



Spirent MEF SD-WAN Service Certification Statement of Work

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Introduction: MEF SD-WAN Certification Program

The MEF SD-WAN Certification program verifies conformity with the industry’s first SD-WAN Standard, [MEF 70](#) (SD-WAN Service Attributes and Services).

[Spirent was selected as MEF’s Authorized Certification Test Partner](#) (ACTP) and collaborated with MEF to establish an SD-WAN Certification Program for both SD-WAN managed services and products. Certification Participants (CPs) must be MEF members.

Figure 1 summarizes the key specifications for the MEF SD-WAN Certification Program. The SD-WAN Certification Test Requirements are specified in [MEF 90 Standard](#).

Additional details, including the relevant documents are available on the [MEF Wiki](#).

This Statement of Work (SoW), describes the processes, certification test environment, and test cases for the MEF SD-WAN Certification of SD-WAN services, as defined in MEF 70.

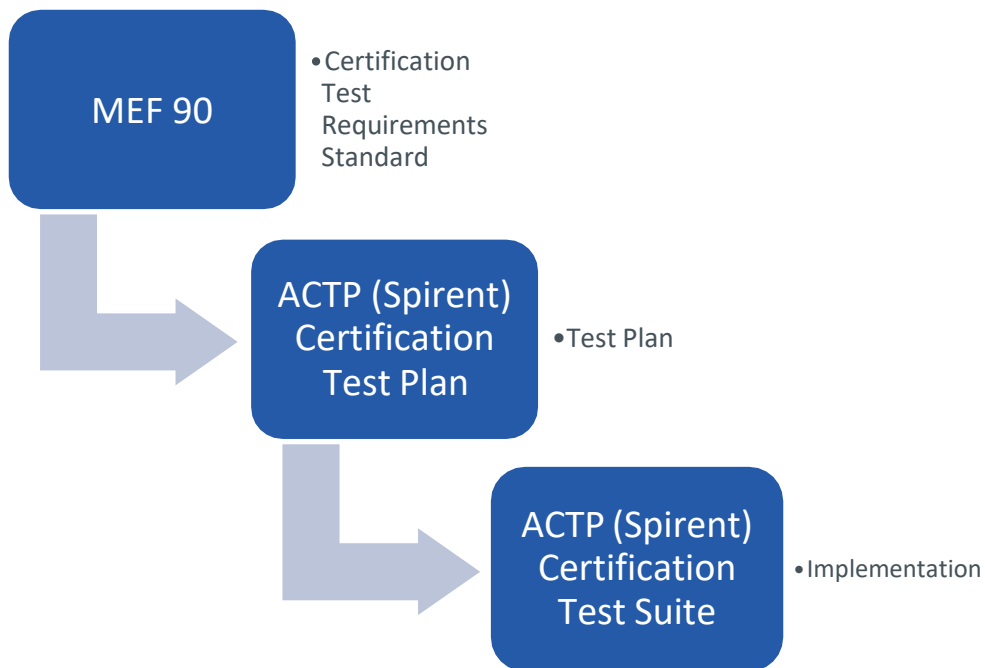


Figure 1: **MEF SD-WAN Certification Specifications**

Benefits of MEF SD-WAN Certification

The MEF SD-WAN Certification Program offers CPs the following benefits:

- Simplify the dialogue with customers and partners about the increasingly fragmented and proprietary SD-WAN market
- Instill confidence that products and services conform to the industry’s first SD-WAN standard

- Assert market leadership as one of the early adopters of the MEF SD-WAN Standard
- SD-WAN service certification takes a major step towards achieving multi-vendor SD-WAN.

Topology Diagram

Figure 2 shows the typical topology to be used for SD-WAN product certification:

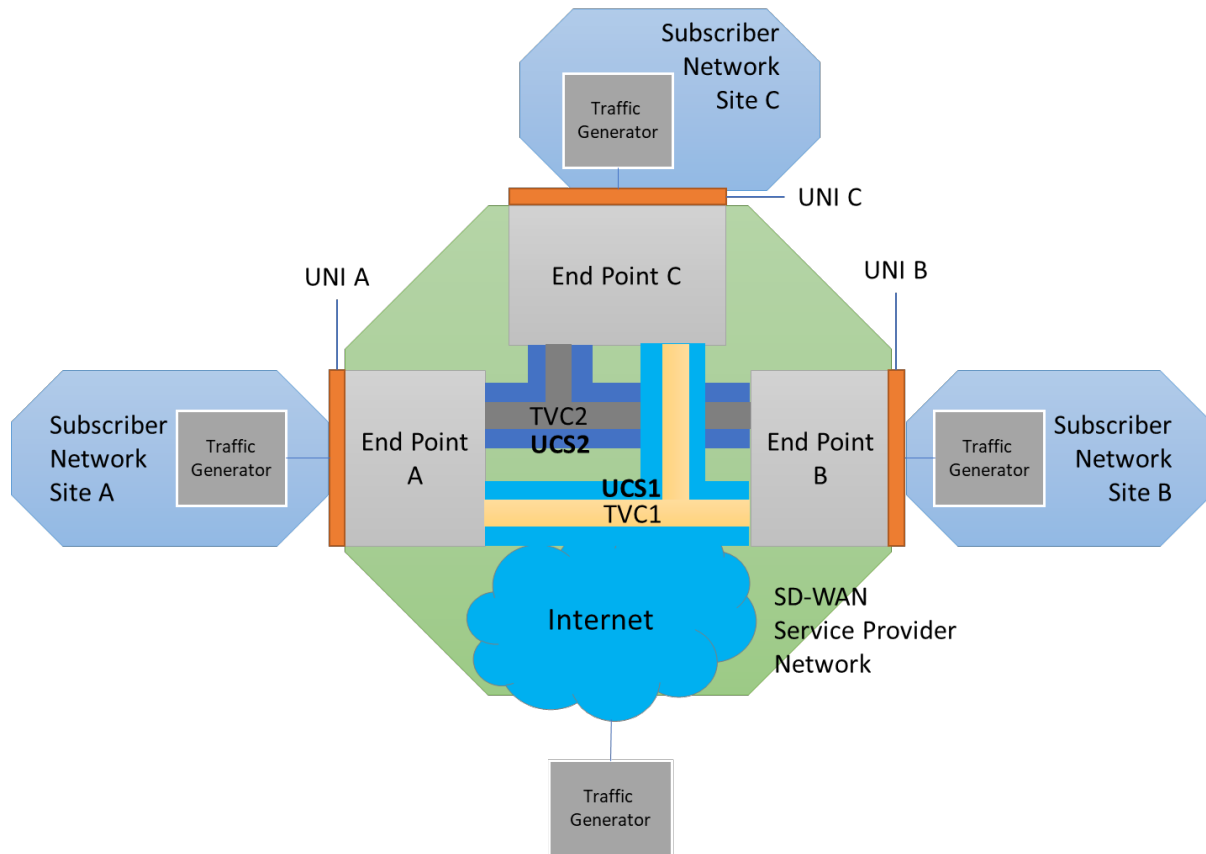


Figure 2: MEF SDN-WAN Service Certification Environment

MEF SD-WAN certification testing will be performed at 3 distinct sites, on a service instance on the CP’s live SD-WAN Network. The 3 sites will be interconnected with at one or two diverse Underlay Connectivity Services (UCS), e.g., Carrier Ethernet, MPLS, LTE, etc.

At each site, the CP will deploy a Spirent TestCenter (STC) platform, which serves as the test traffic generator/analyzer. Each STC unit will access the SD-WAN Overlay service instance through the through the User Network Interface (UNI). Spirent test experts and the service provider engineers will collaborate to execute and manage each test case remotely.

While the certification testing will be performed on-site, Spirent test experts will access the test generator/analyzer units remotely. Prior to executing each test case, Spirent and the CP engineers will coordinate to configure each SWVC-EP, as specified in the Spirent/MEF SD-WAN Certification Test Plan. This collaboration is necessary because Spirent is not typically granted direct access to the service provider's SD-WAN controller/manager.

Once all required test cases are executed, with 100% pass rate, the certification testing is complete. Spirent will then notify MEF who will issue a certificate and update the [service certification registry](#), which is hosted on the MEF public site.

Product Certification Flow

Figure 3 describes the MEF SD-WAN Product high-level certification flow.



Figure 3- MEF SD-WAN Certification Flow

1. Execute Agreements

- 1.1. Non-Disclosure Agreement (NDA)
- 1.2. Spirent-Certification Participation Agreement- Certification will not begin until the Spirent-CP agreement has been executed.

