



Technical Specification
MEF 19

Abstract Test Suite
for
UNI Type 1

April, 2007

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1. Abstract

This document defines test procedures based on the requirements for the User to Network Interface (UNI) Type 1 mode or manual configuration mode. The UNI Type 1 mode provides data-plane connectivity services without control-plane or management-plane capabilities.

2. Terminology

All to One Bundling	A UNI attribute in which all CE-VLAN IDs are associated with a single EVC
Bandwidth Profile	A characterization of ingress Service Frame arrival times and lengths at a reference point and a specification of the disposition of each Service Frame based on its level of compliance with the Bandwidth Profile. In this document the reference point is the UNI
Broadcast Service Frame	A Service Frame that has the broadcast destination MAC address
Bundling	A UNI attribute in which more than one CE-VLAN ID can be associated with an EVC
CBS	Committed Burst Size
CE	Customer Edge
CE-VLAN CoS	Customer Edge VLAN CoS
CE-VLAN ID	Customer Edge VLAN ID
CE-VLAN ID Preservation	An EVC attribute in which the CE-VLAN ID of an egress Service Frame is identical in value to the CE-VLAN ID of the corresponding ingress Service Frame
CE-VLAN ID/EVC Map	An association of CE-VLAN IDs with EVCs at a UNI
CE-VLAN Tag	Customer Edge VLAN Tag
CF	Coupling Flag
CIR	Committed Information Rate
Class of Service	A set of Service Frames that have a commitment from the Service Provider to receive a particular level of performance
Class of Service Identifier	Information derivable from a) the EVC to which the Service Frame is mapped or b) the combination of the EVC to which the Service Frame is mapped and a set of one or more CE-VLAN CoS values
CM	Color Mode
Color Mode	CM is 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 Frame is taken into account when determining the level of compliance for each Service Frame

Color-blind	A Bandwidth Profile property where a pre-determined level of Bandwidth Profile compliance for each Service Frame, if present, is ignored when determining the level of compliance for each Service Frame
Committed Burst Size	CBS is a Bandwidth Profile parameter. It limits the maximum number of bytes available for a burst of ingress Service Frames sent at the UNI speed to remain CIR-conformant
Committed Information Rate	CIR is a Bandwidth Profile parameter. It defines the average rate in bits/s of ingress Service Frames up to which the network delivers Service Frames and meets the performance objectives defined by the CoS Service Attribute
Coupling Flag	CF is a Bandwidth Profile parameter. The Coupling Flag allows the choice between two modes of operations of the rate enforcement algorithm. It takes a value of 0 or 1 only
Customer Edge	Equipment on the Subscriber side of the UNI
Customer Edge VLAN CoS	The user priority bits in the IEEE 802.1Q Tag in a Service Frame that is either tagged or priority tagged
Customer Edge VLAN ID	The identifier derivable from the content of a Service Frame that allows the Service Frame to be associated with an EVC at the UNI
Customer Edge VLAN Tag	The IEEE 802.1Q Tag in a tagged Service Frame
EBS	Excess Burst Size
Egress Service Frame	A Service Frame sent from the Service Provider network to the CE
EIR	Excess Information Rate
E-LAN Service	Ethernet LAN Service
E-Line Service	Ethernet Line Service
Ethernet LAN Service	An Ethernet Service Type distinguished by its use of a Multipoint-to-Multipoint EVC
Ethernet Line Service	An Ethernet Service Type distinguished by its use of a Point-to-Point 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
EVC	Ethernet Virtual Connection
Excess Burst Size	EBS is a Bandwidth Profile parameter. It limits the maximum number of bytes available for a burst of ingress Service Frames sent at the UNI speed to remain EIR-conformant
Excess Information Rate	EIR is a Bandwidth Profile parameter. It defines the average rate in bits/s of ingress Service Frames up to which the network may deliver Service Frames without any performance objectives
FD	Frame Delay
FDV	Frame Delay Variation
FLR	Frame Loss Ratio
Frame	Short for Ethernet frame

Frame Delay	The time required to transmit a Service Frame from source to destination across the metro Ethernet network
Frame Delay Performance	A measure of the delays experienced by Service Frames belonging to the same CoS instance
Frame Delay Variation	The difference in delay of two Service Frames
Frame Delay Variation Performance	A measure of the variation in the delays experienced by Service Frames belonging to the same CoS instance
Frame Loss Ratio Performance	Frame Loss Ratio is a measure of the number of lost frames inside the MEN. Frame Loss Ratio is expressed as a percentage
Ingress Service Frame	A Service Frame sent from the CE into the Service Provider network
Layer 2 Control Protocol Service Frame	A Service Frame that is used for Layer 2 control, e.g., Spanning Tree Protocol
Layer 2 Control Protocol Tunneling	The process by which a Layer 2 Control Protocol Service Frame is passed through the Service Provider network without being processed and is delivered unchanged to the proper UNI(s)
Multicast Service Frame	A Service Frame that has a multicast destination MAC address
Multipoint-to-Multipoint EVC	An EVC with two or more UNIs. A Multipoint-to-Multipoint EVC with two UNIs is different from a Point-to-Point EVC because one or more additional UNIs can be added to it
Point-to-Point EVC	An EVC with exactly 2 UNIs
Service Frame	An Ethernet frame transmitted across the UNI toward the Service Provider or an Ethernet frame transmitted across the UNI toward the Subscriber
Service Level Agreement	The contract between the Subscriber and Service Provider specifying the agreed to service level commitments and related business agreements
Service Level Specification	The technical specification of the service level being offered by the Service Provider to the Subscriber
Service Multiplexing	A UNI service attribute in which the UNI can be in more than one EVC instance
Service Provider	The organization providing Ethernet Service(s)
SLA	Service Level Agreement
SLS	Service Level Specification
Subscriber	The organization purchasing and/or using Ethernet Services
UNI	User Network Interface
UNI-C	Compound architectural component on the Subscriber side of the UNI that represents all the functions required to connect a subscriber to a MEN
UNI-N	Compound architectural component on the Service Provider side of the UNI that represents all the functions required to connect a MEN to a MEN subscriber
Unicast Service Frame	A Service Frame that has a unicast destination MAC address

User Network Interface

The physical demarcation point between the responsibility of the Service Provider and the responsibility of the Subscriber

W_G

W_G is the amount of traffic accepted as Green over the time interval T that should be delivered to the egress UNI

W_Y

W_Y is the amount of traffic accepted as Yellow over the time interval T that may be delivered to the egress UNI

3. Scope

The **Abstract Test Suite for UNI Type 1** describes the test procedures based on the requirements for the User to Network Interface (UNI) Type 1 mode or manual configuration mode. Test Cases in this Test Specification are only defined for the UNI-N and each different physical interface **MUST** be tested independently.

The UNI Type 1 requirements are described in sections 5, 6.1 and 6.2 of MEF 13 *User Network Interface (UNI) Type 1 Implementation Agreement*.

Section 5 of MEF 13 defines the common characteristics of a UNI Type 1 such as the supported physical media and Ethernet frame formats.

Section 6.1 of MEF 13 defines the specific characteristics of a UNI Type 1.1 which is a subset of the UNI Type 1 and which is not meant to support service multiplexing.

Section 6.2 of MEF 13 defines the specific characteristics of a UNI Type 1.2 which is also a subset of the UNI Type 1 but which is meant to support service multiplexing.

UNI Type 2 mode (Service Management) and UNI Type 3 mode (Dynamic Connection Setup) are out of the scope of this document.

This document may be updated in the future to reflect new work done in the MEF Technical Committee.

4. Compliance Levels

The key words "**MUST**", "**MUST NOT**", "**REQUIRED**", "**SHALL**", "**SHALL NOT**", "**SHOULD**", "**SHOULD NOT**", "**RECOMMENDED**", "**MAY**", and "**OPTIONAL**" in this document are to be interpreted as described in RFC 2119. All key words **MUST** be use upper case, bold text.

5. Introduction

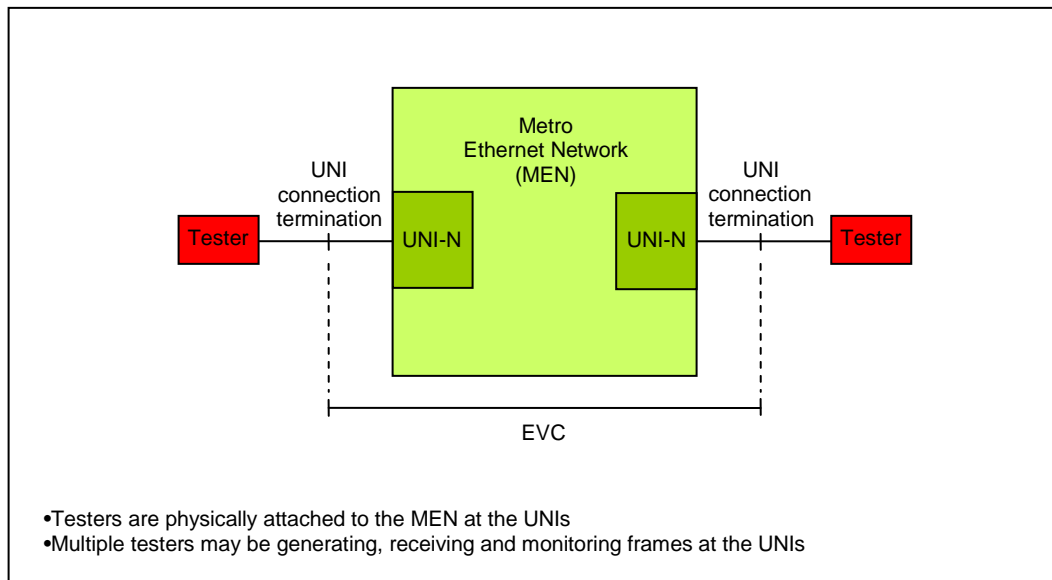
This document supplements the existing MEF test specifications MEF 9 *Abstract Test Suite for Ethernet Services at the UNI* and MEF 14 *Abstract Test Suite for Traffic Management Phase 1*, by adding test procedures based on the requirements for the User to Network Interface (UNI) Type 1 mode (manual configuration) defined in MEF 13 *User Network Interface (UNI) Type 1 implementation agreement*.

As with MEF 9 and MEF 14, vendors can refer to the requirements and test procedures defined in this specification in the development and commercial cycles of their products and carriers can use them to ensure that the network elements they deploy or add to their existing network will have the ability to deliver Ethernet Services based on the MEF technical specifications.

The requirements, framework and functional model on how the UNI reference point operates in a Metro Ethernet Network is defined on the Metro Ethernet Forum technical specification MEF 11 *User to Network Interface Requirements and Framework*.

6. Test Configuration

Although some Test Cases may require very specific test configurations, most Test Cases defined in this document are to be executed by attaching the Ethernet interface of a tester to the Ethernet User Network Interface (UNI).



Test Configuration for UNI Type 1

- In each Test Case, the Test Configuration section describes the number of EVCs associating the number of UNIs and the number of CE-VLAN IDs mapped to the EVCs
- Testers are attached to all UNIs in the configured EVCs
- CE-VLAN ID/EVC Maps are given for each Test Case
- Applicable Bandwidth Profile and Service Performance parameters are provided when necessary

7. Template for Abstract Test Cases for UNI Type 1

The following template is adopted for the definition of Abstract Test Cases for UNI Type 1:

ABSTRACT TEST SUITE FOR UNI TYPE 1																
Test Name	Name derived from reference document															
Test Definition ID	A punctuated alphanumeric string assigned to each defined requirement and test procedure couple using the following convention: 'one to three letter abbreviated source document name'. 'section number' - 'specific requirement number in the section from which requirement is derived'. This number always figures as the last number of an ID. UNI Type 1 = U1; Ethernet Services Definitions = S; etc. Example: U1.5.1-1															
Reference Document	Reference document (and section and paragraph when useful for clarity)															
Test Type	Functional, Conformance, Interoperability or Performance															
Test Status	Mandatory, Optional															
Requirement Description	Brief description of the service requirement that MUST or SHOULD be satisfied															
Test Object	Succinct description of test purpose															
Test Configuration	Succinct description of test bed configuration															
CE-VLAN ID/EVC Map	<p>A sample CE-VLAN ID/EVC Map is suggested. Variables augment it.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">INGRESS UNI 'A'</th> <th colspan="2">EGRESS UNI 'B'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">10</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">10</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	10	EVC ₁	10	EVC ₁			
INGRESS UNI 'A'		EGRESS UNI 'B'														
CE-VLAN ID	EVC	CE-VLAN ID	EVC													
10	EVC ₁	10	EVC ₁													
Bandwidth Profile	<p>A sample Bandwidth Profile table is suggested. Variables augment it.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="5">Per Ingress UNI</th> </tr> <tr> <th>UNI</th> <th colspan="4">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">UNI_A</td> <td style="text-align: center;">CIR_A</td> <td style="text-align: center;">CBS_A</td> <td style="text-align: center;">EIR_A</td> <td style="text-align: center;">EBS_A</td> </tr> </tbody> </table> <p>Note 1 : (0 < CIR_A ≤ UNI Speed), (CBS_A ≥ maximum Service Frame size)</p>	Per Ingress UNI					UNI	Bandwidth Profile Parameters				UNI _A	CIR _A	CBS _A	EIR _A	EBS _A
Per Ingress UNI																
UNI	Bandwidth Profile Parameters															
UNI _A	CIR _A	CBS _A	EIR _A	EBS _A												
Service Performance	<p>A sample EVC Performance Objectives table is suggested. Variables augment it.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>CoS Identifier</th> <th>EVC Performance Service Attributes</th> <th>Performance Objectives</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td> Frame Delay (FD) Performance Frame Delay Variation (FDV) Performance Frame Loss Ratio (FLR) Performance </td> <td style="text-align: center;"> FD₁ FDV₁ FLR₁ </td> </tr> </tbody> </table>	CoS Identifier	EVC Performance Service Attributes	Performance Objectives	1	Frame Delay (FD) Performance Frame Delay Variation (FDV) Performance Frame Loss Ratio (FLR) Performance	FD ₁ FDV ₁ FLR ₁									
CoS Identifier	EVC Performance Service Attributes	Performance Objectives														
1	Frame Delay (FD) Performance Frame Delay Variation (FDV) Performance Frame Loss Ratio (FLR) Performance	FD ₁ FDV ₁ FLR ₁														
Test Procedure	Succinct description of the test procedure															
Units	Units can be time units, rates and counts in integers such as milliseconds, frames per second and numbers of valid frames. For the most part units used are defined in RFCs 2285, 2544, 2889															
Variables	Variables such as number of UNIs, EVCs and CE-VLAN IDs and frame formats and lengths MUST be described															
Results	Description of the textual, numerical and/or graphical format in which to display test results. Results can be Pass or Fail															
Remarks	Description of any particular observations that might effect the test result															

8. Abstract Test Cases for UNI Type 1 Common Characteristics

In this section we assume familiarity with MEF 13 *User Network Interface (UNI) Type 1 Implementation Agreement* and, in particular, its section 5 which defines the common characteristics of the UNI Type 1.

Three Abstract Test Cases based on the common characteristics of the UNI Type 1 are defined in this section.

Abstract Test Cases for UNI-N Type 1 Common Characteristics

Test Case 1: Type 1 UNI-N Ethernet Physical Medium

Test Case 2: Type 1 UNI-N Ethernet Frame Format - Tagged, Untagged and Priority Tagged

Test Case 3: Type 1 UNI-N Minimum and Maximum Ethernet Frame Size

TEST CASE 1: Type 1 UNI-N Ethernet Physical Medium

ABSTRACT TEST SUITE FOR UNI TYPE 1																					
Test Name	Type 1 UNI-N Ethernet Physical Medium																				
Test Definition ID	U1.5.1-2																				
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																				
Test Type	Conformance																				
Test Status	Mandatory																				
Requirement Description	<p>A Type 1 UNI-N MUST support at least one of the following IEEE 802.3 Ethernet PHYs:</p> <ul style="list-style-type: none"> · 10BASE-T in Full-duplex mode · 100BASE-T including 100BASE-TX and 100BASE-FX in Full-duplex mode · 1000BASE-X including 1000BASE-SX, 1000BASE-LX, and 1000BASE-T in Full-duplex mode · 10GBASE-SR, 10GBASE-LX4, 10GBASE-LR, 10GBASE-ER, 10GBASE-SW, 10GBASE-LW, and 10GBASE-EW in Full-duplex mode 																				
Test Object	Verify that a Type 1 UNI-N supports at least one of the IEEE 802.3 Ethernet PHYs listed in the requirement description section above																				
Test Configuration	One EVC associating two Type 1 UNIs is configured and at least one CE-VLAN ID is mapped to the EVC. A per Ingress UNI bandwidth profile is applied at both UNIs. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC																				
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">UNI 'A'</th> <th colspan="2" style="text-align: center;">UNI 'B'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both UNIs</p>	UNI 'A'		UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁	11*	EVC ₁								
UNI 'A'		UNI 'B'																			
CE-VLAN ID	EVC	CE-VLAN ID	EVC																		
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Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0)																					
Service Performance	Not Specified																				
Test Procedure	Tester offers Service Frames bidirectionally at each UNI configured in the EVC and verifies that the corresponding Service Frames are successfully delivered at the associated UNI																				
Units	Number of valid Service Frames																				
Variables	Bandwidth Profile Parameters CIR, CBS, UNIs interface speed																				
Results	Pass or fail																				
Remarks																					

TEST CASE 2: Type 1 UNI-N Ethernet Frame Format - Tagged, Untagged and Priority Tagged

ABSTRACT TEST SUITE FOR UNI TYPE 1																					
Test Name	Type 1 UNI-N Ethernet Frame Format - Tagged, Untagged and Priority Tagged																				
Test Definition ID	U1.5.2-4																				
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																				
Test Type	Conformance																				
Test Status	Mandatory																				
Requirement Description	A Type 1 UNI-N MUST support the transmission and reception of untagged, VLAN-tagged and priority-tagged Ethernet frames according to IEEE 802.3-2002																				
Test Object	Verify that a Type 1 UNI-N supports the transmission and reception of untagged, VLAN-tagged and priority-tagged Ethernet frames according to IEEE 802.3-2002																				
Test Configuration	One EVC associating two Type 1 UNIs is configured and at least one CE-VLAN ID is mapped to the EVC. A per Ingress UNI bandwidth profile is applied at both UNIs. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC																				
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UNI 'A'		UNI 'B'																			
CE-VLAN ID	EVC	CE-VLAN ID	EVC																		
11*	EVC ₁	11*	EVC ₁																		
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">PER INGRESS UNI</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th colspan="4" style="text-align: center;">Bandwidth Profile Parameters</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th style="text-align: center;">CIR</th> <th style="text-align: center;">CBS</th> <th style="text-align: center;">EIR</th> <th style="text-align: center;">EBS</th> </tr> </thead> <tbody> <tr> <td colspan="5"> Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0) </td> </tr> </tbody> </table>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI	CIR	CBS	EIR	EBS	Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0)				
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Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0)																					
Service Performance	Not Specified																				
Test Procedure	Tester offers tagged, untagged and priority tagged Service Frames bidirectionally at each UNI configured in the EVC and verifies that the corresponding Service Frames are received at the associated UNI. The VLAN ID of the tagged Service Frames must be the one configured in the CE-VLAN ID/EVC map																				
Units	Number of valid Service Frames																				
Variables	Bandwidth Profile Parameters CIR, CBS, UNIs interface speed																				
Results	Pass or fail																				
Remarks																					

TEST CASE 3: Type 1 UNI-N Minimum and Maximum Ethernet Frame Size

ABSTRACT TEST SUITE FOR UNI TYPE 1																															
Test Name	Type 1 UNI-N Minimum and Maximum Ethernet Frame Size																														
Test Definition ID	U1.5.2-6																														
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																														
Test Type	Conformance																														
Test Status	Mandatory																														
Requirement Description	A Type 1 UNI-N MUST support the transmission and reception of minimum and maximum size Ethernet frames as specified in IEEE 802.3-2002																														
Test Object	Verify that a Type 1 UNI-N supports the transmission and reception of minimum and maximum size Ethernet frames as specified in IEEE 802.3-2002																														
Test Configuration	One EVC associating two Type 1 UNIs is configured and at least one CE-VLAN ID is mapped to the EVC. A per Ingress UNI bandwidth profile is applied at both UNIs. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC																														
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: #f4a460;">UNI 'A'</th> <th colspan="2" style="background-color: #f4a460;">UNI 'B'</th> </tr> <tr> <th style="background-color: #f4a460;">CE-VLAN ID</th> <th style="background-color: #f4a460;">EVC</th> <th style="background-color: #f4a460;">CE-VLAN ID</th> <th style="background-color: #f4a460;">EVC</th> </tr> </thead> <tbody> <tr> <td style="background-color: #ffffcc;">11*</td> <td style="background-color: #ffffcc;">EVC₁</td> <td style="background-color: #ffffcc;">11*</td> <td style="background-color: #ffffcc;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both UNIs</p>	UNI 'A'		UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁	11*	EVC ₁																		
UNI 'A'		UNI 'B'																													
CE-VLAN ID	EVC	CE-VLAN ID	EVC																												
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Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="background-color: #f4a460;">PER INGRESS UNI</th> </tr> <tr> <th style="background-color: #f4a460;">UNI</th> <th colspan="4" style="background-color: #f4a460;">Bandwidth Profile Parameters</th> </tr> <tr> <th style="background-color: #ffffcc;">UNI</th> <th style="background-color: #ffffcc;">CIR</th> <th style="background-color: #ffffcc;">CBS</th> <th style="background-color: #ffffcc;">EIR</th> <th style="background-color: #ffffcc;">EBS</th> </tr> </thead> <tbody> <tr> <td colspan="5">Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size)</td> </tr> <tr> <td colspan="5">Note 2: (Ingress CIR ≤ Egress UNI Speed)</td> </tr> <tr> <td colspan="5">Note 3: (EIR = 0) and (EBS = 0)</td> </tr> </tbody> </table>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI	CIR	CBS	EIR	EBS	Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size)					Note 2: (Ingress CIR ≤ Egress UNI Speed)					Note 3: (EIR = 0) and (EBS = 0)				
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Note 2: (Ingress CIR ≤ Egress UNI Speed)																															
Note 3: (EIR = 0) and (EBS = 0)																															
Service Performance	Not Specified																														
Test Procedure	Tester offers minimum and maximum size Service Frames, as specified in IEEE 802.3-2002, bidirectionally at each UNI configured in the EVC and verifies that the corresponding Service Frames are delivered at the associated UNI																														
Units	Number of valid Service Frames																														
Variables	Bandwidth Profile Parameters CIR, CBS, UNIs interface speed																														
Results	Pass or fail																														
Remarks																															

9. Abstract Test Cases for UNI Type 1.1 Specific Characteristics

In this section we assume familiarity with MEF 13 *User Network Interface (UNI) Type 1 Implementation Agreement* and, in particular, its section 6.1 which defines the specific characteristics of the UNI Type 1.1.

