

Advanced Design VMware vSphere 7.x

Exam Details (Last Updated: 12/4/2020)

The Advanced Design VMware vSphere 7.x Exam (3V0-21.21), which leads to the VMware Certified Advanced Professional – Data Center Virtualization Design 2021 certification, is a 60-item exam with a passing score of 300 using a scaled method. Candidates are given an exam time of 150 minutes, which includes adequate time to complete the exam for non-native English speakers.

Exam Delivery

This is a proctored exam delivered through Pearson VUE. For more information, visit the [Pearson VUE website](#).

Certification Information

For details and a complete list of requirements and recommendations for attainment, please reference the [VMware Education Services – Certification website](#).

Minimally Qualified Candidate

A minimally qualified or acceptable candidate (MQC) has about 12 months experience designing and deploying a vSphere environment. The MQC is typically a solution architect, capable of developing a conceptual design given a set of customer requirements, determining the functional requirements needed to create a logical design, and architecting a physical design using these elements. The MQC has knowledge of compute, storage, networking and security, design principles, capacity planning, disaster recovery and scalability, as well as sizing and compatibility. The MQC may occasionally require assistance in carrying out more complex tasks.

Exam Sections

VMware exam blueprint sections are now standardized to the seven sections below, some of which may NOT be included in the final exam blueprint depending on the exam objectives.

- Section 1 – Architecture and Technologies
- Section 2 – Products and Solutions
- Section 3 – Planning and Designing
- Section 4 – Installing, Configuring, and Setup
- Section 5 – Performance-tuning, Optimization, and Upgrades
- Section 6 – Troubleshooting and Repairing
- Section 7 – Administrative and Operational Tasks

If a section does not have testable objectives in this version of the exam, it will be noted below, accordingly. The objective numbering may be referenced in your score report at the end of your testing event for further preparation should a retake of the exam be necessary.

Sections Included in this Exam

Section 1 –Architectures and Technologies

Objective 1.1 – Differentiate between conceptual, logical and physical elements of a design

Objective 1.2 – Differentiate between functional and non-functional requirements

Objective 1.3 – Differentiate between Availability, Manageability, Performance, Recoverability, Scalability and Security (AMPRSS)

Section 2 – VMware Products and Solutions - There are no testable objectives for this section.

Section 3 – Planning and Designing

Objective 3.1 – Gather and analyze functional requirements

3.1.1 – Gather and analyze service-level agreement (SLA) requirements

3.1.2 – Gather network, storage and compute requirements

3.1.3 – Gather workload design requirements

3.1.4 – Gather capacity and performance requirements

Objective 3.2 – Gather and analyze non-functional requirements

3.2.1 – Determine security requirements for a vSphere design

3.2.2 – Determine data protection requirements for a vSphere design

3.2.3 – Determine business continuity requirements for a vSphere design

3.2.4 – Determine disaster recovery requirements for a vSphere design

3.2.5 – Determine compliance requirements for a vSphere design

Objective 3.3 – Determine risks, constraints and assumptions for a design

Objective 3.4 – Create a vCenter Server logical design

3.4.1 – Design a single-site, multi-site, multi-region deployment

3.4.2 – Define a virtual data center design

3.4.3 – Determine availability requirements for vCenter Server

Objective 3.5 – Create a vSphere cluster logical design

3.5.1. – Differentiate between workload or management clusters

3.5.2. – Define a workload cluster design

Objective 3.6 – Create a vSphere host logical design

3.6.1 – Recommend compute resource requirements

3.6.2 – Identify and address scalability requirements

3.6.3 – Determine hypervisor deployment method

Objective 3.7 – Create a vSphere network logical design

- 3.7.1 – Determine network protocol needs
- 3.7.2 – Design network segregation for different traffic types
- 3.7.3 – Determine physical and virtual networking topology

Objective 3.8 – Create a vSphere storage logical design

- 3.8.1 – Determine storage topology needs (e.g., SAN, local, Hyper-Converged Infrastructure or HCI)
- 3.8.2 – Evaluate storage protocols based on a given scenario/requirements
- 3.8.3 – Determine different storage segregation techniques based on a given scenario
- 3.8.4 – Determine physical and storage connectivity topology

