EXAM BLUEPRINT GUIDE

Nutanix Certified Professional Multicloud Infrastructure (NCP-MCI) 7.5 Beta Exam

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1. The Exam

1.1 Purpose of Exam

The Nutanix Certified Professional - Multicloud Infrastructure (NCP-MCI) 7.5 exam will measure a candidate's ability to interpret documented standards and perform key administrative tasks (e.g. deploying, configuring, migrating, troubleshooting, expanding, and managing) as it relates to a Nutanix multicloud environment.

1.2 Number of Questions

The NCP-MCI 7.5 beta exam consists of 112 multiple-choice and multiple-response questions.

1.3 Pricing

There is no cost for the NCP-MCI 7.5 beta exam.

1.4 Passing Score

The final score will be determined by examining the results from the beta exam period, determining which exam items performed well, and evaluating each candidate's results, based on only the items that performed well.

This process can take from 4-6 weeks from the time the beta period has ended. Once the evaluation is complete, candidates will receive their scores. Candidates who have passed will not need to take the live exam.

1.5 How Objectives Relate to Questions on the Exam

Objectives summarize what the test is designed to measure. Objectives are developed by Exam Developers and Subject Matter Experts based on identified tasks that relate to the job of deploying and administering a Nutanix multicloud platform environment.

Once the initial development process is complete, these objectives are verified using an external group of individuals in the actual job role. Finally, a number of questions is determined for each objective, which relates directly to the criticality of the task in the job role.

1.6 Languages

The beta exam is available in English.

1.7 Time Limit

The time limit for the exam is 180 minutes.

1.8 Scheduling and Taking the Exam

The NCP-MCI 7.5 exam is delivered via remote proctoring or in-person at select test centers.

If you select remote proctoring, after registering for the exam and providing valid identification, you will receive information on how to take the exam from your location using a web browser. Because the exam is remote proctored, you will be provided with a locked down, monitored, secure exam experience.

If you select in-person testing, you will be able to select a test center near you. On the day of the exam, you will need to arrive at the test center 15 minutes prior to the exam start time with a valid government-issued ID.

1.9 Certification Tracks

The NCP-MCI 7.5 beta exam is a core component of the Nutanix Multicloud Infrastructure track. Passing this exam results in achieving the NCP-MCI 7 certification.

The certification requires a passing score on the exam. While it is not required that you attend a course, Nutanix provides training that covers the objectives on the exam. Details on the recommended training course are provided in Section 4.

1.10 Retake Policy

If a candidate fails an exam on the first attempt, he or she is allowed two additional attempts. There is a seven-day waiting period between attempts. Like the first attempt, these are paid for individually and Nutanix recommends that you allow sufficient time between attempts to be properly prepared and to maximize your chances for success.

Please note: After three attempts, you will be unable to take the exam for 60 days, after which you can email university@nutanix.com and request that your attempts are reset. Nutanix recommends you utilize the time to thoroughly review this guide and the related references and/or take the recommended training for this exam.

1.11 Exam Security

Nutanix reserves the right to refuse certifying a candidate who violates exam security policies. This includes copying and redistribution of exam material, using any type of study material during the exam itself, attempting to photograph exam items and taking an exam using a false identity. Your identity is captured as part of the exam registration process and must be validated before you will be allowed to take the exam.

1.12 Recertification

Once you have passed the Nutanix Certified Professional – Multicloud Infrastructure 7.5 exam and achieved the NCP-MCI 7 certification, it will remain valid for three years.

To maintain your certification status, you must either renew your existing certification, pass an equivalent NCP-level exam within another certification track, or pass the NCM-MCI exam.

1.13 Benefits of Certification

- Digital badge from Credly that you can share on social media
- Access to the Certification store at http://store.nutanix.com for shirts, mugs, and more
- Opportunity to participate as a SME to develop future exams
- Discount on attending Nutanix .NEXT

2. Intended Audience

A candidate for the NCP-MCI 7.5 exam and NCP-MCI 7 certification has approximately 1+ years of holistic IT infrastructure experience and equivalent Nutanix experience.

