Abstract Test Suite

MEF 25

UNI Type 2
Part 3: Service OAM

May 8, 2009

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Table of Contents

1. ABSTRACT 8

2. TERMINOLOGY 8

3. TERMINOLOGY MAPPING BETWEEN MEF, IEEE AND ITU-T 9

4. SCOPE 10

5. COMPLIANCE LEVELS 10

6. INTRODUCTION 10

7. TEST CONFIGURATION FOR UNI-C TYPE 2 SERVICE OAM 11

8. TEST CONFIGURATION FOR UNI-N TYPE 2 SERVICE OAM 12

9. DEFAULT PROTOCOL VALUES 12

10. CC MESSAGES GROUP DESTINATION MAC ADDRESSES 12

11. CC MESSAGES INTERVAL FIELD ENCODING 13

12. TEST STATUS DEFINITIONS 13

13. TEST CASES SUMMARY 14

14. TEMPLATE FOR ABSTRACT TEST CASES FOR UNI TYPE 2 SERVICE OAM 17

15. ABSTRACT TEST CASES FOR UNI-C TYPE 2 SERVICE OAM 18

15.1 UNI-C TYPE 2 CONFIGURATION REQUIREMENTS 19
TEST CASE 1C: UNI-MEG Administrative Configuration 19
TEST CASE 2C: Test-MEG Administrative Configuration 20

15.2 UNI-C TYPE 2 MAINTENANCE ENTITY REQUIREMENTS 21
TEST CASE 3C: MEP Instance on the Subscriber-MEG 21
TEST CASE 4C: Tagged OAM Frames on the Subscriber-MEG 22
TEST CASE 5C: MEP Instance on the Test-MEG 23
TEST CASE 6C: Tagged OAM Frames on the Test-MEG 24
TEST CASE 7C: MEP Instance on the UNI-MEG 25
TEST CASE 8C: Untagged OAM Frames on the UNI-MEG 26
TEST CASE 9C: IEEE 802.1 Bridge MEPs Corresponding to UNI-MEG 27

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TEST CASE 10C: IEEE 802.1 Bridge MEPs Corresponding to Test-MEG 28
TEST CASE 11C: IEEE 802.1 Bridge MEPs Corresponding to Subscriber-MEG - Down-MEP 29
TEST CASE 12C: IEEE 802.1 Bridge MEPs Corresponding to Subscriber-MEG - Up-MEP 30

15.3 UNI-C TYPE 2 MEG END POINTS REQUIREMENTS 31
TEST CASE 13C: Configurable MEG-Level 31
TEST CASE 14C: Processing Received Multicast CCM Frames - Source Address 32
TEST CASE 15C: Processing Received Multicast CCM Frames - Sender ID TLV 33
TEST CASE 16C: Processing Received Multicast CCM Frames - Chassis ID Length 34
TEST CASE 17C: Processing Received Multicast CCM Frames - Port Status TLV 35
TEST CASE 18C: Processing Received Multicast CCM Frames - Interface Status TLV 36
TEST CASE 19C: Processing Received Multicast CCM Frames - CCM Interval 37
TEST CASE 20C: Processing Received Multicast CCM Frames - First TLV Offset 38
TEST CASE 21C: Processing Received Multicast CCM Frames - MEP ID 39
TEST CASE 22C: Processing Received Multicast CCM Frames - Short MA Name Length 1 40
TEST CASE 23C: Processing Received Multicast CCM Frames - Short MA Name Length 2 41
TEST CASE 24C: Processing Received Multicast CCM Frames 42
TEST CASE 25C: Processing & Response to Unicast & Multicast LBM Frames - Destination Address 43
TEST CASE 26C: Processing & Response to Unicast & Multicast LBM Frames - Source Address 44
TEST CASE 27C: Processing & Response to Unicast & Multicast LBM Frames - Sender ID TLV 45
TEST CASE 28C: Processing & Response to Unicast & Multicast LBM Frames - First TLV Offset 46
TEST CASE 29C: Processing & Response to Unicast & Multicast LBM Frames - LBR Header 47
TEST CASE 30C: Processing & Response to Unicast & Multicast LBM Frames - LBR Content 48
TEST CASE 31C: Generating Multicast CCM Frames - Destination Address 49
TEST CASE 32C: Generating Multicast CCM Frames - Source Address 50
TEST CASE 33C: Generating Multicast CCM Frames - Protocol Version Number 50
TEST CASE 34C: Generating Multicast CCM Frames - OpCode 51
TEST CASE 35C: Generating Multicast CCM Frames - Flags 52
TEST CASE 36C: Generating Multicast CCM Frames - First TLV Offset 53
TEST CASE 37C: Generating Multicast CCM Frames - Sequence Number 55
TEST CASE 38C: Generating Multicast CCM Frames - MEP ID 56
TEST CASE 39C: Generating Multicast CCM Frames - MAID Total Length 57
TEST CASE 40C: Generating Multicast CCM Frames - Maintenance Domain Name Format 58
TEST CASE 41C: Generating Multicast CCM Frames - Short MA Name Format 59
TEST CASE 42C: Generating Multicast CCM Frames - Short MA Name Length 60
TEST CASE 43C: Generating Multicast CCM Frames - Short MA Name 61
TEST CASE 44C: Generating Multicast CCM Frames - Sender ID TLV 62
TEST CASE 45C: Generating Multicast CCM Frames - Chassis ID Length 63
TEST CASE 46C: Generating Multicast CCM Frames - Management Address Domain Field 64
TEST CASE 47C: Generating Multicast CCM Frames - Management Address Field 65
TEST CASE 48C: Generating Multicast CCM Frames - Port Status TLV 66
TEST CASE 49C: Generating Multicast CCM Frames - Interface Status TLV 67
TEST CASE 50C: Generating Multicast CCM Frames - Organization Specific TLV 68
TEST CASE 51C: Generating Multicast CCM Frames - End TLV 68
TEST CASE 52C: Generating Multicast LBM Frames - Destination Address 70
TEST CASE 53C: Generating Unicast LBM Frames - Destination Address 70
TEST CASE 54C: Generating Unicast LBM Frames - Source Address 71
TEST CASE 55C: Generating Unicast LBM Frames - Protocol Version Number 72
TEST CASE 56C: Generating Unicast LBM Frames - OpCode 74
TEST CASE 57C: Generating Unicast LBM Frames - Flags 74
TEST CASE 58C: Generating Unicast LBM Frames - First TLV Offset 76
TEST CASE 59C: Generating Unicast LBM Frames - Loopback Transaction Identifier 76
TEST CASE 60C: Generating Unicast LBM Frames - Sender ID TLV 78
TEST CASE 61C: Generating Unicast LBM Frames - Chassis ID Length 79
TEST CASE 62C: Generating Unicast LBM Frames - Management Address Domain Field 80
TEST CASE 63C: Generating Unicast LBM Frames - Management Address Field 80
TEST CASE 64C: Generating Unicast LBM Frames - Data TLV 81
TEST CASE 65C: Generating Unicast LBM Frames - Organization Specific TLV 82

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TEST CASE 66C: Generating Unicast LBM Frames - End TLV 83

15.4 UNI-C TYPE 2 CONTINUITY CHECK REQUIREMENTS 85
TEST CASE 67C: Administratively Enable and Disable CCM Transmission 85
TEST CASE 68C: Mandatory CCM Frame Rate 86
TEST CASE 69C: Optional CCM Frame Rate 87
TEST CASE 70C: Configurable CCM Frames Priority for Subscriber-MEG & Test-MEG 88
TEST CASE 71C: UNI-C Counter - Number of CCM Frames Transmitted 89
TEST CASE 72C: Lowest Priority CC Defect - DefRDICCM 90
TEST CASE 73C: CC Defect & Fault Alarm Hierarchy - DefRDICCM vs DefMACstatus 91
TEST CASE 74C: CC Defect & Fault Alarm Hierarchy - DefMACstatus vs DefRemoteCCM 92
TEST CASE 75C: CC Defect & Fault Alarm Hierarchy - DefRemoteCCM vs DefErrorCCM 93
TEST CASE 76C: CC Defect & Fault Alarm Hierarchy - DefErrorCCM vs DefXconCCM 94
TEST CASE 77C: CC Fault Alarm Time & CC Fault Reset Time 95

15.5 UNI-C TYPE 2 LOOPBACK REQUIREMENTS 96
TEST CASE 78C: Administratively Initiate & Stop Loopback Sessions 96
TEST CASE 79C: Configurable LBM Frames Priority 97
TEST CASE 80C: Configurable Number of LBM Transmissions per Session 98
TEST CASE 81C: Configurable Interval between LBM Transmissions 99
TEST CASE 82C: Configurable Timeout after a LBM Transmission 100
TEST CASE 83C: Configurable LBM Frame Size 101
TEST CASE 84C: UNI-C Counter – Number of LBM Frames Transmitted 102
TEST CASE 85C: UNI-C Counter – Number of LBM Frames Received 103
TEST CASE 86C: UNI-C Counter – Number of LBR Frames Received 104
TEST CASE 87C: UNI-C Statistic - Percentage of Unanswered LB Requests (Lost LBM/LBR) 105
TEST CASE 88C: UNI-C Statistic - Minimum, Maximum & Average Round-Trip Latency 106

16. ABSTRACT TEST CASES FOR UNI-N TYPE 2 SERVICE OAM 107

16.1 UNI-N TYPE 2 CONFIGURATION REQUIREMENTS 108
TEST CASE 1N: UNI-MEG Administrative Configuration 108

16.2 UNI-N TYPE 2 MAINTENANCE ENTITY REQUIREMENTS 109
TEST CASE 7N: MEP Instance on the UNI-MEG 109
TEST CASE 8N: Untagged OAM Frames on the UNI-MEG 110
TEST CASE 9N: IEEE 802.1 Bridge MEPs Corresponding to UNI-MEG 111

16.3 UNI-N TYPE 2 MEG END POINTS REQUIREMENTS 112
TEST CASE 13N: Configurable MEG-Level 112
TEST CASE 14N: Processing Received Multicast CCM Frames - Source Address 113
TEST CASE 15N: Processing Received Multicast CCM Frames - Sender ID TLV 114
TEST CASE 16N: Processing Received Multicast CCM Frames - Chassis ID Length 115
TEST CASE 17N: Processing Received Multicast CCM Frames - Port Status TLV 116
TEST CASE 18N: Processing Received Multicast CCM Frames - Interface Status TLV 117
TEST CASE 19N: Processing Received Multicast CCM Frames - CCM Interval 118
TEST CASE 20N: Processing Received Multicast CCM Frames - First TLV Offset 119
TEST CASE 21N: Processing Received Multicast CCM Frames - MEP ID 120
TEST CASE 22N: Processing Received Multicast CCM Frames - Short MA Name Length 1 121
TEST CASE 23N: Processing Received Multicast CCM Frames - Short MA Name Length 2 122
TEST CASE 24N: Processing Received Multicast CCM Frames 123
TEST CASE 25N: Processing & Response to Unicast & Multicast LBM Frames - Destination Address 124
TEST CASE 26N: Processing & Response to Unicast & Multicast LBM Frames - Source Address 125
TEST CASE 27N: Processing & Response to Unicast & Multicast LBM Frames - Sender ID TLV 126
TEST CASE 28N: Processing & Response to Unicast & Multicast LBM Frames - First TLV Offset 127

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TEST CASE 29N: Processing & Response to Unicast & Multicast LBM Frames - LBR Header 128
TEST CASE 30N: Processing & Response to Unicast & Multicast LBM Frames - LBR Content 129
TEST CASE 31N: Generating Multicast CCM Frames - Destination Address 130
TEST CASE 32N: Generating Multicast CCM Frames - Source Address 131
TEST CASE 33N: Generating Multicast CCM Frames - Protocol Version Number 132
TEST CASE 34N: Generating Multicast CCM Frames - OpCode 133
TEST CASE 35N: Generating Multicast CCM Frames - Flags 134
TEST CASE 36N: Generating Multicast CCM Frames - First TLV Offset 135
TEST CASE 37N: Generating Multicast CCM Frames - Sequence Number 136
TEST CASE 38N: Generating Multicast CCM Frames - MEP ID 137
TEST CASE 39N: Generating Multicast CCM Frames - MAID Total Length 138
TEST CASE 40N: Generating Multicast CCM Frames - Maintenance Domain Name Format 139
TEST CASE 41N: Generating Multicast CCM Frames - Short MA Name Format 140
TEST CASE 42N: Generating Multicast CCM Frames - Short MA Name Length 141
TEST CASE 43N: Generating Multicast CCM Frames - Short MA Name 142
TEST CASE 44N: Generating Multicast CCM Frames - Sender ID TLV 143
TEST CASE 45N: Generating Multicast CCM Frames - Chassis ID Length 144
TEST CASE 46N: Generating Multicast CCM Frames - Management Address Domain Field 145
TEST CASE 47N: Generating Multicast CCM Frames - Management Address Field 146
TEST CASE 48N: Generating Multicast CCM Frames - Port Status TLV 147
TEST CASE 49N: Generating Multicast CCM Frames - Interface Status TLV 148
TEST CASE 50N: Generating Multicast CCM Frames - Organization Specific TLV 149
TEST CASE 51N: Generating Multicast CCM Frames - End TLV 150
TEST CASE 52N: Generating Multicast LBM Frames - Destination Address 151
TEST CASE 53N: Generating Unicast LBM Frames - Destination Address 152
TEST CASE 54N: Generating Unicast LBM Frames - Source Address 153
TEST CASE 55N: Generating Unicast LBM Frames - Protocol Version Number 154
TEST CASE 56N: Generating Unicast LBM Frames - OpCode 155
TEST CASE 57N: Generating Unicast LBM Frames - Flags 156
TEST CASE 58N: Generating Unicast LBM Frames - First TLV Offset 157
TEST CASE 59N: Generating Unicast LBM Frames - Loopback Transaction Identifier 158
TEST CASE 60N: Generating Unicast LBM Frames - Sender ID TLV 159
TEST CASE 61N: Generating Unicast LBM Frames - Chassis ID Length 160
TEST CASE 62N: Generating Unicast LBM Frames - Management Address Domain Field 161
TEST CASE 63N: Generating Unicast LBM Frames - Management Address Field 162
TEST CASE 64N: Generating Unicast LBM Frames - Data TLV 163
TEST CASE 65N: Generating Unicast LBM Frames - Organization Specific TLV 164
TEST CASE 66N: Generating Unicast LBM Frames - End TLV 165

16.4 UNI-N TYPE 2 CONTINUITY CHECK REQUIREMENTS 166
TEST CASE 67N: Administratively Enable and Disable CCM Transmission 166
TEST CASE 68N: Mandatory CCM Frame Rate 167
TEST CASE 69N: Optional CCM Frame Rate 168
TEST CASE 71N: UNI-N Counter - Number of CCM Frames Transmitted 169
TEST CASE 72N: Lowest Priority CC Defect - DefRDICCM 170
TEST CASE 73N: CC Defect & Fault Alarm Hierarchy - DefRDICCM vs DefMACstatus 171
TEST CASE 74N: CC Defect & Fault Alarm Hierarchy - DefMACstatus vs DefRemoteCCM 172
TEST CASE 75N: CC Defect & Fault Alarm Hierarchy - DefRemoteCCM vs DefErrorCCM 173
TEST CASE 76N: CC Defect & Fault Alarm Hierarchy - DefErrorCCM vs DefXconCCM 174
TEST CASE 77N: CC Fault Alarm Time & CC Fault Reset Time 175

16.5 UNI-N TYPE 2 LOOPBACK REQUIREMENTS 176
TEST CASE 78N: Administratively Initiate & Stop Loopback Sessions 176
TEST CASE 80N: Configurable Number of LBM Transmissions per Session 177
TEST CASE 81N: Configurable Interval between LBM Transmissions 178
TEST CASE 82N: Configurable Timeout after a LBM Transmission 179
TEST CASE 83N: Configurable LBM Frame Size 180
TEST CASE 84N: UNI-N Counter - Number of LBM Frames Transmitted 181

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TEST CASE 85N: UNI-N Counter - Number of LBM Frames Received 182
TEST CASE 86N: UNI-N Counter - Number of LBR Frames Received 183
TEST CASE 87N: UNI-N Statistic - Percentage of Unanswered LB Requests (Lost LBM/LBR) 184
TEST CASE 88N: UNI-N Statistic - Minimum, Maximum & Average Round-Trip Latency 185

17. REFERENCES 186

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1. ABSTRACT

This document is the third part of the Abstract Test Suite for User to Network Interface (UNI) Type 2. It defines test procedures based on a combination of requirements for Service OAM described in MEF 20 *UNI Type 2 Implementation Agreement*, ITU-T Y.1731 and IEEE 802.1ag. The overall Abstract Test Suite for UNI Type 2 will be composed of the following six parts: Link OAM, E-LMI, Service OAM, Protection, Enhanced UNI Attributes and L2CP handling.

2. Terminology

AIS	Alarm Indication Signal
CCM	Continuity Check Message
CoS	Class of Service
Down MEP	A MEP residing in a Bridge that receives CFM PDUs from, and transmits them towards, the direction of the LAN
EMS	Element Management System
ETH-AIS	Ethernet Alarm Indication Signal
EVC	Ethernet Virtual Connection
EVC-MA	Ethernet Virtual Connection Maintenance Association
FM	Fault Management
LBM	Loopback Message
LBR	Loopback Reply
MAC	Media Access Control
MA	Maintenance Association
MAID	Maintenance Association Identifier
MD	Maintenance Domain
MD Level	Maintenance Domain Level
ME	Maintenance Entity
MEG	Maintenance Entity Group
MEP	Maintenance association End Point
MP	Maintenance Point. One of either a MEP or a MIP
MTU	Maximum Transmission Unit
NE	Network Element
NMS	Network Management System
OAM	Operations, Administration, and Maintenance
OAM Domain	Equivalent to “Maintenance Domain” (MD)

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Operator-MA	Operator Maintenance Association
P2P	Point-to-Point
PDU	Protocol Data Unit
RDI	Remote Defect Indication
SOAM	Service Operations, Administration, and Maintenance
Subscriber-MA	Subscriber Maintenance Association
Test-MA	Test Maintenance Association
UNI	User-to-Network Interface
UNI-C	Subscriber side UNI functions
UNI-MA	User-to-Network Interface Maintenance Association
UNI-N	Network side UNI functions
Up MEP	A MEP residing in a Bridge that transmits CFM PDUs towards, and receives them from, the direction of the Bridge Relay Entity
VID	VLAN Identifier
VLAN	Virtual LAN

3. Terminology Mapping between MEF, IEEE and ITU-T

MEF 20	**IEEE 802.1ag**	**ITU-T Y.1731**
MEG	MA	MEG
MAID	MAID	MEG ID
MEG Level	MD Level	MEG Level

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4. Scope

The Service OAM part of the Abstract Test Suite for UNI Type 2 describes test procedures based on a combination of the requirements for Service OAM described in MEF 20 *UNI Type 2 Implementation Agreement*, ITU-T Y.1731 and IEEE 802.1ag.

An overview of the different groups of requirements that compose this test suite is provided as follows:

- Configuration Requirements
- Maintenance Entity Requirements
- MEG End Points Requirements
- Continuity Check Requirements
- Loopback Requirements

The UNI Type 2 Link OAM, E-LMI, Protection, Enhanced UNI Attributes and L2CP handling functionalities are outside the scope of this Abstract Test Suite.

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

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** be use upper case, bold text.

6. Introduction

This document supplements the existing MEF test specifications MEF 9 *Abstract Test Suite for Ethernet Services at the UNI*, MEF 14 *Abstract Test Suite for Traffic Management Phase 1*, MEF 18 *Abstract Test Suite for Circuit Emulation Services*, MEF 19 *Abstract Test Suite for UNI Type 1*, MEF 21 *Abstract Test Suite for UNI Type 2 – Part 1: Link OAM* and MEF 24 *Abstract Test Suite for UNI Type 2 – Part 2: E-LMI* by adding test procedures based on the requirements for Service OAM defined in the *User Network Interface (UNI) Type 2 Implementation Agreement*.

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

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

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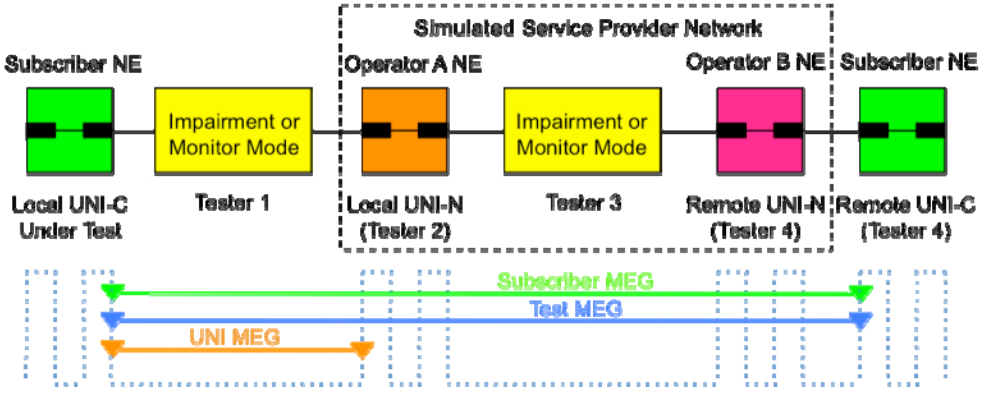
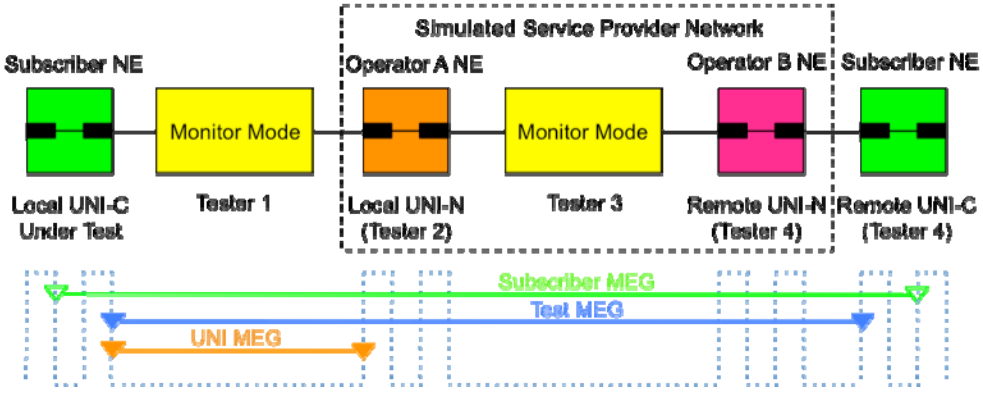
7. Test Configuration for UNI-C Type 2 Service OAM

Although some UNI-C test cases may require very specific test configurations, most UNI-C test cases defined in this document are to be executed using one of the two following test configurations. (Tester 1 and Tester 2) and (Tester 3 and Tester 4) may be combined into single test devices.

Configuration 1: Down MEPs for the UNI-MEG, Test-MEG and Subscriber-MEG



Configuration 2: Down MEPs for the UNI-MEG and Test-MEG and Up MEP for Subscriber-MEG



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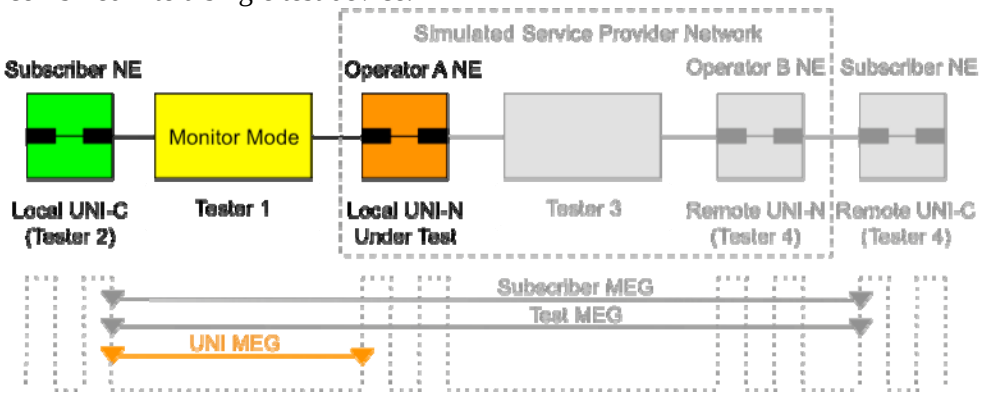
8. Test Configuration for UNI-N Type 2 Service OAM

Although some UNI-N test cases may require very specific test configurations, most UNI-N test cases defined in this document are to be executed using the following test configuration. Tester 1 and Tester 2 may be combined into a single test device.



9. Default Protocol Values

When not otherwise specified in the Test Procedure, use the default values for the following Service OAM Protocol parameters:

Parameter	Default Value
MEG-Level, UNI-MEG	1
MEG-Level, Test-MEG	5
MEG-Level, Subscriber-MEG	6
CCM frame rate	1 frame/s
CCM transmission, UNI-MEG	Enabled
CCM transmission, Test-MEG	Disabled
CCM transmission, Subscriber-MEG	Disabled
CCM frames priority, UNI-MEG	The highest priority supported by the UNI
CCM frames priority, Test-MEG	The CoS ID supported by the EVC, which yields the lowest frame loss performance
CCM frames priority, Subscriber-MEG	The CoS ID supported by the EVC, which yields the lowest frame loss performance
Minimum fault level	RDI
CC fault alarm time	2.5 s
CC fault reset time	10 s
LBM frames priority	The CoS ID supported by the EVC, which yields the lowest frame loss performance
Number of LBM transmissions per session	3
Interval between LBM transmissions	1 s
Timeout after a LBM transmission	5 s
LBM frame size	64 bytes

10. CC Messages Group Destination MAC Addresses

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01-80-C2-00-00-3Y	
MEG-Level of CCM	Four address bits “y”
7	7
6	6
5	5
4	4
3	3
2	2
1	1
0	0

11. CC Messages Interval Field Encoding

Transmission Interval	CCM Interval Field
Invalid	0
3 1/3 ms	1
10 ms	2
100 ms	3
1 s	4
10 s	5
1 min	6
10 min	7

12. Test Status Definitions

MANDATORY status: This means that a test case **MUST** be executed because it verifies an absolute requirement or an absolute requirement dependent on an optional feature. If the requirement is absolute the test must be executed. If the requirement is absolute but dependent on an optional feature and that feature is supported, the test case must be executed. If the optional feature is not supported, the test case is not executed and it is declared as “not applicable”.

OPTIONAL status: This word means that a test case **MAY** or **MAY NOT** be executed because it verifies a requirement that is not absolute. The decision to execute such a test case will usually depend on the ability to support a particular feature that is not tied to an absolute requirement. If such a test case is not executed it is declared as “not applicable”.

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13. Test Cases Summary

Number	Test Case Name	UNI Type	Test Status
1	UNI-MEG Administrative Configuration	UNI-C & UNI-N	Mandatory
2	Test-MEG Administrative Configuration	UNI-C	Mandatory
3	MEP Instance on the Subscriber-MEG	UNI-C	Mandatory
4	Tagged OAM Frames on the Subscriber-MEG	UNI-C	Optional
5	MEP Instance on the Test-MEG	UNI-C	Optional
6	Tagged OAM Frames on the Test-MEG	UNI-C	Optional
7	MEP Instance on the UNI-MEG	UNI-C & UNI-N	Mandatory
8	Untagged OAM Frames on the UNI-MEG	UNI-C & UNI-N	Mandatory
9	IEEE 802.1 Bridge MEPs Corresponding to UNI-MEG	UNI-C & UNI-N	Optional
10	IEEE 802.1 Bridge MEPs Corresponding to Test-MEG	UNI-C	Optional
11	IEEE 802.1 Bridge MEPs Corresponding to Subscriber-MEG – Down-MEP	UNI-C	Optional
12	IEEE 802.1 Bridge MEPs Corresponding to Subscriber-MEG – Up-MEP	UNI-C	Optional
13	Configurable MEG-Level	UNI-C & UNI-N	Mandatory
14	Processing Received Multicast CCM Frames – Source Address	UNI-C & UNI-N	Mandatory
15	Processing Received Multicast CCM Frames – Sender ID TLV	UNI-C & UNI-N	Mandatory if Sender ID TLVs are supported
16	Processing Received Multicast CCM Frames – Chassis ID Length	UNI-C & UNI-N	Mandatory if Sender ID TLVs are supported
17	Processing Received Multicast CCM Frames – Port Status TLV	UNI-C & UNI-N	Mandatory if Port Status TLVs are supported
18	Processing Received Multicast CCM Frames – Interface Status TLV	UNI-C & UNI-N	Mandatory if Interface Status TLVs are supported
19	Processing Received Multicast CCM Frames – CCM Interval	UNI-C & UNI-N	Mandatory
20	Processing Received Multicast CCM Frames – First TLV Offset	UNI-C & UNI-N	Mandatory
21	Processing Received Multicast CCM Frames – MEP ID	UNI-C & UNI-N	Mandatory
22	Processing Received Multicast CCM Frames – Short MA Name Length 1	UNI-C & UNI-N	Mandatory
23	Processing Received Multicast CCM Frames – Short MA Name Length 2	UNI-C & UNI-N	Mandatory
24	Processing Received Multicast CCM Frames	UNI-C & UNI-N	Mandatory
25	Processing & Response to Unicast & Multicast LBM Frames – Destination Address	UNI-C & UNI-N	Mandatory
26	Processing & Response to Unicast & Multicast LBM Frames – Source Address	UNI-C & UNI-N	Mandatory
27	Processing & Response to Unicast & Multicast LBM Frames – Sender ID TLV	UNI-C & UNI-N	Mandatory if Sender ID TLVs are supported
28	Processing & Response to Unicast & Multicast LBM Frames – First TLV Offset	UNI-C & UNI-N	Mandatory
29	Processing & Response to Unicast & Multicast LBM Frames – LBR Header	UNI-C & UNI-N	Mandatory
30	Processing & Response to Unicast & Multicast LBM Frames – LBR Content	UNI-C & UNI-N	Mandatory
31	Generating Multicast CCM Frames – Destination Address	UNI-C & UNI-N	Mandatory
32	Generating Multicast CCM Frames – Source Address	UNI-C & UNI-N	Mandatory
33	Generating Multicast CCM Frames – Protocol Version Number	UNI-C & UNI-N	Mandatory
34	Generating Multicast CCM Frames – OpCode	UNI-C & UNI-N	Mandatory

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35	Generating Multicast CCM Frames – Flags	UNI-C & UNI-N	Mandatory
36	Generating Multicast CCM Frames – First TLV Offset	UNI-C & UNI-N	Mandatory
37	Generating Multicast CCM Frames – Sequence Number	UNI-C & UNI-N	Mandatory
38	Generating Multicast CCM Frames – MEP ID	UNI-C & UNI-N	Mandatory
39	Generating Multicast CCM Frames – MAID Total Length	UNI-C & UNI-N	Mandatory
40	Generating Multicast CCM Frames – Maintenance Domain Name Format	UNI-C & UNI-N	Optional
41	Generating Multicast CCM Frames – Short MA Name Format	UNI-C & UNI-N	Optional
42	Generating Multicast CCM Frames – Short MA Name Length	UNI-C & UNI-N	Mandatory
43	Generating Multicast CCM Frames – Short MA Name	UNI-C & UNI-N	Optional
44	Generating Multicast CCM Frames – Sender ID TLV	UNI-C & UNI-N	Mandatory if Sender ID TLVs are supported
45	nerating Multicast CCM Frames – Chassis ID Length	UNI-C & UNI-N	Mandatory if Sender ID TLVs are supported
46	Generating Multicast CCM Frames – Management Address Domain Field	UNI-C & UNI-N	Optional
47	Generating Multicast CCM Frames – Management Address Field	UNI-C & UNI-N	Optional
48	Generating Multicast CCM Frames – Port Status TLV	UNI-C & UNI-N	Mandatory if Port Status TLVs are supported
49	Generating Multicast CCM Frames – Interface Status TLV	UNI-C & UNI-N	Mandatory if Interface Status TLVs are supported
50	Generating Multicast CCM Frames – Organization Specific TLV	UNI-C & UNI-N	Mandatory if Organization TLVs are supported
51	Generating Multicast CCM Frames – End TLV	UNI-C & UNI-N	Mandatory
52	Generating Multicast LBM Frames – Destination Address	UNI-C & UNI-N	Optional
53	Generating Unicast LBM Frames – Destination Address	UNI-C & UNI-N	Mandatory
54	Generating Unicast LBM Frames – Source Address	UNI-C & UNI-N	Mandatory
55	Generating Unicast LBM Frames – Protocol Version Number	UNI-C & UNI-N	Mandatory
56	Generating Unicast LBM Frames – OpCode	UNI-C & UNI-N	Mandatory
57	Generating Unicast LBM Frames – Flags	UNI-C & UNI-N	Mandatory
58	Generating Unicast LBM Frames – First TLV Offset	UNI-C & UNI-N	Mandatory
59	Generating Unicast LBM Frames – Loopback Transaction Identifier	UNI-C & UNI-N	Mandatory
60	Generating Unicast LBM Frames – Sender ID TLV	UNI-C & UNI-N	Mandatory if Sender ID TLVs are supported
61	Generating Unicast LBM Frames – Chassis ID Length	UNI-C & UNI-N	Mandatory if Sender ID TLVs are supported
62	Generating Unicast LBM Frames – Management Address Domain Field	UNI-C & UNI-N	Optional
63	Generating Unicast LBM Frames – Management Address Field	UNI-C & UNI-N	Optional
64	Generating Unicast LBM Frames – Data TLV	UNI-C & UNI-N	Mandatory
65	Generating Unicast LBM Frames – Organization Specific TLV	UNI-C & UNI-N	Mandatory if Organization TLVs are supported
66	Generating Unicast LBM Frames – End TLV	UNI-C & UNI-N	Mandatory
67	Administratively Enable and Disable CCM Transmission	UNI-C & UNI-N	Mandatory
68	Mandatory CCM Frame Rate	UNI-C & UNI-N	Mandatory
69	Optional CCM Frame Rate	UNI-C & UNI-N	Optional

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70	Configurable CCM Frames Priority for Subscriber-MEG & Test-MEG	UNI-C	Mandatory
71	UNI-C Counter – Number of CCM Frames Transmitted	UNI-C & UNI-N	Optional
72	Lowest Priority CC Defect – DefRDICCM	UNI-C & UNI-N	Mandatory
73	CC Defect & Fault Alarm Hierarchy – DefRDICCM vs DefMACstatus	UNI-C & UNI-N	Optional
74	CC Defect & Fault Alarm Hierarchy – DefMACstatus vs DefRemoteCCM	UNI-C & UNI-N	Optional
75	CC Defect & Fault Alarm Hierarchy – DefRemoteCCM vs DefErrorCCM	UNI-C & UNI-N	Optional
76	CC Defect & Fault Alarm Hierarchy – DefErrorCCM vs DefXconCCM	UNI-C & UNI-N	Optional
77	CC Fault Alarm Time & CC Fault Reset Time	UNI-C & UNI-N	Mandatory if IEEE clause 12.14 7 (Maintenance association End Point managed object) is implemented
78	Administratively Initiate & Stop Loopback Sessions	UNI-C & UNI-N	Mandatory
79	Configurable LBM Frames Priority	UNI-C	Mandatory
80	Configurable Number of LBM Transmissions per Session	UNI-C & UNI-N	Mandatory
81	Configurable Interval between LBM Transmissions	UNI-C & UNI-N	Mandatory
82	Configurable Timeout after a LBM Transmission	UNI-C & UNI-N	Optional
83	Configurable LBM Frame Size	UNI-C & UNI-N	Mandatory
84	UNI-N Counter – Number of LBM Frames Transmitted	UNI-C & UNI-N	Mandatory
85	UNI-N Counter – Number of LBM Frames Received	UNI-C & UNI-N	Mandatory
86	UNI-N Counter – Number of LBR Frames Received	UNI-C & UNI-N	Mandatory
87	UNI-N Statistic – Percentage of Unanswered LB Requests (Lost LBM/LBR)	UNI-C & UNI-N	Mandatory
88	UNI-N Statistic – Minimum, Maximum & Average Round-Trip Latency	UNI-C & UNI-N	Mandatory

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14. Template for Abstract Test Cases for UNI Type 2 Service OAM

The following template is adopted for the definition of Abstract Test Cases for UNI Type 2 Service OAM

Abstract Test Suite for Service OAM	
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: Four characters defining the UNI type + 4 to 8 characters defining the MEF requirement number. Example: UNIC-R60[5] (UNIC: User Network Interface C under test, R60[5]: MEF 20 requirement 60, fifth Test Case related to requirement 60)
Reference Document	MEF Reference document and section IEEE or ITU-T Reference document and section
Test Type	Functional, Conformance, Interoperability or Performance
Test Status	Mandatory, Optional or Recommended
MEF Requirement Description	Brief description of the MEF requirement that **MUST** or **SHOULD** be satisfied
Test Object	Succinct description of test purpose
Test Configuration	Succinct description of test bed configuration
Test Configuration Schematic	Test bed schematic. The variables can augment it.
CE-VLAN ID / EVC Map	A sample VLAN ID/EVC Map is suggested. Variables augment it.
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
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 affect the test result

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15. Abstract Test Cases for UNI-C Type 2 Service OAM

This section contains 88 Test Cases for UNI-C. The section is divided in 5 different subsections as follows:

Section 15.1
Configuration Requirements contains a total of 2 Test Cases covering the UNI Type 2 Requirements R16 and R17.

Section 15.2
Maintenance Entity Requirements contains a total of 10 Test Cases covering the UNI Type 2 Requirements R32, R33, R34, R35 and R36.

Section 15.3
MEG End Points Requirements contains a total of 54 Test Cases covering the UNI Type 2 Requirements R39, R40, R41, R42 and R43.

Section 15.4
Continuity Check Requirements contains a total of 11 Test Cases covering the UNI Type 2 Requirements R44, R45, R46, R47, R48, R49, R50, R51 and R52.

Section 15.5
Loopback Requirements contains a total of 11 Test Cases covering the UNI Type 2 Requirements R53, R54, R55, R56, R57, R58, R59 and R60.

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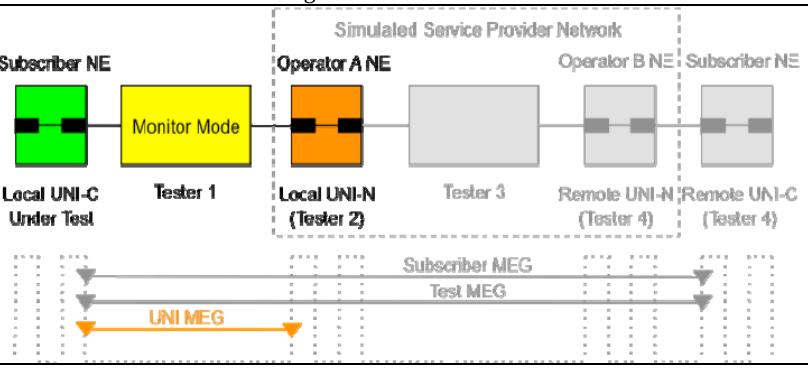
15.1 UNI-C Type 2 Configuration Requirements

TEST CASE 1C: UNI-MEG Administrative Configuration

Abstract Test Suite for Service OAM	
Test Name	UNI-MEG Administrative Configuration
Test Definition ID	UNIC-R16
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 8
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 **MUST** be administratively configurable with the UNI-N MEP ID and MEG-Level corresponding to the UNI-MEG
Test Object	Verify that a UNI-C Type 2 can be administratively configurable with the UNI-N MEP ID and MEG-Level corresponding to the UNI-MEG
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C and the local UNI-N. Configure the UNI-C with the UNI-N MEP ID. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that they contain the configured UNI-C MEP ID, that their MEG-Level is equal to "1" and that the RDI bit of the Flags field is clear. Re-configure the UNI-N with a different MEP ID but do not update the UNI-C configuration with this new information. Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that they contain the configured UNI-C MEP ID, that their MEG-Level is equal to "1" and that the RDI bit of the Flags field is set
Units	MEG-Level, MEP ID and RDI bit values
Variables	None
Results	Pass or fail
Remarks	

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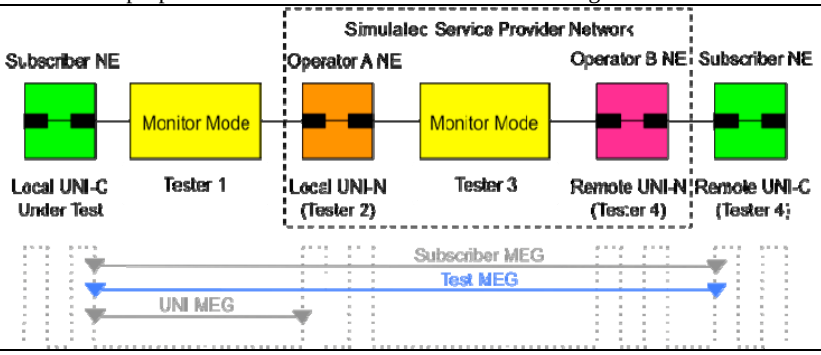
TEST CASE 2C: Test-MEG Administrative Configuration

Abstract Test Suite for Service OAM	
Test Name	Test-MEG Administrative Configuration
Test Definition ID	UNIC-R17
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 8
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 **MUST** be administratively configurable with the MEG-Level for the Test-MEG
Test Object	Verify that a UNI-C Type 2 can be administratively configurable with the MEG-Level for the Test-MEG
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a Test-MEG with a MEG-Level = "5", with a unique MAID. Configure MEP instances with specific MEP IDs for each end point of each configured EVC. Enable CCM transmission on the Test-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that their MEG-Level is equal to "5"
Units	MEG-Level value
Variables	None
Results	Pass or fail
Remarks	

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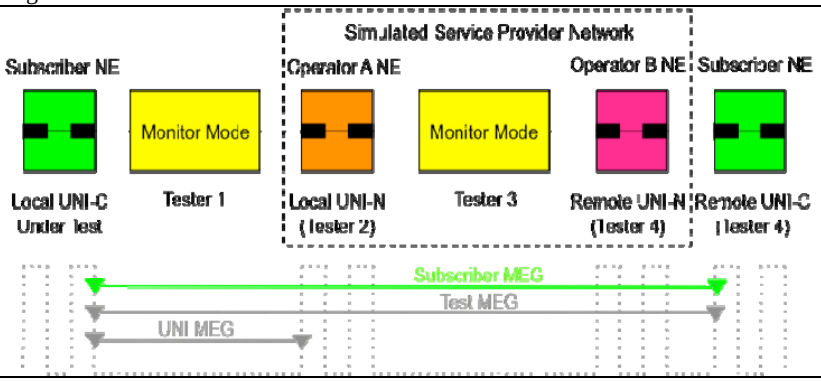
15.2 UNI-C Type 2 Maintenance Entity Requirements

TEST CASE 3C: MEP Instance on the Subscriber-MEG

Abstract Test Suite for Service OAM	
Test Name	MEP Instance on the Subscriber MEG
Test Definition ID	UNIC-R32[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 **MUST** be able to support a MEP instance on the Subscriber-MEG for each configured EVC
Test Object	Verify that a UNI-C Type 2 is able to support a MEP instance on the Subscriber-MEG for each configured EVC
Test Configuration	Configure at least two EVCs associating at least two UNIs (local + remote) and configure a Subscriber-MEG with a MEG-Level = "6", with a unique MAID for each EVC. Configure MEP instances with specific MEP IDs for each end point of each configured EVC. Enable CCM transmission on the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that CCM frames are transmitted from each configured MEP instances (verify MEP IDs) and that the MEG-Level of each CCM frame is equal to "6"
Units	MEG-Level and MEP ID values
Variables	Number of EVCs
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
11	EVC_2	11	EVC_2
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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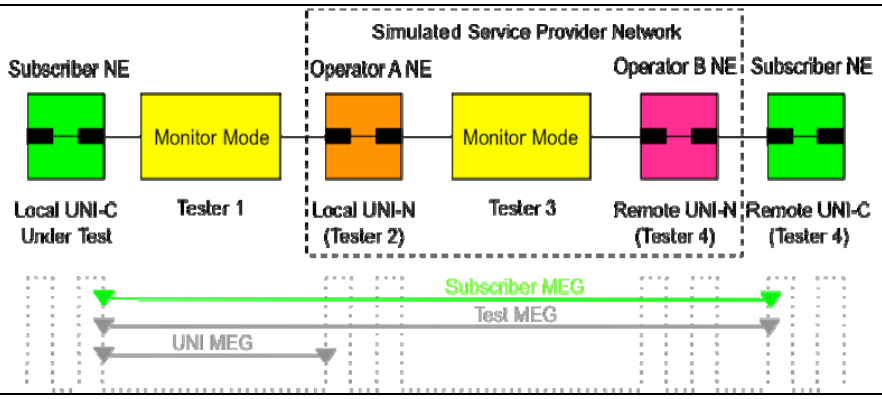
TEST CASE 4C: Tagged OAM Frames on the Subscriber-MEG

Abstract Test Suite for Service OAM	
Test Name	Tagged OAM Frames on the Subscriber MEG
Test Definition ID	UNIC-R32[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	The OAM frames on the Subscriber-MEG **SHOULD** be tagged and use the smallest CE-VLAN ID mapped into that EVC
Test Object	Verify that the OAM frames on the Subscriber-MEG are tagged and use the smallest CE-VLAN ID mapped into that EVC
Test Configuration	Configure at least two EVCs associating at least two UNIs (local + remote) and configure a Subscriber-MEG with a MEG-Level = "6", with a unique MAID for each EVC. Configure MEP instances with specific MEP IDs for each end point of each configured EVCs. Enable CCM transmission on the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that there are CCM frames transmitted from each configured MEP instances (verify MEP IDs) and that they are tagged with the smallest CE-VLAN ID mapped into each EVC
Units	CCM frames VLAN tag and MEP ID values
Variables	Number of EVCs
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10, 11	EVC_1	10, 11	EVC_1
12, 13	EVC_2	12, 13	EVC_2
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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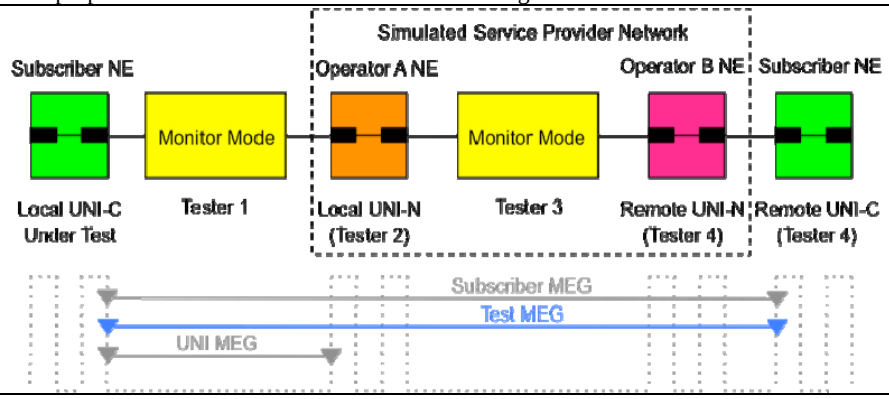
TEST CASE 5C: MEP Instance on the Test-MEG

