



NexaVM nKU

Installation Tutorial

Nexavm Technologies AG



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1. Preparatio

1.1. Hardware Requirements

nKU can be deployed on both baremetal or virtual machine, the hardware requirements as following.

1.1.1. Platform Cluster

The following table takes a single server deployment as an example to describe the configuration requirements over the server:

Device	Minimal (POC)	Recommend (product)
Host	Baremetal or virtual; 1 node	Baremetal or virtual; 3 node
CPU	16 vCPU	16 vCPU +
Memory	32 GB	32 GB +
System disk	300 GB	500 GB +
Data disk	400 GB	500 GB +
Network	1 Gbps	10 Gbps

1.1.2. Control Plane of Business Cluster

The following table takes a single Control Plane of business cluster, deployment as an example to describe the configuration requirements over the server:

Device	Minimal (POC)	Recommend (product)
Host	Baremetal or virtual; 1 node	Baremetal or virtual; 3 node
CPU	8 vCPU	16 vCPU +
Memory	16 GB	32 GB +
System disk	300 GB	500 GB +
Data disk	400 GB	500 GB
Network	1 Gbps	10 Gbps

1.1.3. Computing Node of Business Cluster

The following table takes a single server computing node of business cluster, deployment as an example to describe the configuration requirements over the server:

Device	Minimal (POC)	Recommend (product)
Host	Baremetal or virtual; 0 node	Baremetal or virtual; 2 node
CPU	4 vCPU	16 vCPU +
Memory	8 GB	32 GB +
System disk	100 GB	500 GB +

Network	1 Gbps	10Gbps
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1.1.4. Performance Requirements

The core component that affects the stable operation of clusters is etcd.

- **ETCD**

- **Disk Performance:**

(Recommend) To ensure the performance of etcd, the disk should be a high-speed disk, such as SSD or NVME

IOPS:

- ◆ Random Write IOPS: 1000 ~ 2000 or above
- ◆ Random Read IOPS: 1000 ~ 2000 or above
- ◆ Sequential Write IOPS: 100 ~ 500 or above

- **Network Bandwidth:**

At least 1 Gbps

- **Latency:**

The latency between etcd should be below 10 milliseconds, so network latency should be minimized as much as possible to ensure performance.

1.2. Prepare Software Packages

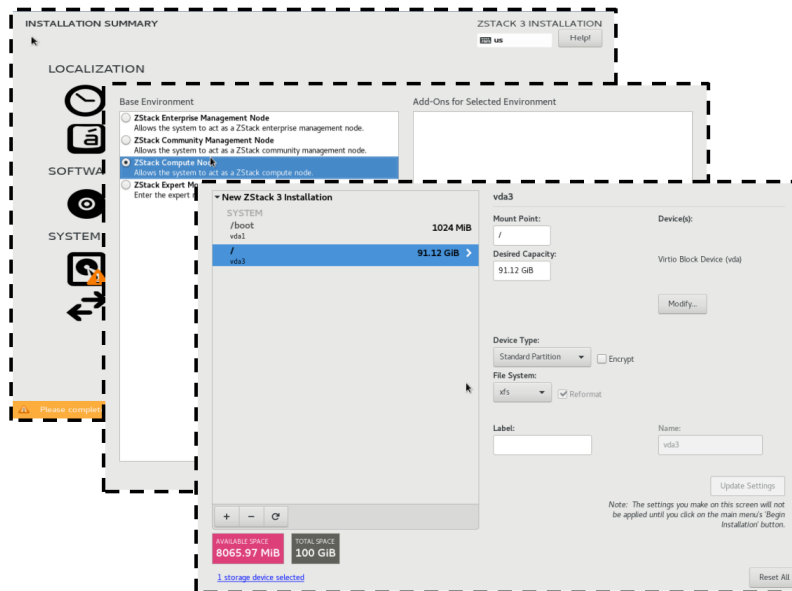
- After download the software packages, check the MD5 hash by using md5 checker to verify software integrity.

1.3. Install Operation System

On the INSTALLATION SUMMARY page, click SOFTWARE SELECTION to enter the SOFTWARE SELECTION page. Select an installation mode on the page: **【Compute Node】**

Configure disk partitioning: sets partitioning to Automatically configure partitioning by default. If you want to customize partitioning, set the parameters based on the BIOS boot mode:

- **UEFI mode**
 - /boot: stores the core files required for Linux startup. We recommend that you distribute 1 GB to the directory.
 - /boot/efi: stores UEFI boot file. We recommend that you distribute 500 MB to the directory.
 - swap: swap. We recommend do not use swap.
 - /: Linux system root. We recommend that you distribute the rest of the space to the directory.
- **Legacy mode**
 - /boot: stores the core files required for Linux startup. We recommend that you distribute 1 GB to the directory.
 - swap: swap. We recommend do not use swap.
 - /: Linux system root. We recommend that you distribute the rest of the space to the directory.