Fourteen Abstract Test Cases based on the specific characteristics of the UNI Type 1.1 are defined in this section.

Abstract Test Cases for UNI-N Type 1.1 Specific Characteristics

Test Case 4: Type 1.1 UNI-N CE-VLAN ID - Single EVC

Test Case 5: Type 1.1 UNI-N Configurable CE-VLAN ID/EVC Map - No CE-VLAN ID

Test Case 6: Type 1.1 UNI-N Bandwidth Profile per Ingress UNI

Test Case 7: Type 1.1 UNI-N Bandwidth Profile Rate Enforcement when CIR > 0 and EIR = 0

Test Case 8: Type 1.1 UNI-N Mandatory CIR Configuration Granularity

Test Case 9: Type 1.1 UNI-N Optional CIR Configuration Granularity

Test Case 10: Type 1.1 UNI-N CBS Configuration

Test Case 11: Type 1.1 UNI-N Mandatory Layer 2 Control Protocol Processing

Test Case 12: Type 1.1 UNI-N Optional Layer 2 Control Protocol Processing

Test Case 13: Type 1.1 UNI-N Optional Layer 2 Control Protocol Discard

Test Case 14: Type 1.1 UNI-N Point-to-Point EVC

Test Case 15: Type 1.1 UNI-N CE-VLAN ID Preservation

Test Case 16: Type 1.1 UNI-N CE-VLAN CoS Preservation

Test Case 17: Type 1.1 UNI-N Service Frame Unconditional Delivery

TEST CASE 4: Type 1.1 UNI-N CE-VLAN ID - Single EVC

ABSTRACT TEST SUITE FOR UNI TYPE 1																					
Test Name	Type 1.1 UNI-N CE-VLAN ID - Single EVC																				
Test Definition ID	U1.6.1.1-7, 8																				
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																				
Test Type	Conformance																				
Test Status	Mandatory																				
Requirement Description	A Type 1.1 UNI-N MUST be able to support a single EVC and to accept any CE-VLAN ID received from the UNI-C																				
Test Object	Verify that a Type 1.1 UNI-N can support a single EVC and accept any CE-VLAN ID received from the UNI-C																				
Test Configuration	One EVC associating at least two Type 1.1 UNIs is configured and all possible CE-VLAN IDs are mapped to the EVC. A per Ingress UNI bandwidth profile is applied at both UNIs. Testers with proper PHY that matches each UNI are attached to all UNIs in the configured EVC																				
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">UNI 'A'</th> <th colspan="2" style="text-align: center;">UNI 'B'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">All possible values allowed at the UNI-C</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">All possible values allowed at the UNI-C</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table>	UNI 'A'		UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	All possible values allowed at the UNI-C	EVC ₁	All possible values allowed at the UNI-C	EVC ₁								
UNI 'A'		UNI 'B'																			
CE-VLAN ID	EVC	CE-VLAN ID	EVC																		
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Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">PER INGRESS UNI</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th colspan="4" style="text-align: center;">Bandwidth Profile Parameters</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th style="text-align: center;">CIR</th> <th style="text-align: center;">CBS</th> <th style="text-align: center;">EIR</th> <th style="text-align: center;">EBS</th> </tr> </thead> <tbody> <tr> <td colspan="5"> Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0) </td> </tr> </tbody> </table>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI	CIR	CBS	EIR	EBS	Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0)				
PER INGRESS UNI																					
UNI	Bandwidth Profile Parameters																				
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Service Performance	Not Specified																				
Test Procedure	Tester offers tagged Service Frames with VLAN IDs = 1, ..., 4095, untagged Service Frames and priority tagged Service Frames bidirectionally at each UNI configured in the EVC and verifies that the corresponding Service Frames are delivered at the associated UNI																				
Units	Number of valid Service Frames																				
Variables	Bandwidth Profile Parameters CIR, CBS, UNIs interface speed																				
Results	Pass or fail																				
Remarks																					

TEST CASE 5: Type 1.1 UNI-N Configurable CE-VLAN ID/EVC Map - No CE-VLAN ID

ABSTRACT TEST SUITE FOR UNI TYPE 1																															
Test Name	Type 1.1 UNI-N Configurable CE-VLAN ID/EVC Map - No CE-VLAN IDs																														
Test Definition ID	U1.6.1.2-9																														
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																														
Test Type	Conformance																														
Test Status	Mandatory																														
Requirement Description	A Type 1.1 UNI-N MUST be configurable to map no CE-VLAN ID to an EVC. (Temporary disconnection without tearing down the EVC)																														
Test Object	Verify that a Type 1.1 UNI-N can be configured to map no CE-VLAN ID to an EVC																														
Test Configuration	One EVC associating two Type 1.1 UNIs is configured and no CE-VLAN ID is mapped to the EVC. A per Ingress UNI bandwidth profile is applied at both UNIs. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC																														
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="2">UNI 'A'</th> <th colspan="2">UNI 'B'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td>None</td> <td>EVC₁</td> <td>None</td> <td>EVC₁</td> </tr> </tbody> </table>	UNI 'A'		UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	None	EVC ₁	None	EVC ₁																		
UNI 'A'		UNI 'B'																													
CE-VLAN ID	EVC	CE-VLAN ID	EVC																												
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Bandwidth Profile	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="5">PER INGRESS UNI</th> </tr> <tr> <th>UNI</th> <th colspan="4">Bandwidth Profile Parameters</th> </tr> <tr> <th>UNI</th> <th>CIR</th> <th>CBS</th> <th>EIR</th> <th>EBS</th> </tr> </thead> <tbody> <tr> <td colspan="5">Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size)</td> </tr> <tr> <td colspan="5">Note 2: (Ingress CIR ≤ Egress UNI Speed)</td> </tr> <tr> <td colspan="5">Note 3: (EIR = 0) and (EBS = 0)</td> </tr> </tbody> </table>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI	CIR	CBS	EIR	EBS	Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size)					Note 2: (Ingress CIR ≤ Egress UNI Speed)					Note 3: (EIR = 0) and (EBS = 0)				
PER INGRESS UNI																															
UNI	Bandwidth Profile Parameters																														
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Note 2: (Ingress CIR ≤ Egress UNI Speed)																															
Note 3: (EIR = 0) and (EBS = 0)																															
Service Performance	Not Specified																														
Test Procedure	Tester offers tagged Service Frames with VLAN IDs = 1, ...4095, untagged Service Frames and priority tagged Service Frames bidirectionally at each UNI configured in the EVC and verifies that the corresponding Service Frames are not delivered at the associated UNI																														
Units	Number of valid Service Frames																														
Variables	Bandwidth Profile Parameters CIR, CBS, UNIs interface speed																														
Results	Pass or fail																														
Remarks																															

TEST CASE 6: Type 1.1 UNI-N Bandwidth Profile per Ingress UNI

ABSTRACT TEST SUITE FOR UNI TYPE 1																
Test Name	Type 1.1 UNI-N Bandwidth Profile per Ingress UNI															
Test Definition ID	U1.6.1.3-10															
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]															
Test Type	Conformance															
Test Status	Mandatory															
Requirement Description	A Type 1.1 UNI-N MUST be able to support a per Ingress UNI bandwidth profile based on MEF 10															
Test Object	Verify that a Type 1.1 UNI-N can support a per Ingress UNI bandwidth profile based on MEF 10															
Test Configuration	One EVC associating two Type 1.1 UNIs is configured and all possible CE-VLAN IDs are mapped to the EVC. A per Ingress UNI bandwidth profile is applied at the ingress UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC															
CE-VLAN ID/EVC Map	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">INGRESS UNI 'A'</th> <th colspan="2">EGRESS UNI 'B'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td>All possible values</td> <td>EVC₁</td> <td>All possible values</td> <td>EVC₁</td> </tr> </tbody> </table>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	All possible values	EVC ₁	All possible values	EVC ₁			
INGRESS UNI 'A'		EGRESS UNI 'B'														
CE-VLAN ID	EVC	CE-VLAN ID	EVC													
All possible values	EVC ₁	All possible values	EVC ₁													
Bandwidth Profile	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="5">PER INGRESS UNI</th> </tr> <tr> <th>UNI</th> <th colspan="4">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td>UNI_A</td> <td>CIR_A</td> <td>CBS_A</td> <td>EIR_A</td> <td>EBS_A</td> </tr> </tbody> </table> <p>Note 1: ($0 < CIR_A < \text{Ingress UNI Speed}$), ($CBS_A \geq \text{maximum Service Frame size}$) Note 2: ($\text{Ingress } CIR_A \leq \text{Egress UNI Speed}$) Note 3: ($EIR_A = 0$) and ($EBS_A = 0$)</p>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI _A	CIR _A	CBS _A	EIR _A	EBS _A
PER INGRESS UNI																
UNI	Bandwidth Profile Parameters															
UNI _A	CIR _A	CBS _A	EIR _A	EBS _A												
Service Performance	Not Specified															
Test Procedure	<p>Tester offers tagged Service Frames with VLAN IDs = 1, ...4095, untagged Service Frames and priority tagged Service Frames of length λ into the configured EVC at the ingress UNI and verifies that over a time interval T at least one Service Frame of each CE-VLAN ID is delivered at the associated egress UNI. Service Frames are offered at equal average rates into the configured EVC, at an aggregate average rate greater than CIR_A. Tester also verifies that the amount of traffic delivered at the egress UNI falls within the range $X \leq W_G \leq Z$ where:</p> <ul style="list-style-type: none"> · W_G is the amount of traffic accepted as Green over the time interval T that should be delivered to the egress UNI. · $X_A = (CIR_A * T + CBS_A - F)$ and $Z_A = (CIR_A * T + CBS_A + F)$ 															
Units	Number of valid Service Frames															
Variables	Bandwidth Profile Parameters CIR_A , CBS_A , UNIs interface speed, time interval T , tolerated variance F , number and length λ of the offered Service Frames															
Results	Pass or fail															
Remarks																

TEST CASE 7: Type 1.1 UNI-N BW Profile Rate Enforcement when CIR > 0 and EIR = 0

ABSTRACT TEST SUITE FOR UNI TYPE 1																
Test Name	Type 1.1 UNI-N Bandwidth Profile Rate Enforcement when CIR > 0 and EIR = 0															
Test Definition ID	U1.6.1.3-12															
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]															
Test Type	Conformance															
Test Status	Mandatory															
Requirement Description	A Type 1.1 UNI-N MUST be able to support color-blind bandwidth profile where EIR=EBS=0 and CIR and CBS are non-zero															
Test Object	Verify that a Type 1.1 UNI-N can support color-blind bandwidth profile where EIR=EBS=0 and CIR and CBS are non-zero															
Test Configuration	One EVC associating two Type 1.1 UNIs is configured and all possible CE-VLAN IDs are mapped to the EVC. One Bandwidth Profile where EIR=EBS=0 and CIR and CBS are non-zero is applied at the ingress UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC															
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">INGRESS UNI 'A'</th> <th colspan="2" style="text-align: center;">EGRESS UNI 'B'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">All possible values</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">All possible values</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	All possible values	EVC ₁	All possible values	EVC ₁			
INGRESS UNI 'A'		EGRESS UNI 'B'														
CE-VLAN ID	EVC	CE-VLAN ID	EVC													
All possible values	EVC ₁	All possible values	EVC ₁													
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">PER INGRESS UNI</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th colspan="4" style="text-align: center;">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">UNI_A</td> <td style="text-align: center;">CIR_A</td> <td style="text-align: center;">CBS_A</td> <td style="text-align: center;">EIR_A</td> <td style="text-align: center;">EBS_A</td> </tr> </tbody> </table> <p>Note 1: ($0 < CIR_A < \text{Ingress UNI Speed}$), ($CBS_A \geq \text{maximum Service Frame size}$) Note 2: ($\text{Ingress } CIR_A \leq \text{Egress UNI Speed}$) Note 3: ($EIR_A = 0$) and ($EBS_A = 0$)</p>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI _A	CIR _A	CBS _A	EIR _A	EBS _A
PER INGRESS UNI																
UNI	Bandwidth Profile Parameters															
UNI _A	CIR _A	CBS _A	EIR _A	EBS _A												
Service Performance	Not Specified															
Test Procedure	Tester offers Service Frames of length λ at an average rate greater than CIR_A to the ingress UNI during a time interval T and measures the number of Service Frames delivered at the associated egress UNI. The amount of traffic delivered at the associated egress UNI must fall within the range $X \leq W_G \leq Z$ where: <ul style="list-style-type: none"> • W_G is the amount of traffic accepted as Green over the time interval T that should be delivered to the egress UNI. • $X_A = (CIR_A * T + CBS_A - F)$ and $Z_A = (CIR_A * T + CBS_A + F)$ 															
Units	Number of valid Service Frames															
Variables	Bandwidth Profile Parameters CIR_A , CBS_A , UNIs interface speed, time interval T , tolerated variance F , number and length λ of the offered Service Frames															
Results	Pass or fail															
Remarks																

TEST CASE 8: Type 1.1 UNI-N Mandatory CIR Configuration Granularity

ABSTRACT TEST SUITE FOR UNI TYPE 1																					
Test Name	Type 1.1 UNI-N Mandatory CIR Configuration Granularity																				
Test Definition ID	U1.6.1.3-13																				
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																				
Test Type	Conformance																				
Test Status	Mandatory																				
Requirement Description	<p>A Type 1.1 UNI-N MUST allow configuration to modify CIR in the following granularities</p> <ul style="list-style-type: none"> • 1 Mbps steps up to 10 Mbps [CIR range 1] • 5 Mbps steps beyond 10 Mbps and up to 100 Mbps [CIR range 2] • 50 Mbps steps beyond 100 Mbps and up to 1 Gbps [CIR range 3] • 500 Mbps steps beyond 1 Gbps [CIR range 4] 																				
Test Object	Verify that a Type 1.1 UNI-N allows configuration to modify CIR in the granularities described in the requirement description section above																				
Test Configuration	One EVC associating two Type 1.1 UNIs is configured. All possible CE-VLAN IDs are mapped to the EVC and one Bandwidth Profile is applied at the ingress UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC																				
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">INGRESS UNI 'A'</th> <th colspan="2" style="text-align: center;">EGRESS UNI 'B'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">All possible values</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">All possible values</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	All possible values	EVC ₁	All possible values	EVC ₁								
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CE-VLAN ID	EVC	CE-VLAN ID	EVC																		
All possible values	EVC ₁	All possible values	EVC ₁																		
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">PER INGRESS UNI</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th colspan="4" style="text-align: center;">Bandwidth Profile Parameters</th> </tr> <tr> <th style="text-align: center;">UNI_A</th> <th style="text-align: center;">CIR_A</th> <th style="text-align: center;">CBS_A</th> <th style="text-align: center;">EIR_A</th> <th style="text-align: center;">EBS_A</th> </tr> </thead> <tbody> <tr> <td colspan="5"> <p>Note 1: ($0 < CIR_A < \text{Ingress UNI Speed}$), ($CBS_A \geq \text{maximum Service Frame size}$)</p> <p>Note 2: ($\text{Ingress } CIR_A \leq \text{Egress UNI Speed}$)</p> <p>Note 3: ($EIR_A = 0$) and ($EBS_A = 0$)</p> </td> </tr> </tbody> </table>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI _A	CIR _A	CBS _A	EIR _A	EBS _A	<p>Note 1: ($0 < CIR_A < \text{Ingress UNI Speed}$), ($CBS_A \geq \text{maximum Service Frame size}$)</p> <p>Note 2: ($\text{Ingress } CIR_A \leq \text{Egress UNI Speed}$)</p> <p>Note 3: ($EIR_A = 0$) and ($EBS_A = 0$)</p>				
PER INGRESS UNI																					
UNI	Bandwidth Profile Parameters																				
UNI _A	CIR _A	CBS _A	EIR _A	EBS _A																	
<p>Note 1: ($0 < CIR_A < \text{Ingress UNI Speed}$), ($CBS_A \geq \text{maximum Service Frame size}$)</p> <p>Note 2: ($\text{Ingress } CIR_A \leq \text{Egress UNI Speed}$)</p> <p>Note 3: ($EIR_A = 0$) and ($EBS_A = 0$)</p>																					
Service Performance	Not Specified																				
Test Procedure	<p>Tester offers Service Frames of length λ at an average rate greater than CIR_A to the ingress UNI during a time interval T and measures the number of Service Frames delivered at the associated egress UNI. The amount of traffic delivered at the egress UNI must fall within the range $X \leq W_G \leq Z$ where:</p> <ul style="list-style-type: none"> • W_G is the amount of traffic accepted as Green over the time interval T that should be delivered to the egress UNI. • $X_A = (CIR_A * T + CBS_A - F)$ and $Z_A = (CIR_A * T + CBS_A + F)$ <p>Begin the test with CIR_A set to the minimum value (i.e. 1 Mbps) and increment CIR_A by the step value defined for the CIR range.</p> <p>Repeat the test for each CIR_A value until CIR_A has been incremented to the UNI speed</p>																				
Units	Number of valid Service Frames																				
Variables	Bandwidth Profile Parameters CIR_A , CBS_A , UNIs interface speed, time interval T , tolerated variance F , number and length λ of the offered Service Frames																				
Results	Pass or fail																				
Remarks																					

TEST CASE 9: Type 1.1 UNI-N Optional CIR Configuration Granularity

ABSTRACT TEST SUITE FOR UNI TYPE 1																
Test Name	Type 1.1 UNI-N Optional CIR Configuration Granularity															
Test Definition ID	U1.6.1.3-14															
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]															
Test Type	Conformance															
Test Status	Optional															
Requirement Description	A Type 1.1 UNI-N SHOULD allow configuration to modify CIR in the following granularities: <ul style="list-style-type: none"> · 64 Kbps (DS0 rate) steps up to 1.422 Mbps (VC11 rate) or 1.932 Mbps (VC12 rate) [CIR range 1] · 1.422 Mbps (VC11 rate) or 1.932 Mbps (VC12 rate) steps up to 50 Mbps [CIR range 2] · 43.008 Mbps (VC3 rate) steps beyond 50 Mbps and up to 150 Mbps [CIR range 3] · 133.12 Mbps (VC4 rate) steps beyond 150 Mbps [CIR range 4] 															
Test Object	Verify that a Type 1.1 UNI-N allows configuration to modify CIR in the granularities described in the requirement description section above															
Test Configuration	One EVC associating two Type 1.1 UNIs is configured. All possible CE-VLAN IDs are mapped to the EVC and one Bandwidth Profile is applied at the ingress UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC															
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">INGRESS UNI 'A'</th> <th colspan="2" style="text-align: center;">EGRESS UNI 'B'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">All possible values</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">All possible values</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	All possible values	EVC ₁	All possible values	EVC ₁			
INGRESS UNI 'A'		EGRESS UNI 'B'														
CE-VLAN ID	EVC	CE-VLAN ID	EVC													
All possible values	EVC ₁	All possible values	EVC ₁													
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">PER INGRESS UNI</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th colspan="4" style="text-align: center;">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">UNI_A</td> <td style="text-align: center;">CIR_A</td> <td style="text-align: center;">CBS_A</td> <td style="text-align: center;">EIR_A</td> <td style="text-align: center;">EBS_A</td> </tr> </tbody> </table> <p>Note 1: ($0 < CIR_A < \text{Ingress UNI Speed}$), ($CBS_A \geq \text{maximum Service Frame size}$) Note 2: ($\text{Ingress } CIR_A \leq \text{Egress UNI Speed}$) Note 3: ($EIR_A = 0$) and ($EBS_A = 0$)</p>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI _A	CIR _A	CBS _A	EIR _A	EBS _A
PER INGRESS UNI																
UNI	Bandwidth Profile Parameters															
UNI _A	CIR _A	CBS _A	EIR _A	EBS _A												
Service Performance	Not Specified															
Test Procedure	<p>Tester offers Service Frames of length λ at an average rate greater than CIR_A to the ingress UNI during a time interval T and measures the number of Service Frames delivered at the associated egress UNI. The amount of traffic delivered at the egress UNI must fall within the range $X \leq W_G \leq Z$ where:</p> <ul style="list-style-type: none"> · W_G is the amount of traffic accepted as Green over the time interval T that should be delivered to the egress UNI. · $X_A = (CIR_A * T + CBS_A - F)$ and $Z_A = (CIR_A * T + CBS_A + F)$ <p>Begin the test with CIR_A set to the minimum value (i.e. 64 Kbps) and increment CIR_A by the step value defined for the CIR range.</p> <p>Repeat the test for each CIR_A value until CIR_A has been incremented to the UNI speed</p>															
Units	Number of valid Service Frames															
Variables	Bandwidth Profile Parameters CIR_A , CBS_A , UNIs interface speed, time interval T , tolerated variance F , number and length λ of the offered Service Frames															
Results	Pass or fail															
Remarks																

