Industrial HiVision

Network Management Software

If you are reading this document, you are probably looking for network management software. Or at least have an interest in the topic. Clearly it is a complex subject. There are so many applications available. Generic or manufacturer-specific. Proprietary or open source. Commercial or free of charge.

Maybe you are not in the market for a network management application at the moment. Even so, this guide will give you some ideas about how the right tools can assist you to increase the security and availability of your existing network.

This booklet describes what functionality is available in Industrial HiVision, and how you can benefit from each function. What's more, you can test most examples for yourself using the cost-free version together with the built-in network simulation tool.

Network Installation
- Effortless device discovery
- Accurate topology mapping
- Rapid device configuration
- Guided network security

Network Operation
- Intuitive graphical user interface
- Clear status displays
- Accelerated fault finding
- Flexible event logging & handling

Network Administration
- Extensive user management
- Detailed network documentation
- Comprehensive asset management
- Transparent licensing

Be certain.
Belden.

Industrial HiVision Functionality

What this Feature Can Do for You

In the past, network installation was as simple as just cabling some switches together. Today all that has changed. To guarantee highest availability, you must configure a large number of parameters, such as redundancy, VLANs, security, and event management. Industrial HiVision is not a substitute for expertise, but it can expedite the mundane tasks, leaving you to concentrate on the essential functionality.

For a well configured network, live operation should be a smooth process. Industrial HiVision gives you visibility into your network, so you have peace of mind. Repetitive tasks can be taken care of easily. If a problem does occur, Industrial HiVision will highlight the root cause, so you can rectify the issue in the shortest time. In other words, for day to day operation, you have the tools you need.

In the hectic world of a network administrator, Industrial HiVision will help you to do your job more efficiently.

Industrial HiVision for highest network availability.

For Network Installation, Industrial HiVision:

- Saves you time
- Reduces effort
- Guides you to optimum configuration

For Network Operation, Industrial HiVision:

- Visualizes the status of your network
- Facilitates regular tasks
- Helps you locate problems quickly

For Network Administration, Industrial HiVision:

- Provides tools to increase your efficiency
- Delivers the information you need to make decisions
- Assists you to achieve highest network availability

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What is Industrial HiVision?

If you search Google for free of charge network management tools, you will find many applications. Which means that if you are going to pay for an application, it will have to meet a lot of your requirements.

Industrial HiVision was originally developed to configure and supervise industrial networks built using Hirschmann equipment. Over the years it has been developed to support equipment from any manufacturer. Today it provides functionality which is usually only found in expensive office network applications.

If you would like to see the functionality for yourself, download Industrial HiVision from our web site and use it free of charge forever.

Learn about the highlights of Industrial HiVision.

Industrial HiVision
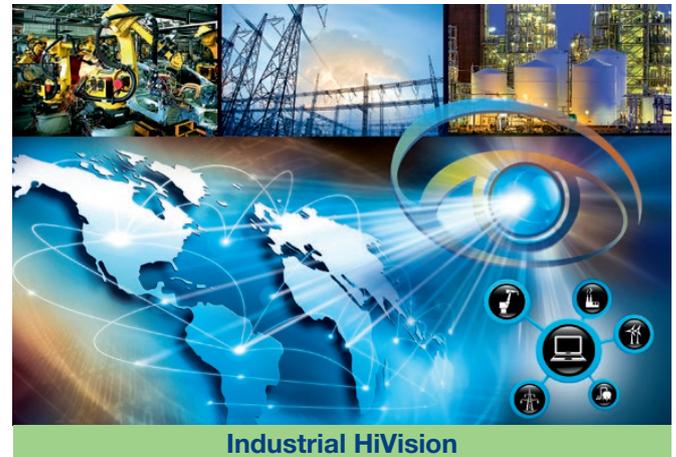
Network Simulation Tool for Off-line Evaluation

It is impossible to evaluate network management software without network hardware such as switches and routers.

So, have you got some hardware laying around? Probably not.
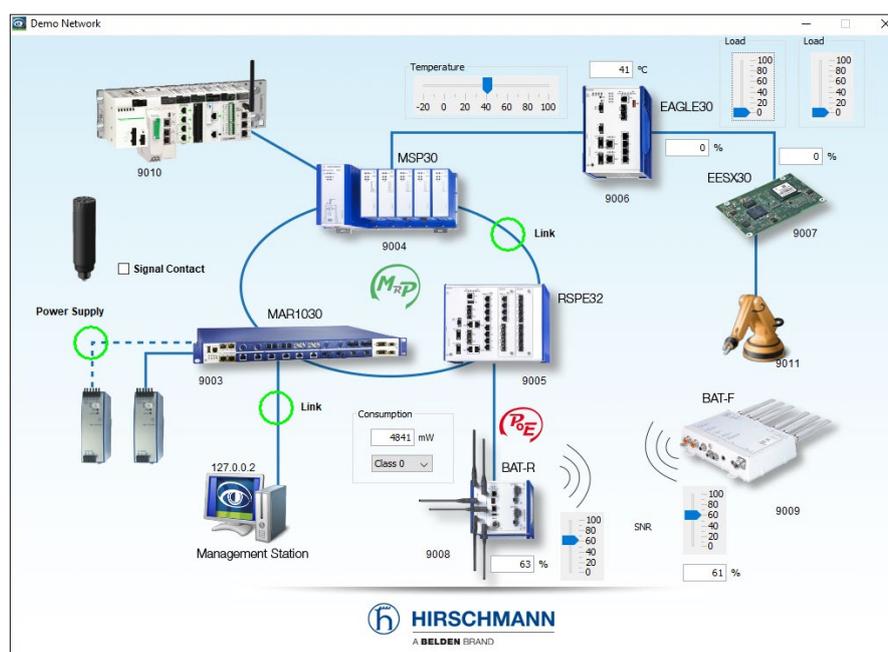
No problem. Industrial HiVision includes a network simulation tool, which behaves almost exactly like a real hardware network. Most of the functionality described in this document can be recreated using the graphical simulation tool. So you can start your evaluation of Industrial HiVision anytime, anywhere. At your convenience.

Evaluate Industrial HiVision without hardware.

Architecture

Getting the network management architecture right is a key step towards a successful application roll-out. Changing the architecture later is even more effort than just starting again from the beginning. Don't let your network management software force you into adopting an unsuitable architecture. Whether your network is local, plant-wide, or geographically dispersed, Industrial HiVision can offer you the best composition. With plenty of possibilities for future expansion.

Client/Server Architecture

The functionality of Industrial HiVision is divided into two components. The Server is the core of the system, where all the processing takes place. The Client supports the graphical user interface.

For a small installation, running the Server and the Client on the same hardware offers a perfect solution.

For larger installations, multiple Clients running on separate devices can access the same Server simultaneously. This provides many advantages.

Individual operators can supervise their own network segments. Faults can be propagated to multiple Clients, ensuring they are noticed more quickly. A network can be monitored locally and remotely at the same time.

If you have a larger network, take advantage of the Client/Server architecture.

Scales to meet your network management requirements.

HiVision Client
and Server

HiVision
Server

HiVision Client
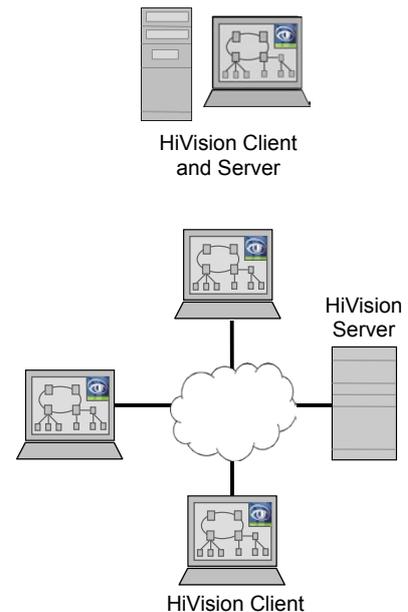
Management Hierarchy

For many networks, a single network management server is enough. But for others, there are advantages to deploying multiple servers.

If you have a very large network, the data collection and processing can be spread across multiple servers.
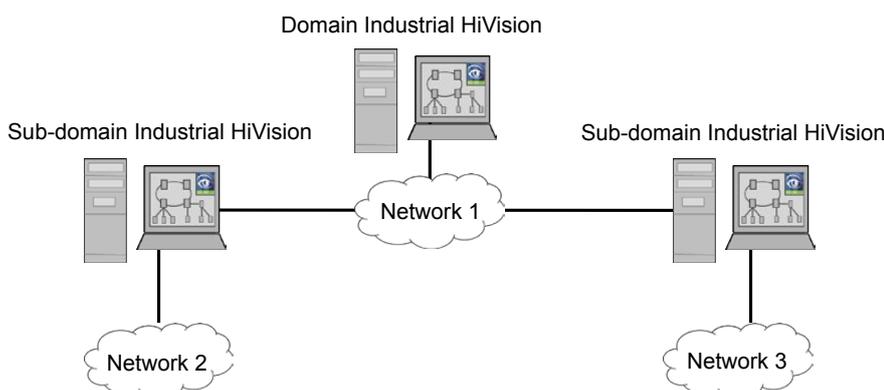
If your network spans multiple geographic locations, using one server per location can limit the amount of data crossing your WAN.

Industrial HiVision can use a Domain Server to supervise the status of Sub-domain Servers, which in turn supervise networks.

This provides you with a highly scalable solution.

And to make administration even simpler, all licenses can be held on the Domain Server, and leased to the Sub-domain Servers.

Supervise very large or geographically dispersed networks.

Domain Industrial HiVision

Sub-domain Industrial HiVision

Network 1

Sub-domain Industrial HiVision

Network 2

Network 3

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Topology

When most people think of networks, it is the topology that springs to mind. The topology map is the foundation of your network management software. If the map is difficult to create, or unfriendly to look at, it doesn't matter how good the rest of the application is. You will never feel comfortable with it. Find an application like Industrial HiVision with an intuitive topology map, and everything else will simply fall into place.

Industrial HiVision User Interface

As mentioned earlier, Industrial HiVision was originally developed to supervise industrial networks, such as those used in factories, oil refineries and power stations. The software used in these environments is highly graphical, using active pictures to literally mimic the industrial applications.

The Industrial HiVision user interface reflects that heritage. The main window shows the network topology, with all components color-coded for status.

The window on the left mirrors the physical structure of the network, known as the network hierarchy.

The window at the bottom is the event log.

The interface is informative and intuitive. But do not be fooled by the simplicity. As you will see, Industrial HiVision offers comprehensive functionality which allows you to meet your network management objectives.

Graphical interface provides information at a glance.
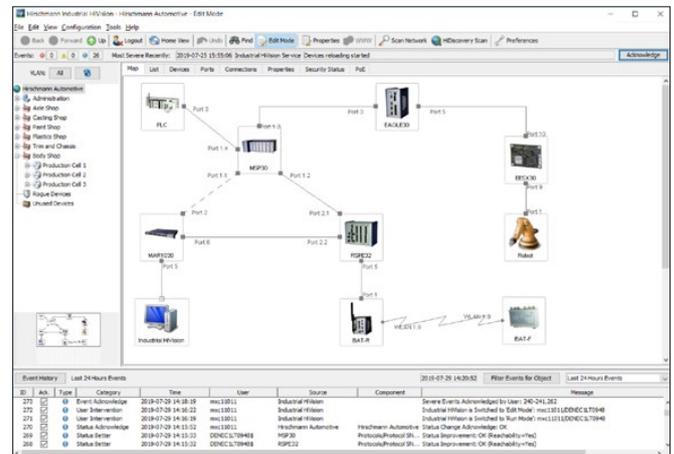
Topology Maps

A clear network topology map is one of the most important network management tools you can have.

Within the map, each device is shown with a real picture, so you know exactly what kind of device you are looking at. Double clicking allows you to drill down into a device, for more granular information.

Connections show the port numbers at each end of the link, so you always know where the cables are connected.

Zigzag lines represent wireless connections, and dotted lines are redundant links. So you can see precisely where your data is flowing.

All components are color-coded for status.

Every element of the display can be customized, which means you can design your screens to provide strictly the information you require.

**Clear topology map displaying infomation of your choice.**
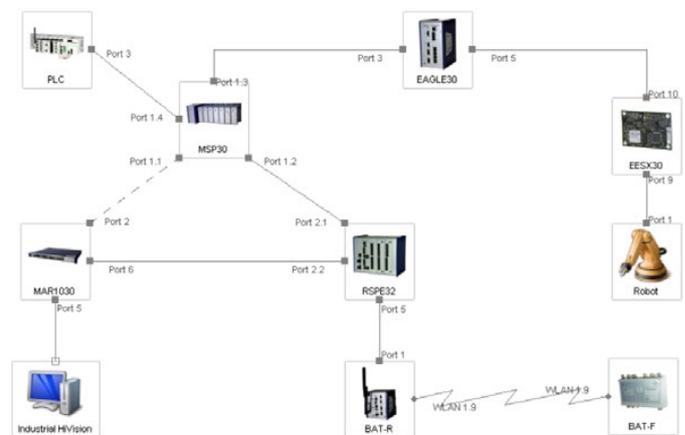
Network Hierarchy

If your network is small, you can almost certainly fit all devices on one screen. If your network is larger, then your display will need to be clearly structured.

The hierarchy function allows you to display your network topology maps in a tree structure. Each branch supports sub-branches, providing ever-increasing levels of detail. Down to individual components of a single device, if required. This gives you precisely the level of detail you require.

The display is active, so it also represents the status of the network components. The status is propagated up the tree. This means that the tree does not need to be permanently expanded. The status of a higher level will always depict the worst case status of a lower level.

So you will never need to waste time searching for a network fault.

Provides visibility into every level of your network.
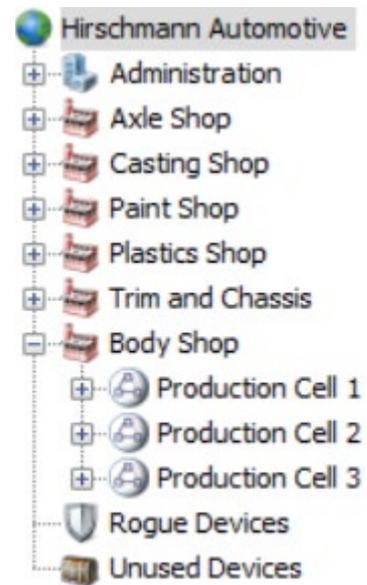
Device Discovery and Identification

For all but the smallest networks, you need an effortless way to discover and identify the devices which should be monitored.

For Hirschmann devices, the HiDiscovery function can discover devices even when they do not have an IP address. Assigning an IP address is then just a couple of clicks.

Industrial HiVision also allows you to scan multiple IP address ranges and display the discovered devices. Device types are then identified using SNMP.

Templates for many devices are already included in Industrial HiVision, ensuring that each device is accurately represented in the software.

If a template for your device is not present, the included HiFusion application will help you to create a template which exactly matches your requirements.

Effortless device discovery and identification.

First IP Address ⬆	Last IP Address	Netmask	Active	Name	Default Map
10.115.6.1	10.115.6.255	255.255.255.0	☑	Axle Shop	Axle Shop
10.115.94.1	10.115.94.255	255.255.255.0	☑	Plastics Shop	Plastics Shop
172.16.16.1	172.16.17.254	255.255.255.0	☑	Administration	Administration
192.168.1.1	192.168.1.254	255.255.255.0	☑	Paint SHop	Paint Shop
192.168.56.1	192.168.56.255	255.255.255.0	☐	Body Shop	Body Shop

New
Edit
Delete
Duplicate

Create Devices from List

A typical small network is based around a Class C address range. This means a maximum of 254 IP addresses.

As industrial networks increase in complexity, two new trends are emerging. In some cases many addresses are used from one single large address range, for example a large production hall. In others, a few addresses are used from multiple address ranges, for example a train where each carriage has its own address range.

In both cases, scanning address ranges becomes impractical, because there are too many addresses to scan.

As an alternative to scanning, it is possible to create devices by importing their IP addresses from a list.

This saves you time during network deployment by scanning only the relevant IP addresses.

Discover devices without scanning address ranges.
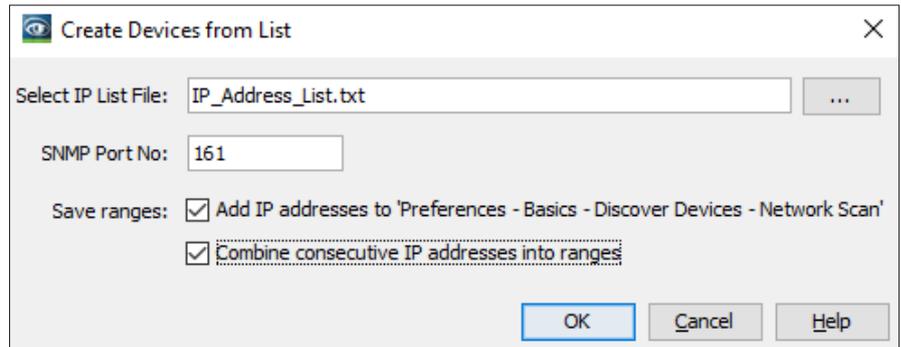
Auto-Topology Discovery

Possibly the most important information you can have about your network is an accurate topology map. This will be the basis for many other decisions you make, during live operation and fault finding.

You could manually draw a topology map. But for most networks this would be tedious and error-prone.

Auto-Topology Discovery will create completely accurate maps of the connections between infrastructure devices such as switches, routers, firewalls and wireless access points. It will also draw the connections to end devices such as PCs or PLCs. It can even display links to unmanaged switches.

During live operation, you can discover new connections, without disturbing existing ones.

With an accurate map showing your exact infrastructure, you can manage your network with complete confidence.

Guarantees accurate network maps.
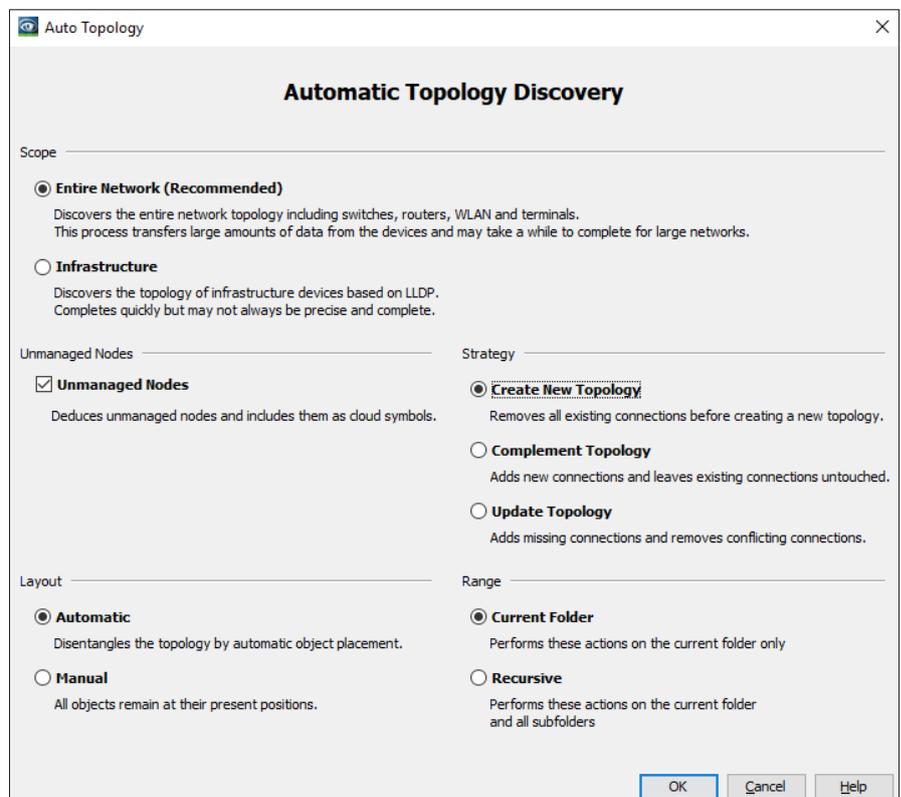
Discover Unmanaged Switches

To reliably supervise a network, the infrastructure must be built using managed switches. These devices provide information about topology and status which forms the basis of the graphical display.

