HIRSCHMANN
A BELDEN BRAND

User Manual

Network Management System
Industrial HiVision 5.1

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You can get the latest version of this manual on the Internet at the Hirschmann product site (www.hirschmann.com).

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1 The Management Tool

Wherever individual network components are to be combined to create an overall system, Industrial HiVision 5.1 is the ideal solution for configuring and monitoring the administrable Hirschmann devices, including switches, routers, EAGLE20 firewalls, wireless BAT units and products from various manufacturers.

Designed for effective industrial supervision, Industrial HiVision can be easily integrated into SCADA applications. It offers a built-in SNMP to OPC server. The graphical user interface is available as an ActiveX control.

1.1 Integration of third-party devices

Of course, network management software from a specific manufacturer of network components is optimized for operating these components. In comparison, a generic, manufacturer-independent network monitoring system will only provide superficial product integration.
However, in the real world, networks are usually a heterogeneous environment with devices from multiple manufacturers.

Industrial HiVision makes it easier for the network administrator to also integrate non-Hirschmann products, as long as they are administrable. This applies to components of the network infrastructure as well as field devices. Managed products have a range of standard characteristics that can be monitored, such as the device status. In addition, the direct standard interface can be used to enter further device-specific information, such as the long-term history and status messages. You decide for yourself how detailed the monitoring of your application is to be.

Advantages:
- Monitoring and trend mapping for administrable devices from any manufacturer
- Status display for your entire system
- Comprehensive network monitoring using a single network management system.

1.2 Enhanced auto-topology discovery

To monitor an industrial network reliably, precise knowledge of the network topology is essential. The network administrator should know how and where which devices are linked to each other in order to manage a complex network efficiently and perform any maintenance measures that are required.

Existing customers are already familiar with the intuitive Industrial HiVision user interface.
This allows rapid visualization of the network topology. The standardized LLDP protocol is used to scan network infrastructure components and the received information allows Industrial HiVision to build a representation of the network connectivity. End devices such as PLCs, I/O, and HMIs are also detected and their location is accurately depicted on the graphical topology map.

Industrial HiVision software enables you to detect unmanaged switches and hubs and display their position within your network diagram. The software is also able to determine the network topology of devices which are located behind a router. This results in an increased level of topology detail.

Because industrial networks evolve over time, documentation can easily become out of date. The auto-topology discovery function assists you to know what is connected where in your network.

Key benefits:
- Network maps are created automatically, without manual intervention
- Topology maps are very accurate
- Network documentation is up to date

1.3 MultiConfig™ for network installation

Many network infrastructure devices require identical configuration parameters. But those parameters will differ from one network to the next.
Which redundancy protocol is required?
What is the temperature threshold of the devices?
Where is the time server located?
Should the web interface be disabled for live operation?
To which management station should alarms be sent?
Should unused ports be disabled?
The list goes on and on.

Configuring devices individually is a tedious task. A misconfiguration on a single device can be very difficult to find. As a result, Site Acceptance Tests will be prolonged or the network may be inoperable. MultiConfig™ helps prevent these issues from happening.
The configuration tool allows you to configure the same parameters across multiple devices simultaneously and it also shows you where there is an inconsistency between parameter configurations. It works across different types of devices, where those devices have parameters in common. MultiConfig™ allows you to save multiple device configurations, both locally and to a server, without touching each device individually.

Key benefits:
- Reduced network installation time
- Network infrastructure configuration consistency

1.4 MultiConfig™ for live operation

Throughout a network's lifetime operation, it is necessary to carry out repetitive but essential maintenance tasks. The threat of cyber attacks means that responsible network administrators will change device passwords regularly. Technology innovations can have great benefits for your network and your company, but to take advantage of them you will need to update your device firmware. And in the worst case scenario, if your network breaks down, your support organization will need immediate access to the current configuration files and event logs of your network devices.

Of course, for a small network, the above can be done by accessing each device individually. But for both small and large industrial networks, network security and availability are the ultimate goals. MultiConfig™ can fulfill the above requirements with a few clicks of a mouse. As a result, network administrators can meet their daily objectives with less effort and minimal disruption.

Key benefits:

- Highest network availability.
- Least effort required for network administration and maintenance.
- Minimized operational disruption.

1.5 Engineered through experience

Industrial HiVision 5.1 is the fourth generation network management software from Hirschmann. We have built on our experience with previous releases to evolve a product which is unique in the industrial space. Industrial HiVision 5.1 encompasses the features and benefits of earlier versions. These include:

Key benefits:

- Client/Server architecture
- Web browser client
- Edit and Run modes
- Network hierarchy display
- Global and individual status display and propagation
- Flexible event handling
- Customizable data acquisition
- Long-term trending
- Comprehensive export functions
- Asset Management

1.6 30 days free trial

As a network administrator, you need cutting edge tools to help you meet your targets. Hirschmann is famous for innovation. We are committed to evolving Industrial HiVision to match our new hardware functionality, meet the requirements of our customers, and exceed the demands of the Industrial Ethernet marketplace.
Everybody knows, seeing is believing. Words cannot do justice to network management software. Download Industrial HiVision, and test it free of charge for 30 days at your convenience. Of course, longer evaluation periods are available on request.
The current version 5.1 of Industrial HiVision is available for download at www.beldensolutions.com.

2 Installation

This chapter describes

- The prerequisites for installing and operating the software
- Installing the software
- Updating the software
- Maintaining the software
- Starting the program
- Deinstalling the software

You will find requirements for operating the software in the appendix (see on page 20 “System Requirements”).

Note: Regarding security
Industrial HiVision helps to protect the edit mode of the user interface by requesting a password.
When you login to your network management station as an administrator and start the user interface of Industrial HiVision, then Industrial HiVision allows you to switch directly to the edit mode. You can thus avoid having to enter a password.

Note: Regarding security
The Industrial HiVision database contains the information for your Industrial HiVision project.
To hinder the access to this file by means of selected access rights for the directory `<installation directory>\database`.

2.1 System Requirements

To install and operate Industrial HiVision you require:

Hardware

- Processor
  x86 compatible CPU, 1 GHz minimum
- RAM
  at least 1 GB, 2 GB recommended.
  Industrial HiVision requires approx. 300 MB free RAM. Another 500 kB RAM is required for each detected agent. The network management unit also requires RAM for the operating system and any additional applications.
- Disk space
  2 GB free.
- Monitor resolution
  at least 1024x768 pixels.

Operating system

- Windows XP, 32 Bit
- Windows 7
  32 Bit
  64 Bit
- Windows Server 2003, 32 Bit
- Windows Server 2008 R2
- PC Linux
  32 Bit: Kernel 2.6, glibc 2.4
  64 Bit: Kernel 2.6, glibc 2.4 (released for Debian 5.0)

License

License keys for Industrial HiVision depend on the number of devices you want to monitor.

You can get license keys for 16, 32, 64, 128, 256, 512, 1024, 2048 and 4096 devices.

2.2 Installation

Industrial HiVision consists of a number of components. A background service performs in large parts the work.

This service has a close connection to a database containing the relevant data for the settings of Industrial HiVision and the devices to be monitored. When you reboot Industrial HiVision, Industrial HiVision gets the configuration data from the database which were current when you last quit the program.

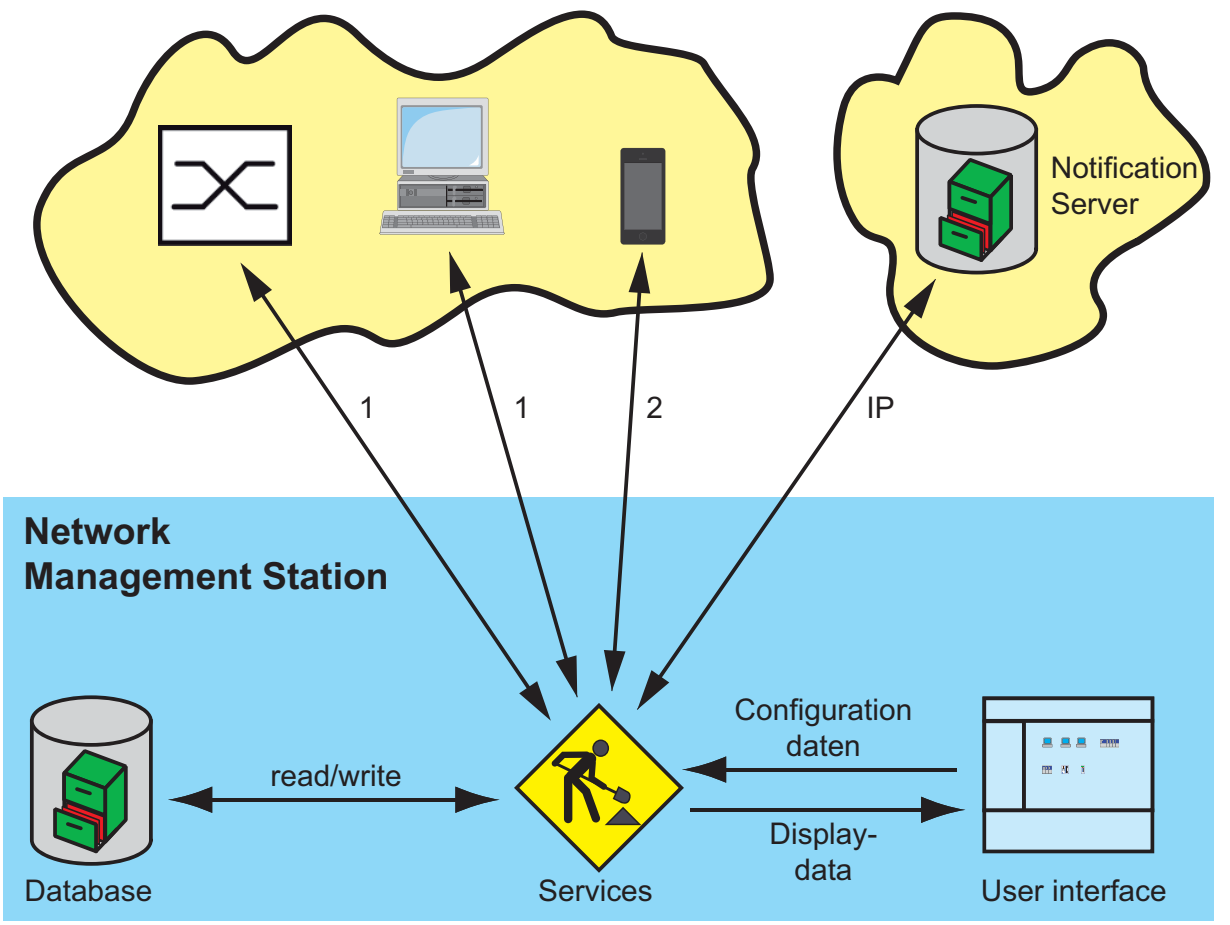

Figure 1: Architecture
1 - SNMP Get/Set/Trap, HiDiscovery, Ethernet/IP, Modbus/TCP, Ping, http, https,
2 - http, https

The program Industrial HiVision, which you call up directly on the screen, maintains a connection with the background service, from which it gets the required data.

You can install Industrial HiVision additionally to a former release of Industrial HiVision. If you start different releases simultaneously each release maintains a connection to its own background service.

Industrial HiVision enables you to install
– the user interface (Industrial HiVision Client) and
– the service with the database (Industrial HiVision Server)
on different computers.
You can thus access a central network management station from different locations with multiple user interfaces. The number of user interfaces that can access a central network management station depends on the capacity of the network management station. To avoid access conflicts, only one user interface can access a network management station in the edit mode (see on page 258 “Advanced:Program Access”)
However, you can access multiple decentral Industrial HiVision servers with one user interface.

Note: Installing an external firewall with NAT between the service and the user interface
In the external firewall you activate port forwarding for the connection port in the service direction for the following ports:

- 11156, Industrial HiVision proxy server for the communication between the service and the user interface.
- 11155, Industrial HiVision Web server to also open the user interface in the browser.

(see on page 267 “Advanced:Services”)

Note: Installing a router between the service and the user interface
When entering the gateway IP address in the computer on which the service is installed and in the computer on which you are operating the user interface, pay attention that both computers are in different sub networks.

Note: Industrial HiVision writes events (see on page 87 “Event list”) with dates and times in the database. The time written refers to the time in the system on which the service is running. When you start the user interface on a computer in a different time zone, Industrial HiVision displays the event times in the time zone of the computer on which the service is running.

- 32- and 64-bit systems
  Industrial HiVision is available to you as a 32-bit and 64-bit version. The installation wizard automatically installs the version that suits your operating system.

2.2.1 Installation under Windows

☐ Login with administration rights.

☐ To install Industrial HiVision, you insert the installation CD.

☐ Select 'Installation' and follow the instructions of the installation assistant.

Note: If you get the message `Error during installation of ikernel.exe`, this means that the user does not have any administration rights.

Depending on your selection, the installation assistant installs
- the Hirschmann Industrial HiVision Service 05.1 service with integrated database (= Industrial HiVision Server) and
- OPC services,
- the Industrial HiVision Client (= user interface) program and
- the ActiveX control.

If you want to connect to a SCADA system, you need the OPC services on the Industrial HiVision server and/or the ActiveX control on the SCADA system.
OPC services function as the data source for SCADA systems.
The ActiveX control visualizes the network in SCADA systems.

To perform a HiDiscovery scan, Industrial HiVision requires the WinPcap program.
During the installation of Industrial HiVision, Industrial HiVision checks whether a version of WinPcap installed on your PC fulfills the requirements of Industrial HiVision. If not, you agree to the installation of WinPcap via the installation wizard.

During the installation, you can select whether the Hirschmann Industrial HiVision Service 05.1
- is started automatically when the program starts or
- is started automatically each time the computer is rebooted.

Note: You will find the status of the service in Windows XP under `Start:Control Panel:Administration:Services.`
Here you can also terminate the service and restart it.
If you are running other resource-intensive programs on the computer, then close the Industrial HiVision program and the “Hirschmann Industrial HiVision Service 05.1” service. This service requires considerable computer resources. When it starts, the Industrial HiVision program asks you whether you want to start the service, and when you are leaving the program, whether you want to close the service.
Note that when the service is switched off, there is no network monitoring, which means that no events are recorded.

Note: In the default setting of the service properties on the “Logon” tab page, no data exchange between the service and the desktop is permitted for the local system account (`Start:Control Panel:Administration:Services`, right-click on the “Hirschmann Industrial HiVision Service 05.1” and choose `Properties`). This means that you can start a program from Industrial HiVision (see on page 231 “Basics:Event Actions”) and that the process runs in the background, but that the program is not visible on the monitor. Permitting the data exchange

between the service and the desktop is a security risk, because this program can then be started independently of the user who is logged on. So-called Trojan horse attacks use this security gap. To automatically send a Short Message Systen (SMS) or an e-mail when an event occurs, you do not need a data exchange between the service and the desktop.

- Special features on Windows Server 2003
  When installing Windows Server 2003, deselect the following components:
  - Share Point Services
  - Exchange Server
  - Active Directory

2.2.2 Installation under Linux

☐ Logon with the `su` command so that you have root access rights.

☐ To install Industrial HiVision, insert the installation CD.

☐ Mount the CD (some Linux systems do this automatically) in the directory assigned to it, e.g. the directory /mnt/cdrom. If you have mounted the CD in another directory, you replace this part of the path with the directory that applies for you.

☐ Quit the current kernels.

☐ Start the installation script with the command
`sh /mnt/cdrom/Software/IndustrialHivision/linux/install.sh`

☐ Answer the questions of the installation script and follow its instructions. If you do not answer a question of the installation script, then the installation script selects the default answer.

Example of a run of the installation script:

```
Welcome to Industrial HiVision

This script will install Industrial HiVision on your system.
You can abort the setup process anytime by pressing ctrl-c.

Do you wish to continue? [y]es, [n]o (default=no)
y

Please specify a destination directory for the installation
(default=/opt/ihivision5.1)


The directory /opt/ihivision5.1 does not exist.
Do you wish to create it? [y]es, [n]o (default=no)
y

Unpacking Industrial HiVision...


Running setup script...
*** Checking database user ***
*** Initialising installation directory ***
*** Initialising log directory ***
*** Configuring Services ***
*** Configuring Executables ***
*** Preparing Init Script ***
*** Industrial HiVision successfully installed ***

Industrial HiVision is now installed and ready for use.
```

☐ Start the Industrial HiVision service with the command
`/etc/init.d/ihivision5.1 start`
Industrial HiVision requires that you have logged on with su.

☐ You can quit the service with the command
`/etc/init.d/ihivision5.1 stop`

☐ You can restart the service with the command
`/etc/init.d/ihivision5.1 restart`

☐ You can check whether the service is running with the command
`/etc/init.d/ihivision5.1 status`

To start the service when starting the operating system, you include the service start in the init sequence of your system.
The various Linux distributions provide you with a whole range of options for this.
For some start sequences compatible with Sys V, the installation copies the start script `ihivision5.1` into the `init.d` directory of the system.
Depending on your requirements, you can
– integrate this script into the various run levels or
– start it manually with the above command.
The Init script was developed and tested under Red Hat, Ubuntu/Kubuntu and Mandriva Linux. Other distributions (such as Gentoo) use a different script format and thus require different scripts.

2.3 Update

2.3.1 Updating under Windows

To update a version of Industrial HiVision already installed, you install the new version as described on “Installation under Windows” on page 24.

During the installation, you can choose whether the installation routine transfers the database contents from a previous installation into the new installation.

If you want to transfer the database contents from an earlier version, you only uninstall the earlier version after the update. Industrial HiVision permits the installation of different versions on a PC.

Note: In order to correctly transfer the data from the previous version, the installation routine terminates the previous version of the service, with your permission, if it is still active. Therefore, there is no network monitoring during the update procedure.

2.3.2 Updating under Linux

To update a version of Industrial HiVision already installed, you install the new version as described on “Installation under Linux” on page 26.

During the installation, you can choose whether the installation routine transfers the database contents from a previous installation into the new installation.

If you want to transfer the database contents from an earlier version, you only uninstall the earlier version after the update. Industrial HiVision permits the installation of different versions on a PC.

Note: In order to correctly transfer the data from the previous version, terminate the previous version before the installation, if it is still active. Therefore, there is no network monitoring during the update procedure.
If multiple previous versions are installed, Industrial HiVision takes the data from the latest previous version.

Note: During an update, Industrial HiVision can transfer the data from the database of the previous version if the previous version is in the specified installation directory.
Otherwise, you can use the interface functions “Save” on page 178 and “Open” on page 178 to transfer the data.

2.4 Maintenance

Hirschmann are continually working on improving and developing their software. You should regularly check whether there is a new version of the software that provides you with additional benefits.
You will find information about updates and upgrades on the Internet pages of Hirschmann Automation and Control GmbH.

www.hivision.de

2.5 Starting

2.5.1 Starting under Windows

During the installation, the program installation routine installs a program symbol for the link to the program Industrial HiVision

- on the desktop and
- in `Start:Programs:Hirschmann:Industrial HiVision5.1`

☐ Start Industrial HiVision with a double-click on the program symbol on your desktop, or by selecting the program symbol in your start directory.

When starting, Industrial HiVision looks for the server. If Industrial HiVision does not find the server, Industrial HiVision opens a dialog for entering the server IP address or the server name. If the server is located on your local computer, you enter the name localhost.

Note: To be able to connect to the Industrial HiVision server from another computer, you first permit remote access in the server settings (see on page 267 “Advanced:Services”).

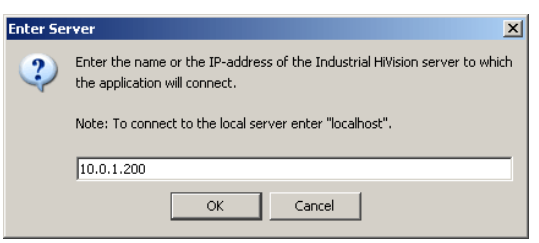

Figure 2: “Enter server address” window

If Industrial HiVision finds the server to which Industrial HiVision was last connected, Industrial HiVision connects to it again. If you want to connect to a different server, you click on “Cancel” in the “Connecting to server...” window. With `File:Connect` you open the dialog for entering the server IP address.

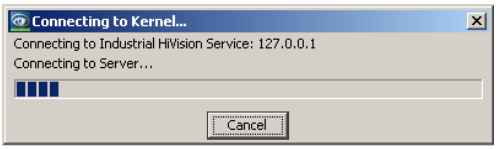

Figure 3: “Connecting to server...” window

- Connecting to multiple servers
  - ☐ To connect to multiple servers, you copy the program symbol and add it again as a connection.
  - ☐ Open the properties of the new program symbol by right-clicking on the symbol and choosing “Properties”.
  - ☐ In the “Destination” row, you enter a blank after “`C:\Programs\Hirschmann\Industrial HiVision5.1\bin\HiVision.exe`”, then the command line parameter `-kernelHost <server name>`. For <server name> you enter the IP address or the name of your server.

  Repeat these steps for every server you want to make a connection to.

2.5.2 Starting under Linux

☐ Start the service before you start the graphic interface (see on page 26 “Installation under Linux”).

To be able to start Industrial HiVision from the graphic interface, you put an icon on the desktop you are using (KDE, Gnome, etc.).
You will find a suitable image (`ihivision_op32x32.png`) in `/opt/ihivision5.1/lib`.

By double-clicking on the icon, or with the command `/opt/ihivision5.1/bin/HiVision`, any user can start Industrial HiVision.

2.6 Deinstallation

2.6.1 Deinstallation under Windows

☐ Quit the program Industrial HiVision before you start the deinstallation.

☐ To deinstall Industrial HiVision, select `Start:Control Panel:Software`.

☐ Select the program Industrial HiVision.

☐ Click on Change/Remove and follow the instructions of the deinstallation routine.

2.6.2 Deinstallation under Linux

☐ Quit the Industrial HiVision program before you start the deinstallation.

☐ Logon with the `su` command so that you have root access rights.

☐ Quit the Industrial HiVision service with the command `/etc/init.d/ihivision5.1 stop`

☐ Delete the `/opt/ihivision5.1` directory with the command `rm -rf /opt/ihivision5.1`

☐ Remove the ihivision start script from the run levels of your init sequence (see on page 26 “Installation under Linux”).

Note: The database content and the licenses are lost during the deinstallation.

3 Preparation

Before you start entering and monitoring your network, set up the necessary or useful conditions.

- The necessary conditions include the accessibility of the devices to be monitored and the related access authorization.
- The useful conditions are the settings related to the presentation, such as color and font size.

☐ Create a data backup plan. Regularly export the data of your project. You can thus recreate your project at any time, should adverse circumstances damage the data stock.

The “Demo Network” program supplied allows you to simulate a network on your computer in order to familiarize yourself with Industrial HiVision without being connected to a network.

3.1 Outside the program

Industrial HiVision requires access to the devices to be monitored. Therefore keep in mind:

- Your network management station has access rights to every device to be monitored. This is the case if the IP address of your network management station is entered as an IP address with access rights on the device to be monitored.
  Devices with any IP address have access to Hirschmann devices whose configuration is set to the factory default.
- Your network management station is physically connected to every device to be monitored, directly or indirectly via hubs and switches or routers.

3.2 Network structure

Large data networks have hierarchical network structures. Industrial HiVision is scalable and can be adapted to the hierarchical network structure. Adapting to the hierarchical network structure means that you can set up a network management station for each subdomain of your data network. (see figure 41 “Domains”)

3.2.1 Advantages of the hierarchical network structure

This hierarchical adaptation offers the following advantages to you:

- Load distribution
  In very large data networks with extensive monitoring, you can easily reach the limits of your system resources (see on page 154 “Effect on system resources”). Through the use of multiple network management stations, you can restrict the utilization of the data network and the network management station to the domain limits. This significantly increases the performance.
- Smaller projects
  Smaller projects make it easier to get an overview.
- Organizational structure
  Adapting your network management projects to your organizational structure enables you to create and copy relevant projects individually.
- Central administration of Industrial HiVision licenses
- Concentrated display of the statuses of the subdomains

3.2.2 Application Example

The following figure shows an application example of a hierarchical network structure.
The network consists of the IT domain, with lower-level domains A1, A11, and B1.
The IT network management station is in the IT network.
The A1 network management station is in production network 1.
The A11 network management station is in production subnetwork 11. An A12 network management station could also be in production subnetwork 12. In this case, the A1 network management station is the superdomain of the A11 domain.
The B1 network management station is in distribution network 1.
The domains A1 and B1 are subdomains of the IT domain.
Industrial HiVision allows a nesting depth of 4 layers and 5 subdomains per domain.

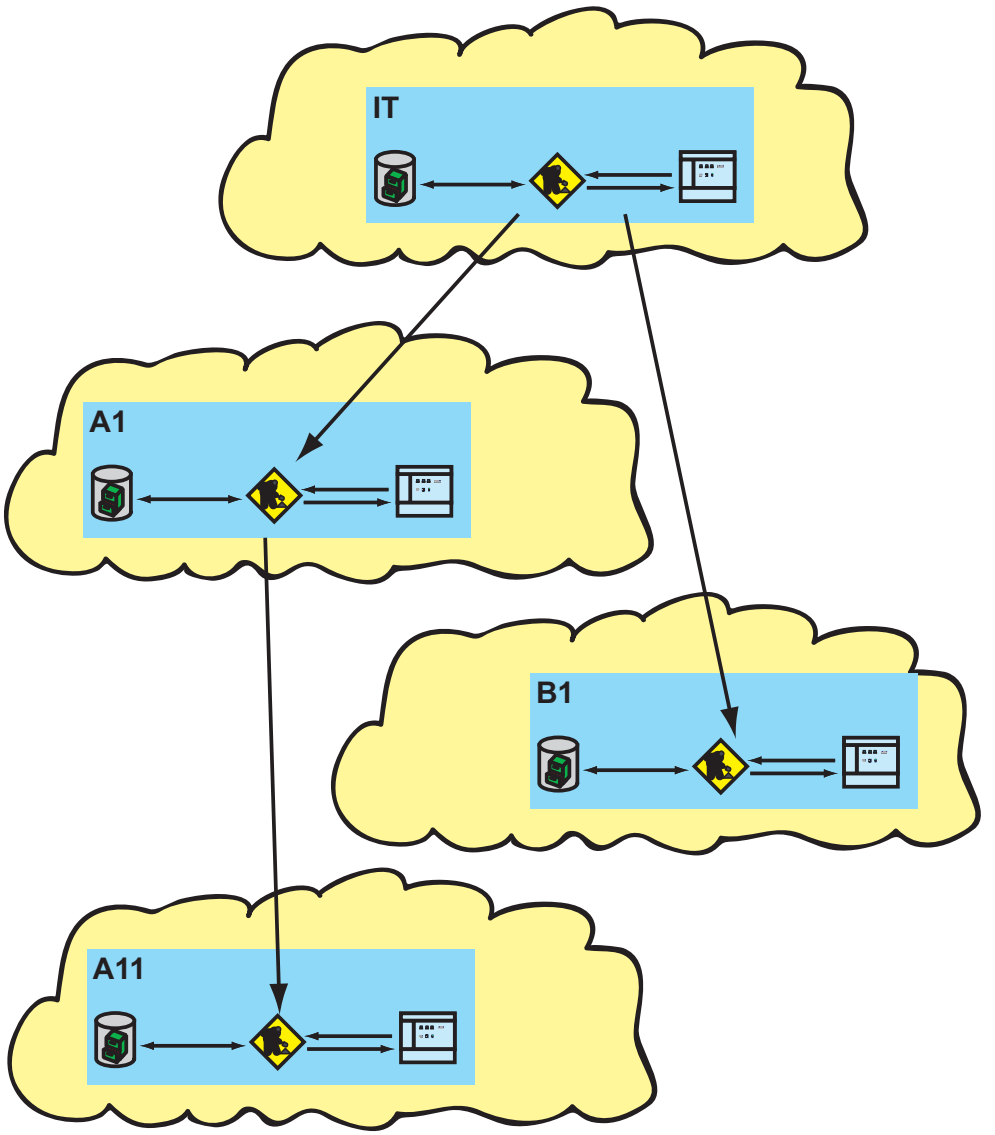

Figure 4: Domains

3.2.3 Configuration of the application example

The configuration of hierarchically arranged network management stations comprises the following steps:

- Release subdomains
- Connect subdomains to superdomains
- Assign licenses from top to bottom

Release subdomains

First you go into the hierarchical levels from bottom to top. In Industrial HiVision, go into the subdomain interface and release access for the superdomain on the next higher level.

The following instructions describe this process for the A11 subdomain.

☐ In the settings, choose `Advanced:Services`.

☐ Allow remote access with `Industrial HiVision Proxy Server:Allow Remote Access` = `true`.
You open the dialog box for editing by double-clicking on the line.

☐ Select the subdomain interface with `Global Settings:Subdomain Interface Enabled` = `true`.
You open the dialog box for editing by double-clicking on the line.

☐ Under `Global Settings:Subdomain Password`, enter a password with which the superdomain can access this subdomain.
Requirement for the password: 8 to 16 characters.
You open the dialog box for editing by double-clicking on the line.

☐ Repeat these steps for the subdomains A1 and B1.

Connect subdomains to superdomains

☐ To connect the A11 subdomain to the A1 superdomain, on the superdomain A1 open the dialog "Add New Subdomain" with `File:New:Subdomain`.

☐ Enter the IP address of the subdomain.

☐ Enter a name for the subdomain under which Industrial HiVision displays the subdomain in the folder frame.

☐ Enter and repeat the subdomain password with which the superdomain can access the subdomain.

Industrial HiVision shows the subdomain in the upper part of the folder frame.

☐ Repeat these steps for the IT superdomain with the superdomains A1 and B1.

You can delete a subdomain from the folder frame by selecting the subdomain and pressing the “Del” button.

Assign licenses from top to bottom

Now you assign the Industrial HiVision licenses in the levels of the hierarchy from top to bottom.

☐ In the IT super domain, enter your license key (see on page 241 “Basics:License”).

☐ To assign licenses to the subdomain A1, right-click the subdomain A1 in the folder frame of the IT superdomain.
In the "License Nodes to Subdomain" dialog, enter the number of licenses you are leasing to subdomain A1.
The number of licenses for the subdomain A1 includes the number of licenses that you further assign from superdomain A1 to subdomain A11 in the next step.

☐ To assign licenses to the subdomain A11, right-click subdomain A11 in the folder frame of the A1 superdomain.
In the "License Nodes to Subdomain" dialog, enter the number of licenses you are leasing to subdomain A11.

As an alternative, Industrial HiVision offers you the option to enter a license key directly in the subdomain.

You will find an overview of the licenses assigned to subdomains in the `Settings:Basics:License` dialog in the configuration settings (see on page 241 “Basics:License”).

3.2.4 Status display of the subdomains

The superdomain determines the status of its subdomains and indicates this status with color.

Color	Meaning
Dark gray	Subdomain cannot be reached
Gray	Status determination not available
Green can be configured in the initial settings	OK
Yellow can be configured in the initial settings	Warning
Red can be configured in the initial settings	Error

Table 1: Meaning of the status colors of the subdomains

3.3 Program default settings

To take into account the individuality of every user, Industrial HiVision gives you the option of entering settings relating to the presentation, the function and the device detection.

- IP parameters
  Enter the IP parameters of your network management station under `Configuration:Preferences:Management Station` (see on page 263 “Advanced:Management Station”).

- Device access
  Industrial HiVision independently detects the delivery settings of Hirschmann devices for the SNMP access.
  If for security reasons you have already made changes to the SNMP settings for the devices to be monitored, then enter the user names and the passwords under `Configuration:Preferences:SNMP Configuration` (see on page 260 “Advanced:SNMP configuration”).

Discover Devices

Industrial HiVision gives you three options for detecting devices in the connected network:

- Traps: Detecting devices using the alarm messages (traps) sent by them. Keep in mind that your network management station is entered as the trap destination address in every device to be monitored (see on page 142 “Trap destination address”).
- HiDiscovery: Detecting devices by means of a query using the HiDiscovery protocol. Select the relevant network card of the network management station (see on page 263 “Advanced:Management Station”).
  On delivery, the HiDiscovery protocol on a new Hirschmann device is active.
- Network scan: Discovering devices by means of an IP query for an entered IP address range (see on page 92 “Device detection”).

Select the required method for device detection under `Configuration:Preferences:Detecting Devices` (see on page 226 “Basics:discover devices”).

License

To be able to utilize the entire scope of the functions of Industrial HiVision, enter your license key under `Configuration:Preferences:License` (see on page 241 “Basics:License”)
After a new installation or after an update, Industrial HiVision starts fully functional for the duration of the free 30-day trial period.
After the free 30-day trial period, Industrial HiVision runs as a free version (see on page 183 “Switch to the free version”).
After you enter a license key, Industrial HiVision runs as the licensed version.

Font size

Depending on the setting of your screen resolution, some of the text displayed is too small or incomplete. Adapt the font size under `Configuration:Preferences:Device,,` `Configuration:Preferences:Appearance` (see “Display:Device” on page 249 and “Display:Appearance” on page 252).

- Colors
  The optimal signal effect of the display depends on your color sensitivity. Select your color display under
  `Configuration:Preferences:Status colors`
  (see on page 254 “Display:Status Colors”).

- Devices and port names
  Industrial HiVision enables you to choose the name of the device/port that appears in the interface. Select the name of the device/port under
  `Configuration:Preferences:Device/Port Names`
  (see on page 271 “Advanced:Device/Port Names”).

- Default device icons
  Industrial HiVision enables you to assign defined default icons to different device types. Select device icons under
  `Configuration:Settings:Device Icons`
  (see on page 255 “Display: Device Icon”).

4 Interface of the program

This chapter describes the structure of the program interface. It provides you with an overview to help you find your way in the graphic interface. You will find a detailed description in the chapter “References” on page 175.

Expert knowledge of networks is not required to use Industrial HiVision. The interface enables you to operate the program intuitively. It contains elements of standard user interfaces, so you will be able to get started after a brief familiarization phase.

4.1 Main window of Industrial HiVision

When you start Industrial HiVision, the main window appears on the screen. It consists of the following parts:

- Menu bar
- Tool bar
- Event line
- Folder frame
- Navigation field
- Detail display
- Event list

By positioning the mouse on a screen position in Industrial HiVision for a short time, you open an information window with a small help text.

In the event list area, Industrial HiVision shows the time that is synchronized with the system time of the computer. Industrial HiVision updates this time every second.
If the time displayed matches the system time of the computer, you can assume that the displayed content of Industrial HiVision is up to date.

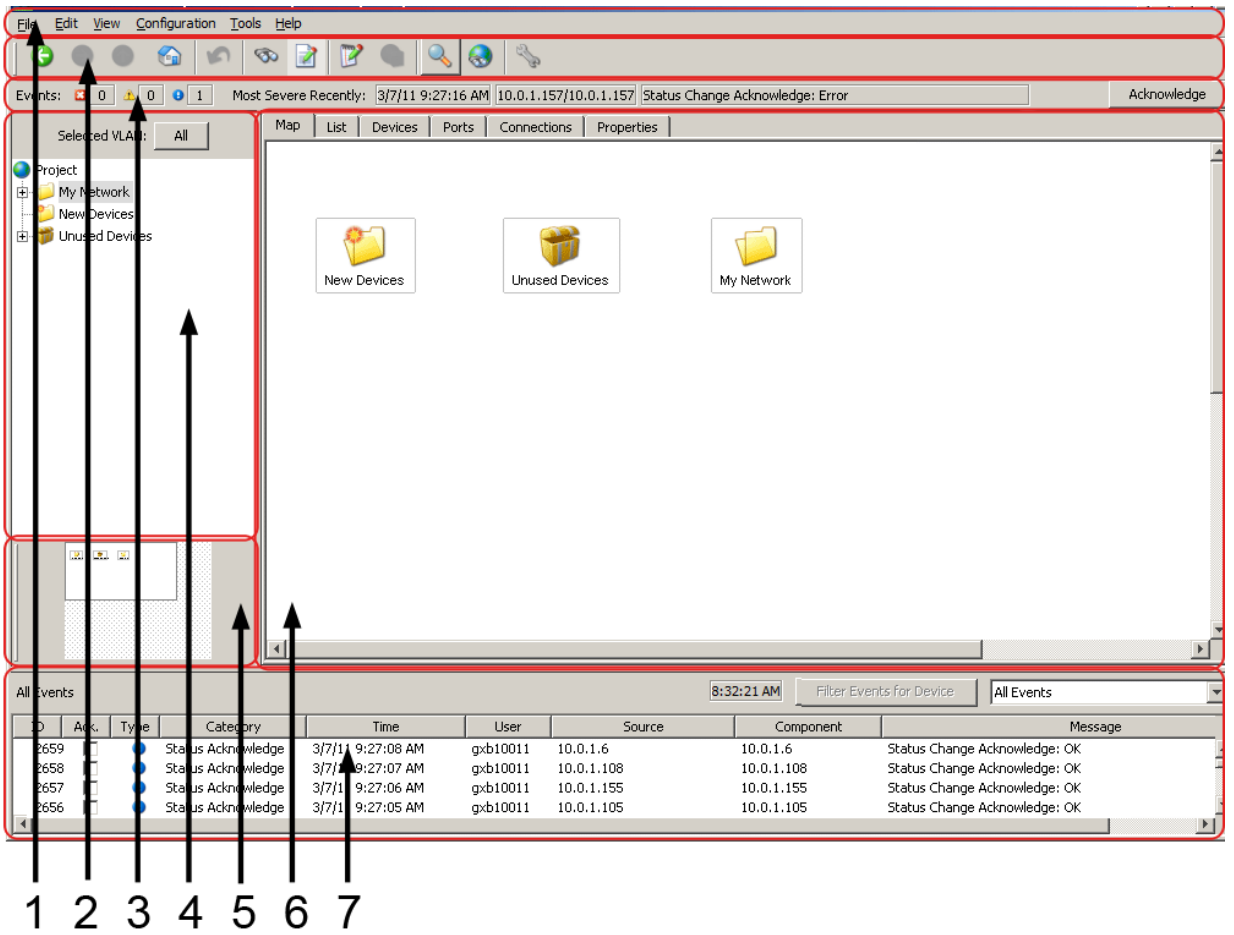

Figure 5: Main window
1 - Menu bar
2 - Tool bar
3 - Event line
4 - Folder frame
5 - Navigation field
6 - Detail display
7 - Event list

4.2 Menu bar

The menu bar is right at the top of the main window of the program. It gives you support in importing, exporting, and creating new projects, in copying, adding, and deleting data, and in changing the view and configuration. A help menu is also provided.

The menu bar contains the following selection items:

- File
- Edit
- View
- Configuration
- Tools
- Help

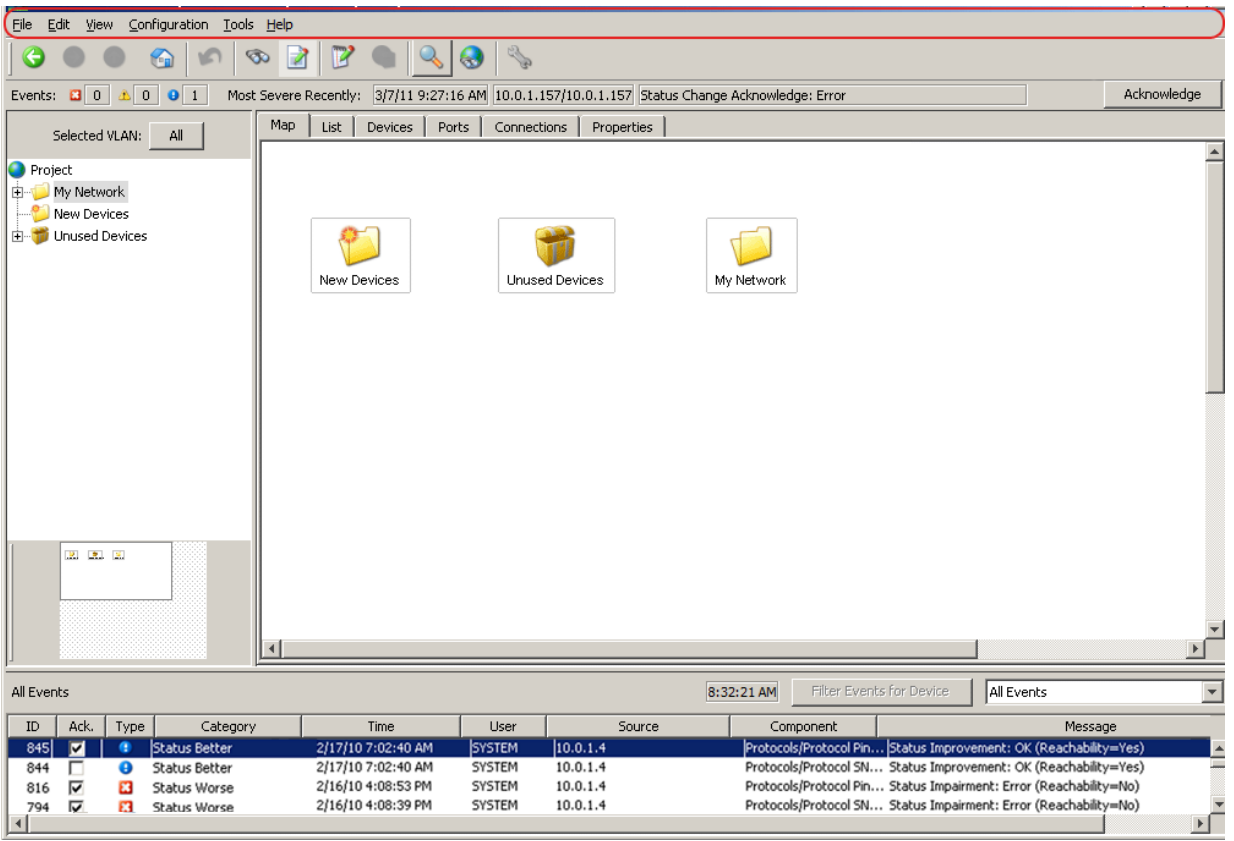

Figure 6: Menu bar

4.2.1 File

The “File” menu item in the menu bar contains the following selection fields:

- New Project
- Run Setup Wizard
- New
- Connect...
- Open... (Ctrl+O)
- Save (Ctrl+S)
- Save as...
- Export...
- Export Events...
- Print... (Ctrl+P)
- Print Events...
- Exit and Stop Service
- Exit (Ctrl+Q)

The key combinations in brackets allow you to start the selection items without using the mouse.

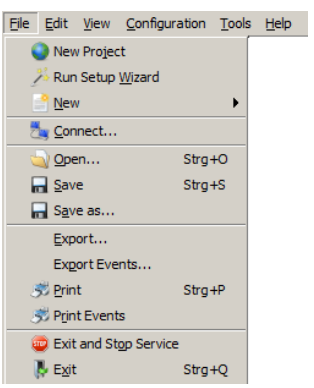

Figure 7: Menu bar – file

4.2.2 Edit

The “Edit” menu item in the menu bar contains the following selection fields:

- Undo (Ctrl+Z)
- Redo (Ctrl+Y)
- Edit mode
- Switch to the Free Version (available during the 30-day trial period)
- Cut (Ctrl+X)
- Copy (Ctrl+C)
- Paste (Ctrl+V)
- Paste As Link
- Delete (Del)
- Rename (F2)
- Select All (Ctrl+A)
- Acknowledge Status Change
- Manage
- Unmanage
- Set Device and Port Names
- Set Default Device Symbol
- Device Documentation
- Drawing Size
- Background Image
- Find... (Ctrl+F)
- Auto Topology...
- Auto Layout
- Properties... (Alt+Enter)

The key combinations in brackets allow you to start the selection items without using the mouse.

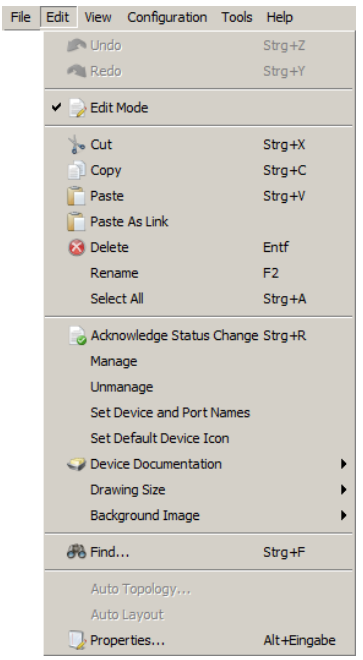

Figure 8: Menu bar – edit

4.2.3 View

The “View” menu item in the menu bar contains the following selection fields:

- Select VLAN
- Protocol Statistics
- Filter Events for Object
- Back
- Forward
- Up
- Home View
- Set As Default Folder
- Zoom

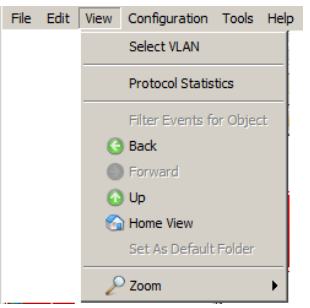

Figure 9: Menu bar – view

4.2.4 Configuration

The “Configuration” menu item in the menu bar contains the following selection fields:

- Monitor
  This dialog gives you an overview of the setting of the monitored components (see on page 215 “Monitor”).
- PSM Manager
  Product-Specific Modules (PSMs) describe the properties of a device which Industrial HiVision can read for monitoring or write to for configuration.
  The PSM Manager gives you the opportunity to update PSMs or import additional PSMs beyond the ones included with delivery and remove them again.
  See “PSM Manager” on page 217.
- Reporting
  The reporting function allows you to manage long-term statistics outside the database of the network management system program.
  See “Reports” on page 148.
- Scheduler
  Scheduler offers the possibility of having repeating tasks of Industrial HiVision carried out automatically.
  See “Scheduling” on page 219.

- Preferences (Ctrl+E)
  You use this selection field to enter settings for the configuration of Industrial HiVision (see on page 225 “Preferences”).
- Status Configuration
  With this dialog you can perform the status configuration of component details for the devices in a device class, or for all devices.
- Scan Ranges
  With this dialog you can enter the scan ranges for the device discovery.
- User-defined properties (see on page 151 “User-defined properties”)
  With the “User-defined Properties” function, Industrial HiVision allows you to include additional properties from the MIB of SNMP-capable devices in the management.
- MultiConfig™
  The multi-configuration function (MultiConfig™) allows you to perform configurations on the device and in Industrial HiVision for:
  – one or more devices
  – one or more device properties, also device overlapping
  – one or more device details, also device overlapping
- MAC/IP address assignment
  MAC/IP list of the discovered devices.
- Refresh (F5) the properties or refresh device.
- IP Configuration
  This dialog enables you to configure the IP parameters of a device detected by HiDiscovery without an IP address, or to change IP parameters already configured.
- Trap Destination
  When the dialog is opened, Industrial HiVision queries the trap settings of the device and displays whether the device sends traps to the IP address displayed.

The key combinations in brackets allow you to start the selection items without using the mouse.

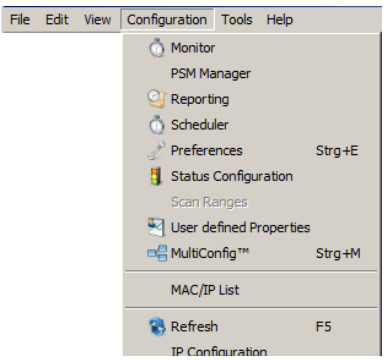

Figure 10: Menu bar – configuration

4.2.5 Tools

The “Tools” menu item in the menu bar contains the following selection fields:

- Web interface
- Device Configuration
- CLI
- Actions
- SNMP browser
- Ping
- HiDiscovery Scan
- Scan Network
- Demo Network
- Calculate Availability

You can activate menu items displayed in gray by selecting a device or property that supports this function.

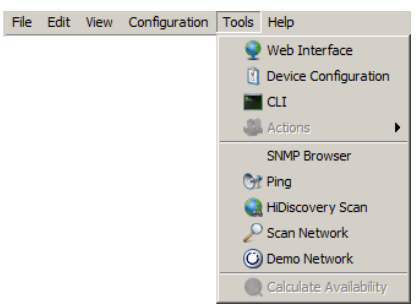

Figure 11: Menu bar – tools

4.2.6 Help

The “Help” menu item in the menu bar contains the following selection fields:

- Online help, (F1)
- Readme
- Release notes
- Tutorial
- Online
- Kernel info
- About

You can use the F1 key to start the online help without using the mouse.

Online help (F1)
You select his field to start the online help of the program.

About
You select this field to open a window with information on the program.

