Cloud Virtual Machine

Guide for Operation and Maintenance

Product Documentation
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Setup Windows CVM For Multi-user Remote Login

Allow CVMs without Internet access to access Internet
Note:
- After formatting, all the data in the data disk will be cleared. Before formatting, make sure there is no data in the data disk or important data has been backed up. To avoid service exceptions, ensure that the CVM has stopped external services before formatting.

Manual Formatting and Mounting Data Disk

Format and mount a data disk by following the steps below.

Note:
- When executing the following commands, remember to modify the data disk drive letter. The drive letter is \texttt{vdb} in this example.

Step 1: Format the data disk

Note:
When formatting partitions, developers can decide the file system format on their own, such as \texttt{ext3} and \texttt{ext4}. \texttt{ext4} is used in this example.

Format the data disk by performing the \texttt{mkfs} command:

\begin{verbatim}
  mkfs.ext4 /dev/vdb
\end{verbatim}

Step 2: Mount the data disk
1. Create a mount point - data directory:

```bash
mkdir /data
```

2. Mount new partitions:

```bash
mount /dev/vdb /data
```

3. Verify whether the data disk is mounted successfully:

```bash
df -h
```

The following message indicates that it is mounted successfully (i.e. the data disk is mounted on the Linux CVM):

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/vdb</td>
<td>50G</td>
<td>53M</td>
<td>47G</td>
<td>1%</td>
<td>/data</td>
</tr>
</tbody>
</table>

**Step 3: Enable auto mount upon launch**

Add the data disk mount information to `/etc/fstab` to enable auto mount upon launch.

To allow your CVM to be automatically mounted with data disk when it is restarted or launched, add the mount information to `/etc/fstab`. Otherwise, the data disk cannot be automatically mounted to the CVM when the CVM is restarted or launched.

1. Execute the following command to add partition information:

```bash
echo '/dev/vdb /data ext4 defaults 0 0' >> /etc/fstab
```

2. Execute the following command to view the partition information:

```bash
cat /etc/fstab
```

The following message indicates that the data disk mount information is added successfully.

```bash
/dev/vdb /data ext4 defaults 0 0
```

**Auto Formatting and Mounting Data Disk**
You can format and mount a data disk on Tencent Cloud Linux CVM by running the following Shell script:

```bash
#!/bin/bash
type=ext4
mount_dir=/data
mkfs.$type /dev/vdb
mkdir -p $mount_dir
echo "/dev/vdb $mount_dir $type defaults 0 0" >> /etc/fstab
mount -a
```
Data Disk Partition and Formatting of Windows CVMs

By default, the data disks purchased on the CVM purchase page are not automatically mounted under an offline state. Data disks that are not partitioned and formatted cannot be used. This tutorial will guide you to mount, partition and format data disks in a Windows system.

The path to the "Disk Management" interface may vary with the Windows version (Windows 2012, Windows 2008, Windows 2003, etc.), but the steps to partition and format the disks are basically the same.

This article provides the guide on how to mount, partition and format data disks on Windows 2012 and Windows 2008.

Note:

Once formatted, all the data in the disk will be cleared. Make sure that there is no data left in the disk or the important data has been backed up before formatting. To avoid any service exception, make sure that the CVM has stopped providing services before formatting.

1. Disk Partitioning and Formatting on Windows 2012

On Windows 2012, the path to Disk Management is "Start" - "Server Management" - "Tools" - "Computer Management" - "Disk Management".

"Disk 1" is an unpartitioned disk. Here, the process is illustrated by creating one partition for "Disk 1". Right click on Disk 1, then select "Online". Right click again, then select "Initialize Disk". Select "GPT" or "MBR" depending on the partitioning method, and click on the "OK" button.

Note: Make sure to select GPT as the partitioning method if the disk is larger than 2TB.

Right click on the unallocated space, and select "New Simple Volume". In the "New Simple Volume Wizard" pop-up window, click "Next". Enter the desired disk size for the partition, then click "Next". Enter the drive letter, then click
"Next". Select "File System", then "Format Partition", and click "Next". Upon completing the New Simple Volume Wizard, click "Finish".

2. Disk Partitioning and Formatting on Windows 2008

On Windows 2008, the path to "Disk Management", different from that on Windows 2012, is "Server Management" - "Storage" - "Disk Management".

"Disk 1" is an unallocated disk. Here, the process is illustrated by creating one partition for "Disk 1".

"Disk 1" is not online in the initial state. Right click "Disk 1", and then click "Online" in the pop-up menu.

Again, right click "Disk 1", and then click "Initialize Disk" in the pop-up menu.

Select the GPT initialization method, and click the "OK" button.

Note: Make sure to select GPT as the partitioning method if the disk is larger than 2TB.

Right click on the unallocated region behind "Disk 1", and select "New Simple Volume" in the shortcut menu that pops up.

As prompted by the Wizard, enter the size of the disk partition, then click "Next".

Select "File System", then "Format Partition", and click "Next".

Upon completing the New Simple Volume Wizard, click "Finish".

"Formatting..." is displayed.

At this point, the newly partitioned data disk can be seen on the computer screen.

Note: Do not convert a basic hard disk to a dynamic hard disk. We are not liable for any data loss arising out of this action.

3. Online Settings

Under a Windows operating system, online settings are often needed in Disk Management. To help you make better use of Elastic Cloud Block Storage, we recommend that you modify the operating system as follows:

Open the cmd line and run the following command
diskpart
san policy = onlineall

Once remounted to the Windows CVM, the Elastic Cloud Block Storage can be used directly without any user action as long as it contains a valid file system.
Read/write EXT Data Disks after Reinstalling a Linux CVM to Windows CVM

Last updated : 2020-02-25 11:44:46

Scenario

This document introduces Linux Reinstall the system After Windows, the operation method of reading the data disk data under the original Linux system on Cloud Virtual Machine. The Windows file system format is usually NTFS or FAT32, while the Linux file system format is usually the EXT series. When the operating system changes from Linux Reinstall to Windows, the operating system type has changed, but the data disk is still in the original format, and the system after Reinstall may not be able to Access data disk file system. Format conversion software is needed to read the original data.

Prerequisites

Download and install DiskInternals Linux Reader on the reinstalled Windows CVM.
How to obtain DiskInternals Linux Reader software:

http://www.diskinternals.com/download/Linux_Reader.exe

• It is known that Cloud Virtual Machine data disk mounted to Linux by Reinstall has two partitions: vdb1 and vdb2. as shown below:

Directions

Data disk mount
If the data disk is mounted, you can skip this step.

1. Log in to the Tencent Cloud CVM Console.
2. Among Left sidebar, select [HDD cloud disk] to enter the HDD cloud disk management page.
3. Select the instance row of the Reinstall system, and click **more**->**Mount** on the right.
4. In the pop-up window, select Windows Cloud Virtual Machine after Reinstall, and click OK.

**Viewing Data Disk Information**

1. Run the DiskInternals Linux Reader software to view the information of the data disk that has just been mounted. `/root/mnt` and `/root/mnt1` There are two partitions of vdb1 and vdb2 of Cloud Virtual Machine data disk in the former Linux of Reinstall. as shown below:

   To perform read and write operations on the data disk as you do on a Windows data disk, back up the files you need and then re-format the disk into a standard type supported by Windows operating system. For more information, please see Data Disk Partitioning and Formatting on Windows System.

2. Double-click to enter `/root/mnt` Within Directory, right-click the file you want to copy, select [Save], and save the file.
Read/write NTFS Data Disks after Reinstalling a Windows CVM to Linux CVM

Last updated : 2020-02-25 11:45:50

Scenario

Windows's file system usually uses the NTFS or FAT32 format, while Linux's file system usually uses the EXT series format. Although the type of Cloud Virtual Machine operating system has changed from Windows Reinstall to Linux, operating system, the data disk in Cloud Virtual Machine is still in the format used by the original system. Therefore, Cloud Virtual Machine after Reinstall system may not be able to Access data disk file system. This document guides you to read the data disk data under the original Windows system on the Linux Cloud Virtual Machine behind the Reinstall system.

Directions

Configure the Linux system to support NTFS

1. Linux Cloud Virtual Machine after logging in to Reinstall's system.
2. Execute the following command to install the ntfsprogs software so that Linux Cloud Virtual Machine supports the Access NTFS file system.

   ```bash
   yum install ntfsprogs
   ```

Mount the data disk under Windows Cloud Virtual Machine to Linux Cloud Virtual Machine

If the data disk under your Windows Cloud Virtual Machine has been mounted to Linux Cloud Virtual Machine, you can skip this operation.

1. Log in to the CVM Console.
2. In the Left sidebar, click [Cloud Block Storage], go to the HDD cloud disk management page.
3. Select the Windows data disk to be mounted, and click **more**->**Mount**.
4. In the pop-up "Mount to instance" window, select the Linux Cloud Virtual Machine you want to mount to, and click "OK".
5. Log in to the Linux Cloud Virtual Machine that has mounted the Windows data disk.
6. Execute the following command to view the data disk mounted from Windows Cloud Virtual Machine.

   ```
   parted -l
   ```

   A message similar to the one below is returned:

   ```
   Model: Virtio Block Device (virtblk)
   Disk /dev/vdb: 53.7GB
   Sector size (logical/physical): 512B/512B
   Partition Table: gpt
   Disk Flags:
   Number Start End Size File system Name Flags
   1 17.4kB 134MB 134MB Microsoft reserved partition msftres
   2 135MB 53.7GB 53.6GB ntfs Basic data partition
   ```

7. Execute the following command to mount the data disk.

   ```
   mount -t ntfs-3g Data disk path mount point
   ```

   For example, you need to set the path to `/dev/vdb1`. The data disk is mounted to the `/mnt`. Execute the following command

   ```
   mount -t ntfs-3g /dev/vdb1 /mnt
   ```

   Because the file system is recognizable at this time, the mounted data disk can be read and written directly by the Linux system.
Environment Configurations
Modifying etc/hosts Configuration of Linux Instance

Scenario

From March 1, 2018, the Linux public image provided by Tencent Cloud has the open-source tool Cloud-Init pre-installed, and all initialization operations on an instance will be done via Cloud-Init, making the internal operations of the instance more transparent. For more information, see Cloud-Init.

