



## Technical Specification MEF 19

# Abstract Test Suite for UNI Type 1

## April, 2007

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### **Table of Contents**

1.	ABSTRACT	5
2.	TERMINOLOGY	5
3.	SCOPE	9
4.	COMPLIANCE LEVELS	9
5.	INTRODUCTION	9
6.	TEST CONFIGURATION	10
7.	TEMPLATE FOR ABSTRACT TEST CASES FOR UNI TYPE 1	
	ABSTRACT TEST CASES FOR UNI TYPE 1 COMMON CHARACTERISTICS	
•••	TEST CASE 1: Type 1 UNI-N Ethernet Physical Medium	
	TEST CASE 1: 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	15
9.	ABSTRACT TEST CASES FOR UNI TYPE 1.1 SPECIFIC CHARACTERISTICS	16
	TEST CASE 4: Type 1.1 UNI-N CE-VLAN ID - Single EVC	17
	TEST CASE 5: Type 1.1 UNI-N Configurable CE-VLAN ID/EVC Map - No CE-VLAN ID	18
	TEST CASE 6: Type 1.1 UNI-N Bandwidth Profile per Ingress UNI	
	TEST CASE 7: Type 1.1 UNI-N BW 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	30
10.	ABSTRACT TEST CASES FOR UNI TYPE 1.2 SPECIFIC CHARACTERISTICS	31
	TEST CASE 18: Type 1.2 UNI-N Service Multiplexing	32
	TEST CASE 19: Type 1.2 UNI-N Service Multiplexing - Minimum Number of EVCs	33
	TEST CASE 20: Type 1.2 UNI-N Minimum Number of CE-VLAN IDs	34
	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	39
	TEST CASE 26: Type 1.2 UNI-N Bandwidth Profile per EVC	40
	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 BW Profile Rate Enforcement when CIR > 0 and EIR = 0 TEST CASE 30: Type 1.2 UNI-N BW Profile Rate Enforcement when CIR = 0 and EIR > 0	
	TEST CASE 31: Type 1.2 UNI-N BW Profile Rate Enforcement when CIR > 0 and EIR > 0	
	TEST CASE 32: Type 1.2 UNI-N Mandatory CIR Configuration Granularity	46
	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	

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TEST CASE 37: Type 1.2 UNI-N EBS Configuration	52
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	55
TEST CASE 41: Type 1.2 UNI-N CE-VLAN ID Preservation	56
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	59
11. REFERENCES	60



## 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
СМ	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



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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 <sub>G</sub>	$W_{\rm G}$ is the amount of traffic accepted as Green over the time interval T that should be delivered to the egress UNI
W <sub>Y</sub>	$W_{\rm Y}$ 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**", "**SHOULD**", "**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.

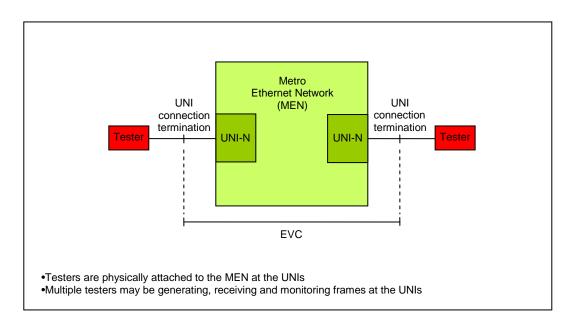
As with MEF 9 and MEF 14, vendors can refer to the requirements and test procedures defined in this specification in the development and commercial cycles of their products and carriers can use them to ensure that the network elements they deploy or add to their existing network will have the ability 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 <b>MUST</b> or <b>SHOULD</b> be satisfied						
Test Object	Succinct description of test purpose						
Test Configuration	Succinct description of test bed configuration						
CE-VLAN ID/EVC Map	INGRESS UNI 'A'EGRESS UNI 'B'CE-VLAN IDEVC10EVC1Use 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						
Bandwidth Profile	A sample Bandwidth Profile table is suggested. Variables augment it. Ver Ingress UNI         UNI         UNI       Bandwidth Profile Parameters         UNI <sub>A</sub> CIR <sub>A</sub> CBS <sub>A</sub> EIR <sub>A</sub> EBS <sub>A</sub> Note 1 : (0 < CIR <sub>A</sub> ≤ UNI Speed), (CBS <sub>A</sub> ≥ maximum Service Frame size)						
Service Performance	A sample EVC Performance Objectives table is suggested. Variables augment it.         CoS       EVC Performance Service Attributes       Performance Objectives         Identifier       Frame Delay (FD) Performance       FD1         1       Frame Delay Variation (FDV) Performance       FD1         Frame Delay Variation (FDV) Performance       FDV1         Frame Loss Ratio (FLR) Performance       FLR1						
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

		ABSTRAC	CT TEST SUITE	FOR UNI	TYPE 1		
Test Name	Type 1 UN	I-N Ethernet Physical Me	edium				
Test Definition ID	U1.5.1-2						
Reference Document	MEF 13 [U	ser Network Interface (U	JNI) Type 1 Imple	mentation A	greement]		
Test Type	Conforman	се					
Test Status	Mandatory						
Requirement Description	· 10B/ · 100E · 100C · 100C	100BASE-T including 100BASE-TX and 100BASE-FX 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	Ingress UN	issociating two Type 1 L I bandwidth profile is ap Is in the configured EVC	plied at both UNIs				
		UNI 'A CE-VLAN ID	EVC		UNI 'E CE-VLAN ID	B' EVC	
CE-VLAN ID/EVC Map		11* Use of other CE-VLAN conforms to MEF 10 [I	Ethernet Services	Attributes F	-		
		The CE-VLAN ID for u both UNIs	intagged and prior	rity tagged S	Service Frames is confi	gured to 11 at	
						gured to 11 at	
		both UNIs		RINGRESS	UNI	-	
Bandwidth Profile				RINGRESS		-	
Bandwidth Profile		both UNIs UNI UNI	PEF gress UNI Speed) ≤ Egress UNI Spe	R INGRESS E	UNI Bandwidth Profile Para	ameters EBS	
Bandwidth Profile Service Performance	Not Specifi	both UNIs UNI UNI Note 1: (0 < CIR < Ing Note 2: (Ingress CIR s Note 3: (EIR = 0) and	PEF gress UNI Speed) ≤ Egress UNI Spe	R INGRESS E	UNI Bandwidth Profile Para CIR CBS EIR	ameters EBS	
Service	Tester offer	both UNIs UNI UNI Note 1: (0 < CIR < Ing Note 2: (Ingress CIR s Note 3: (EIR = 0) and	PEF gress UNI Speed) ≤ Egress UNI Spe (EBS = 0)	R INGRESS E I, (CBS ≥ ma red)	UNI Bandwidth Profile Para CIR CBS EIR aximum Service Frame	ameters EBS size)	sponding
Service Performance	Tester offer Service Fra	both UNIs UNI UNI Note 1: (0 < CIR < Ing Note 2: (Ingress CIR ≤ Note 3: (EIR = 0) and ed	PEF gress UNI Speed) ≤ Egress UNI Spe (EBS = 0)	R INGRESS E I, (CBS ≥ ma red)	UNI Bandwidth Profile Para CIR CBS EIR aximum Service Frame	ameters EBS size)	sponding
Service Performance Test Procedure	Tester offer Service Fra Number of	both UNIs UNI UNI Note 1: (0 < CIR < Ing Note 2: (Ingress CIR s Note 3: (EIR = 0) and ed ed	PEF gress UNI Speed) ≤ Egress UNI Spe (EBS = 0) ectionally at each elivered at the ass	R INGRESS E ( (CBS ≥ ma ed) UNI configu sociated UN	UNI Bandwidth Profile Para CIR CBS EIR aximum Service Frame	ameters EBS size)	sponding
Service Performance Test Procedure Units	Tester offer Service Fra Number of	both UNIs UNI UNI Note 1: (0 < CIR < Ing Note 2: (Ingress CIR s Note 3: (EIR = 0) and ed rs Service Frames bidire ames are successfully de valid Service Frames Profile Parameters CIR,	PEF gress UNI Speed) ≤ Egress UNI Spe (EBS = 0) ectionally at each elivered at the ass	R INGRESS E ( (CBS ≥ ma ed) UNI configu sociated UN	UNI Bandwidth Profile Para CIR CBS EIR aximum Service Frame	ameters EBS size)	sponding

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

		ABSTRA	CT TEST SUITE					
		ABSTRAC			TIPET			
Test Name	Type 1 UN	I-N Ethernet Frame Forn	nat - Tagged, Unt	agged and I	Priority Tagged			
Test Definition ID	U1.5.2-4							
Reference Document	MEF 13 [U	ser Network Interface (U	INI) Type 1 Imple	mentation A	greement]			
Test Type	Conforman	onformance						
Test Status	Mandatory	andatory						
Requirement Description	A Type 1 U Ethernet fra	Type 1 UNI-N <b>MUST</b> support the transmission and reception of untagged, VLAN-tagged and priority-tagged thernet frames according to IEEE 802.3-2002						
Test Object	Verify that Ethernet fra	/erify 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 attache to both UNIs in the configured EVC							
		UNI 'A	3			UNI 'I	B'	
		CE-VLAN ID	EVC		CE-VLAN	-	EVC	
CE-VLAN ID/EVC		11*	EVC <sub>1</sub>		11*		EVC <sub>1</sub>	
Мар		Use of other CE-VLAN	I IDs is permitted		at configuration			
	conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1 The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both UNIs							
			PEI	RINGRESS	UNI			
Randwidth Drafila		UNI		E	andwidth Pro			
Bandwidth Profile				(0.0.0.)	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 Specifi	ed						
Test Procedure	and verifies	rs tagged, untagged and s that the corresponding ames must be the one co	Service Frames a	are received	at the associat	ly at ea ed UNI.	ch UNI configured The VLAN ID of t	in the EVC he tagged
Units		valid Service Frames	-		•			
Variables	Bandwidth	Profile Parameters CIR,	CBS, UNIs inter	ace speed				
Results	Pass or fail	l						
Remarks								



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

		ABSTRAC	CT TEST SUITE	FOR UNI	TYPE 1			
Test Name	Type 1 UN	I-N Minimum and Maxim	um Ethernet Frar	ne Size				
Test Definition ID	U1.5.2-6							
Reference Document	MEF 13 [U	ser Network Interface (U	NI) Type 1 Imple	mentation A	greement]			
Test Type	Conforman	onformance						
Test Status	Mandatory	andatory						
Requirement Description		Type 1 UNI-N <b>MUST</b> support the transmission and reception of minimum and maximum size Ethernet frames as becified in IEEE 802.3-2002						
Test Object	as specified	(erify that a Type 1 UNI-N supports the transmission and reception of minimum and maximum size Ethernet frames is specified in IEEE 802.3-2002						
Test Configuration	Ingress UN	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 attache to both UNIs in the configured EVC						
		UNI 'A	,			UNI 'E	3'	
		CE-VLAN ID	EVC		CE-VLAN	ID	EVC	-
<b>CE-VLAN ID/EVC</b>		11*	EVC <sub>1</sub>		11*		EVC1	-
Мар		Use of other CE-VLAN conforms to MEF 10 [	I IDs is permitted	provided the Attributes F	at configuration	of the C	E-VLAN IDs	
		The CE-VLAN ID for u both UNIs			-		gured to 11 at	
			PEI					
Bandwidth Profile		UNI		E	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 Specifi	ed	· · · ·					4
Test Procedure		rs minimum and maximu ured in the EVC and veri						
Units	Number of	valid Service Frames						
Variables	Bandwidth	Profile Parameters CIR,	CBS, UNIs inter	ace 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 Optional CIR Configuration 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 Optional Layer 2 Control Protocol Discard Test Case 15: 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

		ABSTRA		FOR UN	TYPE 1		
Test Name	Type 1 1 LI	NI-N CE-VLAN ID - Sing	ale EVC				
Test Definition ID	U1.6.1.1-7,						
Reference Document		ser Network Interface (L	JNI) Type 1 Imple	mentation A	greement]		
Test Type	Conforman						
Test Status	Mandatory	Mandatory					
Requirement Description	A Type 1.1	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	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						
	[	UNI 'A	Y		UNI 'E	3'	1
		CE-VLAN ID	EVC		CE-VLAN ID	EVC	
CE-VLAN ID/EVC Map		All possible values allowed at the UNI-C	EVC <sub>1</sub>		All possible values allowed at the UNI-C	EVC <sub>1</sub>	
							-
			PEF				=
Bandwidth Profile		UNI		Bandwidth Profile Parameters CIR CBS EIR EBS			
	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 Specifie	ed					
Test Procedure	Service Fra	rs tagged Service Frame mes bidirectionally at e e delivered at the associ	ach UNI configure		· · · · · · · · · · · · · · · · · · ·		
Units	Number of	valid Service Frames					
Variables	Bandwidth	Profile Parameters CIR	, CBS, UNIs interf	ace speed			
Results	Pass or fail						
Remarks							



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

		ABSTRAC	CT TEST SUITE	FOR UN	I TYPE 1		
Test Name	Type 1.1 U	NI-N Configurable CE-V	LAN ID/EVC Map	- No CE-V	LAN IDs		
Test Definition ID	U1.6.1.2-9						
Reference Document	MEF 13 [U	ser Network Interface (U	NI) Type 1 Implen	nentation A	greement]		
Test Type	Conforman	се					
Test Status	Mandatory						
Requirement Description	A Type 1.1 UNI-N <b>MUST</b> 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		UNI 'A'	9		UNI 'I	B'	
Map		CE-VLAN ID	EVC		CE-VLAN ID	EVC	
		None	EVC <sub>1</sub>		None	EVC <sub>1</sub>	
		PER INGRESS UNI					
		UNI		E	Bandwidth Profile Parameters		
Bandwidth Profile		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 Specifi	ed					
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					gged	
restricteduie				d in the EV	C and verifies that the o	corresponding Serv	ICE
Units	Frames are			d in the EV	C and verifies that the o	corresponding Serv	ICE
	Frames are	e not delivered at the ass	sociated UNI		C and verifies that the o	corresponding Serv	
Units	Frames are	e not delivered at the ass valid Service Frames Profile Parameters CIR,	sociated UNI		C and verifies that the o	corresponding Serv	



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

		ABSTRAC	CT TEST SUITE	FOR UN	I TYPE 1			
Test Name	Type 1.1 U	NI-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	Conforman	се						
Test Status	Mandatory							
Requirement Description	A Type 1.1	A Type 1.1 UNI-N <b>MUST</b> be able to support a per Ingress UNI bandwidth profile based on MEF 10						
Test Object	Verify that a	Verify that a Type 1.1 UNI-N can support a per Ingress UNI bandwidth profile based on MEF 10						
Test Configuration	Ingress UN	issociating two Type 1.1 I bandwidth profile is ap both UNIs in the config	plied at the ingres					
							_	
		INGRESS U	INI 'A'		EGRESS L	JNI 'B'		
CE-VLAN ID/EVC Map		CE-VLAN ID     EVC     CE-VLAN ID     EVC						
·····		All possible values	EVC <sub>1</sub>		All possible values	EVC <sub>1</sub>		
			PER		UNI		]	
		UNI		E	Bandwidth Profile Para	ameters		
Bandwidth Profile		UNI <sub>A</sub>			CIR <sub>A</sub> CBS <sub>A</sub> EIR <sub>A</sub>	EBSA		
		Note 1: $(0 < CIR_A < Ir$ Note 2: $(Ingress CIR_A$ Note 3: $(EIR_A = 0)$ and	≤ Egress UNI Spe		maximum Service Fram	ne size)		
Service Performance	Not Specifie	ed						
Test Procedure	Service Fra one Service equal avera that the am	rs tagged Service Frame ames of length $\lambda$ into the e Frame of each CE-VL/ age rates into the config ount of traffic delivered $W_G$ is the amount of traff egress UNI. $\zeta_A = (CIR_A*T + CBS_A - F$	configured EVC a AN ID is delivered ured EVC, at an a at the egress UNI ic accepted as Gr	at the ingres at the asso ggregate a falls within een over th	ss UNI and verifies that bociated egress UNI. Serverage rate greater than the range $X \le W_G \le Z$ w the time interval <i>T</i> that sh	over a time interva rvice Frames are o n CIR <sub>A.</sub> Tester also vhere:	al $\overline{T}$ at least offered at o verifies	
Units		valid Service Frames			,			
Variables	Bandwidth	Profile Parameters CIR,		erface spee	d, time interval <i>T</i> , tolera	ted variance F, nu	mber and	
variables	length $\lambda$ of	the offered Service Fran	100					
Results	length $\lambda$ of the second seco							