TEST CASE 10: Type 1.1 UNI-N CBS Configuration

ABSTRACT TEST SUITE FOR UNI TYPE 1																
Test Name	Type 1.1 UNI-N CBS Configuration															
Test Definition ID	U1.6.1.3-15															
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]															
Test Type	Conformance															
Test Status	Mandatory															
Requirement Description	A Type 1.1 UNI-N MUST be able to at least support CBS values that are equal to or greater than $8 \times \text{MTU} = 8 \times 1522 \text{ bytes} = 12176 \text{ bytes}$															
Test Object	Verify that a Type 1.1 UNI-N can at least support CBS values that are equal to or greater than $8 \times \text{MTU} = 8 \times 1522 \text{ bytes} = 12176 \text{ bytes}$															
Test Configuration	One EVC associating two Type 1.1 UNIs is configured. All possible CE-VLAN IDs are mapped to the EVC and one Bandwidth Profile is applied at the ingress UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC															
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="2">INGRESS UNI 'A'</th> <th colspan="2">EGRESS UNI 'B'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td>All possible values</td> <td>EVC₁</td> <td>All possible values</td> <td>EVC₁</td> </tr> </tbody> </table>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	All possible values	EVC ₁	All possible values	EVC ₁			
INGRESS UNI 'A'		EGRESS UNI 'B'														
CE-VLAN ID	EVC	CE-VLAN ID	EVC													
All possible values	EVC ₁	All possible values	EVC ₁													
Bandwidth Profile	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="5">PER INGRESS UNI</th> </tr> <tr> <th>UNI</th> <th colspan="4">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td>UNI_A</td> <td>CIR_A</td> <td>CBS_A</td> <td>EIR_A</td> <td>EBS_A</td> </tr> </tbody> </table> <p>Note 1: ($0 < \text{CIR}_A < \text{Ingress UNI Speed}$), ($\text{CBS}_A \geq 12176 \text{ bytes}$) Note 2: ($\text{Ingress CIR}_A \leq \text{Egress UNI Speed}$) Note 3: ($\text{EIR}_A = 0$) and ($\text{EBS}_A = 0$)</p>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI _A	CIR _A	CBS _A	EIR _A	EBS _A
PER INGRESS UNI																
UNI	Bandwidth Profile Parameters															
UNI _A	CIR _A	CBS _A	EIR _A	EBS _A												
Service Performance	Not Specified															
Test Procedure	Tester offers Service Frames of length λ at an average rate equal to CIR _A to the ingress UNI during a time interval T . At time $T/2$ tester injects a burst of ingress Service Frames greater than CBS _A . Tester measures the number of Service Frames delivered at the associated egress UNIs. The amount of traffic delivered at each egress UNI must fall within the range $X \leq W_G \leq Z$ where: <ul style="list-style-type: none"> · W_G is the amount of traffic accepted as Green over the time interval T that should be delivered to the egress UNI · $X_A = (\text{CIR}_A * T + \text{CBS}_A - F)$ and $Z_A = (\text{CIR}_A * T + \text{CBS}_A + F)$ 															
Units	Number of valid Service Frames															
Variables	Bandwidth Profile Parameters CIR _A , CBS _A , UNIs interface speed, time interval T , tolerated variance F , number and length λ of the offered Service Frames															
Results	Pass, fail															
Remarks																

TEST CASE 11: Type 1.1 UNI-N Mandatory Layer 2 Control Protocol Processing

ABSTRACT TEST SUITE FOR UNI TYPE 1													
Test Name	Type 1.1 UNI-N Mandatory Layer 2 Control Protocol Processing												
Test Definition ID	U1.6.1.4-16												
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]												
Test Type	Conformance												
Test Status	Mandatory												
Requirement Description	<p>A Type 1.1 UNI-N MUST be able to pass the following L2 Control Protocols to the EVC:</p> <ul style="list-style-type: none"> · Spanning Tree Protocol (STP), · Rapid Spanning Tree Protocol (RSTP), · Multiple Spanning Tree Protocol (MSTP) · All LANs Bridge Management Group Block of Protocol · Generic Attribute Registration Protocol (GARP) 												
Test Object	Verify that a Type 1.1 UNI-N can pass each L2 Control Protocol described in the requirement description section above to the EVC												
Test Configuration	One EVC associating two Type 1.1 UNIs is configured and all possible CE-VLAN IDs are mapped to the EVC. A per Ingress UNI bandwidth profile is applied at the UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC												
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="2">INGRESS UNI 'A'</th> <th colspan="2">EGRESS UNI 'B'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td>All possible values</td> <td>EVC₁</td> <td>All possible values</td> <td>EVC₁</td> </tr> </tbody> </table>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	All possible values	EVC ₁	All possible values	EVC ₁
INGRESS UNI 'A'		EGRESS UNI 'B'											
CE-VLAN ID	EVC	CE-VLAN ID	EVC										
All possible values	EVC ₁	All possible values	EVC ₁										
Bandwidth Profile	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="4">PER INGRESS UNI</th> </tr> <tr> <th>UNI</th> <th colspan="3">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td>UNI_A</td> <td>CIR_A</td> <td>CBS_A</td> <td>EIR_A EBS_A</td> </tr> </tbody> </table> <p>Note 1: ($0 < CIR_A < \text{Ingress UNI Speed}$), ($CBS_A \geq \text{maximum Service Frame size}$) Note 2: ($\text{Ingress } CIR_A \leq \text{Egress UNI Speed}$) Note 3: ($EIR_A = 0$) and ($EBS_A = 0$)</p>	PER INGRESS UNI				UNI	Bandwidth Profile Parameters			UNI _A	CIR _A	CBS _A	EIR _A EBS _A
PER INGRESS UNI													
UNI	Bandwidth Profile Parameters												
UNI _A	CIR _A	CBS _A	EIR _A EBS _A										
Service Performance	Not Specified												
Test Procedure	Tester offers Service Frames carrying Layer 2 Control protocols described in the requirement description section above at the ingress UNI and verifies that the corresponding Service Frames are delivered at the associated egress UNI. The L2CPs Destination Address and Ethertype/Length fields must be defined as per the IEEE standards												
Units	Number of valid Service Frames carrying the L2CPs												
Variables	L2CP, Bandwidth Profile Parameters CIR _A , CBS _A , UNIs interface speed												
Results	Pass or fail												
Remarks													

TEST CASE 12: Type 1.1 UNI-N Optional Layer 2 Control Protocol Processing

ABSTRACT TEST SUITE FOR UNI TYPE 1																
Test Name	Type 1.1 UNI-N Optional Layer 2 Control Protocol Processing															
Test Definition ID	U1.6.1.4-17															
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]															
Test Type	Conformance															
Test Status	Optional															
Requirement Description	A Type 1.1 UNI-N SHOULD be able to pass the following L2 Control Protocols to the EVC: <ul style="list-style-type: none"> Link Aggregation Control Protocol (LACP) Marker Protocol Authentication (802.1x) 															
Test Object	Verify that a Type 1.1 UNI-N can pass each L2 Control Protocols described in the requirement description section above to the EVC															
Test Configuration	One EVC associating two Type 1.1 UNIs is configured and all possible CE-VLAN IDs are mapped to the EVC. A per Ingress UNI bandwidth profile is applied at the UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC															
CE-VLAN ID/EVC Map	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">INGRESS UNI 'A'</th> <th colspan="2">EGRESS UNI 'B'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td>All possible values</td> <td>EVC₁</td> <td>All possible values</td> <td>EVC₁</td> </tr> </tbody> </table>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	All possible values	EVC ₁	All possible values	EVC ₁			
INGRESS UNI 'A'		EGRESS UNI 'B'														
CE-VLAN ID	EVC	CE-VLAN ID	EVC													
All possible values	EVC ₁	All possible values	EVC ₁													
Bandwidth Profile	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="5">PER INGRESS UNI</th> </tr> <tr> <th>UNI</th> <th colspan="4">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td>UNI_A</td> <td>CIR_A</td> <td>CBS_A</td> <td>EIR_A</td> <td>EBS_A</td> </tr> </tbody> </table> <p>Note 1: ($0 < CIR_A < \text{Ingress UNI Speed}$), ($CBS_A \geq \text{maximum Service Frame size}$) Note 2: ($\text{Ingress } CIR_A \leq \text{Egress UNI Speed}$) Note 3: ($EIR_A = 0$) and ($EBS_A = 0$)</p>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI _A	CIR _A	CBS _A	EIR _A	EBS _A
PER INGRESS UNI																
UNI	Bandwidth Profile Parameters															
UNI _A	CIR _A	CBS _A	EIR _A	EBS _A												
Service Performance	Not Specified															
Test Procedure	Tester offers Service Frames carrying Layer 2 Control protocols described in the requirement description section above at the ingress UNI and verifies that the corresponding Service Frames are delivered at the associated egress UNI. The L2CPs Destination Address and Ethertype/Length fields must be defined as per the IEEE standards															
Units	Number of valid Service Frames carrying the L2CPs															
Variables	L2CP, Bandwidth Profile Parameters CIR _A , CBS _A , UNIs interface speed															
Results	Pass or fail															
Remarks																

TEST CASE 13: Type 1.1 UNI-N Optional Layer 2 Control Protocol Discard

ABSTRACT TEST SUITE FOR UNI TYPE 1																
Test Name	Type 1.1 UNI-N Optional Layer 2 Control Protocol Discard															
Test Definition ID	U1.6.1.4-18															
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]															
Test Type	Conformance															
Test Status	Optional															
Requirement Description	A Type 1.1 UNI-N SHOULD be able to discard 802.3x PAUSE frames															
Test Object	Verify that a Type 1.1 UNI-N can discard 802.3x PAUSE frames															
Test Configuration	One EVC associating two Type 1.1 UNIs is configured and all possible CE-VLAN IDs are mapped to the EVC. A per Ingress UNI bandwidth profile is applied at the UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC															
CE-VLAN ID/EVC Map	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2" style="text-align: center;">INGRESS UNI 'A'</th> <th colspan="2" style="text-align: center;">EGRESS UNI 'B'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">All possible values</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">All possible values</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	All possible values	EVC ₁	All possible values	EVC ₁			
INGRESS UNI 'A'		EGRESS UNI 'B'														
CE-VLAN ID	EVC	CE-VLAN ID	EVC													
All possible values	EVC ₁	All possible values	EVC ₁													
Bandwidth Profile	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="5" style="text-align: center;">PER INGRESS UNI</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th colspan="4" style="text-align: center;">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">UNI_A</td> <td style="text-align: center;">CIR_A</td> <td style="text-align: center;">CBS_A</td> <td style="text-align: center;">EIR_A</td> <td style="text-align: center;">EBS_A</td> </tr> </tbody> </table> <p>Note 1: ($0 < CIR_A < \text{Ingress UNI Speed}$), ($CBS_A \geq \text{maximum Service Frame size}$) Note 2: ($\text{Ingress } CIR_A \leq \text{Egress UNI Speed}$) Note 3: ($EIR_A = 0$) and ($EBS_A = 0$)</p>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI _A	CIR _A	CBS _A	EIR _A	EBS _A
PER INGRESS UNI																
UNI	Bandwidth Profile Parameters															
UNI _A	CIR _A	CBS _A	EIR _A	EBS _A												
Service Performance	Not Specified															
Test Procedure	Tester offers 802.3x PAUSE frames at the ingress UNI and verifies that they are not delivered at the associated egress UNI.. The L2CPs Destination Address and Ethertype/Length fields must be defined as per the IEEE standards															
Units	Number of valid Service Frames carrying the L2CPs															
Variables	Bandwidth Profile Parameters CIR _A , CBS _A , UNIs interface speed															
Results	Pass or fail															
Remarks																

TEST CASE 14: Type 1.1 UNI-N Point-to-Point EVC

ABSTRACT TEST SUITE FOR UNI TYPE 1																															
Test Name	Type 1.1 UNI-N Point-to-Point EVC																														
Test Definition ID	U1.6.1.5-19																														
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																														
Test Type	Conformance																														
Test Status	Mandatory																														
Requirement Description	A Type 1.1 UNI-N MUST be able to support point-to-point EVC																														
Test Object	Verify that a Type 1.1 UNI-N can support point-to-point EVC																														
Test Configuration	One point-to-point EVC associating two Type 1.1 UNIs is configured and all possible CE-VLAN IDs are mapped to the EVC. A per Ingress UNI bandwidth profile is applied at both UNIs. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC																														
CE-VLAN ID/EVC Map	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">UNI 'A'</th> <th colspan="2">UNI 'B'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td>All possible values</td> <td>EVC₁</td> <td>All possible values</td> <td>EVC₁</td> </tr> </tbody> </table>	UNI 'A'		UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	All possible values	EVC ₁	All possible values	EVC ₁																		
UNI 'A'		UNI 'B'																													
CE-VLAN ID	EVC	CE-VLAN ID	EVC																												
All possible values	EVC ₁	All possible values	EVC ₁																												
Bandwidth Profile	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="5">PER INGRESS UNI</th> </tr> <tr> <th>UNI</th> <th colspan="4">Bandwidth Profile Parameters</th> </tr> <tr> <th>UNI</th> <th>CIR</th> <th>CBS</th> <th>EIR</th> <th>EBS</th> </tr> </thead> <tbody> <tr> <td colspan="5">Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size)</td> </tr> <tr> <td colspan="5">Note 2: (Ingress CIR ≤ Egress UNI Speed)</td> </tr> <tr> <td colspan="5">Note 3: (EIR = 0) and (EBS = 0)</td> </tr> </tbody> </table>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI	CIR	CBS	EIR	EBS	Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size)					Note 2: (Ingress CIR ≤ Egress UNI Speed)					Note 3: (EIR = 0) and (EBS = 0)				
PER INGRESS UNI																															
UNI	Bandwidth Profile Parameters																														
UNI	CIR	CBS	EIR	EBS																											
Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size)																															
Note 2: (Ingress CIR ≤ Egress UNI Speed)																															
Note 3: (EIR = 0) and (EBS = 0)																															
Service Performance	Not Specified																														
Test Procedure	Tester offers Service Frames bidirectionally at each UNI configured in the EVC and verifies that the corresponding Service Frames are delivered at the associated UNI																														
Units	Number of valid Service Frames																														
Variables	Bandwidth Profile Parameters CIR, CBS, UNIs interface speed																														
Results	Pass or fail																														
Remarks																															

TEST CASE 15: Type 1.1 UNI-N CE-VLAN ID Preservation

ABSTRACT TEST SUITE FOR UNI TYPE 1																					
Test Name	Type 1.1 UNI-N CE-VLAN ID Preservation																				
Test Definition ID	U1.6.1.6-20																				
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																				
Test Type	Conformance																				
Test Status	Mandatory																				
Requirement Description	A Type 1.1 UNI-N MUST be able to support CE-VLAN ID preservation																				
Test Object	Verify that a Type 1.1 UNI-N can support CE-VLAN ID preservation																				
Test Configuration	One EVC associating two Type 1.1 UNIs is configured and all possible CE-VLAN IDs are mapped to the EVC. A per Ingress UNI bandwidth profile is applied at both UNIs. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC																				
CE-VLAN ID/EVC Map	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2" style="text-align: center;">UNI 'A'</th> <th colspan="2" style="text-align: center;">UNI 'B'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">All possible values</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">All possible values</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table>	UNI 'A'		UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	All possible values	EVC ₁	All possible values	EVC ₁								
UNI 'A'		UNI 'B'																			
CE-VLAN ID	EVC	CE-VLAN ID	EVC																		
All possible values	EVC ₁	All possible values	EVC ₁																		
Bandwidth Profile	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="5" style="text-align: center;">PER INGRESS UNI</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th colspan="4" style="text-align: center;">Bandwidth Profile Parameters</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th style="text-align: center;">CIR</th> <th style="text-align: center;">CBS</th> <th style="text-align: center;">EIR</th> <th style="text-align: center;">EBS</th> </tr> </thead> <tbody> <tr> <td colspan="5"> Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0) </td> </tr> </tbody> </table>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI	CIR	CBS	EIR	EBS	Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0)				
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UNI	Bandwidth Profile Parameters																				
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Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0)																					
Service Performance	Not Specified																				
Test Procedure	Tester offers tagged Service Frames with VLAN IDs = 1,..., 4095, untagged Service Frames and priority tagged Service Frames bidirectionally at each UNI configured in the EVC and verifies that the corresponding Service Frames are delivered at the associated UNI with CE-VLAN ID preservation																				
Units	Number of valid Service Frames																				
Variables	Bandwidth Profile Parameters CIR, CBS, UNIs interface speed																				
Results	Pass or fail																				
Remarks																					

TEST CASE 16: Type 1.1 UNI-N CE-VLAN CoS Preservation

ABSTRACT TEST SUITE FOR UNI TYPE 1																															
Test Name	Type 1.1 UNI-N CE-VLAN CoS Preservation																														
Test Definition ID	U1.6.1.7-21																														
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																														
Test Type	Conformance																														
Test Status	Mandatory																														
Requirement Description	A Type 1.1 UNI-N MUST be able to support CE-VLAN CoS preservation																														
Test Object	Verify that a Type 1.1 UNI-N can support CE-VLAN CoS preservation																														
Test Configuration	One EVC associating two Type 1.1 UNIs is configured and all possible CE-VLAN IDs are mapped to the EVC. A per Ingress UNI bandwidth profile is applied at both UNIs. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC																														
CE-VLAN ID/EVC Map	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">UNI 'A'</th> <th colspan="2">UNI 'B'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td>All possible values</td> <td>EVC₁</td> <td>All possible values</td> <td>EVC₁</td> </tr> </tbody> </table>	UNI 'A'		UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	All possible values	EVC ₁	All possible values	EVC ₁																		
UNI 'A'		UNI 'B'																													
CE-VLAN ID	EVC	CE-VLAN ID	EVC																												
All possible values	EVC ₁	All possible values	EVC ₁																												
Bandwidth Profile	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="5">PER INGRESS UNI</th> </tr> <tr> <th>UNI</th> <th colspan="4">Bandwidth Profile Parameters</th> </tr> <tr> <th>UNI</th> <th>CIR</th> <th>CBS</th> <th>EIR</th> <th>EBS</th> </tr> </thead> <tbody> <tr> <td colspan="5">Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size)</td> </tr> <tr> <td colspan="5">Note 2: (Ingress CIR ≤ Egress UNI Speed)</td> </tr> <tr> <td colspan="5">Note 3: (EIR = 0) and (EBS = 0)</td> </tr> </tbody> </table>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI	CIR	CBS	EIR	EBS	Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size)					Note 2: (Ingress CIR ≤ Egress UNI Speed)					Note 3: (EIR = 0) and (EBS = 0)				
PER INGRESS UNI																															
UNI	Bandwidth Profile Parameters																														
UNI	CIR	CBS	EIR	EBS																											
Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size)																															
Note 2: (Ingress CIR ≤ Egress UNI Speed)																															
Note 3: (EIR = 0) and (EBS = 0)																															
Service Performance	Not Specified																														
Test Procedure	Tester offers tagged Service Frames with all possible CoS values bidirectionally at each UNI configured in the EVC and verifies that the corresponding Service Frames are delivered at the associated UNI with CE-VLAN CoS preservation																														
Units	Number of valid Service Frames																														
Variables	Bandwidth Profile Parameters CIR, CBS, UNIs interface speed																														
Results	Pass or fail																														
Remarks																															

TEST CASE 17: Type 1.1 UNI-N Service Frame Unconditional Delivery

ABSTRACT TEST SUITE FOR UNI TYPE 1																															
Test Name	Type 1.1 UNI-N Service Frame Unconditional Delivery																														
Test Definition ID	U1.6.1.8-22																														
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																														
Test Type	Conformance																														
Test Status	Mandatory																														
Requirement Description	A Type 1.1 UNI-N MUST be able to deliver unicast, multicast and broadcast Service Frames, except 802.3x PAUSE frames unconditionally																														
Test Object	Verify that a Type 1.1 UNI-N can deliver unicast, multicast and broadcast Service Frames, except 802.3x PAUSE frames unconditionally																														
Test Configuration	One EVC associating two Type 1.1 UNIs is configured and all possible CE-VLAN IDs are mapped to the EVC. A per Ingress UNI bandwidth profile is applied at both UNIs. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC																														
CE-VLAN ID/EVC Map	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">UNI 'A'</th> <th colspan="2">UNI 'B'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td>All possible values</td> <td>EVC₁</td> <td>All possible values</td> <td>EVC₁</td> </tr> </tbody> </table>	UNI 'A'		UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	All possible values	EVC ₁	All possible values	EVC ₁																		
UNI 'A'		UNI 'B'																													
CE-VLAN ID	EVC	CE-VLAN ID	EVC																												
All possible values	EVC ₁	All possible values	EVC ₁																												
Bandwidth Profile	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="5">PER INGRESS UNI</th> </tr> <tr> <th>UNI</th> <th colspan="4">Bandwidth Profile Parameters</th> </tr> <tr> <th>UNI</th> <th>CIR</th> <th>CBS</th> <th>EIR</th> <th>EBS</th> </tr> </thead> <tbody> <tr> <td colspan="5">Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size)</td> </tr> <tr> <td colspan="5">Note 2: (Ingress CIR ≤ Egress UNI Speed)</td> </tr> <tr> <td colspan="5">Note 3: (EIR = 0) and (EBS = 0)</td> </tr> </tbody> </table>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI	CIR	CBS	EIR	EBS	Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size)					Note 2: (Ingress CIR ≤ Egress UNI Speed)					Note 3: (EIR = 0) and (EBS = 0)				
PER INGRESS UNI																															
UNI	Bandwidth Profile Parameters																														
UNI	CIR	CBS	EIR	EBS																											
Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size)																															
Note 2: (Ingress CIR ≤ Egress UNI Speed)																															
Note 3: (EIR = 0) and (EBS = 0)																															
Service Performance	Not Specified																														
Test Procedure	Tester offers unicast, multicast and broadcast Service Frames bidirectionally at each UNI configured in the EVC and verifies that the corresponding Service Frames are delivered at the associated UNI																														
Units	Number of valid Service Frames																														
Variables	Bandwidth Profile Parameters CIR, CBS, UNIs interface speed																														
Results	Pass or fail																														
Remarks																															

10. Abstract Test Cases for UNI Type 1.2 Specific Characteristics

In this section we assume familiarity with MEF 13 *User Network Interface (UNI) Type 1 Implementation Agreement* and, in particular, its section 6.2 which defines the specific characteristics of the UNI Type 1.2.

