



MEF Guide

MEF-SDCP Exam Preparation

June 2022

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Contents

Introduction	2
Exam Study References	2
Primary Resources	2
Additional Resources	2
MEF Self-Study Portal.....	2
Exam Design	3
Five Learning Domains & Objectives.....	3
Updates	4
Topic Areas & Tags	6
Cognitive Complexity Approach	6
Sample Exam Questions.....	7
Writing Your Exam	10
Selecting a Proctor	10
MEF-SDCP Exam Registration.....	10
On Exam Day	10
Additional Support.....	13
Training with a MEF-ATP	13
Contact Us.....	13

Introduction

You are destined to become the next MEF SD-WAN Certified Professional! This overview incorporates the references required to prepare for the *NEW* MEF-SDCP (June 2022) certification exam.

Exam Study References

All [MEF-SDCP Professional Certification Exam Reference Materials](#) can be downloaded in a single zip package on [MEF.net > Learn > Educational Materials](#).

Primary Resources

- MEF-SDCP Blueprint B
- MEF 70.1 SD-WAN Service Attributes and Service Framework
- MEF 88 Application Security for SD-WAN Services
- MEF W105 Performance Monitoring and Service Readiness Testing for SD-WAN

Additional Resources

- RFC 2764 A Framework for IP Based Virtual Private Networks
- MEF 55.1 Lifecycle Service Orchestration (LSO): Reference Architecture and Framework
- White Paper: A deep dive into SD-WAN troubleshooting and monitoring, TechTarget.com
- White Paper: What to expect with SD-WAN management, intent, and usability, TechTarget.com
- White Paper: SD-WAN For Dummies, 2nd VMware Special Edition by Sanjay Uppal, Steve Woo, and Dan Pitt
- White Paper: MEF 3.0 SD-WAN Services
- White Paper: Limitations and Differences of using IPsec, TLS/SSL or SSH as VPN-solution, Ole Martin Dahl

All additional references are secondary and may assist in providing a broader perspective related to SD-WAN; however, few questions in the exam refer to the secondary references.

Please note: On occasion, some content may change to reflect the most up-to-date and accurate information at the time.

MEF Self-Study Portal

The [MEF self-study portal](#) provides organized guidance in each learning domain and objectives weighted in order of importance.

Exam Design

50 multiple-choice questions
90 minutes

The new MEF-SDCP exam has 50 multiple choice questions and is approximately 90 minutes long. The multiple-choice questions have no more than four choices; only one choice is correct.

Each MEF Professional exam has an **exam blueprint**. The blueprint is defined by the learning domains and the objectives within each learning domain. Each exam question is developed and vetted with respect to a learning domain and objectives. Each question is also associated with a topic area and given a topic tag. To guide studying, a percentage weight is calculated for each.

The exam questions are designed around a cognitive complexity approach; generally, for MEF professional exams, three methods of study are emphasized:

1. Remember/Recall
2. Understand/Apply
3. Analyze/Evaluate.

MEF exams are highlight-scenario based, so each of the cognitive complexities are utilized simultaneously. In other words, few questions ask the definition of a term; most questions require your ability to understand and analyze--of course, you must recall the referenced terms. Each MEF standard ends with an Acronyms and Terminology section.

Five Learning Domains & Objectives

The exam blueprint contains the following five learning domains and summary of the objectives. For more detail, please see the exam blueprint itself.

1. **SD-WAN Concepts, Business Benefits and Value Proposition:** Demonstrate knowledge of the SD-WAN terminology, concepts, and Service Attributes, understand infrastructure and operational benefits in contrast to legacy solutions and provide implementation and migration strategies.
2. **Securing an SD-WAN Service:** Identify and understand security threats, middle box function use cases, appropriate security functions to mitigate threats, use of 'allow' and 'block' lists, and determine whether an application flow's security requirements are met.
3. **Planning, Design, and Architecture:** Understand and apply SD-WAN application flow specifications, underlay connectivity, Internet Breakout, virtual topologies and policies for planning, design, and architecting SD-WAN services based on business requirements.
4. **Monitoring an SD-WAN Service:** Understand the Service Readiness requirements for an SD-WAN Service, monitor the performance metrics, use of threshold crossing alerts, and troubleshoot issues.
5. **Deploy, Optimize, Maintain:** Demonstrate knowledge of IP Addressing and IP Routing, validate and define the assignment of policies to application flows, tune SD-WAN service

attributes and/or UCS selection to address service problems, determine appropriate performance metrics and values, and identify service improvements.