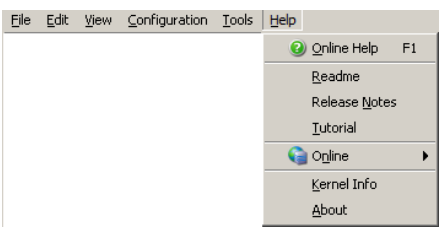

Figure 12: Menu bar – Help

4.3 Tool bar

In the tool bar you can quickly access frequently used functions by clicking on the relevant button.
The tool bar contains the following selection fields:

- Back
- Forward
- Up
- Home View
- Undo
- Search
- Edit mode
- Properties
- WWW
- Network Scan
- HiDiscovery Scan
- Preferences

Grayed-out selection fields cannot be used at the present time. This is the case, for example, if you want to use “Up” to reach a higher level when you are already on the highest level.

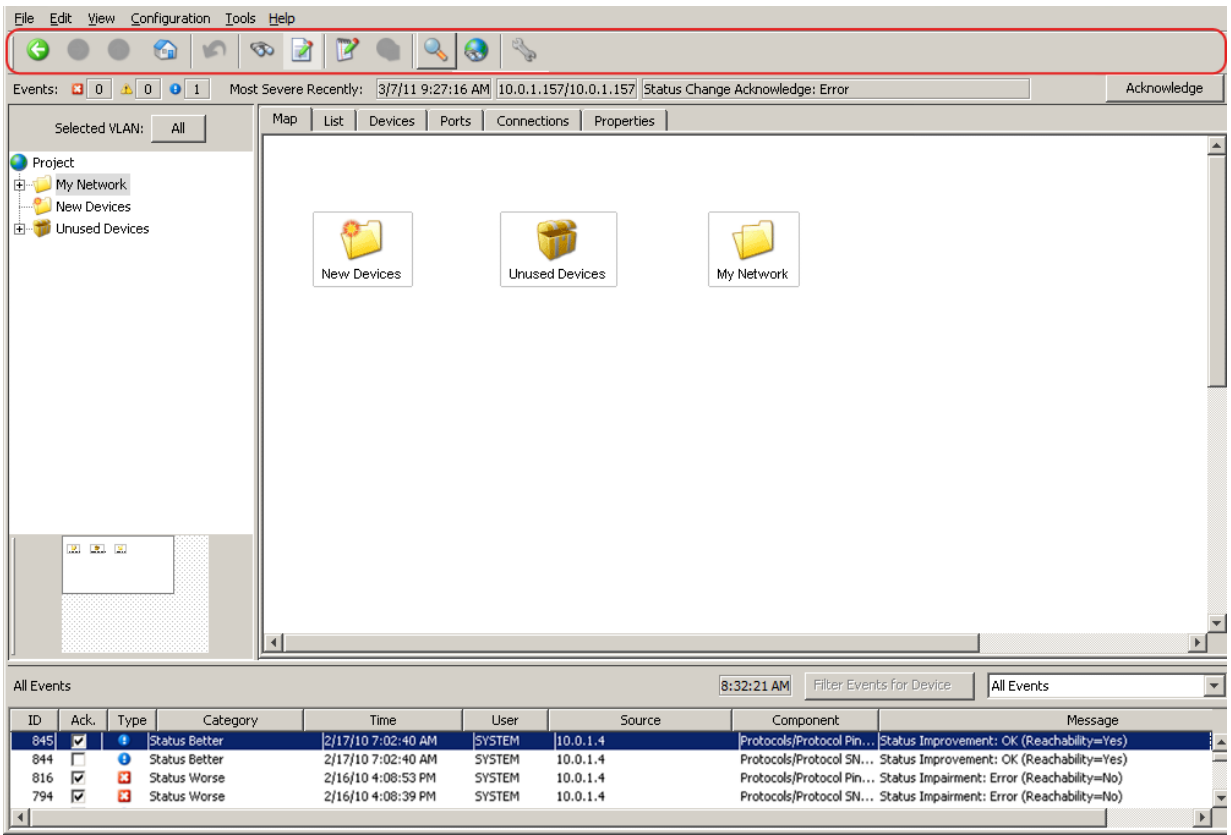

Figure 13: Tool bar

4.3.1 Edit mode

Industrial HiVision provides two operating modes.
You use the “Edit mode” button to switch between these two operating modes.

- Edit mode
  The edit mode allows you to edit settings in your network display and settings for the monitoring functions.
  You can restrict access to the edit mode with a password (see on page 258 “Advanced:Program Access”).
  Another way of restricting access to the edit mode is to use the time of expiry. Here you can specify how long the edit mode is allowed to be active (see on page 258 “Advanced:Program Access”).
- Run mode
  The run mode is used exclusively for monitoring the network. Everyone who has access to the network management station can monitor the network with the settings entered in the edit mode.

4.3.2 Preferences

By selecting the “Preferences” tool in the tool bar you open a window with the following selection items:

- Basics
  Under “Basics”
  – you specify how Industrial HiVision will detect devices,
  – you specify how Industrial HiVision reacts to events,
  – you enter passwords for accessing devices,
  – you manage your Industrial HiVision licenses.
- Display
  The “Display” selection field enables you to specify the mode of presentation for events, devices or text.
- Advanced
  The “Advanced” selection field enables you to enter more comprehensive configurations:
  – Program Access,
  – SNMP Configuration,
  – Management Station,
  – OCP-SNMP
  – Services,
  – External Applications,
  – Device/Port Names.
  – Load/Save
  – 1:1 NAT Devices
  – Mobile Devices

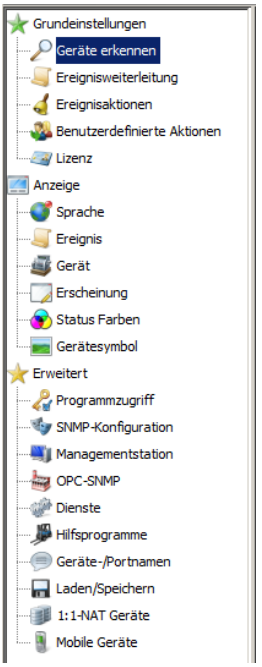

Figure 14: Tool bar – Preferences

4.4 Event line

The event line gives you information on events which are saved in the event log (see on page 87 “Event list”) and which have not been acknowledged yet. The number of events that have occurred is displayed in three fields, sorted by type. You also get more detailed information on the events, which service logged them, and when the events occurred.
In the case of an event of the error type, for example, the relevant fields in the event line are colored. In the detail display, the device affected flashes red, and in the event window the relevant event line is highlighted in red. The user can change the standard settings for the display with color and flashing by means of the Preferences menu item in the tool bar (see on page 62 “Tool bar”).

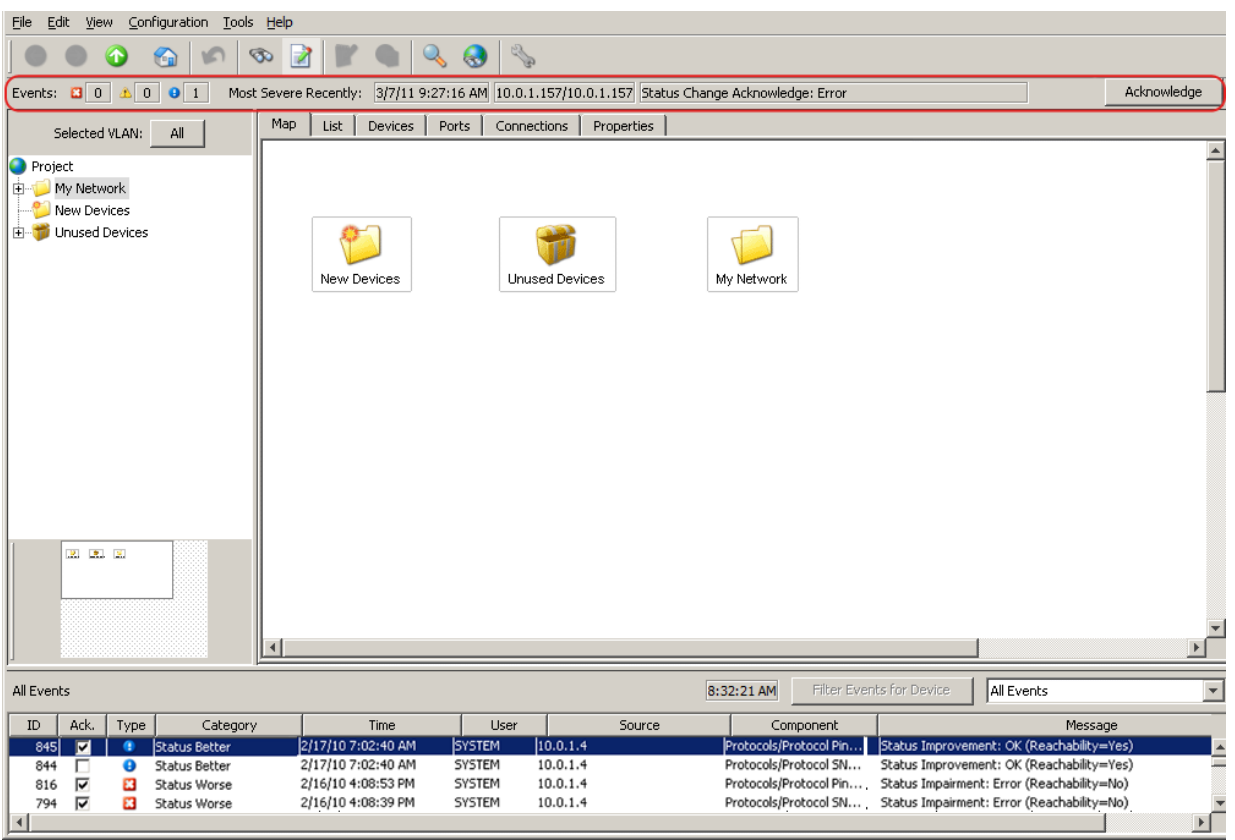

Figure 15: Event line

4.4.1 Number of events

The event line contains the number of unacknowledged events in the 3 information fields after the item “Events:”.
Industrial HiVision can assign one of the 3 evaluation types to an event:

- Error: (red symbol)
  Industrial HiVision evaluates the event that has occurred as a severe error.
- Warning: (yellow symbol)
  Industrial HiVision evaluates the event that has occurred as an error that can lead indirectly to a problem in your network.
- Info: (blue symbol)
  Industrial HiVision evaluates the event that has occurred as a normal operating condition.

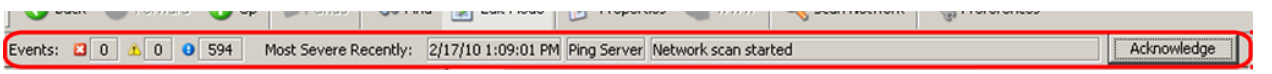

Figure 16: Event line – events

For every new event that occurs, Industrial HiVision increases the relevant counter by 1. When an event is acknowledged by the user, Industrial HiVision reduces the relevant counter by 1.

4.4.2 Types of events

In the three information fields after the item “Last most significant:”, the event line contains more detailed information on the respective event.

Designation	Meaning
Time	Date and time of the event
Source	Service, e.g. Industrial HiVision service
Message	Type of event, e.g. “New device detected by ping”

Table 2: Information in the event line

The last, most significant event is always displayed. If there is only information, then the latest information for the relevant event is displayed. If there are warnings too, then the latest warning for the relevant event is displayed. If there are also errors, then the latest message for the relevant event is displayed.

Figure 17: Event line – events – last most significant

For each new event occurring, the following is displayed:

- In the Time field, the related date and the time
- In the Source field, the name of the service which logged the event
- In the Message field, a detailed description of the event type

You get the full listing of the events in the “Event list” on page 87. You will find the data from the event line in the columns of the event frame.

4.4.3 Acknowledge events

Use the “Acknowledge” button in the event line to acknowledge the displayed event after you have noted it. The “Ack.” field in the event list provides you with another option for acknowledging events.

Figure 18: Event line – events – acknowledge

After the acknowledgment, the event line (see on page 69 “Types of events”) displays the next event from the event log. You get the full listing of the events in the (see on page 69 “Types of events”). Here you can also acknowledge the relevant events in the “Ack.” (acknowledge) column.

When an event is acknowledged by the user, the relevant counter is decreased by 1 (see on page 68 “Number of events”).

In the “Ack.” (acknowledge) column in the “Event list” on page 87, a green checkmark is set or the event is hidden after you acknowledge it, depending on the event filter selected.

4.4.4 Properties of an event

By clicking with the right mouse button on the event line and selecting “Properties...”, you open an information window with a text on the event currently displayed.

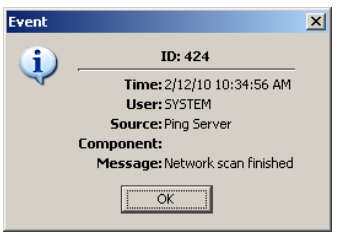

Figure 19: Event line – Events – Properties

4.5 Folder frame

In the folder frame of the Industrial HiVision program interface, you can move around like in other standard user interfaces. You can create new folders and move up and down within the hierarchy using the “back”, “forwards” or “up” buttons in the tool bar (see on page 62 “Tool bar”).

- Back: go back to the last position
- Forwards: go forwards to the next position
- Up: go up one level

You can also access these functions under the “View” menu item in the menu bar (see on page 56 “View”).

If you have divided your network into subdomains and configured them in Industrial HiVision(see on page 39 “Network structure”), then Industrial HiVision represents the domain structure in the top section of the folder frame.

The folders and elements listed in the folder frame are indicated by a “+” sign if they contain further subordinate elements or folders. To display them, you click on this plus sign. The subordinate elements/folders are indicated by a minus sign “-”.

To hide subordinate elements/folders again, you click on this minus sign.

In its state on delivery, Industrial HiVision contains three folders:

- New Devices
  In this folder, Industrial HiVision displays the newly-detected devices. This is part of the software and therefore cannot be deleted. Industrial HiVision does allow you to rename the folder.
- Unused Devices
  Industrial HiVision does not monitor the devices in this folder.
  This folder is part of the software and therefore cannot be deleted.
  Industrial HiVision does allow you to rename the folder.
  In order to decrease your network load, you can move devices which you do not need to monitor into this folder. Industrial HiVision assigns the device status “Unmanage” to devices in the “Unused Devices” folder.
  To monitor a device again, move the device to the desired folder.
- My Network
  Industrial HiVision provides this folder for you to create your own network plan. You can rename or delete it and create new folders for your network plans.

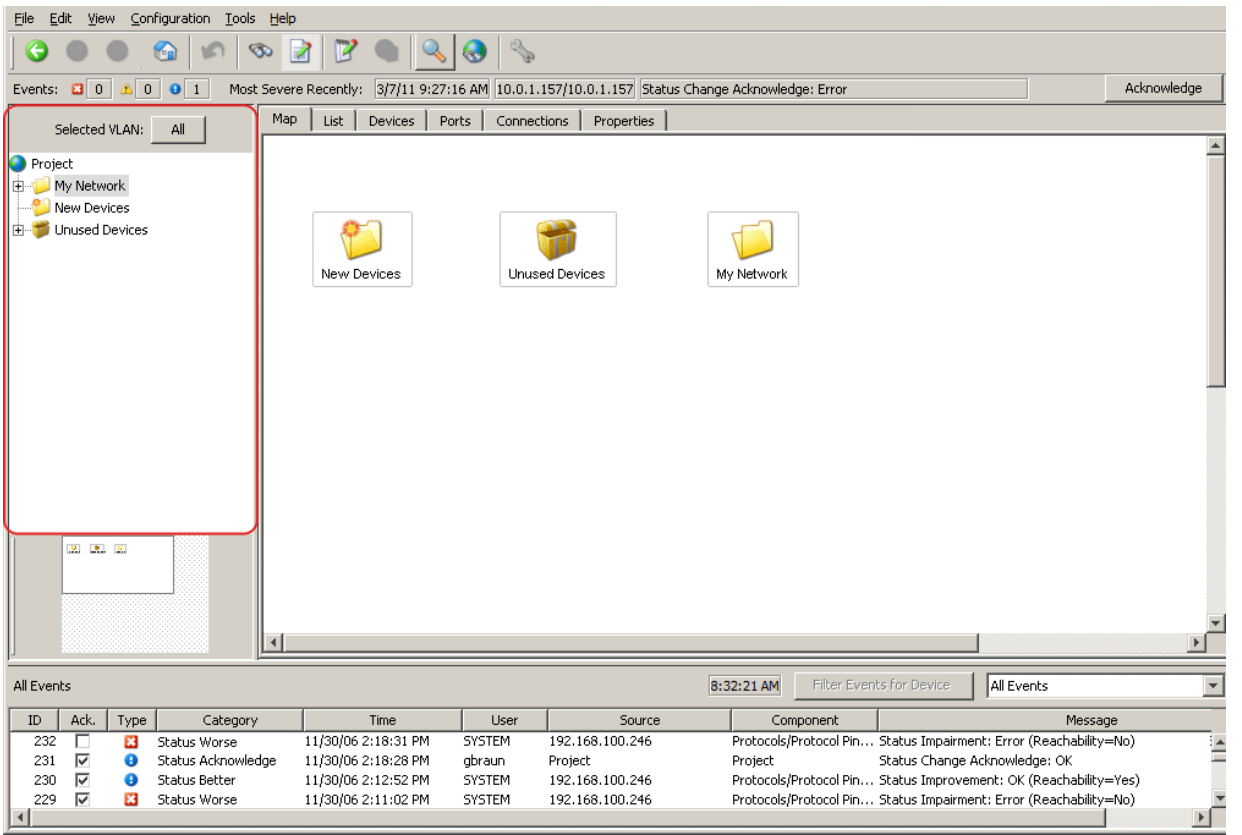

Figure 20: Folder frame

Mark an element in the folder frame to get more detailed information in the detail display (see on page 77 “Detail display”).

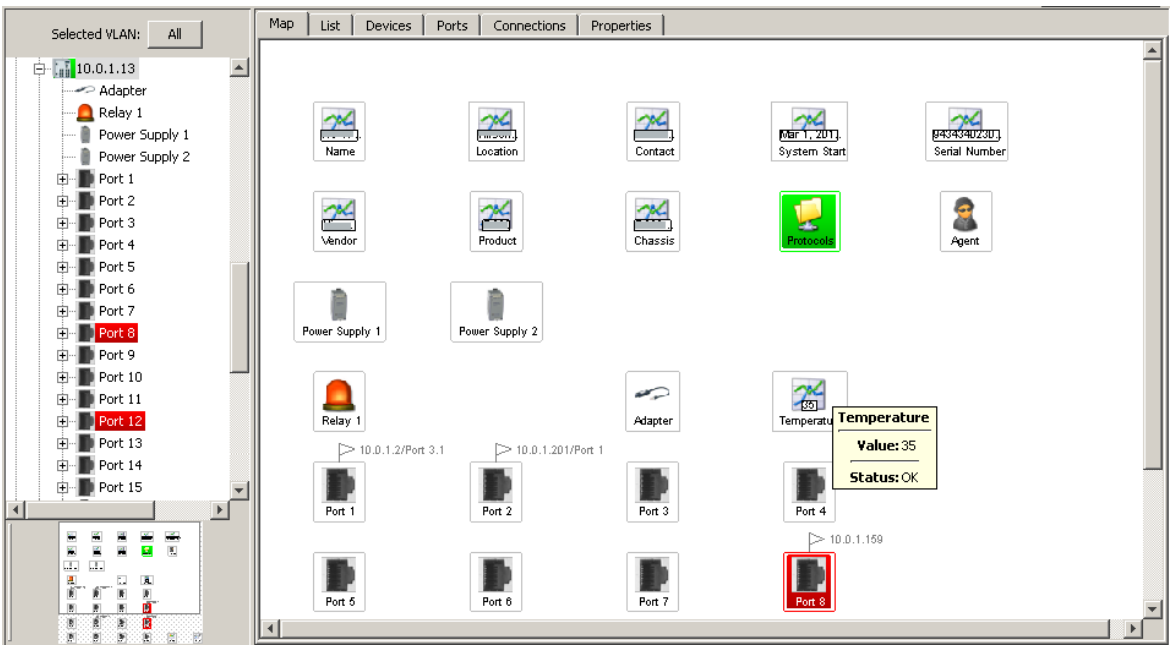

Figure 21: Folder frame – folder structure

4.6 Navigation field

You can use the navigation field to move around the topology display (see on page 77 “Detail display”).

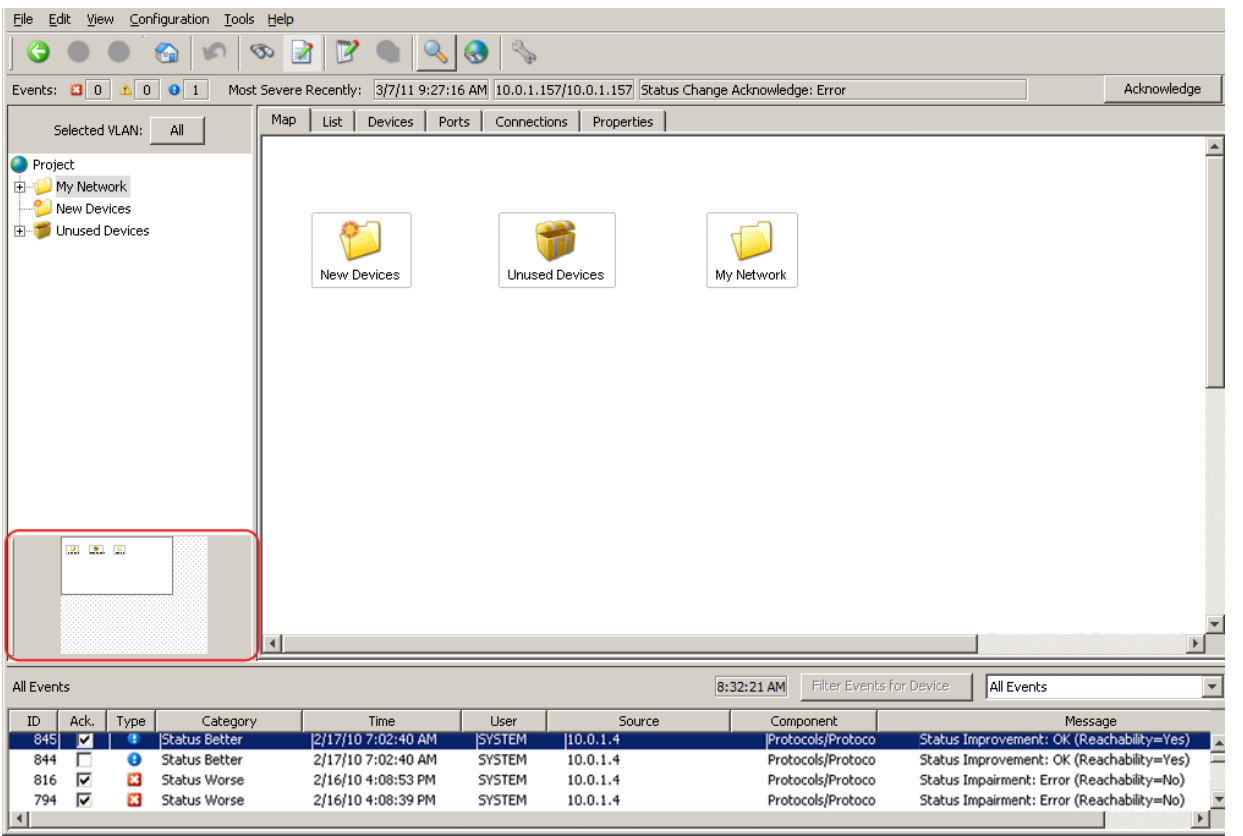

Figure 22: Navigation field

Click on the navigation rectangle and pull it to the position you want within the navigation field. Your position within the detail display changes accordingly. You can use the “View - Zoom” menu item in the menu bar, or right-click in the navigation field, to set the enlargement of the display in the detail frame in steps of 10 %.

4.7 Detail display

In the detail display area of the Industrial HiVision user interface, you get a detailed presentation of your network structure as a topology diagram, or in the form of a list.

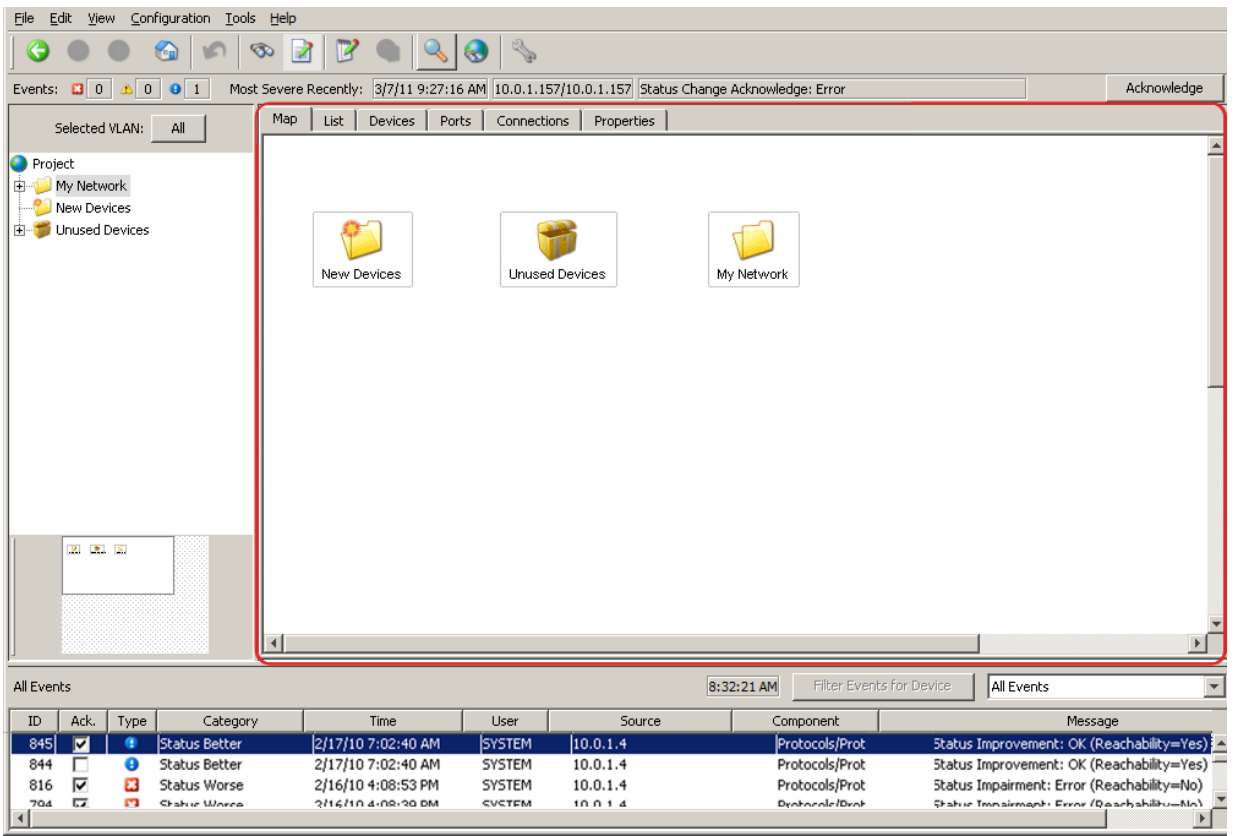

Figure 23: Detail display

4.7.1 Detail display – Topology

In the topology view of the detail display, you click on the “Topology” tab page to go to the detail display.
The devices and connections in your network structure are displayed in the topology view in accordance with the presentation options you selected. By selecting and pulling while pressing the mouse button, you can move devices.

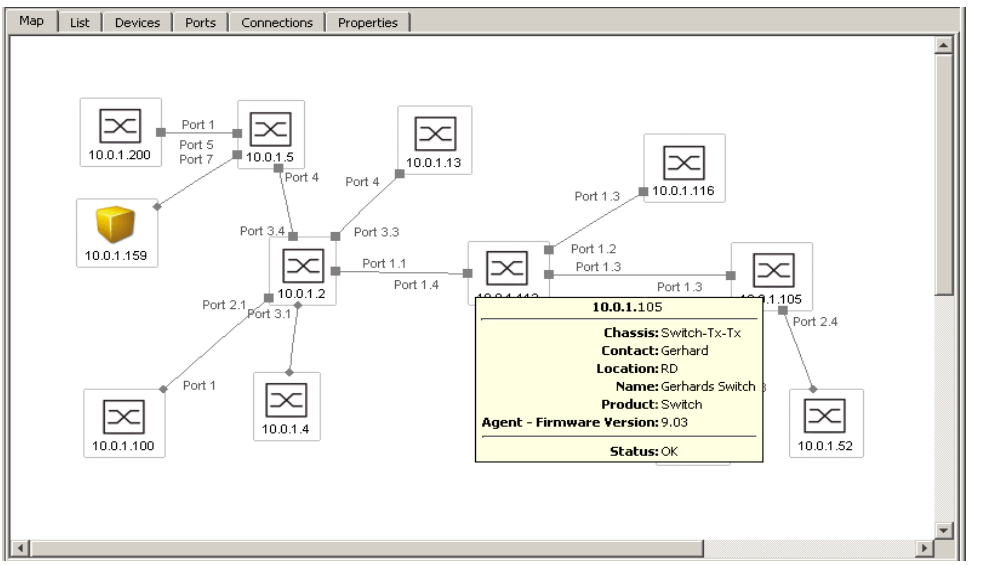

Figure 24: Detail display – Topology

When you double-click a device/component, you go down one level in the detail display (see figure 42).
The lowest level is the component detail level. You recognize it by the diagram symbol.

Figure 25: Diagram symbol for a component detail

4.7.2 Detail display – List

In the list view of the detail display, you click on the “List” tab page to go to the detail display.
The devices and connections in your network structure on this layer are displayed in a list in accordance with the presentation options you selected.

You double-click on a device/component to get to a lower level in the display.

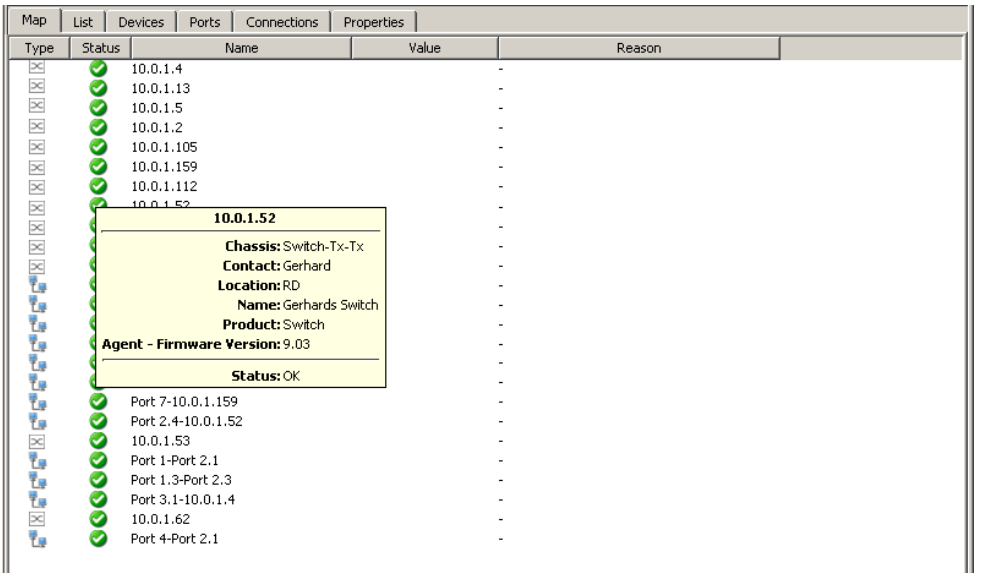

Figure 26: Detail display – list view

4.7.3 Detail display - Devices

In the device view of the detail display, you click the “Devices” tab page to go to the detail display.
Industrial HiVision displays in a list the devices of the folder selected in the folder frame, and its subfolders. This list displays for each device:

Name	Meaning
Type	Symbol for the device
Status	Symbol for the device status
Name	Name you gave to the device in Industrial HiVision, otherwise the IP address of the device
IP Address	Management IP address
MAC Address	Management MAC address
Product	Name of the product family
Chassis	Product description
Serial Nr.	Serial number of the device
System Name	System name from the device MIB
Location	Location name that you entered in the device
Contact	Name of the contact person that you entered in the device
Firmware version	The version of the firmware on the device
Chassis name	Chassis name of a device with multiple management agents
Configuration signature	Devices that support this function assign a signature to a stored configuration.
PSM up to date	This column indicates whether the data read from the device for the current PSM (Product-Specific Module) corresponds to the data in Industrial HiVision. If the data read from the device is from an earlier version of Industrial HiVision, then Industrial HiVision will re-read the data from the device in the next scan cycle.

Table 3: Meaning of the columns in the detail display of the devices

The selection of a class of devices offers the possibility of filtering devices of a class and tagging them at the same time. Using the multi-configuration function, you can configure the selected devices together.

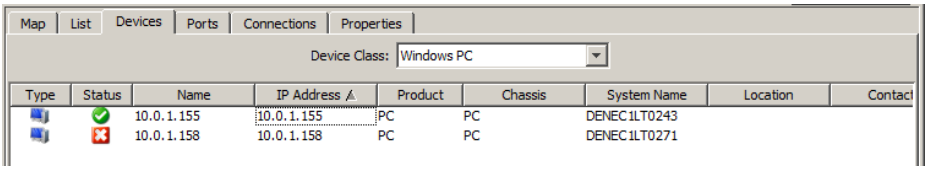

Figure 27: Detail display – Device view

4.7.4 Detail display - Ports

In the port view of the detail display, you click on the “Ports” tab page to go to the detail display.
Industrial HiVision displays in a list the ports of the folder/device selected in the folder frame and the subfolders in accordance with the presentation options you selected.

Name	Meaning
Type	Symbol for the port socket
Status	Symbol for the port status
Device	IP address of the device to which the port belongs
Port	Port number
Port Name	Name of the port as it is stored in the device
Medium Type	Type of the connected transmission medium, e.g. copper
Autoneg	Status of the autonegotiation function. A grayed-out display signifies that there is no autonegotiation function on this port.
Link	Link state of the device connected on this port
Port active	Port setting: switched on or off.
Speed/Duplex	Speed and duplex transmission of the link connected on the port
User	MAC address of the device connected to this port, or if multiple devices are connected, e.g. by means of a hub, the number of connected devices.
Load	Network load of the incoming data volume
PVID	Port VLAN ID of this port. A hyphen indicates that the device has no port VLAN function.
Ingress	Status of the ingress filter function. A grayed-out symbol indicates that the device has no ingress filter function.
VLANs	The port’s membership of VLANs. A number indicates the VLAN ID of the VLAN of which the port is a member. “U” stands for member of the VLAN; data packets without tag. A number alone stands for member of the VLAN; send data packets with tag.
VLAN consistency check	PVID contained in VLANs

Table 4: Meaning of the columns in the detail display of the ports

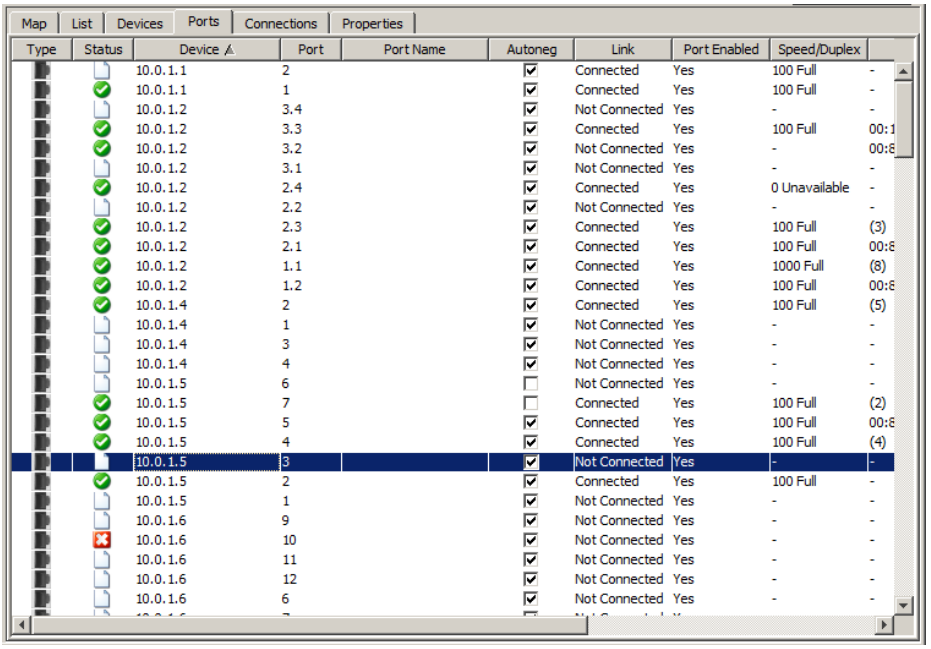

Figure 28: Detail display - Port view

4.7.5 Detail Display – Links

In the link view of the detail display, you click on the “Links” tab page to go to the detail display.
Industrial HiVision displays in a list the links of the folder selected in the folder frame and its subfolders. For each link, this list displays:

Name	Meaning
Status	Symbol for the link status according to the settings in the monitoring
Name	Name of the link - a name you entered for the link, or the IP address/port number of the connected devices
Connection	Status of the link (active, inactive)
Device A	Name/IP address of device A, to which the link is connected
Port A	Port number of device A, to which the link is connected
Device B	Name/IP address of device B, to which the link is connected
Port B	Port number of device B, to which the link is connected
Load A-B	Network load of the data volume from device A to B
Load B-A	Network load of the data volume from device B to A
Speed/Duplex	Speed and duplex transmission of the link
Medium Type	Type of the transmission medium of the link, e.g. copper
Link changed	Date of the last status change for the link
Config. Check	Discrepancy in the settings of the ports to which the link is connected. Refer to table 6
PVID Port A	Port VLAN ID of port A. A hyphen indicates that device A has no port VLAN function.
PVID Port B	Port VLAN ID of port B. A hyphen indicates that device B has no port VLAN function.
VLANs	The link’s membership of VLANs. A number indicates the VLAN ID for the VLAN of which the link is a member. “U” stands for member of the VLAN; data packets without tag. A number alone stands for member of the VLAN; send data packets with tag.
VLAN Check	When Port A and Port B have the same VLAN list, the result of the check is ok. A hyphen indicates that there is no VLAN list information at a port
MTBF	Mean Time Between Failure of the components participating in the link . (see on page 294 “Calculate Availability”).
MTTR	Mean Time to Repair of the components involved in the link (see on page 294 “Calculate Availability”).

Table 5: Meaning of the columns in the detail display of the links

Value	Description
OK	Both of the ports connected to the link have duplex settings that match each other.
Duplex	The ports connected to the link have different duplex settings.
Empty field	Missing information

Table 6: Config. check - meaning of the display

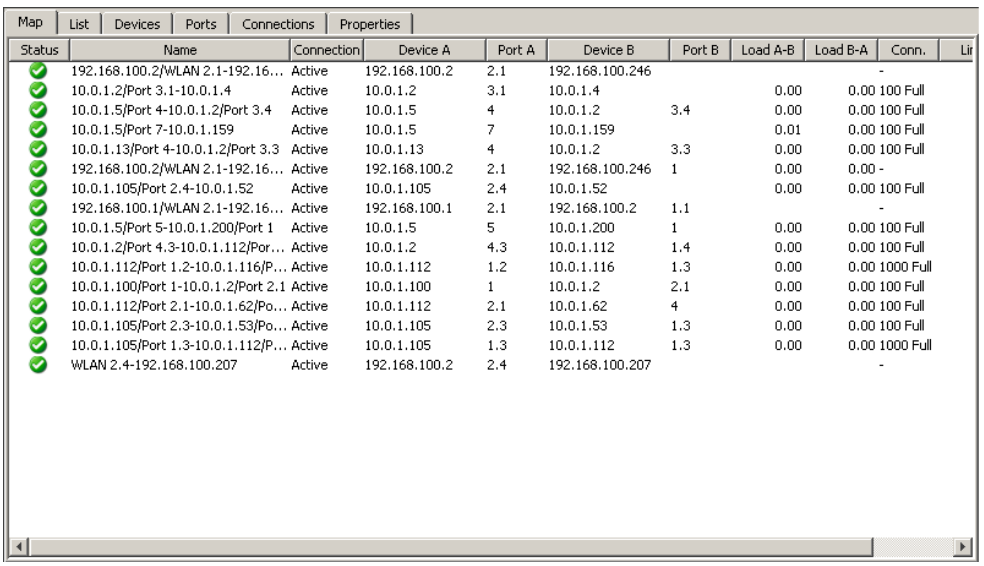

Figure 29: Detail display – link view

4.7.6 Detail display - Properties

In the properties view of the detail display, you click on the “Properties” tab page to go to the detail display.
Industrial HiVision displays in a list a selected property of device classes for the folder/device selected in the folder frame, and its subfolders.

☐ Select a device class (e.g. Windows PC).
☐ Select a property which you want to see for the devices of the device class.

This list displays for each device in the device class:

- Status derived from the value in the right column
- Name/IP address of the device
- Device class
- Name of the queried property
- Value of the property

The properties view provides you with a quick overview - for example, if you want to see the following:

- The software version of the devices of a device class
- The location of the devices of a device class
- The relay states
- The port properties of the Windows PCs
- etc.

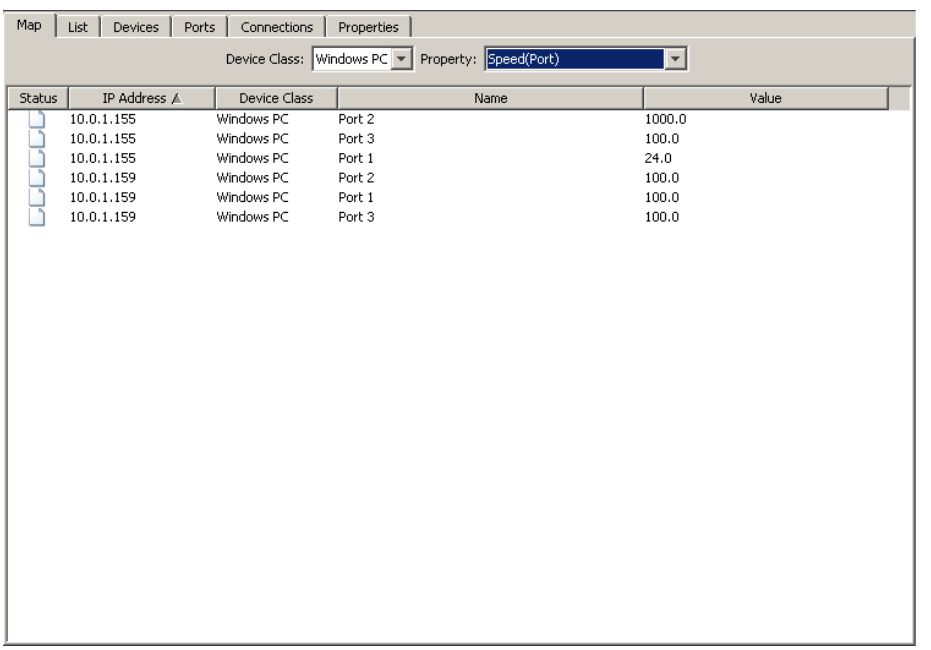

Figure 30: Detail display - Properties view

4.8 Event list

Industrial HiVision logs the events relating to the program itself and to the devices being monitored. (see on page 245 “Display:Event”).

Examples of events are:
Industrial HiVision started, status improvement/disimprovement, event acknowledged, trap received, settings modified, device added, and so on.

Industrial HiVision allows you to write the events to an event log file, as well as displaying the events in the program interface.

Depending on the selection in the drop-down menu, the following is displayed by Industrial HiVision

- Unacknowledged warnings and errors
- Unacknowledged events
- Warnings and errors
- All events
- When you click on “Filter Events for Selected Object”, Industrial HiVision shows the events of the selected object in the event list.
- User-defined events
  For user-defined events, Industrial HiVision opens a window in which you can specify which events Industrial HiVision is to display in the list.
  For help with the input notation, hover the mouse pointer over an input field.

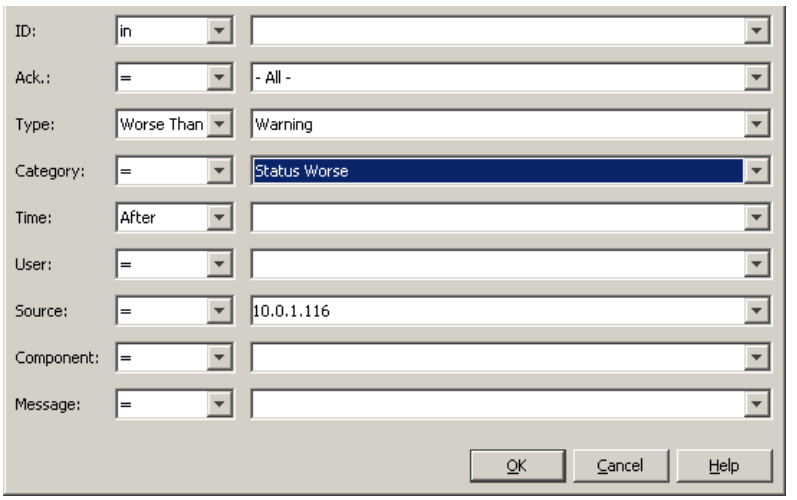

Figure 31: Display of user-defined events

Note: When entering the time, use the 24-hour clock notation.

For every event, Industrial HiVision logs

- An identification number
- Whether the event was acknowledged by the user
- The event type (Info, Warning, Error)
- The event category
- The time the event occurred
- The user responsible for the entry, e.g. the user who acknowledged the event
- The source that caused this entry, e.g. the device that changed to a better status
- The component that caused this entry, e.g. the port for which the connection status changed back to “ok” again
- The message stating which event caused this entry

The event list enables you to acknowledge individual events, or all events at once.
Right-click on a line in the event list and select
- “Acknowledge” to acknowledge this event, or
- “Acknowledge all” to acknowledge all the events on this tab page.

Double-click on a row in the event list to select the source of the event in the folder frame, if the event can be assigned to a device or a property.

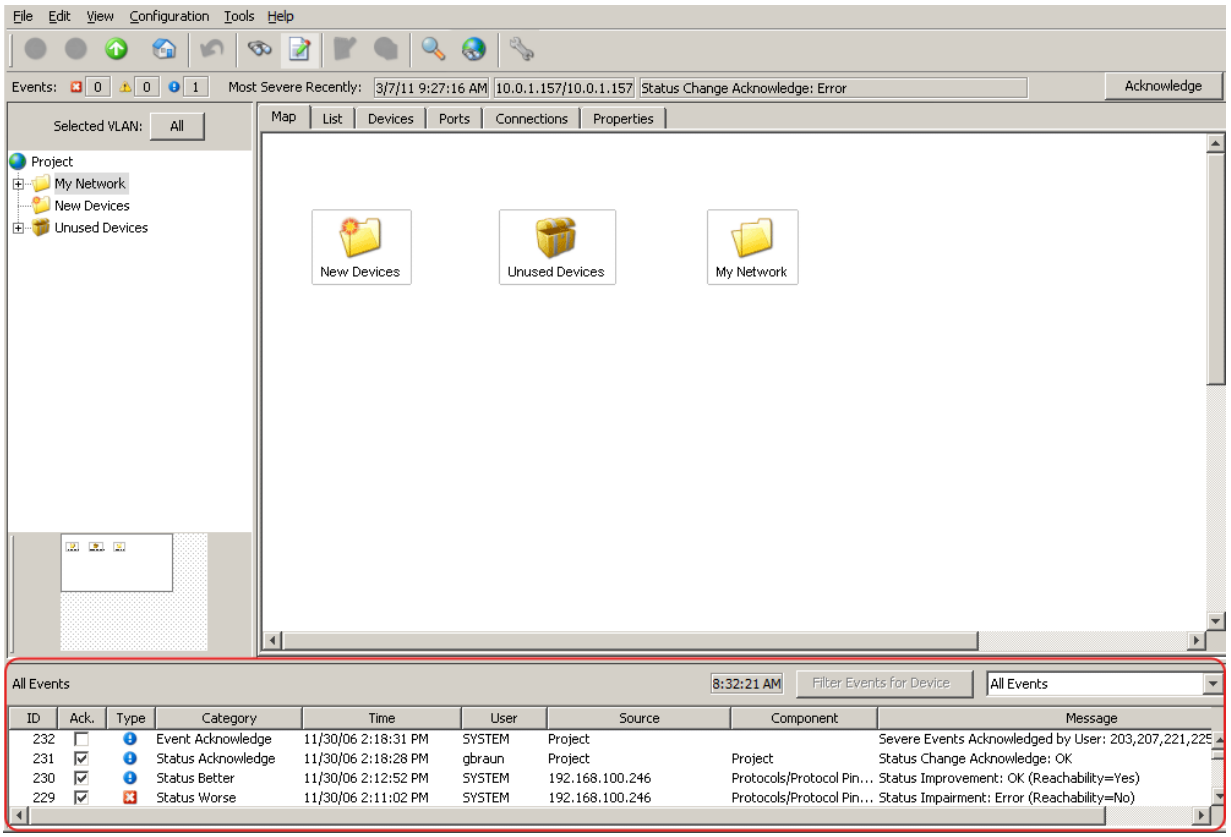

Figure 32: Event list

4.9 To navigate with the Keyboard

4.9.1 Navigating in a table

You can use the arrow keys to move up, down, right and left between the table fields in a table.
You use the tab key to move to the next table field.
With “Ctrl+Tab” you move to the next field outside the table.

