

AR4000S-Cloud on Oracle Cloud Installation Guide

Installation Guide

Introduction

The AR4000S-Cloud is a virtual router appliance product that provides functions such as VPN and firewall.

This installation guide enables you to install and configure your AR4000S-Cloud in an Oracle Cloud environment.

Note: This document contains a lot of terminology specific to Oracle Cloud. For more detailed information about Oracle Cloud terms and concepts, please refer to the Oracle Cloud documentation. Also, the screen-shots shown were current at the time of creation, but are subject to change.

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Creating an AR4000S-Cloud instance on Oracle Cloud

The standard way to create virtual machines on Oracle Cloud is to use a Virtual Machine Image. A virtual machine image is a **template** containing all the information needed to create instances of a specific type.

To allow the creation of AR4000S-Cloud instances on Oracle Cloud, an AR4000S-Cloud virtual machine image is needed.

The following sections cover downloading AR4000S-Cloud from the Allied Telesis Download Center, and the requirements to upload the QCOW image to your Oracle Cloud account as a virtual machine image. You can create the image using either:

- the Oracle CLI (see the “[Creating an AR4000S-Cloud Image with the Oracle CLI](#)” section), or
- the Oracle Cloud GUI (see the “[Creating an AR4000S-Cloud Image with the Oracle GUI](#)” section).

Prerequisites

To configure an AR4000S-Cloud instance on Oracle Cloud, you will need access to the following:

- A PC, connected to the Internet.
- An Oracle Cloud account.
- An AR4000S-Cloud QCOW image. This can be downloaded from the Allied Telesis Download Center.
- (Optional) The Oracle Cloud CLI. The installation instructions can be found at <https://docs.oracle.com/en-us/iaas/Content/API/SDKDocs/cliinstall.htm>.

Creating an AR4000S-Cloud Image with the Oracle CLI

The following section contains instructions on how to create an AR4000S-Cloud image in Oracle Cloud using Oracle CLI. Instructions for using the Oracle Cloud GUI can be found in the “[Creating an AR4000S-Cloud Image with the Oracle GUI](#)” section.

Install the Oracle Cloud CLI

The following steps require the use of the Oracle Cloud CLI. For links to download Oracle Cloud CLI, instructions on how to install it, and documentation of its functionality, refer to <https://docs.oracle.com/en-us/iaas/Content/API/SDKDocs/cliinstall.htm>.

Login to Oracle Cloud via the CLI

To configure your Oracle Cloud account and upload the QCOW, it is necessary to log in to the account using the Oracle Cloud CLI.

1. At the command line, enter the following command:

```
oci session authenticate
```

2. This will open a web browser to authenticate your connection. Log in using your Oracle Cloud credentials.

Create the Oracle Cloud Compartment

An Oracle Cloud Compartment is required to associate all of your Oracle Cloud resources.

Note: If you already have an existing Compartment that you want to use, you may skip this step. You can see a list of your existing compartments by using the **oci iam compartment list** command.

Find the parent Compartment ID

Enter the following command at the Oracle Cloud CLI command line:

```
oci iam compartment list --access-level <level>
--compartment-id-in-subtree <subtree> --auth security_token
```

The following parameters are required:

Table 1: `oci iam compartment list` Command Parameters

<code><level></code>	Options are ‘any’ or ‘accessible’. Set this to ‘accessible’ to show only compartments the user has permission for.
<code><subtree></code>	Options are ‘true’ or ‘false’. Set this to ‘true’ to view all compartments, including sub-compartments.

Example:

```
oci iam compartment list --access-level accessible
--compartment-id-in-subtree true --auth security_token
```

Example output:

```
{
  "data": [
    {
      "compartment-id": "ocidl.tenancy.oc1..abcdefghijklmnopqrstuvwxy1234567890",
      "defined-tags": {
        "Oracle-Tags": {
          "CreatedBy": "default/admin@company.com",
          "CreatedOn": "2023-08-14T23:49:34.144Z"
        }
      },
      "description": "Compartment for Testing",
      "freeform-tags": {},
      "id": "ocidl.compartment.oc1..0987654321abcdefghijklmnopqrstuvwxy",
      "inactive-status": null,
      "is-accessible": true,
      "lifecycle-state": "ACTIVE",
      "name": "Test_Compartment",
      "time-created": "2023-08-14T23:49:34.211000+00:00"
    }
  ]
}
```

Create the Compartment

Once you have the Compartment details, use the **id** from above for the next step.

```
oci iam compartment create --compartment-id <id> --name <name>
--description <description>
```

Table 2: oci iam compartment create Command Parameters

<code><id></code>	The Compartment ID of the parent Compartment containing the created Compartment. This can be found using the OCI CLI in the “Find the parent Compartment ID” section.
<code><name></code>	The name of the Compartment to be created. The name must be unique across all Compartments in the parent Compartment.
<code><description></code>	Sets the description of the Compartment during creation. This does not need to be unique, and can be changed later.

Example:

```
oci iam compartment create --compartment-id
ocidl.compartment.oc1..0987654321abcdefghijklmnopqrstuvwxy
--name AR-Cloud --description 'AR-Cloud storage'
```

From the Oracle Cloud web page, Compartments can be managed in the **Compartments** section.

Create the Bucket

You then need to create an Oracle Cloud Bucket within the above Compartment.

