



MEF 3.0 CE Certification Blueprint

Version 2.0

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1. Introduction

The MEF 3.0 CE Certification Blueprint specifies service attributes and parameters to be verified during MEF 3.0 CE certification testing.

This document focuses on Carrier Ethernet Services. It will be extended in the future to include connectivity services, such as IP services and LSO API services, as and when they are defined by the MEF Forum.

2. Scope

Connectivity Services and Attributes

The MEF 3.0 CE certification for Carrier Ethernet Services extends CE 2.0 certification by adding two new connectivity services to the certification program; Access E-Line and Transit E-Line, based on MEF 51 'OVC Services Definitions' and MEF 26.2 'External Network-Network Interfaces and Operator Service Attributes'. It also enhances the existing E-Line, E-LAN and E-Tree connectivity services with new and re-defined service attributes, specified in MEF 6.2 'Ethernet Services Definitions Phase 3', MEF 10.3 'Ethernet Services Attributes Phase 3', MEF 23.2 'CoS IA Phase 3', MEF 23.2.1 'Models for bandwidth profile with token sharing', MEF 45 'Multi-CEN L2CP' and MEF 45.0.1 'OVC Services Requirements for L2CP' and listed below:

- New bandwidth profile algorithm that supports more than one flow with prioritized bandwidth sharing
- L2CP handling for all services
- Class of Service and Egress Equivalence Class Identifiers for SOAM Service Frames
- Subscriber MEG MIP
- Maximum Service and ENNI frame sizes
- New Performance Tier
- New CPOs for multipoint services
- New standard CoS ID and Color ID values

LSO API Services

The principal characteristic of MEF 3.0 Services is the ability to be orchestrated via LSO APIs running at the Management Interface Reference Points of the LSO Reference Architecture and Framework.

This section is to be completed following the definition of the relevant LSO API Services.

Out of scope

Control and management protocols such as E-LMI, Link OAM, Service OAM UNI-MEG, Service OAM ENNI-MEG or protection mechanisms that may be operating at the external interfaces are outside the scope MEF 3.0 certification program. The deployment and verification of these protocols are to be handled between subscriber/service provider/operator.

3. Structure of the Document

This document has two core sections: 1) Connectivity Services and Service Attributes and 2) LSO API Services.

The Connectivity Services and Service Attributes section is composed of five subsections as listed below and, for each connectivity service, tables are populated with the complete list of service attributes to be verified during certification testing.

- E-Line services, section 4.1
- E-LAN services, section 4.2
- E-Tree services, section 4.3
- Access E-Line services, section 4.4
- Transit E-Line services, section 4.5

For E-Line, E-LAN and E-Tree, the following tables of attributes and requirements are specified:

- UNI Service Attributes
- EVC per UNI Service Attributes
- EVC Service Attributes

For Access E-Line, the following tables of attributes and requirements are specified:

- Operator UNI Service Attributes
- ENNI Service Attributes
- ENNI Common Service Attributes
- Operator Multilateral Attributes
- OVC Service Attributes
- OVC End Point per UNI Service Attributes
- OVC End Point per ENNI Service Attributes

For Transit E-Line, the following tables of attributes and requirements are specified:

- ENNI Service Attributes
- ENNI Common Service Attributes
- Operator Multilateral Attributes
- OVC Service Attributes
- OVC End Point per ENNI Service Attributes

The LSO API Services section is to be completed following the definition of the relevant LSO API Services.

4. Connectivity Services and Service Attributes

4.1 E-Line Service Attributes

MEF 3.0 CE Certification - E-Line Service Attributes

UNI Service Attributes	Service Attributes Parameters and Values	Reference	Certification Applicability	
UNI ID	String as specified in Section 9.1 of MEF 10.3	MEF 6.2 Tables 4, 7 and 10	EPL ○	EVPL ○
Physical Layer	List of Physical Layers as specified in Section 9.2 of MEF 10.3	MEF 6.2 Tables 4, 7 and 10	EPL ●	EVPL ●
Synchronous Mode ¹	List of Disabled or Enabled for each link in the UNI as specified in Section 9.3 of MEF 10.3	MEF 6.2 Tables 4, 7 and 10	EPL ○	EVPL ○
Number of Links ¹	At least 1 as specified in Section 9.4 of MEF 10.3	MEF 6.2 Tables 4, 7 and 10	EPL ○	EVPL ○
UNI Resiliency ¹	None or 2-link Aggregation or Other as specified in Section 9.5 of MEF 10.3	MEF 6.2 Tables 4, 7 and 10	EPL ○	EVPL ○
Service Frame Format	IEEE 802.3 – 2012 as specified in Section 9.6 of MEF 10.3	MEF 6.2 Tables 4, 7 and 10	EPL ●	EVPL ●
UNI Maximum Service Frame Size	At least 1522 Bytes as specified in Section 9.7 of MEF 10.3. SHOULD be ≥ 1600 Bytes	MEF 6.2 Tables 4, 7 and 10	EPL ●	EVPL ●
Service Multiplexing ³	Enabled or Disabled as specified in Section 9.8 of MEF 10.3	MEF 6.2 Tables 4, 7 and 10	EPL ○	EVPL ○
CE-VLAN ID for Untagged and Priority Tagged Service Frames	A value in the range 1 to 4094 as specified in Section 9.9 of MEF 10.3	MEF 6.2 Tables 4, 7 and 10	EPL ○	EVPL ●
CE-VLAN ID/EVC Map	A map as specified in Section 9.10 of MEF 10.3	MEF 6.2 Tables 4, 7 and 10	EPL ●	EVPL ●
Maximum number of EVCs	At least 1 as specified in Section 9.11 of MEF 10.3	MEF 6.2 Tables 4, 7 and 10	EPL ●	EVPL ●
Bundling	Enabled or Disabled as specified in Section 9.12 of MEF 10.3	MEF 6.2 Tables 4, 7 and 10	EPL ○	EVPL ●
All to One Bundling	Enabled or Disabled as specified in Section 9.13 of MEF 10.3	MEF 6.2 Tables 4, 7 and 10	EPL ●	EVPL ○
Token Share	Enabled or Disabled as specified in Section 8.2.1 of this MEF 6.2	MEF 6.2 Tables 4, 7 and 10	EPL ●	EVPL ●
Envelopes	list of <Envelope ID, CF ⁰ , n >, where <Envelope ID, CF ⁰ > is as specified in Section 12.1 of MEF 10.3 and n is the number of Bandwidth Profile Flows in the Envelope	MEF 6.2 Tables 4, 7 and 10	EPL ●	EVPL ●
Ingress BWP per UNI	MUST be No	MEF 6.2 Tables 4, 7 and 10	EPL ○	EVPL ○
Egress BWP per UNI	MUST be No	MEF 6.2 Tables 4, 7 and 10	EPL ○	EVPL ○
Link OAM ¹	Enabled or Disabled as specified in Section 9.16 of MEF 10.3	MEF 6.2 Tables 4, 7 and 10	EPL ○	EVPL ○
UNI MEG ¹	Enabled or Disabled as specified in Section 9.17 of MEF 10.3	MEF 6.2 Tables 4, 7 and 10	EPL ○	EVPL ○
E-LMI ¹	Enabled or Disabled as specified in Section 9.18 of MEF 10.3	MEF 6.2 Tables 4, 7 and 10	EPL ○	EVPL ○
UNI L2CP Address Set	CTB or CTB-2 or CTA as specified in MEF 45 table 10 for EVPL and in MEF 45.0.1 Table 11 for EPL	MEF 6.2 Tables 4, 7 and 10	EPL ●	EVPL ●
UNI L2CP peering ²	None or list of {Destination Address, Protocol Identifier} or list of {Destination Address, Protocol Identifier, Link Identifier} to be Peered as specified in MEF 45	MEF 6.2 Tables 4, 7 and 10	EPL ●	EVPL ●

¹: Control and management protocols such as E-LMI, Link OAM, Service OAM UNI-MEG, Service OAM ENNI-MEG or protection mechanisms that may be operating at the external interfaces are outside the scope of the MEF 3.0 CE certification program. The deployment and verification of these protocols are to be handled between subscriber/service provider/operator

²: Protocols not in list are either Passed to EVC or Discarded based on the Destination Address.