Abstract Test Suite for Service OAM	
Test Name	MEP Instance on the Test-MEG
Test Definition ID	UNIC-R33[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	A UNI-C Type 2 **SHOULD** be able to support a MEP instance on the Test-MEG for each configured EVC
Test Object	Verify that a UNI-C Type 2 is able to support a MEP instance on the Test-MEG for each configured EVC
Test Configuration	Configure at least two EVCs associating at least two UNIs (local + remote) and configure a Test-MEG with a MEG-Level = "5", with a unique MAID for each EVC. Configure MEP instances with specific MEP IDs for each end point of each configured EVCs. Enable CCM transmission on the Test-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that CCM frames are transmitted from each configured MEP instance (verify MEP IDs) and that the MEG-Level of each CCM frame is equal to "5"
Units	MEG-Level and MEP ID values
Variables	Number of EVCs
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
11	EVC_2	11	EVC_2
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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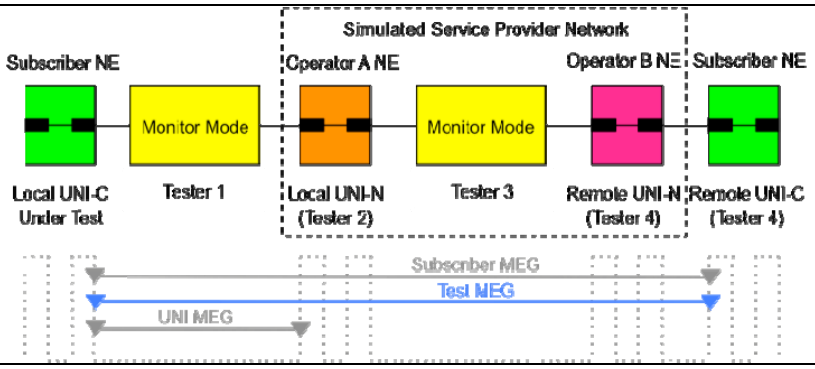
TEST CASE 6C: Tagged OAM Frames on the Test-MEG

Abstract Test Suite for Service OAM	
Test Name	Tagged OAM Frames on the Test-MEG
Test Definition ID	UNIC-R33[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	The OAM frames on the Test-MEG **SHOULD** be tagged and use the smallest CE-VLAN ID mapped into that EVC
Test Object	Verify that the OAM frames on the Test-MEG are tagged and use the smallest CE-VLAN ID mapped into that EVC
Test Configuration	Configure at least two EVCs associating at least two UNIs (local + remote) and configure a Test-MEG with a MEG-Level = "5", with a unique MAID for each EVC. Configure MEP instances with specific MEP IDs for each end point of each configured EVC. Enable CCM transmission on the Test-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that there are CCM frames transmitted from each configured MEP instances (verify MEP IDs) and that they are tagged with the smallest CE-VLAN ID mapped into each EVC
Units	CCM frames VLAN tag and MEP ID values
Variables	Number of EVCs
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10, 11	EVC_1	10, 11	EVC_1
12, 13	EVC_2	12, 13	EVC_2
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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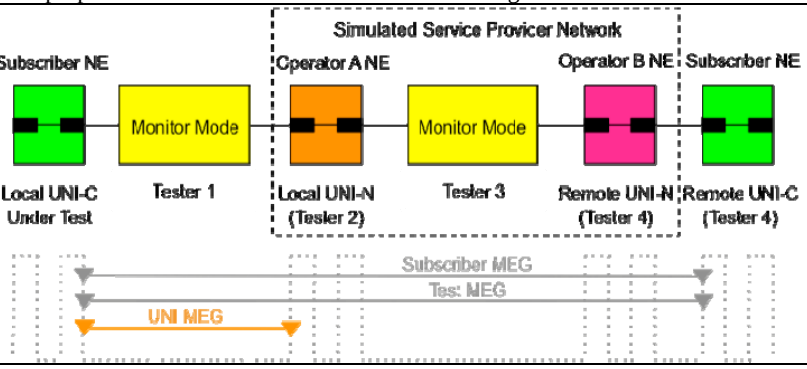
TEST CASE 7C: MEP Instance on the UNI-MEG

Abstract Test Suite for Service OAM	
Test Name	MEP Instance on the UNI-MEG
Test Definition ID	UNIC-R34[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 **MUST** be able to support a single MEP instance on the UNI-MEG, regardless of whether any EVC is configured for that UNI or not
Test Object	Verify that a UNI-C Type 2 can support a single MEP instance on the UNI-MEG, regardless of whether any EVC is configured for that UNI or not
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C and the local UNI-N. Enable CCM transmission on the UNI-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1. Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that they contain the configured MEP ID and that their MEG-Level is equal to "1". Delete the configured EVC(s) and use Tester 1 to verify that the Continuity Check Messages are still transmitted by the UNI-C under test, that they still contain the configured MEP ID and that their MEG-Level is still equal to "1"
Units	MEG-Level and MEP ID values
Variables	None
Results	Pass or fail
Remarks	

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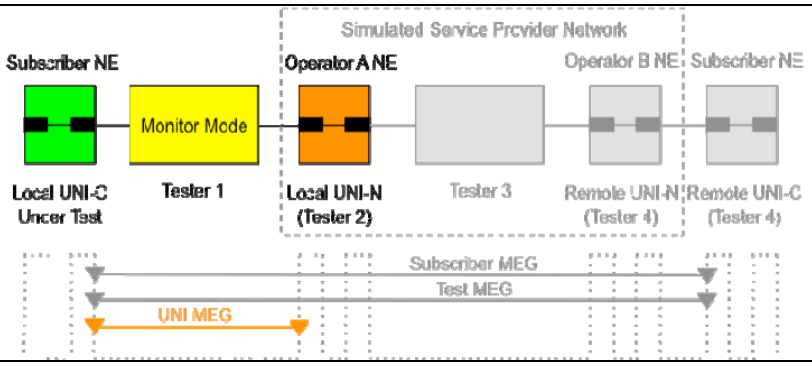
TEST CASE 8C: Untagged OAM Frames on the UNI-MEG

Abstract Test Suite for Service OAM	
Test Name	Untagged OAM Frames on the UNI-MEG
Test Definition ID	UNIC-R34[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 must be able to support a single MEP instance on the UNI-MEG, this UNI-MEG is called the "default UNI-MEG" and **MUST** use Untagged OAM frames
Test Object	Verify that a UNI-C Type 2 is able to support a single MEP instance on the UNI-MEG and that it uses untagged OAM frames
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that their MEG-Level is equal to "1" and that they are untagged
Units	MEG-Level value and CCM frames VLAN tag (absence)
Variables	None
Results	Pass or fail
Remarks	

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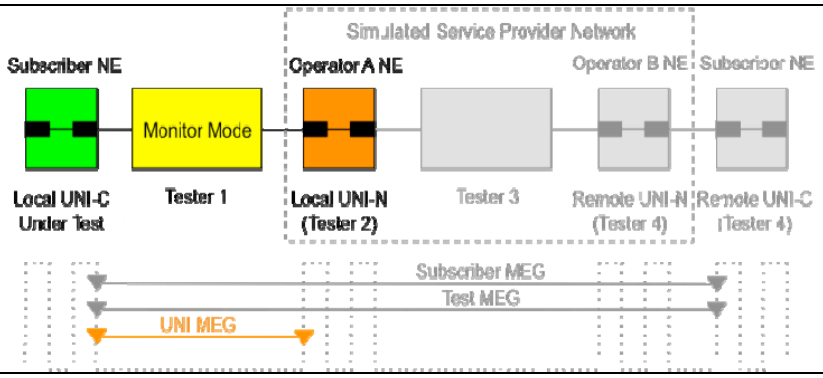
TEST CASE 9C: IEEE 802.1 Bridge MEPs Corresponding to UNI-MEG

Abstract Test Suite for Service OAM	
Test Name	IEEE 802.1 Bridge MEPs Corresponding to UNI-MEG
Test Definition ID	UNIC-R35[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	When the CE is an IEEE 802.1 Bridge, the MEPs corresponding to the UNI-MEG on a UNI-C Type 2 **SHOULD** be Down-MEPs
Test Object	Verify that when the CE is an IEEE 802.1 Bridge, the MEPs corresponding to the UNI-MEG on a UNI-C Type 2 are Down-MEPs
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure Down-MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-C under test and if the bridge implements IEEE 802.1ag clause 12.14.7, use the management system of the UNI-C under test to verify that the value indicating the direction in which the MEP is facing on the interface is "Down"
Units	MEP direction
Variables	None
Results	Pass or fail
Remarks	To perform this test, the bridge must implement IEEE 802.1ag clause 12.14.7 (Maintenance association End Point managed object). If this is not the case, there is no obligation to perform the test

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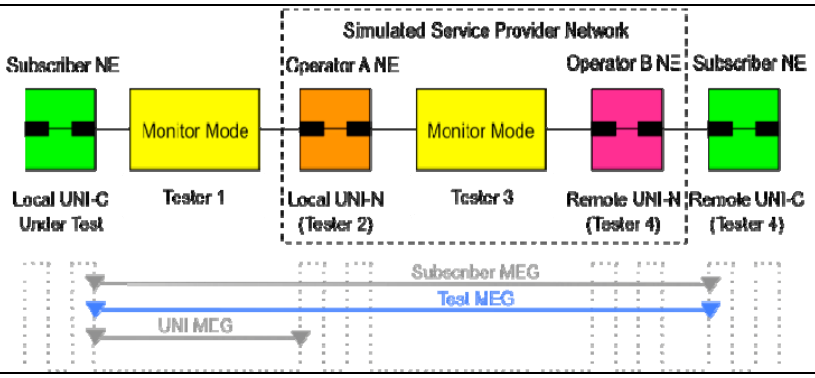
TEST CASE 10C: IEEE 802.1 Bridge MEPs Corresponding to Test-MEG

Abstract Test Suite for Service OAM	
Test Name	IEEE 802.1 Bridge MEPs Corresponding to Test-MEG
Test Definition ID	UNIC-R35[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	When the CE is an IEEE 802.1 Bridge, the MEPs corresponding to Test-MEG on a UNI-C Type 2 **SHOULD** be Down-MEPs
Test Object	Verify that when the CE is an IEEE 802.1 Bridge, the MEPs corresponding to Test-MEG on a UNI-C Type 2 are Down-MEPs
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a Test-MEG with a MEG-Level = "5", with a unique MAID. Configure Down-MEP instances with specific MEP IDs for each end point of each configured EVC. Enable CCM transmission on the Test-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and if the bridge implements IEEE 802.1ag clause 12.14.7, use the management system of the UNI-C under test to verify that the values indicating the directions in which the MEPs are facing on the interface are "Down"
Units	MEP direction
Variables	None
Results	Pass or fail
Remarks	To perform this test, the bridge must implement IEEE 802.1ag clause 12.14.7 (Maintenance association End Point managed object). If this is not the case, there is no obligation to perform the test

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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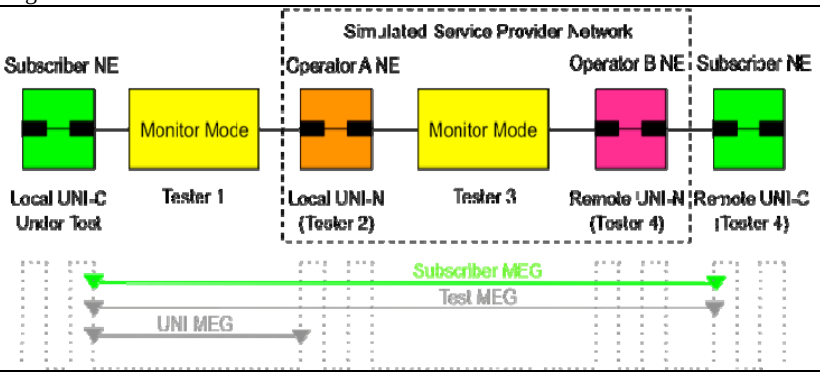
TEST CASE 11C: IEEE 802.1 Bridge MEPs Corresponding to Subscriber-MEG – Down-MEP

<table>
<tr><th colspan="2">Abstract Test Suite for Service OAM</th></tr>
<tr><td>Test Name</td><td>IEEE 802.1 Bridge MEPs Corresponding to Subscriber-MEG – Down-MEP</td></tr>
<tr><td>Test Definition ID</td><td>UNIC-R36[1]</td></tr>
<tr><td>Reference Document</td><td>MEF 20 UNI Type 2 Implementation Agreement Section 10.2
IEEE 802.1ag</td></tr>
<tr><td>Test Type</td><td>Conformance</td></tr>
<tr><td>Test Status</td><td>Optional</td></tr>
<tr><td>MEF Requirement Description</td><td>When the CE is an IEEE 802.1 Bridge, the MEPs corresponding to Subscriber-MEG on a UNI-C Type 2 MAY either be Up-MEP or Down-MEP</td></tr>
<tr><td>Test Object</td><td>Verify that when the CE is an IEEE 802.1 Bridge, the MEPs corresponding to Subscriber-MEG on a UNI-C Type 2 are Down-MEPs</td></tr>
<tr><td>Test Configuration</td><td>Configure at least one EVC associating at least two UNIs (local + remote) and configure a Subscriber-MEG with a MEG-Level = “6”, with a unique MAID. Configure Down-MEP instances with specific MEP IDs for each end point of each configured EVC. Enable CCM transmission on the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames</td></tr>
<tr><td>Test Configuration Schematic</td><td> 
</td></tr>
<tr><td>CE-VLAN ID/EVC Map</td><td>
<table>
<tr><th colspan="2">LOCAL UNI</th><th></th><th colspan="2">REMOTE UNI</th></tr>
<tr><th>CE-VLAN ID</th><th>EVC</th><th></th><th>CE-VLAN ID</th><th>EVC</th></tr>
<tr><td>10</td><td>EVC_1</td><td></td><td>10</td><td>EVC_1</td></tr>
<tr><td colspan="5">Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1</td></tr>
</table>
</td></tr>
<tr><td>Test Procedure</td><td>Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and if the bridge implements IEEE 802.1ag clause 12.14.7, use the management system of the UNI-C under test to verify that the values indicating the directions in which the MEPs are facing on the interface are “Down”</td></tr>
<tr><td>Units</td><td>MEP direction</td></tr>
<tr><td>Variables</td><td>None</td></tr>
<tr><td>Results</td><td>Pass or fail</td></tr>
<tr><td>Remarks</td><td>To perform this test, the bridge must implement IEEE 802.1ag clause 12.14.7 (Maintenance association End Point managed object). If this is not the case, there is no obligation to perform the test</td></tr>
</table>

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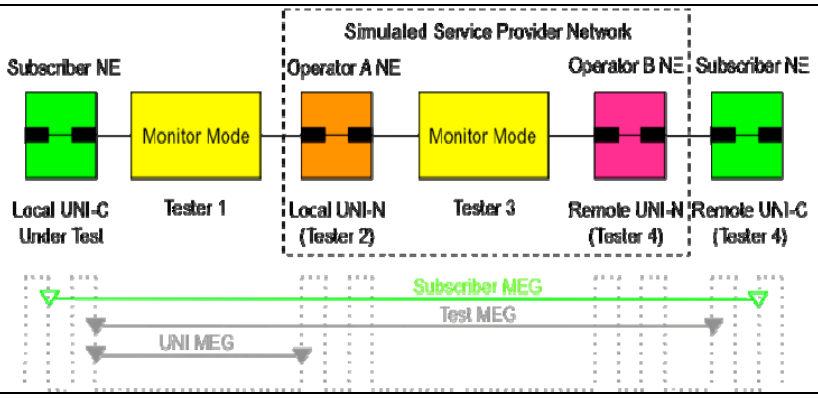
TEST CASE 12C: IEEE 802.1 Bridge MEPs Corresponding to Subscriber-MEG – Up-MEP

Abstract Test Suite for Service OAM	
Test Name	IEEE 802.1 Bridge MEPs Corresponding to Subscriber-MEG – Up-MEP
Test Definition ID	UNIC-R36[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	When the CE is an IEEE 802.1 Bridge, the MEPs corresponding to Subscriber-MEG on a UNI-C Type 2 **MAY** either be Up-MEP or Down-MEP
Test Object	Verify that when the CE is an IEEE 802.1 Bridge, the MEPs corresponding to Subscriber-MEG on a UNI-C Type 2 are Up-MEPs
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a Subscriber-MEG with a MEG-Level = "6", with a unique MAID. Configure Up-MEP instances with specific MEP IDs for each end point of each configured EVC. Enable CCM transmission on the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and if the bridge implements IEEE 802.1ag clause 12.14.7, use the management system of the UNI-C under test to verify that the values indicating the directions in which the MEPs are facing on the interface are "Up"
Units	MEP direction
Variables	None
Results	Pass or fail
Remarks	To perform this test, the bridge must implement IEEE 802.1ag clause 12.14.7 (Maintenance association End Point managed object). If this is not the case, there is no obligation to perform the test

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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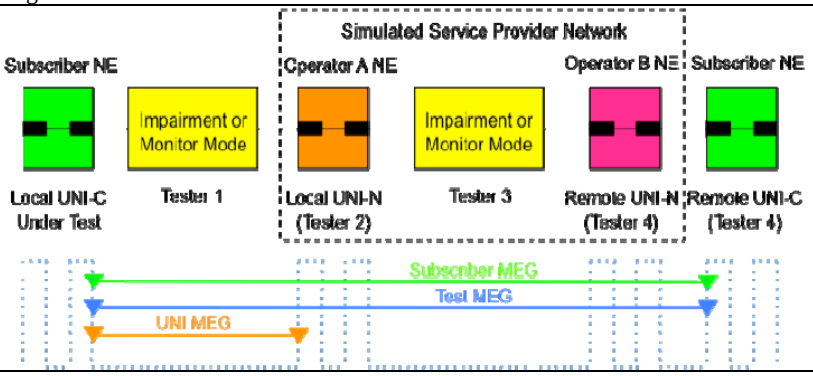
15.3 UNI-C Type 2 MEG End Points Requirements

TEST CASE 13C: Configurable MEG-Level

Abstract Test Suite for Service OAM	
Test Name	Configurable MEG-Level
Test Definition ID	UNIC-R39
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 **MUST** support a configurable MEG-Level for the MEPs
Test Object	Verify that a UNI-C Type 2 can support a configurable MEG-Level for the MEPs
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, on the Test-MEG and on the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that CCM frames are transmitted from each configured MEP instance (verify MEP IDs) and that the MEG-Level of the UNI-MEG is = "1", the MEG-Level of the Test-MEG is = "5", and the MEG-Level of Subscriber-MEG is = "6"
Units	MEG-Level and MEP ID values
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI			REMOTE UNI	
CE-VLAN ID	**EVC**		**CE-VLAN ID**	**EVC**
10	EVC_1		10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1				

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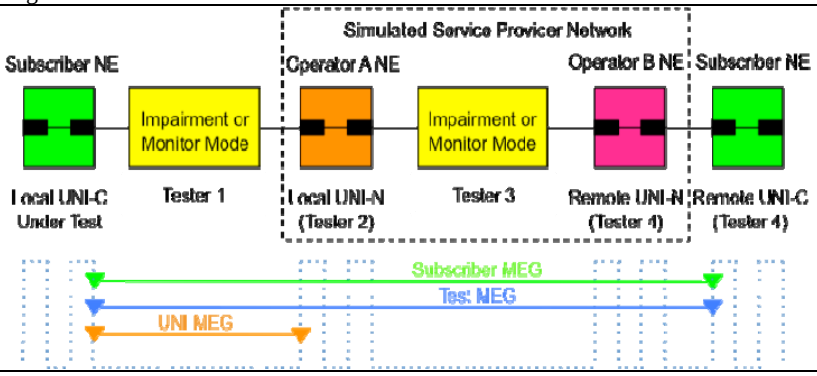
TEST CASE 14C: Processing Received Multicast CCM Frames – Source Address

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames – Source Address
Test Definition ID	UNIC-R40[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.3.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG – Source address validation
IEEE Requirement Description	The receiving system **SHALL** consider a CCM PDU invalid and discard it if the source address parameter contains a Group address, and not an Individual MAC address
Test Object	Verify that any CCM frame received with a source address parameter that contains a Group MAC address is considered invalid and discarded
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 2 and Tester 4 to send Continuity Check Messages with a source address parameter that contains a Group MAC address to the UNI-C under test and use the management system of the UNI-C under test to verify that the received CCMs are not catalogued (MEP IDs of the remote MEPs) in the UNI-C MEP CCM Database for the UNI-MEG, for the Test-MEG and for the Subscriber-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI			REMOTE UNI	
CE-VLAN ID	**EVC**		**CE-VLAN ID**	**EVC**
10	EVC_1		10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1				

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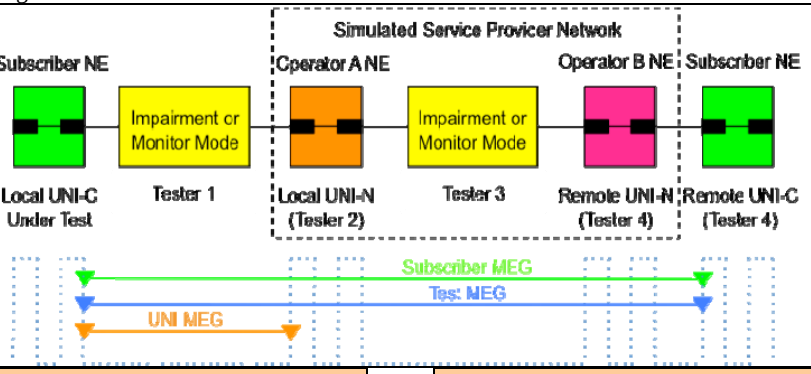
TEST CASE 15C: Processing Received Multicast CCM Frames – Sender ID TLV

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames – Sender ID TLV
Test Definition ID	UNIC-R40[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.5.3)
Test Type	Conformance
Test Status	Mandatory if Sender ID TLVs are supported
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG – Sender ID TLV validation
IEEE Requirement Description	The receiving system **SHALL** consider a CCM PDU invalid and discard it if the Sender ID TLV Length field is not large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields
Test Object	Verify that any CCM frame received with a Sender ID TLV Length field that is not large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields is considered invalid and discarded
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 2 and Tester 4 to send Continuity Check Messages with Sender ID TLV Length field not large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields to the UNI-C under test and use the management system of the UNI-C under test to verify that the received CCMs are not catalogued (MEP IDs of the remote MEPs) in the UNI-C MEP CCM Database for the UNI-MEG, for the Test-MEG and for the Subscriber-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI			REMOTE UNI	
CE-VLAN ID	**EVC**		**CE-VLAN ID**	**EVC**
10	EVC_1		10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1				

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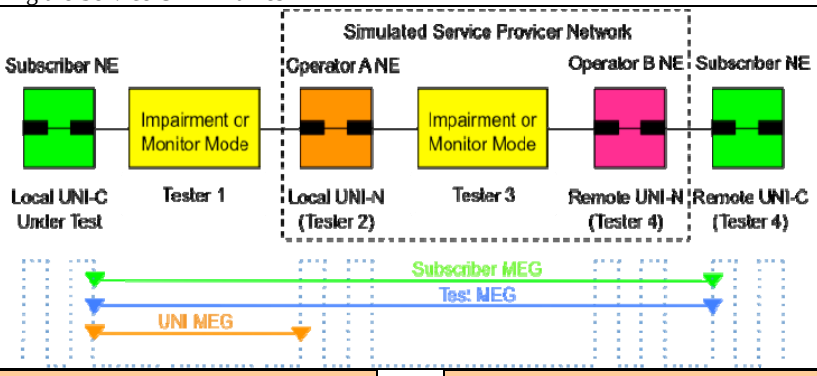
TEST CASE 16C: Processing Received Multicast CCM Frames – Chassis ID Length

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames – Chassis ID Length
Test Definition ID	UNIC-R40[3]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.5.3.1)
Test Type	Conformance
Test Status	Mandatory if Sender ID TLVs are supported
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG – Chassis ID length validation
IEEE Requirement Description	The receiving system **SHALL** consider a CCM PDU invalid and discard it if the Chassis ID Length field is not 0, nor less than (TLV Length field value – 1)
Test Object	Verify that any CCM frame received with a Chassis ID Length field that is not 0, nor less than (TLV Length field value – 1) is considered invalid and discarded
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI** / **REMOTE UNI** **CE-VLAN ID** | **EVC** / **CE-VLAN ID** | **EVC** 10 | EVC_1 / 10 | EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 2 and Tester 4 to send Continuity Check Messages with a Chassis ID Length field that is not 0, nor less than (TLV Length field value – 1) to the UNI-C under test and use the management system of the UNI-C under test to verify that the received CCMs are not catalogued (MEP IDs of the remote MEPs) in the UNI-C MEP CCM Database for the UNI-MEG, for the Test-MEG and for the Subscriber-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

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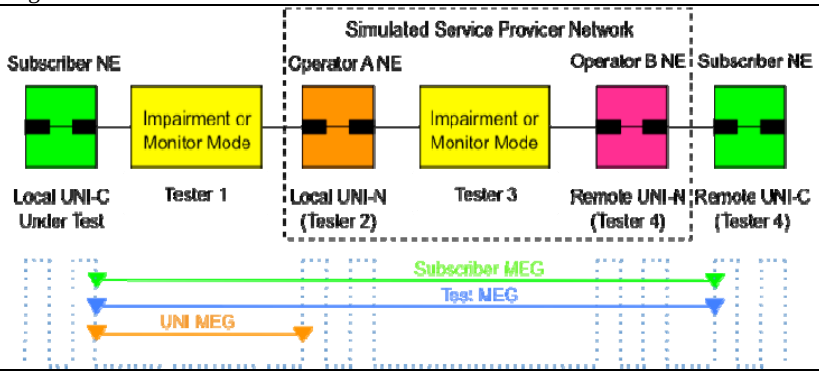
TEST CASE 17C: Processing Received Multicast CCM Frames – Port Status TLV

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames – Port Status TLV
Test Definition ID	UNIC-R40[4]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.5.4)
Test Type	Conformance
Test Status	Mandatory if Port Status TLVs are supported
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG – Port Status TLV validation
IEEE Requirement Description	The receiving system **SHALL** consider a CCM PDU invalid and discard it if the Port Status TLV contains a value other than (0x01) or (0x02)
Test Object	Verify that any CCM frame received with a Port Status TLV that contains a value other than (0x01) or (0x02) is considered invalid and discarded
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 2 and Tester 4 to send Continuity Check Messages with a Port Status TLV that contains a value other than (0x01) or (0x02) to the UNI-C under test and use the management system of the UNI-C under test to verify that the received CCMs are not catalogued (MEP IDs of the remote MEPs) in the UNI-C MEP CCM Database for the UNI-MEG, for the Test-MEG and for the Subscriber-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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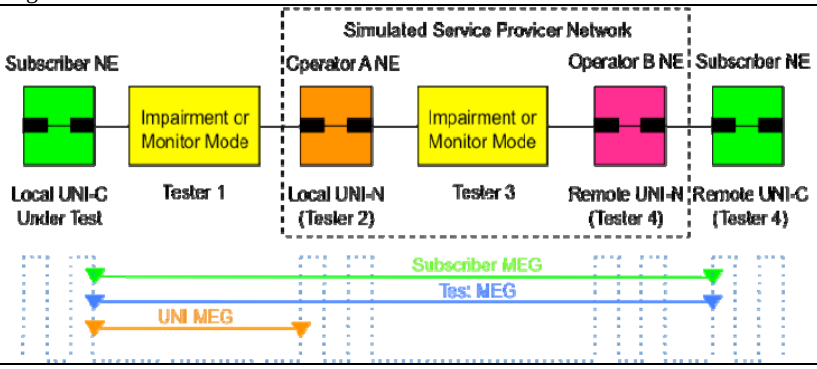
TEST CASE 18C: Processing Received Multicast CCM Frames – Interface Status TLV

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames – Interface Status TLV
Test Definition ID	UNIC-R40[5]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.5.5)
Test Type	Conformance
Test Status	Mandatory if Interface Status TLVs are supported
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG – Interface Status TLV validation
IEEE Requirement Description	The receiving system **SHALL** consider a CCM PDU invalid and discard it if the Interface Status TLV contains a value other than (0x01), (0x02), (0x03), (0x04), (0x05), (0x06) or (0x07)
Test Object	Verify that any CCM frame received with an Interface Status TLV that contains a value other than (0x01), (0x02), (0x03), (0x04), (0x05), (0x06) or (0x07) is considered invalid and discarded
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 2 and Tester 4 to send Continuity Check Messages with an Interface Status TLV that contains a value other than (0x01), (0x02), (0x03), (0x04), (0x05), (0x06) or (0x07) to the UNI-C under test and use the management system of the UNI-C under test to verify that the received CCMs are not catalogued (MEP IDs of the remote MEPs) in the UNI-C MEP CCM Database for the UNI-MEG, for the Test-MEG and for the Subscriber-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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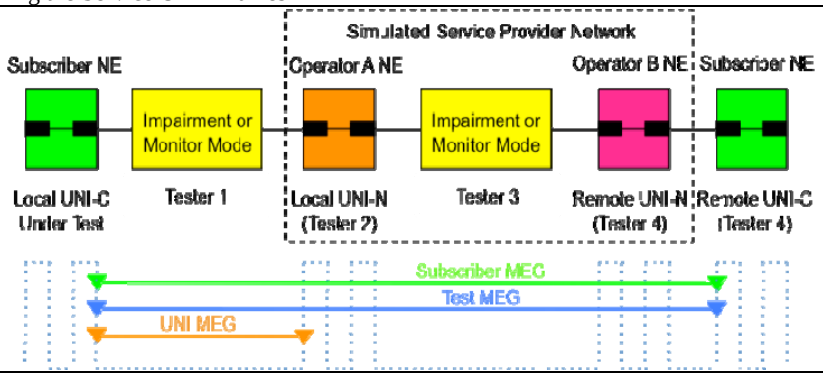
TEST CASE 19C: Processing Received Multicast CCM Frames – CCM Interval

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames – CCM Interval
Test Definition ID	UNIC-R40[6]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.6.1.3)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG – CCM Interval validation
IEEE Requirement Description	The receiving system **SHALL** consider a CCM PDU invalid and discard it if the CCM Interval field contains the value 0
Test Object	Verify that any CCM frame received with a CCM Interval field that contain the value 0 is considered invalid and discarded
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 2 and Tester 4 to send Continuity Check Messages with a CCM Interval field that contain the value 0 to the UNI-C under test and use the management system of the UNI-C under test to verify that the received CCMs are not catalogued (MEP IDs of the remote MEPs) in the UNI-C MEP CCM Database for the UNI-MEG, for the Test-MEG and for the Subscriber-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI			REMOTE UNI	
CE-VLAN ID	**EVC**		**CE-VLAN ID**	**EVC**
10	EVC_1		10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1				

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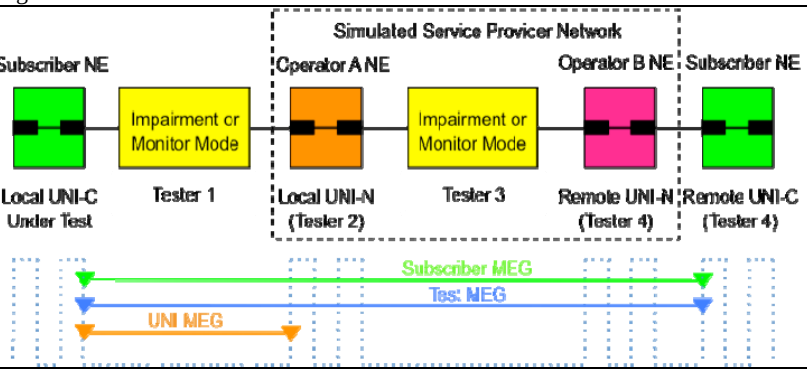
TEST CASE 20C: Processing Received Multicast CCM Frames – First TLV Offset

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames – First TLV Offset
Test Definition ID	UNIC-R40[7]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.6.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG – First TLV Offset validation
IEEE Requirement Description	The receiving system **SHALL** consider a CCM PDU invalid and discard it if the First TLV Offset field of the Common CFM Header in a CCM does not contain a value greater than or equal to 70
Test Object	Verify that any CCM frame received with a First TLV Offset field of the Common CFM Header that does not contain a value greater than or equal to 70 is considered invalid and discarded
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 2 and Tester 4 to send Continuity Check Messages with a First TLV Offset field of the Common CFM Header that does not contain a value greater than or equal to 70 to the UNI-C under test and use the management system of the UNI-C under test to verify that the received CCMs are not catalogued (MEP IDs of the remote MEPs) in the UNI-C MEP CCM Database for the UNI-MEG, for the Test-MEG and for the Subscriber-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

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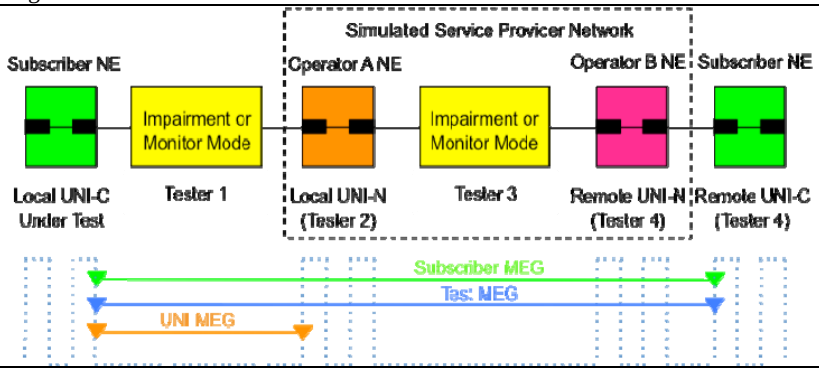
TEST CASE 21C: Processing Received Multicast CCM Frames – MEP ID

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames – MEP ID
Test Definition ID	UNIC-R40[8]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.6.4)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG – MEP ID validation
IEEE Requirement Description	The receiving system **SHALL** consider a CCM PDU invalid and discard it if the MEP ID is not in the range 1-8191
Test Object	Verify that any CCM frame received with a MEP ID that is not in the range 1-8191 is considered invalid and discarded
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 2 and Tester 4 to send Continuity Check Messages with a MEP ID that is not in the range 1-8191 to the UNI-C under test and use the management system of the UNI-C under test to verify that the received CCMs are not catalogued (MEP IDs of the remote MEPs) in the UNI-C MEP CCM Database for the UNI-MEG, for the Test-MEG and for the Subscriber-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI			REMOTE UNI	
CE-VLAN ID	**EVC**		**CE-VLAN ID**	**EVC**
10	EVC_1		10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1				

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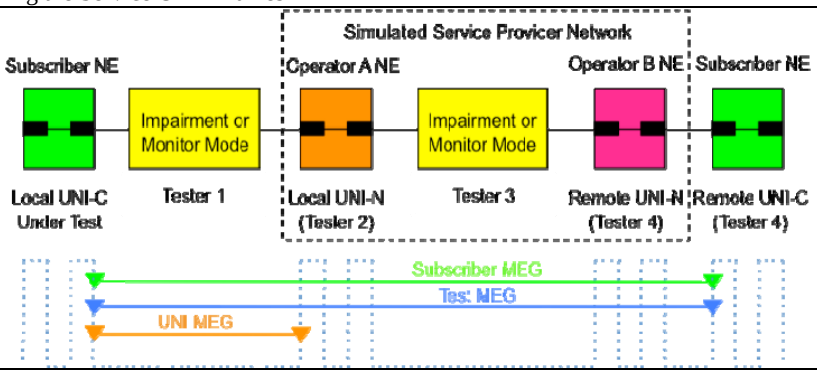
TEST CASE 22C: Processing Received Multicast CCM Frames – Short MA Name Length 1

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames – Short MA Name Length 1
Test Definition ID	UNIC-R40[9]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.6.5.5)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG – Short MA Name length validation 1
IEEE Requirement Description	The receiving system **SHALL** consider a CCM PDU invalid and discard it if the Short MA Name Length does not contain a value greater than or equal to 1
Test Object	Verify that any CCM frame received with a Short MA Name Length that does not contain a value greater than or equal to 1 is considered invalid and discarded
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI** / **REMOTE UNI** **CE-VLAN ID** / **EVC** / **CE-VLAN ID** / **EVC** 10 / EVC_1 / 10 / EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 2 and Tester 4 to send Continuity Check Messages with a Short MA Name Length that does not contain a value greater than or equal to 1 to the UNI-C under test and use the management system of the UNI-C under test to verify that the received CCMs are not catalogued (MEP IDs of the remote MEPs) in the UNI-C MEP CCM Database for the UNI-MEG, for the Test-MEG and for the Subscriber-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

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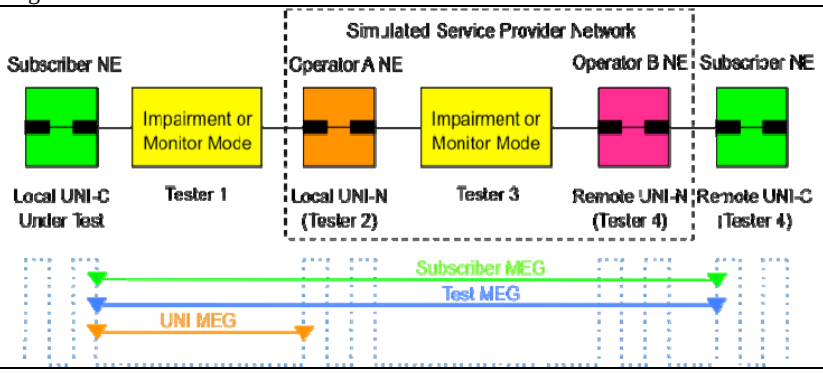
TEST CASE 23C: Processing Received Multicast CCM Frames – Short MA Name Length 2

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames – Short MA Name Length 2
Test Definition ID	UNIC-R40[10]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.6.5.5)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG – Short MA Name length validation 2
IEEE Requirement Description	The receiving system **SHALL** consider a CCM PDU invalid and discard it if the Short MA Name Length indicates that the Short MA Name runs over the 48-octet limit for the MAID
Test Object	Verify that any CCM frame received with a Short MA Name Length that indicates that the Short MA Name runs over the 48-octet limit for the MAID is considered invalid and discarded
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 2 and Tester 4 to send Continuity Check Messages with a Short MA Name Length that indicates that the Short MA Name runs over the 48-octet limit for the MAID to the UNI-C under test and use the management system of the UNI-C under test to verify that the received CCMs are not catalogued (MEP IDs of the remote MEPs) in the UNI-C MEP CCM Database for the UNI-MEG, for the Test-MEG and for the Subscriber-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI			REMOTE UNI	
CE-VLAN ID	**EVC**		**CE-VLAN ID**	**EVC**
10	EVC_1		10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1				

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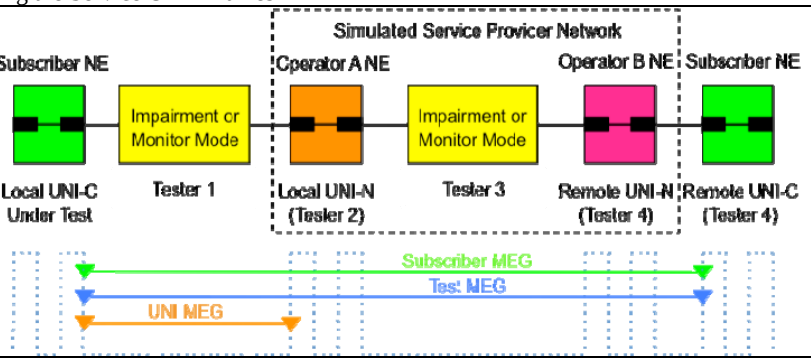
TEST CASE 24C: Processing Received Multicast CCM Frames

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames
Test Definition ID	UNIC-R40[11]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.1.3)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG
IEEE Requirement Description	Further to the successful PDU validation tests (described in Test Cases 14 through 23) a receiving MEP **SHALL** examine every CCM to be sure that its MAID matches that configured in the receiving MEP, check to ensure that its own MEPID does *not* match that in the received CCM and catalog CCMs in its MEP CCM Database
Test Object	Verify that further to the successful PDU validation tests (described in Test Cases 14 through 23) the receiving MEP examines every CCM to be sure that its MAID matches that configured in the receiving MEP, checks to ensure that its own MEPID does *not* match that in the received CCM and catalog CCMs in its MEP CCM Database
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI** / **REMOTE UNI** **CE-VLAN ID** | **EVC** / **CE-VLAN ID** | **EVC** 10 | EVC_1 / 10 | EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 2 and Tester 4 to send valid Continuity Check Messages to the UNI-C under test and use the management system of the UNI-C under test to verify that the received CCMs are catalogued (MEP IDs of the remote MEPs) in the UNI-C MEP CCM Database for the UNI-MEG, for the Test-MEG and for the Subscriber-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

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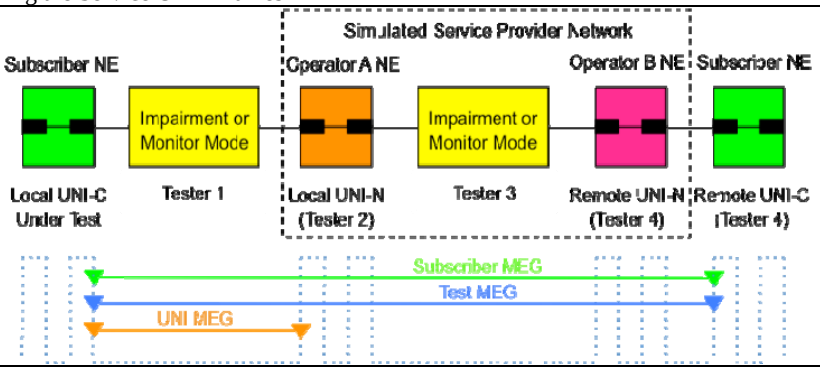
TEST CASE 25C: Processing & Response to Unicast & Multicast LBM Frames – Destination Address

<table>
<tr><th colspan="2">Abstract Test Suite for Service OAM</th></tr>
<tr><td>Test Name</td><td>Processing & Response to Unicast & Multicast LBM Frames – Destination Address</td></tr>
<tr><td>Test Definition ID</td><td>UNIC-R41[1]</td></tr>
<tr><td>Reference Document</td><td>MEF 20 UNI Type 2 Implementation Agreement Section 10.2
IEEE 802.1ag (20.2.2)</td></tr>
<tr><td>Test Type</td><td>Conformance</td></tr>
<tr><td>Test Status</td><td>Mandatory</td></tr>
<tr><td>MEF Requirement Description</td><td>A UNI-C Type 2 MEP implementation MUST be able to process and respond to both Unicast and Multicast LBM frames for each required MEG – Destination address validation</td></tr>
<tr><td>IEEE Requirement Description</td><td>When an LBM is received by an MEP Loopback Responder, if the destination address matches neither the MAC address of the receiving MEP, nor the Group MAC address listed in the MAC addresses Table in section 10, appropriate to the MD Level (MEG-Level) of the receiving MEP, the MEP SHALL discard the LBM</td></tr>
<tr><td>Test Object</td><td>Verify that any LBM frame received with a destination address that does not match the MAC address of the receiving MEP, nor the Group MAC address listed in the MAC addresses Table in section 10, appropriate to the MD Level (MEG-Level) is considered invalid and discarded</td></tr>
<tr><td>Test Configuration</td><td>Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = “1” and with a unique MAID, a Test-MEG with a MEG-Level = “5” and with a unique MAID, and a Subscriber-MEG with a MEG-Level = “6” and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames</td></tr>
<tr><td>Test Configuration Schematic</td><td> 
</td></tr>
<tr><td>CE-VLAN ID/EVC Map</td><td>
<table>
<tr><th colspan="2">LOCAL UNI</th><th colspan="2">REMOTE UNI</th></tr>
<tr><th>CE-VLAN ID</th><th>EVC</th><th>CE-VLAN ID</th><th>EVC</th></tr>
<tr><td>10</td><td>EVC$_1$</td><td>10</td><td>EVC$_1$</td></tr>
<tr><td colspan="4">Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1</td></tr>
</table>
</td></tr>
<tr><td>Test Procedure</td><td>Instruct Tester 2 and Tester 4 to send Loopback Messages with a destination address that does not match the MAC address of the receiving MP, nor the Group MAC address listed in the MAC addresses Table in section 10, appropriate to the MD Level (MEG-Level) to the UNI-C under test. Use Tester 1 and Tester 3 to monitor the messages transmitted by the UNI-C under test and to verify that it does not generate any Loopback Replies (because the received LBMs are considered invalid and discarded)</td></tr>
<tr><td>Units</td><td>OpCode value</td></tr>
<tr><td>Variables</td><td>LBM frame type (Unicast or Multicast)</td></tr>
<tr><td>Results</td><td>Pass or fail</td></tr>
<tr><td>Remarks</td><td></td></tr>
</table>

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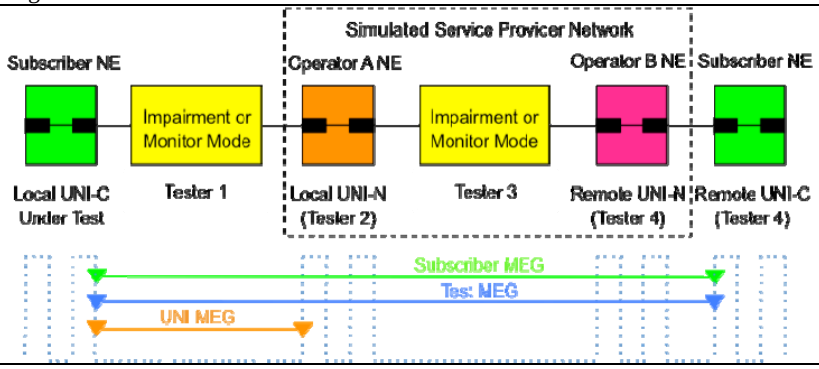
TEST CASE 26C: Processing & Response to Unicast & Multicast LBM Frames – Source Address

Abstract Test Suite for Service OAM	
Test Name	Processing & Response to Unicast & Multicast LBM Frames – Source Address
Test Definition ID	UNIC-R41[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.3.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to process and respond to both Unicast and Multicast LBM frames for each required MEG – Source address validation
IEEE Requirement Description	The receiving system **SHALL** consider an LBM PDU invalid and discard it if the source address parameter contains a Group address, and not an Individual MAC address
Test Object	Verify that any LBM frame received with a source address parameter that contains a Group MAC address is considered invalid and discarded
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Instruct Tester 2 and Tester 4 to send Loopback Messages with a source address parameter that contains a Group MAC address to the UNI-C under test. Use Tester 1 and Tester 3 to monitor the messages transmitted by the UNI-C under test and to verify that it does not generate any Loopback Replies (because the received LBMs are considered invalid and discarded)
Units	OpCode value
Variables	LBM frame type (Unicast or Multicast)
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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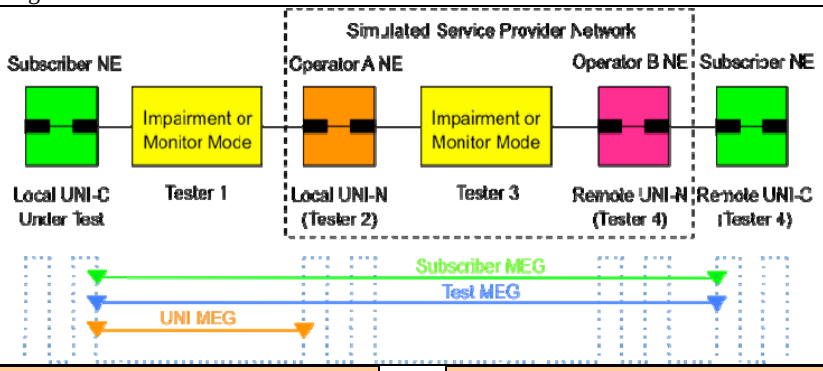
TEST CASE 27C: Processing & Response to Unicast & Multicast LBM Frames – Sender ID TLV

