Image Management Service

Service Overview

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Contents

1 What Is Image Management Service?

Overview

An image is a cloud server or disk template that contains an operating system (OS), service data, or necessary software.

Image Management Service (IMS) allows you to manage the entire lifecycle of your images. You can create ECSs or BMSs from public, private, or shared images. You can also create a private image from a cloud server or an external image file to make it easier to migrate workloads to the cloud or on the cloud.

Image Types

IMS provides public, private, KooGallery, and shared images. Public images are provided by the cloud platform, private images are created by users, and shared images are private images that other users shared with you.

Figure 1-1 illustrates the relationships among different types of images.

Figure 1-1 Image types

Image Type	Description
Public	A public image is a standard, widely used image. It contains an OS and preinstalled public applications and is available to all users. Public images are very stable and their OS and any included software have been officially authorized for use. If a public image does not contain the environments or software you need, you can use a public image to create an ECS and then deploy the required environments or software on it. Public images include the following OSs to choose from: Huawei Cloud EulerOS, CentOS, Debian, openSUSE, Fedora, Ubuntu, EulerOS, and CoreOS. For more information, see **Managing Public Images**.

Image Type	Description
Private	A private image contains an OS or service data, preinstalled public applications, and a user's personal applications. Private images are only available to the users who created them. A private image can be a system disk image, data disk image, ISO image, or full-ECS image. ● A system disk image contains an OS and preinstalled software for various services. You can use a system disk image to create ECSs and migrate your services to the cloud. ● A data disk image contains only service data. You can use a data disk image to create EVS disks and use them to migrate your service data to the cloud. ● An ISO image is created from an external ISO image file. It is a special image that is not available on the ECS console. ● A full-ECS image contains an OS, preinstalled software, and service data. A full-ECS image is created using differential backups and the creation takes less time than creating a system or data disk image that has the same disk capacity.
Shared	A shared image is a private image another user has shared with you. For more information, see **Sharing Images**.
KooGallery	KooGallery is an online store where you can purchase third-party images that have the OS, application environments, and software preinstalled. You can use these images to deploy websites and application development environments in just a few clicks. No additional configuration is required. KooGallery images are provided by service providers who have extensive experience in configuring and maintaining cloud servers. All the images are thoroughly tested and have been approved by Huawei Cloud KooGallery and service providers before being published.

IMS Functions

IMS provides:

● Public images that contain common OSs

● Creation of a private image from an ECS or external image file

● Public image management, such as searching for images by OS type, name, or ID, and viewing the image ID, system disk capacity, and image features such as user data injection and disk hot swap

● Private image management, such as modifying image attributes, sharing images, and replicating images

● Creation of ECSs using an image

Access Methods

The public cloud provides a web-based service management platform (a management console). You can access the IMS service through HTTPS APIs or from the management console.

- API

  If you need to integrate IMS into a third-party system for secondary development, use APIs to access the IMS service. For details, see **Image Management Service API Reference**.

- Management console

  If no integration with a third-party system is needed, use the management console. Log in to the management console and choose **Computing** > **Image Management Service** on the homepage.

  If you do not have an account, sign up to create one as instructed in **Registering a HUAWEI ID and Enabling HUAWEI CLOUD Services**.

2 Product Advantages

IMS provides convenient, secure, flexible, and efficient image management. Images allow you to deploy services faster, more easily and more securely.

Saving Time and Effort

- Deploying services on cloud servers is much faster and easier when you use images.
- A private image can be created from an ECS, a BMS, or an external image file. It can be a system disk, data disk, or full-ECS image that suites your different needs.
- Private images can be transferred between accounts, regions, or cloud platforms through image sharing, replication, and export.

Secure

- Public images use Huawei EulerOS and mainstream OSs such as Ubuntu, Windows Server, and CentOS. These OSs have been thoroughly tested to provide secure and stable services.
- Multiple copies of image files are stored on Object Storage Service (OBS), which provides excellent data reliability and durability.
- Private images can be encrypted for data security by using envelope encryption provided by Key Management Service (KMS).

Flexible

- You can manage images through the management console or using APIs.
- You can use a public image to deploy a general-purpose environment, or use a private image or KooGallery image to deploy a custom environment.
- You can use IMS to migrate servers to the cloud or on the cloud, and back up server running environments.

Unified

- IMS provides a self-service platform to simplify image management and maintenance.
- IMS allows you to batch deploy and upgrade application systems, improving O&M efficiency and ensuring consistency.

- Public images comply with industry standards. Preinstalled components only include clean installs, and only kernels from well-known third-party vendors are used to make it easier to transfer images from or to other cloud platforms.

Comparison Between Image-based Deployment and Manual Deployment

Table 2-1 Image-based deployment and manual deployment

Item	Image-based Deployment	Manual Deployment
Time required	2 to 5 minutes	1 to 2 days
Complexity	Quickly create ECSs by using public images, KooGallery images, or private images.	Select an appropriate OS, database, and various software packages based on your service requirements. Then, install and commission them.
Security	You only need to identify sources of shared images. Public, KooGallery, and private images have been thoroughly tested to ensure security and stability.	The security depends on the skills of the R&D or O&M personnel.

3 Application Scenarios

- Migrating servers to the cloud or on the cloud

  You can import local images in various formats such as VHD, VMDK, QCOW2, and RAW to the cloud platform and use the images to quickly create cloud servers for service migration to the cloud.

  You can also share or replicate images across regions to migrate cloud servers between accounts and regions.

- Deploying a specific software environment

  Use shared or KooGallery images to quickly build custom software environments without having to manually configure environments or install any software. This is especially useful for Internet startups.

- Batch deploying software environments

  Prepare an ECS with an OS, the partition arrangement you prefer, and software installed to create a private image. You can use the image to create batch clones of your custom ECS.

- Backing up server environments

  Create an image from an ECS to back up the ECS. If the ECS breaks down due to software faults, you can use the image to restore it.

4 Features

Private Image Lifecycle

After you create a private image, you can use it to create cloud servers or EVS disks. You can also share the image with other tenants or replicate it to other regions. **Figure 4-1** shows the lifecycle of a private image.

Figure 4-1 Private image lifecycle
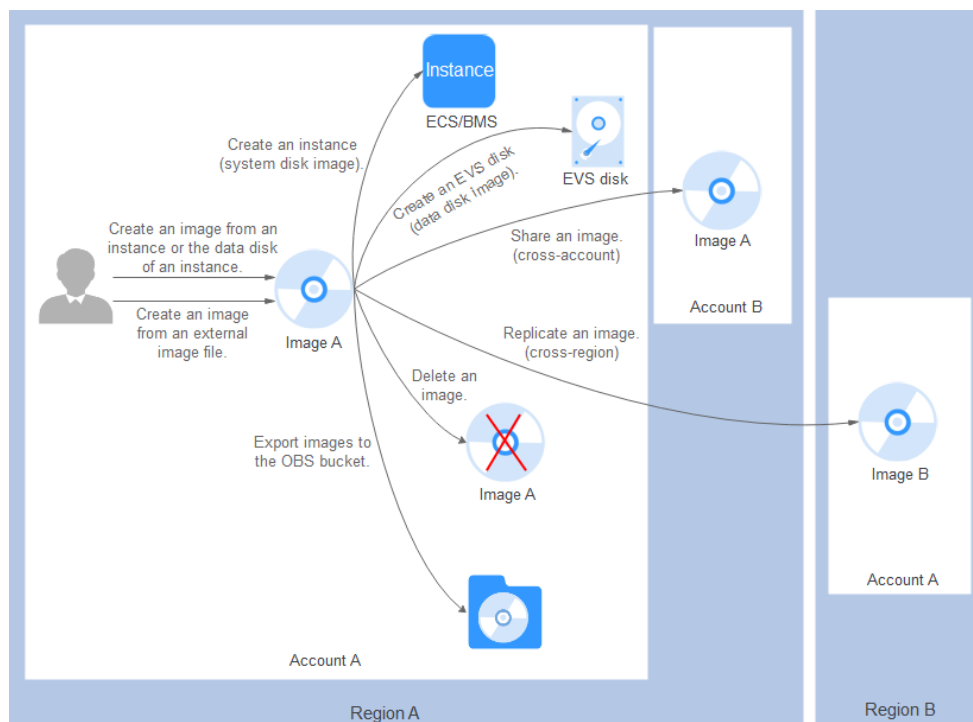
Features

