



IT SECURITY IN POWER GRIDS



sprecher
automation

SECURE ENERGY NETWORKS

The growing density together with the growing number of grid participants amplifies the attack vector on energy networks. Therefore, approved technological solutions are required that meet the demands of modern information and communication technologies – especially regarding data management and data security.

SECURITY STANDARDS

With SPRECON, Sprecher Automation introduces a modular automation platform for power transmission and distribution, which is particularly developed for critical infrastructures such as energy, information & communication technologies, transportation & traffic as well as water supply.

SPRECON systems are in accordance with the IT security catalogue (§ 11 Abs. 1a EnWG) of the German Federal Network Agency (Bundesnetzagentur), the BDEW Security Whitepaper as well as the international standards of the ISO/IEC 27000 series (i. e. ISMS), IEC 62351 and IEC 62443.

SPRECON systems, as well as all relevant business processes of Sprecher Automation, are ready-prepared to meet the specific future regulations and certifications.

SECURITY FUNCTIONS

SPRECON devices support VPN tunnelling for all IP-based services and protocols. The system provides consistent security and encryption by the CPU. Together

with the integrated modem or any other existing network SPRECON supports secure IP connections.

The high-performance CPUs feature VPN tunnel setup and data encryption either by multi-channel IPsec or OpenVPN.

VPN connections – as usual for various projects – can be used for telecontrol or for communication with SCADA systems and may also be applied to secure communication between SPRECON devices. Full hardening is achieved through encryption of network services such as NTP.

Additionally, SPRECON features a firewall which is directly integrated into the firmware and therefore into the devices. This minimises the amount of additional devices. The combination with external firewalls increases security in accordance with the Defense-in-Depth principle. The SPRECON Intrusion Detection & Prevention System identifies, logs and prevents possible intrusion attempts.

SPRECON systems also support the Syslog protocol which allows transfer of system messages via the network in order to analyse and archive them.

SPRECON devices provide further comprehensive functions for secure operation of energy stations:

- Authentication at the end-point as well as password encryption



- Connection to RADIUS/LDAP (Directory Services) as well as local administration for Out-of-Band (OOB) network access
- Secure access for commissioning and service through Role-Based Access Control (RBAC) in the Service Program and Webserver
- System hardening by deactivation of non-required services, ports or webserver as well as through secured connection by Transport Layer Security (TLS)
- Network monitoring (security logging) via Syslog and SNMPv3
- Network segmentation with VPN, VLAN, firewall as well as independent physical interfaces
- Protection against malware due to applied SPRECON firmware as well as Application Whitelisting

SERVICES

- Maintenance agreements for information supply and support for patch management
- Hardening of PC systems (i.e. HMI)
- Comprehensive trainings from security basics through to security professional
- Consulting and know-how for secure system concepts

IT SECURITY MANAGEMENT

For Sprecher Automation, IT security is a continuous corporate process, obtained by certain security administrators.

The production of security directives as well as coding directives for development and system design is based on clear guidelines. Also, vulnerability management and analysis tools are applied, that scan source code and applications against vulnerability databases in order to identify potential weaknesses.

The complete source code is in permanent possession of Sprecher Automation.

System hardening and secure system configuration are achieved by professional and approved routines.

Both manufacturing and final testing of the systems are conducted in Sprecher's headquarters in Linz, Austria.

