

VCP-VVF ADMINISTRATOR LAB TASKS · EXAM 2V0-16.25

Work task 1 to task 138 and you have built and run vSphere Foundation 9.0

Exam 2V0-16.25, VMware vSphere Foundation 9.0 Administrator. The testable objectives sit in section 2, the fundamentals, and section 4, deploy, manage, operate and consume. Tasks only, in build order. The code at the right of each task is the objective it covers.

Dr Pranay Jha · drpranayjha.com

A. VIRTUALIZATION AND VVF, ON PAPER

Written tasks. Objective 2.1 is entirely here.

- | | | |
|----|---|-----|
| 1. | Write the principles of virtualization in your own words: abstraction, isolation, encapsulation and hardware independence. | 2.1 |
| 2. | List five use cases for virtualization and what each gains from it. | 2.1 |
| 3. | Write the value proposition of virtualization for three audiences: the business, the operations team and the application owner. | 2.1 |
| 4. | List the components of a VVF 9.0 deployment, and mark what VCF adds that VVF does not include. | 4.1 |
| 5. | Draw a VVF environment on one page: hosts, vCenter, vSAN, the Supervisor, VCF Operations and VCF Operations for logs. | 4.1 |

B. VCENTER AND ESX

The compute layer.

- | | | |
|-----|---|-----|
| 6. | Install ESX on a host and set its management network, DNS name and NTP source from the console. | 2.2 |
| 7. | Deploy a vCenter appliance and record the size you chose and why. | 2.2 |
| 8. | Create a datacenter object and add two hosts to it. | 2.2 |
| 9. | Configure NTP and DNS consistently on every host, then check them from the vSphere Client. | 2.2 |
| 10. | Configure a VMkernel adapter for vMotion on each host. | 2.2 |
| 11. | Put a host into maintenance mode and back out, recording what happens to its virtual machines. | 2.2 |
| 12. | Back up the vCenter appliance using file-based backup to an SFTP target. | 2.2 |

C. VSPHERE CLUSTERS

Configure a cluster and know what each setting does.

- | | | |
|-----|--|-----|
| 13. | Create a cluster and move hosts into it. | 2.2 |
| 14. | Turn on vSphere HA and set admission control to tolerate one host failure. | 2.2 |
| 15. | Turn on vSphere DRS and compare the automation levels. | 2.2 |
| 16. | Create a VM-to-host affinity rule and a VM-to-VM anti-affinity rule, then test both. | 2.2 |
| 17. | Configure Enhanced vMotion Compatibility on the cluster and record the baseline chosen. | 2.2 |
| 18. | Create a resource pool with shares, a reservation and a limit, and place virtual machines in it. | 2.2 |
| 19. | Manage the cluster with a vSphere Lifecycle Manager image and check host compliance against it. | 2.2 |

D. VIRTUAL MACHINES

Deploy, configure and manage virtual machines through vCenter.

- | | | |
|-----|---|-----|
| 20. | Create a virtual machine from scratch and install a guest operating system. | 2.2 |
| 21. | Install or update VMware Tools and record what it adds. | 2.2 |

- | | | |
|-----|---|-----|
| 22. | Convert the virtual machine into a template, then deploy two virtual machines from it with a customisation specification. | 2.2 |
| 23. | Hot add CPU and memory to a running virtual machine, after enabling it. | 2.2 |
| 24. | Take a snapshot, change the virtual machine, revert, then delete the snapshot. Record why a snapshot is not a backup. | 2.2 |
| 25. | Clone a running virtual machine. | 2.2 |
| 26. | Migrate a running virtual machine with vMotion, then move its disks with Storage vMotion. | 2.2 |
| 27. | Open a virtual machine console, read its events and change its virtual hardware. | 2.2 |

E. DAY 2 OPERATIONS IN VCENTER

The everyday work the blueprint calls day 2.

