

PROmanage[®] NT

User Manual



Permanent network monitoring

Revision overview

date	Revision	Change(s)
16.03.2015	0	First version
18.08.2016	1	Update for version 1.6
10.01.2017	2	Update for version 1.7
25.09.2019	3	Update for version 2.0
26.06.2024	4	Update for version 2.4
09.07.2025	5	Update for version 2.5
13.10.2025	6	Update for version 2.6
04.03.2026	7	Update for version 2.7

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Table of contents

1	Introduction	6
1.1	General	6
1.2	Disclaimer	6
1.3	System description	7
1.4	Data Flow Diagram	8
2	Installation PROmanage® NT	9
2.1	System requirements	9
2.1.1	Hardware requirements	9
2.1.2	Port release	10
2.2	Starting the installation	11
2.3	Installation procedure	11
2.4	Installation procedure	12
2.4.1	Full installation	13
2.4.2	Client installation	20
3	Licensing	23
3.1	Licence dimensioning	23
3.2	Licensing PROmanage® NT	23
3.3	Function without licence	26
4	First steps	26
4.1	Log in	26
4.2	Add decentralised data collector	27
4.3	Check / analyse recording	28
5	Programme structure	29
6	Chronicle	30
6.1	Representation	30
6.2	Operation	32
7	Analysis	33
7.1	Representation	33
7.2	Network overview	35
7.3	View	39
7.4	Summary	42
7.5	Navigation overview	44
7.6	Participant matrix	45
7.7	Legend	47
8	Topology	48

Table of contents

8.1	Representation	48
8.2	Network overview	49
8.3	View	49
8.4	Data	53
8.5	Diagnostic data	54
8.6	Summary	56
8.7	Device list	57
9	Alarm management	60
9.1	Presentation	61
9.2	Network overview	62
9.3	Available parameters	62
9.4	Available actions	63
9.5	Available alarm templates	66
9.6	Active alarm templates	66
9.7	Wastepaper basket	67
10	Notification	67
11	Menu bar	69
11.1	Representation	69
11.2	Change/create database	70
11.3	Save database	74
11.4	Restore database	76
11.5	Manage data collectors	77
11.6	Device management	81
11.6.1	Presentation	81
11.6.2	Set up devices	85
11.6.3	Device information	88
11.6.4	Monitoring	90
11.7	Device identification management	94
11.8	Topology device validation	97
11.9	Device description management	99
11.10	Setting	100
11.10.1	Data collector	100
11.11	Log out user	106
11.12	Exit	106
11.13	Windows	107
11.14	Help	108
12	Appendix	109

Table of contents

12.1	PGadmin IV	109
12.1.1	Backup database (PostgreSQL)	109
12.1.2	Restore database (PostgreSQL)	110
12.1.3	Delete database	112
12.2	OPC server	113
12.2.1	Establish OPC connection	113
12.2.2	Install KepServerEx and configuration	113
12.2.3	Explanation of the individual alarms (alerts)	118
13	Notes	119

1 Introduction

1.1 General

PROmanage® NT is a central software for analysing, managing and storing data on the communication quality of industrial networks.

Using the standard SNMP and Web API queries, standardised network parameters can be queried cyclically across networks and protocols (PROFINET, PROFIBUS, Ethernet, CAN and AS-i) and saved with a time stamp.

Threshold and alarm management analyses the incoming network communication data and warns of any anomalies.

The current topology of the network can be displayed. Conspicuous subscribers are marked here. By selecting a subscriber, its relevant quality parameters can be displayed.

Statistical functions allow the data to be displayed to the minute, retrospectively over several months.

This means that historical events, for example for analysing sporadic failures, can be traced at any time and used for root cause analysis.

1.2 Disclaimer

PROmanage® NT has been carefully developed and tested by Indu-Sol GmbH to the best of its knowledge and belief. Nevertheless, according to the state of the art, it is impossible to create completely error-free software.

Therefore, Indu-Sol GmbH does not guarantee that the hardware or software will work properly in all applications. Therefore, any liability for direct or indirect damage resulting from the operation of the hardware or software and the usability described in the manual is rejected.

Indu-Sol GmbH will rectify any defects that cancel or reduce the suitability of the software for the usual or contractually agreed purpose within a reasonable period of time, usually as part of regular software maintenance.

1.3 System description

The PROmanage® NT system consists of the following components:

- PROmanage® NT (Client)
- PROmanage® NT Data collector (subject to licence)
- PROmanage® NT Web
- PostgreSQL database server (+ optional OPC extension)

The centrepiece of the system is the PROmanage® NT data collector. This queries decentralised data collectors (e.g. PROFINET INspector® NT, manageable switches, ...) and stores the data in an SQL database. The PROmanage® NT (client) is used to configure which devices are to be queried. Data stored in the SQL database can be displayed with PROmanage® NT (Client). By installing the PROmanage® NT Web component, the history (6 Chronicle) can be displayed. Optionally, the database server can be extended with an OPC interface.

Each component can be installed on a separate system if they are connected to each other via a network. The components are selected during the installation (2.4 Installation procedure).

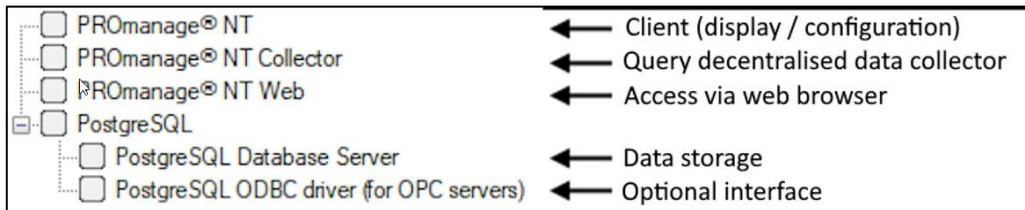


Illustration 1: Section - Selection of components during installation

For performance reasons, PROmanage® NT data collector and SQL database should always be installed on the same system.



The PROmanage® NT data collector is the component that requires a licence to query the devices to be monitored.

The PROmanage® NT (Client) component can be installed licence-free on one or more systems.

1.4 Data Flow Diagram

The following diagram illustrates the interaction of the PROmanage® NT components. If individual components are installed on separate systems, the port releases (2.1.2 Port release) must be observed.

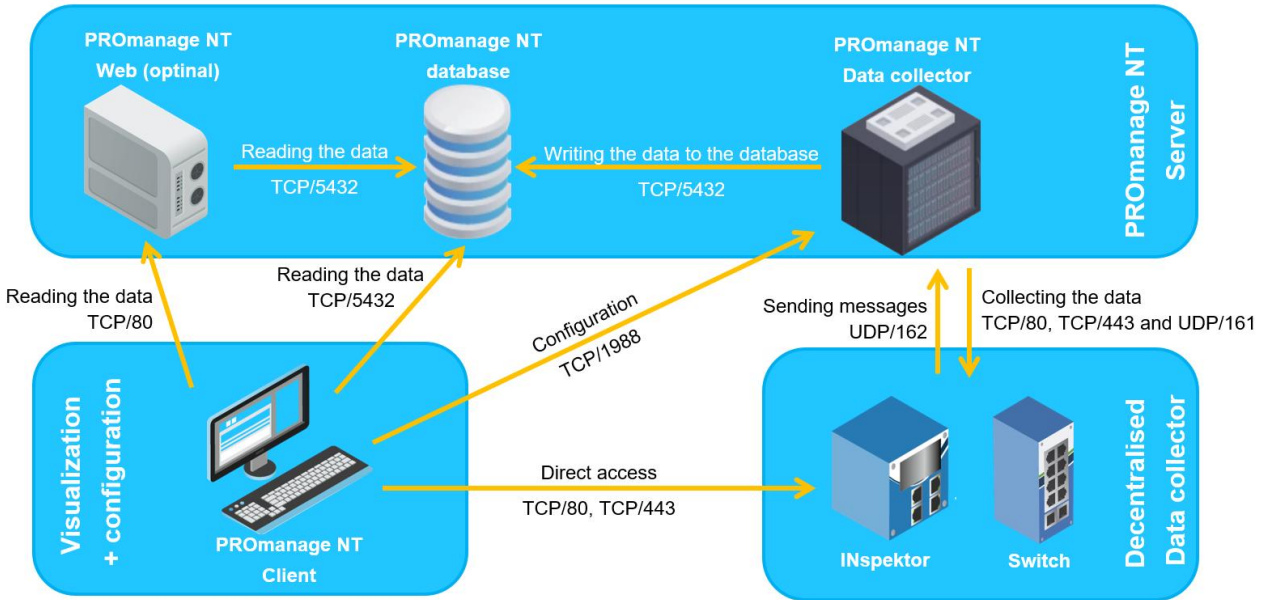


Illustration 2: Data Flow Diagram

2 Installation PROmanage® NT

2.1 System requirements

The following operating systems are supported for all PROmanage® NT components:

- Microsoft® Windows® 10
- Microsoft® Windows® 11
- Microsoft® Windows® Server 2022, 2025

2.1.1 Hardware requirements

Depending on the type and number of devices to be queried, the following hardware requirements apply for the individual components. The minimum hardware requirements for the overall system result from the individual component with the highest requirements.

Database

Number of ports	CPU cores	Working memory	Required hard disc space ¹
up to 160	Dual Core (Intel® Core™ i5,i7, Intel® Xeon®)	2 GB	50 GB (SSD, NVMe recommended)
up to 480	Quad Core (E5 V3 2,6GHz, Corresponds to 4./5. generation i7 series)	4 GB	100 GB (SSD, NVMe recommended)
up to 960	Hexa Core (E5 V3 2,6GHz, Corresponds to 4./5. generation i7 series)	8 GB	200 GB (SSD, NVMe recommended)
until 2000	Octa Core (E5 V3 2,6GHz, Corresponds to 4./5. generation i7 series)	16 GB	400 GB (SSD, NVMe recommended)

1) with a data retention period of 3 months.

For continuous operation, we recommend the use of a server hard drive or server SSD memory.

Data Collector

Processor	At least Xeon E5 v3/v4 @2,6 GHz (2 cores)
Memory	At least 1 GB
Hard disk	At least 256 MB
Network	wired, At least 100MBit

Client

Processor	Intel i7, 8. Gen., At least. Dual Core
Memory	At least 3 GB free RAM
Graphics Resolution	At least 1920 x 1080

2.1.2 Port release

The data flow diagram (1.4 Data Flow Diagram) shows the ports that are required for a connection between the PROmanage® NT components. These and others for full functionality are listed below.

Description of the	Port number	Description of the
Indu-Sol Data Collector	TCP/1988	Access to PROmanage® NT data collector
PostgreSQL database	TCP/5432	Access to SQL database
SNMP	UDP/161, UDP/162 (Trap)	Query dec. data collector Receiving SNMP traps
INspektor web view	TCP/80, TCP/443	Display of the web interface
PROmanage® NT Scan Indu-Sol ServiceTool	UDP/19010, UDP/19011	Used to scan the network for INspektors and PROFINET devices

2.2 Starting the installation



You need administrative rights to be able to carry out the installation

When you purchase PROmanage® NT, you will receive a download link to the software. PROmanage® NT can also be downloaded from the Indu-Sol GmbH website (<https://www.indu-sol.com/support/downloads/software/>).

The downloaded file must be unpacked on the target system.

The installation starts by executing the "Setup.exe" file.

2.3 Installation procedure

The PROmanage® NT installation checks whether the required Windows components are available, updates them or installs missing ones.

- PROmanage® NT Client
 1. Installation and configuration of PROmanage® NT Client
 2. Allow PROmanage® NT to communicate via the Windows firewall
 3. Install Visual C++ Redistributable
 4. Install WinPcap
- PROmanage® NT Data collector
 1. Allow communication for PROmanage® NT data collectors via the Windows firewall
 2. Install driver for Indu-Sol licence stick
 3. Configure database connection
 4. Install as Windows Service
- PostgreSQL database server
 1. Install database server
 2. Create new database
- PROmanage® NT Web
 1. Allowing PROmanage® NT Web to communicate via the Windows firewall
 2. Configure web server
 3. Configure database connection
 4. Install web server service
- PostgreSQL ODBC driver (for OPC Server)
- Uninstaller

2.4 Installation procedure

It is recommended to install the PROmanage® NT components client, data collector and SQL database on one system.

To configure the data collector and display the recorded data, the PROmanage® NT client can be installed individually (2.4.2 Client installation).

If the optional PROmanage® NT-Web is installed, the history of the PROmanage® NT database can be accessed from any system via a web browser without further installation.

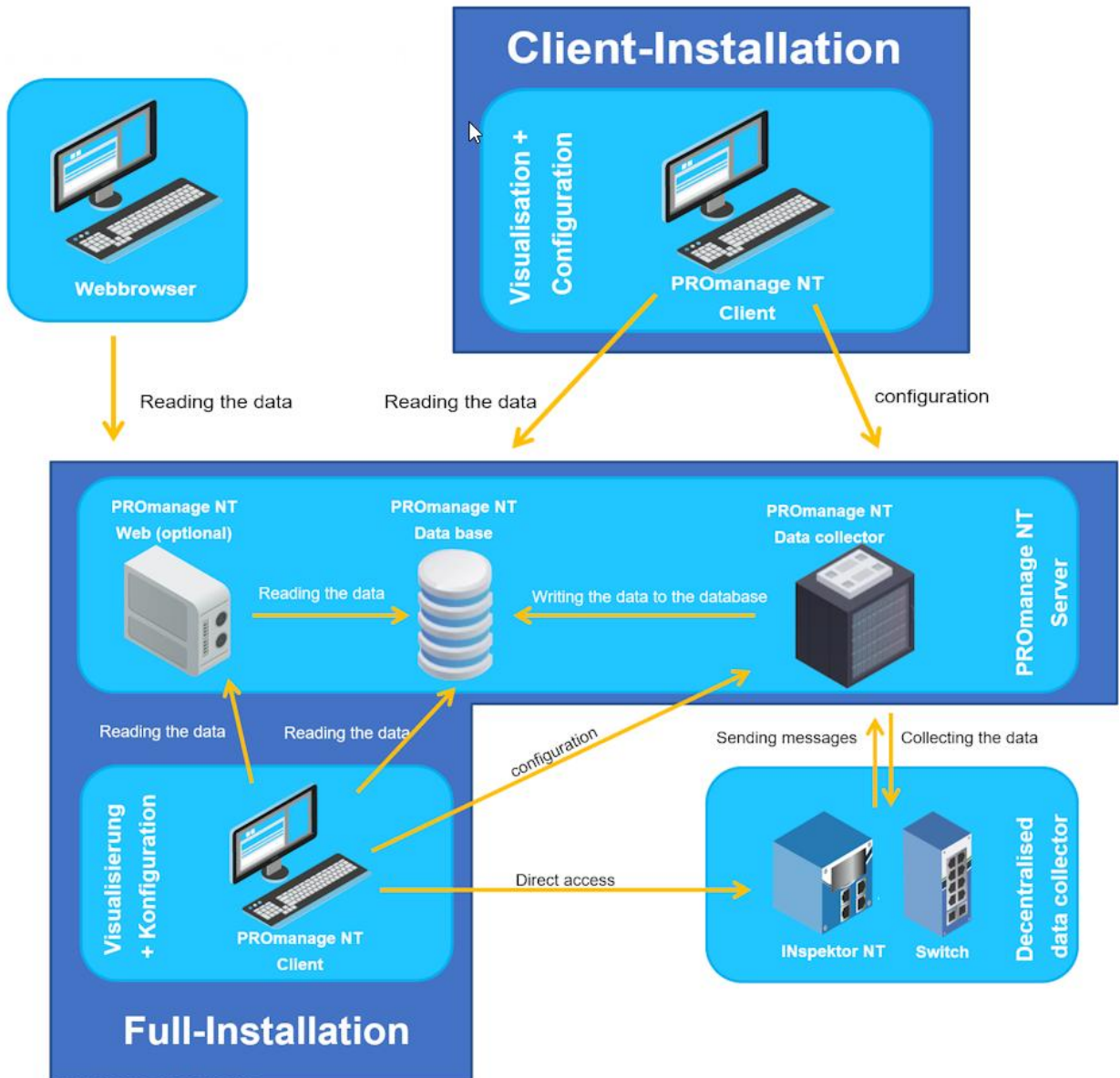
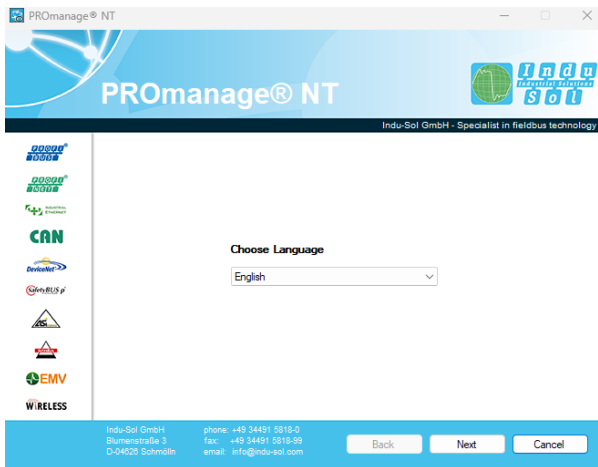


Illustration 3: Installation variants

2.4.1 Full installation



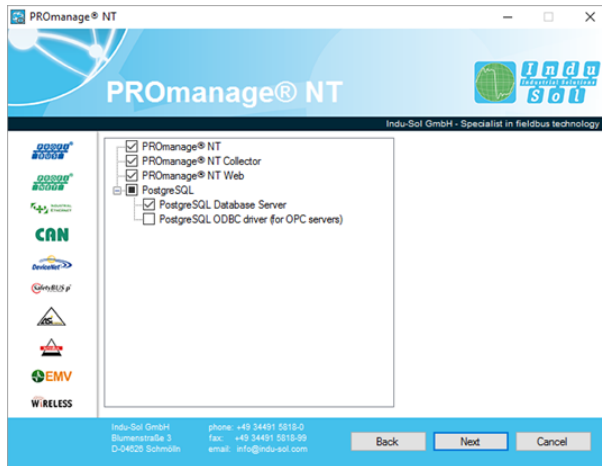
Select language:

- Select language
- Next



End User Licence Agreement:

- Read licence agreement
- Selection - "I agree"
- Next

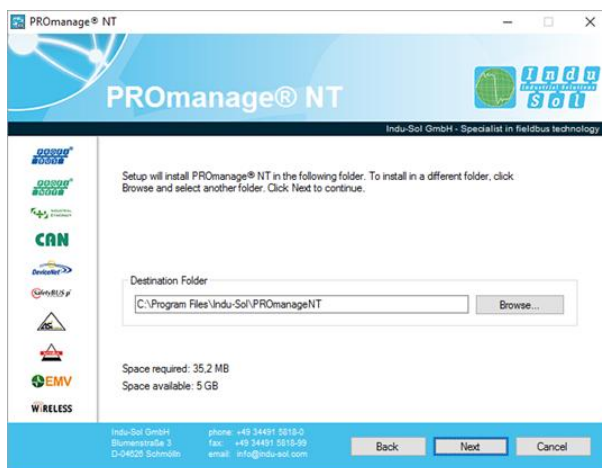


Select PROmanage® NT components:

Selection:

- PROmanage® NT (Client)
- PROmanage® NT Data collector
- PROmanage® NT Web (optional)
- PostgreSQL
 - PostgreSQL database server
 - PostgreSQL ODBC driver (opt.)
- Next

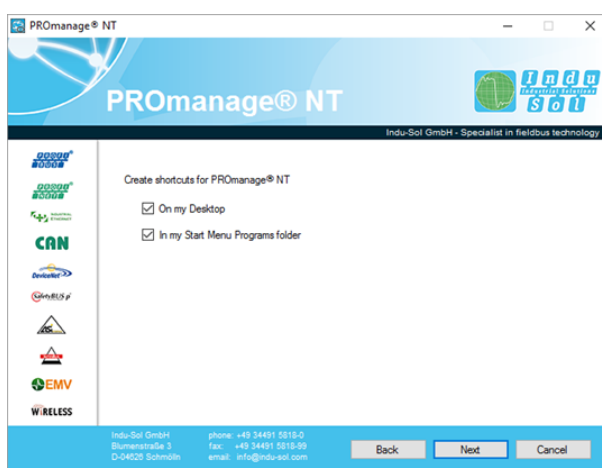
The configuration and installation of the PostgreSQL ODBC driver is explained in "12.3 OPC-Serve 2.



Installation path PROmanage® NT Client:

Selection:

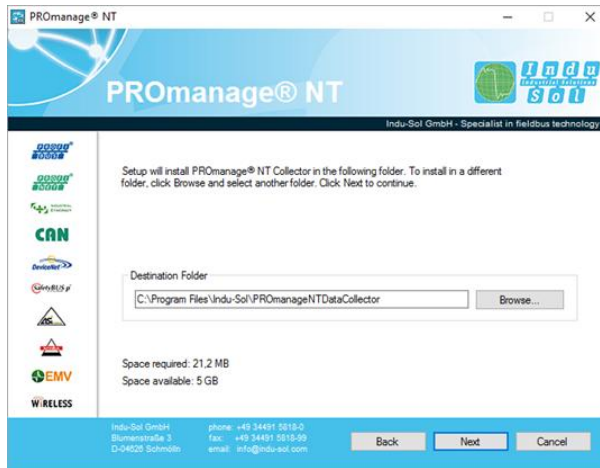
- Destination folder ("Browse" to change installation path)
- Further



Link PROmanage® NT Client:

Selection for the creation of links:

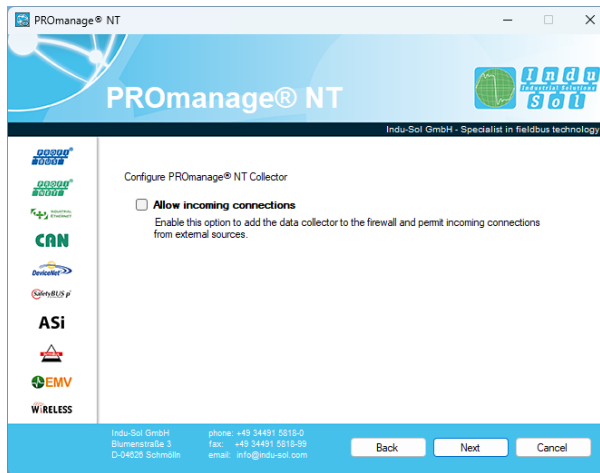
- On the desktop
- In the start menu
- Next



Installation path PROmanage® NT Data collector:

Selection:

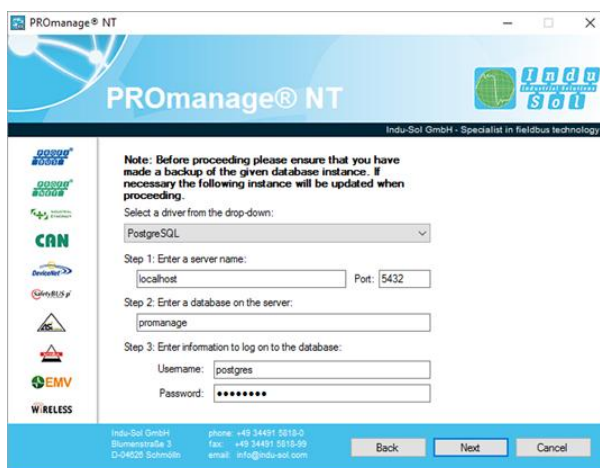
- Destination folder ("Browse" to change installation path)
- Next



Permission Remote connection:

Selection:

- Allow remote connections to the data collector (this determines whether another PROmanage® NT client can access the data collector).
- Next

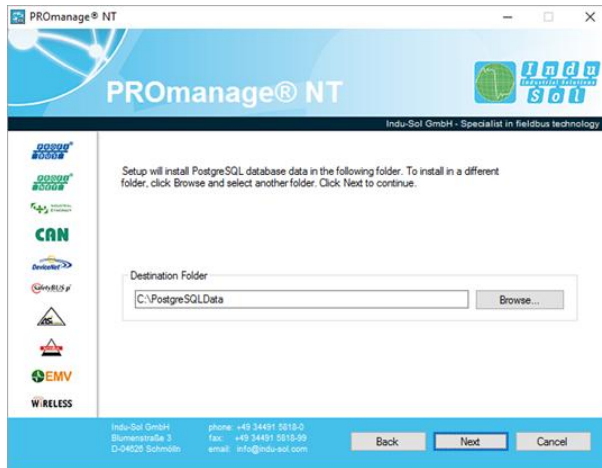


Configuration PROmanage® NT SQL database server:

Selection:

- Step 1 - Server name (preset)
- Step 2 - The installation creates a database. A name for the database can be specified here, e.g. name of the system¹.
- Step 3 - User/password (preset)
- Next

¹ only upper/lower case letters, numbers, _, no special characters

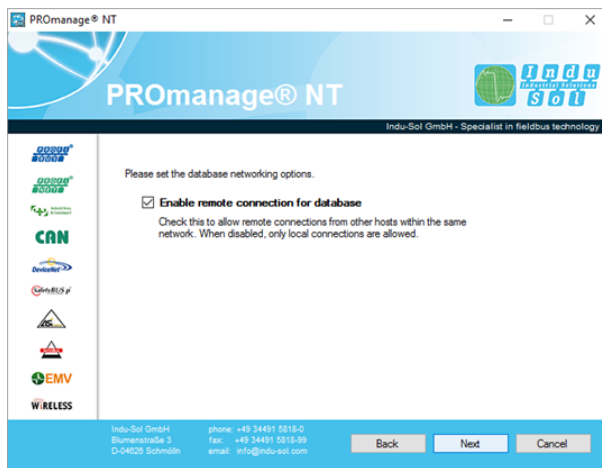


Installation path PostgreSQL installation directory (programme) and data directory (saving the data):

Selection:

- Destination folder ("Browse" to change installation path)
- Next

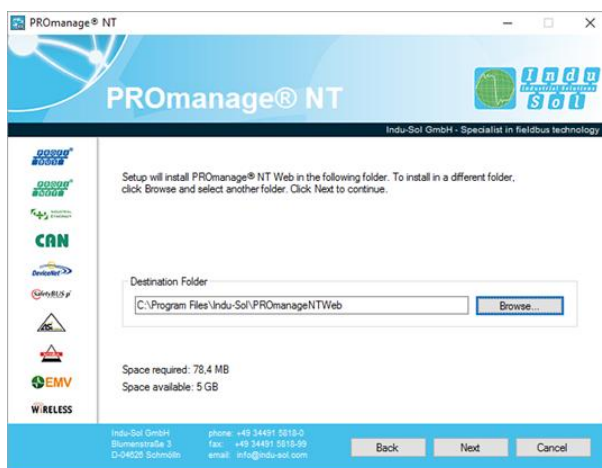
It is recommended not to install the target folder for the data directory "PostgreSQLData" on the system partition (default: "C:\").



Permission Remote connection:

Selection:

- Allow remote connections to the database (this determines whether another PROmanage® NT client can access the database).
If access is not granted, a subsequent PROmanage® NT Client installation will not work (2.4.2 Client installation).
- Next



Installation path PROmanage® NT Web:
(optional)

Selection:

- Destination folder ("Browse" to change installation path)
- Next



Deployment PROmanage® NT Web:

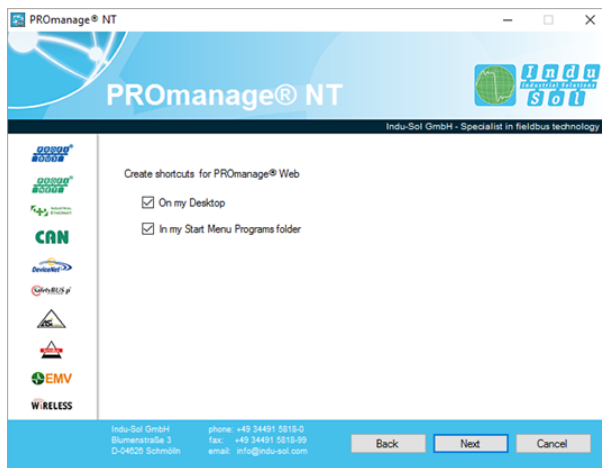
Selection:

- Provide content as a download ("Select" to choose source path)
- Port for PROmanage® NT website
- Start Web Service
- Next

Provide download: The entire content of a directory is stored on the system as a ZIP archive.

...\\Indu-Sol\PROmanageNTWeb\DownloadArea

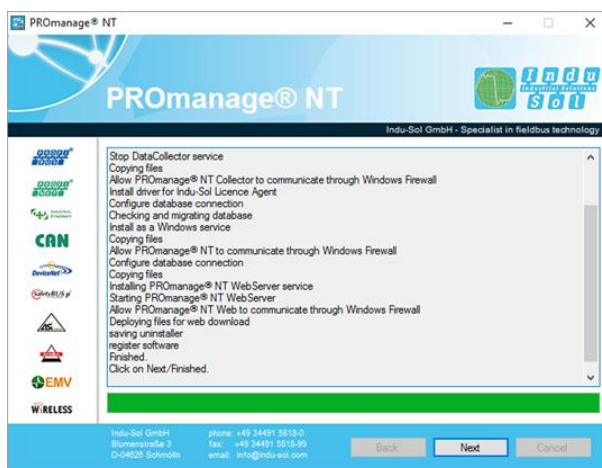
Recommendation: For the later 2.4.2 Client installation it is recommended to release the installation files for PROmanage® NT for download.



Link PROmanage® NT Web:

Selection for the creation of links:

- On the desktop
- In the start menu
- Next



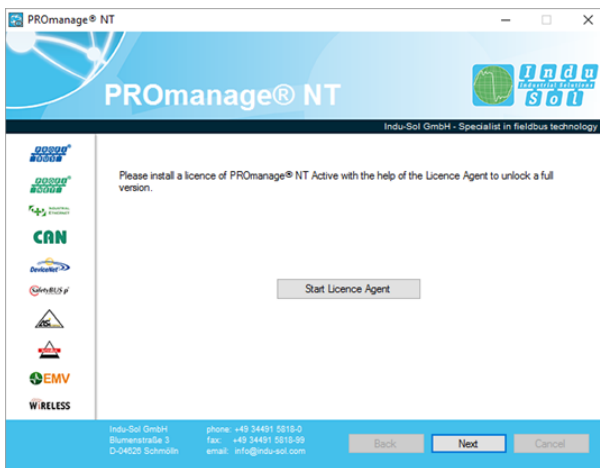
Installation progress PROmanage® NT:

- Next



Driver installation ATMEL

In old PROmanage NT versions, the software was licensed using a licence stick. If a licence stick is available, the "ATMEL" driver must be installed.



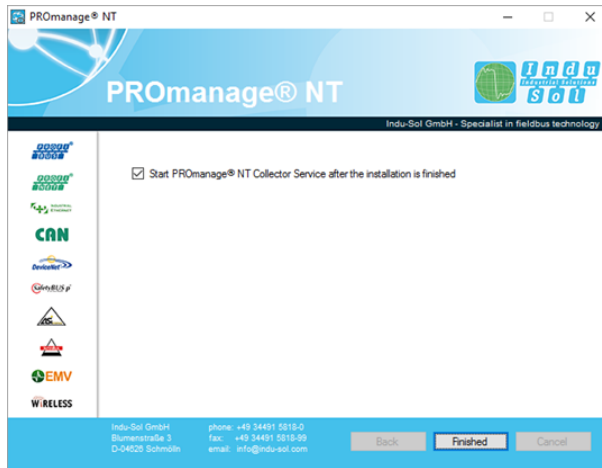
Licensing PROmanage® NT:

PROmanage® NT is licensed using the additional "LicenceAgent" software.

Selection:

- Start licence agent
- Next

Note: Licensing can also be carried out at any later point in time (3 Licensing). Without a licence, PROmanage® NT starts in demo mode and the trap monitor is deactivated.