Managed switches are slightly more expensive than unmanaged ones. For this reason, some users deploy unmanaged switches at the edges of a network, where the operation is not critical.

Even so, it is still important to have an accurate overview of your complete network topology.

You could manually draw the unmanaged switches in your network map. Or you can allow Industrial HiVision to deduce the location of unmanaged switches and display them as part of the topology map.

Discover and display unmanaged switches.
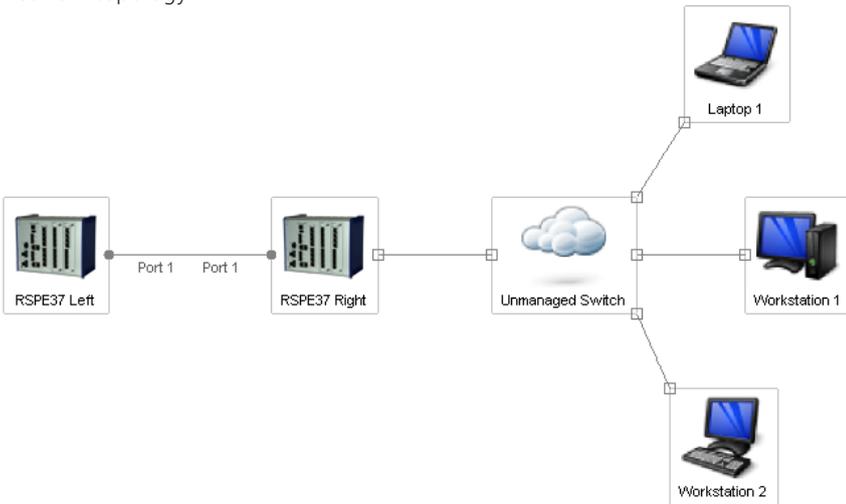
Graphical User Interface

The Graphical User Interface in Industrial HiVision shows its origin as a network management tool for industrial environments. Automation Engineers use graphical tools to manage complex industrial processes, because a visual representation of a process imparts far more information than a page full of text. Decades of experience cannot be wrong. Supervise your network the expert way.

Client Graphical User Interface

Industrial HiVision is a Client/Server application. The Server is the core of the system, and is responsible for polling the network devices and correlating the received information. The Server requires a license.

The Client provides the graphical user interface to the server. Many network management applications use a browser as a client. Typically browsers cannot be used on industrial networks, due to the heightened security risks. For this reason, the Industrial HiVision Client was developed as a stand-alone application, in place of a browser.

Multiple Clients can be connected to a single server simultaneously. So multiple operators can supervise the network at the same time. As the Clients are provided free of charge, this flexibility is available to you at no extra cost.

Maximize visibility with multiple clients.
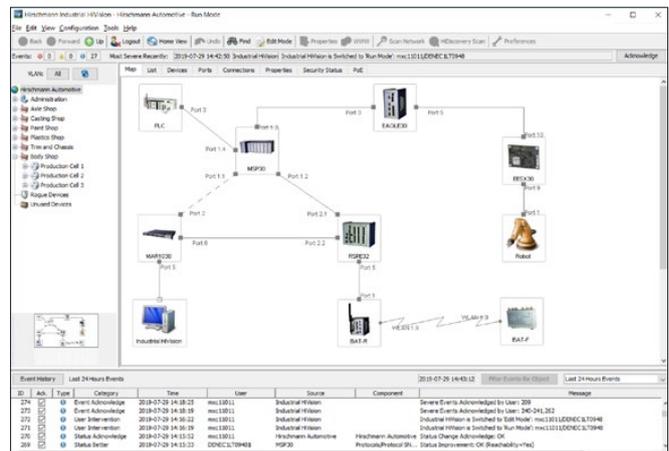
HiMobile Client

HiMobile is more than just another Industrial HiVision client.

Connect to a switch for real-time information, just by scanning the QR code.

Push notifications from Industrial HiVision offer you status messages about your network, directly to your phone.

A snapshot of the network topology map gives you an instant overview of the status of each network device and connection, as though you are standing in front of a PC screen.

HiMobile can provide geographical coordinates of a device to Industrial HiVision, for use in applications like Google Maps.

You can even use HiMobile to flash the port LEDs at either end of a cable, to see exactly where the cable is connected to the switches.

Network visibility in your pocket.

HiMobile Evaluation Mode

If you would like to try HiMobile without a network, the app includes an evaluation mode, which allows you to test most functions of the app.

Scroll around the network topology map.

Drill down into devices, to see the status of components.

Filter the Event Log to look for specific devices.

If you want to appreciate the convenience of having network management in your pocket, download the app and give it a test.

Evaluate HiMobile without Industrial HiVision.

Multiple Languages

Most network management software on the market is only available in English. This is fine for IT experts, who are used to configuring devices in English.

But for many people, simply supervising a network can be stressful. Add a different language into the mix, and the potential for mistakes increases.

The interface of Industrial HiVision is available in many languages, and the number of available languages is constantly increasing.

Even more important, the translations are not done by software. They are created by network engineers with many years of experience using Industrial HiVision.

So spend your time productively, using the comprehensive functionality of Industrial HiVision. Not trying to understand the interface.

Manage your network in your own language.
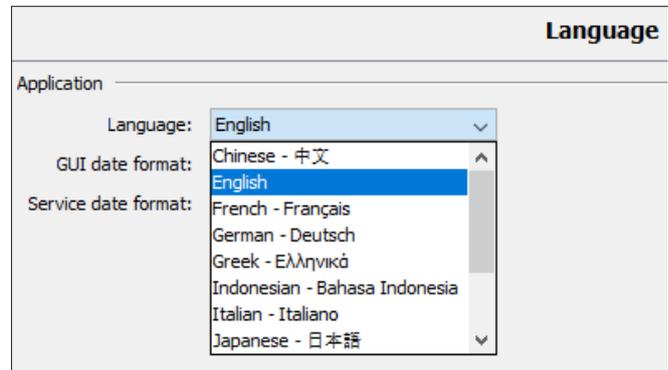
Visualization of Link Medium

Visual information is easier to digest than text-based information. A good graphic can convey a lot of information quickly and concisely.

This is why we have spent a great deal of design effort on the Industrial HiVision graphical user interface.

Here is a great example. Many network management systems use a line between two devices to represent a connection. But as a network administrator, you need a lot more information than just this.

It is important to know the medium used for the connection. Is it copper, fiber, or wireless?

This information is available to you at a glance. Great for network documentation.

And in the event of a cable failure, you already have a head start with the replacement.

Visualize your cable types.
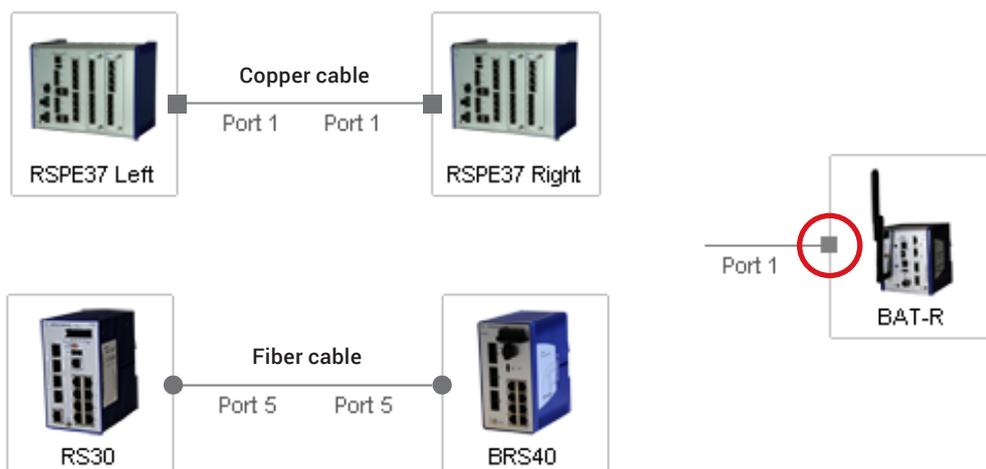
Connection Appearance

Here are some additional examples.

On any topology map, port information can tell you where a cable is connected on a device. Labels can indicate where cables are located, for example using patch panel information.

While this information is valuable, it can also clutter up the screen display for some topologies. With Industrial HiVision, you can choose to display this information permanently, or just when the mouse pointer is over the connection.

The thickness of the cable lines can be configured to show link speed. Or link status. Or indeed both.

For best effect, select a full information display when creating your network documentation, and a reduced information display for live operation.

View comprehensive information about your structured cabling.
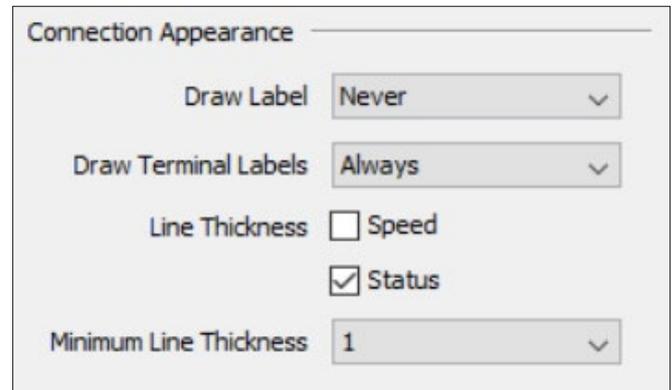
Comprehensive Component Views

Device...	Status	IP Address	Device Name	Device Class	Name	Value
	✓	127.0.0.1:9003	MAR 1030	OpenRail, Mach 4000, Octopus	Temperature	32
	✓	127.0.0.1:9004	MSP30	MSP, RSP, GRS, BRS, Octopus 2, RED, EES, Mach 4x00	Temperature	48
	✓	127.0.0.1:9005	RSPE32	MSP, RSP, GRS, BRS, Octopus 2, RED, EES, Mach 4x00	Temperature	54
	✓	127.0.0.1:9006	EAGLE30	EAGLE 20/30	Temperature	41
	✓	127.0.0.1:9007	EESX30	MSP, RSP, GRS, BRS, Octopus 2, RED, EES, Mach 4x00	Temperature	34

For general supervision, a good topology map will meet your requirements. But there will be times when you need more specific information, and typically you will need it quickly.

The Properties section of Industrial HiVision provides you with information about specific properties of devices, connections or ports. In real time. Across the complete network.

The information can even be sorted by device categories, to avoid overloading you with data.

Whether you need serial numbers for documentation, or device temperatures for fault finding, the information is available to you with a couple of clicks.

View concise information about network device parameters.

Customized Tooltips

The Tooltip provides a pop-up screen of information when the mouse pointer is moved on top of an icon.

Typically it is used for a device icon, but it works with any icon, from a device to an individual port parameter.

This represents the easiest way for you to get information about a component.

Right from the beginning we defined what information would be available via the Tooltip. But many users asked for a function to customize the displayed information.

So now you can define what is displayed in the Tooltip pop-up. Any information is available. Customize it to meet your requirements.
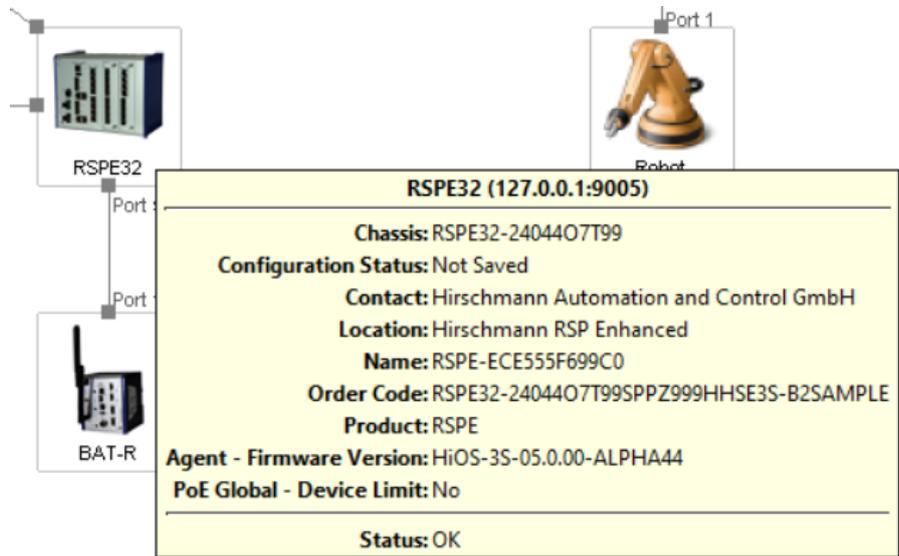
Collate your valuable information in a pop-up screen.

RSPE32 (127.0.0.1:9005)	
Chassis:	RSPE32-24044O7T99
Configuration Status:	Not Saved
Contact:	Hirschmann Automation and Control GmbH
Location:	Hirschmann RSP Enhanced
Name:	RSPE-ECE555F699C0
Order Code:	RSPE32-24044O7T99SPPZ999HHSE3S-B2SAMPLE
Product:	RSPE
Agent - Firmware Version:	HiOS-3S-05.0.00-ALPHA44
PoE Global - Device Limit:	No
Status:	OK

Duplex Check

Duplex mismatches are a thing of the past, right? Nobody manually configures duplex anymore, do they?

In IT networks, probably not. But in OT networks, things are not so clear.

Some legacy end devices have hard-coded duplex and do not support autonegotiation.

Other networks were manually configured in the past, and this is only now causing problems, as the bandwidth utilization increases.

Finding duplex mismatches is a painstaking and tedious task, prone to errors.

The Duplex Check in Industrial HiVision highlights configuration failures across your network at a glance.

Quickly locate duplex configuration errors.

| Map | List | Devices | Ports | Connections | Properties | Security Status | PoE | | | | | |

Status	Name	Connection	Device A ⋀	Port A	Device B	Port B	Speed/Duplex	Media Type	Config Check
✓	BAT867-R-MSP32	Unavailable	192.168.1.1		192.168.1.200			Unknown	
✓	192.168.1.2-RS40	Active	192.168.1.2	1	192.168.1.201	8	100	Copper	
✓	OWL LTE-Internet	Unavailable	192.168.1.8					Unknown	
✓	192.168.1.8-192.168.1.200	Active	192.168.1.8	1	192.168.1.200	3.1	100	Copper	
✓	192.168.1.15-MSP32	Active	192.168.1.15	4	192.168.1.200	3.4	100 Full	Copper	OK
✓	BN48-192.168.1.202	Active	192.168.1.17	10	192.168.1.202	2	1000 Full	Unknown	OK
✓	192.168.1.33-RSPE37 Right	Active	192.168.1.40	1	192.168.1.221	11	100 Full	Copper	OK
✓	MSP32-192.168.1.202	Active	192.168.1.200	1.4	192.168.1.202	1	1000 Full	Fiber	OK
✓	192.168.1.201/Port 7-192.168.1.204/BRS40	Active	192.168.1.201	7	192.168.1.204		1000 Full	Copper	
✓	192.168.1.201/Port 2-192.168.1.220/Port 2	Active	192.168.1.201	2	192.168.1.220	2	100 Full	Fiber	OK
✓	192.168.1.201/Port 1-192.168.1.203/Port 1.1	Active	192.168.1.201	1	192.168.1.200	1.1	1000 Full	Fiber	OK
✓	RS30-BRS40	Active	192.168.1.205	5	192.168.1.204	5	100 Full	Copper	Duplex
✓	192.168.1.205/Port 3-192.168.1.17/Port 2	Standby	192.168.1.205	3	192.168.1.17	2	100 Full	Copper	OK
✓	192.168.1.220/Port 1-192.168.1.221/Port 1	Active	192.168.1.220	1	192.168.1.221	1	1000 Full	Fiber	OK
✓	RSPE37 Right-192.168.1.18	Active	192.168.1.221	5	192.168.1.18	7	100 Full	Copper	OK

"I'm Alive" Email

There are many ways that Industrial HiVision can notify you or your colleagues about network problems. See the Event Handling section for more information.

But all these techniques rely on one thing. Industrial HiVision must actually be running when the problem occurs.

With the reliability of today's hardware, it is very likely that Industrial HiVision will not have stopped. But how can you be sure? Especially if the application is running on a remote PC?

Just configure Industrial HiVision to send you an "I'm Alive" email. You can configure the sending interval, to avoid email overload.

You can even receive the latest warning events in the email.

You decide which information you want, and when you want it. No more uncertainty for you.

Rest assured that you are receiving event notifications.
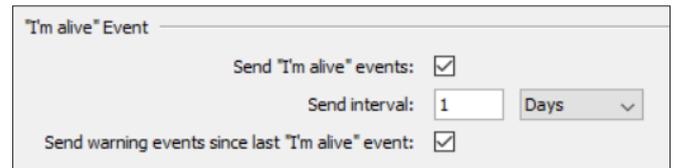
Edit Mode Timer

It is an easy mistake to make. You put Industrial HiVision into Edit Mode. This gives you write access. You then get to work, designing your topology maps, fine tuning your status displays, or creating your monthly reports. You get called away to deal with a network problem, and you accidently leave Industrial HiVision in Edit Mode.

At best, you have prevented other administrators from editing the application.

At worse, you may have given a passer-by write access to Industrial HiVision, and therefore to your network.

Edit Mode has a timer. Just set it for a suitable period of inactivity. Then you never need to worry about the problem again.

Reduce the risk of unauthorized access.

Configurable Scan Rate

A major difference between IT and OT networks is the connected equipment.

An IT network typically supports equipment such as servers, PCs and printers. This equipment is highly resilient to excessive network traffic.

The same cannot be said for typical OT equipment, such as PLCs, drives or I/O. The protocol stacks supported by these devices can easily be overloaded by the level of broadcast traffic generated during an IT address range scan. This results in device failure.

