

TECH DEMO

# UTILIZING SOFTING SMARTLINK SW-HT WITH PORTAINER EDGE FOR SECURE HART DEVICE ACCESS

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Keep OT stable. Add capability at the edge.  
Manage centrally without exposing the plant.

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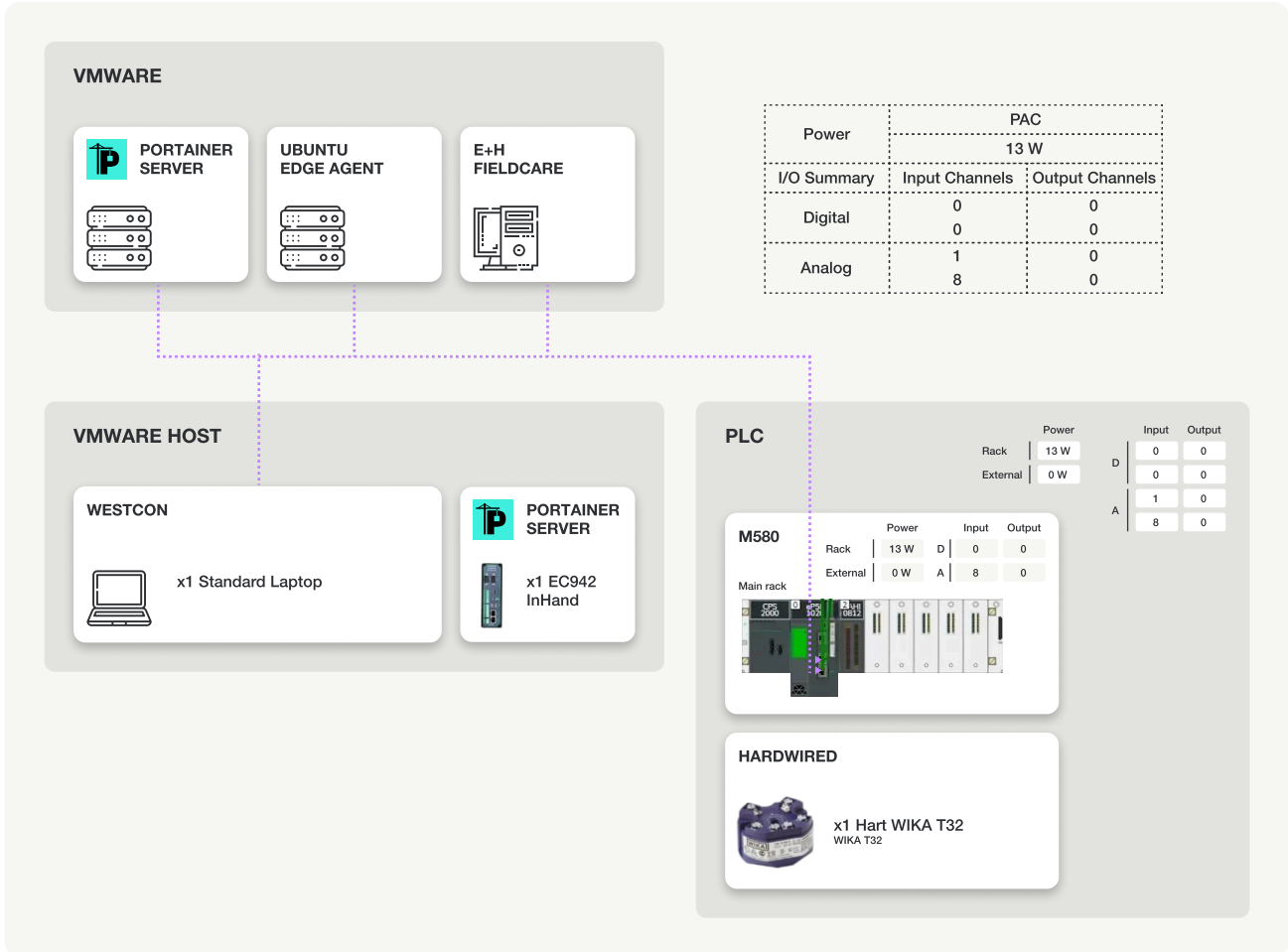
Feb 26