³: Service Multiplexing Service Attribute to be removed from MEF 10.4

MEF 3.0 CE Certification - E-Line Service Attributes

EVC per UNI Service Attributes	Service Attributes Parameters and Values	Reference	Certification Applicability	
UNI EVC ID	String as specified in Section 10.1 of MEF 10.3	MEF 6.2 Tables 5, 8 and 11	EPL ○	EVPL ○
Class of Service Identifier for Data Service Frame	EVC or CE-VLAN CoS or IP value(s) and corresponding CoS Name as specified in Section 10.2.1 of MEF 10.3	MEF 6.2 Tables 5, 8 and 11	EPL ●	EVPL ●
Class of Service Identifier for L2CP Service Frame	"All" or list of each L2CP in the EVC and corresponding CoS Name as specified in Section 10.2.2 of MEF 10.3	MEF 6.2 Tables 5, 8 and 11	EPL ●	EVPL ●
Class of Service Identifier for SOAM Service Frame	Basis same as for Data Service Frames as specified in Section 10.2.3 of MEF 10.3	MEF 6.2 Tables 5, 8 and 11	EPL ●	EVPL ●
Color Identifier for Service Frame	None or EVC or CE-VLAN CoS or CE-VLAN Tag DEI or IP as specified in Section 10.3 of MEF 10.3	MEF 6.2 Tables 5, 8 and 11	EPL ●	EVPL ●
Egress Equivalence Class Identifier for Data Service Frames	CE-VLAN CoS or IP value(s) and corresponding CoS Name(s) as specified in Section 10.4.1 of MEF 10.3	MEF 6.2 Tables 5, 8 and 11	EPL ○	EVPL ●
Egress Equivalence Class Identifier for L2CP Service Frames	"All" or list of each L2CP in the EVC and corresponding Egress Equivalence Class as specified in Section 10.4.2 of MEF 10.3	MEF 6.2 Tables 5, 8 and 11	EPL ○	EVPL ●
Egress Equivalence Class Identifier for SOAM Service Frames	Basis same as for Data Service Frames as specified in Section 10.4.3 of MEF 10.3	MEF 6.2 Tables 5, 8 and 11	EPL ○	EVPL ●
Ingress Bandwidth Profile per EVC	MUST be No	MEF 6.2 Tables 5, 8 and 11	EPL ○	EVPL ○
Egress Bandwidth Profile per EVC	MUST be No	MEF 6.2 Tables 5, 8 and 11	EPL ○	EVPL ○
Ingress Bandwidth Profile per Class of Service Identifier	No or Parameters with Bandwidth Profile as defined in Section 10.6 of MEF 10.3	MEF 6.2 Tables 5, 8 and 11	EPL ●	EVPL ●
Egress Bandwidth Profile per Egress Equivalence Class	No or Parameters with Bandwidth Profile as defined in Section 10.8 of MEF 10.3	MEF 6.2 Tables 5, 8 and 11	EPL ○	EVPL ●
Source MAC Address Limit	Enabled or Disabled as specified in Section 10.9 of MEF 10.3	MEF 6.2 Tables 5, 8 and 11	EPL ○	EVPL ●
Test MEG	Enabled or Disabled as specified in Section 10.10 of MEF 10.3	MEF 6.2 Tables 5, 8 and 11	EPL ●	EVPL ●
Subscriber MEG MIP	Enabled or Disabled as specified in Section 10.11 of MEF 10.3	MEF 6.2 Tables 5, 8 and 11	EPL ●	EVPL ●

MEF 3.0 CE Certification - E-Line Service Attributes

EVC Service Attributes	Service Attributes Parameters and Values	Reference	Certification Applicability	
EVC Type	MUST be Point-to-Point as specified in Section 8.1 of MEF 10.3	MEF 6.2 Tables 6, 9 and 12	EPL ●	EVPL ●
EVC ID	String as specified in Section 8.2 of MEF 10.3	MEF 6.2 Tables 6, 9 and 12	EPL ○	EVPL ○
UNI List	List of <UNI ID, UNI Role> pairs as specified in Section 8.3 of MEF 10.3 for UNIs associated by the EVC	MEF 6.2 Tables 6, 9 and 12	EPL ●	EVPL ●
Maximum Number of UNIs	MUST be two as specified in Section 8.4 of MEF 10.3	MEF 6.2 Tables 6, 9 and 12	EPL ●	EVPL ●
Unicast Service Frame Delivery	Discard or Deliver Unconditionally or Deliver Conditionally as specified in Section 8.5.2 of MEF 10.3	MEF 6.2 Tables 6, 9 and 12	EPL ●	EVPL ●
Multicast Service Frame Delivery	Discard or Deliver Unconditionally or Deliver Conditionally as specified in Section 8.5.2 of MEF 10.3	MEF 6.2 Tables 6, 9 and 12	EPL ●	EVPL ●
Broadcast Service Frame Delivery	Discard or Deliver Unconditionally or Deliver Conditionally as specified in Section 8.5.2 of MEF 10.3	MEF 6.2 Tables 6, 9 and 12	EPL ●	EVPL ●
CE-VLAN ID Preservation	Enabled or Disabled as specified in Section 8.6.1 of MEF 10.3	MEF 6.2 Tables 6, 9 and 12	EPL ●	EVPL ●
CE-VLAN CoS Preservation	Enabled or Disabled as specified in Section 8.6.2 of MEF 10.3	MEF 6.2 Tables 6, 9 and 12	EPL ●	EVPL ●
EVC Performance	List of performance metrics and associated parameters and performance objectives as specified in Section 8.8 of MEF 10.3	MEF 6.2 Tables 6, 9 and 12	EPL ●	EVPL ●
EVC Maximum Service Frame Size	At least 1522 as specified in Section 8.9 of MEF 10.3	MEF 6.2 Tables 6, 9 and 12	EPL ●	EVPL ●

4.2 E-LAN Service Attributes

MEF 3.0 CE Certification - E-LAN Service Attributes

UNI Service Attributes	Service Attributes Parameters and Values	Reference	Certification Applicability	
			EP-LAN	EVP-LAN
UNI Identifier	String as specified in Section 9.1 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-LAN ○	EVP-LAN ○
Physical Layer	List of Physical Layers as specified in Section 9.2 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-LAN ●	EVP-LAN ●
Synchronous Mode ¹	List of Disabled or Enabled for each link in the UNI as specified in Section 9.3 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-LAN ○	EVP-LAN ○
Number of Links ¹	At least 1 as specified in Section 9.4 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-LAN ○	EVP-LAN ○
UNI Resiliency ¹	None or 2-link Aggregation or Other as specified in Section 9.5 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-LAN ○	EVP-LAN ○
Service Frame Format	IEEE Std. 802.3 – 2012 as specified in Section 9.6 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-LAN ●	EVP-LAN ●
UNI Maximum Service Frame Size	At least 1522 B as specified in Section 9.7 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-LAN ●	EVP-LAN ●
Service Multiplexing ³	Enabled or Disabled as specified in Section 9.8 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-LAN ○	EVP-LAN ○
CE-VLAN ID for Untagged and Priority Tagged Service Frames	A value in the range 1 to 4094 as specified in Section 9.9 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-LAN ○	EVP-LAN ●
CE-VLAN ID/EVC Map	A map as specified in Section 9.10 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-LAN ●	EVP-LAN ●
Maximum number of EVCs	At least 1 as specified in Section 9.11 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-LAN ●	EVP-LAN ●
Bundling	Enabled or Disabled as specified in Section 9.12 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-LAN ○	EVP-LAN ●
All to One Bundling	Enabled or Disabled as specified in Section 9.13 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-LAN ●	EVP-LAN ○
Token Share	Enabled or Disabled as specified in Section 8.2.1 of this MEF 6.2	MEF 6.2 Tables 4, 13 and 16	EP-LAN ●	EVP-LAN ●
Envelopes	list of <Envelope ID, CF0, n >, where <Envelope ID, CF0 > is as specified in Section 12.1 of MEF 10.3 and n is the number of Bandwidth Profile Flows in the Envelope	MEF 6.2 Tables 4, 13 and 16	EP-LAN ●	EVP-LAN ●
Ingress BWP per UNI	MUST be No	MEF 6.2 Tables 4, 13 and 16	EP-LAN ○	EVP-LAN ○
Egress BWP per UNI	MUST be No	MEF 6.2 Tables 4, 13 and 16	EP-LAN ○	EVP-LAN ○
Link OAM ¹	Enabled or Disabled as specified in Section 9.16 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-LAN ○	EVP-LAN ○
UNI MEG ¹	Enabled or Disabled as specified in Section 9.17 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-LAN ○	EVP-LAN ○
E-LMI ¹	Enabled or Disabled as specified in Section 9.18 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-LAN ○	EVP-LAN ○
UNI L2CP Address Set	CTB or CTB-2 or CTA as specified in MEF 45 table 10 for EVP-LAN and in MEF 45.0.1 Table 11 for EP-LAN	MEF 6.2 Tables 4, 13 and 16	EP-LAN ●	EVP-LAN ●
UNI L2CP peering ²	None or list of {Destination Address, Protocol Identifier} or list of {Destination Address, Protocol Identifier, Link Identifier} to be Peered as specified in MEF 45	MEF 6.2 Tables 4, 13 and 16	EP-LAN ●	EVP-LAN ●

