



VPN



Wholesale Market

VIP

MPLS connectivity for virtual private networks



TIM

Implementation of a meshed network between different end-customer sites with differentiated management of transmitted traffic. Each location is connected to the VIP network with a bandwidth of 2 Mbps to 1 Gbps in fibre or copper.

Service features

Copper accesses: asymmetrical ADSL and symmetrical	Fibre access to OPM	Assurance SLAs
<ul style="list-style-type: none">• 2Mbps• 4Mbps• 8Mbps	From 10Mbps Up to 1Gbps	Accepted 24 7/7 Disservice closed in 100% of cases within two calendar hours

Who is it for?

VIP is mainly designed for non-infrastructure operators who want to concentrate on their core business, outsourcing the costs of the network connecting the sites to be served.

The End-Customer is represented by companies that need to connect their sites (e.g., banks, hospitals, companies with peripheral sites distributed throughout the country), or that need to create access networks to a centrally managed Data Centre.

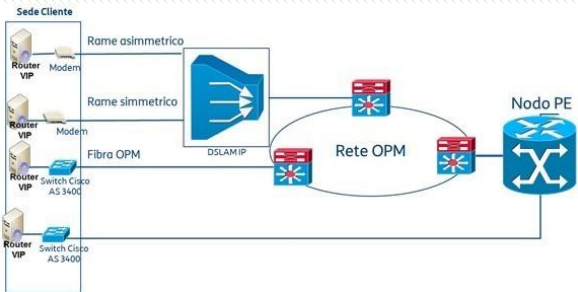
Description of the service

The Wholesale MPLS VPN (trade name VIP) allows the Operator to set up a fully meshed network between different end-customer locations, managing the type of traffic transmitted in a differentiated manner: voice, data and web browsing; each site is connected to the VIP network via copper or fibre access with bands ranging from 2 Mbps to 1 Gbps.

The types of access between sites (Master or Slave) to PE nodes are:

- Symmetrical and asymmetrical Copper accesses on Ethernet platform.
- Access on Fibre via OPM transport network (referred to as *OPM fibre*) or direct to PE (referred to as *direct fibre*).

The figure below describes the network architecture:



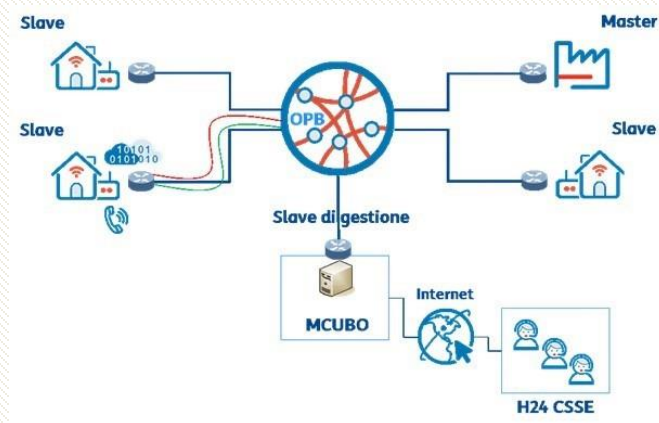
A router (VIP router provided on a rental and maintenance basis) is installed for each VIP network connection to manage VIP IP traffic. IP service traffic is processed using Classes of Service (CoS), which allow traffic to be prioritised according to the three classes of descending importance described below:

- Real Time (RT) for supporting VoIP and Videoconferencing traffic (bit field TOS=5)
- Mission Critical (MC) for supporting Intranet/Extranet applications (bit field TOS=2);
- Best Effort (BE) for supporting Internet traffic (bit field TOS=0).
- Voice traffic coming from the LAN to which an IP PBX equipped with Voice Gateway (not provided in the service) is connected, is received by the Customer router and classified as Real-Time traffic based on the source IP address agreed with the Customer.
- The router verifies that the volume of voice traffic does not exceed the contracted volume, thus ensuring a privileged treatment that minimises losses and delays, differentiating it from Critical and Best Effort traffic.

In a VIP network it will always be necessary to identify one location as Master and all others as Slaves.

The Slave and Master sites can exchange traffic 'at par' (ANY TO ANY mode) or via the Master site (HUB & SPOKE mode) for data traffic.

