Instructions - Physical Infrastructure

Documentation of physical infrastructures

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1. Overview and Intended Use

The feature Physical Infrastructure covers the documentation of your physical IT infrastructure.

This begins with the visualization of sites, buildings and rooms. Subsequently, devices, racks, switches and all other IT relevant systems can be assigned. The cabling of the systems can also be included.

Various maps and reports are available for evaluation.

Further Information

If you require further information on the topic of physical infrastructure, you can access the following resources.

HowTo (this document)

On the Docusnap website you can find in the HowTos section (https://www.docusnap.com/en/support/knowledge-base/) the current document *Physical Infrastructure*, which deals in detail with the topic Physical Infrastructure in Docusnap.

E-Learning (only available in German)

An E-Learning on physical infrastructure in Docusnap is available for a fee. In this E-Learning, the various functions and approaches are described in detail.

You can obtain the E-Learning either on our website or through our sales department:

Web Page

https://www.docusnap.com/training/e-learning/

Sales

Phone: +49 8033 6978 - 4000
E-mail: info@docusnap.com

2. Introduction to the Infrastructure Editor

2.1 Definitions

The following terms are used regularly in this manual.

Physical Infrastructure
In Docusnap the following elements are combined under the physical infrastructure:

- Sites (cities, buildings, floors, rooms, etc.)
- Racks, Patch Panels and Network Sockets
- Cabling

Infrastructure Editor
The Infrastructure Editor provides the interface to create and manage the elements associated with the physical infrastructure.

Sites
Sites are used in Docusnap to represent the structure of a company. At least one site is required to map the physical infrastructure.

Racks
Racks can be used to document the physical structure of a rack in Docusnap.

Site Elements
Site elements in Docusnap are all elements that can be assigned to a site, e.g. network sockets, air conditioners, etc.

Rack Elements
A rack element is built into a rack. Examples of a rack element are servers, switches or patch panels.

Shapes
A shape is the image of a physical element (e.g. server, switch, network socket) and serves to graphically represent the element in the rack. Furthermore, the detected plugs are used for the documentation of the cabling.

Shape Editor
Integrated editor in Docusnap, that helps to extend the existing Shape collection by own Shapes.

2.2 The Infrastructure Editor

The Infrastructure Editor is the user interface for mapping the physical infrastructure in Docusnap. All tasks dealing with this topic can be done in the editor.

The editor can be used to map site structures, create racks and fill them with elements.

Furthermore, the cabling of the physical components can be carried out and new shapes can be added.

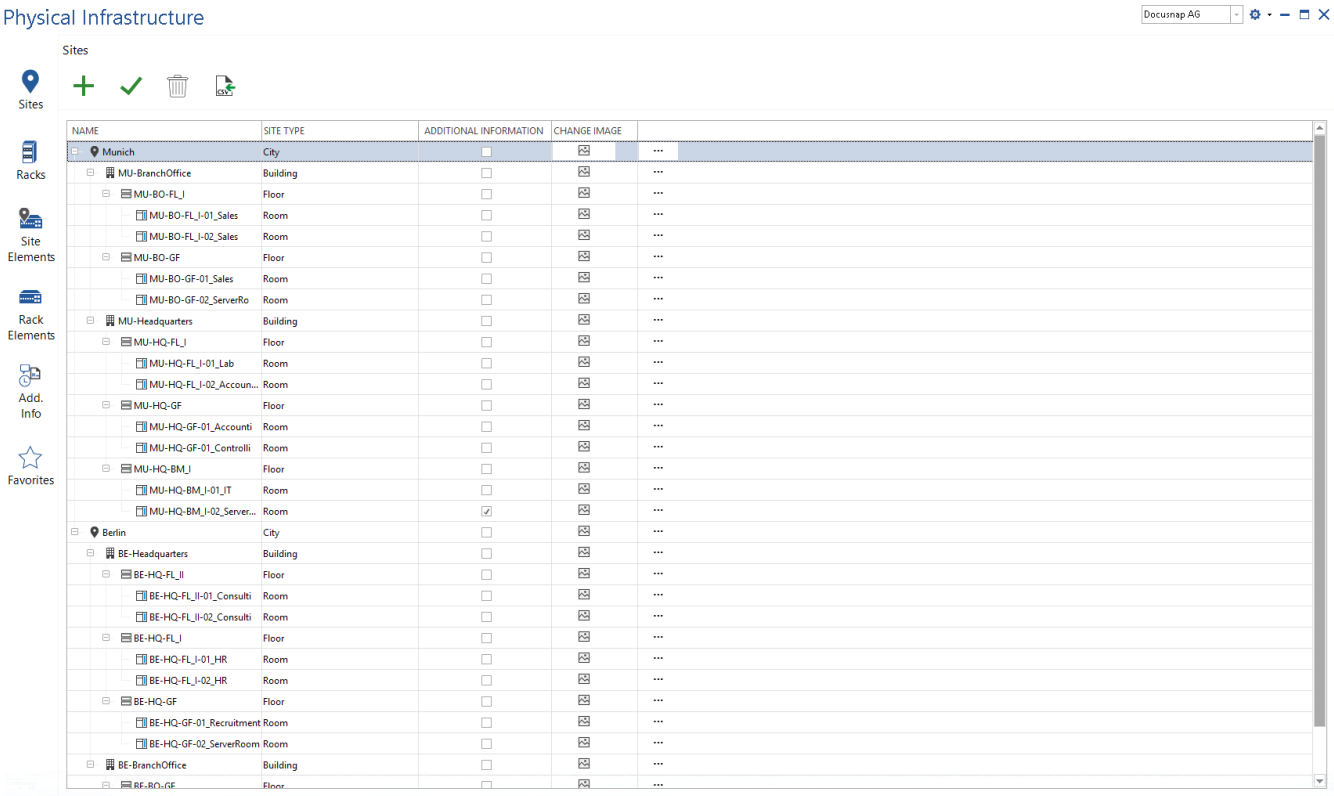

Fig. 1 - Overview Infrastructure Editor

2.3 Editor Basic Functions

As soon as a site or an element of the physical infrastructure has been selected in the data tree, the editor can be opened. According to the selected element in the Docusnap tree structure, the respective client is selected in the editor.

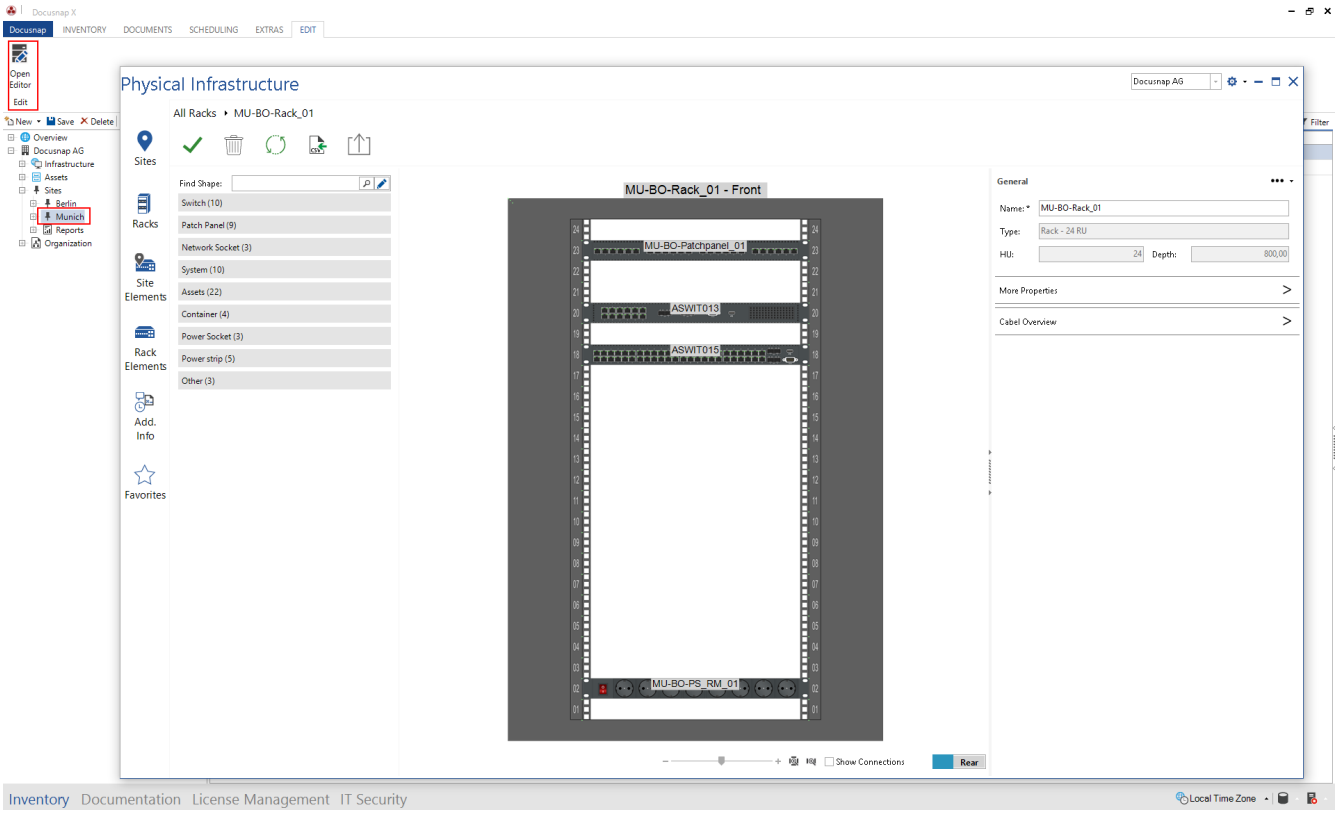

Fig. 2 - Open the Editor II

Editing within the editor takes place in the first step using a tabular structure (grid).

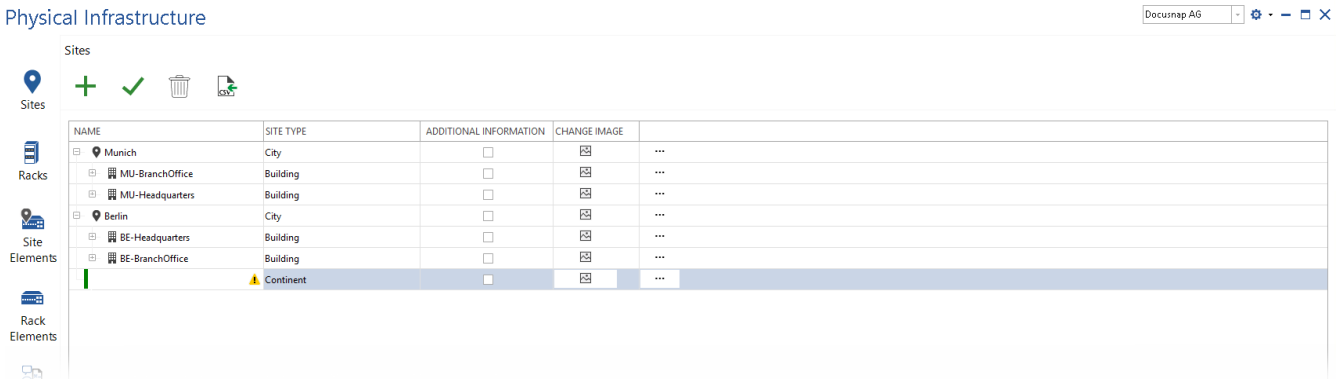

Fig. 3 - Tabular Editing within the Editor

The functions Create, Save and Delete are available for managing the sites.

All actions, such as adding, changing or deleting objects, are only applied after saving (shortcuts can also be used here - e.g. Ctrl + S).

It is possible to map the complete hierarchy and then save it as a whole.

The color coding of the elements indicates that the actions still have to be adopted.

- Green: New element is added
- Pink: Element is deleted
- Blue: Change made to element

A previously made change, if it has not yet been saved, can be undone via the context menu.

The context menu offers at least the following options for each element. Depending on the element, further options are available, which will be dealt within the later chapters.

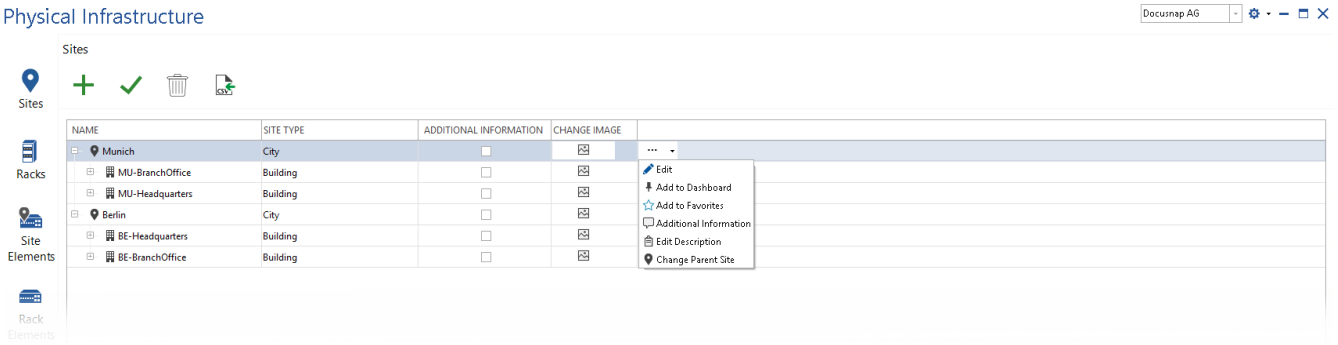

Fig. 4 - Context Menu

Edit

The selected object is edited. Alternatively, the object can be edited by double-clicking on the icon.

Add to Dashboard

The dashboard is the entry point to the Infrastructure Editor. When opened, all added elements are available. The dashboard opens with a click on *Physical Infrastructure*.
The dashboard is user-specific and is therefore not transferred to other users.

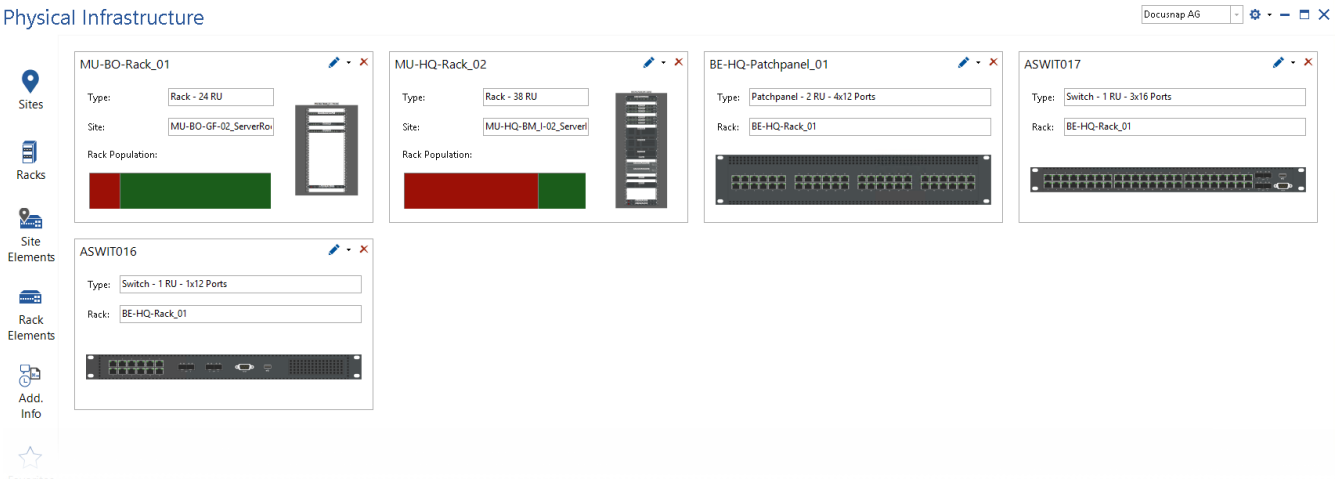

Fig. 5 - Dashboard of the Infrastructure Editor

Add to Favorites

Similar to the dashboard, elements can be added to favorites. Favorites are user-specific and are therefore not transferred to other users.

