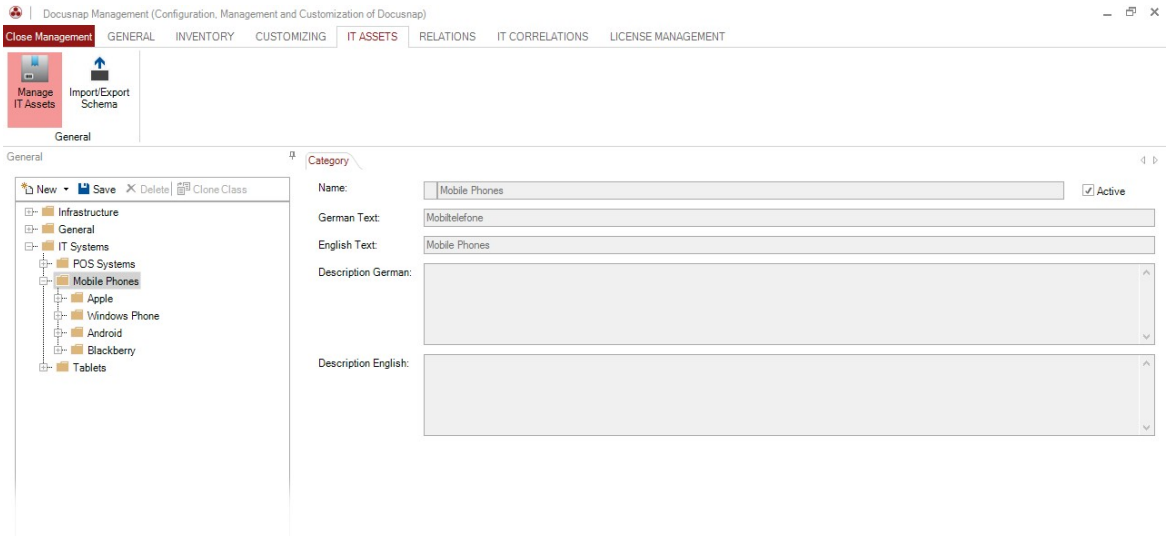
Docusnap comes with different predefined IT asset types. They can be extended and added to, as required, by creating additional types or classes with minimum effort. Docusnap generates the required data entry screens automatically.

2.13.1 IT Assets Structure

Click the *Manage IT Assets* button to open the IT Asset structure. Use this tab to create the structure of your IT assets. User-defined Structures are prefixed with a lowercase x.

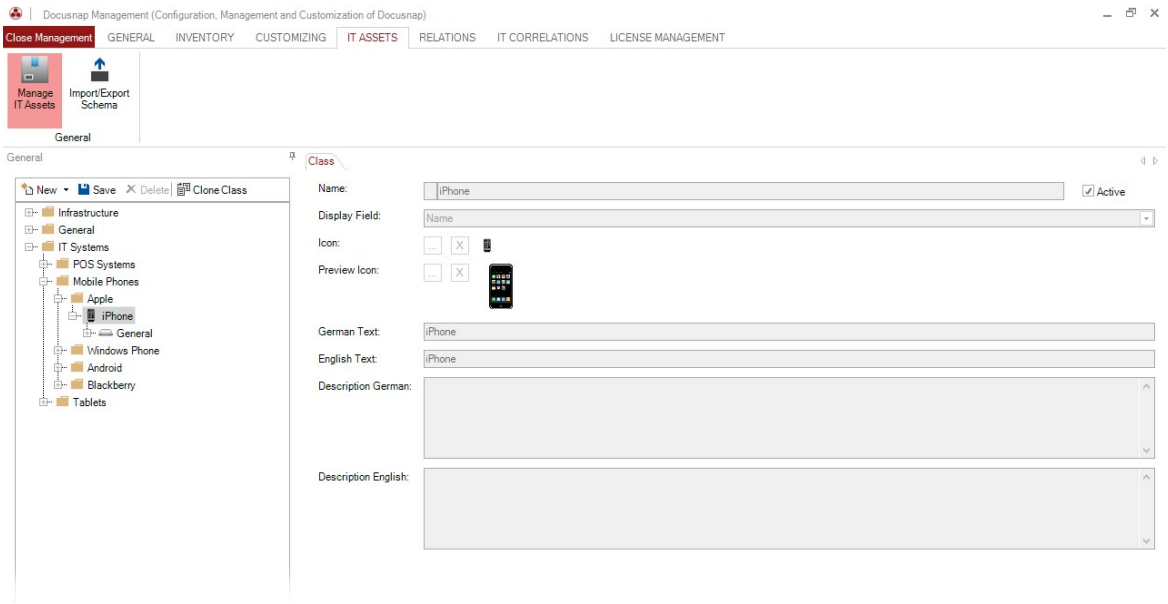
Categories

Click the *New* button and select *Category* to create a new category. You can enter a name and labels in English and German for the category. You can also enter a description in both languages. Below any category, you can create IT assets or subcategories.



Class

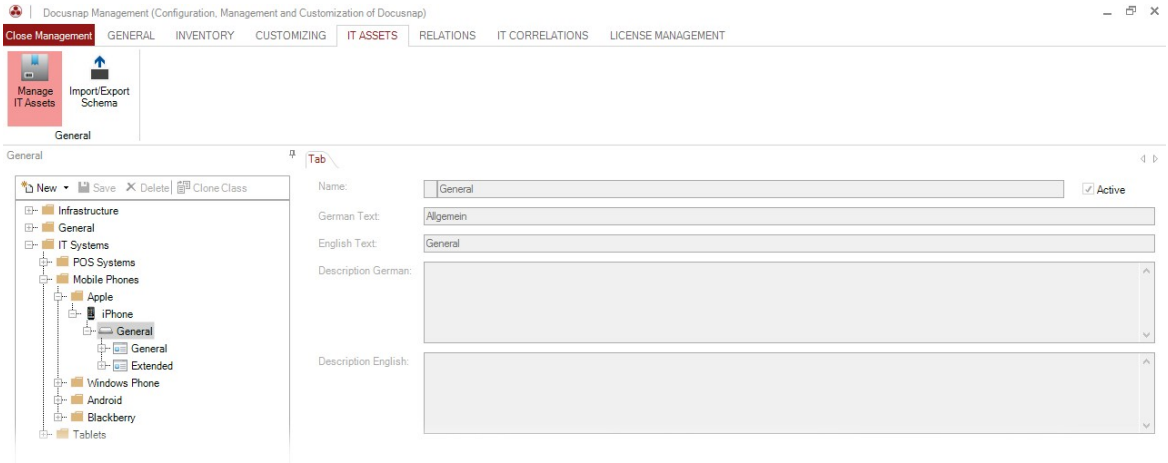
Click *New* button and then *Class* to create an IT asset under the selected category node. You can enter a name and labels in English and German for the IT asset. Docusnap suggests a particular icon for each *class*. You can change this icon using the … button. By unchecking the *Active* checkbox, you can deactivate the class so that it is no longer selectable when you create new IT assets. In the display field, select the property whose value should be displayed in the tree view. After you have saved the class, Docusnap creates the *General* tab and the *General* section. Subclasses may be created under each class.



Tab

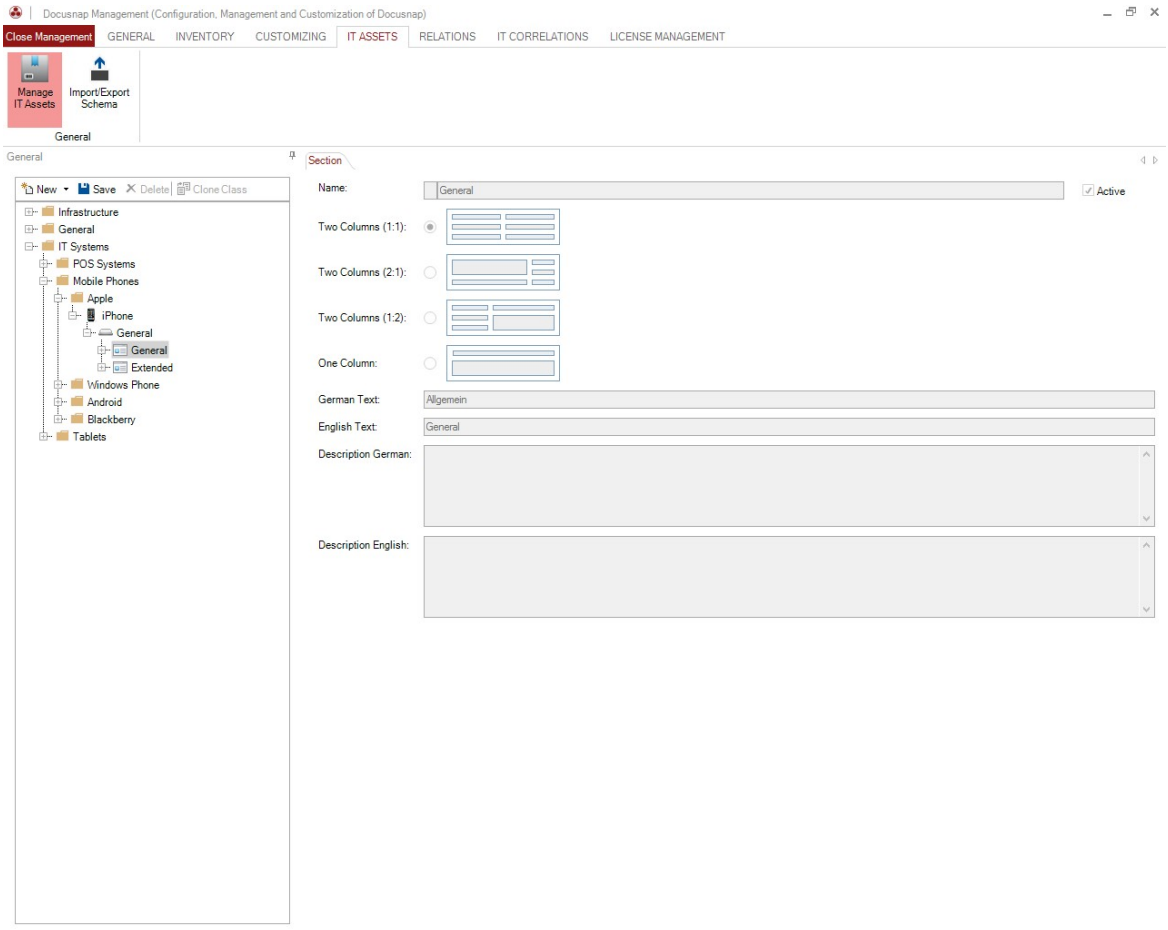
In addition to the *General* tab, which is created for each class and which cannot be deleted, you may create other tabs. These will be displayed as additional tabs when you create IT assets. Besides the name, you can enter labels in English and German

for each tab. The *Active* checkbox allows you to enable/disable the tab.



Section

For each class, Docusnap creates a *General* section. You can rename or delete this section. Sections are used to group the properties of the IT assets in the editor area. You can enter a name and labels in English and German for each section. The *Active* checkbox allows you to enable/disable the section. The *Column Formats* allow you to define how to arrange the properties in the editor area.



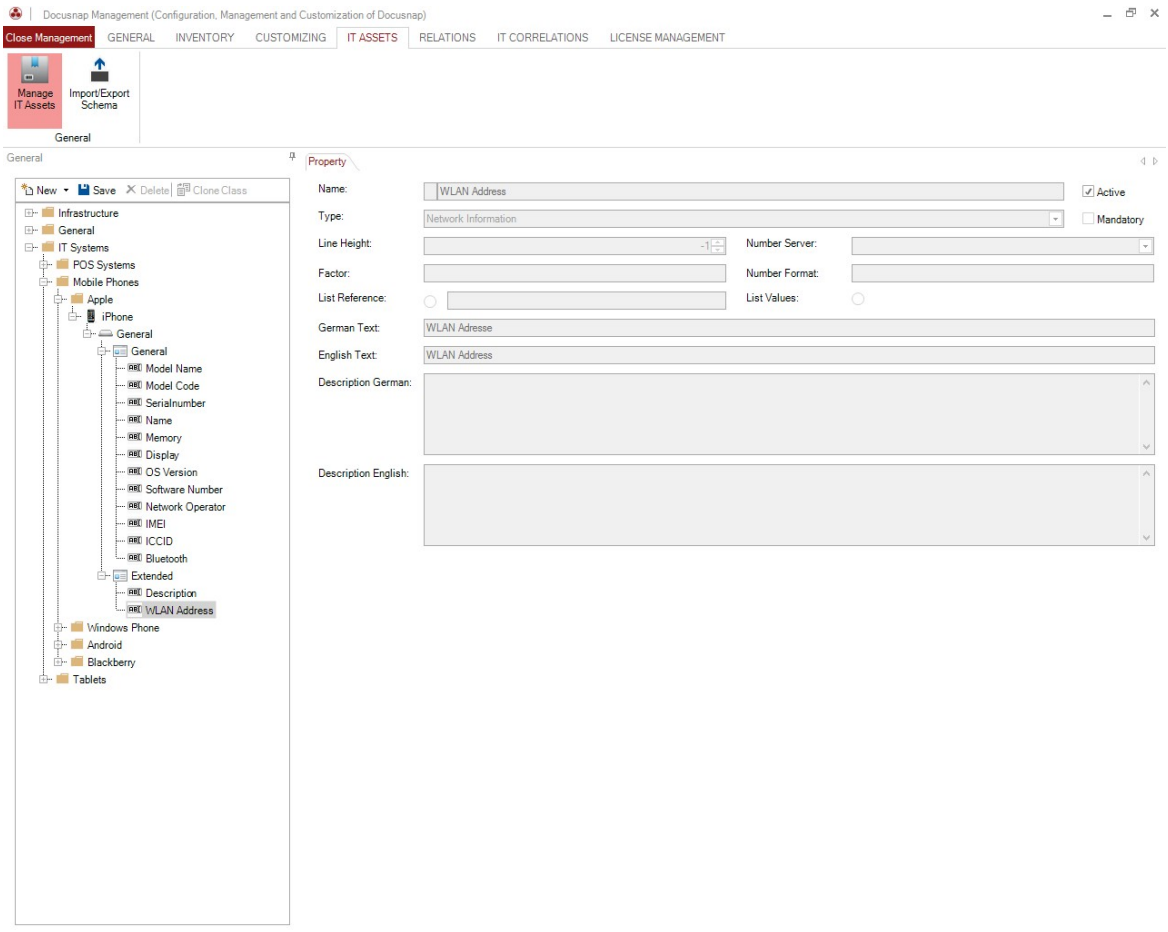
Properties

Properties are used to specify values for the IT assets. Create the properties under the desired section. Click the *New* button and select *Property* to define new properties. You can enter a name and labels in English and German for each property. The *Active* checkbox allows you to enable/disable the property. Various property types are available:

- Date: If you select the *Date* type, a date selection for specifying the date will be provided in the editor area.
- Decimal: If you select the *Decimal* type, only decimal numbers can be inserted into the text box.
  In addition, you can set a factor for the conversion of numeric values. Example: A factor of 1024 would convert a value from bytes into kilobytes.
  Here, you can define the formatting of numeric values according to standard conventions. Valid placeholders are the # character for any numeric value and the digit 0 for numeric values which are padded with leading zeros if they are too small. The comma is used as the thousands separator, and the period as the decimal separator. Examples: #,##0.00 MB, 00 h
- Yes/No: For a property of the *Yes/No* type, a checkbox will be displayed in the editor area.
- List: If you select the *List* type values will be selectable in a drop-down list in the editor area.
  - *List Reference*: As data sources you can use a database table of initial values. A reference to a table is specified [TableName] and a reference to an initial value is input with {InitialValue}.
  - *List Values*: If *List Values* is selected the additional tab *List Values* is displayed. Here entries can be defined, which are then available in a combo box for selection in the editor area.
- Multi-Line Text: If you select the *Multi-Line Text* type, you can enter text without any length limitation. For this type, you can specify the height of the text box in the Line *Height* field.
- Network Information: If you select the *Network Information* type, you can specify the *IP Address*, the *Subnet Mask*, and the *MAC Address* for this IT asset. This information can then also be added to the network maps.
- Text: If you select the *Text* type, Docusnap will display a text box in the editor area.
- Number: If you select the *Number* type, the text box will only accept integers.
  In addition, you can set a factor for the conversion of numeric values.
  Here, you can define the formatting of numeric values according to standard

conventions and include a unit. Valid placeholders include the hash symbol "#" for any numeric value and "0" for numeric values that should be padded with leading zeroes if they are too small for the field. The thousands separator is a comma, and the period is used as the decimal separator. Examples: #,##0.00 MB or 00 h

- ADS Assignment: With the type *ADS Assignment* users or groups from the ADS inventory can be assigned to an IT asset. When creating the IT asset the name of wanted user or group can be entered. Once the first letter is typed, the matching entries are suggested. Users and groups can be added via enter key or selection via the mouse from the suggestion list. Click the ... button to open the dialog for the advanced search. In this dialog the selection of users and groups can be filtered by several conditions. Afterwards the selected user or group can be assigned to the IT asset. You find further information on the filter in the chapter Permission Analysis of the user manual.
- Number Server: The number server can be defined in the *Advanced* ribbon and can be used to assign a continuous number to every new generated IT asset. In the *Settings* an existing Number Server can be chosen, when you select the type *Number Server*. You find further information on the definition of *Number Servers* in the configuration manual.



You can move classes and categories or change the order in which the properties are listed in the editor area by drag&drop.

2.13.2 Import and Export

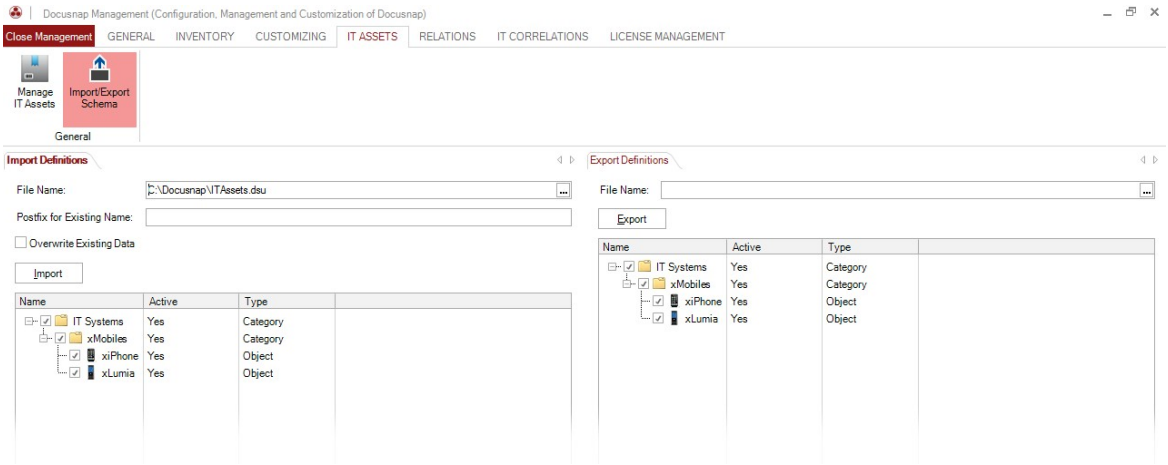
Click the *Import/Export Schema* button to open the tab to import and export IT Asset structures.

Import Definitions

Click the ... button in the *Import Definitions* tab to select the file for importing IT asset structures.

Each newly created category and class will be assigned a unique ID. Tick the *Overwrite Existing Data* checkbox to overwrite the existing data if, upon the import of a category or class, Docusnap detects that the respective item already exists. In case a category or class with an identical name exists, you can define a postfix. The specified postfix will be appended to the name of the category or class using an underscore (_).

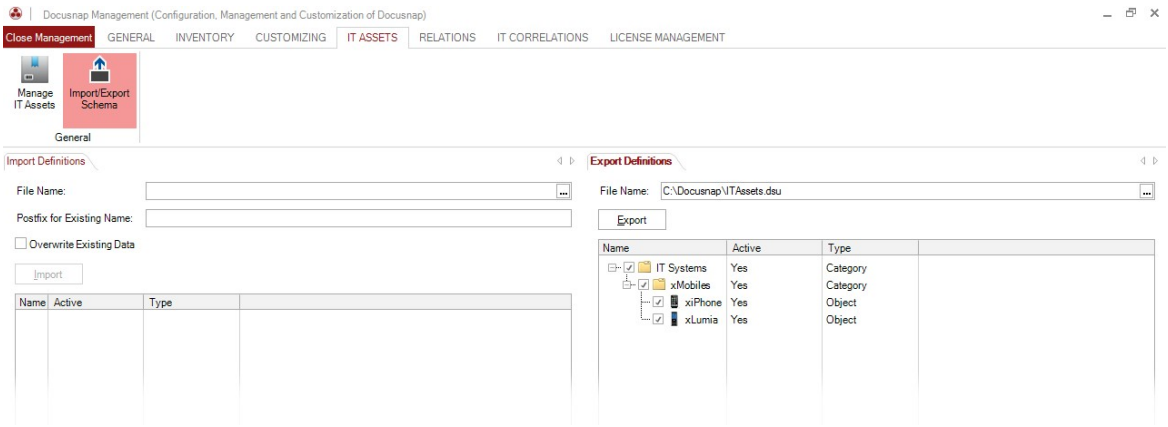
You can select the IT assets to be imported. Start the import by clicking the *Import* button.



Export Definitions

You can export the configuration of the IT assets to an external file and then import the configuration data into another Docusnap database.

In the *Export Definitions* tab you can export the structure of the IT assets to an external file. Clicking the ... button will open a file/path selection dialog. The list below shows the IT asset structures of this database. Click the *Export* button to export all selected categories and classes to the specified file.

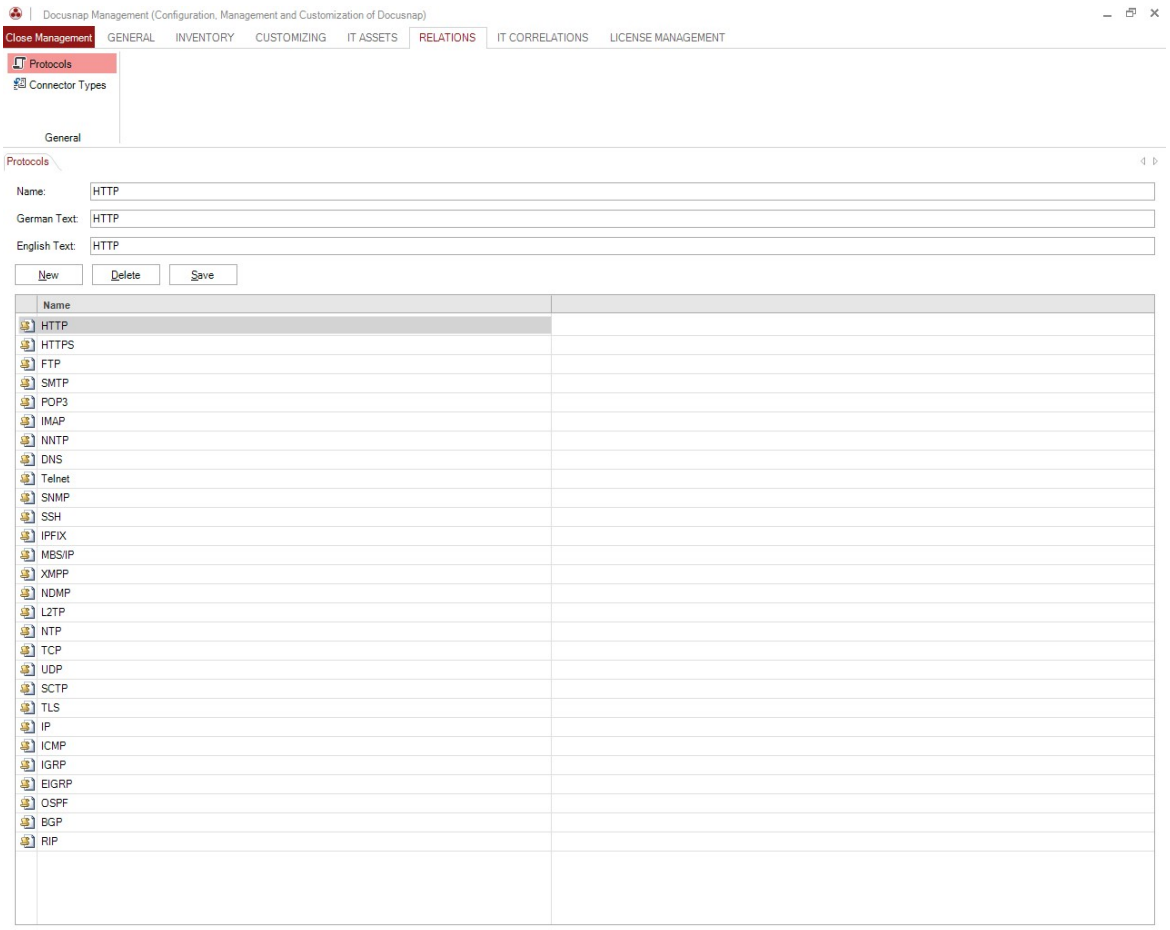


2.14 Relations

In the *Relations* ribbon tabs for the protocols and connection types can be opened.

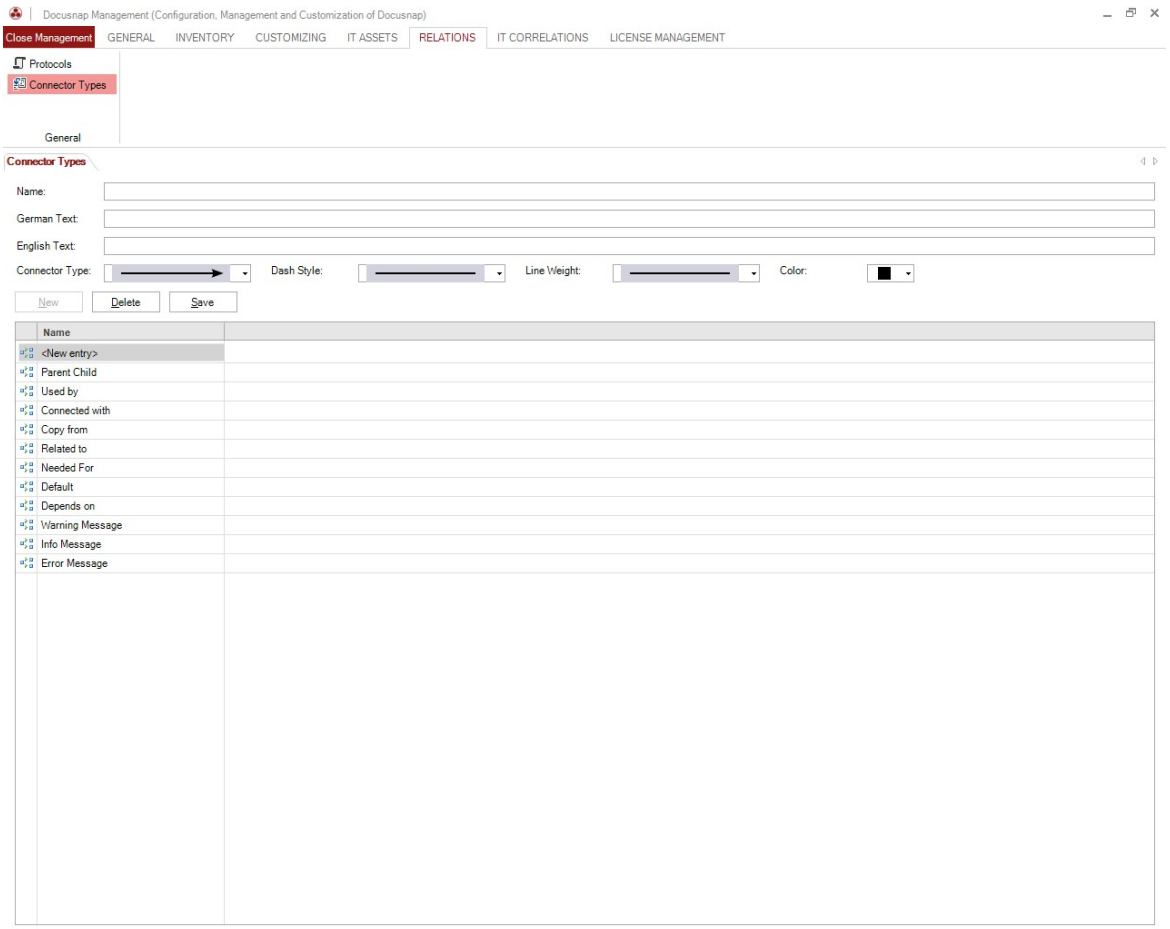
Protocols

For each connector, you can select the protocol to be used for the corresponding connection from the Properties entry screen. Docusnap provides a number of predefined protocols. In the Protocol tab you can create additional protocols.



Relation Types

Every connection between two components is assigned to a relation type. If required, you can add more relation types in the Manage Relation Types dialog. For every new type the type of arrow, the dash style, line weight and color can be chosen.



2.15 IT Correlations

The IT Correlations are configured in Docusnap Management in the *IT Correlations* ribbon. Click the *Relations* button to open the tabs to define IT Correlations.

IT Correlations

You can create new IT Correlations or alter existing ones.

Click the *New* button to create a new IT Correlation. Every IT Correlation has a name and a description in German and English. Every IT Correlation can be defined by what kind of relationship it is. For different types of relationships, different line formats and colors are used.

Every IT Correlation has a start object (Start Type) and a result object (Result Type). These two objects are compared according to the defined filter.

Filter

In the filter, the IT Correlation is defined. In the *Field* column, all the tables and columns of the selected starting object and the hierarchical parent and child objects are displayed. In the *Value* column, all the tables and columns of the selected result object, as well as the hierarchical parent and child objects, are available for selection.

The selected columns in the *Field* column are used for the comparison, e.g. column *ObjectPath* of the table *tADSObject*. In the *Value* column, the column is chosen which identifies the result object to be compared with, for example, the column *ObjectIdentity* of the table *vExchangeMailboxRec.* In this example for each Active Directory user account the corresponding Exchange mailboxes are displayed.

Use the *Operator* column to define the desired relation between startup type and result type.

The comparison of the data does not take domains and companies into consideration. If the filter compares only the name and not the corresponding ID, then objects from other companies or domains could be accidently displayed as IT Correlations. In this case you should include a filter, which compares the DomainID or the AccountID of the relevant tables.

The filter conditions can be grouped and linked with either *And* or *Or*.

If you want to display workstations and servers as IT correlations for an object two IT Correlations have to be defined. One relation for workstations and one for servers.

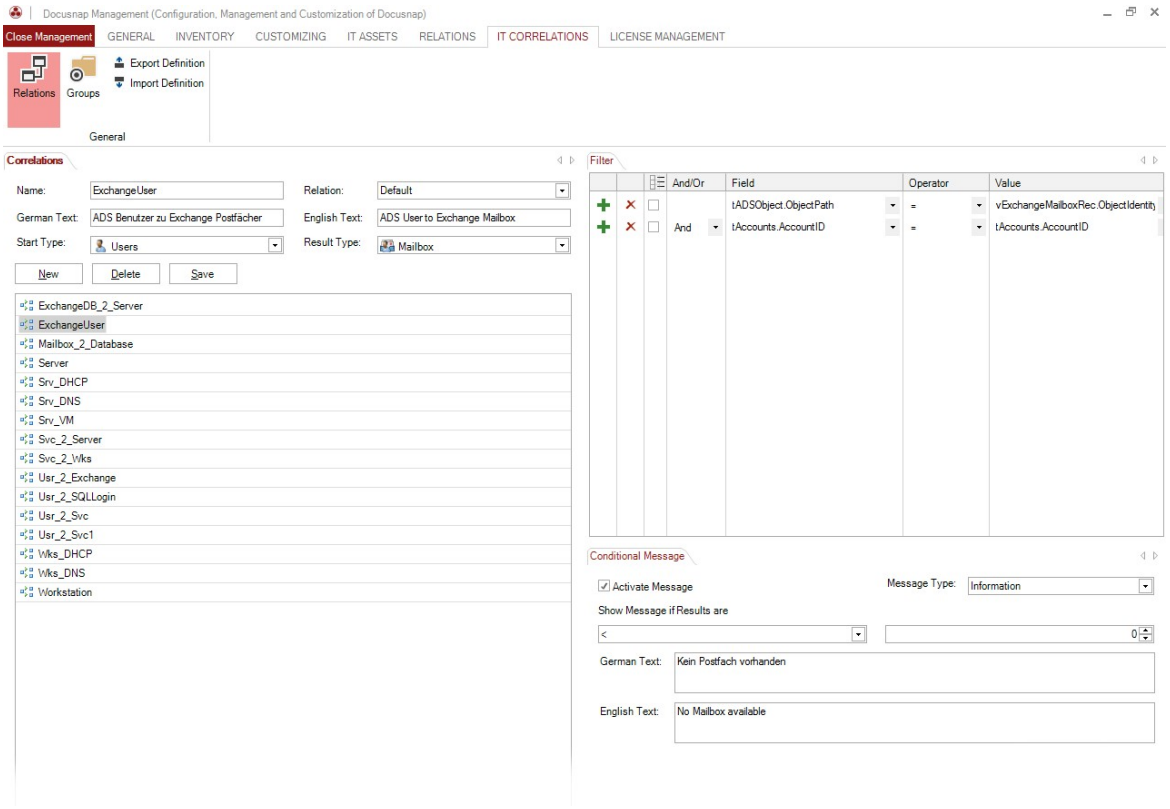
The IT dependencies are defined in one direction, from the start to the result object. To display the start object at the result object, an additional IT Correlation must be defined that shows this relation.

Conditional Message

Use conditional messages to define how many result objects should be found. When the condition is true, then the icon and the defined message will be displayed in the diagram of the IT Correlation.

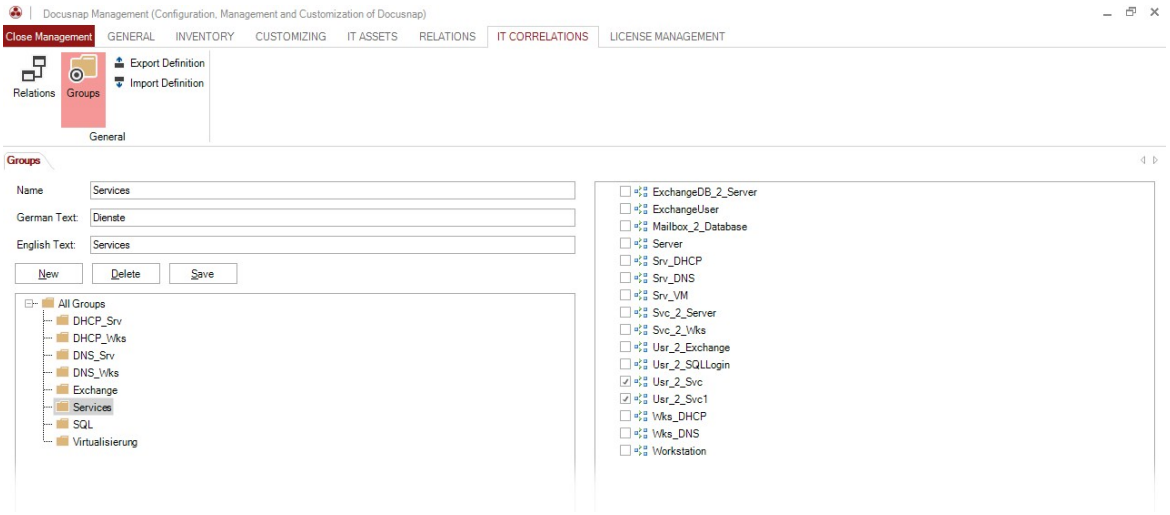
Check the checkbox *Activate Message* to create a message for the IT Correlation. You can define if the number of result objects should be greater than, less than or equal to the specified value to display the message. Select in the field *Message*

Type which icon (Info, Warning, Error) should be displayed with the message. For every message you can enter an English or German text.



Group

Groups are used to group multiple IT Correlations. Thereby the diagram in the *Analysis* tab will be less crowded. IT Correlations which have the same start object can be grouped together.



Export / Import Definitions

Click the *Export Definition* button to export the IT Correlations to a file. Firstly, this

is to secure the user-defined IT Correlations. Secondly, they can be imported into another Docusnap installation later. This is especially interesting when different IT networks and thus different Docusnap installations are in use. Click the *Import Definition* button to import the IT Correlations from a file. In this way, once defined IT Correlations can easily be reused elsewhere.

2.16 License Management

For the License Management module types can be changed or added.

2.16.1 Software Categories

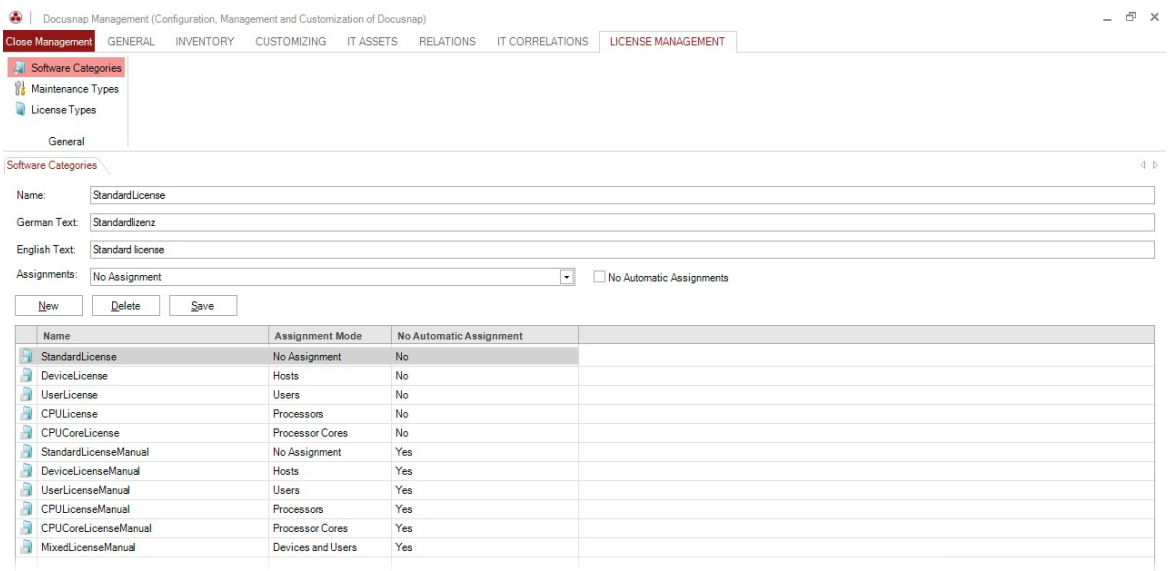
When you create a software product from the License Management module, you have to assign it to a category. Docusnap provides predefined categories. In the *Software Categories* tab, you can edit the existing categories or create new ones.

The categories can be named both in English and German. The name itself may be chosen freely.

The assignment of a category determines the basic settings, such as the type of licensing, for the product. The category you select here determines whether it will be possible to use keywords and create system assignments or user assignments in later wizard steps. The selected *assignment* determines whether the licenses in this category will be assigned to devices, processors, processor cores, users, or not at all.

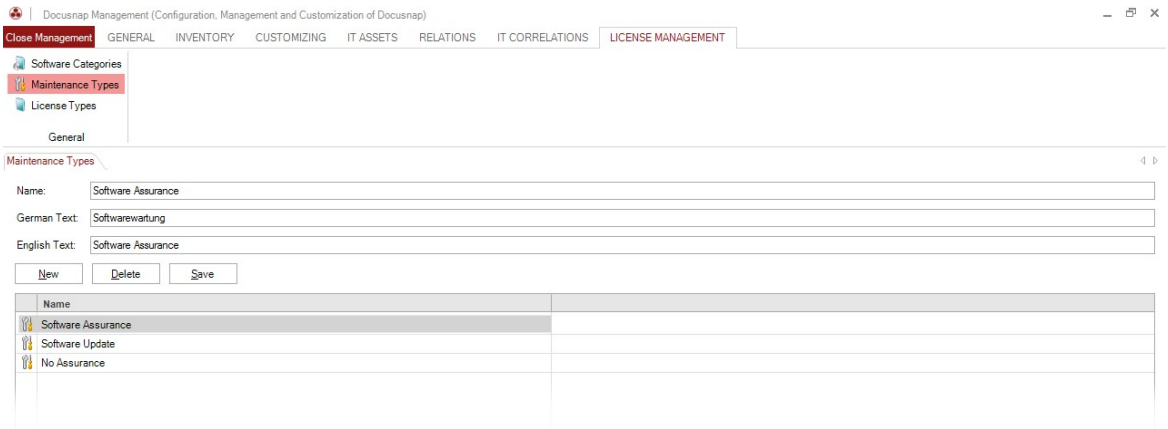
If you prefer not to use a keyword-based assignment, tick the No Automatic Assignment checkbox.

The word *Manual* in the names of the predefined categories indicates that no keyword-based search will be used. Rather, the licenses in use need to be entered manually.



2.16.2 Maintenance Types

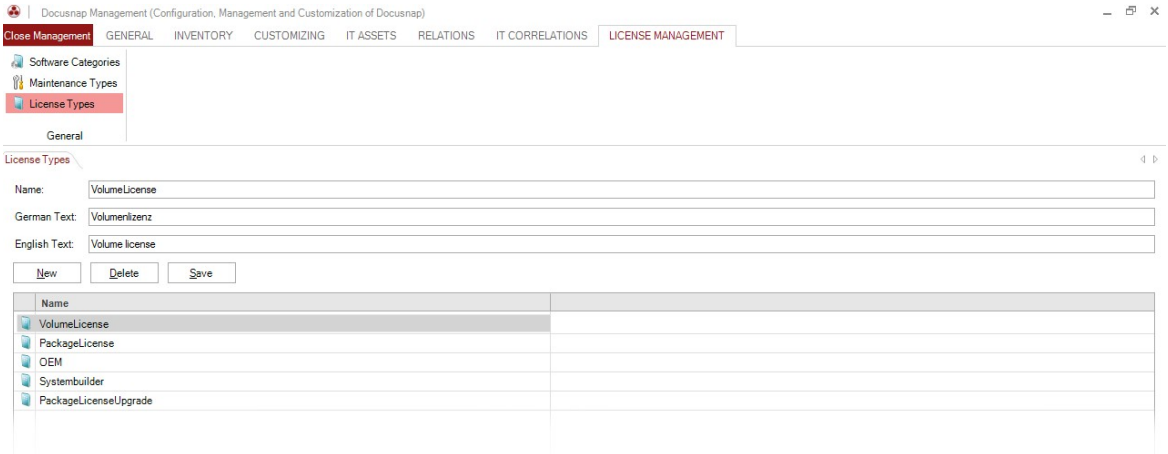
Not only the licenses, but also the associated maintenance contracts can be managed in the License Management module. When creating a new license in the wizard, you can also add software maintenance agreements. Docusnap includes the predefined types. You can add new types, if required. To create new software maintenance types, click the *New* button. You can enter any desired name and designations in English and German. Enter the desired information and add the new entry to the list by clicking the *Save* button.



2.16.3 License Types

Purchased licenses can be of various types, depending on how they were bought, e.g. volume licenses, package licenses or OEM products. During execution of the License Management wizard, you can select the appropriate purchase type. The license types are only shown for your information. They do not affect the behavior of Docusnap when determining the corresponding license balance.

Docusnap provides predefined license types. You can add more types, if required. Click the *New* button to create an additional license type. You can enter any desired name and designations in English and German. To add the new entry to the list, click the *Save* button.



Part

3 Reporting System

The Docusnap database stores information that has either been collected by the network inventory scan or manually entered by the user.

Docusnap provides reports for evaluating and printing this information. For example, you can create a report that contains information about a single system or an overview of a domain. The reports can be exported to documents in various formats (e.g. docx, pdf, html, odt), printed or sent by e-mail.

Reports can be executed from various levels in the tree view. Docusnap provides predefined reports which process existing data from the database.

You can select a global report format. These format settings will be used for all companies. You can customize the company logos, colors and fonts for the reports so that they reflect the corporate identity. Report formatting can be customized even further at the company level.

What is more, you can edit existing reports and create new ones.

3.1 Basics

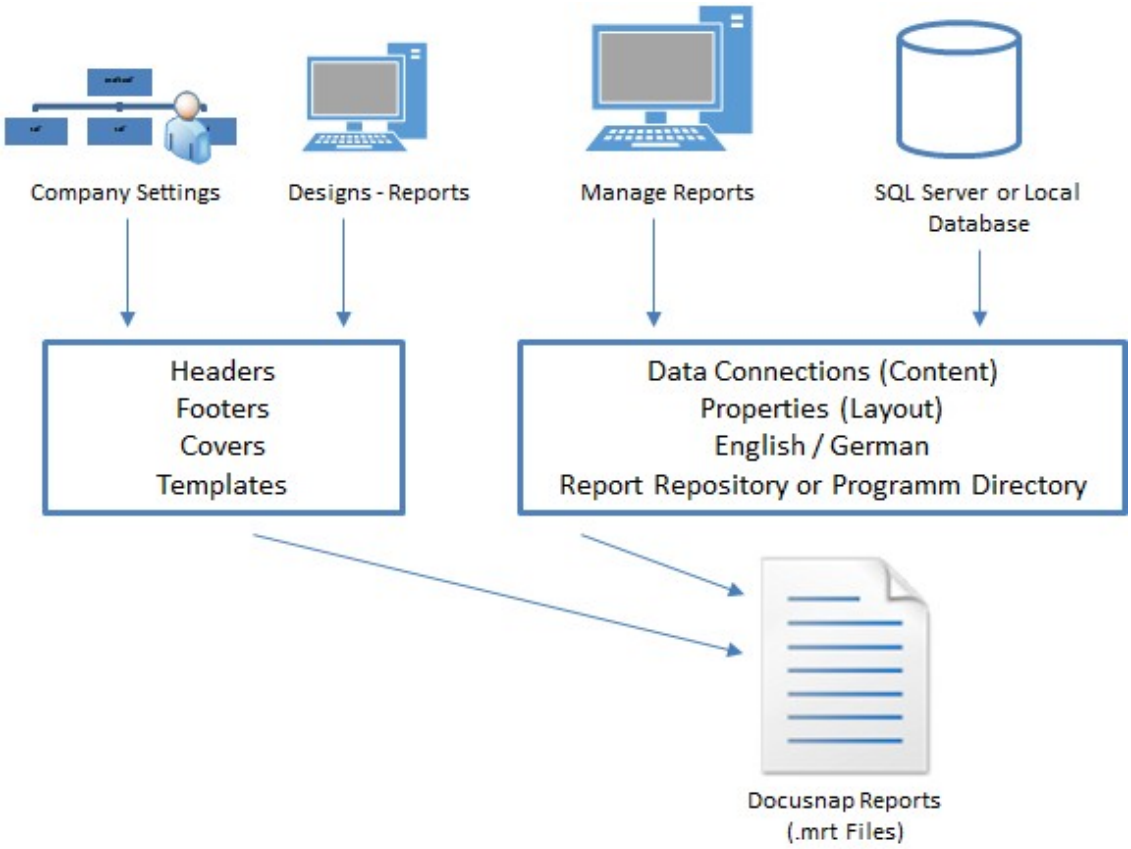
All information stored in the database can be output in reports, filtered and sorted as required.

For each report, additional information can be provided on a cover page, in a header and/or a footer. For each company, you can design a custom cover page and an individual header and footer. The styles used for the report can also be created centrally for all companies. However, you can also customize them at the company level.

The predefined reports are stored in the program directory when Docusnap is installed. User-adapted or newly created reports are stored in the report repository. For each report can be defined, if always the latest report, the customer report or the system report should be used. Subsequently, the report is generated according to the settings either from the program directory or the local settings folder or from the team setting folder (Report Repository).

To generate/execute a report, click it in the tree view. The data is displayed on the *Reports* tab of the main window. Depending on the settings, the report consists of the header and footer, the cover page and the actual report content. The report format is controlled by styles. The content of the report will be retrieved from the database. You can determine the position of the report in the tree structure. In addition, you can specify the language for the report and its properties, such as author or description.

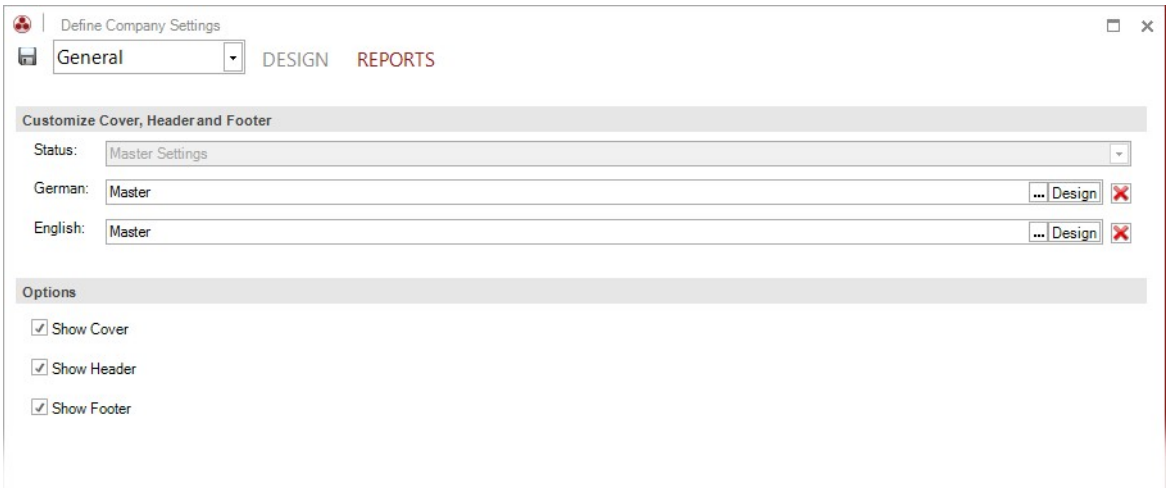
After the report has been executed, it can be printed or exported to any file format desired (docx, pdf, html, odt, etc.).



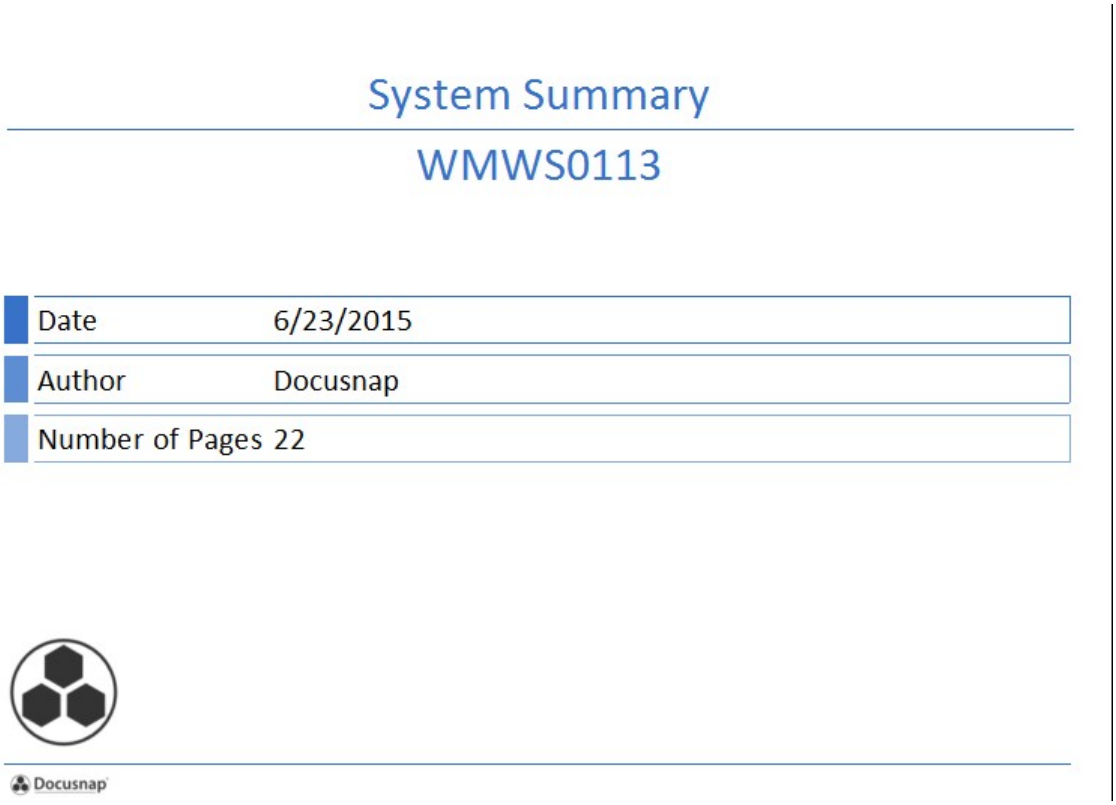
3.2 Report Structure

Additional information, such as the report name, the author or the creation date, is displayed on the cover page, as well as in the header and footer. This information can be changed from the *Manage Reports* tab.

To select the desired cover pages, header and footer, go to the *Layout (CI)* dialog. In order to enable Docusnap to generate reports either in English or in German, the report which defines the cover page, header and footer is stored twice, once for English and once for German.



The cover page shows the report name and the tree view meta object for which the report was generated. What is more, the current date, the name of the author and the page count are also shown. The name of the author and the report name can be changed from the *Manage Reports* tab. If you enter a description in that tab, it will also appear on the cover page.


System Summary

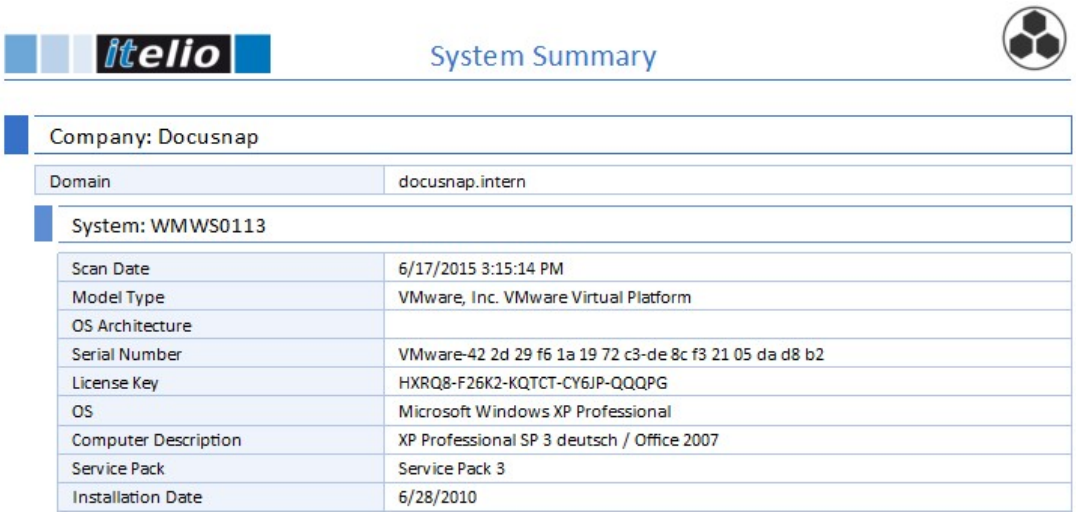
WMWS0113

Date	6/23/2015
Author	Docusnap
Number of Pages	22

Docusnap

The header shows the report name and two logos. Both logos can be selected from the *Layout (CI)* dialog.

The page count and the underlying tree object for the report are shown in the footer.


itelio System Summary

Company: Docusnap

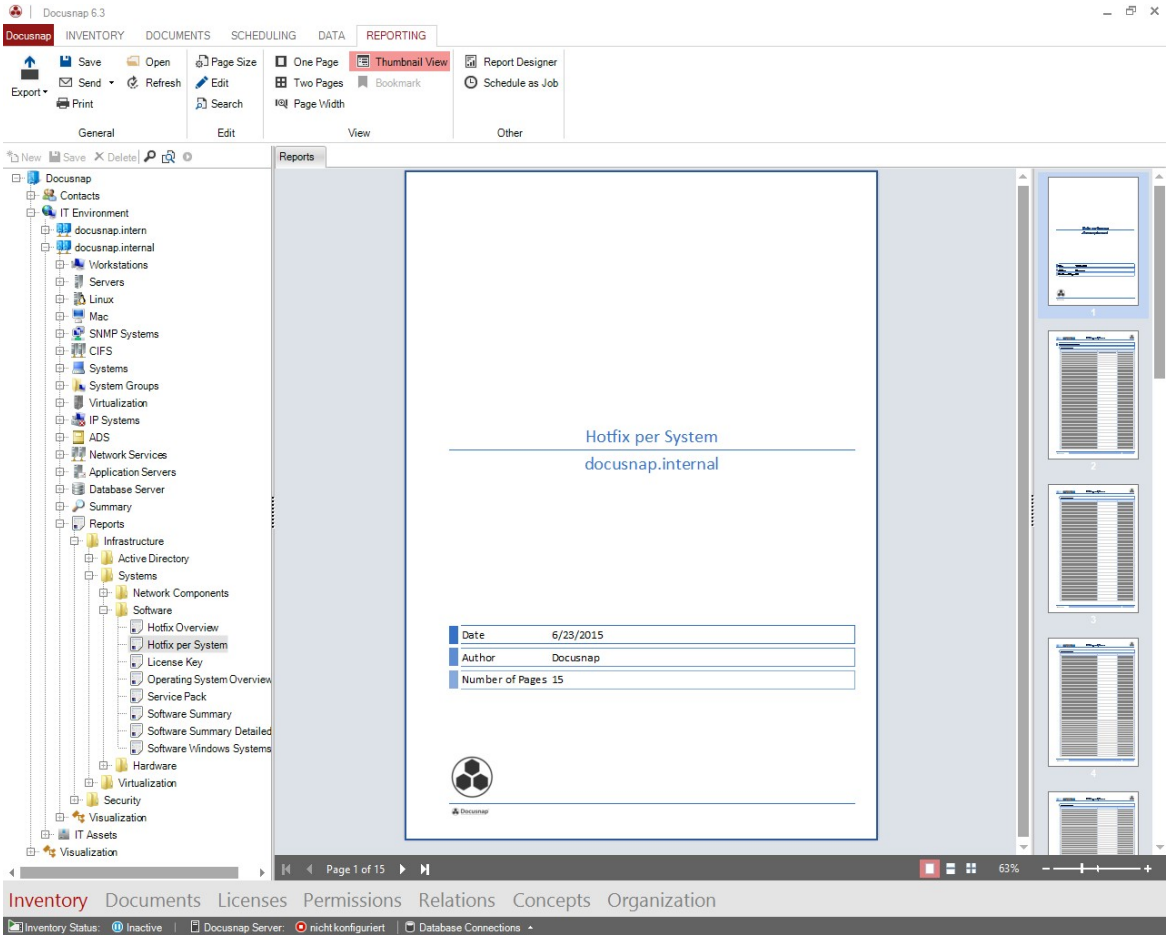
Domain	docusnap.intern

System: WMWS0113

Scan Date	6/17/2015 3:15:14 PM
Model Type	VMware, Inc. VMware Virtual Platform
OS Architecture	
Serial Number	VMware-42 2d 29 f6 1a 19 72 c3-de 8c f3 21 05 da d8 b2
License Key	HXRQ8-F26K2-KQTCT-CY6JP-QQQPG
OS	Microsoft Windows XP Professional
Computer Description	XP Professional SP 3 deutsch / Office 2007
Service Pack	Service Pack 3
Installation Date	6/28/2010

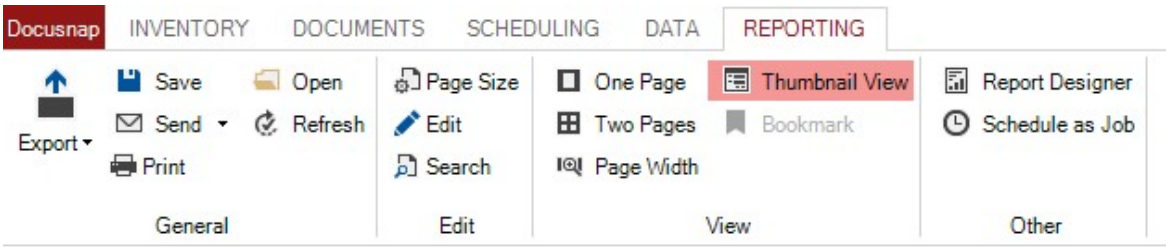
3.3 Output

Reports are usually shown under the *Reports* node in the tree view. Click the desired report to display in on the *Reports* tab of the main window. A thumbnail can be viewed to the right of the window. If bookmarks have been defined for the report, they will be displayed in the left pane of the window.