- | | | |
|-----|---|-----|
| 28. | Create an alarm on a datastore for low free space, and test it. | 2.2 |
| 29. | Create tag categories and tags, and use them to organise and search virtual machines. | 2.2 |
| 30. | Create a scheduled task, such as a snapshot or a power operation, and confirm it ran. | 2.2 |
| 31. | Check host configuration against the cluster configuration and fix a host that has drifted. | 2.2 |
| 32. | Use events, tasks and performance charts to find what changed on a host in the last day. | 2.2 |
| 33. | Export a virtual machine as OVF and import it again. | 2.2 |

F. CONTENT LIBRARIES

Objective 2.2 names them on their own.

- | | | |
|-----|--|-----|
| 34. | Create a content library, add a template to it, and deploy from the library. | 2.2 |
| 35. | Add an OVF template and an ISO to the library, and mount the ISO on a virtual machine from it. | 2.2 |
| 36. | Publish the library and subscribe to it from a second vCenter or library. | 2.2 |
| 37. | Check out a VM template from the library, change it, and check it back in as a new version. | 2.2 |
| 38. | Write when you would use a subscribed library with download on demand. | 2.2 |

G. ENCRYPTION

Objective 2.2: securing workloads and infrastructure with encryption.

- | | | |
|-----|--|-----|
| 39. | Configure a key provider, such as the vSphere Native Key Provider, and back it up. | 2.2 |
| 40. | Encrypt a virtual machine with the encryption storage policy. | 2.2 |
| 41. | Add a virtual TPM to a virtual machine and record what it needs. | 2.2 |
| 42. | Set encrypted vMotion on a virtual machine and record the options. | 2.2 |
| 43. | Turn on vSAN data-at-rest encryption for a cluster. | 2.2 |
| 44. | Write what happens to encrypted virtual machines if the key provider is unavailable. | 2.2 |

H. VSPHERE STORAGE

Storage outside vSAN, and the policies that place workloads on it.

- | | | |
|-----|---|-----|
| 45. | Create a VMFS datastore on a block device and record its version. | 2.3 |
| 46. | Mount an NFS datastore on every host in the cluster. | 2.3 |
| 47. | Increase the size of a VMFS datastore. | 2.3 |
| 48. | Tag two datastores and create a tag-based storage policy that only matches one of them. | 2.3 |
| 49. | Deploy a virtual machine with that policy and confirm where it was placed. | 2.3 |
| 50. | Write the difference between thin and thick provisioned disks and change one disk between them. | 2.3 |

I. VSAN: ESA, OSA AND BUILDING A CLUSTER

Know which architecture fits and how a cluster is formed.

- | | | |
|-----|--|-----|
| 51. | Write the difference between vSAN ESA and vSAN OSA: how each uses devices and what each needs. | 2.3 |
| 52. | Given a scenario with existing SAS and SATA hardware, decide ESA or OSA and justify it. | 2.3 |
| 53. | Configure the vSAN VMkernel network on every host. | 2.3 |
| 54. | Turn on vSAN on a cluster and claim the devices. | 2.3 |
| 55. | Read the vSAN datastore capacity and account for raw against usable. | 2.3 |
| 56. | Run vSAN Skyline Health and clear the warnings you can. | 2.3 |

J. VSAN POLICIES, RESILIENCE AND SPACE EFFICIENCY

The vSAN sub-objectives with the most questions behind them.

- | | | |
|-----|---|-----|
| 57. | Create a storage policy with RAID-1 and failures to tolerate of 1, and apply it to a virtual machine. | 2.3 |
| 58. | Create a RAID-5 policy and a RAID-6 policy, and record the minimum host count for each. | 2.3 |
| 59. | Compare the capacity one virtual machine consumes under RAID-1, RAID-5 and RAID-6. | 2.3 |
| 60. | Change the policy on a running virtual machine and watch the resynchronisation. | 2.3 |
| 61. | Configure fault domains so a rack failure is survived, and write what it changes. | 2.3 |
| 62. | Write the resilience and data availability options in vSAN: failures to tolerate, fault domains, stretched clusters, data protection. | 2.3 |
| 63. | Write the purpose of each vSAN space efficiency feature: deduplication, compression, erasure coding, thin provisioning, UNMAP. | 2.3 |
| 64. | Write which space efficiency features apply to ESA and which to OSA, checked against the 9.0 documentation. | 2.3 |

K. VVF NETWORKING COMPONENTS

Objective 2.4 is one sub-objective: tell the components apart.

