

# Test Plan for Traffic Management Phase 1



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# **1 Introduction**

## **1.1 Abstract**

This document defines Test Cases for Service Performance and Bandwidth Profile Service Attributes based on MEF 14 *Abstract Test Suite for Traffic Management Phase 1*. These attributes may be specified as part of a Service Level Specification (SLS) for an Ethernet Service.

This Test Plan together with the *Test Plan for Ethernet Services at the UNI* based on MEF 9 *Abstract Test Suite for Ethernet Services at the UNI* cover all of the EVC and UNI Service Attributes defined in MEF 10 *Ethernet Services Attributes Phase 1*.

## **1.2 Structure of Document**

This document is structured as follows:

- Section 1: Constitutes the introduction. It describes the abstract, scope, and structure of the document. It also provides definitions, abbreviations, compliance levels and references.
- Section 2: Defines conformance, performance, interoperability and functional testing.
- Section 3: Provides a summary of the Ethernet Services Definitions for Traffic Management.
- Section 4: Provides an overview of the Test Cases per Service type.
- Section 5: Describes the requirements and test procedures for EVC related Performance Service Attributes.
- Section 6: Describes the requirements and test procedures for Bandwidth Profiles Service Attributes.
- Section 7: Revision history.

## **1.3 Scope**

The Test Cases defined in this document are based MEF 14 *Abstract Test Suite for Traffic Management Phase 1* and the requirements are derived from MEF 10 *Ethernet Services Attributes Phase 1* sections 6.7 and 7.10.

Section 6.7 of MEF 10 defines three EVC Related Performance Service Attributes: Frame Delay Performance, Frame Delay Variation Performance, and Frame Loss Ratio Performance. Section 7.10 of MEF 10 defines Bandwidth Profile Service Attributes of an Ethernet Service at the UNI. Bandwidth Profiles Service Attributes are defined per Ingress UNI, per EVC, and per Class of Service. Six parameters are applied to Bandwidth Profiles: Committed Information Rate (CIR), Committed Burst Size (CBS), Excess Information Rate (EIR), Excess Burst Size (EBS), Coupling Flag (CF) and Color Mode (CM). In the absence of a standard way to color Service Frames, tests are not defined in relation to CF and CM parameters that may be applied to a Bandwidth Profile. Such tests may be added in the future when Service Frame Coloring is further specified.

Together with the *Test Plan for Ethernet Services at the UNI* the *Test Plan for Traffic Management Phase 1* provide a comprehensive set of Test Cases to determine the readiness of a Metro Ethernet Network (MEN) to deliver various Ethernet Services, such as Ethernet Line (E-Line) and Ethernet LAN (E-LAN) services when Service Performance and Bandwidth Profile Service Attributes are specified.

Implementation specifications are outside the scope of this document. This document may be updated in the future to reflect new work in the MEF Technical Committee.

## 1.4 Definitions and Abbreviations

<b>All to One Bundling</b>	A UNI attribute in which all CE-VLAN IDs are associated with a single EVC.
<b>Bandwidth Profile</b>	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.
<b>Broadcast Service Frame</b>	A Service Frame that has the broadcast destination MAC address.
<b>Bundling</b>	A UNI attribute in which more than one CE-VLAN ID can be associated with an EVC.
<b>CBS</b>	Committed Burst Size
<b>CE</b>	Customer Edge
<b>CE-VLAN CoS</b>	Customer Edge VLAN CoS
<b>CE-VLAN ID</b>	Customer Edge VLAN ID
<b>CE-VLAN ID Preservation</b>	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.
<b>CE-VLAN ID/EVC Map</b>	An association of CE-VLAN IDs with EVCs at a UNI.
<b>CE-VLAN Tag</b>	Customer Edge VLAN Tag
<b>CF</b>	Coupling Flag
<b>CIR</b>	Committed Information Rate
<b>Class of Service</b>	A set of Service Frames that have a commitment from the Service Provider to receive a particular level of performance.
<b>Class of Service Identifier</b>	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.
<b>CM</b>	Color Mode
<b>Color Mode</b>	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.
<b>Color-aware</b>	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.
<b>Color-blind</b>	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.
<b>Committed Burst Size</b>	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.
<b>Committed Information Rate</b>	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.
<b>Coupling Flag</b>	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.

<b>Customer Edge</b>	Equipment on the Subscriber side of the UNI.
<b>Customer Edge VLAN CoS</b>	The user priority bits in the IEEE 802.1Q Tag in a Service Frame that is either tagged or priority tagged.
<b>Customer Edge VLAN ID</b>	The identifier derivable from the content of a Service Frame that allows the Service Frame to be associated with an EVC at the UNI.
<b>Customer Edge VLAN Tag</b>	The IEEE 802.1Q Tag in a tagged Service Frame.
<b>EBS</b>	Excess Burst Size
<b>Egress Service Frame</b>	A Service Frame sent from the Service Provider network to the CE.
<b>EIR</b>	Excess Information Rate
<b>E-LAN Service</b>	Ethernet LAN Service
<b>E-Line Service</b>	Ethernet Line Service
<b>Ethernet LAN Service</b>	An Ethernet Service Type distinguished by its use of a Multipoint-to-Multipoint EVC.
<b>Ethernet Line Service</b>	An Ethernet Service Type distinguished by its use of a Point-to-Point EVC.
<b>Ethernet Virtual Connection</b>	An association of two or more UNIs that limits the exchange of Service Frames to UNIs in the Ethernet Virtual Connection.
<b>EVC</b>	Ethernet Virtual Connection
<b>Excess Burst Size</b>	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.
<b>Excess Information Rate</b>	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.
<b>FD</b>	Frame Delay
<b>FDV</b>	Frame Delay Variation
<b>FLR</b>	Frame Loss Ratio
<b>Frame</b>	Short for Ethernet frame.
<b>Frame Delay</b>	The time required to transmit a Service Frame from source to destination across the metro Ethernet network.
<b>Frame Delay Performance</b>	A measure of the delays experienced by different Service Frames belonging to the same CoS instance.
<b>Frame Delay Variation</b>	The difference in delay of two Service Frames.
<b>Frame Delay Variation Performance</b>	A measure of the variation in the delays experienced by different Service Frames belonging to the same CoS instance.
<b>Frame Loss Ratio Performance</b>	Frame Loss Ratio is a measure of the number of lost frames inside the MEN. Frame Loss Ratio is expressed as a percentage.
<b>Ingress Service Frame</b>	A Service Frame sent from the CE into the Service Provider network.
<b>Layer 2 Control Protocol Service Frame</b>	A Service Frame that is used for Layer 2 control, e.g., Spanning Tree Protocol.
<b>Layer 2 Control Protocol Tunneling</b>	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).

<b>Multicast Service Frame</b>	A Service Frame that has a multicast destination MAC address.
<b>Multipoint-to-Multipoint EVC</b>	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.
<b>Point-to-Point EVC</b>	An EVC with exactly 2 UNIs.
<b>Service Frame</b>	An Ethernet frame transmitted across the UNI toward the Service Provider or an Ethernet frame transmitted across the UNI toward the Subscriber.
<b>Service Level Agreement</b>	The contract between the Subscriber and Service Provider specifying the agreed to service level commitments and related business agreements.
<b>Service Level Specification</b>	The technical specification of the service level being offered by the Service Provider to the Subscriber.
<b>Service Multiplexing</b>	A UNI service attribute in which the UNI can be in more than one EVC instance.
<b>Service Provider</b>	The organization providing Ethernet Service(s).
<b>SLA</b>	Service Level Agreement
<b>SLS</b>	Service Level Specification
<b>Subscriber</b>	The organization purchasing and/or using Ethernet Services.
<b>UNI</b>	User Network Interface
<b>Unicast Service Frame</b>	A Service Frame that has a unicast destination MAC address.
<b>User Network Interface</b>	The physical demarcation point between the responsibility of the Service Provider and the responsibility of the Subscriber.

## **1.5 Compliance Levels**

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

## **1.6 References**

MEF 10 *Ethernet Services Attributes, Phase 1*

MEF 14 *Abstract Test Suite for Traffic Management, Phase 1*

MEF 6 *Ethernet Services Definitions, Phase 1*

## **2 Testing Methodologies**

This document defines Test Cases for Service Performance and Bandwidth Profile Service Attributes that may be specified as part of a Service Level Specification (SLS) for an Ethernet Service. The requirements and test procedures are derived from Metro Ethernet Forum Technical Committee documents.

Vendors can refer to such requirements and test procedures in the development and commercial cycles of their products and carriers can refer to them to ensure that the Metro Ethernet Network they deploy meet certain well-defined criteria.

Various types of criteria can be used to establish the requirements a MEN must satisfy to deliver various Ethernet Services when Service Performance and Bandwidth Profile Service Attributes are specified. Those criteria are conformance, performance, interoperability and functionality.

### **2.1 Conformance Testing**

Metro Ethernet Services conformance testing consists of testing the extent to which a MEN conforms to the Technical Specification such as MEF 10 *Ethernet Services Attributes Phase 1*.

Conformance testing is extensive as it consists of testing against every feature and function defined in the specification. An example of this would be a test that verifies that per EVC Bandwidth Profile model is supported at the UNI.

### **2.2 Performance Testing**

Performance testing evaluates an implementation under different traffic load and conditions to see how well it performs. Performance testing consists of measuring parameters that are traffic dependent under well-known traffic conditions.

Performance parameters are function related. It generally involves two functions: traffic generation and traffic analysis. An example of this would be a test that measures the ability to successfully forward a certain percentile of frames without loss.

### **2.3 Interoperability Testing**

Interoperability testing is used to measure the condition under which two or more systems with separate and different implementations will interoperate and produce the expected behavior. It involves testing both the capabilities and the behavior of an implementation in an interconnected environment and checking whether an implementation can interoperate with another implementation. An example of this would be the ability of a device to participate in the same arbitrary MEN as the devices of other vendors.

### **2.4 Functional Testing**

The purpose of functional testing is to ensure that an implementation satisfies certain well-defined criteria some of which can be safely taken for granted and others of which it will be useful to test. Usually, these tests do not have a direct correspondence with the Protocol Implementation Conformance Statement (PICS). An example would be that a MEN correctly filters BPDUs (Bridge Protocol Data Units) when configured to do so.

Conformance, interoperability and functional test results are typically reported as “pass” or “fail” unless specified otherwise, whereas performance test results are generally reported in terms of frame counts, times and rates.

## 3 Ethernet Services Definitions for Traffic Management

### 3.1 EVC Related Performance Service Attributes

	EPL	EVPL	E-LAN
CoS Requirement	Only one CoS is required	<b>MAY</b> support none, one or more CoS	Not Specified
CoS ID	A CoS ID of EVC <b>MUST</b> be specified	If supported, a CoS ID <b>MUST</b> be specified	Not Specified
Frame Delay	<b>MUST</b> be specified	<b>MUST</b> be specified	Not Specified
Frame Delay Variation	<b>MUST</b> be specified	<b>MAY</b> be specified	Not Specified
Frame Loss Ratio	<b>MUST</b> be specified	<b>MUST</b> be specified	Not Specified

### 3.2 Bandwidth Profiles Service Attributes

	EPL	EVPL	E-LAN
Per Ingress UNI Support	<b>MUST</b> be supported	<b>OPTIONAL.</b> If supported see following parameters	<b>OPTIONAL.</b> If supported see following parameters
CIR	<b>MUST</b> be $\leq$ UNI Speed	CIR = variable	CIR = variable
CBS	<b>MUST</b> be $>$ largest Service Frame size	CBS = variable	CBS = variable
EIR	<b>MUST</b> be 0	EIR = variable	EIR = variable
EBS	<b>MUST</b> be 0	EBS = variable	EBS = variable
CM, CF	—	—	—
Per EVC Support	<b>Not Applicable</b>	<b>OPTIONAL.</b> If supported see following parameters	<b>OPTIONAL.</b> If supported see following parameters
CIR	—	CIR = variable	CIR = variable
CBS	—	CBS = variable	CBS = variable
EIR	—	EIR = variable	EIR = variable
EBS	—	EBS = variable	EBS = variable
CM, CF	—	—	—
Per CoS Support	<b>Not Applicable</b>	<b>OPTIONAL.</b> If supported see following parameters	<b>OPTIONAL.</b> If supported see following parameters
CIR	—	CIR = variable	CIR = variable
CBS	—	CBS = variable	CBS = variable
EIR	—	EIR = variable	EIR = variable
EBS	—	EBS = variable	EBS = variable
CM, CF	—	—	—

## 4 Test Cases Overview

### 4.1 Test Cases for EVC Related Performance Service Attributes

Test Case Name	EPL Test Case IDs			EVPL Test Case IDs			E-LAN Test Case IDs		
	Parameters			Parameters			Parameters		
	B.P. per Ingress UNI	B.P. per EVC	B.P. per CoS ID	B.P. per Ingress UNI	B.P. per EVC	B.P. per CoS ID	B.P. per Ingress UNI	B.P. per EVC	B.P. per CoS ID
Frame Delay Service Performance - Single EVC	1.1.1a to 1.1.5a	N/A	N/A	1.2.1a to 1.2.5a	1.2.1b to 1.2.5b	1.2.1c to 1.2.5c	N/A	N/A	N/A
Frame Delay Service Performance - Multiple EVCs	N/A	N/A	N/A	N/A	1.2.6b to 1.2.10b	N/A	N/A	N/A	N/A
Frame Delay Variation Service Performance - Single EVC	2.1.1a to 2.1.5a	N/A	N/A	2.2.1a to 2.2.5a	2.2.1b to 2.2.5b	2.2.1c to 2.2.5c	N/A	N/A	N/A
Frame Delay Variation Service Performance - Multiple EVCs	N/A	N/A	N/A	N/A	2.2.6b to 2.2.10b	N/A	N/A	N/A	N/A
Frame Loss Ratio Service Performance - Single EVC	3.1.1a to 3.1.5a	N/A	N/A	3.2.1a to 3.2.5a	3.2.1b to 3.2.5b	3.2.1c to 3.2.5c	N/A	N/A	N/A
Frame Loss Ratio Service Performance - Multiple EVCs	N/A	N/A	N/A	N/A	3.2.6b to 3.2.10b	N/A	N/A	N/A	N/A
Total number of tests	15 EPL Tests			60 EVPL Tests			0 E-LAN Tests		

### 4.2 Test Cases for Bandwidth Profiles Service Attributes

Test Case Name	EPL Test Case IDs			EVPL Test Case IDs			E-LAN Test Case IDs		
	Parameters			Parameters			Parameters		
	B.P. per Ingress UNI	B.P. per EVC	B.P. per CoS ID	B.P. per Ingress UNI	B.P. per EVC	B.P. per CoS ID	B.P. per Ingress UNI	B.P. per EVC	B.P. per CoS ID
Bandwidth Profile Rate Enforcement when CIR > 0 and EIR = 0	4.1.1a to 4.1.4a	N/A	N/A	4.2.1a to 4.2.4a	4.2.1b to 4.2.4b	4.2.1c to 4.2.4c	4.3.1a to 4.3.4a	4.3.1b to 4.3.4b	4.3.1c to 4.3.4c
Bandwidth Profile Rate Enforcement when CIR = 0 and EIR > 0	N/A	N/A	N/A	5.2.1a to 5.2.4a	5.2.1b to 5.2.4b	5.2.1c to 5.2.4c	5.3.1a to 5.3.4a	5.3.1b to 5.3.4b	5.3.1c to 5.3.4c
Bandwidth Profile Rate Enforcement when CIR > 0 and EIR > 0	N/A	N/A	N/A	6.2.1a to 6.2.4a	6.2.1b to 6.2.4b	6.2.1c to 6.2.4c	6.3.1a to 6.3.4a	6.3.1b to 6.3.4b	6.3.1c to 6.3.4c
Bandwidth Profile per Ingress UNI	7.1.1a	N/A	N/A	7.2.1a to 7.2.6a	N/A	N/A	7.3.1a to 7.3.6a	N/A	N/A
Bandwidth Profile per EVC	N/A	N/A	N/A	N/A	8.2.1b	N/A	N/A	8.3.1b	N/A
Bandwidth Profile per Class of Service	N/A	N/A	N/A	N/A	N/A	9.2.1c	N/A	N/A	9.3.1c
Multiple Bandwidth Profiles at the UNI	N/A	N/A	N/A	N/A	10.2.1b/c		N/A	10.3.1b/c	
Total number of tests	5 EPL Tests			45 EVPL Tests			45 E-LAN Tests		

### 4.3 Test Traffic Parameters

Tests are performed with small, medium and large Service Frames. Small size Service Frames (80-byte frames) correspond to Service Frames carrying VoIP traffic, medium size Service Frames (600-byte frames) correspond to commonly observed average size data frames and large size Service Frames (1500-byte frames) correspond to commonly observed frames carrying video traffic. Traffic loads are specified when testers are used to generate Service Frames in EVC related performance Test Cases. Whenever an EVC associates UNIs of different speeds, the total measurement time and test parameters are based on the lowest UNI speed.

