Arelion

Service Level Agreement: Arelion EVPL and ELAN Services

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1 Scope

This Appendix is an integral part of the Arelion Master Service Agreement (MSA) and shall only apply, on the terms specified herein, to the following products provided to Customer by Arelion:

- Arelion EVPL Services
- Arelion ELAN Services

This document defines levels of service and Customer's right to apply for credits in the event that the applicable service levels are not achieved. Terms not defined herein shall have the same definition as in the Agreement.

2 Service Description

Arelion provides a comprehensive set of global MEF CE 3.0 certified Carrier Ethernet services. Supported MEF service types are E-Line (EPL, EVPL) and E-LAN (EP-LAN, EVP-LAN). Services are available from more than 320 Arelion MPLS points of presence (PoPs) in Europe, North America and Asia. Services have the same technical characteristics and performance at all worldwide locations.

The product offers high flexibility. Many Ethernet services of varying types and attributes may be provisioned together on the UNI ports of a network solution. Each UNI in the network can be in either Port-based or VLAN-based mode. EVCs may be provisioned between any combination of Port and VLAN-mode UNIs. The Ethernet services can be purchased with a Class of Service (CoS) option, with single CoS (sCoS) or multiple CoS (mCoS) configurations available. Services will be billed with a flat-rate MRC.

Arelion can connect services to end-customer office locations using Arelion certified local tail providers. The service connection can either use a dedicated connection per service or can use a pre-established Supplier ENNI interface and E-Access services.

Arelion EVPL and ELAN Services are offered in two categories, Basic and Advanced, and different service levels apply to each category of Services.

2.1 Basic EVPL and ELAN Services

Basic EVPL and ELAN Services are delivered without managed Ethernet demarcation devices. The demarcation point of the Service for the purpose of measurement of the Service Levels is the customer-facing port on the Arelion aggregation switch or router in Arelion's MPLS PoP.

2.2 Advanced EVPL and ELAN Services

Advanced EVPL and ELAN Services are delivered with managed Ethernet Network Interface Devices ("NIDs") usually located at the customer's premises and the service levels typically apply between these devices. The demarcation point of the Service for the purpose of measurement of the Service Levels is the LAN-side port on the NID.

Additional end-to-end service assurance is provided with the Advanced NIDs with pro-active service monitoring by the Arelion Customer Service Center. The Advanced option gives visibility of the combined performance of local tails and Arelion's network. Customers choosing this option may view the end-to-end service performance on a near real-time basis via a customer portal.

3 Delivery

3.1 Credits for RFS delay

The Service at each site shall be installed and operating in accordance with the applicable specification on or prior to the committed RFS Date provided by Arelion, subject to any special conditions applicable to the Order. If the committed RFS Date is not met by Arelion at a particular site, Customer is entitled to claim credits according to the table set forth below for each day of delivery delay beyond the committed RFS Date, which shall be Customer's sole and exclusive remedy in connection with the delay.

Number of full working days by which Arelion fails to meet the committed RFS date for service	Service credits as a % of the committed monthly recurring charge (MRC)
1 to 5 days	10%
6 to 10 days	20%
11 to 20 days	30%
> 21 days	50%

The Customer shall not be entitled to any credits for RFS delays arising out of Customer's acts or omissions, a delay caused by Customer failing to provide access to its premises, the failure of a third-party to deliver or provide services, or an event of force majeure.

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4 Fault and Availability

4.1 Measurement of Availability

Availability of the Arelion MPLS Backbone is **99.999%**. The term "MPLS Backbone" refers to Arelion's global MPLS Network comprised of the links, or circuits, between international points-of-presence in different countries and is the platform over which Ethernet Services are provided. Service Availability Calculation for Basic and Advanced Ethernet Services is described below.

4.1.1 Definition of Fault

A Fault is considered to have occurred when the Service is unavailable, or the Service suffers frame loss of greater than ten percent (10%) for a continuous period of at least 10 minutes between the demarcation points of the Service.

