

Service Dispatching Unit (SDU)

Actelis® Service Dispatching Units (SDUs) and ML solutions enable service providers to boost their Ethernet service delivery, reaching more customers and providing more services ubiquitously over copper or fiber. The SDU cards are used by Actelis' chassis-based solutions, the ML2300 and ML230, offering advanced Carrier-class switching capabilities, centralized EFM bonding, crosstalk management, Clock Synchronization, enhanced OAM, and high-speed flexible aggregation.

The SDU offers advanced Ethernet capabilities enabling service providers to effectively support voice, data and streaming video services ubiquitously over copper or fiber, as well as clock synchronization for DSLAM and mobile backhaul applications. The hardened SDU cards can be installed within the ML aggregation platforms, in any location, including central offices, remote/cabinet locations, basements, communication rooms and the customer premises.

The Actelis SDU cards offer the following main capabilities:

Advanced Switching and QoS. The systems support current and evolving Ethernet Quality of Service (QoS) requirements. The systems provide 802.1q VLAN-aware wire-speed bridging, double tagging (VLAN stacking) for end-user VLAN transparency, L2 (Ethernet priority) classification with 8 traffic classes, RSTP/STP, bandwidth monitoring and HSL rate limiting. SDU-400 series cards provides extended Ethernet Virtual Service capabilities offering up to 2K Service flows with comprehensive L2 identifiers, meters, queue prioritization and shapers, where all parameters are configurable per service flow.



SDU 450G / SDU 455G

Effective Aggregation and Scalability. Multiple ML aggregation systems can be stacked in a Star or Ring topology using the multiple Ethernet interfaces on the SDU to provide higher port density per uplink. Various SDU models are available, offering different number and types of Ethernet ports to enable suitable solutions for varying application needs. The SDU aggregation interfaces allow for easy integration into both Metro Ethernet and SONET/SDH networks. The SDUs support Small Form Factor (SFP) modules of up to 1000/2500 Base-FX, additional copper-based Ethernet interfaces of up to 1000Base-TX as well as T3/E3 modules. DDM capabilities are supported for enhanced diagnostic and troubleshooting of

the fiber interfaces. The SDU fiber interfaces can be used as aggregation as well as customer-facing interfaces to deliver direct Ethernet over fiber services.

Carrier Redundancy. Several redundancy schemes are supported for assured protection and service availability, offering automatic switchover in case of equipment or monitored facilities failures. Ethernet facility protection is offered between Ethernet ports on the same card, while SDU equipment protection is offered between two SDU cards. Various Ethernet protection protocols are supported, including RSTP/STP, LAG as well as ERPS. In addition, the SDU card manages the system MLP (modem port) allocation and protection, allowing service providers to flexibly assign any MLP from any MLU card to any HSL, ensuring service continuity even during multiple failure conditions.



SDU 450

Enhanced Rate, Reach and Reliability. The SDU cards control the EFMplus™ technology algorithms involving Dynamic Spectrum Management (DSM), Dynamic Spectral Shaping (DSS) and Dynamic Rate Boost (DRB), offering significantly increased performance over bonded-copper pairs while fully complying with regional spectral regulations. The centralized SDU management offers performance optimization per system across all cards, modems and HSLs, allowing for effective crosstalk management and crosstalk cancellation and, therefore, performance boost.

Advanced Synchronization. Actelis' SDU-455 offers advanced clock transmission mechanism. The unique architecture, ML2300/ML230 at the CO and ML650S at the CPE ensures the best clock accuracy and reliability of any copper-based backhaul solution eliminating carrier concerns related to clock recovery over pseudo wire. Various redundant clock interfaces are supported including synchronous Ethernet (SyncE) over copper or fiber, E1/T1 and 2 MHz.

Advanced Management and OAM Capabilities. The SDU supports advanced Ethernet OAM capabilities, providing a set of tools that enable service providers to effectively manage, monitor and troubleshoot the end-to-end Ethernet infrastructure. CFM (802.1ag), ITU-T Y.1731 OAM and EFM OAM (802.3ah) are supported, offering management of individual customer service instances. Standard CLI and TL1 command line interfaces, as well as SNMP standard MIBs are supported for seamless integration with Actelis MetaASSIST™ management suite as well as other existing third-party Network Management Systems (NMS).

Highlights

- IEEE 802.3ah EFM 2Base-TL Solution
- MEF Certified Ethernet Capabilities
- Rapid Service Deployment
- Carrier-Class Redundancy
- Carrier-Class OAM
- Superior Rate, Reach & Reliability - EFMplus, DRB
- High Precision Synchronization
- Low Delay & Jitter for Voice & Video Transmission
- Worldwide Spectral Compliancy
- NEBS III, FCC, UL, CE
- Environmentally Hardened

Applications

- DSLAM Backhaul
- Fast Internet Access
- MDU/MTU Backhaul
- Metro Ethernet Extension
- Private Campus Network Intra-Connection
- Transparent LAN Service
- WiFi and Cellular Backhaul

Markets Served

- RBOCs, PTTs, Alternative Carriers and IOCs
- Federal, State and Municipalities
- Education, Health Care, Utilities, Private Campuses

