



# Carrier Managed Network Solutions – CMNS – Wholesale Layer 2 IP VPN.

## Technical Product Sheet.

### Deutsche Telekom’s Wholesale IP VPN Offering – CMNS Layer 2.

International Carrier Sales and Solutions (ICSS), one of the leading worldwide service providers, offers customized solutions and network management experience for international clients. Our wholesale IP VPN solutions combine state-of-the-art technology with good quality of service.

Based on the IP MPLS (Multi Protocol Label Switching) backbone of Deutsche Telekom AG, we connect customers' locations across the globe while furnishing round-the-clock monitoring and maintenance, assuring security and reliability.

### Circuit Solution – Ethernet over MPLS Layer 2 VPN.

This solution is close to the legacy Layer 2 services (FR and ATM) from the security and quality of service aspects, but with the strong advantage of being inexpensive.

One of the obvious benefits of Ethernet over MPLS (Fast or Gigabit Ethernet) is the possibility to have bandwidth on demand.

The solution delivers true benefits to the customer. Providing CAPEX and OPEX savings, it also offers:

- Multiple physical connections with single virtual network
- Different billing options are available for this service: Flat rate or usage based billing variants.
- Scalable solution, easy addition and/or removal of VCs
- Online performance monitoring to get up-to-date & detailed information about the performance of each port used for a connection

### Available options for the Circuit Solution.

- Ethernet over MPLS connections with pure Ethernet ports (“Transparent Circuit Port Ethernet”)
- Ethernet over MPLS connections with VLAN ports (“Transparent Circuit Port VLAN”)
- Ethernet over MPLS connections with combined pure Ethernet and VLAN ports (“Multi Circuit Port”)

### High Security for Voice, Data and Network.

Security is an important component of every VPN solution, and Deutsche Telekom takes this strongly into account. ICSS delivers the highest level of security via MPLS technology, supports operational security and access protection of the PE routers, the access links and the backbone.

### Transparent Connectivity

On the FE and GE port provided by ICSS, customers can manage traffic as if it was their own without large investment in hardware or backbone. The solution enables customers to be full members of any of the biggest Internet Exchanges worldwide or to set up direct peering connections.

### Classes of Service (CoS).

Deutsche Telekom’s VPN solution supports 4 classes of service ensuring optimum prioritization of transport of IP traffic. These are: Basic, Business Data, Stream and Voice.

Classification can be done by port or per VLAN or per user priority-bits.

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## IP/MPLS Backbone.

| Network Architecture |  |
|----------------------|--|
| Network              | Deutsche Telekom IP Network; full MPLS       |
| PoPs                 | 31 IP PoPs available worldwide               |
| Platform             | Juniper and Cisco switches and routers       |
| Backbone             | Multiple OC-48 (2,5 Gbps) & OC-192 (10 Gbps) |
| Network Management   | 24/7   |

## Access Interfaces.

The following physical interfaces are available to access Wholesale Layer2 IP VPN Services:

| Standard Features         |  |
|---------------------------|--|
| Dedicated Ethernet Access | Fast Ethernet (T), Gigabit Ethernet (SX, LX, LH)   |
| Topology                  | Point to Point   |
| Available Options         | Transparent Circuit Port Ethernet<br>Transparent Circuit Port VLAN<br>Multi Circuit Port |

## Product Features.

| ICSS Wholesale Layer 2 IP VPN |  |
|-------------------------------|--|
| SLAs                          | Available, based on region   |
| Average Time to Install       | Within 15 days on-net  |
| Performance Monitoring        | Available on IP layer via personalized web page for each customer                              |
| QoS                           | Packet delivery guarantees provided. 4 CoS available.  |
| Bandwidth Sizes Available     | 100 Mbps and 1 Gbps ports available. Virtual circuits adjustable in 10 or 100 Mbps increments. |

| Optional Features   |   |
|---------------------|---|
| Interfaces          | Ethernet<br>VLAN Support for Ethernet. Customer can choose multiple point-to point VLAN's over the same port.<br>Rate Limitation: Interfaces support Sub bit rate.<br>LAN Emulation for "virtual Backbone"<br>Support of multiple VC's per Port |
| Supported Protocols | Ethernet<br>Static or dynamic forwarding<br>Tunneling protocols   |

### Publisher:

Deutsche Telekom AG  
International Carrier Sales & Solutions (ICSS)  
P. O. Box 2000  
53105 Bonn  
Germany

For more information, call us or visit us on the Internet.

| Region (Office)  | Phone             | E-mail                     |
|--|-------------------|----------------------------|
| Americas (Red Bank)  | +1 732 936 4434   | redbank@t-systems.com      |
| Asia & Middle East (Singapore)   | +65 6317 0571     | icss@t-systems.com.sg      |
| Northern Europe (London)   | +44 20 7432 6200  | sales.icss@t-systems.co.uk |
| Western Europe & Africa (Paris)  | +33 1 41 88 95 32 | sales.icss@t-systems.fr    |
| Central & Eastern Europe (Budapest)  | +36 1 430 3195    | sales.icss@deteline.hu     |
| Eastern Europe & CIS (Moscow)  | +7 095 956 5434   | sales.icss@rus.telekom.de  |
| Internet: <a href="http://www.t-systems.com/icss">www.t-systems.com/icss</a> |                   |                            |