When you generate/execute a report, an additional ribbon displays. It contains buttons to modify the view and to export, print or edit the report.

When you click the *Report Designer* button, the current report will be opened in the Report Designer for editing.



3.4 Report Management

Reports can be managed from the *Reports* tab in Docusnap Management. This tab allows you to create new reports and edit existing ones. Each report has properties, such as a name, author and language. These properties can also be edited from this tab.

All reports are listed in the tree view. The tree view consists of meta objects. For a detailed description of meta objects, see the meta objects section. Each report can be linked with one or more meta objects. This determines the position of the report in the tree structure. The link can be defined in the *Reports* tab.

Data can only be shown in the tree view if the corresponding meta objects have been linked with tables. Each table in the database has a primary key. The primary key of a table is a value that uniquely identifies each record in the table. When you generate/execute a report, the primary key of the associated table will be passed to the report.

Reports can be linked with any meta objects that exist in the database. If you link the report with a meta object of the Data type, the primary key of that table will be passed to the report. For meta objects of a different type, Docusnap will always pass the primary key of the next parent object which is linked with a table.

Thereby, this value can be used for filtering and only data associated with that object will be included in the report. For example, if the primary key for the domain is passed and used for filtering, the report will only show data related to that domain.

All reports that have been created are listed both in German and English. In the drop-down list, you can select the language in which the report will be displayed. In the left tab of the dialog, the available reports are listed. The properties of the selected report are displayed in the right tab.

The author of all reports created by Docusnap defaults to Docusnap. To change the author in some reports or delete a number of reports in one go, you can select multiple reports at the same time.

All of the reports can be deleted or renamed. However, care should be taken with some reports.
Several Docusnap features are based on reports. If you delete or rename one of these reports, those features might no longer work properly.

The datasheets and overviews you can create in the Documentation module are based on reports. The output from data comparisons is also provided by means of a report. The effective permissions calculation results are displayed in a report as well. Therefore, do not delete or rename the following reports:

Documentation Reports

Datenblatt Arbeitsstation	Workstation Datasheet
Datenblatt Server	Server Datasheet
Datenblatt Mac	Mac Datasheet
Datenblatt Linux	Linux Datasheet
Datenblatt SNMP	SNMP Datasheet
Datenblatt AD Standorte	AD Sites Datasheet
Datenblatt CIFS	CIFS Datasheet
Datenblatt Datenspeicher	Data Store Datasheet
Datenblatt Email Kontakte	Email Contacts Datasheet
Datenblatt Hyper-V	Hyper-V Datasheet
Datenblatt IIService	IIService Datasheet
Datenblatt Netzwerk	Network Datasheet
Datenblatt öffentliche Ordner DB	Public Folders DB Datasheet
Datenblatt öffentliche Ordner Gruppen	Public Folders Groups Datasheet
Datenblatt öffentlichen Ordner	Public Folders Datasheet
Datenblatt Organisation	Organization Datasheet
Datenblatt Postfächer	Mailboxes Datasheet
Datenblatt Postfächer Datenbank	Mailboxes DB Datasheet
Datenblatt Postfächer Gruppen	Mailboxes Groups Datasheet
Datenblatt Serverkonfiguration	Server Configuration Datasheet
Datenblatt SQL Datenbank	SQL Database Datasheet
Datenblatt SQL Server	SQL Server Datasheet
Datenblatt Verteilergruppen	Distribution Groups Datasheet
Datenblatt Virtuelle Maschine	Virtual Machine Datasheet
Datenblatt VMware Server	Virtual Machine Server Datasheet

Data Comparison Report

Vergleichsdaten	Compare Objects

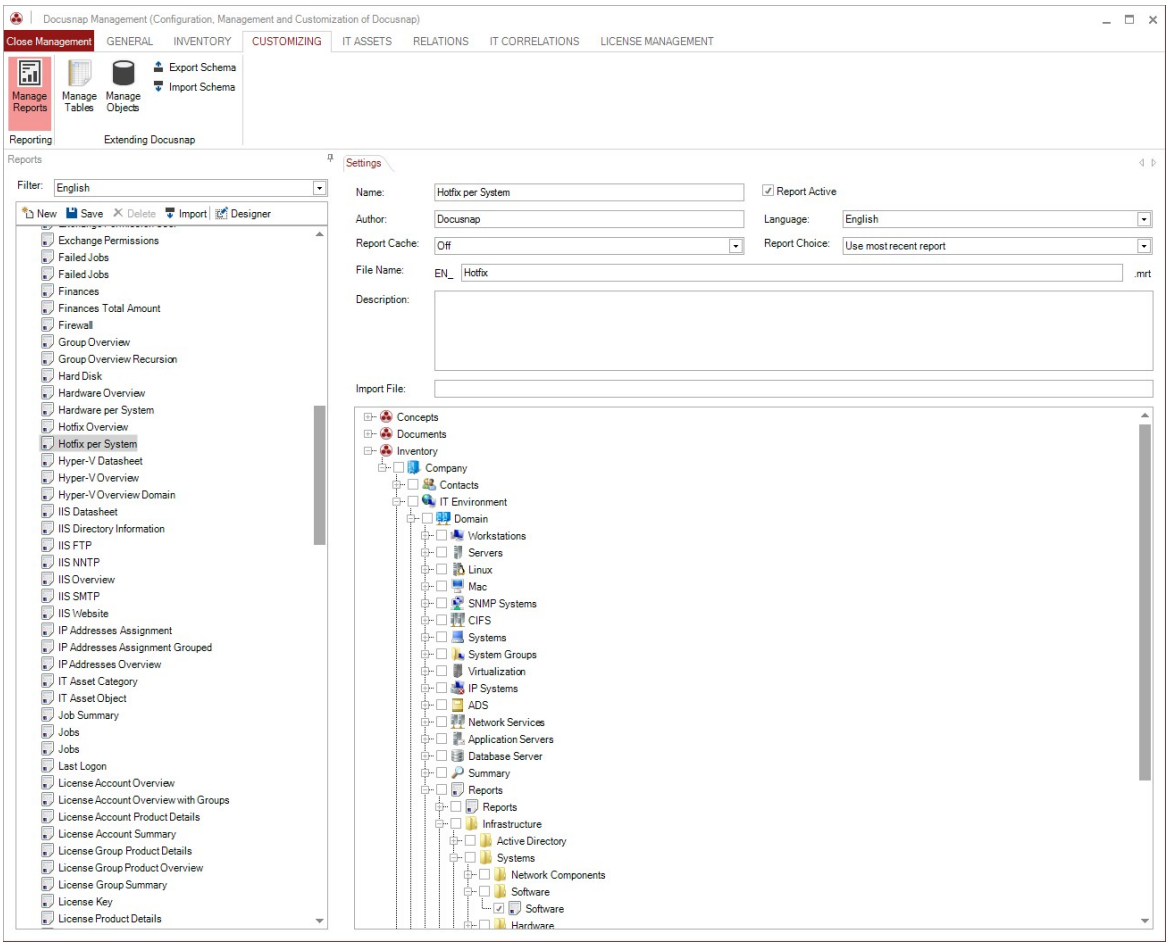
Effective Permissions Report

Verzeichnis (Ressource)	Directory (Resource)
Benutzer (Ressource)	User (Resource)
Berechtigungsanalyse Aktuelle Ansicht	Permission Analysis - Current View

Report Properties	
Name	The name specified in the *Name* field is displayed in the report list of this dialog and in the tree view.

Status	The current report will only be visible in the tree view if the *Report is Enabled* checkbox is ticked. If this checkbox is empty, the current report will not be displayed in the tree view.
Author	This field shows the name of the person who created the report. This name will be shown under *Author* on the report cover page.
Language	Reports for which the English language has been selected will only be displayed if the Docusnap language setting is also English. German reports are only displayed if the language has been set to German. The language that you select in the Manage Reports dialog determines the file name prefix, i.e. either "DE_" or "EN_". After creating and saving the report, you can still change the language. If you switch the language, e.g. from German to English, the prefix will be changed from "DE_" to "EN_" and the report will be displayed as soon as the display language for Docusnap is changed to English. The headings in the report, however, remain in the language in which they were created.
Report Cache	If you want to create extensive reports, you need to enable the *Report Cache* feature. This feature caches the pages of the report. This makes sense in case the RAM on your machine would not be sufficient to create the report. If you select the *Auto* setting here, the report will be split once it has reached 500 pages. The *On* setting causes Docusnap to cache the pages of the report from the first page on. Upon completion of the creation process, the pages will be combined into a single report. This step takes additional time, so make sure to only select this setting if your RAM is insufficient for creating the report. It is recommended to use the *Auto* setting.
Report Choice	The predefined reports are stored in the program directory when Docusnap is installed. User-adapted, newly created or imported reports are stored in the report repository. For each report can be defined, if always the latest report,

	the customer report or the system report should be used. Subsequently, the report is generated according to the settings either from the program directory or the local settings folder or from the team setting folder (Report Repository).
File Name	The file name for the reports is composed of the "DE_" or "EN_" prefix, the report name and the ".mrt" file extension. The prefix depends on the selected language. You can choose any name you like. This file name will be used to save the report on the disk.
Description	The text entered here will appear on the cover page. This field is optional, i.e. you can save the report without a description.
Existing Meta Objects	This group in the lower half of the dialog displays the meta objects existing in the tree views. Select the desired tree view from the drop-down list. Enable the checkbox of the meta object you want to link the report with. The reports will be listed in the tree section below the node of the meta object they are linked with. If you link the report with a meta object of the Report type, the report will replace this meta object in the tree view. If desired, you can change the object the report is linked with and you can link the same report with multiple nodes in the tree



When you click the *Designer* button, the selected report will open in the Designer where it can be edited. By clicking the *New* button, you create a new, empty report. Enter all required properties and then click *Save* to apply your entries. To delete reports that are no longer needed both from this list and from the hard disk, click the *Delete* button.

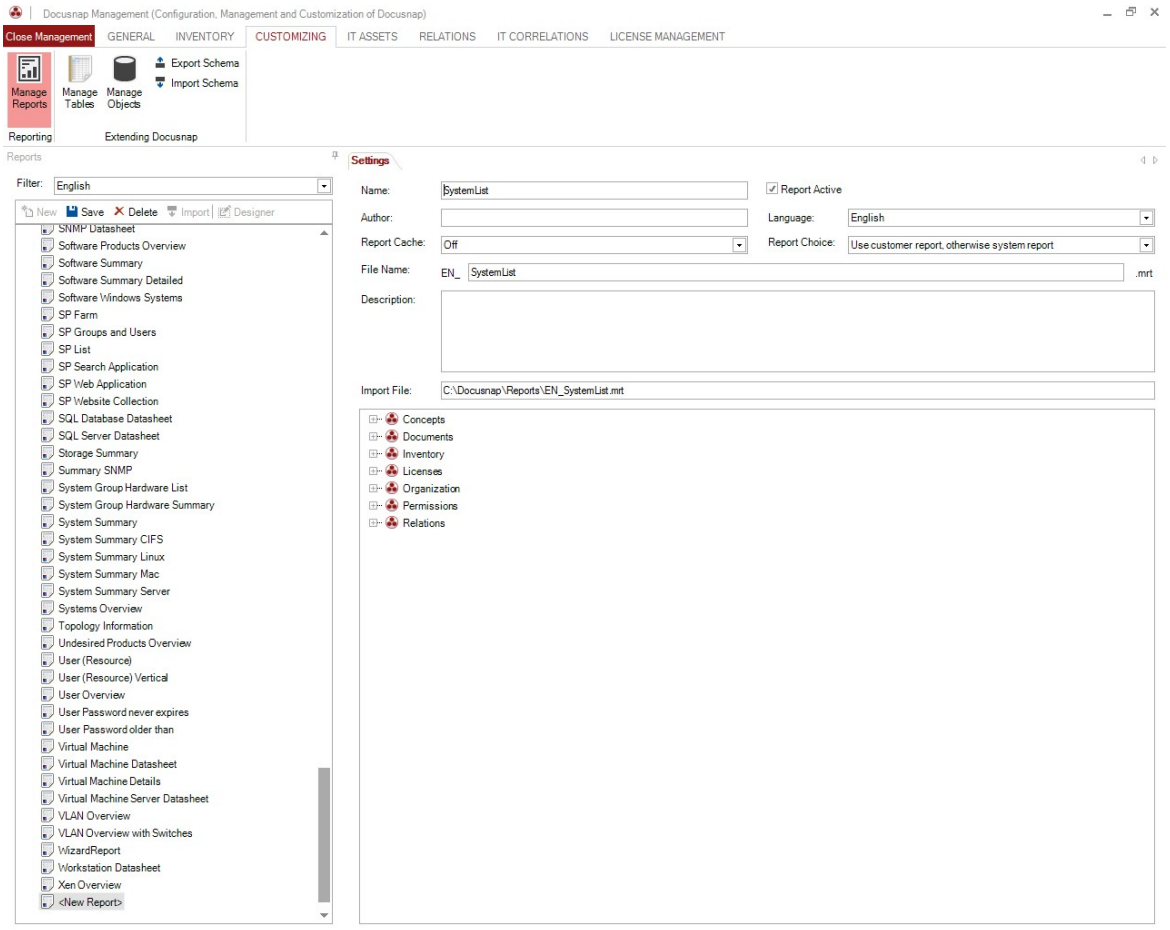
3.5 Report Import

In addition to managing existing reports, the *Reports* tab can also be used to import reports. If you would like multiple users to access the same reports while working in Docusnap, use of the *Team Settings* folder is recommended. This feature is required if you need to import new reports, e.g. when the software manufacturer provides a new report that was created specifically for this client.

To select a report file (*.mrt), click the *Import* button. The file name will be used as the report name. Both the report name and the file name can be changed. The report can only be saved if you have specified its author. To display the report in the tree view, you need to select a meta object. When you click the *Save* button, the imported report will be saved to the *Reporting* folder under the *Team* or *Local Settings* folder.

If a report with the same file name already exists, you can either save the report

under a different file name or overwrite the existing report with the imported report.



3.6 Report Designer

The Report Designer allows you to open predefined reports for editing or create new reports.

There are two ways to open the Report Designer:

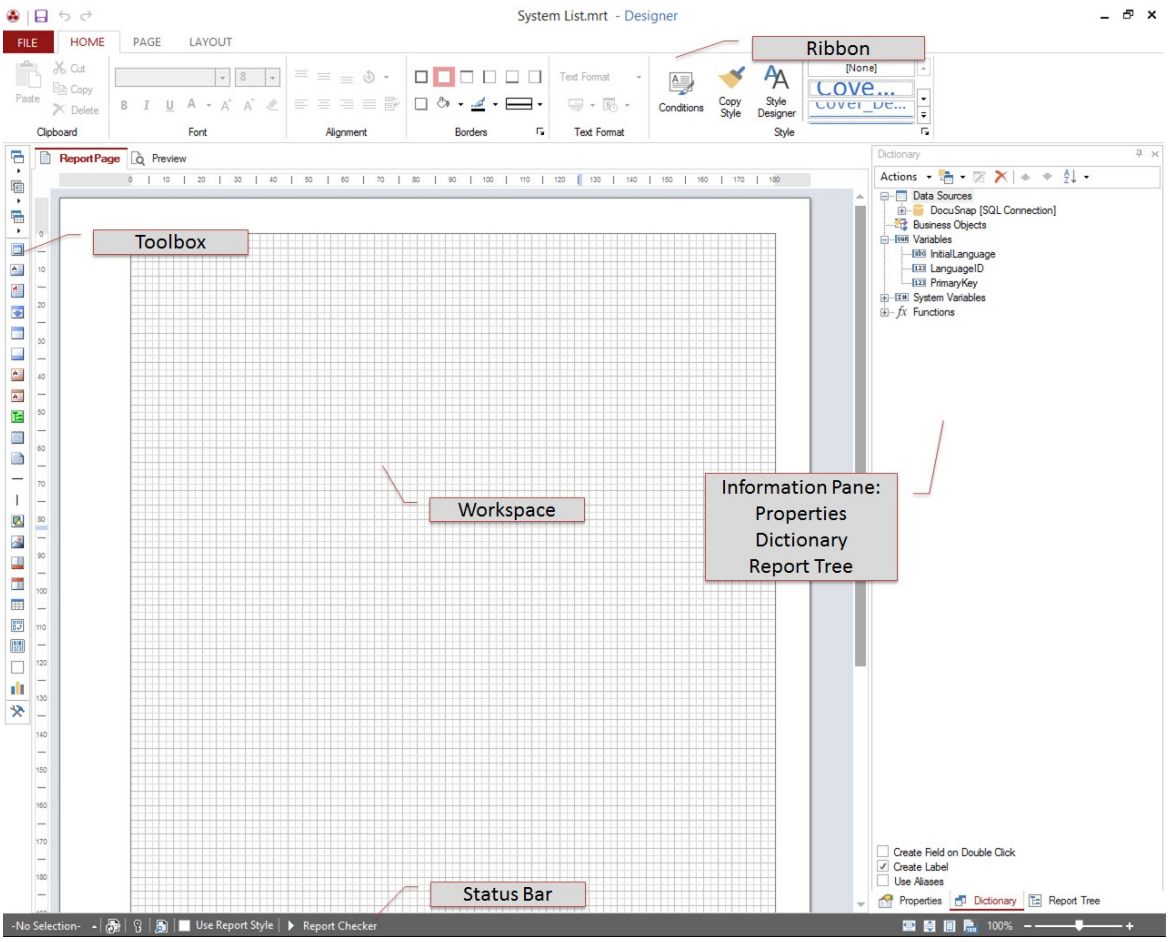
- The Report Designer can be opened from the *Reports* tab in Docusnap Management. To open the Designer module, the report to be edited must be selected. By clicking the *Designer* button, you can open the selected report in the Designer. When creating a new report, you first need to create it in the *Reports* tab. Then, you can open the empty report in the Designer.
- When you generate/execute a report from the tree view, an additional ribbon displays. This report can then be opened in the Report Designer by clicking the *Report Designer* button.

3.6.1 User Interface

Basic Structure

Use the Report Designer to create or edit reports.

The Designer consists of five main areas: ribbon, toolbox, workspace, information pane and status bar.



Ribbon

From the ribbon, you can define settings related to the layout and font design for the report.

- Home: On the *Home* tab, you can choose formatting options for the selected report component. These format settings can also be selected from the information pane. In addition, the *Cut*, *Copy*, *Paste* and *Delete* buttons are available from the *Clipboard* group. Conditions and styles can be defined from the *Style* group. By setting conditions, you can define a different format setting for values that reflect a certain condition.
  The Style Designer and the style selection field show the styles available in the current design.

- Page: On the *Page* ribbon, you can define the page size and other parameters. If your report includes a header, footer and cover page, these settings are not available. The appearance of a report may also be changed after has been executed in Docusnap. In addition, you can add a watermark, either as a text or as an image, from this ribbon.
- Layout: On the *Layout* tab, you can specify how the components of your report will be aligned and how they will be stacked. This z-order can also be set by right-clicking the component and selecting one of the *Order* options. Using the *Size* button, you can resize multiple components to the same size. They will always take the size of the first component selected.
- View: On the *View* tab, you can select whether the components should align with the grid and which grid you want to display. Each data band has a header part used for identification. This header can be hidden. By clicking *Show Order*, you can display indicators that show the z-order of the components. The page can be displayed in either Normal or Page Break page mode. The tabs of the information pane can be shown or hidden. This is also true for the toolbox.

Toolbox

The main purpose of this toolbox is to make the components and various types of bands available when you create reports. To add a new component, you can simply click its icon in the toolbox and then click its intended position in the workspace.

Workspace

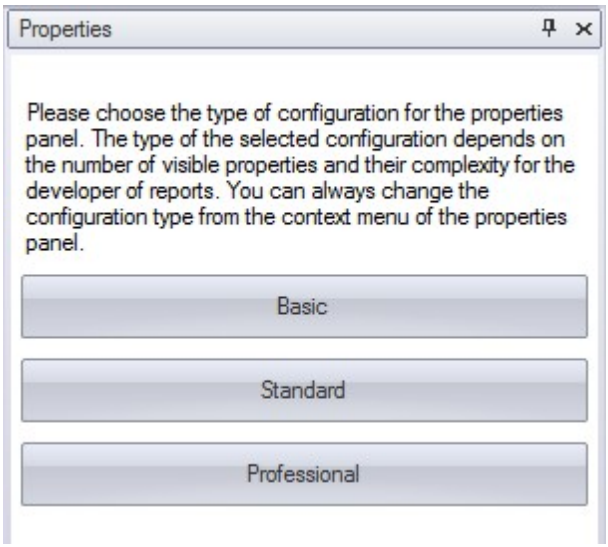
The report design workspace has two tabs. The first one displays the report page where you can create and edit your report. On this tab, you will create the data bands and define the connection to the database. On the *Preview* tab, you display a preview of the generated report. Since most predefined reports depend on the object they are linked with, you must specify the primary key before executing the report. If a primary key has not been provided yet, you can select it when changing to the *Preview* tab.

If the selected primary key is invalid or if no primary key has been provided, it is not possible to generate a data preview. Docusnap can only show the filtered data if you provide a valid value. Each time you change to the *Preview* tab, you will be prompted for the primary key until you have selected a valid key. If you would like to use a different primary key, you can change it immediately using the *PrimaryKey* variable on the Dictionary tab of the information pane. For this purpose, a corresponding icon is also available on the Report Designer status bar.

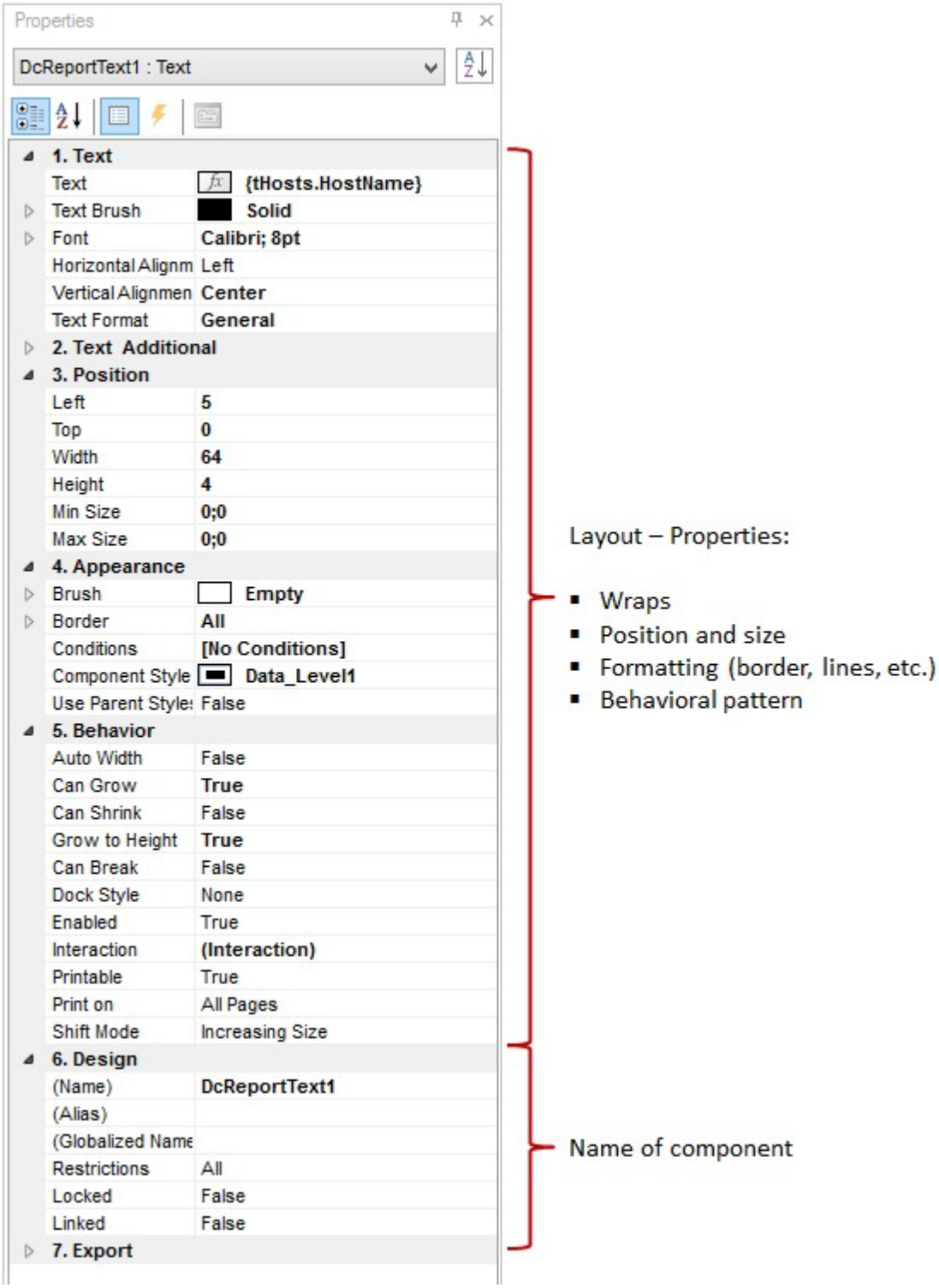
Information Pane

The information pane consists of three tabs.

- Properties: When you open the Report Designer for the first time, you need to specify one of the settings for the Properties tab. The available options are Basic, Standard and Professional. To be able to make detailed changes to the text boxes, charts, etc., select the Professional setting because it allows highest degree of modification. You can change this setting at any time using the context menu of the Properties tab.

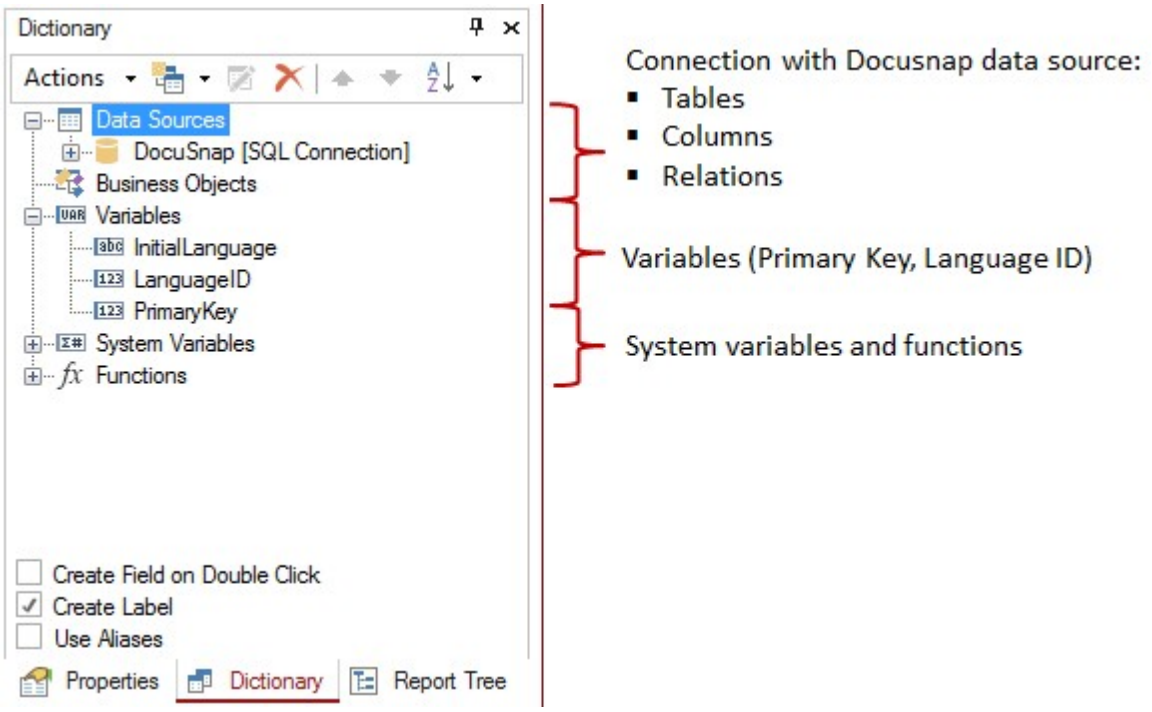


- The *Properties* tab displays the properties of the component selected in the workspace. Just like in the Designer for data entry screens, this tab enables you to specify the formatting, size, position and behavior of the selected component. A brief description of the selected property is displayed at the bottom of the information pane.



- Dictionary: On the *Dictionary* tab, the data source, variables, system variables and functions are displayed. The current Docusnap database will be used as the data source. All specified table definitions will be loaded. However, they are not yet connected to the database. Since only the tables needed for the current report will be connected to the database, the report will execute faster. To display the table that has been loaded into a data band, the *Connect on Start* property of that table must be set to *True*. With the options under *Actions* in Dictionary tab

toolbar, you can save, open, add or create a dictionary. You can use the options under the button to establish a new database connection, create a data source or define a relation. In addition, new variables or categories can be added. Click the button to open the selected object for editing. By clicking the button, you can delete the selected object. Clicking the Up or Down arrows will change the position of the selected item in the list. To sort the items alphabetically, click the button.



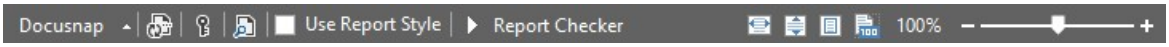
- Report Tree: This tab displays the components in a hierarchical structure. You can verify the organization of the individual components from the tree view.

Status Bar

- Company: The first button displays all companies created in the current database. You can define custom format settings for each company. When you select a company, Docusnap will apply the format settings for that company to the report. If -*No Selection*-displays, the format settings from the *Designs and Styles* dialog will be used.
- Update Styles: For each component, you can select the desired format settings on the *Properties* tab. If a different style template has been selected, the new format settings can be applied by clicking the button.
- Primary Key: Click the button to open a dialog where you can specify the primary key. After a primary key has been specified, data will be displayed on the Preview tab even if a filter has been applied to the primary key.
- Full Preview: When you click the icon, a full preview of the current report with

cover page, header and footer will be displayed. This is the same format as used when you generate the report in Docusnap from the tree view.

- Use Report Style: If you specify that the report style will be used for a report, this report will always use the style currently defined for it. If you change the style in the *Designs and Styles* or *Define Company Settings* dialog, the report will still use the original style.
- Report Checker: Checks the report for errors and displays them.
- Page width: Using the options to the right of the status bar, you can set the report page width and other parameters.



3.6.2 Basics

The purpose of the Report Designer is to create and edit reports. The datasheets and overviews that can be created in the Documentation module are based on reports and are also editable from the Report Designer.

Components

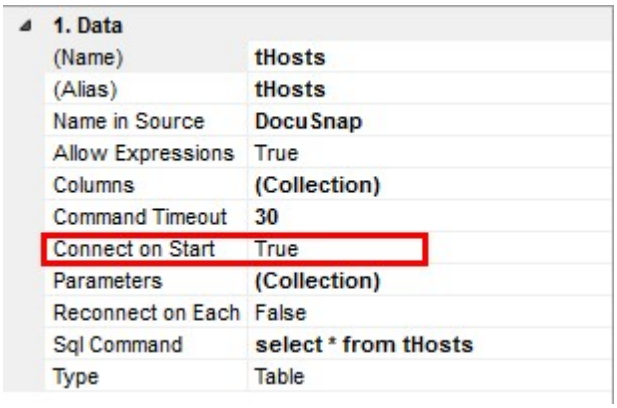
A report consists of various components. Primarily, data bands, text boxes and lines are used as components.

- Band: Each band is a placeholder for the data that will be shown at that position in the generated report. To show data from the database, you need to define data bands. Data filtering and sorting are set via the data band. The data band will be repeated as long as corresponding data is available in the database. In addition, data bands determine how the report will be organized.
  The header band is another useful data band. Using this type of band, column headings for the data can be shown. The header band will only be displayed in connection with a data band.
- Text boxes: Text boxes contain values from the database or static values.

Data Sources

When you create a new report, all tables and relations are automatically created from the Docusnap database. The report is always connected to the database currently selected in Docusnap. Tables from the database as well as custom tables, which were created by means of SQL statements, may be used as data sources. In order to show the values from the data sources, you need to create data bands.

To reduce the time required for data loading, the tables are initially not connected to the database. To display the data from the table in the report, first select the table to be connected from the *Dictionary* tab. Then, go to the *Properties* tab and set the *Connect on Start* property of the table to *true*.



1. Data	
(Name)	tHosts
(Alias)	tHosts
Name in Source	DocuSnap
Allow Expressions	True
Columns	(Collection)
Command Timeout	30
Connect on Start	True
Parameters	(Collection)
Reconnect on Each	False
Sql Command	select * from tHosts
Type	Table

It is also possible to enter SQL statements and thereby build a table that contains data from several other tables. To create a new data source, click the button or right-click the *Dictionary* tab and select *New Data Source*. The connection is always an OLE DB connection. Tables that are no longer needed can be deleted by clicking the button or by right-clicking and selecting *Delete* from the context menu. In addition to the tables, the relations between the tables are loaded into the Designer. You can also create new relations, if required. The columns that are used to define the relation must have the same data type.

Variables

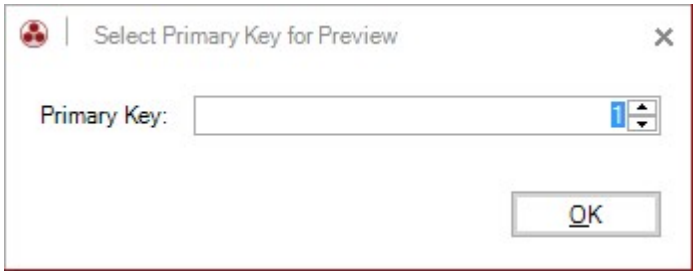
When you create a report, three variables are created. These variables cause additional values from Docusnap to be added to the report.

- PrimaryKey: Each report is linked with an object in the tree structure. Each object has a primary key which identifies the records of the underlying table. To make sure that a report will only include the data associated with that object, you can define a filter so that only records with a matching primary key will be used. This way, the report always shows the correct data for the domain, the computer, etc. When you generate/execute the report, the corresponding value will be assigned to the PrimaryKey variable.
  Since most predefined reports depend on the object that they are linked with, you need to specify the primary key. If no primary key has been specified yet, you can do so when changing to the *Preview* tab.
- LanguageID: The LanguageID for German is 0, and 1 for English. This refers to the language that was selected in the *Reports* tab. Using this variable, you can select the proper language for tables that exist in two languages.
- InitialLanguage: This variable can hold one of the following values: *TextEN* for English or *TextDE* for German.

Preview

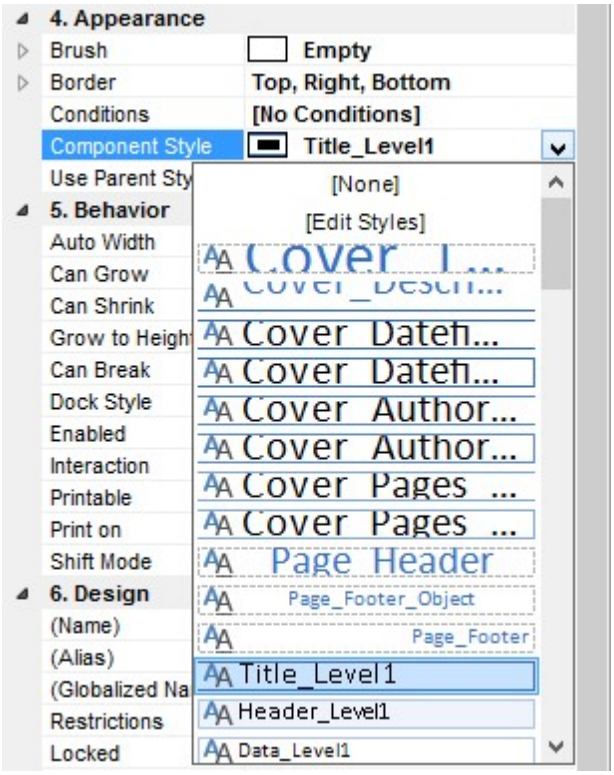
In the Report Designer, two types of previews are available. When you click the *Preview* tab, the report will be executed.

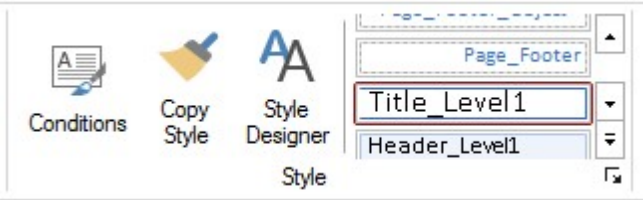
Clicking the *Full Preview* icon in the status bar will execute the report using the currently selected cover page, header and footer.
For most reports, the data will be filtered using a primary key. For this reason, you must specify an existing primary key to see data on the *Preview* tab.



Format Settings

- You can apply the desired style to each Docusnap component.
- To apply a style, open the *Properties* tab and click the *Component Style* property.
- As an alternative, you can use the button in the *Style* group of the *Home* ribbon to apply styles.
- Styles have been predefined for four different levels. The name of each style indicates its level, i.e. "Level 1" to "Level 4".

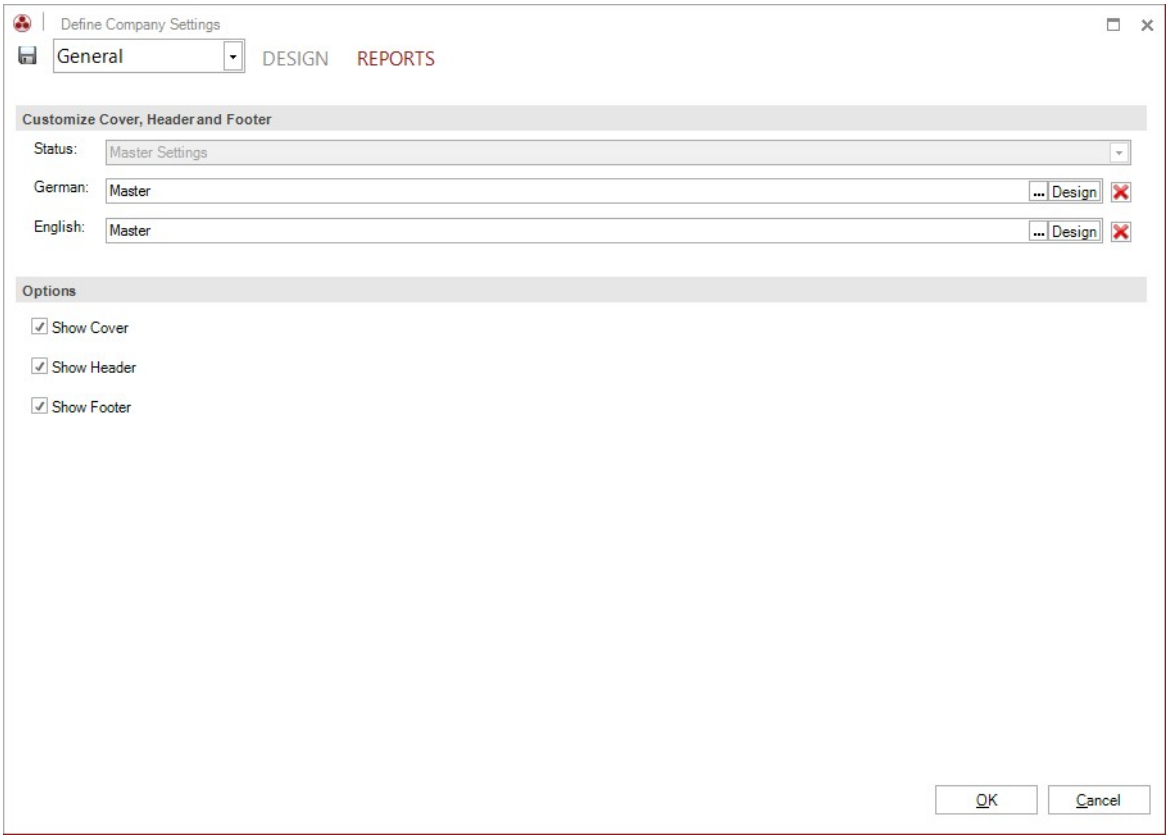




3.6.3 Editing Headers, Footers and Cover Pages

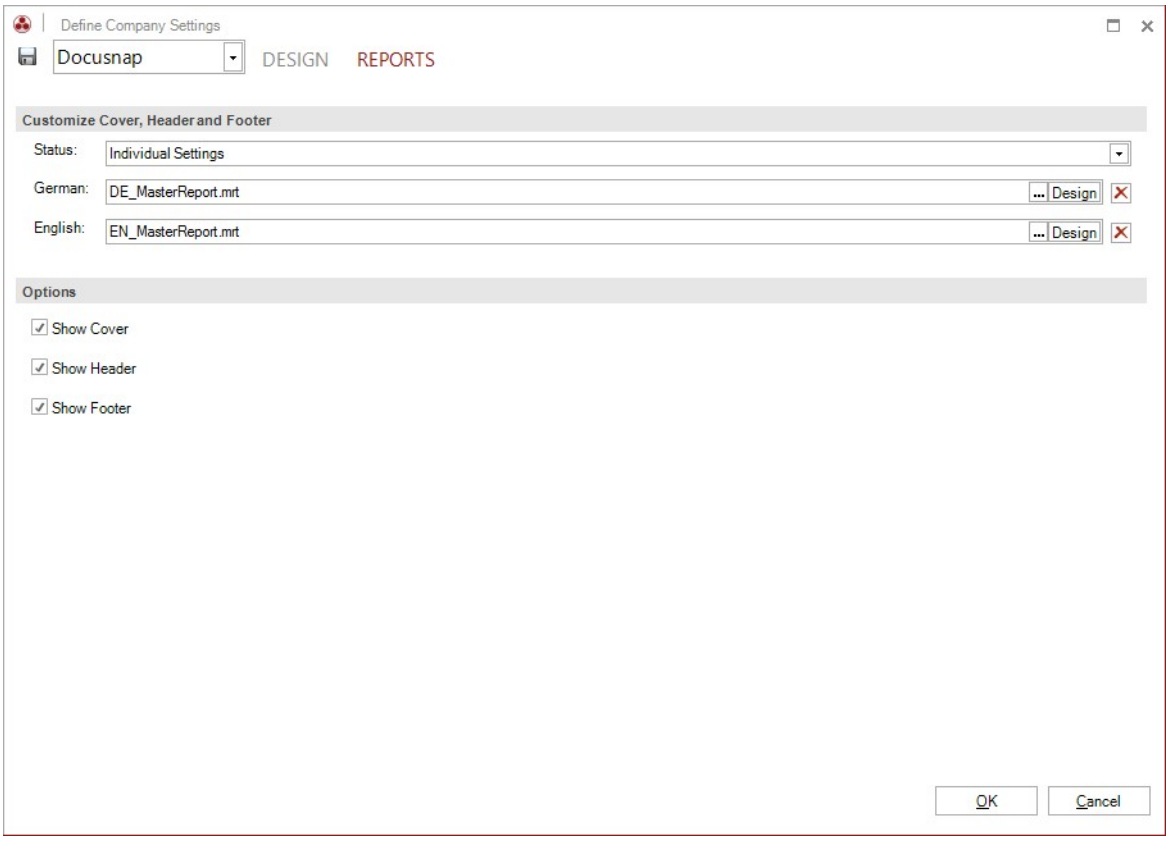
Docusnap provides default reports with predefined headers, footers and cover pages. In the *Layout (CI)* dialog, you can edit the settings of these reports. To ensure that the header, footer and cover page will be used, either tick the appropriate checkbox(es) in dialog or configure individual company settings.

Open the master report in the Designer where you can edit the header, footer and/ or cover page by clicking the *Design* button. A different report can be selected by clicking the ... button. The selected report will be saved in the report repository as *EN_MasterReport.mrt*. (For German templates, the "DE_" prefix will be used instead of "EN_".) Docusnap archives the file that previously had this file name and assigns it a timestamp so that you can restore it at any time through the operating system's file system.



Select a company in the list box to customize the header, footer and cover page for this company. You can choose not to use the header, footer or cover page, to apply

the master settings as defined in *General* or select an individual company-specific setting. Company-specific individual settings are always saved in the database. If you use the *Individual Settings* option, you can select an existing report and click the *Design* button to open it in the Report Designer and edit it. If no report has been selected and you click the *Design* button, an empty new report will be created which you can edit and save afterwards.



The EN_MasterReport.mrt file contains the header, footer and cover page definitions. Using the DsReportType property, you can specify the type of page, i.e. Cover, Header or Footer. When Docusnap creates the report, the width of the main report is compared with the width of the cover page, header and footer. If a cover page, header and/or footer of a suitable width exist for the report, these will be used. By default, the EN_MasterReport.mrt and DE_MasterReport.mrt files include a cover page, a header and a footer for reports in portrait and landscape formats, respectively.

The cover page will be output as the first page before the actual report.

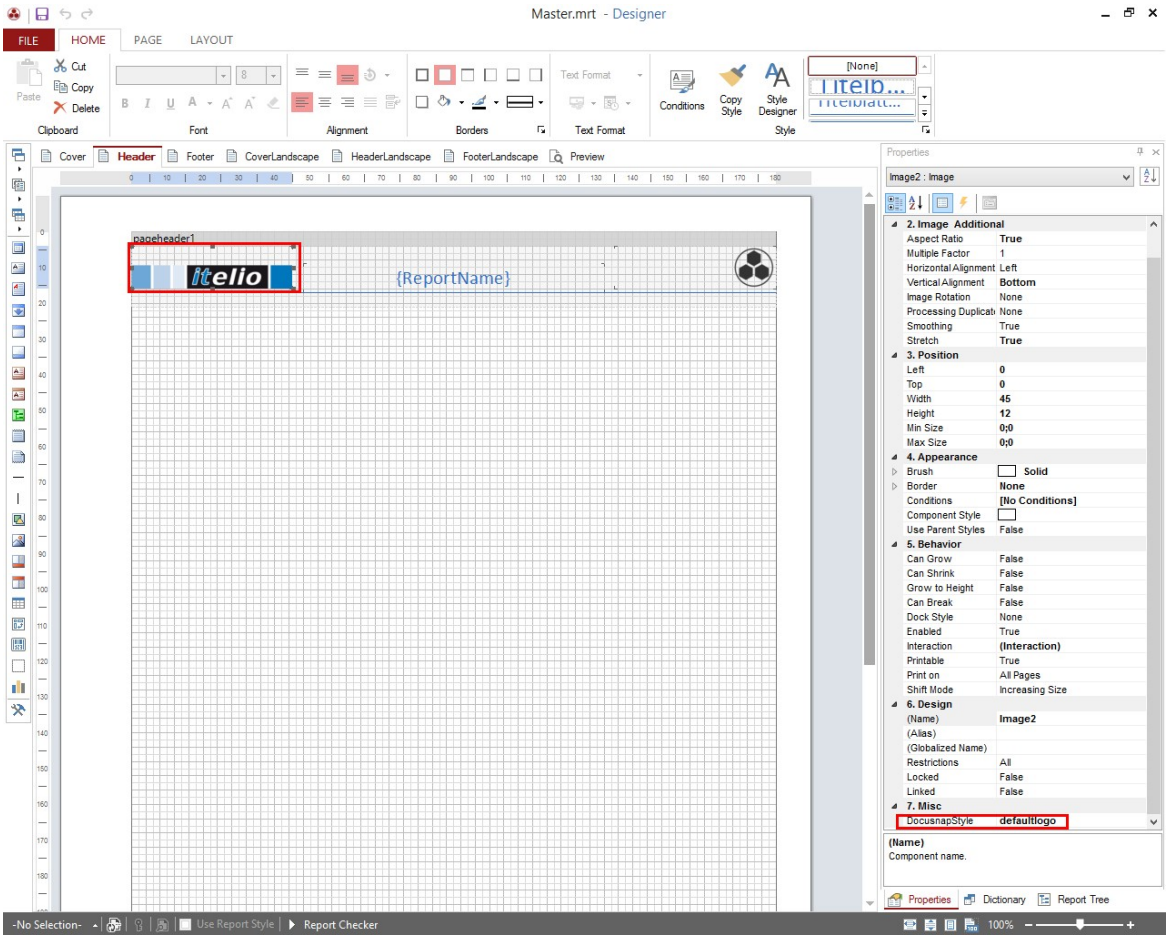
The header is output at the top of each page in the actual report. The header includes the report name and two logos.

The general logo and the company logo are selected in the *Layout (CI)* dialog. To change one of the logos, you do not have to open the header in the Designer. To change the general logo select *General* in the combo box of the *Layout (CI)* dialog and choose a different logo. To change the company logo select the desired

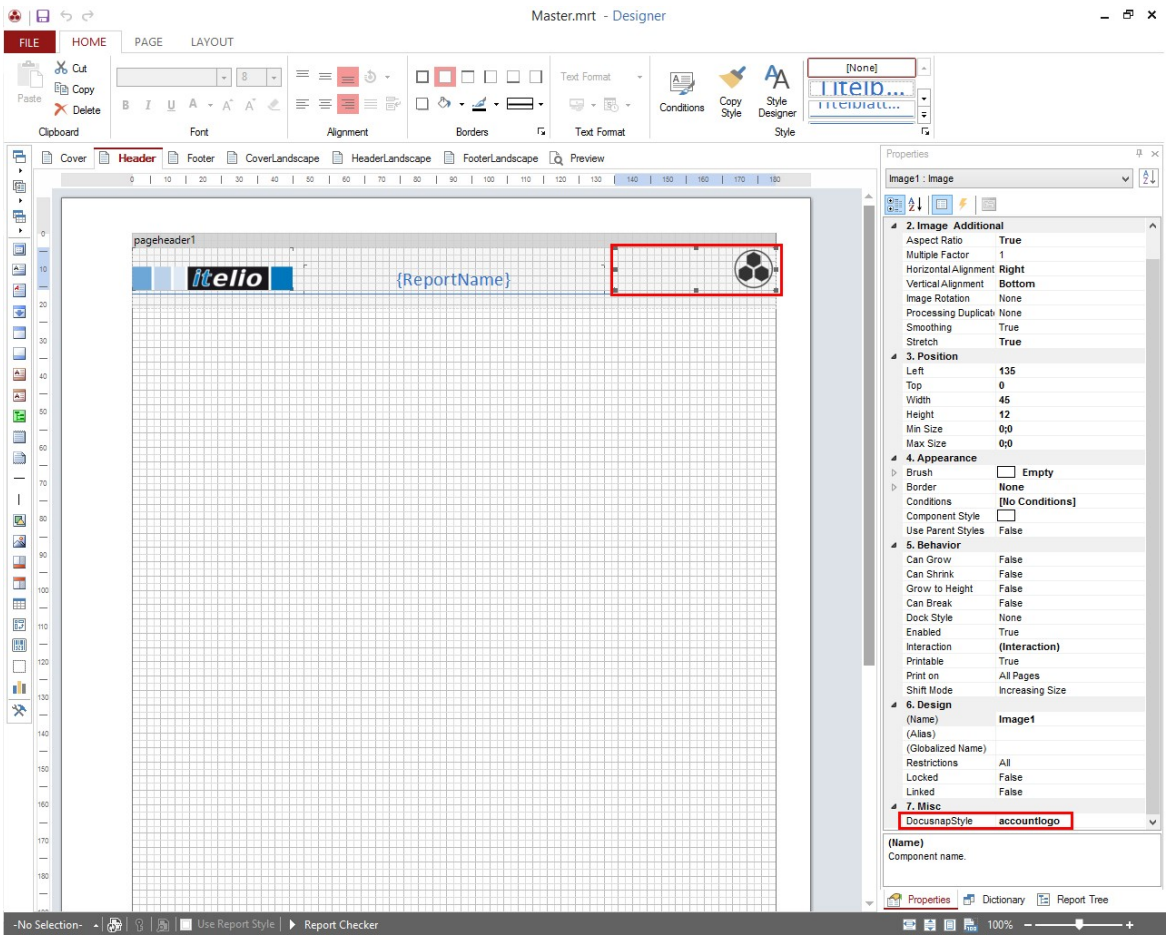
company in the combo box and choose the new logo.

To show the corresponding logo, a Docusnap image component is added in the Designer. On the Properties tab, you can set the *DocusnapStyle* property to either *defaultlogo* or *accountlogo*. This causes the display of the correct logo.

- Defaultlogo: If you set the DocusnapStyle property of an image to *defaultlogo*, the general logo will display.



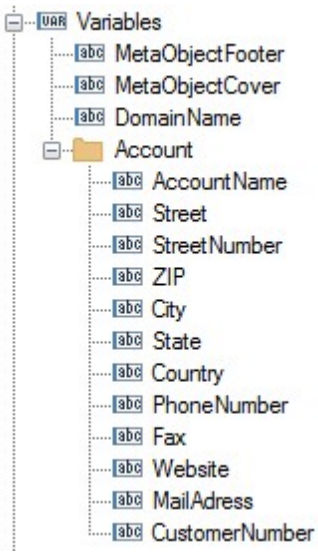
- Accountlogo: If you set the DocusnapStyle property of an image to *accountlogo*, the logo selected for the current company will be displayed.



When creating a new text box, image, line, or data band component, make sure that its name is different from the names of the components in the header, footer or cover page. This is also true for the rest of the report: The name of each component in the report must be unique. If two components have the same name, only one of them will be shown in the generated report. For this reason, when creating an additional component for the cover page, header or footer, prefix its name with *Cover*, *Header* or *Footer*. The component name can be changed from the Properties tab.

- Variables for the Current Meta Object
  - MetaObjectCover: This variable shows the name of the object this report is linked with. It is associated with the cover page.
  - MetaObjectCover: This variable shows the name of the object this report is linked with. It is associated with the footer.
  - DomainName: This variable shows the name of the domain under which the report will be generated. If the report is generated above the domain level, this variable is blank.

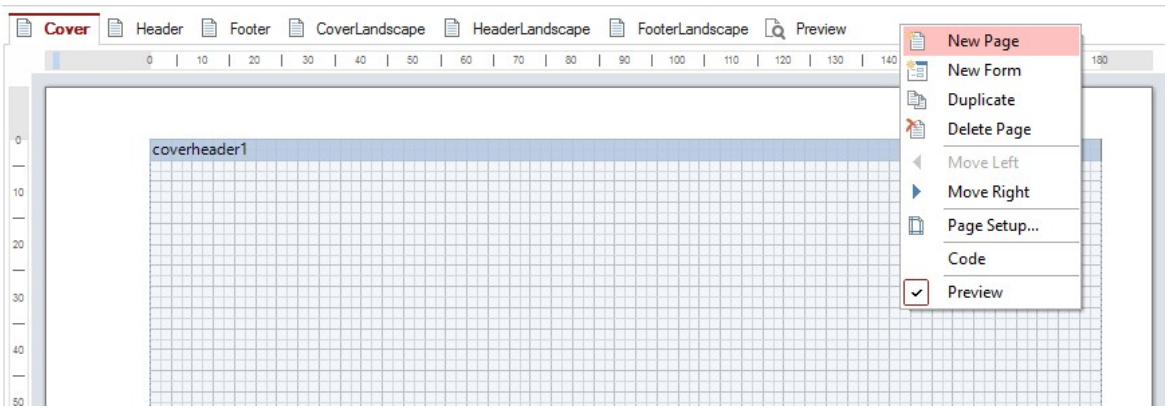
- Account: To show information on the company for which the report will be generated, several variables are available. For example, you can use the AccountName variable to include the company name in the report.
- CoverAccountID, HeaderAccountID and FooterAccountID: These variables include the primary key of the company for which the report will be executed. This way, you can filter the database on the company name. The respective variables are used for the cover page (CoverAccountID), the header (HeaderAccountID) and the footer (FooterAccountID). When the report is generated, these variables will be replaced with the actual data. Since separate company-related variables are available in Docusnap, the variables mentioned above are no longer required in the default MasterReport.



- System Variables
  - ReportName: Docusnap uses the report name specified in the *Manage Reports* dialog.
  - ReportDescription: This is the description stored via the *Manage Reports* dialog. If no description was entered, no description will be displayed.
  - Today: The *Today* variable shows the current date.
  - ReportAuthor: This is the author as specified in the *Reports* tab. For the predefined Docusnap reports, the author is "Docusnap". To display the name of a different author, you first need to change the value in the Author field of the *Reports* tab.
  - TotalPageCountThrough: This variable shows the page count for this report.
  - PageNofM: This variable shows the current page number and the total page count.

Additional Page Formats

By default, each report includes a cover page, a header and a footer for the A4 portrait and landscape formats with page margins left of 2 cm and right, top and bottom margins of 1 cm, respectively. If required, you can define a cover page, header and footer for a different page format. To do so, right-click the area next to the pages tabs to open the context menu and select *New Page*.



For this page, set the DsReportType property to Cover, Header or Footer, as required. Then, assign the desired page format to the new page. You can now create the content to be used later for the cover page, header or footer. If you later create a report with the same page width as the new pages, the newly created cover page, header and footer will be used.

Make sure that the page names are unique, otherwise the report cannot be displayed. If the MasterReport includes multiple pages with the same page width, the leftmost page will be used first.

3.7 Report Creation

This section uses a sample report to explain how you can create reports.

You will learn how to create a report yourself. In addition, this section explains the use of relations to specify which data will be shown in the report.

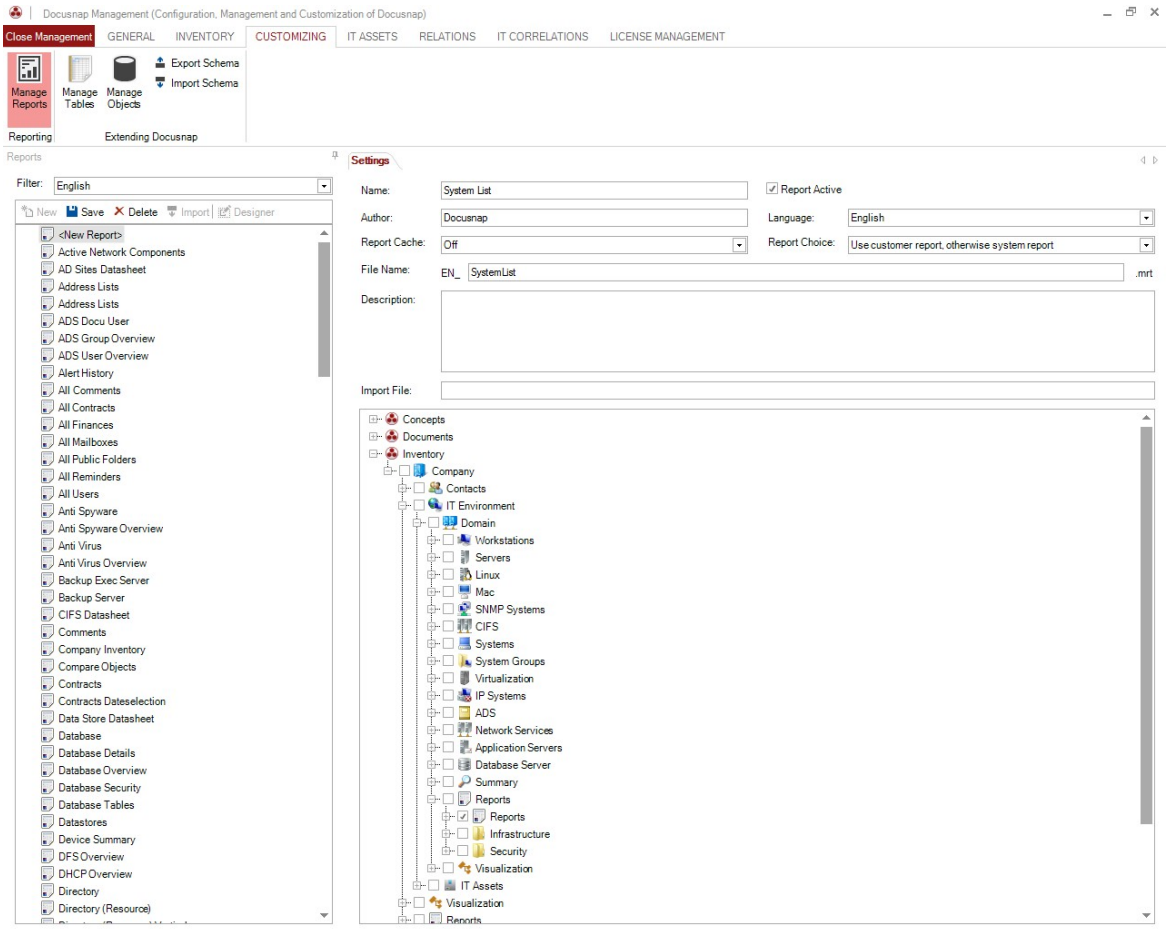
In an example, you can see how styles are applied to a report.