Note: If you already have an existing Bucket in the Compartment that you want to use, you may skip this step.

```
oci os bucket create --compartment-id <id> --name <name>
--storage-tier <description>
```

Table 3: oci os bucket create Command Parameters

<id>	The ID of the Compartment in which to create the Bucket. This is the Compartment created in the “Create the Compartment” section. See the “Find the parent Compartment ID” section for an example of finding the Compartment ID.
<name>	Sets the name of the Bucket. Valid characters are upper-case or lower-case letters, numbers, hyphens, underscores, and periods.
<tier>	Sets the storage tier type of this Bucket. This property can't be changed once the Bucket is created.

Example:

```
oci os bucket create --compartment-id
ocid1.tenancy.oc1..abcdefghijklmnopqrstuvwxy1234567890
--name images --storage-tier Standard
```

Upload the QCOW

Upload the AR-Cloud QCOW as an Object to the created Bucket.

```
oci os object put --bucket-name <name> --file <file>
```

Table 4: oci os object put Command Parameters

<name>	The name of the Bucket to use. This is the Bucket from the “Create the Bucket” section.
<tier>	The path to the QCOW file on your local PC.

Example:

```
oci os object put --bucket-name images
--file AR4000S-Cloud-1.8.3-5.5.3-1.1-rc1.cow
```

Create the Image

Finally, you can create the AR4000S-Cloud image using the uploaded QCOW.

```
oci compute image import from-object --compartment-id <id>
--namespace <namespace> --bucket-name <bucket> --source-image-type <type>
--name <name> --launch-mode <mode> --display-name <display-name>
--auth security_token
```

Table 5: oci os object put Command Parameters

<id>	The ID of the Compartment in which to create the Image. This is the Compartment ID of the Compartment created in the “Create the Compartment” section.
<namespace>	Namespaces span a full Tenancy. Within a namespace, Buckets cannot have the same name, even if in different Compartments. For this example, the default namespace automatically generated by Oracle Cloud for our Tenancy has been used. You can use the oci os ns get command to find the available namespaces. This should only return one Namespace, unless more have been configured.
<bucket>	The Bucket containing the object to create an Image from. This will be the Bucket in the “Create the Bucket” section.
<type>	The AR-Cloud for Oracle Cloud is a QCOW2 image.
<name>	The Object to create the Image from. This will be the Object created in the “Create the Image” section.
<mode>	Sets the configuration mode for launching VM instances created with this image.
<display-name>	Sets the name of the Image being created.

Example:

```
oci compute image import from-object --compartment-id
ocid1.tenancy.oc1..abcdefghijklmnopqrstuvwxy1234567890
--namespace abc123xyz890 --bucket-name images
--source-image-type QCOW2
--name AR4000S-Cloud-1.8.3-5.5.3-1.1-rc1.cow
--launch-mode PARAVIRTUALIZED --display-name AR-Cloud-Image
--auth security_token
```

Creating an AR4000S-Cloud Image with the Oracle GUI

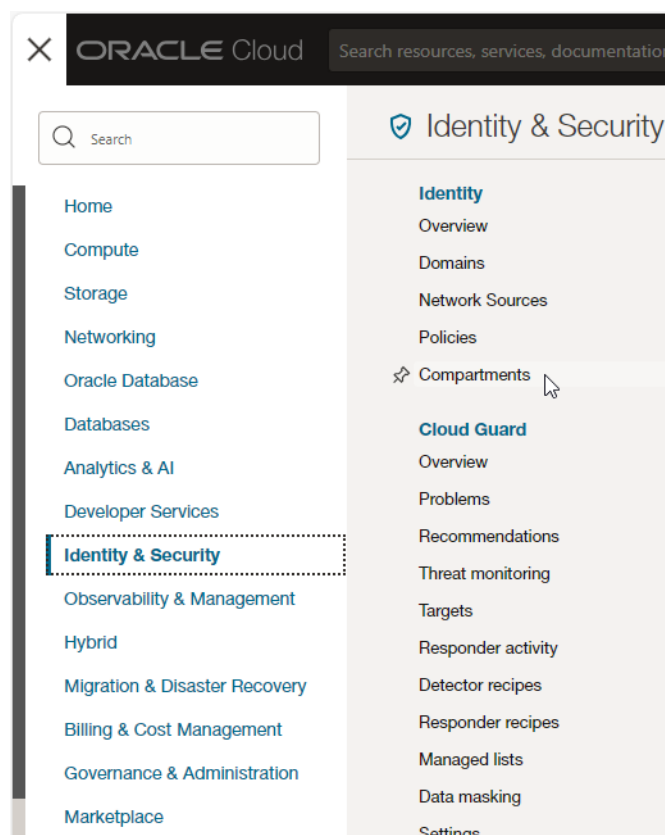
The following section contains instructions on how to create an AR4000S-Cloud image in Oracle Cloud using the Oracle Cloud GUI. Instructions for using the Oracle CLI can be found in the “Creating an AR4000S-Cloud Image with the Oracle CLI” section.

Create the Oracle Cloud Compartment

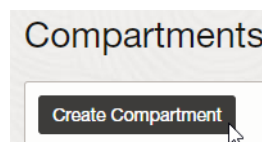
An Oracle Cloud Compartment is required to associate all of your Oracle Cloud resources.

Note: If you already have an existing Compartment that you want to use, you may skip this step.

1. Navigate to the **Compartments** page.



2. Click on the **Create Compartment** button.



- Configure the detail for the new compartment. Once it is configured, click on the **Create Compartment** button.