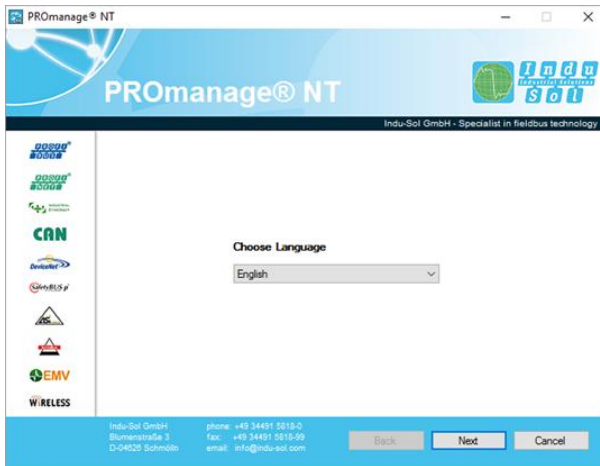


PROmanage® NT Start data collector:

Selection:

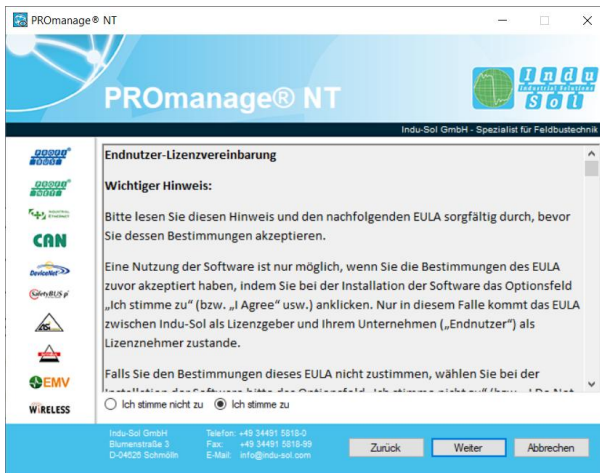
- Start service
- Finished

2.4.2 Client installation



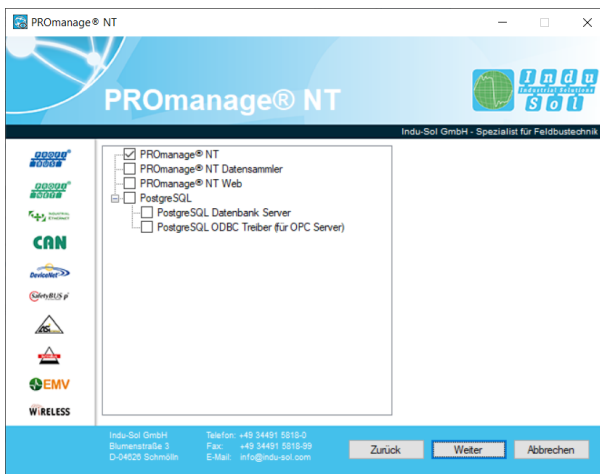
Select language:

- Select language
- Next



End User Licence Agreement:

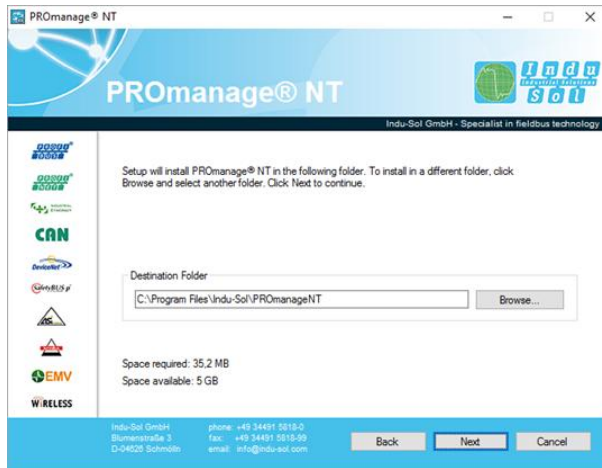
- Read licence agreement
- Selection - "I agree"
- Next



Select PROmanage® NT components:

Selection:

- PROmanage® NT (Client)
- Next

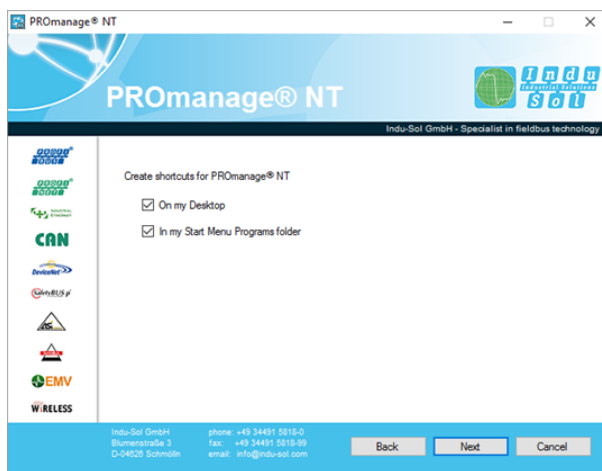


Installation path PROmanage® NT

Client:

Selection:

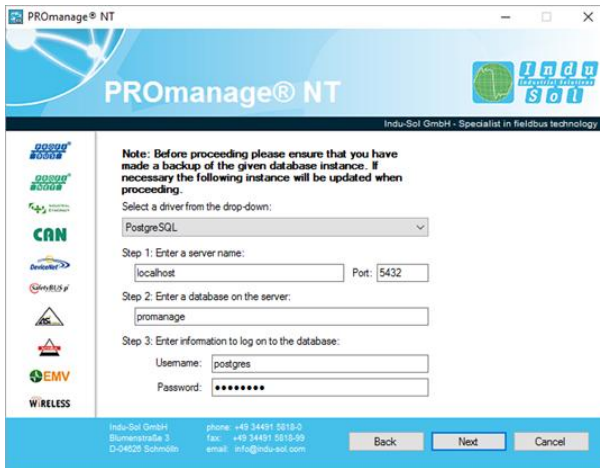
- Destination folder ("Browse" to change installation path)
- Next



Link PROmanage® NT Client:

Selection for the creation of links:

- On the desktop
- In the start menu
- Next



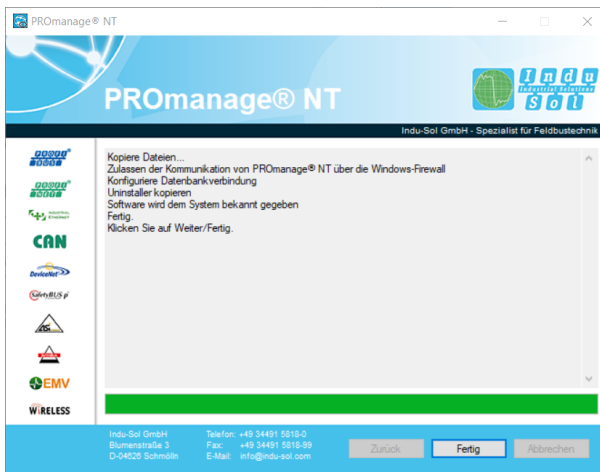
Configuration PROmanage® NT

SQL database server:

Selection:

- Step 1 - Server name
(Name of the system on which the PROmanage® NT SQL database is installed)
- Step 2 - Name of the database to which the PROmanage® NT data collector writes¹ .
- Step 3 - User/password
- Next

¹ only upper/lower case letters, numbers, _ , no special characters



Installation progress PROmanage® NT:

- Finished

3 Licensing

3.1 Licence dimensioning

The size of the required licence is determined by the maximum number of decentralised data collectors to be monitored. A certain number of licence ports are required for each device, whereby the following default values apply:

Number of licence ports	Component										
1	per switch port										
8	<table border="0"> <tr> <td>ASi inspector</td> <td>CB-INspektor</td> </tr> <tr> <td>EMC-INspector V2</td> <td>INBLOX DP Diag Rep X1</td> </tr> <tr> <td>INBLOX DP Diag Rep X4</td> <td>INBLOX DP Diag+ Rep</td> </tr> <tr> <td>PB-INspektor NT</td> <td>PB-INspektor V2</td> </tr> <tr> <td>IP device</td> <td>CANobserver</td> </tr> </table>	ASi inspector	CB-INspektor	EMC-INspector V2	INBLOX DP Diag Rep X1	INBLOX DP Diag Rep X4	INBLOX DP Diag+ Rep	PB-INspektor NT	PB-INspektor V2	IP device	CANobserver
ASi inspector	CB-INspektor										
EMC-INspector V2	INBLOX DP Diag Rep X1										
INBLOX DP Diag Rep X4	INBLOX DP Diag+ Rep										
PB-INspektor NT	PB-INspektor V2										
IP device	CANobserver										
16	<table border="0"> <tr> <td>INBLOX DP Diag Rep X2</td> <td>INBLOX PA Diag+</td> </tr> <tr> <td>iPNMA</td> <td>PN-INspektor NT</td> </tr> <tr> <td>PN-INspektor V1</td> <td>EtherNet/IP-INspector</td> </tr> </table>	INBLOX DP Diag Rep X2	INBLOX PA Diag+	iPNMA	PN-INspektor NT	PN-INspektor V1	EtherNet/IP-INspector				
INBLOX DP Diag Rep X2	INBLOX PA Diag+										
iPNMA	PN-INspektor NT										
PN-INspektor V1	EtherNet/IP-INspector										



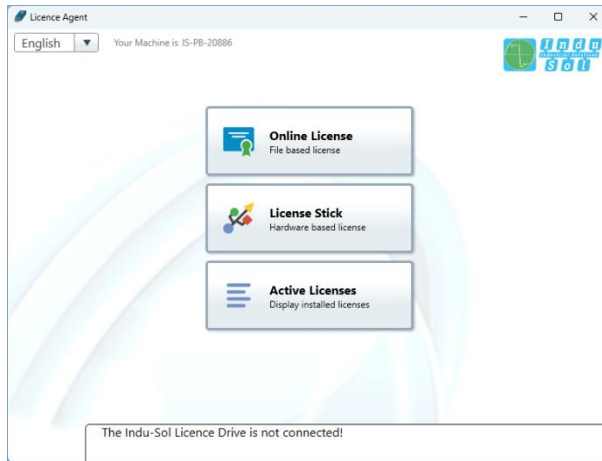
The licence is linked to the hardware and operating system of the system on which the PROmanage® NT data collector is installed. A change to these can lead to the licence expiring.

3.2 Licensing PROmanage® NT

The LicenceAgent software is responsible for licensing PROmanage® NT and other Indu-Sol software. The LicenceAgent is stored within the PROmanage® NT installation routine on the system and can be called up within it. If the LicenceAgent is accessible in another way, e.g. via a download (<https://www.indu-sol.com/support/downloads/software/>), the licensing can be carried out at any time (before and after the PROmanage® NT installation).

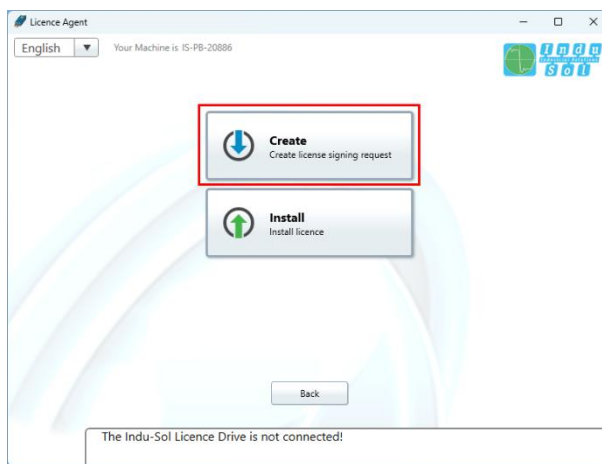
The PROmanage® NT data collector must always be licensed. Please note that the license is always permanently bound to a hardware system. **A subsequent transfer of the license to another hardware system is therefore not possible!**

Once the licence has been successfully transferred, PROmanage® NT is activated and can be used without restriction.



Start LicenceAgent

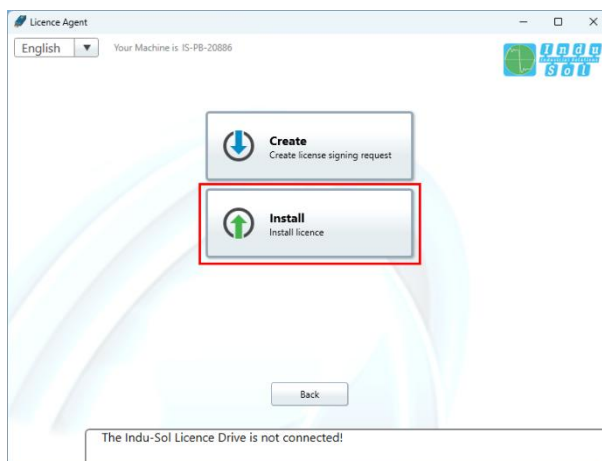
- Selection of the licensing procedure
- Online License
Current procedure
- License Stick
outdated procedure – chosen if the license is still available on a stick.



Create a licensing request:

- Select “Create”
- Save the LicenseSigningRequest (*.lsr file) to the desired location

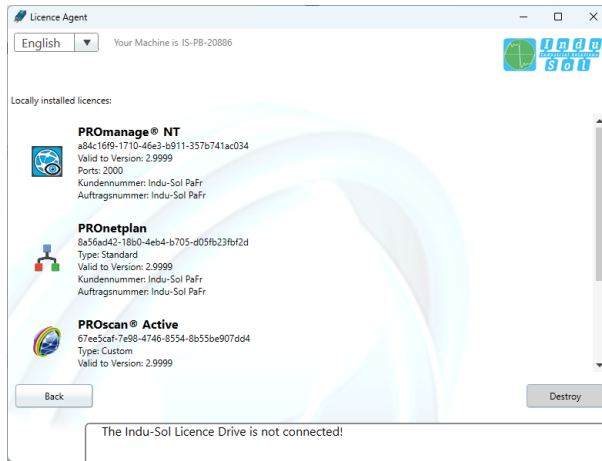
The created .lsr file must now be sent to license@indu-sol.com along with the license ID from your delivery note. You will then receive the activation license (*.lic file) from Indu-Sol within one working day.



Using the Activation License:

- Select “Install”

Download the activation license you received earlier (*.lic file). The successful installation of the license is then confirmed by a corresponding message.



Checking Active Licenses:

- Select „Active Licenses“

The installed licenses and associated information such as validity, expiration date and size are displayed here.

3.3 Function without licence

Configuration Display SQL database / PROmanage® NT Data collector

If only the PROmanage® NT client is installed (2.4.2 Client installation), a connection to an SQL database can also be established without a licence in order to display the recorded data. If the PROmanage® NT client has access to a PROmanage® NT data collector, it can configure this according to its licence.

Demonstration

If no licence is installed for the PROmanage® NT data collector, a single decentralised data collector can be monitored in this state, regardless of the number of ports. In this way, the simplest monitoring scenarios can be implemented in order to familiarise yourself with individual functions of PROmanage® NT.

4 First steps

4.1 Log in

When you start the PROmanage® NT client, a login window opens. The default login data is

User: admin
Password: admin

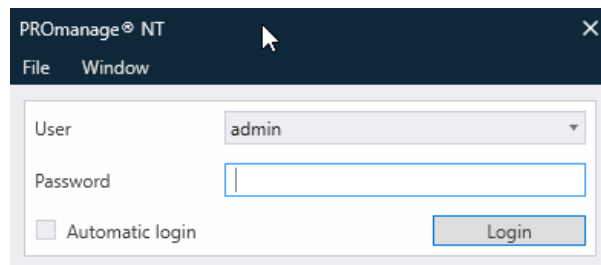


Illustration 4: Log-in window

4.2 Add decentralised data collector

A device can be integrated into the monitoring via the device management (Ctrl+D) of PROmanage® NT.

1. Opening the perspective Analysis
2. Opener for device management
3. Scan manually
4. Select device type
5. IP address
6. OK
7. Set up
8. Close

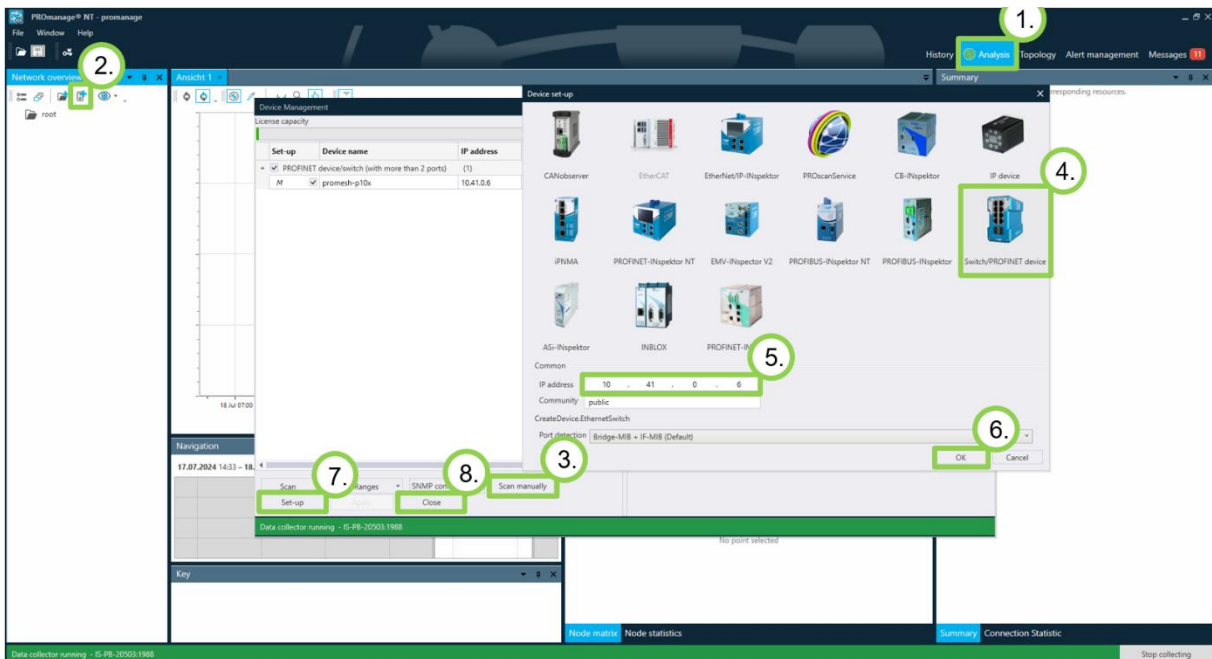


Illustration 5 Device management

4.3 Check / analyse recording

PROmanage® NT displays the quality of the monitored network in the form of a status graph. After setting up a device, the first data point is visible after one minute:

1. Selection of the configured device
2. Automatic update
3. Select data point or time period
4. Check network data

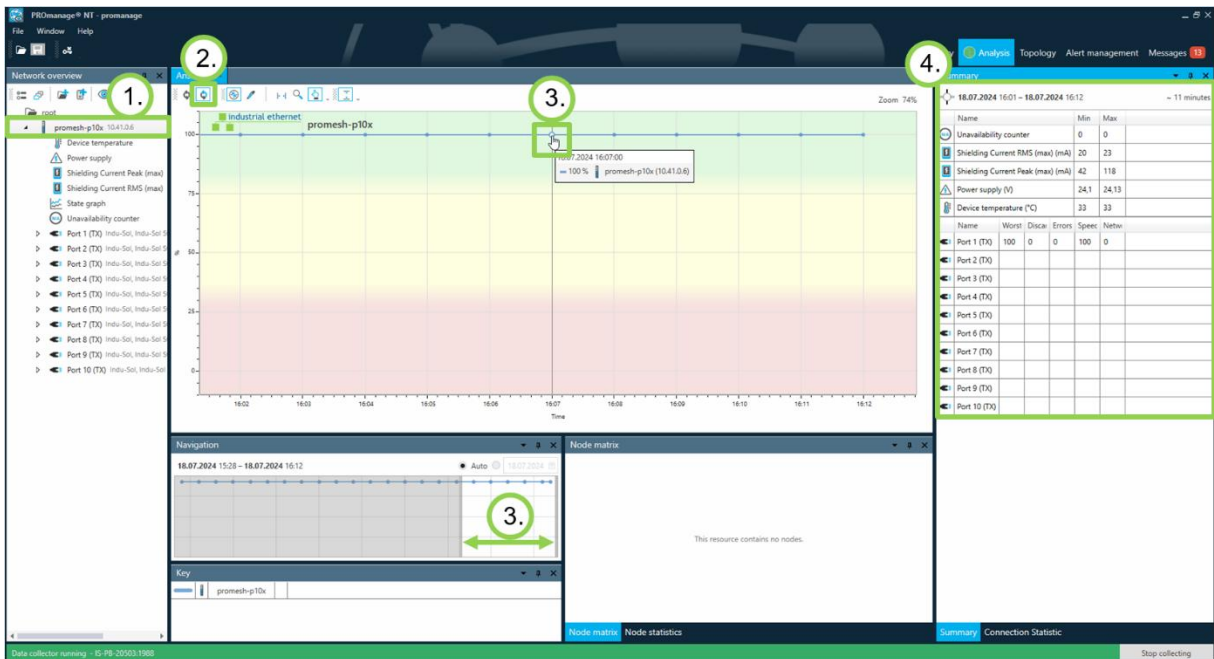


Illustration 6 Check recording

5 Programme structure

The PROmanage® NT display is divided into four areas.

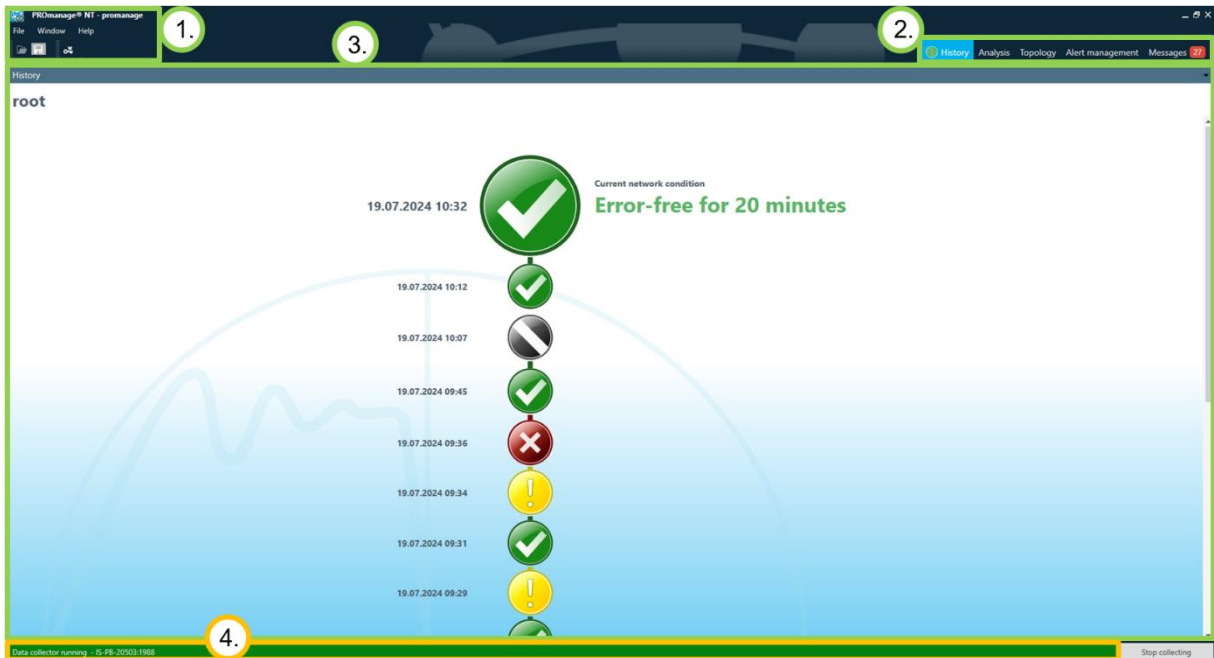


Illustration 7 Programme interface

1. Menu bar: Configuration of the PROmanage® NT system
2. Perspective bar: Selection of the programme section to be operated
3. Perspective: Presentation of the selected programme section
4. PROmanage® NT data collector: Status display of the monitoring status

The core element of PROmanage® NT operation is the perspectives:

Chronicle

Simple visualisation of the current and historical network status

Analysis

Detailed display of network-relevant parameters for evaluating quality

Topology

Display of the network structure, for validation of the devices and localisation of changes or faults in the network.

Alarm management

Creation of actions when defined threshold values are exceeded

6 Chronicle

6.1 Representation

The history shows the current and historical network status with the traffic light colours green, yellow and red. The devices to be monitored must first be configured in the device management (11.6 Device management) beforehand.

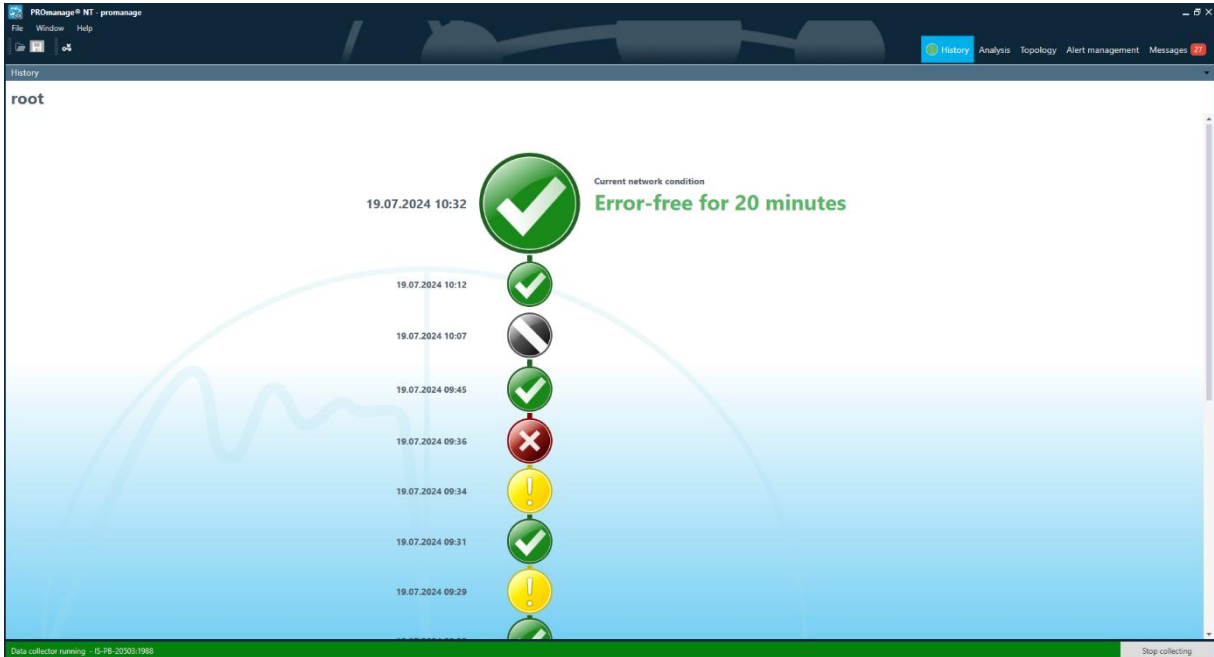


Illustration 8Chronicle

Each icon describes the network quality up to that point in time.

Valuation the Network quality	> 75%	75% > 35%	< 35%	OT-SECURITY Event	
Colour symbol					
Network status	Good	Questionable (usually without disrupting production)	Bad (usually with disruption to production)	An OT-Security Event has occurred	No data

This colour is also used as the background colour in the status graph in the Analysis perspective. The icons are not displayed in the Analysis perspective.

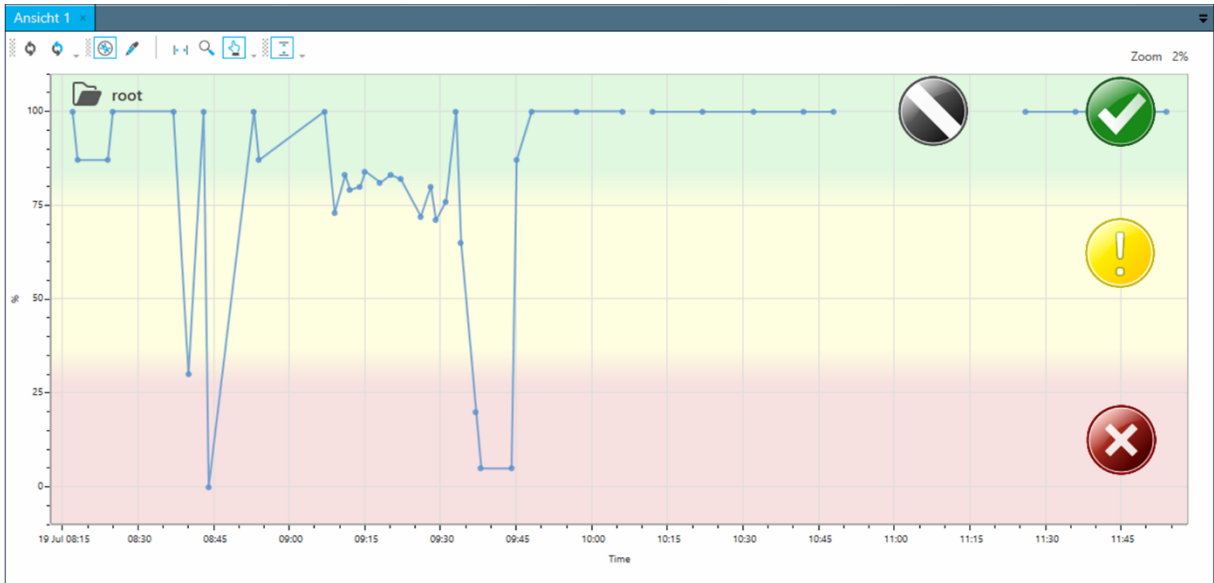


Illustration 9 Meaning of the colour icons

To influence when the status of the network changes to a different range, the device management (11.6 Device management), in the Monitoring window, the status graph calculation can be adjusted. The limits of the colour gradient (green: > 75%, yellow: 75% > 35%, red: < 35%) are fixed by default and cannot be configured.

6.2 Operation

Click on one of the icons to open a list view. This contains

1. State of the network
2. Period in which the condition was pending
3. Device concerned (worst first)

Double-click on the device to open the Analysis perspective (7 Analysis).

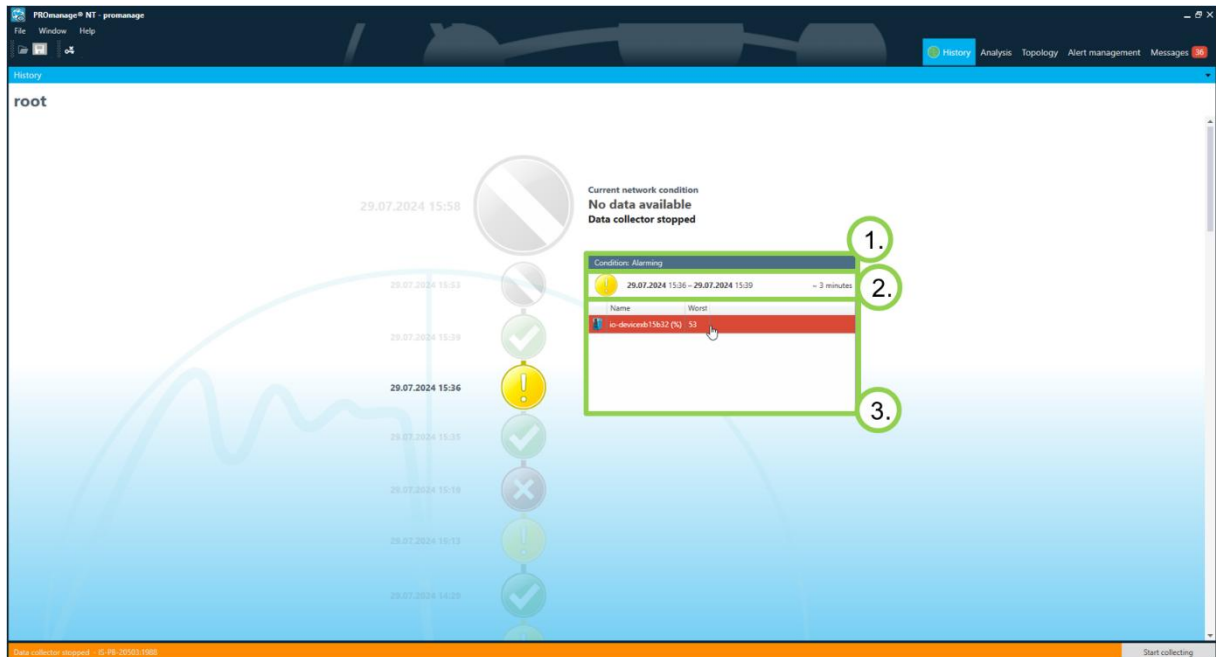


Illustration 10 Detailed view Chronicle

7 Analysis

7.1 Representation

All records retrieved from the decentralised data collectors and stored in the PROmanage® NT database can be displayed in the Analysis perspective. This perspective is used for analysing and troubleshooting.



Illustration 11 Overview analysis

1. Network overview (7.2 Network overview)

- By creating folders, a directory is created that groups and structures the devices to be monitored.
- Selection of the folders or devices whose status is displayed in the view.

2. View (7.3 View)

- Representation of the stored network data as data points, which are summarised in a graph describing the status.

3. Summary (7.4 Summary)

- Indication of the period selected for the summary
- When a folder is selected, shows the devices that have been grouped together in a folder and their worst value or
- When a device is selected, shows the relevant network parameters, their values and the worst value first

4. Navigation overview (7.5 Navigation overview)

- Selection of the time period to be displayed in the view

5. Participant matrix (7.6 Participant matrix)

- Display of the participants belonging to the network (only available if provided by the device - e.g. PROFIBUS-INspector NT, PROFINET-INspector NT, ...)

6. Legend

- Assignment of the colour of the graph, with multiple selection (Ctrl + left-click in the network overview on folders or devices)

Arrangement of the viewing window

The typical Windows window options are available and are referred to as *views* in PROmanage® NT. Each *view* can be detached from the display grid, rearranged, moved and scaled. Closed views can be reopened via the *menu bar* > *Window* > *Show view* and the display can be reset to the default setting via *Menu bar* > *Window* > *Reset perspective*.

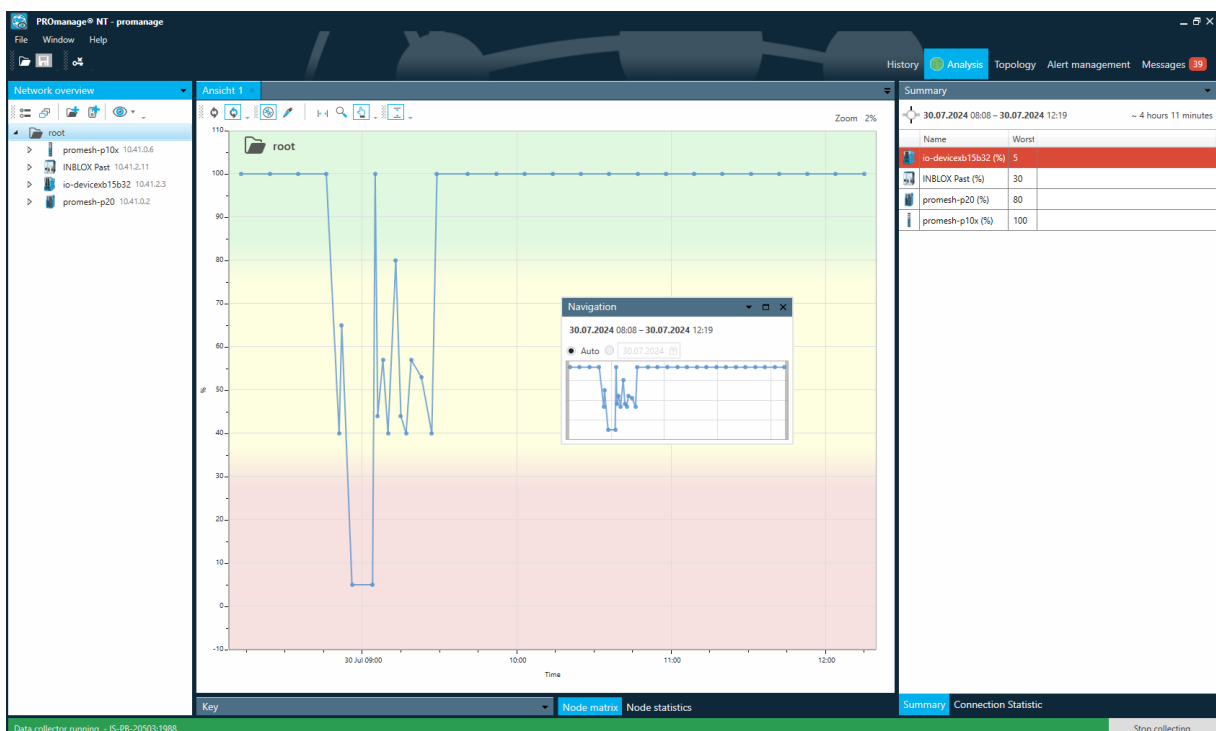


Illustration 12Window view



Icon 1Window positioning

If you drag one window over another, an icon appears to position the window at an edge or to merge the two into a group.