3.7.1 Initial Steps

The initial steps for creating a report will be explained using the example of a report that lists all computers.

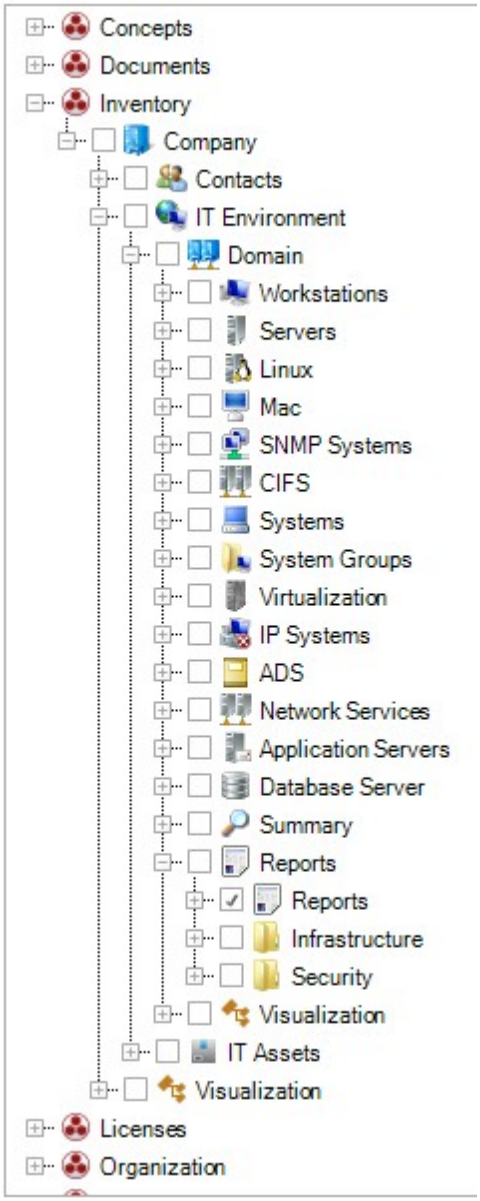
Creating the Report

To create a new report, go to Docusnap Management and the *Reports* tab. A new report can be created by clicking the *New* button. Then, specify the required properties. These properties will be displayed on the cover page.

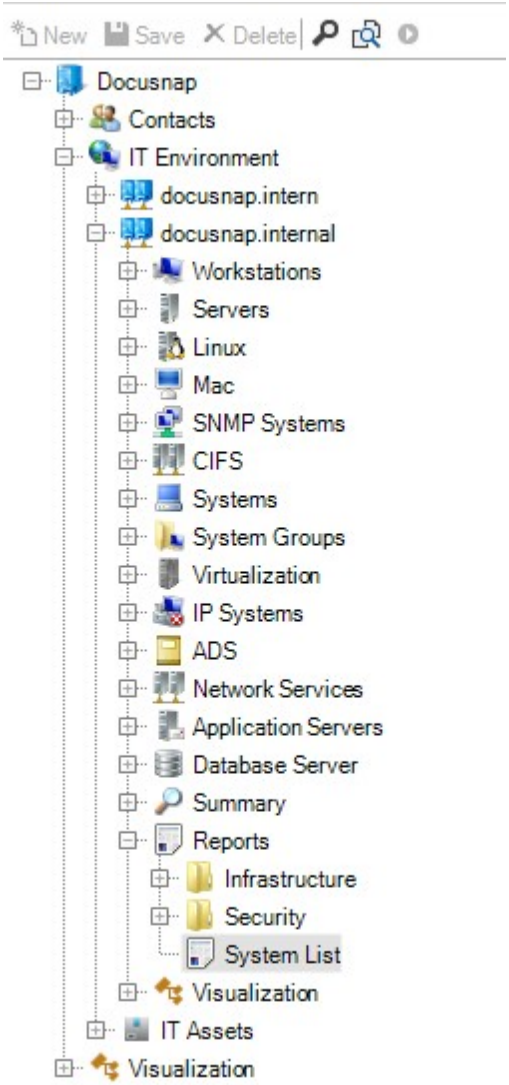


Linking the Report with a Meta Object

In the next step, you need to select the location in the tree view where the report will be executed. In this case, select the *Reports* meta object below the domain level. This passes the primary key of the domain to the report, and the report will be displayed below the domain level.

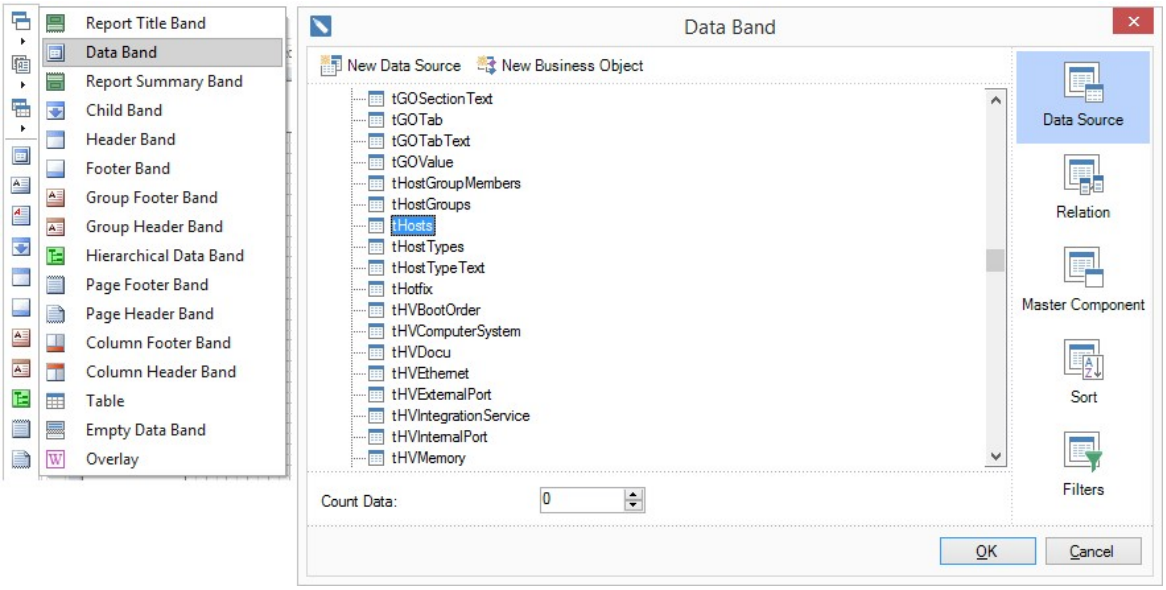


After it has been saved, the report will be displayed in the tree view. To generate/ execute this report, click it. This opens the additional *Reporting* ribbon. The report can be opened in the Report Designer by clicking the *Report Designer* button on this ribbon.



Creating a Data Band

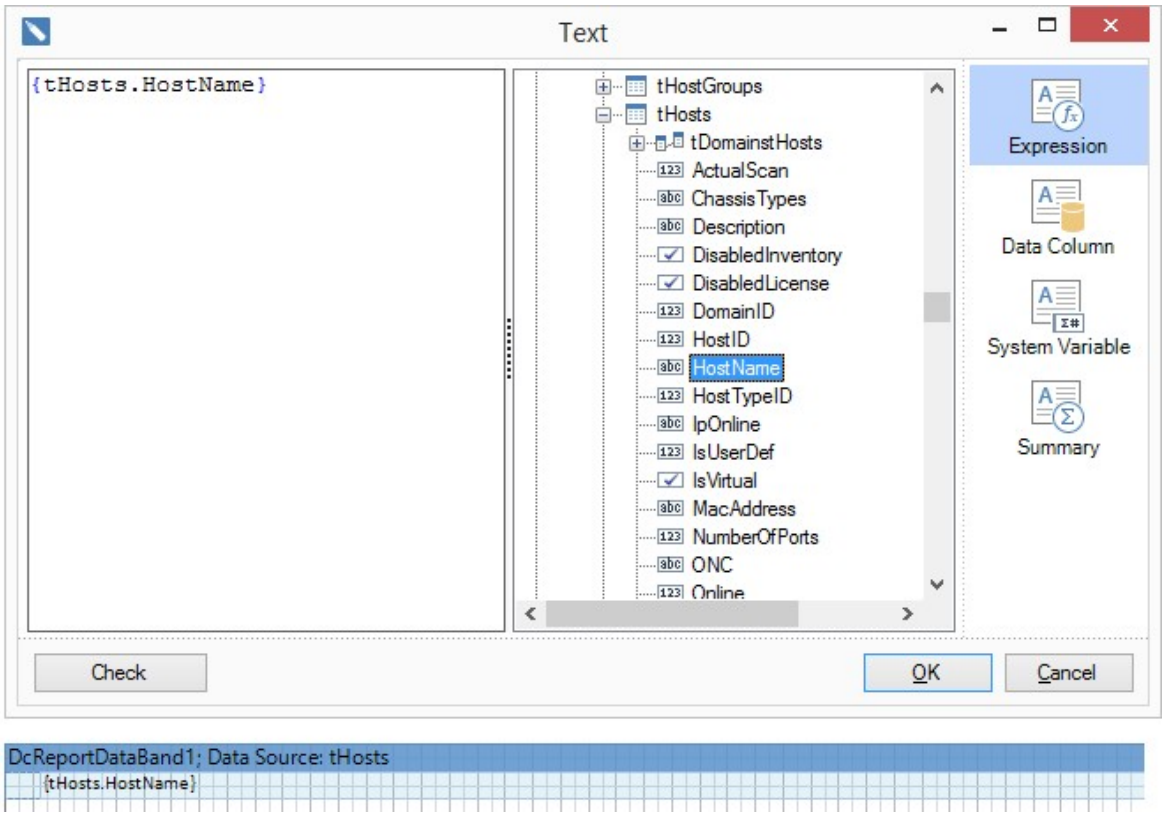
A data band is required for the output of data from the database. Data bands can be added from the *Docusnap Bands* icon in the Report Designer toolbox. To add a data band, click the *Data Band* component. For the data source, select the tHosts table.



Adding a Text Box

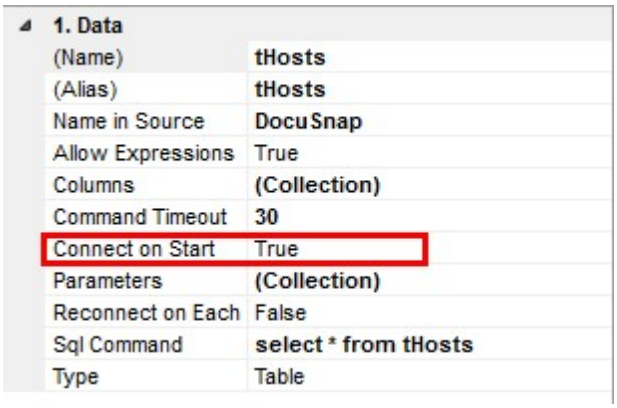
Text boxes are required to enter values that will be shown in the report. You can combine expressions and table columns in a text box. Text boxes can be added from the toolbox (Text components).

Draw the text box in the data band. In the Text Editor, select the *HostName* column from the *tHosts* table.



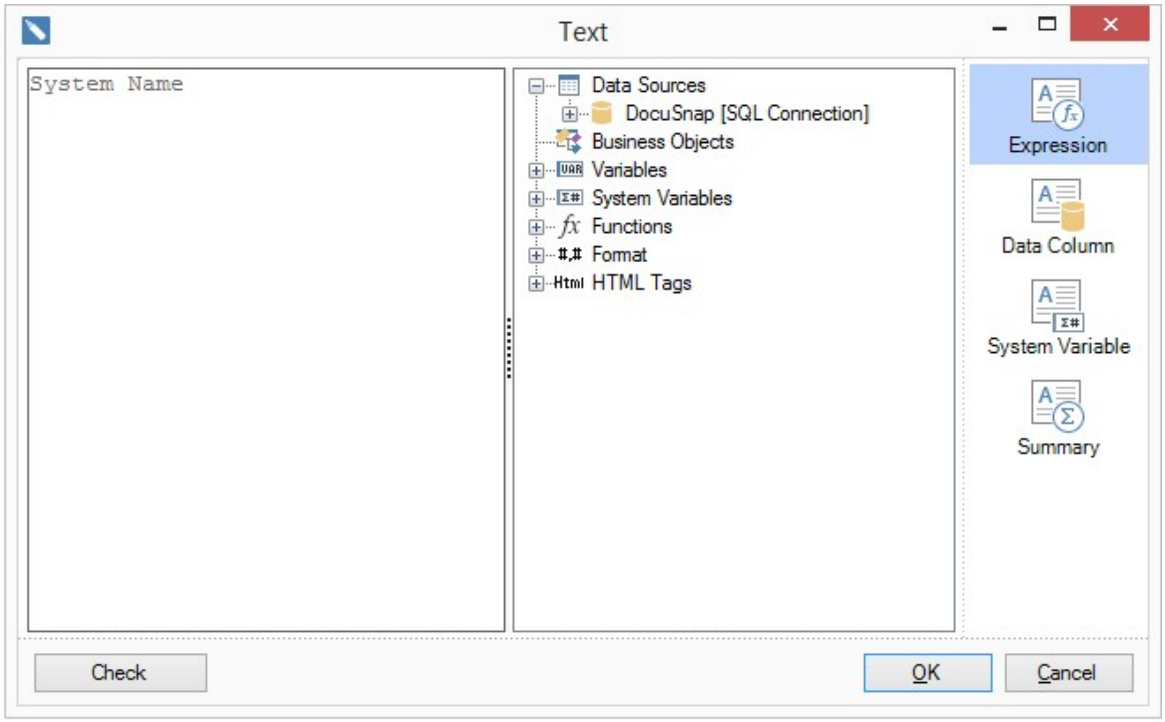
Connecting the Table

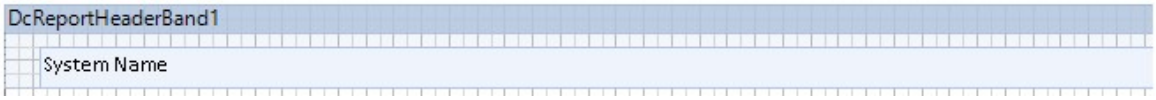
Before the table data can be displayed in the report, you need to connect the table to it. For this purpose, set the *Connect On Start* property of the table to *True*.



Creating a Header Band

The header contains the headings for the data. The header band will only be displayed if the data band contains data. First, add a *Header Band* component from the toolbox. Use drag and drop to place the header band before the data band. Then, add a text box and enter the heading.





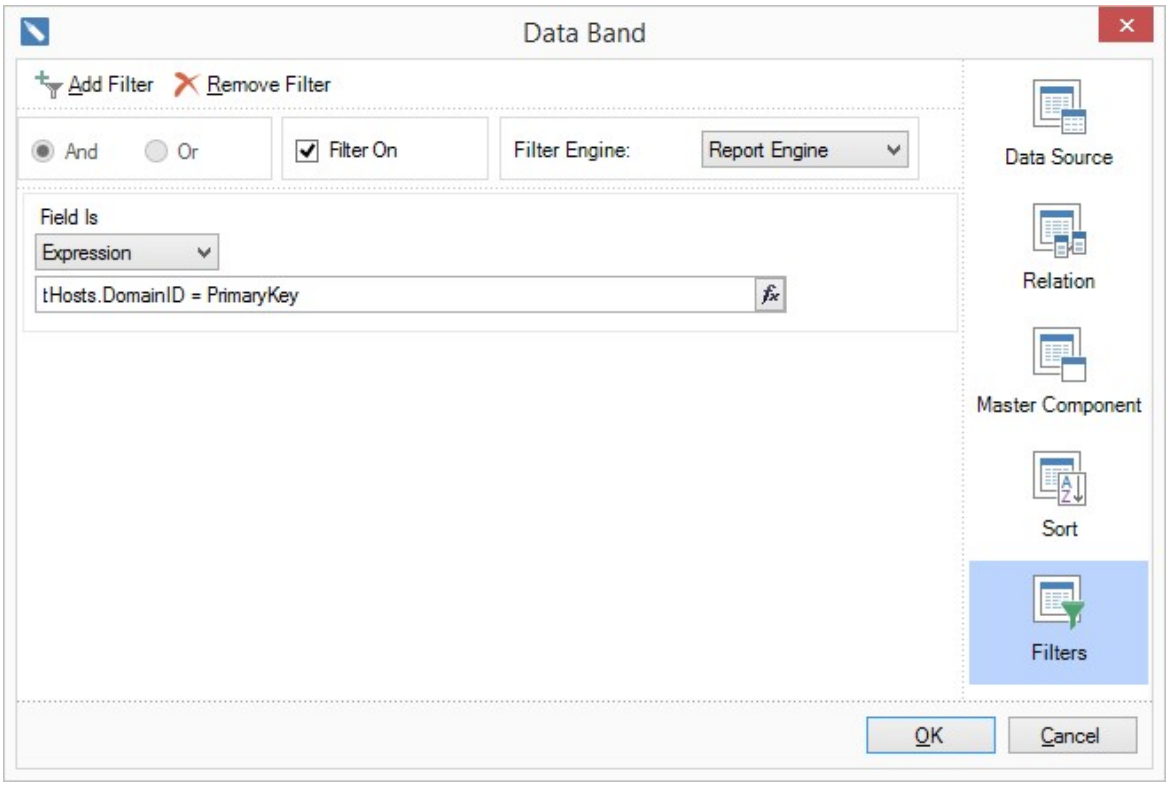
Primary Key

The primary key is stored in the *PrimaryKey* variable. The primary key of the associated meta object is used as the primary key. By means of this value, the data for the report can be filtered on the associated object. This means that only data is included in the report that is associated with that computer, domain, license group, etc. The variable will be set when you execute the report.

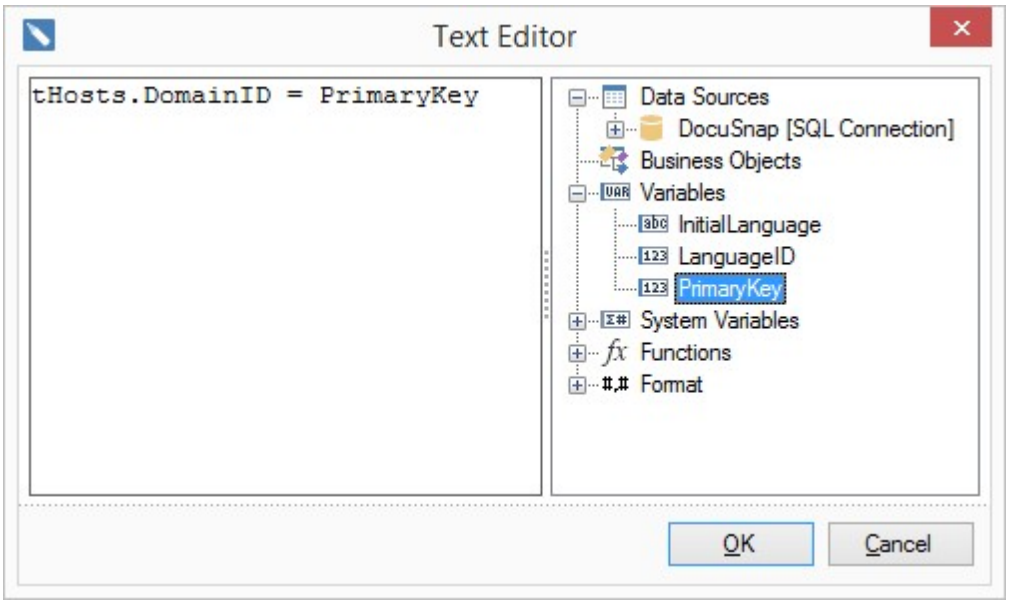
Filtering on the primary key can be done in two ways, either via the data band or directly using an SQL statement.

Specifying the Primary Key in the Data Band

You can define a filter for a data band. Open the dialog by double-clicking the data band. To define a filter, open the *Filters* page and click *Add Filter*. Then, change the option for *Field Is* from "Value" to "Expression". A click on the fx button will open the text editor. Enter the filter condition in this dialog. It is also possible to enter the filter condition directly in the expression field of the *Data Setup* dialog. The advantage of the text editor is that you can add the column names by double-clicking them.



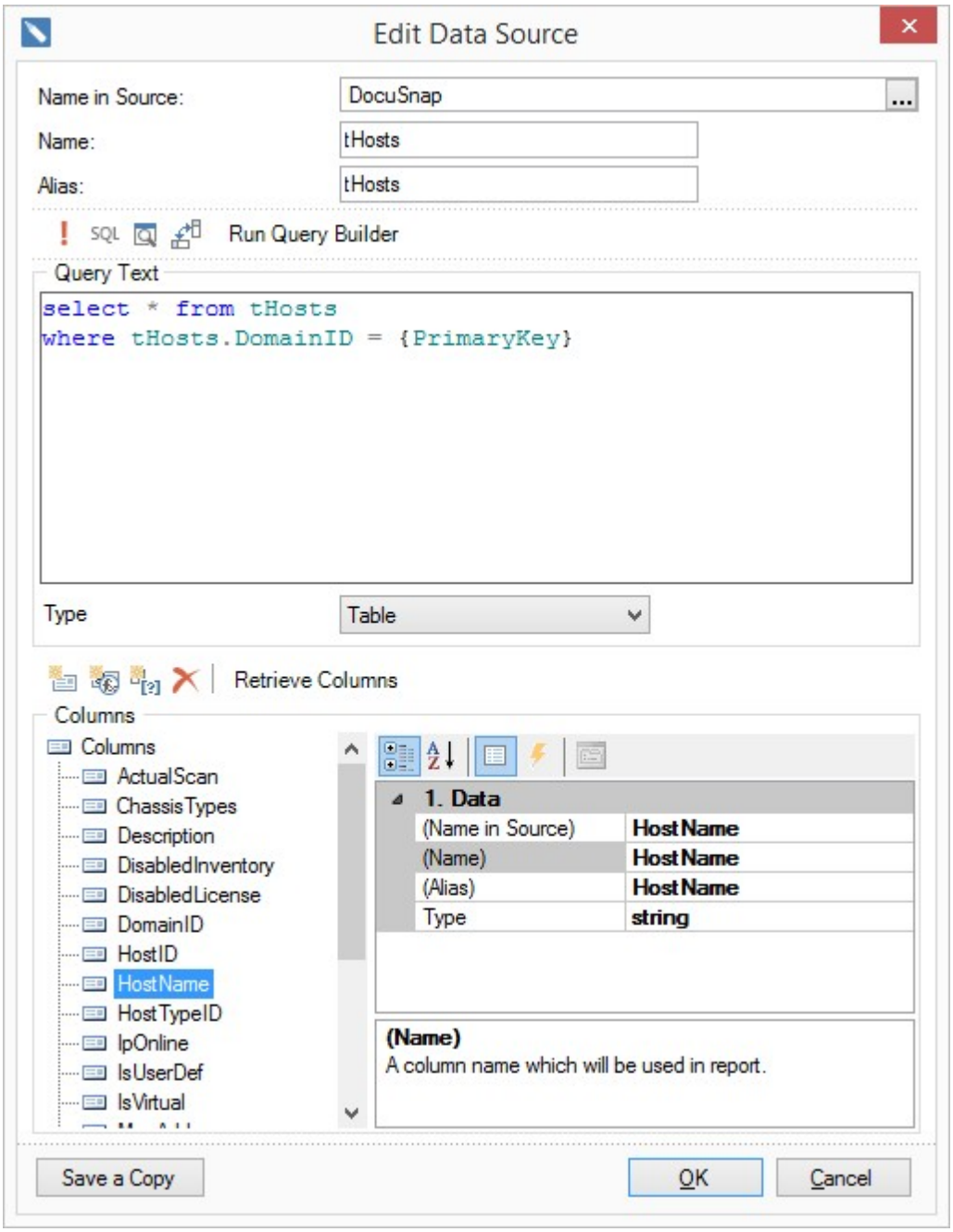
To the right of the text editor, the contents of the dictionary are displayed. You can add the desired column by double-clicking it or by using drag & drop. Then, enter an equal sign ("="). Next, you need the PrimaryKey variable. You can find it under the *Variables* node. Add it by double-clicking or using drag & drop again. Confirm your filter settings by clicking *OK*.



Specifying the Primary Key Using an SQL Statement

Filtering on the primary key can also be done by specifying an SQL statement for the table. Only data that corresponds to the primary key will be included in the report.

To edit the data source, go to the Dictionary tab, select the table, right-click and select *Edit*. Then, you can create an SQL statement with a filter on the primary key using a *Where* clause. The result is that only data that matches this primary key will be shown in the report.



Primary Key: Filter vs. SQL Statement

The advantage of the SQL statement over a filter will become apparent in the speed of execution of the report when large data sets need to be accessed. When you use a filter, all data in the table will be retrieved from the database. Then, Docusnap determines the data output by means of the filter. If you filter the database using an SQL statement, only the data that matches this SQL statement will be retrieved. This reduces the execution time of the report as less data must be loaded.

3.7.2 Components and Functions

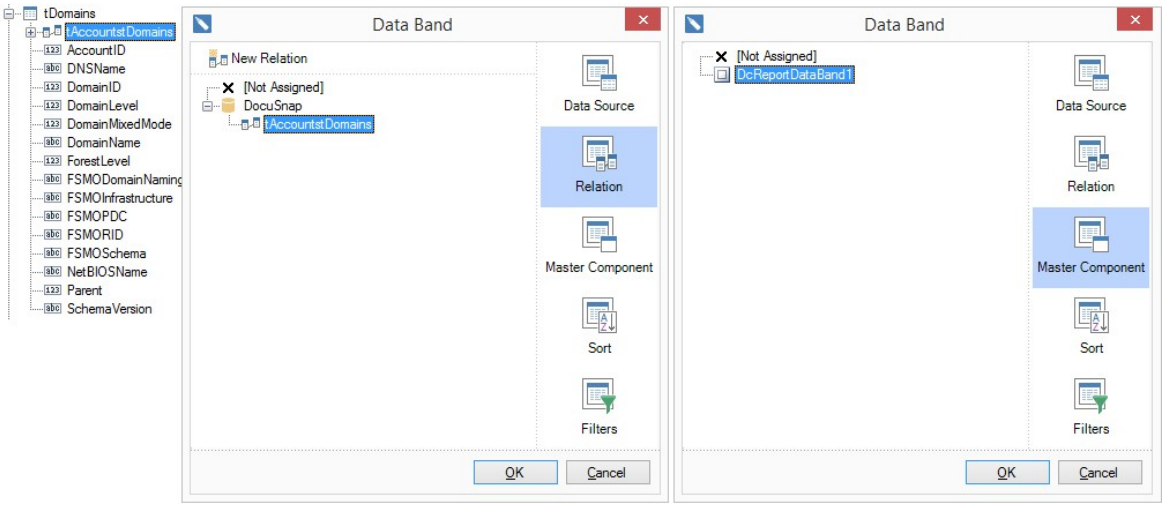
Before continuing with the creation of the report, you will now be introduced to

working with data bands and text boxes. In addition, a brief explanation of the functions that are available for reports will be provided.

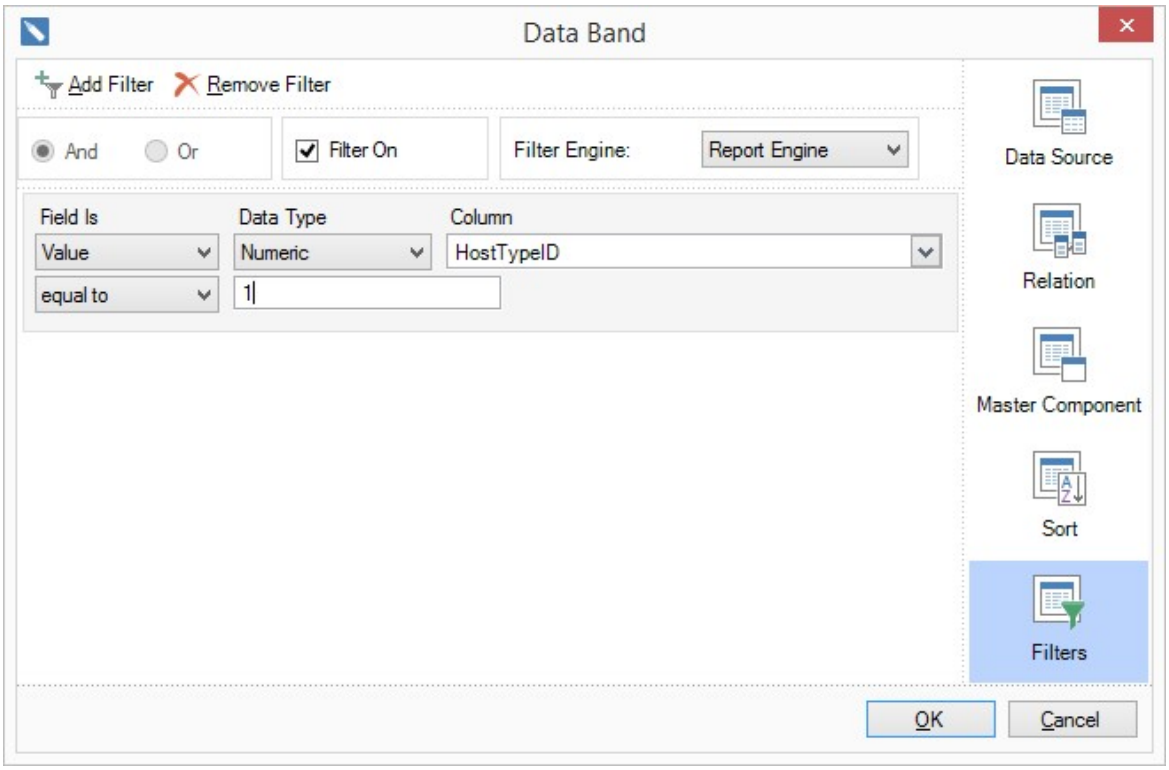
Bands

Bands are key components of a report. Via data bands, you establish the connection to the database. In addition, they can be used to sort and filter the data. Data bands can be added from the toolbox. They fulfill a variety of tasks. Each band has a different color to make them more distinctive.

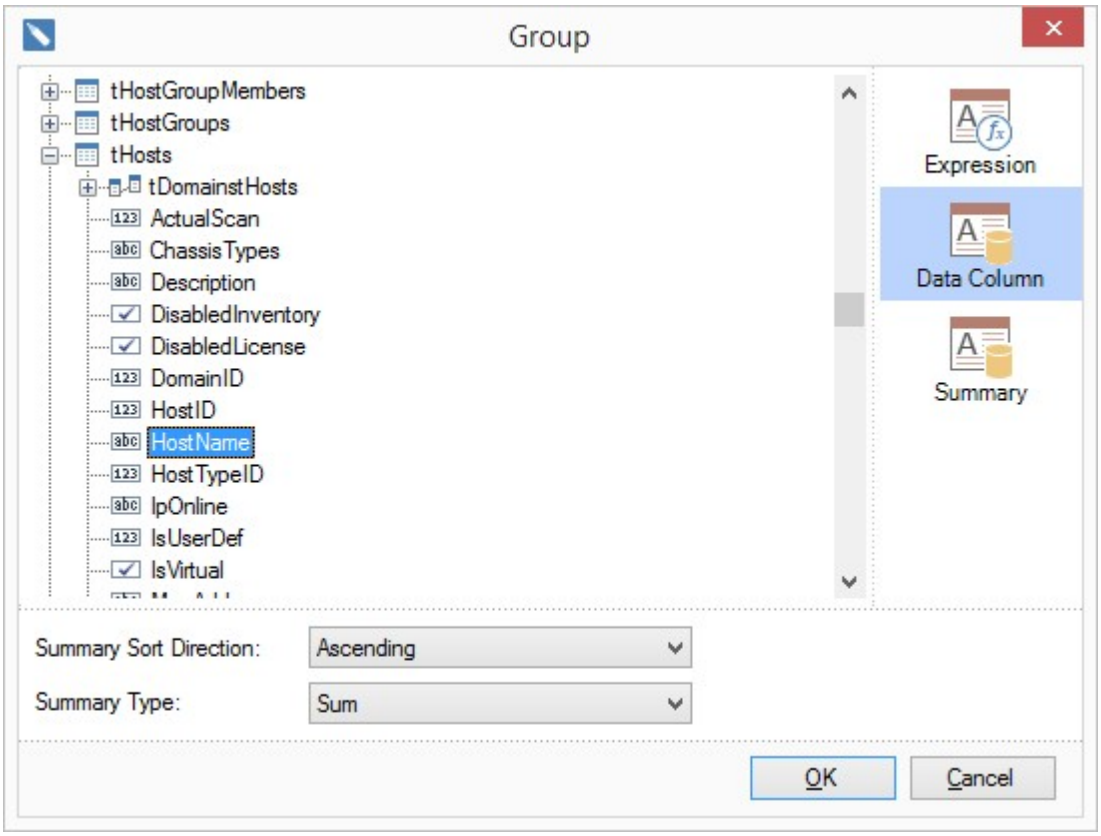
- Data band: The data band connects your report to the database. When you create a data band, the dialog for selecting the data source, relation, master component, sorting, and filtering conditions opens. From this dialog, you can select the data source. The data band is repeated as often as corresponding data is available in the table. You can restrict the amount of data to be included in the report by specifying relations and filters.
  - For a relation, you need to select a master component. This ensures that only data that matches this master component will be shown. A relation must exist between the tables selected for the data band and for the master component. When you create a new data band or double-click an existing data band, a dialog opens. From this dialog, you can select the relation and the master component. The report shows the first record from the master component and then immediately below it, the associated records from the sub-component. Then, the next record from the master component is shown and again the associated records from the sub-component. This pattern is repeated until there are no more master component records. Example: The domains that have been inventoried can be assigned to the company accounts.



  - Filters are used to filter the data on one or more values. When you create a new data band or double-click an existing data band, a dialog opens. From this dialog, you can define the filter. If required, you can specify multiple filters that can be combined using either *And* or *Or* operator.



- Header Band: The header band, the page header band and the report title band can be used to show headings and titles/headings at the desired position in the report. The header band provides the headings for a specific data band. The header band is shown before the data of the associated data band. If the data band is empty, the header band will not be displayed either. The page header band is shown on every page, and the report title band is shown only once, i.e. at the beginning of the report.
- Footer Band: The footer band, the page footer band and the report summary band are the closing items of the associated data display. The footer band is shown after the data of the data band. The page footer band appears at the bottom of each page, and the report summary band at the end of the report.
- Group Header Band: Using a group header band, you can group data of a table. For instance, the data can be grouped by operating systems. When you add a group header band, the dialog for entering the group condition opens. Here, you can select the column that controls the grouping and you can specify the desired sort order for the data. Then, a separate data band must be defined for the remaining data. In the heading, the value selected in the condition will be shown and the data will be grouped accordingly. Make sure to add a data band after the group header band. Otherwise, the group header band will not be displayed either.

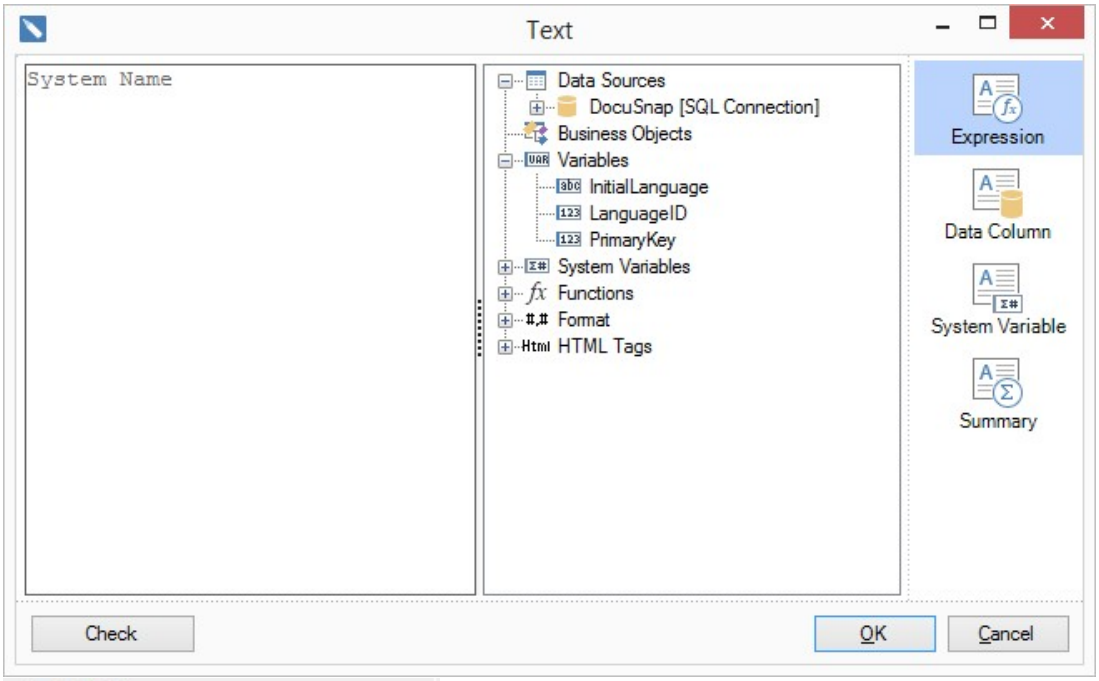


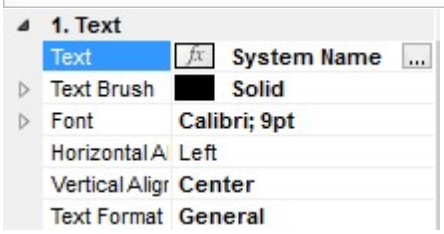
- Group Footer Band: This band can, e.g., be used to draw a line below the group. However, it is also possible to calculate the number of records.
- Column Header Band: The data in the data bands can be shown in columns. The column header band is automatically divided into as many columns as the associated data band has.
- Column Footer Band: This band is the closing item of a data band consisting of multiple columns.
- Hierarchical Data Band: This band enables you to display a recursive table. A recursive table has a column that depends on another column in the same table, for example, a list of employees where one employee may be the manager of another. The properties for the hierarchical data band include a group of *Hierarchical* properties. In the *Key Data Column* field, you can specify the column that contains the key for the data. In the *Master Key Data Column* field, you can specify the column to which the hierarchy refers. The *Parent Value* field allows you to enter a value that indicates the top of the hierarchy.
- Child Band: This band is an extension of its parent band. Even though it is possible to place multiple data fields from the tables in a single data band, the size of the data band does not adjust as desired when you change the font size. For this reason, child bands are used. The color of the child band is slightly lighter than the color of its parent data band.

Text Boxes

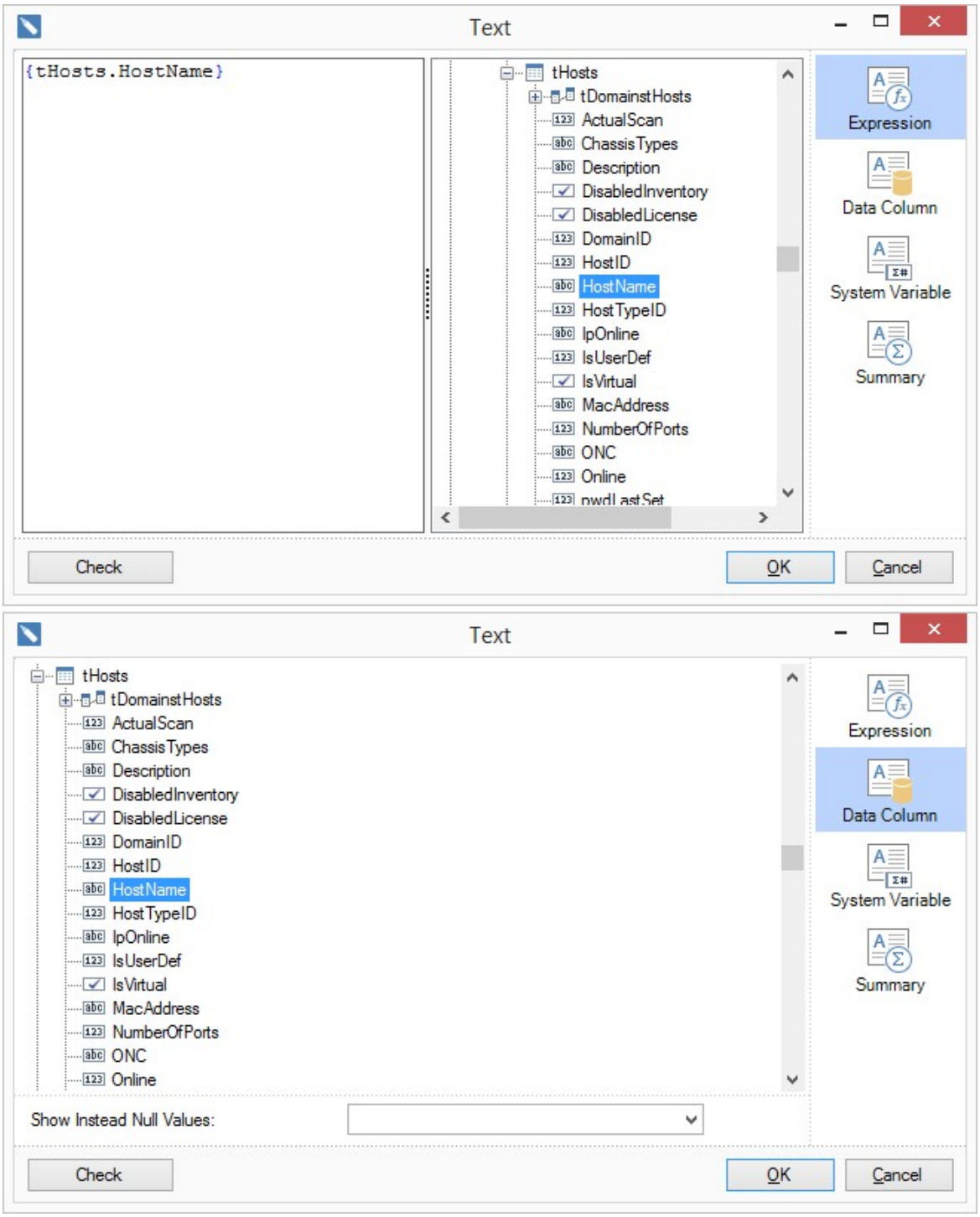
Text boxes can be used to show the headings and data of your report. When you add a text box, the Text Editor opens. In the Text Editor, you can either add fields from the database or enter text.

- Heading: The heading for the data is text that has been entered manually. You can enter this text in the Text Editor. To apply the text to the text box, click the *OK* button. Alternatively, open the *Properties* tab where you can enter the text in the *Text* field. To open the Text Editor, either click the ... icon or double-click the text box.

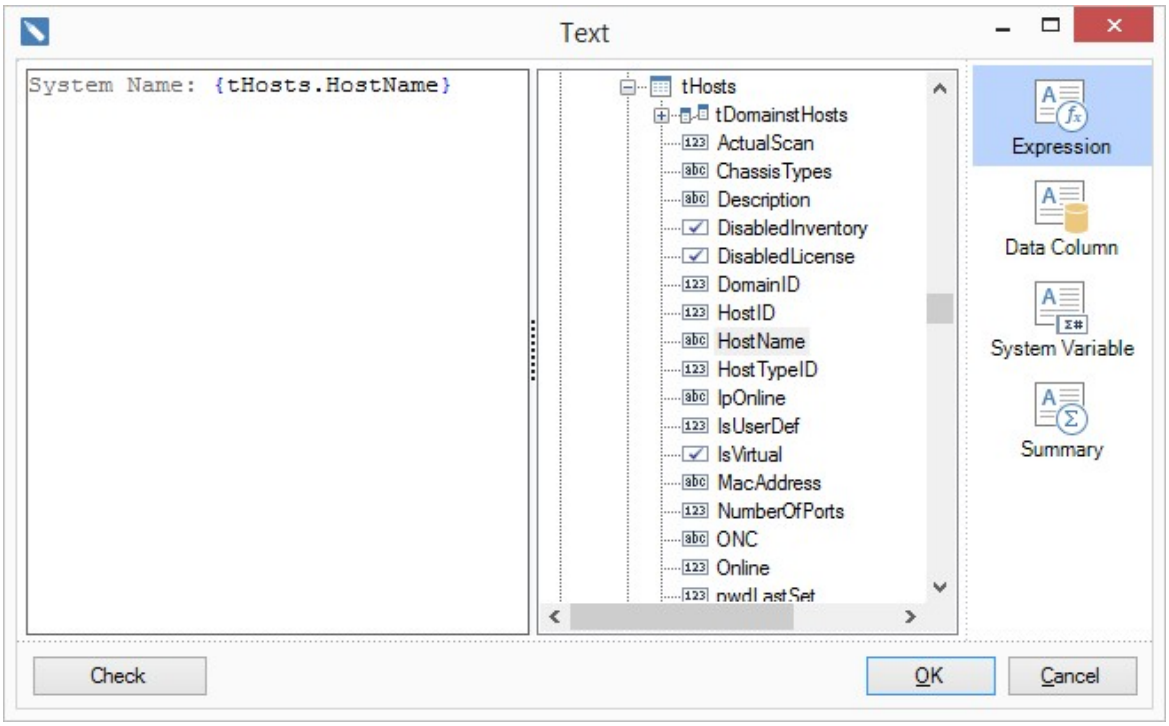




- Data: If you want to output data in a text box, place the text box on a data band, a group header band, a hierarchical data band or a child band belonging to another data band. In addition, the data source for the band must match the table associated with the column. Otherwise, there is no connection to the database and the data from the database cannot be shown. In the Text Editor, you can select the data fields either on the *Expression* or the *Data Column* page. To add a field from the *Expression* page, double-click it. On the *Data Column* page, click the desired field. Then, click the *OK* button to apply the selected data field to the text box.



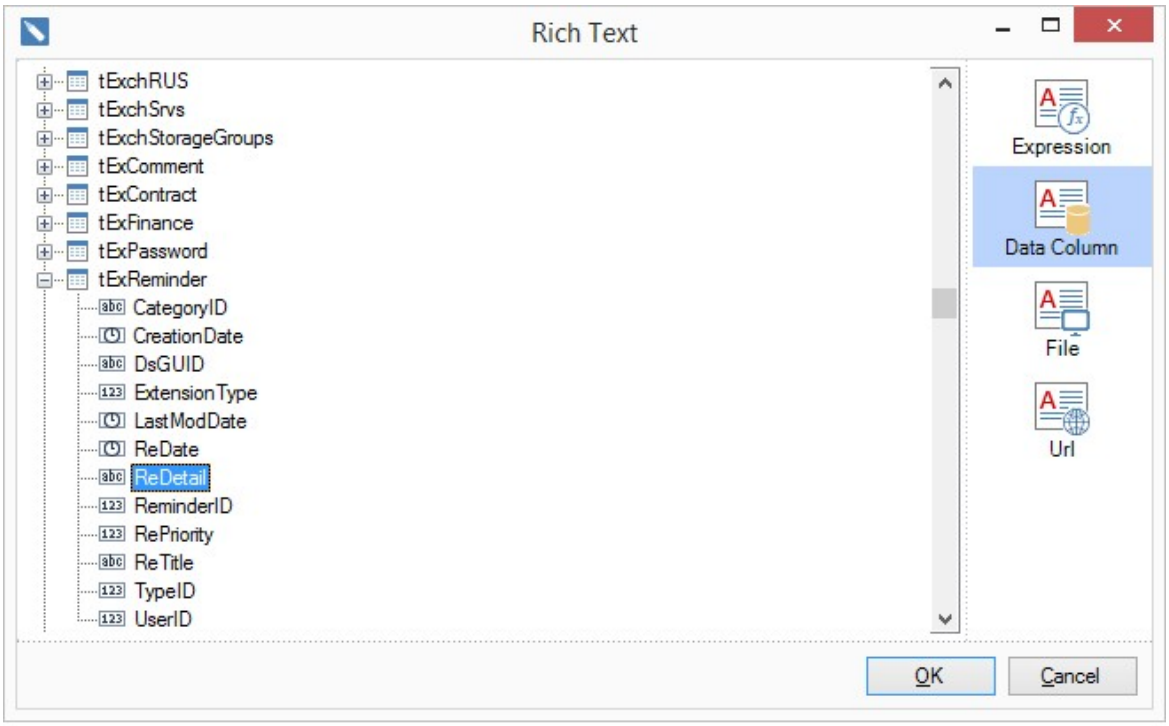
- Expression: In text boxes, data fields and text may be combined. In this case, you can only use the *Expression* page. When using the Expression page, you can enter a name that will precede the data column. Make sure to place such a text box on a data band, a group header band, a hierarchical data band or a child band belonging to a data band. Furthermore, the data source for the band must match the table associated with the column. Otherwise, the data from the database cannot be shown, because there is no connection to the database.

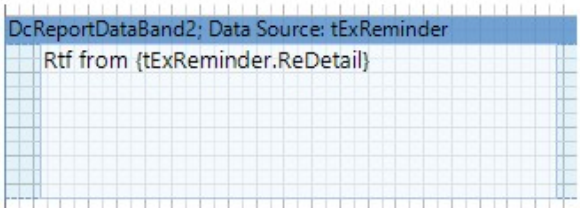


- Functions: In addition to data fields and text, you can specify functions to be included in a text box. The functions available in Docusnap will be explained in the Functions section.

Rich Text

For data entry screens, it is possible to create rich text boxes. In order to show the format settings of these fields in the report as well, you need to define a corresponding rich text box in the report. Rich text boxes can be moved and handled just like text boxes. The difference between a rich text box and a normal text box is that the data column to be included in the report will not be entered in the field, but rather specified from the Properties tab. You can select the data column by setting the *Data Column* property on the Properties tab. The text will only be displayed with the selected format settings if you specify the data column through this property.



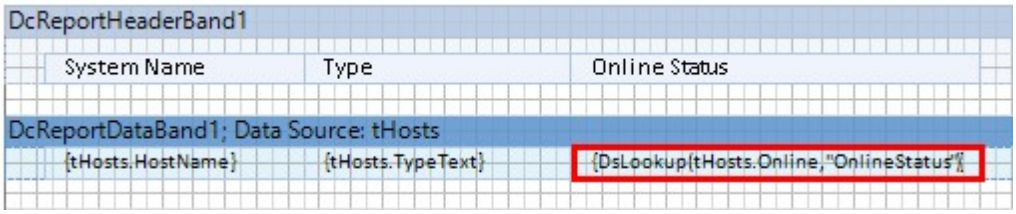


Functions

Docusnap provides several functions for reports.

General Functions

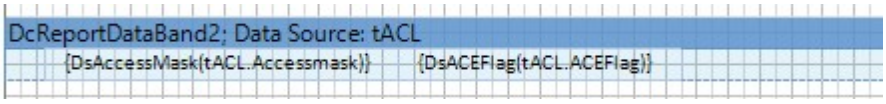
- DsLookup: Many tables contain only numbers. To express these numbers as words, the tSysInitials table from the Docusnap database can be used. In this table, the states of services and computers, the computer types, the countries, and other information are stored as literals. The InitialFilter column contains the values stored in the respective tables. The DsLookup function can be used to show the values from these tables as words. Enter this function into a text box located in a data band. The function must be surrounded by braces "{}", otherwise the Designer will not recognize it as a function. Thus, the form of the function is: `{DsLookup(ColumnName,"InitialFilter")}`. The column name represents the value in the table that should be replaced with the literal. "InitialFilter" is the word that exists in the InitialFilter column of the tSysInitials table. Thus, if you want to display the online status for the tHosts table, enter the following function: `{DsLookup(tHosts.Online,"OnlineStatus")}`.



- DsSortIPAddress: If you wish to sort a data band by IP addresses, the number blocks with less than three digits need to be left-padded with zeros. This means that if you want to sort the data in a data band by IP addresses, precede the name of the IP address column with the `{DsSortIPAddress(ColumnName)}` function. This function is used by the *IP Addresses* report.
- DsGetDateFromTimeStamp: The date from certain Active Directory properties, such as the creation date, is stored as a timestamp. To convert the timestamp into a readable format, the `{DsGetDateFromTimeStamp(ColumnName)}` function is used. This function is used by the *ADS Docu User* report.
- DsPlainTextRTF: If you enter your text in a rich text box, the formatting is stored along with the actual text in the database. The DsPlainTextRTF function allows you to output the plain text in a text box, without considering the formatting.
  `{DsPlainTextRTF(ColumnName)}`

Permissions

- DsAccessMask and DsACEFlag: These are special functions to determine the access mask or the ACE flags when scanning the permissions. These fields are located in the tACL table of the database.
- `{DsAccessMask(ColumnName)}`
- `{DsACEFlag(ColumnName)}.`



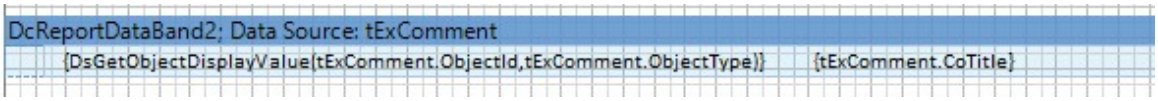
- GetBit: Using the *GetBit* function, you can individually evaluate the users' permissions to the directories. To show the permissions in a report, you can use the `{GetBit(ColumnName,Bit)}` function. For this purpose, the *Permission* column is used as the column name. For the Bit argument, enter the number that corresponds to the required permission. If the user has this permission, an "x" will be returned; otherwise, a space. This function is used in the *User (Resource), Directory (Resource)* and *Permission Analysis - Current View* reports.
  - Permissions and their Numeric Equivalents
  - 0 = Read
  - 1 = Write
  - 2 = Create directories
  - 3 = Read extended attributes
  - 4 = Change extended attributes
  - 5 = Execute

- 6 = Delete subdirectories
- 7 = Read attributes
- 8 = Change attributes
- 16 = Delete
- 17 = Read permissions
- 18 = Change permissions
- 19 = Owner

- Share Permissions: For the output of share permissions, three functions are used. These are `{IsFullAccess(ColumnName)}` for full access, `{IsChangeAccess(ColumnName)}` for change access and `{IsReadAccess(ColumnName)}` for read-only access. Use the *Permission* column from the *tSharePermission* table as the column name. If the user has the respective share permission, an "x" will be returned; otherwise, a space.

Extensions

- DsGetObjectDisplayValue: Outputs an object linked with an extension. The values are stored in the tExtensions table and in the table for the respective extension, i.e. *tExComment, tExContract, tExFinance, tExPassword* and *tExReminder*. The syntax of this function is: `{DsGetObjectDisplayValue(ObjectId, ObjectType)}`



Exchange Server

- GetPublicFolderBit: This function is used for the output of the permissions to the *public folders* of the Exchange Server. To define the output of permissions, use the following syntax: `{GetPublicFolderBit(ColumnName,Bit)}`. Use the *ExchangePublicFolderPermission* column from the*tExchangePublicFolderPermission* table as the column name. For the Bit argument, enter the number that corresponds to the required permission. If the user has this permission, an "x" will be returned; otherwise, a space. The function is used by the *Public Folder Permissions* report.

  - Permissions and their position
  - 0 = Folder visible
  - 1 = Owner
  - 2 = Read elements
  - 3 = Create elements
  - 4 = Edit own elements
  - 5 = Delete own elements
  - 6 = Edit all elements
  - 7 = Delete all elements
  - 8 = Create subfolders
  - 9 = Folder owner

- 10 = Publishing editor
- 11 = Contributor
- 12 = Author
- 13 = None
- 14 = Editor
- 15 = Publishing author
- 16 = Reviewer
- 17 = Folder contact person

- GetExchangeMailboxBit: This function is used for output of the permissions to the *mailboxes* of the Exchange Server. To define the output of permissions, use the following syntax: `{GetExchangeMailboxBit(ColumnName,Bit)}`. Use the *ExchangeMailboxPermission* column from the *tExchangeMailboxPermission* table as the column name. For the Bit argument, enter the number that corresponds to the required permission. If the user has this permission, an "x" will be returned; otherwise, a space. The function is used by the *Mailbox Permissions* report.
  - Permissions and their positions
  - 0 = Full access
  - 1 = Delete objects
  - 2 = Read permissions
  - 3 = Change permissions
  - 4 = Change owner
  - 5 = Send as
  - 6 = External account

Licenses

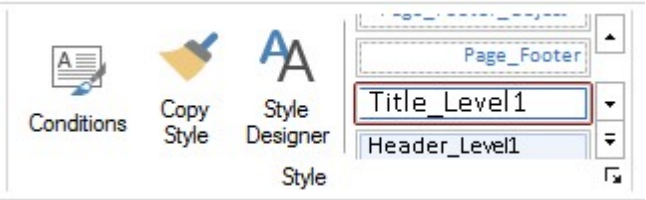
- Docusnap uses functions for license calculations. The value used is the SoftwareID from the tSoftwareProducts table.
  - Calculating the correction value
    - `{DsLicCorrectionValue(SoftwareID)}`
  - Counting the licenses purchased
    - `{DsLicAvailableLicenses(SoftwareID)}`
  - Counting the licenses in use
    - `{DsLicFoundCount(SoftwareID)}`
  - Calculating the upgrade and downgrade paths
    - `{DsLicPathCorrectionValue(SoftwareID)}`

3.7.3 Format Settings

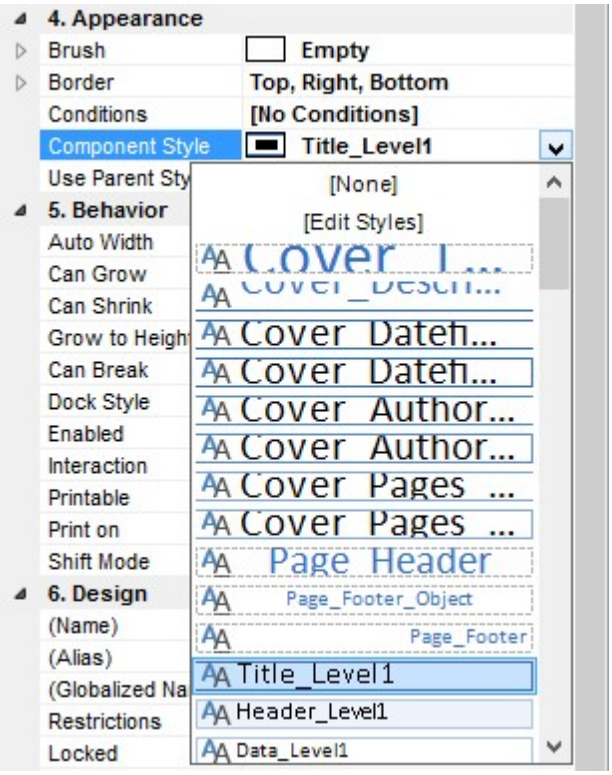
Formatting Reports in the Designer

When you open the Report Designer, Docusnap loads the current styles that have been selected in the *Layout (CI)* dialog. If you select a company, for which a different design was defined, from the status bar, that design will be loaded.

