

EXAM BLUEPRINT GUIDE

# Nutanix Certified Professional Multicloud Infrastructure (NCP-MCI) 6.5 Exam



## Table of Contents

Author	3
Contributors	3
<b>1. The Exam</b>	<b>4</b>
1.1 Purpose of Exam	4
1.2 Number of Questions	4
1.3 Pricing	4
1.4 Passing Score	4
1.5 How Objectives Relate to Questions on the Exam	4
1.6 Languages	4
1.7 Time Limit	4
1.8 Scheduling and Taking the Exam	5
1.9 Certification Tracks	5
1.10 Retake Policy	5
1.11 Exam Security	5
1.12 Recertification	5
1.13 Benefits of Certification	6
<b>2. Intended Audience</b>	<b>6</b>
<b>3. Objectives Covered in the NCP-MCI 6.5 Exam</b>	<b>7</b>
3.1 Introduction	7
3.2 Objectives	7
Section 1 – Manage Cluster, Nodes, and Features	7
Section 2 – Manage Cluster Storage	10
Section 3 – Configure Cluster Networking and Network Security	12
Section 4 – Analyze and Remediate Performance Issues	13
Section 5 – Configure, Analyze, and Remediate Alerts and Events	16
Section 6 – Manage VM Deployment and Configuration	17
<b>4. NCP-MCI 6.5 Training Recommendations</b>	<b>20</b>
4.1 Course Recommendation	20
<b>5. Resources</b>	<b>21</b>
5.1 Nutanix Community Edition	21
5.2 Test Drive	21
5.3 The Nutanix Community	21



## Author

Jeff Hall, Manager, Technical Certification Development

## Contributors

Kevin Arphexad – Sr. Nutanix Trainer

Maroane Boutayeb – System Engineer

Todd Burris – Systems Engineer

John Burton – Sr. Staff System Reliability Engineer

Cliff Butler – Lab Manager

Samuele Cerutti – Sr. Partner & OEM Systems Engineer Nutanix Italia

Oscar Chacon – Engineering Sales Specialist

Jim Corder – Instructor/Consultant

Kenneth Fingerlos – Director, Global Practices - Services

Matthew Gauch – Sr. Staff System Reliability Engineer

Lev Goronshtein – Systems Architect

Brad Gough – Systems Architect

Michael Heistruevers – Systems Engineer

Ross Hunt – Lead Infrastructure Development Engineer

Stephen Linker – Systems Administrator

Christian Marrero – Inside Systems Engineer, Portfolio Specialist

Paul Monroe – Sr. System Reliability Engineer

Keith Olsen – Systems Architect

Andrei Patergin – CTO

Drew Plaster – Sr. Network Systems Administrator

Gary Schwankl – IT Administrator

Ken Thacker – Sr. Manager, Technical Curriculum Development

Troy Ward – Sr. Systems Engineer

### Disclaimer:

The Nutanix Certified Professional - Multicloud Infrastructure (NCP-MCI) 6.5 Exam Blueprint Guide provides an overview of the objectives that must be mastered to achieve the NCP-MCI 6 credential. Nutanix does not offer any guarantees that this guide will ensure a candidate's success in achieving the NCP-MCI 6 certification. All information in this guide is subject to change at any time at the sole discretion of Nutanix.

---

# 1. The Exam

## 1.1 Purpose of Exam

The Nutanix Certified Professional - Multicloud Infrastructure (NCP-MCI) 6.5 exam tests candidates on their skills and abilities to interpret documented standards and procedures to complete routine tasks, including deploying and managing virtual infrastructure components and VMs, performing operational maintenance tasks, and initiating disaster recovery.

Additionally, the exam will validate the candidate's ability to configure user roles and remediate infrastructure alerts and events.

## 1.2 Number of Questions

The NCP-MCI 6.5 exam consists of 75 multiple-choice and multiple-response questions.

## 1.3 Pricing

The cost for the NCP-MCI 6.5 exam is \$199 USD.

## 1.4 Passing Score

The passing score for this exam is 3000, using a scaled scoring method. The scale is from 1000-6000. Scaled scores are calculated using a mathematical formula that considers a variety of factors, including the number and type of exam questions included in a specific version of the exam.

Because this combination may vary in different versions of the same examination, scaled scores provide a fair score for everyone based on the version of the exam taken.

## 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 AOS 6.5 / Prism Central 2022.6 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 exam is available in English.

## 1.7 Time Limit

The time limit for the exam is 120 minutes.

---

## 1.8 Scheduling and Taking the Exam

This 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 6.5 exam is a core component of the Nutanix Multicloud Infrastructure track. Passing this exam results in achieving the NCP-MCI 6 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](mailto: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 6.5 exam and achieved the NCP-MCI 6 certification, it will remain valid for two 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
- Points on Nutanix Xtribe that you can redeem for prizes (only available for Nutanix customers)
- 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 6.5 exam and NCP-MCI 6 certification has approximately 1-2 years of holistic IT infrastructure experience, while having at least 6-12 months of Nutanix virtualization experience.