7.2 Network overview

The network overview provides a structured display of the devices to be monitored in the form of a directory tree.

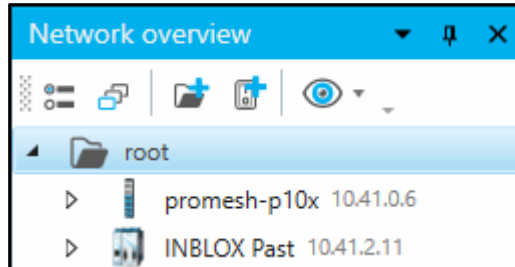






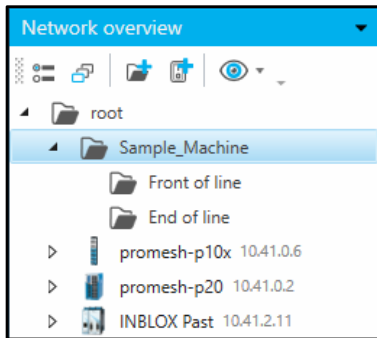
Illustration 13Network overview

Meaning of the icons:

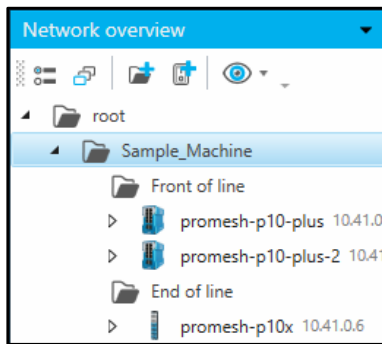


-  Switch between hierarchical view and grouped view (network type)
-  Reduce device tree
-  Opens the device management (11.6 Device management)
-  Creates a "New folder" in the network overview

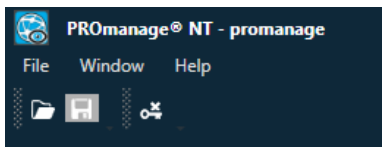
Sorting the network overview



The overview can be structured by creating folders. Right-click on folders or devices to rename them.



Folders and devices can be moved to a different position (sequence) or to a different folder (grouping) using *drag and drop*.



Changes must be finalised and saved

Selection of devices

The *drop-down* menus for folders and devices are used to display down to the lowest parameter. The selection made here is loaded in the *view*. Multiple selection of up to four units is possible with *Ctrl + left-click*.

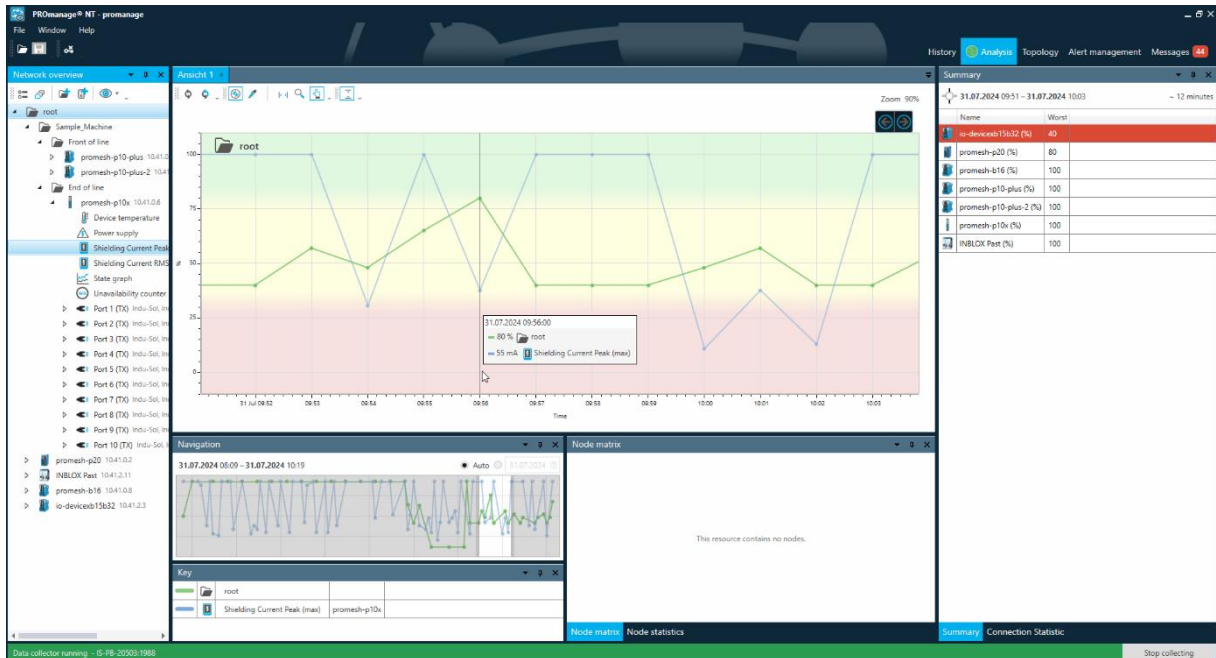


Illustration 14 Selection in network overview

Right-click on a device or folder to open a context menu with further options:

To website

Opens a web browser and attempts to call up the IP address of the device

New folder

Creates a new folder to structure the view

Geräteverwaltung öffnen

Opens the device management (11.6 Device management)

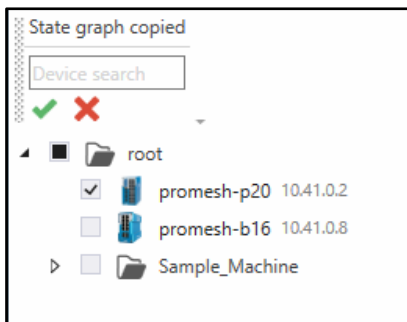
Delete device

Deletes the device completely from the list of devices to be monitored

Rename

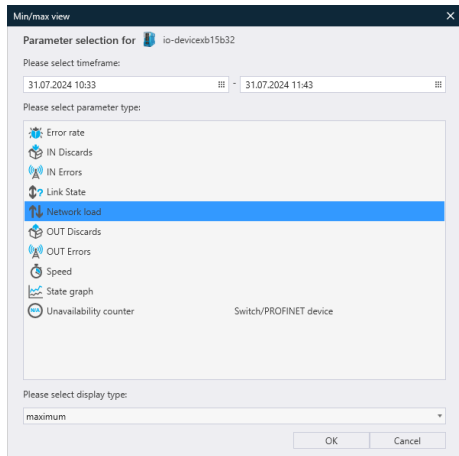
Changes the display name

Copy state graph settings



Copies the calculation basis of the state graph (11.6.4 Monitoring). A view then opens in which you can select which devices should receive the same settings.

Min/max view



Opens a window for selecting a parameter and time period. Press OK to check all underlying parameters and, depending on the selection, the highest values are displayed.

The legend shows which value and port is displayed.

7.3 View

The data points of the selected folder or device are displayed in the *view* and connected to form a graph. In the summary displayed next to it (7.4 Summary), the devices belonging to the folder or parameters belonging to the device are displayed depending on the selection. The time reference of the summary depends on whether a *point selection* is made (**Point selection**). If no point is selected, the entire graph displayed is used for evaluation. How strongly the status graph reacts to changes can be set in the status graph calculation.

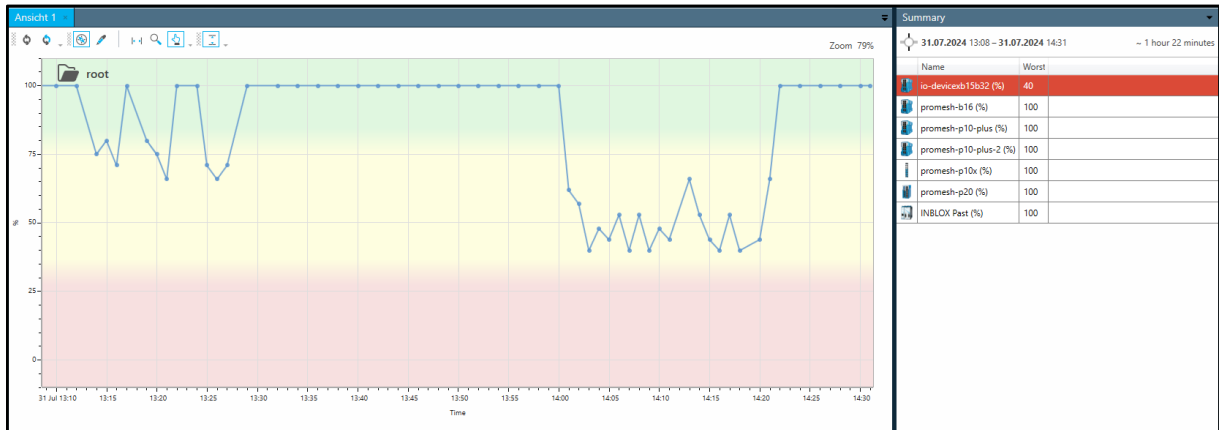









Illustration 15View

Meaning of the icons



-  One-time update of all displayed data
-  Continuous updating of the data as soon as the PROmanage® NT data collector writes new values to the PROmanage® NT database
-  Navigation in the view (**Navigation in the view**)
-  Marker options (**Marker**)
-  Reset the zoom to the entire period according to the navigation overview
-  Zoom option
-  Point selection

Navigation in the view

Options:

Left-click and hold > Move the graph (horizontal axis)

Scroll mouse wheel > Zoom in / out of the graph

Point selection > Data point selected / not selected > Display in summary

Marker

Markers are used to add further information to the displayed graph. The marker is linked to the time at which it was created.



Activate the marker function (automatic update is deactivated)



Showing and hiding the markers



Removing markers

Selecting the marker type

Example: Marking an event in the status graph.

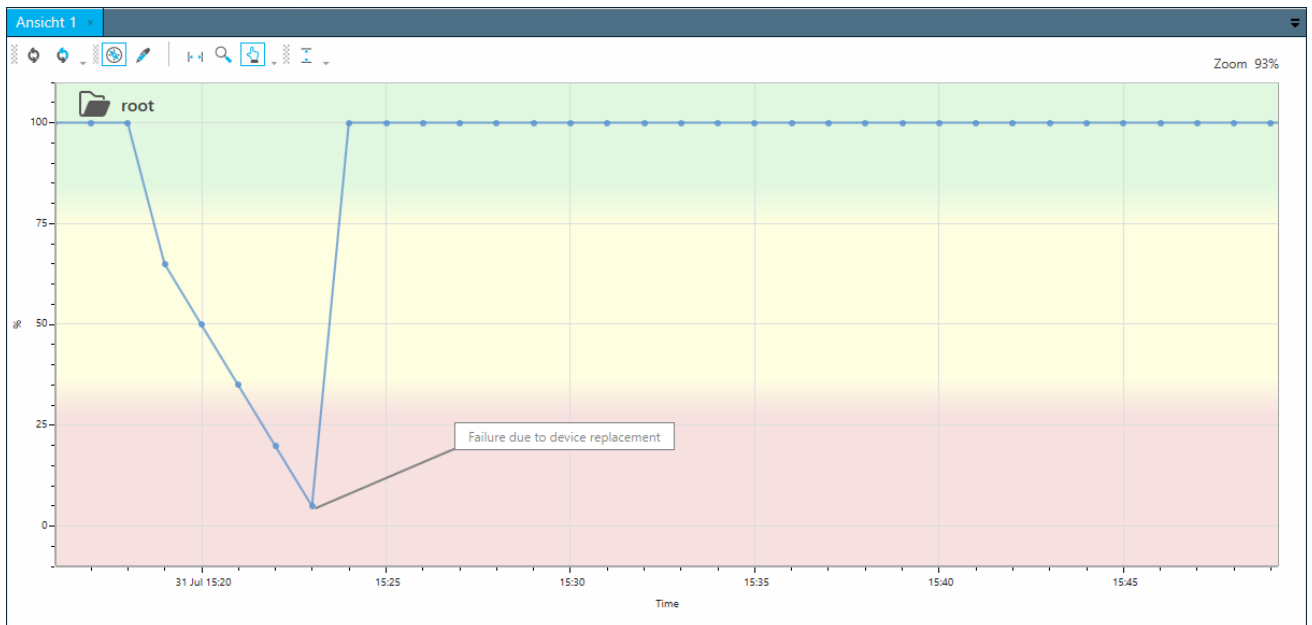


Illustration 16 Example marker

Point selection

If a point is selected, the exact values of the vertical scale are displayed next to the cursor. The selection also determines the display in the summary.

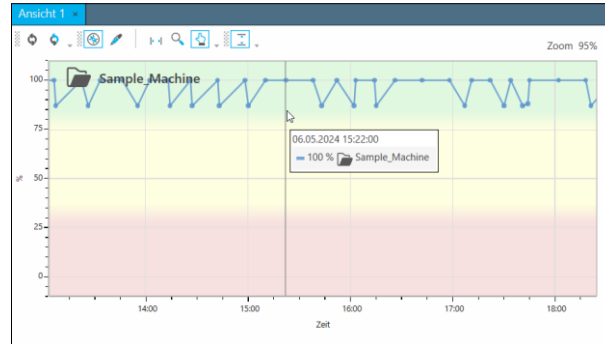


Illustration 17 Selection of a data point

Axes

The horizontal axis always represents the time scale and is given in minutes, hours or days.



Illustration 18 Scaling x-axis

Depending on the selection in the *navigation overview*, the vertical axis displays either a quality value as a percentage or the specific value of the selected element as a summary of several summarised parameters.

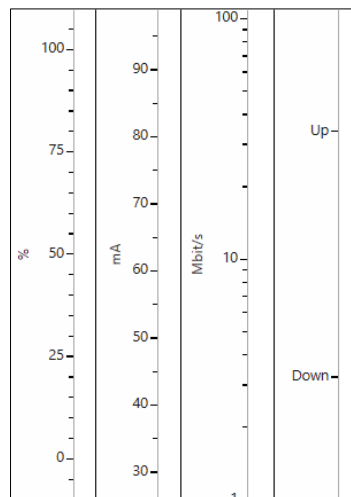


Illustration 19 Scaling y-axis

7.4 Summary

The summary shows all parameters that are summarised in the view to form a data point and form the graph. Which values are displayed depends on which element is selected in the *network overview* (7.2 Network overview) is selected and which time range is displayed in the *view*.

Time domain

If no individual data point is selected, the values of all data points are summarised and listed. The top line shows which period is actually shown in the table.



Illustration 20 Time range without selected data point

When a data point is selected, the values at this point in time are displayed. In this case, the time period is one minute.



Illustration 21 Time range with selected data point

Representation of the values

Which values are displayed in the table depends on the selection in the *network overview*. The worst value is displayed first and in red in the table.

Example:

PROmesh P10X Switch

Summary						
08.08.2024 12:00 – 08.08.2024 13:00 ~ 1 hour						
Name	Min	Max				
Shielding Current Peak (max) (mA)	27	118				
Power supply (V)	23,77	23,79				
Power supply 2 (V)	0	0				
Unavailability counter	0	0				
Shielding Current RMS (max) (mA)	16	21				
Device temperature (°C)	38	38				
Name	Worst	Discal	Errors	Spec	Netw	
Port 1 (TX)	100	0	0	100	0,02	
Port 2 (TX)	100	0	0	100	0,4	
Port 3 (TX)						
Port 4 (TX)						
Port 5 (TX)	100	0	0	100	0,37	
Port 6 (TX)						
Port 7 (TX)						
Port 8 (TX)						
Port 9 (TX)						
Port 10 (TX)						

Illustration 22Zsfg. PROmesh

Example:

PROFINET INspector®

Summary			
08.08.2024 10:35 – 08.08.2024 11:05 ~ 30 minutes			
Name	Min	Max	
Unavailability counter	0	1	
High priority alert	0	0	
Low priority alert	0	0	
Bus node failure	0	0	
Releases	0	0	
Bus node restart	0	0	
Errors	0	0	
Telegram gaps	0	0	
Load ratio (Profinet / 1 IP)	1	500	
Telegram overtakes	0	0	
Telegram jitter (%)	6	8	
Device temperature (°C)	53	53	
Broad and Multicast telegrams	56	77	
Update rate (max) (ms)	130,51	138,69	
Update rate (min) (ms)	2	2	
Network load (max) (%)	0	0	
Network load (%)	0	0	

Illustration 23Zsfg. PROFINET INspector® NT

Example:

Selected folder

Summary		
08.08.2024 11:30 – 08.08.2024 11:55 ~ 25 minutes		
Name	Worst	
promesh-p10x (%)	87	
promesh-p10-plus (%)	100	
promesh-p10-plus-2 (%)	100	

Illustration 24Zsfg. of selected folders

Selection

Double-click on a value to open a new *view* in which this value is displayed as a graph.

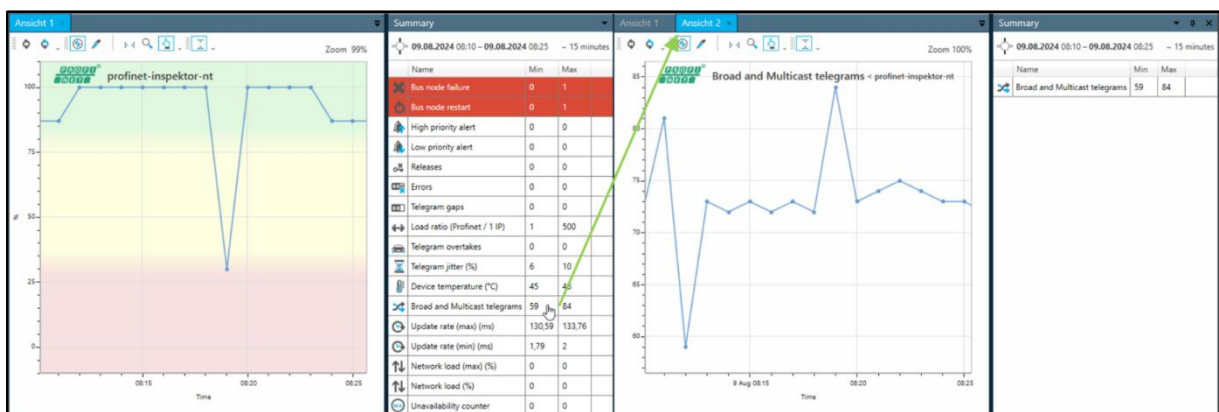


Illustration 25Selection of a value

7.5 Navigation overview

The navigation overview is used to set the time range to be displayed and evaluated. A maximum time range of 7 days is displayed. The time can be set automatically or manually (selection in the top right-hand window).

The selection "Auto." (Automatic) sets the time range so that the last recorded data point is displayed and up to 7 days before that. If there are fewer data points available, the time range is automatically selected shorter according to the available data points.

When setting manually, a date can be selected using the keyboard or the calendar symbol. This date then represents the centre of the time range. Grey horizontal lines are visible on the left and right, which can be moved by holding the left mouse button and dragging. In the *View* view (7.3 View) and *Summary* (7.4 Summary), the time range that is shown in white in the navigation overview is always displayed.

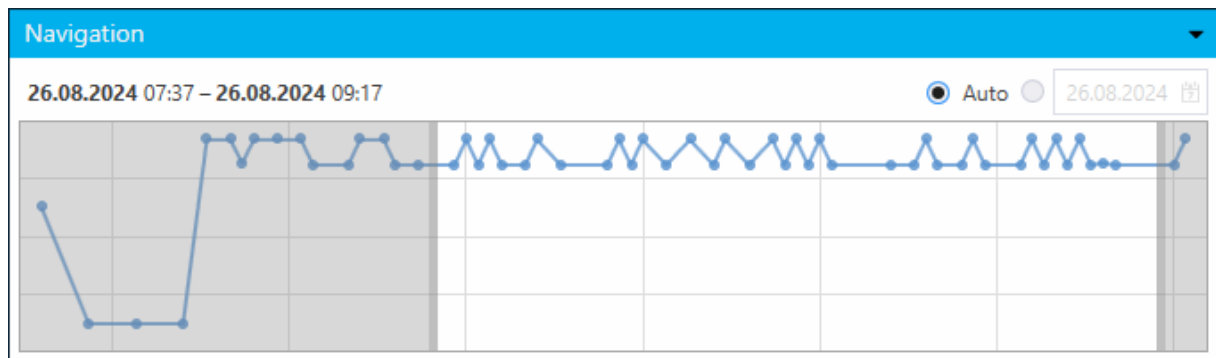


Illustration 26 Navigation overview

7.6 Participant matrix

The *device matrix* is only available for devices that provide additional information on monitored devices (e.g. from PROFIBUS-INspektor NT, PROFINET-INspektor NT, ...).

The overview shows the addresses that are monitored by the device. The device matrix of the PROFINET INspektor® NT is shown as an example:

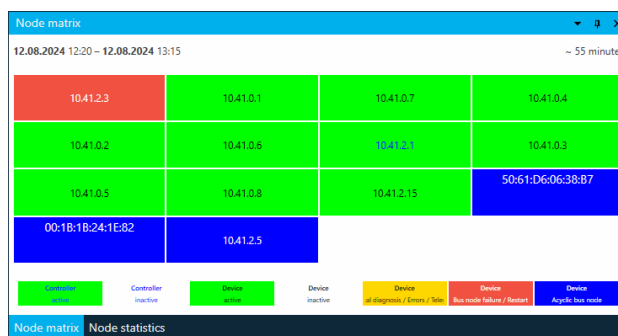


Illustration 27 Participant matrix PROFINET INspektor® NT

The condition of the devices can be read from the colouring of the participants.

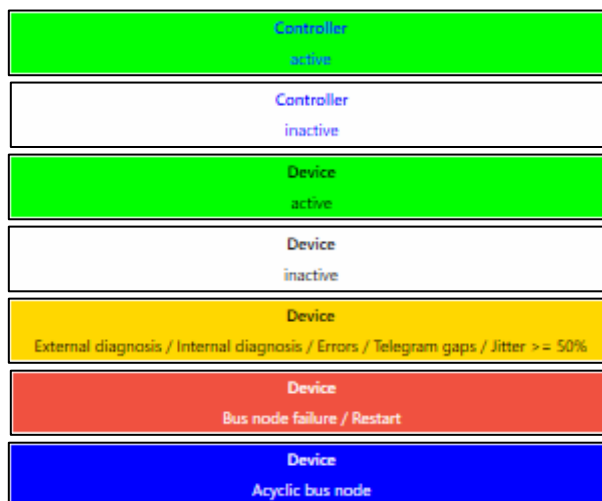


Illustration 28 Colouring PROFINET INspektor® NT

The detailed information is displayed by moving the mouse cursor over the participants.

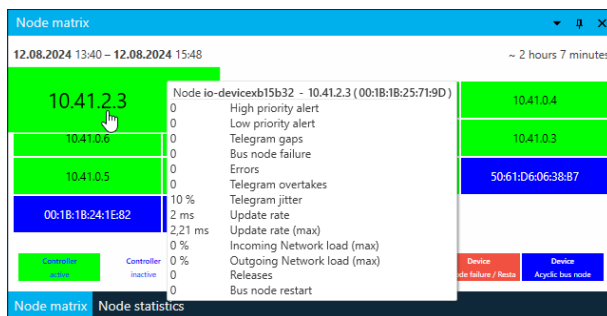


Illustration 29Details PROFINET INspektor® NT

Participant statistics

The participant statistics are a *view* (Arrangement of the viewing window), which in the default setting is linked to the *subscriber matrix* (7.6 Participant matrix) in the default setting. This can be displayed by selecting it in the bottom line of the group.

A parameter is selected in the upper section via a *drop-down* menu. Below this, the monitored participants are listed, their values and a bar chart are displayed. This *view* illustrates which subscriber is most frequently affected or has the greatest deviation.

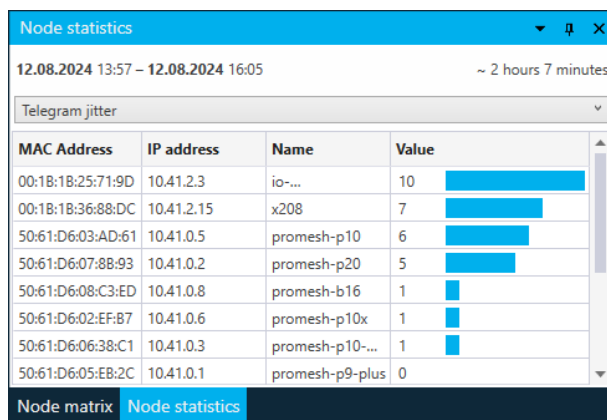


Illustration 30Participant statistics PROFINET INspektor® NT

7.7 Legend

By selecting up to four folders, devices or parameters in the *network overview* (7.2 Network overview), their graphs can be displayed in the *view* (7.3 View) can be displayed on top of each other. This makes it possible to recognise connections between graphs.

The legend describes which colour is assigned to which selection.

By additionally activating the *point selection* (**Point selection**) further improves the clarity and comprehensibility of the correlations between the values.

With multiple selection, you can choose between the graphs in the *view* using the arrow buttons at the top right. The selection determines which graph moves to the foreground and is displayed in the summary.

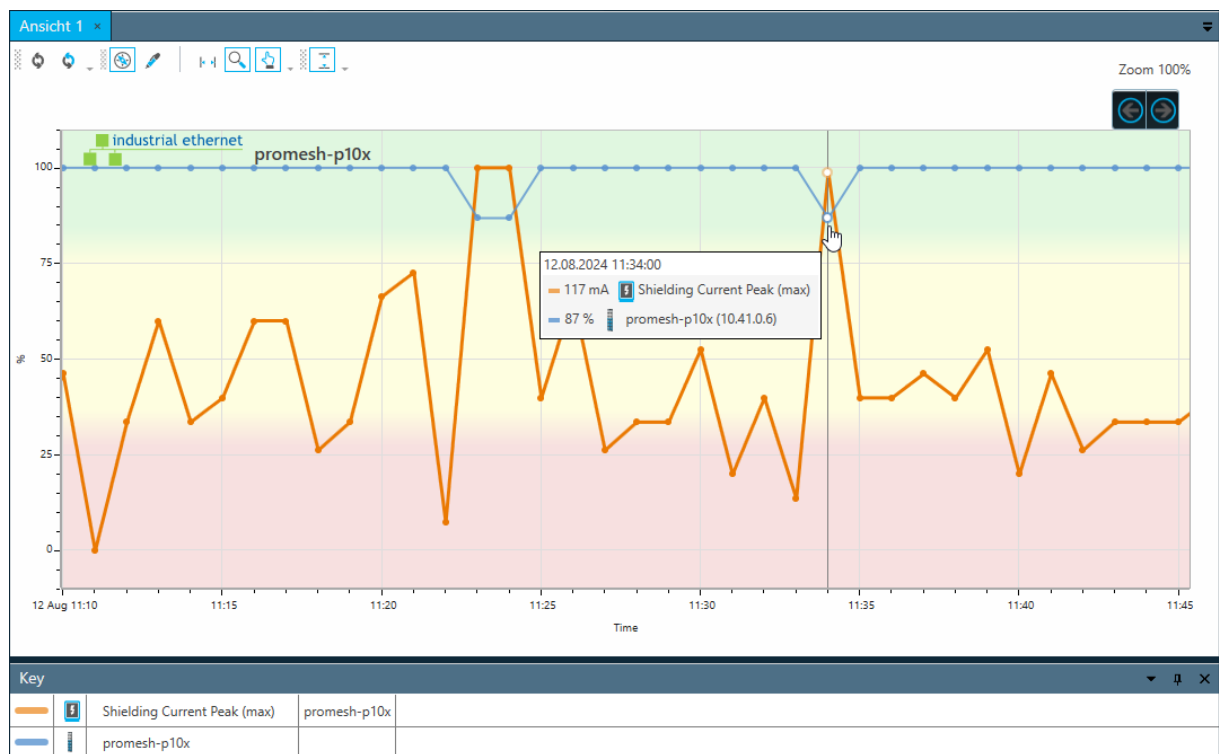


Illustration 31 Legend

8 Topology

8.1 Representation

The *Topology* perspective is used to visualise the current, actual network structure. The topology is supplemented with network-relevant information that helps to localise anomalies quickly. The topology cannot be determined independently by PROmanage NT. It can either be imported manually (topo file from PROscan® Active V2 or PROFINET INSpektor® NT) or continuously queried by a PROFINET INSpektor® NT or PROscan® service.

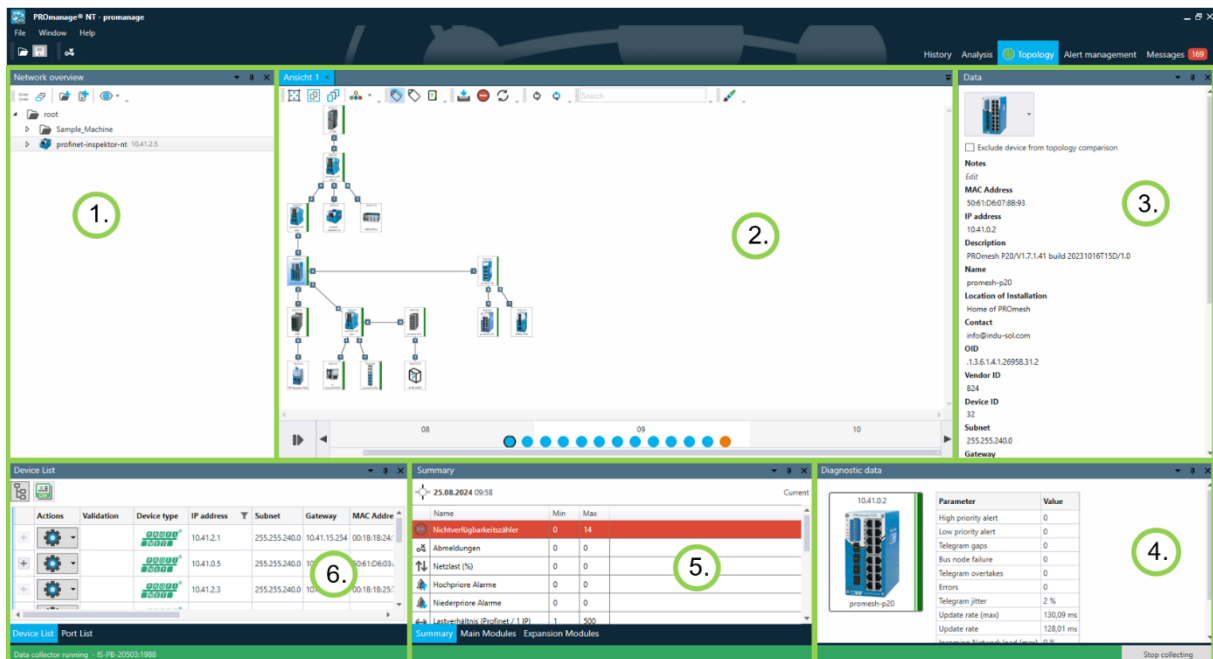


Illustration 32Topology

1. Network overview (8.2 Network overview)
 - Same presentation as in *analysis* (7.2 Network overview)
 - Topologies are always assigned to an element of the *network overview*
2. View (8.3 View)
 - Displaying and editing the topology
 - Visualisation of changes and events in the topology
 - Timeline for displaying the scan times
3. Data (add links for subitems)
 - When selecting a device: Display of the device information
4. Diagnostic data
 - When selecting a device: Display of the information of the PROFINET INSpektor® NT that monitors this device

5. Summary
 - Information about the PROFINET INspector® NT
6. Device list
 - Tabular listing of detailed device information

Arrangement of the viewing window

Identical, as in *analysis* ([Arrangement of the viewing window](#)).

8.2 Network overview

The network overview is identical to the *analysis* (7.2 Network overview). In the *Topology* perspective, the network overview is used to assign the topologies. A manually imported topology can be assigned to any element. Each PROFINET INspector® NT or PROscan® service can be assigned a topology via the device management (11.6 Device management) so that an available topology is retrieved at regular intervals.

8.3 View

The topology is displayed and edited in the *view*. If diagnostic data from the PROFINET INspector® NT is available for PROFINET IO devices, a colour bar indicates the device status.