Create Compartment [Help](#)

Name

Description

Security Zone: - ⓘ

Parent Compartment

Add tags to organize your resources. [What can I do with tagging?](#)

Tag namespace	Tag key	Tag value
<input type="text" value="None (add a free-form tag)"/>	<input type="text"/>	<input type="text"/>

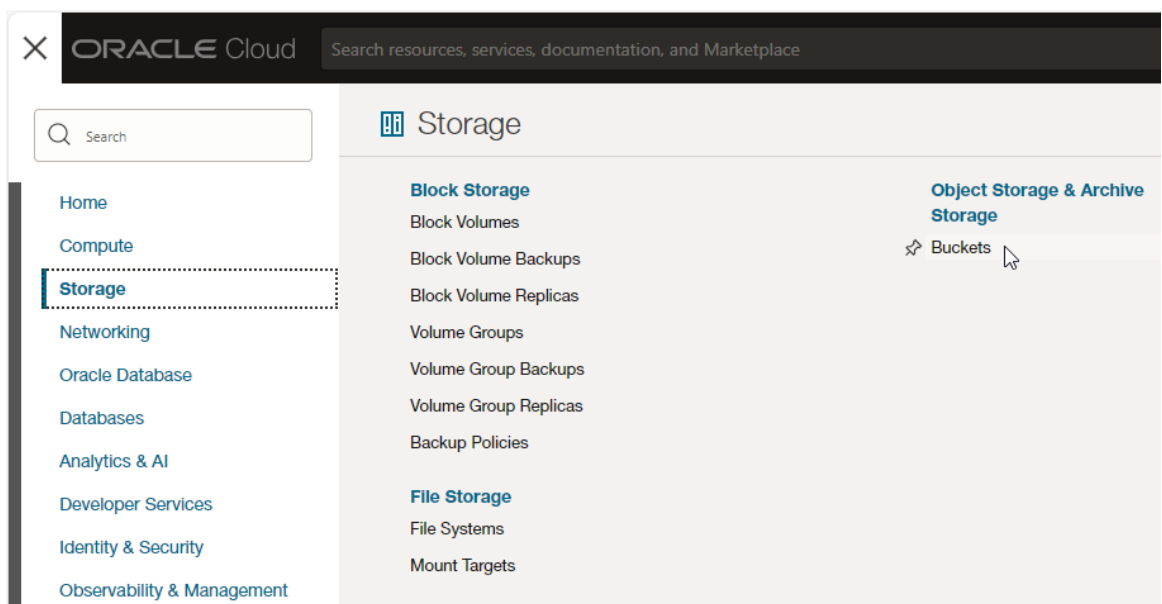
[Cancel](#)

Create the Bucket

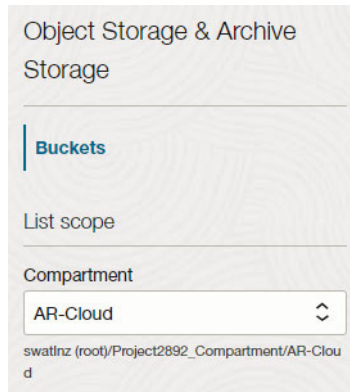
Create an Oracle Cloud Bucket within the Compartment above.

Note: If you already have an existing Bucket in the Compartment that you want to use, you may skip this step.

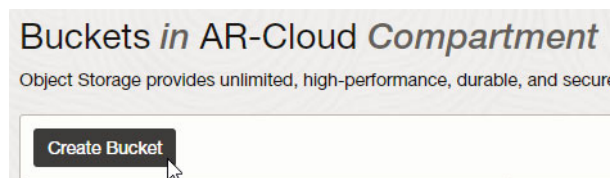
- Navigate to the **Buckets** page.



2. Select the compartment to create the bucket in. This will be the compartment from the “[Create the Oracle Cloud Compartment](#)” section.



3. Now open the bucket creation screen by clicking on the **Create Bucket** button.



4. Configure the details of the Bucket to be created.

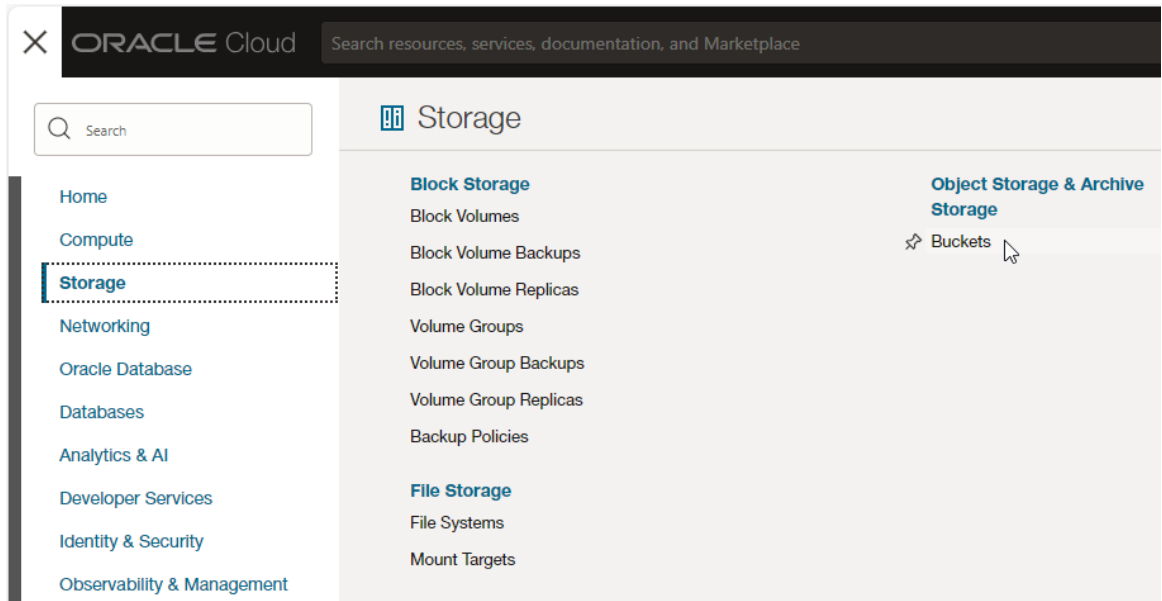
 A screenshot of the 'Create Bucket' configuration screen. The 'Bucket Name' field contains 'images'. Under 'Default Storage Tier', 'Standard' is selected. There are several optional checkboxes: 'Enable Auto-Tiering', 'Enable Object Versioning', 'Emit Object Events', and 'Uncommitted Multipart Uploads Cleanup', all of which are currently unchecked. Under 'Encryption', 'Encrypt using Oracle managed keys' is selected. At the bottom, there is a 'Resource logging' section with a toggle switch for 'Resource logging disabled' which is currently turned off. The 'Create' button is highlighted in dark grey, and a 'Cancel' link is next to it.

