EXAM BLUEPRINT GUIDE

Nutanix Certified Professional Cloud Native (NCP-CN) 7.5 Beta Exam

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1. The Exam

1.1 Purpose of Exam

The Nutanix Certified Professional - Cloud Native (NCP-CN) 7.5 beta exam will measure a candidate's ability to deploy, configure, and manage Nutanix Kubernetes Platform (NKP) clusters.

1.2 Number of Questions

The NCP-CN 7.5 beta exam consists of 105 multiple-choice and multiple-response questions.

1.3 Pricing

There is no cost for the NCP-CN 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, configuring, and managing NKP clusters.

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-CN 7.5 beta 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-CN 7.5 beta exam is a core component of the Nutanix Cloud Native track. Passing this exam results in achieving the NCP-CN 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 NCP-CN 7.5 exam and achieved the NCP-CN 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-CN 7.5 exam and NCP-CN 7 certification has at least 6-12 months of building and managing Kubernetes clusters, 6-12 months of working with Linux, and 6 months of experience with a Kubernetes platform or applicable training.

The successful candidate should have foundational knowledge about the target platforms, an understanding of basic networking and basic cloud native concepts and should possess a Certified Kubernetes Administrator (CKA) certification level of knowledge.

Successful candidates are typically DevOps Engineers, Cloud Engineers, NKP Administrators, Platform Administrators, or Platform Engineers. They may also be Solution Architects, Developers, Systems Engineers, or Systems Reliability Engineers.

Finally, the successful candidate will most likely have taken training courses, such as the Nutanix Kubernetes Platform Administration (NKPA) course.

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

3.1 Introduction

It is recommended that candidates have the knowledge and skills necessary to deploy, configure, and manage NKP clusters before attempting the NCP-CN 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-CN 7 certification, candidates will be tested on the following software versions:

- NKP: version 2.17
- AOS: version 7.5
- 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 – Prepare the Environment for an NKP Deployment

Objective 1.1: Seed a private registry

Knowledge

- Recognize the purpose for seeding a registry
- Determine parameters for registry seeding command
- Demonstrate understanding of the workflow for seeding a registry
- Troubleshoot issues that arise during seeding the registry
- Recognize the network requirements for a private registry

References

- Seeding the Registry for an Air-gapped Cluster
- Air-gapped vs Non-air-gapped Environments

- Loading the Registry
- Registry and Registry Mirrors
- Pushing Images to the Registry
- Installing custom root certificates to trust Private Registry

Objective 1.2: Create a bootstrap cluster

Knowledge

- Recognize the purpose for creating a bootstrap cluster
- Determine parameters for creating a bootstrap cluster
- Demonstrate understanding of the workflow for creating a bootstrap cluster
- Troubleshoot issues that arise during the creation of a bootstrap cluster

References

- ClusterAPI (CAPI) Concepts and Terms
- Nutanix Infrastructure Requirements
- Creating the NKP Management Cluster using CLI
- Creating the NKP Management Cluster on a Public Cloud Provider
- Modifying the NKP Bootstrap subnet and gateway
- Creating an NKP diagnostic bundle
- Generating an NKP support bundle

Objective 1.3: Determine license tiers for clusters

Knowledge

- Differentiate between the feature levels per license type
- Align the use case with a license tier
- Identify the process for obtaining a license

References

- NKP Licenses
- NKP Feature Support Matrix

- NKP Software Options
- Adding an NKP License through the UI

Objective 1.4: Prepare a bastion host

Knowledge

- Recognize the purpose of a bastion host
- Demonstrate understanding of the bastion host prerequisites and components
- Recognize the network requirements for a bastion host

References

- Purpose of the bastion host
- Creating a bastion host
- Deploying NKP using UI from Nutanix Marketplace

Objective 1.5: Build machine images or prepare nodes

Knowledge

- Demonstrate understanding of the purpose and process for building machine images using the CLI
- Demonstrate understanding of the purpose and process for preparing nodes using the CLI
- Recognize the prerequisites for building machine images
- Recognize the minimum requirements for building machine images and preparing nodes
- Determine how to customize the process of building images or preparing nodes
- Demonstrate understanding of changes required to build an image in an air-gapped environment

References

- Creating a Nutanix VM Image
- Building a Custom Image with Nutanix
- Using an Image provided by Nutanix
- Control Plane and Worker Node Resource Requirements for NKP
- Defining the Infrastructure in a Pre-provisioned Environment
- Supported Infrastructure Operating Systems

Objective 1.6: Gather information for building a cluster on a target provider

Knowledge

- Identify parameters associated for building a cluster on a target provider
    - Networking requirements
    - Connectivity details
    - Storage requirements
    - Cost/SKU

References

- Creating NKP Clusters on Azure
- Creating NKP Clusters on AKS
- Creating NKP Clusters on AWS
- Creating NKP Clusters on EKS
- Creating NKP Clusters on GCP