# 5 Traffic Management - Requirements and Test Procedures for EVC Related Performance Service Attributes

## 5.1 Test Cases for Ethernet Private Lines

<b>TEST CASE 1.1.1a</b> <b>FRAME DELAY SERVICE PERFORMANCE</b> <b>SINGLE EVC WITH CIR = 25% OF THE UNI SPEED</b>																																																							
TEST CASE NAME	1.1.1a Frame Delay Service Performance - Single EVC with CIR = 25% of the UNI Speed																																																						
SERVICE TYPE	Ethernet Private Line																																																						
REFERENCES	MEF 10 Ethernet Services Attributes - Phase 1 (6.7.1) MEF 14 Abstract Test Suite for Traffic Management - Phase 1 (Test Case 1)																																																						
TEST TYPE	Conformance																																																						
TEST STATUS	Mandatory																																																						
REQUIREMENT DESCRIPTION	For all Service Frames declared Green and associated with a particular Class of Service Identifier on a Point-to-Point EVC that arrive at the UNI during a time interval $T$ , Frame Delay Performance <b>MUST</b> be less than or equal to the Frame Delay Performance Objective																																																						
TEST OBJECT	Verify that for all Service Frames declared Green and associated with a particular Class of Service Identifier on a Point-to-Point EVC that arrive at the UNI during a time interval $T$ , Frame Delay Performance is less than or equal to the Frame Delay Performance Objective																																																						
TEST CONFIGURATION	One EVC associating two UNIs is configured and one Bandwidth Profile with CIR > 0 is associated with the ingress UNI '00'. Testers are attached to both UNIs in the configured EVC																																																						
CE-VLAN ID/EVC MAP	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="2">INGRESS UNI '00'</th> <th colspan="2">EGRESS UNI '01'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td>11</td> <td>EVC<sub>1</sub></td> <td>11</td> <td>EVC<sub>1</sub></td> </tr> </tbody> </table>	INGRESS UNI '00'		EGRESS UNI '01'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11	EVC <sub>1</sub>	11	EVC <sub>1</sub>																																										
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CE-VLAN ID	EVC	CE-VLAN ID	EVC																																																				
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TEST PROCEDURE	Tester offers tagged unicast Service Frames with VLAN ID 11 at the ingress UNI '00' into the configured EVC and measures Frame Delay as the time elapsed from the reception of the first bit of the ingress Service Frame declared Green until the transmission of the last bit of the Service Frame at the egress UNI. Frame Delay Performance is then calculated for a time interval $T$ , as the P-Percentile of the Frame Delay for all Service Frames successfully delivered between the UNI pairs. The P-Percentile is set to 99%. The results of multiple measurements may be compiled together so that the total measurement time is at least $[(1 \times 10^7)/UNI \text{ Speed}] * 60 \text{ sec}$																																																						
TEST PARAMETERS	<table border="1" style="width: 100%;"> <thead> <tr> <th>SERVICE ATTRIBUTE</th> <th>SERVICE ATTRIBUTE - PARAMETERS &amp; VALUES</th> </tr> </thead> <tbody> <tr> <td colspan="2"><b>EVC</b></td> </tr> <tr> <td>EVC<sub>1</sub> Type</td> <td>Point-to-Point <input checked="" type="checkbox"/> Multipoint-to-Multipoint <input type="checkbox"/></td> </tr> <tr> <td>CE-VLAN ID Preservation</td> <td>EVC<sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td>CE-VLAN CoS Preservation</td> <td>EVC<sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td>Unicast Service Frame Delivery</td> <td>EVC<sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/></td> </tr> <tr> <td>Multicast Service Frame Delivery</td> <td>EVC<sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/></td> </tr> <tr> <td>Broadcast Service Frame Delivery</td> <td>EVC<sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Discard</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Tunnel</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>Service Performance - EVC<sub>1</sub></td> <td>CoS ID: 1 Fr. 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L2 Control Protocol - Discard	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																						
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Service Performance - EVC <sub>1</sub>	CoS ID: 1 Fr. Delay = FD <sub>1</sub> Fr. Delay Variation = FDV <sub>1</sub> Fr. Loss Ratio = FLR <sub>1</sub>																																																						
<b>UNI</b>																																																							
Physical Medium	Standard Ethernet PHY <input checked="" type="checkbox"/>																																																						
Speed	10Mbps <input type="checkbox"/> 100Mbps <input type="checkbox"/> 10/100Mbps <input type="checkbox"/> 1Gbps <input type="checkbox"/> 10Gbps <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																						
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Service Multiplexing	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																																																						
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UNITS	Time units																																																						
RESULTS	Pass or Fail - See Frame Delay Performance Objectives on section 4.4																																																						
REMARKS	Test results set the lower limit that the Frame Delay Performance Objective can take when the CIR = 25% of the UNI speed																																																						

<b>TEST CASE 2.1.2a</b>																																																							
<b>FRAME DELAY VARIATION SERVICE PERFORMANCE</b>																																																							
<b>SINGLE EVC WITH CIR = 50% OF THE UNI SPEED</b>																																																							
<b>TEST CASE NAME</b>	2.1.2a Frame Delay Variation Service Performance - Single EVC with CIR = 50% of the UNI Speed																																																						
<b>SERVICE TYPE</b>	Ethernet Private Line																																																						
<b>REFERENCES</b>	MEF 10 Ethernet Services Attributes - Phase 1 (6.7.3) MEF 14 Abstract Test Suite for Traffic Management - Phase 1 (Test Case 2)																																																						
<b>TEST TYPE</b>	Conformance																																																						
<b>TEST STATUS</b>	Mandatory																																																						
<b>REQUIREMENT DESCRIPTION</b>	For all Service Frames declared Green and associated with a particular Class of Service Identifier on a Point-to-Point EVC that arrive at the UNI during a time interval $T$ , Frame Delay Variation Performance <b>MUST</b> be less than or equal to the Frame Delay Variation Performance Objective																																																						
<b>TEST OBJECT</b>	Verify that for all Service Frames declared Green and associated with a particular Class of Service Identifier on a Point-to-Point EVC that arrive at the UNI during a time interval $T$ , Frame Delay Variation Performance is less than or equal to the Frame Delay Variation Performance Objective																																																						
<b>TEST CONFIGURATION</b>	One EVC associating two UNIs is configured and one Bandwidth Profile with CIR > 0 is associated with the ingress UNI '00'. Testers are attached to both UNIs in the configured EVC																																																						
<b>CE-VLAN ID/EVC MAP</b>	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="2">INGRESS UNI '00'</th> <th colspan="2">EGRESS UNI '01'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td>11</td> <td>EVC<sub>1</sub></td> <td>11</td> <td>EVC<sub>1</sub></td> </tr> </tbody> </table>	INGRESS UNI '00'		EGRESS UNI '01'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11	EVC <sub>1</sub>	11	EVC <sub>1</sub>																																										
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<b>TEST PROCEDURE</b>	<p>Tester offers tagged unicast Service Frames with VLAN ID 11 at the ingress UNI '00' into the configured EVC and measures Frame Delay Variation as the variation in the Frame Delay between a pair of Green Service Frames. Frame Delay Variation Performance is then calculated for a time interval <math>T</math>, as the P-Percentile of the difference between the frame delays of a Service Frame pair that satisfies the following two characteristics:</p> <ul style="list-style-type: none"> <li>The two Service Frames that comprise the pair arrive at the ingress UNI within the time interval <math>T</math></li> <li>The two Service Frames that comprise the pair arrive at the ingress UNI exactly <math>\Delta t</math> time units apart</li> </ul> <p>The P-Percentile is set to 99%. The <math>\Delta t</math> is set to <math>(1 \times \text{inter-frame time})</math>. The results of multiple measurements may be compiled together so that the total measurement time is at least <math>[(1 \times 10^7)/\text{UNI Speed}] \times 60 \text{ sec}</math></p>																																																						
<b>TEST PARAMETERS</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">SERVICE ATTRIBUTE</th> <th>SERVICE ATTRIBUTE - PARAMETERS &amp; VALUES</th> </tr> </thead> <tbody> <tr> <td><b>EVC</b></td> <td></td> </tr> <tr> <td>EVC<sub>1</sub> Type</td> <td>Point-to-Point <input checked="" type="checkbox"/> Multipoint-to-Multipoint <input type="checkbox"/></td> </tr> <tr> <td>CE-VLAN ID Preservation</td> <td>EVC<sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td>CE-VLAN CoS Preservation</td> <td>EVC<sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td>Unicast Service Frame Delivery</td> <td>EVC<sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/></td> </tr> <tr> <td>Multicast Service Frame Delivery</td> <td>EVC<sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/></td> </tr> <tr> <td>Broadcast Service Frame Delivery</td> <td>EVC<sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Discard</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Tunnel</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>Service Performance - EVC<sub>1</sub></td> <td>CoS ID: 1 Fr. 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<b>TEST CASE 3.1.1a</b>																																																							
<b>FRAME LOSS RATIO SERVICE PERFORMANCE</b>																																																							
<b>SINGLE EVC WITH CIR =25% OF THE UNI SPEED</b>																																																							
TEST CASE NAME	3.1.1a Frame Loss Ratio Service Performance - Single EVC with CIR = 25% of the UNI Speed																																																						
SERVICE TYPE	Ethernet Private Line																																																						
REFERENCES	MEF 10 Ethernet Services Attributes - Phase 1 (6.7.5) MEF 14 Abstract Test Suite for Traffic Management - Phase 1 (Test Case 3)																																																						
TEST TYPE	Conformance																																																						
TEST STATUS	Mandatory																																																						
REQUIREMENT DESCRIPTION	For all Service Frames declared Green and associated with a particular Class of Service Identifier on a Point-to-Point EVC that arrive at the UNI during a time interval $T$ , Frame Loss Ratio Performance <b>MUST</b> be less than or equal to the Frame Loss Ratio Performance Objective																																																						
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TEST PROCEDURE	Tester offers tagged unicast Service Frames with VLAN ID 11 at the ingress UNI '00' into the configured EVC and over a time interval $T$ counts the number of Service Frames declared Green at the ingress UNI and successfully received at the egress UNI. Frame Loss Ratio Performance is then calculated as the ratio, expressed as a percentage, of the number of Service Frames declared Green not delivered at the egress UNI divided by the total number of such Service Frames. The results of multiple measurements may be compiled together so that the total measurement time is at least $[(1 \times 10^7)/UNI \text{ Speed}] * 60 \text{ sec}$																																																						
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UNITS	Number of valid Service Frames																																																						
RESULTS	Pass or Fail - See Frame Loss Ratio Performance Objectives on section 4.4																																																						
REMARKS	Test results set the lower limit that the Frame Loss Ratio Performance Objective can take when the CIR = 25% of the UNI speed																																																						

<b>TEST CASE 1.2.6b</b>																																																															
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TEST CASE NAME	1.2.6b Frame Delay Service Performance - Multiple EVCs with $\Sigma$ CIR = 25% of the UNI Speed																																																														
SERVICE TYPE	Ethernet Virtual Private Line																																																														
REFERENCES	MEF 10 Ethernet Services Attributes - Phase 1 (6.7.1) MEF 14 Abstract Test Suite for Traffic Management - Phase 1 (Test Case 1)																																																														
TEST TYPE	Conformance																																																														
TEST STATUS	Optional																																																														
REQUIREMENT DESCRIPTION	For all Service Frames declared Green and associated with a particular Class of Service Identifier on a Point-to-Point EVC that arrive at the UNI during a time interval $T$ , Frame Delay Performance <b>MUST</b> be less than or equal to the Frame Delay Performance Objective																																																														
TEST OBJECT	Verify that for all Service Frames declared Green and associated with a particular Class of Service Identifier on a Point-to-Point EVC that arrive at the UNI during a time interval $T$ , Frame Delay Performance is less than or equal to the Frame Delay Performance Objective																																																														
TEST CONFIGURATION	Two EVCs associating two UNIs are configured. Two Bandwidth Profiles with CIRs > 0 are associated with the EVCs. Testers are attached to both UNIs in the configured EVCs																																																														
CE-VLAN ID/EVC MAP	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="2">INGRESS UNI '00'</th> <th colspan="2">EGRESS UNI '01'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td>11</td> <td>EVC<sub>1</sub></td> <td>11</td> <td>EVC<sub>1</sub></td> </tr> <tr> <td>12</td> <td>EVC<sub>2</sub></td> <td>12</td> <td>EVC<sub>2</sub></td> </tr> </tbody> </table>	INGRESS UNI '00'		EGRESS UNI '01'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11	EVC <sub>1</sub>	11	EVC <sub>1</sub>	12	EVC <sub>2</sub>	12	EVC <sub>2</sub>																																														
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TEST PROCEDURE	Tester offers tagged unicast Service Frames with VLAN IDs 11 and 12 at the ingress UNI '00' into the configured EVCs and for each EVC measures Frame Delay as the time elapsed from the reception of the first bit of the ingress Service Frame declared Green until the transmission of the last bit of the Service Frame at the egress UNI. Frame Delay Performance is then calculated for each EVC for a time interval $T$ , as the P-Percentile of the Frame Delay for all Service Frames successfully delivered between the UNI pairs. The P-Percentile is set to 99%. The results of multiple measurements may be compiled together so that the total measurement time is at least $[(1 \times 10^6)/\text{UNI Speed}] * 60 \text{ sec}$																																																														
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Delay = FD <sub>1</sub> Fr. Delay Variation = FDV <sub>1</sub> Fr. Loss Ratio = FLR <sub>1</sub>	Service Performance - EVC <sub>2</sub>	CoS ID: 2 Fr. Delay = FD <sub>2</sub> Fr. Delay Variation = FDV <sub>2</sub> Fr. Loss Ratio = FLR <sub>2</sub>	<b>UNI</b>		Physical Medium	Standard Ethernet PHY <input checked="" type="checkbox"/>	Speed	10Mbps <input type="checkbox"/> 100Mbps <input type="checkbox"/> 10/100Mbps <input type="checkbox"/> 1Gbps <input type="checkbox"/> 10Gbps <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	Mode	Full Duplex <input checked="" type="checkbox"/> Auto negotiation <input type="checkbox"/>	MAC Layer	IEEE 802.3-2002 <input checked="" type="checkbox"/>	Service Multiplexing	UNI '00' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> UNI '01' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Bundling	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	All to One Bundling	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Bandwidth Profile per Ingress UNI	None	Bandwidth Profile per EVC (EVC <sub>1</sub> )	CIR <sub>1</sub> : 12.5% UNI speed CBS <sub>1</sub> : 12176 bytes EIR <sub>1</sub> : 87.5% UNI speed EBS <sub>1</sub> : 12176 bytes CM <sub>1</sub> : Color-blind CF <sub>1</sub> : N/S	Bandwidth Profile per EVC (EVC <sub>2</sub> )	CIR <sub>2</sub> : 12.5% UNI speed CBS <sub>2</sub> : 12176 bytes EIR <sub>2</sub> : 87.5% UNI speed EBS <sub>2</sub> : 12176 bytes CM <sub>2</sub> : Color-blind CF <sub>2</sub> : N/S	Bandwidth Profile per CoS Identifier	None	L2 Control Protocol - Discard	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	L2 Control Protocol - Peer	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocol <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	L2 Control Protocol - Pass to EVC	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	<b>TEST TRAFFIC</b>		1) Packet Size & Traffic Load	80-byte frames tagged with VLAN ID 11 at a constant rate equal to 12.5% of the UNI speed combined with 80-byte frames tagged with VLAN ID 12 at a constant rate equal to 12.5% of the UNI speed	2) Packet Size & Traffic Load	600-byte frames tagged with VLAN ID 11 at a constant rate equal to 12.5% of the UNI speed combined with 600-byte frames tagged with VLAN ID 12 at a constant rate equal to 12.5% of the UNI speed	3) Packet Size & Traffic Load	1500-byte frames tagged with VLAN ID 11 at a constant rate equal to 12.5% of the UNI speed combined with 1500-byte frames tagged with VLAN ID 12 at a constant rate equal to 12.5% of the UNI speed
SERVICE ATTRIBUTE	SERVICE ATTRIBUTE - PARAMETERS & VALUES																																																														
<b>EVC</b>																																																															
EVC Type	EVC <sub>1</sub> Point-to-Point <input checked="" type="checkbox"/> MP-to-MP <input type="checkbox"/> EVC <sub>2</sub> Point-to-Point <input checked="" type="checkbox"/> MP-to-MP <input type="checkbox"/>																																																														
CE-VLAN ID Preservation	EVC <sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> EVC <sub>2</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																																																														
CE-VLAN CoS Preservation	EVC <sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> EVC <sub>2</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																																																														
Unicast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/> EVC <sub>2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>																																																														
Multicast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/> EVC <sub>2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>																																																														
Broadcast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/> EVC <sub>2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>																																																														
L2 Control Protocol - Discard	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																														
L2 Control Protocol - Tunnel	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																														
Service Performance - EVC <sub>1</sub>	CoS ID: 1 Fr. Delay = FD <sub>1</sub> Fr. Delay Variation = FDV <sub>1</sub> Fr. Loss Ratio = FLR <sub>1</sub>																																																														
Service Performance - EVC <sub>2</sub>	CoS ID: 2 Fr. Delay = FD <sub>2</sub> Fr. Delay Variation = FDV <sub>2</sub> Fr. Loss Ratio = FLR <sub>2</sub>																																																														
<b>UNI</b>																																																															
Physical Medium	Standard Ethernet PHY <input checked="" type="checkbox"/>																																																														
Speed	10Mbps <input type="checkbox"/> 100Mbps <input type="checkbox"/> 10/100Mbps <input type="checkbox"/> 1Gbps <input type="checkbox"/> 10Gbps <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																														
Mode	Full Duplex <input checked="" type="checkbox"/> Auto negotiation <input type="checkbox"/>																																																														
MAC Layer	IEEE 802.3-2002 <input checked="" type="checkbox"/>																																																														
Service Multiplexing	UNI '00' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> UNI '01' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																																																														
Bundling	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																																																														
All to One Bundling	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																																																														
Bandwidth Profile per Ingress UNI	None																																																														
Bandwidth Profile per EVC (EVC <sub>1</sub> )	CIR <sub>1</sub> : 12.5% UNI speed CBS <sub>1</sub> : 12176 bytes EIR <sub>1</sub> : 87.5% UNI speed EBS <sub>1</sub> : 12176 bytes CM <sub>1</sub> : Color-blind CF <sub>1</sub> : N/S																																																														
Bandwidth Profile per EVC (EVC <sub>2</sub> )	CIR <sub>2</sub> : 12.5% UNI speed CBS <sub>2</sub> : 12176 bytes EIR <sub>2</sub> : 87.5% UNI speed EBS <sub>2</sub> : 12176 bytes CM <sub>2</sub> : Color-blind CF <sub>2</sub> : N/S																																																														
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L2 Control Protocol - Pass to EVC	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																														
<b>TEST TRAFFIC</b>																																																															
1) Packet Size & Traffic Load	80-byte frames tagged with VLAN ID 11 at a constant rate equal to 12.5% of the UNI speed combined with 80-byte frames tagged with VLAN ID 12 at a constant rate equal to 12.5% of the UNI speed																																																														
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3) Packet Size & Traffic Load	1500-byte frames tagged with VLAN ID 11 at a constant rate equal to 12.5% of the UNI speed combined with 1500-byte frames tagged with VLAN ID 12 at a constant rate equal to 12.5% of the UNI speed																																																														
UNITS	Time units																																																														
RESULTS	Pass or Fail - See Frame Delay Performance Objectives on section 4.4																																																														
REMARKS	Test results set the lower limit that the Frame Delay Performance Objective can take when the $\Sigma$ CIR = 25% of the UNI speed																																																														