Parameter	Value
Device Discovery	
Scan Rate [devices/min]	600
Simultaneously Discovered Devices	20
SNMP Guessing Packet Rate [pkts/s]	100

Unlike office-grade network management solutions, Industrial HiVision allows discovery traffic to be throttled back to a level which can be accommodated by sensitive industrial devices. So you can be certain that a device discovery scan will not have a negative effect on the applications running on your industrial network.

Protect your network against harmful scanning.

Configurable Services Ports

Industrial HiVision uses a Client/Server architecture, where the Clients can be installed remotely. To enable communication, it is necessary to define TCP/IP ports per service.

By default, each version of Industrial HiVision uses different ports. This has a big advantage. If you are considering upgrading to a newer version, you can install the new version on the same hardware which is running the current version. If you are satisfied with the new version, just go live.

This also has a big disadvantage. If you have firewalls, or switches with Access Control Lists, between the Clients and the Server, you will need to update the rules to reflect the new ports.

Fortunately the port numbers are configurable. So you can select whichever option best suits your migration strategy.

Reduce your firewall configuration effort.

Services Access

Web Server
- Web Server: ☑   Restart Required
- Protocol: http ⌄   Restart Required
- Port: 11180   ☐ Use Default Values   Restart Required

Project Data Server
- Remote Access: ☑
- Port: 11181   ☐ Use Default Values   Restart Required
- Subdomain interface: ☐   Restart Required
- Password: Restart Required
- Retype Password:

OPC Server
- OPC Server: ☐   Restart Required
- OPC Server Type: OPC UA
- Global Write: ☐   Restart Required
- OPC UA Server Port (http): 11182   ☑ Use Default Values   Restart Required
- OPC UA Server Port (https): 11183   ☑ Use Default Values   Restart Required

☑ Hide Passwords

Status Visualization

In many aspects of life, colors are used to convey meaning. Reacting to colors is instinctive. Industrial HiVision enables you to take advantage of how people react to colors. You can use colors to highlight any network condition which you consider deserves attention from the network operator, together with its criticality. And like almost everything else in Industrial HiVision, the colors themselves are customizable. So use colors to push focus where it is needed.

Status Display

Many IT network management applications are heavily text-based. If the application supports a topology map, it is often only used to show the location of physical connections.

Industrial HiVision stands out from the crowd by offering attractive topology maps featuring extensive status displays. Every active component in a map can be configured to display its status.

When a hierarchy of maps is used, the status is propagated up the tree.

At a glance you can see the worst case status of your complete network. By drilling down through the graphical components, you can easily find the failed item.

You will never again waste time sorting through pages of text trying to isolate a fault.

Rapidly locate problems anywhere in your network.
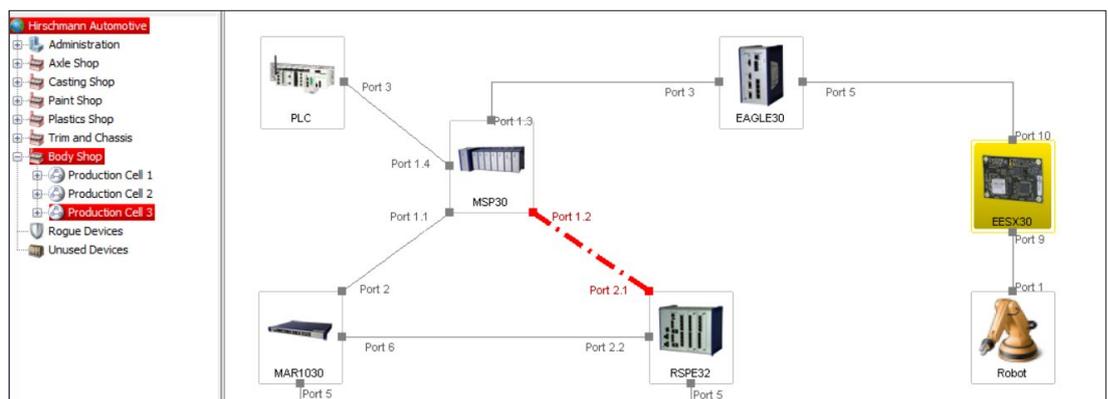
Status Display Configuration

From the moment that Industrial HiVision starts to discover your network devices and connections, it also starts to configure status parameters.

The statuses selected by Industrial HiVision meet most common requirements. Failed devices or connections are displayed in red. Configuration errors are shown in yellow, as are redundancy errors. The list of possibilities is comprehensive.

If you would like to change the status displays, this can be done for each parameter individually. It can be done for multiple parameters using MultiConfig™. Or it can be done globally using the Status Configuration List.

However you prefer your status configuration, you can customize it with just a few clicks.

Configure component status to reflect your operational requirements.
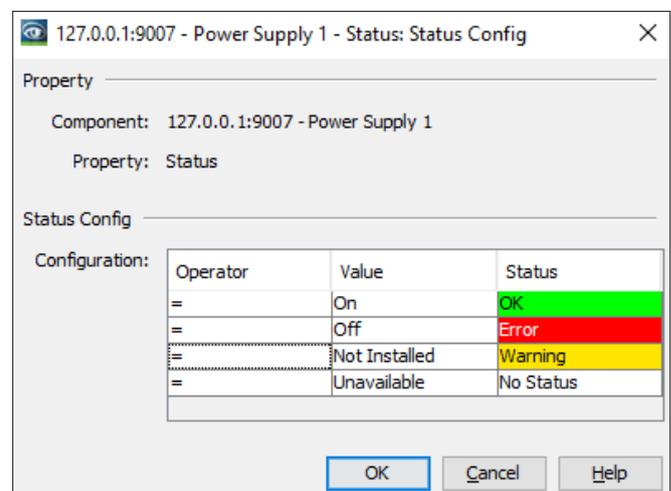
Status Display Customization

Status display provides an immediate visual indication of a problem. Industrial HiVision provides four status levels, each represented by a color. Transparent/Grey = "OK". Yellow = "Warning". Red = "Error". Green = "OK, but previous status not acknowledged". This last option is used to make the operator aware of any faults which may have fixed themselves.
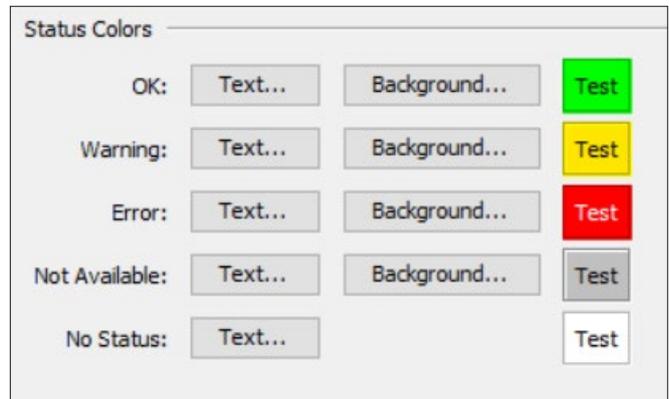
For operators with color vision deficiency, there are many options. The colors used for status displays can be selected. Status symbols can be superimposed on device icons. The icons themselves can even be made to flash after a status change.

Optimize status displays for your operators.

Thresholds

As a network administrator, you need to be aware of changes which occur on your network. Physical changes are easy to spot, because they will immediately be highlighted in your network management system. Changes in other characteristics are less obvious, but can be just as catastrophic.

For example, OT networks tend to have predictable traffic patterns based on polling. Changes in network load happen for a reason, and must be investigated.

If a connection is experiencing an increasing number of errors, this indicates the likelihood of a future failure.

Increases in device temperature could indicate a cooling failure.

Thresholds can bring these and many other conditions to your attention, by generating alarms. These give you breathing space to react, and potentially avoid a major incident.

Threshold alarms notify you of changes immediately.

Unsaved Configuration Alarm

There is a well known scenario faced by most network administrators at some point in their careers. You spend some productive time working on your network. When you are happy with the result, you go home. On the way home you have a nagging doubt about whether you saved the new configurations in the switches.

So, do you go back to work, or chance it until the next day?

Industrial HiVision has a warning status for an unsaved device configuration. And it is enabled by default. There is a visual indication for each device that has an unsaved running configuration.

So you never again need to worry that you have forgotten an important part of the configuration process.

Never forget to save a modified device configuration.

RSPE32 (127.0.0.1:9005)

Chassis: RSPE32-24044O7T99
Configuration Status: Not Saved
Contact: Hirschmann Automation and Control GmbH
Location: Hirschmann RSP Enhanced
Name: RSPE-ECE555F699C0
Order Code: RSPE32-24044O7T99SPPZ999HHSE3S-B2SAMPLE
Product: RSPE
Agent - Firmware Version: HiOS-3S-05.0.00-ALPHA44
PoE Global - Device Limit: No

Status: Warning
Reason: Warning: RSPE32/Configuration Status=Not Saved

Virtual LANs

The original goal of virtual LANs was to create multiple logical networks running on one physical network, for the purpose of data segregation. In the past this was done manually, but the trend is moving towards automatic VLAN creation by the switches themselves. VLANs are now also deployed extensively for network security, for example to hide the network infrastructure from the network users. This can become complex. But Industrial HiVision gives you the tools to maintain control.

VLAN Viewer

Not all network management applications offer a topology map. Of those that do, the map is usually a simple diagram, showing network components such as switches, and the physical links between these devices.

In the past, a physical diagram was enough. But modern networks use VLANs to separate traffic from individual applications.

Fault-finding a network which is supporting VLANs presents a new challenge. Primarily because it is not possible to see an individual VLAN.

Industrial HiVision can display a topology map per VLAN. This shows precisely which switches, connections and end devices are members of a VLAN. Configuration errors are immediately obvious.

If you use VLANs on your network, you need a tool like this.

See VLAN topologies like physical networks.

Ports VLAN Membership Table

The VLAN Viewer in Industrial HiVision is a great tool, which allows you to view a VLAN topology as if it were a physical VLAN. It is easy to spot mistakes.

Fixing the mistakes often requires more detailed information.

The VLAN Membership Table provides granular information about VLAN Ingress Rules (PVID) and VLAN Egress Rules (VLANs) across all devices which support public VLAN information.

This provides you comprehensive, network-wide information about configured VLANs. Essential for finding configuration errors.

Clear summary of all VLAN information.

Map	List	Devices	Ports	Connections	Properties	Security Status	PoE	
Type	Status	Device	Port ⋀	Speed/Duplex	User	PVID	Ingress	VLANs
	✔	192.168.1.201	1	1000 Full	(6)	1	☐	1T,2T,3T,4T
	✔	192.168.1.201	2	100 Full	(4)	1	☐	1T,2T,3T,4T
	✔	192.168.1.201	3	1000 Full	80:1f:02:d6:32:b9	1	☐	1U,4U
		192.168.1.201	4	-	-	1	☐	1U,4U
		192.168.1.201	5	-	-	2	☐	2U,4U
		192.168.1.201	6	-	-	2	☐	2U,4U
	✔	192.168.1.201	7	1000 Full	-	3	☐	3U,4U
	✔	192.168.1.201	8	100 Full	-	3	☐	3U,4U
		192.168.1.201	9	-	-	1	☐	1U,4U

VLAN Consistency Check

Industrial HiVision offers two great tools for VLAN management: VLAN Viewer and VLAN Membership Table.

Is another VLAN tool really necessary?

Over the years it has become evident that users are configuring more VLANs, and those VLANs are becoming more complex. It is possible that you could become overwhelmed with information.

So we have provided one final tool: VLAN Consistency Check. As its name suggests, it provides a configuration consistency check per port, across the complete network.

The results of the check are displayed per port as OK or Error. It is that simple.

To diagnose the configuration error, Industrial HiVision offers two great tools mentioned previously: VLAN Viewer and VLAN Membership Table.

Real-time visualization of VLAN configuration errors.

Map	List	Devices	Ports	Connections	Properties	Security Status	PoE					
Status	Name		Connection	Device A ⋀	Port A	Device B	Port B	PVID Port A	PVID Port B	VLANs A	VLANs B	VLAN Check
✔	BAT867-R-MSP32		Unavailable	192.168.1.1		192.168.1.200		-	-	-	-	-
✔	192.168.1.2-RS40		Active	192.168.1.2	1	192.168.1.201	8	-	3	-	3U,4U	-
✔	OWL LTE-Internet		Unavailable	192.168.1.8				-	-	-	-	-
✔	192.168.1.8-192.168.1.200		Active	192.168.1.8	1	192.168.1.200	3.1	-	1	-	1U	OK
✔	192.168.1.15-MSP32		Active	192.168.1.15	4	192.168.1.200	3.4	-	1	-	1U	OK
✔	BN48-192.168.1.202		Active	192.168.1.17	10	192.168.1.202	2	-	1	-	1U	OK
✔	192.168.1.33-RSPE37 Right		Active	192.168.1.40	1	192.168.1.221	11	1	1	1U	1U	OK
✔	MSP32-192.168.1.202		Active	192.168.1.200	1.4	192.168.1.202	1	1	1	1U	1U	OK
✔	192.168.1.201/Port 7-192.168.1.204/BRS40		Active	192.168.1.201	7	192.168.1.204		3	-	3U,4U	-	-
✔	192.168.1.201/Port 2-192.168.1.220/Port 2		Active	192.168.1.201	2	192.168.1.220	2	1	1	1T,2T,3T,4T	1U	ERROR
✔	192.168.1.201/Port 1-192.168.1.203/Port 1.1		Active	192.168.1.201	1	192.168.1.200	1.1	1	1	1T,2T,3T,4T	1U	ERROR
✔	RS30-BRS40		Active	192.168.1.205	5	192.168.1.204	5	1	1	1U	1U	OK
✔	192.168.1.205/Port 3-192.168.1.17/Port 2		Standby	192.168.1.205	3	192.168.1.17	2	1	-	1U	-	OK
✔	192.168.1.220/Port 1-192.168.1.221/Port 1		Active	192.168.1.220	1	192.168.1.221	1	1	1	1U	1U	OK
✔	RSPE37 Right-192.168.1.18		Active	192.168.1.221	5	192.168.1.18	7	1	-	1U	-	OK

Power over Ethernet

Everyone is talking about the Industrial Internet of Things, or Industry 4.0. These scenarios are resulting in a huge increase in the number of connected devices. This in turn is driving the demand for Power over Ethernet, in order to save costs by reducing the amount of cabling and lowering installation effort.

Power over Ethernet Overview

PoE is mostly plug and play. But there are times when an overview of PoE on your network would be beneficial. For example, if you want to add more PoE devices to your network, you need certain information to optimize power distribution and balancing.

Which switches are delivering power? How much power is being delivered? How much power is remaining? Are you reaching your power delivery threshold? Are there any Class 0 devices in the network?

Some networks, for example in warehouses, will shut off PoE outside working hours, to disable the wireless network. You need an overview of this.

Industrial HiVision will provide you, at a glance, with comprehensive information about your PoE usage at switch and port level.

Comprehensive information about your PoE consumption.

Name	Operation	Budget	Remaining	Reserved	Delivered	Global Threshold[%]	Device Limit	Module	Nominal Pwr	Max Pwr	Res Pwr	Del Pwr	Pwr Source	Threshold[%]	Module Limit	Trap Notif
RSPE37 Left	On	120	108	12	6	90	✓	1	62	62	12	6	internal	90	✓	On
RSPE37 Left	On	120	108	12	6	90	✓	2	120	120	0	0	internal	90	✓	On
RSPE37 Right	On	120	96	24	9	90	✓	1	62	62	24	9	internal	90	✓	On
RSPE37 Right	On	120	96	24	9	90	✓	2	120	120	0	0	internal	90	✓	On

Name	Nominal Pwr	Rem Pwr	Res Pwr	Del Pwr	Module	Port	Operation	Fast Start	Prio	Status	Det. Cl.	C0 Det.	Cons	Pwr Limit	Port Limit	Max Cons	Enab ASDn	Start	End
RSPE37 Left	62	50	12	6	1	10	On	Off	low	Delivering Power	class1	✓	1.4	0.0	✓	2.2	On	17:00	09:00
RSPE37 Right	62	38	24	9	1	10	On	Off	low	Delivering Power	class1	✓	1.4	0.0	✓	2.2	Off	00:00	00:00
RSPE37 Left	62	50	12	6	1	11	On	Off	low	Delivering Power	class1	✓	1.4	0.0	✓	2.3	On	16:30	08:30
RSPE37 Right	62	38	24	9	1	11	On	Off	low	Delivering Power	class3	✓	4.1	0.0	✓	5.4	Off	00:00	00:00
RSPE37 Left	62	50	12	6	1	12	On	Off	low	Delivering Power	class1	✓	3.4	0.0	✓	3.4	On	17:00	09:00
RSPE37 Right	62	38	24	9	1	12	On	Off	low	Delivering Power	class1	✓	2.4	0.0	✓	2.4	Off	00:00	00:00

Power over Ethernet Optimization Wizard

Passive cooling is a main characteristic of industrial switches. We have put a great deal of research effort into designing and constructing the most effective methods of heat dissipation for our products.

But Power over Ethernet generates heat. So industrial switches are limited in the amount of power they can offer, before the PoE starts to reduce the lifetime of the product. Which means you need to maximize the use of available power.

Industrial HiVision includes a PoE wizard. This wizard will override the standard PoE classes. With no intervention from an administrator, the wizard will calculate the maximum power required by each device on the network. It will allocate the relevant power to each port. Remaining power is then available for use by other devices.

This is the most efficient use you can make of limited PoE. And you can configure it with just a couple of clicks.

Optimize your use of existing PoE.

Before:

Name	Nominal Pwr	Rem Pwr	Res Pwr	Del Pwr	Module	Port ⬆	Status	Det. Cl.	C0 Det.	Cons	Pwr Limit	Max Cons
RSPE37 Left	62	50	12	6	1	10	Delivering Power	class1	✔	1.4	0.0	2.2
RSPE37 Right	62	38	24	9	1	10	Delivering Power	class1	✔	1.4	0.0	2.2
RSPE37 Left	62	50	12	6	1	11	Delivering Power	class1	✔	1.4	0.0	2.3
RSPE37 Right	62	38	24	9	1	11	Delivering Power	class3	✔	4.1	0.0	5.4
RSPE37 Left	62	50	12	6	1	12	Delivering Power	class1	✔	3.4	0.0	3.4
RSPE37 Right	62	38	24	9	1	12	Delivering Power	class1	✔	2.4	0.0	2.4

After:

Name	Nominal Pwr	Rem Pwr	Res Pwr	Del Pwr	Module	Port ⬆	Status	Det. Cl.	C0 Det.	Cons	Pwr Limit	Max Cons
RSPE37 Left	62	53	9	6	1	10	Delivering Power	class1	✔	1.4	2.4	2.2
RSPE37 Right	62	50	12	8	1	10	Delivering Power	class1	✔	1.4	2.4	2.2
RSPE37 Left	62	53	9	6	1	11	Delivering Power	class1	✔	1.4	2.5	2.3
RSPE37 Right	62	50	12	8	1	11	Delivering Power	class3	✔	4.7	5.9	5.4
RSPE37 Left	62	53	9	6	1	12	Delivering Power	class1	✔	3.3	3.8	3.5
RSPE37 Right	62	50	12	8	1	12	Delivering Power	class1	✔	2.4	2.7	2.4

Network Security

Attention to detail is a fundamental aspect of network security. But the big picture also provides valuable information. Industrial HiVision can highlight potential vulnerabilities with your network configuration, and assist you to lock down your network security. Later changes which could affect your security posture will be highlighted.