In each launch, Cloud-Init generates a new `/etc/hosts` file according to the `/etc/cloud/templates/hosts.${os_type}.tmpl` template and overwrites the original `/etc/hosts` file of an instance. Hence, after the user manually modifies the internal `/etc/hosts` configuration of the instance and restarts it, the `/etc/hosts` configuration goes back to the original default configuration.

Prerequisites

Tencent Cloud has fixed this problem for instances created after September 2018, and the `/etc/hosts` configuration will not be overwritten.

For instance created before September 2018, follow the steps below for modification.

Steps

**Solution 1**

1. Log into the Linux CVM.

2. Execute the following command to change the `- update_etc_hosts in the '/etc/cloud/cloud.cfg` configuration file to `- ['update-etc-hosts', 'once-per-instance']`.  

   ```bash
   sed -i "/update_etc_hostsc $/ - ['update-etc-hosts', 'once-per-instance']" /etc/cloud/cloud.cfg
   ```
3. Execute the following command to create a config_update_etc_hosts file under the /var/lib/cloud/instance/sem/ path.

   touch /var/lib/cloud/instance/sem/config_update_etc_hosts

Solution 2

This solution takes the CentOS 7.2 operating system as an example.

Obtaining hosts Template File Path

1. Log into the Linux CVM.
2. Execute the following command to view the system hosts template file.

   cat /etc/hosts

The hosts template file is as shown in the following figure:

```
# Your system has configured 'manage_etc_hosts' as True.
# As a result, if you wish for changes to this file to persist
# then you will need to either
# a.) make changes to the master file in /etc/cloud/templates/hosts.redhat.tmpl
# b.) change or remove the value of 'manage_etc_hosts' in
#     /etc/cloud/cloud.cfg or cloud-config from user-data
#
# The following lines are desirable for IPv4 capable hosts
127.0.0.1 VM_2_9_centos VM_2_9_centos
127.0.0.1 localhost.localdomain localhost
127.0.0.1 localhost4.localdomain4 localhost4

# The following lines are desirable for IPv6 capable hosts
::1 VM_2_9_centos VM_2_9_centos
::1 localhost.localdomain localhost
::1 localhost6.localdomain6 localhost6
```

Modifying the hosts Template File

Taking adding 127.0.0.1 test test as an example, you can modify the hosts template and /etc/hosts file as needed.

1. Execute the following command to modify the hosts template file.
vim /etc/cloud/templates/hosts.redhat.tmpl

2. Press i or Insert to switch to editing mode.
3. Add the following content to the end of the file.

    127.0.0.1 test test

4. Press Esc, enter :wq, save the file and return.

Modifying the /etc/hosts File

1. Execute the following command to modify the /etc/hosts file.

    vim /etc/hosts

2. Press i or Insert to switch to editing mode.
3. Add the following content to the end of the file.

    127.0.0.1 test test

4. Press Esc, enter :wq, save the file and return.
Make sure that you have followed the steps in Installing Software via YAST in SUSE Environment install the necessary software.

1. Configuration of nginx

1) Start nginx service

Start the nginx with the following command:

```
service nginx restart
```

2) Test whether nginx service is working properly

Test with the following command:

```
wget http://127.0.0.1
```

If the result is as shown below and displays "'index.html' saved" at the end, it means the nginx service is working properly.

```
--2013-02-20 17:07:26-- http://127.0.0.1/
Connecting to 127.0.0.1:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 151 [text/html]
Saving to: 'index.html'
100%[============================================================================>]
151 --.-K/s in 0s
2013-02-20 17:07:26 (37.9 MB/s) - 'index.html' saved [151/151]
```

3) In the browser, visit the Public IP of CentOS CVM to check if the nginx service is working properly.

The appearance of the following page indicates that nginx has been installed and configured successfully.

2. Configuration of PHP
1) Create a new configuration file php-fpm.conf with the following command:

```bash
vim /etc/php5/fpm/php-fpm.conf
```

Write the following:

```ini
[global]
    error_log = /var/log/php-fpm.log

[www]
    user = nobody
    group = nobody
    listen = 127.0.0.1:9000
    pm = dynamic
    pm.max_children = 5
    pm.start_servers = 2
    pm.min_spare_servers = 1
    pm.max_spare_servers = 3
```

3. Start services

Start all services with the following commands:

```bash
/etc/init.d/mysql start; /etc/init.d/php-fpm start; /etc/init.d/nginx start
```

Example:

```
VM 137.55_sles10_64:~ # /etc/init.d/mysql start; /etc/init.d/php-fpm start; /etc/init.d/nginx start
Starting MySQL done
Starting php-fpm done
Starting nginx Checking for service nginx running
done
```

4. Environment configuration validation

Create index.php under a web directory using the following command:

```bash
vim /usr/share/nginx/html/index.php
```

Write the following:
<?php
echo "<title>Test Page</title>";
echo "hello world";
?>

In the browser, visit the Public IP of SUSE CVM to check whether the environment configuration is successful. If the webpage shows "hello world", it means the configuration is successful.
A Linux system without an acpi management program will suffer failures of soft shutdown. Therefore, make sure that the acpi (power management for Linux) module has been installed on your CVM.

Checking method

Check whether the acpi has been installed using the following command:

```
ps -ef|grep -w "acpid"|grep -v "grep"
```

If there's no such process, it hasn't been installed. Then you need to follow the next step to install the module. If there's such process, the next step can be ignored.

Installation method

Use the following command to install the acpi module.

1) For Ubuntu/Debian system

```
sudo apt-get install acpid
```

2) For Redhat/CentOS system

```
yum install acpid
```

3) For SUSE system

```
in apcid
```

Note: The CoreOS system doesn't have such problem.
Reset Passwords of Activated Linux CVMs

Last updated : 2018-06-25 11:44:47

If you need to reset password for a batch of Linux CVMs without shutting them down, you can download the reset script (Click here to download) to batch reset password online.

Note: If you run the script on a machine of public network, the ip added to the hosts.txt file must be the Public IP of the host. If the script is run on the private network CVM of Tencent Cloud, you can fill in the Private IP of the host.

The using method of script is as follows.

Input the ip of CVM to be operate on, ssh port, account, old and new passwords into the hosts.txt file. Each line represents a host, for example:

```
10.0.0.1 22 root old_passwd new_passwd
10.0.0.2 22 root old_passwd new_passwd
```

Run the following code:

```
./batch-chpasswd.py
```

Example of returned results:

```
change password for root@10.0.0.1
spawn ssh root@10.0.0.1 -p 22
root's password:
Authentication successful.
[root@VM_18_18_centos ~]# echo root:root | chpasswd
[root@VM_18_18_centos ~]# exit
logout
change password for root@10.0.0.2
spawn ssh root@10.0.0.2 -p 22
root's password:
Authentication successful.
```
```
[root@VM_19_150_centos ~]# echo root:root | chpasswd
[root@VM_19_150_centos ~]# exit
logout
```
Upload Files
Upload Files via WinSCP

Last updated: 2018-04-28 10:46:54

WinSCP is an open source graphical SFTP client that uses SSH in Windows environment and supports SCP protocol. Its main function is to copy files between the local and remote computers safely. Instead of using FTP to upload code, you can use the server account and password to access the server directly via WinSCP, without any configuration on the server side. Download address: Official Download.

Start WinSCP after installation. The interface is as follows. Fill in the information as shown and log in.

How to fill in the fields:
- Protocol: either SFTP or SCP is OK
- Host Name: Public IP of CVM (Log into CVM Console to view the Public IP of CVM)
• Username: the system username for CVM (SUSE/CentOS/Debian: root, Windows: Administrator, Ubuntu: ubuntu)
• Password: the password corresponding to the username of CVM
• Port: 22 by default

Click on Log In after completing the information. After successful login, select a local file and drag it to the remote site on the right, and then you can upload the file to the Linux CVM.
Upload Files via FTP

You can use FTP channel to upload application from your own server to CVM.

1. Configure FTP service on CVM

1) Run the following commands as root to install Vsftp (take CentOS system as an example):

```bash
yum install vsftpd
```

2) Before starting the vsftpd service, you need to log into the CVM to modify configuration files to disable anonymous login.

Open the configuration file with the following command:

```bash
vim /etc/vsftpd/vsftpd.conf
```

Change

```
anonymous_enable=YES (on the 11th line in the configuration file)
```

To

```
anonymous_enable=NO
```

to disable anonymous login.

3) Read the effective configuration.

```bash
cat /etc/vsftpd/vsftpd.conf | grep ^[^#
```

The following results will be returned:

```
local_enable=YES
write_enable=YES
local_umask=022
anon_upload_enable=YES
anon_mkdir_write_enable=YES
anon_umask=022
dirmessage_enable=YES
xferlog_enable=YES
```
4) Start vsftpd service.

```
service vsftpd start
```

5) Set up an FTP user account.
Set up an FTP user account by running the following command:

```
useradd
```
For example, if the account is "ftpuser1", the directory is /home/ftpuser1, and login via ssh is not allowed:

```
useradd -m -d /home/ftpuser1 -s /sbin/nologin ftpuser1
```
And set a password for the account using the following command:

```
pwd
```
For example, setting the password for the above account as "ftpuser1":

```
pwd ftpuser1
```
After setting these up, you can log on to the FTP server using the account.

6) Modify the pam configuration of vsftpd, so that users can connect to the CVM via the account and password they set by themselves.

