

GAS&COM AG MPLS/Ethernet link

Service description

This document and its contents are the property of GAS&COM AG and may not be copied, reproduced, transmitted or used for execution without its permission.

Scope and area of applicability of this service description

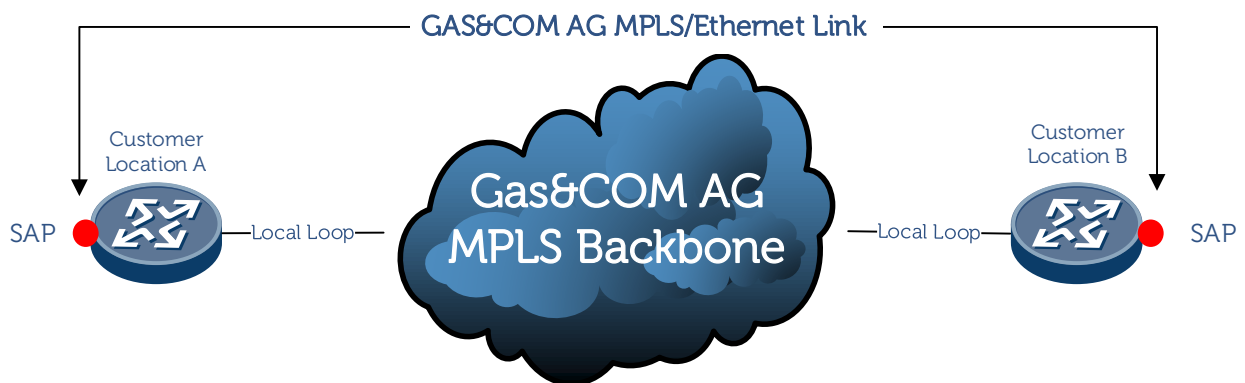
This service description defines the product **GAS&COM AG MPLS/Ethernet link** in terms of the technology, functionality, provision and operation of the service as well as the associated contractual services and the obligations of the customer and GAS&COM AG. This document is an integral part of the "Ethernet Service" contract of GAS&COM AG.

The specific service scope is regulated in the corresponding service contract of the respective customer.

"MPLS/Ethernet link" service

This service description defines the technical details for planning and implementing the customer service with the MPLS/Ethernet link of GAS&COM AG.

Overview



The MPLS/Ethernet is a high-availability, point-to-point connection with guaranteed, synchronous bandwidth. It connects two locations with one Ethernet connection. The Service Access Point (SAP) is the defined transfer point at the customer location, i.e. at the port of the Customer Premises Equipment (CPE) or in a data centre directly from the MPLS end device of GAS&COM AG. The CPE is connected to the GAS&COM AG MPLS backbone via fibre-optic cable. In exceptional cases, a leased line from a third-party provider may be used instead of the fibre-optic cable. In such a case, GAS&COM AG CPE will be connected directly to the CPE of the third-party provider.

Technical features

Standard bandwidths and interfaces

Bandwidths	Electrical interface	Optical interface
100 Mbps	100BaseTX, 1000BaseT	SMF 1000BASE-LR / ER if required / BiDi-SFP
200 Mbps	1000BaseT	SMF 1000BASE-LR / ER if required / BiDi-SFP
500 Mbps	1000BaseT	SMF 1000BASE-LR / ER if required / BiDi-SFP
1000 Mbps	1000BaseT	SMF 1000BASE-LR / ER if required / BiDi-SFP
>1000 Mbps	--	SMF 10GBase LR / ER if required / BiDi-SFP

The bandwidth profiles are applied to the Ethernet frames (layer 1)

For the service transfer to a data centre or house connection box (without CPE), the transfer interface is always optical.

Layer 2 protocol tunnelling

To achieve high transparency, a number of Layer 2 Control Protocol frames are explicitly allowed and transported transparently end-to-end. This allows protocols like Spanning Tree or LLDP to be used. The following table lists the supported protocols:

Protocol	Description
CDP	Cisco Discovery Protocol
STP	Spanning Tree Protocol (STP, RSTP, MSTP, PVST+)
VTP	Vlan Trunk Protocol
PAGP	Port Aggregation Protocol
LLDP	Link Layer Discovery Protocol
LACP	Link Aggregation Control Protocol
UDLD	Unidirectional Link Detection
LOAM	Link Operations, Administration and Management
ESMC	Ethernet Synchronization Message Channel
ELMI	Ethernet Local Management Interface
802.1X	Network Access Control
*	Other protocols (e.g. EDP, Extreme Discovery Protocol)

*Additional protocols can be added optionally for specific service needs and customer requirements.