Table 4-1 Creating a private image

Feature	Description	Helpful Link
Creating a system disk image from an ECS or BMS	After creating a cloud server, you can set it up, installing whatever software or application environment you need, and then use the preconfigured server to create a system disk image. You can create new cloud servers with the custom configurations from the image, which frees you from a lot of repetitive work.	• **Creating a System Disk Image from a Windows ECS** • **Creating a System Disk Image from a Linux ECS** • **Creating a Private Image from a BMS**
Creating a system disk image from an external image file	You can import a system disk from your local PC or other cloud platforms, and use the imported image to create new cloud servers or reinstall or change the OSs of existing cloud servers.	• **Creating a Windows System Disk Image from an External Image File** • **Creating a Linux System Disk Image from an External Image File** • **Creating a BMS Private Image from an External Image File** • **Fast Import of an Image File**
Creating a system disk image from an ISO file	In contrast with other image formats, an ISO file can be used only after it is decompressed using a tool, such as UltraISO or VirtualBox. For details about the image creation process, see the **Helpful Link** column in the table.	• **Creating a Windows System Disk Image from an ISO File** • **Creating a Linux System Disk Image from an ISO File** • **Creating a Windows Image Using VirtualBox and an ISO File** • **Creating a Linux Image Using VirtualBox and an ISO File**

Feature	Description	Helpful Link
Creating a system disk image using Packer	Packer is an open-source tool used to create custom images. It simplifies private image creation by using manageable code. In this way, you can customize images easily.	**Creating a Private Image Using Packer**
Creating a data disk image from an external image file	You can import the data disk image of a local server or a server on another cloud platform to Huawei Cloud and then the image can be used to create EVS disks.	**Creating a Data Disk Image from an External Image File**
Creating a full-ECS image from an ECS, a CSBS backup, or a CBR backup	You can use an ECS with data disks to create a full-ECS image, complete with an OS, various applications, and your service data. The full-ECS image then can be used to quickly provision identical ECSs for data migration. A full-ECS image can be created from an ECS, a CSBS backup, or a CBR backup.	• **Creating a Full-ECS Image from an ECS** • **Creating a Full-ECS Image from a CSBS Backup** • **Creating a Full-ECS Image from a CBR Backup**
Creating an ECS from a private image	After a system disk image or full-ECS image is created, you can click **Apply for Server** in the row that contains the image to create an ECS.	**Creating an ECS from an Image**

Table 4-2 Managing private images

Feature	Description	Helpful Link
Modifying an image	You can modify the following attributes of an image: name, description, minimum memory, maximum memory, and advanced functions such as NIC multi-queue and SR-IOV driver.	**Modifying an Image**
Sharing images	You can share an image with other Huawei Cloud accounts. These accounts can use your shared private image to quickly create ECSs or EVS disks.	• **Sharing Images** • **Image Sharing FAQ**

Feature	Description	Helpful Link
Exporting images	You can export private images to your OBS bucket and download them to your local PC for backup.	**Exporting an Image**
Encrypting images	You can create encrypted images to improve data security. KMS envelope encryption is used. Encrypted images can be created from external image files or encrypted ECSs.	● **Encryption Method** ● **Creating Encrypted Images**
Replicating images within a region	By replicating images within a region, you can convert encrypted and unencrypted images into each other or enable some advanced features, for example, fast instance provisioning.	**Replicating Images Within a Region**
Replicating images across regions	You can replicate private images created in one region to another region. Cross-region replication can be used together with image sharing for cross-region, cross-account image replication.	**Replicating Images Across Regions**
Tagging an image	You can tag your private images for easy management and search.	**Tagging an Image**
Exporting image list	You can export the public or private image list in a given region as a CSV file for local maintenance and query.	**Exporting Image List**
Deleting images	You can delete images that will be no longer used. Deleting an image does not affect the ECSs created from that image.	**Deleting Images**

5 Constraints

This section describes the constraints on using IMS.

- **Creating a private image**
- **Importing a private image**
- **Sharing images**
- **Replicating an image**
- **Exporting an image**
- **Encrypting an image**
- **Deleting images**
- **Creating cloud servers from an image**
- **Tagging an image**

Table 5-1 Constraints on creating a private image

Item	Constraint
Maximum number of private images that can be created in a region	50 If you need more, submit a service ticket to increase your quota. For details, see **Managing Quotas**.
Maximum number of concurrent tasks for creating private images	40 **NOTE** Currently, only one image can be created in each task.
Creating a system disk image from an ECS or BMS	• The ECS must be in the **Stopped** or **Running** state. • The BMS must be in the **Stopped** state and must be booted from an EVS disk rather than a local disk.
Creating a data disk image from an ECS	• The ECS must be in the **Stopped** or **Running** state. • A data disk image can be used to create only one data disk at a time.

Item	Constraint
Disk capacity	• The system disk capacity of an ECS or a BMS used to create a system disk image must be no greater than 1 TB. If it is greater than 1 TB for an ECS, you can only use the ECS to create a full-ECS image. • The data disk capacity of an ECS used to create a data disk image must be no greater than 1 TB. If it is greater than 1 TB, you can only use the ECS to create a full-ECS image.
Creating a full-ECS image from an ECS or a CSBS or CBR backup	• The ECS must be in the **Stopped** or **Running** state. • A CSBS or CBR backup can be used to create only one full-ECS image at a time. • A full-ECS image can only be replicated across regions. • A full-ECS image is shareable with other tenants only when it is created from a CBR backup or from an ECS that has never had a CSBS backup. • A full-ECS image cannot be exported, published in KooGallery, or replicated within a region.

Table 5-2 Constraints on importing a private image

Item	Constraint
Importing a system disk image from an external image file	For details about constraints on external image files, see **Preparing an Image File (Windows)** or **Preparing an Image File (Linux)**.
Importing a system disk image from an ISO file	• Register the ISO file as an ISO image, use the ISO image to create a temporary ECS, install an OS and related drivers on the ECS, and use the ECS to create a system disk image. • The ISO image cannot be replicated, exported, or encrypted.
Importing a data disk image from an external image file	The data disk capacity can be 40–2048 GB, and it must also be at least as big as the data disk in the image file.
Image format	VMDK, VHD, QCOW2, RAW, VHDX, QED, VDI, QCOW, ZVHD2, and ZVHD

Item	Constraint
Image size	The image size cannot exceed 128 GB. If the image size is between 128 GB and 1 TB, convert the image file into the RAW or ZVHD2 format and import the image through fast import. • For details about how to convert the image file format, see **Converting the Image Format Using qemu-img-hw**. • For details about fast import, see **Fast Import of an Image File**.

Table 5-3 Constrains on sharing images

Item	Constraint
Maximum number of tenants, projects, or organizations an image can be shared with	System disk image or data disk image: 128 Full-ECS image: 10
Maximum number of shared images that a tenant can receive	No limit
Private image status	**Normal**
Image sharing	• Images published in KooGallery cannot be shared. • Encrypted images cannot be shared. • A full-ECS image is shareable only when it is created from a CBR backup or from an ECS that has never had a CSBS backup.
Region	• You can share images only within the region where they reside. To make an image available in a different region, replicate the image to the region and then share it. • There are constraints on the region when cloud servers are created from a shared image. For example, a shared image can be used to create cloud servers only in the same region.

Table 5-4 Constraints on replicating an image

Item	Constraint
Maximum size of an image	128 GB The image size cannot exceed 300 GB if you replicate an image from the CN South-Guangzhou, CN East-Shanghai1, CN East-Shanghai2, or CN North-Beijing4 region to another region. In other cases, it cannot exceed 128 GB.
Maximum number of concurrent replication tasks per tenant	5
Private image status	**Normal**
Replicating images within a region	- Full-ECS images cannot be replicated within the same region. - Private images created using ISO files do not support in-region replication.
Replicating images across regions	- A new replication task can be created only after the previous replication task is complete. - Encrypted images do not support cross-region replication.

Table 5-5 Constraints on exporting an image

Item	Constraint
Maximum size of an exported image	1 TB Images larger than 128 GB only support fast export. NOTE In some regions, an image larger than 128 GB can be exported normally (not fast export). For details about fast export, see **Comparison Between Import and Fast Import, and Between Export and Fast Export**.
Formats of exported image files	VMDK, VHD, QCOW2, ZVHD, and ZVHD2
Private image status	**Normal**

Item	Constraint
Exporting an image	- Encrypted images cannot be exported through fast export. - An image can only be exported to a Standard bucket that is in the same region as the image. - The following private images cannot be exported: - Full-ECS images - ISO images - Private images created from a Windows, SUSE, Red Hat, Ubuntu, or Oracle Linux public image - Private images created from a KooGallery image - The image size must be less than 1 TB. Images larger than 128 GB support only fast export. **NOTE** In some regions, an image larger than 128 GB can be exported normally (not fast export).

Table 5-6 Constraints on other image operations

Operation	Item	Constraint
Encrypting an image	Creating an encrypted image from an encrypted ECS or an external image file	- An encrypted image cannot be shared with others, published in KooGallery, or replicated across regions. - The key used for encrypting an image cannot be changed.
Deleting images	Private image status	A published private image cannot be deleted.
Creating cloud servers from an image	Number of cloud servers that can be concurrently created using a system disk image	Recommended value: ≤ 100
Tagging an image	Maximum number of tags that can be added to a private image	10

Other Constraints

- If an ECS is frozen due to overdue payment, it cannot be used to create a private image. You must renew the ECS before using it to create a private image.