Section 2 – Manage Building an NKP Cluster

Objective 2.1: Customize and deploy clusters

Knowledge

- Use NKP CLI to build and deploy a cluster
- Given a use case, determine when and how to employ the various components of cluster API for customization
- Determine steps to diagnose a cluster deployment issue
    - Determine which cluster API resources should be analyzed
- Determine when and how to use a custom manifest for deploying clusters
    - Determine corresponding cluster API resources and their configuration parameters
- Analyze the NKP CLI parameters required for a specific cluster deployment use case

References

- Step-by-Step Guide for Deploying an Air-gapped NKP Environment
- NKP Installation Prerequisites

- Creating the NKP Management Cluster using CLI
- Pre-provisioned Air-gapped: Creating a New Cluster
- Pre-provisioned Infrastructure
- Pre-provisioned Installation Options
- Pre-provisioned Air-gapped: Configuring the Environment
- Configuring an HTTP or HTTPS Proxy

Objective 2.2: Customize and deploy Kommander and apply appropriate licenses

Knowledge

- Use NKP CLI to build and deploy Kommander
- Determine steps to diagnose a Kommander deployment issue
- Determine when and how to use a custom manifest for deploying Kommander
    - Determine corresponding platform application resources and their configuration parameters
- Analyze the NKP CLI parameters required for a specific Kommander deployment use case

References

- Installing Kommander in an Air-gapped Environment
- Installing Kommander in a Small Environment
- Installing Kommander with a Configuration File
- Additional Kommander Configuration Customizations
- Enabling NKP Full Stack License
- Supported NKP Applications

Section 3 – Perform Day 2 NKP Operations

Objective 3.1: Configure authentication and authorization

Knowledge

- Configure identity provider and groups
- Differentiate between Kommander roles and cluster roles
- Configure custom roles and role bindings

- Use tokens to authenticate users
- Demonstrate understanding of environment contexts and role inheritance

References

- Identity Providers
- OpenID Connect (OIDC)
- Onboarding a User to an NKP Cluster
- Access to Kubernetes and Kommander Resources
- Limitation for Kommander Roles
- Access Control
- Role Bindings
- Configuring Token Authentication for Global Identity Providers
- Configuring Token Authentication for Workspace Identity Providers

Objective 3.2: Configure logging

Knowledge

- Demonstrate understanding of logging stack
- Scale the logging stack
- Integrate log forwarding with provider
- Manage logging in a multitenant environment
- Determine which logs to gather and analyze
- Integrate persisting data to Nutanix Unified Storage (NUS)

References

- Logging Architecture
- Logging Stack Scaling
- Grafana Loki
- Enabling Logging Applications Using the UI
- Rook Ceph
- Multi-tenant Logging

- Admin-level Logs
- Overriding ConfigMap to Modify the Storage Retention
- Managing persistent, cluster-scoped storage for workloads

Objective 3.3: Configure cluster backup and recovery

Knowledge

- Recognize dependencies for cluster backup and recovery
- Determine target storage requirements for cluster backup
- Configure storage/volume snapshot classes for backup
- Configure Velero
- Use Velero CLI to perform backups and restores
- Perform a cluster restore
- Use Nutanix Data Services for Kubernetes (NDK) for storage level protection
- Diagnose and address backup issues

References

- Backup and Restore
- Valero Configuration
- Valero Backup Reference Guide
- Container Storage Interface Snapshot Support in Valero
- Valero Restore Reference Guide
- Restore a Cluster from Backup
- Changing the Default Backup Service Settings
- Nutanix Data Services for Kubernetes on NKP Prerequisites
- Deploying NDK on Air-gapped NKP Environments
- Troubleshooting Guide

Objective 3.4: Conduct performance and health monitoring

Knowledge

- Demonstrate understanding of the monitoring stack
- Configure/enable NKP monitoring stack
    - Centralize monitoring in a multi-cluster environment
- Customize service- and system-level metrics
- Diagnose and address performance and health issues
- Use custom dashboards
- Configure monitoring alerts and endpoints
- Configure backend storage for a monitoring application

References

- Monitoring and Alerts
- Centralized Monitoring
- Centralized Metrics
- Centralized Alerts
- Alerts Using AlertManager
- Configuring Prometheus Alerts in Emails
- Setting Storage Capacity for Prometheus

Objective 3.5: Configure cluster autoscaling

Knowledge

- Recognize the purpose and use cases for enabling and configuring cluster autoscaling
- Demonstrate the method for enabling and configuring cluster autoscaling

References

- Configuring Nutanix Cluster Autoscaler
- Scaling Node Pools Using the Cluster Autoscaler
- Scaling Up with Autoscaler
- Scaling Down with Autoscaler

Objective 3.6: Conduct lifecycle management functions

Knowledge

- Upgrade clusters
- Upgrade Air-gapped cluster
- Determine when and how to update cluster configurations
- Manage node pools
- Manually scale clusters
- Use the NKP CLI to delete clusters

References

- Upgrading Management and Managed Clusters on Nutanix Infrastructure
- Upgrading Management and Managed Clusters on Other Infrastructures
- Configuring Node Pool Information
- Manually Scaling Up Node Pools
- Manually Scaling Down Node Pools
- Adding GPU Node Pools Using the NKP UI
- vSphere: Scaling Node Pools
- Deleting a Cluster