Use the following command to modify the pam:

```
vim /etc/pam.d/vsftpd
```
Modify to:

```
#PAM-1.0
auth required /lib64/security/pam_listfile.so item=user sense=deny file=/etc/ftpusers onerr=succeed
auth required /lib64/security/pam_unix.so shadow nullok
auth required /lib64/security/pam_shells.so
```
Confirm whether the modified file is correct using the following command:

```bash
cat /etc/pam.d/vsftpd
```

Returned results are:

```bash
auth required /lib64/security/pam_listfile.so item=user sense=deny file=/etc/ftpusers onerr=succeed
auth required /lib64/security/pam_unix.so shadow nullok
auth required /lib64/security/pam_shells.so
account required /lib64/security/pam_unix.so
session required /lib64/security/pam_unix.so
```

Restart the vsftpd service using the following command to make the modification effective:

```bash
service vsftpd restart
```

The results are:

```
Shutting down vsftpd: [ OK ]
Starting vsftpd for vsftpd: [ OK ]
```

2. Upload files to Linux CVM

1) Download and install open source software FileZilla

Please use FileZilla Ver. 3.5.1 or 3.5.2 (Using FileZilla Ver. 3.5.3 for FTP uploading will lead to problems).

Since FileZilla official site only provides the latest Ver.3.5.3 for download, you are recommended to search for download links for Ver.3.5.1 or 3.5.2 on your own. Recommended download link for Ver.3.5.1: [http://www.oldapps.com/filezilla.php?old_filezilla=6350](http://www.oldapps.com/filezilla.php?old_filezilla=6350)

2) Connect to FTP

Run FileZilla, fill in setting form, and then click "Quick Links".

Description of the settings:

- Host: Public network IP of CVM (Log in to CVM Console page to view the public network IP of CVM).
- User Name: ID of the FTP user account set in the previous step (here “ftpuser1” is used as example).
- Password: Password of the FTP user account set in the previous step (here “ftpuser1” is used as example).
- Port: FTP listener port, default is “21”.

3) Upload files to Linux CCVM

When uploading a file, select the local file with the mouse and drag it to the remote site to upload it to Linux CVM.

Note: CVM FTP path does not support automatic unzipping or deletion of uploaded tar zip files.
Upload Files via SCP

Last updated : 2017-11-13 09:56:10

Linux machine can upload files to Linux CVM with the following commands:

```
scp local file address CVM login name@CVM public network IP/domain name CVM file location
```

For example, upload local file "/home/lnmp0.4.tar.gz" to the directory for the CentOS CVM with IP of 129.20.0.2:

```
scp /home/lnmp0.4.tar.gz root@129.20.0.2 /home/lnmp0.4.tar.gz
```

Press "Enter" and type in login password to complete the upload.
Upload Files to Windows CVMs

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1) Open the "Remote Desktop Connection" dialog box, click "Options".

2) In the "Local Resources" tab, click "Detail" button.

3) In the drive module, select the local hard disk where the file you want to upload to Windows CVM is located.

4) After the configuration, log in to Windows CVM, select "Start" - "Computer" to view the local hard disk that is mounted to the CVM.

5) Copy the code files in the local hard disk to the Windows CVM to complete the file upload.
Installing Software
Tencent Cloud Software Source
Acceleration Package Download and Update

Last updated: 2018-08-13 11:36:50

To solve the problem that the access to the official source is too slow during software dependencies installation, Tencent Cloud has built cache service for some software. You can accelerate the installation of dependency packages using Tencent Cloud software origin server, and CVM without public network egress can use a software origin server via a private network to facilitate construction of service architecture. Tencent Cloud software origin server supports public network access and private network access.

Public network domain name

http://mirrors.cloud.tencent.com/

Private network domain name

http://mirrors.tencentyun.com/

The following are example illustrations based on private network domain names. If you access these software sources via a public network, replace the private network domain name with a public network domain name.

Accelerating pip Using Tencent Cloud Image Source

Temporary Use

Before use, make sure you have installed python.

Execute the following command to use Tencent Cloud pypi software source:

```
pip install -i http://mirrors.tencentyun.com/pypi/simple <some-package>
```

Note: simple in the path must be added.
Set as Default

Modify the file `~/.pip/pip.conf` (create one if it does not exist). Update `index-url` to Tencent Cloud path, for example:

```
[global]
index-url = http://mirrors.tencentyun.com/pypi/simple
trusted-host = mirrors.tencentyun.com
```

Synchronization Period

Tencent Cloud makes synchronization from pypi.python.org official website every day.

Accelerating Maven Using Tencent Cloud Image Source

Before use, make sure you have installed JDK and Maven

Setting Method

Open Maven setting file `settings.xml` and configure the following repository mirror:

```
<mirror>
  <id>nexus-tencentyun</id>
  <mirrorOf>*</mirrorOf>
  <name>Nexus tencentyun</name>
  <url>http://mirrors.tencentyun.com/nexus/repository/maven-public/</url>
</mirror>
```

Accelerating npm Using Tencent Cloud Image Source

Before use, make sure you have installed Node.js and npm.

Setting Method

Execute the following command:

```
npm config set registry http://mirrors.tencentyun.com/npm/
```
Accelerating docker Using Tencent Cloud Image Source

**Tencent Cloud Container Service (CCS) Cluster**

When creating a node, the CVM in CCS cluster automatically installs docker service and configure Tencent Cloud private network image, without the need of manual configuration.

**Tencent Cloud CVM**

Make sure you have installed docker on CVM. Only Docker 1.3.2 and above support Docker Hub Mirror mechanism. If you have not installed Docker or the installed version is too low, please install it or upgrade your version.

- For such systems as Ubuntu 14.04, Debian, CentOS 6, Fedora, OpenSUSE. The configuration may be slightly different in other versions:
  
  Modify Docker configuration file `/etc/default/docker`

  ```
  DOCKER_OPTS="--registry-mirror=https://mirror.ccs.tencentyun.com"
  ```

- For Centos 7:
  
  Modify Docker configuration file `/etc/sysconfig/docker`

  ```
  OPTIONS="--registry-mirror=https://mirror.ccs.tencentyun.com"
  ```

- For Windows:
  
  When using Boot2Docker, enter Boot2Docker Start Shell and execute:

  ```
  sudo su echo "EXTRA_ARGS="--registry-mirror=https://mirror.ccs.tencentyun.com"" >> /var/lib/boot2docker/profile
  ```

  Restart Boot2Docker

Accelerating MariaDB Using Tencent Cloud Image

1. Configure MariaDB yum repo file

   Create `MariaDB.repo` file under `/etc/yum.repos.d/` (CentOS 7 is taken as an example and the actual address of operating system yum repos prevails):
vi /etc/yum.repos.d/MariaDB.repo

Write the following:

```
# MariaDB 10.2 CentOS7-amd64
[mariadb]
name = MariaDB
baseurl = http://mirrors.tencentyun.com/mariadb/yum/10.2/centos7-amd64/
gpgkey = http://mirrors.tencentyun.com/mariadb/yum/RPM-GPG-KEY-MariaDB
gpgcheck=1
```

2. Execute command `yum clean all`

3. Install MariaDB with `yum`
   Execute `yum install MariaDB-client MariaDB-server`

Accelerating MongoDB Using Tencent Cloud Image

**CentOS and Redhat Systems**

In the example, MongoDB V3.4 is installed. If you need to install another version, change the version number in the mirror path.

1. Create file `/etc/yum.repos.d/mongodb.repo` and write the following content:

```
[mongodb-org-3.4]
name=MongoDB Repository
baseurl=http://mirrors.tencentyun.com/mongodb/yum/redhat/$releasever/3.4/
gpgcheck=0
enabled=1
```

2. Install `mongodb`
   Execute `yum install -y mongodb-org`

**Debian System**

In the example, MongoDB V3.4 is installed. If you need to install another version, change the version number in the mirror path.
1. Import MongoDB GPG public key

```
sudo apt-key adv --keyserver hkp://keyserver.ubuntu.com:80 --recv 0C49F3730359A14518585931BC711F9BA15703C6
```

2. Configure mirror path

**#Debian7**

```
echo "deb http://mirrors.tencentyun.com/mongodb/apt/debian wheezy/mongodb-org/3.4 main" | sudo tee /etc/apt/sources.list.d/mongodb-org-3.4.list
```

**#Debian8**

```
echo "deb http://mirrors.tencentyun.com/mongodb/apt/debian jessie/mongodb-org/3.4 main" | sudo tee /etc/apt/sources.list.d/mongodb-org-3.4.list
```

3. Install mongodb

```
sudo apt-get install -y mongodb-org
```

**Ubuntu System**

In the example, MongoDB V3.4 is installed. If you need to install another version, change the version number in the mirror path.

1. Import MongoDB GPG public key

```
sudo apt-key adv --keyserver hkp://keyserver.ubuntu.com:80 --recv 0C49F3730359A14518585931BC711F9BA15703C6
```

2. Configure mirror path

**#Ubuntu 12.04**

```
echo "deb [ arch=amd64 ] http://mirrors.tencentyun.com/mongodb/apt/ubuntu precise/mongodb-org/3.4 multiverse" | sudo tee /etc/apt/sources.list.d/mongodb-org-3.4.list
```

**#Ubuntu 14.04**

```
echo "deb [ arch=amd64 ] http://mirrors.tencentyun.com/mongodb/apt/ubuntu trusty/mongodb-org/3.4 multiverse" | sudo tee /etc/apt/sources.list.d/mongodb-org-3.4.list
```

**#Ubuntu 16.04**

```
echo "deb [ arch=amd64,arm64 ] http://mirrors.tencentyun.com/mongodb/apt/ubuntu xenial/mongodb-org/3.4 multiverse" | sudo tee /etc/apt/sources.list.d/mongodb-org-3.4.list
```
3. Install mongodb

```bash
sudo apt-get install -y mongodb-org
```

## Accelerating Rubygems Using Tencent Cloud Image Source

Make sure that you have installed Ruby locally

### Modifying Configuration

Execute the following command to modify RubyGems source address.

```bash
gem source -r https://rubygems.org/
gem source -a http://mirrors.tencentyun.com/rubygems/
```

### Synchronization Period

Tencent Cloud makes synchronization from [https://rubygems.org/](https://rubygems.org/) official website every day.
Install Software via Apt-get under Ubuntu Environment

Last updated: 2020-02-25 12:12:27

Scenario

In order to improve the efficiency of software installation on Cloud Virtual Machine and reduce the cost of downloading and installing software, Tencent Cloud provides a source of Apt-get download. In Ubuntu environment, users can quickly install software through Apt-get. For the Apt-get download source, you do not need to add a software source, you can install the software package directly.

