

MEEF

Introducing the Specifications of the Metro Ethernet Forum

MEF 19

Abstract Test Suite for UNI Type 1

Introducing the Specifications of the Metro Ethernet Forum

- **MEF 2** Requirements and Framework for Ethernet Service Protection
- **MEF 3** Circuit Emulation Service Definitions, Framework and Requirements in Metro Ethernet Networks
- **MEF 4** Metro Ethernet Network Architecture Framework Part 1: Generic Framework
- **MEF 6** Metro Ethernet Services Definitions Phase I
- **MEF 7** EMS-NMS Information Model
- **MEF 8** Implementation Agreement for the Emulation of PDH Circuits over Metro Ethernet Networks
- **MEF 9** Abstract Test Suite for Ethernet Services at the UNI
- **MEF 10.1** Ethernet Services Attributes Phase 2*
- **MEF 11** User Network Interface (UNI) Requirements and Framework
- **MEF 12** Metro Ethernet Network Architecture Framework Part 2: Ethernet Services Layer
- **MEF 13** User Network Interface (UNI) Type 1 Implementation Agreement
- **MEF 14** Abstract Test Suite for Traffic Management Phase 1
- **MEF 15** Requirements for Management of Metro Ethernet Phase 1 Network Elements
- **MEF 16** Ethernet Local Management Interface
- **MEF 17** Service OAM Framework and Requirements
- **MEF 18** Abstract Test Suite for Circuit Emulation Services
- **MEF 19** Abstract Test Suite for UNI Type 1

* MEF 10 .1 replaces and enhances MEF 10 Ethernet Services Definition Phase 1 and replaced MEF 1 and MEF 5.

This Presentation

- **Purpose:**
 - This presentation is an introduction to MEF 19
 - This document defines test procedures based on the requirements for the User to Network Interface (UNI) Type 1 mode or manual configuration mode.
- **Audience**
 - Equipment Manufacturers building devices that will carry Carrier Ethernet Services.
 - Useful for Service Providers architecting their systems
- **Other Documents**
 - Presentations of the other specifications and an overview of all specifications is available on the MEF web site
 - Other materials such as white papers and case studies are also available

Purpose of MEF 19

MEF 19		Abstract Test Suite for UNI Type 1
Purpose	Supplements the MEF test specifications MEF 9, and MEF 14 with test procedures for UNI manual configuration mode defined in MEF 13	
Audience	Equipment Manufacturers building devices that will carry CE Services. Useful for Service Providers architecting their systems.	

Technical Committee Test and Measurement Area

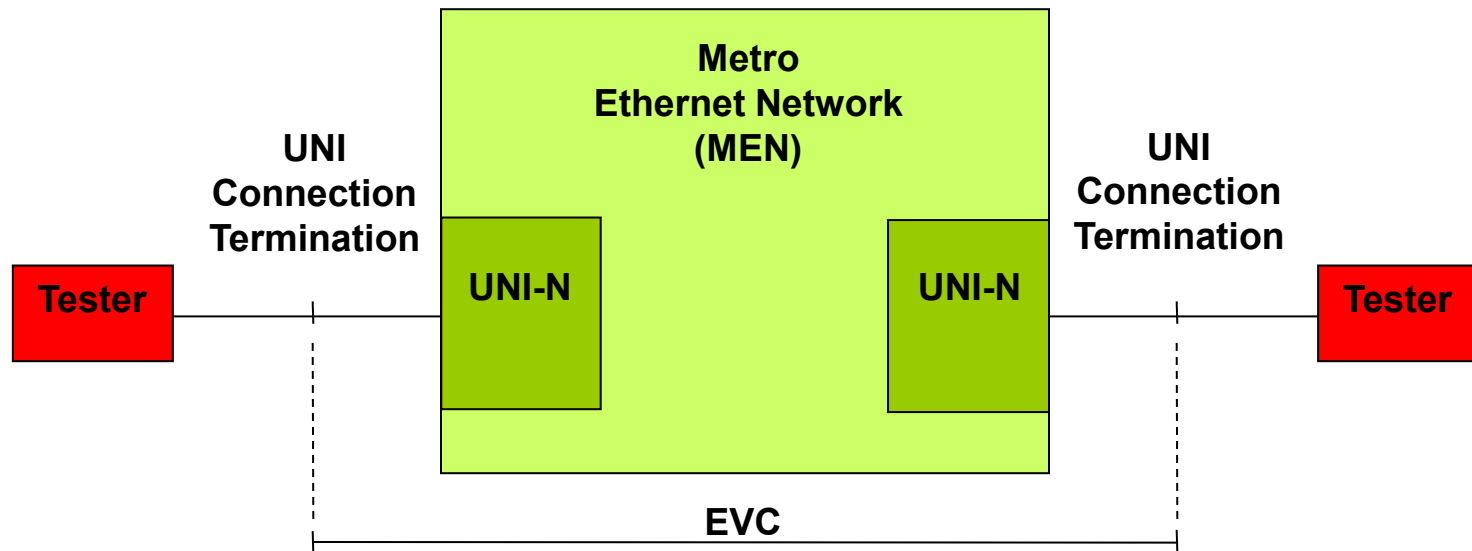
- MEF 19 defines test procedures based on the requirements for the UNI Type 1 mode or manual configuration mode
- The UNI Type 1 mode provides data-plane connectivity services without control-plane or management-plane capabilities.
- MEF 19 consists of 44 test cases
 - Abstract Test Cases for UNI Type 1 Common Characteristics
 - 3 Test Cases
 - Abstract Test Cases for UNI Type 1.1 Specific Characteristics
 - 14 Test Cases
 - Abstract Test Cases for UNI Type 1.2 Specific Characteristics
 - 27 Test Cases