4.9.2 Changing the frame

With “Tab” you move to the next frame in the program interface.

5 Creating a network plan

The monitoring of a network starts with the display of the network on the network management interface. Industrial HiVision allows you to view your network in different display variations at the same time, based on different criteria. Thus, for example, you can set up a network plan which

– shows the actual physical environment
– shows the most important connection nodes
– is based on the topology of your network, and so on.

You can display a device in several network plans by means of copying or connections.

The network display is subdivided into:

- Device detection
- Device arrangement
- Device mapping
- Device connections

Networks are generally undergoing constant modification. This involves

- removing devices
- adding new devices, and thus
- rearranging connections.

5.1 Device detection

During the first step in setting up a network plan, Industrial HiVision supports you in discovering the following devices installed on the network (see on page 226 “Basics:discover devices”):

- Hirschmann BAT family
- Hirschmann OCTOPUS family
- Hirschmann Rail Switch with Management
- Hirschmann MICE family
- Hirschmann Power MICE family
- Hirschmann MACH family
- Hirschmann GES-24TP Plus
- Hirschmann EAGLE family
- Hirschmann Rail Router family
- Hirschmann LION family
- Hirschmann Embedded Ethernet family
- Magnum 6K
- Magnum 10KT
- Magnum DX line
- Magnum 10ETS
- Magnum 10RX
- Magnum 12KX
- Schneider Electric TCSESM, TCSESM-E and TCSESB families
- Schneider Electric Nxx family
- Selectron Systems ESM family
- Selectron Systems ERT family
- ABB AFF, AFS and AFR families
- INSYS MoRoS Modem, ISDN, HSPA, UMTS, GPRS, LAN, MI
- Meinberg LANTIME GPS, M300, M600
- Advantech SNMP-1000
- EPSON FX-2190, ACULASER C100N printers
- Devices with SNMP
- Windows PCs
- Devices with ICMP (Ping)

Note: Industrial HiVision detects SNMP based devices of a third party manufacturer based on the MIB II standard. As a result, Industrial HiVision represents existing interfaces of the `ifTable`, including VLAN or routing interfaces, as separate ports.

☐ Under `Configuration:Preferences:Basics:Discover Devices` you select your preferred device discovering method.

Industrial HiVision provides 4 methods for discovering devices:

- Discovering devices using traps
  After they are switched on, the devices send a switched-on message to the network management station entered in the device. Industrial HiVision evaluates this message and displays the devices in the default map entered (see on page 226 “Basics:discover devices”).
  This method is suitable for use during ongoing monitoring in networks where the bandwidth needs to be managed.
- Discovering devices using the HiDiscovery protocol
  The HiDiscovery protocol uses the MAC address to communicate with devices in the network on which the HiDiscovery protocol is active.
  This method enables you to detect devices in your network to which you have not yet assigned a valid IP address.
  Industrial HiVision displays the devices in the default map entered (see on page 226 “Basics:discover devices”).
  This method is suitable for when you start up a newly installed network and want to assign the IP address to the new devices.
- Discovering devices via a defined IP address range
  Using Net Scan, Industrial HiVision periodically sends Ping and SNMP requests to the devices with an IP address in the defined IP address ranges. Industrial HiVision positions the devices thus detected in the default map for this IP address range. When defining the IP address range, you can assign a default map to each IP address range (see on

page 226 “Basics:discover devices”).
This method is suitable for monitoring a running network. Adapt the frequency of the requests to the bandwidth of your network.

- Discovering newly created devices
  Industrial HiVision allows you to create a device manually and to assign an IP address to the entry for this device. After the device is created, Industrial HiVision can send an enquiry to this IP address in order to detect it (see on page 99 “Creating new devices”).

5.2 Assigning device icons

To visualize the devices more clearly in the detail display, Industrial HiVision allows you to assign different icons as default icons to the device types.

Figure 33: Device icons

In the state on delivery, Industrial HiVision detects a number of device types (e.g. Hirschmann devices) and assigns the corresponding device icons to these devices.
You can assign icons to other device types in the “Preferences” dialog. To differentiate the device types, Industrial HiVision provides you with the following assignment characteristics in the device detection (see on page 255 “Display: Device Icon”):

- System Object Identifier (SysOID)
  The SysOID denotes an MIB variable. As the SysOID of a manufacturer MIB contains the manufacturer, you can use different icons here to differentiate the devices on the manufacturer level. In the state on delivery, Industrial HiVision contains the SysOIDs for Hirschmann, Schneider, Siemens, Rockwell and Cisco.
- EtherNet/IP
  Similarly to the System Object Identifier, EtherNet/IP devices contain information about the manufacturer and the product. Here you can get Industrial HiVision to assign the icons down to the device level.

- Modbus/TCP
  Similarly to the System Object Identifier, Modbus/TCP devices contain information about the manufacturer and the product. Here you can get Industrial HiVision to assign the icons down to the device level.
- MAC Address
  The MAC address also contains manufacturer information. Depending on the manufacturer's coding depth, you can perform icon assignment from the manufacturer level down to the device type level.

5.3 Device arrangement

5.3.1 Creating a network plan

For a new network plan, you create a new folder in the folder frame.

☐ Click with the right mouse button on the globe symbol and select `New:folder` in the drop-down menu.

☐ Click with the right mouse button on the new folder and select `Properties` in the drop-down menu. Give the new folder the name that you want to use for this network plan.
You can also change the name of a folder by selecting the folder twice or marking the folder and pressing the F2 key. Complete the entry for the name by pressing the Enter key.

☐ Right-click on the new folder and select Scan Ranges. The “`Scan Ranges`” dialog allows you to define IP address ranges. In this folder, Industrial HiVision represents newly detected devices with IP addresses from this IP address range.

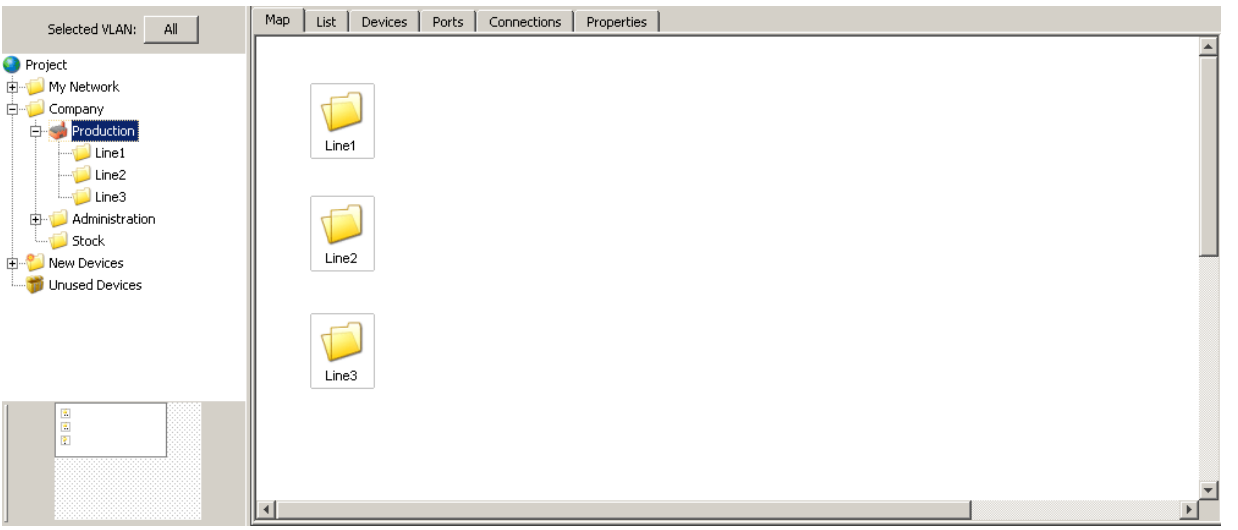

Figure 34: Example of a structure of a network plan

5.3.2 Moving devices into the network plan

Move the newly detected devices into the network plan folder.

☐ Mark these devices.

☐ Click on a device you have marked and move it onto the network plan folder in the folder frame.

5.3.3 Creating new devices

If you want to enter the network plan before the devices are installed in the network, you position new devices in the detail display.

☐ Click with the right mouse button in the detail display frame and select `New:Device` in the drop-down menu.
The “Properties” dialog opens.

☐ Enter the IP address of the new device in the “IP address” tab page.
If you have selected the “Scan device” field, when you close the dialog with “OK”, Industrial HiVision automatically scans the network for the device.
If you selected “Create device”, Industrial HiVision adds the option to create modules and ports for the device to this dialog.

If the new device is disconnected from the network management station by a NAT router, for example, then Industrial HiVision can communicate with the new device via the port forwarding of the NAT router.
You then enter the IP address of the NAT router and the SNMP port number of the port by means of which Industrial HiVision shall communicate with the new device in the “IP Address” tab page. Enter the combination of the port and the IP address of the new device in the NAT table of the NAT router.

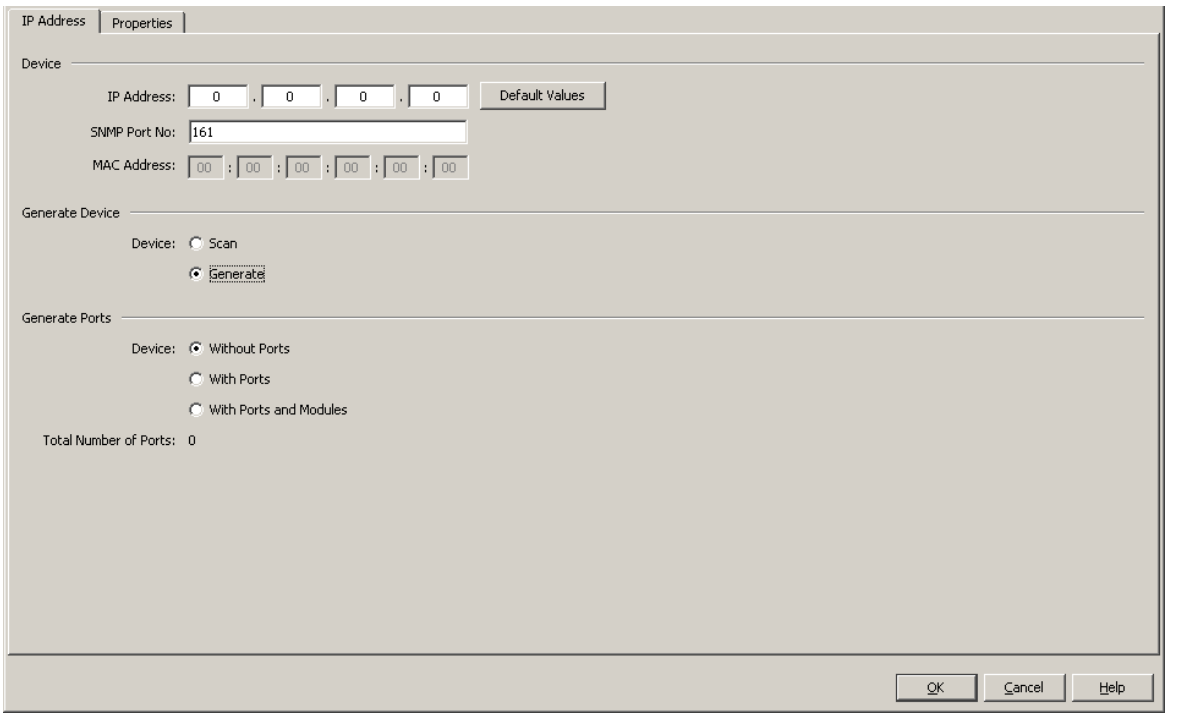

Figure 35: Entering the IP address of a new device

☐ In the “Properties” tab page you enter
- the name you want to give the device and
- the status propagation / status determination, if required

(see on page 194 “Properties of a folder/device”).

☐ Select the device and press the F5 key on your keyboard, or right-click on the device and select `Update` so that Industrial HiVision detects the device in the network and calls up its data.

5.3.4 Arrange devices in the detail display

Industrial HiVision supports you in arranging the devices inside the detail display.

☐ Right-click in the detail frame and select `Auto Layout`, so that Industrial HiVision repositions the objects in the detailed display, taking your connections into account.

☐ Right-click on a device and select `Drawing:To Front/To Back` to move devices which are lying upon each other into a higher/lower drawing layer.

☐ Right-click in the detail display and select `Drawing:Line Up all Objects` to arrange the devices line-by-line.

☐ Select multiple objects in the detail frame, right-click on the detail frame, and select
`Drawing:Arrange Above/Below/Right/Left` to line up the selected objects in rows/columns.
Here Industrial HiVision selects the outermost object as the position for the row/column.

☐ Select multiple objects in the detail frame, right-click on the detail frame, and select
`Drawing:Center Horizontally/Vertically` to line up the selected objects in rows/columns.
Here Industrial HiVision selects the first object selected as the position for the row/column.

Note: If you have pushed individual objects out of the visible area by moving object groups, and if they are still contained in the folder frame, you can pull the objects back into the visible area by right-clicking in the detail window and selecting `Auto Layout` or `Drawing: Assign all objects`.

5.3.5 Naming devices and ports

The device/port name that Industrial HiVision displays in the folder frame or the detail display is taken from the properties dialog of the device/port by Industrial HiVision. If no name is entered, Industrial HiVision displays the management IP address for a device and the module/port number for a port.

☐ To enter the name, right-click on a device/port and select `Properties`.

The configuration settings (see on page 271 “Advanced:Device/Port Names”) enable you to automatically transfer

- the device/port names from the device and
- in the case of the device name, also from the Domain Name Server (DNS) or from a private hosts file.

5.3.6 Copying devices

In order to represent different monitoring scenarios, for example, Industrial HiVision gives you the option of copying devices. For this purpose you can enter different status configurations for copied devices in the properties dialog. Industrial HiVision has one data record for each device. Every copy has its own data record. The content of the data record is taken from the original by the copy.

Example with two monitoring scenarios:
In one monitoring scenario, you want to display only events that you determine to be critical. A connection break on port 3 of device A would be critical.
In the other monitoring scenario, you want to display events relevant for maintenance. The loss of a redundant voltage supply on device A would be relevant for maintenance.

☐ To realize this, you create two new folders in the folder frame and give one folder the name “Critical” and the other “Maintenance”.
☐ Right-click on device A and select “Copy”.
☐ Add a copy of device A to each of the “Maintenance” and “Critical” folders.

☐ Double-click on the “Critical” folder to get to the component level. Double-click on port 3 to go to the detail level.
☐ In the dialog (see on page 200 “Properties of a component detail”),enter the relevant settings for the “Link” detail.
☐ Proceed in the same way in the “Maintenance” folder.

5.3.7 Devices with multiple IP addresses

Industrial HiVision represents devices with multiple IP addresses, such as a router, as one device. In the Properties dialog of the device, on the MAC/IP Addresses tab page, you can see which IP addresses are assigned to the device.
For unique assignment, Industrial HiVision identifies a device with exactly one IP address. If you want to identify a device with a different IP address, you delete the device in the interface and create it again with the desired IP address. After the device is updated, Industrial HiVision identifies the device with this IP address.

5.3.8 Creating a link

To display a device in a number of network plans, Industrial HiVision gives you the option of creating links from devices. Connections are particularly useful if you want to divide your network into several folders. You can then display in both network plans the device connecting the two network plans with one another. In contrast to making a copy, the link accesses the data record of the original. Every change to the original is reflected in the link.

As well as links for devices, you can also create links for components.

☐ Copy the object for which you want to create the link.

☐ Right-click on the position where you want to place the link and select “Paste as Link”.

5.4 Device connection

5.4.1 Automatically displaying the topology

The easiest way of displaying links between devices is provided by the Auto Topology function of Industrial HiVision.

☐ Select `Edit:Auto Topology`.

☐ In the dialog for automatic topology discovery (see on page 190 “Auto Topology”) you select how you want Industrial HiVision to execute the Auto Topology function and click on “OK”.

Then Industrial HiVision queries the devices for their links. Industrial HiVision displays the detected links in the interface and starts monitoring the link state and load.

In the case of Wireless Local Area Networks (WLAN), Industrial HiVision displays wireless connections with dashed lines. Because access stations can be mobile, roaming from one access point to another is a completely normal process. Therefore, Industrial HiVision does not include the connection status in the status configuration of radio connections. Industrial HiVision detects a break in the connection to the access point after the polling time for determining the status of the access point has elapsed.

5.4.2 Connecting devices manually

After you have arranged the devices to meet your requirements, you add the connections between the devices.

☐ Click on the center of a device symbol. Click again and, holding down the mouse button, move the cursor onto the device symbol with which you want to connect the device.

5.4.3 Reshaping a connection line

Industrial HiVision allows you to reshape connection lines. Thus, for example, you can represent a HIPER-Ring just like a ring.

☐ Select the connection in order to bend the line or give it a curved shape. Depending on the shape of the connection and the selection, the following options are available to you (see bubble help):

- Add an anchor point with one click on the handle.
- Switch between “Add anchor point” and “Change shape of curve” by re-selecting the connection.
- Delete the anchor point by double-clicking.
- Change the shape of the curve using the handle.
- Straighten the connection piece with one click on the handle.

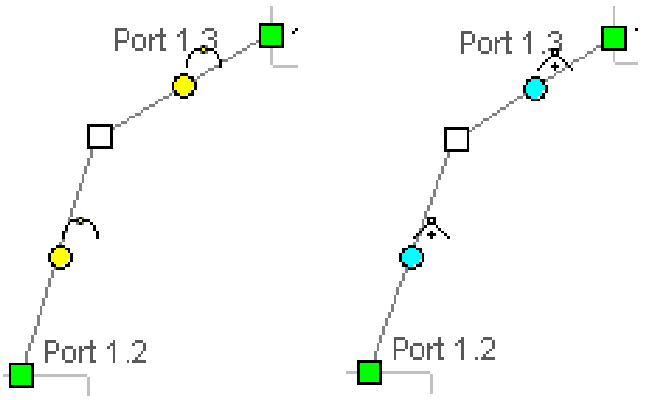

Figure 36: Reshaping a connection
- left: change shape of curve
- right: add anchor point

5.4.4 Specifying the line thickness

Depending on the selected background image, the connection lines can blend into the background. Industrial HiVision gives you the option of changing the line thickness. This enables you to make the lines more distinct from the background.
You set the line thickness globally in the menu `References:Setting:Configuration:Display:Device` (see on page 252 “Display:Appearance”).

5.4.5 Other connections

In the same way as you can connect devices, Industrial HiVision also gives you the option of connecting folders and components other than symbols and text with each other. In the illustration below (see figure 37), you will find an example of a connection with a folder.

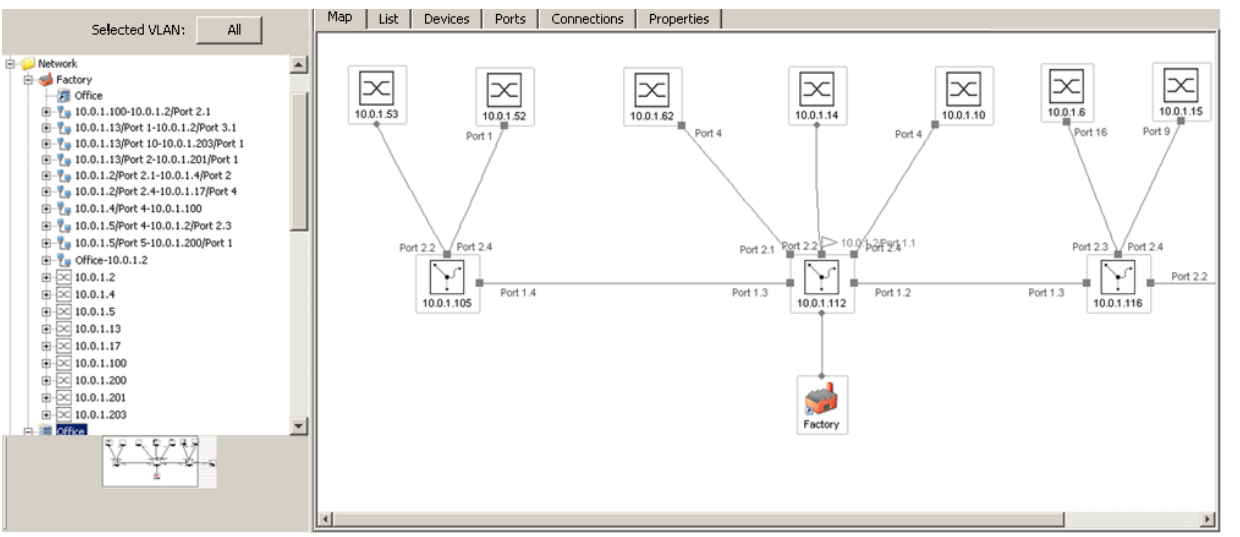

Figure 37: Connection with a folder

5.4.6 Detecting a connection to another folder

Industrial HiVision uses a flag to indicate links to a device or folder outside the current folder. Beside the flag you will find information about where the link leads to. If the link has multiple destinations, Industrial HiVision groups the destinations together and the bubble help shows you the destinations.

When you double-click on the flag,

- you go directly to the port named in the destination if a single device is connected, or
- you open a drop-down menu if the flag points to multiple destinations. The drop-down menu shows the destination of the link. Select the link whose ports you want to go to.

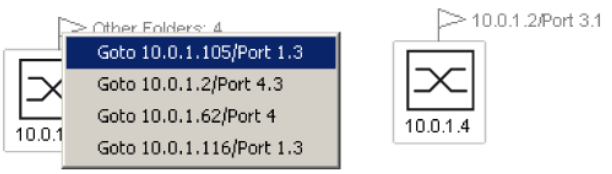

Figure 38: Flags as link indicators

5.4.7 Specifying connection properties

Specify the connection properties.

☐ Right-click on a connection line and select `Properties` (see on page 206 “Properties of a connection”).

☐ On the “Connection” tab page you enter the ports to which the line is connected.
Click your way through the tree structure until you can select the port on the device to which you are connecting the line.

☐ Also on the “Connection” tab page, select the properties you want to monitor under “Monitor.” In the default setting, Industrial HiVision automatically monitors the connection interruption, network load and port redundancy.

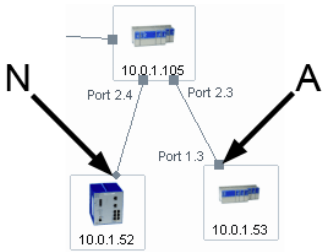

Figure 39: Monitoring state of a connection
N - No link monitoring
A - Active link monitoring

5.4.8 Link types

For clarification purposes, Industrial HiVision represents the links in different ways, according to their character.

Representation	Meaning
	Normal link
	Stand-by link
	Interrupted link
	Radio link
	Stand-by radio link
	Interrupted radio link

Table 7: Link types

5.4.9 Representation of the connection medium

Industrial HiVision enables you to identify the medium of a connection based on the icon for the connection ends (see on page 206 “Connection”).

Representation	Meaning
	Copper
	Optical
	Wireless, sawtooth line
	Unmanaged
	Unknown

Table 8: Representation of the connection medium

5.5 The Network changing over time

Rarely does your network remain in a static condition. Generally, from time to time new devices are added and other devices removed and then reinserted in other positions.

5.5.1 Adding devices with HiDiscovery

A simple method of adding a new device is to use the HiDiscovery button in the tool bar.

☐ Click on the HiDiscovery button in the tool bar.
Industrial HiVision starts a network request.
Industrial HiVision displays newly detected Hirschmann devices that do not have an IP address yet in the “New Devices” folder.
Industrial HiVision displays newly detected Hirschmann devices that already have an IP address in the default map for the address range (see on page 226 “Basics:discover devices”).

As described on the previous pages, you can move the new devices among your network folders and create links.

- Assigning the IP address
  After you have added a new device, e.g. with HiDiscovery, Industrial HiVision gives you an option of assigning an IP address to the device (see on page 284 “IP Configuration”).

  ☐ Right-click on the device and select “IP configuration”. With the IP configuration dialog you can enter
  – the device name
  – the IP address
  – the network mask
  – the gateway IP address

5.5.2 Adding devices with network scan

A method of adding a new device with a previously configured IP address is provided by the Scan Network button in the tool bar.

☐ Click on the Scan Network button in the tool bar.
Industrial HiVision starts a network inquiry in accordance with the settings under “Basics:discover devices” on page 226. Industrial HiVision displays newly detected devices in the default map for the address range (see on page 226 “Basics:discover devices”).

As described on the previous pages, you can move the new devices among your network folders and create links.

5.5.3 Adding devices manually

Another option for adding a new device is to add the device manually (see on page 99 “Creating new devices”).

As described on the previous pages, you can move the new devices among your network folders and create links.

5.5.4 Startup procedure for Hirschmann devices

Industrial HiVision simplifies the startup procedure for Hirschmann devices. Apart from the installation, you can start up Hirschmann devices from your network management station:

☐ Detect Hirschmann devices using HiDiscovery (see on page 92 “Device detection”).

☐ Configure the IP parameters (see on page 284 “IP Configuration”).

☐ Enter the trap destination address (see on page 287 “Trap destination”).

☐ For a new device, you use the Web interface to change the SNMP password.

☐ Enter the new SNMP password in Industrial HiVision (see on page 260 “Advanced:SNMP configuration”).

5.5.5 Interrupting device monitoring

To reduce the load on your network, Industrial HiVision provides you with two options for interrupting the monitoring for individual devices and folders:

☐ Move the device into the “Unused Devices” folder.

or

☐ Right-click on the device and select Unmanage in the drop-down menu.
Industrial HiVision displays the device in gray.

5.5.6 Removing devices

To remove a device

☐ Right-click on the device and select Unmanage in the drop-down menu.(see on page 72 “Folder frame”).
Industrial HiVision allows you to delete the device or move it into the “Unused Devices” folder.

5.6 Network Documentation

Industrial HiVision provides a number of functions to assist you in the documentation of your network.

5.6.1 Saving Industrial HiVision projects

Industrial HiVision allows you to save your current network data and the configuration of Industrial HiVision in a project file (see “Save” on page 178 and “Save as...” on page 178).

5.6.2 Saving reporting data

Industrial HiVision records the data of the reporting function (see on page 218 “Reporting”) in a separate database outside of the project. You will find this database in the installation directory in the subdirectory `report_db`. As this subdirectory may contain reporting databases from multiple projects, Industrial HiVision creates a subdirectory for each project therein:
`<INSTALL_DIR>/report_db/<UUID>/pm.h2.db`
You will find the UUID in the help menu in the kernel info.

5.6.3 Exporting the content of the detail display

Industrial HiVision allows you to export the content of the detail display. (see on page 179 “Export...”).

☐ Choose `File:Export...` and select the file type in the “Save” window.

5.6.4 Printing the content of the detail display

Industrial HiVision allows you to print the content of the detail display.

☐ Choose `File:Print...`.
Industrial HiVision creates a temporary PDF file of the content of the detail display and opens this PDF file in the PDF display program, e.g. Acrobat Reader, that is installed on your management station.

5.6.5 Exporting the event list

Industrial HiVision allows you to export the complete event list (see on page 179 “Export Events...”).

☐ Choose `File:Export event list...` and select the file type in the “Save” window.

5.6.6 Printing the event list

Industrial HiVision allows you to print the complete event list.

☐ Choose `File:print event...`.
Industrial HiVision creates a temporary PDF file of the content of the detail display and opens this PDF file in the PDF display program, e.g. Acrobat Reader, that is installed on your management station.

5.6.7 Creating device documentation

Industrial HiVision allows you to create device documentation. In the device documentation, Industrial HiVision creates a PDF file for every device selected. The PDF file contains information about the device and its settings.

☐ In the detail window, mark the devices you want to document.

☐ In the menu bar, select `Edit:Document Selected Devices` or right-click on a selected device and choose `Document Selected Devices`.

☐ In the “Choose a directory” window, enter the folder in which you want Industrial HiVision to write the PDF files and click on “Select”.

For each device selected, Industrial HiVision writes a PDF file with the name: “inventory_<IP address>.pdf” in this folder.

5.6.8 Printing or exporting the MAC/IP address assignment

Industrial HiVision allows you to create a list of the IP addresses in the project and their related MAC addresses (see on page 199 “MAC/IP addresses of a device”).

☐ Choose `Configuration:MAC/IP List`.

☐ Click on “Print”.
Industrial HiVision creates a temporary PDF file of the content of the detail display and opens this PDF file in the PDF display program, e.g. Acrobat Reader, that is installed on your management station.

☐ Click on “Export”.
Industrial HiVision allows you to export the list as:
- PDF file
- HTML file
- CSV file (see on page 310 “CSV export”)

5.6.9 Printing or exporting the status configuration

Industrial HiVision allows you to print or export the status configuration (see on page 277 “Status configuration”).

☐ Select `Configuration:Status Configuration`.

☐ Click on “Print”.
Industrial HiVision creates a temporary PDF file of the status configuration and opens this PDF file in the PDF display program, e.g. Acrobat Reader, that is installed on your management station.

☐ Click on “Export”.
Industrial HiVision allows you to export the list as:
- PDF file

- HTML file
- CSV file (see on page 310 “CSV export”)

6 Configuring the network

When you have your network displayed in Industrial HiVision, with your devices and connections, you can configure the devices.
The multi-configuration function (MultiConfig™) allows you to perform configurations on the device and in Industrial HiVision for:

- one or more devices
- one or more device properties, also device overlapping
- one or more device details, also device overlapping

You go to the multi-configuration dialog by selecting at least one device or property in the detail display and choosing `Configuration:MultiConfig™` in the menu bar.

Note: Keep in mind how this affects your system resources (see on page 154 “Effect on system resources”).

6.1 Using the dialog box

The MultiConfig™ dialog contains 3 frames:

- Web-based, interface-type menu tree
- Object frame
- Function frame

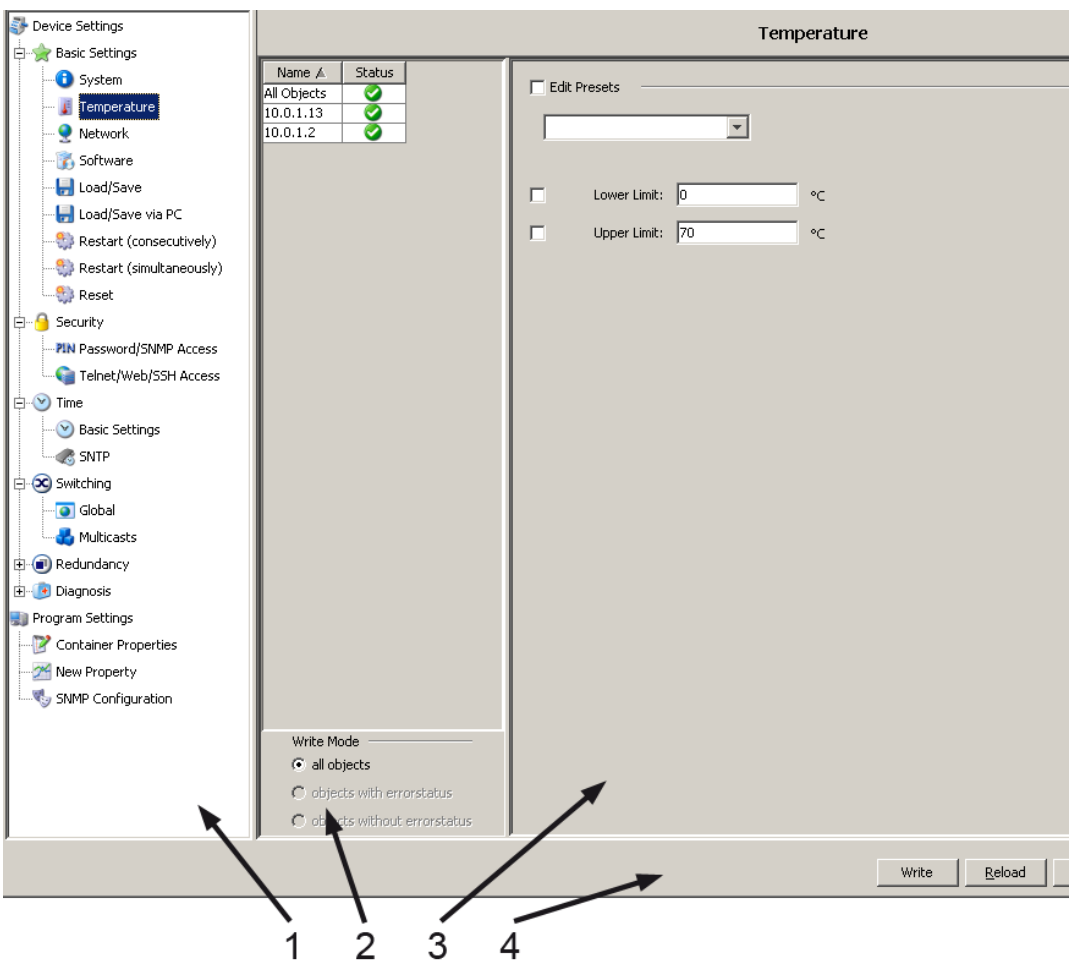

Figure 40: MultiConfig™ dialog overview

1 - Menu tree
2 - Object frame
3 - Function frame
4 - Control elements

6.1.1 Description of the menu tree

In the Web-based, interface-type menu tree, you choose the function that you want to configure. Here you will find functions
– that you configure on the devices
– and properties that you configure for the monitoring in Industrial HiVision

6.1.2 Description of the object frame

The object frame contains a table of the objects that you selected for configuration in the detail display.
In the first row of the table you will find the summary of the statuses of the objects in the table.

The status symbols behind the objects have the following meanings:

Symbol	Meaning
	Industrial HiVision has read the values of the parameters and displays the matches in the function frame.
	Action initiated but not started yet.
	Industrial HiVision is reading/transferring the values of the parameters.
	Move the mouse pointer over the symbol to obtain information about any peculiarities. A peculiarity could be, for example, that a table contains hidden entries. These hidden table entries are lost when data is written.
	Industrial HiVision can reach the device. One or more values are missing from the transfer. Move the mouse pointer over the symbol to obtain information.
	The objects have not supplied any values. The connection to the device is interrupted. Move the mouse pointer over the symbol to find out the reason why you cannot read/write the values.

Table 9: Meaning of the status symbols

6.1.3 Description of the function frame

In the function frame, Industrial HiVision provides a selection of parameters and actions. Industrial HiVision chooses the configurable parameters and executable actions that represent an intersection of the selected objects and the selected function.

As the number of variations for representing the parameters is too large, you will find additional application examples later on (see on page 127 “Examples for using the multi-configuration”).

You use the selection field on the left side of the function frame to select the parameters you want to configure.

The symbols beside the selection fields, if there are any, have the following meanings (see table 10).

Symbol	Meaning
	The objects read have different values for this parameter.
	The object selected has no value for this parameter.
	Some objects have no values for this parameter.

Table 10: Meaning of the symbol beside the selection fields

To simplify entering settings that reoccur, Industrial HiVision allows you to create default settings (see on page 128 “Using contact person with default setting”).

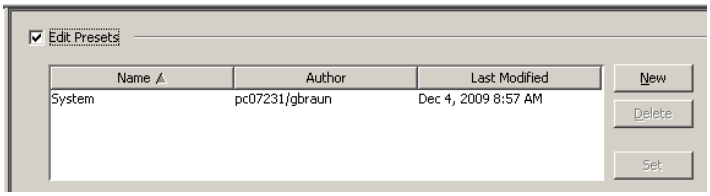

Figure 41: Default setting for the multi-configuration function.

Because the MultiConfig™ function provides a range of input options on different device types, Industrial HiVision allows any values to be entered in the input fields.
If Industrial HiVision detects an inconsistency during entry, Industrial HiVision changes the font color to red.

To load or save files, enter a path in the respective dialogs describing the storage location of the file. Industrial HiVision can handle absolute and relative paths. A relative path begins with `<Install-Dir>/service`.

6.1.4 Description of the control elements

- Write
  With “Write” the Industrial HiVision transfers the data for the parameters selected to
  – all the objects contained in the table of the Object frame.
  – the objects with an error status contained in the table of the Object frame.
  – all the objects without an error status contained in the table of the Object frame.
  You select the objects you want to write to in the Object frame under “Write mode”.
  When you write configuration parameters on devices in this way, these parameters are located in the temporary memory of the devices. To save the device configuration data, the last configuration step you perform is to save the new configuration on the devices.
- Reload
  With “Reload”, Industrial HiVision transfers the data in the selected parameters from the objects contained in the table of the object frame.
  To display the values of the parameters for an object, click on the object in the object frame.
- Cancel
  With “Cancel”, Industrial HiVision closes the dialog. Changes that you entered after the last write command are lost.
  Actions that have already started  are completed by the Industrial HiVision.
- Help
  With “Help”, Industrial HiVision opens the online help on the relevant page.
  If an example exists for the opened dialog (see on page 127 “Examples for using the multi-configuration”), then Industrial HiVision opens the online help on the page for the example.

6.2 Examples for using the multi-configuration

Depending on the menu item you select, you will find different representations in the function frame. The following examples show you the different representations.

6.2.1 Same contact person on multiple devices

You want to enter the same contact person, e.g. Michael, on multiple devices.

☐ In the detail display, choose the topology view or another view that displays devices.
☐ Select the devices on which you want to enter the same contact person.
☐ To open the MultiConfig™ dialog, right-click on a selected device and choose “MultiConfig™”.
☐ In the MultiConfig™ dialog, choose `Device:Basic Settings:System` in the menu tree.
You will then find the table with the related devices in the object frame, and the configurable parameters in the function frame.

Displaying current parameter values

☐ To display the values of the parameters for an device, click on a row of the table in the object frame.
☐ To display the values of the parameters that are the same on each device, click on the first row (“All objects”) of the table in the object frame.

Writing contact persons on devices

- ☐ Select the selection field in the “Contact person” row.
- ☐ Enter the name of the contact person, e.g. Michael, in the “Contact person” field.
- ☐ To transfer the change to the devices and temporarily save them there,
  click on “Write”.
- ☐ To save the change on the devices into the permanent memory, choose
  `Device:Basic Settings:Load/Save` in the menu tree,
  choose the action “Save to device” and
  click on “Write”.

Using contact person with default setting

Industrial HiVision allows you to create a name as the default setting so that you do not have to enter the name again when configuring additional devices later on.

- ☐ Select the selection field in the “Contact person” row.
- ☐ Enter the name of the contact person, e.g. Michael, in the “Contact person” field.
- ☐ Select the “Edit Presets” selection field. Industrial HiVision now opens the preset table.
- ☐ Click on “New” beside the preset table to enter the selected parameters under the table as presets in the table.
- ☐ To give the new table entry a meaningful name, double-click the name cell for this entry and enter the name, e.g. “Contact person Michael”. Click on the enter button to take over the change.

From now on, you can select the “Contact person Michael” preset instead of having to select and enter the name.

- ☐ To change an existing table entry, select the desired row, change the parameters, and click “Set”.
- ☐ To select an object in the Object frame, deselect “Edit Presets” in the Function frame.

6.2.2 Software update on similar devices

You want to perform a software update on a number of similar devices.

- ☐ In the detail display, select the device view.
- ☐ Select the Device Class.
- ☐ Select the devices on which you want to perform the software update.
- ☐ To open the MultiConfig™ dialog, right-click on a selected device and choose “MultiConfig™”.
- ☐ In the MultiConfig™ dialog, choose `Device:Basic Settings:Software` in the menu tree.
  You will then find the table with the related devices in the object frame, and the settings for the update in the function frame.
- ☐ To open the file selection screen, click on “..” in the function frame.
  Select the software update file or use drag & drop to pull it into the row and click on “Open”.
- ☐ Select the selection fields in the “Update” and “File” rows.
- ☐ Click on “Write” to transfer the update to the devices.
  In the object frame, the “Status” symbol ✅ informs you that the transfer was successful.
- ☐ To activate the new software on the devices, perform a cold start on the devices:
  (see on page 130 “Restarting multiple devices”)

6.2.3 Restarting multiple devices

With its MultiConfig™ function,Industrial HiVision offers the option of initiating a restart on multiple devices.
Industrial HiVision distinguishes between a successive restart (consecutively) and a concurrent restart (simultaneous).

- Restart (consecutively)
  Industrial HiVision sends a restart command to a device and waits until the device has executed the restart. Then Industrial HiVision sends the restart command to the next device.
  You select this method if the devices you want to start are connected to the network management station in a line.
- Restart (simultaneously)
  Industrial HiVision sends the restart command to the devices to be started nearly simultaneously. You select this method if the network management station accesses the devices directly.
  Note: Restarting a device interrupts the transfer. This means that some devices may not receive the restart command.

☐ In the MultiConfig™ dialog, select
`Device:Basic Settings:Restart (consecutively)`or
`Device:Basic Settings:Restart (simultaneous)` in the menu tree.
In the object frame, you will now find the restart options for the devices.
☐ Select the selection field, e.g. in the “Cold reset” row after a software update.
☐ Click on “Write”.

6.2.4 Loading/saving the configuration for multiple devices

Depending on the devices you have selected, Industrial HiVision gives you multiple options for transferring configurations:

Action	Load/Save	Load/Save via PC
Save on device Copy the current configuration from the non-volatile memory of the device to the permanent memory of the device.	X	
Save on tftp server (binary) Copy the current configuration in binary form from the non-volatile memory of the device to the specified URL.	X	
Save on tftp server (script) Copy the current configuration as an editable and readable script from the non-volatile memory of the device to the specified URL.	X	
Load from device Copy the configuration from the permanent memory of the device to the non-volatile memory of the device.	X	
Load from tftp server Read the configuration from the specified URL to the non-volatile memory of the device.	X	
Load from tftp server and save on device Read the configuration from the specified URL to the non-volatile and permanent memories of the device.	X	
Delete: current configuration Overwrite the configuration in the non-volatile memory of the device with the configuration in the permanent memory of the device.	X	
Delete: current configuration and from device Delete the configuration in the non-volatile memory of the device and the configuration in the permanent memory of the device, and replace with the configuration from the state on delivery. After the next restart, the IP address is also in the state on delivery.	X	
Save on PC (script) Copy the configuration as an editable and readable script from the non-volatile memory of the device to a file on the PC.		X
Save on PC (binary) Copy the configuration in binary form from the non-volatile memory of the device to a file on the PC.		X

Table 11: Transfer options for configurations

Action	Load/Save	Load/Save via PC
Load from PC (script) Read the configuration from a file as an editable and readable script from the PC to the non-volatile memory of the device.		X
Load from PC (binary) Read the configuration from a file in binary form from the PC to the non-volatile memory of the device.		X

Table 11: Transfer options for configurations

- ☐ In the detail display, choose the topology view or another view that displays devices.
- ☐ Select the devices on which you want to save a configuration, or from which you want to load a configuration.
- ☐ To open the MultiConfig™ dialog, right-click on a selected device and choose “MultiConfig™”.
- ☐ In the MultiConfig™ dialog, choose `Device:Basic Settings:Load/Save` or `Device:Basic Settings:Load/Save via PC` in the menu tree. You will then find the table with the related devices in the object frame, and the options for transferring the configuration in the function frame.
- ☐ “Load/Save”
  Select a selection field by clicking on the desired transfer type.
  “Load/Save via PC”

Select the selection field in the “Action” row by choosing the desired transfer type.

☐ Select the selection field “File” / “URL” and enter the file name with the complete path, e.g. file:
`D:\Data\Network Management\Configurations/$CURRENT-DATE/$IP_ADDRESS.$EXTENSION`
or the URL
`tftp://10.0.1.159/configs/2009_10_28/$IP_ADDRESS.cfg`
Industrial HiVision allows you enter a file name and a URL in the settings (see on page 273 “Advanced:Load/Save”).
Industrial HiVision automatically takes over this file name/URL when it opens the MultiConfig™`Save Support Info` dialog.
When writing the data, Industrial HiVision creates any subfolders that are missing.

☐ To transfer the data,
click on “Write”.
In the object frame, the “Status” symbol informs you that the transfer was successful.

6.2.5 Configuring a trap destination on multiple devices

You want to configure the same trap destination on multiple devices.

☐ In the detail display, choose the topology view or another view that displays devices.

☐ Select the devices on which you want to configure the same trap destination.

☐ To open the MultiConfig™ dialog, right-click on a selected device and choose “MultiConfig™”.

☐ In the MultiConfig™ dialog, choose
`Device:Diagnostics:Trap Destinations` in the menu tree.
You will then find the table with the related devices in the object frame, and the table for the trap destinations in the function frame.

☐ To create a new entry in the table,
click on “New”.

☐ Enter the IP address of the trap destination, select the active status and

click on “OK”.
In the table you will find the rows with the new trap destination.

☐ To transfer the change to the devices and temporarily save them there, click on “Write”.

☐ To save the change on the devices into the permanent memory, choose `Device:Basic Settings:Load/Save` in the menu tree, choose the action “Save to device” and click on “Write”.

6.2.6 Saving support info for multiple devices

You require help from the support team. To process your request, the support team requires as much information as possible about your network and the network components installed.
This dialog allows you to gather this information very effectively.

☐ In the detail display, choose the topology view or another view that displays devices.

☐ Select the devices for which you want to save the support information.

☐ To open the MultiConfig™ dialog, right-click on a selected device and choose “MultiConfig™”.

☐ In the MultiConfig™ dialog, choose `Device:Diagnosis:Save Support Info` in the menu tree.
You will then find the table with the related devices in the object frame, and the options for transferring the configuration in the function frame.

☐ Select the selection field in the “Save support info” row by clicking on the field.

☐ Select the selection field “File” and enter the file name with the complete path, e.g. file:
`D:\Data\Network Management\supportinfo/$CURRENT-DATE/$IP_ADDRESS.$EXTENSION`
Industrial HiVision allows you enter a file name and a URL in the settings (see on page 273 “Advanced:Load/Save”).
Industrial HiVision automatically takes over this file name when it opens the MultiConfig™`Save Support Info` dialog.

When writing the data, Industrial HiVision creates any subfolders that are missing.

☐ To transfer the data,
click on “Write”.
In the object frame, the “Status” symbol  informs you that the transfer was successful.

Depending on the device type and the firmware version, Industrial HiVision writes a selection of the following files for every device selected:

- *config.cli
- *eventlog.html
- *runningConfig.txt
- *runningConfigAll.txt
- *switch.cfg
- *systeminfo.html
- *trapLog.txt

6.2.7 Configuring firewall rules on multiple devices

The server for the virus update files requires you to release another port in the firewalls of your company. For this, you want to add a new 1st rule for the relevant firewalls that releases this port.

Creating a new rule as an initial setting

☐ In the detail display, choose the topology view or another view that displays devices.
☐ Right-click on a firewall device to which you want to add this rule and select “MultiConfig™”.
☐ In the menu tree of the MultiConfig™ dialog, select the relevant packet filter.
☐ In the function frame of the MultiConfig™ dialog, select "Edit Presets".
☐ To save an initial setting for the existing rules, click on "New" in "Edit Presets".

If you want to save the entire content of the table as a rule set, deselect the rules in the table.
If you want to save individual rules as a set, select these rules.
Give a meaningful name to the initial setting by double-clicking on the name. After you have entered the name, e.g. “Existing rule set”, click on the enter button.

☐ After you have just saved the existing rules as a rule set in an initial setting, delete the existing rules.
☐ To create the new rule for the port release, you define the new rule, or if required, multiple rules.
☐ To save the newly created rule - for multiple rules, the rule set - as an initial setting, click on "New" in "Edit initial setting".
Give a meaningful name to the initial setting by double-clicking on the name. After you have entered the name, e.g. “Virus update”, click on the enter button.
☐ To restore the original rules again, click on the initial setting “Existing rules”.
☐ To apply the data, click on "Write".
In the object frame, the “Status” symbol informs you that the transfer was successful.

After these actions, the firewall device is in its original state again, and the preset “Virus update” is saved in Industrial HiVision.

☐ Close the MultiConfig™ dialog.

Adding a new rule to the relevant firewall devices

☐ In the detail display, choose the topology view or another view that displays devices.
☐ Select the firewall devices to which you want to add this rule.
☐ Right-click on a selected firewall device and select “MultiConfig™”.
☐ To add the new rule for the port release as the first rule, you select the first rule.
With "Edit Presets" deactivated, select the preset “Virus update” in the selection list.