Prerequisites

Cloud Virtual Machine, who has logged in to the operating system Ubuntu.

Directions

The following action takes installing Nginx as an example.

View installable software

Execute the following command to view the software that can be installed.

```
sudo apt-cache search all
```

Installing software

4. Run the following command to install Nginx.

```
sudo apt-get install nginx
```

After confirming that the software information is correct, type `Y` to agree to the installation and wait until the software installation is complete as shown below:
View installed software information

According to the actual requirements, execute different commands to view the installed software information.

- Execute the following command to view the Directory where the package is located and all the files in the package.

```
sudo dpkg -L Software name
```

- Execute the following command to view the version information of the package.

```
sudo dpkg -l Software name
```

View installed Nginx information, as shown below:

```
<table>
<thead>
<tr>
<th>Name</th>
<th>Version</th>
<th>Architecture</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>nginx</td>
<td>1.10.3</td>
<td>Ubuntu16.04.2</td>
<td>small, powerful, scalable web/proxy server</td>
</tr>
</tbody>
</table>
```
Install Software via YUM under CentOS Environment

Last updated : 2020-02-25 12:04:35

Scenario

In order to improve the efficiency of software installation on Cloud Virtual Machine and reduce the cost of downloading and installing software, Tencent Cloud provides a source of YUM download. In the CentOS environment, users can use the **yum** Command to quickly install the software. For YUM download sources, users do not need to add software sources and can install software packages directly.

Directions

Installing software

1. Log in to Cloud Virtual Machine with your root account.
2. Execute the following command to install the software.

```
yum install Software name
```

During the process of installing the software, the system will automatically search for the relevant software packages and dependencies, and prompt the user in the interface to confirm whether the searched software packages are appropriate.

For example, you execute `yum install PHP` Command, after installing PHP, the interface is shown as follows:
4. After confirming that the software package is correct, enter **y**, billed by **Enter** To start installing the software

Interface hint Complete The **installation** is complete. as shown below:

![Installation Complete]

**View information about installed software**

After the software installation is completed, you can execute different commands and view the information according to the actual requirements.

- Execute the following **command** to view the **specific installation** of the **package** Directory.

  ```bash
  rpm -ql Software name
  ```

  For example, you execute **rpm -ql php** Command, check the specific installation of PHP Directory. as shown below:
Execute the following command to view the version information of the package.

```
rpm -q
```

For example, you execute `rpm -q php` Command to view the version information of PHP, as shown below:

```
[root@VM_5_10_centos ~]# rpm -q php
php-5.4.16-46.el7.x86_64
[root@VM_5_10_centos ~]#
```
Install Software via zypper under SUSE Environment

Last updated: 2019-09-26 19:27:02

Make sure that you have followed the steps in Installing Software via YAST in SUSE Environment install the necessary software.

1. Configuration of nginx

1) Start nginx service

Start the nginx with the following command:

```
service nginx restart
```

2) Test whether nginx service is working properly

Test with the following command:

```
wget http://127.0.0.1
```

If the result is as shown below and displays "'index.html' saved" at the end, it means the nginx service is working properly.

```
--2013-02-20 17:07:26--  http://127.0.0.1/
Connecting to 127.0.0.1:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 151 [text/html]
Saving to: 'index.html'
100%[================================================================]===>
151 --.-K/s in 0s
2013-02-20 17:07:26 (37.9 MB/s) - 'index.html' saved [151/151]
```

3) In the browser, visit the Public IP of CentOS CVM to check if the nginx service is working properly.

The appearance of the following page indicates that nginx has been installed and configured successfully.

2. Configuration of PHP
1) Create a new configuration file php-fpm.conf with the following command:

```
vim /etc/php5/fpm/php-fpm.conf
```

Write the following:

```
[global]
error_log = /var/log/php-fpm.log

[www]
user = nobody
group = nobody
listen = 127.0.0.1:9000
pm = dynamic
pm.max_children = 5
pm.start_servers = 2
pm.min_spare_servers = 1
pm.max_spare_servers = 3
```

3. Start services

Start all services with the following commands:

```
/etc/init.d/mysql start; /etc/init.d/php-fpm start; /etc/init.d/nginx start
```

Example:

```
VM 137.55.sles10_64:~ # /etc/init.d/mysql start; /etc/init.d/php-fpm start; /etc/init.d/nginx start
Starting MySQL
Starting php-fpm
Starting nginx Checking for service nginx
done
done
running
done
```

4. Environment configuration validation

Create index.php under a web directory using the following command:

```
vim /usr/share/nginx/html/index.php
```

Write the following:
In the browser, visit the Public IP of SUSE CVM to check whether the environment configuration is successful. If the webpage shows "hello world", it means the configuration is successful.
User Data
Commands for First Launching

Last updated: 2019-08-07 12:07:10

When launching a CVM instance for the first time, you can pass user data to the CVM by passing a text (with no format restriction) and execute the text. This document uses Linux CVM as an example to describe how to output "Hello Tencent Cloud" by passing a Shell script when launching the CVM for the first time. The log file (/var/log/cloud-init-output.log) output by Cloud-init catches the output of the console.

Notes

- A command can be executed by passing a text only on the first time of launching a CVM.
- The passed text must be encoded with Base64. **Please encode in Linux environment to avoid format incompatibility.
- The text, which is input as the user data, is executed using the root permission. Therefore, sudo command is not required in the script. Note: All the files you created belong to root. If you need to grant non-root users with the access permission, modify the corresponding permission in the script.
- Adding these tasks to the startup of the CVM will increase its startup time. Wait a few minutes until the tasks complete, and then test whether they are executed successfully.
- In this example, Shell script must start with 
  ```bash
  #!/bin/bash
  echo "Hello Tencent Cloud."
  ```

Step 1: Write Shell script

Note:
Shell script must start with 
  ```bash
  #!/bin/bash
  echo "Hello Tencent Cloud."
  ```
  and the path directing to the interpreter of the script to be read. For more information on Shell script, please see BASH Programming of the Linux Documentation Project (tldp.org).
Step 2: Encode the script file with Base64

**Note:**
Please encode in Linux environment to avoid format incompatibility.

Suppose that the script file you created in step 1 is `script_text`. You can encode the file using Base64 command in Linux environment, as shown below:

```bash
# Encode the file with Base64
base64 script_text

# The encoded result:
IyEvYmluL2Jhc2g2gKCMcVMjaG8gIldlbGNvbWUgVG8gVGVuY2VudCBDbG91ZC4iCg==
```

```bash
# Decode the returned result with Base64 and verify whether it is the command to be executed.
echo "IyEvYmluL2Jhc2gKZWNobyAiSGVsbG8gVGVuY2VudCBDbG91ZC4iCg==" | base64 -d
```

Step 3: Pass the text

We provide multiple methods to launch an instance and here we introduce two of them. Please choose a method as needed:

**Passing on the official website or the console**

When you create a CVM on the official website or the console, select **Advanced Configuration** in 4. **Set Security Group and CVM** step. Enter the encoded result
(IyEvYmluL2Jhc2gKCMcVMjaG8gIldlbGNvbWUgVG8gVGVuY2VudCBDbG91ZC4iCg== in this example) of step 2 in user defined data item. Finish the creation and launch the CVM.

Tencent Cloud CVM executes the script using the open-source software cloud-init. For more
Passing via API

When creating a CVM via API, you can pass the text by assigning the value of the encoded result of step 2 to UserData parameter of RunInstances API. The following is an example of the parameter of CVM creation request with UserData.

```plaintext
https://cvm.tencentcloudapi.com/?Action=RunInstances
&Version=2017-03-12
&Placement.Zone=ap-guangzhou-2
&ImageId=img-pmqg1cw7
&UserData=IyEvYmluL2Jhc2gKCmVjaG8gIldlbGNvbWUgVG8gVGVuY2VudCBDbG91ZC4iCg==
&<Common request parameters>
```
Commands for First Launching

Scenario

When you create Cloud Virtual Machine, you can specify **Custom data** to configure the instance. When Cloud Virtual Machine **Launch for the first time**, the custom data is passed to Cloud Virtual Machine as text and the text is executed. If you buy more than one Cloud Virtual Machine at a time, the custom data will run the text when all Cloud Virtual Machine first Launch.

This paper takes Windows Cloud Virtual Machine's first Launch as an example by passing a script in PowerShell format.

Considerations

- **Windows operating systems** that support custom data include:
  - Windows Server 2012 R2 data center 64-bit English version
  - Windows Server 2012 R2 DataCenter 64-bit Chinese
- Only for the first time, Launch and Cloud Virtual Machine, execute the order by passing the text.
- Before Base64 encoding, custom data content cannot exceed 16KB.
- Custom data is passed through Base64 encoding. If you copy a non-base64 script file directly, please uncheck [enter as base64 format text].
- In Launch, executing job specified in the custom data will increase the time required for Launch's server. It is recommended that you wait a few minutes and test whether job has been successfully executed after job has finished.
- In this example, use the PowerShell tag to specify the Windows PowerShell script, for example `<Powershell>` Tags.

Directions

Prepare text

Please prepare the text according to your actual needs:

PowerShell script

Using the PowerShell tag, prepare a PowerShell script file.