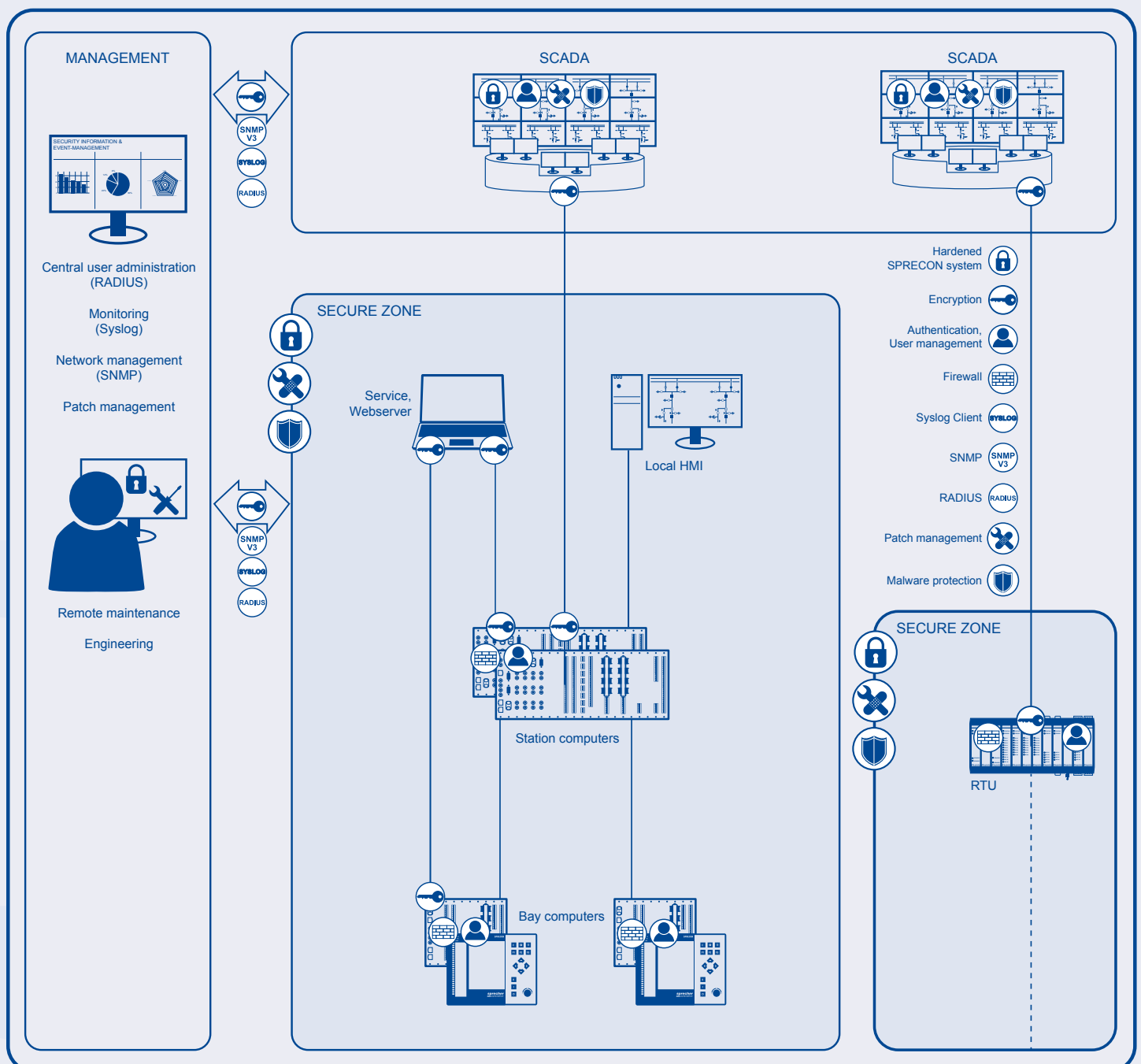
For roll-outs of security-relevant updates, Sprecher Automation is driving patch management processes. Furthermore, security problems are communicated via release notes.

Sprecher Automation operates an ISO 27001 certified information security management system (ISMS). This ISMS encloses all business units such as product development, production, system commissioning, general management, and many others. Also, we support our customers for implementing their ISMS.

Information on current security issues are continually announced at www.sprecher-automation.com under "IT Security".