2. Certification Planning

- 2.1. Conduct Certification Planning Call
 - 2.1.1. Facilitate introductions, primary CP contact, as well as primary technical contact must attend; Key Spirent staff will attend
 - 2.1.2. Address CP questions on the Statement of Work
 - 2.1.3. Discuss the SD-WAN managed service that will be certified
 - 2.1.3.1. Identify each of the three sites
 - 2.1.3.2. Describe the UNI providing access to the service
 - 2.1.3.3. Address how Spirent can gain remote access to STC test generator/analyzer
 - 2.1.4. Discuss the SD-WAN solution deployed, and how the SWVC-EPs are managed.
 - 2.1.5. Describe the certification process flow
- 2.2. Develop/iterate Certification Plan, Plan of Record (PoR) spreadsheet that documents product certification
 - 2.2.1. NOTE: Spirent will not commit to a definitive date for the certification to be complete, because of the many areas that are outside of our control
 - 2.2.2. The Certification Plan spreadsheet details about each of the sites, the SD-WAN products deployed, and Certification Run
- 2.3. CP specify the Certification Run, subset of Spirent SD-WAN Certification Test Suite test cases (refer to Appendix A), which will be required to pass to obtain certification (and will be documented in the Certification Plan)
- 2.4. Establish Certification Test Environment at each of the three sites, including the provisioning of the UCS, deployment of the SWVC-EP, remote certification testing management connectivity, etc.
- 2.5. Discuss how SWVC-EP will be configured (and managed) for each test case
- 2.6. Spirent recommends that the CP arrange with their vendor for a product specialist to support the certification.

3. Pre-Certification Testing

- 3.1. Spirent and CP coordinate to run a few certification test cases to check out the certification testing environment
- 3.2. Check out access to the STC test generator/analyzer and SD-WAN controller/manager
- 3.3. Verify certification testing environment, SWVC-EP deployment, management access, etc.

4. Certification Testing

- 4.1. Execute the initial Certification Run to establish a baseline
- 4.2. Document any test case failures
- 4.3. Resolve any certification testing issues
 - 4.3.1. Certification test environment misconfiguration
 - 4.3.2. SWVC-EP Product issue
 - 4.3.3. Specification issue (MEF 90 Standard or Spirent SD-WAN Certification Test Plan)
 - 4.3.4. Spirent Certification Test Suite issue
- 4.4. Agree on corrective action plan, typically after analyzing all of the required test cases that failed.
- 4.5. Additional tasks beyond those specified in this SoW will be stated in a Change Request to this agreement (refer to Exhibit C, Spirent-CP Agreement), and mutually agreed to by both parties before the work is performed.
- 4.6. Resume testing
- 4.7. Execute final Certification Run (beginning to end) where 100% test cases pass

5. Success

- 5.1. Spirent notify MEF of successful certification testing
- 5.2. Spirent prepare Draft Certification Test Report
- 5.3. Spirent review Draft Certification Test Report with CP
- 5.4. Spirent finalize Certification Test Report
 - 5.4.1. Spirent will not issue the final test report until the CP issues the PO for the certification.

5.5. MEF issue SD-WAN Certificate (PDF)

5.6. MEF update [Service Certification Registry](#) appearing on MEF's public website

5.6.1. Includes a reference to the SD-WAN Service Certification Test Report

5.6.2. Spirent will NOT disclose Test Report to any party (including MEF) without explicit authorization

Dispute Resolution

Should an issue arise in the midst of the certification, Spirent will assist in basic troubleshooting of the problem, which typically will arise from:

1. Certification Testing Environment mis-configuration- Spirent will share any insights and reconfigure the problematic test case and proceed with the testing.
2. SD-WAN Product issues (including SD-WAN Controller/Manager software)- CP must perform detailed analysis, correct the problem, and discuss how to resume certification testing.
3. SD-WAN Certification Requirements issues- Once Spirent and the CP agree that a failed test case is attributed to an inaccurate, incomplete, and/or ambiguous requirement, Spirent will report the issue to the MEF. Upon receiving a response, Spirent and CP will discuss how to resume certification testing.
4. Spirent SD-WAN Certification Test Suite issues- Spirent will assume responsibility for troubleshooting, and resolving the issue, and then discuss with the CP on how to resume certification testing.

In the case that Spirent and the CP cannot reach a resolution after reasonable efforts have been expended by both parties, we will escalate the issue to the MEF for final resolution.

Commercial Engagement

The MEF SD-WAN Certification Program offers simple pricing, while offering flexibility to the CP. The Licensing Unit is the Certification Run:

- Certification Run consists of execution of all the required test cases, from beginning to end
- A successful Certification requires that 100% of the required test cases (that comprise the Certification Run) pass
- When test cases fail, Spirent will assist the CP in performing basic troubleshooting, and then resume certification testing
- Up to 4 Certification Runs are included with the Basic Certification fee (see Table 1 below)
- Additional Certification Runs are available

Certification Pricing

The pricing is provided in the Table below. Terms and Conditions are contained in the Spirent-Certification Participant agreement (formally: 'SPIRENT PROFESSIONAL SERVICES AGREEMENT UNDER MEF SERVICES').