**This technical demonstration outlines an architecture utilized by Portainer and partner, Westcon, to showcase a use case for a shared customer. It leverages Portainer Edge features and Softing smartLink SW-HT in a lab environment to securely access data from HART devices without modifying existing OT infrastructure.**

The solution enables engineering software such as Control Expert and PACTware to connect to HART devices through a software-defined access layer. This supports installation & commissioning of new or replacement equipment, and enables access to existing HART devices for integration with one of the many supported field device management and equipment lifecycle solutions.

While demonstrated in a controlled environment, the architecture reflects real industrial constraints and is designed to be repeatable across production sites.

# Architecture Overview



The system consists of two virtual machines running on a single laptop to simulate a typical production scenario in which edge workloads are managed centrally but operate within site boundaries.

- VM1: Hosts the Portainer server, providing centralized management and visibility.
- VM2: Acts as a Portainer Edge Agent node simulating an edge device, running the Softing smartLink SW-HT container

**Physical OT Components:**

- Schneider Electric PLC M580
- Schneider HART module AHI0812
- WIKA Temperature transmitter with potentiometer wired in for signal simulation

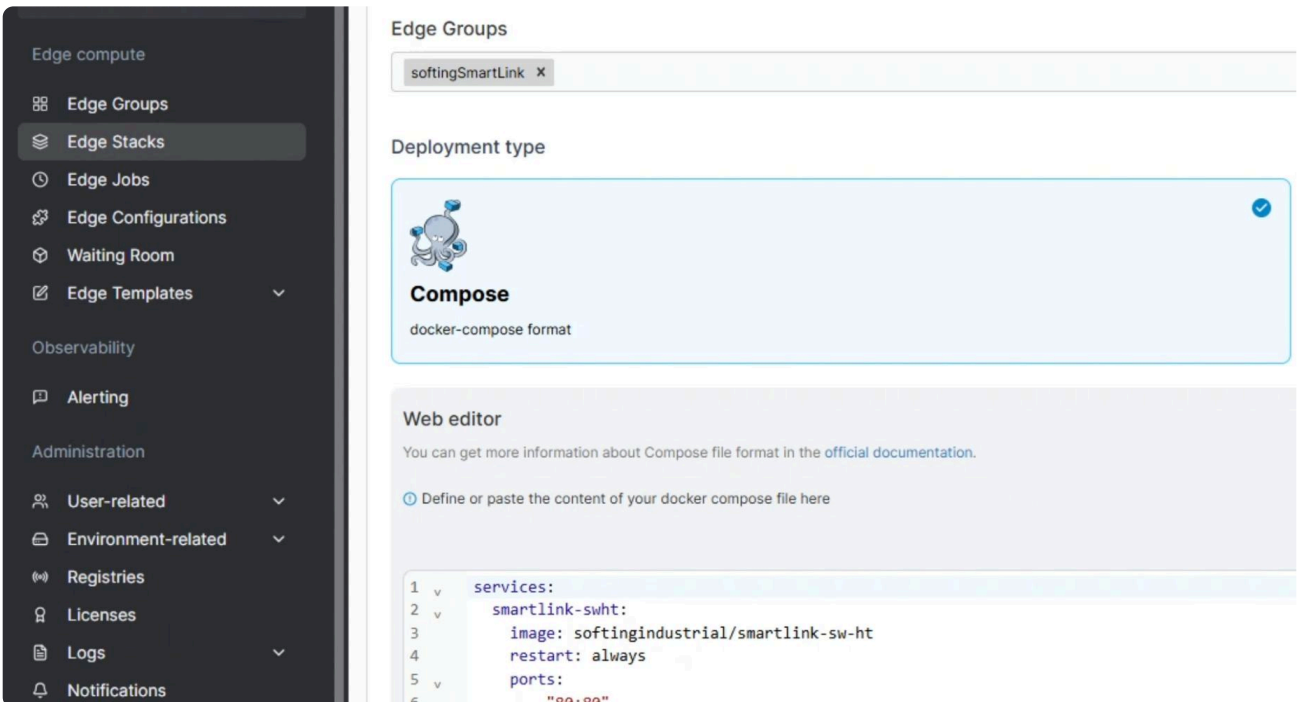
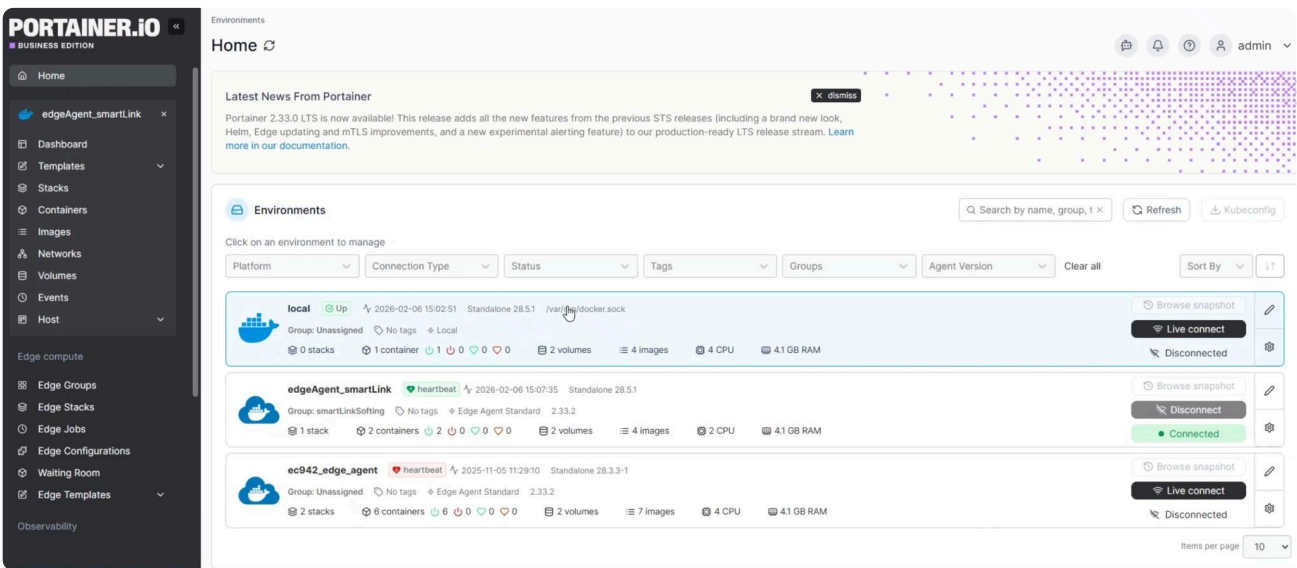
The HART devices remain connected via the existing PLC and module infrastructure. No additional gateway hardware or protocol converters are introduced.

# Deployment Process

The Softing smartLink SW-HT container is deployed as a Portainer Edge stack onto the edge agent (VM2).

Portainer Edge initiates an outbound tunnel from the edge node to the Portainer Server. This eliminates the need for inbound firewall changes or exposing the edge device to external networks.

The container operates within a lightweight, web-configurable runtime environment and can be deployed on a variety of edge compute platforms, including industrial PCs or virtual machines within plant environments.



Environments Status

Select...

Q Search...

