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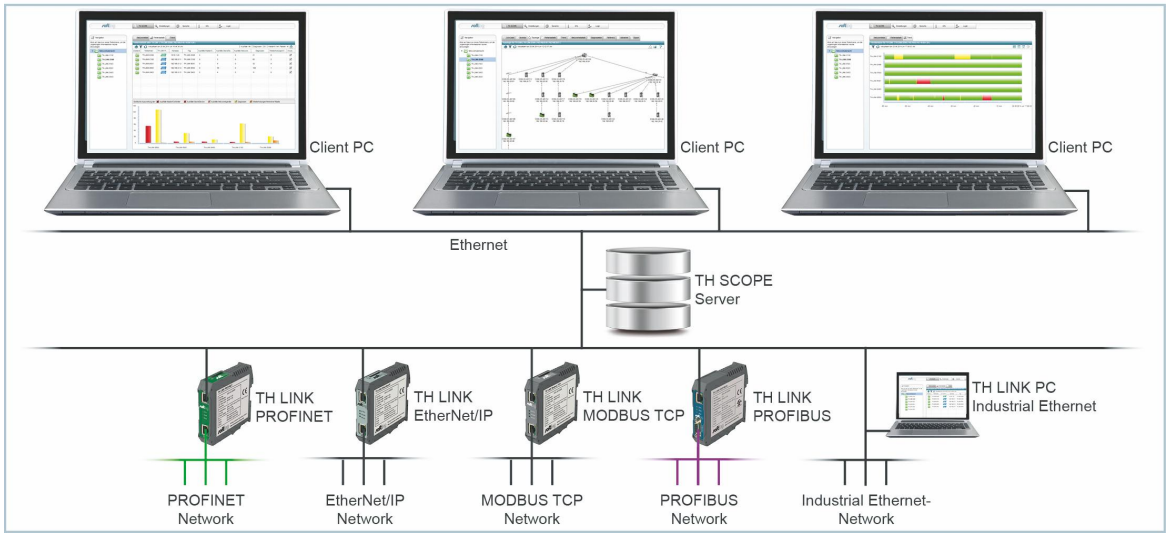
User Manual

TH SCOPE



Version: EN-032018-3.50

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The information contained in these instructions corresponds to the technical status at the time of printing of it and is passed on with the best of our knowledge. The information in these instructions is in no event a basis for warranty claims or contractual agreements concerning the described products, and may especially not be deemed as warranty concerning the quality and durability pursuant to Sec. 443 German Civil Code. We reserve the right to make any alterations or improvements to these instructions without prior notice. The actual design of products may deviate from the information contained in the instructions if technical alterations and product improvements so require.

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Table of Contents

1 Introduction

1.1 About TH SCOPE

TH SCOPE is a software application for industrial network management and network diagnostics. Geared to plant operators and maintenance personnel, TH SCOPE is an all-in-one, easy-to-use solution for permanent monitoring and predictive maintenance, for acceptance testing and for troubleshooting. Relevant data of connected network devices is collected by a TH LINK and forwarded to TH SCOPE. Combined with TH LINK components, the product supports PROFIBUS, PROFINET, EtherNet/IP and Modbus TCP protocols.

In the following diagram, the *TH LINK PROFIBUS a*nd *TH LINK Ethernet* show two typical industrial network topologies.

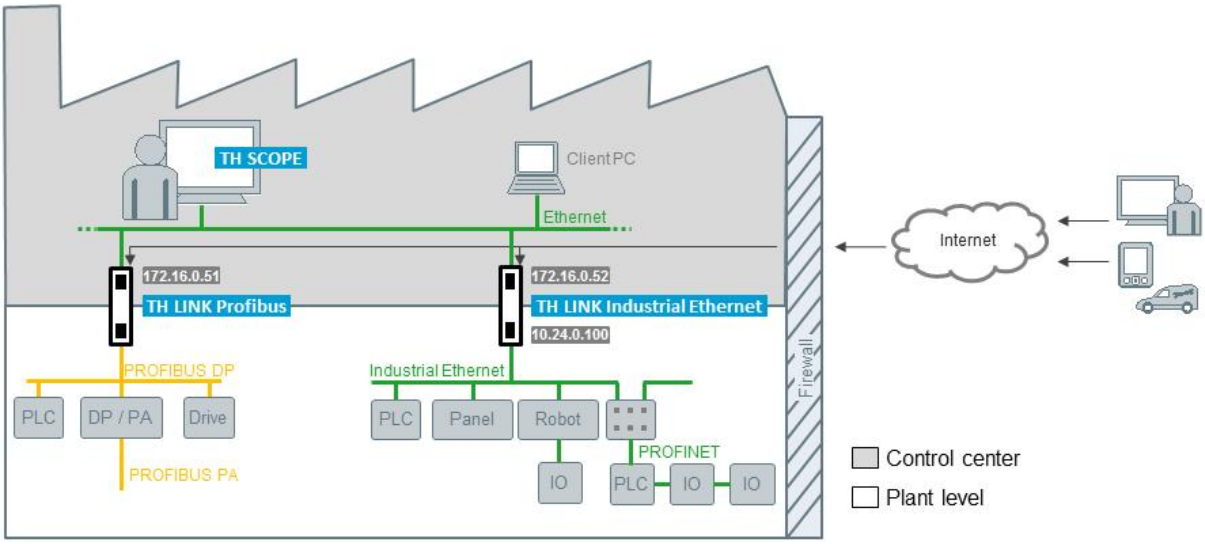


Figure 1: data exchange in Ethernet and PROFIBUS network topology

When TH SCOPE is started for the first time it must be connected with a TH LINK device. For more details see Chapter TH LINK detection 48.

To access the fieldbus system, at least one of the following products is required:

- TH LINK PROFIBUS
- TH LINK PROFINET
- TH LINK EtherNet/IP
- TH LINK Modbus TCP
- TH LINK Industrial Ethernet
- TH LINK PC Industrial Ethernet

1.2 About this manual

This User Manual explains the use of TH SCOPE. Main focus are the functions of the graphical user interface. Examples are given to show how to find and interpret network errors with the software.

Read this manual before starting.

For damages due to improper connection, implementation or operation Softing refuses any liability according to our existing guarantee obligations.

1.3 Typographic conventions

The following typographic conventions are used throughout Softing customer documentation:

Keys, buttons, menu items, commands and other elements involving user interaction are set in bold font and menu sequences are separated by an arrow	Open **Start → Control Panel → Programs**
Buttons from the user interface are enclosed in brackets and set to bold typeface	Press **[Start]** to start the application
Coding samples, file extracts and screen output is set in Courier font type	`MaxDlsapAddressSupported=23`
Filenames and directories are written in italic	Device description files are located in *C:\<Application name>\delivery\software\Device Description files*

CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

Note

This symbol is used to call attention to notable information that should be followed during installation, use, or servicing of this device.

1.4 Document History

Version	Release date	What has changed
1.00	September 2014	Adaptation to new Softing documentation structure and layout
1.10	January 2015	▪ Enhanced Feature "Utilization" in the Topology list including related description. ▪ Adobe Flash Player system requirements modified to version 14.0 or higher.
1.20	April 2015	▪ Sections "Using device description files 13" and "Diagnostics list 35" enhanced with information on GSDML file support.
1.30	August 2015	▪ HTML 5 implementation ▪ Adobe Flash-Player is no longer required.
1.40	January 2016	▪ New functionality and new description Acceptance reports 42. ▪ Display of line depth and cable length, see Topology 30. ▪ Detection of duplicate IP addresses, see Diagnostics list 35.
1.41	February 2016	▪ Acceptance report 42 enhanced with "VALUE" note.
1.50	July 2016	▪ New functionality Black List 40. ▪ New functionality Automatic export 51 with prefix configuration possibility.
2.00	January 2017	▪ Add location information for each network device in TH SCOPE Inventory list (Device names for EtherNet/IP devices respectively) ▪ OPC UA Server running in TH SCOPE for higher-level connectivity ▪ Configuration of "Docking devices" (PROFINET devices)
3.40	June 2017	▪ Update of this user guide
3.50	March 2018	▪ New functionality: ▫ Inventory details displayed on *OPC UA Server* ▫ Telegram analysis using *dataCheckAnalazyer*

2 General requirements

- The TH SCOPE software has been installed successfully.
- At least one of the following products is needed to connect with the fieldbus system(TH LINK PROFIBUS, TH LINK PROFINET, TH LINK EtherNet/IP, TH LINK Modbus TCP, TH LINK Industrial Ethernet, TH LINK PC Industrial Ethernet).
- A measurement must have been started for each TH LINK gestartet sein. Click the **Info** ( ) tab to see if a measurement has been started. Make sure **Measurement started** is displayed below **TH SCOPE**.
- If no measurement has been started, go to **Settings** ( ) → **TH SCOPE** → **Measurement** and click **Start**.

2.1 System requirements

The following operating systems are supported for TH SCOPE:

Operating system	Bit version
Windows 7	32 Bit and 64 Bit
Windows 8.1	64 Bit
Windows 10	64 Bit
Windows Server 2012	64 Bit
Windows Server 2012 R2	64 Bit
Windows Server 2016	64 Bit

Note

The instructions given in this user guide are based on the operating system Microsoft Windows Professional 7.

Software required

- Microsoft Excel 2010 or higher to open or edit the acceptance reports
- Adobe Reader 8 or higher
- Microsoft Internet Information Services (IIS) 5.1 or higher (available on Microsoft Windows installation CD or via Internet download at http://www.iis.net.
- Microsoft .NET Framework 4.0 (included in TH SCOPE installation)

Browsers supported

- Internet Explorer 11 or higher
- Mozilla Firefox 49 or higher
- Google Chrome 53 or higher

Note

To provide the complete functionality for creating and downloading the acceptance report make sure that no pop-up blockers are activated and downloading of files or documents is allowed.

2.2 Network settings

If your network is protected by a second firewall in addition to the Windows firewall, make sure that the following settings are made to allow TH SCOPE services to communicate properly.

- Enabling of HTTP port 80 - inbound and outbound
- Enabling of SNMP port 161 inbound or port 2367 (if port 161 is used by another SNMP agent).
- Enabling of IP 224.0.5.128 port 2364 UDP outbound
- Enabling of UDP ports 2365 outbound and 2366 inbound

The following ports are used by TH SCOPE for internal communication only:

- Port 22
- Port 80
- Port 1100
- Ports 1123 - 1151
- Port 1500
- Port 1501
- Ports 2363 - 2366
- Ports 49152 - 49171

3 Installing TH SCOPE

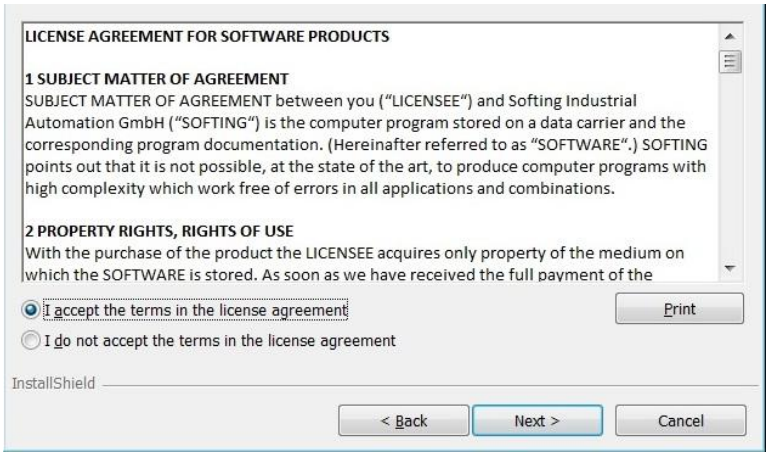
Make sure that all system requirements 8 are met.

1. Start the installation:
   a. for 64 bit systems with a double-click on *Install64_TH_SCOPE.exe*
   b. for 32 bit systems with a double-click on *Install32_TH_SCOPE.exe*

   Note
   If you install a Softing product for the first time, a window is opened that prompts you to trust the publisher. Activate the option **Always trust software from Softing AG**, if you do not want to be asked in subsequent installations. Then select **[Install]** to start the installation.

2. Select your installation language and click **[OK]**.
   The **Welcome screen** appears:

3. Click **[Next]** to install TH SCOPE on your system.
   The **license agreement** screen appears:



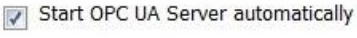
4. Carefully read the information. Click I accept the terms in the license agreement. Then click [Next].

5. Click **I accept the terms in the license agreement** and continue with **[Next]**.
   The **Destination Folder** appears::

6. Click **[Next]** to copy the software to the folder currently displayed or click **[Change]** to copy TH SCOPE to a different folder.
   The installation screen appears.

7. Click **[Instal]** to start the installation. If you want to review or change any of your installation settings, click **[Back]**.

8. Tick the checkbox for **Start OPC UA Server automatically**.



9. Click **[Finish]** to complete the installation and to exit the wizard.

3.1 Licensing

To use all TH SCOPE features you will need to acquire a license.

Note
With the installation of TH SCOPE you will automatically have a 30-day demo license.

There are two types of licenses:

- **Licensing on PC**: The PC license is a run-time license offering a full set of TH SCOPE features on a dedicated computer.
- **Licensing on USB dongle (hardlock)**: In contrast to the PC license, a dongle license is not stored on the computer but on the USB dongle itself. Using a dongle license the TH SCOPE software can therefore be run on any PC to which the dongle is attached.

3.1.1 Licensing on PC

Installing a PC licence with Internet access

1. Start the license manager: **Start → All Programs → Softing →License Manager → License Manager V4**.
2. Select **Activate for this PC**.
3. Enter the license key in the input field using the following format XXXXX-XXXXX-XXXXX-XXXXX.
4. Click **[Activate license]**.
   After the license key has been activated successfully it will appear under **Available licenses on this PC**.
5. Restart your PC to activate the licence.

Installing a PC licence without Internet access

1. Start the license manager: **Start → All Programs → Softing →License Manager → License Manager V4**.
2. Select **Activate for this PC**.
3. Click **[Export PC IDs...]**
4. Select your PC and click **[OK]** to save the file.
5. Copy this file to a PC with Internet access and installed License Manager.
6. Start the License Manager and select Genrate **license file for remote PC**.
7. Enter the license key in the input field and select **Import PC-Id from remote PC...**.
8. Select **Generate and export license file...** .
9. Save the file and copy the file to the computer on which you want to install the license.
10. Select **Activate for this PC**.
11. Click **[Import license file]** and import the file.
12. Click **[Activate license]**.
    After the license key has been activated successfully it will appear under **Available licenses on this PC**.
13. Restart your PC to activate the licence.