Abstract Test Suite for Service OAM	
Test Name	Processing & Response to Unicast & Multicast LBM Frames – Sender ID TLV
Test Definition ID	UNIC-R41[3]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.5.3)
Test Type	Conformance
Test Status	Mandatory if Sender ID TLVs are supported
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to process and respond to both Unicast and Multicast LBM frames for each required MEG – Sender ID TLV validation
IEEE Requirement Description	The receiving system **SHALL** consider an LBM PDU invalid and discard it if the Sender ID TLV Length field is not large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields
Test Object	Verify that any LBM frame received with a Sender ID TLV Length field that is not large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields is considered invalid and discarded
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Instruct Tester 2 and Tester 4 to send Loopback Messages with Sender ID TLV Length field not large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields to the UNI-C under test. Use Tester 1 and Tester 3 to monitor the messages transmitted by the UNI-C under test and to verify that it does not generate any Loopback Replies (because the received LBMs are considered invalid and discarded)
Units	OpCode value
Variables	LBM frame type (Unicast or Multicast)
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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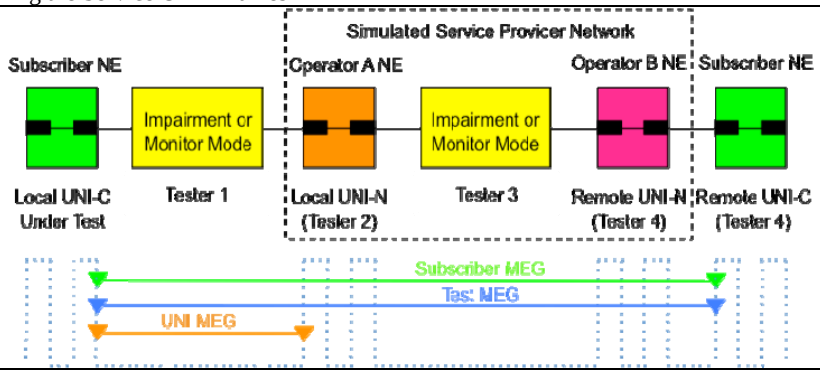
TEST CASE 28C: Processing & Response to Unicast & Multicast LBM Frames – First TLV Offset

Abstract Test Suite for Service OAM	
Test Name	Processing & Response to Unicast & Multicast LBM Frames – First TLV Offset
Test Definition ID	UNIC-R41[4]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.6.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to process and respond to both Unicast and Multicast LBM frames for each required MEG – First TLV Offset validation
IEEE Requirement Description	The receiving system **SHALL** consider an LBM PDU invalid and discard it if the First TLV Offset field of the Common CFM Header in an LBM does not contain a value greater than or equal to 4
Test Object	Verify that any LBM frame received with a First TLV Offset field of the Common CFM Header that does not contain a value greater than or equal to 4 is considered invalid and discarded
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI** / **REMOTE UNI** **CE-VLAN ID** / **EVC** / **CE-VLAN ID** / **EVC** 10 / EVC_1 / 10 / EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Instruct Tester 2 and Tester 4 to send Loopback Messages with a First TLV Offset field of the Common CFM Header that does not contain a value greater than or equal to 4 to the UNI-C under test. Use Tester 1 and Tester 3 to monitor the messages transmitted by the UNI-C under test and to verify that it does not generate any Loopback Replies (because the received LBMs are considered invalid and discarded)
Units	OpCode value
Variables	LBM frame type (Unicast or Multicast)
Results	Pass or fail
Remarks	

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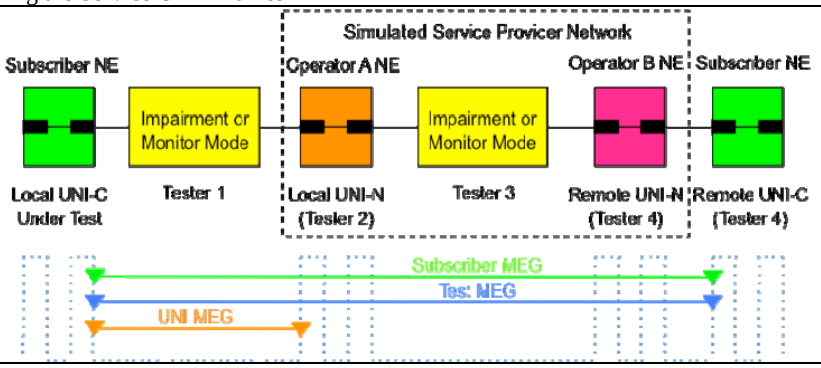
TEST CASE 29C: Processing & Response to Unicast & Multicast LBM Frames – LBR Header

<table>
<tr><th colspan="2">Abstract Test Suite for Service OAM</th></tr>
<tr><td>Test Name</td><td>Processing & Response to Unicast & Multicast LBM Frames – LBR Header</td></tr>
<tr><td>Test Definition ID</td><td>UNIC-R41[5]</td></tr>
<tr><td>Reference Document</td><td>MEF 20 UNI Type 2 Implementation Agreement Section 10.2
IEEE 802.1ag (20.2.2)</td></tr>
<tr><td>Test Type</td><td>Conformance</td></tr>
<tr><td>Test Status</td><td>Mandatory</td></tr>
<tr><td>MEF Requirement Description</td><td>A UNI-C Type 2 MEP implementation MUST be able to process and respond to both Unicast and Multicast LBM frames for each required MEG</td></tr>
<tr><td>IEEE Requirement Description</td><td>Further to the successful PDU validation tests (described in Test Cases 25 through 28), the receiving MEP generates an LBR and transmits it to the originating MEP. The source address parameter of the received LBM is used as the destination address parameter for the transmitted LBR, the source address parameter for the LBR is the MAC address of the replying MEP and the OpCode field is changed from LBM to LBR</td></tr>
<tr><td>Test Object</td><td>Verify that further to the successful PDU validation tests (described in Test Cases 25 through 28) the receiving MEP generates an LBR and transmits it to the originating MEP with the source address parameter of the received LBM used as the destination address parameter for the transmitted LBR, with the MAC address of the replying MEP used as the source address parameter for the LBR and with the OpCode field changed from LBM to LBR</td></tr>
<tr><td>Test Configuration</td><td>Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = “1” and with a unique MAID, a Test-MEG with a MEG-Level = “5” and with a unique MAID, and a Subscriber-MEG with a MEG-Level = “6” and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames</td></tr>
<tr><td>Test Configuration Schematic</td><td> 
</td></tr>
<tr><td>CE-VLAN ID/EVC Map</td><td>
<table>
<tr><th colspan="2">LOCAL UNI</th><th colspan="2">REMOTE UNI</th></tr>
<tr><th>CE-VLAN ID</th><th>EVC</th><th>CE-VLAN ID</th><th>EVC</th></tr>
<tr><td>10</td><td>EVC_1</td><td>10</td><td>EVC_1</td></tr>
<tr><td colspan="4">Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1</td></tr>
</table>
</td></tr>
<tr><td>Test Procedure</td><td>Instruct Tester 2 and Tester 4 to send valid Loopback Messages to the UNI-C under test. Use Tester 1 and Tester 3 to monitor the Loopback Reply messages transmitted by the UNI-C under test and to verify that the source address parameter of the received LBM is used as the destination address parameter for the transmitted LBR, the source address parameter for the LBR is the MAC address of the replying MEP and the OpCode field is changed from LBM to LBR</td></tr>
<tr><td>Units</td><td>Source address, destination address and OpCode values</td></tr>
<tr><td>Variables</td><td>LBM frame type (Unicast or Multicast)</td></tr>
<tr><td>Results</td><td>Pass or fail</td></tr>
<tr><td>Remarks</td><td></td></tr>
</table>

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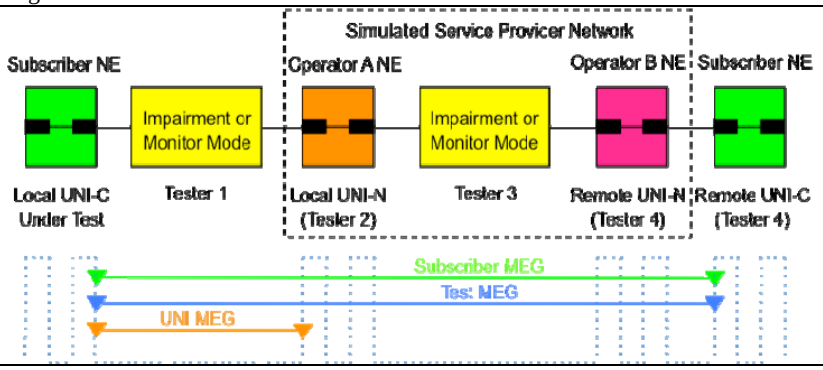
TEST CASE 30C: Processing & Response to Unicast & Multicast LBM Frames – LBR Content

Abstract Test Suite for Service OAM	
Test Name	Processing & Response to Unicast & Multicast LBM Frames – LBR Content
Test Definition ID	UNIC-R41[6]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.2.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to process and respond to both Unicast and Multicast LBM frames for each required MEG
IEEE Requirement Description	A receiving MEP that receives a valid LBM, shall not interpret any of the other fields or TLVs than the source address, destination address and OpCode. The contents of any TLVs that do not violate the validation criteria (described in Test Cases 25 through 28), shall be ignored, not interpreted by the receiver and **SHALL** be copied to the LBR
Test Object	Verify that when a receiving MEP receives a valid LBM, it does not interpret any of the other fields or TLVs than the source address, destination address and OpCode, and the contents of any TLVs that do not violate the validation criteria (described in Test Cases 25 through 28), are ignored and copied to the LBR
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1 — **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Instruct Tester 2 and Tester 4 to send valid Loopback Messages to the UNI-C under test. Use Tester 1 and Tester 3 to monitor the Loopback Reply messages transmitted by the UNI-C under test and to verify that any TLVs that do not violate the validation criteria (described in Test Cases 25 through 28), are ignored and copied to the LBR
Units	LBR TLV fields value
Variables	LBM frame type (Unicast or Multicast)
Results	Pass or fail
Remarks	

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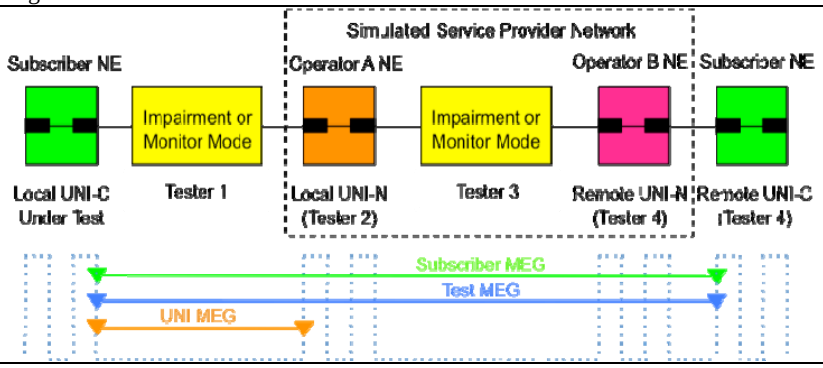
TEST CASE 31C: Generating Multicast CCM Frames – Destination Address

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Destination Address
Test Definition ID	UNIC-R42[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.3.1)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-C Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Destination address validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; CCMs monitoring a service instance distinguished by its VID use the Group MAC addresses listed in the MAC addresses Table in section 10, as the destination address
Test Object	Verify that the destination address parameter of the CCM frames generated by the UNI-C under test is one of the Group MAC addresses listed in the MAC addresses Table in section 10
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that their destination address parameter contains one of the Group MAC addresses listed in the MAC addresses Table in section 10
Units	Destination address
Variables	None
Results	Pass or fail
Remarks	

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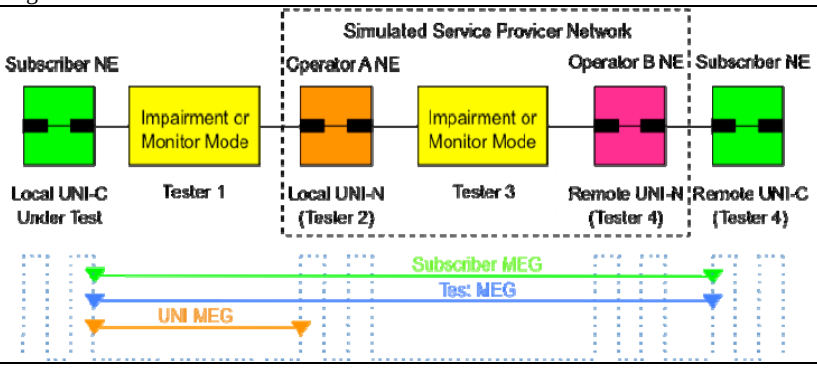
TEST CASE 32C: Generating Multicast CCM Frames – Source Address

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Source Address
Test Definition ID	UNIC-R42[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.3.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-C Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Source address validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The CCM frames source address is the Individual MAC address of the MEP transmitting the PDU. The source address parameter contains an individual, and not a Group, MAC address
Test Object	Verify that the source address parameter of the CCM frames generated by the UNI-C under test contains an individual, and not a Group, MAC address
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that their source address parameter contains an individual, and not a Group, MAC address
Units	Source address
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

TEST CASE 33C: Generating Multicast CCM Frames – Protocol Version Number

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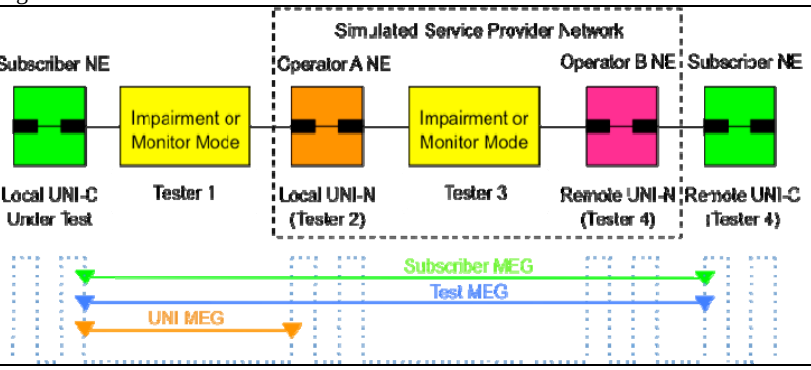
Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Protocol Version Number
Test Definition ID	UNIC-R42[3]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.4.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-C Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Protocol Version Number validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The protocol version number is always 0
Test Object	Verify that the protocol version number of the CCM frames generated by the UNI-C under test is always 0
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI** / **REMOTE UNI** **CE-VLAN ID** | **EVC** / **CE-VLAN ID** | **EVC** 10 | EVC_1 / 10 | EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that their protocol version number is always 0
Units	Protocol version number
Variables	None
Results	Pass or fail
Remarks	

TEST CASE 34C: Generating Multicast CCM Frames – OpCode

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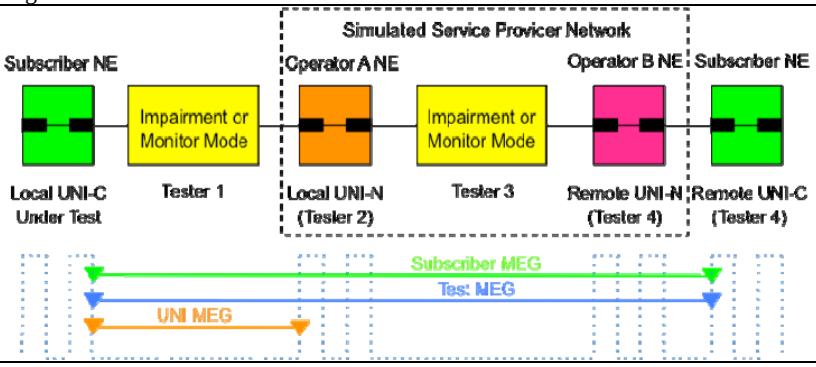
Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – OpCode
Test Definition ID	UNIC-R42[4]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.4.3)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-C Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – OpCode validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The OpCode field specifies the format and meaning of the remainder of the CFM PDU. The value for CCM PDUs is (0x01)
Test Object	Verify that the OpCode value of the CCM frames generated by the UNI-C under test is (0x01)
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that their OpCode value is (0x01)
Units	OpCode value
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

TEST CASE 35C: Generating Multicast CCM Frames – Flags

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Flags

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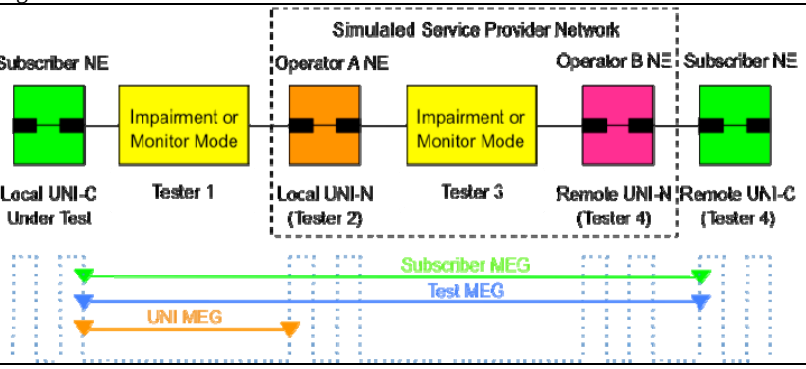
Test Definition ID	UNIC-R42[5]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.6.1)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-C Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Flags validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Flags field of the Common CFM Header is split into three parts for the CCM: the RDI field, the Reserved field and the CCM Interval field. The most significant bit of the Flags field is the RDI bit. This bit is set to 1 if the transmitting MEP's presentRDI variable is set, and 0 if not. The bits of the Flags field not including the RDI field and the CCM Interval field are set to 0 by the transmitting MEP. The least-significant three bits of the Flags field constitute the CCM Interval field. The CCM Interval field is encoded as specified in the CCM Interval Table in section 11
Test Object	Verify that the Flags field bits of the CCM frames generated by the UNI-C under test that are not included in the CCM Interval field are set to 0 and that the CCM Interval field contains a value in the range 1-7
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that the Flags field bits that are not included in the CCM Interval field are set to 0 and that the CCM Interval field contains a value in the range 1-7
Units	Flags field value
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

TEST CASE 36C: Generating Multicast CCM Frames – First TLV Offset

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – First TLV Offset
Test Definition ID	UNIC-R42[6]

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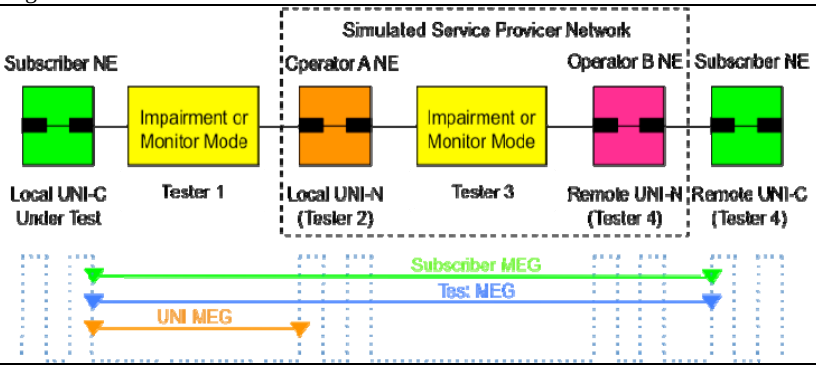
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.6.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-C Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – First TLV Offset validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The First TLV Offset field of the Common CFM Header in a CCM contains a value greater than or equal to 70
Test Object	Verify that the First TLV Offset field of the Common CFM Header in the CCM frames generated by the UNI-C under test contains a value greater than or equal to 70
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that the First TLV Offset field contains a value greater than or equal to 70
Units	First TLV Offset field value
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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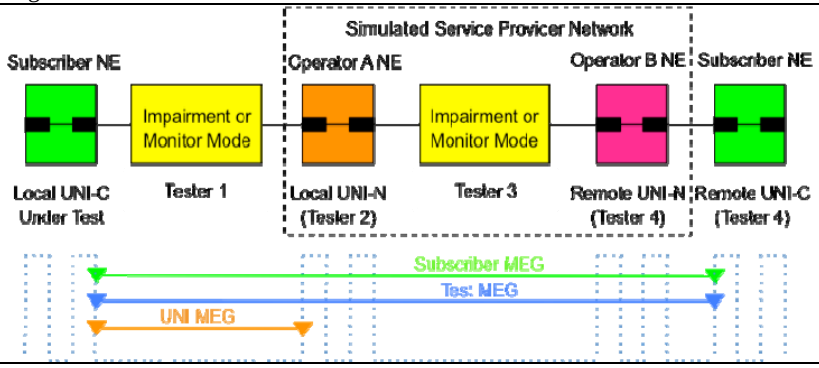
TEST CASE 37C: Generating Multicast CCM Frames – Sequence Number

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Sequence Number
Test Definition ID	UNIC-R42[7]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.6.3)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-C Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Sequence Number validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; A MEP transmits either a 0 in the Sequence Number field of the CCM frames, or copies to it the contents of the CCIsentCCMs variable
Test Object	Verify that the Sequence Number field of the CCM frames generated by the UNI-C under test contains either a 0 or a copy of the CCIsentCCMs variable
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI** / **REMOTE UNI** **CE-VLAN ID** | **EVC** / **CE-VLAN ID** | **EVC** 10 | EVC_1 / 10 | EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that the Sequence Number field contains either a 0 or a copy of the CCIsentCCMs variable
Units	Sequence Number value
Variables	None
Results	Pass or fail
Remarks	

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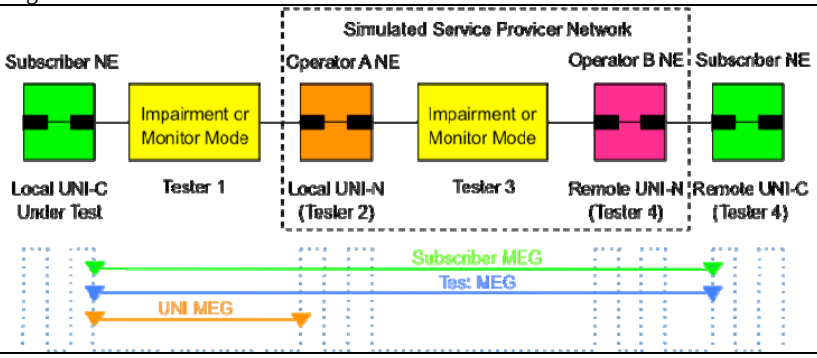
TEST CASE 38C: Generating Multicast CCM Frames – MEP ID

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – MEP ID
Test Definition ID	UNIC-R42[8]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.6.4)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-C Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – MEP ID validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The MEP ID TLV specifies from which MEP the CCM was transmitted and is in the range 1-8191
Test Object	Verify that the MEP ID TLV of the CCM frames generated by the UNI-C under test contains a value in the range 1-8191
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that the MEP ID TLV contains a value in the range 1-8191
Units	MEP ID value
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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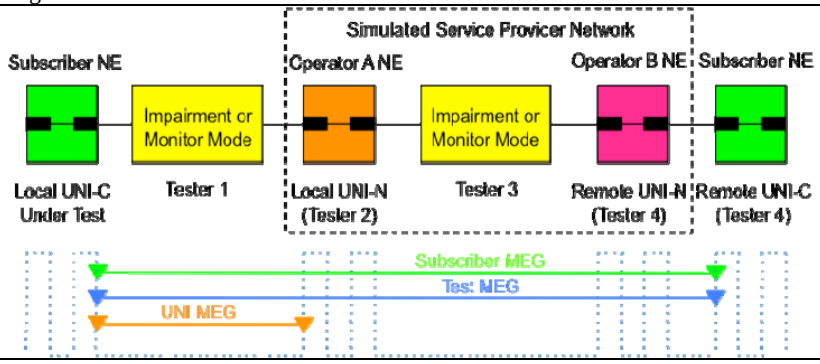
TEST CASE 39C: Generating Multicast CCM Frames – MAID Total Length

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – MAID Total Length
Test Definition ID	UNIC-R42[9]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.6.5)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-C Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – MAID total length validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The total length of the MAID field, including padding, if present, **SHALL** be exactly 48 octets.
Test Object	Verify that the total length of the MAID field, including padding, of the CCM frames generated by the UNI-C under test is exactly 48 octets
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that the total length of the MAID field, including padding is exactly 48 octets
Units	MAID field total length
Variables	None
Results	Pass or fail
Remarks	

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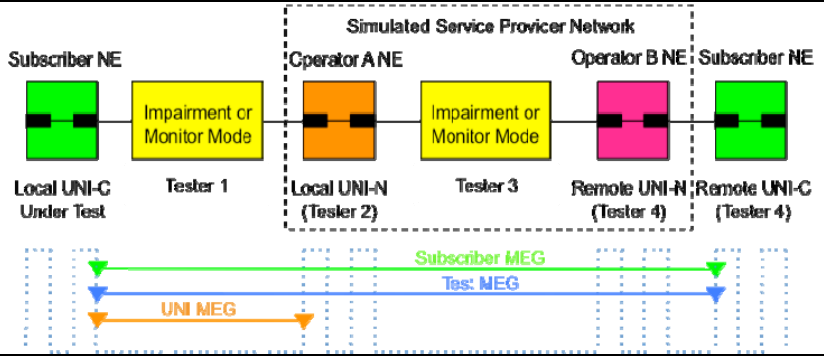
TEST CASE 40C: Generating Multicast CCM Frames – Maintenance Domain Name Format

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Maintenance Domain Name Format
Test Definition ID	UNIC-R42[10]-R48[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.6.5.1)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-C Type 2 implementation, the MEP must be able to generate Multicast CCM frames. The Maintenance Domain Name **SHOULD** use the "null" format (value equal to 0x01)
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Maintenance Domain Name Format specifies the format of the Maintenance Domain Name field. When no Maintenance Domain Name is present, the value is equal to 0x01
Test Object	Verify that the Maintenance Domain Name of the CCM frames generated by the UNI-C under test uses the "null" format (value equal to 0x01)
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that the Maintenance Domain Name of the CCM frames generated by the UNI-C under test uses the "null" format (value equal to 0x01)
Units	Maintenance Domain Name format
Variables	None
Results	Pass or fail
Remarks	

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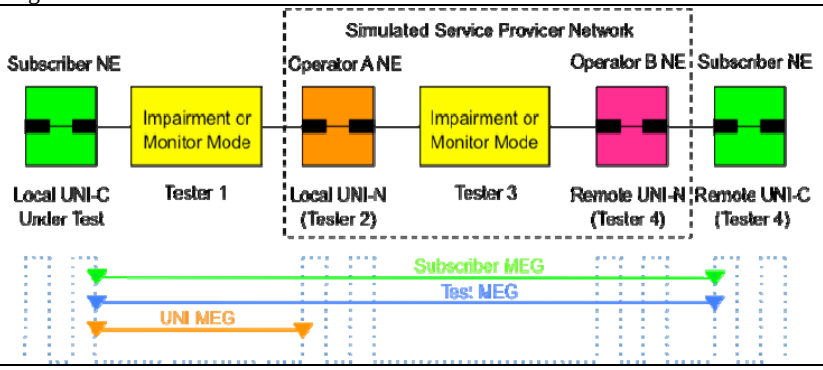
TEST CASE 41C: Generating Multicast CCM Frames – Short MA Name Format

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Short MA Name Format
Test Definition ID	UNIC-R42[11]-R48[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.6.5.4)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-C Type 2 implementation, the MEP must be able to generate Multicast CCM frames. The Short MA Name **SHOULD** use the "text" format (value equal to 0x02)
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Short MA Name format specifies the format of the Short MA Name field. The "text" format or character string value is 0x02
Test Object	Verify that the Short MA Name format of the CCM frames generated by the UNI-C under test uses the "text" format (value equal to 0x02)
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that the Short MA Name format of the CCM frames generated by the UNI-C under test uses the "text" format (value equal to 0x02)
Units	Short MA Name format
Variables	None
Results	Pass or fail
Remarks	

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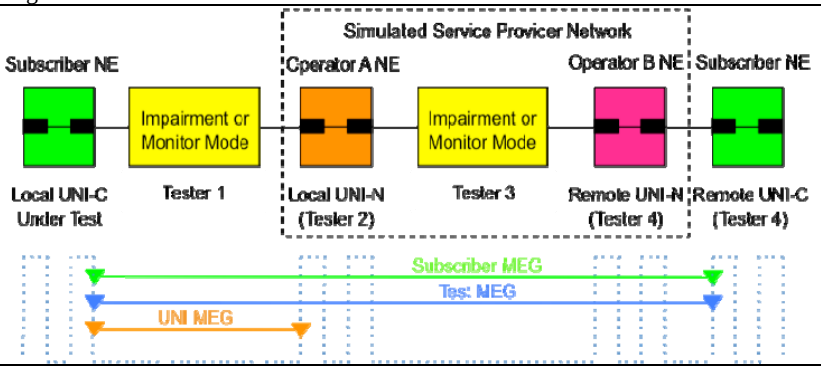
TEST CASE 42C: Generating Multicast CCM Frames – Short MA Name Length

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Short MA Name Length
Test Definition ID	UNIC-R42[12]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.6.5.5)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-C Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Short MA name length validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Short MA Name length in a CCM contains a value greater than or equal to 1 and does not indicate that the Short MA Name runs over the 48-octet limit for the MAID
Test Object	Verify that the Short MA Name length of the CCM frames generated by the UNI-C under test contains a value greater than or equal to 1 and does not indicate that the Short MA Name runs over the 48-octet limit for the MAID
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that the Short MA Name length of the CCM frames generated by the UNI-C under test contains a value greater than or equal to 1 and does not indicate that the Short MA Name runs over the 48-octet limit for the MAID
Units	Short MA Name length
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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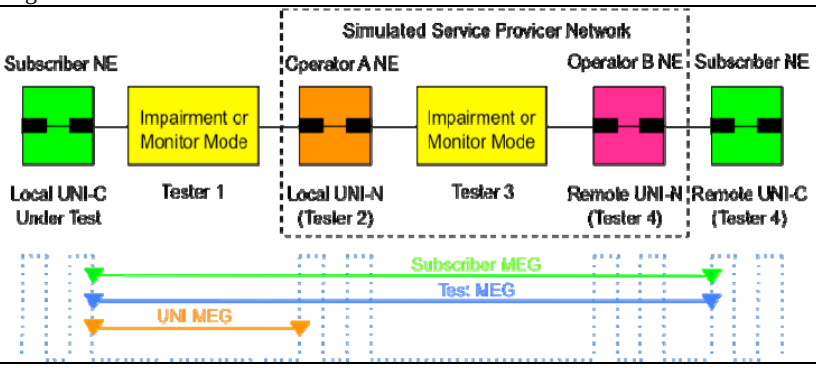
TEST CASE 43C: Generating Multicast CCM Frames – Short MA Name

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Short MA Name
Test Definition ID	UNIC-R42[13]-R48[3]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.6.5.6)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-C Type 2 implementation, the MEP must be able to generate Multicast CCM frames. The Short MA Name is provisioned, has a maximum length of 45 ASCII characters and **SHOULD** default to a Representative Value that is uniquely related, but not necessarily equal, to the EVC ID or UNI ID as following: a. The Representative Value of the UNI ID for the default UNI-MEG b. The Representative Value of the EVC ID for the Test-MEG c. The Representative Value of the EVC ID for the Subscriber-MEG
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Short MA Name field contains the Short MA Name, in the format specified by the Short MA Name Format field
Test Object	Verify that the Short MA Name has a maximum length of 45 ASCII characters and defaults to a Representative Value that is uniquely related, but not necessarily equal to the UNI ID for the default UNI-MEG, the EVC ID for the Test-MEG and the EVC ID for the Subscriber-MEG
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that the Short MA Name of the CCM frames generated by the UNI-C under test is uniquely related, but not necessarily equal to the UNI ID for the default UNI-MEG, the EVC ID for the Test-MEG and the EVC ID for the Subscriber-MEG
Units	Short MA Name length
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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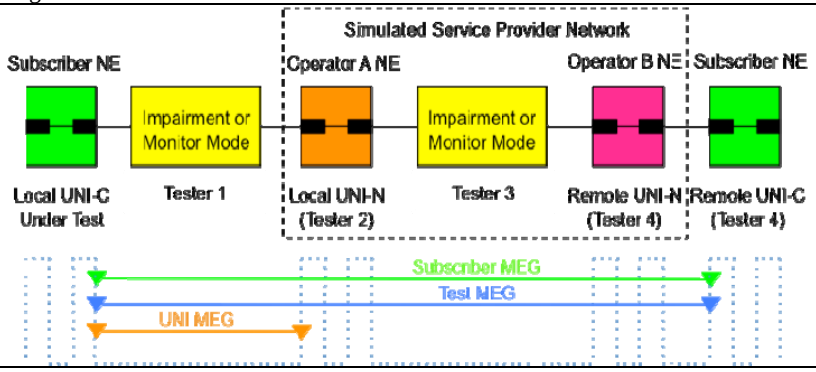
TEST CASE 44C: Generating Multicast CCM Frames – Sender ID TLV

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Sender ID TLV
Test Definition ID	UNIC-R42[14]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.3)
Test Type	Conformance
Test Status	Mandatory if Sender ID TLVs are supported
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-C Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Sender ID TLV validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Sender ID TLV identifies the Bridge on which the transmitting MEP is configured, and may also include a management address for that Bridge. The Sender ID TLV Type is equal to (0x01) and the Length field is large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields
Test Object	Verify that the Sender ID TLV Type of the CCM frames generated by the UNI-C under test is equal to (0x01) and that the Sender ID Length field is large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI** / **REMOTE UNI** **CE-VLAN ID** / **EVC** / **CE-VLAN ID** / **EVC** 10 / EVC_1 / 10 / EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that the Sender ID TLV Type of the CCM frames generated by the UNI-C under test is equal to (0x01) and that the Sender ID Length field is large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields
Units	Sender ID TLV Type and Length values
Variables	None
Results	Pass or fail
Remarks	

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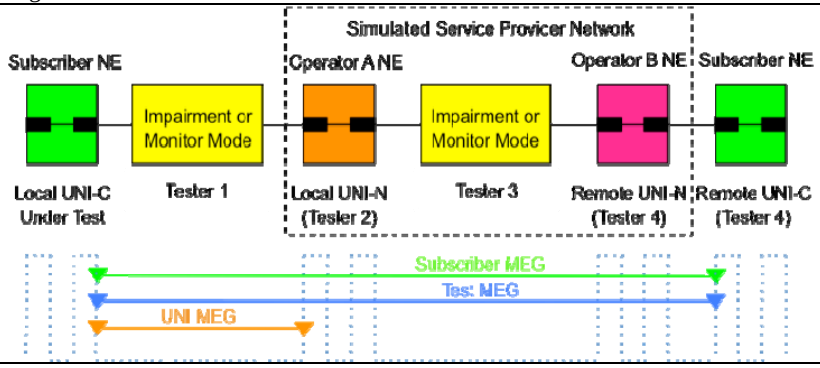
TEST CASE 45C: Generating Multicast CCM Frames – Chassis ID Length

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Chassis ID Length
Test Definition ID	UNIC-R42[15]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.3)
Test Type	Conformance
Test Status	Mandatory if Sender ID TLVs are supported
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-C Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Chassis ID length validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The chassis ID length is the length, in octets, of the Chassis ID field, it is either 0, or is less than (TLV Length field value – 1)
Test Object	Verify that the Chassis ID length of the CCM frames generated by the UNI-C under test is either 0 or less than (TLV Length field value – 1)
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that the Chassis ID length of the CCM frames generated by the UNI-C under test is either 0 or less than (TLV Length field value – 1)
Units	Chassis ID length value
Variables	None
Results	Pass or fail
Remarks	

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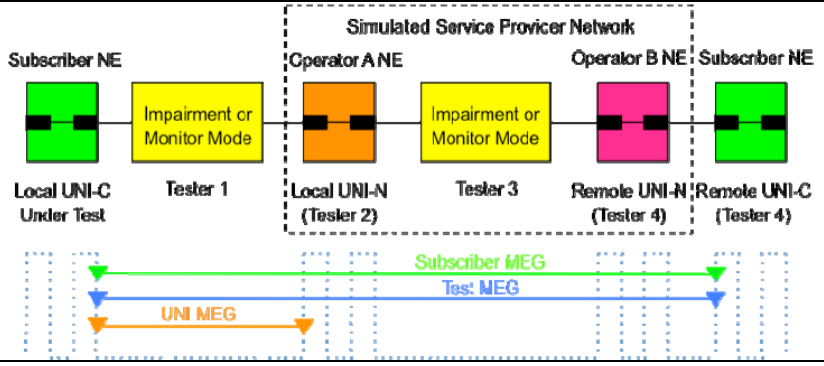
TEST CASE 46C: Generating Multicast CCM Frames – Management Address Domain Field

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Management Address Domain Field
Test Definition ID	UNIC-R42[16]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.3)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-C Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Management Address Domain field validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Management Address Domain Length field contains the length, in octets, of the Management Address Domain field. If 0, or if the TLV's Length field indicates that the Management Address Domain Length field is not present, then the Management Address Domain, Management Address Length, and Management Address fields are not present
Test Object	Verify that the Management Address Domain field of the CCM frames generated by the UNI-C under test is empty
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that the Management Address Domain field of the CCM frames generated by the UNI-C under test is empty
Units	Management Address Domain field
Variables	None
Results	Pass or fail
Remarks	The Management Address Domain field **SHOULD** be empty in the Sender ID TLV by default as a security precaution (MEF Service OAM FM IA)

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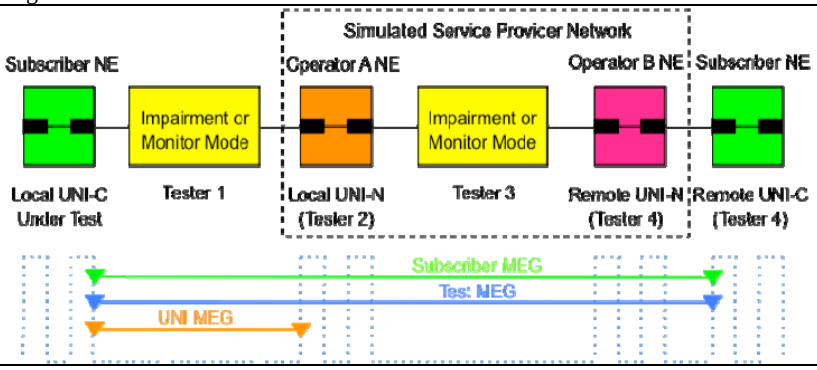
TEST CASE 47C: Generating Multicast CCM Frames – Management Address Field

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Management Address Field
Test Definition ID	UNIC-R42[17]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.3)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-C Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Management Address field validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Management Address length and the Management Address fields are not present if the Management Address Domain Length field is not present or contains a 0, or if the Management Address Length field is not present or contains a 0
Test Object	Verify that the Management Address field of the CCM frames generated by the UNI-C under test is empty
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI** / **REMOTE UNI** **CE-VLAN ID** | **EVC** / **CE-VLAN ID** | **EVC** 10 | EVC_1 / 10 | EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that the Management Address field of the CCM frames generated by the UNI-C under test is empty
Units	Management Address field
Variables	None
Results	Pass or fail
Remarks	The Management Address field **SHOULD** be empty in the Sender ID TLV by default as a security precaution (MEF Service OAM FM IA)

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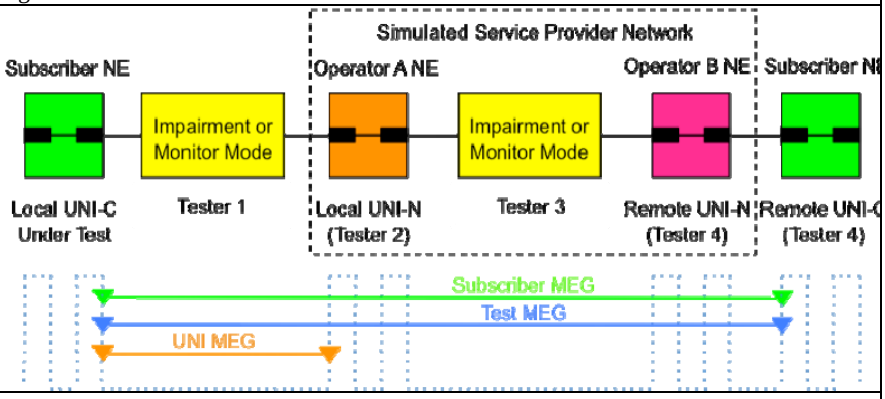
TEST CASE 48C: Generating Multicast CCM Frames – Port Status TLV

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Port Status TLV
Test Definition ID	UNIC-R42[18]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.4)
Test Type	Conformance
Test Status	Mandatory if Port Status TLVs are supported
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-C Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Port Status TLV validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Port Status TLV indicates the ability of the Bridge Port on which the transmitting MEP resides to pass ordinary data, regardless of the status of the MAC. The Port Status TLV Type is equal to (0x02) and the Port Status TLV field contains one of the following values (0x01) psBlocked or (0x02) psUp
Test Object	Verify that the Port Status TLV Type of the CCM frames generated by the UNI-C under test is equal to (0x02) and that the Port Status TLV field contains one of the following values (0x01) psBlocked or (0x02) psUp
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that the Port Status TLV Type of the CCM frames generated by the UNI-C under test is equal to (0x02) and that the Port Status TLV field contains one of the following values (0x01) psBlocked or (0x02) psUp
Units	Port Status TLV Type and TLV field values
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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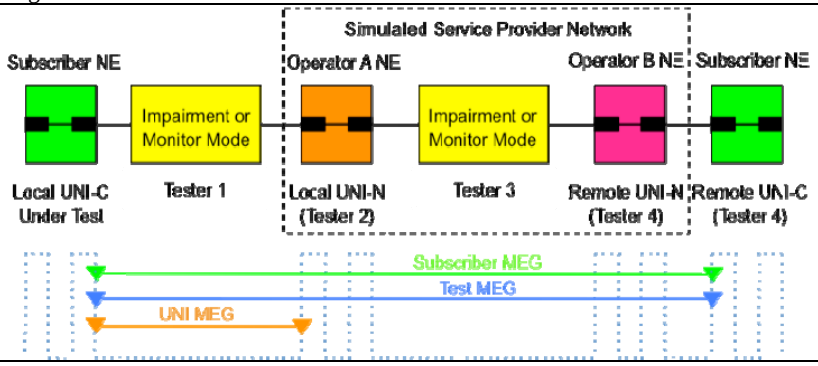
TEST CASE 49C: Generating Multicast CCM Frames – Interface Status TLV

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Interface Status TLV
Test Definition ID	UNIC-R42[19]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.5)
Test Type	Conformance
Test Status	Mandatory if Interface Status TLVs are supported
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-C Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Interface Status TLV validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Interface Status TLV indicates the status of the interface on which the MEP transmitting the CCM is configured, or the next-lower interface in the IETF RFC 2863 IF-MIB. The Interface Status TLV Type is equal to (0x04) and the Interface Status TLV field contains one of the following values (0x01) isUp, (0x02) isDown, (0x03) isTesting, (0x04) isUnknown, (0x05) isDormant, (0x06) isNotPresent or (0x07) isLowerLayerDown
Test Object	Verify that the Interface Status TLV Type of the CCM frames generated by the UNI-C under test is equal to (0x04) and that the Interface Status TLV field contains one of the following values (0x01) isUp, (0x02) isDown, (0x03) isTesting, (0x04) isUnknown, (0x05) isDormant, (0x06) isNotPresent or (0x07) isLowerLayerDown
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that the Interface Status TLV Type of the CCM frames generated by the UNI-C under test is equal to (0x04) and that the Interface Status TLV field contains one of the following values (0x01) isUp, (0x02) isDown, (0x03) isTesting, (0x04) isUnknown, (0x05) isDormant, (0x06) isNotPresent or (0x07) isLowerLayerDown
Units	Interface Status TLV Type and TLV field values
Variables	None
Results	Pass or fail
Remarks	

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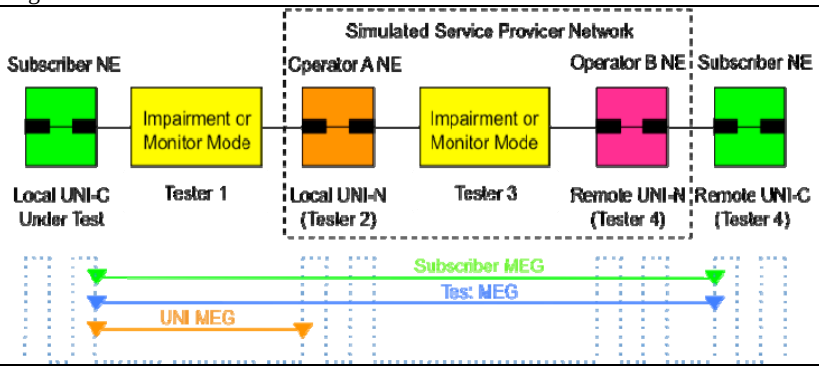
TEST CASE 50C: Generating Multicast CCM Frames – Organization Specific TLV

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Organization Specific TLV
Test Definition ID	UNIC-R42[20]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.2)
Test Type	Conformance
Test Status	Mandatory if Organization TLVs are supported
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-C Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Organization Specific TLV validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; Any organization can define TLVs for use in Connectivity Fault Management. The Organization TLV Type is equal to 31 (0x1F)
Test Object	Verify that the Organization TLV Type of the CCM frames generated by the UNI-C under test is equal to 31 (0x1F)
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that the Organization Specific TLV Type of the CCM frames generated by the UNI-C under test is equal to 31 (0x1F)
Units	Organization Specific TLV Type value
Variables	None
Results	Pass or fail
Remarks	

