

# How to Deploy a Test Agent in Oracle Cloud

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# Executive Summary

This document describes how to deploy a Paragon Active Assurance Test Agent in Oracle Cloud.

## Introduction

This document describes how to deploy a Paragon Active Assurance Test Agent in Oracle Cloud.

Oracle Cloud uses QEMU as its underlying virtualization platform and thus accepts images in QCOW2 and VMDK format.

The Test Agent images are available in various formats in Control Center under **Test Agents → Download**. Among these formats is QCOW2. If VMDK is the preferred option it can be easily converted either from the QCOW2 image or extracted from the OVA provided in the same section.

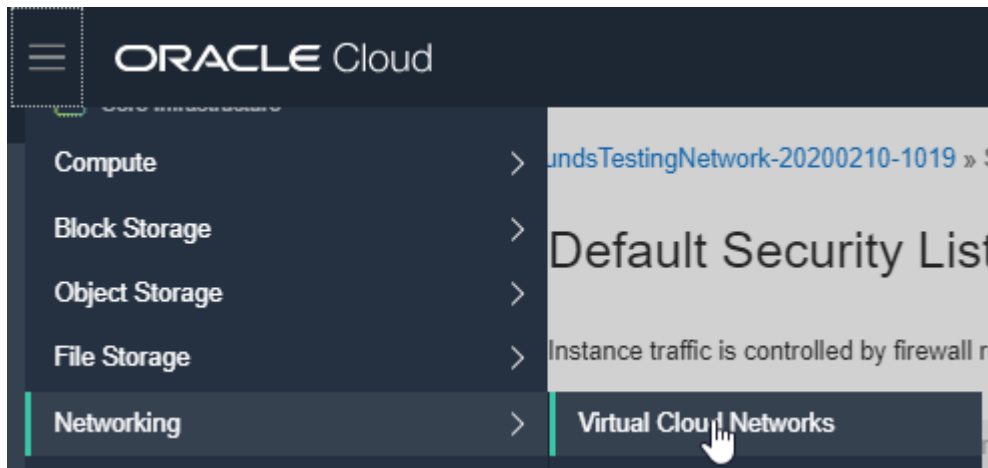
## Deploying a Test Agent in Oracle Cloud

### IN THIS SECTION

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# Prerequisites

- An account in Oracle Cloud.
- A Test Agent boot disk made available in Oracle Cloud as a custom image.
- A defined virtual cloud network resource in Oracle Cloud. The network needs at least SSH access from the desired source IP address. This configuration can be done under the selected virtual cloud network under **Security List**. See the following screenshots.



## Networking

## Virtual Cloud Networks

Dynamic Routing Gateways

Customer-Premises Equipment

IPSec Connections

Load Balancers

Virtual Cloud Networks *in* netrounds (root) *Compartment*

## Networking Quickstart

Create Virtual Cloud Network

Name	State	CIDR Block
<a href="#">NetroundsTestingNetwork-20200210-1019</a>	● Available	10.0.0.0/16



AVAILABLE

## Default Security List for N

Instance traffic is controlled by firewall rules on each

Move Resource

Add Tags

Terminate

## Security List Information

Tags

OCID: ...4pzloq [Show](#) [Copy](#)

Created: Mon, Feb 10, 2020, 09:24:54 UTC

## Resources

## Ingress Rules (5)

Egress Rules (1)

## Ingress Rules

Add Ingress Rules

Edit

Remove

☐

Stateless ▾

Source

**NOTE:** For security reasons, please restrict the range of sources from which SSH access is enabled. Do not accept SSH access from any source address.

Add Ingress Rules Cancel

---

Ingress Rule 1

Allows TCP traffic for ports: 22 SSH Remote Login Protocol

☐ STATELESS ⓘ

SOURCE TYPE: CIDR

SOURCE CIDR: 0.0.0.0/0 ⓘ  
Specified IP addresses: 0.0.0.0-255.255.255.255 (4,294,967,296 IP addresses)

IP PROTOCOL: SSH (TCP/22) ⓘ

SOURCE PORT RANGE: OPTIONAL ⓘ: All ⓘ  
Examples: 80, 20-22

DESTINATION PORT RANGE: OPTIONAL ⓘ: 22 ⓘ  
Examples: 80, 20-22

DESCRIPTION: OPTIONAL ⓘ  
 Maximum 255 characters

---

Ingress Rules

[Add Ingress Rules](#) [Edit](#) [Remove](#)