Configuration Signature Check

As a network administrator, you are responsible for the availability of your network. So imagine the following scenario.

A user with administration rights makes a change to a switch configuration. As a consequence, the network fails. Seeing the result, the user quickly reverts the change. How can you prove that the switch configuration was changed?

Each switch has a configuration checksum, known as a signature. If the configuration changes, the signature will change, and Industrial HiVision will generate an alarm.

Even better, if the configuration is reverted to the previous value, a third signature will be generated. Not the original signature.

So you can prove that a configuration was changed, even if the change has been reverted.

Protect yourself with the configuration signature.

Map	List	Devices	Ports	Connections	Properties	Security Status	PoE

Device Class: All   Property: Configuration Signature (Device)

Device...	Status	IP Address ⋀	Device Name	Device Class	Name	Value
	✔	192.168.1.200	MSP32	MSP, RSP, GRS, BRS, Octopus 2, RED, EES, Mach 4x00	Configuration Signature	95B1DD8891AFE791BC39FF0F93B81A...
	✔	192.168.1.201	RS40	OpenRail, Mach 4000, Octopus	Configuration Signature	0f dc 30 19
	⚠	192.168.1.202	RSP35	MSP, RSP, GRS, BRS, Octopus 2, RED, EES, Mach 4x00	Configuration Signature	1811880580E86175DC997FB78CAD6B...
	✔	192.168.1.204	BRS40	MSP, RSP, GRS, BRS, Octopus 2, RED, EES, Mach 4x00	Configuration Signature	03774272CBBCBA5501A16D99B04B24...
	✔	192.168.1.220	RSPE37 Left	MSP, RSP, GRS, BRS, Octopus 2, RED, EES, Mach 4x00	Configuration Signature	368A8946 11269C79A9A81143C901A...
	✔	192.168.1.221	RSPE37 Right	MSP, RSP, GRS, BRS, Octopus 2, RED, EES, Mach 4x00	Configuration Signature	8A793CFC7A2FA5041058125B7F17D...

Security Lockdown

Protecting the network infrastructure, such as switches and routers, is a critical part of a network security policy. The techniques required have been tried and tested over many years.

You can of course manually configure every parameter across all devices.

Or you can let Industrial HiVision do the hard work for you.

We have already selected the most commonly used security configurations. The Security Lockdown wizard lets you decide which of these security functions you would like to implement. Then a single click will roll out the functions across the network.

Let the Security Lockdown wizard guide you through the first steps towards a secure network infrastructure.

Secure your network infrastructure with a couple of clicks.

Status	Name ⋀
✔	All Objects
✔	127.0.0.1:9003 - MAR1030
✔	127.0.0.1:9004 - MSP30
✔	127.0.0.1:9005 - RSPE32
✔	127.0.0.1:9006 - EAGLE30
✔	127.0.0.1:9007 - EESX30

☐ Edit Presets

Security Lockdown

☐ Restrict Management Access: ☐
☐ Port Security: ☐
☐ Disable Unused Ports: ☑
☐ Disable Unused Slots: ☑
☐ Disable GMRP: ☐
☐ Disable MMRP: ☑
☐ Disable HiDiscovery: ☐
☐ Disable Unsecure Protocols: ☐

Network Infrastructure Security Overview

Fine-tuning your network infrastructure can be a time-consuming process, especially if you need to check every switch, firewall and wireless access point individually.

It is easy to overlook a single configuration parameter on one device. But that could be enough to let an attacker into your network.

The Security Status screen gives a detailed overview in an easy to read graphical format. For every device, you can see the status of each unsecure protocol or security function.

The alarms are configurable, to ensure compliance with your corporate security level.

Now you have detailed information about your infrastructure security at a glance.

Transparent overview of your security posture.

Type	Status	Name	Default Password	HiDiscovery	Telnet	SSH V1	Tftp	Http	SNMP V1/V2	Profinet IO	IEC61850	Ethernet/IP	Time Sync...	Unused Active Ports	Restricted Management Access
	⚠	BAT-F		⚠					⚠				⚠		⚠
	⚠	BAT-R		⚠					⚠				⚠		⚠
	⚠	EAGLE30	⚠	⚠	⚠				⚠				⚠		⚠
	⚠	EESX30		⚠	⚠			⚠	⚠				⚠		⚠
	⚠	MAR1030		⚠	⚠				⚠				⚠		⚠
	⚠	MSP30	⚠	⚠	⚠			⚠	⚠				⚠		⚠
	⚠	RSPE32	⚠	⚠	⚠			⚠	⚠				⚠		⚠

Rogue Device Detection

In a perfect world, industrial networks should be static. The network administrator will know exactly which end devices are connected to the network.

In reality, it is difficult to prevent users from connecting new devices. The connection of unauthorized devices can have many consequences. Additional or inappropriate traffic may destabilize the network, leading to poor performance or network downtime. Unknown devices may not conform with your network security policy, and therefore introduce new vulnerabilities.

In any case, if new devices are introduced to the network, you need to know about it.

The Rogue Device Detection feature periodically scans for new devices. If discovered, the devices are added to the Rogue Devices folder, and you will be notified. This gives you the opportunity to take action before a rogue device causes a problem on your network.

Get notified about rogue devices.

We reserve the right to make technical changes. EMEA +49 (0) 7127/14-1809 | beldensolutions.com ■ US 1-800-BELDEN-1 | belden.com
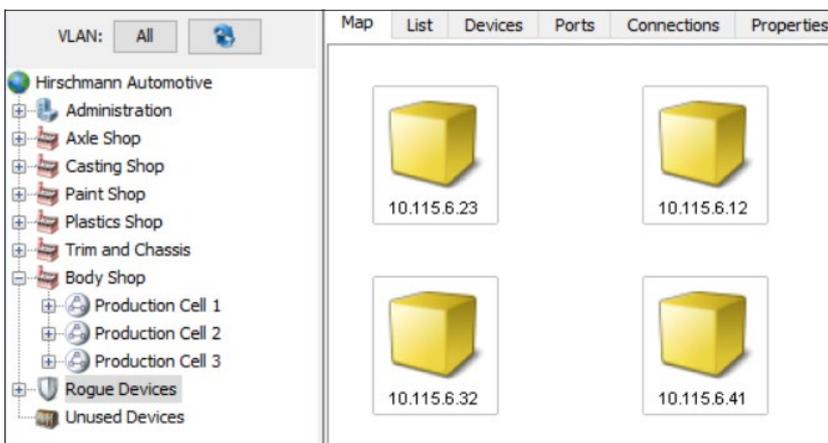
MAC/IP Address Pairs

Attackers are aware of many methods to get access to your network. One of the most common techniques is known as spoofing.

During a spoofing attack, the attacker will take the IP address of an existing device and assign it to his own PC. As firewalls and Access Control Lists are typically configured for IP addresses, the attacker's PC will get the same network access as the original device.

Industrial HiVision can warn you if a MAC/IP address pair changes, giving you the chance to investigate this possible security breach.

Of course there are legitimate reasons why MAC/IP address pairs could change, for example if data is being transmitted through a router. So you can fine tune the function to avoid false alarms.

Detect IP Address spoofing attacks.
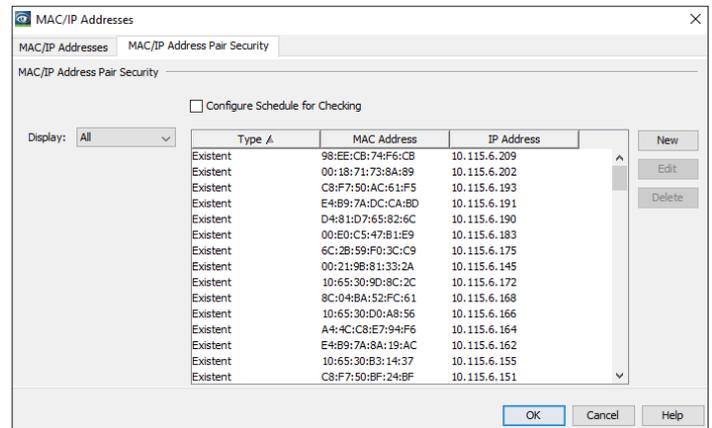
Wireless LAN

Wireless LAN technology is reliable and secure. So the deployment of WLAN devices in industrial networks is becoming increasingly prevalent. WLAN devices have their own sophisticated configuration and supervision tools. But as these devices are active components of the industrial infrastructure, they need to be visualized within the same network management application as the rest of the network.

WLAN Topology

Traditionally Industrial HiVision has been used to display the topology of cabled links. But it also has the capability to show wireless connections.

The auto-topology mechanism will discover and display both point to point links, and connections between access points and clients.

Point to point links, also known as bridge links, behave like cables, and therefore form part of the network infrastructure. Industrial HiVision uses the same display characteristics for both cabled and wireless links. So if wireless bridge links are being used as backup connections, for example in a Rapid Spanning Tree network, they are displayed as dashed lines.

If you are using WLAN bridge links to extend your cabling, Industrial HiVision will provide you with a consistent view across your complete network.

Automatically create your WLAN topology view.
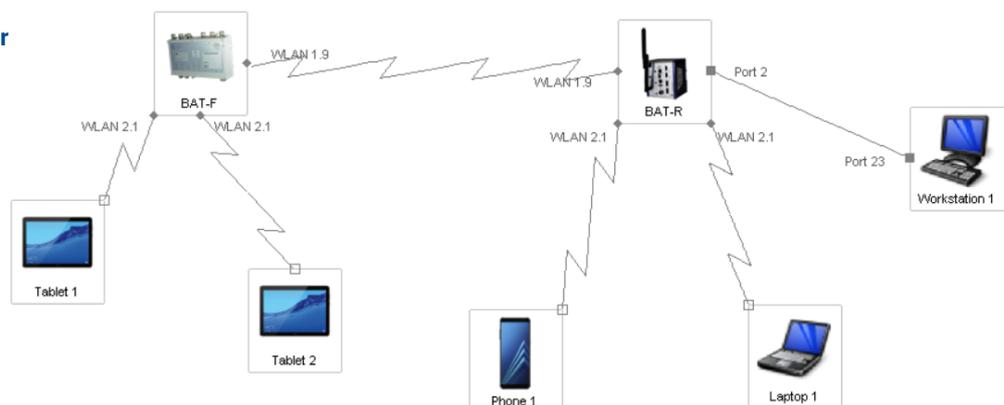
WLAN Bridge Link Status

Wireless bridge links can save you time and money when used as an alternative to cables.

With modern encryption and authentication techniques, communication over wireless links is secure.

This still leaves the question of reliability.

When a wireless bridge link is installed, the antenna alignment is perfect. Therefore the data throughput is maximized. Over time, the antennas may become misaligned, usually as a result of harsh weather, such as strong winds. In this case, the data throughput deteriorates progressively, until the link fails entirely.

Industrial HiVision can generate alarms when the antennas start to become misaligned. This gives you time to readjust the antennas, before the bridge link fails. This function helps you to ensure reliability of the link.

Enhance the availability of WLAN bridge links.

Speed: 217.0
Media Type: Wireless

Status: Warning
Reason: Warning: BAT-F/WLAN Interface 1/WLAN 1.9/Signal to Noise Ratio<16, Current Value:13
Warning: BAT-R/WLAN Interface 1/WLAN 1.9/Signal to Noise Ratio<16, Current Value:11
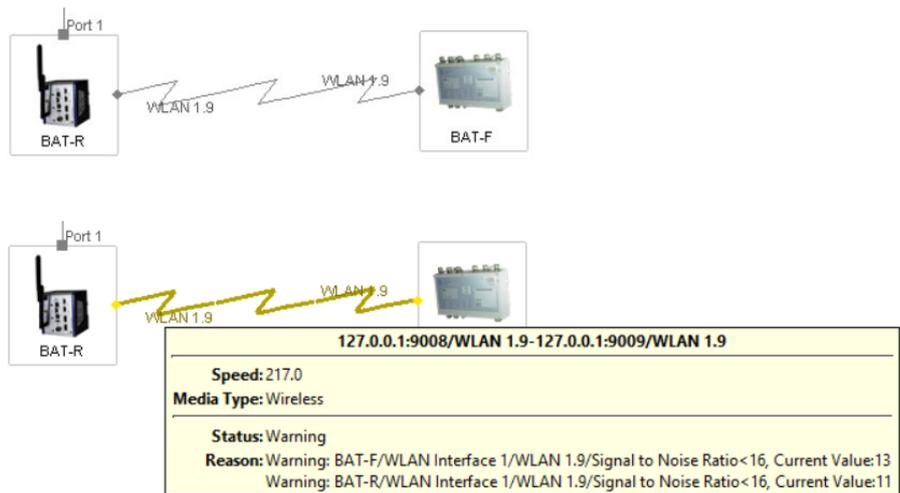
Client Activity Event Log

The use of wireless clients in industrial networks is increasing at a rapid rate. Today clients fall into two categories, static and mobile.

An example of a static client would be a cordless nutrunner. Its area of operation should not be limited by a cable, but it will never move out of its wireless cell. So just like any other end device, you need to know when it is connected or disconnected from the network.

A mobile device could include a tablet or a portable workstation. An operator moves around the plant floor, using the device at different locations. For you it is important to know how the device is roaming through your network.

From a network administration perspective, there is no difference between a wireless or wired end device. If you are responsible for tracking which end devices are connected to your network, both when and where, then treat both device types equally.

Stay informed about client activity on your network.

ID	Ack.	Type	Category	Time	Source	Message
1362	☐	ⓘ	SNMP Trap	2019-05-25 13:50:29	192.168.1.41	Disassociated WLAN station due to idle timeout
1361	☐	ⓘ	SNMP Trap	2019-05-25 13:49:57	192.168.1.41	Deauthenticated WLAN station, MAC Address: 84:2e:27:46:0a:86
1360	☐	ⓘ	SNMP Trap	2019-05-25 13:49:55	192.168.1.41	User Roamed, MAC Address: 84:2e:27:46:0a:86
1359	☐	ⓘ	SNMP Trap	2019-05-25 13:49:55	192.168.1.40	Connected with New User, MAC Address: 84:2e:27:46:0a:86
1358	☐	ⓘ	SNMP Trap	2019-05-25 13:49:52	192.168.1.41	User Roamed, MAC Address: dc:08:0f:55:7c:d7
1357	☐	ⓘ	SNMP Trap	2019-05-25 13:49:52	192.168.1.40	Connected with New User, MAC Address: dc:08:0f:55:7c:d7
1356	☐	ⓘ	SNMP Trap	2019-05-25 13:49:35	192.168.1.41	User Roamed, MAC Address: dc:08:0f:55:7c:d7
1355	☐	ⓘ	SNMP Trap	2019-05-25 13:49:35	192.168.1.41	Connected with New User, MAC Address: dc:08:0f:55:7c:d7
1347	☐	ⓘ	SNMP Trap	2019-05-25 13:48:08	192.168.1.40	Deauthenticated WLAN station, MAC Address: 84:2e:27:46:0a:86
1346	☐	ⓘ	SNMP Trap	2019-05-25 13:48:06	192.168.1.41	Connected with New User, MAC Address: 84:2e:27:46:0a:86
1345	☐	ⓘ	SNMP Trap	2019-05-25 13:48:06	192.168.1.40	User Roamed, MAC Address: 84:2e:27:46:0a:86
1343	☐	ⓘ	SNMP Trap	2019-05-25 13:46:51	192.168.1.41	Deauthenticated WLAN station, MAC Address: 84:2e:27:46:0a:86
1342	☐	ⓘ	SNMP Trap	2019-05-25 13:46:49	192.168.1.41	User Roamed, MAC Address: 84:2e:27:46:0a:86
1341	☐	ⓘ	SNMP Trap	2019-05-25 13:46:49	192.168.1.40	Connected with New User, MAC Address: 84:2e:27:46:0a:86
1339	☐	ⓘ	SNMP Trap	2019-05-25 13:45:58	192.168.1.41	User Roamed, MAC Address: dc:08:0f:55:7c:d7
1338	☐	ⓘ	SNMP Trap	2019-05-25 13:45:58	192.168.1.40	Connected with New User, MAC Address: dc:08:0f:55:7c:d7
1336	☐	ⓘ	SNMP Trap	2019-05-25 13:45:00	192.168.1.41	Connected with New User, MAC Address: dc:08:0f:55:7c:d7
1335	☐	ⓘ	SNMP Trap	2019-05-25 13:45:00	192.168.1.40	User Roamed, MAC Address: dc:08:0f:55:7c:d7
1334	☐	ⓘ	SNMP Trap	2019-05-25 13:44:47	192.168.1.40	Connected with New User, MAC Address: dc:08:0f:55:7c:d7
1333	☐	ⓘ	SNMP Trap	2019-05-25 13:44:37	192.168.1.40	Disassociated WLAN station due to station request, MAC Address: dc:08:0f:55:7c:d7
1332	☐	ⓘ	SNMP Trap	2019-05-25 13:44:19	192.168.1.40	Connected with New User, MAC Address: dc:08:0f:55:7c:d7
1331	☐	ⓘ	SNMP Trap	2019-05-25 13:44:06	192.168.1.40	Disassociated WLAN station due to station request, MAC Address: dc:08:0f:55:7c:d7

MultiConfig™

MultiConfig™ is a core component of Industrial HiVision. At a high level, the concept is simple. One or more parameters can be configured on multiple devices simultaneously. The devices do not need to be the same. It even works across manufacturers. So why is MultiConfig™ such an important tool for network deployment and operation?
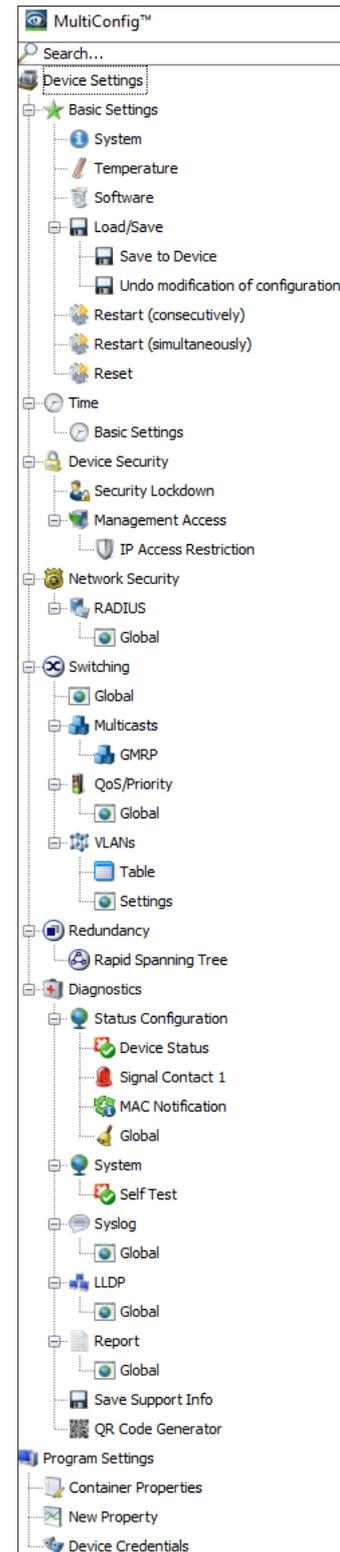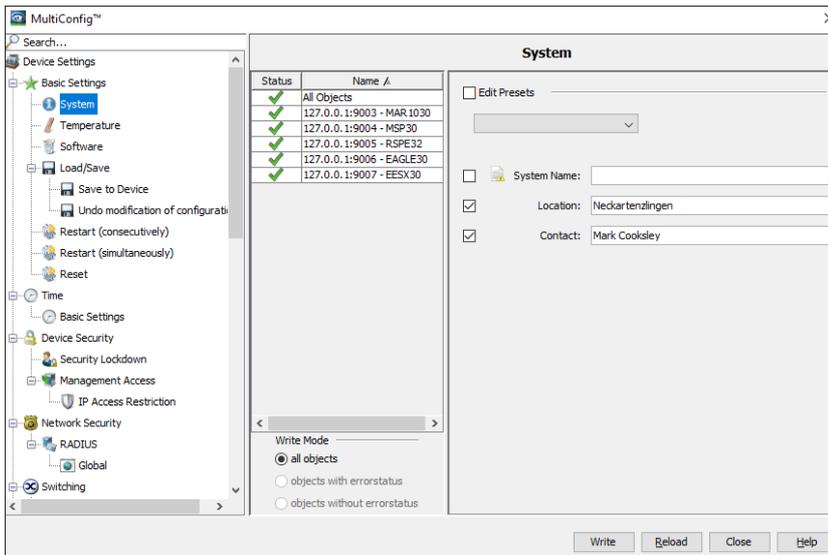
MultiConfig™ ▲

When configuring a network, parameters on the devices often need to be configured to the same value. Of course it is possible to configure each switch individually, for example using the built-in web interface or a command line. But it is far quicker to configure all the switches simultaneously.

