Elisa Ethernet 2.0 Service

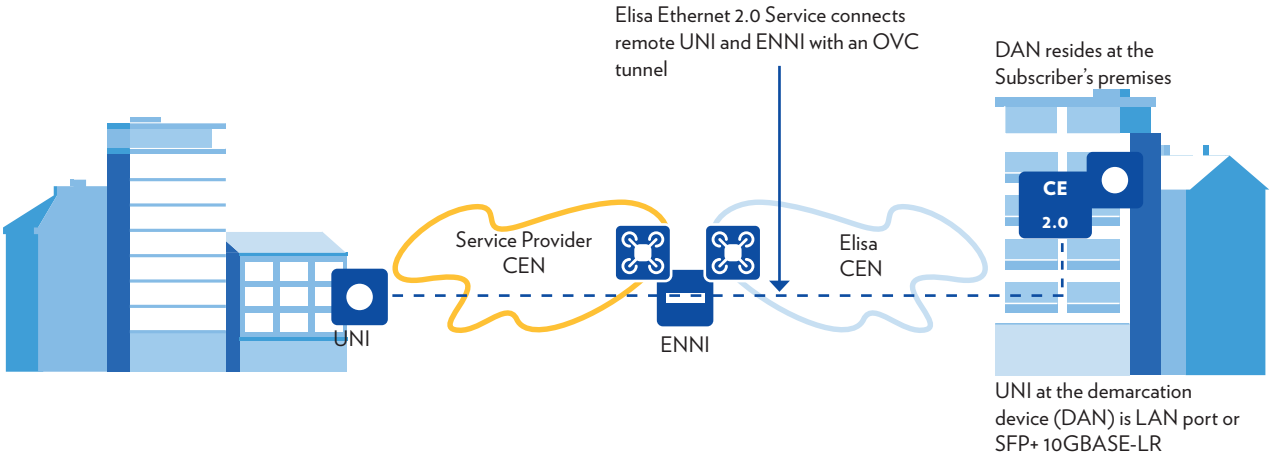
Elisa Ethernet 2.0 Service is a Carrier Ethernet 2.0 certified wholesale service. This new carrier-to-carrier wholesale service is based on the Metro Ethernet Forum's E-Access Service type, and it enables Service Providers to reach off-net Subscriber locations through Elisa's Carrier Ethernet Network. Elisa Ethernet 2.0 Service is a modern and cost effective service for implementing multiple Operator Virtual Connections using Ethernet technology. Being a wholesale service, Elisa Ethernet 2.0 Service can be utilized to support many types of Service Provider use cases such as MEF 6.2 based Service Provider's Ethernet Private Line and Ethernet Private-Local Area Network services end-to-end. Furthermore, it can function as an underlay for Layer 3 services. Elisa Ethernet 2.0 Service is available nationwide in Finland and in the Baltics.

Content of the service

Elisa Ethernet 2.0 Service is a port-based Access Ethernet Private Line (A-EPL) service based on the MEF 33 Technical Specification. It provides a Layer 2 Operator Virtual Connection (OVC) between an User Network Interface (UNI) and an Ethernet Network to Network Interface (ENNI) within reach of Elisa's Carrier Ethernet Network (CEN). The ENNI is a reference point, representing the boundary between the CENs of the Service Provider and Elisa.

In the Elisa's CEN, the redundancy of the core network equipment are secured either at the device level - power supply, control/processor card - or with duplicated devices. Backbone fiber connections between equipment are diversified. Logical resiliency is based on the use of different protocols and mechanisms to ensure quick re-routing in case of failure.

In the Ethernet 2.0 Service, the UNI functionality is provided from a demarcation access node (DAN). By default, the hand-over for the Ethernet 2.0 Service under 1 Gb connection is an autonegotiated 10/100/1000Base-T/TX/T full-duplex RJ45-port. Over 1 Gb connection uses a port speed of 10 Gb and the handover interface is SFP+ 10GBASE-LR 2-fiber single-mode fiber connection (with LC connector). DAN is located at the Subscribers's premises.



From the Service Provider's point of view the Ethernet 2.0 Service is a L2 tunneling service based on the MEF's specifications where an OVC is used to connect two interfaces - ENNI and UNI - using parameters and attributes defined in MEF 33.

The Ethernet service of the subscriber is implemented in Service Provider's CEN.