- | | | |
|-----|---|-----|
| 65. | Write the difference between a standard switch, a distributed switch, a port group, an uplink and a VMkernel adapter. | 2.4 |
|-----|---|-----|

- | | | |
|-----|---|-----|
| 66. | Create a distributed switch, add hosts to it and migrate their VMkernel adapters. | 2.4 |
| 67. | Create distributed port groups with VLAN IDs and set the teaming policy. | 2.4 |
| 68. | Set the MTU on the distributed switch and confirm it end to end with vmkping. | 2.4 |
| 69. | Turn on Network I/O Control and set shares for vSAN, vMotion and virtual machine traffic. | 2.4 |
| 70. | Write which networking a Supervisor uses in VVF, and which load balancers pair with it. | 2.4 |

L. DEPLOYING VVF

Objective 4.1: components and the deployment itself.

- | | | |
|-----|---|-----|
| 71. | Deploy the VCF Installer appliance and record that it deploys vSphere Foundation as well as VCF. | 4.1 |
| 72. | Gather the VVF wizard inputs: VCF Operations, vCenter, storage, ESX hosts, networks and the distributed switch. | 4.1 |
| 73. | Write the distributed switch profiles the wizard offers and when each fits. | 4.1 |
| 74. | Run the installer validation, fix one failure, and run it again. | 4.1 |
| 75. | Deploy VVF, or walk every step in a hands-on lab, and record what each step created. | 4.1 |
| 76. | Write how an existing vSphere environment is converged to VVF instead of deployed new. | 4.1 |

M. SUPERVISOR IN A VVF CLUSTER

Objective 4.1: configure the Supervisor.

- | | | |
|-----|--|-----|
| 77. | Choose the Supervisor networking for a VVF cluster: distributed switch with the Foundation Load Balancer or Avi. | 4.1 |
| 78. | Deploy or prepare the load balancer the Supervisor will use. | 4.1 |
| 79. | Enable the Supervisor on a cluster with distributed switch networking. | 4.1 |
| 80. | Create a vSphere namespace with resource limits, storage policies and VM classes. | 4.1 |
| 81. | Add a content library of Kubernetes releases and one of VM images to the Supervisor. | 4.1 |
| 82. | Write the difference between a single-zone and a three-zone Supervisor. | 4.1 |

N. IDENTITY, RBAC, LICENCES AND CERTIFICATES

Objective 4.2, first three sub-objectives.

- | | | |
|-----|---|-----|
| 83. | Configure the vCenter identity source or an external identity provider, and sign in with a directory account. | 4.2 |
| 84. | Map a directory group to a role, and test the access it gives. | 4.2 |
| 85. | Create a custom role in vCenter with only the privileges a VM operator needs, and assign it on one folder. | 4.2 |
| 86. | Record the local break-glass accounts and test one. | 4.2 |
| 87. | Add licences in VCF Operations and assign them to the components that need them. | 4.2 |
| 88. | Read the licence usage view and record what is reported and when. | 4.2 |
| 89. | Write the vCenter certificate modes: VMCA as the CA, VMCA as a subordinate, or custom certificates. | 4.2 |

90. Replace the vCenter machine certificate with a CA-signed certificate, and set an expiry alarm. 4.2

O. LIFECYCLE

Objective 4.2: keeping VVF current.

91. Configure the software depot, online or offline, and download a bundle. 4.2
92. Write the upgrade order for VVF: VCF Operations, then vCenter, then the hosts through the cluster image. 4.2
93. Upgrade vCenter, or walk through it in a hands-on lab, and record the downtime. 4.2
94. Run a remediation precheck on a cluster image and remediate the cluster to a new version. 4.2
95. Write what to check after an upgrade, including the vSAN on-disk format. 4.2

P. VCF OPERATIONS AND LOGS: ARCHITECTURE AND INTEGRATION

Objective 4.3, the largest in the blueprint.