¹: Control and management protocols such as E-LMI, Link OAM, Service OAM UNI-MEG, Service OAM ENNI-MEG or protection mechanisms that may be operating at the external interfaces are outside the scope of the MEF 3.0 CE certification program. The deployment and verification of these protocols are to be handled between subscriber/service provider/operator

²: Protocols not in list are either Passed to EVC or Discarded based on the Destination Address.

³: Service Multiplexing Service Attribute to be removed from MEF 10.4

MEF 3.0 CE Certification - E-LAN Service Attributes

EVC per UNI Service Attributes	Service Attributes Parameters and Values	Reference	Certification Applicability	
UNI EVC ID	String as specified in Section 10.1 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-LAN ○	EVP-LAN ○
Class of Service Identifier for Data Service Frame	EVC or CE-VLAN CoS or IP value(s) and corresponding CoS Name as specified in Section 10.2.1 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-LAN ●	EVP-LAN ●
Class of Service Identifier for L2CP Service Frame	"All" or list of each L2CP in the EVC and corresponding CoS Name as specified in Section 10.2.2 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-LAN ●	EVP-LAN ●
Class of Service Identifier for SOAM Service Frame	Basis same as for Data Service Frames as specified in Section 10.2.3 of MEF10.3	MEF 6.2 Tables 5, 14 and 17	EP-LAN ●	EVP-LAN ●
Color Identifier for Service Frame	None or EVC or CE-VLAN CoS or CE-VLAN Tag DEI or IP as specified in Section 10.3 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-LAN ●	EVP-LAN ●
Egress Equivalence Class Identifier for Data Service Frames	CE-VLAN CoS or IP value(s) and corresponding CoS Name(s) as specified in Section 10.4.1 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-LAN ●	EVP-LAN ●
Egress Equivalence Class Identifier for L2CP Service Frames	"All" or list of each L2CP in the EVC and corresponding Egress Equivalence Class as specified in Section 10.4.2 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-LAN ●	EVP-LAN ●
Egress Equivalence Class Identifier for SOAM Service Frames	Basis same as for Data Service Frames as specified in Section 10.4.3 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-LAN ●	EVP-LAN ●
Ingress Bandwidth Profile per EVC	MUST be No	MEF 6.2 Tables 5, 14 and 17	EP-LAN ○	EVP-LAN ○
Egress Bandwidth Profile per EVC	MUST be No	MEF 6.2 Tables 5, 14 and 17	EP-LAN ○	EVP-LAN ○
Ingress Bandwidth Profile per Class of Service Identifier	No or Parameters with Bandwidth Profile as defined in Section 10.6 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-LAN ●	EVP-LAN ●
Egress Bandwidth Profile per Egress Equivalence Class	No or Parameters with Bandwidth Profile as defined in Section 10.8 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-LAN ●	EVP-LAN ●
Source MAC Address Limit	Enabled or Disabled as specified in Section 10.9 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-LAN ●	EVP-LAN ●
Test MEG	Enabled or Disabled as specified in Section 10.10 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-LAN ●	EVP-LAN ●
Subscriber MEG MIP	Enabled or Disabled as specified in Section 10.11 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-LAN ●	EVP-LAN ●

MEF 3.0 CE Certification - E-LAN Service Attributes

EVC Service Attributes	Service Attributes Parameters and Values	Reference	Certification Applicability	
EVC Type	MUST be Multipoint-to-Multipoint as specified in Section 8.1 of MEF 10.3	MEF 6.2 Tables 6, 15 and 18	EP-LAN ●	EVP-LAN ●
EVC ID	String as specified in Section 8.2 of MEF 10.3	MEF 6.2 Tables 6, 15 and 18	EP-LAN ○	EVP-LAN ○
UNI List	List of <UNI ID, UNI Role> pairs as specified in Section 8.3 of MEF 10.3 for UNIs associated by the EVC	MEF 6.2 Tables 6, 15 and 18	EP-LAN ●	EVP-LAN ●
Maximum Number of UNIs	Two or three or greater as specified in Section 8.4 of MEF 10.3	MEF 6.2 Tables 6, 15 and 18	EP-LAN ●	EVP-LAN ●
Unicast Service Frame Delivery	Discard or Deliver Unconditionally or Deliver Conditionally as specified in Section 8.5.2 of MEF 10.3	MEF 6.2 Tables 6, 15 and 18	EP-LAN ●	EVP-LAN ●
Multicast Service Frame Delivery	Discard or Deliver Unconditionally or Deliver Conditionally as specified in Section 8.5.2 of MEF 10.3	MEF 6.2 Tables 6, 15 and 18	EP-LAN ●	EVP-LAN ●
Broadcast Service Frame Delivery	Discard or Deliver Unconditionally or Deliver Conditionally as specified in Section 8.5.2 of MEF 10.3	MEF 6.2 Tables 6, 15 and 18	EP-LAN ●	EVP-LAN ●
CE-VLAN ID Preservation	Enabled or Disabled as specified in Section 8.6.1 of MEF 10.3	MEF 6.2 Tables 6, 15 and 18	EP-LAN ●	EVP-LAN ●
CE-VLAN CoS Preservation	Enabled or Disabled as specified in Section 8.6.2 of MEF 10.3	MEF 6.2 Tables 6, 15 and 18	EP-LAN ●	EVP-LAN ●
EVC Performance	List of performance metrics and associated parameters and performance objectives as specified in Section 8.8 of MEF 10.3	MEF 6.2 Tables 6, 15 and 18	EP-LAN ●	EVP-LAN ●
EVC Maximum Service Frame Size	At least 1522 as specified in Section 8.9 of MEF 10.3	MEF 6.2 Tables 6, 15 and 18	EP-LAN ●	EVP-LAN ●