The **Default Storage Tiers** sets the storage tier type of this Bucket. This property can't be changed after the Bucket is created.

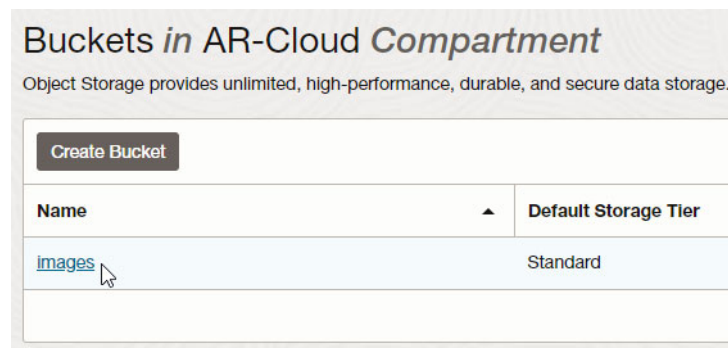
Upload the QCOW

Next, upload the AR-Cloud QCOW as an Object to the created Bucket.

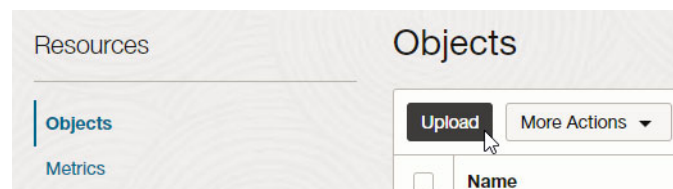
1. Navigate to the **Buckets** page.



2. Select the destination bucket of the object. This will be the bucket created in the “Create the Bucket” section.



3. From the **Bucket Details** page, under the **Objects** section, click on the **Upload** button.



4. Select and confirm the files to upload. This will be a QCOW file from your local PC. An example file-name would be **AR4000S-Cloud-5.5.3-1.1.cow**. Click on the **Upload** button to upload the file.


Upload Objects [Help](#)

Object Name Prefix *Optional*

Storage Tier


Standard ⌵


Choose Files from your Computer

 Drop files here or [select files](#)

AR4000S-Cloud-5.5.3-1.1.cow 0 bytes ✕

1 files, 0 bytes total

 [Show Optional Response Headers and Metadata](#)

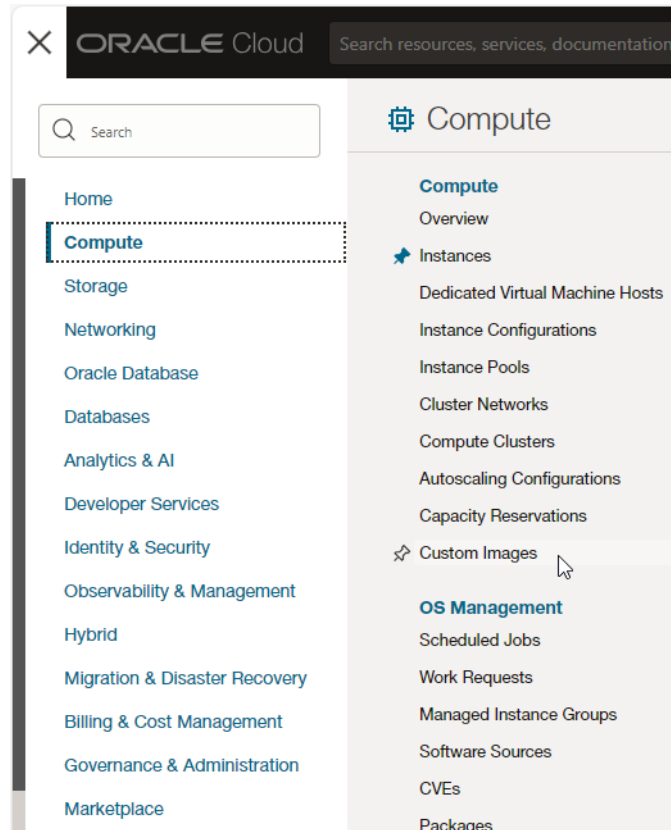


Upload [Cancel](#)

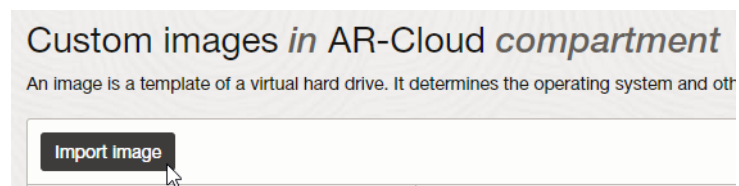
Create the Image

Now an image can be created from the uploaded QCOW object.

