

Logical Operations Certified Virtualization Professional—VMware vSphere 6.5 Level 1 Exam CVP1-111

Exam Information

Candidate Eligibility:

The *Logical Operations Certified Virtualization Professional (CVP)—VMware vSphere 6.5 Level 1* exam requires no application fee, supporting documentation, or other eligibility verification measures for you to be eligible to take the exam. Simply purchase an exam voucher [here](#), then Logical Operations will send you an email containing the information you need to register to take the exam through Pearson VUE. You can also purchase a voucher directly through Pearson VUE. If your voucher came bundled with your CVP training program, you will receive registration information from your trainer or training administrator. Once you have obtained your voucher information, you can register for an exam time [here](#). By redeeming your exam voucher, you agree to our [Candidate Agreement](#).

Exam Prerequisites

While there are no formal prerequisites to register for and schedule a CVP1-111 exam time, Logical Operations (LO) strongly recommends you first possess the knowledge, skills, and abilities to do the following:

- Explain the significant benefits of virtualization
- Install ESXi Server following best practices
- Configure and manage local storage
- Create virtual and virtual-to-physical LAN segments
- Use shared SAN storage, including Fibre SAN and iSCSI SAN
- Define and use file share (NAS) datastores
- Install, configure, and update the platform service controller and vCenter Server Appliance
- Configure and use hotplug hardware, including hot-add vCPUs and memory
- Add and grow virtual disks, including system disks and secondary volumes

- Rapidly deploy VMs using golden-master templates
- Create clones
- Perform VM cold migrations, vMotion, and Storage vMotion
- Configure, manage, monitor, and secure users and groups
- Identify the benefits and tradeoffs of network attached storage, and Fibre and iSCSI SANs
- Deploy and use VMware Replication to hot backup and recover critical VMs
- Create and manage DRS load balanced clusters
- Understand, create, and manage HA clusters to protect against VM service loss caused by ESXi Server failures
- Monitor and tune both ESXi and virtual machine performance
- Patch and update ESXi Servers using VMware Update Manager
- Identify how VMware and third-party products, including operating systems, are impacted by virtualization
- Use advanced vSwitch settings, like NIC teaming and security
- Troubleshoot common problems

You can obtain this level of skill and knowledge by taking the following Logical Operations course, which is available through training providers located around the world:

- *VMware vSphere 6.5 with ESXi and vCenter*

Please visit www.cvpcertified.com for a full listing of training providers offering this course.

Exam Specifications

Number of Items: 80

Passing Score: 56 out of 80 (70%)

Duration: 120 minutes (**Note:** Published exam times include the 5 minutes you are allotted for reading and signing the Candidate Agreement and the 5 minutes you are allotted for the Pearson VUE testing system tutorial.)

Exam Options: In person at Pearson VUE test centers

Item Formats: Multiple Choice/Multiple Response/True-False

Exam Description

Target Candidate:

This exam is intended for vSphere 6.5 operators and junior administrators who perform duties that could include: installing and configuring standalone ESXi Servers, configuring and managing shared storage and networks, performing centralized management tasks, resource balancing, ensuring high

availability, power management, running backup and recovery processes, monitoring and managing performance, and ensuring VM and vCenter redundancy. The typical candidate has one year of day-to-day vSphere administration experience.

To ensure exam candidates possess the aforementioned knowledge, skills, and abilities, the CVP1-111 exam will test them on the following objective domains with the following weightings:

Domain	% of Examination
1.0 Virtualization and vSphere 6.5 with ESXi and vCenter	14%
2.0 Networking and Storage	19%
3.0 VM Creation and Management	31%
4.0 Resource Management	11%
5.0 Monitoring and Maintenance	14%
6.0 Replication and High Availability	11%
Total	100%

The information that follows is meant to help you prepare for your Logical Operations certification exam. This information does not represent an exhaustive list of all the concepts and skills that you may be tested on during your exam. The exam domains, identified previously and included in the objectives listing, represent the large content areas covered in the exam. The objectives within those domains represent the specific tasks associated with the job role(s) being tested. The information beyond the domains and objectives is meant to provide examples of the types of concepts, tools, skills, and abilities that relate to the corresponding domains and objectives. All of this information represents the industry-expert analysis of the job role(s) related to the certification and does not necessarily correlate one-to-one with the content covered in your training program or on your exam. Logical Operations strongly recommends that you independently study to familiarize yourself with any concept identified here that was not explicitly covered in your training program or products.