4.3 E-Tree Service Attributes

MEF 3.0 CE Certification - E-Tree Service Attributes

UNI Service Attributes	Service Attributes Parameters and Values	Reference	Certification Applicability	
UNI Identifier	String as specified in Section 9.1 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-Tree ○	EVP-Tree ○
Physical Layer	List of Physical Layers as specified in Section 9.2 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-Tree ●	EVP-Tree ●
Synchronous Mode ¹	List of Disabled or Enabled for each link in the UNI as specified in Section 9.3 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-Tree ○	EVP-Tree ○
Number of Links ¹	At least 1 as specified in Section 9.4 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-Tree ○	EVP-Tree ○
UNI Resiliency ¹	None or 2-link Aggregation or Other as specified in Section 9.5 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-Tree ○	EVP-Tree ○
Service Frame Format	IEEE Std. 802.3 – 2012 as specified in Section 9.6 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-Tree ●	EVP-Tree ●
UNI Maximum Service Frame Size	At least 1522 B as specified in Section 9.7 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-Tree ●	EVP-Tree ●
Service Multiplexing ³	Enabled or Disabled as specified in Section 9.8 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-Tree ○	EVP-Tree ○
CE-VLAN ID for Untagged and Priority Tagged Service Frames	A value in the range 1 to 4094 as specified in Section 9.9 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-Tree ○	EVP-Tree ●
CE-VLAN ID/EVC Map	A map as specified in Section 9.10 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-Tree ●	EVP-Tree ●
Maximum number of EVCs	At least 1 as specified in Section 9.11 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-Tree ●	EVP-Tree ●
Bundling	Enabled or Disabled as specified in Section 9.12 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-Tree ○	EVP-Tree ●
All to One Bundling	Enabled or Disabled as specified in Section 9.13 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-Tree ●	EVP-Tree ○
Token Share	Enabled or Disabled as specified in Section 8.2.1 of this MEF 6.2	MEF 6.2 Tables 4, 13 and 16	EP-Tree ●	EVP-Tree ●
Envelopes	list of <Envelope ID, CF0, n >, where <Envelope ID, CF0 > is as specified in Section 12.1 of MEF 10.3 and n is the number of Bandwidth Profile Flows in the Envelope	MEF 6.2 Tables 4, 13 and 16	EP-Tree ●	EVP-Tree ●
Ingress BWP per UNI	MUST be No	MEF 6.2 Tables 4, 13 and 16	EP-Tree ○	EVP-Tree ○
Egress BWP per UNI	MUST be No	MEF 6.2 Tables 4, 13 and 16	EP-Tree ○	EVP-Tree ○
Link OAM ¹	Enabled or Disabled as specified in Section 9.16 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-Tree ○	EVP-Tree ○
UNI MEG ¹	Enabled or Disabled as specified in Section 9.17 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-Tree ○	EVP-Tree ○
E-LMI ¹	Enabled or Disabled as specified in Section 9.18 of MEF 10.3	MEF 6.2 Tables 4, 13 and 16	EP-Tree ○	EVP-Tree ○
UNI L2CP Address Set	CTB or CTB-2 or CTA as specified in MEF 45 table 10 for EVP-Tree and in MEF 45.0.1 Table 11 for EP-Tree	MEF 6.2 Tables 4, 13 and 16	EP-Tree ●	EVP-Tree ●
UNI L2CP peering ²	None or list of {Destination Address, Protocol Identifier} or list of {Destination Address, Protocol Identifier, Link Identifier} to be Peered as specified in MEF 45	MEF 6.2 Tables 4, 13 and 16	EP-Tree ●	EVP-Tree ●

¹: Control and management protocols such as E-LMI, Link OAM, Service OAM UNI-MEG, Service OAM ENNI-MEG or protection mechanisms that may be operating at the external interfaces are outside the scope of the MEF 3.0 CE certification program. The deployment and verification of these protocols are to be handled between subscriber/service provider/operator

²: Protocols not in list are either Passed to EVC or Discarded based on the Destination Address.

³: Service Multiplexing Service Attribute to be removed from MEF 10.4

MEF 3.0 CE Certification - E-Tree Service Attributes

EVC per UNI Service Attributes	Service Attributes Parameters and Values	Reference	Certification Applicability	
UNI EVC ID	String as specified in Section 10.1 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-Tree ○	EVP-Tree ○
Class of Service Identifier for Data Service Frame	EVC or CE-VLAN CoS or IP value(s) and corresponding CoS Name as specified in Section 10.2.1 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-Tree ●	EVP-Tree ●
Class of Service Identifier for L2CP Service Frame	"All" or list of each L2CP in the EVC and corresponding CoS Name as specified in Section 10.2.2 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-Tree ●	EVP-Tree ●
Class of Service Identifier for SOAM Service Frame	Basis same as for Data Service Frames as specified in Section 10.2.3 of MEF10.3	MEF 6.2 Tables 5, 14 and 17	EP-Tree ●	EVP-Tree ●
Color Identifier for Service Frame	None or EVC or CE-VLAN CoS or CE-VLAN Tag DEI or IP as specified in Section 10.3 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-Tree ●	EVP-Tree ●
Egress Equivalence Class Identifier for Data Service Frames	CE-VLAN CoS or IP value(s) and corresponding CoS Name(s) as specified in Section 10.4.1 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-Tree ●	EVP-Tree ●
Egress Equivalence Class Identifier for L2CP Service Frames	"All" or list of each L2CP in the EVC and corresponding Egress Equivalence Class as specified in Section 10.4.2 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-Tree ●	EVP-Tree ●
Egress Equivalence Class Identifier for SOAM Service Frames	Basis same as for Data Service Frames as specified in Section 10.4.3 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-Tree ●	EVP-Tree ●
Ingress Bandwidth Profile per EVC	MUST be No	MEF 6.2 Tables 5, 14 and 17	EP-Tree ○	EVP-Tree ○
Egress Bandwidth Profile per EVC	MUST be No	MEF 6.2 Tables 5, 14 and 17	EP-Tree ○	EVP-Tree ○
Ingress Bandwidth Profile per Class of Service Identifier	No or Parameters with Bandwidth Profile as defined in Section 10.6 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-Tree ●	EVP-Tree ●
Egress Bandwidth Profile per Egress Equivalence Class	No or Parameters with Bandwidth Profile as defined in Section 10.8 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-Tree ●	EVP-Tree ●
Source MAC Address Limit	Enabled or Disabled as specified in Section 10.9 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-Tree ●	EVP-Tree ●
Test MEG	Enabled or Disabled as specified in Section 10.10 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-Tree ●	EVP-Tree ●
Subscriber MEG MIP	Enabled or Disabled as specified in Section 10.11 of MEF 10.3	MEF 6.2 Tables 5, 14 and 17	EP-Tree ●	EVP-Tree ●

MEF 3.0 CE Certification - E-Tree Service Attributes

EVC Service Attributes	Service Attributes Parameters and Values	Reference	Certification Applicability	
EVC Type	MUST be Rooted-Multipoint as specified in Section 8.1 of MEF 10.3	MEF 6.2 Tables 6, 15 and 18	EP-Tree ●	EVP-Tree ●
EVC ID	String as specified in Section 8.2 of MEF 10.3	MEF 6.2 Tables 6, 15 and 18	EP-Tree ○	EVP-Tree ○
UNI List	List of <UNI ID, UNI Role> pairs as specified in Section 8.3 of MEF 10.3 for UNIs associated by the EVC	MEF 6.2 Tables 6, 15 and 18	EP-Tree ●	EVP-Tree ●
Maximum Number of UNIs	Two or three or greater as specified in Section 8.4 of MEF 10.3	MEF 6.2 Tables 6, 15 and 18	EP-Tree ●	EVP-Tree ●
Unicast Service Frame Delivery	Discard or Deliver Unconditionally or Deliver Conditionally as specified in Section 8.5.2 of MEF 10.3	MEF 6.2 Tables 6, 15 and 18	EP-Tree ●	EVP-Tree ●
Multicast Service Frame Delivery	Discard or Deliver Unconditionally or Deliver Conditionally as specified in Section 8.5.2 of MEF 10.3	MEF 6.2 Tables 6, 15 and 18	EP-Tree ●	EVP-Tree ●
Broadcast Service Frame Delivery	Discard or Deliver Unconditionally or Deliver Conditionally as specified in Section 8.5.2 of MEF 10.3	MEF 6.2 Tables 6, 15 and 18	EP-Tree ●	EVP-Tree ●
CE-VLAN ID Preservation	Enabled or Disabled as specified in Section 8.6.1 of MEF 10.3	MEF 6.2 Tables 6, 15 and 18	EP-Tree ●	EVP-Tree ●
CE-VLAN CoS Preservation	Enabled or Disabled as specified in Section 8.6.2 of MEF 10.3	MEF 6.2 Tables 6, 15 and 18	EP-Tree ●	EVP-Tree ●
EVC Performance	List of performance metrics and associated parameters and performance objectives as specified in Section 8.8 of MEF 10.3	MEF 6.2 Tables 6, 15 and 18	EP-Tree ●	EVP-Tree ●
EVC Maximum Service Frame Size	At least 1522 as specified in Section 8.9 of MEF 10.3	MEF 6.2 Tables 6, 15 and 18	EP-Tree ●	EVP-Tree ●