For example, you need to create a content called "Hello Tencent Cloud." in Cloud Virtual Machine's C: disk, you can use the PowerShell tag to prepare the following:

```
C:\powershell
"Hello Tencent Cloud." | Out-File C:\tencentcloud.txt
C:\powershell
```
**Base64 encoding script**

1. Execute the following command to create a PowerShell script file named "script_text.ps1".

```bash
vi script_text.ps1
```

2. By `I` Switch to edit mode, refer to the following, and write and save the "script_text.ps1" script file.

```bash
C:\powershell
"Hello Tencent Cloud." | Out-File C:\tencentcloud.txt
C:\powershell
```

3. Execute the following command to Base64 encode the "script_text.ps1" script file.

```bash
base64 script_text.ps1
```

The following information is returned:

```
PHBvd2Vyc2hlbGw+CiJIZWxsbyBUZW5jZW50IEJsb3VkLiIgfCBPdXQtRmlsZSBGb3VuY3J5cHRpb24g
L3Bvd2Vyc2hlbGw+==
```

**Transfer text**

We provide a variety of Launch examples, mainly divided into the following two cases. Please choose according to your actual needs:

- Pass through the official website or console
- Pass through API

**Passing on the official website or the console**

1. Refer to Create instances Purchase an instance and go to "4." Click Advanced Settings in set Security groups and hosts.
2. In Advanced Settings, enter the prepared text content in the text box of Custom data, depending on your actual needs.

- PowerShell scripts: entering directly PowerShell script.
- Base64 encoding script: check [enter as base64 text] before entering Base64 encoding script.
3. Operate step by step according to the interface information to complete the creation of Cloud Virtual Machine.

**Passing via API**

When you create Cloud Virtual Machine through API, you can set the Base64 encoding script. The encoding result returned in is assigned to the UserData parameter of the RunInstances interface to pass the text.

For example, create a request parameter of Cloud Virtual Machine with UserData parameter. The example is as follows:

```plaintext
https://cvm.tencentcloudapi.com/?Action=RunInstances
&Version=2017-03-12
&Placement.Zone=ap-guangzhou-2
&ImageId=img-pmqg1cw7
&UserData=PHBvd2Vyc2hlbGw+CiJIZWxsbyBUZW5jZW50IENsb3VkLiIgfCBPdXQtRmlsZSAtcmVjdml0aWRlbnRhbGljaABpcy9wYXluY29tbWluZz0=
&<common request parameters>
```

**Verify custom data configuration**

1. Log in to the CVM.
2. In the operating system interface, open the C:\ disk to see if it exists. `tencentcloud.txt` Text file.
   
   If it exists `tencentcloud.txt` Text file, the configuration is successful.
System-related

Activate Windows License

Last updated: 2020-02-25 12:15:00

Tencent Cloud CVM uses KMS to authorize Windows servers.

- This document is only for the Windows Server public Image provided by Tencent Cloud, Custom image or external import Image can not use the activation method of this article.
- Windows Server 2008 and Windows Server 2012 need to be authorized in this way the KMS address (kms.tencentyun.com:1668) configured by default in the public Image of, Windows Server 2016 is correct and does not need to be modified.

Instructions before activation

SPP Notification Service on Windows is used to perform activation-related services and its normal operation needs to be ensured, as shown below.

Some optimization software may disable the change to execute permissions of service-related executables. For example, the change to the execute permission of sppsvc.exe process can cause abnormal operation of service:

Before you attempt to activate Windows, make sure the service and other basic functions on Windows are in a normal condition.

Automatic activation

Tencent Cloud encapsulates a script for the activation of Windows servers, simplifying the steps of manual activation.

1. Log in to the Windows CVM.
3. Run the script to complete the automatic activation.

Run the activation manually.
Considerations

On some systems, an error occurs when manually activating if there is a problem with the system clock. At this point, you need to synchronize the system clock first. The steps to synchronize the clock are as follows:

If the system clock on Windows Cloud Virtual Machine is normal, please proceed directly to Activation step.

1. Log in to the Windows CVM.
2. In the operating system interface, click start > run, and enter `cmd.exe` to open the console window.
3. Synchronize the system clock by executing the following commands in the console window.

   ```
   w32tm /config /syncfromflags:manual /manualpeerlist:“ntpupdate.tencentyun.com”
w32tm / resync
   ```

Activation step

1. Log in to the Windows CVM.
2. In the operating system interface, click start > run, and enter `cmd.exe` to open the console window.
3. The manual activation can be completed by executing the following commands in the console window.

- The commands executed by the Windows Server 2008 and Windows Server 2012 servers are as follows:

  ```
  cscript /nologo %windir%\system32\slmgr.vbs -skms kms.tencentyun.com:1688
cscript /nologo %windir%\system32\slmgr.vbs -ato
  ```

- The Windows Server 2016 server executes the following commands in sequence:

  ```
  cscript /nologo %windir%\system32\slmgr.vbs -skms kms.tencentyun.com:1688
cscript /nologo %windir%\system32\slmgr.vbs -ato
  ```
System Updates
Last updated: 2020-02-25 12:13:59

Scenario
This document uses the Windows Server 2012 operating system as an example to guide you in updating Windows patches.

Directions
Obtain updates via the public network.
You can install the patch through the system's Windows Update service program. The specific implementation steps are as follows:

1. Log in to the Windows CVM.

3. Click [check for updates] and wait for the check to complete.
4. When the check is complete, click in "Windows updates" [N important updates available] or [N optional updates available].
5. In the pop-up "Select installed updates" window, select the update you want to install, and click install.
   If you are prompted to restart your system after the update is completed, please restart the CVM.

When you complete the update and restart the CVM, you need to log in and observe the CVM through VNC. If the system appears "in the process of updating, please do not power off" or "configuration is not complete" and other prompts, do not perform a hard shutdown operation. Hard shutdown may damage your Cloud Virtual Machine.

Obtain updates via the private network.
If Cloud Virtual Machine cannot connect to the public network, you can install the update by using Tencent Cloud private network patch server. Tencent Cloud's Windows patch server contains most of the commonly used patch updates on Windows, but does not include hardware driver packages and some less commonly used server update packages. Some of the less used services may not be able to search for updated patches on Tencent Cloud's private network patch server.
The patch server in Tencent Cloud private network can be used as follows:

1. Log in to the Windows CVM.
2. Through the IE browser Access and download Tencent Cloud private network setup tool (wusin.bat).
   
   The download address for wusin.bat is: [http://mirrors.tencentyun.com/install/windows/wusin.bat](http://mirrors.tencentyun.com/install/windows/wusin.bat)

3. Open wusin.bat using the administrator command line tool (command).

   If you execute the wusin.bat tool directly through IE, the console window will automatically close and you will not be able to observe the output.

If you no longer need to use Tencent Cloud private network Windows patch server, you can also download the wusout.bat cleanup tool to clean up. The methods are as follows:

1. Log in to the Windows CVM.
2. Through the IE browser Access and download Tencent Cloud private network cleaning tool (wusout.bat).
   
   Http://mirrors.tencentyun.com/install/windows/wusout.bat

3. Open wusout.bat using the administrator command line tool (command).

   If you execute the wusout.bat tool directly through IE, the console window will automatically close and you will not be able to observe the output.
1. Analysis on the Shutdown of Virtual Clients

The following is the shutdown process of Windows virtual machine on Tencent Cloud.

1) Libvirt on the parent host sends shutdown command to qemu component via qmp protocol;
2) Qemu component transfers shutdown command to child host by injecting acpi interruption (For details, see technical documents on vmcs);
3) When receiving the shutdown signal, Windows tells applications and service processes to exit;
4) Close the core service process;
5) Turn off the power.

The shutdown process on Windows is basically the same as shown above. The sequence in which the applications and services are closed in step 3-4 may vary with the settings of system.

As a closed-source system, Windows provides some APIs to allow the programs with kernel mode and user mode to intervene in the shutdown process. And some services of Windows will also affect the shutdown process during operation, making the shutdown impossible. In some cases, Windows shutdown process can be very time-consuming to prevent the computer from being shut down.

In virtual scenarios, besides informing the Windows itself to shut down by sending a message, another means, which is similar to powering off a physical machine, is provided to stop a virtual client. This means is called "hard shutdown". Correspondingly, the shutdown action initiated by a system signal is called "soft shutdown".

Hard shutdown has some impact on the Windows itself and the user experience, mainly in the following two ways:

1) A hard shutdown interrupts some services and applications, which as a result may operate improperly, such as unsaved documents, and unfinished Windows Update processes;
2) As the NTFS system (or the earlier FAT32 system) of Windows writes some key data during the shutdown process, a hard shutdown may result in the failure to write such key data to the disk, which would lead Windows to determine that the NTFS file system is damaged.

For these reasons, it's recommended Tencent Cloud users take soft shutdown as the preferred way to shut down Windows.
2. Several Scenarios of Shutdown Failure

However, as mentioned above, there may be some issues within the Windows system that interfere with the shutdown process and result in shutdown failure. The scenarios include but not limited to:

1) A Windows Update process may extend the shutdown time. For some patch operations, the Windows system may take some actions during the shutdown process, by which time messages like "Please do not power off or unplug your machine" will display.

2) If "Shutdown Event Tracker" mechanism is enabled on the Windows system, when the system is shut down due to any error in the system service and driver, the system will provide user with a prompt box based on the configuration or fill in the error description to wait for the user to complete these operations. Windows will not turn off the power until the user has completed these operations.

3) Windows can be set to not allow shutdown while the user is not logged in to the system. In this case, the soft-shutdown command sent from the virtual host will be discarded by Windows so that the shutdown cannot be achieved.

4) Before the shutdown, Windows will broadcast a message to every service and application. If the applications responding to this message do not send a response that allows the shutdown, Windows will not initiate the shutdown. In this scenario, some settings can be made on Windows to ignore this process.