Successful candidates are typically IT staff, NOC/SOC escalation engineers, and Tier 2 support personnel who are able to interpret documented standards and procedures to complete routine tasks, including deploying and managing virtual infrastructure components and VMs and performing operational maintenance tasks. Additionally, the successful exam candidate is expected to configure user roles and remediate infrastructure alerts and events.

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 6.5 Exam

### 3.1 Introduction

It is recommended that candidates have the knowledge and skills necessary to deploy, administer and troubleshoot a Nutanix AOS environment before attempting the NCP-MCI 6.5 exam. It is also recommended that the candidate complete the recommended course prior to taking the 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 6 certification, candidates will be tested on the following software versions:

- AOS: version 6.5
- Prism Central: version pc2022.6

### 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 Cluster, Nodes, and Features

Objective 1.1: Perform initial cluster configuration checks

Knowledge

- Run NCC Health Checks
- Determine the use for an external IP address
- Differentiate between an external IP address and a data services IP
- Install licenses in standard and dark data centers
- Determine how to create a cluster summary file

References

- [Verify the NTP configuration during an NCC Health Check](#)
- [Validate default passwords with NCC Health Check](#)
- [Host Network Management](#)

- [Common BMC and IPMI Utilities and Examples](#)
- [Configuring a new cluster in Prism](#)

## Objective 1.2: Manage supporting infrastructure tasks

### Knowledge

- Configure NTP, SMTP, and DNS services
- Configure directory services, such as Active Directory and LDAP
- Install SSL certificates
- Configure authentication and password management

### References

- [Configuring an SMTP Server](#)
- [Configuring an NTP Server](#)
- [Configuring Authentication](#)
- [Adding an Authentication Directory](#)
- [Controlling Remote \(SSH\) Access](#)

## Objective 1.3: Upgrading the platform using Life Cycle Manager (LCM)

### Knowledge

- Perform inventory in standard and dark data centers
- Determine the update order
- Differentiate software and firmware update processes

### References

- [Performing Inventory with Life Cycle Manager](#)
- [Performing Updates with Life Cycle Manager](#)
- [Automatically Updating Components with Life Cycle Manager](#)
- [Effects of Updates on a Cluster](#)
- [Setting up a Local Web Server](#)



## Objective 1.4: Maintain a Nutanix cluster

### Knowledge

- Upgrade cluster licenses
- Perform cluster maintenance tasks:
  - Start/Stop a cluster
  - Validate cluster status
  - Add/Remove a node
  - Manage maintenance mode
  - Secure a cluster
  - Perform a cluster health check using the GUI and CLI
  - Configure redundancy and replication factors
  - Differentiate the fault tolerance levels regarding block and rack awareness
  - Summarize the node boot process

### References

- [Shutting Down an AHV Cluster](#)
- [Removing a Node from a Cluster](#)
- [Controlling Cluster Access](#)
- [Data-at-Rest Encryption](#)
- [Run NCC Checks](#)
- [Replication Factor 1 Overview](#)
- [RF1 Guidelines and Limitations](#)
- [Configuring Rack Fault Tolerance](#)
- [Increasing the Cluster Fault Tolerance Level](#)
- [Availability Domains](#)
- [Limitations of Live Migration Support](#)



## Objective 1.5: Manage user roles and permissions

### Knowledge

- Configure Role-Based Access Control (RBAC) in Prism Central and Prism Element
- Create local users

### References

- [User Management](#)
- [Assigning Role Permissions](#)
- [Configuring Role Mapping](#)
- [Granular Role-Based Access Control \(RBAC\)](#)
- [Managing Local User Accounts](#)
- [Security Management Using Prism Central](#)
- [Security Management Using Prism Element](#)

## Section 2 – Manage Cluster Storage

### Objective 2.1: Describe Nutanix storage concepts

#### Knowledge

- Create and modify storage containers
- Identify storage resiliency options
- Describe replication factor options
- Describe volume groups
- Explain storage policies on containers
- Describe data encryption features and requirements
- Describe data path redundancy

#### References

- [Creating a Storage Container](#)
- [Modifying a Storage Container](#)

- 
- [Storage Components](#)
  - [Volume Group Configuration](#)
  - [Creating or Updating a Storage Policy](#)
  - [Data-at-Rest Encryption](#)
  - [Guest VM Data Management](#)
  - [Performance Analysis of Nutanix Shadow Clones](#)
  - [Distributed Storage Fabric](#)