- A private image created from an x86 ECS cannot be used to create a Kunpeng ECS or change the OS of a Kunpeng ECS.

- When you use an external image file to create a private image and select **x86** for **Architecture**, the private image cannot be used to create a Kunpeng ECS or change the OS of a Kunpeng ECS.

- A private image containing a 32-bit OS cannot be used to create an ECS with larger than 4 GB of memory because the total available address space for a 32-bit OS is 4 GB.

6 EOS Plan

If the End of Support (EOS) of an OS arrives, you can still use images containing this OS, but Huawei Cloud will no longer provide technical support for these images, such as locating new problems and rectifying defects.

This section provides the OS EOS plan.

- **Huawei Cloud EulerOS**
- **EulerOS**
- **CentOS**
- **Debian**
- **Ubuntu**
- **RedHat**
- **FreeBSD**
- **OpenSUSE**
- **SUSELinux**
- **Fedora**
- **RockyLinux**
- **AlmaLinux**
- **WindowsServer**

📖 NOTE

- EulerOS and Huawei Cloud EulerOS are developed by Huawei which provides technical support for the OSs until their end of life (EOL).
- For third-party OSs, when their EOL arrives, Huawei Cloud will stop providing technical support for the images that contain these OSs.

OS EOS

- Huawei Cloud EulerOS

Version	EOS Date
Huawei Cloud EulerOS 2.0	2028-06-30
Huawei Cloud EulerOS 1.1	2026-06-30

- EulerOS

Version	EOS Date
EulerOS 2.0SP12	2028-12-31
EulerOS 2.0SP11	2027-12-31
EulerOS 2.0SP10	2026-12-31
EulerOS 2.0SP9	2025-12-31
EulerOS 2.0SP8	2024-12-31
EulerOS 2.0SP5	2024-06-30
EulerOS 2.0SP3	2022-12-31
EulerOS 2.0SP2	2021-12-31
EulerOS 2.0SP1	2019-09-30

- CentOS

Version	Mainstream End Date	Extended End Date
CentOS 8	2021-12-31	2021-12-31
CentOS 7	2020-08-06	2024-06-30
CentOS 6	2017-05-10	2020-11-30

- Debian

Version	EOS Date
Debian 13	Unknown
Debian 12	Unknown
Debian 11	Unknown
Debian 10	2022-09-10
Debian 9	2020-07-18
Debian 8	2018-06-17
Debian 7	2016-04-25

- Ubuntu

Version	EOS Date
Ubuntu 22.04 LTS	2027-04

Version	EOS Date
Ubuntu 20.04 LTS	2025-04
Ubuntu 18.04 LTS	2023-06
Ubuntu 16.04 LTS	2021-04
Ubuntu 14.04 LTS	2019-04

- Red Hat

Version	EOS Date
Red Hat 9	2027-05-31
Red Hat 8	2024-05-31
Red Hat 7	2019-08-06
Red Hat 6	2016-05-10

- FreeBSD

Version	EOS Date
FreeBSD 13.0	Three months after the release of FreeBSD 13.1
FreeBSD 12.3	2022-08-21
FreeBSD 12.2	2022-03-31
FreeBSD 12.1	2021-01-31
FreeBSD 12.0	2020-02-04
FreeBSD 11.4	2021-09-30
FreeBSD 11.3	2020-09-30
FreeBSD 11.2	2019-10-31
FreeBSD 11.1	2018-09-30
FreeBSD 11.0	2017-11-30

- OpenSUSE

Version	EOS Date
OpenSUSE 15.3	2022-11-30
OpenSUSE 15.2	2022-01-04
OpenSUSE 15.1	2021-02-02

Version	EOS Date
OpenSUSE 15.0	2019-12-03
OpenSUSE 42.3	2019-07-01
OpenSUSE 42.2	2018-01-26
OpenSUSE 42.1	2017-05-17

- SUSE Linux

Version	Mainstream End Date	Extended End Date
SUSE Linux Enterprise Server 15 SP4	Six months after the release of SUSE Linux Enterprise Server 15 SP5	Unknown
SUSE Linux Enterprise Server 15 SP3	2022-12-31	2025-12-31
SUSE Linux Enterprise Server 15 SP2	2021-12-31	2024-12-31
SUSE Linux Enterprise Server 15 SP1	2021-01-31	2024-06-31
SUSE Linux Enterprise Server 15	2019-12-31	2022-12-31
SUSE Linux Enterprise Server 12 SP5	2024-10-31	2027-10-31
SUSE Linux Enterprise Server 12 SP4	2020-06-30	2023-06-30
SUSE Linux Enterprise Server 12 SP3	2019-06-30	2022-06-30
SUSE Linux Enterprise Server 12 SP2	2018-03-31	2021-03-31
SUSE Linux Enterprise Server 12 SP1	2017-05-31	2020-05-31
SUSE Linux Enterprise Server 12	2016-06-30	2019-07-01

- Fedora

Version	EOS Date
Fedora 35	2022-12-13
Fedora 34	2022-06-07

Version	EOS Date
Fedora 33	2021-11-30
Fedora 32	2021-05-25
Fedora 31	2020-11-24
Fedora 30	2020-05-26
Fedora 29	2019-11-26
Fedora 28	2019-05-28
Fedora 27	2018-11-30

- Rocky Linux

Version	EOS Date
Rocky Linux 8.5	2031-11-14

- AlmaLinux

Version	EOS Date
AlmaLinux 8.5	2031-11

- Windows Server

Version	Mainstream End Date	Extended End Date
Windows Server 2019	2024-01-09	2029-01-09
Windows Server 2016	2022-01-11	2027-01-12
Windows Server 2012	2018-10-09	2023-10-10
Windows Server 2012 R2	2018-10-19	2023-10-10
Windows Server 2008	Ended	Ended
Windows Server 2003	Ended	Ended

7 Supported OSs

7.1 OSs Supported by Different Types of ECSs

This section describes the OSs supported by different types of ECSs.

- **x86 ECSs**
- **Kunpeng ECSs**

x86 ECSs

- **Table 7-1** lists the OSs supported by the following ECSs:

  General-purpose T6

  General computing S2, S3, S6, SN3, S7, S7n

  General computing-plus C3, C6, C6s, C7, C7t, C7e

  Memory-optimized M2, M3, M6, M7

  High-performance computing HC2, H3

  Disk-intensive D2, D3, D6

- **Table 7-2** lists the OSs supported by the following ECSs:

  General computing-plus C3ne

  Memory-optimized M3ne

- **Table 7-3** lists the OSs supported by the following ECSs:

  Large-memory E3, E6, E7

- **Table 7-4** lists the OSs supported by the following ECSs:

  Ultra-high I/O I3, IR3

- **Table 7-5** lists the OSs supported by the following ECSs:

  Ultra-high I/O I7, IR7

- **Table 7-6** lists the OSs supported by the following ECSs:

  General computing-plus aC7 and aC8

- For the OSs supported by GPU-accelerated ECSs, see the GPU product description.

   ◻ **NOTE**

   ● It is recommended that you use the official OS release versions. Do not tailor or customize the release versions, or problems may occur.

   ● OS vendors do not always update OS release versions regularly. Some versions are no longer maintained, and these deprecated versions no longer receive security patches. Ensure that you read the update notifications from OS vendors and update your OS so that it runs properly.

Table 7-1 Supported OS versions

OS	OS Version
Windows	Windows Server 2022 Standard/Datacenter
	Windows Server 2019 Standard/Datacenter
	Windows Server 2016 Standard/Datacenter
	Windows Server 2012 R2 Standard/Datacenter
	Windows Server 2012 Standard/Datacenter
	Windows Server 2008 R2 Standard/Enterprise/ Datacenter/Web
	Windows Server Core Version 1709
Huawei Cloud EulerOS	64-bit: Huawei Cloud EulerOS 2.0 Standard
	64-bit: Huawei Cloud EulerOS 1.1 for CentOS
	NOTE
	● Only S6, C6s, C6, M6, and D6 ECSs support Huawei Cloud EulerOS 1.1 for CentOS.
	● Huawei Cloud EulerOS 1.1 for CentOS is only available in the AP-Singapore region.
CentOS	64-bit: CentOS 8.3, 8.2, 8.1, and 8.0
	64-bit: CentOS 7.9, 7.8, 7.7, 7.6, 7.5, 7.4, 7.3, 7.2, 7.1, and 7.0
	64-bit: CentOS 6.10, 6.9, 6.8, 6.7, 6.6, 6.5, 6.4, and 6.3
CentOS Stream	64-bit: CentOS Stream 9
	64-bit: CentOS Stream 8
Ubuntu	64-bit: Ubuntu 22.04, 20.04, 18.04, 16.04, 14.04, and 12.04 Server
EulerOS	64-bit: EulerOS 2.5, 2.3, and 2.2
Red Hat	64-bit: Red Hat 8.0
	64-bit: Red Hat 7.9, 7.8, 7.6, 7.5, 7.4, 7.3, 7.2, 7.1, and 7.0
	64-bit: Red Hat 6.10, 6.9, 6.8, 6.7, 6.6, 6.5, and 6.4
SUSE Linux Enterprise	64-bit: SLES 15, 15 SP1, 15 SP2, 15 SP3
	64-bit: SLES 12 SP4, 12 SP3, 12 SP2, 12 SP1, and 12
	64-bit: SLES 11 SP4 and 11 SP3

