Bare Metal Server

FAQs

Issue 12

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1 General FAQs

1.1 What Are the Restrictions on Using BMSs?

- External hardware devices (such as USB devices, bank U key, external hard disks, and dongle) cannot be directly loaded.
- Out-of-band management is not supported. Your BMSs are managed and maintained by HUAWEI CLOUD.
- Live migration is not supported. If a server is faulty, services will be affected. You are advised to deploy your service in a cluster or in primary/standby mode to ensure high availability.
- You cannot create a raw server with no OS, that is, a BMS must have an OS.
- The OSs of BMSs cannot be changed.
- The OSs of Windows BMSs using public images are activated by default. The virtual OSs installed on the BMSs must be activated manually.
- You cannot configure the CPU or memory when creating a BMS and cannot expand capacities of the CPU, memory, or local disks after the BMS is created. Only the EVS disk capacity can be expanded.
- Only EVS disks whose device type is **SCSI** can be attached to a BMS.
- BMSs using some flavors or images cannot have EVS disks attached because the servers do not have SDI iNICs or for other reasons.
- Do not delete or modify built-in plug-ins of the image, such as Cloud-Init and bms-network-config. Otherwise, BMS basic functions will be affected.
- If you choose to assign an IP address automatically when creating a BMS, do not change the private IP address of the BMS after the BMS is provisioned. Otherwise, the IP address may conflict with that of another BMS.
- BMSs do not support bridge NICs which will cause network interruptions.
- Do not upgrade the OS kernel. Otherwise, the hardware driver may be incompatible with the BMS, adversely affecting BMS reliability.

1.2 How Are BMSs Different from ECSs?

Tenants share physical resources of ECSs, but can exclusively use physical resources of BMSs. BMSs can better meet your requirements in scenarios such as key

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applications, services that require high performance (such as big data clusters and enterprise middleware systems), and a secure and reliable running environment.

For details about the function and performance differences between BMSs, physical servers, and ECSs, see **Comparison of BMSs, Physical Servers, and ECSs**.

1.3 What Are the Differences Between BMSs and Traditional Physical Servers?

Compared with traditional physical servers, BMSs support automatic provisioning, automatic O&M, communication through the VPC, and interconnection with shared storage. You can provision and use BMSs as easily as ECSs while enjoying the excellent computing, storage, and network capabilities provided by BMSs.

For details about the function and performance differences between BMSs, physical servers, and ECSs, see **Comparison of BMSs, Physical Servers, and ECSs**.

1.4 What Are the Differences Between BMS and Dedicated Host (DeH)?

Both BMS and DeH provide physical servers but they have the following differences:

- BMS uses the bare metal architecture and does not use the virtualization platform. You need to install virtualization software before creating an ECS on a BMS.
- DeH uses the virtualization system. After purchasing a DeH, you can use ECS public images to provision ECSs.

For more information, see **Table 1-1**.

Table 1-1 Comparison between BMS and DeH

Item	BMS	DeH
Whether virtualization is provided	No	Yes
How to use	Use each BMS as a whole server, or install virtualization software on a BMS.	Provision ECSs on a DeH.
Specifications	BMS specifications	DeH specifications and ECS specifications
Image	BMS images	ECS images

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1.5 How Do BMSs Ensure Data Security?

- BMSs offer physical server-level performance and isolation. They provide dedicated computing resources for you without any loss caused by virtualization. The high-performance and high-reliability servers can ensure the security of data stored on them.
- RAID groups consisting of local disks are supported to improve fault tolerance and ensure data security.
- BMSs that do not have local disks can be booted from Elastic Volume Service (EVS) disks, which are used as system disks. In this way, the BMSs can be provisioned in a short time. Cloud Server Backup Service (CSBS) backs up BMS data. It works based on the consistent snapshot technology for EVS disks. With CSBS, you can use backups to restore BMS data, ensuring data security and correctness.

1.6 Can I Use APIs to Access BMSs?

Yes.

The BMS service provides various APIs, including BMS APIs and native OpenStack APIs. If you are familiar with network service protocols and more than one programming language, you are advised to use BMS APIs to manage your cloud resources.

For details, see **Bare Metal Server API Reference**.

1.7 Can I Build a Private Cloud Environment on BMSs?

Yes.

BMSs have all the features and advantages of physical servers and allow secondary virtualization. You can build a private cloud environment on a BMS by using a virtualization platform such as VMware, XenServer, and Hyper-V. For more information, see **Virtualization on BMS**.

1.8 What OS Images Does BMS Support?

BMS supports mainstream Linux and Windows image versions.

The following Linux images are supported:

- Red Hat Linux Enterprise 6.5/6.7/6.8/6.9/7.2/7.3/7.4/7.5 64-bit
- CentOS 6.8/6.9/7.2/7.3/7.4 64-bit
- SUSE Linux Enterprise Server 11.4/12.1/12.2/12.3 64-bit
- Oracle Linux Server Release 6.8/6.9/7.2/7.3/7.4 64-bit
- Ubuntu 14.04/16.04 64-bit
- Debian 8.6 64-bit

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- EulerOS 2.2/2.3 64-bit

The following Windows images are supported:

- 2016 Standard 64-bit
- 2012 R2 Standard 64-bit

Note that the OSs supported for BMSs of different flavors vary. For details, see **OSs Supported by Different Types of BMSs**.

1.9 Will Services Be Affected If Hyper-Threading Is Configured for BMS?

Yes. Hyper-threading is configured in the BMS BIOS, during which the BMS needs to be restarted. As a result, the services are affected.

1.10 How Do I Apply for Increasing the BMS Quota?

What Is Quota?

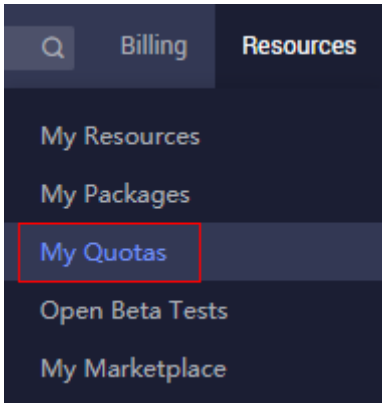
Quotas are enforced for service resources on the platform to prevent unforeseen spikes in resource usage. Quotas can limit the number or amount of resources available to users, such as the maximum number of ECSs or EVS disks that can be created.

If the existing resource quota cannot meet your service requirements, you can apply for a higher quota.

How Do I View My Quotas?

1. Log in to the management console.
2. Click in the upper left corner and select the desired region and project.
3. In the upper right corner of the page, choose **Resources** > **My Quotas**.
   The **Service Quota** page is displayed.

   Figure 1-1 My Quotas



4. View the used and total quota of each type of resources on the displayed page.

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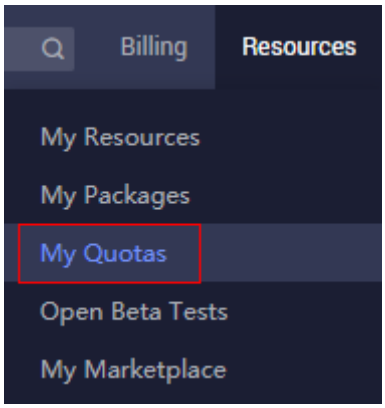
If a quota cannot meet service requirements, apply for a higher quota.

How Do I Apply for a Higher Quota?

1. Log in to the management console.
2. In the upper right corner of the page, choose **Resources** > **My Quotas**.
   The **Service Quota** page is displayed.

   Figure 1-2 My Quotas



3. Click **Increase Quota**.
4. On the **Create Service Ticket** page, configure parameters as required.
   In **Problem Description** area, fill in the content and reason for adjustment.
5. After all necessary parameters are configured, select **I have read and agree to the Tenant Authorization Letter and Privacy Statement** and click **Submit**.

1.11 How Do I Synchronize the Time of a BMS?

Time consistency is important to BMSs and may affect task execution results. You are advised to use the HUAWEI CLOUD NTP server for time synchronization. For details, see **Does HUAWEI CLOUD Provide the NTP Server and How Can I Install It?**

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2 Instance FAQs

2.1 How Long Does It Take to Create a BMS?

Generally, a Linux BMS is created in 30 minutes and a Windows BMS is created in one to two hours. BMSs supporting quick provisioning can be created in about five minutes.

2.2 What Do I Do If I Cannot Find My BMS on the Management Console?

Symptom

I have purchased a BMS but cannot find it on the management console.

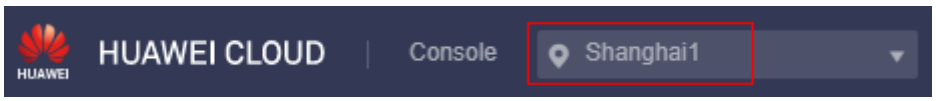
Causes

Your BMS is not in the selected region or project.

Solution

1. Log in to the **BMS management console**.
2. In the upper left corner of the management console, select the region where your BMS is located. Then, your BMS is displayed.

   Figure 2-1 Changing the region

   If your BMS is purchased under a project in a region, switch to the project to view the BMS.

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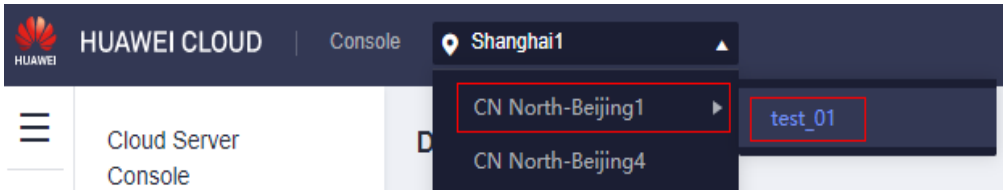
Figure 2-2 Switching the project



2.3 How Can I Obtain board_type of a BMS Flavor?

Symptom

The public images supported by BMSs vary depending on BMS flavors. You can view the public images supported by each flavor on the management console or using the **querying images** API. When you use the API to query for the public images supported by a BMS flavor, you need to enter **board_type** of the flavor. This section describes how to obtain the value of **board_type**.

Solution

The format of a BMS flavor is **physical.***AB.C*, for example, **physical.s1.large**.

In the flavor format:

- *A* specifies the BMS type. For example, **s** indicates a general-purpose BMS, **c** a computing BMS, and **m** a memory-optimized BMS.
- *B* specifies the BMS serial number. For example, **1** in **s1** indicates the first generation of general-purpose BMSs.
- *C* specifies the flavor size, such as medium, large, or xlarge.

Use *AB*+*First one or more letters of C* as the value of **board_type**. For example, if the flavor is **physical.s1.large**, board_type is **s1l**. For **board_type** of more flavors, see **Table 2-1**.

Table 2-1 board_type of a BMS flavor

BMS Flavor	board_type
physical.m2.medium	m2m
physical.h2.large	h2l
physical.hs2.large	hs2l
physical.io2.xlarge	io2xl
physical.kl1.3xlarge	kl13xl

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2.4 Why Is Failed Displayed for a BMS Application Task But the BMS List Shows the Obtained BMS?

Symptom

After I apply for a BMS that requires an EIP on the management console, the BMS application request was successfully processed but binding the EIP failed due to insufficient EIPs. In this case, **Failed** was displayed for the task in the **Task Status** area. However, the requested BMS was displayed in the BMS list.

Root Cause

- The BMS list shows the details about obtained BMSs.
- The **Task Status** area shows the processing status of the BMS application task, including statuses of sub-tasks, such as preparing for the BMS resource and binding an EIP. Only when all subtasks have succeeded, the task status becomes **Succeeded**. Otherwise, the task status is **Failed**.

If the BMS is successfully provisioned but EIP binding fails, **Failed** is displayed for the task. The provisioned BMS is temporarily displayed in the BMS list. After the system rolls back the failed task, the BMS is removed from the list.

2.5 How Can I Quickly Provision BMSs Using EVS Disks?

When provisioning a common BMS, you need to download its OS from the cloud and install it. The download costs a long time. BMSs using EVS disks as system disks can be provisioned quickly.

On the page for creating a BMS, select a flavor that supports quick BMS provisioning, set the system disk type and capacity, and configure other required parameters to obtain a BMS.

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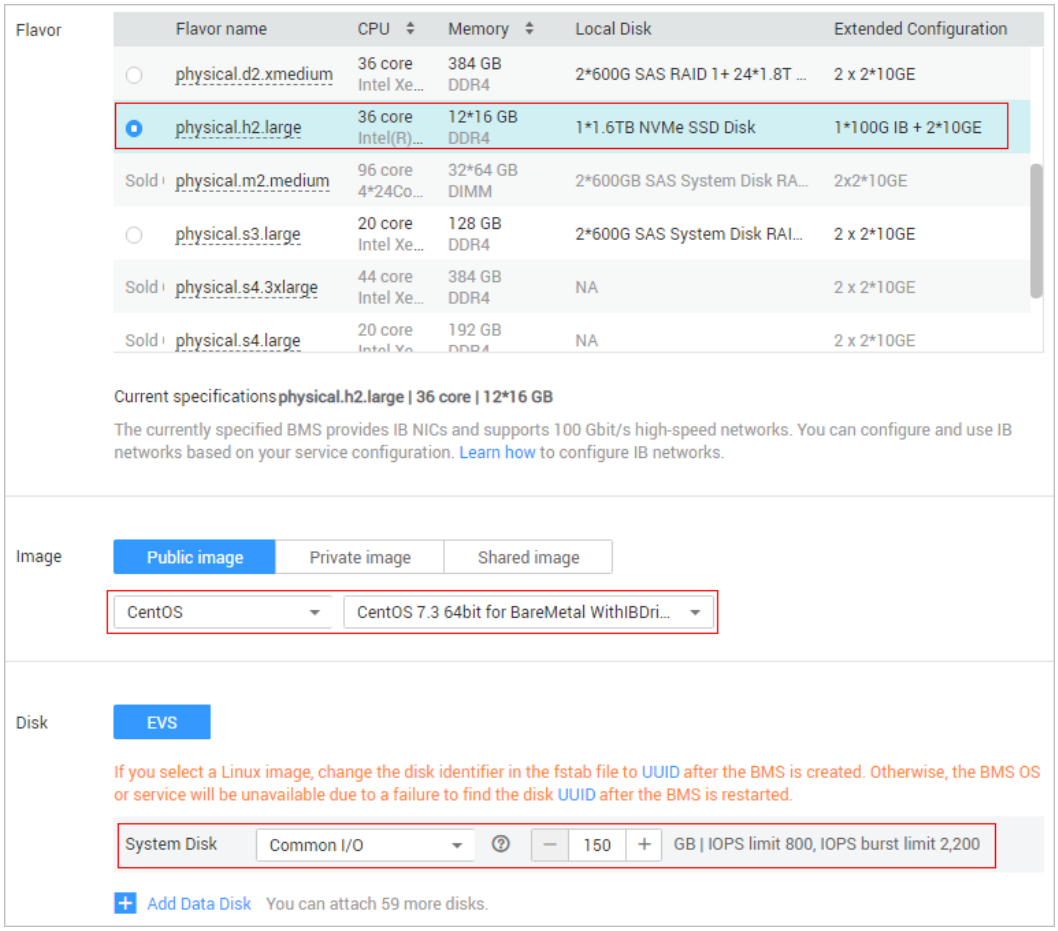
Figure 2-3 Purchasing a BMS



2.6 What Are the Advanced Features of BMSs Using EVS Disks?

You are advised to select BMSs using EVS disks as their system disks to achieve quick service recovery.

Such BMSs have the following advanced features:

- BMSs booted from EVS disks can be provisioned within about 5 minutes.
- BMSs support CSBS backups, ensuring data security.
- BMS rebuilding upon faults is supported, enabling quick service recovery.
- An Image of a BMS can be exported to apply configurations of the BMS to other BMSs without the need of configuring the BMSs again.

Helpful Links

- **Creating a BMS Supporting Quick Provisioning**
- **Backing Up a BMS**
- **Rebuilding a BMS**
- **Creating a Private Image from a BMS**

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2.7 Can I Transfer a BMS to Another Account?

A BMS cannot be directly transferred to another account. To transfer it, perform the following operations:

1. Use the BMS to create a private image.

   For details, see **Creating a Private Image from a BMS**.
2. Share the image with the target account.

   For details, see **Sharing Specified Images**.
3. Use the target account to create a BMS from the shared private image.
4. Unsubscribe from the original BMS.

2.8 Is the BMS Host Name with Suffix novalocal Normal?

Symptom

Host names of some BMSs have suffix **.novalocal**.

For example, the host name is set to **abc** during BMS creation. **Table 2-2** lists the host names (obtained by running the **hostname** command) of BMSs created using different images and those displayed after the BMSs are restarted.

Table 2-2 Hostnames of BMSs created from different images

Image	Host Name Before BMS Restart	Host Name After BMS Restart
CentOS 6.8	abc	abc.novalocal
CentOS 7.3	abc.novalocal	abc.novalocal
Ubuntu 16	abc	abc

Host names of BMSs created from some types of images have suffix **.novalocal**, while others do not.

Troubleshooting

This is a normal phenomenon.

The static host name of a Linux BMS is user-defined and injected using Cloud-Init during the BMS creation. According to the test results, Cloud-Init adapts to OSs differently. As a result, hostnames of some ECSs have suffix **.novalocal**, while others do not.

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If you want to ensure that all host names do not have suffix **.novalocal**, you can change the hostname. For details, see **How Do I Configure the Static Host Name of a BMS?**

2.9 Why Does the System Display a Message Indicating That the BMS Cannot Be Deleted?

Currently, BMSs only support the yearly/monthly billing mode and cannot be directly deleted. Therefore, when you click **Delete**, the system displays a message indicating that the BMS cannot be deleted.

If you no longer need a BMS, you can unsubscribe from it using either of the following methods:

- Locate the row that contains the BMS, click **More** in the **Operation** column, and select **Unsubscribe** from the drop-down list. On the **Unsubscribes** page, click **Unsubscribe**.
- Choose **Billing Center** > **Unsubscriptions and Changes** > **Unsubscriptions**. Locate the row that contains the BMS, click **More** in the **Operation** column, and select **Unsubscribe** from the drop-down list.

