

Remote gateway “Fernwirkgateway” – Swissgrid

Challenges

Connection of more than 30 substations with control technology from **different manufacturers, variable age and with a diversity of data models and interfaces** to the new standardised control systems of **Swissgrid**.

This project implies a **very high IT-Security standard**. It is why one of the **first phase of this project** was to **qualify the XPG gateways** with respect to Swissgrid security requirements. For this process a **high flexibility** of the system was necessary. Support withing 8 hours during office hours is required.

→ Elvexys' Solutions & Services

Procedure for security:

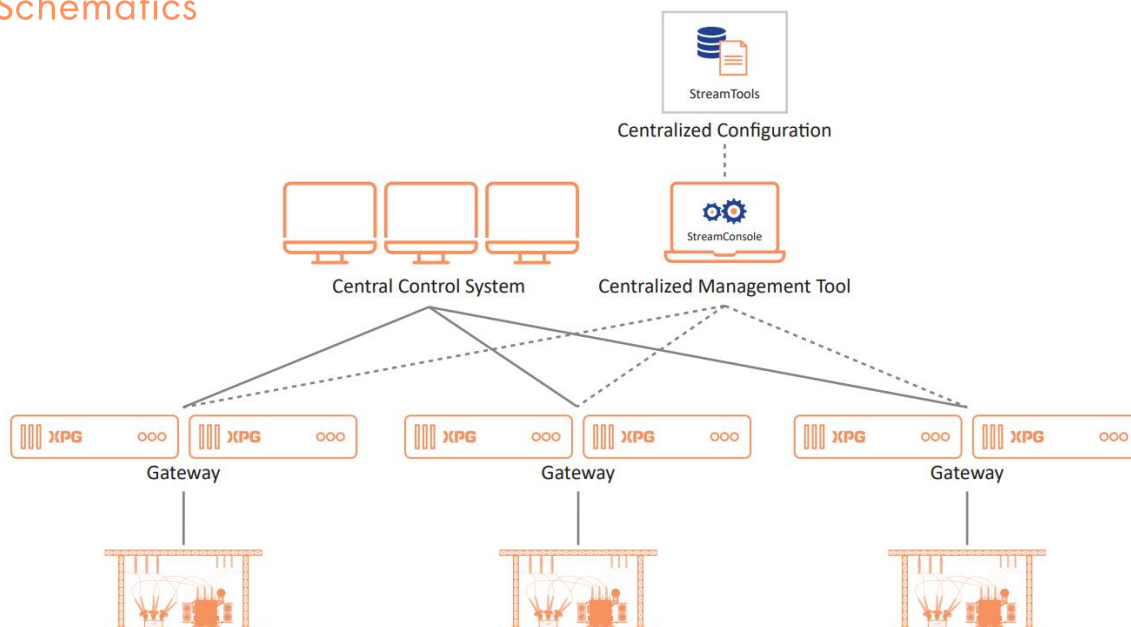
- Use of secure protocols (see hereunder) for gateway monitoring
- Remote security updates of the gateway via a secure and reliable process
- Consistent firmware version on each substation deactivation of non-used interfaces (USB/LAN)
- Specific user training
- Storage encryption and UEFI secure boot



HOT-HOT Redundancy of the Control System and Substation:

- Continuous supervision of partner gateway, over different networks
- Hot-Hot mode enabled on both gateways. That means, no matter if the gateway is Standby or UP, the protocol is active
- Each gateway has an active connection with the substations RTU
- The commands can be sent over both gateways

Schematics



Hardware & Software

XPG gateways used in each substation are composed with:

- Robust 19" dedicated hardware for OPC UA Server
- Secured OS Linux ISOS (Industrial Secure Operating System)
- StreamBridge applicative module for protocol conversion

StreamTools

The Elvexys hosted engineering tool has been used, comprising secured access for users. StreamTools includes mechanisms of uniqueness, versioning, locking and rights management to handle simultaneous user access.

StreamConsole

The management condole is the real companion of the commissioning engineer. Providing an efficient way to execute configuration, tests and maintenance tasks. It can be securely executed from remote and therefore has been approved for the highly secured OPC UA environment.

Protocols & Standards

Communication

- IEC 60870-5-104
- IEC 60870-5-101
- IEC 61850
- TG 800

Management

- SNMP V3 (Client & Agent)
- NTP
- Syslog Client
- LDAP-S Client
- SSH