The styles are listed in the *Style* group of the *Home* ribbon.



To assign a style to a component, select the component first. Then, either select the associated style from the dropdown list of the ribbon or via the *Component Style* property on the *Properties* tab.

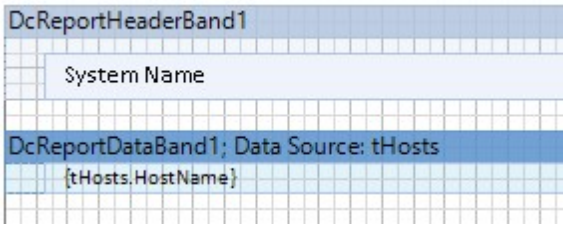


Styles

By default, styles have been defined for four different levels.

- Title: The Title_Level1 style is available for the title text and the Shape_Title_Level1 style for the shape title.
- Description: For the description output, the Description_Level1 style (left side) and a value using the Value_Level1 style (right side) are used. To align a value to the right margin, select the Value_Right_Level1 style.
- Headings: To format headings, you can used the Header_Level1 style.
- Data: Data can be formatted using the Data_Level1 and Data_Right_Level1 styles.
- Lines: Different styles are available for lines: Lines_Horizontal_Dark_Level1 and Lines_Horizontal_Bright_Level1. By using the Lines_Horizontal_Dotted_Level1 style, you draw a dotted line.

The other available styles can be used to format Permission Analysis reports and cover pages as well as headers and footers.



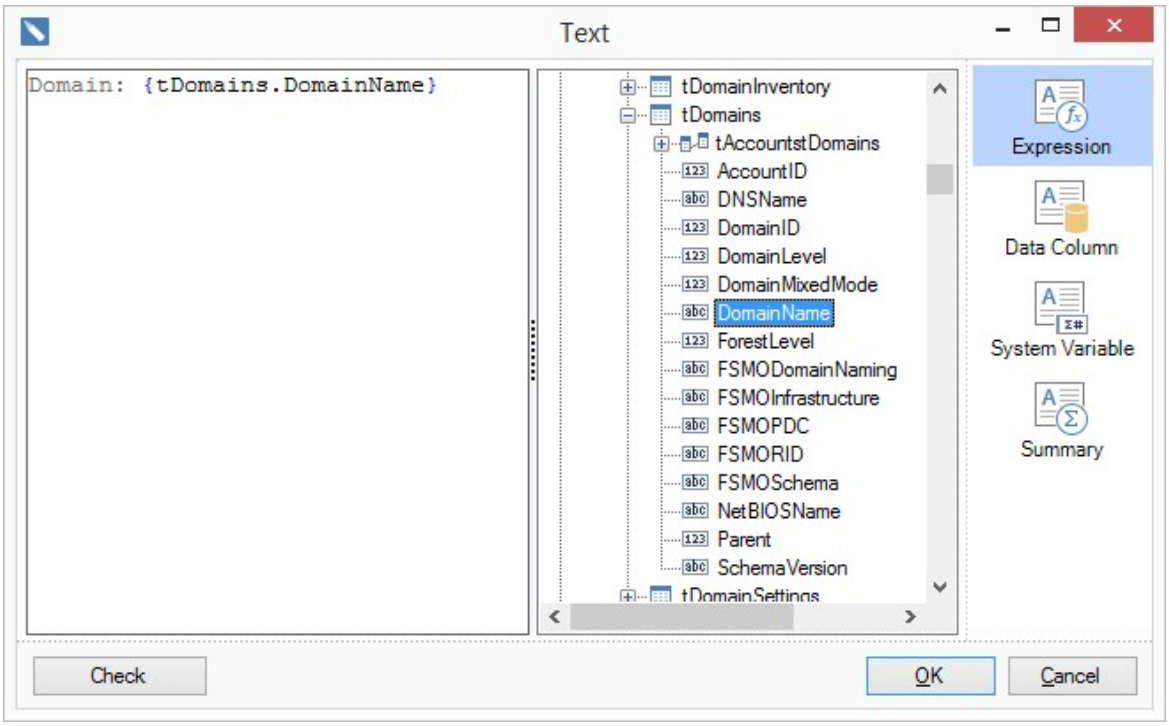
3.7.4 Advanced Structures

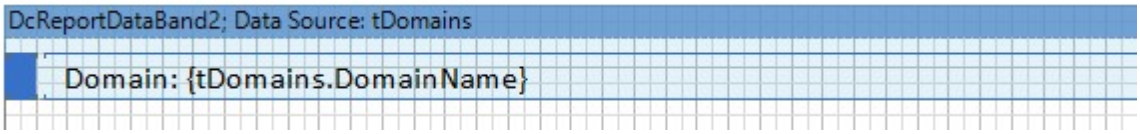
Hierarchies

In Docusnap, you can represent parent-child relationships between the tables. The dependencies between the tables can be implemented using relations or parameters. The parameters are explained in the Special Reporting Techniques section.

In the example below, we assume that an additional data band is required to which the tDomains data source will be assigned. First, add a Docusnap shape. For this purpose, use the *Shape_Title_Level1* style.

Then, create a text box for the domain name output. For the title, always use a single text box. In the Text Editor, enter "Domain" and add the *DomainName* column. The style to be used is *Title_Level1*.

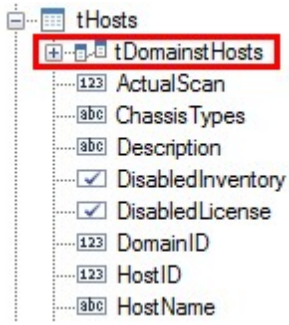




Hierarchies: Relations

When you create a report, you will define all required relations. For a child data band, you need to select the relation and the parent data band as the master component.

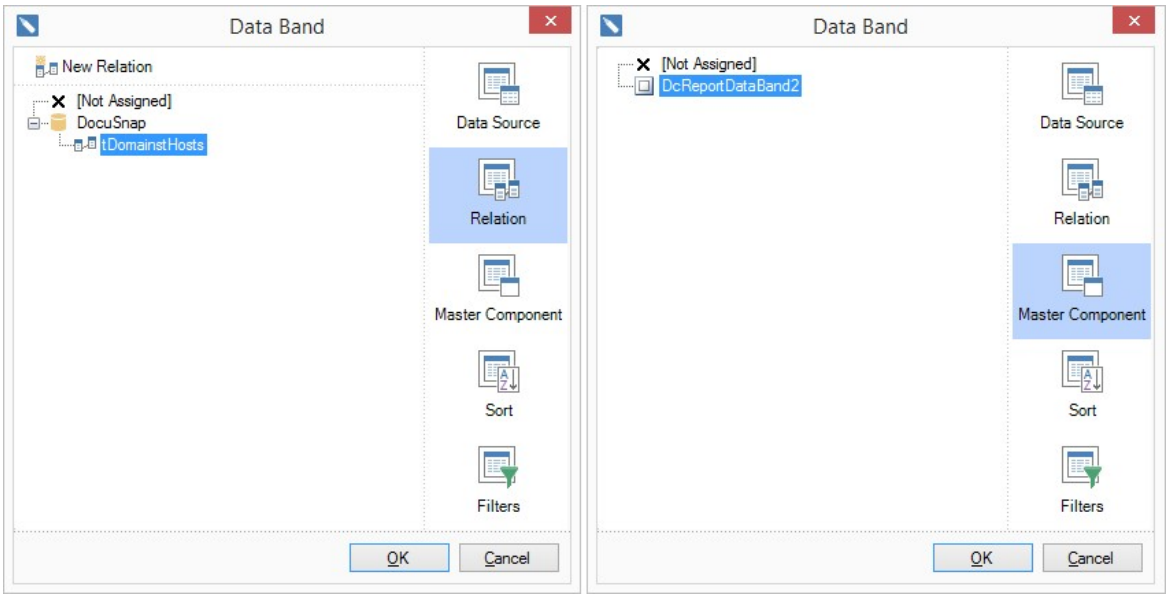
In this report, the computers will be assigned to the domains. In the generated report, the first domain is shown in the first place, followed by all associated computers. Then, the next domain is shown with its associated computers, and so forth. In order to obtain this structure, a relation must be defined between the two data bands. Relations that exist in the database are also loaded into the Report Designer. Relations that do not exist can be created now. Relations always consist of a master component and a detail component. The detail component is the band that contains the data that will be associated. In this example, the data band with the computers will be used as the detail component. The master component is the data band that contains the domains. Relations will always be associated to the detail component. For this reason, enter the relation for the *tHosts* table. The icon indicates a relation. The name of the relation is composed of the name of the table for the master component and the name of the table for the detail component. In this report, the relation is named *tDomainstHosts*.



When you double-click the computers data band, the *Data Setup* dialog opens. There, you can select the desired relation. Click the *Relation* button to display all relations defined for this table. In this case, only one relation is listed: the relation with the *tDomains* table. Select the *tDomainstHosts* relation. Double-clicking a relation will select it and close the dialog. If you only click the relation once to select it, the dialog remains open. To make additional settings, select the relation using a single click.

Next, select the master component. The master component indicates the band on which this relation depends. The relation only represents the connection between the tables. If a report includes multiple bands, make sure to select the appropriate name. The name of the data band is displayed on the left in its blue title bar. In this

report, there is only one other data band. Select this data band. Click the *OK* button to apply the relation and the master component to the detail component.

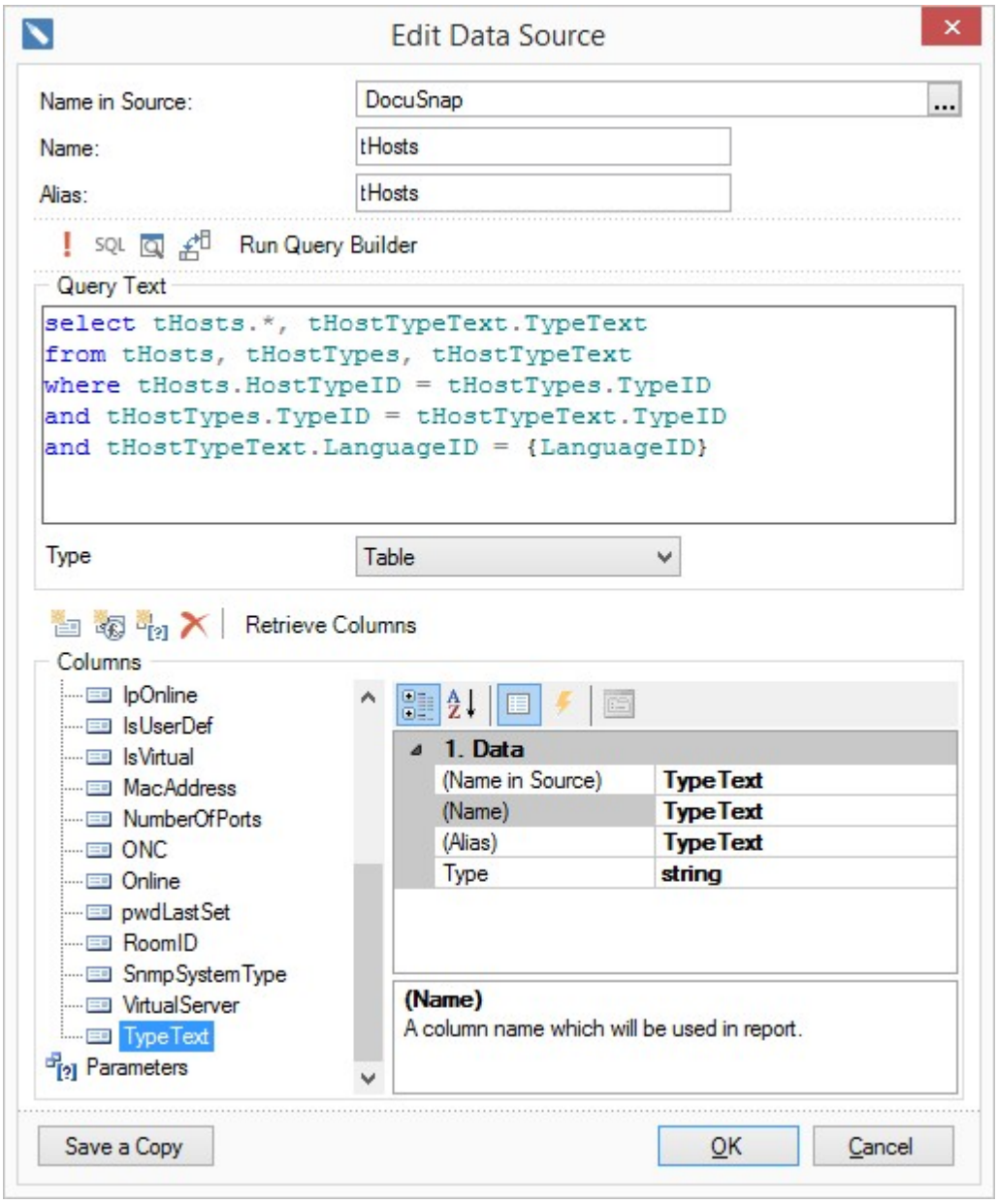


Showing Types in Multiple Languages

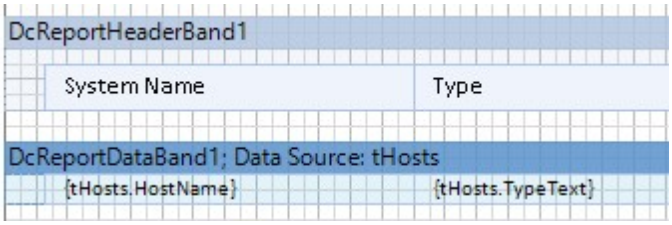
- Since Docusnap uses two languages, all types are stored in English and German. In the database structure, two additional tables are used for this purpose besides the table that contains the actual data: The Type table contains the name and the TypeText table contains the name in English and German.
- For each report, Docusnap creates the LanguageID variable. This variable contains either 0 for German or 1 for English, depending on the language that has been selected for this report. By means of this variable, the types can be shown in the desired language.
- In order to show the type text, the SQL statement for the data source needs to be modified. Example of the new SQL statement based on the Host type:

```
Select tHosts.*, TypeText as Type
from tHosts, tHostTypes, tHostTypeText
where tHosts.HostTypeID = tHostTypes.TypeID and tHostTypes.TypeID =
tHostTypeText.TypeID and
LanguageID = {LanguageID}
```

- To add the additional column, click the *Retrieve Columns* button.



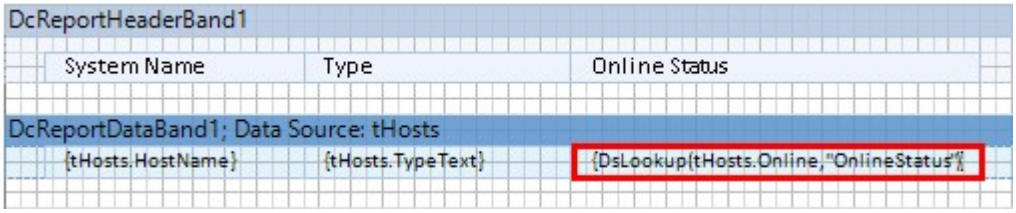
- Then, copy the text boxes for the text and the heading. Finally, you can edit the heading and the selected column, if required.



3.7.5 Reference Values

Many tables contain only numbers. To express these numbers as words, the *tSysInitials* table is available in the Docusnap database. The *DsLookup* function can be used to express the values from these tables as literals. Enter this function into a

text box located in a data band. The function must be surrounded by braces "{}", otherwise the Designer will not recognize it as a function. To show the online status of the *tHosts* table in the report, add a text box and type the following function into this field: `{DsLookup(tHosts.Online,"OnlineStatus")}`.



3.8 Special Reporting Techniques

This section will explain the use of parameters. The advantage of parameters over relations is that the reports can be executed more quickly. The parameter is added to the SQL statement. This results in only the filtered data being retrieved from the database.

In addition, grouped reports and hierarchical reports will be covered in the following sections. In the Sub-Reports section, you will learn how to use a sub-report to generate a single row that shows data from multiple tables.

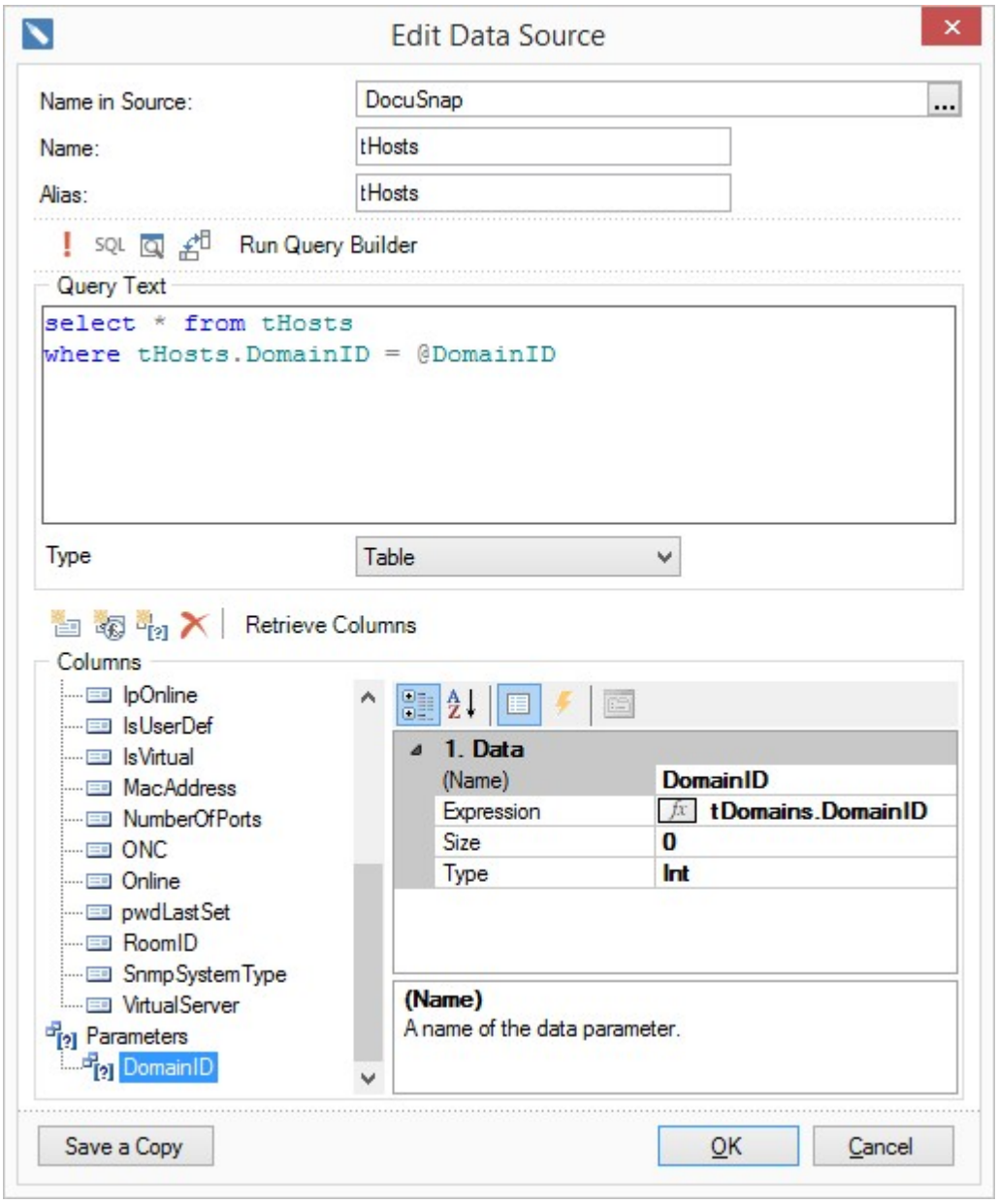
3.8.1 Parameters

Hierarchies: Parameters

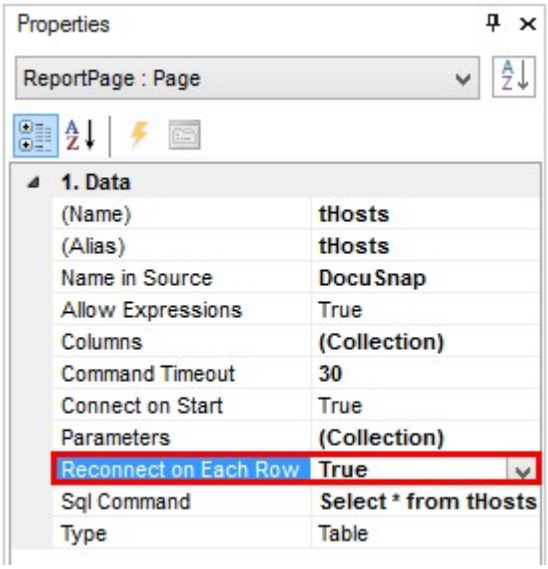
If you use parameters instead of relations to represent the dependencies between tables, reports can be executed more quickly. You can add the required parameter to the SQL statement. The result is that only the filtered data is transferred from the database to the client.

Click the button  to add a parameter. Every parameter of a table has to have a unique name. Select the referenced column of the parent table in the *Expression* field. If the value of a parameter is needed multiple times, the parameter must still be created only once.

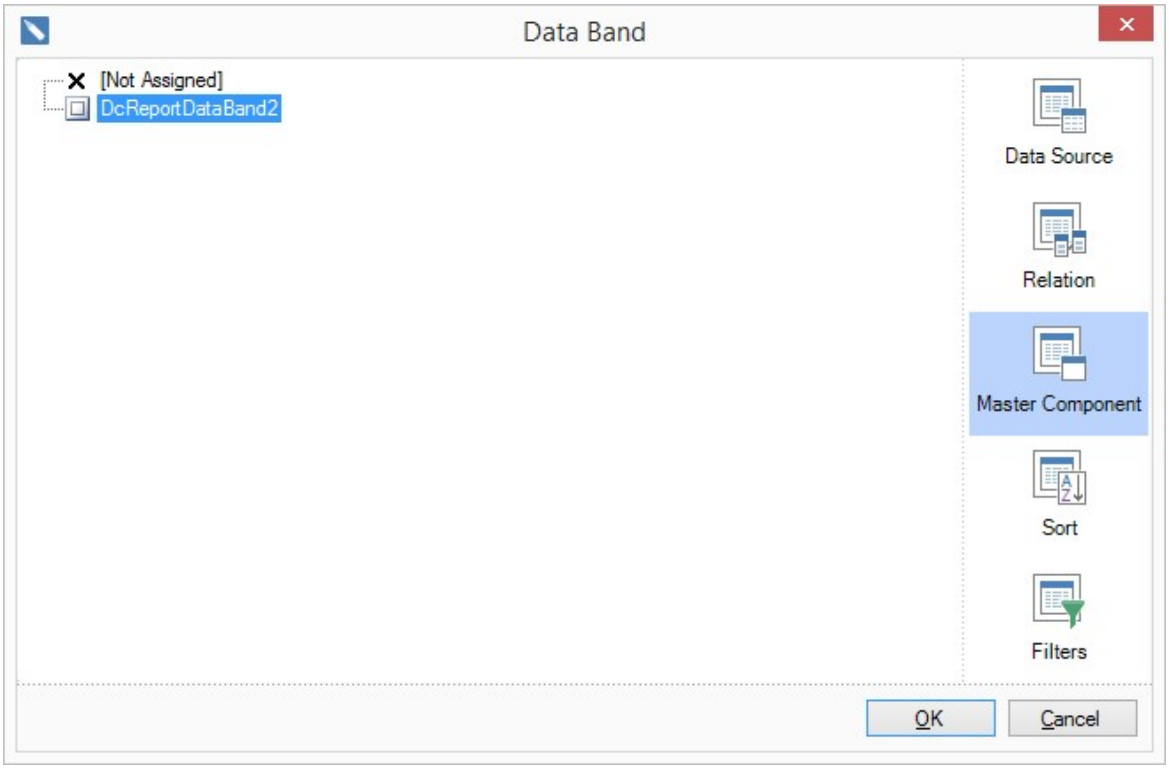
The parameter is represented in the statement by @ and the name of the parameter (e.g. *@DomainID*).



For the table, the *Reconnect on Each Row* property must be set to *True* on the Properties tab.



When defining the data band, the parent data band must be defined as the master component. In the parent data band, select the parent table from which the parameter was selected, as the data source.



3.8.2 Grouped Reports

Computers grouped by Operating System

This sample report will include all computers grouped by their operating system.

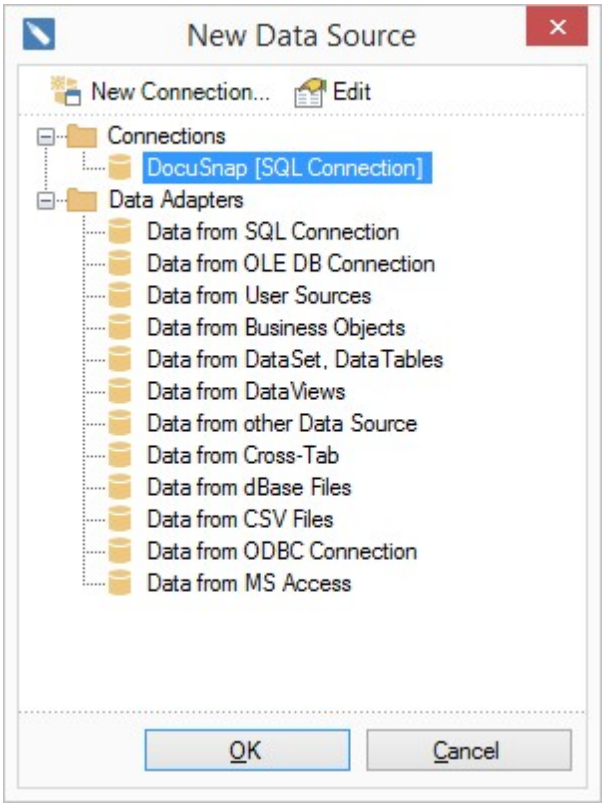
The computers are found in the *tHosts* table and the operating systems in the *tDocuWindows* table. Due to the relationship between the *tHosts* and

tDocuWindows tables, a given computer may have multiple entries in the *tDocuWindows* table, because it may have been scanned several times. In a report designed on the basis of relations, it is possible that multiple detail components exist for each master component. In this report, the *tDocuWindows* table would be the master component and the *tHosts* table would be the detail component, as the computers will be assigned to the operating systems. Since there may be several entries in the *tDocuWindows* table (master component) for each computer (detail component), this report cannot be resolved using native database relations. In this case, you need to create a virtual table using an SQL statement. It will invert the physical structure and generate a corresponding list.

SQL Statement

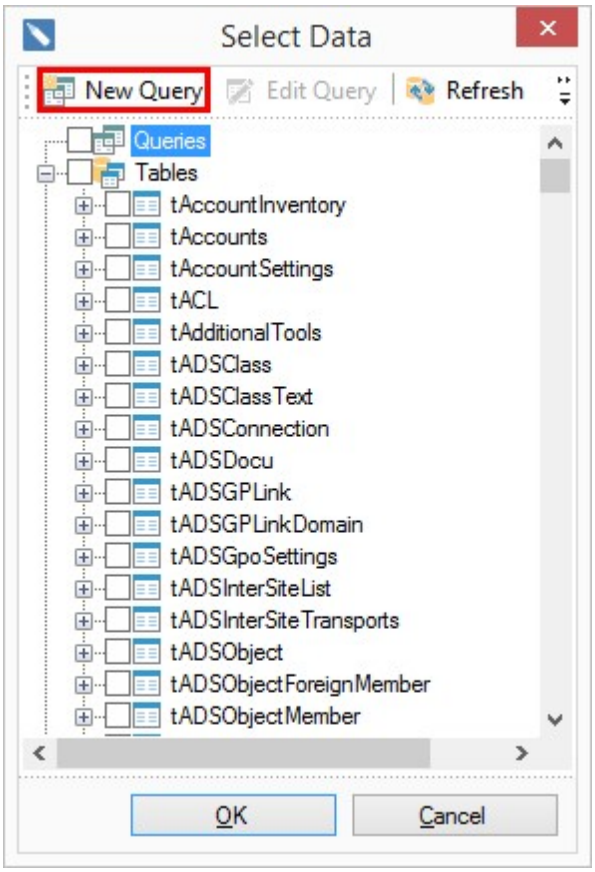
When you create a new report, all existing database tables are loaded into the report. For this report, however, a table is required that does not exist in the meta tables. For this reason, you must create this table in the Report Designer using an SQL statement.

First, add a new data source. To do so, go to the Dictionary tab and click the  button or right-click to open the context menu and select *New Data Source*. As the connection, select DocuSnap [SQL Connection]. Click *OK* to confirm the connection. A dialog opens where you can select the tables to be connected.



As an alternative, you can open this dialog by double-clicking the connection. From this dialog, you can import newly added tables to the Dictionary that were not yet

present in the database when the report was created. For this sample report, an additional table is required. Click the *New Query* button to open the *New Data Source* dialog.



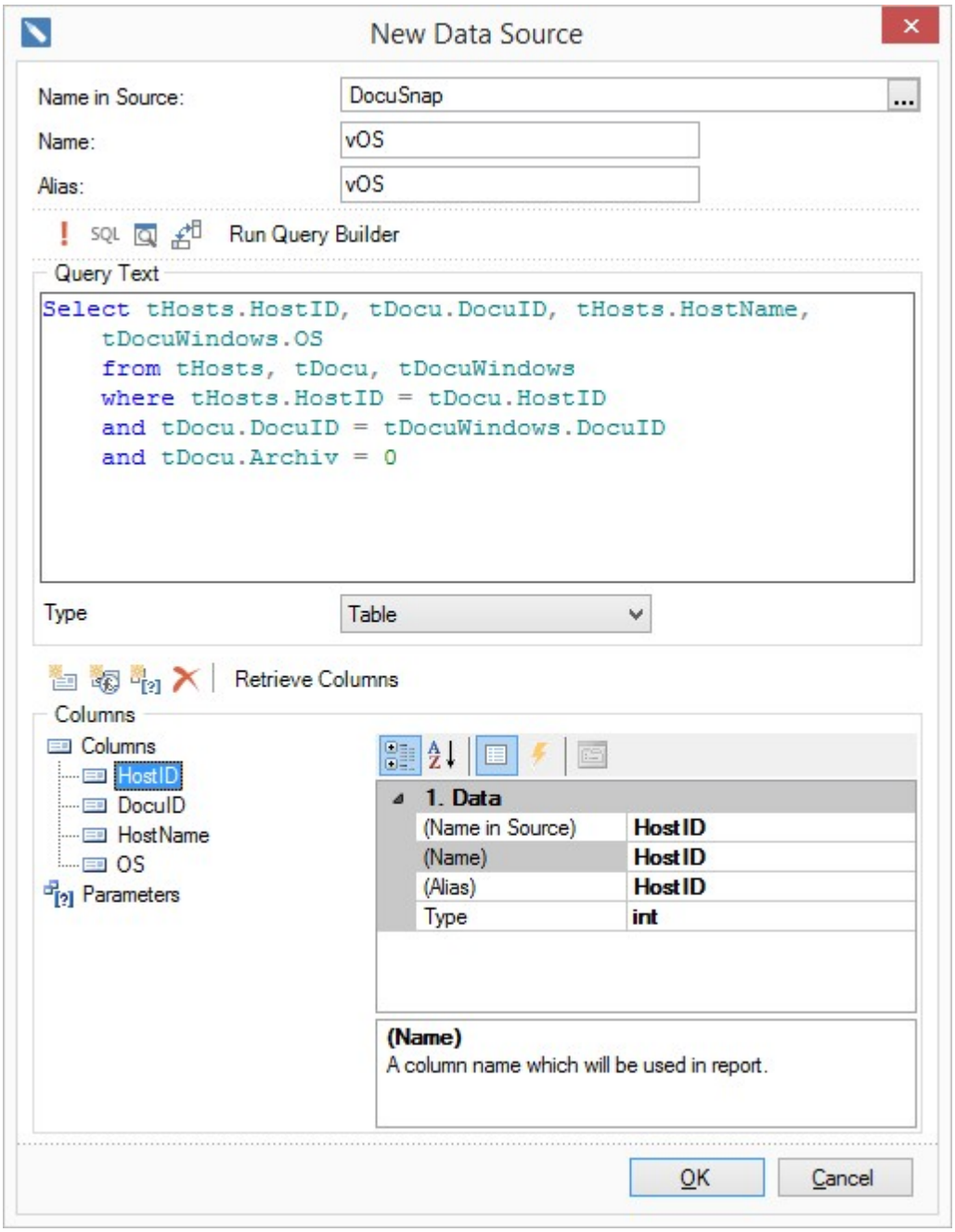
From this dialog, you can create the new data source. The correct database has already been entered as the name of the data source. The table name can be chosen freely. We recommend to prefix the name of the table with a lowercase "*v*" for "virtual", to distinguish this table from those already created. For this report, name the table *vOS*. The Alias field is automatically populated with the same name. By clicking the button, you can validate the SQL statement you entered. To open a text editor where you can enter the SQL statement, click the SQL button. The data retrieved by the SQL statement can be displayed by clicking the button. Using the button, you can change the dialog view. Enter the SQL statement in the *Query Text* field. You can enter any SQL statement desired in the *Query Text* field as long as it relates to tables and columns that exist in the database. When you are done entering the statement, add the columns by clicking the *Retrieve Columns* tab. The table columns are displayed in the *Columns* field. When you select one of the columns, its properties are displayed to the right of the selected column. When you add a column, the primary key is defined as an *int* data type. For existing database tables, the primary keys are of the *long* data type. When you create a relation, make sure that the related columns are of the same data type. For this reason, change the primary key for new tables to the *long* data type.

For this report, a table that combines data from the *tHosts* and the *tDocuWindows* tables is required. There is no direct relation between the *tHosts* and *tDocuWindows* tables. The connection will be made through the *tDocu* table. The *tDocu* table is linked with the *tHosts* and *tDocuWindows* tables. The *tHosts* table is linked with the *tDocu* table by means of the *HostID* column. The relation between the *tDocu* and *tDocuWindows* tables is created through the *DocuID* column.

For the new table, not all columns from these tables will be needed. Therefore, select only some of them. For the output, the computer name (*Hostname* column) and the operating system (*OS* column) are required. It is a good idea to specify the primary keys of the tables for the output fields of the SQL statement, although they do not actually appear in the report. In addition, the *tDocu* table has a special feature. Assume that you want to limit the report to the most recent data. However, each computer may have been scanned multiple times. To obtain only the current information, you can use the *Archiv* column in the *tDocu* table. For the most recent scan in the *Archiv* column, the value 0 (zero) will be set. By using the *Archiv = 0* Where condition, only the current data will be added to the new table. The resulting SQL statement connects all necessary tables:

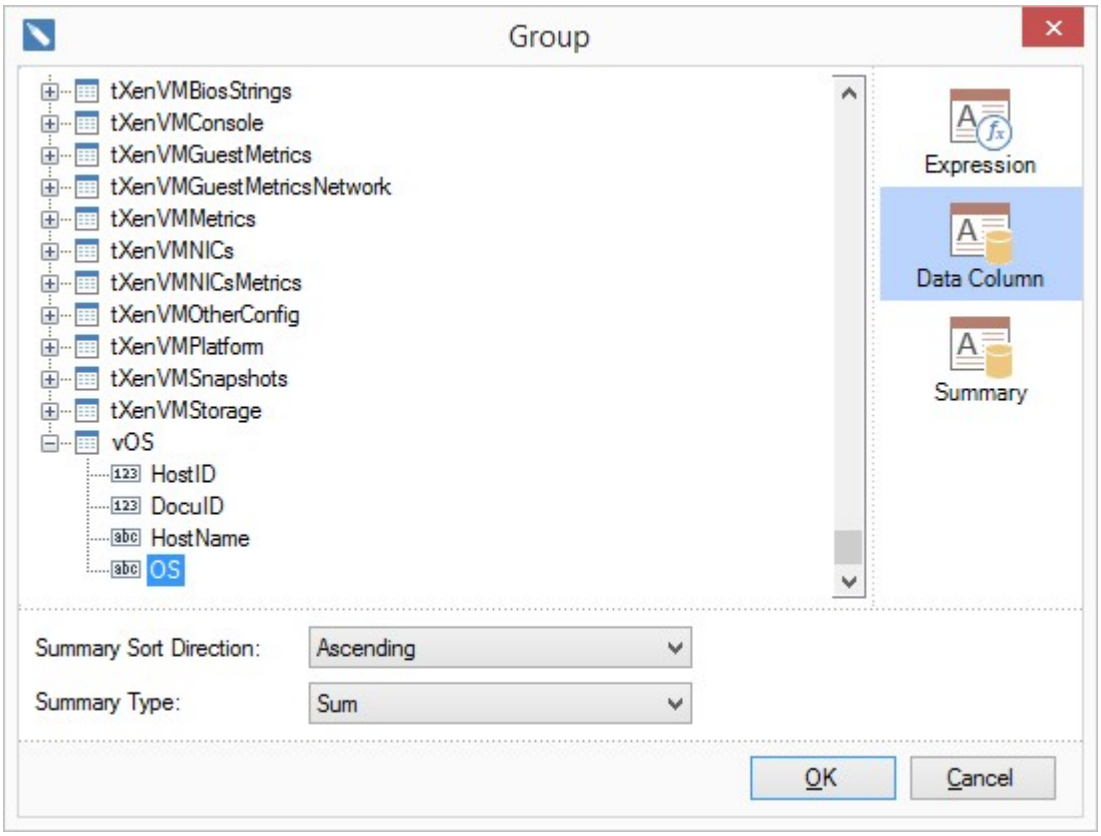
```
Select tHosts.HostID, tDocu.DocuID, tHosts.Hostname, tDocuWindows.OS
from tHosts, tDocu, tDocuWindows
where tHosts.HostID = tDocu.HostID and tDocu.DocuID =
tDocuWindows.DocuID and tDocu.Archiv = 0
```

When you click the *Retrieve Columns* button, the columns you indicated in the SQL statement will be retrieved from the database. Both *HostID* and *DocuID* are primary keys. For this reason, the data type needs to be changed to *long*. Click the *OK* button to close the dialog. Next, select the newly created table, *vOS*, under the *Queries* node in the *Select Data* dialog. Click *OK* to add the table to the Dictionary. The *vOS* table now appears on the Dictionary tab.

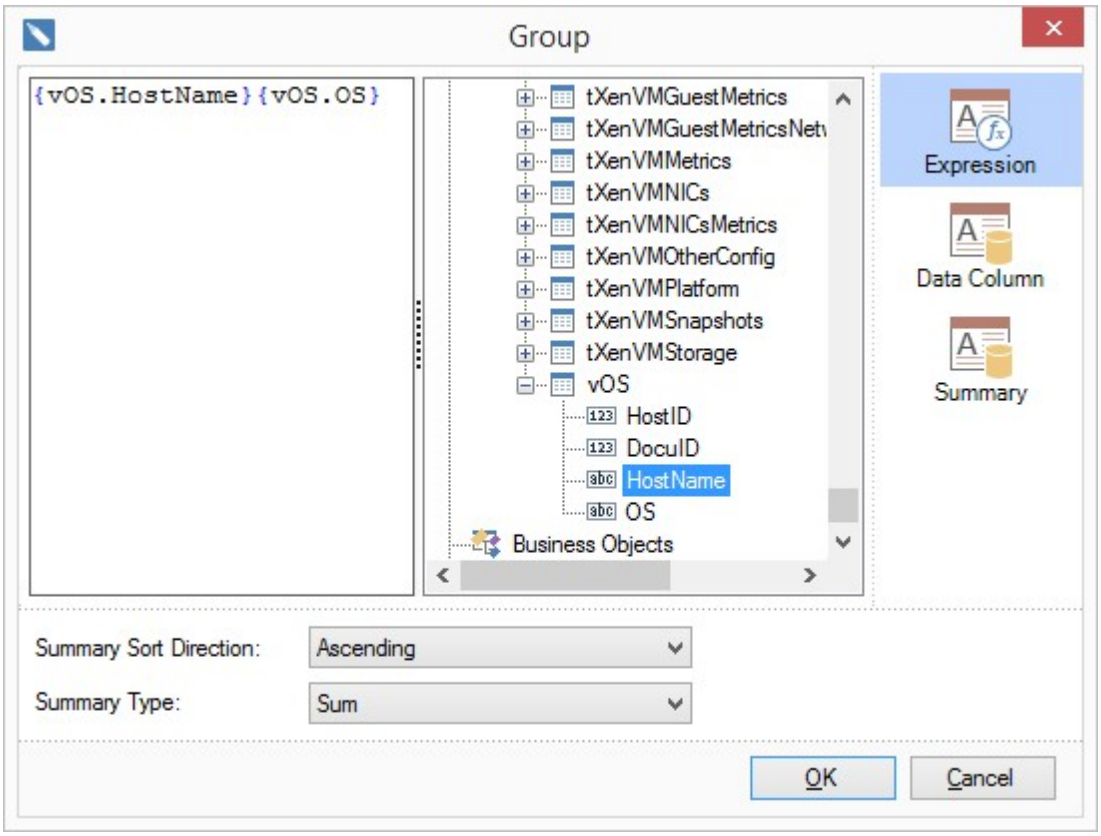


Creating a Group

To group the data of a table, add a group header band to your report. Group header bands can be added from the Toolbox. Open the the *Group Condition* dialog to do so. Here, you can specify the column on which to group your data. For this sample report, select the operating system (*OS* column) from the *vOS* table. You can also specify whether the group should be sorted in ascending or descending order or not at all.

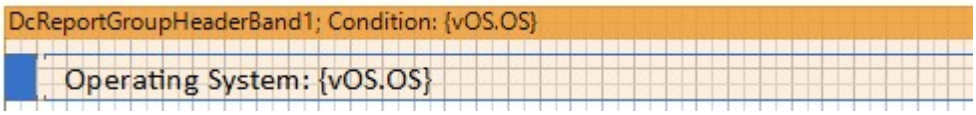


If you want to use more than one column for grouping, open the *Expression* page. On this page, you can add multiple columns. Thereby, only those records that match the selected expression will be output as a group. To apply the condition to the group header band, click *OK*.



Group Output

By selecting the condition, you can determine which criterion will be used for grouping. The group header band is of course still empty. The group header band will be used for the title of this report. For this reason, the format setting for the title will be used.



This ensures that the grouping criterion will be shown at the top.

Child Band

The child band is an extension of the band preceding it. In this report, a child band is used as an extension of the group header band. Following the title, a header band is often added to provide the heading for the data band. Please note that a header band for the headings cannot be inserted after a group header band, because the bands would not be shown in the correct sequence: The headers would not be placed after the title and before the data. For this reason, a child band is used for the headings of the data band. The child band is always shown after its parent band. In this report, the band with the headings will be shown after each group header band.

Create a text box, enter the "Computer" heading into it and assign the

Header_Level1 style.

Data Band

In order to output the data for the group header band, a data band must exist for which the same data source has been specified as in the condition for the group header band. In order to be grouped by the group header band, this data band does not need a defined relation or a master component. As the data source, select the same data source that was used for the group header band. Select the *vOS* table and the HostName column for this report.

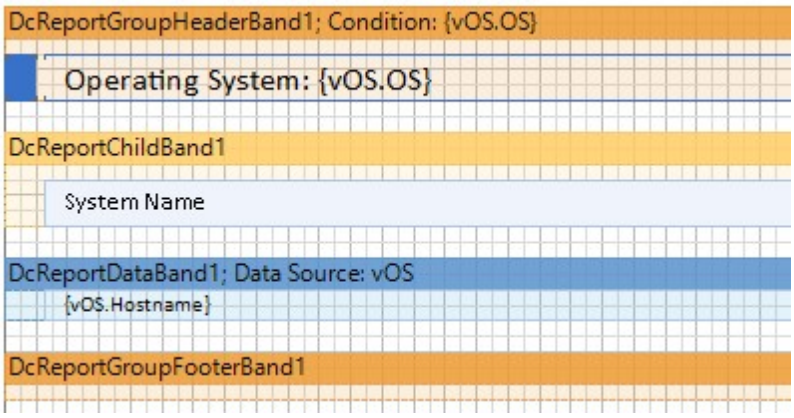
In the next step, create the text box that will show the database content. When you add this field, the Text Editor opens. In the Text Editor, you can select the data fields either on the *Expression* or the *Data Column* page. To add a field from the *Expression* page, double-click it. On the *Data Column* page, click the desired field. For this report, select the *HostName* column from the *vOS* table. The style to be used is *Data_Level1*.

Group Footer Band

Finally, a group footer band will be added. The group footer band is the closing item of the group.

Finished Report

The header band contains the text box that indicates the operating system. The name and the condition appear in the left corner of the group header band. The *System Name* heading will be shown on the child band. The data band includes the text box with the *HostName* column. The data band name and the data source appear in the upper left corner of the data band.



3.8.3 Hierarchical Reports

Listing the Directory Structure

The directories of all computers in the domain are stored in the *tDirectories* table. A folder that does not have a parent directory will be identified by the value -1. For each other folder, the *DirectoryID* of its parent folder is listed in the *Parent* column. This enables you to build a hierarchy. This hierarchy will be created in the Report Designer using a hierarchical data band.

Hierarchical Data Band

When you add a hierarchical data band, the *Data Setup* dialog opens. For this report, select the *tDirectories* table. Then, specify the criteria to build the hierarchy. On the Properties tab, set the *Key Data Column* property to *DirectoryID* and the *Master Key Data Column* property to *Parent*. The parent value identifies the "parent" of the top folder. If you do not enter a value for this property, this column, identifying the parent record, must be empty for the top level directory in the hierarchy.

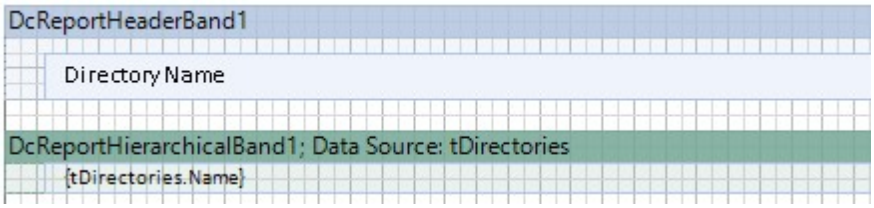
For the *Indent* property, specify the number of millimeters for indenting the next level. If only the first text box should be indented, the *Locked* property must be set to *True* for the remaining fields. Using the Headers and Footers properties, you can select the header band and the footer band to be shown before each hierarchy level.

Parent Value

In addition to a number, the primary key or a column from another table may be specified as the parent value. However, this value cannot be entered in the *Parent Value* property on the Properties tab, but rather must be defined as an event. Select the page by clicking the white margin or an area of the page that does not have a band.

Switch to the *Events* properties by clicking the ⚡ button on the *Properties* tab. The parent value can be defined using the *Begin Render* property. When assigning, first specify the name of the hierarchical band and then use *.ParentValue* to get the parent value. Finally, assign the desired value using the equals sign (=). In this report, it is called DcReportHierarchicalBand1.

Finally, you can add text boxes for user input.



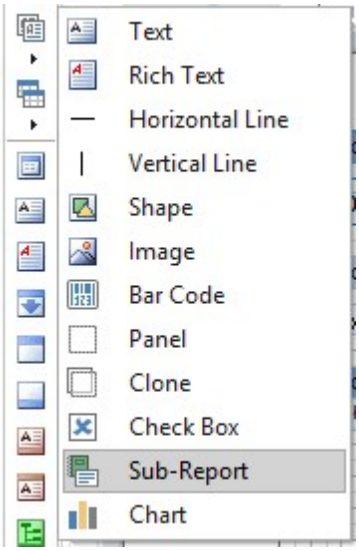
3.8.4 Sub-reports

To show the contents of a table and its child table in a single row, you can use a sub-report.

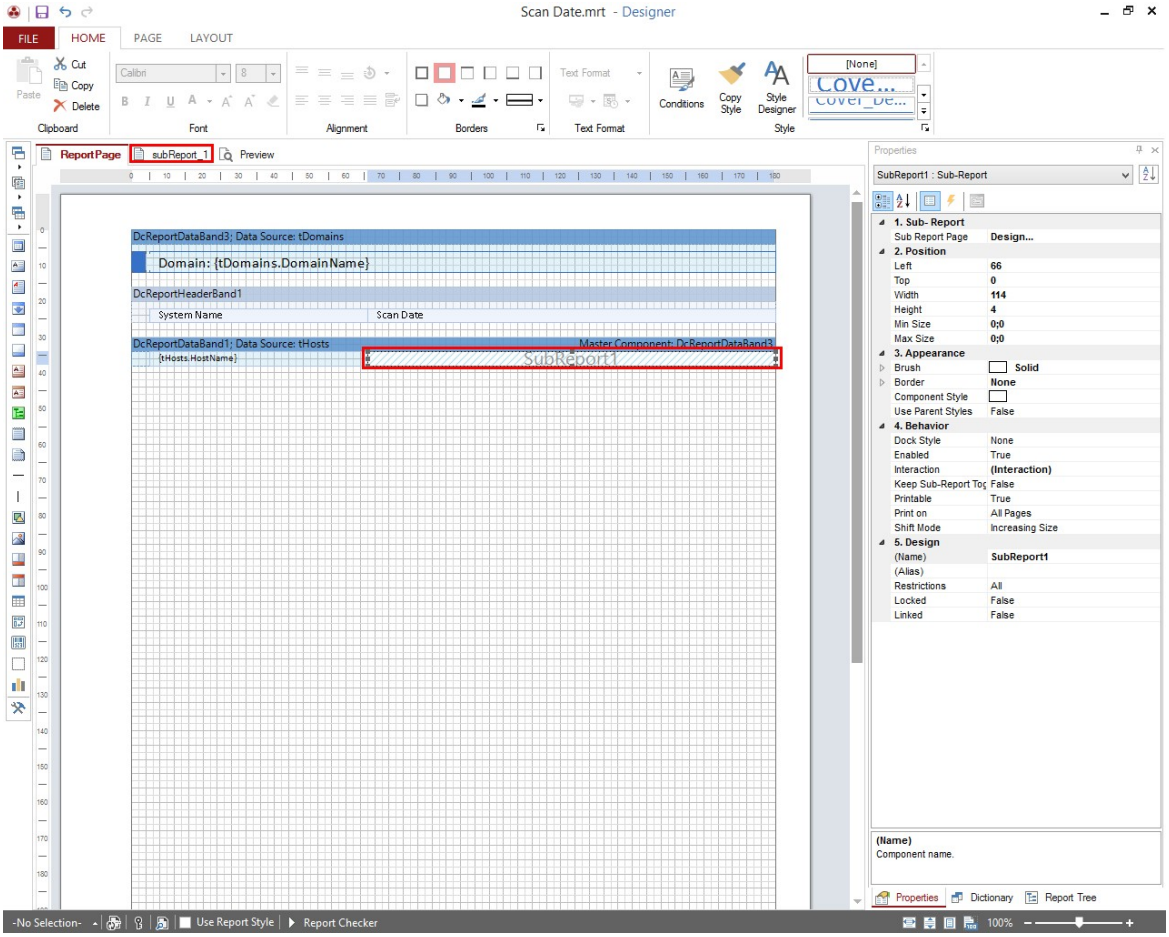
In this example, the dates of all inventory scans performed on this computer are shown. The data is found in the *tHosts* and *tDocu* tables.

First, create a header band with the *System Name* and *Scan Date* headings. Then, add a data band using the *tHosts* table as the data source and add a text box containing the *HostName*.

Next, create a *sub-report*. To create the sub-report, use the icon from the Toolbox.

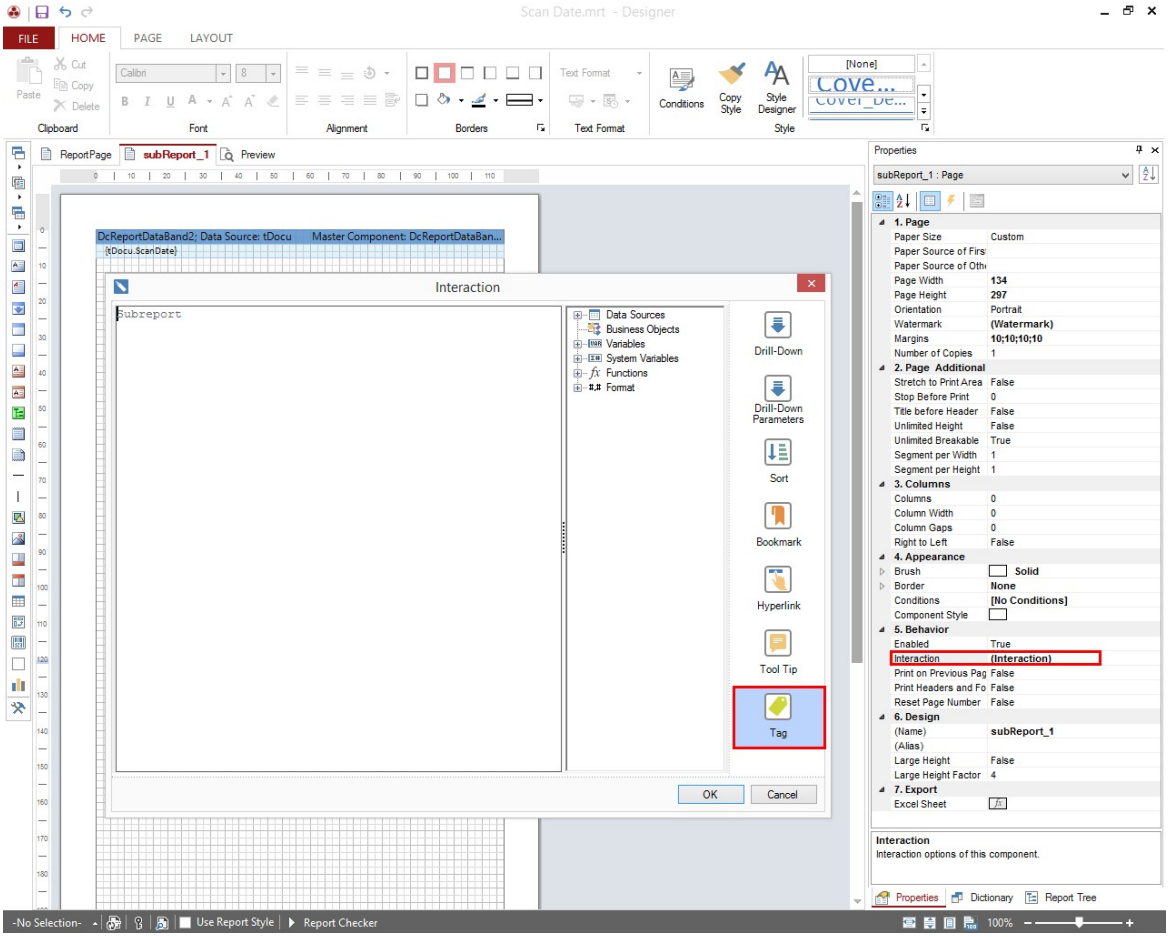


Docusnap automatically adds an additional page where you can define the sub-report.



Create a data band, in this example the data band with the *tDocu* data source, on the sub-report page. Add the text boxes for the data of this child data band here. In this example, add a text box for the *Scan Date* from the *tDocu* table.

When generating a report, Docusnap creates all defined pages with a cover page, a footer and a header. However, since the sub-report only involves a "page" that will be output as part of another table, neither a cover page nor a header or footer should be shown for it. For this reason, enter the word *SubReport* in the *Tag* property of the *Interaction* group on the Properties tab of the sub-report. This ensures that these "pages" will neither be given a cover page nor a header or a footer.



As the master component of the data band, you can use the data band where the sub-report will be inserted. Create the connection to the master component using a relation or a parameter. After the *tHosts* and *tDocu* tables have been connected to the database, the report can be executed.

itelio

Scan Date

Domain: docusnap.internal

System Name	Scan Date
SBEX0001	12/4/2014 4:42:14 PM
	1/13/2015 10:32:00 AM
SBPS0001	12/4/2014 4:42:14 PM
	1/13/2015 10:32:00 AM
SLDC0001	12/4/2014 4:42:14 PM
	1/13/2015 10:32:00 AM
SLSQ0001	12/4/2014 4:42:14 PM
	1/13/2015 10:32:00 AM
	1/13/2015 10:34:04 AM
SLTS0001	12/4/2014 4:42:14 PM
	1/13/2015 10:32:00 AM
	1/13/2015 10:34:04 AM
WLWS008B	12/4/2014 4:42:14 PM
	1/13/2015 10:32:00 AM
	1/13/2015 10:34:04 AM

3.8.5 SNMP Reports

Docusnap relies on MIBs when performing the inventory scan for SNMP devices. For the output of the SNMP device data in a report, tables are used that are populated with the retrieved data. These tables are for example used for the Summary *SNMP report* that lists the data for each SNMP device or for the *Active Network Components* report that indicates the SNMP devices of a domain. Adding SNMP tables only works for reports whose primary key corresponds to the *DocuID* or the *DomainID* of the respective SNMP devices.

To add the additional tables for SNMP devices, you need to create variables whose names start with *vSNMPMib*. First write in the *Value* property of the variable the text *SNMP:* followed by the MIB (in parentheses), and, separated by a comma, the name, into these variables. To separate the MIBs, enter a semi-colon. If you add the *ID:DomainID* after the closing parenthesis, the tables will be output for all SNMP devices existing in the domain.

This results in the following syntax:

```
SNMP:(1.3.6.1.2.1.4.20.1.1,IPAddress;1.3.6.1.2.1.4.20.1.3,
SubnetMask;1.3.6.1.2.1.4.20.1.2,InterfaceID)

SNMP:(1.3.6.1.2.1.4.20.1.1,IPAddress;1.3.6.1.2.1.4.20.1.3,
SubnetMask;1.3.6.1.2.1.4.20.1.2,InterfaceID)ID:DomainID
```

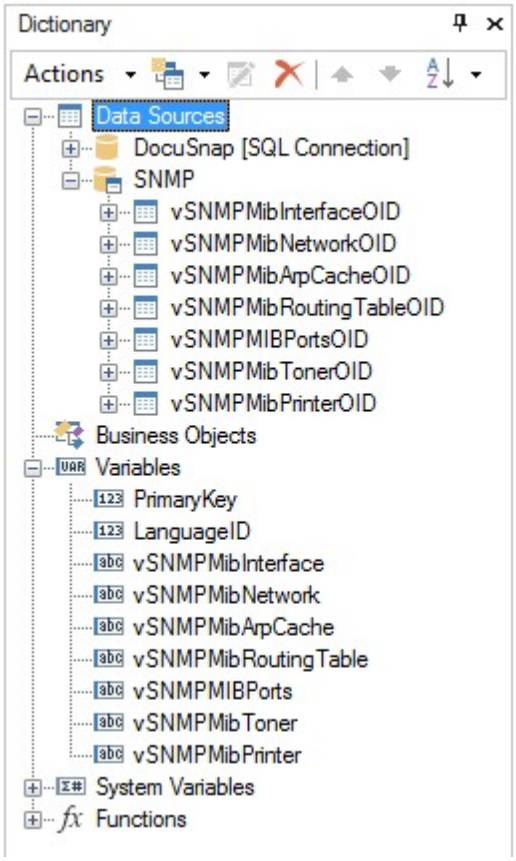
To ensure the output of values that exist only once for each SNMP device, precede the statement with *SNMP-Single*.