5) In the power management-related operation "What will Windows do when you press the power button ", if Windows is set to ignore it or do nothing, Windows will ignore the shutdown event of the virtualized parent host.

6) Based on the settings of power management, Windows will go into Sleep and not handle shutdown event.

7) In case of initial purchase of Windows, the initialization process is slightly longer due to the use of sysprep for distributing images. Windows will ignore the shutdown event until the initialization has been finished.

8) If the Windows system itself is damaged due to some malicious software installed within it or infection with Trojan virus or other viruses, Windows can be prevented from shutdown.

Tencent Cloud has optimized most of the above scenarios when publishing Windows public images so that the soft-shutdown can be completed successfully. These optimization measures are integrated into the script of Windows Power Management to be used for making adjustments to Windows features such as power management, turn-off of "Shutdown Event Tracker" and shutdown while user is not logged in to the system.
But these optimization measures cannot solve the scenarios where Windows is infected with viruses and Trojans or the system is damaged; In addition, if these relevant settings in the Windows virtual machine of user are adjusted again, there is no guarantee that the soft-shutdown can be completed successfully. In some cases, forced shutdown would pose a risk. For example, in the process of Windows Update, it is necessary to wait for the update to complete. During the soft-shutdown process, user needs to check the scenarios of shutdown failure by opening VNC, so as to conduct appropriate processing as required. Please perform hard-shutdown only if it is very necessary to do so.
High-performance power management options need to be set on Windows Server to enable soft-shutdown of virtual machine. Otherwise, the virtual machine only can be shut down by console in a hard-shutdown manner. Take Windows 2012 as an example, the power management is set as follows:

NOTE: You do not need to restart the computer to change power management.

1) Download power change and setup tools of Tencent Cloud to execute in the console (private network address: http://mirrors.tencentyun.com/install/windows/power-set-win.bat, save to C:\Later, then execute it in the console).

After execution, use powercfg -L to view the current power management scheme.

2) In "Control Panel" - "System and Security" - "Power Options", change the idle time limit and turn-off time of display and hard drive.
What is Windows Recovery?

**Windows Recovery** is a state in which users can repair, back up, or restore the system. If Windows detects certain system problems with its automatic repair function and believes that the system will be damaged if it continues to work, it will stop itself from starting up and enter the system recovery mode.

System Recovery Options include several tools, such as Startup Repair, System Restore, and Windows Memory Diagnostic. You can use those tools to repair problems, back up data, and restore the system.

If users fail to log in to a CVM remotely, and see the following figure when logging in to the CVM via the console, it means that the Windows CVM has entered the recovery mode.

![System Recovery Options](image)

Reasons for entering recovery mode

Common reasons for entering recovery mode:

- **The power was cut off while Windows was running or shutting down**. This includes shutting down the CVM in the console while Windows was running or shutting down. Windows entered the recovery mode because of possible loss of important data caused by improper shutdown.
- **The power was cut off when Windows was updating.** Windows entered the recovery mode because of possible loss of important data during the interrupted update.

- **The system was damaged by Trojans or viruses.**

- **Bugs in Windows core services.** Windows detected a risk itself and entered Recovery mode.

- **The system lost critical data or was damaged.** Windows entered the recovery mode because users accidentally damaged system files.

**Precautions**

It is recommended to take the following precautions:

- When shutting down the CVM, go to the console to monitor the shutdown process. The soft shutdown used by Tencent Cloud has a timeout mechanism. After soft shutdown is executed, if the shutdown process has not been completed after the preconfigured period, the system will return failure. If the shutdown process is slow or Windows updates start, do not force the shutdown; instead, just wait for the shutdown to complete. Please refer to Several Scenarios of Shutdown Failure as needed.

- Check whether there are abnormal programs or processes in the system, such as Trojans or viruses.

- Check whether the system management and anti-virus software is running normally.

- Install Windows updates in time, especially important updates and security updates.

- Check the system event logs regularly to see if there is a bug in core services.

**Solutions**

If Windows enters the recovery mode, you can continue the startup or allows Windows to automatically repair itself. Windows can automatically repair minor problems. Please follow the steps below:

1. Log in to the CVM via the CVM Console.
2. On the recovery mode interface, click **Next**.

3. When the system recovery options show up, click **Next** to use the default solution.
4. Click **Restart**, and quickly press **F8**.

5. Choose "Start Windows Normally".
6. If the startup fails, reinstall the system via the Console. See Use console to reinstall system for more details.
Update the Virtio ENI driver

Scenario

Tencent Cloud's Windows Server 2008 R2 Enterprise SP1 and Windows Server 2012 R2 use Virtio ENI drivers to optimize the network performance of virtualization hardware. Tencent Cloud will continue to improve ENIs for performance improvement and troubleshooting. This document describes how to upgrade the Virtio ENI driver and check the driver version.

Prerequisites

You have logged in to a Tencent Cloud CVM.

Directions

Checking system version information

You can view the system version information in the following steps:

1. Log in to the CVM, right-click **Computer**, select **Properties** to open the System window.
2. In the **View basic information about your computer** section, you can see the system version information as shown below:

Updating the Virtio ENI driver

The CVM will be disconnected from the network briefly during the update. Please make sure that this will not affect your service before updating. The CVM needs to be restarted after the update.

1. Use the browser of the CVM to download the Virtio ENI driver installer for Window Server 2008 R2 and Windows Server 2012 R2.
   
   Download the Virtio ENI driver: http://mirrors.tencentyun.com/install/windows/virtio_64_10003.msi
2. After the download is completed, double-click the installer, choose the **Classic** installation mode, and click **Next** as shown below:

3. In the Windows Security pop-up window, check **Always trust the software from Tencent Technology (Shenzhen) Company Limited** and click **Install** as shown below:

During the installation process, if the following box pops up, choose **Install this driver software anyway**.

4. Follow the prompt to restart the computer to complete the update.

### Checking the driver version

1. Click ![Run](image) and type `ncpa.cpl` in the Run box, and press **Enter** as shown below:

2. In the "Network Connections" window, right-click the "Ethernet" icon and choose **Properties** as shown below:

3. In the "Ethernet Properties" window, click **Configure** as shown below:

4. In the "Tencent Virtio Ethernet Adapter Properties" window, go to the **Driver** tab to see the current driver version as shown below:
Note: This only applies to Windows Server 2008 R2 and Windows Server 2012. For any need to batch edit SID, you can create a custom image (select "Run Sysprep to Create an Image").

1. Background

Microsoft's operating system uses a security identifier (SID) to identify computers and users. When there is a need to build a Windows domain environment, modification of SIDs is required to overcome the inability to join the domain due to the fact that CVM SIDs generated based on the same image are the same.

2. Operation Steps

1) Log into the CVM using the console VNC

2) Save the current network configuration

Click "Start" - "Run". Type cmd to open the command line. Run the command ipconfig / all. Keep record or save screenshots of the result information.

3) Open the Sysprep tool

Run the sysprep.exe program under the folder C: \ windows \ system32 \ sysprep.

As shown below, select "Enter System Out-of-Box Experience (OOBE)" under "System Cleanup Action", and meanwhile check the "General" option. Select "Restart" under "Shutdown Options".

4) Clicking on "OK" will restart the system. When the restart is done, complete the configuration steps following the wizard (select language, reset password, etc.)

5) Verify SID

Click "Start" - "Run". Type cmd to open a command line. Run the whoami / user command and refer to the figure below to verify if SID has been modified.

6) Refer to the configuration saved in Step 2 to reset network card information (IP address, gateway address, DNS, etc.).
Scenario

Linux users sometimes need to boot into single user mode to perform some special operations, such as password management, sshd corruption, etc. This document describes how to boot into the single user mode in mainstream Linux operating systems.

Directions

Determining the Type of the Operating System

Follow different steps based on the type of the operating system.

- For CentOS 6, follow the steps for CentOS 6.
- For CentOS 7, follow the steps for CentOS 7.
- For Ubuntu, follow the steps for Ubuntu.

CentOS 6

Centos 6 uses GRUB boot loader. The following steps use CentOS 6.9 as an example. Specific steps vary slightly depending on the version of the operating system.

1. Log in to the CVM instance remotely.
2. Execute the following command to open the `/etc/grub.conf` file.
   ```bash
   vi /etc/grub.conf
   ```
3. Press I to enter the insert mode.
4. Find “GRUB_TIMEOUT”, the parameter setting the length of waiting time before the default entry is booted, and modify its value based on your needs.
   The default value of “GRUB_TIMEOUT” is 5 seconds. In order to avoid missing the boot interface because the waiting time is too short, it is recommended to modify it to 60s or longer.
This item affects how long it takes for the system to start up. After you complete the configuration, modify it back to the default value.

5. Press **Esc** to exit the insert mode, type **:wq**, and press **Enter**.
   
   Save your settings and exit the VI editor.

6. Execute the following command to reboot the server.

   ```sh
   reboot
   ```

7. Wait for about 1 minute, then log in to the CVM instance via VNC. The login interface is as shown below:

   ![Login Interface](image)

8. Press any key to enter the menu as shown below:

   ![Menu Interface](image)
9. Press **e** to enter the kernel editing interface and enter **single** as shown below:

![Kernel editing interface screenshot]

0. Press **Enter** as shown below:
1. In the interface as shown below, press **b** to enter the single user mode.

```
GNU GRUB version 0.97 (639K lower / 1047544K upper memory)

root (hd0,0)
kernel /boot/vmlinuz-2.6.32-696.el6_x86_64 ro root=UUID=e9879d8c-4b88
initrd /boot/initramfs-2.6.32-696.el6_x86_64.img

Use the ↑ and ↓ keys to select which entry is highlighted. Press 'b' to boot, 'e' to edit the selected command in the boot sequence, 'c' for a command-line, 'o' to open a new line after ('O' for before) the selected line, 'd' to remove the selected line, or escape to go back to the main menu.
```

2. Execute the following command to exit the single user mode.

```
exec /sbin/init
```

### CentOS 7

Unlike CentOS 6, CentOS version 7 and above use GRUB 2. The following steps use CentOS 7.5 as an example. Specific steps vary slightly depending on the version of the operating system.

