

# SWCED-2316

## 2.5 GIGABIT ETHERNET SWITCH



### Ruggedized DIN switch

### 2.5 GigaBit Carrier Ethernet & POE+

4X SFP  
12X GE

POE+

DIN  
RUGGEDIZED

CARRIER  
ETHERNET  
CE 2.0

**SWCED-2316** is a DIN-rail ruggedized Gigabit Ethernet switch that delivers 4x optical uplinks and 12 Gigabit accesses with 4x POE+ ports.

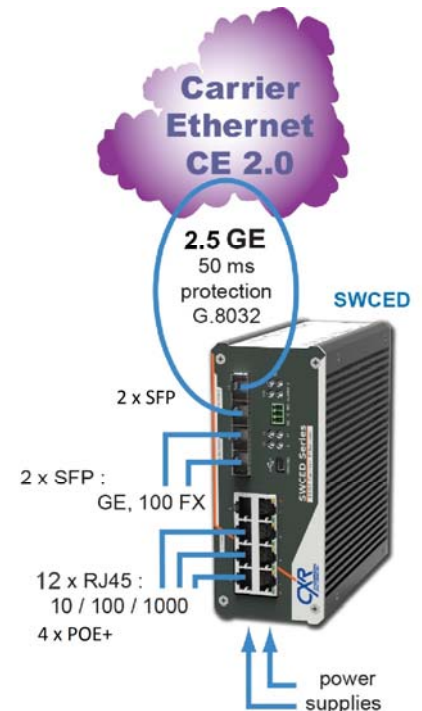
**SWCED-2316** provides two multi-standard SFP interfaces for 2.5GbE / GbE / 100FX speeds, and twelve GigaBit Ethernet RJ45 ports. It is a ruggedized product with a robust DIN-rail aluminum design and extended operating temperature range that suits most stringent integration requirements of the Carrier, Transportation, Defense, and Utility infrastructures.

**SWCED** enables CE 2.0 managed services including EVC, E-LINE / E-LAN / E-TREE at a UNI / NNI Carrier Ethernet network access with guaranteed service availability and resiliency that are required by Carrier Ethernet service providers.

**SWCED** helps industry networks to extend to higher 2.5 GbE bandwidth within an affordable approach that best preserves long term investments and reduces OPEX costs. It builds resilient Rings at Gigabit and 2.5 GbE speeds and it delivers high speed Ethernet connectivity to Control centers, hospitalities, video-surveillance systems, Transportation sites, water and electric utilities, etc.

**SWCED** provide scalable 2.5 GbE bandwidth and multiservice backbone services to large industry infrastructures and Smart Cities with a broad range of OAM and performance monitoring, security and ACL/QCL traffic filtering functionalities.

**SWCED** is a best choice networking and communication equipment for Mission Critical Networks thanks to its resilient and ruggedized design and extended operating temperature range.



# Gigabit Carrier Ethernet Switch

## CE 2.0 CARRIER ETHERNET SERVICES

SWCED provides managed services at the UNI / NNI Ethernet network provider to deliver **EVC / E-LAN / E-TREE** services according to the **MEF CE 2.0 standard**.

SWCED is based on a **Service Aware architecture** with hardware processing of real time functions such as switching, service mapping, CoS, G8032, OAM. This carrier grade architecture guaranties best performance whatever the traffic load and SLA requirements.

SWCED distinguishes from other existing products from its **ruggedized and compact DIN-rail form factor** and integration, its CE 2.0 carrier class, its **two redundant power supplies**, its very low per port power consumption, its **extended operating temperature range** and its **cost effectiveness**.

## MANAGEMENT

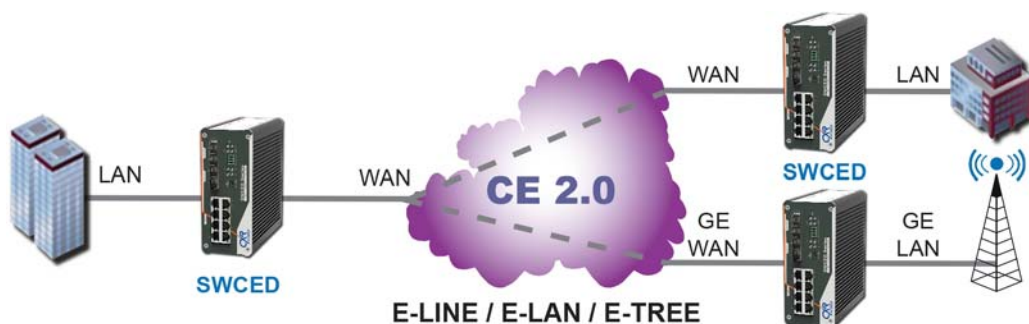
SWCED offers many management protocols and interfaces including a user-friendly **web interface** with **help pages**. System operation is secured by strong authentication and encryption protocols such as **HTTPS** and **SNMP v3**. The product embeds a **dual IP stack** with versions v4 and v6. The Command Line Interface is based on industry standards and enables batch configuration script.