Use the following syntax:

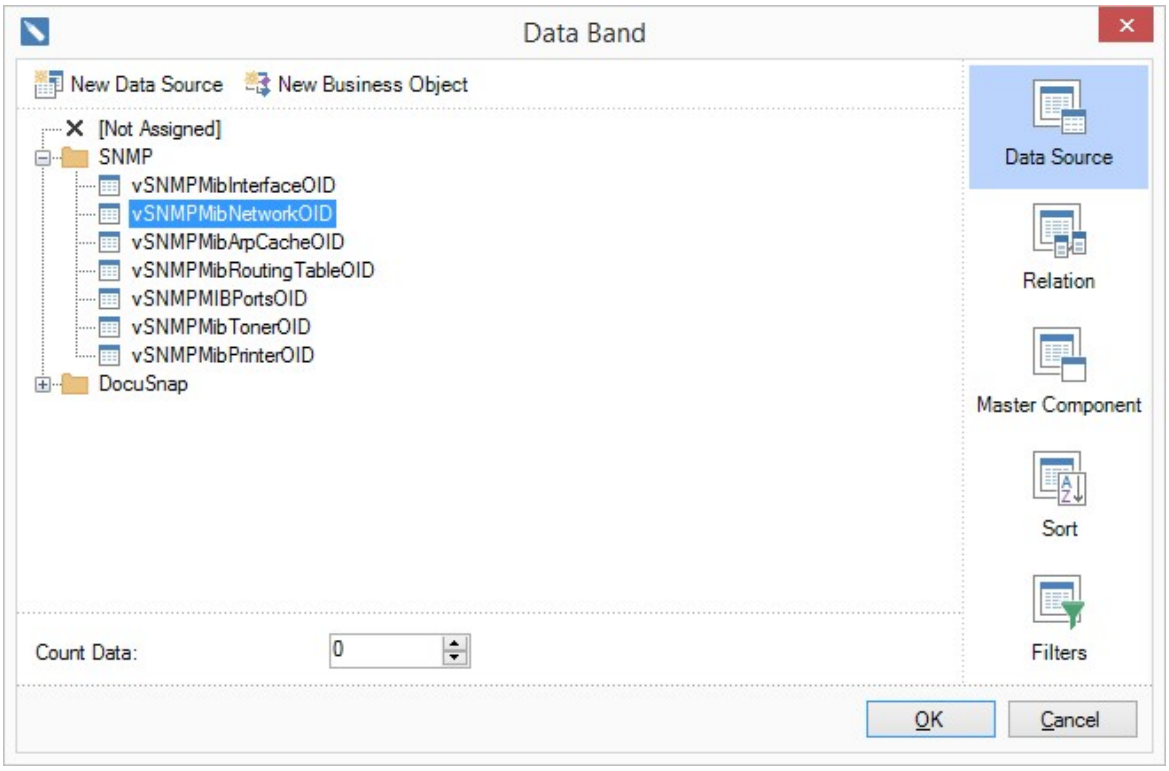
```
SNMP-Single: (1.3.6.1.2.1.43.8.2.1.14.1.1,
Manufacturer;1.3.6.1.2.1.43.5.1.1.17.1,SerialNumber)

SNMP-Single: (1.3.6.1.2.1.43.8.2.1.14.1.1,
Manufacturer;1.3.6.1.2.1.43.5.1.1.17.1,SerialNumber)ID:DomainID
```

Once you have created all required variables, close the report and then open it again. This ensures that the Report Designer will create the tables for SNMP when loading the report. In the Report Designer, the tables are listed under the *SNMP* data connection node that is found below the Data Sources node.

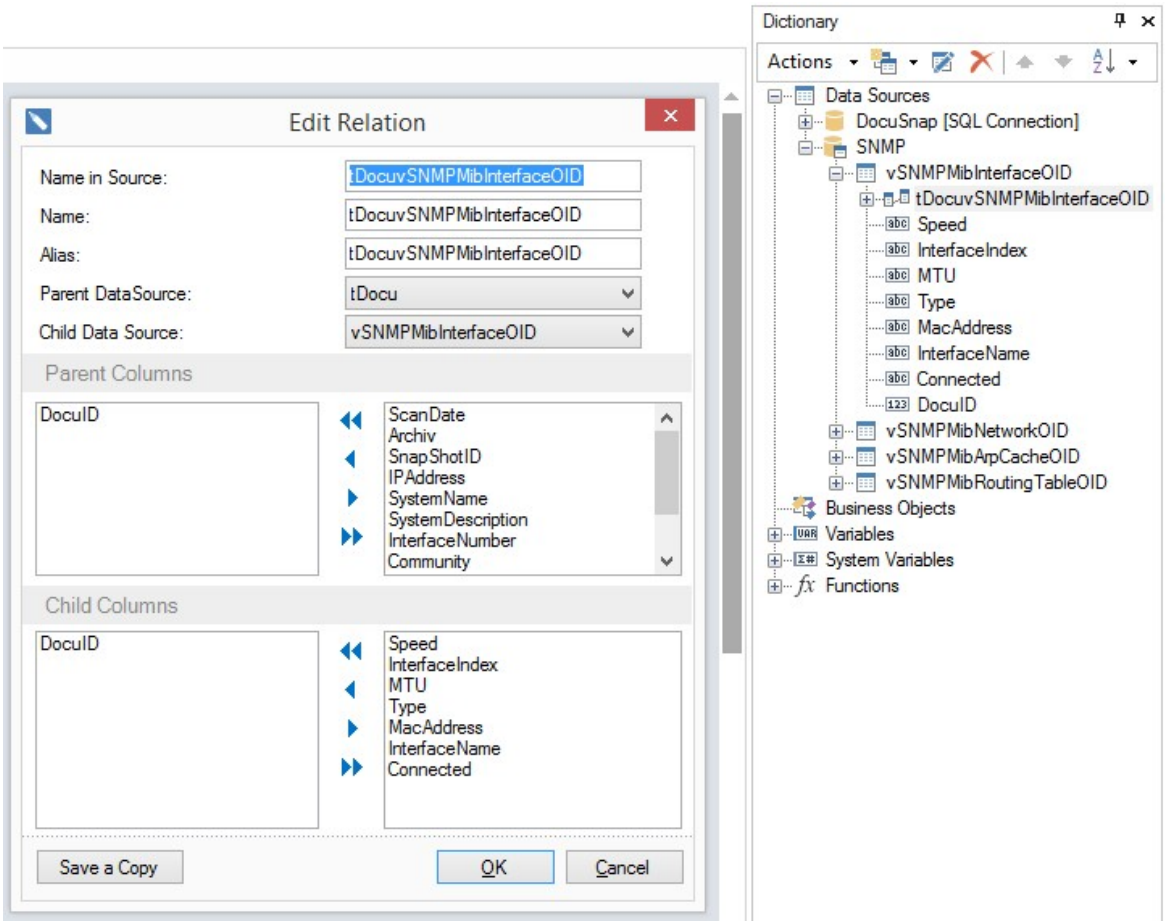


When creating the report, you can select the SNMP tables as data sources for data bands.

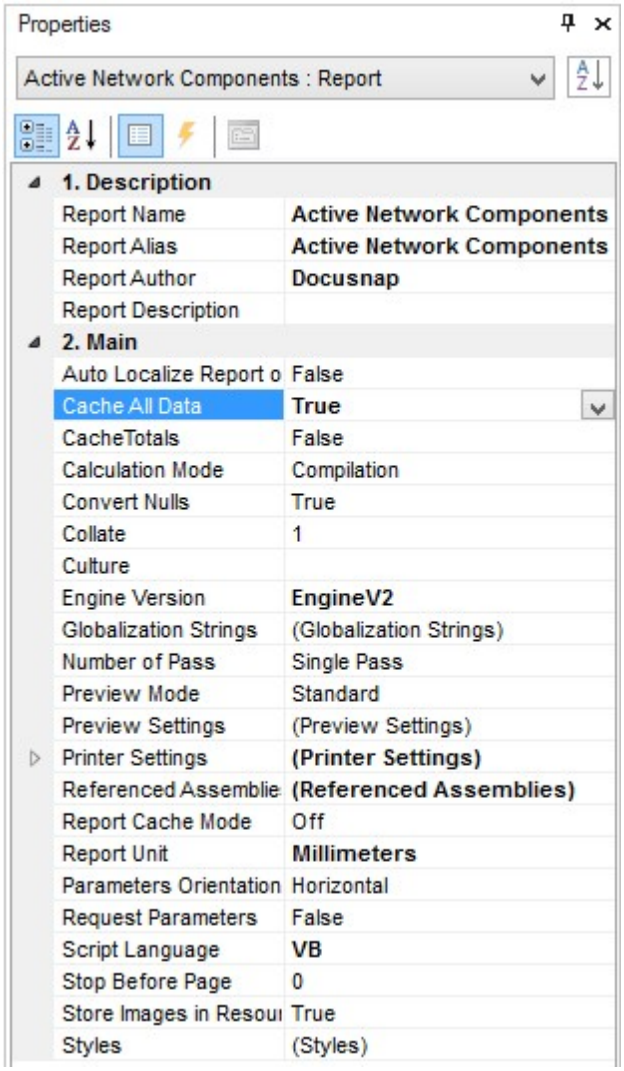


Using relations, you can create a hierarchical structure. Every SNMP table has a

DocuID field which can be used to define a Relation to other tables.



Since the relation spans two different data sources, you must set the *Cache All Data* property in the report properties to *True*.



3.9 Dialog

It is possible to filter the data output in the report by adding a preliminary dialog.

You can define a dialog where the user can e.g. select the system for which the report should be created or specify the period that should be considered for the report.

To use a dialog in your report, you first need to create a new form in the Report Designer by right-clicking the horizontal area to the right of the Preview tab and selecting *New Form* from the context menu.

Now, the toolbox displays the components that can be added to the form. The *Properties* window displays the settings for the selected component.

3.9.1 Components

For each of the components, you can specify a name in the *(Name)* field of the Properties window. This name is required to access the value of this component

later.

Label

The label is used to describe another control. For example, you can specify which values have to be entered into a text box.

Text Box

Users can enter any desired text in a text box. To later reference the text entered into the text box, use *(Name).Text*.

Group

You can use group controls to organize other components in a clearly arranged form layout. From a functional point of view, there is no difference between grouped components and components that are arranged directly on the main screen. Use the *Text* property to specify the text to be displayed as the group title.

Button

For each form, you must add at least one button whose *Dialog Result* property has a value other than *None* or *Cancel*. The *OK* or *Yes* dialog results are best suited to apply the values from the form to the report.

Checkbox

To enable the input of Boolean values, add checkboxes. If the checkmark is set, the value of the component is *True*, if the checkbox is empty, the value of the component is *False*. The *Checked* property defines whether the checkmark will be set by default or not. To later reference the status of the checkbox, use (Name) .checked.

Radio Button

Use radio buttons if you want to provide a set of options excluding each other (i.e. only one option may be selected at a time). If you want to add multiple radio button sets, either arrange them in group boxes or panels. For each set of radio buttons, one radio button should be defined with the *Checked* property set to *True*. In the report, you can use the *(Name).checked* expression to find out whether the button was selected.

Combo Box and LookUp Box

For entries whose allowed values can be selected from a list, so called combo boxes or lookup boxes are available. These components are suitable for all cases where a limited number of valid values is available which may change dynamically. As the source for the values of the combo box, you can either define a data column or enter static values.

In the lookup box, a key is stored in addition to the value. This enables you to filter not only on the selected name, but, e.g. also on the primary key of the selected value.

In the Properties window, select the data column, e.g., *tHosts.Hostname* under *(Data Bindings) - Items*. When adding a lookup box, additionally select the data column to be used as the key, e.g. *tHosts.HostID*. You can enter a static list of values into the *Items* and *Keys* properties which are not grouped under *(Data Bindings)*.

Then, you can specify the *(Name).selectedItem* and *(Name).selectedKey* expressions to use the selected values or keys in the report.

Checked List Box

A *checked list box* lists values which the user can select by enabling the checkbox to the left of the corresponding value. In the Properties window, under *(Data Bindings) - Items,* select the data column whose values will be made available for selection. Using the *Check on Click* option in the *Behavior* category of the Properties window, you can define if a value is enabled by simply clicking on it or if the associated checkbox needs to be checked to enable the value. In the report, you can reference the selected values by specifying *(Name).selectedItems*.

Date Time Picker

Date-time pickers are used to select a date. Above all, this component is required if the user wants to restrict the report output to a certain period of time. In the report, specify *(Name).value* to reference the selected date. When you select the date, the current time is added automatically. If you only want to use the date, specify *(Name).value.date*.

Numbers (Numeric Up Down)

Use the *Numeric Up Down* component to make sure that only numbers will be entered. In addition, you can define a minimum and a maximum value. You can enter a default value using the *Value* property. To reference the number entered by the user, specify *(Name).value*.

Panel

The *Panel*, similarly to the *Group* component, can be used for structuring the components and for grouping *radio buttons*. The difference between a panel and a group is that the panel does not stand out against the rest of the form as long as it has the same color as the background.

3.9.2 Example

Some examples for the use of dialogs:

Filtering a single system

If the user should only select one particular system, it is best to define a *lookup box* (similar to a drop-down list).

Filtering multiple systems

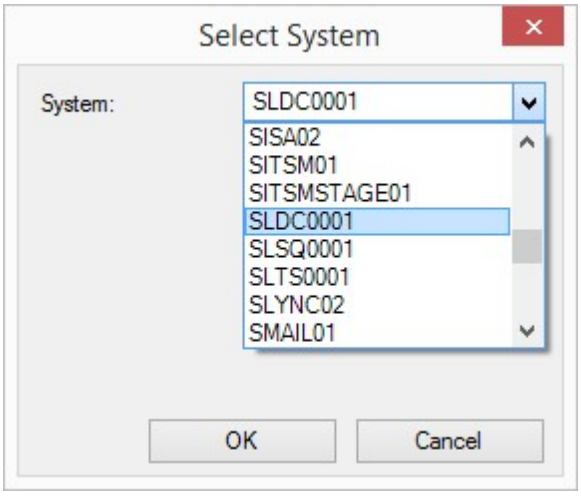
To enable the selection of multiple values at the same time, use a *checked list box*.

Filtering systems using an SQL statement

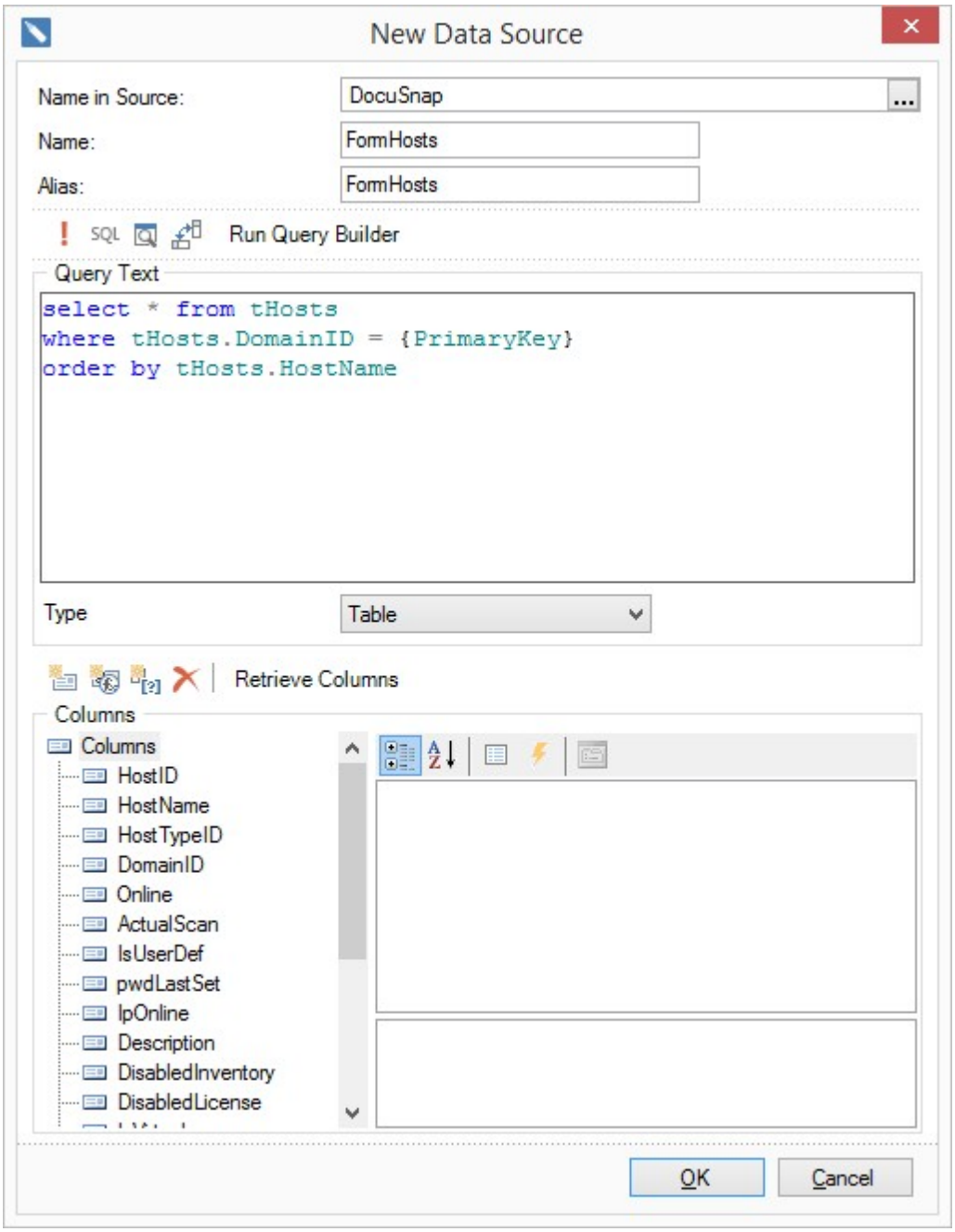
The desired data can be filtered by applying an SQL statement to the data source. The selected values are stored in variables and can then be used in SQL statements.

3.9.2.1 Filtering a Single System

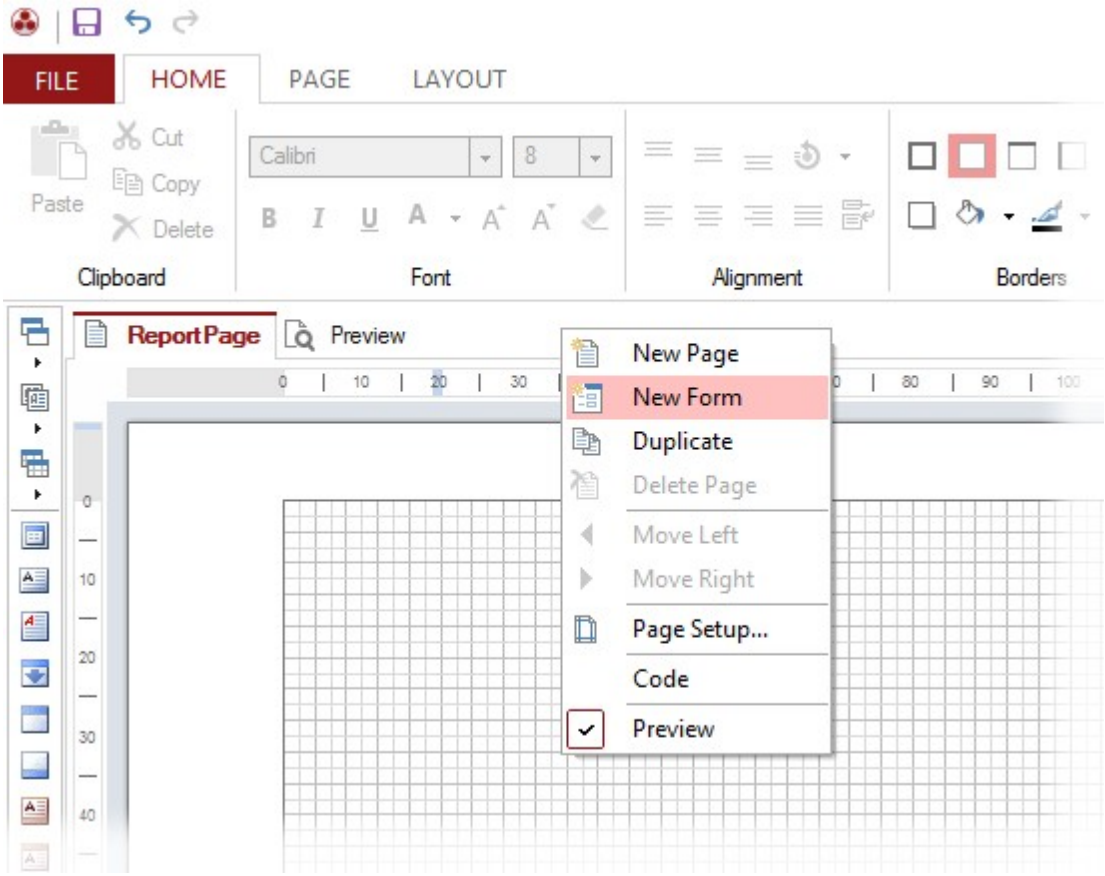
A *lookup box* can be used to enable the selection of a value.



To create this dialog, first define a new data source. This data source can then be used to supply the selection list values. Make sure to indicate in the data source how to sort the list because the components will output the values as they appear in the table without considering the alphabetical sort order.

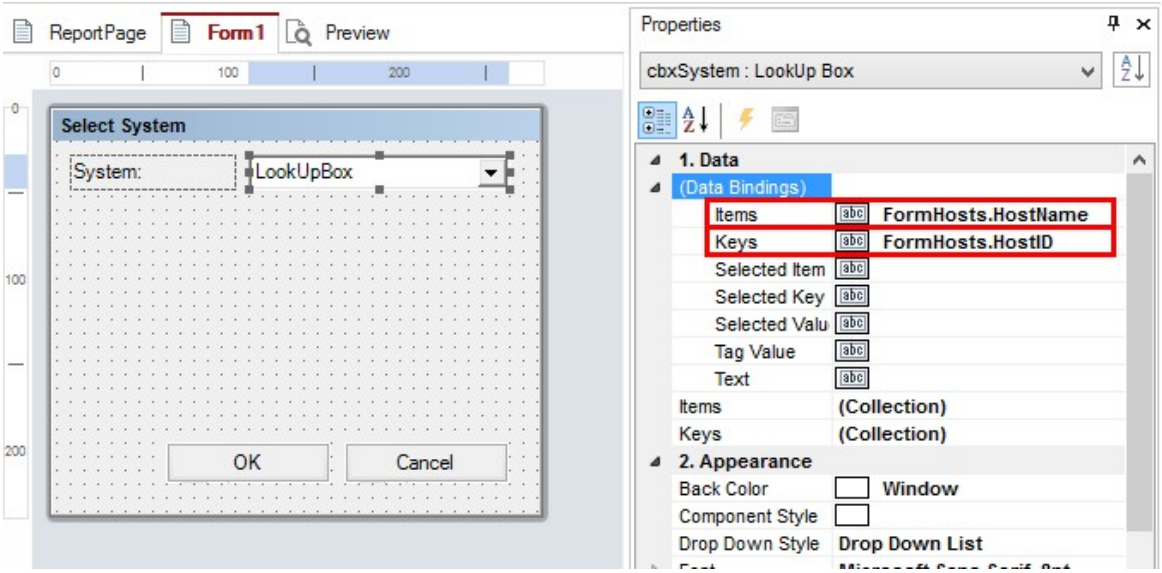


First, create a new form in the Report Designer by right-clicking the horizontal area to the right of the Preview tab and selecting *New Form* from the context menu.

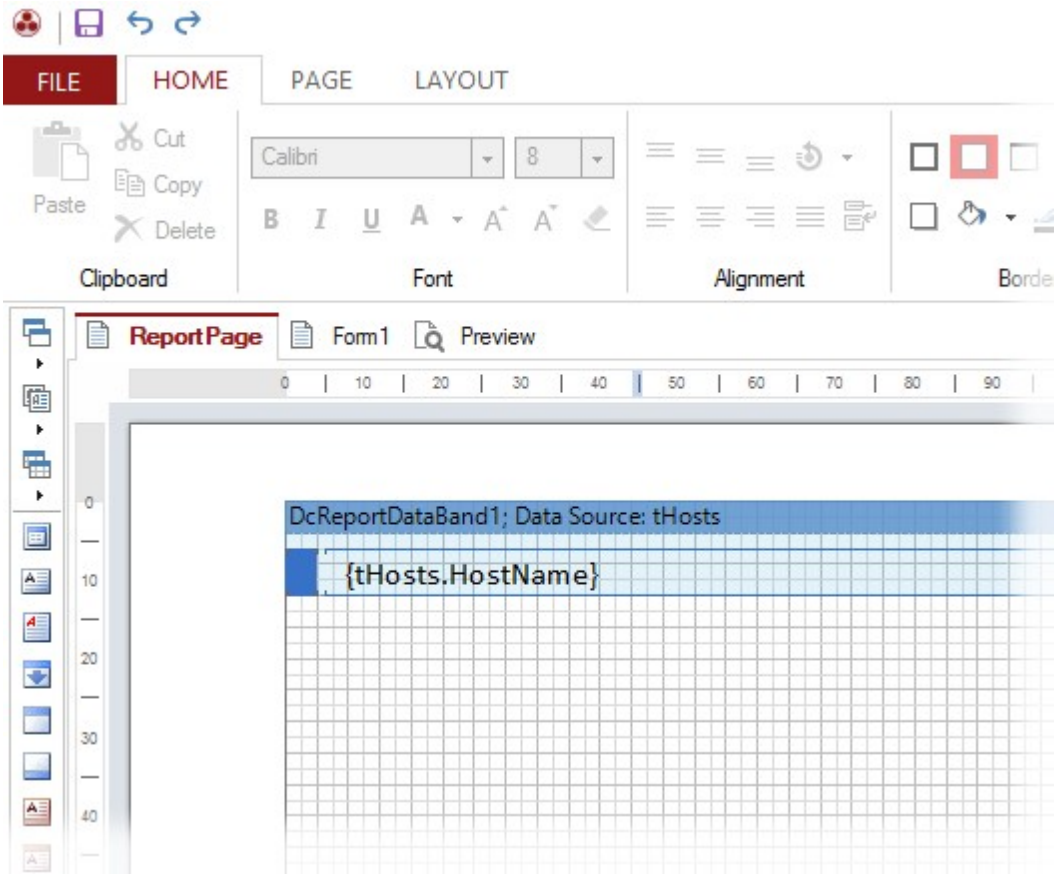


Use the toolbox to add a *label* as the first element and enter *System:* for the Text property.

Then, add a lookup box and select the *FormHosts.HostName* data column for the *(Data Bindings) - Items* property and the *FormHosts.HostID* data column for the *(Data Bindings) - Keys* property. For the lookup box, set the *(Name)* property to *cbxSystems*. Then, add two buttons. For one of the buttons, select *Cancel* as the Dialog Result property, and for the other one, select *OK* as the Dialog Result property. Change the Text properties to *OK* and *Cancel*, respectively. This completes the dialog creation.



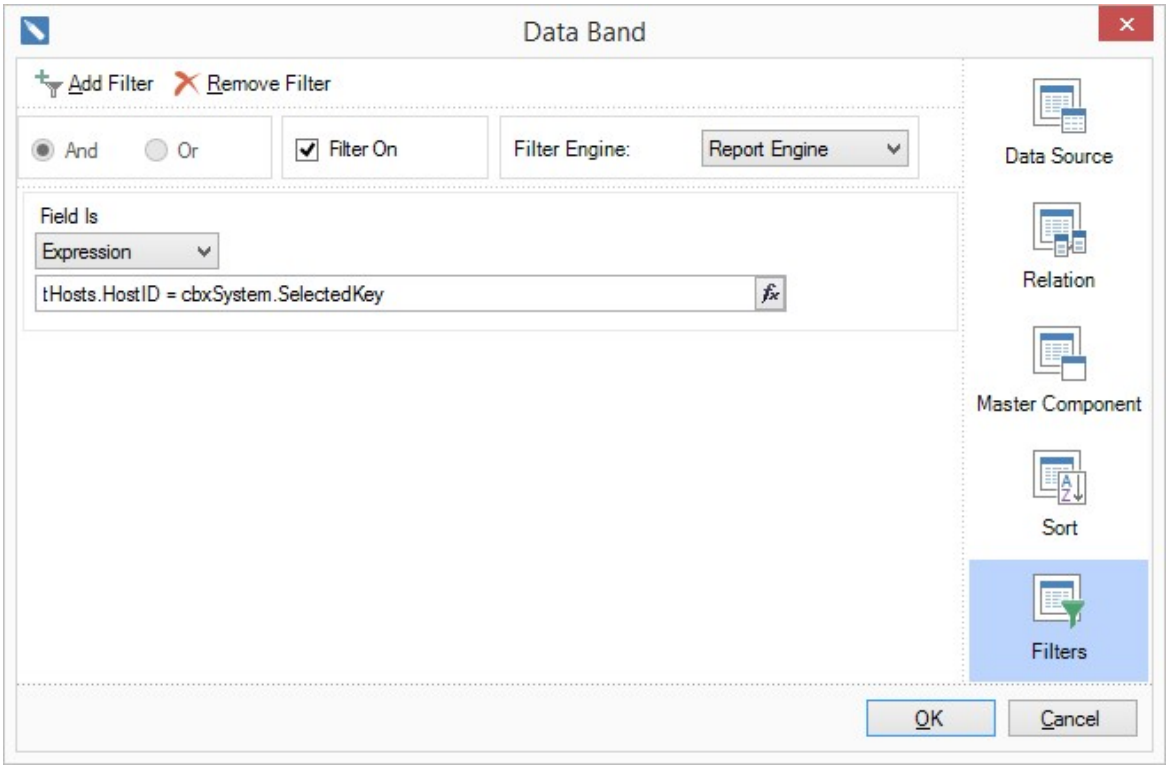
Next, change to the *ReportPage* tab to add the data output components. Define a data band and select the *tHosts* table as its data source. For the table, set the *Connect On Start* property to *True*. Then, add a text box to the data band and enter *HostName* as the Text property.



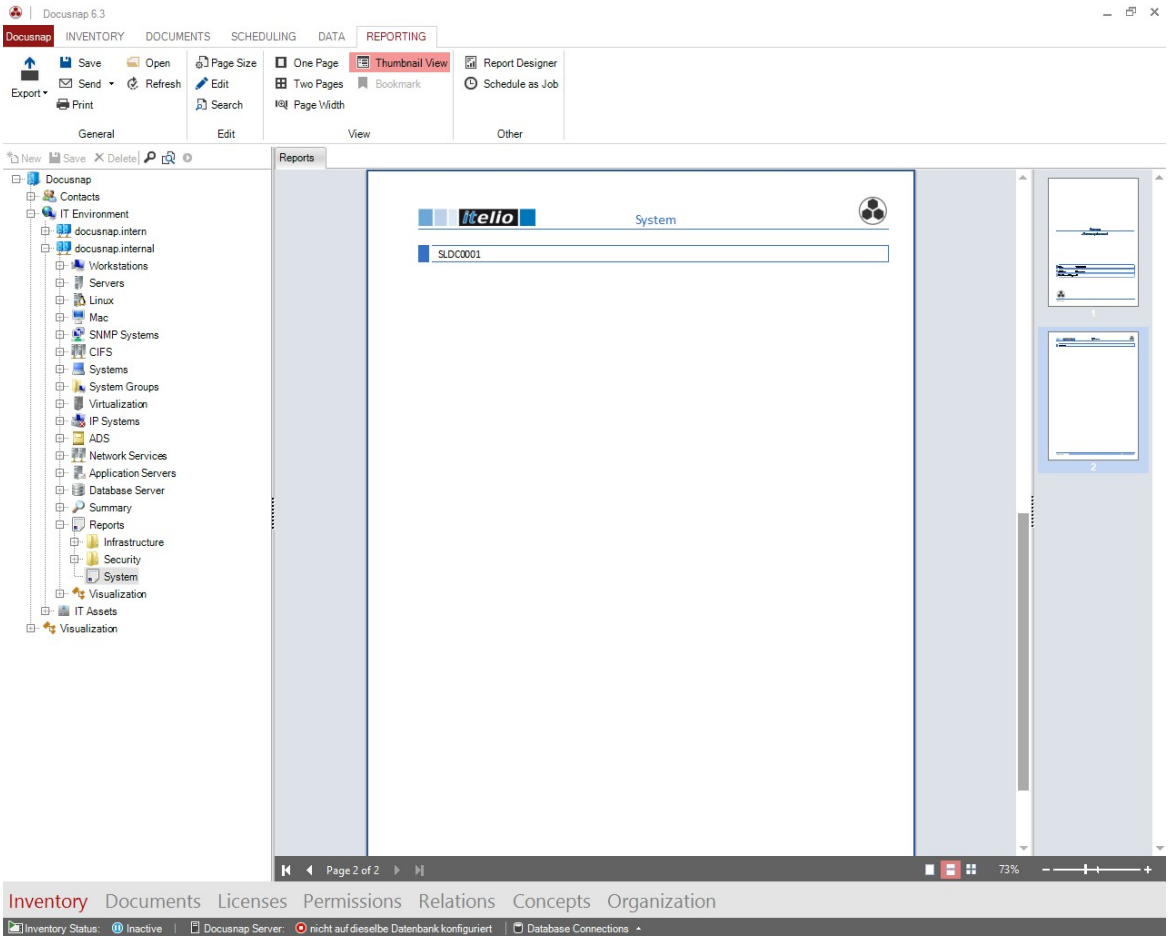
Next, double-click the data band to open the *Data Setup* dialog. Go to the *Filters* page to add a filter and enter the *tHosts.HostID = cbxSystems.SelectedKey* expression for it. This filter determines that only the system whose *HostID* matches

the one of the selected system will be displayed.

tHosts.HostID indicates the primary key of the *tHosts* table. The second part of the expression is composed of *cbxSystems* (the name of the lookup box in the dialog) and *SelectedKey* which references the key of the selected value.

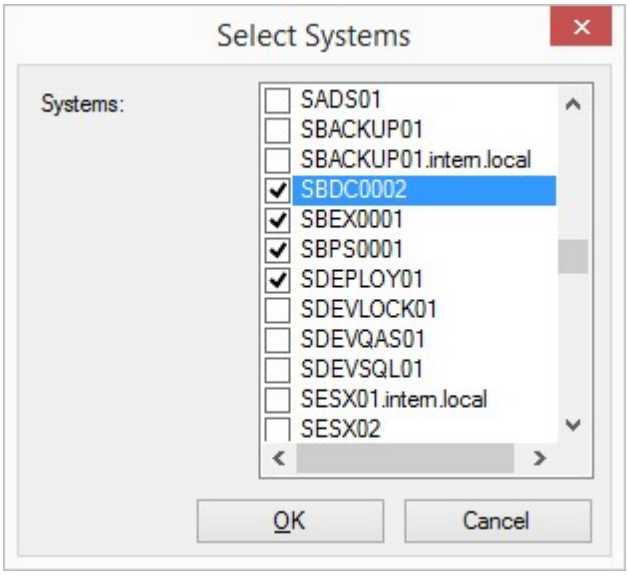


Only the selected value will be included in the report.



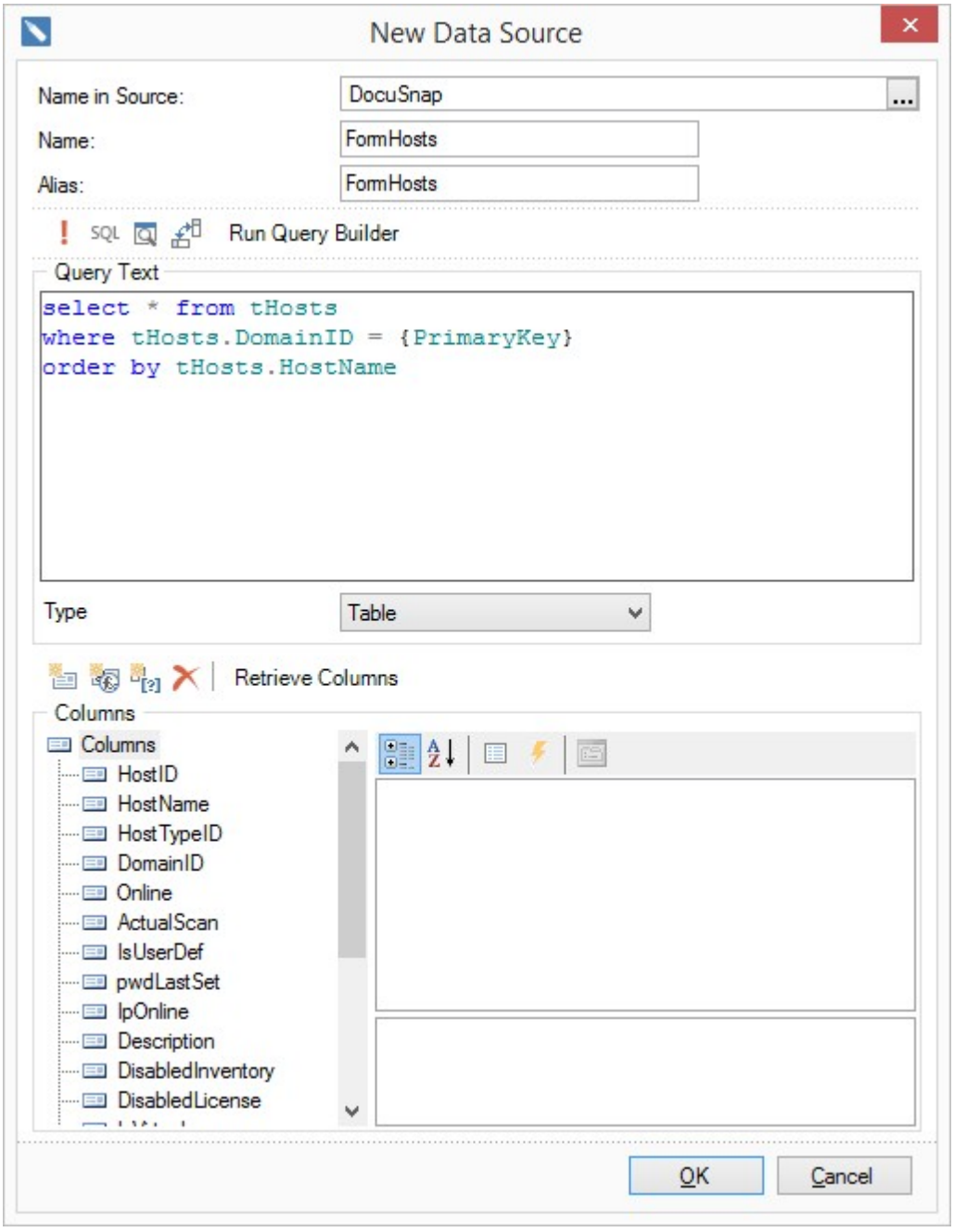
3.9.2.2 Filtering Multiple Systems

If the user is supposed to select multiple values, it is best to define a *checked list box* for this purpose.

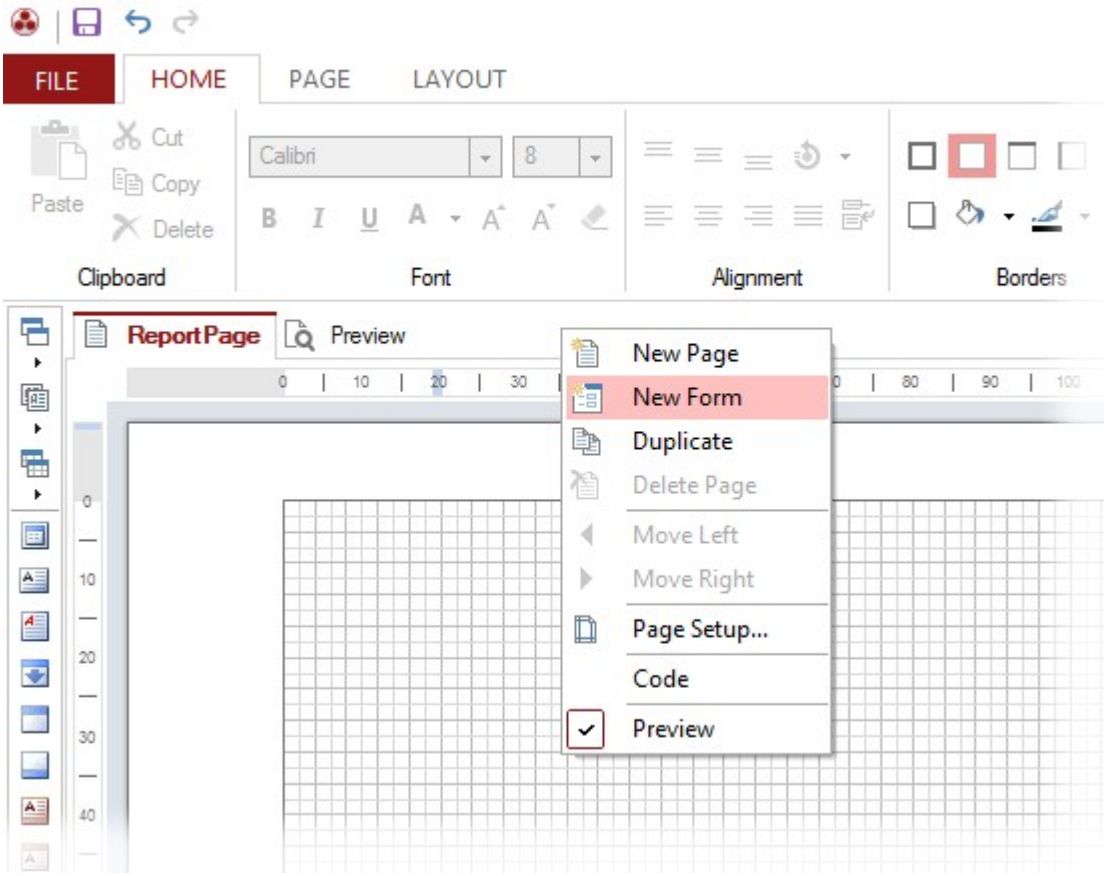


To create this dialog, first define a new data source. This data source can then be used to supply the selection list values. Make sure to indicate in the data source

how to sort the list because the components will output the values as they appear in the table without considering the alphabetical sort order.

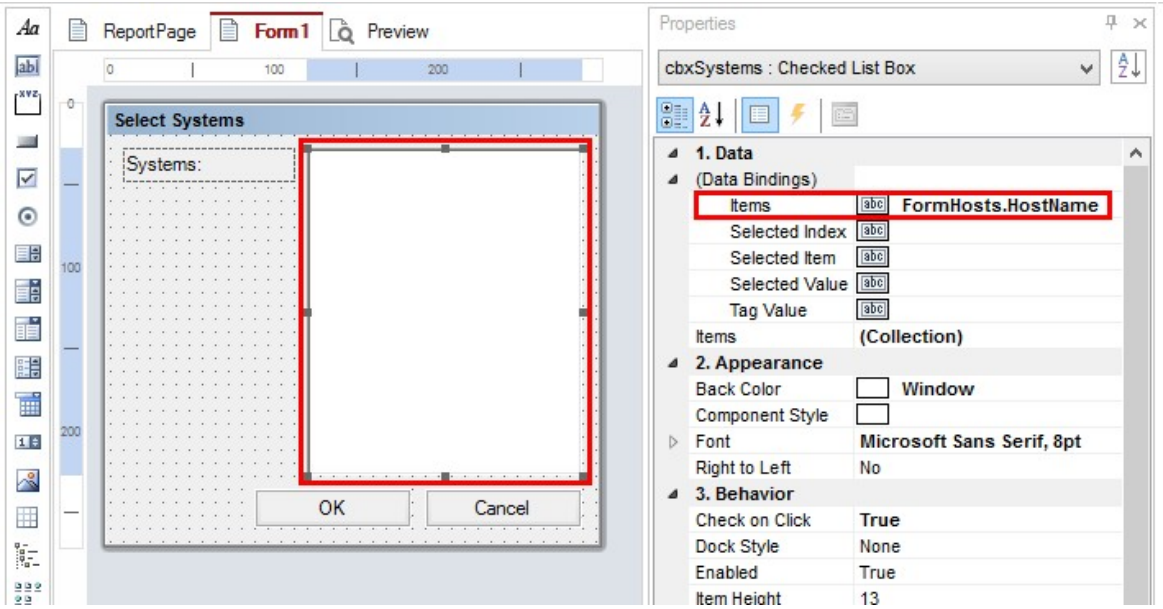


First, create a new form in the Report Designer by right-clicking the horizontal area to the right of the Preview tab and selecting *New Form* from the context menu.

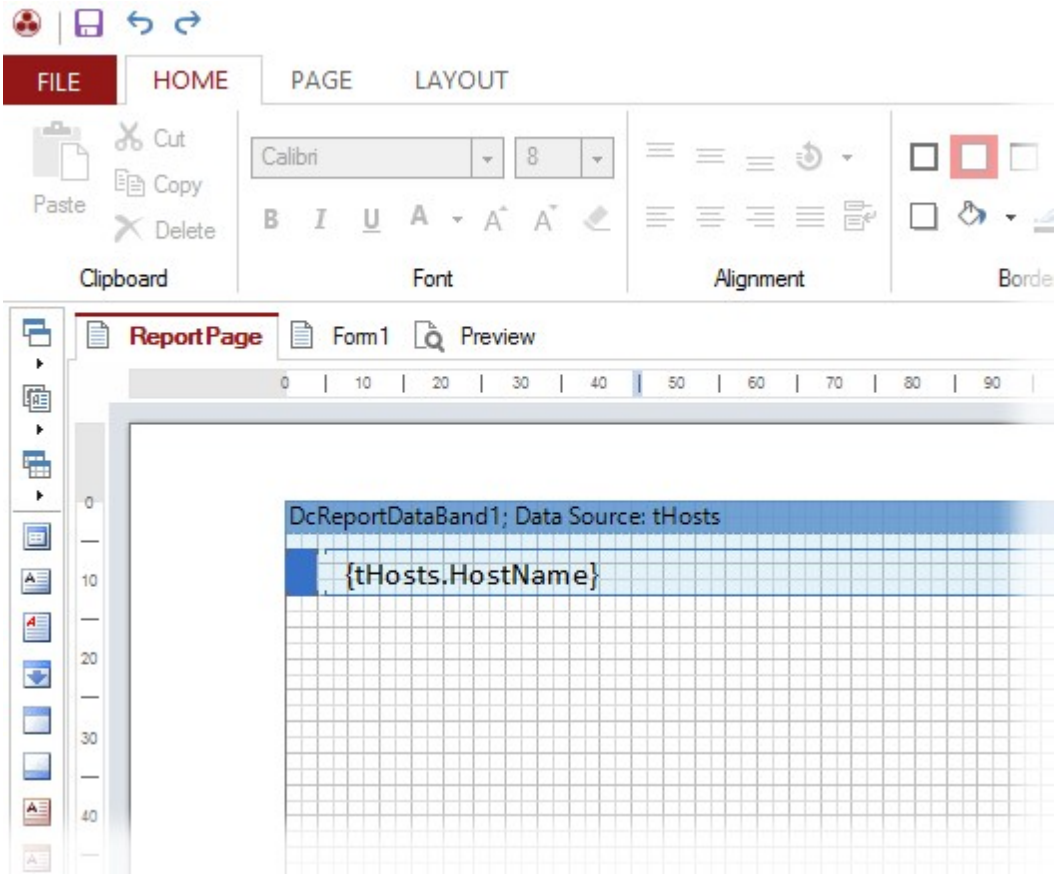


Use the toolbox to add a *label* as the first element and enter *System:* for the Text property.

Now, add a *checked list box* to enable the selection of multiple systems. For the *list box*, specify *FormHosts.HostName* as the data source under the *(Data Bindings - Items)* property. In the *(Name)* property of the *list box*, assign the name *cbxSystems*. Then, add two buttons. For one of the buttons, select *Cancel* as the Dialog Result property, and for the other one, select *OK* as the Dialog Result property. Change the Text properties to *OK* and *Cancel*, respectively. This completes the dialog creation.



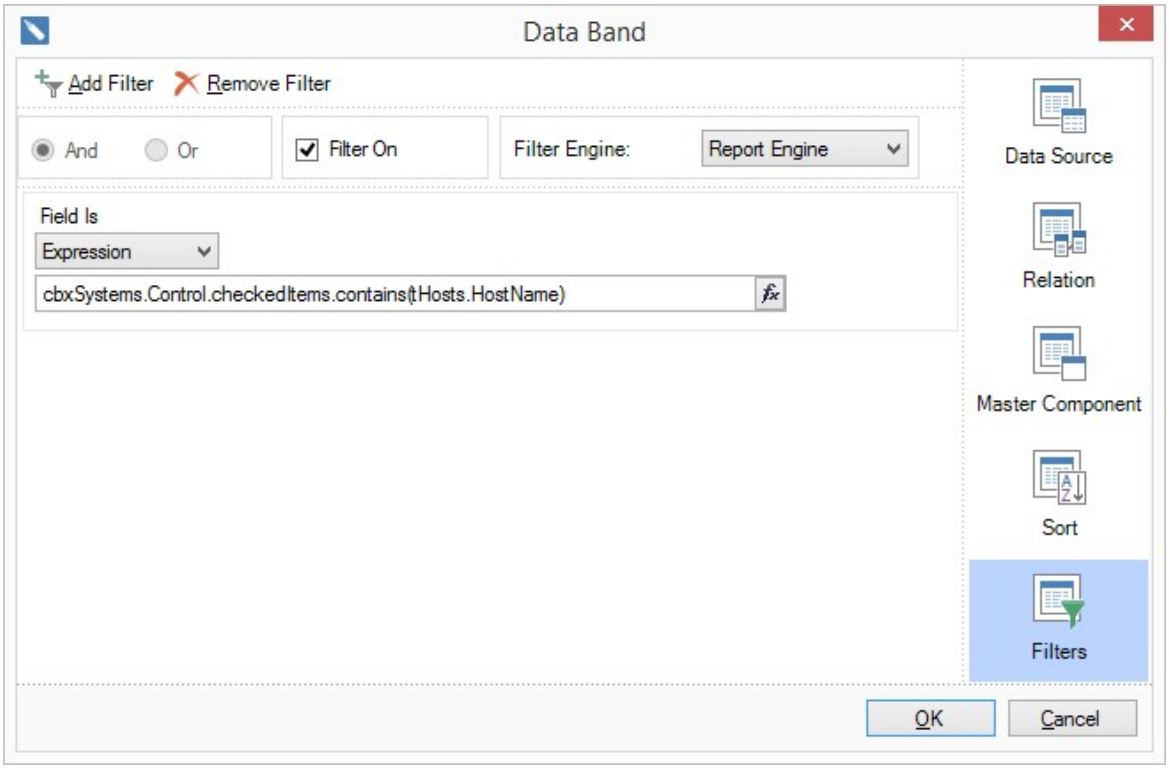
Next, change to the *ReportPage* tab to add the data output components. Define a data band and select the *tHosts* table as its data source. For the table, set the *Connect On Start* property to *True*. Then, add a text box to the data band and enter *tHosts.HostName* as the Text property.



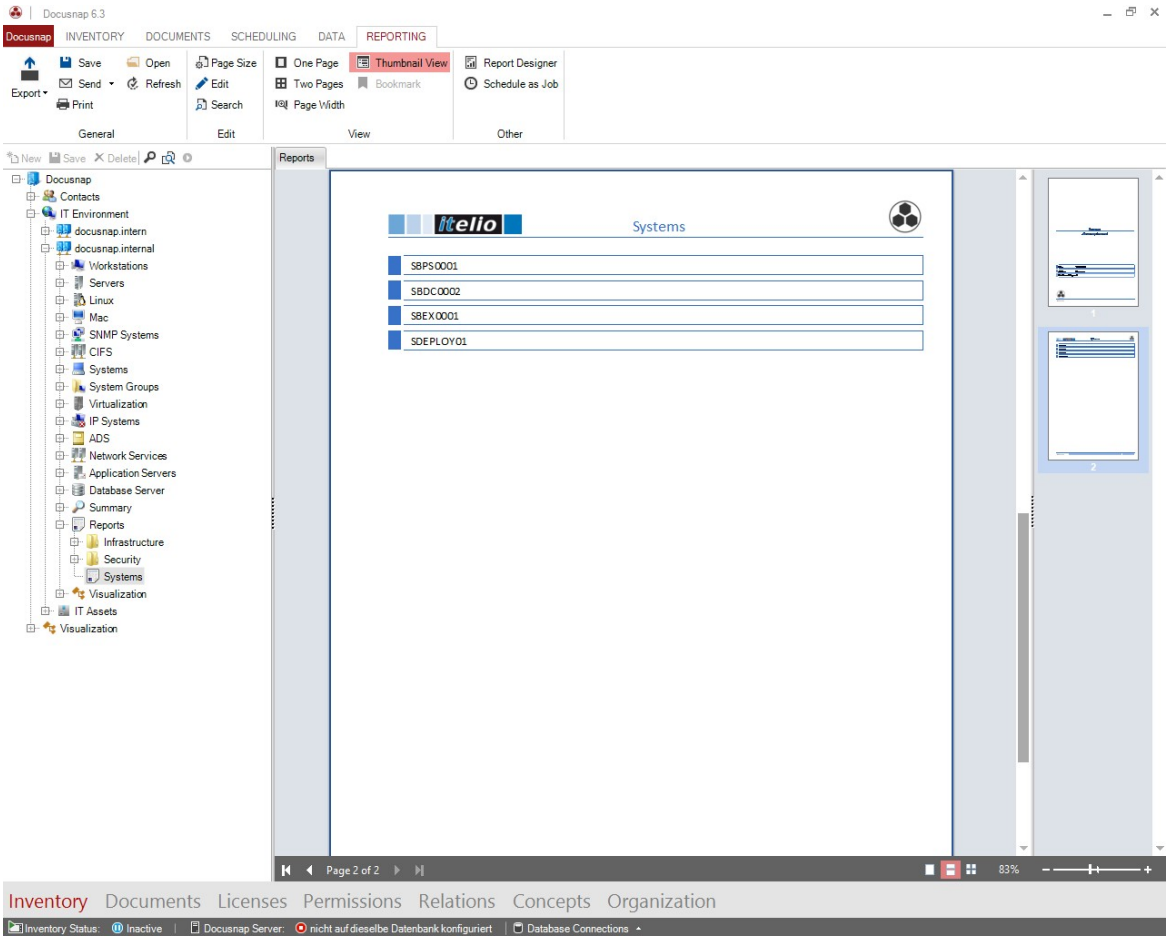
Next, double-click the data band to open the *Data Setup* dialog. There, go to the *Filters* page to add a filter and enter the following expression: *cbxSystems.Control.checkedItems.contains(tHosts.HostName)*. This way, only

systems will be output whose name matches the name of one of the selected systems. This statement compares each of the selected systems with *tHosts.HostName* and if it contains the name of the system, the system will be displayed.

The expression is composed of *cbxSystems* (the name of the list box), *Control* to access the control, *CheckedItems* (the list of the selected systems), *Contains* (a comparison function), and *(tHosts.HostName)* which references the names of the systems in the *tHosts* table.



Only the selected values will be included in the report.

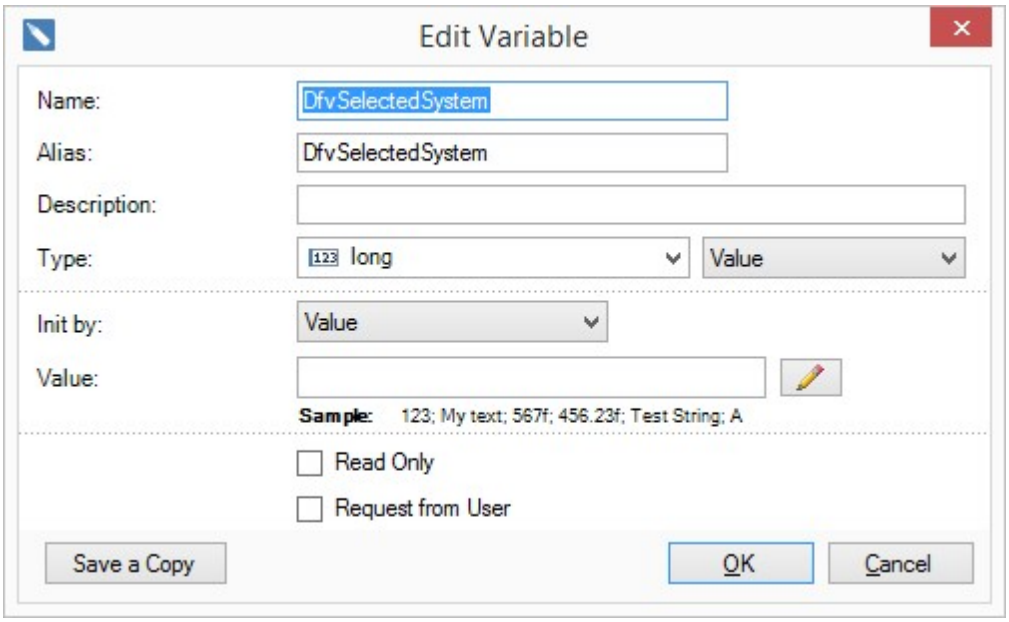


3.9.2.3 Filtering Systems Using an SQL Statement

As an alternative to filtering the data using the data band, the desired data can be filtered by applying an SQL statement to the data source. The advantage is that less data needs to be loaded from the database and therefore less memory is used.

This example is based on the report from the Filtering a single system example. To save the selected value from the dialog, right-click in the *Dictionary* panel and select *New Variable*. The New Variable dialog opens. Assign the name *DfvSelectedSystem* to this variable.

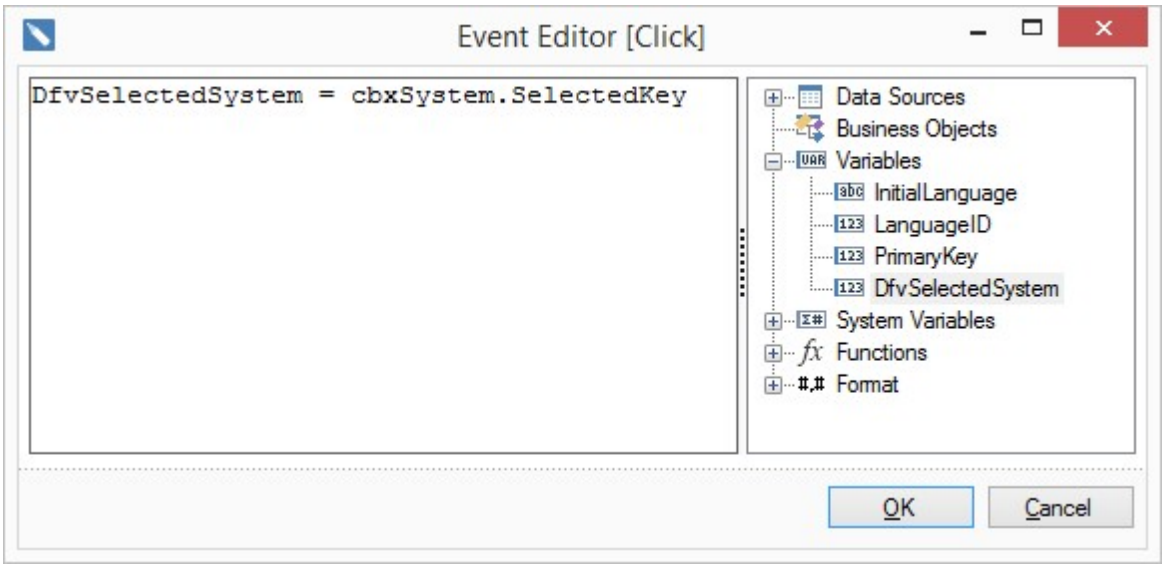
The *Dfv* prefix is short for *Docusnap Form Variable* and identifies variables which are used for evaluating dialogs. Variables may be named as desired, but if the created reports are to be scheduled using the Docusnap Server, it is recommended to use the *Dfv* prefix to make sure that the values assigned to the variables will be saved.