TEST CASE 51C: Generating Multicast CCM Frames – End TLV

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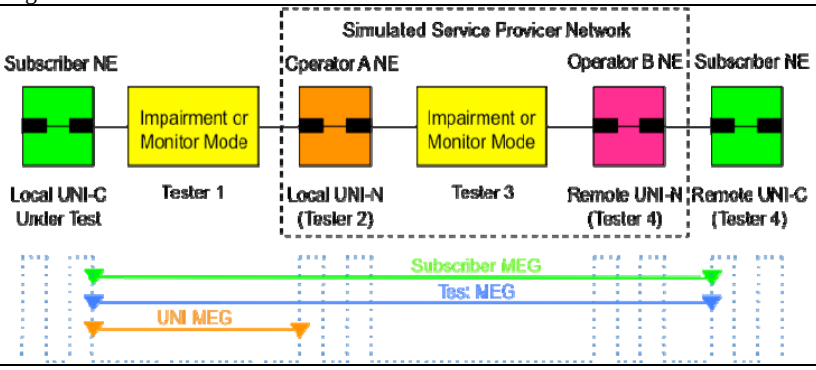
Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – End TLV
Test Definition ID	UNIC-R42[21]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.7)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-C Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – End TLV validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The End TLV is required and is the last TLV in the CFM PDU and is Required. The End TLV Type is equal to (0x00)
Test Object	Verify that the End TLV Type of the CCM frames generated by the UNI-C under test is equal to (0x00)
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that the End TLV Type of the CCM frames generated by the UNI-C under test is equal to (0x00)
Units	End TLV Type value
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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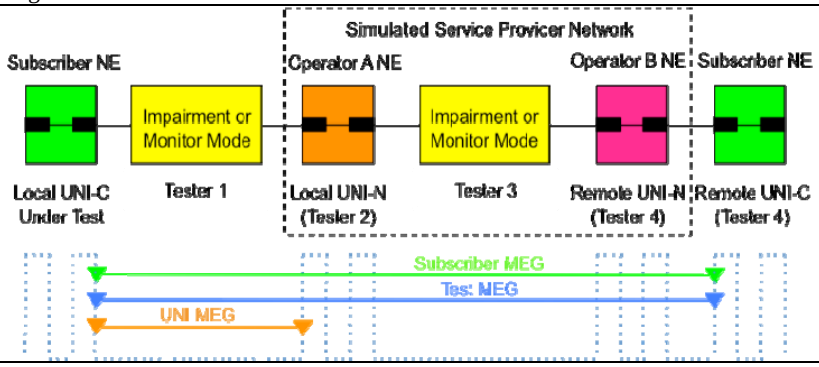
TEST CASE 52C: Generating Multicast LBM Frames – Destination Address

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast LBM Frames – Destination Address
Test Definition ID	UNIC-R43[1]-R54[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.3.1)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MAY** be able to generate Multicast LBM frames. For each LB session, Multicast destinations **MAY** be supported using the reserved CCM multicast MAC DA in the range of 01-80-C2-00-00-30 to 01-80-C2-00-00-37 that corresponds to the MEG-Level of the MEP
Test Object	Verify that when the UNI-C under test uses Loopback messages to check bidirectional connectivity between itself and the other MEPs in the same MEG, the destination address parameter of the LBM frames generated by the UNI-C under test contains one of the Group MAC address listed in the MAC addresses Table in section 10
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI** / **REMOTE UNI** **CE-VLAN ID** / **EVC** / **CE-VLAN ID** / **EVC** 10 / EVC_1 / 10 / EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Instruct the local UNI-C under test to send Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to monitor the LBM messages transmitted by the UNI-C under test and to verify that the destination address parameter of the LBM message destined to the local UNI-N on the UNI-MEG, to the remote UNI-C on the Subscriber-MEG and on the Test-MEG contains one of the Group MAC address listed in the MAC addresses Table in section 10
Units	Destination address
Variables	None
Results	Pass or fail
Remarks	

TEST CASE 53C: Generating Unicast LBM Frames – Destination Address

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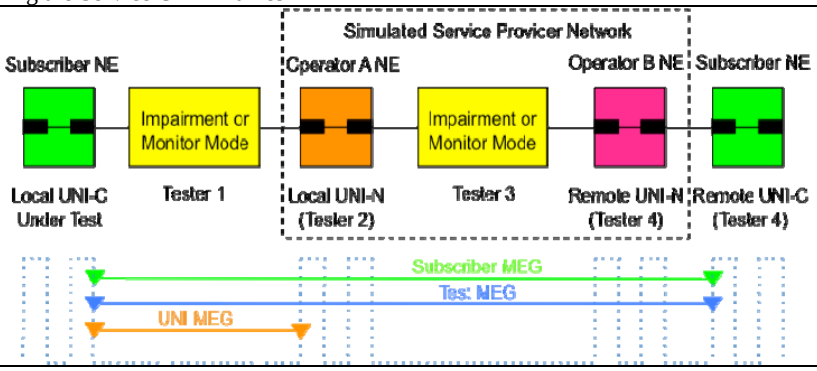
Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – Destination Address
Test Definition ID	UNIC-R43[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.3.1)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames. For each LB session, the destination address **MUST** be configurable to any Unicast MAC DA
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The LBM frames are addressed to a single specific MP
Test Object	Verify that the destination address parameter of the LBM message sent by the UNI-C under test contain the Unicast address of the its peer MEPs
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Instruct the local UNI-C under test to send Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to monitor the LBM messages transmitted by the UNI-C under test and to verify that the destination address parameter of the LBM message destined to the local UNI-N on the UNI-MEG contains the Unicast address of the local UNI-N, that the destination address parameter of the LBM message destined to the remote UNI-C on the Subscriber-MEG contains the Unicast address of the remote UNI-C and that the destination address parameter of the LBM message destined to the remote UNI-C on the Test-MEG also contains the Unicast address of the remote UNI-C
Units	Destination address
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

TEST CASE 54C: Generating Unicast LBM Frames – Source Address

Abstract Test Suite for Service OAM

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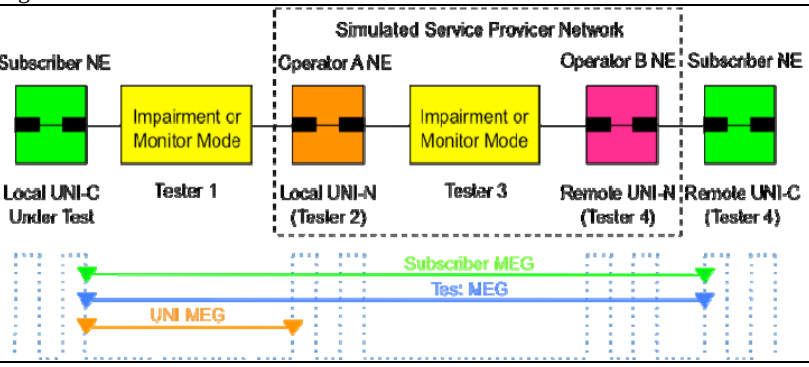
Test Name	Generating Unicast LBM Frames – Source Address
Test Definition ID	UNIC-R43[3]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.3.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – Source address validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The LBM frames source address is the Individual MAC address of the MEP transmitting the PDU. The source address parameter contains an individual, and not a Group, MAC address
Test Object	Verify that the source address parameter of the LBM frames generated by the UNI-C under test contains an individual, and not a Group, MAC address
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI** / **REMOTE UNI** **CE-VLAN ID** | **EVC** / **CE-VLAN ID** | **EVC** 10 | EVC_1 / 10 | EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Instruct the local UNI-C under test to send Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to monitor the LBM messages transmitted by the UNI-C under test and to verify that the source address parameter of the LBM messages distined to the local UNI-N on the UNI-MEG, to the remote UNI-C on the Subscriber-MEG and to the remote UNI-C on the Test-MEG contain an individual, and not a Group, MAC address
Units	Source address
Variables	None
Results	Pass or fail
Remarks	

TEST CASE 55C: Generating Unicast LBM Frames – Protocol Version Number

Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – Protocol Version Number
Test Definition ID	UNIC-R43[4]

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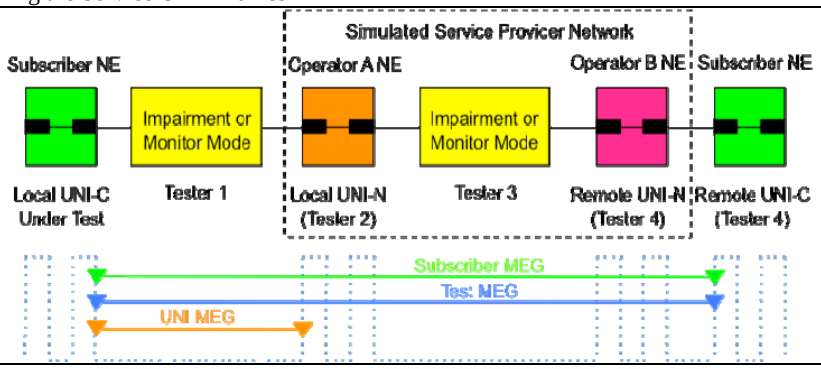
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.4.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – Protocol Version Number validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The protocol version number is always 0
Test Object	Verify that the protocol version number of the LBM frames generated by the UNI-C under test is always 0
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Instruct the local UNI-C under test to send Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to monitor the LBM messages transmitted by the UNI-C under test and to verify that the protocol version number of the LBM messages distined to the local UNI-N on the UNI-MEG, to the remote UNI-C on the Subscriber-MEG and to the remote UNI-C on the Test-MEG is always 0
Units	Protocol version number
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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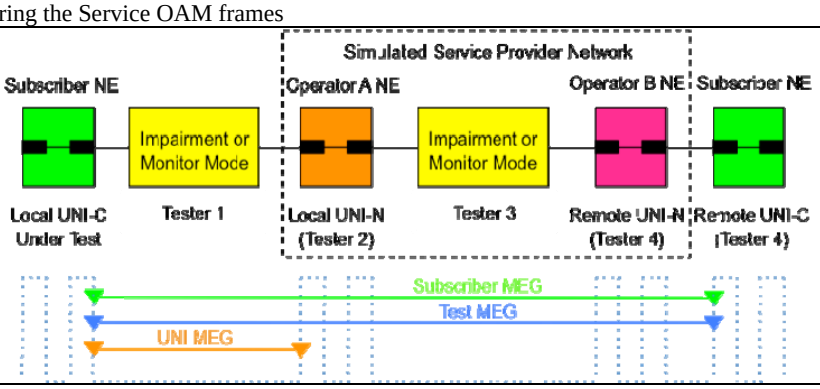
TEST CASE 56C: Generating Unicast LBM Frames – OpCode

Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – OpCode
Test Definition ID	UNIC-R43[5]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.4.3)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – OpCode validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The OpCode field specifies the format and meaning of the remainder of the CFM PDU. The value for LBM PDUs is (0x03)
Test Object	Verify that the OpCode value of the LBM frames generated by the UNI-C under test is (0x03)
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI** / **REMOTE UNI** **CE-VLAN ID** / **EVC** / **CE-VLAN ID** / **EVC** 10 / EVC_1 / 10 / EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Instruct the local UNI-C under test to send Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to monitor the LBM messages transmitted by the UNI-C under test and to verify that the OpCode of the LBM messages distined to the local UNI-N on the UNI-MEG, to the remote UNI-C on the Subscriber-MEG and to the remote UNI-C on the Test-MEG is (0x03)
Units	OpCode value
Variables	None
Results	Pass or fail
Remarks	

TEST CASE 57C: Generating Unicast LBM Frames – Flags

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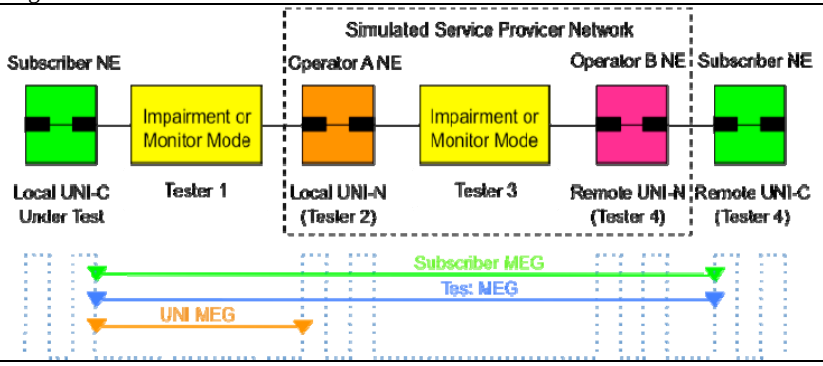
Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – Flags
Test Definition ID	UNIC-R43[6]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.7.1)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – Flags validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; In an LBM, the Flags field of the Common CFM Header is set to 0 by the transmitting MEP
Test Object	Verify that the Flags field bits of the LBM frames generated by the UNI-C under test that are set to 0
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Instruct the local UNI-C under test to send Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to monitor the LBM messages transmitted by the UNI-C under test and to verify that the Flags field bits of the LBM messages distined to the local UNI-N on the UNI-MEG, to the remote UNI-C on the Subscriber-MEG and to the remote UNI-C on the Test-MEG are set to 0
Units	Flags field value
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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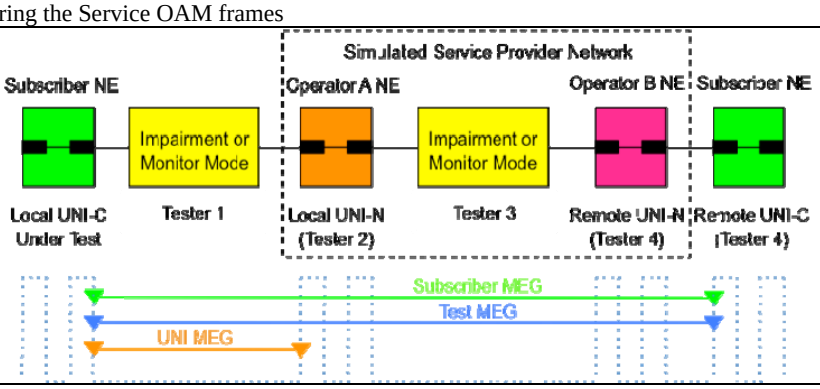
TEST CASE 58C: Generating Unicast LBM Frames – First TLV Offset

Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – First TLV Offset
Test Definition ID	UNIC-R43[7]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.7.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – First TLV Offset validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The First TLV Offset field of the Common CFM Header in a LBM contains a value greater than or equal to 4
Test Object	Verify that the First TLV Offset field of the Common CFM Header in the LBM frames generated by the UNI-C under test contains a value greater than or equal to 4
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Instruct the local UNI-C under test to send Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to monitor the LBM messages transmitted by the UNI-C under test and to verify that the First TLV Offset field of the LBM messages distined to the local UNI-N on the UNI-MEG, to the remote UNI-C on the Subscriber-MEG and to the remote UNI-C on the Test-MEG contain a value greater than or equal to 4
Units	First TLV Offset field value
Variables	None
Results	Pass or fail
Remarks	

TEST CASE 59C: Generating Unicast LBM Frames – Loopback Transaction Identifier

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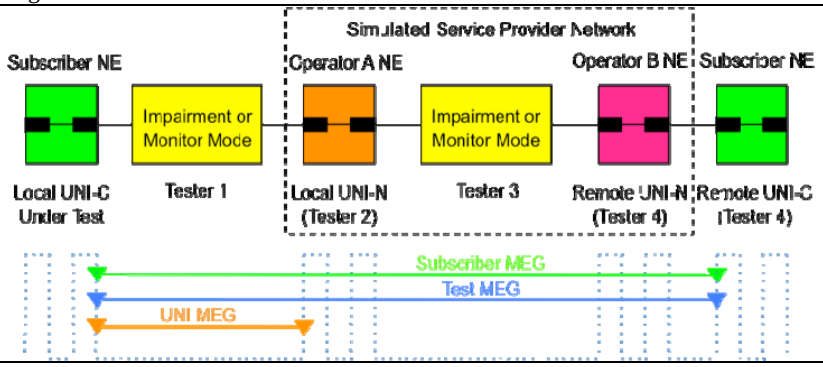
Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – Loopback Transaction Identifier
Test Definition ID	UNIC-R43[8]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.7.3)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – Loopback Transaction Identifier validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; A MEP copies the contents of the nextLBMtransID variable to the Loopback Transaction Identifer field of the LBM frames
Test Object	Verify that the Loopback Transaction Identifier field of the LBM frames generated by the UNI-C under test contains a copy of the nextLBMtransID variable
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Instruct the local UNI-C under test to send Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to monitor the LBM messages transmitted by the UNI-C under test and to verify that the Loopback Transaction Identifier field of the LBM messages distined to the local UNI-N on the UNI-MEG, to the remote UNI-C on the Subscriber-MEG and to the remote UNI-C on the Test-MEG contain a copy of the nextLBMtransID variable
Units	Loopback Transaction Identifier field value
Variables	None
Results	Pass or fail
Remarks	

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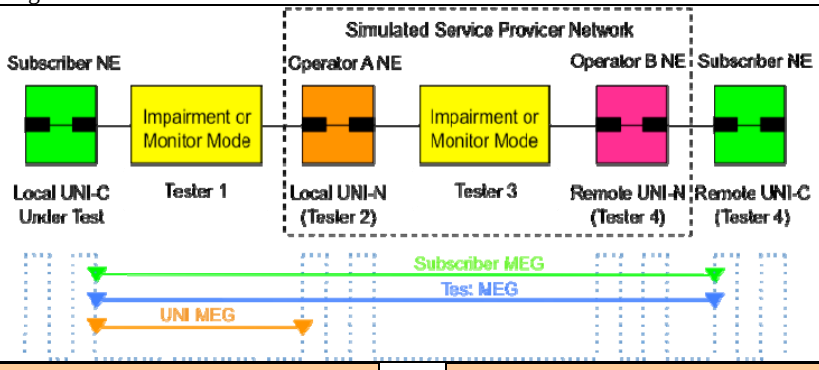
TEST CASE 60C: Generating Unicast LBM Frames – Sender ID TLV

Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – Sender ID TLV
Test Definition ID	UNIC-R43[9]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.3)
Test Type	Conformance
Test Status	Mandatory if Sender ID TLVs are supported
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – Sender ID TLV validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Sender ID TLV identifies the Bridge on which the transmitting MEP is configured, and may also include a management address for that Bridge. The Sender ID TLV Type is equal to (0x01) and the Length field is large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields
Test Object	Verify that the Sender ID TLV Type of the LBM frames generated by the UNI-C under test is equal to (0x01) and that the Sender ID Length field is large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Instruct the local UNI-C under test to send Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to monitor the LBM messages transmitted by the UNI-C under test and to verify that the Sender ID TLV Type field of the LBM messages distined to the local UNI-N on the UNI-MEG, to the remote UNI-C on the Subscriber-MEG and to the remote UNI-C on the Test-MEG is equal to (0x01) and that the Sender ID Length field is large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields
Units	Sender ID TLV Type and Length values
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI			REMOTE UNI	
CE-VLAN ID	**EVC**		**CE-VLAN ID**	**EVC**
10	EVC_1		10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1				

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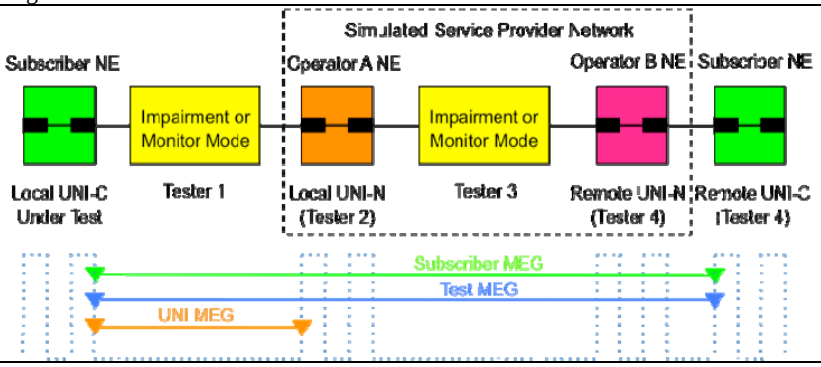
TEST CASE 61C: Generating Unicast LBM Frames – Chassis ID Length

Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – Chassis ID Length
Test Definition ID	UNIC-R43[10]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.3)
Test Type	Conformance
Test Status	Mandatory if Sender ID TLVs are supported
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – Chassis ID length validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The chassis ID length is the length, in octets, of the Chassis ID field, it is either 0, or is less than (TLV Length field value – 1)
Test Object	Verify that the Chassis ID length of the LBM frames generated by the UNI-C under test is either 0 or less than (TLV Length field value – 1)
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Instruct the local UNI-C under test to send Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to monitor the LBM messages transmitted by the UNI-C under test and to verify that the Chassis ID length of the LBM messages distined to the local UNI-N on the UNI-MEG, to the remote UNI-C on the Subscriber-MEG and to the remote UNI-C on the Test-MEG is either 0 or less than (TLV Length field value – 1)
Units	Chassis ID length value
Variables	None
Results	Pass or fail
Remarks	

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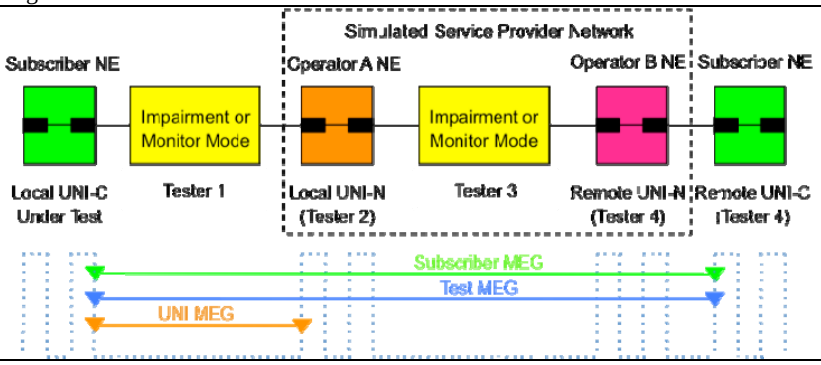
TEST CASE 62C: Generating Unicast LBM Frames – Management Address Domain Field

Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – Management Address Domian Field
Test Definition ID	UNIC-R43[11]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.3)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Management Address Domain Length field contains the length, in octets, of the Management Address Domain field. If 0, or if the TLV's Length field indicates that the Management Address Domain Length field is not present, then the Management Address Domain, Management Address Length, and Management Address fields are not present
Test Object	Verify that the Management Address Domain field of the LBM frames generated by the UNI-C under test is empty
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI** / **REMOTE UNI** **CE-VLAN ID** / **EVC** / **CE-VLAN ID** / **EVC** 10 / EVC_1 / 10 / EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Instruct the local UNI-C under test to send Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to monitor the LBM messages transmitted by the UNI-C under test and to verify that the Management Address Domain field of the LBM messages distined to the local UNI-N on the UNI-MEG, to the remote UNI-C on the Subscriber-MEG and to the remote UNI-C on the Test-MEG is empty
Units	Management Address Domain field
Variables	None
Results	Pass or fail
Remarks	The Management Address Domain field **SHOULD** be empty in the Sender ID TLV by default as a security precaution (MEF Service OAM FM IA)

TEST CASE 63C: Generating Unicast LBM Frames – Management Address Field

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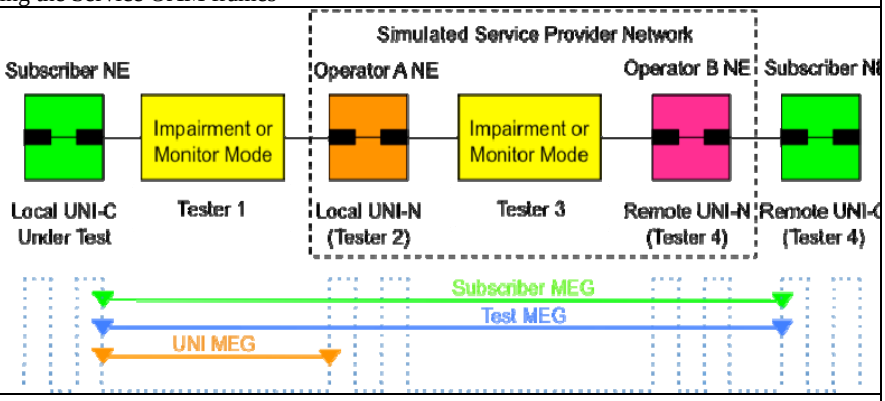
Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – Management Address Field
Test Definition ID	UNIC-R43[12]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.3)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	A UNI-C Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Management Address length and the Management Address fields are not present if the Management Address Domain Length field is not present or contains a 0, or if the Management Address Length field is not present or contains a 0
Test Object	Verify that the Management Address field of the LBM frames generated by the UNI-C under test is empty
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI** / **REMOTE UNI** **CE-VLAN ID** / **EVC** / **CE-VLAN ID** / **EVC** 10 / EVC_1 / 10 / EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Instruct the local UNI-C under test to send Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to monitor the LBM messages transmitted by the UNI-C under test and to verify that the Management Address field of the LBM messages distined to the local UNI-N on the UNI-MEG, to the remote UNI-C on the Subscriber-MEG and to the remote UNI-C on the Test-MEG is empty
Units	Management Address field
Variables	None
Results	Pass or fail
Remarks	The Management Address field **SHOULD** be empty in the Sender ID TLV by default as a security precaution (MEF Service OAM FM IA)

TEST CASE 64C: Generating Unicast LBM Frames – Data TLV

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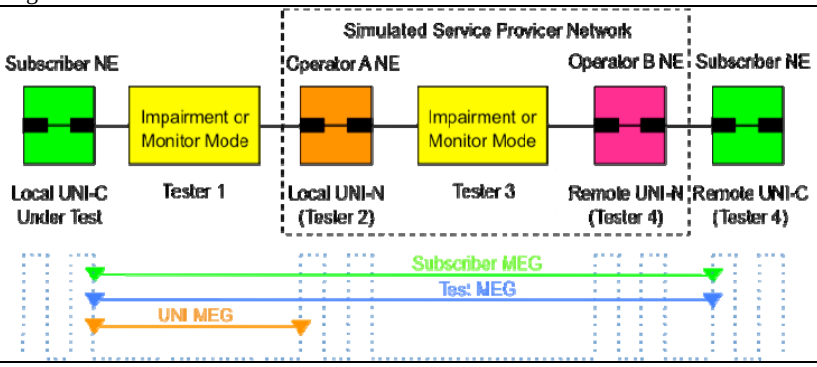
Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – Data TLV
Test Definition ID	UNIC-R43[13]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.6)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	UNI-C Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – Data TLV validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Data TLV contains zero or more octets of arbitrary data and serves several purposes, including the transmission of different frame sizes to test MTU capabilities, and the testing for data-specific error dependencies. The Data TLV may be included in the Loopback Messages and the Data TLV Type is equal to (0x03)
Test Object	Verify that the Data TLV Type of the LBM frames generated by the UNI-C under test is equal to (0x03)
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Instruct the local UNI-C under test to send Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to monitor the LBM messages transmitted by the UNI-C under test and to verify that the Data TLV Type of the LBM messages distined to the local UNI-N on the UNI-MEG, to the remote UNI-C on the Subscriber-MEG and to the remote UNI-C on the Test-MEG is equal to (0x03)
Units	Data TLV Type value
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

TEST CASE 65C: Generating Unicast LBM Frames – Organization Specific TLV

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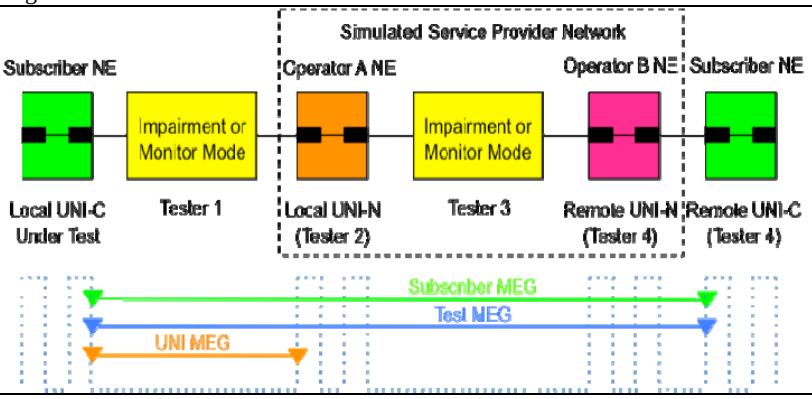
Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – Organization Specific TLV
Test Definition ID	UNIC-R43[14]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.2)
Test Type	Conformance
Test Status	Mandatory if Organization TLVs are supported
MEF Requirement Description	UNI-C Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – Organization Specific TLV validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; Any organization can define TLVs for use in Connectivity Fault Management. The Organization TLV Type is equal to 31 (0x1F)
Test Object	Verify that the Organization TLV Type of the LBM frames generated by the UNI-C under test is equal to 31 (0x1F)
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Instruct the local UNI-C under test to send Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to monitor the LBM messages transmitted by the UNI-C under test and to verify that the Organization Specific TLV Type of the LBM messages distined to the local UNI-N on the UNI-MEG, to the remote UNI-C on the Subscriber-MEG and to the remote UNI-C on the Test-MEG is equal to 31 (0x1F)
Units	Organization Specific TLV Type value
Variables	None
Results	Pass or fail
Remarks	

TEST CASE 66C: Generating Unicast LBM Frames – End TLV

Abstract Test Suite for Service OAM

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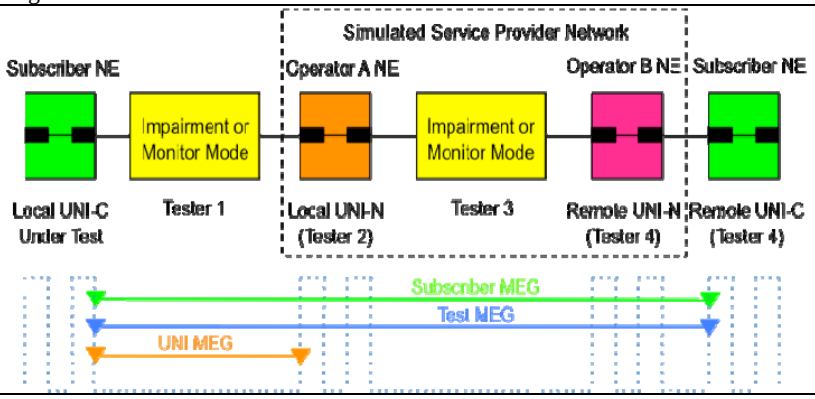
Test Name	Generating Unicast LBM Frames – End TLV
Test Definition ID	UNIC-R43[15]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.7)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	UNI-C Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – End TLV validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The End TLV is required and is the last TLV in the CFM PDU and is Required. The End TLV Type is equal to (0x00)
Test Object	Verify that the End TLV Type of the LBM frames generated by the UNI-C under test is equal to (0x00)
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Instruct the local UNI-C under test to send Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to monitor the LBM messages transmitted by the UNI-C under test and to verify that the End TLV Type of the LBM messages distined to the local UNI-N on the UNI-MEG, to the remote UNI-C on the Subscriber-MEG and to the remote UNI-C on the Test-MEG is equal to (0x00)
Units	End TLV Type value
Variables	None
Results	Pass or fail
Remarks	

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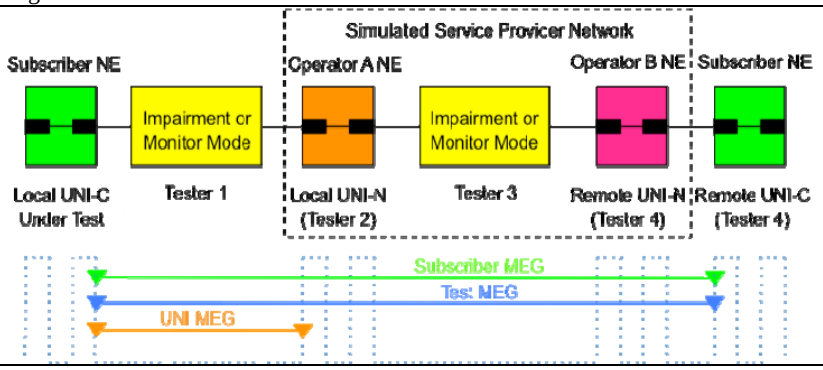
15.4 UNI-C Type 2 Continuity Check Requirements

TEST CASE 67C: Administratively Enable and Disable CCM Transmission

Abstract Test Suite for Service OAM	
Test Name	Administratively Enable and Disable CCM Transmission
Test Definition ID	UNIC-R44[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 8
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 **MUST** have the capability to administratively enable and disable CCM transmission on all local MEPs
Test Object	Verify that the UNI-C Type 2 under test has the capability to administratively enable and disable CCM transmission on all local MEPs
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI** / **REMOTE UNI** **CE-VLAN ID** | **EVC** | **CE-VLAN ID** | **EVC** 10 | EVC_1 | 10 | EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that CCM frames are transmitted from each configured MEP instance (verify MEP IDs) and that the MEG-Level of the UNI-MEG is = "1", the MEG-Level of the Test-MEG is = "5", and the MEG-Level of Subscriber-MEG is = "6". Disable CCM transmission on the UNI-MEG and verify that only CCMs with MEG-Level = 5 and 6 are still being transmitted. Disable CCM transmission on the Test-MEG and verify that only CCMs with MEG-Level = 6 are still being transmitted. Disable CCM transmission on the Subscriber-MEG and verify that no CCMs are transmitted. Re-enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG and verify that CCM frames are transmitted from each configured MEP instance (verify MEP IDs) and that the MEG-Level of the UNI-MEG is = "1", the MEG-Level of the Test-MEG is = "5", and the MEG-Level of Subscriber-MEG is = "6"
Units	MEP IDs MEG-Level values
Variables	None
Results	Pass or fail
Remarks	

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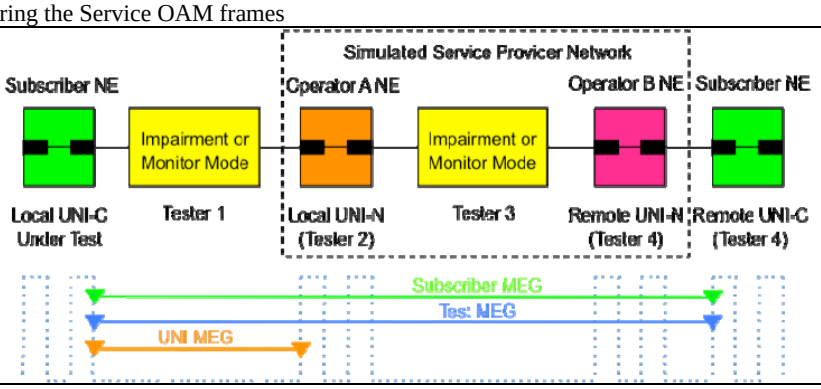
TEST CASE 68C: Mandatory CCM Frame Rate

Abstract Test Suite for Service OAM	
Test Name	Mandatory CCM Frame Rate
Test Definition ID	UNIC-R45[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 8
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 **MUST** support a CCM frame rate of 1 frame per second
Test Object	Verify that the UNI-C Type 2 under test supports a CCM frame rate of 1 frame per second
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI** / **REMOTE UNI** **CE-VLAN ID** / **EVC** / **CE-VLAN ID** / **EVC** 10 / EVC_1 / 10 / EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that the CCM Interval field of the CCM frames generated by the UNI-C under test contains the value 4. Also use Tester 2 and Tester 4 to verify that the CCMs are received within the CCM maximum lifetime
Units	CCM frame rate
Variables	None
Results	Pass or fail
Remarks	

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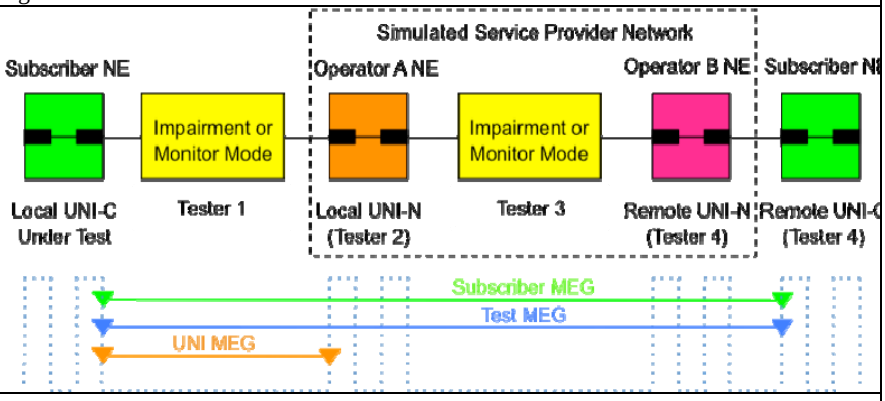
TEST CASE 69C: Optional CCM Frame Rate

Abstract Test Suite for Service OAM	
Test Name	Optional CCM Frame Rate
Test Definition ID	UNIC-R45[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 8
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	A UNI-C Type 2 **MAY** support other frame rates specified in section 7.1.1 of ITU-T Y.1731
ITU-T Requirement Description	When Ethernet Continuity Check is enabled, a MEP periodically transmits CCM frames as often as the configured transmission period. Transmission period can be one of the following seven values: 3.33ms, 10ms, 100ms, 1s, 10s, 1min or 10min
Test Object	Verify that the UNI-C Type 2 under test supports transmission periods of: 3.33ms, 10ms, 100ms, 10s, 1min or 10min
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Configure the transmission period of the UNI-C under test MEPs to 3.33ms. Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that the CCM Interval field of the CCM frames contains the value 1. Also use Tester 2 and Tester 4 to verify that the CCMs are received within the CCM maximum lifetime. Configure the transmission period of the UNI-C under test MEPs to 10ms and repeat the test. Configure the transmission period of the UNI-C under test MEPs to 100ms and repeat the test. Configure the transmission period of the UNI-C under test MEPs to 10s and repeat the test. Configure the transmission period of the UNI-C under test MEPs to 1min and repeat the test. Configure the transmission period of the UNI-C under test MEPs to 10min and repeat the test.
Units	CCM frame rate
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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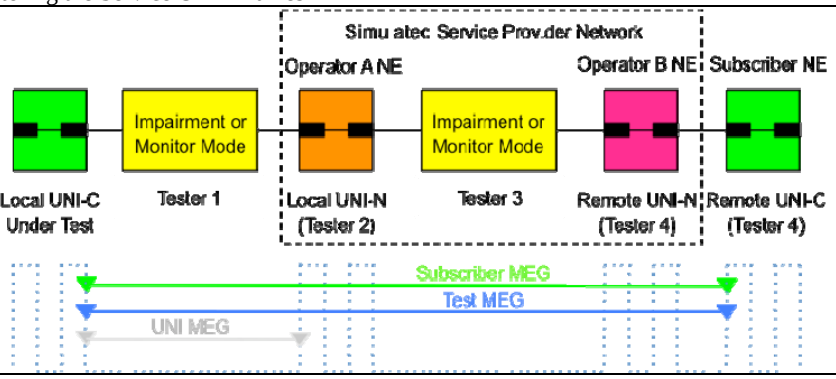
TEST CASE 70C: Configurable CCM Frames Priority for Subscriber-MEG & Test-MEG

Abstract Test Suite for Service OAM	
Test Name	Configurable CCM Frames Priority for Subscriber-MEG & Test-MEG
Test Definition ID	UNIC-R47[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 8
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 **MUST** support a configurable priority for transmitted CCM frames for Test-MEG and subscriber-MEG
Test Object	Verify that the CoS ID of the CCM frames transmitted by the UNI-C Type 2 under test is configurable and set in the transmitted CCM PDUs
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C and for each end point of each configured EVC. Enable CCM transmission on the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that the CCM frames transmitted from each configured MEP instance are C-tagged with a specific COS ID*
Units	CCM PDUs CoS ID
Variables	None
Results	Pass or fail
Remarks	*The CoS ID supported by the EVC which yields the lowest frame loss performance

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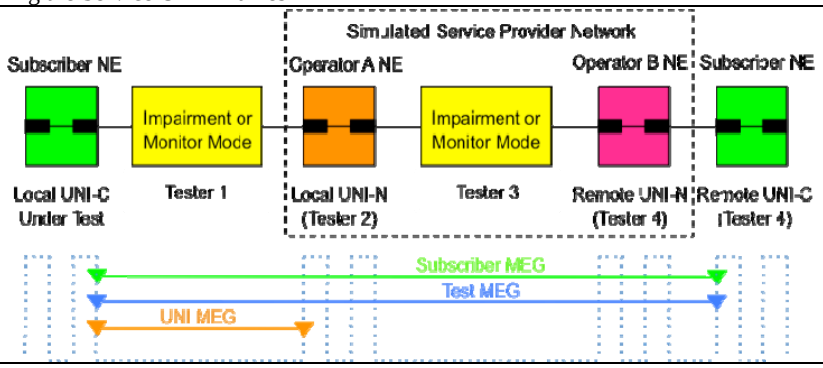
TEST CASE 71C: UNI-C Counter – Number of CCM Frames Transmitted

Abstract Test Suite for Service OAM	
Test Name	UNI-C Counter – Number of CCM Frames Transmitted
Test Definition ID	UNIC-R49[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 8
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	A UNI-C Type 2 **SHOULD** support counters for each MEP that counts the number of CCM frames transmitted
Test Object	Verify that the UNI-C Type 2 under test supports counters for each MEP that counts the number of CCM frames transmitted
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Reset the UNI-C under test counters. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG and use Tester 1 and Tester 3 to monitor and count the Continuity Check Messages transmitted by the UNI-C under test. Disable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG and verify that the number of CCMs with MEG-Level = 1 counted by the Tester 1 is equal to the number of CCM frames transmitted indicated by the UNI-C MEP counter for the UNI-MEG, that the number of CCMs with MEG-Level = 5 counted by the Tester 1 and Tester 3 is equal to the number of CCM frames transmitted indicated by the UNI-C MEP counter for the Test-MEG and that the number of CCMs with MEG-Level = 6 counted by the Tester 1 and Tester 3 is equal to the number of CCM frames transmitted indicated by the UNI-C MEP counter for the Subscriber-MEG
Units	Number of CCM frames
Variables	None
Results	Pass or fail
Remarks	

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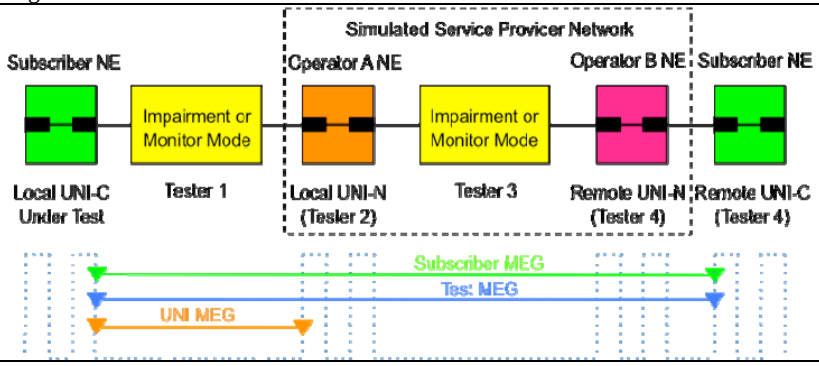
TEST CASE 72C: Lowest Priority CC Defect – DefRDICCM

Abstract Test Suite for Service OAM	
Test Name	Lowest Priority CC Defect – DefRDICCM
Test Definition ID	UNIC-R51[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.1.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-C Type 2 MEP **MUST** support the minimum CC fault priority level defined in IEEE 802.1ag for which a CC alarm will be generated. An alarm will be generated only if the fault has equal or greater priority than this minimum fault level
IEEE Requirement Description	A number of separate defects are maintained by a MEP. The defects are ranked by priority. If a higher priority defect occurs after a lower priority defect has triggered a Fault Alarm, but before the Fault Alarm has reset, then the MEP will immediately issue another Fault Alarm. Only the highest-priority defect is reported in the Fault Alarm
Test Object	Verify that if a higher priority defect occurs after a lower priority defect has triggered a Fault Alarm, but before the Fault Alarm has reset, then the MEP will immediately issue another Fault Alarm. Only the highest-priority defect is reported in the Fault Alarm. (No defect vs DefRDICCM)
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Clear all alarms. Use Tester 2 and Tester 4 to stop transmitting CCMs to the UNI-C under test on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Use Tester 1 and Tester 3 to monitor the CCMs transmitted by the UNI-C under test and to verify that the RDI bit of the Flags field is set in all messages and use the management system of the UNI-C under test to verify that the DefRDICCM defect triggers a Fault Alarm
Units	Fault Alarm hierarchy
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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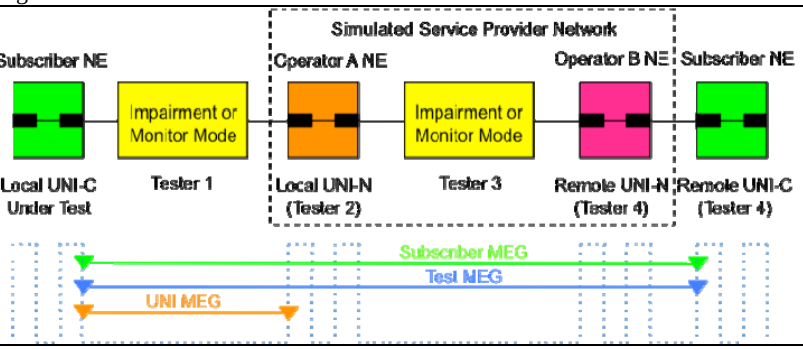
TEST CASE 73C: CC Defect & Fault Alarm Hierarchy – DefRDICCM vs DefMACstatus

Abstract Test Suite for Service OAM	
Test Name	CC Defect & Fault Alarm Hierarchy – DefRDICCM vs DefMACstatus
Test Definition ID	UNIC-R50[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.1.2)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	A UNI-C Type 2 **SHOULD** support the CC defect and fault alarm hierarchy per clause 20.1.2 of IEEE 802.1ag. If this is supported, the highest priority alarm **MUST** be made available to management and **SHOULD** mask lower priority alarms
IEEE Requirement Description	A number of separate defects are maintained by a MEP. The defects are ranked by priority. If a higher priority defect occurs after a lower priority defect has triggered a Fault Alarm, but before the Fault Alarm has reset, then the MEP will immediately issue another Fault Alarm. Only the highest-priority defect is reported in the Fault Alarm
Test Object	Verify that if a higher priority defect occurs after a lower priority defect has triggered a Fault Alarm, but before the Fault Alarm has reset, then the MEP will immediately issue another Fault Alarm. Only the highest-priority defect is reported in the Fault Alarm. (DefRDICCM vs DefMACstatus)
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Clear all alarms. Use Tester 2 and Tester 4 to stop transmitting CCMs to the UNI-C under test on the UNI-MEG, the Test-MEG and the Subscriber-MEG and use the management system to verify that the DefRDICCM defects trigger Fault Alarms on the three local UNI-C MEPs. Before the CC fault reset time expires, use Tester 2 and Tester 4 to send CCMs with Port Status TLV values equal to "psBlocked" (0x01) or with Interface TLV values not equal to "isUp" (0x01) to the UNI-C under test on the UNI-MEG, the Test-MEG and the Subscriber-MEG and use the management system to verify that the DefMACstatus defects trigger new Fault Alarms on the three local UNI-C MEPs and that the lower priority alarms are masked by the new ones
Units	Fault Alarm hierarchy
Variables	None
Results	Pass or fail
Remarks	

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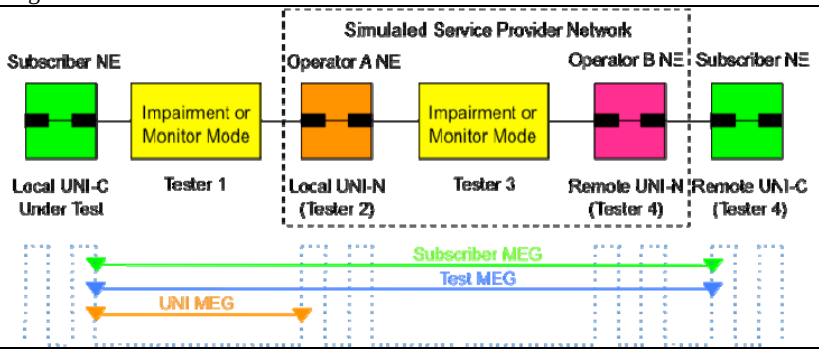
TEST CASE 74C: CC Defect & Fault Alarm Hierarchy – DefMACstatus vs DefRemoteCCM