Service	Description	Price (\$USD)	Notes
Basic Certification Fee	4 Certification Runs	\$24,000	Exclusive of taxes 50% upon agreement execution 50% upon delivery of Test Report Duration (maximum): 180 Days
Equipment Lease	3 Spirent Test Center platforms	\$6,000	Includes all 3 units for up to 90 days
Optional Services			
Technical SME	Additional technical support (available upon request)	\$2,000 (per day)	Minimum: 2 Weeks (does not include travel costs)
Travel & Lodging	For Technical SME	Actual	Applicable for Technical SME (expenses in accordance with Travel Corporate Travel Policy)
Additional Certification Runs	2 Certification Runs	\$15,000	Exclusive of taxes
Additional Services	Pricing will be provided per the scope of work		

Roles and Responsibilities

Phase	CP responsibilities	Spirent Responsibilities	Notes
Certification Planning	<ul style="list-style-type: none"> Identify service to certify Describe certification environment Describe SD-WAN controller/manager Contribute to and review the Certification Plan Define the Certification Run Discuss optional services Update the Certification Plan 	<ul style="list-style-type: none"> Generate the Certification Statement of Work Describe the Certification process flow Describe the Certification Test Suite and baseline Cert. Run Create/iterate Certification Plan Agree on scheduled start date 	<p>Certification Plan documents the Plan of Record for the certification, and will be updated throughout the certification process.</p> <p>Spirent cannot commit to a date when the certification will be finalized because of the many factors outside of Spirent's control.</p>
Pre-Certification Testing	<ul style="list-style-type: none"> Finalize the Certification Run Provide remote access to the Spirent Test Center units (at each site) Install the STC unit at each site Check out the certification test environment hardware Provide access to the SD-WAN controller/manager Arrange for SD-WAN vendor to support the certification 	<ul style="list-style-type: none"> Working remotely, configure the STC unit at each site Collaborate with the CP to check out the certification test environment Verify access to the SD-WAN Controller/Manager Review the Certification Plan 	
Certification Testing	<ul style="list-style-type: none"> Support the certification testing by configuring SWVC-EP for each test case Troubleshoot failed test cases Provide corrective actions as appropriate Update the Certification Plan (as needed) 	<ul style="list-style-type: none"> Execute initial Certification Run Document test results for each test case executed For failed test cases, provide test case details, and arrange/execute re-test Document major problems 	<p>Additional services (including training, enhanced troubleshooting, enhanced testing, etc.) are available, and will be quoted upon request.</p>
Success!	<ul style="list-style-type: none"> Review Draft Test Report Review (final)/update the Certification Plan Issue final Purchase Order 	<ul style="list-style-type: none"> Validate and record the test results Notify MEF of that certification testing is complete Develop the Test Report Finalize Test Report Finalize Certification Plan 	<p>Success: 100% required test cases pass in one run</p> <p>MEF will issue Service Certificate, and update Service Registry</p> <p>Test Report is proprietary to the CP; only Spirent will archive a copy</p>

For Each Certification Run

Work Item	CP responsibilities	Spirent Responsibilities	Notes
Certification Test Run	<ul style="list-style-type: none"> Provide technical support for configuring SWVC-EP for each required test case 	<ul style="list-style-type: none"> Execute all required test cases from start to finish 	
Record the Results	<ul style="list-style-type: none"> Review the test results from each Certification Run 	<ul style="list-style-type: none"> Record the disposition of each test case execution 	
When a Test Case Fails	<ul style="list-style-type: none"> Support the testing Troubleshoot failed test cases Provide corrective actions as appropriate 	<ul style="list-style-type: none"> Document additional details when a test case fails Provide basic troubleshooting 	Basic troubleshooting (only) is included in the Basic Certification fee; more extensive testing/troubleshooting available (additional fee applies)
Test environment mis-configuration	<ul style="list-style-type: none"> Reconfigure test environment 	<ul style="list-style-type: none"> Reconfigure test environment 	
Product issue	<ul style="list-style-type: none"> Determine resolution plan 	<ul style="list-style-type: none"> 	
Specification issue	<ul style="list-style-type: none"> Discuss/Review the resolution proposal 	<ul style="list-style-type: none"> Notify MEF of specification or standard issue Offer proposal for resolution Await MEF approval to proceed 	MEF 90 (Certification Test Requirements standard)
Spirent issue (Cert. Test Suite)	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Determine resolution plan Provide corrective actions as appropriate 	
Update Certification Plan	<ul style="list-style-type: none"> Discuss/agree on plan to resume testing 	<ul style="list-style-type: none"> Update the Certification Plan 	Depending on the outcome, the pricing may be affected

Certification Deliverables

- Successful certification
- Perform Certification Testing (and re-testing, as necessary)
 - Up to 4 Certification Runs (max)
- Support CP troubleshooting for test case fails
- Documentation:
 - Certification Plan
 - Certification Test Report
- Issued by MEF:
 - Certification Test Certificate (issued by MEF)
 - Certification Test Registry entry (maintained by MEF)