Updates

The learning domains and objectives include a significant number of updates based on the updates in **MEF 70.1 vs. MEF 70**. These include SD-WAN Virtual Connection (SWVC) Zones, virtual topologies, performance and policy criteria, SD-WAN UNI routing protocols, UCS UNI, UCS end-point service attributes, performance metrics, etc.

MEF 88 adds SD-WAN Security functions, policies supporting application flows, middle box functions, certificate authority and validation functions, Transport Layer Security (TLS), IP, DNS, URL filtering, Malware detection/removal.

MEF 105 Draft Release 4 adds SD-WAN performance measurements, monitoring, service readiness, Measured Information Rate for application flows, zones.

Changes in MEF 70 vs. MEF 70.1

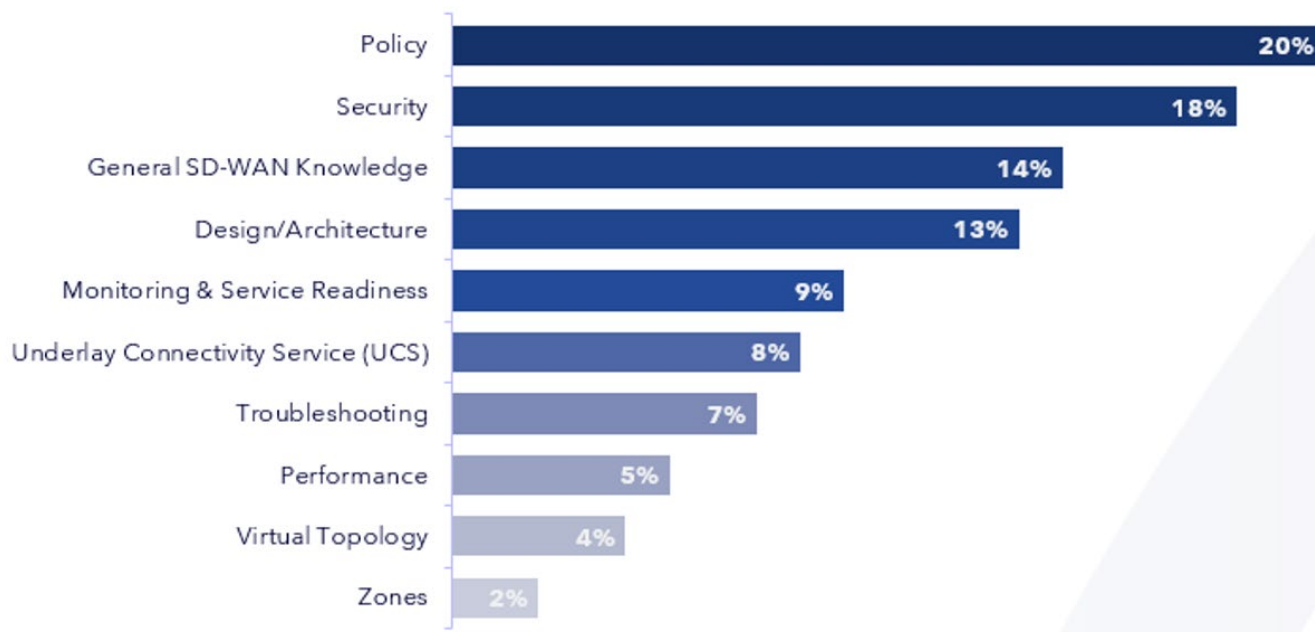
The following list represents the major changes in this standard, MEF 70.1, from the previous version, MEF 70:

- The document title was changed from “SD-WAN Service Attributes and Services” to “SD-WAN Service Attributes and Service Framework.”
- Added section 5.1 with Numerical Prefix Conventions and 5.2 with Notational Conventions. Move Diagram Conventions from section 7 to section 5.3.
- Inclusion of Service Attributes for Underlay Connectivity Services, UCS UNIs, and UCS End Points.
- An updated definition of Application Flow that includes packet flows that both ingress a UNI and are directed toward the UNI.
- Definition of Application Flow Specification as distinct from Application Flow.
- Rename “Application Flow Group” to “Application Flow Specification Group”.
- An updated and enhanced description of Application Flow Criteria.
- The table of Application Flow Criteria and the table of Policy Criteria were split into two tables, those that service providers are required to support and those that service providers should support.
- The values for most Application Flow Criteria are now lists of items rather than individual items.
- The DSCP Field was added to the list of Application Flow Criteria that require support.
- An updated definition of Tunnel Virtual Connection (TVC) providing a more detailed and implementation-independent description.
- New PERFORMANCE Ingress Policy Criterion to specify performance goals for an Application Flow.