1. Navigate to the **Custom Images** page.



2. Click on the **Import Image** button.



- Configure the settings for the image to import. The table below describes some of the required settings for these fields.

Table 6: Import image settings

Object name	The Object to create the Image from. This will be the Object created in the “Upload the QCOW” section.
Image type	The AR4000S-Cloud for Oracle Cloud is a QCOW2 image. This option must be set to QCOW2 .
Launch mode	The configuration mode for launching VM instances created with this image. This must be Paravirtualized mode .

Import image [Help](#)

Bucket in **AR-Cloud** [\(Change compartment\)](#)

images

Object name

AR4000S-Cloud-5.5.3-2.1.cow

Image type

VMDK
Virtual machine disk file format. For disk images used in virtual machines.

QCOW2
For disk image files used by QEMU.

OCI
For images that were exported from Oracle Cloud Infrastructure. The launch mode is specified in the .oci file and can't be changed in the Console.

Launch mode

Firmware: BIOS **NIC attachment type:** PV NIC
Boot volume type: PV **Remote data volume:** PV

Paravirtualized mode
For virtual machines that [support paravirtualized drivers](#), created outside of Oracle Cloud Infrastructure.

Emulated mode
For virtual machines that [don't support paravirtualized drivers](#), created outside of Oracle Cloud Infrastructure from older on-premises physical or virtual machines.

Native mode
For images that were exported from Oracle Cloud Infrastructure.

[Show tagging options](#)

Import image [Cancel](#)

- Click on the **Import image** button.

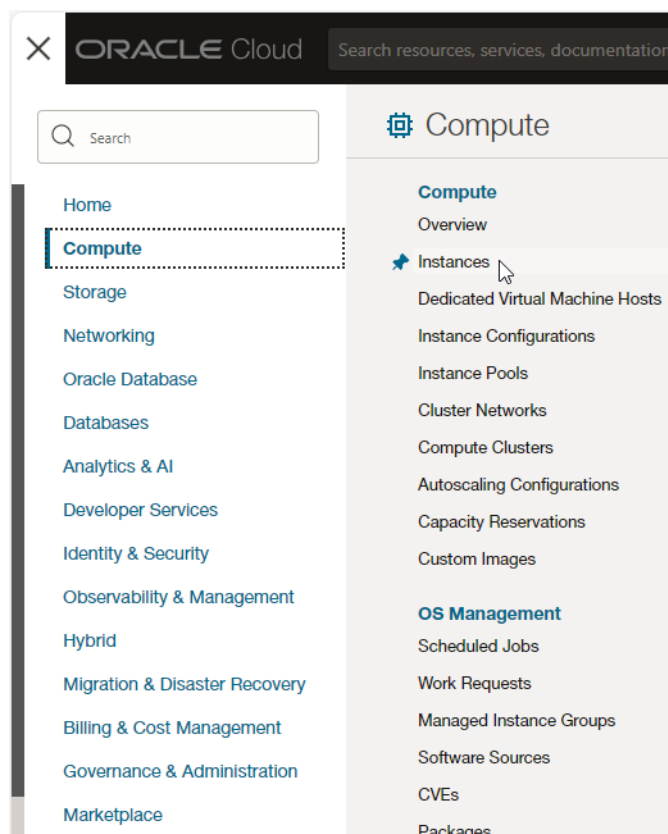
Creating an AR4000S-Cloud VM with the Oracle GUI

Once you have created the image, using either the CLI or GUI, you can create the VM instance using the Oracle GUI.

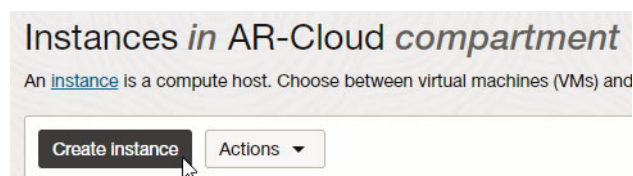
Note: Any SSH private keys generated by Oracle Cloud are not used by AR4000S-Cloud. A freshly created AR4000S-Cloud will ignore any Oracle Cloud generated SSH key pairs, and instead use password authentication with default credentials. Further, any authentication methods configured via Oracle Cloud will be ignored by AR4000S-Cloud.

Note: AR4000S-Cloud does not support reporting runtime status information to Oracle Cloud. For this reason, Oracle Cloud may report false positive errors related to AR4000S-Cloud starting or running. Do not trust the validity of any Oracle Cloud runtime reporting, and attempt to connect to the AR4000S-Cloud to confirm if any issues did occur.

1. From the **Navigation Menu** of Oracle Cloud, select **Compute -> Instances**.



2. Click on the **Create Instance** button.



- This will open the **Compute Instance** creation page. Enter a **Name** and **Compartment**. Select the Compartment created in the “[Create the Oracle Cloud Compartment](#)” section.

Create compute instance

Create an instance to deploy and run applications, or save as a reusable Terraform stack for creating an instance with Resource Manager.

Name

Create in compartment


AR-Cloud

- Click on the **Change image** button.

Image and shape [Collapse](#)


A [shape](#) is a template that determines the number of CPUs, amount of memory, and other resources allocated to an instance. The image is the operating system that runs on top of the shape.