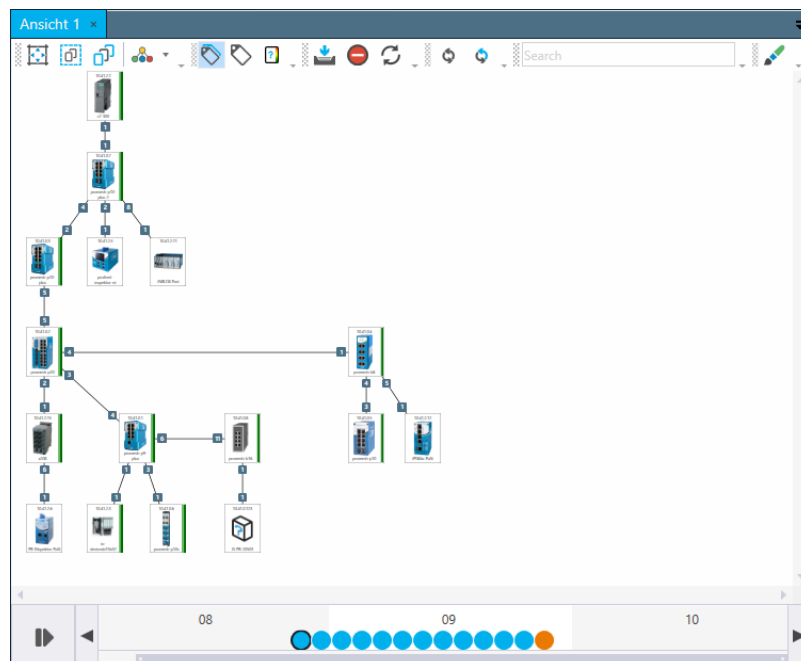
















Illustration 33 Topology view

Control in the topology

Key combination	Behaviour
Mouse wheel	Vertical scrolling
Ctrl + mouse wheel	Zoom in/out
Shift + mouse wheel	Horizontal scrolling

Meaning of the icons - Menu bar



-  Fitting topology into screen
-  Multiple selection with selection frame (hold down the SHIFT key)
-  Multiple selection with mouse click (hold down the CTRL key)
-  Rearrange topology (tree structure, circular tree structure, circle)
-  Show/hide difference to (previous) reference topology
-  Set current topology as reference for comparison
-  Condition assessment from INspektor data (period selection)
-  Import topology
-  Remove topology
-  Rescan topology (immediate topology scan by PROFINET INspektor NT)
-  Refresh (loads the last saved topology into the *view*)
-  Update automatically (as soon as a new topology is available)
-  Search for all values in the device list
-  Switch editing mode on/off

Meaning of the icons - Topology

	Active" status, no events (evaluated by PROFINET INspektor® NT)
	Warning" status, critical events (evaluated by PROFINET INspektor® NT)
	Error" status, failures detected (evaluated by PROFINET INspektor® NT)
	Port change recognised
	Connection interrupted
	Connection newly recognised
	Device newly recognised

Meaning of the icons - Timeline

	Topology data point
	Selected/displayed topology
	Reference topology
	Auto-play topology (every 10 seconds)
	Select next/previous topology data point
	Zoom in timeline

Arrangement of the devices in the topology

The devices in the topology can be reorganised using *drag'n drop*. To do this, the editing mode must first be activated. Activating editing mode can take a while. The arrangement of the topology is transferred to all topology data points.

Right-click on a device to select it as the *root node* and then click on the *Rearrange topology* icon to automatically rearrange the topology.

In edit mode, additional *frames*, *texts* and a *background image* can be added to improve clarity.

Further navigation options: Right-click on device

Right-click on a device to open a drop-down menu.

Go to	selects the device in the <i>network overview</i>
Go to the analysis	opens this device in the <i>analysis</i> perspective
Go to alarm management	opens this device in the <i>alarm management</i> perspective
Set as root node	shows this device at the top, when selecting <i>Rearrange topology</i>

If the device is not entered in the network overview, only the *Set as root node* selection is available.

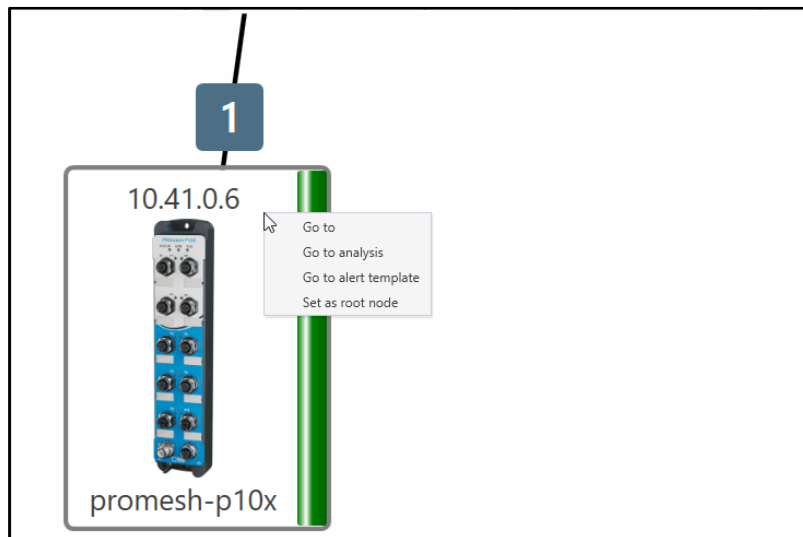


Illustration 34 Navigation options - right-click on device

8.4 Data

When a device is selected in the *view*, all device-relevant information is displayed in the *Data* view.

A different image for the device can be selected via the *drop-down* menu next to the device image. If there is no suitable device in the image database, a new image can be imported via the menu bar *File* → *Device identification management* or *Ctrl+P* (11.7 Device Identification management).

By selecting *Exclude device from topology comparison*, this device is no longer displayed in red if it is no longer present in a later topology data point.

If changes in the port assignment are detected when comparing the displayed and reference topology, an additional information field appears.

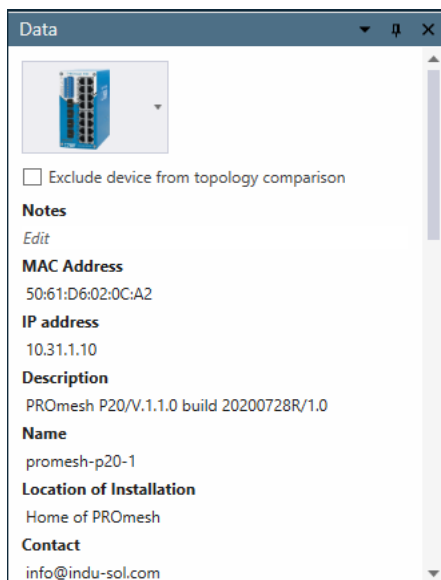


Illustration 35 Topology Device data

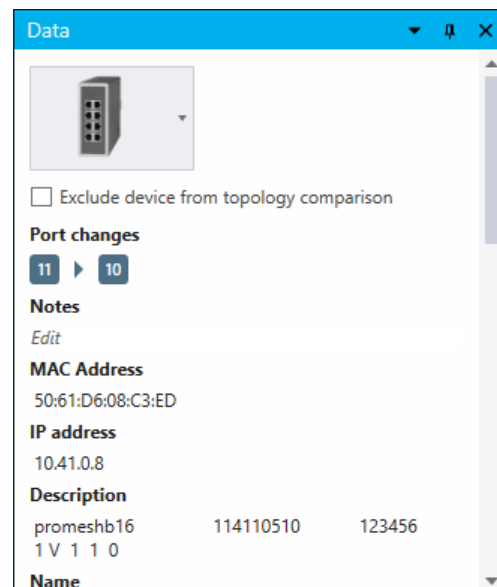


Illustration 36 Topology Device data Port change

8.5 Diagnostic data

When a device is selected in the *view*, PROFINET-specific parameters are displayed in the *Diagnostic data* view. The data can only be displayed if the topology contains data from the PROFINET INSpektor® NT.



- CRC errors were detected on the subscriber.**
 - check plug connector (possibly loose contact)
 - carry out cable test (only possible during a system stop)
 - check shield currents and mesh resistances
- Device reports internal error.**
 - check diagnostics in the master (error register/alarms)
 - check device/power supply/cabling, restart/replace if necessary
- Invalid version/parameter reference (VPRS).**
 - Vendor ID, product code, revision number, or serial number invalid
 - load appropriate project/device version
- Port unused / no medium.**
 - expected connection present?
 - if necessary, establish topology/connection
- Link is up, but there is no EtherCAT traffic.**
 - Is the remote station in the correct state (Operational)?
 - check master/scan/project
- Expected connection missing.**
 - close topology/cabling
 - rule out defective cable/port
- Unexpected additional connection detected.**
 - remove duplicate/faulty cabling
 - use ring/redundancy only as per project requirements
- Physical connection interrupted.**
 - check connector/cable
 - test port/remote device



Parameter	Value
Abnormal changes	0
Present changes	0
Device state, Communication phase	Operational
Device state	Device state, State machine error Device state, Invalid device IDs
Link state	Link state, No communication Link state, Link without communication Link state, Missing link Link state, Additional link Link state, Error at port A Link state, Error at port B Link state, Error at port C
CRC error port A	1
CRC error port B	1
CRC error Port C	1
CRC error port D	1
Link state, No communication	1
Link state, Link without communication	1
Link state, Missing link	1
Link state, Additional link	1
Link state, Port A	1
Link state, Port B	1
Link state, Port C	1
Link state, Port D	0
Device state, Error	1
Device state, Invalid device IDs	1
Device state, Initialize error	0

Illustration 37: Topology diagnostic data

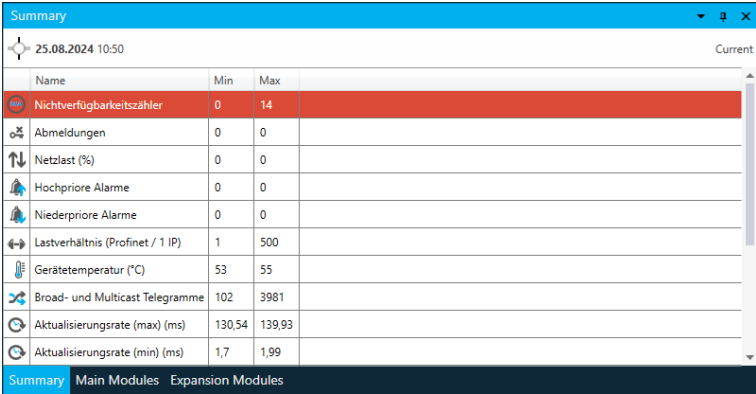
Topology

As the diagnostic data is queried independently of the topology, the user can flexibly select the time range here. Depending on the selection made, the diagnostic data is then visualised based on the corresponding time range.

Last 24 Hours ▾	Diagnostic data from the last 24 hours
Last topology to now ▾	Diagnostic data since the last retrieved topology until now
Selected Topology to now ▾	Diagnostic data since the selected topology until now
Last reference to selected topology ▾	Diagnostic data since the last reference topology up to the currently selected topology
Last reference to now ▾	Diagnostic data since the last reference topology until now
Custom ▾ 23.12.2024 14:35 ⌵ 14.10.2025 13:46 ⌵ Apply	Diagnostic data in a user-defined time range (accurate to the minute)

8.6 Summary

The *summary* shows network-relevant parameters. The data is presented in the same way as in the *Analysis* perspective in the *Summary* view (7.4 Summary). Therefore, the selection in the *network overview* (folder, device, ...) determines which data is displayed. The time from the currently displayed topology to the previous one is automatically set as the time period for the display. The evaluated time period can be read in the second line of the *view*.

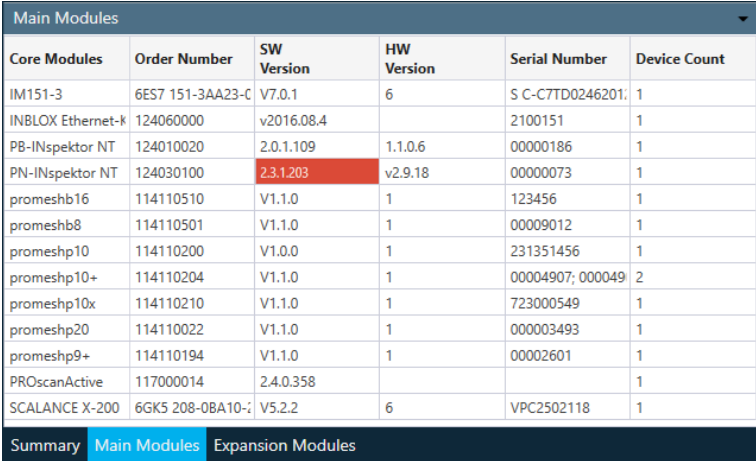


Name	Min	Max
Nichtverfügbarkeitszähler	0	14
Abmeldungen	0	0
Netzlast (%)	0	0
Hochpriorie Alarme	0	0
Niederpriorie Alarme	0	0
Lastverhältnis (Profinet / 1 IP)	1	500
Gerätetemperatur (°C)	53	55
Broad- und Multicast Telegramme	102	3981
Aktualisierungsrate (max) (ms)	130,54	139,93
Aktualisierungsrate (min) (ms)	1,7	1,99

Illustration 38 Summary (topology)

Main modules

The *Main modules* view is *summarised* into a group in the default setting and can be selected in the bottom bar. It is used to display all relevant information required to recognise differences in versions of identical devices. Devices of the same type but with different software versions are highlighted in red.

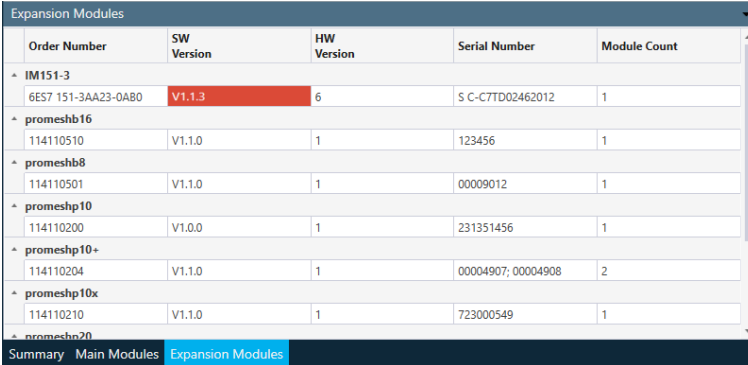


Core Modules	Order Number	SW Version	HW Version	Serial Number	Device Count
IM151-3	6ES7 151-3AA23-C	V7.0.1	6	S C-C7TD0246201	1
INBLOX Ethernet-k	124060000	v2016.08.4	1.1.0.6	2100151	1
PB-INspektor NT	124010020	2.0.1.109	1.1.0.6	00000186	1
PN-INspektor NT	124030100	2.3.1.203	v2.9.18	00000073	1
promeshb16	114110510	V1.1.0	1	123456	1
promeshb8	114110501	V1.1.0	1	00009012	1
promeshp10	114110200	V1.0.0	1	231351456	1
promeshp10+	114110204	V1.1.0	1	00004907; 000049	2
promeshp10x	114110210	V1.1.0	1	723000549	1
promeshp20	114110022	V1.1.0	1	000003493	1
promeshp9+	114110194	V1.1.0	1	00002601	1
PROscanActive	117000014	2.4.0.358	6	VPC2502118	1
SCALANCE X-200	6GK5 208-0BA10-	V5.2.2	6	VPC2502118	1

Illustration 39 Main modules (topology)

Extension modules

The *Extension modules* view is also used to recognise differences in versions of identical devices and refers to modules that are subordinate to the main module.

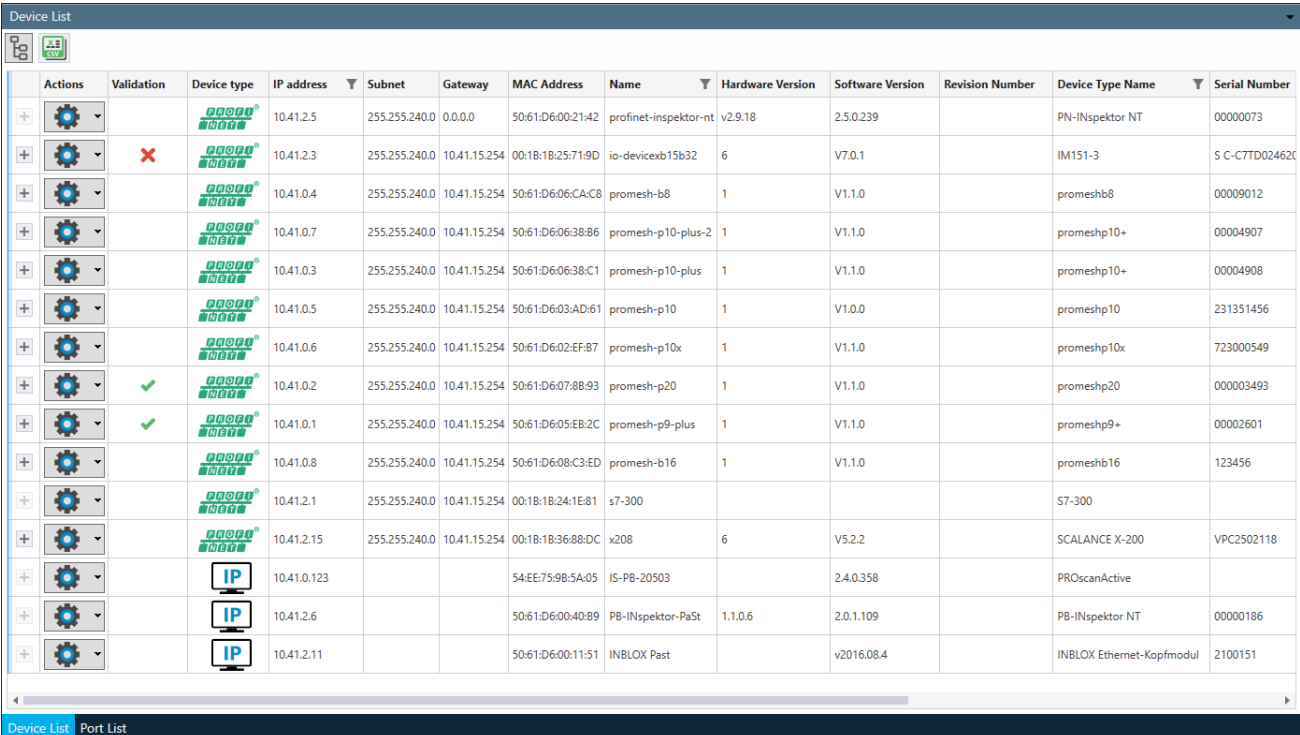


Order Number	SW Version	HW Version	Serial Number	Module Count
IM151-3				
6ES7 151-3AA23-0AB0	V1.1.3	6	S C-C77D02462012	1
promeshb16				
114110510	V1.1.0	1	123456	1
promeshb8				
114110501	V1.1.0	1	00009012	1
promeshp10				
114110200	V1.0.0	1	231351456	1
promeshp10+				
114110204	V1.1.0	1	00004907; 00004908	2
promeshp10x				
114110210	V1.1.0	1	723000549	1
promeshp20				

Illustration 40 Summary (topology)

8.7 Device list









In the *device list*, all devices contained in the topology are listed in a table and their device-specific information is listed.



Actions	Validation	Device type	IP address	Subnet	Gateway	MAC Address	Name	Hardware Version	Software Version	Revision Number	Device Type Name	Serial Number
+			10.41.2.5	255.255.240.0	0.0.0.0	50:61:D6:00:21:42	profinet-inspektor-nt	v2.9.18	2.5.0.239		PN-INspektor NT	00000073
+	✗		10.41.2.3	255.255.240.0	10.41.15.254	00:1B:1B:25:71:9D	io-deviceb15b32	6	V7.0.1		IM151-3	S C-C77D02462012
+			10.41.0.4	255.255.240.0	10.41.15.254	50:61:D6:06:CA:C8	promesh-b8	1	V1.1.0		promeshb8	00009012
+			10.41.0.7	255.255.240.0	10.41.15.254	50:61:D6:06:38:B6	promesh-p10-plus-2	1	V1.1.0		promeshp10+	00004907
+			10.41.0.3	255.255.240.0	10.41.15.254	50:61:D6:06:38:C1	promesh-p10-plus	1	V1.1.0		promeshp10+	00004908
+			10.41.0.5	255.255.240.0	10.41.15.254	50:61:D6:03:AD:61	promesh-p10	1	V1.0.0		promeshp10	231351456
+			10.41.0.6	255.255.240.0	10.41.15.254	50:61:D6:02:EF:B7	promesh-p10x	1	V1.1.0		promeshp10x	723000549
+	✓		10.41.0.2	255.255.240.0	10.41.15.254	50:61:D6:07:88:93	promesh-p20	1	V1.1.0		promeshp20	000003493
+	✓		10.41.0.1	255.255.240.0	10.41.15.254	50:61:D6:05:EB:2C	promesh-p9-plus	1	V1.1.0		promeshp9+	00002601
+			10.41.0.8	255.255.240.0	10.41.15.254	50:61:D6:08:C3:ED	promesh-b16	1	V1.1.0		promeshb16	123456
+			10.41.2.1	255.255.240.0	10.41.15.254	00:1B:1B:24:1E:81	s7-300				S7-300	
+			10.41.2.15	255.255.240.0	10.41.15.254	00:1B:1B:36:88:DC	x208	6	V5.2.2		SCALANCE X-200	VPC2502118
+			10.41.0.123			54:EE:75:98:5A:05	IS-PB-20503		2.4.0.358		PRScanActive	
+			10.41.2.6			50:61:D6:00:40:89	PB-INspektor-PaSt	1.1.0.6	2.0.1.109		PB-INspektor NT	00000186
+			10.41.2.11			50:61:D6:00:11:51	INBLOX Past		v2016.08.4		INBLOX Ethernet-Kopfmodul	2100151

Illustration 41 Device list

Meaning of the icons - Device list

-  Shows devices from the last topologies of all selected devices/folders
-  Export as CSV file
-  Display of associated extension modules
- Actions**
-  Drop down:
 - Display device in topology
 - Open the website of the device in the web browser (only if IP address available)
- Validation**
-  No validation rule applicable
-  Validation rules fulfilled
-  Validation rules violated
-  Filter column

Device validation

Via the *menu bar* → *Topology Device validation* (11.8 Topology device validation), rules can be described which characterise the criteria for selected devices as valid or invalid.

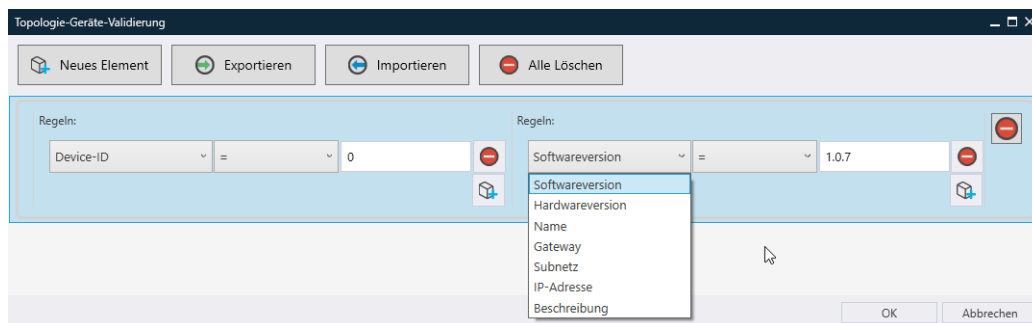


Illustration 42 Configuration Topology Devices Validation

Filters and sorting

Use the key combination *Ctrl + F* to open a search field at the top to search for any values in the table.

The table can be filtered using the filter symbol in the first line, either by selecting existing IP addresses or by describing filter rules.

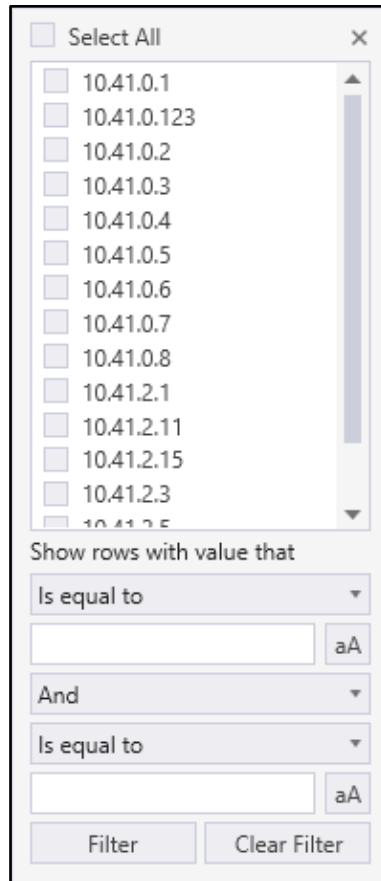


Illustration 43 Filter device list

Right-click on a column in the top row to sort the table in ascending or descending order.

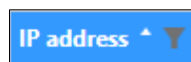
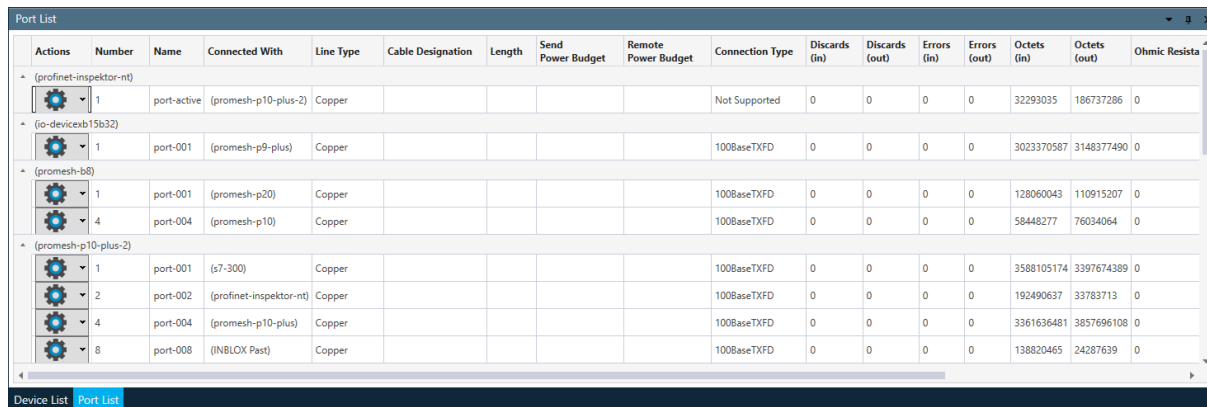


Illustration 44 Column sorting

Port list

The *port list* is a *view* (Arrangement of the viewing window), which is grouped with the *device list* in the default setting. It can be displayed by selecting it in the bottom line of the group.

The table shows all ports that can be queried in the network and their values, with information on connection type, properties and quality.



Actions	Number	Name	Connected With	Line Type	Cable Designation	Length	Send Power Budget	Remote Power Budget	Connection Type	Discards (in)	Discards (out)	Errors (in)	Errors (out)	Octets (in)	Octets (out)	Ohmic Resista
+ (profinet-inspektor-nt)																
	1	port-active	(promesh-p10-plus-2)	Copper					Not Supported	0	0	0	0	32293035	186737286	0
+ (io-devicexb15b32)																
	1	port-001	(promesh-p9-plus)	Copper					100BaseTXFD	0	0	0	0	3023370587	3148377490	0
+ (promesh-b8)																
	1	port-001	(promesh-p20)	Copper					100BaseTXFD	0	0	0	0	128060043	110915207	0
	4	port-004	(promesh-p10)	Copper					100BaseTXFD	0	0	0	0	58448277	76034064	0
+ (promesh-p10-plus-2)																
	1	port-001	(s7-300)	Copper					100BaseTXFD	0	0	0	0	3588105174	3397674389	0
	2	port-002	(profinet-inspektor-nt)	Copper					100BaseTXFD	0	0	0	0	192490637	33783713	0
	4	port-004	(promesh-p10-plus)	Copper					100BaseTXFD	0	0	0	0	3361636481	3857696108	0
	8	port-008	(INBLOX Past)	Copper					100BaseTXFD	0	0	0	0	138820465	24287639	0

Illustration 45Port list

Use the key combination *Ctrl + F* to open a search field at the top to search for any values in the table.

9 Alarm management

Alarm management is used for the organised notification of different users. Alarms can relate to different areas (9.2 **Network overview**) or due to different events (9.3 **Available parameters**), notifying different groups of people (9.4 Available actions).

9.1 Presentation

In the *alarm management* perspective, threshold values are defined and scenarios are developed on how to react to events in monitored networks.

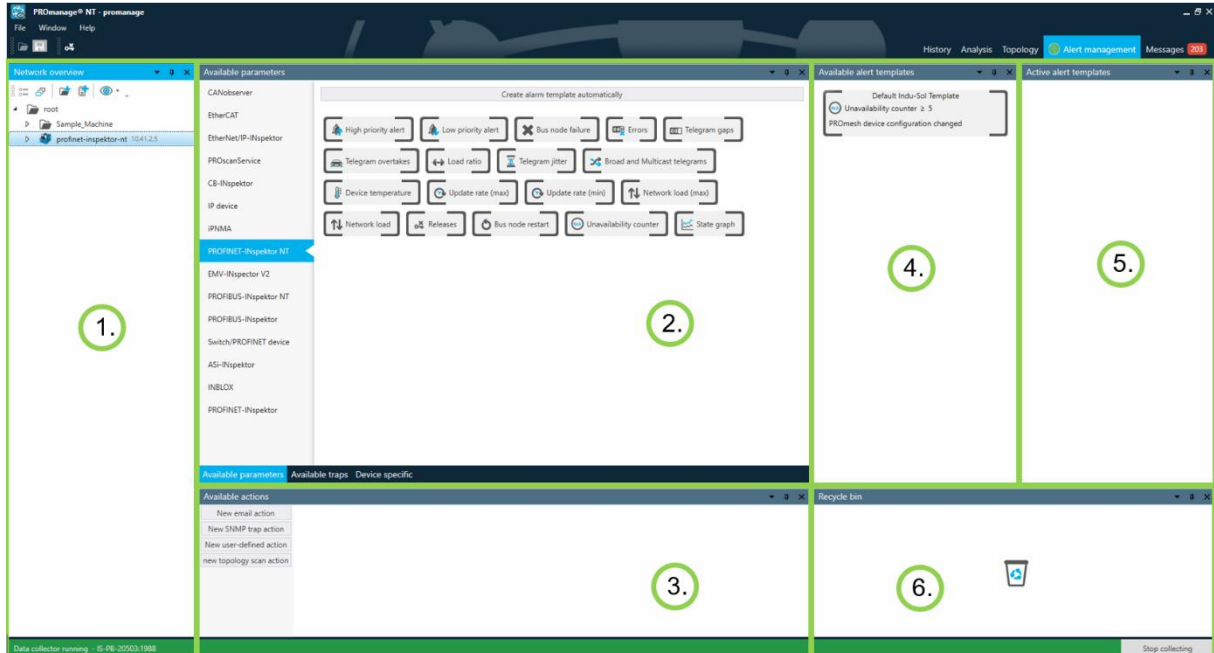


Illustration 46 Alarm management

Configuration of an alarm

1. Selection of a device or folder for which an alarm is to be created
(9.2 Network overview)
2. Selection of a device type, display of the threshold values suitable for the device type
 - Drag'n drop available threshold values into *available alarm templates*
(9.3 Available parameters)
3. Selecting an action
 - Drag'n drop available actions into *available alarm templates*
(9.4 Available actions)
4. Grouping threshold values and actions into an *alarm template*
(9.5 Available alarm templates)
5. Display of active alarm templates
6. Deleting active alarm templates

Arrangement of the viewing window

Identical, as in *analysis* ([Arrangement of the viewing window](#)).

9.2 Network overview

Alarm templates always apply to a device or folder. The available alarm templates relate to the current selection in the network overview. To create an alarm template, an element of the network overview must first be selected.

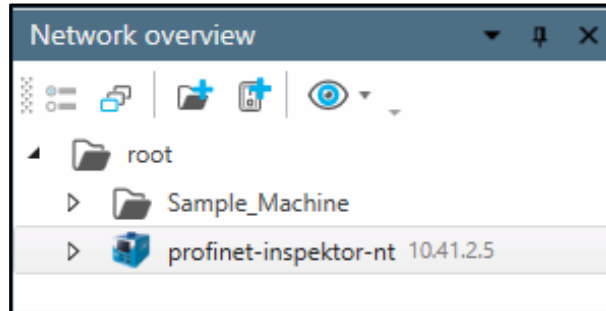


Illustration 47 Alarm management network overview

9.3 Available parameters

Depending on the selection of a device type (left), the available parameters for the selected device are displayed (centre). By left-clicking, drag'n drop, threshold values can be transferred to the Available alarms view (right). There they can be summarised into groups or several templates can be created, depending on where the transferred threshold value is stored.

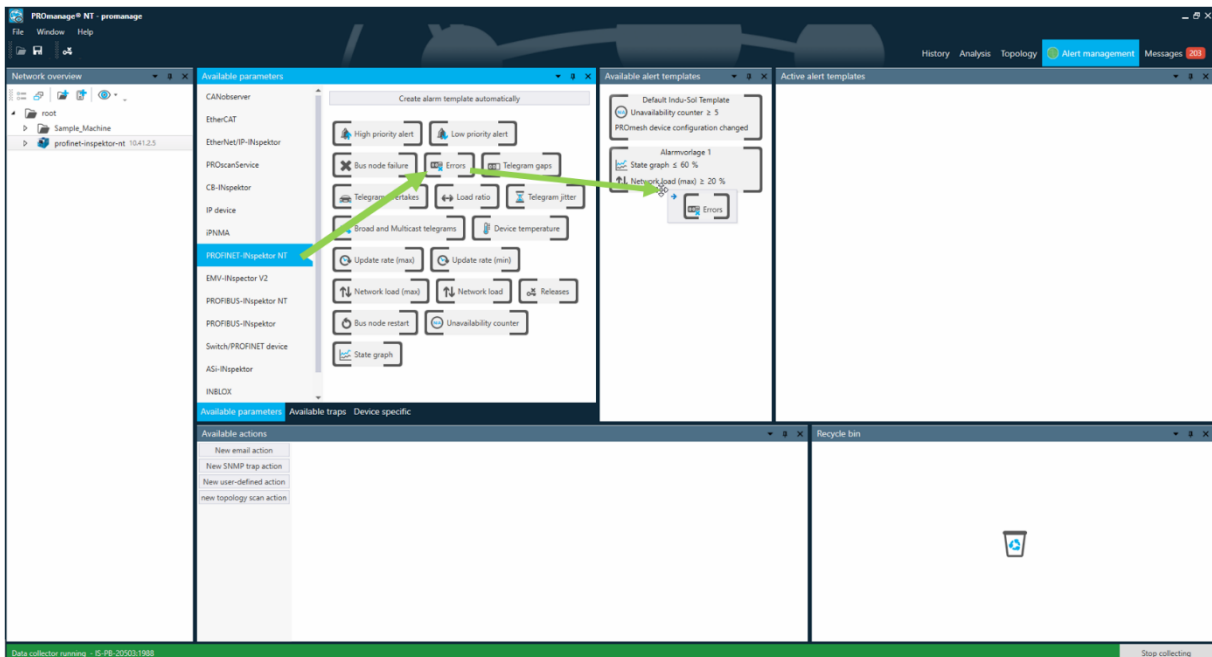


Illustration 48 Creating alarm templates

9.4 Available actions

If no action is selected, alarms are triggered when threshold values are exceeded in the *active alarm templates* (9.6 Active alarm templates) under *Notifications* (10 Notification). If a message is to leave the system, actions can be preconfigured in *Available actions*.