## Objective 2.2: Configure Nutanix storage optimization features

### Knowledge

- Determine when to use advanced storage optimization settings:
  - [Compression](#)
  - [Deduplication](#)
  - [Erasure Coding](#)
- [Differentiate post-process compression and inline compression](#)
- [Evaluate the number of nodes required for erasure coding at various replication factor levels](#)
- [Determine storage container sizing](#)

### References

- [Data Efficiency](#)
- [Compression](#)
- [Erasure Coding](#)
- [Elastic Deduplication Engine](#)
- [Configuring a Warning Threshold for Resilient Capacity](#)
- [Flash Mode for Virtual Machines, Disks, and Volume Groups](#)
- [Replication Factor 1 Recommendations and Limitations](#)
- [Capacity Reservation Best Practices](#)

## Section 3 – Configure Cluster Networking and Network Security

### Objective 3.1: Deploy and configure networking

#### Knowledge

- Create managed and unmanaged networks
- Create and configure networking bridges
- Determine proper networking configuration options, such as LLDP, CDP, SNMP, etc.
- Determine proper switch properties, such as the MTU and packet transfer rate
- Determine VM network traffic statistics

#### References

- [Layer 2 Network Management](#)
- [AHV Networking Recommendations](#)
- [Host Network Management](#)
- [Configuring Network Connections](#)
- [VPC Management](#)
- [Virtual Switch Limitations](#)
- [Security Policy Model](#)
- [Switch Port Analyzer on AHV Hosts](#)

### Objective 3.2: Describe Nutanix networking concepts

#### Knowledge

- Segment management networks
- Explain extended subnets in overlay networks
- Describe how internal networking facilitates I/O performance
- Describe load balancing modes

#### References

- [Virtual Switches](#)
- [Segmented and Unsegmented Networks](#)
- [Configuring the Network on an AHV Host](#)
- [VLAN Configuration](#)

- [Virtual Switch Requirements](#)
- [Securing Traffic Through Network Segmentation](#)

Objective 3.3: Given a scenario, troubleshoot basic cluster networking

#### Knowledge

- Manage host-side networking
- Investigate switch properties
- Manage OVS commands to display switch status
- Investigate Application-specific performance issues

#### References

- [Cluster Expansion Prerequisites and Requirements](#)
- [Adding or Removing NICs from Bridges on AHV Clusters](#)
- [Network Configuration for VM Interfaces](#)
- [Verifying Host NIC Errors with NCC](#)
- [Cisco Nexus Recommended Practices](#)
- [Arista EOS Recommended Practices](#)

## Section 4 – Analyze and Remediate Performance Issues

Objective 4.1: Determine how to use reporting tools

#### Knowledge

- Customize widgets
- Build dashboards
- Generate output
- Locate data
- Determine where storage stats are located
- Create customized reports

#### References

- [Widgets on a Dashboard](#)
- [Creating a New Dashboard](#)

- 
- [Creating a Report](#)
  - [Scheduling a Report](#)
  - [Downloading a Report](#)
  - [Configuring Report Settings](#)
  - [Playbook Actions](#)

Objective 4.2: Given a scenario, determine which metrics and entities are relevant

Knowledge

- Determine which types of charts to use for given scenarios
- Determine which node is generating high resource consumption
- Determine which values to analyze, such as IOPS, latency, throughput, etc.

References

- [Creating an Entity Chart](#)
- [Creating a Metric Chart](#)
- [Chart Metrics](#)
- [Exporting Performance Data](#)
- [Alerts/Health Checks](#)
- [Analysis Dashboard](#)
- [Alerts Dashboard](#)
- [Health Dashboard](#)

Objective 4.3: Given a scenario, interpret anomaly detection events

Knowledge

- Determine how anomaly detection operates
- Compare anomaly detection to a manual baseline
- Determine behavioral anomaly events

References

- [Prism Central Main Dashboard Display](#)
- [Operations Policy Management](#)

- 
- [Behavioral Tools](#)
  - [Enabling an Operations Policy](#)
  - [Creating Custom Alert Policies](#)

Objective 4.4: Determine how to resolve a performance issue

Knowledge

- Add RAM or CPU to a VM
- Add a node to a cluster
- Review storage optimization features
- Recognize Data Protection performance issues
- Recognize if an issue is external or internal

References

- [Virtual Machine Memory and CPU Hot-Plug Configurations](#)
- [Adding a Compute-Only Node to an AHV Cluster](#)
- [Storage Optimization Features](#)
- [Conditions for Implementing Data Protection](#)
- [Data Protection with NearSync Replication](#)
- [Enabling Load Balancing of vDisks in a Volume Group](#)
- [SQL Server Performance Tuning](#)

Objective 4.5: Identify VM inefficiencies

Knowledge

- Identify bully VMs
- Identify over-provisioned and under-provisioned VMs
- Identify inactive VMs