- New SWVC List of Security Policies Service Attribute.
- New AF-SECURITY-INGRESS Ingress Policy Criterion and AF-SECURITY-EGRESS Egress Policy Criterion to invoke security functions listed in MEF 88 for an Application Flow.
- Support for Egress Policies and Egress Policy Criteria.
- New BLOCK-SOURCE Egress Policy Criterion.
- Updated and clarified description of the BANDWIDTH Ingress Policy Criterion.
- New SD-WAN UNI Routing Service Attribute to allow the Subscriber to specify/advertise reachable subnets at the UNI.
- New Service Attributes and Policy Criteria to support multiple Virtual Topologies that can be assigned by Policy.
- Support for partitioning the Subscribers IP Hosts into Zones and assigning Zone-wide Ingress Policies.
- Removed support for priority-tagged frames from the SD-WAN UNI L2 Interface Service Attribute.
- Uniqueness requirements were tightened for the SWVC, SWVC End Point, and SD-WAN UNI Identifiers (Service Attributes).
- Updated the SWVC Service Uptime Objective Service Attribute with a requirement that provides a definition of "outage."
- Several Policy Criteria with Boolean values were normalized to use Enabled and Disabled as values (as opposed to Yes/No, True/False, etc.).
- The parameters for the ENCRYPTION Policy Criterion have been changed from Required and Either to Required-Always, Required-Public-Only, Either. Modified the argument to several Application Flow Criteria to be a list (several of them were already lists, now all of them are).
- Clarified definitions and descriptions in several sections and concepts without changing the normative intention of the text. These include Internet Breakout and INTERNET-BREAKOUT Policy Criterion, BANDWIDTH Policy Criterion, definitions of the Performance Metrics.
- The PCParam element in SWVC List of Policies Service Attribute was changed from a list of parameters to a single parameter. If multiple parameters are needed, the Policy Criterion can define the argument as a list (or a n-tuple, if appropriate).

Topic Areas & Tags

To help you focus your study efforts, we also weight each exam question by learning areas. If you choose to utilize the MEF SDCP Self-Study tool, you will notice it is also organized by the following topic areas and that we associated each document reference with each topic area.



Cognitive Complexity Approach

Cognitive complexity, or rather the nature of thinking required, relates to how a person remembers, understands, analyzes the questions being asked and the correct response to the question. MEF exam developments utilize an approach that includes three levels of cognitive complexity (see table below). It's good to keep this in mind as you prepare for your exam.

COGNITIVE LEVEL	DESCRIPTION	ITEM CHARACTERISTICS
1. Remember	Retrieve relevant knowledge from long-term memory	No scenario – knowledge-based question where the answer could be directly found in a resource
2. Understand/Apply	Construct meaning from information, demonstrate comprehension of concepts or processes, apply processes or procedures.	May have a short scenario – candidate must use knowledge to answer the question.
3. Analyze/Evaluate	Break material into parts, determine how parts relate to one another or overall structure, make judgments based on criteria.	Detailed scenario – candidate must make some kind of decision using several pieces of information provided in the scenario (think 4-6 details in the scenario)

Sample Exam Questions

Here are some sample questions to assist in orienting you to the exam. These questions are provided for illustration and not necessarily questions you will see in the exam:

Question:

Which of the following is not an advantage of an SD-WAN Service over a private multi-point connectivity service?

Response: (Check One)

- A ☐ SD-WAN *can* forward packets to the public Internet but a private multi-point connectivity service *cannot*
- B ☐ SD-WAN *can* use different paths for different applications but a private multi-point connectivity service *cannot*
- C ☐ SD-WAN *can* change routes taken by packets based on recent performance metrics but a private multi-point connectivity service *cannot*
- D ☐ SD-WAN *can* forward packets between two UNIs that are not directly connected by a connectivity service but a private multi-point connectivity service *cannot*

Reference:

[MEF 70.1 - SD-WAN Service Attributes and Service Framework](#)

Question:

A company wants to deploy an SD-WAN Service with UCS Type Service Attribute = *Public*. The UCS is a MEF IP Service.

What are the required values for the IPVC Service Attributes?