4.4 Access E-Line Service Attributes

MEF 3.0 CE Certification - Access E-Line Service Attributes

Operator UNI Service Attributes	Service Attributes Parameters and Values	Reference	Certification Applicability
Operator UNI Identifier	A string that is unique across the Operator CEN as specified in Table 25 of MEF 26.2	MEF 51 Section 8.5	Access E-Line O
Operator UNI Physical Layer	A subset of the PHYs listed in IEEE Std. 802.3 – 2012 for each physical link as specified in Table 25 of MEF 26.2	MEF 51 Section 8.5	Access E-Line ●
Operator UNI Synchronous Mode ¹	A list of items, one for each physical link, where each item can equal either Enabled or Disabled as specified in Table 25 of MEF 26.2	MEF 51 Section 8.5	Access E-Line O
Operator UNI Number of Links ¹	A strictly positive integer as specified in Table 25 of MEF 26.2	MEF 51 Section 8.5	Access E-Line O
Operator UNI Link Aggregation ¹	None, 2-Link Active/Standby, All Active, or Other as specified in Table 25 of MEF 26.2	MEF 51 Section 8.5	Access E-Line O
Operator UNI Port Conversation ID to Aggregation Link Map ¹	See IEEE Std. 802.1AX – 2014 as specified in Table 25 of MEF 26.2	MEF 51 Section 8.5	Access E-Line O
Operator UNI Service Frame Format	Ethernet MAC Frame conforming to Clause 3 of IEEE 802.3-2012 as specified in Table 25 of MEF 26.2	MEF 51 Section 8.5	Access E-Line ●
Operator UNI Maximum Service Frame Size	An integer number of bytes greater than or equal to 1522 as specified in Table 25 of MEF 26.2	MEF 51 Section 8.5	Access E-Line ●
Operator UNI Default CE-VLAN ID	An integer in the range 1,2, ... ,4094 as specified in Table 25 of MEF 26.2	MEF 51 Section 8.5	Access E-Line ●
Operator UNI Maximum Number of OVC End Points	A strictly positive integer as specified in Table 25 of MEF 26.2	MEF 51 Section 8.5	Access E-Line ●
Operator UNI Maximum Number of CE-VLAN IDs per OVC End Point	A strictly positive integer as specified in Table 25 of MEF 26.2	MEF 51 Section 8.5	Access E-Line ●
Operator UNI Ingress Bandwidth Profile	Parameters or Disabled When Parameters, several parameter values need to be agreed to by the SP/SO and Operator as specified in Table 25 of MEF 26.2 (single bandwidth profile flow)	MEF 51 Section 8.5	Access E-Line ●
Operator UNI Egress Bandwidth Profile	Parameters or Disabled When Parameters, several parameter values need to be agreed to by the SP/SO and Operator as specified in Table 25 of MEF 26.2 (single bandwidth profile flow)	MEF 51 Section 8.5	Access E-Line ●
Operator UNI Link OAM ¹	Enabled or Disabled as specified in Table 25 of MEF 26.2	MEF 51 Section 8.5	Access E-Line O
Operator UNI MEG ¹	Enabled or Disabled as specified in Table 25 of MEF 26.2	MEF 51 Section 8.5	Access E-Line O
Operator UNI LAG Link MEG ¹	Enabled or Disabled as specified in Table 25 of MEF 26.2	MEF 51 Section 8.5	Access E-Line O
Operator UNI E-LMI ¹	Enabled or Disabled as specified in Table 25 of MEF 26.2	MEF 51 Section 8.5	Access E-Line O
Operator UNI Token Share	Enabled or Disabled as specified in Table 25 of MEF 26.2	MEF 51 Section 8.5	Access E-Line ●
Operator UNI Envelopes	A list entries of the form <Envelope ID value, Envelope Coupling Flag value> as specified in Table 25 of MEF 26.2	MEF 51 Section 8.5	Access E-Line ●
Operator UNI L2CP Address set	CTB or CTB-2 or CTA as specified in MEF 45.0.1 section 10.6	MEF 45.0.1 Section 10.6	Access E-Line ●
Operator UNI L2CP Peering ²	The L2CP Peering service attribute value MUST be an empty list, or a list of entries identifying protocols to be Peered where each entry consists of {Destination Address, Protocol Identifier} or {Destination Address, Protocol Identifier, Link Identifier}	MEF 45 Section 8.2	Access E-Line ●

¹: Control and management protocols such as E-LMI, Link OAM, Service OAM UNI-MEG, Service OAM ENNI-MEG or protection mechanisms that may be operating at the external interfaces are outside the scope of the MEF 3.0 CE certification program. The deployment and verification of these protocols are to be handled between subscriber/service provider/operator

²: Protocols not in list are either Passed to OVC or Discarded based on the Destination Address.

MEF 3.0 CE Certification - Access E-Line Service Attributes

ENNI Service Attributes	Service Attributes Parameters and Values	Reference	Certification Applicability
Operator ENNI Identifier	A string that is unique across the ENNIs of the Operator CEN as specified in Table 24 of MEF 26.2	MEF 51 Section 8.4	Access E-Line ○
S-VLAN ID Control	Full or Partial as specified in Table 24 of MEF 26.2	MEF 51 Section 8.4	Access E-Line ○
Maximum Number of OVCs	A strictly positive integer as specified in Table 24 of MEF 26.2	MEF 51 Section 8.4	Access E-Line ○
Maximum Number of OVC End Points per OVC	A strictly positive integer as specified in Table 24 of MEF 26.2	MEF 51 Section 8.4	Access E-Line ●
ENNI Token Share	Enabled or Disabled as specified in Table 24 of MEF 26.2	MEF 51 Section 8.4	Access E-Line ●
ENNI Envelopes	A list entries of the form <Envelope ID value, Envelope Coupling Flag value> as specified in Table 24 of MEF 26.2	MEF 51 Section 8.4	Access E-Line ●
ENNI Common Service Attributes	Service Attributes Parameters and Values	Reference	Certification Applicability
ENNI Peering Identifier	A string that is unique across all of the ENNIs between the Operator CENs as specified in Table 3 of MEF 26.2	MEF 51 Section 8.4	Access E-Line ○
ENNI Physical Layer	A subset of the PHYs listed in IEEE Std. 802.3 – 2012 for each physical link as specified in Table 3 of MEF 26.2	MEF 51 Section 8.4	Access E-Line ●
ENNI Frame Format	Ethernet MAC Frame conforming to Clause 3 of IEEE 802.3-2012 as specified in Table 3 of MEF 26.2	MEF 51 Section 8.4	Access E-Line ●
ENNI Number of Links ¹	A strictly positive integer as specified in Table 3 of MEF 26.2	MEF 51 Section 8.4	Access E-Line ○
ENNI Link Aggregation ¹	None, 2-Link Active/Standby, All Active, or Other as specified in Table 3 of MEF 26.2	MEF 51 Section 8.4	Access E-Line ○
ENNI Port Conversation ID to Aggregation Link Map ¹	See IEEE Std. 802.1AX – 2014 as specified in Table 3 of MEF 26.2	MEF 51 Section 8.4	Access E-Line ○
ENNI MEG ¹	Enabled or Disabled as specified in Table 3 of MEF 26.2	MEF 51 Section 8.4	Access E-Line ○
ENNI LAG Link MEG ¹	Enabled or Disabled as specified in Table 3 of MEF 26.2	MEF 51 Section 8.4	Access E-Line ○
ENNI Link OAM ¹	Enabled or Disabled as specified in Table 3 of MEF 26.2	MEF 51 Section 8.4	Access E-Line ○
Operator Multilateral Attributes	Service Attributes Parameters and Values	Reference	Certification Applicability
ENNI L2CP Peering ²	The L2CP Peering service attribute value MUST be an empty list, or a list of entries identifying protocols to be Peered where each entry consists of {Destination Address, Protocol Identifier} or {Destination Address, Protocol Identifier, Link Identifier}	MEF 45 Section 8.2	Access E-Line ●
ENNI Tagged L2CP Frame Processing	An ENNI Tagged L2CP Frame Processing Service Attribute SHOULD be 802.1 compliant	MEF 45 Section 8.3	Access E-Line ●
ENNI Maximum Frame Size	The maximum length ENNI Frame in bytes that can be reliably processed	MEF 51 Section 8.4	Access E-Line ●

¹: Control and management protocols such as E-LMI, Link OAM, Service OAM UNI-MEG, Service OAM ENNI-MEG or protection mechanisms that may be operating at the external interfaces are outside the scope of the MEF 3.0 CE certification program. The deployment and verification of these protocols are to be handled between subscriber/service provider/operator

²: Protocols not in list are either Passed to OVC or Discarded based on the Destination Address.