Twenty-seven Abstract Test Cases based on the specific characteristics of the UNI Type 1.2 are defined in this section.

Abstract Test Cases for UNI-N Type 1.2 Specific Characteristics

- Test Case 18: Type 1.2 UNI-N Service Multiplexing
- Test Case 19: Type 1.2 UNI-N Service Multiplexing - Minimum Number of EVCs
- Test Case 20: Type 1.2 UNI-N Minimum Number of CE-VLAN IDs
- Test Case 21: Type 1.2 UNI-N CE-VLAN ID Range
- Test Case 22: Type 1.2 UNI-N Configurable CE-VLAN ID/EVC Map
- Test Case 23: Type 1.2 UNI-N CE-VLAN ID/EVC Map Service Frame Discard
- Test Case 24: Type 1.2 UNI-N All-to-One Bundling
- Test Case 25: Type 1.2 UNI-N Bandwidth Profile per Ingress UNI
- Test Case 26: Type 1.2 UNI-N Bandwidth Profile per EVC
- Test Case 27: Type 1.2 UNI-N Bandwidth Profile per Class of Service
- Test Case 28: Type 1.2 UNI-N Multiple Bandwidth Profiles
- Test Case 29: Type 1.2 UNI-N Bandwidth Profile Rate Enforcement when CIR > 0 and EIR = 0
- Test Case 30: Type 1.2 UNI-N Bandwidth Profile Rate Enforcement when CIR = 0 and EIR > 0
- Test Case 31: Type 1.2 UNI-N Bandwidth Profile Rate Enforcement when CIR > 0 and EIR > 0
- Test Case 32: Type 1.2 UNI-N Mandatory CIR Configuration Granularity
- Test Case 33: Type 1.2 UNI-N Mandatory EIR Configuration Granularity
- Test Case 34: Type 1.2 UNI-N Optional CIR Configuration Granularity
- Test Case 35: Type 1.2 UNI-N Optional EIR Configuration Granularity
- Test Case 36: Type 1.2 UNI-N CBS Configuration
- Test Case 37: Type 1.2 UNI-N EBS Configuration
- Test Case 38: Type 1.2 UNI-N Optional Layer 2 Control Protocol Discard
- Test Case 39: Type 1.2 UNI-N Optional Layer 2 Control Protocol Generation
- Test Case 40: Type 1.2 UNI-N Concurrent Point-to-Point and Multipoint EVCs
- Test Case 41: Type 1.2 UNI-N CE-VLAN ID Preservation
- Test Case 42: Type 1.2 UNI-N CE-VLAN CoS Preservation
- Test Case 43: Type 1.2 UNI-N Broadcast & Multicast Service Frame Unconditional Delivery
- Test Case 44: Type 1.2 UNI-N Unicast Service Frame Unconditional Delivery

TEST CASE 18: Type 1.2 UNI-N Service Multiplexing

ABSTRACT TEST SUITE FOR UNI TYPE 1																									
Test Name	Type 1.2 UNI-N Service Multiplexing																								
Test Definition ID	U1.6.2.1-23																								
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																								
Test Type	Conformance																								
Test Status	Mandatory																								
Requirement Description	A Type 1.2 UNI-N MUST be able to support Service Multiplexing as defined in MEF 10																								
Test Object	Verify that a Type 1.2 UNI-N can support Service Multiplexing as defined in MEF 10																								
Test Configuration	At least two EVCs, each one associating a given Type 1.2 ingress UNI and at least one other Type 1.2 UNI are configured and at least one CE-VLAN ID is mapped per EVC. Per EVC bandwidth profiles are applied at all UNIs. Testers with proper PHY that matches each UNI are attached to all UNIs in the configured EVCs																								
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="2" style="background-color: #f4a460;">UNI 'A'</th> <th colspan="2" style="background-color: #f4a460;">UNI 'B'</th> <th colspan="2" style="background-color: #f4a460;">UNI 'C'</th> </tr> <tr> <th style="background-color: #f4a460;">CE-VLAN ID</th> <th style="background-color: #f4a460;">EVC</th> <th style="background-color: #f4a460;">CE-VLAN ID</th> <th style="background-color: #f4a460;">EVC</th> <th style="background-color: #f4a460;">CE-VLAN ID</th> <th style="background-color: #f4a460;">EVC</th> </tr> </thead> <tbody> <tr> <td style="background-color: #ffff00;">11*</td> <td style="background-color: #ffff00;">EVC₁</td> <td style="background-color: #ffff00;"></td> <td style="background-color: #ffff00;"></td> <td style="background-color: #ffff00;">11*</td> <td style="background-color: #ffff00;">EVC₁</td> </tr> <tr> <td style="background-color: #ffff00;">12</td> <td style="background-color: #ffff00;">EVC₂</td> <td style="background-color: #ffff00;">12</td> <td style="background-color: #ffff00;">EVC₂</td> <td style="background-color: #ffff00;"></td> <td style="background-color: #ffff00;"></td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both ingress and egress UNIs</p>	UNI 'A'		UNI 'B'		UNI 'C'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁			11*	EVC ₁	12	EVC ₂	12	EVC ₂		
UNI 'A'		UNI 'B'		UNI 'C'																					
CE-VLAN ID	EVC	CE-VLAN ID	EVC	CE-VLAN ID	EVC																				
11*	EVC ₁			11*	EVC ₁																				
12	EVC ₂	12	EVC ₂																						
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="5" style="background-color: #f4a460;">PER EVC</th> </tr> <tr> <th style="background-color: #f4a460;">EVC</th> <th colspan="4" style="background-color: #f4a460;">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td style="background-color: #ffff00;">EVC₁</td> <td style="background-color: #ffff00;">CIR₁</td> <td style="background-color: #ffff00;">CBS₁</td> <td style="background-color: #ffff00;">EIR₁</td> <td style="background-color: #ffff00;">EBS₁</td> </tr> <tr> <td style="background-color: #ffff00;">EVC₂</td> <td style="background-color: #ffff00;">CIR₂</td> <td style="background-color: #ffff00;">CBS₂</td> <td style="background-color: #ffff00;">EIR₂</td> <td style="background-color: #ffff00;">EBS₂</td> </tr> </tbody> </table> <p>Note 1: (0 < CIR_{1,2} < Ingress UNI Speed), (CBS_{1,2} ≥ maximum Service Frame size) Note 2: (Σ Ingress CIRs ≤ Egress UNI Speed) Note 3: (EIR_{1,2} = 0) and (EBS_{1,2} = 0)</p>	PER EVC					EVC	Bandwidth Profile Parameters				EVC ₁	CIR ₁	CBS ₁	EIR ₁	EBS ₁	EVC ₂	CIR ₂	CBS ₂	EIR ₂	EBS ₂				
PER EVC																									
EVC	Bandwidth Profile Parameters																								
EVC ₁	CIR ₁	CBS ₁	EIR ₁	EBS ₁																					
EVC ₂	CIR ₂	CBS ₂	EIR ₂	EBS ₂																					
Service Performance	Not Specified																								
Test Procedure	Tester offers Service Frames with mapped CE-VLAN IDs bidirectionally at each UNI configured in the EVCs and verifies that the corresponding Service Frames are successfully delivered on the proper EVC at the associated UNIs.																								
Units	Number of valid Service Frames																								
Variables	Number of UNIs, number of EVCs per UNI, Bandwidth Profile Parameters CIR ₁ , CBS ₁ , CIR ₂ , CBS ₂ , UNIs interface speed																								
Results	Pass or fail																								
Remarks																									

TEST CASE 19: Type 1.2 UNI-N Service Multiplexing - Minimum Number of EVCs

ABSTRACT TEST SUITE FOR UNI TYPE 1																																																													
Test Name	Type 1.2 UNI-N Service Multiplexing - Minimum Number of EVCs																																																												
Test Definition ID	U1.6.2.1-24																																																												
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																																																												
Test Type	Conformance																																																												
Test Status	Optional																																																												
Requirement Description	<p>A Type 1.2 UNI-N SHOULD at least be able to support a minimum number of EVCs as described in the following table</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Link Speed</th> <th>10/100 Mbps</th> <th>1 Gbps</th> <th>10 Gbps</th> </tr> </thead> <tbody> <tr> <td>Minimum Number of EVCs</td> <td style="text-align: center;">8</td> <td style="text-align: center;">64</td> <td style="text-align: center;">512</td> </tr> </tbody> </table>	Link Speed	10/100 Mbps	1 Gbps	10 Gbps	Minimum Number of EVCs	8	64	512																																																				
Link Speed	10/100 Mbps	1 Gbps	10 Gbps																																																										
Minimum Number of EVCs	8	64	512																																																										
Test Object	Verify that a Type 1.2 UNI-N can support a minimum number of EVCs as described in the requirement description table above																																																												
Test Configuration	At least eight EVCs, each one associating a given Type 1.2 ingress UNI and at least one other Type 1.2 UNI are configured and at least one CE-VLAN ID is mapped per EVC. Per EVC bandwidth profiles are applied at all UNIs. Testers with proper PHY that matches each UNI are attached to all UNIs in the configured EVCs																																																												
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">UNI 'A'</th> <th colspan="2" style="text-align: center;">UNI 'B'</th> <th colspan="2" style="text-align: center;">UNI 'C'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">1</td><td>EVC₁</td><td></td><td></td><td style="text-align: center;">1</td><td>EVC₁</td></tr> <tr><td style="text-align: center;">2</td><td>EVC₂</td><td></td><td></td><td style="text-align: center;">2</td><td>EVC₂</td></tr> <tr><td style="text-align: center;">3</td><td>EVC₃</td><td></td><td></td><td style="text-align: center;">3</td><td>EVC₃</td></tr> <tr><td style="text-align: center;">4</td><td>EVC₄</td><td></td><td></td><td style="text-align: center;">4</td><td>EVC₄</td></tr> <tr><td style="text-align: center;">5</td><td>EVC₅</td><td style="text-align: center;">5</td><td>EVC₅</td><td></td><td></td></tr> <tr><td style="text-align: center;">6</td><td>EVC₆</td><td style="text-align: center;">6</td><td>EVC₆</td><td></td><td></td></tr> <tr><td style="text-align: center;">7</td><td>EVC₇</td><td style="text-align: center;">7</td><td>EVC₇</td><td></td><td></td></tr> <tr><td style="text-align: center;">8</td><td>EVC₈</td><td style="text-align: center;">8</td><td>EVC₈</td><td></td><td></td></tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>This mapping applies for 10/100 Mbps UNI speeds. The same mapping principles should be applied for the 1Gbps and 10Gbps UNI speeds but with respectively 64 and 512 EVCs</p>	UNI 'A'		UNI 'B'		UNI 'C'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	CE-VLAN ID	EVC	1	EVC ₁			1	EVC ₁	2	EVC ₂			2	EVC ₂	3	EVC ₃			3	EVC ₃	4	EVC ₄			4	EVC ₄	5	EVC ₅	5	EVC ₅			6	EVC ₆	6	EVC ₆			7	EVC ₇	7	EVC ₇			8	EVC ₈	8	EVC ₈		
UNI 'A'		UNI 'B'		UNI 'C'																																																									
CE-VLAN ID	EVC	CE-VLAN ID	EVC	CE-VLAN ID	EVC																																																								
1	EVC ₁			1	EVC ₁																																																								
2	EVC ₂			2	EVC ₂																																																								
3	EVC ₃			3	EVC ₃																																																								
4	EVC ₄			4	EVC ₄																																																								
5	EVC ₅	5	EVC ₅																																																										
6	EVC ₆	6	EVC ₆																																																										
7	EVC ₇	7	EVC ₇																																																										
8	EVC ₈	8	EVC ₈																																																										
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">PER EVC</th> </tr> <tr> <th>EVC</th> <th colspan="4">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td>EVC₁</td> <td>CIR₁</td> <td>CBS₁</td> <td>EIR₁</td> <td>EBS₁</td> </tr> <tr> <td>EVC₂</td> <td>CIR₂</td> <td>CBS₂</td> <td>EIR₂</td> <td>EBS₂</td> </tr> <tr> <td style="text-align: center;">⋮</td> <td style="text-align: center;">⋮</td> <td style="text-align: center;">⋮</td> <td style="text-align: center;">⋮</td> <td style="text-align: center;">⋮</td> </tr> <tr> <td>EVC₈</td> <td>CIR₈</td> <td>CBS₈</td> <td>EIR₈</td> <td>EBS₈</td> </tr> </tbody> </table> <p>Note 1: (0 < CIR_{1,2,3,4,5,6,7,8} < Ingress UNI Speed), (CBS_{1,2,3,4,5,6,7,8} ≥ maximum Service Frame size) Note 2: (Σ Ingress CIRs ≤ Egress UNI Speed) Note 3: (EIR_{1,2,3,4,5,6,7,8} = 0) and (EBS_{1,2,3,4,5,6,7,8} = 0)</p>	PER EVC					EVC	Bandwidth Profile Parameters				EVC ₁	CIR ₁	CBS ₁	EIR ₁	EBS ₁	EVC ₂	CIR ₂	CBS ₂	EIR ₂	EBS ₂	⋮	⋮	⋮	⋮	⋮	EVC ₈	CIR ₈	CBS ₈	EIR ₈	EBS ₈																														
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EVC	Bandwidth Profile Parameters																																																												
EVC ₁	CIR ₁	CBS ₁	EIR ₁	EBS ₁																																																									
EVC ₂	CIR ₂	CBS ₂	EIR ₂	EBS ₂																																																									
⋮	⋮	⋮	⋮	⋮																																																									
EVC ₈	CIR ₈	CBS ₈	EIR ₈	EBS ₈																																																									
Service Performance	Not Specified																																																												
Test Procedure	Tester offers Service Frames with mapped CE-VLAN IDs bidirectionally at each UNI configured in the EVCs and verifies that the corresponding Service Frames are delivered at the associated UNIs																																																												
Units	Number of valid Service Frames																																																												
Variables	UNIs interface speed, number of UNIs, number of EVCs per UNI, Bandwidth Profile Parameters CIR ₁ , CBS ₁ , CIR ₂ , CBS ₂ , CIR ₃ , CBS ₃ , CIR ₄ , CBS ₄ , CIR ₅ , CBS ₅ , CIR ₆ , CBS ₆ , CIR ₇ , CBS ₇ , CIR ₈ , CBS ₈																																																												
Results	Pass or fail																																																												
Remarks																																																													

TEST CASE 20: Type 1.2 UNI-N Minimum Number of CE-VLAN IDs

ABSTRACT TEST SUITE FOR UNI TYPE 1																					
Test Name	Type 1.2 UNI-N Minimum Number of CE-VLAN Ids																				
Test Definition ID	U1.6.2.2-25.1																				
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																				
Test Type	Conformance																				
Test Status	Optional																				
Requirement Description	<p>A Type 1.2 UNI-N SHOULD be able to support at least a minimum number of CE-VLAN IDs as described in the following table</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="background-color: #f4a460;">Link Speed</th> <th style="background-color: #f4a460;">10/100 Mbps</th> <th style="background-color: #f4a460;">1 Gbps</th> <th style="background-color: #f4a460;">10 Gbps</th> </tr> </thead> <tbody> <tr> <td style="background-color: #f4a460;">Minimum Number of CE-VLAN IDs</td> <td style="background-color: #ffff00;">8</td> <td style="background-color: #ffff00;">64</td> <td style="background-color: #ffff00;">512</td> </tr> </tbody> </table>	Link Speed	10/100 Mbps	1 Gbps	10 Gbps	Minimum Number of CE-VLAN IDs	8	64	512												
Link Speed	10/100 Mbps	1 Gbps	10 Gbps																		
Minimum Number of CE-VLAN IDs	8	64	512																		
Test Object	Verify that a Type 1.2 UNI-N can at least support a minimum number of CE-VLAN IDs as described in the requirement description table above																				
Test Configuration	One EVC associating two Type 1.2 UNIs is configured and at least eight CE-VLAN IDs are mapped to the EVC. A per Ingress UNI bandwidth profile is applied at both UNIs. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC																				
CE-VLAN ID/EVC Map	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2" style="background-color: #f4a460;">UNI 'A'</th> <th colspan="2" style="background-color: #f4a460;">UNI 'B'</th> </tr> <tr> <th style="background-color: #f4a460;">CE-VLAN ID</th> <th style="background-color: #f4a460;">EVC</th> <th style="background-color: #f4a460;">CE-VLAN ID</th> <th style="background-color: #f4a460;">EVC</th> </tr> </thead> <tbody> <tr> <td style="background-color: #ffff00;">11, 12, 13, 14, 15, 16, 17, 18</td> <td style="background-color: #ffff00;">EVC₁</td> <td style="background-color: #ffff00;">11, 12, 13, 14, 15, 16, 17, 18</td> <td style="background-color: #ffff00;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>This mapping applies for 10/100 Mbps UNI speeds. The same mapping principles should be applied for the 1Gbps and 10Gbps UNI speeds but with respectively 64 and 512 CE-VLAN IDs</p>	UNI 'A'		UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11, 12, 13, 14, 15, 16, 17, 18	EVC ₁	11, 12, 13, 14, 15, 16, 17, 18	EVC ₁								
UNI 'A'		UNI 'B'																			
CE-VLAN ID	EVC	CE-VLAN ID	EVC																		
11, 12, 13, 14, 15, 16, 17, 18	EVC ₁	11, 12, 13, 14, 15, 16, 17, 18	EVC ₁																		
Bandwidth Profile	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="5" style="background-color: #f4a460;">PER INGRESS UNI</th> </tr> <tr> <th style="background-color: #f4a460;">UNI</th> <th colspan="4" style="background-color: #f4a460;">Bandwidth Profile Parameters</th> </tr> <tr> <th style="background-color: #f4a460;">UNI</th> <th style="background-color: #ffff00;">CIR</th> <th style="background-color: #ffff00;">CBS</th> <th style="background-color: #ffff00;">EIR</th> <th style="background-color: #ffff00;">EBS</th> </tr> </thead> <tbody> <tr> <td colspan="5"> Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0) </td> </tr> </tbody> </table>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI	CIR	CBS	EIR	EBS	Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0)				
PER INGRESS UNI																					
UNI	Bandwidth Profile Parameters																				
UNI	CIR	CBS	EIR	EBS																	
Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0)																					
Service Performance	Not Specified																				
Test Procedure	Tester offers Service Frames with mapped CE-VLAN IDs bidirectionally at each UNI configured in the EVC and verifies that the corresponding Service Frames are delivered at the associated UNI																				
Units	Number of valid Service Frames																				
Variables	UNIs interface speed, number of mapped CE-VLAN IDs, Bandwidth Profile Parameters CIR, CBS																				
Results	Pass or fail																				
Remarks																					

