



# Welcome

## **Cyberseguridad en planta para máquinas y conexión remota**

Antonio Gordillo / 18 Agosto 2021 / Automatización Marketing

Communication Interfaces

## Agenda

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- Cyberseguridad y su importancia
- Productos
- mGuard 1100
- TC Router
- TC ROUTER TOM Software
- CLOUD Client





**Top Cyber Attacks In History | Biggest Cyber Attacks Of All Time | Cyber Security | Simplilearn**

Implementación de ciberseguridad

## Ciber ataques

En mayo del 2019, una computadora infectada con **cinco de las más mortíferas piezas de software** fue vendida por 1.4 millones de dólares, un proyecto del artista chino Guo O Dong, encomendado por la firma de ciberseguridad Deep Instinct, cuyo objetivo es representar físicamente el peligro que suponen las amenazas digitales.

Pese a que se trata de una computadora común y corriente, incluso la fotografía del dispositivo inspira temor cuando se conoce el daño que han causado el **virus ILOVEYOU**, **Dark Tequila**, **los gusanos SoBig y MyDoom**, el **criptogusano Wannacry** y el malware multipropósito **Black Energy**.

En conjunto, estas cinco piezas de malware han ocasionado daños por alrededor de 95,000 millones de dólares a nivel global.

 EL ECONOMISTA



#OptimitNetwork



SEASON 2, EP 08

## How to secure an industrial network

Productos mGuard

## Portafolio



# mGuard

Productos mGuard

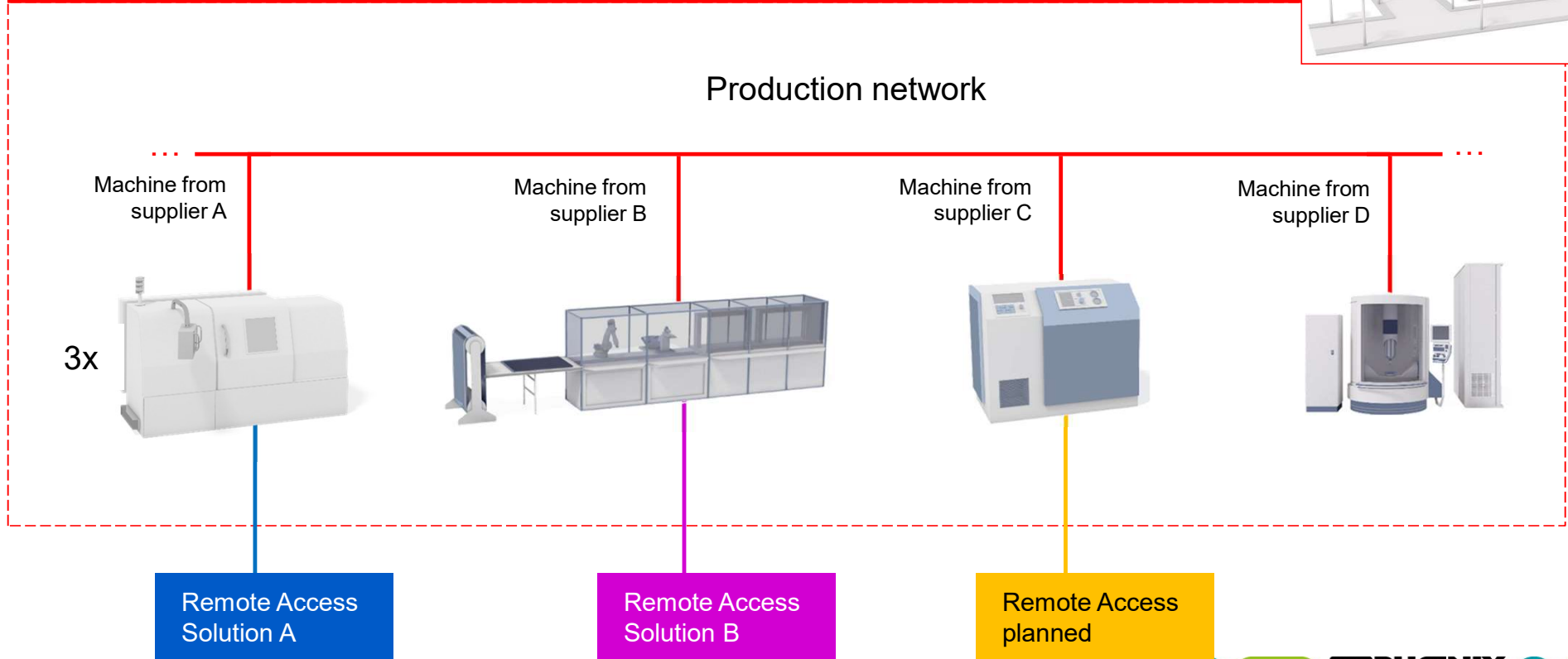




Production area



Production network







**Step 1:** Change purchasing conditions!



Change for the machine manufacturer

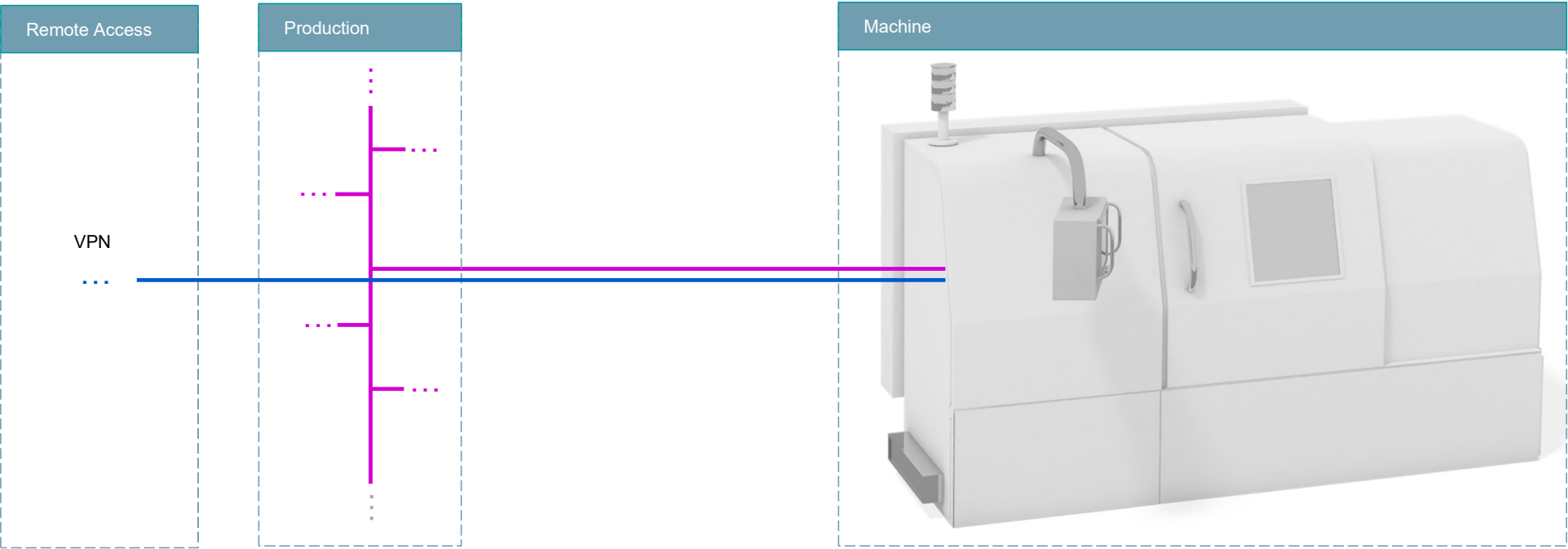


NEW

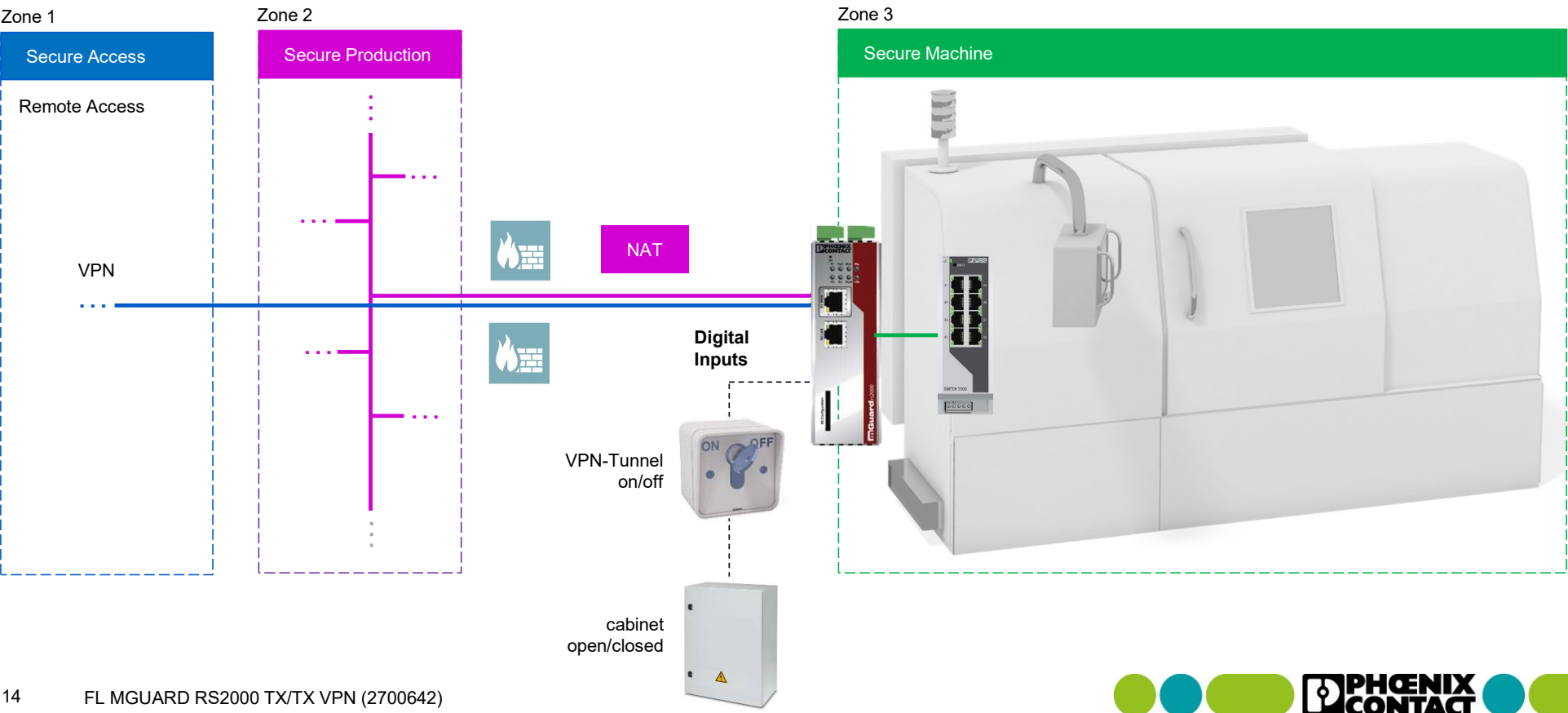
Remote access and security



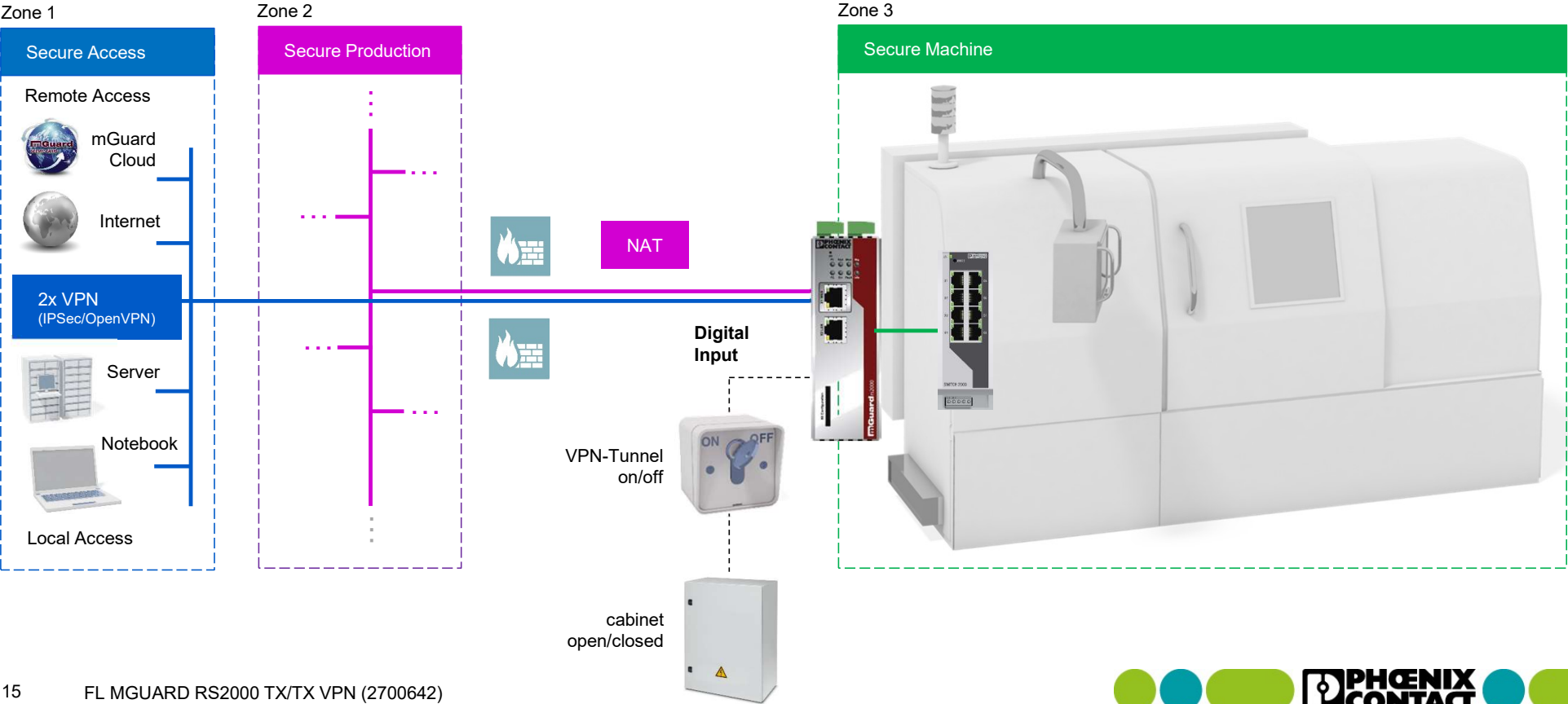
# How to increase security?



# Solution



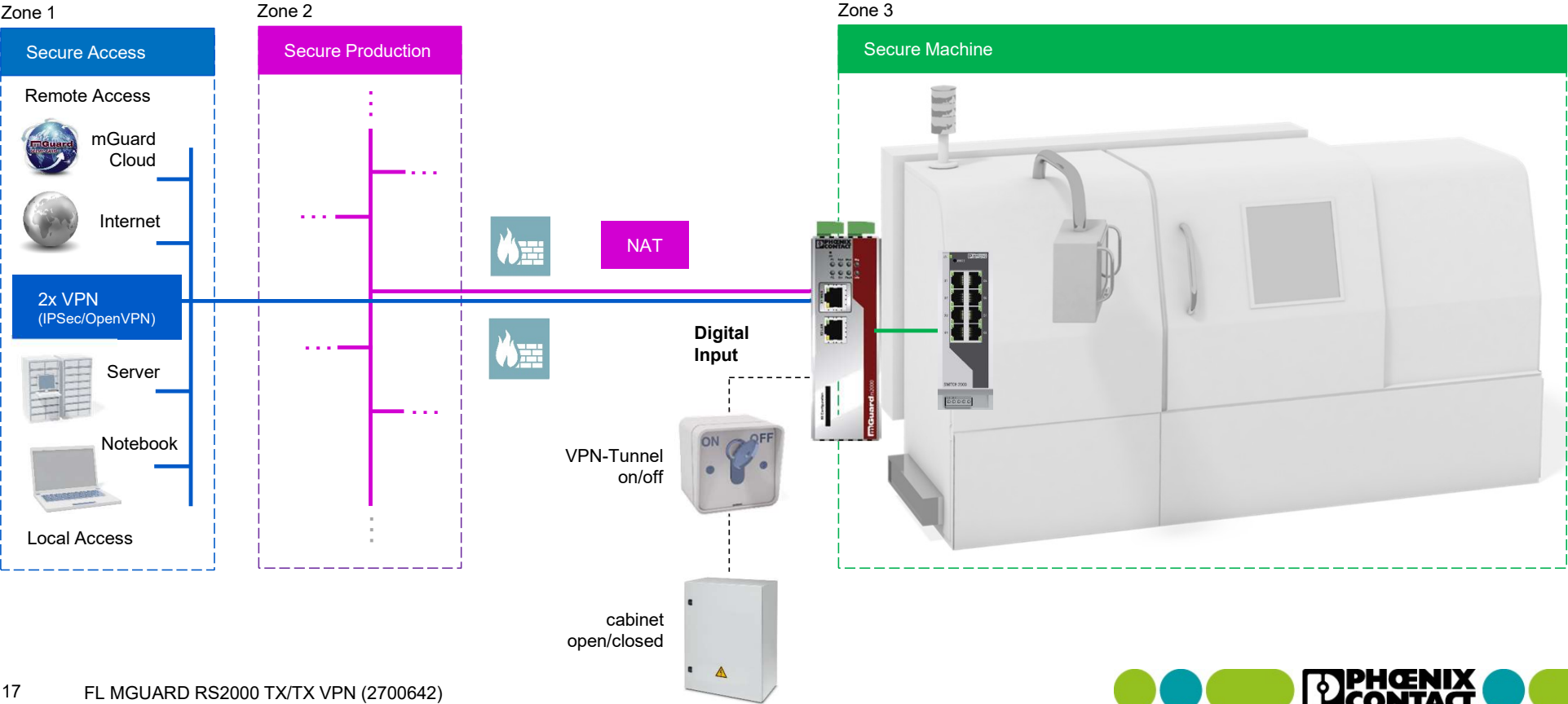
# Solution



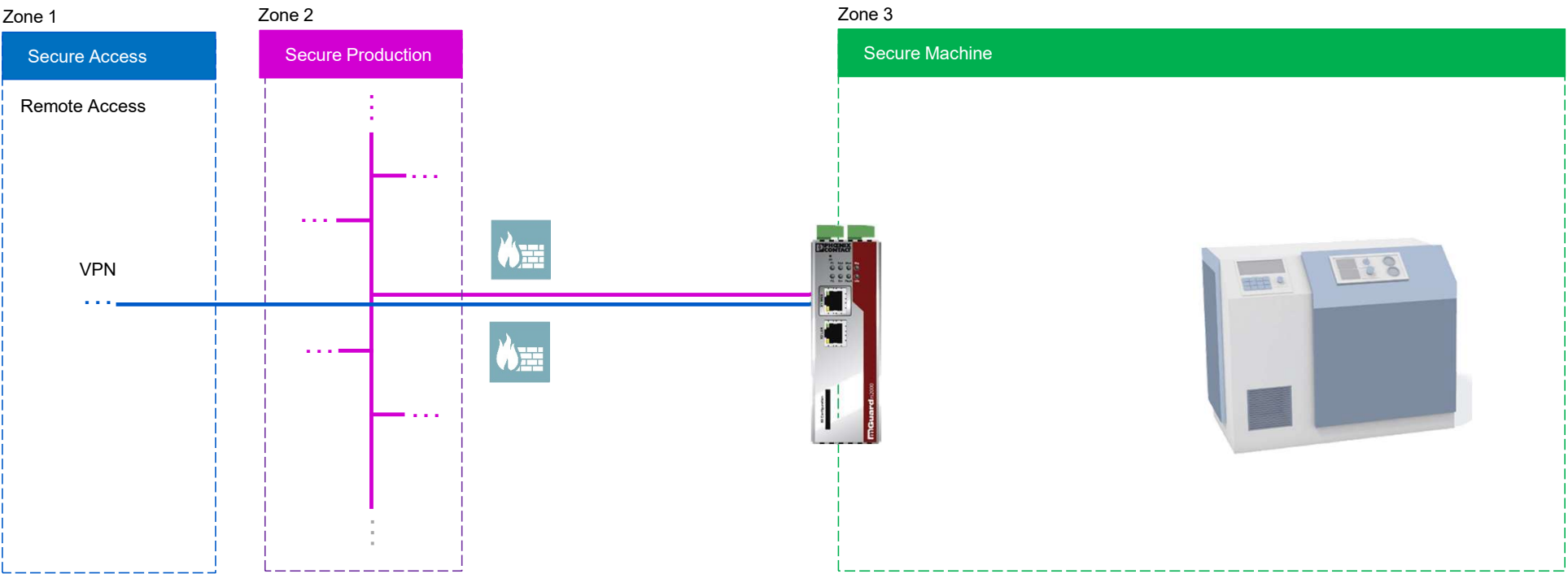




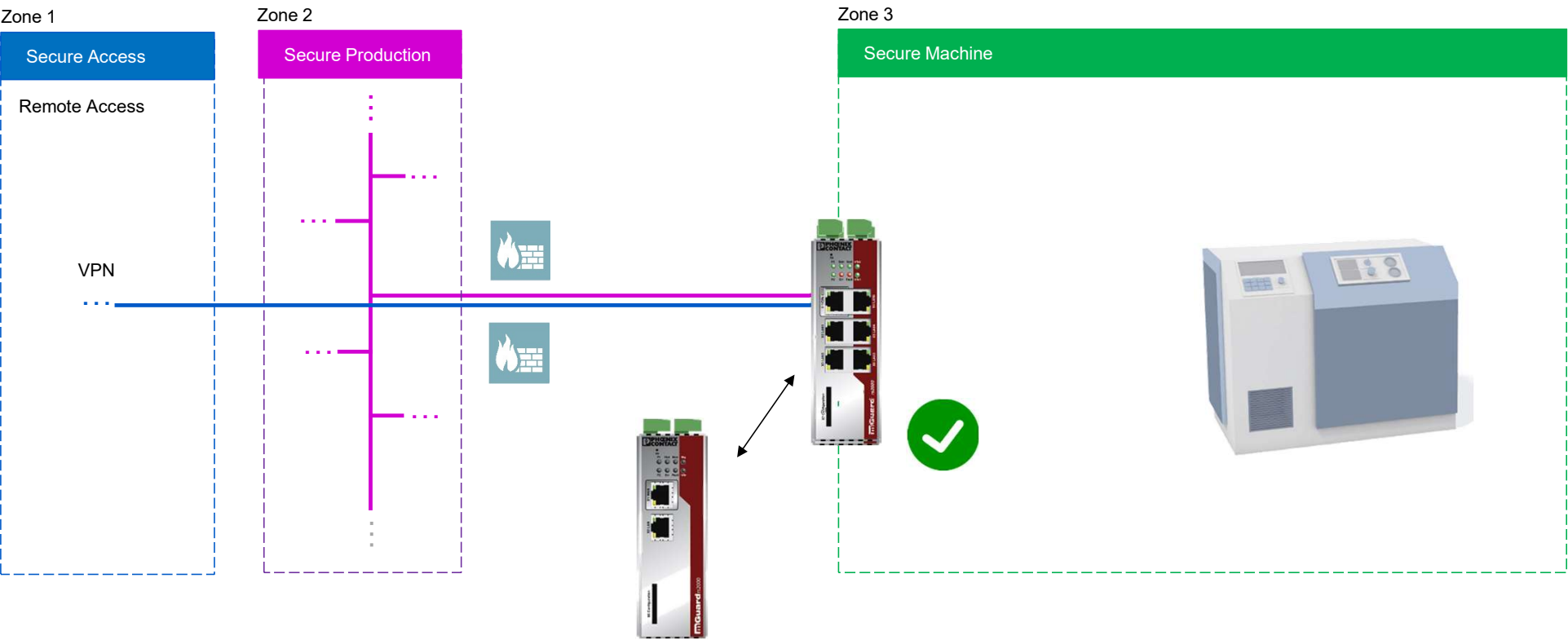
# Perfect Product ...