**TEST CASE 2.2.8b**  
**FRAME DELAY VARIATION SERVICE PERFORMANCE**  
**MULTIPLE EVCs WITH  $\Sigma$ CIR = 75% OF THE UNI SPEED**

TEST CASE NAME	2.2.8b Frame Delay Variation Service Performance - Multiple EVCs with $\Sigma$ CIR = 75% of the UNI Speed
SERVICE TYPE	Ethernet Virtual Private Line
REFERENCES	MEF 10 Ethernet Services Attributes - Phase 1 (6.7.3) MEF 14 Abstract Test Suite for Traffic Management - Phase 1 (Test Case 2)
TEST TYPE	Conformance
TEST STATUS	Optional
REQUIREMENT DESCRIPTION	For all Service Frames declared Green and associated with a particular Class of Service Identifier on a Point-to-Point EVC that arrive at the UNI during a time interval $T$ , Frame Delay Variation Performance <b>MUST</b> be less than or equal to the Frame Delay Variation Performance Objective
TEST OBJECT	Verify that for all Service Frames declared Green and associated with a particular Class of Service Identifier on a Point-to-Point EVC that arrive at the UNI during a time interval $T$ , Frame Delay Variation Performance is less than or equal to the Frame Delay Variation Performance Objective
TEST CONFIGURATION	Two EVCs associating two UNIs are configured. Two Bandwidth Profiles with CIRs > 0 are associated with the EVCs. Testers are attached to both UNIs in the configured EVCs

CE-VLAN ID/EVC MAP	<b>INGRESS UNI '00'</b>		<b>EGRESS UNI '01'</b>	
	<b>CE-VLAN ID</b>	<b>EVC</b>	<b>CE-VLAN ID</b>	<b>EVC</b>
	11	EVC <sub>1</sub>	11	EVC <sub>1</sub>
	12	EVC <sub>2</sub>	12	EVC <sub>2</sub>

TEST PROCEDURE	<p>Tester offers tagged unicast Service Frames with VLAN IDs 11 and 12 at the ingress UNI '00' into the configured EVCs and for each EVC measures Frame Delay Variation as the variation in the Frame Delay between a pair of Green Service Frames. Frame Delay Variation Performance is then calculated for a time interval <math>T</math>, as the P-Percentile of the difference between the frame delays of a Service Frame pair that satisfies the following two characteristics:</p> <ul style="list-style-type: none"> <li>The two Service Frames that comprise the pair arrive at the ingress UNI within the time interval <math>T</math></li> <li>The two Service Frames that comprise the pair arrive at the ingress UNI exactly <math>\Delta t</math> time units apart</li> </ul> <p>The P-Percentile is set to 99%. The <math>\Delta t</math> is set to (1 x inter-frame time). The results of multiple measurements may be compiled together so that the total measurement time is at least <math>[(1 \times 10^7)/UNI \text{ Speed}] * 60 \text{ sec}</math></p>
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SERVICE ATTRIBUTE	SERVICE ATTRIBUTE - PARAMETERS & VALUES			
<b>EVC</b>				
EVC Type	EVC <sub>1</sub> Point-to-Point <input checked="" type="checkbox"/> MP-to-MP <input type="checkbox"/>		EVC <sub>2</sub> Point-to-Point <input checked="" type="checkbox"/> MP-to-MP <input type="checkbox"/>	
CE-VLAN ID Preservation	EVC <sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		EVC <sub>2</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
CE-VLAN CoS Preservation	EVC <sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		EVC <sub>2</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Unicast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>		EVC <sub>2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>	
Multicast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>		EVC <sub>2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>	
Broadcast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>		EVC <sub>2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>	
L2 Control Protocol - Discard	Bridge Block of protocols <input type="checkbox"/>	GARP Block of protocols <input type="checkbox"/>	All Bridges Protocol <input type="checkbox"/>	N/S <input checked="" type="checkbox"/>
L2 Control Protocol - Tunnel	Bridge Block of protocols <input type="checkbox"/>	GARP Block of protocols <input type="checkbox"/>	All Bridges Protocol <input type="checkbox"/>	N/S <input checked="" type="checkbox"/>
Service Performance - EVC <sub>1</sub>	CoS ID: 1	Fr. Delay = FD <sub>1</sub>	Fr. Delay Variation = FDV <sub>1</sub>	Fr. Loss Ratio = FLR <sub>1</sub>
Service Performance - EVC <sub>2</sub>	CoS ID: 2	Fr. Delay = FD <sub>2</sub>	Fr. Delay Variation = FDV <sub>2</sub>	Fr. Loss Ratio = FLR <sub>2</sub>
<b>UNI</b>				
Physical Medium	Standard Ethernet PHY <input checked="" type="checkbox"/>			
Speed	10Mbps <input type="checkbox"/>	100Mbps <input type="checkbox"/>	10/100Mbps <input type="checkbox"/>	1Gbps <input type="checkbox"/> 10Gbps <input type="checkbox"/> N/S <input checked="" type="checkbox"/>
Mode	Full Duplex <input checked="" type="checkbox"/>		Auto negotiation <input type="checkbox"/>	
MAC Layer	IEEE 802.3-2002 <input checked="" type="checkbox"/>			
Service Multiplexing	UNI '00' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	UNI '01' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Bundling	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
All to One Bundling	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Bandwidth Profile per Ingress UNI	None			
Bandwidth Profile per EVC (EVC <sub>1</sub> )	CIR <sub>1</sub> : 37.5% UNI speed EBS <sub>1</sub> : 12176 bytes		CBS <sub>1</sub> : 12176 bytes CM <sub>1</sub> : Color-blind EIR <sub>1</sub> : 62.5% UNI speed CF <sub>1</sub> : N/S	
Bandwidth Profile per EVC (EVC <sub>2</sub> )	CIR <sub>2</sub> : 37.5% UNI speed EBS <sub>2</sub> : 12176 bytes		CBS <sub>2</sub> : 12176 bytes CM <sub>2</sub> : Color-blind EIR <sub>2</sub> : 62.5% UNI speed CF <sub>2</sub> : N/S	
Bandwidth Profile per CoS Identifier	None			
L2 Control Protocol - Discard	Bridge Block of protocols <input type="checkbox"/>	GARP Block of protocols <input type="checkbox"/>	All Bridges Protocol <input type="checkbox"/>	N/S <input checked="" type="checkbox"/>
L2 Control Protocol - Peer	Bridge Block of protocols <input type="checkbox"/>	GARP Block of protocol <input type="checkbox"/>	All Bridges Protocol <input type="checkbox"/>	N/S <input checked="" type="checkbox"/>
L2 Control Protocol - Pass to EVC	Bridge Block of protocols <input type="checkbox"/>	GARP Block of protocols <input type="checkbox"/>	All Bridges Protocol <input type="checkbox"/>	N/S <input checked="" type="checkbox"/>
<b>TEST TRAFFIC</b>				
1) Packet Size & Traffic Load	80-byte frames tagged with VLAN ID 11 at a constant rate equal to 37.5% of the UNI speed combined with 80-byte frames tagged with VLAN ID 12 at a constant rate equal to 37.5% of the UNI speed			
2) Packet Size & Traffic Load	600-byte frames tagged with VLAN ID 11 at a constant rate equal to 37.5% of the UNI speed combined with 600-byte frames tagged with VLAN ID 12 at a constant rate equal to 37.5% of the UNI speed			
3) Packet Size & Traffic Load	1500-byte frames tagged with VLAN ID 11 at a constant rate equal to 37.5% of the UNI speed combined with 1500-byte frames tagged with VLAN ID 12 at a constant rate equal to 37.5% of the UNI speed			

UNITS	Time units
RESULTS	Pass or Fail - See Frame Delay Variation Performance Objectives on section 4.4
REMARKS	Test results set the lower limit that the Frame Delay Variation Performance Objective can take when the $\Sigma$ CIR = 75% of the UNI speed

<b>TEST CASE 3.2.9b</b>																																																																																																																																																																											
<b>FRAME LOSS RATIO SERVICE PERFORMANCE</b>																																																																																																																																																																											
<b>MULTIPLE EVCs WITH <math>\Sigma</math>CIR = 95% OF THE UNI SPEED</b>																																																																																																																																																																											
<b>TEST CASE NAME</b>	3.2.9b Frame Loss Ratio Service Performance - Multiple EVCs with $\Sigma$ CIR = 95% of the UNI Speed																																																																																																																																																																										
<b>SERVICE TYPE</b>	Ethernet Virtual Private Line																																																																																																																																																																										
<b>REFERENCES</b>	MEF 10 Ethernet Services Attributes - Phase 1 (6.7.5) MEF 14 Abstract Test Suite for Traffic Management - Phase 1 (Test Case 3)																																																																																																																																																																										
<b>TEST TYPE</b>	Conformance																																																																																																																																																																										
<b>TEST STATUS</b>	Optional																																																																																																																																																																										
<b>REQUIREMENT DESCRIPTION</b>	For all Service Frames declared Green and associated with a particular Class of Service Identifier on a Point-to-Point EVC that arrive at the UNI during a time interval $T$ , Frame Loss Ratio Performance <b>MUST</b> be less than or equal to the Frame Loss Ratio Performance Objective																																																																																																																																																																										
<b>TEST OBJECT</b>	Verify that for all Service Frames declared Green and associated with a particular Class of Service Identifier on a Point-to-Point EVC that arrive at the UNI during a time interval $T$ , Frame Loss Ratio Performance is less than or equal to the Frame Loss Ratio Performance Objective																																																																																																																																																																										
<b>TEST CONFIGURATION</b>	Two EVCs associating two UNIs are configured. Two Bandwidth Profiles with CIRs > 0 are associated with the EVCs. Testers are attached to both UNIs in the configured EVCs																																																																																																																																																																										
<b>CE-VLAN ID/EVC MAP</b>	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="2">INGRESS UNI '00'</th> <th colspan="2">EGRESS UNI '01'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td>11</td> <td>EVC<sub>1</sub></td> <td>11</td> <td>EVC<sub>1</sub></td> </tr> <tr> <td>12</td> <td>EVC<sub>2</sub></td> <td>12</td> <td>EVC<sub>2</sub></td> </tr> </tbody> </table>	INGRESS UNI '00'		EGRESS UNI '01'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11	EVC <sub>1</sub>	11	EVC <sub>1</sub>	12	EVC <sub>2</sub>	12	EVC <sub>2</sub>																																																																																																																																																										
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<b>TEST PROCEDURE</b>	Tester offers tagged unicast Service Frames with VLAN IDs 11 and 12 at the ingress UNI '00' into the configured EVCs and for each EVC over a time interval $T$ counts the number of Service Frames declared Green at the ingress UNI and successfully received at the egress UNI. Frame Loss Ratio Performance is then calculated for each EVC as the ratio, expressed as a percentage, of the number of Service Frames declared Green not delivered at the egress UNI divided by the total number of such Service Frames. The results of multiple measurements may be compiled together so that the total measurement time is at least $[(1 \times 10^7)/\text{UNI Speed}] * 60 \text{ sec}$																																																																																																																																																																										
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Loss Ratio = FLR<sub>2</sub></td> </tr> <tr> <td><b>UNI</b></td> <td colspan="4"></td> </tr> <tr> <td>Physical Medium</td> <td colspan="4">Standard Ethernet PHY <input checked="" type="checkbox"/></td> </tr> <tr> <td>Speed</td> <td>10Mbps <input type="checkbox"/></td> <td>100Mbps <input type="checkbox"/></td> <td>10/100Mbps <input type="checkbox"/></td> <td>1Gbps <input type="checkbox"/> 10Gbps <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>Mode</td> <td colspan="2">Full Duplex <input checked="" type="checkbox"/></td> <td colspan="2">Auto negotiation <input type="checkbox"/></td> </tr> <tr> <td>MAC Layer</td> <td colspan="4">IEEE 802.3-2002 <input checked="" type="checkbox"/></td> </tr> <tr> <td>Service Multiplexing</td> <td>UNI '00' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> <td colspan="3">UNI '01' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td>Bundling</td> <td>UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></td> <td colspan="3">UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></td> </tr> <tr> <td>All to One Bundling</td> <td>UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></td> <td colspan="3">UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></td> </tr> <tr> <td>Bandwidth Profile per Ingress UNI</td> <td colspan="4">None</td> </tr> <tr> <td>Bandwidth Profile per EVC (EVC<sub>1</sub>)</td> <td colspan="2">CIR<sub>1</sub>: 47.5% UNI speed EBS<sub>1</sub>: 12176 bytes</td> <td colspan="2">CBS<sub>1</sub>: 12176 bytes CM<sub>1</sub>: Color-blind EIR<sub>1</sub>: 52.5% UNI speed CF<sub>1</sub>: N/S</td> </tr> <tr> <td>Bandwidth Profile per EVC (EVC<sub>2</sub>)</td> <td colspan="2">CIR<sub>2</sub>: 47.5% UNI speed EBS<sub>2</sub>: 12176 bytes</td> <td colspan="2">CBS<sub>2</sub>: 12176 bytes CM<sub>2</sub>: Color-blind EIR<sub>2</sub>: 52.5% UNI speed CF<sub>2</sub>: N/S</td> </tr> <tr> <td>Bandwidth Profile per CoS Identifier</td> <td colspan="4">None</td> </tr> <tr> <td>L2 Control Protocol - Discard</td> <td>Bridge Block of protocols <input type="checkbox"/></td> <td>GARP Block of protocols <input type="checkbox"/></td> <td>All Bridges Protocol <input type="checkbox"/></td> <td>N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Peer</td> <td>Bridge Block of protocols <input type="checkbox"/></td> <td>GARP Block of protocol <input type="checkbox"/></td> <td>All Bridges Protocol <input type="checkbox"/></td> <td>N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Pass to EVC</td> <td>Bridge Block of protocols <input type="checkbox"/></td> <td>GARP Block of protocols <input type="checkbox"/></td> <td>All Bridges Protocol <input type="checkbox"/></td> <td>N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td><b>TEST TRAFFIC</b></td> <td colspan="4"></td> </tr> <tr> <td>1) Packet Size &amp; 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Delay = FD <sub>1</sub>	Fr. Delay Variation = FDV <sub>1</sub>	Fr. Loss Ratio = FLR <sub>1</sub>	Service Performance - EVC <sub>2</sub>	CoS ID: 2	Fr. Delay = FD <sub>2</sub>	Fr. Delay Variation = FDV <sub>2</sub>	Fr. 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<b>TEST CASE 3.2.2c</b>																																																											
<b>FRAME LOSS RATIO SERVICE PERFORMANCE</b>																																																											
<b>SINGLE EVC WITH CIR = 50% OF THE UNI SPEED</b>																																																											
TEST CASE NAME	3.2.2c Frame Loss Ratio Service Performance - Single EVC with CIR = 50% of the UNI Speed																																																										
SERVICE TYPE	Ethernet Virtual Private Line																																																										
REFERENCES	MEF 10 Ethernet Services Attributes - Phase 1 (6.7.5) MEF 14 Abstract Test Suite for Traffic Management - Phase 1 (Test Case 3)																																																										
TEST TYPE	Conformance																																																										
TEST STATUS	Optional																																																										
REQUIREMENT DESCRIPTION	For all Service Frames declared Green and associated with a particular Class of Service Identifier on a Point-to-Point EVC that arrive at the UNI during a time interval $T$ , Frame Loss Ratio Performance <b>MUST</b> be less than or equal to the Frame Loss Ratio Performance Objective																																																										
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TEST CONFIGURATION	One EVC associating two UNIs is configured and one Bandwidth Profile with CIR > 0 is associated with the ingress UNI '00'. Testers are attached to both UNIs in the configured EVC																																																										
CE-VLAN ID/EVC MAP	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="2">INGRESS UNI '00'</th> <th colspan="2">EGRESS UNI '01'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td>11</td> <td>EVC<sub>1</sub></td> <td>11</td> <td>EVC<sub>1</sub></td> </tr> </tbody> </table>	INGRESS UNI '00'		EGRESS UNI '01'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11	EVC <sub>1</sub>	11	EVC <sub>1</sub>																																														
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TEST PROCEDURE	Tester offers tagged unicast Service Frames with VLAN ID 11 and user priority bits set to 001 at the ingress UNI '00' into the configured EVC and over a time interval $T$ counts the number of Service Frames declared Green at the ingress UNI and successfully received at the egress UNI. Frame Loss Ratio Performance is then calculated as the ratio, expressed as a percentage, of the number of Service Frames declared Green not delivered at the egress UNI divided by the total number of such Service Frames. The results of multiple measurements may be compiled together so that the total measurement time is at least $[(1 \times 10^4)/\text{UNI Speed}] * 60 \text{ sec}$																																																										
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UNITS	Number of valid Service Frames																																																										
RESULTS	Pass or Fail - See Frame Loss Ratio Performance Objectives on section 4.4																																																										
REMARKS	Test results set the lower limit that the Frame Loss Ratio Performance Objective can take when the CIR = 50% of the UNI speed																																																										