The content of the ENNI

- Separately ordered Elisa NNI service
  - more detailed in the separate service description
- 10GBase-LR port on an Elisa's Provider Edge (PE) Router (LC-connectors)
- Termination of the OVCs separately ordered as Elisa Ethernet 2.0 connections
- Each Ethernet 2.0 connection is associated with an individual OVC at the ENNI
  - Service Provider can overbook the total UNI capacity of the terminated Ethernet 2.0 connections in the ENNI
  - Elisa do not monitor the total bandwidth consumed by the Ethernet 2.0 UNI's and thus the maximum physical capacity of the ENNI can be exceeded
- Elisa SLA Special Service Level P1V2
  - Service Hours Mon - Fri 7 a.m. - 6 p.m. on business days
  - Response time for the fault limitation and/or starting the repair measures is two hours during the Service Hours
  - Targeted fault repair time is eight hours during the Service Hours
- Elisa's CEN is divided to service areas (page 10 map)
- Additional services
  - SLA Special Service Levels
  - ENNI Protection Service
  - International Services

The content of the Elisa Ethernet 2.0 Service

- An OVC via available access-technology from the ENNI to the UNI at the Subscriber location within Elisa's CEN
  - The OVC is implemented by available access-technology chosen by Elisa that can fulfil the ordered performance tier and quality indicated by the Service Provider
  - In an order the Service Provider selects the needed CoS type and the CIR/EIR capacity
- **Under 1 Gb speed:** By default the physical medium is an autonegotiated full-duplex 10/100/1000Base-T/TX/T DAN port with the electric RJ45 hand-over at the Subscriber's premises
- **Under 1 Gb speed**, other options:
  - 1000Base-BX-10-D full-duplex with the optical single fiber hand-over in the single mode fiber (LC connector)
  - 1000Base-LX full-duplex with the optical two fiber hand-over in the single mode fiber (LC connectors)
  - 1000Base-SX full-duplex with the optical two fiber hand-over in the multimode fiber (LC connectors)
- **Over 1 Gb speed:** Physical medium at demarcation device is SFP+ 10GBASE-LR, connection to 2-fiber single-mode fiber with LC connector
- Excess Information Rate (EIR):
  - Opal ("Best-effort" with EIR)
- Elisa SLA Special Service Level P1V2
  - Service Hours Mon - Fri 7 a.m. - 6 p.m. on business days
  - Response time for the fault limitation and/or starting the repair measures is two hours during the Service Hours
  - Targeted fault repair time is eight hours during the Service Hours

When the Ethernet 2.0 subscriber location and the ENNI reside in the same SMP area, it is regarded as a local Ethernet 2.0 service. In other cases it is regarded as a nationwide Ethernet 2.0 service. This information is provided automatically from Elisa's information system. From the Service Provider's point of view, the only difference lies in the pricing.

- Additional services
  - Class of Service (CoS) for Ethernet traffic
  - SLA Special Service Levels
  - Access Backup Service
  - ENNI Protection Service
  - Customer Premises Equipment (CPE) Rental Service
  - International Services

The high degree transparency provided by the Ethernet 2.0 Service is achieved by mapping all service frames arriving at the UNI to a single OVC End Point. The Service Provider and Elisa coordinate the value of the S-VLAN ID at the ENNI and other service attributes.

The Service Provider will always assign the CE-VLAN ID value.

The Customer edge (CE) device is expected to shape traffic according to the Ingress Bandwidth Profile of the Ethernet 2.0 Service so that all egress traffic from the CE including certain L2CPs requiring delivery for proper operation will not exceed the bandwidth offered by the Ethernet 2.0 Service. The Service Provider is liable for this traffic shaping at the UNI-C according to the Ethernet 2.0 UNI attributes and parameters.

Elisa Ethernet 2.0 service attributes, parameters and values according to MEF 33

UNI Service Attribute	Parameters and Values
UNI Identifier	Unique e.g. LL123456/1
Physical Medium	By default an autonegotiative full-duplex: 10/100/1000Base-T/TX/T* Additional full-duplex options: 1000Base-BX-10-D, 1000Base-LX, 1000Base-SX
UNI Speed	10Mbit/s, 100Mbit/s, 1Gbit/s
Synchronous Mode	Disabled
MAC Layer	IEEE 802.3-2012
UNI Maximum Service Frame Size	2000 bytes**
CE-VLAN ID for untagged and priority tagged Frames	Value from 1 – 4094
Maximum number of OVCs per UNI	1
Ingress Bandwidth Profile Per UNI	Not specified
Egress Bandwidth Profile Per UNI	Not specified

OVC per UNI Service Attribute	Possible Values
UNI OVC Identifier	Unique e.g. LL123456/1
OVC End Point Map	All CE-VLAN ID values 1-4094 maps to a single OVC End Point
Class of Service Identifier for Service Frames	CoS ID based on S-tag PCP value CoS Name / CoS Label / PCP Value Diamond / H / 5 Sapphire / M / 3 Emerald / L / 1 Opal / L / 0
Ingress Bandwidth Profile Per OVC End Point at a UNI	Up to 70% of the UNI speed supports Committed Information Rate (CIR) CIR Mbit/s / CBS*** bytes / EIR Mbit/s / EBS bytes / CF value / CM value 1-10 / ≥12176 / 0 / 0 / 0 / color blind 10-100 / ≥12176 / 0 / 0 / 0 / color blind 100-700 / ≥12176 / 0 / 0 / 0 / color blind Each egress ENNI Frame MUST be marked Green via the S-Tag Up to 90% of the UNI speed supports Excess Information Rate (EIR) EIR Mbit/s / EBS bytes / CF value / CM value 1-10 / 0 / 0 / color blind 10-100 / 0 / 0 / color blind 100-900 / 0 / 0 / color blind Each egress ENNI Frame MUST be marked Green via the S-Tag
Ingress Bandwidth Profile Per Class of Service Identifier at a UNI	Not used
Egress Bandwidth Profile Per OVC End Point at a UNI	Not specified
Egress Bandwidth Profile Per Class of Service Identifier at a UNI	Not specified