Objective 3.9 – Create a workload logical design

- 3.9.1 – Determine workload sizing
- 3.9.2 – Determine workload placement

Objective 3.10 – Create a vCenter Server physical design

- 3.10.1 – Determine the correct sizing for vCenter Server based on workload requirements
- 3.10.2 – Map clusters to logical design

Objective 3.11 – Create a vSphere cluster physical design

- 3.11.1 – Determine the appropriate Distributed Resource Scheduler (DRS), Predictive Distributed Resource Scheduler (pDRS), and Distributed Power Management (DPM) configurations based on requirements
- 3.11.2 – Determine the appropriate Proactive High Availability/High Availability configurations based on requirements
- 3.11.3 – Determine the appropriate vSphere Enhanced vMotion Compatibility (EVC) configurations based on requirements
- 3.11.4 – Determine the appropriate cluster size based on requirements

Objective 3.12 – Create a vSphere host physical design

- 3.12.1 – Identify the hypervisor deployment method
- 3.12.2 – Determine the appropriate host size based on requirements
- 3.12.3 – Determine the appropriate host configurations (network adapters, local storage, RAID controller) based on requirements

Objective 3.13 – Create a vSphere network physical design

- 3.13.1 – Determine bandwidth needs based on requirements
- 3.13.2 – Determine NIC teaming and load balancing methods
- 3.13.3 – Design VMkernel adapters based on requirements
- 3.13.4 – Determine Network I/O Control (NIOC) configurations based on requirements
- 3.13.5 – Determine switch type (standard vs distributed) based on requirements

Objective 3.14 – Create a vSphere storage physical design

3.14.1 – Determine storage multi-pathing and load balancing methods

3.14.2 – Determine the Storage DRS configuration

3.14.3 – Determine appropriate datastore configurations based on requirements

3.14.4 – Determine the physical storage design based on requirements

3.14.5 – Determine appropriate storage policy based on requirements

Objective 3.15 – Create a workload physical design based on application requirements

3.15.1 – Determine workload virtual hardware (e.g., number of network interface cards (NICs) and type of NIC)

3.15.2 – Design content library topology

Section 4 – Installing, Configuring, and Setup - There are no testable objectives for this section.

Section 5 – Performance-tuning, Optimization, Upgrades - There are no testable objectives for this section.

Section 6 – Troubleshooting and Repairing - There are no testable objectives for this section.

Section 7 – Administrative and Operational Tasks - There are no testable objectives for this section.

Recommended Courses

[VMware vSphere: Design \[v7\]](#)

References

In addition to the recommended course, item writers used the following references for information when writing exam questions. It is recommended that you study the reference content as you prepare to take the exam, in addition to the recommended training.

Name	Version	Products
vSphere Resource Management	VMware Docs 26 August 2020	VMware vSphere
vSphere Security	VMware Docs 26 August 2020	VMware vSphere
vSphere Networking	VMware Docs 11 August 2020	VMware vSphere
vCenter Server Installation and Setup	VMware Docs 26 August 2020	VMware vSphere
vSphere Availability	VMware Docs 26 August 2020	VMware vSphere
vSphere Storage	VMware Docs 26 August 2020	VMware vSphere
vSphere Authentication	VMware Docs 26 August 2020	VMware vSphere
vSAN Planning and Deployment	VMware Docs 26 August 2020	VMware vSphere, VMware vSAN

Setup for Windows Server Failover Clustering	VMware Docs 26 August 2020	VMware vSphere
Performance Best Practices for VMware vSphere 7.0	VMware Docs 29 May 2020	VMware vSphere, VMware ESXi, VMware vCenter Server
vCenter Server and Host Management	VMware Docs 28 August 2020	VMware vSphere, VMware ESXi, VMware vCenter Server
vSphere Virtual Machine Administration	VMware Docs 28 August 2020	VMware vSphere
vSphere Bitfusion 2	VMware Docs 29 September 2020	VMware vSphere Bitfusion
Architecting Microsoft SQL Server on VMware vSphere	Best Practices Guide April 2019	VMware vSphere
FAQ: VMware vSphere Storage APIs – Data Protection (formerly known as VMware vStorage APIs for Data Protection or VADP) (1021175)	Knowledge Base 17 February 2020	VMware ESXi, VMware vCenter Server
Mixed, Passthru, HBA and RAID mode SAS or SATA IO Controller card support (53573)	Knowledge Base 28 April 2020	VMware vSAN
VMware response to ‘L1 Terminal Fault - VMM’ (L1TF - VMM) Speculative-Execution vulnerability in Intel processors for vSphere: CVE-2018-3646 (55806)	Knowledge Base 18 August 2020	VMware vSphere
Understanding Virtual Volumes (vVols) in VMware vSphere 6.7/7.0 (2113013)	Knowledge Base 2 April 2020	VMware ESXi, VMware vCenter Server
Storage DRS FAQ (2149938)	Knowledge Base 14 September 2020	VMware vCenter Server
vSAN Design Considerations – Deduplication and Compression	VMware Blogs 18 June 2020	VMware vSAN
vSphere 7 – Content Library	VMware Blogs 1 April 2020	VMware vCenter Server
*vSphere content in this exam is based on V7.0. Review all 7.0 release notes and material for features and function.		