1.4. Network Settings

Network configuration command reference tools:

```
# create bond bond0
    zs-bond-ab -c bond0

# add network device enp59s0f0 to bond bond0
    zs-nic-to-bond -a bond0 enp59s0f0

# create vlan (optional)
    zs-vlan -c bond0 103

# create bridge and configure ip
zs-network-setting -b bond0.103 172.34.4.111 255.255.255.0 172.34.4.1
```

1.5. Installation information

We recommend to record the information shown in the table, in order to facilitate installation, configuration, and use.

The information collected below is used to deploy a high availability platform cluster and business clusters. The information of minimal single cluster will be less the the table.

Platform Cluster		
IP	172.31.13.11、12、13	
Gateway	172.31.13.1	
Netmask	255.255.255.0	
Base service VIP	172.31.13.31	
Console VIP	172.31.13.32	Web console of nKU
Network card name	ens3	Network card name of 3 nodes should be same.
Data disk	/dev/sdb	
Business Cluster		
Management-IP	172.31.13.21、22、23	
Management-Gateway	172.31.13.1	
Management-netmask	255.255.255.0	
business-IP (default route)	172.31.14.21、22、23	
Business-gateway	172.31.14.1	
Business-netmask	255.255.255.0	
Storage-IP	192.168.100.11、12、13	optional
Storage-netmask	255.255.255.0	
Management-VIP	172.31.13.24	
Business-VIP	172.31.14.24	
Data disk	/dev/sdb	
information		
Root password	password	
DNS	223.5.5.5	optional
NTP	172.27.8.5	optional

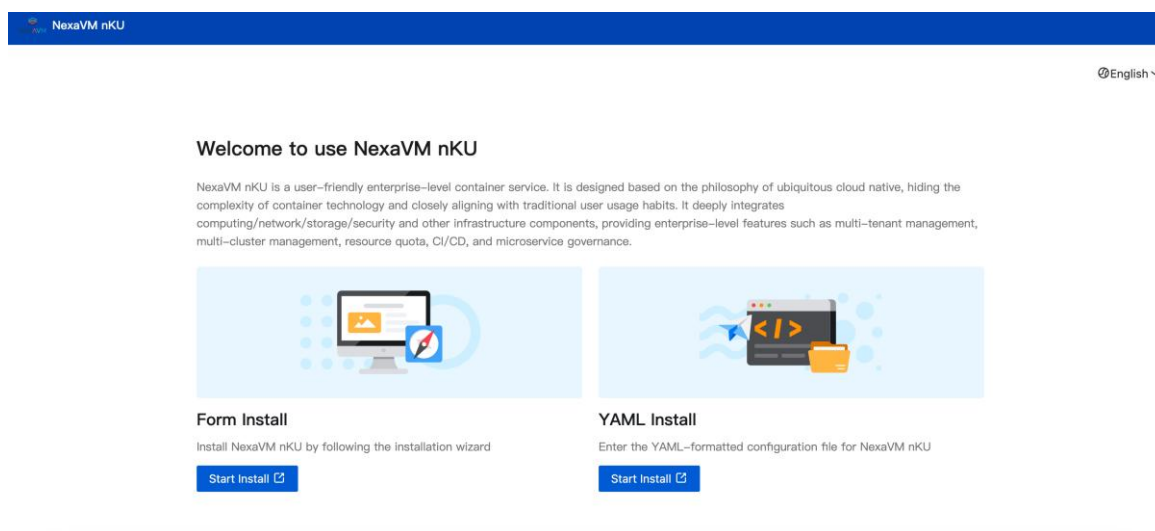
2. Install nKU

2.1. Install Installation Guide

- Copy bin package to /root directory on the third node of the platform cluster, and execute the following command:

```
bash nKU-3.7.1-all-in-one-nexavm.bin
```

- After installation complete, you can visit the guide from.
`http://node_ip:12000`
- When you visit the guide http://node_ip:12000, follow the nKU installation guide to install the platform cluster



2.2. Install Platform Cluster

2.2.1. Node information

Fill in management IP address、password and SSH port.

Form Install Wizard

Node Configuration

Cluster HA *

If turned off, the Cluster does not support high availability, only 1 Control Plane is required. It is not recommended to turn off Cluster HA in production environments.