## INTEGRATION

SWCED is a **DIN-rail ruggedized product**. It comes with a 24 - 48 Vdc power converters. It can be installed in a non temperature controlled environment such as a street cabinet.

SWCED is an industry grade product that combines high performance Carrier Ethernet processing and **severe industry robustness and reliability**. It works over an extended temperature range from -20 to +70 °C.

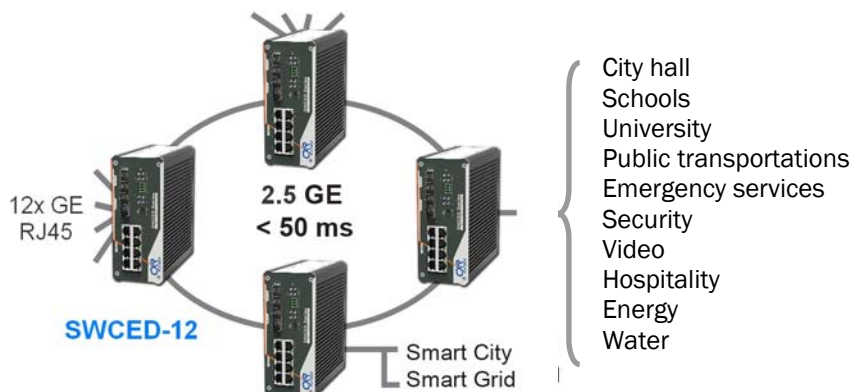
SWCED preserves the environment and natural resources through a choice of recyclable materials and an extremely low per port power consumption.



## SCALABLE ETHERNET COMMUNICATIONS FOR INDUSTRY INFRASTRUCTURES

SWCED supports very high speed backbone communications for large infrastructures such as Smart Cities, Public Transportation (railway, road) and Transport / Distribution Utility (electricity, oil and gas, water). It comes with a very cost effective approach for best flexibility and scalability to suit current requirements and anticipate future developments. Its SFP optical ports can be set to 1xGbE and 2.5 GbE speeds.

Increasing speed is not enough to Mission Critical Networks. Communication network must provide continuous control and monitoring of performance, services availability, latency, traffic load with reactivity and accuracy but no application traffic disruption. A Carrier Class equipment with compliance to the Metro Ethernet Forum CE2.0 is a guaranty for such long lasting performance and precise network monitoring.



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## Specifications

### MEF CE 2.0 SERVICE AWARE SWITCH

SWCED distinguishes from other products by its combined addition of a newer generation Ethernet switching solution dedicated to Gigabit Carrier Ethernet Services, and extensive software features according to Ethernet industry and MEF CE 2.0 standards. A number of hardware accelerators perform real time critical functions for wire-speed switching, SLA controls and OAM test and maintenance which guaranty minimum latency whatever equipment settings and network load and type of traffics. SWCE exceeds MEF CE 2.0 specifications. Each EVC virtual connection can be assigned specific QoS and resources.

SWCED embeds all standard Ethernet protocols, VLAN, Provider VLAN, QOS, IGMP, RSTP, MSTP, GVRP, EVC, ERPS G.8032, etc. It has many security functions including Access Control List and authentication protocols - 802.1X, Radius, TACACS.

SWCED is offered to Ethernet network operators and industrial infrastructure managers with the most attractive price strategy. It is a flexible equipment with 2.5 Gigabit SFP speed and a software license that enables the EVC CE2.0 services. This Pay-as-you-grow approach best preserves investments and future developments.