Image



Oracle Linux 8
Image build: 2023.12.13-0

- Select **My Images** and the **Custom images** radio button.



My images
Custom images & boot volumes ✓

Custom images
 Boot volumes
 Image OCID

- Select the **Compartment** created in the “[Create the Oracle Cloud Compartment](#)” section.

Compartment

AR-Cloud

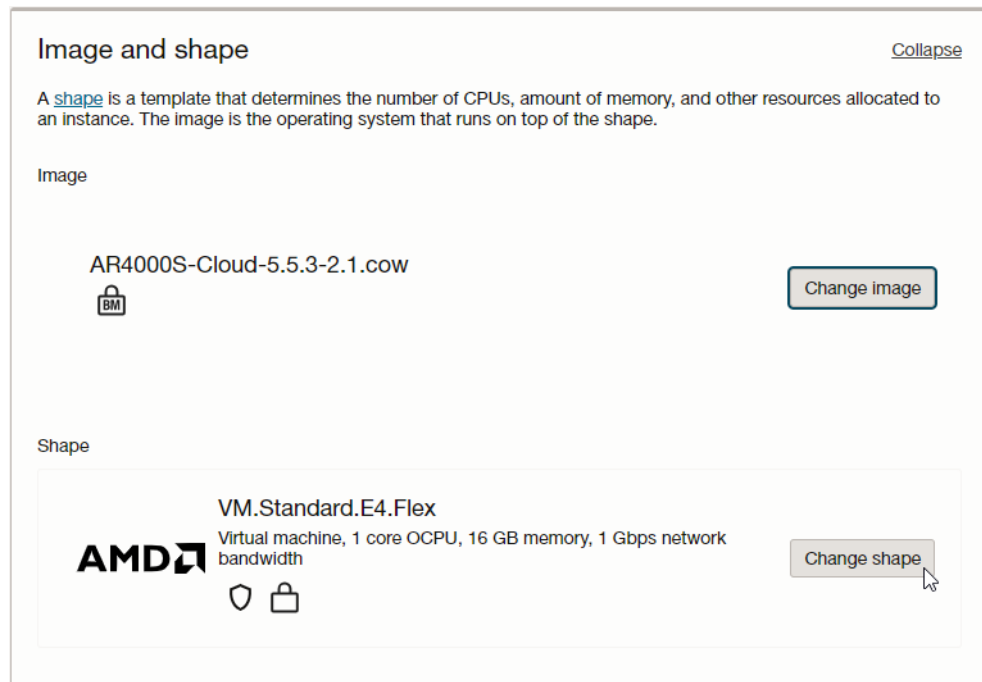
- From the list of **Custom image names**, select the Image created in the “[Create the Image](#)” section.

Custom image name

<input checked="" type="checkbox"/>	AR4000S-Cloud-5.5.3-2.1.cow
-------------------------------------	-----------------------------

1 selected

8. Confirm the selected image by clicking the **Select image** button. This will close the side-panel.
9. Next, select a Shape. This is a template for the amount of resources the created AR4000S-Cloud instance will have access to. Click on the **Change Shape** button.



10. Select the details for your VM.

Browse all shapes

A [shape](#) is a template that determines the number of CPUs, amount of memory, and other resources allocated to a newly created instance.

Instance type

Virtual machine

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.

Shape series

AMD

Flexible OCPU count. Current generation AMD processors.

Intel

Flexible OCPU count. Current generation Intel processors.

Ampere

Arm-based processor.



Specialty and previous generation

Always Free, Dense I/O, GPU, HPC, Generic, and earlier generation AMD and Intel standard shapes. ✓


Image: Custom Custom

Shape name	OCPU ⓘ	Memory (GB)	Security
<input type="checkbox"/> VM.Standard.E2.1.Micro Always Free-eligible	1	1	⌵
<input checked="" type="checkbox"/> VM.Standard.E3.Flex	2 (114 max)	4 (1,776 max)	🛡️ ⌶

For running AR4000S-Cloud, we recommend to **VM.Standard3.Flex** with at least **2 OCPUs** and **4GB of memory**.



VM.Standard.E3.Flex 2 (114 max) 4 (1,776 max)  

Network bandwidth (Gbps): 2


Maximum VNICs: 2 



You can customize the number of OCPUs and the amount of memory allocated to a flexible shape. The other resources scale proportionately. [Learn more about flexible shapes.](#)

Number of OCPUs

 **Extended OCPU** 

12 22 43 64 114

Amount of memory (GB) 

 **Extended memory** 

4 342 683 1024 1776

Burstable

[Burstable instances](#) are virtual machine (VM) instances that provide a baseline level of CPU performance with the ability to burst to a higher level to support occasional increases in usage.

11. Click on the **Select shape** button to confirm the chosen Shape for the AR-Cloud instance.
12. Under the **Primary VNIC** information section, select the **Create new virtual cloud network** and **Create new public subnet** radio buttons. You can specify a name for each of these, as well as for the VNIC.

Primary VNIC information [Collapse](#)

A [virtual network interface card \(VNIC\)](#) connects your instance to a [virtual cloud network \(VCN\)](#) and endpoints in and outside the VCN. Having a public IP address is required to make this instance accessible from the internet.

VNIC name *Optional*

Primary network

Select existing virtual cloud network Create new virtual cloud network Enter subnet OCID

New virtual cloud network name **Create in compartment**

Subnet

An IP address from a public subnet and an [internet gateway](#) on the VCN are required to make this instance accessible from the internet.