Successful candidates are typically IT staff, to include administrators, engineers, and operators, as well as Tier 1 or 2 support personnel and Network or Security Operations Center escalation engineers who are capable of successfully deploying, configuring, migrating, troubleshooting, expanding, and managing within a Nutanix multicloud platform environment. Finally, the successful candidate will most likely have taken training courses, such as the Nutanix Enterprise Cloud Administration (ECA) course.

3. Objectives Covered in the NCP-MCI 7.5 Beta Exam

3.1 Introduction

It is recommended that candidates have the knowledge and skills necessary to deploy, configure, migrate, troubleshoot, expand, and manage within a Nutanix multicloud platform environment before attempting the Nutanix Certified Professional – Multicloud Infrastructure 7.5 beta exam. It is also recommended that the candidate complete the training course described in Section 4 prior to taking the exam.

For the NCP-MCI 7 certification, candidates will be tested on the following software versions:

- AOS: version 7.5
- AHV: version 11.0
- Prism Central: version pc.7.5

3.2 Objectives

Prior to taking this exam, candidates should understand each of the following objectives. Each objective is listed below; along with related tools the candidate should have experience with, and related documentation that contains information relevant to the objective. Please note that some documentation requires access via the Support Portal. Information on creating an account for use with the Support Portal can be found here.

All objectives may also be referenced in other product documentation not specifically highlighted below. The candidate should be familiar with all relevant product documentation or have the equivalent skills.

Section 1 – Manage Clusters in a Multicloud Environment

Objective 1.1: Deploy and configure clusters

Knowledge

- Gather required configuration details
- Differentiate between deployment methods
- Select CVM size based on required features
- Configure required services
- Perform Node Imaging

References

- Controller VM (CVM) Specifications
- Deploying Foundation Central
- Enabling Marketplace
- How to create a Phoenix ISO or AHV ISO from a CVM or Foundation VM
- Field Installation Overview
- Recommendations for Time Synchronization
- Configuring OpenLDAP Authentication in Prism Element
- Configuring Active Directory Authentication in Prism Element
- Virtual Switch Workflow
- iSCSI Data Services IP Address Impact
- Configuring an SMTP Server
- Foundation Central Appliance Overview
- Prepare Bare-Metal Nodes for Imaging

Objective 1.2: Deploy and configure Prism Central

Knowledge

- Given scenario define Prism Central deployment
- Select Prism Central size based on required features
- Scale Prism Central
- Enable features within Prism Central
- Demonstrate understanding of Policy Engine applications

References

- Prism Central Deployment
- Prism Central Scalability
- Expanding (Scale Out) Prism Central
- X-Small Prism Central
- Limitations of Prism Central Deployment:
- Prism Central in a Non-Nutanix Environment

- Deploy Multiple Prism Central Instances on a Prism Element Cluster
- Adding and Configuring the NTP Server Setting
- Performing Prism Central resource checks and resource resizing checks
- Policy Engine Overview
- Project Management

Objective 1.3: Perform network management

Knowledge

- Given a scenario, configure virtual switch(es)
- Given a scenario, deploy a virtual subnet
- Choose a VPC configuration
- Configure Flow Load Balancing and Traffic Mirroring

References

- Virtual Switch Workflow
- Changing the IP Address, Network Mask, or Gateway of an AHV Host
- IP Address Management
- Creating a Basic VLAN Subnet for Guest VM Interfaces
- NIC Compatibility Matrix for RDMA Features

Objective 1.4: Configure cluster storage

Knowledge

- Given a scenario, address storage shortage options
- Determine appropriate use case for storage resiliency
- Determine when to use Reserved Capacity/Reserved Space
- Determine current storage configuration and utilization
- Apply data resiliency
- Explain integration with external storage

References

- Storage Components
    - Compression
    - Deduplication
    - Erasure Coding
- Mixing Nutanix Nodes in a Cluster
- Increasing the Cluster Fault Tolerance Level
- Erasure Coding Best Practices and Requirements
- Creating a Shared Storage Container
- Configuring a Filesystem Whitelist
- Capacity Reservation Best Practices
- Rebuild Capacity Reservation
- Recycle Bin