*separately agreed also fixed values are possible

**other values negotiated case-by-case

*** exact CBS values provided upon request

OVC Service Attributes	Possible Values
OVC Identifier	e.g. LL123456/1
OVC Type	Point-to-Point
OVC End Point List	Exactly 2, one OVC End Point at the UNI, and one at the ENNI
Maximum Number of UNI OVC End Points	1
Maximum Number ENNI OVC End Points	1
OVC Maximum Service Frame Size	2000 bytes*
CE-VLAN ID Preservation	Yes
CE-VLAN CoS ID Value Preservation	Yes
S-VLAN ID Preservation	N/A as only one ENNI in the service instance
S-VLAN CoS ID Value Preservation	N/A as only one ENNI in the service instance
Color Forwarding	Yes

Service Level Specification

Elisa Performance Tier 1 (EPT1)
ENNI - UNI < 1000 km

CoS Name	One-way Frame Delay Performance		One-way Frame Loss Ratio Performance		One-way Inter Frame Delay Variation Performance	
	Latency [ms]		Packet-Loss [%]		Jitter [ms]	
	SLS (Objective)	SLA	SLS (Objective)	SLA	SLS (Objective)	SLA
Diamond	< 10 ms	5 - 10 ms	≤ 0,01%	10^-8 - 10^-5 %	≤ 3 ms	≤ 4 ms
Sapphire	< 20 ms	10 - 15 ms	≤ 0,01%	10^-8 - 10^-4 %	≤ 8 ms	≤ 8 ms
Emerald	< 37 ms	15 - 20 ms	≤ 0,1%	10^-7 - 10^-4 %	N/S	N/S
Opal**	N/S	N/S	N/S	N/S	N/S	N/S

Elisa Performance Tier 2 (EPT2)
ENNI - UNI < 1600 km

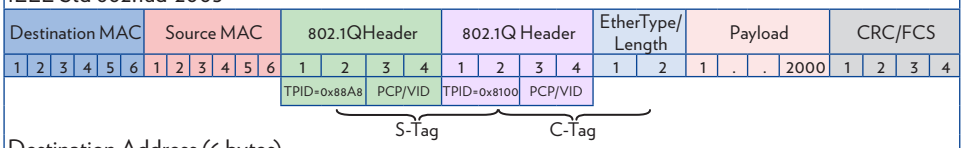
CoS Name	One-way Frame Delay Performance		One-way Frame Loss Ratio Performance		One-way Inter Frame Delay Variation Performance	
	Latency [ms]		Packet-Loss [%]		Jitter [ms]	
	SLS (Objective)	SLA	SLS (Objective)	SLA	SLS (Objective)	SLA
Diamond	< 25 ms	10 - 30 ms	≤ 0,01%	≤ 0,01%	≤ 8 ms	≤ 25 ms
Sapphire	< 75 ms	30 - 45 ms	≤ 0,01%	≤ 0,01%	≤ 40 ms	≤ 40 ms
Emerald	< 125 ms	45 - 60 ms	≤ 0,1%	≤ 0,1%	N/S	N/S
Opal**	N/S	N/S	N/S	N/S	N/S	N/S

Unicast Frame Delivery	Delivered Unconditionally
Multicast Frame Delivery	Delivered Unconditionally
Broadcast Frame Delivery	Delivered Unconditionally

*other values negotiated case-by-case

**The MEF33 technical specification does not define the service level specifications for the best-effort traffic. However, in the Elisa's CEN the best-effort traffic is designed to be applicable for typical data applications. The indicative objective is, that running the test routine at least 15 minutes with 1000 bytes test packets the throughput of the best-effort traffic is on average at the very least 70% of the connection's EIR bandwidth.