MEF 3.0 CE Certification - Access E-Line Service Attributes

OVC Service Attributes	Service Attributes Parameters and Values	Reference	Certification Applicability
OVC Identifier	A unique identifier within the Operator's network for the OVC	MEF 51 Table 5	Access E-Line ○
OVC Type	MUST be Point-to-Point	MEF 51 Table 8	Access E-Line ●
OVC End Point List	MUST have one OVC End Point at an ENNI and one OVC End Point at a UNI	MEF 51 Table 11	Access E-Line ●
Maximum Number of UNI OVC End Points	MUST be 1	MEF 51 Table 11	Access E-Line ●
Maximum Number of ENNI OVC End Points	MUST be 1	MEF 51 Table 11	Access E-Line ●
OVC Maximum Frame Size	At least 1526 as specified in Section 12.6 of MEF 26.2	MEF 51 Table 5	Access E-Line ●
OVC CE-VLAN ID Preservation	Can be one of Preserve, Strip, or Retain as specified in Section 12.7 of MEF 26.2	MEF 51 Table 11	Access E-Line ●
OVC CE-VLAN CoS (PCP) Preservation	Enabled or Disabled as specified in Section 12.8 of MEF 26.2	MEF 51 Table 11	Access E-Line ●
OVC S-VLAN ID Preservation	Enabled or Disabled in MEF 26.1 and MEF 51 but the attribute has been removed from 26.2	MEF 51 Table 5	Access E-Line ○
OVC S-VLAN CoS (PCP) Preservation	Enabled or Disabled as specified in Section 12.10 of MEF 26.2	MEF 51 Table 5	Access E-Line ○
Color Forwarding (OEP Egress Map)	The Color Forwarding OVC Service Attribute in MEF 26.1 is replaced by the OVC End Point Egress Map Service Attribute in MEF 26.2 Table 30 "The specification of the content of the S-Tag and/or C-Tag PCP value and DEI value for egress EI Frames"	MEF 51 Table 5	Access E-Line ●
Service Level Specification	Any combination of some or all of performance metrics defined in MEF 26.2 can be used in an SLS	MEF 51 Table 5	Access E-Line ●
Unicast Frame Delivery	Conditional or Unconditional (or Discard). If Conditional, the conditions need to be specified. The Operator MUST support unconditional unicast frame delivery	MEF 51 Table 8	Access E-Line ●
Multicast Frame Delivery	Conditional or Unconditional (or Discard). If Conditional, the conditions need to be specified. The Operator MUST support unconditional multicast frame delivery	MEF 51 Table 8	Access E-Line ●
Broadcast Frame Delivery	Conditional or Unconditional (or Discard). If Conditional, the conditions need to be specified. The Operator MUST support unconditional broadcast frame delivery	MEF 51 Table 8	Access E-Line ●
OVC Available MEG Level	Specifies the lowest MEG Level available for the Service Provider or SOAM Super Operator	MEF 51 Table 5	Access E-Line ●

MEF 3.0 CE Certification - Access E-Line Service Attributes

OVC End Point per UNI Service Attributes	Service Attributes Parameters and Values	Reference	Certification Applicability
UNI OVC Identifier	A unique identifier within the Operator's network for a specific OVC at the UNI	MEF 51 Table 7	Access E-Line O
OVC End Point Map	The CE-VLAN ID(s) that map to the OVC End Point at the UNI	MEF 51 Table 7	Access E-Line ●
Class of Service Identifiers	The way that a Class of Service Name is determined for ingress Service Frames at a UNI	MEF 51 Table 7	Access E-Line ●
Ingress Bandwidth Profile per OVC End Point	MUST be No	MEF 51 Table 7	Access E-Line O
Ingress Bandwidth Profile per Class of Service Identifier (Name)	Ingress policing by the Operator on all ingress frames with the CoS ID for a given OVC End Point at a UNI	MEF 51 Table 7	Access E-Line ●
Egress Bandwidth Profile per OVC End Point	MUST be No	MEF 51 Table 7	Access E-Line O
Egress Bandwidth Profile per Class of Service Identifier	Traffic limiting of egress Service Frames with the CoS ID mapped to the OVC End Point at a UNI (shaping and/or policing could be used in the CEN)	MEF 51 Table 7	Access E-Line ●
Source MAC Address Limit	Enabled or Disabled as specified in section 16.5 of MEF 26.2	MEF 51 Section 8.5	Access E-Line ●
Maintenance End Point (MEP) List	A list of MEPs, with their direction (Up or Down), MEG and MEG level, to be enabled at the OVC End Point	MEF 51 Table 7	Access E-Line ●
Subscriber MEG MIP	Enabled or Disabled	MEF 51 Table 7	Access E-Line ●

OVC End Point per ENNI Service Attributes	Service Attributes Parameters and Values	Reference	Certification Applicability
OVC End Point Identifier	A unique identifier within the Operator's network for the OVC End Point	MEF 51 Table 6	Access E-Line O
Trunk Identifier	A pair of S-VLAN ID values used on the ENNI for distinguishing between Root and Leaf originated frames. Note: Applicable for Rooted-Multipoint OVC Services having a 'trunk' OVC End Point. Not applicable for Access E-Line Services	MEF 51 Table 6	Access E-Line O
OVC End Point Map	Each S-VLAN ID value associated with an instance of an OVC Service, as defined in this document, MUST map to a distinct End Point of Type = 'OVC'	MEF 51 Section 8.4	Access E-Line ●
Class of Service Identifier for ENNI Frames	The way that a Class of Service Name is determined for ingress ENNI Frames at an ENNI	MEF 51 Table 6	Access E-Line ●
Ingress Bandwidth Profile per OVC End Point	MUST be No	MEF 51 Table 6	Access E-Line O
Ingress Bandwidth Profile per Class of Service Identifier (Name)	Ingress policing by the Operator on all ingress ENNI frames with the CoS ID mapped to the OVC End Point	MEF 51 Table 6	Access E-Line ●
Egress Bandwidth Profile per OVC End Point	MUST be No	MEF 51 Table 6	Access E-Line O
Egress Bandwidth Profile per Class of Service Identifier	Traffic limiting of egress ENNI Frames with the CoS ID mapped to the OVC End Point (shaping and/or policing could be used in the CEN)	MEF 51 Table 6	Access E-Line ●
Source MAC Address Limit	Enabled or Disabled as specified in section 16.5 of MEF 26.2	MEF 51 Section 8.4	Access E-Line ●
Maintenance End Point (MEP) List	A list of MEPs, with their direction (Up or Down), MEG and MEG level, to be enabled at the OVC End Point	MEF 51 Table 6	Access E-Line ●
Maintenance Intermediate Point (MIP)	Enabled or Disabled	MEF 51 Table 6	Access E-Line ●