Service levels for availability are measured on a per-site basis and not as an entire network. Except for point-to-point EVPL Services between two sites, a Fault affecting the availability of Service at one site is not considered affecting other sites included in the Service, even if traffic between the affected site and other sites in the network is not possible for the duration of the Fault. In the case of a point-to-point EVPL Service, however, both sites will be considered unavailable if one site is unavailable.

4.1.2 Fault Time Calculation

With respect to the availability guarantees set forth in this Appendix, a Fault is recognized upon initiation of an incident case by Customer and Arelion confirmation of a problem. The Fault or restoration time is calculated as the time between the opening of the trouble-ticket until Arelion notifies Customer that the Service at the affected site has been restored through the implementation of a full or a temporary repair reduced by the following:

- Delay of Fault repair caused by the Customer not giving access to its premises to Arelion and/or Arelion's subcontractors.
- Delay of the closure of the trouble-ticket due to Arelion not being able to reach the Customer.
- Other delays caused by the Customer or Customer's employees, agents or representatives.

If necessary, Customer must provide Arelion and/or Arelion's subcontractors (e.g., local tail or professional services providers) with access to its premises or a third-party's premises in order to perform testing, maintenance and/or Fault repair.

A Fault will be considered to have been repaired in the event that either a full repair or a temporary repair restoring the continuity of the relevant Service has been implemented.

4.1.3 Service Availability Calculation

The measurement period for the availability of the Service at a site shall be coterminous with the monthly billing cycle. The availability is calculated monthly, beginning with the first full month of Service at the site.

$$Availability = \frac{TotalTime - \Sigma(FaultTime_n)}{TotalTime} * 100\ \%$$

where $TotalTime$ = the total time during the measurement period

and $\Sigma(FaultTime_n)$ = the sum of all fault times of the faults that occurred during the measurement period

4.2 Measurement of Frame Loss and Network Latency

Frame Loss and Network Latency will be measured based on monthly average measurements taken between sites.

4.2.1 Basic EVPL and ELAN Services

For Basic EVPL and ELAN Services, backbone frame loss and network latency are measured by sending UDP-Datagrams to designated servers located at MPLS Backbone Core Nodes, which are primary nodes in the network designated by Arelion. Arelion will use these measurements in order to determine an average monthly measurement between sites. The Customer's interface in the MPLS Backbone routers/switches will be measured using Simple Network Management Protocol ("SNMP"). The term "UDP-Datagram" refers to the User Datagram Protocol, a connectionless transport-layer protocol in the TCP/IP protocol suite.

4.2.2 Advanced EVPL and ELAN Services

For Advanced EVPL and ELAN Services, end-to-end frame loss, network latency and inter-frame delay variation are measured by sending Y.1731 Protocol Data Units (PDUs) between the Arelion's managed Ethernet NIDs. Arelion will use these measurements in order to determine an average monthly measurement between sites.

4.3 Exclusions

A Service will not be considered to be subject to a Fault and/or a service level will not be deemed to have not been achieved to the extent caused by any of the following:

- Planned Work (see The Customer Service Handbook)
- Environmental conditions at the Customer site such as power supply, climate or housing
- The Customer's actions or intervention
- An event of Force Majeure
- The suspension, interruption or termination of Service in accordance with the Agreement
- A Fault or problem with an unmanaged Customer owned Customer Premises Equipment (CPE)

5 Basic EVPL & ELAN Service Levels

The Arelion MPLS Backbone network is used to deliver Ethernet services. The service levels and credits set forth in this Section shall apply only to Basic EVPL and ELAN Services specified in each section below and shall not apply to Advanced EVPL and ELAN Services. The credit percentages stated in this section are applied to the committed monthly recurring charges ("MRC") for the affected site.

5.1 Availability Service Level and Credits

Availability of Basic EVPL and ELAN Service at a site is **99.99%**, measured as specified above. Customer shall be entitled to request a credit equal to the pro-rated charges for Service at the affected site for 1/60 of a day (i.e., 1/60 of 1/30 of the MRC for Service at the affected site) for every minute of Fault time exceeding the guaranteed Availability during a calendar month.