<input type="checkbox"/> Stateless	Source	IP Protocol	Source Port Range	Destination Port Range	Type and Code	Allows	Description
<input type="checkbox"/> No	0.0.0.0	TCP	All	22		TCP traffic for ports: 22 SSH Remote Login Protocol	SSH access ⓘ

0 Selected Showing 6 items < Page 1 >

## Creating an Oracle Bucket

- Go to the Oracle Cloud console.
- Select the compartment “netrounds (root)”.
- Go to **Object Storage** in that compartment.

**Create Bucket** [Help](#) [Cancel](#)

**BUCKET NAME**  
netrounds-ta

**STORAGE TIER**  
Storage tier for a bucket can only be specified during creation. Once set, you cannot change the storage tier in which a bucket resides.  
☒ STANDARD  
☐ ARCHIVE

**OBJECT EVENTS** ⓘ  
☐ EMIT OBJECT EVENTS

**ENCRYPTION**  
☒ ENCRYPT USING ORACLE MANAGED KEYS  
 Leaves all encryption-related matters to Oracle.  
☐ ENCRYPT USING CUSTOMER-MANAGED KEYS  
 Requires you to have access to a valid Key Management key. [Learn More](#)

Tagging is a metadata system that allows you to organize and track resources within your tenancy. Tags are composed of keys and values that can be attached to resources.  
[Learn more about tagging](#)

**TAG NAMESPACE** TAG KEY VALUE  
 None (add a free-form tag) Name netrounds-ta

[+ Additional Tag](#)

[Create Bucket](#) [Cancel](#)

- Create a new bucket to upload the Test Agent disk image to. Make settings as shown in the screenshot below, then click **Create Bucket**.

## Uploading the Image to Your Bucket

- Click the bucket name in the list of buckets.

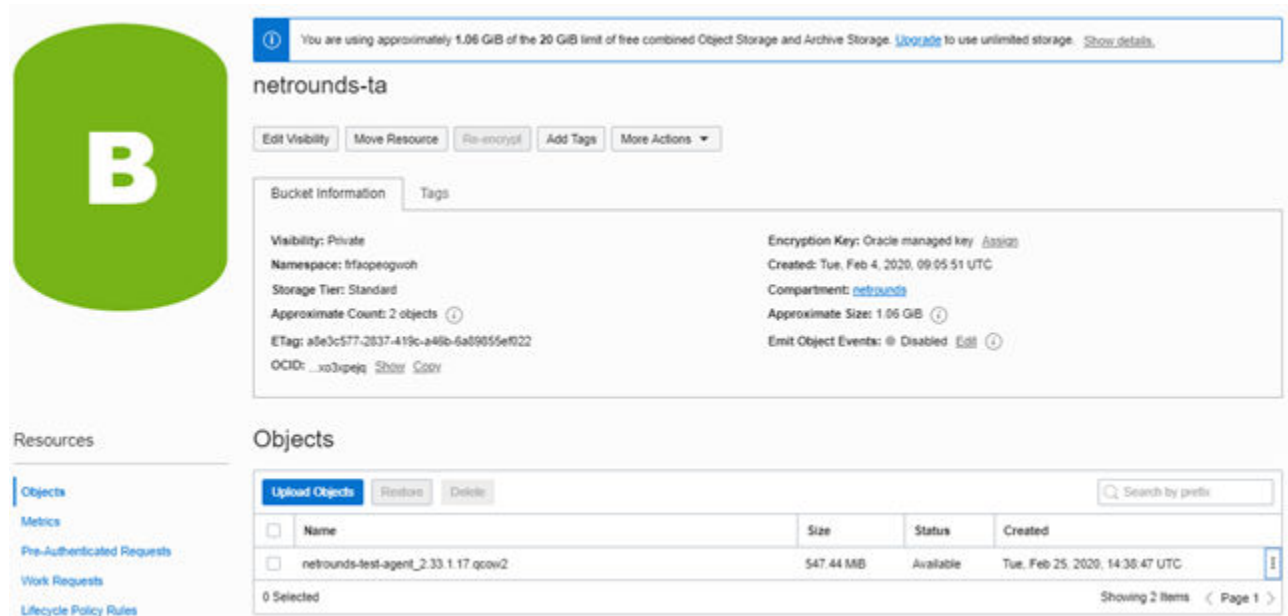
**Buckets in netrounds (root) Compartment**

