Frequently Asked Questions

Telia Carrier's Ethernet solution - 10 quick questions for Anna Maslewska, Ethernet Product Manager

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Q1: Where can Telia Carrier deliver the service – in other words, where are Telia Carrier's Points of Presence (PoPs) located?

A1: Telia Carrier is a global network operator with:

- 320+ PoPs globally (and growing every year)
- Over 450 certified local access network partners around the world
- 180+ NNI agreements
- Live MPLS end points in 80+ countries

For more details, see:

Our Global Fiber Network, AS1299 | Telia Carrier

Network News | Telia Carrier

Q2: What speed / bandwidth options are available - min, max and increments?

A2: Telia Carrier offers a wide range of Ethernet bandwidth options from 10Mbps all the way up to 10Gbps in granular 10Mbps, 100Mbps and 1Gbps increments and with selection of standard optical and electrical interfaces for 1GE (Gigabit Ethernet) and 10GE (Gigabit Ethernet).

Ethernet Virtual Circuit (EVC) bandwidth options Mbps:

EVC bandwidth (Mbps) in increments									
	10	20	30	40	50	60	70	80	90
	100	200	300	400	500	600	700	800	900
	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
	10,000		-						

Port types (standard interfaces supported):

Port types			
Electrical RJ45	100/1000Base-T		
Optical 1G LC	1000Base-SX	1000Base-LX	1000Base-EX
Optical 10G LC	10GBase-LR	10GBase-ER	

Company information
Telia Company AB
16994 Solna, Sweden
Registered office: Stockholm
Business ID 556103-4249 VAT No. SE556103424901

Q3: Does Telia Carrier support jumbo frames and Layer 2 control protocol transparency, even in the last mile?

A3: Telia Carrier's Ethernet solution supports jumbo frames up to 9100 bytes across our MPLS backbone network.

Layer 2 control protocol transparency requirements are fully supported on Telia Carrier's network and include last mile access with our Advanced Ethernet option, where a NID (Network Interface Device) is installed at customer site to terminate the service. We configure the NID in tunnelling mode which enables Layer 2 control protocol transparency.

For our Basic Ethernet option which does not include a NID device, Layer 2 control protocol transparency can be validated on Individual Case Basis (ICB) for both on-net and last mile requirements.

Telia Carrier has also introduced a very strict process for onboarding last mile third party access providers. This means that all our supplier partners need to go through a rigorous certification process, although not all of them are able to provide last mile support for jumbo frames. However, if this is a customer requirement, Telia Carrier will endeavour to source an appropriate supplier at the time of order.

Q4: What SLA availability guarantees does Telia Carrier offer, without and without the last mile and a NID?

A4: Telia Carrier's MPLS backbone offers built-in resilience and 99.999% backbone availability for any services running across it. Protecting customer traffic from network faults and fibre cuts provides additional peace of mind.

In addition, for the Ethernet services, we offer two levels of service availability:

- 99.99% PoP to PoP availability for our Basic Ethernet product where customers do not require managed network interface devices (NIDs). For the purpose of SLA measurement, the demarcation point of the service is the customer-facing port on the Telia Carrier aggregation switch or router in Telia Carrier's MPLS PoP – excluding any cross connects or 3rd party access tails.
- For our Advanced Ethernet product with a network interface device, we offer 99.5% end-to-end availability. NIDs are usually located at a customer's premises and the service levels typically apply between these devices. For the purpose of SLA measurement, the service demarcation point is the LAN-side port on the NID, including any cross connects, 3rd party access tails and the device itself.

Q5: What is the latency SLA on both primary and/or the protected paths?

A5: We have designed our core MPLS backbone network for low latency applications, and we offer latency SLA commitments for EVPL and ELAN Ethernet services in accordance with figures published on our portal. For standard configurations, the SLA applies to both primary and secondary paths.

Q6: Is Telia Carrier's Ethernet MEF certified?

A6: Yes – Telia Carrier Ethernet services are MEF 2.0 certified with MEF 3.0 certification underway. We follow industry standards to make it easy for our customers to implement and deploy our suite of Ethernet products.