OS	OS Version
Debian	64-bit: Debian 11.1.0
	64-bit: Debian 10.0.0–10.5.0, 10.7.0
	64-bit: Debian 9.13.0, 9.12.0, 9.11.0, 9.9.0, 9.8.0, 9.7.0, 9.6.0, 9.5.0, 9.4.0, 9.3.0, and 9.0.0
	64-bit: Debian 8.0.0–8.10.0
openSUSE	64-bit: openSUSE Leap 42.3, 42.2, and 42.1
	64-bit: openSUSE Leap 15.1 and 15.0
	64-bit: openSUSE 13.2
Fedora	64-bit: Fedora 22–32
CoreOS	64-bit: CoreOS 2079.4.0
FreeBSD	64-bit: FreeBSD 12.1, 11.0, and 10.3
openEuler	64-bit: openEuler 22.03
	64-bit: openEuler 20.03
AlmaLinux	64-bit: AlmaLinux 9.0
	64-bit: AlmaLinux 8.4
	64-bit: AlmaLinux 8.3
Rocky Linux	64-bit: Rocky Linux 9.0
	64-bit: Rocky Linux 8.5
	64-bit: Rocky Linux 8.4

Table 7-2 Supported OS versions

OS	OS Version
Windows	Windows Server 2019 Datacenter
	Windows Server 2016 Standard/Datacenter
	Windows Server 2012 R2 Standard/Datacenter
	Windows Server 2008 R2 Enterprise/Datacenter/Web/Standard
	Windows Server Version 1709 Datacenter
CentOS	64-bit:
	CentOS 8
	CentOS 7
	CentOS 6

OS	OS Version
Ubuntu	64-bit: Ubuntu 22.04 Server Ubuntu 20.04 Server Ubuntu 18.04 Server Ubuntu 16.04 Server Ubuntu 14.04 Server
EulerOS	64-bit: EulerOS 2.5 EulerOS 2.3 EulerOS 2.2
Red Hat	64-bit: Red Hat 7 Red Hat 6
SUSE Linux Enterprise	64-bit: SLES 12 SLES 11
Debian	64-bit: Debian 9 Debian 8
openSUSE	64-bit: openSUSE 15.1 openSUSE 15.0
Fedora	64-bit: Fedora 2x
openEuler	64-bit: openEuler 20.03

Table 7-3 Supported OS versions

OS	OS Version
Huawei Cloud EulerOS **NOTE** Only E6 ECSs support Huawei Cloud EulerOS.	Huawei Cloud EulerOS 2.0 Standard

OS	OS Version
CentOS	64-bit: CentOS 8 CentOS 7 CentOS 6
Ubuntu	64-bit: Ubuntu 20.04 Server Ubuntu 18.04 Server Ubuntu 16.04 Server Ubuntu 14.04 Server
EulerOS	64-bit: EulerOS 2.5 EulerOS 2.3 EulerOS 2.2
Red Hat	64-bit: Red Hat 7 Red Hat 6
SUSE Linux Enterprise	64-bit: SLES 15 SLES 12 SLES 11
Debian	64-bit: Debian 10 Debian 9 Debian 8
openSUSE	64-bit: openSUSE 15.1 openSUSE 15.0
Fedora	64-bit: Fedora 3x Fedora 2x
openEuler	64-bit: openEuler 20.03

Table 7-4 Supported OS versions

OS	OS Version
CentOS	64-bit: CentOS 7
Ubuntu	64-bit: Ubuntu 20.04 Server Ubuntu 18.04 Server Ubuntu 16.04 Server Ubuntu 14.04 Server
EulerOS	64-bit: EulerOS 2.3 EulerOS 2.2
SUSE Linux Enterprise	64-bit: SLES 12
Debian **NOTE** IR3 ECSs do not support Debian.	64-bit: Debian 9 Debian 8

Table 7-5 Supported OS versions

OS	OS Version
Windows	64-bit: Windows Server 2016 Datacenter Windows Server 2012 Datacenter
CentOS	64-bit: CentOS 8.1 CentOS 8.0 CentOS 7.6 CentOS 7.5 CentOS 7.4 CentOS 7.3 CentOS 7.2 CentOS 6.9
Debian	64-bit: Debian 10.0.0

OS	OS Version
Fedora	64-bit: Fedora 32 Fedora 28 Fedora 27
SUSE Linux Enterprise	64-bit: SLES 15 SP2 SLES 15 SP1 SLES 12 SP5
Ubuntu	64-bit: Ubuntu 22.04 Server Ubuntu 20.04 Server Ubuntu 18.04 Server Ubuntu 16.04.3 Server Ubuntu 16.04.1 Server
Rocky Linux	Rocky Linux 9.0 64bit

Table 7-6 Supported OS versions

OS	OS Version
Huawei Cloud EulerOS	Huawei Cloud EulerOS 2.0 Standard
CentOS	64-bit: CentOS 8.2 CentOS 8.1 CentOS 8.0 CentOS 7.6 CentOS 7.5 CentOS 7.4 CentOS 7.3 CentOS 7.2
Ubuntu	64-bit: Ubuntu 22.04/20.04/18.04
Debian	64-bit: Debian 11.1.0 Debian 10.0.0 Debian 9.0.0
AlmaLinux	64-bit: AlmaLinux 9.0

OS	OS Version
Rocky Linux	64-bit: Rocky Linux 9.0 64-bit: Rocky Linux 8.5
openEuler	OpenEuler 20.03 64bit

Kunpeng ECSs

- **Table 7-7** lists the OSs supported by the following ECSs:

  Kunpeng general computing-plus kC1

  Kunpeng memory-optimized kM1

- **Table 7-8** lists the OSs supported by the following ECSs:

  Kunpeng general computing-plus kC2

  Kunpeng memory-optimized kM2

- Kunpeng ultra-high I/O (kI1) ECSs support CentOS 7.6 and Huawei Cloud EulerOS 2.0.

- Kunpeng AI inference-accelerated ECSs (kAi1s) support CentOS 7.6 and Ubuntu 18.04 Server.

Table 7-7 Supported OS versions

OS	OS Version
Huawei Cloud EulerOS	Huawei Cloud EulerOS 2.0 Standard
CentOS	64-bit: CentOS 8.0 64-bit: CentOS 7.6, 7.5, and 7.4
Ubuntu	64-bit: Ubuntu 18.04 Server
EulerOS	64-bit: EulerOS 2.8
Red Hat	64-bit: Red Hat 7.6 and 7.5
SUSE Linux Enterprise	64-bit: SLES 12 SP5 and SP4 64-bit: SLES 15
openSUSE	64-bit: openSUSE Leap 15.0
Fedora	64-bit: Fedora 29
Debian	64-bit: Debian 10.2.0
openEuler	64-bit: openEuler 20.03
KylinSec	64-bit: KylinSec 3.3
Kylin	64-bit: KylinOS_V10_SP3 64-bit: KylinOS_V10_SP2 64-bit: KylinOS_V10_SP1

OS	OS Version
UnionTechOS	64-bit: UnionTechOS Server 20 1050e
NeoKylin	64-bit: NeoKylin 7.6

Table 7-8 Supported OS versions

OS	OS Version
Huawei Cloud EulerOS	Huawei Cloud EulerOS 2.0 Standard
CentOS	64-bit: CentOS 7.6
Debian	64-bit: Debian 10.2.0
openEuler	64-bit: openEuler 20.03
Kylin	64-bit: KylinOS_V10_SP1

7.2 External Image File Formats and Supported OSs

External File Formats

Image files in VMDK, VHD, QCOW2, RAW, VHDX, QED, VDI, QCOW, ISO, ZVHD2, or ZVHD format can be used to create private images. Select whichever format best meeting your requirements.

Supported OSs

The OSs supported by external image files are listed by CPU architecture.

- **x86**

- **Arm**

When you upload an external image file to an OBS bucket on the management console, the OS contained in the image file will be checked. **Table 7-9** and **Table 7-10** list the OSs supported by external image files.

If the OS cannot be identified or is not supported:

- For Windows, **Other_Windows (64_bit)** or **Other_Windows (32_bit)** will be selected during image registration.