<b>TEST CASE 3.2.5c</b>																																																											
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TEST CASE NAME	3.2.5c Frame Loss Ratio Service Performance - Single EVC with CIR = 100% of the UNI Speed																																																										
SERVICE TYPE	Ethernet Virtual Private Line																																																										
REFERENCES	MEF 10 Ethernet Services Attributes - Phase 1 (6.7.5) MEF 14 Abstract Test Suite for Traffic Management - Phase 1 (Test Case 3)																																																										
TEST TYPE	Conformance																																																										
TEST STATUS	Optional																																																										
REQUIREMENT DESCRIPTION	For all Service Frames declared Green and associated with a particular Class of Service Identifier on a Point-to-Point EVC that arrive at the UNI during a time interval $T$ , Frame Loss Ratio Performance <b>MUST</b> be less than or equal to the Frame Loss Ratio Performance Objective																																																										
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TEST CONFIGURATION	One EVC associating two UNIs is configured and one Bandwidth Profile with CIR > 0 is associated with the ingress UNI '00'. Testers are attached to both UNIs in the configured EVC																																																										
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Service Performance - EVC <sub>1</sub>	CoS ID: 1 Fr. Delay = FD <sub>1</sub> Fr. Delay Variation = FDV <sub>1</sub> Fr. Loss Ratio = FLR <sub>1</sub>																																																										
<b>UNI</b>																																																											
Physical Medium	Standard Ethernet PHY <input checked="" type="checkbox"/>																																																										
Speed	10Mbps <input type="checkbox"/> 100Mbps <input type="checkbox"/> 10/100Mbps <input type="checkbox"/> 1Gbps <input type="checkbox"/> 10Gbps <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																										
Mode	Full Duplex <input checked="" type="checkbox"/> Auto negotiation <input type="checkbox"/>																																																										
MAC Layer	IEEE 802.3-2002 <input checked="" type="checkbox"/>																																																										
Service Multiplexing	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																																																										
Bundling	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																																																										
All to One Bundling	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																																																										
Bandwidth Profile per Ingress UNI	None																																																										
Bandwidth Profile per EVC	None																																																										
Bandwidth Profile per CoS ID (CoS ID 1)	CIR <sub>1</sub> : 100% UNI speed CBS <sub>1</sub> : 12176 bytes EIR <sub>1</sub> : 0 EBS <sub>1</sub> : 0 CM <sub>1</sub> : Color-blind CF <sub>1</sub> : N/S																																																										
L2 Control Protocol - Discard	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																										
L2 Control Protocol - Peer	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																										
L2 Control Protocol - Pass to EVC	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																										
<b>TEST TRAFFIC</b>																																																											
1) Packet Size & Traffic Load	80-byte frames at a constant rate equal to the UNI speed																																																										
2) Packet Size & Traffic Load	600-byte frames at a constant rate equal to the UNI speed																																																										
3) Packet Size & Traffic Load	1500-byte frames at a constant rate equal to the UNI speed																																																										
UNITS	Number of valid Service Frames																																																										
RESULTS	Pass or Fail - See Frame Loss Ratio Performance Objectives on section 4.4																																																										
REMARKS	Test results set the lower limit that the Frame Loss Ratio Performance Objective can take when the CIR = 100% of the UNI speed																																																										

# 6 Traffic Management - Requirements and Test Procedures for Bandwidth Profiles Service Attributes

## 6.1 Test Cases for Ethernet Private Lines

<b>TEST CASE 4.1.1a</b>																																																							
<b>BANDWIDTH PROFILE RATE ENFORCMENT WHEN CIR &gt; 0 AND EIR = 0</b>																																																							
<b>SINGLE EVC WITH CIR = 25% OF THE UNI SPEED</b>																																																							
TEST CASE NAME	4.1.1a Bandwidth Profile Rate Enforcement when CIR > 0 and EIR = 0 - Single EVC with CIR = 25% of the UNI Speed																																																						
SERVICE TYPE	Ethernet Private Line																																																						
REFERENCES	MEF 10 Ethernet Services Attributes – Phase 1 (7.10.2) MEF 14 Abstract Test Suite for Traffic Management – Phase 1 (Test Case 4)																																																						
TEST TYPE	Conformance																																																						
TEST STATUS	Mandatory																																																						
REQUIREMENT DESCRIPTION	When a Bandwidth Profile is associated with a UNI, with a CIR > 0 and an EIR = 0, the amount of traffic delivered at the egress UNI <b>MUST NOT</b> exceed the amount of traffic accepted as Green ( $W_G$ ) at the ingress UNI during a time interval $T$ , provided that the ingress traffic is greater than $W_G$																																																						
TEST OBJECT	Verify that when a Bandwidth Profile is associated with a UNI, with a CIR > 0 and an EIR = 0, the amount of traffic delivered at the egress UNI does not exceed the amount of traffic accepted as Green ( $W_G$ ) at the ingress UNI during a time interval $T$ , provided that the ingress traffic is greater than $W_G$																																																						
TEST CONFIGURATION	One EVC associating two UNIs is configured and one Bandwidth Profile is applied at the UNI. Testers are attached to both UNIs in the configured EVC																																																						
CE-VLAN ID/EVC MAP	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2" style="text-align: center;">INGRESS UNI '00'</th> <th colspan="2" style="text-align: center;">EGRESS UNI '01'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11</td> <td style="text-align: center;">EVC<sub>1</sub></td> <td style="text-align: center;">11</td> <td style="text-align: center;">EVC<sub>1</sub></td> </tr> </tbody> </table>	INGRESS UNI '00'		EGRESS UNI '01'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11	EVC <sub>1</sub>	11	EVC <sub>1</sub>																																										
INGRESS UNI '00'		EGRESS UNI '01'																																																					
CE-VLAN ID	EVC	CE-VLAN ID	EVC																																																				
11	EVC <sub>1</sub>	11	EVC <sub>1</sub>																																																				
TEST PROCEDURE	<p>Tester offers tagged unicast Service Frames with VLAN ID 11 of length <math>\lambda</math> at an average rate greater than CIR<sub>1</sub> to the ingress UNI during a time interval <math>T</math> and measures the number of Service Frames delivered at the egress UNI. The amount of traffic delivered at the egress UNI must not exceed <math>W_G</math> where:</p> <ul style="list-style-type: none"> <li><math>W_G</math> is the amount of traffic accepted as Green over the time interval <math>T</math> that should be delivered to the egress UNI</li> </ul> <p>The results of multiple measurements may be compiled together so that the total measurement time is at least <math>[(1 \times 10^7)/\text{UNI Speed}] * 60 \text{ sec}</math></p>																																																						
TEST PARAMETERS	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">SERVICE ATTRIBUTE</th> <th style="text-align: left;">SERVICE ATTRIBUTE – PARAMETERS &amp; VALUES</th> </tr> </thead> <tbody> <tr> <td><b>EVC</b></td> <td></td> </tr> <tr> <td>EVC<sub>1</sub> Type</td> <td>Point-to-Point <input checked="" type="checkbox"/> Multipoint-to-Multipoint <input type="checkbox"/></td> </tr> <tr> <td>CE-VLAN ID Preservation</td> <td>EVC<sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td>CE-VLAN CoS Preservation</td> <td>EVC<sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td>Unicast Service Frame Delivery</td> <td>EVC<sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/></td> </tr> <tr> <td>Multicast Service Frame Delivery</td> <td>EVC<sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/></td> </tr> <tr> <td>Broadcast Service Frame Delivery</td> <td>EVC<sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol – Discard</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol – Tunnel</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>Service Performance – EVC<sub>1</sub></td> <td>CoS ID: 1 Fr. Delay = FD<sub>1</sub> Fr. Delay Variation = FDV<sub>1</sub> Fr. Loss Ratio = FLR<sub>1</sub></td> </tr> <tr> <td><b>UNI</b></td> <td></td> </tr> <tr> <td>Physical Medium</td> <td>Standard Ethernet PHY <input checked="" type="checkbox"/></td> </tr> <tr> <td>Speed</td> <td>10Mbps <input type="checkbox"/> 100Mbps <input type="checkbox"/> 10/100Mbps <input type="checkbox"/> 1Gbps <input type="checkbox"/> 10Gbps <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>Mode</td> <td>Full Duplex <input checked="" type="checkbox"/> Auto negotiation <input type="checkbox"/></td> </tr> <tr> <td>MAC Layer</td> <td>IEEE 802.3-2002 <input checked="" type="checkbox"/></td> </tr> <tr> <td>Service Multiplexing</td> <td>UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></td> </tr> <tr> <td>Bundling</td> <td>UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></td> </tr> <tr> <td>All to One Bundling</td> <td>UNI '00' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> UNI '01' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td>Bandwidth Profile per Ingress UNI</td> <td>CIR<sub>1</sub>: 25% UNI speed CBS<sub>1</sub>: 12176 bytes EIR<sub>1</sub>: 0 EBS<sub>1</sub>: 0 CM<sub>1</sub>: Color-blind CF<sub>1</sub>: N/S</td> </tr> <tr> <td>L2 Control Protocol – Discard</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol – Peer</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol – Pass to EVC</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td><b>TEST TRAFFIC</b></td> <td></td> </tr> <tr> <td>1) Packet Size &amp; Traffic Load</td> <td>80-byte frames at a constant rate equal to the UNI speed</td> </tr> <tr> <td>2) Packet Size &amp; Traffic Load</td> <td>600-byte frames at a constant rate equal to the UNI speed</td> </tr> <tr> <td>3) Packet Size &amp; Traffic Load</td> <td>1500-byte frames at a constant rate equal to the UNI speed</td> </tr> </tbody> </table>	SERVICE ATTRIBUTE	SERVICE ATTRIBUTE – PARAMETERS & VALUES	<b>EVC</b>		EVC <sub>1</sub> Type	Point-to-Point <input checked="" type="checkbox"/> Multipoint-to-Multipoint <input type="checkbox"/>	CE-VLAN ID Preservation	EVC <sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	CE-VLAN CoS Preservation	EVC <sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Unicast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>	Multicast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>	Broadcast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>	L2 Control Protocol – Discard	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	L2 Control Protocol – Tunnel	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	Service Performance – EVC <sub>1</sub>	CoS ID: 1 Fr. 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UNITS	Number of valid Service Frames																																																						
RESULTS	Pass or fail																																																						
REMARKS																																																							

<b>TEST CASE 7.1.1a BANDWIDTH PROFILE PER INGRESS UNI SINGLE EVC WITH CIR &gt; 0 and EIR = 0</b>																																																							
TEST CASE NAME	7.1.1a Bandwidth Profile per Ingress UNI - Single EVC with CIR > 0 and EIR = 0																																																						
SERVICE TYPE	Ethernet Private Line																																																						
REFERENCES	MEF 10 Ethernet Services Attributes - Phase 1 (7.10.3) MEF 14 Abstract Test Suite for Traffic Management - Phase 1 (Test Case 7)																																																						
TEST TYPE	Conformance																																																						
TEST STATUS	Mandatory																																																						
REQUIREMENT DESCRIPTION	When a per Ingress UNI Bandwidth Profile is associated with a UNI, the Bandwidth Profile <b>MUST</b> be applied to all ingress Service Frames at that UNI																																																						
TEST OBJECT	Verify that when a per Ingress UNI Bandwidth Profile is associated with a UNI, the Bandwidth Profile is applied to all ingress Service Frames at that UNI																																																						
TEST CONFIGURATION	One EVC associating two UNIs is configured and one Bandwidth Profile is applied at the UNI. Testers are attached to both UNIs in the configured EVC																																																						
CE-VLAN ID/EVC MAP	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="2">INGRESS UNI '00'</th> <th colspan="2">EGRESS UNI '01'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td>11, 12</td> <td>EVC<sub>1</sub></td> <td>11, 12</td> <td>EVC<sub>1</sub></td> </tr> </tbody> </table>	INGRESS UNI '00'		EGRESS UNI '01'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11, 12	EVC <sub>1</sub>	11, 12	EVC <sub>1</sub>																																										
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11, 12	EVC <sub>1</sub>	11, 12	EVC <sub>1</sub>																																																				
TEST PROCEDURE	<p>Tester offers tagged unicast Service Frames with VLAN IDs 11 and 12 of length <math>\lambda</math> into the configured EVC at the ingress UNI and verifies that over a time interval <math>T</math> at least one Service Frame of each VLAN ID is delivered at the egress UNI. Service Frames tagged with VLAN 11 and 12 are offered at equal average rates into the configured EVC at the ingress UNI, at an aggregate average rate greater than the CIR<sub>1</sub>. Tester also verifies that the amount of traffic delivered at the egress UNI does not exceed (<math>W_G</math>) where:</p> <ul style="list-style-type: none"> <li><math>W_G</math> is the amount of traffic accepted as Green over the time interval <math>T</math> that should be delivered to the egress UNI</li> </ul> <p>The results of multiple measurements may be compiled together so that the total measurement time is at least <math>[(1 \times 10^7)/\text{UNI Speed}] * 60</math> sec</p>																																																						
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UNITS	Number of valid Service Frames																																																						
RESULTS	Pass or fail																																																						
REMARKS																																																							