ⓘ You can use 10 GiB of Object Storage and 10 GiB of Archive Storage for free in your home region. You are using approximately 542.25 MiB of combined Object Storage and data is deleted. [Show details](#)

[Create Bucket](#)

Name	Storage Tier	Visibility
<a href="#">netrounds-ta</a>	Standard	Private

- Upload the QCOW2 image. For more information, see the Oracle Cloud online documentation [here](#). In the example below, the QCOW2 image has been used. The VMDK format can be easily obtained either by converting the QCOW2 image or by uncompressing the OVA offered in Paragon Active Assurance Control Center.



The screenshot displays the Oracle Cloud console interface for a bucket named 'netrounds-ta'. On the left, there is a green circular icon with a white letter 'B'. The main content area shows the bucket's details, including its visibility (Private), namespace (bfaoeogvoh), storage tier (Standard), and approximate count (2 objects). It also displays the encryption key (Oracle managed key), creation date (Tue, Feb 4, 2020, 09:05:51 UTC), compartment (netrounds), and approximate size (1.06 GB). Below the bucket information, there is a section for 'Objects' which contains a table with columns for Name, Size, Status, and Created. The table lists one object: 'netrounds-test-agent\_2.33.1.17.qcow2' with a size of 547.44 MB and a status of 'Available'. The object was created on Tue, Feb 25, 2020, 14:36:47 UTC. At the bottom of the console, there is a navigation bar with links for 'Objects', 'Metrics', 'Pre-Authenticated Requests', 'Work Requests', and 'Lifecycle Policy Rules'.

**netrounds-ta**

Bucket Information

Visibility: Private  
 Namespace: bfaoeogvoh  
 Storage Tier: Standard  
 Approximate Count: 2 objects  
 ETag: a8e3c577-2837-419c-a48b-6a89855e1022  
 OCID: ...xo3apejq Show Copy

Encryption Key: Oracle managed key Assign  
 Created: Tue, Feb 4, 2020, 09:05:51 UTC  
 Compartment: netrounds  
 Approximate Size: 1.06 GB  
 Emit Object Events: Disabled Edit

**Objects**

Name	Size	Status	Created
netrounds-test-agent_2.33.1.17.qcow2	547.44 MB	Available	Tue, Feb 25, 2020, 14:36:47 UTC

0 Selected Showing 2 items Page 1

- Click the three-dots button for the image (on the far right).
- Select **View Object Details** to get the *object storage ID (URL path)*.



 You are using approximately 1.06 GiB of the 20 GiB limit of free combined Object Storage and Archive Storage. [Upgrade](#) to use unlimited storage. [Show details](#).

## netrounds-ta

[Edit Visibility](#) [Move Resource](#) [Re-encrypt](#) [Add Tags](#) [More Actions](#) ▼

Bucket Information Tags

Visibility: Private  
 Namespace: f1fa0e0gwoh  
 Storage Tier: Standard  
 Approximate Count: 2 objects   
 ETag: a8e3c577-2837-419c-a46b-6a09055ef022  
 OCID: ...xo3xpejq [Show](#) [Copy](#)

Encryption Key: Oracle managed key [Assign](#)  
 Created: Tue, Feb 4, 2020, 09:05:51 UTC  
 Compartment: [netrounds](#)  
 Approximate Size: 1.06 GiB   
 Emit Object Events:  Disabled [Edit](#) 

## Objects

<a href="#">Upload Objects</a> <a href="#">Restore</a> <a href="#">Delete</a> <div>Search by prefix</div>				
<input type="checkbox"/>	Name	Size	Status	Created
<input type="checkbox"/>	netrounds-test-agent_2.33.1.17.qcow2	547.44 MiB	Available	Tue, Feb 25
0 Selected				
				<a href="#">View Object Details</a> <a href="#">Download</a> <a href="#">Copy</a> <a href="#">Restore</a> <a href="#">Create Pre-Authenticated Request</a>

- Copy **URL Path (URI)**. It will be needed in the section "Creating a Test Agent Custom Image" on page 8.