Sample Questions

Sample questions presented here are examples of the types of questions candidates may encounter and should not be used as a resource for exam preparation.

Sample Question 1

An architect is designing a new vSphere environment to meet the following requirements:

- REQ01 The platform must provide a minimum of N+1 redundancy.
- REQ02 The recovery point objective (RPO) for all virtual machines within the environment is one hour.
- REQ03 The production environment must be deployed into the primary data center.
- REQ04 The design must adhere to the company security standards, which include Payment Card Industry (PCI) Data Security Standard compliance.
- REQ05 The platform must be capable of running 1,000 virtual machines across both data centers concurrently.

Which two of the listed requirements would be classified as functional requirements? (Choose two.)

- A. The platform must provide a minimum of N+1 redundancy.
- B. The recovery point objective (RPO) for all virtual machines within the environment is one hour.
- C. The production environment must be deployed into the primary data center.
- D. The design must adhere to the company security standards, which include Payment Card Industry (PCI) Data Security Standard compliance.
- E. The platform must be capable of running 1,000 virtual machines across both data centers concurrently.

Answer: C,E

Sample Question 2

An application owner is concerned about their front-end web servers suffering an outage in the event of a host failure.

Which functional requirement could the architect include in the application design to mitigate this concern?

- A. The platform must include configuration rules to separate the web servers.
- B. The platform must include configuration rules to restart the web servers upon host failure.
- C. The platform must be configured with resource scheduling in fully automated mode.
- D. The platform must include configuration rules to reset the web servers when guest heartbeats are not received.

Answer: A

Sample Question 3

An architect is assigned to report available capacity of a vSphere platform and is provided with the following:

- Read-only access to the platform's virtualization monitoring tool
- Full access to an internally developed and manually updated Configuration Management Database (CMDB) tool
- Access to a document repository containing the go-live design documentation for each application
- Links to vendor best practice documentation for many of the deployed applications
- Access to the company wide in-guest monitoring tool

Information extracted from which two sources will accurately provide the required information? (Choose two.)

- A. Virtualization monitoring tools
- B. Application virtual machine design documents
- C. In-guest monitoring tools
- D. Application vendor best practice documentation
- E. Support organizations Configuration Management Database (CMDB)

Answer: A, C

Sample Question 4

An organization operates a vSphere platform that supports three tiers of virtual machines: Tier 1- for all business-critical applications and services, Tier 2- for line of business services, and Tier 3- for test and development virtual machines. The vSphere platform operates from three sites, named A, B and C; and virtual machines from all tiers run at each location. The operations manager wants to improve services so that the vSphere platform operates with virtual machines running on any site. The Chief Executive Officer (CEO)

requests that the architect redesign the disaster recovery (DR) solution to meet the goals of the operations manager and notes that site A should not be considered as there are plans to redevelop it as office space.

Which requirement should the architect include in the design to meet the goals of both the operations manager and the CEO?

- A. DR must be configured as Active/Passive between sites A and B. Tier 1, 2 and 3 virtual machines must be operated from site A.
- B. DR must be configured as Active/Active between sites A, B and C. Tier 1, 2 and 3 virtual machines must be capable of running at any site.
- C. DR must be configured as Active/Passive between sites B and C. Tier 1, 2 and 3 virtual machines must be operated from site B.
- D. DR must be configured as Active/Active between sites B and C. Tier 1, 2 and 3 virtual machines must be capable of running at any site.