2.10 How Do I Monitor BMS Metrics?

Cloud Eye can be used to monitor BMS metrics only after Agent is installed on the BMS. For details about the installation guide and supported monitoring metrics, see **Server Monitoring**.

2.11 How Do I Create an Agency for Server Monitoring of the BMS?

1. On the management console homepage, choose **Service List** > **Management & Deployment** > **Identity and Access Management**.
2. In the navigation pane on the left, choose **Agency** and then click **Create Agency** in the upper right corner.
   - **Agency Name**: Enter **bms_monitor_agency**.
   - **Agency Type**: Select **Cloud service**.
   - **Cloud Service**: This parameter is available if you select **Cloud service** for **Agency Type**. Click **Select**, select **ECS BMS** in the displayed **Select Cloud Service** dialog box, and click **OK**.
   - **Validity Period**: Select **Permanent**.
   - **Description**: This parameter is optional. You can enter **"Support BMS server monitoring"**.
   - **Permissions**: Locate the region where the BMS resides or the sub-project of the region and click **Modify** in the **Operation** column. In the displayed dialog box, enter **CES** in the **Available Policies** search box. Then select **CES (CES Administrator)** and click **OK**.

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NOTE

If the BMS belongs to a sub-project, ensure that the sub-project has the CES Administrator permission.

3. Click **OK**.

   The operations to create an agency for server monitoring of the BMS are complete.

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3 Billing FAQs

3.1 Where Can I Query the BMS Price?

The prices of BMSs vary depending on the region and flavor. You can query the prices from **Product Pricing Details**.

3.2 What Are Pre-payment and Post-payment? How Do I Choose Between Them?

Pre-payment refers to the yearly/monthly billing mode. The system calculates the price based on the BMS type and quantity you select and deducts the sum from your account.

Post-payment refers to the pay-per-use billing mode, which means that you pay for what you use. BMSs do not support this mode.

If your services are stable and you need BMSs for a long term, pre-payment is recommended. If your service demands fluctuate greatly and are hard to predict accurately, or temporary or abrupt demand spikes may occur, post-payment may better suit your needs.

3.3 How Am I Charged When Unsubscribing from a BMS?

It depends on the BMS status and how long you have used it. **Table 3-1** provides the details.

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Table 3-1 Unsubscription rules

Unsubscription Type	Number of Unsubscriptions	Handling Fee Charged	Amount Due Charged	Cash Coupons Refunded	Discount Coupons Returned
Five-day unconditional full refund	10 times per account in a year	No	No	Yes	No
Conditional partial refund (including for a renewal period that has taken effect)	Unlimited	Yes	Yes	No	No
Unsubscribing from a BMS that failed to be created	Unlimited	No	No	Yes	No
Unsubscribing from a BMS that has not taken effect	Unlimited	No	No	Yes	No
Unsubscribing from a renewal period that has not taken effect	Unlimited	No	No	Yes	No

For more information, see **Unsubscription Rules**.

3.4 How Do I Set Automatic Renewal for Yearly/Monthly BMSs?

To prevent BMSs from being deleted when they expire, you can enable automatic renewal for BMSs that you want to use for a long term.

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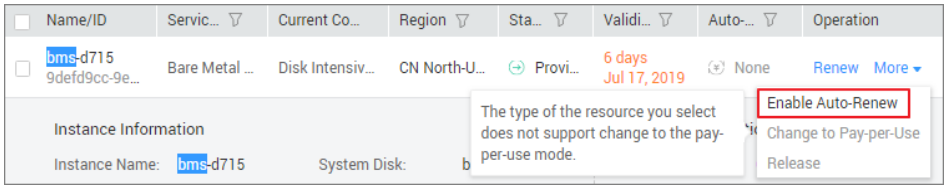
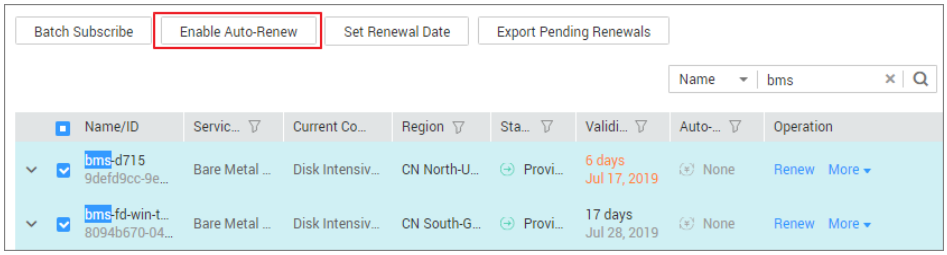
Procedure

1. Log in to the management console and choose **Billing** > **Renewal**.
2. Query the target BMSs by name, order No., or ID.
3. To enable automatic renewal for a BMS or multiple BMSs as follows:
   - To enable automatic renewal for a BMS, locate the row that contains the BMS and click **Enable Auto-Renew**. On the displayed page, set **New Auto-Renew Period** and click **OK**.



   - To enable automatic renewal for multiple BMSs, select the BMSs and click **Enable Auto-Renew** on top of the **Renewals** list. On the displayed page, set **New Auto-Renew Period** and click **OK**.



3.5 When Will a BMS Be Released After It Expires?

If you do not renew a BMS timely after it expires, HUAWEI CLOUD provides a retention period.

The retention period duration depends your level. For details, see **Retention Period**.

NOTE

To view your level, log in to the management console, click the username in the upper right corner, click **Basic Information**, and view the level next to the account name.

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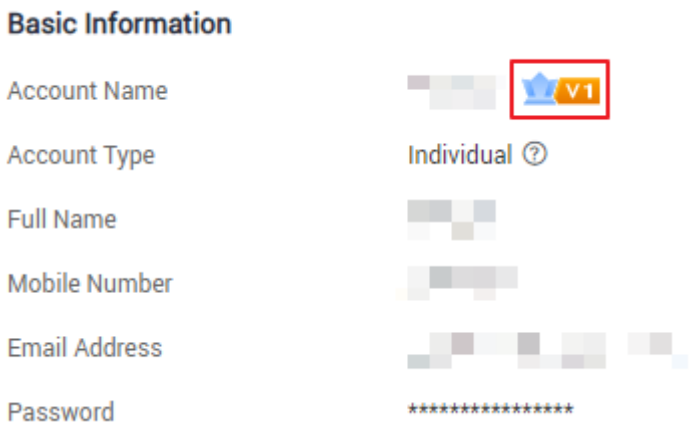
Figure 3-1 Basic information



3.6 How Do I Unfreeze a BMS?

If a BMS has expired and is not renewed, it will be frozen and automatically enter a retention period, during which you cannot access or use it. For example, you cannot download data from the BMS. To unfreeze the BMS, renew it.

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4 Key Pair and Password FAQs

4.1 How Do I Change the Password of a BMS in Its OS?

This section describes how to change the password of a BMS in its OS.

You are advised to **reset the password on the console**. If the password cannot be reset on the console, change the password in the BMS OS.

Change the Password for Logging In to a Linux BMS

CentOS 7.5 is used as an example.

1. **Remotely log in to the BMS**.
2. Run the **passwd root** command and enter the new password twice.

```
[root@    -77a9 ~]# passwd root
Changing password for user root.
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
[root@    -77a9 ~]#
```

3. Enter **exit** to log out and use the new password to log in to the BMS to check whether the password is changed successfully.

Change the Password for Logging In to a Windows BMS

Windows Server 2012 R2 is used as an example.

1. **Log in to the BMS remotely using MSTSC**.
2. Click  in the lower left corner, choose **Windows PowerShell** and enter **compmgmt.msc** to open **Computer Management**.
3. Choose **System Tools** > **Local Users and Groups** > **Users**, right-click the target username, for example, **Administrator** in the following figure.

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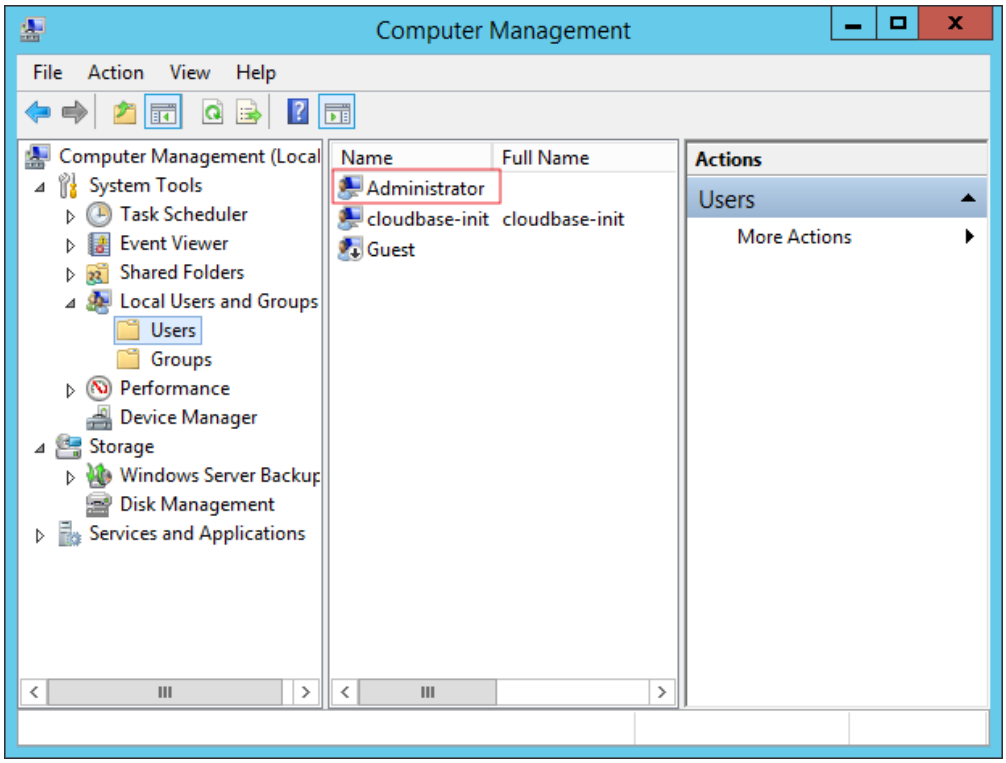
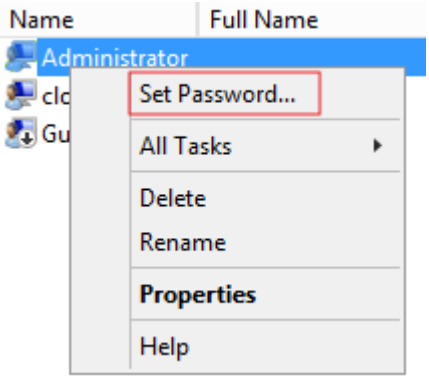


4. Select **Set Password**.



5. Click **Continue**.

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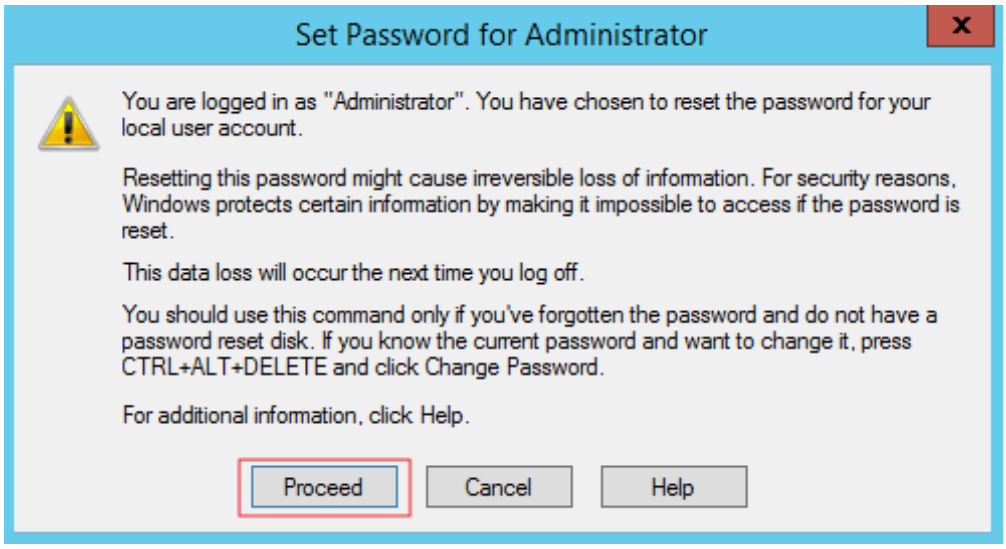
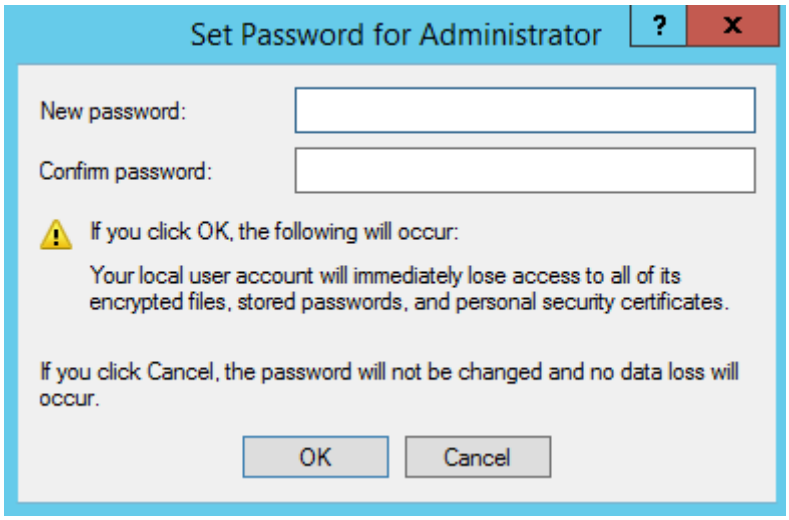


6. Enter the new password twice to confirm it. Then, click **OK**.



7. Press **Ctrl+Alt+Delete** to lock the BMS screen. Then unlock the screen and use the new password to log in.

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5 Login FAQs

5.1 What Are the Preparations for Logging In to a BMS?

Windows

- Obtain the login password.

  When creating a Windows BMS, you can select only the key pair login mode. You need to parse the key file into a password. For details, see **Obtaining the Password of a Windows BMS**.
- Ensure that an EIP is bound to the BMS.

  For details, see **Bind an EIP to a BMS**.

Linux

- Obtain the login password.
  - If the authentication mode is SSH key pair, use the key pair selected during BMS creation. If your private key file is lost, you are advised to enable **Data Encryption Workshop** to reset the key pair. For details, see **Binding a Key Pair**.
  - If the authentication mode is password, use the password set during the BMS creation. If you forget the password, you can reset it. For details, see **Resetting the BMS Password with a Few Clicks**.
- Ensure that an EIP is bound to the BMS (not required for remote login).

  If you want to log in to a BMS using an SSH key pair, or a username and a password, you need to bind an EIP to the BMS.

  For details, see **Bind an EIP to a BMS**.

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5.2 What Do I Do If I Select the Key Authentication Mode When Creating a BMS But Want to Log In to the BMS Using a Password?

When creating a Windows BMS, you can select only the key authentication mode. To log in to the BMS using a password, obtain the password in either of the following ways:

- Resolve the key file to a password. For details, see **Obtaining the Password of a Windows BMS**.
- Reset the password on the console. For details, see **Resetting the BMS Password**.

When creating a Linux BMS, you can select the key or password authentication mode. If the key authentication mode is selected, you can obtain the password in either of the following ways:

- Log in to the BMS as instructed in **Logging In to a BMS Using an SSH Key Pair** and run the **passwd** command to set a password.
- Reset the password on the console. For details, see **Resetting the BMS Password**.

5.3 What Do I Do If I Cannot Log In to a Windows BMS?

Fault Locating

If you cannot connect to a BMS using the remote desktop, perform the following steps to locate the fault:

1. **Check Whether Login Conditions Are Met**
2. **Check Network Connectivity**
3. **Checking Whether the Firewall Is Correctly Configured**
4. **Check the Port for Remotely Accessing the BMS**
5. **Restart the BMS**

Check Whether Login Conditions Are Met

Check whether the login preparations described in **What Are the Preparations for Logging In to a BMS?** are complete.

Check Network Connectivity

Check whether the EIP bound to the BMS can be pinged. If the EIP cannot be pinged, check whether the following rule has been added to the security group.

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Protocol	Direction	Port Range	Source
ICMP	Inbound	All	0.0.0.0/0

Then, try the remote connection to the BMS again.

Checking Whether the Firewall Is Correctly Configured

The firewall of the BMS must allow the remote connection port (3389 by default). If the remote connection port is not configured in the inbound rule, the BMS cannot be accessed remotely. In this case, add the remote connection port to the inbound rule of the firewall. For details, see **Adding a Port Exception on a Windows ECS Firewall**.

Then, try the remote connection to the BMS again.

Check the Port for Remotely Accessing the BMS

Check whether port 3389 of the BMS can be accessed.

If the port is inaccessible, check whether this port is allowed by the security group.

- **Default Security Groups and Security Group Rules**
- **Adding Security Group Rules**

Then, try the remote connection to the BMS again.

Restart the BMS

If the preceding configurations are correct, but the login still fails, **restart the BMS** on the console. The restart operation will stop the server and interrupt services. Exercise caution when performing this operation.

After the BMS is restarted, try to remotely connect to the BMS again.

If the fault persists after the preceding operations are performed, record the BMS information and the time when the fault occurred. Then, **create a service ticket** to contact HUAWEI CLOUD technical support.

5.4 What Do I Do If I Cannot Log In to a Linux BMS?

If you cannot log in to a BMS using SSH, you are advised to remotely log in to the BMS through the console.

Check Whether You Can Remotely Log In to the BMS Through the Console

If the SSH login fails, check whether you can remotely log in to the BMS through the management console.

1. Log in to the management console.
2. Under **Computing**, click **Bare Metal Server**.

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3. Locate the row that contains the target BMS and click **Remote Login** in the **Operation** column.

   After about one minute, the login page is displayed. Press **Enter** and enter username **root** and the password.

   NOTE

   Learn about the **preparations** for logging in to a BMS.

If you cannot remotely log in to the BMS with the preceding instructions, record your BMS information and the time when the fault occurred. Then, **create a service ticket** to contact HUAWEI CLOUD technical support.