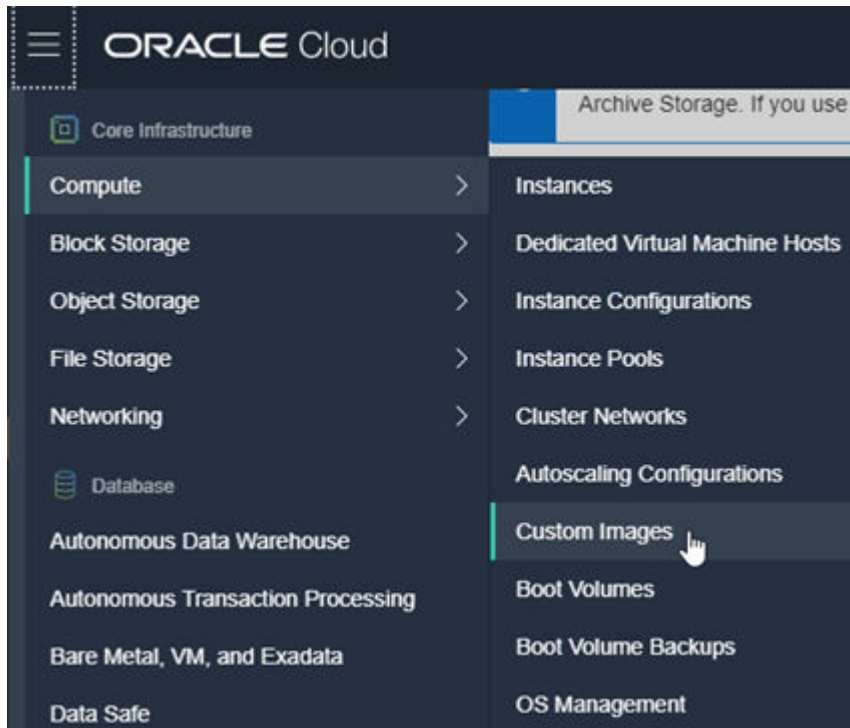
## Object Details

Name: netrounds-test-agent\_2.33.1.17.qcow2  
 URL Path (URI): [https://objectstorage.eu-frankfurt-1.oraclecloud.com/h/f1fa0e0gwoh/b/netrounds-ta/o/netrounds-test-agent\\_2.33.1.17.qcow2](https://objectstorage.eu-frankfurt-1.oraclecloud.com/h/f1fa0e0gwoh/b/netrounds-ta/o/netrounds-test-agent_2.33.1.17.qcow2)  
 Storage Tier: Standard  
 Size: 547.44 MiB  
 Accept-Ranges: bytes  
 Content Length: 574029824  
 ETag: 3c2256a3-80e0-4611-aa32-6be4720e9ee2  
 Last Modified: Tue, Feb 25, 2020, 14:38:47 UTC  
 opc-multipart-md5: tP77PSv7phzcn9Ql0xzXzg==9  
 version-id: 8675e6da-af72-4b5a-b106-f8430615b8d0  
 x-api-id: native

# Creating a Test Agent Custom Image

This process is needed to be able to boot virtual Test Agents from the Netrounds drive uploaded in the previous section.

- Go to the Oracle Cloud menu and select **Custom Images**.



Now it is time to import the disk image you have uploaded as a bootable disk. Note that the bootable disk will be available in the compartment you have uploaded to. Here we will use the object storage ID to point to the disk.

**Import Image** [Help](#) [Cancel](#)

**CREATE IN COMPARTMENT**  
 netrounds (root)

**NAME**  
 netrounds-ta

**OPERATING SYSTEM**  
 Linux

**OBJECT STORAGE URL**  
 https://objectstorage.eu-frankfurt-1.oraclecloud.com/n/ifaopeogwoh/b/netrounds-ta/o/netrounds-test-agent\_2.33.1.17.qcow2

See [Object Storage URLs](#) for more information. See [Instructions](#) for creating a pre-authenticated request.