- For Linux, **Other_Linux (64_bit)** or **Other_Linux (32_bit)** will be selected during image registration.

  ☐ **NOTE**

  Uploading image files containing OSs not listed in **Table 7-9** and **Table 7-10** may fail. You are advised to contact the customer service before attempting to upload these image files.

Table 7-9 Supported OSs (x86)

OS	Version
Rocky Linux	Rocky Linux 9.3 64bit
	Rocky Linux 9.2 64bit
	Rocky Linux 9.1 64bit
	Rocky Linux 9.0 64bit
	Rocky Linux 8.10 64bit
	Rocky Linux 8.9 64bit
	Rocky Linux 8.8 64bit
	Rocky Linux 8.7 64bit
	Rocky Linux 8.6 64bit
	Rocky Linux 8.5 64bit
	Rocky Linux 8.4 64bit
	Rocky Linux 8.3 64bit
AlmaLinux	AlmaLinux 9.2 64bit
	AlmaLinux 9.1 64bit
	AlmaLinux 9.0 64bit
	AlmaLinux 8.9 64bit
	AlmaLinux 8.8 64bit
	AlmaLinux 8.7 64bit
	AlmaLinux 8.6 64bit
	AlmaLinux 8.5 64bit
	AlmaLinux 8.4 64bit
	AlmaLinux 8.3 64bit

OS	Version
Windows	Windows 10 64bit
	Windows Server 2022 Standard 64bit
	Windows Server 2022 Datacenter 64bit
	Windows Server 2019 Standard 64bit
	Windows Server 2019 Datacenter 64bit
	Windows Server 2016 Standard 64bit
	Windows Server 2016 Datacenter 64bit
	Windows Server 2012 R2 Standard 64bit
	Windows Server 2012 R2 Essentials 64bit
	Windows Server 2012 R2 Datacenter 64bit
	Windows Server 2012 Datacenter 64bit
	Windows Server 2012 Standard 64bit
	Windows Server 2008 WEB R2 64bit
	Windows Server 2008 R2 Standard 64bit
	Windows Server 2008 R2 Enterprise 64bit
	Windows Server 2008 R2 Datacenter 64bit
SUSE	SUSE Linux Enterprise Server 15 SP5 64bit
	SUSE Linux Enterprise Server 15 SP4 64bit
	SUSE Linux Enterprise Server 15 SP3 64bit
	SUSE Linux Enterprise Server 15 SP2 64bit
	SUSE Linux Enterprise Server 15 SP1 64bit
	SUSE Linux Enterprise Server 15 64bit
	SUSE Linux Enterprise Server 12 SP5 64bit
	SUSE Linux Enterprise Server 12 SP4 64bit
	SUSE Linux Enterprise Server 12 SP3 64bit
	SUSE Linux Enterprise Server 12 SP2 64bit
	SUSE Linux Enterprise Server 12 SP1 64bit
	SUSE Linux Enterprise Server 11 SP4 64bit
	SUSE Linux Enterprise Server 11 SP3 64bit
	SUSE Linux Enterprise Server 11 SP3 32bit

OS	Version
Oracle Linux	Oracle Linux Server release 9.4 64bit
	Oracle Linux Server release 9.2 64bit
	Oracle Linux Server release 8.10 64bit
	Oracle Linux Server release 8.8 64bit
	Oracle Linux Server release 7.6 64bit
	Oracle Linux Server release 7.5 64bit
	Oracle Linux Server release 7.4 64bit
	Oracle Linux Server release 7.3 64bit
	Oracle Linux Server release 7.2 64bit
	Oracle Linux Server release 7.1 64bit
	Oracle Linux Server release 7.0 64bit
	Oracle Linux Server release 6.10 64bit
	Oracle Linux Server release 6.9 64bit
	Oracle Linux Server release 6.8 64bit
	Oracle Linux Server release 6.7 64bit
	Oracle Linux Server release 6.5 64bit
Red Hat	Red Hat Linux Enterprise 8.0 64bit
	Red Hat Linux Enterprise 7.9 64bit
	Red Hat Linux Enterprise 7.8 64bit
	Red Hat Linux Enterprise 7.6 64bit
	Red Hat Linux Enterprise 7.5 64bit
	Red Hat Linux Enterprise 7.4 64bit
	Red Hat Linux Enterprise 7.3 64bit
	Red Hat Linux Enterprise 7.2 64bit
	Red Hat Linux Enterprise 7.1 64bit
	Red Hat Linux Enterprise 7.0 64bit
	Red Hat Linux Enterprise 6.10 64bit
	Red Hat Linux Enterprise 6.9 64bit
	Red Hat Linux Enterprise 6.8 64bit
	Red Hat Linux Enterprise 6.7 64bit
	Red Hat Linux Enterprise 6.6 64bit
	Red Hat Linux Enterprise 6.6 32bit
	Red Hat Linux Enterprise 6.5 64bit
	Red Hat Linux Enterprise 6.4 64bit
	Red Hat Linux Enterprise 6.4 32bit

OS	Version
Ubuntu	Ubuntu 22.04 Server 64bit
	Ubuntu 20.04 Server 64bit
	Ubuntu 19.04 Server 64bit
	Ubuntu 18.04.2 Server 64bit
	Ubuntu 18.04.1 Server 64bit
	Ubuntu 18.04 Server 64bit
	Ubuntu 16.04.6 Server 64bit
	Ubuntu 16.04.5 Server 64bit
	Ubuntu 16.04.4 Server 64bit
	Ubuntu 16.04.3 Server 64bit
	Ubuntu 16.04.2 Server 64bit
	Ubuntu 16.04 Server 64bit
	Ubuntu 14.04.5 Server 64bit
	Ubuntu 14.04.4 Server 64bit
	Ubuntu 14.04.4 Server 32bit
	Ubuntu 14.04.3 Server 64bit
	Ubuntu 14.04.3 Server 32bit
	Ubuntu 14.04.1 Server 64bit
	Ubuntu 14.04.1 Server 32bit
	Ubuntu 14.04 Server 64bit
	Ubuntu 14.04 Server 32bit
openSUSE	openSUSE 42.3 64bit
	openSUSE 42.2 64bit
	openSUSE 42.1 64bit
	openSUSE 15.5 64bit
	openSUSE 15.4 64bit
	openSUSE 15.3 64bit
	openSUSE 15.1 64bit
	openSUSE 15.0 64bit
	openSUSE 13.2 64bit
	openSUSE 11.3 64bit

OS	Version
CentOS	CentOS 8.3 64bit
	CentOS 8.2 64bit
	CentOS 8.1 64bit
	CentOS 8.0 64bit
	CentOS 8.0 64bit
	CentOS 7.9 64bit
	CentOS 7.8 64bit
	CentOS 7.7 64bit
	CentOS 7.6 64bit
	CentOS 7.5 64bit
	CentOS 7.4 64bit
	CentOS 7.3 64bit
	CentOS 7.2 64bit
	CentOS 7.1 64bit
	CentOS 7.0 64bit
	CentOS 7.0 32bit
	CentOS 6.10 64bit
	CentOS 6.10 32bit
	CentOS 6.9 64bit
	CentOS 6.8 64bit
	CentOS 6.7 64bit
	CentOS 6.7 32bit
	CentOS 6.6 64bit
	CentOS 6.6 32bit
	CentOS 6.5 64bit
	CentOS 6.5 32bit
	CentOS 6.4 64bit
	CentOS 6.4 32bit
	CentOS 6.3 64bit
	CentOS 6.3 32bit

OS	Version
Debian	Debian GNU/Linux 12.5.0 64bit
	Debian GNU/Linux 12.4.0 64bit
	Debian GNU/Linux 12.3.0 64bit
	Debian GNU/Linux 12.2.0 64bit
	Debian GNU/Linux 12.1.0 64bit
	Debian GNU/Linux 12.0.0 64bit
	Debian GNU/Linux 11.1.0 64bit
	Debian GNU/Linux 10.7.0 64bit
	Debian GNU/Linux 10.5.0 64bit
	Debian GNU/Linux 10.4.0 64bit
	Debian GNU/Linux 10.3.0 64bit
	Debian GNU/Linux 10.2.0 64bit
	Debian GNU/Linux 10.1.0 64bit
	Debian GNU/Linux 10.0.0 64bit
	Debian GNU/Linux 9.13.0 64bit
	Debian GNU/Linux 9.3.0 64bit
	Debian GNU/Linux 9.0.0 64bit
	Debian GNU/Linux 8.10.0 64bit
	Debian GNU/Linux 8.8.0 64bit
	Debian GNU/Linux 8.7.0 64bit
	Debian GNU/Linux 8.6.0 64bit
	Debian GNU/Linux 8.5.0 64bit
	Debian GNU/Linux 8.4.0 64bit
	Debian GNU/Linux 8.2.0 64bit
	Debian GNU/Linux 8.1.0 64bit
Fedora	Fedora 32 64bit
	Fedora 31 64bit
	Fedora 30 64bit
	Fedora 29 64bit
	Fedora 28 64bit
	Fedora 27 64bit
	Fedora 26 64bit
	Fedora 25 64bit
	Fedora 24 64bit
	Fedora 23 64bit
	Fedora 22 64bit