3.1.2 Licensing on USB dongle

1. Connect the dongle to a computer with Internet access.
2. Start the license manager: **Start → Alle Programme → Softing →License Manager → License Manager V4**.
3. Enter the license key in the input field using the following format XXXXX-XXXXX-XXXXX-XXXXX.
4. Click **[Activate license]**.
   After the license key has been activated successfully it will appear under **Available licenses on this PC** and will be copied to the internal memory of the dongle.
5. Restart your PC to activate the licence.

3.2 Displaying device images

In TH SCOPE you can display in your topology view images of devices connected your network. The following image file types are supported: **.png*, **.jpg*, **.gif*.

If you want to display device images in the topology, you need to store the images in the following folder:

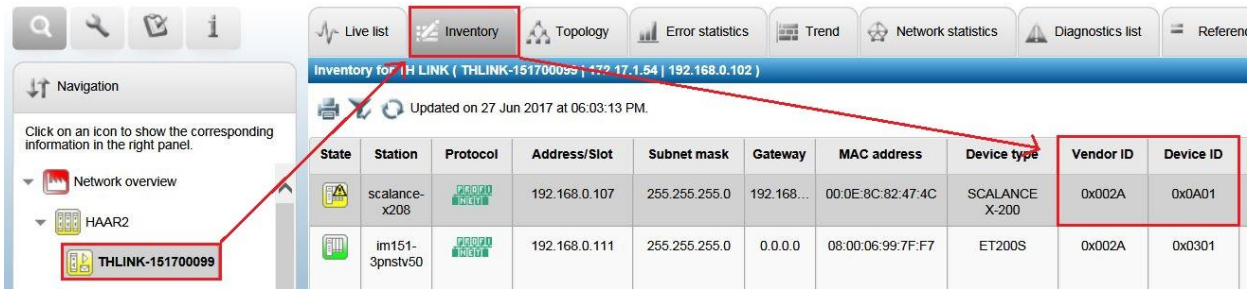
<Installationsverzeichnis>\Softing\TH SCOPE\WebContent\Bitmaps

Double-click the bitmap link to connect with the correct folder.

Note

Make sure that a single image is not larger than 50 KB.

The file name of the device image consists of an identifier (prefix) and an extension (suffix). The identifier is a combination of vendor ID and device ID followed by a dot and the file extension (e.g. *.png*). Both the vendor ID and the device ID can be found in the tab "Inventory" of the connected TH Link device. Example**:** 002A-0302



If a device cannot be identified by vendor ID and device ID you can alternatively use the MAC address or the order number of the device.

Alternative file names

Identification	Notation	Example
MAC address	The MAC address must be divided by hyphens	00-0E-8C-D0-50-46
Manufacturer specific part of the MAC address of the device	The MAC address part must be divided by hyphens	00-0E-8C
Order number	Order number code - for specific restrictions see note below	1846-56482

Note

All characters which must not be used in Windows file names such as \ / : * ? " < > | have to be replaced by a hyphen.

Example

order number appears as: 1846/56482

file name must be written as: 1846-56482

3.3 Using device description files

TH SCOPE supports GSD files for PROFIBUS networks and GSDML files for PROFINET networks. It analyzes the hexadecimal values of the manufacturer-specific diagnostics messages and the error codes of channel diagnostics and displays them in plain text. The diagnostic messages are displayed in the diagnostic list. If the GSD or GSDML file includes troubleshooting tips, they are displayed in the diagnostics list as well.

Proceed as follows:

1. Store the GSD or GSDML files in the corresponding folder in the TH SCOPE installation directory (see figure below).
2. Restart your PC. If you have administrator right on the PC, restart the TH SCOPE service

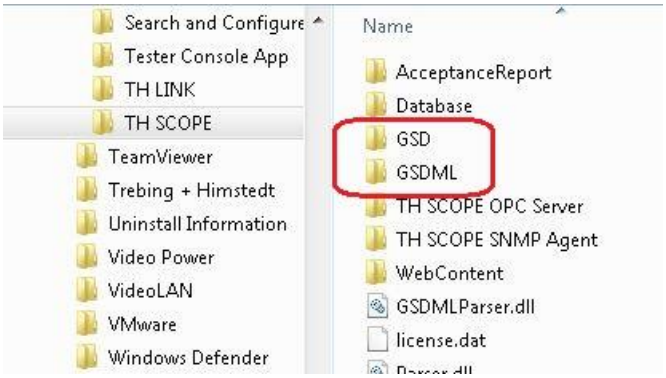


Figure 2: GSD and GSDML folder in TH SCOPE default directory

4 Opening TH SCOPE

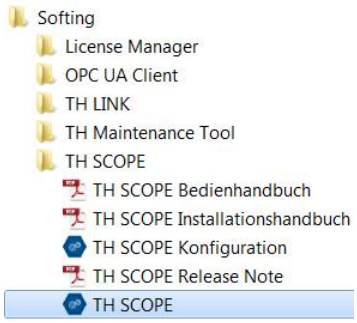
After TH SCOPE has been installed, open the application to familiarize yourself with the features and the user interface.

You can start TH SCOPE from your local computer or remotely from another computer on the network.

Open TH SCOPE on local computer

To start TH SCOPE on your computer which is directly connected to a TH LINK device, proceed as follows:

1. Open the Windows start menu.
2. Select **Alle Programme → Softing → TH SCOPE**.
3. Click **TH SCOPE:**



TH SCOPE appears in the default browser on your computer showing the network overview.

Note

If you have a second web server installed on your computer, see the Section Solving port conflicts 54.

Note

If you have configured the HTTP port manually you will reach the TH SCOPE service in your default web browser on **localhost:<Portnummer>/THSCOPE** (example: localhost:8080/THSCOPE). The port the selected HTTP port.

Hint

Save the TH SCOPE address and port to your browser favourites.

Open TH SCOPE from a remote computer

To start TH SCOPE from a remote computer on you network, enter the following URL into the address bar of your browser:

http://<Computername>/THSCOPE

where <computer name> is the computer name or IP address of the computer on which the TH SCOPE service is running.

Note

If you have configure the HTTP port manually for TH SCOPE you will reach the TH SCOPE service in your default web on **http://<Computername>:<Port>/THSCOPE** (example: 192.168.0.1:8080/THSCOPE)

TH SCOPE does not start

In the event that TH SCOPE does not start and the following screen appears instead of the user interface, the Microsoft Internet Information Services (IIS) have not been correctly installed.

Note

Install IIS as described in Chapter 7.2 (Installing Microsoft Internetinformationsdienste (IIS) 55).

4.1 User interface

The graphical user interface includes a number of functions and views divided into the following areas:

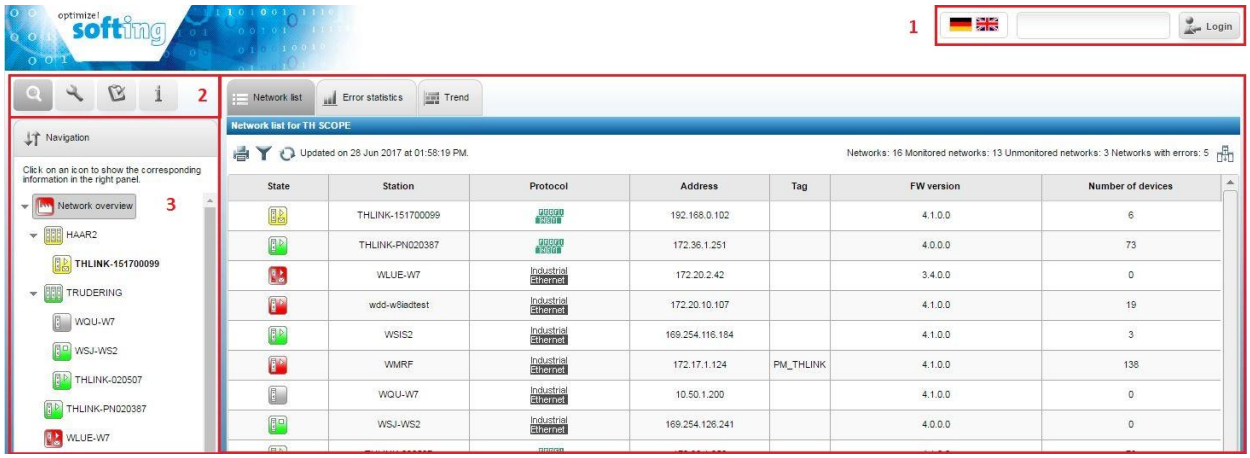


Figure 3: TH SCOPE start page

1. **Login area** - allows you to log in and log out as administrator and switch between languages (English and German)

2. **Function area** - allows you to select specific functions and features
3. **View area** - displays the network structure, connected devices and give you an a general status overview

4.2 Login and language

1. Select your preferred language (German or English)
2. Click into the login input field.
3. Enter the password. Default password is **THSCOPE_Admin**.
4. Click 

.

Note

We recommend changing the password after login (see user administration 51).

Note

Log out after you have changed the settings. Otherwise you will have to wait about 5 minutes to reopen this page after closing the browser.

4.3 Functions

Click on the above icons to select one of the following options:

 opens the network overview 20

 opens the setting page of the selected TH LINK

 opens the Create acceptance report 42 page

 opens the product information of the TH SCOPE and TH LINK(s) in use

4.4 View area

The view area displays the results of the currently recorded measurements. Select the tabs to switch between different views.

4.4.1 Printing

Click the printer icon () to print tables, topology views or acceptance reports.

Note

When printing tables, the printer settings of your computer from which you access to the TH SCOPE are used. The topology is exported into a PDF file that you can print afterwards.

4.4.2 Filtering

Most view areas will allow you to filter status information and table content (including names, addresses, network protocols, device types). Click the  icon. A window opens allowing you to filter displayed data by state or address:

1. Click the  icon.
   A window opens allowing you to filter displayed data by state or address.
2. Select a filter.
3. Click **[Set filter]**.
   The filtered data is shown and the filter icon in the view are is displayed with a check mark ().

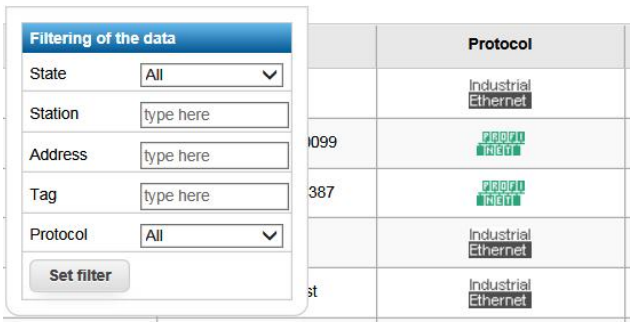


Figure 4: filtering of data

4.4.3 Updating views

To update the page content click the refresh icon within the view or switch from one view to another and back.

4.4.4 Viewing and hiding table columns

1. Click the icon to view or hide table columns
   A window pops up.
2. Tick any number of checkboxes in the popup window to view or hide table columns.

Figure 5: Ein-/Ausblenden von Tabellenspalten

4.4.5 Sorting

1. Click the corresponding column header in the table to sort table content.
   You can sort ascending or descending (click again).
2. To sort consecutive columns press and hold the **Ctrl** key and select the desired columns.

Note

Not all columns can be sorted.

4.4.6 Tooltips

All station icons have tool tips. Move the mouse over the icon to read the tool tip:

5 Working with TH SCOPE

5.1 Network monitoring

The icon colors provide information about the status of the network and the network stations:

Red icon

Error signal:	Station is displayed with a red icon.
Error cause:	At least on station is malfunctioning.
Action:	Check the station for damaged connections, correct installation of connectors and defects.

Yellow icon

Error signal:	Station is displayed with a yellow icon.
Error cause:	At least one station has a diagnostic.
Action:	Check the station and evaluate the manufacturer-specific diagnostics if necessary.

Green icon

Fully functioning.

Grey Icon

Station is inactive (in PROFIBUS networks) or has no valid IP address (in Ethernet network).

Permanent change of station state

Error signal:	Permanent state change of a station between failure and ok.
Possible cause:	Loose contact of connector or cable.

PROFIBUS: entire segment is down

Error signal:	An entire network segment is malfunctioning.
Possible cause:	EMC interference in this segment.

PROFINET/Industrial Ethernet: module/submodule is not the original module/submodule

Error signal:	The diagnostics list shows the message for the replaced module/ submodule "module/submodule is not the original module/submodule, but compatible".
Possible cause:	The firmware of the device has been updated. This includes a new GSDML file, in which a new module/submodule is available. However, the project has not changed, so that the controller transfers the parameterization of the old firmware that was created with the old GSDML file to the device.

Hint

See the diagnostics list 35 for detailed information about possible errors and remedies.

5.2 Network overview

Click the **Network Overview** icon to view configuration and status details of the network and connected stations.

The TH SCOPE navigation has a hierarchical structure. The network overview presents a status summary of the monitored networks and is divided into the level **overview**, **groups** and **links**. The following network overview contains the groups HAAR2 and TRUDERING. The level below the group shows the connected TH LINKs.

Each TH LINK in the navigation tree indicates the status of the monitored area. If a connected TH LINK reports an error, the incident is reflected across the entire network overview and immediately indicated at the highest level.

The navigation tree shows all reachable TH LINKs and is automatically updated with every modification in the configuration of TH SCOPE.

When a group has been created, the group structure is shown in the navigation tree. The status of the higher level group node shows the worst network status of the group. Example: 2 TH LINKs are yellow, 1 TH LINK is green => group node is yellow).

Each group node has a network list which shows all assigned and available TH LINKs, their names, status, protocol type and further details.

