

SICAM A8000 News & Updates

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SICAM A8000 Series – Wherever energy flows

Enhanced Feature Set of CP-8050

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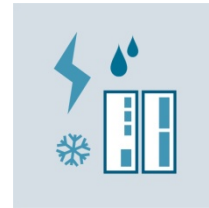
[siemens.com/sicam-a8000](https://www.siemens.com/sicam-a8000)

September
2019

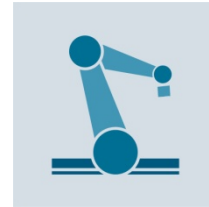
SICAM A8000 Series:

All requirements combined in a single platform

SIEMENS
Ingenuity for life



Rough ambient conditions



Automation



Long product lifecycle



Cyber Security



Space-saving design



High electric strength



Integrated communication



Scalability

A strong team: SICAM A8000 - equipped for any task

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CI module



Ethernet
communication module



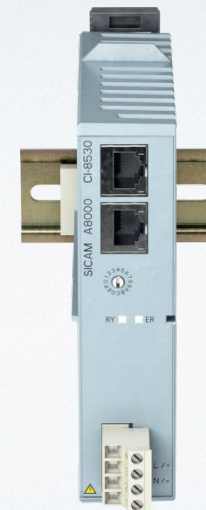
CP-8050



Modular processor with external
power supply (optional: redundant)



CI module



Detachable
expansion module



I/O module



I/O expansion modules
combinable as needed

The entire family at a glance: SICAM A8000 - expansion modules

DO-8212

8 binary outputs

DC 24/48/60/110/220 V;
AC 110/230 V

DO-8221

in preparation

Secure command output

DC 24-220 V, AC 230 V
1-of-n monitoring
Continuity check



CM-8820

3 inputs current

I: 1 A/5 A (parameterizable)
Output: 225 mV in accordance
with IEC 60044-8

CM-8830

LED module (upgradable) for
local process visualization per
EBIO line (128 LEDs)

Integration of
functionality
of **SICAM FCM**



DI-8110

16 binary inputs

DC 24 V

DI-8111

DC 48/60 V

DI-8112

DC 110 V

DI-8113

DC 220 V

AI-8310

4 analog inputs

(2 groups with 2 AI
each) for Pt100/Ni100
in 2-, 3-, or 4-wire
design

AI-8320

4 analog inputs

-20...0...+20 mA
-10...0...+10 V

AO-8380

4 analog outputs

-20...0...+20 mA
-10...0...+10 mA
-10...0...+10 V

AI-8510

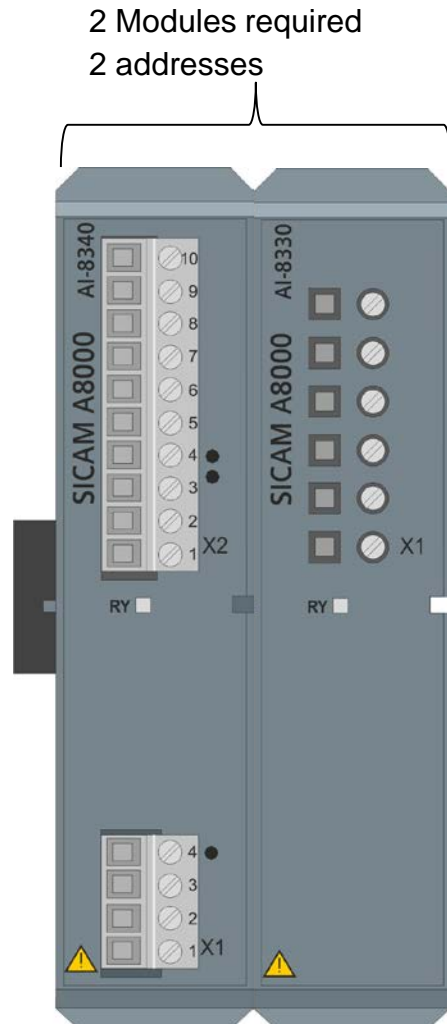
3 inputs current/voltage

I: 225 mV as per IEC 60044-8
U: 100/√3 VAC, 230 VAC, 400/√3 VAC

AI-8511

I: 225 mV as per IEC 60044-8
U: 3.25/√3 VAC

New modules for CT/VT inputs including synch.check



2 Modules required
2 addresses

Up to 6 additional modules possible

Firmware equivalent to AI-5313/6303

accuracy:
class 0,2% for measured values
class 0,5% for calculated values

frequency: 50Hz, 16,6Hz

AI-8340:
4 x U (max. 250V), galvanic isolated
2 x DO for Syn. Check

Can be used stand alone for voltage measurement and syn.check

AI-8330
3I (In=1A/5A), 100% overload range
Can carry up to 25 A

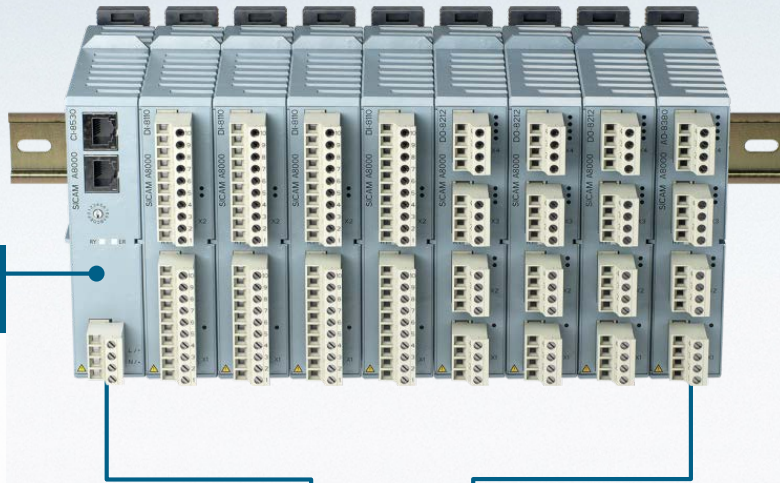
Dedicated bus-coupling module will be delivered with AI-8330 for proper synchronization of current with voltage measurement

Will be available for CP-8050 in first release.
Up to 6 additional can be equipped within the power consumption constraints.