Select existing subnet Create new public subnet

New subnet name **Create in compartment**

CIDR block

13. Select the **Automatically assign IPv4 address** radio button and the **Automatically assign public IPv4 address** check-box.

Primary VNIC IP addresses

Private IPv4 address
 Automatically assign private IPv4 address Manually assign private IPv4 address

Public IPv4 address
 Automatically assign public IPv4 address
If you're not sure whether you need a public IP address, you can always assign one later.

IPv6 addresses
 Assign IPv6 addresses from subnet prefixes
You can only assign one IPv6 address per subnet prefix at first instance creation. Subnets can have more than one IPv6 prefix.

14. The SSH private key generated by Oracle Cloud is not used by AR-Cloud. Refer to the [Secure Shell \(SSH\) Feature Overview and Configuration Guide](#) to configure an SSH key to authenticate connecting users.

Add SSH keys

Generate an [SSH key pair](#) to connect to the instance using a Secure Shell (SSH) connection, or upload a public key that you already have.

Generate a key pair for me Upload public key files (.pub) Paste public keys No SSH keys

i Download the private key so that you can connect to the instance using SSH. It will not be shown again.

15. Once you have completed all the configuration, click on the **Create** button. Creating the instance may take several minutes.

The screenshot shows the Oracle Cloud console for an instance named 'AR-Cloud-Instance' with the status 'RUNNING'. The instance is labeled 'Always Free'. The console displays the following information:

- Instance information:** Start, Stop, Reboot, Terminate, More actions
- General information:**
 - Availability domain: AD-1
 - Fault domain: FD-2
 - Region: ap-sydney-1
 - OCID: [or:oc5:q](#) Show Copy
 - Launched: Mon, Jan 8, 2024, 00:15:41 UTC
 - Compartment: [ud](#) AR-Clo
 - Capacity type: On-demand
- Instance details:**
 - Virtual cloud network: [network1](#)
 - Maintenance reboot: -
 - Image: [AR4000S-Cloud-5.5.3-2.1.cow](#)
 - Launch mode: PARAVIRTUALIZED
 - Instance metadata service: Versions 1 and 2 [Edit](#) ⓘ
 - Live migration: Use recommended default
 - Maintenance recovery action: Restore instance
- Instance access:**
 - Public IP address: [Public IP address](#) Copy
- Primary VNIC:**
 - Public IPv4 address: [Public IPv4 address](#) Copy
 - Private IPv4 address: 10.0.0.28
 - Network security groups: None [Edit](#) ⓘ
 - Subnet: [AR-Cloud-IP-Block1](#)
 - Private DNS record: Enable
 - Hostname: ar-cloud
 - Internal FQDN: ar-cloud... [Show](#) [Copy](#)
- Launch options:**
 - NIC attachment type: PARAVIRTUALIZED
 - Remote data volume: PARAVIRTUALIZED
 - Firmware: BIOS

16. Once created, you can connect to the AR4000S-Cloud instance over SSH via the following command:

```
ssh <public-ip-of-vm>
```

Alternatively, you can connect using the Device GUI via HTTPS on port 443:

```
https://<public-ip-of-vm>
```

where **<public-ip-of-vm>** is the IP address listed in **Public IPv4 address** on the **Compute Instance information** page shown above.

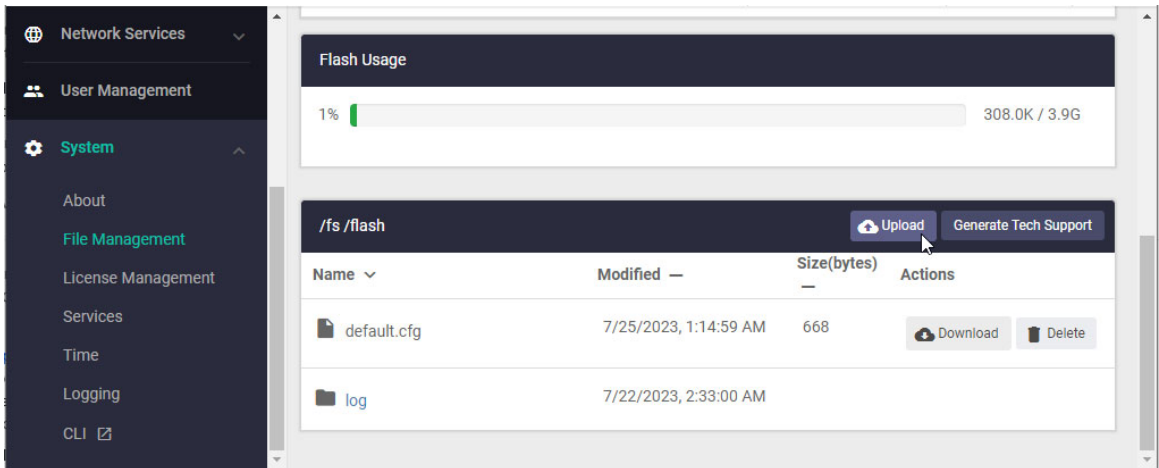
Note: HTTP on port 80 is blocked by default.

Updating an AR-Cloud VM on Oracle

You can use either the Web GUI or CLI to update the firmware of this product. Follow the steps below to update.