Key Contacts

Spirent	<CP>
<u>Certification Delivery Lead</u> Name: _____ Mobile: _____ Email: _____	<u>Primary Contact:</u> Name: _____ Mobile: _____ Email: _____
<u>Certification Technical Lead</u> Name: _____ Mobile: _____ Email: _____	<u>Technical Contact:</u> Name: _____ Mobile: _____ Email: _____
<u>SD-WAN Lead</u> Name: _____ Mobile: _____ Email: _____	<u>Executive Sponsor</u> Name: _____ Mobile: _____ Email: _____
<u>SD-WAN Strategy</u> Name: _____ Mobile: _____ Email: _____	Designation: _____ Name: _____ Mobile: _____ Email: _____
Designation: _____ Name: _____ Mobile: _____ Email: _____	Designation: _____ Name: _____ Mobile: _____ Email: _____

Certification Testing References

No.	Reference	Version	Web Link
1	MEF 70	R1 (7/29/2019)	https://www.mef.net/resources/technical-specifications/download?id=122&fileid=file1
2	MEF 90 SD-WAN Certification Test Requirements	MEF 90 Standard July, 2020	MEF 90 SD-WAN Certification Test Rqmts
3	Spirent SD-WAN Certification Test Plan	WD 0.31, March, 2020	Requires MEF permissions to access Wiki Page: https://wiki.mef.net/display/CECX/SD-WAN+Certification+Test+Plan

Document Checklist

No.	Document	Customer
1	Statement of Work (this document)	
2	Certification Plan	
3	Spirent mutual NDA	
4	Spirent-Certification Participant agreement (formally: 'SPIRENT PROFESSIONAL SERVICES AGREEMENT UNDER MEF SERVICES')	
5	Spirent Third party access request form (if applicable)	
6	Supplier network access security agreement (if applicable)	

Abbreviations

Acronym		Description
	ACTP	Authorized Certification Testing Partner
	CP	Certification Participant
	MEF	Standards Development Organization (www.mef.net)
	NDA	Non-Disclosure Agreement
	PoR	Plan of Record
	SD-WAN	Software Defined Wide Area Network
	SME	Subject Matter Expert
	SoW	Statement of Work
	SP	Service Provider
	STC	Spirent Test Center
	SWVC	SD-WAN Virtual Circuit
	SWVC-EP	SD-WAN Virtual Circuit Endpoint
	UCS	Underlay communication service
	UNI	User Network Interface

Appendix A: List of MEF SD-WAN Certification Test Cases

This section lists all current Spirent SD-WAN Certification Test Cases. The Certification Run consists of the required subset of these test cases that will be verified in the certification, which is documented in the Certification Plan.

No.	Test Area	Test Requirement [MEF 90]	Test Case Name	Test Case ID	Test Status
1	IP forwarding	R3[T]	MEF SD-WAN IP Forwarding IPv4 Destination Reachable	MEF_SD-WAN_IP_Forwarding.001	IPv4 Mandatory
2			MEF SD-WAN IP Forwarding IPv4 Destination Unreachable	MEF_SD-WAN_IP_Forwarding.002	IPv4 Mandatory
3			MEF SD-WAN IP Forwarding IPv4 Longest Prefix Match	MEF_SD-WAN_IP_Forwarding.003	IPv4 Mandatory
4			MEF SD-WAN IP Forwarding IPv6 Destination Reachable	MEF_SD-WAN_IP_Forwarding.004	IPv6 Mandatory
5			MEF SD-WAN IP Forwarding IPv6 Destination Unreachable	MEF_SD-WAN_IP_Forwarding.005	IPv6 Mandatory
6			MEF SD-WAN IP Forwarding IPv6 Longest Prefix Match	MEF_SD-WAN_IP_Forwarding.006	IPv6 Mandatory
7		R4[T]	MEF SD-WAN IP Forwarding IPv4 Transparency	MEF_SD-WAN_IP_Forwarding.007	IPv4 Mandatory
8			MEF SD-WAN IP Forwarding IPv4 Transparency LSRR	MEF_SD-WAN_IP_Forwarding.008	IPv4 Mandatory
9			MEF SD-WAN IP Forwarding IPv4 Transparency SSRR	MEF_SD-WAN_IP_Forwarding.009	IPv4 Mandatory
10			MEF SD-WAN IP Forwarding IPv4 Transparency RR	MEF_SD-WAN_IP_Forwarding.010	IPv4 Mandatory
11			MEF SD-WAN IP Forwarding IPv4 Transparency Fragment	MEF_SD-WAN_IP_Forwarding.011	DELETED
12		R6[T]	MEF SD-WAN IP Forwarding IPv6 Transparency	MEF_SD-WAN_IP_Forwarding.012	IPv6 Mandatory
13			MEF SD-WAN IP Forwarding IPv6 Transparency HopbyHop Option	MEF_SD-WAN_IP_Forwarding.013	IPv6 Mandatory
14	SWVC Service Attribute	R13[T]	MEF SD-WAN SWVC Receiver IPv4 Address Overlap	MEF_SD-WAN_SWVC.001	IPv4 Mandatory
15			MEF SD-WAN SWVC Sender IPv4 Address Overlap	MEF_SD-WAN_SWVC.002	IPv4 Mandatory
16			MEF SD-WAN SWVC Receiver IPv6 Address Overlap	MEF_SD-WAN_SWVC.003	IPv6 Mandatory
17			MEF SD-WAN SWVC Sender IPv6 Address Overlap	MEF_SD-WAN_SWVC.004	IPv6 Mandatory
18	Application Flows Service Attribute	T[R46]	MEF SD-WAN Application Flow Ethertype	MEF_SD-WAN_Application_Flow.001	Optional
19			MEF SD-WAN Application Flow IPv4 SA	MEF_SD-WAN_Application_Flow.002	IPv4 Mandatory
20			MEF SD-WAN Application Flow IPv4 SA Discard	MEF_SD-WAN_Application_Flow.003	IPv4 Mandatory
21			MEF SD-WAN Application Flow IPv4 DA	MEF_SD-WAN_Application_Flow.004	IPv4 Mandatory
22			MEF SD-WAN Application Flow IPv4 DA Discard	MEF_SD-WAN_Application_Flow.005	IPv4 Mandatory