The SICAM A8000 I/O family grows up: SICAM A8000 CM-8830 SICAM I/O LED module

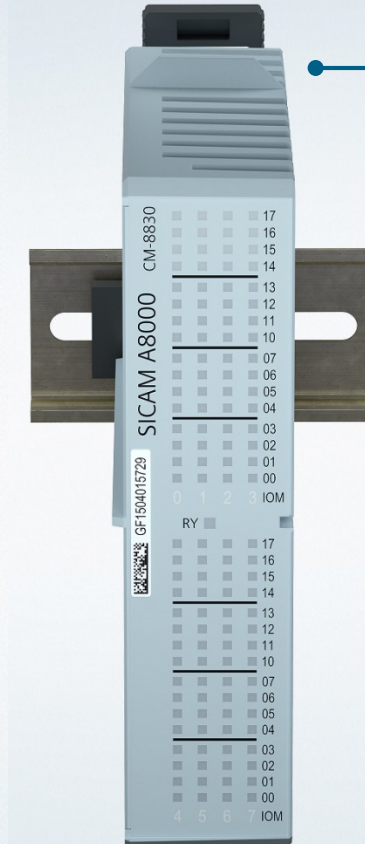
Remote I/O Adapter

Up to 16 remote I/O rows connected to CP-8050 with:
CI-8530: DC 24–60 V
CI-8532: DC 110–220 V



SICAM I/O row

Up to 8 I/O modules
DI / DO / AI / AO



CM-8830

SICAM I/O LED module

- 128 Process LEDs for 8 I/O Modules
- Can be added subsequently to existing I/O rows (FW Update)
- Direct FW support - No dedicated engineering necessary
- Position is free to choose right from PS-86xx/CI-853x
- Power consumption <0,6W
- Process visualization after configuration of I/O modules
- Error LEDs per Module show process errors after engineering

SICAM A8000 CP-8050 grows up

Enhanced Feature-Set

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Interface extension modules

CI-8520 5x Ethernet

CI-8551 5x Serial

released

Redundancy

Device redundancy with PLC and singular I/O module synchronization via IO-bus.

Device redundancy with PLC synchronization via IP network.

Redundant power supply.



Performance

Dual-core CPU
Up to 4 virtual resources
Pre-processing on CI-8551

released

HSR

released

In conjunction with CI-8520:
High Availability Seamless Redundancy.

PRP

released

In conjunction with CI-8520:
Parallel-Redundancy-Protocol according to IEC 62439.

RSTP & Line Mode

released

In conjunction with CI-8520:
Rapid-Spanning-Tree Protocol.

Flexible communication:

Diverse range of interfaces and protocols with SICAM A8000

CP-8050

- 2 x Ethernet (RJ45)
- 1 x RS 232 (RJ45)
- 1 x RS 485 (8-Pin)
- Up to 4 Expansion modules
- Up to 24 protocols

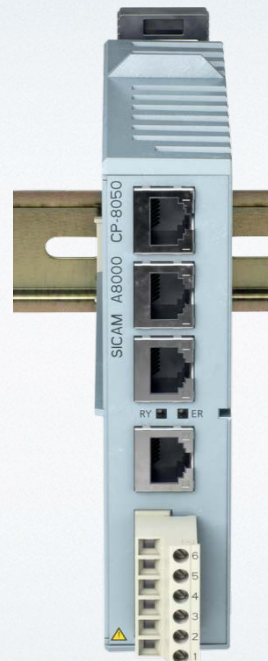
CI-8520 (max. 2x)

- 5 x Ethernet (RJ45)
- PRP, HSR
- RSTP, Line Mode

CI-8551 (max. 6x)

released

- 5 x Serial (3x RJ45, 2x Push-In)
- 2x RS-232
- 1x RS-485
- 2x Switchable (RS-232/422/485)
- Support of CM-0847



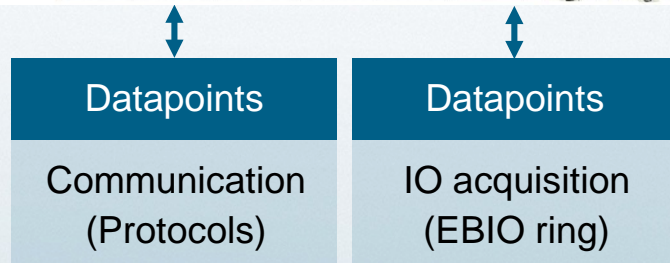
Flexible integration into an existing communications infrastructure through the support of standard protocols, legacy systems, and protocols from third-party manufacturers:

- IEC 61850
- IEC 60870-5-101 / 103 / 104
- DNP3.0 serial / TCP
- Modbus RTU / TCP
- Profibus DP **released**
- Profinet IO **released**
- IoT protocols **released**
- Additional protocols upon request

SICAM A8000 CP-8050

Enhanced Featureset – Extended Processing

CPCI85	Up to 4x EPCI85
400.000 datapoints	400.000 datapoints
400 connections	200 connections
8 Protocols	4 Protocols
1 PLC ressource	1 PLC ressource



- Today's CP-8050 Base-Firmware CPCI85
 - Limited to 400.000 datapoints
 - Limited to 400 connections
 - Limited to 8 protocols
 - Limited to 1 PLC resource
- Tomorrow's Extended-Processing-Firmware EPCI85 will offer a scalable feature-set.

SICAM A8000 CP-8050

Enhanced Feature Set - Release V4.00

With the enhanced feature set of CP-8050, the established SICAM A8000 platform will cover new applications on the highest performance level.

The following features will be released for CP-8050 with V4.00:

- Device Redundancy
- Up to 24 protocols
- Up to 5 PLC-Resources
- Hardware-based Firewall in conjunction with CI-8520

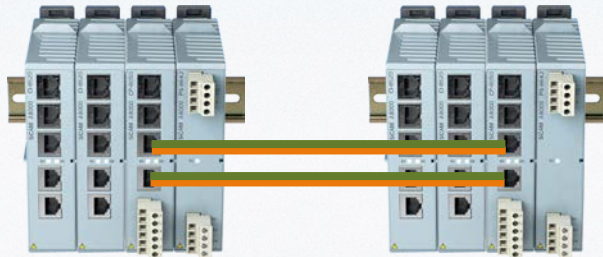
All these features require license keys which can be imported to the device via Engineering Tool and ALM. The license keys will have an 6MF2750-0 ordering-code.*