Industrial HiVision inserts the rules with the preset “Virus update” before the selected rule.

Note: Industrial HiVision allows you to insert new rules before the last rule if the rules on the devices in this dialog are identical.

☐ To apply the data, click on "Write".
In the object frame, the “Status” symbol informs you that the transfer was successful.
☐ Close the MultiConfig™ dialog.

■ General information on inserting rules

▶ "Edit Presets" activated
Mode for displaying and editing rules
– To display a preset in the bottom frame, you click on the rule.
– To save the rules from the bottom frame as a preset, click "New".
– To change a preset, you click on the preset. Edit the rules in the bottom frame. Finish the action with "Set".

▶ "Edit Presets" deactivated
Mode for inserting and adding rules
– To add rules from an initial setting to the rules in the bottom frame, select the row above which you want to insert the rules in the bottom frame, and select your desired initial setting.
– To add rules from an initial setting to the end of the rules in the bottom frame, deselect the rows in the bottom frame and select your desired initial setting.

6.2.8 Configuring the Industrial HiVision property

The availability of your transmission component has the highest priority. Therefore, you want Industrial HiVision to keep you informed if the redundancy of the supply voltage is missing.
In the standard status configuration of the power unit status of Industrial HiVision
– Industrial HiVision assigns the status “OK” to the value “Not installed”.
– Industrial HiVision assigns the status “No status” to the value “Not available”.

However, in both cases you want to receive the status “Warning”.

- ☐ Select the “Properties” view in the detail display.
- ☐ Under “Properties”, choose the property “Status (power unit)”.
- ☐ In the table you select the power units for which you want to change the configuration.
- ☐ To open the MultiConfig™ dialog, right-click on a selected row and choose “MultiConfig™”.
- ☐ In the MultiConfig™ dialog, choose `HiVision:Status Config` in the menu tree.
  You will then find the table with the related devices in the object frame, and the options for setting the status configuration in the function frame.
- ☐ Select the selection fields in the “Value=‘Not installed’” and “Value=‘Not available’” rows by clicking on the fields.
- ☐ In the selection fields for the two rows, choose the status “Warning”.
- ☐ To save the change in Industrial HiVision, click on “Write”.

7 Monitoring the network

The basic settings of Industrial HiVision enable you to begin with the monitoring immediately after you set up the network plan.
Important components for modifying the settings relating to the network monitoring are:

- Status configuration
- Status determination
- Trap destination address
- Status propagation
- Event actions
- History

You will find an overview of the monitored components under “Monitor” on page 215.

You will find settings for monitoring the properties of a folder/device, a component or a connection in the chapters

- “Properties of a folder/device” on page 194
- “Properties of a connection” on page 206
- “Properties of a component detail” on page 200

7.1 Status configuration

The status configuration specifies which status is assigned to the value of the component detail. Possible statuses are:

- OK,
- Warning,
- Error,
- No status.

Example:
You can assign the status “OK”, “Warning” or the status “Error” to a connection break.
In the case of a terminal device that you regularly turn off, a connection break (= device switched off) is not an error.
In the case of a server that should be available, a connection break is a serious error that should be monitored.

Industrial HiVision allows you to perform the status configuration of a component detail device overlapping for the devices in a device class (see on page 277 “Status configuration”).

If you want to change the status configuration of individual devices, you will find access to the status configuration in the Properties window of a component detail. The status configuration allows you to enter status configuration settings for each component detail (see on page 200 “Properties of a component detail”).

A pre-condition for determining a status is monitoring a component detail. When it monitors a component detail, Industrial HiVision queries the value periodically.
Industrial HiVision assigns a status to this value as part of the determination.

In the state on delivery, the status configurations are set so that you can monitor your network properly right after the installation.

7.2 Status determination

To monitor your network, your network management station requires information from the components of the network. To acquire this information,

- the network management station can query the components periodically or
- the components send information (traps) on their own initiative to the network management station.

Periodic querying (polling)

Depending on the size of the network and the querying frequency, periodic querying can lead to significant loss of available bandwidth. In the case of, for example, short-term overloading of the network, an answer or a trap can get lost. An advantage of periodic querying is the high probability that the network management station will receive an answer when it makes the next query.

Traps

As soon as a device detects a status change, it sends an alarm message (trap) to the network management station. Since the device only sends a trap if there has been a status change, this method has little effect on the network load. However, if a packet gets lost, the network management station may not be informed of the status change.

7.2.1 Trap destination address

To send alarm messages, a device needs the IP address (= trap destination address) of the network management station, to which it sends any alarm messages that arise. You can enter the trap destination address directly on the device via, for example, the Web-based interface, or more straightforwardly using Industrial HiVision (see on page 287 “Trap destination”).

☐ Click with the right mouse button on the device symbol and select `Device:Trap Destination` in the drop-down menu.
The trap configuration dialog opens up.
Select “Send Traps” and click “OK”.

7.2.2 Updating device status

Industrial HiVision displays the status that the device had at the time of the device detection, or the status from the received traps or status queries.

▶ “Refresh” allows you to read in the properties again.

7.3 Status propagation

The status propagation specifies whether the status is propagated to the next highest level.

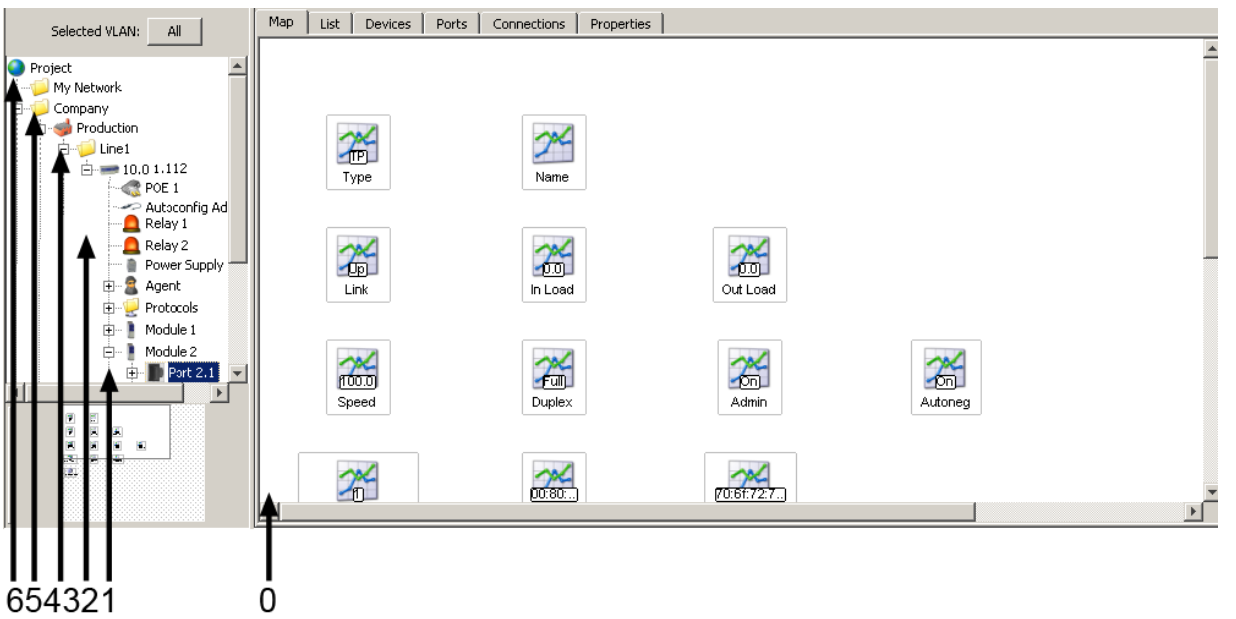

Figure 42: Status propagation to a higher level

0 - Lowest level = component detail
1 - 1st higher level
2 - 2nd higher level
3 - 3rd higher level
4 - 4th higher level
5 - 5th higher level
6 - 6th higher level

A folder takes the worst status that the content of a component is showing. The evaluation is based on the following sequence:

- Error (worst status)
- Warning
- OK
- Unavailable
- No Status

☐ You specify the meaning of the color assignment at `Configuration:Preferences:Display:Status colors`.

☐ In the properties window of the relevant component, you specify the determination of the status and the propagation. The component can also be a folder in the folder frame.

7.4 Management actions

In addition to passive observation of the network, network monitoring also consists of active intervention into network events. Active intervention manifests itself in the response to events in the network or administrative actions such as switching ports on and off according to a schedule.

7.4.1 Event actions

Industrial HiVision allows you to react automatically to events such as a status change.

☐ Select `Configuration:Preferences:Basics:Event Actions` or click on “Preferences” in the tool bar and select `Basics:Event Actions`.

The automatic reaction options (see on page 231 “Basics:Event Actions”) provided by Industrial HiVision are:

- Popup Message Box
- Send SMS
- Send Email
- Run Executable
- Play Sound
- Push Notification

In the second frame of this dialog, Industrial HiVision enables you to assign a selected reaction to an event.

7.4.2 Time-linked actions

Industrial HiVision offers you the opportunity to set a time period during which Industrial HiVision responds to an event with an action.

☐ Select `Configuration:Preferences:Basics:Event Actions` or click “Preferences” in the tool bar and select `Basics:Event Actions`.

☐ Create a new entry in "Alarms".
The "Time" frame in the "Alarms" dialog gives you the option of defining a fixed period with a fixed start and end point.

7.4.3 Industrial HiVision “I'm alive” event

Industrial HiVision enables you to receive an “I'm alive” event from Industrial HiVision when using remote monitoring.

☐ Select `Configuration:Preferences:Basics:User defined Actions` or click "Preferences" in the tool bar and select `Basics:User defined Actions`.

☐ Define an action that Industrial HiVision is to perform as an “I'm alive” event, e.g. send an SMS.
(see on page 231 “Basics:Event Actions”)

☐ Define an alarm that triggers Industrial HiVision to perform the action.
(see on page 231 “Basics:Event Actions”)

7.5 Time-related recordings

Industrial HiVision allows you to record time-related values from properties in various databases:

- in a project database (history)
- in a separate report database (report)

With the size of a database the access time for the database increases. For this reason, Industrial HiVision restricts the number of history entries that can be recorded to the project database.

7.5.1 History

To monitor your network over a user-specified period of time, Industrial HiVision allows you to log states with time information.
You will find settings for logging and displaying the history in the properties dialogs

– “Properties of a connection” on page 206 and
– “Properties of a component detail” on page 200.

Configuring the protocoling

The Properties dialog of a component detail and the connection dialog of a connection enable you

- to switch on the protocoling of the history
- to enter the recording/querying interval
- to enter the maximum number of entries recorded. When the maximum number of entries is reached, Industrial HiVision throws out the oldest entry when a new one is recorded.
  100 entries (= default setting) take up approx. 5 kByte of your hard disk capacity.

- Network load
  Double-click on a link to open the history window. There you will find for each data direction a graphic representation of the network load.

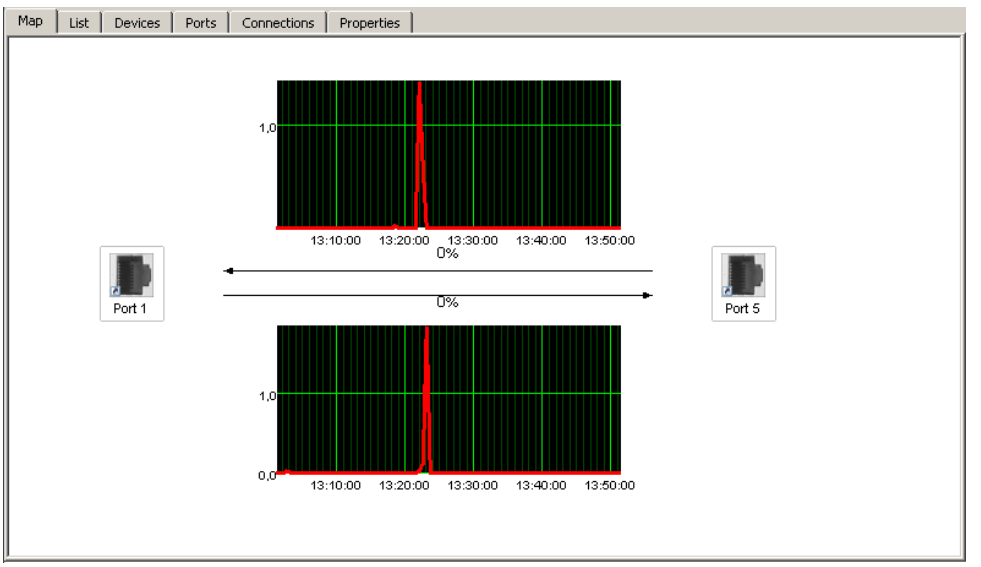

Figure 43: Network load

If no ports are assigned to the link yet, you can double-click on the link to open the dialog for assigning the ports.
If you activated polling of the threshold values in the properties dialog of a link, then the graphical display shows the threshold lines.

7.5.2 Reports

The reporting function allows you to manage long-term statistics outside the database of the network management system program.
Industrial HiVision stores values from properties with time information in a special report database.
To evaluate the recorded values, the reporting function allows you to output reports in the form of graphics and tables.

Note: Depending on your settings, Industrial HiVision can collect any amount of data and save it on your hard drive. Make sure that your hard drive has sufficient free memory space.

Application example for temperature monitoring

You want to monitor the temperature fluctuation within a switch over the course of a 5-day work week for a period of several weeks. Industrial HiVision should generate a report for each week. You would like to have the first report on Sunday, October 7, 2012 and further reports at weekly intervals.

Add the temperature property to reporting:

- ☐ To go to the properties level, double-click on the desired switch in the topology display.
- ☐ Right-click on the icon for the temperature property. Select “Add to reporting...”.
  Industrial HiVision opens a dialog for entering the reporting parameter.
- ☐ Enter October 1, 2012, 12:00 am as the recording start time.
  Press the Enter key to close the date dialog.
  Set the recording start time no later than the time at which the report requires the first entry.
  Retain “indefinite” as the recording stop time.
  Choose a polling interval as large as possible, but short enough that Industrial HiVision is able to record the expected fluctuations.
  Enter 10 minutes as the polling interval.
  Click on "OK".

Create a template for the report:
A template defines the appearance of the report to be generated. In this example, you want the report to be a line graph in a PDF file.

- ☐ Select `Configuration:Reporting` in the menu bar.
- ☐ In the “Reporting” dialog, select the “Templates” tab.
- ☐ To create a new template for your report,
  click on “New”.
- ☐ Enter the parameters for the template (see table 12).
- ☐ Click on "OK".

Parameter	Meaning
Report Name	Temp. SW1
Report Title	Temperature fluctuation in switch 1
Report Type	PDF
Report Layout	Chart
Chart Type	Line
Data	Select the “Monitored Property” and click the right arrow button.

Table 12: Defining a new template

Create scheduling for the report:
With the scheduling function, you define the points in time at which you want Industrial HiVision to create reports as well as the time period the report should cover.

☐ Select `Configuration:Reporting` in the menu bar.
☐ In the “Reporting” dialog, select the “Scheduling” tab.
☐ To create a new schedule for your report, click on “New”.
☐ Enter the parameters for the template (see table 13).
☐ Click on "OK".

Parameter	Meaning
Report Name	Temp. SW1
Recurring	This type of scheduling generates successive reports.
Duration	5 days
Offset to Execution	6 days, as you want the report to include data from Monday through Friday and the first generation of the report is to take place on Saturday.
First Execution	Sunday, 7 October 2012, 00:00:00 am CET
Repeat	1 week

Table 13: Defining a new schedule

7.6 User-defined properties

To use this function you require advanced knowledge of SNMP MIB and the device.

7.6.1 Description of user-defined properties

In the state on delivery, Industrial HiVision already recognizes a large number of devices and their properties.
With the “User-defined Properties” function, Industrial HiVision allows you to include additional properties from the MIB of SNMP-capable devices in the management.
In this way you can add and monitor the properties of any SNMP-capable devices in Industrial HiVision. You can also add additional properties from MIB to devices already recognized by Industrial HiVision and monitor them.

7.6.2 Application example for user-defined properties

In a sensitive network, you want to use ICMP packets to monitor the load on the network components. If a device receives more than 10 ICMP requests within 5 minutes, you want Industrial HiVision to output a warning.

☐ To inform Industrial HiVision about this new property, you select the `Configuration:User-defined Properties` dialog.

☐ In the “User-defined Properties” dialog, click on “New” to create a new entry with a new property.

- ☐ In the “Name” field, give the new property a unique name, e.g. `UserDef_ICMP-Message`. Here Industrial HiVision expects a name that starts with “UserDef_”.
- ☐ In the “Label” field, enter an identifier for this property that Industrial HiVision will display in the user interface, e.g. `ICMP-Watch`.
- ☐ Choose a view beside “Symbol” for Industrial HiVision to display this new property.
  For example, click on “Realistic”, select the “bell.png” file in the “Objects” folder and click on “Open”.
- ☐ Select the “Higher-level property”, e.g. “Agent”.
- ☐ In the “MIB variable/OID” field, enter the MIB variable of the new property. Alternatively, the MIB Manager allows you to search for the MIB variables in the MIB of the device:
  Click on the 3 dots to open the MIB Viewer.
  Click on “MIB Manager” to get an overview of the MIBs that the MIB Viewer has loaded.
  To load additional MIBs into the MIB Viewer, click “Load...” and select the desired MIB in your file system.
  Click on “OK” to close the MIB Manager.
  In the MIB Viewer, you can now open the path `org:dod:internet:mgmt:mib-2:icmp` to select the MIB variable `icmpInMsgs`.
- ☐ In the “Instance” field, enter the instance of the MIB variables, in this case `0`.
- ☐ Select the “Type” of the property, e.g. “Delta”.

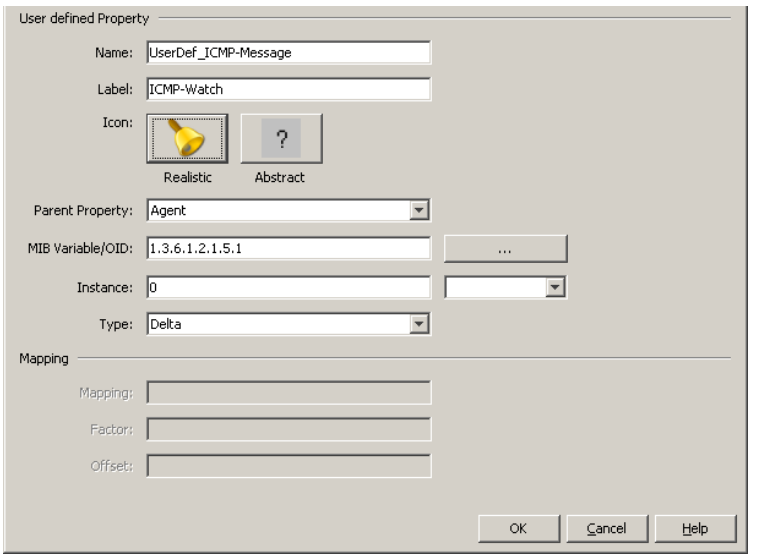

Figure 44: Creating a new user-defined property

- ☐ To finish defining the property,
  click on “OK”.
  You can now see the new defined property in the “User-defined properties” window.
- ☐ To close the “User-defined properties” window,
  click on “OK”.
- ☐ Now go to the list view from the detail display.
- ☐ In the list view, select the agent of the device that you want to monitor.
- ☐ To open the “New Properties” window,
  right-click on the list view and select `New:Properties`.
- ☐ To close the window again, select the newly-defined property “ICMP Watch” in the “New Properties” window and
  click on “OK”.

You have now assigned the new property “ICMP Watch” to the agent. To monitor the new property of the agent, configure the status (see on page 140 “Status configuration”) and the status determination (see on page 141 “Periodic querying (polling)”).

7.7 Effect on system resources

Industrial HiVision provides you with a range of options for managing and monitoring your network. This range of options also makes it possible for you to exhaust your system resources and even to overload them.

In this chapter you will find information about how to

- detect
- influence and
- minimize the utilization of your system resources.

7.7.1 Detecting utilization of system resources

Polling operations and history records are the main activities that affect your system resources.
In extreme cases, when you change such settings you can see that your system has slowed down.
In other cases, you require objective indicators to back up your subjective perception. You will find these indicators in the help menu of the kernel info.

Indicator	Meaning
Number of polled properties	Displays the number of properties for which polling is activated. This display takes into account the devices (see on page 186 “Manage”) monitored by Industrial HiVision and their properties.
Number of properties recording history	Displays the number of properties for which the history recording is activated. This display takes into account the devices (see on page 186 “Manage”) monitored by Industrial HiVision and their properties.
Polling operations per minute	Industrial HiVision sums up the properties for which polling is activated and relates the total to the polling interval. As some polling intervals are greater than 1 minute, the number of polling operations can exceed this calculated value within the last minute. This display takes into account the devices (see on page 186 “Manage”) monitored by Industrial HiVision and their properties.
Polling operations in the last minute	Displays the number of polling operations performed in the last minute. This display takes into account the devices (see on page 186 “Manage”) monitored by Industrial HiVision and their properties.
Total number of history entries set	Displays the number of entries saved by Industrial HiVision (see on page 147 “Configuring the protocoling”).
Total number of actual history entries	Displays the number of entries actually saved by Industrial HiVision.

Table 14: Indicators for system resource utilization in the kernel info

7.7.2 Influencing utilization of system resources

You will have the most influence on the utilization of your system resources by using the settings for polling operations and history recording. You can see for which properties you have currently activated the polling or the history recording in the “Monitoring” dialog (see on page 215 “Monitor”).

To keep the utilization of your system resources as low as possible, please note the following points:

- Every property that you have activated in Industrial HiVision for periodic querying creates a load on your network management station and increases the network traffic.
  - ☐ Check which properties you really want to monitor.
  - ☐ Check which query frequency you require for this monitoring.
- Every history entry creates a load on your network management station and uses up the free memory space on your network management station.
  - ☐ Check which properties you really want to record.
  - ☐ Check which buffer size you require.
- The multi-configuration function allows you to set up statistic counters on multiple devices at the same time. By setting up statistic counters, you activate the polling and recording operations.
  - ☐ Before you use the multi-configuration function, check what effect the settings have on your system resources.
- Many events increase the memory requirement, the program start time and the start time of the event filter dialog.

For a sufficient performance of your network management station, consider the following additional factors:

- Network range
- Number of nodes
- Complexity of the node management
- Network load
- Computer resources of your network management station
- Memory size (RAM and hard drive) of your network management station

7.7.3 Minimizing polling

Industrial HiVision gives you the option of adjusting polling gradually to your requirements. You can change the polling interval and also determine which properties are to be queried by Industrial HiVision.

Changing the polling interval for the properties of several devices

The table (see on page 308 “Monitored properties in the basic setting”) shows you which properties Industrial HiVision monitors with the basic polling setting.

To reduce the polling volume from temperature monitoring for the devices in the detail display, proceed as follows:

- ☐ Select the “Properties” file card in the detail display.
- ☐ For “Device Class”,
  select all
  For “Property”, select temperature (device)
- ☐ Select all devices with “Ctrl”+“a”.
- ☐ Right-click on a device and select MultiConfig™.
- ☐ In the menu tree of the MultiConfig™ dialog, select “Property Properties”.
- ☐ Enter 15 minutes for the polling interval, for example in the function frame of the MultiConfig™ dialog.
- ☐ To save the change in Industrial HiVision,
  click on “Write”.

You can also turn off polling completely in the same way.

Turning off polling for connection properties

With the default value, Industrial HiVision polls the network load every 30 seconds.

To turn off network load polling, proceed as follows:

- ☐ Select the “Connections” file card in the detail display.
- ☐ Select all connections with “Ctrl”+“a”.
- ☐ Click on a connection with the right mouse button and select MultiConfig™.
- ☐ In the menu tree of the MultiConfig™ dialog, select “Connection Properties”.

☐ In the function frame of the MultiConfig™ dialog, deselect the checkmark for “Load”.
☐ To save the change in Industrial HiVision, click on “Write”.

7.7.4 Minimizing network load

Industrial HiVision gives you the option of reducing the network load caused by the device detection.

☐ Choose `Configuration:Preferences:Services`.
☐ Under “Industrial HiVision Ping Server”, reduce the “Scan Rate”.
☐ Under “Global Settings”, reduce the value for “Simultaneously Discovered Devices”.

7.8 Process visualization systems

7.8.1 Link to process visualization system

As an interface to process visualization systems (SCADA, Supervisory Control and Data Acquisition) Industrial HiVision contains OPC services and an ActiveX control element on Windows operating systems.

A process visualization system can use the ActiveX control element to graphically represent data from Industrial HiVision.

If the Hirschmann Industrial HiVision Service 05.1 is active, the OPC service can read data from Industrial HiVision and make it available to the process visualization systems. The OPC services can also write data in Industrial HiVision. The OPC Data Access V1 to V3 services support communication. OPC is based on the Distributed Component Object Model (DCOM) protocol from Microsoft. DCOM is designed as a transport protocol on multiple layers, e.g. on the http Internet protocol. Thus DCOM supports direct communication between software components via the LAN.
Windows XP, Windows 7, Windows 2003 and Windows 2008 support DCOM. For further information on DCOM, visit the Microsoft website. Activate the DCOM protocol and the remote access to the network management station, in order that an OPC client has remote access to the OPC server.

Initial setting for the Industrial HiVision OPC server service: Deactivated (see on page 267 “Advanced:Services”).

Note: If you activate the Industrial HiVision OPC server service, an OPC client use the OPC service and Industrial HiVision to access Industrial HiVision managed devices with write authorizations.

In the `Configuration:Preferences:Advanced:Services` dialog, under “Industrial HiVision OPC Server”, you can use “Global Write Enable” to deactivate the write permission.

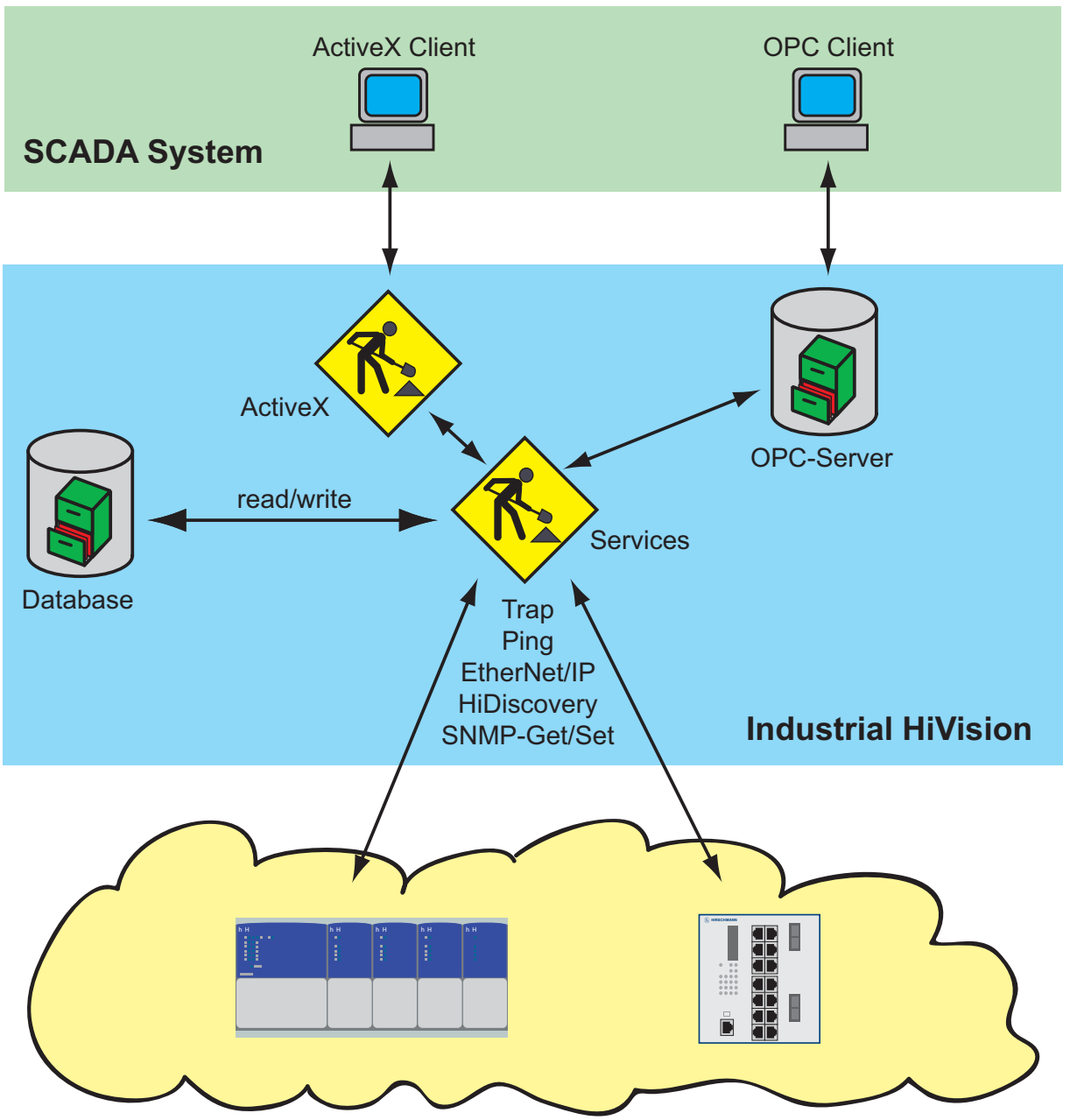

Figure 45: Link to process visualization system

7.8.2 Structure of the transfer data for OPC

The Industrial HiVision OPC server maps the data to be transferred in the same tree structure in which Industrial HiVision represents it in the folder frame. The individual elements and their values are known as tags. To indicate the hierarchy, Industrial HiVision uses prefixes which Industrial HiVision puts before the tag name. The tag names correspond to the names of Industrial HiVision in the English language version.
Changing the names in Industrial HiVision has the effect that OPC clients cannot access the tags any more. The same applies to moving components into other folders.

Note: If you intend to move components regularly, you can put a link to the components in your own folder (e.g. Folder/OPC) and access the link using OPC. This method can be useful if your process visualization system has a length restriction for the tag name.

Prefix	Type of component
C_	Link
D_	Device
F_	Folder
L_	Link
P_	Port
V_	Device detail

Table 15: Tag name for OPC

For device names, Industrial HiVision represents the IP addresses with dots instead of underscores. The Industrial HiVision OPC server replaces dots and spaces with underscores.
Every node/folder in the structure consists of 5 tags, with the exception of devices, device details and links.
A device also has the “Managed” tag.
A device detail also has the “Value” tag.
A link also has the “ConnectionState”, “Utilization_AB” and “Utilization_BA” tags.

Tag name	Meaning	Component
Label	Name of the component, as displayed by the program interface.	All
Status	Current status as numerical value. 0=No Status, 1=Unavailable, 2=Ok, 3=Warning, 4=Error	all
StatusString	Current status as readable (English) text, e.g. "OK", "Error"	all
StatusReason	List of all the reasons that contribute to the status of the component, in readable (English) text form.	all
StatusChanged	Shows whether the status of the object is unconfirmed. 0=Confirmed 1=Unconfirmed You can use OPC to set the value to "0".	all
Managed	Shows whether Industrial HiVision is monitoring the device.	Device
Value	Current value of the component detail.	Device detail
ConnectionState	Link status, as displayed by the program interface through line representation: 1=Unavailable 2=Active (unbroken line) 3=Standby (dotted line) 4=Inactive (chain line)	Connection
Utilization_AB	Load on the line from the first terminal point to the second terminal point (sequence as represented in the OPC tree).	Connection
Utilization_BA	Load on the line from the second terminal point to the first terminal point (sequence as represented in the OPC tree).	Connection

Table 16: Available tags

Note: The OPC server from Industrial HiVision supports the querying of up to 3000 OPC tags.

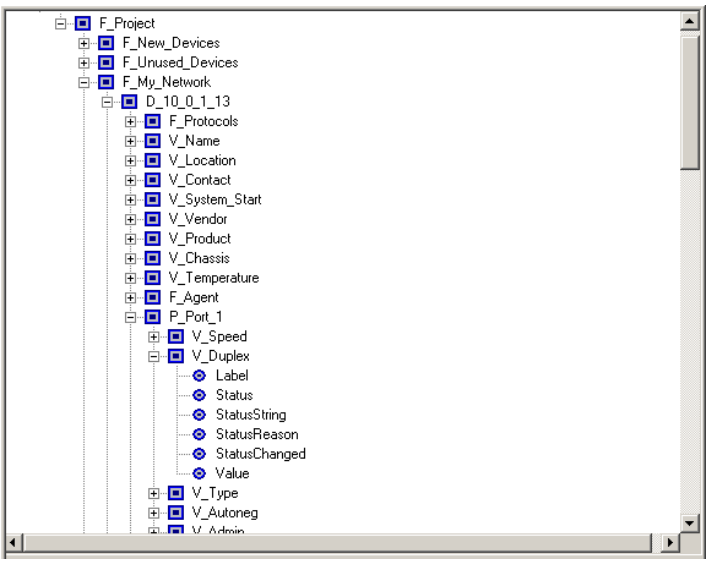

Figure 46: Example of the representation as an OPC tree structure

7.8.3 Connection as ActiveX control element

To connect Industrial HiVision to a process visualization system, you require the ActiveX control element, which you can optionally install with Industrial HiVision.
During the installation of Industrial HiVision with the ActiveX control element, the installation program registers the ActiveX control element in the Windows operating system.

☐ Incorporate the ActiveX control element “HiVisionAxControl Control” into your process visualization system.

The ActiveX control element requires a link to the Industrial HiVision service.

☐ By transferring the parameters to your process visualization system, you create the link to the Industrial HiVision service. Under `Object:Properties`, you enter the name or the IP address of the computer on which the Industrial HiVision service is running. If the Industrial HiVision service is running on the local computer, you enter `localhost`.

You can now operate Industrial HiVision in “running mode” on the interface of your process visualization system (see on page 64 “Edit mode”).

7.8.4 Supported applications for ActiveX and OPC

Hirschmann has tested Industrial HiVision with the following applications under Windows XP (German):

Software	Version	Hersteller	ActiveX	OPC
RS View 32	7.20.00	Rockwell Automation	X	X
Genesis 32	8.00.138.00	Iconics, Inc	X	X
Simatic WinCC	6.0	Siemens AG	X	X
Citect SCADA	6.0	Citect Corporation	X	X
Softing OPC Demo Client	4.10 Built 512	Softing AG	-	X
Microsoft ActiveX Container	-	Microsoft Corporation	X	-
Internet Explorer	6.0	Microsaft Corporation	X	-

7.9 Remote access to Industrial HiVision

7.9.1 Web access to Industrial HiVision

Industrial HiVision allows you to access the Web server of Industrial HiVision with a browser via the http or https protocol (see on page 267 “Advanced:Services”). You can thus monitor your network from anywhere in the world.
Example of an Internet address entry:
`https://[IP address of your network management station]:11155`
You can restrict the access with a password. To have information on accessing, Industrial HiVision can create an event for every successful access (see on page 258 “Advanced:Program Access”).

Note: The applet communicates with the service via ports 11155 and 11156. Make sure that this communication is possible. This is particularly important if the connection is made via firewalls / port forwarding.
Take note of this information when using a firewall (see on page 22 “Installation”).

The Industrial HiVision Web server provides the following pages:
- Selection of the different websites
- Graphic user interface
- Event view

Selection of the different websites

On this page, the Industrial HiVision Web server presents for selection the websites provided by Industrial HiVision.

URL for this website:
`https://[IP address of your network management station]:11155/idx`

Graphical user interface

The Industrial HiVision Web server provides the same graphic interface as the one used in your network management station. This enables you to monitor and configure your network remotely in the same way as you are accustomed to doing on-site.

URL for this website:
`https://[IP adresse of your network management station]:11155`

Events on the website

PDAs, smartphones and other portable devices are increasingly important tools for IT administrators. For administrators, the event list is an important part of Industrial HiVision. The event list contains a concentrated overview of the state of the monitored network (see on page 87 “Event list”).
The Industrial HiVision Web server provides the event list in HTML format, optimized for display on portable devices such as the iPhone, BlackBerry devices, etc.

URL for this website:
`https://[IP address of your network management station]:11155/events`

The event website allows you to confirm events. Industrial HiVision synchronizes the confirmations with the graphic user interface and vice versa.
For the sake of clarity, Industrial HiVision restricts the display to the following events:
– Unconfirmed events
– Confirmed events of the types “Warning” and “Error”.
When you confirm a standard event in the list, Industrial HiVision removes the confirmed standard event from the list.

Industrial HiVision refreshes this page every 5 minutes.
You can select different refresh cycles in the `Display:Event` dialog in `Configuration:Settings`.
(see on page 245 “Display:Event”)

In addition to the predefined filters by “Category”, Industrial HiVision offers user-defined filters according to the “Source” and the “Component” that caused an event.

☐ Copy a string from the “Source” or “Component” table column to the corresponding filter field. You can make the string more general by using the wildcard “*”.

Note: When accessing the event list via http(s), Industrial HiVision saves the filter settings in a Web session on the Web server of Industrial HiVision.
Industrial HiVision gives you the option to change the lifetime of this Web session in the `Configuration:Settings:Advanced:Services` dialog.
Use the setting `Industrial HiVision Web Server:Web Server Session Timeout`.
If a password is configured for the Web access, this password remains valid after the Web session is finished.

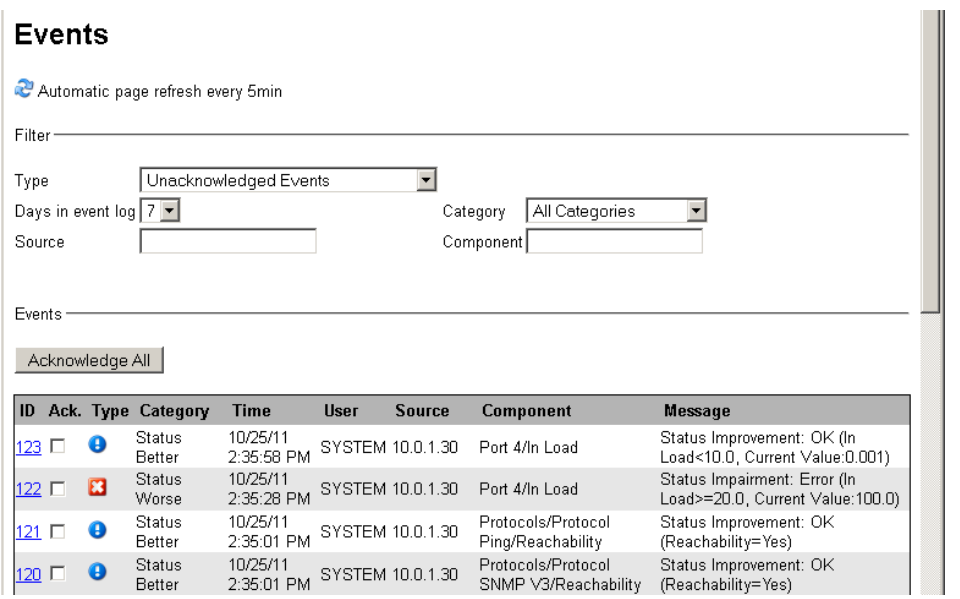

Figure 47: Events on the website of Industrial HiVision

7.9.2 App access to Industrial HiVision

HiMobile is a mobile application (app) for mobile devices such as smartphones and tablet PCs.
Anywhere in the world that you have an Internet connection and a link, e.g. via VPN , to the network of Industrial HiVision, HiMobile allows you to receive information about the status of your network.
To do this, HiMobile connects to the service of Industrial HiVision as a client in order to exchange information.

Functions of HiMobile:
- Displaying the folder frame of Industrial HiVision with status information
- Displaying the event list of Industrial HiVision
- Notifications when an event occurs
- Scanning of the device QR code to identify the device in the folder frame and for other device information

You will find the HiMobile app as a free download on the ViVision website.

Preparing Industrial HiVision for app access

☐ Allow access to the Industrial HiVision web server:
`Configuration:Preferences:Advanced:Services:Industrial HiVision Web Server:Enabled`

☐ For mobile android devices
If a firewall is restricting the data traffic between the Internet and Industrial HiVision, you release ports 5228, 5229 and 5230. Industrial HiVision communicates with the GCM server (Google Cloud Messaging) via these ports.
GCM is a Google service that Industrial HiVision uses to send messages on mobile android devices.

- ☐ For mobile iOS devices
  If a firewall is restricting the data traffic between the Internet and Industrial HiVision, you release ports 5223, 2195, 2194 and 443. Industrial HiVision communicates with APNs (Apple Push Notification Service) via these ports.
  APNs is an Apple service that Industrial HiVision uses to send messages on mobile iOS devices.
- ☐ For mobile Windows devices
  If a firewall is restricting the data traffic between the Internet and Industrial HiVision, you release http protocol port 80. Industrial HiVision communicates with the Microsoft Push Notification Service via this port.

Preparing the app for access to Industrial HiVision

After you first start the app, or the "Settings" menu in the app, you see the "Settings" dialog for entering the connection parameters.

- ☐ Enter the IP address or the host name of your network management station. You will find the IP address in Industrial HiVision in the following dialog:
  `Configuration:Preferences:Advanced:Management Station:Network Card Management Station`
  If your network management station has multiple network interface cards, you take the IP address of the network interface card by means of which HiMobile is to communicate with Industrial HiVision.
  If your network management station is hidden behind a firewall with the NAT function, you obtain the relevant IP address from the administrator of the firewall.
- ☐ Enter the port for the web server. You will find the "web server port" in Industrial HiVision in the following dialog:
  `Configuration:Preferences:Advanced:Services`
- ☐ Enter the password for the Web access. You will find the "web access password" in Industrial HiVision in the following dialog:
  `Configuration:Preferences:Advanced:Program Access`

Identifying devices with the app

Industrial HiVision allows you to store a QR code for each device. Print out this QR code and affix it to the relevant device.

The HiMobile QR Code Scanner allows you to scan this QR code on site in order to identify the device. To show the information on your mobile device, you scan in the QR code. Then HiMobile calls up the information for the device from the Industrial HiVision web server and displays the information on your mobile device.

☐ To generate the QR codes of devices, select a device or multiple devices of a device class, and to open the MultiConfig™ dialog, choose `Configuration:MultiConfig™`.
☐ In the MultiConfig™ dialog, choose `Device Settings:Diagnostics:QR Code Generator` in the menu tree.
The QR Code Generator dialog gives you the following options for saving the QR code:
– Change the initial setting for the path and file name for storing the QR code files.
– Define the size of the QR code in pixels.
– Save the entries as an initial setting
☐ To save the QR codes in the specified directory, click on "Write".

The `Configuration:Preferences:Advanced:Load/Save` dialog allows you set the path globally with the file name and tokens as placeholders.

7.9.3 Certificate for the https connection

To provide the best protection for the connection between your mobile device or a browser and Industrial HiVision, you require a new certificate. For this, you require a web server keystore. The web server keystore is a file that contains the key for the https connection.
The following example also applies to Linux operating systems when you use a “/” instead of a “\”.

☐ In the command line interpreter of the operating system, go to the installation directory of Industrial HiVision.
☐ Generate a Industrial HiVision web server keystore in the command line interpreter of the MS-DOS Microsoft operating system with the following command:

```
lib\java_x86\bin\keytool -genkey -alias Industrial
HiVision -keyalg RSA -keystore keystore -keysize 2048
-keypass password -storepass password
```

Respond to the request for your first name and surname with the unique domain name of the domain to which your network management station is connected.

You can enter any responses you want to the requests for your organizational unit, your city or community, and your federal state.

Respond to the request for your country code with the two letters that make up the country code of your country.

You will find the “keystore” file in the directory from which you executed the command.

☐ To request a certificate from a certification body, you require a certificate signing request file (*.csr).

You generate this file in the command line interpreter of the operating system with the following command:

```
lib\java_x86\bin\keytool -certreq -alias Industrial
HiVision -keystore keystore -file ihivision.csr -
storepass password
```

You will find the *.csr file in the directory from which you executed the command.

☐ With this *.csr file you request a certificate from a certification body, such as Verisign.de.

The certification body supplies the signed certificate in the form of a file or an ASCII character string.

If you receive a file, rename this file to ihivision.crt.

If you receive an ASCII character string, copy this completely to a text file with the name ihivision.crt.

☐ Import the certificate into the web server keystore in the command line interpreter of the operating system with the following command:
lib\java_x86\bin\keytool -import -trustcacerts -alias Industrial HiVision -file ihivision.crt -keystore keystore -storepass password

☐ Save the “keystore” file in the installation directory of Industrial HiVision before replacing the existing file with the newly generated file.

☐ Replace the “keystore” file in the installation directory of Industrial HiVision with the newly generated “keystore” file.

Note: The files contain confidential keys that are comparable to passwords. Protect these files from unauthorized access.

Alternatively you can create your certificate yourself - see, for example, www.openssl.org. For this, you import the required master certificate to the mobile device or browser by means of which you want to connect with Industrial HiVision.

8 References

The descriptions in the previous chapters have been task-oriented, while the preference chapter describes the individual dialogs and menu items in a function-oriented way. Here you will find descriptions of function details for performing basic tasks that are of lesser importance.

8.1 File

The “File” menu contains functions relating to file operations.
Industrial HiVision performs file operations on the computer with whose “Hirschmann Industrial HiVision Service 05.1” service your interface communicates. If you have installed the service and the user interface on different computers, you get the file selection dialog for the file selection (see figure 48).
You double-click on a table row to go one level lower on the file tree structure.
You click on “Up” to go one level higher in the file tree structure.
Above the table you see the path you are currently on.

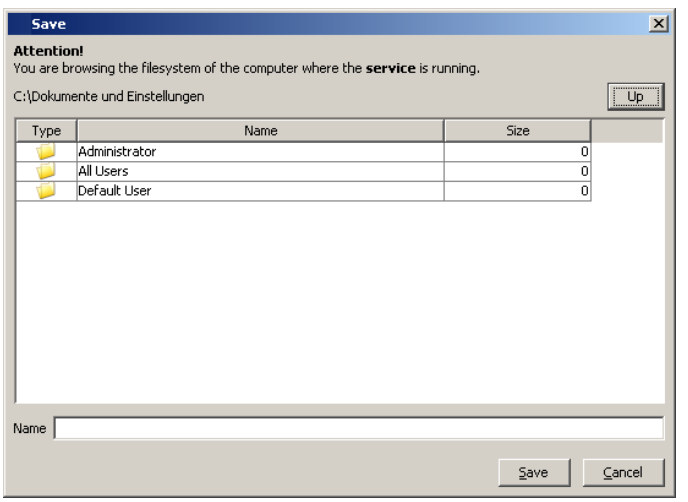

Figure 48: File selection dialog for different computers

8.1.1 New project

You can use this selection field to create a new project in which you can save your network data.

Note: By selecting a new project you delete the current project. To save the data of the current project, you export this project under another name (see on page 178 “Save”) before selecting the new project.

8.1.2 New

You use this selection field

- to add a new folder
- to add a new device to the selected folder
- to create a new connection
- to add counters with properties on the port level, e.g. for “In non Unicast Packets”.
- to add a text line
- to add a symbol. You can change the symbol in the Properties window of the symbol.

8.1.3 Connect...

With this selection you can connect the user interface with the service on your own computer (`localhost`) or with the service on a remote computer.

8.1.4 Open

You use this selection field to open a previously saved project in order to view it or make changes in it.

☐ Select the relevant path and the desired file within your folder structure.

8.1.5 Save

You use this selection field to save your current network data and the configuration of Industrial HiVision into a current project file.

☐ Select `File:save` to overwrite the open project file with the current project and the current configuration of Industrial HiVision.

8.1.6 Save as...

You use this selection field to save your current network data and the configuration of Industrial HiVision into a current project file.

☐ Choose `File:save as...`

☐ Select the relevant path within your folder structure and enter a project name.

☐ Click on “Save” to save the current project and the current configuration of Industrial HiVision in a new file.

8.1.7 Export...

With this selection you export the content of the detail display.
Industrial HiVision exports graphics (topology representation) as a:

- PDF file,
- jpg file,
- png file and
- bmp file.

Industrial HiVision exports tables as a:

- PDF file
- HTML file
- CSV file (see on page 310 “CSV export”)

☐ Choose `File:Export...` and select the file type in the “Save” window.

8.1.8 Export Events...

With this selection you export the complete event list as:

- PDF file
- HTML file
- CSV file (see on page 310 “CSV export”)

☐ Choose `File:Export event list...` and select the file type in the “Save” window.