Name	Status	Time	Target version	Deployed version	Error	Actions	Action Status
edgeAgent_smartLink	Acknowledged	2026-02-05 16:13:15					
	Images Pulled	2026-02-05 16:13:47					
	Deploying	2026-02-05 16:13:47	3	3			
	Deployment Received	2026-02-05 16:13:49					
	Running	2026-02-05 16:13:50					

Items per page 10

```
1 v services:
2 v   smartlink-swht:
3     image: softingindustrial/smartlink-sw-ht
4     restart: always
5 v   ports:
6     - "80:80"
7     - "443:443"
8     - "5094:5094"
9     - "49152:49152/udp"
10    - "49154:49154/udp"
11 v   environment:
12     - TZ="UTC"
13 v   volumes:
14     - smartLinkSWHT:/var/lib/smartLinkSW-HT
15
16 v volumes:
17   smartLinkSWHT:
18
```

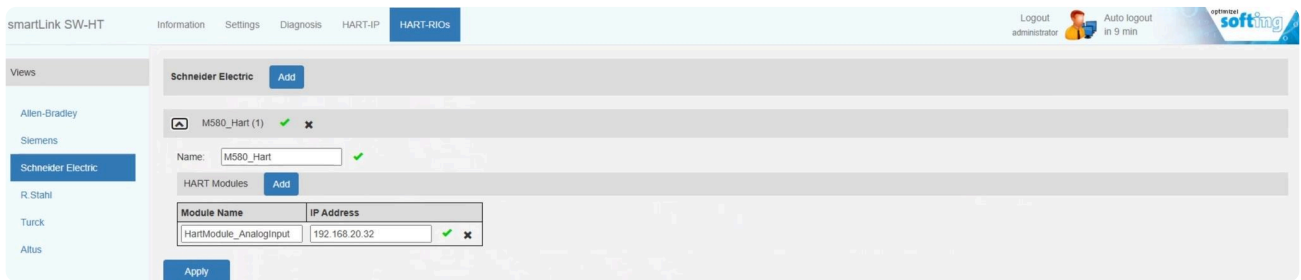
# HART communication workflow

smartLink SW-HT communicates directly with the HART module connected to the PLC using the existing industrial network infrastructure.

**Key characteristics of the communication path:**

- Standard HART-IP protocol
- Transparent forwarding of all HART commands
- Full bidirectional communication
- No modification of command sets