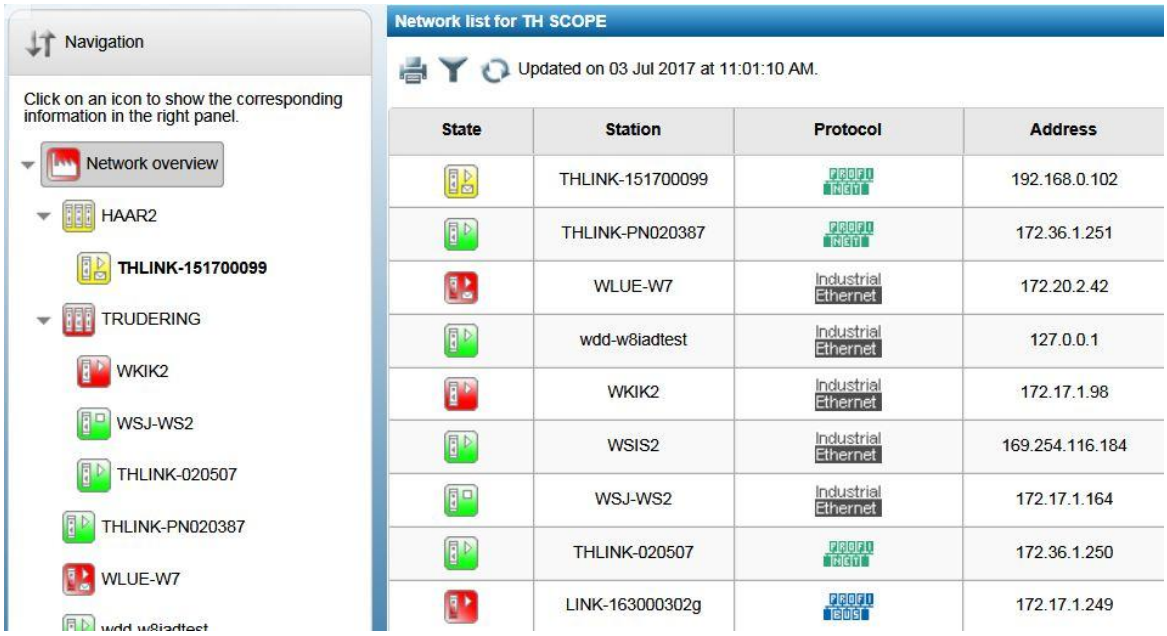


Figure 6: groups of TH LINKs in TH SCOPE navigation tree

5.2.1 Network list

The Network list gives you an overview about all networks and associated TH LINKS. You can see all TH LINK sorted by IP address and you can find out by the icons what a network type it is. The status of each TH LINK is colour-coded. The meaning of a colour is explained by tooltips. Select a TH LINK and move your mouse pointer over the link icon to see a status description.

Furthermore you can see the firmware version and how many devices are located in the network. Network overview is highlighted and the tab **Network list** is selected:

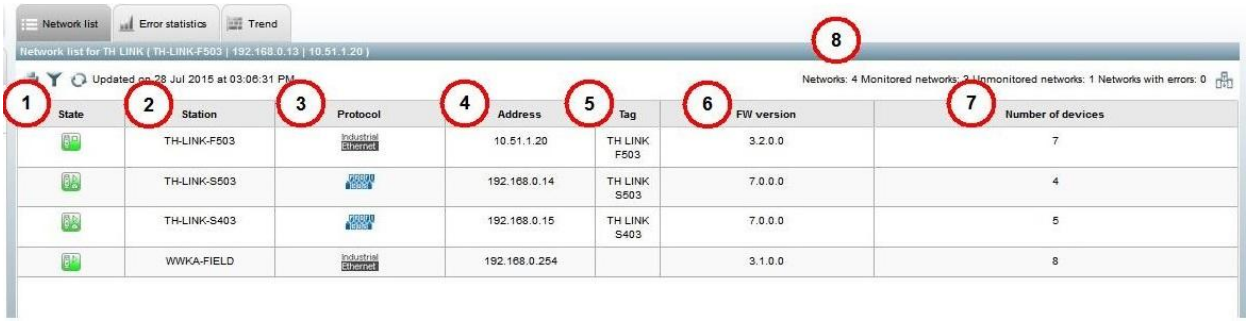


Figure 7: network list

1 TH LINK state

2 Host name of TH LINK

3 Protocol type

4 IP address of TH LINK

5 Tag name of TH LINK

6 Firmware version of TH LINK

7 Number of all devices in the network

8 Overview of all networks available, monitored or not monitored or faulty

5.2.2

Error statistics

The **Error statistics** view shows a list and a bar chart of all networks that are faulty. Faulty means that at least one station in a network has been down, has been diagnosed with an error or that at least one repeat or lost packet has been detected in the network.

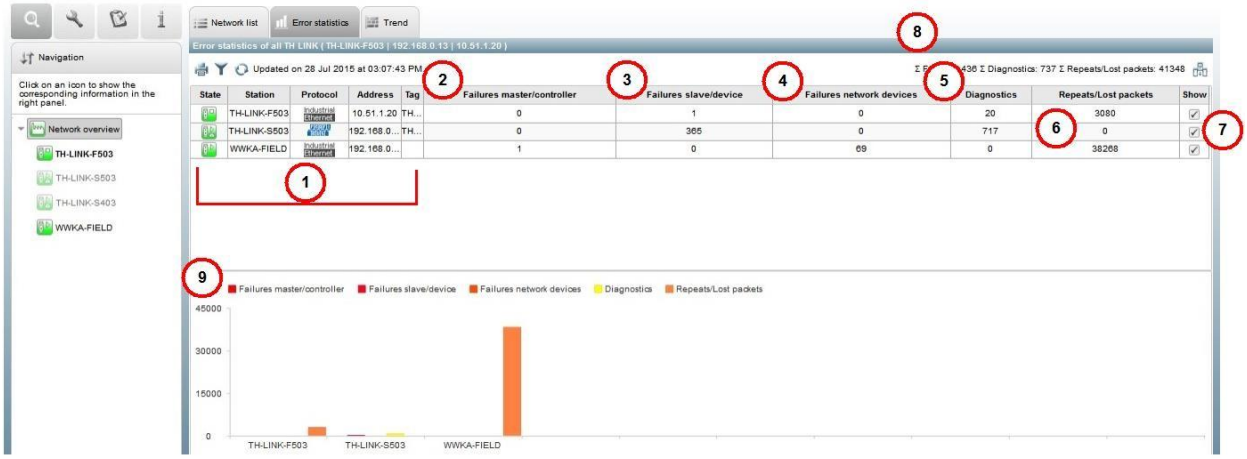


Figure 8: Error statistics

1	TH LINK data, see Network list (also TH LINK) 21
2	Number of all master or controller failures
3	Number of all slave or device failures
4	Number of all other network device failures
5	Number of all diagnostics
6	Number of repeats or lost packets
7	Show/hide in graphical view
8	Sum of all failures, diagnostics, repetitions/lost packets of all networks
9	Show/hide in chart view

Note

If this view is empty, all networks are running properly. That means since measurement start no error in the networks occurred.

Note

Lost packets are among: discarded packets (discarded caused by overload), error packets (defect packets) and unknown packets (not corresponding to the Ethernet standard).

5.2.3 Trend

The **Trend view** s view displays graphically state changes of all networks are in a chronological sequence between one hour up to one month. The state change of the network icon is shown. Thus it is readily identifiable when and how long a faulty was existing in the network.

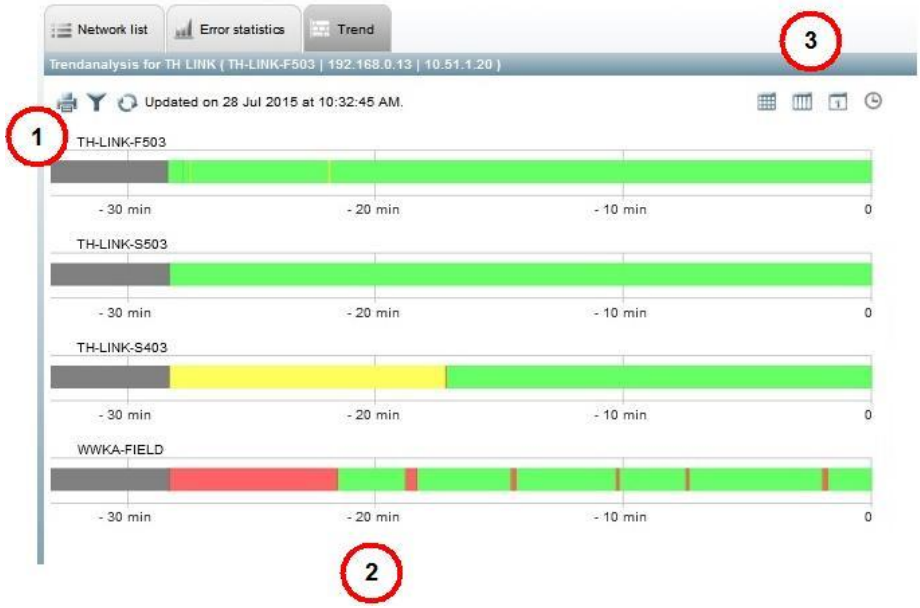


Figure 9: Trend (network)

1 Host name of TH LINK

2 Time interval selected

3 Symbols to select the time interval (month, week, day, hour)

Note

Up to 1000 state changes can be saved. If 1000 entries are reached, the oldest entry will be overwritten.

5.3 TH LINK View

In the **network overview** you can see all connected TH LINKs and there status. By selecting a TH LINK in the navigation tree you can analyse the diagnostics data of the network.

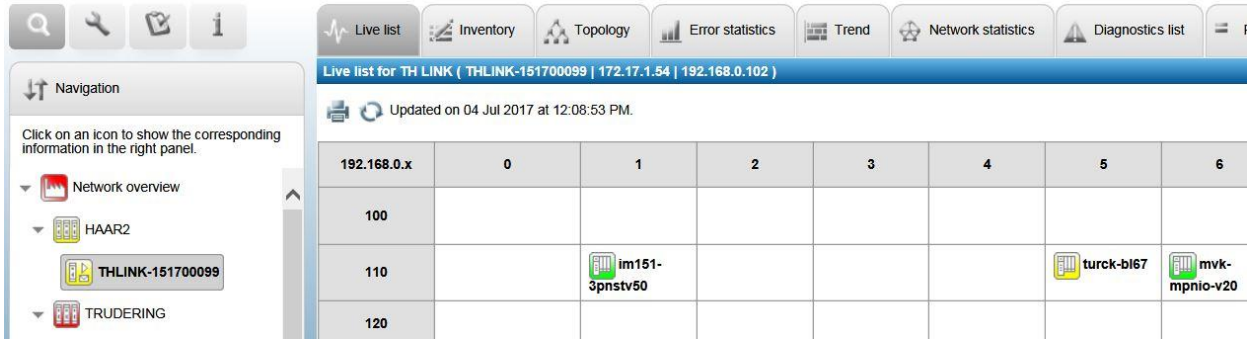


Figure 10: network overview with detected TH LINKs.

5.3.1 Live list

The **Live List** displays all stations corresponding to their address. The address of the station results from the header row and the first column. Icons and tag or station name of the stations are displayed within the cell. If no name has been configured, the address is displayed.

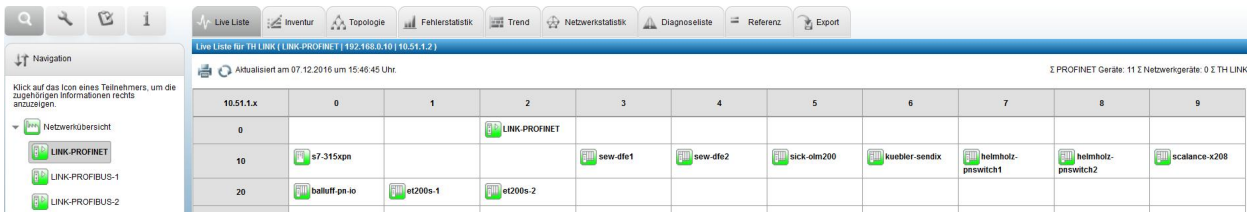


Figure 11: Live Liste

Note

Top left the station IP address range is displayed.

If different address ranges have been specified in the settings for the measurement, then the Live List display corresponds to these ranges configured.

Note

Top right the number of PROFINET, Ethernet/IP or Modbus TCP devices (according to the used TH LINK), other network devices and TH LINK is displayed.

Other network devices could be for example PCs, printers or switches. The state of these devices can be either ok or failed.

5.3.2 Inventory

The **Inventory view** displays all network stations, their modules, submodules and those of the TH LINKs .

Figure 12: inventory view

Note

If for some devices several cells are empty, this is because the information is not stored in the device and thus cannot be read.

Enable/disable failure monitoring

The column **Failure monitoring** is only available for administrators. By default all cells are activated. Individual cells can be deactivated for PROFINET devices only. To do so, click the check box. No further storage operations are required.

If failure monitoring is disabled for a particular station, no further failures will be reported. That means a station failure will no longer trigger an e-mail alert or update the diagnostic list or error statistics. The station is displayed with a gray icon.

Failure monitoring status - whether enabled or disabled - does not change upon TH LINK reboot. Failure monitoring is a name-based process hence a station address change is irrelevant.

Note

If you restart the measurement, check boxes for all stations will be automatically reset.

PROFIBUS

The Inventory view for PROFIBUS networks appears as follows. TH LINK is highlighted and the tab **Inventory** is selected:

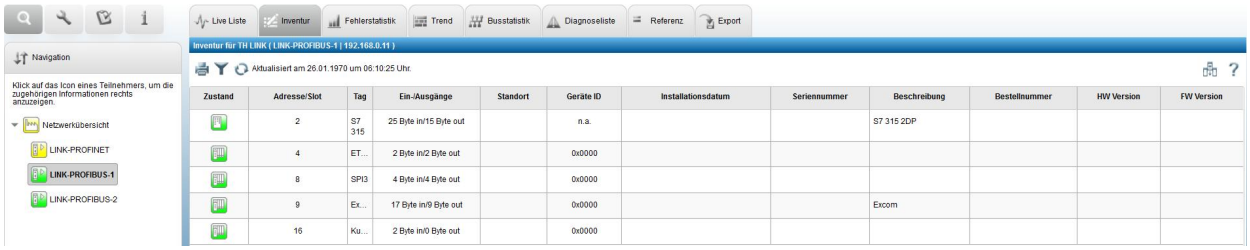


Figure 13: inventory in PROFIBUS networks

Reading and displaying of values in the inventory depends on the TH LINK operation mode. Values in the columns **Station** and **Address/Slot** can be determined in both operation modes. The values of the columns **Tag**, **Location**, **Installation date**, **Serial number**, **Description**, **Order number**, **HW version** and **FW version** are part of the I&M data (*Identification & Maintenance*). These I&M data can only be read actively.

Requirements for reading I&M data

- I&M data can only be read by administrator. Log in as administrator.

- The operation mode Active/Passive PROFIBUS station must be set for PROFIBUS TH LINK.
  Select **Settings → xEPI2 → Netzwork Configuration → Operation mode** see chapter Settings 39.
- The TH SCOPE measurement must have been started.

Important information about reading I&M data

For the following devices I&M data can not be determined: Master (incl. panels), FDL slaves and DPV0 Slaves.

- Click **[Read I&M data]**, to read the data (as specified in the PROFIBUS standard).