Fault Locating

If you can log in to the BMS remotely but cannot log in to it using SSH, you are advised to locate the fault as follows:

1. **Check Network Connectivity**
2. **Check Whether the Security Group Is Correctly Configured**
3. **Non-System Disk Information Is Not Commented Out in the /etc/fstab File**
4. **Check the Port for Remotely Accessing the BMS**
5. **Check the CPU Load**

Check Network Connectivity

Check whether the EIP bound to the BMS can be pinged. If the EIP cannot be pinged, check whether the following rule has been added to the security group.

Protocol	Direction	Port Range	Source
ICMP	Inbound	All	0.0.0.0/0

After performing the preceding operations, try to remotely connect to the BMS.

Check Whether the Security Group Is Correctly Configured

Check whether port 22 of the security group is allowed.

- **Default Security Groups and Security Group Rules**
- **Adding Security Group Rules**

After performing the preceding operations, try to remotely connect to the BMS.

Non-System Disk Information Is Not Commented Out in the /etc/fstab File

1. Log in to the BMS and run the following command to edit the **/etc/fstab** file:

   vi /etc/fstab

2. Comment out the data disk configuration in the **/etc/fstab** file.

   The **/etc/fstab** file contains information about the file systems and storage devices automatically attached to the BMS when the BMS starts. The

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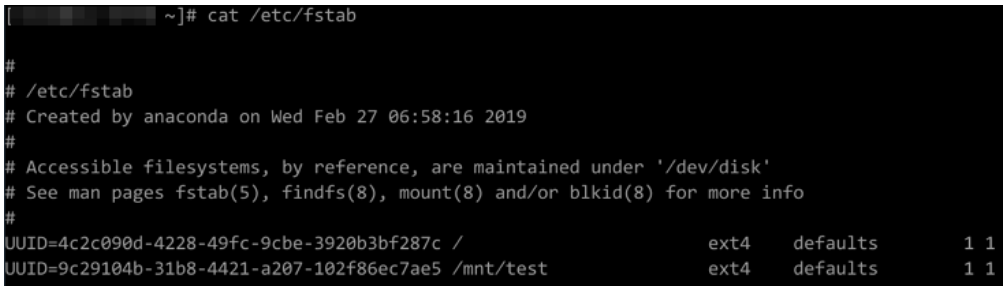
configuration information about data disks automatically attached to the BMS needs to be commented out. For example, the last row shown in **Figure 5-1** is the data disk configuration to be commented out in the **/etc/fstab** file.

Figure 5-1 Data disk configuration in the fstab file

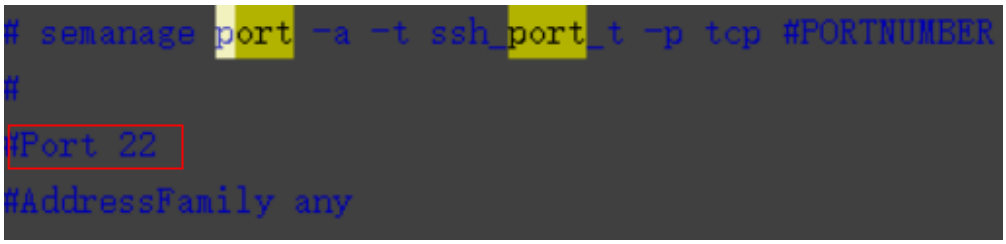


After performing the preceding operations, restart the BMS and try to remotely connect to it.

Check the Port for Remotely Accessing the BMS

Check the internal settings of the BMS.

1. Check whether the BMS sshd process is running.
2. Check whether the BMS rejects access by the local PC.
   a. Log in to the BMS and run the following command:
      vi /etc/hosts.deny
   b. If the IP address of the local PC is contained in the file, the IP address is rejected. In such a case, delete the IP address from the file.
3. Open the **/etc/ssh/ssh_config** file on the local PC and check the default login port. In addition, check whether the value of the **port** field (SSH-enabled port) in the **/etc/ssh/sshd_config** file of the BMS has been changed (the default port number is 22).



After performing the preceding operations, try to remotely connect to the BMS.

Check the CPU Load

Check whether the login failure is caused by high CPU usage. If yes, perform the following operations to reduce the CPU usage:

- Stop some processes that are not used temporarily and try again.
- You can also **restart the BMS**.
  The restart operation will stop the server and interrupt services. Exercise caution when performing this operation.

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- **Reinstall the OS**.

  Reinstalling the OS is a high-risk operation. Back up data before the reinstallation.

After performing the preceding operations, try to remotely connect to the BMS.

If the fault persists after the preceding operations are performed, record the BMS information and the time when the fault occurred. Then, **create a service ticket** to contact HUAWEI CLOUD technical support.

5.5 What Browser Versions Can Be Used to Remotely Log In to a BMS?

When you use a browser to remotely log in to a BMS, ensure that the browser version meets the requirements listed in **Table 5-1**.

Table 5-1 Browser version requirements

Browser	Version
Google Chrome	31.0-75.0
Mozilla FireFox	27.0-62.0
Internet Explorer	10.0-11.0

5.6 What Do I Do If the Login Page Does Not Respond?

Symptom

On the page for remotely logging in to a BMS, after you press **Enter**, the page does not respond.

Possible Causes

The BMS OS configuration does not allow remote login to the BMS.

Solution

Use a key pair to log in to the BMS and configure the OS as required. The configuration varies depending on the OS. The following part provides configurations of some OSs as examples. For details, see **Configuring Remote Login to a BMS** in *Bare Metal Server Private Image Creation Guide*.

Step 1 Modify the configuration file.

- For SUSE Linux Enterprise Server 12 SP2, SUSE Linux Enterprise Server 12 SP1, Ubuntu 16.04 Server, CentOS Linux 7.3, and EulerOS 2.2, use the vi editor to open the **/etc/default/grub** file and add **console=tty0 console=ttyS0** after **GRUB_CMDLINE_LINUX**.

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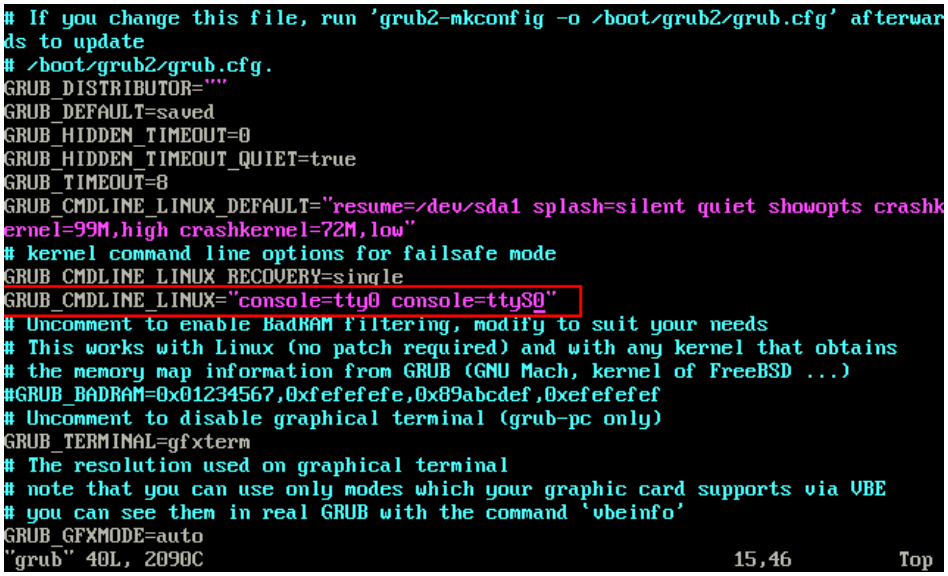
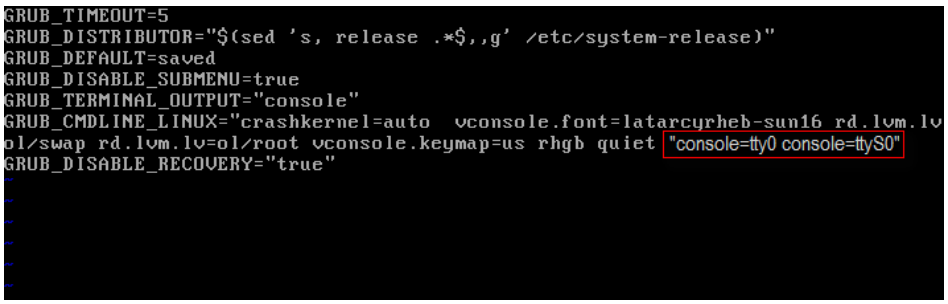
Figure 5-2 Example



- For Oracle Linux 7.3 and Red Hat Enterprise Linux 7.3, use the vi editor to open the **/etc/sysconfig/grub** file and add **console=tty0 console=ttyS0** after **GRUB_CMDLINE_LINUX**.

Figure 5-3 Example



Step 2 Update the configuration.

- For SUSE Linux Enterprise Server 12 SP2, Oracle Linux 7.3, Red Hat Enterprise Linux 7.3, CentOS Linux 7.3, and EulerOS 2.2, run the following commands to update the configuration:

  stty -F /dev/ttyS0 speed 115200

  grub2-mkconfig -o /boot/grub2/grub.cfg

  systemctl enable serial-getty@ttyS0

- For Ubuntu 16.04 Server, run the following commands to update the configuration:

  stty -F /dev/ttyS0 speed 115200

  grub-mkconfig -o /boot/grub/grub.cfg

  systemctl enable serial-getty@ttyS0

Step 3 (Optional) Modify the security configuration file.

If you log in to the BMS through the serial port as user **root**, you need to modify the security configuration file. Add the following information to the end of **/etc/securetty**:

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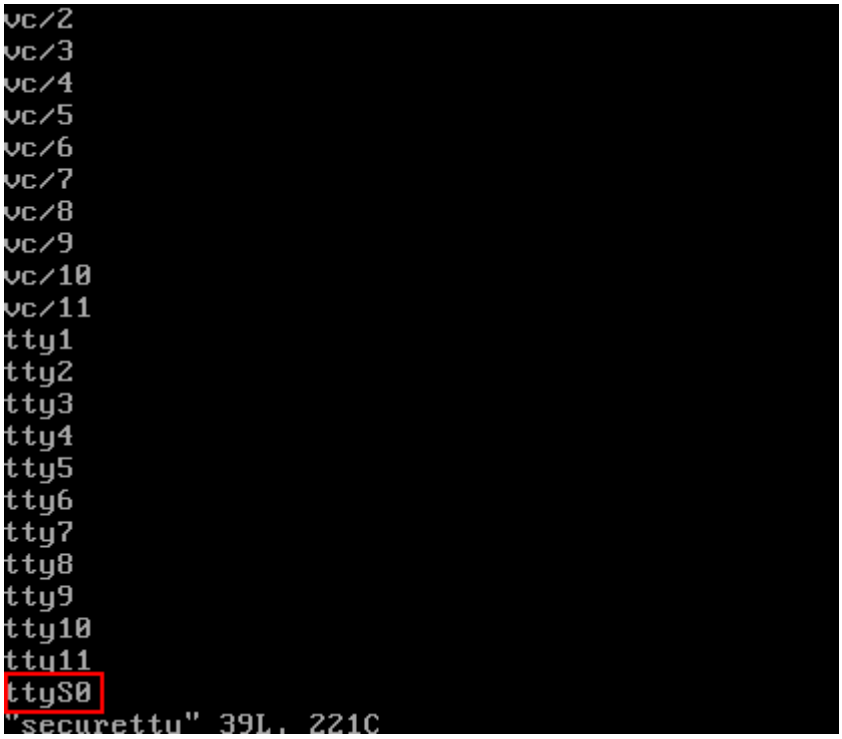
Figure 5-4 Example



Step 4 Run the **reboot** command to restart the OS.

----End

After configuring the BMS OS, check whether you can log in to the BMS remotely.

5.7 What Do I Do If the BMS Console Is Displayed Improperly After I Remotely Log In to a BMS?

Symptom

The following symptoms occur:

- After you exit the vim editor, only half space of the screen is editable.
- When you enter more than 80 characters, the current row is covered.
- If you adjust the size of the browser window when using a text editor such as vim, rows are broken on the screen.

Possible Causes

Remote login to a BMS is subject to the communication on the serial port. The BMS console cannot automatically adapt to the screen. The default number of rows is 24, and that of columns is 80.

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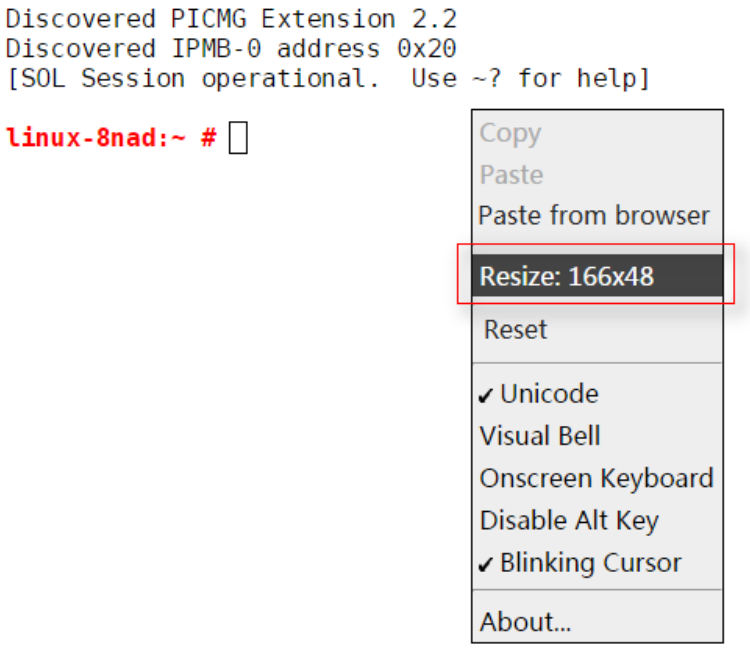
Solution

After you log in to the BMS remotely, right-click the blank area and select **Resize: *xxx***. A command will be pasted on the command line, such as **stty cols 166 rows 48**. Then press **Enter** and adjust the console size.

Figure 5-5 Selecting Resize: xxx



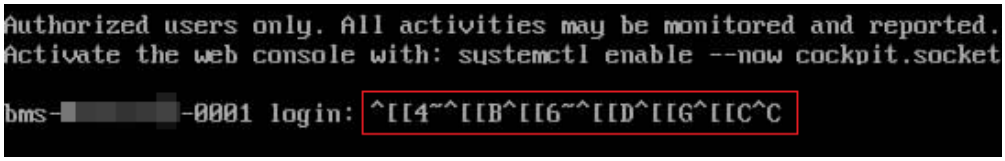
CAUTION

When you are using a text editor such as vim, do not adjust the window size. If you do need to adjust the window size, exit the editor first, adjust the window size, and adjust the console size based on the solution provided in this section.

5.8 What Do I Do If the Numeric Keypad Does Not Work During Remote Login?

Symptom

When I enter numbers using the numeric keypad for remote login, the numbers are not displayed properly.



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Solution

Run the Linux **setleds** command to turn on the numeric keypad.

1. On the remote login page, run the following command to query the status of the numeric keypad:

   setleds -F

   ```
   [root@arm-autoinstaller ~]# setleds -F
   Current flags:          NumLock off   CapsLock off   ScrollLock off
   ```

   NumLock is **off**, indicating that the numeric keypad is turned off.

2. Run the following command to turn on the numeric keypad:

   setleds +num

3. Run the **setleds -F** command again. If **NumLock** changes to **on**, the issue is fixed.

5.9 What Do I Do If the SSH Login or Data Transmission Is Slow?

Symptom

The login to Linux BMSs or data transmission between Linux BMSs in SSH mode is slow because UseDNS is enabled for SSH.

UseDNS is an enhanced security feature of SSH and is enabled by default. In such a case, the server obtains the host name of a client by locating the PTR record of the client IP address through a reverse DNS query. Then, the server performs a DNS query based on the obtained client host name and checks whether the obtained IP address is the same as the original IP address, preventing client spoofing. Generally, clients use a dynamic IP address and do not have a corresponding PTR record. Therefore, this feature is invalid for information comparison. However, this feature increases the delay and thereby slows down the client connection.

Solution

1. Log in to the BMS remotely.
2. Run the following command to open the **/etc/ssh/sshd_config** file:

   vi /etc/ssh/sshd_config

3. Find the following field:

   ```
   #UseDNS yes
   ```

   Add the following information in a new line after the field:

   ```
   UseDNS no
   ```

4. Save the configuration and restart SSH.

   service sshd restart

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6 Network and Security FAQs

6.1 Can BMSs of Different Accounts Communicate with Each Other over an Internal Network?

Generally, BMSs of different accounts cannot communicate with each other for security concerns.

However, if you do need to allow BMSs of different accounts to communicate with each other through an internal network, you can create a VPC peering connection between VPCs in different accounts. For details, see **Creating a VPC Peering Connection with a VPC in Another Account**.

6.2 How Do Two BMSs in the Same Region But Different AZs Communicate with Each Other?

If they are in the same VPC, they communicate with each other through an internal network. If they are on the same subnet of a VPC, they communicate with each other through the layer-2 network. If they are on different subnets of a VPC, they communicate with each other through the layer-3 network. An EIP must be bound to the primary NIC of each BMS so that they can communicate with each other.

6.3 Are My BMSs in the Same Subnet?

You can customize your networks. Therefore, no matter your BMSs use the common network or high-speed network, you can control whether they are in the same subnet.

6.4 Can I Associate a BMS with Multiple Security Groups?

Yes. For details, see **Changing a Security Group**.

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6.5 Can BMSs Communicate with ECSs in the Same VPC?

Yes, BMSs can communicate with ECSs in the same VPC.

Your VPC may consist of multiple network segments. If the BMSs and ECSs are in the same segment, they communicate with each other through the Layer 2 network. If they are in different segments, they communicate with each other through the Layer 3 network.

In addition, you must configure security group rules for the BMSs to communicate with the ECSs. In addition, to enable an ECS to access a Windows BMS, disable the firewall of Windows.