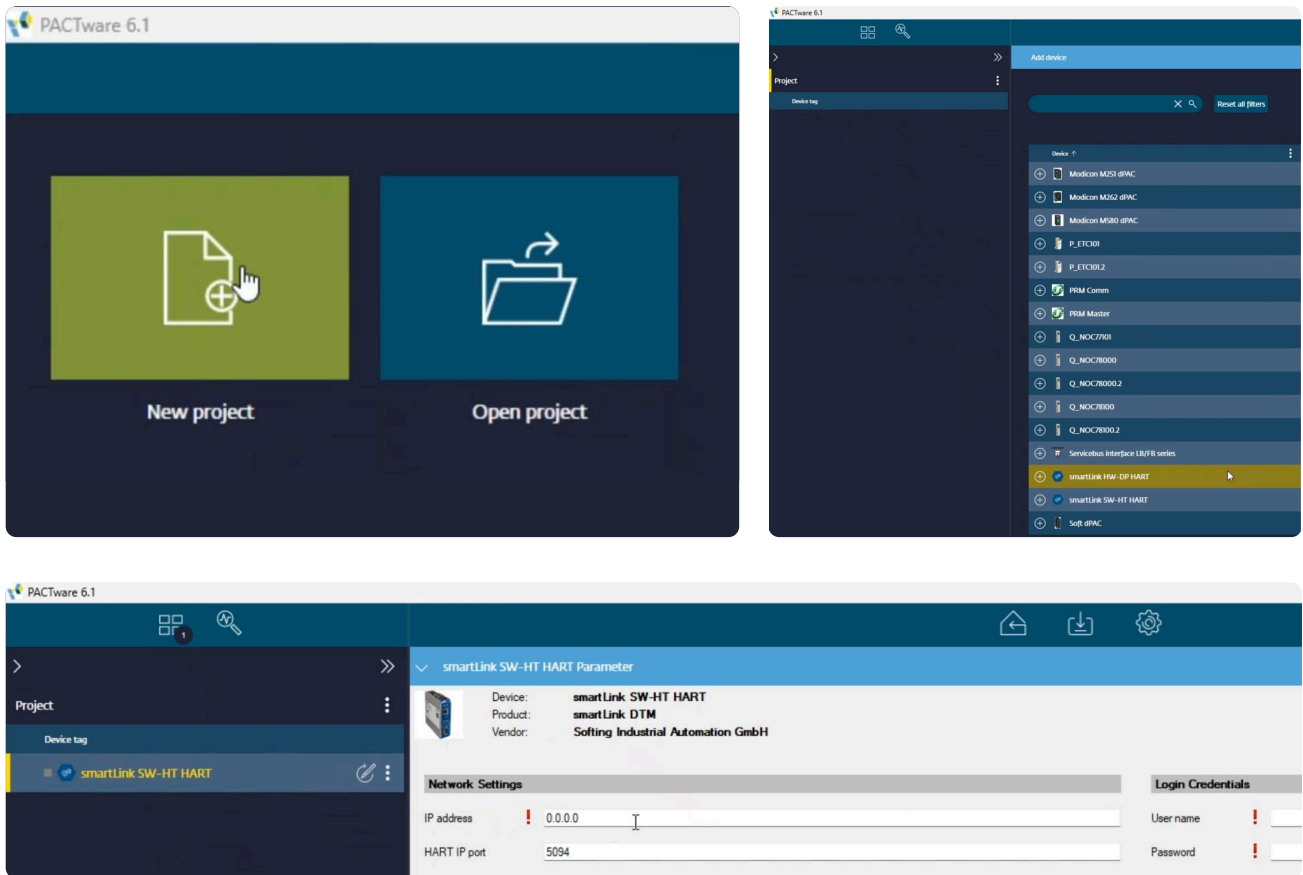
Engineering tools such as Control Expert or PACTware connect to the smartLink instance as if it were a traditional HART gateway. This preserves compatibility with established commissioning and diagnostic workflows while enabling remote access through a software-defined model