Note

However, some slaves can crash when reading the I&M data because of wrong firmware behavior.
You can deselect these devices before reading by deactivating the check box in the right column

Note

For devices that have no tags and descriptions, you can add these manually if you are logged in as administrator.

This data is stored permanently. All other I&M data is deleted on reboot of the TH LINK and restart of the TH SCOPE measurement.

5.3.2.1 Inventory data of PROFINET modules

The **Inventory** tab of TH SCOPE shows Identification & Maintenance data for PROFINET modules. This includes device ID, serial number, device description, order number, hardware version and firmware version.

To see all modules and sub-modules the filter settings must be adjusted.

- Click the filter icon ( ) and move "Module" and "Submodule" with the arrow keys to the field „Device class Include".

Note

For some module you may need a GSDML file to show the device description. You find more details about the import of GSDML files here 13. If several entries are found in the device description file (GSDML) this is highlighted by an asterisk (*).

In the column **Address/Slot** you find the type of module. The information has the format <**IP address controller**> / <**module number in hex**> / <**submodule number in hex**>. Ethernet ports of the modules have the number "0x8...".

State	Station	Protocol	Address/Slot	Subnet mask	Gateway	MAC address	Device type	Serial number	Description	Order number	HW version	FW version
	pn3-s7-1500		172.36.1.10	255.255.0.0	172.36.1.10	28:63:36:A5:C1:09	S7-1500		Siemens, SIMATIC S7, CPU1511C-1 PN, 6ES7 511-1CK00-0AB	6ES7 511-1CK00-0AB0	2	V1.8.4
	pn3-et200sp-1		172.36.1.11	255.255.0.0	172.36.1.11	28:63:36:6C:A6:C4	ET200SP	S C-HNB505082016	Siemens, SIMATIC S7, IM155-6PN HF, 6ES7 155-6AU00-0CN0	6ES7 155-6AU00-0CN0	5	V3.3.0
			172.36.1.11 / 0x0000									
			172.36.1.11 / 0x0000 / 0x0001									

controller
module
submodule

Figure 14: Identification & Maintenance data of controller, module and submodule in TH SCOPE

Example:
The table above shows the controller with IP address 172.36.1.11. Below you see module 0 with the address 172.36.1.11 / 0x0000 and the .
associated submodule 1 with address 172.36.1.11 / 0x0000 / 0x0001.

Hint

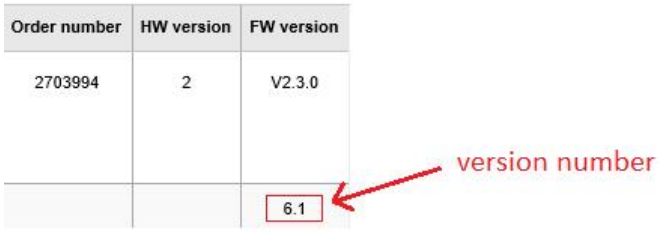
The information for Identification & Maintenance(I&M) is included in the export file and can be exported in the Excel format for further use.

5.3.2.2 Inventor data of other Ethernet devices

TH SCOPE gibt Ihnen die Möglichkeit, neben PROFINET-Modulen auch die Inventurdaten weiterer Ethernet-Geräten wie Netzwerk-PCs und -Server abzufragen. Dies erfolgt über den TH LINK mittels *Simpel Network Management Protocol* (SNMP). Mit folgender Tabelle können Sie die von den Ethernet-Geräten an TH SCOPE übermittelten Versionsnummern dem jeweiligen Betriebssystem des Gerätes zuordnen:

Operating system	**Version number in inventory list**
Windows 2000	5.00/5.0
Windows XP	5.01/5.1
Windows Server 2003	5.02/5.2
Windows Vista	6.00
Windows Server 2008	6.00
Windows Server 2008 R2	6.01/6.1
Windows 7	6.01/6.1
Windows 8.1	6.02/6.2
Windows Server 2012	6.02/6.2
Windows Server 2012 R2	6.02/6.2
Windows 10	10.0
Windows Server 2016	10.0

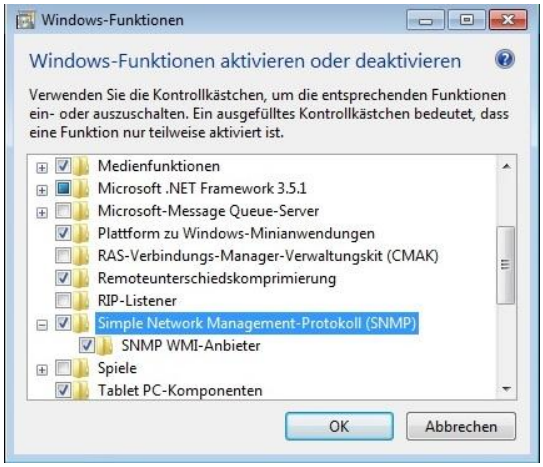
The version number appears in the inventory list (see Figure 14) of the Ethernet device in the firmware column "FW version".



Um die Inventurdaten lesen zu können, müssen allerdings zunächst SNMP-Dienste auf jedem angeschlossenem Netzwerkgerät freigeschaltet werden. Die folgenden Schritte sind beispielhaft für das Betriebssystem Windows 7 beschrieben:

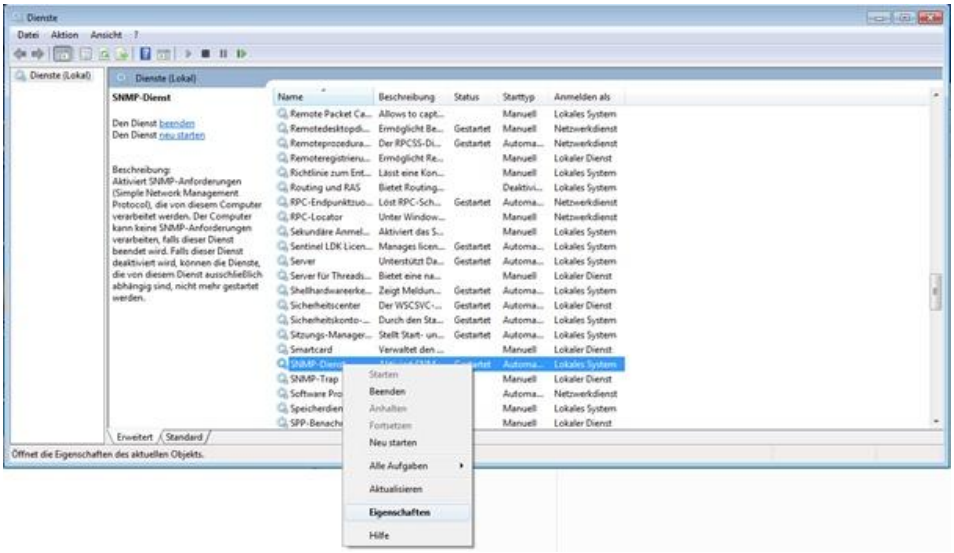
1. Klicken Sie unten links auf das Windows-Symbol **Start → Systemsteuerung → Programme und Funktionen** und wählen Sie **Windows-Funktionen aktivieren oder deaktivieren**.

2. Setzen Sie in dem sich öffnenden Fenster einen Haken vor **Simple Network Management Protocol (SNMP)** und **SNMP WMI-Anbieter**“ und klicken Sie auf **[OK]**. bestätigen.



3. Klicken Sie erneut unten links auf Windows-Start und geben Sie auf Ihrer Tastatur den Suchbegriff **Dienste** ein.

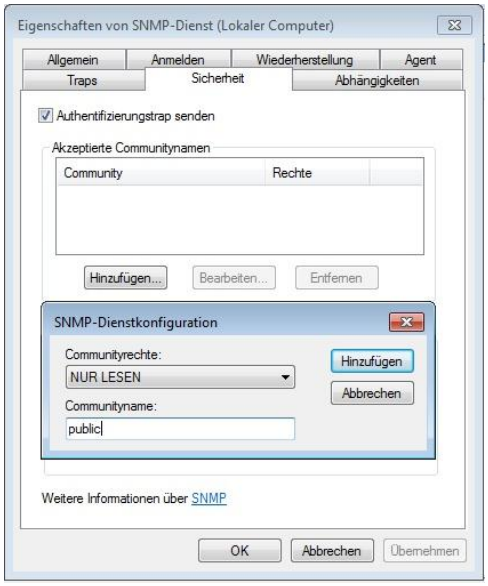
4. Drücken Sie die Return-Taste um die Suche zu starten.
   Es öffnet sich das Fenster "Dienste" mit einer Liste aller zur Verfügung stehenden Dienste.



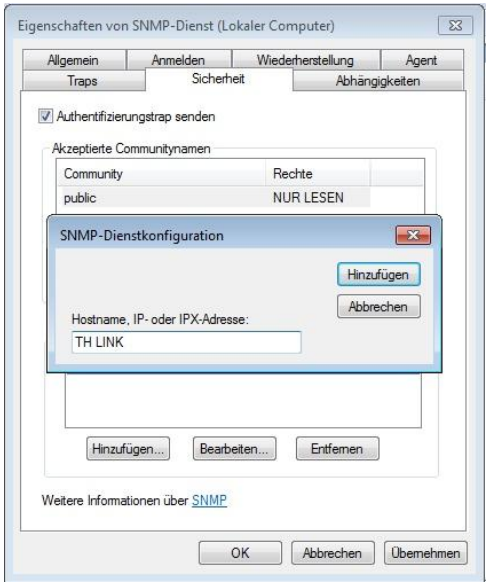
5. Markieren Sie im Fenster Dienste **SNMP-Dienst** und wählen Sie mit einen Rechtsklick **Eigenschaften** aus.
   Es erschient das Fenster "Eigenschaften von SNMP-Dienst"

6. Klicken Sie auf den Reiter **Sicherheit** und stellen Sie sicher, dass der Haken bei **Authentifizierungstrap senden** gesetzt ist.

7. Fügen Sie eine neue Community mit dem Namen **public** und den Communityrechten **NUR LESEN** hinzu und klicken Sie **[Hinzufügen]**.



8. Klicken Sie in dem Feld darunter auf **[Hinzufügen]** um den anfragenden Host genauer zu spezifizieren und geben Sie Hostnamen oder IP-Adresse des pollenden Gerätes an.



9. Klicken sie auf **[OK]** um das Fenster "Eigenschaften von SNMP-Dienst" zu schließen.

10. Schließen Sie TH SCOPE durch Schließen des Browserfensters oder Browsers.

5.3.3 Topology

The **Tolology** view shows in graphical or tabular form which stations are connected with each other in the network. It includes those whose peer cannot be determined. These stations without topology information can be hidden from the view. In addition, information on the status of the stations and their connection is displayed.

Note

Stations supporting LLDP (Link Layer Discovery Protocol) or CDP (Cisco Discovery Protocol) are displayed, as well as terminal stations that are connected directly to a managed switch.

Use the icons in the upper right corner to select the preferred view mode:

Switch to graphical view:

Switch to table view:

TH LINK is highlighted and the tab **Topology** is selected:

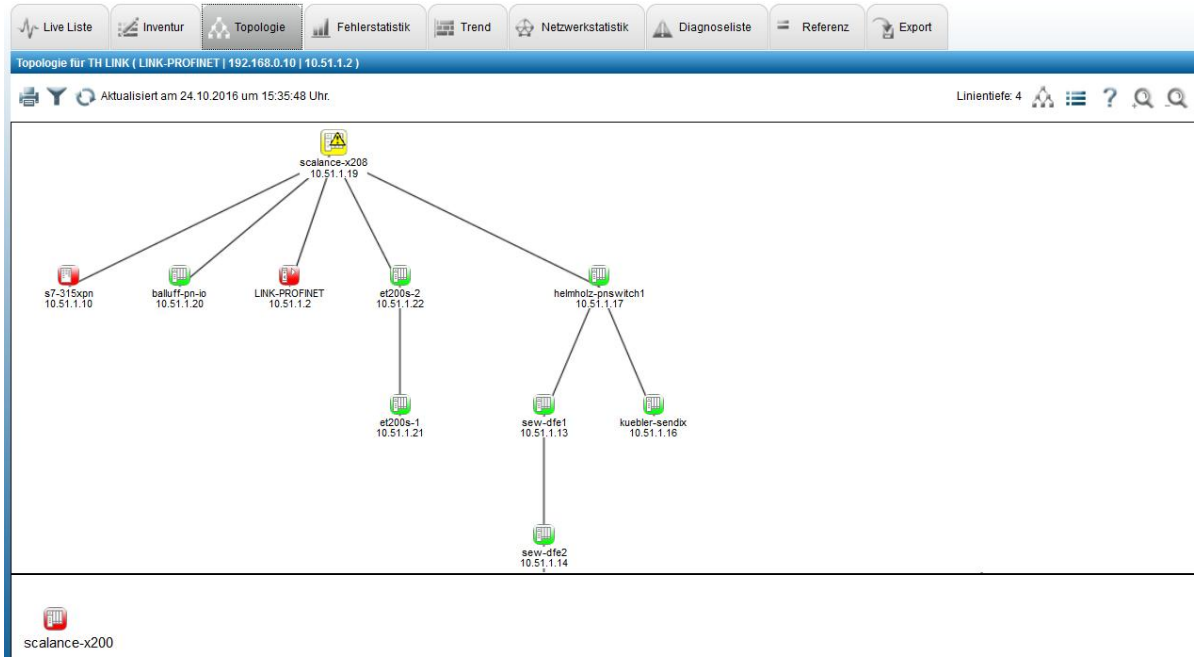


Figure 15: Graphical presentation of the stations connected with each other with device images displayed

In der grafischen Topologiedarstellung gibt es folgende Informationen und Aktionsmöglichkeiten:

- Displaying the line depth beside the graphic icon.
- You may change the zoom factor via the scroll wheel on your mouse.
- Station icons can be moved.
- Double-clicking on any station that station becomes the top node and all other stations will be located and aligned below. Double-click on the same station again to display the default topology view.

Note

The paper sizes A1, A2, A3, A4 and Letter are supported.

- Information displayed in the graphical representation (Name, Address, Device images (refer to Display of device images in the topology 12), Protocol, Ports, Type of connection, Connection state, Bandwidth in MBit/s, Duplex type, Redundancy manager) and stations without topology information can be displayed or hidden as required. To do so click the filter icon and select the desired data.
- Each line displays the following information:

Type of connection: As label and per line type.
Copper: solid line.
Wireless: Dotted line.
OFC: Dashed line, displaying absorption in parentheses.
For unknown line types a solid line without text is displayed.

Cable length: Cable length is displayed in meters. If the device connected does not support this functionality, "n.a." is displayed.