TEST CASE 21: Type 1.2 UNI-N CE-VLAN ID Range

ABSTRACT TEST SUITE FOR UNI TYPE 1																															
Test Name	Type 1.2 UNI-N CE-VLAN ID Range																														
Test Definition ID	U1.6.2.2-25.2																														
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																														
Test Type	Conformance																														
Test Status	Optional																														
Requirement Description	A Type 1.2 UNI-N should be able to support a minimum number of CE-VLAN IDs that SHOULD be configurable in the range of 1-4095																														
Test Object	Verify that a Type 1.2 UNI-N can at support a minimum number of CE-VLAN IDs configurable in the range of 1-4095																														
Test Configuration	One EVC associating two Type 1.2 UNIs is configured and at least eight CE-VLAN IDs are mapped to the EVC. A per Ingress UNI bandwidth profile is applied at both UNIs. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC																														
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">UNI 'A'</th> <th colspan="2" style="text-align: center;">UNI 'B'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1, 56, 212, 1087, 1460, 2228, 3999, 4095</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">1, 56, 212, 1087, 1460, 2228, 3999, 4095</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>This mapping applies for 10/100 Mbps UNI speeds. The same mapping principles should be applied for the 1Gbps and 10Gbps UNI speeds but with respectively 64 and 512 CE-VLAN IDs, including VLAN IDs 1 and 4095</p>	UNI 'A'		UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	1, 56, 212, 1087, 1460, 2228, 3999, 4095	EVC ₁	1, 56, 212, 1087, 1460, 2228, 3999, 4095	EVC ₁																		
UNI 'A'		UNI 'B'																													
CE-VLAN ID	EVC	CE-VLAN ID	EVC																												
1, 56, 212, 1087, 1460, 2228, 3999, 4095	EVC ₁	1, 56, 212, 1087, 1460, 2228, 3999, 4095	EVC ₁																												
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">PER INGRESS UNI</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th colspan="4" style="text-align: center;">Bandwidth Profile Parameters</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th style="text-align: center;">CIR</th> <th style="text-align: center;">CBS</th> <th style="text-align: center;">EIR</th> <th style="text-align: center;">EBS</th> </tr> </thead> <tbody> <tr> <td colspan="5">Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size)</td> </tr> <tr> <td colspan="5">Note 2: (Ingress CIR ≤ Egress UNI Speed)</td> </tr> <tr> <td colspan="5">Note 3: (EIR = 0) and (EBS = 0)</td> </tr> </tbody> </table>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI	CIR	CBS	EIR	EBS	Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size)					Note 2: (Ingress CIR ≤ Egress UNI Speed)					Note 3: (EIR = 0) and (EBS = 0)				
PER INGRESS UNI																															
UNI	Bandwidth Profile Parameters																														
UNI	CIR	CBS	EIR	EBS																											
Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size)																															
Note 2: (Ingress CIR ≤ Egress UNI Speed)																															
Note 3: (EIR = 0) and (EBS = 0)																															
Service Performance	Not Specified																														
Test Procedure	Tester offers Service Frames with mapped CE-VLAN IDs bidirectionally at each UNI configured in the EVC and verifies that the corresponding Service Frames are delivered at the associated UNI																														
Units	Number of valid Service Frames																														
Variables	UNIs interface speed, number of mapped CE-VLAN IDs, Bandwidth Profile Parameters CIR, CBS																														
Results	Pass or fail																														
Remarks																															

TEST CASE 22: Type 1.2 UNI-N Configurable CE-VLAN ID/EVC Map

ABSTRACT TEST SUITE FOR UNI TYPE 1																															
Test Name	Type 1.2 UNI-N Configurable CE-VLAN ID/EVC Map																														
Test Definition ID	U1.6.1.3-26																														
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																														
Test Type	Conformance																														
Test Status	Mandatory																														
Requirement Description	A Type 1.2 UNI-N MUST have a configurable CE-VLAN ID/EVC mapping table																														
Test Object	Verify that a Type 1.2 UNI-N can have a configurable CE-VLAN ID/EVC mapping table																														
Test Configuration	One EVC associating two Type 1.2 UNIs is configured and at least one CE-VLAN ID is mapped per EVC. At least two different mapping configurations are required. A per Ingress UNI bandwidth profile is applied at both UNIs. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC																														
CE-VLAN ID/EVC Map Configuration 1	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: #f4a460;">UNI 'A'</th> <th colspan="2" style="background-color: #f4a460;">UNI 'B'</th> </tr> <tr> <th style="background-color: #f4a460;">CE-VLAN ID</th> <th style="background-color: #f4a460;">EVC</th> <th style="background-color: #f4a460;">CE-VLAN ID</th> <th style="background-color: #f4a460;">EVC</th> </tr> </thead> <tbody> <tr> <td style="background-color: #ffff00;">11*</td> <td style="background-color: #ffff00;">EVC₁</td> <td style="background-color: #ffff00;">11*</td> <td style="background-color: #ffff00;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both ingress and egress UNIs</p>	UNI 'A'		UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁	11*	EVC ₁																		
	UNI 'A'		UNI 'B'																												
CE-VLAN ID	EVC	CE-VLAN ID	EVC																												
11*	EVC ₁	11*	EVC ₁																												
CE-VLAN ID/EVC Map Configuration 2	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: #f4a460;">UNI 'A'</th> <th colspan="2" style="background-color: #f4a460;">UNI 'B'</th> </tr> <tr> <th style="background-color: #f4a460;">CE-VLAN ID</th> <th style="background-color: #f4a460;">EVC</th> <th style="background-color: #f4a460;">CE-VLAN ID</th> <th style="background-color: #f4a460;">EVC</th> </tr> </thead> <tbody> <tr> <td style="background-color: #ffff00;">12</td> <td style="background-color: #ffff00;">EVC₁</td> <td style="background-color: #ffff00;">12</td> <td style="background-color: #ffff00;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p>	UNI 'A'		UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	12	EVC ₁	12	EVC ₁																		
	UNI 'A'		UNI 'B'																												
CE-VLAN ID	EVC	CE-VLAN ID	EVC																												
12	EVC ₁	12	EVC ₁																												
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="background-color: #f4a460;">PER INGRESS UNI</th> </tr> <tr> <th style="background-color: #f4a460;">UNI</th> <th colspan="4" style="background-color: #f4a460;">Bandwidth Profile Parameters</th> </tr> <tr> <th style="background-color: #f4a460;">UNI</th> <th style="background-color: #ffff00;">CIR</th> <th style="background-color: #ffff00;">CBS</th> <th style="background-color: #ffff00;">EIR</th> <th style="background-color: #ffff00;">EBS</th> </tr> </thead> <tbody> <tr> <td colspan="5">Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size)</td> </tr> <tr> <td colspan="5">Note 2: (Ingress CIR ≤ Egress UNI Speed)</td> </tr> <tr> <td colspan="5">Note 3: (EIR = 0) and (EBS = 0)</td> </tr> </tbody> </table>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI	CIR	CBS	EIR	EBS	Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size)					Note 2: (Ingress CIR ≤ Egress UNI Speed)					Note 3: (EIR = 0) and (EBS = 0)				
	PER INGRESS UNI																														
UNI	Bandwidth Profile Parameters																														
UNI	CIR	CBS	EIR	EBS																											
Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size)																															
Note 2: (Ingress CIR ≤ Egress UNI Speed)																															
Note 3: (EIR = 0) and (EBS = 0)																															
Service Performance	Not Specified																														
Test Procedure	Tester offers Service Frames with mapped and unmapped CE-VLAN IDs bidirectionally at each UNI configured in the EVC as per the CE-VLAN ID/EVC map 1 and verifies that the Service Frames with the mapped CE-VLAN IDs are delivered and the ones with the unmapped CE-VLAN IDs are not delivered at the associated UNI. Change the configuration to the CE-VLAN ID/EVC map 2. Tester offers Service Frames with mapped and unmapped CE-VLAN IDs bidirectionally at each UNI configured in the EVC as per the CE-VLAN ID/EVC map 2 and verifies that the Service Frames with the mapped CE-VLAN IDs are delivered and the ones with the unmapped CE-VLAN IDs are not delivered at the associated egress UNI																														
Units	Number of valid Service Frames																														
Variables	CE-VLAN ID/EVC maps, Bandwidth Profile Parameters CIR, CBS, UNIs interface speed																														
Results	Pass or fail																														
Remarks																															

TEST CASE 23: Type 1.2 UNI-N CE-VLAN ID/EVC Map Service Frame Discard

ABSTRACT TEST SUITE FOR UNI TYPE 1																
Test Name	Type 1.2 UNI-N CE-VLAN ID/EVC Map Service Frame Discard															
Test Definition ID	U1.6.1.3-27															
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]															
Test Type	Conformance															
Test Status	Mandatory															
Requirement Description	A Type 1.2 UNI-N MUST be able to drop the frames if a match in the CE-VLAN ID/EVC map table cannot be found															
Test Object	Verify that a Type 1.2 UNI-N can drop the frames if a match in the CE-VLAN ID/EVC map table cannot be found															
Test Configuration	One EVC associating two Type 1.2 UNIs is configured and at least one CE-VLAN ID is mapped per EVC. A per Ingress UNI bandwidth profile is applied at the UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC															
CE-VLAN ID/EVC Map	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">INGRESS UNI 'A'</th> <th colspan="2">EGRESS UNI 'B'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both ingress and egress UNIs</p>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁	11*	EVC ₁			
INGRESS UNI 'A'		EGRESS UNI 'B'														
CE-VLAN ID	EVC	CE-VLAN ID	EVC													
11*	EVC ₁	11*	EVC ₁													
Bandwidth Profile	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="5">PER INGRESS UNI</th> </tr> <tr> <th>UNI</th> <th colspan="4">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">UNI_A</td> <td style="text-align: center;">CIR_A</td> <td style="text-align: center;">CBS_A</td> <td style="text-align: center;">EIR_A</td> <td style="text-align: center;">EBS_A</td> </tr> </tbody> </table> <p>Note 1: ($0 < CIR_A < \text{Ingress UNI Speed}$), ($CBS_A \geq \text{maximum Service Frame size}$) Note 2: ($\text{Ingress CIR} \leq \text{Egress UNI Speed}$) Note 3: ($EIR_A = 0$) and ($EBS_A = 0$)</p>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI _A	CIR _A	CBS _A	EIR _A	EBS _A
PER INGRESS UNI																
UNI	Bandwidth Profile Parameters															
UNI _A	CIR _A	CBS _A	EIR _A	EBS _A												
Service Performance	Not Specified															
Test Procedure	Tester offers Service Frames with mapped and unmapped CE-VLAN IDs at the ingress UNI configured in the EVC and verifies that the Service Frames with the mapped CE-VLAN IDs are delivered and the ones with the unmapped CE-VLAN IDs are not delivered at the associated egress UNI															
Units	Number of valid Service Frames															
Variables	Bandwidth Profile Parameters CIR _A , CBS _A , UNIs interface speed															
Results	Pass or fail															
Remarks																

TEST CASE 24: Type 1.2 UNI-N All-to-One Bundling

ABSTRACT TEST SUITE FOR UNI TYPE 1																					
Test Name	Type 1.2 UNI-N All-to-One Bundling																				
Test Definition ID	U1.6.2.4-28																				
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																				
Test Type	Conformance																				
Test Status	Mandatory																				
Requirement Description	A Type 1.2 UNI-N MUST be able to support All-to-one bundling																				
Test Object	Verify that a Type 1.2 UNI-N can support All-to-one bundling																				
Test Configuration	One EVC associating two Type 1.2 UNIs is configured and all possible CE-VLAN IDs are mapped to the EVC. A per Ingress UNI bandwidth profile is applied at both UNIs. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC																				
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="2">UNI 'A'</th> <th colspan="2">UNI 'B'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td>All possible values</td> <td>EVC₁</td> <td>All possible values</td> <td>EVC₁</td> </tr> </tbody> </table>	UNI 'A'		UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	All possible values	EVC ₁	All possible values	EVC ₁								
UNI 'A'		UNI 'B'																			
CE-VLAN ID	EVC	CE-VLAN ID	EVC																		
All possible values	EVC ₁	All possible values	EVC ₁																		
Bandwidth Profile	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="5">PER INGRESS UNI</th> </tr> <tr> <th>UNI</th> <th colspan="4">Bandwidth Profile Parameters</th> </tr> <tr> <th>UNI</th> <th>CIR</th> <th>CBS</th> <th>EIR</th> <th>EBS</th> </tr> </thead> <tbody> <tr> <td colspan="5"> Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0) </td> </tr> </tbody> </table>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI	CIR	CBS	EIR	EBS	Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0)				
PER INGRESS UNI																					
UNI	Bandwidth Profile Parameters																				
UNI	CIR	CBS	EIR	EBS																	
Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0)																					
Service Performance	Not Specified																				
Test Procedure	Tester offers tagged Service Frames with VLAN IDs= 1, ..., 4095, untagged Service Frames and priority tagged Service bidirectionally at each UNI configured in the EVC and verifies that the corresponding Service Frames are delivered at the associated UNI with CE-VLAN ID preservation																				
Units	Number of valid Service Frames																				
Variables	Bandwidth Profile Parameters CIR, CBS, UNIs interface speed																				
Results	Pass or fail																				
Remarks																					

TEST CASE 25: Type 1.2 UNI-N Bandwidth Profile per Ingress UNI

ABSTRACT TEST SUITE FOR UNI TYPE 1																	
Test Name	Type 1.2 UNI-N Bandwidth Profile per Ingress UNI																
Test Definition ID	U1.6.2.5-29																
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																
Test Type	Conformance																
Test Status	Mandatory																
Requirement Description	A Type 1.2 UNI-N MUST be able to support a per Ingress UNI bandwidth profile based on MEF 10																
Test Object	Verify that a Type 1.2 UNI-N can support a per Ingress UNI bandwidth profile based on MEF 10																
Test Configuration	Two EVCs associating two Type 1.2 UNIs are configured and at least one CE-VLAN ID is mapped per EVC. A per Ingress UNI bandwidth profile is applied at the ingress UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVCs																
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">INGRESS UNI 'A'</th> <th colspan="2">EGRESS UNI 'B'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">11</td> <td style="text-align: center;">EVC₁</td> </tr> <tr> <td style="text-align: center;">12</td> <td style="text-align: center;">EVC₂</td> <td style="text-align: center;">12</td> <td style="text-align: center;">EVC₂</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11	EVC ₁	11	EVC ₁	12	EVC ₂	12	EVC ₂
INGRESS UNI 'A'		EGRESS UNI 'B'															
CE-VLAN ID	EVC	CE-VLAN ID	EVC														
11	EVC ₁	11	EVC ₁														
12	EVC ₂	12	EVC ₂														
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">PER INGRESS UNI</th> </tr> <tr> <th>UNI</th> <th colspan="3">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">UNI_A</td> <td style="text-align: center;">CIR_A</td> <td style="text-align: center;">CBS_A</td> <td style="text-align: center;">EIR_A EBS_A</td> </tr> </tbody> </table> <p>Note 1: ($0 < CIR_A < \text{Ingress UNI Speed}$), ($CBS_A \geq \text{maximum Service Frame size}$) Note 2: ($\text{Ingress } CIR_A \leq \text{Egress UNI Speed}$)</p>	PER INGRESS UNI				UNI	Bandwidth Profile Parameters			UNI _A	CIR _A	CBS _A	EIR _A EBS _A				
PER INGRESS UNI																	
UNI	Bandwidth Profile Parameters																
UNI _A	CIR _A	CBS _A	EIR _A EBS _A														
Service Performance	Not Specified																
Test Procedure	<p>Tester offers Service Frames with mapped CE-VLAN IDs of length λ into the configured EVCs at the ingress UNI and verifies that over a time interval T at least one Service Frame of each CE-VLAN ID is delivered at the associated egress UNI. Service Frames are offered at equal average rates into the configured EVCs at the ingress UNI, at an aggregate average rate greater than CIR_A. Tester also verifies that the amount of traffic delivered at the egress UNI falls within the range $X \leq (W_G + W_Y) \leq Z$ where:</p> <ul style="list-style-type: none"> · W_G is the amount of traffic accepted as Green over the time interval T that should be delivered to the egress UNI · W_Y is the amount of traffic accepted as Yellow over the time interval T that may be delivered to the egress UNI · $X_A = ((CIR_A + EIR_A) * T + CBS_A + EBS_A - F)$ and $Z_A = ((CIR_A + EIR_A) * T + CBS_A + EBS_A + F)$ 																
Units	Number of valid Service Frames																
Variables	Bandwidth Profile Parameters $CIR_A, CBS_A, EIR_A, EBS_A$, UNIs interface speed, time interval T , tolerated variance F , number and length λ of the offered Service Frames																
Results	Pass or fail																
Remarks																	

TEST CASE 26: Type 1.2 UNI-N Bandwidth Profile per EVC

ABSTRACT TEST SUITE FOR UNI TYPE 1																	
Test Name	Type 1.2 UNI-N Bandwidth Profile per EVC																
Test Definition ID	U1.6.2.5-30																
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																
Test Type	Conformance																
Test Status	Mandatory																
Requirement Description	A Type 1.2 UNI-N MUST be able to support a per EVC bandwidth profile based on MEF 10																
Test Object	Verify that a Type 1.2 UNI-N can support a per EVC bandwidth profile based on MEF 10																
Test Configuration	Two EVCs associating two Type 1.2 UNIs are configured and at least one CE-VLAN ID is mapped per EVC. Per EVC bandwidth profiles are applied at the ingress UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVCs																
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">INGRESS UNI 'A'</th> <th colspan="2" style="text-align: center;">EGRESS UNI 'B'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">11</td> <td style="text-align: center;">EVC₁</td> </tr> <tr> <td style="text-align: center;">12</td> <td style="text-align: center;">EVC₂</td> <td style="text-align: center;">12</td> <td style="text-align: center;">EVC₂</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11	EVC ₁	11	EVC ₁	12	EVC ₂	12	EVC ₂
INGRESS UNI 'A'		EGRESS UNI 'B'															
CE-VLAN ID	EVC	CE-VLAN ID	EVC														
11	EVC ₁	11	EVC ₁														
12	EVC ₂	12	EVC ₂														
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">PER EVC</th> </tr> <tr> <th style="text-align: center;">EVC</th> <th style="text-align: center;">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">CIR₁ CBS₁ EIR₁ EBS₁</td> </tr> <tr> <td style="text-align: center;">EVC₂</td> <td style="text-align: center;">CIR₂ CBS₂ EIR₂ EBS₂</td> </tr> </tbody> </table> <p>Note 1: (CIR₁ = 0), (CBS₁ = 0) and (EIR₁ = 0) and (EBS₁ = 0) Note 2: (0 < CIR₂ < Ingress UNI Speed), (CBS₂ ≥ maximum Service Frame size) Note 3: (Σ Ingress CIRs ≤ Egress UNI Speed)</p>	PER EVC		EVC	Bandwidth Profile Parameters	EVC ₁	CIR ₁ CBS ₁ EIR ₁ EBS ₁	EVC ₂	CIR ₂ CBS ₂ EIR ₂ EBS ₂								
PER EVC																	
EVC	Bandwidth Profile Parameters																
EVC ₁	CIR ₁ CBS ₁ EIR ₁ EBS ₁																
EVC ₂	CIR ₂ CBS ₂ EIR ₂ EBS ₂																
Service Performance	Not Specified																
Test Procedure	<p>Tester offers Service Frames with mapped CE-VLAN IDs of length λ into the configured EVCs at the ingress UNI during a time interval T, at an aggregate average rate in excess of the sum of the CIRs of all the configured EVCs and measures the number of Service Frames delivered at the associated egress UNI. For each EVC the amount of traffic delivered at the associated egress UNI must fall within the range $X \leq (W_G + W_Y) \leq Z$ where:</p> <ul style="list-style-type: none"> · W_G is the amount of traffic accepted as Green over the time interval T that should be delivered to the egress UNI · W_Y is the amount of traffic accepted as Yellow over the time interval T that may be delivered to the egress UNI · $X_1 = ((CIR_1 + EIR_1) * T + CBS_1 + EBS_1 - F)$ and $Z_1 = ((CIR_1 + EIR_1) * T + CBS_1 + EBS_1 + F)$ · $X_2 = ((CIR_2 + EIR_2) * T + CBS_2 + EBS_2 - F)$ and $Z_2 = ((CIR_2 + EIR_2) * T + CBS_2 + EBS_2 + F)$ 																
Units	Number of valid Service Frames																
Variables	Bandwidth Profile Parameters CIR ₂ , CBS ₂ , EIR ₂ , EBS ₂ , UNIs interface speed, time interval T , tolerated variance F , number and length λ of the offered Service Frames																
Results	Pass or fail																
Remarks																	