<table>
<tr><th>OVC end point per ENNI Service Atribute</th><th>Possible Values</th></tr>
<tr><td>OVC End Point Identi</td><td>e.g. LL234567/1</td></tr>
<tr><td>Class of Service Identifier for ENNI Frames</td><td>S-Tag PCP Value
<table><tr><th>CoS Name</th><th>CoS Label</th><th>PCP Value</th></tr><tr><td>Diamond</td><td>H</td><td>5</td></tr><tr><td>Sapphire</td><td>M</td><td>3</td></tr><tr><td>Emerald</td><td>L</td><td>1</td></tr><tr><td>Opal</td><td>L</td><td>0</td></tr></table></td></tr>
<tr><td>Ingress Bandwidth Profile Per OVC End Point</td><td>Up to 70% of the ENNI speed supports Committed Information Rate (CIR)
<table><tr><th>CIR
Mbit/s</th><th>CBS
bytes</th><th>EIR
Mbit/s</th><th>EBS
bytes</th><th>CF
value</th><th>CM
value</th></tr><tr><td>1-10</td><td>≥12176</td><td>0</td><td>0</td><td>0</td><td>color aware</td></tr><tr><td>10-100</td><td>≥12176</td><td>0</td><td>0</td><td>0</td><td>color aware</td></tr><tr><td>100-700</td><td>≥12176</td><td>0</td><td>0</td><td>0</td><td>color aware</td></tr></table>Up to 90% of the UNI speed supports Excess Information Rate (EIR)
<table><tr><th>EIR
Mbit/s</th><th>EBS
bytes</th><th>CF
value</th><th>CM
value</th></tr><tr><td>1-10</td><td>0</td><td>0</td><td>color aware</td></tr><tr><td>10-100</td><td>0</td><td>0</td><td>color aware</td></tr><tr><td>100-900</td><td>0</td><td>0</td><td>color aware</td></tr></table></td></tr>
<tr><td>Ingress Bandwidth Profile Per ENNI Class of Service Identifier</td><td>Not used</td></tr>
<tr><td>Egress Bandwidth Profile Per End Point</td><td>Not specified</td></tr>
<tr><td>Egress Bandwidth Profile Per ENNI Class of Service Identifier</td><td>Not specified</td></tr>
</table>

ENNI Service Attribute	Possible Values
Operator ENNI Identifier	e.g. LL234567/1
Physical Layer	10GBASE-LX full-duplex*
Frame Format	IEEE Std 802.1ad-2005  Destination Address (6 bytes) : Source Address (6) : Outer VLAN value S-Tag (4) : (TPID value as a default = 0x88A8, separately agreed also value 0x8100 can be used) Inner VLAN value C-Tag (4) : (TPID value = 0x8100) Ethertype ET (2) : Payload (2000) : CRC/FCS (4) :
Number of Links	1 link: as a default 2 links: an additional service; see Protection Mechanism below
Protection Mechanism	None as a default. If 2 links: Multi Chassis Link Aggregation, MC-LAG
ENNI Maximum Service Frame Size	2004 bytes**
End Point Map	Each S-VLAN ID value associated with an instance of Ethernet 2.0 Service is mapped to a distinct End Point, of Type = "OVC"

Maximum Number of OVCs	Depends on the use of the ENNI
	• ENNI: Service Provider buys only Elisa Ethernet 2.0 services max. 4093 OVCs within S-VLAN value range 1 - 4094
	  • S-VLAN values 1 and 99 are reserved for the testing purposes
	• Multi-NNI: Service Provider buy e.g. Elisa Ethernet 2.0 and Operator Broadband services max. 4083 OVCs within S-VLAN value range 1 - 4094
	  • S-VLAN values 1 and 99 are reserved for the testing purposes
	  • S-VLAN values 10 - 19 are reserved for the group-VLAN use of the Elisa Operator Broadband Service
	• Bilateral: 2094 OVCs within S-VLAN value range 2001 – 4094
	  • S-VLAN values 1, 99 and 2000 are reserved for the testing purposes
	  • S-VLAN values 10 - 19 are reserved for the group-VLAN use of the Eli-sa Operator Broadband Service
	  • S-VLAN values 2 - 98 and 100 – 1999 are reserved for the use of Elisa

Maximum Number of OVC End Points per OVC	1

*other interfaces negotiated case-by-case
**other values negotiated case-by-case

Additional Services

The available additional services for the Elisa Ethernet 2.0 Service are:

- Class of Service (CoS) for Ethernet traffic
- SLA Special Service Levels
- Access Backup Service
- ENNI Protection Service
- Customer Premises Equipment (CPE) Rental Service
- International Services
- Ethernet Software Loop

Class of Service (CoS) for Ethernet traffic

Single Class of Service (CoS) for the OVC using one of the following:

- Committed Information Rate (CIR)
- Diamond (High with CIR)
- Sapphire (Medium with CIR)
- Emerald (Low with CIR)

SLA Special Service Level

Elisa Ethernet 2.0 Service includes the Special Service Level P1V2.

