

3080

Compact Service-Aware Industrial Ethernet Switch



Secure Industrial Ethernet Solution

- Compact switch with 8x10/100TX + optional 2x100/1000 SFP ports
- Advanced Ethernet switching and IP routing feature-set
- Application-aware firewall per port
- Integrated VPN agent for inter-site connectivity or remote user access
- RS-232 port with protocol gateway functionality
- Optional cellular 2G/3G modem with 2 SIM cards for operator redundancy
- Fit to harsh industrial environment
- Combined with the 3030/3070 modular systems for a large-scale network
- Supported by RADiFlow industrial service management tool (iSIM)

Compact Service-aware Industrial Ethernet Switch

The RADiFlow Service-aware Industrial Ethernet switches combine a ruggedized Ethernet platform with a unique application-aware processing engine.

As an Industrial Ethernet switch the RADiFlow switches provide a strong packet processing feature-set with a special emphasis on the fit to the mission-critical industrial environment:

- Fit to the harsh environment conditions
- Robust system design ensuring high reliability of the product
- Support for network resiliency schemes to ensure end-to-end high-availability

In addition the RADiFlow switches have unique service-aware capabilities that enable an integrated handling of application-level requirements such as implementation of security measures.

Such an integrated solution results in a simple network architecture with an optimized fit to the application requirements.

SMART GRID INFRASTRUCTURE

Smart grid solutions optimize the electricity network by adding distributed mini-generators, enhancing the distributed automation of the grid and dynamically adjusting the power consumption of the consumers.

Secondary sub-stations have thus evolved into intelligent distributed sites keeping online communication with the control center.

The compact 3080 switch was designed to optimize the network infrastructure of such distributed applications as the smart grid. It is a natural fit for installation at the MV/LV Transformation Sites acting as the secure access point for the Distributed Automation control at these remote sites.

Main Benefits:

- A compact, industrial design holding a variety of interfaces including cellular.
- Secure VPN service for remote sites over the public network.
- Unique firewall capabilities to maintain secure networking and validate data collection from smart meters and DA.
- Serial interface with protocol gateway for IEC101/IEC 104 and DNP3.

UTILITY INFRASTRUCTURE

In the modern era national utility infrastructure operators need to connect their remote distributed sites to the SCADA control center. Such communication between distributed utility sites must be served using highly integrated switches for cost and space savings while ensuring a reliable and secure services.

With the RADiFlow switches you can implement a compact integrated communication center in each site providing:

- Fit to the out-door environmental conditions
- Compact Ethernet switch with 8x10/100TX ports and 2x100/1000 SFP ports
- Optional serial port for connection of legacy user equipment
- Optional cellular modem integrated in the switch with 2 SIM cards and usage of encrypted tunnels over the public network
- Distributed firewalls throughout the network to isolate the various logical functions and to control the traffic that flows between the sites
- VPN agent for secure connection from remote maintenance centers