Objectives:

Domain 1.0 Virtualization and vSphere 6.5 with ESXi and vCenter

Objective 1.1 Identify basic virtualization concepts and terms.

- Common virtualization uses
 - Rackspace economy
 - Power/cost reduction
 - Lower datacenter overhead/management
 - Rapid deployment/imaging
- Common virtualization terms
 - CPU/vCPU
 - RAM/vRAM

- Disk/vDisk
- Network
- VM
- Hosts/clients
- Virtual/physical <component name>
- Overcommit
- IT problems and virtualization solutions
 - Imaging individual machines
 - Mass software installation
 - Production and test environment mismatches
 - Short lifespan of physical servers

Objective 1.2 Identify the features and uses of vSphere 6.5.

- CPU and memory management
 - Memory overcommit
 - Memory sharing
- Availability management
 - HA clusters
 - FT VMs
 - vMotion
 - Load balancing
 - DRS clusters
- Storage management
 - Storage vMotion
 - Storage profiles
- Backup and protection
 - VMware data protection
 - vSphere replication
 - vSphere endpoint

Objective 1.3 Install ESXi.

- Installation process
 - EULA
 - Target disks
 - Root passwords
 - Local storage partitioning and formatting
 - Enterprise class storage controllers
- Post-installation
 - ESXi DCUI
 - NIC selection
 - Static IP

- Host/domain names
 - Management network configuration
 - IPv4/IPv6 configuration
- Host logs
- Config files
- vSphere Client support
 - Inventory
 - Roles
 - System logs
- ESXi Host Client
 - User management
 - Active Directory joining
 - Time configuration
 - DNS and router settings
 - Physical server properties
 - Physical network adapters
 - Health status
 - ESXi firewall
 - ESXi system logs
 - Resource sizing

Domain 2.0 Networking and Storage

Objective 2.1 Identify common virtual network hardware components and concepts.

- Virtual switches
 - Internal only/isolated
 - Uplinked
 - Teamed
- vSwitch properties
 - Virtual side
 - Physical side
- vSwitch rules
- Frame forwarding
- Multi-homed networking
- Virtual NICs
 - Emulated
 - Fully virtualized

Objective 2.2 Work with virtual switches.

- vSphere standard virtual switches
- vSphere distributed virtual switches
- Frame forwarding

- vSwitch connection types
 - VMkernel ports
 - VM port groups
- vSwitch rules
- VMkernel NICs
- pNIC teams
- Cisco Discovery Protocol

Objective 2.3 Work with shared storage.

- Networking categories
 - Physical
 - Virtual-to-physical
 - VM-to-VM
 - VMkernel networking
- NAS
 - SMB
 - NFS protocol
 - Server side vs. client side
 - Pros and cons of NFS shares
 - FQDN/IP
- Linux NFS shares
 - /dir
 - IP
 - Rw
 - Sych
 - No_root_squash
- Defining
 - Drive types
 - Capacity
 - Provisioning
- Mounting/unmounting
- Troubleshooting
 - VMware support
 - Correct addressing
 - Services enabled
 - Firewall configuration
 - Connectivity
- NFS best practices
 - Jumbo frames
 - Read-only mounting

- SAN
 - Storage capacity consolidation
 - Redundant pathways
 - Shadowing
 - Snapshotting
- Fibre SANs
 - Fibre switched fabric topology
 - WWNs
 - Zoning
 - Masking
 - Zoning options
 - Port zoning
 - WWN zoning
 - Hard and soft zoning
 - Runtime hardware paths
- iSCSI
 - Non-redundant storage networks
 - Redundant Layer 2 networks
 - Stacked storage networks
 - Routed storage networks
 - iSCSI qualified names
 - Hardware/software initiators
 - IQN
 - CHAP
 - 1-way
 - 2-way
- LUN
 - LUN discovery options
 - Static
 - Send targets
 - Thin LUN provisioning
 - Deduplication
 - Hardware addresses
- Storage performance and management
 - Fast Ethernet networking
 - Isolated LAN segments
 - pNIC bonding
- Replication and backups
 - Disaster recovery

Objective 2.4 Work with VMware's Cluster File System.

- VMFS
 - Creation
 - Growth
 - Spanning
- VMFS auto discovery
- The Add Storage wizard
 - Device selection
 - VMFS versions
 - Partition configuration
 - Datastore settings
- Storage paths
 - Healthy
 - Failed
 - Preferred
 - Active
 - Standby
- PSP
 - Round Robin
 - Fixed
 - Most Recently Used
- Capacity management

Domain 3.0 VM Creation and Management

Objective 3.1 Identify common virtual machine hardware components.