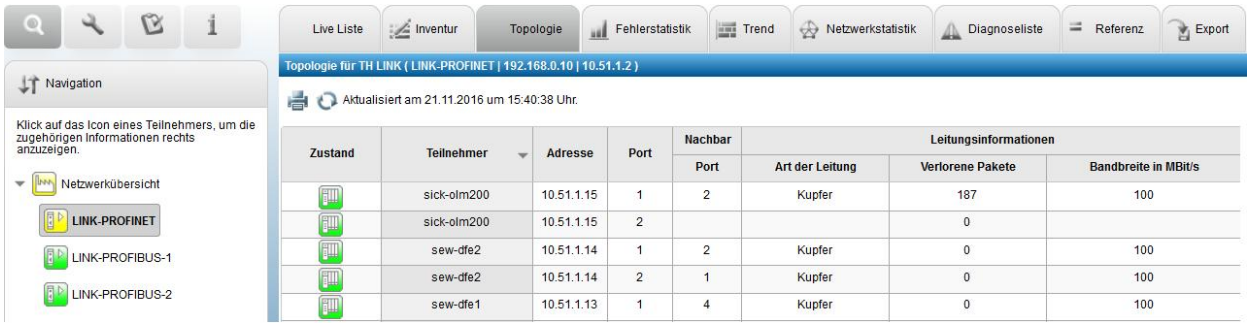
Connection state: (network quality)
Lost packets: connection line is displayed in orange.
Line disconnection: connection line is displayed in red.
Swapped ports are displayed with the following icon:

Bandwidth: The bandwidth is displayed in MBit/s.

Duplex type: The duplex type is displayed as a line label: HX - half-duplex, DX - full duplex

Redundancy: The redundancy manager is indicated by a R on the station icon.

After clicking this icon the topology information is displayed in tabular form. By sorting the columns, you may for example identify the connections with the highest utilization by a single click:



Zustand	Teilnehmer	Adresse	Port	Nachbar	Leitungsinformationen		
				Port	Art der Leitung	Verlorene Pakete	Bandbreite in MBit/s
	sick-olm200	10.51.1.15	1	2	Kupfer	187	100
	sick-olm200	10.51.1.15	2			0	
	sew-dfe2	10.51.1.14	1	2	Kupfer	0	100
	sew-dfe2	10.51.1.14	2	1	Kupfer	0	100
	sew-dfe1	10.51.1.13	1	4	Kupfer	0	100

Figure 16: topology – tabular display

Table columns can be either hidden or displayed and sorted.

The utilization in % is calculated from the following factors:

- negotiated bandwidth,
- duplex type
- transmitted data in bytes

These values are read approximately 2 to 3 times per minute from the devices.

The utilization results from the difference of the transmitted bytes and the time difference between the readout times and is related to the negotiated bandwidth per duplex type. The maximum utilization value is stored and compared to the next new calculated value. If a new value is higher than the one before, this value is the new maximum value.

5.3.4 Error statistics

The **Error statistics** tab of the TH LINK view displays only those stations which have been down at least once, which have been diagnosed with an error or had at least one repeat (PROFIBUS) or lost packet (Industrial Ethernet Netzwerke).

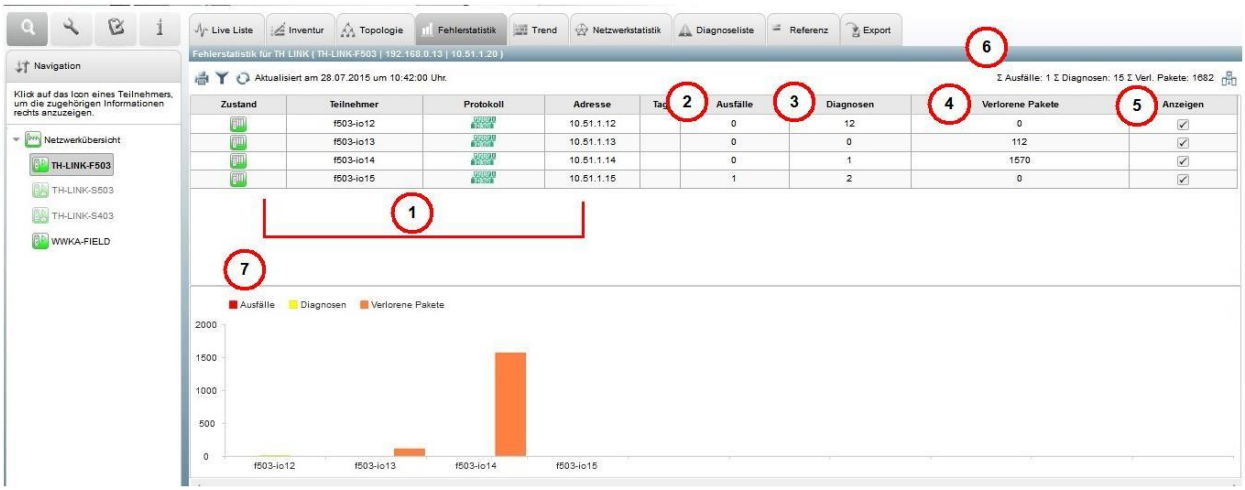


Figure 17: Error statistics

1	TH LINK data, see Network list 21
2	Number of failures
3	Number of all diagnostics
4	Lost packets
5	Show/hide in graphical view
6	Sum of all failures, diagnostics and repetitions/lost packets
7	Show/hide in chart view

Note

As soon as a diagnostics repeater, a DP/PA link or an SK3 is detected in a PROFIBUS network, additional tables are displayed in the error statistics.

5.3.5 Trend

The tab **Trend** displays the state changes of all stations in chronological order. This makes it easy to determine when and for how long a station has been malfunctioning. Maintenance cycles can be derived from this information. For a Trend view see Section Trend 23 in Chapter Network overview.

5.3.6 Network statistics

The tab **Network statistics** displays all network stations (controller, devices and other networks). TH LINK is highlighted and the tab Network statistics is selected:

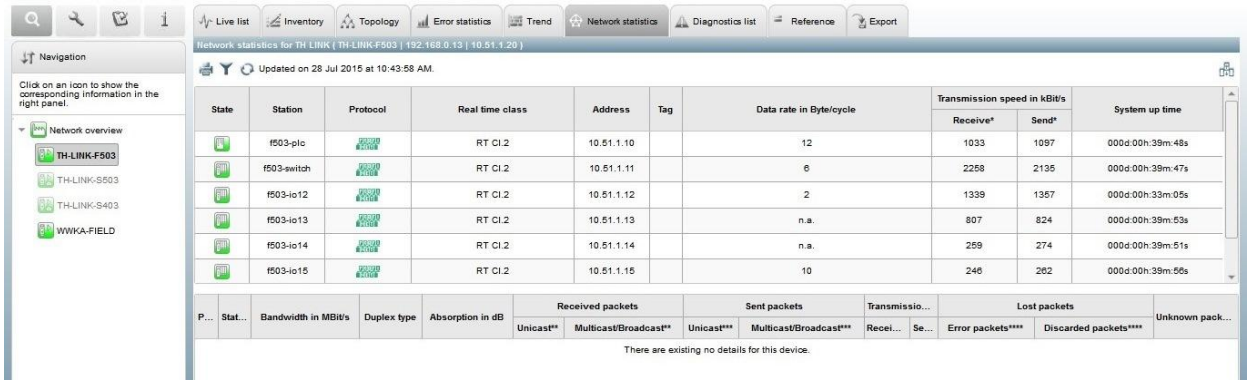


Figure 18: Network statistics

For each station the following information is displayed: state of the station, protocol, address, tag, data rate (incoming and outgoing), network statistics.

- Click on a station in the displayed network statistics view to display the port-specific properties of the station:

Column	Content	Note
Port	Shows ports of the selected station	
Status	Shows whether a station is connected to this port (Up) or not (Down)	
Bandwidth	Maximally available bandwidth	Standard for PROFINET: 100 MBit/s
Duplex type	Full duplex (DX) or half-duplex (HX)	
Absorption	Absorption value in dB	for fiber optic cables only
Received packets	Number of packets received by station since reboot	Unicast: packets to a special receiver. Multicast/Broadcast: packets to a group or to all stations.
Sent packets	Number of packets sent by station since reboot	
Transmission rate in kBit/s Receive / Send	Shows current utilization for each port	
Lost packets	Number of lost packets per port	Error packets: defect packets. Discarded packets: packets discarded caused by overload

Column	Content	Note
Unknown packets	Number of unknown packets per port	Unknown packets are not corresponding to the Ethernet standard

5.3.7 Diagnostics list

The tab **Diagnostics list** displays all diagnostics of the selected network.

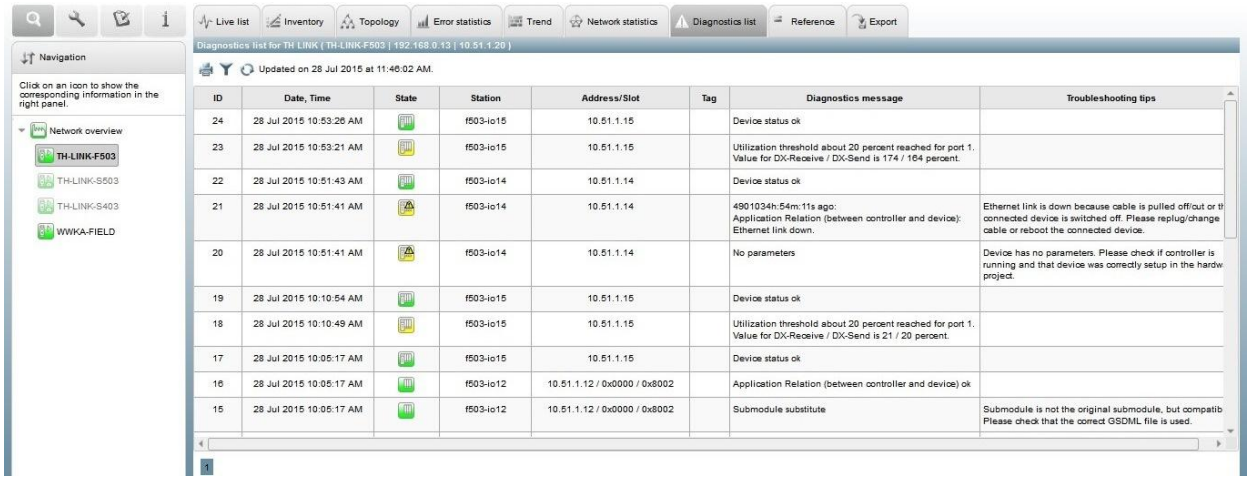


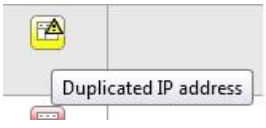
Figure 19: Diagnostics list

Note

For PROFIBUS networks you can use GSD files and for PROFINET networks you can use GSDML files to decode manufacturer-specific diagnostics (refer to Using device description files 13).

Duplicated IP address

If TH LINK detects after start multiple devices with identical IP address, the device symbol appears in yellow together with an according tooltip and the explanation text that you must switch off the device, then reconfigure it and then restart the measurement:



5.3.8 Reference

The **Reference** tab is a useful tool to detect changes in the network structure. Save at any time the state of your network as reference state (the reference file must be saved as .xml file). When you have created a reference file you can compare the stored network data at a later point in time with the current state of your network and print the comparison results.

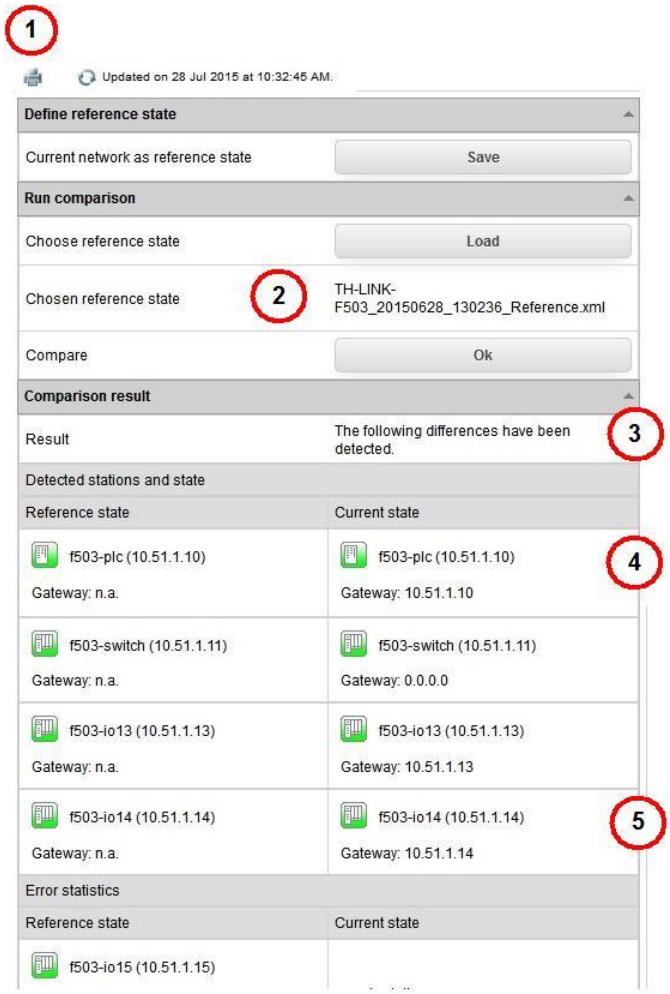


Figure 20: Completed reference comparison with TH SCOPE

1 Print reference comparison result.

2 Selected reference state.

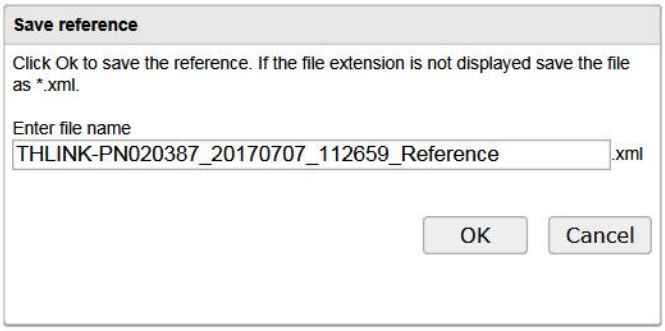
3 Reference state and current state differ from each other. Differences are shown in the table below.

4 Error statistics show the increase of lost packets, failures or diagnostics.

5 Network statistics may show changes at the ports, e.g. if a cable is replugged.

The reference state can be compared in TH SCOPE with only a few clicks:

1. Click the **[Save] button** at the top of the tab to define the current network state as reference state. The "Save reference" window appears.