**IMAGE TYPE**  
☐ VMCK  
☒ QCOW2  
☐ OCI  
Select OCI for .zoi files exported from Oracle Cloud Infrastructure. The launch mode setting is specified in the .zoi file and cannot be changed in the Console.

**LAUNCH MODE**  
☐ PARAVIRTUALIZED MODE  
Select this option for virtual machines that [support paravirtualized drivers](#), created outside of Oracle Cloud Infrastructure.  
[Show Launch Options](#)  
☒ EMULATED MODE  
Select this option for virtual machines that [do not support paravirtualized drivers](#), created outside of Oracle Cloud Infrastructure from your older on-premise physical or virtual machines.  
[Show Launch Options](#)  
☐ NATIVE MODE  
Select this option for images exported from Oracle Cloud Infrastructure.  
[Show Launch Options](#)

**TAGS**  
 Tagging is a metadata system that allows you to organize and track resources within your tenancy. Tags are composed of keys and values that can be attached to resources.  
[Learn more about tagging](#)

TAG NAMESPACE	TAG KEY	VALUE
None (apply a free-form tag)		


[+ Additional Tag](#)

Once the image has been created, it will be displayed in your inventory:

**Images in netrounds (root) Compartment**

[Import Image](#)

Sort by: Created Date (Desc)

Image Icon	Name	Original Image	Created
	netrounds-ta OCID: ...uooyeq <a href="#">Show</a> <a href="#">Copy</a>	-	Created: Tue, 04 Feb 2020 16:08:40 UTC

AVAILABLE

# Deploying the Test Agent from the Custom Image

**NOTE: Important:** At this point, if no network has been previously created in your Oracle Cloud, a default network will be created (for example, 10.0.0.0/16). This will be displayed in the configuration template (**Virtual cloud network** in step "5" on page 12 below). You will need to choose where to attach the image.

- Go to **Instance** → **New Instance** → **Create New Instance**.
- Enter a name for the instance.