1. Log in to the CVM instance remotely.
2. Execute the following command to open the `/etc/default/grub` file.

```
vi /etc/default/grub
```

3. Press **I** to enter the insert mode.
4. Find “GRUB_TIMEOUT”, the parameter setting the length of waiting time before the default entry is booted, and modify its value based on your needs as shown below:

   The default value of “GRUB_TIMEOUT” is 5 seconds. In order to avoid missing the boot interface because the waiting time is too short, it is recommended to modify it to 60s or longer.
This item affects how long it takes for the system to start up. After you complete the configuration, modify it back to the default value.

5. Press `Esc` to exit the insert mode, type `:wq`, and press `Enter`. Save your settings and exit the VI editor.

6. Execute the following command to recompile and generate the grub.cfg file.

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

   The returned result is as follows:

   ```
   * Socket connection established *
   Last login: Mon Feb 25 16:37:51 2019
   [root@VM_204_43_centos ~]# grub2-mkconfig -o /boot/grub2/grub.cfg
   Generating grub configuration file ...
   Found linux image: /boot/vmlinux-3.10.0-862.el7.x86_64
   Found initrd image: /boot/initramfs-3.10.0-862.el7.x86_64.img
   Found linux image: /boot/vmlinux-0-rescue-c28d40cbc8e3adcb4e32d9779a77b39e
   Found initrd image: /boot/initramfs-0-rescue-c28d40cbc8e3adcb4e32d9779a77b39e.img
done
   [root@VM_204_43_centos ~]#
   ```

7. Execute the following command to reboot the server.

   ```bash
   reboot
   ```

8. Wait for about 1 minute, then log in to the CVM instance via VNC. The login interface is as shown below:
9. Press **e** to enter the kernel editing interface and add `init=/bin/sh` to the red box area as shown below:

```
inmod part_msdos
inmod ext2
set root=`hd0,msdos1`
if [ x$feature_platform_search_hint = xy ]; then
  search --no-floppy --fs-uuid --set=root --hint='hd0,msdos1' 21dbe03\0-aa71-4b3a-8610-3b942dd447fa
else
  search --no-floppy --fs-uuid --set=root 21dbe030-aa71-4b3a-8610-3b94\2dd447fa
fi
linux16 /boot/vmlinux-3.10.0-862.e17.x86_64 root=UUID=21dbe030-aa71-4b\3a-8610-3b942dd447fa ro crashkernel=auto console=ttyS0 console=tty0 panic=5 net\t.ifs=None=0 biosdevname=0 init=/bin/sh
initrd16 /boot/initramfs-3.10.0-862.e17.x86_64.img
```

Press **Ctrl-x** to start, **Ctrl-c** for a command prompt or **Escape** to discard edits and return to the menu. Pressing **Tab** lists possible completions.
0. Press **Ctrl+X** to start and enter the single user mode as shown below:

```
[ OK ] Reached target Initrd Default Target.
[ OK ] Started dracut pre-pivot and cleanup hook...
[ OK ] Started dracut pre-pivot and cleanup hook.
    Starting Cleaning Up and Shutting Down Daemons...
    Starting Plymouth switch root service...
[ OK ] Stopped target Timers.
[ OK ] Stopped Cleaning Up and Shutting Down Daemons.
[ OK ] Stopped dracut pre-pivot and cleanup hook.
    Stopping dracut pre-pivot and cleanup hook...
[ OK ] Stopped dracut initqueue hook.
    Stopping dracut initqueue hook...
[ OK ] Stopped target Initrd Default Target.
[ OK ] Stopped target Basic System.
[ OK ] Stopped target System Initialization.
[ OK ] Stopped Apply Kernel Variables.
    Stopping Apply Kernel Variables...
    Stopping udev Kernel Device Manager...
[ OK ] Stopped udev Coldplug all Devices.
    Stopping udev Coldplug all Devices...
[ OK ] Stopped target Swap.
[ OK ] Stopped target Sockets.
[ OK ] Stopped target Slices.
[ OK ] Stopped target Paths.
[ OK ] Stopped udev Kernel Device Manager.
[ OK ] Stopped dracut pre-udev hook.
    Stopping dracut pre-udev hook...
[ OK ] Stopped dracut cmdline hook.
    Stopping dracut cmdline hook...
[ OK ] Stopped Create Static Device Nodes in /dev.
    Stopping Create Static Device Nodes in /dev...
[ OK ] Stopped Create list of required static device nodes for the current kernel.
    Stopping Create list of required static device nodes for the current kernel...
[ OK ] Closed udev Control Socket.
[ OK ] Closed udev Kernel Socket.
    Starting Cleanup udev DB...
[ OK ] Started Cleanup udev DB.
[ OK ] Reached target Switch Root.
[ OK ] Started Plymouth switch root service.
    Starting Switch Root...
```

1. Execute the following command to exit the single user mode.

```
exec /sbin/init
```

**Ubuntu**

The following steps use Ubuntu 16.04 as an example. Specific steps vary slightly depending on the version of the operating system.
1. Log in to the CVM instance remotely.
2. Execute the following command to open the `/etc/default/grub` file.

```bash
sudo vi /etc/default/grub
```

3. Press I to enter the insert mode.
4. Find "GRUB_TIMEOUT", the parameter setting the length of waiting time before the default entry is booted, and modify its value based on your needs as shown below:
   The default value of "GRUB_TIMEOUT" is 5 seconds. In order to avoid missing the boot interface because the waiting time is too short, it is recommended to modify it to 60s or longer.

   - This item affects how long it takes for the system to start up. After you complete the configuration, modify it back to the default value.
   - The default account in Ubuntu is not root, please use the sudo commands.

5. Execute the following command to recompile and generate the grub.cfg file.

```bash
sudo update-grub
```
6. Execute the following command to reboot the server.

```
sudo reboot
```

7. Wait for about 1 minute, then log in to the CVM instance via VNC. The login interface is as shown below:

```
Use the ↑ and ↓ keys to select which entry is highlighted. Press enter to boot the selected OS, 'e' to edit the commands before booting or 'c' for a command-line. The highlighted entry will be executed automatically in 10s.
```

8. Press **e** to enter the kernel editing interface and add **rw single init=/bin/bash** to the red box area as shown below:
Minimum Emacs-like screen editing is supported. Tab lists completions. Press Ctrl-x or F10 to boot, Ctrl-c or F2 for a command-line or ESC to discard edits and return to the GRUB menu.
9. Press **Ctrl+X** to start and enter the single user mode as shown below:
1. What is Linux Server Load Average?

Load is used for measuring the workload of server, i.e. the length of the queue of tasks to be executed by CPU of the computer. The greater the value, the more processes that are currently running or waiting to be executed.

2. How can I check Linux server load?

You can execute the `w`, `top`, `uptime`, `procinfo` Command, or Access `/proc/loadavg` To view the file.

Please refer to "Installing Software in Linux Environment" for the instructions on how to install procinfo tool.

3. What can I do when the server load is too high?

The server load (Load/Load Average) is displayed according to the length of the process queue. When there is a high load on the server (it is recommended to take the aPCge of 15 minutes as a reference), it may be due to insufficient CPU resources, read and write bottlenecks, insufficient memory resources, and intensive computing in CPU. Recommended use `vmstat`, `iostat`, `top` Command to determine the cause of the overload, and find a specific process that takes up a lot of resources to optimize.

4. How can I check server memory usage?

You can execute the `free`, `top` (after execution, you can pass the `shift+m` Sort memory), `vmstat`, `procinfo` Command, or Access `/proc/meminfo` To view the file.
5. How can I check the memory occupied by a single process?

You can execute the `top -p PID`, `pmap -x PID`, `ps aux|grep PID` Command, or Access `/proc/$process_id (PID of the process)/status` View the file, for example, the `/proc/7159/status` file.

6. How can I check services and ports that are in use?

You can execute the `netstat -tunlp`, `netstat -antup`, `lsof -i:PORT` Command to view.

7. How can I check server process information?

You can execute the `ps auxww|grep PID`, `ps -ef`, `lsof -p PID`, `top -p PID` Command to view.

8. How can I stop the process?

You can execute the `kill -9 PID` (PID represents the process number), `killall Program name` (for example, killall cron) to stop the process. If you need to stop the zombie process, you need to kill the parent process of the process, with the following command: `kill -9 ppid` (ppid is the parent process ID number, which can be accessed through the `ps -o ppid PID` Command to find, for example, ps-o ppid 32535).

9. How can I find a zombie process?

You can execute the `top` Command to view the total number of zombie process (zombie), by executing `ps -ef | grep defunct | grep -v grep` Find information about specific zombie processes.

Why can't server port be enabled?

Enabling and listen-in of server port need to be checked from operating system itself and the application. Port below 1024 can only be enabled by root users on the Linux operating system. This means that you need to run sudo su first to obtain root permission before enabling the server port. For any problem with application, it is recommended to use application startup log to identify
reasons for failure, for example, port conflict (port used by Tencent server system cannot be occupied, such as 36000), configuration problem, etc.