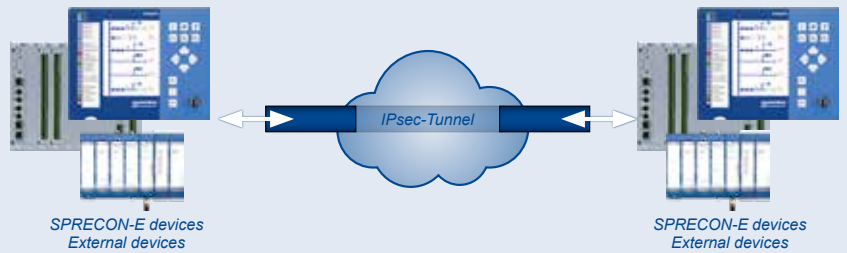
SECURE COMMUNICATION WITH SPRECON



IT SECURITY WITH SPRECON

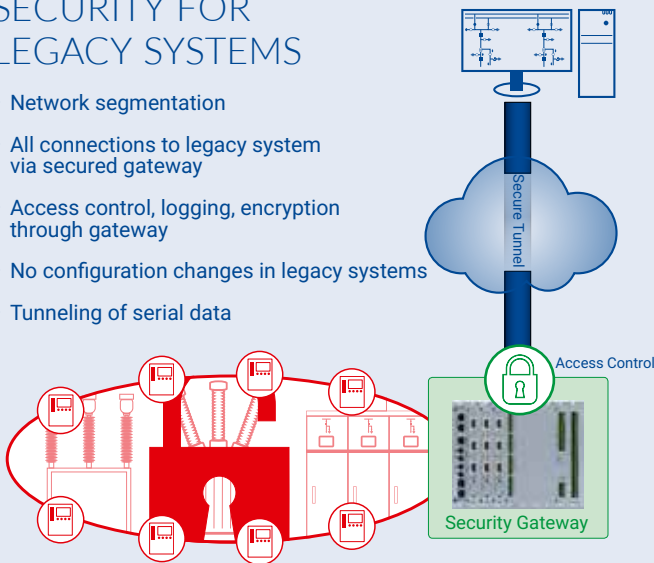
ENCRYPTION

- Implementation of virtual private networks
- Direct encryption via CPU of SPRECON device
- VPN utilisation for all IP connections (manufacturer-independent)
- Encryption of additional services such as NTP



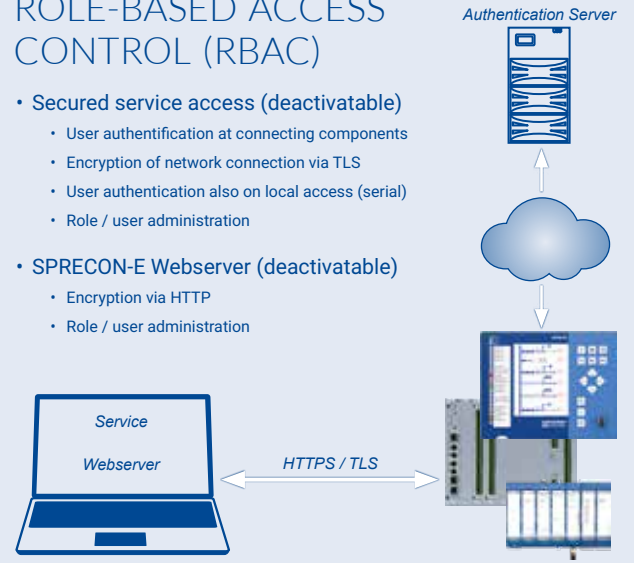
SECURITY FOR LEGACY SYSTEMS

- Network segmentation
- All connections to legacy system via secured gateway
- Access control, logging, encryption through gateway
- No configuration changes in legacy systems
- Tunneling of serial data



ROLE-BASED ACCESS CONTROL (RBAC)

- Secured service access (deactivatable)
 - User authentication at connecting components
 - Encryption of network connection via TLS
 - User authentication also on local access (serial)
 - Role / user administration
- SPRECON-E Webserver (deactivatable)
 - Encryption via HTTP
 - Role / user administration