Now, save a value to the newly created *DfvSelectedSystem* variable. To do so, first double-click the *OK* button in the form. This opens the editor for the *click event*. Enter the following text in this editor:

DfvSelectedSystem = cbxSystems.SelectedKey

This assigns the selected value from the *cbxSystems* lookup box to the newly created *DfvSelectedKey* variable.

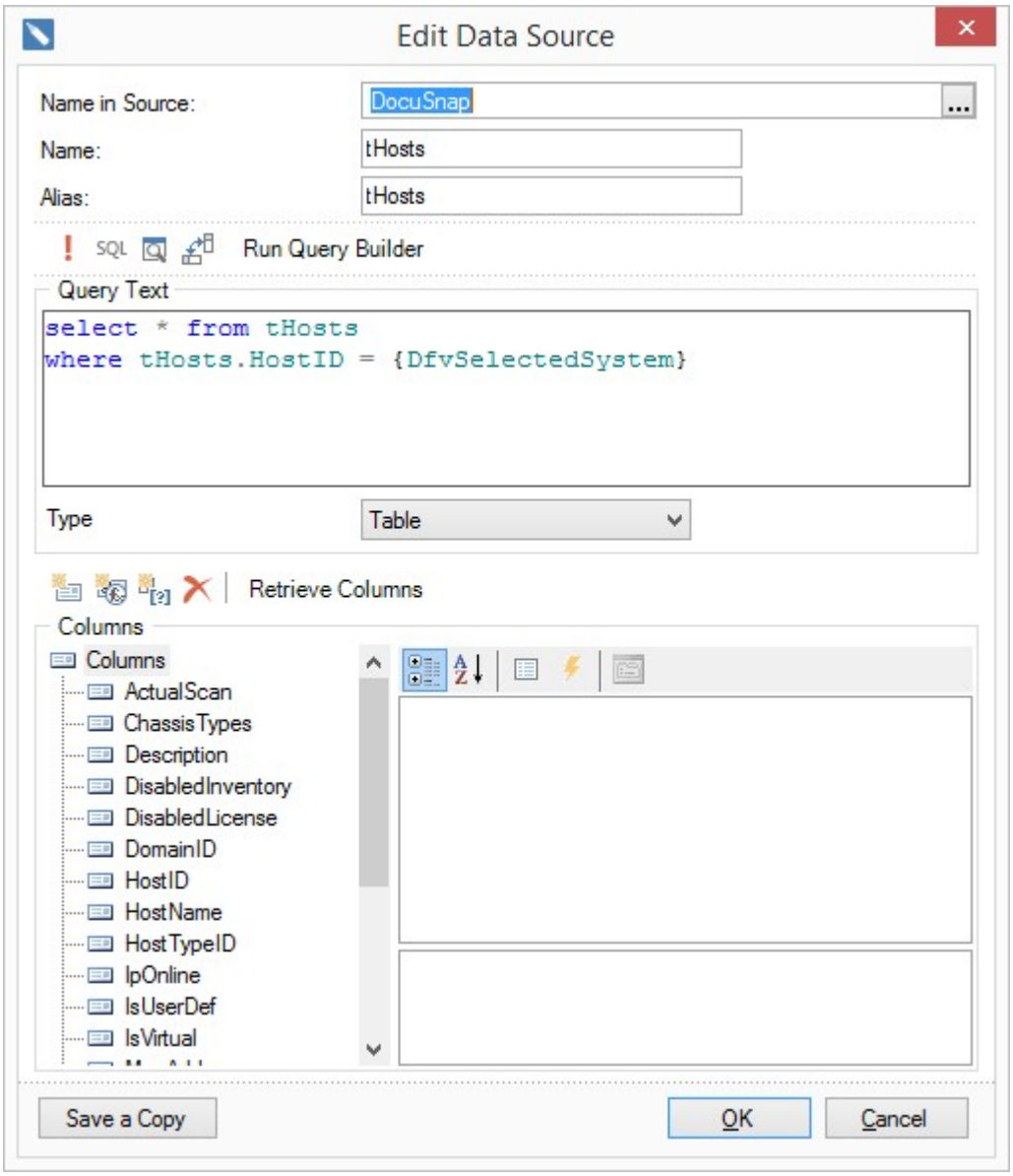


Instead of adding a filter to the data band as described in the Filtering a single system example, you can now use an SQL statement to filter the *tHosts* table on the selected value.

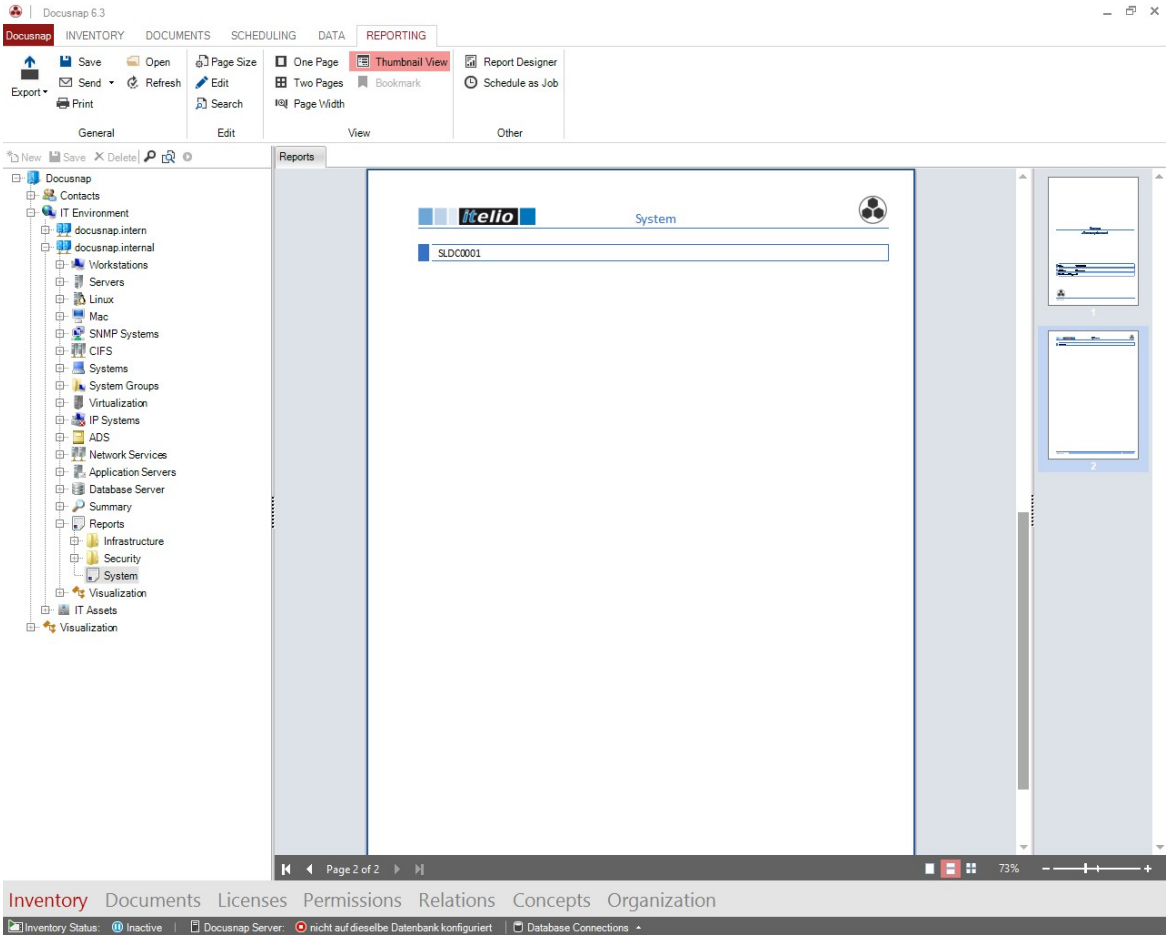
To adapt the SQL statement, right-click the *tHosts* table in the Dictionary panel, and then select *Edit* from the context menu. In the SQL statement, the *Where clause* can be used to filter the *HostID* on the value of the *DfvSelectedSystem* variable:

*Select * from tHosts where tHosts.HostID = {DfvSelectedSystem}*

To reference a variable in the SQL statement, enclose its name by braces { }.



The report will then only output the data for the selected system.



Part

4 Database Structures

For storing data, Docusnap uses an open database based on Microsoft SQL Server or Microsoft LocalDB. After the installation of Docusnap and the initial connection to the database, Docusnap automatically creates table structures in the database. These structures are defined in the Metaschema.dss and DDLUpdate.xml files.

If required, additional structures in the database (tables, views and fields) can be created automatically. Customizing is available for Premium and Enterprise Edition.

This section consists of two subsections. They include general information on the database and instructions on how to extend the database structure.

4.1 Definitions

In order to simplify working with and understanding the database, certain standards have been used in configuring the database. When extending the database, we recommend to continue using these standards.

All names of the database elements are in English. For all tables, an auto-incrementing primary key has been defined. The name of the primary key column is always the same as the table name (without the prefix) and has an "ID" suffix. Thus, the primary key column in the *tHosts* table is called *HostID.*

If a foreign key is specified, its name is identical with the name of the primary key column of the linked table. For the *tHosts* table, e.g., a foreign key was defined that links it to the domains in the *tDomains* table. Thus, *DomainID* was specified in the Foreign Key field.

All table names in the Docusnap database begin with a lowercase "t" as an abbreviation for "table". All tables whose name begins with *tSys* do not contain user-definable content. They hold system definitions for Docusnap.

If you create new fields or tables using the Customizing module, they will be identified by an "x" prefix. Thus, you would name a table for mobile phones as "xtMobilePhones", for example. The columns in this table would be identified by a leading "x" (such as xMobilephone). This convention avoids conflicts with system-defined names.

4.2 Organization

Basically, the Docusnap database is structured in a hierarchical manner, starting from the *tAccounts* company table. On the next level, you can find the domains table (*tDomains*) and below it, the child tables for the respective modules.

Thanks to foreign keys, it is easily possible to visualize the database structure in the

SQL Enterprise Manager.

To find out which tables are used at which level in the tree structures, open Docusnap Management. For more information about this topic, refer to the Meta Objects section.

Tables that contain the word "*docu*" in their name (e.g. *tDocu*, *tADSDocu*), are used to build the individual versions for each type of inventory scan. What is important in this is that each of these tables is linked with the *tSnapshot* table, since each scan is assigned to a unique snapshot. Furthermore, each of these tables contains a field named "*Archiv*" which indicates whether the entry is the most recent one (`Archiv=0`) or belongs to an older version (`Archiv=1`). Thus, using the `Archiv=0` filter criterion is a quick and efficient way to access the most current data without having to spend much time verifying the last inventory scan date.

4.3 Reference Values

To improve performance and to simplify the database for reference lists that contain only a few values (such as Service, StartType, Countries), Docusnap does not use separate tables, but rather reference values.

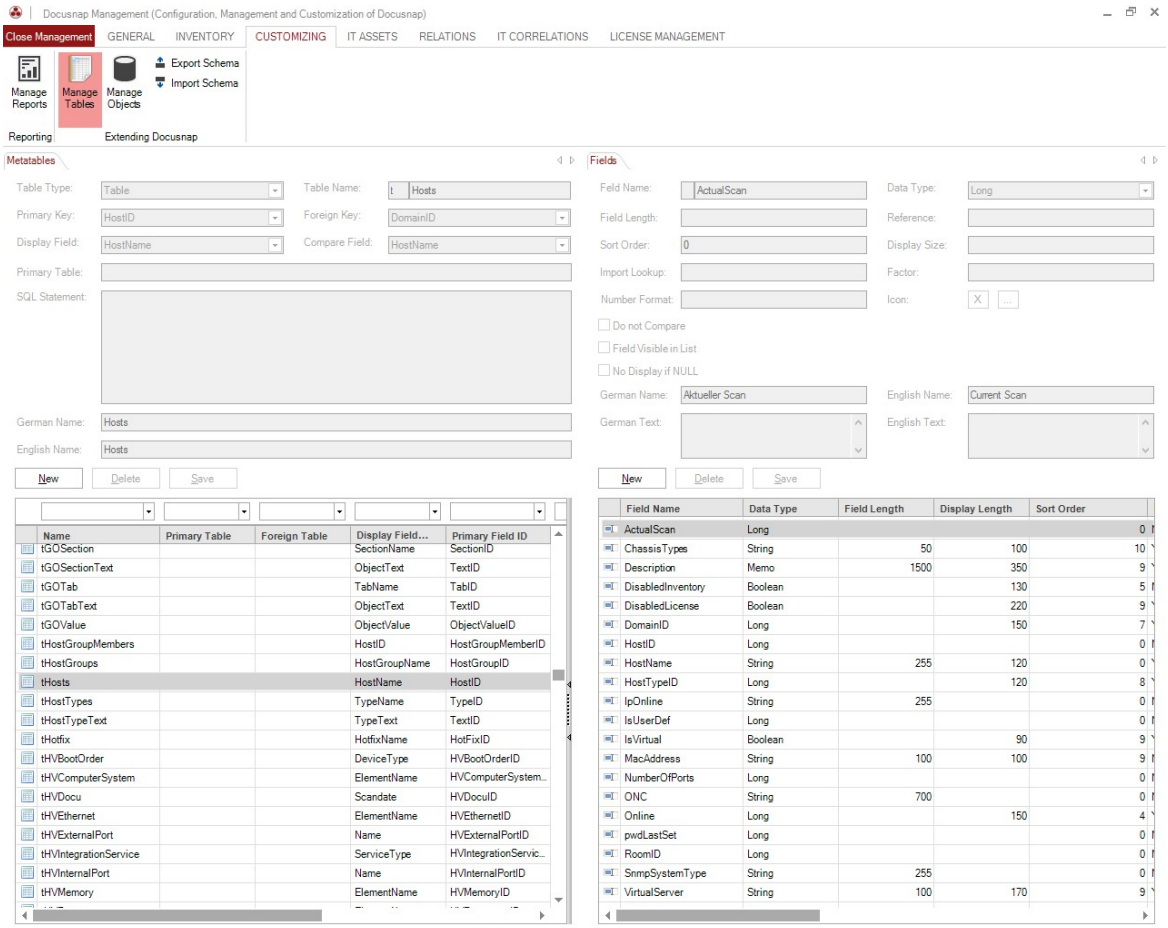
Each reference value consists of a filter value, an ID and the text in German and English, respectively.

Docusnap controls can either refer to a table or to a reference value. This means that the selection list for a combo box can be populated from either a physical database table or a specific type of reference values.

The defined reference values are stored in the *tSysInitials* table and will be checked for possible changes each time you start Docusnap.

4.4 Modification of the Structure

In Docusnap, you can extend the existing table structures as needed. For this purpose, open Docusnap Management and click the *Manage Tables* button on the *Customizing* ribbon.



This tab contains all descriptions of the Docusnap database structure. On the upper left pane the details of the below selected table are listed. The corresponding settings for the columns of the selected table can be made in the right pane.

In principle, there are three different types of tables in Docusnap:

Table	Tables are the physical Docusnap database tables described in this manual. All table names begin with a lowercase "t" prefix.
View	Views are tables that were generated by an SQL SELECT statement. Views may contain data from multiple tables. It is possible to add placeholders (e.g. FilterID) to the SQL statements. Docusnap will populate them with the current values at runtime. All view names begin with a lowercase "v" prefix.

Virtual	Virtual tables are used to format the tables that are used, for example, in the Docusnap wizards. In addition, they are used in the tree view in order to display data from various database tables in a single table. All virtual table names begin with a lowercase "i" prefix.

General Table Properties

When defining a table, you need to set several properties. The number of properties depends on the table type. The following properties apply to all tables, i.e. they are mandatory:

Property	Description
Table Name	Unique name of the table Depending on the selected table type, one of the "i", "v" or "t" prefixes is used. Names of user-defined tables are additionally prefixed with an "x" (e.g. xtSLA).
Primary Key	A field (i.e. column) in the table that uniquely identifies each record. Within Docusnap, these fields are usually auto-increment fields of the LONG data type.
Foreign Key	The field that represents the relation to another table further up in the hierarchy.
Display Field	The field in the table that is used to display the desired text output in the tree views (e.g. Data Explorer, Permission Analysis, etc.).
Comparison Field	For data comparison, a field is required that can be used to identify two records when comparing two snapshots. For this purpose, it might be a good idea to use, for example, a serial number or a computer name.
English Name, German Name	Name of the table in that language.

Note: The *Primary Key, Foreign Key, Display Field* and *Compare Field* fields can only be selected after you have created fields for your table. This means that you must save the table without these properties first. Then, create the desired fields and finally set the 4 table definition fields

Properties for Views

Views are tables that are built on the basis of an SQL SELECT statement. Docusnap supports this with a number of variables that will be replaced with actual data during the execution of the SELECT statement.

Basically, the SELECT statement has the following syntax:

```
SELECT [DISTINCT] SelectionList FROM Source [WHERE WhereClause]
[GROUP BY (GroupByAttribute)+
 [HAVING HavingClause]]
 [ORDER BY (SortAttribute [ASC|DESC])+];
```

In principle, all valid variants are possible that comply with the SQL standard.

Docusnap provides the following variables for use in statements. Make sure to always enclose the variable in braces, like this: {Variable}.

Variable	Description

{FilterID}	The FilterID variable is always replaced with the primary key of the parent object.
	Example:
	In Docusnap, the following statement:
	`select * from thosts where domainid = {FilterID} order by hostname`
	will for example result in the following when the statement is executed:
	`select * from thosts where domainid = 1 order by hostname`

{LANGUAGEID}	This variable is replaced with the integer value for the respective language: German = 0 English = 1

{Fieldname}	Using this construct, you can access each data field in a parent data object. Note: This will only work for the Data object type, but not for the Caption object type.

Enter the respective SQL statement directly into the *SQL statement* field where you can enter or edit the statement.

Since an SQL SELECT statement may be used to link multiple tables, Docusnap does not know which table the primary key refers to when you delete this object in the tree view. In the *Primary Table* field, you can specify the table in which the record should be deleted. If you leave this field blank, it will not be possible to delete meta objects that depend on this table.

SNMP Statements

In addition to SQL statements for the output of tables, Docusnap provides special statements for the output of SNMP tables. When performing an SNMP inventory scan, Docusnap uses MIBs. To program the output, enter the following into the *SQL Statement* field: First, the text *SNMP:*, then, in parentheses, the MIB and, separated by a comma, its name. To separate the MIBs, enter a semi-colon.

This results in the following syntax:

```
SNMP:(1.3.6.1.2.1.4.20.1.1,IPAddress;1.3.6.1.2.1.4.20.1.3,
SubnetMask;1.3.6.1.2.1.4.20.1.2,InterfaceID)
```

To ensure the output of values that exist only once for each SNMP device, precede the statement with SNMP-Single.

Use the following syntax:

```
SNMP-Single: (1.3.6.1.2.1.43.8.2.1.14.1.1,
Manufacturer;1.3.6.1.2.1.43.5.1.1.17.1,SerialNumber)
```

If you need to divide the value of one column by that of another column, e.g. to determine the toner level, separate the MIBs of the two columns using a slash. When the statement is executed, the quotient will be output in this column.

The statement has the following syntax:

```
SNMP-Single: (1.3.6.1.2.1.43.11.1.1.9.1.1/1.3.6.1.2.1.43.11.1.1.8.1.1,
TonerBlack)
```

Then, create the fields (columns) of this table. As the field name, use the name you entered in the statement for this MIB.

Data Fields

Data fields represent the various columns of a table. Each field is assigned a data type in Docusnap. The meta description of each field also includes its English or German name.

Property	Description
Field Name	In this field, you can specify a unique field name. Key fields should always have the "ID" ending, so that they can be identified more easily. User-defined fields will automatically be assigned an "x" prefix to avoid naming collisions.
Datatype	This field indicates the data type of the field. Blob — Binary field that stores binary data, such as attachments Boolean — Yes or No value Byte — Numeric field that holds integer values between 0 and 255. Date — Date field Decimal — Decimal field for floating point numbers Combination — Field that combines multiple fields. Field names are identified by ampersand "@" symbols, literal text is surrounded by single quotes ('Text'). The values can be concatenated using the "+" operator. Strings in angle brackets "<>" are only displayed if they are followed by more

		text. Example `@Lastname + '<, >' + @ Firstname` Output: Smith, John or, if no first name exists, Smith The Combination type should only be used for display fields.
	Long	Integer
	Memo	Text box containing an unlimited string of characters
	String	Text
	SID	Convert a SID into the associated ADS name.
Reference		By means of the *Reference* field, an ID can be converted into a meaningful (plain text) name. For this purpose, enter a reference to a table [TableName] or a reference to a reference value {ValueName}. If you have specified a value in the Reference field, Docusnap uses the numeric content of the entry and performs a query on the specified table or in the reference values, filtering on the respective primary key. The output will be the value that was defined as the display field in the target table. Example: Field: DomainID, Reference: [tdomains] Instead of the DomainID "1", the output will be "test.local".

Name, Description (German, English)	Field name in the respective language. This value will be shown later in lists as a column heading.
Sort Order	The field order in lists is not alphabetical, but rather determined by this value.
Display Size	Here, you can specify the column width (in pixels) for the display in lists. If you do not specify a value, Docusnap uses a default value of 80 pixels.
Field Length	This value can only be defined for the *String* data type. It is used to enter the maximum number of characters that may be entered in the respective field.
Import Lookup	This field defines reference fields that must be compared and matched for data import. Basically, these are references such as comment types, passwords types, etc.
Factor	In this field, you can set a divisor for converting numeric values. This field is only enabled for numeric data types. For example, a factor of 1024 would convert a byte value into kilobytes.
Number Format	Using this field, you can define the formatting of numeric values according to standard conventions. Valid placeholders include the hash symbol "#" for any numeric value and "0" for numeric values that should be padded with leading zeroes if they are too small for the field. The thousands separator is a comma, and the period is used as the decimal separator. Examples: #,##0.00 MB 00 h
Icon	Using the Icon property, you can store a specific icon for each field. This is only necessary if the meta object that

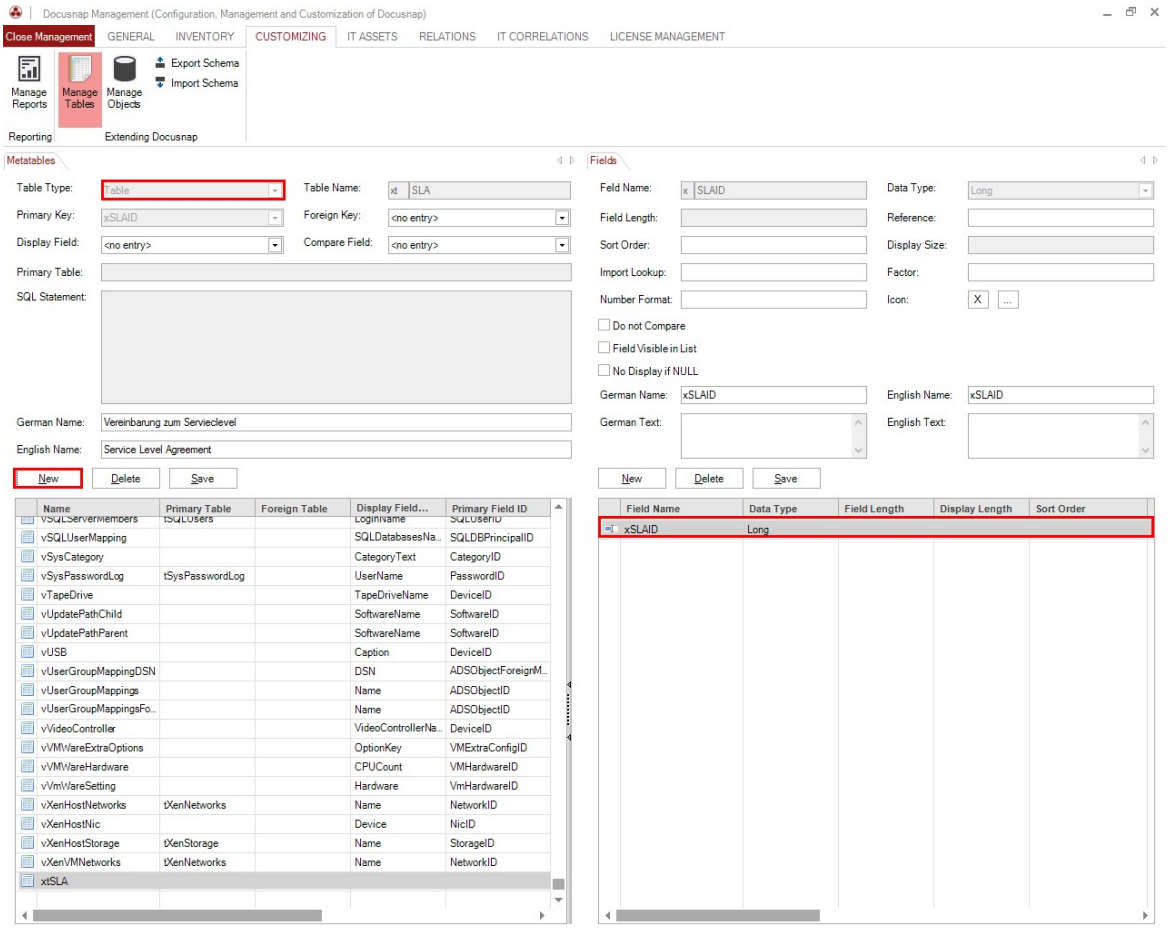
	refers to the table has a vertical alignment.
Field Visible in Listings	If you tick this checkbox, this field will be visible in lists.
Do Not Compare	By enabling this checkbox, you can prevent the field from being used in data comparisons. This is useful, e.g., for a field that reflects the available storage space on a hard disk, since this value is ever-changing.
No Display if NULL	If the meta object for which the table will be shown has a *Vertical* alignment, this flag determines whether the column will be displayed at all if the database value is NULL.

4.5 Example

As a simple example, this section explains how to create an additional table for entering SLAs (Service Level Agreements).

Creating the Table

The first step is to create the table. To do so, click the *New* button. Then, select *Table* as the table type and enter the table name, i.e. *SLA*. Save the table by clicking the *Save* button. The xSLAID column is created automatically and defined as the primary key.



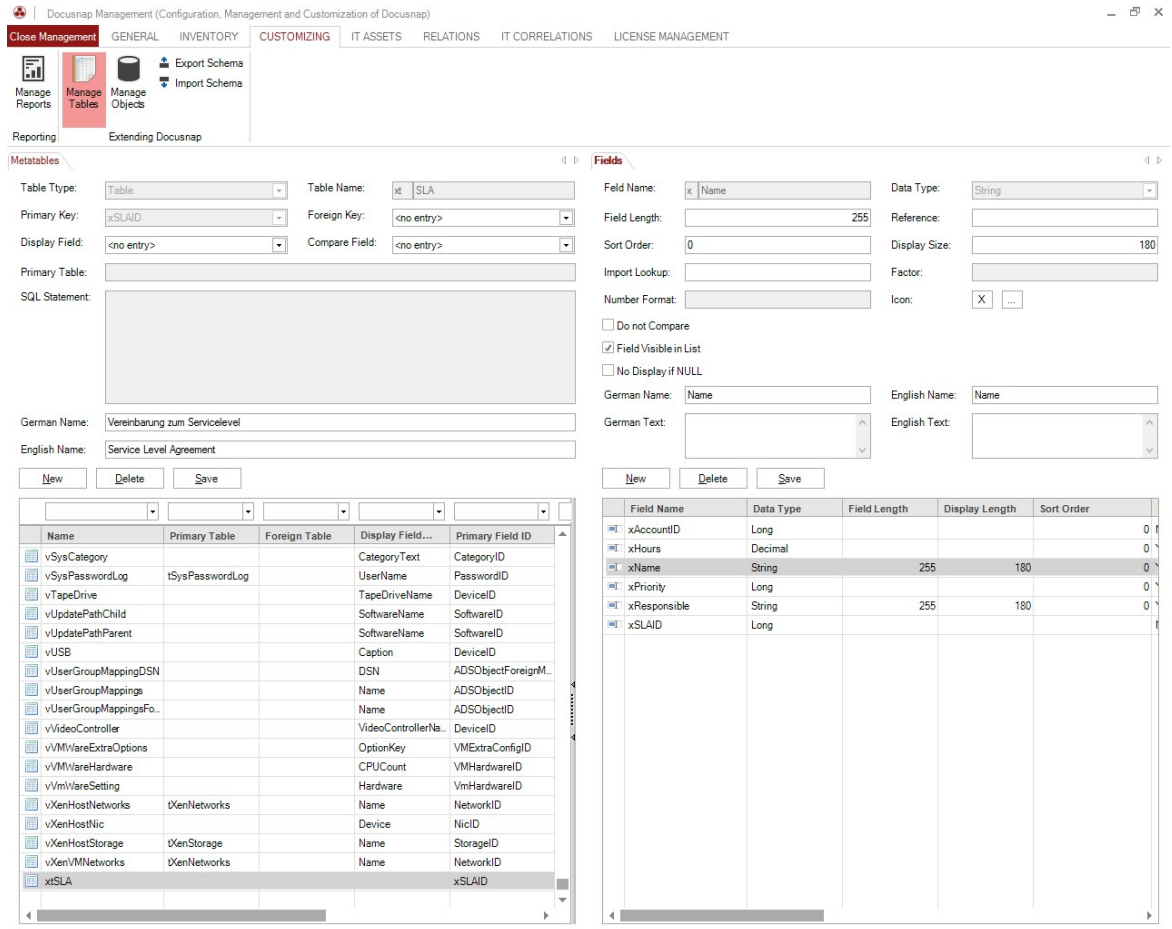
Creating Fields

Next, click the *New* button in the lower pane to create additional fields. To save a newly defined field, click the *Save* button in the field creation pane.

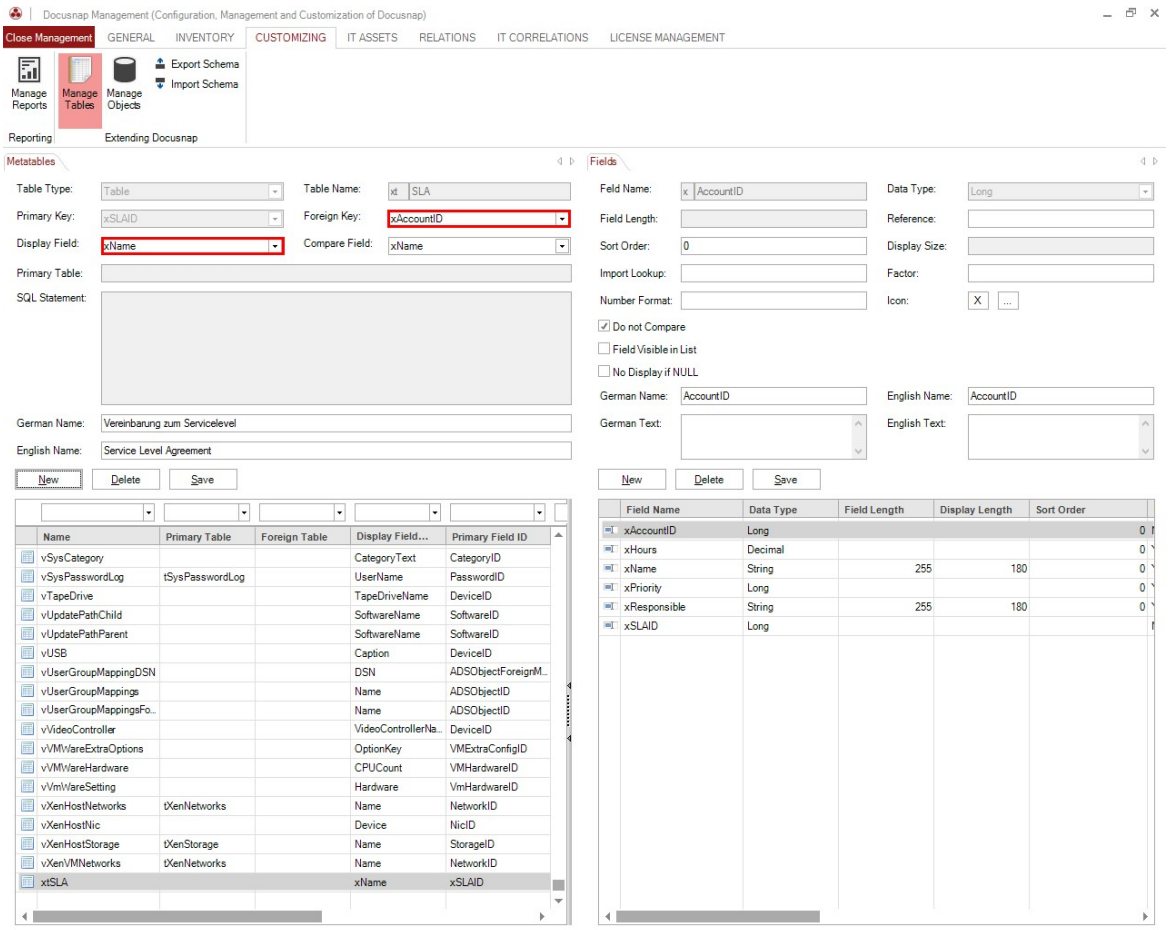
For this example, you need to create the following fields:

Field Name	Datatype	
AccountID	Long	

Hours	Decimal	
Name	String	Field Length: 255
Priority	Long	Reference: {RePriority}
Responsible	String	Field Length: 255



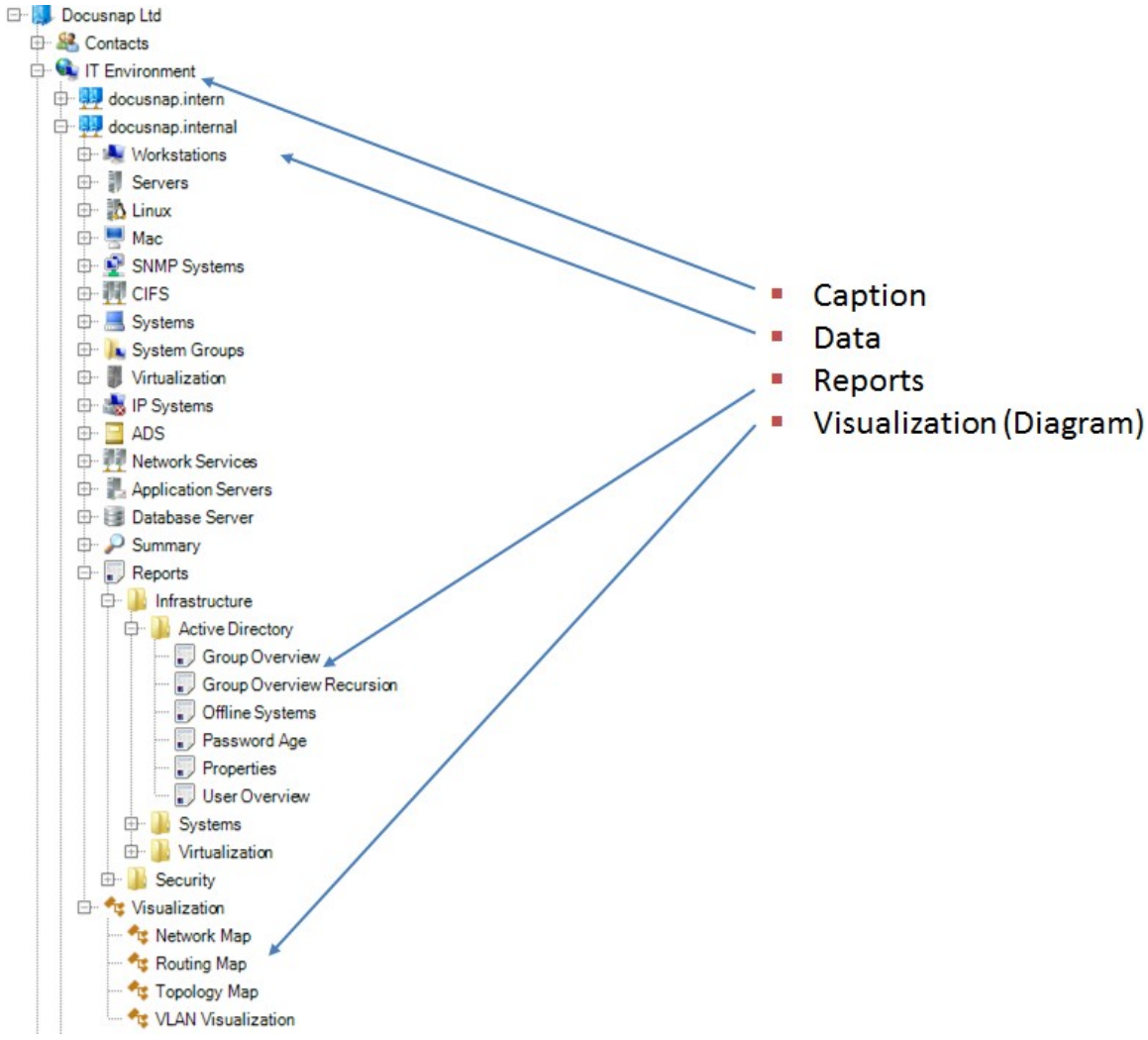
When you are done creating these fields, select the *xAccountID* field as the foreign key and the *xName* field as the display field. When you have selected the foreign key and the display field, click the *Save* button in the upper pane to save your changes.



Part V

5 Meta Objects

The Docusnap tree structures consist of meta objects that can be extended as desired. In total, six different tree structures are available in Docusnap (Inventory, Permissions, Licenses, Organization, Documents and Data Import (not visible)).

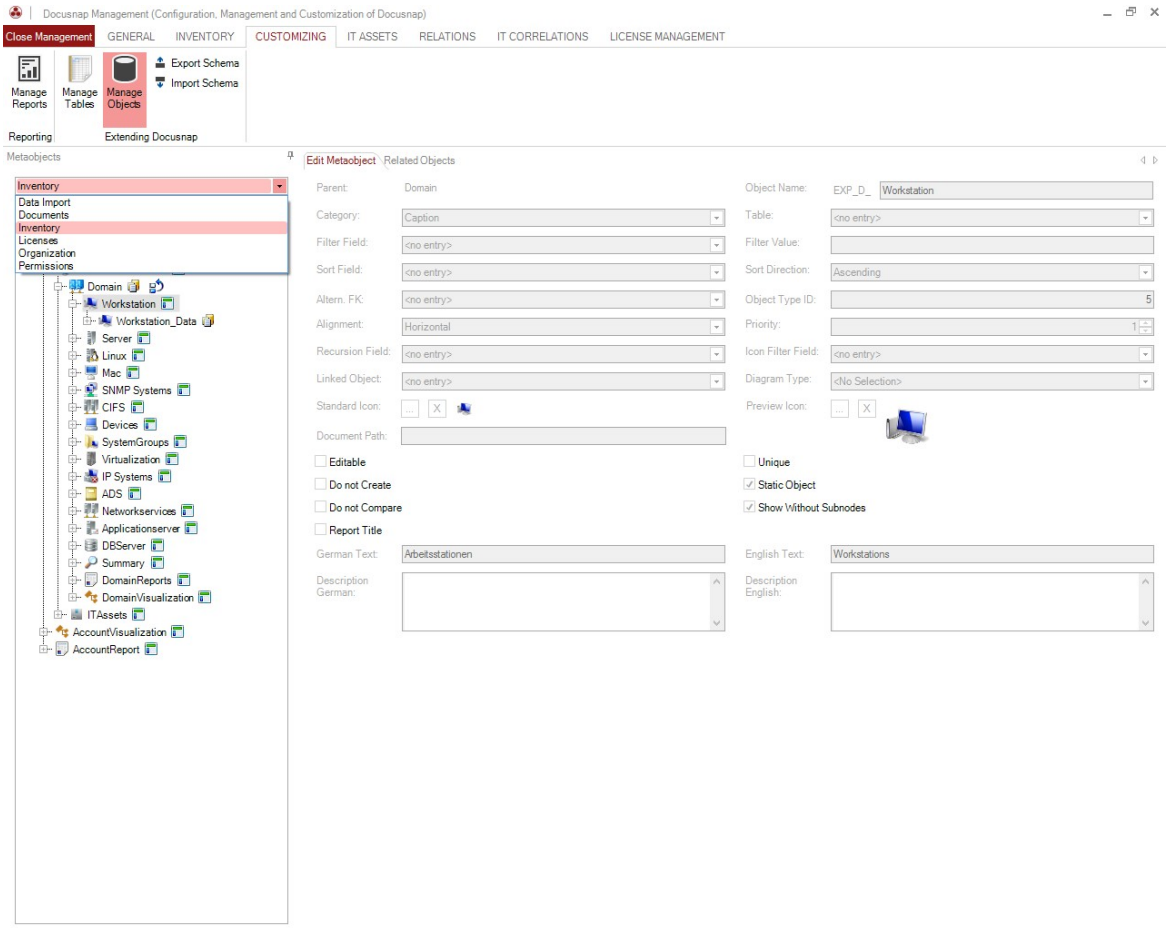


Meta objects are the items underlying the individual tree nodes. A node can belong to one of the following categories: Caption, Data, Report, Linked Object, Output or Diagram. Meta objects define the contents and organization of the tree structure. Meta objects of the Data and Report types are placeholders for the corresponding data.

5.1 Basics

You can adjust the tree structure in the *Metaobjects* tab in the Docusnap Management in the *Customizing* ribbon. This tab provides all settings required to create user-defined structures.

Meta Objects



In Docusnap, six different hierarchical structures are available that can be used to organize the data that has been recorded.

Hierarchy	Content
Inventory	All data retrieved by a scan or entered manually.
Data Import	This hierarchy determines the structure for importing data from other databases.
Licenses	Represents the hierarchy for the License Management module.
Organization	Hierarchy for the Docusnap Organization module.
Permissions	Hierarchy for the Permission Analysis module.
Documents	Structure for the Documents view.

You can extend all hierarchies. Certain properties and settings apply to all meta object types. They will be explained below. The specific properties of the various object types will covered in separate subsections.

For each meta object, a unique primary key is stored at runtime that allows its identification. Each object without a primary key (such as captions) will inherit the primary key of its parent Data-type meta object.

In simple words, each child level is filtered on a value from its parent level. Thus, the domain level is filtered on the value of the AccountID column, which represents a unique value at the company level.

General Settings for Metaobjects

Property	Description
Object Name	This field contains the name of the object. The object name is composed of a prefix + its origin, i.e. defined by the software manufacturer ("_D_") or by the customer ("_U_") + the object name. The prefix indicates in which tree hierarchy this meta object is located. The following prefixes are available: ▪ Inventory (EXP) ▪ Data Import (IMP) ▪ Licenses (LIC) ▪ Organization (ORG) ▪ Permissions (RIG) ▪ Documents (DOC) Example: A new object for a caption (such as Service Level Agreement) would have the following name: EXP_U_SLA
Category	This field indicates the object category or type (Caption, Data, Report, Linked Object, Output or Diagram).
German Text / English Text	The display name of the object in English or German, respectively (only visible for captions in the tree)

Priority	If you create multiple meta objects at the same level, their order is not alphabetic, but determined by the number in this field. Thus, the Server meta object under a domain, for example, has a higher number than the Workstations meta object.
Alignment	This field indicates how the results from the list in the right Docusnap pane will be aligned.
Object Type ID	Unique ID of each meta object. Docusnap assigns these IDs automatically. By default, all IDs below 1,000,000 are reserved for system definitions.
Default Icon	Defines the icon that is displayed next to the object in the tree.
Preview Icon	Defines the icon to be used for the creation of diagrams that illustrate relations.
Document Path	Using this property, you can link external documents, such as Word or HTML files, with this meta object. When you select an object, Docusnap automatically checks whether documents exist in this path. If documents are found, they will be displayed on the separate *Documents* tab of the Docusnap Data pane. The path entered for this property is always relative to the documentation directory. In order to make paths flexible, you can use variables when specifying the path. The following variables are available: %Account% Company name %Domain% Domain name %Object% Object name %ParentObject% Object name of the parent node Docusnap will automatically append "_EN.html" or "_DE.html" to the file names. Example:

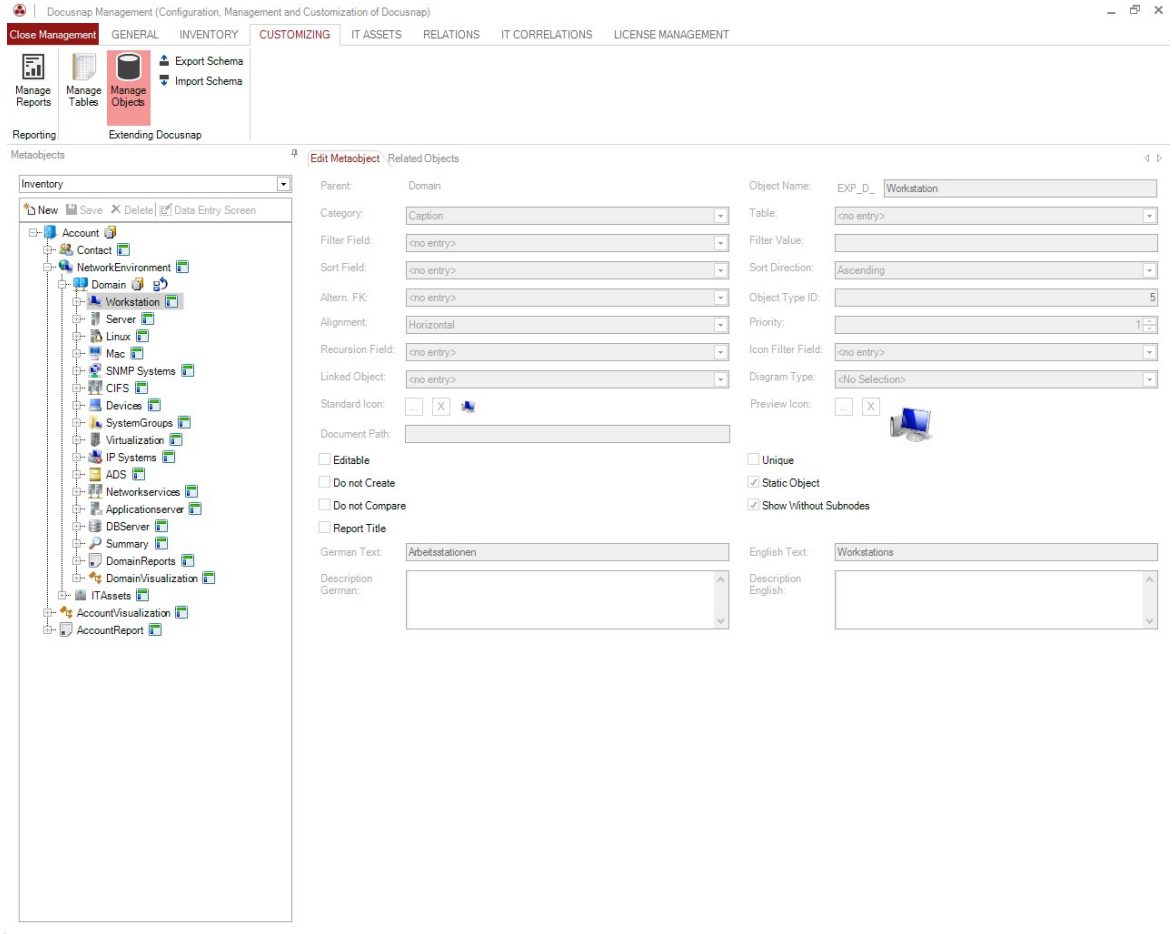
	Assuming your documentation directory is "c:\Documentation" and you enter %Account%\%Domain%\Datasheets\Workstations\%Object%\%Object% in this field, the resulting file name will be: c:\Documentation\Docusnap AG\test.local\Datasheets\Workstations\Notebook1\Notebook1_en.html
Show Without Subnodes	Objects of this meta object type will even be displayed if they do not have any child nodes. By default, Docusnap hides objects without child nodes, i.e. this checkbox is disabled. Enabling this checkbox also has a performance increasing effect, because Docusnap will not have to check whether there are subnodes or not.
Do Not Compare	The Docusnap data comparison will ignore objects for which this checkbox is enabled. Objects at levels below this one will neither be compared.
Report Title	When you generate/execute a report, the first object that is higher in the hierarchy and for which this checkbox is enabled, will be used as the report subtitle.
Static Object	This option enables the extensions (comments, passwords, etc.) for this meta object.

If the alignment is set to Vertical, make sure that no more than one record is returned for each level. Otherwise, the data output will fail.

For a vertical alignment, Docusnap will ignore the default icon that has been specified. In this case, specify the icon to be used for each individual field.

5.2 Captions

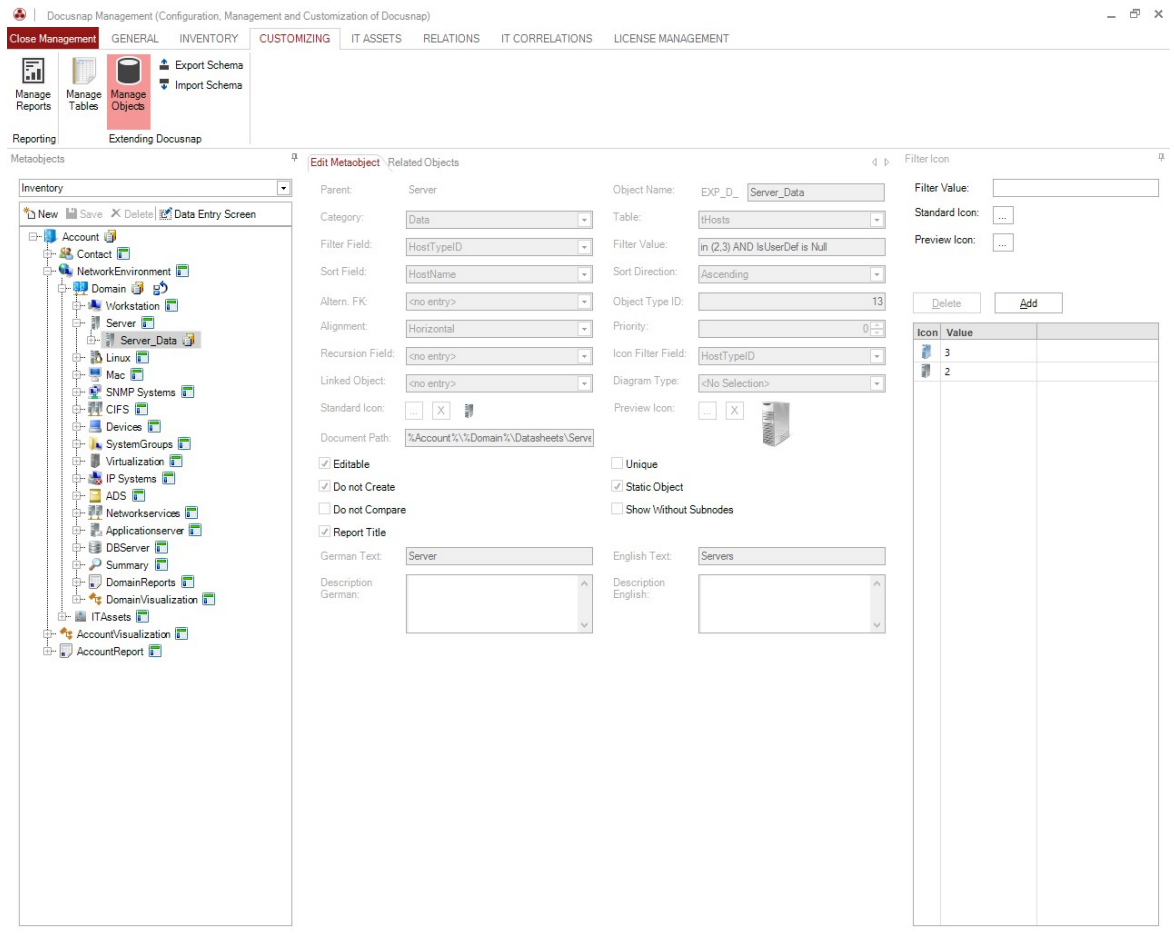
Captions are not linked with any table. They are used to organize the objects and therefore help to present the tree structure more clearly.



For a meta object of the *Caption* type, all general settings are available.

5.3 Data

A meta object of the *Data* type is used for the output of database tables in the hierarchy. For this reason, such a meta object must be linked with a database table, view or virtual table. For this object type, additional settings and options, especially for the display of content data, are available.



Virtual tables are used for the output of data from various tables in a single table where they can be sorted by a specific value. A virtual table node will not be shown in the tree view, but rather is used to combine the data from the dependent tables. The column names in the virtual table must match the field names in the tables being combined. For this reason, the tables to be used here should share some columns. The primary key of the parent node is used as the foreign key for the subnode. In order to show different icons in the table for display in the main window, define such icons using the *Icon Filter Field*.

Available Options for Data-Type Meta Objects

Property	Description
Table	Here, you can select the linked data table from the list of

	meta tables. Meta tables can be modified or extended from the Metatables tab.
Filter Field	This is the table field used for defining a filter.

Filter Value	Filter criterion for the *Filter Field*.
	In this field, you can enter any valid SQL conditions (such as `= 1`). The clause can further be extended using additional fields or conditions.
	Examples:
	`= 1 AND Hostname Like 'S%'`
	`<> 5 AND HostType in (1,2,3)`

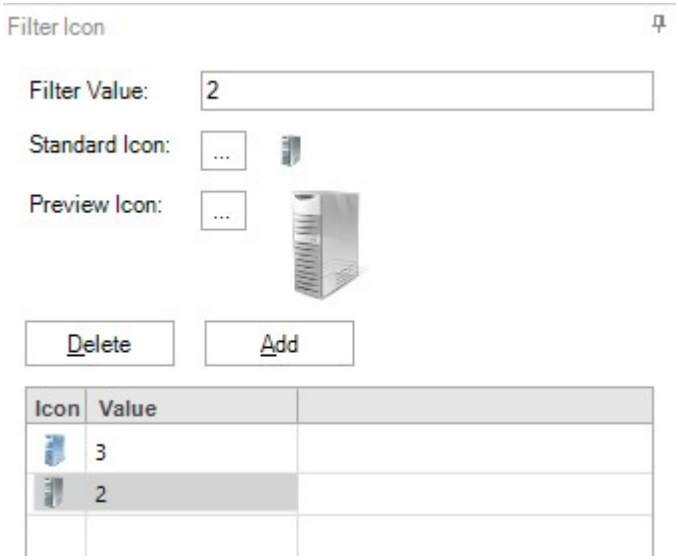
Sort Field	Database field on which the displayed elements will be sorted.
Sort Order	Order in which the data of the sort field will be sorted.
Alt. FK	An alternate foreign key is used if you want to build the hierarchy using a foreign key that is different from the one specified in the *Metatables* dialog. This option can only be used with real tables. If a data entry screen is used for this node, the alternate foreign key column of new entries will automatically be filled with the primary key of the parent node. The actual foreign key for the table must be entered using the data entry screen.
Editable	If this checkbox is enabled for a meta object, a data entry screen can be created or is available.
Unique	This flag ensures that only one object can be created for each level. This option is can only be selected for meta objects where the *Editable* checkbox is enabled.
Do Not Create	If you tick this checkbox, the object can only be deleted or saved. The *New* button is disabled in this case. This means that users can only edit objects, but cannot create new ones
Recursion Field	By means of this property, you can define a recursive field, and thus build a hierarchy on the basis of a table. At the

	first level, only records will be shown where the recursive field contains the value NULL or -1. Make sure to always define a recursive field as a Long data type. At the second level, Docusnap shows records where the recursive field contains the value of the primary key from the first level.

Icon Filter

Using an icon filter, you can assign one of various icons to a meta object based on the value of a certain column. Thus, it is e.g. possible to define only a single meta object to be used for workstations, servers and domain controllers, but assign different icons by means of the icon filter.

To enable the icon filter, select the data field that contains the filter value from the *Icon Filter Field* field. Then an additional tab is displayed on the right side, where desired filter values and associated icons can be defined. If the table includes a value for which no custom icon has been defined, the default icon for that object will be used.

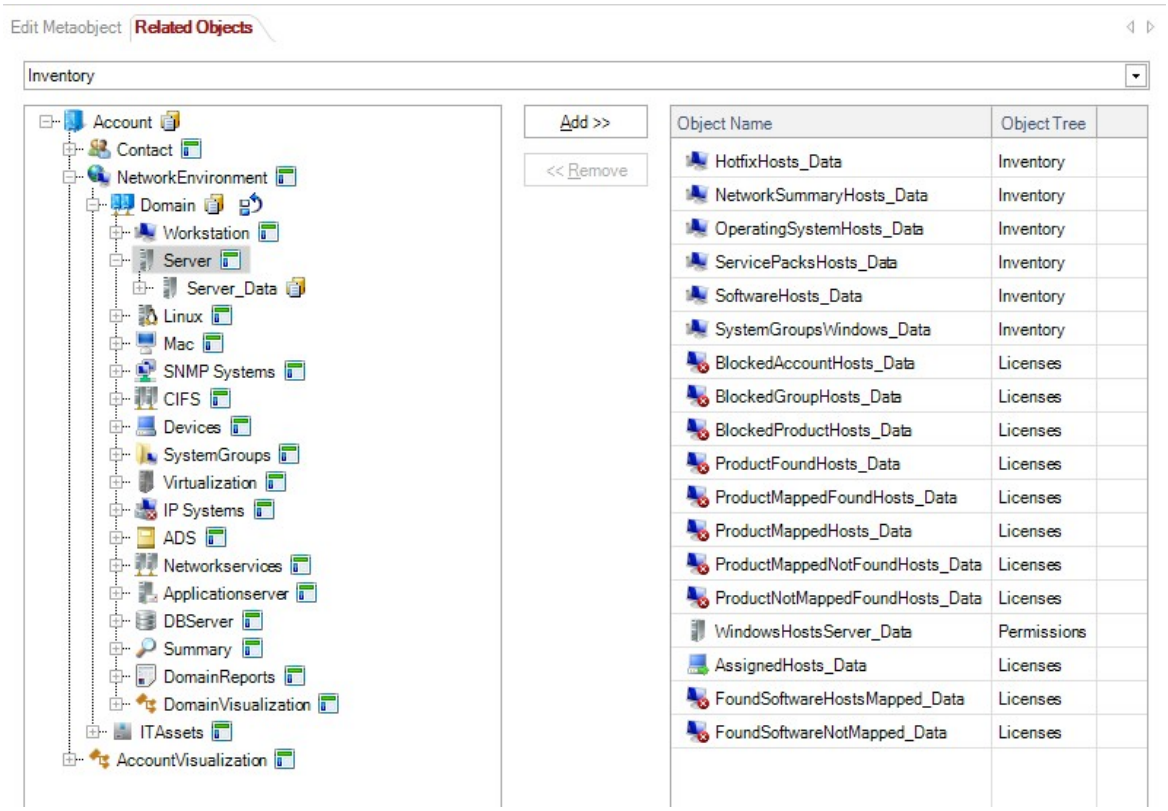


Related Objects

It is possible to use the same objects in multiple hierarchies. For example, the same computer can be displayed in the *Inventory* tree view under the Workstations node and in the *Permissions* explorer. You can specify permissions and extensions for each computer. To make sure that this information will also be displayed for the same computer when listed in the *Permissions* hierarchy and do not have to be re-created, it is possible to define these two objects as related objects.