SICAM A8000 CP-8050

Redundancy Configurations

Software Voting

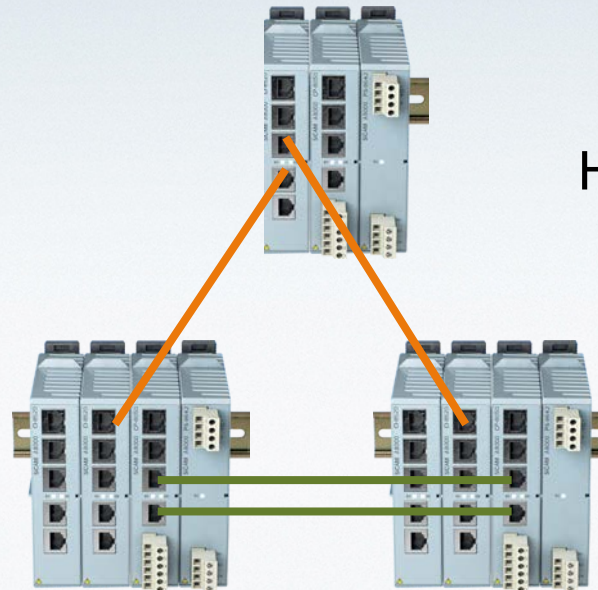


Redundancy

Exchange Voting information via redundant connection

Data synchronization via encrypted I/O bus

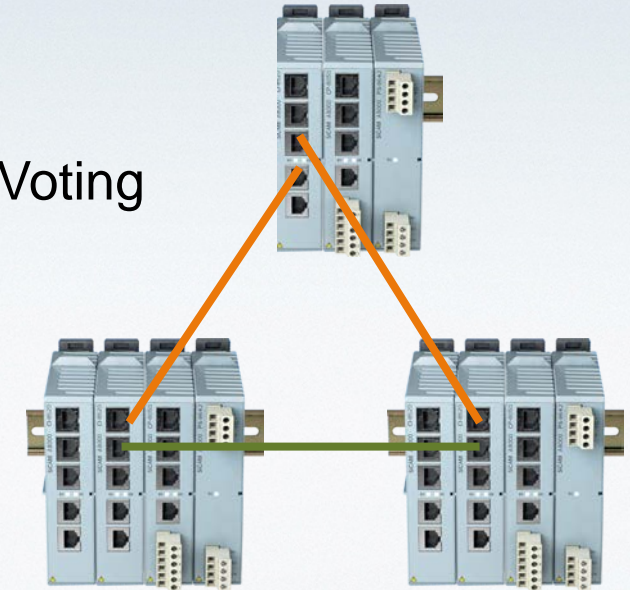
Hardware Voting



Redundancy

Singular Hardware Voter

Data synchronization via encrypted I/O bus



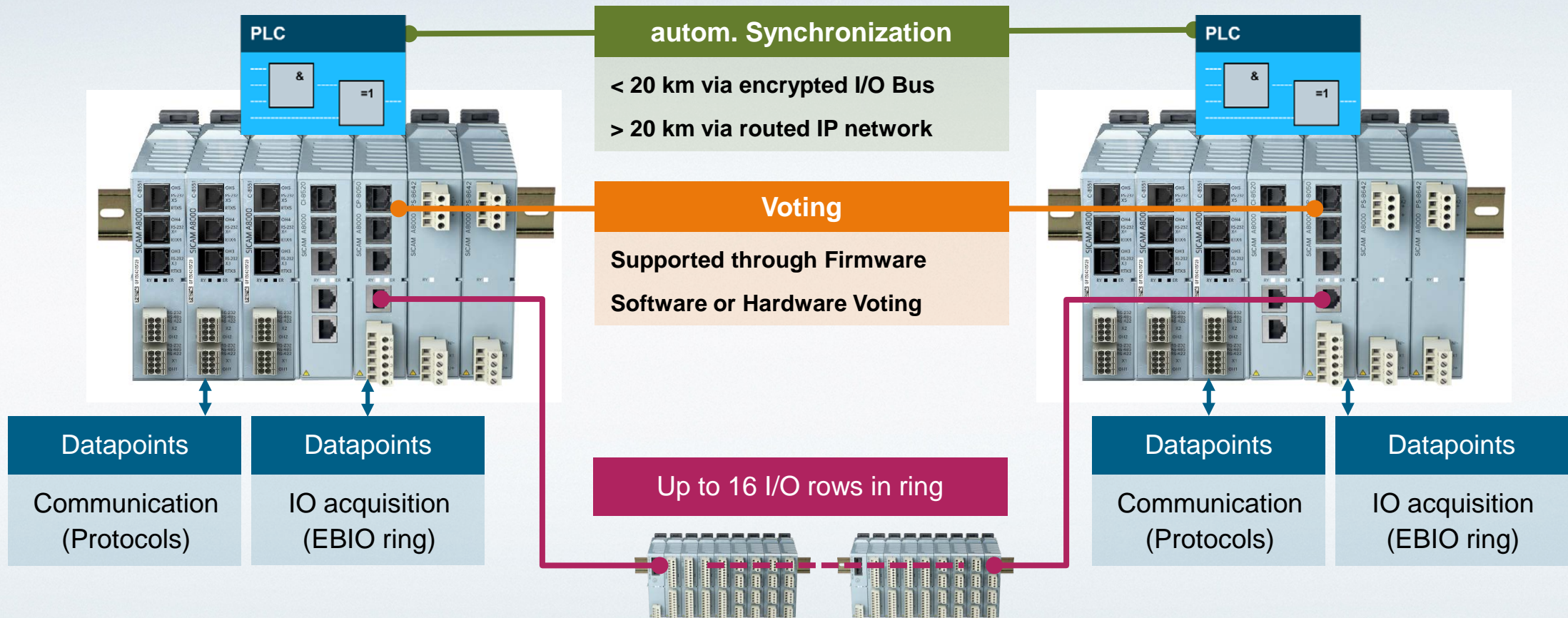
Redundancy

Singular Hardware Voter

Data synchronization via routed IP network

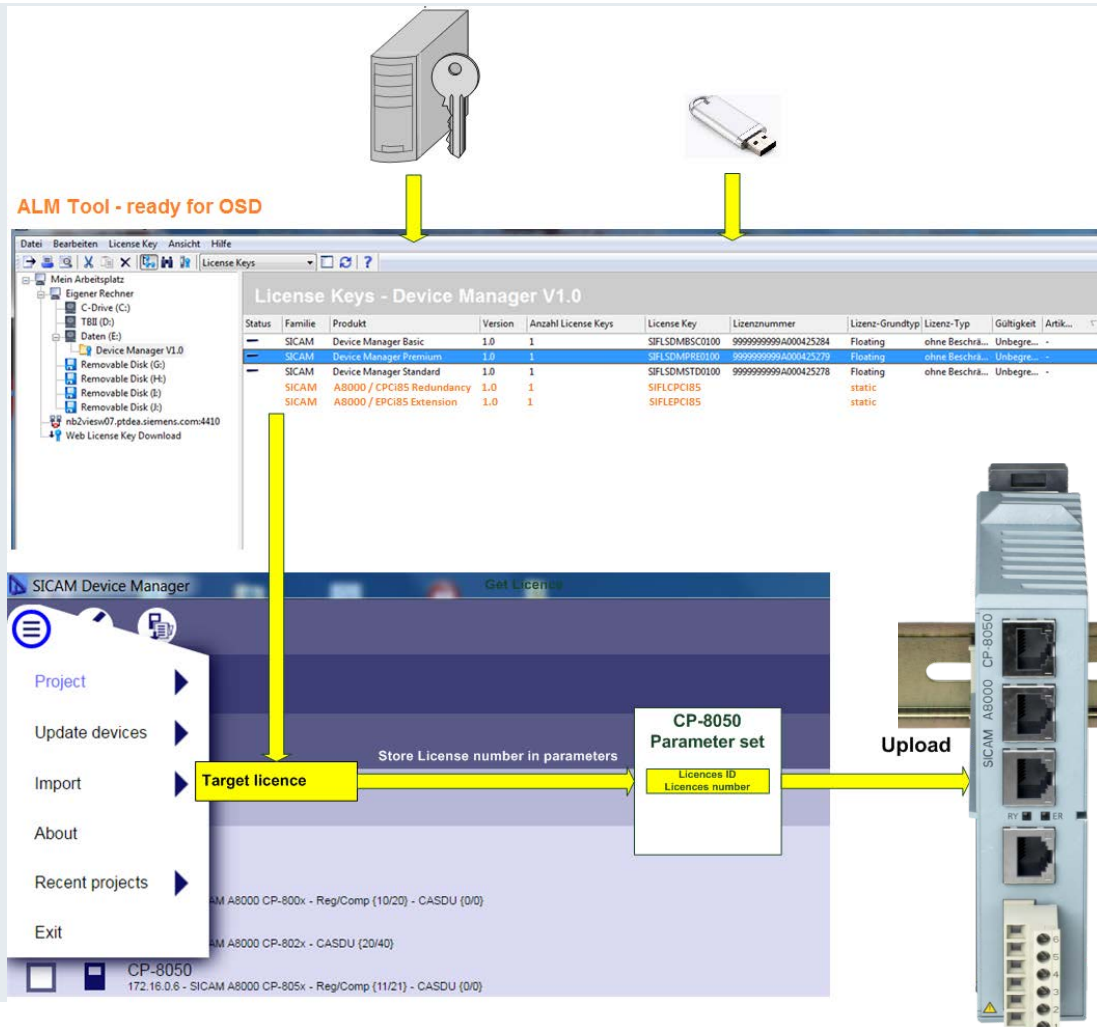
SICAM A8000 CP-8050

Enhanced Feature Set – Redundancy Concept



SICAM A8000 CP-8050

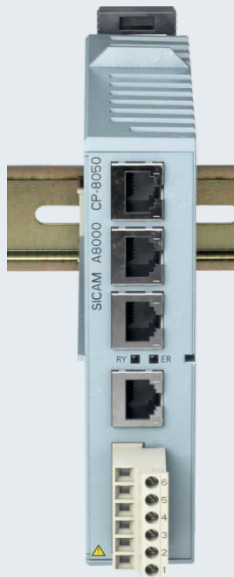
Enhanced Feature Set – License Import



- 3 Unique license keys for 3 features
 - Redundancy
 - Extended Processing
 - HW-based-FW
- License Management via ALM-Infrastructure
- Load license keys into device / parameter-set
- License key is stored on SD-card
- Parameterization without license key possible
 - 3 weeks trial (Diagnostics-Warning)
 - After 3 weeks, functionality stops

SICAM A8000 CP-8050

Enhanced Feature Set – License Keys



Designation	MLFB
CP-8050 Redundancy	6MF27500RE00
CP-8050 Extended Processing	6MF27500EP00
CP-8050 IEC104 Firewall	6MF27500FW40

"7" = License Key
"5" = CP-8050

A diagram with two arrows. One arrow points from the text '"7" = License Key' to the '7' in the MLFB code '6MF27500FW40'. The other arrow points from the text '"5" = CP-8050' to the '5' in the MLFB code '6MF27500FW40'.