Objective 1.5: Manage cluster security

Knowledge

- Troubleshoot AOS/Prism Central Security Issues, including:
    - Hardening using nCLI
    - Disablement of SSH/Bash
    - Filesystem Whitelists
    - Implement SSL Certificates
    - Nutanix firewall requirements
    - Explain Cluster Lockdown Mode
- Describe Encryption Options
- Implement Network Segmentation
- Configure Prism Central IAM, RBAC, and System Accounts

References

- Configuring Cluster Lockdown in Prism Element
- CVM Security Hardening

- Prerequisites for Prism Central Installation
- Importing a CA-Signed SSL Certificate in Prism Central
- Configuring a Filesystem Whitelist
- Service Accounts
- Data-at-Rest Encryption (Software Only)
- Microservices Infrastructure Prerequisites and Considerations
- vTPM Integration with External KMS
- External Key Management Server on Prism Central
- Key Management Server (KMS) Considerations
- Cluster Lockdown in Prism Element
- Enabling Cluster Lockdown Mode
- Security Configuration Management Automation Implementation

Section 2 – Manage Workloads in a Multicloud Environment

Objective 2.1: Perform VM management

Knowledge

- Update VM Configurations
- Update VM policies
- Perform VM Migration within clusters and between clusters
- Update NGT
- Explain use of Guest Customization Profiles
- Clone/restore VM from snapshots/recovery points
- Explain VM Agent usage

References

- Prerequisites
- Creating a VM (AHV)
- Updating a VM through Prism Central (AHV)
- Limitations of VM Template Feature
- Guest Customization Profile

- GPU and vGPU Support
- Memory Overcommit
- Understanding the Stable State of Reclaimed Memory
- Secure Boot Considerations
- AHV Overview
- VM High Availability in Acropolis
- VM-Host Affinity Policies
- VM-VM Anti-Affinity Policies
- Enabling Load Balancing of vDisks in a Volume Group
- Migrating Within the Cluster
- Live vDisk Migration Across Storage Containers
- Storage Quality of Service (QoS)

Objective 2.2: Perform storage container management

Knowledge

- Identify storage savings use cases
- Define storage policies
- Define container storage type
- Define image management policies

References

- Storage Container Management
- Storage Policy Management
- Creating a Storage Container
- Creating a Shared Storage Container
- Limitations for Storage Containers
- Managing Cluster Fault Tolerance
- Compression
- Deduplication
- Limitations with Bandwidth Throttling Policy

Objective 2.3: Manage workload storage

Knowledge

- Given a scenario select the appropriate vDisk type
- Change VM storage to match workload requirements
- Perform vDisk live migration
- Manage Volume Group

References

- Storage Policy Management
- Nutanix AHV VM Disk Configuration
- Best Practice Checklist
- Creating a Shared Storage Container
- External Storages
- Creating a VM (AHV)
- Live vDisk Migration Across Storage Containers
- Creating a Volume Group
- Examples of Supported Volumes Use Cases
- Configuring Mutual CHAP Authentication

Objective 2.4: Convert VM workloads

Knowledge

- Install VirtIO
- Identify VM migration scenarios
- Describe VM migration methods
- Identify supported source and target platforms
- Describe Nutanix tools used for VM conversion

References

- Creating a Windows VM on AHV with Nutanix VirtIO
- Nutanix Move Overview

- Creating a Migration Plan
- Security Policy Migration
- Downloading Support Bundle (UI)
- Downloading Support Bundle (CLI)

Objective 2.5: Secure workloads

Knowledge

- Enable vTPM and/or Secure Boot on a VM
- Given a scenario, configure VM level encryption via a storage policy
- Given a scenario, apply a microsegmentation policy
- Analyze environment using capabilities of Security Central
- Create approval policies