Service Level Category	Service Hours Category (EET/ EEST)	Response Time	Repair Time
P1V2h Special Service Level	P1: Mon - Fri 7 a.m.– 6 p.m. on business days	2 h	target 8 h

The content and application of the service levels are described in more detail in the Elisa SLA service description. Elisa reserves the right to restrict the number of the service levels According to offered on a subscription-specific basis in locations where restrictions are imposed by:

- Geographical distances
- Technical quality of the access connection
- The limited level of service for the access connection provided by a third party (local network operator)

The Special Service Levels are:

Service Level Category	Service Hours Category (EET/ EEST)	Response Time	Repair Time
P1K6h	P1: Mon-Fri 7 a.m.- 6 p.m. on business days	30 min	6 h
P2K6h	P2: Mon- Fri 7 a.m.– 9 p.m., Sat 8 a.m.- 6 p.m. on business days	30 min	6 h
P25K6h	P25: Mon - Sun 7 a.m. - 11 p.m.	30 min	6 h
P3K6h	P3: 24h/365d	30 min	6 h

Service hours refer to the time when fault limitation and repair measures will be carried out.

Response time refers to the time within actions according to a service request will be started.

Repair time refers to the time within a fault has been repaired.

Access Backup Service

Elisa offers the Access Backup Service at physical layer with four different implementation models. The service is described in more detailed in a separate document.

ENNI Protection

With the ENNI Protection service, a Service Provider can increase the resiliency of the interface (ENNI) between its own CEN and Elisa's CEN, and thus enhances the availability of Elisa Ethernet 2.0 Services purchased from Elisa's CEN.

The protection mechanism is based on Multi Chassis Link Aggregation Group (MC-LAG) technology. With the ENNI Protection service Ethernet 2.0 service is delivered via Elisa's CEN as a redundant OVC connection from a single UNI to both member ports of the MC-LAG ENNI.

Customer Premises Equipment (CPE) Rental Service

Elisa provides an option for the Service Provider to rent customer premises equipment (CPE) delivered by Elisa. The rented CPE is owned, installed and hardware maintained by Elisa. The CPE is installed with a basic configuration setup.

After installation the Service Provider is responsible for configuring, monitoring and managing the CPE. The Service Provider is liable to fulfil the exterior conditions required for the CPE as stated in section "Requirements and restrictions of the service".

The fault diagnosis and possible CPE replacement process begins from a fault notification made by the Service Provider (see "Technical contact points").

With the CPE Rental Service, the service handover will be the WAN-port of the CPEs offered by Elisa. The CPE selection is listed in the table below. The CPEs are delivered with a Cisco IOS release version defined by Elisa. After the installation the Service Provider can change the IOS to an optimum release over remote management. By default in the Elisa's CPE Rental Service all the CPEs are delivered with the Advanced IP Feature License.

Capacity of connection	Elisa CPE
1M-200M	Cisco C1111-8P Integrated Services Router
300M-9Gb	Cisco ASR-920-4SZ-A Series Ethernet Access Switch

International Services

Ethernet 2.0 Service is also available outside Finland via Elisa's international CEN reach. Elisa may use international partners to extend the services to additional destinations. The service outside of Finland may differ from the domestic service in regard to their features and levels of service. International services are priced in a case-by-case basis and their features will be checked to be compliant with MEF 33 if the local access is not CE2.0 certified.

Ethernet Software Loop

It is possible to test customer traffic by setting the DAN device to Ethernet Loop mode. With the additional Ethernet Software Loop service, the service operator can test connections in their own network.

The service operator receives a MAC address that enables them to perform the measurements. The demarcation device sends all the traffic back by changing the client's source MAC address to the destination address. The Ethernet Software Loop will be available for ten days, after which the loop is automatically removed.

Requirements and restrictions of the service

The Service Provider is responsible for ensuring that the conditions at the Subscriber location permit the installation of the Ethernet 2.0 Service:

- Single mode fiber cabling or twisted copper pair cabling (Cat 5e, Cat 6 or Cat 7) from the building's main distribution frame to the Subscriber site
- Power supply (230V AC) for the DAN
- Sufficient rack or shelf space for the DAN
  - 1U: H*W*D 4,28 cm * 26,5 cm * 17,5 cm
- General environmental conditions suitable for electrical equipment
- Access and guidance for the field engineer at the property and Subscriber site

If the delivery of the Ethernet 2.0 service requires the construction of a new physical cable route, the Service Provider should have pre-granted permission from the property owner of the cabling routes, ducts and lead-throughs on the property's area and in the building. In this case the order needs to contain contact information of the property owner in order for Elisa to be able to achieve the confirmed delivery time.

The pricing for the Ethernet 2.0 Service is subject to the following restrictions if no availability enquiry has been performed beforehand:

- The pricing is based on the precondition that an access connection to the Subscriber premises exist and no new physical network (optical fiber or copper cable) need to be constructed
- The standard pricing is only valid for regions with an access point to Elisa's backbone network

Availability of connections and availability of certain features or additional services may differ depending on the desired installation address.