No.	Test Area	Test Requirement [MEF 90]	Test Case Name	Test Case ID	Test Status
23			MEF SD-WAN Application Flow IPv4 SA or DA	MEF_SD-WAN_Application_Flow.006	IPv4 Mandatory
24			MEF SD-WAN Application Flow IPv4 Protocol	MEF_SD-WAN_Application_Flow.007	IPv4 Mandatory
25			MEF SD-WAN Application Flow IPv4 Protocol List	MEF_SD-WAN_Application_Flow.008	IPv4 Mandatory
26			MEF SD-WAN Application Flow IPv6 SA	MEF_SD-WAN_Application_Flow.009	IPv6 Mandatory
27			MEF SD-WAN Application Flow IPv6 SA Discard	MEF_SD-WAN_Application_Flow.010	IPv6 Mandatory
28			MEF SD-WAN Application Flow IPv6 DA	MEF_SD-WAN_Application_Flow.011	IPv6 Mandatory
29			MEF SD-WAN Application Flow IPv6 DA Discard	MEF_SD-WAN_Application_Flow.012	IPv6 Mandatory
30			MEF SD-WAN Application Flow IPv6 SA or DA	MEF_SD-WAN_Application_Flow.013	IPv6 Mandatory
31			MEF SD-WAN Application Flow IPv6 Next Header	MEF_SD-WAN_Application_Flow.014	IPv6 Mandatory
32			MEF SD-WAN Application Flow IPv6 Next Header List	MEF_SD-WAN_Application_Flow.015	IPv6 Mandatory
33			MEF SD-WAN Application Flow IPv4 SPort	MEF_SD-WAN_Application_Flow.016	IPv4 Mandatory
34			MEF SD-WAN Application Flow IPv4 SPort List	MEF_SD-WAN_Application_Flow.017	IPv4 Mandatory
35			MEF SD-WAN Application Flow IPv4 DPort	MEF_SD-WAN_Application_Flow.018	IPv4 Mandatory
36			MEF SD-WAN Application Flow IPv4 DPort List	MEF_SD-WAN_Application_Flow.019	IPv4 Mandatory
37			MEF SD-WAN Application Flow IPv4 Sport or DPort	MEF_SD-WAN_Application_Flow.020	IPv4 Mandatory
38			MEF SD-WAN Application Flow IPv4 Sport or DPort List	MEF_SD-WAN_Application_Flow.021	IPv4 Mandatory
39			MEF SD-WAN Application Flow IPv6 SPort	MEF_SD-WAN_Application_Flow.022	IPv6 Mandatory
40			MEF SD-WAN Application Flow IPv6 SPort List	MEF_SD-WAN_Application_Flow.023	IPv6 Mandatory
41			MEF SD-WAN Application Flow IPv6 DPort	MEF_SD-WAN_Application_Flow.024	IPv6 Mandatory
42			MEF SD-WAN Application Flow IPv6 DPort List	MEF_SD-WAN_Application_Flow.025	IPv6 Mandatory
43			MEF SD-WAN Application Flow IPv6 Sport or DPort	MEF_SD-WAN_Application_Flow.026	IPv6 Mandatory
44			MEF SD-WAN Application Flow IPv6 Sport or DPort List	MEF_SD-WAN_Application_Flow.027	IPv6 Mandatory
45		R43[T]	MEF SD-WAN Application Flow IPv4 Criteria Matching 01	MEF_SD-WAN_Application_Flow.028	IPv4 Mandatory
46			MEF SD-WAN Application Flow IPv6 Criteria Matching 01	MEF_SD-WAN_Application_Flow.029	IPv6 Mandatory
47			MEF SD-WAN Application Flow IPv4 Criteria Matching 02	MEF_SD-WAN_Application_Flow.030	IPv4 Mandatory
48			MEF SD-WAN Application Flow IPv6 Criteria Matching 02	MEF_SD-WAN_Application_Flow.031	IPv6 Mandatory
49		R44[T]	MEF SD-WAN Application Flow Matching Order	MEF_SD-WAN_Application_Flow.032	Mandatory