Add Additional Information

Additional information can be assigned to elements. Further information on the subject of additional information: HowTo: Add additional information in Docusnap.

3. Manage Sites

Detailed information on working with sites can be found in the manual. To map the physical infrastructure, a site is mandatory.

Within the editor, sites are created, edited or deleted. Existing sites can also be moved.

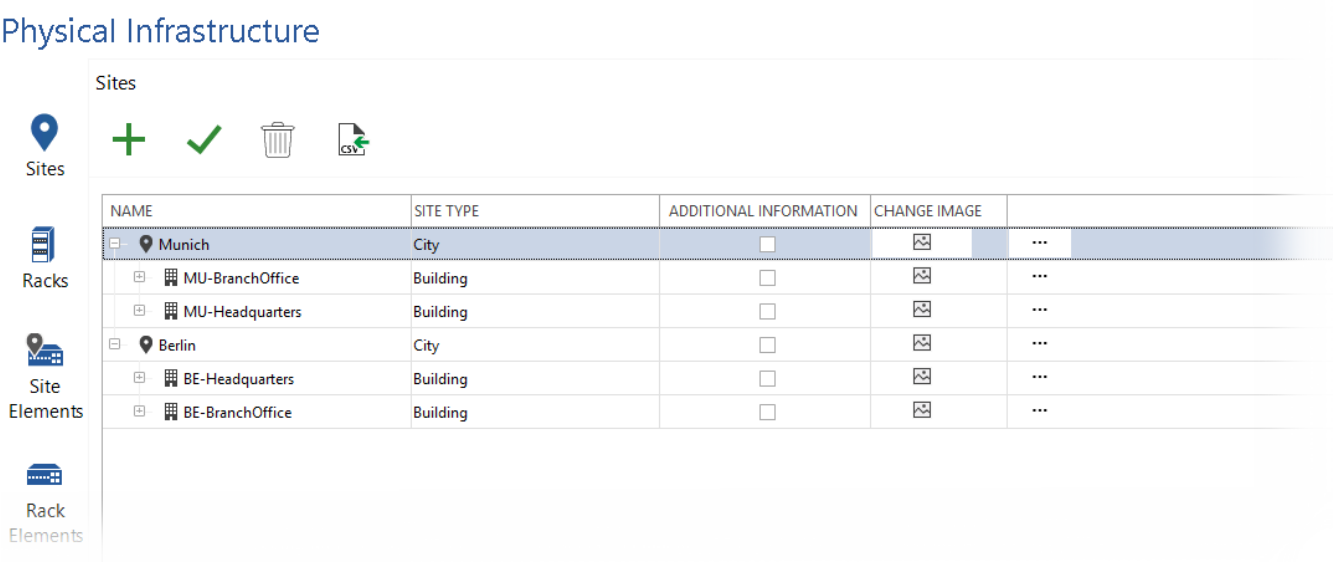

Fig. 6 - Editor - Sites

3.1 Site Map

3.1.1 Open the Site Map

The site map is part of the *Edit Site* function. The *Edit Site* function is opened in the data grid of the sites via the context menu or by double-clicking on the icon of the site.

3.1.2 Work with the Site Map

The site map serves for the visual representation of the site. The site map can also be used to create elements via drag & drop (e.g. racks, air conditioning systems, etc.) and to assign inventoried systems. The created elements can be edited by double-clicking.

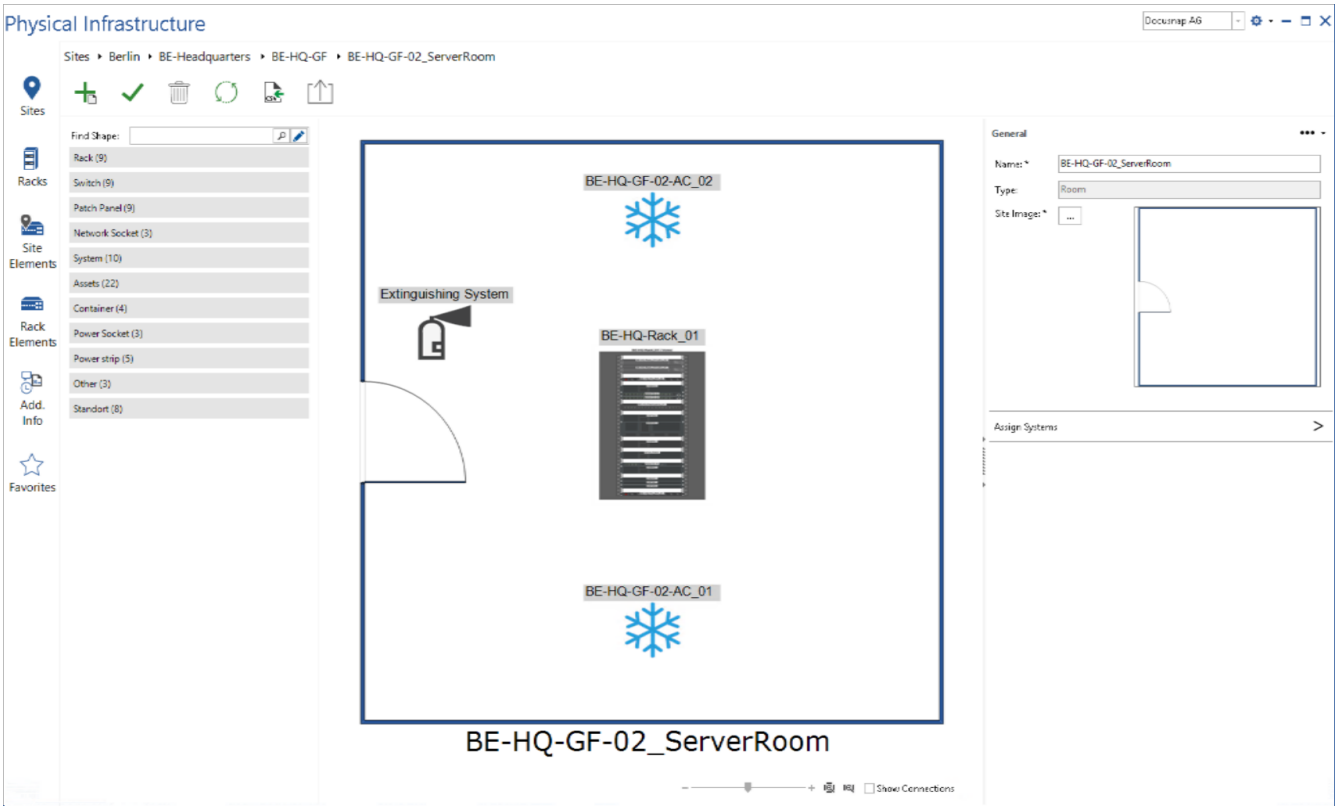

Fig. 7 - Overview Site Map

In the map, the context menu can be opened by right-clicking on the displayed elements. This provides further options such as displaying or editing the cable map and much more.

4. Site Elements

4.1 Use Site Elements

Site items are all items that can be added to a site. These are, for example, servers, network sockets, assets such as air conditioners or fire extinguishers.

Please note that the elements are only assigned to the site. These must subsequently be positioned in the site plan and assigned to an object.

4.2 Create and Manage Site Elements

Site elemtents can be created, edited, and deleted within the *Site Elements* tab.

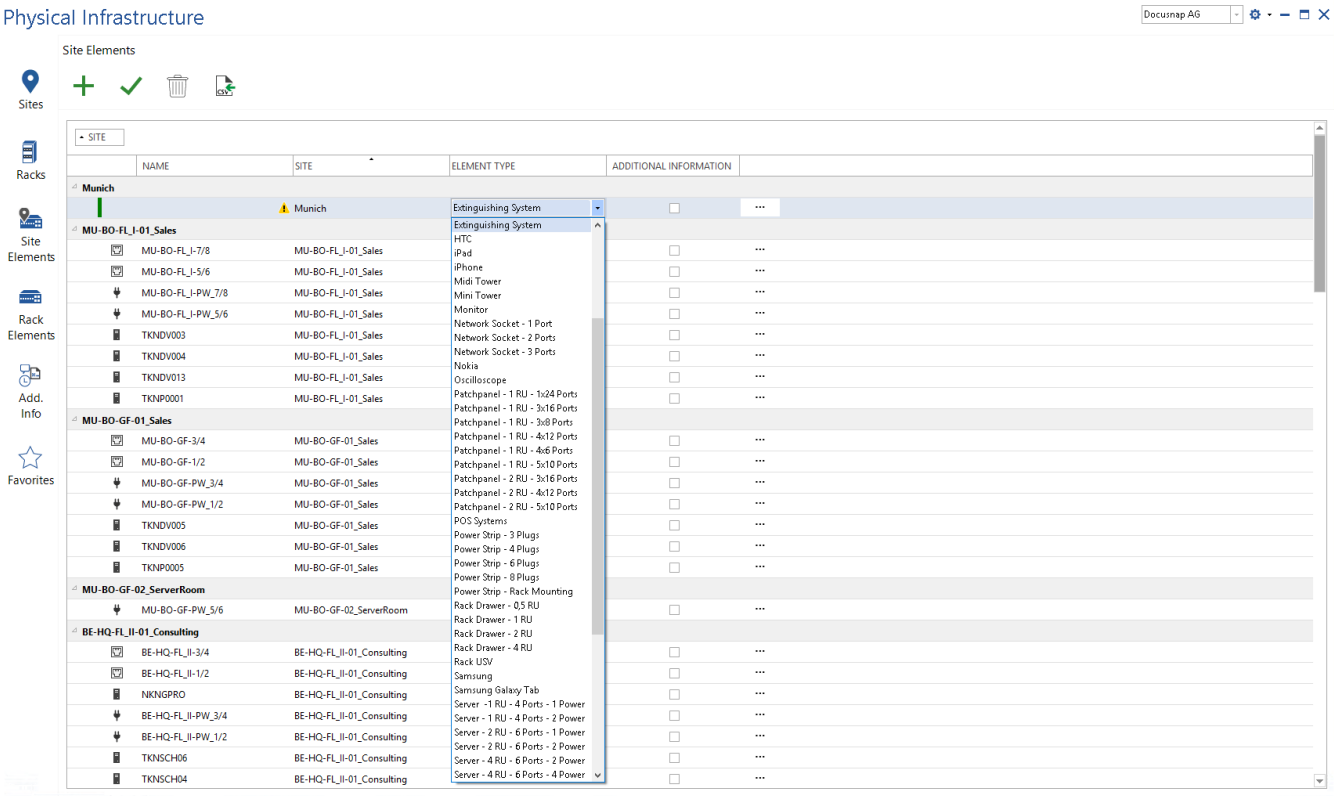

Fig. 8 - Create new Site Element

Within the grid *Site Elements*, elements can be assigned to sites. The assigned elements can then be positioned in the site map.

4.3 Site Element Map

The site element map provides a graphical overview of the selected element. Furthermore, cable connections are defined here, properties are adapted and system assignments are carried out.

The site element map can be opened via the context menu in the tab *Site Elements*.

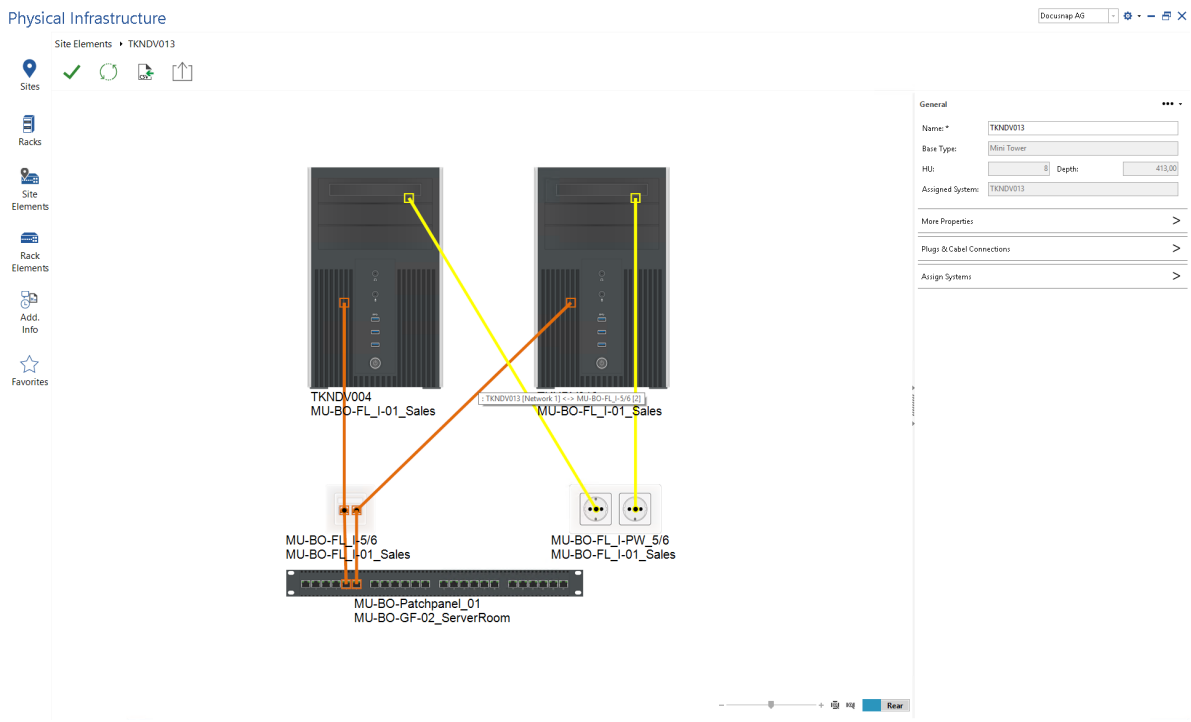

Fig. 9 - Site Element Plan

If other elements are connected to the selected element, the direct connections are displayed in the site elements map.

The mouse over function for individual cabling displays more detailed information about this.

5. Racks

5.1 Use Racks

A rack is created in the Infrastructure editor. Elements are then added to the rack. Inventoried or manually added systems (assets) can then be assigned to these elements.

5.2 Create and Manage Racks

In the Infrastructure Editor, new racks can be created or existing ones managed in the racks area.

Predefined shapes are supplied as standard. New shapes can be created with the shape editor.

If a new rack shape is created, the counting direction can be defined in addition to the height.

The rack can then be selected for editing via the context menu.

Elements can be inserted into the rack via drag & drop.

The inserted elements can be marked and edited in the toolbox. The element can be inserted forwards or backwards.

Once a rack element has been selected, an inventoried or manual object can be assigned to it. An assignment is made within the toolbox using *Assign Systems*.

The name of the rack element is automatically set during system assignment.