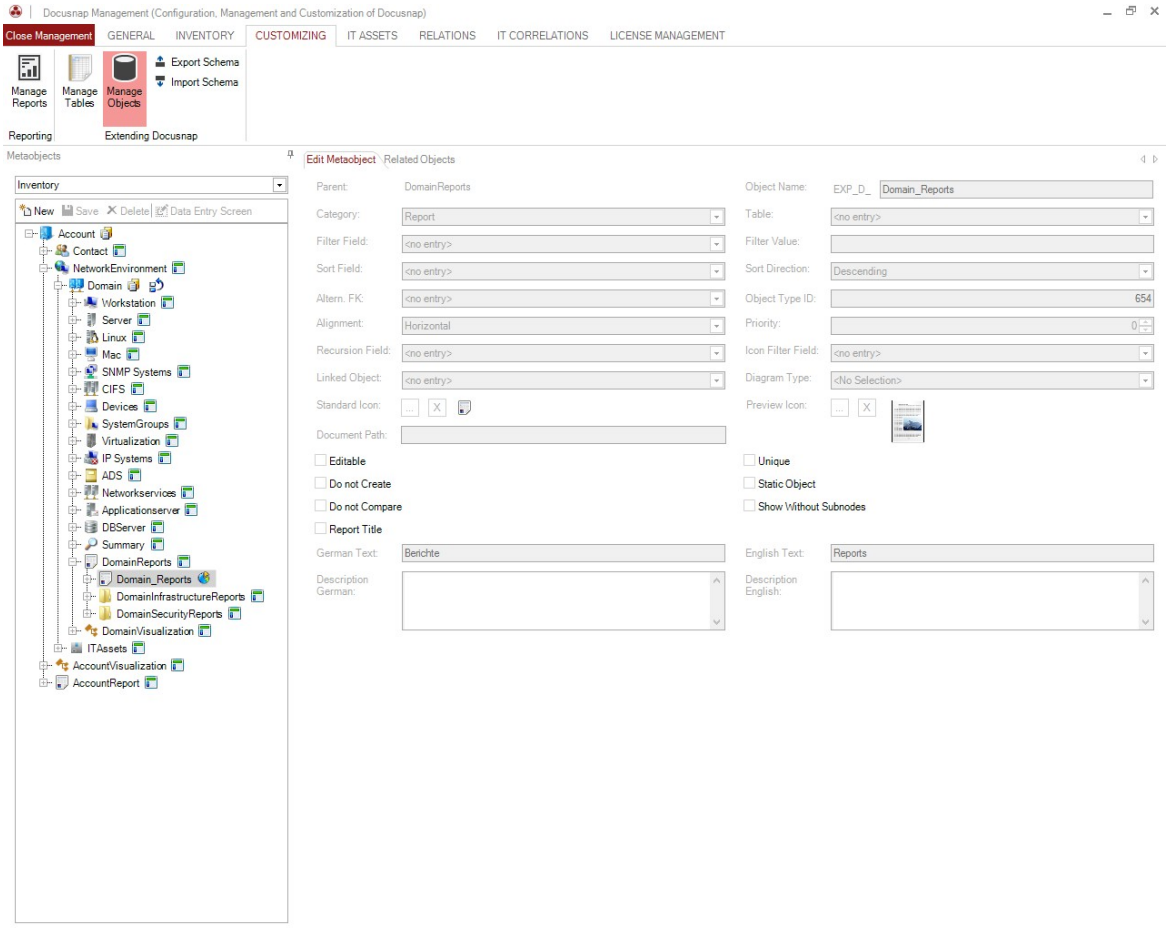
To do so, switch to *Related Objects* tab and select the related objects. In the left pane, all tree views will be displayed, and the right pane shows the objects that have already been defined as related types. When you select an object in the left pane, the *Add* button is enabled.

If you define related objects for the current object, it is recommended to repeat this assignment in the other direction, i.e. to assign this object to the related objects as well.



5.4 Reports

In the tree views, Report nodes serve as placeholders for the report definitions. The link between reports and meta objects is made from the *Reports* tab (Docusnap Management/Customizing). Any number of reports can be linked with a Report meta object.



For meta objects of the Report type, only the Alignment, Priority and Text properties are relevant

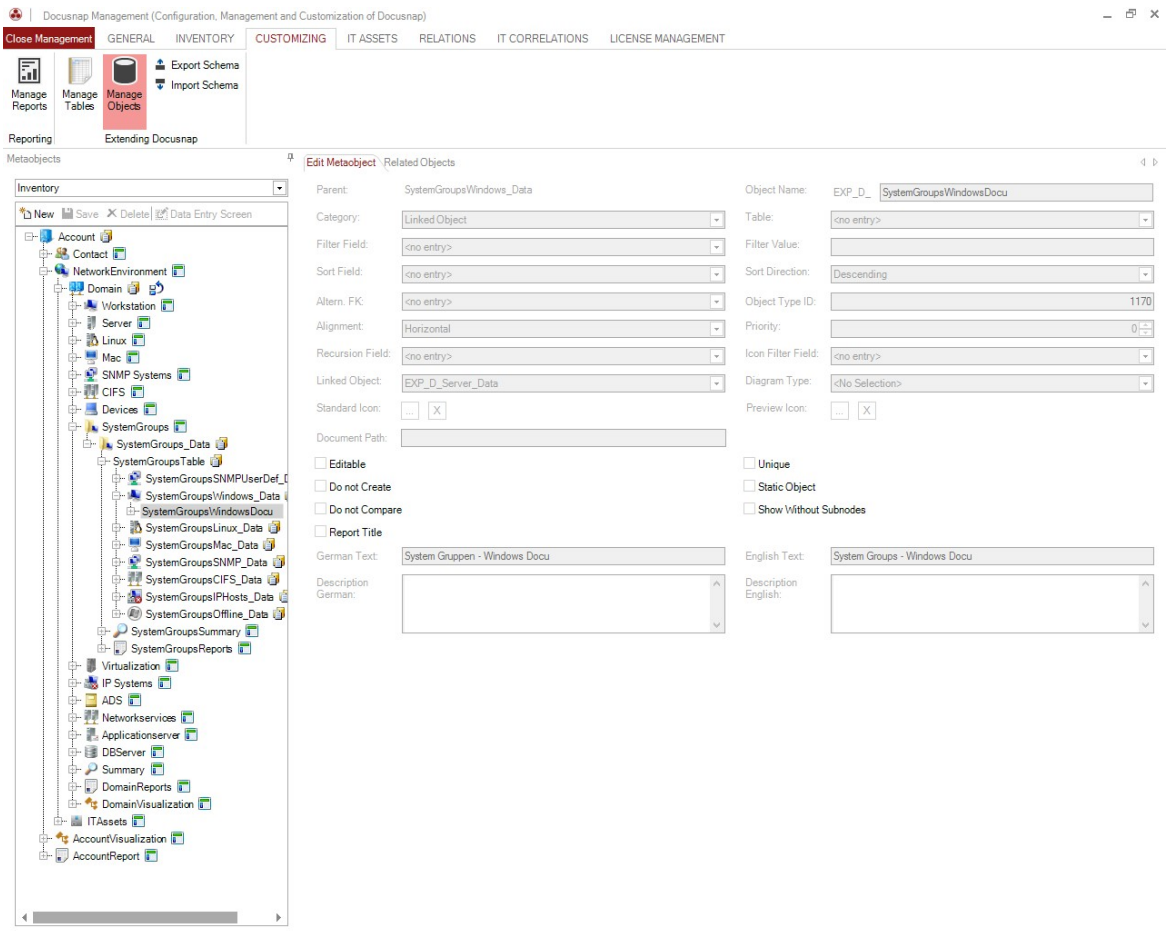
5.5 Links

Meta objects of the *Linked Object* type represent a logical link within the tree view. By creating a linked object, you can define cross-references in the structure and thereby reduce the number of objects to be defined.

For meta objects of the *Linked Object* type, you can select the target meta object from the *Linked Object* field.

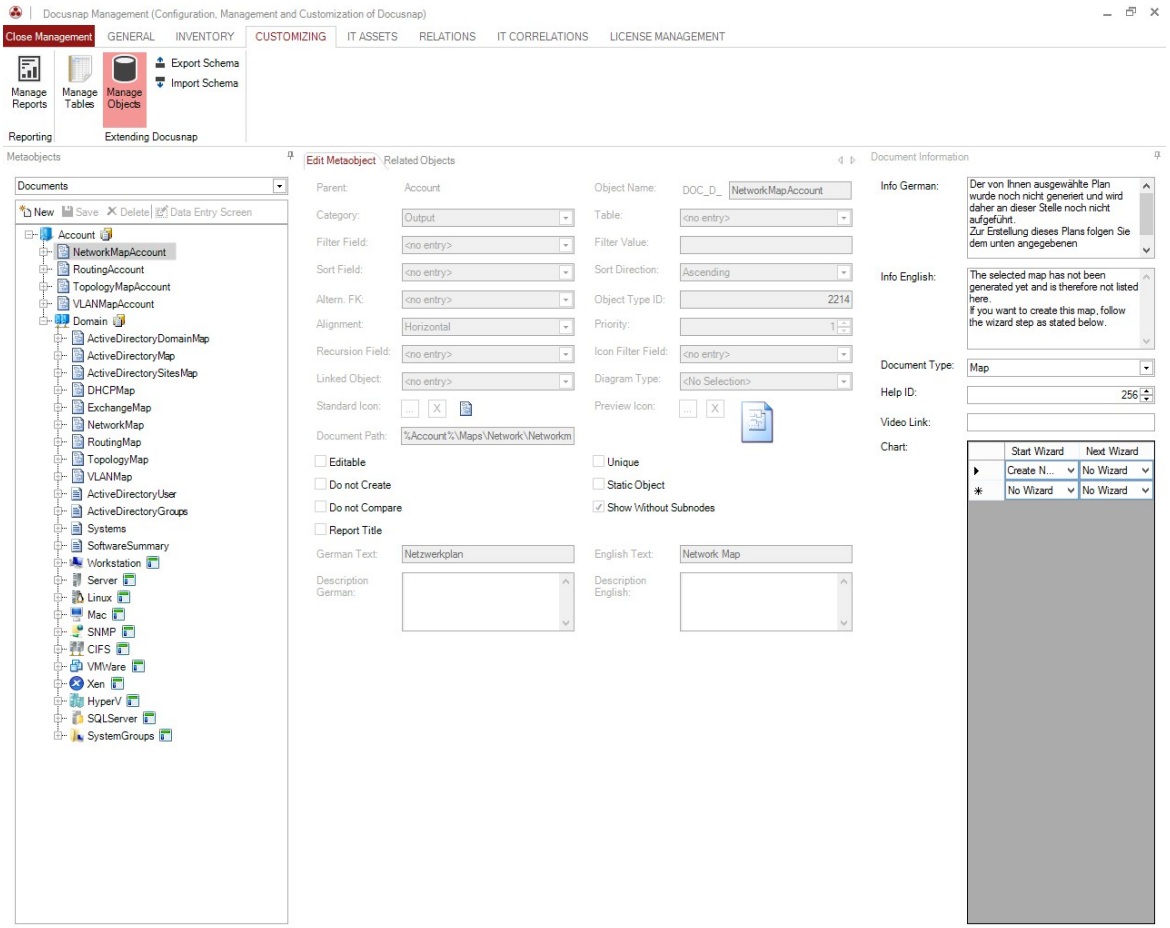
Linked objects are not taken into account for data comparisons and full-text searches because the actual data has already been compared or searched under its original path.

The target of the link must always match the primary key of the very meta object that is the parent of the Linked Object type meta object. Otherwise, Docusnap will not be able to select the data properly.



5.6 Output

Meta objects of the *Output* type are used to show documents such as maps, datasheets or overviews in the tree structure. Unlike the Document Path used for meta objects of the Data and Caption types, Docusnap will only display the *Document* tab for Output-type objects. In addition, you can specify which wizard will be used to create the document. The selected wizard will be shown as a dashboard on the *Document* tab if the corresponding document has not been created yet.

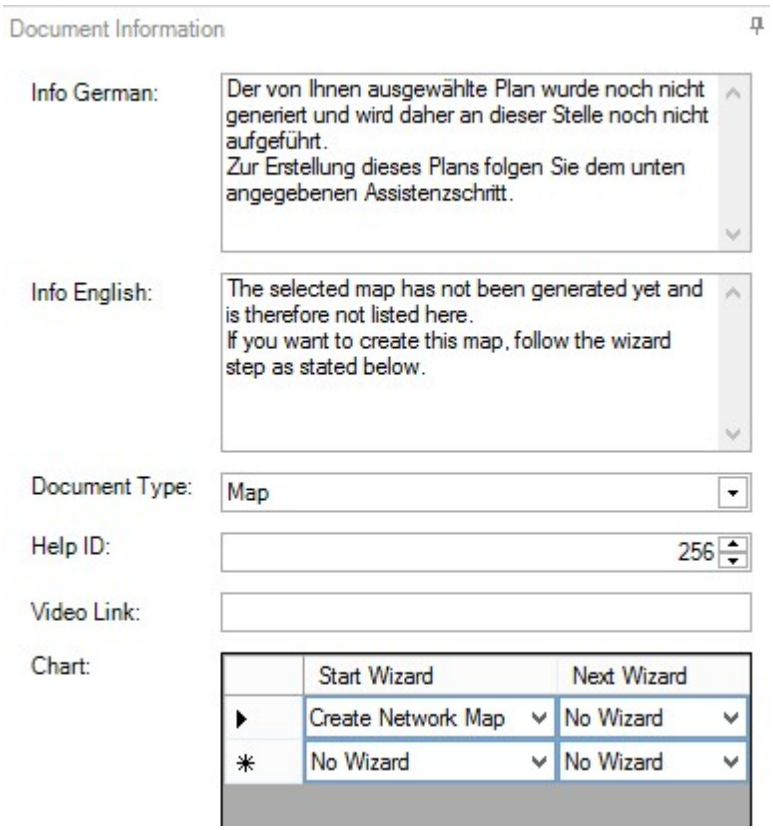


Property	Description
Document Path	The document path specifies the path to external documents, e.g. in Word or HTML format. When you select an object, Docusnap automatically checks whether documents exist in this path. If documents are found, they will be displayed on the *Documents* tab. The path entered for this property is always relative to the documentation directory. In order to make paths flexible, you can use variables when specifying the path. The following variables

Property	Description
	are available: %Account% Company name %Domain% Domain name %Object% Object name %ParentObject% Object name of the parent node Docusnap will automatically append "_EN.html" or "_DE.html" to the file names.

If the desired document has not been created yet, a dashboard displays. From there, you can launch the wizard for creating this document. For each meta object of type *Output* the *Document Info* tab is displayed on the right side.

Property	Description
Info in German / Info in English	In the *Info in German* and *Info in English* fields, you can enter the text to be displayed on the dashboard.
Document Type	In the *Document Type* field, you can specify whether the document is a map, a datasheet or a list.
Help ID	Using the help ID, you can specify which section of the help system will be accessed via the dashboard.
Chart	In the *Chart* group, you can select the wizard to be used for creating the desired document. If another wizard is required after the initial wizard, you can select it from the *Next Wizard* dropdown list.



5.7 Diagram

Meta objects of the *Diagram* type are used to show the structures and Active Directory group policies as separate nodes in the tree view. When defining a meta object of the *Diagram* type, you can select whether the diagram refers to a structure or a group policy object.

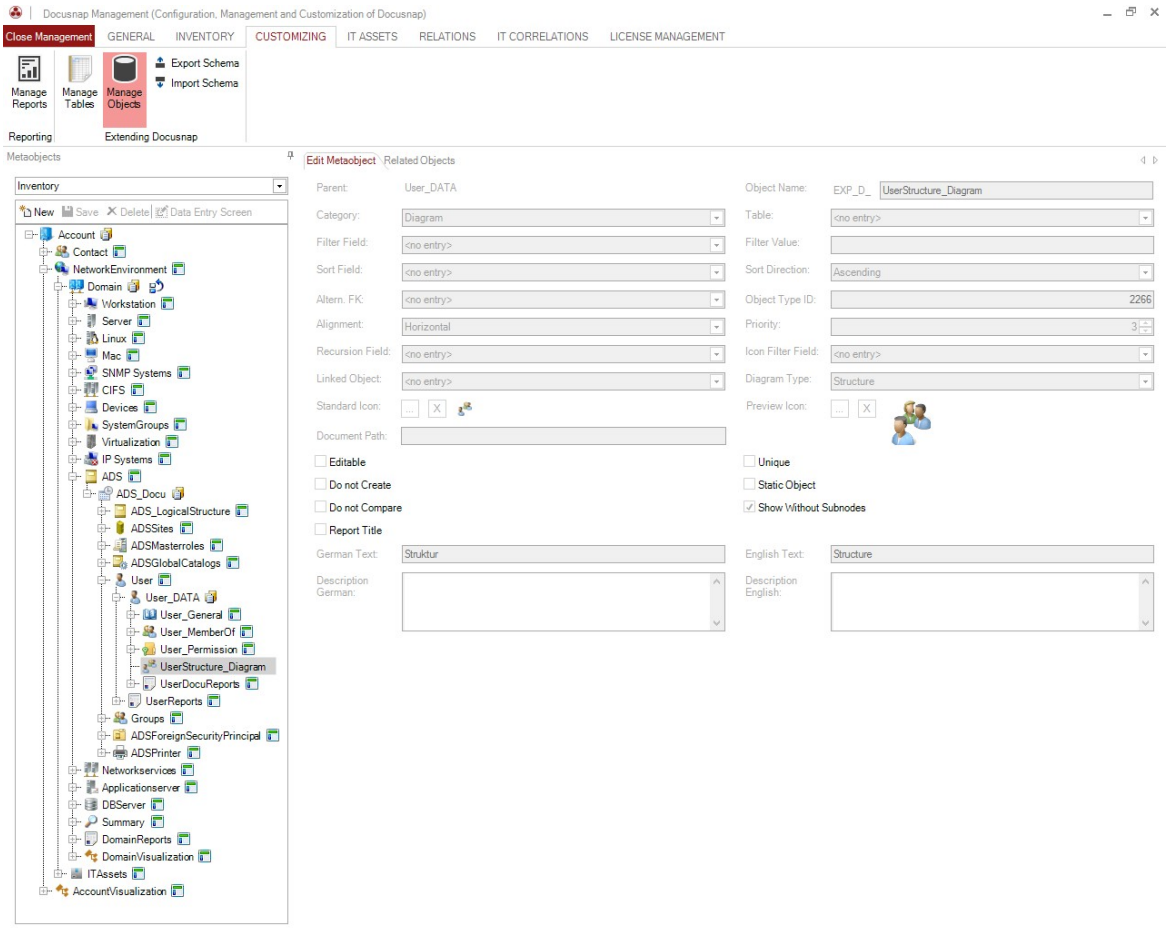
Structure

For Active Directory users and Active Directory groups, an additional tab is used to show the structures. This tab shows group nesting as well as user nesting information.

Using this information, you can find out the following:

- Which group or groups is the user x a member of?
- Which members make up the group y?

The Diagram-type meta object is used to show the structure as a separate node below the Active Directory user and Active Directory groups.



Group Policies

In Docusnap, you can retrieve group policies and assign them to the corresponding organizational units, sites and domains. When you create a meta object of the Diagram type and the GPO diagram type, Docusnap creates a group policy node that is displayed below the group policy information. As the table for the parent node, select one that uses the *GPOSettingsID* field of the *tADSGPOSettings* table as the primary key.

Visualization

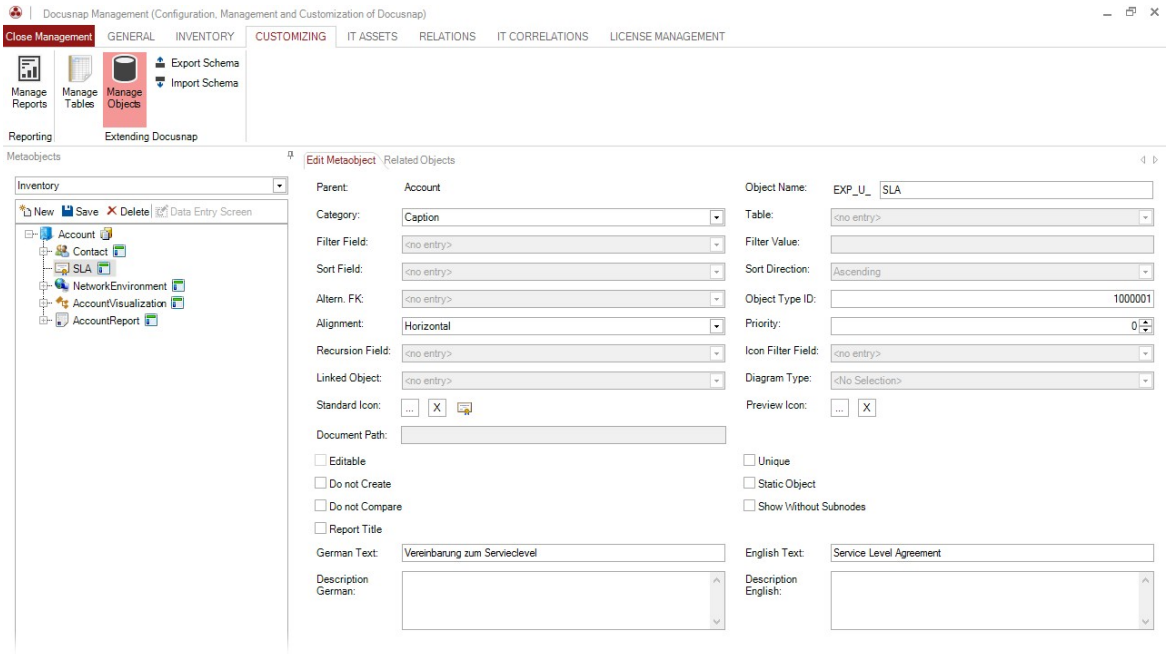
The diagram type *Visualization* is an object that can only be used by the vendor to create maps dynamically and display them in the main window.

5.8 Example

As a simple example for extending meta objects, we will demonstrate how to create the additional SLA object. To execute this example, first create the *SLA* table. For creating additional tables, refer to the Example subsection of the Database Structures section.

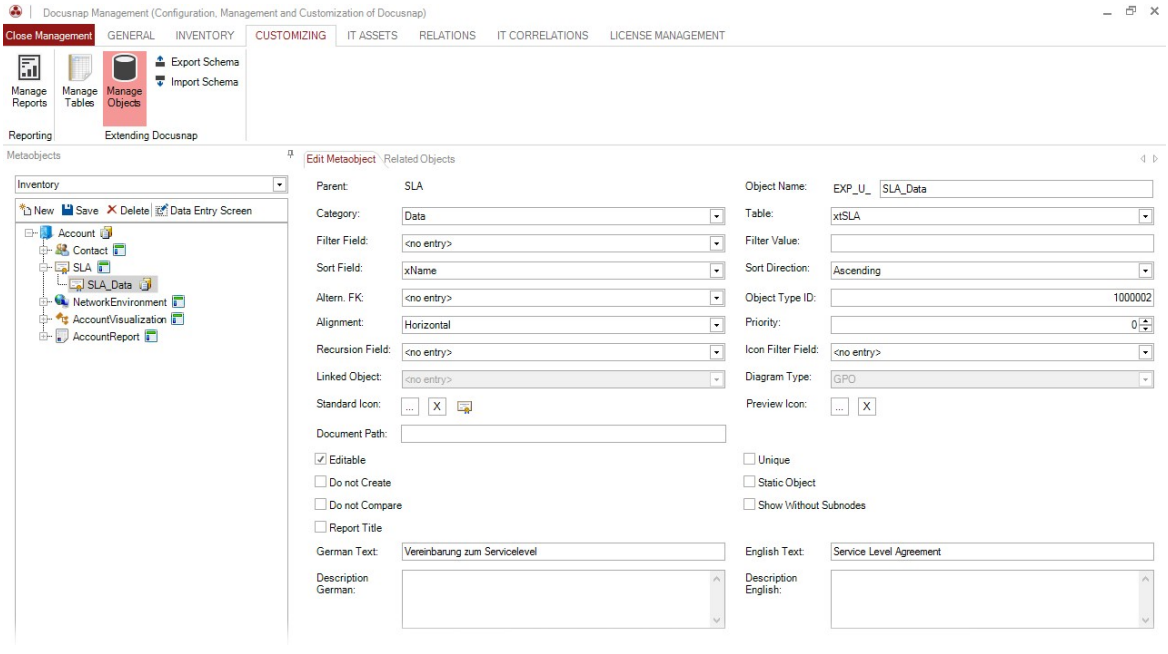
In the first step, create the *SLA* caption. Create a new object below the *Account* object in the *Inventory* explorer by clicking the *New* button. Assign the *Caption*

category to this object. Enter *SLA* as the Object Name. The English text and the German text can be chosen freely. In addition, tick the *Static Object* and *Show Without Subnodes* checkboxes.



Save the caption and then create an additional object below it. Link this object with the *xtSLA* table. Select the *Data* category for this object and enter *SLA_Data* in the Object Name field. In the *Table* dropdown list, select the *xtSLA* table.

Enable the *Editable* checkbox so that it will be possible to enter data through the user interface. For information on how to create the data entry screen, refer to the Example subsection of the Data Entry Screens section. Save the object by clicking the *Save* button.



Part

6 Data Entry Screens

Interaction with the Database

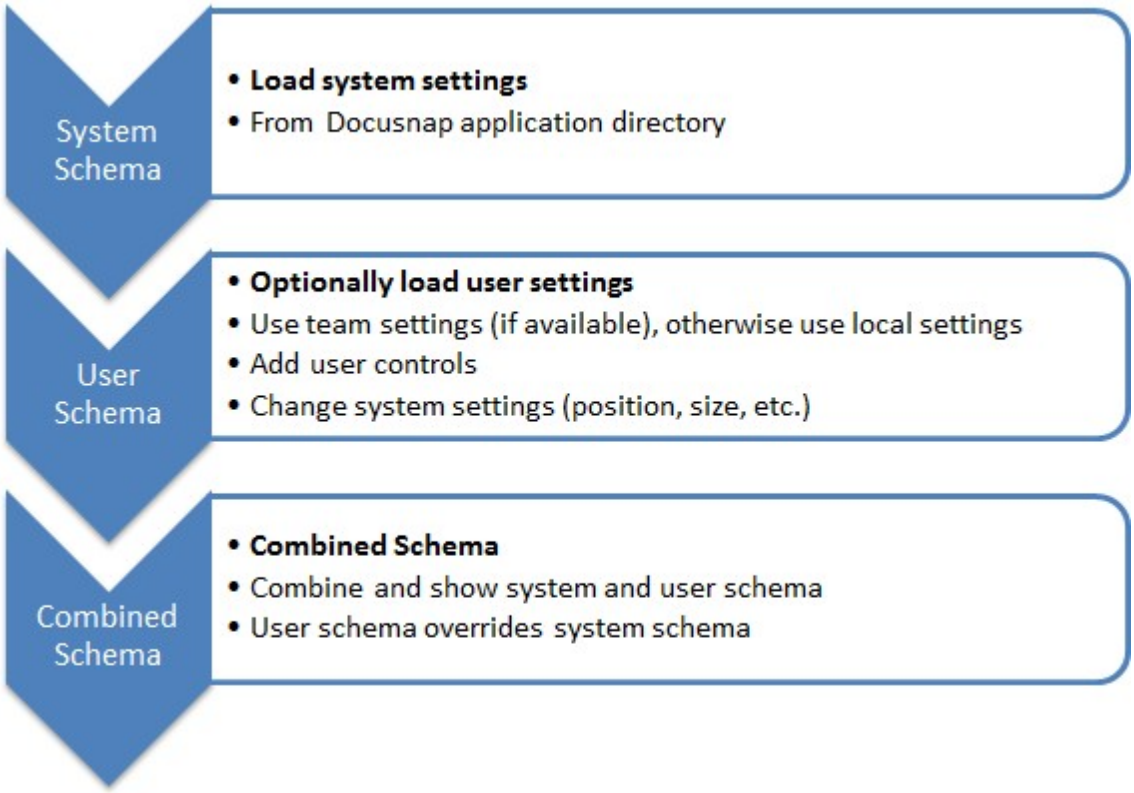
All editable meta objects have predefined data entry screens that allow fast and easy editing of all available data directly in the Docusnap tree view. Their function is that of an interface between the user and the database, performing a basic validation of the data entered by the user and generating error messages, if necessary. All system-defined data entry screens can be modified and extended by the user, so that maximum flexibility is achieved. In addition, you can create new data entry screens for user-defined meta objects from scratch. This way, and by extending the database and the object structure, it is possible to perfectly customize and extend Docusnap to meet all current corporate requirements.

System and User Schemas

The appearance of each data entry screen used in Docusnap is defined by a corresponding definition file stored in the program directory. In this context, please note that each predefined data entry screen has a so-called system schema with a .des file extension, which is located in the Dataedit subfolder of the Docusnap program directory. These files contain all system-defined values and enable you to reset modified data entry screens to their original configuration. In addition to these files, edits and extensions made by the user are stored in so-called "user schema" files with a .deu file extension. Depending upon the relevant setting, these files are stored in the *DataEdit* subfolder of either the local or the team settings folders for Docusnap.

Docusnap always loads the system settings for each data entry screen first and, if user settings exist, uses them to customize or extend the data entry screen. It should however be noted that not all of the predefined settings can be replaced by user settings. For example, it is not possible to delete predefined controls or to change the links to the database. But you can change the size and position of each control as required. There are no such limitations with regard to user-defined extensions. All controls created by users can be deleted as desired. The illustration below shows how the user and system schemas are used in Docusnap.

Data Entry Screens



Due to the fact that data entry screens primarily represent the interfaces to the current Docusnap database, it should be noted that controls that can be used to enter or manipulate data will automatically be disabled if their configuration is invalid. This might be the case if no link or an invalid link to the database has been specified for a control.

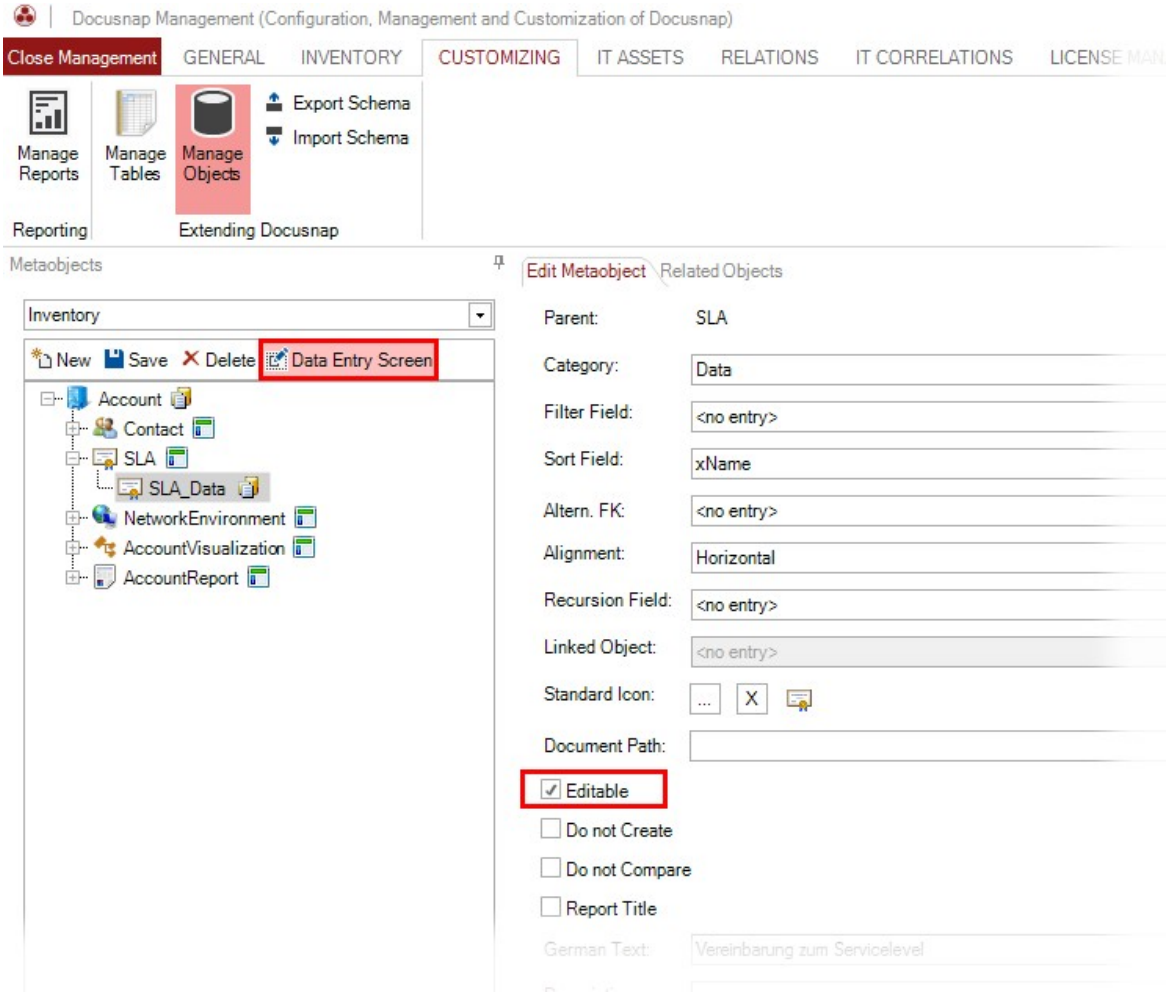
After changes have been made to any data entry screens, you might need to restart Docusnap or close the entire tree structure and re-open it in order to load the changes.

6.1 Designer

In Docusnap, an integrated Designer is available that you can use to customize or create data entry screens.

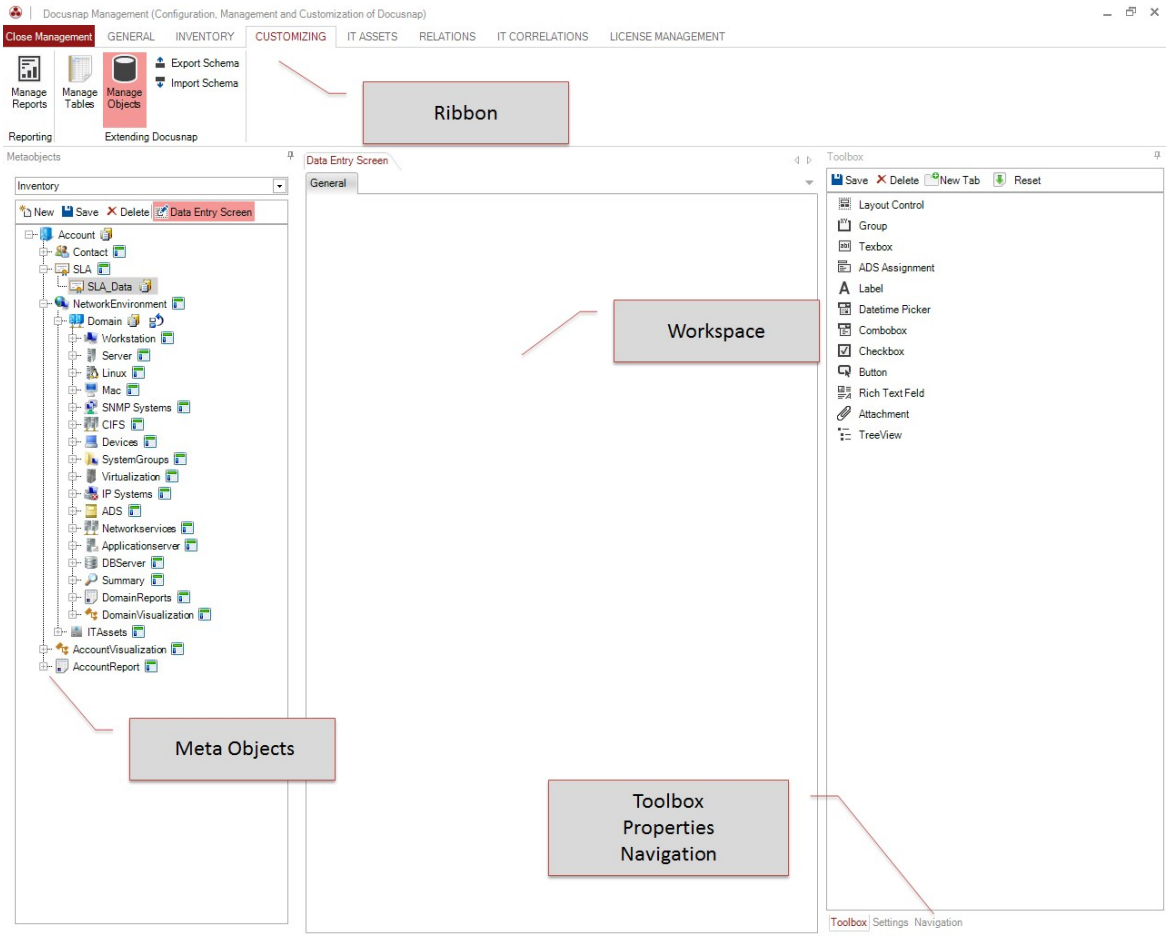
The data entry screens are created directly with the respective meta objects in the Docusnap Management. Click the Manage Objects button on the Customizing ribbon to open the Meta Objects ribbon. After the object has been selected, for which the data entry screen should be edited or created, click the Data Entry Screen button to open the tab for editing. Only when the *Editable* checkbox is checked can a data entry screen be created.

The data entry screens of the extensions can be opened and modified using the organization tree view by clicking on the *Data Entry Screen* button of the respective meta object for comments, finance, contracts, reminders or passwords on the *Metaobjects* tab.



Basic Structure of the Designer

Basically, the Designer for editing data entry screens consists of four panes: the Workspace, the Toolbox, the Properties and the Navigation tab. The Workspace is the largest of these areas. Above the workspace, the so-called "tabs" are located. They extend the available space and help to organize the data entry screens in a meaningful way. They will be explained in more detail in the Using Tabs section. In the right pane, either the *Toolbox*, the *Properties* or the *Navigation* tab is displayed. To save the edits made to a data entry screen, click the *Save* button in the Toolbox. Similarly, you can reset a data entry screen to its original settings by clicking the *Reset* button.

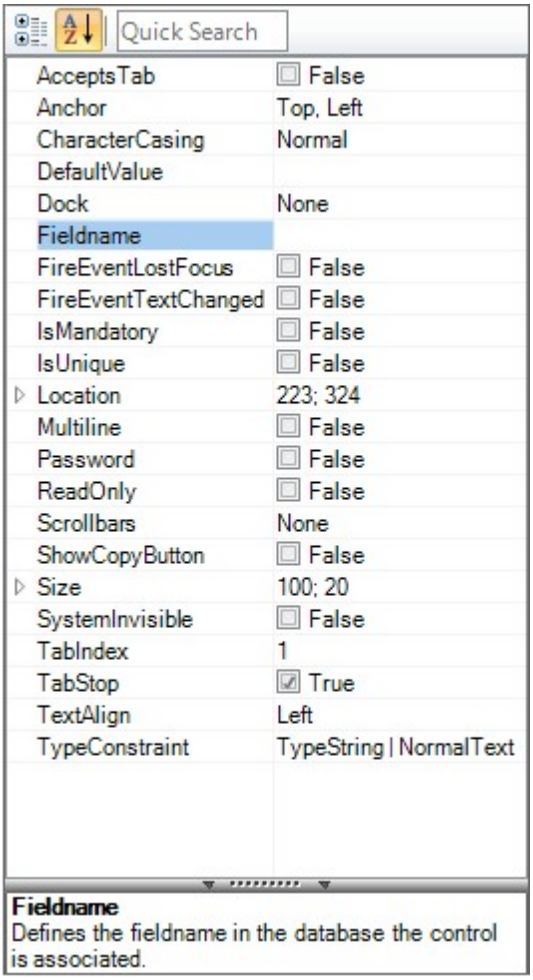


Adding and Configuring Controls

To add a new control, simply drag it from the Toolbox and drop it on the Workspace. In the Toolbox, various controls are available that can be used in different situations. For details regarding the functionality and properties of the each control, see the Controls section.

It is recommended to add a Layout Control in the first step. The other controls such as textboxes, comboboxes, etc. are then added to this Layout Control which will control the size and alignment of the elements automatically.

There are two ways to remove an existing control from a data entry screen. After the control has been selected (is highlighted by a red border), you can delete it by either clicking the *Delete Control* button in the Toolbox or by pressing the *<Del>* key on the keyboard.Adding and Configuring Controls



To move a previously added control, simply select it and drag it to the desired position with the mouse. Precise alignment can be done using the X & Y coordinates on the Properties tab. These properties, like any other available properties, can be changed from the Properties tab. Please note that the properties of system-defined controls may differ from those of controls added by a user. Similarly, predefined controls cannot be deleted. To modify the properties of a control by means of the Properties tab, the desired value can, in most cases, be entered directly into the right column of the displayed table. In some special cases, it is possible to make changes to the settings from a separate dialog. If so, the button ... is displayed in the right column of the *Properties* tab when you select such a setting. When you click this button, the dialog opens where you can specify the corresponding settings.

All controls that are placed on a data entry screen will automatically be linked with the current record for the associated meta object and can be used to edit this data.

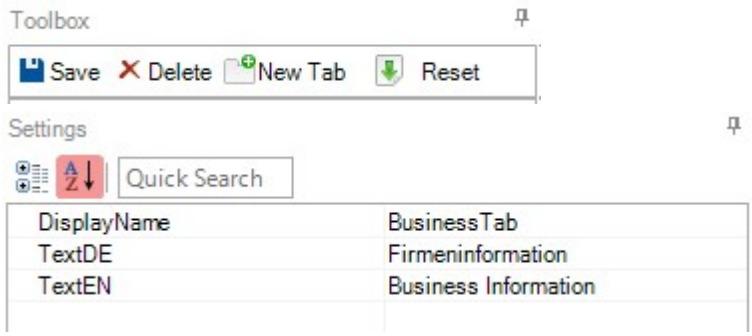
6.2 Usage of Tabs

Usually, a data entry screen consists of several so-called "tabs". Various controls can be placed on each of these tabs, all of them being related to the same record in the current Docusnap database. Each of the predefined data entry screens has a tab named *General*. In almost every case, it contains the predefined controls for Docusnap.

Since the available space is thereby already quite limited in many cases, it is possible to add any number of additional tabs to the data entry screen. This way, the available space can be extended as desired. At runtime, you can switch back

and forth between the individual tabs as desired.

To create the tabs in the Designer the *New Tab* button is available in the toolbox. To delete an existing tab, it must be selected and removed by clicking the *Delete* button in the Toolbox. To specify the name of a tab, select the tab in the Designer, open the Properties tab and enter the desired text for the *TextDE* and *TextEN* properties. The DisplayName will only be listed in the *Navigation* pane.



6.3 Controls

Available Controls

The following controls are available to customize and extend the Docusnap data entry screens. Their properties will be described in the following sections:

- Layout Control
- Textbox
- Group
- Label
- Date/Time Picker
- Combo Box
- Checkbox
- Button
- Rich Text Box
- Tree View
- ADS Assignment

General Properties

In addition to the specific properties of the individual controls, several general properties are available, which serve a similar purpose for most of the available controls. The two tables below briefly list these two groups of properties, including an explanation.

Global Properties of All Controls	
Anchor	Determines the edges where the current control is anchored to a parent control. For data entry screens, the parent control can be either a group, in which the respective control is located, or the data entry screen itself. The default setting for the anchor is *Top, Left*. This means that the upper left corner will be anchored, which, at runtime, results in a constant offset between the control and the upper left corner of its parent control. If, for example, you want the size of a control to grow or shrink horizontally with an increasing or decreasing resolution, then a *Left, Right* anchor would be necessary. If you further want the vertical position to remain constant, it would be recommended to use an additional *Top* anchor. If vertical size adjustment is desired as well, you can also set the *Bottom* anchor. You can easily select or deselect an anchoring option by clicking the down arrow of the *Anchor* property on the *Properties* tab and then selecting the corresponding area.
Dock	This property defines whether the current control will be aligned with the parent control and, if yes, at which edges. For this property, the behavior of the control is the same as described for the *Anchor* property. When you select a docking edge for the control, it will always be attached to this edge of the parent control, regardless of its own size and other properties. If you select the *Fill* docking option, the control will fill the entire surface area of its parent control. This makes sense, for example, if you want a text box to use the entire available area. If you rather want to leave a small margin between the text box and the parent control, it would be better to use the *Anchor* property instead and select all four options. The docking option *Full* is particularly helpful for the Layout Control, to spread the controls over the whole area.
Location	This property specifies the position of the control relative to the

	upper left corner of the parent control. The values are based on a Cartesian coordinate system with the origin in the upper left corner.
Size	Defines the size of the control. For the values, the "width x height" pattern applies. Please note that size limitations exist for certain controls. For example, the height of a single-line text box cannot be increased. In addition, other properties, such as *Dock* or *Anchor*, may change the size of the control.
TabIndex	This property defines the sequence in which the controls on a data entry screen will be selected when a user presses the <Tab> key. Enter an integer for this property. The controls will be accessed in the order defined by the numbers entered for each control in this property, starting with the smallest.
TabStop	This property must be set to allow a user to select the corresponding control by pressing the <Tab> key. Otherwise, the control will be skipped, when a user presses the <Tab> key and the next control where this property is set to 'True' will be accessed.
DisplayName	In the *Navigation* pane all elements of the opened data entry screen are listed and can be selected. The display name is used to identify the controls in this collection clearly. If for a control no display name is defined, the type of the element is specified in the *Navigation* pane. For example, Textbox for a textbox.

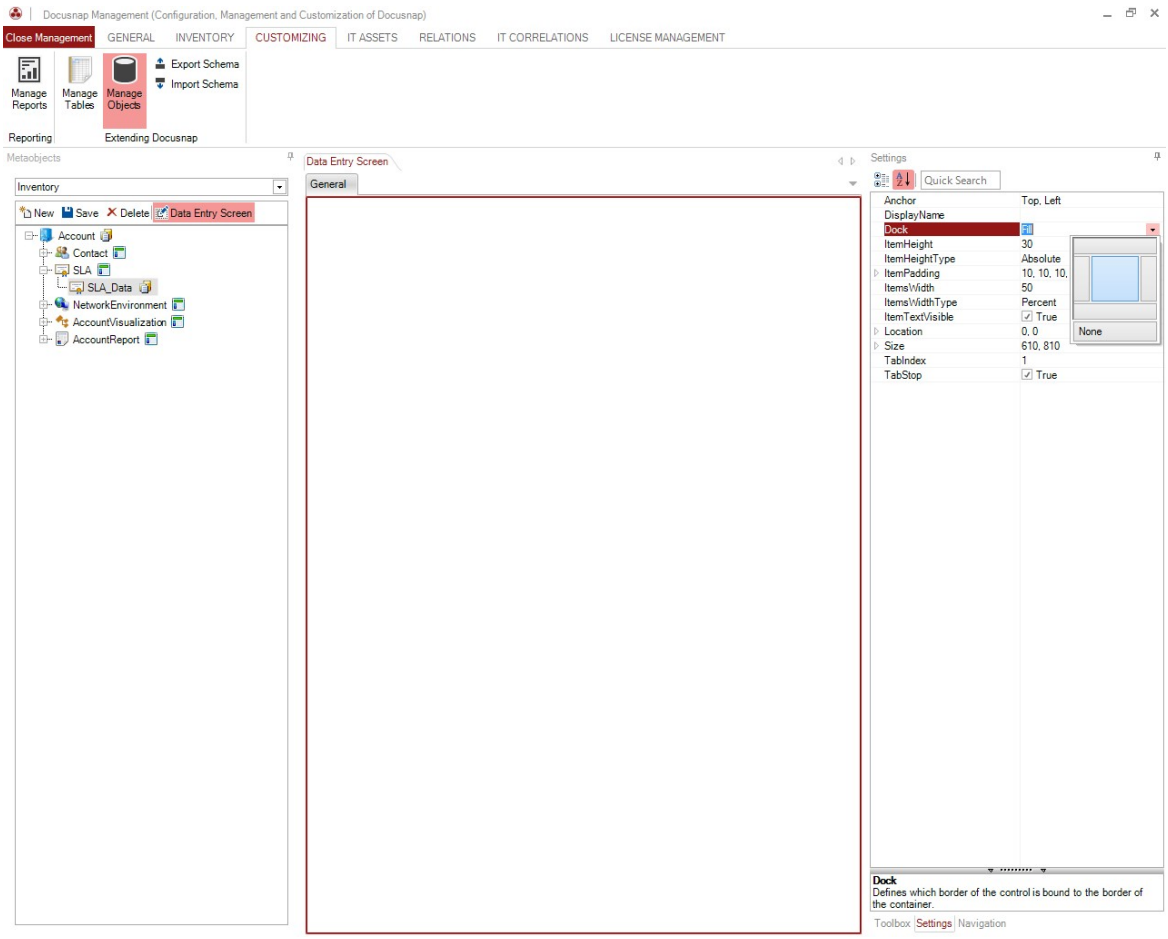
Properties for Some Controls	
DefaultValue	This is the default value of the control. The control will be set to this value when the control is first initialized. It can be overwritten by the user, if required.
IsMandatory	Indicates if a value must be specified for the control. If this property is set to 'True' and the user did not enter or select a value, the data cannot be saved and an error message displays. It is a good idea to set this property for all fields where the *NOT NULL* flag is set in the database schema. But this property can also be applied to fields that may be set to *NULL*.

IsUnique / AdditionalUniqueColumns	If this property is set to 'True', Docusnap validates the data the user entered or specified for this control when saving. If duplicates are found, the data cannot be saved and an error message displays. This validation is done at the table level. This way, Docusnap makes sure that no identical record exists in the database table. In some cases you might want to make sure, that the new entry is unique only for e.g. the current domain. In this case, the *IsUnique* property is set to true and the additional columns are entered in the *AdditionalUniqueColumns* property. The columns, that must be unique, are listed separated by commas, for example DomainID.
TextDE/TextEN	Using these two properties, you can specify an English and a German caption for this control. *TextDE* represents the German caption and *TextEN* the English caption. For most controls where this property is available, this is the text that will be displayed on the user interface.

6.3.1 Layout Control

The Layout Control is used to make the display of the data entry screens more flexible. The controls are assigned to the Layout Control and the alignment and size of the elements are automatically adjusted.

In the first step select the Layout Control in the toolbox and add it via Drag & Drop to the workspace. The property *Dock* is used to define if the control is bound to one or several borders of the workspace. The setting *Fill* is best suited for the shaping of the data entry screen.



Afterwards, the desired controls are dragged into the workspace.

For each control on the layout control the name and the actual element are displayed. For each element specific settings can be made. By clicking on the name the layout settings are displayed in the *Properties* window.

Specific Properties of Layout	
Control Size	In most cases, the default value of 0,0 is maintained, thereby the size is set automatically by the Layout Control.
Height / Height Type	The height of each control can be set in pixels (Absolute) or a percentage (Percent). The HeightType defines whether the value in the *Height* property represents pixels or a percentage. If the height of all the controls are given in percent, then the height will be divided according to the specified percentage. If the sum of the specified values exceeds 100, a scrollbar is displayed. If the heights of the controls on one tab are defined in absolute values and percent, then the available height will be used for the controls with the absolute values. The remaining height will be divided according to the specified percentage among the controls with the percentage values. For example define the height for the textboxes with an absolute value of 30 px and then define 100 percent for a rich text field to occupy the remaining space. Use percentages so the data entry masks are displayed properly on screens with different resolutions.
Padding	This property defines the distance to the borders. By default the padding is 10 px to the top, left and right.
TextDE / TextEN	For every control a caption is displayed. Using these two properties, the names of the controls in both German and English are entered, with *TextDE* represents the German name and *TextEN* represents the name in English.
Text Visible	When adding a control a label is created. If this label should not be displayed, the *TextVisible* property must be set to false.
Width / Width Type	The width of each control can be set in pixels (Absolute) or a percentage (Percent). The WidthType defines whether the value in the Width property represents pixels or a percentage. By default, each control is created with width 50 and width type *Percent*. Thereby two controls are always displayed side by side. If a control should extend over the entire width, the width must be changed to 100 percent. The percentages can be assigned as desired, but controls can be only be placed next to each other, if the sum of

	specified percentages does not exceed 100. If the widths of the controls on one line are defined in absolute values and percent, then the available width will be used for the controls with the absolute values. The remaining width will be divided according to the specified percentage among the controls with the percentage values.

The default values that are set when adding a control to a layout control, can be changed in the layout control. After changing the default values all the controls, which are added to this layout control, are created with the default values. Controls that have already been added are not changed.

To configure the settings of the control, highlight the control itself.

When a control is added to the Layout Control, some properties such as size, docking and location are controlled by the Layout Control. Therefore, these properties are disabled for the individual controls.

6.3.2 Field

Purpose and Properties

In most situations, text boxes are the most important controls of data entry screens. Primarily, they are used to enter free text, but you can assign comprehensive formatting and validation options, if required. This allows you to use text boxes to prepare data entry screens for the input of the most diverse data. A special case is the so-called number servers which automatically populates a text box, based on a predefined schema.

The table below list the specific properties of text boxes, including a brief explanation:

Specific Properties of Text Box Controls	
AcceptsTab	Specifies whether the tab key can be used as an input

	character or not.
CharacterCasing	Defines whether the text entered by a user will be shown in uppercase, lowercase or normal characters.
Fieldname	Specifies the linked column in the respective table of the current Docusnap database. The meta object linked with the data entry screen determines which table will be used. Unlike most other controls, text boxes can be linked with nearly every data type that exists in the database. Make sure to specify an appropriate data validation, otherwise errors may arise when users enter data of the wrong type.
Multiline	Determines whether a text box should consist of one single line or multiple lines. It is neither possible to enter line breaks into single-line text boxes nor can the height of these text boxes be changed. Multi-line text boxes are recommended for the input of large amounts of information. Care should be taken to ensure that the corresponding database field is large enough to accommodate the data (use the varchar(1500), TEXT or MEMO type).
Password	If you set this property to 'True', each character entered by a user will be displayed as an asterisk (*). In addition, a button will appear in the text box. When a user clicks this button, the content of the text box is displayed as plain text.
ReadOnly	Using this property, you can specify whether the text box will be used for data input and output or merely for the display of database data. If you set this property to 'True', users will not be able to change the data in the linked database column. This property is always useful if the data shown in the text box are predefined and should not be changed. However, please note that there must always be another way to save the data in the database, for example, by means of a script or an inventory process. One use case for this property would be when using the number server, because the content of the text box is generated automatically and users should be prevented from changing it.
Scrollbars	Determines if scroll bars will be displayed in multi-line text

	boxes and if so, which type. In principle, navigation within a text box control is also possible without scroll bars by using the keyboard or the mouse. However, scroll bars significantly facilitate this process.
ShowCopyButton	Specifies if a button will be displayed in the right part of the text box for copying its current content to the clipboard.
SystemInvisible	If you set this property to 'True', the text box will not be displayed during the runtime of the data entry screen, but rather filled with a predefined value that you can determine by means of the *DefaultValue* property. This approach is useful when the database schema requires a static value that the user cannot enter, for example automatic input of the corresponding device type in data entry screens at the device level.
TextAlign	Determines how the characters will be aligned in the text box. As a rule of thumb, select left alignment for free text and right alignment for numbers (this improves their readability).
TypeConstraint	Defines specific validation options for the content of a text box. For details on these options, see the subsection below and the dedicated number servers section.

TypeConstraint Property

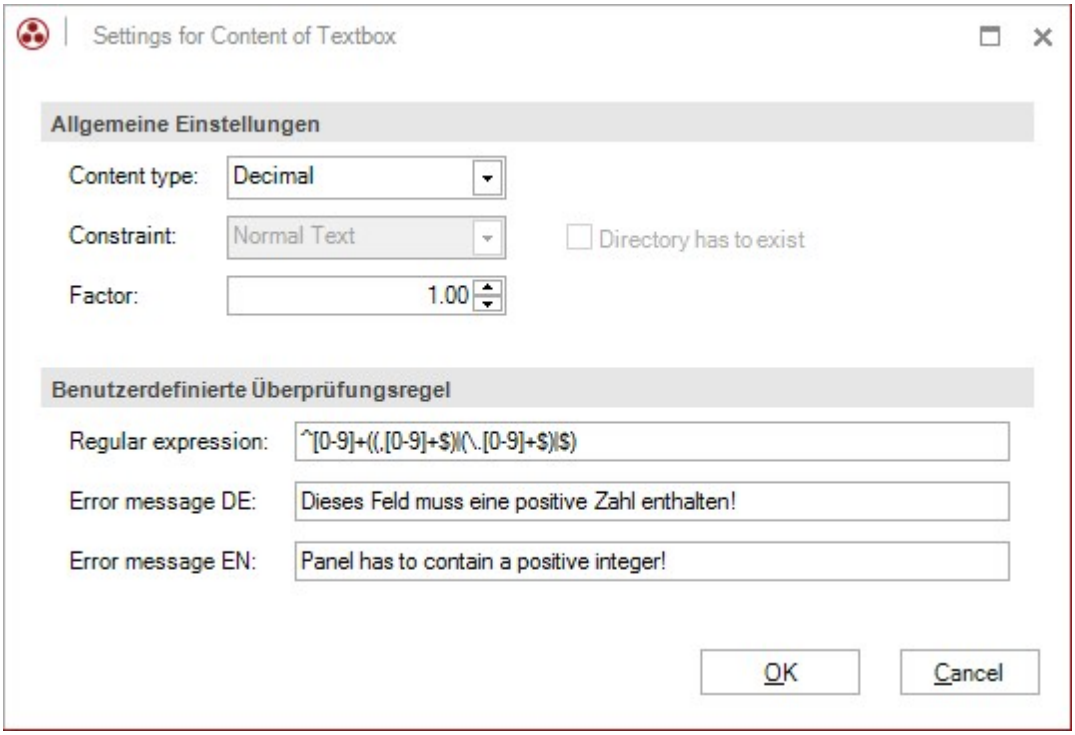
This property can be used to store specific validation options for the input of data in a certain text box. If the validation results in errors when a user tries to save a record of data entered into the respective data entry screen, the save will be aborted and a predefined error message will display. Several predefined validation types are available that are briefly explained in the table below.

Content Type	Description
Text	When you select the *Text* content type, users can enter free text into the text box that might be checked further before they are saved. • ***Normal Text***: Users can enter any text. It will not be validated.

	• ***IP Address***: Verifies if the text entered by the user is a valid IP address. • ***Subnet Mask***: Verifies if the text entered by the user is a valid subnet mask. • ***MAC Address***: Verifies if the text entered by the user is a valid MAC address. The character groups may be separated either by no character at all or by colons (:) or hyphens (-). • ***Directory***: Verifies if the text entered by the user is a valid directory path. If you also enable the *Directory has to exist* checkbox, Docusnap will check whether the specified directory really exists on the hard disk or share. • ***Drive Letter***: Verifies if the user entered a valid drive letter. Please note that Docusnap will not check whether the drive really exists and is connected.
Integer	Specifies that this text box is reserved for entering integers. For number values, you can also specify a factor in the *Factor* field so that the integer entered by the user will be multiplied or divided by this value. The database will store the product of this multiplication. In this case, it is recommended to add the factor to the corresponding column in the meta table to obtain a consistent representation of the numbers in the data entry screen and the associated lists.
Date	Specifies that this text box is reserved for entering dates.
Byte	Specifies that this text box is reserved for entering byte values.
Memo	Specifies that this text box is reserved for entering text in the MEMO format.
Binary Data	Specifies that this text box is reserved for entering binary data.
Bool	Specifies that this text box is reserved for entering Boolean data values.
Decimal	Specifies that this text box is reserved for entering decimal numbers. As with integers, you can specify a factor.

