

ROMTELECOM
carrier services



Service Description

Internet Broadband



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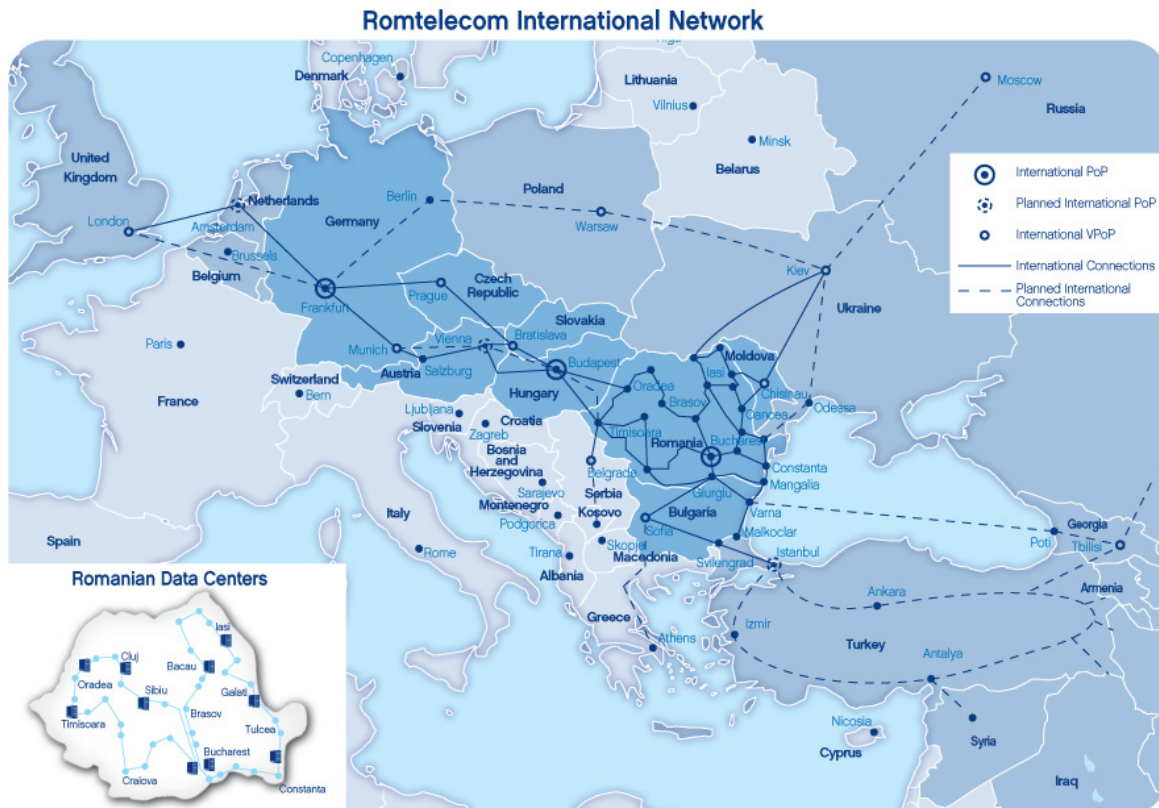
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Romtelecom Carrier Services

Romtelecom Carrier Services is the division dedicated to telecom operators and wholesale customers in Romania and abroad, offering a complex portfolio of data, internet, infrastructure, voice transit and termination. Acting on the local and regional market, with an extensive network, interconnections, and strategic partnerships with renowned global operators, Romtelecom is a reliable partner in Central and Eastern Europe.



Internet Broadband – service description

The Internet Broadband service is developed for ISPs and other service operators, empowering them to provide a standard, good value, flat-rate Internet access service at higher speeds, over copper cables.

Internet Broadband offers premium Internet connectivity and a guaranteed bandwidth from the end user location to the Internet network. It is a higher speed broadband service, providing symmetrical upstream/downstream line rates starting from 256 Kbits to 10 Mbps.

Benefits:

- High speed connectivity;
- Unlimited traffic: flat monthly fee, irrespective of the traffic volume;
- 24/7 service availability resulting from pro-active monitoring of the network;
- High efficiency: the service can be used simultaneously for various applications (browsing, video conference, files upload/download, corporate e-mail, intranet, extranet, distance learning, VPNs);
- Scalability: the service bandwidth can be easily upgraded to meet the end user's needs.



Internet Broadband features

The Internet Broadband service provides premium Internet access service through a separate digital leased line connecting the end user's location to Romtelecom's closest PoP.

Internet Broadband is one of the top Internet access products, the QoS being carefully controlled through traffic prioritization within the core network.

The allocated IP addresses (public and static) allow the implementation of various applications such as: WEB server, e-mail server, IP telephony, video telephony etc.

