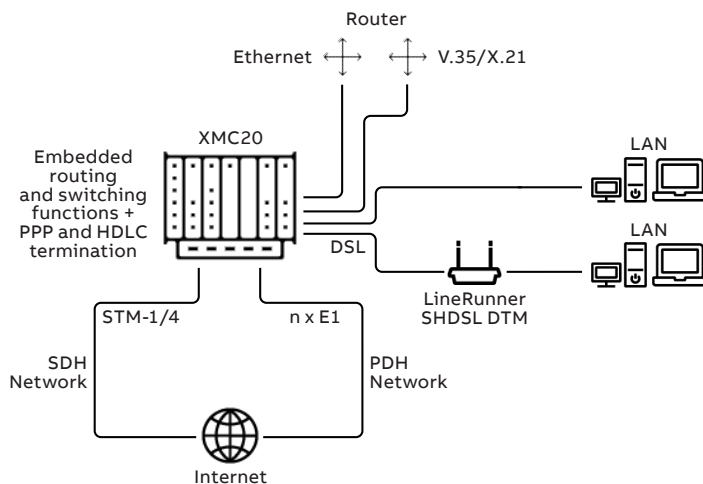


## XMC20 ETAG1

ETAG1 provides efficient aggregation of Ethernet traffic transported via its front Ethernet ports or via XMC20's TDM bus



With its advanced architecture, XMC20 fulfils the growing demands on Ethernet services in dedicated networks. Additionally, native TDM services and transport solutions can be provided with XMC20 thanks to its Ethernet-TDM hybrid backplane.

01 Applications with ETAG1

The TDM capabilities include aggregation and transport of Ethernet data via SDH/PDH networks. Thus, networks operators can serve both networks structures with one platform and one management system.

- PPP and HDLC termination/encapsulation
- Aggregation of  $n \times 2$  Mbps channels using MLPPP
- Layer 2 and Layer 3 based packet forwarding
- Multiple VLAN aware switch instances
- For all XMC20 subracks
- Designed for indoor and outdoor deployment
- All functions out of one network management system

### Ethernet traffic aggregation from TDM interfaces

ETAG1 provides the XMC20 platform with the ability to aggregate TDM-transported low-bandwidth Ethernet traffic by using its Layer 2 and Layer 3 switching functionality. It terminates PPP and HDLC encapsulated Ethernet traffic from XMC20 bus units; and it also provides direct connection to Ethernet

networks or devices via its front ports. Several 2 Mbps channels of Ethernet traffic can also be bundled on a single logical channel using Multi-Link Point-to-Point Protocol (MLPPP). MLPPP can be used for spreading traffic of multiple PPP connection, hence balancing the load of the transport network.

The ETAG1 interworks with all of XMC20 PDH units providing Ethernet services, including remote devices like the LineRunner CPEs. Naturally, its front Ethernet ports can also be used in conjunction with the Ethernet ports of any of the XMC20 units.

### TDM protection mechanisms

Protection mechanisms, like 1+1 path protection and Sub-Network Connection Protection (SNCP), are supported in the unit in order to provide reliable services and connections as expected for TDM services. These protection mechanisms are also compatible with those available in other XMC20 TDM units.

**PPP and HDLC termination**

ETAG1 terminates PPP encapsulated traffic from the serial data interface unit TUDA1; as well as HDLC encapsulated traffic from LineRunner CPEs via SDSL8. The traffic terminated from these units can then be switched or routed towards the network.

**Switching functionality**

ETAG1 provides switching functionality towards XMC20's TDM bus and Ethernet star, for Ethernet traffic serviced from other XMC20 units or from any of its front ports.

ETAG1 allows the creation of several VLAN enabled and independent switch instances, therefore allowing the creation of separate Ethernet networks and also the separation of traffic into different TDM or SDH channels. Rapid Spanning Tree Protocol (RSTP) is supported on each of the switch instances.

**Routing functionality**

ETAG1 also provides layer 3 routing functionality with support of the Open Shortest Path First (OSPF) protocol. This feature allows the ETAG1 to be used to

separate Layer 2 networks as well as to provide an IP interface towards the network.

Virtual Router Redundancy Protocol (VRRP) is implemented in order to increase the availability of the default gateway servicing hosts on the same subnet.

Some of the main applications with ETAG1 are:

- Aggregation of local Ethernet traffic from the XMC20 unit TUDA1
- Aggregation of remote Ethernet service provided with SHDSL TDM line card SDSL8 and connected LineRunner CPE
- Transport of Ethernet services over  $n \times 2$  Mbps, over PDH or SDH, channels using MLPPP
- Creation of Ethernet L2 and L3 networks vtransported over PDH or SDH.

**Management**

All services are managed centrally via the management system UNEM or via local management access (SNMP).

## Technical Data

### General

Number of ports	4 x 10/100BaseT
Backplane access	access to the GbE-star 16 x P12 (2 Mbps)

### Protection

Protection mechanisms	1:1 equipment protection 1+1 path protection, SNCP
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### Layer 2 Features

PPP	RFC 3518
HDLC	LineRunner SHDSL DTM/DTU compatible
VLAN support	VLAN tagging (IEEE 802.1Q), port based VLAN
Spanning tree	RSTP (IEEE 802.1w)
MLPPP	RFC 1990
QoS	Packet classification and marking Forwarding service fairness

### Layer 3 Features

Routing	OSPF v2 (RFC 2328), Static routing, Unnumbered links, VRRP (RFC 2338)
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### Management

ECST	For local management
UNEM	For central management

### Power Supply

Input voltage nominal (min/max)	-48/-60 V DC (-40.5 V DC ... -72 V DC)
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### Operation Environment

Temperature range and humidity	According to XMC20 environmental specifications
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