**MEF 19** 

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

		ABSTRAC	CT TEST SUITE	FOR UN	I TYPE 1					
Test Name	Type 1.1 U	NI-N Bandwidth Profile I	Rate Enforcement	when CIR	> 0 and EIR = 0					
Test Definition ID	,,	J1.6.1.3-12								
Reference Document		MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]								
Test Type	Conforman	се								
Test Status	Mandatory									
Requirement Description	A Type 1.1 non-zero	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 zero	a Type 1.1 UNI-N can su	upport color-blind I	bandwidth	profile where EIR=EBS	S=0 and CIR and C	BS are non-			
Test Configuration	Bandwidth	ssociating two Type 1.1 Profile where EIR=EBS / that matches each UN	=0 and CIR and C	BS are nor	-zero is applied at the	are mapped to the ingress UNI. Test	EVC. One ers with			
		INGRESS U	NI 'A'		EGRESS	IINI 'B'				
<b>CE-VLAN ID/EVC</b>		CE-VLAN ID	EVC		CE-VLAN ID	EVC	-			
Мар		All possible values	EVC <sub>1</sub>		All possible values	EVC <sub>1</sub>				
			PER	INGRESS	UNI					
		UNI		E	Bandwidth Profile Par	rameters				
Bandwidth Profile		UNIA		C	$CIR_A$ $CBS_A$ $EIR_A$	EBS <sub>A</sub>				
		Note 1: $(0 < CIR_A < In$ Note 2: $(Ingress CIR_A$ Note 3: $(EIR_A = 0)$ and	≤ Egress UNI Spe		maximum Service Fra	me size)				
Service Performance	Not Specifie	ed								
Test Procedure	interval T a	rs Service Frames of len nd measures the numbe ered at the associated e	er of Service Fram	es delivere	d at the associated eg	ress UNI. The am	a time ount of			
	UNI.	the amount of traffic acc CIR <sub>A</sub> * $T$ + CBS <sub>A</sub> - F) and			e interval $\mathcal T$ that should	be delivered to th	e egress			
Units		• $X_A = (CIR_A * T + CBS_A - F)$ and $Z_A = (CIR_A * T + CBS_A + F)$ Number of valid Service Frames								
Units	Number of	valid Service Frames								
Variables	Bandwidth	valid Service Frames Profile Parameters CIR, the offered Service Fran		rface spee	d, time interval <i>T</i> , tole	rated variance F, r	number and			
	Bandwidth	Profile Parameters CIR, the offered Service Fran		rface spee	d, time interval <i>T</i> , tole	rated variance F, r	number and			



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

		ABSTRAC	CT TEST SUITE	FOR UN	I TYPE 1			
Test Name	Type 1.1 U	NI-N Mandatory CIR Co	onfiguration Granu	larity				
<b>Test Definition ID</b>	U1.6.1.3-13							
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]							
Test Type	Conforman	ce						
Test Status	Mandatory							
Requirement Description		<ul> <li>A Type 1.1 UNI-N MUST allow configuration to modify CIR in the following granularities</li> <li>1 Mbps steps up to 10 Mbps [CIR range 1]</li> <li>5 Mbps steps beyond 10 Mbps and up to 100 Mbps [CIR range 2]</li> <li>50 Mbps steps beyond 100 Mbps and up to 1 Gbps [CIR range 3]</li> <li>500 Mbps steps beyond 1 Gbps [CIR range 4]</li> </ul>						
Test Object	Verify that description	a Type 1.1 UNI-N allor section above	ws configuration	to modify C	CIR in the granularities	described in the	requirement	
Test Configuration	Bandwidth				sible CE-VLAN IDs are n oper PHY that matches			
		INGRESS U	JNI 'A'		EGRESS U	JNI 'B'		
CE-VLAN ID/EVC		CE-VLAN ID	EVC		CE-VLAN ID	EVC		
Мар		All possible values	EVC <sub>1</sub>		All possible values	EVC <sub>1</sub>		
			PEF		S UNI			
		UNI			Bandwidth Profile Para	ameters		
Bandwidth Profile		UNI <sub>A</sub>		C	CIR <sub>A</sub> CBS <sub>A</sub> EIR <sub>A</sub>	EBS <sub>A</sub>		
		Note 1: $(0 < CIR_A < Ir$ Note 2: (Ingress $CIR_A$ Note 3: ( $EIR_A = 0$ ) and	≤ Egress UNI Sp	), (CBS <sub>A</sub> ≥ eed)	maximum Service Fram	ie size)		
Service	Not Specifi	ed						
Performance			ath lat an arrest	no roto	ator than OID to the back	rooo LINII duuda -	o time	
	interval T a		er of Service Fram	nes delivere	ater than $CIR_A$ to the ing ed at the associated egree $W_G \le Z$ where:			
Test Procedure	UNI.	the amount of traffic ac $CIR_A * T + CBS_A - F)$ and			e interval <i>T</i> that should	be delivered to th	ne egress	
	CIR range.				and increment $CIR_A$ by nented to the UNI speed		efined for the	
Units	Number of	valid Service Frames						
Variables		Profile Parameters CIR the offered Service Frar		erface spee	d, time interval <i>T</i> , tolera	ted variance F, n	umber and	
Results	Pass or fail							
Remarks								
	I							

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

		ABSTRAC	CT TEST SUITE	FOR UN				
Test Name		NI-N Optional CIR Conf	iguration Granula	rity				
Test Definition ID	U1.6.1.3-14	U1.6.1.3-14						
Reference Document	MEF 13 [U	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]						
Test Type	Conforman	ce						
Test Status	Optional							
Requirement Description		<ul> <li>Type 1.1 UNI-N SHOULD allow configuration to modify CIR in the following granularities:</li> <li>64 Kbps (DS0 rate) steps up to 1.422 Mbps (VC11 rate) or 1.932 Mbps (VC12 rate) [CIR range 1]</li> <li>1.422 Mbps (VC11 rate) or 1.932 Mbps (VC12 rate) steps up to 50 Mbps [CIR range 2]</li> <li>43.008 Mbps (VC3 rate) steps beyond 50 Mbps and up to 150 Mbps [CIR range 3]</li> <li>133.12 Mbps (VC4 rate) steps beyond 150 Mbps [CIR range 4]</li> </ul>						
Test Object		a Type 1.1 UNI-N allow section above	ws configuration 1	to modify C	CIR in the granularities	described in the	requirement	
Test Configuration	Bandwidth	associating two Type 1.1 Profile is applied at the in the configured EVC	UNIs is configure ingress UNI. Test	ed. All poss ters with pro	sible CE-VLAN IDs are r oper PHY that matches	napped to the EV each UNI are atta	C and one ched to	
		INGRESS U	INII 'A'		EGRESS			
CE-VLAN ID/EVC		CE-VLAN ID	EVC		CE-VLAN ID	EVC	-	
Мар					-			
		All possible values	EVC <sub>1</sub>		All possible values	EVC1		
			PER				1	
		UNI			Bandwidth Profile Para	ameters	-	
Bandwidth Profile		UNIA		-	$CIR_A$ $CBS_A$ $EIR_A$	EBSA		
		Note 1: $(0 < CIR_A < Ir$ Note 2: $(Ingress CIR_A$ Note 3: $(EIR_A = 0)$ and	≤ Egress UNI Sp	), (CBS <sub>A</sub> ≥ eed)	maximum Service Fram	ie size)		
Service Performance	Not Specifi	ed						
Fenomiance	Tester offe	rs Service Frames of ler	ath lat an average	ao roto aroa	ator than CIP to the inc		time	
	interval T a	and measures the number ered at the egress UNI r	er of Service Fram	nes delivere	ed at the associated egro			
Test Procedure	UNI.	the amount of traffic action $CIR_A T + CBS_A - F$ ) and			e interval $T$ that should	be delivered to th	e egress	
	the CIR rar	est with $CIR_A$ set to the nge. test for each $CIR_A$ valu					efined for	
Units	Number of	valid Service Frames						
Variables	Bandwidth	Profile Parameters CIR, the offered Service Frar		erface spee	d, time interval <i>T</i> , tolera	ted variance F, nu	imber and	
	- 3							
Results	Pass or fail							
Results Remarks	0							



#### TEST CASE 10: Type 1.1 UNI-N CBS Configuration

		ABSTRAC	CT TEST SUITE	e for un	I TYPE 1				
Test Name	Type 1.1 U	NI-N CBS Configuration	1						
Test Definition ID	U1.6.1.3-1	5							
Reference Document	MEF 13 [U	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]							
Test Type	Conforman	Conformance							
Test Status	Mandatory	<i>I</i> andatory							
Requirement Description		A Type 1.1 UNI-N <b>MUST</b> be able to at least support CBS values that are equal to or greater than 8 x MTU = 8 x 1522 bytes = 12176 bytes							
Test Object		a Type 1.1 UNI-N can ai /tes = 12176 bytes	t least support CB	S values th	at are equal to or greate	er than 8 x MTU =	:		
Test Configuration	Bandwidth	associating two Type 1.1 Profile is applied at the in the configured EVC							
		INGRESS U	INI 'A'	]	EGRESS L	JNI 'B'			
<b>CE-VLAN ID/EVC</b>		CE-VLAN ID	EVC		CE-VLAN ID	EVC			
Мар		All possible values	EVC <sub>1</sub>		All possible values	EVC <sub>1</sub>			
			PEI						
Bandwidth Profile		UNI		-	Bandwidth Profile Para	EBS <sub>A</sub>	-		
		Note 1: $(0 < CIR_A < Ir$ Note 2: (Ingress CIR_A Note 3: (EIR_A = 0) and	ngress UNI Speed ≤ Egress UNI Sp	I), (CBS <sub>A</sub> ≥					
Service Performance	Not Specifi	ed							
Test Procedure	At time T/2 Service Fra fall within th · W <sub>G</sub> is UNI	rs Service Frames of ler tester injects a burst of ames delivered at the as he range $X \le W_G \le Z$ wh the amount of traffic act CIR <sub>A</sub> * <i>T</i> + CBS <sub>A</sub> - F) and	ingress Service F sociated egress I nere: cepted as Green	rames grea JNIs. The a over the tim	ater than CBS <sub>A</sub> . Tester amount of traffic delivered	measures the nur ed at each egress	nber of UNI must		
Units	Number of	valid Service Frames							
	Donduridth	Number of valid Service Frames Bandwidth Profile Parameters CIR <sub>A</sub> , CBS <sub>A</sub> , UNIs interface speed, time interval <i>T</i> , tolerated variance F, number and							
Variables		the offered Service Fran							
Variables Results									



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

		ABSTRA	CT TEST SUITE	FOR UNI	I TYPE 1				
Test Name	Type 1.1 U	NI-N Mandatory Layer 2	2 Control Protocol	Processing					
Test Definition ID	U1.6.1.4-16	3							
Reference Document	MEF 13 [U	ser Network Interface (L	JNI) Type 1 Imple	mentation A	greement]				
Test Type	Conforman	се							
Test Status	Mandatory								
Requirement Description	A Type 1.1	UNI-N <b>MUST</b> be able to Spanning Tree Prot Rapid Spanning Tre Multiple Spanning T All LANs Bridge Ma Generic Attribute R	tocol (STP), ee Protocol (RSTF Tree Protocol (MS anagement Group	P), TP) Block of Pro					
Test Object	Verify that above to th	a Type 1.1 UNI-N can e EVC	pass each L2 Co	ontrol Proto	col described in the re	quirement descrip	tion section		
Test Configuration	per Ingress	associating two Type 1.1 UNI bandwidth profile i both UNIs in the config	is applied at the U						
CE-VLAN ID/EVC Map		INGRESS UNI 'A'EGRESS UNI 'B'CE-VLAN IDEVCCE-VLAN IDEVCAll possible valuesEVC1All possible valuesEVC1							
			PEF	R INGRESS	UNI				
		UNI		E	Bandwidth Profile Para	ameters			
Bandwidth Profile		UNIA	۱.	C	CIR <sub>A</sub> CBS <sub>A</sub> EIR <sub>A</sub>	EBSA			
		Note 1: $(0 < CIR_A < Ir$ Note 2: $(Ingress CIR_A$ Note 3: $(EIR_A = 0)$ and	≤ Egress UNI Sp		maximum Service Fram	ne size)			
Service Performance	Not Specifi	ed							
Test Procedure	above at th	rs Service Frames carry e ingress UNI and verifi .2CPs Destination Addre	ies that the corres	ponding Se	rvice Frames are delive	red at the associa	ted egress		
Units	Number of	valid Service Frames ca	arrying the L2CPs						
	1								
Variables	L2CP, Ban	dwidth Profile Paramete	ers CIR <sub>A,</sub> CBS <sub>A</sub> , U	NIs interfac	e speed				
Variables Results	L2CP, Ban Pass or fail		ers CIR <sub>A,</sub> CBS <sub>A</sub> , U	NIs interfac	e speed				



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

		ABSTRA	CT TEST SUITE	FOR UN	I TYPE 1				
Test Name	Type 1.1 U	NI-N Optional Layer 2 (	Control Protocol Pr	ocessing					
Test Definition ID	U1.6.1.4-17	7							
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]								
Test Type	Conforman	се							
Test Status	Optional								
Requirement Description	A Type 1.1	<ul> <li>A Type 1.1 UNI-N SHOULD be able to pass the following L2 Control Protocols to the EVC:</li> <li>Link Aggregation Control Protocol (LACP)</li> <li>Marker Protocol</li> <li>Authentication (802.1x)</li> </ul>							
Test Object	Verify that above to th		pass each L2 Co	ntrol Proto	cols described in the re	quirement descrip	tion section		
Test Configuration	Ingress UN	associating two Type 1.1 Il bandwidth profile is an in the configured EVC	I UNIs is configure oplied at the UNI.	ed and all p Testers wit	ossible CE-VLAN IDs a h proper PHY that matc	re mapped to the I hes each UNI are	EVC. A per attached to		
CE-VLAN ID/EVC Map		INGRESS UNI 'A'     EGRESS UNI 'B'       CE-VLAN ID     EVC     CE-VLAN ID     EVC       All possible values     EVC1     All possible values     EVC1							
			PER						
		UNI		-	Bandwidth Profile Para	ameters			
Bandwidth Profile		UNIA	<u>.</u>	-	CIR <sub>A</sub> CBS <sub>A</sub> EIR <sub>A</sub>	EBSA			
		Note 1: $(0 < CIR_A < In$ Note 2: (Ingress CIR <sub>A</sub> Note 3: (EIR <sub>A</sub> = 0) an	⊾ ≤ Egress UNI Sp	), (CBS <sub>A</sub> ≥	maximum Service Fram	ne size)			
Service Performance	Not Specifi	ed							
Test Procedure	above at th	e ingress UNI and verif	ies that the corres	oonding Se	described in the require ervice Frames are delive Ids must be defined as p	red at the associa	ted egress		
Units	Number of	valid Service Frames ca	arrying the L2CPs						
Variables	L2CP, Ban	dwidth Profile Paramete	ers CIR <sub>A,</sub> CBS <sub>A</sub> , U	NIs interfac	ce speed				
Results	Pass or fail								
Remarks									