Response: (Check One)

- A ☐ IPVC Topology Service Attribute = Internet Access, or IPVC Cloud Service Attribute with Cloud Type parameter = Cloud Access
- B ☐ IPVC Topology Service Attribute = Internet Access, and IPVC Cloud Service Attribute with Cloud Type parameter = Cloud Access
- C ☐ IPVC Topology Service Attribute = Cloud Access, or IPVC Cloud Service Attribute with Cloud Type parameter = Internet Access
- D ☐ IPVC Topology Service Attribute = Cloud Access, and IPVC Cloud Service Attribute with Cloud Type parameter = Internet Access

Reference:

[MEF 70.1 - SD-WAN Service Attributes and Service Framework](#)

Question:

A finance company uses an SD-WAN Service to connect all its locations. Each location has one Public UCS and one Private UCS.

The company asks the IT manager to increase the security of the SD-WAN Service.

The IT manager enables all Security Functions at all SD-WAN Edges using the web portal. After this, users at the branches complain about a significant increase in delay accessing finance applications in the head office.

How can the IT manager address this issue?

Response: (Check One)

- A ☐ Disable all Security Functions at all branches and depend on encryption for security
- B ☐ Increase Private UCS bandwidth of complaining branches
- C ☐ Increase Public UCS bandwidth of complaining branches
- D ☐ Enable only the Security Functions appropriate for the company's applications

Reference:

[MEF 88 - Application Flow Security for SD-WAN Services](#)

Question:

An SD-WAN Subscriber and an SD-WAN Service Provider have different threat database contents for a particular Security Function. The Service Provider's database matches a specific Application Flow to a security threat. The Subscriber's database does not.

The Subscriber does not view the application as a threat. How is this situation handled?

Response: (Check One)

- A ☐
 - The Provider's classification takes precedence and the Application Flow will be blocked
 - The Subscriber accesses the Provider's threat database and removes the application
- B ☐
 - The Subscriber's classification takes precedence and the Application Flow will be allowed
 - No changes are necessary
- C ☐

- The Provider's classification takes precedence and the Application Flow will be blocked
- The Provider must request a change using a predefined process

D ☐

- The Provider's classification takes precedence and the Application Flow will be blocked
- The Subscriber must request an update using a predefined process

Reference:

[MEF 88 - Application Flow Security for SD-WAN Services](#)

Objective:

Understand the Service Readiness requirements for an SD-WAN Service

Question:

A Bank uses an SD-WAN Service to connect its branches. The bank has an Application Flow that needs high availability. The Policy assigned to this Application Flow is designed to support the high availability requirements.

The Bank adds a new branch with two Underlay Connectivity Services to its SD-WAN Service.

What must be confirmed by the Service Readiness Test (SRT) to ensure the high availability requirements are met before enabling the Application Flow and assigning the Policy to it at the new branch?

Response: (Check One)

- A ☐ SD-WAN Service Provider SRT reports the value of the UCS End Point Backup=*Enabled* for one of the UCS
- B ☐ SD-WAN Service Provider SRT reports the Application Flow Performance Metric test results for both UCSs
- C ☐ SD-WAN Service Provider SRT reports the value of the BACKUP Ingress Policy Criterion=*Enabled* for the Application Flow
- D ☐ SD-WAN Service Provider SRT reports the value of the UCS UNI ID

Reference:

[MEF 105 Draft Release 4 Performance Monitoring and Service Readiness Testing for SD-WAN](#)

Writing Your Exam

Selecting a Proctor

While we recommend that you study and register for your exam with one of our MEF Premier Accredited Training Partners (MEF-PATP), if you choose to study and take the exam independently, you will need a MEF Approved Remote Proctor Service to facilitate and monitor your exam. *Pro Exam Services* comes highly recommended. Proctoring is included in the exam fee when you register at least 72 hours in advance; expediting the exam will incur an additional fee.

Once you register, you will receive the details needed to schedule your exam session with the proctor.

MEF-SDCP Exam Registration

REGISTER FOR YOUR EXAM on: <https://www.mefprocert.com>

Please add support@mefprocert.com and ProCert@mef.net to your email whitelist to avoid having them accidentally sent into your spam or junk mail folders.

On Exam Day

Arrive Early

Please arrive at least 30 minutes before your scheduled exam time to provide ample time to check in and review your computer. Otherwise, you may not have enough time to take the exam.

Personal Belongings

You will be required to leave your personal belongings outside of the testing room, or as advised by the exam proctor.