6.6 What Are the Differences Between the Primary and Extension NICs of BMSs?

They are different in the following ways:

- Generally, the OS default routes preferentially use the primary NICs. If the OS default routes use the extension NICs, network communication will be interrupted. Then, you can check the route configuration to rectify the network communication error.
- By default, only the primary NICs can communicate with the public service zone (zone where PaaS and DNS services are deployed). The extension NICs cannot communicate this zone.

6.7 Can Multiple EIPs Be Bound to a BMS?

Only one EIP can be bound to a NIC. If you want to bind multiple EIPs to a BMS, you can bind them to extension NICs and then perform required operations on the BMS, such as adding policy-based routes or namespaces, to ensure network connectivity. For details about how to configure policy-based routes, see **How Do I Access the Internet Using the EIP Bound to the Extension NIC?**

6.8 Can I Configure the EIP?

No. The EIP is automatically allocated from the DHCP address pool.

6.9 Will I Obtain an EIP That Has Been Released?

You may not. After an EIP is released, it is randomly assigned among users. If you just stop using an EIP temporarily and want to use it in the future, please do not release the EIP.

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6.10 What Are the Differences Between EIPs, Private IP Addresses, and Virtual IP Addresses?

An EIP can be used to access the Internet and can only be bound to one BMS.

A private IP address is used for communication within an internal network and cannot be used to access the Internet.

Virtual IP addresses, also called floating IP addresses, are used for active and standby switchover of servers to achieve high availability. If the active server is faulty and cannot provide services, the virtual IP address is dynamically switched to the standby server to provide services.

6.11 How Can I Modify the Network Configuration or Restart the Network If I Can Log In to a BMS Using Only SSH?

The network automatically allocated by the BMS cannot be modified. If you modify the network configuration, you may fail to log in to the BMS. If the BMS has a NIC of the user-defined VLAN, you can configure or modify the network to which the NIC connects.

6.12 How Do I Handle the Failure to Ping a CentOS 7 Extension NIC?

Cause

A known kernel issue of the OS

NOTE

CentOS 7.4 and earlier CentOS 7 have this issue.

Solution

This issue has been rectified in CentOS 7.5. To use extension NICs, you are advised to use CentOS 7.5 or upgrade the OS kernel version to 3.10.0-862. (In quick provisioning scenarios, you can only resolve this issue by changing the OS to CentOS 7.5.).

Step 1 Upload the CentOS 7.5 kernel file downloaded from the official website to the BMS and run the following command to update the kernel:

yum install kernel-3.10.0-862.el7.x86_64.rpm

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NOTE

If you have configured automatic EVS disk attaching to the BMS in **/etc/fstab**, comment out the corresponding configuration item in **/etc/fstab**. Otherwise, you may fail to enter the BMS OS when restarting the BMS.

Step 2 Restart the OS. After entering the OS, reinstall the SDI iNIC driver, RAID controller card driver, and IB driver for CentOS 7.5 by following the instructions in the *Bare Metal Server Private Image Creation Guide*.

----End

6.13 What Do I Do If a Service Port Is Used by a One-Click Password Reset Plug-in?

Cause

- If the one-click password reset plug-in of a BMS works in AUTO mode, when the plug-in is started, it randomly uses a port, which may be a service port.
- Existing BMSs still work in AUTO mode, in which the plug-in randomly uses a service port ranging from 31000 to 32999. The system will automatically select an idle port with the smallest port number.

Recommended Solution 1

Change the work mode of the one-click password reset plug-in Wraper from **AUTO (SOCKET)** to **PIPE**. After the change, the plug-in will not use service ports.

Step 1 Open the CloudResetPwdAgent configuration file.

- Paths in which the file is stored on Linux BMSs:

  /CloudrResetPwdAgent/conf/wrapper.conf and **/CloudResetPwdUpdateAgent/conf/wrapper.conf**

- Paths in which the file is stored on Windows BMSs:

  C:\CloudResetPwdUpdateAgent\conf\wrapper.conf and **C:\CloudResetPwdUpdateAgent\conf\wrapper.conf**

Step 2 Add the following content to the end of the file:

```
wrapper.backend.type=PIPE
```

Step 3 Restart the CloudResetPwdUpdateAgent service.

- Linux BMS

  /CloudResetPwdUpdateAgent/bin/cloudResetPwdUpdateAgent.script restart

- Windows BMS

  Press **Win+R** to start the **Open** text box.

  Enter **Services.msc** and click **OK**.

  Right-click **cloud reset password update agent** and choose **Restart** from the shortcut menu.

----End

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Solution 2

Modify the CloudResetPwdAgent configuration to change the default port range for the password reset plug-in (31000-32999) so that the service port is out of the port range.

For example, to change the port range to 40000-42000, perform the following operations:

Step 1 Open the CloudResetPwdAgent configuration file.

- Paths in which the file is stored on Linux BMSs:

  /CloudrResetPwdAgent/conf/wrapper.conf and **/CloudResetPwdUpdateAgent/conf/wrapper.conf**

- Paths in which the file is stored on Windows BMSs:

  C:\CloudResetPwdUpdateAgent\conf\wrapper.conf and **C:\CloudResetPwdUpdateAgent\conf\wrapper.conf**

Step 2 Add the following content to the end of the file:

```
wrapper.port.min=40000
wrapper.port.max=41000
wrapper.jvm.port.min=41001
wrapper.jvm.port.max=42000
```

Step 3 Restart the CloudResetPwdUpdateAgent service.

- Linux BMS

  /CloudResetPwdUpdateAgent/bin/cloudResetPwdUpdateAgent.script restart

- Windows BMS

  Press **Win+R** to start the **Open** text box.

  Enter **Services.msc** and click **OK**.

  Right-click **cloud reset password update agent** and choose **Restart** from the shortcut menu.

----End

6.14 What Do I Do If the Communication Between the Primary NIC and Extension NIC of the BMS is Abnormal?

Cause

If two NICs on the same network segment are added to a BMS, communication between the primary NIC and extension NIC is abnormal because the BMS gateway strictly verifies the source MAC addresses. For example, in **Figure 6-1**, the primary NIC and extension NIC are both on the 172.22.9.*X* network segment. A policy-based route needs to be configured to enable communication between the NICs.

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Figure 6-1 Network segment of the NICs

Solution

Step 1 Run the following command to add two routing table names (**net1** and **net2**) and priorities (**252** and **251**) to the **/etc/iproute2/rt_tables** file:

vi /etc/iproute2/rt_tables

```
252    net1
251    net2
```

Step 2 Run the following command to add the NIC routing information to the **/etc/rc.local** file:

vi /etc/rc.local

For example, the IP address of the primary NIC is 172.22.9.7, that of the extension NIC is 172.22.9.206, and that of the BMS gateway is 172.22.9.1, add the following routes:

```
ip route add 172.22.9.0/24 dev bond0 src 172.22.9.7 table net1
ip route add default via 172.22.9.1 dev bond0 table net1
ip route add 172.22.9.0/24 dev bond0.3935 src 172.22.9.206 table net2
ip route add default via 172.22.9.1 dev bond0.3935 table net2
ip rule add from 172.22.9.7/32 table net1
ip rule add from 172.22.9.206/32 table net2
```

----End

6.15 How Can I Configure a Static IP Address for a BMS?

Scenarios

To customize the DNS server information of a BMS, you need to configure a static IP address for the BMS. If you change the IP address assignment mode from DHCP to the static mode, the IP address and gateway must be consistent with those when the BMS is provisioned. Otherwise, network disconnections may occur. This section takes CentOS 7 as an example to describe how to configure a static IP address for a BMS.

Procedure

Step 1 Query the IP address and gateway of the BMS.

Run the following command to query the IP address of the BMS:

ifconfig bond0

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```
[root@bms-2178 ~]# ifconfig bond0
bond0: flags=5187<UP,BROADCAST,RUNNING,MASTER,MULTICAST>  mtu 8888
        inet 192.168.20.238  netmask 255.255.255.0  broadcast 192.168.20.255
        inet6 fe80::f816:3eff:fe4b:c31c  prefixlen 64  scopeid 0x20<link>
        ether fa:16:3e:4b:c3:1c  txqueuelen 1000  (Ethernet)
        RX packets 7153  bytes 644462 (629.3 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 9435  bytes 1703746 (1.6 MiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

Run the following command to query the gateway address of the BMS:

ip ro

```
[root@bms-2178 ~]# ip ro
default via 192.168.20.1 dev bond0
169.254.0.0/16 dev bond0  scope link  metric 1008
169.254.169.254 via 192.168.20.1 dev bond0  proto static
192.168.20.0/24 dev bond0  proto kernel  scope link  src 192.168.20.238
```

Step 2 Modify the network configuration file.

Run the **vi /etc/sysconfig/network-scripts/ifcfg-bond0** command to open the **/etc/sysconfig/network-scripts/ifcfg-bond0** file, change the network information from DHCP to static, or delete **PERSISTENT_DHCLIENT=1** and add configuration items **IPADDR**, **NETMASK**, and **GATEWAY** (indicating the IP address, subnet mask, and gateway).

Figure 6-2 Modifying the network configuration file

```
USERCTL=no
#PERSISTENT_DHCLIENT=1
BONDING_MASTER=yes
ONBOOT=yes
NM_CONTROLLED=no
BOOTPROTO=static
IPADDR=192.168.20.238
NETMASK=255.255.255.0
GATEWAY=192.168.20.1
BONDING_OPTS="mode=4 xmit_hash_policy=layer3+4 miimon=100"
DEVICE=bond0
TYPE=Bond
```

NOTE

The IP address, subnet mask, and gateway must be consistent with those when the BMS is provisioned. Otherwise, network disconnections may occur.

Step 3 Run the **systemctl disable bms-network-config.service** command to disable the bms-network-config network script.

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Step 4 Restart the BMS to make the network configuration take effect, or run the **kill dhclient** command to restart the network service to make the configuration take effect.

----End

6.16 How Do I Change the MTU Value of a Linux BMS NIC?

Maximum Transmission Unit (MTU) specifies the largest packet of data that can be transmitted on a network and ranges from 1280 to 8888 in the unit of byte. If the MTU values of two hosts are different, the transmission may be interrupted, or packet loss may occur. This section describes how to change the NIC MTU values of BMSs running SUSE Linux, CentOS, and Ubuntu.

SUSE Linux

The following operations use SUSE Enterprise Linux Server 11 SP4 64-bit as an example to describe how to change the MTU value:

1. Log in to the BMS as user **root**.
2. Run the **ifconfig** command to view the NIC that has a bound IP address, for example, **eth0**.
3. Run the following command to open **ifcfg-***XXX*.

   vi /etc/sysconfig/network/ifcfg-*XXX*

   NOTE

   XXX indicates the NIC obtained in step 2, for example, **eth0**.
4. Press **i** to enter editing mode and add the following statement to set the MTU value of the NIC:

   MTU=8888
5. Press **Esc**, enter **:wq!**, and press **Enter** to save and exit the file.
6. Run the following command to restart the network:

   service network restart
7. Run the **ifconfig** command to check whether the MTU value has been changed.

CentOS

The following operations use CentOS 7.5 64-bit as an example to describe how to change the MTU value:

1. Log in to the BMS as user **root**.
2. Run the **ifconfig** command to view the NIC that has a bound IP address, for example, **eth0**.
3. Run the following command to open **ifcfg-***XXX*.

   vi /etc/sysconfig/network-scripts/ifcfg-*XXX*

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NOTE

XXX indicates the NIC obtained in step 2, for example, **eth0**.

4. Press **i** to enter editing mode and add the following statement to set the MTU value of the NIC:

   MTU=8888

5. Press **Esc**, enter **:wq!**, and press **Enter** to save and exit the file.
6. Run the following command to restart the network:

   service network restart

7. Run the **ifconfig** command to check whether the MTU value has been changed.

Ubuntu

1. Log in to the BMS as user **root**.
2. Run the following command to open the **interfaces** file:

   vi /etc/network/interfaces

3. Press **i** to enter editing mode and add the following statement to set the MTU value of the NIC:

   post-up /sbin/ifconfig/ eth0 mtu 8888

4. Press **Esc**, enter **:wq!**, and press **Enter** to save and exit the file.
5. Run the following command to restart the network:

   /etc/init.d/networking restart

6. Run the **ifconfig** command to check whether the MTU value has been changed.

6.17 How Do I Change the MTU Value of a Windows BMS NIC?

Maximum Transmission Unit (MTU) specifies the largest packet of data that can be transmitted on a network and ranges from 1280 to 8888 in the unit of byte. If the MTU values of two hosts are different, the transmission may be interrupted, or packet loss may occur. This section uses Windows Server 2012 R2 as an example to describe how to change the MTU value of a Windows BMS NIC.

Step 1 Enable Jumbo Packet on the NIC.

1. Click  in the lower left corner to open **Control Panel**.

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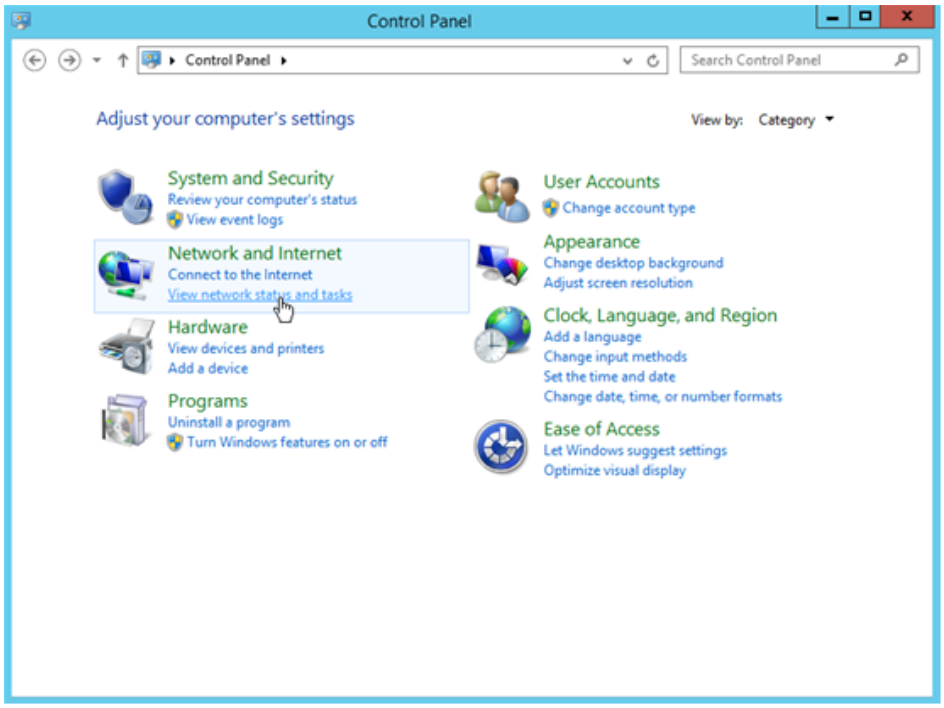
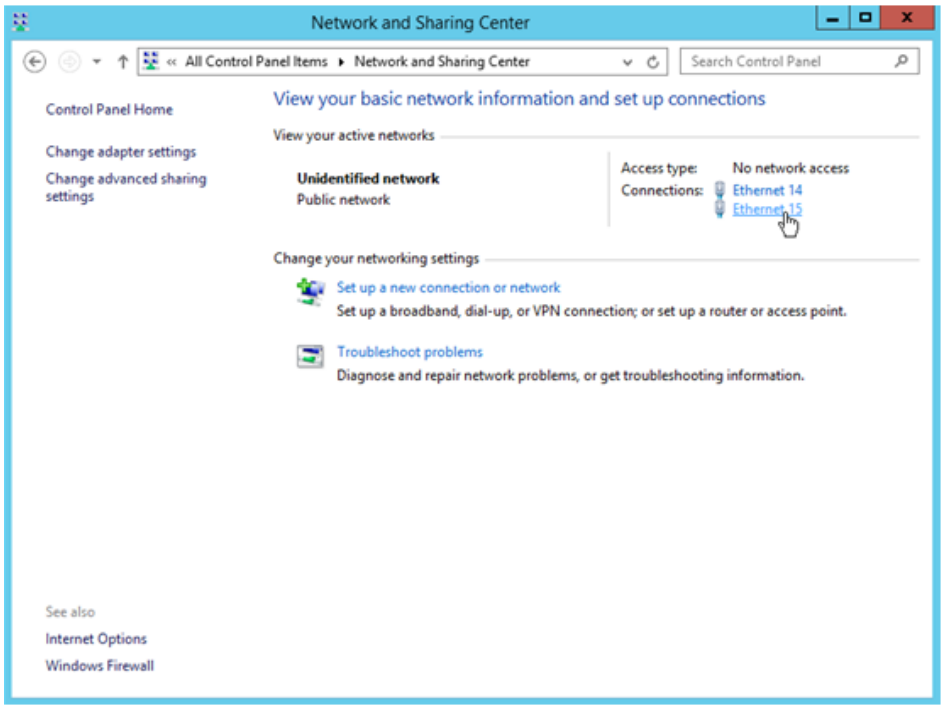
Figure 6-3 Control Panel



2. Click **View network status and tasks** under **Network and Internet**.

Figure 6-4 Network and Sharing Center



3. In the **View your active networks** area, click the target NIC, for example, **Ethernet 15** shown in **Figure 6-4**.

   The page showing the Ethernet 15 NIC status is displayed.

4. Click **Properties**.

   The page showing the Ethernet 15 NIC properties is displayed.