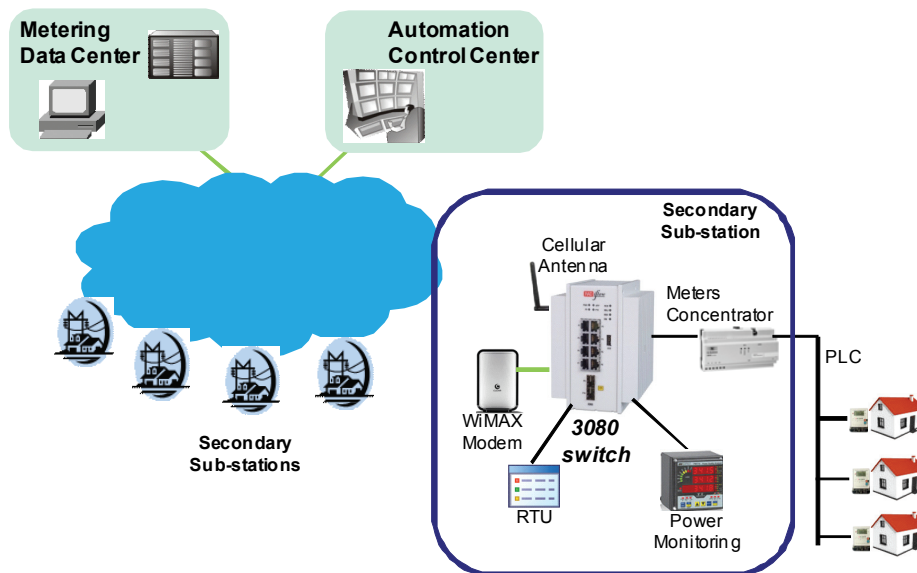


Figure 1. Simple yet secure connection for Smart-Grid secondary sub-stations using the 3080 switch

RUGGEDIZED COMPACT SYSTEM

The 3080 switch is a compact switch with 8x10/100TX ports and 2x10/100/1000 SFP ports thus suitable for aggregation of remote industrial sites with 100M or 1GE uplink. The switch is designed for installation in harsh industrial applications including DIN-rail mount, IP30 protection level, -40° to +75° operating temperature range with no fans, ATEX class 2 hazardous environment, EMI immunity according to IEC61850-3, IEEE1613 and EN50121-4, etc.

NETWORK RESILIENCY

The RADiFlow switches support Ethernet rings according to the ITU-T G.8032 standard. This standard-based ring protection is the preferred method of data-path resiliency ensuring fast failure detection and switchover regardless of the scale of the network.

Traditional resiliency protocols such as RSTP and MSTP are also supported for tree-based networks.

In order to use a unified Ethernet network across the factory but still isolate the traffic between different groups of devices, service groups are created using Ethernet VLANs. Such network setup enables the enforcement of quality-of-service and security measures on each service group regardless of the scale of the network.

APPLICATION-AWARE SECURITY

The RADiFlow switch contain an integrated firewall on each port, providing a network-based distributed security solution equivalent to the use of personal firewalls on all the industrial systems in the factory.

The firewall implemented in the switch is "application-aware", meaning that it inspects the contents of the data packets according to the rules of the industrial protocol used. This firewall is operated according to user-defined access-rules for each end-device up to the level of the industrial protocol command parameters.

The switch also contains a VPN gateway with 2 operation modes: Inter-site connectivity using IPSec tunnels and remote user access using SSH.

For the inter-site VPN the switch uses GRE tunnels over an IPSec encrypted link. The usage of IPSec encryption ensures the privacy of the link while the usage of GRE tunneling enables the transparent connection of the Ethernet networks sites.

For remote access the switch uses a SSH-encrypted tunnel, with user authentication and specific access authorizations. Over the SSH tunnel any protocol can be redirected in the remote host and the gateway will implement a proxy to securely transfer this protocol to the target device.

MULTI-SERVICE INTERFACES

The 308x switches also support a RS-232 serial interface with serial data tunneling or service gateway to IP-based industrial protocols.

The 308x can offer an integrated cellular 2G/3G modem for easy connectivity of remote sites. 2 SIM cards are supported by the modem to choose between 2 cellular operators based on the dynamic monitoring of their network quality.

SERVICE MANAGEMENT TOOL

The RADiFlow switches are best utilized when operating their network-wide features using the iSIM central management tool without requiring in-depth IT know-how.

The iSIM presents the network topology in a graphical map view enabling the provisioning of service connections between the industrial end-devices with detailed security rules. The user configures application-aware security rules for each pair of end-devices starting from the protocol level and up to the specific parameters of the industrial protocols and the iSIM translates these rules to specific configuration for each switch.

The iSIM also provides several tools for easy operation and monitoring of the network including: Network alarms log, Security violations log and link utilization statistics.