Create a new action

Left-click on a *New ... action* to open a dialogue to assign parameters for the action.

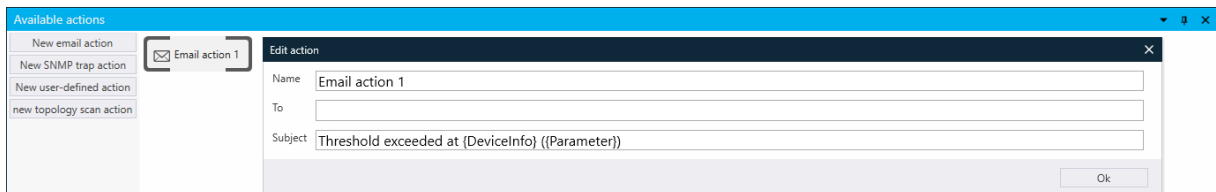


Illustration 49 Creating an alarm action

Configuring a new action

Depending on the action, other parameters must be specified or requirements observed.

<div style="border: 1px solid #ccc; background-color: #f0f0f0; padding: 5px; margin-bottom: 10px; text-align: center;">New email action</div>	<p>Sends an e-mail to one or more recipients. Additional recipients are separated by spaces.</p> <p>Prerequisite: Setting SMTP (11.10.1.1 E-mail server configuration)</p> <p>Multiple recipients by separating the addresses with spaces</p>
<div style="border: 1px solid #ccc; background-color: #f0f0f0; padding: 5px; margin-bottom: 10px; text-align: center;">New email action</div>	<p>Sends an SNMP trap to a trap receiver.</p> <p>Test under Settings (11.10.1.2 SNMP trap receiver)</p>
<div style="border: 1px solid #ccc; background-color: #f0f0f0; padding: 5px; margin-bottom: 10px; text-align: center;">New user-defined action</div>	<p>Starts an application on the PC.</p> <p>Test under Settings (11.10.1.3 User-defined action)</p>
<div style="border: 1px solid #ccc; background-color: #f0f0f0; padding: 5px; text-align: center;">new topology scan action</div>	<p>Starts a topology scan by a PROFINET INspector NT.</p> <p>Can only be configured for PROFINET INspector NT or PROscan Service.</p>

Apply a new action

Prepared and configured actions are transferred to *available alarm templates* via *drag'n drop*.

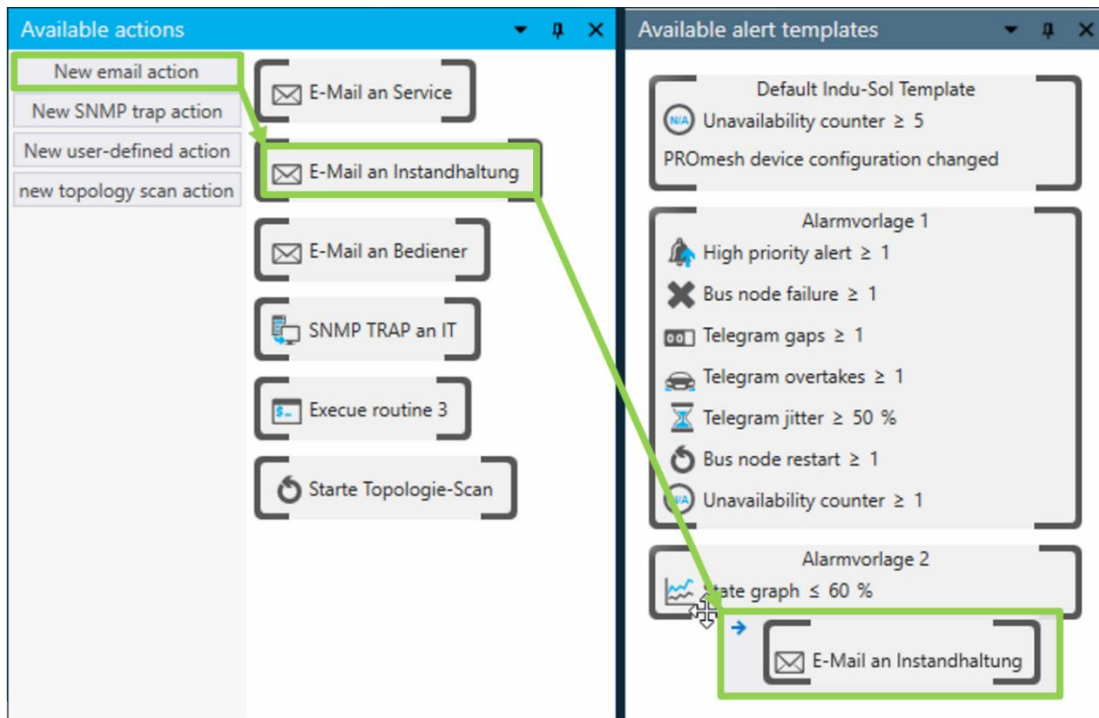


Illustration 50 Linking alarm actions and alarm triggers

Inserting a Telegram Bot

First, you need a Telegram account. To do this, download the Telegram app from <https://telegram.org/> or from the Play Store (Android) or App Store (iOS). A valid phone number is required to create your account. Choose a name (real name or pseudonym) and complete the account setup.

To create a Telegram bot, we will use the service "BOTFATHER" in this guide. On the same device where you created your Telegram account, open a browser of your choice and visit <https://telegram.me/botfather>. This should (either automatically or by clicking the "Start Bot" button) open your Telegram app.

Click on "Start". Botfather will provide you with a list of commands to manage your bots. You can either type these commands yourself or click them directly in the message from Botfather.

Create your first bot using the command `/newbot`. Botfather will guide you through the setup. You will need to give your bot a name and a unique username. The name can be anything, but the username must end with "Bot".

Example:

Name: TelegramProManage

Username: ProManageBot

Done! You have created your first Telegram bot!

In the message you received, you will find a token. Never share this token with others. This token allows control of and access to messages from your bot. Store it securely.

You can access your bot via the link at the top of the message. In the bot's chat, click "Start".

To retrieve the chat ID required by ProManage to send you messages, enter the following link in a browser:

<https://api.telegram.org/bot<YourToken>/getUpdates>

Replace <YourToken> with the token you received from Botfather. Visit this URL.

You should now see a text output in your browser that looks something like this:

```
{"ok":true,"result":[{"update_id":115822816,"message":{"message_id":3,"from":{"id":6972774780,"is_bot":false,"first_name":"Max","last_name":"Mustermann"},"chat":{"id":<this_is_the_chat_id>,"title":"BotTest","type":"supergroup"},"date":1710496169,"text":"test"}}]}
```

The bold and highlighted part is your chat ID. Copy and store this number securely.

Now we have all the data needed to activate the Telegram bot in ProManage.

Go back to ProManage and navigate to: Alarm Management → Available Actions → New Telegram Action.

Give your action a name and fill in the fields for Bot Token and Chat ID.

Confirm with "OK". Your Telegram action should now appear under Available Actions.

9.5 Available alarm templates

The view shows prepared alarm templates that are not yet active.

By adding further threshold values (9.3 **Available parameters**) or actions (9.4 Available actions) in an existing alarm template, these are bundled into groups. Depending on where the parameter is stored in the view, a new template is created or an existing template is extended by that parameter. In this way, templates can be created for different alarm strategies.

The values of the element can be configured by *left-clicking* on the name of the template or a parameter.

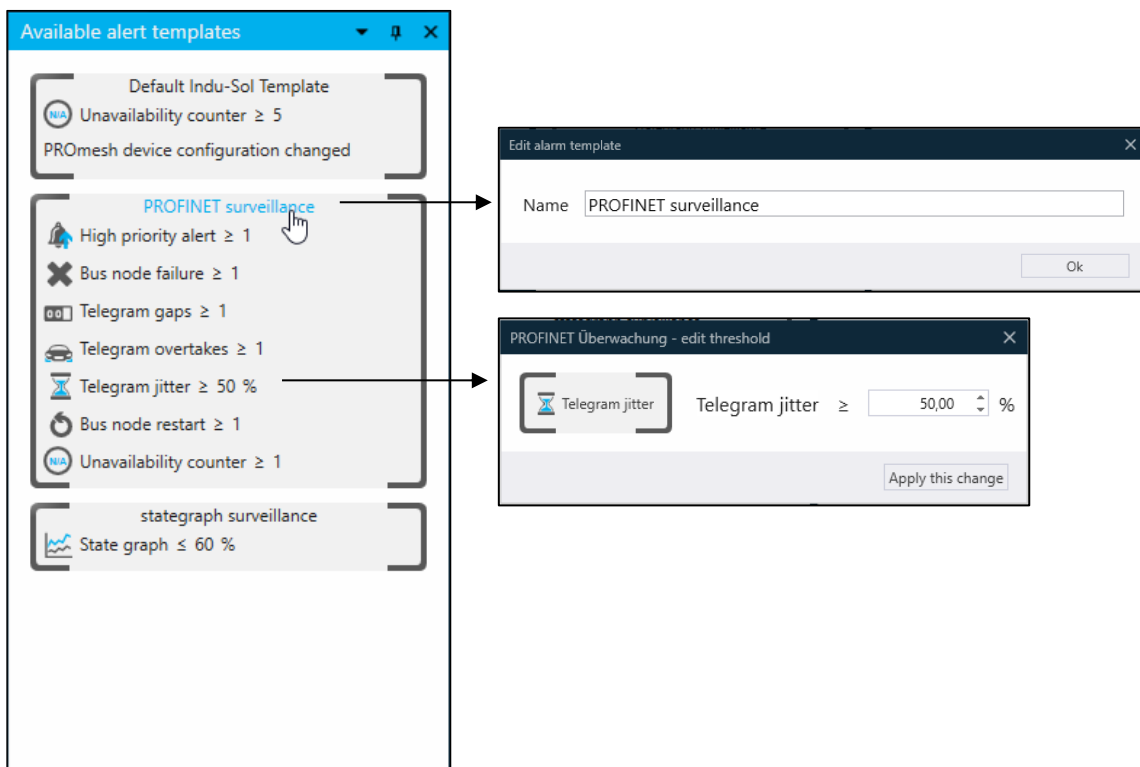


Illustration 51 Edit alarm template

Created templates can be transferred to active alarm templates via drag'n drop.

9.6 Active alarm templates

All templates stored here are active, i.e. if one of the threshold values is exceeded, an alarm is triggered via notifications (10 Notification). If the template also contains actions (9.4 Available actions), these are executed.

If you modify an active alarm template in a parent folder, you also change the active alarm template of its subfolders. You cannot edit this template at this level, but you will be redirected via a link. When a parent template is updated, the subtemplates are, of course, updated as well.

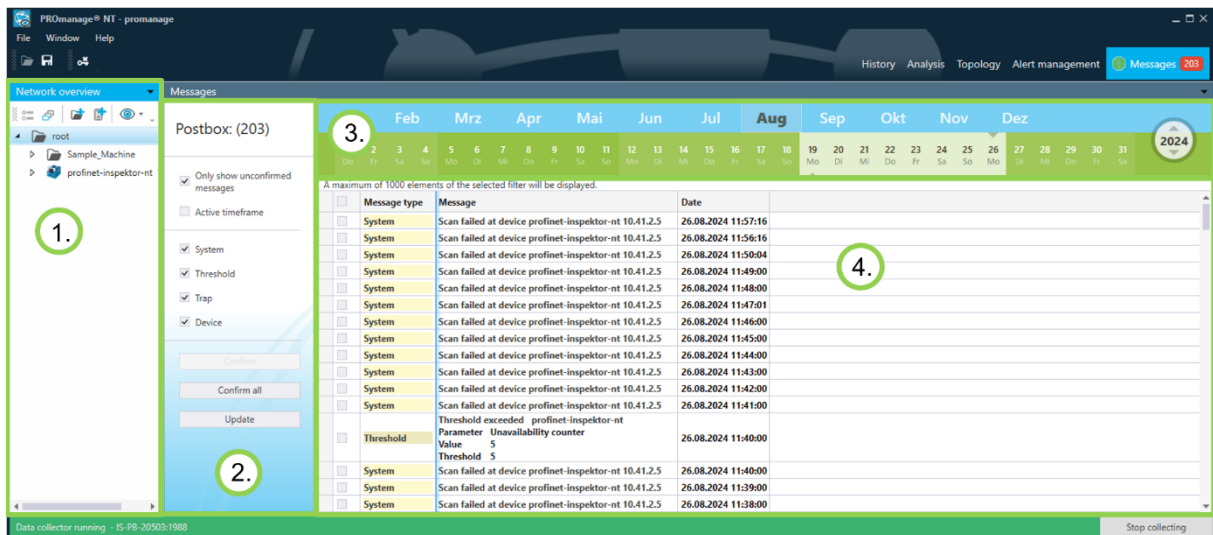
9.7 Wastepaper basket

The elements *dragged* here by *drag'n drop* are deleted.

10 Notification

In the *Notifications* perspective, all system, subscriber, trap and device messages are summarised and listed in an alarm overview.

- System messages: Messages from the PROmanage® NT software, e.g. errors during scan, initialisation of the data collector, ...
- Threshold messages: Exceeding an active alarm template (9.6 Active alarm templates)
- Trap messages: If the trap receiver is activated, the traps that are received are listed in the notification window (11.10.1.2 SNMP trap receiver).
- Device messages: Messages relating to an individual device, e.g. errors during scanning or device-specific threshold value violations.
- Inspektor Alert messages: These are alarm messages that are generated and retrieved by the PROFINET-INspektor® NT.
- Validation messages: Anomalies are listed when device validation has been set up.
- OPC error codes e.g. OPC license invalid, internal error in control



The screenshot shows the 'Messages' window in PROmanage NT. On the left, there is a 'Network overview' pane with a tree view showing 'Sample_Machine' and 'profinet-inspektor-nt'. Below it are filter checkboxes for 'System', 'Threshold', 'Trap', and 'Device', along with buttons for 'Confirm', 'Confirm all', and 'Update'. A green circle '1.' is next to the filter area. The main area shows a calendar for August 2024 with a green circle '3.' over the date '3'. Below the calendar is a table of messages with columns for 'Message type', 'Message', and 'Date'. A green circle '4.' is next to the table. The table contains several 'System' messages about scan failures and one 'Threshold' message about an unavailability counter.

Message type	Message	Date
System	Scan failed at device profinet-inspektor-nt 10.41.2.5	26.08.2024 11:57:16
System	Scan failed at device profinet-inspektor-nt 10.41.2.5	26.08.2024 11:56:16
System	Scan failed at device profinet-inspektor-nt 10.41.2.5	26.08.2024 11:50:04
System	Scan failed at device profinet-inspektor-nt 10.41.2.5	26.08.2024 11:49:00
System	Scan failed at device profinet-inspektor-nt 10.41.2.5	26.08.2024 11:48:00
System	Scan failed at device profinet-inspektor-nt 10.41.2.5	26.08.2024 11:47:01
System	Scan failed at device profinet-inspektor-nt 10.41.2.5	26.08.2024 11:46:00
System	Scan failed at device profinet-inspektor-nt 10.41.2.5	26.08.2024 11:45:00
System	Scan failed at device profinet-inspektor-nt 10.41.2.5	26.08.2024 11:44:00
System	Scan failed at device profinet-inspektor-nt 10.41.2.5	26.08.2024 11:43:00
System	Scan failed at device profinet-inspektor-nt 10.41.2.5	26.08.2024 11:42:00
System	Scan failed at device profinet-inspektor-nt 10.41.2.5	26.08.2024 11:41:00
Threshold	Threshold exceeded profinet-inspektor-nt Parameter Unavailability counter Value 5 Threshold 5	26.08.2024 11:40:00
System	Scan failed at device profinet-inspektor-nt 10.41.2.5	26.08.2024 11:40:00
System	Scan failed at device profinet-inspektor-nt 10.41.2.5	26.08.2024 11:39:00
System	Scan failed at device profinet-inspektor-nt 10.41.2.5	26.08.2024 11:38:00

Illustration 52 Notification perspective

Network overview

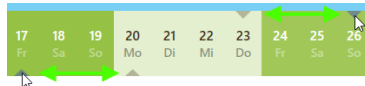
- The selection in the network overview determines which messages are displayed. The *root* folder can be selected to display all messages.

Display selection

- The selection of the check boxes determines which messages are listed. Messages can be confirmed using the buttons. Every change in the check boxes or the period selection is applied after *left-clicking* the *Update* button.

Period selection

- Daily display in list by selecting year, month and day.
- Setting the year and month by selecting
- Set the days by moving the arrow marker



Message display

- Detailed list of the type and content of the message
- Bold - Message not yet confirmed (as read)
- For threshold value message - *double left-click* to open the parameter in the *Analysis* perspective

11 Menu bar

11.1 Representation

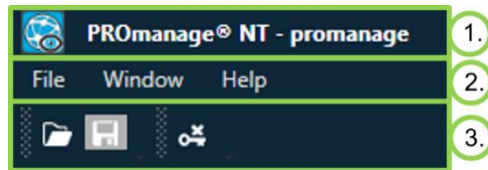


Illustration 53 Menu options




1. Display database

- The name of the database that is currently displayed is shown next to the software name PROmanage® NT.

2. Menu bar

- File - Used to operate, manage and set all functions related to the recording of PROmanage data.
- Window - For navigation in the individual views and perspectives, as well as setting the language.
- Help - Information on version, licence and third-party providers is displayed here and access to log data is provided.

3. Meaning of the icons:

-  Opens a new view (7.3 View)
-  Saves the settings made (lights up when changes have been made)
-  User change

11.2 Change/create database

In the system description (1.3 System description) describes the role of the database. The data flow diagram (1.4 Data Flow Diagram) shows the necessary settings for a connection from PROmanage® NT Client to PROmanage® NT Database. The database connection parameters must also be taken into account during installation (2.4 Installation procedure), but can also be changed in this view at any other time. In case a database already exists, you can initialise it. In this process, all data in the database will be wiped.

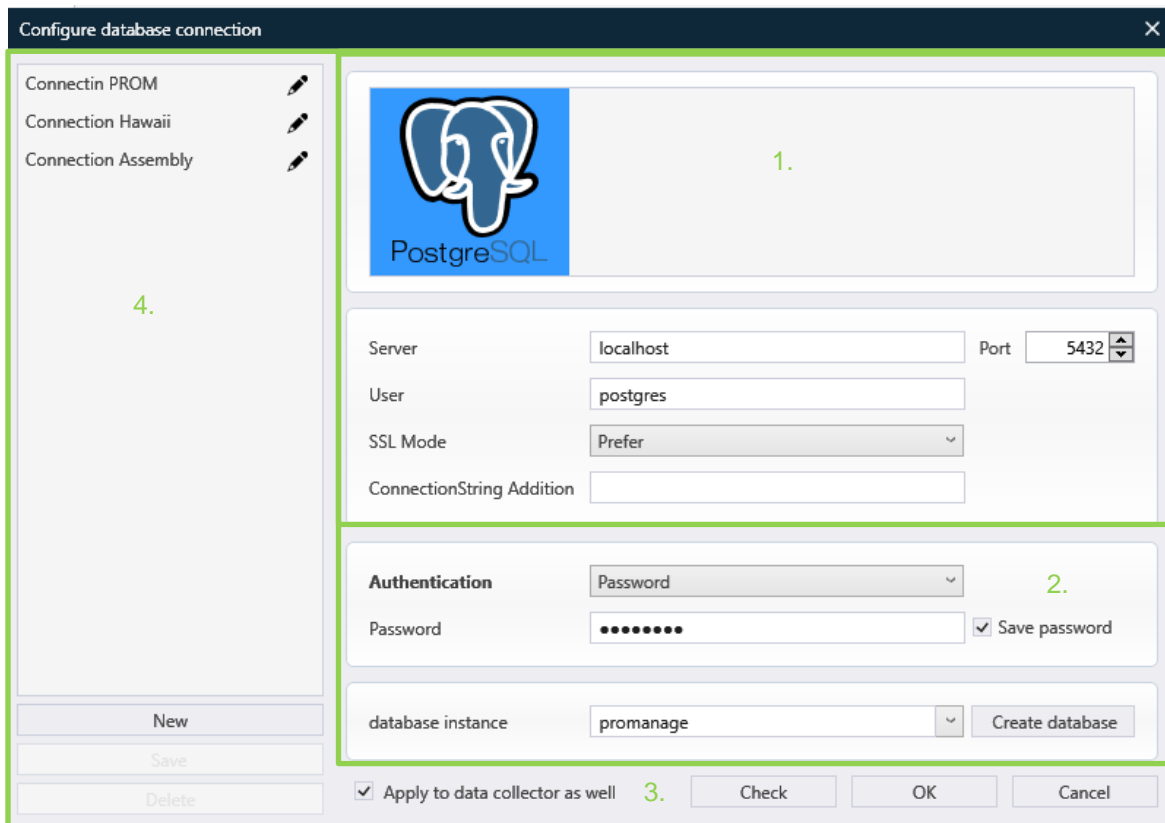


Illustration 54: Configure database connection

1. Configurations of the database connection
2. Selection / creation of a database
3. Selection of available options
4. Templates Database connection

Configuration of the database connection

PROmanage® NT uses the data entered here to establish a connection to a database server. With the full installation a PostgreSQL server is installed. The default configuration is:

Server	localhost
Port	5432
Users	postgres
password	postgres

In the "Connection String Addition" line, you can specify the encryption of the connection between the database and the client. By default, this connection is not encrypted.

During the client installation (2.4.2 Client installation), the data of the server on which a PostgreSQL server was installed by the PROmanage NT installation (or other) must be entered in this field.

You can also use a Certificate to connect to your Database. Just use the Dropdown menu in the Authentication field and select Client Certificate.

SSL Configuration:

You can choose which kind of SSL mode you want to use. You can choose between:

Disable: deactivate every kind of SSL connection

Allow: allows SSL connection

Prefer: checks if SSL is supported, if not, falls back to non SSL connection

Require: the connection need to be secured by SSL, if not, connection refuses

VerifyCA: the server checks if the certificate is signed by an certification authority.

VerifyFull: the server checks, in addition to VerifyCA, if the username or its mapping matches the Common Name

In case of uncertainty, please refer to the PostgreSQL documentation about SSL: <https://www.postgresql.org/docs/current/ssl-tcp.html>

Selection / creation of a database

If the server data is entered correctly, PROmanage® NT can manage the database. The databases available on the server are displayed and selected via the *drop-down menu*. Click *OK* to load the displayed database.

Menu bar

A new database is created using the *plus* icon. To do this, enter a name in the *Database name* field and click on *plus*. This click causes PROmanage® NT to create and select a new database on the PostgreSQL server.

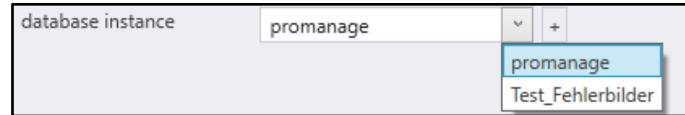


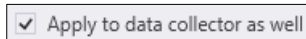
Illustration 55 Selection / creation of a database

Selection of available options

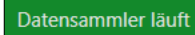
The following options are available.

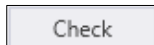


Illustration 56 Option selection

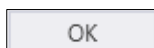


Once this selection has been made, the devices are queried according to the network overview of the selected database after confirming with *OK*. The selection is only possible if the data collector is currently running:

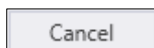
PROmanage® NT Status bar - 



Checks whether a connection to the database is possible with the settings and whether the database structure corresponds to that of PROmanage® NT.



Adopts the settings. Logs out when the database is changed.



Discards the settings

Templates Database connection

Menu bar

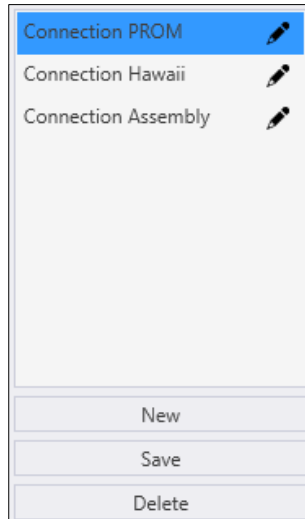


Illustration 57 Database connection templates

If there are repeated changes between configurations, it makes sense to create templates of the settings.

- Click on *New* to transfer the current settings to a template.
- Templates are renamed using the pencil icon.
- Click on a template (highlighted in blue) to load the saved settings.
- If a template is selected, the settings can be changed and then applied to the template by clicking *Save*.
- Selected templates (highlighted in blue) can be removed via *Delete*.

11.3 Save database

By backing up the database, it is possible to restore the previously recorded data at a later date or on another system. The result of the backup is a DBB file that can be transferred at any time.

The *Save database* window is processed from top to bottom and a decision is made on each setting.

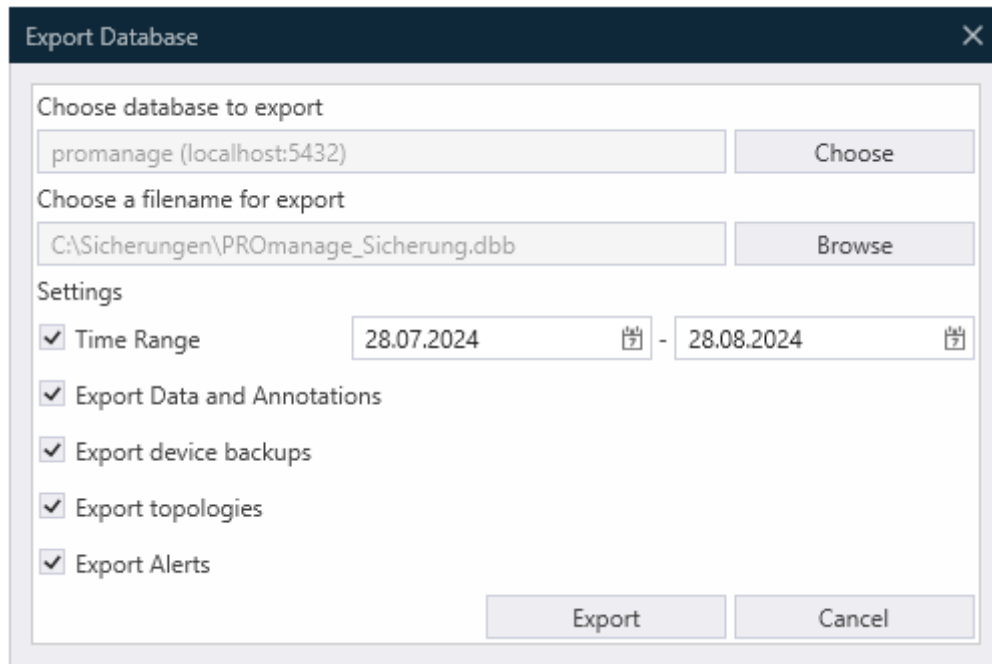


Illustration 58 Database backup

Menu bar

<input type="button" value="Choose"/>	<p>Opens the <i>Change/create database</i> window^{*1} to select a database to be backed up.</p>
<input type="button" value="Browse"/>	<p>Opens a <i>Windows storage dialogue</i> to select a storage location and name for the backup file.</p>
<input checked="" type="checkbox"/> Time Range	<p>By specifying a start and end date, only the data recorded during this time is saved. If no time range is specified, all available data is saved.</p>
<input checked="" type="checkbox"/> Export Data and Annotations	<p>Saves:</p> <ul style="list-style-type: none"> ○ the list of devices and folders in the network overview ^{*1} ○ the <i>device</i> management settings ^{*1} ○ the state graph of the perspective <i>analysis</i>^{*1} and the marker set there
<input checked="" type="checkbox"/> Export device backups	<p>Saves:</p> <ul style="list-style-type: none"> ○ the list of devices and folders in the network overview ^{*1} ○ the <i>device management</i> settings ^{*1}
<input checked="" type="checkbox"/> Export topologies	<p>Saves:</p> <ul style="list-style-type: none"> ○ the list of devices and folders in the network overview ^{*1} ○ the <i>device management</i> settings ^{*1} ○ the topologies of perspective <i>topologies</i> ^{*1}
<input checked="" type="checkbox"/> Export Alerts	<p>Saves:</p> <ul style="list-style-type: none"> ○ the list of devices and folders in the network overview ^{*1} ○ the <i>device management</i> settings ^{*1} ○ the messages of the perspective <i>notifications</i> ^{*1}
<input type="button" value="Sichern"/>	<p>Starts the creation of the backup</p>
<input type="button" value="Cancel"/>	<p>Cancels the process</p>

^{*1} Useful links:

- 11.2 Change/create database
- 7.2 Network overview
- 7 Analysis
- 11.6 Device management
- **Marker**
- 8 Topology

11.4 Restore database

A database backup (11.3 Save database) of file type DBB can be restored in PROmanage® NT. The backup file is loaded into a PostgreSQL database by PROmanage® NT. A dialogue window opens via the *Select button* to create a new database or select an existing one. The backup cannot be loaded into the currently displayed database. If the backup has been successfully restored, you can switch to this database in the next step (11.2 Change/create database).

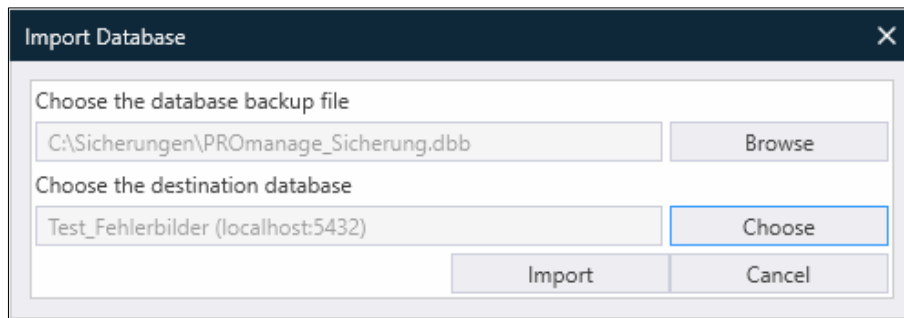
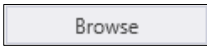
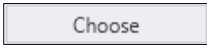




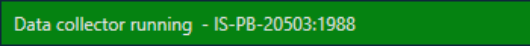


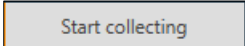
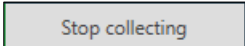
Illustration 59: Restore database

	Opens a <i>Windows Explorer window</i> to select the location of the backup file to be restored.
	Opens the <i>Change/create database</i> window (11.2 Change/create database) to select a database into which the backup file is to be loaded.
	Start the restore process
	Cancels the process

11.5 Manage data collectors

The data collector is the centrepiece of the PROmanage® NT software. It is configured by the PROmanage® NT client and then collects information from decentralised data collectors, such as an INspektor®, managed switch or others. The collected data is then written to the PROmanage® NT database.

The current status of the data collector is always displayed in the bottom line of the PROmanage® NT window and can be stopped/started.

	Data collector service has been launched.
	Service collector Service was stopped manually.
	The data collector service has not started.
	Starts a stopped monitoring. The settings made in the <i>device management</i> (11.6 Device management) are queried.
	Stops ongoing monitoring. No further data is queried in the network.

The data collector can be configured and the current settings displayed in the Data collector management window.