2. Enter a name for the reference file.
3. Select a stored reference state and compare it with the current state.
4. Click the **[Load]** button and select a previously saved reference file.
5. Click **[OK]** to perform the comparison.

Evaluating the comparison

The aim of the evaluation is to compare detected stations, their state and error statistics. The evaluation of Ethernet networks also includes a comparison of the topology and network statistics. For PROFIBUS networks the bus statistics are included.

5.3.9 Export

Using the **Export** tab you can archive TH SCOPE diagnostics data for network acceptance and further processing. The data is exported into a spreadsheet file.

- Highlight the TH LINK for which you want to export diagnostics data.
- Select the **Export** tab (see below).
- Click the **[Export]** button and save the file.
- To use the exported file for network acceptance, see Chapter Acceptance report 42.

Figure 21: export in TH SCOPE

Note

The file column headers can be used to filter and sort. For each view in TH SCOPE (except for reference and Trend) a spreadsheet is added to the file. Diagrams and graphics are not stored in the file.

5.4 Settings

Click the **Settings** icon to set parameters for measurements, alarms and data backups.

Figure 22: setting tabs in TH SCOPE for TH LINK with Ethernet protocol

5.4.1 TH SCOPE

Type of measurement	
Measurement range	**Default:** **User defined**: Up to five measurement ranges can be selected for one TH LINK. As per TH LINK a total of 254 devices can be monitored.
Data view	The measurement data can be viewed from the start of the measurement or with historic data (from SD card).
Data restore after voltage recovery	If an SD card is inserted in the TH LINK, the recovered measurement data will be cached on the SD card. Activate data restore only if the TH LINK has a card inserted.
Measurement	Starts, stops or continues the measurement.
Sorting of the diagnostics list	Sorts the diagnostic list = latest results first.
Delete the diagnostics messages	Deletes entries from the diagnostic list.
Additional SNMP community name	
Retries in case of no response	A device is reported as being "down" by a TH LINK if the request limit has been reached (example: 3 requests before the device is reported down).
Start-up delay in sec.	
Alerting	
Email alerting active	Activating (Yes) or deactivating (No) of the email alerting. If email alerting is activated alerts and email settings can be configured. The user is informed by email about diagnostics or downtimes (configurable!). The email contains information about the faulty network and a link to the corresponding TH LINK.
Threshold monitoring	
Value increase of lost packets / 15 min in %	If the number of lost packets exceeds the time threshold value of 15 minutes, a diagnostic message is sent.
Value exceedance of lost packets / day	If the number of lost packets exceeds the daily threshold value a diagnostic message is sent.
Value max. utilization in %	If a station exceeds the defined utilization a diagnostic message is sent.
Threshold monitoring for station	Stations can be included in and excluded from monitoring.

5.4.2 TH LINK

User management	changing of the password
old password	
new password	
repeat password	
change password	

TH LINK description	
tag	defining a TAG for the TH LINK
location	assigning a location for the TH LINK
installation date	defining an installation date for the TH LINK
description	defining a description for the TH LINK (e.g. monitored network).
default language	selecting a default language in TH LINK (German / English)
network configuration	
network adapter (TH LINK PC only)	selecting a network adapter, which is used for scanning the network (if there is more than one available)

5.4.3 TH LINK - xEPI2

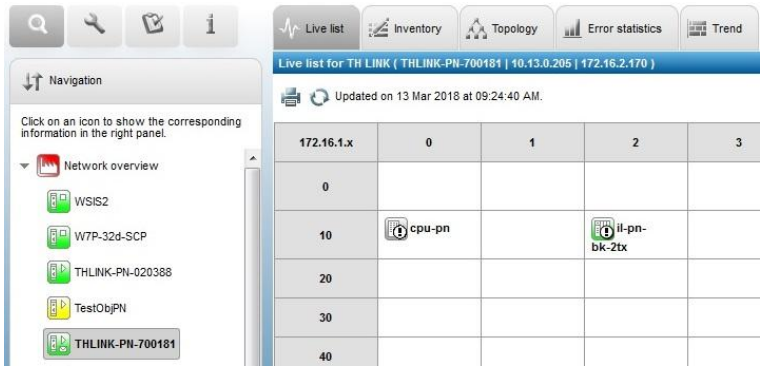
Note

A TH LINK with PROFIBUS is shown in the **Settings** menu as **xEPI2**.

User administration	changing of the password
Old password	
New password	
Repeat password	
Change password	
xEPI 2 description	
Tag	defining a TAG for the xEPI 2
Location	assigning a location for the xEPI 2
Installation date	defining an installation date for the xEPI 2
Description	defining a description for the xEPI 2 (e.g. monitored network)
Default language	selecting a default language in xEPI 2 (German / English)
Network configuration	
Operation mode	
Hostname	name of the xEPI 2
Configuration method	here you can choose option *DHCP* or *Manually*
IP address	IP-Adresse des TH LINKs
Subnet mask	
Default gateway	
Use DNS server	here you select if you want to use the server "manually" or "automatically"

5.4.4 Black List

The black list functionality allows you to exclude specific TH LINK devices from measurements. Although excluded devices are still visible in the network, no detailed data is recorded from these devices. Excluded devices are marked in the TH SCOPE user interface with an exclamation mark are are shown in grey.



Preconditions

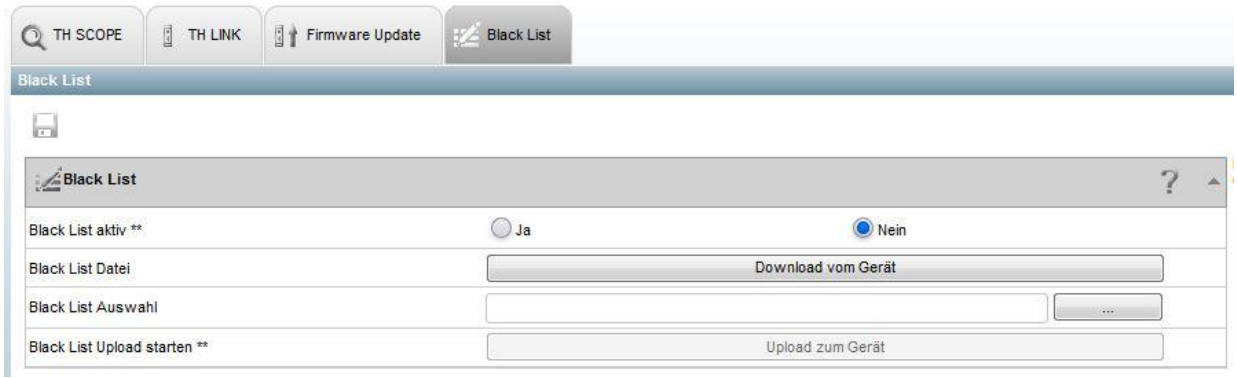
- You have installed a firmware version 3.4 or higher on your TH LINK devices.
- You are using TH LINK Ethernet devices.
- You are logged in as administrator.

Note

Following a firmware update you first need to restart the measurement. Then close your browser and restart the TH SCOPE application.

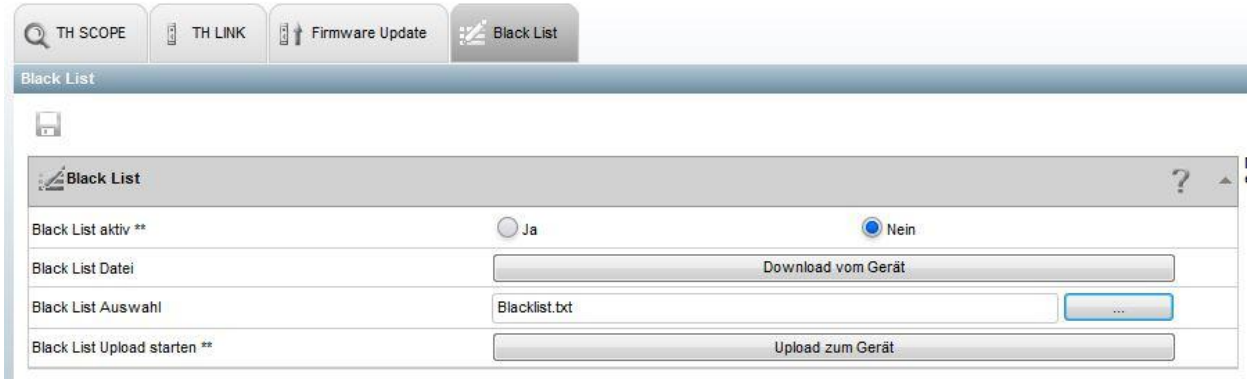
Download

1. Click Settings (🔧)
2. Click the tab **Black List**.
3. Click **[Download from device]**, to download the current version of the file *device_blacklist.txt* from the TH LINK device to the PC. The file is located per default in the installation directory C:\Programs (x86) \Softing\TH LINK



Upload

1. Use the button **[...]** to select a file or enter a directory and file name into the empty field in the middle of the window.
2. Click **[Upload to device]** to upload this file from the PC to the corresponding device.



Note

The functions download/upload are not available for TH LINK PC. It is only possible to activate/deactivate the Black List. To modify the list content you need to edit the file *C:\Program Files (x86)\Softing\TH LINK\device_blacklist.txt* with administrator rights directly. Then restart the measurement to activate your changes.

Activate/deactivate functionality

Click **Yes** right beside **Black Listing active** to activate the function. Modifications in the black list will not be effective immediately but following the next measurement start. **No** deactivates this functionality.

5.5 Acceptance reports

Click the icon **Generate acceptance report** to make report settings under **Options**, **Configuration** and **Finalization**.

TH SCOPE allows you to create a protocol for acceptance test purposes of PROFINET networks. The report makes use of the information provided by TH SCOPE.

Before you start make sure

- that no pop-up blockers are activated in your browser within your TH SCOPE environment
- downloading of files or documents is permitted
  (Internet Explorer 11: **Internet Options → Security Settings → Internet Zone → Downloads Enable Downloads**)
- that a measurement has been started
- collect the data required for report creation such as network addresses, network environment etc.

How to generate a report

Follow these steps to generate an acceptance report:

1. Click the icon to switch to **Generate acceptance report**.
2. In tab **Options** select the **Data source**:

a. **Online**, if you want to use the data currently measured

b. **Offline**, if you want to use data previously exported into a file

Note

If you intend to generate the acceptance report offline (based on an older measurement), at least one TH LINK (e.g. TH LINK PC) must be detected by the report-generating PC.

3. Select the **Language** in which you want to publish the protocol (English or German) and the **Output format** (PDF, Excel or PDF and Excel).
4. Select the **Configuration** tab.
5. If you create a protocol for the first time and you do not dispose of a configuration file:
   a. Fill out the fields in section **Tester** and in section **Customer**. You can upload logos by clicking **[...]**.
   b. Then specify the **Criteria for Topology and consistency data**. You get detailed information about specific values in the online help. To open the help click the question mark (?) right beside the section heading.
   c. Then specify the criteria for statistical data. Select which devices are to be validated. Enter the corresponding values.
   d. Then enter the **Project data**.
   e. Save your configuration by clicking . Enter a file name and click **[Ok]**.
6. If you already have saved configuration files:
   a. Open your list by clicking the arrow on the right. Select your file. The corresponding data is automatically entered into the corresponding fields. Review your data and add or modify the data if required.
   b. Save your file with the existing name by clicking or enter a new name and click .

Hint

Configuration files are located in the installation directory in *<drive, e.g. C:>:\Programs (x86)\Softing\TH SCOPE\AcceptanceReport\Configurations.*

Default file name extension is *.cfgAll*.

7. Switch to the **Finalization** tab.
8. Enter a measurement period in the section **Evaluation summary** and select the criteria from the respective list.
9. Enter your comments in the section **Evaluation details**.
10. Attach existing reference files or reference topology files in PDF format in the section **Appendix**.
11. Complete the protocol creation.

    Click to execute an online test of the data entered.

    Click to start the protocol preview.

    Click to create the acceptance report.

Click  to clear the data already entered.

Missing values ("#VALUE!") in acceptance report
If you open the acceptance report in Excel and some fields contain a "#VALUE!", please check the decimal separator in Excel.

To do so in Excel 2010 select **File → Options → Advanced → Editing options**. Deactivate **Use system separators** and enter the decimal separator from the language settings of your protocol (comma or decimal point). In field **Thousands separator** enter a different value from decimal separator. Confirm with **[OK]**.

5.5.1 Frame analysis

This type of analysis is used to determine the quality of frames in a PROFINET network. If you want to analyse one or several PROFINET devices you first have to hook up a TH Link PC on a USB connection with a PROFITAP and then set up an Ethernet connection from the PROFITAP to the PROFINET network between the controller and the switch.

Note

You must have TH SCOPE version 3.5 and TH LINK PC version 4.2 installed to perform a frame analysis.

This setup ensures that the frame traffic of each PROFINET device in the network is recorded. What follows is an analysis of the traffic time of the data frames. The measured jitter, load ratio and update intervals are recorded in the acceptance reports.

Note

You must have TH SCOPE version 3.5 and TH LINK PC version 4.2 installed to perform a frame analysis.

Setting up a frame analysis

1. Select a TH LINK in your network.
2. Click the icon to switch to **Generate acceptance report**.
3. Select the **Configuration** tab and scroll down to the section **Criteria for frame analysis.**
4. Click the radio button **Activated**.
5. Enter a value for the **minimum load ratio*.**
   See the online help (?) for more details.
6. Enter a percentage for **maximum jitter**.
   See the online help (?) for more details.

**The load ratio is the ratio between PROFINET frames and non-PROFINET frames.*

Running a frame analysis

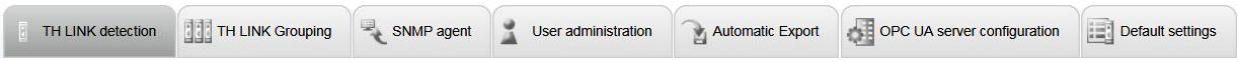
1. Switch to the **Finalization** tab.
2. Enter a measurement period in the section **Evaluation summary** and select the criteria from the respective list.
3. Enter your comments in the section **Evaluation details**.
4. Attach existing reference files or reference topology files in PDF format in the section **Appendix**..
5. Click  to execute an online test of the data entered.
   The date is now available for preview and for creating a report.

5.6 Product information

In the **product information** tab you will find information about a version, licensing and network configuration of TH SCOPE and connected TH LINK devices. In addition the tab includes the contact data for customer support at Softing Industrial Automation GmbH.