# We have no place



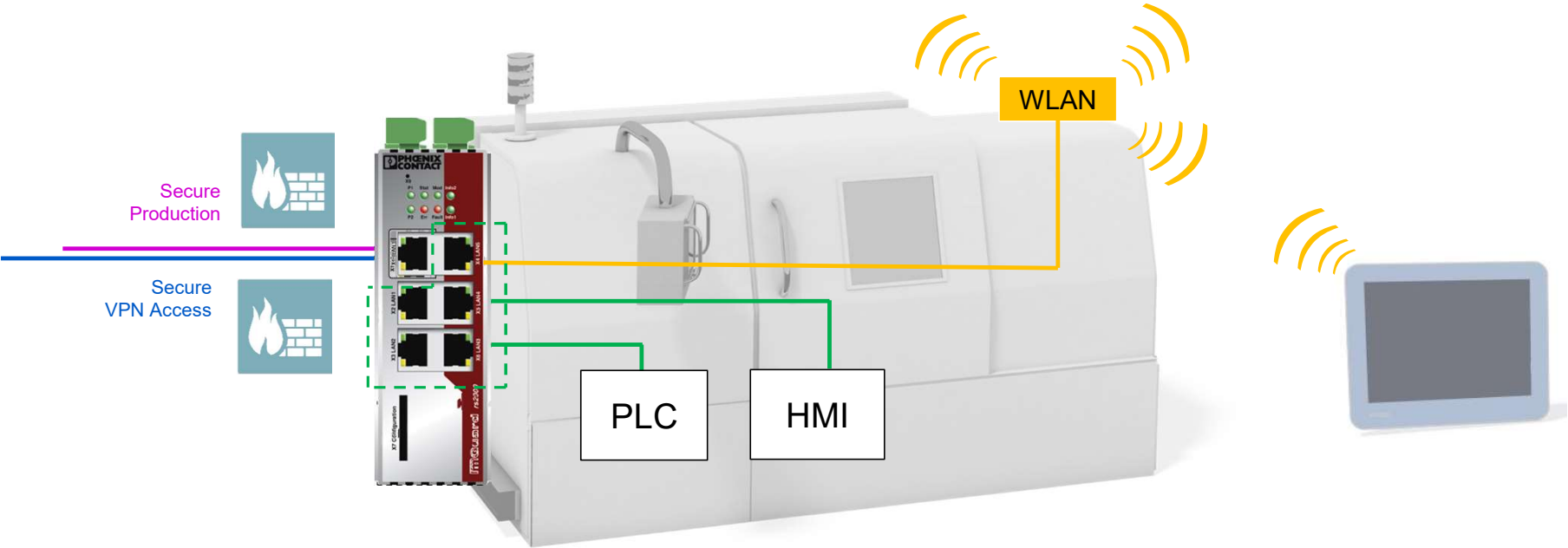
# Solution



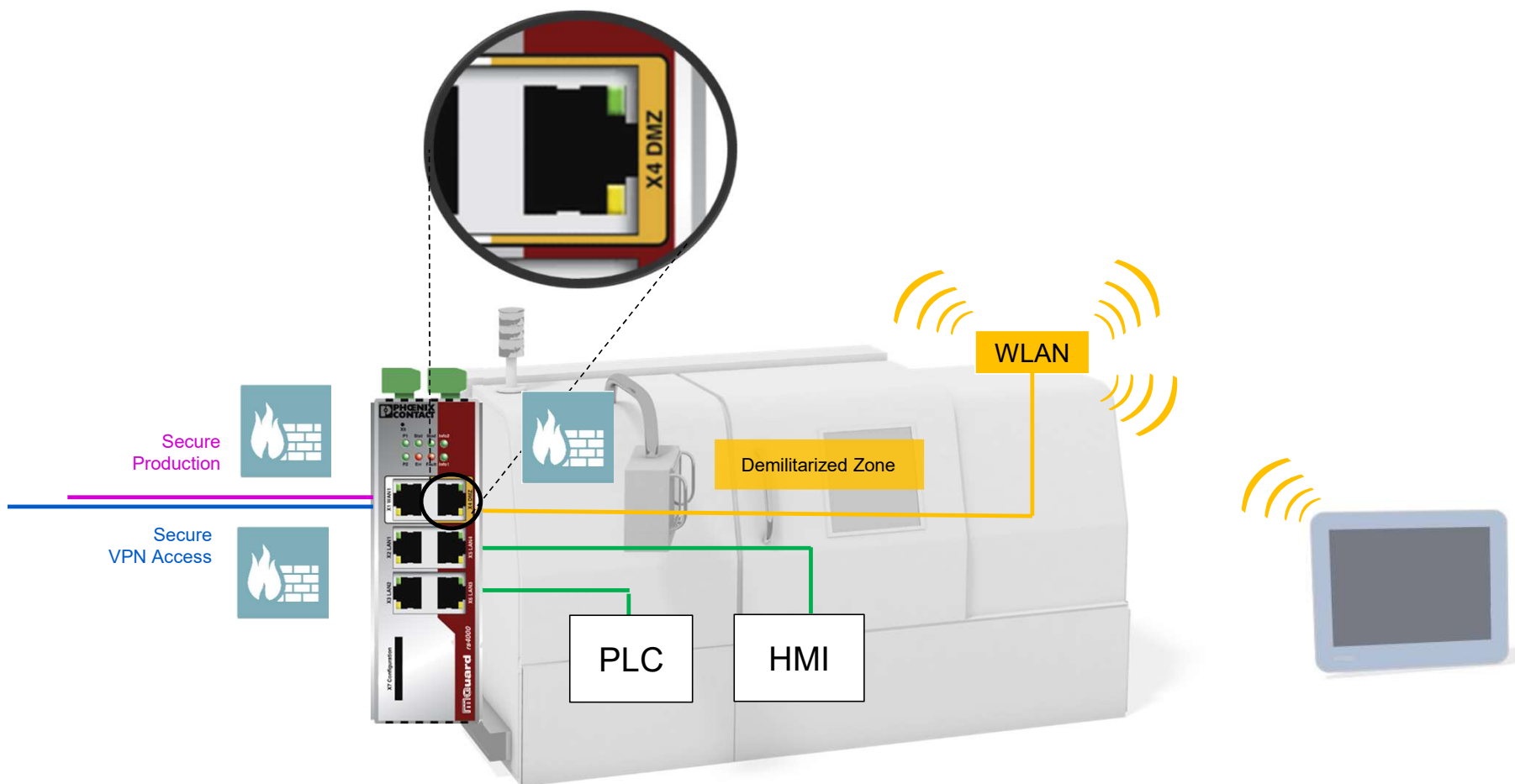




What about security?







## Three products



FL MGUARD **2000** ...

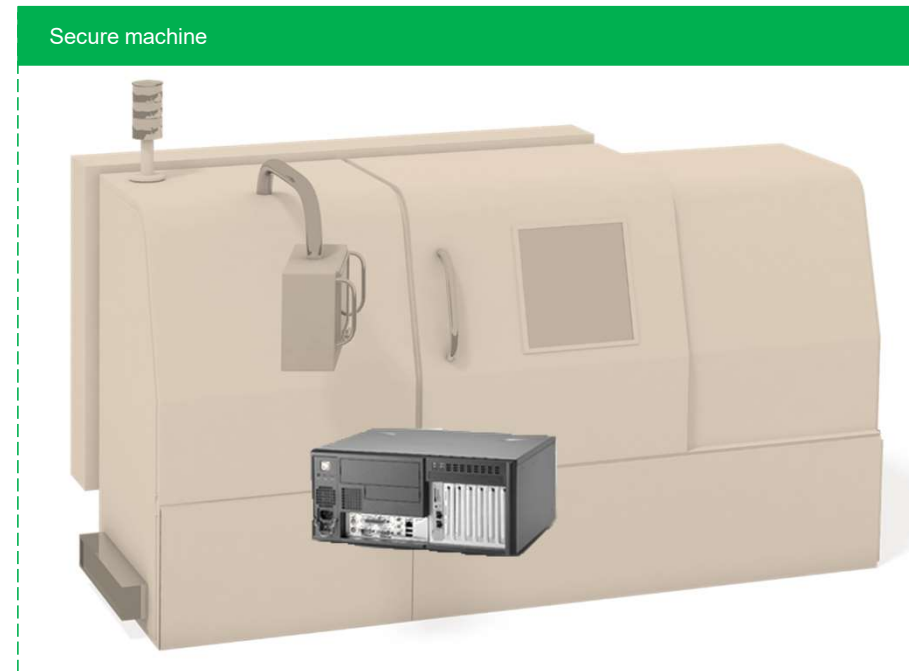


FL MGUARD 200**5** ...

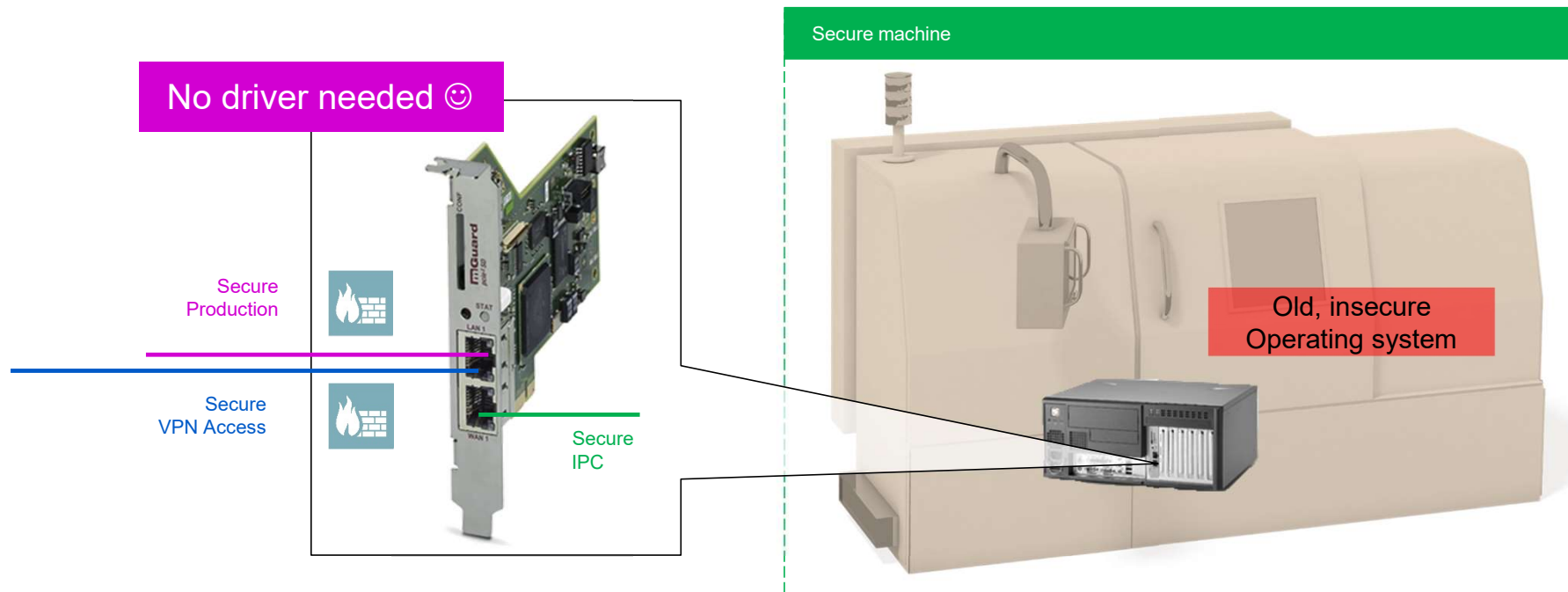


FL MGUARD 400**4** ...

## IPC in a machine



## Solution

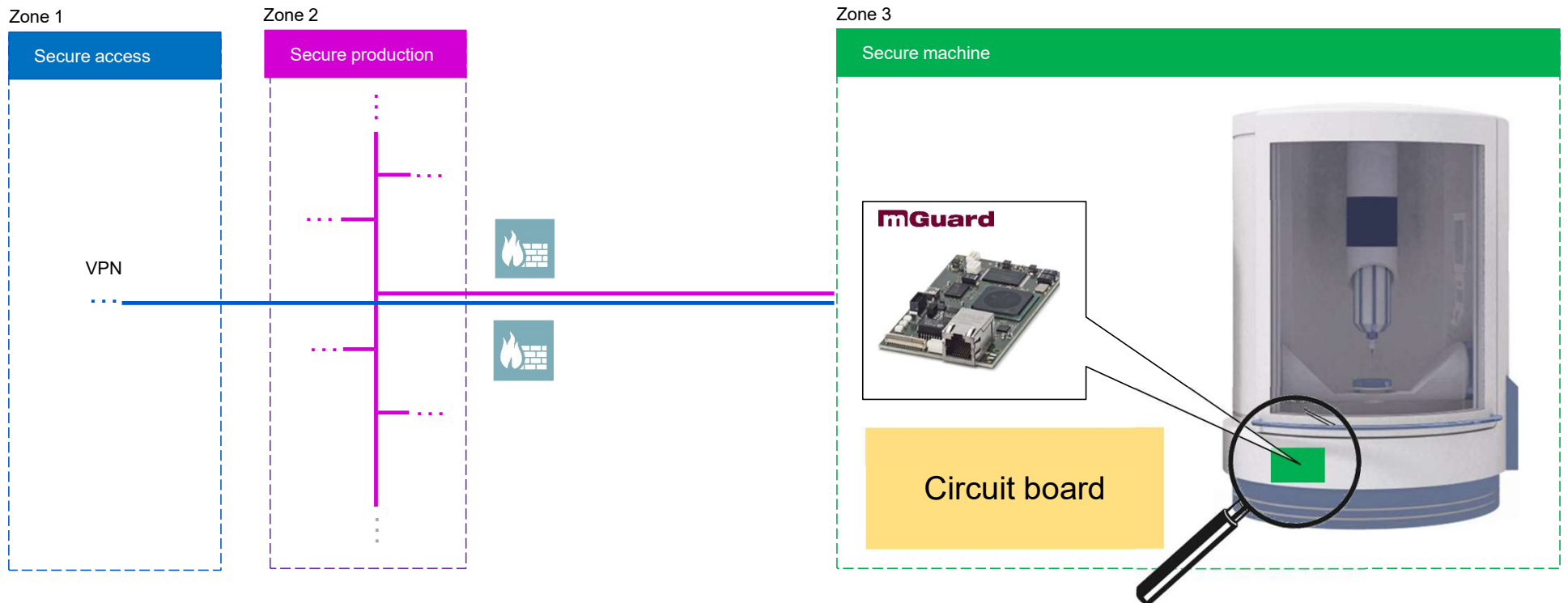


Very little space



Secure machine









**Step 1:** Change purchasing conditions!



Answer: No problem for the machine builder 😊 ... but ...

## Security für die Maschine



...2000...



...2005...



...4004...



...PCI/PCIE...

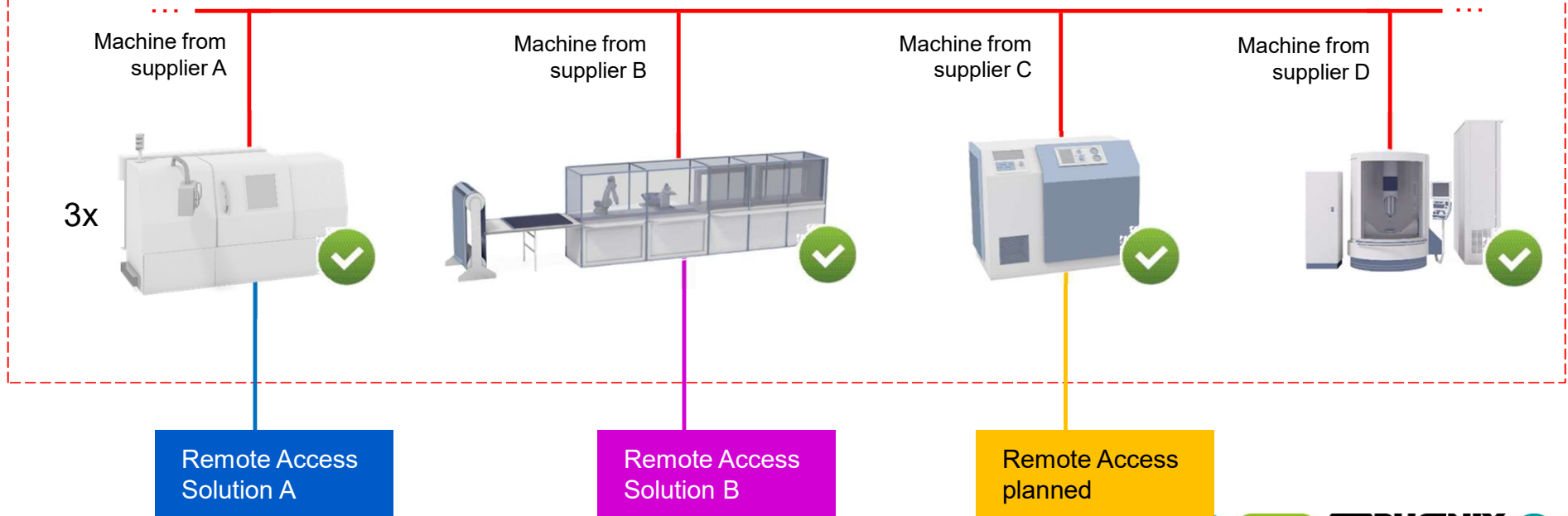


...Core...

Production area



Production network



## Secure VPN remote station

For the beginning

Independent of the mGuard Secure Cloud



Software  
(1 VPN-Tunnel)



Office  
(250 VPN-Tunnel)

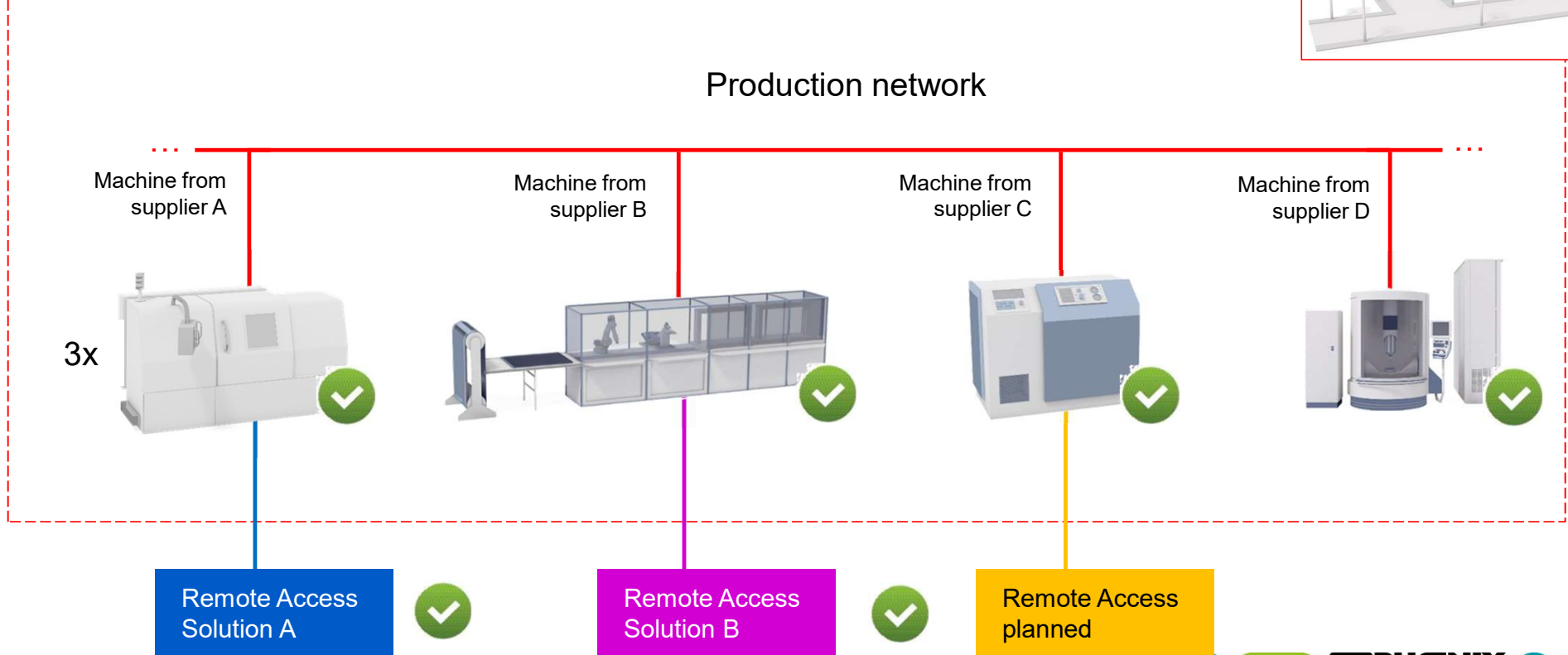


Server room  
(3000 VPN-Tunnel)