Service Dispatching Unit (SDU)

SDU Model	Ethernet Interfaces	Ethernet Interfaces (SFPs)	Sync Interfaces	Copper Pairs (max)	HSLs (max)
SDU-455G	2x10/100/1000BaseT	4x100/1000BaseFX 4x1000/2500BaseFX	E1/T1, SyncE, 2 MHz Redundant	256	128
SDU 450G	2x10/100/1000BaseT	4x100/1000BaseFX 4x1000/2500BaseFX	NA	256	128
SDU 450	2x10/100/1000BaseT	4x100/1000BaseFX	NA	256	128
SDU 440G	2x10/100/1000BaseT	8x100/1000BaseFX	NA	128	64
SDU 440	2x10/100/1000BaseT	4x100/1000BaseFX	NA	128	64

Specifications

Chassis Compatibility

- **SDU-440 series:** CHS-2000B, CHS-2000, CHS-2000-ETSI
- **SDU-450 series:** CHS-200, CHS-2000B, CHS-2000, CHS-2000-ETSI

MLU Compatibility

- **SDU-440 series:** MLU-32ER, MLU-32EF, MLU-32DR, MLU-32DF
- **SDU-450 series:** MLU-32ER, MLU-32EF, MLU-32DR, MLU-64DR, MLU-32DF, MLU-64DF

Layer 1 Capabilities

- **EFMplus™:** SDU-400 series
- **DSS:** SDU-400 series*
Note: *DSS is not supported with SW releases 7.2, 7.25, 7.3
- **DRB:** SDU-440/G with MLU-32DR/F, SDU-450/G with MLU-32DR/F, MLU-64DR/F
- **Higher Rates:** SDU-400 series

TDM Synchronization

- **Clock Source:** T1/E1, Synchronous Ethernet over copper or fiber (SyncE), 2 MHz
- **Clock Holdover:** Stratum 3, GR-1244 Type II and G.813
- **Clock Jitter:** ITU-T G.823/G.824 SSU
- **Clock APS:** Automatic Protection Switch from Primary to Secondary as specified in GR-1244-CORE TDM Protocols
- ITU-T G.703, G.704, GR-499-CORE, GR-253-CORE

Ethernet

LAN Protocols

- **Dynamic Bridging:** IEEE 802.1
- **VLAN Tagging:** IEEE 802.1Q
- **Double Tagging:** Q-in-Q, VMAN
- **RSTP, STP:** IEEE 802.1d
- **Link Aggregation:** IEEE 802.3ad
- **Provider Bridges:** IEEE 802.1ad
- **LLDP:** IEEE 802.1ab
- **ERPS:** ITU-T G.8032
- **IGMP Snooping:** IGMP V1, V2 (only SDU-450 series)

Protocols

- **SNMP:** V3, V2C, V1
- **IP addresses:** IPV4 and IPV6
- **Command Line Interface:** TL1, CLI
- **Remote Access:** Telnet
- **Secure Access (option):** SSH v2
- **Time Synchronization:** SNTP v3
- **Radius Authentication:** RFC 2856
- **Web Access:** HTTP
- **File Transfer:** FTP, TFTP
- **EFM OAM:** IEEE 802.3ah clause 57
- **CFM & Service OAM:** IEEE 802.3ag; ITU Y.1731

Quality of Service

- **Classes of Service:** 2K Queues per systems
- **Scheduler:** Hybrid (WFQ, SP)
- **Classification:** Port/VID/L2 Priority bits

Front Panel Indicators

- **Active:** Status
- **ACT (Activity):** LNK (Link) per Ethernet port
- **SYNC**

Management

Applications

- **EMS:** MetaASSIST™ EMS
- **Craft GUI:** MetaASSIST™ View

Power

- **SDU-450/G :** 35W
- **SDU-455G:** 38W

Environmental

- **Operating Temp:** -40° to +65°C (-40° to +149° F)**
- **Storage Temp:** -40° to +75°C (-40° to +167° F)
- **Relative humidity:** Up to 95%, non-cond.
(Note: **Tested in accordance with NEMA temperature requirements with MLU-32XX cards)

Compliance/Certification

Metro Ethernet Forum

- CE 2.0, CE 1.0: MEF 9, 10, 14

Safety

- UL 60950, CSA C22.2 60950; EN 60950, IEC 60950

EMC

- FCC Part 15 Class A, ICES-003 Class A, ETSI EN 300 386, ETSI ETS 300 132-2

NEBS

- Level III (GR-1089-CORE, GR-63-CORE)

CE

- EMC and Safety

Environmental

- GR-63-CORE; ETSI ETS 300 019



Corporate Headquarters

Actelis Networks, Inc.
47800 Westinghouse Drive
Fremont, CA 94539
t. +1 510-545-1045 or toll-free in U.S. 1-866-ACTELIS

Company and General Information: info@actelis.com

Asia Pacific Sales: apacsales@actelis.com

Central and Latin America Sales: calasales@actelis.com

Europe, Middle East and Africa Sales: emeasales@actelis.com

North America Sales: nasales@actelis.com