Section 4 – Conduct NKP Fleet Management

Objective 4.1: Configure workspaces

Knowledge

- Given a use case, determine workload cluster workspace assignment
- Recognize the purpose and use cases for a workspace
- Configure infrastructure provider
- Configure access control at workspace level
- Deploy application to a workspace
- Recognize the purpose and use case of Insights

References

- Workspaces
- Configuring Workspace Role Bindings
- Infrastructure Providers
- Multi-Tenancy in NKP
- Configuring an AWS Infrastructure Provider with a User Role
- Workspace Applications
- Customizing an Application Per Cluster
- NKP Insights Overview
- Installing NKP Insights
- NKP Insights Resource Requirements

Objective 4.2: Deploy workload clusters to a workspace

Knowledge

- Recognize the purpose and use cases for deploying workload clusters
- Determine how to deploy workload clusters
- Recognize the impact of target provider environments on workload cluster deployments
- Troubleshoot the deployment of a workload cluster

References

- Creating New Cluster
- Creating Managed Clusters Using the NKP CLI
- Preflight Checks
- Default Storage Providers
- Generate a Support Bundle
- Using SSH Fallback and Ansible

Objective 4.3: Attach clusters to a workspace

Knowledge

- Recognize the purpose and use case for attaching clusters
- Determine how to attach a cluster
- Configure and update attached and air-gapped clusters
- Recognize capabilities and limits of attached clusters

References

- Requirements for Attaching an Existing Cluster
- Cluster Attachment without Network Restrictions
- Cluster Attachment with Network Restrictions
- Prerequisites for a Tunneled Attachment
- Attaching an NKP-created Cluster Using the CLI
- EKS: Attaching a Cluster from the UI Dashboard
- EKS: Attaching a Cluster Manually Using the CLI
- EKS: Creating a kubeconfig File
- Accessing a Managed or Attached Cluster

Objective 4.4: Detach or delete clusters from a workspace

Knowledge

- Recognize the purpose and use case of detaching or deleting clusters from a workspace
- Use the Kommander dashboard to delete a cluster from the GUI
- Delete a cluster using the CLI

References

- Pre-provisioned: Deleting a Cluster
- Disconnecting or Deleting Clusters
- Deleting a Cluster Through the CLI

Objective 4.5: Configure projects

Knowledge

- Recognize the purpose and use cases for a project
- Determine workload cluster project assignments
- Configure access control at the project level
- Deploy applications at the project level
- Configure Flux Continuous Deployment (CD)/GitOps deployment
- Federate resources
- Use Cluster API (CAPI) and its Runtime Extensions to manage declaratives

References

- Projects
- Creating a Project Using the UI
- Configuring the Project Role Using the UI
- Configuring the Project Role Using the CLI
- Project Secrets
- Configuring the Project Secrets Using the UI
- Project Quotas and Range Limits
- Project Platform Applications
- Continuous Deployment

Objective 4.6: Configure platform applications

Knowledge

- Recognize supported platform applications
- Deploy, modify, disable, or enable platform application via the UI
- Deploy, modify, disable, or enable platform application via the CLI
- Customize a platform application deployment from the Kommander dashboard
- Differentiate between global and cluster scope application configuration
- Troubleshoot platform application configurations

References

- Supported Platform Applications
- Enabling an Application Using the UI
- Deploying Platform Applications Using CLI
- Verifying the Deployed Platform Applications
- Upgrading Project Catalog Applications Using the UI
- Upgrading the Catalog Applications Using the CLI
- Setting PriorityClasses in NKP Applications
- Approach for Troubleshooting Applications
- Applications Context

4. NCP-CN 7.5 Training Recommendations

4.1 Course Recommendations

Nutanix offers 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.

The course details are here, as follows:

The Nutanix® Cloud Platform Administration (NKPA) course teaches the skills needed to deploy, configure, optimize, troubleshoot, and perform administrative tasks on a Nutanix Kubernetes Platform (NKP) cluster.

The NKPA course explores a number of subjects, including:

- What NKP is, key terms and concepts, how to install NKP in an air-gapped and non-air-gapped environment, and how to license an NKP cluster.
- Various lifecycle management operations for an NKP cluster, including configuring infrastructure; using workspaces; creating, attaching, and scaling clusters; creating projects; and upgrading NKP.
- How to configure and manage access control, by configuring identity providers, creating identity provider groups, configuring workspace and project roles, and binding roles.
- What platform applications are, the categories of platform applications that NKP provides out-of-the-box (monitoring, logging, security, and so on), and how to deploy platform applications.
- How to protect and restore NKP clusters, and the applications running on those clusters.
- About the NKP logging stack, how to enable, customize, and scale the logging stack applications, how to restrict logging to specific namespaces, and how to view logs.
- About NKP's monitoring capabilities, including which components gather metrics, which metrics are exposed, cost monitoring, visualizations using Grafana, and how to configure alert rules and alert notifications.

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 Cloud Native Resources

Find a wealth of additional Cloud Native resources here.

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