Delivery and commissioning of the service

The hand-over of the Ethernet 2.0 Service is the LAN-port or SFP+10GBASE-LR with LC connectors of the DAN located at the Subscriber's premises. This requires that the requirements stated in the section "Requirements and restrictions of the service" are met beforehand.

If the in-house cabling is inadequate the delivery will be aborted. Elisa reserves the right to invoice according to its price list in these and other customer dependent cases where a field-engineer has to make extra visits to the site.

Request for quotation, availability enquiry, ordering and delivery time

The requests for quotation, availability enquiries and orders are placed through the Elisa Carrier Services Online order and delivery system.

Target-oriented delivery time is ten calendar days from the accepted order in the Elisa's on-net area.

The delivery time will be confirmed in the order acknowledgment, also in the deliveries where special construction is needed. Elisa and the Service Provider may also agree another delivery time on a case-by-case basis.

Billing

The monthly billing of a service starts from the beginning of the next month after the Elisa' confirmed delivery day. The one-time payment is billed separately in the next month after the delivery.

A service has one month notice of termination time and the billing is carried through full months.

Elisa's network maintenance and change work timetable

Elisa will perform scheduled network maintenance and change works on the second and fourth Wednesday at each month between 00:30 a.m. – 05:30 a.m. Elisa reserves the right to perform network maintenance and change works as needed. The maintenance and change works are attempted to announce in advance to minimize outage and downtime of the services.

Technical contact points

Fault notifications should be made through the Elisa Carrier Services Online order and delivery system or by phone to the Service Desk (24h), service in English tel. +358 10 26 096, service in Finnish tel. +358 10 804 400.

Data protection

Personal data is processed in the service, such as installation address and contact details for the onsite persons. The personal data is processed for service implementation. Concerning the personal data processed in the service, the telecommunications operator is the personal data controller stated in the data protection legislation and Elisa is the processor.

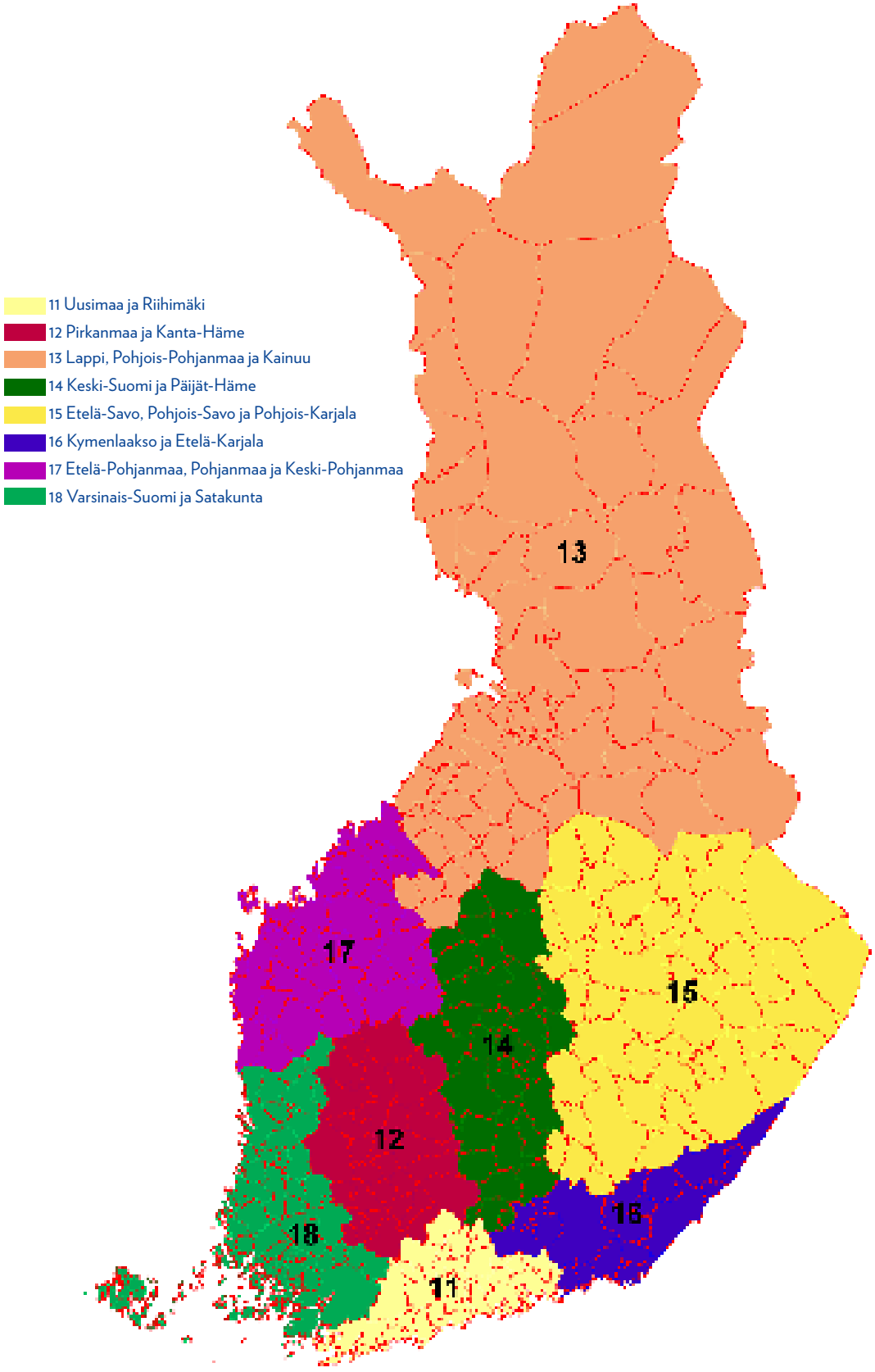
Personal data processed in the service can be processed outside the EU / EEA area. Elisa ensures that in a country where personal data is processed, the level of data protection is adequate and in accordance with the European Commission's decision, or alternatively, that the transfer is subject to a legally appropriate safeguard measure such as a data transfer agreement in accordance with the EU standard contractual clauses on the transfer of personal data outside the EEA.

