Elastic Cloud Server

Troubleshooting

Issue	01
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1 General Issues

1.1 Troubleshooting Slow Access of a Website Outside the Chinese Mainland over an ECS

Scenarios

Accessing a website outside the Chinese Mainland may be slow on an ECS. This is caused by the slow access of a DNS server outside the Chinese Mainland.

NOTE

If you are required to access websites outside the Chinese Mainland, purchase an ECS in a region outside the Chinese Mainland. To do so, select the target region when purchasing the ECS.

You are advised to perform the operations described in this section to identify the cause of slow website access outside the Chinese Mainland. The following uses a Windows ECS as an example to describe how to troubleshoot slow access to www.example.com.

- **Checking Whether DNS Has Been Correctly Configured**
- **Checking Whether the Request Is Responded**
- **Modifying the hosts File to Speed Up the Website Access**

Checking Whether DNS Has Been Correctly Configured

1. Run **cmd** and then **ipconfig /all** to check whether a default HUAWEI CLOUD DNS server address is used.

   You are advised to use the default HUAWEI CLOUD DNS server addresses.

   NOTE

   To obtain the addresses, see **What Are the Private DNS Server Addresses Provided by the DNS Service?**

2. Run the following command to check whether your ECS and the DNS server are reachable to each other:

   ping *IP address of the DNS server*

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Taking the CN North-Beijing 1 region as an example, run the **ping 100.125.1.250** command.

3. Run the following command to check whether domain name resolution is functional:

   nslookup *Target website*

   For example, run **nslookup www.example.com**.

   Access the target website again and check whether the fault has been rectified.

   If the fault persists, perform the following operations to continue the fault locating.

Checking Whether the Request Is Responded

- Linux

  Run executable curl commands delivered with Linux.

  curl -I *Target website*

  For example, run **curl -I www.example.com**.

- Windows

  Try to access the target website. If the website can be accessed but the loading is slow, packet loss may occur when you access the destination server. In such a case, run the **ping -t** *Website address* command to check the packet loss. For details, see **Troubleshooting a Ping Failure or Packet Loss Using a Link Test**.

  For example, run **ping -t www.example.com**.

  NOTE

  In Windows, you can also **download the curl client**, decompress it, open the bin folder, copy the path, and configure the environment variables.

  If a response status code is displayed, the request has been sent and received. The slow website access may be caused by loss of packets sent to the destination server.

  Contact customer service to check for packet loss. You are suggested to use **Cloud Connect** to speed up the website access. For details, see **Communication Among Multiple VPCs Across Regions**.

Modifying the hosts File to Speed Up the Website Access

You can also try to speed up the website access by modifying the hosts file. To do so, perform the following operations:

1. Log in to the ECS as user **Administrator**.
2. Use a browser to access the ping check tool. The following uses **http://ping.chinaz.com** as an example.
3. Ping the target website for test. Take www.example.com as an example. Record the IP address with the lowest response time in detection results.
4. Download **PingInfoView**, decompress it, and run **PingInfoView.exe**.
5. Open **PingInfoView**, copy the IP addresses obtained in step **3** to the text box, and click **OK**.