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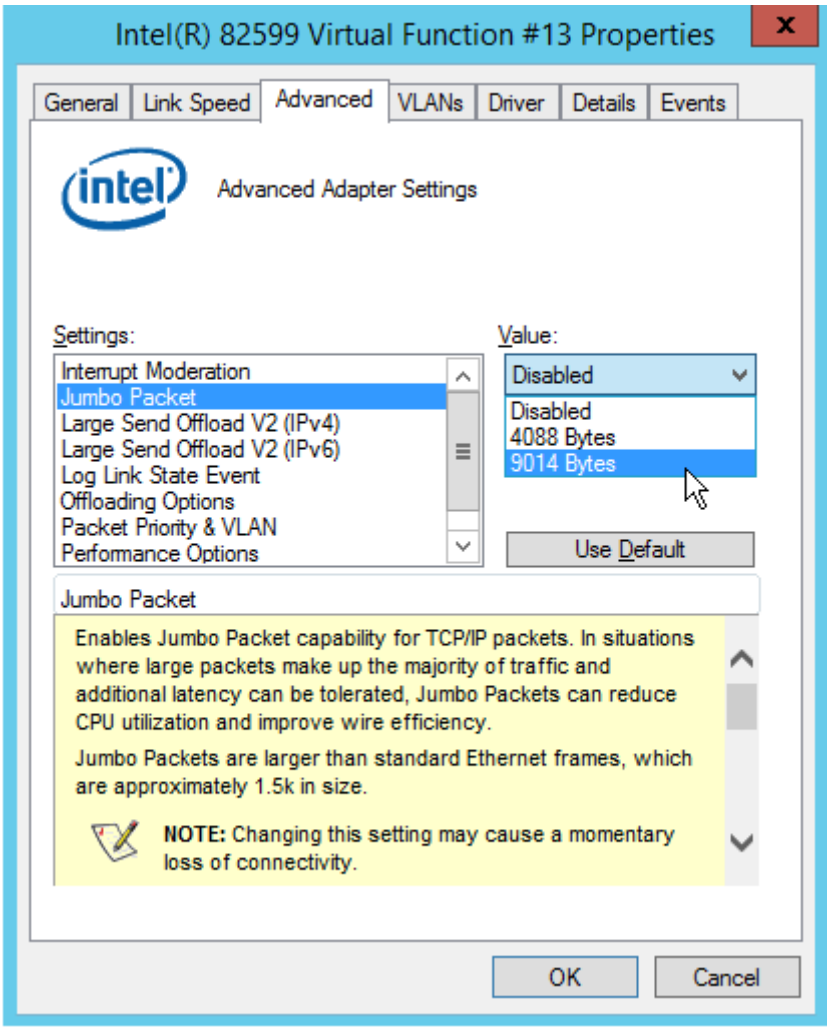
5. Click **Configure**. In the displayed dialog box, click the **Advanced** tab.

Figure 6-5 Inter(R) 82599 Virtual Function #13 Properties



6. In the **Settings** area, select **Jumbo Packet**. In the **Value** area, select **9014 Bytes**.
7. Click **OK**.

Step 2 Change the MTU value.

1. Click in the lower left corner, choose **Windows PowerShell**, and run the following command to query the MTU value of the current NIC:

   netsh interface ipv4 show subinterfaces

2. Obtain the result. The MTU value of the NIC with Jumbo Packet enabled is 9000.

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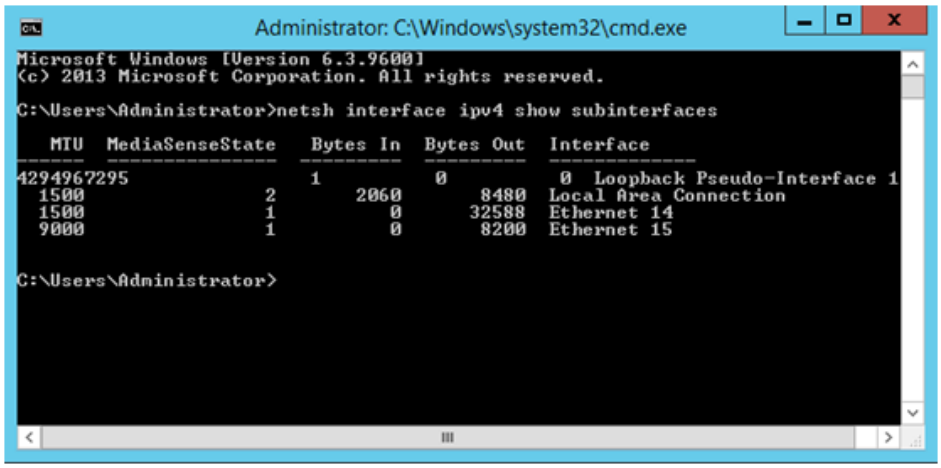
Figure 6-6 Obtaining the NIC MTU value



3. Run the following command to change the NIC MTU value:

   netsh interface ipv4 set interface "*NIC name***" mtu=***Changed MTU value* **store=persistent**

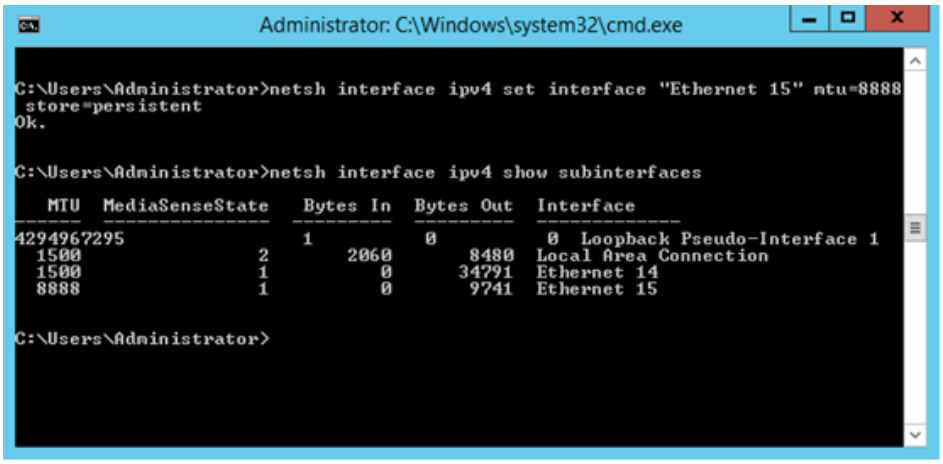
   For example, to change the MTU value of the Ethernet 15 NIC to 8888, run the following command:

   netsh interface ipv4 set interface "Ethernet 15" mtu=8888 store=persistent

4. Run the following command to query the changed MTU value:

   netsh interface ipv4 show subinterfaces

Figure 6-7 Obtaining the changed MTU value



----End

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6.18 What Do I Do If the Network Performance Is Poor When 128 Ethernet Network Devices Are Bound to a BMS?

Symptom

The network performance is poor when multiple Ethernet network devices (for example, 128 single-queue NICs) are bound to an EulerOS 2.3/Euler OS 2.5 BMS. This is because the interrupts of all the 128 NIC queues are processed by the same CPU, causing a critical bottleneck of the CPU and affecting the network performance. The root cause is that **--hintpolicy=subset** is set for irqbalance of the Euler OS 2.3/Euler OS 2.5 BMS. To solve the problem, change it to **--hintpolicy=ignore** as instructed in **Procedure**.

NOTE

hintpolicy is a policy used by irqbalance to balance interrupts across CPUs based on **affinity_hint** of each interrupt. **affinity_hint** indicates the CPU affinity of an interrupt. The value of **hintpolicy** can be:

- **exact**: irqbalance never violates **affinity_hint**.
- **subset**: irqbalance distributes interrupts to a subset of **affinity_hint**.
- **ignore**: irqbalance completely ignores **affinity_hint**.

Procedure

The following operations use EulerOS 2.3 as an example:

1. Log in to the BMS as user **root**.
2. Run the following command to open the **/etc/sysconfig/irqbalance** file:

   vi /etc/sysconfig/irqbalance
3. The original setting is **--hintpolicy=subset**.

```
#
# IRQBALANCE_ARGS
#    append any args here to the irqbalance daemon as documented in the man page
#
IRQBALANCE_ARGS="--policyscript=/etc/sysconfig/irqbalance.rules --hintpolicy=subset"
~
```

   Change the setting to **--hintpolicy-ignore**.

```
#
# IRQBALANCE_ARGS
#    append any args here to the irqbalance daemon as documented in the man page
#
IRQBALANCE_ARGS="--policyscript=/etc/sysconfig/irqbalance.rules --hintpolicy=ignore"
~
```

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7 Disk FAQs

7.1 Can EVS Disks Be Attached to BMSs? How Many Data Disks Can Be Attached to a BMS?

Yes. Ultra-high I/O, general purpose SSD, high I/O, and common I/O (previous generation) EVS disks can be attached to BMSs. However, some BMSs support only local disks and EVS disks cannot be attached to them. In this case, you are not allowed to add an EVS disk when creating a BMS.

A maximum of 60 EVS disks can be attached to a BMS.

NOTE

If you need to attach an EVS disk to an existing BMS, **Device Type** of the EVS disk must be **SCSI**. If you need to create an EVS disk and attach it to the BMS, you must select **SCSI** in **Advanced Settings** when you create the EVS disk.

7.2 What Are the Restrictions for Attaching a Disk to a BMS?

- The disk and the target BMS must be located in the same AZ.
- The BMS must be in **Running** or **Stopped** state.
- **Device Type** of the EVS disk must be **SCSI**.
- A non-shared EVS disk must be in **Available** state.

  A shared EVS disk must be in **In-use** or **Available** state.
- BMSs using some flavors or images cannot have EVS disks attached because the servers do not have SDI iNICs or for other reasons.

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7.3 How Do I Know Whether EVS Disks Are Available in a Flavor?

Some BMSs do not support EVS disks because the BMSs do not have SDI iNICs or for other reasons. Therefore, certain flavors with EVS disks unavailable are provided for creating such BMSs.

You can call the **Querying Details About Flavors and Extended Flavor Information** API to check whether a BMS flavor supports EVS disks. If the value of **baremetal:__support_evs** in the response is **true**, EVS disks are available in the flavor. If the parameter value is **false** or the parameter is not displayed in the response, EVS disks are unavailable in the flavor.

7.4 How Do I Change the Disk Identifier in the fstab file to UUID?

Scenarios

After attaching disks to a Linux BMS, you must change the disk identifier in the **fstab** file to UUID. Otherwise, you cannot enter the BMS OS or the BMS becomes unavailable due to a mount point disorder after you stop and start the BMS, or restart the BMS.

NOTE

Universally Unique Identifier (UUID) is a 128-bit number used to identify information in computer systems.

Procedure

This section takes CentOS 7 as an example to describe how to change the disk identifier in the **fstab** file to UUID.

Step 1 Log in to the BMS as user **root**. Run the **blkid** command to query all types of file systems that have been mounted to the BMS and UUIDs of the corresponding devices.

```
/dev/sda2: UUID="4eb40294-4c6f-4384-bbb6-b8795bbb1130" TYPE="xfs"
/dev/sda1: UUID="2de37c6b-2648-43b4-a4f5-40162154e135" TYPE="swap"
```

Step 2 Run the **cat /etc/fstab** command to open the **fstab** file.

```
/dev/sda2 /      xfs     defaults    0 0
/dev/sda1 swap    swap    defaults    0 0
```

Step 3 Check the disk identifier in the **fstab** file.

- If the disk identifier is UUID, no further action is required.
- If the disk identifier is the device name, go to **Step 4**.

Step 4 Run the **vi /etc/fstab** command to open the **fstab** file, press **i** to enter editing mode, and change the disk identifier to UUID.

```
UUID=4eb40294-4c6f-4384-bbb6-b8795bbb1130 /      xfs     defaults    0 0
UUID=2de37c6b-2648-43b4-a4f5-40162154e135 swap    swap    defaults    0 0
```

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Press **Esc** and enter **:wq** to save and exit the file.

----End

7.5 How Do I Obtain the Drive Letter of an EVS Disk?

After a BMS is restarted, the drive letter of an EVS disk attached to the BMS may change. This section describes how to find the mapping between an EVS disk and its drive letter.

1. Record **Device Identifier** of the EVS disk on the BMS details page.
2. Log in to the BMS OS, switch to the **/dev/disk/by-id** directory, and run the **ll** command to check the mapping between the WWN and drive letter. In Linux, WWN is in the format **wwn-0x** + *Device identifier*, for example, **wwn-0x50000397c80b685d -> ../../sdc**.

Figure 7-1 Checking the mapping between the WWN and drive letter

```
rwxrwxrwx. 1 root root  9 Mar 20 17:20 wwn-0x50000397c8088c61 -> ../../sdb
rwxrwxrwx. 1 root root  9 Mar 20 17:20 wwn-0x50000397c80b2539 -> ../../sde
rwxrwxrwx. 1 root root  9 Mar 20 17:20 wwn-0x50000397c80b685d -> ../../sdc
rwxrwxrwx. 1 root root  9 Mar 20 17:20 wwn-0x50000397c80ba3e9 -> ../../sdg
rwxrwxrwx. 1 root root  9 Mar 20 17:20 wwn-0x50000397c80bb905 -> ../../sdf
rwxrwxrwx. 1 root root  9 Mar 20 17:20 wwn-0x50000397c810e531 -> ../../sdd
rwxrwxrwx. 1 root root  9 Mar 20 17:20 wwn-0x600508e0000000002ab14603b88fa90b -> ../../sda
rwxrwxrwx. 1 root root 10 Mar 20 17:20 wwn-0x600508e0000000002ab14603b88fa90b-part1 -> ../../sda1
rwxrwxrwx. 1 root root 10 Mar 20 17:20 wwn-0x600508e0000000002ab14603b88fa90b-part2 -> ../../sda2
rwxrwxrwx. 1 root root 10 Mar 20 17:20 wwn-0x600508e0000000002ab14603b88fa90b-part3 -> ../../sda3
rwxrwxrwx. 1 root root 10 Mar 20 17:20 wwn-0x600508e0000000002ab14603b88fa90b-part4 -> ../../sda4
rwxrwxrwx. 1 root root 10 Mar 20 17:20 wwn-0x600508e0000000002ab14603b88fa90b-part5 -> ../../sda5
rwxrwxrwx. 1 root root  9 Mar 20 17:20 wwn-0x68886030000369fafa17a17502223655 -> ../../sdh
rwxrwxrwx. 1 root root 10 Mar 20 17:20 wwn-0x68886030000369fafa17a17502223655-part1 -> ../../sdh1
rwxrwxrwx. 1 root root 10 Mar 20 17:20 wwn-0x68886030000369fafa17a17502223655-part2 -> ../../sdh2
rwxrwxrwx. 1 root root 10 Mar 20 17:20 wwn-0x68886030000369fafa17a17502223655-part3 -> ../../sdh3
rwxrwxrwx. 1 root root  9 Mar 21 14:16 wwn-0x6888603000036b61fa17a17502223655 -> ../../sdo
```

NOTE

You are advised to use the WWN to perform operations on disks. For example, run the **mount** *wwn-0x50000397c80b685d Folder name* command to attach a disk. You are not advised to use the drive letter directly because drive letter drift may cause the failure to find the disk.

Obtaining the drive letter of a disk by using the WWN is only supported by Linux.

7.6 Are the EVS Disk Device Names on the Console and the Device Names in BMS OSs Consistent?

Local System Disk

The EVS disk device names displayed on the BMS details page on the VPC console are inconsistent with the device names displayed in the BMS OS. To prevent impact of device name changes on services, you are advised to use EVS disks by UUID.

If EVS disks are specified during BMS allocation, the EVS disk device names displayed on the BMS details page start from **/dev/sdb** and the device names displayed in the BMS OS start after the BMS local disk names, as shown in **Figure 7-2**.

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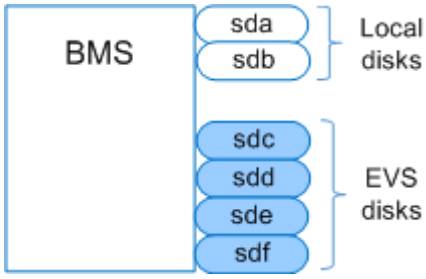
Figure 7-2 Device names in the BMS OS



If EVS disks are attached to an allocated BMS, the device names displayed on the BMS details page are those specified by the tenant during disk attaching. After the EVS disks are detached from the BMS, the disks will not be displayed on the BMS details page, and the device names will be released.

If EVS disks are detached from an allocated BMS, the device names displayed in the BMS OS vary depending on whether the BMS OS restarts.

After EVS disks are attached to a BMS, if the BMS OS does not restart, the device names displayed in the BMS OS start from the smallest device name that is not used by other devices. For example, if device names **/dev/sda** and **/dev/sdc** are in use, the device names will start from **dev/sdb**. After EVS disks are detached from the BMSs, if the BMS OS does not restart, the BMS OS will release the device names.

If the BMS OS restarts, the device names displayed in the BMS OS will change based on the number of disks the BMS has and the disk attaching sequence. **Figure 7-3** shows the device names displayed in the BMS OS after EVS disks are attached to the BMS (before and after BMS restart). **Figure 7-4** shows the device names displayed in the BMS OS after EVS disks are detached from the BMS (before and after BMS restart).

Figure 7-3 Attaching EVS disks to a BMS

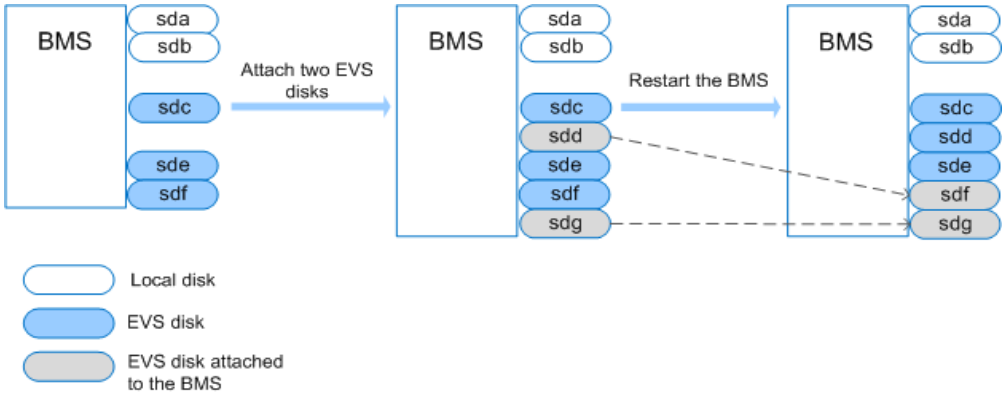


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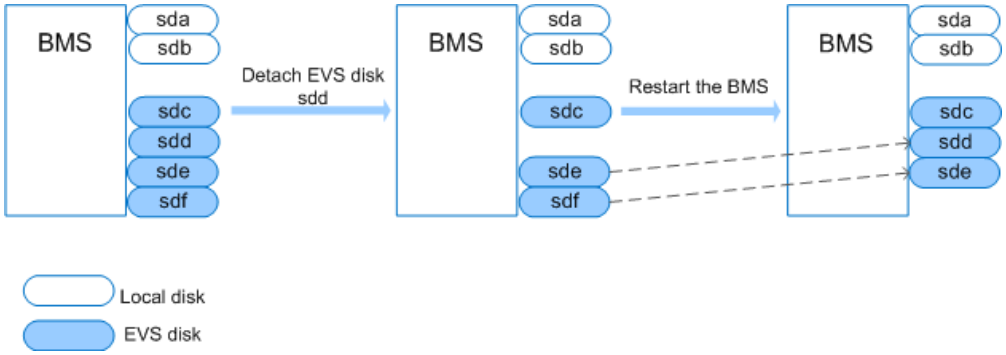
Figure 7-4 Detaching EVS disks from a BMS



EVS System Disk

The EVS disk device names displayed on the BMS details page on the VPC console may be inconsistent with the device names displayed in the BMS OS.