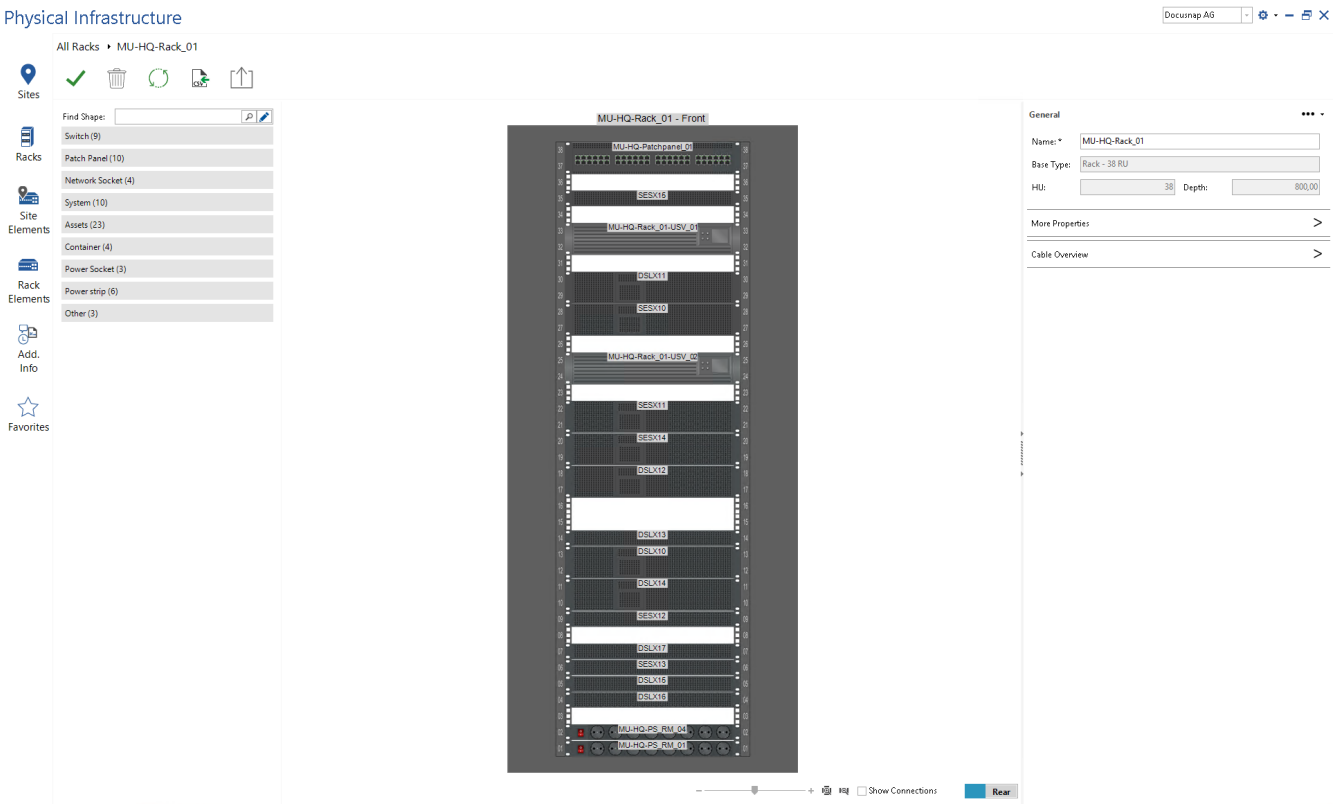

Fig. 10 - Edit the Rack - Elements Added

5.3 Clone and Export / Import Racks

Existing racks can be duplicated or saved as templates.

To duplicate a rack or save it as a template, open the context menu of the desired rack. This option can also be found in the site map or rack map.

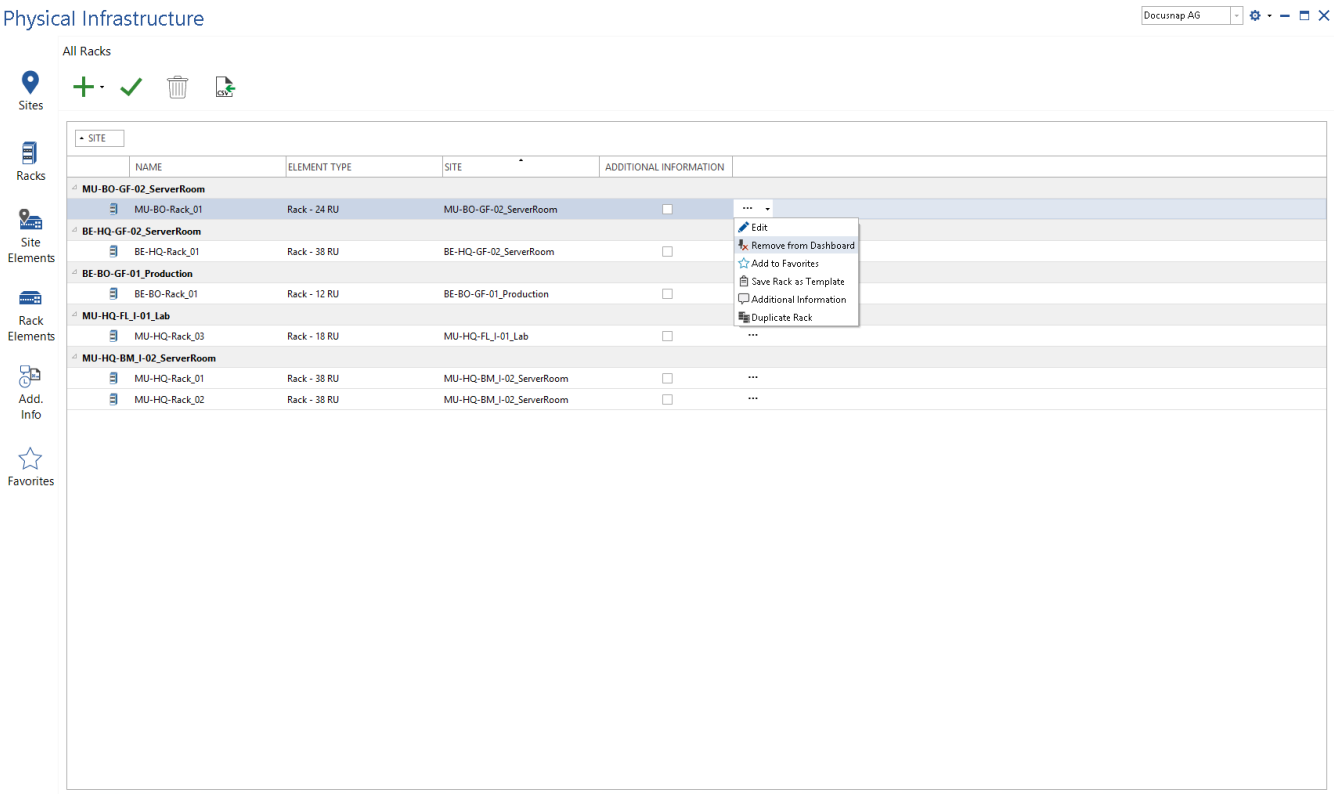

Fig. 11 - Duplicate Rack or Save as Template

If the rack is saved as a template, the information is saved in an XML file. When a new rack is created, the option *Create rack from template* is available.

If the rack is duplicated, it will be created with all components included.

If a rack is duplicated or created from a template, the properties of the rack and elements have to be adjusted.

6. Rack Elements

6.1 Use Rack Elements

Rack elements are those components that are inserted into a rack.

In the rack elements area, elements can be added to a rack via the grid. Elements that are assigned to the rack via the grid are not automatically positioned in the rack. The positioning of the elements is carried out afterwards in the rack map.

It should be noted that no validation takes place as to whether there is still sufficient space in the rack.

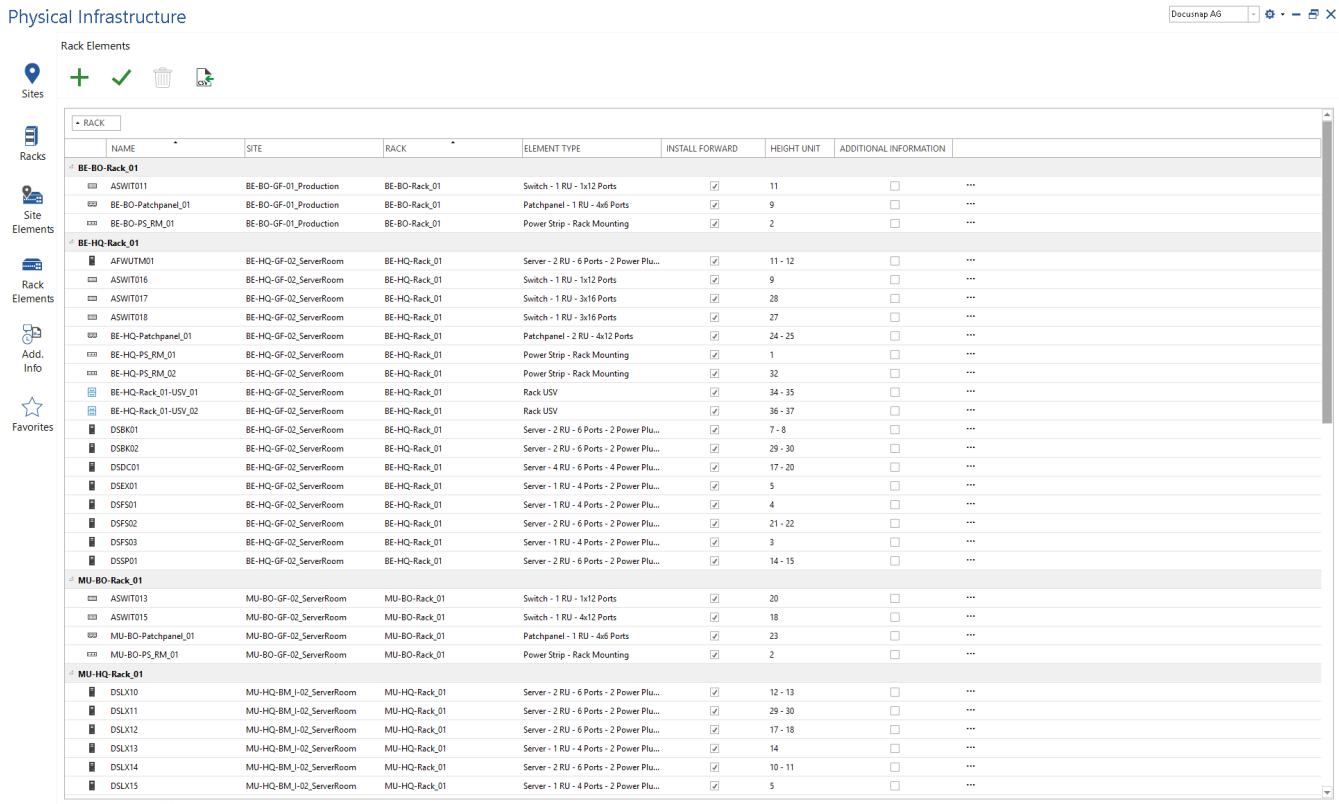

Fig. 12 - Overview Rack Elements

6.2 Rack Elements Map

If the editing of a rack element is started via the context menu, the rack elements map is opened.

With the help of the toolbox, the rack element can be edited, cable connections can be stored or a system assignment can be made.

In the case the cabling is defined, the direct connections are displayed.

The mouse over function for individual cabling displays more detailed information about this.

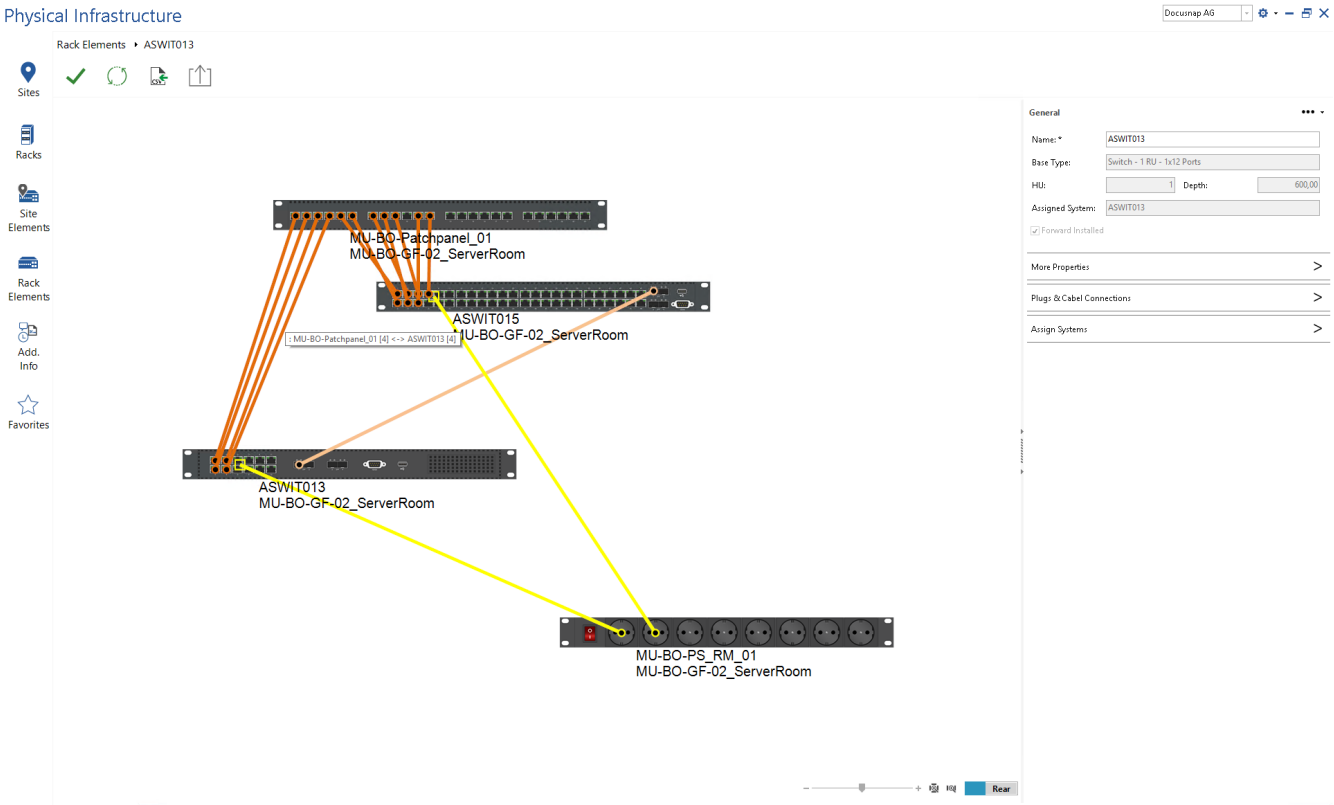

Fig. 13 - Cabling of the Elements

7. Shapes

Shapes in Docusnap are graphical images of elements. These are needed, for example, to visually represent the structure of a rack. Examples of shapes are servers, workstations, power strips, UPS, patch panels, etc.

7.1 Shape Editor

Docusnap supplies ready-made shapes. The existing Shape collection can be extended using the Shape Editor.

For newly created other assets, a corresponding shape is automatically created.

7.1.1 Use Shape Editor

The Shape Editor is started within the Infrastructure Editor - via the gearwheel and the *Edit Element Types* selection.

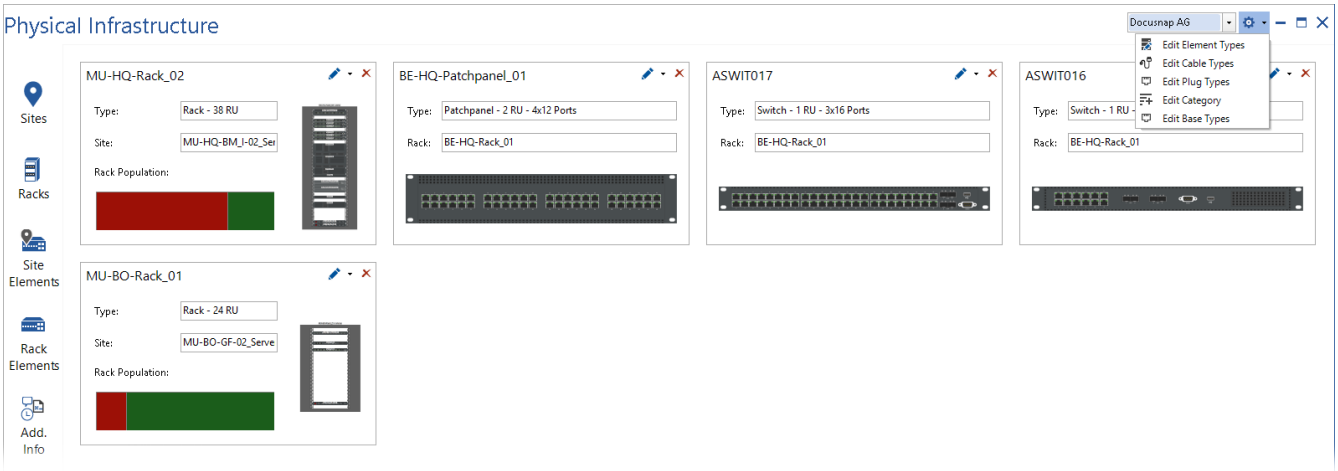

Fig. 14 - Call the Shape Editor

New - Element (Shape Editor) can now be selected in the newly opened Manage Shapes window.

7.1.2 Work with the Shape Editor

7.1.2.1 Add New Shapes

In order to be able to create new shapes, corresponding image files are required first. Please note that front and back side are required.