<b>TEST CASE 4.2.2a</b>																																																											
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<b>SINGLE EVC WITH CIR = 50% OF THE UNI SPEED</b>																																																											
TEST CASE NAME	4.2.2a Bandwidth Profile Rate Enforcement when CIR > 0 and EIR = 0 - Single EVC with CIR = 50% of the UNI Speed																																																										
SERVICE TYPE	Ethernet Virtual Private Line																																																										
REFERENCES	MEF 10 Ethernet Services Attributes - Phase 1 (7.10.2) MEF 14 Abstract Test Suite for Traffic Management - Phase 1 (Test Case 4)																																																										
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TEST STATUS	Optional																																																										
REQUIREMENT DESCRIPTION	When a Bandwidth Profile is associated with a UNI, with a CIR > 0 and an EIR = 0, the amount of traffic delivered at the egress UNI <b>MUST NOT</b> exceed the amount of traffic accepted as Green ( $W_G$ ) at the ingress UNI during a time interval $T$ , provided that the ingress traffic is greater than $W_G$																																																										
TEST OBJECT	Verify that when a Bandwidth Profile is associated with a UNI, with a CIR > 0 and an EIR = 0, the amount of traffic delivered at the egress UNI does not exceed the amount of traffic accepted as Green ( $W_G$ ) at the ingress UNI during a time interval $T$ , provided that the ingress traffic is greater than $W_G$																																																										
TEST CONFIGURATION	One EVC associating two UNIs is configured and one Bandwidth Profile is applied at the UNI. Testers are attached to both UNIs in the configured EVC																																																										
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TEST PROCEDURE	<p>Tester offers tagged unicast Service Frames with VLAN ID 11 of length <math>\lambda</math> at an average rate greater than CIR<sub>1</sub> to the ingress UNI during a time interval <math>T</math> and measures the number of Service Frames delivered at the egress UNI. The amount of traffic delivered at the egress UNI must not exceed <math>W_G</math> where:</p> <ul style="list-style-type: none"> <li><math>W_G</math> is the amount of traffic accepted as Green over the time interval <math>T</math> that should be delivered to the egress UNI</li> </ul> <p>The results of multiple measurements may be compiled together so that the total measurement time is at least <math>[(1 \times 10^7)/\text{UNI Speed}] * 60 \text{ sec}</math></p>																																																										
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Bundling	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																																																										
All to One Bundling	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																																																										
Bandwidth Profile per Ingress UNI	CIR <sub>1</sub> : 50% UNI speed CBS <sub>1</sub> : 12176 bytes EIR <sub>1</sub> : 0																																																										
Bandwidth Profile per EVC	EBS <sub>1</sub> : 0 CM <sub>1</sub> : Color-blind CF <sub>1</sub> : N/S																																																										
Bandwidth Profile per CoS Identifier	None																																																										
L2 Control Protocol - Discard	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																										
L2 Control Protocol - Peer	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																										
L2 Control Protocol - Pass to EVC	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																										
<b>TEST TRAFFIC</b>																																																											
1) Packet Size & Traffic Load	80-byte frames at a constant rate equal to the UNI speed																																																										
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3) Packet Size & Traffic Load	1500-byte frames at a constant rate equal to the UNI speed																																																										
UNITS	Number of valid Service Frames																																																										
RESULTS	Pass or fail																																																										
REMARKS																																																											

**TEST CASE 6.2.3c**  
**BANDWIDTH PROFILE RATE ENFORCEMENT WHEN CIR > 0 AND EIR > 0**  
**SINGLE EVC WITH CIR + EIR = 75% OF THE UNI SPEED**

TEST CASE NAME	6.2.3c Bandwidth Profile Rate Enforcement when CIR > 0 and EIR > 0 - Single EVC with CIR + EIR = 75% of the UNI Speed																																																																																																																																																								
SERVICE TYPE	Ethernet Virtual Private Line																																																																																																																																																								
REFERENCES	MEF 10 Ethernet Services Attributes - Phase 1 (7.10.2) MEF 14 Abstract Test Suite for Traffic Management - Phase 1 (Test Case 6)																																																																																																																																																								
TEST TYPE	Conformance																																																																																																																																																								
TEST STATUS	Optional																																																																																																																																																								
REQUIREMENT DESCRIPTION	When a Bandwidth Profile is associated with a UNI, with a CIR > 0 and an EIR > 0, the amount of traffic delivered at the egress UNI <b>MUST NOT</b> exceed the amount of traffic accepted as Green ( $W_G$ ) plus the amount of traffic accepted as Yellow ( $W_Y$ ) at the ingress UNI during a time interval $T$ , provided that the ingress traffic is greater than ( $W_G + W_Y$ )																																																																																																																																																								
TEST OBJECT	Verify that when a Bandwidth Profile is associated with a UNI, with a CIR > 0 and an EIR > 0, the amount of traffic delivered at the egress UNI does not exceed the amount of traffic accepted as Green ( $W_G$ ) plus the amount of traffic accepted as Yellow ( $W_Y$ ) at the ingress UNI during a time interval $T$ , provided that the ingress traffic is greater than ( $W_G + W_Y$ )																																																																																																																																																								
TEST CONFIGURATION	One EVC associating two UNIs is configured and one Bandwidth Profile is applied at the UNI. Testers are attached to both UNIs in the configured EVC																																																																																																																																																								
CE-VLAN ID/EVC MAP	<table border="1" style="margin: auto;"> <tr> <th colspan="2">INGRESS UNI '00'</th> <th colspan="2">EGRESS UNI '01'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> <tr> <td style="text-align: center;">11</td> <td style="text-align: center;">EVC<sub>1</sub></td> <td style="text-align: center;">11</td> <td style="text-align: center;">EVC<sub>1</sub></td> </tr> </table>	INGRESS UNI '00'		EGRESS UNI '01'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11	EVC <sub>1</sub>	11	EVC <sub>1</sub>																																																																																																																																												
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11	EVC <sub>1</sub>	11	EVC <sub>1</sub>																																																																																																																																																						
TEST PROCEDURE	<p>Tester offers tagged unicast Service Frames with VLAN ID 11 and user priority bits set to 001 of length <math>\lambda</math> at an average rate greater than CIR<sub>1</sub> + EIR<sub>1</sub> to the ingress UNI during a time interval <math>T</math> and measures the number of Service Frames delivered at the egress UNI. The amount of traffic delivered at the egress UNI must not exceed (<math>W_G + W_Y</math>) where:</p> <ul style="list-style-type: none"> <li><math>W_G</math> is the amount of traffic accepted as Green over the time interval <math>T</math> that should be delivered to the egress UNI</li> <li><math>W_Y</math> is the amount of traffic accepted as Yellow over the time interval <math>T</math> that may be delivered to the egress UNI</li> </ul> <p>The results of multiple measurements may be compiled together so that the total measurement time is at least <math>[(1 \times 10^7)/\text{UNI Speed}] * 60 \text{ sec}</math></p>																																																																																																																																																								
TEST PARAMETERS	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">SERVICE ATTRIBUTE</th> <th colspan="4">SERVICE ATTRIBUTE - PARAMETERS &amp; VALUES</th> </tr> </thead> <tbody> <tr> <td><b>EVC</b></td> <td colspan="4"></td> </tr> <tr> <td>EVC Type</td> <td colspan="4">EVC<sub>1</sub> Point-to-Point <input checked="" type="checkbox"/> Multipoint-to-Multipoint <input type="checkbox"/></td> </tr> <tr> <td>CE-VLAN ID Preservation</td> <td colspan="4">EVC<sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td>CE-VLAN CoS Preservation</td> <td colspan="4">EVC<sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td>Unicast Service Frame Delivery</td> <td colspan="4">EVC<sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/></td> </tr> <tr> <td>Multicast Service Frame Delivery</td> <td colspan="4">EVC<sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/></td> </tr> <tr> <td>Broadcast Service Frame Delivery</td> <td colspan="4">EVC<sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Discard</td> <td>Bridge Block of protocols <input type="checkbox"/></td> <td>GARP Block of protocols <input type="checkbox"/></td> <td>All Bridges Protocol <input type="checkbox"/></td> <td>N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Tunnel</td> <td>Bridge Block of protocols <input type="checkbox"/></td> <td>GARP Block of protocols <input type="checkbox"/></td> <td>All Bridges Protocol <input type="checkbox"/></td> <td>N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>Service Performance - EVC<sub>1</sub></td> <td>CoS ID: 1</td> <td>Fr. Delay = FD<sub>1</sub></td> <td>Fr. Delay Variation = FDV<sub>1</sub></td> <td>Fr. Loss Ratio = FLR<sub>1</sub></td> </tr> <tr> <td><b>UNI</b></td> <td colspan="4"></td> </tr> <tr> <td>Physical Medium</td> <td colspan="4">Standard Ethernet PHY <input checked="" type="checkbox"/></td> </tr> <tr> <td>Speed</td> <td>10Mbps <input type="checkbox"/></td> <td>100Mbps <input type="checkbox"/></td> <td>10/100Mbps <input type="checkbox"/></td> <td>1Gbps <input type="checkbox"/> 10Gbps <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>Mode</td> <td colspan="4">Full Duplex <input checked="" type="checkbox"/> Auto negotiation <input type="checkbox"/></td> </tr> <tr> <td>MAC Layer</td> <td colspan="4">IEEE 802.3-2002 <input checked="" type="checkbox"/></td> </tr> <tr> <td>Service Multiplexing</td> <td>UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></td> <td>UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></td> <td colspan="2"></td> </tr> <tr> <td>Bundling</td> <td>UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></td> <td>UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></td> <td colspan="2"></td> </tr> <tr> <td>All to One Bundling</td> <td>UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></td> <td>UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></td> <td colspan="2"></td> </tr> <tr> <td>Bandwidth Profile per Ingress UNI</td> <td colspan="4">None</td> </tr> <tr> <td>Bandwidth Profile per EVC</td> <td colspan="4">None</td> </tr> <tr> <td>Bandwidth Profile per CoS ID (CoS ID 1)</td> <td>CIR<sub>1</sub>: 50% UNI speed</td> <td>CBS<sub>1</sub>: 12176 bytes</td> <td>EIR<sub>1</sub>: 25% UNI speed</td> <td></td> </tr> <tr> <td></td> <td>EBS<sub>1</sub>: 12176 bytes</td> <td>CM<sub>1</sub>: Color-blind</td> <td>CF<sub>1</sub>: N/S</td> <td></td> </tr> <tr> <td>L2 Control Protocol - Discard</td> <td>Bridge Block of protocols <input type="checkbox"/></td> <td>GARP Block of protocols <input type="checkbox"/></td> <td>All Bridges Protocol <input type="checkbox"/></td> <td>N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Peer</td> <td>Bridge Block of protocols <input type="checkbox"/></td> <td>GARP Block of protocols <input type="checkbox"/></td> <td>All Bridges Protocol <input type="checkbox"/></td> <td>N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Pass to EVC</td> <td>Bridge Block of protocols <input type="checkbox"/></td> <td>GARP Block of protocols <input type="checkbox"/></td> <td>All Bridges Protocol <input type="checkbox"/></td> <td>N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td><b>TEST TRAFFIC</b></td> <td colspan="4"></td> </tr> <tr> <td>1) Packet Size &amp; Traffic Load</td> <td colspan="4">80-byte frames at a constant rate equal to the UNI speed</td> </tr> <tr> <td>2) Packet Size &amp; Traffic Load</td> <td colspan="4">600-byte frames at a constant rate equal to the UNI speed</td> </tr> <tr> <td>3) Packet Size &amp; Traffic Load</td> <td colspan="4">1500-byte frames at a constant rate equal to the UNI speed</td> </tr> </tbody> </table>			SERVICE ATTRIBUTE	SERVICE ATTRIBUTE - PARAMETERS & VALUES				<b>EVC</b>					EVC Type	EVC <sub>1</sub> Point-to-Point <input checked="" type="checkbox"/> Multipoint-to-Multipoint <input type="checkbox"/>				CE-VLAN ID Preservation	EVC <sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				CE-VLAN CoS Preservation	EVC <sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				Unicast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>				Multicast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>				Broadcast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>				L2 Control Protocol - Discard	Bridge Block of protocols <input type="checkbox"/>	GARP Block of protocols <input type="checkbox"/>	All Bridges Protocol <input type="checkbox"/>	N/S <input checked="" type="checkbox"/>	L2 Control Protocol - Tunnel	Bridge Block of protocols <input type="checkbox"/>	GARP Block of protocols <input type="checkbox"/>	All Bridges Protocol <input type="checkbox"/>	N/S <input checked="" type="checkbox"/>	Service Performance - EVC <sub>1</sub>	CoS ID: 1	Fr. Delay = FD <sub>1</sub>	Fr. Delay Variation = FDV <sub>1</sub>	Fr. 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<b>TEST CASE 7.2.5a</b>																																																													
<b>BANDWIDTH PROFILE PER INGRESS UNI</b>																																																													
<b>MULTIPLE EVCS WITH CIR = 0 and EIR &gt; 0</b>																																																													
TEST CASE NAME	7.2.5a Bandwidth Profile per Ingress UNI - Multiple EVCs with CIR = 0 and EIR > 0																																																												
SERVICE TYPE	Ethernet Virtual Private Line																																																												
REFERENCES	MEF 10 Ethernet Services Attributes - Phase 1 (7.10.3) MEF 14 Abstract Test Suite for Traffic Management - Phase 1 (Test Case 7)																																																												
TEST TYPE	Conformance																																																												
TEST STATUS	Optional																																																												
REQUIREMENT DESCRIPTION	When a per Ingress UNI Bandwidth Profile is associated with a UNI, the Bandwidth Profile <b>MUST</b> be applied to all ingress Service Frames at that UNI																																																												
TEST OBJECT	Verify that when a per Ingress UNI Bandwidth Profile is associated with a UNI, the Bandwidth Profile is applied to all ingress Service Frames at that UNI																																																												
TEST CONFIGURATION	Two EVCs associating two UNIs are configured and one Bandwidth Profile is applied at the UNI. Testers are attached to both UNIs in the configured EVCs																																																												
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12	EVC <sub>2</sub>	12	EVC <sub>2</sub>																																																										
TEST PROCEDURE	<p>Tester offers tagged unicast Service Frames with VLAN IDs 11 and 12 of length <math>\lambda</math> into the configured EVCs at the ingress UNI and verifies that over a time interval <math>T</math> at least one Service Frame from each of the EVCs is delivered at the associated egress UNI. Service Frames tagged with VLAN IDs 11 and 12 are offered at equal average rates into each of the configured EVCs at the ingress UNI, at an aggregate average rate greater than the <math>EIR_1</math>. Tester also verifies that the amount of traffic delivered at the egress UNI does not exceed <math>(W_G + W_Y)</math> where:</p> <ul style="list-style-type: none"> <li><math>W_G</math> is the amount of traffic accepted as Green over the time interval <math>T</math> that should be delivered to the egress UNI</li> <li><math>W_Y</math> is the amount of traffic accepted as Yellow over the time interval <math>T</math> that may be delivered to the egress UNI</li> </ul> <p>The results of multiple measurements may be compiled together so that the total measurement time is at least <math>[(1 \times 10^7)/UNI \text{ Speed}] * 60 \text{ sec}</math></p>																																																												
TEST PARAMETERS	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">SERVICE ATTRIBUTE</th> <th>SERVICE ATTRIBUTE - PARAMETERS &amp; VALUES</th> </tr> </thead> <tbody> <tr> <td><b>EVC</b></td> <td></td> </tr> <tr> <td>EVC Type</td> <td>EVC<sub>1</sub> Point-to-Point <input checked="" type="checkbox"/> MP-to-MP <input type="checkbox"/> EVC<sub>2</sub> Point-to-Point <input checked="" type="checkbox"/> MP-to-MP <input type="checkbox"/></td> </tr> <tr> <td>CE-VLAN ID Preservation</td> <td>EVC<sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> EVC<sub>2</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td>CE-VLAN CoS Preservation</td> <td>EVC<sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> EVC<sub>2</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td>Unicast Service Frame Delivery</td> <td>EVC<sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/> EVC<sub>2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/></td> </tr> <tr> <td>Multicast Service Frame Delivery</td> <td>EVC<sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/> EVC<sub>2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/></td> </tr> <tr> <td>Broadcast Service Frame Delivery</td> <td>EVC<sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/> EVC<sub>2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Discard</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Tunnel</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>Service Performance - EVC<sub>1</sub></td> <td>CoS ID: 1 Fr. Delay = FD<sub>1</sub> Fr. Delay Variation = FDV<sub>1</sub> Fr. Loss Ratio = FLR<sub>1</sub></td> </tr> <tr> <td>Service Performance - EVC<sub>2</sub></td> <td>CoS ID: 2 Fr. Delay = FD<sub>2</sub> Fr. Delay Variation = FDV<sub>2</sub> Fr. Loss Ratio = FLR<sub>2</sub></td> </tr> <tr> <td><b>UNI</b></td> <td></td> </tr> <tr> <td>Physical Medium</td> <td>Standard Ethernet PHY <input checked="" type="checkbox"/></td> </tr> <tr> <td>Speed</td> <td>10Mbps <input type="checkbox"/> 100Mbps <input type="checkbox"/> 10/100Mbps <input type="checkbox"/> 1Gbps <input type="checkbox"/> 10Gbps <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>Mode</td> <td>Full Duplex <input checked="" type="checkbox"/> Auto negotiation <input type="checkbox"/></td> </tr> <tr> <td>MAC Layer</td> <td>IEEE 802.3-2002 <input checked="" type="checkbox"/></td> </tr> <tr> <td>Service Multiplexing</td> <td>UNI '00' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> UNI '01' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td>Bundling</td> <td>UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></td> </tr> <tr> <td>All to One Bundling</td> <td>UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></td> </tr> <tr> <td>Bandwidth Profile per Ingress UNI</td> <td>CIR<sub>1</sub>: 0 CBS<sub>1</sub>: 0 EIR<sub>1</sub>: 10% UNI speed EBS<sub>1</sub>: 12176 bytes CM<sub>1</sub>: Color-blind CF<sub>1</sub>: N/S</td> </tr> <tr> <td>Bandwidth Profile per EVC</td> <td>None</td> </tr> <tr> <td>Bandwidth Profile per CoS ID</td> <td>None</td> </tr> <tr> <td>L2 Control Protocol - Discard</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Peer</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Pass to EVC</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td><b>TEST TRAFFIC</b></td> <td></td> </tr> <tr> <td>1) Packet Size &amp; Traffic Load</td> <td>80-byte frames at a constant rate equal to the UNI speed</td> </tr> <tr> <td>2) Packet Size &amp; Traffic Load</td> <td>600-byte frames at a constant rate equal to the UNI speed</td> </tr> <tr> <td>3) Packet Size &amp; Traffic Load</td> <td>1500-byte frames at a constant rate equal to the UNI speed</td> </tr> </tbody> </table>	SERVICE ATTRIBUTE	SERVICE ATTRIBUTE - PARAMETERS & VALUES	<b>EVC</b>		EVC Type	EVC <sub>1</sub> Point-to-Point <input checked="" type="checkbox"/> MP-to-MP <input type="checkbox"/> EVC <sub>2</sub> Point-to-Point <input checked="" type="checkbox"/> MP-to-MP <input type="checkbox"/>	CE-VLAN ID Preservation	EVC <sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> EVC <sub>2</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	CE-VLAN CoS Preservation	EVC <sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> EVC <sub>2</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Unicast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/> EVC <sub>2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>	Multicast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/> EVC <sub>2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>	Broadcast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/> EVC <sub>2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>	L2 Control Protocol - Discard	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	L2 Control Protocol - Tunnel	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	Service Performance - EVC <sub>1</sub>	CoS ID: 1 Fr. Delay = FD <sub>1</sub> Fr. Delay Variation = FDV <sub>1</sub> Fr. Loss Ratio = FLR <sub>1</sub>	Service Performance - EVC <sub>2</sub>	CoS ID: 2 Fr. Delay = FD <sub>2</sub> Fr. Delay Variation = FDV <sub>2</sub> Fr. Loss Ratio = FLR <sub>2</sub>	<b>UNI</b>		Physical Medium	Standard Ethernet PHY <input checked="" type="checkbox"/>	Speed	10Mbps <input type="checkbox"/> 100Mbps <input type="checkbox"/> 10/100Mbps <input type="checkbox"/> 1Gbps <input type="checkbox"/> 10Gbps <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	Mode	Full Duplex <input checked="" type="checkbox"/> Auto negotiation <input type="checkbox"/>	MAC Layer	IEEE 802.3-2002 <input checked="" type="checkbox"/>	Service Multiplexing	UNI '00' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> UNI '01' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Bundling	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	All to One Bundling	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Bandwidth Profile per Ingress UNI	CIR <sub>1</sub> : 0 CBS <sub>1</sub> : 0 EIR <sub>1</sub> : 10% UNI speed EBS <sub>1</sub> : 12176 bytes CM <sub>1</sub> : Color-blind CF <sub>1</sub> : N/S	Bandwidth Profile per EVC	None	Bandwidth Profile per CoS ID	None	L2 Control Protocol - Discard	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	L2 Control Protocol - Peer	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	L2 Control Protocol - Pass to EVC	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	<b>TEST TRAFFIC</b>		1) Packet Size & Traffic Load	80-byte frames at a constant rate equal to the UNI speed	2) Packet Size & Traffic Load	600-byte frames at a constant rate equal to the UNI speed	3) Packet Size & Traffic Load	1500-byte frames at a constant rate equal to the UNI speed
SERVICE ATTRIBUTE	SERVICE ATTRIBUTE - PARAMETERS & VALUES																																																												
<b>EVC</b>																																																													
EVC Type	EVC <sub>1</sub> Point-to-Point <input checked="" type="checkbox"/> MP-to-MP <input type="checkbox"/> EVC <sub>2</sub> Point-to-Point <input checked="" type="checkbox"/> MP-to-MP <input type="checkbox"/>																																																												
CE-VLAN ID Preservation	EVC <sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> EVC <sub>2</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																																																												
CE-VLAN CoS Preservation	EVC <sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> EVC <sub>2</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																																																												
Unicast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/> EVC <sub>2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>																																																												
Multicast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/> EVC <sub>2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>																																																												
Broadcast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/> EVC <sub>2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>																																																												
L2 Control Protocol - Discard	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																												
L2 Control Protocol - Tunnel	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																												
Service Performance - EVC <sub>1</sub>	CoS ID: 1 Fr. Delay = FD <sub>1</sub> Fr. Delay Variation = FDV <sub>1</sub> Fr. Loss Ratio = FLR <sub>1</sub>																																																												
Service Performance - EVC <sub>2</sub>	CoS ID: 2 Fr. Delay = FD <sub>2</sub> Fr. Delay Variation = FDV <sub>2</sub> Fr. Loss Ratio = FLR <sub>2</sub>																																																												
<b>UNI</b>																																																													
Physical Medium	Standard Ethernet PHY <input checked="" type="checkbox"/>																																																												
Speed	10Mbps <input type="checkbox"/> 100Mbps <input type="checkbox"/> 10/100Mbps <input type="checkbox"/> 1Gbps <input type="checkbox"/> 10Gbps <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																												
Mode	Full Duplex <input checked="" type="checkbox"/> Auto negotiation <input type="checkbox"/>																																																												
MAC Layer	IEEE 802.3-2002 <input checked="" type="checkbox"/>																																																												
Service Multiplexing	UNI '00' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> UNI '01' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																																																												
Bundling	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																																																												
All to One Bundling	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																																																												
Bandwidth Profile per Ingress UNI	CIR <sub>1</sub> : 0 CBS <sub>1</sub> : 0 EIR <sub>1</sub> : 10% UNI speed EBS <sub>1</sub> : 12176 bytes CM <sub>1</sub> : Color-blind CF <sub>1</sub> : N/S																																																												
Bandwidth Profile per EVC	None																																																												
Bandwidth Profile per CoS ID	None																																																												
L2 Control Protocol - Discard	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																												
L2 Control Protocol - Peer	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																												
L2 Control Protocol - Pass to EVC	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																												
<b>TEST TRAFFIC</b>																																																													
1) Packet Size & Traffic Load	80-byte frames at a constant rate equal to the UNI speed																																																												
2) Packet Size & Traffic Load	600-byte frames at a constant rate equal to the UNI speed																																																												
3) Packet Size & Traffic Load	1500-byte frames at a constant rate equal to the UNI speed																																																												
UNITS	Number of valid Service Frames																																																												
RESULTS	Pass or fail																																																												
REMARKS																																																													

