GAS&COM AG IP Service

Service description

# Scope and area of applicability of this service description

This service description defines the product **GAS&COM AG IP Service** 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.

"IP Service"

This service description defines the technical details for planning and implementing the customer service with the IP Service of GAS&COM AG.

Overview
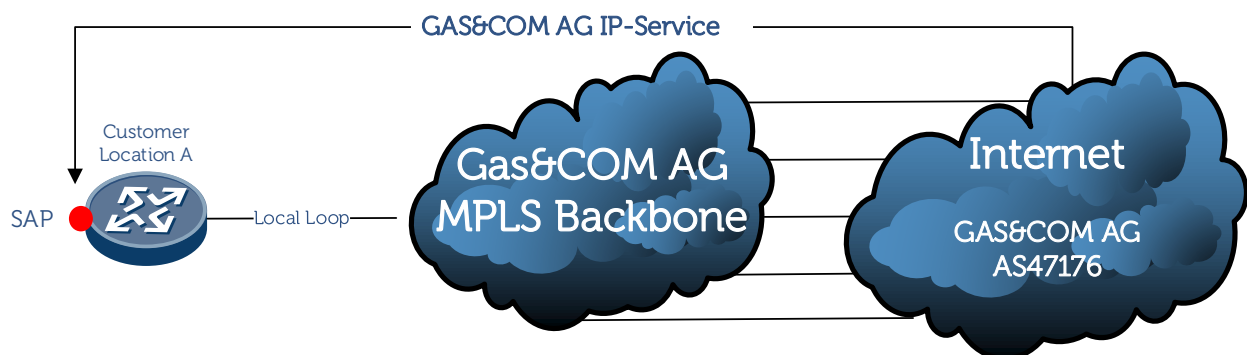
The GAS&COM AG IP Service is a high-availability connection to the Internet with guaranteed, synchronous bandwidth. The Service Access Point (SAP) is the defined transfer point at the customer location, i.e. at the port of the Customer Premises Equipment (CPE) or in a data centre directly from the MPLS 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.

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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 Mpbs	--	SMF 10GBase LR / ER if required / BiDi-SFP
>10Gbps		SMF 40GBase LR / ER
		SMF 100GBase LR4 / ER4

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.

Included IP addresses
The IP Service of GAS&COM AG is in a public /29 IP network, of which five addresses can be used by the customer. Reverse DNS entries can be set accordingly on request. GAS&COM AG has 3 own DNS servers, which are distributed georedundantly throughout Switzerland.

IP V6
If desired, the customer can use both IPv4 and IPv6 addresses. GAS&COM AG provides customers with a /48 IPv6 network, which corresponds to about 65,000 /64 networks. The operating mode used here for parallel use of IPv4 and IPv6 is called dual stack.

Additional IPv4 and IPv6 addresses
Additional IP addresses can be provided on request. The RIPE guidelines must however be observed when assigning them. This means, among other things, that the customer really must need additional IP addresses.

Own IP addresses
If the customer has its own IPv4 or IPv6 addresses (usually provider-independent addresses from RIPE), these can be moved to an Internet feed from GAS&COM AG. The smallest possible address range is a /24 subnet with 256 addresses for IPv4, and /48 for IPv6.

BGP feed
If the customer is a RIPE member and has its own Autonomous System (AS), the BGP feed option can be booked. With this option all addresses from the global Internet routing table

are sent to the customer via the BGP routing protocol. For smaller systems, there is also the possibility to send just one default route. On the other side, GAS&COM AG transmits the customer's addresses to the entire Internet.

Dual Homing (Active / Host Standby)

The dual-homing option is available to customers for whom access with just one fibre/IP Service link represents too high a risk. Here, the customer is connected redundantly with two independent fibre-optic cables, so that a defect in one fibre will not influence the service. In such a case, two end devices are also provided at the customer's premises, which guarantee mutual redundancy. The transfer of traffic is usually handled via dynamic routing protocols. Alternatively, the transfer can take place with a highly available virtual IP address (VRRP).
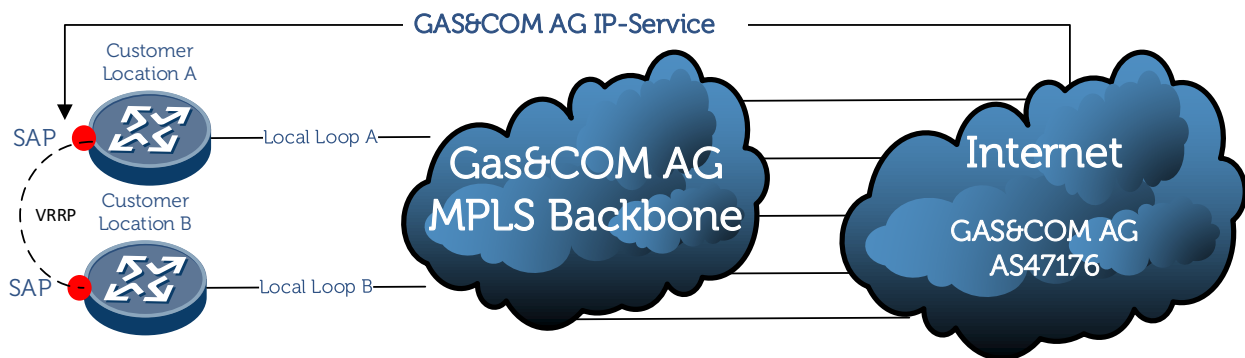
Redundancy / Protection

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.

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 IP Service is coordinated by GAS&COM AG. Services provided in relation to provision of the product include the design of the solution, project coordination, implementation, RIPE management 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 IP Service.

Patch cable and SPF specification

- Fiber Type ITU-T G.652.D

- Pkug Type E-2000/APC to LC/PC
- Mode Typ Singlemode

- 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

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- SFP 1 Gbps 1310 nm SM LR / ER
- QSFP28 40 Gbps LR / ER /ZR

- SFP+ 10 Gbps BiDi 1270/1330 nm SM LR
- QSFP28/CFP2 100GBASE-(4×25G)/-LR4-10km / ER4 40km

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