Also, repetitively configuring the same parameter again and again can easily result in errors. What is worse, these errors will be time-consuming to find.

MultiConfig™ can save you huge time and effort when configuring your network. Let's look at some examples.

Save time and prevent errors during network configuration.

MultiConfig™ for Installation ▶

Generally speaking, Ethernet switches will work out of the box. You can build a network just by cabling the switches together. This is why unmanaged switches are popular for creating networks which have little operational significance.

But when you invest money to buy managed switches, you expect to be able to customize the network to meet your exact requirements.

On the right you can see a list of typical parameters which you would need to configure on a managed network. For critical networks, this list is just the tip of the iceberg.

Installing a network is a stressful task. MultiConfig™ facilitates the network configuration process, allowing you to devote your full concentration to the configuration itself.

Reduce network configuration effort.

MultiConfig™ Port Manager

A robust network needs configuration at the switch level. But for fine-tuning, it also needs configuration at the port level.

Clearly the number of ports in a network far exceeds the number of switches. In many network deployments, configuring ports is the most time-consuming aspect of the process.

For this reason, we have also developed the MultiConfig™ tool for use with ports.

The list on the right shows typical parameters which may be configured at port level. The number of configurable parameters per port is extensive, depending on the capabilities of the switch.

The MultiConfig™ Port Manager is the fastest way to configure groups of ports during network installation.

Ensure consistent configuration across ports.
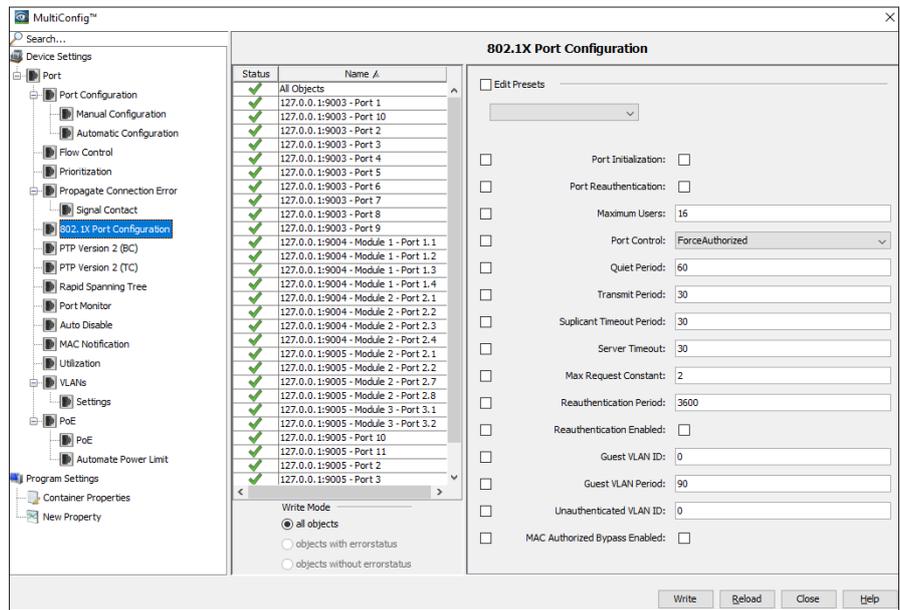
MultiConfig™ for Third-party Devices

Industrial HiVision was designed from the beginning to support Hirschmann devices. A tool like MultiConfig™ makes it simple and fast to install a network of Hirschmann devices.

But modern networks consist of devices from many manufacturers. So it makes sense that MultiConfig™ can also be used for third-party devices.

For standardized parameters this is relatively simple to implement. For manufacturer-specific parameters, it is far more challenging, not least because there are an almost unlimited number of configurable parameters.

Industrial HiVision has met the challenge by incorporating MultiConfig™ for third-party devices directly into HiFusion.

To summarize, this high speed tool for configuring third-party devices is available to you today, and can be customized to meet your requirements.

Universal network configuration with MultiConfig™.
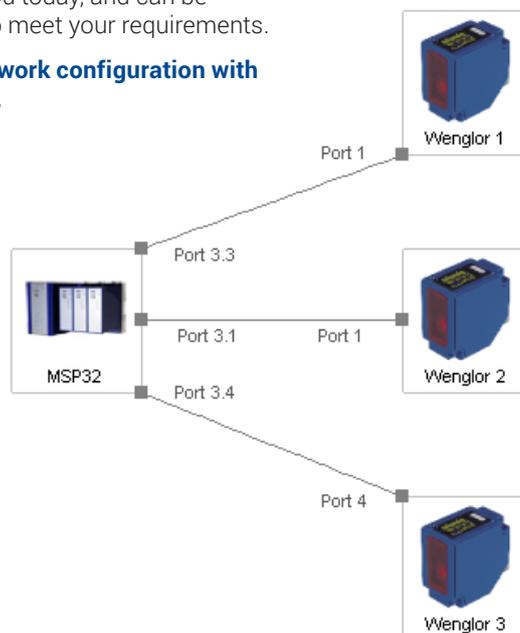
MultiConfig™ Live Operation

It is easy to think that MultiConfig™ is a tool which is only required for network installation. But this is not the case.

Device configuration does not end when a network goes live. During day to day operation, networks still need to be maintained.

For example, security best practices dictate that you should change the passwords of your network infra-structure devices on a regular basis.

Security vulnerabilities are a fact of life. As technology progresses, more vulnerabilities are discovered. Device manufacturers will of course issue security patches, but it is up to you to roll out the updates.

These are typical examples of how MultiConfig™ can continue to save you time and effort during the lifetime of your network.

Reduced effort for network maintenance.
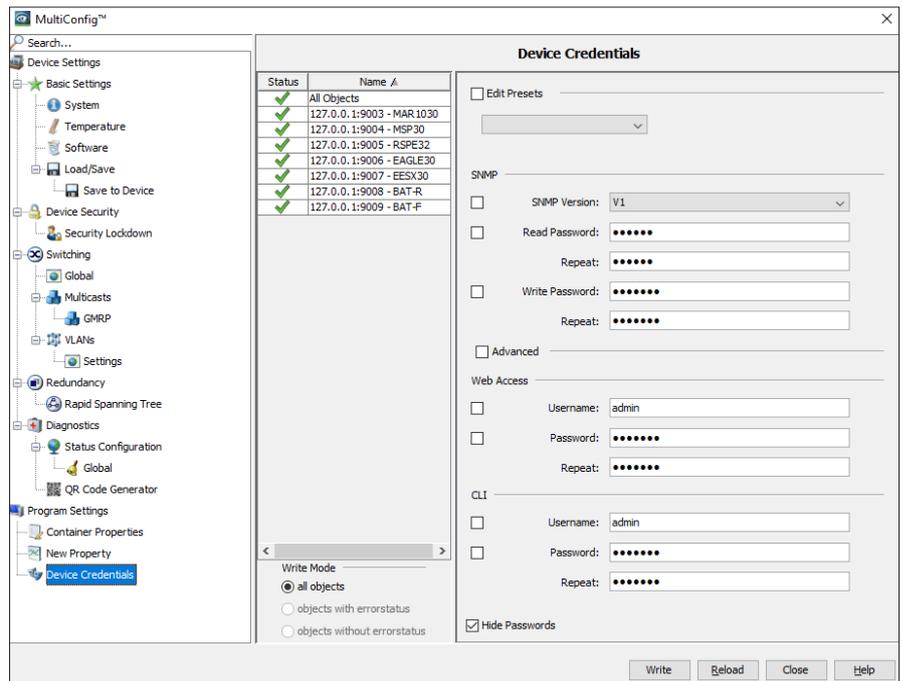
MultiConfig™ Device Load/Save

Backing up the configuration of your switches to an external storage medium is a basic operational requirement.

You need copies of your device configuration files for network documentation.

You need to update these stored files if the device configurations are changed.

And you need an easy way to do it.

MultiConfig™ provides the easiest way to back up all your devices simultaneously. You have a choice of communication protocols to match your available servers. Wildcards will ensure that the configuration files have unique names.

Hopefully you will never need the configuration files. But having them securely stored will give you confidence that you are prepared for the worst.

Straightforward back-up of multiple devices.
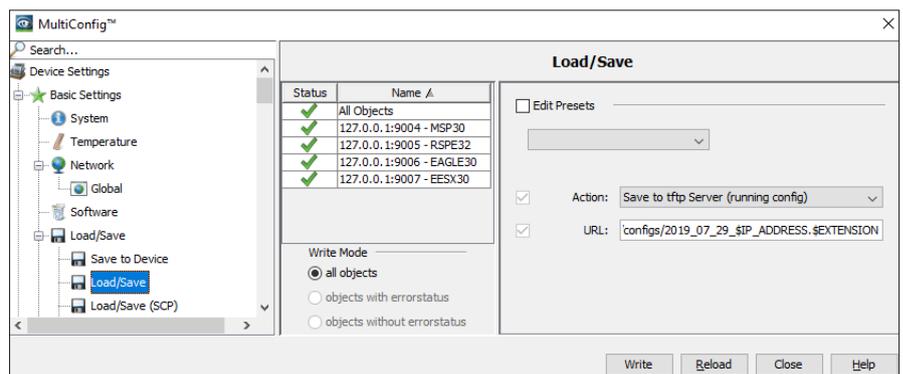
MultiConfig™ Consecutive Reboot

Having to reboot multiple devices is not common. But there are times when it might be necessary. Planned reboots, such as after a firmware upgrade, do not present a problem and should not affect your service level agreements.

Unplanned reboots are another matter. Sometimes network faults occur, and when no other action has fixed the fault, the last resort is to reboot devices.

Rebooting all switches simultaneously causes massive disruption to live operation.

Even worse, it entails a high degree of risk. What happens if some devices do not reboot?

The MultiConfig™ Consecutive Reboot function will reboot the switches one after the other. If a switch does not reboot, the process stops.
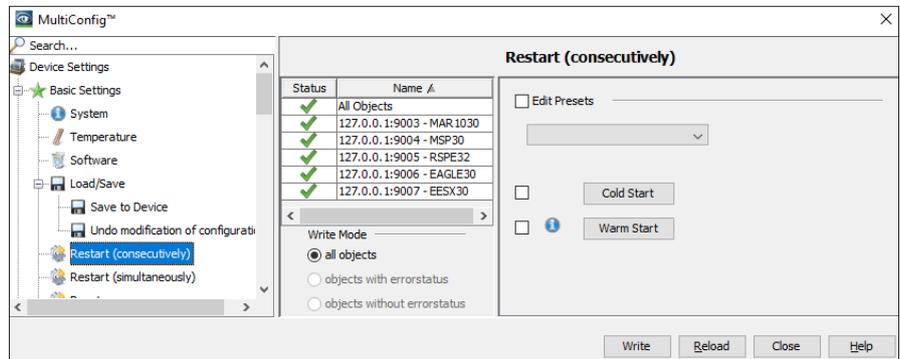
Use this function to reduce disruption and minimize risk when conducting emergency maintenance on your network.

The safest way to reboot a network.

MultiConfig™ Consistency Check

Consistent configuration across switches is essential for stable network operation and maximum uptime.

There are many ways to analyze configurations across devices, but sometimes all you need is a quick check. The MultiConfig™ Consistency Check provides you with a fast and easy solution.

First select the switches that you want to check. Then select the relevant function from the MultiConfig™ menu. The parameters for this function will be displayed.

If the value of a parameter across all devices is identical, it is displayed. If the value is not identical, a warning appears next to the parameter. To read the parameter per individual device, just select the relevant IP address. You will find the rogue value in no time at all.

This simple technique will save you valuable time when investigating a network anomaly.

Promotes consistency across network configuration.
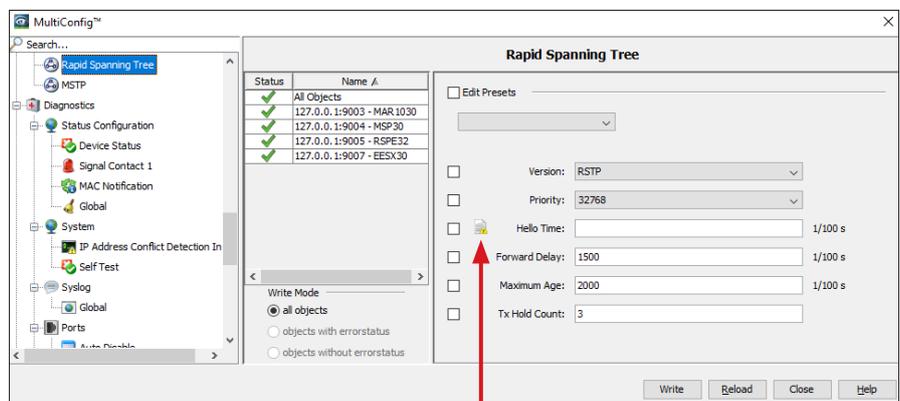
Parameter is not identical on all devices

MultiConfig™ Save Support Information

Even the most professional of networks may need technical support at some time. Hirschmann is proud to offer technical support directly to our customers.

To maximize the efficiency of the support process, the technician will ask you for information about your network. For example network topology, device configuration, system information, log files, and so on. Without this information, the technician cannot conduct serious diagnostics.

You could manually collect the information from each device. This would be stressful during a fault situation.

Or you could use the MultiConfig™ Save Support Information option. With a
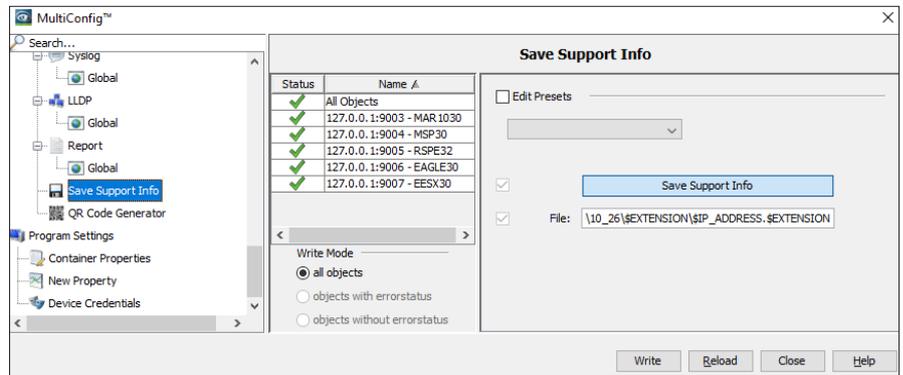
couple of clicks, all the required support information will be downloaded from your switches to your Industrial HiVision PC, then zipped into an archive ready to be forwarded to our help desk. This enables the technician to start work on your network issue with the minimum of delay.

Fastest technical support.

Application Security

Industrial HiVision is a powerful configuration tool. It can be used to configure every aspect of your network infrastructure. So it is important to control who has access to this application. Industrial HiVision offers various methods of access control, to seamlessly integrate with your corporate standard.

Access to Industrial HiVision

Industrial HiVision is a powerful tool for network configuration, supervision and reporting. Therefore user accounts and permissions must be tailored to suit your security requirements.

At the most basic level, Industrial HiVision can operate without user accounts.

The next security level involves password-protecting Edit Mode. A password would then be required to make modifications to the application. For closed systems, this may be enough.

For more advanced security, user accounts are supported. The accounts are used to force a login to Industrial HiVision.

It is also possible to create roles with assigned permissions. These roles can then be allocated to individual user accounts.

Flexible user configuration for appropriate security levels.
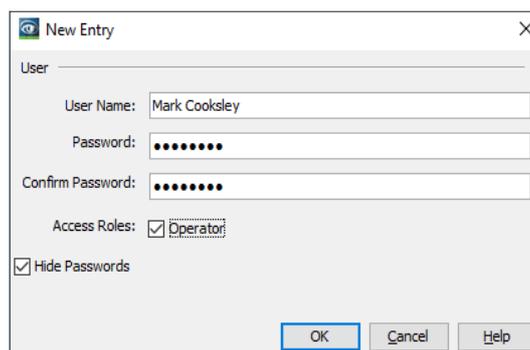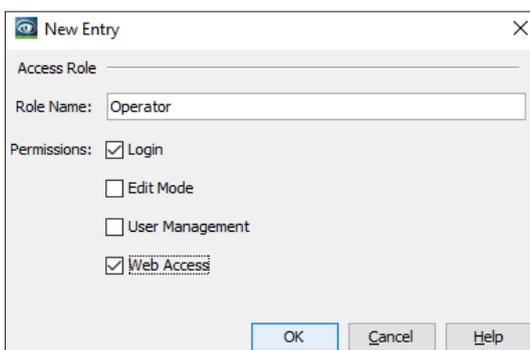
User Authentication

For many installations, the user management provided locally by Industrial HiVision is ideal. For larger installations, especially where IT/OT convergence is taking place, another approach may be required.