Create Compute Instance

Name your instance

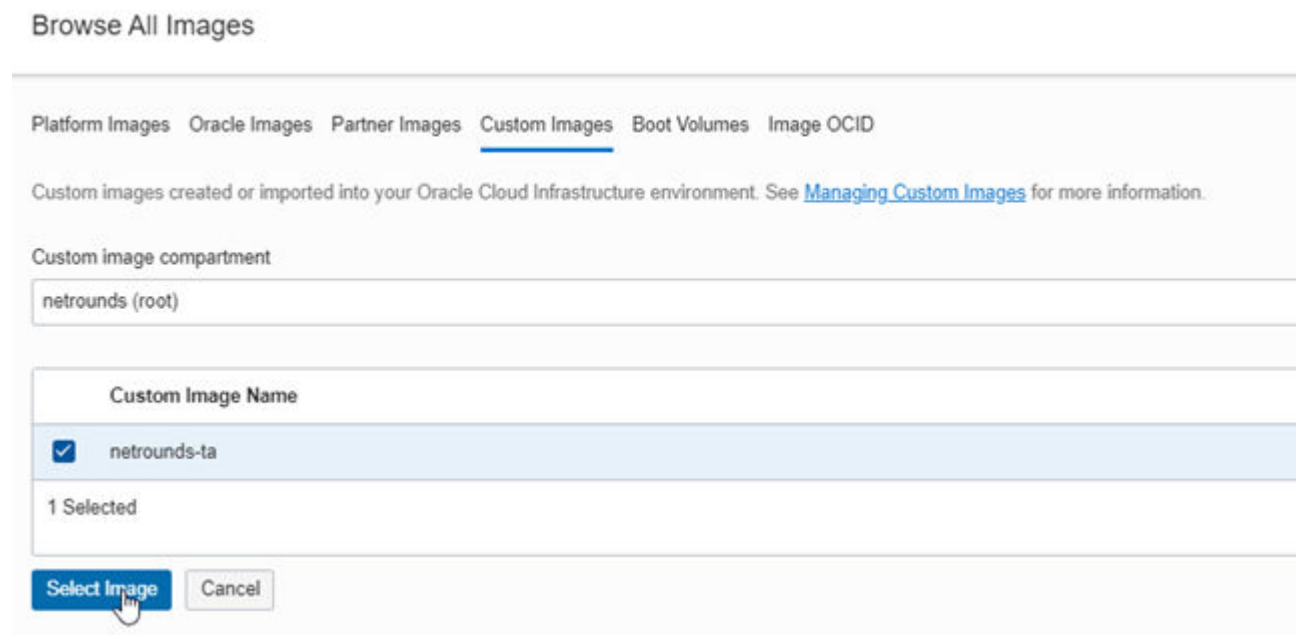
test-agent

Choose an operating system or image source ⓘ

ORACLE Linux  
Oracle Linux 7.7  
Image Build: 2020.01.28-0

Change Image Source

- Click the **Change Image Source** button and select the **Custom Images** option. At this point the uploaded image (below, "netrounds-ta") should be displayed as a selectable item.



Browse All Images

Platform Images Oracle Images Partner Images Custom Images Boot Volumes Image OCID

Custom images created or imported into your Oracle Cloud Infrastructure environment. See [Managing Custom Images](#) for more information.

Custom image compartment

netrounds (root)

Custom Image Name

☒ netrounds-ta

1 Selected

Select Image Cancel

- Click **Show Shape, Network, and Storage Options** to configure things such as:

- Availability domain
- Instance type: Virtual machine or bare metal instance (a cost will be applied for the latter).
- Instance shape: *The Test Agent has been tested with the default instance shape.* The available virtual machine shapes can be found [here](#).

Hide Shape, Network, Storage Options

Availability Domain

AD 1  
ujqj EU-FRANKFURT-1-AD-1

AD 2  
ujqj EU-FRANKFURT-1-AD-2

AD 3 **Always Free Eligible**  
ujqj EU-FRANKFURT-1-AD-3 ✓

Instance Type

**Virtual Machine** **Always Free Eligible**  
A virtual machine is an independent computing environment that runs on top of physical bare metal hardware. ✓

**Bare Metal Machine**  
A bare metal compute instance gives you dedicated physical server access for highest performance and strong isolation.

Instance Shape

**VM.Standard.E2.1.Micro (Virtual Machine)** **Always Free Eligible**  
1 Core OCPU, 1 GB Memory

Change Shape

Here are some examples of instance shapes:

X5-based shapes availability is limited to monthly universal credit customers existing on or before November 9, 2018, in the US West (Phoenix), US East (Ashburn), and Germany Central (Frankfurt) regions.

- **VM.Standard.B1:** X6-based standard compute. Processor: 2.2 GHz Intel Xeon E5-2699 v4.
- **VM.Standard2:** X7-based standard compute. Processor: 2.0 GHz Intel Xeon Platinum 8167M.
- **VM.Standard.E2.1.Micro:** E2-based standard compute with AMD CPUs. Processor: 2.0 GHz AMD EPYC 7551.
- **VM.Standard.E2:** E2-based standard compute. Processor: 2.0 GHz AMD EPYC 7551.

Shape	OCPU	Memory (GB)	Local Disk (TB)	Max Network Bandwidth	Max VNICs Total: Linux	Max VNICs Total: Windows
VM.Standard1.1	1	7	Block Storage only	600 Mbps	2	1
VM.Standard1.2	2	14	Block Storage only	1.2 Gbps	2	1

**NOTE:** The Test Agent should be assigned resources according to the specifications for production environments:

- 2 vCPUs
  - 4 GB RAM
  - 2 VNICS, 1 for management and 1 for testing
  - Test Agent image disk size: 2 GB
- Configure other basic settings such as the following (the rest are optional):
    - **Virtual cloud network compartment:** The compartment which the virtual machine will belong to.
    - **Virtual cloud network:** The virtual cloud network needs to be defined prior to deployment. If no cloud network has been defined, Oracle Cloud offers you to set up a virtual cloud network with the default security group. The default security group allows ingress SSH traffic to the network from any location and egress traffic without any restrictions.
    - **Use network security groups to control traffic:** On top of the security group, other policies can be applied to the specific virtual machine. These policies need to be defined prior to deployment.
    - **Assign a public IP address:** Here you assign a public IP to associate with the Test Agent.