Elisa has the right to use subcontractors in the provision of services and in the processing of personal data.

Terms of agreement

Elisa's General Terms for Operator products will be applied to the agreement. Service Description is valid from 1 September 2023.

Service areas



Abbreviation	Term	Definition
1U	One rack Unit	A rack unit is a unit of measure defined as 1.75 inches (44.45 mm). It is used as a measurement of the overall height of 19-inch and 23-inch rack frames, as well as the height of equipment that mounts in these frames, whereby the height of the frame or equipment is expressed as multiples of rack units e.g. equipment is typically 1U, 2U, 3U, or 4U high.
Ethernet 2.0	Access Ethernet Private Line	Access EPL service uses a Point-to-Point OVC to associate one OVC End Point at a UNI and one OVC End Point at an ENNI. One UNI can support only a single instance of the Access EPL service.
CE	Customer Edge	Equipment on the Subscriber side of the UNI.
CE 2.0	Carrier Ethernet 2.0	CE 2.0 is a ubiquitous, standardized, carrier-class Service and Network defined by five attributes that distinguish it from familiar LAN-based Ethernet.
CEN	Carrier Ethernet Network	A network from a Service Provider or Operator supporting the MEF service and architecture models
CE-VLAN	Customer Edge VLAN ID	The identifier derivable from the content of a Service Frame that allows the Service Frame to be mapped to an EVC at the UNI.
CF	Color Forwarding	An OVC attribute defining the relationship between the Color of an egress ENNI Frame and the Color of the corresponding ingress ENNI Frame or Service Frame
CIR	Committed Information Rate	CIR is a Bandwidth Profile parameter. It defines the average rate in bits/s of Frames at an EI up to which the network delivers Frames, and is committed to meeting the performance objectives defined by the CoS Service Attribute
CM	Color Mode	A Bandwidth Profile parameter. The Color Mode parameter indicates whether the color-aware or color-blind property is employed by the Bandwidth Profile. It takes a value of "color-blind" or "color-aware" only.
	Color-aware	A Bandwidth Profile property where a pre-determined level of Bandwidth Profile compliance for each Service or ENNI Frame is taken into account when determining the level of compliance for each Service Frame.
CoS	Class of Service	A parameter used in data protocols to differentiate the types of payloads contained in the packet being transmitted. The objective of such differentiation is generally associated with assigning priorities to the data payload.
CoS-merkki	Class of Service Label	A CoS Name that is standardized in MEF 23.1 document. Each CoS Label identifies four Performance Tiers where each Performance Tier contains a set of performance objectives and associated parameters.
CoS-nimi	Class of Service Name	A designation given to one or more sets of performance objectives and associated parameters by the Service Provider or Operator.
CPE	Customer Premises Equipment	Equipment rented and maintained by Elisa for the use of Service Provider's subscriber. CPE is delivered and installed together with the Elisa Ethernet 2.0 service.
CRC	Cyclic Redundancy Check	An error-detecting code commonly used in digital networks and storage devices to detect accidental changes to raw data
C-Tag	Subscriber VLAN Tag	In the Elisa Ethernet 2.0 service C-Tag is given the value 0x8100 at the ENNI and UNI.
DA	Destination Address	The MAC address of the equipment where to the Ethernet packet has been sent.
DAN	Demarcation Access Node	Equipment at the Subscriber site. DAN functions as a hand-over point between Service Operator and Elisa.
E-Access	Ethernet Access	Ethernet services that use an OVC with at least one UNI OVC End Point and one ENNI OVC End Point.
EIR	Excess Information Rate	EIR is a Bandwidth Profile parameter. It defines the average rate in bits/s of Frames up to which the network may deliver Frames but without any performance objectives.
ENNI	Ethernet Network - Network Interface	A reference point representing the boundary between two Operator CENs that are operated as separate administrative domains.
EPL	Ethernet Private Line	Port-based point-to-point EVC connection of the E-Line Service Type.
EP-LAN	Ethernet Private LAN	Port-based multipoint-to-multipoint EVC connection of the E-LAN Service Type.
ET	EtherType	EtherType is used to indicate which protocol is encapsulated in the payload of the frame.
EVC	Ethernet Virtual Connection	An association of two or more UNIs that limits the exchange of Service Frames to UNIs in the Ethernet Virtual Connection