In the first step, information regarding **name**, **type**, **height**, **width** and **depth is** entered. The values refer to the actual size of the object.

The image files are then made available. Image files can be made available to the Shape Editor already cut. However, the Shape Editor also has an integrated crop mode.

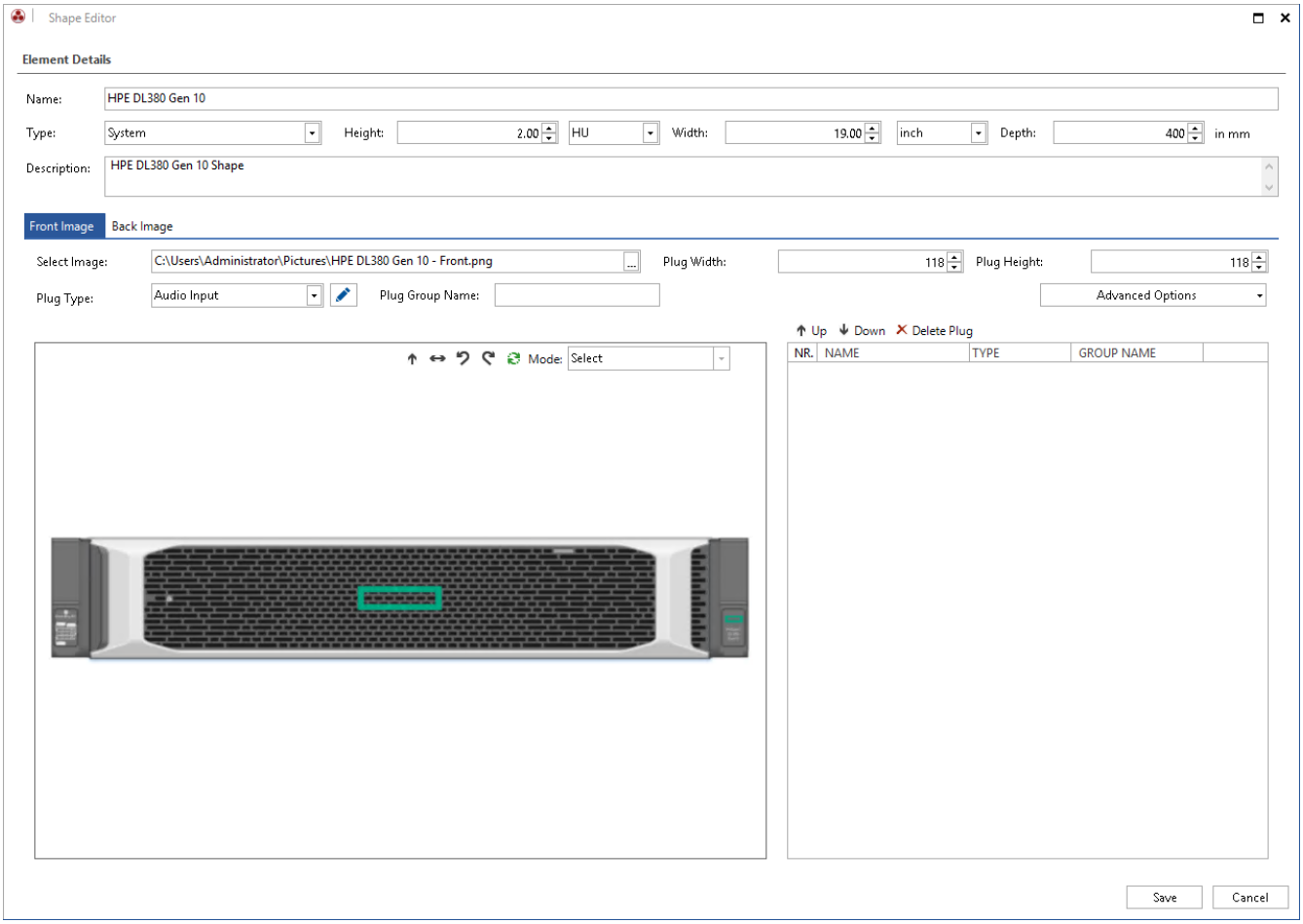

Fig. 15 - Crop the Shapes in the Editor

7.1.2.2 Define Plug Connections

Docusnap automatically recognizes the possible plug connections of the shape. The following figure shows the detected plug connections (marked red).

Note: By adjusting the plug width and height, the algorithm is able to detect plugs that were not detected during the first pass.

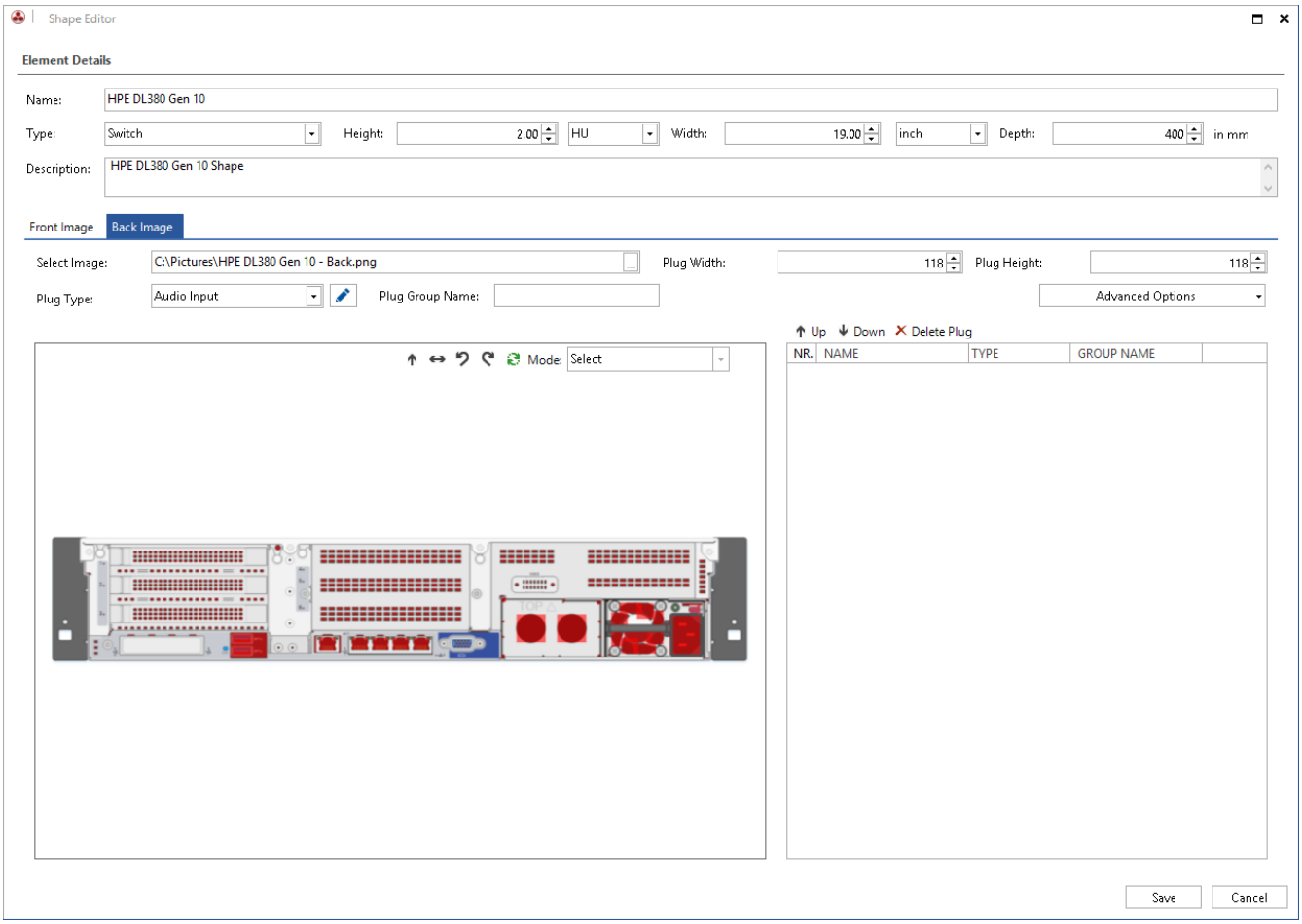

Fig. 16 - Detected Plugs

A plug connection is defined by selecting the interface on the shape. Before a selection is made, the appropriate plug type should be selected.

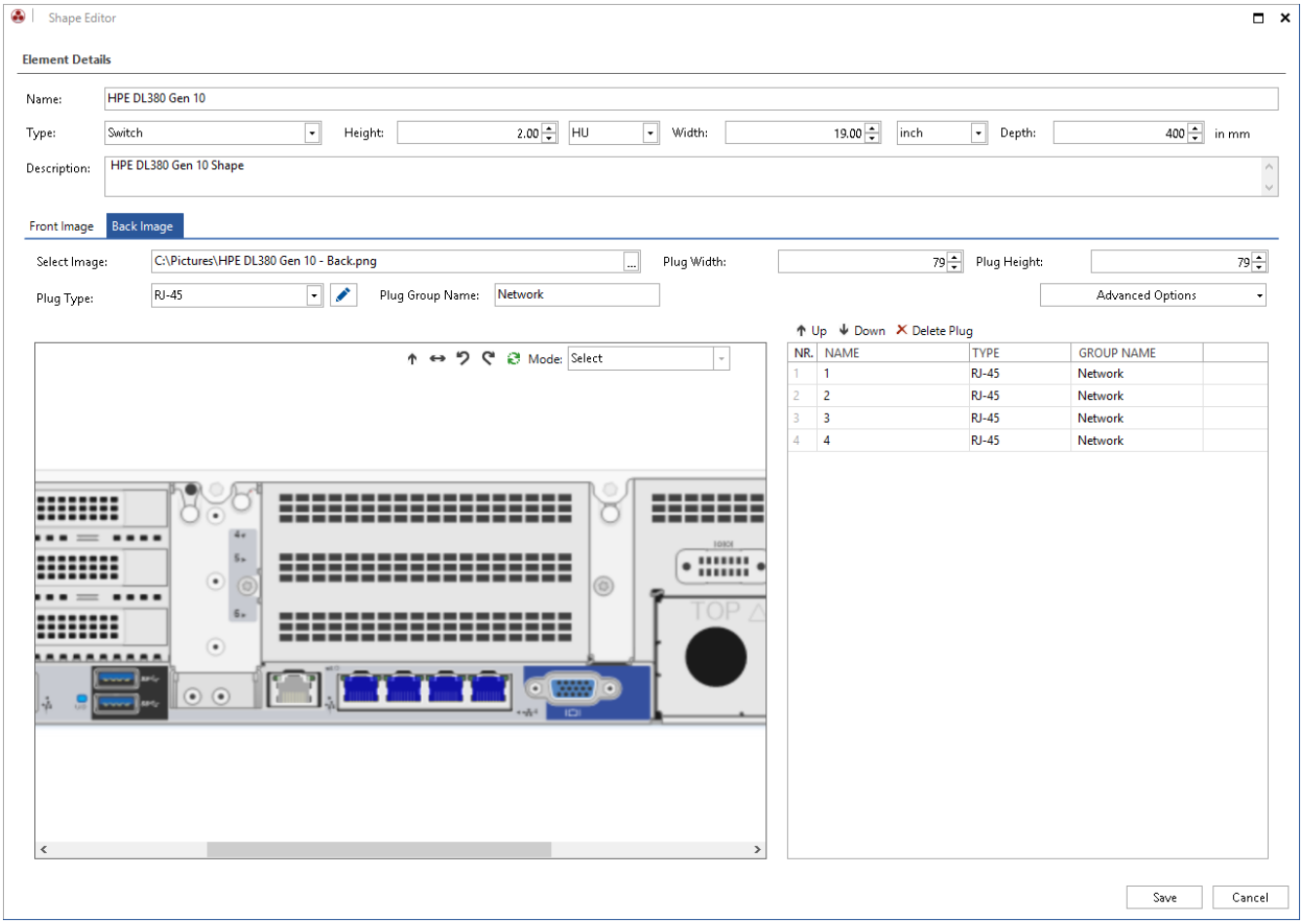

Fig. 17 - Define the Detected Plugs

7.1.2.3 Add Unrecognized Plugs

If individual plugs are not detected automatically, they can be added manually. The *Define Plug Manually* mode is used for this purpose.

The position of the plug can be defined with the aid of four marking points.

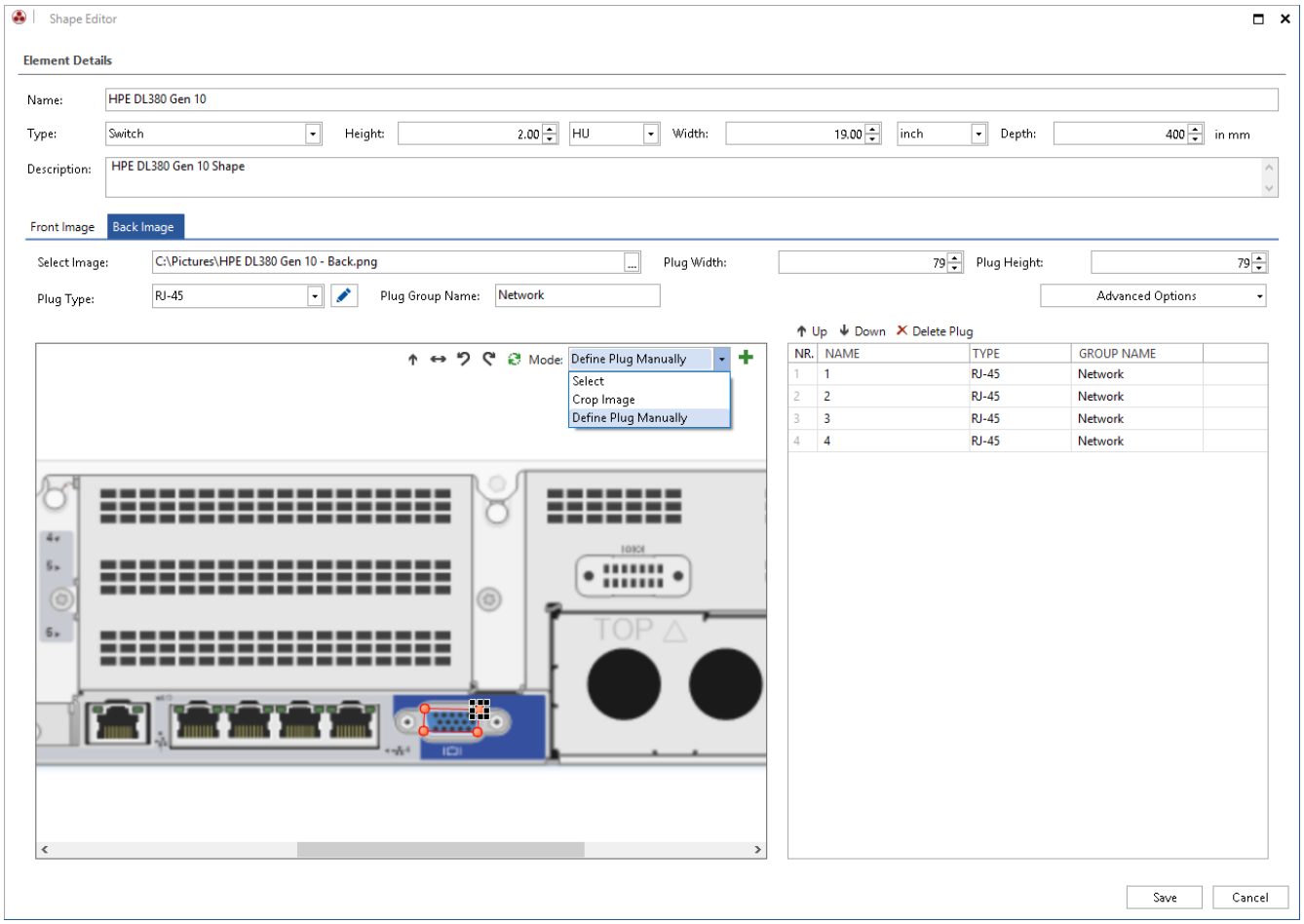

Fig. 18 - Define the Plug Manually

7.2 Add Properties

Further properties (e.g. weight, current consumption, etc.) can be added to an element via the gear wheel and the selection *Edit Element Types*.