4.5 Transit E-Line Service Attributes

MEF 3.0 CE Certification - Transit E-Line Service Attributes

ENNI Service Attributes	Service Attributes Parameters and Values	Reference	Certification Applicability
Operator ENNI Identifier	A string that is unique across the ENNIs of the Operator CEN as specified in Table 24 of MEF 26.2	MEF 51 Section 8.4	Transit E-Line ○
S-VLAN ID Control	Full or Partial as specified in Table 24 of MEF 26.2	MEF 51 Section 8.4	Transit E-Line ○
Maximum Number of OVCs	A strictly positive integer as specified in Table 24 of MEF 26.2	MEF 51 Section 8.4	Transit E-Line ○
Maximum Number of OVC End Points per OVC	A strictly positive integer as specified in Table 24 of MEF 26.2	MEF 51 Section 8.4	Transit E-Line ●
ENNI Token Share	Enabled or Disabled as specified in Table 24 of MEF 26.2	MEF 51 Section 8.4	Transit E-Line ●
ENNI Envelopes	A list entries of the form <Envelope ID value, Envelope Coupling Flag value> as specified in Table 24 of MEF 26.2	MEF 51 Section 8.4	Transit E-Line ●
ENNI Common Service Attributes	Service Attributes Parameters and Values	Reference	Certification Applicability
ENNI Peering Identifier	A string that is unique across all of the ENNIs between the Operator CENs as specified in Table 3 of MEF 26.2	MEF 51 Section 8.4	Transit E-Line ○
ENNI Physical Layer	A subset of the PHYs listed in IEEE Std. 802.3 – 2012 for each physical link as specified in Table 3 of MEF 26.2	MEF 51 Section 8.4	Transit E-Line ●
ENNI Frame Format	Ethernet MAC Frame conforming to Clause 3 of IEEE 802.3-2012 as specified in Table 3 of MEF 26.2	MEF 51 Section 8.4	Transit E-Line ●
ENNI Number of Links ¹	A strictly positive integer as specified in Table 3 of MEF 26.2	MEF 51 Section 8.4	Transit E-Line ○
ENNI Link Aggregation ¹	None, 2-Link Active/Standby, All Active, or Other as specified in Table 3 of MEF 26.2	MEF 51 Section 8.4	Transit E-Line ○
ENNI Port Conversation ID to Aggregation Link Map ¹	See IEEE Std. 802.1AX – 2014 as specified in Table 3 of MEF 26.2	MEF 51 Section 8.4	Transit E-Line ○
ENNI MEG ¹	Enabled or Disabled as specified in Table 3 of MEF 26.2	MEF 51 Section 8.4	Transit E-Line ○
ENNI LAG Link MEG ¹	Enabled or Disabled as specified in Table 3 of MEF 26.2	MEF 51 Section 8.4	Transit E-Line ○
ENNI Link OAM ¹	Enabled or Disabled as specified in Table 3 of MEF 26.2	MEF 51 Section 8.4	Transit E-Line ○
Operator Multilateral Attributes	Service Attributes Parameters and Values	Reference	Certification Applicability
ENNI L2CP Peering ²	The L2CP Peering service attribute value MUST be an empty list, or a list of entries identifying protocols to be Peered where each entry consists of {Destination Address, Protocol Identifier} or {Destination Address, Protocol Identifier, Link Identifier}	MEF 45 Section 8.2	Transit E-Line ●
ENNI Tagged L2CP Frame Processing	An ENNI Tagged L2CP Frame Processing Service Attribute SHOULD be 802.1 compliant	MEF 45 Section 8.3	Transit E-Line ●
ENNI Maximum Frame Size	The maximum length ENNI Frame in bytes that can be reliably processed	MEF 51 Section 8.4	Transit E-Line ●

¹: Control and management protocols such as E-LMI, Link OAM, Service OAM UNI-MEG, Service OAM ENNI-MEG or protection mechanisms that may be operating at the external interfaces are outside the scope of the MEF 3.0 CE certification program. The deployment and verification of these protocols are to be handled between subscriber/service provider/operator

²: Protocols not in list are either Passed to OVC or Discarded based on the Destination Address.

MEF 3.0 CE Certification - Transit E-Line Service Attributes

OVC Service Attributes	Service Attributes Parameters and Values	Reference	Certification Applicability
OVC Identifier	A unique identifier within the Operator's network for the OVC	MEF 51 Table 5	Transit E-Line ○
OVC Type	MUST be Point-to-Point	MEF 51 Table 8	Transit E-Line ●
OVC End Point List	For Transit E-Line Service, each OVC End Point MUST be at an ENNI	MEF 51 Table 17	Transit E-Line ●
Maximum Number of UNI OVC End Points	MUST be 0	MEF 51 Table 17	Transit E-Line ○
Maximum Number of ENNI OVC End Points	MUST be 2	MEF 51 Table 17	Transit E-Line ●
OVC Maximum Frame Size	At least 1526 as specified in Section 12.6 of MEF 26.2	MEF 51 Table 5	Transit E-Line ●
OVC CE-VLAN ID Preservation	MUST be yes	MEF 51 Table 11	Transit E-Line ●
OVC CE-VLAN CoS (PCP) Preservation	MUST be yes	MEF 51 Table 11	Transit E-Line ●
OVC S-VLAN ID Preservation	Enabled or Disabled in MEF 26.1 and MEF 51 but the attribute has been removed from 26.2	MEF 51 Table 5	Transit E-Line ●
OVC S-VLAN CoS (PCP) Preservation	Enabled or Disabled as specified in Section 12.10 of MEF 26.2	MEF 51 Table 5	Transit E-Line ●
Color Forwarding (OEP Egress Map)	The Color Forwarding OVC Service Attribute in MEF 26.1 is replaced by the OVC End Point Egress Map Service Attribute in MEF 26.2 Table 30 "The specification of the content of the S-Tag and/or C-Tag PCP value and DEI value for egress EI Frames"	MEF 51 Table 5	Transit E-Line ●
Service Level Specification	Any combination of some or all of performance metrics defined in MEF 26.2 can be used in an SLS	MEF 51 Table 8	Transit E-Line ●
Unicast Frame Delivery	Conditional or Unconditional (or Discard). If Conditional, the conditions need to be specified. The Operator MUST support unconditional unicast frame delivery	MEF 51 Table 8	Transit E-Line ●
Multicast Frame Delivery	Conditional or Unconditional (or Discard). If Conditional, the conditions need to be specified. The Operator MUST support unconditional multicast frame delivery	MEF 51 Table 8	Transit E-Line ●
Broadcast Frame Delivery	Conditional or Unconditional (or Discard). If Conditional, the conditions need to be specified. The Operator MUST support unconditional broadcast frame delivery	MEF 51 Table 8	Transit E-Line ●
OVC Available MEG Level	Specifies the lowest MEG Level available for the Service Provider or SOAM Super Operator	MEF 51 Table 5	Transit E-Line ●

MEF 3.0 CE Certification - Transit E-Line Service Attributes

OVC End Point per ENNI Service Attributes	Service Attributes Parameters and Values	Reference	Certification Applicability
OVC End Point Identifier	A unique identifier within the Operator's network for the OVC End Point	MEF 51 Table 6	Transit E-Line ○
Trunk Identifier	A pair of S-VLAN ID values used on the ENNI for distinguishing between Root and Leaf originated frames. Note: Applicable for Rooted-Multipoint OVC Services having a 'trunk' OVC End Point. Not applicable for Access E-Line Services	MEF 51 Table 6	Transit E-Line ○
OVC End Point Map	Each S-VLAN ID value associated with an instance of an OVC Service, as defined in this document, MUST map to a distinct End Point of Type = 'OVC'	MEF 51 Section 8.4	Transit E-Line ●
Class of Service Identifier for ENNI Frames	The way that a Class of Service Name is determined for ingress ENNI Frames at an ENNI	MEF 51 Table 6	Transit E-Line ●
Ingress Bandwidth Profile per OVC End Point	MUST be No	MEF 51 Table 6	Transit E-Line ○
Ingress Bandwidth Profile per Class of Service Identifier (Name)	Ingress policing by the Operator on all ingress ENNI frames with the CoS ID mapped to the OVC End Point	MEF 51 Table 6	Transit E-Line ●
Egress Bandwidth Profile per OVC End Point	MUST be No	MEF 51 Table 6	Transit E-Line ○
Egress Bandwidth Profile per Class of Service Identifier	Traffic limiting of egress ENNI Frames with the CoS ID mapped to the OVC End Point (shaping and/or policing could be used in the CEN)	MEF 51 Table 6	Transit E-Line ●
Source MAC Address Limit	Enabled or Disabled as specified in section 16.5 of MEF 26.2	MEF 51 Section 8.4	Transit E-Line ●
Maintenance End Point (MEP) List	A list of MEPs, with their direction (Up or Down), MEG and MEG level, to be enabled at the OVC End Point	MEF 51 Table 6	Transit E-Line ●
Maintenance Intermediate Point (MIP)	Enabled or Disabled	MEF 51 Table 6	Transit E-Line ●

5. LSO API Services

This section is to be completed following the definition of the relevant LSO API Services.