Answer: D

Sample Question 5

An architect is tasked with designing the vSphere cluster layout for a customer. The customer is NOT sure how many clusters are required or the number of hosts to use in any of the clusters. The customer has provided the following requirements:

- The placement of Linux and Windows machines (end user virtual machines) needs to be controlled for license compliance.
- Access to virtual machines such as Active Directory and DHCP (infrastructure virtual machines) should be restricted to just the platform administration team.
- Infrastructure virtual machines should not prevent end user virtual machines from consuming their allocated resources.
- Utilization for the current infrastructure's virtual machines is less than end user virtual machines.
- The platform needs to provide the ability to lifecycle manage the hosts without impacting end user virtual machines.
- The platform needs to account for the predicted future growth of end user virtual machines being very high, while for infrastructure virtual machines being very low.
- There are a total of 15 physical servers for use across the platform.

Which of the proposed cluster layouts would meet the customer's requirements?

- A. One vSphere cluster of 12 hosts for Linux and Windows virtual machines and one vSphere cluster of three hosts for infrastructure virtual machines.
- B. One vSphere cluster of six hosts for Linux virtual machines, one vSphere cluster of six hosts for Windows virtual machines and one vSphere cluster of three hosts for infrastructure virtual machines.
- C. One vSphere cluster of 15 hosts for all virtual machines with resource controls to give higher priority to end user virtual machines.
- D. One vSphere cluster of five hosts for Linux virtual machines, one vSphere cluster of five hosts for Windows virtual machines and one vSphere cluster of five hosts for infrastructure virtual machines.

Answer: B

Sample Question 6

An architect is redesigning a storage environment to provide simplified management of a VMware environment. The administrators have expressed the need to provision storage and apply a custom set of array features granularly to virtual machines. They will re-use their existing shared storage platform as it does support all modern VMware storage integrations.

Which two technologies or features are needed to support the requirements of this project? (Choose two.)

- A. vStorage APIs for Storage Awareness (VASA)
- B. vSphere Virtual Volumes (vVols)
- C. Datastore Clusters
- D. vSphere Storage DRS
- E. Raw Device Mappings (RDMs)

Answers: A, B

Sample Question 7

An architect is designing a solution for an environment that has an application consisting of five resource-intensive virtual machines.

Which design recommendation should the architect make to avoid resource bottlenecks?

- A. Create a cluster with three hosts and only run the application virtual machines on this cluster.
- B. Create a cluster with six hosts and use automated placement rules to keep the application virtual machines together.
- C. Create a cluster with six hosts and use automated placement rules to keep the application virtual machines apart.
- D. Create a cluster with four hosts and use rules to prioritize the resources for the application virtual machines.

Answer: C

Sample Question 8

An architect is designing a solution for an environment with a limited number of operating system licenses.

How should the architect design the virtual infrastructure to meet the operating system license requirements?

- A. Place the hosts into a single cluster and enable automated placement of virtual machines.
- B. Create rules to restrict placement of virtual machines to specified hosts.
- C. Create a resource pool and only put the virtual machines that need the operating system licenses within the pool.
- D. Use standalone ESXi hosts and only apply the operating system licenses to those hosts.

Answer: B

Sample Question 9

An architect is designing a new platform. Existing virtual machines will be migrated to this platform. The migration process is defined as follows:

- A migration host will be loaded with virtual machines from the old platform.
- The migration host will be added to the desired new cluster.
- Virtual machines compute and storage will be migrated to desired hosts in the new platform.
- The migration host will be removed and added back to the old platform so the process can restart.

The following characteristics are noted:

- A total of 800 virtual machines will be migrated.
- A total of 50 hosts will be available in the new platform.
- The migration host will have four paths to each of 512 connected LUNs.

Which size vCenter Server should be specified for the new platform?

- A. Large
- B. Small
- C. Medium
- D. Tiny

Answer: A

Sample Question 10

The DevOps team at an organization is preparing to build and package virtual machine (VM) images that will be added to a content library for a new vSphere environment. Users will deploy virtual machines from the content library. The solutions architect is gathering requirements to help the DevOps team decide between the use of VM templates versus Open Virtualization Format (OVF) templates in the content library.

Which requirement would influence the design decision to use OVF templates in the content library?

- A. Templates must be able to support license agreement acceptance during deployment.
- B. Templates must be encrypted.
- C. vSphere Storage DRS must be supported.
- D. Templates must be automatically migrated to another ESXi host when a host is inaccessible.

Answer: A

Certification Requirements

VCAP-DCV Design 2021

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