Cyber Security

SICAM A8000 - meeting the requirements of tomorrow



Integrated crypto chip

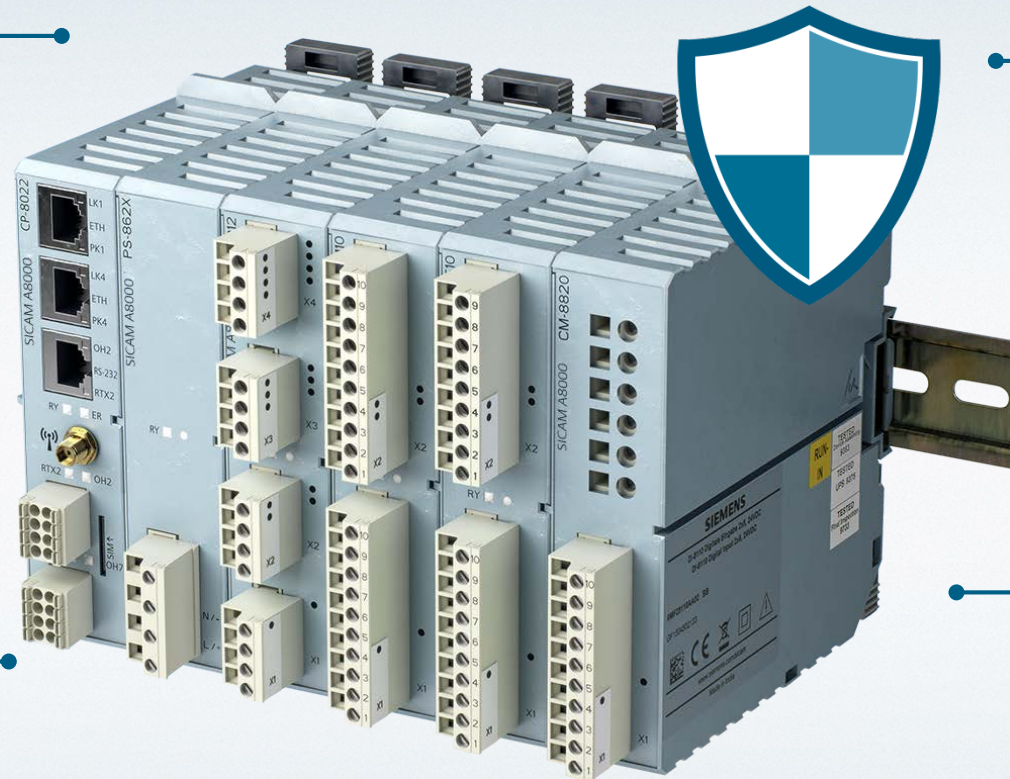
Protects data in a secure environment

IPSec encryption

Enables secure communication via IP networks

Secure and reliable https protocol

Guarantees the secure transmission of sensitive data



Compliant with BDEW White Paper

Fulfills the recommendations for secure and reliable control and communication systems

Password-protected access to SICAM TOOLBOX II

Ensures that only authorized persons can access your system

Cyber Security

SICAM A8000 - additional features with SICAM CP-8050



Firewall

For the separation of TCP/IP networks via integrated software firewall or additional hardware-based application firewall