TEST CASE 27: Type 1.2 UNI-N Bandwidth Profile per Class of Service

ABSTRACT TEST SUITE FOR UNI TYPE 1																
Test Name	Type 1.2 UNI-N Bandwidth Profile per Class of Service															
Test Definition ID	U1.6.2.5-31.1															
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]															
Test Type	Conformance															
Test Status	Optional															
Requirement Description	A Type 1.2 UNI-N SHOULD be able to support a per CoS bandwidth profile based on MEF 10															
Test Object	Verify that a Type 1.2 UNI-N can support a per CoS bandwidth profile based on MEF 10															
Test Configuration	One EVC associating two Type 1.2 UNIs is configured and at least one CE-VLAN ID is mapped per EVC. Per Class of Service bandwidth profiles are applied at the ingress UNI. Two CoS Identifiers are used to identify the Class of Service applicable to the Service Frames offered at the UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC															
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">INGRESS UNI 'A'</th> <th colspan="2" style="text-align: center;">EGRESS UNI 'B'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both ingress and egress UNIs</p>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁	11*	EVC ₁			
INGRESS UNI 'A'		EGRESS UNI 'B'														
CE-VLAN ID	EVC	CE-VLAN ID	EVC													
11*	EVC ₁	11*	EVC ₁													
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4" style="text-align: center;">PER CLASS OF SERVICE</th> </tr> <tr> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CoS Identifier</th> <th style="text-align: center;">CE-VLAN CoS</th> <th style="text-align: center;">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td rowspan="2" style="text-align: center;">EVC₁</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> <td style="text-align: center;">CIR₁₁ CBS₁₁ EIR₁₁ EBS₁₁</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">7</td> <td style="text-align: center;">CIR₁₂ CBS₁₂ EIR₁₂ EBS₁₂</td> </tr> </tbody> </table> <p>Note 1: (CIR₁₁ = 0), (CBS₁₁ = 0) and (EIR₁₁ = 0) and (EBS₁₁ = 0) Note 2: (0 < CIR₁₂ < Ingress UNI Speed), (CBS₁₂ ≥ maximum Service Frame size) Note 3: (Σ Ingress CIRs ≤ Egress UNI Speed)</p>	PER CLASS OF SERVICE				EVC	CoS Identifier	CE-VLAN CoS	Bandwidth Profile Parameters	EVC ₁	1	1	CIR ₁₁ CBS ₁₁ EIR ₁₁ EBS ₁₁	2	7	CIR ₁₂ CBS ₁₂ EIR ₁₂ EBS ₁₂
PER CLASS OF SERVICE																
EVC	CoS Identifier	CE-VLAN CoS	Bandwidth Profile Parameters													
EVC ₁	1	1	CIR ₁₁ CBS ₁₁ EIR ₁₁ EBS ₁₁													
	2	7	CIR ₁₂ CBS ₁₂ EIR ₁₂ EBS ₁₂													
Service Performance	Not Specified															
Test Procedure	<p>Tester offers Service Frames with mapped CE-VLAN IDs of length λ into the configured EVC at the ingress UNI during a time interval T, at an aggregate average rate in excess of the sum of the CIRs of the configured CoS IDs and measures the number of Service Frames delivered at the associated egress UNI. For each CoS ID, the amount of traffic delivered at the associated egress UNI must fall within the range $X \leq (W_G + W_Y) \leq Z$ where:</p> <ul style="list-style-type: none"> · W_G is the amount of traffic accepted as Green over the time interval T that should be delivered to the egress UNI · W_Y is the amount of traffic accepted as Yellow over the time interval T that may be delivered to the egress UNI · $X_{11} = ((CIR_{11} + EIR_{11}) * T + CBS_{11} + EBS_{11} - F)$ and $Z_{11} = ((CIR_{11} + EIR_{11}) * T + CBS_{11} + EBS_{11} + F)$ · $X_{12} = ((CIR_{12} + EIR_{12}) * T + CBS_{12} + EBS_{12} - F)$ and $Z_{12} = ((CIR_{12} + EIR_{12}) * T + CBS_{12} + EBS_{12} + F)$ 															
Units	Number of valid Service Frames															
Variables	Bandwidth Profile Parameters CIR ₁₂ , CBS ₁₂ , EIR ₁₂ , EBS ₁₂ , time interval T , tolerated variance F , number and length λ of the offered Service Frames															
Results	Pass or fail															
Remarks																

TEST CASE 28: Type 1.2 UNI-N Multiple Bandwidth Profiles

ABSTRACT TEST SUITE FOR UNI TYPE 1																																			
Test Name	Type 1.2 UNI-N Multiple Bandwidth Profiles																																		
Test Definition ID	U1.6.2.5-31.2																																		
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																																		
Test Type	Conformance																																		
Test Status	Optional																																		
Requirement Description	Multiple models of bandwidth profile MAY exist at a UNI-N Type 1.2.																																		
Test Object	Verify that a Type 1.2 UNI-N can support multiple models of bandwidth profile																																		
Test Configuration	Two EVCs associating two Type 1.2 UNIs are configured and at least one CE-VLAN ID is mapped per EVC. A per EVC bandwidth profile and a per Class of Service bandwidth profile are applied at the ingress UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC																																		
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">INGRESS UNI 'A'</th> <th colspan="2" style="text-align: center;">EGRESS UNI 'B'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">11</td> <td style="text-align: center;">EVC₁</td> </tr> <tr> <td style="text-align: center;">12</td> <td style="text-align: center;">EVC₂</td> <td style="text-align: center;">12</td> <td style="text-align: center;">EVC₂</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11	EVC ₁	11	EVC ₁	12	EVC ₂	12	EVC ₂																		
INGRESS UNI 'A'		EGRESS UNI 'B'																																	
CE-VLAN ID	EVC	CE-VLAN ID	EVC																																
11	EVC ₁	11	EVC ₁																																
12	EVC ₂	12	EVC ₂																																
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">PER EVC</th> </tr> <tr> <th style="text-align: center;">EVC</th> <th colspan="4" style="text-align: center;">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">CIR₁</td> <td style="text-align: center;">CBS₁</td> <td style="text-align: center;">EIR₁</td> <td style="text-align: center;">EBS₁</td> </tr> </tbody> </table> <p>Note 1: (0 < CIR₁ < ingress UNI Speed), (CBS₁ ≥ maximum Service Frame size)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">PER CLASS OF SERVICE</th> </tr> <tr> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CoS Identifier</th> <th style="text-align: center;">CE-VLAN CoS</th> <th colspan="2" style="text-align: center;">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td rowspan="2" style="text-align: center;">EVC₂</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> <td style="text-align: center;">CIR₂₁</td> <td style="text-align: center;">CBS₂₁ EIR₂₁ EBS₂₁</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">7</td> <td style="text-align: center;">CIR₂₂</td> <td style="text-align: center;">CBS₂₂ EIR₂₂ EBS₂₂</td> </tr> </tbody> </table> <p>Note 2: (CIR₂₁ = 0), (CBS₂₁ = 0) and (EIR₂₁ = 0) and (EBS₂₁ = 0) Note 3: (0 < CIR₂₂ < ingress UNI Speed), (CBS₂₂ ≥ maximum Service Frame size) Note 4: (∑ Ingress CIRs < Ingress UNI Speed) Note 5: (∑ Ingress CIRs ≤ Egress UNI Speed)</p>	PER EVC					EVC	Bandwidth Profile Parameters				EVC ₁	CIR ₁	CBS ₁	EIR ₁	EBS ₁	PER CLASS OF SERVICE					EVC	CoS Identifier	CE-VLAN CoS	Bandwidth Profile Parameters		EVC ₂	1	1	CIR ₂₁	CBS ₂₁ EIR ₂₁ EBS ₂₁	2	7	CIR ₂₂	CBS ₂₂ EIR ₂₂ EBS ₂₂
PER EVC																																			
EVC	Bandwidth Profile Parameters																																		
EVC ₁	CIR ₁	CBS ₁	EIR ₁	EBS ₁																															
PER CLASS OF SERVICE																																			
EVC	CoS Identifier	CE-VLAN CoS	Bandwidth Profile Parameters																																
EVC ₂	1	1	CIR ₂₁	CBS ₂₁ EIR ₂₁ EBS ₂₁																															
	2	7	CIR ₂₂	CBS ₂₂ EIR ₂₂ EBS ₂₂																															
Service Performance	Not Specified																																		
Test Procedure	<p>Tester offers Service Frames with mapped CE-VLAN IDs of length λ into the configured EVCs at the ingress UNI during a time interval T, at an aggregate average rate in excess of the sum of the CIRs of all the configured EVCs and CoS IDs and measures the number of Service Frames delivered at the associated egress UNI. For EVC₁ and for each CoS ID of EVC₂, the amount of traffic delivered at the associated egress UNI must fall within the range $X \leq (W_G + W_Y) \leq Z$ where:</p> <ul style="list-style-type: none"> · W_G is the amount of traffic accepted as Green over the time interval T that should be delivered to the egress UNI · W_Y is the amount of traffic accepted as Yellow over the time interval T that may be delivered to the egress UNI · $X_1 = ((CIR_1 + EIR_1) * T + CBS_1 + EBS_1 - F)$ and $Z_1 = ((CIR_1 + EIR_1) * T + CBS_1 + EBS_1 + F)$ · $X_{21} = ((CIR_{21} + EIR_{21}) * T + CBS_{21} + EBS_{21} - F)$ and $Z_{21} = ((CIR_{21} + EIR_{21}) * T + CBS_{21} + EBS_{21} + F)$ · $X_{22} = ((CIR_{22} + EIR_{22}) * T + CBS_{22} + EBS_{22} - F)$ and $Z_{22} = ((CIR_{22} + EIR_{22}) * T + CBS_{22} + EBS_{22} + F)$ 																																		
Units	Number of valid Service Frames																																		
Variables	Bandwidth Profile Parameters CIR ₁ , CBS ₁ , EIR ₁ , EBS ₁ , CIR ₂₂ , CBS ₂₂ , EIR ₂₂ , EBS ₂₂ , UNIs interface Speed, time interval T , tolerated variance F , number and length λ of the offered Service Frames																																		
Results	Pass or fail																																		
Remarks																																			

TEST CASE 29: Type 1.2 UNI-N BW Profile Rate Enforcement when CIR > 0 and EIR = 0

ABSTRACT TEST SUITE FOR UNI TYPE 1																
Test Name	Type 1.2 UNI-N Bandwidth Profile Rate Enforcement when CIR > 0 and EIR = 0															
Test Definition ID	U1.6.2.5-33.1															
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]															
Test Type	Conformance															
Test Status	Mandatory															
Requirement Description	A Type 1.2 UNI-N MUST be able to support color-blind bandwidth profiling to enforce CIR, CBS, EIR and EBS															
Test Object	Verify that a Type 1.2 UNI-N can support color-blind bandwidth profiling to enforce CIR, CBS, EIR and EBS when CIR > 0 and EIR = 0															
Test Configuration	One EVC associating two Type 1.2 UNIs is configured and at least one CE-VLAN ID is mapped to the EVC. One Bandwidth Profile where EIR=EBS=0 and CIR and CBS are non-zero is applied at the ingress UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC															
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">INGRESS UNI 'A'</th> <th colspan="2">EGRESS UNI 'B'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both ingress and egress UNIs</p>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁	11*	EVC ₁			
INGRESS UNI 'A'		EGRESS UNI 'B'														
CE-VLAN ID	EVC	CE-VLAN ID	EVC													
11*	EVC ₁	11*	EVC ₁													
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5">PER INGRESS UNI</th> </tr> <tr> <th>UNI</th> <th colspan="4">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">UNI_A</td> <td style="text-align: center;">CIR_A</td> <td style="text-align: center;">CBS_A</td> <td style="text-align: center;">EIR_A</td> <td style="text-align: center;">EBS_A</td> </tr> </tbody> </table> <p>Note 1: ($0 < CIR_A < \text{Ingress UNI Speed}$), ($CBS_A \geq \text{maximum Service Frame size}$) Note 2: ($\text{Ingress } CIR_A \leq \text{Egress UNI Speed}$) Note 3: ($EIR_A = 0$) and ($EBS_A = 0$)</p>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI _A	CIR _A	CBS _A	EIR _A	EBS _A
PER INGRESS UNI																
UNI	Bandwidth Profile Parameters															
UNI _A	CIR _A	CBS _A	EIR _A	EBS _A												
Service Performance	Not Specified															
Test Procedure	<p>Tester offers Service Frames with mapped CE-VLAN IDs of length λ at an average rate greater than CIR_A to the ingress UNI during a time interval T and measures the number of Service Frames delivered at the associated egress UNI. The amount of traffic delivered at the associated egress UNI must fall within the range $X \leq W_G \leq Z$ where:</p> <ul style="list-style-type: none"> W_G is the amount of traffic accepted as Green over the time interval T that should be delivered to the egress UNI $X_A = (CIR_A * T + CBS_A - F)$ and $Z_A = (CIR_A * T + CBS_A + F)$ 															
Units	Number of valid Service Frames															
Variables	Bandwidth Profile Parameters CIR_A , CBS_A , UNIs interface speed, time interval T , tolerated variance F , number and length λ of the offered Service Frames															
Results	Pass or fail															
Remarks																

TEST CASE 30: Type 1.2 UNI-N BW Profile Rate Enforcement when CIR = 0 and EIR > 0

ABSTRACT TEST SUITE FOR UNI TYPE 1																
Test Name	Type 1.2 UNI-N Bandwidth Profile Rate Enforcement when CIR = 0 and EIR > 0															
Test Definition ID	U1.6.2.5-33.2															
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]															
Test Type	Conformance															
Test Status	Mandatory															
Requirement Description	A Type 1.2 UNI-N MUST be able to support color-blind bandwidth profiling to enforce CIR, CBS, EIR and EBS															
Test Object	Verify that a Type 1.2 UNI-N can support color-blind bandwidth profiling to enforce CIR, CBS, EIR and EBS when CIR = 0 and EIR > 0															
Test Configuration	One EVC associating two Type 1.2 UNIs is configured and at least one CE-VLAN ID is mapped to the EVC. One Bandwidth Profile where CIR=CBS=0 and EIR and EBS are non-zero is applied at the ingress UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC															
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">INGRESS UNI 'A'</th> <th colspan="2" style="text-align: center;">EGRESS UNI 'B'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both ingress and egress UNIs</p>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁	11*	EVC ₁			
INGRESS UNI 'A'		EGRESS UNI 'B'														
CE-VLAN ID	EVC	CE-VLAN ID	EVC													
11*	EVC ₁	11*	EVC ₁													
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">PER INGRESS UNI</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th colspan="4" style="text-align: center;">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">UNI_A</td> <td style="text-align: center;">CIR_A</td> <td style="text-align: center;">CBS_A</td> <td style="text-align: center;">EIR_A</td> <td style="text-align: center;">EBS_A</td> </tr> </tbody> </table> <p>Note 1: (CIR_A = 0) and (CBS_A = 0) Note 2: (0 < EIR_A < Ingress UNI Speed), (EBS_A ≥ maximum Service Frame size) Note 3: (Ingress EIR_A ≤ Egress UNI Speed)</p>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI _A	CIR _A	CBS _A	EIR _A	EBS _A
PER INGRESS UNI																
UNI	Bandwidth Profile Parameters															
UNI _A	CIR _A	CBS _A	EIR _A	EBS _A												
Service Performance	Not Specified															
Test Procedure	Tester offers Service Frames with mapped CE-VLAN IDs of length λ at an average rate greater than EIR _A to the ingress UNI during a time interval T and measures the number of Service Frames delivered at associated egress UNI. The amount of traffic delivered at the associated egress UNI must fall within the range $X \leq W_Y \leq Z$ where: <ul style="list-style-type: none"> · W_Y is the amount of traffic accepted as Yellow over the time interval T that may be delivered to the egress UNI · $X_A = (EIR_A * T + EBS_A - F)$ and $Z_A = (EIR_A * T + EBS_A + F)$ 															
Units	Number of valid Service Frames															
Variables	Bandwidth Profile Parameters EIR _A , EBS _A , UNIs interface speed, time interval T , tolerated variance F , number and length λ of the offered Service Frames															
Results	Pass or fail															
Remarks																

TEST CASE 31: Type 1.2 UNI-N BW Profile Rate Enforcement when CIR > 0 and EIR > 0

ABSTRACT TEST SUITE FOR UNI TYPE 1																																				
Test Name	Type 1.2 UNI-N Bandwidth Profile Rate Enforcement when CIR > 0 and EIR > 0																																			
Test Definition ID	U1.6.2.5-33.3																																			
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																																			
Test Type	Conformance																																			
Test Status	Mandatory																																			
Requirement Description	A Type 1.2 UNI-N MUST be able to support color-blind bandwidth profiling to enforce CIR, CBS, EIR and EBS																																			
Test Object	Verify that a Type 1.2 UNI-N can support color-blind bandwidth profiling to enforce CIR, CBS, EIR and EBS when CIR > 0 and EIR > 0																																			
Test Configuration	One EVC associating two Type 1.2 UNIs is configured and at least one CE-VLAN ID is mapped to the EVC. One Bandwidth Profile where CIR, CBS, EIR and EBS are non-zero is applied at the ingress UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC																																			
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: #f4a460;">INGRESS UNI 'A'</th> <th colspan="2" style="background-color: #f4a460;">EGRESS UNI 'B'</th> </tr> <tr> <th style="background-color: #f4a460;">CE-VLAN ID</th> <th style="background-color: #f4a460;">EVC</th> <th style="background-color: #f4a460;">CE-VLAN ID</th> <th style="background-color: #f4a460;">EVC</th> </tr> </thead> <tbody> <tr> <td style="background-color: #ffffcc;">11*</td> <td style="background-color: #ffffcc;">EVC₁</td> <td style="background-color: #ffffcc;">11*</td> <td style="background-color: #ffffcc;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both ingress and egress UNIs</p>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁	11*	EVC ₁																							
INGRESS UNI 'A'		EGRESS UNI 'B'																																		
CE-VLAN ID	EVC	CE-VLAN ID	EVC																																	
11*	EVC ₁	11*	EVC ₁																																	
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="background-color: #f4a460;">PER INGRESS UNI</th> </tr> <tr> <th style="background-color: #f4a460;">UNI</th> <th colspan="4" style="background-color: #f4a460;">Bandwidth Profile Parameters</th> </tr> <tr> <th style="background-color: #ffffcc;">UNI_A</th> <th style="background-color: #ffffcc;">CIR_A</th> <th style="background-color: #ffffcc;">CBS_A</th> <th style="background-color: #ffffcc;">EIR_A</th> <th style="background-color: #ffffcc;">EBS_A</th> </tr> </thead> <tbody> <tr> <td colspan="5">Note 1: (0 < CIR_A < Ingress UNI Speed), (CBS_A ≥ maximum Service Frame size)</td> </tr> <tr> <td colspan="5">Note 2: (0 < EIR_A < Ingress UNI Speed), (EBS_A ≥ maximum Service Frame size)</td> </tr> <tr> <td colspan="5">Note 3: (CIR_A + EIR_A < Ingress UNI Speed)</td> </tr> <tr> <td colspan="5">Note 4: (Σ Ingress CIRs + EIRs ≤ Egress UNI Speed)</td> </tr> </tbody> </table>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI _A	CIR _A	CBS _A	EIR _A	EBS _A	Note 1: (0 < CIR _A < Ingress UNI Speed), (CBS _A ≥ maximum Service Frame size)					Note 2: (0 < EIR _A < Ingress UNI Speed), (EBS _A ≥ maximum Service Frame size)					Note 3: (CIR _A + EIR _A < Ingress UNI Speed)					Note 4: (Σ Ingress CIRs + EIRs ≤ Egress UNI Speed)				
PER INGRESS UNI																																				
UNI	Bandwidth Profile Parameters																																			
UNI _A	CIR _A	CBS _A	EIR _A	EBS _A																																
Note 1: (0 < CIR _A < Ingress UNI Speed), (CBS _A ≥ maximum Service Frame size)																																				
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Note 3: (CIR _A + EIR _A < Ingress UNI Speed)																																				
Note 4: (Σ Ingress CIRs + EIRs ≤ Egress UNI Speed)																																				
Service Performance	Not Specified																																			
Test Procedure	<p>Tester offers Service Frames with mapped CE-VLAN IDs of length λ at an average rate greater than $CIR_A + EIR_A$ to the ingress UNI during a time interval T and measures the number of Service Frames delivered at the associated egress UNI. The amount of traffic delivered at the associated egress UNI must fall within the range $X \leq (W_G + W_Y) \leq Z$ where:</p> <ul style="list-style-type: none"> W_G is the amount of traffic accepted as Green over the time interval T that should be delivered to the egress UNI W_Y is the amount of traffic accepted as Yellow over the time interval T that may be delivered to the egress UNI $X_A = ((CIR_A + EIR_A) * T + CBS_A + EBS_A - F)$ and $Z_A = ((CIR_A + EIR_A) * T + CBS_A + EBS_A + F)$ 																																			
Units	Number of valid Service Frames																																			
Variables	Bandwidth Profile Parameters CIR _A , CBS _A , EIR _A , EBS _A , UNIs interface speed, time interval T , tolerated variance F , number and length λ of the offered Service Frames																																			
Results	Pass or fail																																			
Remarks																																				

