



L2CONNECT

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SERVICE OVERVIEW

L2Connect provides two Ethernet connectivity solutions:

- **L2Connect** - carrier-grade solutions for global solutions suppliers looking for Ethernet services, in order to include them in the solutions offered to their end customers (B End Model)
- **L2Connect e2e** - a permanent and dedicated Layer 2 Ethernet connectivity, end-to-end, assuring a symmetrical and transparent bandwidth between two or more customer's locations.

CUSTOMER BENEFITS

- **Flexibility** - specially designed to tailor various requirements, easily allowing capacity increase, adding new locations, or choosing among distinct levels of service management
- **Transparency** - offers the same service features all across Telekom Romania's network footprint, without manipulations of partner's CoS or PDUs, enabling seamless integration with the end customer intranets
- **Security** - data packages from one Virtual LAN will not be directed to a different VLAN; the service offers a level of security similar to traditional leased lines.
- **Strong SLAs for QoS** - complemented with two service levels, tailored for different customers' needs: Standard and Premium, with an availability goal of 100%.

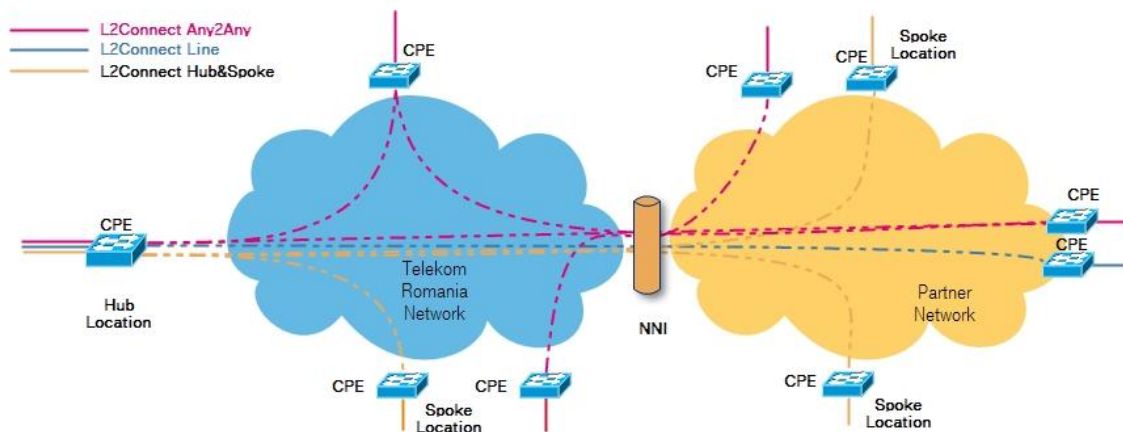


Figure 1: L2Connect Service Diagram

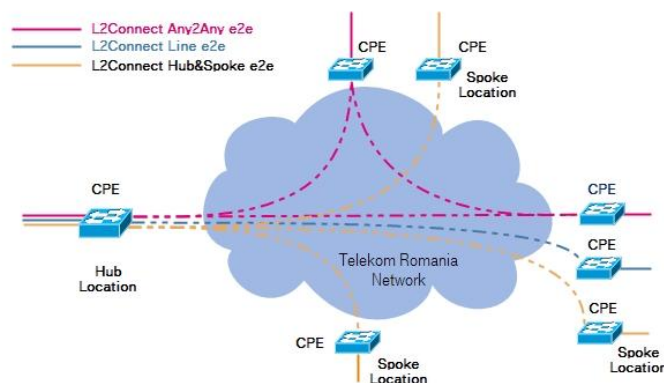


Figure 2: L2Connect e2e service diagram

SERVICE ATTRIBUTES

L2Connect provides Ethernet connectivity, with symmetrical bandwidth and payload transparency, starting from 2 Mbps up to 1 Gbps.