Firmware Signature

Protection against firmware manipulation

Security Logbook

Non-volatile storage of SYSLOG events

TLS encryption

Acc. To IEC 62351-3
For IEC104 & IEC61850

released

Certificate Exchange

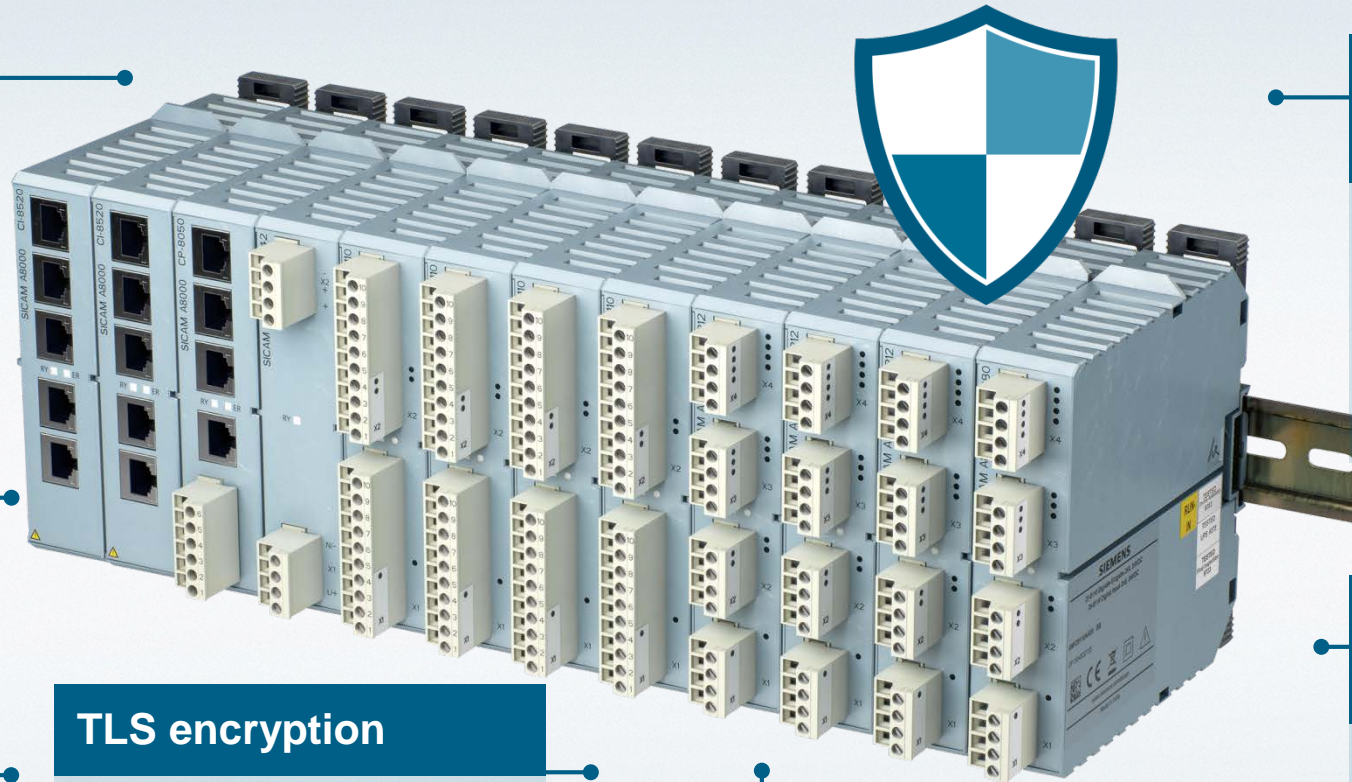
Via EST & SICAM GridPass

Role Based Access Control

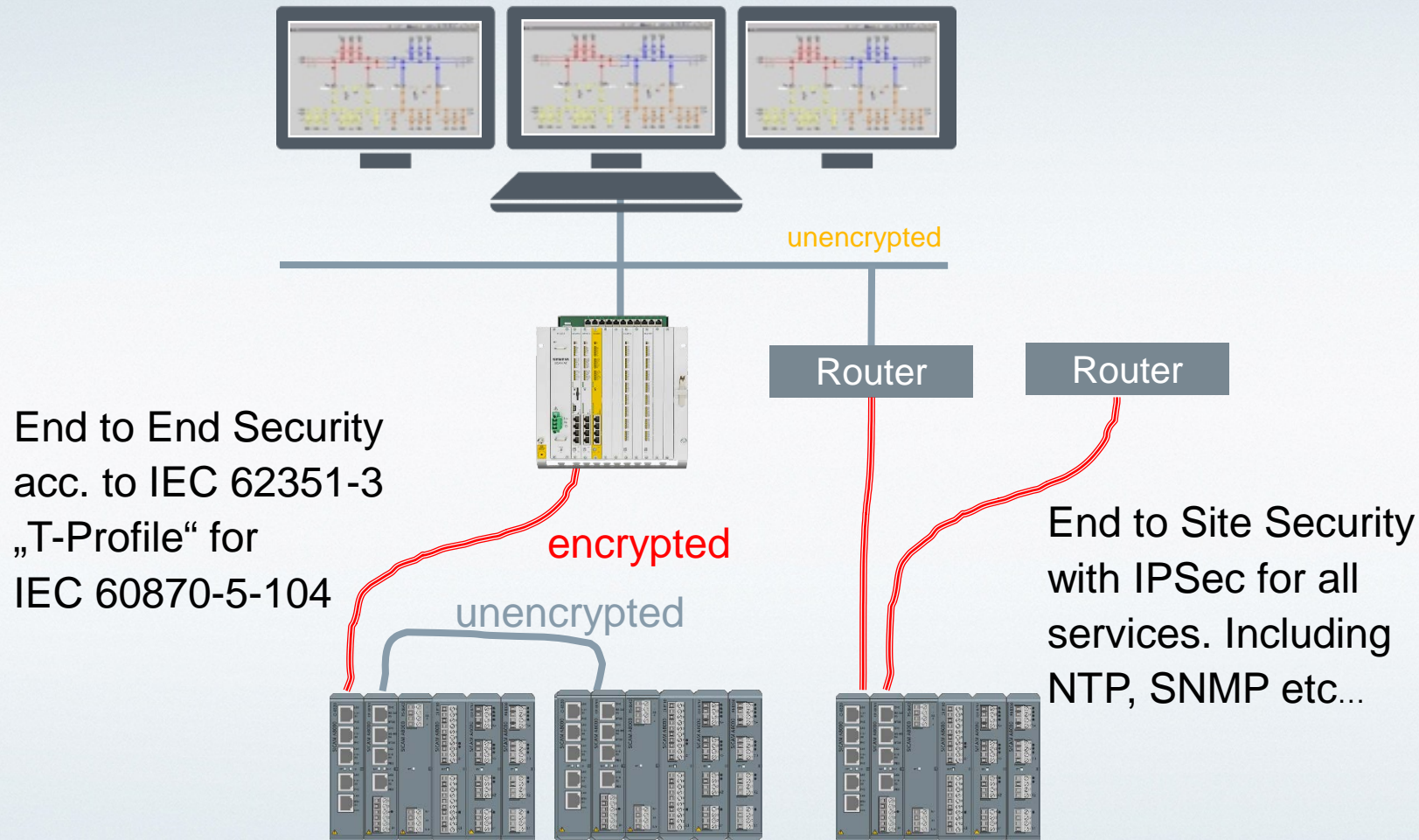
RBAC in accordance with IEC 62351-8 ensures that users may exercise only the rights that correspond to their assigned role

Configurable System Functions

Selective activation of individual or multiple system functions per communications interface



Comparison encryption IPSec vs. TLS



Key features IPsec:

- only IPsec enabled router required
- Pre-shared Key
- all services encrypted

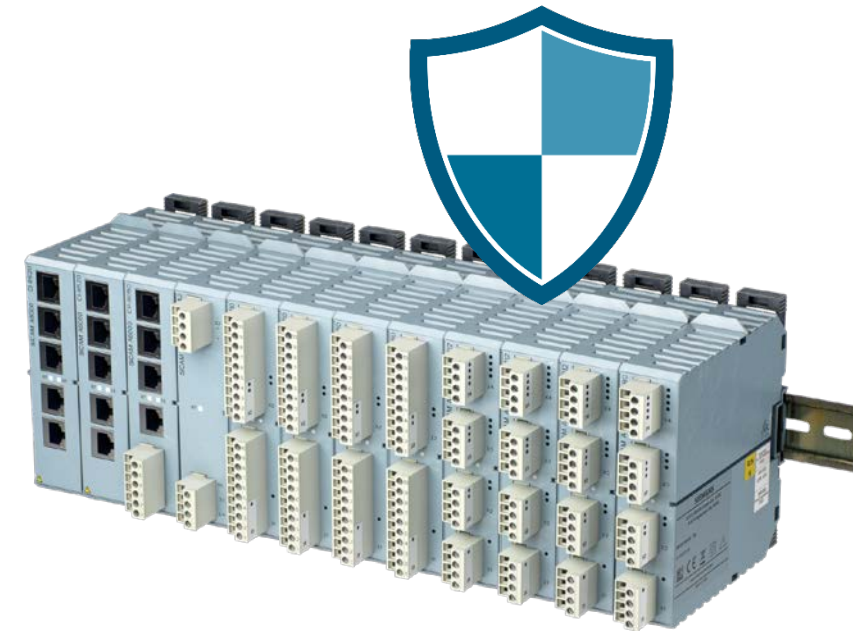
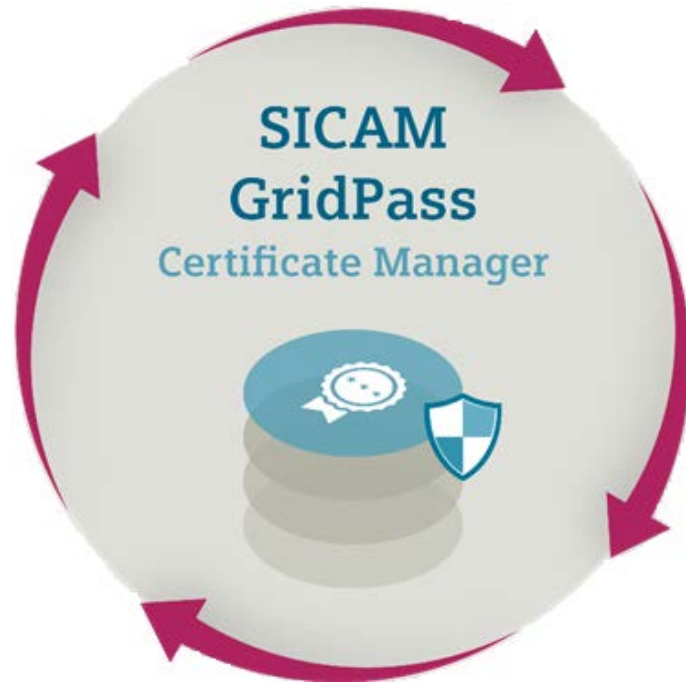
Key features „T-Profile“:

- fewer IP-network know how required
- no firewall required
- deployment of X.509 certificates
- can be selected for each -104 connection separately
- uses TLS 1.2

SICAM GridPass V1 with SICAM A8000-CP8050

Automated Certificate Management for Secure IEC 104

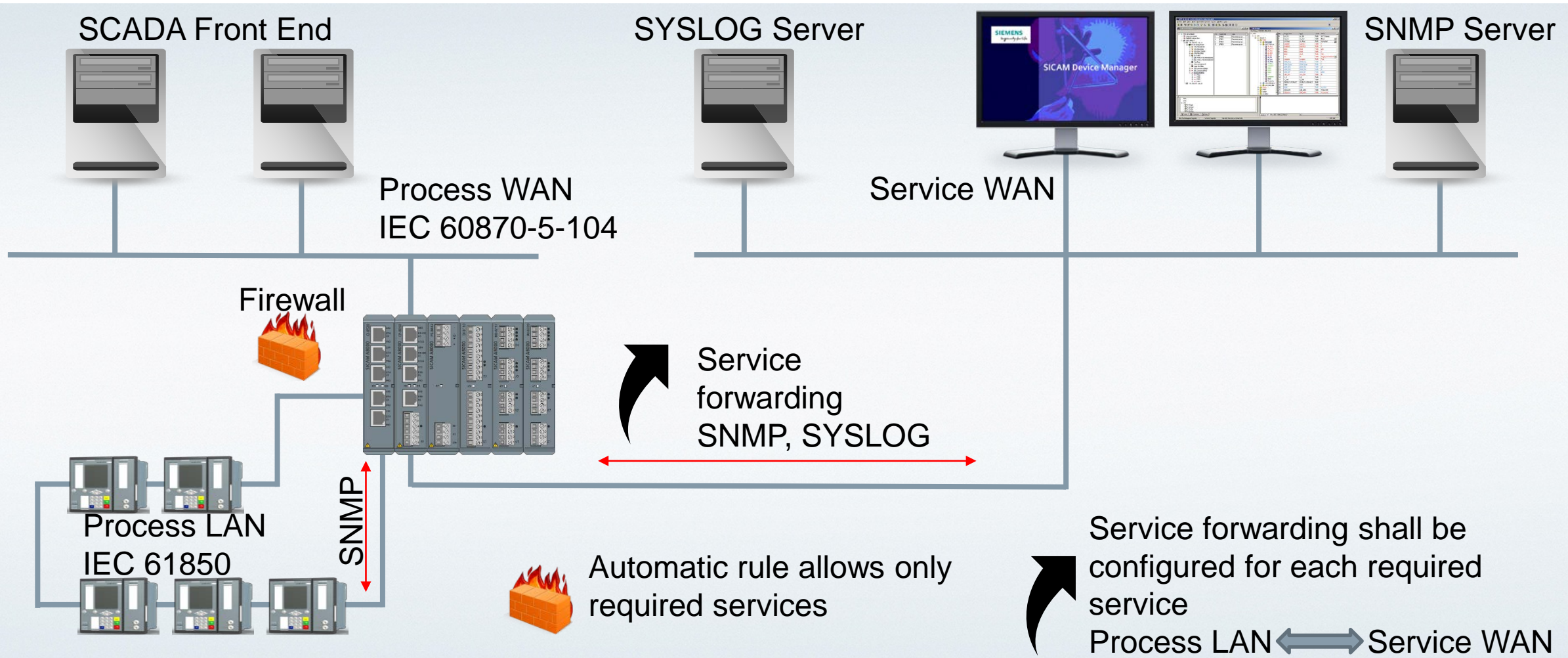
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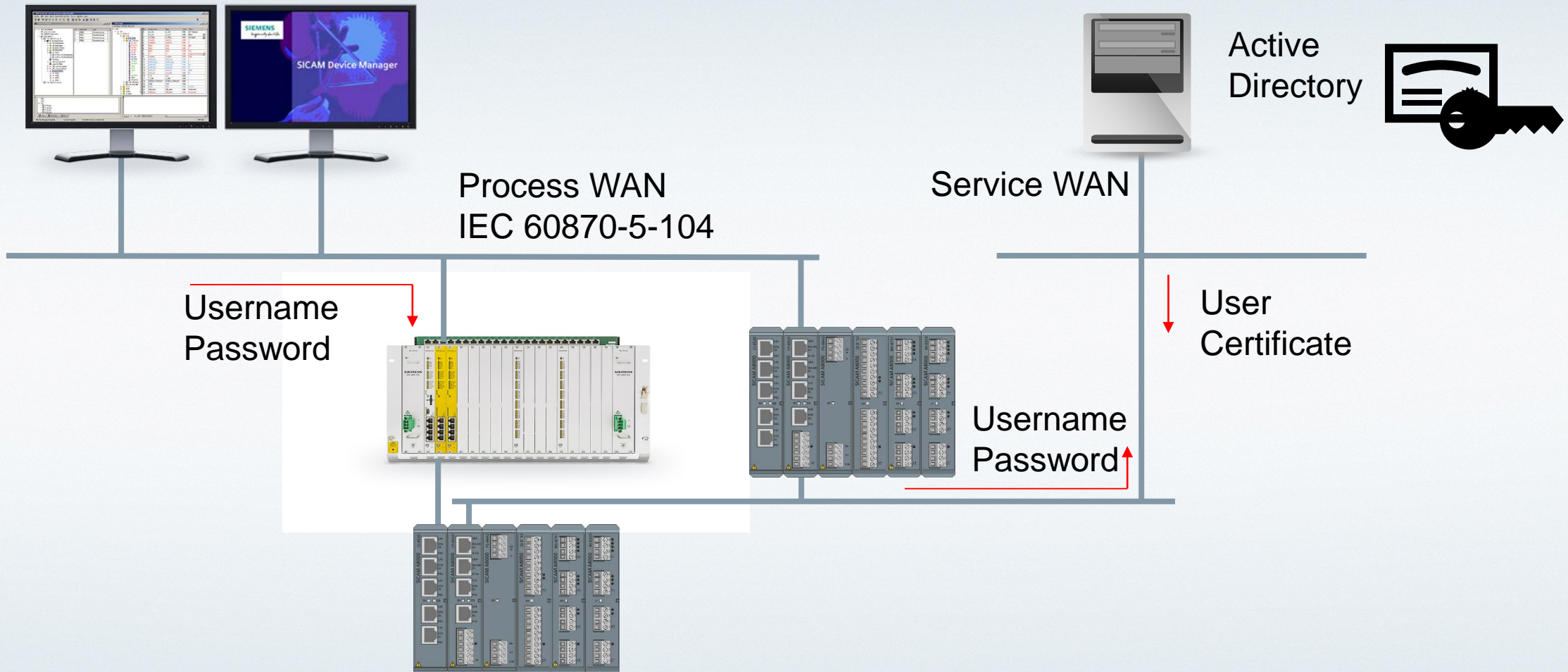
With V2.0 firmware, CP-8050 devices can automatically obtain certificates from SICAM GridPass for securing IEC 104