References

- [Prism Central VMs Summary View](#)
- [Behavioral Learning Tools](#)
- [Cluster Details View](#)
- [Event Details](#)

---

## Section 5 – Configure, Analyze, and Remediate Alerts and Events

### Objective 5.1: Configure Remote Syslog Server settings

#### Knowledge

- Enable Remote Syslog Server settings in the GUI and CLI
- Configure Syslog options in the GUI and CLI
- Determine use cases for enabling Remote Syslog

#### References

- [Configuring Syslog Monitoring](#)
- [Configuring Remote Syslog Server Settings](#)
- [Send Logs to a Remote Syslog Server](#)
- [Collecting Logs by Using Web Console](#)

### Objective 5.2: Identify common Nutanix services

#### Knowledge

- Describe the role of critical services:
  - Cassandra
  - Curator
  - Genesis
  - Pithos
  - Prism
  - Stargate
  - ZooKeeper
- Collect logs for critical services in the GUI and CLI

#### References

- [Cluster Components](#)
- [Cassandra Service](#)
- [Curator Service](#)
- [Genesis Service](#)



- [Pithos Service](#)
- [Prism Service](#)
- [Stargate Service](#)
- [Zookeeper Service](#)
- [Collecting Logs by Using Web Console](#)

### Objective 5.3: Configure Nutanix Alert Policies

#### Knowledge

- Configure alert emails
- Stop alerts during a maintenance window
- Manage alert policies

#### References

- [Configuring Alert Emails](#)
- [Creating Custom Alert Policies](#)
- [Configuring Alert Policies](#)
- [Overlapping Alert Policies](#)

## Section 6 – Manage VM Deployment and Configuration

### Objective 6.1: Create, modify, and optimize VMs and their components

#### Knowledge

- Create VMs
- Customize VMs
- Configure hot plug devices
- Configure virtual hardware settings

#### References

- [Creating a VM in AHV](#)
- [Managing a VM in AHV](#)
- [Hot-Plugging the Memory and CPUs on Virtual Machines](#)
- [Memory Overcommit](#)

- [Enabling vNUMA on Virtual Machines](#)
- [Installing Windows on a VM](#)
- [Affinity Policies for AHV](#)
- [Configuring Network Connections](#)

## Objective 6.2: Manage the Image Service

### Knowledge

- Utilize templates to deploy VMs
- Upload images
- Configure image placement policies

### References

- [Deploying a VM from a Template](#)
- [Configuring Images](#)
- [Uploading Images from a Workstation](#)
- [Uploading Images from a Remote Server](#)
- [Image Upload Verification](#)
- [Image Placement Policies](#)

## Objective 6.3: Describe VM Storage Policies

### Knowledge

- Configure storage policy options
- Apply a storage policy to a VM

### References

- [Creating or Updating a Storage Policy](#)
- [Storage Policy Based Encryption](#)
- [Deleting a Storage Policy](#)
- [Associating a Storage Policy with a VM](#)



## Objective 6.4: Manage VM Placement Options

### Knowledge

- Describe GPU VMs
- Describe VM live migration
- Describe Affinity policies
- Differentiate Affinity and Anti-affinity policies
- Explain High Availability
- Explain Capacity Reservation

### References

- [AHV VM Live Migration Process](#)
- [Live Migration of vGPU-enabled VMs](#)
- [Affinity Policies for AHV](#)
- [Affinity Policies Defined in Prism Central](#)
- [Acropolis Dynamic Scheduling in AHV](#)
- [VM High Availability in Acropolis](#)
- [Capacity Reservation Best Practices](#)

## 4. NCP-MCI 6.5 Training Recommendations

### 4.1 Course Recommendation

Nutanix offers a course that provides training on the objectives tested for in the exam. More information on this course, including delivery methods and pricing, can be found at [nutanix.com/training](https://nutanix.com/training).

The course details are as follows

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

The course covers the following objectives:

- Managing clusters, nodes, and features
- Managing cluster storage
- Configuring cluster networking
- Managing network security
- Analyzing and remediating cluster performance issues
- Configuring, analyzing, and remediating alerts and events
- Managing VM deployments and configuration

The material provided in the course covers a majority of the objectives (approximately 80%) that appear on the NCP-MCI 6.5 exam and is recommended for individuals who want to gain a good understanding of these objectives. Please note that additional exposure to a Nutanix environment is highly recommended.

---

## 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](#).

**NUTANIX**

+1 (855) 688-2649 | [certification@nutanix.com](mailto:certification@nutanix.com) | [www.nutanix.com](http://www.nutanix.com)

©2024 Nutanix, Inc. All rights reserved. Nutanix, the Nutanix logo and all product and service names mentioned herein are registered trademarks or trademarks of Nutanix, Inc. in the United States and other countries. All other brand names mentioned herein are for identification purposes only and may be the trademarks of their respective holder(s).