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

		ABSTRA	CT TEST SUITE	FOR UN	TYPE 1				
Test Name	Type 1.1 U	NI-N Optional Layer 2 C	Control Protocol Dis	card					
Test Definition ID	U1.6.1.4-18	3							
Reference Document	MEF 13 [Us	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]							
Test Type	Conforman	Conformance							
Test Status	Optional	Optional							
Requirement Description	A Type 1.1	UNI-N SHOULD be abl	e to discard 802.3x	PAUSE f	rames				
Test Object	Verify that a	a Type 1.1 UNI-N can d	iscard 802.3x PAU	SE frames					
Test Configuration	Ingress UN	associating two Type 1.1 Il bandwidth profile is ap in the configured EVC	UNIs is configured oplied at the UNI. T	d and all po esters wit	ossible CE-VLAN IDs an h proper PHY that matc	re mapped to the E hes each UNI are a	VC. A per attached to		
CE-VLAN ID/EVC Map		INGRESS UNI 'A'EGRESS UNI 'B'CE-VLAN IDEVCCE-VLAN IDEVCAll possible valuesEVC1All possible valuesEVC1							
			PER	INGRESS	UNI				
		UNI		E	Bandwidth Profile Para	ameters			
Bandwidth Profile									
	1	UNIA		C	CIR <sub>A</sub> CBS <sub>A</sub> EIR <sub>A</sub>	EBSA			
			ngress UNI Speed). . ≤ Egress UNI Spe	, (CBS <sub>A</sub> ≥	<mark>:IR<sub>A</sub> CBS<sub>A</sub> EIR<sub>A</sub> maximum Service Fram</mark>				
Service Performance	Not Specifie	Note 1: $(0 < CIR_A < IrNote 2: (Ingress CIR_ANote 3: (EIR_A = 0) and$	ngress UNI Speed). . ≤ Egress UNI Spe	, (CBS <sub>A</sub> ≥					
	Tester offer	Note 1: $(0 < CIR_A < IrNote 2: (Ingress CIR_ANote 3: (EIR_A = 0) and$	gress UNI Speed), ≤ Egress UNI Spe d (EBS <sub>A</sub> = 0) s at the ingress UN	, (CBS <sub>A</sub> ≥ ed) Il and verif	maximum Service Fram	ivered at the assoc			
Performance	Tester offer egress UNI standards	Note 1: $(0 < CIR_A < IrNote 2: (Ingress CIR_ANote 3: (EIR_A = 0) andedrs 802.3x PAUSE frame$	s at the ingress and Eth	, (CBS <sub>A</sub> ≥ ed) Il and verif	maximum Service Fram	ivered at the assoc			
Performance Test Procedure	Tester offer egress UNI standards Number of	Note 1: (0 < CIR <sub>A</sub> < Ir Note 2: (Ingress CIR <sub>A</sub> Note 3: (EIR <sub>A</sub> = 0) and ed rs 802.3x PAUSE frame I The L2CPs Destination	arrying the L2CPs	, (CBS <sub>A</sub> ≥ ed) Il and verit hertype/Le	maximum Service Fram	ivered at the assoc			
Performance Test Procedure Units	Tester offer egress UNI standards Number of	Note 1: (0 < CIR <sub>A</sub> < Ir Note 2: (Ingress CIR <sub>A</sub> Note 3: (EIR <sub>A</sub> = 0) and ed rs 802.3x PAUSE frame I The L2CPs Destination valid Service Frames can Profile Parameters CIR	arrying the L2CPs	, (CBS <sub>A</sub> ≥ ed) Il and verit hertype/Le	maximum Service Fram	ivered at the assoc			



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

		ABSTRAC	CT TEST SUITE	FOR UN	I TYPE 1				
Test Name	Type 1.1 U	NI-N Point-to-Point EVC	, ,						
Test Definition ID	U1.6.1.5-19	9							
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]								
Test Type	Conforman	Conformance							
Test Status	Mandatory	Mandatory							
Requirement Description	A Type 1.1	UNI-N <b>MUST</b> be able to	o support point-to-	point EVC					
Test Object	Verify that a	a Type 1.1 UNI-N can si	upport point-to-po	int EVC					
Test Configuration	the EVC. A	o-point EVC associating A per Ingress UNI bandw ached to both UNIs in th	vidth profile is app	lied at both					
		UNI 'A	3		UNI 'E	3'			
CE-VLAN ID/EVC Map		CE-VLAN ID	EVC		CE-VLAN ID	EVC			
Map		All possible values	EVC <sub>1</sub>		All possible values	EVC <sub>1</sub>			
			PEF		UNI				
		UNI		E	Bandwidth Profile Para	meters			
Bandwidth Profile		UNI			CIR CBS EIR	EBS			
		Note 1: (0 < CIR < Ing Note 2: (Ingress CIR = Note 3: (EIR = 0) and	≤ Egress UNI Spe		aximum Service Frame	size)			
			· · ·						
Service Performance	Not Specifie	ed	<u> </u>						
	Tester offer	ed rs Service Frames bidire ames are delivered at the	ectionally at each	UNI configu	rred in the EVC and veri	fies that the corr	esponding		
Performance	Tester offer Service Fra	rs Service Frames bidire	ectionally at each	UNI configu	red in the EVC and veri	fies that the corr	esponding		
Performance Test Procedure	Tester offer Service Fra Number of	rs Service Frames bidire ames are delivered at the	ectionally at each e associated UNI		red in the EVC and veri	fies that the corr	esponding		
Performance Test Procedure Units	Tester offer Service Fra Number of	rs Service Frames bidire ames are delivered at the valid Service Frames Profile Parameters CIR,	ectionally at each e associated UNI		red in the EVC and veri	fies that the corr	esponding		



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

		ABSTRAC	CT TEST SUITE	FOR UN	I TYPE 1		
Test Name	Type 1.1 U	INI-N CE-VLAN ID Prese	ervation				
Test Definition ID	U1.6.1.6-20	0					
Reference Document	MEF 13 [U	ser Network Interface (L	JNI) Type 1 Impler	nentation A	\greement]		
Test Type	Conforman	nce					
Test Status	Mandatory						
Requirement Description	A Type 1.1	UNI-N MUST be able to	o support CE-VLA	N ID prese	rvation		
Test Object	Verify that	a Type 1.1 UNI-N can si	upport CE-VLAN I	D preserva	tion		
Test Configuration	Ingress UN	associating two Type 1.1 II bandwidth profile is ap Ils in the configured EVC	plied at both UNIs				
CE-VLAN ID/EVC Map		UNI 'A CE-VLAN ID All possible values	EVC EVC1		UNI CE-VLAN ID All possible values	B' EVC EVC <sub>1</sub>	
			PER	INGRESS	S UNI		
		UNI		i	Bandwidth Profile Pa	rameters	
Bandwidth Profile		UNI			CIR CBS EIR	EBS	
		Note 1: (0 < CIR < Ing Note 2: (Ingress CIR = Note 3: (EIR = 0) and	≤ Egress UNI Spe	(CBS ≥ m ed)	aximum Service Frame	e size)	
Service Performance	Not Specifi	ied					
Test Procedure	Service Fra	ers tagged Service Frame ames bidirectionally at ea e delivered at the associ	ach UNI configure	d in the EV	C and verifies that the		
Units	Number of	valid Service Frames					
Variables	Bandwidth	Profile Parameters CIR,	, CBS, UNIs interfa	ace speed			
Results	Pass or fail	I					
Remarks							



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

		ABSTRAC	CT TEST SUITI	FOR UN	I TYPE 1				
Test Name	Type 1.1 U	NI-N CE-VLAN CoS Pre	eservation						
Test Definition ID	U1.6.1.7-2	1							
Reference Document	MEF 13 [U	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]							
Test Type	Conforman	Conformance							
Test Status	Mandatory	Mandatory							
Requirement Description	A Type 1.1	A Type 1.1 UNI-N <b>MUST</b> be able to support CE-VLAN CoS preservation							
Test Object	Verify that	a Type 1.1 UNI-N can si	upport CE-VLAN	CoS preser	vation				
Test Configuration	Ingress UN	issociating two Type 1.1 I bandwidth profile is ap Is in the configured EVC	plied at both UNI	ed and all p s. Testers	ossible CE-VLAN IDs a with proper PHY that ma	re mapped to the I atches each UNI a	EVC. A per re attached		
CE-VLAN ID/EVC Map		UNI 'A'CE-VLAN IDEVCAll possible valuesEVC1All possible valuesEVC1							
			PE		S UNI		]		
		UNI			Bandwidth Profile Para	ameters			
Bandwidth Profile		UNI			CIR CBS EIR	EBS			
		Note 1: (0 < CIR < Ing Note 2: (Ingress CIR = Note 3: (EIR = 0) and	≤ Egress UNI Spe	, (CBS ≥ m eed)	aximum Service Frame	size)			
Service Performance	Not Specifi	ed							
Test Procedure	Tester offer and verifies preservatio	rs tagged Service Frame s that the corresponding n	es with all possibl Service Frames	e CoS value are delivere	es bidirectionally at eacl d at the associated UNI	h UNI configured in I with CE-VLAN Co	າ the EVC ວS		
Units	Number of	valid Service Frames							
Variables	Bandwidth	Profile Parameters CIR,	CBS, UNIs inter	ace speed					
Results	Pass or fail								
Remarks									



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

		ABSTRA	CT TEST SUITE	FOR UN	I TYPE 1		
Test Name	Type 1.1 U	NI-N Service Frame Un	conditional Deliver	у			
Test Definition ID	U1.6.1.8-22	2					
Reference Document	MEF 13 [U	ser Network Interface (l	JNI) Type 1 Implen	nentation A	Agreement]		
Test Type	Conforman	nce					
Test Status	Mandatory						
Requirement Description		UNI-N <b>MUST</b> be able to conditionally	o deliver unicast, m	nulticast ar	nd broadcast Service Fra	ames, except 802.	3x PAUSE
Test Object	frames unc	conditionally			broadcast Service Fram	-	
Test Configuration	per Ingress		is applied at both L		ossible CE-VLAN IDs a ers with proper PHY tha		
CE-VLAN ID/EVC Map		UNI 'A CE-VLAN ID All possible values	EVC EVC1		UNI 'E CE-VLAN ID All possible values	B' EVC EVC1	
			PER	INGRESS	S UNI		1
		UNI			Bandwidth Profile Para	ameters	
Bandwidth Profile		UNI			CIR CBS EIR	EBS	
		Note 1: (0 < CIR < In Note 2: (Ingress CIR Note 3: (EIR = 0) and	≤ Egress UNI Spee	(CBS ≥ m ed)	aximum Service Frame	size)	
Service Performance	Not Specifi	ed					
Test Procedure		rs unicast, multicast and t the corresponding Ser			bidirectionally at each UI the associated UNI	NI configured in th	e EVC and
Units	Number of	valid Service Frames					
Variables	Bandwidth	Profile Parameters CIR	, CBS, UNIs interfa	ace speed			
Results	Pass or fail	l					
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

			ABSTRA	CT TE	ST SUITE FOR	UNI TYPE 1	l		
Test Name	Type 1.2 U	INI-N Servio	ce Multiplexir	ng					
Test Definition ID	U1.6.2.1-2	3							
Reference Document	MEF 13 [U	ser Networ	k Interface (l	JNI) Ty	pe 1 Implementatio	on Agreement	t]		
Test Type	Conformar	nce							
Test Status	Mandatory								
Requirement Description	A Type 1.2	2 UNI-N <b>MU</b>	I <b>ST</b> be able to	o suppo	ort Service Multiple	xing as define	ed in M	EF 10	
Test Object	Verify that	a Type 1.2	UNI-N can s	upport	Service Multiplexin	g as defined	in MEF	10	
Test Configuration	configured	and at leas	st one CE-VL	AN ID i	a given Type 1.2 ir s mapped per EV0 ch UNI are attache	C. Per EVC b	andwid	th profiles are app	1.2 UNI are lied at all UNIs.
		UNI 'A	Y	]	UNI 'E	3'		UNI '	C'
	CE-	VLAN ID	EVC		CE-VLAN ID	EVC		CE-VLAN ID	EVC
		11*	EVC <sub>1</sub>					11*	EVC <sub>1</sub>
	1								
CE-VLAN ID/EVC Map	Use o	12 of other CE-	EVC₂ ∙VLAN IDs is	permitt	12 ed provided that c	EVC <sub>2</sub>	f the C	E-VLAN IDs confo	rms to MEF
	10 [Et The C	of other CE- thernet Ser	VLAN IDs is vices Attribut	tes Pha	12 ed provided that c se 1], Section 7.5. riority tagged Serv	onfiguration o 1			
	10 [Et The C	of other CE- thernet Ser CE-VLAN ID	VLAN IDs is vices Attribut	tes Pha	ed provided that co se 1], Section 7.5.	onfiguration o 1 rice Frames is			
	10 [Et The C	of other CE- thernet Ser CE-VLAN ID	VLAN IDs is vices Attribut	tes Pha	ed provided that c se 1], Section 7.5. riority tagged Serv PER E	onfiguration o 1 rice Frames is	s config	ured to 11 at both	
Мар	10 [Et The C	of other CE- thernet Ser CE-VLAN ID	VLAN IDs is vices Attribut ofor untagge	tes Pha	ed provided that c se 1], Section 7.5. riority tagged Serv PER E Bandwid	vr vice Frames is vice <b>Frames</b> is vc th <b>Profile Pa</b>	s config	ured to 11 at both	
	10 [Et The C	of other CE- thernet Ser CE-VLAN ID	VLAN IDs is vices Attribut o for untagge	tes Pha	ed provided that c se 1], Section 7.5. riority tagged Serv PER E Bandwid	VC th Profile Pa	s config	ured to 11 at both	
Мар	10 [Et The C	A contract of the center of th	EVC EVC1 EVC2 O + CIR1,2 < 10	tes Pha: d and p d and p ngress Rs ≤ Eg	ed provided that c se 1], Section 7.5. riority tagged Serv PER E Bandwid CIR1 C CIR2 C UNI Speed), (CBS ress UNI Speed)	VC th Profile Pa BS <sub>1</sub> EIR <sub>1</sub>	ramete EBS <sub>1</sub> EBS <sub>2</sub>	ured to 11 at both	
Мар	10 [Et The C	Note 1: (C Note 3: (E	EVC EVC EVC EVC EVC2 0 < CIR <sub>1,2</sub> < II Σ Ingress CIF	tes Pha: d and p d and p ngress Rs ≤ Eg	ed provided that c se 1], Section 7.5. riority tagged Serv PER E Bandwid CIR1 C CIR2 C UNI Speed), (CBS ress UNI Speed)	VC th Profile Pa BS <sub>1</sub> EIR <sub>1</sub>	ramete EBS <sub>1</sub> EBS <sub>2</sub>	ured to 11 at both	
Map Bandwidth Profile Service	10 [Et The C egres	Note 1: (C Note 2: (2 Note 3: (E Note 3: (E Note 3: (E	VLAN IDs is vices Attribut o for untagge EVC EVC1 EVC2 0 < CIR <sub>1,2</sub> < II Σ Ingress CIF EIR <sub>1,2</sub> = 0) ar	tes Pha: d and p d and p ngress Rs ≤ Eg nd (EBS	ed provided that c se 1], Section 7.5. riority tagged Serv PER E Bandwid CIR1 C CIR2 C UNI Speed), (CBS ress UNI Speed)	onfiguration o 1 ice Frames is VC th Profile Pa BS <sub>1</sub> EIR <sub>1</sub> BS <sub>2</sub> EIR <sub>2</sub> 1,2 ≥ maximur directionally a	ramete EBS1 EBS2 m Servi	ured to 11 at both rs ce Frame size) UNI configured in t	ingress and
Map Bandwidth Profile Service Performance	10 [Et The C egres Not Specifi Tester offe verifies tha	Note 1: (C Note 2: (2 Note 3: (E Note 3: (E Note 3: (E	VLAN IDs is vices Attribut o for untagge EVC EVC1 EVC2 0 < CIR <sub>1,2</sub> < II Σ Ingress CIF EIR <sub>1,2</sub> = 0) ar Frames with sponding Ser	tes Pha: d and p d and p ngress Rs ≤ Eg nd (EBS	ed provided that c se 1], Section 7.5. riority tagged Serv PER E Bandwid CIR <sub>1</sub> C CIR <sub>2</sub> C UNI Speed), (CBS ress UNI Speed) S <sub>1,2</sub> = 0)	onfiguration o 1 ice Frames is VC th Profile Pa BS <sub>1</sub> EIR <sub>1</sub> BS <sub>2</sub> EIR <sub>2</sub> 1,2 ≥ maximur directionally a	ramete EBS1 EBS2 m Servi	ured to 11 at both rs ce Frame size) UNI configured in t	ingress and
Map Bandwidth Profile Service Performance Test Procedure	10 [Et The C egres Not Specifi Tester offe verifies tha Number of	f other CE- thernet Sen CE-VLAN IC s UNIs Note 1: (C Note 2: (2 Note 3: (E ied rs Service I t the corres valid Servio	EVC EVC EVC EVC EVC EVC C C C C C C C C C C C C C	ngress Rs ≤ Eg nd (EBS	ed provided that c se 1], Section 7.5. riority tagged Serv PER E Bandwid CIR <sub>1</sub> C CIR <sub>2</sub> C UNI Speed), (CBS ress UNI Speed) S <sub>1,2</sub> = 0)	onfiguration o 1 ice Frames is VC th Profile Pa BS <sub>1</sub> EIR <sub>1</sub> BS <sub>2</sub> EIR <sub>2</sub> 1,2 ≥ maximur directionally a ully delivered	ramete EBS1 EBS2 m Servi	ured to 11 at both rs ce Frame size) UNI configured in t proper EVC at the	ingress and
Map Bandwidth Profile Service Performance Test Procedure Units	10 [Et The C egres Not Specifi Tester offe verifies tha Number of Number of	f other CE- thernet Sen CE-VLAN IC s UNIs Note 1: (C Note 2: (2 Note 3: (E ied rs Service I t the corres valid Servi UNIs, num	EVC EVC EVC EVC EVC EVC C C C C C C C C C C C C C	ngress Rs ≤ Eg nd (EBS	ed provided that cr se 1], Section 7.5. riority tagged Serv PER E Bandwid CIR <sub>1</sub> Cl CIR <sub>2</sub> C UNI Speed), (CBS ress UNI Speed) S <sub>1,2</sub> = 0)	onfiguration o 1 ice Frames is VC th Profile Pa BS <sub>1</sub> EIR <sub>1</sub> BS <sub>2</sub> EIR <sub>2</sub> 1,2 ≥ maximur directionally a ully delivered	ramete EBS1 EBS2 m Servi	ured to 11 at both rs ce Frame size) UNI configured in t proper EVC at the	ingress and