TEST CASE 32: Type 1.2 UNI-N Mandatory CIR Configuration Granularity

ABSTRACT TEST SUITE FOR UNI TYPE 1																					
Test Name	Type 1.2 UNI-N Mandatory CIR Configuration Granularity																				
Test Definition ID	U1.6.2.5-34.1																				
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																				
Test Type	Conformance																				
Test Status	Mandatory																				
Requirement Description	A Type 1.2 UNI-N MUST allow configuration to modify CIR in the following granularities <ul style="list-style-type: none"> · 1 Mbps steps up to 10 Mbps [CIR range 1] · 5 Mbps steps beyond 10 Mbps and up to 100 Mbps [CIR range 2] · 50 Mbps steps beyond 100 Mbps and up to 1 Gbps [CIR range 3] · 500 Mbps steps beyond 1 Gbps [CIR range 4] 																				
Test Object	Verify that a Type 1.2 UNI-N allows configuration to modify CIR in the granularities described in the requirement description section above																				
Test Configuration	One EVC associating two Type 1.2 UNIs is configured. At least one CE-VLAN ID is mapped to the EVC and one Bandwidth Profile is applied at the ingress UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC																				
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">INGRESS UNI 'A'</th> <th colspan="2" style="text-align: center;">EGRESS UNI 'B'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both ingress and egress UNIs</p>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁	11*	EVC ₁								
INGRESS UNI 'A'		EGRESS UNI 'B'																			
CE-VLAN ID	EVC	CE-VLAN ID	EVC																		
11*	EVC ₁	11*	EVC ₁																		
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">PER INGRESS UNI</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th colspan="4" style="text-align: center;">Bandwidth Profile Parameters</th> </tr> <tr> <th style="text-align: center;">UNI_A</th> <th style="text-align: center;">CIR_A</th> <th style="text-align: center;">CBS_A</th> <th style="text-align: center;">EIR_A</th> <th style="text-align: center;">EBS_A</th> </tr> </thead> <tbody> <tr> <td colspan="5"> Note 1: ($0 < CIR_A < \text{Ingress UNI Speed}$), ($CBS_A \geq \text{maximum Service Frame size}$) Note 2: ($\text{Ingress } CIR_A \leq \text{Egress UNI Speed}$) Note 3: ($EIR_A = 0$) and ($EBS_A = 0$) </td> </tr> </tbody> </table>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI _A	CIR _A	CBS _A	EIR _A	EBS _A	Note 1: ($0 < CIR_A < \text{Ingress UNI Speed}$), ($CBS_A \geq \text{maximum Service Frame size}$) Note 2: ($\text{Ingress } CIR_A \leq \text{Egress UNI Speed}$) Note 3: ($EIR_A = 0$) and ($EBS_A = 0$)				
PER INGRESS UNI																					
UNI	Bandwidth Profile Parameters																				
UNI _A	CIR _A	CBS _A	EIR _A	EBS _A																	
Note 1: ($0 < CIR_A < \text{Ingress UNI Speed}$), ($CBS_A \geq \text{maximum Service Frame size}$) Note 2: ($\text{Ingress } CIR_A \leq \text{Egress UNI Speed}$) Note 3: ($EIR_A = 0$) and ($EBS_A = 0$)																					
Service Performance	Not Specified																				
Test Procedure	<p>Tester offers Service Frames with mapped CE-VLAN IDs of length λ at an average rate greater than CIR_A to the ingress UNI during a time interval T and measures the number of Service Frames delivered at the associated egress UNI. The amount of traffic delivered at the associated egress UNI must fall within the range $X \leq W_G \leq Z$ where:</p> <ul style="list-style-type: none"> · W_G is the amount of traffic accepted as Green over the time interval T that should be delivered to the egress UNI · $X_A = (CIR_A * T + CBS_A - F)$ and $Z_A = (CIR_A * T + CBS_A + F)$ <p>Begin the test with CIR_A set to the minimum value (i.e. 1 Mbps) and increment CIR_A by the step value defined for the CIR range.</p> <p>Repeat the test for each CIR_A value until CIR_A has been incremented to the UNI speed</p>																				
Units	Number of valid Service Frames																				
Variables	Bandwidth Profile Parameters CIR_A , CBS_A , UNIs interface speed, time interval T , tolerated variance F , number and length λ of the offered Service Frames																				
Results	Pass or fail																				
Remarks																					

TEST CASE 33: Type 1.2 UNI-N Mandatory EIR Configuration Granularity

ABSTRACT TEST SUITE FOR UNI TYPE 1													
Test Name	Type 1.2 UNI-N Mandatory EIR Configuration Granularity												
Test Definition ID	U1.6.2.5-34.2												
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]												
Test Type	Conformance												
Test Status	Mandatory												
Requirement Description	<p>A Type 1.2 UNI-N MUST allow configuration to modify EIR in the following granularities</p> <ul style="list-style-type: none"> 1 Mbps steps up to 10 Mbps [EIR range 1] 5 Mbps steps beyond 10 Mbps and up to 100 Mbps [EIR range 2] 50 Mbps steps beyond 100 Mbps and up to 1 Gbps [EIR range 3] 500 Mbps steps beyond 1 Gbps [EIR range 4] 												
Test Object	Verify that a Type 1.2 UNI-N allows configuration to modify EIR in the granularities described in the requirement description section above												
Test Configuration	One EVC associating two Type 1.2 UNIs is configured. At least one CE-VLAN ID is mapped to the EVC and one Bandwidth Profile is applied at the ingress UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC												
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">INGRESS UNI 'A'</th> <th colspan="2">EGRESS UNI 'B'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both ingress and egress UNIs</p>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁	11*	EVC ₁
INGRESS UNI 'A'		EGRESS UNI 'B'											
CE-VLAN ID	EVC	CE-VLAN ID	EVC										
11*	EVC ₁	11*	EVC ₁										
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">PER INGRESS UNI</th> </tr> <tr> <th>UNI</th> <th colspan="3">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">UNI_A</td> <td style="text-align: center;">CIR_A</td> <td style="text-align: center;">CBS_A</td> <td style="text-align: center;">EIR_A EBS_A</td> </tr> </tbody> </table> <p>Note 1: (CIR_A = 0) and (CBS_A = 0) Note 2: (0 < EIR_A < Ingress UNI Speed), (EBS_A ≥ maximum Service Frame size) Note 3: (Ingress EIR_A ≤ Egress UNI Speed)</p>	PER INGRESS UNI				UNI	Bandwidth Profile Parameters			UNI _A	CIR _A	CBS _A	EIR _A EBS _A
PER INGRESS UNI													
UNI	Bandwidth Profile Parameters												
UNI _A	CIR _A	CBS _A	EIR _A EBS _A										
Service Performance	Not Specified												
Test Procedure	<p>Tester offers Service Frames with mapped CE-VLAN IDs of length λ at an average rate greater than EIR_A to the ingress UNI during a time interval T and measures the number of Service Frames delivered at the associated egress UNI. The amount of traffic delivered at the associated egress UNI must fall within the range $X \leq W_Y \leq Z$ where:</p> <ul style="list-style-type: none"> W_Y is the amount of traffic accepted as Yellow over the time interval T that may be delivered to the egress UNI $X_A = (EIR_A * T + EBS_A - F)$ and $Z_A = (EIR_A * T + EBS_A + F)$ <p>Begin the test with EIR_A set to the minimum value (i.e. 1 Mbps) and increment EIR_A by the step value defined for the EIR range.</p> <p>Repeat the test for each EIR_A value until EIR_A has been incremented to the UNI speed</p>												
Units	Number of valid Service Frames												
Variables	Bandwidth Profile Parameters EIR _A , EBS _A , UNIs interface speed, time interval T , tolerated variance F , number and length λ of the offered Service Frames												
Results	Pass or fail												
Remarks													

TEST CASE 34: Type 1.2 UNI-N Optional CIR Configuration Granularity

ABSTRACT TEST SUITE FOR UNI TYPE 1																					
Test Name	Type 1.2 UNI-N Optional CIR Configuration Granularity																				
Test Definition ID	U1.6.2.5-35.1																				
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																				
Test Type	Conformance																				
Test Status	Optional																				
Requirement Description	A Type 1.2 UNI-N SHOULD allow configuration to modify CIR in the following granularities <ul style="list-style-type: none"> · 64 Kbps (DS0 rate) steps up to 1.422 Mbps (VC11 rate) or 1.932 Mbps (VC12 rate) [CIR range 1] · 1.422 Mbps (VC11 rate) or 1.932 Mbps (VC12 rate) steps up to 50 Mbps [CIR range 2] · 43.008 Mbps (VC3 rate) steps beyond 50 Mbps and up to 150 Mbps [CIR range 3] · 133.12 Mbps (VC4 rate) steps beyond 150 Mbps [CIR range 4] 																				
Test Object	Verify that a Type 1.2 UNI-N allows configuration to modify CIR in the granularities described in the requirement description section above																				
Test Configuration	One EVC associating two Type 1.2 UNIs is configured. At least one CE-VLAN ID is mapped to the EVC and one Bandwidth Profile is applied at the ingress UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC																				
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">INGRESS UNI 'A'</th> <th colspan="2" style="text-align: center;">EGRESS UNI 'B'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both ingress and egress UNIs</p>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁	11*	EVC ₁								
INGRESS UNI 'A'		EGRESS UNI 'B'																			
CE-VLAN ID	EVC	CE-VLAN ID	EVC																		
11*	EVC ₁	11*	EVC ₁																		
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">PER INGRESS UNI</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th colspan="4" style="text-align: center;">Bandwidth Profile Parameters</th> </tr> <tr> <th style="text-align: center;">UNI_A</th> <th style="text-align: center;">CIR_A</th> <th style="text-align: center;">CBS_A</th> <th style="text-align: center;">EIR_A</th> <th style="text-align: center;">EBS_A</th> </tr> </thead> <tbody> <tr> <td colspan="5"> Note 1 : (0 < CIR_A < Ingress UNI Speed), (CBS_A ≥ maximum Service Frame size) Note 2 : (Ingress CIR_A ≤ Egress UNI Speed) Note 3 : (EIR_A = 0) and (EBS_A = 0) </td> </tr> </tbody> </table>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI _A	CIR _A	CBS _A	EIR _A	EBS _A	Note 1 : (0 < CIR _A < Ingress UNI Speed), (CBS _A ≥ maximum Service Frame size) Note 2 : (Ingress CIR _A ≤ Egress UNI Speed) Note 3 : (EIR _A = 0) and (EBS _A = 0)				
PER INGRESS UNI																					
UNI	Bandwidth Profile Parameters																				
UNI _A	CIR _A	CBS _A	EIR _A	EBS _A																	
Note 1 : (0 < CIR _A < Ingress UNI Speed), (CBS _A ≥ maximum Service Frame size) Note 2 : (Ingress CIR _A ≤ Egress UNI Speed) Note 3 : (EIR _A = 0) and (EBS _A = 0)																					
Service Performance	Not Specified																				
Test Procedure	Tester offers Service Frames with mapped CE-VLAN IDs of length λ at an average rate greater than CIR _A to the ingress UNI during a time interval T and measures the number of Service Frames delivered at the associated egress UNI. The amount of traffic delivered at the associated egress UNI must fall within the range $X \leq W_G \leq Z$ where: <ul style="list-style-type: none"> · W_G is the amount of traffic accepted as Green over the time interval T that should be delivered to the egress UNI · $X_A = (CIR_A * T + CBS_A - F)$ and $Z_A = (CIR_A * T + CBS_A + F)$ Begin the test with CIR _A set to the minimum value (i.e. 64 Kbps) and increment CIR _A by the step value defined for the CIR range. Repeat the test for each CIR _A value until CIR _A has been incremented to the UNI speed																				
Units	Number of valid Service Frames																				
Variables	Bandwidth Profile Parameters CIR _A , CBS _A , UNIs interface speed, time interval T , number and length λ of the offered Service Frames, amount of traffic X and amount of traffic Z																				
Results	Pass or fail																				

Remarks	
---------	--

TEST CASE 35: Type 1.2 UNI-N Optional EIR Configuration Granularity

ABSTRACT TEST SUITE FOR UNI TYPE 1																
Test Name	Type 1.2 UNI-N Optional EIR Configuration Granularity															
Test Definition ID	U1.6.2.5-35.2															
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]															
Test Type	Conformance															
Test Status	Optional															
Requirement Description	<p>A Type 1.2 UNI-N SHOULD allow configuration to modify EIR in the following granularities</p> <ul style="list-style-type: none"> 64 Kbps (DS0 rate) steps up to 1.422 Mbps (VC11 rate) or 1.932 Mbps (VC12 rate) [EIR range 1] 1.422 Mbps (VC11 rate) or 1.932 Mbps (VC12 rate) steps up to 50 Mbps [EIR range 2] 43.008 Mbps (VC3 rate) steps beyond 50 Mbps and up to 150 Mbps [EIR range 3] 133.12 Mbps (VC4 rate) steps beyond 150 Mbps [EIR range 4] 															
Test Object	Verify that a Type 1.2 UNI-N allows configuration to modify EIR in the granularities described in the requirement description section above															
Test Configuration	One EVC associating two Type 1.2 UNIs is configured. At least one CE-VLAN ID is mapped to the EVC and one Bandwidth Profile is applied at the ingress UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC															
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: #f4a460;">INGRESS UNI 'A'</th> <th colspan="2" style="background-color: #f4a460;">EGRESS UNI 'B'</th> </tr> <tr> <th style="background-color: #f4a460;">CE-VLAN ID</th> <th style="background-color: #f4a460;">EVC</th> <th style="background-color: #f4a460;">CE-VLAN ID</th> <th style="background-color: #f4a460;">EVC</th> </tr> </thead> <tbody> <tr> <td style="background-color: #ffff00; text-align: center;">11*</td> <td style="background-color: #ffff00; text-align: center;">EVC₁</td> <td style="background-color: #ffff00; text-align: center;">11*</td> <td style="background-color: #ffff00; text-align: center;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both ingress and egress UNIs</p>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁	11*	EVC ₁			
INGRESS UNI 'A'		EGRESS UNI 'B'														
CE-VLAN ID	EVC	CE-VLAN ID	EVC													
11*	EVC ₁	11*	EVC ₁													
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="background-color: #f4a460;">PER INGRESS UNI</th> </tr> <tr> <th style="background-color: #f4a460;">UNI</th> <th colspan="4" style="background-color: #f4a460;">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td style="background-color: #ffff00; text-align: center;">UNI_A</td> <td style="background-color: #ffff00; text-align: center;">CIR_A</td> <td style="background-color: #ffff00; text-align: center;">CBS_A</td> <td style="background-color: #ffff00; text-align: center;">EIR_A</td> <td style="background-color: #ffff00; text-align: center;">EBS_A</td> </tr> </tbody> </table> <p>Note 1: (CIR_A = 0) and (CBS_A = 0) Note 2: (0 < EIR_A < Ingress UNI Speed), (EBS_A ≥ maximum Service Frame size) Note 3: (Ingress EIR_A ≤ Egress UNI Speed)</p>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI _A	CIR _A	CBS _A	EIR _A	EBS _A
PER INGRESS UNI																
UNI	Bandwidth Profile Parameters															
UNI _A	CIR _A	CBS _A	EIR _A	EBS _A												
Service Performance	Not Specified															
Test Procedure	<p>Tester offers Service Frames with mapped CE-VLAN IDs of length λ at an average rate greater than EIR_A to the ingress UNI during a time interval T and measures the number of Service Frames delivered at the associated egress UNI. The amount of traffic delivered at the associated egress UNI must fall within the range $X \leq W_Y \leq Z$ where:</p> <ul style="list-style-type: none"> W_Y is the amount of traffic accepted as Yellow over the time interval T that may be delivered to the egress UNI $X_A = (EIR_A * T + EBS_A - F)$ and $Z_A = (EIR_A * T + EBS_A + F)$ <p>Begin the test with EIR_A set to the minimum value (i.e. 64 Kbps) and increment EIR_A by the step value defined for the EIR range.</p> <p>Repeat the test for each EIR_A value until EIR_A has been incremented to the UNI speed</p>															
Units	Number of valid Service Frames															
Variables	Bandwidth Profile Parameters EIR _A , EBS _A , UNIs interface speed, time interval T , tolerated variance F , number and length λ of the offered Service Frames															

Results	Pass or fail
Remarks	

TEST CASE 36: Type 1.2 UNI-N CBS Configuration

ABSTRACT TEST SUITE FOR UNI TYPE 1																
Test Name	Type 1.2 UNI-N CBS Configuration															
Test Definition ID	U1.6.2.5-36.1															
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]															
Test Type	Conformance															
Test Status	Mandatory															
Requirement Description	A Type 1.2 UNI-N MUST be able to at least support CBS values that are equal to or greater than $8 \times \text{MTU} = 8 \times 1522 \text{ bytes} = 12176 \text{ bytes}$															
Test Object	Verify that a Type 1.2 UNI-N can at least support CBS values that are equal to or greater than $8 \times \text{MTU} = 8 \times 1522 \text{ bytes} = 12176 \text{ bytes}$															
Test Configuration	One EVC associating two Type 1.2 UNIs is configured. At least one CE-VLAN ID is mapped to the EVC and one Bandwidth Profile is applied at the ingress UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC															
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">INGRESS UNI 'A'</th> <th colspan="2" style="text-align: center;">EGRESS UNI 'B'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both ingress and egress UNIs</p>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁	11*	EVC ₁			
INGRESS UNI 'A'		EGRESS UNI 'B'														
CE-VLAN ID	EVC	CE-VLAN ID	EVC													
11*	EVC ₁	11*	EVC ₁													
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">PER INGRESS UNI</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th colspan="4" style="text-align: center;">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">UNI_A</td> <td style="text-align: center;">CIR_A</td> <td style="text-align: center;">CBS_A</td> <td style="text-align: center;">EIR_A</td> <td style="text-align: center;">EBS_A</td> </tr> </tbody> </table> <p>Note 1: ($0 < \text{CIR}_A < \text{Ingress UNI Speed}$), ($\text{CBS}_A \geq 12176 \text{ bytes}$) Note 2: ($\text{Ingress CIR}_A \leq \text{Egress UNI Speed}$) Note 3: ($\text{EIR}_A = 0$) and ($\text{EBS}_A = 0$)</p>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI _A	CIR _A	CBS _A	EIR _A	EBS _A
PER INGRESS UNI																
UNI	Bandwidth Profile Parameters															
UNI _A	CIR _A	CBS _A	EIR _A	EBS _A												
Service Performance	Not Specified															
Test Procedure	Tester offers Service Frames with mapped CE-VLAN IDs of length λ at an average rate equal to CIR_A to the ingress UNI during a time interval T . At time $T/2$ tester injects a burst of ingress Service Frames greater than CBS_A . Tester measures the number of Service Frames delivered at the associated egress UNI. The amount of traffic delivered at the associated egress UNI must fall within the range $X \leq W_G \leq Z$ where: <ul style="list-style-type: none"> • W_G is the amount of traffic accepted as Green over the time interval T that should be delivered to the egress UNI • $X_A = (\text{CIR}_A * T + \text{CBS}_A - F)$ and $Z_A = (\text{CIR}_A * T + \text{CBS}_A + F)$ 															
Units	Number of valid Service Frames															
Variables	Bandwidth Profile Parameters CIR_A , CBS_A , UNIs interface speed, time interval T , tolerated variance F , number and length λ of the offered Service Frames, burst size															
Results	Pass or fail															
Remarks																

TEST CASE 37: Type 1.2 UNI-N EBS Configuration

ABSTRACT TEST SUITE FOR UNI TYPE 1													
Test Name	Type 1.2 UNI-N EBS Configuration												
Test Definition ID	U1.6.2.5-36.2												
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]												
Test Type	Conformance												
Test Status	Mandatory												
Requirement Description	A Type 1.2 UNI-N MUST be able to at least support EBS values that are equal to or greater than $8 \times \text{MTU} = 8 \times 1522 \text{ bytes} = 12176 \text{ bytes}$												
Test Object	Verify that a Type 1.2 UNI-N can at least support EBS values that are equal to or greater than $8 \times \text{MTU} = 8 \times 1522 \text{ bytes} = 12176 \text{ bytes}$												
Test Configuration	One EVC associating two Type 1.2 UNIs is configured. At least one CE-VLAN ID is mapped to the EVC and one Bandwidth Profile is applied at the ingress UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC												
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">INGRESS UNI 'A'</th> <th colspan="2" style="text-align: center;">EGRESS UNI 'B'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both ingress and egress UNIs</p>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁	11*	EVC ₁
INGRESS UNI 'A'		EGRESS UNI 'B'											
CE-VLAN ID	EVC	CE-VLAN ID	EVC										
11*	EVC ₁	11*	EVC ₁										
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4" style="text-align: center;">PER INGRESS UNI</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th colspan="3" style="text-align: center;">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">UNI_A</td> <td style="text-align: center;">CIR_A</td> <td style="text-align: center;">CBS_A</td> <td style="text-align: center;">EIR_A EBS_A</td> </tr> </tbody> </table> <p>Note 1: (CIR_A = 0) and (CBS_A = 0) Note 2: (0 < EIR_A < Ingress UNI Speed), (EBS_A ≥ 12176 bytes) Note 3: (Ingress EIR_A ≤ Egress UNI Speed)</p>	PER INGRESS UNI				UNI	Bandwidth Profile Parameters			UNI _A	CIR _A	CBS _A	EIR _A EBS _A
PER INGRESS UNI													
UNI	Bandwidth Profile Parameters												
UNI _A	CIR _A	CBS _A	EIR _A EBS _A										
Service Performance	Not Specified												
Test Procedure	Tester offers Service Frames with mapped CE-VLAN IDs of length λ at an average rate equal to EIR _A to the ingress UNI during a time interval T . At time $T/2$ tester injects a burst of ingress Service Frames greater than EBS _A . Tester measures the number of Service Frames delivered at the associated egress UNI. The amount of traffic delivered at the associated egress UNI must fall within the range $X \leq W_Y \leq Z$ where: <ul style="list-style-type: none"> • W_Y is the amount of traffic accepted as Yellow over the time interval T that may be delivered to the egress UNI • $X_A = (EIR_A * T + EBS_A - F)$ and $Z_A = (EIR_A * T + EBS_A + F)$ 												
Units	Number of valid Service Frames												
Variables	Bandwidth Profile Parameters EIR _A , EBS _A , UNIs interface speed, time interval T , tolerated variance F , number and length λ of the offered Service Frames, burst size												
Results	Pass or fail												
Remarks													