**TEST CASE 8.2.1b  
BANDWIDTH PROFILE PER EVC  
MULTIPLE EVCS WITH VARIOUS COMBINATIONS OF CIRs AND EIRs**

TEST CASE NAME	8.2.1b Bandwidth Profile per EVC - Multiple EVCS with Various Combinations of CIRs and EIRs
SERVICE TYPE	Ethernet Virtual Private Line
REFERENCES	MEF 10 Ethernet Services Attributes - Phase 1 (7.10.4) MEF 14 Abstract Test Suite for Traffic Management - Phase 1 (Test Case 8)
TEST TYPE	Conformance
TEST STATUS	Optional
REQUIREMENT DESCRIPTION	When a UNI is associated with a per EVC Bandwidth Profile, the Bandwidth Profile <b>MUST</b> be applied to all ingress Service Frames at the UNI on that EVC
TEST OBJECT	Verify that when a UNI is associated with a per EVC Bandwidth Profile, the Bandwidth Profile is applied to all ingress Service Frames at the UNI on that EVC
TEST CONFIGURATION	Four EVCS associating two UNIs are configured and four Bandwidth Profiles are applied at the UNI. Testers are attached to both UNIs in the configured EVCS

CE-VLAN ID/EVC MAP	<b>INGRESS UNI '00'</b>		<b>EGRESS UNI '01'</b>	
	<b>CE-VLAN ID</b>	<b>EVC</b>	<b>CE-VLAN ID</b>	<b>EVC</b>
	11	EVC <sub>1</sub>	11	EVC <sub>1</sub>
	12	EVC <sub>2</sub>	12	EVC <sub>2</sub>
	13	EVC <sub>3</sub>	13	EVC <sub>3</sub>
	14	EVC <sub>4</sub>	14	EVC <sub>4</sub>

Tester offers tagged unicast Service Frames with VLAN IDs 11, 12, 13 and 14 of length  $\lambda$  into the configured EVCS at the ingress UNI during a time interval  $T$ , at an aggregate average rate in excess of the sum of the CIRs of all the configured EVCS and measures the number of Service Frames delivered at the egress UNI. For EVC<sub>1</sub>, the amount of traffic delivered at the egress UNI must be 0 and for every other configured EVC, the amount of traffic delivered at the egress UNI must not exceed  $(W_G + W_Y)$  where:

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

The results of multiple measurements may be compiled together so that the total measurement time is at least  $[(1 \times 10^7)/\text{UNI Speed}] * 60 \text{ sec}$

SERVICE ATTRIBUTE	SERVICE ATTRIBUTE - PARAMETERS & VALUES					
<b>EVC</b>						
EVC Type	EVC <sub>1,2</sub> Point-to-Point <input checked="" type="checkbox"/> MP-to-MP <input type="checkbox"/>		EVC <sub>3,4</sub> Point-to-Point <input checked="" type="checkbox"/> MP-to-MP <input type="checkbox"/>			
CE-VLAN ID Preservation	EVC <sub>1,2</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		EVC <sub>3,4</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
CE-VLAN CoS Preservation	EVC <sub>1,2</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		EVC <sub>3,4</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Unicast Service Frame Delivery	EVC <sub>1,2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>		EVC <sub>3,4</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>			
Multicast Service Frame Delivery	EVC <sub>1,2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>		EVC <sub>3,4</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>			
Broadcast Service Frame Delivery	EVC <sub>1,2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>		EVC <sub>3,4</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>			
L2 Control Protocol - Discard	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/>		All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>			
L2 Control Protocol - Tunnel	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/>		All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>			
Service Performance - EVC <sub>1,2,3,4</sub>	CoS ID: 1,2,3,4 Fr. Delay = FD <sub>1,2,3,4</sub>		Fr. Delay Variation = FDV <sub>1,2,3,4</sub>		Fr. Loss Ratio = FLR <sub>1,2,3,4</sub>	
<b>UNI</b>						
Physical Medium	Standard Ethernet PHY <input checked="" type="checkbox"/>					
Speed	10Mbps <input type="checkbox"/>	100Mbps <input type="checkbox"/>	10/100Mbps <input type="checkbox"/>	1Gbps <input type="checkbox"/>	10Gbps <input type="checkbox"/>	N/S <input checked="" type="checkbox"/>
Mode	Full Duplex <input checked="" type="checkbox"/>		Auto negotiation <input type="checkbox"/>			
MAC Layer	IEEE 802.3-2002 <input checked="" type="checkbox"/>					
Service Multiplexing	UNI '00' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		UNI '01' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Bundling	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>			
All to One Bundling	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>			
Bandwidth Profile per Ingress UNI	None					
Bandwidth Profile per EVC (EVC <sub>1</sub> )	CIR <sub>1</sub> : 0 EBS <sub>1</sub> : 0		CBS <sub>1</sub> : 0 CM <sub>1</sub> : Color-blind		EIR <sub>1</sub> : 0 CF <sub>1</sub> : N/S	
Bandwidth Profile per EVC (EVC <sub>2</sub> )	CIR <sub>2</sub> : 25% UNI speed EBS <sub>2</sub> : 0		CBS <sub>2</sub> : 12176 bytes CM <sub>2</sub> : Color-blind		EIR <sub>2</sub> : 0 CF <sub>2</sub> : N/S	
Bandwidth Profile per EVC (EVC <sub>3</sub> )	CIR <sub>3</sub> : 15% UNI speed EBS <sub>3</sub> : 12176 bytes		CBS <sub>3</sub> : 12176 bytes CM <sub>3</sub> : Color-blind		EIR <sub>3</sub> : 5% UNI speed CF <sub>3</sub> : N/S	
Bandwidth Profile per EVC (EVC <sub>4</sub> )	CIR <sub>4</sub> : 0 EBS <sub>4</sub> : 12176 bytes		CBS <sub>4</sub> : 0 CM <sub>4</sub> : Color-blind		EIR <sub>4</sub> : 10% UNI speed CF <sub>4</sub> : N/S	
Bandwidth Profile per CoS ID	None					
L2 Control Protocol - Discard	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/>		All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>			
L2 Control Protocol - Peer	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/>		All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>			
L2 Control Protocol - Pass to EVC	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/>		All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>			
<b>TEST TRAFFIC</b>						
1) Packet Size & Traffic Load	80-byte frames at a constant rate equal to the UNI speed					
2) Packet Size & Traffic Load	600-byte frames at a constant rate equal to the UNI speed					
3) Packet Size & Traffic Load	1500-byte frames at a constant rate equal to the UNI speed					

UNITS	Number of valid Service Frames
RESULTS	Pass or fail
REMARKS	

<b>TEST CASE 9.2.1c</b> <b>BANDWIDTH PROFILE PER CLASS OF SERVICE</b> <b>SINGLE EVC WITH MULTIPLE CoS IDENTIFIERS</b>																																																																	
TEST CASE NAME	9.2.1c Bandwidth Profile per Class of Service - Single EVC with Multiple CoS Identifiers																																																																
SERVICE TYPE	Ethernet Virtual Private Line																																																																
REFERENCES	MEF 10 Ethernet Services Attributes - Phase 1 (7.10.5) MEF 14 Abstract Test Suite for Traffic Management - Phase 1 (Test Case 9)																																																																
TEST TYPE	Conformance																																																																
TEST STATUS	Optional																																																																
REQUIREMENT DESCRIPTION	When a UNI is associated with a per Class of Service Bandwidth Profile, the Bandwidth Profile <b>MUST</b> be applied to all ingress Service Frames at the UNI with that specific Class of Service Identifier																																																																
TEST OBJECT	Verify that when a UNI is associated with a per Class of Service Bandwidth Profile, the Bandwidth Profile is applied to all ingress Service Frames at the UNI with that specific Class of Service Identifier																																																																
TEST CONFIGURATION	One EVC associating two UNIs is configured and four Bandwidth Profiles are applied at the UNI. Testers are attached to both UNIs in the configured EVC																																																																
CE-VLAN ID/EVC MAP	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2" style="text-align: center;">INGRESS UNI '00'</th> <th colspan="2" style="text-align: center;">EGRESS UNI '01'</th> </tr> <tr> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> <th style="text-align: center;">CE-VLAN ID</th> <th style="text-align: center;">EVC</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">11</td> <td style="text-align: center;">EVC<sub>1</sub></td> <td style="text-align: center;">11</td> <td style="text-align: center;">EVC<sub>1</sub></td> </tr> </tbody> </table>	INGRESS UNI '00'		EGRESS UNI '01'		CE-VLAN ID	EVC	CE-VLAN ID	EVC	11	EVC <sub>1</sub>	11	EVC <sub>1</sub>																																																				
INGRESS UNI '00'		EGRESS UNI '01'																																																															
CE-VLAN ID	EVC	CE-VLAN ID	EVC																																																														
11	EVC <sub>1</sub>	11	EVC <sub>1</sub>																																																														
TEST PROCEDURE	<p>Tester offers tagged unicast Service Frames with VLAN ID 11 and user priority bits set to 001, 011, 101 and 111 of length <math>\lambda</math> into the configured EVC at the ingress UNI during a time interval <math>T</math>, at an aggregate average rate in excess of the sum of the CIRs of all the configured CoS IDs and measures the number of Service Frames delivered at the egress UNI. For CoS ID 1, the amount of traffic delivered at the egress UNI must be 0 and for every other configured CoS ID, the amount of traffic delivered at the egress UNI must not exceed <math>(W_G + W_Y)</math> where:</p> <ul style="list-style-type: none"> <li><math>W_G</math> is the amount of traffic accepted as Green over the time interval <math>T</math> that should be delivered to the egress UNI</li> <li><math>W_Y</math> is the amount of traffic accepted as Yellow over the time interval <math>T</math> that may be delivered to the egress UNI</li> </ul> <p>The results of multiple measurements may be compiled together so that the total measurement time is at least <math>[(1 \times 10^7)/\text{UNI Speed}] * 60 \text{ sec}</math></p>																																																																
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UNITS	Number of valid Service Frames																																																																
RESULTS	Pass or fail																																																																
REMARKS																																																																	