To assign properties to an element, it must be selected. The *Properties* button opens an overview of the available properties.

The *Define Properties* button can be used to create additional properties and assign them to the element.

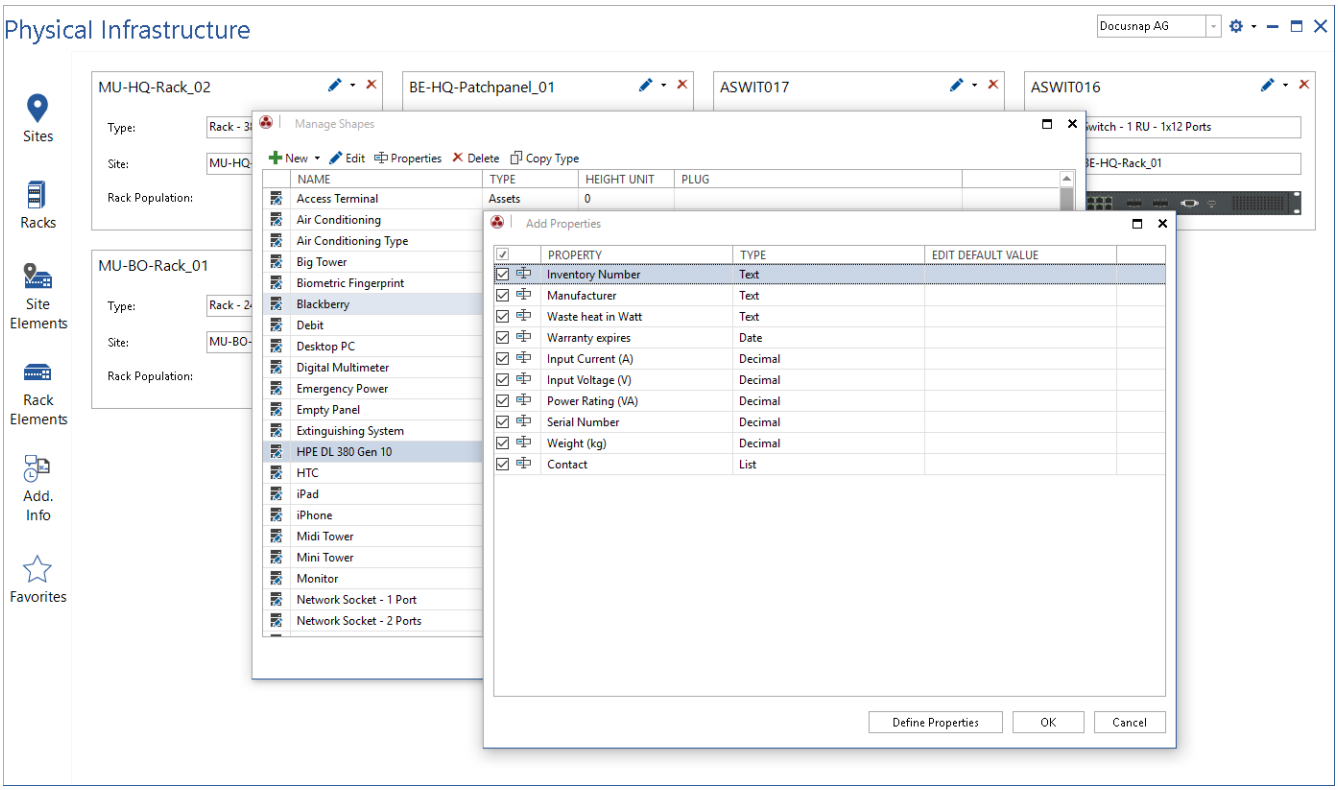

Fig. 19 - Edit the Element Types

7.3 Edit Plug Types

The call is made within the Infrastructure Editor - via the gear wheel on the top right and the selection *Edit Plug Types*.

All plugs created in Docusnap have a basic type. Only plugs that share the same basic types can be wired to each other. The different plugs can be assigned to several basic types. E.g. SFP + corresponds to the type "Network" as well as "Fibre-optic".

The Plug Count specifies the number of possible connections per plug. This is required if several connections are possible with one port, e.g. with a TERA cabling.

7.4 Edit Cable Types

The call is made within the Infrastructure Editor - via the gear wheel and the selection *Edit Cable Types*.

All connections created in Docusnap have a basic type. Cable types can only be wired with a plug that shares the same basic types.

The number of possible ports per side can be defined by means of the number of A/B plugs.

8. Document Cabling

By mapping the Physical Infrastructure it is possible to document the cabling.

Before cabling routes can be mapped, the corresponding elements must be stored in Docusnap. These elements could be for example

- Several sites of the type room
- One or more racks in which switches and patch panels are added
- One or more network sockets available in the rooms
- Elements of the type workstations in rooms
- Defined plugs
- Defined cable types

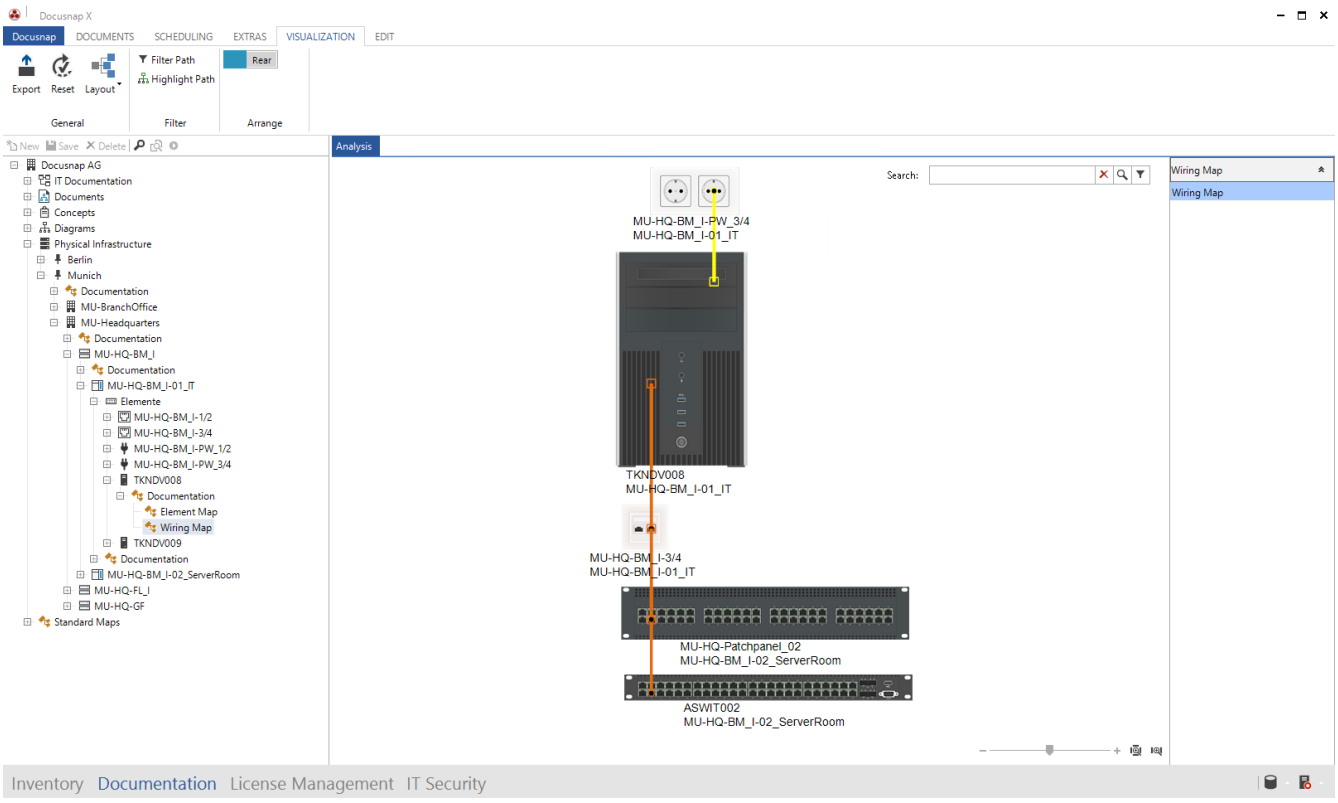

Fig. 20 - Sample Cable Map

8.1 Cable Types

Different cable types are required to map complete cabling. Docusnap contains standard cable types. Further cable types can be added in the menu under *Edit Cable Types*.

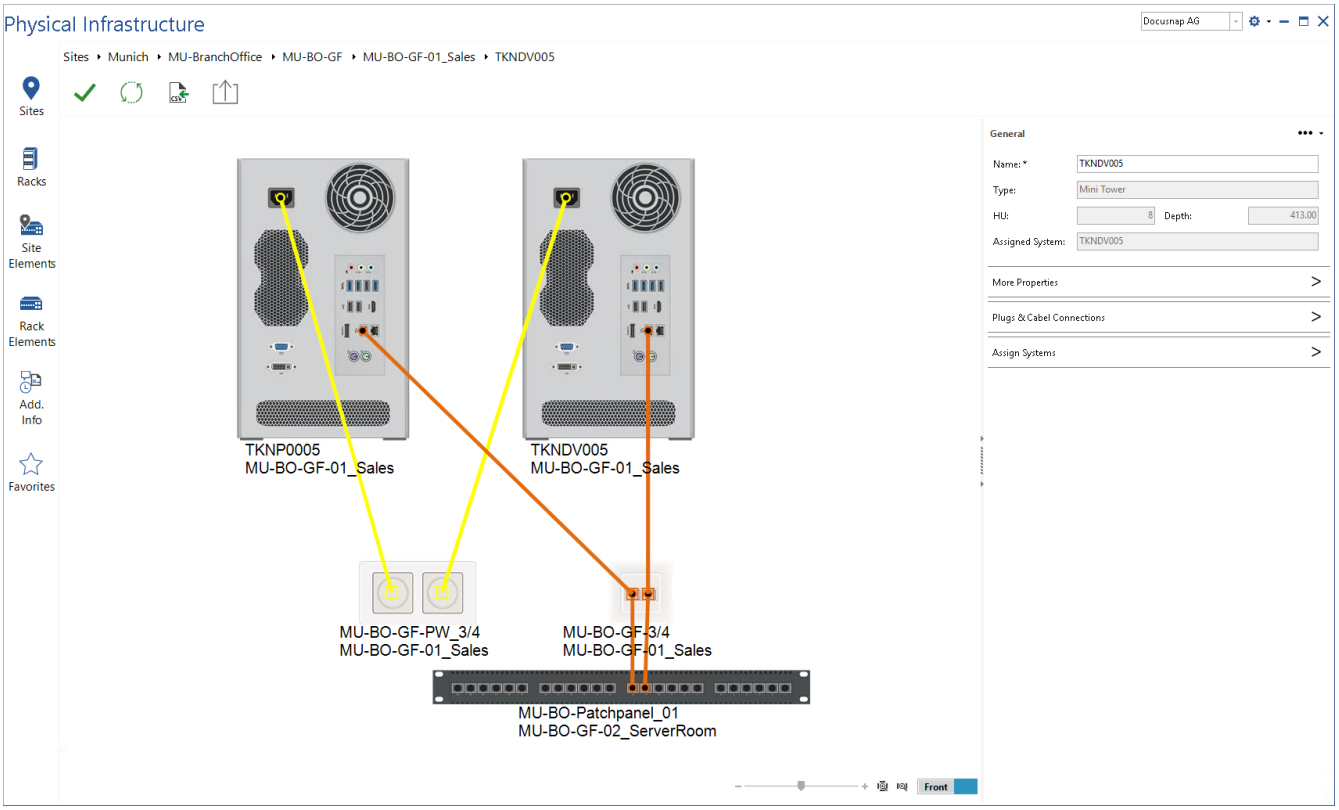

Fig. 21 - Add Cable Types

The required cable types can then be defined in the next dialog.

8.2 Description of the Procedure

In order to define a cabling, it is necessary to switch to the editing of the element. Connections to other elements can be specified in the toolbox under *Plugs & Cable Connections*.

Fig. 22 - Ports & Power Connections

It should be noted that some elements require a connection for the front and rear sides, e.g. patch panels or network sockets.

If an element is linked to a switch, the topology map of the linked switch can be displayed. This is opened with the help of the button *Switch Assignment* within the toolbox *Plugs & Cable Connections*.

By means of the three points a description can be deposited for a single port. The name of the plug can be edited directly in the *PLUG* column.

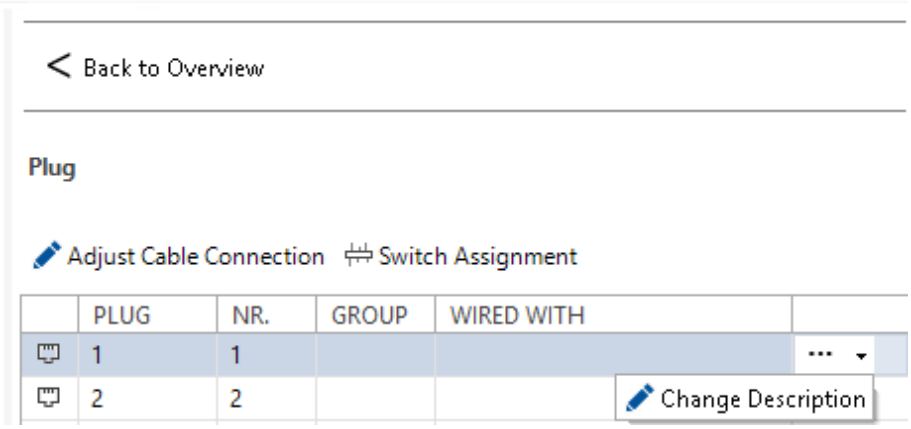

Fig. 23 - Show Switch Assignment

A new cable connection can be defined for this object using the cabling dialog. This can be opened via the *Adjust Cable Connection* button or by double-clicking in the *WIRED WITH* column.

The cable name, the cable type, the cable color, the element name of start and destination as well as the port can be defined.

All existing cable connections are displayed in the editing dialog. The default setting, however, is a filter that filters the data grid to the previously selected port.

If a new entry is created, the desired cable type must be selected. Then one or more ports can be connected depending on the cable type. The checkbox at the cable side indicates the starting point and the end point of the connection. An empty checkbox corresponds to Start and a set checkbox corresponds to Endpoint.