Production area



Production network



Central device / security-Management



for the machine builder





**Step 1:** Change purchasing conditions!



Answer: No problem for the machine builder 😊

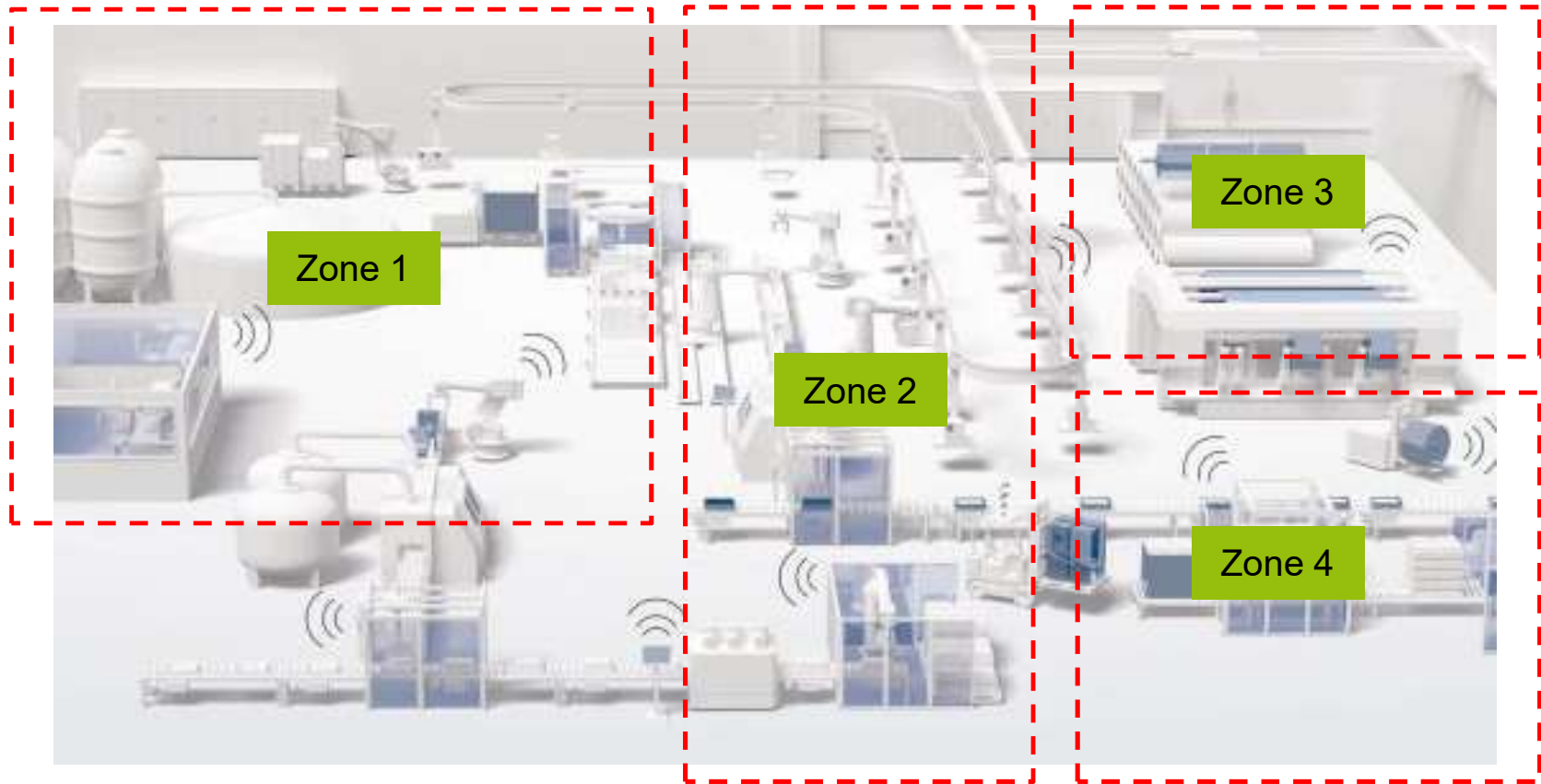
**Step 2:** Secure your own network



## Zones



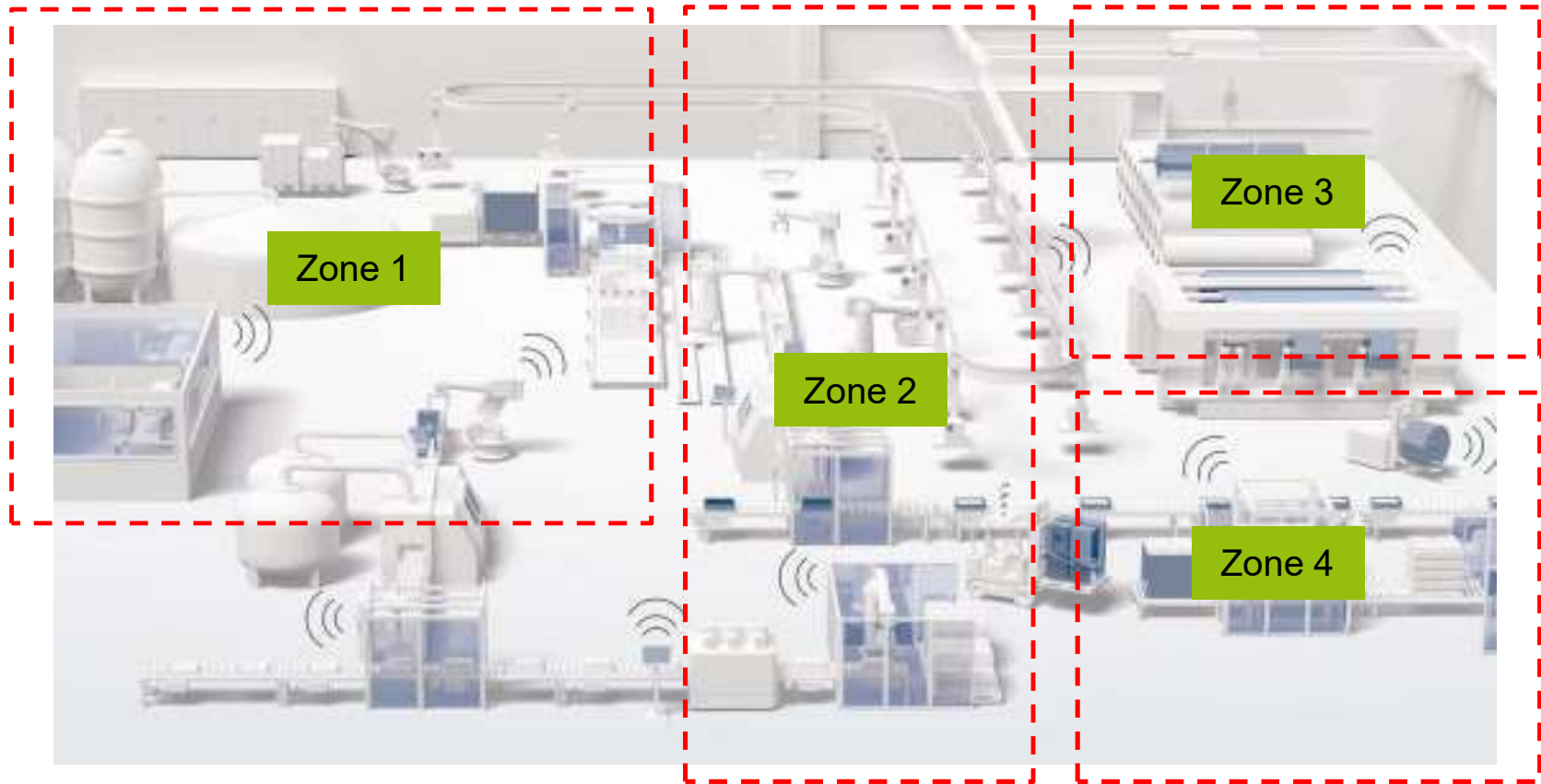
## Zones



fiber optic

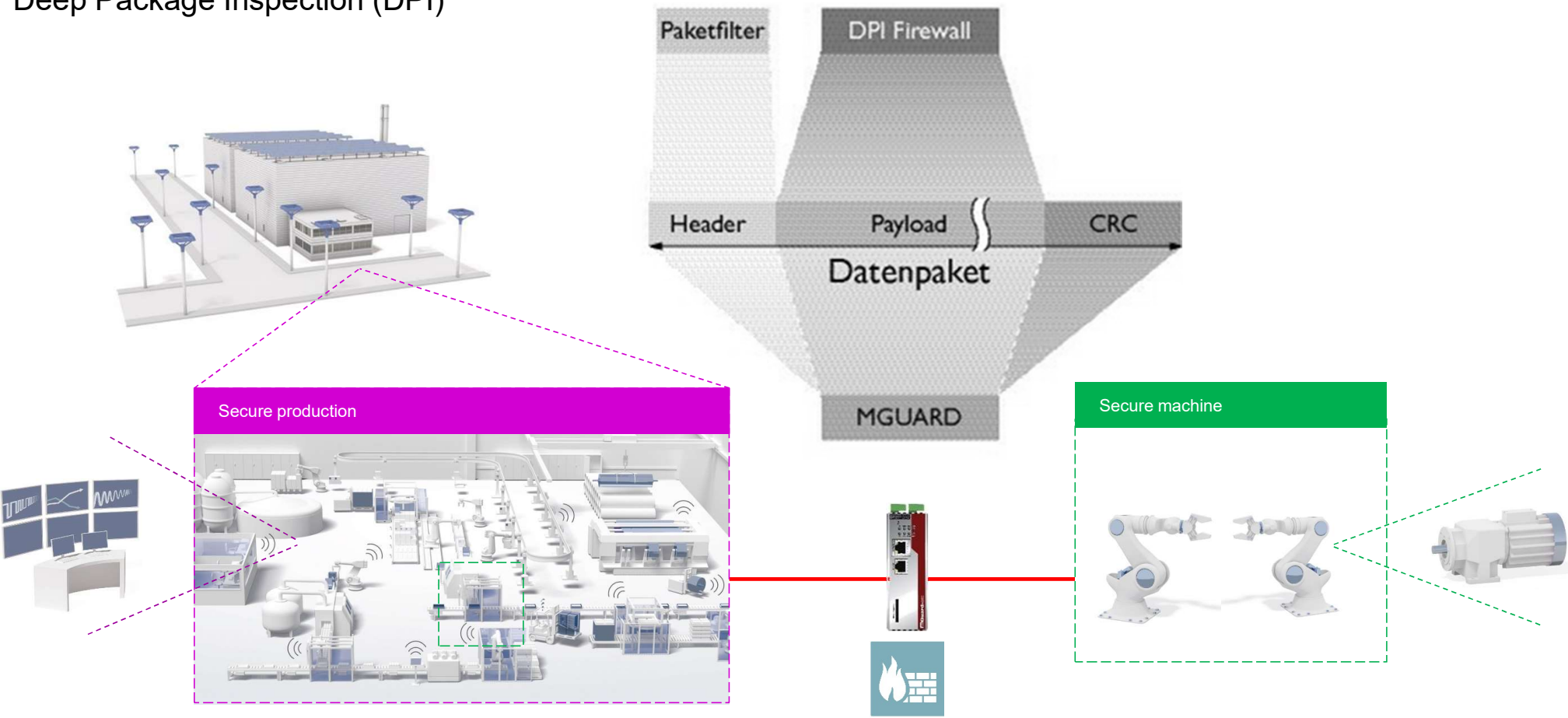


## Zones





Deep Package Inspection (DPI)



FL MGUARD LIC MODBUS Inspector (2702980)  
FL MGUARD LIC OPC INSP Classic (2702191)



## Deep Package Inspection: Modbus TCP

Network Security » Packet Filter

Incoming Rules   Outgoing Rules   Rule Records   MAC Filtering   IP/Port Groups   Advanced

Incoming

General firewall setting   Use the firewall ruleset below

Seq.		Interface	Protocol	From IP	From port	To IP	To port	Action
1	 	External	TCP	10.10.3.2	any	192.168.1.2	502	Modbus1











Network Security » Deep Packet Inspection » Modbus1

Modbus TCP Rule Record

Options

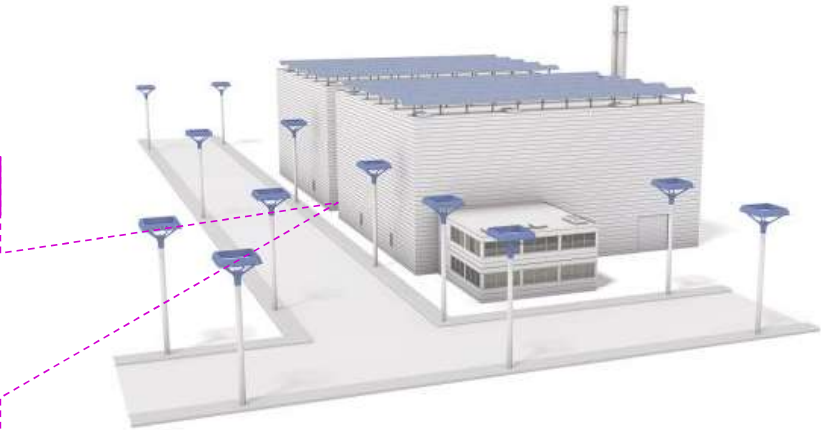
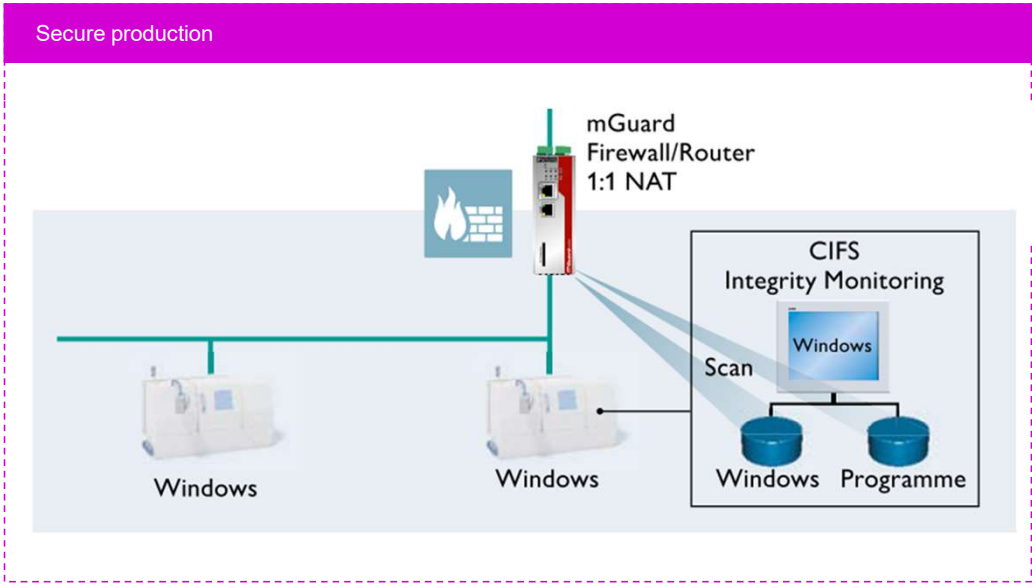
Name   Modbus1

Filter Rules

Seq.		Function code	PDU addresses	Action
1	 	2: Read Discrete Inputs	any	Accept
2	 	1: Read Coils	any	Accept
3	 	4: Read Input Register	any	Accept
4	 	5: Write Single Coil	4700:4800	Accept
5	 	15: Write Multiple Coils	4711	Accept

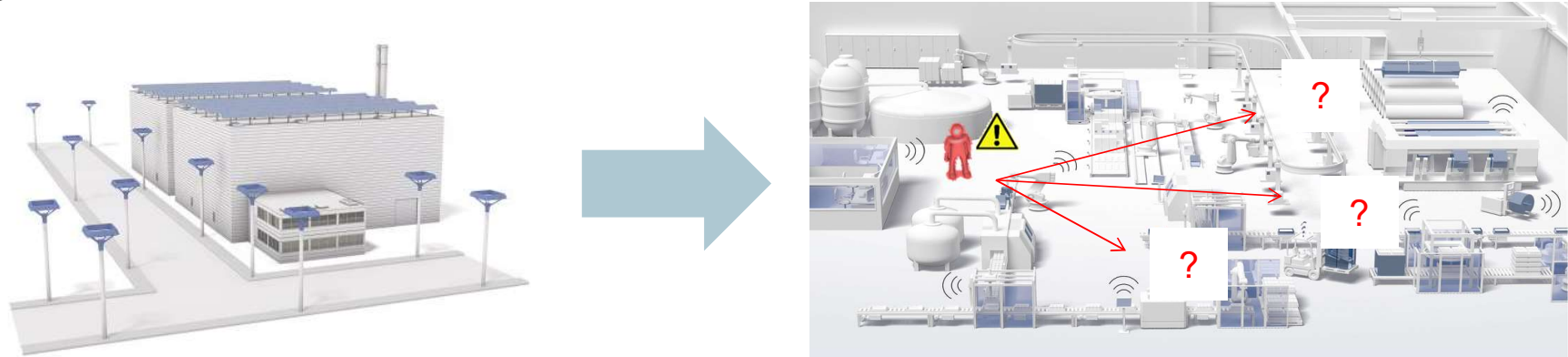
Log entries for unknown packets   ☒

# CIFS Integrity Monitoring

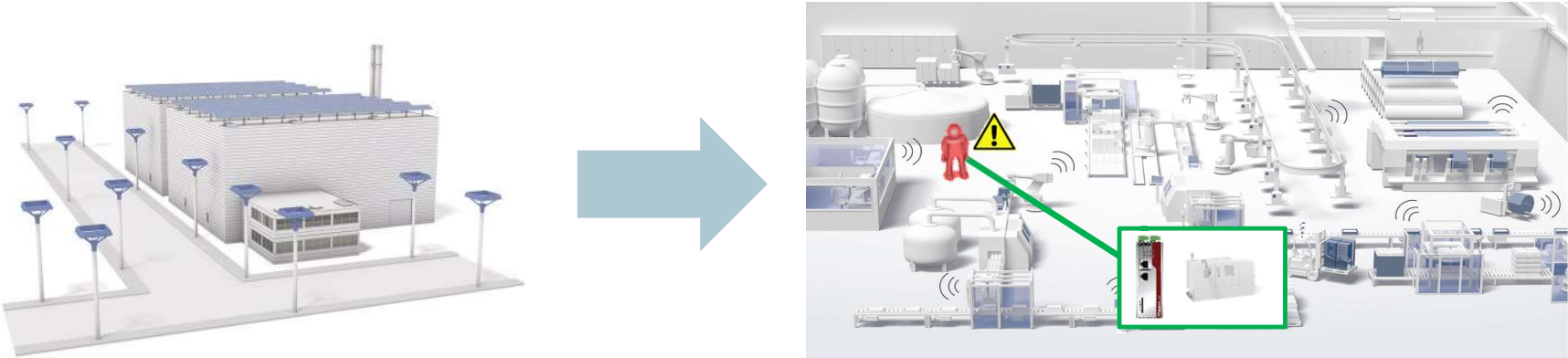




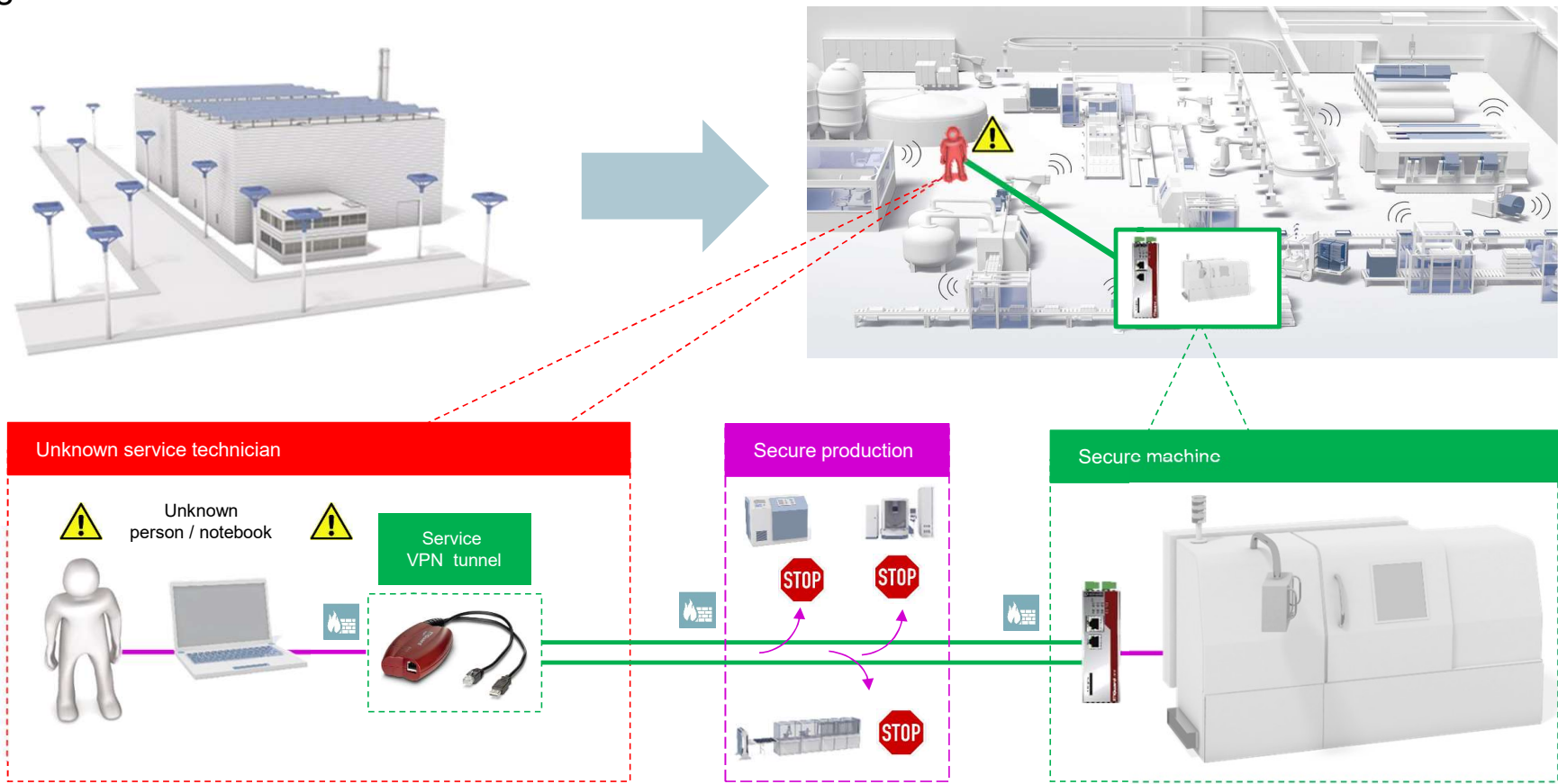
Foreign service technician



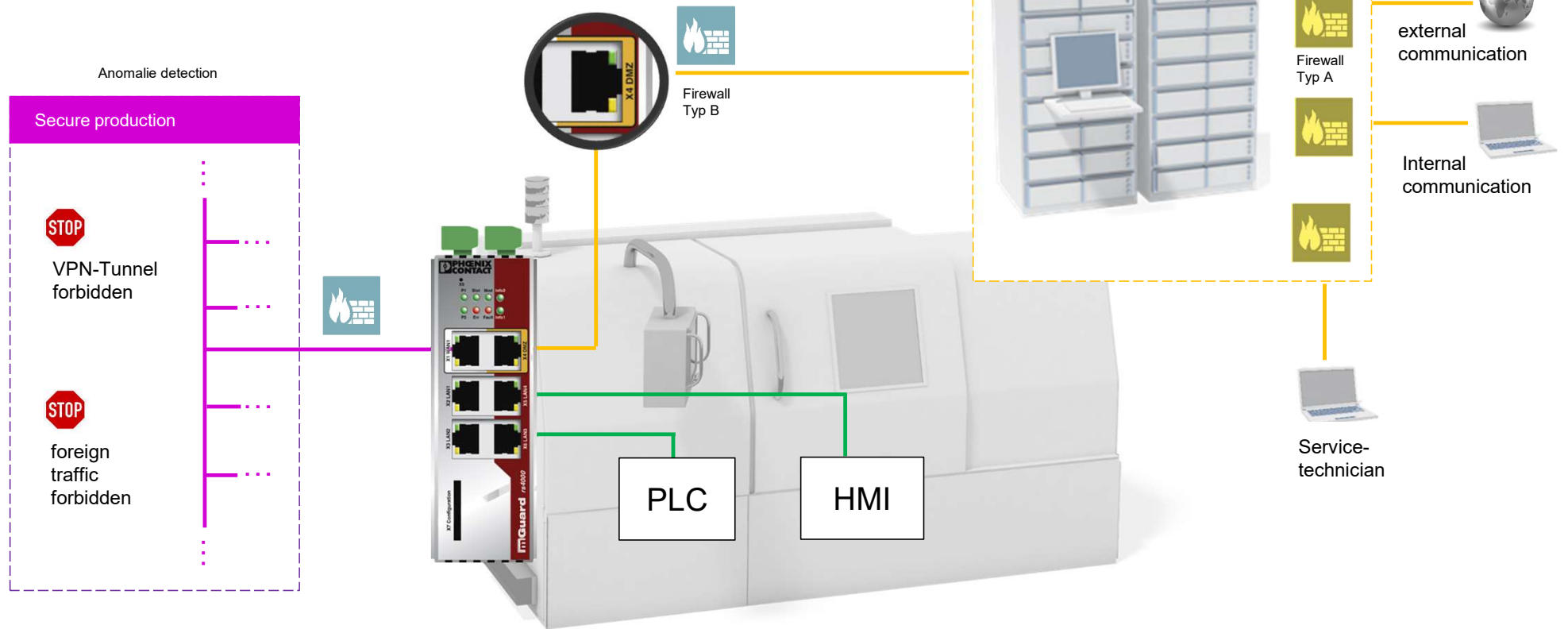
Foreign service technician



Foreign service technician



No access via the production network!



## Device management



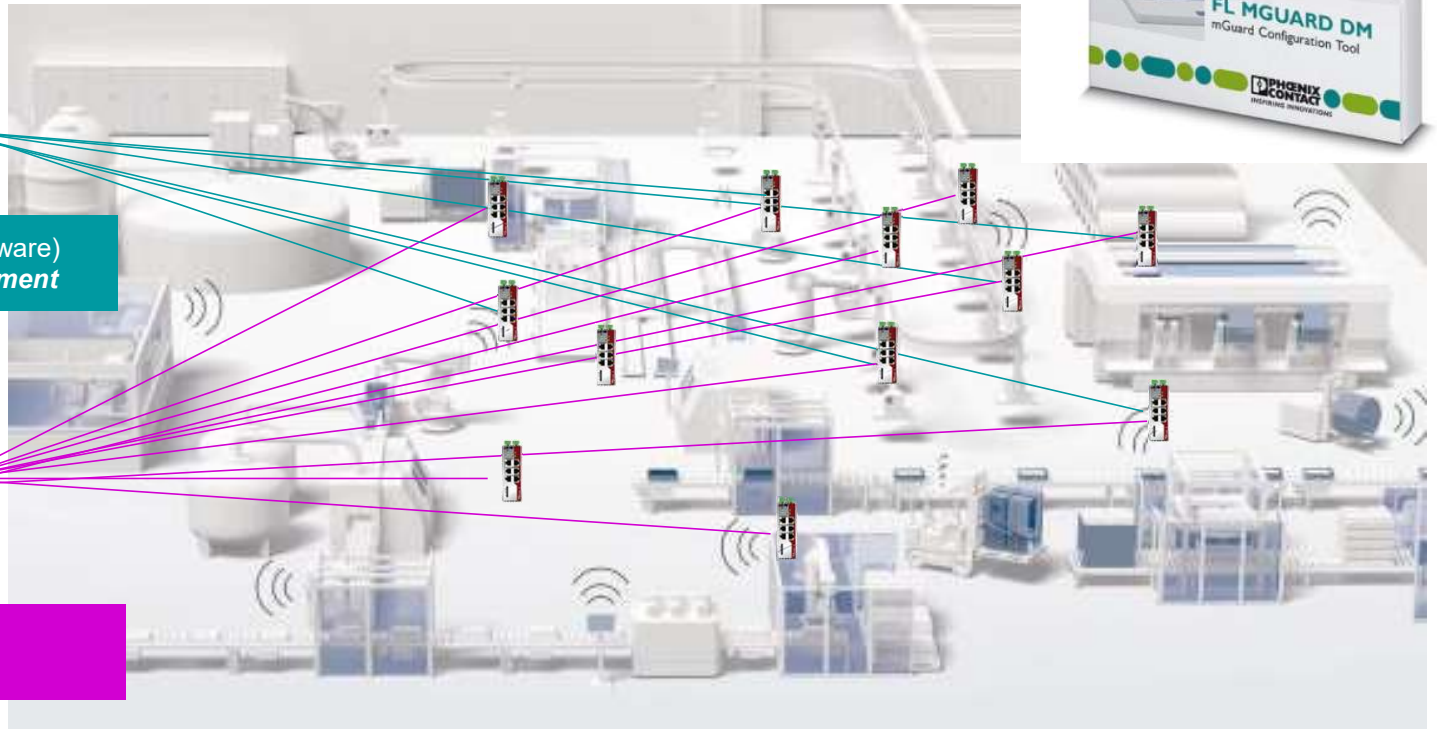
## Device management



FL MGUARD DM Unlimited (Software)  
*Configuration / Patch Management*



Radius Server:  
*Password Management*





Products alone are not everything

SecurITy  
made  
in  
Germany  
TeleTrust Quality Seal  
www.teletrust.de/itsmig



+



Own **hardware** development  
and production (Bad Pyrmont)

Own **firmware** development  
(Berlin)

Link: <https://www.teletrust.de/en/itsmig/>





## Products alone are not everything

Official website of the Department of Homeland Security



# ICS-CERT

INDUSTRIAL CONTROL SYSTEMS CYBER EMERGENCY RESPONSE TEAM

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### Control Systems

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- Information Products
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- Related Sites
- FAQ

## Advisory (ICSA-17-131-01)

Phoenix Contact GmbH mGuard

Original release date: May 11, 2017

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All information products included in <http://ics-cert.us-cert.gov> are provided "as is" for informational purposes only. The Department of Homeland Security (DHS) does not provide any warranties of any kind regarding any information contained within. DHS does not endorse any commercial product or service, referenced in this product or otherwise. Further dissemination of this product is governed by the Traffic Light Protocol (TLP) marking in the header. For more information about TLP, see <http://www.us-cert.gov/tlp/>.