5.2 Network Latency Service Level and Credits

The term "Network Latency" refers to the period of time taken for an Ethernet frame to travel from its source to a destination within the network and back again (also referred to as Round Trip Delay or RTD). Arelion guarantees the monthly average Network Latency for Basic EVPL and ELAN Service. Network Latency is measured within the Arelion's Backbone between Arelion's points-of-presence and shall not exceed the committed values as specified in the latency tables as published on arelion.com measured over a calendar month. For the avoidance of doubt, measurements are based on Arelion's Backbone only.

When the Service Level is not met, Customer shall be entitled to request a credit equal to 10% of the monthly recurring charges for the Service subject to the Service Level at the affected sites during the calendar month in which the Network Latency Service Level was not achieved.

Network Latency for Basic Services shall be determined by Arelion based on averaging sample measurements taken between sites at core nodes during a calendar month. When the guarantee is not met between two sites, Customer shall be entitled to request a credit equal to 10% of the MRC for Service at the two affected sites for the applicable month.

For services that use a pre-defined route (Fixed Path Routing) in the Arelion's Backbone the abovementioned latency guarantee is only applicable for the primary path. The service level will not be deemed to have not been achieved if or when a re-route in case of a Fault or Planned Work on the pre-defined path occurs, resulting in a higher latency on the backup path. Where Customer specifically requests single Fixed Path Route with no backup path defined – the availability of the service will additionally be reduced to **99.4%** in line with Arelion's unprotected product suite.

5.3 Frame Loss Service Levels and Credits

Arelion guarantees that the monthly average Frame Loss between two sites on the global network for Basic Services will not exceed 0.1%, measured over a calendar month. Frame Loss shall be determined by Arelion based on averaging sample measurements taken between sites at core nodes using test Ethernet frames during a calendar month. When the guarantee is not met between two sites, Customer shall be entitled to request a credit equal to 10% of the MRC for Service at the two affected sites for the applicable month.

6 Advanced EVPL & ELAN Service Levels

The end-to-end service levels and credits set forth in this Section shall apply only to sites connected by Advanced EVPL or ELAN Services, i.e., delivered with managed Ethernet NID at each end. The credit percentages stated in this section are applied to the committed monthly recurring charges ("MRC") for the affected site.

6.1 Availability Service Level and Credits

Availability of Advanced EVPL and ELAN Service at a site is **99.5%**, measured as specified above*. Customer shall be entitled to request a credit equal to the pro-rated charges for Service at the affected site for 1/60 of a day (i.e., 1/60 of 1/30 of the MRC for Service at the affected site) for every minute of Fault time exceeding the guaranteed Availability at the site during a calendar month.

* Where ≥10Gbps bearer bandwidth access tail is required, this is quoted ICB and may be subject to lower availability SLA depending on design.

6.2 Network Latency Service Level and Credits

The term “Network Latency” refers to the average time taken for an Ethernet frame to travel between designated routers within Arelion’s Backbone and back again during a calendar month (also referred to as Round Trip Delay or RTD). Network Latency is measured within the Arelion’s Backbone between Arelion’s points-of-presence and shall not exceed the committed values as specified in the latency tables as published on arelion.com measured over a calendar month. For the avoidance of doubt, measurements are based on Arelion’s Backbone only.

When the Service Level is not met, Customer shall be entitled to request a credit equal to 10% of the monthly recurring charges for the Service subject to the Service Level at the affected sites during the calendar month in which the Network Latency Service Level was not achieved.

6.2.1 Additional Latency per Access Type

Access Type	Average network latency/round trip time
Local or national tail	10 ms per 100 km line-of-sight distance
International tail	Guarantee figure available upon request

The permitted monthly average network latency between two sites shall be equal to the sum of the average committed network latency for the relevant sites published on arelion.com plus the permitted average network latency for the local, national or international tail as above. If the average network latency for an international tail is not stated, the permitted average network latency for the international tail shall be provided by Arelion upon request. Network Latency for Advanced Services shall be determined by Arelion based on averaging sample measurements taken between sites during a calendar month. When the guarantee is not met between two sites, Customer shall be entitled to request a credit equal to 10% of the MRC for Service at the two affected sites for the applicable month.