1. EST: Enrollment over Secure Transport protocol, IETF Standard RFC 7030

Service Forwarding and Firewall



Authentication with LDAP or RADIUS



Cyber Security

SICAM A8000 – Secure services with SICAM CP-8050 V3.00

Secure NTP

Released

Client & Server

LDAP Client

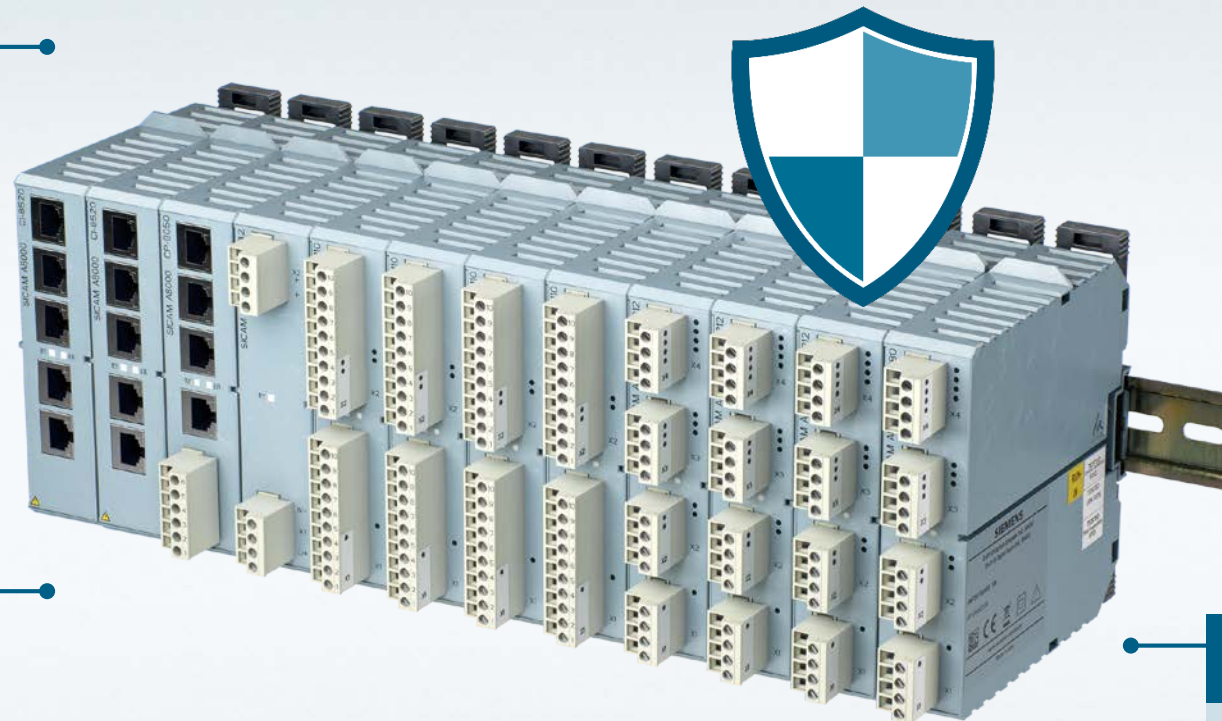
Released

Certificate based LDAP authentication acc. to IEC 62351-8

SNMPv3 Cipher

released

SNMPv3 with AES256 encryption



Great benefits right from the factory: SICAM A8000 - well-designed for practical use

1. Platform modularity for **versatile application options and reduced inventory**
2. Extended temperature range of -40°C to +70°C for **rough ambient conditions**
3. Highest EMC stability up to 5 kV (IEC 60255) for **direct use in substations**
4. Integrated short-circuit indicator functionality for **use in cable network monitoring**
5. Use of international standards such as IEC 61850 for **high investment security**
6. Integrated crypto chip and IPsec encryption to **fulfill the high cyber security requirements**
7. Multitude of interfaces and integrated GPRS module for **simple adaptation to existing communication infrastructures**
8. Integrated web server for **simple engineering**
9. Plug-and-Play functionality of the modules for **time and cost savings**

Summary

Standards

- Standard cable (RJ45, CAT5e)
- Standard technology (Ethernet, Webserver)

Compatibility

- SICAM TOOLBOX II integration
- Further use of CAExplus Logic
- TM I/O module

Reduced complexity

- No proprietary bus hubs (CM-084x)
- SICAM WEB online functions in the device available without a license

CP-8021

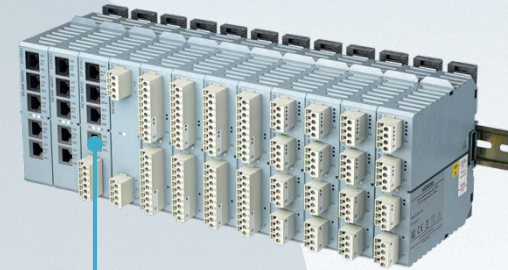


CP-8022

Integrated GPRS modem

SICAM A8000

CP-8050



CP-8000

Compact design

- SICAM I/O modules are only 30 mm wide

Interfaces x4

- Up to 12x Ethernet
- Up to 32x serial
- Network functionality (TCP/IP protocol architecture, switching, HSR, PRP, RSTP)

Performance

- Remote installation of SICAM I/O module possible up to 100 m (electrically)
- Dual core CPU & memory

Cyber Security

- Meets future security requirements



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