Node IPv4 *

Node 1 * 172.27.207.28

Node 2 * 172.27.207.22

Node 3 * 172.27.207.47

Node ROOT Password * zstack@123@%

Node SSH Port * 22

Exit Next Step: Basic Configuration

2.2.2. Basic Configuration

- Fill the Basic service VIP、console VIP、NTP、data disk。
- If you want to manage licenses on Cloud platform(support by version Cloud 5.4.x and above), turn on the “Use Cloud Platform License Services”.

Form Install Wizard

Node Configuration

Basic Configuration

Confirm Configuration

Generate YAML Configurations

Installation

Basic Service IPv4 VIP * 172.27.212.166

Console IPv4 VIP * 172.27.212.167

External NTP Server

System Data Disk *

Node	System Data Disk *
k8s-1 172.27.207.28	/dev/vdb x
k8s-2 172.27.207.22	/dev/vdb x
k8s-3 172.27.207.47	/dev/vdb x

Cloud License Service *

You can manage the license of this product with Cloud 5.3.20 or later. If you connect Cloud 5.3.20 or later to the platform, we recommend that you enable this feature.

Cloud API URL * 172.27.212.168

Enter a Cloud IP to call Cloud APIs. Typically, the IP is the VIP or the Management Node IP of the Cloud console.

Cloud admin Password *

Embedded into Cloud *

This feature is available only if your Cloud version is 5.3.20 or later.

Cloud URL * http://172.27.212.168:5000

Enter the ID of Cloud, for example, http://172.21.56.130:5000. Ensure that the ID is accessible to this platform.

Exit Previous Step: Node Configuration Next Step: Confirm Configuration

2.2.3. Confirm Configuration

Check of all parameters are filled in correctly, and click next

NexaVM nKU

Form Install Wizard

Node Configuration
Basic Configuration
Confirm Configuration
Generate YAML Configurations
Installation

Node Configuration

Cluster HA : Enable
Node IPv4 : 172.27.207.28 172.27.207.22 172.27.207.47
Node ROOT Pass... : *****
Node SSH Port : 22

Basic Configuration

Basic Service IPv... : 172.27.212.166 Console IPv4 VIP : 172.27.212.167
System Data Disk : k8s-1| 172.27.207.28 /dev/vdb
k8s-2| 172.27.207.22 /dev/vdb
k8s-3| 172.27.207.47 /dev/vdb
Cloud License Service : Close

Exit Previous Step:Basic Configuration Next Step:Generate YAML Configurations

2.2.4. YAML

- If there are special requirements, Yaml files can be modified for deployment.

NexaVM nKU

Form Install Wizard

Node Configuration
Basic Configuration
Confirm Configuration
Generate YAML Configurations
Installation

You can edit the YAML configurations. The final install is based on the YAML configurations.

```

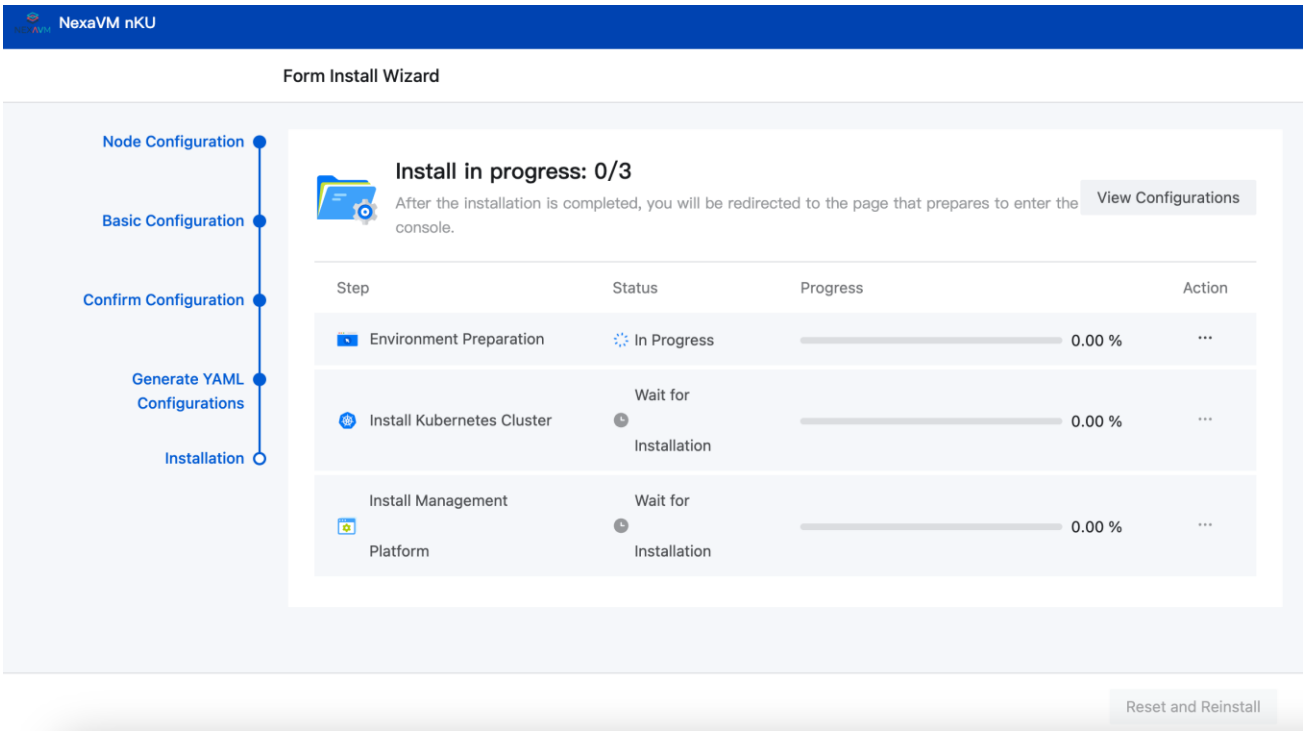
1 all:
2   hosts:
3     k8s-1:
4       ansible_host: 172.27.207.28
5       ansible_port: 22
6       ip: 172.27.207.28
7     k8s-2:
8       ansible_host: 172.27.207.22
9       ansible_port: 22
10      ip: 172.27.207.22
11     k8s-3:
12       ansible_host: 172.27.207.47
13       ansible_port: 22
14       ip: 172.27.207.47
15   vars:
16     # Basic Configuration=
17     # Node Root Password
18     cluster_host_root_pass
19     # The cluster has a b