Present Your ID

At on-site and remote proctoring, you will be required to present an acceptable form of photo identification:

- Driver's license
- School ID
- Government provided identification
- Passport
- Military Identification

Common Questions

- **Are the exams open book?**
No.
- **During the exam, may I use a piece of paper and pencil?**
Yes. However, upon exam completion, please destroy the paper.
- **Can I step away from the computer during the exam?**
No, not even for bathroom breaks. Please expect to remain in your seat for the entire length of the exam.
- **English is not my primary language; is a time extension possible?**
Proof of language exception is required; if approved, a 15-minute extension may be provided.
- **During the exam, may I talk to people in my location?**
No. If you interact with anyone at your location, the proctor is instructed to end the exam without refund.
- **What if I have computer or related issues?**
Please contact our support team using the contact details below.
- **How long does it take to receive my exam results?**
Approximately 10 minutes. Results are sent to your registered email address and posted on your exam dashboard. If you passed, they are also published in the MEF Professional Certification Registry.

Computer Requirements

Prior to your exam, an exam proctor will assist you to review your computer for minimum compatibility and security requirements, in addition to monitoring you during your exam.

Your system must adhere to the following minimum requirements. There is always the potential for a computer or network problem to occur; however, we attempt to minimize issues by requiring the following minimal compatibility requirements. Proctors are responsible to check minimum system requirements. If a system cannot be adjusted to achieve the requirements, a computer proven to meet the minimum requirements must be used instead.

- Windows® 7, 8.1, 10, 11 (latest).
- Mac OS® (latest).
- Browsers: Windows Edge (latest), Internet Explorer (IE) 8, 9, 10, 11, Firefox (latest), Chrome (latest), Safari (latest).

Computer Stability and Security Check

- **Clear your browser cache/history** or load a new browser, such as Firefox. Browser caching issues can cause application problems.
- **No screen capturing/recording** and utilities in system tray, system processes, or browser toolbar. These applications must be removed before logging in to an exam.

- **Reliable high speed resilient Internet connection.** Wired connections are highly recommended.

Testing Room and Seating Arrangements

The exam room should be:

- Comfortable with a good chair and a minimum 3 x 3-meter space at a clean desk.
- Void of any papers, technical diagrams on walls, sticky notes on computer screens, etc.
- Silent, free from distracting noises.
- Arranged with exam participants' backs to other participants to avoid distractions.

Starting your Exam

When the exam is about to begin, the proctor will provide you with your login username and password. This login information cannot be used again after you complete the exam. Anything offered prior to the exam, such as a paper with the login ID and password, must be destroyed.

The 'Exam Navigator'

To make the best use of your exam time, it is a common approach to review all questions on the exam and answer all questions you know first. Then, go back through the exam to answer the more difficult questions. The exam 'navigator tool' makes it possible to mark questions for later review. Clicking on any box jumps you to that question. **White** boxes indicate questions not yet viewed. **Gray** boxes indicate questions viewed, but not answered. **Blue** boxes indicate answered questions.

35 of 126

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
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91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108
109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126

Ending your Exam

Within approximately 10 minutes upon completion of your exam, results are calculated and automatically displayed in your exam dashboard. You will also receive the results by email.

If the results indicate that you "Failed," you may register to re-take the exam as soon as you wish. Please note that only 3 exams may be taken in a 6-month period; this "time out" is required for you to attain more training to ensure that your next attempt is successful. If you pass the exam,

the results will indicate "Passed," your certificate will appear in your certification profile, and you will be listed in the MEF Professional Certification Registry. Congratulations!

Additional Support

Training with a MEF-ATP

MEF Premier Accredited Training Providers offer formalized self-study programs. We can help you to choose the right provider for you. Contact us.

Contact Us

Email: ProCert@mef.net

Need more help? Chat with our support team. For immediate queries about the exam, scheduling, and other support, access our online chat on: <https://mefprocert.com>

About MEF

An industry association of 200+ member companies, MEF has introduced the MEF 3.0 transformational global services framework for defining, delivering, and certifying assured services orchestrated across a global ecosystem of automated networks. MEF 3.0 services are designed to provide an on-demand, cloud-centric experience with user- and application-directed control over network resources and service capabilities. MEF 3.0 services are delivered over automated, virtualized, and interconnected networks powered by LSO, SDN, and NFV. MEF produces service specifications, LSO frameworks, open LSO APIs, software-driven reference implementations, and certification programs. MEF 3.0 work will enable automated delivery of standardized Carrier Ethernet, Optical Transport, IP, SD-WAN, Security-as-a-Service, and other Layer 4-7 services across multiple provider networks. For more information, visit <https://www.mef.net/> and follow us on [LinkedIn](#) and Twitter [@MEF_Forum](#).



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