TEST CASE 38: Type 1.2 UNI-N Optional Layer 2 Control Protocol Discard

ABSTRACT TEST SUITE FOR UNI TYPE 1																					
Test Name	Type 1.2 UNI-N Optional Layer 2 Control Protocol Discard																				
Test Definition ID	U1.6.2.6-37																				
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																				
Test Type	Conformance																				
Test Status	Optional																				
Requirement Description	<p>A Type 1.2 UNI-N SHOULD be able to discard the following L2 Control Protocols</p> <ul style="list-style-type: none"> · Spanning Tree Protocol (STP), · Rapid Spanning Tree Protocol (RSTP), · Multiple Spanning Tree Protocol (MSTP) · All LANs Bridge Management Group Block of Protocol · Generic Attribute Registration Protocol (GARP) · Link Aggregation Control Protocol (LACP) · Marker Protocol · Authentication (802.1x) · 802.3x (PAUSE) frames 																				
Test Object	Verify that a Type 1.2 UNI-N can discard each L2 Control Protocol described in the requirement description section above																				
Test Configuration	One EVC associating two Type 1.2 UNIs is configured and at least one CE-VLAN ID is mapped to the EVC. A per Ingress UNI bandwidth profile is applied at the UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC																				
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">INGRESS UNI 'A'</th> <th colspan="2" style="text-align: center;">EGRESS UNI 'B'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both ingress and egress UNIs</p>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁	11*	EVC ₁								
INGRESS UNI 'A'		EGRESS UNI 'B'																			
CE-VLAN ID	EVC	CE-VLAN ID	EVC																		
11*	EVC ₁	11*	EVC ₁																		
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">PER INGRESS UNI</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th colspan="4" style="text-align: center;">Bandwidth Profile Parameters</th> </tr> <tr> <th style="text-align: center;">UNI_A</th> <th style="text-align: center;">CIR_A</th> <th style="text-align: center;">CBS_A</th> <th style="text-align: center;">EIR_A</th> <th style="text-align: center;">EBS_A</th> </tr> </thead> <tbody> <tr> <td colspan="5"> Note 1: ($0 < CIR_A < \text{Ingress UNI Speed}$), ($CBS_A \geq \text{maximum Service Frame size}$) Note 2: ($\text{Ingress } CIR_A \leq \text{Egress UNI Speed}$) Note 3: ($EIR_A = 0$) and ($EBS_A = 0$) </td> </tr> </tbody> </table>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI _A	CIR _A	CBS _A	EIR _A	EBS _A	Note 1: ($0 < CIR_A < \text{Ingress UNI Speed}$), ($CBS_A \geq \text{maximum Service Frame size}$) Note 2: ($\text{Ingress } CIR_A \leq \text{Egress UNI Speed}$) Note 3: ($EIR_A = 0$) and ($EBS_A = 0$)				
PER INGRESS UNI																					
UNI	Bandwidth Profile Parameters																				
UNI _A	CIR _A	CBS _A	EIR _A	EBS _A																	
Note 1: ($0 < CIR_A < \text{Ingress UNI Speed}$), ($CBS_A \geq \text{maximum Service Frame size}$) Note 2: ($\text{Ingress } CIR_A \leq \text{Egress UNI Speed}$) Note 3: ($EIR_A = 0$) and ($EBS_A = 0$)																					
Service Performance	Not Specified																				
Test Procedure	Tester offers Service Frames carrying Layer 2 Control protocols described in the requirement description section above at the ingress UNI and verifies that the corresponding Service Frames are not delivered at the associated egress UNI. The L2CPs Destination Address and Ethertype/Length fields must be defined as per the IEEE standards																				
Units	Number of valid Service Frames carrying the L2CPs																				
Variables	L2CP, Bandwidth Profile Parameters CIR _A , CBS _A , UNIs interface speed																				
Results	Pass or fail																				
Remarks																					

TEST CASE 39: Type 1.2 UNI-N Optional Layer 2 Control Protocol Generation

ABSTRACT TEST SUITE FOR UNI TYPE 1																
Test Name	Type 1.2 UNI-N Optional Layer 2 Control Protocol Generation															
Test Definition ID	U1.6.2.6-38															
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]															
Test Type	Conformance															
Test Status	Optional															
Requirement Description	A Type 1.2 UNI-N SHOULD NOT generate 802.3x PAUSE frames															
Test Object	Verify that a Type 1.2 UNI-N does not generate 802.3x PAUSE frames															
Test Configuration	One EVC associating two Type 1.2 UNIs is configured. At least one CE-VLAN ID is mapped to the EVC and one Bandwidth Profile is applied at the ingress UNI. A per Ingress UNI bandwidth profile is applied at the UNI. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC															
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">INGRESS UNI 'A'</th> <th colspan="2" style="text-align: center;">EGRESS UNI 'B'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both ingress and egress UNIs</p>	INGRESS UNI 'A'		EGRESS UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁	11*	EVC ₁			
INGRESS UNI 'A'		EGRESS UNI 'B'														
CE-VLAN ID	EVC	CE-VLAN ID	EVC													
11*	EVC ₁	11*	EVC ₁													
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">PER INGRESS UNI</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th colspan="4" style="text-align: center;">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">UNI_A</td> <td style="text-align: center;">CIR_A</td> <td style="text-align: center;">CBS_A</td> <td style="text-align: center;">EIR_A</td> <td style="text-align: center;">EBS_A</td> </tr> </tbody> </table> <p>Note 1: (0 < CIR_A < Ingress UNI Speed/2), (CBS_A ≥ maximum Service Frame size) Note 2: (EIR_A = 0) and (EBS_A = 0) Note 3: (Ingress CIR_A ≤ Egress UNI Speed)</p>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI _A	CIR _A	CBS _A	EIR _A	EBS _A
PER INGRESS UNI																
UNI	Bandwidth Profile Parameters															
UNI _A	CIR _A	CBS _A	EIR _A	EBS _A												
Service Performance	Not Specified															
Test Procedure	Tester offers Service Frames with mapped CE-VLAN IDs at the ingress UNI, at an average rate equal to the UNI speed and verifies that no 802.3x PAUSE frames are sent back to its test interfaces															
Units	Number of valid Service Frames carrying the L2CPs															
Variables	Bandwidth Profile Parameters CIR _A , CBS _A , UNIs interface speed															
Results	Pass or fail															
Remarks																

TEST CASE 40: Type 1.2 UNI-N Concurrent Point-to-Point and Multipoint EVCs

ABSTRACT TEST SUITE FOR UNI TYPE 1																									
Test Name	Type 1.2 UNI-N Concurrent Point-to-Point and Multipoint EVCs																								
Test Definition ID	U1.6.2.7-40																								
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																								
Test Type	Conformance																								
Test Status	Mandatory																								
Requirement Description	A Type 1.2 UNI-N MUST be able to support Point-to-Point and Multipoint EVCs concurrently																								
Test Object	Verify that a Type 1.2 UNI-N can support Point-to-Point and Multipoint EVCs concurrently																								
Test Configuration	One Multipoint and one Point-to-Point EVCs associating one Type 1.2 ingress UNI and two Type 1.2 egress UNIs are configured and at least one CE-VLAN ID is mapped per EVC. Per EVC bandwidth profiles are applied at all UNIs. Testers with proper PHY that matches each UNI are attached to all UNIs in the configured EVCs																								
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">UNI 'A'</th> <th colspan="2" style="text-align: center;">UNI 'B'</th> <th colspan="2" style="text-align: center;">UNI 'C'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> </tr> <tr> <td style="text-align: center;">12</td> <td style="text-align: center;">EVC₂</td> <td style="text-align: center;">12</td> <td style="text-align: center;">EVC₂</td> <td></td> <td></td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both ingress and egress UNIs</p>	UNI 'A'		UNI 'B'		UNI 'C'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁	11*	EVC ₁	11*	EVC ₁	12	EVC ₂	12	EVC ₂		
UNI 'A'		UNI 'B'		UNI 'C'																					
CE-VLAN ID	EVC	CE-VLAN ID	EVC	CE-VLAN ID	EVC																				
11*	EVC ₁	11*	EVC ₁	11*	EVC ₁																				
12	EVC ₂	12	EVC ₂																						
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">PER EVC</th> </tr> <tr> <th style="text-align: center;">EVC</th> <th colspan="4" style="text-align: center;">Bandwidth Profile Parameters</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">CIR₁</td> <td style="text-align: center;">CBS₁</td> <td style="text-align: center;">EIR₁</td> <td style="text-align: center;">EBS₁</td> </tr> <tr> <td style="text-align: center;">EVC₂</td> <td style="text-align: center;">CIR₂</td> <td style="text-align: center;">CBS₂</td> <td style="text-align: center;">EIR₂</td> <td style="text-align: center;">EBS₂</td> </tr> </tbody> </table> <p>Note 1: ($0 < CIR_{1,2} < \text{Ingress UNI Speed}$), ($CBS_{1,2} \geq \text{maximum Service Frame size}$) Note 2: ($\sum \text{Ingress CIRs} \leq \text{Egress UNI Speed}$) Note 3: ($EIR_{1,2} = 0$) and ($EBS_{1,2} = 0$)</p>	PER EVC					EVC	Bandwidth Profile Parameters				EVC ₁	CIR ₁	CBS ₁	EIR ₁	EBS ₁	EVC ₂	CIR ₂	CBS ₂	EIR ₂	EBS ₂				
PER EVC																									
EVC	Bandwidth Profile Parameters																								
EVC ₁	CIR ₁	CBS ₁	EIR ₁	EBS ₁																					
EVC ₂	CIR ₂	CBS ₂	EIR ₂	EBS ₂																					
Service Performance	Not Specified																								
Test Procedure	Tester offers Service Frames with mapped CE-VLAN IDs bidirectionally at each UNI configured in the EVCs and verifies that the corresponding Service Frames are successfully delivered on the proper EVC at the associated UNIs.																								
Units	Number of valid Service Frames																								
Variables	Bandwidth Profile Parameters CIR ₁ , CBS ₁ , CIR ₂ , CBS ₂ , UNIs interface speed																								
Results	Pass or fail																								
Remarks																									

TEST CASE 41: Type 1.2 UNI-N CE-VLAN ID Preservation

ABSTRACT TEST SUITE FOR UNI TYPE 1																					
Test Name	Type 1.2 UNI-N CE-VLAN ID Preservation																				
Test Definition ID	U1.6.2.8-41																				
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																				
Test Type	Conformance																				
Test Status	Mandatory																				
Requirement Description	A Type 1.2 UNI-N MUST be able to support CE-VLAN ID preservation																				
Test Object	Verify that a Type 1.2 UNI-N can support CE-VLAN ID preservation																				
Test Configuration	One EVC associating two Type 1.2 UNIs is configured and at least one CE-VLAN ID is mapped to the EVC. A per Ingress UNI bandwidth profile is applied at both UNIs. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC																				
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">UNI 'A'</th> <th colspan="2" style="text-align: center;">UNI 'B'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both ingress and egress UNIs</p>	UNI 'A'		UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁	11*	EVC ₁								
UNI 'A'		UNI 'B'																			
CE-VLAN ID	EVC	CE-VLAN ID	EVC																		
11*	EVC ₁	11*	EVC ₁																		
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">PER INGRESS UNI</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th colspan="4" style="text-align: center;">Bandwidth Profile Parameters</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th style="text-align: center;">CIR</th> <th style="text-align: center;">CBS</th> <th style="text-align: center;">EIR</th> <th style="text-align: center;">EBS</th> </tr> </thead> <tbody> <tr> <td colspan="5"> Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0) </td> </tr> </tbody> </table>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI	CIR	CBS	EIR	EBS	Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0)				
PER INGRESS UNI																					
UNI	Bandwidth Profile Parameters																				
UNI	CIR	CBS	EIR	EBS																	
Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0)																					
Service Performance	Not Specified																				
Test Procedure	Tester offers Service Frames with mapped CE-VLAN IDs bidirectionally at each UNI configured in the EVC and verifies that the corresponding Service Frames are delivered at the associated UNI with CE-VLAN ID preservation																				
Units	Number of valid Service Frames																				
Variables	Bandwidth Profile Parameters CIR, CBS, UNIs interface speed																				
Results	Pass or fail																				
Remarks																					

TEST CASE 42: Type 1.2 UNI-N CE-VLAN CoS Preservation

ABSTRACT TEST SUITE FOR UNI TYPE 1																					
Test Name	Type 1.2 UNI-N CE-VLAN CoS Preservation																				
Test Definition ID	U1.6.2.9-42																				
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																				
Test Type	Conformance																				
Test Status	Mandatory																				
Requirement Description	A Type 1.2 UNI-N MUST be able to support CE-VLAN CoS preservation																				
Test Object	Verify that a Type 1.2 UNI-N can support CE-VLAN CoS preservation																				
Test Configuration	One EVC associating two Type 1.2 UNIs is configured and at least one CE-VLAN ID is mapped to the EVC. A per Ingress UNI bandwidth profile is applied at both UNIs. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC																				
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">UNI 'A'</th> <th colspan="2">UNI 'B'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both ingress and egress UNIs</p>	UNI 'A'		UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁	11*	EVC ₁								
UNI 'A'		UNI 'B'																			
CE-VLAN ID	EVC	CE-VLAN ID	EVC																		
11*	EVC ₁	11*	EVC ₁																		
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5">PER INGRESS UNI</th> </tr> <tr> <th>UNI</th> <th colspan="4">Bandwidth Profile Parameters</th> </tr> <tr> <th>UNI</th> <th>CIR</th> <th>CBS</th> <th>EIR</th> <th>EBS</th> </tr> </thead> <tbody> <tr> <td colspan="5"> Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0) </td> </tr> </tbody> </table>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI	CIR	CBS	EIR	EBS	Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0)				
PER INGRESS UNI																					
UNI	Bandwidth Profile Parameters																				
UNI	CIR	CBS	EIR	EBS																	
Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0)																					
Service Performance	Not Specified																				
Test Procedure	Tester offers tagged Service Frames with mapped CE-VLAN ID with all possible CoS values bidirectionally at each UNI configured in the EVC and verifies that the corresponding Service Frames are delivered at the associated UNI with CE-VLAN CoS preservation																				
Units	Number of valid Service Frames																				
Variables	Bandwidth Profile Parameters CIR, CBS, UNIs interface speed																				
Results	Pass or fail																				
Remarks																					

TEST CASE 43: Type 1.2 UNI-N Broadcast & Multicast Service Frame Unconditional Delivery

ABSTRACT TEST SUITE FOR UNI TYPE 1																					
Test Name	Type 1.2 UNI-N Broadcast & Multicast Service Frame Unconditional Delivery																				
Test Definition ID	U1.6.2.10-43																				
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																				
Test Type	Conformance																				
Test Status	Mandatory																				
Requirement Description	<p>A Type 1.2 UNI-N MUST be able to deliver multicast and broadcast Service Frames unconditionally, except:</p> <ul style="list-style-type: none"> · Spanning Tree Protocol (STP), · Rapid Spanning Tree Protocol (RSTP), · Multiple Spanning Tree Protocol (MSTP) · All LANs Bridge Management Group Block of Protocol · Generic Attribute Registration Protocol (GARP) · Link Aggregation Control Protocol (LACP) · Marker Protocol · Authentication (802.1x) · 802.3x (PAUSE) frames 																				
Test Object	Verify that a Type 1.2 UNI-N can deliver multicast and broadcast Service Frames unconditionally, except the L2CPs listed in the requirement description above																				
Test Configuration	One EVC associating two Type 1.2 UNIs is configured and at least one CE-VLAN ID is mapped to the EVC. A per Ingress UNI bandwidth profile is applied at both UNIs. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVC																				
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">UNI 'A'</th> <th colspan="2" style="text-align: center;">UNI 'B'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both ingress and egress UNIs</p>	UNI 'A'		UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁	11*	EVC ₁								
UNI 'A'		UNI 'B'																			
CE-VLAN ID	EVC	CE-VLAN ID	EVC																		
11*	EVC ₁	11*	EVC ₁																		
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">PER INGRESS UNI</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th colspan="4" style="text-align: center;">Bandwidth Profile Parameters</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th style="text-align: center;">CIR</th> <th style="text-align: center;">CBS</th> <th style="text-align: center;">EIR</th> <th style="text-align: center;">EBS</th> </tr> </thead> <tbody> <tr> <td colspan="5"> Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0) </td> </tr> </tbody> </table>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI	CIR	CBS	EIR	EBS	Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0)				
PER INGRESS UNI																					
UNI	Bandwidth Profile Parameters																				
UNI	CIR	CBS	EIR	EBS																	
Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0)																					
Service Performance	Not Specified																				
Test Procedure	Tester offers multicast and broadcast Service Frames (except the L2CPs listed in the requirement description above) bidirectionally at each UNI configured in the EVC and verifies that the corresponding Service Frames are delivered at the associated UNI																				
Units	Number of valid Service Frames																				
Variables	Frame Format (broadcast, multicast), Bandwidth Profile Parameters CIR, CBS, UNIs interface speed																				
Results	Pass or fail																				
Remarks																					

TEST CASE 44: Type 1.2 UNI-N Unicast Service Frame Unconditional Delivery

ABSTRACT TEST SUITE FOR UNI TYPE 1																					
Test Name	Type 1.2 UNI-N Unicast Service Frame Unconditional Delivery																				
Test Definition ID	U1.6.1.8-44																				
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]																				
Test Type	Conformance																				
Test Status	Mandatory																				
Requirement Description	A Type 1.2 UNI-N MUST be able to deliver all unicast Service Frames unconditionally																				
Test Object	Verify that a Type 1.2 UNI-N can deliver all unicast Service Frame unconditionally																				
Test Configuration	One EVC associating two Type 1.2 UNIs is configured and at least one CE-VLAN ID is mapped to the EVC. A per Ingress UNI bandwidth profile is applied at both UNIs. Testers with proper PHY that matches each UNI are attached to both UNIs in the configured EVCs																				
CE-VLAN ID/EVC Map	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">UNI 'A'</th> <th colspan="2" style="text-align: center;">UNI 'B'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> <td style="text-align: center;">11*</td> <td style="text-align: center;">EVC₁</td> </tr> </tbody> </table> <p>Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1</p> <p>The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both ingress and egress UNIs</p>	UNI 'A'		UNI 'B'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11*	EVC ₁	11*	EVC ₁								
UNI 'A'		UNI 'B'																			
CE-VLAN ID	EVC	CE-VLAN ID	EVC																		
11*	EVC ₁	11*	EVC ₁																		
Bandwidth Profile	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">PER INGRESS UNI</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th colspan="4" style="text-align: center;">Bandwidth Profile Parameters</th> </tr> <tr> <th style="text-align: center;">UNI</th> <th style="text-align: center;">CIR</th> <th style="text-align: center;">CBS</th> <th style="text-align: center;">EIR</th> <th style="text-align: center;">EBS</th> </tr> </thead> <tbody> <tr> <td colspan="5"> Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0) </td> </tr> </tbody> </table>	PER INGRESS UNI					UNI	Bandwidth Profile Parameters				UNI	CIR	CBS	EIR	EBS	Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0)				
PER INGRESS UNI																					
UNI	Bandwidth Profile Parameters																				
UNI	CIR	CBS	EIR	EBS																	
Note 1: (0 < CIR < Ingress UNI Speed), (CBS ≥ maximum Service Frame size) Note 2: (Ingress CIR ≤ Egress UNI Speed) Note 3: (EIR = 0) and (EBS = 0)																					
Service Performance	Not Specified																				
Test Procedure	Tester offers unicast Service Frames with mapped CE-VLAN IDs with varying destination addresses bidirectionally at each UNI configured in the EVC and verifies that the corresponding Service Frames are delivered at the associated UNI																				
Units	Number of valid Service Frames																				
Variables	Bandwidth Profile Parameters CIR, CBS, UNIs interface speed																				
Results	Pass or fail																				
Remarks																					

11. References

References	Details
IEEE 802.3	IEEE P 802.3 – 2002, Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements – Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications, 8 March 2002. (Normative)
IEEE 802.3ae	IEEE 802.3ae-2002 Information Technology - Local & Metropolitan Area Networks - Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications - Media Access Control Parameters, Physical Layers and Management Parameters for 10 Gb/s Operation
IEEE 802.1Q	IEEE 802.1Q, 2003 Edition , IEEE Standards for Local and metropolitan area networks—Virtual Bridged Local Area Networks
MEF 4	Metro Ethernet Network Architecture Framework - Part 1: Generic Framework
MEF 6	Ethernet Services Definitions
MEF 10	Ethernet Services Attributes Phase 1
MEF 11	User Network Interface (UNI) Requirements and Framework
MEF 13	User Network Interface (UNI) Implementation Agreement
RFC 2119	RFC 2119, "Key words for use in RFCs to Indicate Requirement Levels", S. Bradner, http://www.ietf.org/rfc/rfc2119.txt (Normative)
RFC 2285	RFC 2285, "Benchmarking Terminology for LAN Switching Devices", R. Mandeville, http://www.ietf.org/rfc/rfc2285.txt
RFC 2544	RFC 2544, "Benchmarking Methodology for Network Interconnect Devices", S. Bradner, J. McQuaid, http://www.ietf.org/rfc/rfc2544.txt
RFC 2889	RFC 2889, "Benchmarking Methodology for LAN Switching Devices", R. Mandeville, J. Perser, http://www.ietf.org/rfc/rfc2889.txt