8.1.9 Print

With this selection you print the content of the detail display.

☐ Choose `File:Print...`.
Industrial HiVision creates a temporary PDF file of the content of the detail display and opens this PDF file in the PDF display program, e.g. Acrobat Reader, that is installed on your management station.

8.1.10 Printing the event list

With this selection you print the complete event list.

☐ Choose `File:print event...`.
Industrial HiVision creates a temporary PDF file of the content of the detail display and opens this PDF file in the PDF display program, e.g. Acrobat Reader, that is installed on your management station.

8.1.11 Exit and Stop Service

Available when running on the Windows operating system.
With this selection you exit both the program and, for the local service, the service. By exiting the service you also interrupt the monitoring of your network.

8.1.12 Exit

You use this selection field to quit the program. The service remains active in the background and continues to monitor your network.

8.2 Edit

The “Edit” menu contains functions relating to editing operations and device properties.

8.2.1 Undo

With this selection you undo the last change you made in the program.

8.2.2 Redo

With this selection you redo the last change you made in the program, which you had previously undone.

8.2.3 Edit mode

You use this selection field to activate/deactivate the edit mode (see on page 258 “Advanced:Program Access”). To avoid writing conflicts, Industrial HiVision impedes the edit mode from being activated on multiple user interfaces at the same time.

8.2.4 Switch to the free version

With this selection you switch during the free 30-day trial period between the licensed version and the free version.
Industrial HiVision offers 3 versions:

- Licensed version
  After you enter a license key, Industrial HiVision runs as the licensed version. As the licensed version, Industrial HiVision gives you the full function range.
- Free 30-day trial version (licensed)
  After a new installation or after an update, Industrial HiVision starts fully functional for the duration of the free 30-day trial period.
  During the last 7 days of the trial period, a message window tells you that the trial period is running out and that you can save the project file before the trial period expires. If Industrial HiVision is idle during this time, Industrial HiVision shows this message window when it starts again.
- Free version
  As the free version, Industrial HiVision offers the option of detecting devices of Hirschmann and performing updates on the detected devices.

8.2.5 Cut

You use this selection field to put data you have selected (screen element, components, devices with their settings) into the clipboard.
The data is deleted, and you can add it in again at another position using the “Paste” menu item.
You can also copy the names of objects into other applications, such as a text editor.

8.2.6 Copy

You use this selection field to put data you have selected (screen element, components, devices with their settings) into the clipboard.
The data remains where it is, and you can add a copy of it at another position using the “Paste” menu item.
You can also copy the names of objects into other applications, such as a text editor.

8.2.7 Paste

You use this selection field to add the data (screen element, components, devices with their settings) in your clipboard at the position where your cursor is currently located.

8.2.8 Paste as link

You use this selection field to add the data (screen element, components, devices with their settings) in your clipboard as a link at the position where your cursor is currently located. Only a reference to the data is inserted. The data themselves remain in their original position (see on page 103 “Creating a link”).

8.2.9 Delete

You use this selection field to delete data you have selected (screen element, components, devices with their settings).
When deleting devices, Industrial HiVision allows you to delete the device or move the device into the “Unused Devices” folder.

8.2.10 Rename

With this selection you rename a selected folder or a tagged device.

8.2.11 Select all

You use this selection field to select all parts inside the active folder.

8.2.12 Acknowledge Status Change

You use this selection field to acknowledge the status change of the selected components and their sub components.

8.2.13 Manage

With this selection you activate the monitoring of the selected devices (see on page 186 “Unmanage”).

8.2.14 Unmanage

With this selection you deactivate the monitoring of the selected devices. Industrial HiVision keeps the device, its configuration and its current values stored in the database. The monitoring of the device is off until you set it to “Manage” again (see on page 186 “Manage”). Industrial HiVision releases the license of this device and allows you to use this license for another device.
Industrial HiVision displays a device in the “Unmanage” state in gray with a stop symbol.

8.2.15 Set devices and port names

With this selection you set the detail window to show
– the device name and port name of the selected devices, instead of
– the IP address and port numbers of the selected devices.

8.2.16 Set default device Icon

With this selection you take the symbol for display from the device class. If no default symbol exists for the device class, Industrial HiVision takes the device symbol entered in the preferences (see on page 255 “Display: Device Icon”).

8.2.17 Device Documentation

With this selection, Industrial HiVision generates a PDF file for
- every device selected, or for
- all devices.

The PDF file contains information about the device and its settings.

☐ Make a selection and specify the folder in which you want Industrial HiVision to save the PDF files.

8.2.18 Drawing Size

You use this selection field to adapt the size of the drawing area for the detail display to meet your requirements. Industrial HiVision provides you with three options for doing this:

- Reduce,
- Enlarge,
- Shrink to fit.

8.2.19 Background image

You use this selection field to load, remove or change the background image in your detail display. The following options are available:

- Paste As Background
  When you select “Paste As Background”, you add the image in your clipboard to your detail display as a background image. If the clipboard is empty, this menu item is marked in grey and cannot be selected.

- Select Background Image...
  When you select “Select Background Image...”, you add the image from a file to your detail display as a background image. Select the relevant path and the desired file within your folder structure.

  Note: High-resolution background images sap the resources of your network management station and therefore reduce the performance of your system.

- Remove Background Image
  When you select “Remove Background Image”, you delete the background image in your detail display.

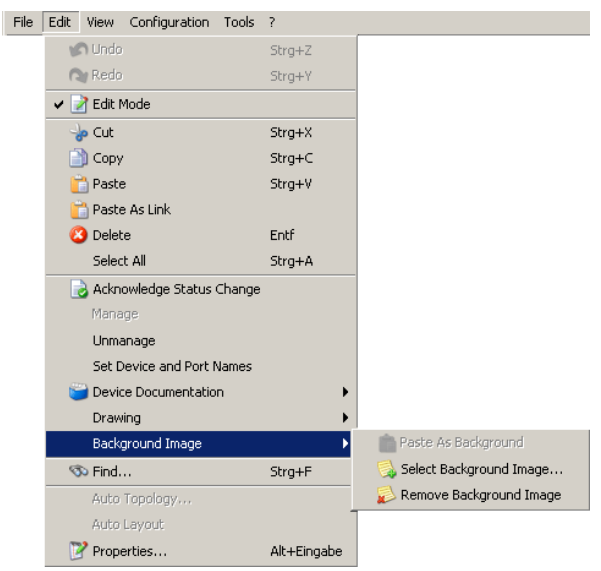

Figure 49: Edit:Background image

8.2.20 Find

The Find dialog allows you to search for components, MAC addresses or IP addresses in the display.

☐ Select the “Devices by IP Address” tab page if you are searching for an IP address or “Components by Name” if you are searching for part of a device.

☐ Enter

- the IP address/MAC address or a part of it, or
- the component name or a part of it without using wildcards.

☐ Select a device on the left of the tree diagram or a folder in which you want Industrial HiVision to search.

☐ Click on “Find” to start the search.

Industrial HiVision shows the result of the search in a list of the search dialog. When you double-click on a line in this list, Industrial HiVision selects the component you want to find in the folder frame.

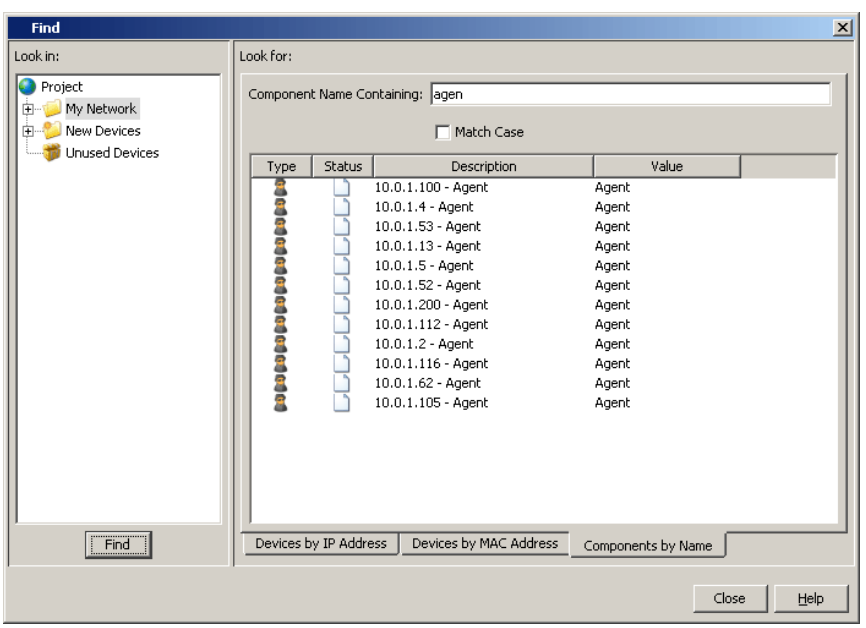

Figure 50: Edit:Find

8.2.21 Auto Topology

The Auto Topology function allows you to automatically create the links between the devices. For the Topology Discovery, Industrial HiVision uses the Forwarding Data Base (FDB) and the LLDP and SNMP functions of the devices.
IEEE 802.1AB describes the Link Layer Discovery Protocol (LLDP). LLDP enables the user to have automatic topology recognition for his LAN.
Industrial HiVision detects redundancy mechanisms, such as RSTP, redundant network coupling or HIPER-Ring. Industrial HiVision represents every redundant connection as a separate connection.
Industrial HiVision can detect the terminal device topology across the subnetworks if the router separating the subnetworks supports the SNMP ipNetToPhysicalTable.

☐ Select `Edit:Auto Topology` .

☐ In the dialog for automatic topology discovery, you select how you want Industrial HiVision to execute the Auto Topology function.

Selection	Action
Entire Network	Detects the topology of the entire network, including switches, routers, WLAN and terminal devices and reads large data quantities from the devices. In large networks, Topology Discovery can take up a significant amount of time. In this case “Entire Network” means the Layer 2 network that is connected with the network interface card of the network management station and all the reachable VLANs.
Infrastructure	Only detects the topology of the infrastructure devices based on LLDP. Is performed very quickly and sometimes with gaps.

Table 17: Scope

Selection	Action
Devices without management	Industrial HiVision derives topology information from devices without the management function and from devices without an Industrial HiVision license from the information in known neighboring devices. Industrial HiVision represents these unknown devices as a cloud. A cloud can represent one or more unknown devices.

Table 18: Nodes without management

Selection	Action
Create a completely new topology	Create completely new topology Removes existing connections and clouds. Then creates new topology.
Enhance existing topology	Enhance existing topology Creates new connections and clouds. The existing connections are kept.
Correct a topology	Adds missing connections and removes connections that differ from the current topology. Keeps existing clouds if they correspond to the current topology.

Table 19: Procedure

Selection	Action
Automatically	Industrial HiVision unravels the topology and reassigns the objects.
Manually	Industrial HiVision leaves the objects in their current positions.

Table 20: Layout

Selection	Action
Current folder	Performs the selected actions only in the selected folder.
Recursively	Industrial HiVision performs the automatic Auto Topology Discovery in the current folder and in the folders below it, and displays the results in both the current folder and the folders below it.

Table 21: Range

☐ Click on "OK".

Then Industrial HiVision queries the links in the network in accordance with the settings and displays the detected links in the interface.

Note: Topology Discovery

- Network components that do not conform to the LLDP specifications or cannot be managed via SNMP can lead to incorrect Auto Topology Discovery.
- An active DHCP request during the discovery procedure can corrupt the result of the discovery.
- VLAN routing can corrupt the result of the discovery.
  MACH 3000 M-Router modules work with VLAN routing.
- To detect subnetworks behind 1:1 NAT routers, select “Infrastructure” under “Scope” (see table 17).
- Industrial HiVision detects the virtual interface of two VRRP routers as a separate device. As a result, Industrial HiVision creates additional connections. To avoid this, set the device with the virtual router interface to the “unmanaged” status.
- Detecting devices of an LAN behind a wireless client device:
  The BAT-Geräte from Hirschmann have the “client bridge support” function.
  For Industrial HiVision to be able to detect devices of an LAN behind a wireless client device, activate the “client bridge support” function in the wireless client device and in the related WAN on the access point.
- Redundantly connected terminal devices can corrupt the result of the discovery.
- The topology discovery detects the topology at the time at which it is executed.
  Industrial HiVision displays other changes in the network (e.g. roaming) when you update the topology display.

8.2.22 Auto Layout

The Auto Layout function gives you the option of leaving the assignment of the devices to Industrial HiVision.

☐ Select `Edit:Auto Layout..`

☐ Click on “OK” to get Industrial HiVision to reposition the objects in the detailed display.

8.2.23 Properties of a folder/device

The properties dialog contains the Properties, Subcomponents, Scan Range, Protocol and MAC/IP Addresses tab pages.
The protocol and MAC/IP Addresses tab pages describe device properties.

Properties of a folder/device

The “Properties” tab page displays the general properties of the component display.
You click on a symbol once to open a dialog for selecting an image for Industrial HiVision to use in the display. Industrial HiVision adapts the image size automatically.
The status display is important for monitoring your network. Here you select whether Industrial HiVision determines the status of this component and whether Industrial HiVision forwards the status determined to the next highest level. In the basic setting, Industrial HiVision determines the status and forwards it to the next highest level.

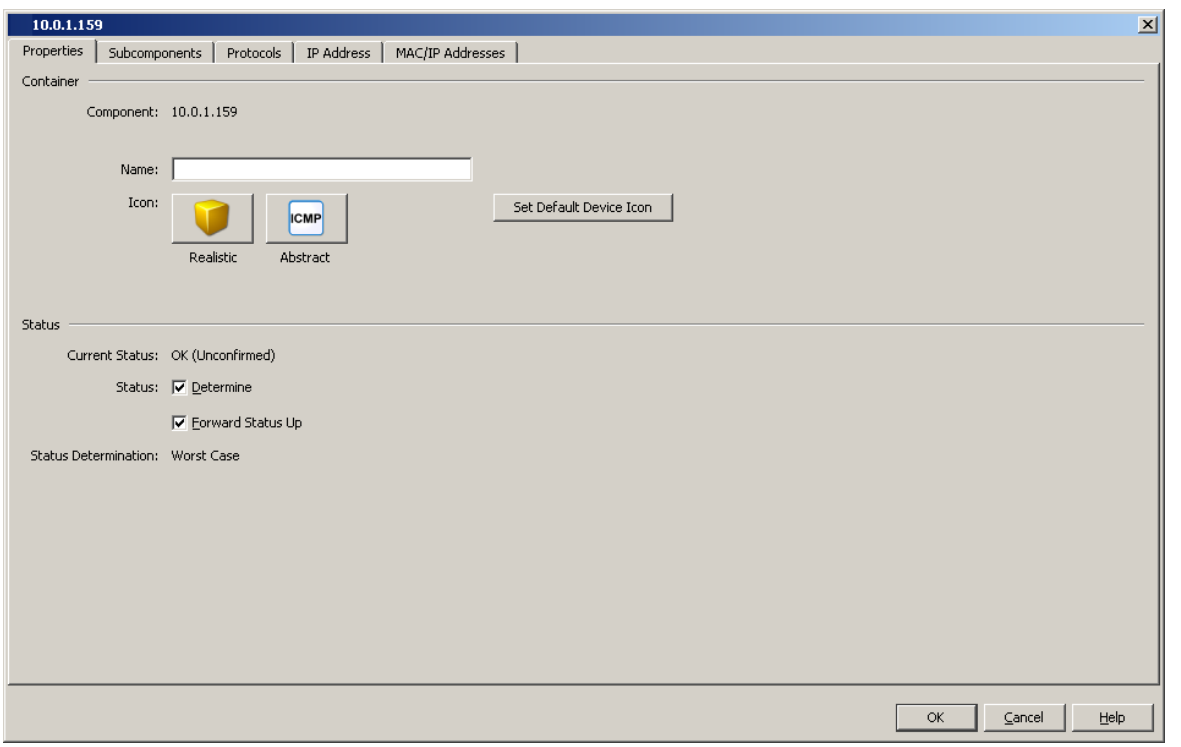

Figure 51: Properties of a folder/device

Subcomponents of a device/folder

The “Subcomponents” tab page shows a table of the entire parts of the component from which you opened the properties dialog. Along with the names of the parts, the table also contains the values of the different properties of these parts.

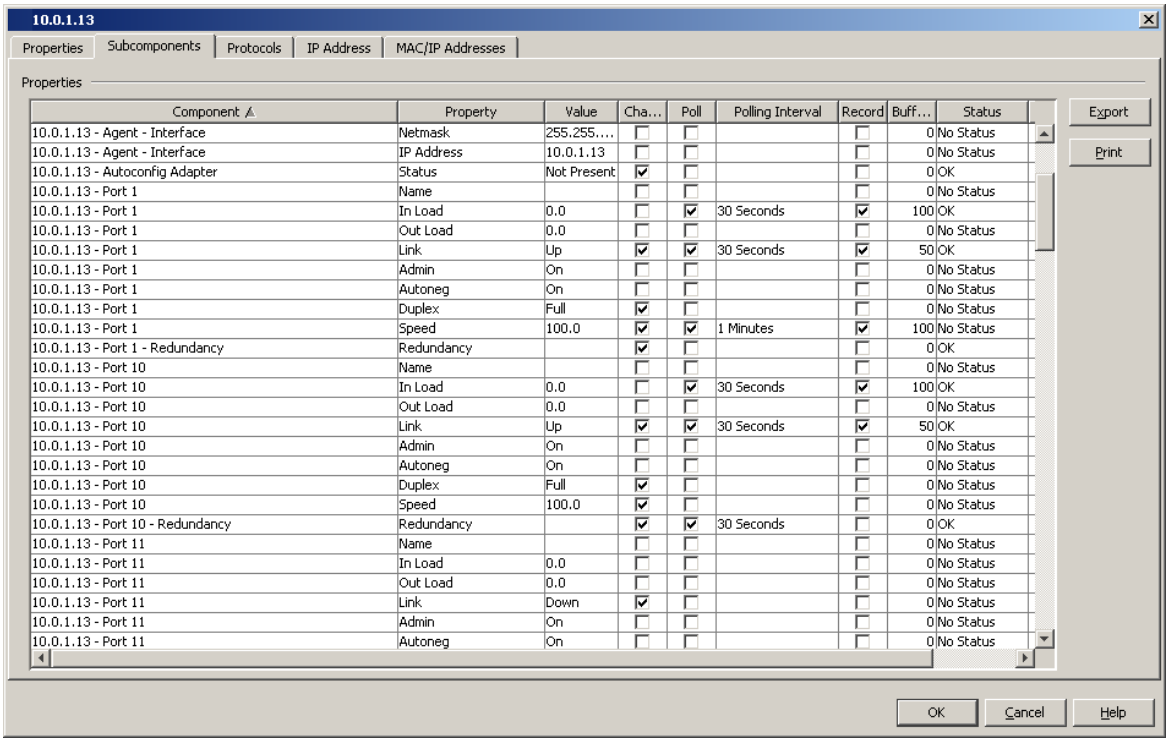

Figure 52: Subcomponents of a folder/device

Scan range of a folder

The “Scan Ranges” tab page enables you to define IP address ranges. Industrial HiVision shows newly detected devices with IP addresses from one of these IP address ranges in this folder (see on page 279 “Scan Ranges”).

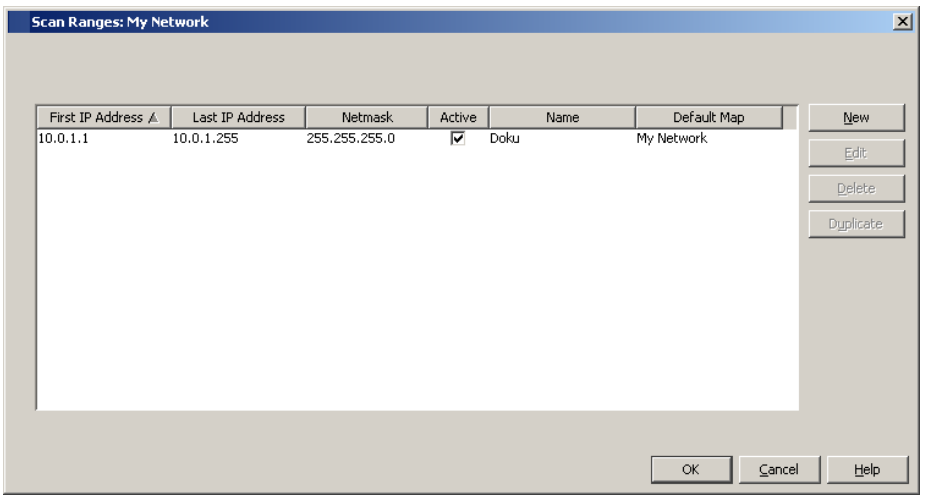

Figure 53: Scan ranges of a folder

Protocols of a device

The “Protocols” tab page shows a table of the protocols that are supported and their properties.

Depending on the devices, Industrial HiVision supports the protocols:

- Ping
- SNMP V1
- SNMP V3
- HiDiscovery
- EtherNet/IP
- Modbus/TCP

  Industrial HiVision supports the Modbus/TCP command `Read Device Identification (43 / 14)` exclusively.

Industrial HiVision uses the highest possible protocol (sequence: SNMP V3, SNMP V1, Modbus/TCP, Ping) to monitor a device.

You use “Reload” to get Industrial HiVision to query protocols of the device again.

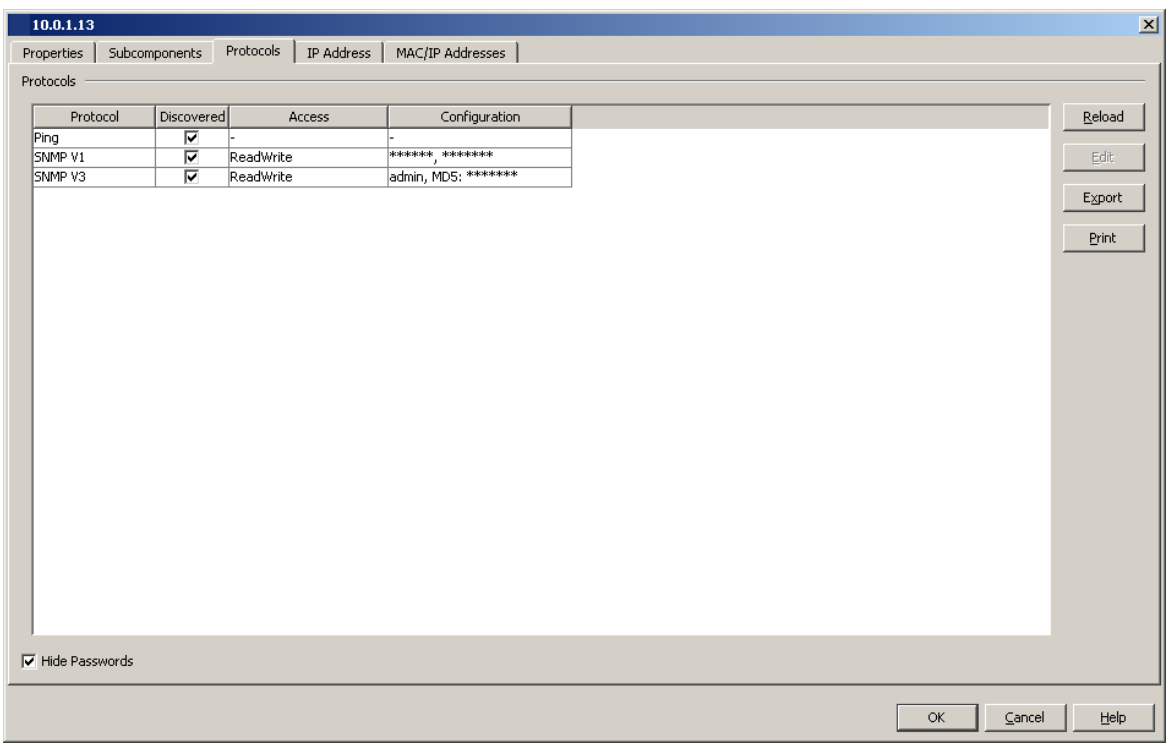

Figure 54: Protocols of a device

IP address of a device

The tab page allows you to change the IP address and the SNMP port number for current devices for Industrial HiVision in this dialog.
You require this function to re-access with Industrial HiVision a known device whose IP address was changed directly on the device.
If you want to change the IP address on a device, you select the device and use the `Configuration:IP Configuration` dialog (see on page 284 “IP Configuration”).

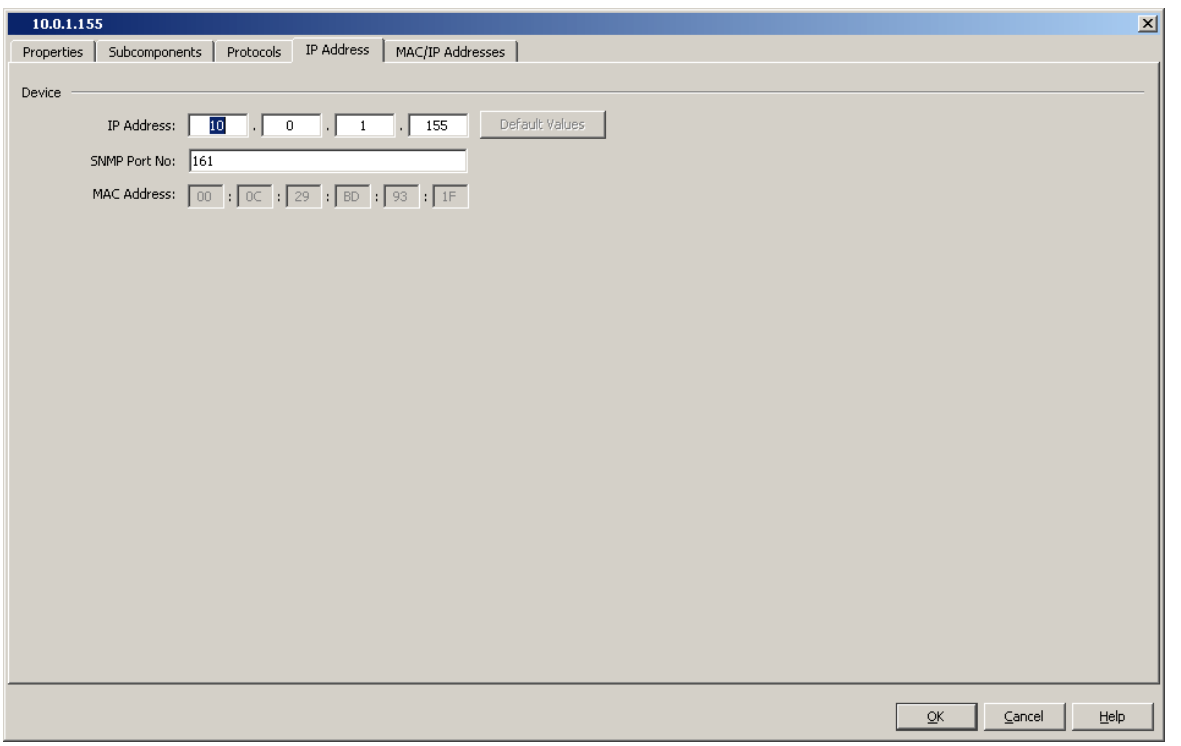

Figure 55: IP address for a current device

MAC/IP addresses of a device

This tab page shows you a list of the IP addresses in the device and their related MAC addresses. The list contains:

Designation	Meaning
MAC Address	
IP Address	
Netmask	
Hostname	Host name from the /config/hosts.txt file in the installation directory if – the file exists, – there is an entry and – the determination of a device name is activated in the basic settings. Otherwise, the field remains empty.
DNS Name	Name from the Domain Name Service
Port No	Port number of the protocol.
Port	Device port
Management	Industrial HiVision communicates with the management of the device by means of the IP address in this row.
User Generated	The device in this row was generated by the user. Industrial HiVision has not detected this device yet.
Router Entry	The IP address in this row comes from the routing table of the device.

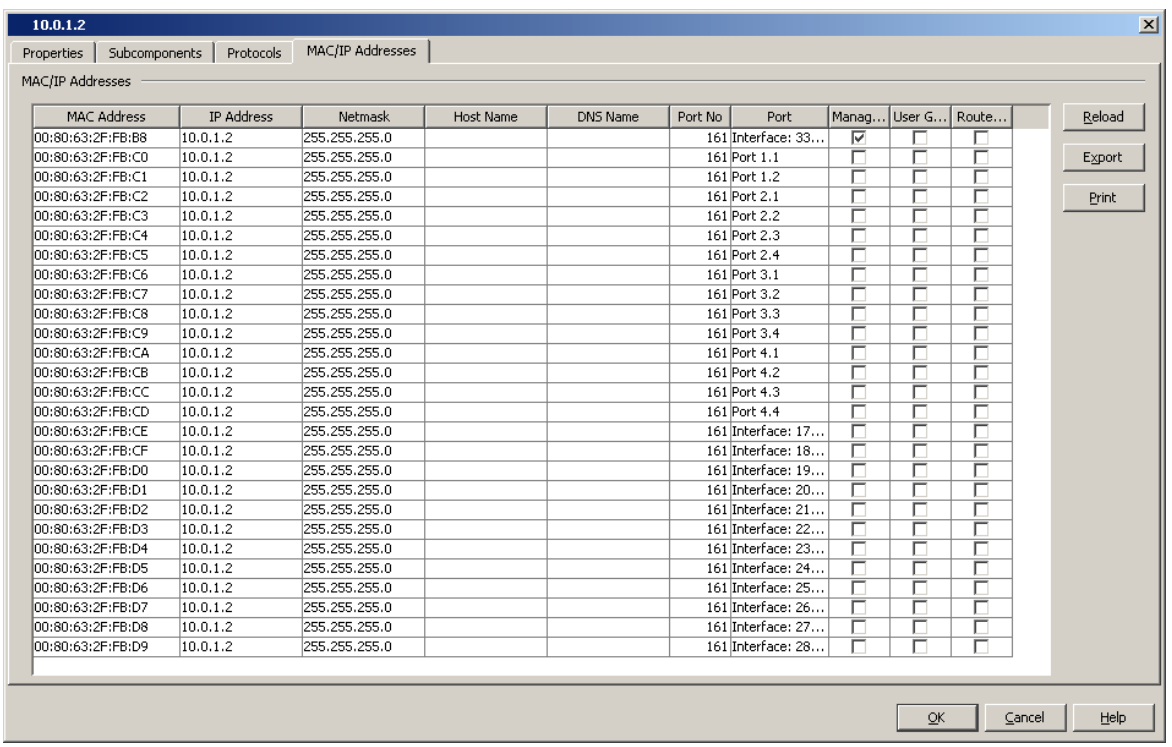

Figure 56: MAC/IP address and name of a device

8.2.24 Properties of a component detail

In the “Properties of a component detail” dialog, you are at the lowest level of the status determination. In addition to the properties that are on higher levels, this dialog contains a specifically determined value. If you want to observe this value, you can query it at freely specified intervals and log it. Value range for the polling interval: ≥5 seconds.

You can edit the name of the property if you have previously permitted renaming in the settings (see on page 258 “Advanced:Program Access”).

- To perform logging, select “Record history”.
  Select “Display” to open another window to display the history. You can use the tab page selection in this window to choose between tabular and graphic views.
  The graphic view is available if the property is of the counter type.

- With “Buffer size” you specify how many lines the protocol buffers.
  If you also want to display this value in the bubble help of a higher-level component, you select the component in the “Display value in bubble help” selection menu (see figure 57).

In the “Status Config” dialog, you specify how a change in this value affects the display of the status.

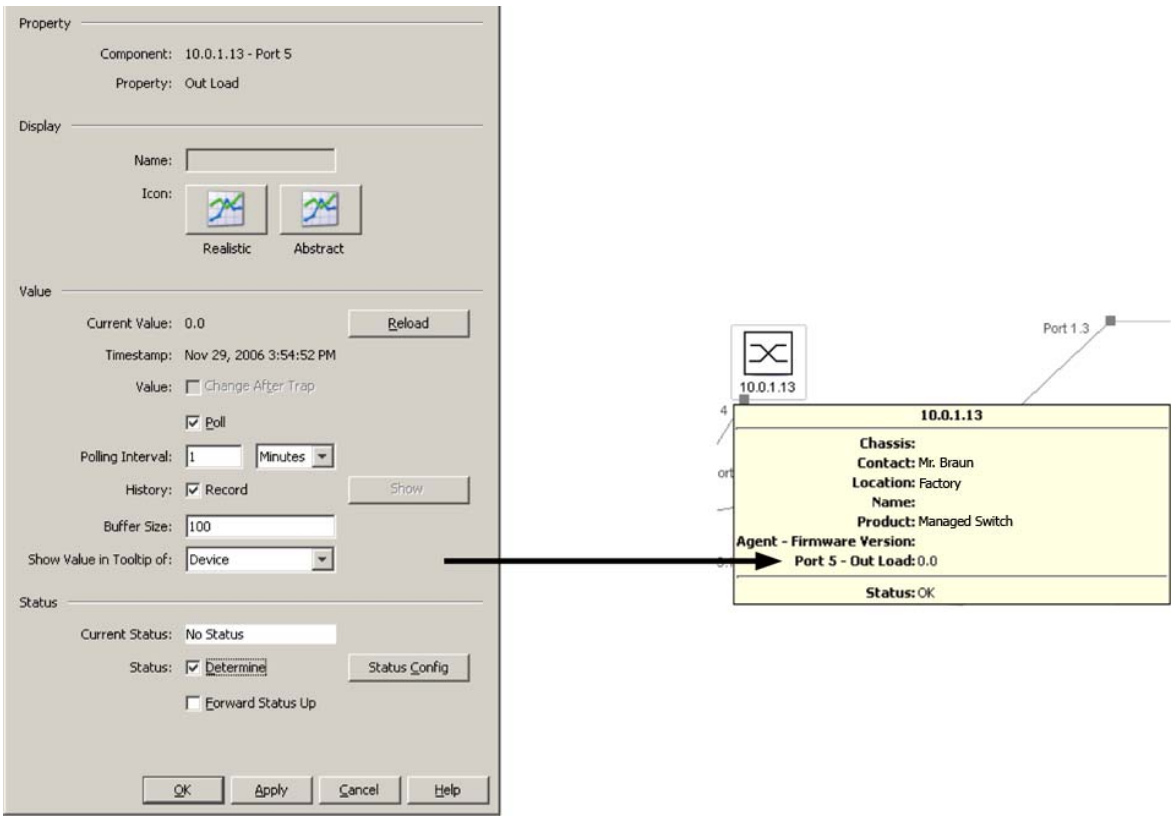

Figure 57: Detail properties

Aside from monitoring your network, Industrial HiVision also allows you to configure the following properties on the component detail level, if the device supports this option:

- Port Name
  Assign the port any readable name.
- Port Status
  Switch the port on or off.
- Autonegotiation
  Switch the autonegotiation function on or off.
- Device Name
  Assign the device any readable name.
- Contact
  Name the contact person for the device.
- Location
  Name the location of the device.

To configure a component detail property,

☐ select the “Properties” dialog for the component detail
☐ edit the value and click on “Write”.

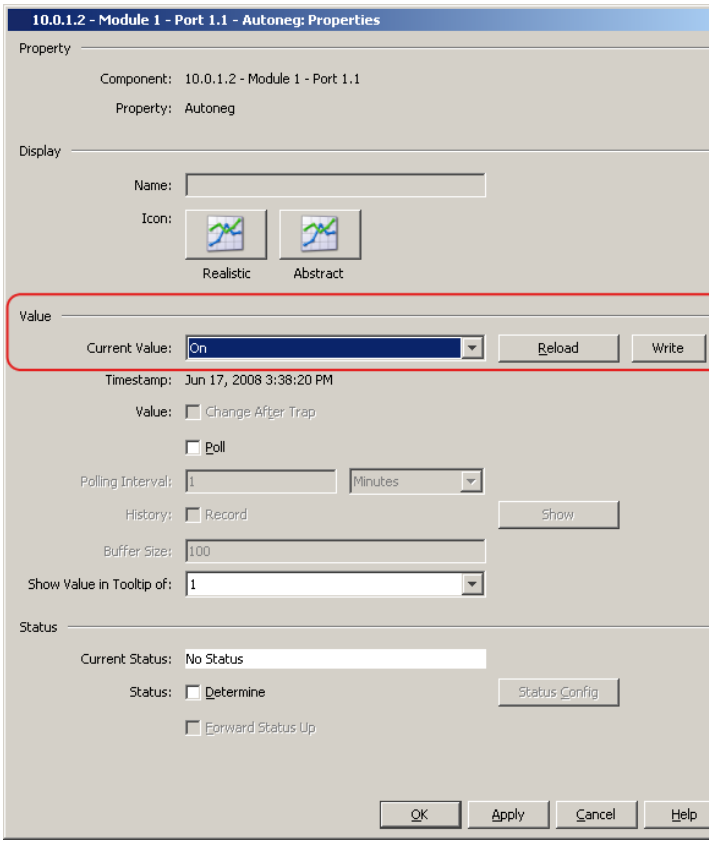

Figure 58: Configuring detail properties

Specified values

The “Status Conf” dialog shows you the possible values of the component detail.

Use the drop-down menu to assign the statuses you require to the values.

The operators provide you with further options for the definition of the status configuration.

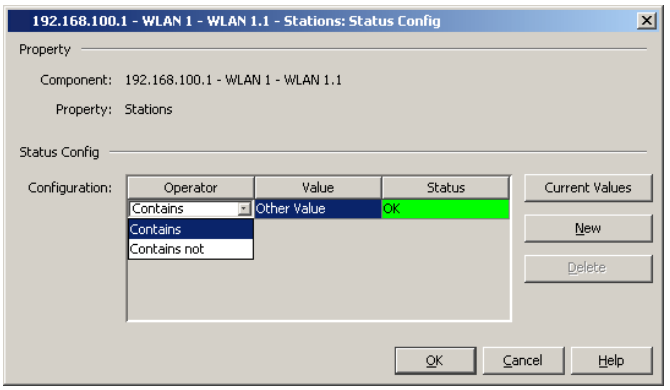

Figure 59: Example for the status display of default values

List values

The “Status Conf” dialog shows you a list with current values of the component detail.
Use the drop-down menu to assign the statuses you require to the values.
In contrast to “Defined values”, the values are variable and
you can use “Current values” to read in the currently available values,
use “New” to enter your own values in the list and
use “Delete” to delete values from the list.

Application example: You want an error message when unauthorized stations login to an access point. Enter the permitted stations in the list and set “Other Value” to “Error” (see figure 60).

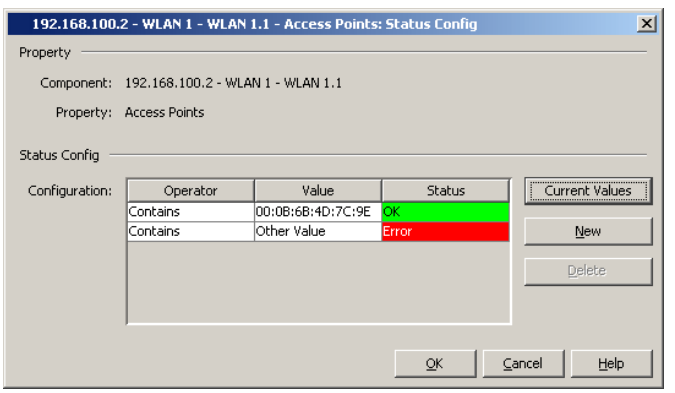

Figure 60: Status display for list values

Numeric values

The “Status Conf” dialog allows you to enter threshold values numerically. Use the drop-down menus to select the statuses which Industrial HiVision should assign to the device when these threshold values are exceeded or not reached.

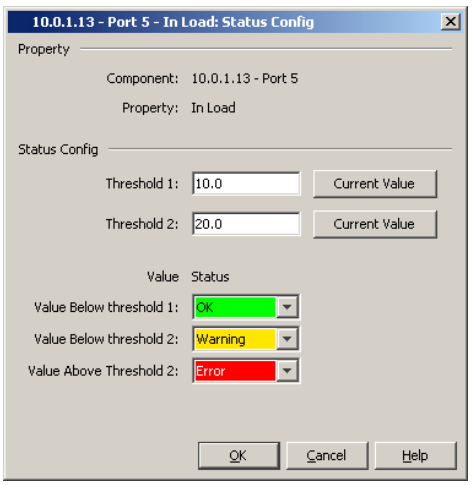

Figure 61: Status display for numeric values

Alphanumeric character string

The “Status Conf” dialog allows you to assign an alphanumeric value to the device detail.
Use the drop-down menus to select the statuses which Industrial HiVision should assign to the device for other character strings.
Example: Enter at one port the MAC address of the connected device. Assign the status “OK” if the MAC address of the connected device is the same. Assign the status “Error” if the MAC address of the connected device is different. As soon as the MAC address changes, you get an error message.

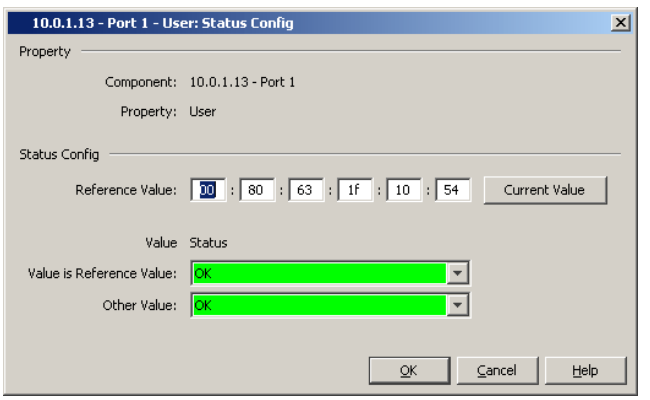

Figure 62: Status display for alphanumeric values

8.2.25 Properties of a connection

The properties dialog of a connection consists of 2 tab pages: Connection and Properties
You can access a third property, the history of the connection, by double-clicking on the connection.

Connection

On the “Connection” tab page you select the ports to which the connection is connected. To give you a better overview, the dialog provides you with an option to select the ports that will appear in the selection display.

If the speed display is activated, when the speed is increasing Industrial HiVision increases the line thickness in 2-point steps at 10, 100, 1000, 10000 MBit/s. If the speed display is activated, Industrial HiVision displays the current connection setting in the bubble help.
If the speed display is activated, Industrial HiVision displays the current speed setting even if you have deactivated the speed display in the connection properties dialog (see on page 249 “Display:Device”).
With automatic display of the connection medium via the connection end icon, Industrial HiVision selects the respective icon. Industrial HiVision allows you to define the connection end icon for a connection yourself. This option enhances clarity when conditions prevent determination of the medium.
If observing the connection is important for you, you can query the following standard parameters at freely specified intervals:

- Link status
- Load (incoming load)
  If a terminal device on a connection does not supply a value for the incoming load, then Industrial HiVision displays the outgoing load of the other end of the connection as the incoming load at this end.
- Port redundancy
- WLAN port properties

Industrial HiVision uses “Load History Record” to store the value of the queried incoming load on an ongoing basis.

Properties

The “Properties” tab page for the connection allows you to give the connection any name you want and to specify the status handling.
The status display is important for monitoring your network. Here you select whether Industrial HiVision determines the status of this connection and whether Industrial HiVision forwards the status determined to the next highest level. In the basic setting, Industrial HiVision determines the status and forwards it to the next highest level, as soon as you have assigned the connected ports to the connection (see below).
Under “Availability”, you can find the fields for entering the MTBF and MTTR values that Industrial HiVision uses for calculating availability(see on page 294 “Calculate Availability”).

8.2.26 Adding a component detail to a port

Industrial HiVision provides the monitoring of many component details for the individual components. For the sake of clarity, Industrial HiVision provides an overview of a selection of these details.

☐ To add another component detail to a port, right-click on the empty space in the component detailed display.

☐ Select `New:Properties`.

Industrial HiVision then provides you with a list of additional component details. A component detail is available as a “Delta” type and “Absolute” type.

- Delta: The monitoring refers to the difference between the values for two consecutive inquiries. The symbol of the delta property is a triangle in the top right corner.
- Absolute: The monitoring refers to the absolute value for each particular inquiry.

Figure 63: Symbols for Delta and Absolute properties

☐ You double-click on a row to select the corresponding component detail and thus create a symbol for this component detail in the detailed display.

☐ Right-click on the symbol and select “Properties” to open the “Properties of a component detail” on page 200 dialog.

8.2.27 Add to reporting

The reporting function allows you to manage long-term statistics outside the database of the network management system program.

You can add the following to the reporting function:
- Pollable device details
- Connections between 2 devices, at both ends of which Industrial HiVision has detected a link status.

☐ To add a device detail or a connection to the reporting function, click with the right mouse button on the device detail or the connection and select “Add to reporting ...”.

The dialog allows you to use “Report” to activate/deactivate the reporting for this property or this connection. If you deactivate the reporting, the entry remains in the reporting function (see on page 218 “Reporting”). For the reporting, you have the choice of recording the value or recording the status.

“Start” and “Stop” allow you to define when the recording starts and when it stops. With the default setting, the recording begins right after you click “OK” and continues for as long as the Industrial HiVision service is running.

If you previously activated the polling for the property or the connection, or if you changed the polling interval, this setting is kept. Otherwise Industrial HiVision activates the polling and sets the polling interval to the minimum value of 30 seconds.

Polling interval setting:
- Minimum value: 30 seconds
- Possible values: multiples of 30 seconds

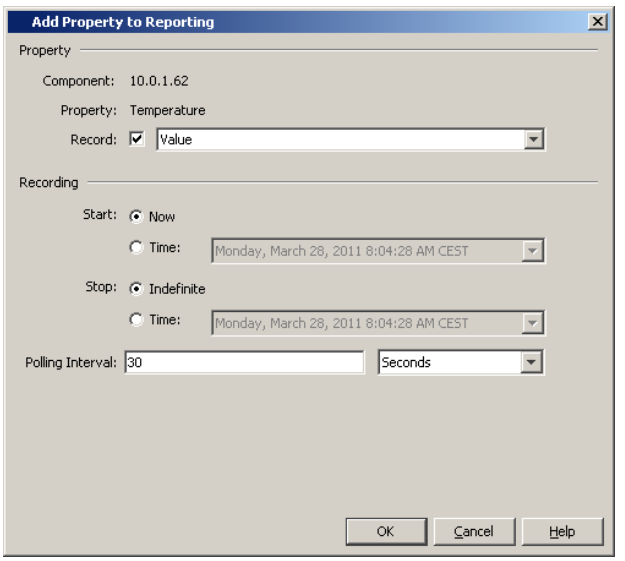

Figure 64: Add property to reporting

8.3 View

You use the “View” function to navigate through the history of the content of the detail display frame.

8.3.1 Select VLAN

This function allows you to see the VLAN membership of the detected devices and links based on the colors in which they are displayed.

☐ Choose “View: Select VLAN”.
Industrial HiVision opens a dialog for selecting a VLAN.

☐ In the drop-down menu, select the VLAN ID for the VLAN whose VLAN membership you want to see.
Industrial HiVision displays the devices and links that belong to other VLANs in light gray. The devices of the selected VLAN remain in color or in dark gray.

At the top of the folder frame, Industrial HiVision displays the selected VLAN.

8.3.2 Protocol Statistics

The Protocol Statistics give you an overview of the response time behavior of the devices with Industrial HiVision with regard to the protocol communication. This overview helps you find out whether the response time behavior is the cause if Industrial HiVision cannot set up the communication with individual devices.
The `Settings:Advanced:SNMP Configuration` dialog in Industrial HiVision allows you to change the setting for timeouts under `Settings`.

Parameter	Meaning
Device	IP address of the device to which the entries in this line apply
Protocol	Relevant protocol via which Industrial HiVision communicates with the device
Requests	Number of requests from Industrial HiVision since the last reset
Responses	Number of responses from the device since the last reset
Timeouts	Number of cases in which the device required longer for a response than was entered in the settings
Errors	Number of packets deviating from the standard
Msg loss [%]	Pkt. loss [%] = packet loss [%] = 1-(replies/requests) * 100
Avg Resp [ms]	Average value of response times
Min Resp [ms]	Minimum wait period for a response
Max Resp [ms]	Maximum response time for a reply
Std Dev	Standard deviation of the response times = measurement for the variation
Try 1	Number of responses received after the first request attempt. Depending on your settings in the SNMP configuration in Industrial HiVision, Industrial HiVision creates columns with “Try 2”, “Try 3”, etc. The “Try 2” column then only contains the number of responses received after the 2nd request attempt.

Table 22: Log statistics

Industrial HiVision provides you with a portion of the protocol statistics as detailed information for each device. You will find “Avg Resp” and “Std Dev” in the log properties of a device.
You can use the reporting function to analyze the behavior of individual devices more precisely. To do this, you add these log details in a report.