```

Exit Previous Step:Confirm Configuration Next Step:Installation

2.2.5. Install in Progress

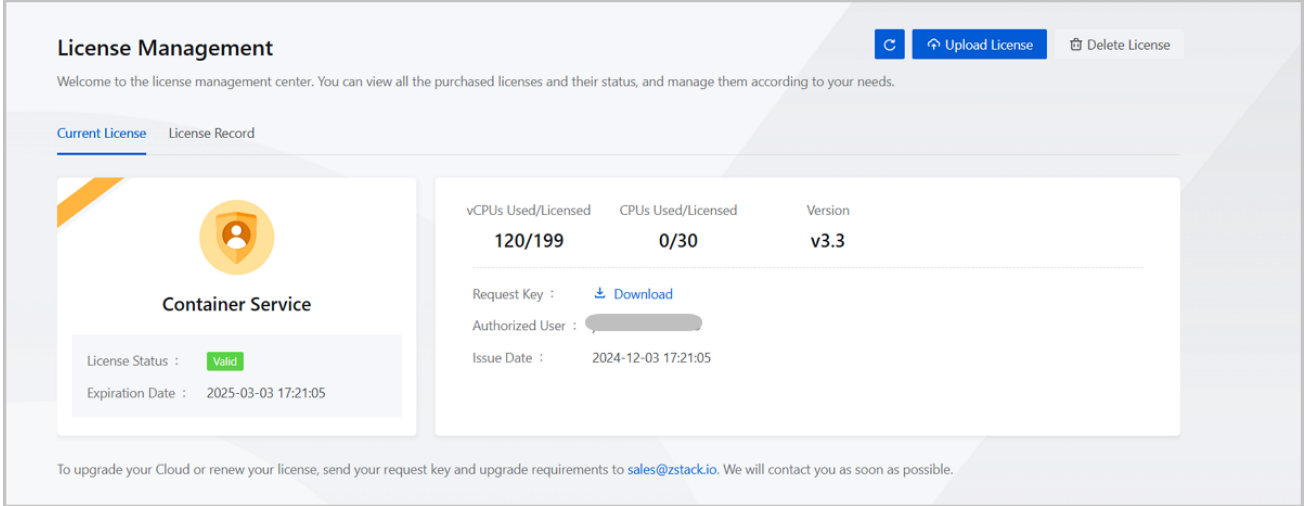
- The deployment process is divided into three steps, and the estimated deployment time for the entire platform is around 40 minutes. May vary depending on server performance and network factors.
- On the right side of each step, there is a “Operation” button that allows you to view deployment logs and retry the current step.