### CVSS v3 8.6

**ATTENTION:** Remotely exploitable/low skill level to exploit

**Vendor:** Phoenix Contact GmbH

**Equipment:** mGuard

**Vulnerabilities:** Resource Exhaustion, Improper Authentication

### AFFECTED PRODUCTS

The following versions of mGuard, a network device, are affected:

- mGuard firmware versions 8.3.0 to 8.4.2

More Advisories

Firmware was not bad.  
It is now even better.

Source: <https://ics-cert.us-cert.gov/advisories/ICSA-17-131-01>



Products alone are not everything

fast + accurate

Open partnership

**Security information and  
event management (SIEM)**



**Anomaly  
detection**



Link: <https://www.teletrust.de/en/itsmig/>



Cyber Security

## New mGuard 1100



# Remote Maintenance



TC CLOUD CLIENT

Only **remote maintenance**



MGUARD RS2000

**Remote maintenance and integration** of machines into the factory network



MGUARD RS4000

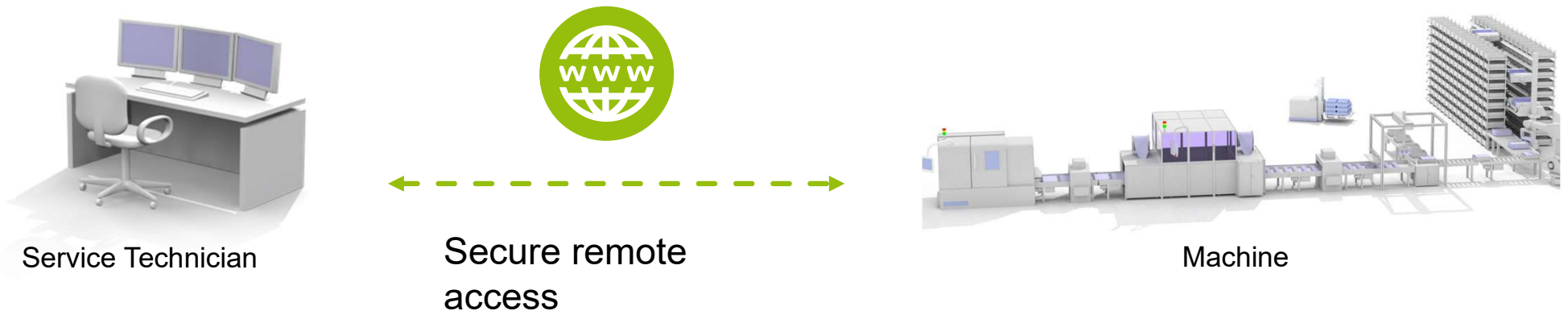
**Remote maintenance** (optionally via mobile radio) and **integration** of machines into **complex** factory networks

Remote connections with mGuard portfolio

Why remote maintenance?

## Aim of the remote maintenance

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### Target:

- Monitoring, control, maintenance concepts 24/7
- Predictive maintenance - avoidance of malfunctions and failures
- Reduce reaction times

Why remote maintenance?

## Advantages of remote maintenance

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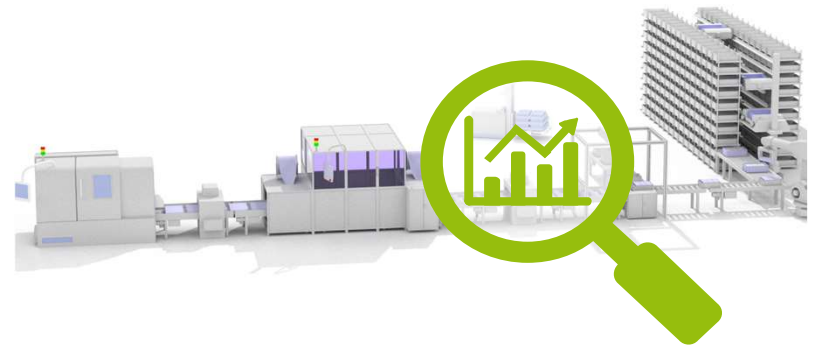
Saving time and money  
in the event of servicing



Reduce or avoid machine  
downtime



Expert knowledge also on  
discarding sites





The background of the slide is a faded, grayscale image of an industrial factory floor. Large white machines and conveyor belts are visible. A semi-transparent white rectangle is positioned on the right side, containing a large, light-blue padlock icon. A diagonal white line runs from the top left towards the center. A thick green horizontal bar is located behind the text.

# **Remote maintenance access**

Remote maintenance access

## What are the requirements?

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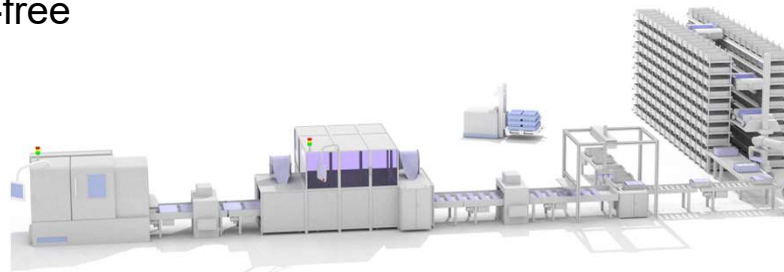
Secure, reliable and trouble-free  
remote access

Simple integration of  
machines / plants

Worldwide access

Firewall in the VPN tunnel  
to secure access

VPN communication without  
changes to the corporate  
firewall



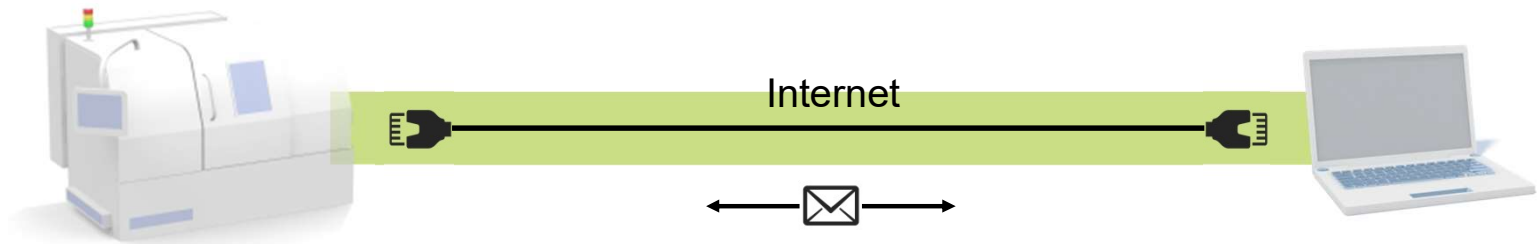
Remote maintenance access

## VPN

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- VPN means Virtual Private Network
- A VPN connection enables encrypted, targeted transmission of data via public networks such as the Internet.



Remote maintenance access

## Secure remote access

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- Secure data transmission via VPN tunnel
- All accesses are traceable
- Connection only on request
- Key switch on machine for connection establishment
- SMS or call to Router to initiate remote maintenance
- No access to the superimposed network
- Use of modern encryption standards (IPSec, OpenVPN)

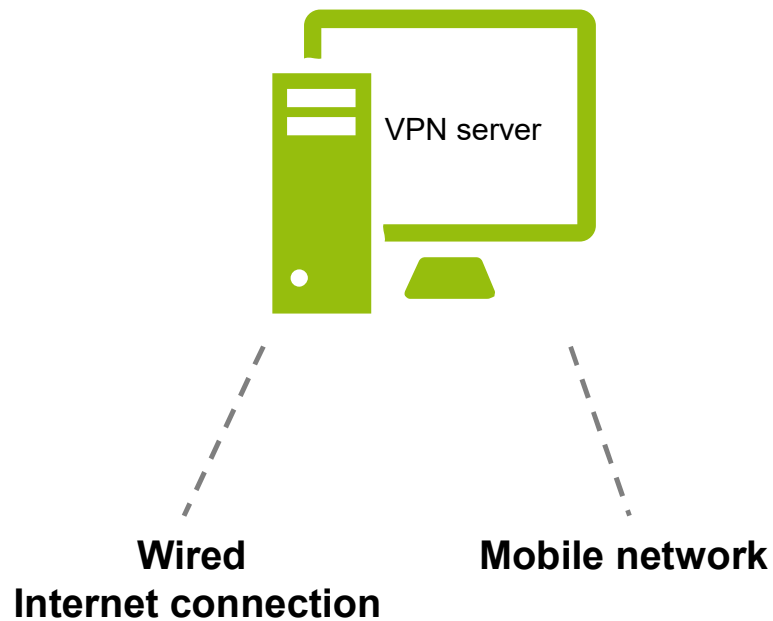


**How can a remote maintenance  
concept look like?**

How can a remote maintenance concept look like?

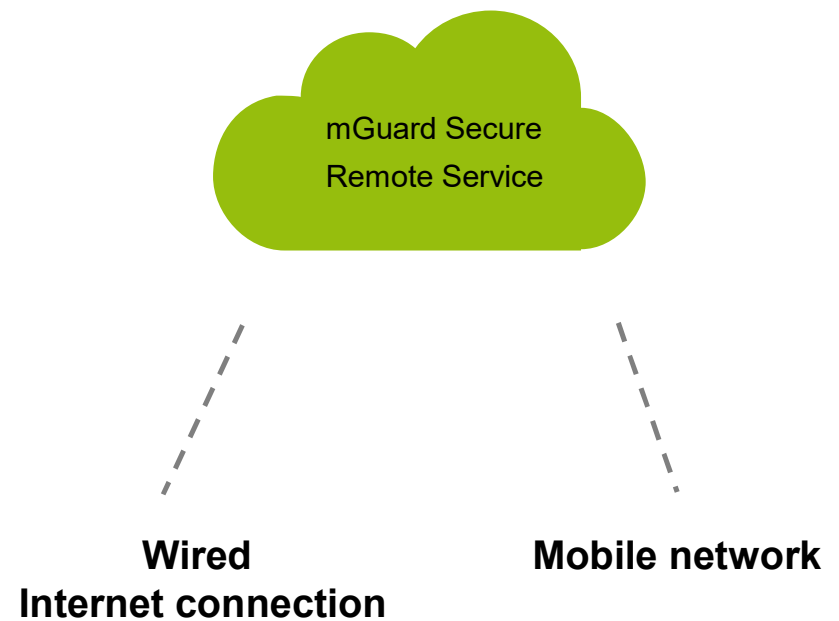
## VPN Server vs. Cloud

---



- Secure transparent communication channel is established between two devices via the Internet

or



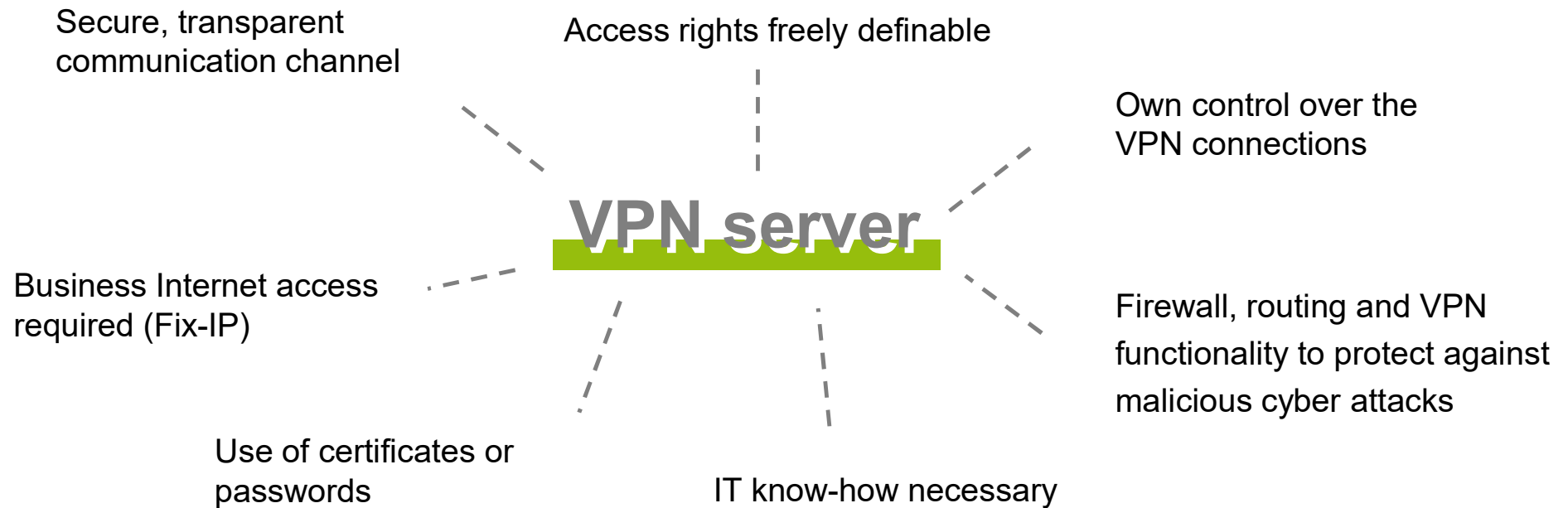
- Secure transparent communication channel is established between the field device and the service technician, over the Internet and the mGuard Secure Remote Service

How can a remote maintenance concept look like?



## VPN Server - General

---





How can a remote maintenance concept look like?

## Wired vs. mobile telephony

---



or



### Cabled Internet connection

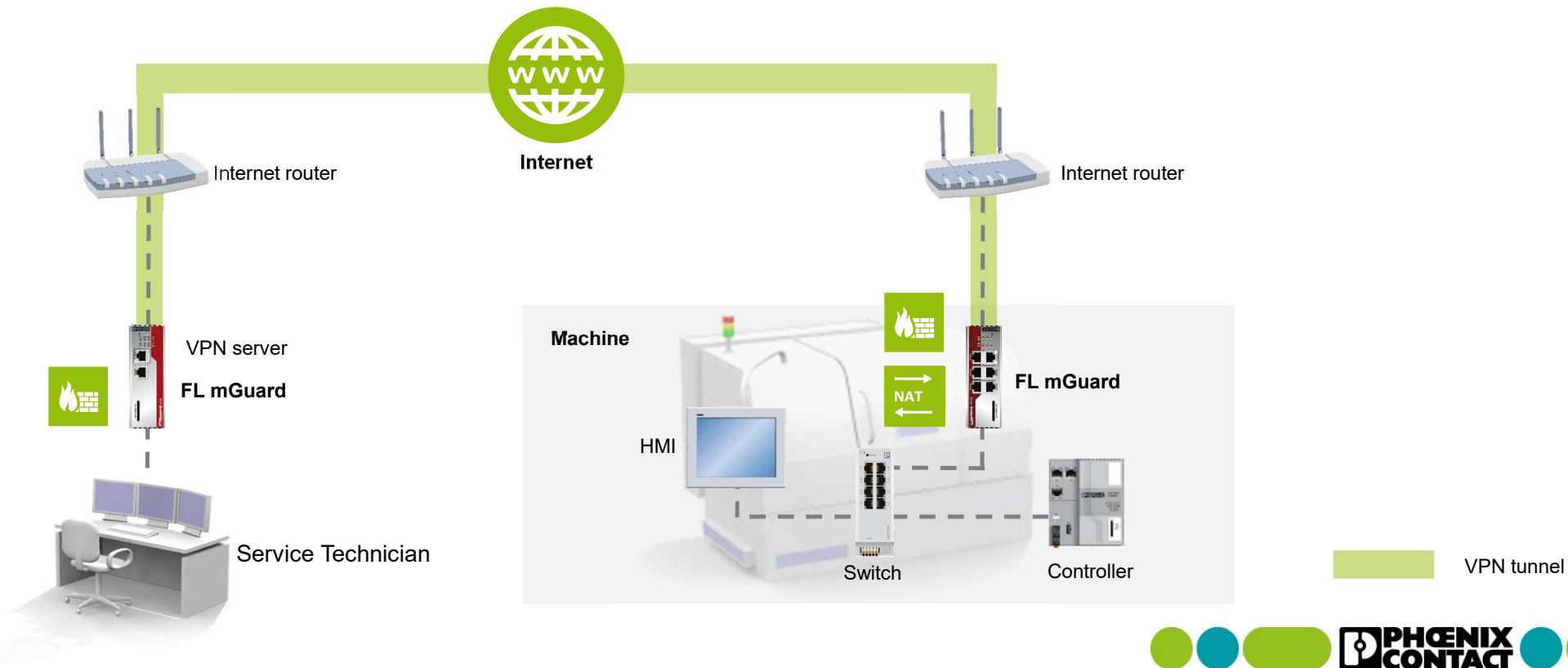
- ✓ Simply
- ✓ Cost-effective

### Mobile radio (2G / 3G / 4G)

- ✓ High area coverage
- ✓ No cable-based Internet connection required on site

How can a remote maintenance concept look like?

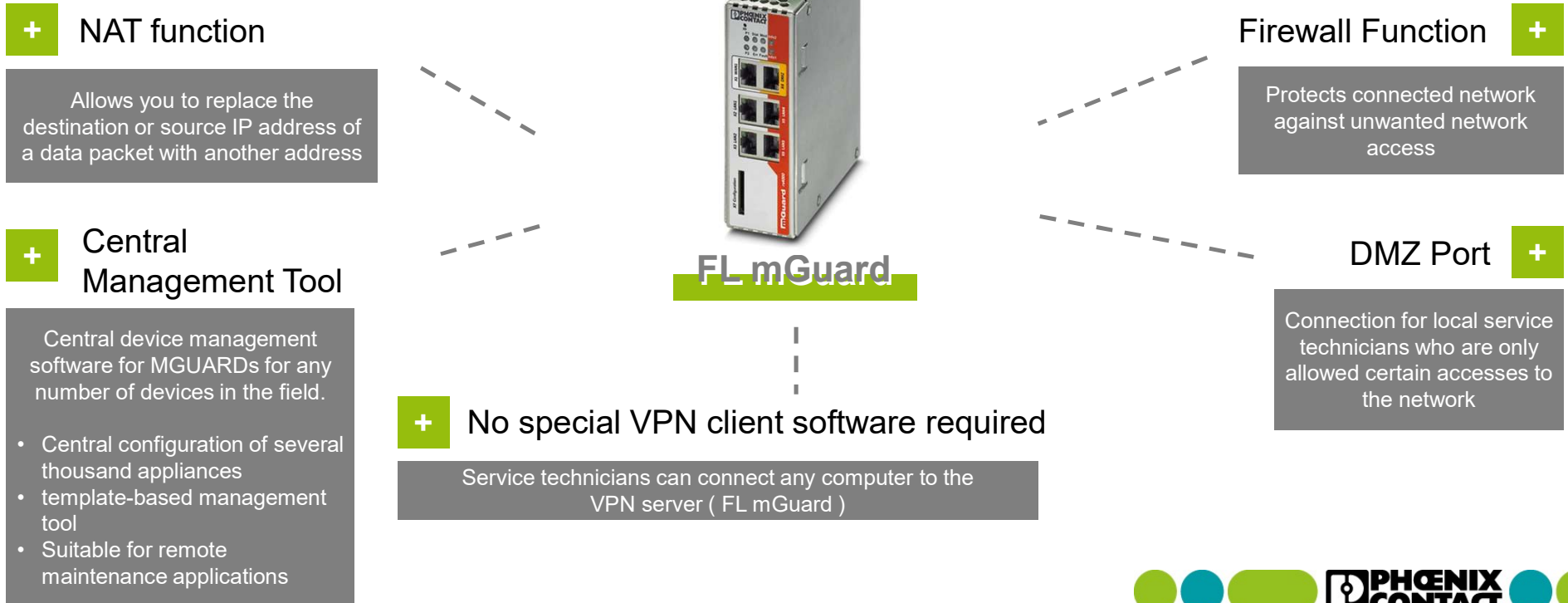
## VPN Server - Wired Internet connection



How can a remote maintenance concept look like?

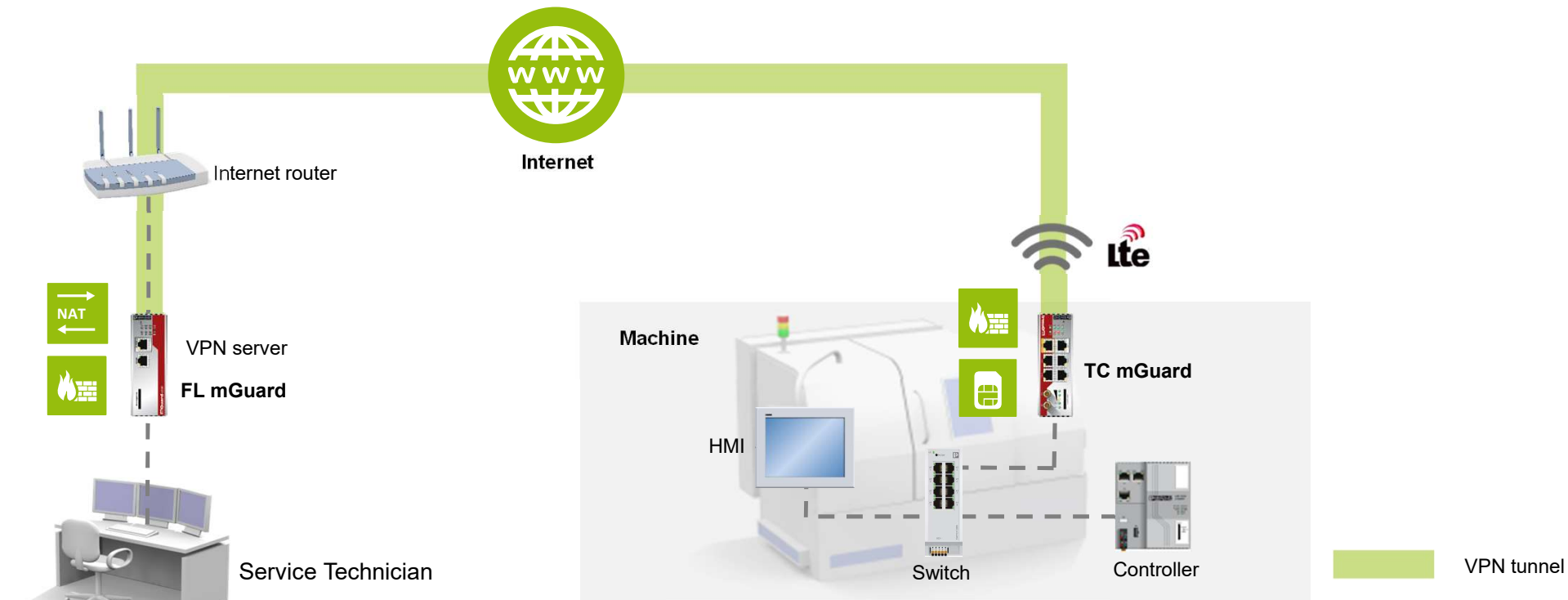


## VPN Server - Wired Internet connection



How can a remote maintenance concept look like?

## VPN Server - mobile phone network (2G / 3G / 4G)



How can a remote maintenance concept look like?



## VPN Server - mobile phone network (2G / 3G / 4G)

### + Higher reliability

WAN and mobile radio  
Connection to the device.

Two SIM cards can be used in  
order to establish mobile  
communications with different  
providers. It is

### + No special VPN client software required

Service technicians can connect  
any computer to the VPN server  
(FL mGuard)



TC mGuard

### + 4G Mobile Router (LTE)

Fallback to 3G (UMTS/HSPA)  
or 2G (GPRS/EDGE)

### Firewall Function +

Protects connected network  
against unwanted network  
access

### DMZ Port +

Connection for local service  
technicians who are only  
allowed certain accesses to the  
network

How can a remote maintenance concept look like?

## VPN Server - mobile phone network (2G / 3G / 4G)



How can a remote maintenance concept look like?



## VPN Server - mobile phone network (2G / 3G / 4G)

### + Cheaper solution

Cheaper solution compared to the mGuard, as the functions are reduced.

### + Up to three VPN tunnels simultaneously

VPN remote start by call or SMS



TC Router

### 4G Mobile Router (LTE) +

Fallback to 3G (UMTS/HSPA) or 2G (GPRS/EDGE)

### Firewall +

Stateful-Inspection- Firewall for dynamic filters



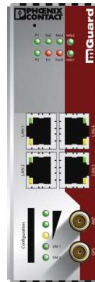
How can a remote maintenance concept look like?