If EVS disks are specified during BMS allocation, the EVS disk device names displayed on the BMS details page start from **/dev/sda** and the device names in the BMS OS are displayed in a sequence determined by system scanning. There are two situations as shown in **Figure 7-5** and **Figure 7-6**, and the EVS system disk always has the smallest drive letter of all the EVS disks.

Figure 7-5 Device names in the BMS OS (situation 1)

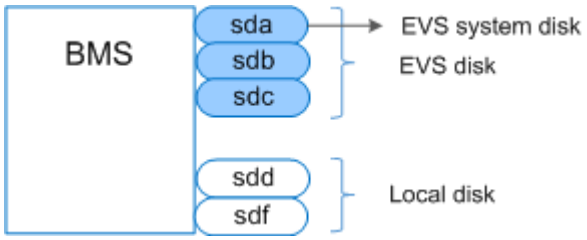
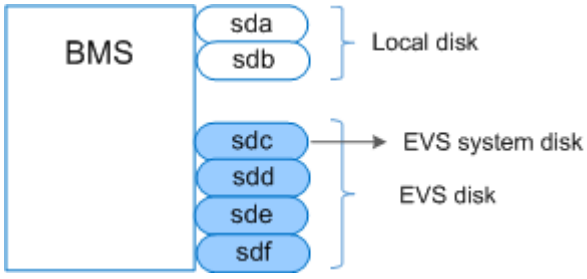


Figure 7-6 Device names in the BMS OS (situation 2)



If EVS disks are attached to an allocated BMS, the device names displayed on the BMS details page are those specified by the tenant during disk attaching. After the EVS disks are detached from the BMS, the disks will not be displayed on the BMS details page, and the device names will be released.

If EVS disks are detached from an allocated BMS, the device names displayed in the BMS OS vary depending on whether the BMS OS restarts.

After EVS disks are attached to a BMS, if the BMS OS does not restart, the device names displayed in the BMS OS start from the smallest device name that is not

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used by other devices. For example, if device names **/dev/sda** and **/dev/sdc** are in use, the device names will start from **dev/sdb**. After EVS disks are detached from the BMSs, if the BMS OS does not restart, the BMS OS will release the device names.

If the BMS OS restarts, the device names displayed in the BMS OS will change based on the number of disks the BMS has and the disk attaching sequence. **Figure 7-7** and **Figure 7-8** show the device names displayed in the BMS OS after EVS disks are attached to the BMS (before and after BMS restart). **Figure 7-9** and **Figure 7-10** show the device names displayed in the BMS OS after EVS disks are detached from the BMS (before and after BMS restart).

Figure 7-7 Attaching an EVS disk (before the BMS restart)

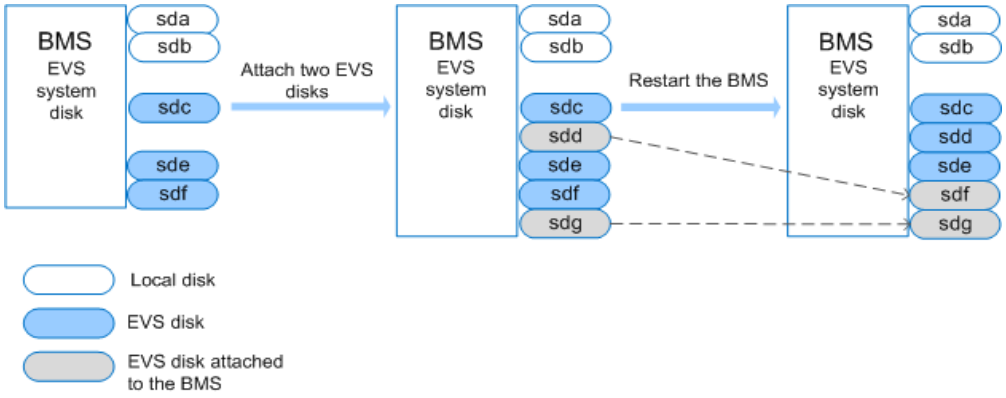

Figure 7-8 Attaching an EVS disk (after the BMS restart)

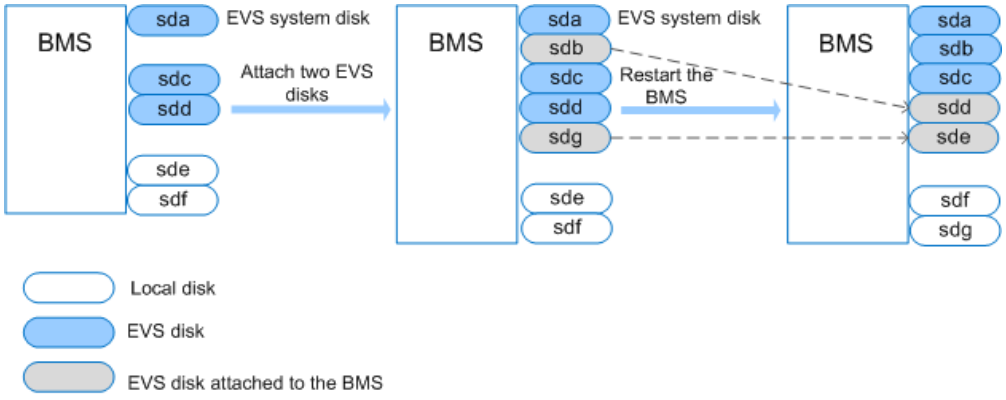

Figure 7-9 Detaching an EVS disk (before the BMS restart)

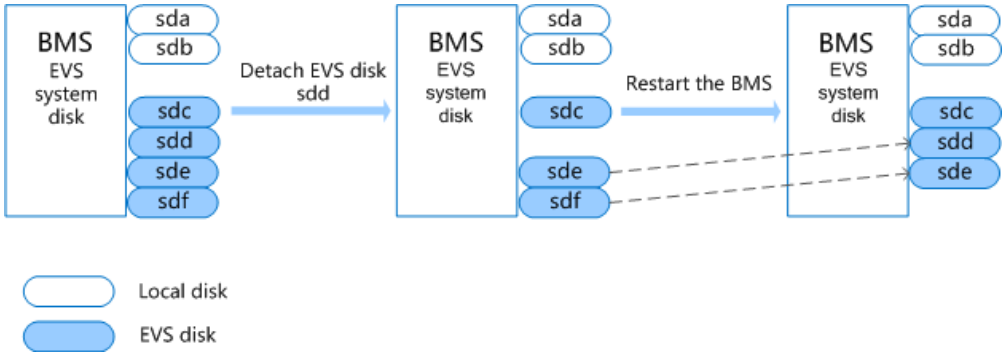

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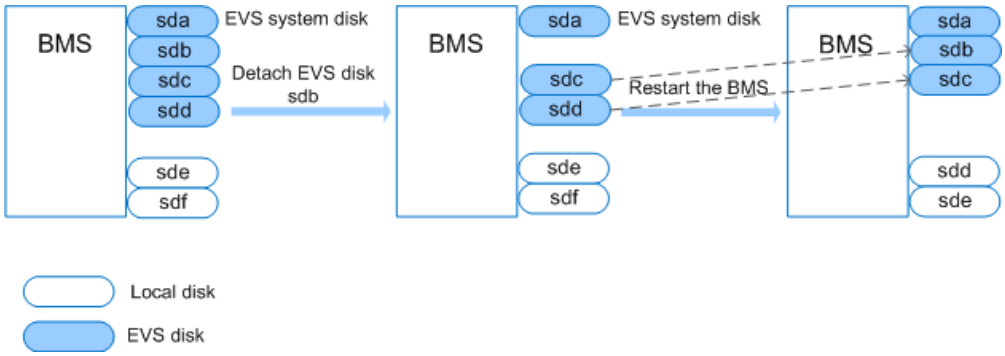
Figure 7-10 Detaching an EVS disk (after the BMS restart)



NOTE

To identify EVS disks, log in to the BMS and run the **lsscsi** command. Disks whose type is **Huawei** are EVS disks.

7.7 Why Is the EVS Disk Size Not Updated in the BMS OS After the EVS Disk Capacity Has Been Expanded?

If this occurs, scan block devices in the BMS OS. Take the sdh disk of Red Hat as an example, run the **echo 1 > /sys/block/sdh/device/rescan** command.

7.8 How Can I Restore System Disk Data Using the Snapshot?

You can create snapshots of the BMS system disk on the EVS console periodically. To restore the system disk data, mount the target system disk to the **sda** mount point.

Step 1 Power off the BMS.

1. Log in to the management console.
2. Under **Computing**, click **Bare Metal Server**.
   The BMS console is displayed.
3. Locate the target BMS and click **Stop**.

Step 2 Detach the system disk.

1. Click the BMS after it is powered off.
   The page showing details of the BMS is displayed.
2. Locate the target system disk and click **Detach**.
   In the displayed dialog box, click **OK**.

Step 3 Attach the system disk.

1. On the page showing the BMS details, click **Attach Disk**.
   The **Attach Disk** page is displayed.
2. Select the system disk and mount point **/dev/sda**, and click **Attach Disk**.

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In the displayed dialog box, click **OK**.

----End

7.9 What Do I Do to Prevent Risks of Attaching or Detaching the System Disk?

Attaching or detaching the system disk is a high-risk operation. You can attach or detach the system disk only when you need to restore the system disk data using the snapshot. In other cases, you are forbidden to attach or detach the system disk.

7.10 How Should I Select Storage?

When you create a BMS, you can select one from the following storage types:

- Elastic Volume Service (EVS): provides EVS disks of different QoS configurations to meet performance requirements in various scenarios.
- Dedicated Distributed Storage Service (DSS): provides exclusive storage resources. You can create disks of different specifications as needed and attach them to BMSs.
- Dedicated Enterprise Storage Service (DESS): provides dedicated storage devices for enterprises to help them migrate key services to the cloud.

7.11 Why Is the Disk Capacity Displayed in the BMS OS Less Than That Displayed on the Official Website?

Possible causes of this issue are as follows:

1. Hardware vendors have a different method of calculating storage capacity from that of the OS. Hardware vendors use decimal notation to calculate disk capacity, in which 1 GB = 1000 x 1000 x 1000 bytes. In the OS, the capacity is calculated in binary mode, in which 1 GB = 1024 x 1024 x 1024 bytes.
2. The system contains hidden partitions, such as the boot partition, system backup, and restoration partition.
3. The file system consumes some disk capacity. Before using a hard disk, the OS partitions the disk and initializes the file system. The configuration also occupies a small amount of disk capacity.
4. The RAID array occupies some disk capacity. For example, if two 600 GB hard disks form RAID 1, only 600 GB capacity of one disk can be used.

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8 OS FAQs

8.1 Can I Install or Upgrade BMS OSs by Myself?

You can reinstall a BMS OS. If an upgrade or patch installation is involved and the kernel version changes, confirm with the cloud service vendor whether drivers, such as RAID controller card drivers and NIC drivers, need to be reinstalled. If the required drivers of the corresponding kernel version are not installed, the OS may fail to start or basic functions of the OS may be unavailable.

8.2 Can the BMS OS Be Replaced?

No. The BMS OS cannot be replaced.

8.3 Is a GUI Provided for BMS OSs?

The Linux OSs provided for BMSs are managed using the command line interface (CLI). If you want to manage OSs using GUI, configure the GUI.

8.4 Is an Upload Tool Delivered with BMS OSs?

No. You must install and configure the upload tool, for example, the FTP tool, by yourself.

8.5 Does the Public Image Used to Create a BMS Have a Swap Partition?

Yes.

To increase the swap partition size, see **How Do I Increase the Swap Partition Size?**

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8.6 How Do I Configure the Static Host Name of a BMS?

Symptom

The static host name of a Linux BMS is user-defined and injected on the console during the BMS creation. You can use the console or run the **hostname** command to change the host name of a BMS. However, if you restart the BMS, its host name will be automatically changed to the user-defined one injected on the console.

Automatically Updating the Host Name (Recommended)

Change the host name of the BMS on the console and enable automatic host name synchronization in the BMS OS. In this way, after the BMS is restarted, it automatically synchronizes the host name from the console.

This method has the following restrictions:

- The host name contains a maximum of 63 characters.
- Special characters except hyphens (-), underscores (_), and periods (.) are not supported.
- Uppercase letters are not supported.
- This method does not apply to Windows BMSs.

Step 1 Log in to the management console, click **Bare Metal Server** under **Computing**.

Step 2 Click the name of the BMS whose name is to be changed.

Step 3 On the displayed page, click next to **Name**, enter a new name that meets the preceding requirements, and click to save the change.

Step 4 Log in to the BMS OS and run the following command to enable automatic hostname synchronization:

vi /opt/huawei/network_config/bms-network-config.conf

Set the value of **auto_synchronize_hostname** to **True**.

```
auto_synchronize_hostname = True
```

Press **Esc** and enter **:wq** to save and exit the file.

Step 5 Log in to the management console again. Locate the row that contains the BMS, click **More** in the **Operation** column, and select **Restart**.

After about 10 minutes, verify that the BMS is restarted and its hostname is automatically updated.

NOTE

If you set the value of **auto_synchronize_hostname** in step **Step 4** to **False**, the host name configured during BMS creation will be retained.

----End

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Manually Updating the Host Name

To make the changed host name take effect even after the BMS is stopped or restarted, save the changed name into configuration files.

For example, if the changed host name is *new_hostname*, perform the following steps:

Step 1 Modify the **/etc/hostname** configuration file.

1. Run the following command to edit the **/etc/hostname** configuration file:

   sudo vim /etc/hostname

2. Change the host name to *new_hostname*.
3. Run the following command to save and exit the configuration file:

   :wq

Step 2 (Optional) For Red Hat Enterprise Linux, CentOS, and Fedora 6, modify the configuration file **/etc/sysconfig/network**.

1. Run the following command to edit the **/etc/sysconfig/network** configuration file:

   sudo vim /etc/sysconfig/network

2. Change the **HOSTNAME** value to *new_hostname*.

   HOSTNAME=*new_hostname*

3. Run the following command to save and exit the configuration file:

   :wq

Step 3 Modify the **/etc/cloud/cloud.cfg** configuration file.

1. Run the following command to edit the **/etc/cloud/cloud.cfg** configuration file:

   sudo vim /etc/cloud/cloud.cfg

2. Use either of the following methods to modify the configuration file:
   - Method 1: Change the **preserve_hostname** parameter value or add the **preserve_hostname** parameter to the configuration file.

     If **preserve_hostname: false** is already available in the **/etc/cloud/cloud.cfg** configuration file, change it to **preserve_hostname: true**.

     If **preserve_hostname: false** is unavailable in the **/etc/cloud/cloud.cfg** configuration file, add **preserve_hostname: true** before **cloud_init_modules**.
   - Method 2: Delete or comment out the following content:

     update_hostname

3. Run the following command to save and exit the configuration file:

   :wq

Step 4 Change the BMS network configuration script **bms-network-config.conf**.

The value of parameter **enable_preserve_hostname** in the **bms-network-config.conf** file is **False** by default, indicating that the host name is updated each time the board resets. To disable this function, change its value to **True**.

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1. Run the following command to edit the configuration script **bms-network-config.conf**:

   sudo vim /opt/huawei/network_config/bms-network-config.conf

2. Set the value of **enable_preserve_hostname** to **True**.

   enable_preserve_hostname: True

3. Run the following command to save and exit the configuration file:

   :wq!

Step 5 (Optional) For SUSE, modify the configuration file **/etc/sysconfig/network/dhcp**.

1. Run the following command to edit the **/etc/sysconfig/network/dhcp** configuration file:

   sudo vim /etc/sysconfig/network/dhcp

2. Set the value of **DHCLIENT_SET_HOSTNAME** to **no** to ensure that DHCP does not automatically allocate host names.

   DHCLIENT_SET_HOSTNAME="no"

3. Run the following command to save and exit the configuration file:

   :wq

Step 6 Run the following command to restart the BMS:

sudo reboot

Step 7 Run the following command to check whether the static host name is changed:

sudo hostname

If the changed host name *new_hostname* is displayed in the command output, the host name is changed and the new name permanently takes effect.

----End

8.7 How Do I Set the Password Validity Period?

If you cannot log in to a BMS due to password expiry, contact the administrator.

If you can log in to the BMS, perform the following operations to set the password validity period:

Step 1 Log in to the BMS OS and run the following command to query the password validity period:

vi /etc/login.defs

The value of parameter **PASS_MAX_DAYS** indicates the password validity period.

Step 2 Run the following command to change the value of parameter **PASS_MAX_DAYS** in **Step 1**:

chage -M *99999 user_name*

99999 is the validity period of the password, and *user_name* is a system user.

You are advised to set the password validity period as needed and change it on a regular basis.