PERIMETER SECURITY SECURITY MANAGEMENT

NETWORK SECURITY

SYSTEM INTEGRITY

Logging & Monitoring: Syslog, SNMPv3, Audit Logs

Role-Based Access Control: local or external via RADIUS

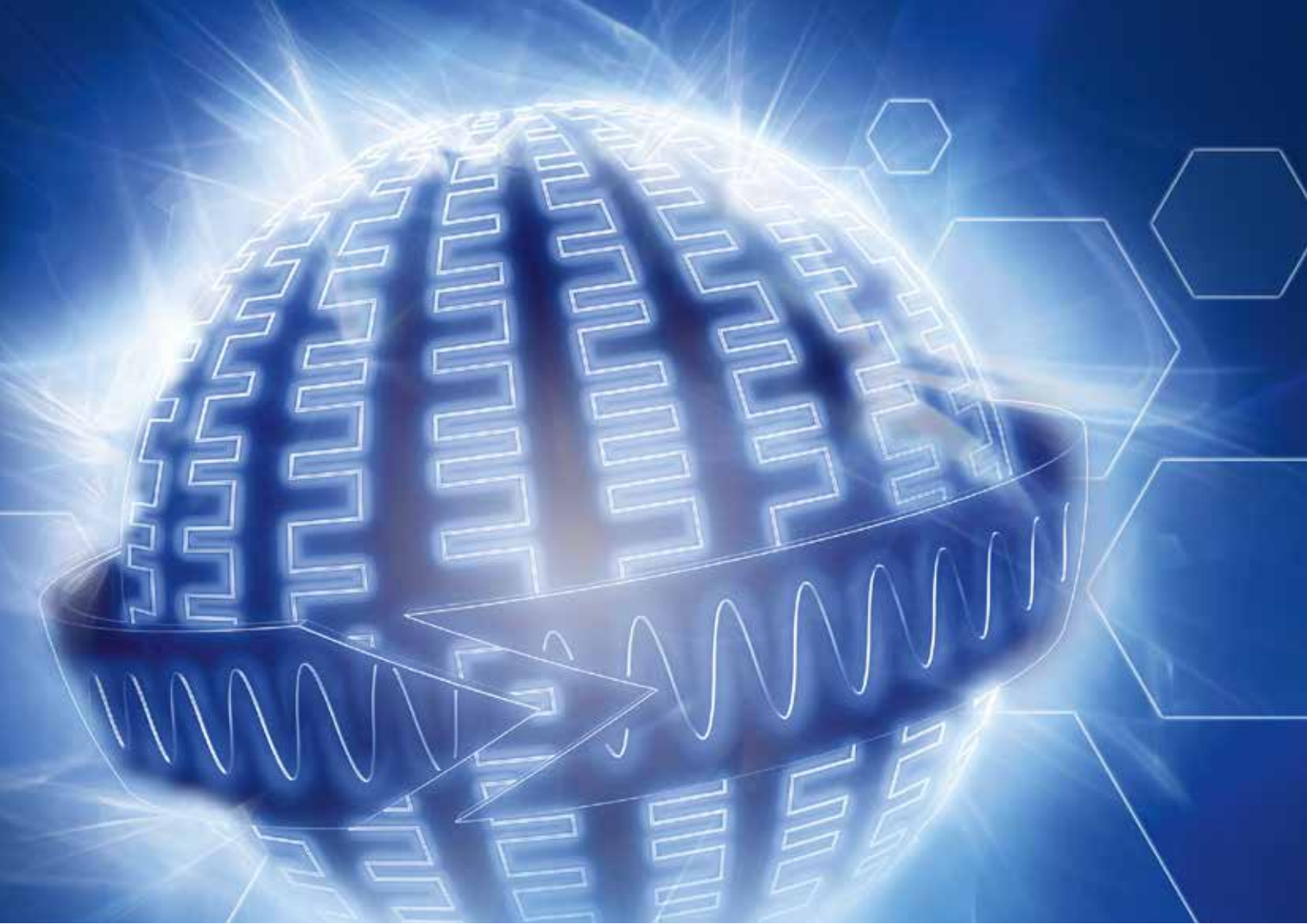
Encrypted Process Data: IPsec or OpenVPN for all IP connections

Secured service access (SSL/TLS) for Webserver and Service Program

Integrated firewall in each device

Intrusion detection & prevention system

Secure Boot and integrity protection



LOCATIONS

AUSTRIA

Sprecher Automation GmbH
Linz, Wien

GERMANY

Sprecher Automation Deutschland GmbH
Berlin, Erfurt, Dortmund, München

NETHERLANDS

Sprecher Automation Nederland B.V.
Oud Gastel

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