## VPN Server - mobile phone network (2G / 3G / 4G)



TC ROUTER

Universal cellular router,  
simple firewall



MGUARD RS2000

Remote communication with  
redundant providers, simple  
firewall



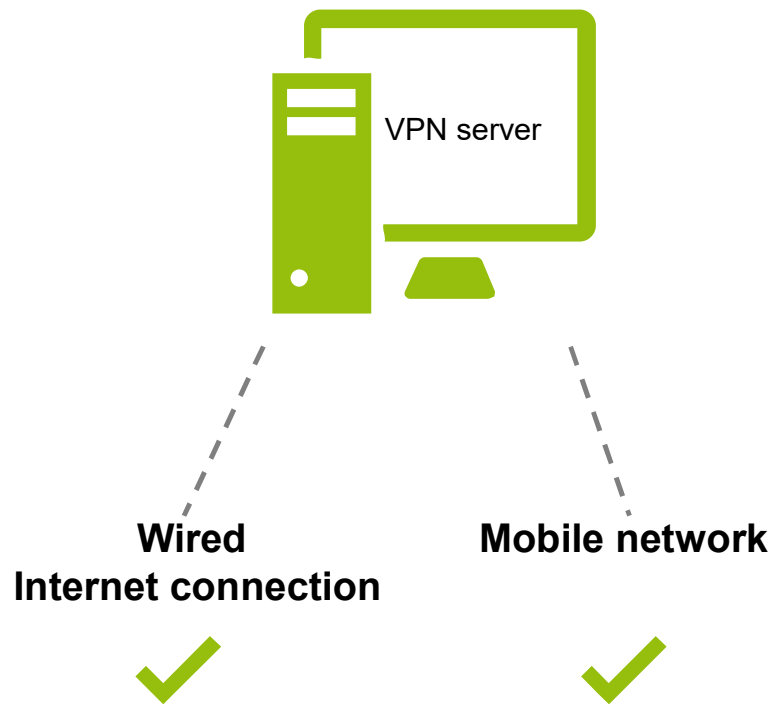
MGUARD RS4000

Remote communication with  
fallback->  
WAN to the mobile network,  
intelligent firewall

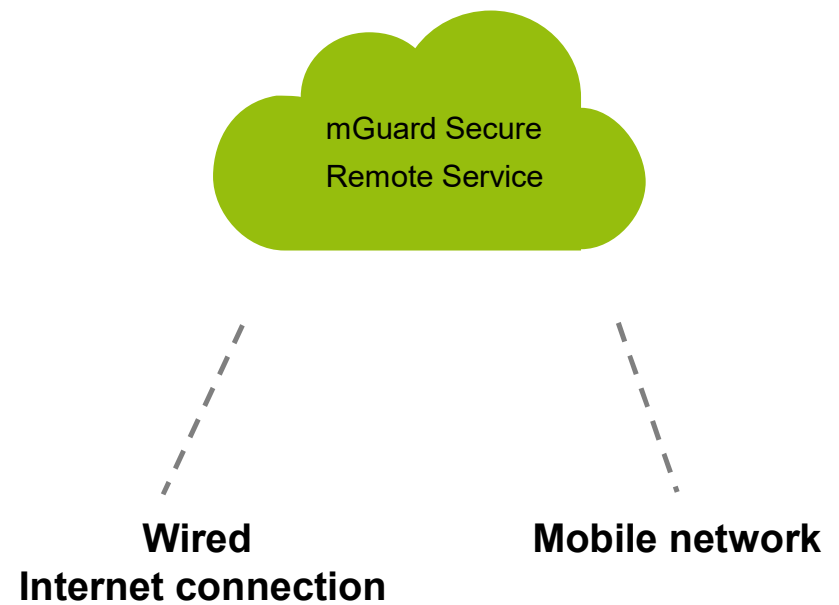
How can a remote maintenance concept look like?

## VPN Server vs. Cloud

---



or



How can a remote maintenance concept look like?

## Cloud - General

---



Secure transparent  
communication channel over the  
Internet with the mGuard Secure  
Remote Service

Turnkey VPN solution

### mGuard Secure Remote Service

--- No IT know-how necessary

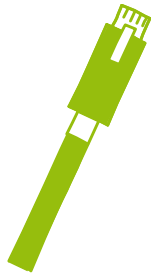
Any Internet access can be used

Simple commissioning through  
configuration wizard

How can a remote maintenance concept look like?

## Wired vs. mobile telephony

---



### Cabled Internet connection

- ✓ Simply
- ✓ Cost-effective

or



### Mobile radio (2G / 3G / 4G)

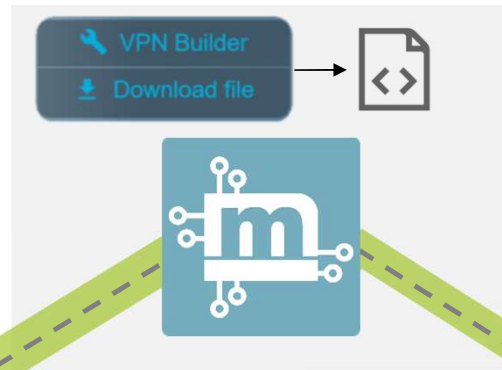
- ✓ High area coverage
- ✓ No cable-based Internet connection required on site

How can a remote maintenance concept look like?

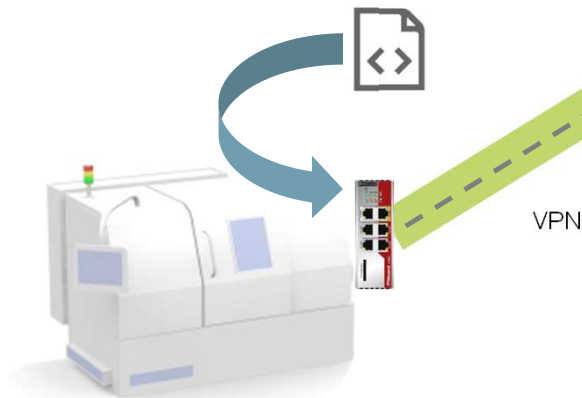
## Cloud – Configuration in 3 steps



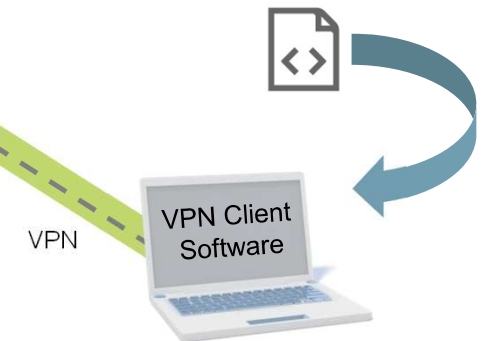
### 1. Create configuration file for devices



### 2. Import configuration file into devices



### 3. Start the connection in the "Cloud"





.....



How can a remote maintenance concept look like?

## Cloud - Wired Internet access



### + Firewall Function

Protects connected network against unwanted network access

### + DMZ Port

Connection for local service technicians who are only allowed certain accesses to the network



FL mGuard



TC Cloud Client

### Only for "simple" Remote maintenance +

No firewall function

### Direct integration into existing networks +

Simple Internet connection is sufficient

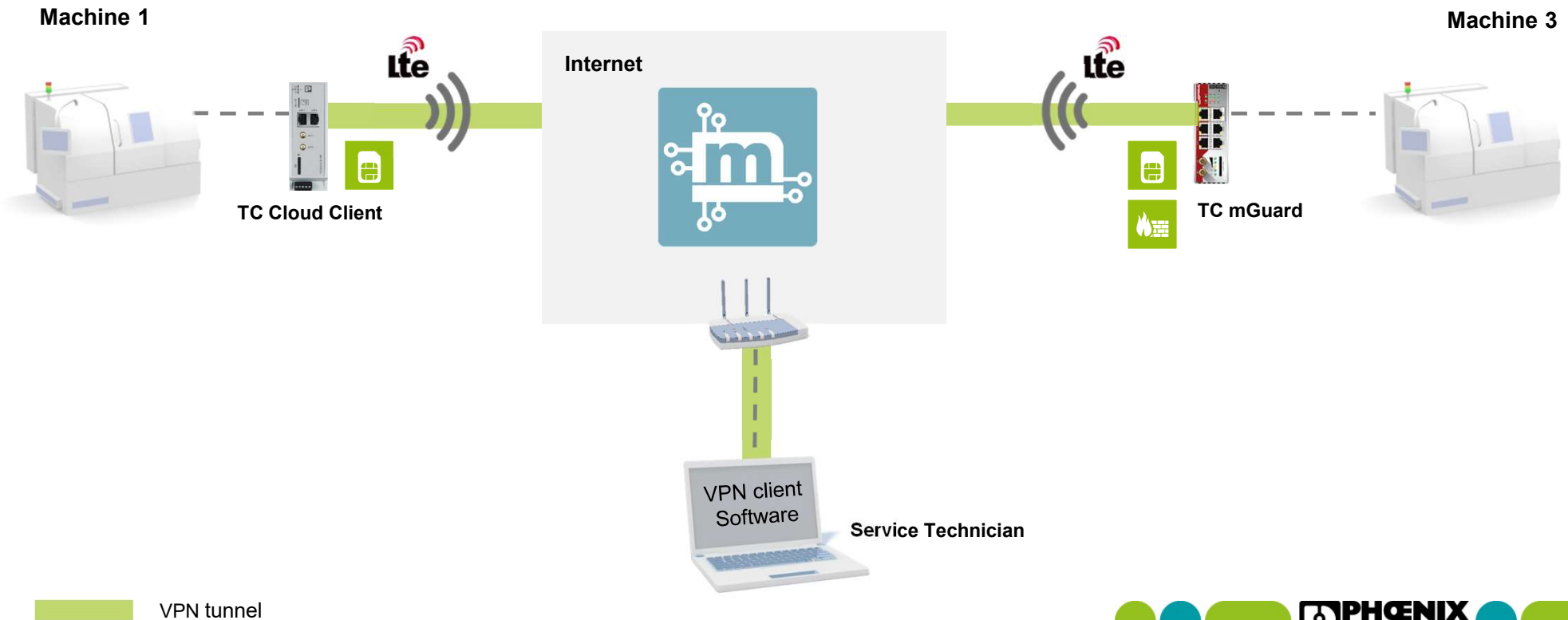
WAN and LAN  
Connection on the device

Simple Internet connection is  
sufficient



How can a remote maintenance concept look like?

## Cloud - Mobile network (2G / 3G / 4G)



How can a remote maintenance concept look like?

## Cloud - Mobile network (2G / 3G / 4G)



### + Firewall Function

Protects connected network against unwanted network access

### + DMZ Port

Connection for local service technicians who are only allowed certain accesses to the network



TC mGuard



TC Cloud Client

### Only for "simple" Remote maintenance +

No firewall function

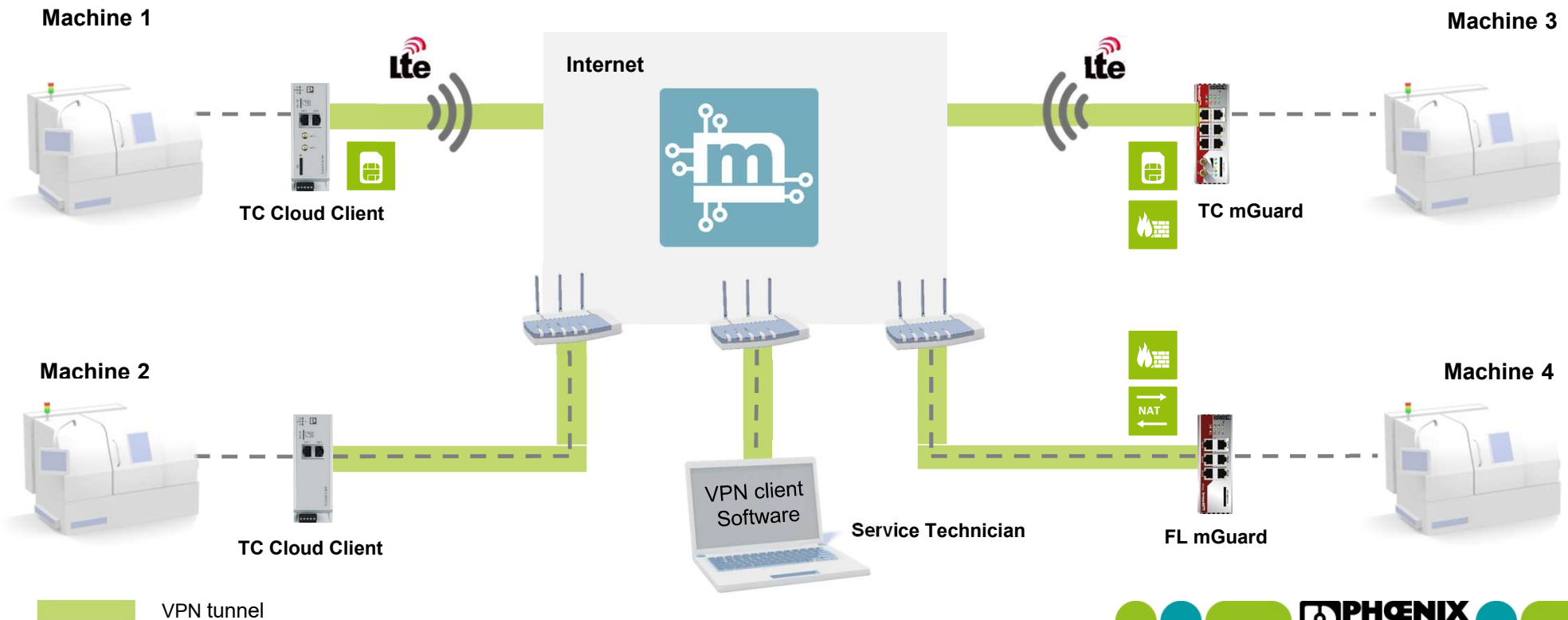
### 4G Mobile Router (LTE) +

Connects networks with the mGuard Secure Remote Service (Cloud only) over the mobile network.

WAN and mobile telephony  
Connection on the device

How can a remote maintenance concept look like?

## Cloud - Mobile network (2G / 3G / 4G)



How can a remote maintenance concept look like?

## Cloud - General



TC CLOUD CLIENT

Only **remote maintenance**



MGUARD RS2000

**Remote maintenance and integration** of machines into the factory network



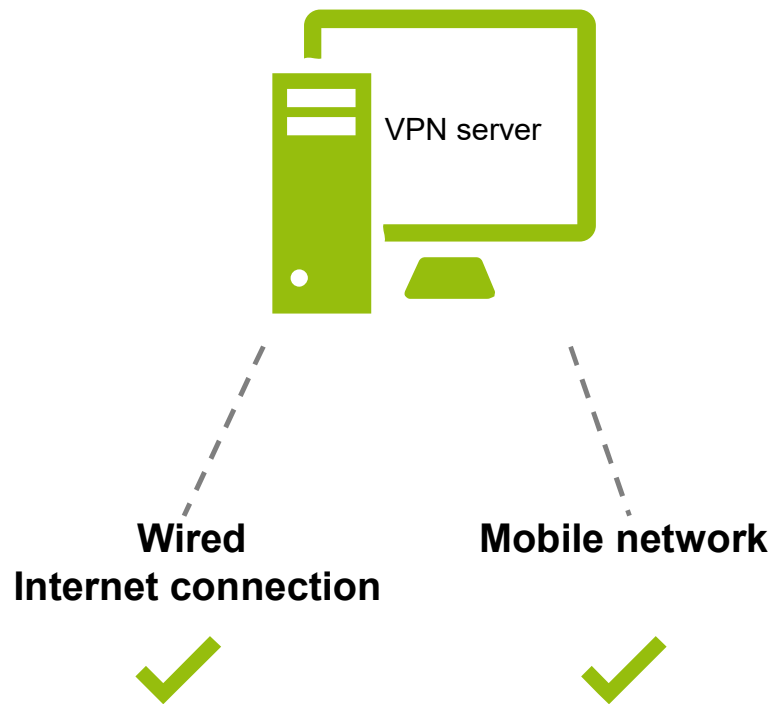
MGUARD RS4000

**Remote maintenance** (optionally via mobile radio) and **integration** of machines into **complex** factory networks

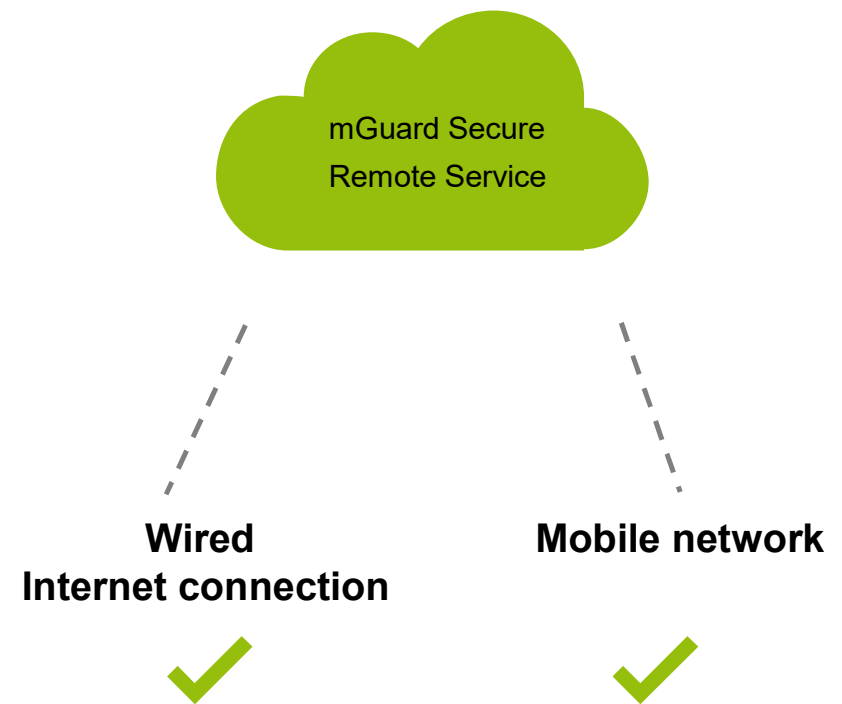
How can a remote maintenance concept look like?

## VPN Server vs. Cloud

---



or



How can a remote maintenance concept look like?

## Overview



VPN server



mGuard Secure Remote Service

	VPN server	mGuard Secure Remote Service
<b>Description</b>	<ul style="list-style-type: none"> <li>Secure transparent communication channel is established between two devices via the Internet</li> </ul>	<ul style="list-style-type: none"> <li>Secure transparent communication channel is established between the field device and the service technician, over the Internet and the mGuard Secure Remote Service</li> </ul>
<b>Internet connection</b>	<ul style="list-style-type: none"> <li>Business Internet access required (Fix IP address)</li> </ul>	<ul style="list-style-type: none"> <li>Any Internet access can be used</li> </ul>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>Firewall, Routing and VPN functionalities for Cyber Attack Protection</li> <li>Complete self control of the VPN tunnel</li> </ul>	<ul style="list-style-type: none"> <li>Turnkey VPN solution</li> <li>Simple commissioning through configuration wizard</li> <li>Secure transparent communication channel</li> </ul>
<b>Additional features</b>	<ul style="list-style-type: none"> <li>Encryption certificates required</li> <li>No access to the superimposed network via VPN possible (conditional firewall)</li> </ul>	<ul style="list-style-type: none"> <li>Support for iOs devices like iPad and iPhone</li> <li>Logbook - Access logging of all accesses</li> <li>Free Basic Account</li> </ul>
<b>Devices</b>	<ul style="list-style-type: none"> <li>WIRED: FL mGuard..</li> <li>MOBILE: TC Router, TC mGuard..</li> </ul>	<ul style="list-style-type: none"> <li>WIRED: TC Cloud Client..TX, FL mGuard..</li> <li>MOBILE: TC Cloud Client..4G, TC mGuard..</li> </ul>
<b>IT expertise</b>		


# Remote maintenance Web

PHOENIX CONTACT

Products Solutions Service and support My Phoenix Contact

Home Solutions Remote control and remote maintenance

## Remote control and remote maintenance



Ind  
cor  
Wor  
mac

Back to Solutions

Category

- inGuard Secure Cloud
- Remote control
- Remote maintenance

Alerts

Networking

Service and support

Securely connecting distributed stations with the control room is now an option thanks to the versatility of remote communication. Remote communication allows access and continuous process data monitoring from the central station.

Remote maintenance involves temporary access to a system or machine. In contrast to remote maintenance, remote control requires a permanent connection to a remote station in the vast majority of cases. Various alert

PHOENIX CONTACT

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Company News Career Contact

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Home Solutions Remote control and remote maintenance Remote maintenance

## Remote maintenance



Back to Remote control and remote maintenance

### Category

Remote maintenance in the cloud

Secure remote maintenance via the Internet opens up huge potential for production systems in terms of additional services. With mGuard, a reliable solution that you can easily integrate into your machines. Secure Remote Service and the TC Cloud Client, you have an independent remote maintenance in the cloud.

## Excellent products



**Remote maintenance pro**

With Internet technologies, connections to your machine. To safeguard your network (manipulation, Phoenix Contact art security mechanisms such as Digital Transformation (DT) and

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Home Products Industrial communication technology Remote communication

## Remote communication



Worldwide access to your own data

Acquire all the information relating to your application quickly and smoothly.

Back to Industrial communication technology

### Category

Alerts

Remote control

Remote maintenance

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### SERVICE

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Worldwide remote access to machines and systems  
[PDF, 50.83 MB]



mGuard secure cloud

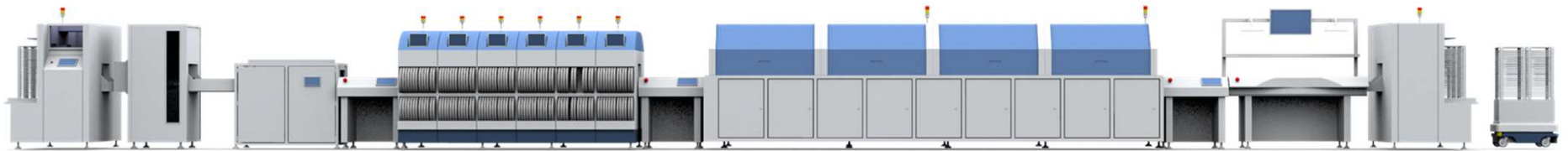
## Remote Maintenance



Remote maintenance with mGuard Secure Cloud

Example

## Machine Integration



Example      FL MGUARD 1100      and it's NAT Function

Machine integration

## Network Address Translation (NAT)-Solutions

**NAT + Firewall**



**mGuard 1100**

**NAT + managed Switch**



**NAT 2000**

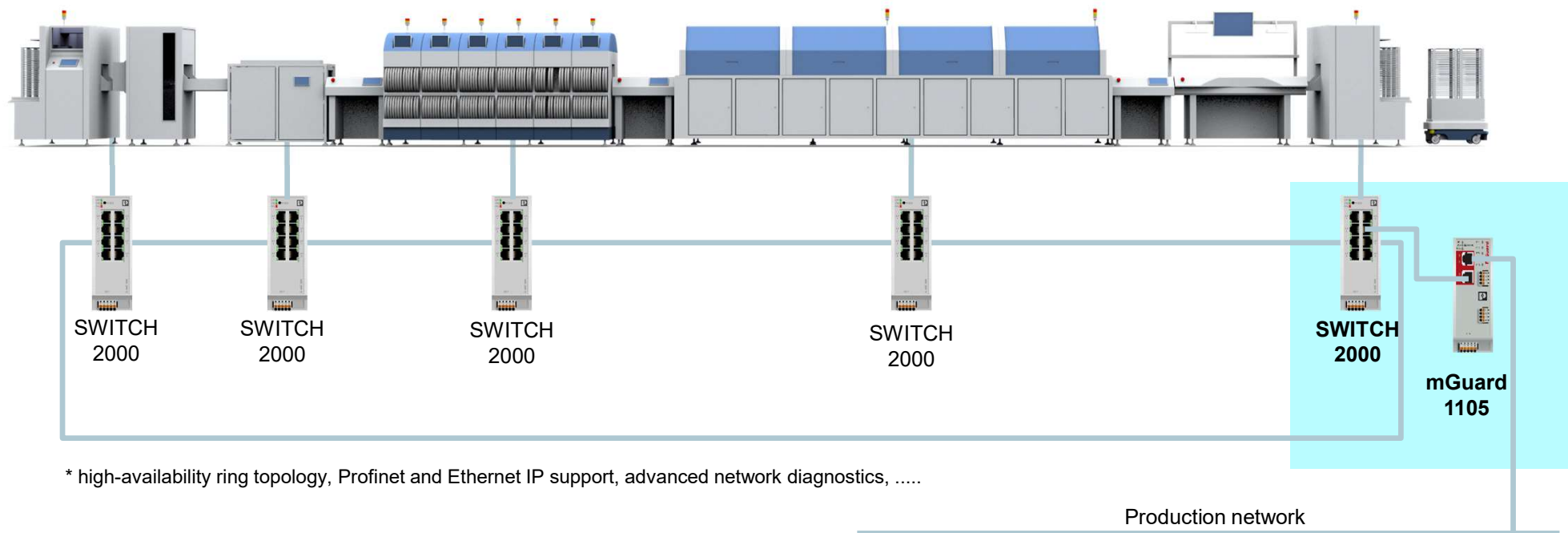
**NAT + Security +  
managed Switch**



**mGuard 1100 & Switch 2000**

Secure machine integration

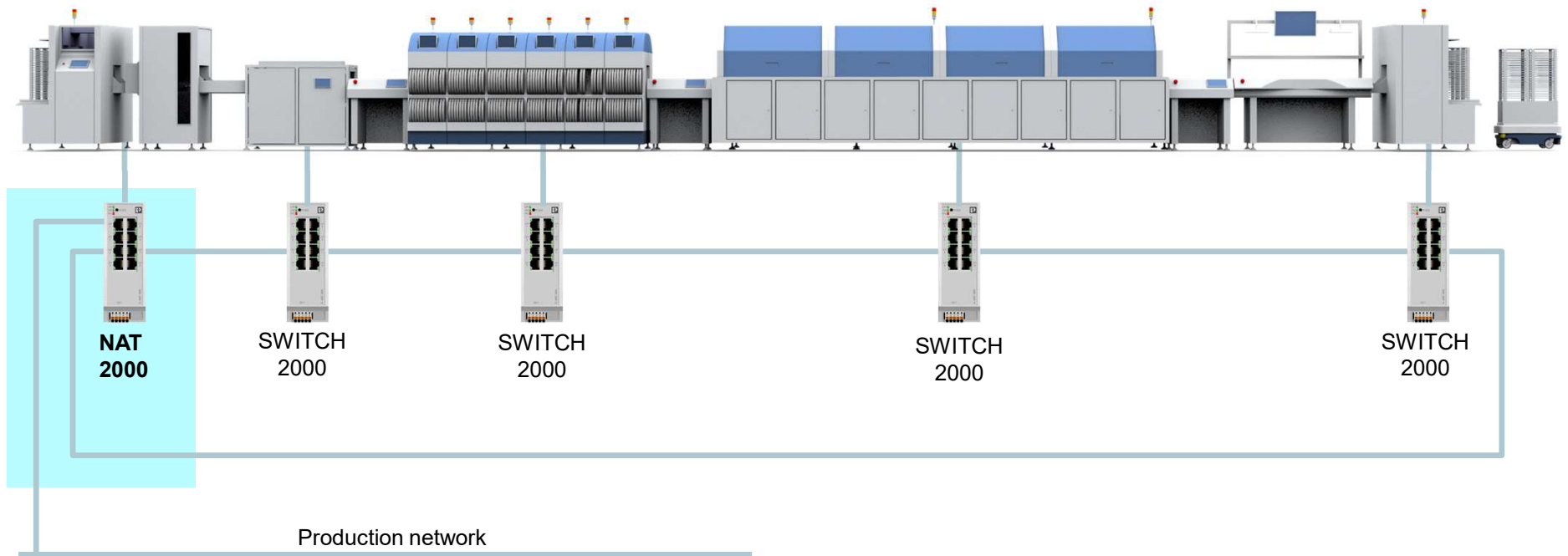
## NAT + Security + managed Switch\*



\* high-availability ring topology, Profinet and Ethernet IP support, advanced network diagnostics, .....