Abstract Test Suite for Service OAM	
Test Name	CC Defect & Fault Alarm Hierarchy – DefMACstatusCCM vs DefRemoteCCM
Test Definition ID	UNIC-R50[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.1.2)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	A UNI-C Type 2 **SHOULD** support the CC defect and fault alarm hierarchy per clause 20.1.2 of IEEE 802.1ag. If this is supported, the highest priority alarm **MUST** be made available to management and **SHOULD** mask lower priority alarms
IEEE Requirement Description	A number of separate defects are maintained by a MEP. The defects are ranked by priority. If a higher priority defect occurs after a lower priority defect has triggered a Fault Alarm, but before the Fault Alarm has reset, then the MEP will immediately issue another Fault Alarm. Only the highest-priority defect is reported in the Fault Alarm
Test Object	Verify that if a higher priority defect occurs after a lower priority defect has triggered a Fault Alarm, but before the Fault Alarm has reset, then the MEP will immediately issue another Fault Alarm. Only the highest-priority defect is reported in the Fault Alarm. (DefMACstatus vs DefRemoteCCM)
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Clear all alarms. Use Tester 2 and Tester 4 to send CCMs with Port Status TLV values equal to "psBlocked" (0x01) or with Interface TLV values not equal to "isUp" (0x01) to the UNI-C under test on the UNI-MEG, the Test-MEG and the Subscriber-MEG and use the management system to verify that the DefMACstatus defects trigger Fault Alarms on the three local UNI-C MEPs. Before the CC fault reset time expires, use Tester 2 and Tester 4 to send CCMs with the RDI bit of the Flags field set to the UNI-C under test on the UNI-MEG, the Test-MEG and the Subscriber-MEG and use the management system to verify that the DefRemoteCCM status defects trigger new Fault Alarms on the three local UNI-C MEPs and that the lower priority alarms are masked by the new ones
Units	Fault Alarm hierarchy
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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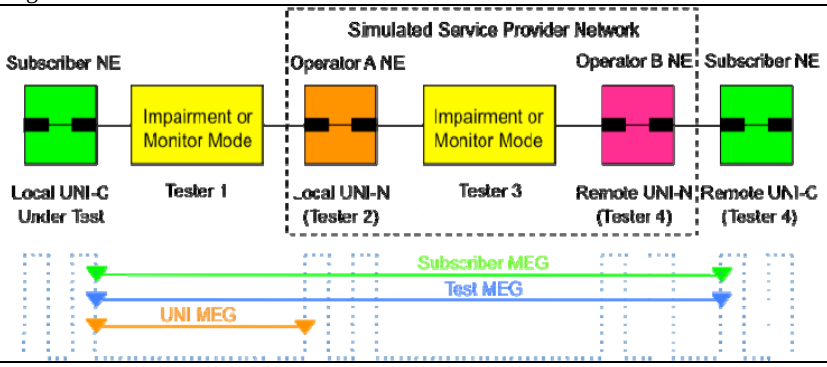
TEST CASE 75C: CC Defect & Fault Alarm Hierarchy – DefRemoteCCM vs DefErrorCCM

Abstract Test Suite for Service OAM	
Test Name	CC Defect & Fault Alarm Hierarchy – DefRemoteCCM vs DefErrorCCM
Test Definition ID	UNIC-R50[3]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.1.2)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	A UNI-C Type 2 **SHOULD** support the CC defect and fault alarm hierarchy per clause 20.1.2 of IEEE 802.1ag. If this is supported, the highest priority alarm **MUST** be made available to management and **SHOULD** mask lower priority alarms
IEEE Requirement Description	A number of separate defects are maintained by a MEP. The defects are ranked by priority. If a higher priority defect occurs after a lower priority defect has triggered a Fault Alarm, but before the Fault Alarm has reset, then the MEP will immediately issue another Fault Alarm. Only the highest-priority defect is reported in the Fault Alarm
Test Object	Verify that if a higher priority defect occurs after a lower priority defect has triggered a Fault Alarm, but before the Fault Alarm has reset, then the MEP will immediately issue another Fault Alarm. Only the highest-priority defect is reported in the Fault Alarm. (DefRemoteCCM vs DefErrorCCM)
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Clear all alarms. Use Tester 2 and Tester 4 to send CCMs with the RDI bit of the Flags field set to the UNI-C under test on the UNI-MEG, the Test-MEG and the Subscriber-MEG and use the management system to verify that the DefRemoteCCM defects trigger Fault Alarms on the three local UNI-C MEPs. Before the CC fault reset time expires, use Tester 2 and Tester 4 to send invalid CCMs (with a multicast source address) to the UNI-C under test on the UNI-MEG, the Test-MEG and the Subscriber-MEG and use the management system to verify that the DefErrorCCM status defects trigger new Fault Alarms on the three local UNI-C MEPs and that the lower priority alarms are masked by the new ones
Units	Fault Alarm hierarchy
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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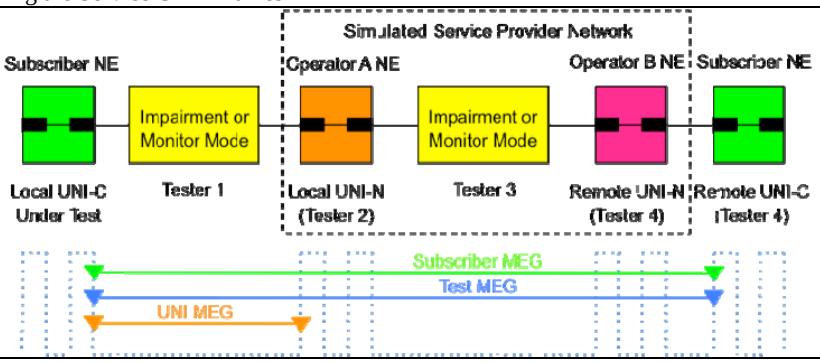
TEST CASE 76C: CC Defect & Fault Alarm Hierarchy – DefErrorCCM vs DefXconCCM

Abstract Test Suite for Service OAM	
Test Name	CC Defect & Fault Alarm Hierarchy – DefErrorCCM vs DefXconCCM
Test Definition ID	UNIC-R50[4]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.1.2)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	A UNI-C Type 2 **SHOULD** support the CC defect and fault alarm hierarchy per clause 20.1.2 of IEEE 802.1ag. If this is supported, the highest priority alarm **MUST** be made available to management and **SHOULD** mask lower priority alarms
IEEE Requirement Description	A number of separate defects are maintained by a MEP. The defects are ranked by priority. If a higher priority defect occurs after a lower priority defect has triggered a Fault Alarm, but before the Fault Alarm has reset, then the MEP will immediately issue another Fault Alarm. Only the highest-priority defect is reported in the Fault Alarm
Test Object	Verify that if a higher priority defect occurs after a lower priority defect has triggered a Fault Alarm, but before the Fault Alarm has reset, then the MEP will immediately issue another Fault Alarm. Only the highest-priority defect is reported in the Fault Alarm. (DefErrorCCM vs DefXconCCM)
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Clear all alarms. Use Tester 2 and Tester 4 to send invalid CCMs (with a multicast source address) to the UNI-C under test on the UNI-MEG, the Test-MEG and the Subscriber-MEG and use the management system to verify that the DefErrorCCM defects trigger Fault Alarms on the three local UNI-C MEPs. Before the CC fault reset time expires, use Tester 2 and Tester 4 to send CCMs with a valid but unknown Short MA Name to the UNI-C under test on the UNI-MEG, the Test-MEG and the Subscriber-MEG and use the management system to verify that the DefXconCCM status defects trigger new Fault Alarms on the three local UNI-C MEPs and that the lower priority alarms are masked by the new ones
Units	Fault Alarm hierarchy
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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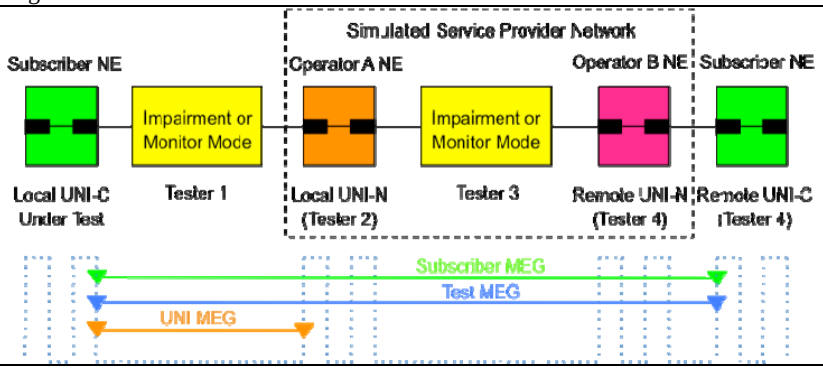
TEST CASE 77C: CC Fault Alarm Time & CC Fault Reset Time

Abstract Test Suite for Service OAM	
Test Name	CC Fault Alarm Time & CC Fault Reset Time
Test Definition ID	UNIC-R52[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.1.2)
Test Type	Conformance
Test Status	Mandatory if IEEE clause 12.14 7 (Maintenance association End Point managed object) is implemented
MEF Requirement Description	A UNI-C Type 2 MEP **MUST** support a CC fault Alarm time and a CC Fault Reset Time
IEEE Requirement Description	A Fault Alarm is issued when the MEP Fault Notification Generator state machine detects that a configured time period (default, 2.5s) has passed with one or more defects indicated, and Fault Alarms are enabled. The state machine can transmit no further Fault Alarms until it is reset by the passage of a configured time period (default, 10s) during which no defect indication is present
Test Object	Verify that the UNI-C Type 2 MEP under test supports a CC fault Alarm time and a CC Fault Reset Time
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Enable CCM transmission on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	If IEEE clause 12.14 7 (Maintenance association End Point managed object) is implemented, verify that the variable someRMEPCCMdefect is cleared and clear all alarms. Use Tester 2 and Tester 4 to stop transmitting CCMs to the UNI-C under test on the UNI-MEG, the Test-MEG and the Subscriber-MEG. Use the management system of the UNI-C under test to verify that 2.5 seconds after the variable someRMEPCCMdefect changes from clear to set and the DefRemoteCCM is triggered, a Fault alarm is transmitted. Use Tester 2 and Tester 4 to start transmitting CCMs to the UNI-C under test on the UNI-MEG, the Test-MEG and the Subscriber-MEG and verify that the variable someRMEPCCMdefect changes from set to clear. Use the management system of the UNI-C under test to verify that 10 seconds after the variable someRMEPCCMdefect changes from set to clear the Fault alarm is cleared
Units	CC Fault Alarm & CC Fault Reset times
Variables	None
Results	Pass or fail
Remarks	

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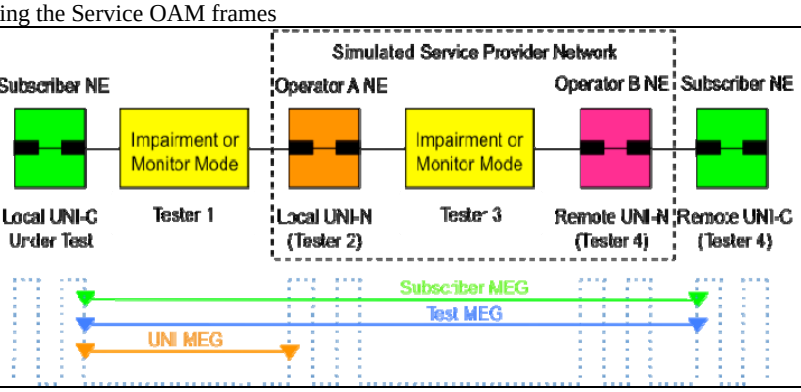
15.5 UNI-C Type 2 Loopback Requirements

TEST CASE 78C: Administratively Initiate & Stop Loopback Sessions

Abstract Test Suite for Service OAM	
Test Name	Administratively Initiate & Stop Loopback Sessions
Test Definition ID	UNIC-R53[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 8
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	Each LB session **MUST** have the ability to be administratively initiated and stopped
Test Object	Verify that the UNI-C Type 2 under test has the ability to administratively initiate and stop LB sessions
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	LOCAL UNI: CE-VLAN ID = 10, EVC = EVC_1; REMOTE UNI: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Instruct the local UNI-C under test to send Loopback Messages (repeatedly until aborted) to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to verify that LBM frames are transmitted from each configured MEP instance (verify MEP IDs) and that the MEG-Level of the UNI-MEG is = "1", the MEG-Level of the Test-MEG is = "5", and the MEG-Level of Subscriber-MEG is = "6". Instruct the local UNI-C under test to abort the loopback session on the UNI-MEG and use Tester 1 and Tester 3 to verify that only LBMs with MEG-Level = 5 and 6 are still being transmitted. Instruct the local UNI-C under test to abort the loopback session on the Test-MEG and use Tester 1 and Tester 3 to verify that only LBMs with MEG-Level = 6 are still being transmitted. Instruct the local UNI-C under test to abort the loopback session on the Subscriber-MEG and use Tester 1 and Tester 3 to verify that no LBMs are transmitted. Instruct the local UNI-C under test to send Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to verify that LBM frames are transmitted from each configured MEP instance (verify MEP IDs) and that the MEG-Level of the UNI-MEG is = "1", the MEG-Level of the Test-MEG is = "5", and the MEG-Level of Subscriber-MEG is = "6"
Units	MEP IDs MEG-Level values
Variables	None
Results	Pass or fail
Remarks	

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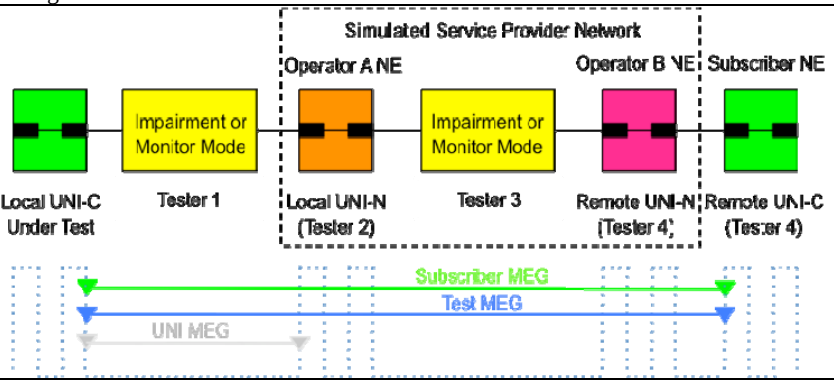
TEST CASE 79C: Configurable LBM Frames Priority

Abstract Test Suite for Service OAM	
Test Name	Configurable LBM Frames Priority
Test Definition ID	UNIC-R55[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 8
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	For each LB session, the priority of LBM frames **MUST** be configurable
Test Object	Verify that the CoS ID of the LBM frames transmitted by the UNI-C Type 2 under test is configurable and set in the transmitted LBM PDUs
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C and for each end point of each configured EVC. Enable CCM transmission on the Test-MEG and the Subscriber-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 1 and Tester 3 to monitor the Continuity Check Messages transmitted by the UNI-C under test and to verify that the CCM frames transmitted from each configured MEP instance are C-tagged with a specific COS ID*. Instruct the local UNI-C under test to send 3 Loopback Messages to the remote UNI-C on both Subscriber-MEG and Test-MEG and use Tester 1 and Tester 3 to monitor the LBM frames transmitted by the UNI-C under test and to verify that the LBM frames transmitted from each configured MEP instance are C-tagged with a specific COS ID* equal to the COS ID of the CCM frames.
Units	CCM and LBM PDUs CoS ID
Variables	None
Results	Pass or fail
Remarks	*The CoS ID supported by the EVC which yields the lowest frame loss performance

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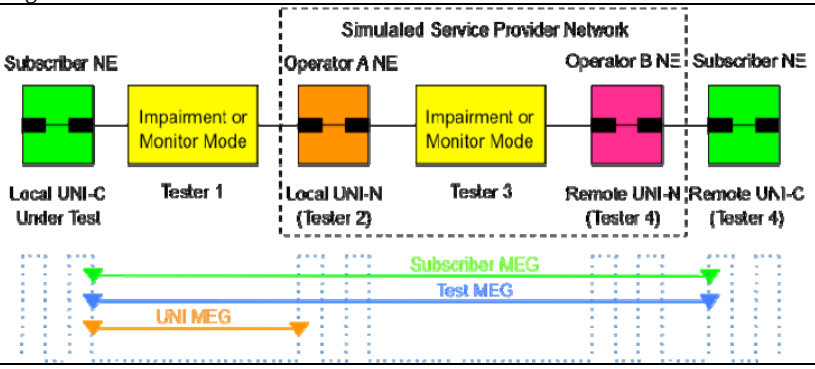
TEST CASE 80C: Configurable Number of LBM Transmissions per Session

Abstract Test Suite for Service OAM	
Test Name	Configurable Number of LBM Transmissions per Session
Test Definition ID	UNIC-R56[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 8
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	For each LB session, the number of LBM transmissions **MUST** be configurable
Test Object	Verify that for each LB session, the number of LBM transmissions is configurable
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	LOCAL UNI: CE-VLAN ID = 10, EVC = EVC_1; REMOTE UNI: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Instruct the local UNI-C under test to send 3 Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to verify that LBM frames are transmitted from each configured MEP instance (verify MEP IDs) and that the MEG-Level of the UNI-MEG is = "1", the MEG-Level of the Test-MEG is = "5", and the MEG-Level of Subscriber-MEG is = "6". Instruct the local UNI-C under test to send 1024 Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to verify that LBM frames are transmitted from each configured MEP instance (verify MEP IDs) and that the MEG-Level of the UNI-MEG is = "1", the MEG-Level of the Test-MEG is = "5", and the MEG-Level of Subscriber-MEG is = "6". Instruct the local UNI-C under test to send Loopback Messages (repeatedly until aborted) to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to verify that LBM frames are transmitted from each configured MEP instance (verify MEP IDs) and that the MEG-Level of the UNI-MEG is = "1", the MEG-Level of the Test-MEG is = "5", and the MEG-Level of Subscriber-MEG is = "6".
Units	MEP IDs MEG-Level values
Variables	None
Results	Pass or fail
Remarks	

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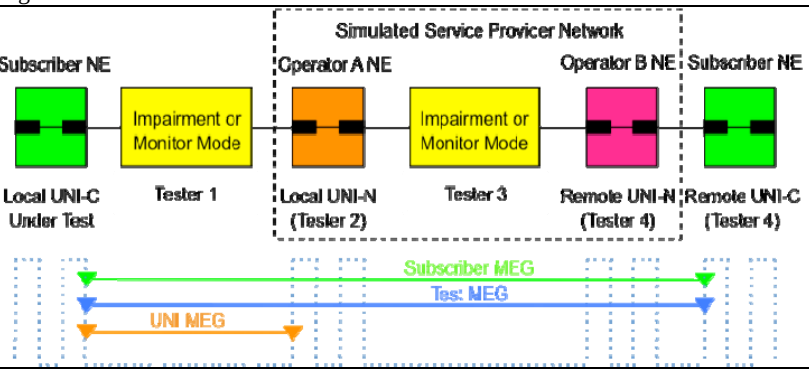
TEST CASE 81C: Configurable Interval between LBM Transmissions

Abstract Test Suite for Service OAM	
Test Name	Configurable Interval between LBM Transmissions
Test Definition ID	UNIC-R57[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 8
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	For each LB session, the interval between LBM transmissions **MUST** be configurable
Test Object	Verify that for each LB session, the interval between LBM transmissions is configurable
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Instruct the local UNI-C under test to send 3 Loopback Messages with a period of 1 second to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to verify that the interval between LBM transmissions is 1 second. Instruct the local UNI-C under test to send 3 Loopback Messages at an interval of 'T' seconds with ('T' > 1) to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to verify that the interval between LBM transmissions is 'T' seconds. Instruct the local UNI-C under test to send 3 Loopback Messages with a period of 0 second (send the next LBM upon receipt of last LBR) to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Using the MEP counters, verify that the total number of (LBMs transmitted) is never greater than the number of (LBRs received +1)
Units	LBM transmissions interval and number of LBM and LBR frames
Variables	Interval between LBM transmissions
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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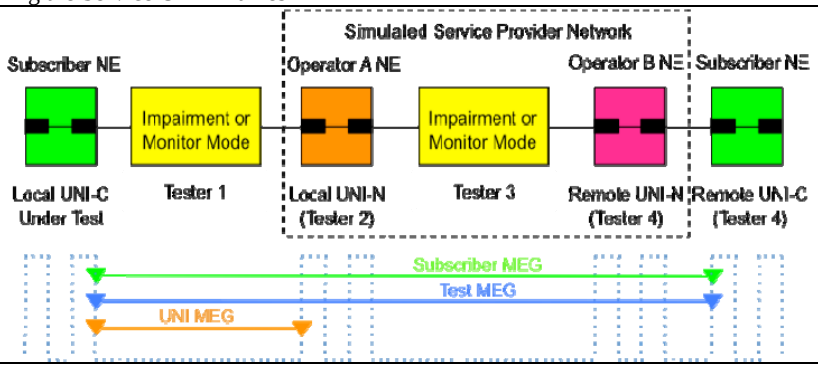
TEST CASE 82C: Configurable Timeout after a LBM Transmission

Abstract Test Suite for Service OAM	
Test Name	Configurable Timeout after a LBM Transmission
Test Definition ID	UNIC-R58[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 8
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	For each LB session, the timeout after a LBM transmission, for an expected LBR result **MAY** be configurable
Test Object	Verify that for each LB session, the timeout after a LBM transmission, for an expected LBR result is configurable
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI** / **REMOTE UNI** **CE-VLAN ID** | **EVC** / **CE-VLAN ID** | **EVC** 10 | EVC_1 / 10 | EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Instruct the local UNI-C under test to send 3 Loopback Messages with a period of 0 second (send the next LBM upon receipt of last LBR) and with a timeout of 5 seconds to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Instruct the local UNI-N (Tester 2) and the remote UNI-C (Tester 4) not to respond to any of the received LBMs. Use Tester 1 and Tester 3 to monitor the LBMs sent by the UNI-C under test and to verify that the interval between LBM transmissions is at least 5 seconds
Units	LBM transmissions interval
Variables	None
Results	Pass or fail
Remarks	

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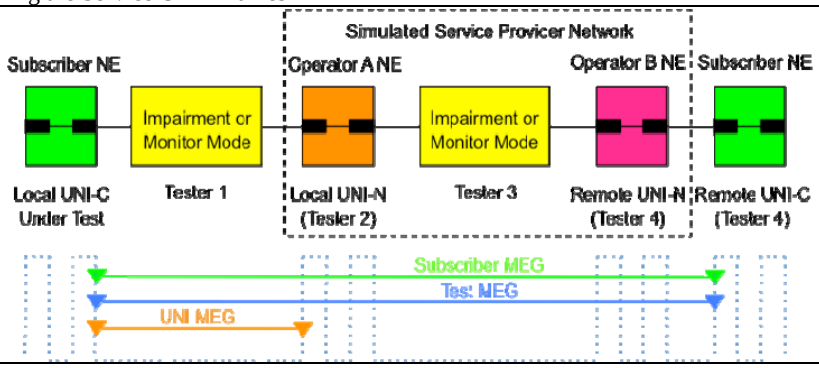
TEST CASE 83C: Configurable LBM Frame Size

Abstract Test Suite for Service OAM	
Test Name	Configurable LBM Frame Size
Test Definition ID	UNIC-R59[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	For each LB session, the size of the LBM frame **MUST** be configurable. This requires that the optional Data TLV **MUST** be supported to allow for frames up to the MTU size
Test Object	Verify that for each LB session, the size of the LBM frame is configurable and that the optional Data TLV is supported to allow for frames up to the MTU size
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Instruct the local UNI-C under test to send three 64-byte Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to monitor the LBMs sent by the UNI-C under test and to verify that the LBM frame size is 64 bytes. Instruct the local UNI-C under test to send three Loopback Messages (frame size equal to the maximum transmission unit of the EVC) to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG. Use Tester 1 and Tester 3 to monitor the LBMs sent by the UNI-C under test and to verify that the LBM frame size is equal to the maximum transmission unit of the EVC
Units	LBM frame size
Variables	None
Results	Pass or fail
Remarks	

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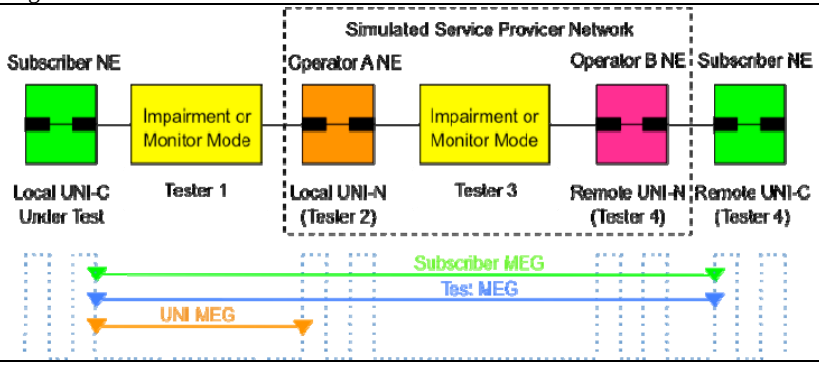
TEST CASE 84C: UNI-C Counter – Number of LBM Frames Transmitted

Abstract Test Suite for Service OAM	
Test Name	UNI-C Counter – Number of LBM Frames Transmitted
Test Definition ID	UNIC-R60[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	For each LB session, counters for LBM frames transmitted **MUST** be maintained
Test Object	Verify that the UNI-C Type 2 under test maintains counters for each MEP that counts the number of LBM frames transmitted
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI**: CE-VLAN ID = 10, EVC = EVC_1; **REMOTE UNI**: CE-VLAN ID = 10, EVC = EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Reset the UNI-C under test counters. Instruct the local UNI-C under test to send 3 Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG and use Tester 1 and Tester 3 to monitor and count the LBMs transmitted by the UNI-C under test. Verify that the number of LBMs with MEG-Level = 1 counted by the Tester 1 is equal to the number of LBM frames transmitted indicated by the UNI-C MEP counter for the UNI-MEG, that the number of LBMs with MEG-Level = 5 counted by the Tester 1 and Tester 3 is equal to the number of LBM frames transmitted indicated by the UNI-C MEP counter for the Test-MEG and that the number of LBMs with MEG-Level = 6 counted by the Tester 1 and Tester 3 is equal to the number of LBM frames transmitted indicated by the UNI-C MEP counter for the Subscriber-MEG
Units	Number of LBM frames
Variables	None
Results	Pass or fail
Remarks	

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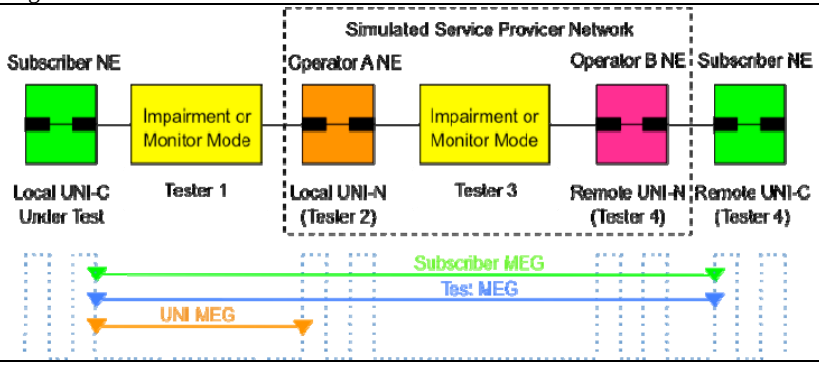
TEST CASE 85C: UNI-C Counter – Number of LBM Frames Received

Abstract Test Suite for Service OAM	
Test Name	UNI-C Counter – Number of LBM Frames Received
Test Definition ID	UNIC-R60[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	For each LB session, counters for LBM frames Received **MUST** be maintained
Test Object	Verify that the UNI-C Type 2 under test maintains counters for each MEP that counts the number of LBM frames received
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI** / **REMOTE UNI** **CE-VLAN ID** | **EVC** / **CE-VLAN ID** | **EVC** 10 | EVC_1 / 10 | EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Reset the UNI-C under test counters. Instruct the local UNI-N (Tester 2) and the remote UNI-C (Tester 4) to send 3 Loopback Messages to the UNI-C under test on the UNI-MEG, on the Test-MEG and on the Subscriber-MEG. Use Tester 1 and Tester 3 to monitor and count the LBMs transmitted by the local UNI-N (Tester 2) and the remote UNI-C (Tester 4). Verify that the number of LBMs with MEG-Level = 1 counted by the Tester 1 is equal to the number of LBM frames received indicated by the UNI-C MEP counter for the UNI-MEG, that the number of LBMs with MEG-Level = 5 counted by the Tester 1 and Tester 3 is equal to the number of LBM frames received indicated by the UNI-C MEP counter for the Test-MEG and that the number of LBMs with MEG-Level = 6 counted by the Tester 1 and Tester 3 is equal to the number of LBM frames received indicated by the UNI-C MEP counter for the Subscriber-MEG
Units	Number of LBM frames
Variables	None
Results	Pass or fail
Remarks	

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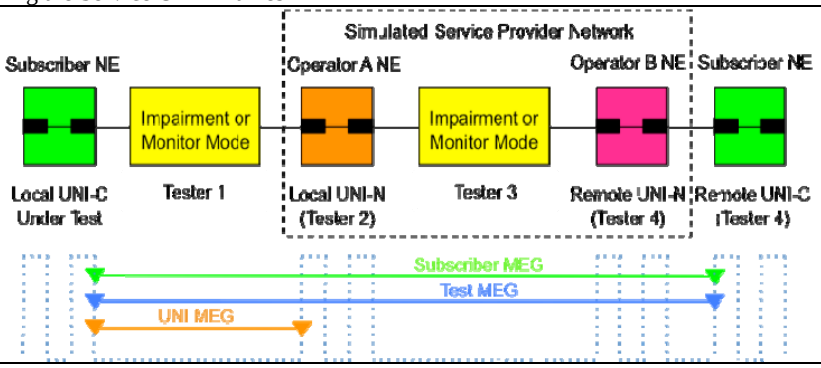
TEST CASE 86C: UNI-C Counter – Number of LBR Frames Received

Abstract Test Suite for Service OAM	
Test Name	UNI-C Counter – Number of LBR Frames Received
Test Definition ID	UNIC-R60[3]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	For each LB session, counters for LBR frames Received **MUST** be maintained
Test Object	Verify that the UNI-C Type 2 under test maintains counters for each MEP that counts the number of LBR frames received
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI** / **REMOTE UNI** **CE-VLAN ID** | **EVC** / **CE-VLAN ID** | **EVC** 10 | EVC_1 / 10 | EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Reset the UNI-C under test counters. Instruct the local UNI-C under test to send 3 Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG and use Tester 1 and Tester 3 to monitor and count the LBMs transmitted by the UNI-C under test and also count the number of LBRs transmitted by the local UNI-N (Tester 2) and the remote UNI-C (Tester 4). Verify that the number of LBRs with MEG-Level = 1 counted by the Tester 1 is equal to the number of LBR frames received indicated by the UNI-C MEP counter for the UNI-MEG, that the number of LBRs with MEG-Level = 5 counted by the Tester 1 and Tester 3 is equal to the number of LBR frames received indicated by the UNI-C MEP counter for the Test-MEG and that the number of LBRs with MEG-Level = 6 counted by the Tester 1 and Tester 3 is equal to the number of LBR frames received indicated by the UNI-C MEP counter for the Subscriber-MEG
Units	Number of LBR frames
Variables	None
Results	Pass or fail
Remarks	

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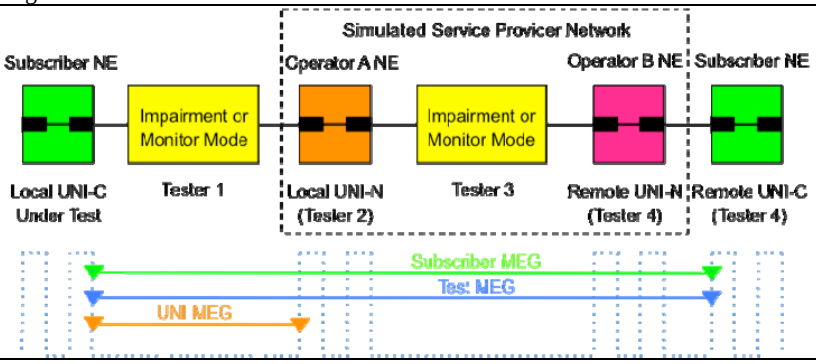
TEST CASE 87C: UNI-C Statistic – Percentage of Unanswered LB Requests (Lost LBM/LBR)

Abstract Test Suite for Service OAM	
Test Name	UNI-C Statistic – Percentage of Unanswered LB Requests (Lost LBM/LBR)
Test Definition ID	UNIC-R60[4]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	For each LB session, statistics on the percentage of unanswered LB requests (lost LBM/LBR) **MUST** be maintained
Test Object	Verify that the UNI-C Type 2 under test maintains statistics on the percentage of unanswered LB requests (lost LBM/LBR)
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI** / **REMOTE UNI** **CE-VLAN ID** | **EVC** | **CE-VLAN ID** | **EVC** 10 | EVC_1 | 10 | EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Reset the UNI-C under test counters and statistics. Instruct the local UNI-C under test to send 3 Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG and use Tester 1 and Tester 3 to verify that the number of LBMs transmitted by the UNI-C under test and is equal to the number of LBRs transmitted by the local UNI-N (Tester 2) and the remote UNI-C (Tester 4). Verify that the percentage of unanswered LB requests is 0% for the 3 UNI-C under test MEPs. DO NOT Reset the UNI-C under test counters and statistics. Instruct the local UNI-C under test to send 3 Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG and instruct the local UNI-N (Tester 2) and the remote UNI-C (Tester 4) not to respond to any of the received LBMs. Verify that the percentage of unanswered LB requests is 50% for the 3 UNI-C under test MEPs. Reset the UNI-C under test counters and statistics. Instruct the local UNI-C under test to send 3 Loopback Messages to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG and instruct the local UNI-N (Tester 2) and the remote UNI-C (Tester 4) not to respond to any of the received LBMs. Verify that the percentage of unanswered LB requests is 100% for the 3 UNI-C under test MEPs
Units	Percentage of unanswered LB requests
Variables	None
Results	Pass or fail
Remarks	

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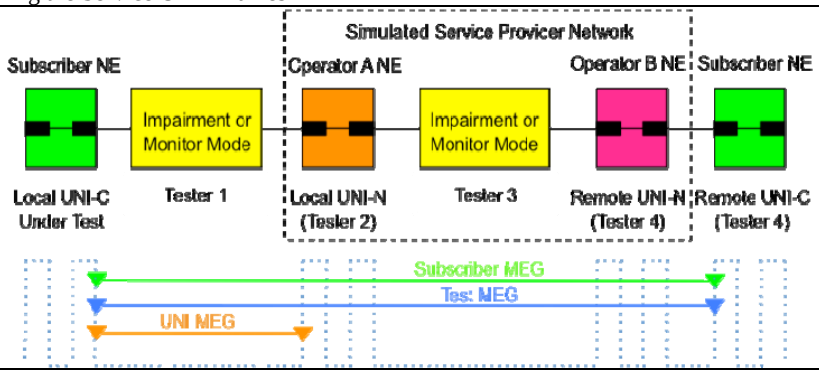
TEST CASE 88C: UNI-C Statistic – Minimum, Maximum & Average Round-Trip Latency

Abstract Test Suite for Service OAM	
Test Name	UNI-C Statistic – Minimum, Maximum & Average Round-Trip Latency
Test Definition ID	UNIC-R60[5]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	For each LB session, statistics on the minimum, maximum and average round-trip latency **MUST** be maintained
Test Object	Verify that the UNI-C Type 2 under test maintains statistics on the minimum, maximum and average round-trip latency
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1" and with a unique MAID, a Test-MEG with a MEG-Level = "5" and with a unique MAID, and a Subscriber-MEG with a MEG-Level = "6" and with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C, local UNI-N and for each end point of each configured EVC. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	See table below
Test Procedure	Reset the UNI-C under test counters and statistics. Instruct the local UNI-C under test to send Loopback Messages (repeatedly until aborted) to the local UNI-N on the UNI-MEG, and to the remote UNI-C on both Subscriber-MEG and Test-MEG for a period of time T and verify the UNI-C under test maintains statistics on the minimum, maximum and average round-trip latency
Units	Minimum, maximum and average round-trip latency
Variables	None
Results	Pass or fail
Remarks	

LOCAL UNI		REMOTE UNI	
CE-VLAN ID	**EVC**	**CE-VLAN ID**	**EVC**
10	EVC_1	10	EVC_1
Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1			

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16. Abstract Test Cases for UNI-N Type 2 Service OAM

This section contains 78 Test Cases for UNI-N. The section is divided in 5 different subsections as follows:

Section 16.1
Configuration Requirements contains a total of 1 Test Case covering the UNI Type 2 Requirements R15.

Section 16.2
Maintenance Entity Requirements contains a total of 3 Test Cases covering the UNI Type 2 Requirements R35, R37 and R38.

Section 16.3
MEG End Points Requirements contains a total of 54 Test Cases covering the UNI Type 2 Requirements R39, R40, R41, R42 and R43.

Section 16.4
Continuity Check Requirements contains a total of 10 Test Cases covering the UNI Type 2 Requirements R44, R45, R46, R48, R49, R50, R51 and R52.

Section 16.5
Loopback Requirements contains a total of 10 Test Cases covering the UNI Type 2 Requirements R53, R54, R56, R57, R58, R59 and R60.

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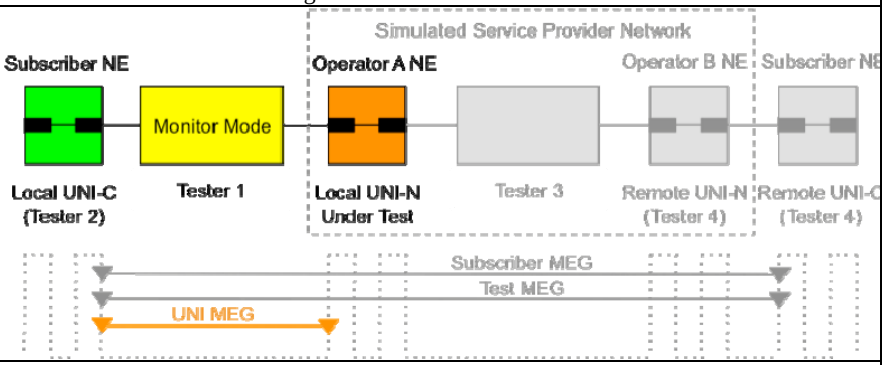
16.1 UNI-N Type 2 Configuration Requirements

TEST CASE 1N: UNI-MEG Administrative Configuration

Abstract Test Suite for Service OAM	
Test Name	UNI-MEG Administrative Configuration
Test Definition ID	UNIN-R15
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 8
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 **MUST** be administratively configurable with the UNI-C MEP ID and MEG-Level corresponding to the UNI-MEG
Test Object	Verify that a UNI-N Type 2 can be administratively configurable with the UNI-C MEP ID and MEG-Level corresponding to the UNI-MEG
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C and the local UNI-N. Configure the UNI-N with the UNI-C MEP ID. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that they contain the configured UNI-N MEP ID, that their MEG-Level is equal to "1" and that the RDI bit of the Flags field is clear. Re-configure the UNI-C with a different MEP ID but do not update the UNI-N configuration with this new information. Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that they contain the configured UNI-N MEP ID, that their MEG-Level is equal to "1" and that the RDI bit of the Flags field is set
Units	MEG-Level, MEP ID and RDI bit values
Variables	None
Results	Pass or fail
Remarks	

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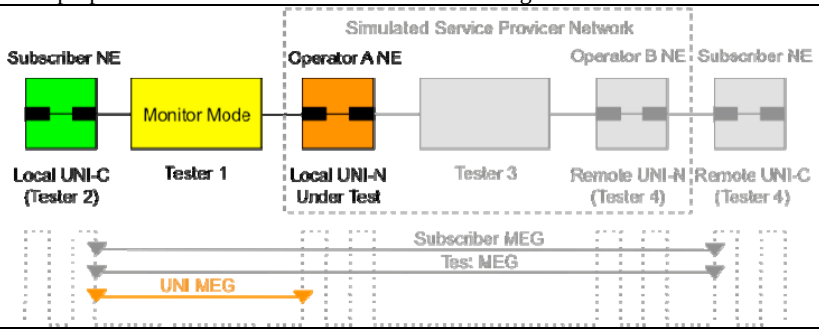
16.2 UNI-N Type 2 Maintenance Entity Requirements

TEST CASE 7N: MEP Instance on the UNI-MEG

Abstract Test Suite for Service OAM	
Test Name	MEP Instance on the UNI-MEG
Test Definition ID	UNIN-R37[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 **MUST** be able to support a single MEP instance on the UNI-MEG, regardless of whether any EVC is configured for that UNI or not
Test Object	Verify that a UNI-N Type 2 can support a single MEP instance on the UNI-MEG, regardless of whether any EVC is configured for that UNI or not
Test Configuration	Configure at least one EVC associating at least two UNIs (local + remote) and configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances with specific MEP IDs for the local UNI-C and the local UNI-N. Enable CCM transmission on the UNI-MEG. Testers with proper PHYs that match the UNIs are monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	**LOCAL UNI** / **REMOTE UNI** **CE-VLAN ID** | **EVC** | **CE-VLAN ID** | **EVC** 10* | EVC_1 | 10* | EVC_1 Use of other CE-VLAN IDs is permitted provided that configuration of the CE-VLAN IDs conforms to MEF 10.1
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that they contain the configured MEP ID and that their MEG-Level is equal to "1". Delete the configured EVC(s) and use Tester 1 to verify that the Continuity Check Messages are still transmitted by the UNI-N under test, that they still contain the configured MEP ID and that their MEG-Level is still equal to "1"
Units	MEG-Level and MEP ID values
Variables	None
Results	Pass or fail
Remarks	

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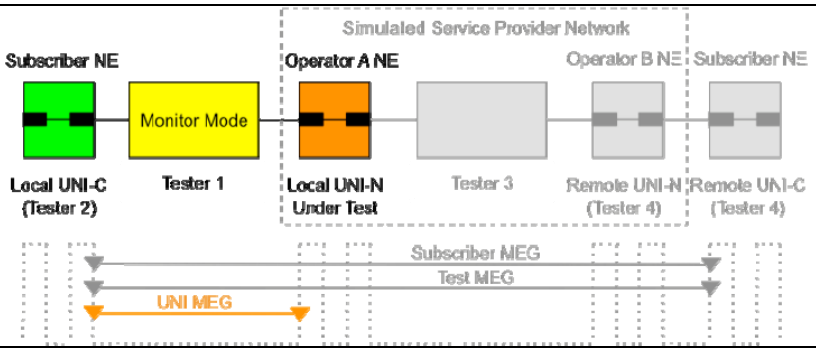
TEST CASE 8N: Untagged OAM Frames on the UNI-MEG

Abstract Test Suite for Service OAM	
Test Name	Untagged OAM Frames on the UNI-MEG
Test Definition ID	UNIN-R37[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 must be able to support a single MEP instance on the UNI-MEG, this UNI-MEG is called the "default UNI-MEG" and **MUST** use Untagged OAM frames
Test Object	Verify that a UNI-N Type 2 is able to support a single MEP instance on the UNI-MEG and that it uses untagged OAM frames
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that their MEG-Level is equal to "1" and that they are untagged
Units	MEG-Level value and CCM frames VLAN tag (absence)
Variables	None
Results	Pass or fail
Remarks	

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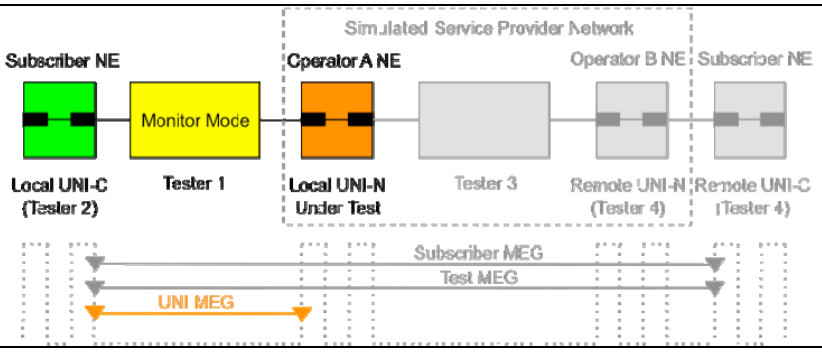
TEST CASE 9N: IEEE 802.1 Bridge MEPs Corresponding to UNI-MEG

Abstract Test Suite for Service OAM	
Test Name	IEEE 802.1 Bridge MEPs Corresponding to UNI-MEG
Test Definition ID	UNIN-R38[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	When the CE is an IEEE 802.1 Bridge, the MEPs corresponding to the UNI-MEG on a UNI-N Type 2 **SHOULD** be Down-MEPs
Test Object	Verify that when the CE is an IEEE 802.1 Bridge, the MEPs corresponding to the UNI-MEG on a UNI-N Type 2 are Down-MEPs
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure Down-MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and if the bridge implements IEEE 802.1ag clause 12.14.7, use the management system of the UNI-N under test to verify that the value indicating the direction in which the MEP is facing on the interface is "Down"
Units	MEP direction
Variables	None
Results	Pass or fail
Remarks	To perform this test, the bridge must implement IEEE 802.1ag clause 12.14.7 (Maintenance association End Point managed object). If this is not the case, there is no obligation to perform the test

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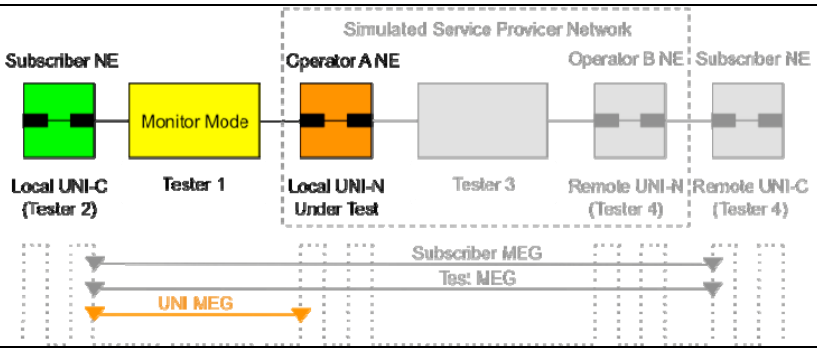
16.3 UNI-N Type 2 MEG End Points Requirements

TEST CASE 13N: Configurable MEG-Level

Abstract Test Suite for Service OAM	
Test Name	Configurable MEG-Level
Test Definition ID	UNIN-R39
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 **MUST** support a configurable MEG-Level for the MEPs
Test Object	Verify that a UNI-N Type 2 can support a configurable MEG-Level for the MEPs
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that CCM frames are transmitted from the UNI-N MEP instance (verify MEP ID) and that the MEG-Level of the UNI-MEG is = "1"
Units	MEG-Level and MEP ID values
Variables	None
Results	Pass or fail
Remarks	