VLAN Trunking

The GAS&COM AG MPLS/Ethernet link supports both 802.1Q tagged Ethernet frames and those without tags. This also makes it possible to transmit Class of Service information.

Frame sizes

For the highest possible data throughput with the smallest possible overhead, the GAS&COM AG MPLS/Ethernet link supports a Maximum Transmission Unit (MTU) of 9000 bytes.

MAC addresses

Due to the point-to-point topology in the GAS&COM AG MPLS/Ethernet link, all frames are sent to the remote end points. This means the service is not limited to a certain number of MAC addresses. Customers can therefore use any number of MAC addresses.

Redundancy / Protection

All routers in the GAS&COM AG backbone are connected redundantly, thereby enabling continued operation if one path in the network fails. Only the connection between Point of Presence (PoP) and the customer location is accessible via just one route.

Options

- 802.1AE MACSEC
- Other Ethernet protocols
- Point to Multipoint (E-Tree Service)

CPE (Customer Premises Equipment)

In certain cases, CPEs can be used for specific customer requirements and also for premium SLAs.

Dimensions and features

The CPE has the following dimensions and features and is provided by GAS&COM AG:

Parameter	Value
Height	43.6 mm (1 RU)
Width	250 mm (19' brackets are supplied)
Depth	180 mm
Power supply	1 x C13, 230 V
Power input	Maximum: 12.9 Watt, usually: 10.4 Watt

Installation

GAS&COM AG is responsible for realising the fibre-optic connection to the customer. The customer is responsible for the electrical power supply of the CPE. The unit is supplied with a T13 to C13 inlet connector for non-heating appliances. An appropriate fibre-optic cable to connect the CPE to the patch panel is supplied by GAS&COM AG. The customer is responsible for connecting its installations to the CPE.

Provision of the service

Services provided by GAS&COM AG

Provision of the GAS&COM AG MPLS/Ethernet link is coordinated by GAS&COM AG. Services provided in relation to provision of the product include the design of the solution, project coordination, implementation, measurement using RFC25544 and an RFS (Ready for Service) document, which contains the technical details.

Responsibilities of the customer

The customer is responsible for providing the equipment in the building (in-house installation), which must be ready and tested on time.

The in-house installation must be implemented with 9 µm SM fibre for the GAS&COM AG MPLS/Ethernet link.

Patch cable and SPF specification

- Fibre type ITU-T G.652.D
- Plug type E-2000/APC to LC/PC
- Mode type - single mode
- SFP 1 Gbps BiDi 1330/1550 nm SM LR / ER
- SFP+ 10 Gbps 1310 nm SM LR / ER
- SFP+ 10 Gbps 1550 nm SM ER

- SFP 1 Gbps 1310 nm SM LR / ER
- SFP+ 10 Gbps BiDi 1270/1330 nm SM LR

Operation of the service

GAS&COM AG is responsible for operating the CPE. Maintenance work, which can affect the connection from the CPE to the GAS&COM AG backbone or the power supply, must be announced in advance.

To ensure the reliable operation of the service, GAS&COM AG may update the hardware and software. The customer will be informed accordingly in such a case.

Services during operation

GAS&COM AG guarantees that the services purchased will be provided in accordance with the agreed SLA and the general terms and conditions of business.

Operational monitoring and fault rectification

The Network Operation Center is available around the clock, 365 days a year. Faults reported by the customer are recorded by Dispatching and forwarded to the Operations team. Faults reported outside of the support hours are forwarded directly to the stand-by service team.

Service Level Agreement (SLA)

According to the SLA document

Network Operation Center

Calls within Switzerland:

0848 427 266 (24 hours / 365 days)

Calls from outside Switzerland:

+41 44 733 62 18 (24 hours / 365 days)

E-mail: support@gas-com.ch