Network integration

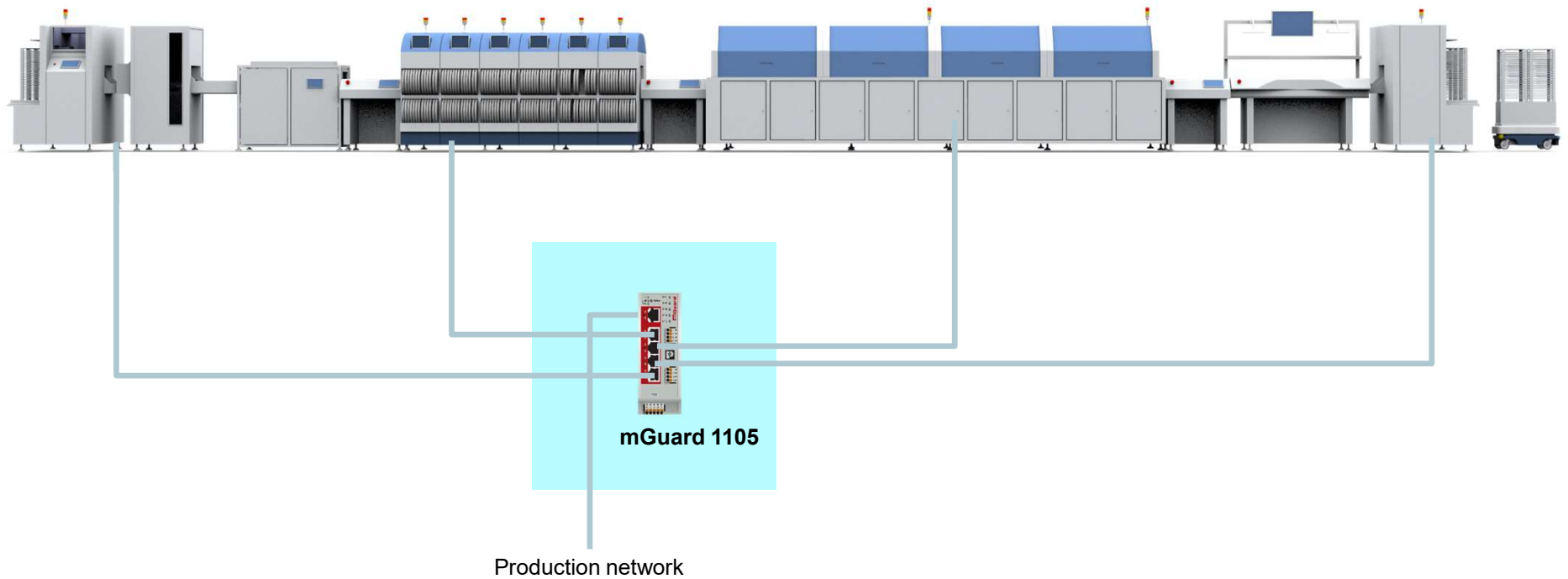
## NAT + managed Switch\*



\* high-availability ring topology, Profinet and Ethernet IP support, advanced network diagnostics, .....

Secure network integration

## NAT + Security



## Technical facts

# mGuard 1102/1105

5 multicolor LED

### Computing power

- ARMv8 64-bit processor
- Marvell ARMADA 88F3720 / 1 GHz CPU clock
- 1024 Mbyte DDR3 SDRAM
- 4 GB flash memory
- TPM 2.0
- Real time clock
- 4 port unmanaged switch (1105)

SD card slot  
backside

24V DC  
no redundant power supply \*

3 x digital IO  
currently one used\*

### Ethernet ports

- RJ45 | Full Duplex | Auto-MDIX
- Ethernet
- Fast Ethernet
- Gigabit Ethernet

Operating temperature  
0° to 60°C \*

Push-In terminals  
all on the front level



Industrial Security-Router with mGuard security technology

## mGuard 1102/1105



- Stateful-Inspection-Firewall
- Standard-Routing, NAT, 1:1-NAT, Port-Forwarding
- "Stealth Mode" for secure network segmentation without changing the network or its configuration (Layer 2 transparent)

### Key Feature:

- **Gigabit-Speed**
- **mGuard Security Technology** for secure network protection
- **Automatic firewall rule creation** based on a reference communication



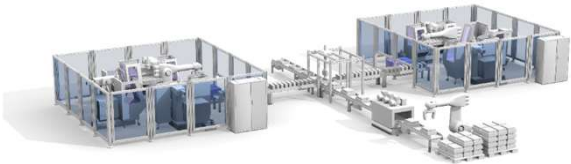

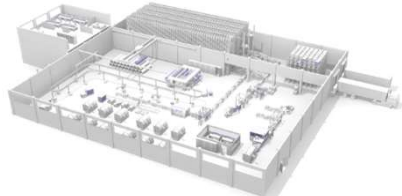
## mGuard 1100



**The industrial NAT Firewall,  
connecting networks easy and secure.**



# mGuard product families

mGuard 1000	mGuard 2000	mGuard 4000
		
<b>Integrate machines in production networks securely</b>	<b>Secure remote access + security</b>	<b>Integration of OT security into the IT security infrastructure</b>
<b>Key Features</b> Routing, NAT, Firewall with assistant High data throughput	<b>Key Features</b> VPN remote access mGuard secure cloud Firewall	<b>Key Features</b> IP/Port Groups, Emergency Mode, User firewall, DMZ, Network Access Server, ..... High Performance

## Result

# Our mGuards make everyone happy



+



+



Machine builder 😊

Production 😊

IT department 😊





Cyber Security

## New mGuard 1100

new





Cyber security for the control cabinet with COMPLETE line

mGuard 1100

**The industrial NAT Firewall, connecting networks easy and secure.**



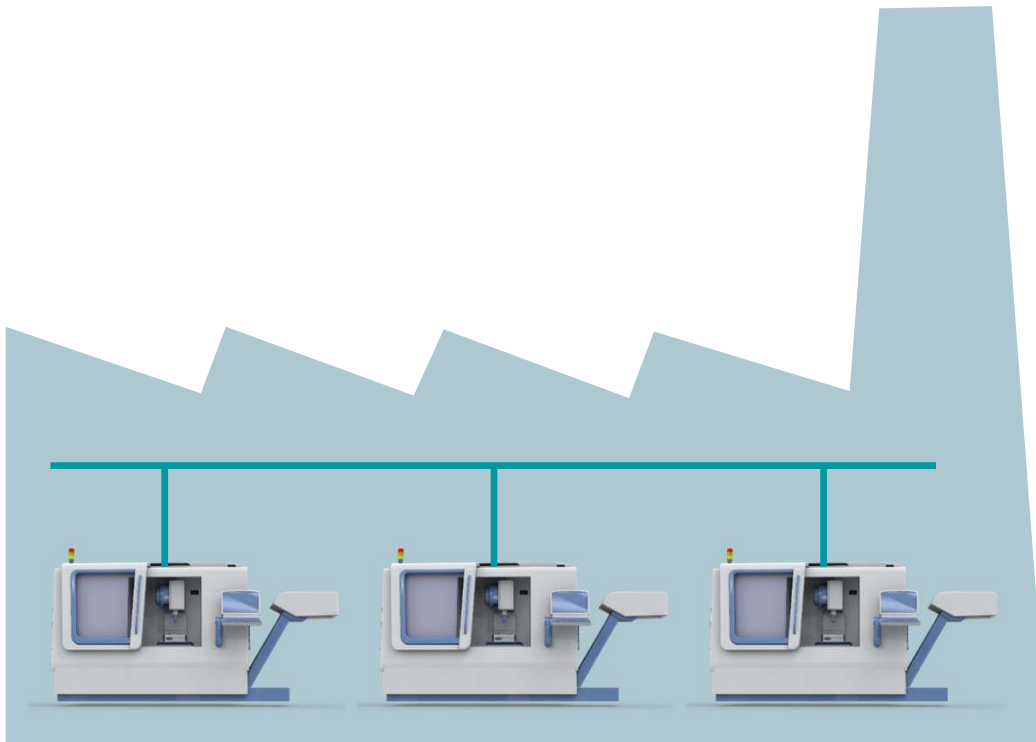
**... for the automation technician (OT).**





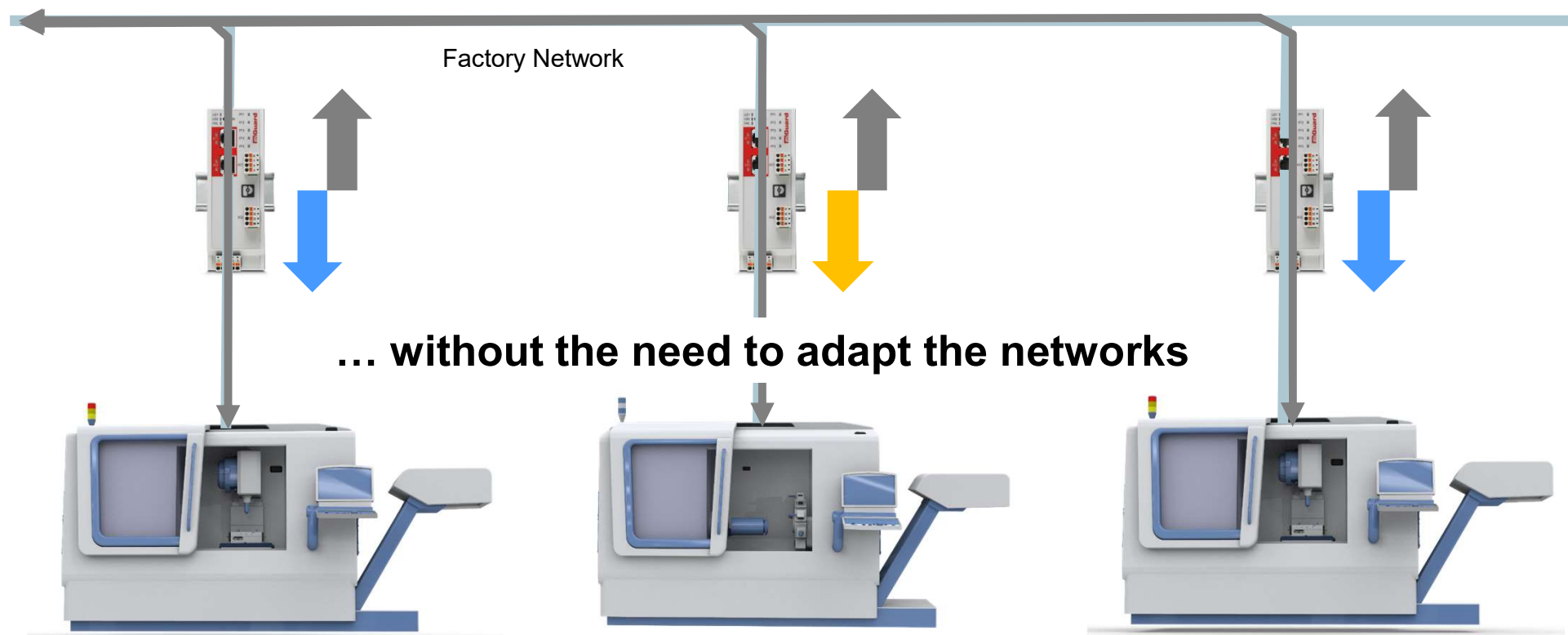
mGuard 1100

## For the integration of machines into the networked factory



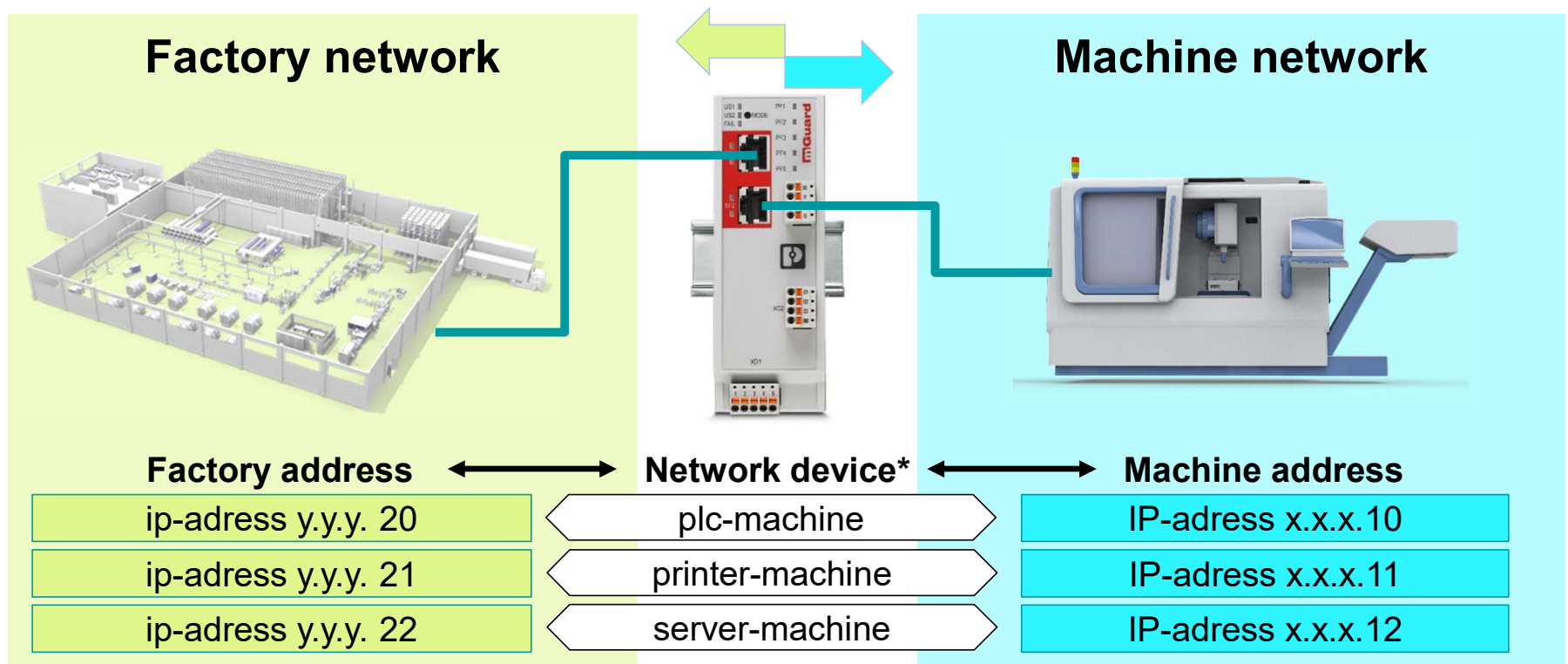
**... without the need to adapt  
the networks.**

# Simply integrate your machine into the factory network ...



Connecting networks without the need to adapt the networks

## Network Address Translation (NAT)

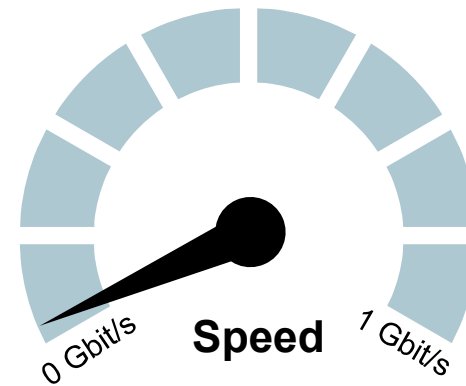
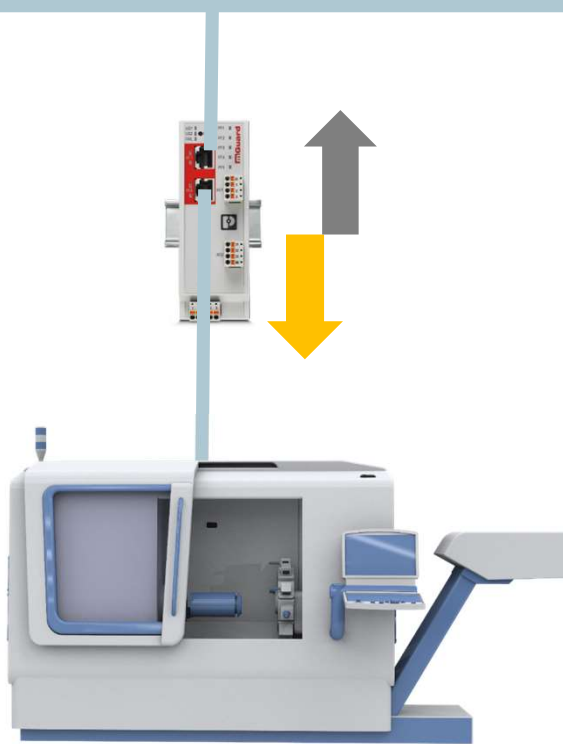


103

\* The device has an own address in both networks. The network and device configuration does not need to be changed.

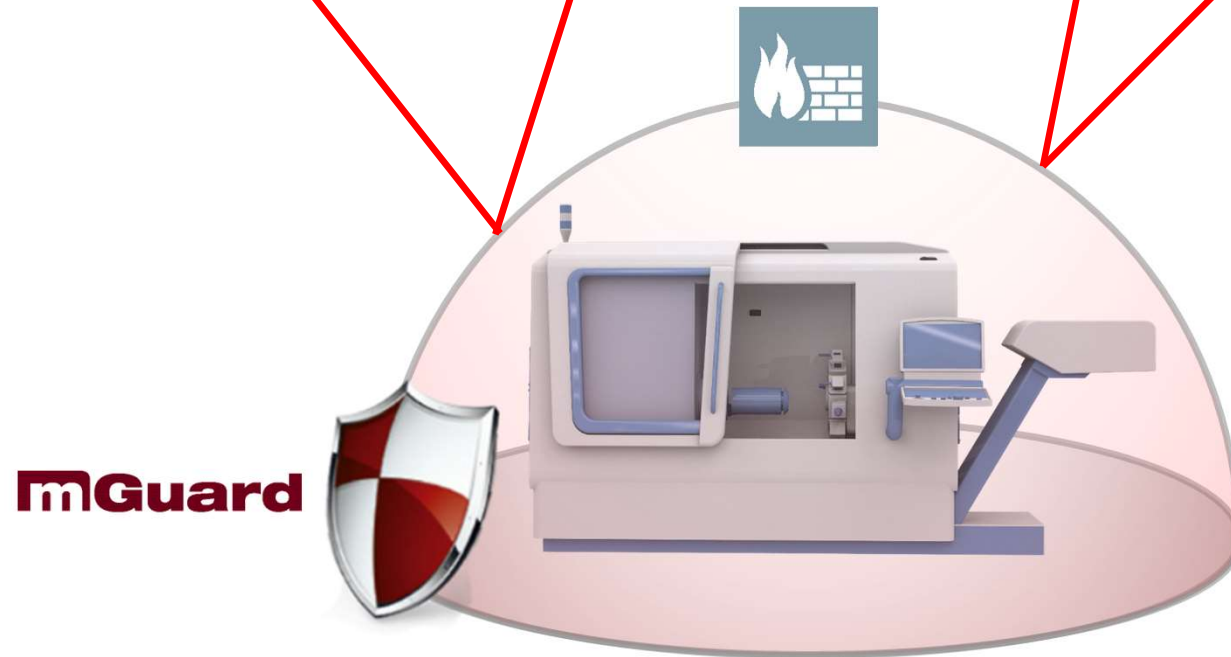
mGuard 1100

## Connecting networks with super fast Gigabit speed.



mGuard 1100

**The special feature is the integrated mGuard security technology**



... which **protects your machine** network securely for unwanted communication.

mGuard 1100

## mGuard Security Technology



Secure by Design

Experts guarantee security from the beginning of development. It's not added later.



Product Security  
Incident Response  
Team

Daily Monitoring of vulnerabilities in the used open source components. These are Evaluated and fixed depending on the severity of the problem immediately or in the next regular release.



Product/Solution

Specialy hardened Linux system and technologies selected acording security apects.



Team/Company

Experience on Cyber Security since 20 Years. Experienced consulting team supports you in complex rollout scenarios.