In addition to the predefined types, you can define and apply your own validation

rules. When defining such rules in Docusnap, you can use regular expressions (RegEx), which allow the definition of almost any validation check. Introductory information about regular expressions can be found on many websites, such as Microsoft's http://msdn.microsoft.com/en-en/library/az24scfc.aspx or Wikipedia http://en.wikipedia.org/wiki/Regex. To test and optimize regular expressions, we recommend the *Expresso* software from *Ultrapico* available under http://www.ultrapico.com/Expresso.htm.



Number servers are a special case of text box. For more details, see the Number Server section.

Examples of Regular Expressions

Use regular expressions to validate the input in a text box. The text entered by a user is compared with a predefined pattern to make sure that the text is, for example, an e-mail address, a positive number, etc.

What do regular expressions consist of?

Enclose valid letters, digits and characters in square brackets []. The following characters can be used to define how often these letters, digits and characters should be repeated: ?,+ and *.

Characters	Meaning
[A-Za-z]	This expression checks if a letter of the Latin alphabet has been entered at the indicated position.
[0-9]	This expression is used to find any digit at a certain position in the

	input.
?	The preceding letters, digits or characters are optional. They may (but need not) occur once, i.e. the expression occurs once or not at all.
+	The preceding letters, digits or characters must appear at least once, but may occur repeatedly.
*	The preceding letters, digits or characters may be repeated any number of times (or may not occur at all).
|	The | symbol can be used to define a logical OR. Place the | symbol between the alternatives.
^	Use the ^ character to identify the beginning of the pattern.
$	The $ symbol is the counterpart of the ^. It indicates the end of the pattern that has to match the end of the string. In a regular expression, you can define multiple end characters, provided that the expressions are separated by a logical Or (|).
.	Enter a period to check that any character (with the exception of a line break) exists at a certain position.
-	Within character classes, a hyphen is interpreted as a character. There, it is used to specify character ranges.
\	If you want to use a character in the pattern that has a specific meaning, such the period as a punctuation mark and not in its meaning as an expression for a given character, precede it with a backslash (\) to "escape" it.
()	To group expressions, use parentheses.

Examples:

Check if a number is positive:

```
^[0-9]+((.[0-9]+$|(\.[0-9]+$)|$)
```

Check if the user input represents an e-mail address:

```
^([a-zA-Z0-9_\-\.]+)@((\[[0-9]{1,3}\.[0-9]{1,3}\.[0-9]{1,3}\.)|(([a-zA-Z0-9\-]+\.)+))([a-zA-Z]{2,4}|[0-9]{1,3})$
```

6.3.3 Groups

Group controls can be used to organize other controls, in order to design more clearly structured data entry screens. From a functional point of view, controls in groups do not make any difference to controls that have been placed directly on

the data entry screen. Controls organized in groups also use the database record of the parent control (in this case, always the data entry screen itself). However, you can move child controls together with their group control, and properties like *Anchor* or *Dock* use the coordinates of the group control for their origin.

Like all other controls, you can position a group control simply by dragging and dropping it on the data entry screen. Controls can be placed automatically by a Layout Control or be dragged directly onto the group. When using the Layout Controls first drag it from the toolbox to the group. Then add the desired controls. The alignment is controlled by the Layout Control. Controls can also be taken directly from the toolbox to the group, however, the positioning must be made manually.

It is neither possible to insert an existing control into a group control at a later time nor to move a group control into another group control or into the parent control. Besides, group controls cannot be nested within other group controls. This means that only one hierarchical level is allowed.

In addition to the global properties, a group control only has one additional property named *Border*. This property controls the visual appearance of the group control in the data entry screen. Two options are available: By selecting the *AllSides* option, you can display a border around the entire group control. In contrast, the *OnlyTop* option displays only a single line along the upper edge, while the other three sides are left open.

6.3.4 Caption

Like textboxes, labels can be used for the output of text. However, the user cannot enter data into labels, as they are merely used for display purposes. Usually, labels describe or name other controls on the data entry screen. Thus, a label can indicate the purpose of a text box.

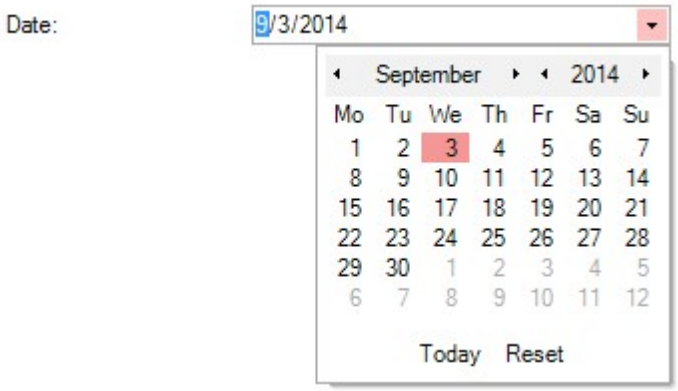
When controls are added to the layout control, a label is displayed automatically and must not be added.

In addition to the global properties, labels have two additional properties, which are explained in the table below.

Specific Properties of Labels	
AutoEllipsis	If this property is set to 'True' and the text exceeds the size of the control, an ellipsis symbol (...) appears at the right edge of the control to indicate that the text continues. If this property is set to 'False', the text will simply be truncated at the edge of the control.
TextAlign	Similar to the property of the same name for text boxes. This property determines the horizontal alignment of the string it contains.

6.3.5 Date/Time Picker

By adding a *date/time picker* to your data entry screen, you can provide a control that helps the user select a time or date to be saved in the database. This control is useful if users have to enter periods of validity, expiration dates and similar values. Optionally, a date selection may of course be made using a text box, provided that you have configured it with the corresponding type and validation settings.



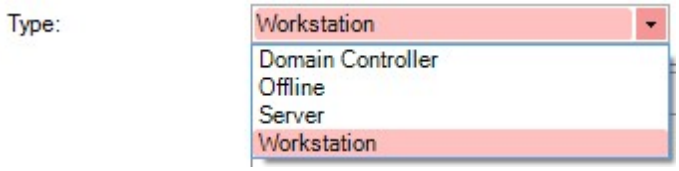
Specific Properties of Date/Time Pickers	
DisplayFormat	This property defines how the date will be represented in the control. Five different options are available. How the date or time will be displayed at runtime depends upon the locale settings in the control panel of the computer. The following options are available: • ShortDate: date in short format • LongDate: date in long format • Time: time in long format

	• DateTime: date in short format, time in long format • DateTimeShort: date and time in short format
Fieldname	Specifies the linked column in the respective table of the current Docusnap database. The meta object linked with the data entry screen determines which table will be used. For a *date/time picker* control, the corresponding target column in the database must always be of the Date data type.
MaxDate	Specifies the latest date the user will be able to enter or select for this control
MinDate	Specifies the earliest date the user will be able to enter or select for this control.

6.3.6 Combobox

So-called "combo boxes" display a list of valid values the user can select from. These controls are also known as drop-down lists. For this purpose, all valid values for the linked database column are presented to the user in a list from which the desired value can then be selected. This control is therefore suitable in all cases where a limited number of valid values are available that may change dynamically. As the data source, other database tables or Docusnap reference values may be used. If you select the database as the data source, you can specify any existing database table, provided that a primary key and a display field have been defined for it. When a user selects a value from this control, Docusnap will not save the selected string, but rather its associated number, which corresponds to the primary key (if the data source is a table) or the respective value (if the data source is a reference value).

In many cases, it is desired that only certain values are available from the combo box, such as only contacts stored for the current company. To make this possible, you can use a view that is filtered using the {FilterID} variable. The {FilterID} will always be replaced with the primary key of the parent object.



The table below lists all specific properties for *combo boxes*.

Specific Properties of Combo Box Controls

DropDownHeight	Determines the size of the dropdown list that should be displayed for the selection of the predefined values.
Fieldname	Specifies the linked column in the respective table of the current Docusnap database. The meta object linked with the data entry screen determines which table will be used. For a combo box, the corresponding target column in the database must always be a number that will be replaced with the associated text at runtime.
Sorted	If you set this property to 'True', the content of the combo box will be displayed in alphabetical order. Please note that reference values cannot be sorted explicitly. Using this option when *SourceType* is set to 'DCInitials' can lead to an erroneous behavior when the user selects a value.
SourceType	This property specifies the type of data source to be used for the combo box. As explained above, you can either use other database tables or the Docusnap reference values.
SourceValue	Depending on the selected *SourceType*, enter either the name of the corresponding database table or the identifier of the desired reference value for this property.
NoSelection	Is this property is set to 'True', the combo box will also display a *<No Selection>* item. If the user selects *<No Selection>*, no value will be saved in the database. If the data column must be filled, this property cannot be used.

6.3.7 Checkbox

If the user needs to enter a Boolean value into the database from a data entry screen, a checkbox is helpful. Here, the checked control represents the "true" or "yes" value, and the unchecked control the "false" or "no" value. Checkboxes may either be used as independent controls or as label fields that have an additional feature used to enable or disable the control.

In addition to the global properties, checkboxes have the properties shown in the table below.

Specific Properties of Checkbox Controls

CheckBoxPosition	This property defines where the actual checkbox should appear within the control. Docusnap uses its caption as the reference position.
Fieldname	Specifies the linked column in the respective table of the current Docusnap database. The meta object linked with the data entry screen determines which table will be used. For checkboxes, the corresponding target column in the database must always have the Boolean data type (BOOLEAN, YES/NO).

6.3.8 Buttons

Use and Properties

Buttons can be used to implement additional user-defined features directly on Docusnap data entry screens. For this purpose, either external applications with corresponding parameters may be started or VB scripts may be executed. In both cases, the data from the current record will be available and may be integrated into the corresponding program call or the script. To load the desired data, enter the corresponding database column names in braces in the following format: {FIELDNAME}

In addition to the global properties, the following property settings are available for buttons.

Specific Properties of Button Controls	
ActionMode	This property determines the type of action to be executed. The available options are *Application* or *Script*. When you select *Application*, clicking the button will start the application specified in the *Application* property. Additional parameters can be indicated by means of the *AppArguments* property. When you select *Script*, clicking the button will execute a VB script that you define through the *Script* property. The unselected option will automatically be ignored by Docusnap. Settings you have made for the currently disabled option will not be considered.
Application	Here, you can specify the application to be executed when

	the button is clicked. This requires that the *Application* option has been selected for the *ActionMode* property. Enter either the name of the application, such as *explorer.exe*, or the full path to an executable file on the hard disk or on a share.
AppArguments	Using this property, you can define additional arguments that will be passed as parameters to the application to be executed when the user clicks the button control. As with the Windows command line, multiple parameters can be entered. It is also possible to use data from the current record by entering the respective field name in braces.
Script	In this property, you can specify a VB script to be executed when the user clicks the button. Here again, data from the current record is available without restriction. You can integrate it into the script by entering the respective field name in braces.

Examples of Use

Opening an Admin Share

Specify the following to enable a user to open the C$ admin share of a Windows computer by clicking a button on a Windows systems level data entry screen:

Property	Value
ActionMode	Application
Application	Explorer.exe
AppArguments	\\{Hostname}\C$

Starting a Remote Desktop Connection

The configuration below enables the user to start a remote desktop connection for the current computer from a data entry screen at the device level.

Property	Value

ActionMode	Application
Application	mstsc.exe
AppArguments	/v {Hostname}

Simple VB Script Example

The simple example of a device level script shown below checks whether the currently selected computer is online or unreachable using a ping command.

Property	Value
ActionMode	Script

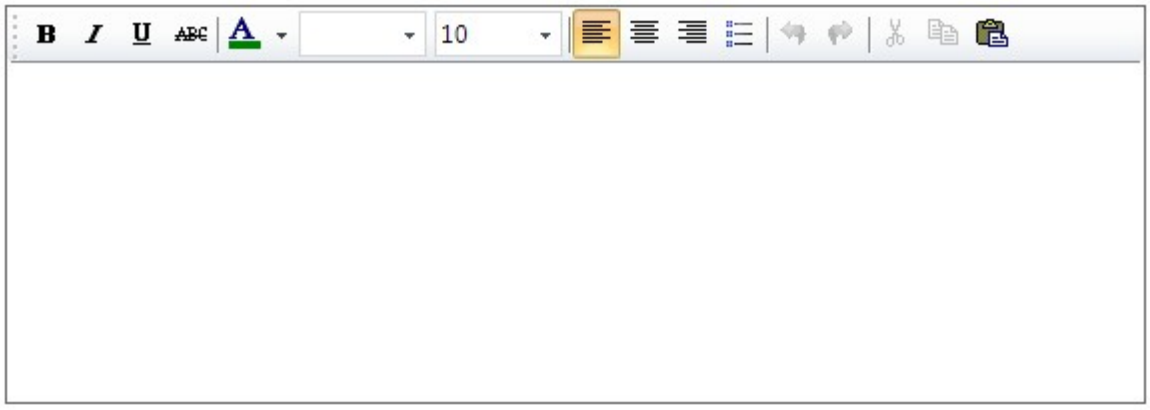
Script	Dim Win
	Win="select*from Win32_PingStatus where address='{Hostname}'"
	Dim Level
	Level = "winmgmts:{impersonationLevel=impersonate}"
	
	Set objPing = GetObject(Level).ExecQuery(Win)
	For Each objStatus in objPing
	If IsNull(objStatus.StatusCode) Or objStatus.StatusCode<>0 Then
	WScript.Echo "Computer {Hostname} is unreachable."
	Else
	WScript.Echo "Computer {Hostname} is online."
	End If
	Next

The examples shown in this section are meant to provide a basic look at the options to extend Docusnap by integrating external applications or VB scripts. Almost any imaginable customization can be made by means of these two options. If a planned customization goes beyond the capabilities of a VB script, you can call a self-programmed application with corresponding parameters in order to achieve the desired goal. More information about the capabilities provided by VB scripts can be found in a number of books and, of course, on the Internet.

6.3.9 Richtextbox

Rich text boxes enable the user to enter and edit formatted text at runtime. Thus, the user can benefit from all format options that have been provided by Microsoft for the corresponding text entry fields. Similar to a mini-word processor, users can apply simple formatting to the text as well as paste graphics, tables, photos and other objects simply by using copy & paste. Elements copied from another applications (or other parts of Docusnap) can be pasted at the current cursor position by pressing the *<Ctrl>+<V>* hotkey or by clicking the corresponding button on the toolbar, provided that this functionality is supported by the rich text box. Thus, rich text boxes are particularly suitable to enter comprehensive passages of text such as notes, comments, or they can simply be used as a means to enter formatted text.

When using rich text boxes, please note that the formatting applied to the text will be saved in the database as strings. When creating database fields that save formatted text, make sure that they are large enough for this purpose. Example: A length of nvarchar(255) will be sufficient in only a few cases, because this character count will be easily exceeded by the formatting instructions that add to the text itself. For this reason, it is a good idea to use rich text box controls primarily in connection with database fields of the MEMO or TEXT type.



In addition to the global properties, rich text box controls have the properties shown in the table below.

Specific Properties of Rich Text Box Controls	
Scrollbars	Determines if scroll bars will be displayed and if so, which type. In principle, navigation within a rich text box control is also possible without scroll bars by using the keyboard or the mouse. However, scroll bars significantly facilitate this process.
ShowAlignment	Determines whether the controls for text alignment will be shown or not.
ShowCopyPasteCut	Determines whether the controls for copying, pasting and cutting text will be shown or not.
ShowFontSelection	Determines whether the controls for basic font formatting will be shown or not.
ShowTextFormats	Determines whether the controls for text formatting will be shown or not.
ShowUndoRedo	Determines whether the Undo and Redo controls will be shown or not.

If a rich text box control is used to enter formatted text, it is also necessary to define a Docusnap rich text box in the corresponding position of the associated reports. If you do not modify the affected reports accordingly and apply a normal Docusnap text box in the reports instead, the full content of the rich text box control, including the formatting instructions in plain text, will be shown in this field. However, the reverse does not present any problems. A rich text box control can easily show the content of normal text boxes. Please note that, in this case, when editing plain text using a rich text box control, the content will automatically be assigned formatting instructions. This might lead to an erroneous presentation of the modified text when displayed in normal text boxes.

6.3.10 TreeView

Using the *TreeView* element, you can assign elements from another table to the current element using a tree structure. It is easy to assign an element from the table to be connected to the current element by enabling its checkbox. The advantage of the *TreeView* element is that you can assign multiple elements. This is helpful if the assignment via a *combo box*, which only allows a single connection, is not sufficient. To create a *TreeView* control, specify the following properties:

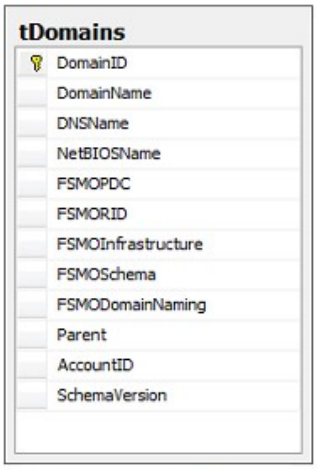
Specific Properties of a TreeView Control	
MappingForeignKeyField	Here, you can specify the foreign key field of the table to be used to define the relation to the table to be linked.
MappingReferenceField	Here, you can specify the field in the related table where the selected data from the reference table will be saved.
MappingTable	Here, you can specify the name of the table that relates both fields to be linked.
ReferencePrimaryField	Here, you can specify the primary key of the reference table.
ReferenceRecursionField	Here, you can specify an existing recursive field if the reference table is recursive.
ReferenceSQL	Here, you can specify the SQL statement used to query the required data from the reference table.
ReferenceTextField	Here, you can specify the text field to be used as a node name in the tree.

Example of use:

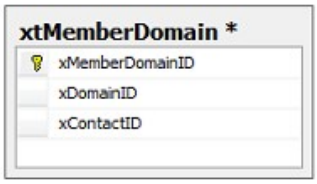
Assume you want to use the *TreeView* control to assign each contact the domain to which it belongs.

First, create a table that relates the contacts and the domains tables to each other. For this purpose, follow the instructions given in the Extending the Database Structure section.

The *xtMemberDomain* table, which includes the *xDomainID*, *xContactID* and *xMemberDomainID* fields, has the following structure:



Reference Table



Mapping Table

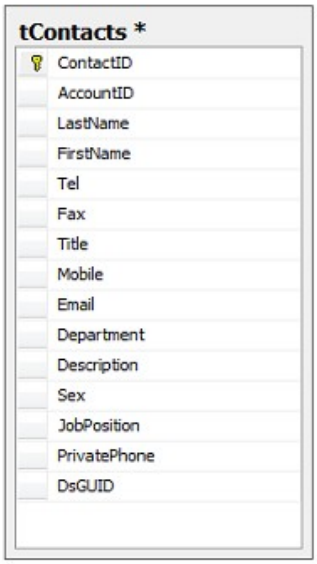
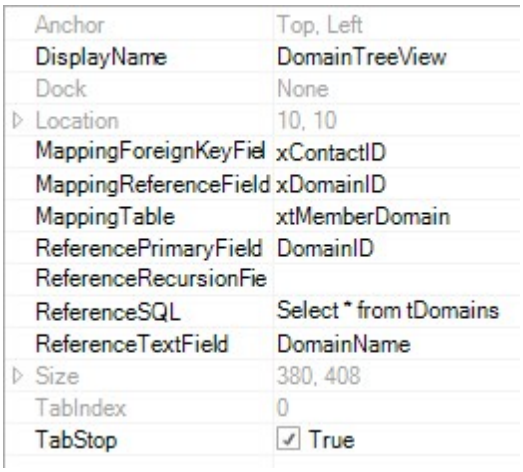


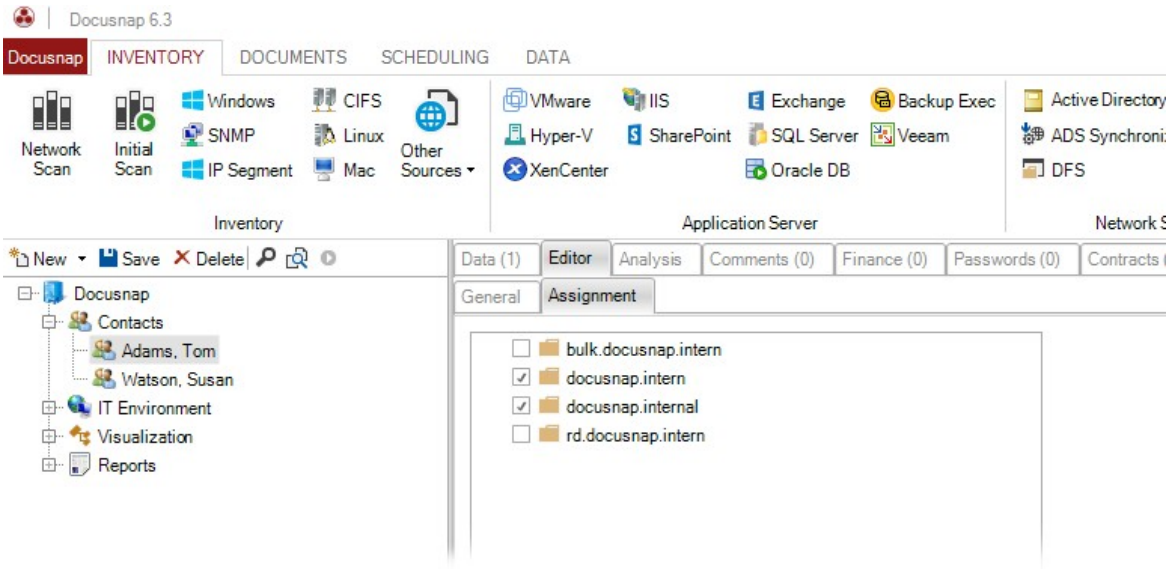
Table in Data Entry Screen

Now, all data can be specified on the Properties tab of the TreeView control.



For the ReferenceSQL property, enter a simple SELECT statement on the *tDomains* table. To obtain all domains of the current company, use the {AccountID} variable. The variable will be filled with the company AccountID for which you create this data entry screen.

After you have entered all required data, you can save the element for later use.



6.3.11 Attachments

Attachments can be added to each meta object which has a data entry screen.

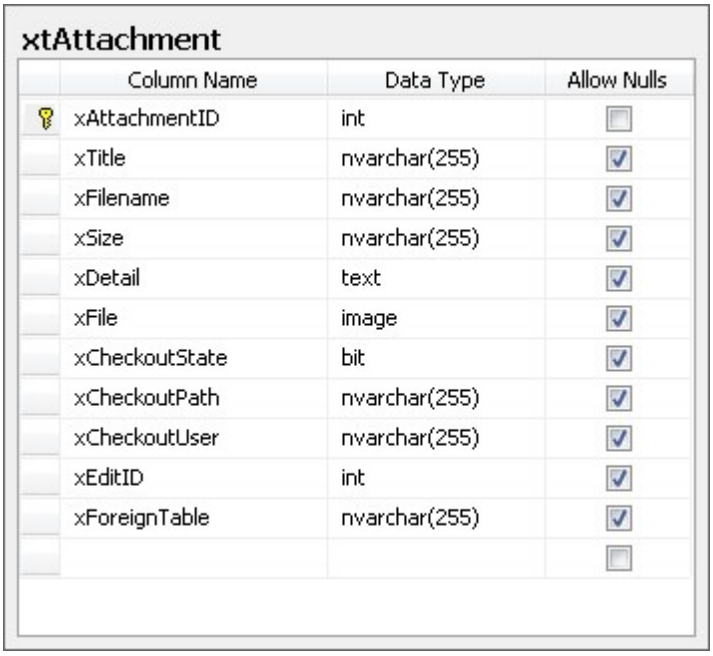
It is recommended to add a separate tab where the *Attachment* control can be inserted.

For the *Attachment* control, you must create a user-defined table in which the attachments will be saved.

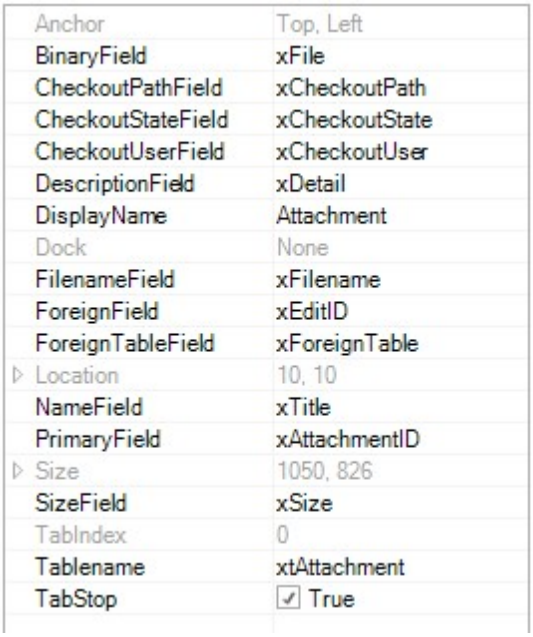
Specific Properties of Attachments	
BinaryField	Indicates the field in the database table where the file attachment will be saved.
CheckoutPathField	Indicates the field in the database table where the path for checking out the file attachment will be saved.
CheckoutStateField	Indicates the field in the database table where the checkout status of the file attachment will be saved.
CheckoutUserField	Indicates the field in the database table where the user who checked out a file attachment will be saved.
DescriptionField	Indicates the field in the database table where the description of the file attachment will be saved.
FilenameField	Indicates the field in the database table where the file name of the file attachment will be saved.

ForeignField	Indicates the field in the database table where the foreign key of the file attachment will be saved.
ForeignTableField	Indicates the field in the database table where the name of the table to which the file attachment belongs will be saved.
NameField	Indicates the field in the database table where the name of the file attachment will be saved.
PrimaryField	Indicates the field in the database table where the primary key of the file attachment will be saved.
SizeField	Indicates the field in the database table where the file size of the file attachment will be saved.
Tablename	Indicates the database table where the file attachments will be saved.

The user-defined table must contain fields that match the fields of this database table.



These fields can then be assigned to the properties of the *Attachment* control.



Anchor	Top, Left
BinaryField	xFile
CheckoutPathField	xCheckoutPath
CheckoutStateField	xCheckoutState
CheckoutUserField	xCheckoutUser
DescriptionField	xDetail
DisplayName	Attachment
Dock	None
FilenameField	xFilename
ForeignField	xEditID
ForeignTableField	xForeignTable
Location	10, 10
NameField	xTitle
PrimaryField	xAttachmentID
Size	1050, 826
SizeField	xSize
TabIndex	0
Tablename	xtAttachment
TabStop	☑ True

Adding Attachments

There are two ways to add attachments.

- Click the *New* button on the Attachments tab to enable the data entry screen where you can define the attachment. When you click the *Choose File* button, a dialog opens where you can select the desired file. After you have selected the desired file, the *Title* text box will automatically be populated with the file name. Optionally, you can enter a description of this attachment. To save the attachment data (*file, title, description*) in the database, click the *Save* button.
- You can also add files to the attachments by *drag & drop*. Simply drag the desired file into the table on the *Attachments* tab and drop it there. If you use *drag & drop* to add a directory or multiple files to the table, the corresponding files, or all the files in the directory, will be added simultaneously. The attachments added by *drag & drop* will immediately be stored in the database. For each added file, its file name will be used as title. You can change it and then apply your change by clicking the *Save* button.

Opening Attachments

To open an attachment in an application, first select the file. Then click the *Execute* button to open the file in the default application set for this file type in the system.

Editing Attachments

You can edit attachments whenever you want to do so. To edit the file, you must select it. Then, click the *Check Out* button. The file will be stored in the *check out path*. *Checking out* a file prevents the file from being edited by multiple users at the same time, which would introduce inconsistencies. To make the checked-out

file available to other users again when you are done with editing, release it by clicking the *Check In* button. *Checking in* the modified file saves it back to the database.

6.3.12 ADS Assignment

With the type *ADS Assignment* users or groups from the ADS inventory can be assigned. When creating a new entry the name of wanted user or group can be entered. Once the first letter is typed, the matching entries are suggested. Users and groups can be added via enter key or selection via the mouse from the suggestion list. Click the ... button to open the dialog for the advanced search. In this dialog the selection of users and groups can be filtered by several conditions. Afterwards the selected user or group can be assigned to the created object. You find further information on the filter in the User Manual in the chapter Permission Analysis.

Specific Properties of Attachments	
Fieldname	Specifies the linked column in the respective table of the current Docusnap database. The meta object linked with the data entry screen determines which table will be used. For an *ADS Assignment* control, the corresponding target column in the database must always be of the String data type, so the SID of the user or group can be stored.

The selection of users and groups in the ADS assignment control is filtered by the company under which the object is created.

6.4 Number Servers

Functionality

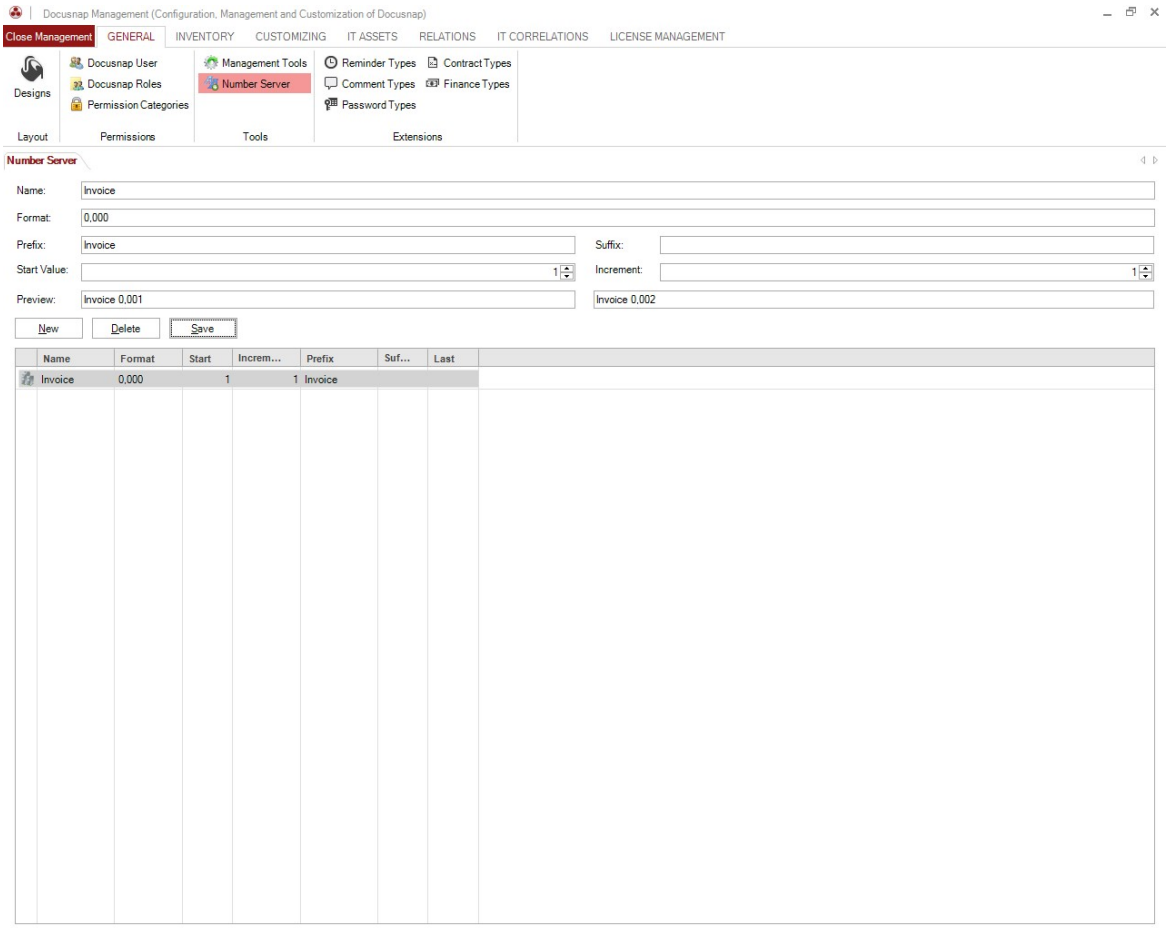
The number server actually represents a special type of text box that is used to generate numbers automatically. This can, for example, be helpful to create sequential numbers for documents automatically and with a minimum of administrative effort. In addition to sequential numbers, you can specify prefixes and suffixes, as well as formatting, the starting value and an increment for the numbers.

Managing the Number Server

The settings for the number server can be configured in the Docusnap Management using the *Number Server* option on the *General* ribbon. From the *Number Server* tab, it is possible to create various definitions for number servers and test them. Similar to most other management dialogs, you can create new definitions or edit or delete existing definitions. The name may be chosen freely and only serves identification purposes in Docusnap. The selected name does not affect the functionality of number servers in any way. In the *Format* field, enter a formatting string which determines how the sequential numbers will be presented. The formatting options behave like their equivalents provided by Microsoft for the .ToString() method in .NET, where the respective formatting string needs to be entered in quotes (""). The most important properties are explained briefly in the table below.

Character(s)	Meaning
0	Serves as a placeholder for a number or a digit of a number, where non-significant zeros will be replaced by the zero (0) character.
#	Serves as a placeholder for a number or a digit of a number, where non-significant zeros will not be replaced.
.	Inserts a decimal separator at the corresponding position.
,	Inserts a thousand separator at the corresponding position. The symbol actually used depends on the locale setting. Aside from this, the symbol divides the value by 1000. Thus, the "#,," formatting string would cause the number 1234567890 to be displayed as 1234.
%	Formats the number as a percentage and additionally multiplies it by 100. The symbol that will be used depends on the locale settings.
fp;fn;f0	Allows to specify different formats for positive and negative numbers, as well as for zero.

To specify formatting strings, you can use any desired combination of the placeholders and formatting symbols shown in the table above.

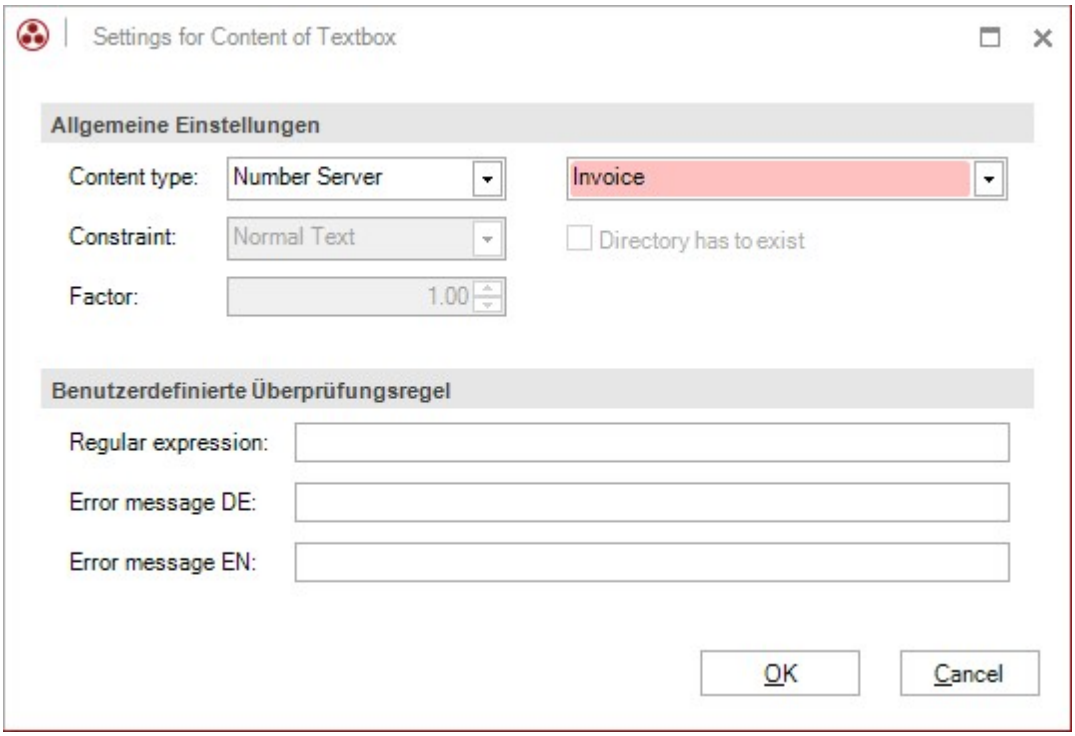


To specify a prefix that will precede the number, enter any desired string in the *Prefix* field. The *Suffix* field behaves similarly, except that this string will be shown after the formatted number. Enter the first valid value for this number definition in the *Start Value* field and specify the increment by which each subsequent number will be increased in the *Increment* field. The two text boxes at the bottom of the dialog display a preview of the first and second valid values generated. This makes it easy to see if you specified all settings correctly. When you edit the settings in the *Manage Number Server* tab, the preview will immediately be adjusted without requiring any additional actions.

Using the Number Server

After you have entered the corresponding definitions for the number server, they can be used in combination with the text boxes in the Designer for data entry screens. On the Properties tab of text boxes, you can set a so-called "TextConstraint" property to validate your entries. When you click the ellipsis for this property, the *Settings for Content of Textbox* dialog opens where you can select the *Number Server* content type. In the dropdown list to the right of it, you can select the previously created number server definition. After the selection has been saved, the text box will be read-only on the associated data entry screen.

When a user creates a new record by means of this data entry screen, the text box will remain empty until the user clicks the *Save* button below the ribbon. If there is no value in the corresponding text box when the user saves the data, the number server determines the next value in the sequence and saves it with the record. This value will then be preset when the user accesses the record for the next time. It can no longer be modified.



Please note that settings related to the number server will only be applied when you **reload the entire data entry screen**. Since data entry screens are cached for performance reasons, it is necessary to load another data entry screen and then switch back to the modified data entry screen to do so. For this purpose, it is not sufficient to switch to one of the extensions or to display a list view. The entire data entry screen must be reloaded. Example: After having customized the company data entry screen, you could load the contacts data entry screen and then switch back to the company data entry screen.

6.5 Example

Opening the Designer

As a simple example of a full user-defined data entry screen, this section will explain how to create a suitable user interface for the SLA object already explained in the preceding sections. For this purpose, first select the SLA_Data object in Docusnap Management in *Manage Objects*. Click the *Data Entry Screen* button to open the

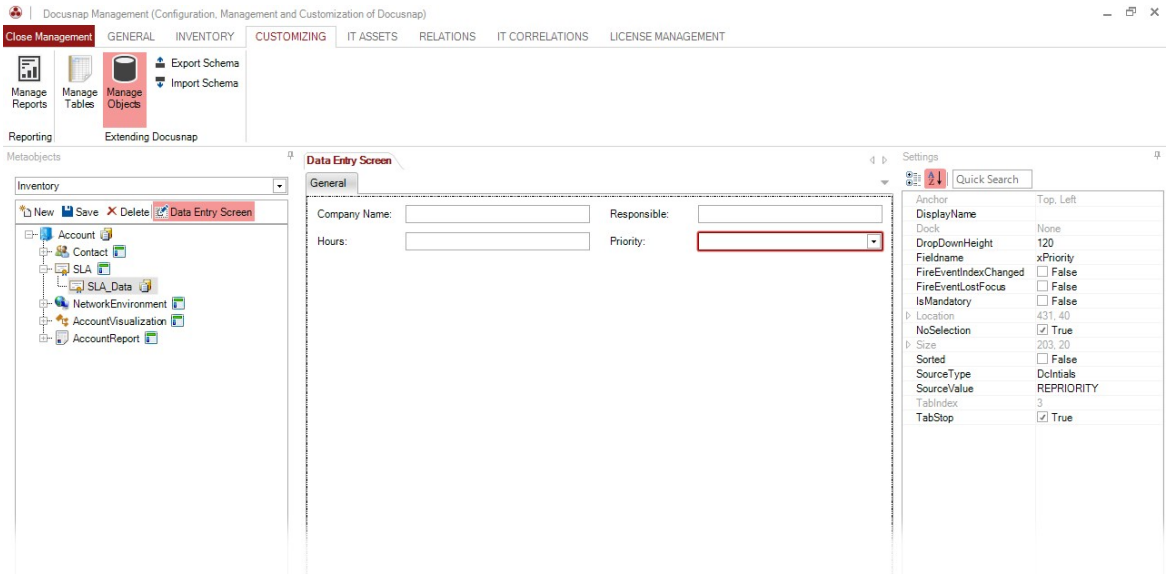
empty data entry screen. Once the Designer is open the data entry screen can be crated.

Designing the User Interface

In order to be able to enter all data that is required to create a total of five controls are necessary which will be briefly introduced in the table below, including their properties. The *Control* column indicates the type; the *Field Name* column the value of the *Fieldname* property; and the *Notes* column shows other required settings.

Control	Field Name	Characteristics
Layout Control		Dock: Fill
Text Box	xName	TabIndex: 1; IsMandatory: True
Text Box	xResponsible	TabIndex: 2
Text Box	xHours	TabIndex: 3, TextConstraint: Decimal
Combo Box	xPriority	TabIndex: 4; SourceType: DcInitials; SourceValue: REPRIORITY

In the first step add a Layout Control. By setting the property *Dock* to *Fill* the control spreads to the whole surface. Subsequently, add three text boxes and a combo box. Then the user interface should appear as shown in the figure below and have all required features. All four data entry controls need to be connected to the corresponding columns in the Docusnap database by specifying the column name the *Fieldname* property. The combo box will be filled with a predefined list of different selectable priority settings, because you assigned the REPRIORITY reference value.



If you added and configured all controls properly on the Properties tab, you can save the new data entry screen by clicking the *Save* button in the toolbox. Depending upon the active configuration, the data entry screen will be stored in the folder for local or team settings. If you want that other users have access to the new data entry screen too, you need to distribute the corresponding file to these users. For more information on this topic, refer to the Distributing Customizations section below.

Testing the Newly Created Data Entry Screen

To test if the newly created data entry screen works properly, close Docusnap Management. Now, it is possible to create a new SLA object by selecting the SLA caption and clicking the *New* button above the *Inventory* tree view. The newly created data entry screen will appear in the main window of Docusnap and users can enter and edit data as required. By clicking the *Save* button above the *Inventory* tree view, the data is saved directly in the current or new record of the user-defined Docusnap table.

Please note that errors that occur during this test are not necessarily caused by errors in the data entry screen. Due to the fact that this SLA example consists of three components, errors may arise from any one of the components and might only now become visible. For example, if data input controls are shown in read-only mode, it is very likely that Docusnap was not able to establish the connection to the database column. In most cases, this error is due to incorrect or missing settings for the *Fieldname* property of the respective controls.

Part

7 Distribution of Modifications

Underlying Principle

In Docusnap, it is possible to export customizations made to the database structures, the meta objects and the data entry screens and to apply them to other databases and Docusnap installations without much effort by importing them in the other environment.

You can export and import customizations via the Docusnap Management.

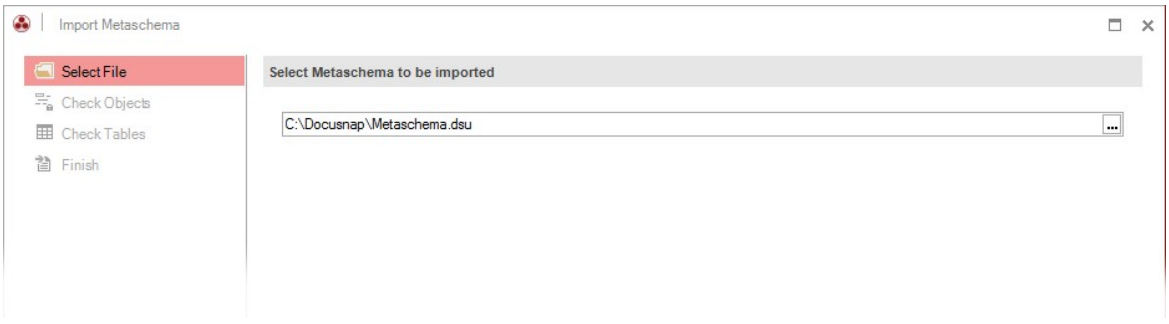
Exporting the Database Structure and the Meta Objects

In order to export a meta schema, Docusnap must be connected to the database that contains the corresponding schema. The current schema can be exported to any desired location by clicking the *Export Schema* button on the *Customizing* ribbon. At the selected location, Docusnap creates a new file with the .dsu file extension which contains all customizations made to the current Docusnap database. Please note that a partial export of the customizations is not possible.

Importing the Database Structure and the Meta Objects

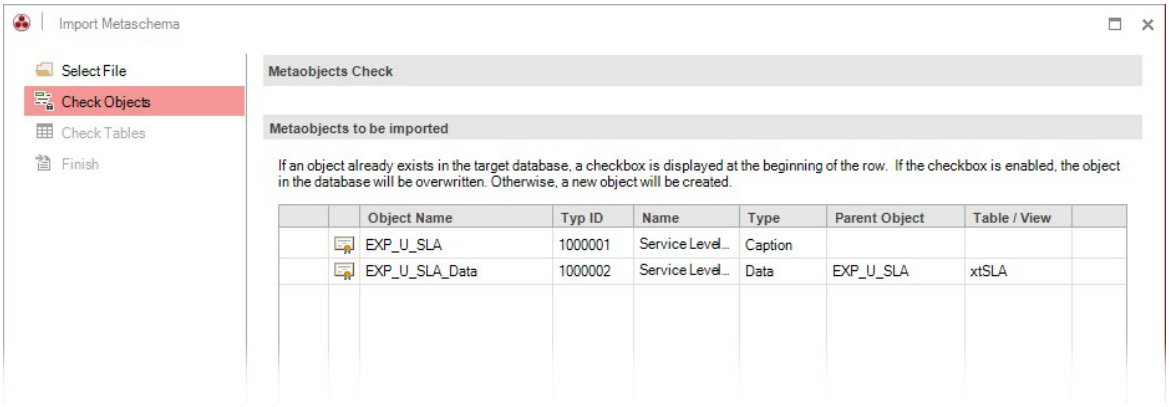
Previously exported customizations of the meta schema can be imported into another database using a wizard. To do so, Docusnap needs to be connected to the target database at the time of the import process. By clicking the *Import Schema* button on the *Customizing* ribbon, you can open the associated wizard that helps you specify further settings.

The first step in the wizard is to select the previously exported file which contains the modified meta schema. When you click the ... button, a file selection dialog opens where you can open the desired .dsu file.

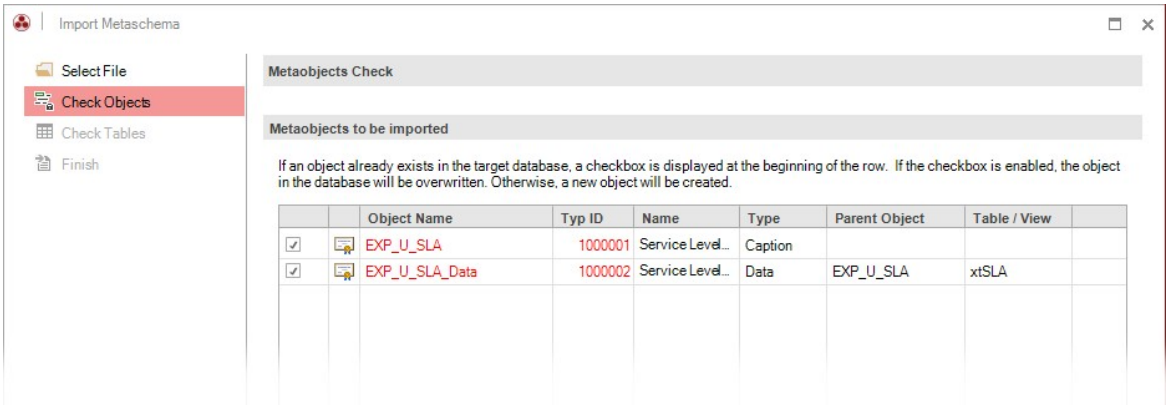


In the second step, the wizard will display all customized and newly added meta objects that exist in the selected file and that will be imported into the current database. When importing the file, Docusnap considers all objects from the schema file. This means that all meta objects contained in the file will be imported. Due to the potential dependencies between the objects, a selection is not possible at this time. After the import, you can use the *Manage Metaobjects* dialog to delete any

objects that are not required.



If a checkbox is displayed next to an object to be imported, an object with the same type ID already exists in the target database. The red font indicates that the corresponding object name or type ID is already present among the meta objects of the target database. If you enable the checkbox, the corresponding object in the target database will be overwritten by the information from the selected file. If you leave the checkbox unchecked, a new object with the same name, but a different type ID, will be created in the target database. In this case, the original object in the target database remains unchanged. If the type ID already exists but the object name is different, and you select the option for overwriting existing data, Docusnap will also overwrite the existing object name with the one from the import file.

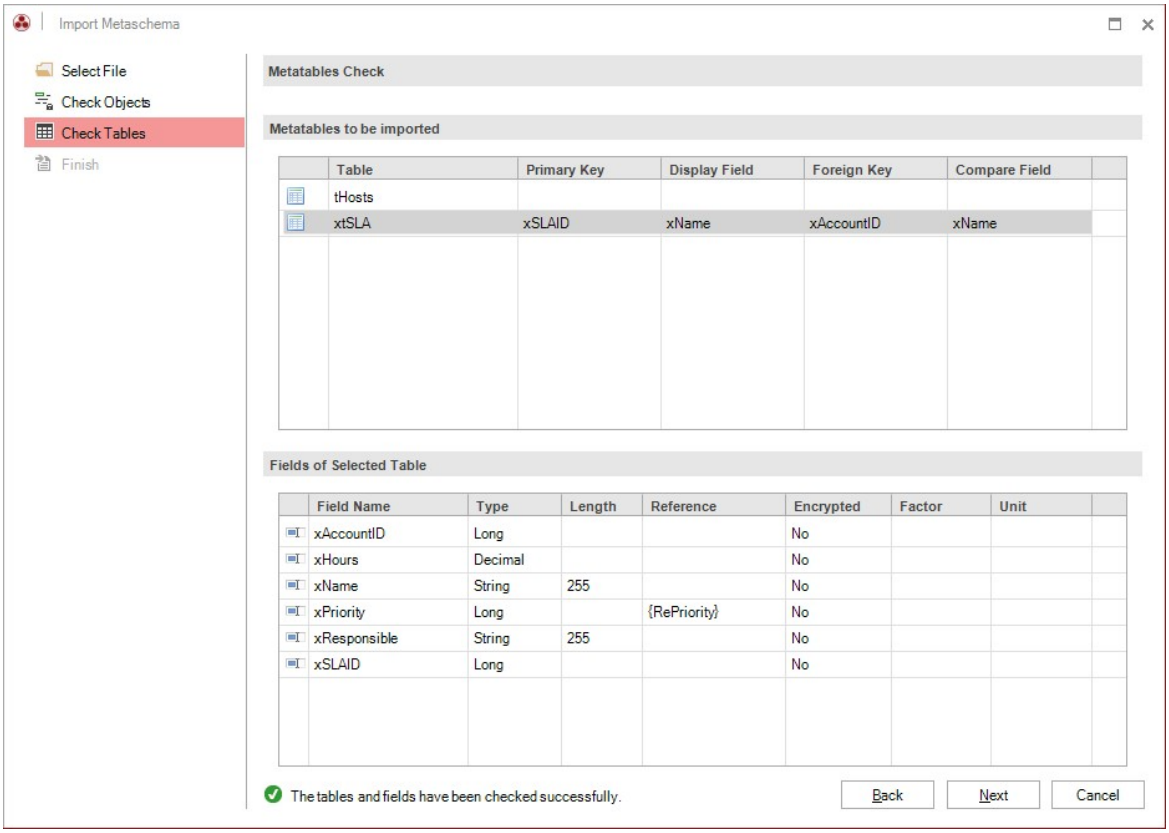


The third step of the wizard lists all tables that are present in the selected file and that will be imported into the target database. The following figure shows a table called *xtSLA* which does not exist in the Docusnap system schema. The *tHosts* table, in contrast, belongs to the system schema. A field was added to it where users can enter additional information.

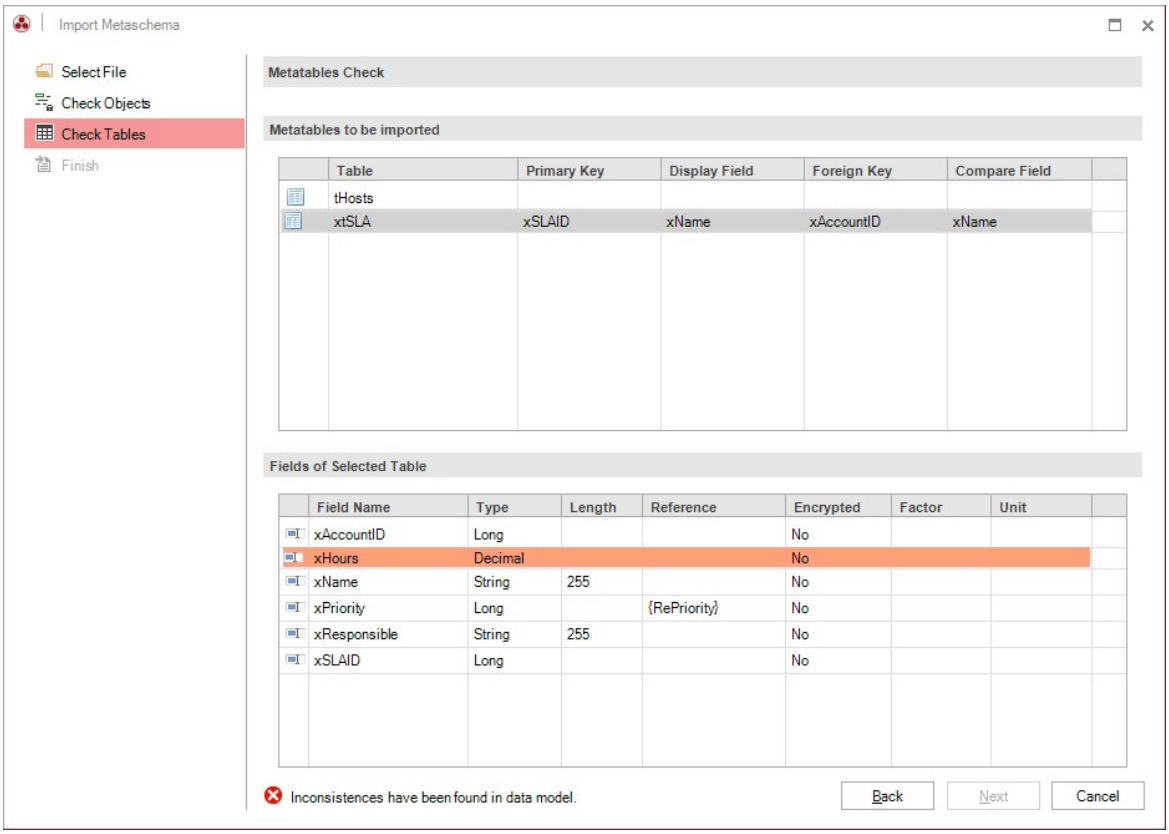
The *Metatables to be imported* list displays all tables that are either user-defined or have been customized by adding user-defined fields or by editing existing fields. When you select a table in the upper list, all added or modified columns of the selected table will be displayed in the *Fields of Selected Table* list below.

If a table does not yet exist in the target database, the table will be created with all

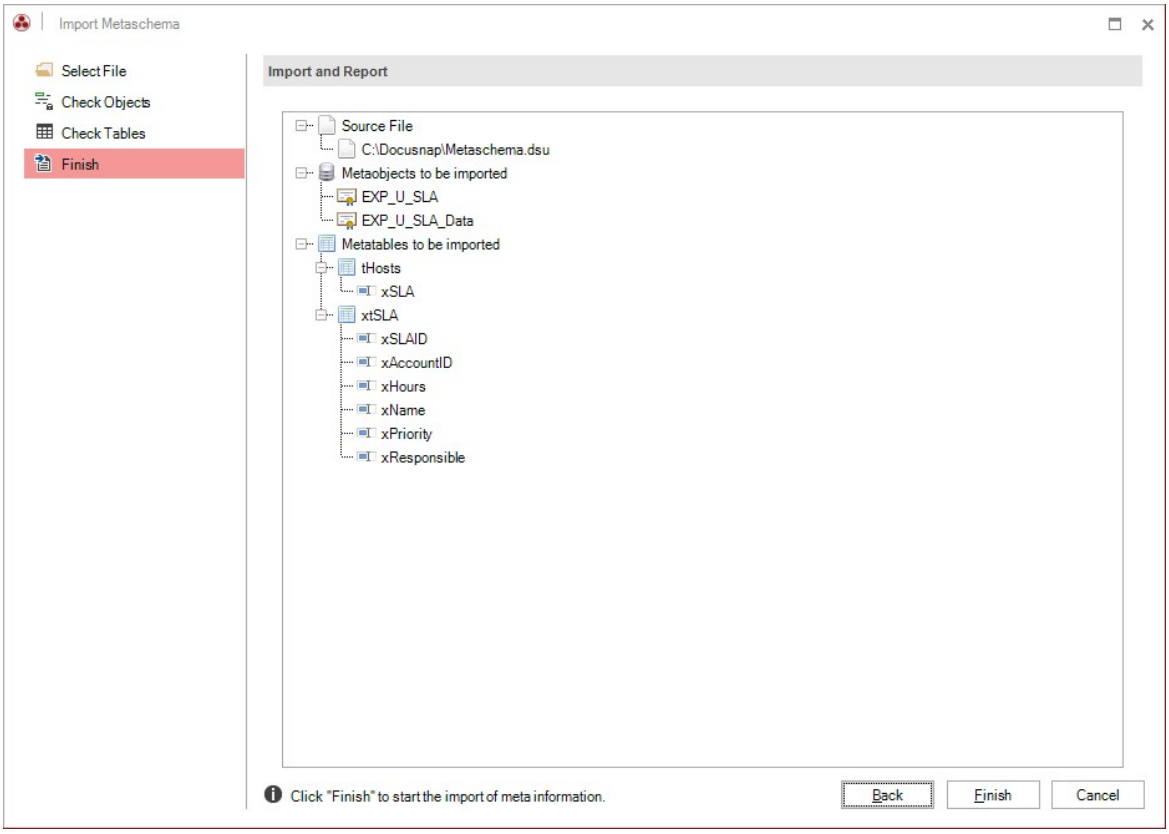
its fields. If the table already exists, this list shows only the columns that are still missing. Docusnap will never delete fields that, while existing in the database, are not associated with that table in the schema file. All tables and fields will be imported during the import process. It is not possible to exclude individual tables or fields from being imported.



If a field already exists in the target database, but has a different data type than that of the definition in the import file, the field will be highlighted in red in the corresponding list. When you click the table in the upper list, Docusnap will display the columns in the lower list, highlighting the fields that still have problems in red. To perform the import process, change the data type in either the target database or the source database. However, the data type can only be changed by deleting the affected column and re-creating it with the other data type. Please note, that all data in this field will be deleted from the database. If you change the field in the source database, you need to re-export the schema file to make sure that the updated data will be imported. If you change the field in the target database, however, it is sufficient to only delete the field, since it will be re-created by importing the source file, this time with the appropriate data type from the source database.



The last step of the wizard shows a summary of all objects and tables to be imported. By clicking the *Back* button, you can change the selection, if required. To import the objects and tables into the target database, click the *Finish* button.



Distributing Data Entry Screens

Customized or newly created data entry screens are not automatically distributed by means of a wizard, since they are independent from the database in use. Instead, they will be loaded from the respective local or team settings. In order to make these changes available to multiple users, these users need access to the corresponding .dsu files. If team settings are used, it is usually sufficient to copy the modified .dsu files to the *DataEdit* subdirectory of the team settings directory, unless this has been done automatically when saving the data. If local settings are used, the corresponding files will always have to be distributed manually.

Even if team settings are used, changes made to the data entry screens might not immediately be loaded into all Docusnap installations. In particular, if Docusnap is used on laptop computers by field representatives who are not connected to the corresponding team settings directory, the local settings will be used alternatively. In this case, manual distribution of the changes is indispensable in order to enable all users to use the modified data entry screens.