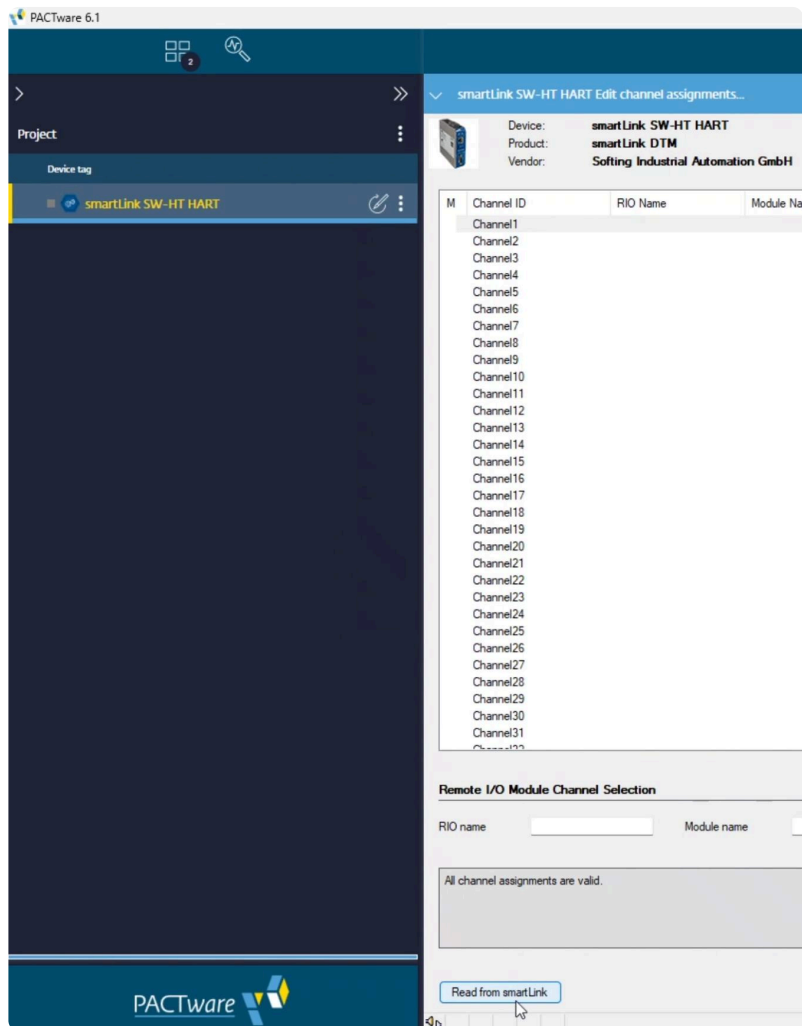
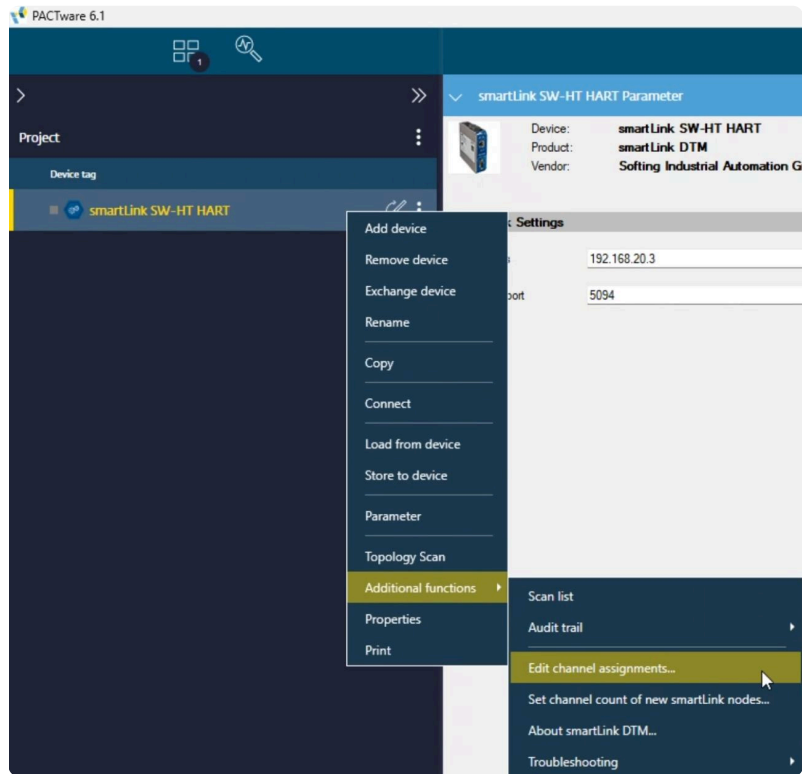