96. Write the use cases for VCF Operations and for VCF Operations for logs. 4.3
97. Write the cluster components of VCF Operations, the collectors, and the deployment options. 4.3
98. Write the cluster components and deployment options of VCF Operations for logs. 4.3
99. Pick one virtual machine and list three metrics, three properties and three log events for it. Write the difference. 4.3
100. Connect VCF Operations to vCenter and vSAN, and confirm data arrives. 4.3
101. Integrate VCF Operations for logs with VCF Operations, and send vCenter and ESX logs to it. 4.3
102. Add one more integration, such as a management pack, and record what it adds. 4.3

Q. VIEWS, REPORTS, DASHBOARDS, ALERTS AND POLICIES

Building content in VCF Operations.

103. Create a custom list view of virtual machines with chosen metrics and properties. 4.3
104. Create a report from that view and schedule it. 4.3
105. Create a dashboard with three widgets that interact. 4.3
106. Share the dashboard with a group of users. 4.3
107. Create a symptom definition and an alert definition built on it. 4.3
108. Configure an email notification for that alert, then trigger it. 4.3
109. Create a VCF Operations policy, change one threshold, and apply it to a custom group. 4.3
110. Write how policy inheritance works, and test which policy an object gets. 4.3

R. VCF OPERATIONS FOR LOGS

Log events, Explore Logs and log dashboards.

111. Search log events in VCF Operations for one host and filter them by time and text. 4.3
112. Use Explore Logs to group events by a field and find the busiest source of errors. 4.3
113. Create a log dashboard in VCF Operations for logs and share it. 4.3

- | | | |
|------|---|-----|
| 114. | Create a log query alert for a specific event. | 4.3 |
| 115. | Write how long logs are kept and what decides it. | 4.3 |

S. COST, VSAN, APPLICATIONS AND COMPLIANCE

The rest of objective 4.3.

- | | | |
|------|---|-----|
| 116. | Configure cost drivers in VCF Operations and read the cost of one cluster. | 4.3 |
| 117. | Create a pricing policy and read the price of one virtual machine. | 4.3 |
| 118. | Monitor a vSAN cluster in VCF Operations: capacity, performance and health. | 4.3 |
| 119. | Configure service discovery and record which services it found and how they connect. | 4.3 |
| 120. | Set up application monitoring on one virtual machine and confirm its services are discovered. | 4.3 |
| 121. | Group the virtual machines of one application and monitor them together. | 4.3 |
| 122. | Turn on a security hardening compliance benchmark and read the result. | 4.3 |
| 123. | Fix one non-compliant setting and confirm the score changes. | 4.3 |

T. CONSUME AND AUTOMATE

Objective 4.4: Supervisor services, VM Service, VKS, vSphere Pods and Orchestrator.

- | | | |
|------|---|-----|
| 124. | Write how Supervisor-based services are deployed in VVF, and list the ones available. | 4.4 |
| 125. | Install one Supervisor service and confirm it is running. | 4.4 |
| 126. | Deploy a virtual machine with the VM Service from a YAML specification. | 4.4 |
| 127. | Deploy a VKS cluster in the namespace and log in to it with kubectl. | 4.4 |
| 128. | Deploy a workload into the VKS cluster and expose it through the load balancer. | 4.4 |
| 129. | Check which Supervisor networking supports vSphere Pods in 9.0, and deploy one where you can. | 4.4 |
| 130. | Write the use case for VCF Operations Orchestrator. | 4.4 |
| 131. | Run a simple Orchestrator workflow and record what it automated. | 4.4 |

U. AGAINST THE CLOCK

Do this section twice in the last week, timing yourself.

- | | | |
|------|--|-----|
| 132. | Configure a cluster with HA, DRS and one affinity rule. 15 minutes. | 2.2 |
| 133. | Encrypt a virtual machine and add a vTPM. 10 minutes. | 2.2 |
| 134. | Create three vSAN policies and apply them to three virtual machines. 15 minutes. | 2.3 |
| 135. | Enable a Supervisor and create a namespace. 30 minutes, or walk through it in a lab. | 4.1 |
| 136. | Replace the vCenter certificate and assign a licence. 15 minutes. | 4.2 |
| 137. | Build a view, a report, a dashboard and an alert in VCF Operations. 25 minutes. | 4.3 |
| 138. | Deploy a VM with the VM Service and a VKS cluster. 25 minutes. | 4.4 |