- VM hardware
 - Virtual keyboard
 - Keyboard/mouse controllers
 - Floppy controllers
 - IDE controllers
 - SATA controllers
 - PCI video controllers
 - CPUs
 - Virtual Ethernet NICs
 - USB devices
- Base VMs

Objective 3.2 Create and configure virtual machines.

- The New virtual machine wizard
 - vCPU sockets and cores
 - RAM

- Disk
 - SCSI
 - SATA
- Removable media devices
- VMX files
- Guest OS installation
 - ISO images vs. physical media
 - Supported OSs
 - Windows versions
 - Linux distributions
 - Other supported OSs
 - Mac OSX 10.6+
 - Solaris 10 and 11
 - FreeBSD Unix
 - SCO OpenServer 5, UnixWare 7
- Virtual hardware upgrades

Objective 3.3 Install VMware tools.

- Device manager
 - Guest OS driver enhancements
 - Additional drivers
 - Heartbeat
 - File system synchronization
 - Guest OS busy/idle indicator
 - Memory management
 - USB passthrough to physical devices
- VM snapshots
- Snapshot Manager
 - Commit
 - Revert
 - Fork

Objective 3.4 Import and configure vCenter Server.

- vCenter Server
 - vCenter for Windows
 - Windows vServer Installer App
 - vCenter for databases
 - Microsoft
 - Oracle
 - vPostgres
 - Database storage requirements

- Performance data
- vCenter Server Appliance
- PSC
- VAMI
- vCenter Task Scheduler
- VMware Remote Console
- SSO Service
- VMCA
 - VMCA default
 - VMCE enterprise
 - Custom
- vSphere Web Client
 - HTML5 version
- ESXi target host selection
 - Password selection
 - Deployment size
 - Storage requirements
 - Target datastores
 - Time synchronization

Objective 3.5 Create an inventory hierarchy.

- Datacenters
 - Datacenter folders

Objective 3.6 Install and operate the VMware Remote Console Application.

- VM property editing
- Power management
- BIOS interaction
 - Phoenix BIOS

Objective 3.7 Deploy multiple VMs simultaneously.

- Image creation
 - Templates
 - Properties
 - Guest OS customization
 - Host/cluster/resource pool assignment
 - Virtual disk formats
 - Thick provisioned
 - Lazy zeroed
 - Eager zeroed
 - Thin provisioned
- Deploying from templates

- Deploy Template wizard
- Cloning

Objective 3.8 Work with and manage virtual appliances.

- Pre-built VMs
- Types (based on need)
 - Security
 - Firewall
 - Antivirus/anti-spam
 - IDS/IPS
 - Unified threat management
 - Applications
 - Mail servers
 - Web servers
 - OSs
- Virtual appliance pros and cons
- vCPU considerations
- Hotplugging
 - vCPU hotplugging
 - Memory hotplugging
 - Virtual disk
- 2D/3D video support
- Importation
 - OVF
 - OVA

Objective 3.9 Define permission models.

- Roles
 - Existing roles
 - Administrator
 - VM User
 - VM Power User
 - Network Administrator
 - Custom roles
 - Role assignment
- Privileges
- Permissions
 - Item-level
 - vCenter base permissions
 - Default ESXi permissions
- Permission best practices

- Groups
 - ESX Admins group

Objective 3.10 Monitor virtual infrastructure with vCenter alarms.

- Alarms
 - Parameters
 - Actions
 - Definition and customization
- Active and object alarms
- Alarm best practices
- Alarm targets

Objective 3.11 Perform migration tasks.

- VM migration
 - Cold
 - Hot
 - vMotion migration
 - vMotion migration requirements
 - Long Distance migration
 - Storage
 - Storage vMotion
- Validation and warnings
- Host compatibility
 - AMD CPU Identification Utility
 - Intel CPU Identification Utility

Domain 4.0 Resource Management

Objective 4.1 Allocate resource pools.

- Resource pools vs. individual VMs
 - Auto-update
 - Resource allocation
 - Resource use monitoring
- Resource delegation
 - Fair
 - Predictable
- Resource tuneables
 - Limits
 - Reservations
 - Shares
- Resource pool settings
 - Share settings
 - High

- Normal
 - Low
- Hard limits
 - Total ESXi host MHz
 - Total ESXi host MBs
- Expandable reservations
- Dynamic memory management

Objective 4.2 Work with DRS clusters.