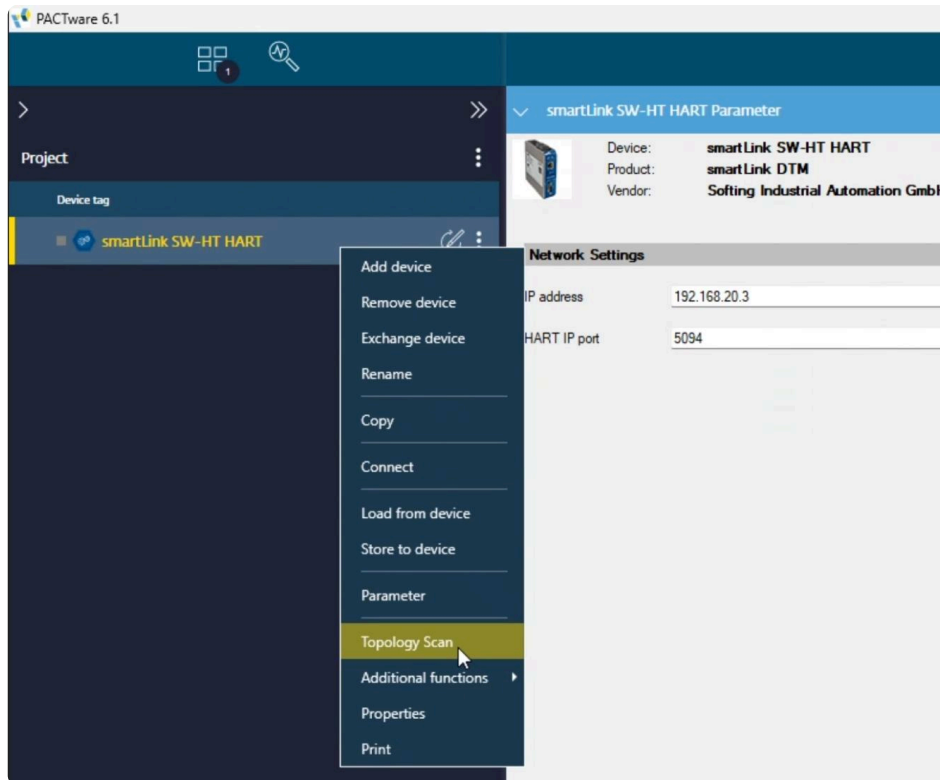
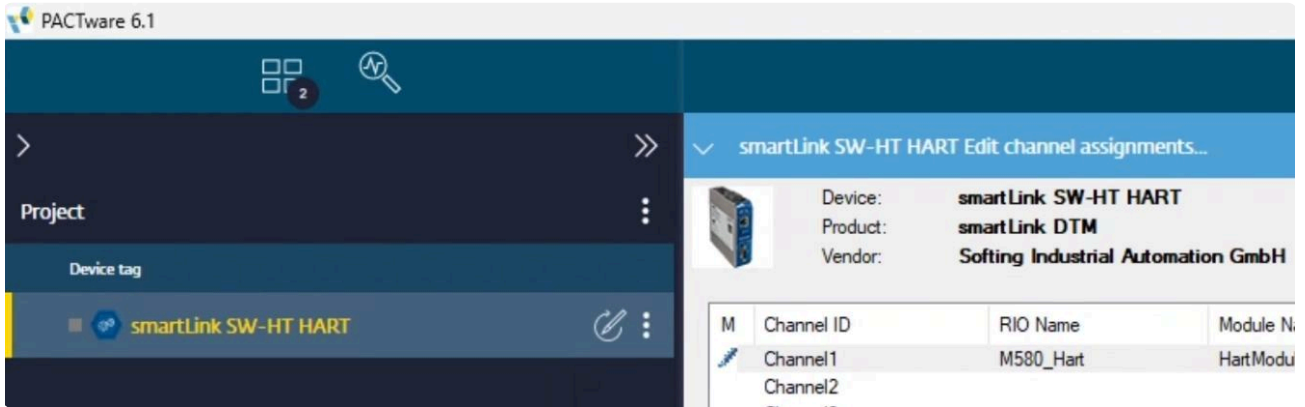
# Device Integration Process

Device integration follows standard engineering practice:

- Configure the smartLink SW-HT container with the IP address of the HART module (e.g., AHIO812) on the PLC network.
- Initiate a HART scan via the device management interface. The system automatically detects and enumerates all accessible HART devices downstream of the configured module.
- Use FDT-compliant tools such as PACTware to establish communication with the smartLink SW-HT instance.
- In PACTware, create a new project and configure device discovery by specifying the smartLink’s IP address.
- Perform a topology scan to locate devices; the WIKA transmitter is identified through automatic HART device enumeration.
- Establish real-time data connections for monitoring sensor readings and diagnostic information.