Default user name and password on nKU:
admin / admin@123

2.2.6. Platform Authorization

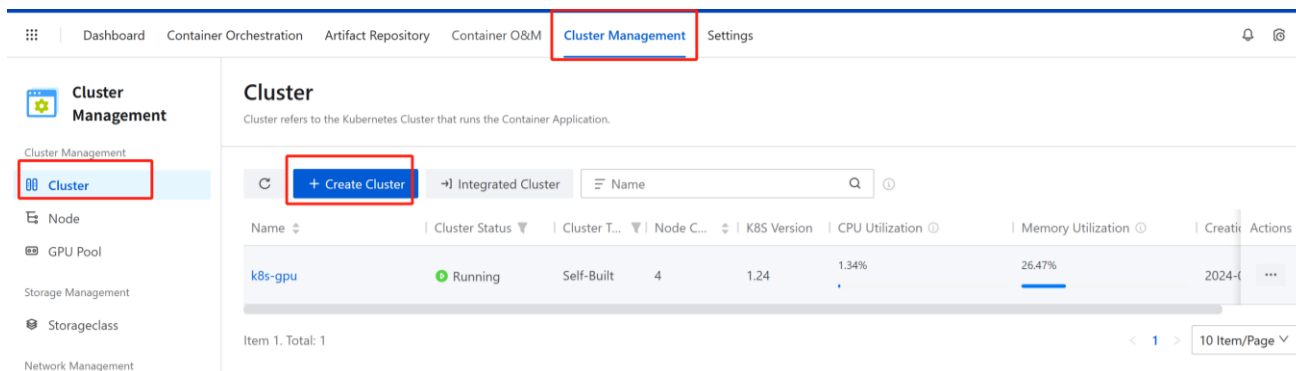
The menu displays information about the current container service's license agreement, software version, and license status, and provides unified management of licenses. Please click Download download requestkey.



2.3. Install Business Cluster

2.3.1. Create Cluster

One the main menu of nKU, choose “Cluster Management” > “Cluster” page, click “Create Cluster”



2.3.2. Node Configuration

can be entered accordingly by referring to the following example:

- **Management network and business network Reuse:** select whether the management network multiplexes the business network. When it is turned on, the management network multiplexes the business network, and the management cluster will access the nodes and manage the business clusters through the business network IP of the nodes, so please make sure that the management cluster is connected to the business network.
- **Cluster HA:** Select whether to turn on Cluster HA. The default is on. If it is off, the cluster HA does not support high availability, and only 1 management cluster node is needed. It is not recommended to turn off cluster HA for production environments.
- **Node Information:** Fill in information about the nodes to be used to create the cluster
 - # **Node Role:** Select the role of the node, optional: control plane, compute node, GPU node. A cluster must have 3 management nodes.
 - # **GPU Manufacturer:** Fill in this field when checking the GPU node for the node role, select the manufacturer of the GPU manufacturer on the node, and the system will install the GPU-related components of the corresponding manufacturer, currently supported: NVIDIA, Huawei.
 - # **Node Name:** Set the name of the node. Naming rules: length limit 2-50 characters, can only contain lowercase letters, numbers and separator (-), must start with a lowercase letter and cannot end with a separator.
 - # **Business network IPv4:** fill in the business network IPv4 address of the node
 - # **Management network IPv4:** Fill in the IPv4 address of the management network of the node. The management cluster accesses and manages the business cluster nodes through the management network IPv4 address, so make sure that the management cluster is connected to this address. When the management network is multiplexed with the business network, the management network IPv4 address and the business network IPv4 address are the same.
- **Node ROOT password:** Fill in the node root password to facilitate the process of adding nodes, SSH to the node to perform the installing steps, please ensure that the ROOT password of each node is the same.
- **Node SSH port:** Fill in the port used by the SSH node to facilitate the process of adding nodes, SSH to the node to perform the installing steps, please make sure that the port of each node can be connected.

Create Cluster

Node Configuration | Basic Configuration | Preview

Management Network ☒
Cluster HA ☒
If turned off, the Cluster does not support high availability, only 1 Control Plane is required. It is not recommended to turn off Cluster HA in production environments.