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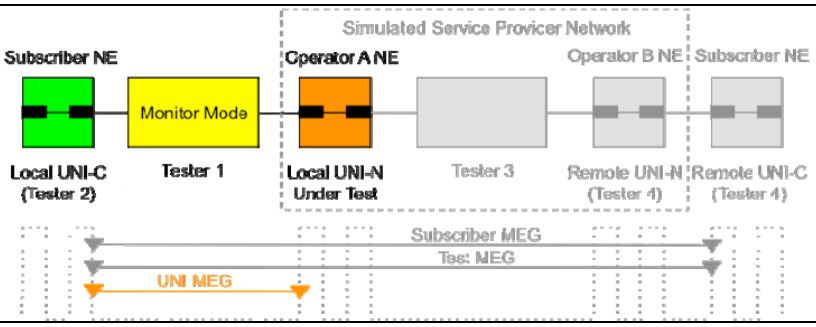
TEST CASE 14N: Processing Received Multicast CCM Frames – Source Address

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames – Source Address
Test Definition ID	UNIN-R40[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.3.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG – Source address validation
IEEE Requirement Description	The receiving system **SHALL** consider a CCM PDU invalid and discard it if the source address parameter contains a Group address, and not an Individual MAC address
Test Object	Verify that any CCM frame received with a source address parameter that contains a Group MAC address is considered invalid and discarded
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 2 to send Continuity Check Messages with a source address parameter that contains a Group MAC address to the UNI-C under test and use the management system of the UNI-C under test to verify that the received CCMs are not catalogued (MEP IDs of the remote MEPs) in the UNI-C MEP CCM Database for the UNI-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

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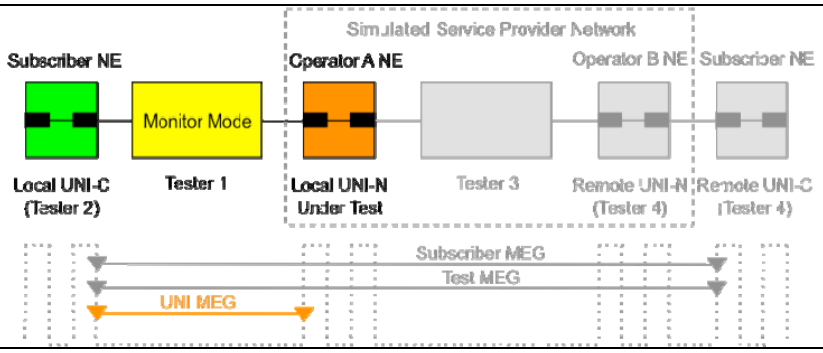
TEST CASE 15N: Processing Received Multicast CCM Frames – Sender ID TLV

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames – Sender ID TLV
Test Definition ID	UNIN-R40[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.5.3)
Test Type	Conformance
Test Status	Mandatory if Sender ID TLVs are supported
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG – Sender ID TLV validation
IEEE Requirement Description	The receiving system **SHALL** consider a CCM PDU invalid and discard it if the Sender ID TLV Length field is not large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields
Test Object	Verify that any CCM frame received with a Sender ID TLV Length field that is not large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields is considered invalid and discarded
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 2 to send Continuity Check Messages with Sender ID TLV Length field not large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields to the UNI-N under test and use the management system of the UNI-N under test to verify that the received CCMs are not catalogued (MEP ID of the remote MEP) in the UNI-N MEP CCM Database for the UNI-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

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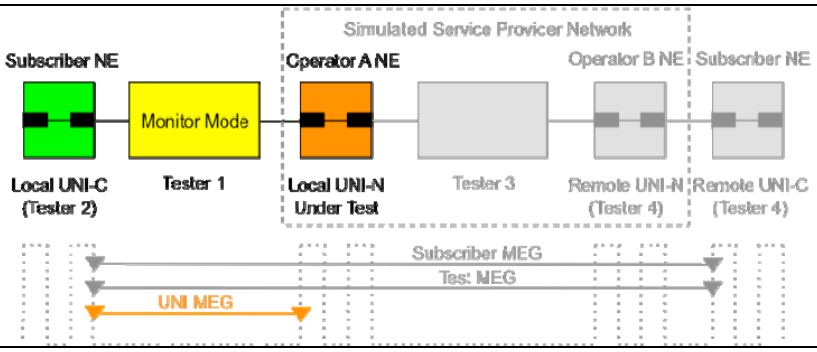
TEST CASE 16N: Processing Received Multicast CCM Frames – Chassis ID Length

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames – Chassis ID Length
Test Definition ID	UNIN-R40[3]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.5.3.1)
Test Type	Conformance
Test Status	Mandatory if Sender ID TLVs are supported
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG – Chassis ID length validation
IEEE Requirement Description	The receiving system **SHALL** consider a CCM PDU invalid and discard it if the Chassis ID Length field is not 0, nor less than (TLV Length field value – 1)
Test Object	Verify that any CCM frame received with a Chassis ID Length field that is not 0, nor less than (TLV Length field value – 1) is considered invalid and discarded
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 2 to send Continuity Check Messages with a Chassis ID Length field that is not 0, nor less than (TLV Length field value – 1) to the UNI-N under test and use the management system of the UNI-N under test to verify that the received CCMs are not catalogued (MEP ID of the remote MEP) in the UNI-N MEP CCM Database for the UNI-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

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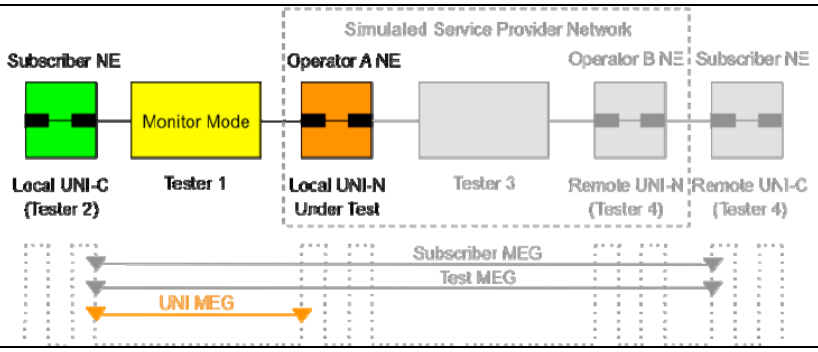
TEST CASE 17N: Processing Received Multicast CCM Frames – Port Status TLV

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames – Port Status TLV
Test Definition ID	UNIN-R40[4]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.5.4)
Test Type	Conformance
Test Status	Mandatory if Port Status TLVs are supported
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG – Port Status TLV validation
IEEE Requirement Description	The receiving system **SHALL** consider a CCM PDU invalid and discard it if the Port Status TLV contains a value other than (0x01) or (0x02)
Test Object	Verify that any CCM frame received with a Port Status TLV that contains a value other than (0x01) or (0x02) is considered invalid and discarded
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 2 to send Continuity Check Messages with a Port Status TLV that contains a value other than (0x01) or (0x02) to the UNI-N under test and use the management system of the UNI-N under test to verify that the received CCMs are not catalogued (MEP ID of the remote MEP) in the UNI-N MEP CCM Database for the UNI-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

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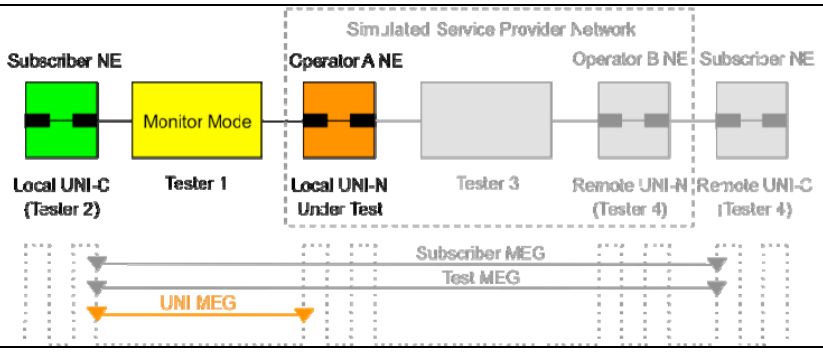
TEST CASE 18N: Processing Received Multicast CCM Frames – Interface Status TLV

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames – Interface Status TLV
Test Definition ID	UNIN-R40[5]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.5.5)
Test Type	Conformance
Test Status	Mandatory if Interface Status TLVs are supported
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG – Interface Status TLV validation
IEEE Requirement Description	The receiving system **SHALL** consider a CCM PDU invalid and discard it if the Interface Status TLV contains a value other than (0x01), (0x02), (0x03), (0x04), (0x05), (0x06) or (0x07)
Test Object	Verify that any CCM frame received with an Interface Status TLV that contains a value other than (0x01), (0x02), (0x03), (0x04), (0x05), (0x06) or (0x07) is considered invalid and discarded
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 2 to send Continuity Check Messages with an Interface Status TLV that contains a value other than (0x01), (0x02), (0x03), (0x04), (0x05), (0x06) or (0x07) to the UNI-N under test and use the management system of the UNI-N under test to verify that the received CCMs are not catalogued (MEP ID of the remote MEP) in the UNI-N MEP CCM Database for the UNI-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

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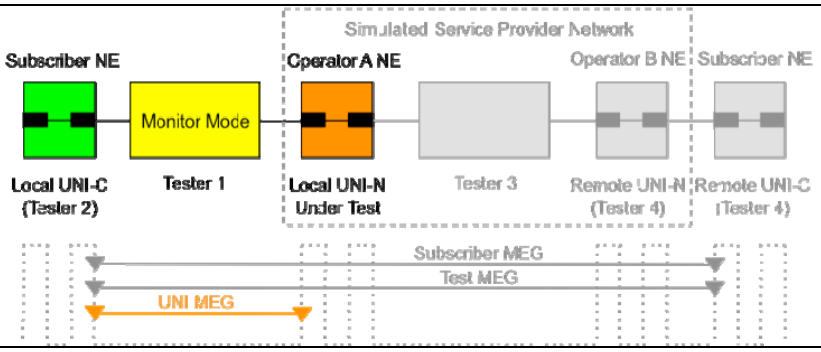
TEST CASE 19N: Processing Received Multicast CCM Frames – CCM Interval

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames – CCM Interval
Test Definition ID	UNIN-R40[6]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.6.1.3)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG – CCM Interval validation
IEEE Requirement Description	The receiving system **SHALL** consider a CCM PDU invalid and discard it if the CCM Interval field contains the value 0
Test Object	Verify that any CCM frame received with a CCM Interval field that contain the value 0 is considered invalid and discarded
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 2 to send Continuity Check Messages with a CCM Interval field that contain the value 0 to the UNI-N under test and use the management system of the UNI-N under test to verify that the received CCMs are not catalogued (MEP ID of the remote MEP) in the UNI-N MEP CCM Database for the UNI-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

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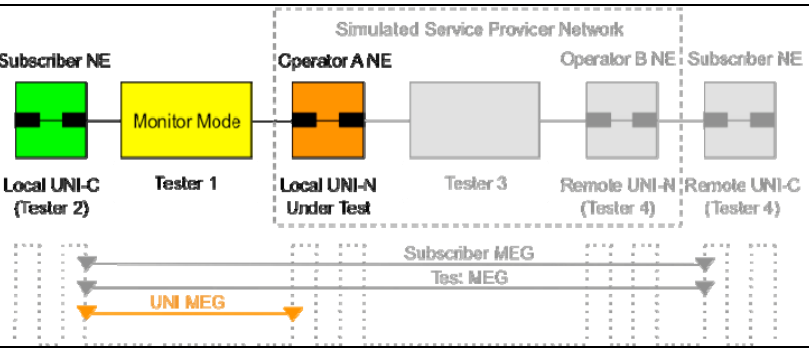
TEST CASE 20N: Processing Received Multicast CCM Frames – First TLV Offset

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames – First TLV Offset
Test Definition ID	UNIN-R40[7]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.6.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG – First TLV Offset validation
IEEE Requirement Description	The receiving system **SHALL** consider a CCM PDU invalid and discard it if the First TLV Offset field of the Common CFM Header in a CCM does not contain a value greater than or equal to 70
Test Object	Verify that any CCM frame received with a First TLV Offset field of the Common CFM Header that does not contain a value greater than or equal to 70 is considered invalid and discarded
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 2 to send Continuity Check Messages with a First TLV Offset field of the Common CFM Header that does not contain a value greater than or equal to 70 to the UNI-N under test and use the management system of the UNI-N under test to verify that the received CCMs are not catalogued (MEP ID of the remote MEP) in the UNI-N MEP CCM Database for the UNI-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

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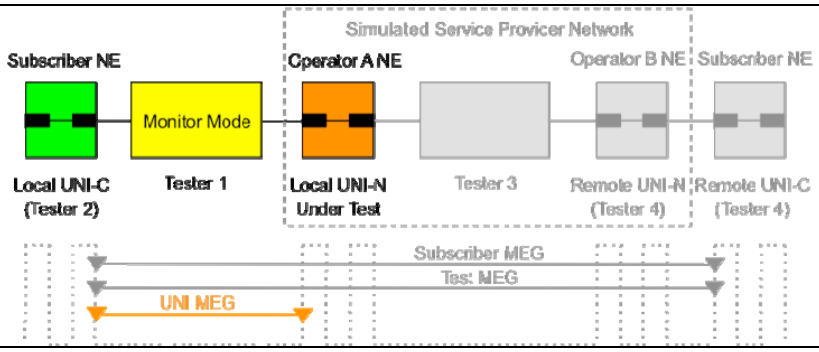
TEST CASE 21N: Processing Received Multicast CCM Frames – MEP ID

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames – MEP ID
Test Definition ID	UNIN-R40[8]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.6.4)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG – MEP ID validation
IEEE Requirement Description	The receiving system **SHALL** consider a CCM PDU invalid and discard it if the MEP ID is not in the range 1-8191
Test Object	Verify that any CCM frame received with a MEP ID that is not in the range 1-8191 is considered invalid and discarded
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 2 to send Continuity Check Messages with a MEP ID that is not in the range 1-8191 to the UNI-N under test and use the management system of the UNI-N under test to verify that the received CCMs are not catalogued (MEP ID of the remote MEP) in the UNI-N MEP CCM Database for the UNI-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

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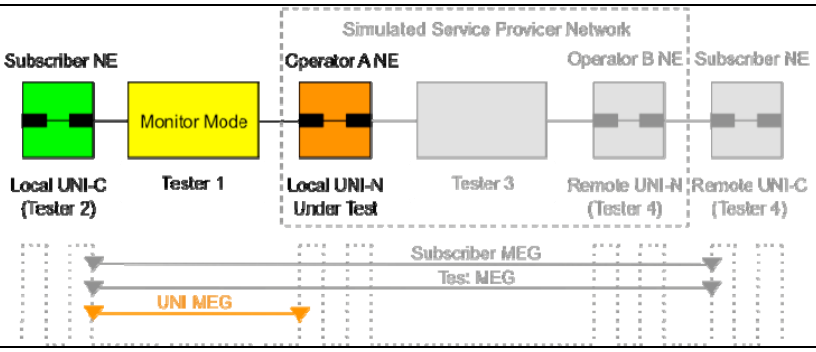
TEST CASE 22N: Processing Received Multicast CCM Frames – Short MA Name Length 1

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames – Short MA Name Length 1
Test Definition ID	UNIN-R40[9]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.6.5.5)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG – Short MA Name length validation 1
IEEE Requirement Description	The receiving system **SHALL** consider a CCM PDU invalid and discard it if the Short MA Name Length does not contain a value greater than or equal to 1
Test Object	Verify that any CCM frame received with a Short MA Name Length that does not contain a value greater than or equal to 1 is considered invalid and discarded
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 2 to send Continuity Check Messages with a Short MA Name Length that does not contain a value greater than or equal to 1 to the UNI-N under test and use the management system of the UNI-N under test to verify that the received CCMs are not catalogued (MEP ID of the remote MEP) in the UNI-N MEP CCM Database for the UNI-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

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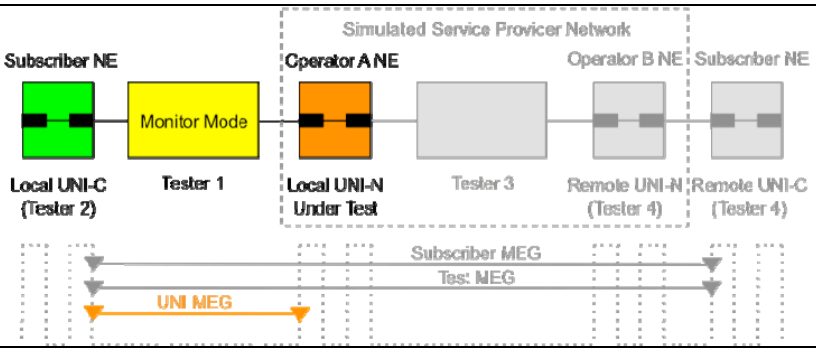
TEST CASE 23N: Processing Received Multicast CCM Frames – Short MA Name Length 2

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames – Short MA Name Length 2
Test Definition ID	UNIN-R40[10]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.6.5.5)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG – Short MA Name length validation 2
IEEE Requirement Description	The receiving system **SHALL** consider a CCM PDU invalid and discard it if the Short MA Name Length indicates that the Short MA Name runs over the 48-octet limit for the MAID
Test Object	Verify that any CCM frame received with a Short MA Name Length that indicates that the Short MA Name runs over the 48-octet limit for the MAID is considered invalid and discarded
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 2 to send Continuity Check Messages with a Short MA Name Length that indicates that the Short MA Name runs over the 48-octet limit for the MAID to the UNI-N under test and use the management system of the UNI-N under test to verify that the received CCMs are not catalogued (MEP ID of the remote MEP) in the UNI-N MEP CCM Database for the UNI-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

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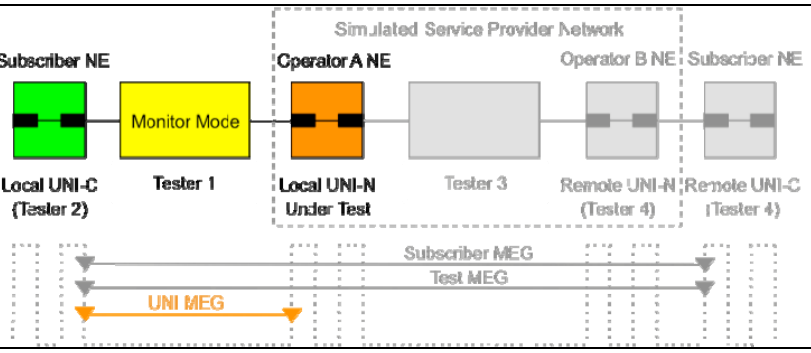
TEST CASE 24N: Processing Received Multicast CCM Frames

Abstract Test Suite for Service OAM	
Test Name	Processing Received Multicast CCM Frames
Test Definition ID	UNIN-R40[11]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.1.3)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to process received Multicast CCM frames for each required MEG
IEEE Requirement Description	Further to the successful PDU validation tests (described in Test Cases 14 through 23) a receiving MEP **SHALL** examine every CCM to be sure that its MAID matches that configured in the receiving MEP, check to ensure that its own MEPID does *not* match that in the received CCM and catalog CCMs in its MEP CCM Database
Test Object	Verify that further to the successful PDU validation tests (described in Test Cases 14 through 23) the receiving MEP examines every CCM to be sure that its MAID matches that configured in the receiving MEP, checks to ensure that its own MEPID does *not* match that in the received CCM and catalog CCMs in its MEP CCM Database
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 2 to send valid Continuity Check Messages to the UNI-N under test and use the management system of the UNI-N under test to verify that the received CCMs are catalogued (MEP ID of the remote MEP) in the UNI-N MEP CCM Database for the UNI-MEG
Units	CCM database MEP ID values
Variables	None
Results	Pass or fail
Remarks	

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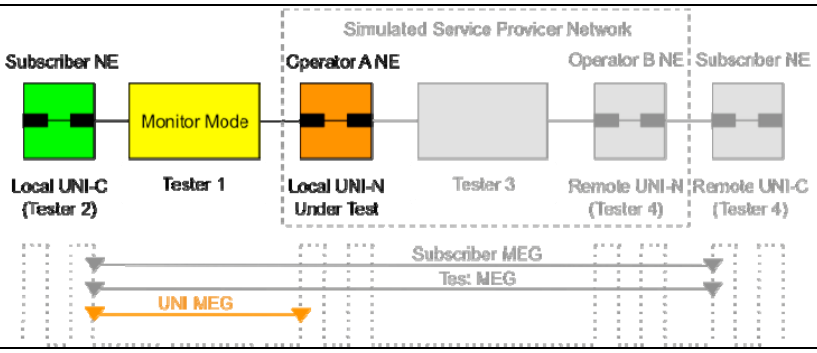
TEST CASE 25N: Processing & Response to Unicast & Multicast LBM Frames – Destination Address

Abstract Test Suite for Service OAM	
Test Name	Processing & Response to Unicast & Multicast LBM Frames – Destination Address
Test Definition ID	UNIN-R41[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.2.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to process and respond to both Unicast and Multicast LBM frames for each required MEG – Destination address validation
IEEE Requirement Description	When an LBM is received by an MEP Loopback Responder, if the destination address matches neither the MAC address of the receiving MEP, nor the Group MAC address listed in the MAC addresses Table in section 10, appropriate to the MD Level (MEG-Level) of the receiving MEP, the MEP **SHALL** discard the LBM
Test Object	Verify that any LBM frame received with a destination address that does not match the MAC address of the receiving MEP, nor the Group MAC address listed in the MAC addresses Table in section 10, appropriate to the MD Level (MEG-Level) is considered invalid and discarded
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct Tester 2 to send Loopback Messages with a destination address that does not match the MAC address of the receiving MP, or the Group MAC address listed in the MAC addresses Table in section 10, appropriate to the MD Level (MEG-Level) to the UNI-N under test. Use Tester 1 to monitor the messages transmitted by the UNI-N under test and to verify that it does not generate any Loopback Replies (because the received LBMs are considered invalid and discarded)
Units	OpCode value
Variables	LBM frame type (Unicast or Multicast)
Results	Pass or fail
Remarks	

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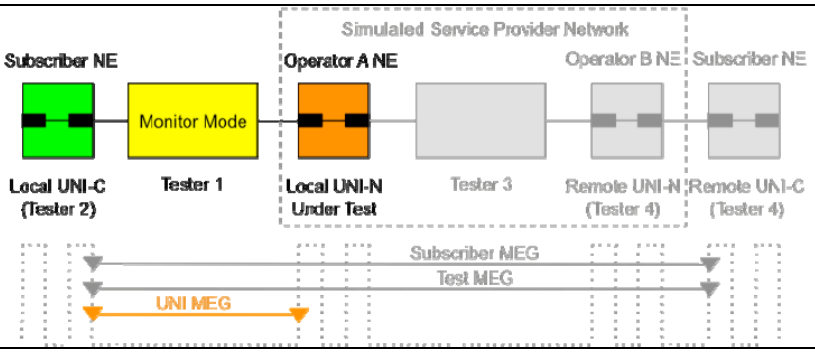
TEST CASE 26N: Processing & Response to Unicast & Multicast LBM Frames – Source Address

Abstract Test Suite for Service OAM	
Test Name	Processing & Response to Unicast & Multicast LBM Frames – Source Address
Test Definition ID	UNIN-R41[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.3.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to process and respond to both Unicast and Multicast LBM frames for each required MEG – Source address validation
IEEE Requirement Description	The receiving system **SHALL** consider an LBM PDU invalid and discard it if the source address parameter contains a Group address, and not an Individual MAC address
Test Object	Verify that any LBM frame received with a source address parameter that contains a Group MAC address is considered invalid and discarded
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct Tester 2 to send Loopback Messages with a source address parameter that contains a Group MAC address to the UNI-N under test. Use Tester 1 to monitor the messages transmitted by the UNI-C under test and to verify that it does not generate any Loopback Replies (because the received LBMs are considered invalid and discarded)
Units	OpCode value
Variables	LBM frame type (Unicast or Multicast)
Results	Pass or fail
Remarks	

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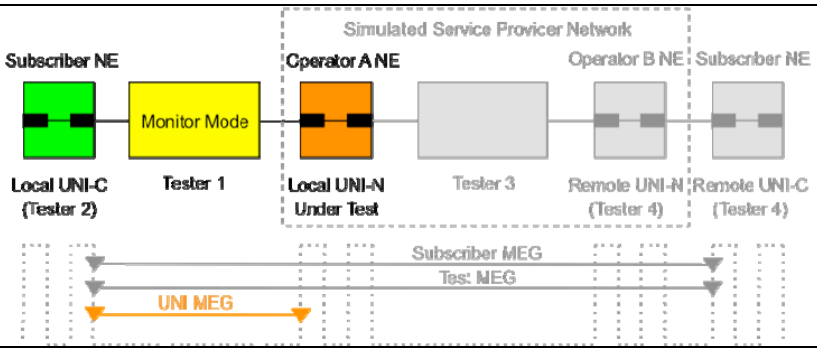
TEST CASE 27N: Processing & Response to Unicast & Multicast LBM Frames – Sender ID TLV

Abstract Test Suite for Service OAM	
Test Name	Processing & Response to Unicast & Multicast LBM Frames – Sender ID TLV
Test Definition ID	UNIN-R41[3]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.5.3)
Test Type	Conformance
Test Status	Mandatory if Sender ID TLVs are supported
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to process and respond to both Unicast and Multicast LBM frames for each required MEG – Sender ID TLV validation
IEEE Requirement Description	The receiving system **SHALL** consider an LBM PDU invalid and discard it if the Sender ID TLV Length field is not large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields
Test Object	Verify that any LBM frame received with a Sender ID TLV Length field that is not large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields is considered invalid and discarded
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct Tester 2 to send Loopback Messages with Sender ID TLV Length field not large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields to the UNI-N under test. Use Tester 1 to monitor the messages transmitted by the UNI-N under test and to verify that it does not generate any Loopback Replies (because the received LBMs are considered invalid and discarded)
Units	OpCode value
Variables	LBM frame type (Unicast or Multicast)
Results	Pass or fail
Remarks	

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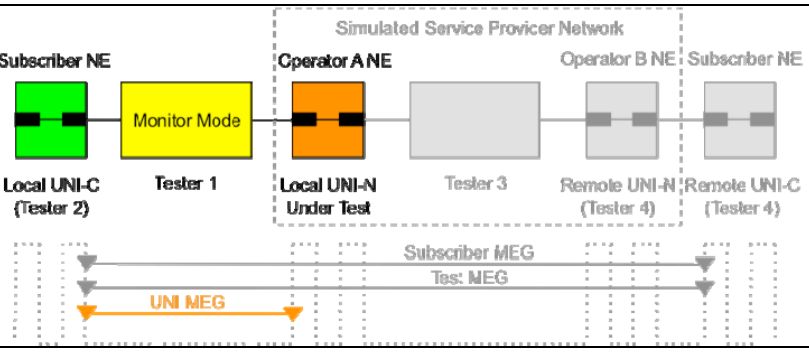
TEST CASE 28N: Processing & Response to Unicast & Multicast LBM Frames – First TLV Offset

Abstract Test Suite for Service OAM	
Test Name	Processing & Response to Unicast & Multicast LBM Frames – First TLV Offset
Test Definition ID	UNIN-R41[4]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.46 & 21.6.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to process and respond to both Unicast and Multicast LBM frames for each required MEG – First TLV Offset validation
IEEE Requirement Description	The receiving system **SHALL** consider an LBM PDU invalid and discard it if the First TLV Offset field of the Common CFM Header in an LBM does not contain a value greater than or equal to 4
Test Object	Verify that any LBM frame received with a First TLV Offset field of the Common CFM Header that does not contain a value greater than or equal to 4 is considered invalid and discarded
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct Tester 2 to send Loopback Messages with a First TLV Offset field of the Common CFM Header that does not contain a value greater than or equal to 4 to the UNI-N under test. Use Tester 1 to monitor the messages transmitted by the UNI-N under test and to verify that it does not generate any Loopback Replies (because the received LBMs are considered invalid and discarded)
Units	OpCode value
Variables	LBM frame type (Unicast or Multicast)
Results	Pass or fail
Remarks	

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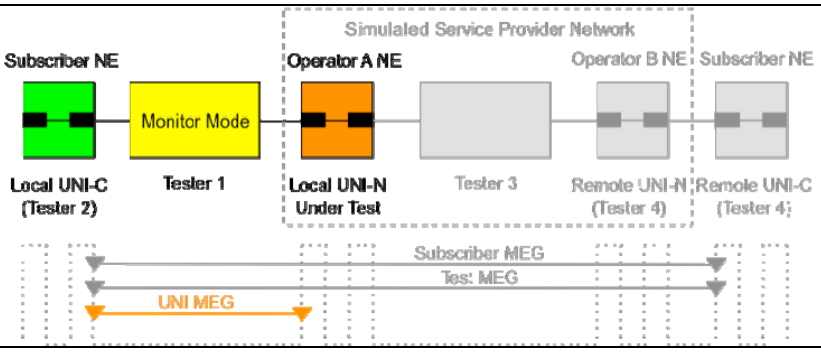
TEST CASE 29N: Processing & Response to Unicast & Multicast LBM Frames – LBR Header

Abstract Test Suite for Service OAM	
Test Name	Processing & Response to Unicast & Multicast LBM Frames – LBR Header
Test Definition ID	UNIN-R41[5]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.2.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to process and respond to both Unicast and Multicast LBM frames for each required MEG
IEEE Requirement Description	Further to the successful PDU validation tests (described in Test Cases 25 through 28), the receiving MEP generates an LBR and transmits it to the originating MEP. The source address parameter of the received LBM is used as the destination address parameter for the transmitted LBR, the source address parameter for the LBR is the MAC address of the replying MEP and the OpCode field is changed from LBM to LBR
Test Object	Verify that further to the successful PDU validation tests (described in Test Cases 25 through 28) the receiving MEP generates an LBR and transmits it to the originating MEP with the source address parameter of the received LBM used as the destination address parameter for the transmitted LBR, with the MAC address of the replying MEP used as the source address parameter for the LBR and with the OpCode field changed from LBM to LBR
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct Tester 2 to send valid Loopback Messages to the UNI-N under test. Use Tester 1 to monitor the Loopback Reply messages transmitted by the UNI-N under test and to verify that the source address parameter of the received LBM is used as the destination address parameter for the transmitted LBR, the source address parameter for the LBR is the MAC address of the replying MEP and the OpCode field is changed from LBM to LBR
Units	Source address, destination address and OpCode values
Variables	LBM frame type (Unicast or Multicast)
Results	Pass or fail
Remarks	

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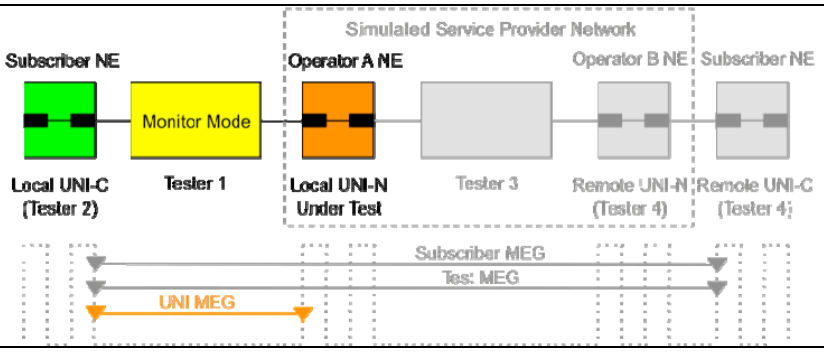
TEST CASE 30N: Processing & Response to Unicast & Multicast LBM Frames – LBR Content

Abstract Test Suite for Service OAM	
Test Name	Processing & Response to Unicast & Multicast LBM Frames – LBR Content
Test Definition ID	UNIN-R41[6]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.2.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to process and respond to both Unicast and Multicast LBM frames for each required MEG
IEEE Requirement Description	A receiving MEP that receives a valid LBM, shall not interpret any of the other fields or TLVs than the source address, destination address and OpCode. The contents of any TLVs that do not violate the validation criteria (described in Test Cases 25 through 28), shall be ignored, not interpreted by the receiver and **SHALL** be copied to the LBR
Test Object	Verify that when a receiving MEP receives a valid LBM, it does not interpret any of the other fields or TLVs than the source address, destination address and OpCode, and the contents of any TLVs that do not violate the validation criteria (described in Test Cases 25 through 28), are ignored and copied to the LBR
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct Tester 2 to send valid Loopback Messages to the UNI-N under test. Use Tester 1 to monitor the Loopback Reply messages transmitted by the UNI-N under test and to verify that any TLVs that do not violate the validation criteria (described in Test Cases 25 through 28), are ignored and copied to the LBR
Units	LBR TLV fields value
Variables	LBM frame type (Unicast or Multicast)
Results	Pass or fail
Remarks	

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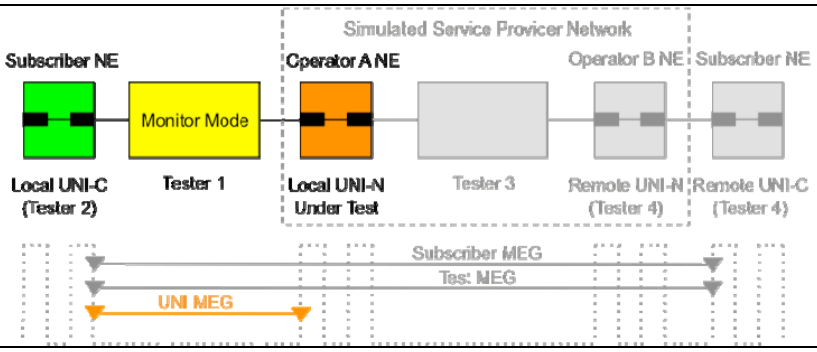
TEST CASE 31N: Generating Multicast CCM Frames – Destination Address

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Destination Address
Test Definition ID	UNIN-R42[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.3.1)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-N Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Destination address validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; CCMs monitoring a service instance distinguished by its VID use the Group MAC addresses listed in the MAC addresses Table in section 10, as the destination address
Test Object	Verify that the destination address parameter of the CCM frames generated by the UNI-N under test is one of the Group MAC addresses listed in the MAC addresses Table in section 10
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that their destination address parameter contains one of the Group MAC addresses listed in the MAC addresses Table in section 10
Units	Destination address
Variables	None
Results	Pass or fail
Remarks	

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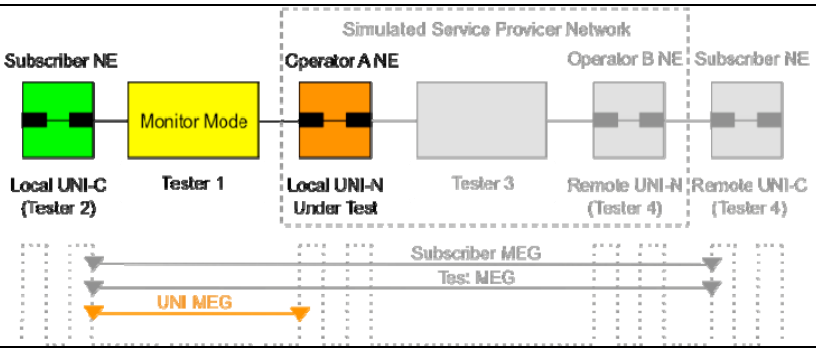
TEST CASE 32N: Generating Multicast CCM Frames – Source Address

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Source Address
Test Definition ID	UNIN-R42[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.3.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-N Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Source address validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The CCM frames source address is the Individual MAC address of the MEP transmitting the PDU. The source address parameter contains an individual, and not a Group, MAC address
Test Object	Verify that the source address parameter of the CCM frames generated by the UNI-N under test contains an individual, and not a Group, MAC address
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that their source address parameter contains an individual, and not a Group, MAC address
Units	Source address
Variables	None
Results	Pass or fail
Remarks	

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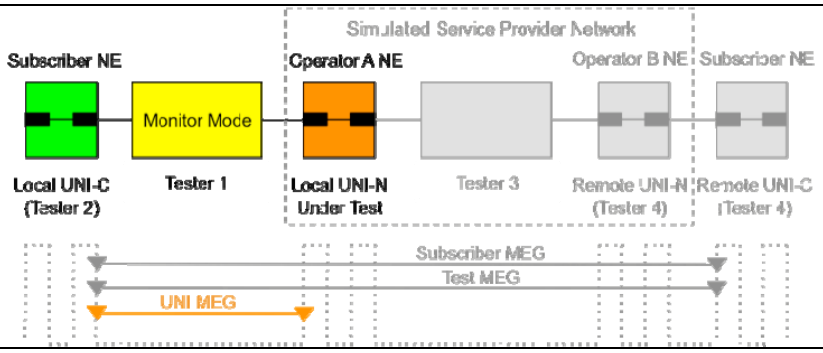
TEST CASE 33N: Generating Multicast CCM Frames – Protocol Version Number

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Protocol Version Number
Test Definition ID	UNIN-R42[3]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.4.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-N Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Protocol Version Number validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The protocol version number is always 0
Test Object	Verify that the protocol version number of the CCM frames generated by the UNI-N under test is always 0
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that their protocol version number is always 0
Units	Protocol version number
Variables	None
Results	Pass or fail
Remarks	

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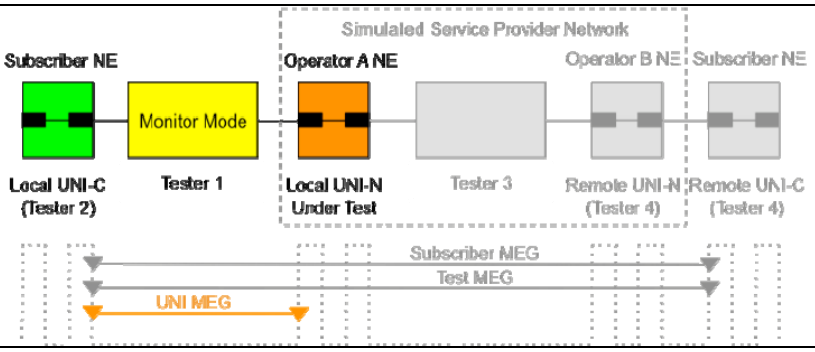
TEST CASE 34N: Generating Multicast CCM Frames – OpCode

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – OpCode
Test Definition ID	UNIN-R42[4]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.4.3)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-N Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – OpCode validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The OpCode field specifies the format and meaning of the remainder of the CFM PDU. The value for CCM PDUs is (0x01)
Test Object	Verify that the OpCode value of the CCM frames generated by the UNI-N under test is (0x01)
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that their OpCode value is (0x01)
Units	OpCode value
Variables	None
Results	Pass or fail
Remarks	

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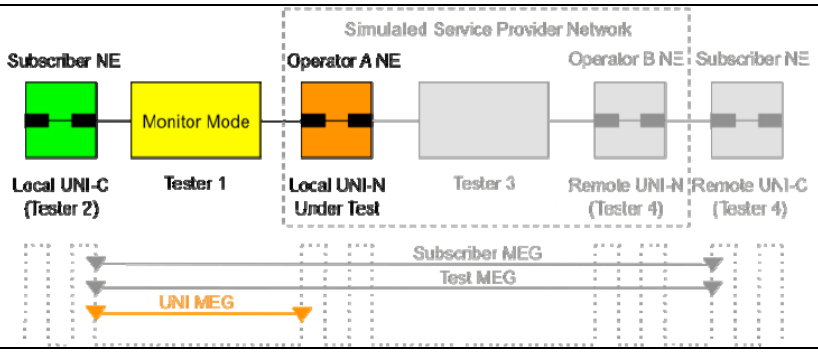
TEST CASE 35N: Generating Multicast CCM Frames – Flags

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Flags
Test Definition ID	UNIN-R42[5]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.6.1)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-N Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Flags validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Flags field of the Common CFM Header is split into three parts for the CCM: the RDI field, the Reserved field and the CCM Interval field. The most significant bit of the Flags field is the RDI bit. This bit is set to 1 if the transmitting MEP's presentRDI variable is set, and 0 if not. The bits of the Flags field not including the RDI field and the CCM Interval field are set to 0 by the transmitting MEP. The least-significant three bits of the Flags field constitute the CCM Interval field. The CCM Interval field is encoded as specified in the CCM Interval Table in section 11
Test Object	Verify that the Flags field bits of the CCM frames generated by the UNI-N under test that are not included in the CCM Interval field are set to 0 and that the CCM Interval field contains a value in the range 1-7
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that the Flags field bits that are not included in the CCM Interval field are set to 0 and that the CCM Interval field contains a value in the range 1-7
Units	Flags field value
Variables	None
Results	Pass or fail
Remarks	

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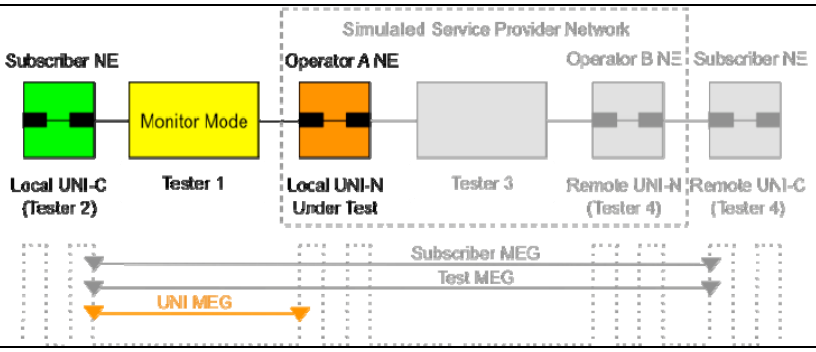
TEST CASE 36N: Generating Multicast CCM Frames – First TLV Offset

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – First TLV Offset
Test Definition ID	UNIN-R42[6]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.6.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-N Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – First TLV Offset validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The First TLV Offset field of the Common CFM Header in a CCM contains a value greater than or equal to 70
Test Object	Verify that the First TLV Offset field of the Common CFM Header in the CCM frames generated by the UNI-N under test contains a value greater than or equal to 70
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that the First TLV Offset field contains a value greater than or equal to 70
Units	First TLV Offset field value
Variables	None
Results	Pass or fail
Remarks	

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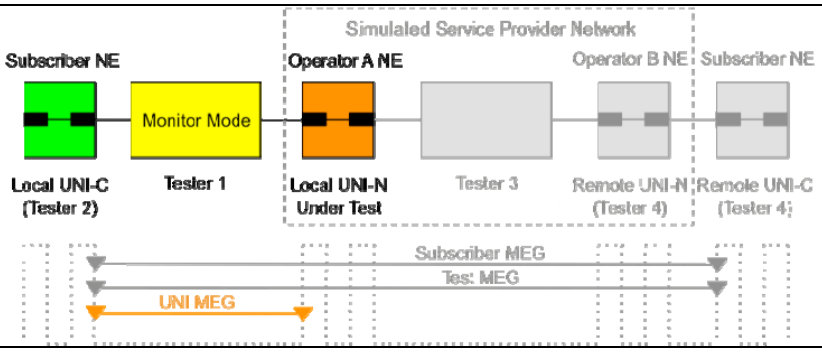
TEST CASE 37N: Generating Multicast CCM Frames – Sequence Number

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Sequence Number
Test Definition ID	UNIN-R42[7]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.6.3)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-N Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Sequence Number validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; A MEP transmits either a 0 in the Sequence Number field of the CCM frames, or copies to it the contents of the CCIsentCCMs variable
Test Object	Verify that the Sequence Number field of the CCM frames generated by the UNI-N under test contains either a 0 or a copy of the CCIsentCCMs variable
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that the Sequence Number field contains either a 0 or a copy of the CCIsentCCMs variable
Units	Sequence Number value
Variables	None
Results	Pass or fail
Remarks	

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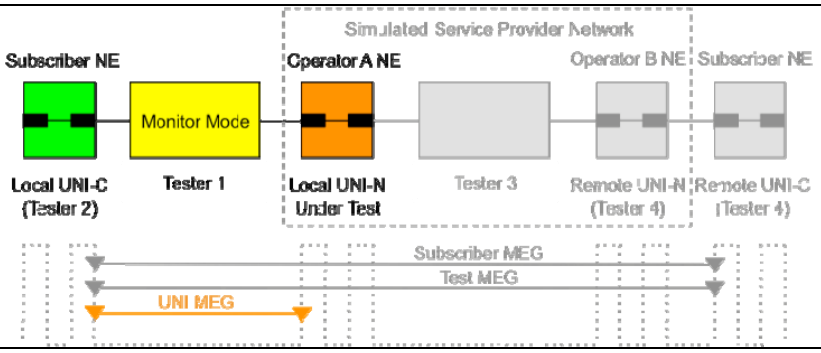
TEST CASE 38N: Generating Multicast CCM Frames – MEP ID

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – MEP ID
Test Definition ID	UNIN-R42[8]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.6.4)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-N Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – MEP ID validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The MEP ID TLV specifies from which MEP the CCM was transmitted and is in the range 1-8191
Test Object	Verify that the MEP ID TLV of the CCM frames generated by the UNI-N under test contains a value in the range 1-8191
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that the MEP ID TLV contains a value in the range 1-8191
Units	MEP ID value
Variables	None
Results	Pass or fail
Remarks	

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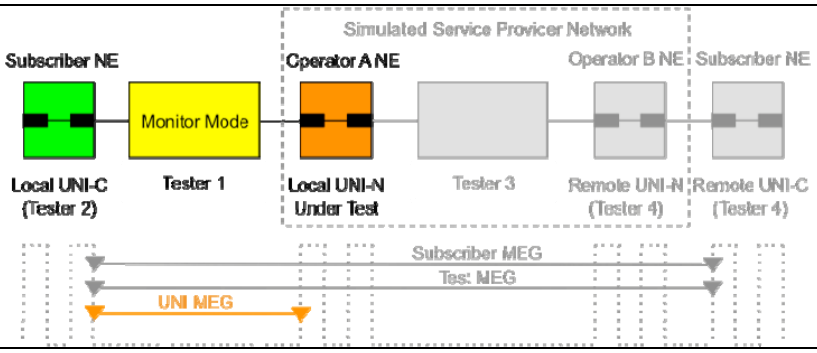
TEST CASE 39N: Generating Multicast CCM Frames – MAID Total Length

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – MAID Total Length
Test Definition ID	UNIN-R42[9]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.6.5)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-N Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – MAID total length validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The total length of the MAID field, including padding, if present, **SHALL** be exactly 48 octets.
Test Object	Verify that the total length of the MAID field, including padding, of the CCM frames generated by the UNI-N under test is exactly 48 octets
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that the total length of the MAID field, including padding is exactly 48 octets
Units	MAID field total length
Variables	None
Results	Pass or fail
Remarks	

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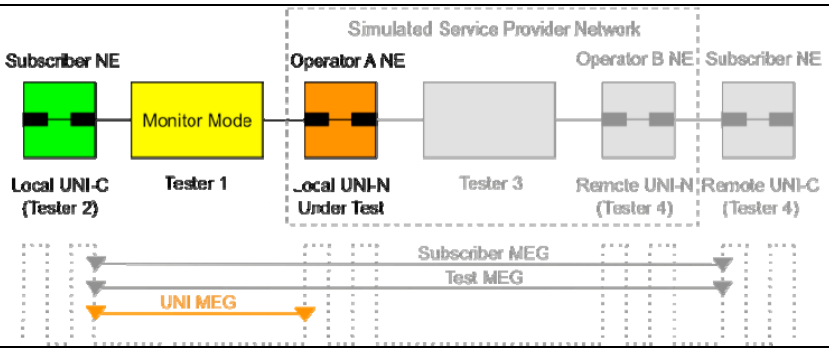
TEST CASE 40N: Generating Multicast CCM Frames – Maintenance Domain Name Format