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

Test Definition ID     U1.       Reference     ME       Document     Cor       Test Type     Cor       Test Status     Opt       A T     table	6.2.1-24 F 13 [User Networ	ce Multiplexing - Mir	imum Number of E	EVCs				
Test Definition ID     U1.       Reference     ME       Document     Cor       Test Type     Cor       Test Status     Opt       A T     table	6.2.1-24 F 13 [User Networ	g						
Document     ME       Test Type     Cor       Test Status     Opt       A T       Requirement     tabl	•							
Document       Test Type     Cor       Test Status     Opt       A T     Table       Requirement     table	•							
Test Status         Opt           A T         Table	1	k interface (UNI) Ty	pe 1 implementatio	on Agreementj				
Requirement A T tabl	nformance							
Requirement tabl	ional							
	ype 1.2 UNI-N <b>SH</b>	OULD at least be at	ole to support a mir	nimum number of	f EVCs as describe	d in the following		
	-							
Description		nk Speed Number of EVCs	10/100 Mbps 8	64 64	•			
Vor						uirement description		
	le above	2 UNI-N can suppor	t a minimum numi		described in the red	juirement description		
		ach one associating	a given Type 1.2	ingress UNI and	at least one other T	ype 1.2 UNI are		
Configuration	figured and at leas	st one CE-VLAN ID i	s mapped per EVC	C. Per EVC band	dwidth profiles are a	pplied at all UNIs.		
Tes	ters with proper P	HY that matches ea	ch UNI are attache	d to all UNIs in th	ne configured EVCs			
	UNI 'A	·	UNI 'E	3'	UN	II 'C'		
	CE-VLAN ID	EVC	CE-VLAN ID	EVC	CE-VLAN ID	EVC		
	1	EVC <sub>1</sub>			1	EVC <sub>1</sub>		
	2	EVC <sub>2</sub>			2	EVC <sub>2</sub>		
	3	EVC <sub>3</sub>			3	EVC <sub>3</sub>		
	4	EVC <sub>4</sub>			4	EVC <sub>4</sub>		
CE-VLAN ID/EVC	5	EVC <sub>5</sub>	5	EVC <sub>5</sub>				
Мар	6	EVC <sub>6</sub>	6	EVC <sub>6</sub>				
	7	EVC <sub>7</sub>	7	EVC <sub>7</sub>				
	8	EVC <sub>8</sub>	8	EVC <sub>8</sub>				
	This mapping ap	vices Attributes Pha plies for 10/100 Mbp 0Gbps UNI speeds	s UNI speeds. Th	ne same mappind	g principles should b /Cs	be applied for		
			PER E	VC				
	-	EVC	Bandwidth F	Profile Paramete	ers			
		EVC <sub>1</sub>						
		EVC <sub>2</sub>	CIR <sub>2</sub> CBS <sub>2</sub>					
Bandwidth Profile								
		· .						
	EVC <sub>8</sub> CIR <sub>8</sub> CBS <sub>8</sub> EIR <sub>8</sub> EBS <sub>8</sub>							
	Note 2: (Σ In	$CIR_{1,2,3,4,5,6,7,8} < Ingregers CIRs \le Egress_{1,2,3,4,5,6,7,8} = 0$ and (I	s UNI Speed)	CBS <sub>1,2,3,4,5,6,7,8</sub> ≥ n	naximum Service Fr	ame size)		
Service Performance Not	Specified							
		Frames with mapped sponding Service Fra				in the EVCs and		
Units Nur	nber of valid Servi	ce Frames						
Variables	Is interface speed,	number of UNIs, nu IR4, CBS4, CIR5, CE				CIR <sub>1</sub> , CBS <sub>1</sub> , CIR <sub>2</sub> ,		
CBS		, -,	÷1					
CB	s or fail							

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

		ABSTRACT	TEST SUITE	FOR UN	I TYPE 1		
Test Name	Type 1.2 L	JNI-N Minimum Number of C	CE-VLAN Ids				
Test Definition ID	U1.6.2.2-2	5.1					
Reference Document	MEF 13 [U	lser Network Interface (UNI)	Type 1 Impler	mentation A	greement]		
Test Type	Conformar	nce					
Test Status	Optional						
Requirement	A Type 1.2 following ta	2 UNI-N <b>SHOULD</b> be able to able	support at lea	ist a minimi	um number of CE-VLAN	IDs as described ir	n the
Description		Link Speed	10/10	0 Mbps	1 Gbps	10 Gbps	
		Minimum Number of CE-VLAN IDs		8	64	512	
Test Object		t a Type 1.2 UNI-N can a nt description table above	at least suppo	ort a minim	um number of CE-VL	AN IDs as describ	ed in the
Test Configuration	per Ingres	associating two Type 1.2 UN s UNI bandwidth profile is an b both UNIs in the configured	oplied at both l				
CE-VLAN ID/EVC Map		UNI 'A' CE-VLAN ID 11, 12, 13, 14, 15, 16, 17, 18 Use of other CE-VLAN ID conforms to MEF 10 [Ether This mapping applies for be applied for the 1Gbps VLAN IDs	ernet Services 10/100 Mbps l	Attributes F	Phase 1], Section 7.5.1	EVC EVC1 CE-VLAN IDs	
			PFF				
		UNI			Bandwidth Profile Para	ameters	
Bandwidth Profile		UNI			CIR CBS EIR	EBS	
		Note 1: $(0 < CIR < Ingress)$ Note 2: $(Ingress CIR \le Eq)$ Note 3: $(EIR = 0)$ and $(EE)$	gress UNI Spe		aximum Service Frame	size)	
Service Performance	Not Specif	ied					
Test Procedure		ers Service Frames with map at the corresponding Service				nfigured in the EVC	and
		valid Service Frames					
Units	Number of						
Units Variables		face speed, number of mapp	ed CE-VLAN	IDs, Bandw	idth Profile Parameters	CIR, CBS	
		ace speed, number of mapp	bed CE-VLAN	IDs, Bandw	idth Profile Parameters	CIR, CBS	



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

		ABSTRACT TES	T SUITE FOR UN	II TYPE 1	
Test Name	Type 1.2 U	NI-N CE-VLAN ID Range			
Test Definition ID	U1.6.2.2-2	5.2			
Reference Document	MEF 13 [U	ser Network Interface (UNI) Type	e 1 Implementation	Agreement]	
Test Type	Conforman	ce			
Test Status	Optional				
Requirement Description	A Type 1.2 the range c	UNI-N should be able to support of 1-4095	t a minimum numbe	er of CE-VLAN IDs that <b>SHOU</b>	JLD be configurable in
Test Object	Verify that	a Type 1.2 UNI-N can at support	a minimum number	r of CE-VLAN IDs configurab	le in the range of 1-4095
Test Configuration	per Ingress	associating two Type 1.2 UNIs is UNI bandwidth profile is applied both UNIs in the configured EV	at both UNIs. Test		
		UNI 'A'		UNI 'B'	
		CE-VLAN ID	EVC	CE-VLAN ID	EVC
CE-VLAN ID/EVC		1, 56, 212, 1087, 1460, 2228, 3999, 4095	EVC1	1, 56, 212, 1087, 1460, 2228, 3999, 4095	EVC <sub>1</sub>
Мар		Use of other CE-VLAN IDs is p conforms to MEF 10 [Ethernet			LAN IDs
		This mapping applies for 10/10 be applied for the 1Gbps and 1 VLAN IDs, including VLAN IDs	OGbps UNI speeds		
			PER INGRES	SUNI	
		UNI		Bandwidth Profile Paramet	ors
Bandwidth Profile		UNI		CIR CBS EIR EB	
		Note 1: (0 < CIR < Ingress UN Note 2: (Ingress CIR ≤ Egress Note 3: (EIR = 0) and (EBS = 0	UNI Speed)		
Service Performance	Not Specifi	ed			
Test Procedure		rs Service Frames with mapped of the corresponding Service Fran			ired in the EVC and
Units	Number of	valid Service Frames			
Variables	UNIs interfa	ace speed, number of mapped C	E-VLAN IDs, Bandy	width Profile Parameters CIR	, CBS
Results	Doop or foi	1			
Results	Pass or fail				



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

			CT TEST SUITE	FOR UN	TYPE 1		
Test Name Test Definition ID		NI-N Configurable CE-V	LAN ID/EVC Map				
Reference	U1.6.1.3-26						
Document	MEF 13 [U	ser Network Interface (U	INI) Type 1 Implen	nentation A	greement]		
Test Type	Conforman	ce					
Test Status	Mandatory						
Requirement Description	A Type 1.2	UNI-N MUST have a co	onfigurable CE-VL/	AN ID/EVC	mapping table		
Test Object	Verify that	a Type 1.2 UNI-N can ha	ave a configurable	CE-VLAN	ID/EVC mapping table		
Test Configuration	two differer	associating two Type 1.2 nt mapping configuration h proper PHY that matcl	is are required. A	per Ingress	UNI bandwidth profile	is applied at both UNIs.	
		UNI 'A'			UNI 'B'		
		CE-VLAN ID	EVC		CE-VLAN ID	EVC	
CE-VLAN ID/EVC		11*	EVC <sub>1</sub>		11*	EVC <sub>1</sub>	
Map Configuration 1		Use of other CE-VLAN conforms to MEF 10 [8	IDs is permitted p		at configuration of the C	CE-VLAN IDs	
		-	intagged and prior		Service Frames is confi	gured to 11 at	
		both ingress and egres	SS UNIS				
		UNI 'A	,	UNI 'B'			
<b>CE-VLAN ID/EVC</b>		CE-VLAN ID	EVC		CE-VLAN ID	EVC	
Map		12	EVC <sub>1</sub>		12	EVC <sub>1</sub>	
Configuration 2		Use of other CE-VLAN conforms to MEF 10 [E			at configuration of the C Phase 1], Section 7.5.1	CE-VLAN IDs	
Configuration 2						CE-VLAN IDs	
Configuration 2			Ethernet Services		Phase 1], Section 7.5.1	CE-VLAN IDs	
Configuration 2			Ethernet Services	Attributes F	Phase 1], Section 7.5.1		
Configuration 2		conforms to MEF 10 [	Ethernet Services	Attributes F	Phase 1], Section 7.5.1		
		conforms to MEF 10 [I	Ethernet Services PER gress UNI Speed), ≤ Egress UNI Speed),	Attributes F INGRESS E (CBS ≥ ma	Phase 1], Section 7.5.1 UNI Bandwidth Profile Para	ameters EBS	
	Not Specifi	Conforms to MEF 10 [I UNI UNI Note 1: (0 < CIR < Ing Note 2: (Ingress CIR = Note 3: (EIR = 0) and	Ethernet Services PER gress UNI Speed), ≤ Egress UNI Speed),	Attributes F INGRESS E (CBS ≥ ma	Phase 1], Section 7.5.1 UNI Sandwidth Profile Para CIR CBS EIR	ameters EBS	
Bandwidth Profile	Tester offer the EVC as are delivered Change the Tester offer the EVC as	Conforms to MEF 10 [I UNI UNI Note 1: (0 < CIR < Ing Note 2: (Ingress CIR = Note 3: (EIR = 0) and	Ethernet Services PER PER gress UNI Speed), ≤ Egress UNI Speed (EBS = 0) mapped and unma VC map 1 and ver unmapped CE-VI -VLAN ID/EVC ma mapped and unma VC map 2 and ver	Attributes F INGRESS (CBS ≥ ma (CBS ) (CBS	Phase 1], Section 7.5.1         UNI         Bandwidth Profile Para         CIR       CBS         EIR         aximum Service Frame         'LAN IDs bidirectionally         e Service Frames with 1         e not delivered at the aximum Service Frames with 1         'LAN IDs bidirectionally         Service Frames with 1	ameters EBS size) size) sociated UNI configured the mapped CE-VLAN II ssociated UNI. r at each UNI configured the mapped CE-VLAN II	
Bandwidth Profile Service Performance	Tester offer the EVC as are delivered Change the Tester offer the EVC as are delivered	Conforms to MEF 10 [I         UNI         UNI         UNI         UNI         Note 1: (0 < CIR < Ing         Note 2: (Ingress CIR          Note 2: (Ingress CIR          Note 3: (EIR = 0) and         ed         rs Service Frames with resper the CE-VLAN ID/E*         ed and the ones with the example configuration to the CE         rs Service Frames with resper the CE-VLAN ID/E*         eper the CE-VLAN ID/E*	Ethernet Services PER PER gress UNI Speed), ≤ Egress UNI Speed (EBS = 0) mapped and unma VC map 1 and ver unmapped CE-VI -VLAN ID/EVC ma mapped and unma VC map 2 and ver	Attributes F INGRESS (CBS ≥ ma (CBS ) (CBS	Phase 1], Section 7.5.1         UNI         Bandwidth Profile Para         CIR       CBS         EIR         aximum Service Frame         'LAN IDs bidirectionally         e Service Frames with 1         e not delivered at the aximum Service Frames with 1         'LAN IDs bidirectionally         Service Frames with 1	ameters EBS size) size) sociated UNI configured the mapped CE-VLAN II ssociated UNI. r at each UNI configured the mapped CE-VLAN II	
Bandwidth Profile Service Performance Test Procedure	Tester offe the EVC as are delivere Change the Tester offe the EVC as are delivere Number of	UNI UNI UNI Note 1: (0 < CIR < Ing Note 2: (Ingress CIR s Note 3: (EIR = 0) and ed rs Service Frames with re a per the CE-VLAN ID/E <sup>1</sup> ed and the ones with the s per the CE-VLAN ID/E <sup>1</sup> ed and the ones with the s per the CE-VLAN ID/E <sup>1</sup> ed and the ones with the	Ethernet Services PER PER gress UNI Speed), ≤ Egress UNI Speed), ≤ Egress UNI Speed), ≤ Egress UNI Speed), ≤ Egress UNI Speed), ≤ UNI Speed),	Attributes F INGRESS (CBS ≥ ma (CBS ) (CBS	Phase 1], Section 7.5.1         UNI         Bandwidth Profile Para         CIR       CBS         CIR       CBS         aximum Service Frame         'LAN IDs bidirectionally         e Service Frames with         e not delivered at the aximum         'LAN IDs bidirectionally         e Service Frames with         e not delivered at the aximum	ameters EBS size) size) at each UNI configured the mapped CE-VLAN II ssociated UNI. the mapped CE-VLAN II ssociated egress UNI	
Bandwidth Profile Service Performance Test Procedure Units	Tester offe the EVC as are delivere Change the Tester offe the EVC as are delivere Number of	conforms to MEF 10 [I         UNI         UNI         UNI         Note 1: (0 < CIR < Ing	Ethernet Services PER PER gress UNI Speed), ≤ Egress UNI Speed), ≤ Egress UNI Speed), ≤ Egress UNI Speed), ≤ Egress UNI Speed), ≤ UNI Speed),	Attributes F INGRESS (CBS ≥ ma (CBS ) (CBS	Phase 1], Section 7.5.1         UNI         Bandwidth Profile Para         CIR       CBS         CIR       CBS         aximum Service Frame         'LAN IDs bidirectionally         e Service Frames with         e not delivered at the aximum         'LAN IDs bidirectionally         e Service Frames with         e not delivered at the aximum	ameters EBS size) size) at each UNI configured the mapped CE-VLAN II ssociated UNI. the mapped CE-VLAN II ssociated egress UNI	