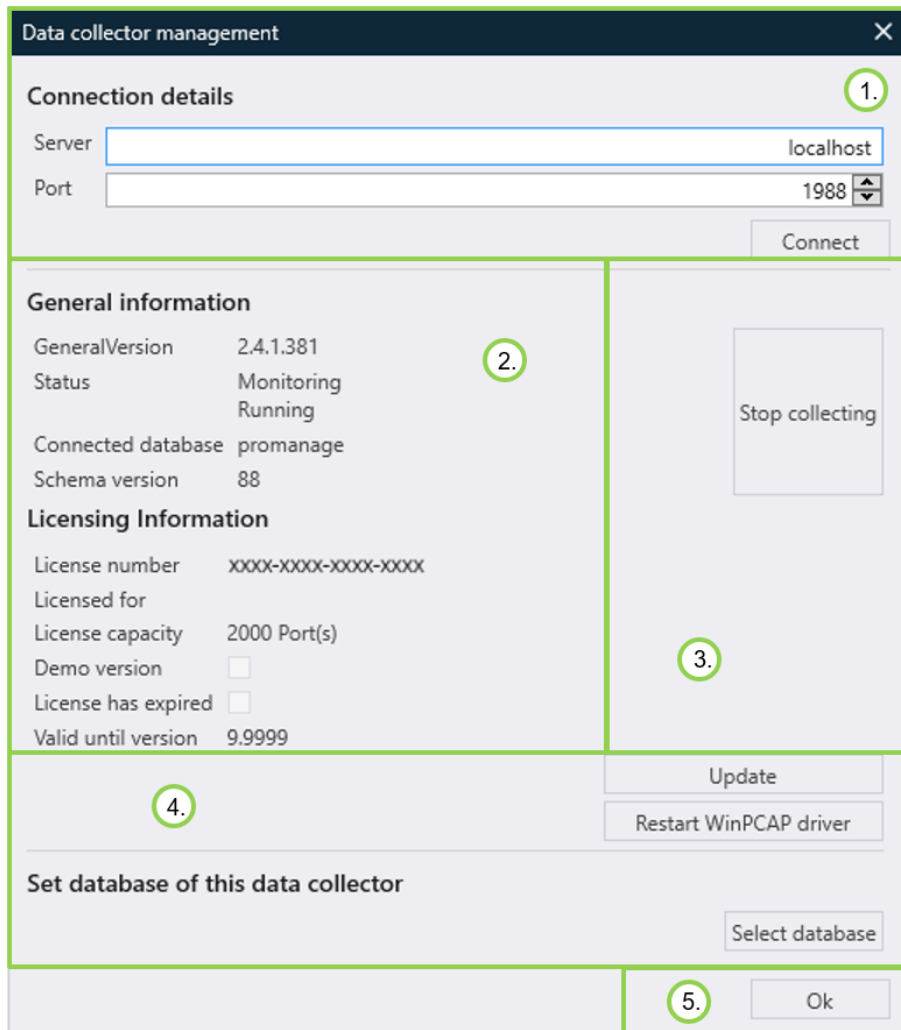


Illustration 60Data collector management

1. Connection information: Setting the connection to which data collector a connection is to be established.
2. Information overview: Version, status and licence information about the connected data collector
3. Applicable action
4. Change to which database the data collector should write its collected data
5. Close window

Connection information

During the full installation (**Fehler! Verweisquelle konnte nicht gefunden werden. Fehler! Verweisquelle konnte nicht gefunden werden.**), the PROmanage® NT client and data collector are installed on the same system. Then the basic settings are:

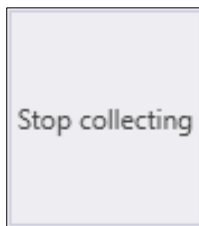
Server: localhost

Port: 1988

If PROmanage® NT client and data collector are installed on separate systems, the server IP address or name must be entered. It must also be ensured that port 1988 is enabled in the connection between the client and data collector.

The data collector can only be accessed via the *Connect button* to display information and perform actions if the connection information is entered correctly.

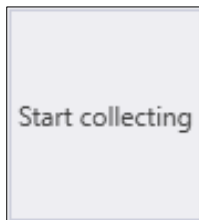
Meaning of the buttons



Stop the surveillance

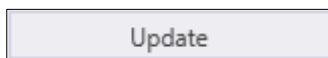
The settings made in the *device management* (11.6 Device management) are no longer queried and consequently no new *data points* or *topologies* are displayed in a *perspective*.

Does not stop the *Indu-Sol Data Collector Service*

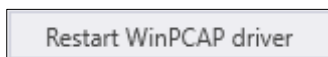


Starts monitoring

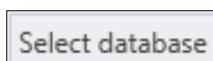
The settings made in the *device management* (11.6 Device management) are queried.



Updates the information requested by the data collector, e.g. if the licence has been extended in the background.



Restarts the driver that executes the network queries.



Specify the database in which the collected data is stored.

Select database

Clicking the *Select database* button opens a window with the same display as for *Change/restore database* (Change/create database). The window is not prefilled. A database selected here is now the storage location for collected data. With a *full installation*, the default settings can be used, as the PROmanage® NT database and data collector are installed on the same system:

Server	localhost
Port	5432
Users	postgres
password	Postgres

During the *client installation* (2.4.2 Client installation), the name or IP address of the server on which the data collector is installed and is to be configured must be specified.

11.6 Device management

Device management is the centrepiece of the PROmanage® NT application. It is used to configure the data collector and thus determines which devices are queried. In addition, extensive settings and actions can be carried out here, which simplify the operation and maintenance of the system.

11.6.1 Presentation

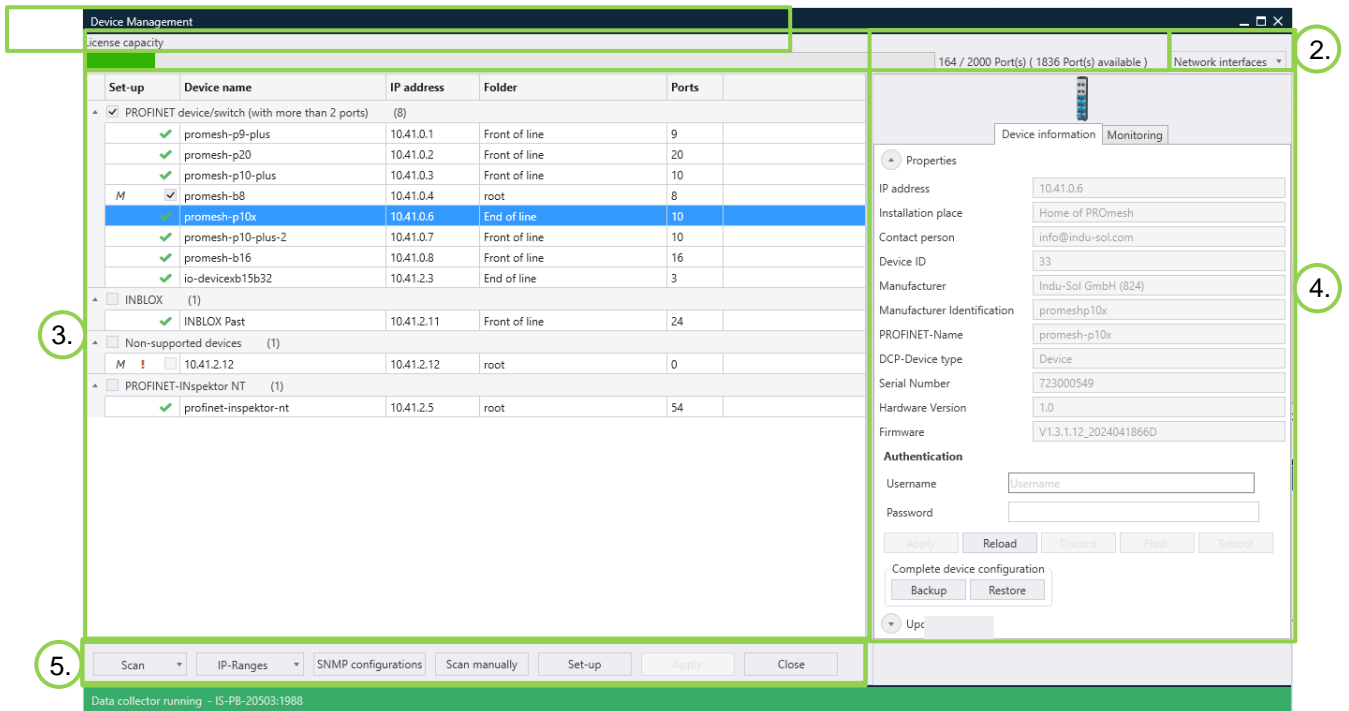


Illustration 61 Device management

1. Licence volume - display how many ports are available, used and free (3 Licensing)
2. Network adapter - *drop-down* selection of which interface is used
3. Device overview - list of devices and their status
4. Device information and monitoring:
 - Device configuration (11.6.2 Set up devices)
 - Backing up the device configuration ([Save device configuration](#))
 - Firmware update ([Firmware update](#))
 - Scan setting ([Scan](#))
 - Memory setting (Data retention time)
 - Setting the evaluation, recorded data ([State graph calculation](#))
5. Scan and set up devices, apply settings

Meaning of the icons



The device is entered in the data logger and is actively queried.



There is a connection problem. Select the device for detailed information.

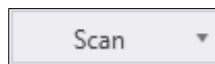


Select whether the device should be included in monitoring. Confirm using the *Set up button*.



Manual - The device was scanned manually.

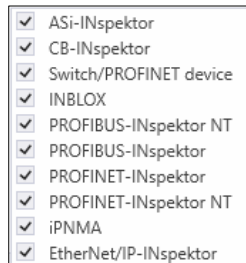
Meaning of the buttons



Starts an automatic network scan and checks which accessible devices support a query.

Depending on the network settings and the number of accessible devices, the scan can take from a few seconds to several minutes.

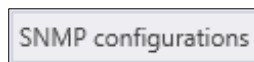
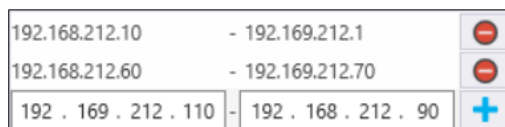
- The search can be restricted to specific device types in the corresponding *drop-down* menu.
- The scanning time can be significantly reduced by narrowing down the search.



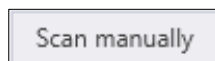
Opens a *drop-down* menu to specify address ranges to be scanned.

The scanning time can be significantly reduced by narrowing down the search.

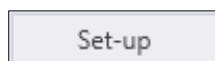
- The scanning time can be significantly reduced by specifying an address range.
- Removing a scan area
- Adding a scan area



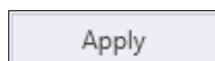
Opens a dialogue window to configure SNMP (**SNMP configuration**).



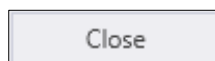
Opens a dialogue window to set up an individual device (11.6.2 Set up devices).



If a new device has been added to the device management list, the cyclical query does not start until the *Set up* button is pressed.



If settings have been changed, they become active with the *Apply* button.



Changes are not accepted.

SNMP configuration

PROmanage® NT always requires read-only access to query the device information. If access restrictions are configured for devices, SNMP users or communities can be specified in this screen. The configurations can be sorted using the green arrow buttons, depending on which is to be used first when establishing a connection. If a connection to a device does not work, the next configuration is tested. If a configuration has been used successfully, it is saved for future access to the device.

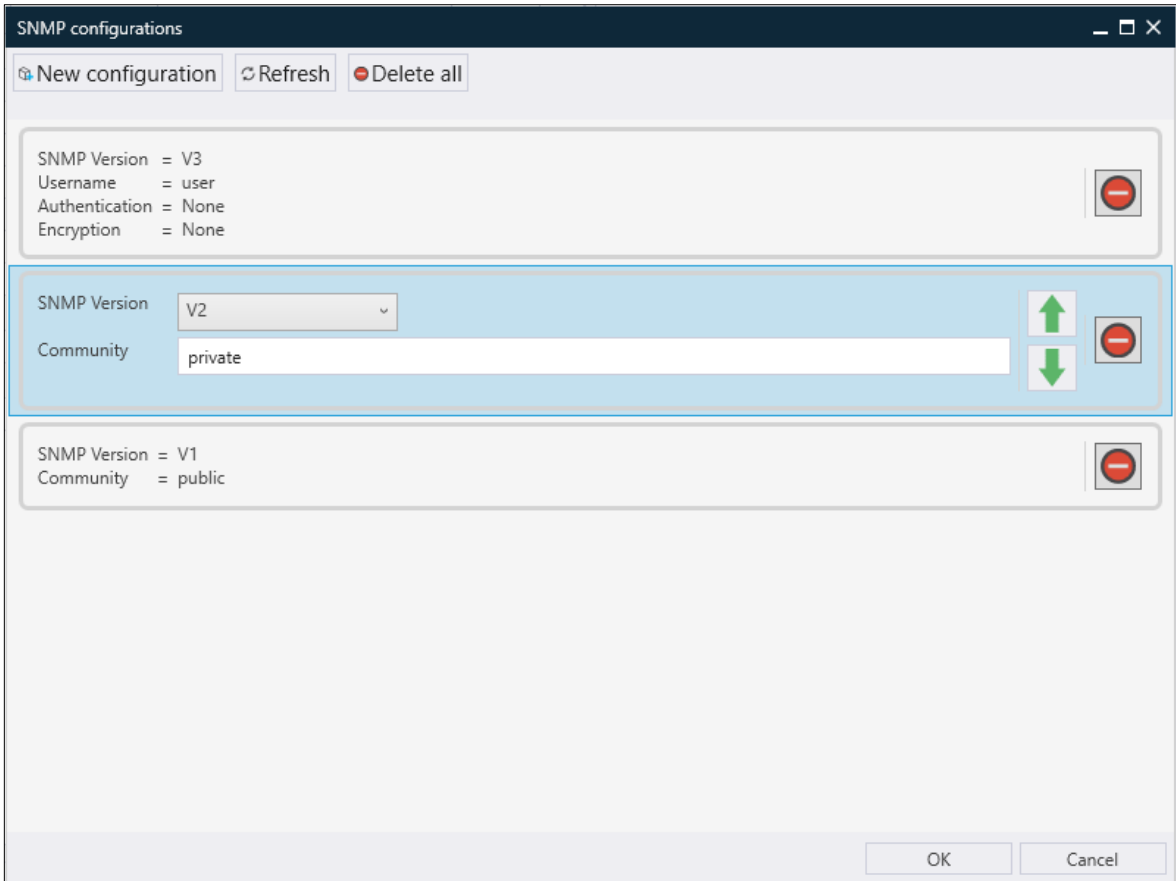


Illustration 62SNMP configuration

11.6.2 Set up devices

As with the first steps (4 First steps), various devices can be added to the monitoring system step by step and individually (4.2 Add decentralised data collector). This procedure is suitable if only a few devices are to be added.

The same procedure can be used for the automatic scan (network scan) can be used. This procedure is suitable if many devices are to be added in one step.

Special configurations

Some setting options are only available in the *manual scan* dialogue window.

IP devices:

If an IP device is set up, it is checked for availability via a ping query. Values can also be queried via OPC UA, SNMP or individual OIDs.

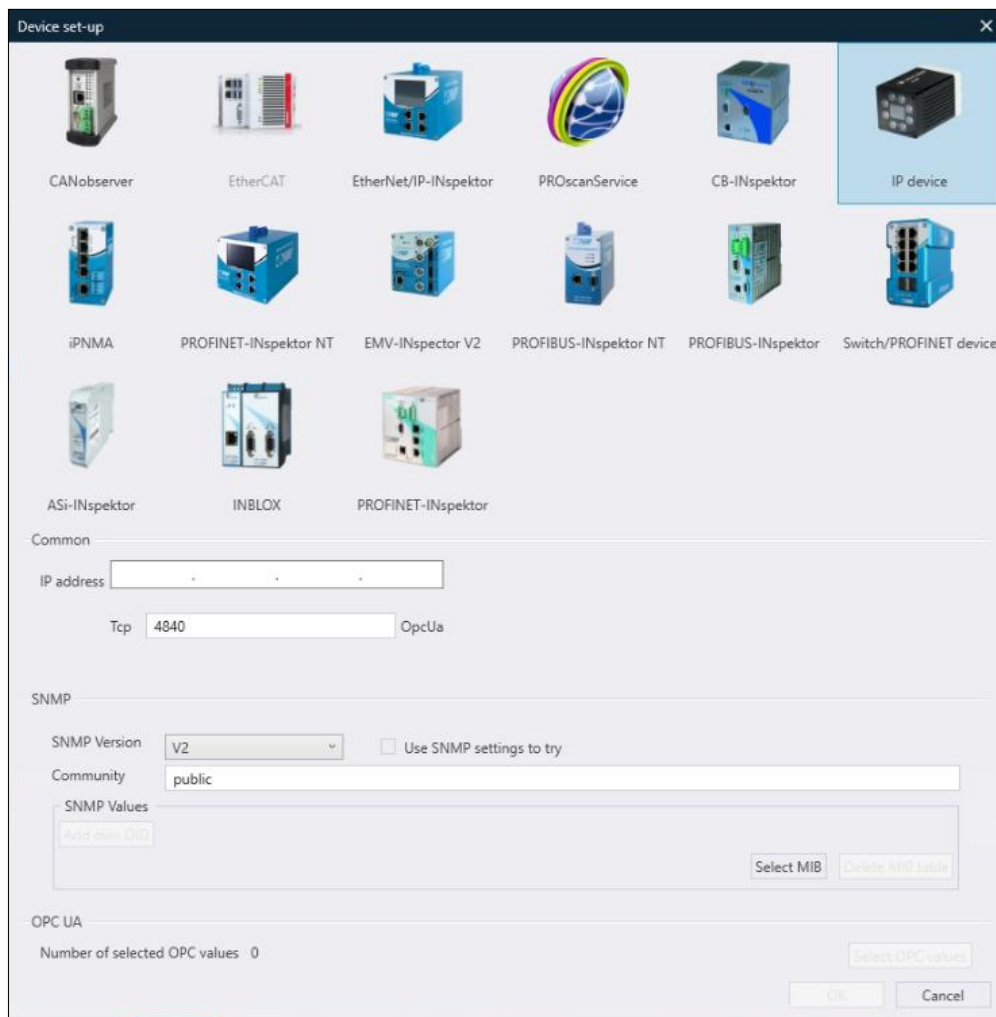


Illustration 63: Configuration IP device

Switch / PROFINET device:

The device query is enabled by setting the IP address. If a different community applies to the device, it can be entered here.

Port detection - Different switches output different information with different MIBs (Management Information Bases). It is therefore possible to choose between different MIBs to obtain the appropriate display for your switch. If the display does not correspond to the desired information, try using a different MIB.

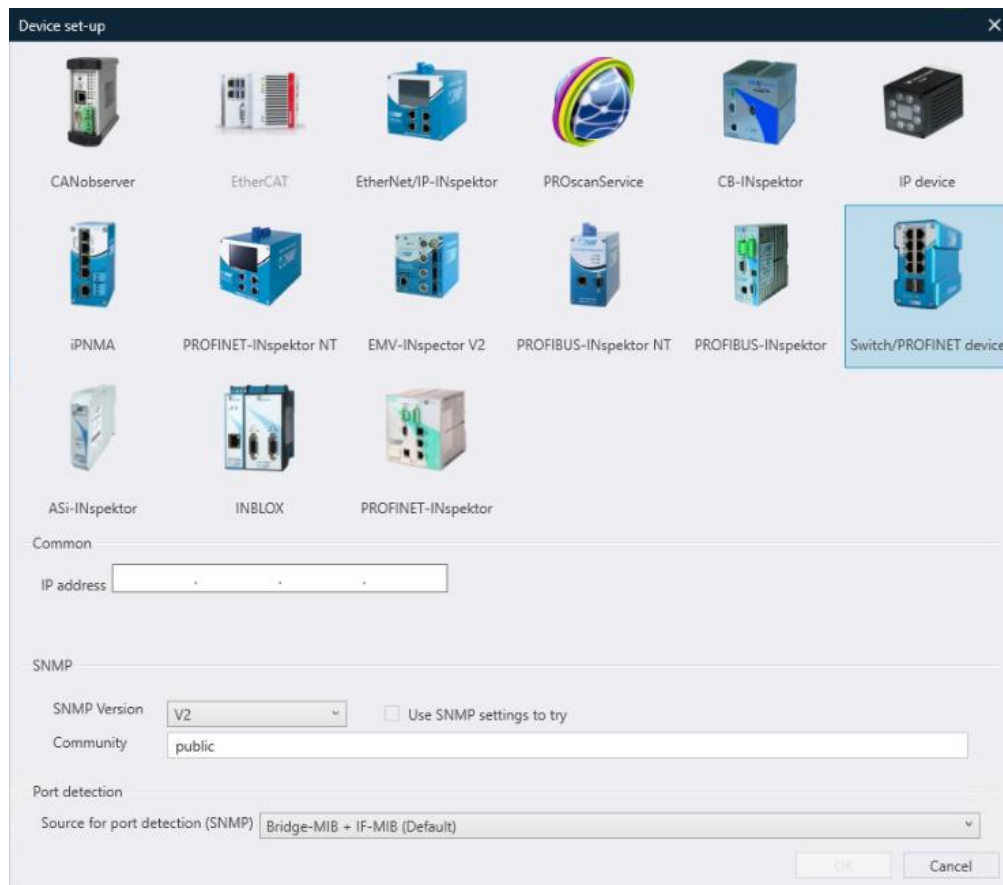


Illustration 64: Configuration switch / PROFINET device

INspektor® :

The device query is enabled by setting the IP address. Enables a connection to be established exclusively via HTTPS. PROmanage® NT uses the standardised TLS validation of the .NET framework with automatic trust check via the Windows certificate store. This implementation means that the certificates stored in the delivery status of Indu-Sol devices are not recognised as trustworthy. In order to be able to set up the devices anyway, the "Ignore certificate errors" checkbox must be activated. It is therefore also possible to use your own certificate.

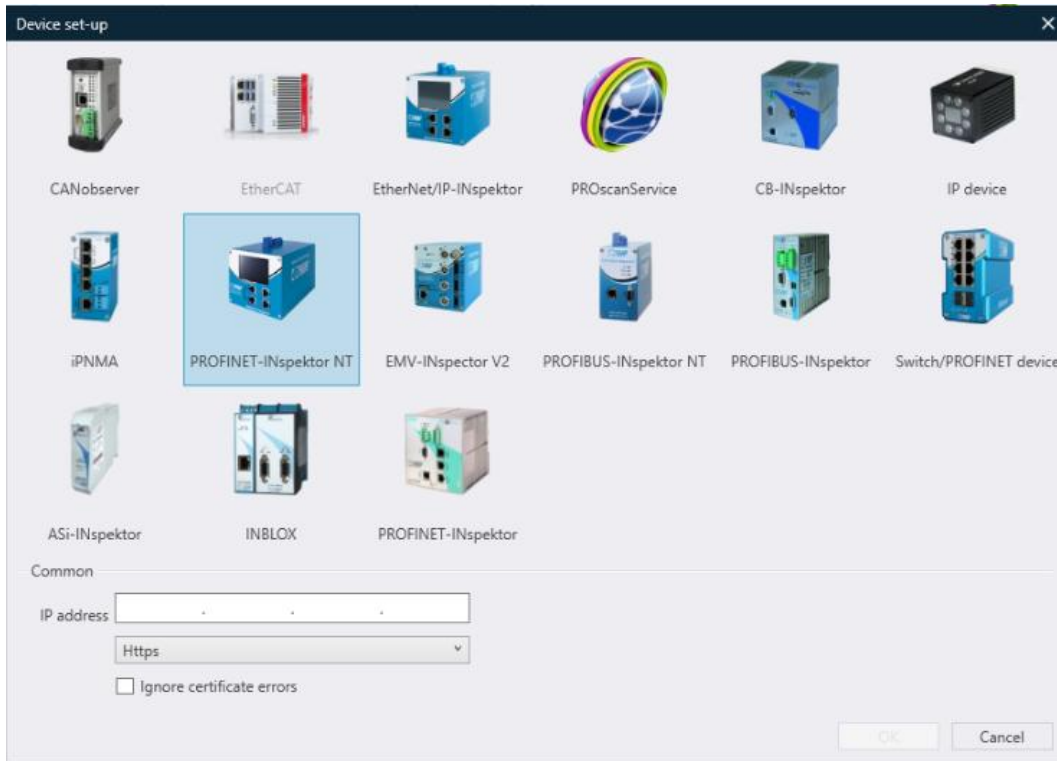


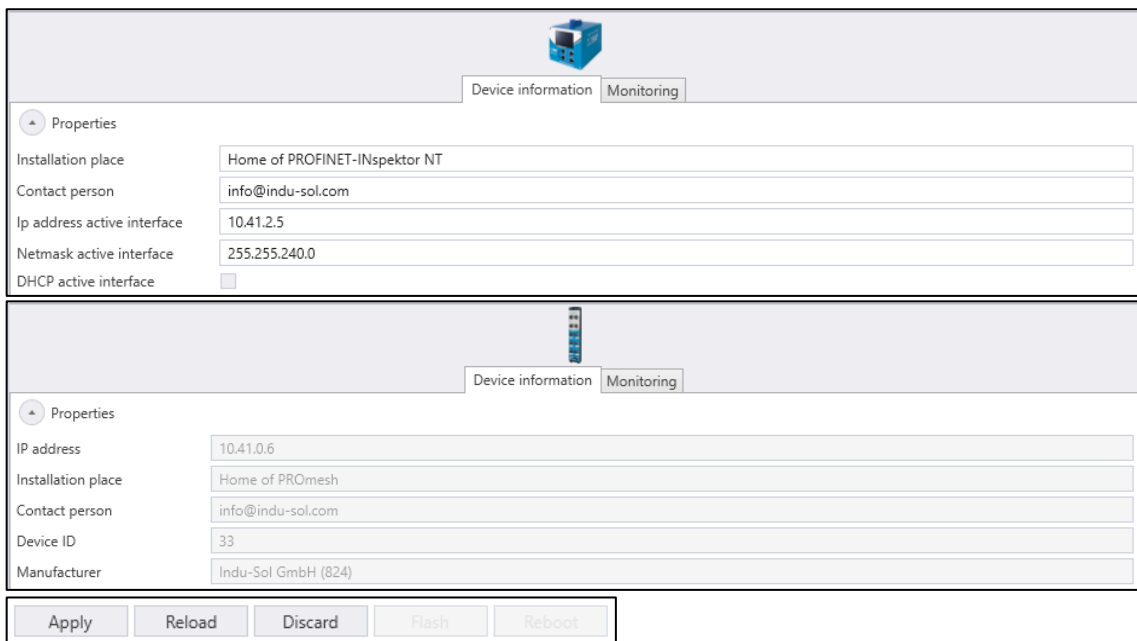
Illustration 65: Configuration INspektor®

11.6.3 Device information

If a device is selected in the *device overview*, the device-specific information is displayed in the *Device information* tab. By pressing *Ctrl + left mouse button*, several devices can be selected at the same time and common properties can be displayed. Device names are loaded through the GSDML-File.

Device configuration

Various configurations can be made via the *Device information* tab in the *Properties drop-down menu*, depending on the device type. Adjustable values are highlighted in white, non-adjustable values in grey. Changes must be saved using the *Apply* button.



The top screenshot shows the configuration for a device with the following fields:

Installation place	Home of PROFINET-INspektor NT
Contact person	info@indu-sol.com
Ip address active interface	10.41.2.5
Netmask active interface	255.255.240.0
DHCP active interface	<input type="checkbox"/>

The bottom screenshot shows the configuration for a device with the following fields:

IP address	10.41.0.6
Installation place	Home of PROmesh
Contact person	info@indu-sol.com
Device ID	33
Manufacturer	Indu-Sol GmbH (824)

At the bottom of the interface, there are buttons for: Apply, Reload, Discard, Flash, and Reboot.

Illustration 66 Device information

Save device configuration

At the end of the *Properties drop-down menu*, there is an option for some devices to save the configuration of the device in order to restore it at a later date. *Clicking* on *Save* opens a *Windows save dialogue* to save the configuration on the system. The progress of the device backup is displayed in a window that opens. This file can then be selected via the *Restore button* in order to load a saved configuration into the device.



Illustration 67: Backup / restore device configuration

Firmware update

At the end of the *Device information* tab, an update can be carried out in the *Update drop-down menu* depending on the device type. This function is used in particular to update several devices by selecting the same device type several times with *Ctrl + left mouse button*.

Clicking on the *Browse* button opens a Windows dialogue to select an update file. Clicking the *Start update* button opens a separate window that displays the progress of the update.

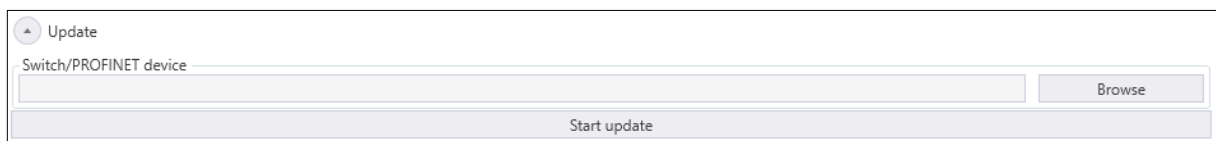


Illustration 68: Firmware update

11.6.4 Monitoring

If a device is selected in the *device overview*, the device-specific information is displayed in the *Monitoring* tab. Changes in this tab must be saved using the *Apply* button (bottom right).

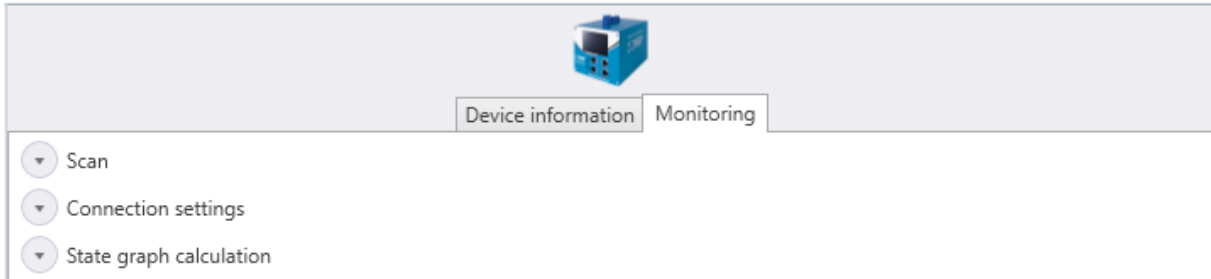


Illustration 69: Monitoring

Scan

Various options are available in the *Scan drop-down menu*, depending on the device type.

Scan active	Selection of whether or not data should be requested from the device
Activate device backup	Selection of whether the configuration of the device should be saved or not
Query interval	Setting how often data should be requested from the device
Data retention time	Setting how long data from the device should be saved
Ports / Modules / Subordinate devices	Selection of whether ports or devices subordinate to the main device are to be queried

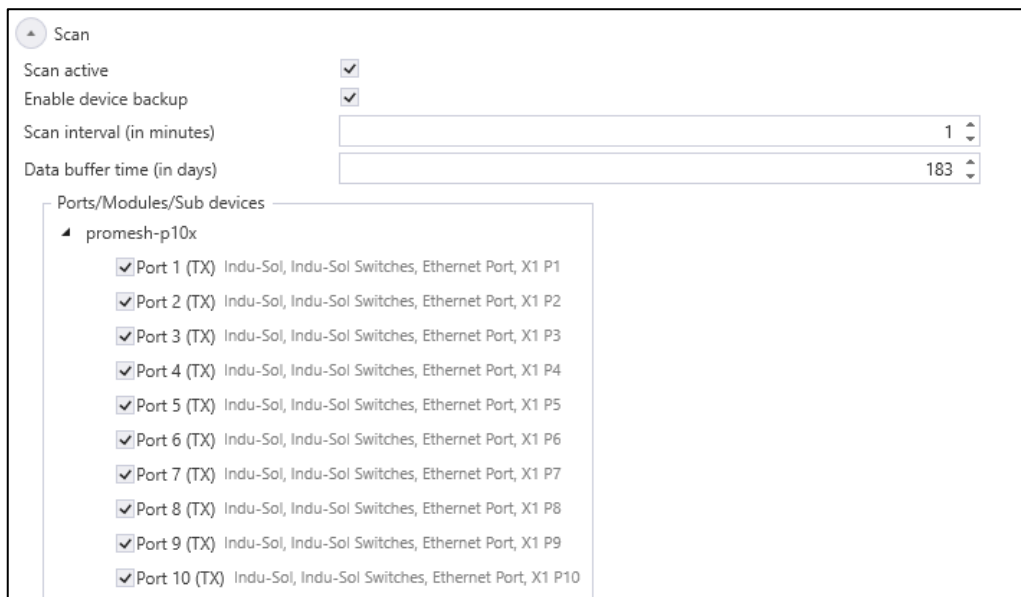
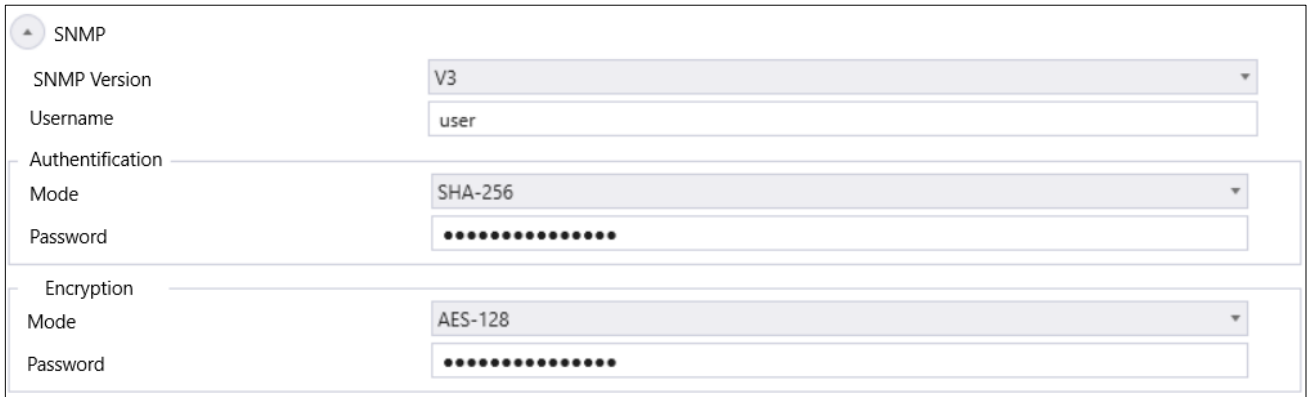


Illustration 70 Scan settings

Connection settings

Depending on the device type, the second *drop-down menu* refers to the connection settings to the device. This setting is queried during a manual scan. Default values are assumed for an automatic scan (11.6.2 Set up devices).



The form displays the configuration for SNMP. It is organized into sections: Authentication and Encryption. Each section contains a Mode dropdown menu and a Password text input field. The Authentication section is currently expanded.