Configure networking

Virtual cloud network compartment

netrounds (root)

Virtual cloud network

NetroundsTestingNetwork-20200210-1019

Subnet compartment

netrounds (root)

Subnet

Public Subnet (Regional)

☐ Use network security groups to control traffic

☒ Assign a public IP address ☐ Do not assign a public IP address

Assigning a public IP address makes this instance accessible from the internet. If you're not sure whether you need a public IP address, you can always assign one later.

- Choose an SSH key:

Add SSH key ⓘ

☒ Choose SSH key file ☐ Paste SSH keys

Choose SSH key file (.pub) from your computer

Drop files here

Choose Files

- *Optional:* If you want to use cloud-config to register the Test Agent, go to **Advanced Options**→**Management** and paste the cloud-config data in the **User data** section:

[Hide Advanced Options](#)

Management Networking Image Host

Choose a compartment for your instance

netrounds (root)

Choose a fault domain

Choose a fault domain

User data

You can choose to specify a startup script that will run when your instance boots up or restarts. Startup scripts can be used to install software and updates, and to ensure that services are running within the virtual machine.

☐ Choose cloud-init script file ☒ Paste cloud-init script

```
email: email@boommail.com
password: superpassword
account: demo
server: login.netrounds.com
management_interface: eth0
management_address_type: dhcp
```

Oracle Cloud Agent ⓘ

☒ Enable monitoring  
Collect metrics to monitor this instance's health, capacity, and performance. When enabled, Oracle Cloud Agent emits metrics for this instance to the Monitoring service.

☒ Use Oracle Cloud Agent to manage this instance  
Enables Oracle Cloud Agent to automate operational tasks for the instance, such as installing patches. [Learn more](#)