Node Information

Node Role	Node name *	Business Network VIP *	Management Network VIP *
☒ Control Plane ☐ Node ☐ GPU Node	node1	172.26.52.194	172.26.52.194
☒ Control Plane ☐ Node ☐ GPU Node	node2	172.26.50.241	172.26.50.241
☒ Control Plane ☐ Node ☐ GPU Node	node3	172.26.50.121	172.26.50.121

[+ Add Node](#)

Node Root Password *
Node SSH Port *

[Cancel](#) [Next: Basic Configuration](#)

2.3.3. Basic Configuration

can be entered accordingly by referring to the following example:

- **Cluster Name:** Set the name of the cluster. Naming rules: length limit 2-50 characters, can only contain lowercase letters, numbers and separator (-), must start with a lowercase letter, can not end with a separator
- **K8S version:** select the Kubernetes version of the cluster, you can choose 1.24, 1.30 version
- **Business network VIP:** Fill in the highly available address of the cluster API Server in the business network, please fill in the IPv4 address in the business network segment.
- **Management Network VIP:** Fill in the cluster HA address of the cluster API Server in the management network, please fill in the IPv4 address in the management network segment. If the management network is multiplexed with the business network, the VIP of the management network is the same as the VIP of the business network.
- **Maximum pods per node:** fill in the maximum number of container pods allowed to run on each node, the default is 110, and you can only fill in an integer of 50~1000
- **Monitoring/logging data disk:** Select the disk used for storing cluster monitoring data and container log data, make sure it is loaded on each management cluster node.

- **Pod CIDR:** Fill in the network segment used by the pod in the cluster, which is used to assign the IP address used by the pod, and the default is 10.233.64.0/18. If you modify the default pod segment, please avoid overlapping with the intranet segment and other segments used in the creation of this cluster.
- **Service CIDR:** Fill in the service CIDR in the cluster, used to assign the ClusterIP for the service, the default is 10.233.0.0/18. If you modify the default service CIDR, please avoid overlapping with the Intranet CIDR and other CIDRs used in the creation of the cluster.
- **DNS server:** Add a DNS server to provide DNS resolution service to resolve domain names external to the cluster. If you have not deployed a dedicated DNS server, you can fill in the public DNS server address, such as 223.5.5.5.
- **Microservices governance:** choose whether to enable microservices governance, when enabled, the deployment of microservices governance related components in the cluster, support the use of microservices governance related functions in the cluster
- **Container Image Disk:** optional, select the Image data disk used to store the Image data. If no container images disk is set, the Image data is stored in the system disk by default. When more and larger Images are used, it is recommended to load a special volume for the node to store the Images, so as to avoid the Image data from filling up the system disk, resulting in system abnormalities.

Create Cluster

Node Configuration

Basic Configuration

Preview

Cluster Name *

clustr-demo

K8S Version *

1.30

Business Netw... *

172.26.52.94

Cluster API Server Business Network highly available address, please fill in IPv4 in the Node Business Network segment.

Management ... *

172.26.52.94

Maximum pod... *

110

Monitoring/Lo... * ⓘ

Node

Monitoring/Lo... *

node1	172.26.52.194	/dev/vdb x
node2	172.26.50.241	/dev/vdb x
node3	172.26.50.121	/dev/vdb x

Pod CIDR ⓘ

10.233.64.0/18

Service CIDR ⓘ

10.233.0.0/18

DNS Server *

223.5.5.5

Add a DNS server to resolve the external domain name of the Cluster. If there is no dedicated DNS server for Deployment, fill in the public DNS Service address, such as 223.5.5.5.

Cancel

Previous: Node Configuration

Next: Preview

×

[立即刷新](#)