No.	Test Area	Test Requirement [MEF 90]	Test Case Name	Test Case ID	Test Status
50		R48[T]	MEF SD-WAN Application Flow Any	MEF_SD-WAN_Application_Flow.033	Mandatory
51	Policies Service Attribute	R23[T]	MEF SD-WAN Policy Encryption Yes	MEF_SD-WAN_Policy.001	Encryption Mandatory
52		R24[T]	MEF SD-WAN Policy Encryption Either	MEF_SD-WAN_Policy.002	Encryption Mandatory
53		R25[T]	MEF SD-WAN Policy Private Only	MEF_SD-WAN_Policy.003	Public/Private Mandatory
54		R26[T]	MEF SD-WAN Policy Public Private Either	MEF_SD-WAN_Policy.004	Public/Private Mandatory
55		R27[T], R28[T]	MEF SD-WAN Policy Internet Breakout True	MEF_SD-WAN_Policy.005	Internet Breakout Mandatory
56		R29[T]	MEF SD-WAN Policy Internet Breakout Criteria Ignore	MEF_SD-WAN_Policy.006	Internet Breakout Mandatory
57		R30[T]	MEF SD-WAN Policy Billing Method Flat Only	MEF_SD-WAN_Policy.007	Billing Mandatory
58		R31[T]	MEF SD-WAN Policy Billing Method Either	MEF_SD-WAN_Policy.008	Billing Mandatory
59		R32[T]	MEF SD-WAN Policy Non-Backup Available	MEF_SD-WAN_Policy.009	Backup Mandatory
60		R33[T]	MEF SD-WAN Policy Only Backup Available	MEF_SD-WAN_Policy.010	Backup Mandatory
61		R34[T], R35[T], R36[T]	MEF SD-WAN Policy Bandwidth One App Flow Traffic Rate Below Commit	MEF_SD-WAN_Policy.011	Bandwidth Mandatory
62		R34[T], R35[T], R36[T]	MEF SD-WAN Policy Bandwidth Two App Flows Traffic Rate Below Commit	MEF_SD-WAN_Policy.012	Bandwidth Mandatory
63		R34[T], R35[T], R36[T]	MEF SD-WAN Policy Bandwidth App Flow Group Traffic Rate Below Commit	MEF_SD-WAN_Policy.013	Bandwidth Mandatory
64		R34[T], R35[T], R36[T]	MEF SD-WAN Policy Bandwidth One App Flow Traffic Rate Over Commit	MEF_SD-WAN_Policy.014	Bandwidth Mandatory
65		R34[T], R35[T], R36[T]	MEF SD-WAN Policy Bandwidth Two App Flow Traffic Rate Over Commit	MEF_SD-WAN_Policy.015	Bandwidth Mandatory
66		R34[T], R35[T], R36[T]	MEF SD-WAN Policy Bandwidth App Flow Group Traffic Rate Over Commit	MEF_SD-WAN_Policy.016	Bandwidth Mandatory
67		R34[T], R35[T], R36[T]	MEF SD-WAN Policy Bandwidth One App Flow Traffic Rate Over Max	MEF_SD-WAN_Policy.017	Bandwidth Mandatory
68		R34[T], R35[T], R36[T]	MEF SD-WAN Policy Bandwidth Two App Flows Traffic Rate Over Max	MEF_SD-WAN_Policy.018	Bandwidth Mandatory
69		R34[T], R35[T], R36[T]	MEF SD-WAN Policy Bandwidth App Flow Group Traffic Rate Over Max	MEF_SD-WAN_Policy.019	Bandwidth Mandatory
70		R34[T], R35[T], R36[T]	MEF SD-WAN Policy Bandwidth Application Flow Group Override	MEF_SD-WAN_Policy.020	Bandwidth Mandatory