Abbreviation	Term	Definition
FCS	Frame Check Sequence	The 32 bits long extra error-detecting code added to a frame in an Ethernet packet.
IOS	Internetwork Operating System	A family of software used on most Cisco Systems routers and current Cisco network switches.
L2CP	Layer-2 Control Protocol	Control protocol of the data link layer (Layer 2).
LAG	Link Aggregation Group	A Link Aggregation Group combines a number of physical ports together to make a single high-bandwidth data path, so as to implement the traffic load sharing among the member ports in the group and to enhance the connection reliability.
LAN	Local Area Network	A local area network is a computer network that interconnects computers within a limited area such as a residence, school, laboratory, university campus or office building and has its network equipment and interconnects locally managed.
MAC	Media Access Control	Media access control layer is the lower sublayer of the data link layer (Layer 2) providing addressing and channel access control mechanisms that make it possible for several terminals or network nodes to communicate within an Ethernet network.
MC-LAG	Multi Chassis Link Aggregation Group	Multi-Chassis Link Aggregation Group is a type of link aggregation group (LAG) with constituent ports that terminate on separate chassis, primarily for the purpose of providing redundancy in the event one of the chassis fails.
MEF	Metro Ethernet Forum	The MEF is a California, USA registered industry association with over 200 leading member companies, including 130 service providers. MEF is the enabling force for the development and implementation of agile, assured and orchestrated Third Network services for the digital economy and the hyper-connected world. Third Network services are delivered over automated, virtualized, and interconnected networks globally powered by Carrier Ethernet 2.0 (CE 2.0), Lifecycle Service Orchestration (LSO), Software Defined Networking (SDN), and Network Function Virtualization (NFV).
OVC	Operator Virtual Connection	Operator Virtual Connection, an association of OVC End Points
OVC End Point	OVC-päätepiste	An association of an OVC with a specific External Interface i.e., UNI, ENNI.
PCP	Priority Code Point	CoS-technique where a 3-bit field called the Priority Code Point within an Ethernet frame 802.1Q header specifies a priority value of between 0 and 7 inclusive that can be used by CoS disciplines to differentiate traffic.
PT	Performance Tier	Performance Tier is a MEF CoS Performance Objectives set. MEF has specified four different PT sets.
SA	Source Address	The MAC address of the equipment where from the Ethernet packet has been sent.
SLA	Service Level Agreement	The contract between the Subscriber and Service Provider specifying the agreed to service level commitments and related business agreements.
SMP	Significant Market Power	Under the current EC Directives, a Finnish operator designated as having SMP by the Finnish Communications Regulatory Authority.
S-Tag	Service VLAN Tag	In the Elisa Ethernet 2.0 service the S-Tag is given the TPID value of 0x88A8 at the ENNI.
S-VLAN	Service VLAN	The 12 bit VLAN ID field in the S-Tag of an ENNI Frame.
Tag		An optional field in a frame header. It is the 4-byte field that, when present in an Ethernet frame, appears immediately after the Source Address or another tag in an Ethernet frame header. It consists of the 2-byte Tag Protocol Identification Field (TPID) which indicates S-Tag or C-Tag, and the 2-byte Tag Control Information field (TCI) which contains the 3-bit Priority Code Point for the CoS, and the 12-bit S-VLAN/CE-VLAN ID field specified in the Service Provider's order.
TCI	Tag Control Information field	The 2-byte Tag Control Information field which contains the 3-bit Priority Code Point for the CoS, and the 12-bit S-VLAN/CE-VLAN ID field specified in the Service Provider's order.
TPID	Tag Protocol Identification Field	The 2-byte Tag Protocol Identification Field which indicates S-Tag or C-Tag. According to the 802.1ad standard the values are set to 0x88A8 for the outer S-tag and to 0x8100 for the inner C-tag.
UNI	User Network Interface	The physical demarcation point between the responsibility of the Service Provider and the responsibility of the Subscriber.
VLAN	Virtual LAN	A Virtual LAN is any broadcast domain that is partitioned and isolated in a computer network at the data link layer (Layer 2).
WAN	Wide Area Network	A Wide Area Network is a telecommunications network or computer network that extends over a large geographical distance.