Some companies require a single sign-on per user. In other words, one set of credentials provides access to all corporate applications. Industrial HiVision achieves this by allowing you to authenticate users via LDAP.

An older but very widely used method of central authentication is RADIUS. Traditionally RADIUS is used to authenticate login credentials for switches. But for consistency, we have also made RADIUS available for Industrial HiVision authentication.

By offering a spectrum of techniques, Industrial HiVision can match your authentication requirements.

User authentication complies with your corporate standard.

Audit Trail

As a network administrator, the responsibility for the smooth running of the network rests with you. But all employees who actively work with the network must be accountable for their actions.

The purpose of standard event logs is to provide information about the network history. But these logs are not intended to be secure. Entries can be deleted.

The Audit Trail provides a permanent record of events relevant to Industrial HiVision. This includes the user who caused the event.

Hopefully you will never need the Audit Trail. But if you ever have to prove what occurred on your network, you can rest assured that the information is available.

Permanent record of operator actions.
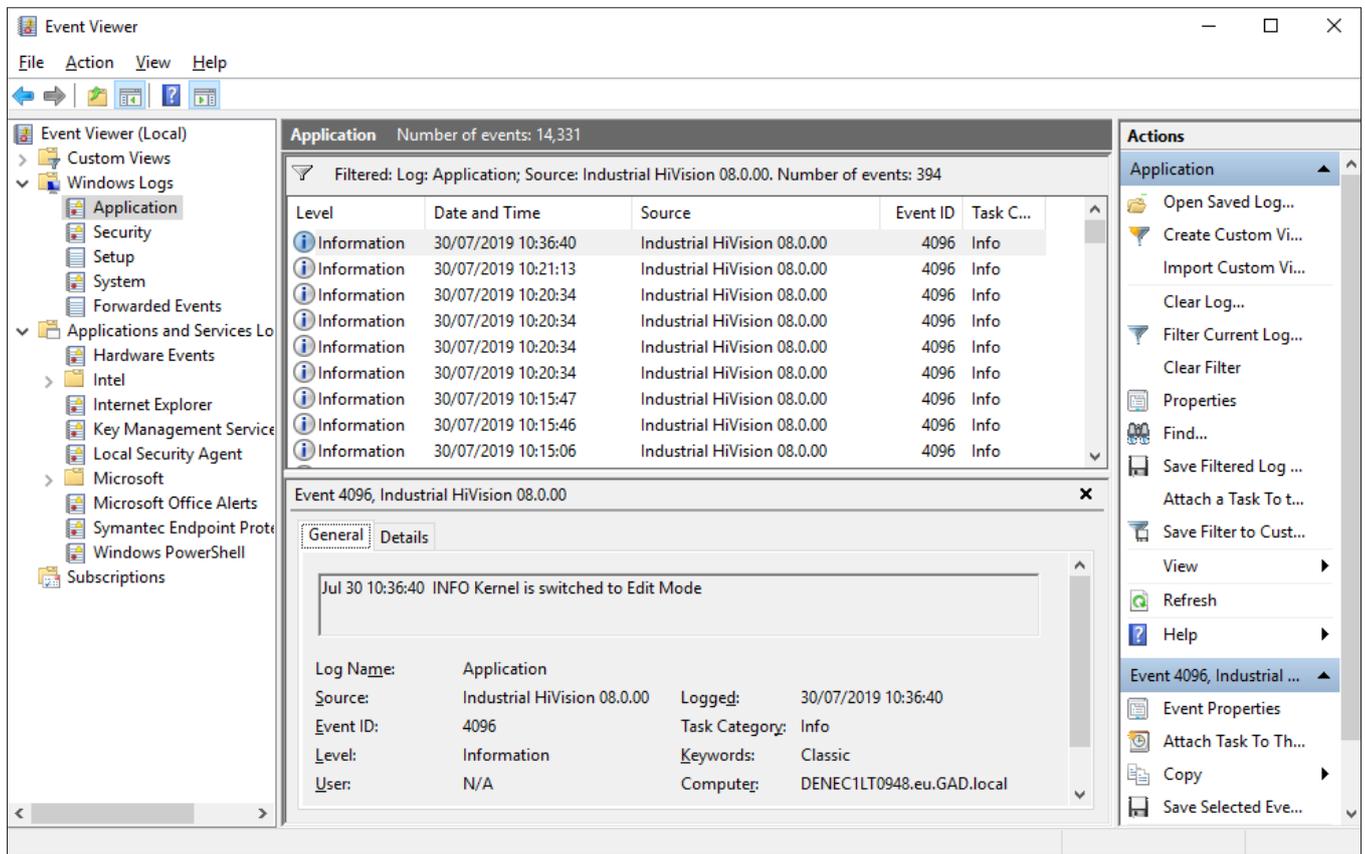
Event Logging

Event logs are one of the cornerstones of network management. They provide valuable historical information for analysis and reporting. Event logs are also an important source of information when fault finding. Comprehensive factual information, presented in an intelligible way, will assist you to maintain a high level of network availability, and provide rapid service to your network users.

Event History Log

It is not possible to watch a network management screen 24 hours a day. So an intuitive event log is one of the most important network management tools.

For the network operator, the event log provides a list of warnings and errors logged by time, and information about when these problems were fixed. Acknowledging an entry confirms that the operator is aware of the log entry.

The event log provides information about the overall performance of the network, as well as the network management application itself. Comprehensive filters make it easy to view just the required information.

SNMP Traps show events as they happen, meaning your information is always up to date.

The event log will give you an instant overview of the recent history of your network.

Extensive list of recent events.

Graphical Event History Display

The Event History log provides a lot of useful information about what has happened in the recent past. But sometimes you just need a high level overview.

A musical score shows the notes for all instruments lined up in a fixed order. The Graphical History Event Viewer provides the same display for network devices. Essentially it gives you a visual view of the status of network devices over time. You can scroll the screen back in time, to view history. You can zoom into the screen for more detailed information.

This visual display results in intuitive event correlation. At a glance you can see which devices were affected by which events. This information helps you to pinpoint the basic cause of a network failure. You can then return to the text based event log for more comprehensive information.

Visual event correlation.
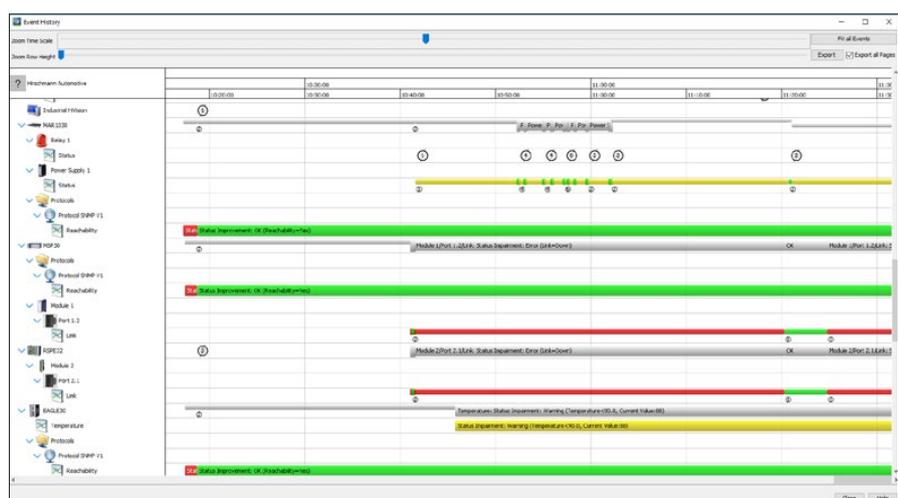
Event Log Export

If a network incident occurs, it is good practice to document what happened and how it was resolved, for future reference.

Industrial HiVision facilitates this by making all event logs exportable. You can select which severity of information will be included, for which devices, over which time frame.

Exported data is available as pdf, html, or csv. So reports can be customized to match your corporate standard.

Don't spend hours creating reports. The event export function in Industrial HiVision provides the required information for professional quality reports with just a few clicks.

Facilitates the creation of professional looking reports.

Event Log on Mobile Devices

Industrial networks run 24 hours a day. But you cannot always be in the Operations Center, or at your desk.

What if a network problem is reported to you out of hours?

The event log is one of the most valuable tools for rapid fault finding. But how can you get access to it when you are away from the network management station?

Industrial HiVision has a built-in web server. This server can provide the event log as a standard web page.

Of course to take advantage of this feature, you must have access to the Industrial HiVision server from your current location.

This function can provide real-time information directly to your phone or tablet. Consequently you can maximize your network availability by starting the fault-finding immediately.

Event log information directly to your phone.
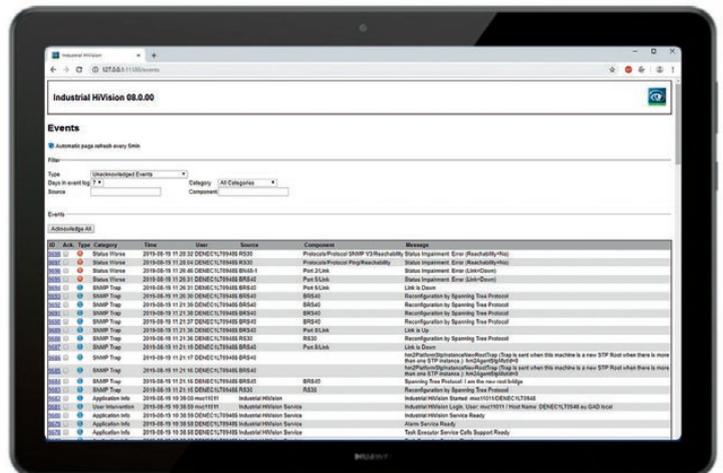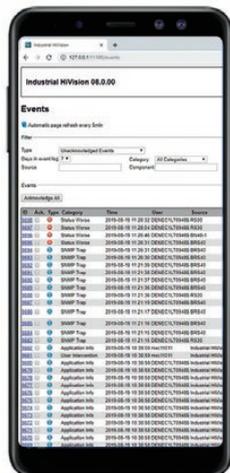
Event Handling

No network can be supervised by a person, 24 hours a days. So you need a proactive way to be informed about network events. Preferably using a technique which fits into the current way you work. At the same time, the network is just part of a much bigger application. So network events need to be shared with colleagues outside your immediate department. Industrial HiVision gives you a choice of how to achieve these objectives.

Event Reporting

Event logs store information for later use. But often if an event occurs, you or your network operators need to know immediately.

Industrial HiVision offers you many options for event reporting. An audio alarm will attract attention. Standard options like email, SMS and push notifications make use of mobile phones. An event can start any other application. A pop-up message box can give the operator precise instructions for dealing with the alarm.

Event handling can be customized to suit your requirements.

For beginners, existing events from the event log can be used to generate and tailor new events for reporting. So getting started could not be easier.

Take some time to set up the event reporting. Receiving network events in a timely fashion will give you additional time to plan your response.

Instant notification of selected events.
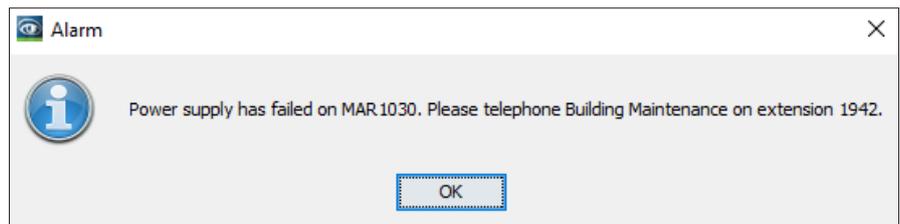
Event Forwarding

The events stored by Industrial HiVision are intended to be used for short-term network administration and fault-finding. For long-term storage and analysis, it is common to use a central location to store all events. This location is typically a Syslog Server.

Industrial HiVision provides you with two powerful options to forward events to one or more central Syslog Servers.

First, all internal events can be forwarded. So events relevant to Industrial HiVision itself, such as user logins, are stored.

Second, events about network devices can be forwarded. This is useful if your networked devices do not support Syslog. It is also valuable if you do not want your devices to send their own Syslog messages outside the local network.

Storing all your messages centrally will allow you to take advantage of modern techniques such as event correlation.

Centralize your event messages.
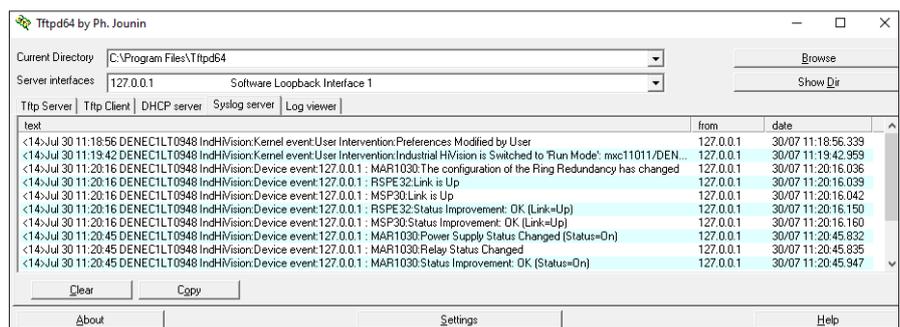
Event Escalation

In a perfect world, your network operators would see and acknowledge every event. In reality, sometimes the operators will be focussed on other tasks, and the events will get missed.

Industrial HiVision offers a simple function to mitigate this problem. Unacknowledged events can be redirected to an alternative operator, or escalated to you.

You can define the acknowledgement time-out period per alarm. For example, the higher the event severity, the shorter the acknowledgement period.

You can also define how each event should be escalated.

Event escalation reduces the chance of events being missed, and helps you and your colleagues to maintain awareness of the network status.

Prevent alarms being overlooked.
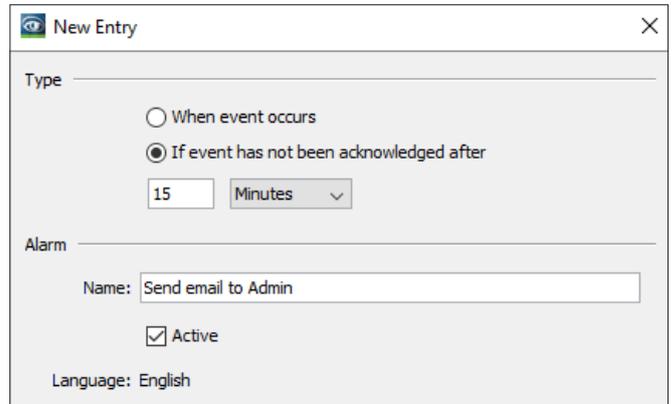
Asset Management

Asset management is a critical component of proactive network management. You need to understand what your company owns, and where it is located. Optimizing the use of existing assets can save the expense of buying new ones. Spare parts stock needs to match the deployed hardware. If you outsource your hardware maintenance, you will need to know what is covered.

Asset Management – Summary

An inventory list is the first task in the asset management process.

Industrial HiVision provides a concise summary of your network infrastructure devices. This includes device type, serial number, software version, location, and other relevant information. All this information is contained on a single screen, and can be exported into a single spreadsheet.

The asset management summary in Industrial HiVision can save you hours of effort. Even better, because the information

is read online, directly from the devices themselves using SNMP and EtherNet/IP, you can be sure that it is accurate.

Whether you need asset management for your network documentation, or for regulatory compliance, the summary is a good first step towards conformity.

Ensures accurate inventory.

Type	Status	Name	IP Address	MAC Address	Product	Chassis	Serial Nr.	System Name	Location	Contact	Firmware Version
	✓	MAR1030	127.0.0.1:9003	00:80:63:5A:E4:28	MACH Rugged Switch	MAR1030	943940999000101226	MAR-5AE428	Neckartenzlingen	Mark Cooksley	L2P-08.0.06
	✓	MSP30	127.0.0.1:9004	EC:E5:55:AE:AF:C2	MSP	MSP30-2404	942076999010601737	MSP-ECE555AEAFC2	Neckartenzlingen	Mark Cooksley	HiOS-2A-04.0.00
	✓	RSPE32	127.0.0.1:9005	EC:E5:55:F6:99:C0	RSPE	RSPE32-24044O7T99	837640605010101053	RSPE-ECE555F699C0	Neckartenzlingen	Mark Cooksley	HiOS-3S-05.0.00-ALP...
	✓	EAGLE30	127.0.0.1:9006	EC:E5:55:01:30:60	EAGLE 20/30	EAGLE30-04022O6TT999	0815	EAGLE-ECE555013060	Neckartenzlingen	Mark Cooksley	HiSecOS-01.2.00
	✓	EESX30	127.0.0.1:9007	EC:E5:55:F6:7D:00	EESX	EESX30-0802	837634005010101034	EESX-ECE555F67D00	Neckartenzlingen	Mark Cooksley	HiOS-2E-04.0.01-RC02
	✓	BAT-R	127.0.0.1:9008	EC:E5:55:FF:D0:FC	BAT	BAT-R	942070999000000191	BAT-R_340BC8	Neckartenzlingen	Mark Cooksley	8.90Rel
	✓	BAT-F	127.0.0.1:9009	EC:E5:55:FF:D3:CF	BAT	BAT-F	942070999010101391	BAT-F_619ED8	Neckartenzlingen	Mark Cooksley	9.00
	✓	PLC	127.0.0.1:9010	00:80:63:77:4B:F7	NETSNMP	PLC		PLC	Neckartenzlingen	Mark Cooksley	
	✓	Robot	127.0.0.1:9011	00:80:63:A7:B0:48	NETSNMP	Robot		Robot	Neckartenzlingen	Mark Cooksley	
	✓	Industrial HiVision	127.0.0.2	00:00:00:00:00:00	Ping Device						

Asset Management – Comprehensive

The Asset Management Summary provides the essential details about your network infrastructure devices. But maybe you need even more comprehensive information.

The Document Device function will create an individual pdf document for each network device. The document not only contains information about a device, but also information about sub-components. For example, the serial numbers of interface cards, the presence of ACA external memory, and the location of SFPs. It is also possible to see the status of ports which are participating in redundancy mechanisms.

You can create documents for all network devices, or just selected ones, with only a couple of mouse clicks.

Create valuable reference documents with a couple of clicks.