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

		ABSTRA	CT TEST SUITE	FOR UNI	TYPE 1				
Test Name	Type 1.2 U	NI-N CE-VLAN ID/EVC	Map Service Frar	ne Discard					
Test Definition ID	U1.6.1.3-27	7							
Reference Document	MEF 13 [U	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]							
Test Type	Conforman	се							
Test Status	Mandatory								
Requirement Description	A Type 1.2	UNI-N <b>MUST</b> be able to	o drop the frames	if a match ir	n the CE-VLAN I	D/EVC	map table cannot	be found	
Test Object	Verify that a	a Type 1.2 UNI-N can d	rop the frames if a	match in th	e CE-VLAN ID/I	EVC ma	ap table cannot be	found	
Test Configuration	Ingress UN	ssociating two Type 1.2 I bandwidth profile is ap n the configured EVC							
		INGRESS U	JNI 'A'		EGI	RESSI	JNI 'B'		
		CE-VLAN ID	EVC		CE-VLAN	ID	EVC		
<b>CE-VLAN ID/EVC</b>		11*	EVC₁		11*		EVC1	=	
Мар		Use of other CE-VLAN conforms to MEF 10 [					E-VLAN IDs		
		The CE-VLAN ID for u both ingress and egre		rity tagged S	Service Frames i	s confi	gured to 11 at		
			PEI		UNI				
		UNI		B	andwidth Profi	ile Para	ameters		
Bandwidth Profile		UNIA		С	IR <sub>A</sub> CBS <sub>A</sub>	EIRA	EBS <sub>A</sub>		
		Note 1: $(0 < CIR_A < Ir$ Note 2: (Ingress CIR : Note 3: (EIR_A = 0) an	≤ Egress UNI Spe		maximum Servic	e Fram	ne size)		
Service Performance	Not Specifi	ed							
Test Procedure	and verifies	rs Service Frames with that the Service Frame Ds are not delivered at	es with the mappe	d CE-VLAN					
Units	Number of	valid Service Frames							
Variables	Bandwidth	Profile Parameters CIR	$_{A_{i}}$ CBS $_{A}$ , UNIs int	erface speed	b				
Results	Pass or fail								
Remarks									



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

		ABSTRAC	CT TEST SUITE	FOR UN	I TYPE 1				
Test Name	Type 1.2 U	NI-N All-to-One Bundling	g						
Test Definition ID	U1.6.2.4-28	U1.6.2.4-28							
Reference Document	MEF 13 [U	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]							
Test Type	Conforman	ce							
Test Status	Mandatory								
Requirement Description	A Type 1.2	UNI-N MUST be able to	o support All-to-on	e bundling					
Test Object		a Type 1.2 UNI-N can su							
Test Configuration	Ingress UN		plied at both UNIs			re mapped to the EVC. A atches each UNI are attac			
		UNI 'A' UNI 'B'							
CE-VLAN ID/EVC Map		CE-VLAN ID EVC CE-VLAN ID EVC							
		All possible values	EVC <sub>1</sub>		All possible values	EVC <sub>1</sub>			
			PER		UNI				
		UNI Bandwidth Profile Parameters							
Bandwidth Profile		UNI			Bandwidth Profile Para	ameters EBS			
Bandwidth Profile		UNI	≤ Egress UNI Spe	(CBS ≥ m		EBS			
Bandwidth Profile	Not Specifi	UNI Note 1: (0 < CIR < Ing Note 2: (Ingress CIR = Note 3: (EIR = 0) and	≤ Egress UNI Spe	(CBS ≥ m	CIR CBS EIR	EBS			
Service	Tester offer Service bid	UNI Note 1: (0 < CIR < Ing Note 2: (Ingress CIR = Note 3: (EIR = 0) and ed	Egress UNI Spect (EBS = 0) es with VLAN IDs= configured in the l	(CBS ≥ m ed) = 1, …, 409 ΞVC and v	CIR CBS EIR aximum Service Frame 5, untagged Service Fra	EBS			
Service Performance	Tester offer Service bid delivered a	UNI Note 1: (0 < CIR < Ing Note 2: (Ingress CIR = Note 3: (EIR = 0) and ed rs tagged Service Frame lirectionally at each UNI	Egress UNI Spect (EBS = 0) es with VLAN IDs= configured in the l	(CBS ≥ m ed) = 1, …, 409 ΞVC and v	CIR CBS EIR aximum Service Frame 5, untagged Service Fra	EBS size)			
Service Performance Test Procedure	Tester offer Service bid delivered a Number of	UNI Note 1: (0 < CIR < Ing Note 2: (Ingress CIR = Note 3: (EIR = 0) and ed rs tagged Service Frame irrectionally at each UNI t the associated UNI with	Egress UNI Spece (EBS = 0) es with VLAN IDs= configured in the I h CE-VLAN ID pre	(CBS ≥ m. ed) = 1,, 409 EVC and vo servation	CIR CBS EIR aximum Service Frame 5, untagged Service Fra	EBS size)			
Service Performance Test Procedure Units	Tester offer Service bid delivered a Number of	UNI Note 1: (0 < CIR < Ing Note 2: (Ingress CIR ≤ Note 3: (EIR = 0) and ed rs tagged Service Frame lirectionally at each UNI t the associated UNI with valid Service Frames Profile Parameters CIR,	Egress UNI Spece (EBS = 0) es with VLAN IDs= configured in the I h CE-VLAN ID pre	(CBS ≥ m. ed) = 1,, 409 EVC and vo servation	CIR CBS EIR aximum Service Frame 5, untagged Service Fra	EBS size)			



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

		ABSTRAC	CT TEST SUITE	FOR UN	TYPE 1					
Test Name	Type 1.2 U	NI-N Bandwidth Profile	per Ingress UNI							
Test Definition ID	U1.6.2.5-29									
Reference Document	MEF 13 [U	/IEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]								
Test Type	Conforman	ce								
Test Status	Mandatory									
Requirement Description	A Type 1.2	UNI-N MUST be able to	support a per Ing	gress UNI b	andwidth profil	e based	on MEF 10			
Test Object	Verify that	a Type 1.2 UNI-N can si	upport a per Ingre	ss UNI ban	dwidth profile b	based on	MEF 10			
Test Configuration	Ingress UN	associating two Type 1. Il bandwidth profile is ap both UNIs in the config	plied at the ingres							
		INGRESS U	NI 'A'		E	GRESS	UNI 'B'			
		CE-VLAN ID	EVC		CE-VLAN		EVC			
<b>CE-VLAN ID/EVC</b>		11	EVC <sub>1</sub>		11		EVC <sub>1</sub>			
Мар		12	EVC <sub>2</sub>		12		EVC <sub>2</sub>			
		Use of other CE-VLAN conforms to MEF 10 [E	I IDs is permitted Ethernet Services	provided the Attributes F	at configuratior hase 1], Secti	າ of the ( on 7.5.1	CE-VLAN IDs			
			DEI	RINGRESS						
		UNI	PEr		Bandwidth Pro	file Der	amotoro	-		
Bandwidth Profile							EBSA	-		
		Note 1: (0 < CIR <sub>A</sub> < Ir	gress UNI Speed					_		
		Note 2: (Ingress CIR <sub>A</sub>	≤ Egress UNI Sp	eed)						
Service Performance	Not Specifi	ed								
Test Procedure	verifies tha egress UN aggregate falls within falls within falls uthin	rs Service Frames with r t over a time interval <i>T</i> a l. Service Frames are o average rate greater tha the range $X \le (W_G + W_Y)$ $W_G$ is the amount of traff egress UNI $W_Y$ is the amount of traff JNI $X_A = ((CIR_A + EIR_A)^*T +$	t least one Servic ffered at equal av n CIR <sub>A.</sub> Tester al $r > \leq Z$ where: ic accepted as Gi ic accepted as Ye	e Frame of erage rates so verifies t reen over th ellow over th	each CE-VLAI into the config hat the amoun e time interval le time interval	N ID is de jured EV t of traffic <i>T</i> that sh <i>T</i> that m	elivered at the as 'Cs at the ingress c delivered at the hould be delivered hay be delivered t	sociated UNI, at an egress UNI d to the		
Units	Number of	valid Service Frames								
Variables		Profile Parameters CIR, d length $\lambda$ of the offered		S <sub>A</sub> , UNIs in	terface speed,	time inte	erval T, tolerated	variance F,		
Results	Pass or fail	l								



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

		ABSTRAC	CT TEST SUIT	E FOR UNI	TYPE 1					
Test Name	Type 1.2 U	NI-N Bandwidth Profile	per EVC							
Test Definition ID	U1.6.2.5-30	U1.6.2.5-30								
Reference Document	MEF 13 [U	U1.6.2.5-30 MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]								
Test Type	Conforman	ice								
Test Status	Mandatory									
Requirement Description	A Type 1.2	UNI-N MUST be able to	o support a per E	VC bandwid	th profile based on MEF	10				
Test Object	-	a Type 1.2 UNI-N can su								
Test Configuration	EVC bandv	associating two Type 1. width profiles are applied both UNIs in the config	at the ingress U							
		INGRESS U	INI 'A'	1	EGRESS U	JNI 'B'				
		CE-VLAN ID	EVC		CE-VLAN ID	EVC				
<b>CE-VLAN ID/EVC</b>		11	EVC <sub>1</sub>		11	EVC <sub>1</sub>				
Мар		12	EVC <sub>2</sub>	_	12	EVC <sub>2</sub>				
		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								
		EVO		PER EVC	Nefile Devemeters					
		EVC EVC <sub>1</sub>			Profile Parameters EIR1 EBS1					
Bandwidth Profile		EVC <sub>2</sub>		$R_2 CBS_2$						
		Note 1: $(CIR_1 = 0)$ , $(CENote 2: (0 < CIR_2 < IngNote 3: (\Sigma Ingress CIR))$	gress UNI Speed	), (CBS₂ ≥ m	EBS₁ = 0) naximum Service Frame	e size)				
Service Performance	Not Specifi	ed								
	during a tin and measu	rs Service Frames with r ne interval <i>T</i> , at an aggre ires the number of Servi ered at the associated e	egate average ra ce Frames delive	te in excess red at the as	of the sum of the CIRs ssociated egress UNI.	of all the configured For each EVC the an	EVCs			
Test Procedure	e - 1 - 1 - 2	$W_G$ is the amount of traff egress UNI $W_Y$ is the amount of traff JNI $X_1 = ((CIR_1 + EIR_1)^*T + CC)^*$ $X_2 = ((CIR_2 + EIR_2)^*T + CC)^*$	ic accepted as Y $CBS_1 + EBS_1 - F$	ellow over th ) and $Z_1 = (($	the time interval $T$ that m (CIR <sub>1</sub> + EIR <sub>1</sub> )* $T$ + CBS <sub>1</sub>	ay be delivered to th + EBS₁ + F)				
Units		valid Service Frames			•	-				
Units							_			
Variables		Profile Parameters CIR $_{2}$ d length $\lambda$ of the offered		$35_2$ , UNIS IN	terface speed, time inte	rval <i>T</i> , tolerated varia	ance F,			
		d length $\lambda$ of the offered			terface speed, time inte	rval T, tolerated varia	ance F,			



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

			ABSTRAC	T TEST SUITE	FOR UNI	TYPE 1				
Test Name	Type 1.2 U	NI-N Ban	dwidth Profile p	er Class of Serv	ice					
Test Definition ID	U1.6.2.5-3	J1.6.2.5-31.1								
Reference Document	MEF 13 [U	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]								
Test Type	Conforman	onformance								
Test Status	Optional									
Requirement Description	A Type 1.2	UNI-N <b>SI</b>	HOULD be able	to support a pe	r CoS bandv	vidth profile based on N	1EF 10			
Test Object	-				•	profile based on MEF 10				
Test Configuration	of Service Service ap	bandwidth blicable to	profiles are ap	plied at the ingreating at the ingreating at the place of the second sec	ess UNI. Tw	ast one CE-VLAN ID is to CoS Identifiers are us sters with proper PHY t	sed to identify the	Class of		
			INGRESS UN	NI 'A'		EGRESS L	JNI 'B'			
		CE-	VLAN ID	EVC		CE-VLAN ID	EVC			
			11*	EVC <sub>1</sub>		11*	EVC <sub>1</sub>			
CE-VLAN ID/EVC Map						at configuration of the C Phase 1], Section 7.5.1	E-VLAN IDs			
		The CE	-	tagged and prio		Service Frames is config	gured to 11 at			
		DOUTING	liess and egress	5 UNIS						
				PER C	LASS OF S	ERVICE		1		
		EVC	CoS Identifier	CE-VLAN CoS	Bandwidt	h Profile Parameters				
Bandwidth Profile			1	1	CIR <sub>11</sub> CE	SS <sub>11</sub> EIR <sub>11</sub> EBS <sub>11</sub>				
Banuwiulii Frome		EVC <sub>1</sub>	2	7	CIR <sub>12</sub> CE	3S <sub>12</sub> EIR <sub>12</sub> EBS <sub>12</sub>				
		Note 2:	$(0 < CIR_{12} < Ing$	S <sub>11</sub> = 0) and (EI ress UNI Speed s ≤ Egress UNI S	), (CBS <sub>12</sub> ≥	I (EBS 11 = 0) maximum Service Fran	ne size)			
Service Performance	Not Specifi	ed								
	during a tin and measu	ne interva res the nu	I <i>T,</i> at an aggree	gate average rat e Frames delive	e in excess red at the as	th $\lambda$ into the configured of the sum of the CIRs ssociated egress UNI. If the range $X \leq (W_G + W_G)$	of the configured For each CoS ID,	CoS IDs		
Test Procedure	e ۱ ۱	egress UN $W_Y$ is the JNI $C_{11} = ((CII)$	II amount of traffic $R_{11} + EIR_{11})^*T +$	caccepted as Ye CBS <sub>11</sub> + EBS <sub>11</sub>	ellow over th - F) and Z <sub>1</sub>	e time interval $T$ that sh e time interval $T$ that m $T_1 = ((CIR_{11} + EIR_{11})^*T + CIR_{12})^*T + CIR_{$	ay be delivered to CBS <sub>11</sub> + EBS <sub>11</sub> +	the egress - F)		
Units			vice Frames		1 / 4/10/21			• /		
Variables	Bandwidth of the offer			, CBS <sub>12,</sub> EIR <sub>12,</sub> I	EBS <sub>12</sub> , time	interval T, tolerated var	iance F, number a	and length $\lambda$		
Results	Pass or fail		-							
Remarks										
	I									