6. Terminology and Acronyms

Term	Definition	Source
ADAGIO	The element Management Interface Reference Point needed to manage the network resources, including element view related management functions. For example, ICM will use Adagio to implement cross-connections or network functions on specific elements via the ECM functionality responsible for managing the element	MEF 55
ALLEGRO	The Management Interface Reference Point that allows Customer Application Coordinator supervision and control of dynamic service behavior (see Section 8.2.3) of the LSO service capabilities under its purview through interactions with the Service Orchestration Functionality. When a Customer exercises dynamic service behavior via Allegro, the Service Orchestration Functionality must validate each request using the Service specific policies that govern such dynamic behavior. Such dynamic behavior and associated constraints are defined based on the Product Specification implemented by the Service. For example, a Service specific dynamic service policy may describe the range of bandwidth in which the Customer is permitted to throttle. Allegro may also be used to share service level fault information with the Customer. Since cross domain interactions are supported, additional security considerations need to be addressed on this Management Interface Reference Point	MEF 55
Application Program Interface (API)	In the context of LSO, API describes one of the Management Interface Reference Points based on the requirements specified in an Interface Profile, along with a data model, the protocol that defines operations on the data and the encoding format used to encode data according to the data model	MEF 55
CANTATA	The Management Interface Reference Point that provides a Customer Application Coordinator (including enterprise Customers) with capabilities to support the operations interactions (e.g., ordering, billing, trouble management, etc.) with the Service Provider's Business Applications for a portion of the Service Provider service capabilities related to the Customer's Products and Services (e.g., Customer Service Management interface). Since cross domain interactions are supported, additional security considerations need to be addressed on this Management Interface Reference Point	MEF 55
CEN	Carrier Ethernet Network	MEF 12.2
Color Identifier (Color ID)	The fields in a Service Frame or ENNI Frame, along with the values of those fields, that are used to identify the Color that applies to the frame	MEF 23.2
Connectivity service	A service delivering network connectivity (i.e. traffic) among service access points described by a set of both static and/or dynamic service attributes	MEF 55
Class of Service Performance Objective (CPO)	An objective for a given performance metric	MEF 23.2
Class of Service Identifier (CoS ID)	The fields in a Service Frame or ENNI Frame, along with the values of those fields, that are used to identify the Class of Service Name that applies to the frame	MEF 23.2
E-LMI	Ethernet Local Management Interface Protocol	MEF 16
External Network-Network Interface (ENNI)	An interface used to interconnect two CEN Operators	MEF 4
ENNI Common Attributes	Technical details that need to be agreed to by Operators in order for their CENs to be interconnected to form an ENNI	MEF 26.2
EVC	Ethernet Virtual Connection	MEF 4
INTERLUDE	The Management Interface Reference Point that provides for the coordination of a portion of LSO services within the partner domain that are managed by a Service Provider's Service Orchestration Functionality within the bounds and policies defined for the service. Through Interlude, the Service Orchestration Functionality may request initiation of technical operations or dynamic control behavior associated with a Service with a partner network domain (see Section 8.2.3). Such requests must be within the constraints set forth in the policies associated with established Services and performed without impacting business applications. For example, to satisfy a Customer request, the Service Orchestration Functionality may request changes to a CE-VLAN ID mapping at a UNI that resides in a partner domain. Interlude may also be used to share service level fault information with the partner domain. Since cross domain interactions are supported, additional security considerations need to be addressed on this Management Interface Reference Point	MEF 55
Layer 2 Control Protocol Frame (L2CP)	A L2CP Service Frame or L2CP ENNI Frame	MEF 45
Lifecycle Service Orchestration (LSO)	Open and interoperable automation of management operations over the entire lifecycle of Layer 2 and Layer 3 Connectivity Services. This includes fulfillment, control, performance,	MEF 55

	assurance, usage, security, analytics and policy capabilities, over all the network domains that require coordinated management and control in order to deliver the service	
LEGATO	The Management Interface Reference Point between the Business Applications and the Service Orchestration Functionality needed to allow management and operations interactions supporting LSO connectivity services. For example, the Business Applications may, based on a Customer order, use Legato to request the instantiation of a Connectivity Service. Legato may also allow the SOF to describe Services and capabilities it is able to instantiate. Also, the Service Orchestration Function may use Legato to ask the Business Applications to place an order to a Partner provider for the access service needed as a Service Component of an end-to-end Connectivity Service	MEF 55
LSO reference architecture	A layered abstraction architecture that characterizes the management and control domains and entities, and the interfaces among them, to enable cooperative orchestration of Connectivity Services	MEF 55
Management Interface point	The logical point of interaction between specific management entities	MEF 55
MEG	Maintenance Entity Group	MEF 17
Orchestrated	Relating to automated service management across potentially multiple operator networks which includes fulfillment, control, performance, assurance, usage, security, analytics, and policy capabilities, which are achieved programmatically through APIs that provide abstraction from the particular network technology used to deliver the service	MEF 55
Operator Virtual Connection (OVC)	An association of OVC End Points	MEF 26.2
OVC End Point	A logical entity at a given External Interface that is associated with a distinct set of frames passing over that External Interface	MEF 26.2
Performance Tier	A MEF CoS Performance Objectives (CPO) set	MEF 23.2
PRESTO	The resource Management Interface Reference Point needed to manage the network infrastructure, including network and topology view related management functions. For example, the Service Orchestration Function will use Presto to request ICM to create connectivity or functionality associated with specific Service Components of an end-to-end Connectivity Service within the domain managed by each ICM. Presto may also allow the ICM to describe Resources and capabilities it is able to instantiate	MEF 55
Product		
Resource	A physical or non-physical component (or some combination of these) within a Service Provider's infrastructure or inventory	MEF 55
Service	Represents the Customer experience of a Product Instance that has been realized within the Service Provider's and / or Partners' infrastructure	MEF 55
Service Operations, Administration, and Maintenance (SOAM)	Mechanisms for monitoring connectivity and performance for entities (links, services, etc.) within the Carrier Ethernet Network	MEF 17 MEF 30.1 MEF 35.1
Service Orchestration Functionality (SOF)	The set of service management layer functionality supporting an agile framework to streamline and automate the service lifecycle in a sustainable fashion for coordinated management supporting design, fulfillment, control, testing, problem management, quality management, usage measurements, security management, analytics, and policy-based management capabilities providing coordinated end-to-end management and control of Layer 2 and Layer 3 Connectivity Services	MEF 55
SONATA	The Management Interface Reference Point supporting the management and operations interactions (e.g., ordering, billing, trouble management, etc.) between two network providers (e.g., Service Provider Domain and Partner Domain). For example, the Service Provider Business Applications may use Sonata to place an order to a Partner provider for an access service that is needed as a part of an end-to-end Connectivity Service. Since cross domain interactions are supported, additional security considerations need to be addressed on this Management Interface Reference Point	MEF 55
User Network Interface (UNI)	The physical demarcation point between the responsibility of the Service Provider and the responsibility of the Subscriber	MEF 11

7. Revision History

Revision	Details	Date	Contact
V1	<ul style="list-style-type: none">• First Pilot Phase release for Certification Committee review	April 20, 2017	Isabelle Morency – Iometrix
V1.1	<ul style="list-style-type: none">• Typo corrected in table 'Access E-Line Service Attributes', 'OVC Service Attributes' section, OVC S-VLAN ID Preservation	July 17, 2017	Isabelle Morency - Iometrix
V1.2	<ul style="list-style-type: none">• "Third Network" replaced by "MEF CE 3.0" throughout	October 23, 2017	Isabelle Morency - Iometrix
V2.0	<ul style="list-style-type: none">• Source MAC Address Limit for Access E-Line and Transit E-Line applicable if supported• MEP List for Access E-Line and Transit E-Line applicable if supported• Service Multiplexing not applicable	November 27, 2017	Isabelle Morency - Iometrix