x

操作

确定

页/页 ∨

3. Deploy DevOps – Optional

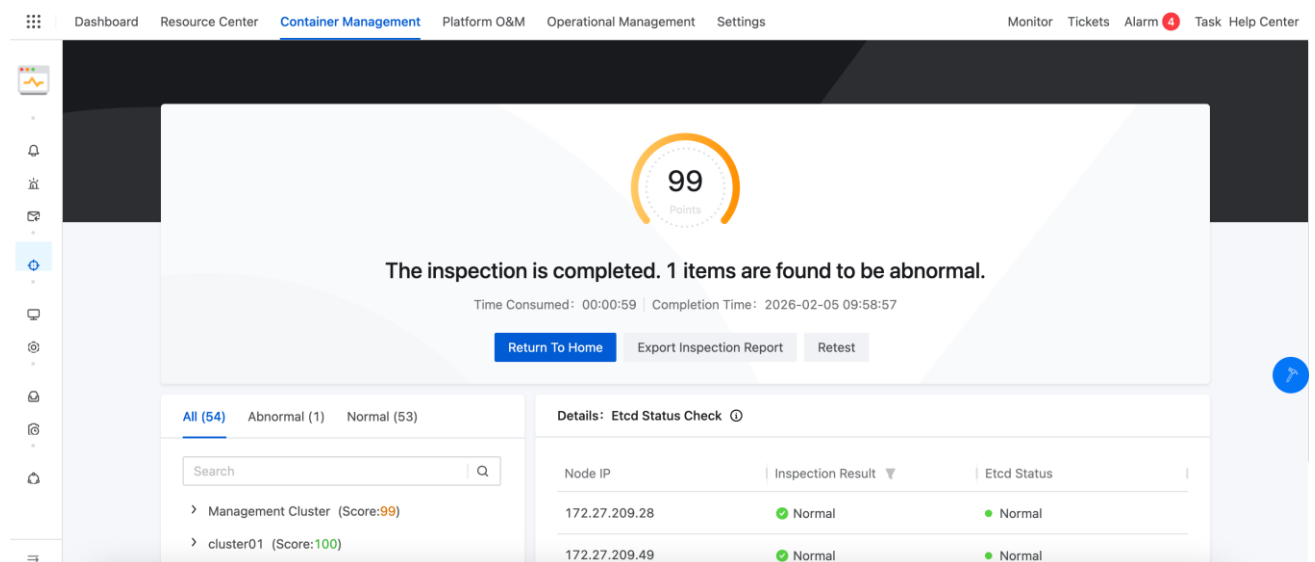
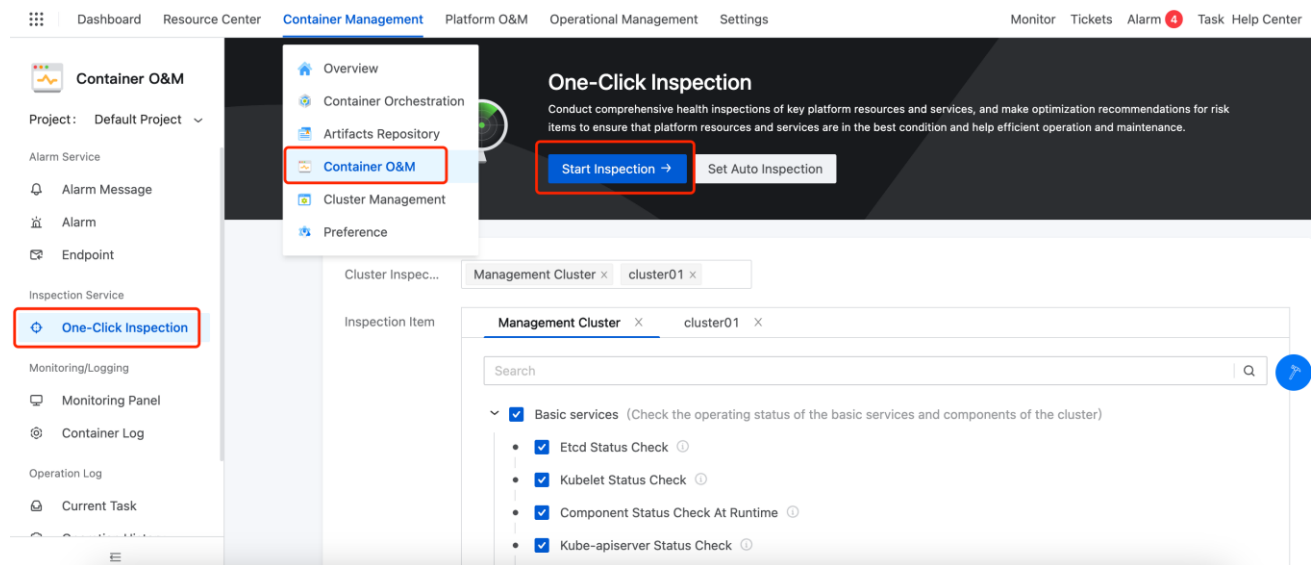
If you need to enable the DevOps feature, please perform the following operations.

Upload the DevOps plugin package to the third node of the management platform in advance and execute the installation script.

[Installation Script can be acquired from NexaVM Local Team in your Region]

4. Platform Check

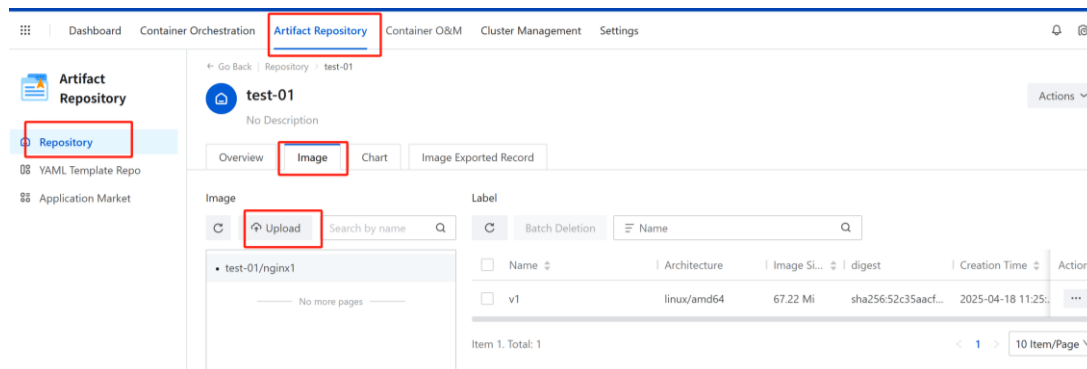
Go to Container O&M > One-Click Inspection, and click the Start Inspection button