For services that use a pre-defined route (Fixed Path Routing) in the Arelion’s Backbone the abovementioned latency guarantee is only applicable for the primary path. The service level will not be deemed to have not been achieved if or when a re-route in case of a Fault or Planned Work on the pre-defined path occurs, resulting in a higher latency on the backup path. Where Customer specifically requests single Fixed Path Route with no backup path defined – the availability of the service will additionally be reduced to **99.4%** in line with Arelion’s unprotected product suite.

6.3 Frame Loss Service Level and Credits

For Services purchased with a prioritized Class of Service option (sCoS or mCoS), Arelion guarantees that the monthly average frame loss between demarcation points for Advanced EVPL and ELAN Services, will not exceed 0.1% to 0.6% for Ethernet Real Time or Ethernet Business Class Service frames, measured over a calendar month depending on the locations of the eligible customer sites*.

End-to-end Frame Loss for Advanced Services shall be determined by Arelion's managed Ethernet NIDs based on averaging sample measurements taken between two sites during a calendar month.

When the guarantee is not met between two sites, Customer shall be entitled to request a credit equal to 10% of the MRC for Service at the two affected sites for the applicable month.

If a Customer purchase Advanced EVPL or ELAN Services without the Ethernet Real Time or Ethernet Business Class CoS option, this section shall not apply, and the Service shall be subject to the Frame Loss service level and credits applicable for Basic EVPL and ELAN Services.

6.4 Inter-Frame Delay Variation Service Level and Credits

Inter-Frame Delay Variation (IFDV) is a measure of the variations in the frame delay derived from Round Trip Delay RTD measured between demarcation points for Advanced EVPL and ELAN Services.

The IFDV service level and related credits shall only apply to Advanced EVPL and ELAN Services purchased with the Ethernet Real Time Class of Service option. For Ethernet Real Time Class of Service frames, the average measured IFDV for traffic within the agreed bandwidth for Service between sites, will not exceed 10 milliseconds measured over a calendar month.

IFDV shall be determined by Arelion's managed Ethernet NIDs based on averaging sample measurements taken between sites during a calendar month. When the guarantee is not met, Customer shall be entitled to request a credit equal to 10% of the MRC for Service at the two affected sites.

If a Customer purchases Advanced EVPL or ELAN Services without the Ethernet Real Time CoS Option, the IFDV service level and credits are not applicable.

* Excluding countries in the African continent, which will be made available on a case-by-case basis.

7 Claim of credits

7.1 Limitation of credits

Notwithstanding the occurrence of multiple events of unavailability or failures to meet the service level guarantees set forth in this SLA, the maximum credit to the Customer during a monthly billing period is limited to 50% of the previous month's charges for Service at the affected site.

7.2 Procedure

In order to receive credits, Customer must submit a claim within thirty (30) days of the end of the calendar month in which the fault occurred. The credits will be based on the actual fault time. In the event of any dispute concerning the duration of a fault, Arelion's fault monitoring and clearance records will govern. If the Customer fails to submit a claim within the applicable thirty days (30) period as defined above, the Customer shall irrevocably waive the right to claim any credits for the Services affected by the fault.

Notwithstanding anything to the contrary in the Agreement, the claim and award of credits pursuant to this Service Level Agreement shall be Customer's sole and exclusive remedy in the event that the Service is unavailable or fails to meet the specified service level guarantees.

8 Equipment

8.1 Equipment supplied by Arelion

Any equipment supplied by Arelion to the Customer to be used in connection with the EVPL and ELAN Services will be installed by Arelion at the Customer location specified in the Service Order Form (SOF).

Any equipment provided by Arelion for use at the site shall at all times remain the property of Arelion or its subcontractors, regardless of the manner of its installation or attachment. Customer shall have no right and shall not assert a claim or interest to or in, the Arelion provided equipment.

8.2 Termination of Service

Upon termination of the Services, the Customer must return the equipment being used for the Advanced EVPL and ELAN Services, within ten (10) business days of termination. Arelion will provide Customer with return instructions and Customer will provide written confirmation of the return.