Name	Date modified	Type	Size
inventory_82_141_17_130.pdf	19/08/2019 10:40	Adobe Acrobat Document	43 KB
inventory_82_141_17_131.pdf	19/08/2019 10:40	Adobe Acrobat Document	46 KB
inventory_82_141_17_134.pdf	19/08/2019 10:40	Adobe Acrobat Document	43 KB
inventory_82_141_17_135.pdf	19/08/2019 10:41	Adobe Acrobat Document	43 KB
inventory_82_141_17_138.pdf	19/08/2019 10:40	Adobe Acrobat Document	46 KB
inventory_82_141_17_139.pdf	19/08/2019 10:40	Adobe Acrobat Document	43 KB
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inventory_82_141_17_142.pdf	19/08/2019 10:41	Adobe Acrobat Document	44 KB
inventory_82_141_17_143.pdf	19/08/2019 10:40	Adobe Acrobat Document	43 KB
inventory_82_141_17_146.pdf	19/08/2019 10:40	Adobe Acrobat Document	43 KB
inventory_82_141_17_148.pdf	19/08/2019 10:40	Adobe Acrobat Document	43 KB
inventory_82_141_17_149.pdf	19/08/2019 10:40	Adobe Acrobat Document	39 KB
inventory_82_141_17_151.pdf	19/08/2019 10:41	Adobe Acrobat Document	36 KB
inventory_82_141_17_152.pdf	19/08/2019 10:41	Adobe Acrobat Document	43 KB
inventory_82_141_17_157.pdf	19/08/2019 10:41	Adobe Acrobat Document	40 KB
inventory_82_141_17_158.pdf	19/08/2019 10:40	Adobe Acrobat Document	43 KB
inventory_192_168_1_1.pdf	19/08/2019 10:41	Adobe Acrobat Document	43 KB
inventory_192_168_1_2.pdf	19/08/2019 10:41	Adobe Acrobat Document	40 KB
inventory_192_168_1_8.pdf	19/08/2019 10:41	Adobe Acrobat Document	41 KB
inventory_192_168_1_15.pdf	19/08/2019 10:41	Adobe Acrobat Document	41 KB
inventory_192_168_1_17.pdf	19/08/2019 10:41	Adobe Acrobat Document	42 KB
inventory_192_168_1_18.pdf	19/08/2019 10:41	Adobe Acrobat Document	42 KB
inventory_192_168_1_40.pdf	19/08/2019 10:41	Adobe Acrobat Document	43 KB
inventory_192_168_1_100.pdf	19/08/2019 10:41	Adobe Acrobat Document	43 KB
inventory_192_168_1_142.pdf	19/08/2019 10:41	Adobe Acrobat Document	36 KB
inventory_192_168_1_200.pdf	19/08/2019 10:41	Adobe Acrobat Document	46 KB
inventory_192_168_1_201.pdf	19/08/2019 10:41	Adobe Acrobat Document	44 KB
inventory_192_168_1_202.pdf	19/08/2019 10:41	Adobe Acrobat Document	44 KB
inventory_192_168_1_204.pdf	19/08/2019 10:41	Adobe Acrobat Document	43 KB
inventory_192_168_1_205.pdf	19/08/2019 10:41	Adobe Acrobat Document	43 KB
inventory_192_168_1_206.pdf	19/08/2019 10:41	Adobe Acrobat Document	43 KB
inventory_192_168_1_220.pdf	19/08/2019 10:41	Adobe Acrobat Document	47 KB
inventory_192_168_1_221.pdf	19/08/2019 10:41	Adobe Acrobat Document	47 KB

Documentation

Network documentation must be one of the least exciting parts of a network administrator's job. But nevertheless, it is essential. Industrial HiVision can help you to document every aspect of your network, ensuring that your paperwork is always up to date and your records are accurate to assist fault finding.

Documentation

There is no standardized way to document a network. Good practise suggests that your documentation should contain network diagrams. You will also need detailed information about the infrastructure components.

Topology maps can be exported in various graphical formats. Topology maps include ports numbers, link speeds and connection media types.

Product tables include models, serial numbers, software versions, names and IP addresses. This information is available as HTML. Alternatively the data can be exported as a csv file, which is the most convenient and flexible format to be inserted into your documentation.

You must document your network, and Industrial HiVision offers you an effortless way to complete the task quickly.

The most efficient way to document your network.

Network topology in .pdf format

Devices list in .csv format

Tools

Every network administrator has their own software toolbox containing a collection of their favorite utilities. Some tools are almost universal. But others fulfil specific requirements of an administrator or a network. Over the years our customers have asked us to develop a multitude of dfferent tools. Many of these are now integrated directly into Industrial HiVision, ready to facilitate administration tasks.

Project Setup Wizard

Although Industrial HiVision is a powerful network management application, getting started does not require a lot of expert knowledge. But sometimes it is good to have a helping hand.

Maybe you have never used a network management application before, and you would like some guidance.

Maybe you just want to get started quickly, without learning where to find all the options.

In either case the Setup Wizard is right for you. It will take you step by step through the setup process, resulting in a very useable management application in the minimum possible time.

Later, as you become more familiar with the functions offered by Industrial HiVision, you can fine tune it to match your exact requirements.

Get started quickly with no prior knowledge.
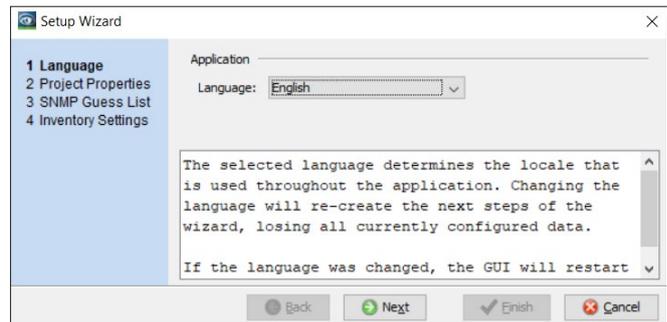
Scheduler

In every network, some tasks need to be repeated. This is usually not the most interesting work, but it is often critical to the smooth running of the network.

A scheduler takes the pressure off you, by automatically running tasks at predefined times.

Some tasks, like backing up switch configurations, or disabling Power over Ethernet outside production hours, are so common that we have built them into Industrial HiVision.

For other tasks which may be specific to individual networks, the Scheduler can run batch or script files created by the network administrator. Wild cards are supported for elements like file names or IP addresses.

By using the Scheduler, you can rest assured that tasks are running smoothly in the background, without your personal intervention.

Automate repetitive tasks.

We reserve the right to make technical changes. EMEA +49 (0) 7127/14-1809 | beldensolutions.com ■ US 1-800-BELDEN-1 | belden.com
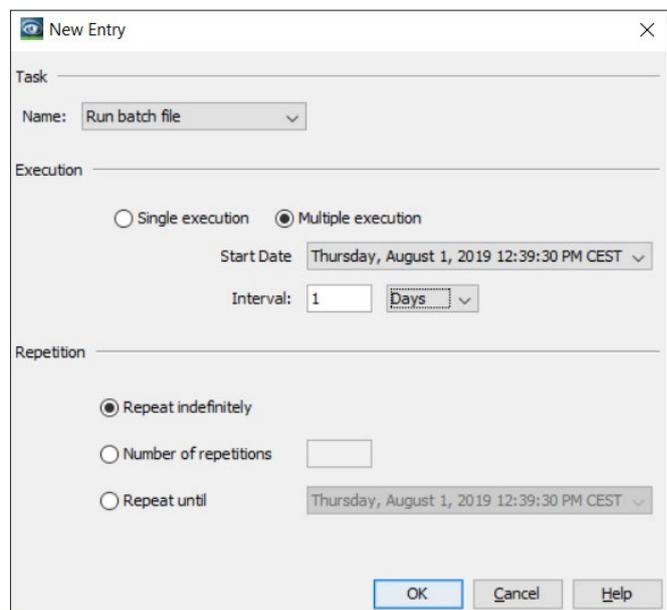
Device Response Times

Whenever there is a communication problem across a network, the users blame the network. The problem may be caused by a slow application, or an overloaded server, but the network is still to blame.

Of course with in-depth knowledge, specialist tools and plenty of time, you can prove the real cause of the problem. But these are luxuries when you are under pressure to remedy the situation.

The Device Availability tool provides you with real-time meaningful statistics about the performance of the network. These include packet errors, lost data, and response times across the network. It is not a mountain of information, but it is enough to give you a feeling of whether the problem is network-related.

In the heat of the moment, this is just the information you need to help you focus on the real cause of the problem.

**Jump start your network fault finding.**

Reporting Tool

Reporting is another of the less glamorous but essential tasks of network management. Keeping good records is a part of a network administrator's responsibility. Long-term knowledge of your network performance will help you to spot trends and anomalies.

Industrial HiVision allows any visible parameter to be added to a report, including any parameters you have defined yourself. This gives you complete flexibility in terms of the information you collect.

There are many options for the scheduling of report generation, from fixed period to sequential.

A built-in PDF generator can create basic visual reports. And by exporting the data in a standard format, you can use applications such as Excel to create professional quality reports.

Create relevant reports with minimum effort.
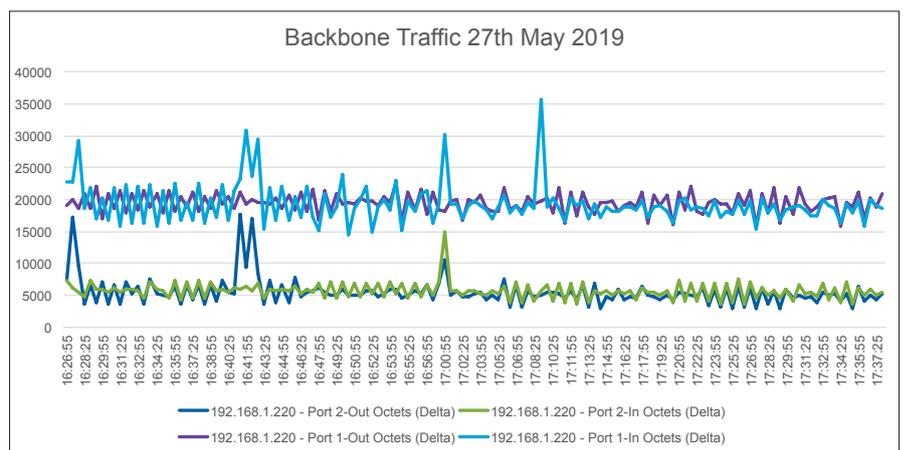
Network Baselining

From a technical perspective, Network Baselining is a subset of reporting. But it represents one of the most important tasks that a network administrator must conduct, to ensure the health of the network.

In this case Network Baseling means monitoring the minimum, average and maximum device response times across a network. Fluctuations in these values could indicate changes in network utilization, or changes in the end devices. In other words, things that you need to know about.

Your devices do not need to offer this information. Industrial HiVision will calculate it for you.
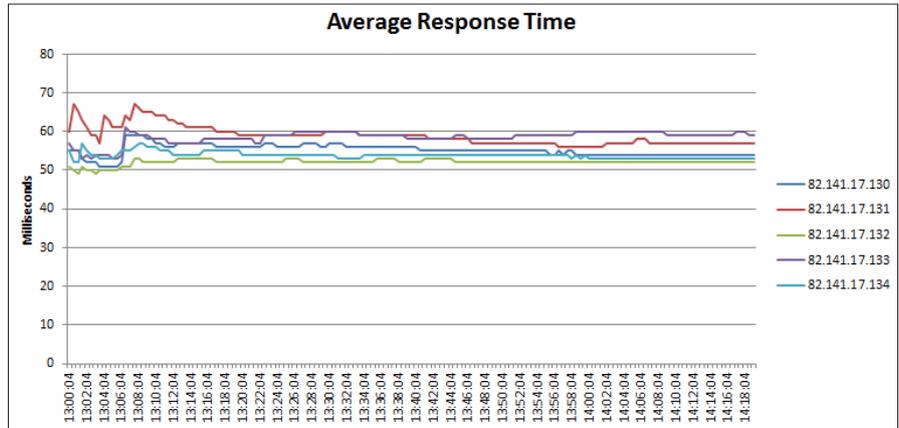
Just select the devices you want to baseline, and you will be well on your way to having a deep understanding of your network's long-term performance.

Understand the typical performance of your network.

Network Dashboard

A network operator has many daily tasks, and monitoring the health of the network is just one of them.

A network dashboard is a useful tool to help the operator stay up to date with the network health.

Essentially a network dashboard is a large screen projected or attached to a wall, which displays a real-time summary of various network components in a graphical, color-coded style. It shows the network status at a glance.

The dashboard in Industrial HiVision is completely configurable. Templates are provided for information such as device or connection status, security status, response times, and application performance. Or you can create your own templates. Multiple dashboards can be displayed in a slideshow.

Greatly enhance the visibility of your network.
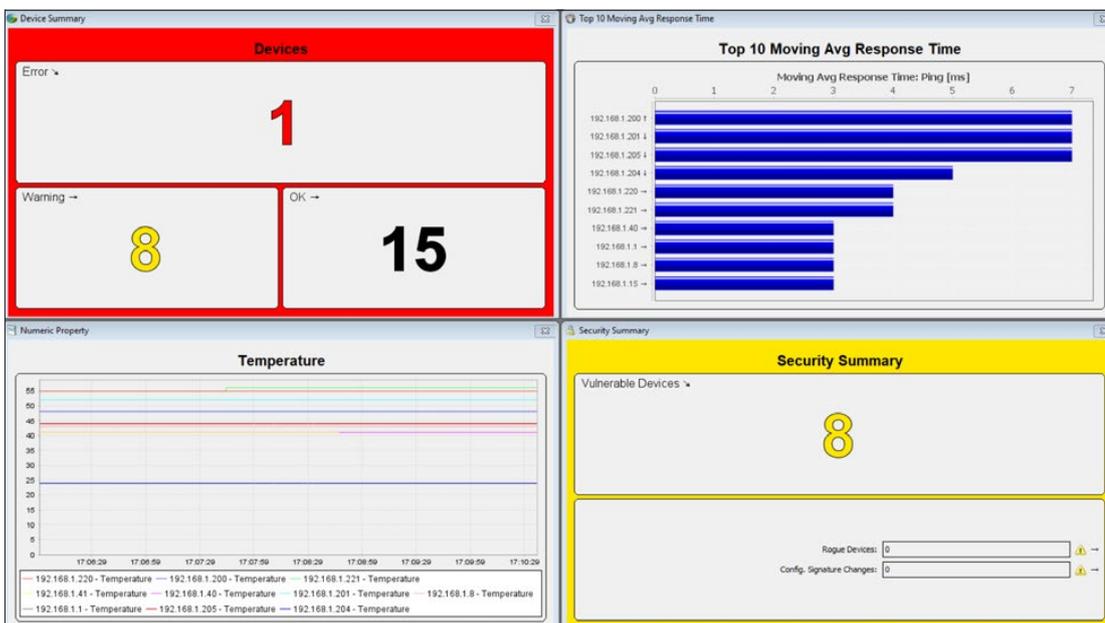
Configuration File Compare

Industrial HiVision includes some great tools to warn you when the configuration of a network device has changed. But that still leaves you with the challenge of working out exactly what has changed.

Of course you could spend hours comparing the previous and current configuration files manually.

Or you could use the Configuration File Compare tool. This gives you a side by side comparison of a device's previous configuration and its current configuration.

Changes are color-coded, making them simple to detect.

Use this tool to save time and frustration when dealing with unauthorized changes to device configurations.

**Save time searching for configuration changes.**

Duplicate Network

There is a well known saying that no two networks are the same. But like many things with OT networks, sometimes reality is far removed from general understanding.

As an example, let's consider a network on a train. Typically each carriage will contain identical hardware, for example cameras, passenger information displays, seat reservation displays, passenger counters, and emergency phones. All these components are networked.

So each carriage needs an identical network, but using different IP addresses.

The Duplicate Network function can create these networks, including devices, IP addresses, passwords, alarms, and event forwarding.
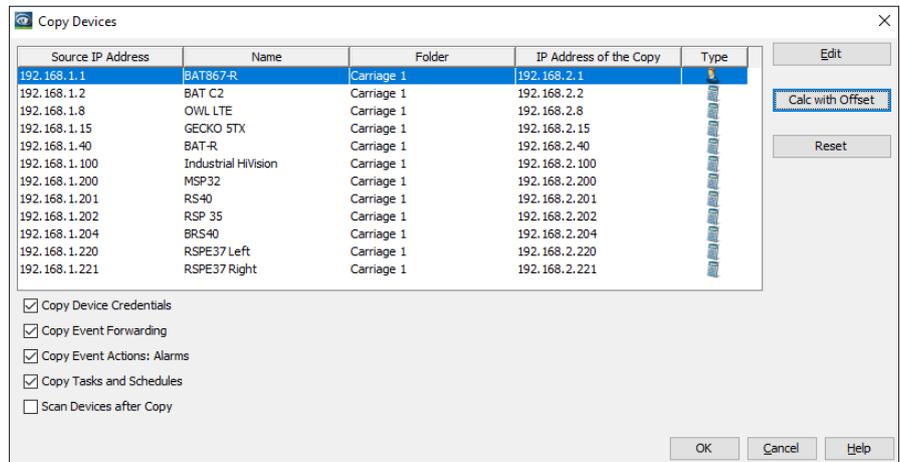
Of course this is a niche function for certain OT networks. But what is niche today, may be mainstream OT tomorrow.

Configure and supervise duplicate networks with minimum effort.

User-defined Menus

Industrial HiVision includes the option to start other device-relevant interfaces directly from within the graphical user interface. For example, right-clicking a switch's icon will allow you to open the device's web interface, or a command line like Telnet or SSH.

But is it possible to run other applications? Especially for third-party devices? Actually, yes. You can design your own device menus, and then run any applications you would like. Wild cards are available for parameters such as IP address. It is even possible to include passwords in the command line.

For example, if you use VNC for remote access to PCs, create a VNC menu and associate it with PC devices.

Enjoy the convenience of customized device access directly from inside Industrial HiVision.

Any application can be started directly from Industrial HiVision.
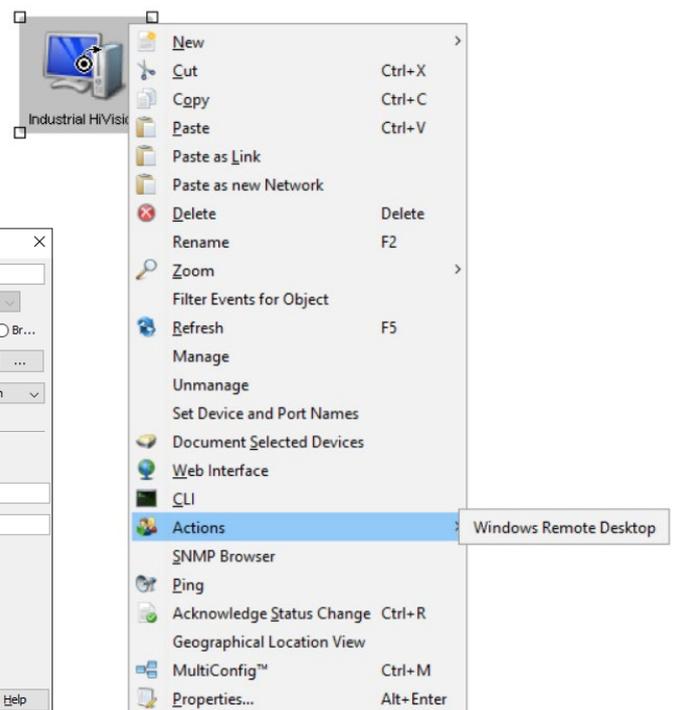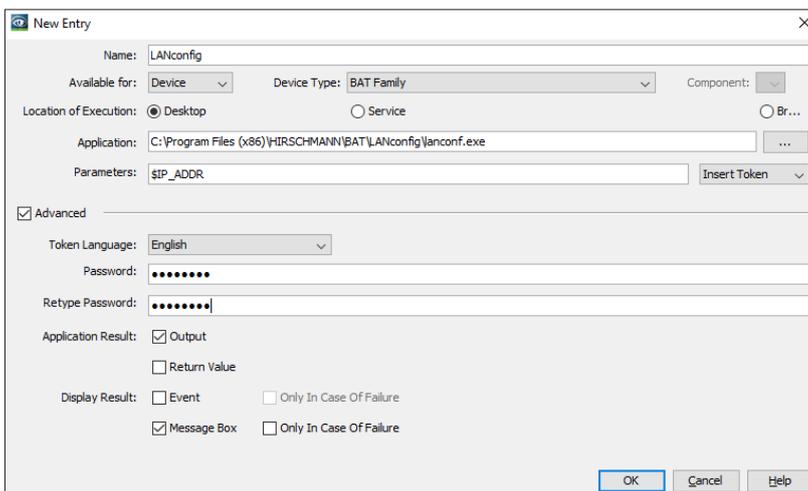
Path Availability Calculator

How often have you heard the expression "five nines availability"? In other words, 99.999% up-time, or 5 seconds a year downtime.