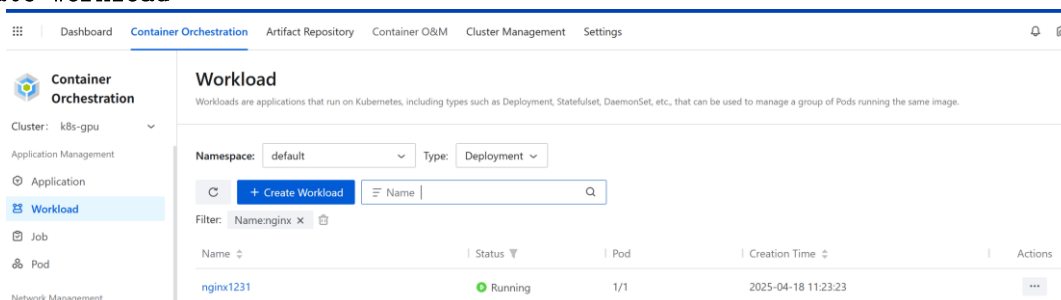
5. Platform Test

After you complete the initialization of Kubernetes Cluster, you can create a workload instance.

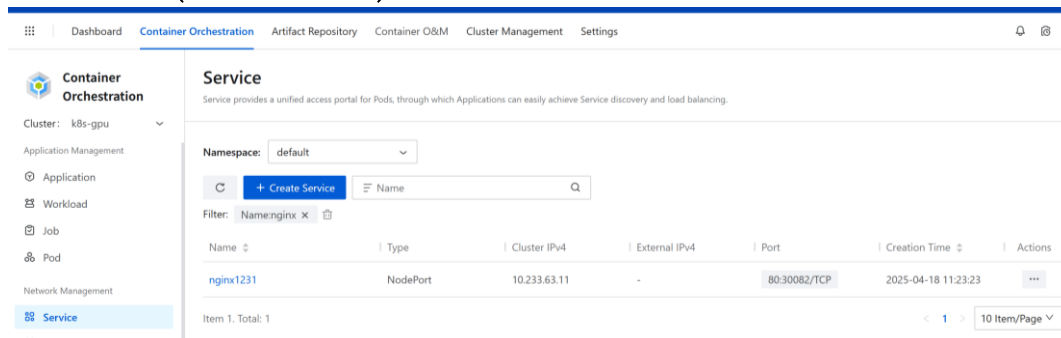
upload to repository



create workload



create service (with nodePort)



Visit service with NodePort



Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

6. CSI Storage Plugin Installation – Optional

Only the business Kubernetes cluster requires the installation of the CSI storage plugin, and the nKU management cluster does not need it.

The compute nodes of the business Kubernetes cluster must be able to access the management network and public network of the distributed storage.

6.1. Upload CSI Images

Download the binary package on the 3rd node of the nKU management cluster (not the business K8s cluster) and execute it to synchronize the container images required by CSI to the image repository. This step only synchronizes the images to the repository for CSI installation on the business K8s cluster, and the CSI installation itself is not completed at this stage.

#Download the CSI plugin binary package

#Execute the command

```
bash nKU-3.7.1-all-in-one-addon-csi.bin
```

6.2. Deploy CSI

Log in to the Console to install the storage CSI

Dashboard
Resource Center
Container Management
Platform O&M
Operational Management
Settings

Monitor
Tickets
Alarm
Task
Help Center

Go Back
Cluster
cluster01

cluster01

Actions

Overview

Functional Component

Advanced Setting

Operation Logs

Name	Description	Status	Deploy Time	Actions
ZStone-RBD-CSI	ZStone-RBD-CSI is used to interface Ku...	Deploy Succeeded	2025-12-03 18:44:38	...
Microservices Governance Component	Microservices Governance Components...	Deploy Succeeded	2025-11-27 14:22:33	...
ZCE-ISCSI-CSI	ZCE ISCSI-CSI is used to interface Kube...	Not Deployed	-	Deploy Undeploy
ZCE-NFS-CSI	ZCE-NFS-CSI is used to interface Kube...	Not Deployed	-	...

Item 1-4, Total: 4

1
10 Item/Page