

Tellabs® 1100 Multiservice Access Platform Series — Ethernet Switching Unit (ESU)

Overview

The Ethernet Switching Unit (ESU) provides multi-Gigabit Ethernet switching capability to the Tellabs® 1100 Multiservice Access Platform (MSAP) Series. Acting as the central switch fabric, the ESU module contains a non-blocking, wire-speed IP/Ethernet switching engine that aggregates, processes and forwards all datagrams between the network interface(s) and subscribers.

With two ESU modules per MSAP in a primary and secondary configuration, Ethernet Link Aggregation is used to load-balance both modules and effectively double the processing capacity of the system. Standard Small Form-factor Pluggable (SFP) and 10 Gigabit Small Form-factor Pluggable (XFP) modules are utilized for flexible network interfaces, supporting a wide range of physical media, wavelengths and optical budgets.

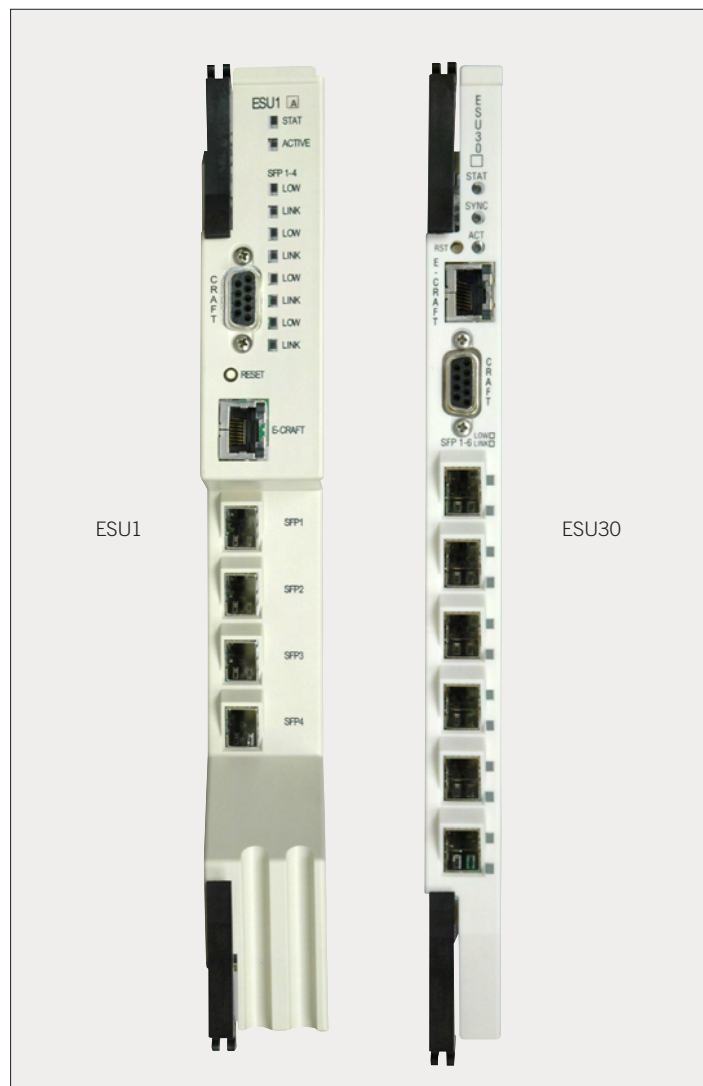
Flexible VLAN Methodologies

Designed for flexible and powerful network integration and based on the DSL Forum TR-101 standard, the ESU module offers multiple Virtual Local Area Network (VLAN) methodologies to support today's triple play networks. 1:1 VLAN (C-Tag per subscriber), N:1 VLAN (S-Tag per service) and Q-in-Q (S-Tag, C-Tag) provisioning models are available for residential High-Speed Internet (HSI), SIP-based VoIP, IP Video and Video on Demand (VoD) services. Business services are provided using Transparent LAN Service (TLS).

Security Architecture

The proper security architecture is imperative for IP-based access networks. The ESU module offers a combination of forced forwarding, user authentication, Access Control Lists (ACL) and port-based network access control. These powerful security measures help mitigate the occurrence of malicious attacks on the network.