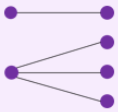
Additionally, we offer design flexibility for different topologies.

Our EVPL service provides point-to-point or hub-and-spoke configuration options in line with MEF E-Line EPL and E-Line EVPL definitions in Port-Mode or VLAN-Mode configurations. The Telia Carrier EVPL service with Port-Mode UNIs provides a compliant EPL service with partial L2CP transparency on certain routes. L2CP transparency may be requested as an option and can be configured when the Advanced Ethernet service, including a NID, has been ordered by a customer.

Our ELAN service provides any-to-any configuration in line with MEF ELAN EP-LAN and ELAN EVP-LAN definitions in Port-Mode or VLAN-Mode configurations.

For Wholesale customers who have an ENNI with Telia Carrier, we offer E-Access services with handover on the ENNI UNI.

Table below summarises the options available:

Ethernet topologies	Telia Carrier products	MEF-defined services	Also known as
	EVPL	E-LINE – EPL E-LINE – EVPL	Point to Point Hub and Spoke
	ELAN	ELAN – EP-LAN ELAN – EVP-LAN	Any to Any VPLS

Q7: What is the difference between Ethernet over SDH and Ethernet over MPLS?

A7: Ethernet services can be provided over circuit switched technologies such as SDH, or packet switched technologies like MPLS.

Circuit switched networks such as SDH require dedicated physical point-to-point connections – supporting EPL (Ethernet Private Line) point-to-point topology. These are more susceptible to fibre cuts and other network related failures.

MPLS is a protocol for efficient network traffic flow between multiple locations – it uses label switching for fast data forwarding and routing within a network.

The main benefit of MPLS networks is reliability and the primary benefit of Ethernet is affordability and simplicity.

Ethernet over MPLS facilitates transparent Layer 2 Ethernet frame transport across an MPLS network, with services benefitting from the inherent reliability and resilience of the network underlay. Additional benefits include multiple topologies support, such as point-to-point, point-to-multipoint and any-to-any VPLS.

In a point-to-point set-up, we can support EPL* (Ethernet Private Line) when configured in Port-Mode as well as EVPL (Ethernet Virtual Private Line) when configured in VLAN-Mode. Telia Carrier's collective name for these service configurations is EVPL.

**EPL service with partial L2CP transparency on certain routes. When Advanced Ethernet is ordered, L2CP transparency can be achieved by configuring the NID device in tunnelling mode.*

Q8: How fast can Telia Carrier provision the solution?

A8: Our on-net Ethernet EVPL and ELAN services can be delivered in as little as **three weeks,** including the physical connections (such as port or cross connects*) required to deploy the initial service.

Once physical connections are in place, further logical services (including additional VLANs or Cloud Connect) can be provisioned in **seven calendar days**.

Where third party access has been requested together with the order, the lead time will vary in accordance with supplier lead times. This is generally in the range of **sixty to ninety calendar days**. Where delivery is impacted by way leaves or civils, it may take longer time.

**Cross Connect delivery lead time is dependent on access arrangements and LOA*

Q9: Is Ethernet a protected service?

A9: Ethernet services delivered over Telia Carrier's MPLS backbone network are inherently resilient by the very nature of the underlay network and as such are protected against network failures or fibre cuts. With multiple diverse physical routes between each Telia Carrier PoP, we are committed to providing the best performance for our customers – four diverse routes between Singapore and Europe and four diverse routes across Atlantic demonstrate the robustness of our network.

Q10: From a pricing perspective, is Telia Carrier's Ethernet a competitive solution?

A10: Ethernet is one of the most affordable network technologies available – it is simple to operate, administer and maintain. Telia Carrier serves customers in 125 countries and with more than 180 third party ENNI agreements, so we are well positioned to offer competitive pricing almost anywhere.

Additionally, our MSOP (Multiple Services on One Port) proposition allows customers to configure multiple Telia Carrier services on a single interconnected port. This maximizes the customer value of existing interconnection points and multiple products such as EVPL, Cloud Connect or IP can then be added without the need for new interconnects.