For Internet traffic, sites access the public Internet through the master site (HUB & SPOKE mode). The MCUBO platform will be used by TI Assurance to register the VPN registry and to supervise all active elements of the VIP network that can be reached via an IP address.



Through the platform, TI Assurance will have at its disposal data and views of the states of physical and logical quantities of the VIP routers at the customer premises or of the PE interfaces, of the transmitted traffic and of the quality of service.

Description of the VIP service for SIMba

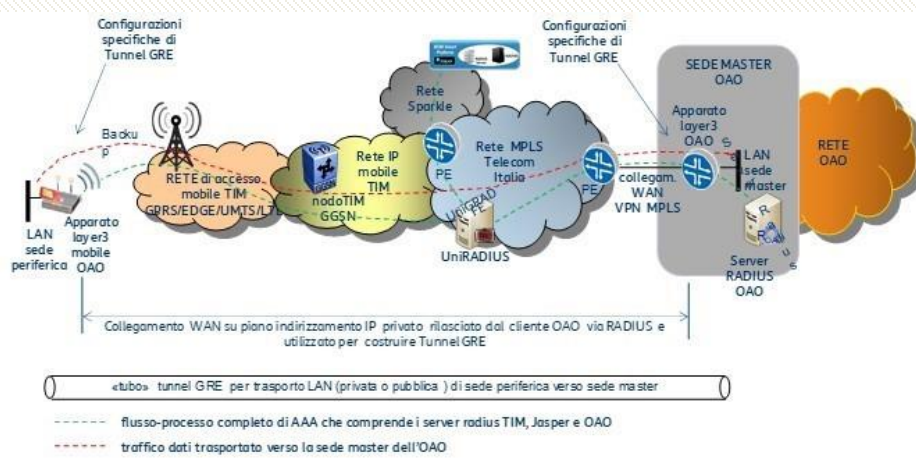
The MPLS VPN in this case is used to transport backup SIM traffic to the OAO site.

Traffic is data only. The VIP will have the following connections:

• fibre OPM connection of the OAO master location

• symmetrical copper connection of the M-Cube management slave location c/o Harpa location (The Harpa management slave will be needed until the HW service to the platform is physically and securely located with TIM)

• existing infrastructure connection between EPG (4G/3G) node of TIM's mobile core network and PE node of the OPB network, called 'SIMba dummy slave'



This VIP configuration is necessary for subscribing to and providing the SIMba (mobile backup) service. The Operator only bears the costs for the WAN VPN MPLS connection.

Description of the VIP Colocation service

This option is only for Operators who require the VIP service for their own use, i.e., not directly for their end customers:

- virtual private network between the Operator's sites;
- WAN VPN MPLS connection for SIMba service

Service architectures do not change from previous images: the only difference is that the Operator's premises are located in an IT centre.

The Operator must ensure the following:

- adequate provision of space to accommodate the VIP router (through Market 3A Colocation offer)
- supply, installation and maintenance of an inverter to convert the 48Vdc electrical current usually distributed in the 220 V AC rack of VIP routers

- availability of a fibre connection to connect the TTF router (via Colocation Market 3A offer); if it already has an optical connection, it must provide the TD connection, otherwise it must request it through the Colocation OR and provide the SdF code of the Patroclo system as soon as it is available.

The VIP service in this case is always subject to feasibility for the preparation of the economic offer and subsequent provision of the service.

Regulatory Conditions

The service is exclusively for:

- Operators with an individual license or a general authorisation for telecommunications networks and services for public use which existed before the entry into force of Italian Legislative Decree no. 259 of 1 August 2003, containing the 'Electronic Communications Code' (referred to in Article 38 of the Code), as last amended by Italian Legislative Decree no. 70 of 28 May 2012.
- Companies with a general authorisation for electronic communications networks and services pursuant to Art. 25 of Italian Legislative Decree no. 259 of 1 August 2003, as last amended by Italian Legislative Decree no. 70 of 28 May 2012.

Prices

The VIP service has a monthly fee per location and a UT fee depending on the type of connection and bandwidth capacity.





Wholesale Market

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Entry in the Register of Producers of Electrical and Electronic
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