No.	Test Area	Test Requirement [MEF 90]	Test Case Name	Test Case ID	Test Status
71		R34[T], R35[T], R36[T]	MEF SD-WAN Policy Bandwidth Congestion	MEF_SD-WAN_Policy.021	Bandwidth Mandatory
72		R34[T], R35[T], R36[T]	MEF SD-WAN Policy Bandwidth Commit None	MEF_SD-WAN_Policy.022	Bandwidth Mandatory
73		R34[T], R35[T], R36[T], R29[T]	MEF SD-WAN Policy Bandwidth Internet Breakout	MEF_SD-WAN_Policy.023	Bandwidth Mandatory and Internet-Breakout Mandatory
74			MEF SD-WAN Policy Matching Mandatory Policies	MEF_SD-WAN_Policy.024	DELETED
75	End Point Policy Map Service Attribute	R51[T], R54[T], R55[T]	MEF SD-WAN Policy Mapping Override	MEF_SD-WAN_Policy_Map.001	Mandatory
76		R56[T]	MEF SD-WAN Policy Mapping Block	MEF_SD-WAN_Policy_Map.002	Mandatory
77	UNI L2 Interface Service Attribute	Test INF10_2.1	MEF SD-WAN L2 Interface UT PT	MEF_SD-WAN_L2_Interface.001	Mandatory
78		Test INF10_2.1	MEF SD-WAN L2 Interface CVLAN	MEF_SD-WAN_L2_Interface.002	Optional
79		R60[T]	MEF SD-WAN L2 Interface Packet Length	MEF_SD-WAN_L2_Interface.003	Mandatory
80		R59[T]	MEF SD-WAN L2 Interface Packet FCS Error	MEF_SD-WAN_L2_Interface.004	Mandatory
81			MEF SD-WAN L2 Interface Packet Runt	MEF_SD-WAN_L2_Interface.005	Mandatory
82			MEF SD-WAN L2 Interface Packet 64bytes Tagged	MEF_SD-WAN_L2_Interface.006	Mandatory
83			MEF SD-WAN L2 Interface Packet 64bytes Untagged	MEF_SD-WAN_L2_Interface.007	Mandatory
84		D2[T]	MEF SD-WAN L2 Interface Packet Giant	MEF_SD-WAN_L2_Interface.008	Mandatory
85	IPv4 Connection Addressing	R62[T], R63[T]	MEF SD-WAN IPv4 Addressing DHCP	MEF_SD-WAN_IPv4_Address.001	IPv4 Mandatory
86		R62[T]	MEF SD-WAN IPv4 Addressing Secondary Subnet Static	MEF_SD-WAN_IPv4_Address.002	IPv4 Optional
87		R62[T], R63[T]	MEF SD-WAN IPv4 Addressing Secondary Subnet DHCP	MEF_SD-WAN_IPv4_Address.003	IPv4 Optional
88	IPv6 Connection Addressing	R66[T], R67[T], R68[T]	MEF SD-WAN IPv6 Addressing DHCP	MEF_SD-WAN_IPv6_Address.001	IPv6 Mandatory
89		R66[T], R69[T]	MEF SD-WAN IPv6 Addressing SLAAC	MEF_SD-WAN_IPv6_Address.002	IPv6 Mandatory
90		R66[T], R67[T], R68[T]	MEF SD-WAN IPv6 Addressing DHCP Rapid Commit	MEF_SD-WAN_IPv6_Address.003	IPv6 Optional
91		R66[T]	MEF SD-WAN IPv6 Addressing Two Subnets	MEF_SD-WAN_IPv6_Address.004	IPv6 Optional
92	Dual Stack Addressing	R62[T], R66[T]	MEF SD-WAN Dual Stack Addressing Static	MEF_SD-WAN_Dual_Stack_Address.001	IPv4 & IPv6 Mandatory

IN WITNESS WHEREOF, the parties hereto understand, accept, and agree to the above terms and conditions.

FOR: SPIRENT COMMUNICATIONS INC

FOR CLIENT: _____

Name: _____

Name: _____

Title: _____

Title: _____

Signature: _____

Signature: _____

Date: _____

Date: _____

About Spirent Communications

Spirent Communications (LSE: SPT) is a global leader with deep expertise and decades of experience in testing, assurance, analytics and security, serving developers, service providers, and enterprise networks.

We help bring clarity to increasingly complex technological and business challenges. Spirent's customers have made a promise to their customers to deliver superior performance. Spirent assures that those promises are fulfilled.

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