There is a large choice for service bandwidth options: 256 kbps, 512 kbps, 1 Mbps, 2 Mbps, 3 Mbps, 4 Mbps, 5 Mbps, 6 Mbps, 8 Mbps, 10 Mbps, 15 Mbps, and 20 Mbps.

Access Technology	Available bandwidths									
g.SHDSL	256 Kbps		512 Kbps		1024 Kbps			2048 Kbps		
g.SHDSL.bis	2 Mbps		3 Mbps		4 Mbps			5 Mbps		
TDM Technologies (backup)	128 kbps		512 Kbps		1024 Kbps			2048 Kbps		
VDSL2	2 Mbps	3 Mbps		4 Mbps	5 Mbps	6 Mbps	8 Mbps	10 Mbps		
EFM	256 kbps	512 kbps	1024 kbps	2 Mbps	3 Mbps	4 Mbps	5 Mbps	6 Mbps	8 Mbps	10 Mbps

Other bandwidths may be available on demand, after a technical feasibility study.

Other services:

- IP addressing: allocation of IP addresses from Romtelecom classes, as follows:
 - ✓ 8 IP Addresses (/29 subnet)
 - ✓ 16 IP Addresses (/28 subnet)
 - ✓ 32 IP Addresses (/27 subnet)
 - ✓ 64 IP Addresses (/26 subnet)
 - ✓ 128 IP Addresses (/25 subnet)
 - ✓ 256 IP Addresses (/24 subnet)
- An IP subnet will be allocated as follows:
 - ✓ A gateway address;
 - ✓ A network address;
 - ✓ A broadcast address;
 - ✓ The other IP addresses may be used for customer's equipments;
- QoS – traffic prioritization: according to Romtelecom CoS policy, Internet Broadband qualifies as a Silver class product (critical business applications; services with guaranteed bandwidth; video streaming; video on demand):
 - ✓ for uploading traffic, the PE maps the services to Silver CoS;
 - ✓ for downloading traffic, the IGW maps the services to Silver CoS;
- Routing of:
 - ✓ a public IP class, owned by the end user;
 - ✓ a private IP class of addresses through a unique public address from Romtelecom domain (NAT/PAT– Network/Port Address Translation);
- DNS services;
- Traffic monitoring: information related to the data traffic recorded by the end users, through a secured web site;



A **back-up line** can be installed using two distinct last-mile links, with the following options:

- Permanent access – ADSL;
- Semi-permanent access – ISDN;
- Dial-Up access – ISDN.

Service components and technical architecture

The IP Transit service provisioning involves the following components:

- CPE* (Customer Premises Edge) Layer3 (router);
- xDSL/Ethernet modem;
- Copper access line connecting End User premises to Romtelecom aggregation network;
- A point-to-point virtual link (VLAN) throughout the aggregation network up to IP/MPLS network.

Interfaces:

- Customer-facing interface, located at the interface between CPE and the end user's equipment;
- Access interface, located at the interface between CPE and the access link;
- Network Interface, located at the interface between the access link and DSLAM, switch or PE router.

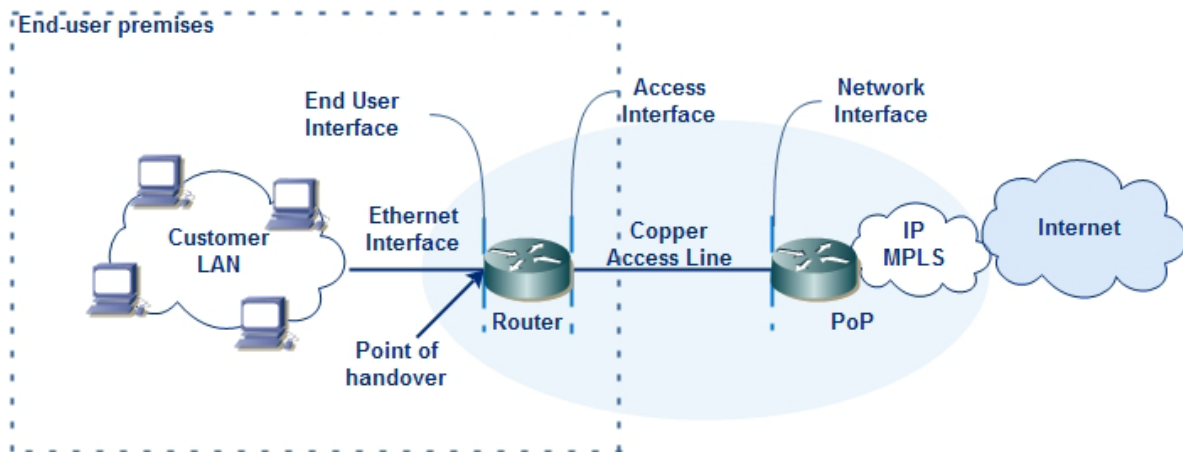


Figure1: Internet Broadband services components