References

- Secure Boot Considerations
- Configuring a VM with a Virtual Trusted Platform Module
- Enabling a Virtual Trusted Platform Module on an Existing VM
- Creating/Updating a VM with Secure Boot Enabled
- Creating AHV VMs with vTPM (aCLI)
- Windows Defender Credential Guard Support in AHV
- Isolation Environment Policy Configuration
- Application Switcher Function
- Nutanix Cloud Manager Overview
- STIG Policy
- Security Policy Model
- Types of Policies
- Built-In Categories for Security Policies
- Storage Policy-Based Encryption
- Creating a Storage Policy

- Storage Policy Compliance
- Conditions in Approval Policies

Section 3 – Perform DR and Data Protection in a Multicloud Environment

Objective 3.1: Protect and recover Prism Central

Knowledge

- Describe supported backup types and backup locations
    - Describe PCBR Continuous Backup
    - Describe PCBR Point-in-Time Backup
- Describe PC Instance migration
- Identify post restore requirements/recommendations
- Describe PCBR recovery process

References

- Implementation Considerations and Limitations for Prism Central Backup and Restore
- Prism Central Backup and Restore Requirements
- Prism Central Backup, Restore, and Migration
- Post Restoration Considerations

Objective 3.2: Configure Prism Central-based DR for VMs and Volumes

Knowledge

- Configure in adherence with asynchronous and near-sync requirements
- Configure in adherence with CCLM and OD-CCLM requirements
- Use categories and policies
- Configure in adherence with Syncrep and Metro requirements
- Configure in adherence with disaster recovery requirements for containers

References

- Requirements for Asynchronous Replication
- Requirements for Synchronous Replication
- Configuring an Asynchronous Replication Schedule

- On-Demand Cross-Cluster Live Migration (OD-CCLM) Requirements
- Performing On-Demand CCLM
- Cross-Cluster Live Migration Limitations
- Checking Live Migration Status of a VM
- Creating a Category
- VM Revert Behavior
- Recovering an Entity Manually-Revert
- Configuring a Multisite Replication Schedule
- Virtual Network Specifications for Disaster Recovery
- Self-Service Data Restore Enablement
- Creating a Protection Policy
- Controller VM (CVM) Specifications
- CVM Specifications - With Disaster Recovery
- Storage Components
- DR Using Multicloud Snapshot Technology (MST)

Objective 3.3: Configure Prism element-based DR

Knowledge

- Configure Protection Domains across multiple clusters
- Explain network mapping and configuration for failover
- Configure Remote Site(s) in PE
- Execute planned and unplanned failover
- Explain container mapping
- Explain metro configuration with ESXi

References

- Protection Strategies
- Data Protection with Asynchronous Replication (One-hour or Greater RPO)
- Configuring an Asynchronous Replication Schedule
- Limitations of Data Protection with Asynchronous Replication

- Performing Failover
- Configuring a Remote Site (Physical Cluster)
- Network Mapping
- Metro Availability Witness Option

Section 4 – Perform Operations and Monitoring in a Multicloud Environment

Objective 4.1: Manage capacity

Knowledge

- Predict and plan for growth capacity, limits, and risks
- Configure proactive monitoring and alerting
- Determine resource optimizations
- Given a failure, DR, or incident scenario, validate capacity

References

- Heterogeneous Cluster Management
- Rebuild Capacity Reservation
- High Availability Reservation Impact on Memory Usage
- Behavioral Learning Tools
- Updating Capacity Configurations
- Configuring a Warning Threshold for Resilient Capacity

Objective 4.2: Manage platform and performance

Knowledge

- Configure Storage QoS in accordance with business requirements
- Automate resolution of performance alerts
- Analyze VM performance results
- Analyze audit logs
- Use system logs to troubleshoot platform or performance issues

References

- Storage Quality of Service (QoS)
- Setting QoS for an Individual VM
- Log Collection
- Acropolis Dynamic Scheduling in AHV
- Accessing Alerts Summary View
- Alerts Summary View (Prism Central)
- Alert and Event Monitoring (Prism Central)
- Logbay
- NCC Health Check: host_nic_error_check
- Creating Custom Alert Policies
- Log Collection
- Acropolis Dynamic Scheduling in AHV
- Creating a Storage Policy
- Playbook Triggers
- Task Automation - Playbooks
- Playbook Triggers
- Accessing Audits Details View
- NCC health check: LongRunningSubtasks
- Random Prism Central Reboots and Service Crashes when backing up via 3rd Party Backup Software or Async DR snapshot schedules