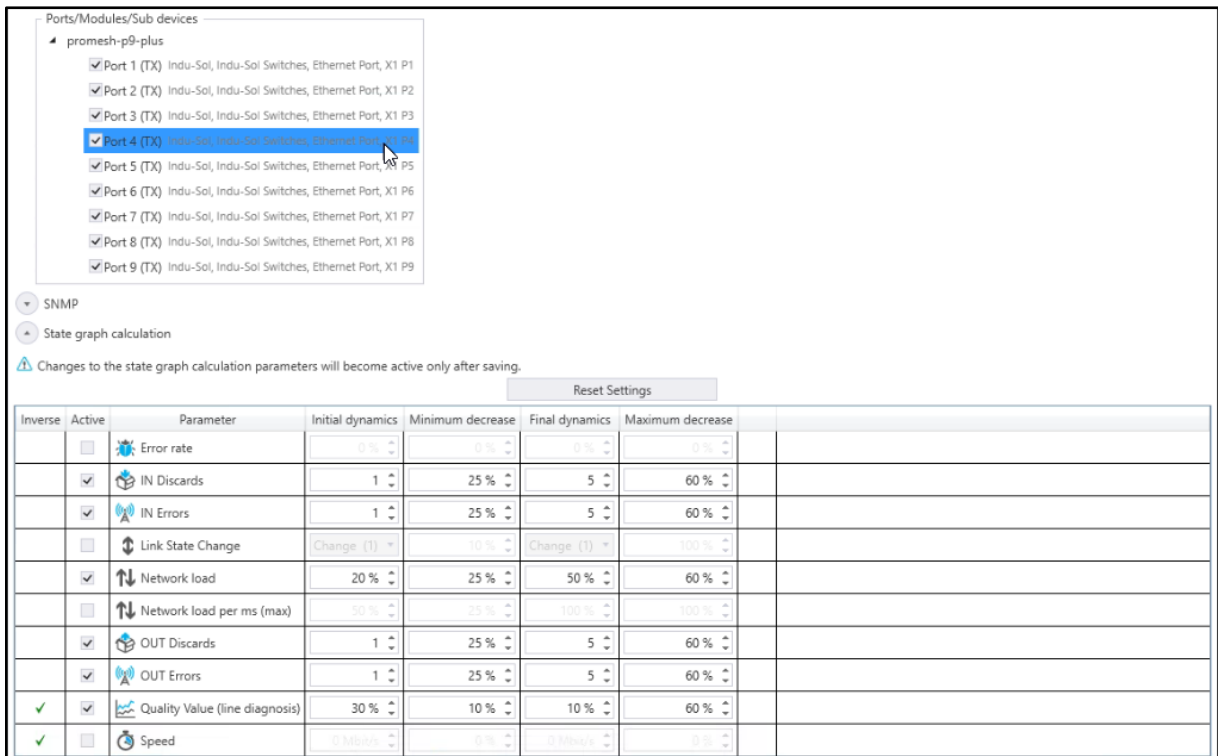
Section	Field	Value
Authentication	SNMP Version	V3
	Username	user
	Mode	SHA-256
Encryption	Mode	AES-128
	Password	••••••••••

Illustration 71 Connection settings

State graph calculation

The data collected by the devices is evaluated by PROmanage® NT in order to display it as a status graph (7.3 View). Poor values lead to a collapse of the status graph. The extent to which the state graph collapses is defined by the state graph calculation. The default settings can be customised in order to adapt them to the conditions of the network. The aim is to make the settings so that the status graph displays 100% during normal operation of the network. The status graph should only collapse if there is a deviation from normal values.

Depending on the device type, the status graph is configured globally for a device or for a port, module or subordinate device. The selection (highlighted in blue) determines the parameters that can be set. Settings only take effect once they have been *accepted*. It is not possible to change the status graph retroactively.



Ports/Modules/Sub devices

- promesh-p9-plus
 - Port 1 (TX) Indu-Sol, Indu-Sol Switches, Ethernet Port, X1 P1
 - Port 2 (TX) Indu-Sol, Indu-Sol Switches, Ethernet Port, X1 P2
 - Port 3 (TX) Indu-Sol, Indu-Sol Switches, Ethernet Port, X1 P3
 - Port 4 (TX) Indu-Sol, Indu-Sol Switches, Ethernet Port, X1 P4**
 - Port 5 (TX) Indu-Sol, Indu-Sol Switches, Ethernet Port, X1 P5
 - Port 6 (TX) Indu-Sol, Indu-Sol Switches, Ethernet Port, X1 P6
 - Port 7 (TX) Indu-Sol, Indu-Sol Switches, Ethernet Port, X1 P7
 - Port 8 (TX) Indu-Sol, Indu-Sol Switches, Ethernet Port, X1 P8
 - Port 9 (TX) Indu-Sol, Indu-Sol Switches, Ethernet Port, X1 P9

SNMP

State graph calculation

Changes to the state graph calculation parameters will become active only after saving.

Reset Settings

Inverse	Active	Parameter	Initial dynamics	Minimum decrease	Final dynamics	Maximum decrease
	<input type="checkbox"/>	Error rate	0 %	0 %	0 %	0 %
	<input checked="" type="checkbox"/>	IN Discards	1	25 %	5	60 %
	<input checked="" type="checkbox"/>	IN Errors	1	25 %	5	60 %
	<input type="checkbox"/>	Link State Change	Change (1)	10 %	Change (1)	100 %
	<input checked="" type="checkbox"/>	Network load	20 %	25 %	50 %	60 %
	<input type="checkbox"/>	Network load per ms (max)	50 %	25 %	100 %	100 %
	<input checked="" type="checkbox"/>	OUT Discards	1	25 %	5	60 %
	<input checked="" type="checkbox"/>	OUT Errors	1	25 %	5	60 %
	<input checked="" type="checkbox"/>	Quality Value (line diagnosis)	30 %	10 %	10 %	60 %
	<input checked="" type="checkbox"/>	Speed	0 Mbps	0 %	0 Mbps	0 %

Illustration 72: Configuration of the state graph settings

The response of the state graph is influenced by setting the dynamic start/end and the min./max. reduction. It is important to note whether this is a normal or inverse parameter.

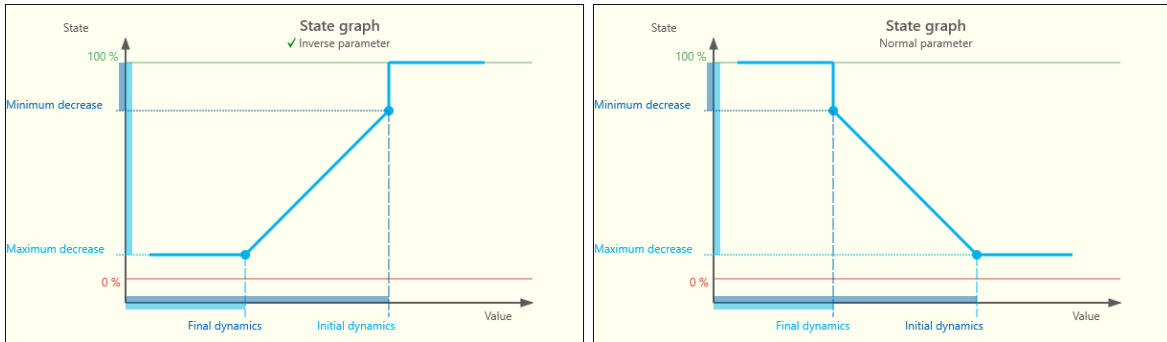


Illustration 73 State graph calculation Illustration

Example: Value IN Errors of a switch port


Inverse	Active	Parameter	Initial dynamics	Minimum decrease	Final dynamics	Maximum decrease
	<input checked="" type="checkbox"/>	 IN Errors	1	20 %	10	60 %

Illustration 74 Example parameters

If an IN error is detected at a switch port, the status graph is reduced by 20 % to 80 %. If more (1 < 10) IN errors are detected during a query, the status graph collapses more sharply. If ten IN errors are detected, the status graph is reduced by 60% to 40%. If more than 10 IN errors are detected, the status graph will not collapse any further.

11.7 Device Identification management

The *screen rule management* refers to the *topology* defined in the *Topology perspective* (8 Topology) of device icons displayed in the Topology perspective. PROmanage® NT has a database of images to display topologies clearly. If a device has no image stored, it is displayed as a question mark.

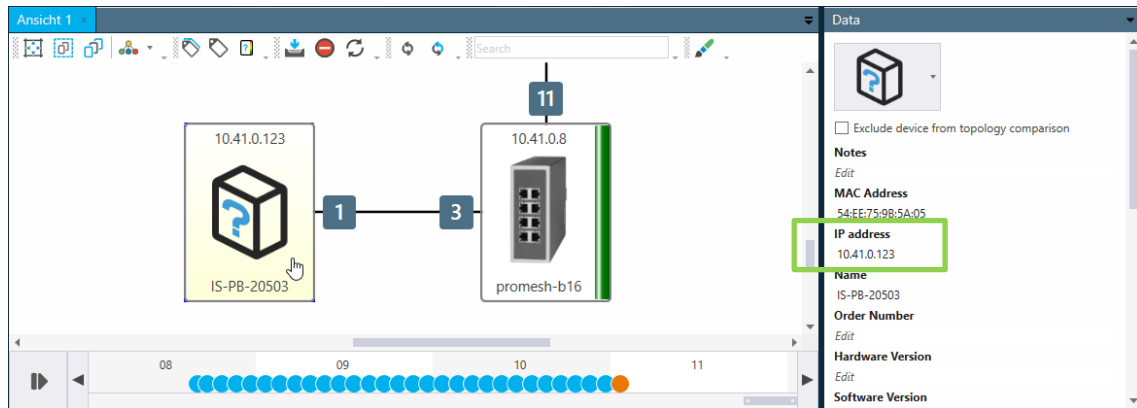


Illustration 75 Topology perspective - missing device icon

To assign an image to one or more devices, an element must be created in which an image can be selected or imported. The assignment is made by defining rules.

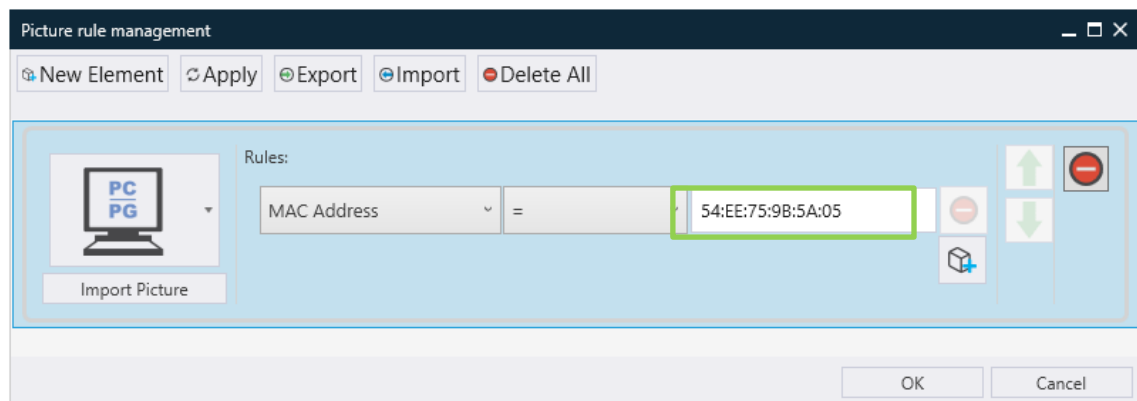


Illustration 76 Element of the device identification management

By *applying* the rule, the new image is assigned to the device in the *Topology perspective*.

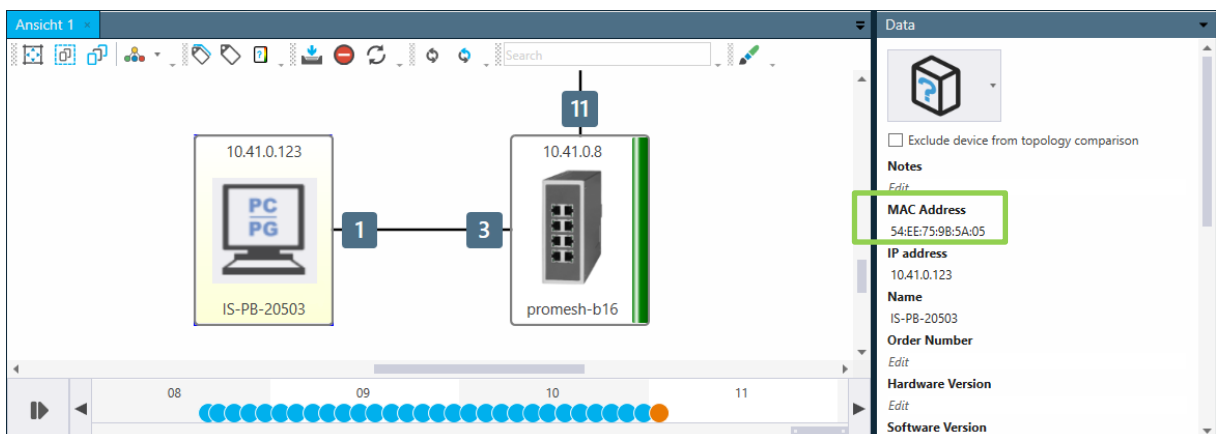
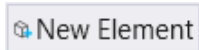
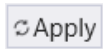


Illustration 77 Topology perspective - Applied device icon

Meaning of the icons

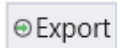


Creates a new *element* in which rules can be defined

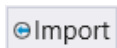


Applies the created *elements*:

- Active topology
- All open topologies
- All topologies



Opens a *Windows dialogue* to export all created elements



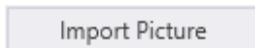
Opens a *Windows dialogue* to import previously created elements



Deletes all created *elements*



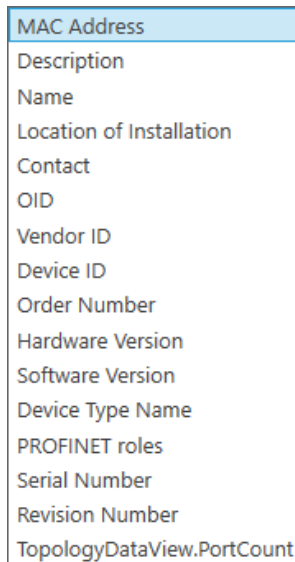
Opens a *drop-down menu* to select existing or imported images



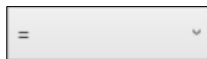
Opens a *Windows dialogue* to import a saved image into PROmanage® NT (png, jpg, jpeg, gif, bmp only)



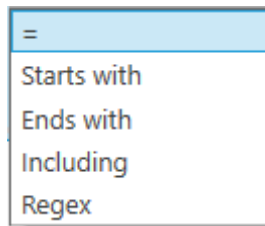
Opens a *drop-down menu* for selecting an argument:



Meaning of the icons



Opens a *drop-down menu* for selecting a condition:



Deletes a rule



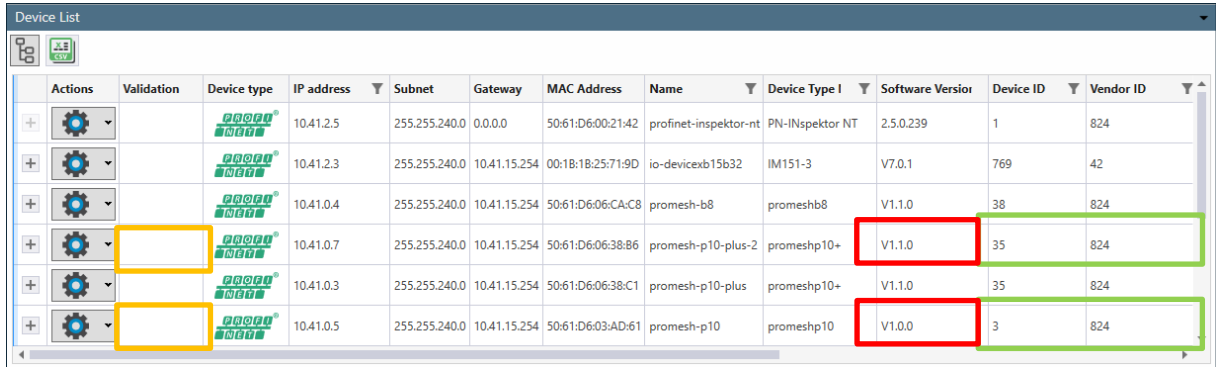
Creates a new rule



Organises the elements in a sequence (organise the elements in such a way that conflicts between their rules are avoided. Rules of elements at the top take precedence over those of elements at the bottom).

11.8 Topology device validation

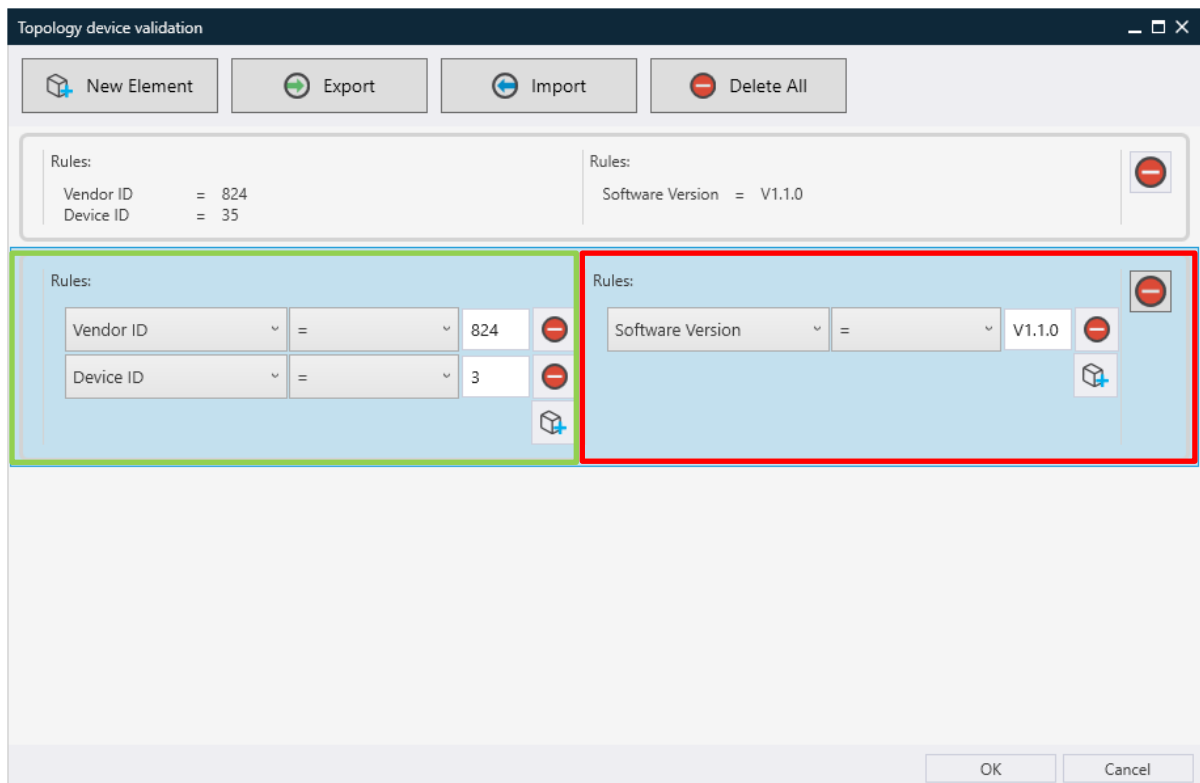
The *topology device validation* refers to the *device list* (8.7 Device list) in the *Topology perspective*. The devices in a topology are displayed in tabular form in the *device list*. One column of the *device list* shows the validation of the device. The validation of a device is primarily used to check the installed software version, but can also be used to validate names, IP addresses and others.



Actions	Validation	Device type	IP address	Subnet	Gateway	MAC Address	Name	Device Type I	Software Versior	Device ID	Vendor ID
+			10.41.2.5	255.255.240.0	0.0.0.0	50-61-D6-00:21-42	profinet-inspektor-nt	PN-INspektor NT	2.5.0.239	1	824
+			10.41.2.3	255.255.240.0	10.41.15.254	00-18-1B-25-71-9D	io-devicexb15b32	IM151-3	V7.0.1	769	42
+			10.41.0.4	255.255.240.0	10.41.15.254	50-61-D6-06:CA:C8	promesh-b8	promeshb8	V1.1.0	38	824
+			10.41.0.7	255.255.240.0	10.41.15.254	50-61-D6-06:38:86	promesh-p10-plus-2	promeshp10+	V1.1.0	35	824
+			10.41.0.3	255.255.240.0	10.41.15.254	50-61-D6-06:38:C1	promesh-p10-plus	promeshp10+	V1.1.0	35	824
+			10.41.0.5	255.255.240.0	10.41.15.254	50-61-D6-03:AD-61	promesh-p10	promeshp10	V1.0.0	3	824

Illustration 78Topology perspective - device list without validation

To validate devices, a rule describing the device type must be linked to a rule describing the device property in an *element*.



Topology device validation

New Element Export Import Delete All

Rules:
Vendor ID = 824
Device ID = 3

Rules:
Software Version = V1.1.0

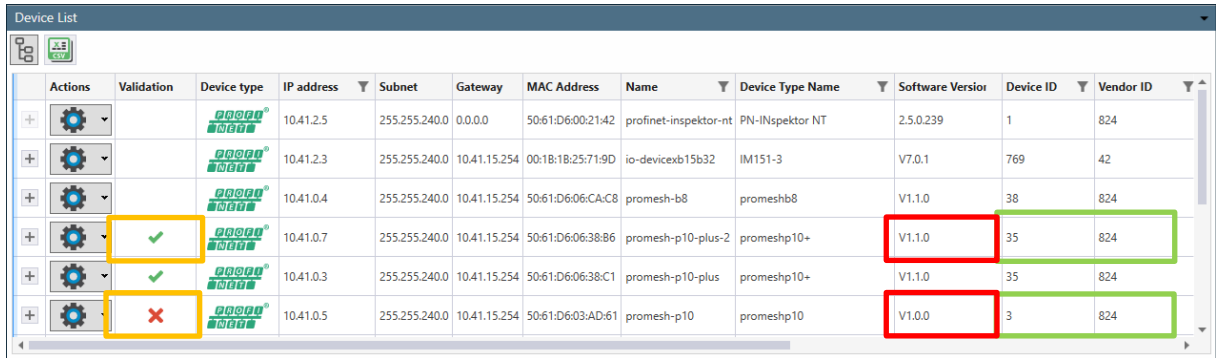
Rules:
Vendor ID = 824
Device ID = 3

Rules:
Software Version = V1.1.0

OK Cancel

Illustration 79Topology device validation - New element

The next time you refresh the view (8.3 View) of the topology, the *elements* of the validation are applied to the device list and symbols are used to indicate whether an *element* has been violated. Devices to which no rule could be applied remain unrated.

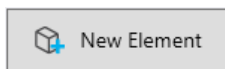


Actions	Validation	Device type	IP address	Subnet	Gateway	MAC Address	Name	Device Type Name	Software Versior	Device ID	Vendor ID
+			10.41.2.5	255.255.240.0	0.0.0.0	50:61:D6:00:21:42	profinet-inspektor-nt	PN-INspektor NT	2.5.0.239	1	824
+			10.41.2.3	255.255.240.0	10.41.15.254	00:18:1B:25:71:9D	io-devicexb15b32	IM151-3	V7.0.1	769	42
+			10.41.0.4	255.255.240.0	10.41.15.254	50:61:D6:06:CA:C8	promesh-b8	promeshb8	V1.1.0	38	824
+	✓		10.41.0.7	255.255.240.0	10.41.15.254	50:61:D6:06:38:B6	promesh-p10-plus-2	promeshp10+	V1.1.0	35	824
+	✓		10.41.0.3	255.255.240.0	10.41.15.254	50:61:D6:06:38:C1	promesh-p10-plus	promeshp10+	V1.1.0	35	824
+	✗		10.41.0.5	255.255.240.0	10.41.15.254	50:61:D6:03:AD:61	promesh-p10	promeshp10	V1.0.0	3	824

Illustration 80Topology perspective - device list without validation

Several *elements* can be created, which are all checked in parallel. If several *elements* apply to a device, all rules must still be fulfilled in order to be valid. If a *rule* for a device is violated, it is not validated, regardless of whether other rules have been fulfilled.

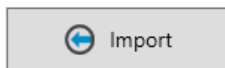
Meaning of the icons



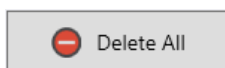
Creates a new *element* in which rules can be defined



Opens a *Windows dialogue* to export all created elements



Opens a *Windows dialogue* to import previously created elements



Deletes all created *elements*

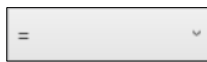


Opens a *drop-down menu* for selecting an argument:

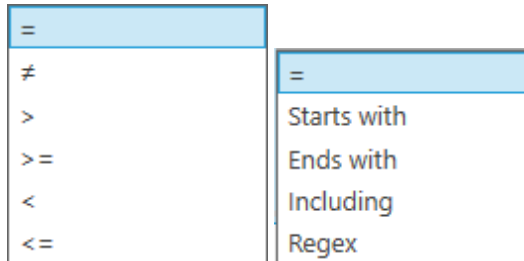
- Vendor ID
- Device ID
- OID
- Name of Controller
- Order Number
- MAC Address
- IP address
- PROFINET roles
- Name
- Description

- Software Version
- Hardware Version
- Name
- Gateway
- Subnet
- IP address
- Description

Meaning of the icons



Opens a *drop-down menu* for selecting a condition:



Deletes a rule or an element



Creates a new rule



No validation rule applies



Validation rules fulfilled



Validation rules violated

11.9 Device description management

System-specific device description files can be stored via the management of device descriptions. EtherCAT (ESI) and PROFINET (GSDML) are currently supported. The stored device description files can be used to read out and visualize detailed information about the devices in topologies.

11.10 Setting

General configurations for the system function are edited in the settings.

11.10.1 Data collector

11.10.1.1 E-mail server configuration

In the *Alarm management perspective*, *actions* (9.4 Available actions) e-mails can be sent. In order for emails to be sent, a mail server must be accessible in the network and its configuration must be specified in PROmanage® NT. The configuration data of the mail server must be assigned by the responsible IT department. The correctness of the configuration can be checked by sending a test e-mail.

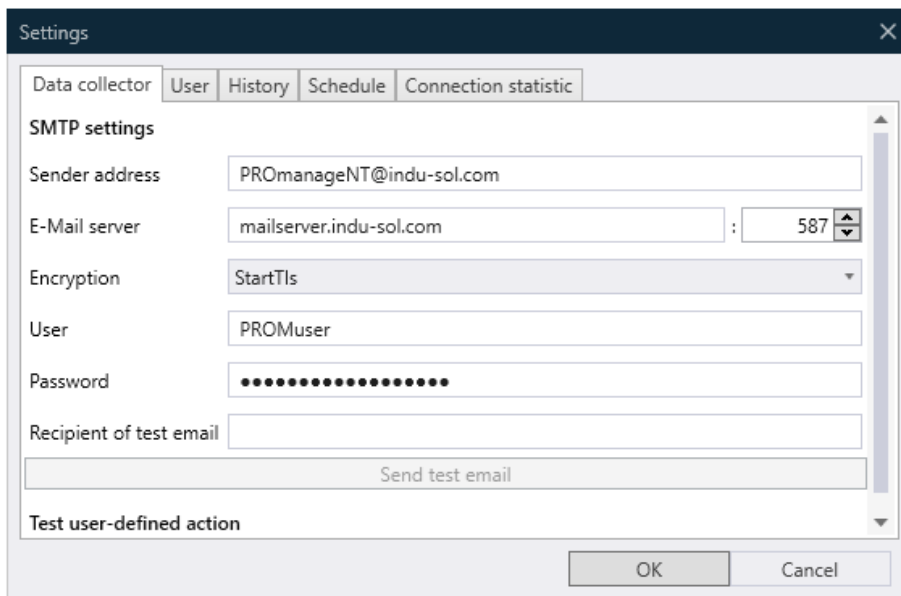


Illustration 81 Example configuration e-mail server

Ports required for SMTP transmission:



Port	function
25	SMTP server connection
465	SMTP over SSL
587	SMTP over SartTLS
993	Internet Message Access Protocol over SSL (IMAPS)
995	Post Office Protocol 3 over TLS/SSL (POP3S)

11.10.1.2 SNMP trap receiver

In the *Alarm management perspective*, *actions* (9.4 Available actions) traps can be sent. In order for traps to be sent, a trap receiver must be accessible in the network and its IP address must be specified in PROmanage® NT.

The "SNMP trap receiver active" option enables the option to receive SNMP traps and traps can now be used for an alarm in the alarm management.

If the "Receive all traps" option is activated, traps from other devices (e.g. switch) that send to this server are also received in addition to the configured devices and displayed in the "Corrections" perspective.

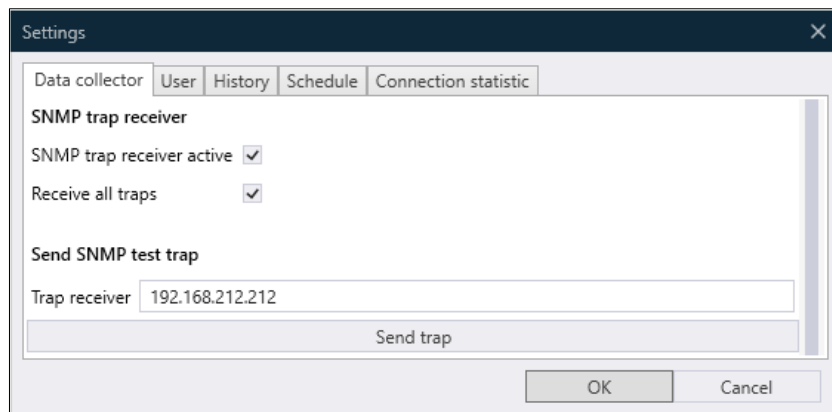


Illustration 82 Example configuration e-mail server

11.10.1.3 User-defined action

In the *Alarm management perspective*, *actions* (9.4 Available actions) can start programmes. A path must be specified in the configuration of PROmanage® NT so that programmes can be started. The programme can also be started with arguments.

A network message can be sent to your own PC for testing purposes.

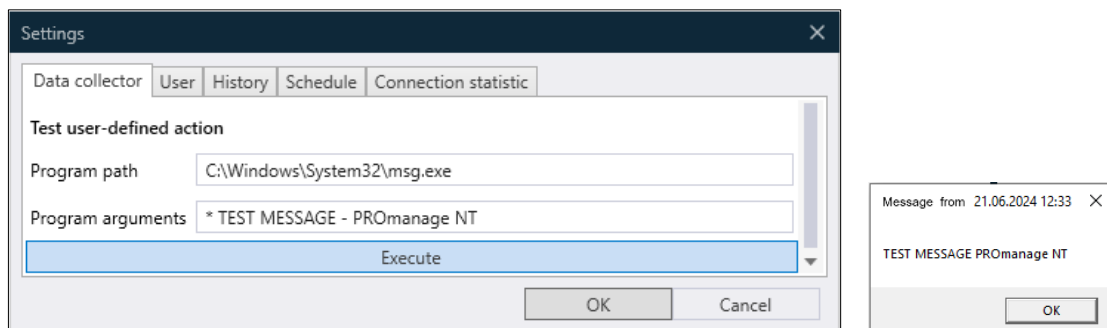


Illustration 83 Example Configuration User-defined action

Further help on network messages can be found on the Microsoft support website.

11.10.1.4 Users

There are two different users who can log in to PROmanage NT. The *admin* user can configure the entire system. The *user* can only display data and cannot change any settings.

The default settings are:

User: admin

Password: admin

User: user

Password: user

Only the respective user can change their own password by entering the current password and assigning a new password. On the other hand, the admin user can reset the passwords for admin and user to the default settings.

By setting a timeout, the user (user) or the admin (admin) is automatically logged out after the set time of inactivity.

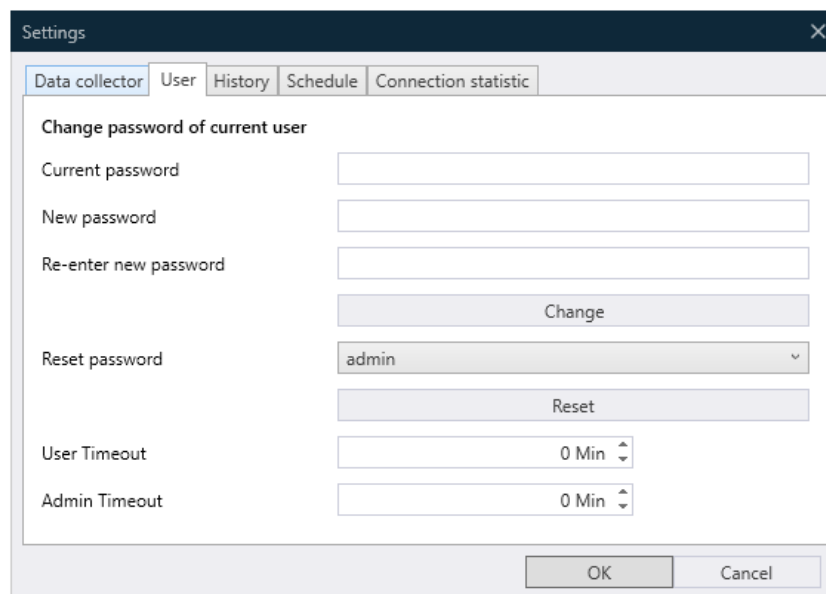


Illustration 84 User settings

11.10.1.5 Chronicle

By activating *Advanced options*, it is possible to view past events in a selected date in the *Chronicle perspective* (6.1 Representation) perspective.

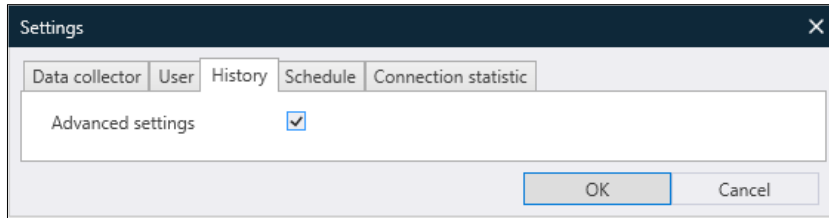


Illustration 85 Chronicle settings

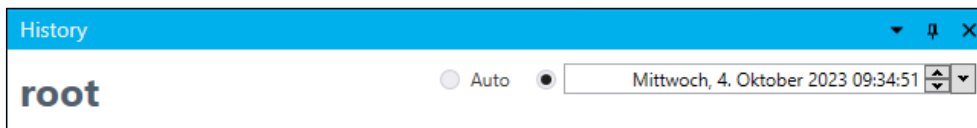


Illustration 86 Chronicle perspective with advanced options

11.10.1.6 Timetable

By creating a schedule, the monitoring of the network can be specifically switched off.