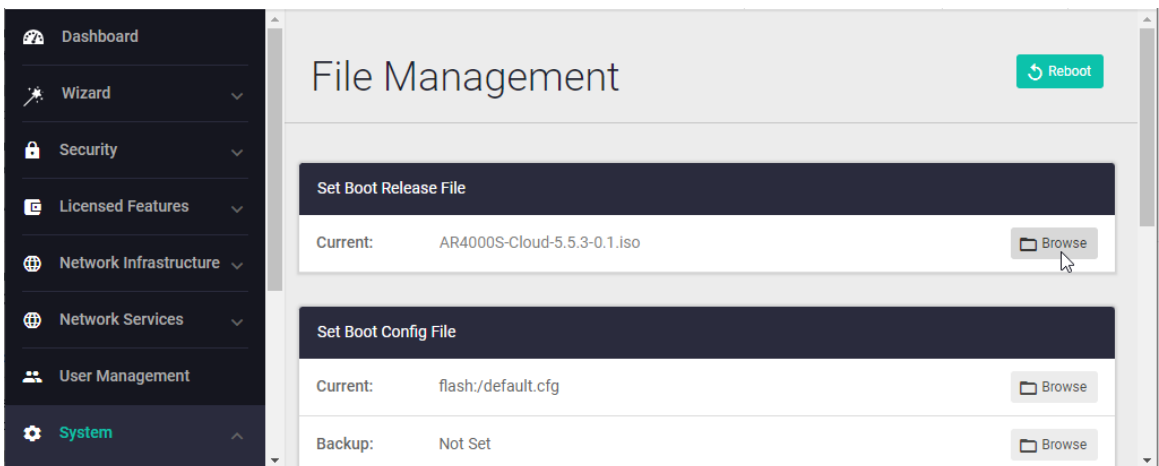
Updating using the Web GUI

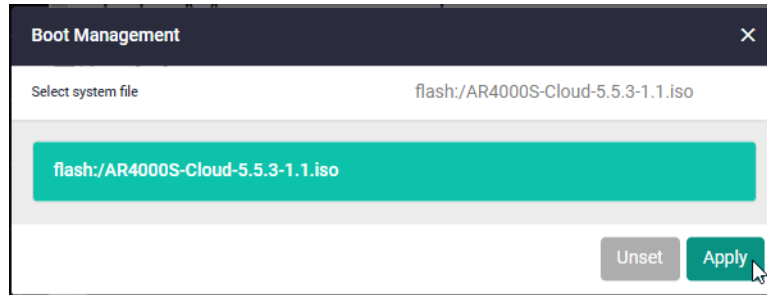
1. Access the web GUI of this product.
2. From the menu on the left side of the screen, select **System > File Management** to open the file management screen. Click the **Upload** button to upload the new ISO image file to this product.



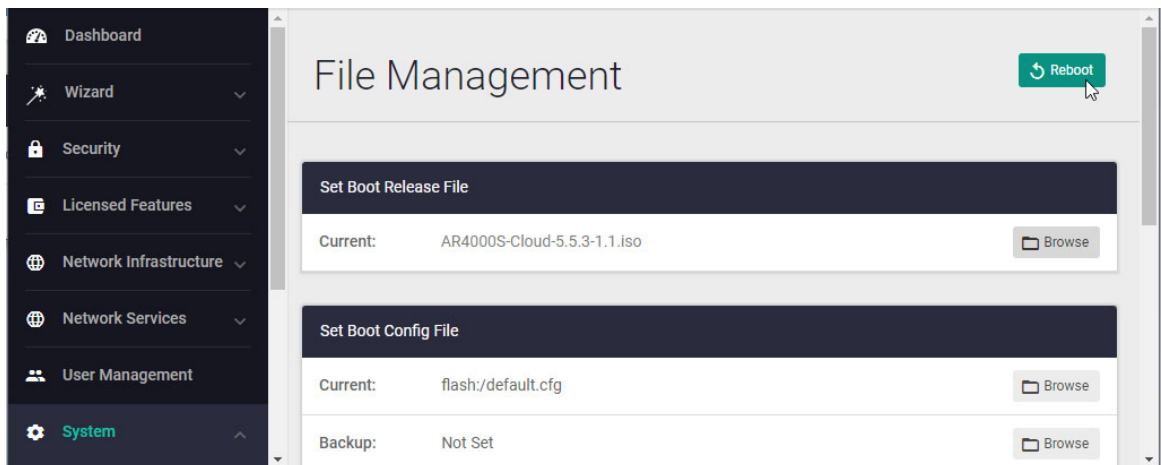
3. Click the **Browse** button in **Set Boot Release File** on the **File Management** screen, and select the new firmware.

Note: Firmware downgrades are not supported. Specify an ISO image file that is newer than the version currently in use.





4. Press the **Reboot** button on the file management screen to restart this product.



Updating using the CLI

1. Access the command line interface (CLI) of this product and enter privileged exec mode.

```
awplus> enable
```

2. Download the new ISO image file to the product using the copy command. The following is an example of downloading from an HTTP server with an ISO image file.

```
awplus# copy http://example.com/ISO-Images/AR4000S-Cloud-5.5.2-0.3.iso  
flash:
```

3. Specify the ISO image file downloaded with the software-upgrade command.

Note: Firmware downgrades are not supported. For the **software-upgrade** command, specify an ISO image file that is newer than the version currently in use.

```
awplus# software-upgrade AR4000S-Cloud-5.5.2-0.3.iso
```

```
Install this release to disk? (y/n): y
```

```
Upgrade started, the change will take effect after rebooting the  
device.
```

4. Restart with the **reload** command.

```
awplus# reload
```

```
reboot system? (y/n): y
```

C613-04163-00 REV A



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