OS	Version
EulerOS	EulerOS 2.10 64bit
	EulerOS 2.9 64bit
	EulerOS 2.5 64bit
	EulerOS 2.3 64bit
	EulerOS 2.2 64bit
	EulerOS 2.1 64bit
CoreOS	CoreOS 1800.1.0
	CoreOS 1745.2.0
	CoreOS 1632.0.0
	CoreOS 1520.8.0
	CoreOS 1465.8.0
	CoreOS 1298.5.0
	CoreOS 1122.3.0
	CoreOS 1122.2.0
	CoreOS 1185.5.0
	CoreOS 1068.10.0
	CoreOS 1010.5.0
	CoreOS 1298.6.0
openEuler	openEuler 24.03 64bit
	openEuler 22.03 64bit
	openEuler 20.03 64bit
NeoKylin	NeoKylin 7.6 64bit
	NeoKylin 7.4 64bit
	NeoKylin Server release 5.0 U2 64bit
	NeoKylin Linux Advanced Server release 7.0 U5 64bit

Table 7-10 Supported OSs (Arm)

OS	Version
AlmaLinux	AlmaLinux 8.4 64bit
	AlmaLinux 8.3 64bit
CentOS	CentOS 8.0 64bit
	CentOS 7.6 64bit
	CentOS 7.5 64bit
	CentOS 7.4 64bit

OS	Version
Debian	Debian GNU/Linux 10.2.0 64bit
EulerOS	EulerOS 2.10 64bit EulerOS 2.9 64bit EulerOS 2.8 64bit
Fedora	Fedora 29 64bit
Ubuntu	Ubuntu 20.04 Server 64bit Ubuntu 19.04 Server 64bit Ubuntu 18.04 Server 64bit
SUSE	SUSE Linux Enterprise Server 12 SP5 64bit
openEuler	openEuler 24.03 64bit openEuler 22.03 64bit openEuler 20.03 64bit
openSUSE	openSUSE 15.0 64bit
NeoKylin	NeoKylin V7 64bit NeoKylin 7.7 64bit
UnionTechOS	UnionTechOS V20 1070e UnionTechOS V20 1060e UnionTechOS V20 1050e UnionTechOS 20 64bit
Kylin	Kylin V10 SP3 64bit Kylin V10 SP2 64bit Kylin V10 SP1 64bit Kylin V10 64bit Kylin Desktop V10 64bit
Kylinsec	KylinSec 3.3 64bit
NeoShine	iSoft 5.1 64bit

Related Operations

For how to upload external image files, see **Uploading an External Image File (Windows)** and **Uploading an External Image File (Linux)**.

After an external image file is successfully uploaded, you can register this image file as a private image on the cloud platform. For details, see **Registering an External Image File as a Private Image (Windows)** and **Registering an External Image File as a Private Image (Linux)**.

7.3 OSs Supporting UEFI Boot Mode

The ECS boot mode can be BIOS or UEFI. For details about the differences between them, see **How Is BIOS Different from UEFI?**

Table 7-11 lists the OSs that support the UEFI boot mode.

Table 7-11 OSs supporting UEFI boot mode

OS	Version
Windows	Windows Server 2019 Standard 64bit
	Windows Server 2019 Datacenter 64bit
	Windows Server 2016 Standard 64bit
	Windows Server 2016 Datacenter 64bit
	Windows Server 2012 R2 Standard 64bit
	Windows Server 2012 R2 Datacenter 64bit
	Windows Server 2012 Essentials R2 64bit
	Windows Server 2012 Standard 64bit
	Windows Server 2012 Datacenter 64bit
	Windows 10 64bit
Ubuntu	Ubuntu 19.04 Server 64bit
	Ubuntu 18.04 Server 64bit
	Ubuntu 16.04 Server 64bit
	Ubuntu 14.04 Server 64bit
Red Hat	Red Hat Linux Enterprise 7.4 64bit
	Red Hat Linux Enterprise 7.3 64bit
	Red Hat Linux Enterprise 7.1 64bit
	Red Hat Linux Enterprise 7.0 64bit
	Red Hat Linux Enterprise 6.9 64bit
	Red Hat Linux Enterprise 6.6 32bit
	Red Hat Linux Enterprise 6.5 64bit
Oracle Linux	Oracle Linux Server release 7.4 64bit
	Oracle Linux Server release 6.9 64bit
openSUSE	openSUSE 42.1 64bit
SUSE	SUSE Linux Enterprise Server 12 SP5 64bit
	SUSE Linux Enterprise Server 12 SP1 64bit
	SUSE Linux Enterprise Server 11 SP3 64bit
Fedora	Fedora 29 64bit
	Fedora 24 64bit

OS	Version
Debian	Debian GNU/Linux 8.8.0 64bit
CentOS	CentOS 7.6 64bit
	CentOS 7.5 64bit
	CentOS 7.4 64bit
	CentOS 7.0 64bit
	CentOS 6.9 64bit
	CentOS 6.6 64bit
EulerOS	EulerOS 2.8 64bit
	EulerOS 2.7 64bit
	EulerOS 2.5 64bit
	EulerOS 2.3 64bit
	EulerOS 2.2 64bit
openEuler	openEuler 20.03 64bit
NeoKylin	NeoKylin V7 64bit
UnionTechOS	UOS 20 64bit

8 Billing

Billing of Different Image Types

Image Type	Billing
Public	Free
Private	• System disk image, ISO image, or data disk image: free OBS buckets are used in the background for free image storage. • Full-ECS image: charged for the storage on CSBS or CBR If the image is created from a CSBS or CBR backup, you will be billed for the space used to store the CSBS or CBR backup.
Shared	• If it is a system or data disk image, the OBS storage is free. • If it is a full-ECS image, you will be billed for the space used to store the CBR backup. **NOTE** Full-ECS images created from a CBR backup can be shared but those created from a CSBS backup cannot.
KooGallery	Determined by the image provider.

Billing of Private Image Operations

Operation	Billing Item
Uploading an external image file to an OBS bucket	OBS storage (You are advised to delete unneeded image files.)

Operation	Billing Item
Creating an ECS from a system disk image or full-ECS image	EVS disks attached to the created ECS (The system disk image and full-ECS image are free of charge.) For example, when you use a full-ECS image (with a 40 GB system disk and 100 GB data disk) to create an ECS, you will be charged based on the total capacity of the system disk and data disk. **NOTE** If a private image is created using an ECS created from a KooGallery image, you will be billed for the private image based on the KooGallery price.
Replication of a system or data disk image within a region	None. OBS buckets are available for free to store the image copies.
Cross-region replication of a system or data disk image	Traffic generated by OBS cross-region replication
Cross-region replication of a full-ECS image	● Traffic of CSBS or CBR cross-region replication ● Space used for storing the CSBS or CBR backup associated with the newly replicated image
Exporting images	OBS space for storing the exported images

Reference

- For OBS pricing details, see **OBS Pricing Details**.
- For CSBS pricing details, see **CSBS Pricing Details**.
- For CBR pricing details, see **CBR Pricing Details**.
- For EVS pricing details, see **EVS Pricing Details**.

9 Security

9.1 Shared Responsibilities

Huawei guarantees that its commitment to cyber security will never be outweighed by the consideration of commercial interests. To cope with emerging cloud security challenges and pervasive cloud security threats and attacks, Huawei Cloud builds a comprehensive cloud service security assurance system for different regions and industries based on Huawei's unique software and hardware advantages, laws, regulations, industry standards, and security ecosystem.

Figure 9-1 illustrates the responsibilities shared by Huawei Cloud and users.

- **Huawei Cloud**: Ensure the security of cloud services and provide secure clouds. Huawei Cloud's security responsibilities include ensuring the security of our IaaS, PaaS, and SaaS services, as well as the physical environments of the Huawei Cloud data centers where our IaaS, PaaS, and SaaS services operate. Huawei Cloud is responsible for not only the security functions and performance of our infrastructure, cloud services, and technologies, but also for the overall cloud O&M security and, in the broader sense, the security and compliance of our infrastructure and services.

- **Tenant**: Use the cloud securely. Tenants of Huawei Cloud are responsible for the secure and effective management of the tenant-customized configurations of cloud services including IaaS, PaaS, and SaaS. This includes but is not limited to virtual networks, the OS of virtual machine hosts and guests, virtual firewalls, API Gateway, advanced security services, all types of cloud services, tenant data, identity accounts, and key management.

Huawei Cloud Security White Paper elaborates on the ideas and measures for building Huawei Cloud security, including cloud security strategies, the shared responsibility model, compliance and privacy, security organizations and personnel, infrastructure security, tenant service and security, engineering security, O&M security, and ecosystem security.