**MEF 19** 



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

	-		E FOR UNI TYPE 1							
Test Name	Type 1.2 UNI-N Multiple Bandwidt	n 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	ptional									
Requirement Description	Multiple models of bandwidth profile <b>MAY</b> exist at a UNI-N Type 1.2.									
Test Object	Verify that a Type 1.2 UNI-N can s									
Test Configuration	EVC bandwidth profile and a per C	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								
	INGRESS U	JNI 'A'	EGRESS L	INI 'B'						
	CE-VLAN ID	EVC	CE-VLAN ID	EVC						
<b>CE-VLAN ID/EVC</b>	11	EVC <sub>1</sub>	11	EVC <sub>1</sub>						
Мар	12	EVC <sub>2</sub>	12	EVC <sub>2</sub>						
			provided that configuration of the C Attributes Phase 1], Section 7.5.1	E-VLAN IDs						
			PER EVC							
	EVC		Bandwidth Profile Para	meters						
	EVC		CIR <sub>1</sub> CBS <sub>1</sub> EIR <sub>1</sub>	EBS <sub>1</sub>						
	Note 1: $(0 < CIR_1 < ir$	ngress UNI Speed	l), (CBS <sub>1</sub> ≥ maximum Service Fram	e size)						
		Т.	LASS OF SERVICE							
Bandwidth Profile	EVC CoS Identifier	CE-VLAN CoS	Bandwidth Profile Parameters							
	EVC <sub>2</sub> 1	1	$CIR_{21}$ $CBS_{21}$ $EIR_{21}$ $EBS_{21}$							
	2	7	CIR <sub>22</sub> CBS <sub>22</sub> EIR <sub>22</sub> EBS <sub>22</sub>							
	Note 2: $(CIR_{21} = 0)$ , $(CIR_{21} = 0)$	$(BS_{21} = 0)$ and (E)	$R_{21} = 0$ ) and (EBS <sub>21</sub> = 0) ), (CBS <sub>22</sub> ≥ maximum Service Fram							
	Note 4: ( $\sum$ Ingress CIF	Rs < Inaress UNI	Speed)	le size)						
	Note 5: (Σ Ingress CIF									
Service	Not Specified									
Performance										
			N IDs of length $\lambda$ into the configured							
			e in excess of the sum of the CIRs Frames delivered at the associated							
			ered at the associated egress UNI n							
	$X \leq (W_G + W_Y) \leq Z$ where:		ő	0						
	• W <sub>c</sub> is the amount of traf	fic accepted as G	reen over the time interval $T$ that sh	ould be delivered to the						
Test Procedure	egress UNI									
		fic accepted as Ye	ellow over the time interval $T$ that matrix	ay be delivered to the egress						
			) and $Z_1 = ((CIR_1 + EIR_1)^*T + CBS_1)$							
			- F) and $Z_{21} = ((CIR_{21} + EIR_{21})^*T + CIR_{22} + CIR_{22})^*T + CIR_{22} + CIR_{22})^*T + CIR_{22} + CIR_{22})^*T + CIR_{22} + CIR_{22} + CIR_{22} + CIR_{22})^*T + CIR_{22} + CIR_{22} + CIR_{22} + CIR_{22})^*T + CIR_{22} + CIR_{22} + CIR_{22})^*T + CIR_{22} + CIR_{22} + CIR_{22})^*T + CIR_{22} $							
Units	Number of valid Service Frames									
Unito										
Variables			S <sub>1</sub> , CIR <sub>22</sub> , CBS <sub>22</sub> , EIR <sub>22</sub> , EBS <sub>22</sub> , UNI	s interface Speed, time						
	interval T, tolerated variance F, nu	mber and length /	to 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

		ABSTRAC	T TEST SUITE	FOR UNI	TYPE 1				
Test Name	Type 1.2 U	Type 1.2 UNI-N Bandwidth Profile Rate Enforcement when $CIR > 0$ and $EIR = 0$							
Test Definition ID	U1.6.2.5-3	U1.6.2.5-33.1							
Reference Document	MEF 13 [U	ser Network Interface (U	NI) Type 1 Impler	mentation A	greement]				
Test Type	Conforman	ice							
Test Status	Mandatory								
Requirement Description	A Type 1.2	A Type 1.2 UNI-N <b>MUST</b> be able to support color-blind bandwidth profiling to enforce CIR, CBS, EIR and EBS							
Test Object	CIR > 0 an	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	Bandwidth	associating two Type 1.2 Profile where EIR=EBS= / that matches each UNI	=0 and CIR and C	BS are non-	-zero is applied at the	mapped to the EVC ingress UNI. Testers	. One s with		
		INGRESS U	NI 'A'	[	EGRESS	UNI 'B'			
		CE-VLAN ID	EVC		CE-VLAN ID	EVC			
CE-VLAN ID/EVC		11*	EVC <sub>1</sub>		11*	EVC <sub>1</sub>			
Мар		Use of other CE-VLAN conforms to MEF 10 [E	IDs is permitted Thernet Services	provided that Attributes P	at configuration of the ( hase 1], Section 7.5.1	CE-VLAN IDs			
		The CE-VLAN ID for u both ingress and egres		ity tagged S	Service Frames is confi	igured to 11 at			
			PER		UNI				
		UNI		В	andwidth Profile Par	ameters			
Bandwidth Profile		UNIA		С	IR <sub>A</sub> CBS <sub>A</sub> EIR <sub>A</sub>	EBS <sub>A</sub>			
		Note 1: $(0 < CIR_A < In$ Note 2: $(Ingress CIR_A$ Note 3: $(EIR_A = 0)$ and	≤ Egress UNI Sp		naximum Service Fran	ne size)			
Service Performance	Not Specifi	ed							
Test Procedure	ingress UN UNI. The a	rs Service Frames with r Il during a time interval 7 amount of traffic delivered the amount of traffic acc	and measures the associate	e number o d egress Ul	f Service Frames deliv NI must fall within the r	rered at the associate ange $X \leq W_G \leq Z$ where $X \leq X$ where $X$	ed egress iere:		
	-	$(CIR_A * T + CBS_A - F)$ and	$dZ_A = (CIR_A * T + C)$	CBS <sub>A</sub> + F)					
Units	Number of	valid Service Frames							
				rfood anoo		ated variance E num	ber and		
Variables		Profile Parameters CIR <sub>A</sub> the offered Service Fram		enace speed	a, time interval 7, tolera				
Variables Results		the offered Service Fram			a, time interval 7, tolera				

MEF 19

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

		ABSTRAC	T TEST SUITE	FOR UNI	TYPE 1					
Test Name	Type 1.2 U	Type 1.2 UNI-N Bandwidth Profile Rate Enforcement when CIR = 0 and EIR > 0								
Test Definition ID	U1.6.2.5-33	U1.6.2.5-33.2								
Reference Document	MEF 13 [U	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]								
Test Type	Conforman	ce								
Test Status	Mandatory	fandatory								
Requirement Description	A Type 1.2	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	Bandwidth	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								
		INGRESS U	NI 'Λ'	Γ	EGPES	S UNI 'B'				
		CE-VLAN ID	EVC	-	CE-VLAN ID	EVC				
CE-VLAN ID/EVC		11*	EVC <sub>1</sub>		11*	EVC <sub>1</sub>				
Мар		Use of other CE-VLAN conforms to MEF 10 [E								
		The CE-VLAN ID for u both ingress and egree		ty tagged S	ervice Frames is co	onfigured to 11 at				
			PER	INGRESS	UNI					
		UNI		В	andwidth Profile F	Parameters				
Bandwidth Profile		UNIA		CI	R <sub>A</sub> CBS <sub>A</sub> Ell	R <sub>A</sub> EBS <sub>A</sub>				
		Note 1: $(CIR_A = 0)$ and Note 2: $(0 < EIR_A < In$ Note 3: $(Ingress EIR_A)$	gress UNI Speed)	, (EBS <sub>A</sub> ≥ n eed)	naximum Service F	rame size)				
Service Performance	Not Specifi	ed								
	ingress UN		and measures the	e number of	Service Frames de	elivered at associated e	egress			
Test Procedure		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 $X \le W_Y \le Z$ where: $W_Y$ is the amount of traffic accepted as Yellow over the time interval T that may be delivered to the egress UNI								
	$\cdot X_A = ($	• $X_A = (EIR_A * T + EBS_A - F)$ and $Z_A = (EIR_A * T + EBS_A + F)$								
Units			$TZ_A = (EIR_A T + E)$	Number of valid Service Frames Bandwidth Profile Parameters EIR <sub>A</sub> , EBS <sub>A</sub> , UNIs interface speed, time interval <i>T</i> , tolerated variance F, number and						
Units Variables	Number of Bandwidth	valid Service Frames	, EBS <sub>A</sub> , UNIs inte		, time interval <i>T</i> , tol	erated variance F, nur	nber and			
	Number of Bandwidth	valid Service Frames Profile Parameters EIR the offered Service Fran	, EBS <sub>A</sub> , UNIs inte		, time interval <i>T</i> , tol	erated variance F, nur	nber and			

MEF 19



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

		ABSTRA			TYPE 1					
Test Name	Type 1.2 U	NI-N Bandwidth Profile	Rate Enforcemen	t when CIR	> 0 and EIR > 0					
Test Definition ID		1.6.2.5-33.3								
Reference		EF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]								
Document		ser network interface (C	nni) Type Timpie	mentation P	greementj					
Test Type	Conforman	ce								
Test Status	Mandatory									
Requirement Description	A Type 1.2	UNI-N MUST be able to	o support color-bli	nd bandwid	th profiling to enforce C	IR, CBS, EIR and	EBS			
Test Object	Verify that CIR > 0 and	a Type 1.2 UNI-N can d EIR > 0	support color-blin	d bandwidt	h profiling to enforce C	IR, CBS, EIR and	I EBS when			
Test Configuration	Bandwidth	associating two Type 1.2 Profile where CIR, CBS natches each UNI are at	, EIR and EBS ar	e non-zero	is applied at the ingress	mapped to the EV UNI. Testers with	'C. One h proper			
		INGRESS U	JNI 'A'	]	EGRESS L	JNI 'B'	1			
		CE-VLAN ID	EVC		CE-VLAN ID	EVC				
<b>CE-VLAN ID/EVC</b>		11*	EVC <sub>1</sub>		11*	EVC <sub>1</sub>				
Мар		Use of other CE-VLAN conforms to MEF 10 [	NIDs is permitted Ethernet Services	provided th Attributes F	at configuration of the C Phase 1], Section 7.5.1	E-VLAN IDs				
		The CE-VLAN ID for ι both ingress and egre		rity tagged s	Service Frames is config	gured to 11 at				
			PE	RINGRESS	UNI					
		UNI			Bandwidth Profile Para					
Bandwidth Profile					CIRA CBSA EIRA	EBSA				
					maximum Service Fram maximum Service Fram					
		Note 3: (CIR <sub>A</sub> + EIR <sub>A</sub>	< Ingress UNI Sp	eed)		0 0120)				
		Note 4: (Σ Ingress CIF	Rs + EIRs ≤ Egre	ss UNI Spee	ed)		]			
Service Performance	Not Specifi	ed								
	Tester offe	rs Service Frames with	mapped CE-VLAN	IDs of lend	gth $\lambda$ at an average rate	greater than CIR.	+ EIR <sub>A</sub> to			
	the ingress	UNI during a time interv	val T and measure	es the numb	er of Service Frames d	elivered at the ass	sociated			
	0	I. The amount of traffic $W_{\rm Y}$ ) $\leq Z$ where:	delivered at the a	ssociated e	gress UNI must fall with	in the range				
Test Procedure		the amount of traffic ac	cepted as Green	over the tim	e interval <i>T</i> that should	be delivered to the	e earess			
	UNI						-			
		the amount of traffic action $(CIR_A + EIR_A)^*T + CBS$	•				egress UNI			
Units	Number of	valid Service Frames								
Variables		Profile Parameters CIR d length $\lambda$ of the offered		3S <sub>A</sub> , UNIs ir	nterface speed, time inte	erval <i>T</i> , tolerated v	ariance F,			
Results	Pass or fail									
Remarks										
	1									



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

		ABSTRA	CT TEST SUITE	FOR UNI	TYPE 1				
Test Name	Type 1.2 U	INI-N Mandatory CIR C	onfiguration Granu	larity					
Test Definition ID		1.6.2.5-34.1							
Reference Document	MEF 13 [U	ser Network Interface (	UNI) Type 1 Imple	mentation A	greement]				
Test Type	Conforman	nce							
Test Status	Mandatory								
Requirement Description		<ul> <li>Type 1.2 UNI-N MUST allow configuration to modify CIR in the following granularities</li> <li>1 Mbps steps up to 10 Mbps [CIR range 1]</li> <li>5 Mbps steps beyond 10 Mbps and up to 100 Mbps [CIR range 2]</li> <li>50 Mbps steps beyond 100 Mbps and up to 1 Gbps [CIR range 3]</li> <li>500 Mbps steps beyond 1 Gbps [CIR range 4]</li> </ul>							
Test Object		a Type 1.2 UNI-N allo section above	ows configuration	to modify C	IR in the granularities	described in the r	equirement		
Test Configuration	One EVC a Bandwidth	associating two Type 1. Profile is applied at the in the configured EVC							
		INGRESS	UNI 'A'	]	EGRESS	UNI 'B'	1		
		CE-VLAN ID	EVC		CE-VLAN ID	EVC	1		
<b>CE-VLAN ID/EVC</b>		11*	EVC <sub>1</sub>		11*	EVC <sub>1</sub>	1		
Мар					at configuration of the Phase 1], Section 7.5.1	CE-VLAN IDs	1		
		The CE-VLAN ID for both ingress and egre		rity tagged S	Service Frames is conf	igured to 11 at			
			PEF		UNI				
		UNI	l	E	Bandwidth Profile Par	ameters			
Bandwidth Profile		UNI			IR <sub>A</sub> CBS <sub>A</sub> EIR <sub>A</sub>				
		Note 1: (0 < CIR <sub>A</sub> < 1 Note 2: (Ingress CIR Note 3: (EIR <sub>A</sub> = 0) ar	<sub>A</sub> ≤ Egress UNI Sp		maximum Service Frar	ne size)			
Service Performance	Not Specifi	ed							
	ingress UN	rs Service Frames with Il during a time interval amount of traffic deliver	T and measures th	ne number o	of Service Frames deliv	vered at the association	ted egress		
		the amount of traffic a		-		-			
Test Procedure	UNI	$(CIR_A * T + CBS_A - F)$ and					, ogioco		
	Begin the to CIR range.	est with CIR <sub>A</sub> set to the	e minimum value (i.	e. 1 Mbps)	and increment $CIR_A$ by	<i>i</i> the step value defi	ned for the		
	Repeat the	e test for each CIR <sub>A</sub> value	ue until CIR <sub>A</sub> has b	een increm	ented to the UNI speed	d			
Units	Number of	valid Service Frames							
Variables		Profile Parameters CIF the offered Service Fra		erface spee	d, time interval <i>T</i> , tolera	ated variance F, nur	nber and		
Results	Pass or fail	I							
Remarks									
	I								



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

		ABSTRAC	T TEST SUITE	FOR UNI	<b>TYPE 1</b>					
Test Name		Type 1.2 UNI-N Mandatory EIR Configuration Granularity								
Test Definition ID Reference		J1.6.2.5-34.2								
Document	MEF 13 [Us	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]								
Test Type	Conformanc	Conformance								
Test Status	Mandatory	Mandatory								
Requirement Description	•	<ul> <li>A Type 1.2 UNI-N MUST allow configuration to modify EIR in the following granularities</li> <li>1 Mbps steps up to 10 Mbps [EIR range 1]</li> <li>5 Mbps steps beyond 10 Mbps and up to 100 Mbps [EIR range 2]</li> <li>50 Mbps steps beyond 100 Mbps and up to 1 Gbps [EIR range 3]</li> <li>500 Mbps steps beyond 1 Gbps [EIR range 4]</li> </ul>								
Test Object		/erify that a Type 1.2 UNI-N allows configuration to modify EIR in the granularities described in the requirement description section above								
Test Configuration	Bandwidth F	ssociating two Type 1.2 Profile is applied at the in the configured EVC								
		INGRESS U	NI 'A'		EC	RESS U	INI 'B'			
	-	CE-VLAN ID	EVC		CE-VLAN		EVC			
CE-VLAN ID/EVC	-	11*	EVC <sub>1</sub>		11*		EVC <sub>1</sub>	-		
Мар	F	Use of other CE-VLAN conforms to MEF 10 [E					E-VLAN IDs			
	Ē	The CE-VLAN ID for u both ingress and egres		ity tagged Se	ervice Frames	s is config	gured to 11 at			
	[		PER	INGRESS I	JNI			]		
	-	UNI			andwidth Pro	file Para	meters	-		
Bandwidth Profile	e	UNIA		CI		EIRA	EBSA	-		
		Note 1: $(CIR_A = 0)$ and Note 2: $(0 < EIR_A < In$ Note 3: $(Ingress EIR_A)$	gress UNI Speed	), (EBS <sub>A</sub> ≥ m						
Service Performance	Not Specifie	ed								
	ingress UNI UNI. The a	s Service Frames with r during a time interval 7 mount of traffic delivere	and measures th d at the associate	e number of d egress UN	Service Fram I must fall wit	hes delive hin the ra	ered at the associon $W_Y \le Z_Y$	ated egress where:		
Test Procedure		he amount of traffic acc EIR <sub>A</sub> * <i>T</i> + EBS <sub>A</sub> - F) and			interval T that	at may be	e delivered to the	egress UNI		
	Begin the te EIR range.	st with $EIR_A$ set to the r	ninimum value (i.e	e. 1 Mbps) ar	nd increment	EIR <sub>A</sub> by 1	the step value def	fined for the		
			e until EIR <sub>A</sub> has b	een increme	nted to the UN	VI speed				
Units	Number of v	alld Service Frames								
		Repeat the test for each EIR <sub>A</sub> value until EIR <sub>A</sub> has been incremented to the UNI speed           Number of valid Service Frames								
Variables		Profile Parameters EIR he offered Service Fran		rface speed,	time interval	T, tolerat	ed variance F, nu	imber and		
Variables Results				rface speed,	time interval	T, tolerat	ed variance F, nu	imber and		