- DRS clusters
 - Cluster maximums
 - Predictive DRS
 - Network-aware DRS
- DRS functions
 - ESXi host placement
 - ESXi host dynamic balancing
- DRS operation modes
 - Manal
 - Partially automated
 - Fully automated
 - Migration threshold
- DRS profiles
 - VM distribution
 - Memory metric for load balancing
 - CPU overcommit
- Affinity/anti-affinity rules
- Overrides
- EVC
 - AMD Opteron pCPUs
 - Intel Xeon pCPUs
 - EVC requirements
 - EVC validation/validation failures
 - Server generation considerations
- DRS resource management
- Server capacity management

Domain 5.0 Monitoring and Maintenance

Objective 5.1 Monitor virtual infrastructure with vCenter alarms.

- Alarms
 - Triggers
 - VM triggers

- ESXi host triggers
 - Datastore triggers
 - vCenter triggers
- Default definitions
- Actions
- Custom alarms
- Alarm status
 - Green
 - Yellow
 - Red
- Mail server properties
- SNMP receiver properties

Objective 5.2 Work with VMware Update Manager.

- VUM
 - VUM Size Estimator
 - VUM configuration
 - VUM vSphere Client plug-in
 - Network connectivity/ports
 - Settings
 - Maintenance Mode
 - Cluster
- Baseline types
 - Host patch
 - Fixed
 - Dynamic
 - Host extension
 - Host upgrade
 - VA upgrade
- Baseline attachment
- Patch application
- Compliance scanning
- VUM tasks
 - Software patch definition downloading
 - Patch update downloading
 - Update scanning
- VUM and HA admission control
- Host remediation options
- Cluster remediation options

Objective 5.3 Analyze and tune performance.

- Common performance issues
 - Scalability
 - Efficient resource utilization
- CPU scheduling and prioritization
 - Sockets
 - Cores
 - Hyper-threaded logical processors
 - Running vs. idle VMs
 - Sequential and concurrent tasks
 - Safe pCPU overcommit
- RAM allocation management
 - VM memory overcommit
 - TPS
 - Security issues
 - Inter-VM TPS
 - Memory ballooning
 - Memory compression
 - VMkernel swapping
- CPU and memory best practices
- Storage I/O controls
- ESXi and SSDs
- Performance charts and advanced performance charts
- Performance analysis tools
 - Windows Resource Monitor
 - Task Manager
 - Turbonomic
 - Foglight
- vCenter Operations Manager

Domain 6.0 Replication and High Availability

Objective 6.1 Enable and configure HA.

- HA clusters
- HA requirements
- ESXi host failure
 - HA host failure alarms
- ESXi management network isolation
 - Isolation response policy settings
 - NIC teaming vSwitch0
 - Second management port
- Network/datastore heartbeats

- PDL
- APD
 - Datastore APD
- HA enablement and configuration
 - Failures and responses
 - Restart priorities
 - Host failure and VM restart
 - HA restart
 - VM dependency restart condition
 - Resources allocated
 - Powered on
 - Guest heartbeats detected
 - App heartbeats detected
 - Restart condition timers
 - Additional delay
 - VM dependency restart condition timeout
 - Host isolation response
 - Epic VM failure
 - Datastore permanent device loss
 - VM monitoring sensitivity
- Proactive HA
- Admission control
 - Percent
 - Slot
 - Failover
- Per-VM override
- Maintenance Mode

Objective 6.2 Prepare for vSphere replication.

- Replication targets
 - Local
 - Remote
 - Target datastores
- VM synchronization
- VM replication policies
 - RPO
 - Hot replication policy
 - Recovery snapshots
- Replicated VMs
- VR Appliance

- Console
- Web login
- VM replication configuration
 - Replicated disk properties
 - Quiesces
 - RPO
 - Point in time instances
- Site-to-site replication
- Replication time zones
- Replication servers

Objective 6.3 Replicate and recover VMs.

- Replication
 - Replication status
 - Replication monitoring
 - Outgoing replications
 - Incoming replications
 - Manual replication
- Power off and recovery
 - Recovery options
 - With recent changes
 - With available data
- Recovered VM connection and testing

Continuing Education Requirements

The *Logical Operations Certified Virtualization Professional (CVP)—VMware vSphere 6.5 Level 1* certification is valid for 3 years from the time the certification is granted. You must re-take the most up-to-date version of the exam prior to the 3-year period's end to maintain a continuously valid certification.

To view the Logical Operations Candidate Agreement, click [here](#).

Then purchase a voucher to take the exam by clicking [here](#).