### 6.3 Test Cases for Ethernet LAN

<b>TEST CASE 4.3.1a</b>																																																											
<b>BANDWIDTH PROFILE RATE ENFORCEMENT WHEN CIR &gt; 0 AND EIR = 0</b>																																																											
<b>SINGLE EVC WITH CIR = 25% OF THE UNI SPEED</b>																																																											
TEST CASE NAME	4.3.1a Bandwidth Profile Rate Enforcement when CIR > 0 and EIR = 0 - Single EVC with CIR = 25% of the UNI Speed																																																										
SERVICE TYPE	Ethernet LAN																																																										
REFERENCES	MEF 10 Ethernet Services Attributes - Phase 1 (7.10.2) MEF 14 Abstract Test Suite for Traffic Management - Phase 1 (Test Case 4)																																																										
TEST TYPE	Conformance																																																										
TEST STATUS	Optional																																																										
REQUIREMENT DESCRIPTION	When a Bandwidth Profile is associated with a UNI, with a CIR > 0 and an EIR = 0, the amount of traffic delivered at the egress UNI <b>MUST NOT</b> exceed the amount of traffic accepted as Green ( $W_G$ ) at the ingress UNI during a time interval $T$ , provided that the ingress traffic is greater than $W_G$																																																										
TEST OBJECT	Verify that when a Bandwidth Profile is associated with a UNI, with a CIR > 0 and an EIR = 0, the amount of traffic delivered at the egress UNI does not exceed the amount of traffic accepted as Green ( $W_G$ ) at the ingress UNI during a time interval $T$ , provided that the ingress traffic is greater than $W_G$																																																										
TEST CONFIGURATION	One EVC associating three UNIs is configured and one Bandwidth Profile is applied at the UNI. Testers are attached to all UNIs in the configured EVC																																																										
CE-VLAN ID/EVC MAP	<table border="1" style="width: 100%; text-align: center;"> <tr> <th colspan="2">INGRESS UNI '00'</th> <th colspan="2">EGRESS UNI '01'</th> <th colspan="2">EGRESS UNI '02'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> <tr> <td>11</td> <td>EVC<sub>1</sub></td> <td>11</td> <td>EVC<sub>1</sub></td> <td>11</td> <td>EVC<sub>1</sub></td> </tr> </table>	INGRESS UNI '00'		EGRESS UNI '01'		EGRESS UNI '02'		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>																																								
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TEST PROCEDURE	<p>Tester offers tagged broadcast Service Frames with VLAN ID 11 of length <math>\lambda</math> at an average rate greater than <math>CIR_1</math> to the ingress UNI during a time interval <math>T</math> and measures the number of Service Frames delivered at the egress UNIs '01' and '02'. The amount of traffic delivered at each egress UNI must not exceed <math>W_G</math> where:</p> <ul style="list-style-type: none"> <li><math>W_G</math> is the amount of traffic accepted as Green over the time interval <math>T</math> that should be delivered to the egress UNI</li> </ul> <p>The results of multiple measurements may be compiled together so that the total measurement time is at least <math>[(1 \times 10^7)/UNI \text{ Speed}] * 60 \text{ sec}</math></p>																																																										
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UNITS	Number of valid Service Frames																																																										
RESULTS	Pass or fail																																																										
REMARKS																																																											

<b>TEST CASE 5.3.2b</b>																																																											
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<b>SINGLE EVC WITH EIR = 50% OF THE UNI SPEED</b>																																																											
TEST CASE NAME	5.3.2b Bandwidth Profile Rate Enforcement when CIR = 0 and EIR > 0 - Single EVC with EIR = 50% of the UNI Speed																																																										
SERVICE TYPE	Ethernet LAN																																																										
REFERENCES	MEF 10 Ethernet Services Attributes - Phase 1 (7.10.2) MEF 14 Abstract Test Suite for Traffic Management - Phase 1 (Test Case 5)																																																										
TEST TYPE	Conformance																																																										
TEST STATUS	Optional																																																										
REQUIREMENT DESCRIPTION	When a Bandwidth Profile is associated with a UNI, with a CIR = 0 and an EIR > 0, the amount of traffic delivered at the egress UNI <b>MUST NOT</b> exceed the amount of traffic accepted as Yellow ( $W_y$ ) at the ingress UNI during a time interval $T$ , provided that the ingress traffic is greater than $W_y$																																																										
TEST OBJECT	Verify that when a Bandwidth Profile is associated with a UNI, with a CIR = 0 and an EIR > 0, the amount of traffic delivered at the egress UNI does not exceed the amount of traffic accepted as Yellow ( $W_y$ ) at the ingress UNI during a time interval $T$ , provided that the ingress traffic is greater than $W_y$																																																										
TEST CONFIGURATION	One EVC associating three UNIs is configured and one Bandwidth Profile is applied at the UNI. Testers are attached to all UNIs in the configured EVC																																																										
CE-VLAN ID/EVC MAP	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="2">INGRESS UNI '00'</th> <th colspan="2">EGRESS UNI '01'</th> <th colspan="2">EGRESS UNI '02'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td>11</td> <td>EVC<sub>1</sub></td> <td>11</td> <td>EVC<sub>1</sub></td> <td>11</td> <td>EVC<sub>1</sub></td> </tr> </tbody> </table>	INGRESS UNI '00'		EGRESS UNI '01'		EGRESS UNI '02'		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>																																								
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TEST PROCEDURE	<p>Tester offers tagged broadcast Service Frames with VLAN ID 11 of length <math>A</math> at an average rate greater than <math>EIR_1</math> to the ingress UNI during a time interval <math>T</math> and measures the number of Service Frames delivered at the egress UNIs '01' and '02'. The amount of traffic delivered at each egress UNI must not exceed <math>W_y</math> where:</p> <ul style="list-style-type: none"> <li><math>W_y</math> is the amount of traffic accepted as Yellow over the time interval <math>T</math> that may be delivered to the egress UNI</li> </ul> <p>The results of multiple measurements may be compiled together so that the total measurement time is at least <math>[(1 \times 10^7)/UNI \text{ Speed}] * 60 \text{ sec}</math></p>																																																										
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Multicast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>																																																										
Broadcast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>																																																										
L2 Control Protocol - Discard	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																										
L2 Control Protocol - Tunnel	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																										
Service Performance - EVC <sub>1</sub>	CoS ID: 1 Fr. Delay = FD <sub>1</sub> Fr. Delay Variation = FDV <sub>1</sub> Fr. Loss Ratio = FLR <sub>1</sub>																																																										
<b>UNI</b>																																																											
Physical Medium	Standard Ethernet PHY <input checked="" type="checkbox"/>																																																										
Speed	10Mbps <input type="checkbox"/> 100Mbps <input type="checkbox"/> 10/100Mbps <input type="checkbox"/> 1Gbps <input type="checkbox"/> 10Gbps <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																										
Mode	Full Duplex <input checked="" type="checkbox"/> Auto negotiation <input type="checkbox"/>																																																										
MAC Layer	IEEE 802.3-2002 <input checked="" type="checkbox"/>																																																										
Service Multiplexing	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '02' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																																																										
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All to One Bundling	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '02' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																																																										
Bandwidth Profile per Ingress UNI	None																																																										
Bandwidth Profile per EVC (EVC <sub>1</sub> )	CIR <sub>1</sub> : 0 CBS <sub>1</sub> : 0 EIR <sub>1</sub> : 50% UNI speed EBS <sub>1</sub> : 12176 bytes CM <sub>1</sub> : Color-blind CF <sub>1</sub> : N/S																																																										
Bandwidth Profile per CoS Identifier	None																																																										
L2 Control Protocol - Discard	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																										
L2 Control Protocol - Peer	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																										
L2 Control Protocol - Pass to EVC	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																										
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UNITS	Number of valid Service Frames																																																										
RESULTS	Pass or fail																																																										
REMARKS																																																											

<b>TEST CASE 6.3.4a</b>																																																											
<b>BANDWIDTH PROFILE RATE ENFORCMENT WHEN CIR &gt; 0 AND EIR &gt; 0</b>																																																											
<b>SINGLE EVC WITH CIR + EIR = 95% OF THE UNI SPEED</b>																																																											
TEST CASE NAME	6.3.4a Bandwidth Profile Rate Enforcement when CIR > 0 and EIR > 0 - Single EVC with CIR + EIR = 95% of the UNI Speed																																																										
SERVICE TYPE	Ethernet LAN																																																										
REFERENCES	MEF 10 Ethernet Services Attributes - Phase 1 (7.10.2) MEF 14 Abstract Test Suite for Traffic Management - Phase 1 (Test Case 6)																																																										
TEST TYPE	Conformance																																																										
TEST STATUS	Optional																																																										
REQUIREMENT DESCRIPTION	When a Bandwidth Profile is associated with a UNI, with a CIR > 0 and an EIR > 0, the amount of traffic delivered at the egress UNI <b>MUST NOT</b> exceed the amount of traffic accepted as Green ( $W_G$ ) plus the amount of traffic accepted as Yellow ( $W_Y$ ) at the ingress UNI during a time interval $T$ , provided that the ingress traffic is greater than ( $W_G + W_Y$ )																																																										
TEST OBJECT	Verify that when a Bandwidth Profile is associated with a UNI, with a CIR > 0 and an EIR > 0, the amount of traffic delivered at the egress UNI does not exceed the amount of traffic accepted as Green ( $W_G$ ) plus the amount of traffic accepted as Yellow ( $W_Y$ ) at the ingress UNI during a time interval $T$ , provided that the ingress traffic is greater than ( $W_G + W_Y$ )																																																										
TEST CONFIGURATION	One EVC associating three UNIs is configured and one Bandwidth Profile is applied at the UNI. Testers are attached to all UNIs in the configured EVC																																																										
CE-VLAN ID/EVC MAP	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="2">INGRESS UNI '00'</th> <th colspan="2">EGRESS UNI '01'</th> <th colspan="2">EGRESS UNI '02'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td>11</td> <td>EVC<sub>1</sub></td> <td>11</td> <td>EVC<sub>1</sub></td> <td>11</td> <td>EVC<sub>1</sub></td> </tr> </tbody> </table>	INGRESS UNI '00'		EGRESS UNI '01'		EGRESS UNI '02'		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>																																								
INGRESS UNI '00'		EGRESS UNI '01'		EGRESS UNI '02'																																																							
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11	EVC <sub>1</sub>	11	EVC <sub>1</sub>	11	EVC <sub>1</sub>																																																						
TEST PROCEDURE	<p>Tester offers tagged broadcast Service Frames with VLAN ID 11 of length <math>A</math> at an average rate greater than <math>CIR_1 + EIR_1</math> to the ingress UNI during a time interval <math>T</math> and measures the number of Service Frames delivered at the egress UNIs '01' and '02'. The amount of traffic delivered at each egress UNI must not exceed (<math>W_G + W_Y</math>) where:</p> <ul style="list-style-type: none"> <li><math>W_G</math> is the amount of traffic accepted as Green over the time interval <math>T</math> that should be delivered to the egress UNI</li> <li><math>W_Y</math> is the amount of traffic accepted as Yellow over the time interval <math>T</math> that may be delivered to the egress UNI</li> </ul> <p>The results of multiple measurements may be compiled together so that the total measurement time is at least <math>[(1 \times 10^7)/UNI \text{ Speed}] * 60 \text{ sec}</math></p>																																																										
TEST PARAMETERS	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">SERVICE ATTRIBUTE</th> <th style="text-align: left;">SERVICE ATTRIBUTE - PARAMETERS &amp; VALUES</th> </tr> </thead> <tbody> <tr> <td colspan="2"><b>EVC</b></td> </tr> <tr> <td>EVC Type</td> <td>EVC<sub>1</sub> Point-to-Point <input type="checkbox"/> Multipoint-to-Multipoint <input checked="" type="checkbox"/></td> </tr> <tr> <td>CE-VLAN ID Preservation</td> <td>EVC<sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td>CE-VLAN CoS Preservation</td> <td>EVC<sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td>Unicast Service Frame Delivery</td> <td>EVC<sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/></td> </tr> <tr> <td>Multicast Service Frame Delivery</td> <td>EVC<sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/></td> </tr> <tr> <td>Broadcast Service Frame Delivery</td> <td>EVC<sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Discard</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Tunnel</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>Service Performance - EVC<sub>1</sub></td> <td>CoS ID: 1 Fr. Delay = FD<sub>1</sub> Fr. Delay Variation = FDV<sub>1</sub> Fr. Loss Ratio = FLR<sub>1</sub></td> </tr> <tr> <td colspan="2"><b>UNI</b></td> </tr> <tr> <td>Physical Medium</td> <td>Standard Ethernet PHY <input checked="" type="checkbox"/></td> </tr> <tr> <td>Speed</td> <td>10Mbps <input type="checkbox"/> 100Mbps <input type="checkbox"/> 10/100Mbps <input type="checkbox"/> 1Gbps <input type="checkbox"/> 10Gbps <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>Mode</td> <td>Full Duplex <input checked="" type="checkbox"/> Auto negotiation <input type="checkbox"/></td> </tr> <tr> <td>MAC Layer</td> <td>IEEE 802.3-2002 <input checked="" type="checkbox"/></td> </tr> <tr> <td>Service Multiplexing</td> <td>UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '02' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></td> </tr> <tr> <td>Bundling</td> <td>UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '02' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></td> </tr> <tr> <td>All to One Bundling</td> <td>UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '02' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></td> </tr> <tr> <td>Bandwidth Profile per Ingress UNI</td> <td>CIR<sub>1</sub>: 50% UNI speed CBS<sub>1</sub>: 12176 bytes EIR<sub>1</sub>: 45% UNI speed EBS<sub>1</sub>: 12176 bytes CM<sub>1</sub>: Color-blind CF<sub>1</sub>: N/S</td> </tr> <tr> <td>Bandwidth Profile per EVC</td> <td>None</td> </tr> <tr> <td>Bandwidth Profile per CoS Identifier</td> <td>None</td> </tr> <tr> <td>L2 Control Protocol - Discard</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Peer</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Pass to EVC</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td colspan="2"><b>TEST TRAFFIC</b></td> </tr> <tr> <td>1) Packet Size &amp; Traffic Load</td> <td>80-byte frames at a constant rate equal to the UNI speed</td> </tr> <tr> <td>2) Packet Size &amp; Traffic Load</td> <td>600-byte frames at a constant rate equal to the UNI speed</td> </tr> <tr> <td>3) Packet Size &amp; Traffic Load</td> <td>1500-byte frames at a constant rate equal to the UNI speed</td> </tr> </tbody> </table>	SERVICE ATTRIBUTE	SERVICE ATTRIBUTE - PARAMETERS & VALUES	<b>EVC</b>		EVC Type	EVC <sub>1</sub> Point-to-Point <input type="checkbox"/> Multipoint-to-Multipoint <input checked="" type="checkbox"/>	CE-VLAN ID Preservation	EVC <sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	CE-VLAN CoS Preservation	EVC <sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Unicast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>	Multicast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>	Broadcast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>	L2 Control Protocol - Discard	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	L2 Control Protocol - Tunnel	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	Service Performance - EVC <sub>1</sub>	CoS ID: 1 Fr. Delay = FD <sub>1</sub> Fr. Delay Variation = FDV <sub>1</sub> Fr. Loss Ratio = FLR <sub>1</sub>	<b>UNI</b>		Physical Medium	Standard Ethernet PHY <input checked="" type="checkbox"/>	Speed	10Mbps <input type="checkbox"/> 100Mbps <input type="checkbox"/> 10/100Mbps <input type="checkbox"/> 1Gbps <input type="checkbox"/> 10Gbps <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	Mode	Full Duplex <input checked="" type="checkbox"/> Auto negotiation <input type="checkbox"/>	MAC Layer	IEEE 802.3-2002 <input checked="" type="checkbox"/>	Service Multiplexing	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '02' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Bundling	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '02' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	All to One Bundling	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '02' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Bandwidth Profile per Ingress UNI	CIR <sub>1</sub> : 50% UNI speed CBS <sub>1</sub> : 12176 bytes EIR <sub>1</sub> : 45% UNI speed EBS <sub>1</sub> : 12176 bytes CM <sub>1</sub> : Color-blind CF <sub>1</sub> : N/S	Bandwidth Profile per EVC	None	Bandwidth Profile per CoS Identifier	None	L2 Control Protocol - Discard	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	L2 Control Protocol - Peer	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	L2 Control Protocol - Pass to EVC	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	<b>TEST TRAFFIC</b>		1) Packet Size & Traffic Load	80-byte frames at a constant rate equal to the UNI speed	2) Packet Size & Traffic Load	600-byte frames at a constant rate equal to the UNI speed	3) Packet Size & Traffic Load	1500-byte frames at a constant rate equal to the UNI speed
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UNITS	Number of valid Service Frames																																																										
RESULTS	Pass or fail																																																										
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<b>TEST CASE 6.3.3c</b>																																																											
<b>BANDWIDTH PROFILE RATE ENFORCMENT WHEN CIR &gt; 0 AND EIR &gt; 0</b>																																																											
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TEST CASE NAME	6.3.3c Bandwidth Profile Rate Enforcement when CIR > 0 and EIR > 0 - Single EVC with CIR + EIR = 75% of the UNI Speed																																																										
SERVICE TYPE	Ethernet LAN																																																										
REFERENCES	MEF 10 Ethernet Services Attributes - Phase 1 (7.10.2) MEF 14 Abstract Test Suite for Traffic Management - Phase 1 (Test Case 6)																																																										
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11	EVC <sub>1</sub>	11	EVC <sub>1</sub>	11	EVC <sub>1</sub>																																																						
TEST PROCEDURE	<p>Tester offers tagged broadcast Service Frames with VLAN ID 11 and user priority bits set to 001 of length <math>\lambda</math> at an average rate greater than <math>CIR_1 + EIR_1</math> to the ingress UNI during a time interval <math>T</math> and measures the number of Service Frames delivered at the egress UNIs '01' and '02'. The amount of traffic delivered at each egress UNI must not exceed (<math>W_G + W_Y</math>) where:</p> <ul style="list-style-type: none"> <li><math>W_G</math> is the amount of traffic accepted as Green over the time interval <math>T</math> that should be delivered to the egress UNI</li> <li><math>W_Y</math> is the amount of traffic accepted as Yellow over the time interval <math>T</math> that may be delivered to the egress UNI</li> </ul> <p>The results of multiple measurements may be compiled together so that the total measurement time is at least <math>[(1 \times 10^7)/UNI\ Speed] \times 60\ sec</math></p>																																																										
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UNITS	Number of valid Service Frames																																																										
RESULTS	Pass or fail																																																										
REMARKS																																																											