With “Export” you can save the complete table as a:

- PDF file
- HTML file
- CSV file (see on page 310 “CSV export”)

With “Print” you can print the complete table. Industrial HiVision creates a temporary PDF file of the content of the list and opens this PDF file in the PDF display program, e.g. Acrobat Reader, that is installed on your management station.

With “Reload” you get Industrial HiVision to reload the values in the tables of this dialog.

With “Reset” you get Industrial HiVision to reset the table values to “0”.

8.3.3 Filter Events for Object

With “Filter Events for Object” you filter the events list based on the device selected.

8.3.4 Back

You use “Back” to return to the previous view of the detail display frame.

8.3.5 Forward

You use “Forward” to go to the next view of the detail display frame.

8.3.6 Up

You use “Up” to go to the next highest level of the detail display frame.

8.3.7 Home View

With "Home View", Industrial HiVision enlarges the window to the size of the entire screen, and in the detail view it displays the content that you defined with "Set As Default Folder".

8.3.8 Set As Default Folder

With "Set As Default Folder" you define the content of the detail view that Industrial HiVision displays when you select the "Home View".

8.3.9 Zoom

Use “Zoom” to increase the size of the display in the detail frame in steps of 10 %.

8.4 Configuration

8.4.1 Monitor

The “Monitor” dialog lists in a table the monitoring functions for the components currently being monitored:

- Property
- Value of the property
- Take the value from an alarm message (trap) relating to this property
- Query the value of this property periodically from the device
- Query interval
- Record history for this property
- Size of the Ring memory for the history recording (number of entries)
- Derive status of property from the value of the property
- Propagate status to the next highest level

Double-click on a row in the table to edit the status configuration of the property.

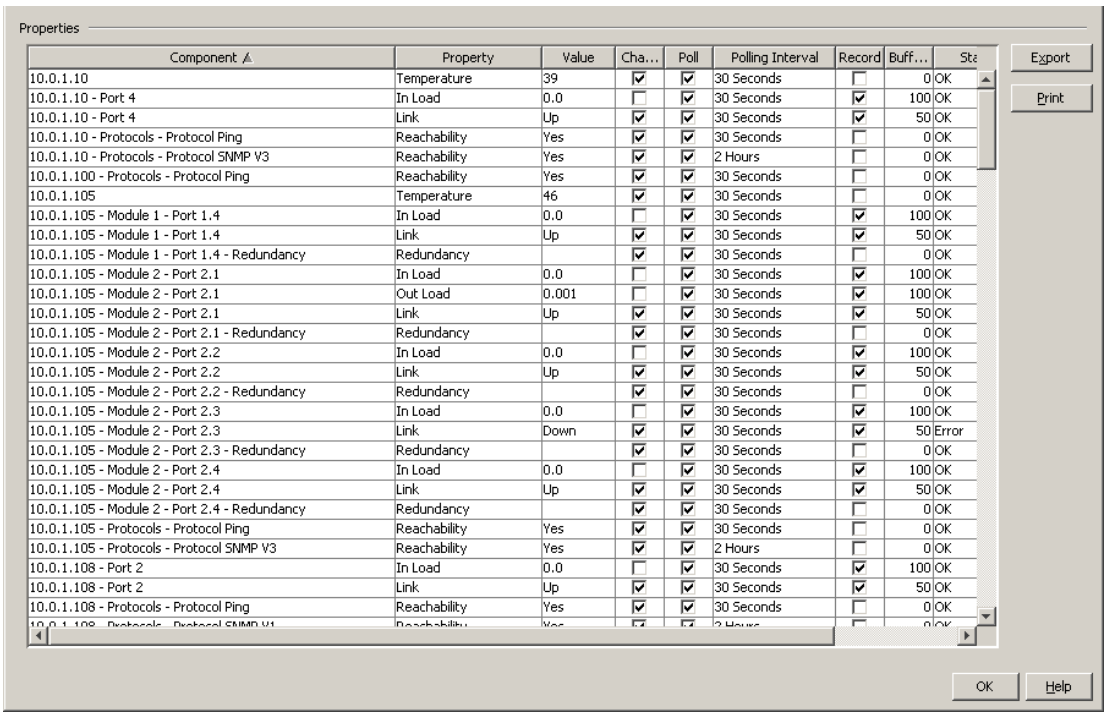

Figure 65: Configuration:Monitoring

8.4.2 PSM Manager

Product-Specific Modules (PSMs) describe the properties of a device which Industrial HiVision can read for monitoring or write to for configuration.
The PSM Manager gives you the opportunity to update PSMs or import additional PSMs beyond the ones included with delivery and remove them again.

- Industrial HiVision assigns the device class “Switch” to devices for which Industrial HiVision has no PSM.
- During import, Industrial HiVision compares the version of the PSM to be imported with any existing PSM. If the PSM to be imported already exists, Industrial HiVision opens a dialog. The dialog offers you the opportunity to keep or overwrite an existing PSM.

Note: Industrial HiVision accepts the changes made after a restart of the service.

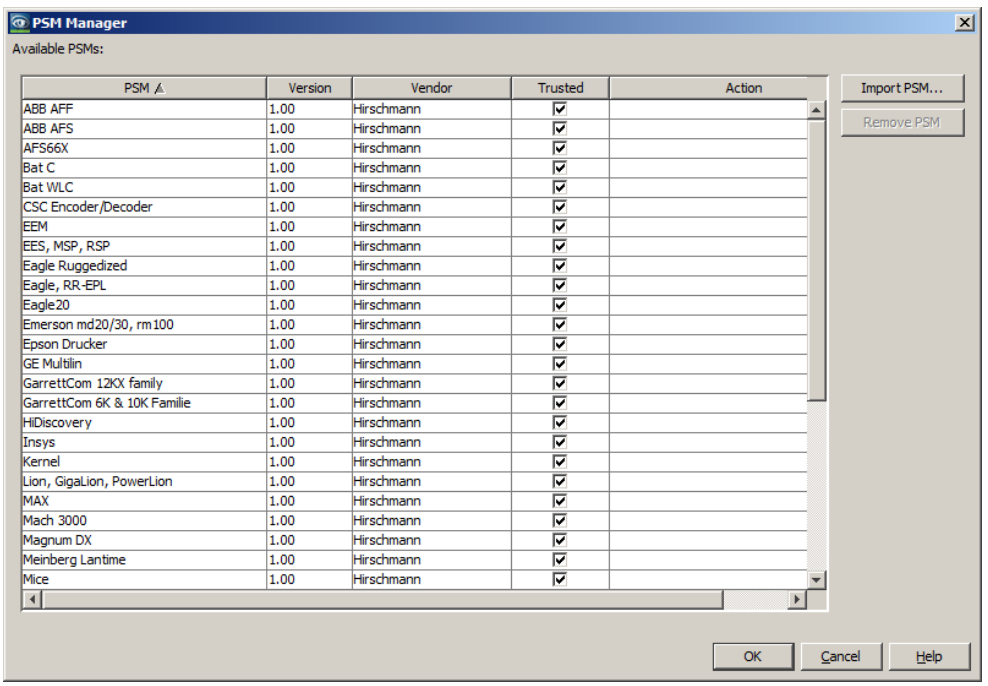

Figure 66: Configuration:PSM Manager

8.4.3 Reporting

The reporting function allows you to manage long-term statistics outside the database of the network management system program.

- Monitor
  This table lists the properties that you selected for monitoring (see on page 209 “Add to reporting”).
  - ☐ To change an entry in this table, select the entry and click “Edit”.
  - ☐ To delete one or more entries in this table, select the entry or entries and click “Delete”.
    If entries are contained in templates, Industrial HiVision refuses the deletion of these entries.
    Delete these entries in the template table so that you can delete the entries in the monitoring table.
  - ☐ To check whether the entries are still valid, as they could have changed during the editing in this dialog, click on “Update”.

  An entry is valid if Industrial HiVision can access and query the component.

Parameter	Meaning
Record	Activate this entry. If you close this dialog, then click “OK” or “Apply” in the “Monitor” dialog, Industrial HiVision starts the recording according to the settings below.
Recording start now	If you close this dialog, then click “OK” or “Apply” in the “Monitor” dialog, Industrial HiVision starts the recording.
Recording start time	If you close this dialog, then click “OK” or “Apply” in the “Monitor” dialog, Industrial HiVision starts the recording at this time.
Recording stop indefinite	After the recording starts, Industrial HiVision continues the recording indefinitely until this entry is deleted or changed.
Polling interval	Time interval at which Industrial HiVision cyclically queries the value from the device.

Table 23: Editing an entry in the monitoring table

Note: Industrial HiVision can record values as long as Hirschmann Industrial HiVision Service 05.1 is active. When you stop Hirschmann Industrial HiVision Service 05.1, the recording also stops until Hirschmann Industrial HiVision Service 05.1 is started again.

Templates

This dialog allows you to define the format of reports.

- ☐ Click “New” to define a new template.
- ☐ Click “Edit” to change a template.
- ☐ Click “Delete” to delete one or more templates.
- ☐ Click “Display report” to check how a template looks.

Parameter	Meaning
Report Name	Name to identify this template.
Report Header	Header that Industrial HiVision writes above the report.
Report Type	Output format of the report. Options: PDF, Excel
Report Layout	Layout of the report. Possible: Diagram for report type “PDF”, table
Diagram type for report layout “PDF”	Options for layout of diagram. Options: Line (for presenting numeric values), bar
Data	Selection of properties that you previously added to the reporting (see on page 209 “Add to reporting”)

Table 24: Defining a new template

- ☐ To avoid gaps in line graphs, combine only properties with the same polling intervals.
- ▶ To improve the appearance of diagrams, Industrial HiVision fills the gaps between the data with repetitions of the latest data. You can recognize the values inserted for filling-out purposes in table reports and Excel files by their grey color.

Scheduling

This dialog allows you to get Industrial HiVision to generate reports for defined time periods.

- ☐ Click “New” to define a new time period.
- ☐ Click “Edit” to change a time period.
- ☐ Click “Delete” to delete one or more time periods.

Industrial HiVision distinguishes between 3 different time period types:

– Absolute start and end times (Single Shot)
– Absolute start and relative end times (Cumulative)
– Relative start and end times (Recurring)

▶ Absolute start and end times (Single Shot)
Industrial HiVision generates a report from the data that lies between the start time and the end time.

Parameter	Meaning
Report Name	Industrial HiVision provides a selection of existing templates.
From	The first time this dialog is opened, Industrial HiVision displays the time at which Industrial HiVision began recording the data for the selected template. If the report to be generated should start with data from a later point in time, you enter this time here. Possible: Point in time after recording has started and before report generation.
Until	End time of the reporting period. Possible: Point in time after the start time.

Table 25: Scheduling with absolute start and end times

▶ Absolute start time and relative stop time (cumulative)
Industrial HiVision generates multiple reports.
The report period begins at the same start time in each case.
The report period ends at a later time in each case and thus comprises increasingly large periods.

Parameter	Meaning
Start of the reporting period.	The first time this dialog is opened, Industrial HiVision displays the time at which Industrial HiVision began recording the data for the selected template. If the report to be generated should start with data from a later point in time, you enter this time here. Possible: Point in time after recording has started and before report generation.
Offset to Execution	Designates the relative end of the data to be included in the report. The relative end of the data to be included in the report relates to the time at which the report was generated. The offset to execution is the amount of time between the relative end of the data to be included in the report and the time at which the report is generated. Possible: Amount of time between the start of recording and the first report generation.

Table 26: Scheduling with absolute start and relative stop times

Parameter	Meaning
First Execution	Time at which Industrial HiVision is to generate the first report.
Schedule every	Amount of time between the generation of a report and the generation of the following report.

Table 26: Scheduling with absolute start and relative stop times

- Relative start and stop times (repeating)
  Industrial HiVision generates multiple reports.
  Each report starts after the end of the preceding report.
  The reports contain data from successive periods of equal length.

Parameter	Meaning
Duration	With the duration you set the relative start of the data to be included in the report. Possible: Period smaller than the repetition interval minus the offset between successive executions
Offset to Execution	Designates the relative end of the data to be included in the report. The relative end of the data to be included in the report relates to the time at which the report was generated. The offset to execution is the amount of time between the relative end of the data to be included in the report and the time at which the report is generated. Possible: Amount of time between the start of recording and the first report generation.
First Execution	Time at which Industrial HiVision is to generate the first report.
Schedule every	Amount of time between the generation of a report and the generation of the following report.

Table 27: Scheduling with relative start and stop times

- Generated reports
  This dialog lists the generated reports. Industrial HiVision stores the generated reports in the installation directory in the directory `\var\report_files`.
  - ☐ To display a report, select the report and click “Display”.
  - ☐ To save a report, select the report and click “Save”.
  - ☐ To delete one or more reports, select the reports and click “Delete”.
  - ☐ To refresh the list, click “Refresh”. After refreshing, Industrial HiVision adds to the list those reports generated since the last refresh.

Industrial HiVision displays the path where Industrial HiVision stores the reports below the table. For remote connections, the specified path refers to the file system on which Hirschmann Industrial HiVision Service 05.1 is running.

The data recorded by the reporting function are snapshots of a moment in time. They represent the value of a property as saved by Industrial HiVision at a particular point in time. Individual values have no bearing on the values from other points in time.

8.4.4 Scheduler

Scheduler offers the possibility of having repeating tasks of Industrial HiVision carried out automatically.

- Tasks
  This table shows you already defined tasks that Industrial HiVision carries out according to the stored schedule.
  ☐ Click “New” to define a new task.
  ☐ Click “Edit” to change a task.
  ☐ Click “Delete” to delete one or more tasks.

Parameter	Meaning
Task Name	Any name to identify this task.
Device	Selection of the device on which Industrial HiVision will run the task.
Task Type	Industrial HiVision makes 2 types of tasks available: Predefined SNMP actions and script actions. Depending on the selection, the subsequent part of this dialog changes.

Table 28: Defining new tasks

Parameter	Meaning
Standard	Standard belongs to task type SNMP action. As SNMP actions, Industrial HiVision offers the following actions: – Switching a port on/off – Switching the PoE voltage of a port on/off After you have selected the action, the table below provides the port selection of the device and the corresponding parameter (On/Off).
Advanced	Advanced belongs to the task type script action. As script actions, Industrial HiVision offers the following actions: – Cisco: show running config – Cisco: show running config all – HiOS: show running config – HiOS: show running config all Under Executable you have the option to use the built-in Telnet client for executing the action, or you can select your own program with parameter transfer. The "Scripts" dialog offers you the opportunity to add your own scripts to the selection of scripted actions.

Table 28: Defining new tasks

Scripts

The “Scripts” dialog offers you the opportunity to add your own scripts to the selection of scripted actions.

☐ Click “New” to define a new script.
☐ To change or import a script, click “Edit”.
☐ Click “Delete” to delete one or more scripts.
☐ To duplicate a script, click "Duplicate".

Parameter	Meaning
Script Name	Any name to identify this script.
Content	Import script or enter script as text.

Table 29: Define new scripts

Schedules

The “Schedules” dialog offers you the opportunity to define a schedule for carrying out a task.

☐ Click “New” to define a new schedule.
☐ Click “Edit” to change a schedule.
☐ Click “Delete” to delete one or more schedules.

Parameter	Meaning
Task name	List of defined tasks for selection in the "Tasks" dialog.
Execution	Type of execution: once or several times with entry of the start date and repeat interval for repeated execution.
Repetition	Entry of the repetition conditions for repeated execution: Number of repetitions, end date.

Table 30: Define a new schedule

Results

The “Results” table lists the results of the executed tasks.

- ☐ To view a marked result, click "Display".
- ☐ To delete a result, click "Delete".
- ☐ To refresh the results list, click "Refresh".

8.4.5 Preferences

The “Preferences” window enables you to enter basic program settings. These settings relate to monitoring functions, management functions, display options, access rights and others.

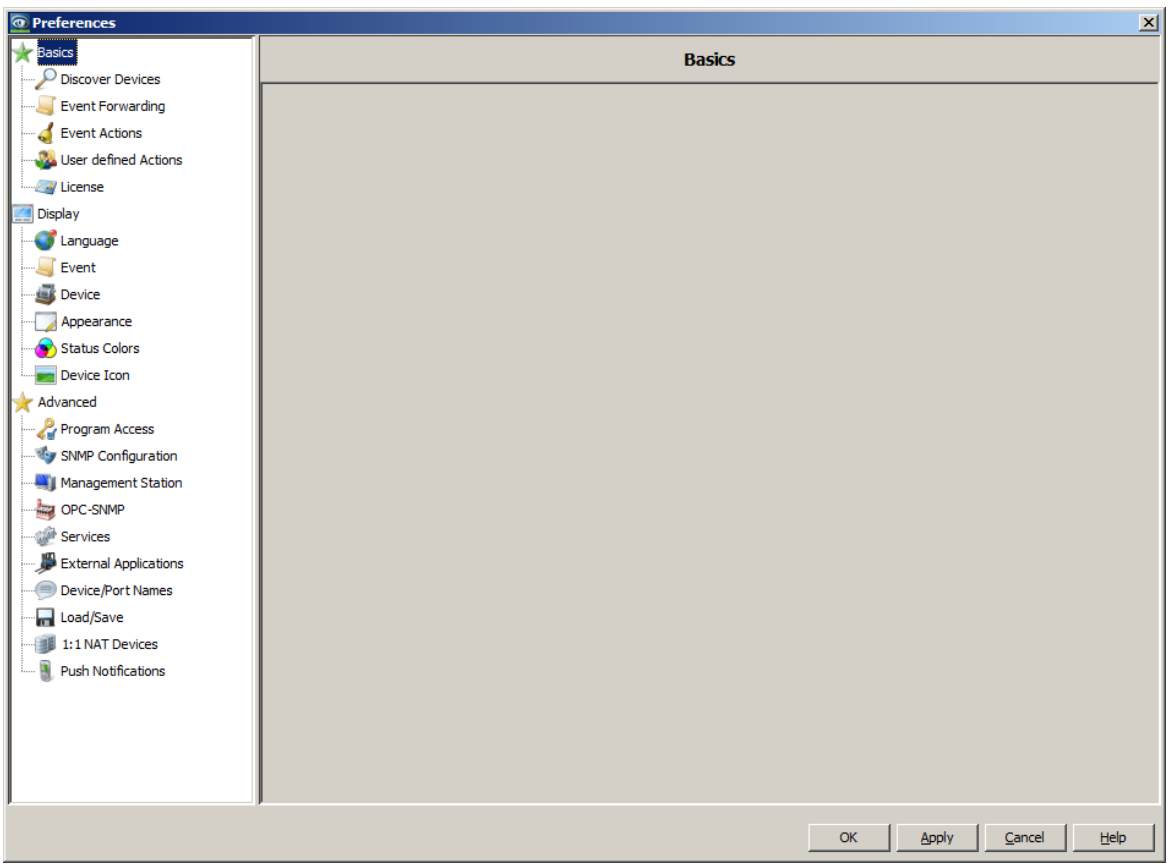

Figure 67: Configuration:Preferences

- ☐ Click on “OK” to accept changes in the setting dialogs and to close the window.
- ☐ Click on “Apply” to accept changes in the setting dialogs before you switch to another setting dialog.
- ☐ Click on “Cancel” to close the window. Changes not written using “Apply” are lost.

Basics:discover devices

You use this dialog to specify which way Industrial HiVision should detect the devices in your network structure. Industrial HiVision enters newly detected devices in the default map entered. If you have not entered an activated default map in the network scan table (see below), then Industrial HiVision shows newly detected devices in the “New Devices” folder.
The search function in the tool bar helps you to find devices already detected.
Industrial HiVision provides the following options for device detection:

- Detecting devices using traps
- Detecting devices using the HiDiscovery protocol
- Detecting devices via a defined IP address range (Net Scan)
- Detecting newly created devices

Detecting devices using traps.
After they are switched on, the devices send a switched-on message to the network management station entered in the device.
Then Industrial HiVision reads the properties of the devices:

– Read device again: Industrial HiVision treats the device like a new device and reads in the entire properties and the structure of the device (new/removed model or power unit) again.
– Read properties again: Industrial HiVision reads the known properties in again.

Example: You switch on a device with 2 power supplies for the duration of some maintenance work. How does Industrial HiVision behave after the device is switched on if a voltage supply is missing?

– With the “Reload Device” setting, Industrial HiVision represents the device with one power unit and the color green.
– With the “Reload Properties” setting, Industrial HiVision represents the device with two power units, with one power unit in red.

Industrial HiVision displays the newly detected devices in the corresponding folder.
This method of detecting devices is suitable for use during ongoing monitoring in networks where you need to manage the bandwidth.

Detecting devices using the HiDiscovery protocol
The HiDiscovery protocol uses the MAC address to communicate with Hirschmann devices in the subnetwork on which the HiDiscovery protocol is active. The following Hirschmann device families support the HiDiscovery protocol.
– MACH
– PowerMICE
– MICE
– RS
– RSR
– RSP
– OCTOPUS
– EES
– EAGLE
– BAT (without BAT-C)
– RR-EPL
This method enables you to detect devices in your network to which you have not yet assigned a valid IP address.
Industrial HiVision displays the devices in the corresponding folder.
This method is suitable for when you start up a newly installed network and want to assign the IP address to the new devices. Select this method for a limited time in order to spare your network an unnecessary network load.

☐ For the polling interval you enter the desired number in the related white field and select the units for this number – seconds, minutes, hours or days – in the selection field.
Default setting: 5 minutes.
Keep in mind how this affects your system resources (see on page 154 “Effect on system resources”).

Detecting devices using a defined IP address range
Using “Network Scan”, Industrial HiVision periodically sends ping requests to the devices with an IP address in the defined IP address ranges and displays the new devices that respond in the destination folder entered.
A firewall blocks the ping requests.
In order for Industrial HiVision to be able to detect devices behind a transparent firewall, activate “with ARP”. A transparent firewall forwards an ARP response. If the ping response does not come within a predetermined time, Industrial HiVision evaluates the ARP response.

The Network Scan method is suitable for monitoring a running network. Adapt the frequency of the requests to the bandwidth of your network.

☐ For the request interval you enter the desired number in the related white field (polling interval) and select the units for this number – seconds, minutes, hours or days – in the selection field.
Default setting: 15 minutes.
Keep in mind how this affects your system resources (see on page 154 “Effect on system resources”).

☐ Click on “New” to enter an IP address range. Entering the IP address range includes
- the first IP address of the query range
- the last IP address of the query range
- the related network mask
- the activation/deactivation of this range for the query
- the name you want to give the range
- the default map in which you want Industrial HiVision to show a newly detected device.
  You can enter overlapping IP address ranges, then Industrial HiVision puts a copy of a device in each of the relevant folders.

The table shows the IP address ranges already created.

☐ Select a row in the table and click on “Edit” to edit this IP address range.

☐ Select a row in the table and click on “Delete” to delete this row from the table.

☐ Select a row in the table and click on “Duplicate” to duplicate this IP address range so that you can then modify the copy.

Detecting newly created devices

Here you enter the initial setting for the dialog for entering the IP address which appears when you create a new device (see on page 99 “Creating new devices”).

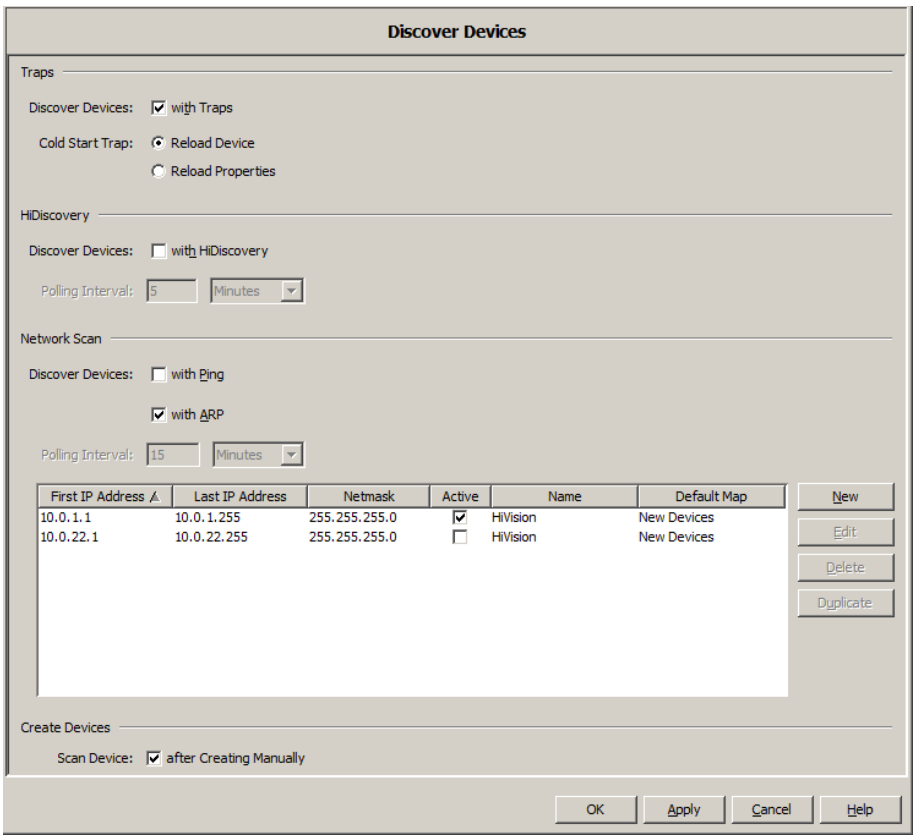

Figure 68: Configuration:Preferences:Basics:Discover Devices

Basic Settings:Event Forwarding

This dialog gives you the option of making settings for forwarding events to a syslog server.

With "Forward events to syslog server", you switch on/off the event forwarding function globally. When event forwarding is switched on, Industrial HiVision sends a syslog message to the syslog server entered in this dialog as soon as an event occurs.

With "Forward internal events", e.g. “Industrial HiVision started”, Industrial HiVision also sends syslog messages for Industrial HiVision internal events.

With "Event Type", you specify at what evaluation level of an event Industrial HiVision sends a syslog message.

In the "Forward events from devices" table, you enter the device whose events should lead to a syslog message.

In the "Syslog servers" table, you enter the data of the syslog server to which Industrial HiVision should send syslog messages.

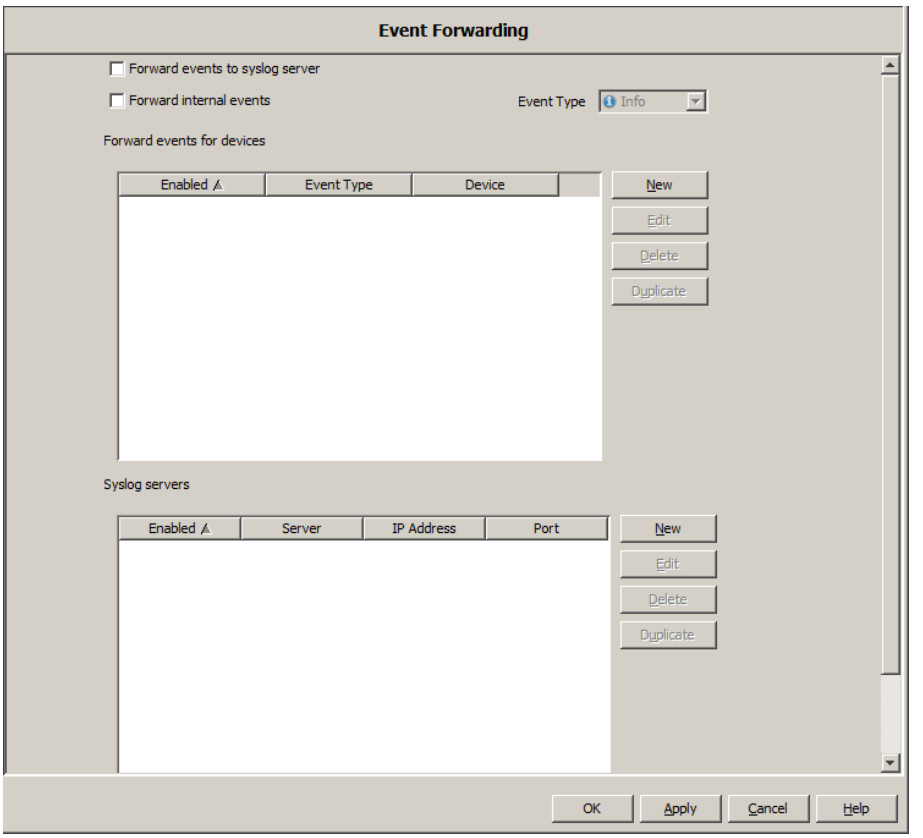

Figure 69: Configuration:Preferences:Basic Settings:Forward Events

Basics:Event Actions

In this dialog you define the actions you want Industrial HiVision to perform when particular events occur.

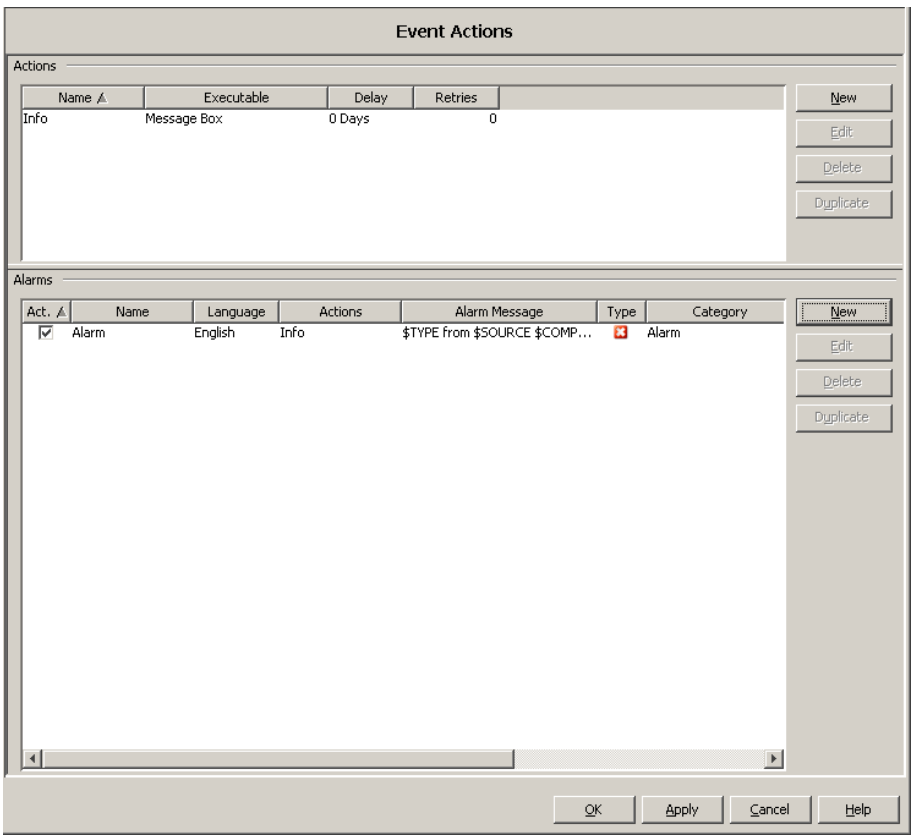

Figure 70: Configuration:Preferences:Basics:Event actions

Actions

Actions describe what Industrial HiVision can carry out:

- Open the message window on the screen
- Send an SMS
- Play Sound

- Send an e-mail
- Execute a program (see note in “Installation under Windows”). In the figure below (see figure 71), you will find the user program “siren.exe” as an example.

☐ Click on “New” to specify the actions which you then want to assign to the events.
For actions that might not execute on the first try, such as a busy line when sending an SMS, Industrial HiVision gives you the option of repeating the action.

The “Send an SMS” action requires
– that your network management station is connected to the telephone network, e.g. via a modem and
– that the SMS program is configured correctly.
Enter the telephone number of the recipient under “Recipient”.
If you enter the telephone number of your modem as the “Sender”, then Industrial HiVision sends it with the message. You can thus recognize Industrial HiVision as the sender in the display of your mobile phone.
As the “service provider” you enter the available service which you configured in your SMS program (if available).
The program SMScom already configured the services D1, D2 and E+ during the installation.
To configure the services, you start the program SMScom, if you want to use SMScom as the SMS program. SMScom maintains an error protocol in the log file `SMScomLOGxxxxxx` in the directory `<Installation Directory> \Hirschmann\Industrial HiVision5.1\services`.

Under `Preferences:Basics:Advanced`, check that the entries for the required external applications are present and that they meet your requirements.

The table shows the actions already created.
☐ Select a row in the table and click “Edit” to edit this action.
☐ Select a row in the table and click “Delete” to delete this row from the table.
☐ Select a row in the table and click “Duplicate” to duplicate this action so that you can then modify the copy.

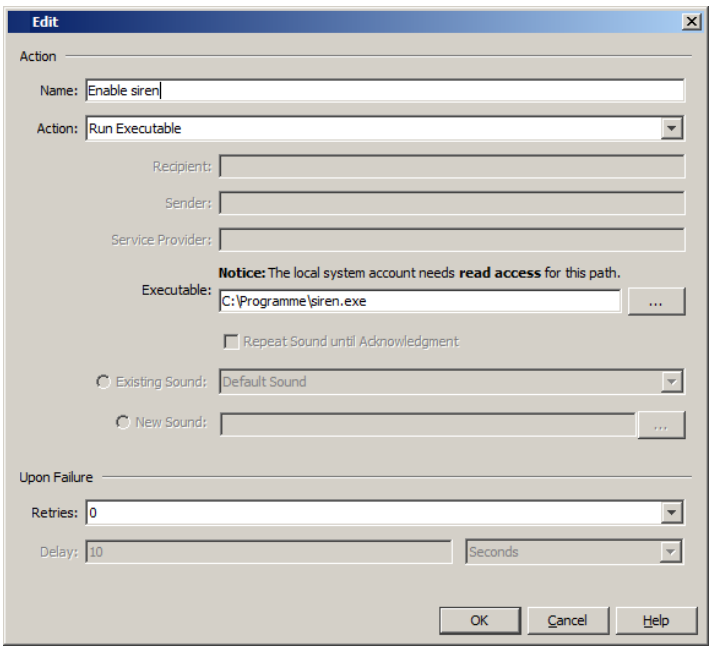

Figure 71: Configuration:Preferences:Basics:Event actions:Actions, Example for using the action “Execute program” for the user program “siren.exe”

Alarm

Industrial HiVision offers the possibility to perform an action when certain events occur or in the absence of confirmation of certain events.

Under "Type", you choose when Industrial HiVision should perform the action.

Under "Alarm", enter any name for the event that is to trigger an action.

Under “Filter”, you define the event that is to trigger the actions selected below. Industrial HiVision allows wildcards for defining the filters.

Designation	Meaning
Type	Selection of the status type (error, warning, ...)
Category	Event of a particular category (status better, new device, ...)
User	Logon name from the network management station
Source	Cause of the event
Component	Component of the cause of the event
Message	Text describing the event

Table 31: Filter criteria

To simplify things, “Import” provides you with the events that have already occurred from the list in the event frame.

☐ Select a row and click “OK”.
Industrial HiVision copies the properties of the selected event into the filter frame.

The “Message” row enables you to enter the message text for actions. You can use the filter keywords with a $ sign as a prefix as a variable entry. Enter the keywords in upper-case characters. Example: If you enter “$TIME” in the message, Industrial HiVision enters the time the event occurred in the message. The keywords that Industrial HiVision provides you with are listed in the “Message” row of the bubble help.

The "Time" frame offers you the opportunity to set a time period during which Industrial HiVision responds to an event with an action.

In the "Actions" frame, you have the option of selecting one or more of the actions already created. Industrial HiVision executes these actions when the event defined above occurs or when confirmation of the event is absent within the time specified in "TYPE".

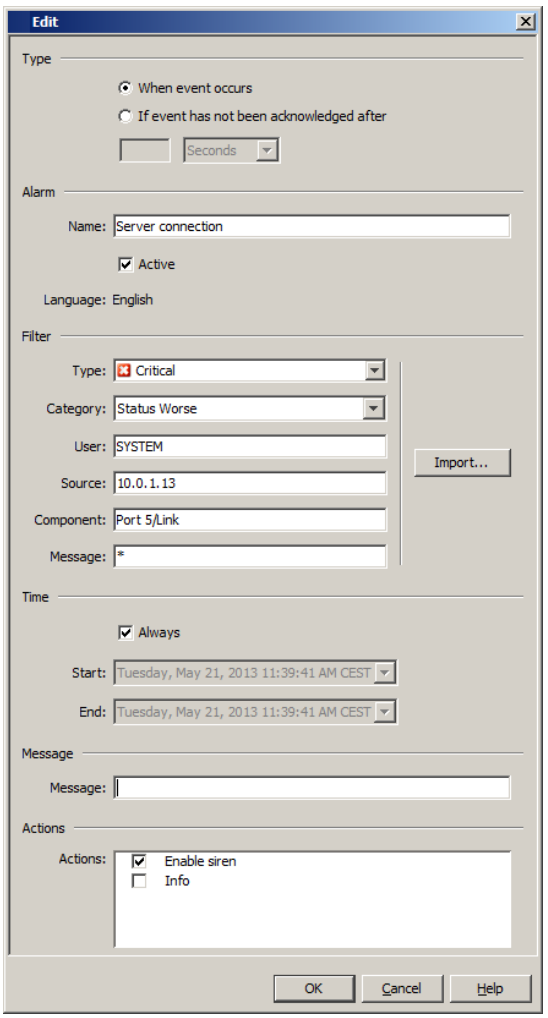

Figure 72: Configuration:Preferences:Basics:Event actions:Alarm messages

Basic settings:User defined actions

User-configurable actions give you the opportunity of starting actions on other devices from your network management station, for example.

Location	Meaning
Desktop	Industrial HiVision starts the application on the computer on which the Industrial HiVision interface is running. The service can run on another computer. You choose “Desktop” when the application that Industrial HiVision starts expects an interaction. Application example: Starting a Telnet client
Service	Industrial HiVision starts the application on the computer on which the service is running. This selection gives you the option of configuring devices that only permit configuration from the IP address of the network management station. Application example: Configuration scripts which you want to call up from multiple interfaces (and also from applets) or use to run batch files (see “Example of interface”).
Browser	Industrial HiVision starts the application with the URL. Example: To open the graphical user interface of a device in the browser, enter the following further down under “Parameters”: `http://10.0.1.13`.

Table 32: Location of execution of a user-defined action

Example of interface: “Call up Telnet client”

You want to use a Telnet client, e.g. “Putty”, to access a known device such as a switch.

- ☐ In the Industrial HiVision menu bar, select `Configuration:Preferences`.
- ☐ In the settings dialog, select `Basic settings:User-configurable actions`.
- ☐ To define a new user-configurable action, click on “New”.
- ☐ To call up the Telnet client, enter any name, e.g. “Manage Switch via Telnet”.
- ☐ “Available for”
  In this line, you select the symbol with which you wish to start the action. Industrial HiVision places the action in the selection list according to the definition. You can find the action under “Action” by right-clicking this symbol.
  As you want to call the action later at device level, choose the object type “Device”.
- ☐ As the “Device Type”, choose “Switch”.

- ☐ You want to start the Telnet client on a computer on which Industrial HiVision is running. The Telnet client expects an interaction with the administrator of the switch. Therefore you select “Desktop” as the “Location of Execution” (see table 32).
- ☐ Under “Application”, enter the path of the application and the application or select the application in the file selection dialog by clicking “...”.
  To select the Telnet client Putty, enter the following for the example: `C:/Data/Software/putty.exe`.
- ☐ The “Parameters” line gives you the option of transferring parameters to the application with tokens. Enter the following in the example:
  – Call up Telnet
  – The token for the IP address of the device
  `$“-telnet $IP_ADDR“`

Example for service: “Switch port on/off”
You have a visitors’ room with Ethernet connections. The room can be accessed by anybody. Therefore you would like to enable a port that is connected to this Ethernet connection exclusively when you actually have visitors.

- ☐ To do this, write two small batch files with the SNMP commands for switching the port on/off:

1st batch file: Port-on.bat

```
<installation folder>\bin\SnmpSet -c private $IP_ADDR
1.3.6.1.2.1.2.2.1.7.$USER integer 1
```

2nd batch file: Port-off.bat

```
<installation folder>\bin\SnmpSet -c private $IP_ADDR
1.3.6.1.2.1.2.2.1.7.$USER integer 2
```

- ☐ Save the two batch files on your network management station, e.g. under `C:/Data/PortOnOffBatch`
- ☐ In the Industrial HiVision menu bar, select `Configuration:Preferences`.
- ☐ In the settings dialog, select `Basic settings:User-configurable actions`.
- ☐ To define a new user-configurable action, click on “New”.
- ☐ Enter the name of your choosing for the 1st batch file, for example “Switch on visitor port”.
- ☐ “Available for”

In this line, you select the symbol with which you wish to start the action. Industrial HiVision places the action in the selection list according to the definition. You can find the action under “Action” by right-clicking this symbol.
As you want to call the action later at device level, choose the object type “Device”.

☐ In this example the port for the visitors' connection is connected to a RS30 rail switch. Therefore, under “Device type” you select “OpenRail, MACH 4000, OCTOPUS”.

☐ You would like to execute the batch files on a computer on which the service of Industrial HiVision is running. Industrial HiVision passes the interface number of the port as a command parameter when calling up the batch file. Then the batch files run automatically. Therefore you select “Service” as the “Location of Execution” (see table 32).

☐ Under “Application”, enter the path of the application and the application or select the application in the file selection dialog by clicking “...”.
Enter the following for the example:
`C:/Data/LANmanagementBatch/Port-on.bat`.

☐ The “Parameters” line gives you the option of transferring parameters to the application with tokens. Enter the following in the example:
– The token for the IP address of the device
– The object ID for switching on the port (1.3.6.1.2.1.2.2.1.7)
– The token for the port
`$IP_ADDR 1.3.6.1.2.1.2.2.1.7.$USER 2`

☐ The “User entry prompt” line gives you the option of entering a parameter for transferring to the application when the action is called. For our example:
`Enter the interface number of the port:`

You can find further function details under “Advanced”:

▶ Select token language
Industrial HiVision transfers the token content to the application in this language. This applies to the tokens: “Status (textual)”, “Value” and “Name”.

▶ Query password when calling action
If more than 30 minutes elapse between password entry and the next call of the action, then Industrial HiVision queries the password again.

▶ Display settings for the content of the application event

▶ Display settings for the display type of the application event.
“Only In Case Of Failure”: There has been a failure if the return value of the application has a value other than 0.

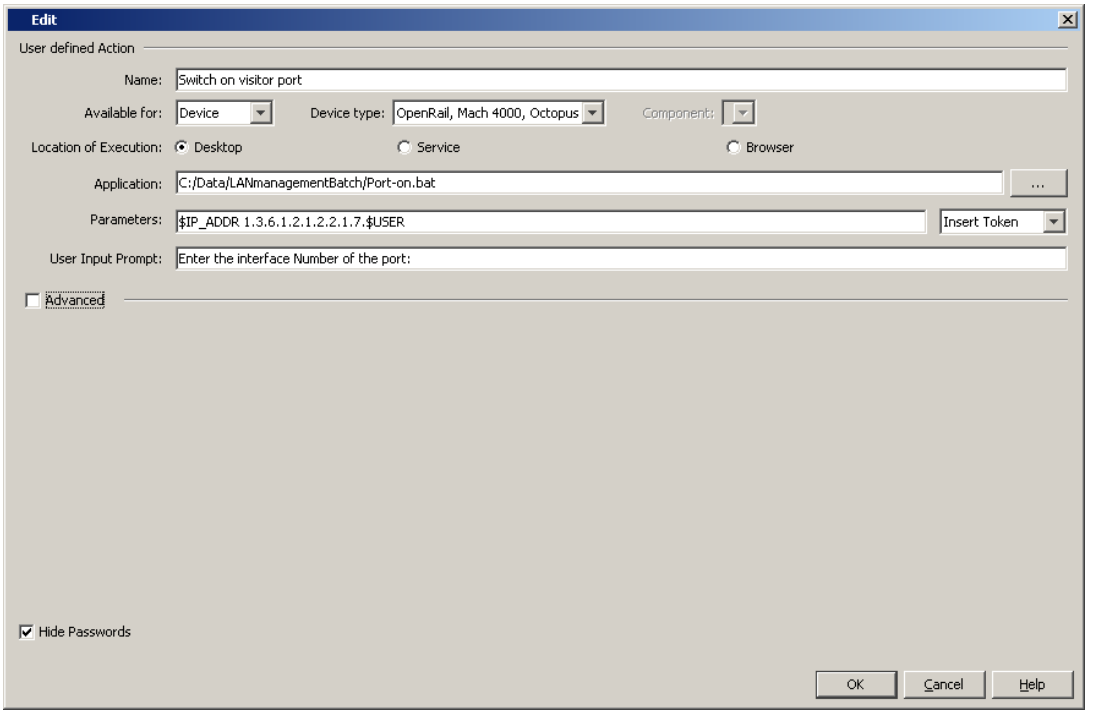

Figure 73: Example for a user-configurable action

Example for browser: “Call up web browser”
You want to access the Web server of your Industrial HiVision service to read the event list.

- ☐ In the Industrial HiVision menu bar, select `Configuration:Preferences`.
- ☐ In the settings dialog, select `Basic settings:User-configurable actions`.
- ☐ To define a new user-configurable action, click on “New”.
- ☐ To call up the Telnet client, enter any name, e.g. “Event list”.
- ☐ “Available for”
  In this line, you select the symbol with which you wish to start the action. Industrial HiVision places the action in the selection list according to the definition. You can find the action under “Action” by right-clicking this symbol.
  As you want to call the action later at device level, choose the object type “Device”.
- ☐ As the “Device Type”, choose “Windows PC”.

☐ You want to view the event list in your web browser. Therefore you select “Browser” as the “Location of Execution” (see table 32).
☐ The “Parameters” line gives you the option of transferring parameters to the application with tokens. Enter the following in the example:
  – Call up the Web browser
  – The token for the IP address of the computer on which the service of Industrial HiVision is running.
  – The port for the Web server of Industrial HiVision
  – The Web page you want to view

```
http://$IP_ADDR:11151/events
```

Basics:License

You require a license key to operate Industrial HiVision. The number of devices you can display depends on the license key. You thus have the option of adapting the amount you invest in Industrial HiVision to the growth of your network.
After a new installation or an update, you require new license keys. Industrial HiVision puts devices for which no license exists into the “Unmanaged” state. When you have entered a license key for these devices, you can put these devices into the “Managed” state again (see on page 186 “Manage”).
Industrial HiVision uses a seal to represent devices without a valid license.

Figure 74: Device without Industrial HiVision license key.

☐ Click on “New” and enter the license key in the entry window. If you have the license key in electronic form, then you can use copy and paste to save having to type it in.
Complete the entry using “OK”.
You add new license keys and update licenses in the same way.

After you enter a license key, Industrial HiVision displays this license key in a row of the table.

Name	Meaning
Key	Key number
Version	Software version number of Industrial HiVision
Expires	Date on which the license expires
Type	Full version or update version
Devices	Number of devices covered by the license
Serial number	Serial number of the key

Table 33: Entries in the license table

Name	Meaning
Hardware key	Hardware key that you entered when requested to enter the license key. If the hardware key of this license key matches the hardware key under this license table, then you can use this license key on this network management station.
Licensee	Name that you entered when requested to enter the license key.

Table 33: Entries in the license table

A full license allows you to monitor a particular number of devices in Industrial HiVision. A full license is linked to the version of Industrial HiVision at the time of purchase.

Note: To determine the hardware key, Industrial HiVision uses a number of hardware components of its network management station. These hardware components include the network interface cards. For you to be able to replace hardware components, Industrial HiVision compares specific combinations of the hardware components in order to determine the hardware key.
As long as at least one of the network interface cards in the network management station that was installed when the license key was requested is active, Industrial HiVision detects the correct key. In this case, Industrial HiVision requires that other hardware components are still installed.