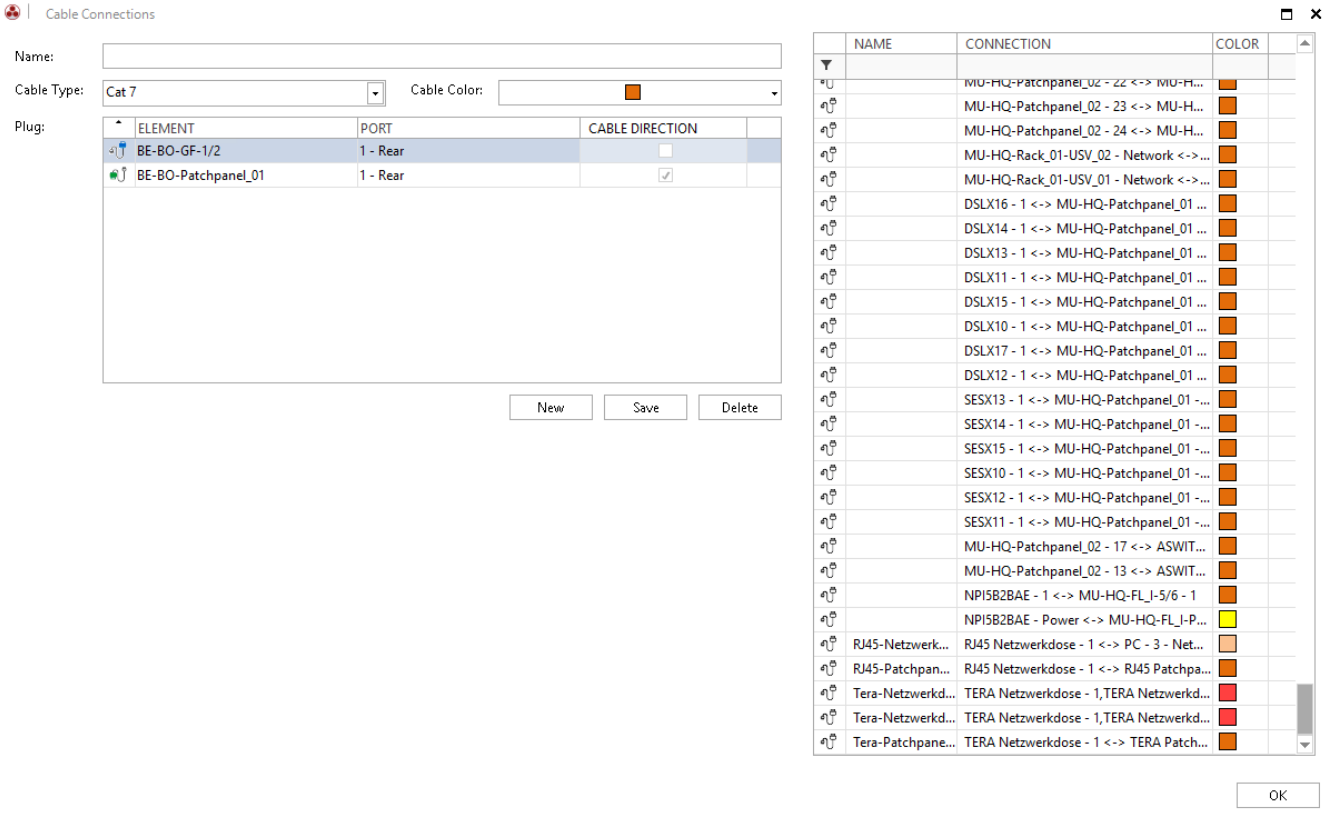

Fig. 24 - Cable Connection

9. Documentation and Analysis

9.1 Reports

Docusnap contains various reports on the Physical Infrastructure. These can be found in the tree structure below the sites.

The following reports are available.

Rack Summary
The Rack Summary outputs information about the rack. It includes existing properties. Information on installed elements is also displayed.

Rack Summary - Site
All racks of the site and the subordinate sites are considered.

Patch Panel Summary
The Patch Panel Summary outputs information about the patch panel. It includes existing properties. information on wired elements is also displayed.

Patch Panel Summary - Site
All patch panels of the site and the subordinate sites are considered.

Dashboard Summary
Overview of the elements added to the dashboard.

Favorites Summary
Overview of the elements added to the favorites.

Patch Panel Cabling Overview
Overview of the patch panel assignment and the further cabling.

9.2 Maps

A visual evaluation of the Physical Infrastructure can be carried out with the help of maps. These can be found in the tree structure within the navigation areas *Inventory* and *Documentation*.

These maps are ad hoc maps. They are thus regenerated when opened and always refer to the most current data.

Maps are not only displayed in Docusnap, but can also be exported to various formats (PNG, Visio, HTML, SVG).

9.2.1 Element Map

The element map can be opened below a single element in the tree structure. This map shows the connection between the element and other elements. Only the direct connections of the element are displayed.

Using the ribbon bar, you can control whether the front or rear side of the elements should be shown.

The mouse over function for individual cabling displays more detailed information about this.

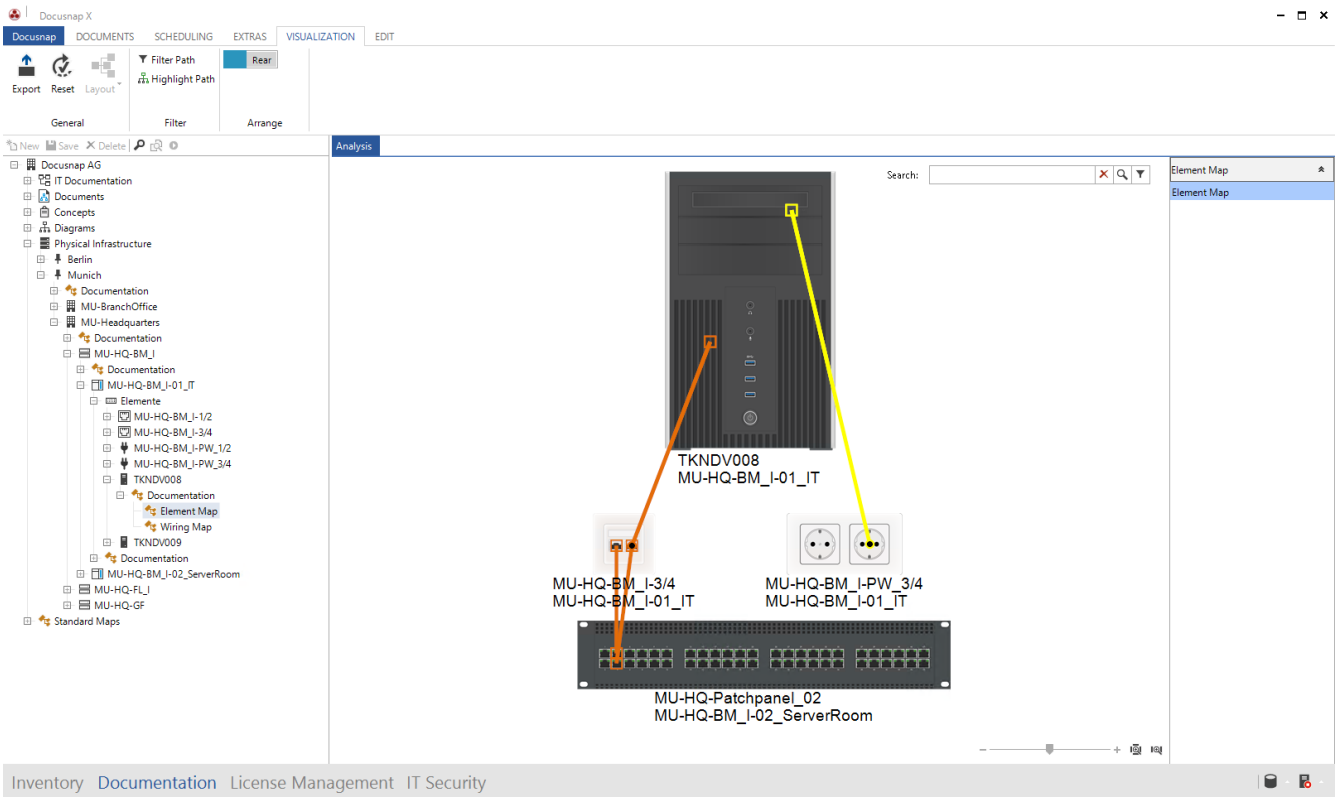

Fig. 25 - Element Map

9.2.2 Wiring Map

The wiring map can be opened below a single element in the tree structure. This map shows the continuous cabling route of the corresponding element to the endpoint, e.g. the network cabling of a workstation to the backbone switch.

Using the ribbon bar, you can control whether the front or rear side of the elements should be shown.

The mouse over function for individual cabling displays more detailed information about this.

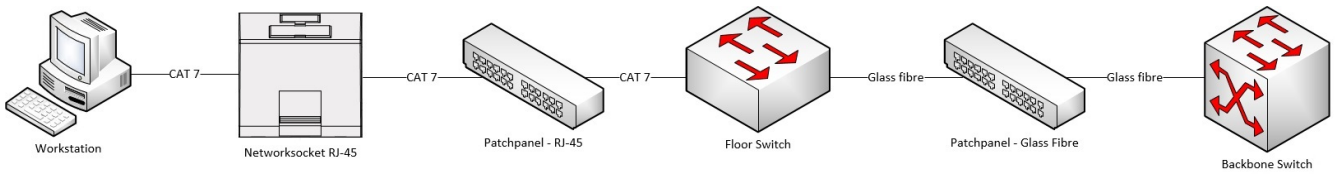

Fig. 26 - Wiring Map

9.2.3 Site Map

The site map can be found below a site. The site map shows the structure of the site. This applies to the stored site image as well as the positioning of the site elements.

9.2.4 Rack Map

The rack map reflects the physical structure of a rack. The positioning of the rack elements in the rack is shown. The map can be found below a rack.

Using the ribbon bar, you can control whether the front or rear side of the elements should be shown.

By setting the checkbox *Show Connections* the connections of the elements within the rack are displayed.

The mouse over function for individual cabling displays more detailed information about this.

9.3 Data Output and Further Processing

In addition to reports and maps the documented Physical Infrastructure can be output and further processed with the following functions.

Docusnap Connect

Using Docusnap Connect, user-defined packages can be exported. These contain the desired information from the Physical Infrastructure.

Docusnap Concepts

Maps, reports and overviews from the Physical Infrastructure can be integrated into concepts.

Grid Export

Possibility of direct Excel export. Overviews in data grids can be exported directly to an Excel table.

10. Physical Infrastructure - CSV Import

10.1 Building a CSV File

Physical Infrastructure information can be imported via CSV import. The general requirements for the CSV file are listed below.

- The sign ";" (semicolon) is used as a separator.
- A heading is always expected in the first line. This row will not be considered during the import.
- The names of the columns are not relevant.
- Docusnap assigns the names of the entries to the dependent objects to import the CSV data. IDs cannot be used.
- If data records to be imported are not complete or cannot be assigned, they are imported in the Import dialog and can be manually adjusted there.
- If data records already exist, duplicates are created.
- The order of the columns must be observed. This is specified in the individual points.

Sites

- Site Name
- Site Type
- Parent Site (empty if at the top of the hierarchy)

	A	B	C	D
1	Site	Type	Parent	
2	Germany	Country		
3	Frankfurt	City	Germany	
4	Berlin	City	Germany	
5	Hamburg	City	Germany	
6	Nuremberg	City	Germany	
7	Dusseldorf	City	Germany	
8	Freiburg	City	Germany	
9	Bremen	City	Germany	
10	Ingolstadt	City	Germany	
11	Regensburg	City	Germany	
12	Floor 1	Floor	Frankfurt	
13	Floor 2	Floor	Frankfurt	
14	Floor 3	Floor	Frankfurt	
15	Room 101	Room	Floor 1	
16	Room 102	Room	Floor 1	
17	Room 103	Room	Floor 1	
18				

Fig. 27 - Sample CSV File for Sites

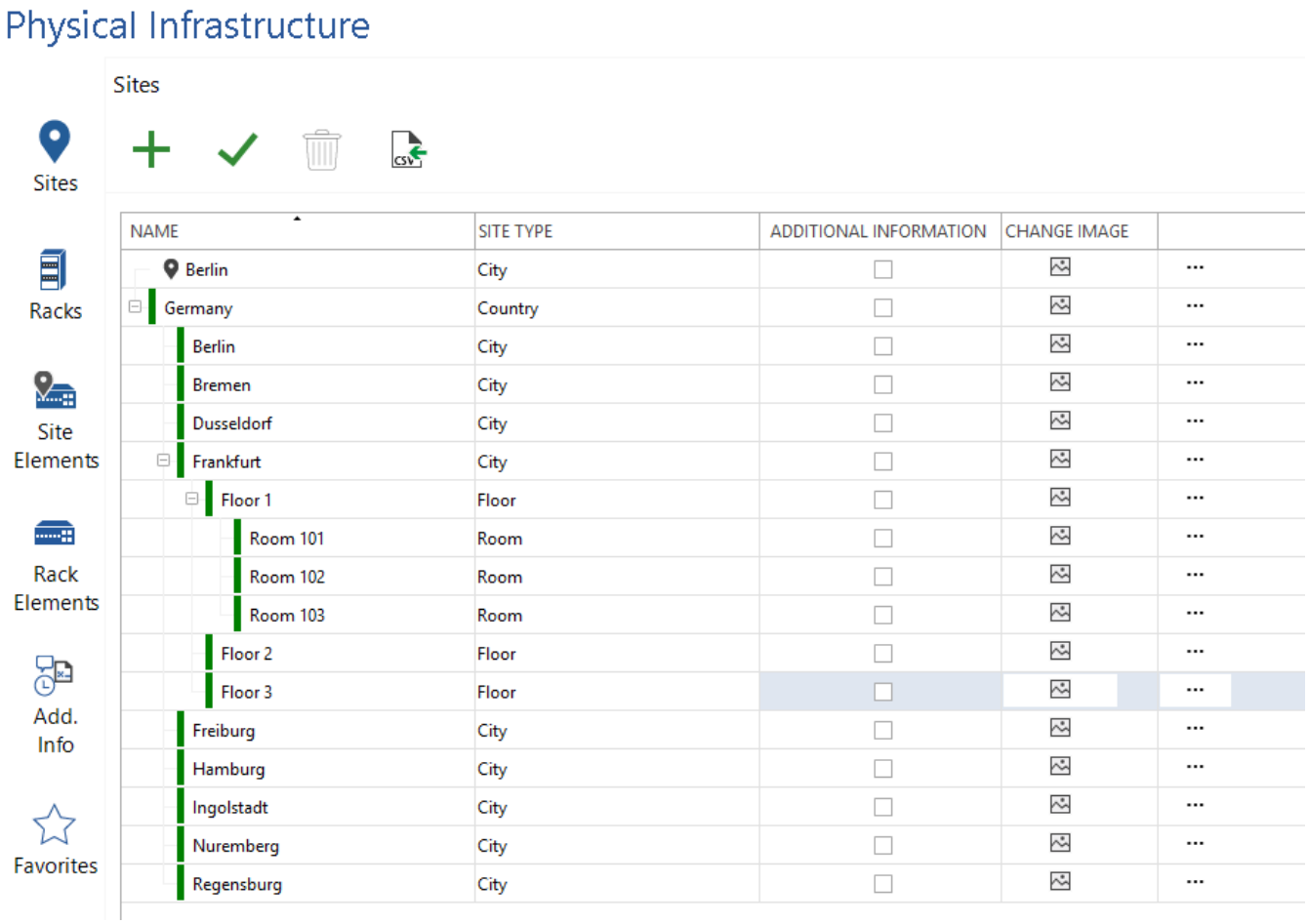

Fig. 28 - Result of the CSV Import

Site Elements

- Site Element Name
- Site
- Site Element Type

Racks

- Rack Name
- Rack Type
- Site

Rack Elements

- Rack Element Name
- Rack Name
- Rack Element Type
- Orientation (front or back) (front = 1 or True, back = 0 or False)

Cable Connection

To be able to import several ports per cable connection, one line must be used per plug. Thus two lines are required for the cabling of a network socket port with a patch panel port.

Based on the name of the connection, an assignment of start port and destination port is implemented. The number is required if a port has several connection options, e.g. TERA wiring.

Entries that could not be inserted correctly are marked with a red X and have to be adjusted manually. With *OK* all connections are inserted.