SERVICE TOPOLOGY

- **Point-to-Point topology** (EPL service type):
 - L2Connect Line - implemented over the EoMPLS technology, the service provides point-to-point connectivity, with symmetrical bandwidth and payload transparency.
 - Dedicated L2Connect - implemented over the SDH/DWDM transport technology, the service ranks as a premium product with similar QoS as the traditional Leased Lines, allowing customers a smooth migration from legacy to new generation networks.
- **Point-to-Multipoint topology** (EVPL service type):
 - L2Connect Hub&Spoke - delivers a point-to-multipoint infrastructure over Telekom Romania Wholesale's MPLS network (E-Line EVPL), providing multiple Ethernet Private Line (EPL) services for data transmission between a central location (such as a corporate headquarters or data processing centre) and satellite locations. The service is ideal for customers that request simultaneous access from multiple tail-end locations to the head-end site, without the need for direct connectivity among the tail-end locations.
- **Multipoint-to-Multipoint topology** (E-LAN service type):
 - L2Connect Any2Any - delivers a Layer 2 multipoint VPN, allowing end customer's multiple sites to be connected in a single bridged domain over Telekom Romania Wholesale's managed IP/MPLS network, using the VPLS technology.

ACCESS METHODS

- **Access over copper** – available for EoMPLS transport technology, g.SHDSL, VDSL;
- **Access over FO** – available for all transport technologies: EoMPLS, EoSDH, EoDWDM, EoFO:

VLAN TRANSPARENCY

- available for end customer tagged traffic and delivered for Ethernet access technology

SERVICE MANAGEMENT

- Service Managed, CPE Management included
- Service Unmanaged, CPE Management excluded

SERVICE COVERAGE

- Romania: all over, within MAN, WAN
- Internationally: within Telekom Romania Wholesale's network footprint

QUALITY OF SERVICE (QOS)

- **Real Time:** real time applications, sensitive to jitter, highly interactive (e.g. VoIP, videoconference)
- **Mission-Critical:** business critical applications – transactional information, highly interactive, highly sensitive to delay (e.g. signaling, banking application)
- **Standard:** standard business applications (e.g. short transactions, SAP, ERP, Oracle, video streaming, network services requesting guaranteed bandwidth)
- **Best Effort:** E-mail, Intranet, Internet, other applications that can accommodate variable throughput delay

SERVICE LEVEL AGREEMENT (SLA)

- Standard



- Premium

ADDITIONAL SERVICES

BACK-UP

- different level of protection can be added upon request or as a result of high service performance parameters level requested by the end customer.

L2TP TRANSPARENCY

- L2Connect service allows the tunneling of the layer 2 PDU's, including STP, VTP, CDP. Exception: cases when the access line uses the g.SHDSL technology over copper.

CPE RENTAL

- Provision of a CPE compliant to the service features
- CPE installation and initial configuration
- Repairs and replacements, as necessary to deliver the contracted service
- CPE recovering at service termination date

CPE MANAGEMENT

- Fault Management
- Administration
- Security Management

SUPPORT SERVICES

- "Engineering services" – service optimization or other configurations altering the service;
- "On-site interventions" – operations that require personnel displacement (e.g. physical resets, cable replacements at partner's locations);
- "Remote hands" operations that do not require personnel displacement (e.g. physical resets or cable replacements at Telekom Romania Wholesale PoPs supervised by specialized personnel, within business hours).

ABBREVIATIONS

PoP	Point of Presence
MPLS	Multiprotocol Label Switching
LAN	local area network
CoS	Class of Service
PDU	Protocol Data Unit
SLA	Service Level Agreement
QoS	Quality of Service
NNI	Network-to-network interface
EPL	Ethernet Private Line
EVPL	Ethernet Virtual Private Line
E-LAN	Ethernet LAN
VPN	Virtual Private Network
VPLS	Virtual Private LAN Services
SHDSL	Single-pair high-speed digital subscriber line
VDSL	Very High-Bitrate Digital Subscriber Line
FO	Optical Fiber
CPE	Customer-Premises Equipment
VOIP	Voice over IP





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