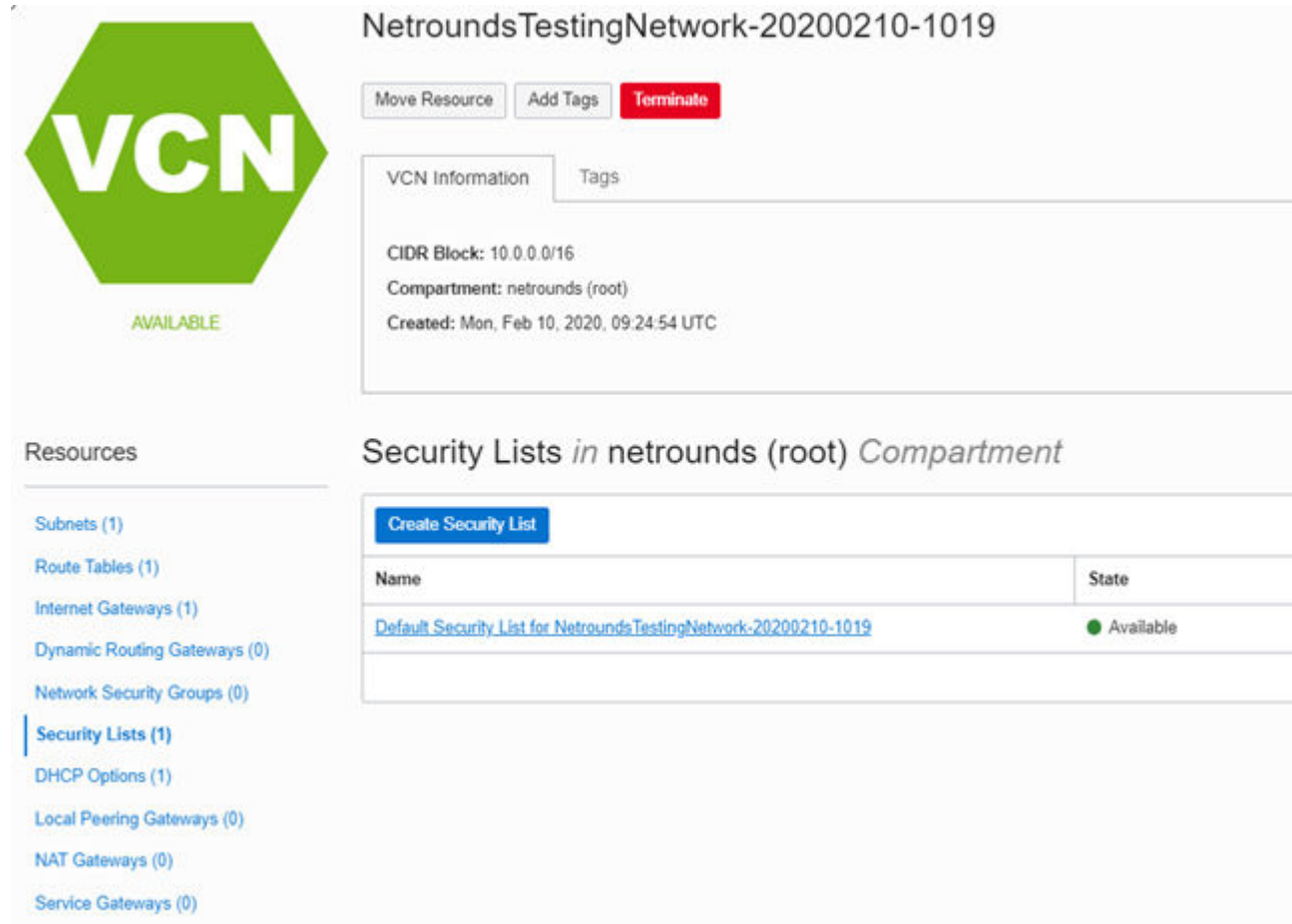
Create Cancel

- Finally, click the **Create** button.

## Example of Network

Below is an example of what the network the Test Agent is attached to may look like.

The compartment should be the same when deploying the virtual machine.



The screenshot displays the Oracle Cloud console interface for a Virtual Cloud Network (VCN). On the left, a green hexagonal icon with 'VCN' in white is shown, with the status 'AVAILABLE' below it. The main header shows the VCN name 'NetroundsTestingNetwork-20200210-1019' and three action buttons: 'Move Resource', 'Add Tags', and 'Terminate'. Below the header, there are two tabs: 'VCN Information' and 'Tags'. The 'VCN Information' tab is active, showing the following details:

- CIDR Block: 10.0.0.0/16
- Compartment: netrounds (root)
- Created: Mon, Feb 10, 2020, 09:24:54 UTC

On the left sidebar, under the 'Resources' section, a list of network resources is shown, including Subnets (1), Route Tables (1), Internet Gateways (1), Dynamic Routing Gateways (0), Network Security Groups (0), Security Lists (1), DHCP Options (1), Local Peering Gateways (0), NAT Gateways (0), and Service Gateways (0). The 'Security Lists (1)' item is selected, leading to the 'Security Lists in netrounds (root) Compartment' page. This page features a 'Create Security List' button and a table with the following data:

Name	State
<a href="#">Default Security List for NetroundsTestingNetwork-20200210-1019</a>	● Available

## Displaying of Running Test Agents

The Instances service will display successfully deployed Test Agent instances as follows:



Instances *in* netrounds (root) *Compartment*

Create Instance

Sort by: Created Date (Desc)

 Running	<a href="#">yfa2-ssade</a> OCID: ...vq8aa <a href="#">Show</a> <a href="#">Copy</a>	Shape: VM.Standard2.1	Region: eu-frankfurt-1 Availability Domain: uqj:EU-FRANKFURT-1-AD-3 Fault Domain: FAULT-DOMAIN-2	Created: Mon, 10 Feb 2020 13:35:44 UTC Maintenance Reboot: -
 Running	<a href="#">yfa1-ssadedowd</a> OCID: ...bk8aa <a href="#">Show</a> <a href="#">Copy</a>	Shape: VM.Standard2.1	Region: eu-frankfurt-1 Availability Domain: uqj:EU-FRANKFURT-1-AD-3 Fault Domain: FAULT-DOMAIN-2	Created: Mon, 10 Feb 2020 09:24:57 UTC Maintenance Reboot: -

## Connecting to the Test Agent's Serial Console

Once the Test Agent is online, if a public IP address has been assigned to it, the serial console will be reachable using port 22 on that address. Remember that the security list needs to allow an SSH connection from the source IP addresses, as explained in the section ["Prerequisites" on page 2](#). The public SSH key must be assigned to the Test Agent at booting time. To log in to the Test Agent console, use the *admin* user, and the Test Agent menu will be displayed.