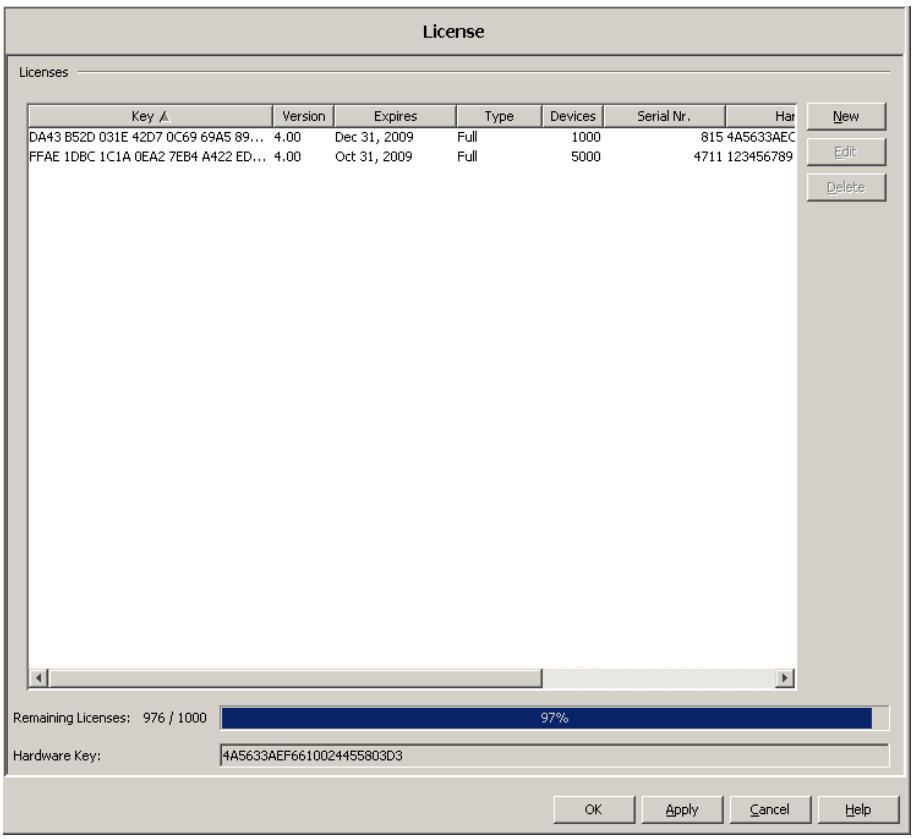

Figure 75: Configuration:Preferences:License

Leased licenses

When you have a hierarchical network structure and have leased licenses to subdomains, the bottom part of the license dialog contains a table for displaying the leased licenses.

This table contains 3 columns:

– "Name of the subdomains"
– "IP address"
– "Leased licenses"

- Display:Language
  This dialog gives you the option to choose the language of the graphical user interface.
  Default setting: System language of your computer.

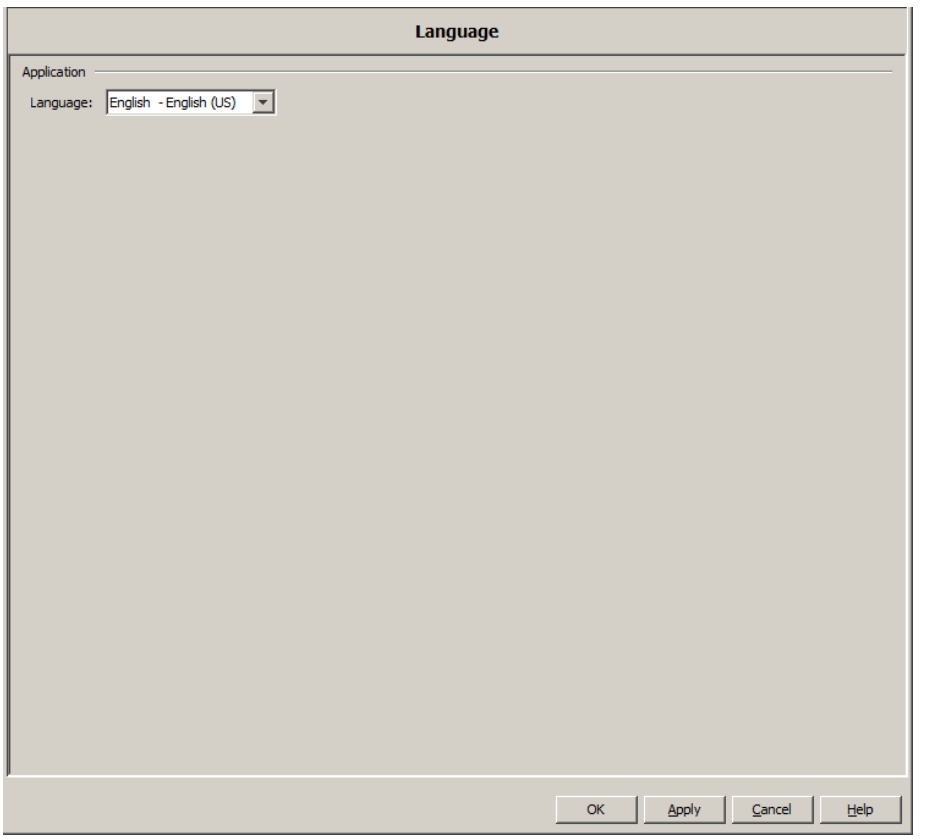

Figure 76: Configuration:Preferences:Display:Language

Display:Event

This dialog gives you the option of entering initial settings for the displaying of events.

Events in the event list(see figure 5):

- Maximum number of events you can display
  Use the drop-down menu to select the maximum number of events which Industrial HiVision should display in the event list. If more events occur than the number specified, then Industrial HiVision discards the older events (first in, first out).
  Default setting: 1000
  Value range: ≤50000
- Event display
  You use “Event Display” to display/hide the event list and the event summary in the main window.
  Default setting: display.
- Event log in file
  With “Event log in file” you can set Industrial HiVision to write every event that occurs in the event log file. Industrial HiVision writes the event log file in the language of the operating system.
  You will find the `HiVisionEvents0.log` event log file in the installation directory of Industrial HiVision under `\log\events`.
  If the `HiVisionEvents0.log` file exceeds a size of 1 MB, then Industrial HiVision renames the `HiVisionEvents0.log` file as `HiVisionEvents1.log`. Industrial HiVision writes new events in the new `HiVisionEvents0.log` file.
  If the size of the `HiVisionEvents0.log` file exceeds 1 MB again, Industrial HiVision renames
  – the `HiVisionEvents1.log` file as `HiVisionEvents2.log` and
  – the `HiVisionEvents0.log` file as `HiVisionEvents1.log`.
  etc.
  Industrial HiVision can write up to 1000 log files. If other events occur, Industrial HiVision overwrites the `HiVisionEvents999.log` file in accordance with the scheme described above.

- Logfile path
  As an alternative to the installation directory, this line gives you the option of choosing a path on which Industrial HiVision writes the event log file.

  Note: Delays or interruptions while writing to a network drive can block the Industrial HiVision service.

  Note: Delays and interruptions in the network can result in gaps in the content of the event log file.

  Note: As the service writes the log file, the local system account requires write permission for this directory.

- Status change caused by status propagation
  A status change for a property of a component/folder is an event which Industrial HiVision can display as an entry in the event list.
  Use the drop-down menu to choose between:
  – No event, if you only want to display the status changes on the lowest level as an entry. The status changes which are propagated upwards from the lowest level are hidden by Industrial HiVision as an event entry.
  – Info event, if you want Industrial HiVision to display the status changes as entries in the event list. The event entries caused by a propagated status change are assigned the type “Info” (see on page 68 “Number of events”).
  – Event severity from status, if you want Industrial HiVision to display the status changes as entries in the event list.
    The event entries caused by a propagated status change are assigned the type corresponding to the propagated status change on this level.
    Default setting: No event.
- Source
  For an event that relates to a device, Industrial HiVision adds to the event list the device name with the location that you entered in the "Location" device property.

Events on the Industrial HiVision website
(see on page 167 “Events on the website”)

- Days in event log
  On the event website, Industrial HiVision displays the events for the number of previous days that you enter here.
  Default setting: 7 days
- Automatic page refresh every [min.]
  Industrial HiVision refreshes the event website periodically. Here you enter the length of the period in minutes.
  Default setting: 5 minutes

“I'm alive” event:
(see on page 146 “Industrial HiVision “I'm alive” event”)

- Send “I'm alive” events
  When this is active, Industrial HiVision periodically sends the event defined as the “I'm alive” action.
  Default setting: inactive
- Send interval
  Default setting: 1 minute
- Send warning events since last “I'm alive” event
  When this is active, Industrial HiVision also sends, along with the “I'm alive” event, the events with a warning status that Industrial HiVision registered since it sent the last “I'm alive” event.
  Default setting: inactive

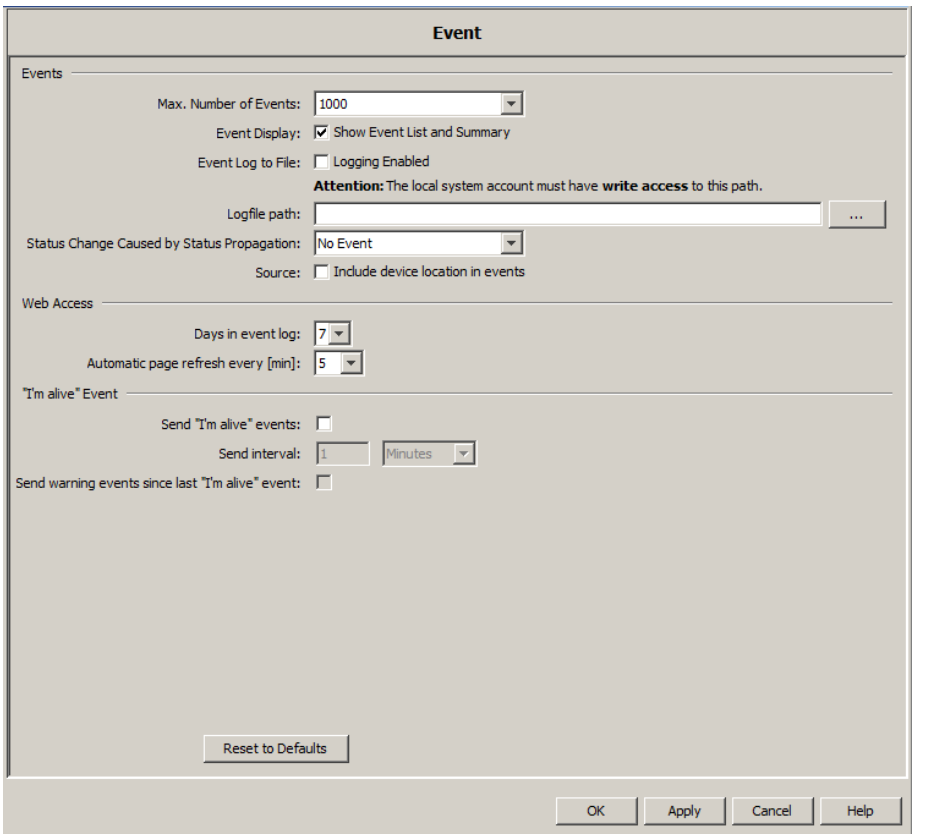

Figure 77: Configuration:Preferences:Display:Event

Display:Device

This dialog allows you to specify the displaying of the devices in the network, the connections between the devices and the labeling.

- Symbol
  Click on the relevant white
  radio button to select between:
  – Realistic: display the device as a product image
  – Abstract: display the function of the device using a symbol
  Default setting: Realistic

- Status Visualisation
  Here you specify how Industrial HiVision optically displays the status of the devices or a status change on the screen.
  Industrial HiVision provides the following display options:
  – Flash after status change
  – Acknowledged OK with Color
  – Status Symbol in Icon
  – Filled Background
  – Frame
  – Icon and Text Flash as well
  Default setting: colored background and frame activated.

- Font
  Enter the font size (in points) and the font type for the labeling of the devices and the connections between the devices. Default setting: font size = 13, font type = Arial.

- Device Appearance
  Specify the icon size and the maximum width (in pixels) with which Industrial HiVision displays the devices in the network on the screen.
  Default setting: icon size = 48, max. width = 150.

- Connection Appearance
  - Specify whether and how Industrial HiVision labels connections between the devices in the network on the screen.
    You use the “Labeling” drop-down menu to select when you want Industrial HiVision to label a connection with the status of the connection.
    Options: always, never, under mouse pointer. Default: never
    You use the “Labeling terminal points” drop-down menu to select when you want Industrial HiVision to label the terminal points of the connection.
    Options: always, never, under mouse pointer.
    Default: under mouse pointer.
  - The settings for “Line Thickness” provide you with a better overview of the connection speed and the connection status in the topology view.
    If the speed display is activated, when the speed is increasing Industrial HiVision increases the line thickness in 2-point steps at 10, 100, 1000, 10000 MBit/s. If the speed display is activated, Industrial HiVision displays the current connection setting in the bubble help.
    If the speed display is deactivated, Industrial HiVision displays the current speed setting even if you have activated the speed display in the connection properties dialog (see on page 206 “Connection”).
    If the status display is activated, when the status weighting increases Industrial HiVision increases the line thickness in 2-point steps.
    Default setting: status.
  - The "Minimum Line Thickness" is the minimum thickness applied by Industrial HiVision when increasing the line thickness depending on the speed.
    Possible: 1, 3, 5
    Default setting: 1
- Preview
  The preview frame shows you how your settings affect the display.

Display	Meaning
OK Acknowledged	Status has not changed and is OK
OK Status Changed	Status has changed and is OK
Warning Acknowledged	Status has not changed. There is a warning message

Table 34: Preview for displaying devices and connection lines

Display	Meaning
Warning Status Changed	Status has changed. There is a warning message
Error Acknowledged	Status has not changed. There is an error
Error Status Changed	Status has changed. An error has occurred

Table 34: Preview for displaying devices and connection lines

- If you click on “Default Settings”, the changes you made are reset to the default settings.

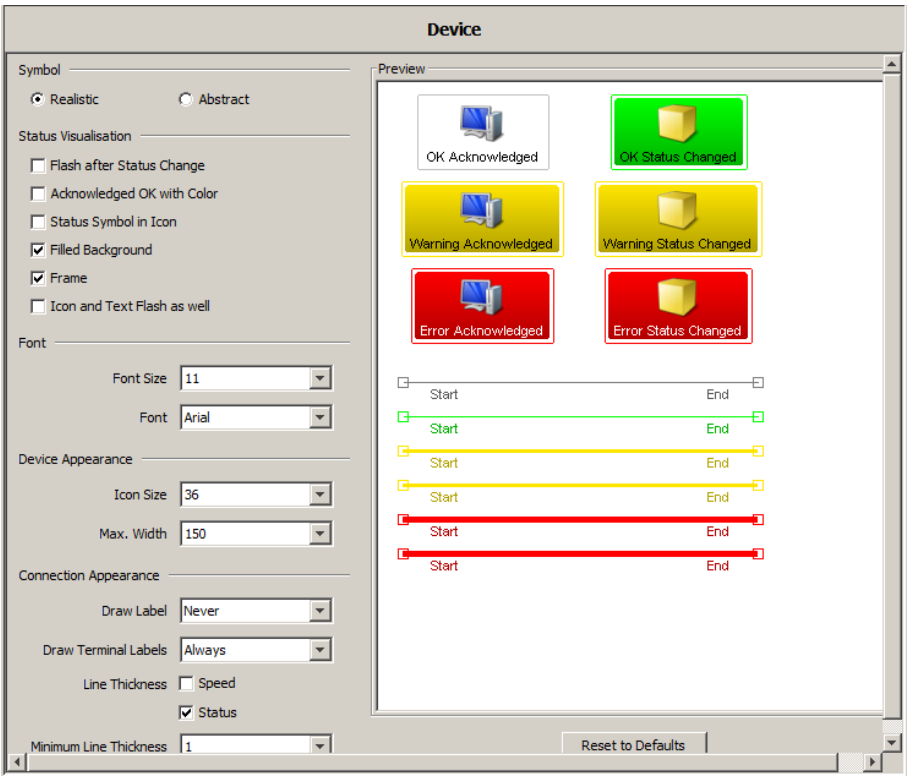

Figure 78: Configuration:Preferences:Display:Device

- Display:Appearance

  This dialog allows you to alter the text display and the tab page selection:

  - Text placement in the tool bar
    Default setting: text alongside symbol.
  - Font size
    Default setting: depends on the screen resolution.
  - Display password as stars (not readable) when dialogs are opened in which you enter or can see passwords.
    Default setting: passwords as stars.
  - Tab page selection:
    Depending on the context, Industrial HiVision provides you with various tab pages.
    – Select “Saved Settings” to display the tab page last opened in this view when you open the view.
    – Choose “Standard Settings” so that Industrial HiVision selects the tab page with the list display below the device level.
    – Choose “Do not use” so that when Industrial HiVision changes to another device or component detail, it keeps the current display type (list or topology display).

    Default setting: Saved Settings.

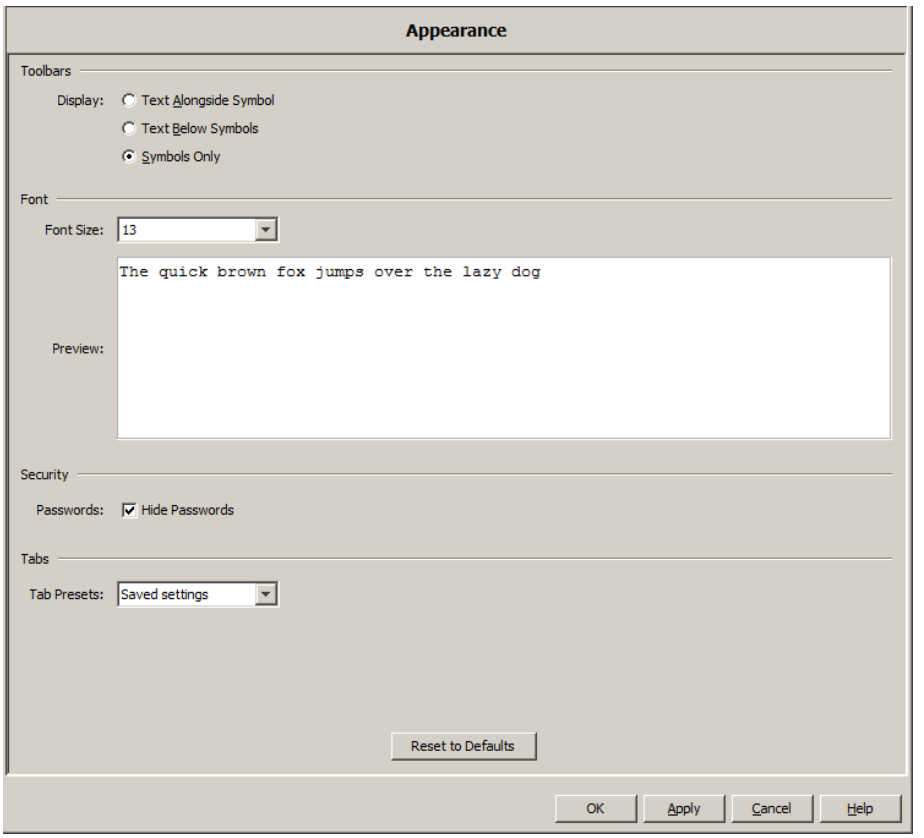

Figure 79: Configuration:Preferences:Display:Appearance

Display:Status Colors

This dialog allows you to assign a color to every status. You can select the colors for the foreground and the background.

Status	Foreground	Background
OK	Black	Green
Warning	Black	Yellow
Error	White	Red
Not Available	Black	Gray
No Status	Black	White

Table 35: Default setting of the status colors

- If you click on “Reset to Defaults”, the changes you made are reset to the default settings.

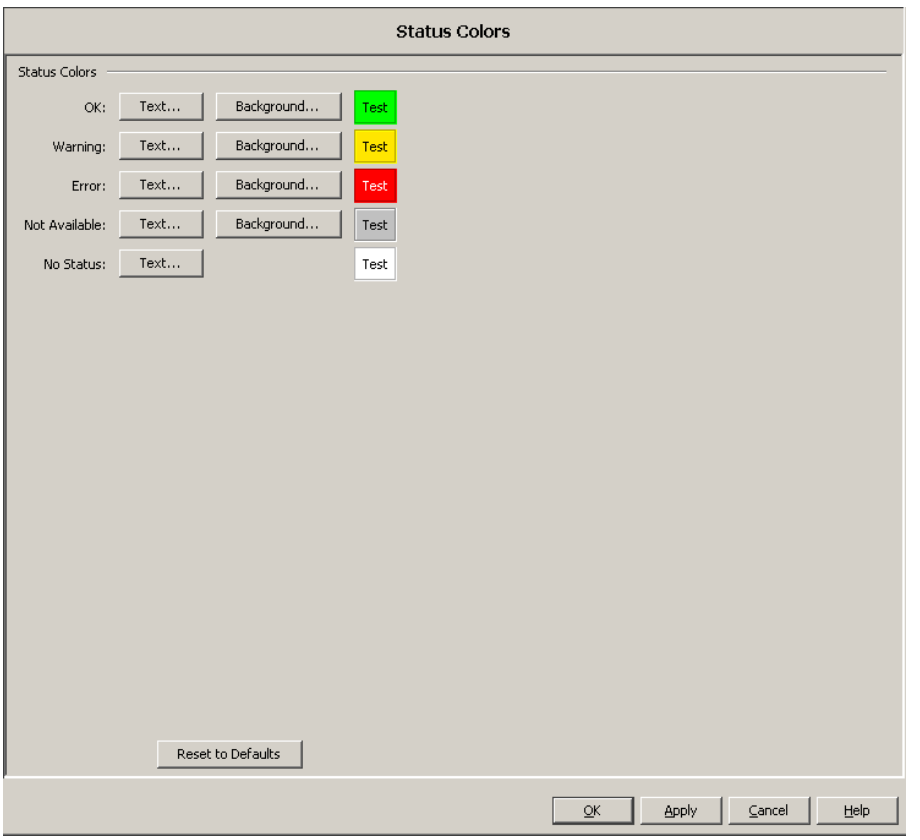

Figure 80: Configuration:Preferences:Display:Status Colors

Display: Device Icon

This dialog enables you to assign defined default icons to different device types when devices are detected.

☐ Click on “New” to define a new default icon assignment or select a row in the table and click on “Edit” to edit this entry.

Industrial HiVision provides the following methods for differentiating the device types:

- System Object Identifier (SysOID)

Method	SysOID
SysOID	Manufacturer ID
Icon	Click on “?” to search your file system for an image file for the icon.

- EtherNet/IP
  Along with entering the parameters in the dialog, Industrial HiVision allows you to load the parameters from an EDS file (electronic data sheet).

Method	EtherNet/IP
Vendor Code	Manufacturer ID in the device description based on EtherNet/IP.
Product Type	Product type in the device description based on EtherNet/IP. An “*” in this field means “all product types”.
Product Code	Product code in the device description based on EtherNet/IP. An “*” in this field means “all products”.
Icon	Click on “?” to search your file system for an image file for the icon.

- Modbus/TCP

Method	Modbus/TCP
VendorName	Manufacturer ID in the device description based on Modbus/TCP.
Product Code	Product code in the device description based on Modbus/TCP. An “*” in this field means “all products”.
Icon	Click on “?” to search your file system for an image file for the icon.

- MAC address

Method	MAC Address
MAC Address	The part of the MAC addresses of devices to which you want to assign a device icon using the MAC address. For example, the first 24 bits of the MAC address of Hirschmann addresses are 00:80:63.

Number of Bits	The number of bits of the MAC addresses that you want to use for the icon assignment. The first 24 bits of a MAC address indicate the manufacturer of a device.
Icon	Click on “?” to search your file system for an image file for the icon.

In the table, you can:
– add new entries
– edit existing entries
– delete existing entries
– duplicate existing entries
– add new EtherNet/IP entries by loading EDS files. Industrial HiVision loads the EDS files selected together with the corresponding icon files. Industrial HiVision also finds icons in manufacturer-specific subfolders.

In the device detection, and for selected devices with `Edit:Set Default Icon`, Industrial HiVision checks the device type. Industrial HiVision assigns the device the first icon that Industrial HiVision finds in the table.
You can use “Up” and “Down” to change the sequence of the entries in the table.
The icons already defined in Industrial HiVision for Hirschmann devices are hidden at the top of the table. Thus Industrial HiVision assigns the correct icons to the Hirschmann devices.

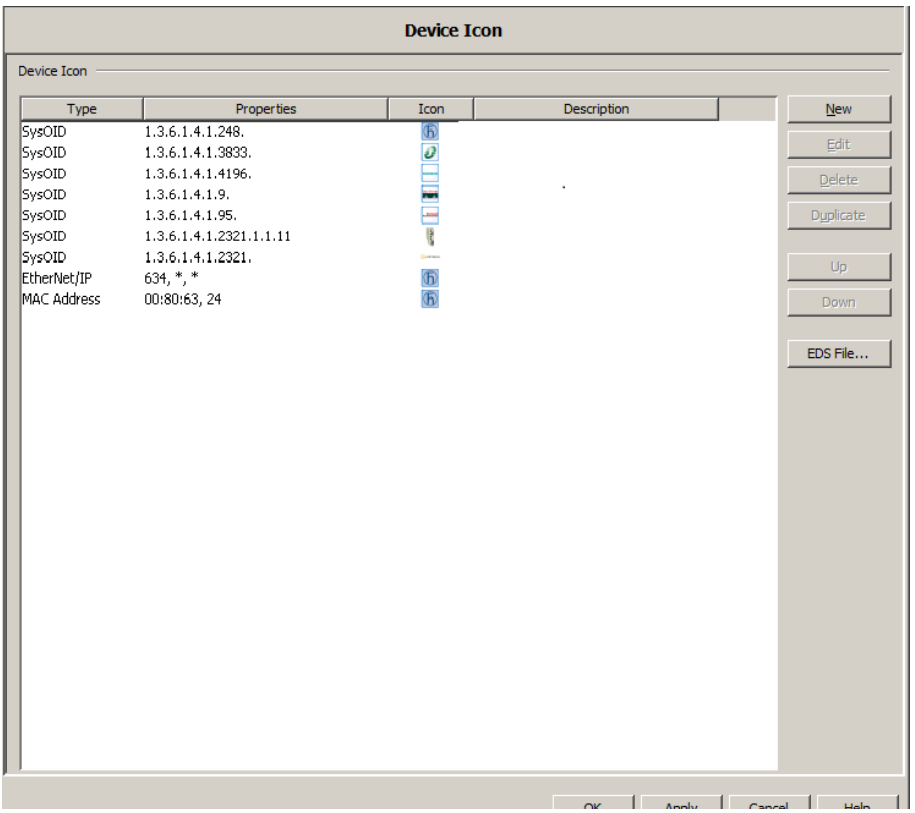

Figure 81: Assignment table for device icons

- Advanced:Program Access

  Password for Edit Mode
  In the Edit Mode, you have the option of changing the settings in your network display.
  To allow other people to observe your network and still be certain that your settings are not changed, you can hinder the access to the edit mode with a password. If no password is entered, you can change to the edit mode without being asked for a password.

  Expire Time for Edit Mode
  With the Expire Time you define how long Industrial HiVision stays in the Edit Mode after you have made an entry. When this time has expired, Industrial HiVision switches to the “Run Mode”. Possible settings: 5 to 60 minutes or “Permanent“.

  Web Access
  “Password” allows you to restrain access to the Web server of Industrial HiVision using a password.
  “Events” allows you to also generate an event for every successful Web access, in addition to unauthorized access attempts.

  “Properties: Allow Renaming” allows you to rename a property of component details, e.g. to change “In Load” to “Volume of Incoming Data”.

  “Auto Reload” allows you to get Industrial HiVision to
  – query the current values for a property dialog when it opens this dialog and/or
  – query the current values of the content of the detail frame when it opens this frame.

  “if Value Older than” allows you to make the automatic querying of the values to be displayed dependent on the age of these values.
  Include device passwords in documentation
  “Device Documentation” allows you create the device documentation with a readable or a hidden password.
  Default setting: password hidden.

	☐	☑
SNMP V1	******,******	public, private
SNMP V3	admin, MD5: ******, DES: ******	admin, MD5: private, DES: private

Table 36: Example device documentation with a readable and a hidden password.

“Hide Passwords” allows you to display passwords unreadably, as stars. In this case, the password must be repeated.
When you open this dialog, the setting for this field depends on the setting in the “Display:Appearance” dialog.

Note: If you have forgotten your password, then quit Industrial HiVision. Logon to Windows as an administrator or to Linux as a root and start Industrial HiVision again. Restarting Industrial HiVision as an administrator or as a root enables you to make a new entry without the password being queried first.

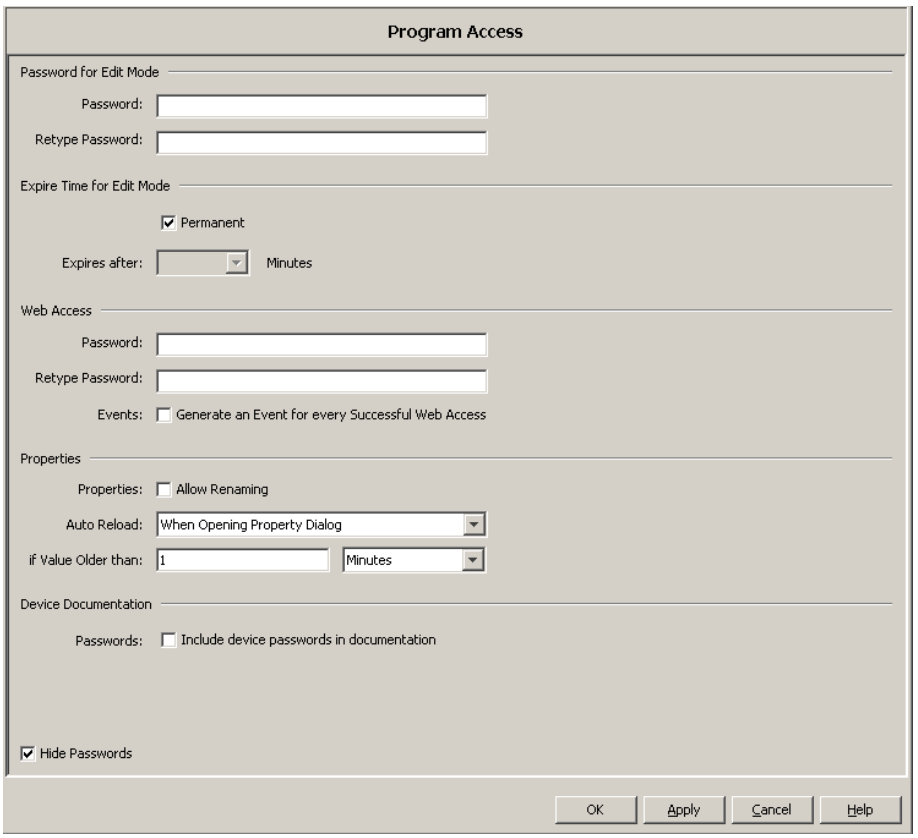

Figure 82: Configuration:Preferences:Advanced:Program Access

Advanced:SNMP configuration

Industrial HiVision supports you in communicating with SNMP devices by means of automated password usage.

SNMP configuration entries
When setting up the communication with an SNMP device, Industrial HiVision tries to get access using known passwords and user names.
For an attempt with an incorrect password, Industrial HiVision gets an authentication trap from the relevant device.
For an attempt with a correct password, Industrial HiVision gets a reply to an SNMP query and enters the correct password and user name into the upper table of this dialog.

SNMP Guess List
When setting up the communication with an unknown SNMP device, Industrial HiVision attempts to authenticate itself with the login data from the SNMP guess list.
You use “New” to create a new entry in the table.
A selected table entry you
– change using “Edit”
– delete using “Delete”
– duplicate using “Duplicate”

“Hide Passwords”
allows you to display passwords unreadable, as stars.
When you open this dialog, the setting for this field depends on the setting in the dialog `Display:Appearance`.

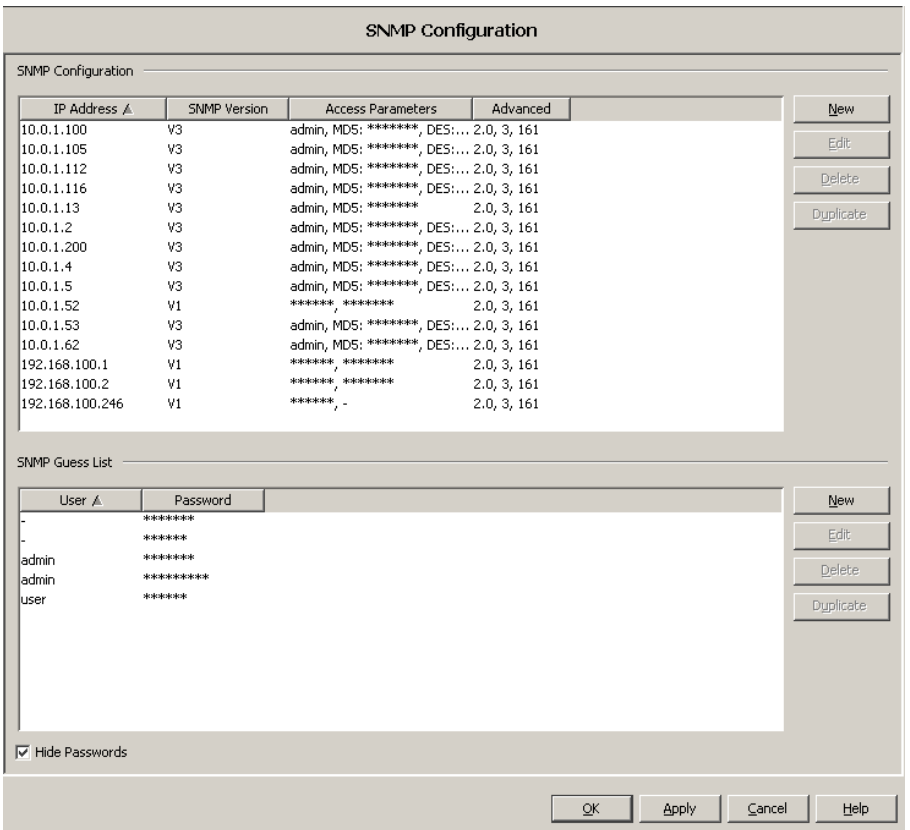

Figure 83: Configuration:Preferences:Advanced:SNMP Configuration

Along with the automatic password usage, Industrial HiVision also gives you the option of manually entering the SNMP configuration for individual SNMP devices.

- ☐ For the SNMP configuration, click on “New” to open the input dialog.
- ☐ Enter the IP address of the device for which you want to enter the SNMP access configuration.
- ☐ Select the SNMP version that supports the device.
- ☐ Depending on the SNMP version selected, you enter the required access information:

SNMP version	Designation	Meaning
V1	Read Password	Password with which you can get read access to the device
V1	Write Password	Password with which you can get write/read access to the device.
V3 (easy)	Username	User name with which you can access the device.
V3 (easy)	Password	Password belonging to the user name.
V3 (complete)	Username	User name with which you can access the device.

Table 37: SNMP configuration entries

SNMP version	Designation	Meaning
V3 (complete)	Authentication	SHA, MD5 protocol for authentification of the message
V3 (complete)	Password	Password for the authentification
V3 (complete)	Encryption	DES, symmetrical encryption algorithm
V3 (complete)	Password	Password for the encryption

Table 37: SNMP configuration entries

Under “Advanced” you will find SNMP-specific exchange parameters. The default settings are sufficient for many requirements.

- ☐ With “Timeout” you specify how long Industrial HiVision should wait for the response to an SNMP query. If there is no response, then Industrial HiVision repeats the SNMP query.
- ☐ With “Retries” you specify how often Industrial HiVision should repeat the SNMP query if there is no response.
  For each repetition, Industrial HiVision doubles the timeout time, Industrial HiVision sends a new query.
- ☐ With “Port No.” you select the protocol port of the device to which Industrial HiVision sends an SNMP query.
- ☐ “Hide Passwords” allows you to display passwords for this table entry unreadable, as stars.

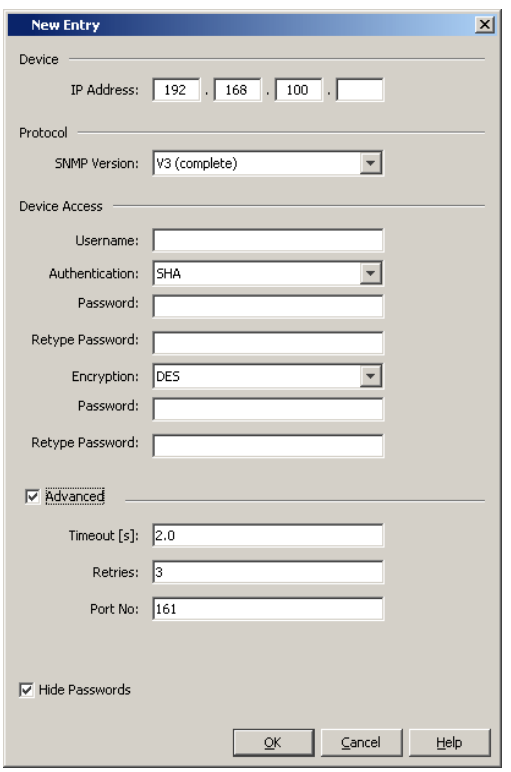

Figure 84: Configuration:Preferences:Advanced:SNMP Configuration:New

- Advanced:Management Station

  In this dialog you enter the default setting for IP parameters. Industrial HiVision enters these default settings when you open dialogs where IP parameter entries are expected,
  e.g. IP configuration of devices which Industrial HiVision detected using HiDiscovery.

  IP address prefix:
  Here Industrial HiVision enters the prefix of its own IP address.

  Default network mask:
  Here Industrial HiVision enters the network mask of its own IP address.

  Default gateway:
  Here Industrial HiVision enters the prefix of the gateway which your network management station also uses.

  IP address management station:
  If your network management station has a number of IP addresses, then Industrial HiVision enters these IP addresses in the drop-down menu.
  ☐ Select the address you want to use as a trap destination address.

  Network card management station:
  If your network management station has a number of network cards, then Industrial HiVision enters these cards in the drop-down menu.
  ☐ Select the card which you want the HiDiscovery protocol to access.

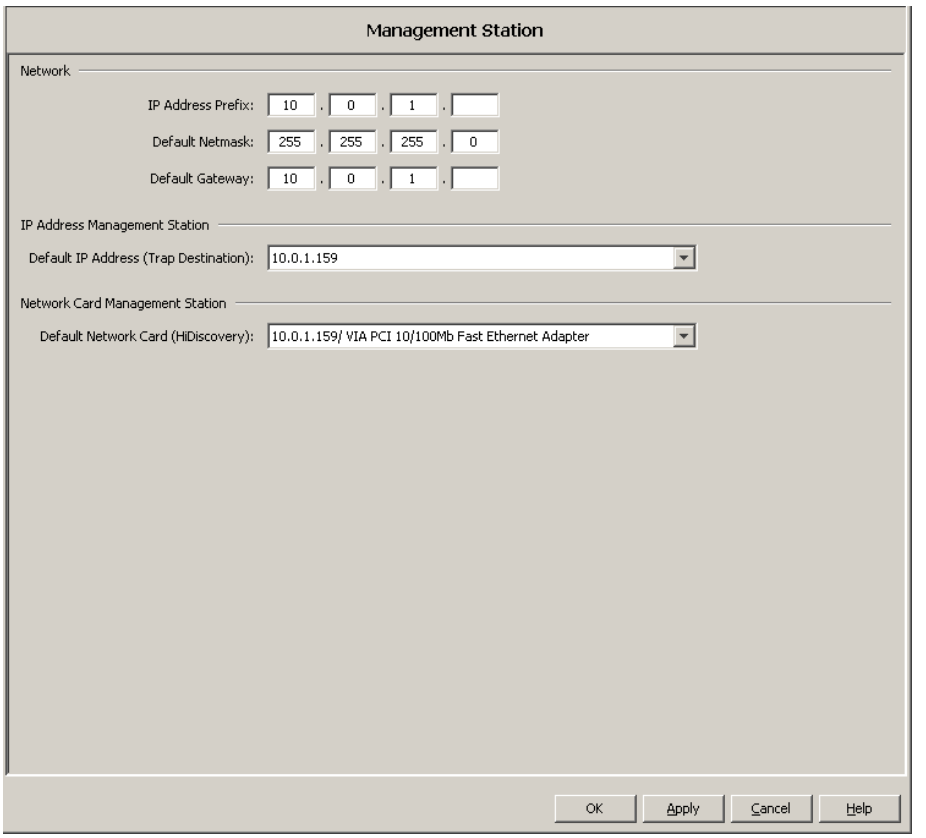

Figure 85: Configuration:Preferences:Advanced:Management Station

- Advanced:OPC-SNMP

  The OPC server of Industrial HiVision allows you to use an OPC client query to determine SNMP values for devices.
  In the Advanced:OPC-SNMP dialog you enter the SNMP attributes whose values you want to determine. In the table, you can
  – add new entries
  – edit existing entries
  – delete existing entries
  – duplicate existing entries

  In the “Edit” and “New” dialogs, you can enter the SNMP attributes directly, or select them from an MIB.
  To select an SNMP attribute from an MIB, you click on “Select MIB attributes ...” to open the “MIB Viewer” dialog and select an SNMP attribute. You can use the “MIB Manager” to load additional MIBs.
  Give the entry a brief, meaningful name, as this will be used later on for the query in the OPC tag.
  If you use an Object Identifier (OID) in the OPC tag, you enter the complete OID, including any existing instance.

  The OPC tag for an OPC client query is, for example:
  `Industrial_HiVision.snmp.get.10:0:1:159,161,ifAdminState`

  Whereby:
  `10:0:1:159` is the IP address of the device, with a colon instead of a dot as a separator
  `161` is the SNMP port
  `ifAdminState` is the name of the SNMP attribute, as configured in the settings

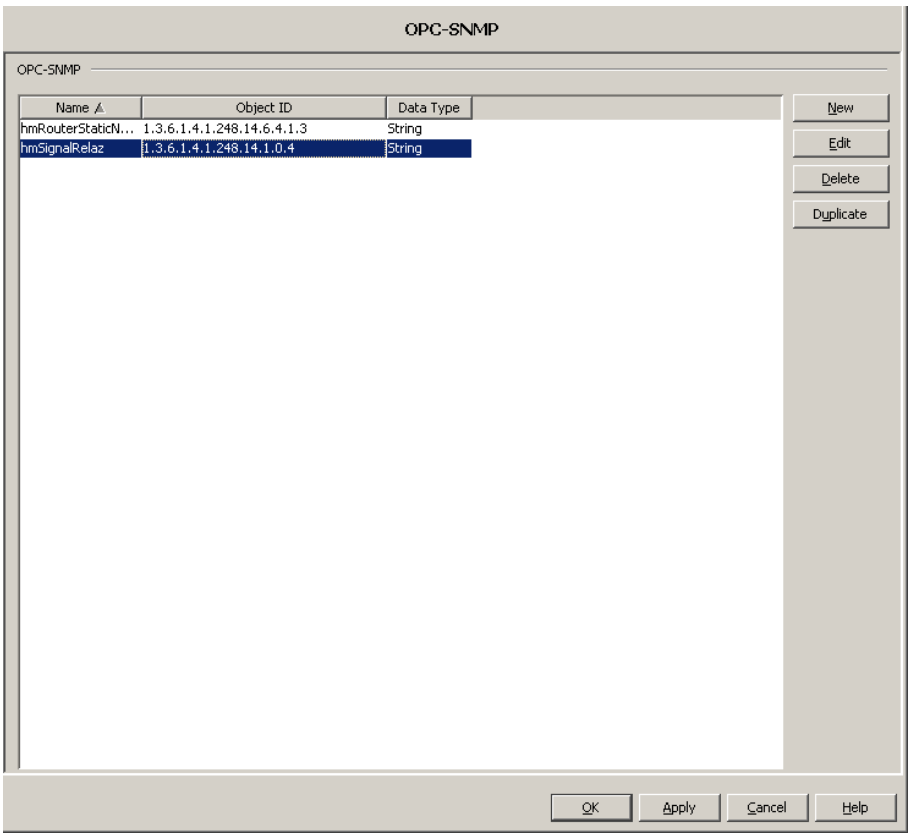

Figure 86: Configuration:Preferences:Advanced:OPC-SNMP

- Advanced:Services
  The Industrial HiVision program starts its own service. Your PC operating system displays this Industrial HiVision service for you.
  The Industrial HiVision service is made up of the following services:
  - Industrial HiVision Ping Server
    This service performs the network scan (see on page 226 “Basics:discover devices”). The scan rate limits the number of pings/minute.
  - Industrial HiVision Web Server
    This service allows you to access your network management server via a Web browser using another computer. The address of the Web server is:
    protocol://IP address of the network management station:port number, e.g.
    http://10.0.1.159:11155.
    When setting up a secure connection using https, Industrial HiVision uses a Hirschmann certificate that classifies your browser as invalid. If you want to use this service, then you trust this connection, add an exception to your browser and save it.
  - Industrial HiVision Proxy Server
    “Remote access port” displays the port via which Industrial HiVision interfaces running on other computers can access the local Industrial HiVision service.
    With “Remote access” you allow Industrial HiVision interfaces running on other computers to have access to the local Industrial HiVision service.
    If you allow “Remote access”, then the local interface, exactly like the interface of the external computer, is connected via the network connection instead of via internal IP address 127.0.0.1. A result of this is that the internal interface also loses the connection to the service if the network connection is interrupted.
  - Industrial HiVision OPC Server
    With “Activate” = “true” you activate the Industrial HiVision OPC server (see on page 161 “Structure of the transfer data for OPC”).
    With “Global Write Enable” you allow object values to be written in Industrial HiVision via an OPC write command (see on page 159 “Link to process visualization system”).
  - Global Settings
    These settings allow you to adjust Industrial HiVision to the ping response behavior of your devices.

Ping Timeout [s]: If the ICMP device responds to a ping request within this period, then Industrial HiVision classifies the device as still present, if it responded to the last request.
Max. Ping Response [ms]: If the ICMP device responds to a ping request within this period, then Industrial HiVision detects that the device is present again, if it did not respond to the last request.
Lower values improve the performance of Industrial HiVision. If the values are too low, the ping response may come too late and Industrial HiVision displays the device as “unreachable”. With large subnetworks that can show short term interrupts, you should use smaller values.
Larger values can cause status changes to be displayed late in Industrial HiVision.
Simultaneously Discovered Devices: This setting allows you to modify the network load during the device discovery. Here you enter the number of devices that Industrial HiVision simultaneously queries during the device discovery.

- Reliability Polling Intervals:
  The value queried was recorded a longer time ago than the maximum number of polling intervals x the polling interval [s] of the property query (see on page 200 “Properties of a component detail”).
  In the report, Industrial HiVision displays older values in brackets.
- Replication Lock for Reporting Events [s]:
  The retry block helps you to reduce how often repeating events are recorded in the event list.
  Industrial HiVision records reporting events of the “warning” and “error” types if their last recording was further back than the duration of the retry block.
  Industrial HiVision considers a change after the program is restarted.
- SNMP Guessing Packet Rate [pkt/s]
  With this setting you define up to how many guess packets per second Industrial HiVision sends to an unknown SNMP device to discover the login data.
- Subdomain interface enabled
  If you activate the subdomain interface, you allow another network management station to access the local application Industrial HiVision as a superdomain.
- Subdomain password
  This dialog gives you the option to enter the password for access to the subdomain interface.

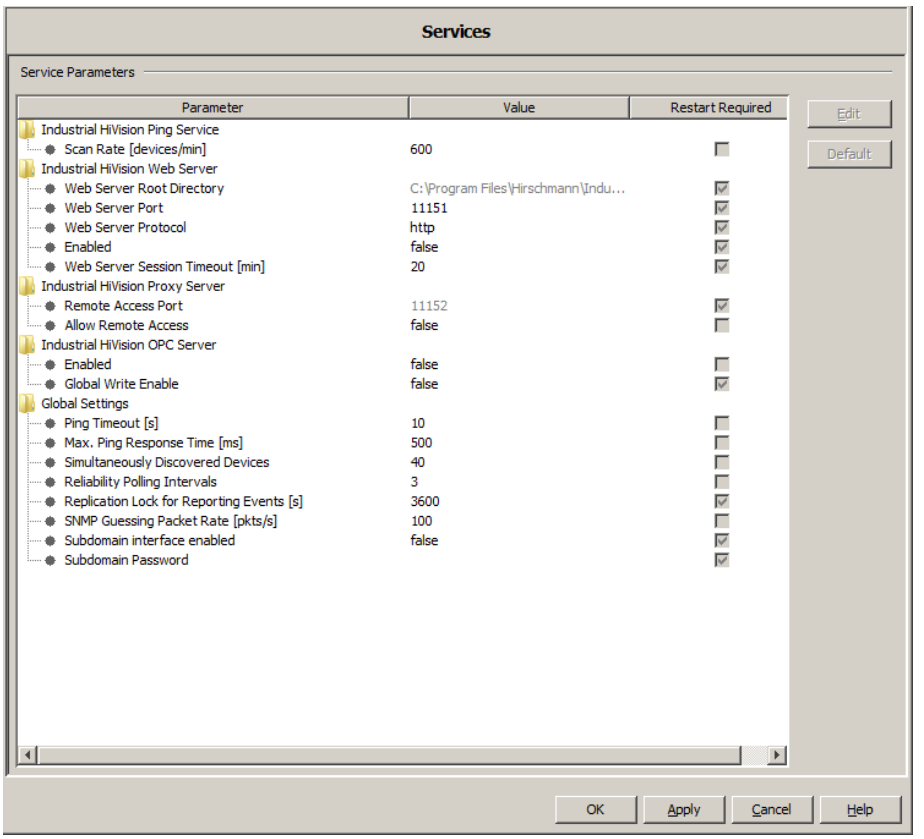

Figure 87: Configuration:Preferences:Advanced:Services

Advanced:External Applications

Industrial HiVision uses external auxiliary programs for the functions

- Telnet
- SMS
- Ping
- PDF Viewer,
- E-mail
- Web-based management.