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Maintenance Domain Name Format
Test Definition ID	UNIN-R42[10]-R48[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.6.5.1)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-N Type 2 implementation, the MEP must be able to generate Multicast CCM frames. The Maintenance Domain Name **SHOULD** use the "null" format (value equal to 0x01)
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Maintenance Domain Name Format specifies the format of the Maintenance Domain Name field. When no Maintenance Domain Name is present, the value is equal to 0x01
Test Object	Verify that the Maintenance Domain Name of the CCM frames generated by the UNI-N under test uses the "null" format (value equal to 0x01)
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that the Maintenance Domain Name of the CCM frames generated by the UNI-N under test uses the "null" format (value equal to 0x01)
Units	Maintenance Domain Name format
Variables	None
Results	Pass or fail
Remarks	

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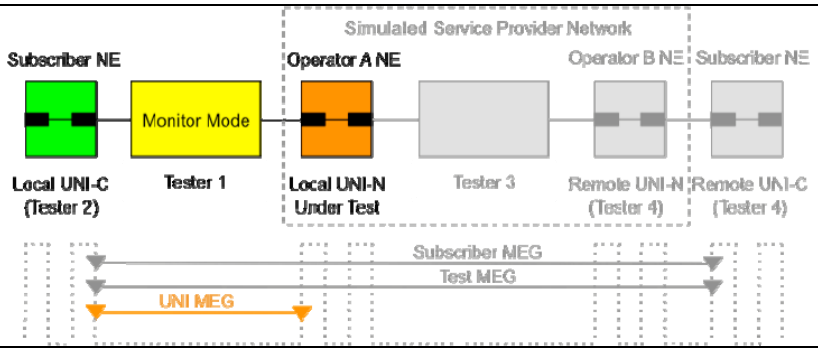
TEST CASE 41N: Generating Multicast CCM Frames – Short MA Name Format

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Short MA Name Format
Test Definition ID	UNIN-R42[11]-R48[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.6.5.4)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-N Type 2 implementation, the MEP must be able to generate Multicast CCM frames. The Short MA Name **SHOULD** use the "text" format (value equal to 0x02)
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Short MA Name format specifies the format of the Short MA Name field. The "text" format or character string value is 0x02
Test Object	Verify that the Short MA Name format of the CCM frames generated by the UNI-N under test uses the "text" format (value equal to 0x02)
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that the Short MA Name format of the CCM frames generated by the UNI-N under test uses the "text" format (value equal to 0x02)
Units	Short MA Name format
Variables	None
Results	Pass or fail
Remarks	

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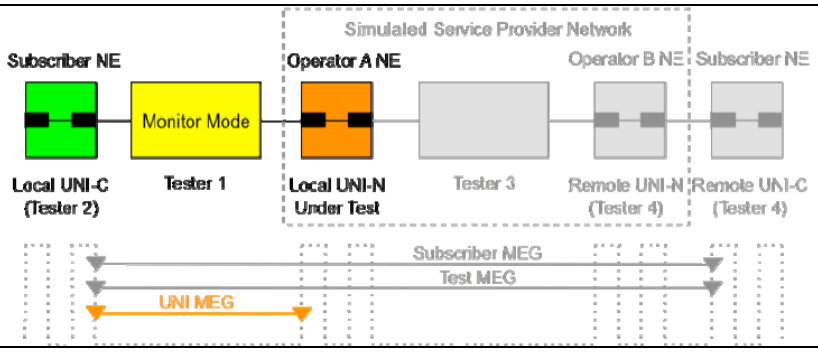
TEST CASE 42N: Generating Multicast CCM Frames – Short MA Name Length

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Short MA Name Length
Test Definition ID	UNIN-R42[12]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.6.5.5)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-N Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Short MA name length validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Short MA Name length in a CCM contains a value greater than or equal to 1 and does not indicate that the Short MA Name runs over the 48-octet limit for the MAID
Test Object	Verify that the Short MA Name length of the CCM frames generated by the UNI-N under test contains a value greater than or equal to 1 and does not indicate that the Short MA Name runs over the 48-octet limit for the MAID
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that the Short MA Name length of the CCM frames generated by the UNI-N under test contains a value greater than or equal to 1 and does not indicate that the Short MA Name runs over the 48-octet limit for the MAID
Units	Short MA Name length
Variables	None
Results	Pass or fail
Remarks	

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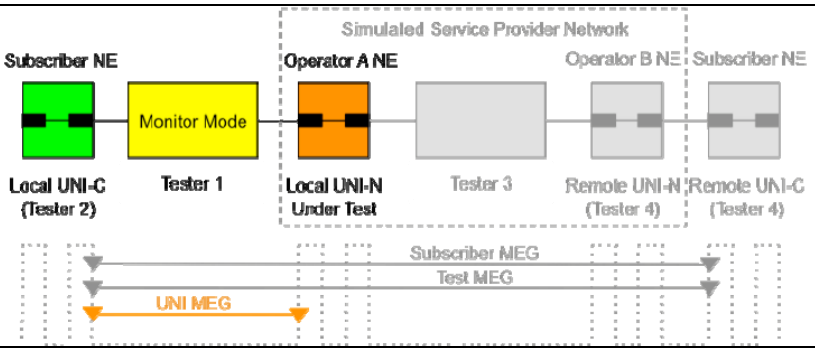
TEST CASE 43N: Generating Multicast CCM Frames – Short MA Name

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Short MA Name
Test Definition ID	UNIN-R42[13]-R48[3]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.6.5.6)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-N Type 2 implementation, the MEP must be able to generate Multicast CCM frames. The Short MA Name is provisioned, has a maximum length of 45 ASCII characters and **SHOULD** default to a Representative Value that is uniquely related, but not necessarily equal, to UNI ID as following: a. The Representative Value of the UNI ID for the default UNI-MEG
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Short MA Name field contains the Short MA Name, in the format specified by the Short MA Name Format field
Test Object	Verify that the Short MA Name has a maximum length of 45 ASCII characters and defaults to a Representative Value that is uniquely related, but not necessarily equal to the UNI ID for the default UNI-MEG
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that the Short MA Name of the CCM frames generated by the UNI-N under test is uniquely related, but not necessarily equal to the UNI ID for the default UNI-MEG
Units	Short MA Name length
Variables	None
Results	Pass or fail
Remarks	

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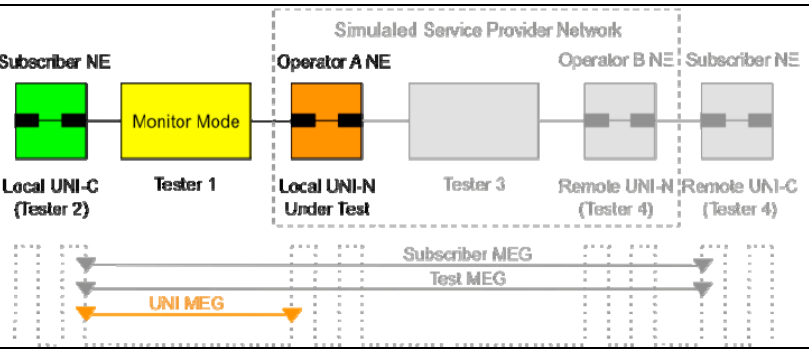
TEST CASE 44N: Generating Multicast CCM Frames – Sender ID TLV

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Sender ID TLV
Test Definition ID	UNIN-R42[14]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.3)
Test Type	Conformance
Test Status	Mandatory if Sender ID TLVs are supported
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-N Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Sender ID TLV validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Sender ID TLV identifies the Bridge on which the transmitting MEP is configured, and may also include a management address for that Bridge. The Sender ID TLV Type is equal to (0x01) and the Length field is large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields
Test Object	Verify that the Sender ID TLV Type of the CCM frames generated by the UNI-N under test is equal to (0x01) and that the Sender ID Length field is large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that the Sender ID TLV Type of the CCM frames generated by the UNI-N under test is equal to (0x01) and that the Sender ID Length field is large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields
Units	Sender ID TLV Type and Length values
Variables	None
Results	Pass or fail
Remarks	

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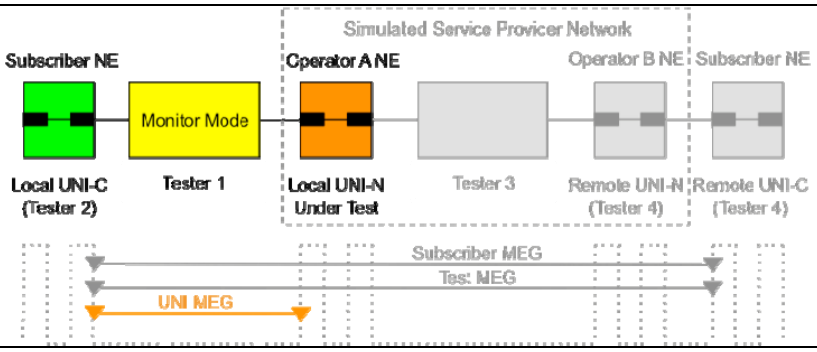
TEST CASE 45N: Generating Multicast CCM Frames – Chassis ID Length

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Chassis ID Length
Test Definition ID	UNIN-R42[15]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.3)
Test Type	Conformance
Test Status	Mandatory if Sender ID TLVs are supported
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-N Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Chassis ID length validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The chassis ID length is the length, in octets, of the Chassis ID field, it is either 0, or is less than (TLV Length field value – 1)
Test Object	Verify that the Chassis ID length of the CCM frames generated by the UNI-N under test is either 0 or less than (TLV Length field value – 1)
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that the Chassis ID length of the CCM frames generated by the UNI-N under test is either 0 or less than (TLV Length field value – 1)
Units	Chassis ID length value
Variables	None
Results	Pass or fail
Remarks	

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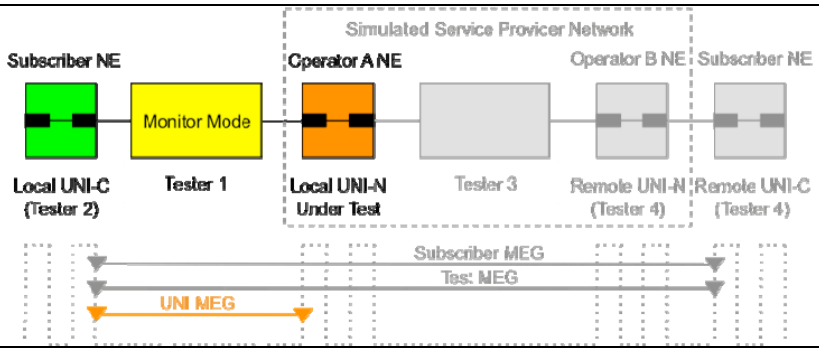
TEST CASE 46N: Generating Multicast CCM Frames – Management Address Domain Field

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Management Address Domian Field
Test Definition ID	UNIN-R42[16]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.3)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-N Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Management Address Domain field validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Management Address Domain Length field contains the length, in octets, of the Management Address Domain field. If 0, or if the TLV's Length field indicates that the Management Address Domain Length field is not present, then the Management Address Domain, Management Address Length, and Management Address fields are not present
Test Object	Verify that the Management Address Domain field of the CCM frames generated by the UNI-N under test is empty
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that the Management Address Domain field of the CCM frames generated by the UNI-N under test is empty
Units	Management Address Domain field
Variables	None
Results	Pass or fail
Remarks	The Management Address Domain field **SHOULD** be empty in the Sender ID TLV by default as a security precaution (MEF Service OAM FM IA)

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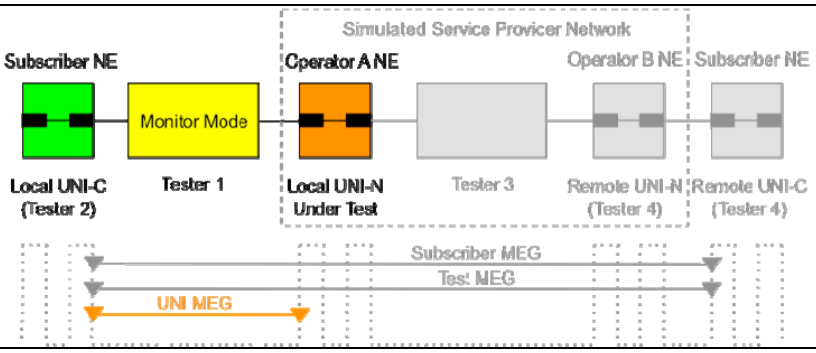
TEST CASE 47N: Generating Multicast CCM Frames – Management Address Field

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Management Address Field
Test Definition ID	UNIN-R42[17]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.3)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-N Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Management Address field validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Management Address length and the Management Address fields are not present if the Management Address Domain Length field is not present or contains a 0, or if the Management Address Length field is not present or contains a 0
Test Object	Verify that the Management Address field of the CCM frames generated by the UNI-N under test is empty
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that the Management Address field of the CCM frames generated by the UNI-N under test is empty
Units	Management Address field
Variables	None
Results	Pass or fail
Remarks	The Management Address field **SHOULD** be empty in the Sender ID TLV by default as a security precaution (MEF Service OAM FM IA)

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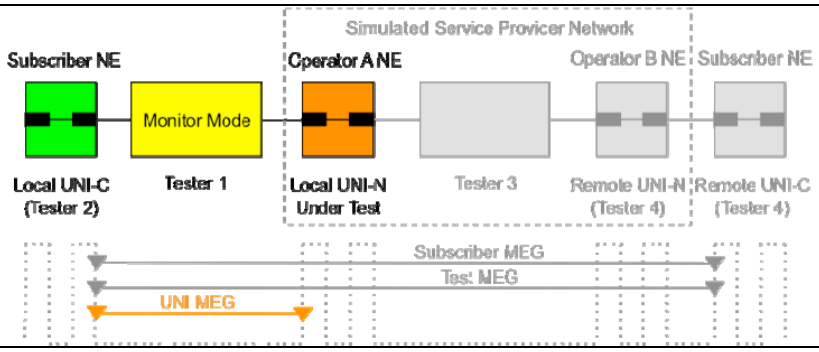
TEST CASE 48N: Generating Multicast CCM Frames – Port Status TLV

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Port Status TLV
Test Definition ID	UNIN-R42[18]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.4)
Test Type	Conformance
Test Status	Mandatory if Port Status TLVs are supported
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-N Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Port Status TLV validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Port Status TLV indicates the ability of the Bridge Port on which the transmitting MEP resides to pass ordinary data, regardless of the status of the MAC. The Port Status TLV Type is equal to (0x02) and the Port Status TLV field contains one of the following values (0x01) psBlocked or (0x02) psUp
Test Object	Verify that the Port Status TLV Type of the CCM frames generated by the UNI-N under test is equal to (0x02) and that the Port Status TLV field contains one of the following values (0x01) psBlocked or (0x02) psUp
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that the Port Status TLV Type of the CCM frames generated by the UNI-N under test is equal to (0x02) and that the Port Status TLV field contains one of the following values (0x01) psBlocked or (0x02) psUp
Units	Port Status TLV Type and TLV field values
Variables	None
Results	Pass or fail
Remarks	

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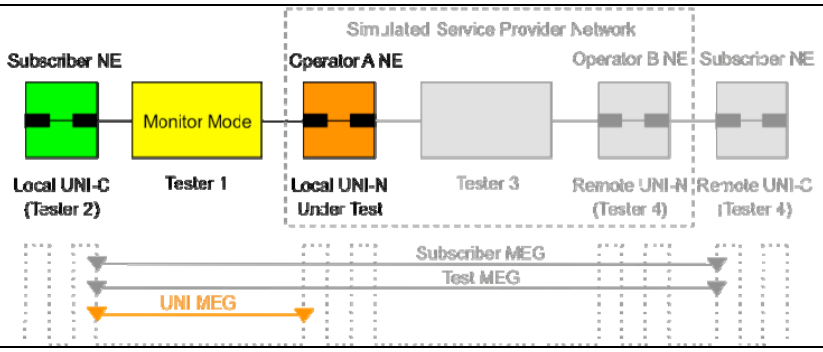
TEST CASE 49N: Generating Multicast CCM Frames – Interface Status TLV

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Interface Status TLV
Test Definition ID	UNIN-R42[19]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.5)
Test Type	Conformance
Test Status	Mandatory if Interface Status TLVs are supported
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-N Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Interface Status TLV validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Interface Status TLV indicates the status of the interface on which the MEP transmitting the CCM is configured, or the next-lower interface in the IETF RFC 2863 IF-MIB. The Interface Status TLV Type is equal to (0x04) and the Interface Status TLV field contains one of the following values (0x01) isUp, (0x02) isDown, (0x03) isTesting, (0x04) isUnknown, (0x05) isDormant, (0x06) isNotPresent or (0x07) isLowerLayerDown
Test Object	Verify that the Interface Status TLV Type of the CCM frames generated by the UNI-N under test is equal to (0x04) and that the Interface Status TLV field contains one of the following values (0x01) isUp, (0x02) isDown, (0x03) isTesting, (0x04) isUnknown, (0x05) isDormant, (0x06) isNotPresent or (0x07) isLowerLayerDown
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that the Interface Status TLV Type of the CCM frames generated by the UNI-N under test is equal to (0x04) and that the Interface Status TLV field contains one of the following values (0x01) isUp, (0x02) isDown, (0x03) isTesting, (0x04) isUnknown, (0x05) isDormant, (0x06) isNotPresent or (0x07) isLowerLayerDown
Units	Interface Status TLV Type and TLV field values
Variables	None
Results	Pass or fail
Remarks	

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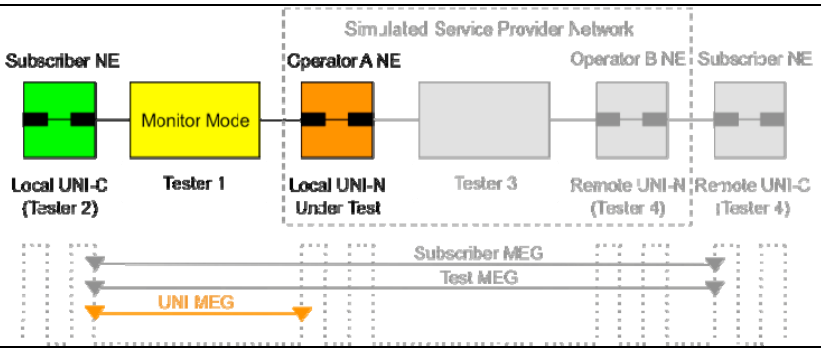
TEST CASE 50N: Generating Multicast CCM Frames – Organization Specific TLV

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – Organization Specific TLV
Test Definition ID	UNIN-R42[20]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.2)
Test Type	Conformance
Test Status	Mandatory if Organization TLVs are supported
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-N Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – Organization Specific TLV validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; Any organization can define TLVs for use in Connectivity Fault Management. The Organization TLV Type is equal to 31 (0x1F)
Test Object	Verify that the Organization TLV Type of the CCM frames generated by the UNI-N under test is equal to 31 (0x1F)
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that the Organization Specific TLV Type of the CCM frames generated by the UNI-N under test is equal to 31 (0x1F)
Units	Organization Specific TLV Type value
Variables	None
Results	Pass or fail
Remarks	

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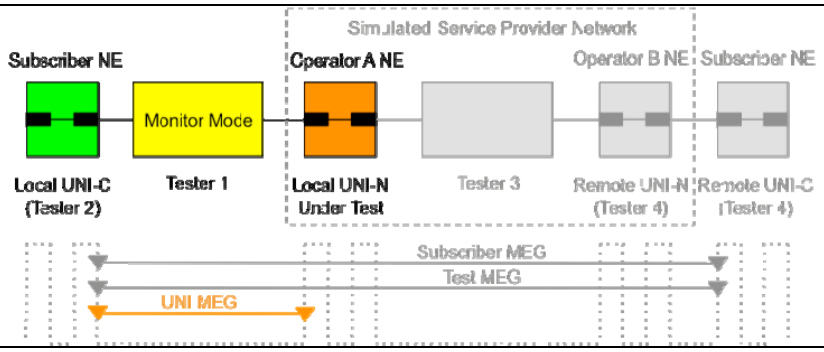
TEST CASE 51N: Generating Multicast CCM Frames – End TLV

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast CCM Frames – End TLV
Test Definition ID	UNIN-R42[21]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.7)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	When CCM transmission is enabled for a MEP in a UNI-N Type 2 implementation, the MEP **MUST** be able to generate Multicast CCM frames – End TLV validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The End TLV is required and is the last TLV in the CFM PDU and is Required. The End TLV Type is equal to (0x00)
Test Object	Verify that the End TLV Type of the CCM frames generated by the UNI-N under test is equal to (0x00)
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that the End TLV Type of the CCM frames generated by the UNI-N under test is equal to (0x00)
Units	End TLV Type value
Variables	None
Results	Pass or fail
Remarks	

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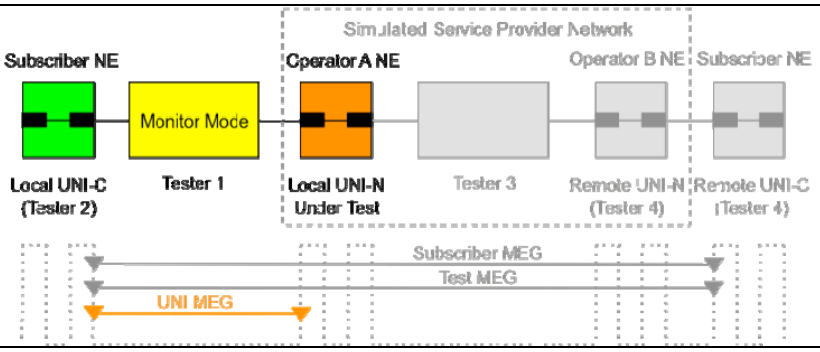
TEST CASE 52N: Generating Multicast LBM Frames – Destination Address

Abstract Test Suite for Service OAM	
Test Name	Generating Multicast LBM Frames – Destination Address
Test Definition ID	UNIN-R43[1]-R54[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.3.1)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MAY** be able to generate Multicast LBM frames. For each LB session, Multicast destinations **MAY** be supported using the reserved CCM multicast MAC DA in the range of 01-80-C2-00-00-30 to 01-80-C2-00-00-37 that corresponds to the MEG-Level of the MEP
Test Object	Verify that when the UNI-N under test uses Loopback messages to check bidirectional connectivity between itself and the other MEPs in the same MEG, the destination address parameter of the LBM frames generated by the UNI-C under test contains one of the Group MAC address listed in the MAC addresses Table in section 10
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct the local UNI-N under test to send Loopback Messages to the local UNI-C on the UNI-MEG. Use Tester 1 to monitor the LBM messages transmitted by the UNI-N under test and to verify that the destination address parameter of the LBM message distined to the local UNI-C on the UNI-MEG contains one of the Group MAC address listed in the MAC addresses Table in section 10
Units	Destination address
Variables	None
Results	Pass or fail
Remarks	

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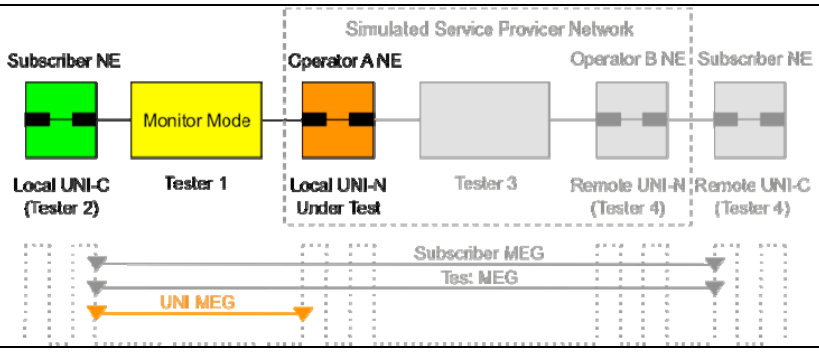
TEST CASE 53N: Generating Unicast LBM Frames – Destination Address

Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – Destination Address
Test Definition ID	UNIN-R43[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.3.1)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames. For each LB session, the destination address **MUST** be configurable to any Unicast MAC DA
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The LBM frames are addressed to a single specific MP
Test Object	Verify that the destination address parameter of the LBM message sent by the UNI-N under test contain the Unicast address of the its peer MEPs
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct the local UNI-N under test to send Loopback Messages to the local UNI-C on the UNI-MEG. Use Tester 1 to monitor the LBM messages transmitted by the UNI-N under test and to verify that the destination address parameter of the LBM message distined to the local UNI-C on the UNI-MEG contains the Unicast address of the local UNI-C
Units	Destination address
Variables	None
Results	Pass or fail
Remarks	

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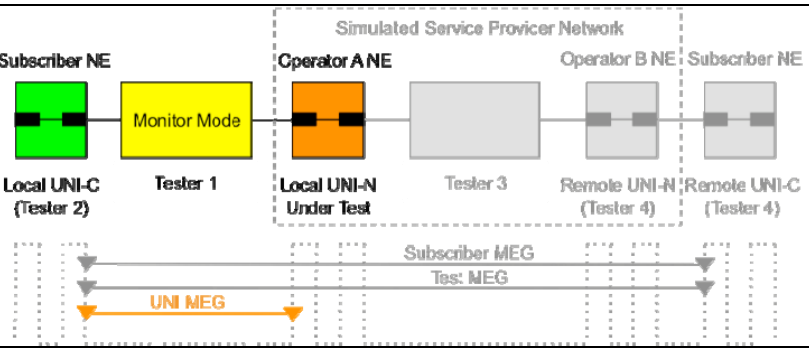
TEST CASE 54N: Generating Unicast LBM Frames – Source Address

Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – Source Address
Test Definition ID	UNIN-R43[3]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.3.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – Source address validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The LBM frames source address is the Individual MAC address of the MEP transmitting the PDU. The source address parameter contains an individual, and not a Group, MAC address
Test Object	Verify that the source address parameter of the LBM frames generated by the UNI-N under test contains an individual, and not a Group, MAC address
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct the local UNI-N under test to send Loopback Messages to the local UNI-C on the UNI-MEG. Use Tester 1 to monitor the LBM messages transmitted by the UNI-N under test and to verify that the source address parameter of the LBM messages distined to the local UNI-C on the UNI-MEG contain an individual, and not a Group, MAC address
Units	Source address
Variables	None
Results	Pass or fail
Remarks	

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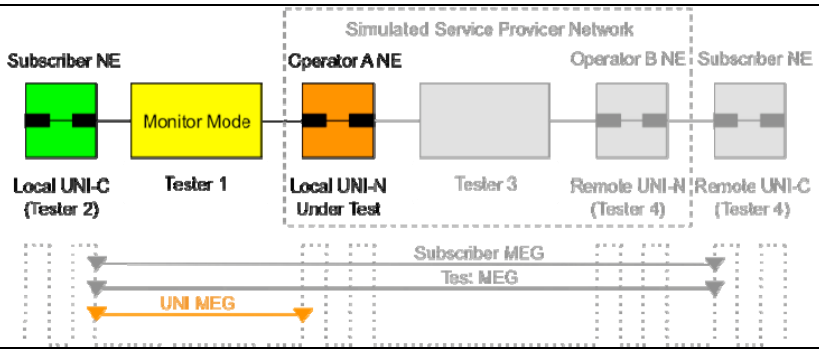
TEST CASE 55N: Generating Unicast LBM Frames – Protocol Version Number

Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – Protocol Version Number
Test Definition ID	UNIN-R43[4]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.4.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – Protocol Version Number validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The protocol version number is always 0
Test Object	Verify that the protocol version number of the LBM frames generated by the UNI-N under test is always 0
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct the local UNI-N under test to send Loopback Messages to the local UNI-C on the UNI-MEG. Use Tester 1 to monitor the LBM messages transmitted by the UNI-N under test and to verify that the protocol version number of the LBM messages distined to the local UNI-C on the UNI-MEG is always 0
Units	Protocol version number
Variables	None
Results	Pass or fail
Remarks	

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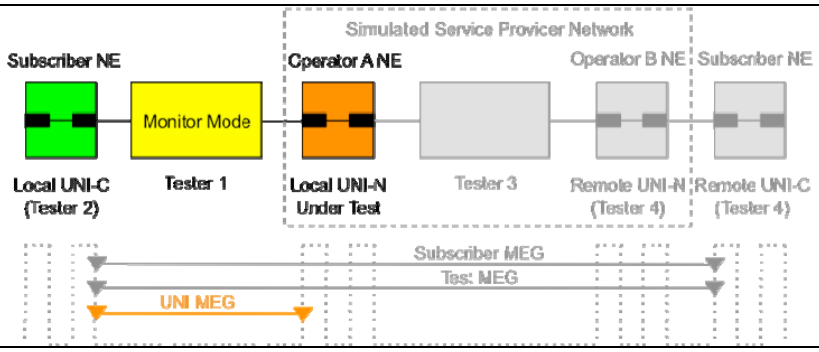
TEST CASE 56N: Generating Unicast LBM Frames – OpCode

Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – OpCode
Test Definition ID	UNIN-R43[5]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.4.3)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – OpCode validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The OpCode field specifies the format and meaning of the remainder of the CFM PDU. The value for LBM PDUs is (0x03)
Test Object	Verify that the OpCode value of the LBM frames generated by the UNI-N under test is (0x03)
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct the local UNI-N under test to send Loopback Messages to the local UNI-C on the UNI-MEG. Use Tester 1 to monitor the LBM messages transmitted by the UNI-N under test and to verify that the OpCode of the LBM messages distined to the local UNI-C on the UNI-MEG is (0x03)
Units	OpCode value
Variables	None
Results	Pass or fail
Remarks	

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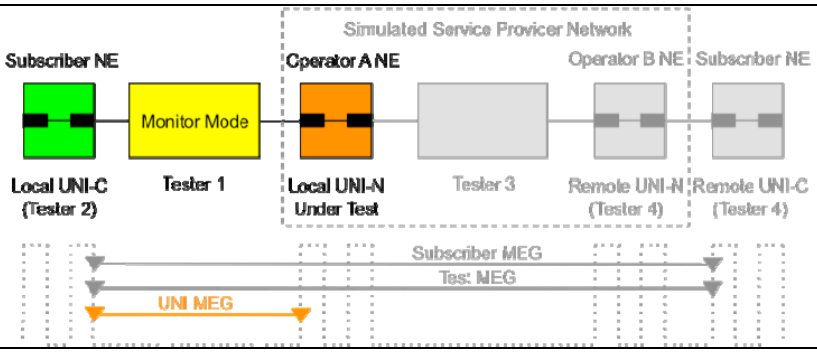
TEST CASE 57N: Generating Unicast LBM Frames – Flags

Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – Flags
Test Definition ID	UNIN-R43[6]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.7.1)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – Flags validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; In an LBM, the Flags field of the Common CFM Header is set to 0 by the transmitting MEP
Test Object	Verify that the Flags field bits of the LBM frames generated by the UNI-N under test that are set to 0
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct the local UNI-N under test to send Loopback Messages to the local UNI-C on the UNI-MEG. Use Tester 1 to monitor the LBM messages transmitted by the UNI-N under test and to verify that the Flags field bits of the LBM messages distined to the local UNI-C on the UNI-MEG are set to 0
Units	Flags field value
Variables	None
Results	Pass or fail
Remarks	

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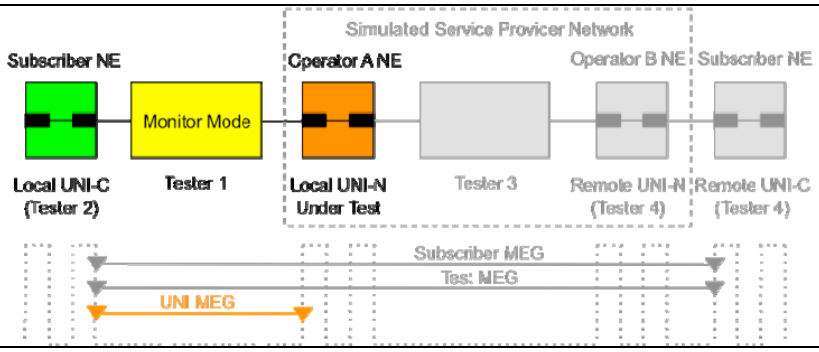
TEST CASE 58N: Generating Unicast LBM Frames – First TLV Offset

Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – First TLV Offset
Test Definition ID	UNIN-R43[7]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.7.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – First TLV Offset validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The First TLV Offset field of the Common CFM Header in a LBM contains a value greater than or equal to 4
Test Object	Verify that the First TLV Offset field of the Common CFM Header in the LBM frames generated by the UNI-N under test contains a value greater than or equal to 4
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct the local UNI-N under test to send Loopback Messages to the local UNI-C on the UNI-MEG. Use Tester 1 to monitor the LBM messages transmitted by the UNI-N under test and to verify that the First TLV Offset field of the LBM messages distined to the local UNI-C on the UNI-MEG contain a value greater than or equal to 4
Units	First TLV Offset field value
Variables	None
Results	Pass or fail
Remarks	

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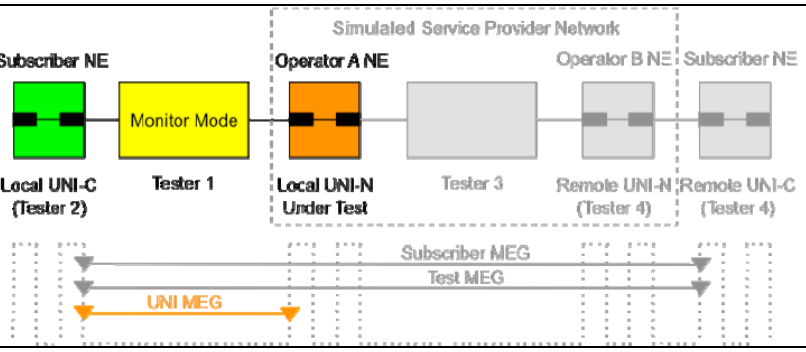
TEST CASE 59N: Generating Unicast LBM Frames – Loopback Transaction Identifier

Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – Loopback Transaction Identifier
Test Definition ID	UNIN-R43[8]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.7.3)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – Loopback Transaction Identifier validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; A MEP copies the contents of the nextLBMtransID variable to the Loopback Transaction Identifer field of the LBM frames
Test Object	Verify that the Loopback Transaction Identifier field of the LBM frames generated by the UNI-N under test contains a copy of the nextLBMtransID variable
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct the local UNI-N under test to send Loopback Messages to the local UNI-C on the UNI-MEG. Use Tester 1 to monitor the LBM messages transmitted by the UNI-N under test and to verify that the Loopback Transaction Identifier field of the LBM messages distined to the local UNI-C on the UNI-MEG contain a copy of the nextLBMtransID variable
Units	Loopback Transaction Identifier field value
Variables	None
Results	Pass or fail
Remarks	

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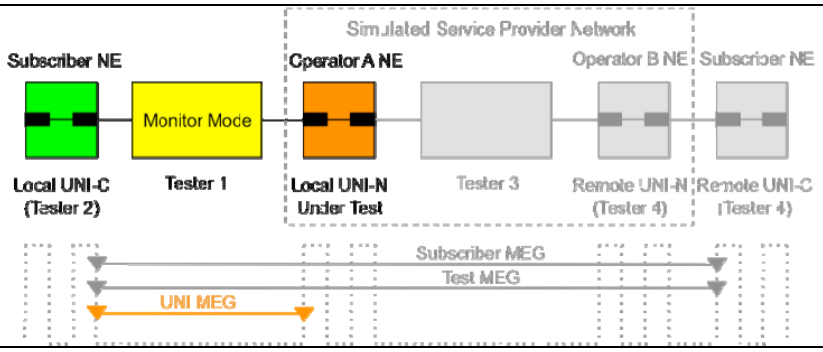
TEST CASE 60N: Generating Unicast LBM Frames – Sender ID TLV

Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – Sender ID TLV
Test Definition ID	UNIN-R43[9]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.3)
Test Type	Conformance
Test Status	Mandatory if Sender ID TLVs are supported
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – Sender ID TLV validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Sender ID TLV identifies the Bridge on which the transmitting MEP is configured, and may also include a management address for that Bridge. The Sender ID TLV Type is equal to (0x01) and the Length field is large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields
Test Object	Verify that the Sender ID TLV Type of the LBM frames generated by the UNI-N under test is equal to (0x01) and that the Sender ID Length field is large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct the local UNI-N under test to send Loopback Messages to the local UNI-C on the UNI-MEG. Use Tester 1 to monitor the LBM messages transmitted by the UNI-N under test and to verify that the Sender ID TLV Type field of the LBM messages distined to the local UNI-C on the UNI-MEG is equal to (0x01) and that the Sender ID Length field is large enough to contain all of the fields indicated as being present by the Chassis ID Length, Management Address Domain Length, and/or Management Address Length fields
Units	Sender ID TLV Type and Length values
Variables	None
Results	Pass or fail
Remarks	

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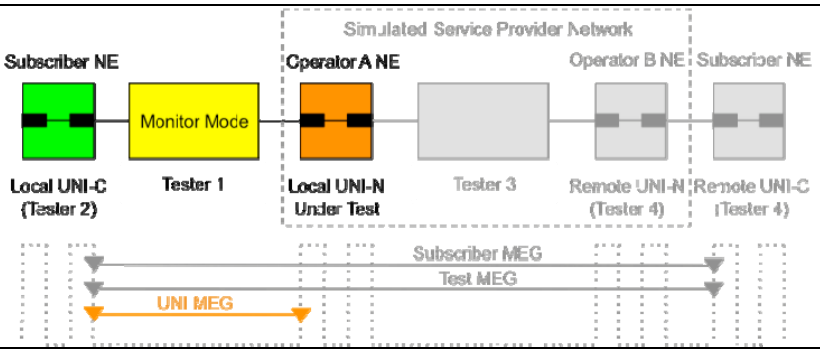
TEST CASE 61N: Generating Unicast LBM Frames – Chassis ID Length

Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – Chassis ID Length
Test Definition ID	UNIN-R43[10]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.3)
Test Type	Conformance
Test Status	Mandatory if Sender ID TLVs are supported
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – Chassis ID length validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The chassis ID length is the length, in octets, of the Chassis ID field, it is either 0, or is less than (TLV Length field value – 1)
Test Object	Verify that the Chassis ID length of the LBM frames generated by the UNI-N under test is either 0 or less than (TLV Length field value – 1)
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct the local UNI-N under test to send Loopback Messages to the local UNI-C on the UNI-MEG. Use Tester 1 to monitor the LBM messages transmitted by the UNI-N under test and to verify that the Chassis ID length of the LBM messages distined to the local UNI-C on the UNI-MEG is either 0 or less than (TLV Length field value – 1)
Units	Chassis ID length value
Variables	None
Results	Pass or fail
Remarks	

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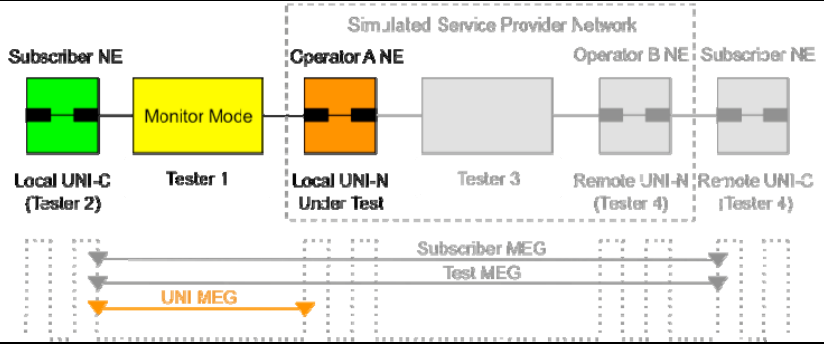
TEST CASE 62N: Generating Unicast LBM Frames – Management Address Domain Field

Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – Management Address Domian Field
Test Definition ID	UNIN-R43[11]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.3)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Management Address Domain Length field contains the length, in octets, of the Management Address Domain field. If 0, or if the TLV's Length field indicates that the Management Address Domain Length field is not present, then the Management Address Domain, Management Address Length, and Management Address fields are not present
Test Object	Verify that the Management Address Domain field of the LBM frames generated by the UNI-N under test is empty
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct the local UNI-N under test to send Loopback Messages to the local UNI-C on the UNI-MEG. Use Tester 1 to monitor the LBM messages transmitted by the UNI-N under test and to verify that the Management Address Domain field of the LBM messages distined to the local UNI-C on the UNI-MEG is empty
Units	Management Address Domain field
Variables	None
Results	Pass or fail
Remarks	The Management Address Domain field **SHOULD** be empty in the Sender ID TLV by default as a security precaution (MEF Service OAM FM IA)

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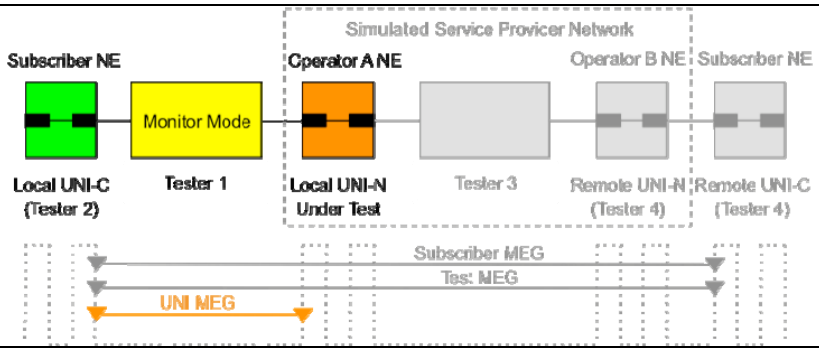
TEST CASE 63N: Generating Unicast LBM Frames – Management Address Field

Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – Management Address Field
Test Definition ID	UNIN-R43[12]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.3)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	A UNI-N Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Management Address length and the Management Address fields are not present if the Management Address Domain Length field is not present or contains a 0, or if the Management Address Length field is not present or contains a 0
Test Object	Verify that the Management Address field of the LBM frames generated by the UNI-N under test is empty
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct the local UNI-N under test to send Loopback Messages to the local UNI-C on the UNI-MEG. Use Tester 1 to monitor the LBM messages transmitted by the UNI-N under test and to verify that the Management Address field of the LBM messages distined to the local UNI-C on the UNI-MEG is empty
Units	Management Address field
Variables	None
Results	Pass or fail
Remarks	The Management Address field **SHOULD** be empty in the Sender ID TLV by default as a security precaution (MEF Service OAM FM IA)

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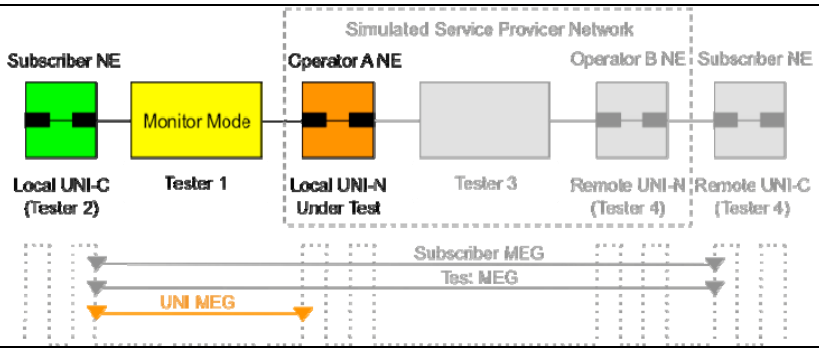
TEST CASE 64N: Generating Unicast LBM Frames – Data TLV

Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – Data TLV
Test Definition ID	UNIN-R43[13]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.6)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	UNI-N Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – Data TLV validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The Data TLV contains zero or more octets of arbitrary data and serves several purposes, including the transmission of different frame sizes to test MTU capabilities, and the testing for data-specific error dependencies. The Data TLV may be included in the Loopback Messages and the Data TLV Type is equal to (0x03)
Test Object	Verify that the Data TLV Type of the LBM frames generated by the UNI-N under test is equal to (0x03)
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct the local UNI-N under test to send Loopback Messages to the local UNI-C on the UNI-MEG. Use Tester 1 to monitor the LBM messages transmitted by the UNI-N under test and to verify that the Data TLV Type of the LBM messages distined to the local UNI-C on the UNI-MEG is equal to (0x03)
Units	Data TLV Type value
Variables	None
Results	Pass or fail
Remarks	

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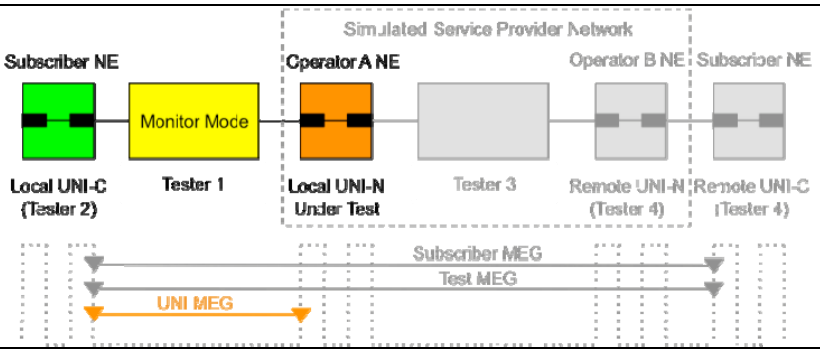
TEST CASE 65N: Generating Unicast LBM Frames – Organization Specific TLV

Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – Organization Specific TLV
Test Definition ID	UNIN-R43[14]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.2)
Test Type	Conformance
Test Status	Mandatory if Organization TLVs are supported
MEF Requirement Description	UNI-N Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – Organization Specific TLV validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; Any organization can define TLVs for use in Connectivity Fault Management. The Organization TLV Type is equal to 31 (0x1F)
Test Object	Verify that the Organization TLV Type of the LBM frames generated by the UNI-N under test is equal to 31 (0x1F)
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct the local UNI-N under test to send Loopback Messages to the local UNI-C on the UNI-MEG. Use Tester 1 to monitor the LBM messages transmitted by the UNI-N under test and to verify that the Organization Specific TLV Type of the LBM messages distined to the local UNI-C on the UNI-MEG is equal to 31 (0x1F)
Units	Organization Specific TLV Type value
Variables	None
Results	Pass or fail
Remarks	

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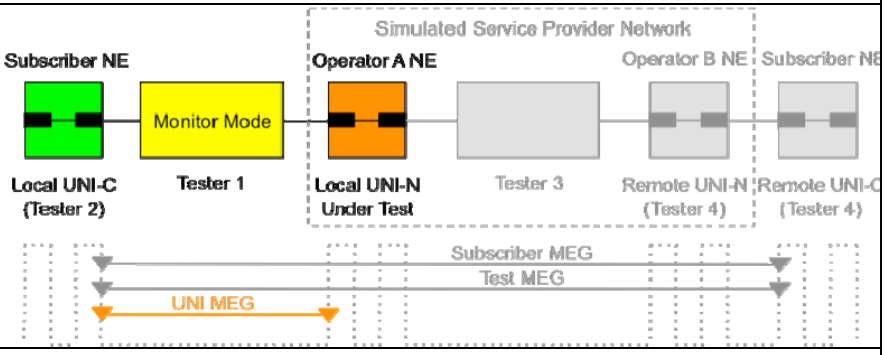
TEST CASE 66N: Generating Unicast LBM Frames – End TLV