PACTware 6.1

Project

Reset all filters

Device tag	State	Address	Devicetype	Message
smartLink SW-HT HART			smartLink SW-HT HART	
ChannelI			ChannelI	
		0	WIKA T32.1S/3S	
ChannelI0			ChannelI0	
ChannelI00			ChannelI00	
ChannelI1			ChannelI1	

Measured value

WIKA T32. 1S/3S  
Temperature Transmitter  
WIKA

Process variables

- Process variables
- Drag Pointers
- Status
- Chart

**Process Input**

PV 47.95 %

4V 10.55 kOhm

4V Info Potentiometer tote

Sensor operating time 1523 h

Reset sensor operation counter

**Status/Alarm**

- Primary Variable out of Limits
- Non PV out of Limits
- Device malfunction

**Analog Output**

Loop current 11.67 mA

PV % of range 47.9 %

PV LRV  %

PV URV  %

**Device**

Write protection

Type code

Device ID

Electronics temp 31.4 degC

Device operating time 1523 h

# Technical Advantages

- Hardware-agnostic access: Utilizes existing industrial network infrastructure without requiring dedicated HART multiplexers or gateways.
- Protocol transparency: Full bidirectional communication using the standard HART-IP protocol ensures compatibility with any compliant engineering or field device management tool.
- Seamless integration: Support for FDT Communication DTM enables integration with lifecycle management and field device management solutions already deployed in industrial environments.
- Secure edge deployment: Agent-initiated outbound connectivity aligns with zero-trust principles while respecting OT isolation requirements.
- Scalable licensing model: smartLink SW-HT licensing scales based on device count with no hardware cost implications; licenses are determined by the number of connected HART devices, enabling cost alignment with operational growth.

Because the solution is containerized and centrally managed, once implemented in one plant it can be replicated across multiple sites without modifying PLCs, HART modules, or field devices.

Portainer enables standardized stack deployment, version control, and governance across distributed edge nodes. This supports consistent rollout across facilities while maintaining site-level isolation.

# CONCLUSION

This demonstration shows how secure access to HART devices can be achieved using a software-defined architecture layered onto existing OT infrastructure. By combining Portainer Edge for application deployment and lifecycle management with Softing smartLink SW-HT for standards-based HART connectivity, the model enables remote commissioning and device access without redesigning networks or introducing inbound exposure. The approach preserves OT stability while adding controlled, scalable capability at the edge.

# Westcon

Founded in 1994, Westcon is a recognized reference in Brazil and a specialist in industrial network connectivity, process automation, and OT cybersecurity.

As the official distributor of [Portainer.io](https://portainer.io) and Softing, the company brings together more than 30 years of experience, technical excellence, and pioneering work in the analysis, diagnostics, and certification of industrial networks.

[www.wii.com.br](https://www.wii.com.br)

# Softing

Softing and Portainer work together to automate site-specific software setup using containers. Instead of manual configuration at each remote location, edgeConnector is deployed over-the-air, saving time, reducing errors, and streamlining operations for Softing's industrial customers.

[industrial.softing.com/us/products/docker/smartlink-sw-ht.html](https://industrial.softing.com/us/products/docker/smartlink-sw-ht.html)

# Portainer

Portainer is the world's leading container management platform, helping organizations deploy, manage, and secure containerized applications across Docker, Kubernetes, and edge environments. Portainer simplifies container operations through a consistent, intuitive interface designed for both developers and operations teams.

[www.portainer.io/solutions/portainer-for-industrial-and-iot](https://www.portainer.io/solutions/portainer-for-industrial-and-iot)



**PORTAINER.io**