6 Configuring TH SCOPE

The configuration page gives you access to the following configuration options:



1. Open the Windows start menu.
2. Select **All Programs → Softing → TH SCOPE**.
3. Select **TH SCOPE Configuration**.

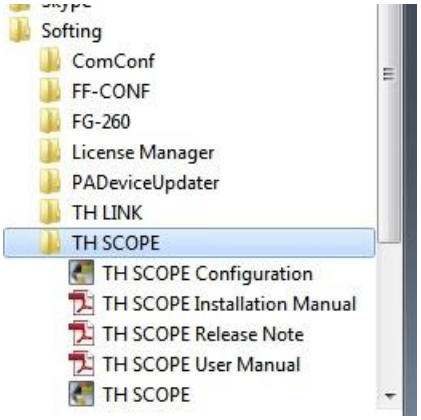


Figure 23: TH SCOPE configuration start menu

The default browser on your PC opens with the configuration interface of TH SCOPE.

Note

To change the configuration of you must have logged in as administrator. Default password is **THSCOPE_Admin**.

6.1 TH LINK detection

The TH LINK detection can be done automatically or manually. The status of all detected TH LINKs is updated at an interval cycle of 20 seconds.

Automatic detection

TH SCOPE detects the TH LINKs via multicast packets. Select "Automatically".

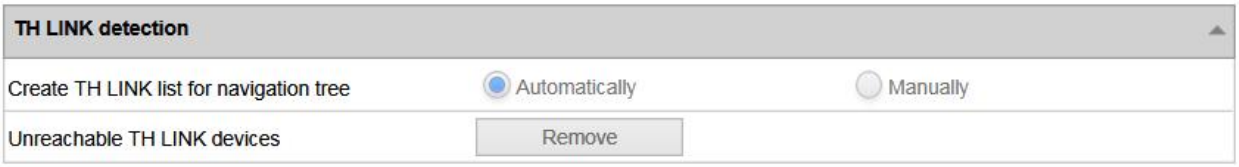


Figure 24: automatic detection of TH LINKs

Note

TH LINKs which have been unreachable by TH SCOPE for at least five minutes are displayed by a grey icon ( ) and can be removed from the navigation tree by clicking the **[Remove]** button.

Manual detection

TH SCOPE detects the TH LINKs via unicast packets. For manual detection select "Manually" and enter the IP address for each TH LINK. Confirm your selection by clicking the **[Add]** button (see below).

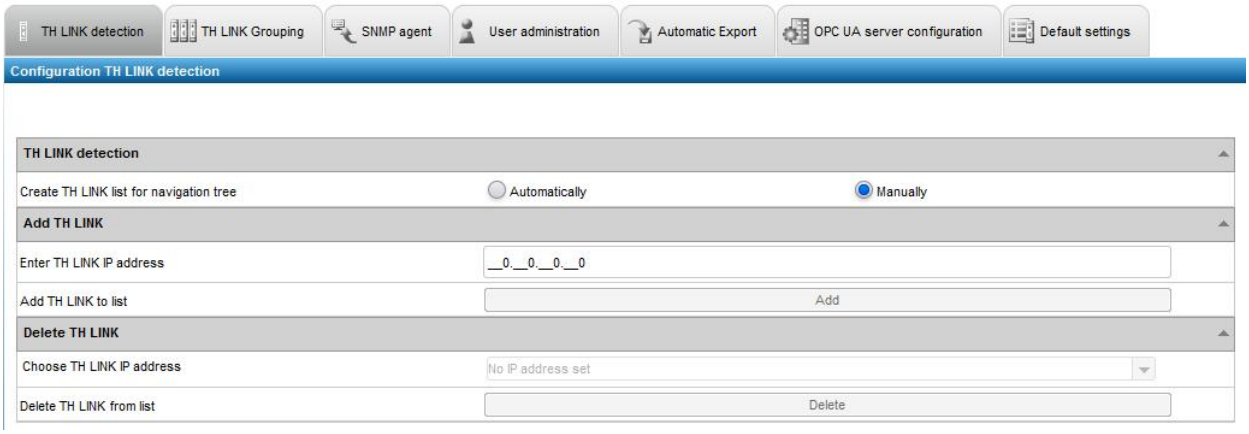


Figure 25: manual detection of TH LINKs

Note

In the navigation tree all TH LINKs are displayed to which a connection can be established. Manually entered TH LINK devices are currently not shown, if they cannot be reached.

Note

When changing from automatic to manual and vice versa remember to restart the TH SCOPE service on your PC. Alternatively you can also simply restart your PC.

6.2 TH LINK grouping

With TH SCOPE you can structure monitored networks by sorting any number of TH LINKs in groups. For example you can combine all TH LINKs (= monitored networks) of an installation site or divide monitored networks by protocols (PROFINET, PROFIBUS, EtherNet/IP). The column "Available TH LINK devices" show all TH LINKs which are reachable by the TH SCOPE server.

Creating a group

1. Enter a group name.
2. Click the **[New]** button.
   The new group appears als a button in the column **Available Groups**. Groups can be renamed at any time by clicking the **[Rename]** button.
3. Now you assign all available TH LINK devices to a group of your choice by moving them with the arrow button .

   A TH LINK can not be assigned to more than one group. The navigator preview on the right-hand side of the window shows the current group structure. Changes (new groups, or TH LINKS which have been added or deleted from a group) are shown immediately. Group content can be viewed and hidden by clicking the arrow to the left.
4. Confirm your changes by clicking the save button. Only saved changes will be managed by TH SCOPE.

Note

The symbols of all TH LINKs are grey and do not show the Live status of the corresponding TH LINK.

6.3 SNMP agent

The TH SCOPE SNMP Agent provides the total status of all networks and the status of the individual network via SNMP. Therefore the information of the navigation tree and the network list is used. The SNMP Agent supports the SNMP version V1/2c and V3. For information about the specific configuration options click on the settings page on the question mark.

Note

The SNMP Client settings have to match with the SNMP Agent settings.

The Object Identifier (OID) of the SNMP MIB is: 1.3.6.1.4.1.29345. The following data is available:

OID	Name	Meaning
1.3.6.1.4.1.29345. 1.1.1	TotalNetworkState	Overall status of all networks
1.3.6.1.4.1.29345. 1.1.2	NumberAgents	Number of all TH LINKs detected
1.3.6.1.4.1.29345. 1.1.3	StatusTableAgents	List of all TH LINKs detected with additional information available (contains all following rows)
1.3.6.1.4.1.29345. 1.1.3.1.1	Index	Shows the row number of the table
1.3.6.1.4.1.29345. 1.1.3.1.2	State	Network status in a figure: 1: Ok 2: at least one station with diagnostics 3: at least one station is failed 4: no network activity, no station detected 5: TH LINK failed
1.3.6.1.4.1.29345. 1.1.3.1.3	StateDescription	network status as text description (matches with the icon tool tip of the TH LINK icon)
1.3.6.1.4.1.29345. 1.1.3.1.4	Station	Host name of TH LINK
1.3.6.1.4.1.29345. 1.1.3.1.5	SupportedProtocolType	protocol type supported by TH LINK
1.3.6.1.4.1.29345. 1.1.3.1.6	IPAddress	TH LINK IP address of the automation network
1.3.6.1.4.1.29345. 1.1.3.1.7	Tag	TH LINK tag name
1.3.6.1.4.1.29345. 1.1.3.1.8	FWVersion	TH LINK firmware version

6.4 User administration

In the tab **User administration** you can change the password to log into TH SCOPE.

To change the default password follow these steps:

1. Log in as administrator (refer to Login and language 16).
2. Click on **Settings** and then on **User administration**.
3. Enter the old password.
4. Select a new password and confirm it by re-entering.
5. Finally click **Change password**.

6.5 Automatic export

You can automatically export inventory and topology data of all currently reachable TH LINK Ethernet devices in a specified interval. You can set a prefix to the export files names. The files are stored in the directory *C:\ProgramData\Softing\THSCOPE\AutoExport*. They contain the device name as well as the current time stamp at export time (exception is the lastly exported file that contains no time stamp).

1. Start TH SCOPE Configuration 47 (**All Programs → Softing → TH SCOPE →TH SCOPE Configuration**).
2. Click the tab **Automatic Export**and log in als Administrator.
3. Select one of the options from the selection list. The default setting for automatic export is **off** (deactivated).
4. Confirm your settings with a click on the Save icon .

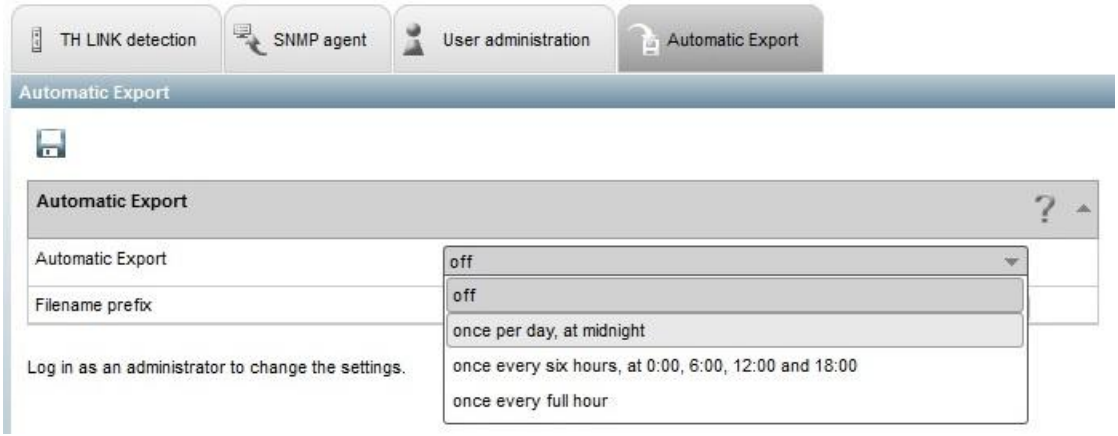


Figure 26: configuration of automatic exports in TH SCOPE

Note

During automatic export a session is created on every TH LINK device. If the maximum number of session (6) is reached, no file can be generated for the corresponding TH LINK in this iteration.

6.6 OPC UA server configuration

Integration in OPC UA

TH SCOPE comes with an OPC UA server access to transfer basic diagnostic and asset management data to higher level systems.

The following Informationen is available:

- number of networks monitored with TH LINK
- status of the monitored networks
- details about TH LINK (device status, device name, protocol, IP address, tag, firmware)

Note

No additional installations are required to make network data of TH SCOPE available on the OPC UA. TH SCOPE is installed with an NGINX (http server software) and an OPC UA Discovery Server.

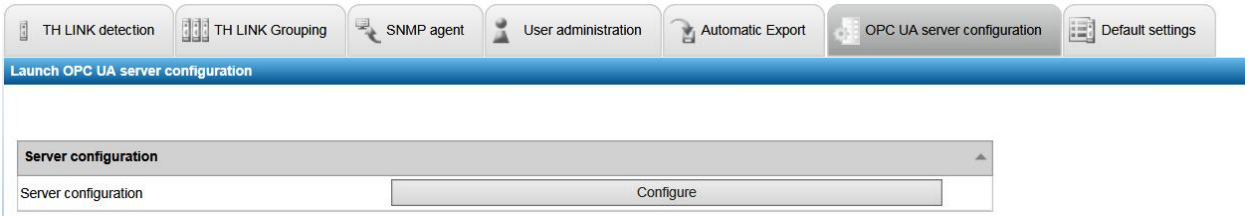


Figure 27: configuration of the OPC UA server in TH SCOPE

This is how you configure the OPC UA interface in TH SCOPE:

1. Open the tab "OPC UA server configuration".
2. Click the button **[Configure]**.
3. Enter the Username: **admin** and the Passwort**: admin**.
4. Select **OPC UA Server Settings** on the left side and click **Identity**.
   Here you find the server endpoint and the port the OPC UA server uses in TH SCOPE.
5. Copy this information to your OPC UA application to establish a connection with TH SCOPE.

Figure 28: configuring automatic export in TH SCOPE

6.7 Network views in TH SCOPE

In the **Default settings** tab of TH SCOPE configuration you can select and save individual network views form a list. The following views can be selected:

- Settings options for network overview: **Network list**, **Error statistics** and **Trend**
- Setting options for TH LINK devices: **Inventory**, **Topology**, **Error statistics**, **Trend** , **Bus statistic** (PROFIBUS only), **Network statistics** (Ethernet only) and **Diagnostics**

This user-defined configuration makes is possible to show workflows in TH SCOPE in accordance with individual requirements. The settings are available only i the active browser session and will be discarded when the browser is closed. To keep the settings for future browser sessions, click the icon (💾) to save them.

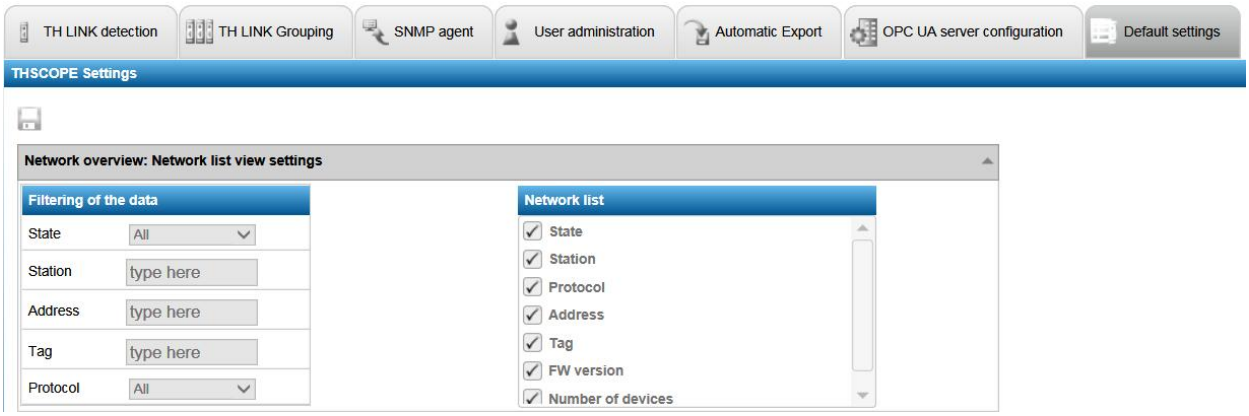


Figure 29: default settings in TH SCOPE (here network list).