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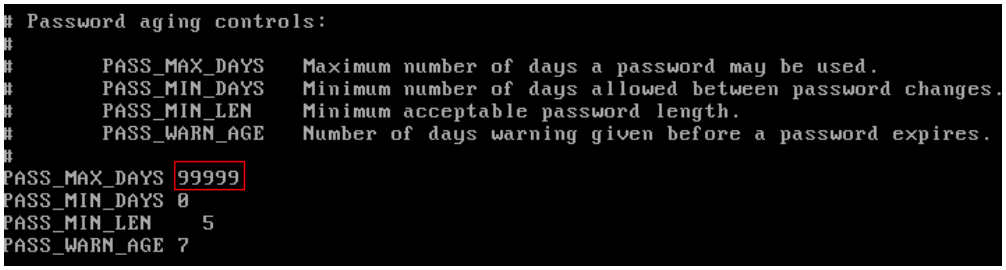
Step 3 Run **vi /etc/login.defs** to verify that the configuration has taken effect.

Figure 8-1 Configuration verification



----End

8.8 How Do I Set SSH Configuration Items?

You can select the BMS login mode or account type. If you have requirements for special configuration, perform the following operations:

Step 1 To improve security of the BMS, disable remote login using the password and retain only the certificate login mode. Configure the following parameters:

- Check whether the **/etc/cloud/cloud.cfg** file contains parameter **ssh_pwauth** and its value is **false**. If not, add the parameter or change its value to **false**. This ensures that password cannot be used to log in to the BMS using Xshell.
- Check whether the value of parameter **ChallengeResponseAuthentication** in the **/etc/ssh/sshd_config** file is **no**. If not, change it to **no**. This ensures that password cannot be entered using the keyboard inactive method to log in to the BMS using Xshell.

Step 2 To enable remote login as user **root** and enable SSH permissions of user **root**, perform the following operations:

CAUTION

This operation may cause risks. Exercise caution before performing this operation.

1. Modify the Cloud-Init configuration file.

   Take CentOS 6.7 as an example. Modify the following parameters:

   ```
   users:
     - name: root
       lock_passwd: false

   disable_root: 0
   ssh_pwauth: 1
   ```

   In the preceding information:

   - If the value of **lock_passwd** is set to **false**, user password is not locked.
   - **disable_root** specifies whether to disable remote SSH login as user **root**. Set the value to **0**, indicating that the remote SSH login as user **root** is enabled (In some OSs, value **true** indicates disabled and **false** indicates enabled).

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- **ssh_pwauth** specifies whether to support SSH password login. Set this parameter to **1**, indicating that SSH password login is supported.

2. Run the following command to open the **/etc/ssh/sshd_config** file using the vi editor:

   vi /etc/ssh/sshd_config

   Change the value of **PasswordAuthentication** in the **sshd_config** file to **yes**.

   NOTE

   - For SUSE and openSUSE, set **PasswordAuthentication** and **ChallengeResponseAuthentication** in the **sshd_config** file to **yes**.
   - For **Ubuntu**, set **PermitRootLogin** to **yes**.

3. Lock the initial password of user **root** in the image template by modifying the **shadow** file to prevent risks.

   a. Run the following command to open the **/etc/shadow** configuration file using the vim editor:

      vim /etc/shadow

      Add **!!** to the password hash value of the root account. The modified configuration file is as follows:

      ```
      # cat /etc/shadow | grep root
       root:!!$6$SphQRPXu$Nvg6izXbhDPrcY3j1vRiHaQFVRpNiV3HD/
      bjDgnZrACOWPXwJahx78iaut1IigIUrwavVGSYQ1JOIw.rDlVh7.:17376:0:99999:7::
      ```

   b. After the configuration file is modified, press **Esc** and enter **:wq** to save and exit the file.

      NOTE

      For Ubuntu, delete the user created during the OS installation. For example, run the **userdel -rf ubuntu** command to delete user **ubuntu** created during OS installation.

----End

8.9 How Can I Handle the Eight-Hour Difference Between the Windows BMS and Local Time

Cause

Linux uses the time of the motherboard CMOS chip as the Coordinated Universal Time (UTC) and determines the system time based on the configured time zone. However, Windows uses the CMOS time as the system time directly without converting it based on the time zone.

Solution

Step 1 Log in to the Windows BMS.

Step 2 Click  in the lower left corner, choose **Windows PowerShell**, and enter **regedit.exe** to open the registry.

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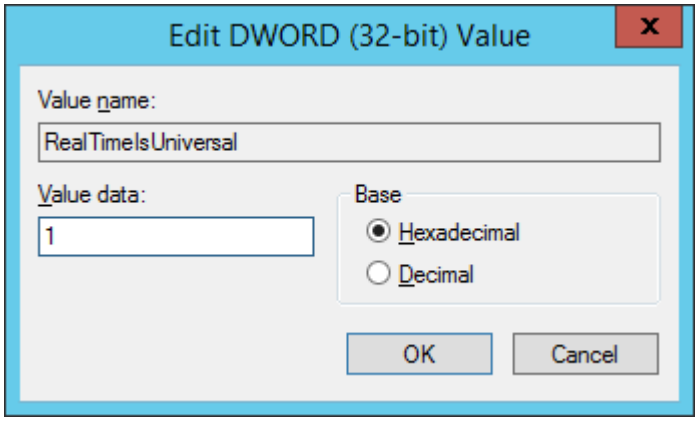
Step 3 In the displayed **Registry Editor** window, choose **HKEY_LOCAL_MACHINE** > **SYSTEM** > **CurrentControlSet** > **Control** > **TimeZoneInformation**.

Step 4 In the right pane, right-click a blank area and choose **New** > **DWORD (32-bit) Value** to add a REG_DWORD code. Set its name to **RealTimeIsUniversal** and value to **1**.

Figure 8-2 Adding a code



Step 5 After the modification, restart the BMS.

After the BMS restarts, its system time is consistent with the local time.

----End

8.10 How Can I Activate a Windows BMS?

Perform the following operations to manually activate a Windows BMS:

Step 1 Log in to the Windows BMS.

Step 2 Click  in the lower left corner and choose **Windows PowerShell**.

Step 3 Run the following command to configure the IP address of the KMS server:

slmgr -skms 100.125.1.2

Step 4 Run the following command to check whether the BMS has been activated:

slmgr -ato

If error 0xC004F074 occurs, the BMS cannot be activated. In such an event, go to **Step 5**.

Step 5 Verify that the time in the BMS is the same as the standard time. If the time is significantly different, the BMS cannot be activated.

Step 6 Run the following command on the BMS to check whether the link between the BMS and the KMS server port is reachable:

telnet 100.125.1.2 1688

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If the link is unreachable, port 1688 is not enabled on the BMS firewall. You must disable the firewall or enable port 1688 on the firewall. If the BMS has any security software such as safedog, stop using it.

Step 7 Run the following command to check whether the BMS has been activated:

slmgr -ato

----End

8.11 How Do I Change the SID of a Windows Server 2012 BMS?

Scenarios

A Security Identifier (SID) is a unique value that identifies a user, group, or computer account (administrator account). When an account is created for the first time, a unique SID is assigned to each account on the network. A SID is determined by the computer name, current time, and CPU use time of the current user-mode thread.

A complete SID contains:

- User and group security description
- 48-bit ID authority
- Revision level
- Variable sub-authority values

An example SID is S-1-5-21-287469276-4015456986-3235239863-500.

S	1	5	21-287469276-4015456986-3235239863	500
The string is a SID.	SID version	SID authority, which is NT in this example	SID sub-authorities	Accounts and groups in the domain

Currently, all the Windows Server 2012 BMSs have the same SID. In the cluster deployment scenario, you need to change the SID of the BMSs to ensure that each BMS uses a unique SID.

Procedure

1. Log in to the BMS OS.
2. Click  in the lower left corner, choose **Windows PowerShell**, and run the **whoami /user** command to query the SID.

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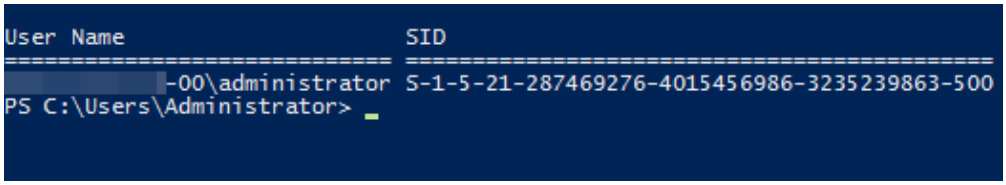
Figure 8-3 Querying the original SID



3. Modify the Cloudbase-Init configuration files.
   a. Open the **cloudbase-init.conf** and **cloudbase-init-unattend.con** files in the **C:\Program Files\Cloudbase Solutions\Cloudbase-Init\conf** directory.
   b. Add **first_logon_behaviour=no** to both files.

```
[DEFAULT]
username=Administrator
groups=Administrators
first_logon_behaviour=no
netbios_host_name_compatibility=false
metadata_services=cloudbaseinit.metadata.services.httpser
inject_user_password=true
...
```

   c. Delete **cloudbaseinit.plugins.common.sethostname.SetHostNamePlugin** from the **cloudbase-init-unattend.conf** file.

```
se Solutions\Cloudbase-Init\log\
.log
0, suds=INFO, iso8601=WARN, requests=WARN
M1, 115200, N, 8


iles\Cloudbase Solutions\Cloudbase-Init\LocalScripts\
.metadata.services.configdrive.ConfigDriveService, cloudbaseinit.metadata.services.httpservi
ommon.mtu.MTUPlugin, cloudbaseinit.plugins.common.sethostname.SetHostNamePlugin, cloudbaseini
```

4. Open the CLI and enter the following command to open the Sysprep window:

```
C:\Program Files\Cloudbase Solutions\Cloudbase-Init\conf> C:\Windows\System32\Sysprep
\sysprep.exe /unattend:Unattend.xml
```

5. In the **System Preparation Tool 3.14** dialog box, configure parameters and click **OK**.

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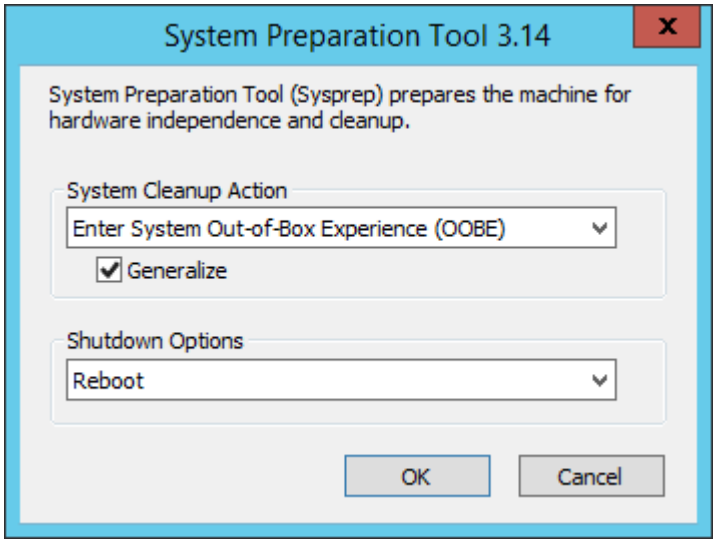
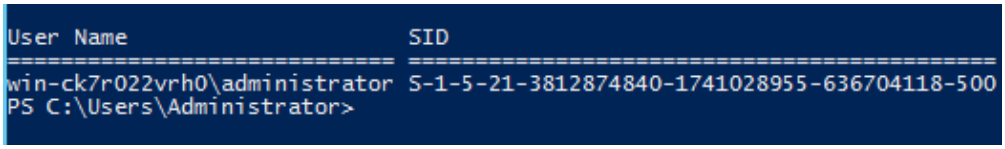
Figure 8-4 System Preparation Tool settings



6. After the configuration is complete, the BMS automatically restarts. You need to encapsulate and decompress the package again. After the BMS restarts, you need to reset the password for the Windows OS. For details, see **Resetting the BMS Password**
7. Log in to the BMS OS and check the SID using the method in **2**.

Figure 8-5 Querying the new SID



As shown in the preceding figure, the SID has been changed successfully.

8.12 How Do I Change the Kernel Version of CentOS 7 BMSs?

Scenarios

Some special software runs properly only on specified Linux kernel versions. This section describes how to change the kernel version.

Solution

1. Log in to the BMS OS.
2. Run the following command to check the current kernel version:

   uname -r

   ```
   [root@xxxxxx~]# uname -r
   3.10.0-327.22.2.el7.x86_64
   ```

3. Run the following command to check the number of kernels in the OS:

   cat /boot/grub2/grub.cfg | grep menuentry

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```
[root@xxxxxx~]# cat /boot/grub2/grub.cfg | grep menuentry
if [ x"${feature_menuentry_id}" = xy ]; then
  menuentry_id_option="--id"
  menuentry_id_option=""
export menuentry_id_option
menuentry ´CentOS Linux (3.10.0-327.22.2.el7.x86_64) 7 (Core)´ --class centos --class gnu-linux --class gnu --class os --unrestricted $menuentry_id_option ´gnulinux-3.10.0-327.el7.x86_64-advanced-80b9b662-0a1d-4e84-b07b-c1bf19e72d97´ {
menuentry ´CentOS Linux (3.10.0-327.el7.x86_64) 7 (Core)´ --class centos --class gnu-linux --class gnu --class os --unrestricted $menuentry_id_option ´gnulinux-3.10.0-327.el7.x86_64-advanced-80b9b662-0a1d-4e84-b07b-c1bf19e72d97´ {
menuentry ´CentOS Linux (0-rescue-7d26c16f128042a684ea474c9e2c240f) 7 (Core)´ --class centos --class gnu-linux --class gnu --class os --unrestricted $menuentry_id_option ´gnulinux-0-rescue-7d26c16f128042a684ea474c9e2c240f-advanced-80b9b662-0a1d-4e84-b07b-c1bf19e72d97´ {
```

4. Run the following command to set the kernel that is started by default, for example, CentOS Linux (3.10.0-327.el7.x86_64) 7 (Core):

   grub2-set-default "CentOS Linux (3.10.0-327.el7.x86_64) 7 (Core)"

5. Run the following command to check the kernel that is started by default:

   grub2-editenv list

   ```
   [root@xxxxxx~]# grub2-editenv list
   saved_entry=CentOS Linux (3.10.0-327.el7.x86_64) 7 (Core)
   ```

6. Restart the BMS, enter its OS, and run the command in step 2 to check whether the kernel has been changed.

   ```
   [root@xxxxxx~]# uname -r
   3.10.0-327.el7.x86_64
   ```

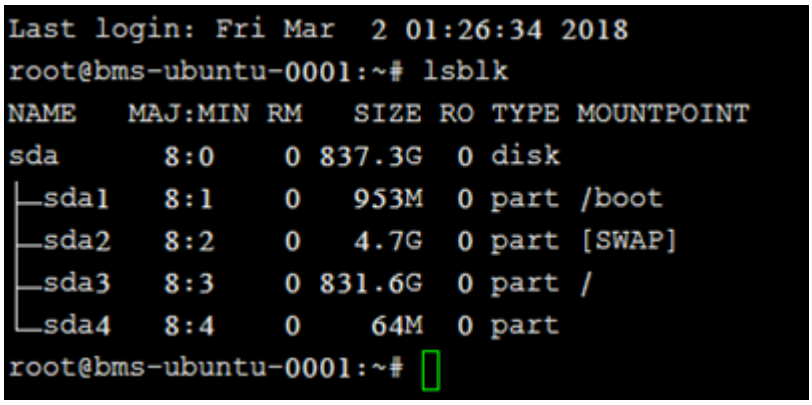
8.13 How Do I Reserve Log Space If the Root Partition Automatically Expands Disks?

Scenarios

In the scenario where the root partition automatically expands disks, the initial root partition may occupy all space of the system disk. This section describes how to reserve log space.

Procedure

Step 1 Run the **lsblk** command. The following command output indicates that the initial root partition has occupied all space of the system disk.



Step 2 Run the following command to create a directory for storing logs:

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mkdir log

```
root@bms-ubuntu-0001:~# mkdir log
root@bms-ubuntu-0001:~# ll
total 44
drwx------  6 root root 4096 May 31 08:48 ./
drwxr-xr-x 24 root root 4096 May 31 08:47 ../
-rw-------  1 root root    1 Mar  2 01:35 .bash_history
-rw-r--r--  1 root root 3106 Feb 19  2014 .bashrc
drwx------  2 root root 4096 Dec 22 23:49 .cache/
drwxr-xr-x  2 root root 4096 May 31 08:48 log/
drwxr-xr-x  2 root root 4096 Feb 28 01:41 .oracle_jre_usage/
-rw-r--r--  1 root root  140 Feb 19  2014 .profile
drwx------  2 root root 4096 Dec 11 22:21 .ssh/
-rw-------  1 root root 4835 Mar  2 01:35 .viminfo
```

Step 3 Run the following command to create a 200 GB image file for storing logs.

dd if=/dev/zero of=disk.img bs=1M count=200000

```
root@bms-ubuntu-0001:~# dd if=/dev/zero of=disk.img bs=1M count=200000
200000+0 records in
200000+0 records out
209715200000 bytes (210 GB) copied, 807.411 s, 260 MB/s
root@bms-ubuntu-0001:~# df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/sda3       819G  198G  588G  26% /
none            4.0K     0  4.0K   0% /sys/fs/cgroup
udev            158G   12K  158G   1% /dev
tmpfs            32G  1.1M   32G   1% /run
none            5.0M     0  5.0M   0% /run/lock
none            158G     0  158G   0% /run/shm
none            100M     0  100M   0% /run/user
/dev/sda1       922M   54M  806M   7% /boot
root@bms-ubuntu-0001:~#
```

Step 4 Run the following commands to virtualize the generated file into a block device and format it:

losetup /dev/loop0 disk.img

mkfs.ext4 /dev/loop0

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```
root@bms-ubuntu-0001:~# losetup /dev/loop0 disk.img
root@bms-ubuntu-0001:~# mkfs.ext4 /dev/loop0
mke2fs 1.42.9 (4-Feb-2014)
Discarding device blocks: done
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
12804096 inodes, 51200000 blocks
2560000 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=4294967296
1563 block groups
32768 blocks per group, 32768 fragments per group
8192 inodes per group
Superblock backups stored on blocks:
        32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
        4096000, 7962624, 11239424, 20480000, 23887872

Allocating group tables: done
Writing inode tables: done
Creating journal (32768 blocks): done
Writing superblocks and filesystem accounting information: done
```

Step 5 Run the following command to mount the image file to the log directory:

mount disk.img log

```
root@bms-ubuntu-0001:~# mount disk.img log/
root@bms-ubuntu-0001:~# df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/sda3       819G  1.7G  784G   1% /
none            4.0K     0  4.0K   0% /sys/fs/cgroup
udev            158G   12K  158G   1% /dev
tmpfs            32G  1.1M   32G   1% /run
none            5.0M     0  5.0M   0% /run/lock
none            158G     0  158G   0% /run/shm
none            100M     0  100M   0% /run/user
/dev/sda1       922M   54M  806M   7% /boot
/dev/loop1      193G   60M  183G   1% /root/log
```

Step 6 Create a file in the log directory.