<b>TEST CASE 7.3.5a</b> <b>BANDWIDTH PROFILE PER INGRESS UNI</b> <b>MULTIPLE EVCS WITH CIR = 0 and EIR &gt; 0</b>																																																											
TEST CASE NAME	7.3.5a Bandwidth Profile per Ingress UNI - Multiple EVCs with CIR = 0 and EIR > 0																																																										
SERVICE TYPE	Ethernet LAN																																																										
REFERENCES	MEF 10 Ethernet Services Attributes - Phase 1 (7.10.3) MEF 14 Abstract Test Suite for Traffic Management - Phase 1 (Test Case 7)																																																										
TEST TYPE	Conformance																																																										
TEST STATUS	Optional																																																										
REQUIREMENT DESCRIPTION	When a per Ingress UNI Bandwidth Profile is associated with a UNI, the Bandwidth Profile <b>MUST</b> be applied to all ingress Service Frames at that UNI																																																										
TEST OBJECT	Verify that when a per Ingress UNI Bandwidth Profile is associated with a UNI, the Bandwidth Profile is applied to all ingress Service Frames at that UNI																																																										
TEST CONFIGURATION	Two EVCs associating three UNIs are configured and one Bandwidth Profile is applied at the UNI. Testers are attached to all UNIs in the configured EVCs																																																										
CE-VLAN ID/EVC MAP	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="2">INGRESS UNI '00'</th> <th colspan="2">EGRESS UNI '01'</th> <th colspan="2">EGRESS UNI '02'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td>11</td> <td>EVC<sub>1</sub></td> <td>11</td> <td>EVC<sub>1</sub></td> <td>11</td> <td>EVC<sub>1</sub></td> </tr> <tr> <td>12</td> <td>EVC<sub>2</sub></td> <td>12</td> <td>EVC<sub>2</sub></td> <td>12</td> <td>EVC<sub>2</sub></td> </tr> </tbody> </table>	INGRESS UNI '00'		EGRESS UNI '01'		EGRESS UNI '02'		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>	12	EVC <sub>2</sub>	12	EVC <sub>2</sub>	12	EVC <sub>2</sub>																																		
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TEST PROCEDURE	<p>Tester offers tagged broadcast Service Frames with VLAN IDs 11 and 12 of length <math>\lambda</math> into the configured EVCs at the ingress UNI and verifies that over a time interval <math>T</math> at least one Service Frame from each of the EVCs is delivered at the associated egress UNI. Service Frames are offered at equal average rates into each of the configured EVCs at the ingress UNI, at an aggregate average rate greater than the <math>EIR_1</math>. Tester also verifies that the amount of traffic delivered at the egress UNI does not exceed <math>(W_G + W_Y)</math> where:</p> <ul style="list-style-type: none"> <li><math>W_G</math> is the amount of traffic accepted as Green over the time interval <math>T</math> that should be delivered to the egress UNI</li> <li><math>W_Y</math> is the amount of traffic accepted as Yellow over the time interval <math>T</math> that may be delivered to the egress UNI</li> </ul> <p>The results of multiple measurements may be compiled together so that the total measurement time is at least <math>[(1 \times 10^7)/UNI \text{ Speed}] * 60 \text{ sec}</math></p>																																																										
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UNITS	Number of valid Service Frames																																																										
RESULTS	Pass or fail																																																										
REMARKS																																																											

<b>TEST CASE 10.3.1b/c</b>																																																															
<b>MULTIPLE BANDWIDTH PROFILES AT THE UNI</b>																																																															
<b>MULTIPLE EVCs WITH MULTIPLE CoS IDENTIFIERS</b>																																																															
TEST CASE NAME	10.3.1b/c Multiple Bandwidth Profiles at the UNI - Multiple EVCs with Multiple CoS Identifiers																																																														
SERVICE TYPE	Ethernet LAN																																																														
REFERENCES	MEF 10 Ethernet Services Attributes - Phase 1 (7.10.6) MEF 14 Abstract Test Suite for Traffic Management - Phase 1 (Test Case 10)																																																														
TEST TYPE	Conformance																																																														
TEST STATUS	Optional																																																														
REQUIREMENT DESCRIPTION	Multiple models of Bandwidth Profile application <b>MAY</b> exist simultaneously at the UNI																																																														
TEST OBJECT	Verify that multiple models of Bandwidth Profile application can exist simultaneously at the UNI																																																														
TEST CONFIGURATION	Two EVCs associating three UNIs are configured and one CE-VLAN ID is mapped per EVC. A per EVC Bandwidth Profile and per Class of Service Bandwidth Profiles are applied at the UNI. Testers are attached to all UNIs in the configured EVCs																																																														
CE-VLAN ID/EVC MAP	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="2">INGRESS UNI '00'</th> <th colspan="2">EGRESS UNI '01'</th> <th colspan="2">EGRESS UNI '02'</th> </tr> <tr> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> <th>CE-VLAN ID</th> <th>EVC</th> </tr> </thead> <tbody> <tr> <td>11</td> <td>EVC<sub>1</sub></td> <td>11</td> <td>EVC<sub>1</sub></td> <td>11</td> <td>EVC<sub>1</sub></td> </tr> <tr> <td>12</td> <td>EVC<sub>2</sub></td> <td>12</td> <td>EVC<sub>2</sub></td> <td>12</td> <td>EVC<sub>2</sub></td> </tr> </tbody> </table>	INGRESS UNI '00'		EGRESS UNI '01'		EGRESS UNI '02'		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>	12	EVC <sub>2</sub>	12	EVC <sub>2</sub>	12	EVC <sub>2</sub>																																						
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12	EVC <sub>2</sub>	12	EVC <sub>2</sub>	12	EVC <sub>2</sub>																																																										
TEST PROCEDURE	<p>Tester offers tagged broadcast Service Frames with VLAN ID 11 and user priority bits set to 001 and 010 and with VLAN ID 12 and user priority bits set to 001 and 010 of length <math>\lambda</math> into the configured EVCs at the ingress UNI during a time interval <math>T</math>, at an aggregate average rate in excess of the sum of the CIRs of all the configured EVCs and CoS IDs and measures the number of Service Frames delivered at the egress UNI. For CoS ID 2, the amount of traffic delivered at the egress UNI must be 0 and for every other configured EVC and CoS ID, the amount of traffic delivered at the egress UNI must not exceed <math>(W_G + W_Y)</math> where:</p> <ul style="list-style-type: none"> <li><math>W_G</math> is the amount of traffic accepted as Green over the time interval <math>T</math> that should be delivered to the egress UNI</li> <li><math>W_Y</math> is the amount of traffic accepted as Yellow over the time interval <math>T</math> that may be delivered to the egress UNI</li> </ul> <p>The results of multiple measurements may be compiled together so that the total measurement time is at least <math>[(1 \times 10^7)/\text{UNI Speed}] * 60 \text{ sec}</math></p>																																																														
TEST PARAMETERS	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">SERVICE ATTRIBUTE</th> <th>SERVICE ATTRIBUTE - PARAMETERS &amp; VALUES</th> </tr> </thead> <tbody> <tr> <td><b>EVC</b></td> <td></td> </tr> <tr> <td>EVC Type</td> <td>EVC<sub>1</sub> Point-to-Point <input type="checkbox"/> MP-to-MP <input checked="" type="checkbox"/> EVC<sub>2</sub> Point-to-Point <input type="checkbox"/> MP-to-MP <input checked="" type="checkbox"/></td> </tr> <tr> <td>CE-VLAN ID Preservation</td> <td>EVC<sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> EVC<sub>2</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td>CE-VLAN CoS Preservation</td> <td>EVC<sub>1</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> EVC<sub>2</sub> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td>Unicast Service Frame Delivery</td> <td>EVC<sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/> EVC<sub>2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/></td> </tr> <tr> <td>Multicast Service Frame Delivery</td> <td>EVC<sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/> EVC<sub>2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/></td> </tr> <tr> <td>Broadcast Service Frame Delivery</td> <td>EVC<sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/> EVC<sub>2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Discard</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Tunnel</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>Service Performance - EVC<sub>1</sub></td> <td>CoS ID: 1 Fr. 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Loss Ratio = FLR<sub>2,3</sub></td> </tr> <tr> <td><b>UNI</b></td> <td></td> </tr> <tr> <td>Physical Medium</td> <td>Standard Ethernet PHY <input checked="" type="checkbox"/></td> </tr> <tr> <td>Speed</td> <td>10Mbps <input type="checkbox"/> 100Mbps <input type="checkbox"/> 10/100Mbps <input type="checkbox"/> 1Gbps <input type="checkbox"/> 10Gbps <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>Mode</td> <td>Full Duplex <input checked="" type="checkbox"/> Auto negotiation <input type="checkbox"/></td> </tr> <tr> <td>MAC Layer</td> <td>IEEE 802.3-2002 <input checked="" type="checkbox"/></td> </tr> <tr> <td>Service Multiplexing</td> <td>UNI '00' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> UNI '01' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> UNI '02' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td>Bundling</td> <td>UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '02' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></td> </tr> <tr> <td>All to One Bundling</td> <td>UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '02' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></td> </tr> <tr> <td>Bandwidth Profile per Ingress UNI</td> <td>None</td> </tr> <tr> <td>Bandwidth Profile per EVC (EVC<sub>1</sub>)</td> <td>CIR<sub>1</sub>: 25% UNI speed CBS<sub>1</sub>: 12176 bytes EIR<sub>1</sub>: 5% UNI speed EBS<sub>1</sub>: 12176 bytes CM<sub>1</sub>: Color-blind CF<sub>1</sub>: N/S</td> </tr> <tr> <td>Bandwidth Profile per CoS ID (EVC<sub>2</sub> / CoS ID 2)</td> <td>CIR<sub>1</sub>: 0 CBS<sub>1</sub>: 0 EIR<sub>1</sub>: 0 EBS<sub>1</sub>: 0 CM<sub>1</sub>: Color-blind CF<sub>1</sub>: N/S</td> </tr> <tr> <td>Bandwidth Profile per CoS ID (EVC<sub>2</sub> / CoS ID 3)</td> <td>CIR<sub>1</sub>: 10% UNI speed CBS<sub>1</sub>: 12176 bytes EIR<sub>1</sub>: 10% UNI speed EBS<sub>1</sub>: 12176 bytes CM<sub>1</sub>: Color-blind CF<sub>1</sub>: N/S</td> </tr> <tr> <td>L2 Control Protocol - Discard</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Peer</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td>L2 Control Protocol - Pass to EVC</td> <td>Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/></td> </tr> <tr> <td><b>TEST TRAFFIC</b></td> <td></td> </tr> <tr> <td>1) Packet Size &amp; 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Delay = FD <sub>1</sub> Fr. Delay Variation = FDV <sub>1</sub> Fr. Loss Ratio = FLR <sub>1</sub>	Service Performance - EVC <sub>2</sub>	CoS ID: 2,3 Fr. Delay = FD <sub>2,3</sub> Fr. Delay Variation = FDV <sub>2,3</sub> Fr. Loss Ratio = FLR <sub>2,3</sub>	<b>UNI</b>		Physical Medium	Standard Ethernet PHY <input checked="" type="checkbox"/>	Speed	10Mbps <input type="checkbox"/> 100Mbps <input type="checkbox"/> 10/100Mbps <input type="checkbox"/> 1Gbps <input type="checkbox"/> 10Gbps <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	Mode	Full Duplex <input checked="" type="checkbox"/> Auto negotiation <input type="checkbox"/>	MAC Layer	IEEE 802.3-2002 <input checked="" type="checkbox"/>	Service Multiplexing	UNI '00' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> UNI '01' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> UNI '02' Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Bundling	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '02' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	All to One Bundling	UNI '00' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '01' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> UNI '02' Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Bandwidth Profile per Ingress UNI	None	Bandwidth Profile per EVC (EVC <sub>1</sub> )	CIR <sub>1</sub> : 25% UNI speed CBS <sub>1</sub> : 12176 bytes EIR <sub>1</sub> : 5% UNI speed EBS <sub>1</sub> : 12176 bytes CM <sub>1</sub> : Color-blind CF <sub>1</sub> : N/S	Bandwidth Profile per CoS ID (EVC <sub>2</sub> / CoS ID 2)	CIR <sub>1</sub> : 0 CBS <sub>1</sub> : 0 EIR <sub>1</sub> : 0 EBS <sub>1</sub> : 0 CM <sub>1</sub> : Color-blind CF <sub>1</sub> : N/S	Bandwidth Profile per CoS ID (EVC <sub>2</sub> / CoS ID 3)	CIR <sub>1</sub> : 10% UNI speed CBS <sub>1</sub> : 12176 bytes EIR <sub>1</sub> : 10% UNI speed EBS <sub>1</sub> : 12176 bytes CM <sub>1</sub> : Color-blind CF <sub>1</sub> : N/S	L2 Control Protocol - Discard	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	L2 Control Protocol - Peer	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	L2 Control Protocol - Pass to EVC	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>	<b>TEST TRAFFIC</b>		1) Packet Size & Traffic Load	80-byte frames at a constant rate equal to the UNI speed	2) Packet Size & Traffic Load	600-byte frames at a constant rate equal to the UNI speed	3) Packet Size & Traffic Load	1500-byte frames at a constant rate equal to the UNI speed
SERVICE ATTRIBUTE	SERVICE ATTRIBUTE - PARAMETERS & VALUES																																																														
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Broadcast Service Frame Delivery	EVC <sub>1</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/> EVC <sub>2</sub> Deliver Unconditionally <input checked="" type="checkbox"/> Conditionally <input type="checkbox"/>																																																														
L2 Control Protocol - Discard	Bridge Block of protocols <input type="checkbox"/> GARP Block of protocols <input type="checkbox"/> All Bridges Protocol <input type="checkbox"/> N/S <input checked="" type="checkbox"/>																																																														
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Service Performance - EVC <sub>1</sub>	CoS ID: 1 Fr. Delay = FD <sub>1</sub> Fr. Delay Variation = FDV <sub>1</sub> Fr. Loss Ratio = FLR <sub>1</sub>																																																														
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UNITS	Number of valid Service Frames																																																														
RESULTS	Pass or fail																																																														
REMARKS																																																															

## 7 Revision History

Revision	Date	Comments
Draft 1.0	09-21-2005	1) First Draft
Draft 1.1	09-28-2005	1) CBS/EBS values modified
Draft 1.2	11-08-2005	1) Measurement time modified 2) Explanations added on the choice of the Service Frame sizes 3) P-Percentile value defined for FD and FDV Test Cases
Draft 1.3	12-05-2005	1) $\Delta t$ value defined for FDV Test Cases 2) Editorial changes
Release 1	12-08-2005	1) Editorial changes
Release 1.1	02-23-2006	1) Editorial changes
Release 1.2	09-17-2007	1) Graphs replaced by the Performance Objective tables
Release 1.3	11-20-2007	1) Editorial changes
Release 1.4	14-01-08	1) Test Status updated for EVPL and ELAN

EXCERPT