This dialog enables you to use programs other than those specified and to enter the e-mail configuration.
On Linux systems, Industrial HiVision uses Mozilla Firefox as the standard browser. If you want to use a different browser, enter the path to your browser in the “Browser” line.

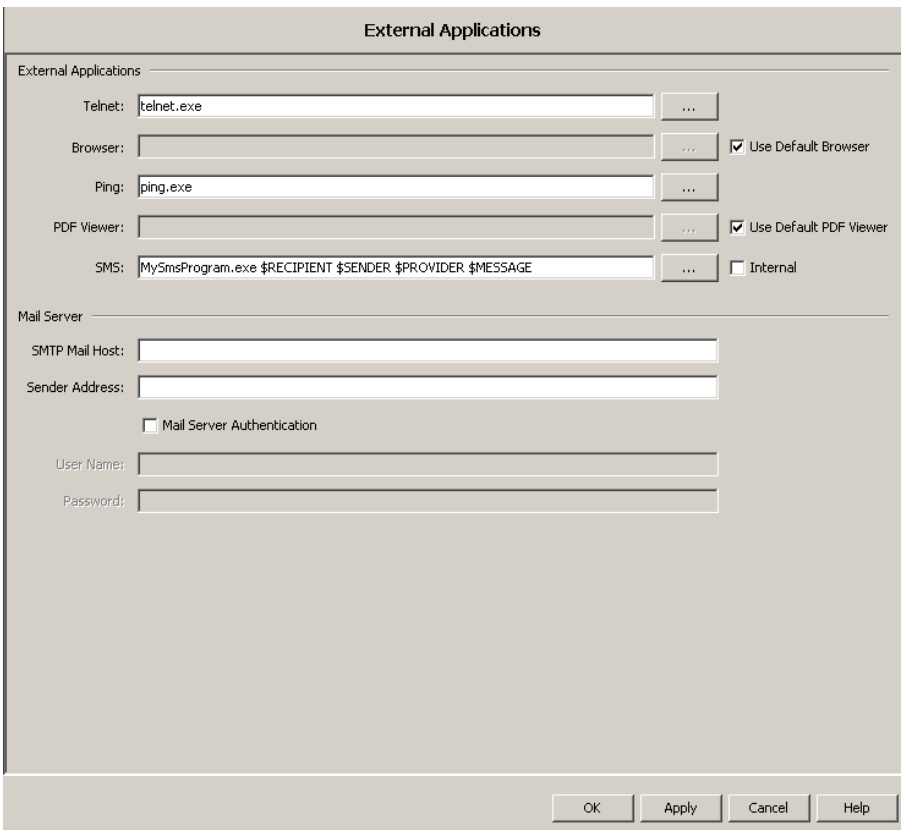

Figure 88: Configuration:Preferences:Advanced:Helper Applications

Advanced:Device/Port Names

With this dialog you manipulate the names of the devices and ports in the respective Properties dialog and thus their representation in the user interface.
You first select whether Industrial HiVision displays the devices and ports with their preset names, or whether Industrial HiVision determines the names from the device.

Determining device names

Query DNS	when it detects a new device, Industrial HiVision determines the device name from the Domain Name Server.
Query now	For the devices already detected, Industrial HiVision determines the device name from the Domain Name Server. This procedure can take some time.
Use name from host file	For the devices already detected, Industrial HiVision reads the device name from the hosts file. The hosts file is the `hosts.txt` text file in the `config` subdirectory of the installation directory. The hosts file contains a row for each device with the IP address and the name, separated by a tab.
Read in now	For the devices already detected, Industrial HiVision reads the device name from the hosts file.

Industrial HiVision writes the host name and the DNS name into the MAC/IP address assignment table (see on page 283 “MAC/IP List”).

Set Device Name
This frame enables you to choose which name Industrial HiVision puts into the name field of the device property for the device. Industrial HiVision displays this name in the folder frame and in the detail display.
Possible parameters are:
– DNS name
– Host name
– System name
– Location and
– Contact person

By selecting it and clicking on the arrow buttons, you move the potential names between the “Possible Parameters” and “Used Parameters” frames. Industrial HiVision takes the name at the top in the “Used Parameters” frame. If the relevant entry is empty for a device, Industrial HiVision takes the name in the next position. If Industrial HiVision does not find an entry for the device, then Industrial HiVision takes the management IP address of the device.

Port Names
“Set Port Name” allows you to take the port name entered in the device into the name field of the port properties, as long as port names are entered in the device. Industrial HiVision displays these names in the folder frame and in the detail display. If there is no setting here, Industrial HiVision displays the IP address for devices and the port number for ports.

Note: When it detects a device/port, Industrial HiVision takes the name selection that is set. If you subsequently change this selection, it becomes effective after you have reset the device/port name. To do this, you select the relevant devices and right-click on `Set Device and Port Names`.

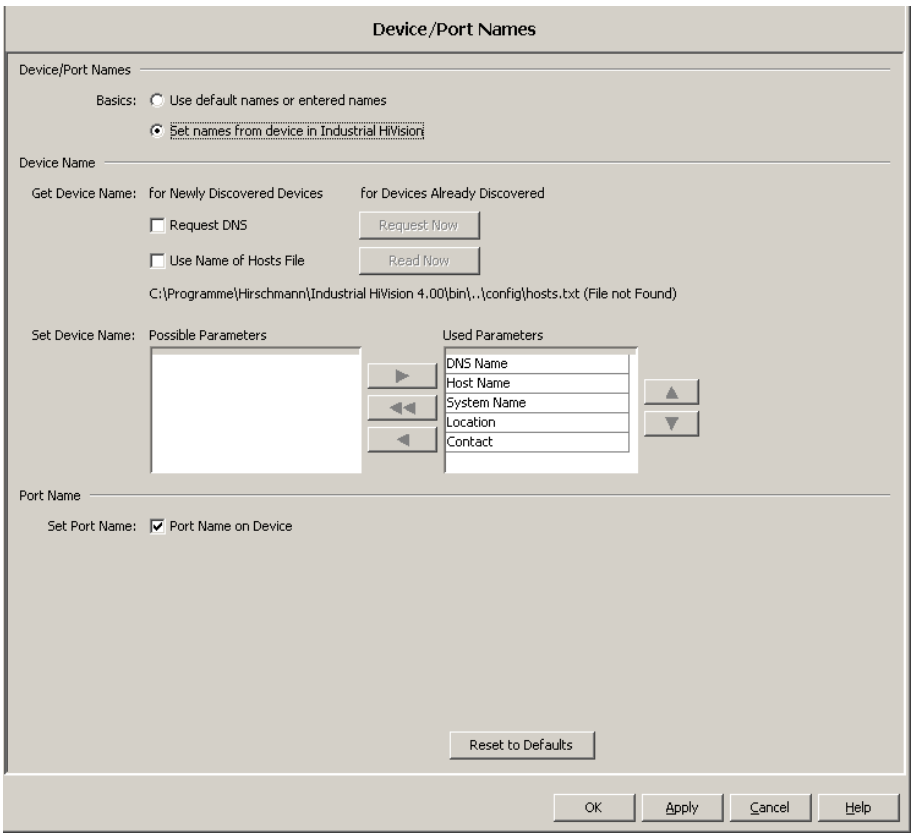

Figure 89: Assignment of device and port names

- Advanced:Load/Save
  This dialog allows you to enter the following parameters:
  – Enter the IP address of a tftp server available in the network
  – File name with path
  – URLs.
  Industrial HiVision automatically takes this over into the dialogs in which you perform file transfer actions, e.g. loading/saving configurations in the MultiConfig™ dialog.
  This spares you having to enter the URL and the file name multiple times when you call up the “MultiConfig™” dialog.

Placeholder	Meaning
$INSTALL	Installation folder of Industrial HiVision on the network management station.
$TFTP_SERVER	IP address of the tftp server that you entered in the `Configuration:Preferences:Advanced:Load/Save` dialog.
$IP_ADDRESS	IP address of the device from which Industrial HiVision reads the configuration, or onto which Industrial HiVision writes the configuration. Industrial HiVision applies the IP addresses from the table of the Object frame.
$CURRENT_DATE	Current date of the network management station.
$CURRENT_TIME	Current time of the network management station.
$EXTENSION	File name extension: `cfg` for binary file `cli` for script file `html` for HTML file

Table 38: Placeholders supported

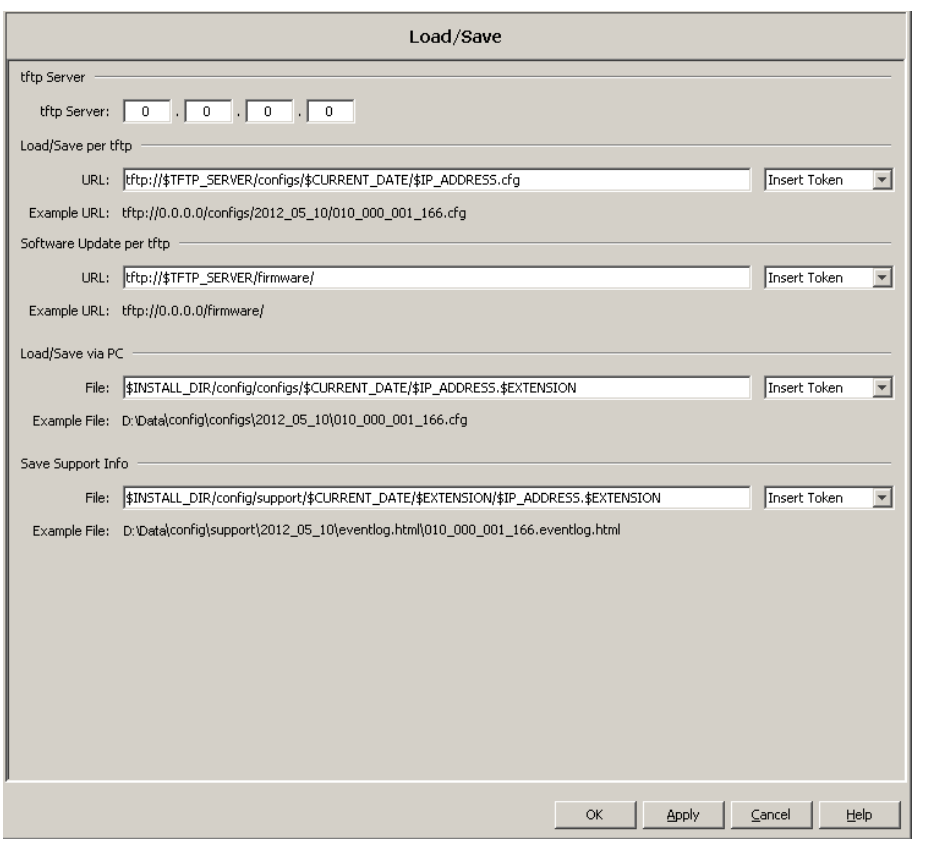

Figure 90: Configuration:Preferences:Advanced:Load/Save

- Advanced:1:1 NAT devices
  This dialog allows you to use Industrial HiVision to manage and monitor devices behind a 1:1 NAT router.
  For Industrial HiVision to be able to detect the devices behind the 1:1 NAT routers, you enter the MAC addresses of the ports (of the 1:1 NAT routers) that are connected to the network management station in this list.
  You will find the port MAC address in the properties dialog of the 1:1 NAT router, on the “MAC/IP Addresses” tab.

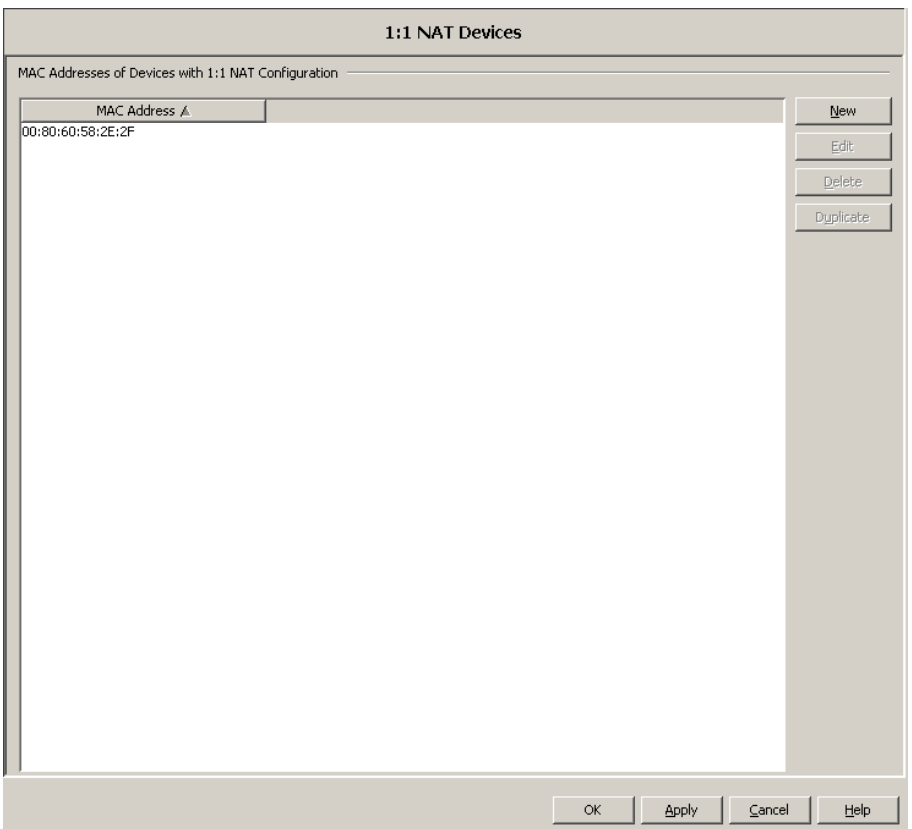

Figure 91: Configuration:Settings:Advanced:1:1 NAT devices

- Advanced:Mobile Devices
  When you send a HiMobile request to Industrial HiVision for the first time, Industrial HiVision registers your mobile device - see `Configuration:Preferences:Advanced:Mobile Devices`.
  In the "Push Notifications" column, you activate/deactivate the sending of push notifications to the registered device.
  Default setting: active

To delete a registered device, you select the row in the table and click on "Delete".
Industrial HiVision sends push notifications to the devices with an active entry in this table. To send push notifications, Industrial HiVision requires Internet access.
After a restart or an update of Industrial HiVision, if the entry for your mobile device is missing from the list, close HiMobile on your mobile device. To register the mobile device at Industrial HiVision, start HiMobile.
In the event actions, you define when Industrial HiVision sends which push notifications.
(see on page 231 “Basics:Event Actions”)

8.4.6 Status configuration

With this dialog you can perform the status configuration of a component detail device overlapping for the devices in a device class, or for the entire devices.

The dialog shows a table of the device classes and their possible properties.

☐ Select “Aggregate Entries” to aggregate the properties of all device classes, or deselect “Aggregate Entries“ to display the property per device class in the table.

☐ Double-click on a row in the table.

Industrial HiVision opens the corresponding status configuration dialog.

☐ Assign the desired status to the values and click “OK”.

☐ Select “Overwrite all Properties” to also change the properties of those devices that you configured individually before.

Industrial HiVision accepts this status configuration for the devices in this class.

This function is useful, for example, if you require the highest availability within a HIPER Ring. Then the default setting “Warning” is too low for a loss of redundancy functionality. In the status configuration dialog, you can use a single step to set the status for “No redundancy” to “Error” for the devices in a class.

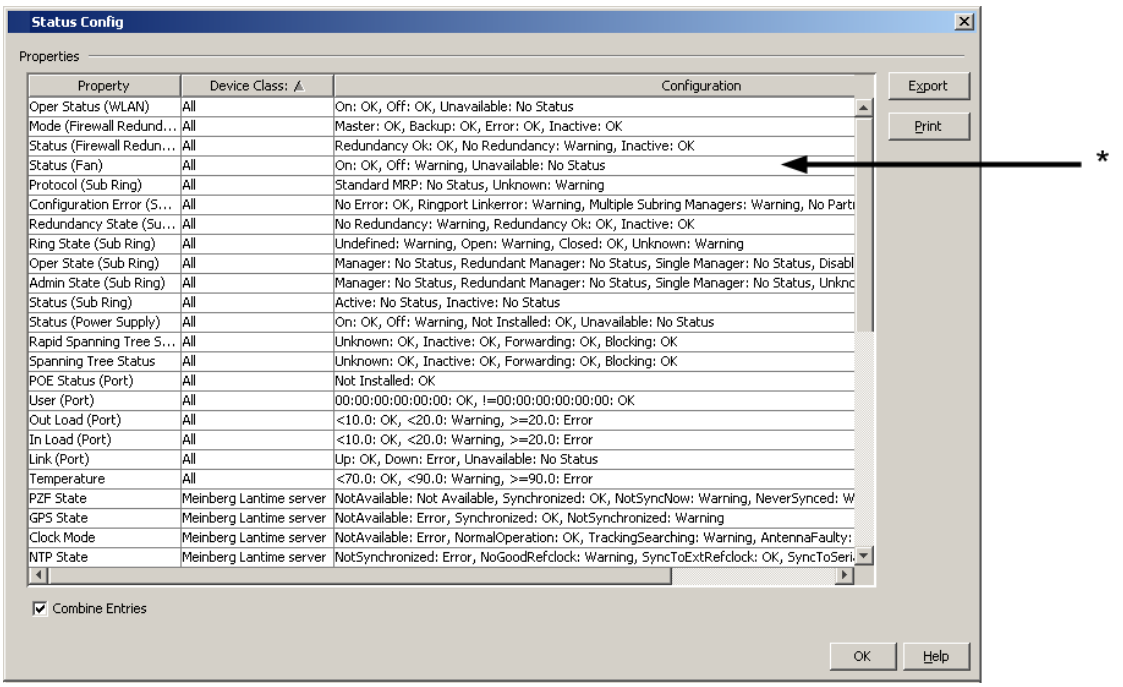

Figure 92: Status configuration
** Double-click on a row*

8.4.7 Scan Ranges

This dialog allows you to enter the scan range for a selected folder.

☐ After selecting a folder in the folder frame, or when the detail display is active, you select `Configuration:Scan Ranges` or right-click on `Scan Ranges` in the selection menu.

☐ Click on “New” to enter an IP address range. Entering the IP address range consists of
- the first IP address of the query range
- the last IP address of the query range
- the related network mask
- the activation/deactivation of this range for the query and
- the name you want to give to the range.

Industrial HiVision has already entered the selected folder or the active detail display as the target folder.

The table shows the IP address ranges already created.

☐ Select a row in the table and click on “Edit” to edit this IP address range.

☐ Select a row in the table and click “Delete” to delete this row from the table.

☐ Select a row in the table and click on “Duplicate” to duplicate this IP address range so that you can then modify the copy.

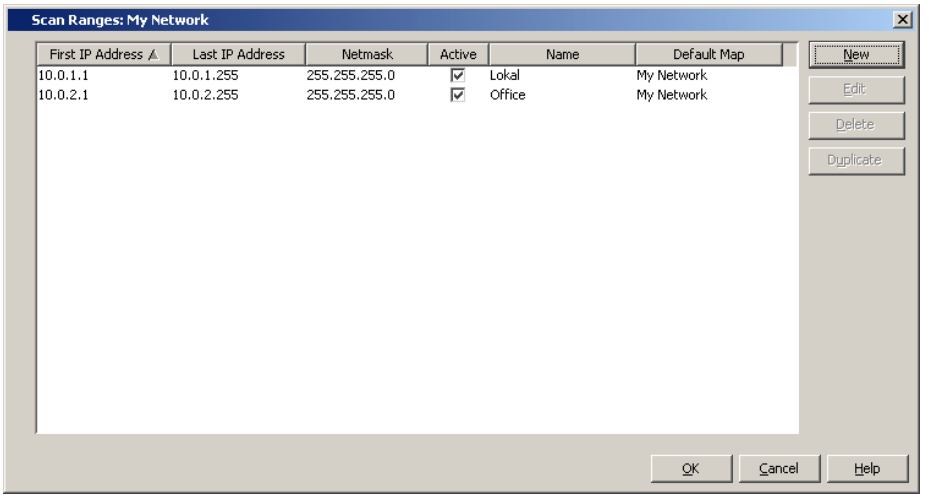

Figure 93: Scan ranges for a folder

Note: Keep in mind that the network masks in this dialog correspond with the network masks within your network, so that the detection executes properly. If the network mask within your network is bigger than the network mask of a scan range, Industrial HiVision skips the highest IP address within the network mask of the scan range during the scan network, because this IP address is a broadcast address.
If the network mask within your network is smaller than the network mask of a scan range, Industrial HiVision scans the highest IP address within the network mask of the network. Because this IP address is a broadcast address, all the devices reply and Industrial HiVision recognizes a device that does not exist.

8.4.8 User defined properties

This dialog allows you to enhance and monitor the properties of any SNMP-capable devices in Industrial HiVision (see on page 151 “Description of user-defined properties”).

☐ In the menu bar, choose `Configuration:User defined Properties` to open the “User defined Properties” dialog.

You can edit, delete or duplicate a selected user-defined property. When you select a user-defined property, “Delete” remains grayed-out if this property is assigned to a higher-level property.

Creating a new user-defined property

You will find an application example in the chapter “Setting up the network monitoring” (see on page 151 “Application example for user-defined properties”).

Name	Meaning
Name	A freely-selectable, unique name for this property starting with “UserDef_”, e.g. “UserDef_ICMP-Message”.
Identifier	A freely-selectable name that Industrial HiVision uses for the display in the user interface.
Symbol	A pixel file is selected that Industrial HiVision displays as a symbol for the property in the user interface.
Higher-level property	The higher-level property of the new property, e.g. the property “Speed” belongs to the higher-level property “Port”.
MIB variable/OID	MIB variable/OID (object identification) that you can select by clicking on the three dots in the MIB browser.
Instance	Assignment of the MIB variants to a device detail, e.g. “0” for the time. Alternatively, Industrial HiVision determines the type itself, e.g. “ModuleNumber”.
Type	Industrial HiVision selects the type (e.g. MAC address, integer) automatically if Industrial HiVision can determine the type.
Mapping	Assignment of a numerical value to a meaning, e.g. “0 = false” or “1 = true”. Industrial HiVision determines this value from the MIB.
Factor	Factor for converting a unit, e.g. Celsius to Fahrenheit.
Offset	Offset for converting a unit, e.g. Celsius to Fahrenheit.

Table 39: “New Entry” dialog for a user-defined property.

8.4.9 Multi-configuration

The multi-configuration function (MultiConfig™) allows you to perform configurations on the device and in Industrial HiVision for:

- one or more devices
- one or more device properties, also device overlapping
- one or more device details, also device overlapping

You will find more information with application examples in chapter “Configuring the network”.

8.4.10 MAC/IP List

This dialog shows you a list of the IP addresses detected by Industrial HiVision and their related MAC addresses. The list contains:

Name	Meaning
MAC address	
IP address	
Network mask	
Host name	Host name from the /config/hosts.txt file in the installation directory if – the file exists, – there is an entry and – the determination of a device name is activated in the basic settings. Otherwise, the field remains empty.
DNS name	Name from the Domain Name Service
Port number	Port number of the log
Port	Device port
Network management	Industrial HiVision communicates with the management of the device by means of the IP address in this row.
User-generated	The device in this row was generated by the user. Industrial HiVision has not detected this device yet.
Router entry	The IP address in this row comes from the routing table of the device.

With “Export” you can save the complete list as a:

- PDF file
- HTML file
- CSV file (see on page 310 “CSV export”)

With “Print” you can print the complete list. Industrial HiVision creates a temporary PDF file of the content of the list and opens this PDF file in the PDF display program, e.g. Acrobat Reader, that is installed on your management station.

8.4.11 Refresh

"Refresh" enables you to have Industrial HiVision read values from properties of a previously selected device, folder or property itself. After Industrial HiVision has read in the values, Industrial HiVision refreshes the display.

- In Edit mode, when a device or folder within a device is updated Industrial HiVision reads in the existing properties within and below the respective device or folder.
  Thus, for example, you can make a module visible in Industrial HiVision after adding the module to the hardware.
- In Run mode, when a device or folder within a device is updated Industrial HiVision reads in only the existing properties within the respective device or folder.

When updating a property, Industrial HiVision reads in the values of the property.

8.4.12 IP Configuration

This dialog enables you to configure the IP parameters of a device detected by HiDiscovery without an IP address, or to change IP parameters already configured.

You open the dialog for the IP configuration by right-clicking on the device and selecting
`IP configuration`.

When you open the dialog, Industrial HiVision queries the device using the HiDiscovery protocol. If the query is successful, Industrial HiVision shows the parameters of the device and the “Signal” button. If the device does not respond to the HiDiscovery query, then Industrial HiVision queries the device via SNMP. If the SNMP query is successful, Industrial HiVision shows the parameters of the device.

- You click on “Signal” to switch on the flashing LEDs on the device for the identification of the device. Click on “Signal” again to switch the flashing off again.
  Prerequisites for this function:
  – The device has activated HiDiscovery.
  – You have chosen the network interface card for this network in the `Configuration:Preferences:Advanced:Management Station` dialog under “Default Network Interface Card (HiDiscovery):”.
- In the “Name” row, you can enter a name for the device.
- In the “IP address” row, you can assign a new IP address to the device.
- In the “Network Mask” row, you can assign a new network mask to the device.
- In the “Gateway” row, you can assign a new gateway IP address to the device.
- If you click once on “Default Values”, Industrial HiVision enters the default values from “Advanced:Management Station” on page 263 in the IP configuration rows.

If you click on “OK”, Industrial HiVision transfers the name and the IP configuration to the device.

Click on “Cancel” to close the dialog and keep the original entries.

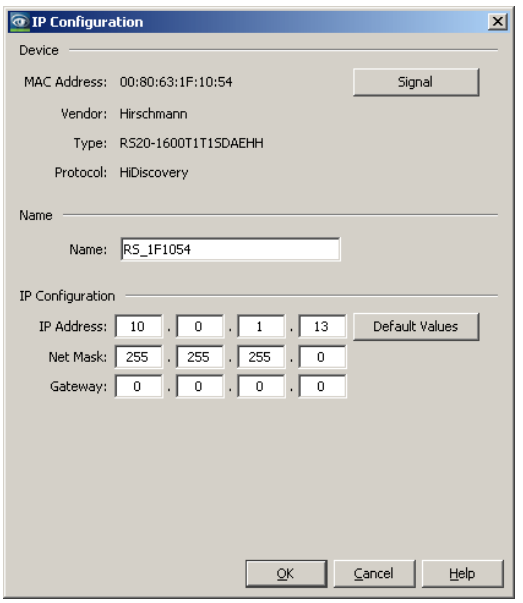

Figure 94: IP configuration of a device

8.4.13 Trap destination

To open the dialog for the trap destination, you right-click on the device and select `Trap Destination`.

When the dialog is opened, Industrial HiVision queries the trap settings of the device and displays whether the device sends traps to the IP address displayed.

- ☐ Select “Send Traps” if you want the device to send traps when defined events occur.
- ☐ In “to IP Address” you select the IP address of your network management station, on which you are operating Industrial HiVision.
- ☐ If you want this trap configuration to be saved on the device into the permanent memory select “Save Config on Device”.

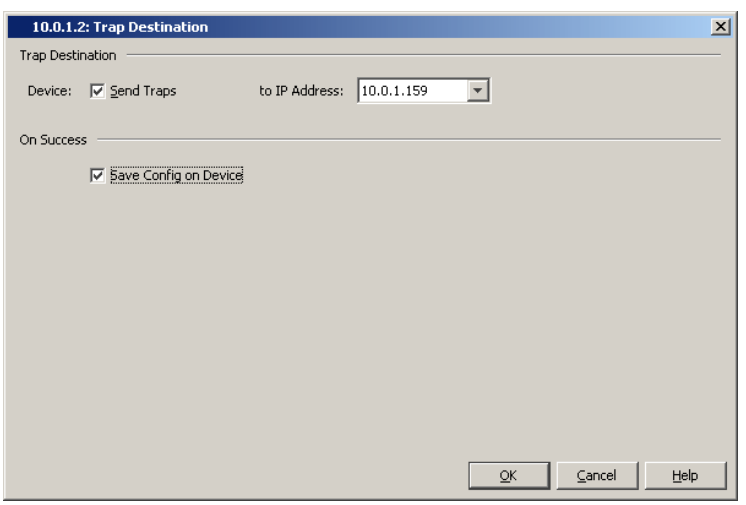

Figure 95: Trap destination of a device

Note: If your Windows firewall is activated and no Windows Trap Service is installed, the firewall can block you from receiving traps. However, if you still want to receive traps, you add the `/services/HiVisionKernelDb.exe` file in the Industrial HiVision installation directory to the firewall settings as an executable file.
The Windows Trap Service is installed if you find “SNMP Trap Connection: Trap Service” under `Help:Kernel Info` in Industrial HiVision .

You can configure the Windows firewall under `Start:Settings:Control Panel:Windows Firewall` on the Exceptions tab page. Click “Program” to select the `/services/HiVisionKernelDb.exe` file in the Industrial HiVision installation directory.

8.5 Tools

In the “Tools” menu you will find various tools enabling you to access devices in your network using Ping, graphical user interface, CLI, SNMP browser or the HiDiscovery Scan.

8.5.1 Web interface

The “Web interface” tool enables you to open, from the Industrial HiVision interface, the Web-based interface of the device selected in the window in the web browser.

8.5.2 Device configuration

The “Device Configuration” tool enables you to open, from the Industrial HiVision the Web-based interface of the device selected in the window, as a Java application. Here, Industrial HiVision uses the login name and the password from the SNMP configuration settings (see on page 260 “Advanced:SNMP configuration”). Thus, Industrial HiVision spares you having to login and you go directly to the start page of the device.

The following series of devices support this function:

- MACH 4000
- MACH 1000
- MACH 100
- PowerMICE
- MS20/MS30
- MSP
- RS20/RS30/RS40
- RSP/RSPS/RSPL
- RSR20/RSR30
- EES20/EES25
- OCTOPUS
- EAGLE 20
- Magnum 12KX
- TCSESM
- TCSESM-E
- TCSG
- TCSN
- TCSEFEC
- ESM 801-TG
- ESM 802-TG
- ERT
- AFF650
- AFS650/655
- AFS66x
- AFS670/675
- AFS677
- AFR677

8.5.3 CLI

The “CLI” tool allows you to create a connection to the selected device from the Industrial HiVision interface. Industrial HiVision opens its own window. Industrial HiVision automatically checks whether the device allows an SSH session or a Telnet session. Industrial HiVision preferably establishes an SSH session.

Note: Under Linux, the CLI tool requires that Telnet and SSH clients are installed and that the environment variable PATH contains the name of the directory in which the “xterm” program is installed.

8.5.4 SNMP browser

The “SNMP browser” tool enables you to read and write the MIB of a selected device. Industrial HiVision displays the MIB in a new window.

Note: The SNMP browser is a freely usable additional software. The SNMP browser is not subject to the system test.

8.5.5 Ping

The “Ping” tool enables you to send a Ping query to the devices selected in the window. Industrial HiVision opens a separate Ping window.

Note: Under Linux, the Ping tool requires that the environment variable PATH contains the name of the directory in which the “xterm” program is installed.

8.5.6 HiDiscovery Scan

HiDiscovery enables you to recognize the devices in the network that support the HiDiscovery protocol, as long as these devices have activated the HiDiscovery protocol.
You select the HiDiscovery tool to start a search for new devices using the HiDiscovery protocol.

8.5.7 Scan Network

Scan Network enables you to detect all the devices within an IP address area of the network specified under “Basics:discover devices” on page 226. You select the Scan Network tool to start a search for new devices.

8.5.8 Demo network

The “Demo Network” program supplied allows you to simulate a network on your computer in order to familiarize yourself with Industrial HiVision without being connected to a network.

☐ Select `Tools:Demo network` to start the simulation of the demo network.

In the state on delivery, the device discovery is activated by a trap, and Industrial HiVision detects the demo devices. Industrial HiVision displays the demo devices in the “New Devices” folder. Because the demo network functions without a network connection, the demo network is simulated via the local host interface with the IP address 127.0.0.1 and differentiates the devices through the port numbers: 127.0.0.1:9003, 127.0.0.1:9004, 127.0.0.1:9005. The simulation replicates the following management functions of the devices:

- Topology discovery based on LLDP
- Line interruptions
- Missing power unit
- Network load at port 5 of the device 127.0.0.1:9004.

Figure 96: Demo network

8.5.9 Calculate Availability

Due to their physical properties, each component in the network has a limited lifetime. The MTBF is the mean time between failures.
Repairs of the components also take a certain amount of time. The MTTR is the mean time to repair.
Industrial HiVision calculates the availability of a path based on the MTBF and MTTR values of the affected transmission components along that path. Industrial HiVision also considers redundant paths here.
The type of a connected device affects the availability of the network. A redundantly connected switch/router has a bigger effect on the availability of the network than a redundantly connected terminal device.

Availability class	Designation	Availability in %	Annual downtime
1 (AEC-0)	Conventional	99,0	3.7 days
2 (AEC-1)	Highly reliable	99,9	8.8 hours
3 (AEC-2)	High availability	99,99	52.2 minutes
4 (AEC-3)	Fault resilient	99,999	5.3 minutes
5 (AEC-4)	Fault tolerant	99,9999	32 seconds
6 (AEC-5)	Disaster tolerant	99,99999	3 seconds

Table 40: Availability classes as per AEC

If the calculated availability values do not fulfill your requirements, you can carry out the following measures, among others, to increase availability:

- Set up redundant path
- Reduce downtimes by, for example, keeping replacement devices at the ready

Prerequisites for calculating availability

- For Windows operating systems:
  To calculate the availability, Industrial HiVision uses Microsoft .NET Framework version 2.0 or higher.
  This program is part of the default installation of the Windows operating systems named in the system requirements.
  This software is required for proper calculation of availability on your network management station.
- For Linux operating systems:
  Install MONO 2.0..
  Check whether these programs are installed on your network management station.
- Note for Debian 6.0 and Ubuntu 12.04 (LTS):
  Install libmono2.0-cil and libmono-winforms20-cil.

Before calculating the availability, Industrial HiVision executes the following checks:

– Are the MTBF/MTTR values of all connections greater than 0?
– Do all objects (devices, clouds) have the properties MTBF/MTTR and are their values greater than 0?

If Industrial HiVision finds objects with missing specifications, Industrial HiVision displays them in a window. As soon as you have entered the required information, you can start the calculation again.
If you want to start the calculation even without the missing information, click “Use default values.” In this case, Industrial HiVision applies the default values wherever entries are missing.

Prepare calculation of availability

The following example describes how to prepare the calculation of the availability of a connection between 2 devices.
You will find the currently available MTBF values of the Hirschmann devices in the installation path of Industrial HiVision under: /data/doc/MTBF-Products.PDF.

☐ Select the device level in the topology view.
☐ Enter the MTBF/MTTR values of the connections.
  – Click on the connection with the right mouse button and select “Properties”.
  – In the Properties dialog, select the “Properties” tab.
  – Under “Availability”, enter the MTBF/MTTR values.
  – Click on "OK".

☐ Add the user-defined properties “MTBF”, “MTTR” and “Node type” to the device properties of the one device.
  – Double-click on one of the two devices to go one level deeper in the detail view.
  – To add the user-defined properties “MTBF” and “MTTR”, right-click an empty space in the detail view. Select `New:Properties`.
  – In the “New Property” dialog hold down the “Ctrl” button and click “MTBF” and “MTTR”.
  – Click on "OK".
  – To enter the MTBR value, open the properties dialog by double-clicking the property “MTBF”.
  – Enter the value in the “Current Value” line and click on “Write”.
  – Click on "OK".
  – Enter the value for MTTR in the same way.
☐ Add the device properties of the other device accordingly.

If one of the two devices is a redundantly connected terminal device, then assign it the property “Node type” with the value “Terminal device” in the same way (see above, MTBF and MTTR).

As an alternative to individual device configuration, Industrial HiVision provides the option of multi-configuration, which has the advantage that both devices can be configured with the MTBF/MTTR properties in one operation:

☐ Select the device level in the topology view.
☐ Enter the MTBF/MTTR values of the connections.
  – Click on the connection with the right mouse button and select “MultiConfig™”.
  – In the MultiConfig™ dialog, select `Container Properties` in the menu tree.
    You will then find the table with the related connections in the object frame, and the table for the properties in the function frame.
  – Under “Availability”, enter the MTBF/MTTR values.
  – Click on “Write”.
☐ Add the user-defined properties “MTBF” and “MTTR” to the device properties of the devices.
  – To select both devices, hold down the “Ctrl” button and click on the two devices at the ends of the connection.
  – To open the MultiConfig™ dialog, right-click on a selected device and choose “MultiConfig™”.
  – In the MultiConfig™ dialog, choose `Program Settings:New Properties` in the menu tree.

You will then find the table with the related devices in the object frame, and the table for the properties in the function frame.
- To create a new entry for the MTBF value in the table, click on “New”.
- Select the property “MTBF” and click on “OK”.
- To create a new entry for the MTTR value in the table, click on “New”.
- Select the property “MTTR” and click on “OK”.
- Click on “Write”.

☐ To open the dialog for entering the MTBF values, select the “All Properties” tab in the detail display.
- In the “Property” input field, select the property “MTBF (Device)”.
- Select the relevant devices.
- To open the MultiConfig™ dialog, right-click on a selected device and choose “MultiConfig™”.
- To enter the MTBF value, click on “Property Value” in the menu tree in the MultiConfig™ dialog.
- In the “Value” input field, enter the MTBF value.
- Click on “Write”.

☐ To open the dialog for entering the MTTR values, select the “All Properties” tab in the detail display.
- In the “Property” input field, select the property “MTTR (Device)”.
- Select the relevant devices.
- To open the MultiConfig™ dialog, right-click on a selected device and choose “MultiConfig™”.
- To enter the MTTR value, click on “Property Value” in the menu tree in the MultiConfig™ dialog.
- In the “Value” input field, enter the MTTR value.
- Click on “Write”.

Calculating availability

The following example describes how you can calculate the availability after the preparations made beforehand.

☐ Select the device level in the topology view.

☐ To select the connections of the two devices, hold down the “Ctrl” button and click on the two devices at the ends of the connection.

☐ To open the dialog for calculating availability, select `Tools:Calculate Availability` in the menu bar.

– If an MTBF/MTTR property is missing for some objects, then Industrial HiVision opens the availability dialog with a table of the devices for which these properties are missing. This table also contains devices for which these properties have the value 0. Check whether the objects, e.g. devices, connections, for which you want to calculate the availability are missing.
If such objects are missing, you can start the calculation of the availability by clicking on “Use Default Values.” Industrial HiVision then uses any MTBF/MTTR values entered for the calculation, and otherwise the default MTBF/MTTR standard values.
MTBF = 30000 h for devices, 100000 h for connections
MTTR = 24 h for devices and connections
The actual values for the devices/connections differ from these standard values.
Using standard values allows you, for example, to calculate the difference in the availability of two alternative routes.

– If the objects in the view have MTBF/MTTR properties, Industrial HiVision performs the calculation and displays the result in a dialog. In the “Detail frame” of the dialog, Industrial HiVision displays the paths that Industrial HiVision included in the calculation.

During the calculation, Industrial HiVision writes details of the availability calculation in a log file. You will find this log file in the directory `<Installation path>/log/availability`. The name of the log file is made up of the name of the loaded project file and a time stamp.

Note: Availability calculation
Industrial HiVision performs the availability calculation under the assumption that the devices in the network are transmitting between all their ports. Therefore, redundantly connected terminal devices, routing, and VLANs can corrupt the results. Remedy for redundantly connected devices: Create the "Node Type" property in the device and set its value to "Device".

Note: Parallel connections
Industrial HiVision combines parallel connections between two devices into one path to optimize the calculation. The paths appear as a single path in the list of paths in the dialog and in the log file.

8.6 Help

In the help menu you will find the online help and the version information for this program.

8.6.1 Online help F1

You can access the online help using the “F1” button on your keyboard or by calling the menu `Help:Online Help F1`
The online help contains the entire contents of the manual, with a table of contents, contents register, search function, and navigation help.
In the individual dialogs, you click “Help” to go directly to the page of the manual that relates to the dialog.

8.6.2 Readme

You open the Readme file with `Help:Readme`. It contains information for installing Industrial HiVision.

8.6.3 Release notes

You open the release notes file with `Help:Release Notes`. It contains information on this installed version of Industrial HiVision.

8.6.4 Tutorial

With `Help:Tutorial` you open an exercise with guidelines for your first familiarization with Industrial HiVision in the browser. This exercise takes you through the important and latest functions of Industrial HiVision.

8.6.5 Online

You will find further information under `Help:Online`.
You can select:

- Hirschmann
  to open the Hirschmann website.
- Hirschmann Competence Center
  to open the Hirschmann Competence Center website.

- Industrial HiVision
  to open the Industrial HiVision product page on the Hirschmann website.
- Order license
  to open an order form for ordering a license online for Industrial HiVision in the browser.
  To request the license key, you require:
  – the registration code of the product certificate (included in delivery)
  – the hardware key (see `Configuration:Preferences:Basic Settings:License`).
    Industrial HiVision transfers the hardware key automatically when you call up the ordering page here.

8.6.6 Kernel Info

Under `Help:Kernel Info`, you will find the information that a service technician requires for a service task.

8.6.7 About

- Program information
  You will find information on the program version and the publisher under `Help:About:Program Information`.

- EULA
  You will find information on license agreements under `Help:About:EULA`.

- `License`
  You will find information on program licenses under `Help:About:License`.

A Appendix

A.1 FAQ

Answers to frequently asked questions can be found at the Hirschmann HiVision Website:

www.hivision.de

A.2 System requirements

(see on page 20 “System Requirements”)

A.3 Monitored properties

A.3.1 Monitored properties in the basic setting

Properties that Industrial HiVision monitors using traps or polling in the basic setting you will find in the following table.

Industrial HiVision lists all traps in the event list.

Note: Keep in mind how this affects your system resources (see on page 154 “Effect on system resources”).

Property	Trap	Polling
AutoConfiguration Adapter Status	x	
Fan Status	x	
Power Supply Status	x	
Relay Status	x	
Port Link	x	*
Port In Load		*
Port Out Load		*
Port Admin	x	
Port Oper Status	x	
WLAN Station	x	**
WLAN Access Points	x	**
Signal to Noise Ratio		x**

Table 41: Monitored properties
** Polling is enabled for ports that have a cable connection in Industrial HiVision.*
*** * Polling is enabled for ports that have a wireless connection in Industrial HiVision.*
**** The higher protocol supported by the device*

Property	Trap	Polling
Spanning Tree Status	x	*
Rapid Spanning Tree Status	x	*
Multiple Spanning Tree Status	x	*
Protocol Ping Reachability		x
Protocol SNMPv1 Reachability		x***
Protocol SNMPv3 Reachability		x***
HIPER Ring Status	x	*
HIPER Ring Coupling Status	x	*
Dual Homing Status	x	*
Ring Coupling Enabled	x	
Ring Manager Enabled	x	
Dual Homing Enabled	x	
Router Redundancy Mode	x	
Router Redundancy Status	x	
Temperature	x	x
Configuration State	x	x

Table 41: Monitored properties
** Polling is enabled for ports that have a cable connection in Industrial HiVision.*
*** * Polling is enabled for ports that have a wireless connection in Industrial HiVision.*
**** The higher protocol supported by the device*

A.4 CSV export

If you are working with CSV files across different languages, you require the corresponding character sets.
Industrial HiVision uses the following codes when exporting data to a CSV file:

Language	Character set
German, English, French, Spanish, Italian, Portuguese, Indonesian	Latin-8859-1
Greek	Windows-1253
Korean	Johab
Japanese	Shift-JIS
Chinese	GB2312
Russian	Cyrillic-8859-5

Table 42: Character sets for CSV export

To import to Microsoft Excel, you choose:
- ☐ In Excel, choose the menu item `Data:Import External Data:Import Data`
- ☐ Select the file and click “Open”.
- ☐ In the Text Conversion Assistant - Step 1, choose “Separate” for the original data type.
- ☐ In the Text Conversion Assistant - Step 1, choose “Separate” for the original data type.
- ☐ In the Text Conversion Assistant - Step 2, choose “Tab stop” and “Semicolon” as the separators.

A.5 Language support

Language	User interface	Online help	Manual (PDF file)	Manual (printed)	Tutorial	Readme
German	X	X	X	X	X	X
English	X	X	X	X	X	X
Spanish	X	X	X			
French	X	X	X			
Italian	X	X	X			
Russian	X					
Chinese	X	X	X			
Korean	X					
Japanese	X					
Greek	X					
Portuguese	X					
Indonesian	X					

Table 43: Language support

A.6 Ports used

To communicate between the user interface and the services Industrial HiVision uses specific protocol ports in your network. The following table contains the ports and their usages.

Ports used	Usage
11153	CORBA Naming Service
11154	Traps from demo agent to the Industrial HiVision service
11155	HTTP/HTTPS server
11156	Communication between the interface und service

Table 44: Ports used

A.7 Maintenance

Hirschmann is continually working to improve and develop our software. You should regularly check whether there is a new version of the software that provides you with additional benefits. You will find software information and downloads on the product pages of the Hirschmann website.

A.8 Literature references

- “Optische Übertragungstechnik in industrieller Praxis”
  Christoph Wrobel (ed.)
  Hüthig Buch Verlag Heidelberg
  ISBN 3-7785-2262-0

- Hirschmann Manual
  “Basics of Industrial ETHERNET and TCP/IP”
  280 710-834

- “TCP/IP Illustrated”, Vol. 1
  W.R. Stevens
  Addison Wesley 1994
  ISBN 0-201-63346-9

- Hirschmann “Installation” user manual

- Hirschmann “Basic Configuration” user manual

- Hirschmann “Redundancy Configuration” user manual

- Hirschmann “Routing Configuration” user manual

- Hirschmann “GUI Graphical User Interface” reference manual

- Hirschmann “Command Line Interface” reference manual

- Hirschmann User Guide “Industry Protocol”

- Hirschmann Manual “Network Management System HiVision”

- Hirschmann Manual “HiOPC Server Interface”

A.9 Copyright of Integrated Software

Industrial HiVision includes a number of open source components.
The creators of these components have released these components under a variety of licenses.
You will find these licences in the installation path of Industrial HiVision under `\data\doc\thirdpartylicenses.txt`

B Index

W

Z

C Readers' Comments

What is your opinion of this manual? We are always striving to provide as comprehensive a description of our product as possible, as well as important information that will ensure trouble-free operation. Your comments and suggestions help us to further improve the quality of our documentation.

Your assessment of this manual:

	Very good	Good	Satisfactory	Mediocre	Poor
Precise description	O	O	O	O	O
Readability	O	O	O	O	O
Understandability	O	O	O	O	O
Examples	O	O	O	O	O
Structure	O	O	O	O	O
Completeness	O	O	O	O	O
Graphics	O	O	O	O	O
Drawings	O	O	O	O	O
Tables	O	O	O	O	O

Did you discover any errors in this manual?
If so, on what page?

Suggestions for improvement and additional information:

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Dear User,

Please fill out and return this page

- as a fax to the number +49 (0)7127 14-1600 or
- by post to

Hirschmann Automation and Control GmbH
Department 01RD-NT
Stuttgarter Str. 45-51
72654 Neckartenzlingen

D Further Support

Technical Questions

For technical questions, please contact any Hirschmann dealer in your area or Hirschmann directly.

You will find the addresses of our partners on the Internet at http://www.hirschmann.com

Contact our support at https://hirschmann-support.belden.eu.com

You can contact us

in the EMEA region at
- Tel.: +49 (0)1805 14-1538
- E-mail: hac.support@belden.com

in the America region at
- Tel.: +1 (717) 217-2270
- E-mail: inet-support.us@belden.com

in the Asia-Pacific region at
- Tel.: +65 6854 9860
- E-mail: inet-ap@belden.com

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