- A forced forwarding architecture prevents subscriber datagrams from switching between ports, independent of destination. All traffic flows within the access network are forced to the network uplink into the edge/core network for proper routing.
- User authentication is supported by Dynamic Host Configuration Protocol (DHCP) or Point-to-Point Protocol over Ethernet (PPPoE), provisionable per subscriber port, including DHCP Option 82 and PPPoE Intermediate Agent functions.
- ACLs process and filter ingress datagrams based upon Layer 2 (Ethernet) and Layer 3 (IP) filter rules, defined by the provisioned authentication model.
- Port-based network access control is based on the 802.1x standard and enables authentication of physical devices within the subscriber and/or business network.



Quality of Service

The ESU module utilizes 802.1p for prioritization and control of bandwidth allocation. Each service flow is designated with one of eight priority levels with policing, queuing and scheduling algorithms controlling bandwidth allocation and delivery mechanisms within the system. Per-subscriber rate limiting is offered to control committed and excess bandwidth delivery of differentiated services, including high-speed data, multicast IP video, unicast IP video and TLS.

IP Video Processing

Utilizing Internet Group Management Protocol (IGMP) transparent snooping with proxy reporting for control of multicast IP video service, the ESU module supports both IGMPv2 and IGMPv3. Thus, service providers gain the flexibility to deploy current generation set-top boxes or next-generation personal entertainment home gateways. This capability to support simultaneous deployment of IGMPv2 and IGMPv3 set-top boxes within the access network creates a unified IGMPv3 edge/core network presence.

Features & Benefits

- High-capacity Gigabit Ethernet switching
- Non-blocking, wire-speed processing
- Layer 2 (Ethernet) and Layer L3 (IP) processing
- 802.1Q VLAN switching, trunking, stacking (Q-in-Q), TLS
- 802.1p priority queuing
- 802.3ad Ethernet link aggregation, load balancing
- 802.1x port-based network access control
- Forced forwarding security architecture
- Access Control Lists
- User authentication via DHCP Option 82 and PPPoE Intermediate Agent
- IGMPv2/3 transparent snooping with proxy reporting
- Support for >1000 simultaneous multicast flows
- SFP pluggable optics supporting 1000Base-SX, 1000Base-LX, 1000Base-T and CWDM modules
- XFP pluggable optics supporting 10GBase-SR, 10GBase-LR, 10GBase-ER and 10GBase-ZR modules
- Dual memory for minimal service interruption during upgrades
- Environmentally hardened, capable of operation out of a Central Office (CO) or remote cabinets
- Fully managed through the Tellabs® 1191 Element Management System (EMS)

Ordering Information

- Ethernet Switching Unit 1 (ESU1)
Part number: 4115044
- Ethernet Switching Unit 2 (ESU2)
Part number: 4115091
- Ethernet Switching Unit 30 (ESU30)
Part number: 4115090

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General Specifications

Physical

- Height: 10.8 in (27.4 cm)
- Width: ESU1/ESU2 — 1.44 in (3.7 cm);
ESU30 — .87 in (2.2 cm)
- Depth: 9.2 in (23.4 cm)

Environmental

- Operating Temperature: -40°C to +70°C
- Humidity: 5%–95% non-condensing

Regulatory Compliance

- GR-63
- GR-78
- GR-295
- GR-418
- GR-487
- GR-1089
- FCC Part 15 Class A
- UL60950
- NEC 2002

	ESU1	ESU2	ESU30
Tellabs 1150 MSAP chassis	✓	✓	
Tellabs 1134 MSAP chassis			✓
Switch capacity (full-duplex)	24 Gbps	200 Gbps	12 Gbps
Network interface ports	4 x 1GbE	2 x 10GbE 4 x 1GbE	6 x 1GbE
Backplane interface ports	19 x 1GbE	19 x 1GbE 16 x 10GbE	4 x 1GbE
Intra-ESU backplane connectivity (redundancy/load balancing)	20G XAUI	20G XAUI	20G XAUI
RS-232 Craft port	✓	✓	✓
Ethernet Craft port	✓	✓	✓

Table 1. ESU feature matrix

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