Abstract Test Suite for Service OAM	
Test Name	Generating Unicast LBM Frames – End TLV
Test Definition ID	UNIN-R43[15]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (21.5.7)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	UNI-N Type 2 MEP implementation **MUST** be able to generate Unicast LBM frames – End TLV validation
IEEE Requirement Description	An implementation that conforms to the provisions of this standard for Connectivity Fault Management **SHALL** Transmit required CFM PDUs in the formats specified in Clause 21; The End TLV is required and is the last TLV in the CFM PDU and is Required. The End TLV Type is equal to (0x00)
Test Object	Verify that the End TLV Type of the LBM frames generated by the UNI-N under test is equal to (0x00)
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct the local UNI-N under test to send Loopback Messages to the local UNI-C on the UNI-MEG. Use Tester 1 to monitor the LBM messages transmitted by the UNI-N under test and to verify that the End TLV Type of the LBM messages distined to the local UNI-C on the UNI-MEG is equal to (0x00)
Units	End TLV Type value
Variables	None
Results	Pass or fail
Remarks	

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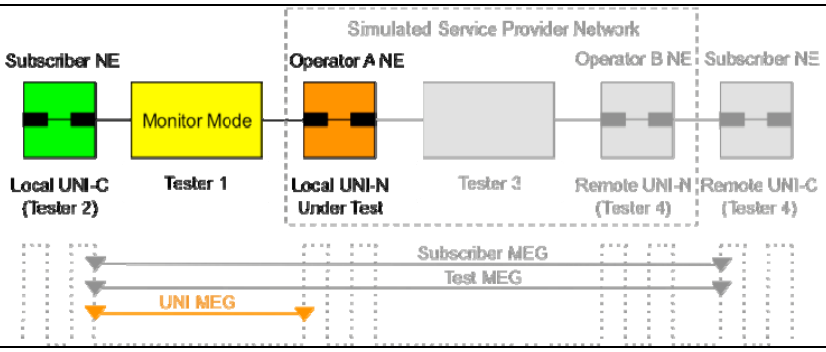
16.4 UNI-N Type 2 Continuity Check Requirements

TEST CASE 67N: Administratively Enable and Disable CCM Transmission

Abstract Test Suite for Service OAM	
Test Name	Administratively Enable and Disable CCM Transmission
Test Definition ID	UNIN-R44[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 **MUST** have the capability to administratively enable and disable CCM transmission on all local MEPs
Test Object	Verify that the UNI-N Type 2 under test has the capability to administratively enable and disable CCM transmission on all local MEPs
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that CCM frames are transmitted from the UNI-N MEP instance (verify MEP ID) and that the MEG-Level of the UNI-MEG is = "1". Disable CCM transmission on the UNI-MEG and verify that no CCMs are transmitted. Re-enable CCM transmission on the UNI-MEG and verify that CCM frames are transmitted from the UNI-N MEP instance (verify MEP ID) and that the MEG-Level of the UNI-MEG is = "1
Units	MEP IDs MEG-Level values
Variables	None
Results	Pass or fail
Remarks	

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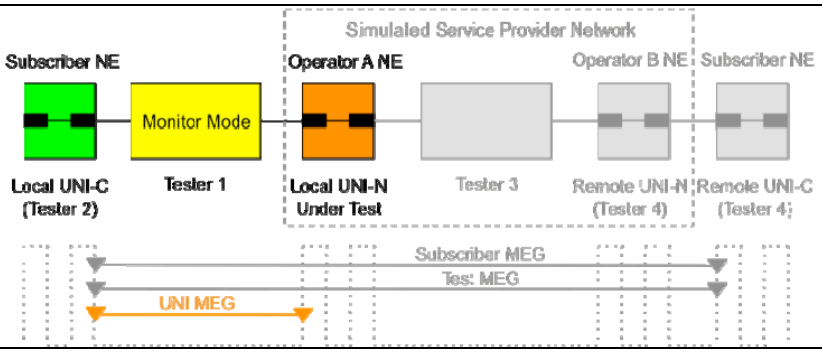
TEST CASE 68N: Mandatory CCM Frame Rate

Abstract Test Suite for Service OAM	
Test Name	Mandatory CCM Frame Rate
Test Definition ID	UNIN-R45[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 **MUST** support a CCM frame rate of 1 frame per second
Test Object	Verify that the UNI-N Type 2 under test supports a CCM frame rate of 1 frame per second
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that the CCM Interval field of the CCM frames generated by the UNI-N under test contains the value 4. Also use Tester 2 to verify that the CCMs are received within the CCM maximum lifetime
Units	CCM frame rate
Variables	None
Results	Pass or fail
Remarks	

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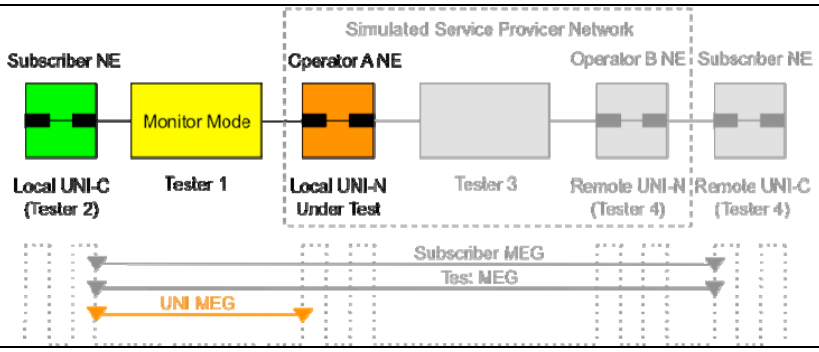
TEST CASE 69N: Optional CCM Frame Rate

Abstract Test Suite for Service OAM	
Test Name	Optional CCM Frame Rate
Test Definition ID	UNIN-R45[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	A UNI-N Type 2 **MAY** support other frame rates specified in section 7.1.1 of ITU-T Y.1731
ITU-T Requirement Description	When Ethernet Continuity Check is enabled, a MEP periodically transmits CCM frames as often as the configured transmission period. Transmission period can be one of the following seven values: 3.33ms, 10ms, 100ms, 1s, 10s, 1min or 10min
Test Object	Verify that the UNI-N Type 2 under test supports transmission periods of: 3.33ms, 10ms, 100ms, 10s, 1min or 10min
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Configure the transmission period of the UNI-N under test MEP to 3.33ms. Use Tester 1 to monitor the Continuity Check Messages transmitted by the UNI-N under test and to verify that the CCM Interval field of the CCM frames contains the value 1. Also use Tester 2 to verify that the CCMs are received within the CCM maximum lifetime. Configure the transmission period of the UNI-N under test MEP to 10ms and repeat the test. Configure the transmission period of the UNI-N under test MEP to 100ms and repeat the test. Configure the transmission period of the UNI-N under test MEP to 10s and repeat the test. Configure the transmission period of the UNI-N under test MEP to 1min and repeat the test. Configure the transmission period of the UNI-N under test MEP to 10min and repeat the test.
Units	CCM frame rate
Variables	None
Results	Pass or fail
Remarks	

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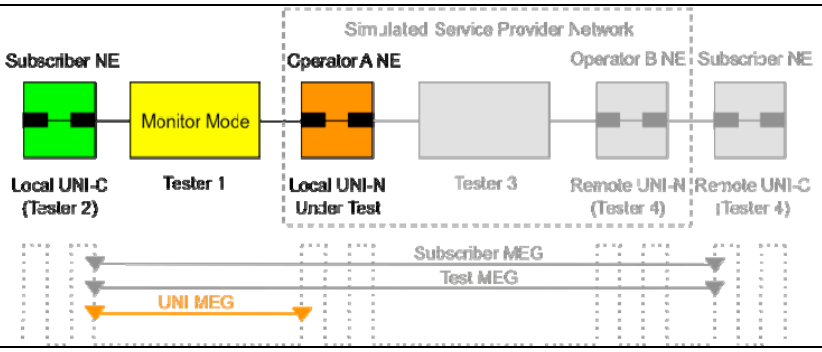
TEST CASE 71N: UNI-N Counter – Number of CCM Frames Transmitted

Abstract Test Suite for Service OAM	
Test Name	UNI-N Counter – Number of CCM Frames Transmitted
Test Definition ID	UNIN-R49[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	A UNI-N Type 2 **SHOULD** support counters for each MEP that counts the number of CCM frames transmitted
Test Object	Verify that the UNI-N Type 2 under test supports counters for each MEP that counts the number of CCM frames transmitted
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Reset the UNI-N under test counters. Enable CCM transmission on the UNI-MEG and use Tester 1 to monitor and count the Continuity Check Messages transmitted by the UNI-N under test. Disable CCM transmission on the UNI-MEG and verify that the number of CCMs with MEG-Level = 1 counted by the Tester 1 is equal to the number of CCM frames transmitted indicated by the UNI-C MEP counter for the UNI-MEG
Units	Number of CCM frames
Variables	None
Results	Pass or fail
Remarks	

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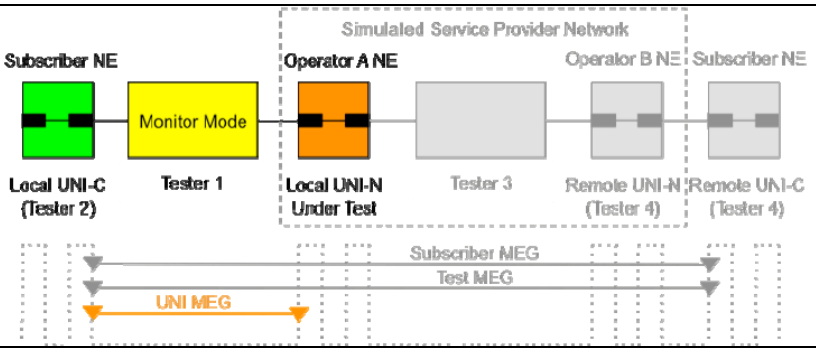
TEST CASE 72N: Lowest Priority CC Defect – DefRDICCM

Abstract Test Suite for Service OAM	
Test Name	Lowest Priority CC Defect – DefRDICCM
Test Definition ID	UNIN-R51[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.1.2)
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	A UNI-N Type 2 MEP **MUST** support the minimum CC fault priority level defined in IEEE 802.1ag for which a CC alarm will be generated. An alarm will be generated only if the fault has equal or greater priority than this minimum fault level
IEEE Requirement Description	A number of separate defects are maintained by a MEP. The defects are ranked by priority. If a higher priority defect occurs after a lower priority defect has triggered a Fault Alarm, but before the Fault Alarm has reset, then the MEP will immediately issue another Fault Alarm. Only the highest-priority defect is reported in the Fault Alarm
Test Object	Verify that if a higher priority defect occurs after a lower priority defect has triggered a Fault Alarm, but before the Fault Alarm has reset, then the MEP will immediately issue another Fault Alarm. Only the highest-priority defect is reported in the Fault Alarm. (No defect vs DefRDICCM)
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Clear all alarms. Use Tester 2 to stop transmitting CCMs to the UNI-N under test on the UNI-MEG. Use Tester 1 to monitor the CCMs transmitted by the UNI-N under test and to verify that the RDI bit of the Flags field is set in all messages and use the management system of the UNI-N under test to verify that the DefRDICCM defect triggers a Fault Alarm
Units	Fault Alarm hierarchy
Variables	None
Results	Pass or fail
Remarks	

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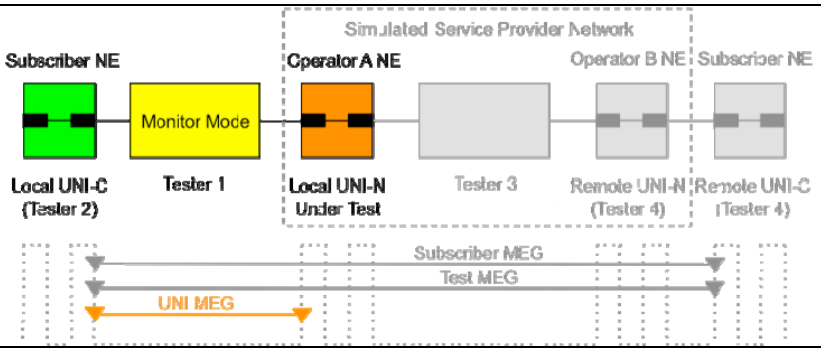
TEST CASE 73N: CC Defect & Fault Alarm Hierarchy – DefRDICCM vs DefMACstatus

Abstract Test Suite for Service OAM	
Test Name	CC Defect & Fault Alarm Hierarchy – DefRDICCM vs DefMACstatus
Test Definition ID	UNIN-R50[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.1.2)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	A UNI-N Type 2 **SHOULD** support the CC defect and fault alarm hierarchy per clause 20.1.2 of IEEE 802.1ag. If this is supported, the highest priority alarm **MUST** be made available to management and **SHOULD** mask lower priority alarms
IEEE Requirement Description	A number of separate defects are maintained by a MEP. The defects are ranked by priority. If a higher priority defect occurs after a lower priority defect has triggered a Fault Alarm, but before the Fault Alarm has reset, then the MEP will immediately issue another Fault Alarm. Only the highest-priority defect is reported in the Fault Alarm
Test Object	Verify that if a higher priority defect occurs after a lower priority defect has triggered a Fault Alarm, but before the Fault Alarm has reset, then the MEP will immediately issue another Fault Alarm. Only the highest-priority defect is reported in the Fault Alarm. (DefRDICCM vs DefMACstatus)
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Clear all alarms. Use Tester 2 to stop transmitting CCMs to the UNI-N under test on the UNI-MEG and use the management system to verify that the DefRDICCM defects trigger Fault Alarms on the local UNI-N MEP. Before the CC fault reset time expires, use Tester 2 to send CCMs with Port Status TLV values equal to "psBlocked" (0x01) or with Interface TLV values not equal to "isUp" (0x01) to the UNI-N under test on the UNI-MEG and use the management system to verify that the DefMACstatus defects trigger new Fault Alarms on the local UNI-N MEP and that the lower priority alarms are masked by the new ones
Units	Fault Alarm hierarchy
Variables	None
Results	Pass or fail
Remarks	

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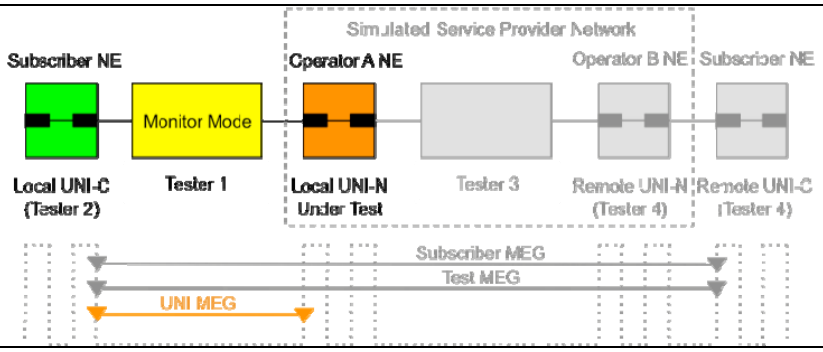
TEST CASE 74N: CC Defect & Fault Alarm Hierarchy – DefMACstatus vs DefRemoteCCM

Abstract Test Suite for Service OAM	
Test Name	CC Defect & Fault Alarm Hierarchy – DefMACstatusCCM vs DefRemoteCCM
Test Definition ID	UNIN-R50[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.1.2)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	A UNI-N Type 2 **SHOULD** support the CC defect and fault alarm hierarchy per clause 20.1.2 of IEEE 802.1ag. If this is supported, the highest priority alarm **MUST** be made available to management and **SHOULD** mask lower priority alarms
IEEE Requirement Description	A number of separate defects are maintained by a MEP. The defects are ranked by priority. If a higher priority defect occurs after a lower priority defect has triggered a Fault Alarm, but before the Fault Alarm has reset, then the MEP will immediately issue another Fault Alarm. Only the highest-priority defect is reported in the Fault Alarm
Test Object	Verify that if a higher priority defect occurs after a lower priority defect has triggered a Fault Alarm, but before the Fault Alarm has reset, then the MEP will immediately issue another Fault Alarm. Only the highest-priority defect is reported in the Fault Alarm. (DefMACstatus vs DefRemoteCCM)
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Clear all alarms. Use Tester 2 to send CCMs with Port Status TLV values equal to "psBlocked" (0x01) or with Interface TLV values not equal to "isUp" (0x01) to the UNI-N under test on the UNI-MEG and use the management system to verify that the DefMACstatus defects trigger Fault Alarms on the local UNI-N MEP. Before the CC fault reset time expires, use Tester 2 to send CCMs with the RDI bit of the Flags field set to the UNI-N under test on the UNI-MEG and use the management system to verify that the DefRemoteCCM status defects trigger new Fault Alarms on the local UNI-N MEP and that the lower priority alarms are masked by the new ones
Units	Fault Alarm hierarchy
Variables	None
Results	Pass or fail
Remarks	

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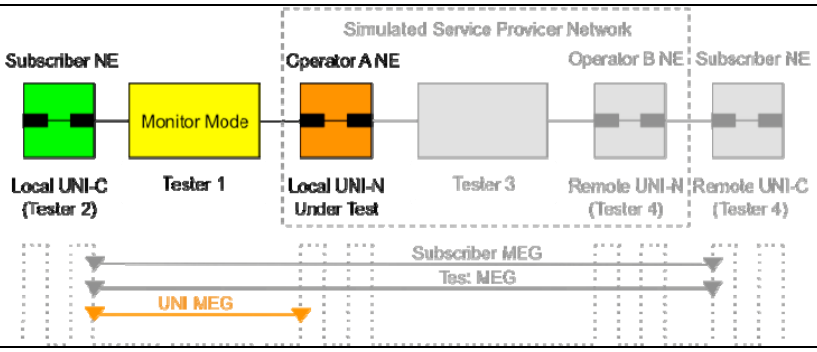
TEST CASE 75N: CC Defect & Fault Alarm Hierarchy – DefRemoteCCM vs DefErrorCCM

Abstract Test Suite for Service OAM	
Test Name	CC Defect & Fault Alarm Hierarchy – DefRemoteCCM vs DefErrorCCM
Test Definition ID	UNIN-R50[3]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.1.2)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	A UNI-N Type 2 **SHOULD** support the CC defect and fault alarm hierarchy per clause 20.1.2 of IEEE 802.1ag. If this is supported, the highest priority alarm **MUST** be made available to management and **SHOULD** mask lower priority alarms
IEEE Requirement Description	A number of separate defects are maintained by a MEP. The defects are ranked by priority. If a higher priority defect occurs after a lower priority defect has triggered a Fault Alarm, but before the Fault Alarm has reset, then the MEP will immediately issue another Fault Alarm. Only the highest-priority defect is reported in the Fault Alarm
Test Object	Verify that if a higher priority defect occurs after a lower priority defect has triggered a Fault Alarm, but before the Fault Alarm has reset, then the MEP will immediately issue another Fault Alarm. Only the highest-priority defect is reported in the Fault Alarm. (DefRemoteCCM vs DefErrorCCM)
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Clear all alarms. Use Tester 2 to send CCMs with the RDI bit of the Flags field set to the UNI-N under test on the UNI-MEG and use the management system to verify that the DefRemoteCCM defects trigger Fault Alarms on the local UNI-N MEP. Before the CC fault reset time expires, use Tester 2 to send invalid CCMs (with a multicast source address) to the UNI-N under test on the UNI-MEG and use the management system to verify that the DefErrorCCM status defects trigger new Fault Alarms on the local UNI-N MEP and that the lower priority alarms are masked by the new ones
Units	Fault Alarm hierarchy
Variables	None
Results	Pass or fail
Remarks	

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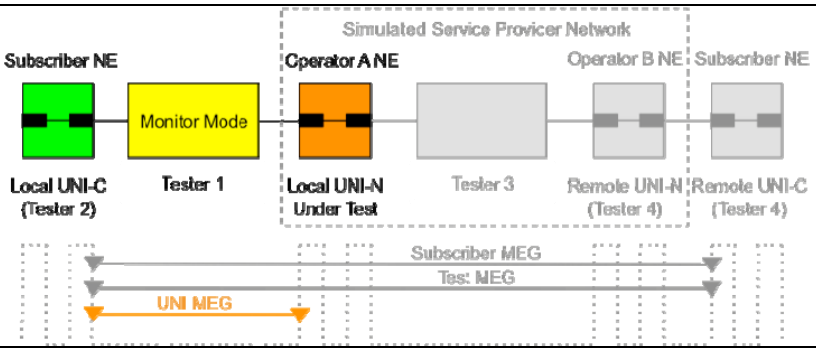
TEST CASE 76N: CC Defect & Fault Alarm Hierarchy – DefErrorCCM vs DefXconCCM

Abstract Test Suite for Service OAM	
Test Name	CC Defect & Fault Alarm Hierarchy – DefErrorCCM vs DefXconCCM
Test Definition ID	UNIN-R50[4]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.1.2)
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	A UNI-N Type 2 **SHOULD** support the CC defect and fault alarm hierarchy per clause 20.1.2 of IEEE 802.1ag. If this is supported, the highest priority alarm **MUST** be made available to management and **SHOULD** mask lower priority alarms
IEEE Requirement Description	A number of separate defects are maintained by a MEP. The defects are ranked by priority. If a higher priority defect occurs after a lower priority defect has triggered a Fault Alarm, but before the Fault Alarm has reset, then the MEP will immediately issue another Fault Alarm. Only the highest-priority defect is reported in the Fault Alarm
Test Object	Verify that if a higher priority defect occurs after a lower priority defect has triggered a Fault Alarm, but before the Fault Alarm has reset, then the MEP will immediately issue another Fault Alarm. Only the highest-priority defect is reported in the Fault Alarm. (DefErrorCCM vs DefXconCCM)
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Clear all alarms. Use Tester 2 to send invalid CCMs (with a multicast source address) to the UNI-N under test on the UNI-MEG and use the management system to verify that the DefErrorCCM defects trigger Fault Alarms on the local UNI-N MEP. Before the CC fault reset time expires, use Tester 2 to send CCMs with a valid but unknown Short MA Name to the UNI-N under test on the UNI-MEG and use the management system to verify that the DefXconCCM status defects trigger new Fault Alarms on the local UNI-N MEP and that the lower priority alarms are masked by the new ones
Units	Fault Alarm hierarchy
Variables	None
Results	Pass or fail
Remarks	

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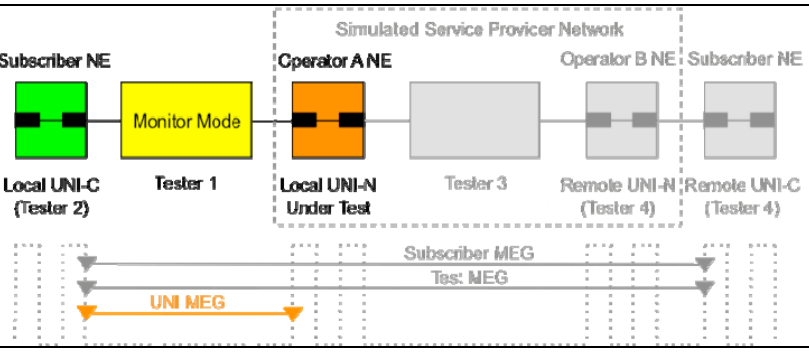
TEST CASE 77N: CC Fault Alarm Time & CC Fault Reset Time

Abstract Test Suite for Service OAM	
Test Name	CC Fault Alarm Time & CC Fault Reset Time
Test Definition ID	UNIN-R52[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2 IEEE 802.1ag (20.1.2)
Test Type	Conformance
Test Status	Mandatory if IEEE clause 12.14 7 (Maintenance association End Point managed object) is implemented
MEF Requirement Description	A UNI-N Type 2 MEP **MUST** support a CC fault Alarm time and a CC Fault Reset Time
IEEE Requirement Description	A Fault Alarm is issued when the MEP Fault Notification Generator state machine detects that a configured time period (default, 2.5s) has passed with one or more defects indicated, and Fault Alarms are enabled. The state machine can transmit no further Fault Alarms until it is reset by the passage of a configured time period (default, 10s) during which no defect indication is present
Test Object	Verify that the UNI-N Type 2 MEP under test supports a CC fault Alarm time and a CC Fault Reset Time
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Enable CCM transmission on the UNI-MEG. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	If IEEE clause 12.14 7 (Maintenance association End Point managed object) is implemented, verify that the variable someRMEPCCMdefect is cleared and clear all alarms. Use Tester 2 to stop transmitting CCMs to the UNI-N under test on the UNI-MEG. Use the management system of the UNI-N under test to verify that 2.5 seconds after the variable someRMEPCCMdefect changes from clear to set and the DefRemoteCCM is triggered, a Fault alarm is transmitted. Use Tester 2 to start transmitting CCMs to the UNI-N under test on the UNI-MEG and verify that the variable someRMEPCCMdefect changes from set to clear. Use the management system of the UNI-N under test to verify that 10 seconds after the variable someRMEPCCMdefect changes from set to clear the Fault alarm is cleared
Units	CC Fault Alarm & CC Fault Reset times
Variables	None
Results	Pass or fail
Remarks	

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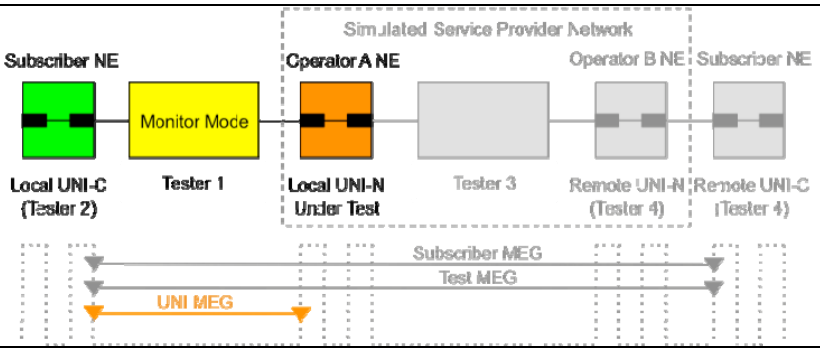
16.5 UNI-N Type 2 Loopback Requirements

TEST CASE 78N: Administratively Initiate & Stop Loopback Sessions

Abstract Test Suite for Service OAM	
Test Name	Administratively Initiate & Stop Loopback Sessions
Test Definition ID	UNIN-R53[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	Each LB session **MUST** have the ability to be administratively initiated and stopped
Test Object	Verify that the UNI-N Type 2 under test has the ability to administratively initiate and stop LB sessions
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct the local UNI-N under test to send Loopback Messages (repeatedly until aborted) to the local UNI-C on the UNI-MEG. Use Tester 1 to verify that LBM frames are transmitted from the UNI-N MEP instance (verify MEP ID) and that the MEG-Level of the UNI-MEG is = "1". Instruct the local UNI-N under test to abort the loopback session on the UNI-MEG and use Tester 1 to verify that no LBMs are transmitted. Instruct the local UNI-N under test to send Loopback Messages to the local UNI-C on the UNI-MEG. Use Tester 1 to verify that LBM frames are transmitted from the UNI-N MEP instance (verify MEP ID) and that the MEG-Level of the UNI-MEG is = "1"
Units	MEP IDs MEG-Level values
Variables	None
Results	Pass or fail
Remarks	

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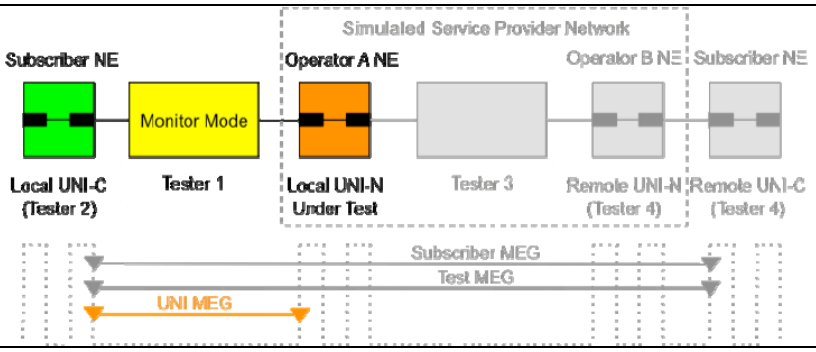
TEST CASE 80N: Configurable Number of LBM Transmissions per Session

Abstract Test Suite for Service OAM	
Test Name	Configurable Number of LBM Transmissions per Session
Test Definition ID	UNIN-R56[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	For each LB session, the number of LBM transmissions **MUST** be configurable
Test Object	Verify that for each LB session, the number of LBM transmissions is configurable
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct the local UNI-N under test to send 3 Loopback Messages to the local UNI-C on the UNI-MEG. Use Tester 1 to verify that LBM frames are transmitted from the UNI-N MEP instance (verify MEP ID) and that the MEG-Level of the UNI-MEG is = "1". Instruct the local UNI-N under test to send 1024 Loopback Messages to the local UNI-C on the UNI-MEG. Use Tester 1 to verify that LBM frames are transmitted from the UNI-N MEP instance (verify MEP ID) and that the MEG-Level of the UNI-MEG is = "1". Instruct the local UNI-N under test to send Loopback Messages (repeatedly until aborted) to the local UNI-C on the UNI-MEG. Use Tester 1 to verify that LBM frames are transmitted from the UNI-N MEP instance (verify MEP ID) and that the MEG-Level of the UNI-MEG is = "1"
Units	MEP IDs MEG-Level values
Variables	None
Results	Pass or fail
Remarks	

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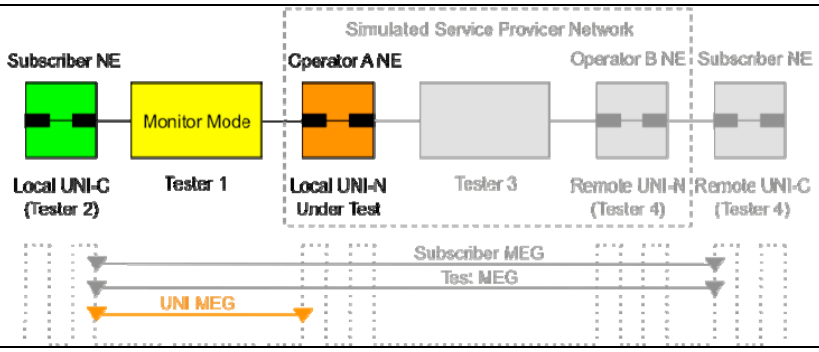
TEST CASE 81N: Configurable Interval between LBM Transmissions

Abstract Test Suite for Service OAM	
Test Name	Configurable Interval between LBM Transmissions
Test Definition ID	UNIN-R57[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	For each LB session, the interval between LBM transmissions **MUST** be configurable
Test Object	Verify that for each LB session, the interval between LBM transmissions is configurable
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct the local UNI-N under test to send 3 Loopback Messages with a period of 1 second to the local UNI-C on the UNI-MEG. Use Tester 1 to verify that the interval between LBM transmissions is 1 second. Instruct the local UNI-N under test to send 3 Loopback Messages at an interval of 'T' seconds with ('T' > 1) to the local UNI-C on the UNI-MEG. Use Tester 1 to verify that the interval between LBM transmissions is equal to 'T' seconds.. Instruct the local UNI-N under test to send 3 Loopback Messages with a period of 0 second (send the next LBM upon receipt of last LBR) to the local UNI-C on the UNI-MEG. Using the MEP counters, verify that the total number of (LBMs transmitted) is never greater than the number of (LBRs received +1)
Units	LBM transmissions interval and number of LBM and LBR frames
Variables	Interval between LBM transmissions
Results	Pass or fail
Remarks	

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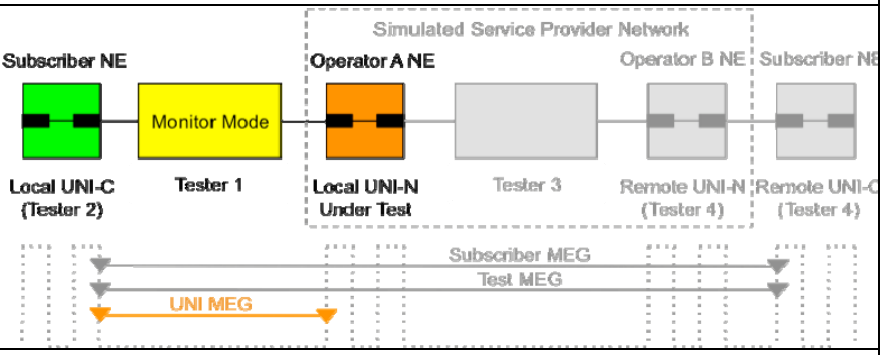
TEST CASE 82N: Configurable Timeout after a LBM Transmission

Abstract Test Suite for Service OAM	
Test Name	Configurable Timeout after a LBM Transmission
Test Definition ID	UNIN-R58[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Optional
MEF Requirement Description	For each LB session, the timeout after a LBM transmission, for an expected LBR result **MAY** be configurable
Test Object	Verify that for each LB session, the timeout after a LBM transmission, for an expected LBR result is configurable
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct the local UNI-N under test to send 3 Loopback Messages with a period of 0 second (send the next LBM upon receipt of last LBR) and with a timeout of 5 seconds to the local UNI-C on the UNI-MEG. Instruct the local UNI-C (Tester 2) not to respond to any of the received LBMs. Use Tester 1 to monitor the LBMs sent by the UNI-N under test and to verify that the interval between LBM transmissions is at least 5 seconds
Units	LBM transmissions interval
Variables	None
Results	Pass or fail
Remarks	

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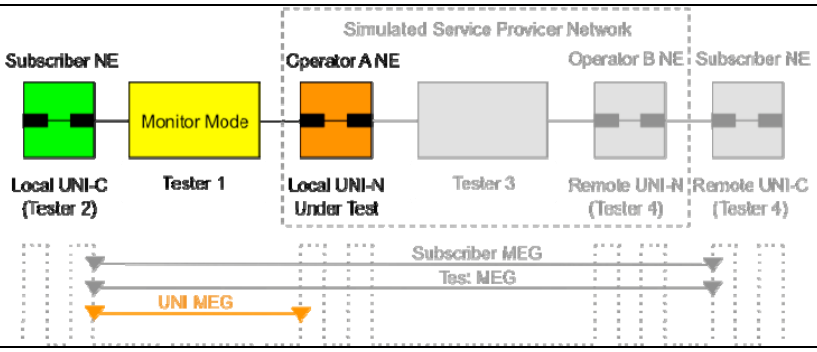
TEST CASE 83N: Configurable LBM Frame Size

Abstract Test Suite for Service OAM	
Test Name	Configurable LBM Frame Size
Test Definition ID	UNIN-R59[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	For each LB session, the size of the LBM frame **MUST** be configurable. This requires that the optional Data TLV **MUST** be supported to allow for frames up to the MTU size
Test Object	Verify that for each LB session, the size of the LBM frame is configurable and that the optional Data TLV is supported to allow for frames up to the MTU size
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Instruct the local UNI-N under test to send three 64-byte Loopback Messages to the local UNI-C on the UNI-MEG. Use Tester 1 to monitor the LBMs sent by the UNI-N under test and to verify that the LBM frame size is 64 bytes. Instruct the local UNI-N under test to send three Loopback Messages (frame size equal to the maximum transmission unit of the UNI) to the local UNI-C on the UNI-MEG. Use Tester 1 to monitor the LBMs sent by the UNI-N under test and to verify that the LBM frame size is equal to the maximum transmission unit of the EVC
Units	LBM frame size
Variables	None
Results	Pass or fail
Remarks	

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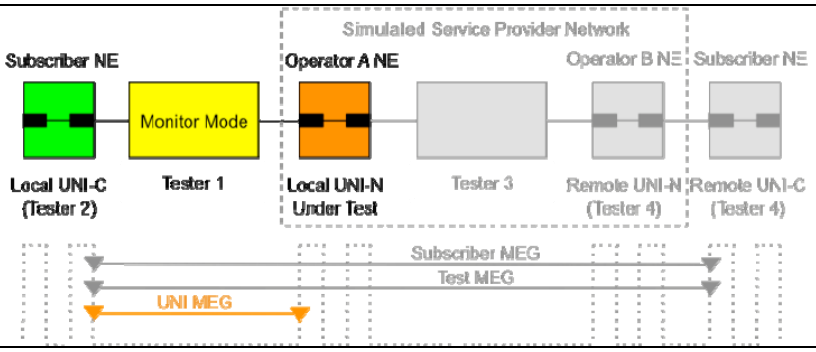
TEST CASE 84N: UNI-N Counter – Number of LBM Frames Transmitted

Abstract Test Suite for Service OAM	
Test Name	UNI-N Counter – Number of LBM Frames Transmitted
Test Definition ID	UNIN-R60[1]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	For each LB session, counters for LBM frames transmitted **MUST** be maintained
Test Object	Verify that the UNI-N Type 2 under test maintains counters for each MEP that counts the number of LBM frames transmitted
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Reset the UNI-N under test counters. Instruct the local UNI-N under test to send 3 Loopback Messages to the local UNI-C on the UNI-MEG and use Tester 1 to monitor and count the LBMs transmitted by the UNI-N under test. Verify that the number of LBMs with MEG-Level = 1 counted by the Tester 1 is equal to the number of LBM frames transmitted indicated by the UNI-N MEP counter for the UNI-MEG
Units	Number of LBM frames
Variables	None
Results	Pass or fail
Remarks	

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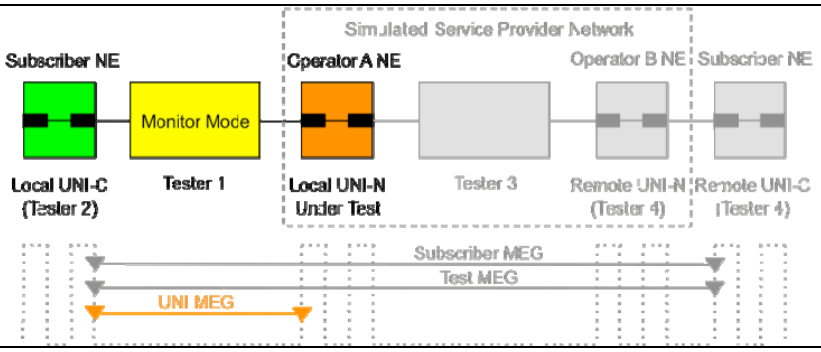
TEST CASE 85N: UNI-N Counter – Number of LBM Frames Received

Abstract Test Suite for Service OAM	
Test Name	UNI-N Counter – Number of LBM Frames Received
Test Definition ID	UNIC-R60[2]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	For each LB session, counters for LBM frames Received **MUST** be maintained
Test Object	Verify that the UNI-N Type 2 under test maintains counters for each MEP that counts the number of LBM frames received
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Reset the UNI-N under test counters. Instruct the local UNI-C (Tester 2) to send 3 Loopback Messages to the UNI-N under test on the UNI-MEG. Use Tester 1 to monitor and count the LBMs transmitted by the local UNI-C (Tester 2). Verify that the number of LBMs with MEG-Level = 1 counted by the Tester 1 is equal to the number of LBM frames received indicated by the UNI-N MEP counter for the UNI-MEG
Units	Number of LBM frames
Variables	None
Results	Pass or fail
Remarks	

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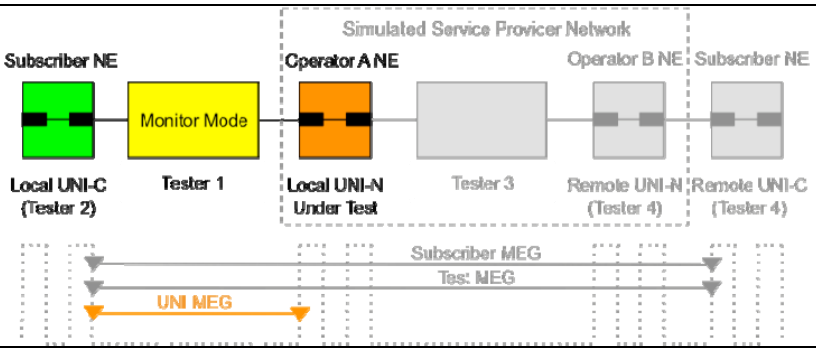
TEST CASE 86N: UNI-N Counter – Number of LBR Frames Received

Abstract Test Suite for Service OAM	
Test Name	UNI-N Counter – Number of LBR Frames Received
Test Definition ID	UNIN-R60[3]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	For each LB session, counters for LBR frames Received **MUST** be maintained
Test Object	Verify that the UNI-C Type 2 under test maintains counters for each MEP that counts the number of LBR frames received
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Reset the UNI-N under test counters. Instruct the local UNI-N under test to send 3 Loopback Messages to the local UNI-C on the UNI-MEG and use Tester 1 to monitor and count the LBMs transmitted by the UNI-N under test and also count the number of LBRs transmitted by the local UNI-C (Tester 2). Verify that the number of LBRs with MEG-Level = 1 counted by the Tester 1 is equal to the number of LBR frames received indicated by the UNI-N MEP counter for the UNI-MEG
Units	Number of LBR frames
Variables	None
Results	Pass or fail
Remarks	

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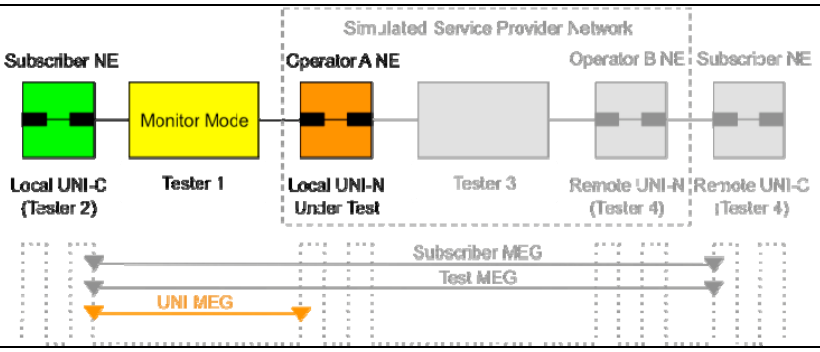
TEST CASE 87N: UNI-N Statistic – Percentage of Unanswered LB Requests (Lost LBM/LBR)

Abstract Test Suite for Service OAM	
Test Name	UNI-N Statistic – Percentage of Unanswered LB Requests (Lost LBM/LBR)
Test Definition ID	UNIN-R60[4]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	For each LB session, statistics on the percentage of unanswered LB requests (lost LBM/LBR) **MUST** be maintained
Test Object	Verify that the UNI-N Type 2 under test maintains statistics on the percentage of unanswered LB requests (lost LBM/LBR)
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Reset the UNI-N under test counters and statistics. Instruct the local UNI-N under test to send 3 Loopback Messages to the local UNI-C on the UNI-MEG and use Tester 1 to verify that the number of LBMs transmitted by the UNI-N under test and is equal to the number of LBRs transmitted by the local UNI-C (Tester 2). Verify that the percentage of unanswered LB requests is 0% for the UNI-N under test MEP. DO NOT Reset the UNI-N under test counters and statistics. Instruct the local UNI-N under test to send 3 Loopback Messages to the local UNI- on the UNI-MEG and instruct the local UNI-C (Tester 2) not to respond to any of the received LBMs. Verify that the percentage of unanswered LB requests is 50% for the UNI-N under test MEP. Reset the UNI-N under test counters and statistics. Instruct the local UNI-N under test to send 3 Loopback Messages to the local UNI-C on the UNI-MEG and instruct the local UNI-C (Tester 2) not to respond to any of the received LBMs. Verify that the percentage of unanswered LB requests is 100% for the UNI-N under test MEP
Units	Percentage of unanswered LB requests
Variables	None
Results	Pass or fail
Remarks	

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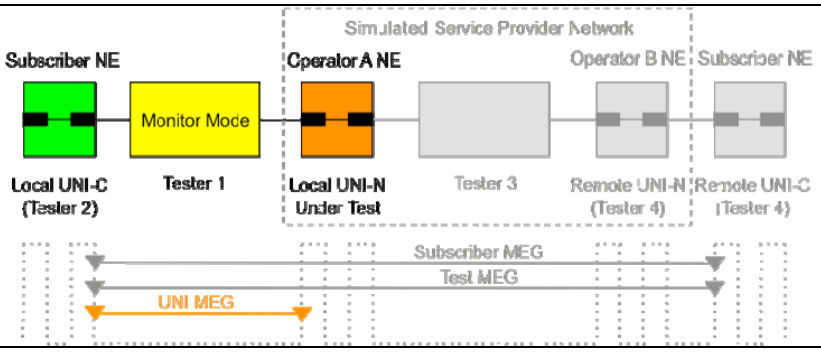
TEST CASE 88N: UNI-N Statistic – Minimum, Maximum & Average Round-Trip Latency

Abstract Test Suite for Service OAM	
Test Name	UNI-N Statistic – Minimum, Maximum & Average Round-Trip Latency
Test Definition ID	UNIN-R60[5]
Reference Document	MEF 20 UNI Type 2 Implementation Agreement Section 10.2
Test Type	Conformance
Test Status	Mandatory
MEF Requirement Description	For each LB session, statistics on the minimum, maximum and average round-trip latency **MUST** be maintained
Test Object	Verify that the UNI-N Type 2 under test maintains statistics on the minimum, maximum and average round-trip latency
Test Configuration	Configure a UNI-MEG with a MEG-Level = "1", with a unique MAID. Configure MEP instances on the local UNI-C and the local UNI-N with specific MEP IDs. Tester 1 with proper PHYs that match the UNIs is monitoring the Service OAM frames
Test Configuration Schematic	
CE-VLAN ID/EVC Map	Not Specified
Test Procedure	Reset the UNI-N under test counters and statistics. Instruct the local UNI-N under test to send Loopback Messages (repeatedly until aborted) to the local UNI-C on the UNI-MEG for a period of time T and verify the UNI-N under test maintains statistics on the minimum, maximum and average round-trip latency
Units	Minimum, maximum and average round-trip latency
Variables	None
Results	Pass or fail
Remarks	

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17. References

References	Details
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Abstract Test Suite for Ethernet Services at the UNI	MEF 9 [Abstract Test Suite for Ethernet Services at the UNI]
IEEE 802.3 – 2005	IEEE, Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications, Dec 2005
IEEE 802.1ag	IEEE Virtual Bridged Local Area Networks, Amendment 5:Connectivity Fault Management, 2007
ITU-T Y.1731	ITU-T, OAM Functions and Mechanisms for Ethernet based networks, 2006
RFC 2119	RFC 2119, “Key words for use in RFCs to Indicate Requirement Levels”, S. Bradner, http://www.ietf.org/rfc/rfc2119.txt (Normative)
RFC 2285	RFC 2285, “Benchmarking Terminology for LAN Switching Devices”, R. Mandeville, http://www.ietf.org/rfc/rfc2285.txt
RFC 2544	RFC 2544, “Benchmarking Methodology for Network Interconnect Devices”, S. Bradner, J. McQuaid, http://www.ietf.org/rfc/rfc2544.txt
RFC 2889	RFC 2889, “Benchmarking Methodology for LAN Switching Devices”, R. Mandeville, J. Perser, http://www.ietf.org/rfc/rfc2889.txt

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