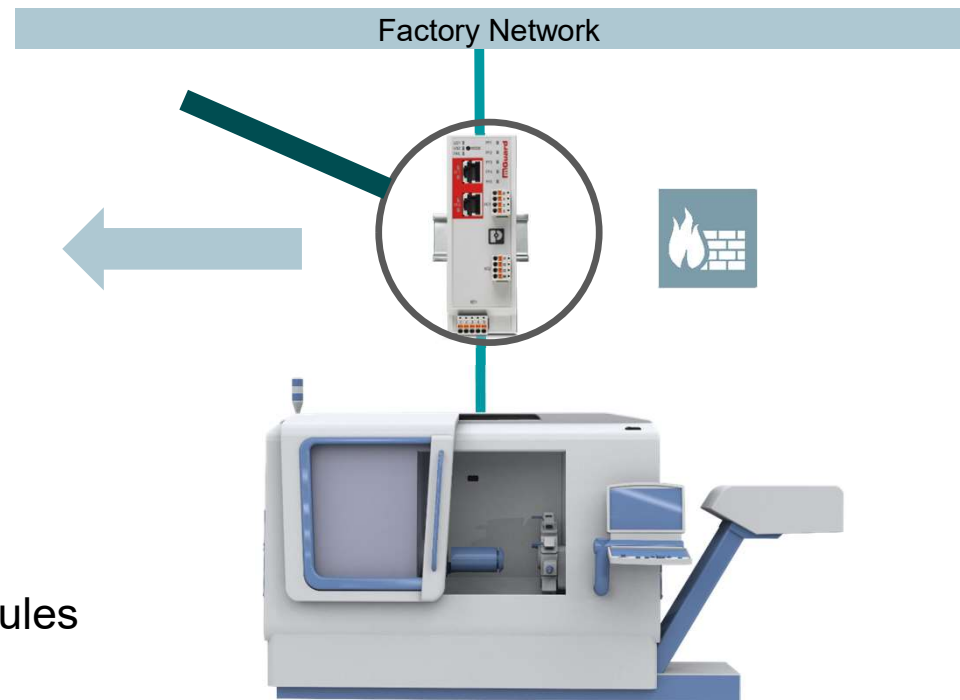
mGuard 1100

## Firewall Assistant

Zelle hinzufügen

ID	Von IP/Netzwerk	Nach IP/Netzwerk	Nach Port	Protokoll	Aktion	Log
1	192.168.10.83	192.168.0.45		UDP	Annehmen	<input type="checkbox"/>
2	192.168.10.83	192.168.1.60		TCP	Annehmen	<input type="checkbox"/>
3	192.168.10.83	178.202.90.223		TCP	Annehmen	<input type="checkbox"/>
4	192.168.10.83	192.168.1.1		TCP	Annehmen	<input type="checkbox"/>
5	192.168.10.83	192.168.1.33		TCP	Annehmen	<input type="checkbox"/>
6	192.168.10.83	192.168.1.7		TCP	Annehmen	<input type="checkbox"/>
7	192.168.10.83	192.168.1.7		TCP	Annehmen	<input type="checkbox"/>
8	192.168.10.83	192.168.1.7		TCP	Annehmen	<input type="checkbox"/>
9	192.168.10.83	192.168.1.7		TCP	Annehmen	<input type="checkbox"/>
10	192.168.10.83	192.168.0.1		TCP	Annehmen	<input type="checkbox"/>

Automatically create the required firewall rules based on a reference communication



## Firewall rules

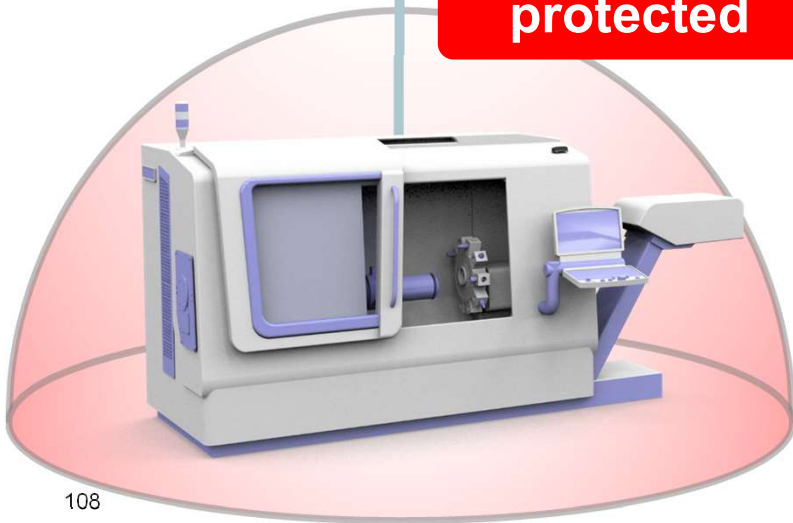
Seq.	Protocol	From IP	From port	To IP	To port
1	UDP	10.10.10.130	any	192.168.108.101	80
2	TCP	192.168.108.101	any	10.10.10.120	80

self-learned  
rule

From: Service PLC to Machine PLC

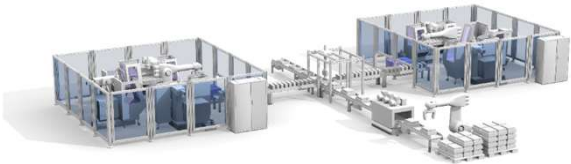

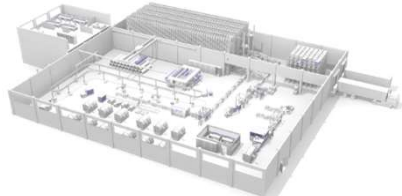
Firewall-Assistent: **OFF**

protected





# mGuard product families

mGuard 1000	mGuard 2000	mGuard 4000
		
<b>Integrate machines in production networks securely</b>	<b>Secure remote access + security</b>	<b>Integration of OT security into the IT security infrastructure</b>
<b>Key Features</b> Routing, NAT, Firewall with assistant High data throughput	<b>Key Features</b> VPN remote access mGuard secure cloud Firewall	<b>Key Features</b> IP/Port Groups, Emergency Mode, User firewall, DMZ, Network Access Server, ..... High Performance

Machine integration

## Network Address Translation (NAT)-Solutions

**NAT + Firewall**



**mGuard 1100**

**NAT + managed Switch**



**NAT 2000**

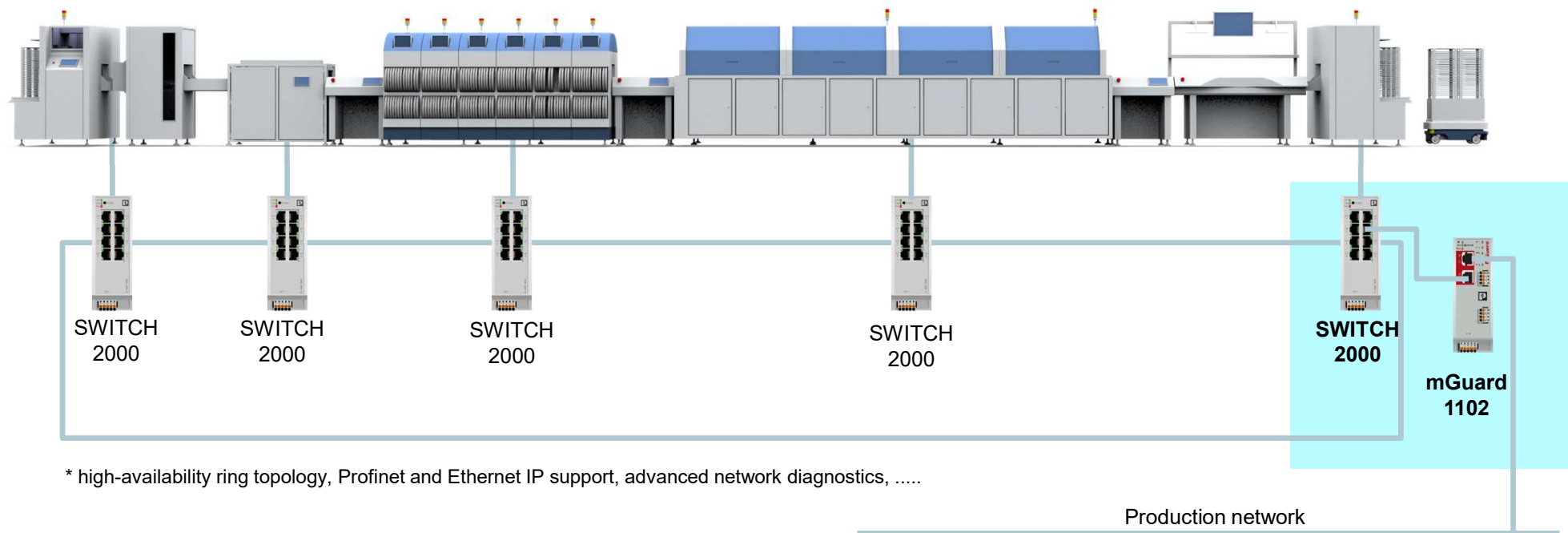
**NAT + Security +  
managed Switch**



**mGuard 1100 & Switch 2000**

Secure machine integration

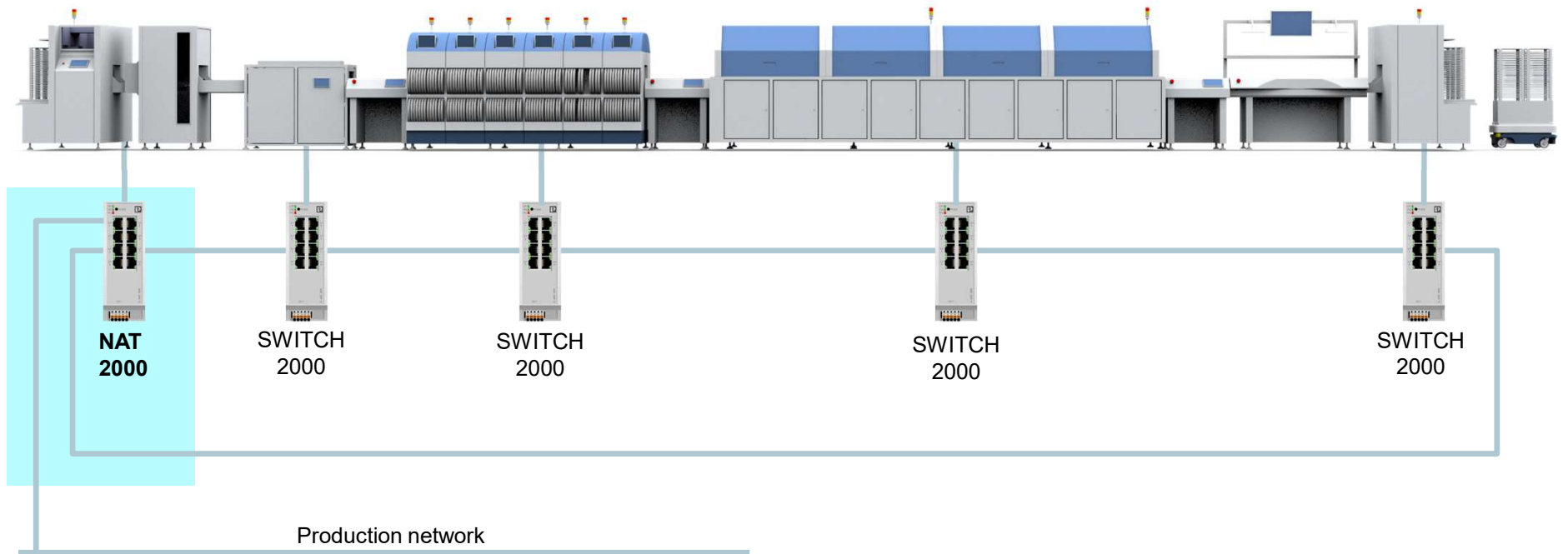
## NAT + Security + managed Switches\*



\* high-availability ring topology, Profinet and Ethernet IP support, advanced network diagnostics, .....

Network integration

## NAT + managed Switch\*



\* high-availability ring topology, Profinet and Ethernet IP support, advanced network diagnostics, .....

## Technical facts

# mGuard 1102/1105

5 multicolor LED

### Computing power

- ARMv8 64-bit processor
- Marvell ARMADA 88F3720 / 1 GHz CPU clock
- 1024 Mbyte DDR3 SDRAM
- 4 GB flash memory
- TPM 2.0
- Real time clock
- 4 port unmanaged switch (1105)

SD card slot  
backside

24V DC  
no redundant power supply \*

### Ethernet ports

- RJ45 | Full Duplex | Auto-MDIX
- Ethernet
- Fast Ethernet
- Gigabit Ethernet

3 x digital IO  
currently one used\*

Operating temperature  
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Push-In terminals  
all on the front level



Industrial Security-Router with mGuard security technology

## mGuard 1102/1105



- Stateful-Inspection-Firewall
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- "Stealth Mode" for secure network segmentation without changing the network or its configuration (Layer 2 transparent)

### Key Feature:

- Gigabit-Speed
- **mGuard Security Technology** for secure network protection
- **Automatic firewall rule creation** based on a reference communication

## mGuard 1100



**The industrial NAT Firewall,  
connecting networks easy and secure.**

What's new at  
TC Router ?





NEW

## TC Router and TOM

### Mobile communication

# TC ROUTER

- Expanding capabilities

- Urban Infrastructure  
*Water procurement and wastewater treatment*
- Oil and gas industry  
*Acquiring process data from pumps and pipeline monitoring*
- Traffic  
*Traffic lights, intelligent traffic signs and parking guiding systems*
- Renewable energy  
*Networking for wind generators and solar parks*

## Features

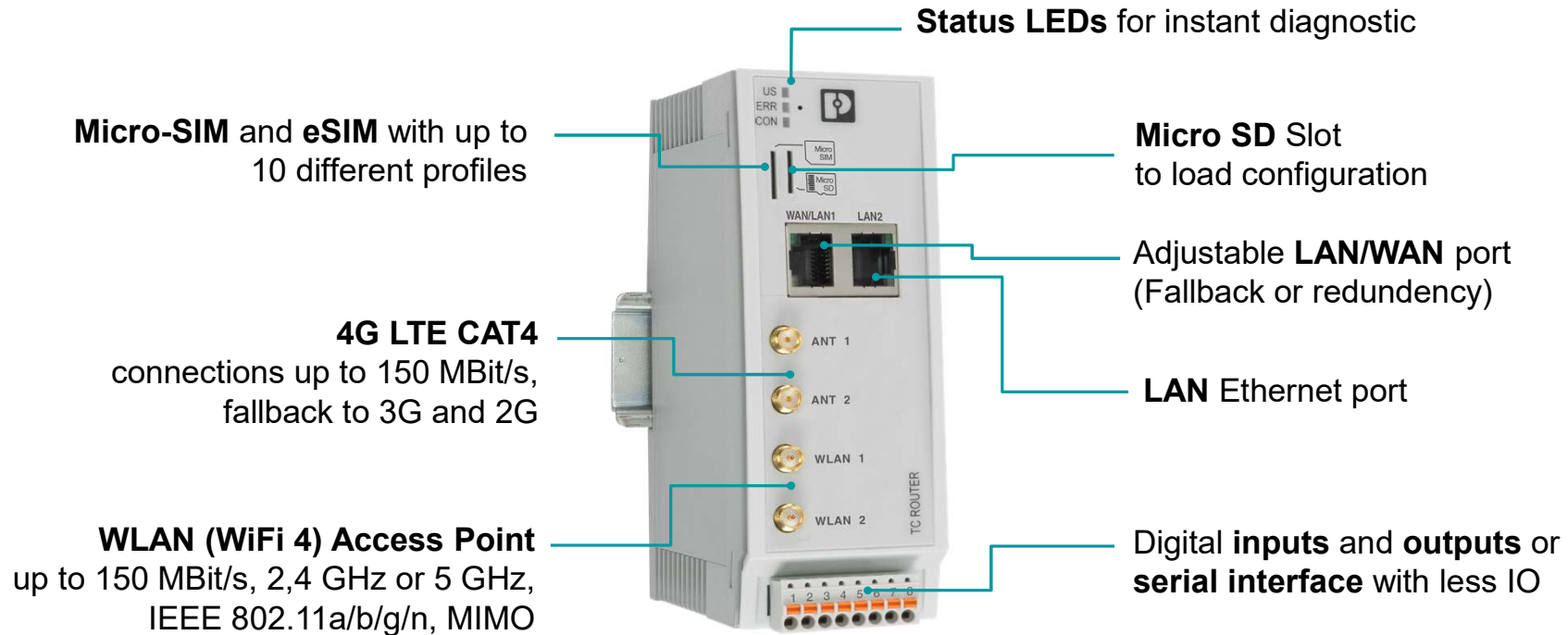
- 4G LTE connections up to 150 mbps, fallback to 3G and 2G
- WLAN (WiFi 4) up to 150 mbps, 2,4 GHz and 5 GHz, IEEE 802.11a/b/g/n, MIMO
- Micro-SIM and eSIM with up to 10 different profiles
- VPN support (IPsec and OpenVPN) as client and server
- Extended operating temperature range -40°C ... 70°C
- 4 digital inputs and 2 digital outputs or integrated serial RS-232/RS-485
- Wide-range power supply, 10...30 VDC



## TC Router

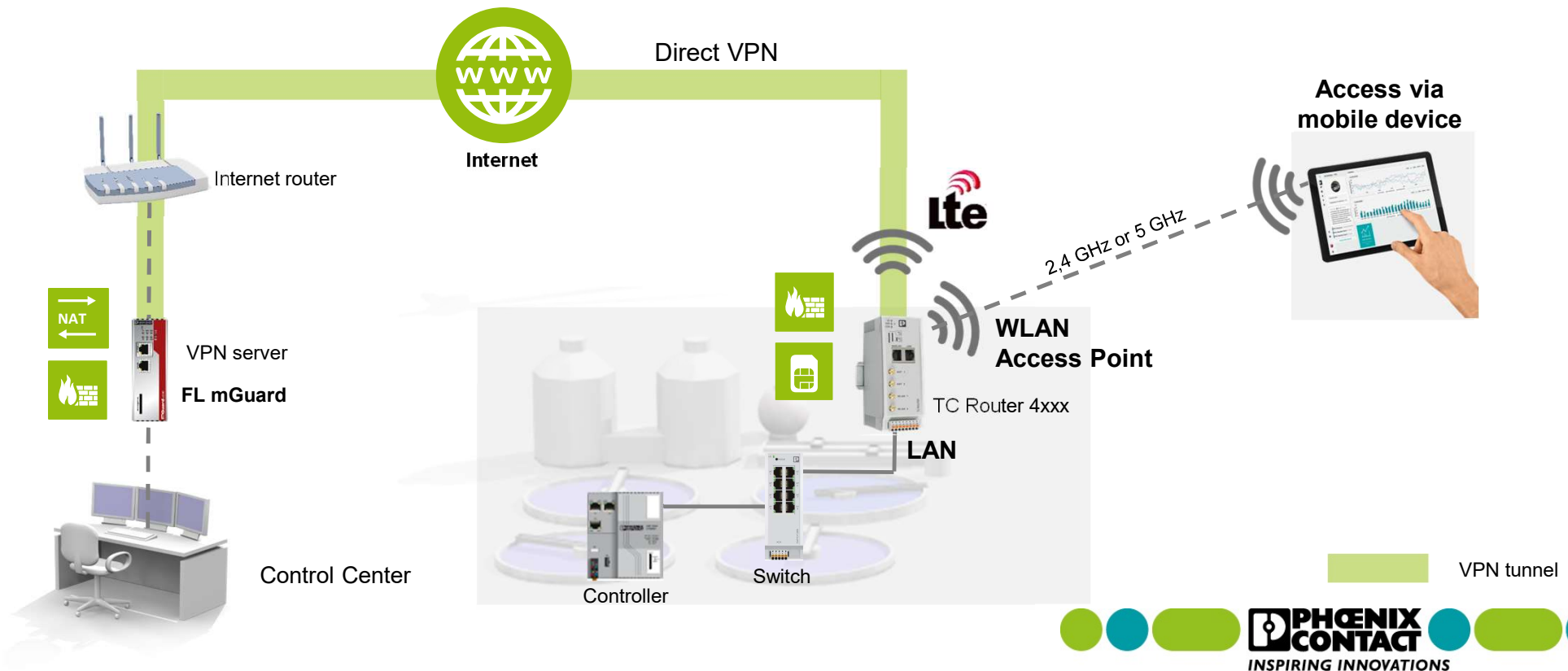
## TC ROUTER 4000 - The new router platform for mobile networks

### Overview



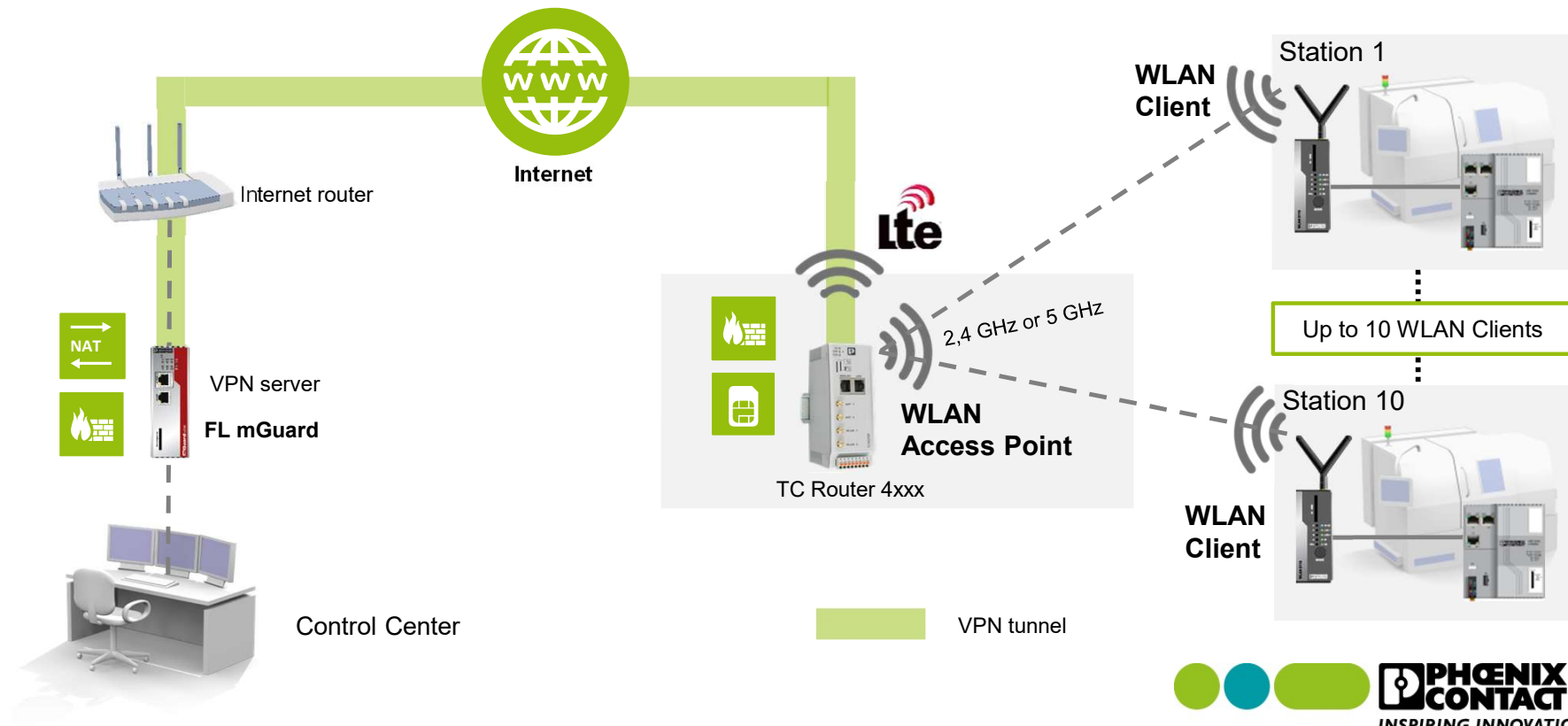
VPN support (IPsec and OpenVPN) as client and server  
Extended operating temperature range -40°C ... 70°C

## Application example: LAN and WLAN Access Point



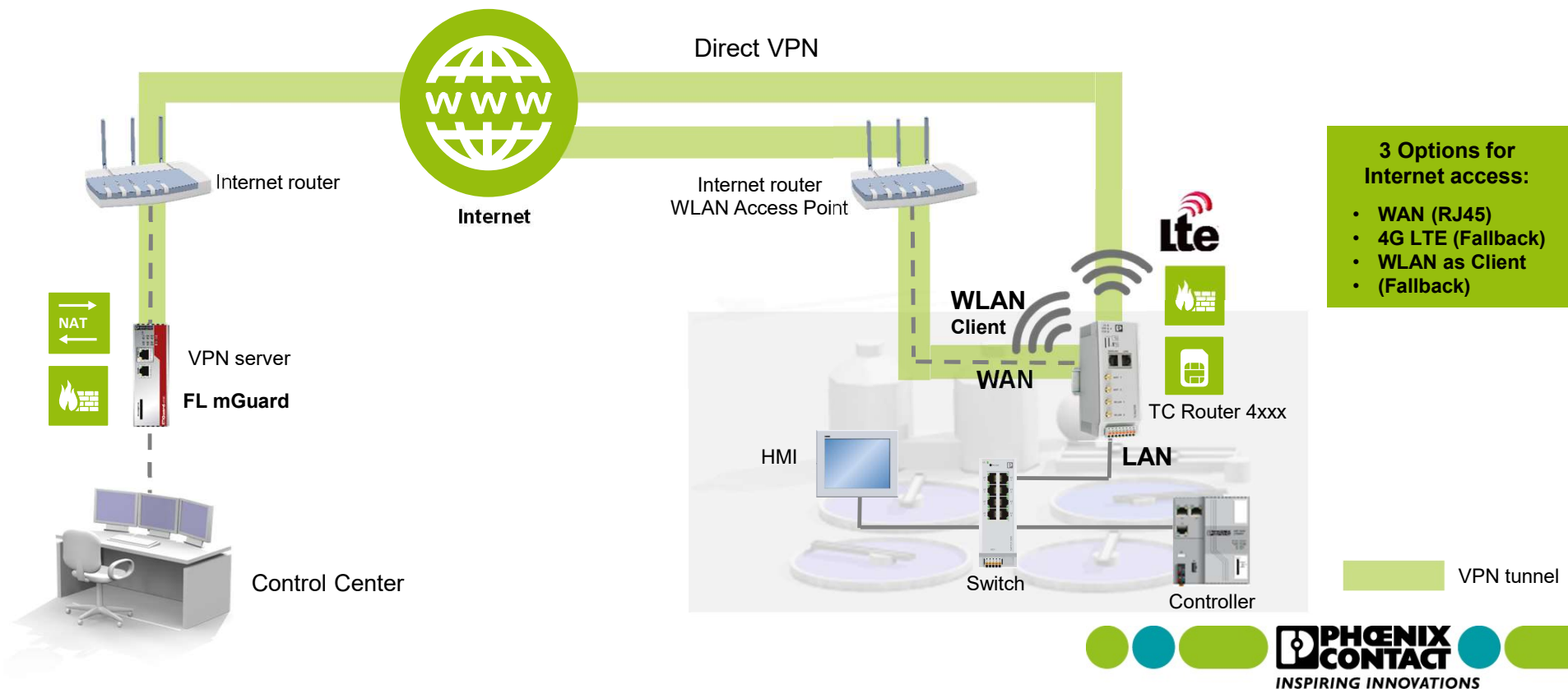
TC ROUTER 4000 - The new router platform for mobile networks

## Application example: WLAN Access Point



TC ROUTER 4000 - The new router platform for mobile networks

## Application example: WAN, WLAN or mobile Internet access



## TC ROUTER 4000 - The new router platform for mobile networks

### New Variants



	TC ROUTER 4002T-4G EU	TC ROUTER 4102T-4G EU WLAN	TC ROUTER 4202T-4G EU WLAN	TC ANT MOBILE WALL 5M	RAD-ISM-2400- ANT-OMNI-2-1- RSMA
Function	4G-LTE Router with 2 Ethernet-ports, 4 DI & 2 DO	4G-LTE Router with 2 Ethernet-ports, 4 DI & 2 DO and WLAN	4G-LTE Router with 2 Ethernet-ports, 2 DI, 1 DO, RS-232/485 and WLAN	Multiband cellular antenna with mounting bracket for outdoor installation,	2,4 GHz WLAN antenna with mounting bracket for outdoor installation,
Mobile radio Interface / Interfaces	4G (Fallback 3G or 2G) EU market	4G (Fallback 3G or 2G) WLAN Client & Access Point EU market	4G (Fallback 3G or 2G) WLAN Client & Access Point RS232/485, EU market	5m antenna cable (SMA)	1,5m antenna cable (RSMA)
Transmission speed	150 Mbit/s LTE Downlink 50 Mbit/s Upload	150 Mbit/s LTE Downlink 50 Mbit/s Upload	150 Mbit/s LTE Downlink 50 Mbit/s Upload	More solutions available.	More solutions available.
Switching inputs and outputs	4 digital Inputs, 2 digital output	4 digital Inputs, 2 digital output	2 digital Inputs, 1 digital output and RS-232 or RS-485		
Order number	1234352	1234353	1234354	2702273	2701362

\* will be launched within 2021

## Pre-Launch Information

# TC ROUTER - product overview

Product key: DNC4..