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

		ABSTRAC	T TEST SUITE	FOR UNI	TYPE 1				
Test Name	Type 1.2 U	NI-N Optional CIR Confi	guration Granula	ity					
Test Definition ID	U1.6.2.5-3	5.1							
Reference Document	MEF 13 [User Network Interface (UNI) Type 1 Implementation Agreement]								
Test Type	Conforman	Conformance							
Test Status	Optional	Optional							
Requirement Description		<ul> <li>A Type 1.2 UNI-N SHOULD allow configuration to modify CIR in the following granularities</li> <li>64 Kbps (DS0 rate) steps up to 1.422 Mbps (VC11 rate) or 1.932 Mbps (VC12 rate) [CIR range 1]</li> <li>1.422 Mbps (VC11 rate) or 1.932 Mbps (VC12 rate) steps up to 50 Mbps [CIR range 2]</li> <li>43.008 Mbps (VC3 rate) steps beyond 50 Mbps and up to 150 Mbps [CIR range 3]</li> <li>133.12 Mbps (VC4 rate) steps beyond 150 Mbps [CIR range 4]</li> </ul>							
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	Bandwidth	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							
		INGRESS U	NI 'A'		EG	RESS U	INI 'B'		
		CE-VLAN ID	EVC		CE-VLAN		EVC		
CE-VLAN ID/EVC		11*	EVC <sub>1</sub>		11*		EVC <sub>1</sub>	-	
Map		Use of other CE-VLAN conforms to MEF 10 [E	IDs is permitted				E-VLAN IDs	=	
		The CE-VLAN ID for un both ingress and egres		ity tagged S	Service Frames	is config	gured to 11 at	]	
			PEF		UNI				
		UNI		В	andwidth Pro	file Para	meters		
Bandwidth Profile		UNIA		С	IR <sub>A</sub> CBS <sub>A</sub>	EIRA	EBS <sub>A</sub>		
		Note 1 : $(0 < CIR_A < Ir$ Note 2 : $(Ingress CIR_A$ Note 3 : $(EIR_A = 0)$ and	≤ Egress UNI Sp		maximum Serv	vice Fram	ne size)		
Service Performance	Not Specifi	ed							
	ingress UN UNI. The a	rs Service Frames with n I during a time interval 7 amount of traffic delivered	and measures the associate	e number o d egress Ul	f Service Fram NI must fall with	es delive hin the ra	ared at the associating $X \leq W_G \leq Z_N$	ated egress where:	
Test Procedure	UNI	the amount of traffic acc $CIR_A^*T + CBS_A - F)$ and			e muerval / tha	a shouid	be delivered to th	e egress	
		est with CIR <sub>A</sub> set to the r			and increment	CIR <sub>A</sub> by	the step value de	fined for	
		test for each CIR <sub>A</sub> value	e until CIR <sub>A</sub> has b	een increme	ented to the UN	II speed			
Units	Number of	valid Service Frames							
Variables		Profile Parameters $CIR_A$ ames, amount of traffic X			l, time interval	T, numbe	er and length $\lambda$ of	the offered	
Results	Pass or fail								



Remarks

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

		ARCTRA	CT TEST SUITE				
		ABSTRAC	51 1251 50112		TTPET		
Test Name		Type 1.2 UNI-N Optional EIR Configuration Granularity					
Test Definition ID	U1.6.2.5-35	5.2					
Reference Document	MEF 13 [U	ser Network Interface (L	JNI) Type 1 Imple	mentation A	greement]		
Test Type	Conforman	се					
Test Status	Optional						
	A Type 1.2	UNI-N SHOULD allow	configuration to m	odify EIR in	the following granularit	ties	
Requirement Description	•	<ul> <li>64 Kbps (DS0 rate) steps up to 1.422 Mbps (VC11 rate) or 1.932 Mbps (VC12 rate) [EIR range 1]</li> <li>1.422 Mbps (VC11 rate) or 1.932 Mbps (VC12 rate) steps up to 50 Mbps [EIR range 2]</li> <li>43.008 Mbps (VC3 rate) steps beyond 50 Mbps and up to 150 Mbps [EIR range 3]</li> <li>133.12 Mbps (VC4 rate) steps beyond 150 Mbps [EIR range 4]</li> </ul>					
Test Object		a Type 1.2 UNI-N allo section above	ws configuration	o modify E	IR in the granularities	described in the I	requirement
Test Configuration	Bandwidth	ssociating two Type 1.2 Profile is applied at the n the configured EVC					
		INGRESS U	JNI 'A'		EGRESS	JNI 'B'	
		CE-VLAN ID	EVC		CE-VLAN ID	EVC	
<b>CE-VLAN ID/EVC</b>		11*	EVC <sub>1</sub>		11*	EVC <sub>1</sub>	
Мар	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						
		•	intagged and prio		Service Frames is confi	gured to 11 at	
		both ingress and egre					
			DEI				
		UNI	r Er	r	Bandwidth Profile Para	amotoro	
Bandwidth Profile						EBSA	
		Note 1: (CIR <sub>A</sub> = 0) an			IR <sub>A</sub> CBS <sub>A</sub> EIR <sub>A</sub>	LDOA	
		Note 2: $(0 < EIR_A < Ir$ Note 3: $(Ingress EIR_A$	ngress UNI Speed	), (EBS <sub>A</sub> ≥ r eed)	naximum Service Fram	ne size)	
Service Performance	Not Specifi	ed					
		rs Service Frames with					
		I during a time interval mount of traffic delivere					
		the amount of traffic ac					
Test Procedure		$EIR_A * T + EBS_A - F)$ and					Egress ONI
	Begin the te the EIR ran	est with EIR <sub>A</sub> set to the ge.	minimum value (i.	e. 64 Kbps)	and increment EIR <sub>A</sub> by	y the step value de	fined for
	Repeat the	test for each EIR <sub>A</sub> valu	e until EIR <sub>A</sub> has b	een increme	ented to the UNI speed		
Units		valid Service Frames					
Variables		Profile Parameters EIR		rface speed	I, time interval <i>T</i> , tolera	ted variance F, nu	mber and



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	ype 1.2 UNI-N CBS Configuration						
Test Definition ID	U1.6.2.5-36.1							
Reference Document	MEF 13 [User Network Interface (I	JNI) Type 1 Impler	nentation A	greement]				
Test Type	Conformance							
Test Status	Mandatory							
Requirement Description	A Type 1.2 UNI-N <b>MUST</b> be able t 8 x 1522 bytes = 12176 bytes	o at least support (	CBS values	that are equal to or g	reater than 8 x MTU =			
Test Object	Verify that a Type 1.2 UNI-N can a 8 x 1522 bytes = 12176 bytes							
Test Configuration	One EVC associating two Type 1.2 Bandwidth Profile is applied at the both UNIs in the configured EVC							
	INGRESS	INI 'A'	ſ	EGRESS	LINI 'B'			
	CE-VLAN ID	EVC		CE-VLAN ID	EVC			
<b>CE-VLAN ID/EVC</b>	11*	EVC <sub>1</sub>		11*	EVC <sub>1</sub>			
Мар	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							
		The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at both ingress and egress UNIs						
	PER INGRESS UNI							
	UNI Bandwidth Profile Parameters							
Bandwidth Profile	UNI <sub>A</sub> CIR <sub>A</sub> CBS <sub>A</sub> EIR <sub>A</sub> EBS <sub>A</sub>							
	UNIACIRACBSAEIRAEBSANote 1: $(0 < CIRA < Ingress UNI Speed)$ , $(CBSA \ge 12176 bytes)$ Note 2: $(Ingress CIRA \le Egress UNI Speed)$ Note 3: $(EIRA = 0)$ and $(EBSA = 0)$							
Service Performance	Not Specified							
	Not Specified Tester offers Service Frames with UNI during a time interval $T$ . At tim measures the number of Service F the associated egress UNI must fa $\cdot W_G$ is the amount of traffic ac	mapped CE-VLAN ne 7/2 tester injects rames delivered a Il within the range	s a burst of the association $X \leq W_G \leq Z$	ingress Service Fram ated egress UNI. The where:	es greater than CBS <sub>A</sub> . Teste amount of traffic delivered a			
Performance	Not Specified Tester offers Service Frames with UNI during a time interval <i>T</i> . At tin measures the number of Service F the associated egress UNI must fa	mapped CE-VLAN ne <i>T</i> /2 tester injects rames delivered a Il within the range scepted as Green c	s a burst of t the associa $X \le W_G \le Z$ over the time	ingress Service Fram ated egress UNI. The where:	es greater than CBS <sub>A</sub> . Teste amount of traffic delivered a			
Performance	Not Specified Tester offers Service Frames with UNI during a time interval <i>T</i> . At tim measures the number of Service F the associated egress UNI must fa • <i>W<sub>G</sub></i> is the amount of traffic ac UNI	mapped CE-VLAN ne <i>T</i> /2 tester injects rames delivered a Il within the range scepted as Green c	s a burst of t the associa $X \le W_G \le Z$ over the time	ingress Service Fram ated egress UNI. The where:	es greater than CBS <sub>A</sub> . Teste amount of traffic delivered a			
Performance Test Procedure	Not Specified Tester offers Service Frames with UNI during a time interval <i>T</i> . At tim measures the number of Service F the associated egress UNI must fa · $W_G$ is the amount of traffic ac UNI · $X_A = (CIR_A*T + CBS_A - F)$ and	mapped CE-VLAN ne $T/2$ tester injects frames delivered at ill within the range ccepted as Green of $dZ_A = (CIR_A * T + O_A)$	s a burst of t the associa $X \le W_G \le Z$ ver the time CBS <sub>A</sub> + F)	ingress Service Fram ated egress UNI. The where: e interval <i>T</i> that shou	es greater than CBS <sub>A</sub> . Teste a amount of traffic delivered a ld be delivered to the egress			
Performance Test Procedure Units	Not Specified Tester offers Service Frames with UNI during a time interval <i>T</i> . At tim measures the number of Service F the associated egress UNI must fa $\cdot W_G$ is the amount of traffic ac UNI $\cdot X_A = (CIR_A*T + CBS_A - F)$ and Number of valid Service Frames Bandwidth Profile Parameters CIR	mapped CE-VLAN ne $T/2$ tester injects frames delivered at ill within the range ccepted as Green of $dZ_A = (CIR_A * T + O_A)$	s a burst of t the associa $X \le W_G \le Z$ ver the time CBS <sub>A</sub> + F)	ingress Service Fram ated egress UNI. The where: e interval <i>T</i> that shou	es greater than CBS <sub>A</sub> . Teste a amount of traffic delivered a ld be delivered to the egress			



# TEST CASE 37: Type 1.2 UNI-N EBS Configuration

	ABSTRACT TEST SUITE FOR UNI TYPE 1							
Test Name	Type 1.2 U	NI-N EBS Configuration	1					
Test Definition ID	U1.6.2.5-36	U1.6.2.5-36.2						
Reference Document	MEF 13 [Us	ser Network Interface (L	JNI) Type 1 Implei	mentation A	greement]			
Test Type	Conforman	се						
Test Status	Mandatory							
Requirement Description		A Type 1.2 UNI-N <b>MUST</b> be able to at least support EBS values that are equal to or greater than 8 x MTU = 8 x 1522 bytes = 12176 bytes						
Test Object		a Type 1.2 UNI-N can at /tes = 12176 bytes	t least support EB	S values tha	at are equal to or great	er than 8 x MTU =		
Test Configuration	Bandwidth					apped to the EVC and one each UNI are attached to		
		INGRESS U	INII 'A'		EGRESS			
		CE-VLAN ID	EVC		CE-VLAN ID	EVC		
		11*	EVC1		11*	EVC <sub>1</sub>		
CE-VLAN ID/EVC Map		Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs						
map	conforms to MEF 10 [Ethernet Services Attributes Phase 1], Section 7.5.1							
	The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at							
		both ingress and egre	ss UNIs					
	PER INGRESS UNI							
		UNI Bandwidth Profile Pa				ameters		
Bandwidth Profile		UNIA CIRA CBSA EIRA EBSA						
	Note 1: (CIR <sub>A</sub> = 0) and (CBS <sub>A</sub> = 0) Note 2: (0 $\neq$ EIR $\rightarrow$ (percent LNI Speed) (ERS $\rightarrow$ 12176 bytes)							
	Note 2: (0 < EIR <sub>A</sub> < Ingress UNI Speed), (EBS <sub>A</sub> $\ge$ 12176 bytes)							
		Note 3: (Ingress EIR <sub>A</sub>			2170 bytes)			
Service	Not Specific	Note 3: (Ingress EIR <sub>A</sub>						
Service Performance	Not Specifi	Note 3: (Ingress EIR <sub>A</sub>			2 170 Bytes)			
	Tester offer UNI during measures t	Note 3: (Ingress EIR <sub>A</sub> ed rs Service Frames with r a time interval <i>T</i> . At tim	Segress UNI Sp mapped CE-VLAN ne T/2 tester inject rames delivered a	l IDs of leng s a burst of t the associ	th $λ$ at an average rate ingress Service Frame ated egress UNI Th	e equal to EIR <sub>A</sub> to the ingress s greater than EBS <sub>A</sub> . Teste le amount of traffic delivered		
Performance	Tester offer UNI during measures t at the asso	Note 3: (Ingress EIR <sub>A</sub> ed rs Service Frames with r a time interval <i>T</i> . At tim he number of Service F ciated egress UNI must	Egress UNI Sp mapped CE-VLAN the <i>T</i> /2 tester inject rames delivered a fall within the ran cepted as Yellow	I IDs of leng s a burst of t the associ ge $X \le W_Y \le$ over the time	th $\lambda$ at an average rate ingress Service Frame ated egress UNI Th ; Z where:	es greater than EBS <sub>A</sub> . Teste		
Performance	Tester offer UNI during measures t at the asso $W_Y$ is $X_A = ($	Note 3: (Ingress EIR <sub>A</sub> ed rs Service Frames with r a time interval <i>T</i> . At tim he number of Service F ciated egress UNI must the amount of traffic acc	Egress UNI Sp mapped CE-VLAN the <i>T</i> /2 tester inject rames delivered a fall within the ran cepted as Yellow	I IDs of leng s a burst of t the associ ge $X \le W_Y \le$ over the time	th $\lambda$ at an average rate ingress Service Frame ated egress UNI Th ; Z where:	es greater than EBS <sub>A</sub> . Teste le amount of traffic delivered		
Performance Test Procedure	Tester offer UNI during measures t at the asso $W_Y$ is $X_A = ($ Number of Bandwidth	Note 3: (Ingress EIR <sub>A</sub> ed ed s Service Frames with r a time interval <i>T</i> . At tim he number of Service F ciated egress UNI must the amount of traffic acc EIR <sub>A</sub> * <i>T</i> + EBS <sub>A</sub> - F) and valid Service Frames	mapped CE-VLAN the <i>T</i> /2 tester inject rames delivered a fall within the range cepted as Yellow of $dZ_A = (EIR_A*T + I)$ A, EBSA, UNIs inte	I IDs of leng s a burst of t the associ ge $X \le W_Y \le$ over the time EBS <sub>A</sub> + F)	th $\lambda$ at an average rate ingress Service Frame ated egress UNI Th Z where: interval $T$ that may b	es greater than EBS <sub>A</sub> . Teste le amount of traffic delivered		
Performance Test Procedure Units	Tester offer UNI during measures t at the asso $W_Y$ is $X_A = ($ Number of Bandwidth	Note 3: (Ingress EIR <sub>A</sub> ed ed s Service Frames with r a time interval <i>T</i> . At tim he number of Service F ciated egress UNI must the amount of traffic act EIR <sub>A</sub> * <i>T</i> + EBS <sub>A</sub> - F) and valid Service Frames Profile Parameters EIR/ the offered Service Frame	mapped CE-VLAN the <i>T</i> /2 tester inject rames delivered a fall within the range cepted as Yellow of $dZ_A = (EIR_A*T + I)$ A, EBSA, UNIs inte	I IDs of leng s a burst of t the associ ge $X \le W_Y \le$ over the time EBS <sub>A</sub> + F)	th $\lambda$ at an average rate ingress Service Frame ated egress UNI Th Z where: interval $T$ that may b	es greater than EBS <sub>A</sub> . Teste le amount of traffic delivered be delivered to the egress UN		