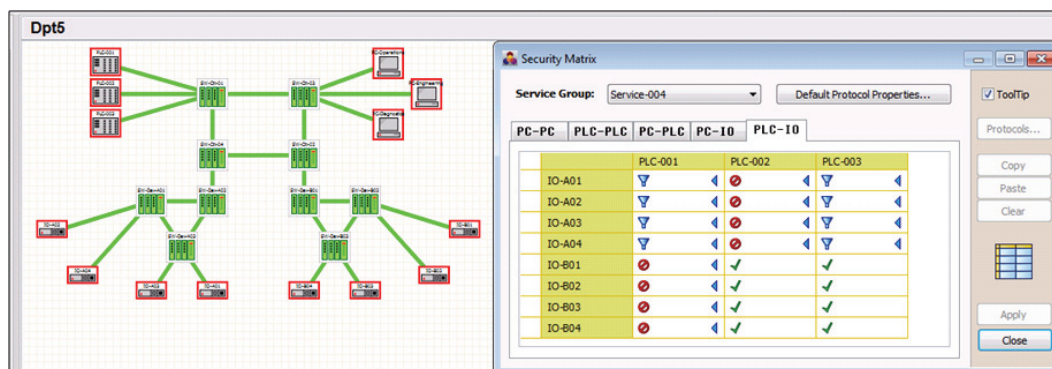


Figure 2. Distributed firewall configuration

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Specifications

NETWORKING

ADVANCED LAYER 2 FEATURE-SET

ITU-T G.8032 Ethernet ring (<50mS recovery)

IEEE 802.1s MSTP, 802.1w RSTP

IEEE 802.3ad LAG with LACP

IEEE 802.1q VLAN tagging

IEEE 802.1p per port queues

LAYER 3 FEATURE-SET

L3 Switching

Static routing, OSPF Routing

DSCP to 802.1p QoS mapping

MULTICAST

L2 Multicast with guaranteed QoS

IGMP Snooping for traffic optimization

BRIDGING SERIAL STREAMS

Transparent tunneling serial streams

Protocol Gateway - Serial to Ethernet (Modbus, IEC101/104, DNP3.0)

SYSTEM PERFORMANCE

32K MAC addresses

4K VLANs

INTERFACES

8 x 10/100 TX ports

Optional 2 x 100/1000 SFP ports

Optional RS-232 ports

Optional 2G/3G cellular modem

SECURITY

ACCESS CONTROL

Enable/Disable port

Port access filter per MAC / IP addresses

SERVICE VALIDATION

Egress filtering per VLAN

Application-aware firewall on each port analyzing industrial protocols

INDUSTRIAL VPN AGENT

Inter-site connection using GRE over IPSec

Remote access using SSH tunnel

Session proxy hiding the local network

On-line session security checks

AES or 3DES encryption

Traffic activity recording for Trail audit

PHYSICAL DESIGN

DIN rail mounting, optional wall mount

Rugged enclosure - IP 30 rated, No fans

Operating temperature: -40 to 75°C

Operating Humidity: 5%-95%

Basic system and optional security module

Dimensions (HxWxD) 148x102x135[mm]

DC 24V/48V power supply with 2 power inputs

IEC 61850-3/IEEE1613 EMI

EN50121-4 Vibration and Shock resistance

MANAGEMENT TOOLS

NETWORK MANAGEMENT

Network elements auto-discovery

End-to-End service groups provisioning

Security rules planning per service group

Network performance & diagnostics tools

LOCAL OPERATION

RS-232 console with command line interface

Failsafe output relay reporting critical alarm

Ordering

3080 P/Ns - RF-3080<P><T><A><C><E>

P – Input Power

- 24 - 24V DC

- 48 - 48V DC

T - Temperature range

- ST – 0°÷60°C

- ET – -40°÷75°C

A - Application Aware

- AA – with application capabilities

C – Cellular interface

- CEL1 – with GPRS/UMTS

E – Ethernet interfaces

- ET28 – 2XSFP + 8XRJ45

- ET08 – no SFP + 8XRJ45

RF-3080SL-IPR

IP routing license

RF-3080SL-SEC

Security license

SFPs

Ethernet Optic MM/SM and Copper

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