Ord.-No.	Designation			Function description
1234352	TC ROUTER 4002T-4G EU			4G-LTE Router with 2 Ethernet-ports, 4 DI & 2 DO
* <b>1234353</b>	<b>TC ROUTER 4102T-4G EU WLAN</b>			<b>4G-LTE Router with 2 Ethernet-ports, 4 DI &amp; 2 DO and WLAN</b>
1234354	TC ROUTER 4202T-4G EU WLAN			4G-LTE Router with 2 Ethernet-ports, 2 DI, 1 DO, RS-232/485 and WLAN



## TC ROUTER Online Manager

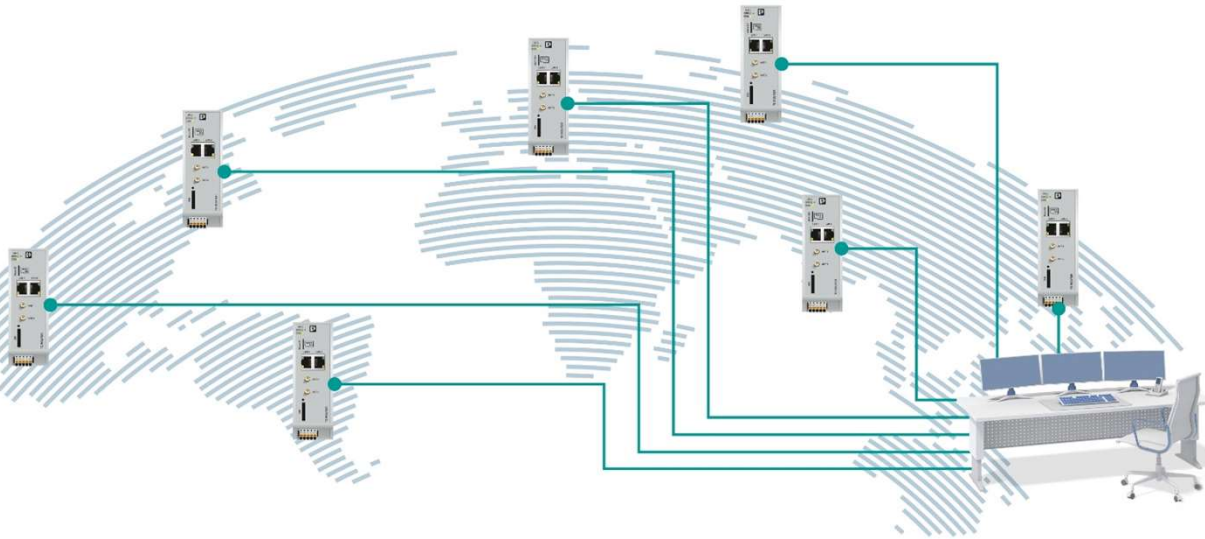
# TOM



TC ROUTER TOM Software

TC Router Online Manager

# Management for all TC Router

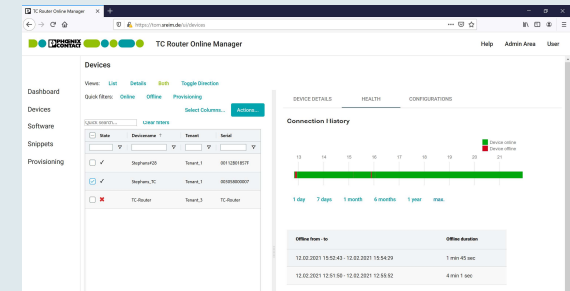


NEW

## TOM



- Security and Firmware updates
- Configuration changes
- Device status
- Locally (on premise) or in a cloud.
- Up to 22500 routers can be managed.



What's new at  
Cloud Clients ?

# CLOUD Client



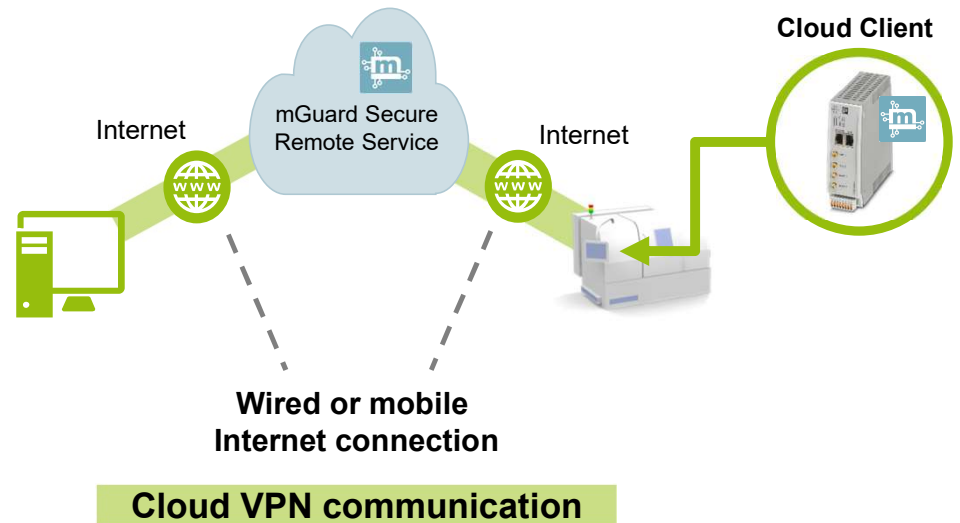
CLOUD Client

Products

## CLOUD CLIENT's for mGuard Secure Remote Service

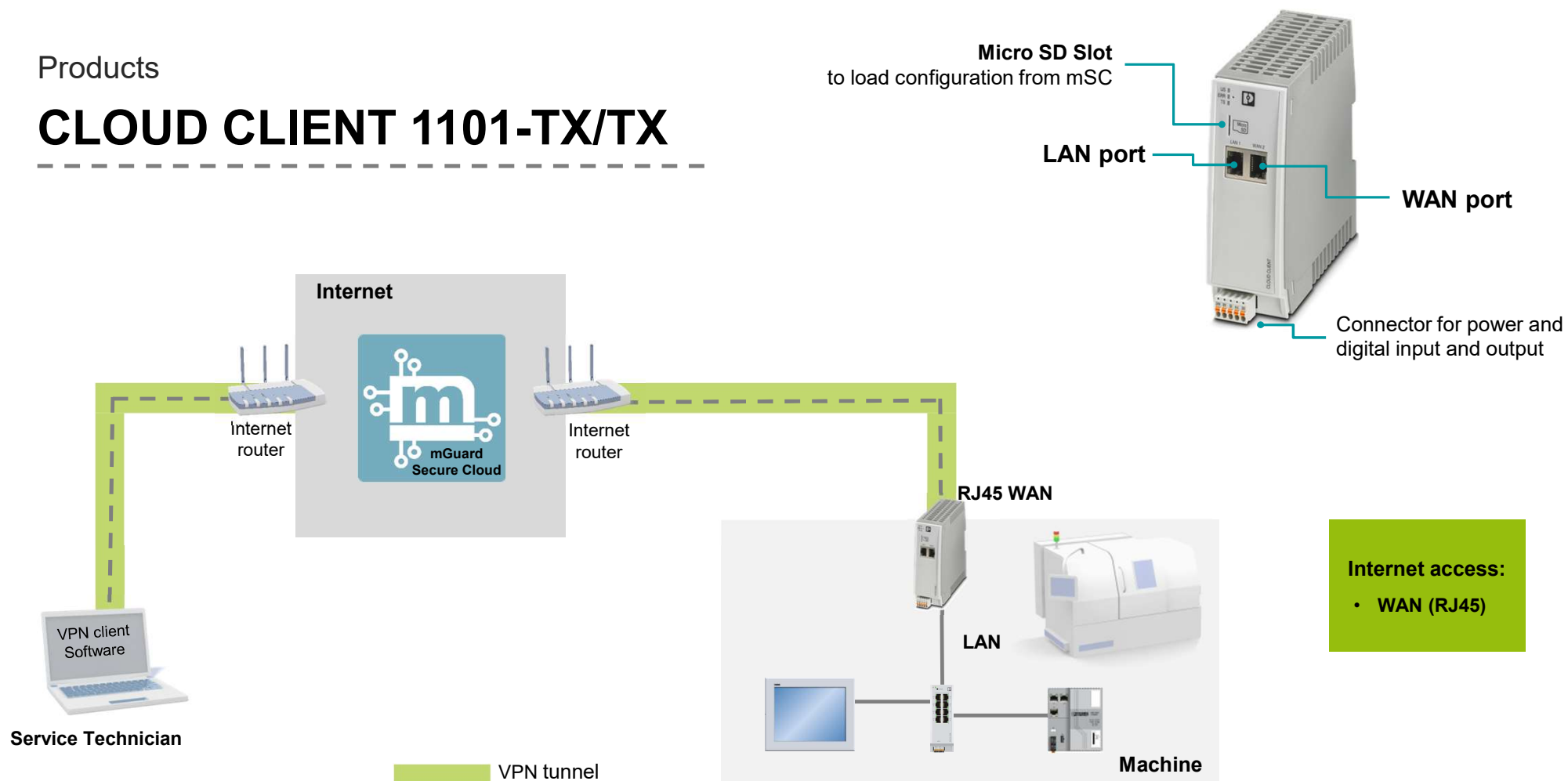
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Secure transparent communication channel between the field device and the service technician, over the Internet and the mGuard Secure Cloud



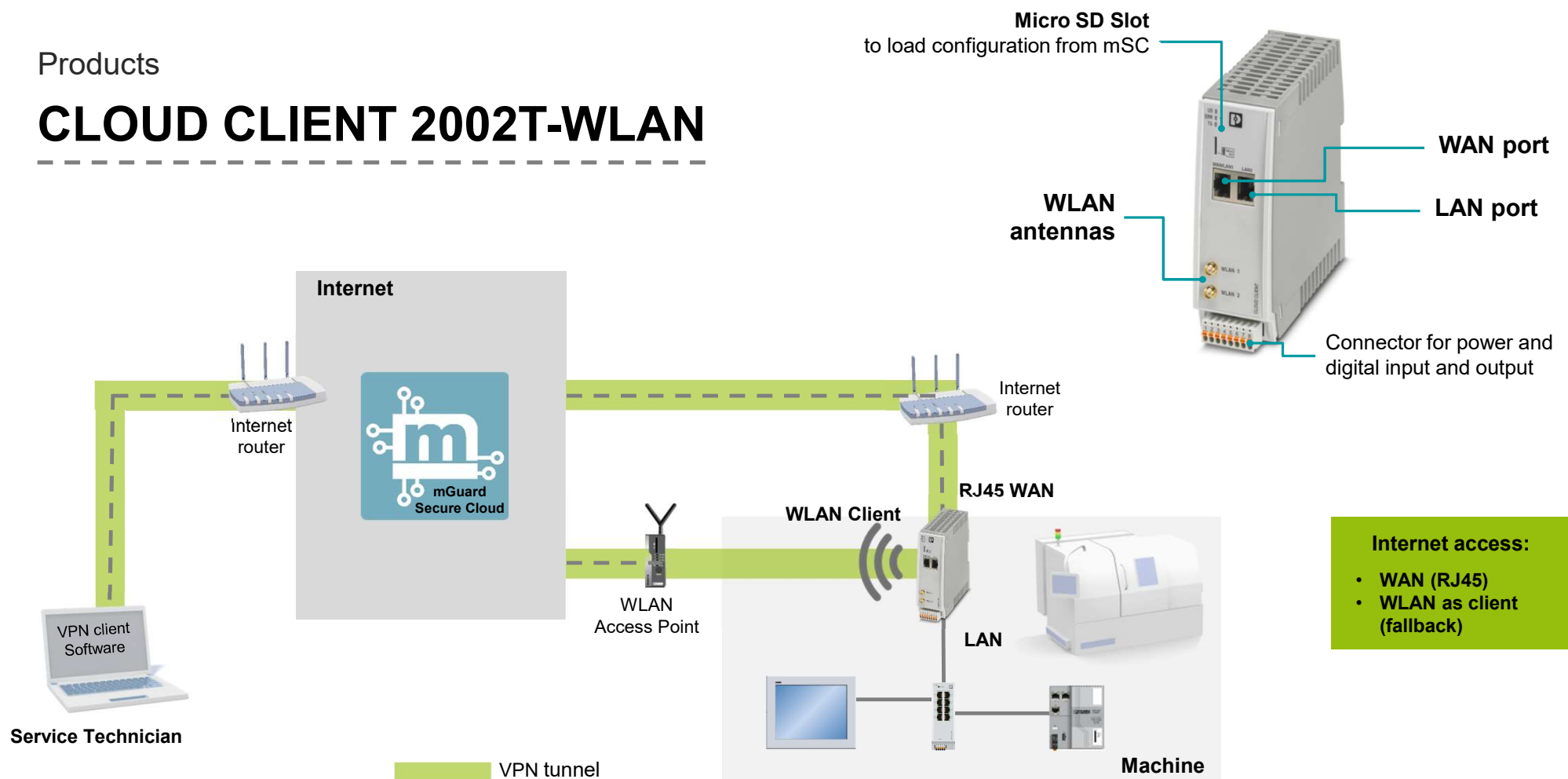
## Products

# CLOUD CLIENT 1101-TX/TX



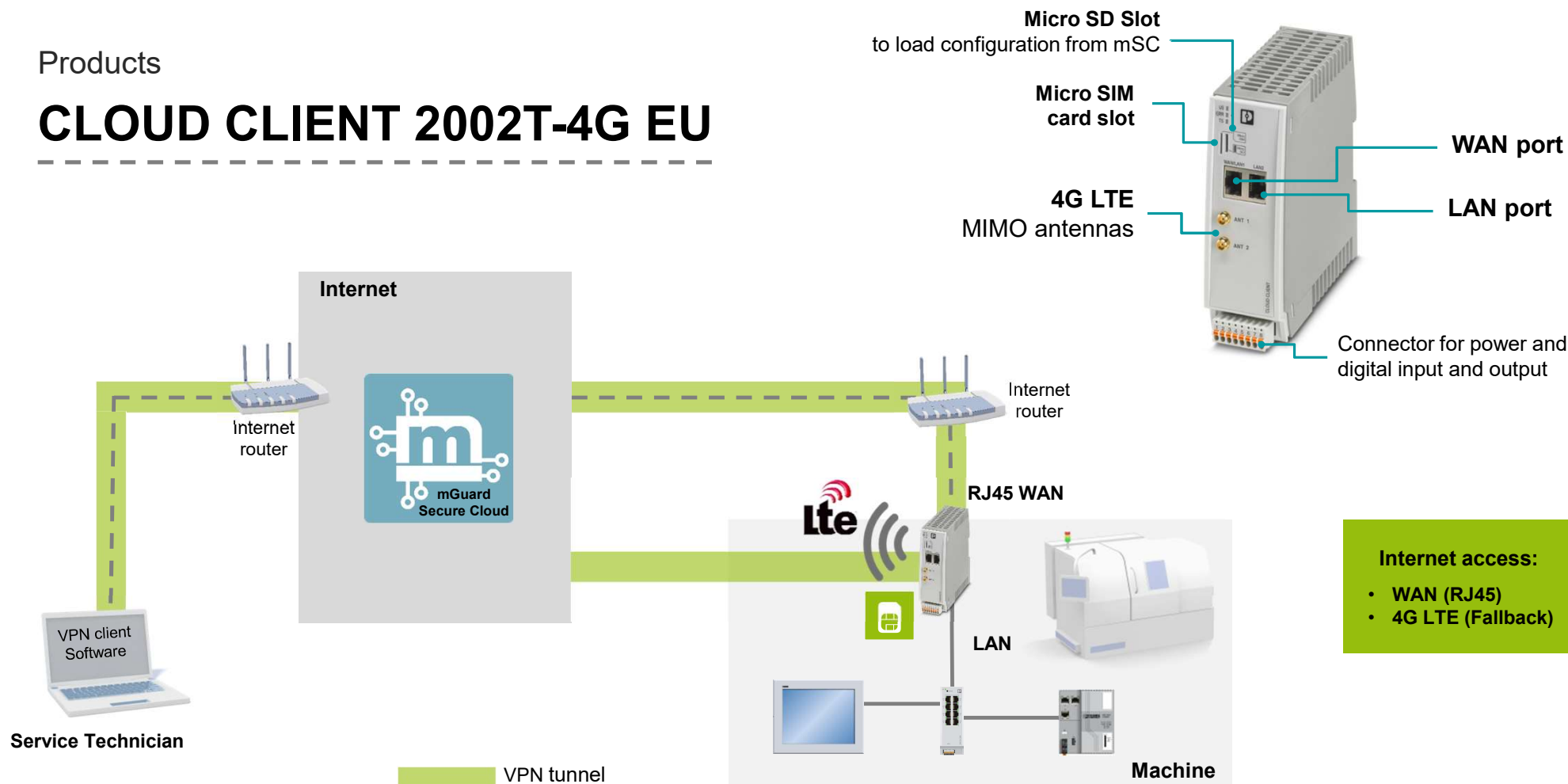
## Products

# CLOUD CLIENT 2002T-WLAN



## Products

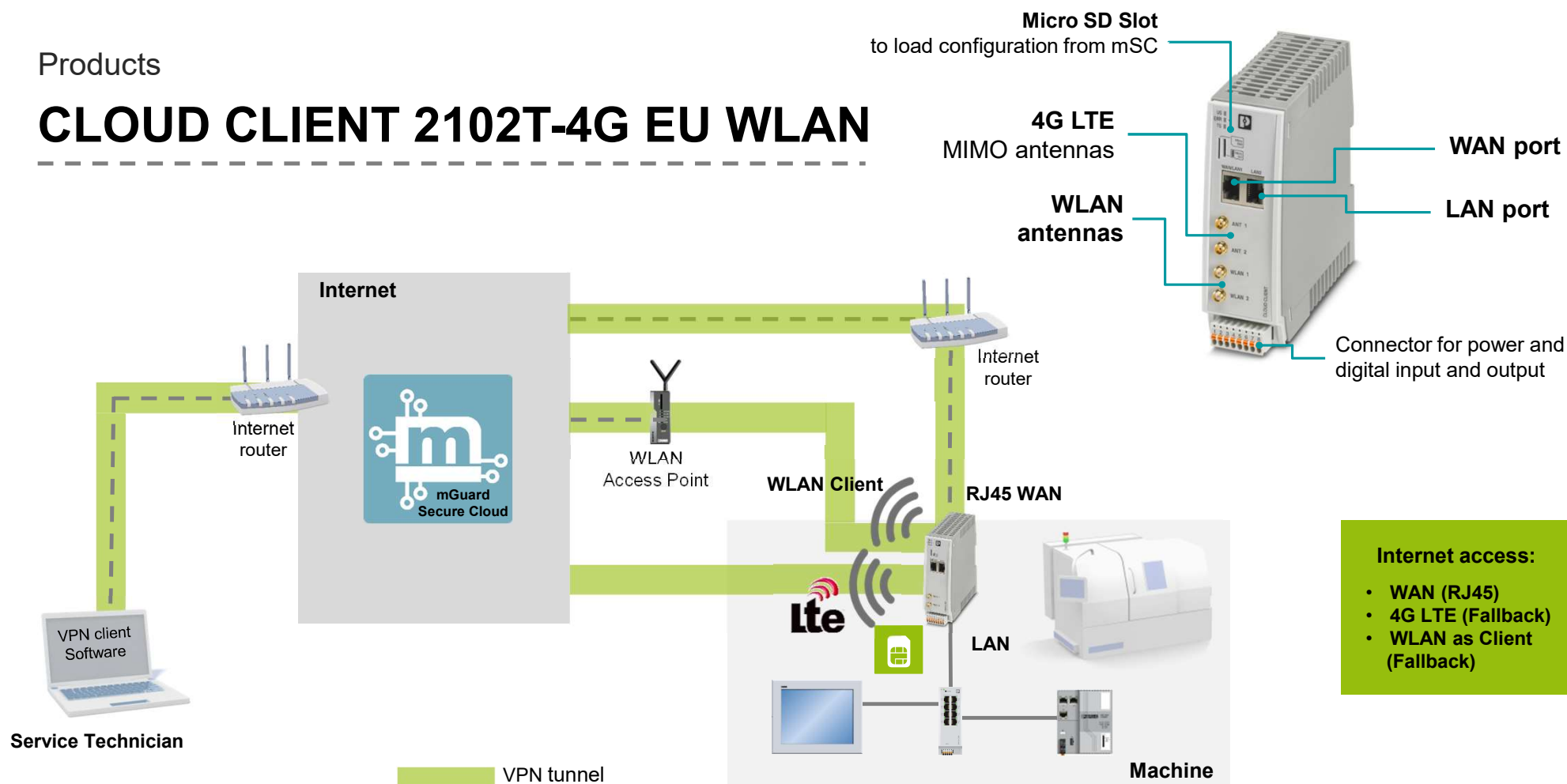
# CLOUD CLIENT 2002T-4G EU





## Products

# CLOUD CLIENT 2102T-4G EU WLAN



New Products 2021

## CLOUD CLIENTs



	CLOUD CLIENT 1101-TX/TX	CLOUD CLIENT 2002T-4G EU	CLOUD CLIENT 2002T-WLAN	CLOUD CLIENT 2102T-4G EU WLAN
Transmission medium	Ethernet WAN	4G LTE Ethernet WAN	WiFi (WLAN) Ethernet WAN	4G LTE WiFi (WLAN) Ethernet WAN
Description	VPN-Router for mGuard Secure Cloud via WAN (successor of CC 1002-TX/TX)	VPN-Router for mGuard Secure Cloud via 4G or WAN	VPN-Router for mGuard Secure Cloud via WLAN or WAN	VPN-Router for mGuard Secure Cloud via 4G, WLAN or WAN
Configuration	Device configuration in mGuard Secure Cloud, simplified Web-Interface			
Firewall	Easy to use firewall w/ predefined rules			
VPN Tunnel	1 IPsec VPN tunnel to the mGuard Secure Cloud			
Order number	1221706	1234355	1234360	1234357

Pre-Launch Information

## CLOUD CLIENT - product overview

Product key: DNC4..

Ord.-No.	Designation			Function description
1234355	CLOUD CLIENT 2002T-4G EU			Cloud Client for mGuard Secure Cloud connections via 4G-LTE
* 1234360	<b>CLOUD CLIENT 2002T-WLAN</b>			<b>Cloud Client for mGuard Secure Cloud connections via WLAN</b>
1234357	CLOUD CLIENT 2102T-4G EU WLAN			Cloud Client for mGuard Secure Cloud connections via WLAN or 4G-LTE
* 1221706	<b>CLOUD CLIENT 1101T-TX/TX</b>			<b>Cloud Client for mGuard Secure Cloud connections via LAN/WAN Ethernet ports</b>

Magazine for customers Phoenix Contact

# UPDATE



## UPDATE Magazine

## Why is ICS security so important?



mGuard

## Ataques de Ciberseguridad



Webinar IMA 2020

## Mayor información



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[ventas@phoenixcontact.com.mx](mailto:ventas@phoenixcontact.com.mx)

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