This is the de facto standard for OT networks.

Easy to say, massively complex to calculate.

Industrial HiVision includes a path availability calculator. To be clear, the tool cannot calculate the availability of a network. But as its name suggests, it can calculate the availability of a path through the network. This depends on the Mean Time Between Failures and the Mean Time To Repair of the network devices, and the redundant paths between the devices.

It is a highly theoretical tool. But it can help you to understand the strengths and weaknesses of your network topology, and the additional availability you could gain by adding redundant devices or connections.

Optimize the availability of any network path.
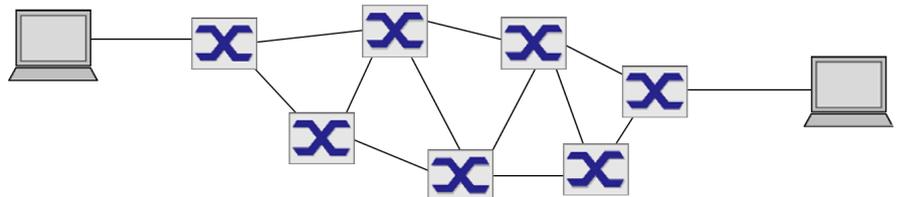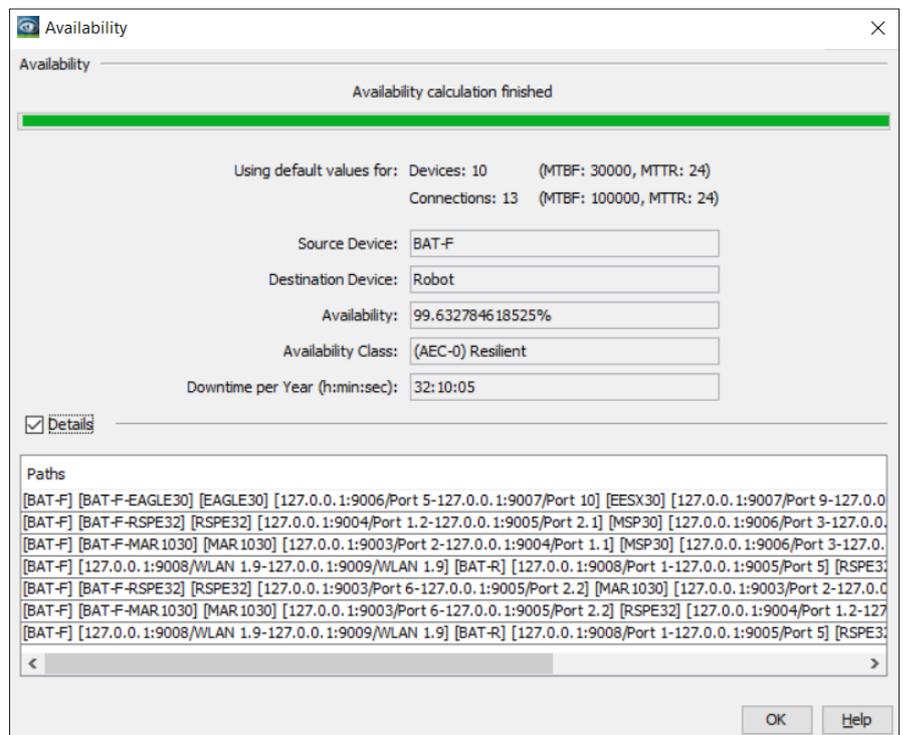
HiFusion

Industrial HiVision was developed to configure and supervise Hirschmann network devices. But modern OT networks increasingly support equipment from many manufacturers.

This could include network infrastructure equipment from other well known vendors. Or end devices which do not have their own supervision software.

In any case, Industrial HiVision can meet the challenges of a mixed environment.

HiFusion is a stand-alone application which can generate the code required to configure and supervise a third-party device.

A Product Specific Module is a file which allows a product type to be identified, displayed and supervised in Industrial HiVision. It includes the device image, plus a list of parameters which can be monitored.

If you have no SNMP knowledge, the HiFusion wizard will generate basic supervision code. If you are an SNMP expert, the sky is the limit for supervision and configuration code. HiFusion includes a test environment, so you do not need to touch your live installation.

Configure and supervise any SNMP-capable devices.
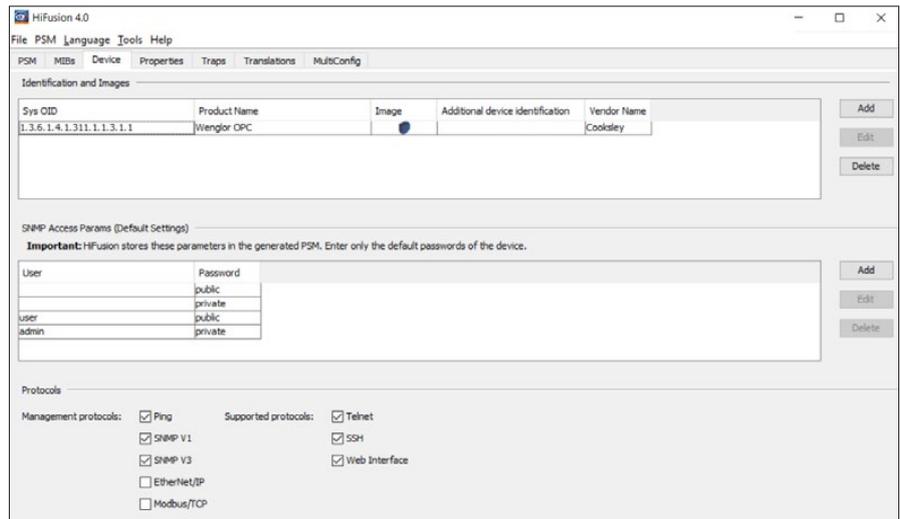
MIB Browser

The MIB Browser allows you to look directly at raw MIB information, without going through a graphical user interface.

There are several reasons you might want to do this. Fault-finding the SNMP stack of an SNMP-enabled device is a typical use.

Searching for manufacturer-specific information to include in Industrial HiVision is another.

But for many of us, curiosity about how SNMP works is the main driving force.

Some tools are best reserved for experts or potential experts, and the MIB Browser is one of them.

SNMP MIB Walker for experts.
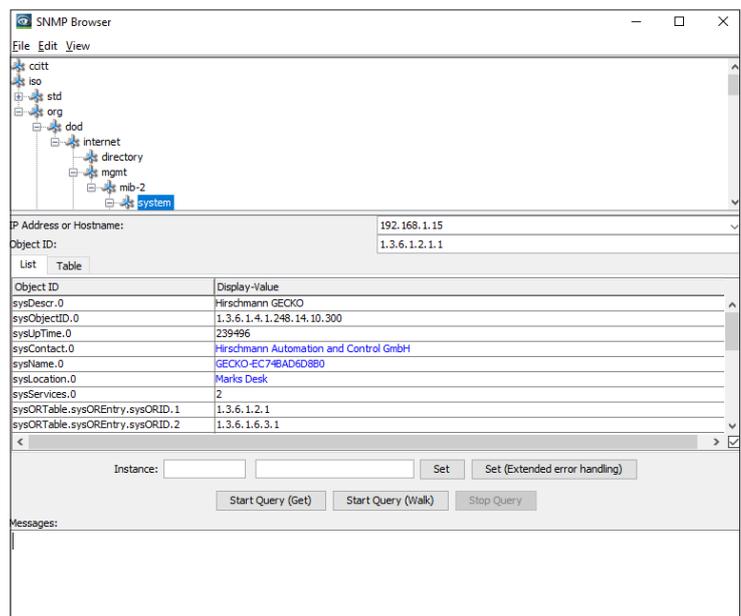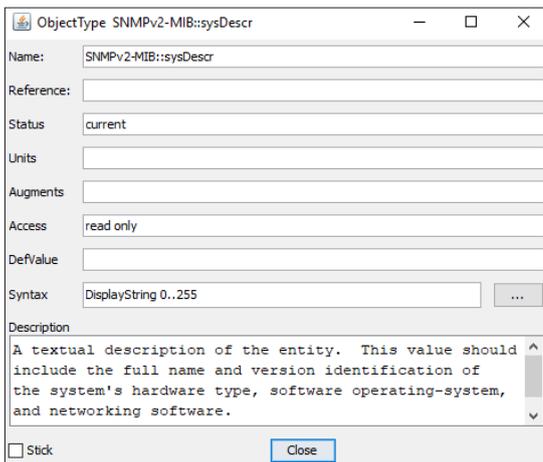
SCADA Integration

Engineers consider the network to be just a part of the complete automation process. So they expect to see information about the network status and performance directly within their standard SCADA visualization tools.

OPC Servers

Industrial HiVision offers OPC DA and OPC UA servers as northbound interfaces to automation software. OPC is a universally recognized protocol in industrial automation.

Any value which is visible in Industrial HiVision is also available as an OPC tag. This includes standard SNMP variables. It also includes information such as the status of the complete network, or zones within a network. This means that the SCADA application can be presented with any level of detail about a network.

For convenience, the OPC tag structure is the same as the Industrial HiVision hierarchy structure, so you can easily locate the required tags.

View network status information directly in your SCADA application.
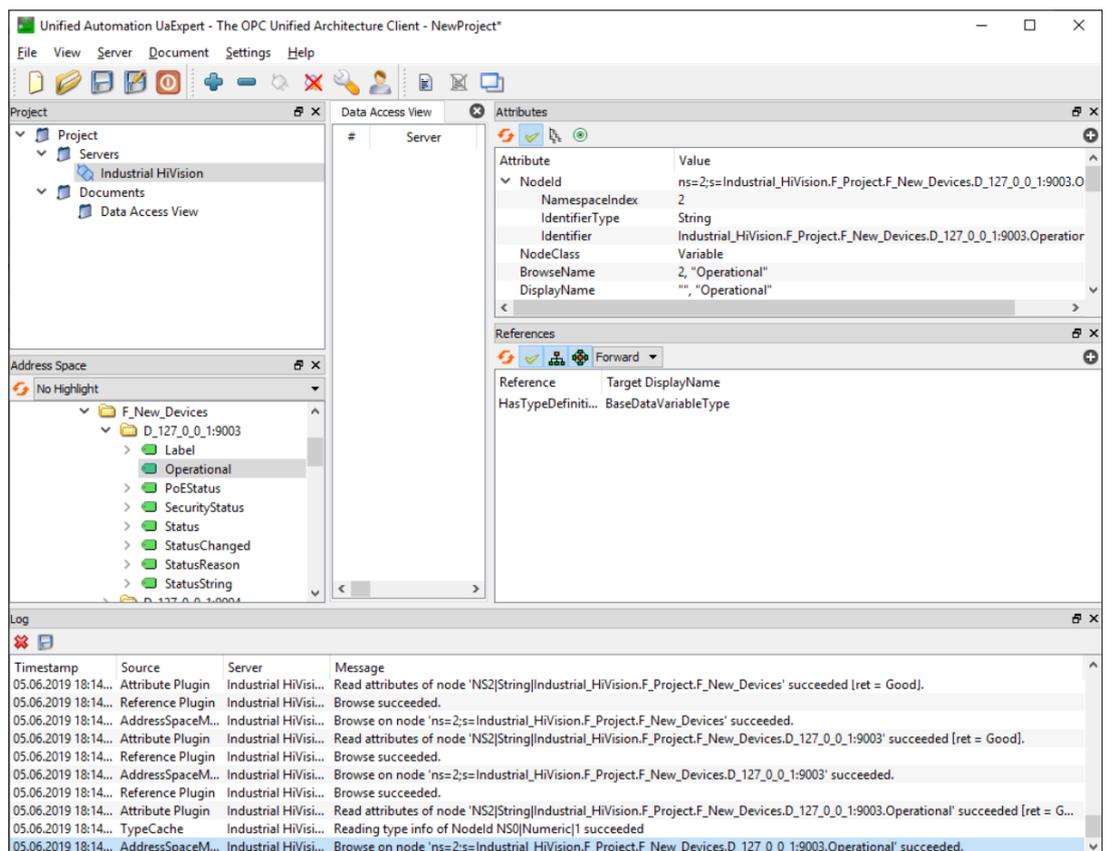
Licensing

Industrial HiVision is a commercial application. It comes with all the benefits of commercial software. Maintenance releases are provided free of charge when required. These include bug fixes and security patches. Unlimited professional technical support is also available at no cost, without a contract.

Flexible Licensing

Licensing in Industrial HiVision is based on a simple concept. The price depends on the number of devices you want to supervise. Licenses are available in ranges, starting at 32 nodes and going up to 4,096 nodes. Licenses are cumulative, so a license for 128 nodes and a license for 256 nodes would allow you to supervise up to 384 devices.

Licenses are perpetual. Each license you buy is valid forever.

A license enables all functionality offered by Industrial HiVision. You do not pay extra for additional functionality.

If you would like to try Industrial HiVision on a large test network, a thirty day evaluation is available.

If your network consists of 16 devices or fewer, a fully functional license is available free of charge with no time limit.

Comprehensive network management at a fair and transparent price.
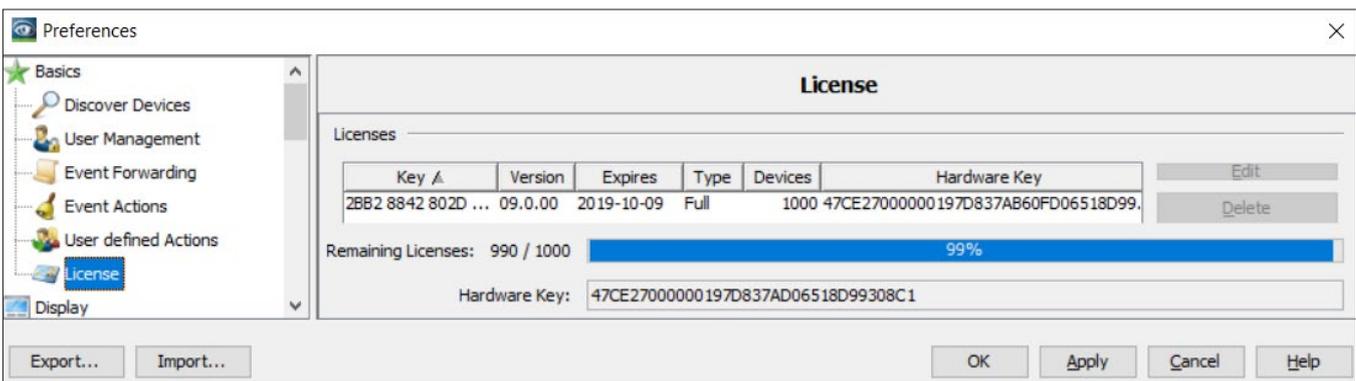
Annual Maintenance Plan (AMP)

The development of Industrial HiVision is driven by its users. We receive many requests for new features. As a result, we release at least one new version per year.

An Industrial HiVision Annual Maintenance Plan is available. The AMP gives you access to all new versions of Industrial HiVision for one year. The validity period starts from when you first generate a license with the AMP, not from when you buy it.

The cost of the AMP is 20% of the price of a full license. The low annual price ensures a fixed total cost of ownership for the lifetime of your network.

Always have access to the latest Industrial HiVision functionality.
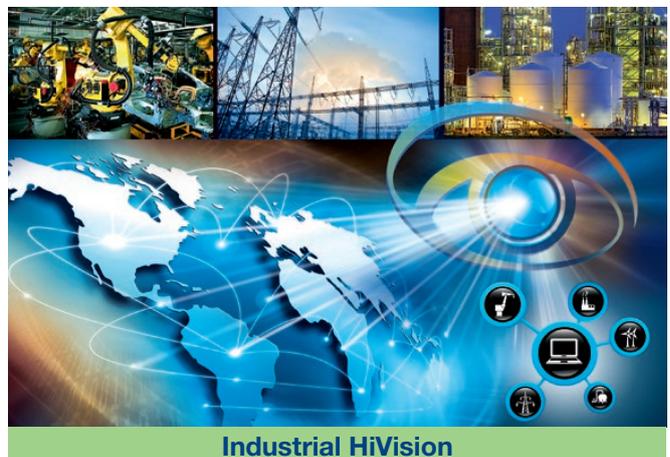
Industrial HiVision

Training

If you need to get started quickly, training represents a good return on investment. Training courses for Industrial HiVision are available globally, either as stand-alone courses, or as part of an Industrial Ethernet theory and product training curriculum.

Training Courses

Industrial HiVision has a shallow learning curve. You will be amazed at how quickly you can start to get meaningful information about your network. A tutorial is included in the installation package.

Industrial HiVision has a loyal customer base, and many users have published how-to videos on the Internet. These are also a great source of knowledge.

Our sales partners offer hands-on training courses for Industrial HiVision. In this case your instructor will be a

person with in-depth expertise, and many years of real-world experience using Industrial HiVision for managing and fault-finding networks.

If you need to prove your expertise, Hirschmann offers certification exams on network management theory and Industrial HiVision software.

Whatever your time and budget constraints, there is a training opportunity to meet your requirements.

The fastest way to in-depth expertise.

HIRSCHMANN

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About Belden

Belden Inc., a global leader in high quality, end-to-end signal transmission solutions, delivers a comprehensive product portfolio designed to meet the mission-critical network infrastructure needs of industrial, enterprise and broadcast markets. With innovative solutions targeted at reliable and secure transmission of rapidly growing amounts of data, audio and video needed for today's applications, Belden is at the center of the global transformation to a connected world. Founded in 1902, the company is headquartered in St. Louis, USA, and has manufacturing capabilities in North and South America, Europe and Asia.

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