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```
root@bms-ubuntu-0001:~# cd log/
root@bms-ubuntu-0001:~/log# ll
total 24
drwxr-xr-x 3 root root  4096 May 31 09:09 ./
drwx------ 6 root root  4096 May 31 08:50 ../
drwx------ 2 root root 16384 May 31 09:09 lost+found/
root@bms-ubuntu-0001:~/log# vim test
root@bms-ubuntu-0001:~/log# cat test
helloworld!
```

Step 7 Run the following command to add the mount command to **/etc/rc.local**:

mount /root/disk.img /root/log

```
#
# By default this script does nothing.
mount /root/disk.img /root/log
exit 0
~
```

Step 8 Run the following command to restart the OS:

reboot

```
The system is going down for reboot NOW!
Connection closing...Socket close.

Connection closed by foreign host.

Disconnected from remote host(10.185.78.41:22) at 21:20:32.
```

Step 9 Run the **lsblk** command. The command output indicates that the image file has been mounted.

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```
Last login: Thu May 31 08:51:44 2018 from 10.190.179.88
root@bms-ubuntu-0001:~# lsblk
NAME   MAJ:MIN RM   SIZE RO TYPE MOUNTPOINT
sda      8:0    0 837.3G  0 disk
├─sda1   8:1    0   953M  0 part /boot
├─sda2   8:2    0   4.7G  0 part [SWAP]
├─sda3   8:3    0 831.6G  0 part /
└─sda4   8:4    0    64M  0 part
loop0    7:0    0 195.3G  0 loop /root/log
root@bms-ubuntu-0001:~# cat /root/log/test
helloworld!
root@bms-ubuntu-0001:~#
```

----End

8.14 How Do I Roll Back the Kernel Version If I Mistakenly Upgrade the Kernel?

Scenarios

SDI, RAID, and IB hardware drivers of the BMS are related to the kernel. You are not advised to upgrade the kernel version.

If you have upgraded the kernel, perform the operations in this section. This section uses CentOS 7.2 as an example to describe how to set the BMS OS to start from the default kernel if you have upgraded the kernel.

Upgrade Scenario

Step 1 Run the **uname -a** command to query the current kernel version.

```
[root@bms-centos ~]# uname -a
Linux bms-centos 3.10.0-327.el7.x86_64 #1 SMP Thu Nov 29 14:49:43 UTC 2018 x86_64 x86_64 x86_64 GNU/Linux
```

Step 2 Run the **yum update kernel** command to upgrade the kernel.

Step 3 Run the **cat /boot/grub2/grub.cfg |grep menuentry** command to check the kernel information of the OS after the upgrade.

As shown in the following figure, **3.10.0-327.el7.x86_64** is the default kernel version and **3.10.0-862.3.2.el7.x86_64** is the upgraded kernel version.

```
if [ x"${feature_menuentry_id}" = xy ]; then
  menuentry_id_option="--id"
  menuentry_id_option=""
export menuentry_id_option
menuentry 'CentOS Linux (3.10.0-862.3.2.el7.x86_64) 7 (Core)' --class centos --class gnu-linux --class
cted $menuentry_id_option 'gnulinux-3.10.0-327.el7.x86_64-advanced-4c147502-c776-4ca9-8657-fb4c8e8c9794
menuentry 'CentOS Linux (3.10.0-327.el7.x86_64) 7 (Core)' --class centos --class gnu-linux --class gnu
 $menuentry_id_option 'gnulinux-3.10.0-327.el7.x86_64-advanced-4c147502-c776-4ca9-8657-fb4c8e8c9794' {
menuentry 'CentOS Linux (0-rescue-2b86009638bb45c9ad2f4e3d14ba820a) 7 (Core)' --class centos --class gn
ss os --unrestricted $menuentry_id_option 'gnulinux-0-rescue-2b86009638bb45c9ad2f4e3d14ba820a-advanced-
b4c8e8c9794' {
```

----End

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Emergency Settings After Kernel Upgrade

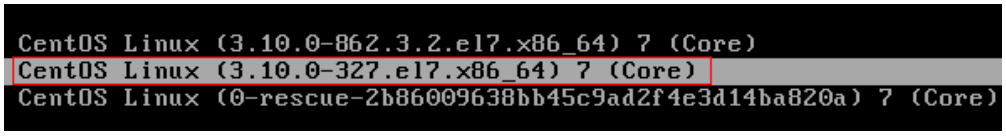
Step 1 Run the following commands to set the original kernel version as the default startup kernel and verify the modification result:

grub2-set-default "CentOS Linux (3.10.0-327.el7.x86_64) 7 (Core)"

grub2-editenv list

```
[root@bms-centos ~]# grub2-editenv list
saved_entry-CentOS Linux (3.10.0-327.el7.x86_64) 7 (Core)
```

Step 2 After the verification is complete, restart the OS from the default kernel.



Step 3 Run the **uname -a** command to check whether the kernel version is restored.

----End

8.15 How Do I Increase the Swap Partition Size?

Scenarios

When you install the Oracle database for a Linux OS, the swap partition size will be checked. If the swap partition cannot meet requirements, you can perform the operations in this section to increase the swap partition size.

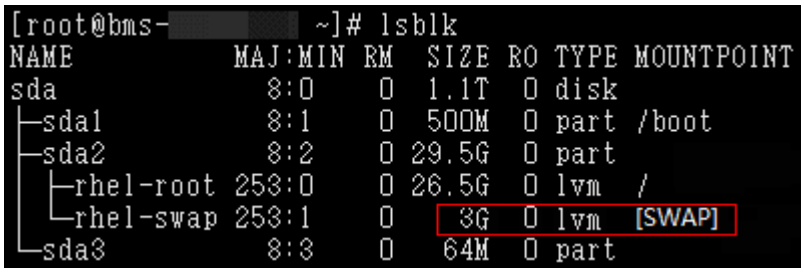
NOTE

The swap partition is similar to the virtual memory of the Windows OS. When the memory is insufficient, some hard disk space is virtualized into memory to improve the system running efficiency.

Procedure

Step 1 Log in to the BMS OS.

Step 2 Run the **lsblk** command to check the size of the swap partition.



The size of the swap partition is 3 GB.

Step 3 Run the following command to increase the swap partition size by 5 GB (example):

dd if=/dev/zero of=/swapfile bs=1M count=5000

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chmod 600 /swapfile

mkswap /swapfile swapon /swapfile echo "/swapfile swap swap defaults 0 0" >>/etc/fstab

Step 4 Run the **lsblk** command to check the size of the expanded swap partition.

```
[root@bms-        ~]# free
              total        used        free      shared  buff/cache   available
Mem:      263564592    87360740    18486896      805268   157716956   174200612
Swap:       8265716     2362592     5903124
```

The size of the swap partition is 8 GB.

----End

8.16 How Do I Increase the Size of the Root Partition of a BMS Which Is Quickly Provisioned?

Scenarios

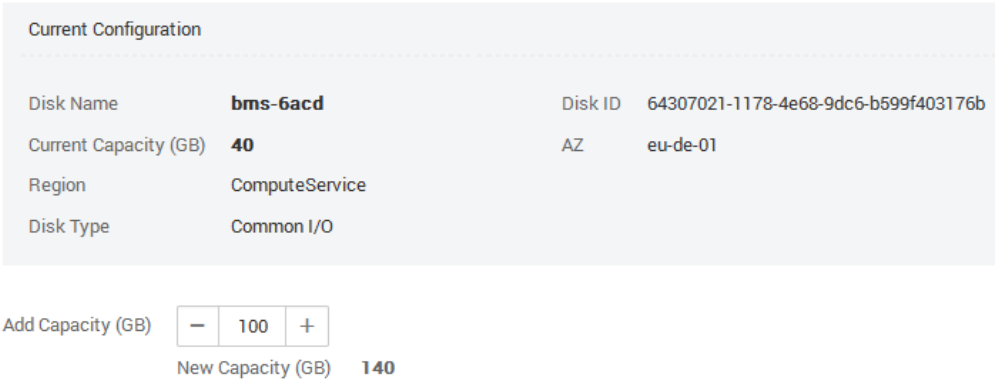
If the root partition size of a BMS which is quickly provisioned cannot meet service requirements, you can increase the root partition size by performing the operations in this section.

Procedure

Assume that the drive letter of the BMS system disk is **/dev/sdf** and its initial size is 40 GB. To increase the partition size to 140 GB, perform the following operations:

```
sdf       8:80   0    40G  0 disk
├─sdf1    8:81   0   500M  0 part /boot
├─sdf2    8:82   0     5G  0 part [SWAP]
├─sdf3    8:83   0  34.5G  0 part /
└─sdf4    8:84   0    64M  0 part
```

Step 1 On the EVS console, add 100 GB capacity to the disk.



After the capacity expansion, check that the size of system disk **/dev/sdf** has been increased from 40 GB to 140 GB. The 64 MB sdf4 partition is the configdriver partition that stores the BMS configuration information.

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```
sdf      8:80   0   140G  0 disk
├─sdf1   8:81   0   500M  0 part /boot
├─sdf2   8:82   0     5G  0 part [SWAP]
├─sdf3   8:83   0  34.5G  0 part /
└─sdf4   8:84   0    64M  0 part
```

Step 2 Run the following command to back up the content in the configdriver partition:

dd if=/dev/sdf4 of=/root/configdriver.img

```
[root@bms-6acd ~]# dd if=/dev/sdf4 of=/root/configdriver.img
131072+0 records in
131072+0 records out
67108864 bytes (67 MB) copied, 0.291739 s, 230 MB/s
```

Step 3 Run the **fdisk /dev/sdf** command and perform the operations shown in the following figure to delete the configdriver partition.

```
[root@bms-6acd ~]# fdisk /dev/sdf
Welcome to fdisk (util-linux 2.23.2).

Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.


Command (m for help): d
Partition number (1-4, default 4): 4
Partition 4 is deleted

Command (m for help): w
The partition table has been altered!

Calling ioctl() to re-read partition table.

WARNING: Re-reading the partition table failed with error 16: Device or resource
 busy.
The kernel still uses the old table. The new table will be used at
the next reboot or after you run partprobe(8) or kpartx(8)
Syncing disks.
```

Run the **partprobe** command to refresh the partitions. The system disk contains the following partitions:

```
sdf      8:80   0   140G  0 disk
├─sdf1   8:81   0   500M  0 part /boot
├─sdf2   8:82   0     5G  0 part [SWAP]
├─sdf3   8:83   0  34.5G  0 part /
└─sdf4   8:84   0  97.7M  0 part
```

Step 4 Create a 100 MB configdriver partition in the system disk.

Assume that the available sector range is 83755008-293601279, the initial value of the new partition is equal to the maximum value of the available sector minus 200000, that is, 293401279. The maximum value of the new partition is 293601279.

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```
Command (m for help): n
Partition type:
   p   primary (3 primary, 0 extended, 1 free)
   e   extended
Select (default e): p
Selected partition 4
First sector (83755008-293601279, default 83755008): 293401279
Last sector, +sectors or +size{K,M,G} (293401279-293601279, default 293601279):
Using default value 293601279
Partition 4 of type Linux and of size 97.7 MiB is set

Command (m for help): w
The partition table has been altered!

Calling ioctl() to re-read partition table.

WARNING: Re-reading the partition table failed with error 16: Device or resource
 busy.
The kernel still uses the old table. The new table will be used at
the next reboot or after you run partprobe(8) or kpartx(8)
Syncing disks.
```

Run the **partprobe** command to refresh the partition details.

```
sdf       8:80   0   140G  0 disk
├─sdf1    8:81   0   500M  0 part /boot
├─sdf2    8:82   0     5G  0 part [SWAP]
├─sdf3    8:83   0  34.5G  0 part /
└─sdf4    8:84   0  97.7M  0 part
```

Step 5 Run the following command to expand the root partition:

growpart /dev/sdf 3

```
[root@bms-6acd ~]# growpart /dev/sdf 3
CHANGED: partition=3 start=11511808 old: size=72243200 end=83755008 new: size=28
1889471,end=293401279
```

The size of the extended root partition is as follows:

```
sdf       8:80   0   140G  0 disk
├─sdf1    8:81   0   500M  0 part /boot
├─sdf2    8:82   0     5G  0 part [SWAP]
├─sdf3    8:83   0 134.4G  0 part /
└─sdf4    8:84   0  97.7M  0 part
```

Run the **resize2fs /dev/sdf3** command to expand the file system of the root partition.

```
[root@bms-6acd ~]# resize2fs /dev/sdf3
resize2fs 1.42.9 (28-Dec-2013)
Filesystem at /dev/sdf3 is mounted on /; on-line resizing required
old_desc_blocks = 5, new_desc_blocks = 17
The filesystem on /dev/sdf3 is now 35236183 blocks long.

You have new mail in /var/spool/mail/root
[root@bms-6acd ~]# df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/sdf3       133G  1.9G  125G   2% /
devtmpfs         63G     0   63G   0% /dev
tmpfs            63G     0   63G   0% /dev/shm
tmpfs            63G  9.0M   63G   1% /run
tmpfs            63G     0   63G   0% /sys/fs/cgroup
/dev/sdf1       477M  104M  344M  24% /boot
tmpfs            13G     0   13G   0% /run/user/0
```

Step 6 Run the following command to restore the configdriver partition:

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dd if=/root/configdriver.img of=/dev/sdf4

```
[root@bms-6acd ~]# dd if=/root/configdriver.img of=/dev/sdf4
131072+0 records in
131072+0 records out
67108864 bytes (67 MB) copied, 0.372614 s, 180 MB/s
[root@bms-6acd ~]#
```

```
/dev/sdf1: UUID="b9c472f9-6737-4200-910a-efa3af16629a" TYPE="ext4"
/dev/sdf2: UUID="b07ff4d0-8b0b-4c43-a40a-0b27290ea215" TYPE="swap"
/dev/sdf3: UUID="1e57f71e-6adc-4e98-9407-0f7d678d4525" TYPE="ext4"
/dev/sdf4: UUID="2018-09-27-19-13-01-00" LABEL="config-2" TYPE="iso9660"
[root@bms-6acd ~]#
```

The capacity expansion of the BMS root partition is complete.

----End

8.17 Common Linux Commands

lsblk

The lsblk command is used to list all available block devices and the dependencies between them, except the RAM disks. Block devices include hard disks, flash memory, and CD-ROM.

By default, the lsblk command lists all block devices in a tree structure. Start the terminal and run the following command:

```
lsblk
NAME    MAJ:MIN  RM  SIZE RO TYPE  MOUNTPOINT
sda     202:0    0   40G  0  disk
├─sda1 202:1    0    4G  0  part  [SWAP]
└─sda2 202:2    0   36G  0  part  /
sdb     202:16   0   10G  0  disk
```

The parameters are as follows:

- **NAME**: block device name
- **MAJ:MIN**: primary and secondary device numbers
- **RM**: whether the device is removable. **0** indicates no and **1** indicates yes.
- **SIZE**: device capacity
- **RO**: whether the device is read-only. **0** indicates no and **1** indicates yes.
- **TYPE**: block device type (disk or a disk partition)
- **MOUNTPOINT**: mount point of a device

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9 Virtualization

9.1 How Do I Access VMs on a BMS with KVM Deployed from the Internet?

Solution

You can install the port mapping software rinetd on a Linux BMS so that you can access VMs deployed on the BMS from the Internet. Take CentOS 7 as an example. Perform the following steps:

Step 1 Download the rinetd installation package from the following path and upload it to the BMS:

http://www.boutell.com/rinetd/http/rinetd.tar.gz

Step 2 Run the following commands to install rinetd:

tar zxvf rinetd.tar.gz

mkdir -p /usr/man/man8

cd rinetd/

make

make install

Step 3 Run the following command to add the port mapping rule to the configuration file:

vi /etc/rinetd.conf

The following is an example: Local IP address Local port VM internal IP address VM port

0.0.0.0 22222 192.168.124.81 22

Step 4 Run the following command to start the rinetd process:

/usr/sbin/rinetd

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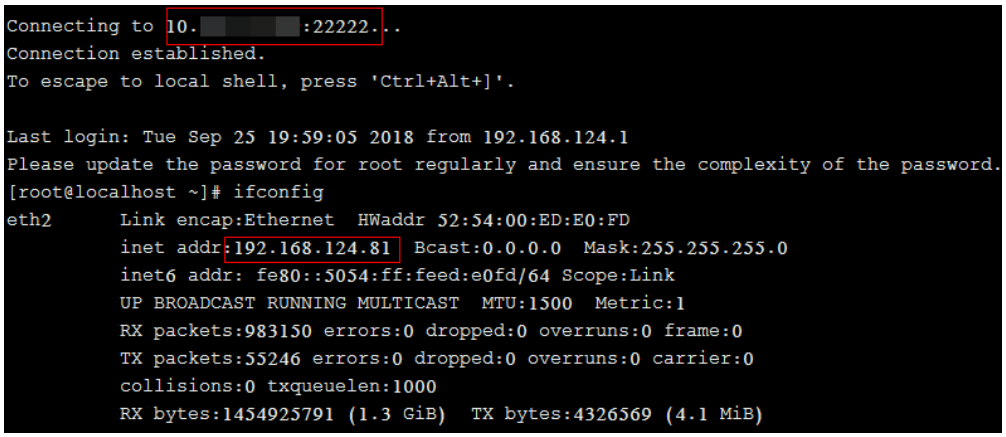
Step 5 Run the following command to connect to port 22222 corresponding to the BMS using SSH to access the VMs from the Internet:

ssh *BMS EIP*:**22222**



----End

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