11. What are the commands commonly used for checking the performance of a Linux server?

<table>
<thead>
<tr>
<th>Command name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>top</td>
<td>Process monitoring commands are used to monitor the overall performance of the system. Can display system load, processes, CPU, memory, paging and other information, commonly used shift+m and shift+p to sort processes by memory and CPU usage.</td>
</tr>
<tr>
<td>vmstat</td>
<td>System monitoring commands, focusing on virtual memory, can also monitor CPU, processes, memory paging and IO status information. For example, vmstat 3 10 outputs the result every 3 seconds and executes it 10 times.</td>
</tr>
<tr>
<td>iostat</td>
<td>A tool for outputting CPU status and IO status, which can display the IO information of the system in detail. For example, iostat-dxmt 10 outputs IO details in MB format every 10 seconds.</td>
</tr>
<tr>
<td>df</td>
<td>Used to check the disk space usage of the system. For example: df-m, which shows the disk usage in units of MB.</td>
</tr>
<tr>
<td>ls−of</td>
<td>Enumerate the files that are opened in the system, because Linux is based on the file system, this command is very helpful in system administration. For example: ls−of−u root, using port 36000 shows the program running in root ls−of−c php−fpm, shows the file opened by the php−fpm process ls−of php.ini, shows the process that opened php.ini.</td>
</tr>
<tr>
<td>ps</td>
<td>The process view command can be used to display the details of the process. The common combination of command parameters is that ps−ef, ps aux, recommends using ps−A−o to customize the output field. For example: ps−A−o pid,stat,uname,%cpu,%mem,rss,args,lstart,etime\</td>
</tr>
</tbody>
</table>

Other commonly used commands and files: `free -m`, `du`, `uptime`, `w`, `/proc/stat`, `/proc/cpuinfo`, `/proc/meminfo`.
# 12. What can I do when Cron does not work?

The trouble-shooting procedures are as follows:

1) Verify whether crontab is running normally.

1. Execute `crontab -e` Command, add the following test entries.

```bash
*/1 * * * * /bin/date >> /tmp/crontest 2>&1 &
```

2. Observation `/tmp/crontest` File.
   In case of any problem, it is recommended to use `ps aux | grep cron` to look for pid of cron and use `kill-9 PID` to terminate cron process, and then restart cron with `/etc/init.d/cron start`.

2) Verify whether the script path in the cron entry is an absolute path.

3) Check whether the user account for cron execution is correct, and check whether the account is included in `/etc/cron.deny`.

4) Check the execution permission of the script, script directory and log file permission.

5) It is recommended to run the script in background. Append a "&" to the script entry, for example, `*/1 * * * * /bin/date > > /tmp/crontest 2> & 1 &`

13. How can I set startup task for CVM?

Linux kernel startup procedure is as follows:


2. Execute the initial init script in turn.

3. Run-level script `/etc/rc.d/rc*.*`, The * value is equal to the operation mode. You can go to `/etc/inittab` to view details.

4. Execute `/etc/rc.d/rc.local`.

The configuration of startup task can be made in S * * rclocal file under /etc/rc.d/rc*. D, or in /etc/rc.d/rc.local.

Why is server hard drive read-only?

Common reasons for read-only hard disk are as follows:
• Disk space is full
  You can use df-m command to check the disk usage, and then delete unnecessary files to free disk space (Deletion of non-third party files is not recommended. Please verify it if required);

2) Disk inode resources are all occupied
You can execute the df -i command to view and confirm the related process.

• Hardware failure.

If hosting application is still unable to identify the reason using the above methods, please call the hot-line 4009100100 or submit ticket for assistance in locating.

15. How can I view Linux system logs?

The storage path for system-level log files is /var/log.
The commonly used system log is /var/log/messages.

16. How can I find large files in file system?

You can find it by performing the following steps:

1. Execute df Command to view disk partition usage, such as df-m.
2. Execute du Command to view the size of the specific folder. For example, du-sh. / *, du-h-- max-depth=1 |head -10.
3. Execute ls Command to list files and file sizes, such as ls-lSh.
   In addition, you can also directly check the size of files under specific directory by using find commands, for example, find /-type f-size + 10m-exec ls-lrt (B);

17. How can I check the version of server's operating system?

You can view the system version by executing the following command:

• Uname-a
• Cat /proc/version
• Cat /etc/issue
18. Why does the Linux terminal display Chinese garbled?

The server itself does not impose restrictions on the display language. If the display of Chinese is affected by the terminal software, you can try to adjust **OPTIONS -> Session Options -> Appearance** (secureCRT settings; please search for relevant settings for software of other versions.)

If the unreadable codes appear in pure Linux shell, please use export command to check settings for user environment variables and such environment variables as LANG and LC_CTYPE.

How to set up time-out for connection to CVM through SecureCRT?

When SecureCRT connects to Cloud Virtual Machine, you can continue to open the connection through the following settings:

1. Open [SecureCRT option (Options)].
2. Select [Session option (Session Options)], and click "Terminal (Terminal)."
3. In the Anti-idle box on the right, check [send Protocol NO-OP (Send protocol NO-OP)] and set the time to every 120 seconds (every 120 seconds).

Why isn't disk space freed after a file on Linux server is deleted?

**Cause**

Log in to the Linux server and execute  

```bash
rm
```

After the command deletes the file, execute  

```bash
df
```

Command to check the hard disk space, you may find that there is no increase in the available hard disk space after deleting the files. The reason is that when passed  

```bash
rm
```

When the command deletes the file, there are other processes in the process of Access the file, if you execute the  

```bash
df
```

Command to view, the deleted files will take up space that is not immediately released.

**Solution:**

1. Execute using root Permission  

```bash
lsot | grep deleted
```

Command to view the PID of the process that is using the deleted file.

2. By command  

```bash
kill -9 PID
```

Just kill the corresponding process.
Setup Windows CVM For Multi-user Remote Login

Scenario

This document shows you how to configure a multi-user remote login to Windows CVM, taking a CVM with Windows Server 2012 R2 as the operating system as an example.

Steps

Adding remote desktop service

1. Log in to the Windows CVM.

2. In the operating system interface, click to open Server Manager, as shown below:
3. Click **Add roles and features**, and the **Add Roles and Features Wizard** window will pop up.
4. In the “Add Roles and Features Wizard” window, keep the default parameters for the first 3 steps.
5. In the **Select server roles** page, check **Remote Desktop Services** and click **Next**, as shown below:

6. Keep the default parameters and click **Next** two times in a row.
7. In the **Select Role Service** interface, check **Remote Desktop Session Host**, as shown below: The “Add features that are required for remote desktop session host?” prompt box will pop up.
8. In the “Add features required for remote desktop session host?” prompt box, click **Add Features**, as shown below:
9. In the **Select Role Service** page, check **Remote Desktop Licensing**, as shown below:

The “Add features that required for Remote Desktop Licensing?” prompt box will pop up.
0. In the “Add features that required for Remote Desktop Licensing?” prompt box, click **Add Features**.
1. Click **Next**.
2. Check **Restart the destination server automatically if required**, and click **Yes** in the pop-up prompt box, as shown below:
3. Click **Install** and wait for the remote desktop service installation to complete.

**Configuring multi-user remote login to instance**

1. Use VNC to log in to Windows CVM.

2. In the operating system interface, click ![VNC icon](image) to open the Windows PowerShell window.

3. In the Windows PowerShell window, enter `<code>gpedit.msc</code>` and press **Enter** to open the **Local Group Policy Editor**.

4. In the left navigation tree, select **Computer Configuration > Administrative Templates > Windows Components > Remote Desktop Services > Remote Desktop Session Host >**
Connections, and double click Limit number of connections, as shown below:

5. In the Limit number of connections window that pops up, select Enabled, and enter the maximum number of simultaneous remote users in RD Maximum Connections allowed, as
6. Click OK.
7. In the left navigation tree, select Computer Configuration > Administrative Templates > Windows Components > Remote Desktop Services > Remote Desktop Session Host > Connections, and double click Restrict Remote Desktop Services users to a single Remote
**Desktop Services session**, as shown below:

8. In the “Restrict Remote Desktop Services users to a single Remote Desktop Services session” window that pops up, select **Disabled**, and click **OK**, as shown below:
9. Close local group policy editor.
10. Restart the instance.
Allow CVMs without Internet access to access Internet

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When the CVM chooses 0Mbps bandwidth, the public network cannot be accessed. The CVM can only access the external network through a CVM with a Public IP.

1. Principle

- A CVM without a Public IP can access the public network through a CVM with a Public IP by using proxy on a CVM with a Public IP or via vpn.
- The proxy is easy to configure but complicated to use. It is suggested that you use pptp vpn to do this. (i.e., A CVM without a Public IP can be connected with a CVM with a Public IP through pptp protocol, and the CVM with a Public IP will be set to the gateway in pptp network)

2. Configuration

Assume that a CVM with a Public IP is A, and a CVM without a Public IP is B.

1) Install pptpd on A, on CentOS for example (other Linux release versions are similar) using the following command:

```bash
yum install pptpd
```

2) Modify the configuration file `/etc/pptpd.conf` by adding the following two lines

```conf
localip 192.168.0.1
remotelip 192.168.0.234-238, 192.168.0.245
```

3) Modify the configuration file `/etc/ppp/chap-secrets` by adding the username and password (the 1st column indicates the username, and the 3rd column indicates the password)

```conf
user pptpd pass *
```

4) Start services

```bash
service pptpd start
```
5) Enable the forward capability

```
# echo 1 > /proc/sys/net/ipv4/ip_forward
# iptables -t nat -A POSTROUTING -o eth0 -s 192.168.0.0/24 -j MASQUERADE
```

6) Install the client on B, on CentOS for example, using the following command:

```
# yum install pptp pptp-setup
```

7) Create a configuration file

```
# pptpsetup --create pptp --server 10.10.10.10 --username user --password pass --encrypt
```

**Note:** `--server` is followed by A's IP address.

8) Connect pptpd

```
# pppd call pptp
```

9) Set the route:

```
# route add -net 10.0.0.0/8 dev eth0
# route add -net 172.16.0.0/12 dev eth0
# route add -net 192.168.0.0/16 dev eth0
# route add -net 0.0.0.0 dev ppp0
```

In addition, if B is Windows CVM, a network "Connecting to Workspace" can be created to connect to the pptpd server.