SWCED brings many benefits from three directions of a industry grade and cost effective Carrier Ethernet equipment:

- Controlled and determinist performance
- Best bandwidth and resource allocation
- Multiservice secure network architecture
- 99.999% availability
- Reduced Time-To-Service
- Scalable and future-proof network
- Lower cost of provisioning, deployment, support and maintenance and best customer experience and satisfaction
- Fault and Performance monitoring with end to end OAM functions
- Sustainable solutions and technical skills thanks to widely adopted and Metro Ethernet Forum supported standards

### PROTOCOLS

#### Layer 2 Switching

- VLAN: translation, MAC based, protocol based, IP address based, VLAN trunking, GVRP and MVRP registration, Private VLAN, Voice VLAN
- Provider Bridge 802.1ad, native or translated
- EVC, MEF Layer 3 traffic classification, 4 K EV services
- E-LINE (EPL, EVPL)
- E-LAN (EP-LAN, EVPLAN)
- E-TREE
- EVC classification of L3 flows (SIP, IP Prot, S-Dport)
- RSTP, STP
- Link Aggregation, LACP
- IGMP v2 Snooping, MLD v1/v2 Snooping, IGMP filtering, 8K IP v4/v6 multicast Groups
- LLDP
- DHCP Snooping

#### Ring Protection

- Port protection: 1+1, 1:1, 1:N
- G. 8031
- G. 8032

#### QoS

- Traffic Classes : 8 priority levels
- Per port and per user priority
- QCL, QoS Control List
- DSCP classification, translation
- Rate limiting
- Storm control, UC / BC / unknown
- Service policing, bandwidth profiles
- WRED

#### Security

- TCAM based security rules, ACL entries
- 802.1X, per port, simple or multiple authentication
- MAC address authentication
- VLAN assignment, QoS assignment
- Guest VLAN
- Radius AAA, TACACS AAA
- IP / MAC binding
- WEB and CLI interface authentication
- ACL and QCL for traffic filtering
- ARP inspection
- IP source guard

## Specifications

### Ethernet interfaces

- 2x SFP ports, 2.5 GE, GE rates
- 2x SFP ports, Gigabit Ethernet
- 12x RJ45 ports, 10 / 100 / 1,000 Mbps
- 4x POE+ ports, 802.3at
- MDI/MDIX automatic detection
- 802.1x Authentication
- 802.3X flow control
- DDMI management on SFP ports
- VeriPhy function for live Ethernet cable diagnostic
- Ethernet MAC address memory : 8 K
- Ethernet frame buffer : 4 Mb
- EEE: Green Ethernet
- Statistics : transmitted frames and interface diagnostics
- Max frame size : 9,660 bytes
- Link Aggregation 802.3ad based on layer 2/3/4 information
- TCAM based egress tagging, VLAN assignment, COS/QOS classification
- TCAM based security rules

### Management

- RS232: local console port
- TCP-IP protocols : Telnet, http, ssh, https,
- IP v4 / v6 dual-stack
- Web interface, intuitive menus and on-line help pages
- CLI command line: ssh, USB port
- Snmp : v1/v2/v3
- Diagnostics : ping, traceroute
- Port Mirroring
- Syslog
- LLDP
- Statistics, RMON
- NTP client
- 2x banks of firmware
- Alarm relay

### Maintenance

- Link OAM: hardware based, 4K services, Loopback
- OAM: Y1731, 802.1ag, 802.3ah

### Light indicators

- Power
- Link / Activity for each Ethernet port

### Power supply

- 24-48 Vdc
- Power input range : 18 to 56 Vdc
- Max power consumption : 25 W
- Typical power consumption : 15 W  
*No including POE consumption*

### Environmental

- DIN-rail aluminum enclosure
- Protection Class : IP-40
- Dimensions : 153x158x65 mm (DxHxW)
- Weight : 1.9 kg
- Operating temperature range : -20 °C to +70 °C
- Hygrometry: 0 to 90° without condensation
- CE compliance : EN60950, EN55022, EN55024
- Industry EMI : EN-50121-4, IEC-61850
- MTBF : 380.000 hours

## Product References

Reference	Description
SWCED-2316-R-D	Ruggedized Gigabit Carrier Ethernet Switch, 2x SFP 2.5GE/GE/100FX, 2x SFP GE, 12x RJ45 1,000/100/10BT, DIN rail format, 24-48 Vdc power supply
SWCED-2316-P-D	Ruggedized Gigabit Carrier Ethernet Switch, 2x SFP 2.5GE/GE, 2x SFP GE, 12x RJ45 1,000/100/10BT including 4x POE+ ports, DIN rail format, 24-48 Vdc power supply



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