Figure 9-1 Huawei Cloud shared security responsibility model
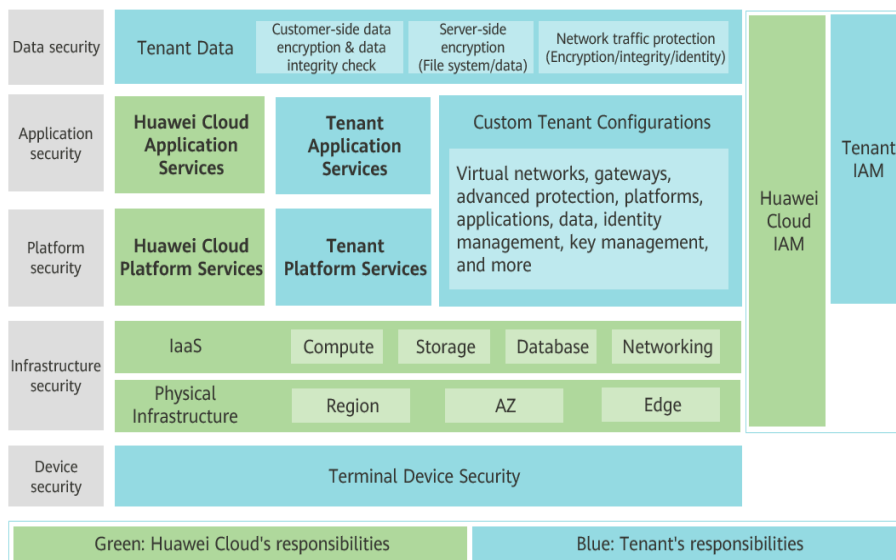
9.2 Identity Authentication and Access Control

9.2.1 Access Control for IMS

You can use Identity and Access Management (IAM) to control access to your images. IAM permissions define which actions on your cloud resources are allowed or denied. After creating an IAM user, add it to a user group and grant the permissions required by IMS to the user group. Then, all users in this group will be automatically granted with these permissions.

- **IMS Permissions Management**
- **Creating a User and Granting Permissions**
- **Creating a Custom Policy**
- **Permission Policies and Supported Actions**

9.3 Data Protection

IMS takes different measures to ensure data security and reliability.

Table 9-1 IMS data protection

Measure	Description
Encrypted transmission (HTTPS)	IMS supports HTTP and HTTPS, but HTTPS is recommended for more secure data transmission.

Measure	Description
Data redundancy	IMS uses the Erasure Code (EC) algorithm, instead of multiple copies, to ensure data redundancy. Compared with the multi-copy redundancy, EC delivers a higher storage utilization while maintaining the same reliability level. When creating images, you can choose a data redundancy policy. Choosing the multi-AZ storage will allow your data to be redundantly stored in multiple AZs in the same region. If one AZ becomes unavailable, data can still be properly accessed from the other AZs. The multi-AZ storage is ideal for scenarios that demand high data reliability.
Data integrity verification	During image uploads or downloads, data may become inconsistent due to network hijacking, caching, and other reasons. IMS verifies data consistency by checking image signatures when they are uploaded or downloaded.
Image encryption	You can create encrypted images to ensure data security.

9.4 Auditing and Logging

Cloud Trace Service (CTS) is a log audit service for Huawei Cloud security. It allows you to collect, store, and query cloud resource operation records. You can use these records for security analysis, audit compliance, resource tracking, and fault locating.

After CTS is enabled, it can record IMS operations.

- For details about how to enable and configure CTS, see **Enabling CTS**.
- If you want to know what IMS operations can be recorded, refer to **IMS Operations Recorded by CTS**.
- If you want to view traces, refer to **Viewing Traces**.

9.5 Certificates

Compliance Certificates

Huawei Cloud services and platforms have obtained various security and compliance certifications from authoritative organizations, such as International Organization for Standardization (ISO). You can **download** them from the console.

Figure 9-2 Downloading compliance certificates

Resource Center

Huawei Cloud also provides the following resources to help users meet compliance requirements. For details, see **Resource Center**.

Figure 9-3 Resource center

10 Permissions

If you need to assign different permissions to personnel in your enterprise to access your images, Identity and Access Management (IAM) is a good choice for fine-grained permissions management. IAM provides identity authentication, permissions management, and access control, helping you secure access to your resources.

With IAM, you can create IAM users and assign permissions to control their access to specific resources. For example, if you want some software developers in your enterprise to use images but do not want them to delete the images or perform any other high-risk operations, you can create IAM users and grant permission to use the images but not permission to delete them.

If your account does not require individual IAM users for permissions management, you can skip this section.

IAM is a free service. You pay only for the resources in your account. For more information about IAM, see **What Is IAM?**

IMS Permissions

New IAM users do not have any permissions assigned by default. You need to first add them to one or more groups and attach policies or roles to these groups. The users then inherit permissions from the groups and can perform specified operations on cloud services based on the permissions they have been assigned.

IMS is a project-level service deployed for specific regions. When you set **Scope** to **Region-specific projects** and select the specified projects (for example, **ap-southeast-2**) in the specified regions (for example, **AP-Bangkok**), the users only have permissions for images in the selected projects. If you set **Scope** to **All resources**, the users have permissions for images in all region-specific projects. When accessing IMS, the users need to switch to the authorized region.

You can grant permissions by using roles and policies.

- Roles: A coarse-grained authorization strategy provided by IAM to assign permissions based on users' job responsibilities. Only a limited number of service-level roles are available for authorization. Cloud services depend on each other. When you grant permissions using roles, you also need to attach

any existing role dependencies. Roles are not ideal for fine-grained authorization and least privilege access.

Table 10-1 System-defined IMS roles

Role	Description	Dependencies
IMS Administrator	Administrator permissions for IMS	This role depends on the **Tenant Administrator** role.
Server Administrator	Permissions for creating, deleting, querying, modifying, and uploading images	This role depends on the **IMS Administrator** role in the same project.

- Policies (recommended): A fine-grained authorization strategy that defines permissions required to perform operations on specific cloud resources under certain conditions. This type of authorization is more flexible and is ideal for least privilege access. For example, you can grant users only the permission to manage images of a certain type.

  A majority of fine-grained policies contain permissions for specific APIs, and permissions are defined using API actions. For the API actions supported by IMS, see **Permissions and Supported Actions**.

Table 10-2 System-defined policies for IMS

Policy	Description	Dependencies
IMS FullAccess	All permissions for IMS	None
IMS ReadOnlyAccess	Read-only permissions for IMS. Users with these permissions can only view IMS data.	None

Table 10-3 lists the common operations supported by system-defined permissions for IMS.

Table 10-3 Common operations supported by system-defined permissions

Operation	IMS FullAccess	IMS ReadOnlyAccess	IMS Administrator (Depending on Tenant Administrator)
Creating images	√	x	√
Deleting images	√	x	√
Querying images	√	√	√
Updating image information	√	x	√

Helpful Links

- **What Is IAM?**

11 Basic Concepts

11.1 Region and AZ

Concept

A region and availability zone (AZ) identify the location of a data center. You can create resources in a specific region and AZ.

- Regions are divided based on geographical location and network latency. Public services, such as Elastic Cloud Server (ECS), Elastic Volume Service (EVS), Object Storage Service (OBS), Virtual Private Cloud (VPC), Elastic IP (EIP), and Image Management Service (IMS), are shared within the same region. Regions are classified into universal regions and dedicated regions. A universal region provides universal cloud services for common tenants. A dedicated region provides specific services for specific tenants.

- An AZ contains one or more physical data centers. Each AZ has independent cooling, fire extinguishing, moisture-proof, and electricity facilities. Within an AZ, computing, network, storage, and other resources are logically divided into multiple clusters.

Figure 11-1 shows the relationship between regions and AZs.

Figure 11-1 Regions and AZs
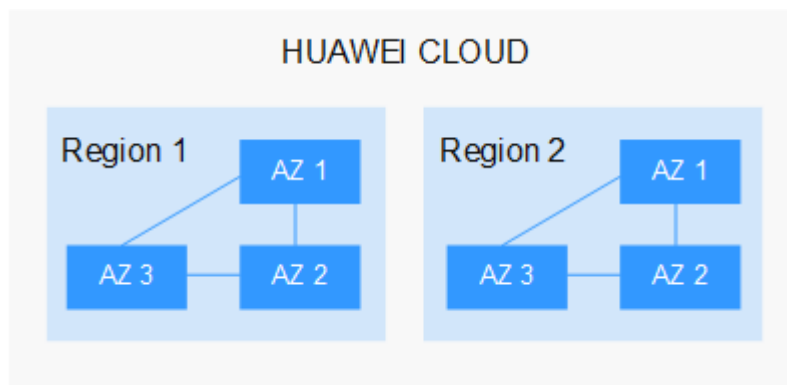
Huawei Cloud provides services in many regions around the world. You can select a region and an AZ based on requirements. For more information, see **Huawei Cloud Global Regions**.