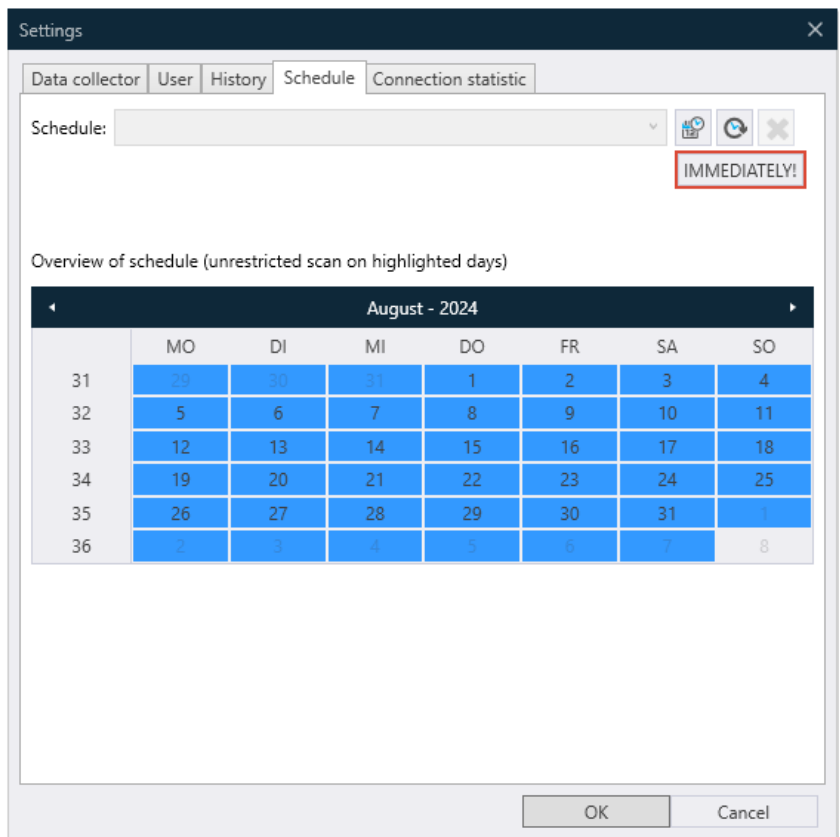
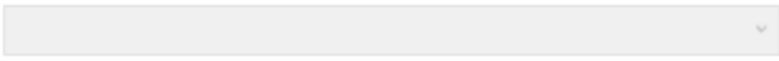


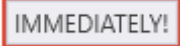



Illustration 87 Schedule setting

Meaning of the icons

Zeitplan:	
	<div style="border: 1px solid black; padding: 5px;"> <p>Schedule early shift</p> <p>Schedule middle shift</p> <p>Schedule late shift</p> <p style="background-color: #ADD8E6;">Schedule weekend</p> </div> <p>Opens a drop-down menu for selecting a created schedule.</p>
Name:	<input type="text"/>
	Naming of the current schedule
	Creates a new schedule in which the start and end times are specified
	Creates a new schedule in which repetitions are set on a daily basis
	Sets the date and time to the current time
	Deletes the currently displayed schedule
<input checked="" type="checkbox"/> Scan off	Stop the data collector (11.5 Manage data collectors)
<input checked="" type="checkbox"/> Alert off	Deactivates alarm settings (9 Alarm management)
13	On this day, the data collector will <u>not be</u> switched off according to the schedule
27	On this day, the data collector will be switched off according to the schedule

Create schedule

- Selection of a single, repeat or immediate appointment
- Assignment of a name
- Selection of whether data collectors and / or alarm management should be stopped
- Setting a time period
- If no end date is specified, the schedule runs permanently until it is cancelled
- Confirm with OK
- Save (11 Menu bar)

11.11 Log out user

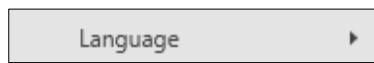
Logs out the current user and redirects to the login window.

11.12 Exit

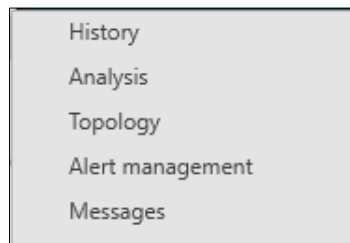
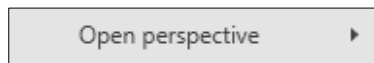
Closes the software.

11.13 Windows

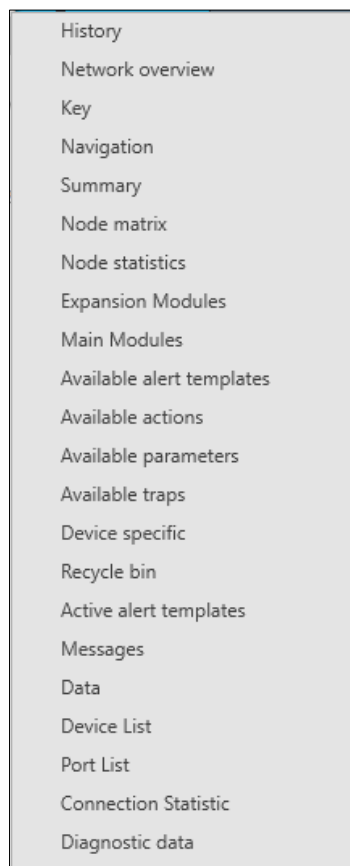
Allows you to select a language, perspective or view (7.1 Representation) or resets all changes.



Changes the language



Opens up a perspective



Opens a view



Resets the view to the default settings

11.14 Help

Shows information on the version, licence, third-party provider and end user licence agreements.

If required, the event reports and configuration files of the software can be accessed via the selection buttons of the log folders.

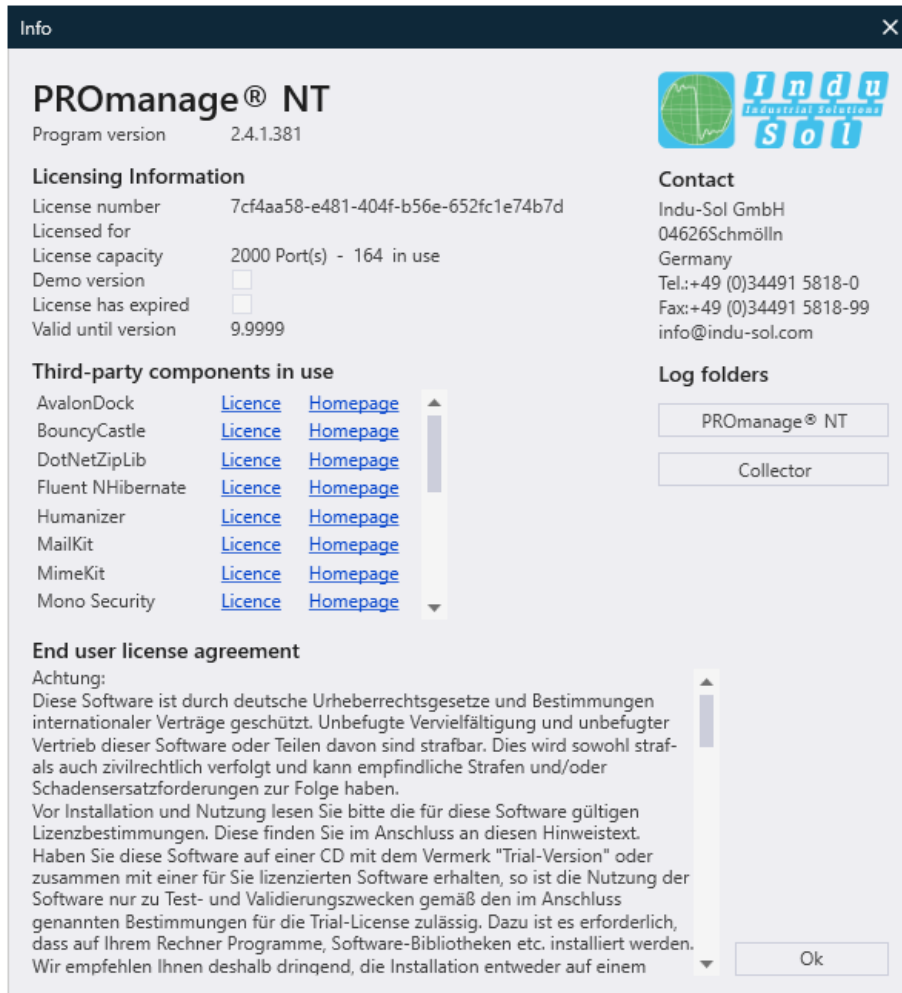


Illustration 88Help, Info

See [10.5 MSG: Command for the CMD chat](#))

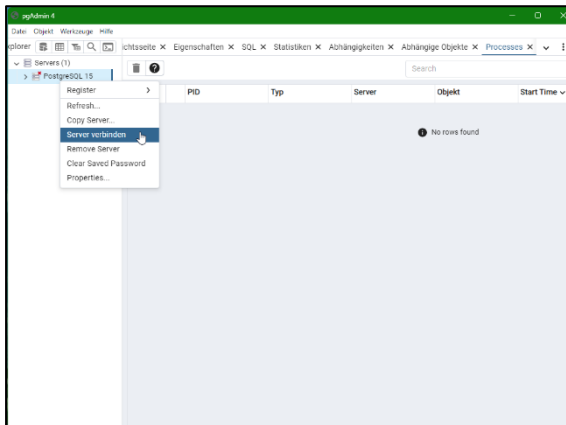
12 Appendix

12.1 PGAdmin IV

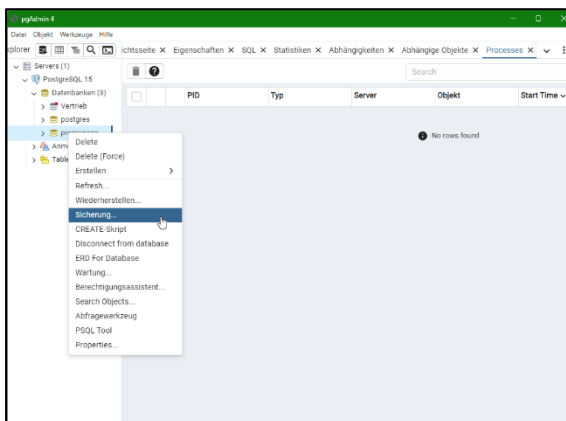
12.1.1 Backup database (PostgreSQL)

The "pgAdmin IV" programme is used to generate a database backup. This is part of PostgreSQL and is started via the programme selection in the corresponding programme folder.

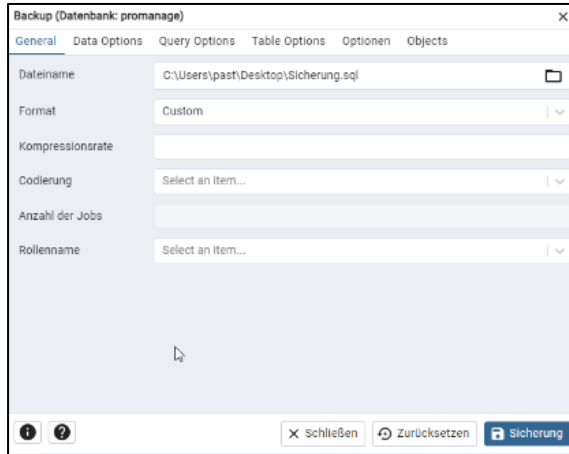
The corresponding server is selected in the programme and a connection to it is established after entering the password (default: "postgres").



The corresponding server is selected in the programme and a connection to it is established after entering the password (default: "postgres").

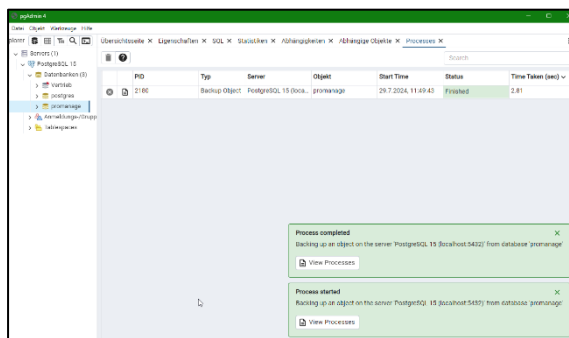


After successfully dialling in, all existing database entries are displayed. Now select the desired file and start the backup.



Enter the file name and target path for the backup file, set the backup *format* to *User-specific* and complete the backup.

Leave the other settings blank as default .

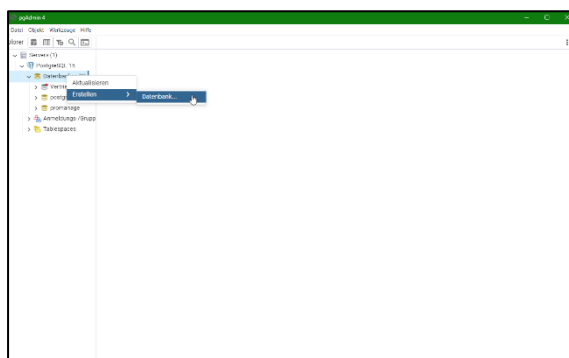


Fuse with message:

"Process completed"

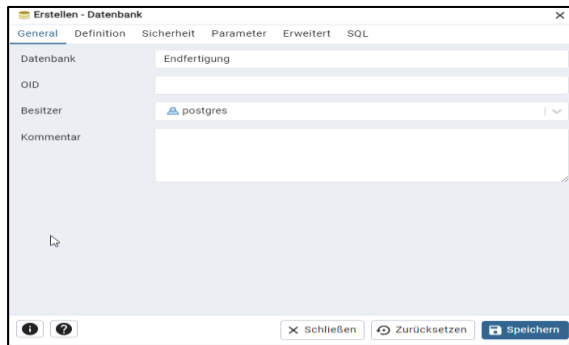
was executed without errors and is now in the previously specified target path.

12.1.2 Restore database (PostgreSQL)

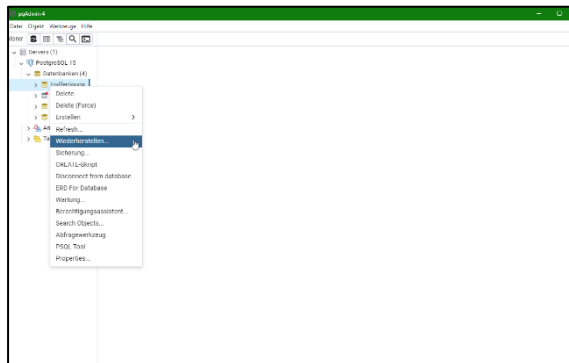


The *"pgAdmin IV"* programme is also used to restore a database.

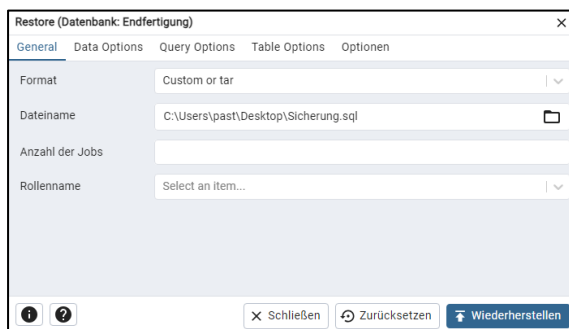
To do this, go to "Databases→ Create→ database".



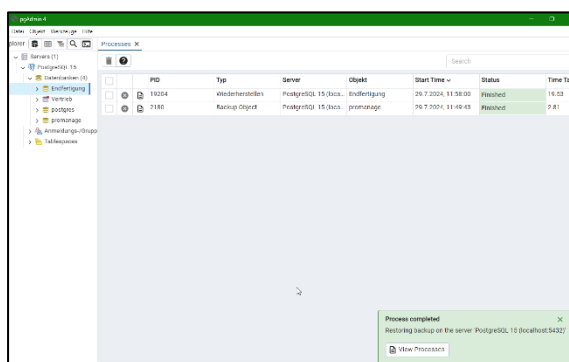
Enter a database name (without special characters) and then confirm with "OK".



To fill the new, still empty database with the desired data, select the new folder and start the restore.



In the next step, locate the storage folder of your backup file and perform the restore.

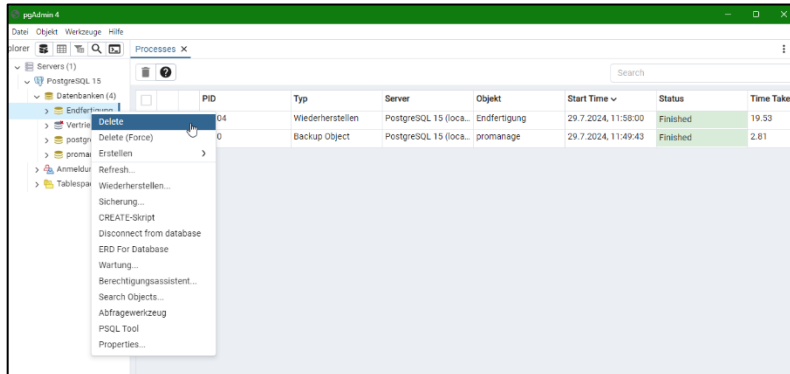


After successful completion, this is confirmed with "Process completed".

12.1.3 Delete database

If you want to remove a database completely, this is also carried out using the "pgAdmin IV" programme.

The corresponding database is selected and deleted after the security prompt.



12.2 OPC server

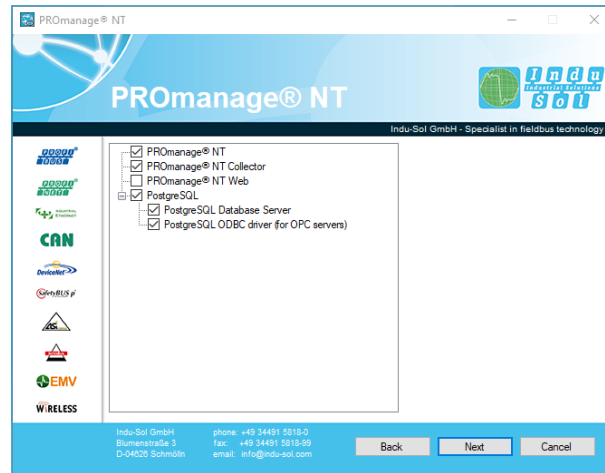


Illustration 89Driver OPC Server

12.2.1 Establish OPC connection

An optional OPC connection to other computers can be established to forward the messages recorded by PROmanage® NT to a higher-level system. To do this, the item "PostgreSQL ODBC driver (for OPC server)" must be activated and executed during installation.

The next step is to install and configure the "KepServerEX" programme. The procedure for this is explained below.

12.2.2 Install KepServerEx and configuration

Install ODBC Client (Full Installation → Communication Server → Communication Driver → ODBC Client)

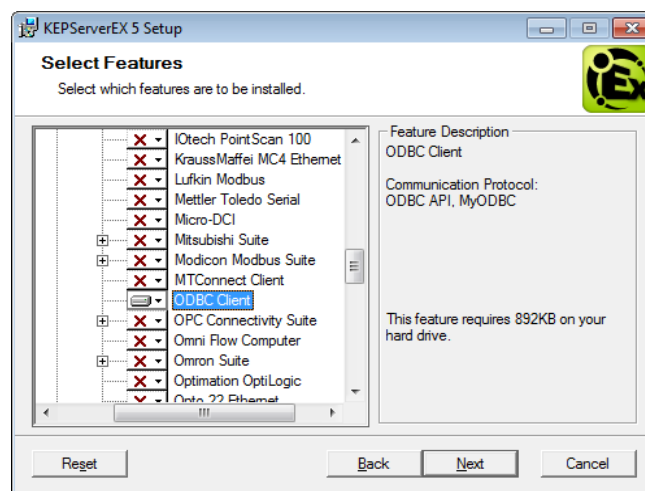
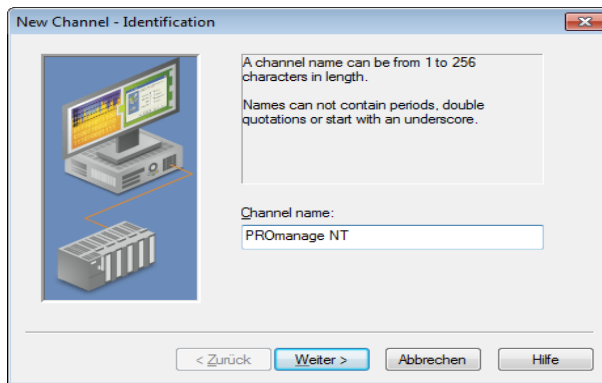


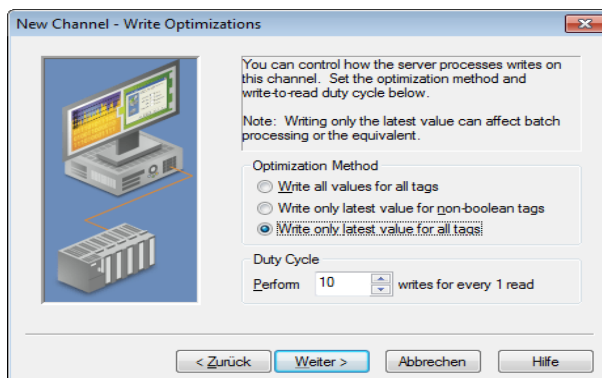
Illustration 90CEP OPC server



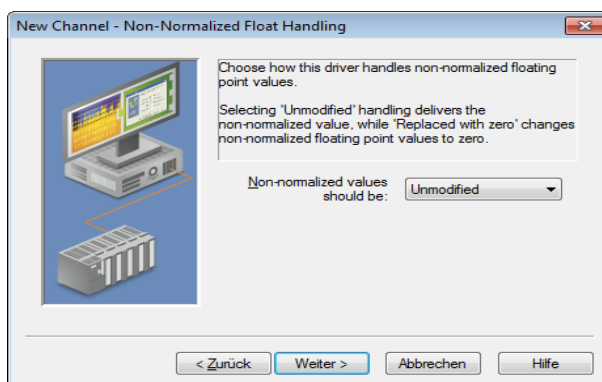
Start KepServerEx Configuration as administrator
Add channel (Edit→ Channels/Devices→ New Channel)



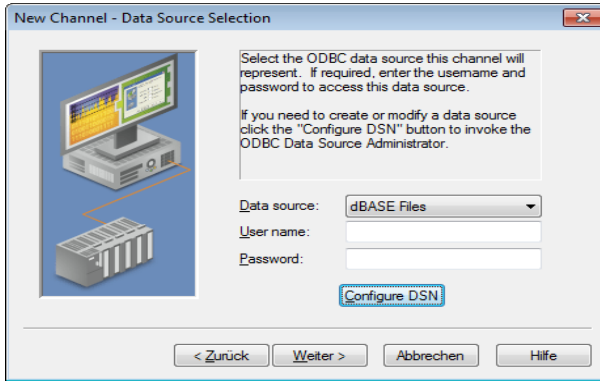
Device Driver: ODBC Client
Activate "Enable diagnostics"



Optimisation Method: Write only latest value for all tags
Duty Cycle: Perform 10 writes for every 1 read

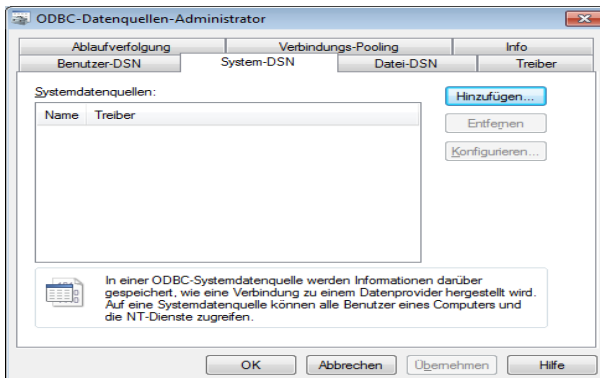


Non-normalised values should be: Unmodified

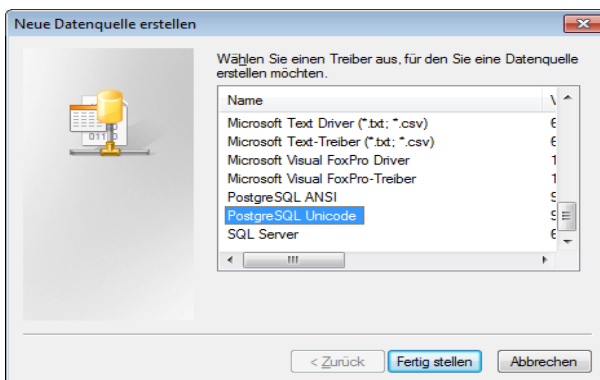


Data source: dBASE Files

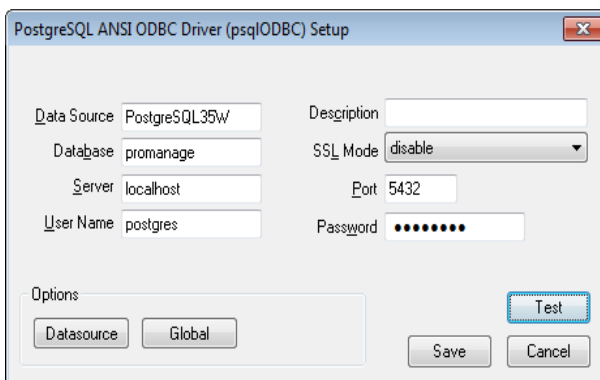
"Activate "Configure DSN"



Select "System DSN" and press "Add"



Select "PostgreSQL" and then confirm with "Finish"

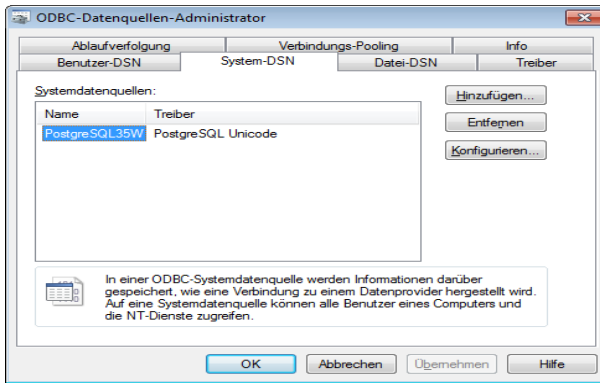


Configure PostgreSQL ANSI ODBC Driver (psqlODBC) Setup

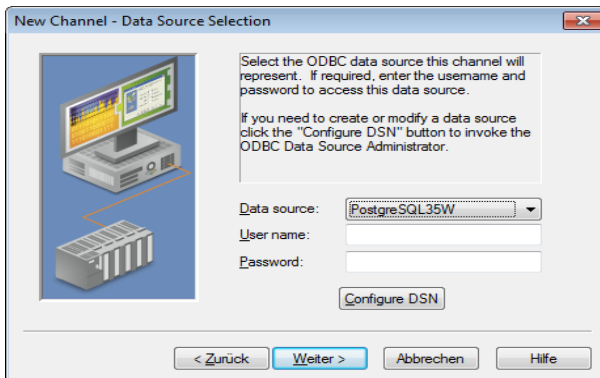
(Example: Settings for standard installation of PROmanage® NT)

- Database: promanage
- Server: localhost
- User name: postgres
- Password: postgres

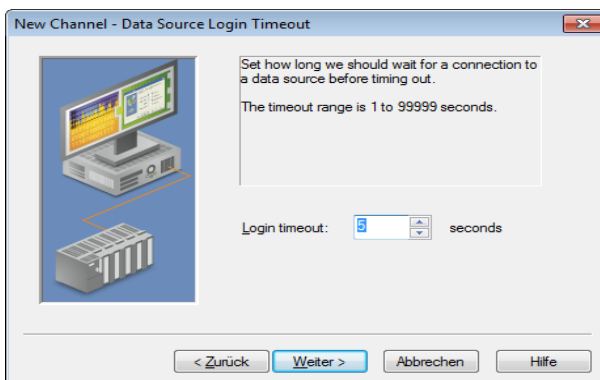
After correct entry: Test button → Connection successful



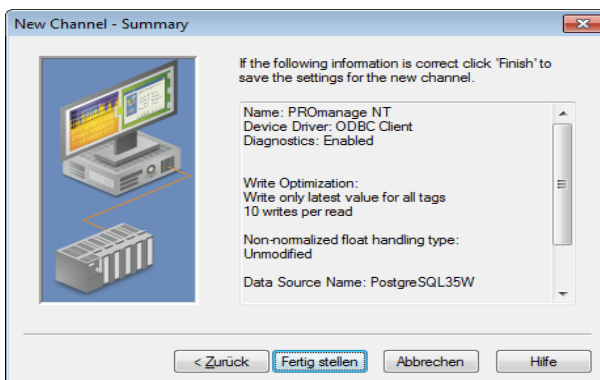
Close the ODBC data source administrator with "OK"



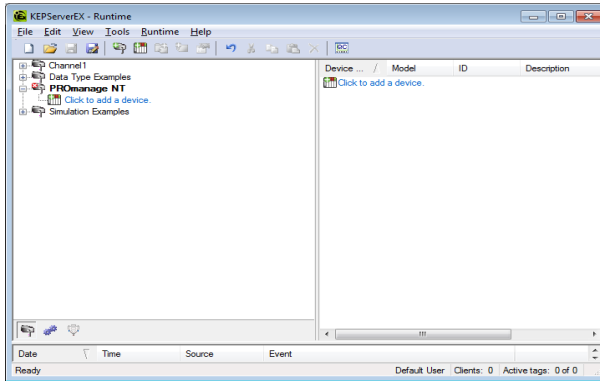
Data Source Selection: select created data source



Data Source Login Timeout: 5 seconds

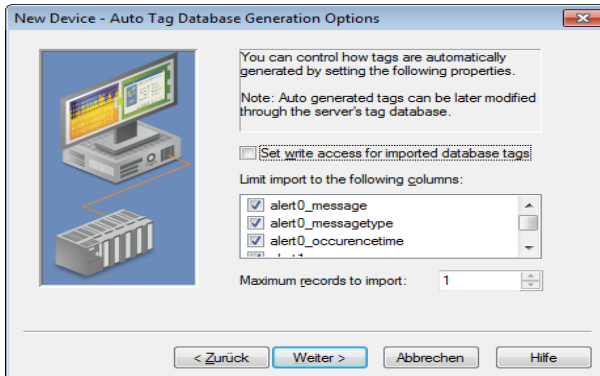


Check and confirm settings

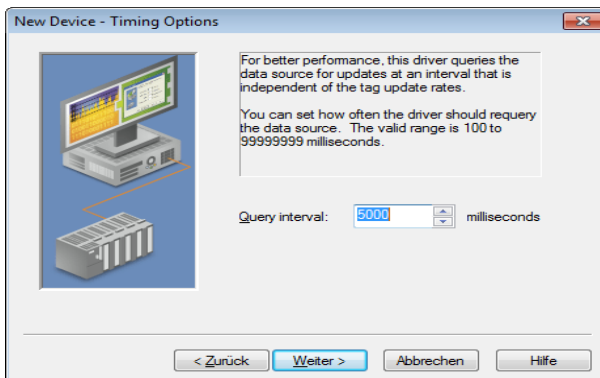


In KEPServerEX via "Click to add a device." Add a new device

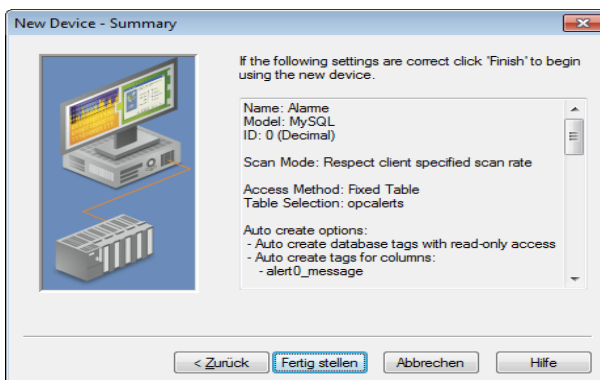
- Device name: Alarms
- Device model: MySQL
- Scan Mode: Respect client specified scan rate
- Access method selection: Fixed Table
- Table selection: opcalerts



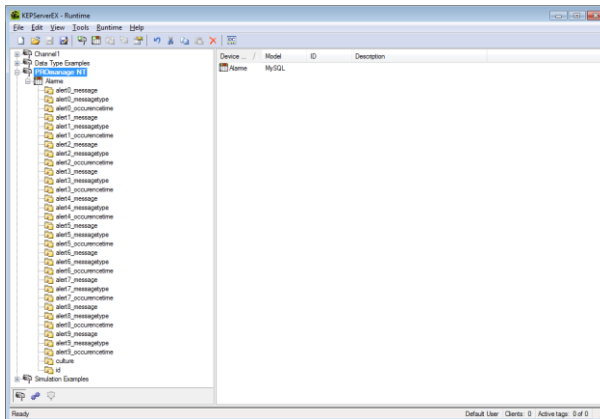
Retain settings under "New Device - Auto Tag Database Generations Options"



Set query interval: 5000 milliseconds



Check and confirm settings



As a result, the tags are automatically generated by the system

12.2.3 Explanation of the individual alarms (alerts)

Alarm	Meaning
Id	Automatically generated primary key
Culture	Language
alert0_message	Message generated by PROmanage NT
alert0_messagetype	Message type (system, trap, ...)
alert0_occurencetime	Date of the generated message
...	...
...	...
...	...
alert9_message	Message generated by PROmanage NT
alert9_messagetype	Message type (system, trap, ...)
alert9_occurencetime	Date of the generated message

Alarm 0 is the last alarm generated (latest message)

13 Notes

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Wir sind zertifiziert nach DIN EN ISO 9001:2008