- Connection Name (related ports are specified by the connection name)
- Cable Type
- Cable Color (specified by RGB value 255-255-255) (If the field is blank, the default color of the cable is used)
- Element (element to be wired)
- Port (port to be wired)
- Front (Front or Back) (Front = 1 or True, Rear = 0 or False)
- Number (Relevant for cabling with multiple connections. Specifies the position of the connection at the plug. If the connector has only one port, a "1" is always entered)
- Destination (specify at which end of the wiring this port is) (Start = 0 and End = 1) Relevant if there are several plugs on one side of the connection, e.g. TERA cabling

	A	B	C	D	E	F	G	H
1	Connection Name	Cable Type	Cable Color	Element	Port	Front	Number	Destination
2	Tera-Switch-Patchpanel	Tera - 4 Pair	138-43-226	TERA Patchpanel	2	1	1	0
3	Tera-Switch-Patchpanel	Tera - 4 Pair	138-43-226	TERA Patchpanel	2	1	2	0
4	Tera-Switch-Patchpanel	Tera - 4 Pair	138-43-226	TERA Patchpanel	2	1	3	0
5	Tera-Switch-Patchpanel	Tera - 4 Pair	138-43-226	TERA Patchpanel	2	1	4	0
6	Tera-Switch-Patchpanel	Tera - 4 Pair	138-43-226	Switch	1	1	1	1
7	RJ45-Switch-Patchpanel	Cat 7		Switch	15	1	1	1
8	RJ45-Switch-Patchpanel	Cat 7		RJ45 Patchpanel	5	1	1	0
9	Tera-Patchpanel-Socket	Cat 7		TERA Patchpanel	2	0	1	1
10	Tera-Patchpanel-Socket	Cat 7		TERA Networksocket	1	0	1	0
11	RJ45-Patchpanel-Socket	Cat 7		RJ45 Patchpanel	5	0	1	1
12	RJ45-Patchpanel-Socket	Cat 7		RJ45 Networksocket	1	0	1	0
13	Tera-Networksocket-PC1	Tera - 2 Pair	255-64-64	TERA Networksocket	1	1	1	0
14	Tera-Networksocket-PC1	Tera - 2 Pair	255-64-64	TERA Networksocket	1	1	2	0
15	Tera-Networksocket-PC1	Tera - 2 Pair	255-64-64	PC - 1	Network	0	1	1
16	Tera-Networksocket-PC2	Tera - 2 Pair	255-64-64	TERA Networksocket	1	1	3	0
17	Tera-Networksocket-PC2	Tera - 2 Pair	255-64-64	TERA Networksocket	1	1	4	0
18	Tera-Networksocket-PC2	Tera - 2 Pair	255-64-64	PC - 2	Network	0	1	1
19	RJ45-Networksocket-PC3	Cat 6		RJ45 Networksocket	1	1	1	0
20	RJ45-Networksocket-PC3	Cat 6		PC - 3	Network	0	1	1
21								

Fig. 29 - Sample CSV File for Connections

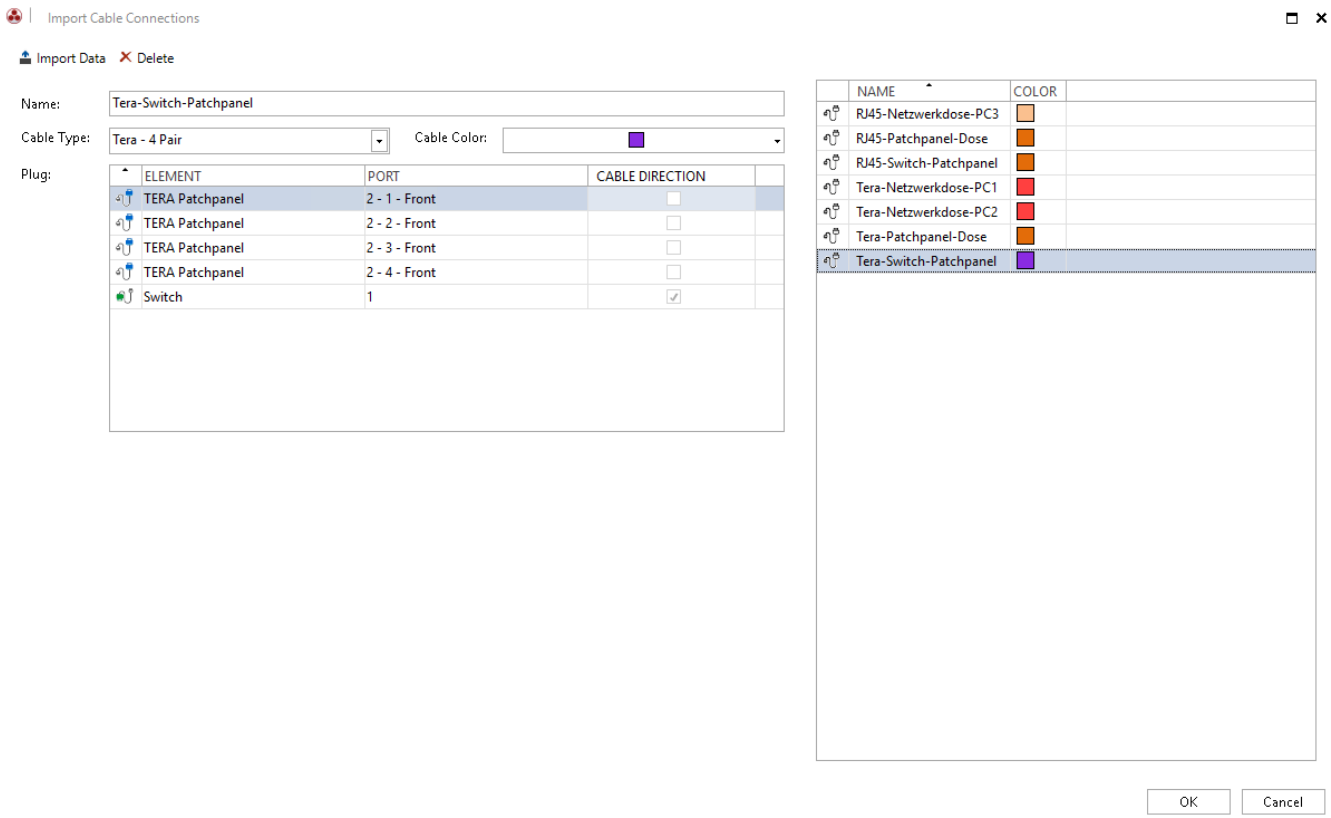

Fig. 30- Results of the CSV Import for Connections

10.2 Cable Connections Import/ Export Functions

With the help of the function "Export Plugs" it is possible to export a finished CSV file with the cabling of the system. The export function is available for all elements where connections can be documented.

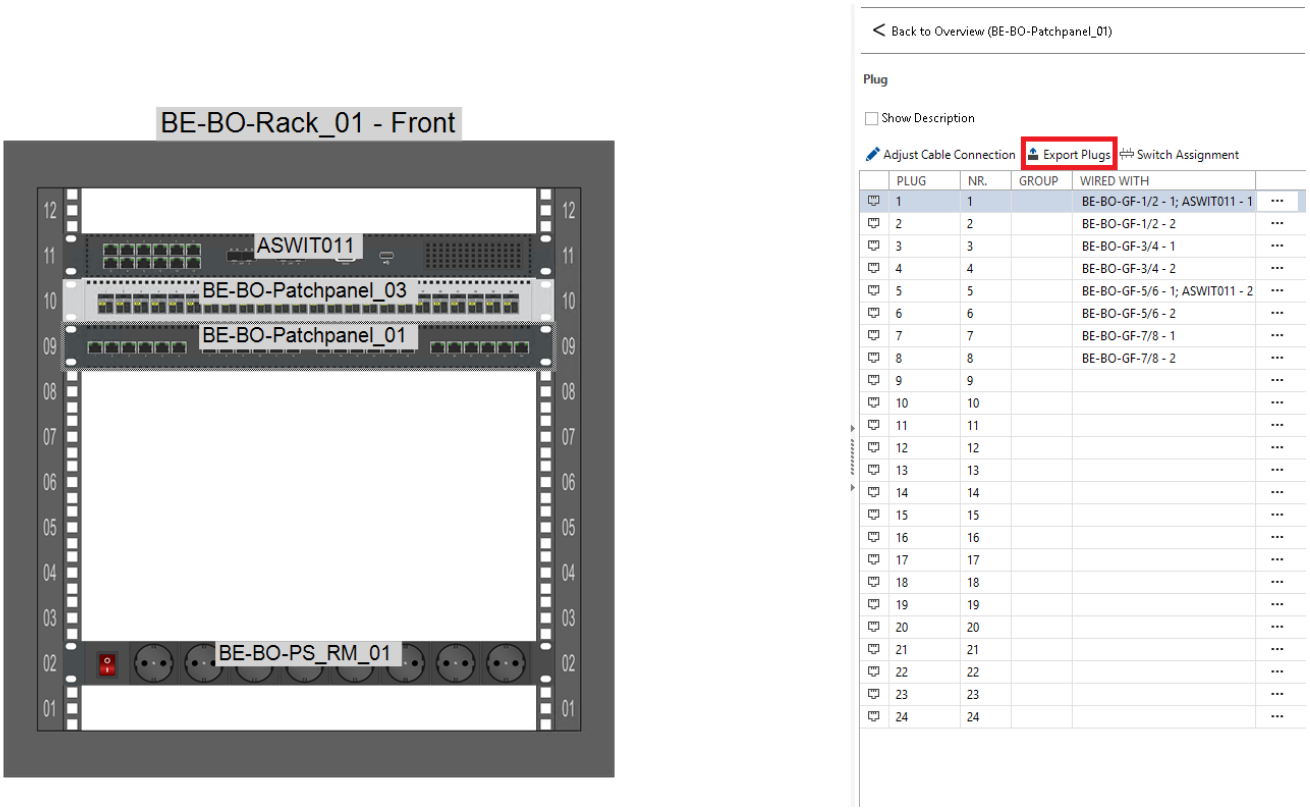

Fig. 31 - Export Plugs

The existing connections can be deleted during export. This means that the connections can then be adapted in the exported CSV file and then re-imported.

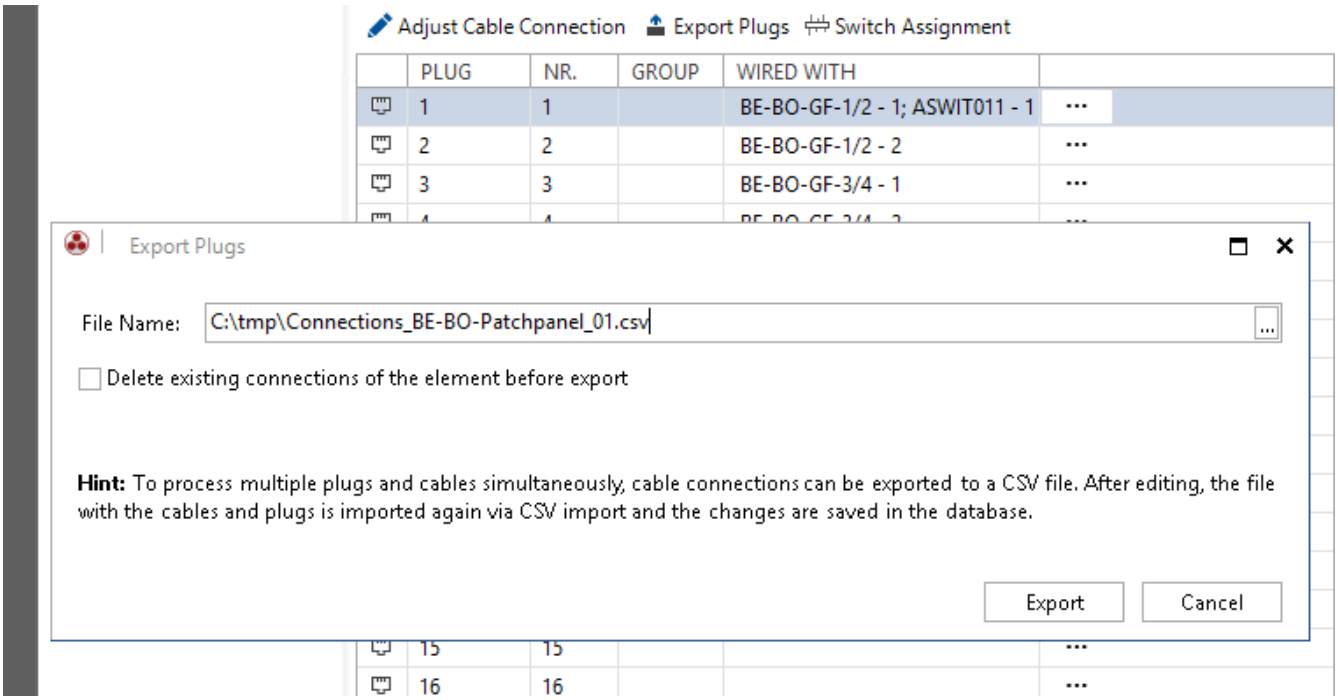

Fig. 32 - Export Plug Dialog

Attention: If the checkbox is activated, these connections are deleted from the database. If the CSV file is lost, the connections must be documented again.

The exported CSV file can then be imported as usual using the "Import Cable Connections" button.

11. Migration Wizard

In order to migrate inventory data of the Physical Infrastructure from older Docusnap versions a migration wizard is available. This is started as soon as the editor is opened.

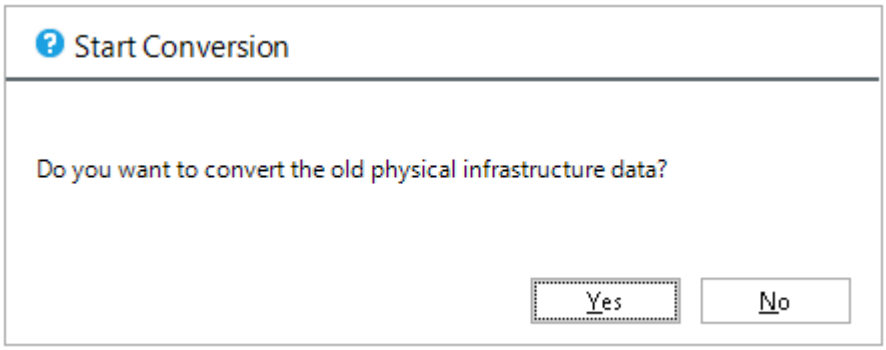

Fig. 33 - Migration Wizard - Start Conversion

The request for migration only occurs once and for all clients in the database. If the conversion is rejected, the dialog does not appear again.

The migration of the existing Physical Infrastructure is only partially automated, since information was not defined in this level of detail in the previous Physical Infrastructure. For example, patch panels were connected to a switch without detailed port information. The assignments within a rack cannot be transferred either. The corresponding elements are placed in the rack, but must be moved to the desired position by the user.

The previous tables and columns and their contents are retained after migration.

- tRacks
- tNetworkSocket
- tNetworkSocketPort
- tHosts.RackID
- tHosts.RackStartHeightUnits
- tHosts.RackNumberOfHeightUnits

11.1 Transfer Data

The following steps are performed in the migration wizard:

- Racks are converted
  - Name and site are taken over automatically
  - A rack type must be manually assigned to the existing rack.

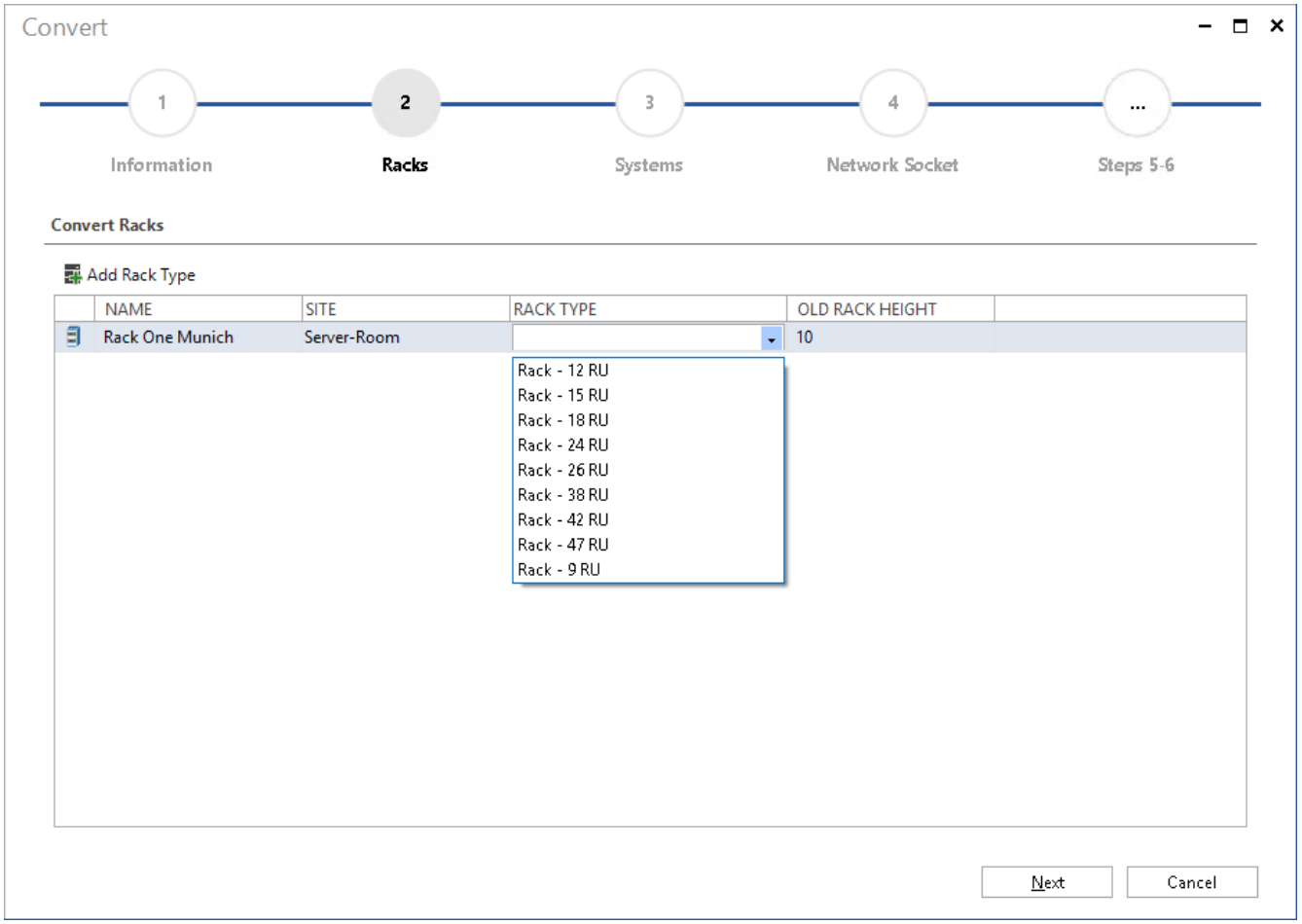

Fig. 34 - Migration Wizard - Racks

- Systems and assets are converted
  - System name, rack and site are assigned automatically.
  - You may have to make manual adjustments to the system type.
  - Systems assigned to a rack must be manually positioned in the rack.
    An automatic installation on the corresponding RUs does not take place!
  - You can make a multiple selection for the system type by choosing *Assign System Type*.