Objective 4.3: Perform cluster maintenance tasks

Knowledge

- Expand a cluster
- Eject node(s) from a cluster
- Diagnose and address an NCC error
- Execute the LCM process
- Plan for LCM upgrades
- Create custom reports

References

- Prerequisites and Requirements
- Preparing the New Nodes for Addition to Existing AHV Cluster
- Performing Firmware and Software Updates in a Connected Site Setup from Prism Element
- Removing Multiple Nodes
- Error: Node cannot be removed: Cluster needs at least 5 usable nodes
- Nutanix Cluster Check (NCC)
- Running NCC (Prism Element)
- Recommended Upgrade Order for Dark Site Method
- How to restore a node from LCM firmware upgrade failure using lcm_node_recovery script
- LCM Limitations
- Performing Firmware and Software Updates in a Dark Site Environment with LCM DUO
- NCC Health Check: ec_enablement_check
- LCM Pre-check: 'test_esx_entering_mm_pinned_vms' fails for ESXi node or 'test_ahv_entering_mm_pinned_vms' for AHV node

4. NCP-MCI 7.5 Training Recommendations

4.1 Course Recommendations

Nutanix offers multiple courses that provide training on the objectives tested for in the exam. More information on these courses, including delivery methods and pricing, can be found at nutanix.com/training.

These courses are detailed here, as follows:

- The Nutanix® Enterprise Cloud Administration (ECA) hands-on training explores the deployment, administration and troubleshooting of a Nutanix Multicloud environment.

  The course covers the following objectives:

  - Managing Virtual Machines
  - Managing clusters
  - Configuring Disaster Recovery
  - Configuring Data Protection
  - Troubleshooting
  - Conducting custom monitoring
  - Managing resource capacity

  This course is available online or instructor-led. More information including schedules and how to register can be found at www.nutanix.com/university.

- The Nutanix Quickstart for Virtualization Professionals (NQVP) is an intensive, one-day program that fast-tracks your journey to becoming a certified Nutanix administrator. With focused, practical training across several key areas – configuring and managing virtual infrastructure, disaster recovery, and monitoring & analysis – you'll gain the skills needed to confidently operate Nutanix environments.

  The course covers the following objectives:

  - Fundamental Nutanix Concepts
  - Securing and Organizing a Nutanix Environment
  - Configuring Nutanix Networking
  - Provisioning and Managing Virtual Infrastructure

- Automating Tasks with Playbooks
- Monitoring a Nutanix Cluster
- Using Nutanix Disaster Recovery
- Migrating VMs to Nutanix

This course is available online or instructor-led. More information including schedules and how to register can be found at www.nutanix.com/university.

- The NCP-MCI Exam Prep course is an intensive, one-day workshop where you will review the major concepts covered by the Enterprise Cloud Administration (ECA) course. You will also review a set of test questions for each module before taking the NCP-MCI exam during the last part of the workshop.

  The course covers the following objectives:

  - Managing Clusters in a Multicloud Environment
  - Managing Workloads in a Multicloud Environment
  - Performing Disaster Recovery and Data Protection in a Multicloud Environment
  - Conducting Operations and Monitoring in a Multicloud Environment

  This course is available online or instructor-led. More information including schedules and how to register can be found at www.nutanix.com/university.

5. Resources

5.1 Nutanix Community Edition

The Nutanix Community Edition is a free product that allows you to deploy a Nutanix Cloud Platform. To download the software and build your own environment for exam preparation, click here.

5.2 Test Drive

You can also take a 2-hour Hyperconverged Test Drive, which utilizes the Nutanix Community Edition, by clicking here.

5.3 The Nutanix Community

Connect with cloud builders from around the world, learn from IT Pros in your industry and share experiences on the Nutanix Community. The community maintains an area focused on Nutanix certifications, which is located here.

5.4 Additional Multicloud Infrastructure Resources

Find a wealth of additional Multicloud Infrastructure resources here.