Selecting a Region

When selecting a region, consider the following factors:

- Location

  It is recommended that you select the closest region for lower network latency and quick access.

  - If your target users are in Asia Pacific (excluding the Chinese mainland), select the **CN-Hong Kong**, **AP-Bangkok**, or **AP-Singapore** region.
  - If your target users are in Africa, select the **AF-Johannesburg** region.
  - If your target users are in Latin America, select the **LA-Santiago** region.

    ◫ NOTE

    The **LA-Santiago** region is located in Chile.

- Resource price

  Resource prices may vary in different regions. For details, see **Product Pricing Details**.

Selecting an AZ

When deploying resources, consider your applications' requirements on disaster recovery (DR) and network latency.

- For high DR capability, deploy resources in different AZs within the same region.
- For lower network latency, deploy resources in the same AZ.

Regions and Endpoints

Before you use an API to call resources, specify its region and endpoint. For more details, see **Regions and Endpoints**.

11.2 Common Image Formats

IMS supports multiple image formats, but the system uses ZVHD or ZVHD2 by default.

Table 11-1 lists the common image formats.

Table 11-1 Common image formats

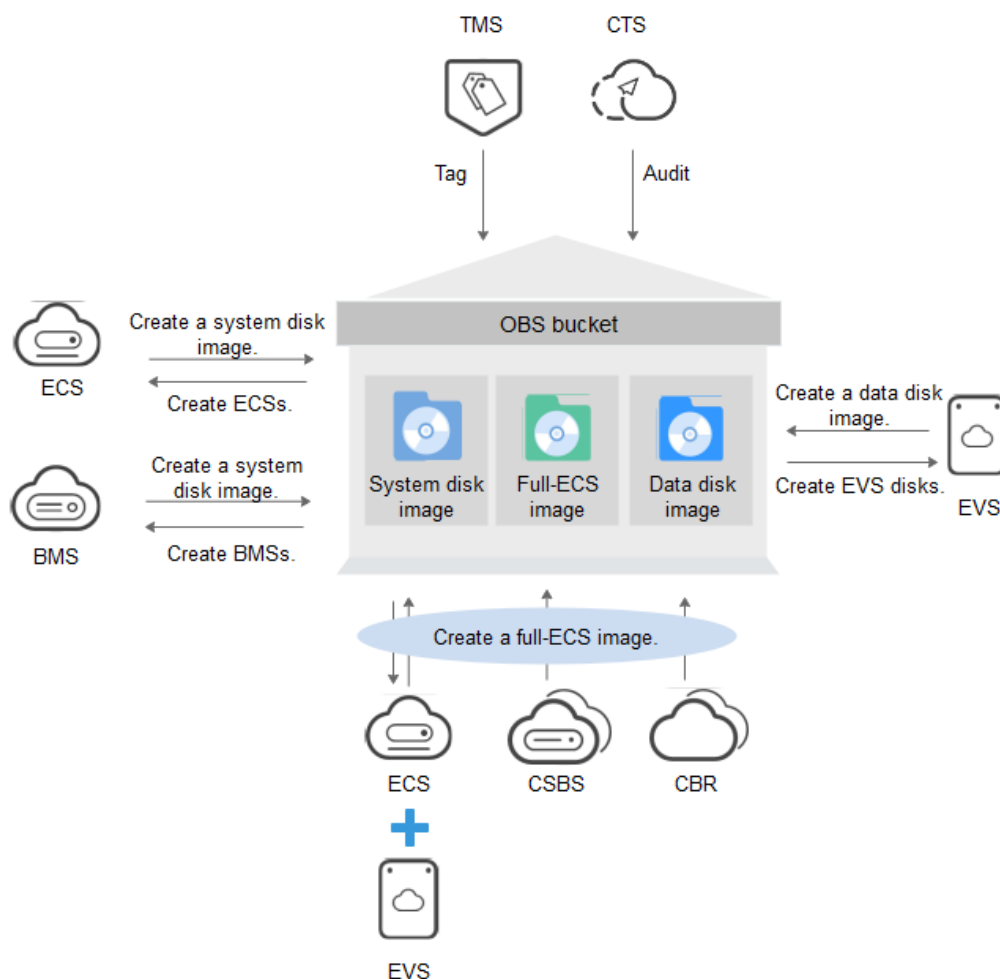| Image Format	Description	Remarks
ZVHD	ZVHD is a self-developed format. This format uses the ZLIB compression algorithm and supports sequential read and write.	A universal format supported by IaaS OpenStack; a format supported for imported and exported images **NOTE** ZVHD image files do not support lazy loading. To import large ZVHD image files fast, convert them into ZVHD2 files first.
ZVHD2	ZVHD2 is a self-developed format. This format uses the ZSTD algorithm and supports lazy loading.	A format for the lazy loading feature; a format supported for imported images
QCOW2	This is a disk image supported by the QEMU simulator. It is a file that indicates a block device disk of a fixed size. Compared with the RAW format, the QCOW2 format has the following features: ● Supports a lower disk usage. ● Supports Copy-On-Write (CoW). The image file only reflects disk changes. ● Supports snapshots. ● Supports zlib compression and encryption by following Advanced Encryption Standard (AES).	A format supported for imported and exported images
VMDK	VMDK is a virtual disk format from VMware. A VMDK file represents a physical disk drive of the virtual machine file system (VMFS) on an ECS.	A format supported for imported and exported images
VHD	VHD is a virtual disk file format from Microsoft. A VHD file is a compressed file stored in the file system of the host machine. It mainly contains a file system required for starting ECSs.	A format supported for imported and exported images **NOTE** VHD image files do not support lazy loading. To import large VHD image files fast, convert them into ZVHD2 files first.

Image Format	Description	Remarks
VHDX	VHDX is a new VHD format introduced into Hyper-V of Windows Server 2012 by Microsoft. Compared with the VHD format, VHDX has a larger storage capacity. It provides protection against data damage during power supply failures, and the disk structure alignment has been optimized to prevent performance degradation of new physical disks in a large sector.	A format supported for imported images
RAW	A RAW file can be directly read and written by ECSs. This format delivers higher I/O performance but does not support dynamic space expansion.	A format supported for imported images
QCOW	QCOW manages the space allocation of an image through the secondary index table. The secondary index uses the memory cache technology and needs the query operation, which results in performance loss. The performance of QCOW is inferior to that of QCOW2, and the read and write performance is inferior to that of RAW.	A format supported for imported images
VDI	VDI is the disk image file format used by the VirtualBOX virtualization software from Oracle. It supports snapshots.	A format supported for imported images
QED	The QED format is an evolved version of the QCOW2 format. Its storage location query mode and data block size are the same as those of the QCOW2 format. However, QED implements Copy-On-Write (CoW) in a different way as it uses a dirty flag to replace the reference count table of QCOW2.	A format supported for imported images

12 Related Services

Figure 12-1 shows the relationships between IMS and other services.

Figure 12-1 IMS relationships with other services

Table 12-1 Related services

Service	Relationship with IMS	Related Operation
Elastic Cloud Server (ECS)	You can use an image to create ECSs or use an ECS to create an image.	• **Creating an ECS from an Image** • **Creating a System Disk Image from a Windows ECS** • **Creating a System Disk Image from a Linux ECS** • **Creating a Full-ECS Image from an ECS**
Bare Metal Server (BMS)	You can use an image to create BMSs or use a BMS to create an image.	• **Creating a BMS from a Private Image** • **Creating a Private Image from a BMS** • **Creating a Private Image from an External Image File**
Object Storage Service (OBS)	Images are stored in OBS buckets. External image files to be uploaded to the system are stored in OBS buckets, and private images are exported to OBS buckets.	• **Uploading an External Image File (Windows)** • **Exporting an Image**
Data Encryption Workshop (DEW)	Images can be encrypted through envelope encryption of DEW to ensure data security. The keys used for encrypting images are stored in DEW.	**Encrypting Images**
Elastic Volume Service (EVS)	You can create a data disk image using a data disk of an ECS. The created data disk image can be used to create other EVS disks.	**Creating a Data Disk Image from an ECS**
Cloud Server Backup Service (CSBS)	You can use a CSBS backup to create a full-ECS image.	**Creating a Full-ECS Image from a CSBS Backup**

Service	Relationship with IMS	Related Operation
Cloud Backup and Recovery (CBR)	You can use a CBR backup to create a full-ECS image.	**Creating a Full-ECS Image from a CBR Backup**
Tag Management Service (TMS)	You can add tags to images for convenient classification and search.	**Tagging an Image**
Cloud Trace Service (CTS)	CTS records IMS operations for query, auditing, or backtracking.	**IMS Operations Recorded by CTS**