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

		ABSTRAC	T TEST SUITE	FOR UNI	TYPE 1		
Test Name	Type 1.2 U	NI-N Optional Layer 2 C	ontrol Protocol D	iscard			
Test Definition ID	U1.6.2.6-37	J1.6.2.6-37					
Reference Document	MEF 13 [Us	ser Network Interface (U	NI) Type 1 Imple	mentation A	greement]		
Test Type	Conforman	Conformance					
Test Status	Optional						
Requirement Description	A Type 1.2	A Type 1.2 UNI-N <b>SHOULD</b> be able to discard the following L2 Control Protocols 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 above	a Type 1.2 UNI-N can d	liscard each L2 C	Control Proto	ocol described in the re	equirement descrip	otion section
Test Configuration	Ingress UN	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					
		INGRESS U	NII ' A '	1	EGRESS		
		CE-VLAN ID	EVC		CE-VLAN ID	EVC	
		11*	EVC <sub>1</sub>		11*	EVC <sub>1</sub>	-
CE-VLAN ID/EVC Map		Use of other CE-VLAN conforms to MEF 10 [E The CE-VLAN ID for u	I IDs is permitted Ethernet Services	Attributes F	at configuration of the ( Phase 1], Section 7.5.1	CE-VLAN IDs	=
		both ingress and egres					
			PEI	R INGRESS	UNI		
		UNI			Bandwidth Profile Par	ameters	
Bandwidth Profile		UNIA		C	IR <sub>A</sub> CBS <sub>A</sub> EIR <sub>A</sub>	EBS <sub>A</sub>	
		Note 1: $(0 < CIR_A < In$ Note 2: (Ingress $CIR_A$ Note 3: ( $EIR_A = 0$ ) and	≤ Egress UNI Sp		maximum Service Fran	ne size)	
Service Performance	Not Specifie	ed					
Test Procedure	above at th	rs Service Frames carryi e ingress UNI and verifie . The L2CPs Destinatio	es that the corres	ponding Se	rvice Frames are not de	elivered at the ass	ociated
Units	Number of	valid Service Frames ca	rrying the L2CPs				
Variables	L2CP Ban	Number of valid Service Frames carrying the L2CPs					
	L201, Dan	L2CP, Bandwidth Profile Parameters CIR <sub>A</sub> , CBS <sub>A</sub> , UNIs interface speed					
Results	Pass or fail		$ISCIR_{A_i}CBS_{A_i}$	INIS Internac	e speed		

MEF 19 follow



#### 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 U	Type 1.2 UNI-N Optional Layer 2 Control Protocol Generation					
Test Definition ID	U1.6.2.6-38	3					
Reference Document	MEF 13 [U	ser Network Interface (U	NI) Type 1 Imple	mentation A	greement]		
Test Type	Conforman	се					
Test Status	Optional						
Requirement Description	A Type 1.2	UNI-N SHOULD NOT g	enerate 802.3x P	AUSE fram	es		
Test Object	Verify that a	a Type 1.2 UNI-N does r	not generate 802.	3x PAUSE 1	irames		
Test Configuration	Bandwidth	ssociating two Type 1.2 Profile is applied at the i PHY that matches each	ngress UNI. A pe	r Ingress UI	VI bandwidth profile is a	applied at the UNI.	
			NII ( A )		5055001		1
		INGRESS U			EGRESS L		-
		CE-VLAN ID	EVC		CE-VLAN ID	EVC	
<b>CE-VLAN ID/EVC</b>		11*	EVC <sub>1</sub>		11*	EVC <sub>1</sub>	
Мар		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 The CE-VLAN ID for untagged and priority tagged Service Frames is configured to 11 at						
		both ingress and egres		nty tagged a	Service Frames is coning	gured to TT at	
							1
		PER INGRESS UNI					
Bandwidth Profile		UNI		E	Bandwidth Profile Para	ameters	
Bandwidth Profile		UNIA			IR <sub>A</sub> CBS <sub>A</sub> EIR <sub>A</sub>	EBSA	
		Note 1: $(0 < CIR_A < In$ Note 2: $(EIR_A = 0)$ and Note 3: $(Ingress CIR_A)$	$d(EBS_A = 0)$	, ,	≥ maximum Service Fra	ame size)	
Service Performance	Not Specifi	ed					
Test Procedure		rs Service Frames with r verifies that no 802.3x F				age rate equal to t	he UNI
Units	Number of	valid Service Frames ca	rrying he L2CPs				
Variables	Bandwidth	Profile Parameters CIR	$_{A,}$ CBS $_{A,}$ UNIs int	erface spee	d		
Results	Pass or fail						
Remarks							



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

			ABSTRA	CT TES		UNI TYPE <sup>-</sup>	1			
Test Name	Type 1.2 l	JNI-N Conce	urrent Point-t	o-Point	and Multipoint EV	′Cs				
Test Definition ID	U1.6.2.7-4	1.6.2.7-40								
Reference Document	MEF 13 [L	Jser Networ	k Interface (L	JNI) Typ	pe 1 Implementation	on Agreemer	nt]			
Test Type	Conforma	onformance								
Test Status	Mandatory	andatory								
Requirement Description	A Type 1.2	2 UNI-N <b>MU</b>	ST be able to	o suppo	ort Point-to-Point a	nd Multipoint	EVCs	concurrently		
Test Object	Verify that	a Type 1.2	UNI-N can s	upport I	Point-to-Point and	Multipoint E	VCs cor	ncurrently		
Test Configuration	are config	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 JNIs. Testers with proper PHY that matches each UNI are attached to all UNIs in the configured EVCs								
		UNI 'A		]	UNI 'E	3'	1	UNI '	C'	
	CE-	VLAN ID	EVC		CE-VLAN ID	EVC		CE-VLAN ID	EVC	
CE-VLAN ID/EVC		11*	EVC <sub>1</sub>		11*	EVC <sub>1</sub>		11*	EVC <sub>1</sub>	
Мар		12	EVC <sub>2</sub>		12	EVC <sub>2</sub>				
	10 [E The (	thernet Serv	vices Attribut	es Pha	se 1], Section 7.5.	1		E-VLAN IDs confo		
					PER E	VC				
			EVC			th Profile Pa		ers		
Bandwidth Profile			EVC <sub>1</sub> EVC <sub>2</sub>			BS <sub>1</sub> EIR <sub>1</sub>	EBS <sub>1</sub> EBS <sub>2</sub>			
		Note 2: (2	) < CIR <sub>1,2</sub> < II	Rs ≤ Eg	CIR <sub>2</sub> Cl UNI Speed), (CBS ress UNI Speed) i <sub>1,2</sub> = 0)			ice Frame size)		
Service Performance	Not Specif	fied								
Test Procedure								UNI configured in the proper EVC at the		
	Number of valid Service Frames									
Units	Number of	f valid Servio	ce Frames	Bandwidth Profile Parameters CIR <sub>1</sub> , CBS <sub>1</sub> , CIR <sub>2</sub> , CBS <sub>2</sub> , UNIs interface speed						
Units Variables				1, CBS1	, CIR <sub>2,</sub> CBS <sub>2,</sub> UNI	s interface s	peed			
		Profile Para		1, CBS1	, CIR <sub>2,</sub> CBS <sub>2,</sub> UNI	s interface s	peed			



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

ABSTRACT TEST SUITE FOR UNI TYPE 1							
Test Name	Type 1.2 U	NI-N CE-VLAN ID Prese	ervation				
Test Definition ID	U1.6.2.8-41	1					
Reference Document	MEF 13 [Us	ser Network Interface (U	NI) Type 1 Imple	mentation A	greement]		
Test Type	Conforman	се					
Test Status	Mandatory						
Requirement Description	A Type 1.2	UNI-N MUST be able to	support CE-VLA	N ID preser	vation		
Test Object	Verify that a	a Type 1.2 UNI-N can su	pport CE-VLAN	D preservat	ion		
Test Configuration	Ingress UN	issociating two Type 1.2 Il bandwidth profile is ap Is in the configured EVC	plied at both UNI				
		UNI 'A	,		UN	II 'B'	
		CE-VLAN ID	EVC		CE-VLAN ID	EVC	
CE-VLAN ID/EVC		11*	EVC <sub>1</sub>		11*	EVC <sub>1</sub>	
Мар	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						
		The CE-VLAN ID for u both ingress and egres		rity tagged S	Service Frames is co	onfigured to 11 at	
			PE	R INGRESS	UNI		]
		UNI			Bandwidth Profile P	=	
Bandwidth Profile		UNI			CIR CBS EIF	R EBS	
		Note 1: (0 < CIR < Ing Note 2: (Ingress CIR ≤ Note 3: (EIR = 0) and	Egress UNI Spe		aximum Service Frai	me size)	
Service Performance	Not Specifie	ed					
Test Procedure		rs Service Frames with r t the corresponding Serv					
Units	Number of	valid Service Frames					
Variables	Bandwidth	Profile Parameters CIR,	CBS, UNIs inter	ace 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 U	NI-N CE-VLAN CoS Pre	servation					
Test Definition ID	U1.6.2.9-42	2						
Reference Document	MEF 13 [Us	ser Network Interface (U	NI) Type 1 Impler	nentation A	greement]			
Test Type	Conforman	се						
Test Status	Mandatory							
Requirement Description	A Type 1.2	UNI-N MUST be able to	support CE-VLA	N CoS pres	ervation			
Test Object	Verify that a	a Type 1.2 UNI-N can su	ipport CE-VLAN (	CoS preserv	vation			
Test Configuration	Ingress UN	ssociating two Type 1.2 I bandwidth profile is ap s in the configured EVC	plied at both UNIs					
		UNI 'A				UNI 'E	3'	
		CE-VLAN ID	EVC		CE-VLAN	ID	EVC	-
<b>CE-VLAN ID/EVC</b>		11*	EVC <sub>1</sub>		11*		EVC1	
Мар		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						
		The CE-VLAN ID for u both ingress and egres		ity tagged S	Service Frames	is confi	gured to 11 at	
			PER	INGRESS	-			_
Developidth Devil		UNI		E	Bandwidth Pro			_
Bandwidth Profile		UNI Note 1: (0 < CIR < Ing Note 2: (Ingress CIR ≤ Note 3: (EIR = 0) and	Egress UNI Spe	(CBS ≥ ma ed)	CIR CBS	EIR Frame	EBS size)	
Service Performance	Not Specifie	, , ,	<u> </u>					
Test Procedure	UNI configu	rs tagged Service Frame ured in the EVC and veri AN CoS preservation						
Units	Number of	valid Service Frames						
Variables	Bandwidth	Profile Parameters CIR,	CBS, UNIs interfa	ace 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 U	Fype 1.2 UNI-N Broadcast & Multicast Service Frame Unconditional Delivery					
Test Definition ID		U1.6.2.10-43					
Reference Document	MEF 13 [U	ser Network Interface (U	NI) Type 1 Impler	mentation A	greement]		
Test Type	Conforman	ce					
Test Status	Mandatory						
Requirement Description	A Type 1.2	<ul> <li>A Type 1.2 UNI-N MUST be able to deliver multicast and broadcast Service Frames unconditionally, except:</li> <li>Spanning Tree Protocol (STP),</li> <li>Rapid Spanning Tree Protocol (RSTP),</li> <li>Multiple Spanning Tree Protocol (MSTP)</li> <li>All LANs Bridge Management Group Block of Protocol</li> <li>Generic Attribute Registration Protocol (GARP)</li> <li>Link Aggregation Control Protocol (LACP)</li> <li>Marker Protocol</li> <li>Authentication (802.1x)</li> <li>802.3x (PAUSE) frames</li> </ul>					
Test Object	listed in the	a Type 1.2 UNI-N can d requirement description	above				
Test Configuration	Ingress UN	Is in the configured EVC	plied at both UNIs	s. Testers v	vith proper PHY that ma	atches each UNI ar	e attached
		UNI 'A'		UNI '	B'		
		CE-VLAN ID	EVC		CE-VLAN ID	EVC	
		11*	EVC <sub>1</sub>		11*	EVC <sub>1</sub>	
CE-VLAN ID/EVC Map		Use of other CE-VLAN conforms to MEF 10 [E	IDs is permitted Ethernet Services	provided that Attributes F	at configuration of the C Phase 1], Section 7.5.1	CE-VLAN IDs	
		The CE-VLAN ID for u both ingress and egres		ity tagged S	Service Frames is confi	gured to 11 at	
			PEF		UNI		
		UNI		E	Bandwidth Profile Para	ameters	
Bandwidth Profile		UNI			CIR CBS EIR	EBS	
		Note 1: (0 < CIR < Ing Note 2: (Ingress CIR ≤ Note 3: (EIR = 0) and	Egress UNI Spe	, (CBS ≥ ma ed)	aximum Service Frame	size)	
Service Performance	Not Specifi						
Test Procedure		rs multicast and broadca ally at each UNI configure ated UNI					
Units	Number of	valid Service Frames					
Variables	Frame Forr	mat (broadcast, multicas	t), Bandwidth Pro	file Parame	ters CIR, CBS, UNIs in	terface speed	
Results	Pass or fail						
Remarks							

**MEF 19** 



#### **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 U	Type 1.2 UNI-N Unicast Service Frame Unconditional Delivery						
Test Definition ID	U1.6.1.8-44	ļ						
Reference Document	MEF 13 [Us	ser Network Interface (U	INI) Type 1 Implei	mentation A	greement]			
Test Type	Conforman	се						
Test Status	Mandatory							
Requirement Description	A Type 1.2	UNI-N MUST be able to	o deliver all unicas	t Service Fi	rames unconditionally			
Test Object	Verify that a	a Type 1.2 UNI-N can de	eliver all unicast S	ervice Fram	ne unconditionally			
Test Configuration	Ingress UN	ssociating two Type 1.2 I bandwidth profile is ap s in the configured EVC	plied at both UNIs	ed and at lea s. Testers v	ast one CE-VLAN ID is vith proper PHY that m	anapped to the E hatches each UNI a	/C. A per are attached	
			_	1				
		UNI 'A			UNI '			
		CE-VLAN ID	EVC		CE-VLAN ID	EVC		
<b>CE-VLAN ID/EVC</b>		11*	EVC <sub>1</sub>		11*	EVC <sub>1</sub>		
Мар		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						
		The CE-VLAN ID for u both ingress and egree		rity tagged S	Service Frames is conf	igured to 11 at		
			PEF	R INGRESS	UNI			
		UNI		E	Bandwidth Profile Par	rameters		
Bandwidth Profile		UNI			CIR CBS EIR	EBS		
		Note 1: (0 < CIR < Ing Note 2: (Ingress CIR ≤ Note 3: (EIR = 0) and	Egress UNI Spe	, (CBS ≥ ma ed)	aximum Service Frame	e size)	]	
Service Performance	Not Specifi	ed						
Test Procedure		rs unicast Service Frame onfigured in the EVC an						
Units	Number of	valid Service Frames						
Variables	Bandwidth	Profile Parameters CIR	CBS, UNIs interf	ace 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-2002Information 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, <u>http://www.ietf.org/rfc/rfc2544.txt</u>
RFC 2889	RFC 2889, "Benchmarking Methodology for LAN Switching Devices", R. Mandeville, J. Perser, http://www.ietf.org/rfc/rfc2889.txt