7 Tips and Troubleshooting

7.1 Solving port conflicts

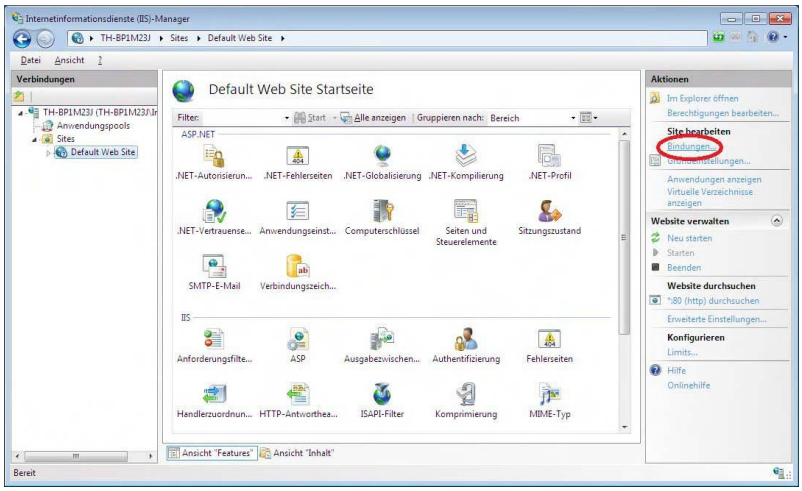
Port conflict using two or more web servers at the same time

Per default TH SCOPE is accessible from any PC. To display the TH SCOPE web page, the IIS webserver (see Installing Microsoft Internet Information Services (IIS) 55) is requested via HTTP. By default, this request is submitted via port 80.

Several web servers can be installed on one PC at the same time. But only one of them can communicate via port 80. Therefore, you may have to change the HTTP port for TH SCOPE or the IIS web server manually.

Changing HTTP port (Windows 7)

1. Click **Start** and enter **IIS**.
2. Select **Internet Information Services (IIS) Manager**:
3. Click **Default Web Site** and click **Bindings**.



4. Select **http** and click **[Edit]**.

5. Change port 80 for example to 8080 and click **[OK]**. Then close all windows.

Note

Instead of port 8080 you can also select another free port. Consult your IT department for more information. Ports up to 1004 are managed by IANA.

7.2 Installing Microsoft Internet Information Services (IIS)

The following sections describe the installation procedure of Microsoft Internet Information Services (IIS) using Windows 7 and Windows Server 2012 and 2012 R2. Depending on the operating system used the procedure may differ slightly from the following descriptions.

Note

To install Microsoft IIS you need administrator rights on your PC and if necessary the Microsoft Windows operating system installation CD.

7.2.1 Windows 7

1. Go to **Start → Control Panel → Programs → Programs and Features** and click on **Turn Windows features on or off**:

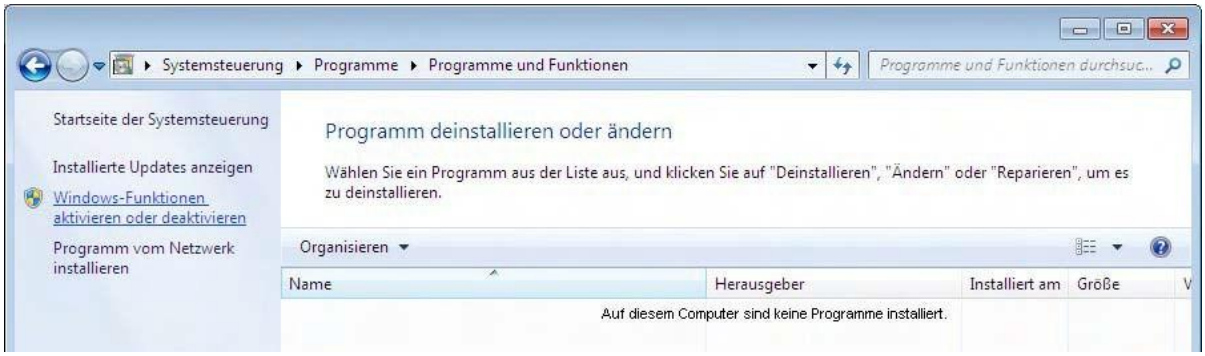


Figure 30: Turn Windows features on or off

2. Open the **Internet Information Services** by clicking the **[+]** icon.
3. Select the following highlighted (yellow) features:

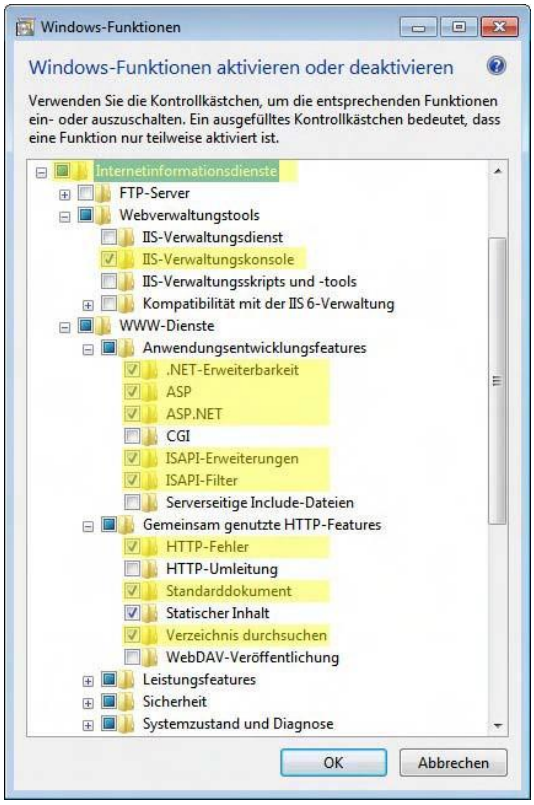


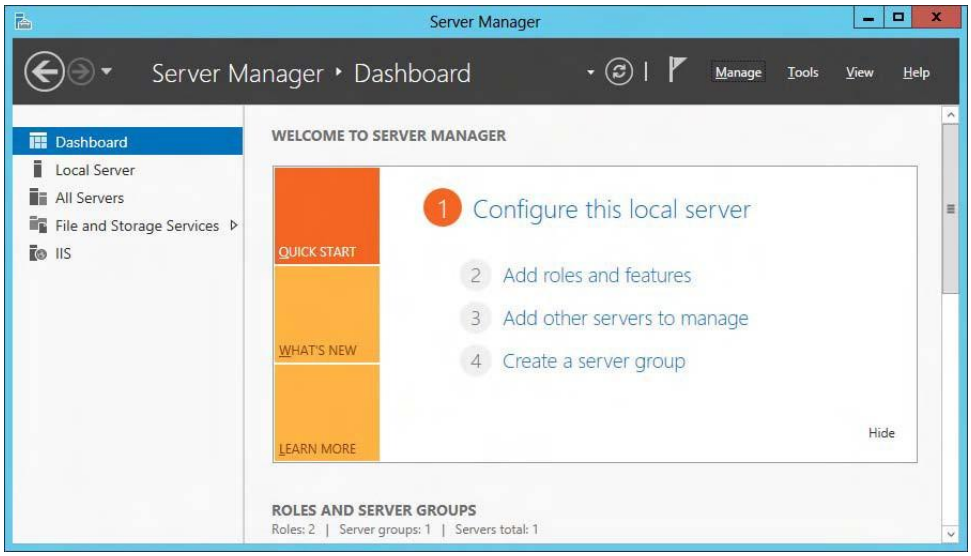
Figure 31: Select Internet Information Services

4. Click **[OK]** to complete the settings.

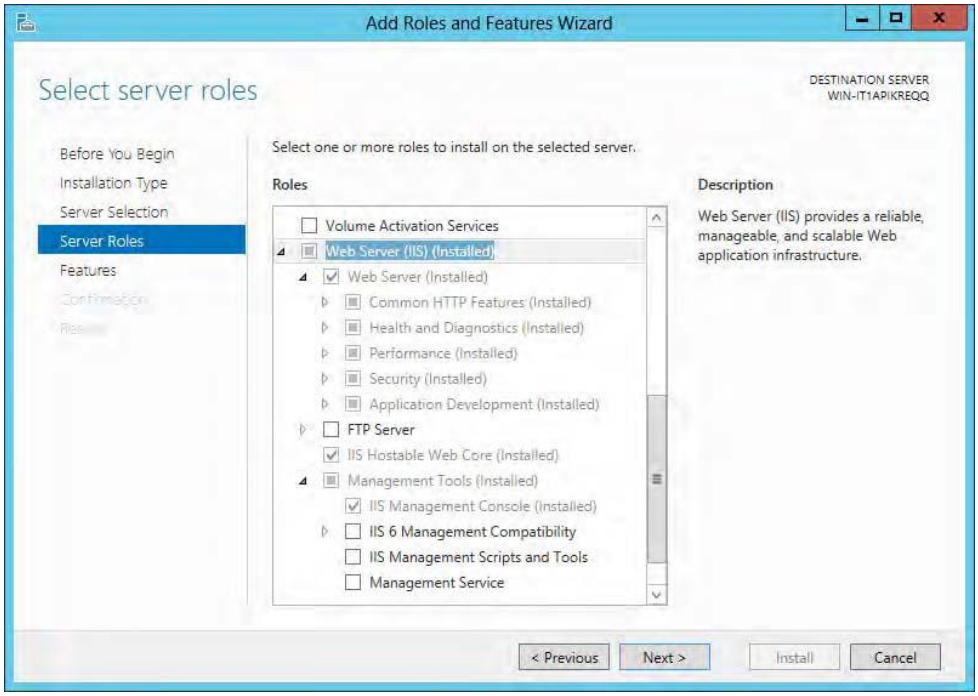
7.2.2 Windows Server 2012, 2012 R2, 2016

Change the local server settings as follows:

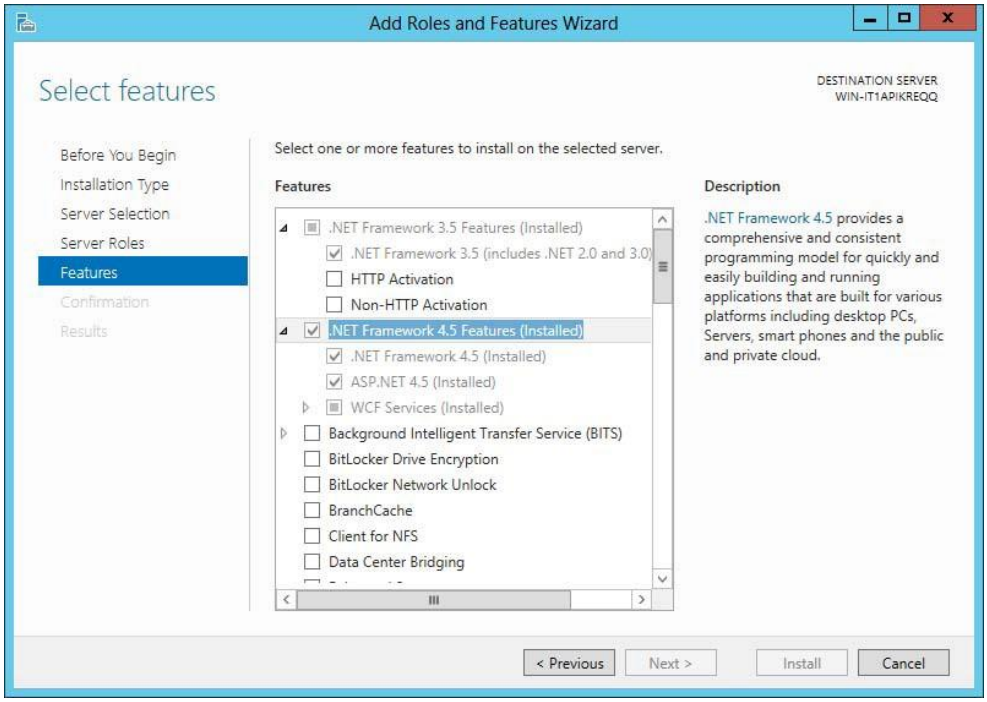
1. Open the **Server Manager** and click on **Add roles and features:**



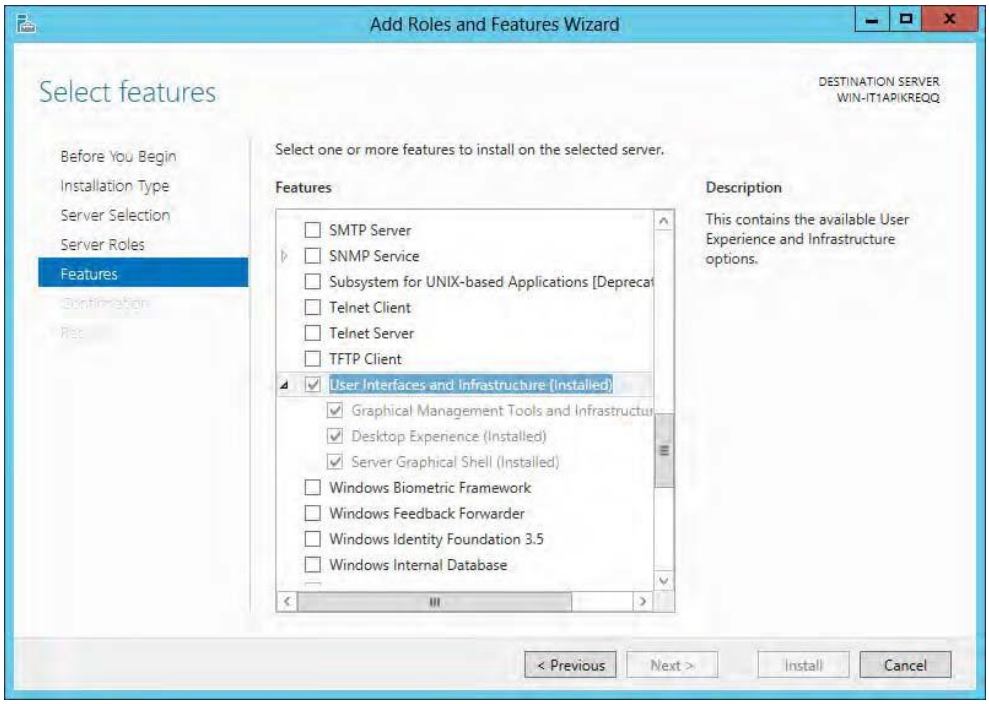
2. Activate **Web Server (IIS)** and **IIS Hostable Web Core** in the **Select server Roles** dialog:



3. Activate the options **.Net Framework 4.5** and **ASP.NET 4.5** in the dialog window **Features:**



4. Activate **User Interfaces and Infrastructure** (to allow installing the Flash Add on in your browser):



5. Close the Server Manager if all components are installed successfully.

Diese Seite wurde absichtlich frei gelassen.

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