Note to Equipment Manufacturers

- **MEF 19 supplements the existing MEF test specifications**
 - MEF 9 *Abstract Test Suite for Ethernet Services at the UNI* and
 - MEF 14 *Abstract Test Suite for Traffic Management Phase 1*,
- By adding test procedures based on the requirements for the User to Network Interface (UNI) Type 1 mode (manual configuration) defined in MEF 13
 - *MEF 13 User Network Interface (UNI) Type 1 implementation agreement.*
- **Equipment Manufacturers should refer to the requirements and test procedures defined in MEF 19 to ensure that their network elements can deliver Ethernet Services based on the MEF technical specifications.**
 - The requirements, framework and functional model on how the UNI reference point operates in a Metro Ethernet Network is defined in MEF 11
 - MEF 11 *User to Network Interface Requirements and Framework.*

Test Configuration

- Most Test Cases are executed by attaching the Ethernet interface of a tester to the Ethernet User Network Interface (UNI).



Testers are physically attached to the MEN at the UNIs
Multiple testers may be generating, receiving and monitoring frames at the UNIs

Test Configuration

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

Template for Abstract Test Cases

- All 44 test cases are represented via this template

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

Test Cases

Abstract Test Cases for UNI-N Type 1 Common Characteristics

- Test Case 1: Type 1 UNI-N Ethernet Physical Medium
- Test Case 2: Type 1 UNI-N Ethernet Frame Format - Tagged, Untagged and Priority Tagged
- Test Case 3: Type 1 UNI-N Minimum and Maximum Ethernet Frame Size

Abstract Test Cases for UNI-N Type 1.1 Specific Characteristics

- Test Case 4: Type 1.1 UNI-N CE-VLAN ID - Single EVC
- Test Case 5: Type 1.1 UNI-N Configurable CE-VLAN ID/EVC Map - No CE-VLAN ID
- Test Case 6: Type 1.1 UNI-N Bandwidth Profile per Ingress UNI
- Test Case 7: Type 1.1 UNI-N Bandwidth Profile Rate Enforcement when CIR > 0 and EIR = 0
- Test Case 8: Type 1.1 UNI-N Mandatory CIR Configuration Granularity
- Test Case 9: Type 1.1 UNI-N Optional CIR Configuration Granularity
- Test Case 10: Type 1.1 UNI-N CBS Configuration
- Test Case 11: Type 1.1 UNI-N Mandatory Layer 2 Control Protocol Processing
- Test Case 12: Type 1.1 UNI-N Optional Layer 2 Control Protocol Processing
- Test Case 13: Type 1.1 UNI-N Optional Layer 2 Control Protocol Discard
- Test Case 14: Type 1.1 UNI-N Point-to-Point EVC
- Test Case 15: Type 1.1 UNI-N CE-VLAN ID Preservation
- Test Case 16: Type 1.1 UNI-N CE-VLAN CoS Preservation
- Test Case 17: Type 1.1 UNI-N Service Frame Unconditional Delivery

Test Cases

Abstract Test Cases for UNI-N Type 1.2 Specific Characteristics

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

- **Next Actions**

- Read the detailed test cases in the MEF 19 Specification available in the MEF web site

MEEF

*Accelerating Worldwide Adoption of
Carrier-class Ethernet Networks and Services*

www.MetroEthernetForum.org