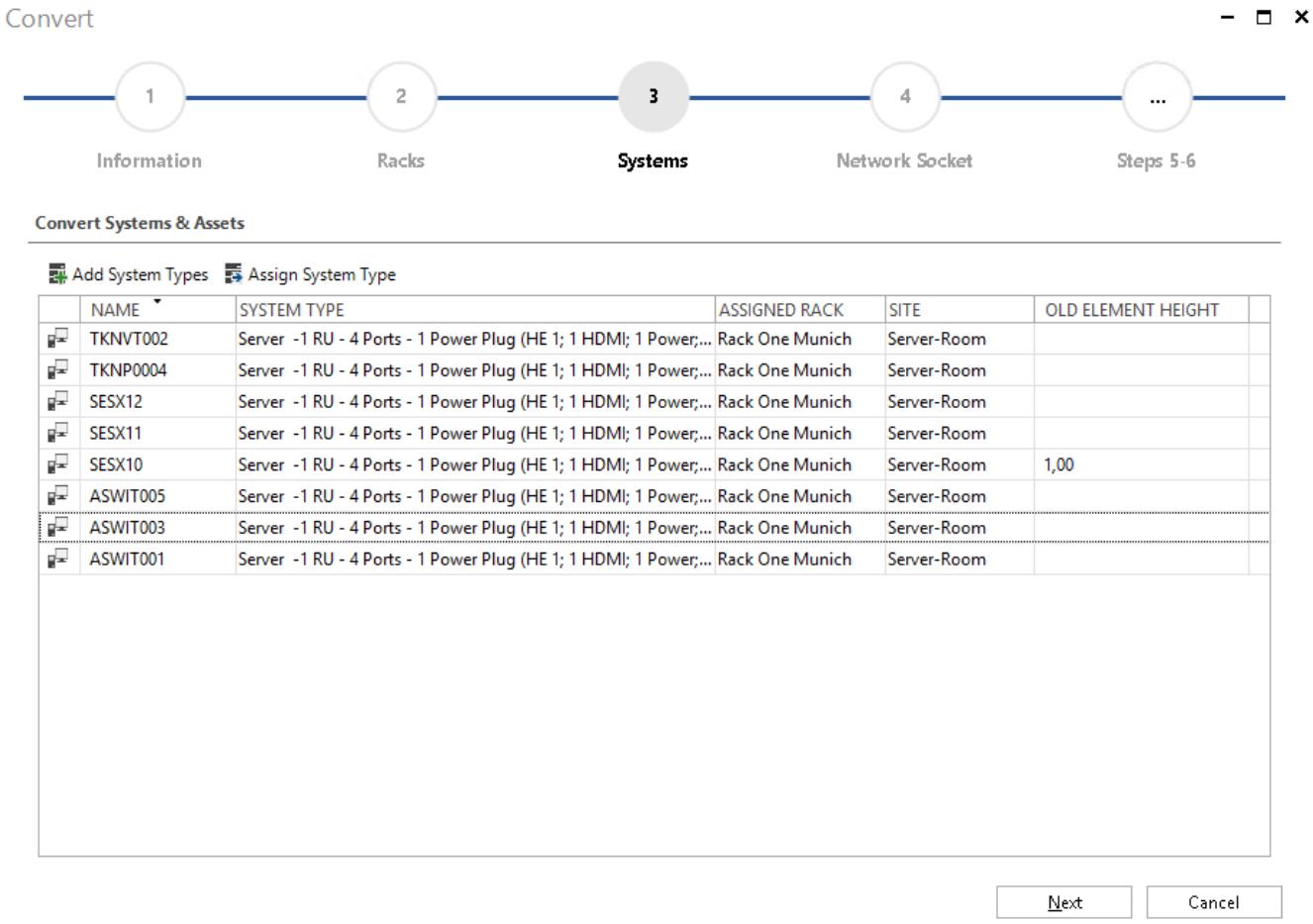

Fig. 35 - Migration Wizard - Systems

- Network sockets are converted
  - The name is transferred
  - The network socket type is determined automatically if possible. A manual correction may be necessary here
  - The site must be assigned if necessary

- Patch panels are converted
  - Name and site are automatically transferred if possible.
  - A patch panel type must be entered manually.
  - Patch panels assigned to racks are only assigned to the corresponding rack. An automatic installation on the corresponding RUs does not take place.

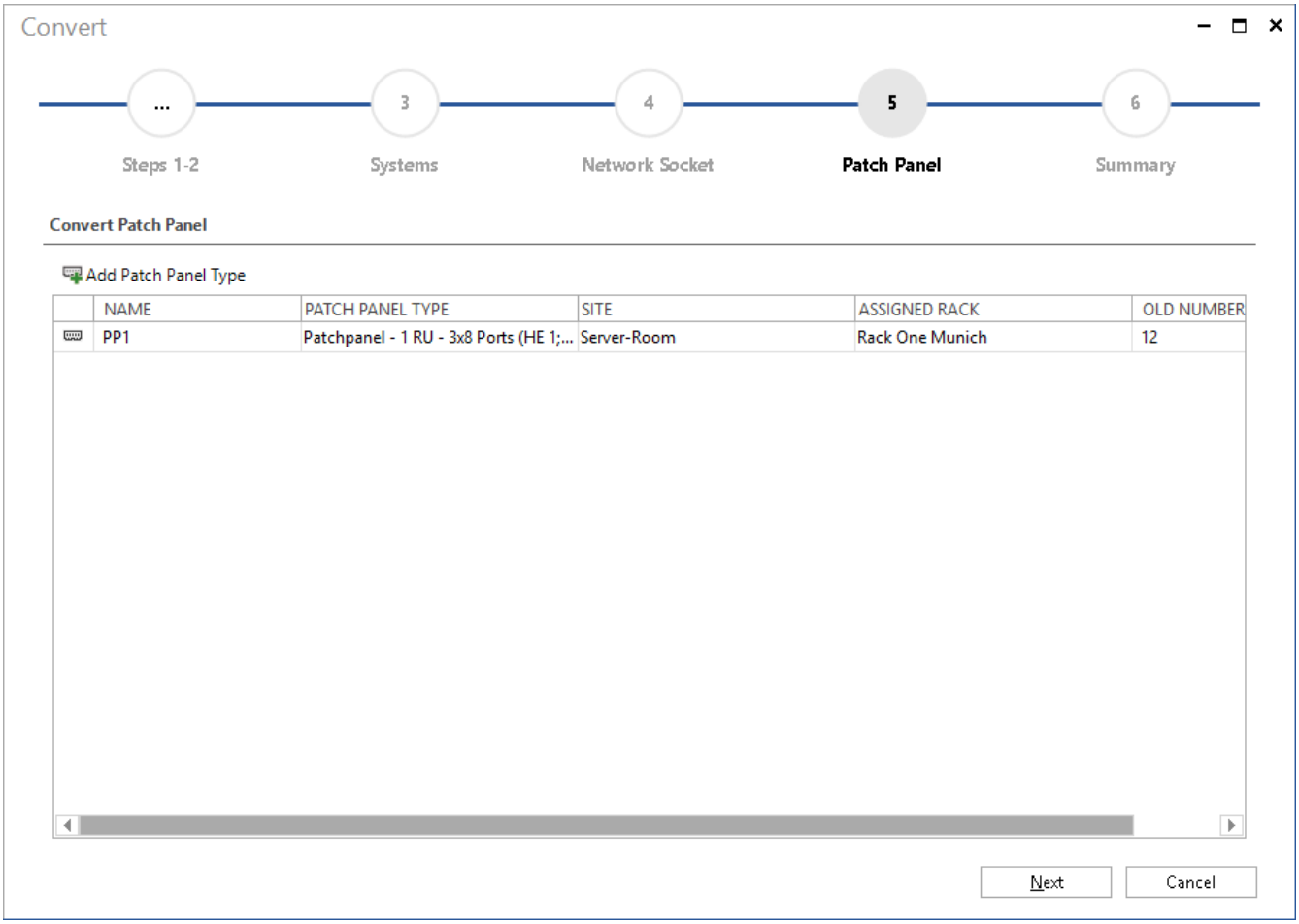

Fig. 36 - Migration Wizard - Patch Panel

12. Use Case for the Physical Infrastructure

In the following chapters, practical scenarios are described using the Docusnap demo database provided. These are explained using fictitious examples.

These use cases do not contain a detailed description of the individual menus.

12.1 Relocation of a Workstation

The relocation of a workstation is described below. The aim is to move the workstation DSWS02 from room EG_00-ROOM_01 to room EG_00-ROOM_02. The problem is to understand the cabling route.

The wiring map is used to ensure that all cable connections are plugged in correctly and that connections that are no longer required are removed.

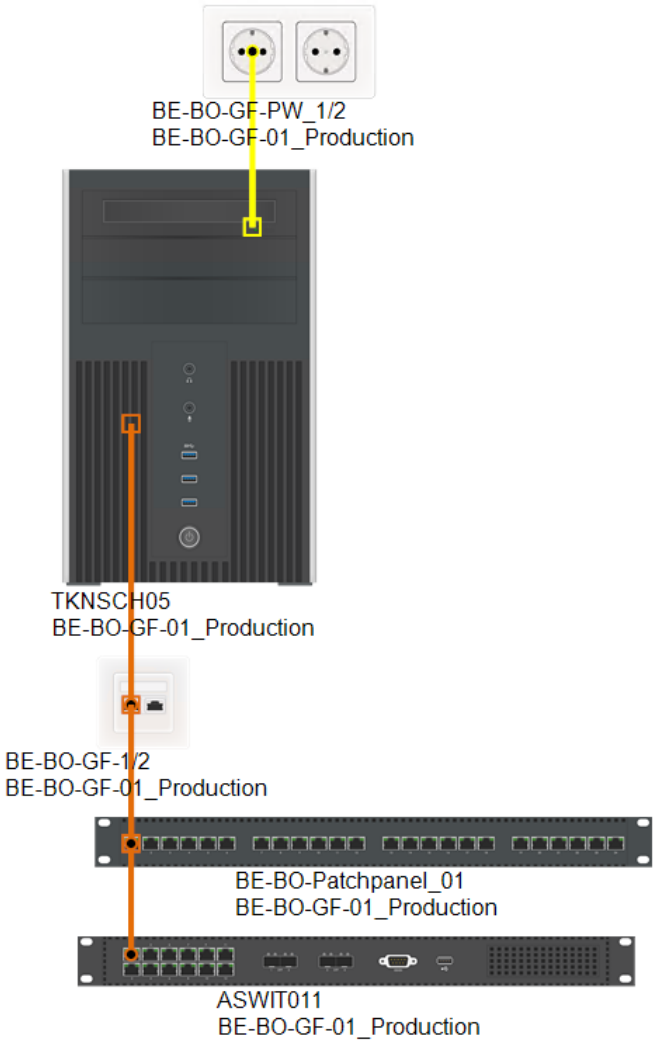

Fig. 37 - Cabling Map - Demo Database

The system is then assigned to the new site and rewired.

12.2 Determine the Wiring of Critical Systems

This example describes the wiring of a redundant network. It looks like this.

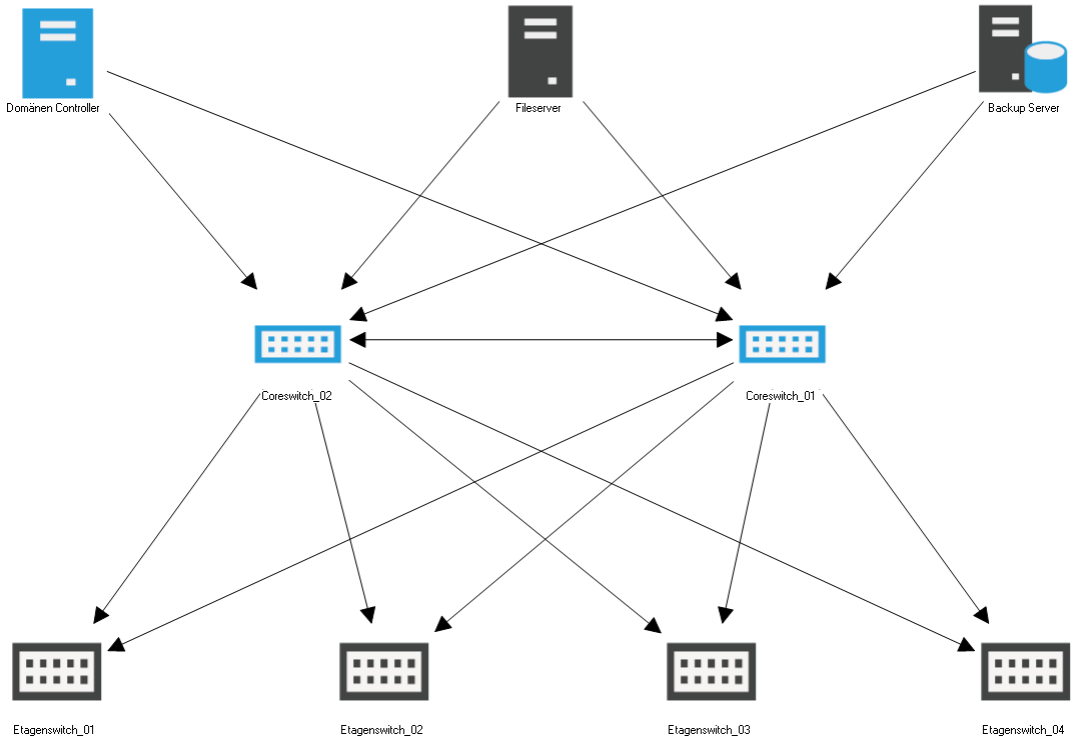

Fig. 38 - Redundant Network Scheme – Use Case

In this use case, the two core switches Coreswitch_01 and Coreswitch_02 are considered. A coreswitch should be wired as follows.

- Connection to the other coreswitch
- One connection each to the three servers
- One connection each to the distribution switches
- One connection each to a separate UPS network

The element plan can be used to check the direct connections of a system.

If a presumed connection is not displayed in the element map, you must check whether it exists.

You can find a redundant network in the Docusnap demo database in the following rack: MU-HQ-Rack_02

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VERSION HISTORY

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23.01.2019	Version 1.0 released
01.07.2019	Version 1.1 new features described

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