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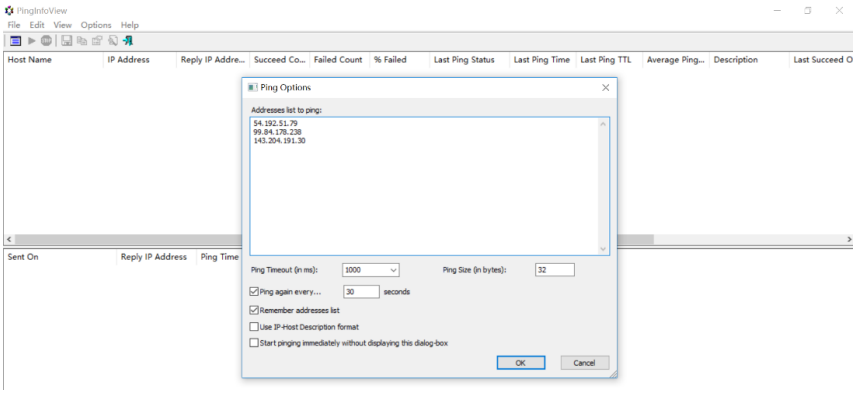
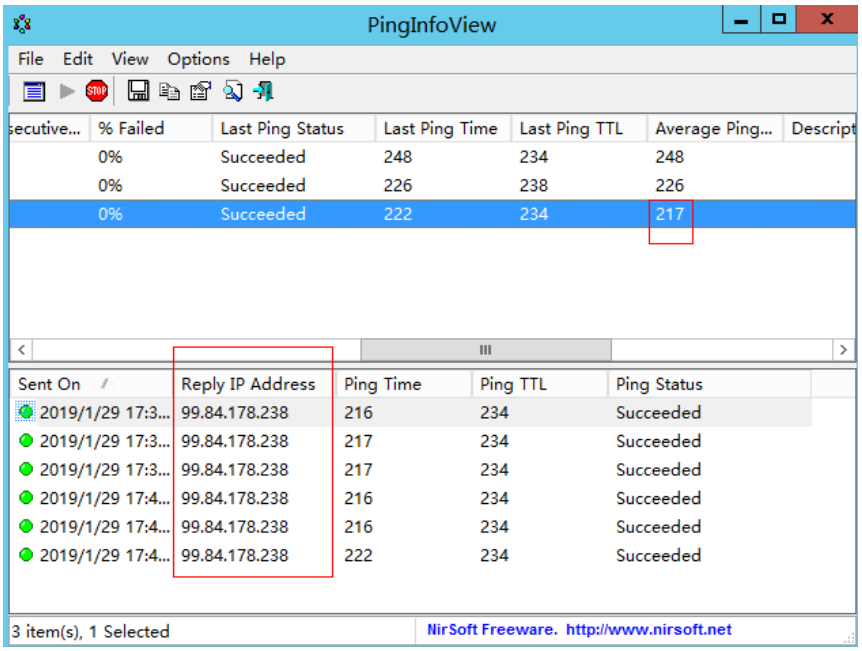


6. Copy the IP address with the lowest response time in the search result.



7. Open the **C:\Windows\System32\drivers\etc** hosts file and paste the IP address in the end of the file.

   NOTE

   The hosts file is one of the core OS files. Therefore, exercise caution when modifying it.

   You are advised to back up the hosts file using either of the following methods: Copy and paste the hosts file for file backup; copy and paste the data of the hosts file for content backup.

   For example, if the selected IP address is 99.84.178.238, enter **99.84.178.238 www.example.com** in the end of the hosts file, save and exit the file.

8. Access the target website again.

   If the fault persists, use an ECS purchased in a region outside the Chinese Mainland to access the target website.

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1.2 Troubleshooting a Ping Failure or Packet Loss Using a Link Test

Symptom

When a user accessed other network resources on an ECS, network freezing occurred. The ping command output showed that packet loss occurred or the network delay was long.

This section uses Tracert and MTR as an example to describe how to troubleshoot packet loss or long delay.

Possible Causes

Packet loss or long delay may be caused by link congestion, link node faults, high server load, or incorrect system settings.

After verifying that the issue was not caused by the ECS, use Tracert or MTR for further fault locating.

MTR is used to detect network faults.

This section provides the following information:

- Windows
  - (Recommended) **Using Tracert in Windows**
  - **Using WinMTR in Windows**
- Linux
  - **Using WinMTR in Linux**

Using Tracert in Windows

Tracert shows the path through which packets reach the destination server and the time when the packets reach each node. Tracert offers similar functions as the ping command but it provides more detailed information, including the entire path the packets take, IP address of each pass-through node, and time when the packets arrive at each node.

1. Log in to the Windows ECS.
2. Open the **cmd** window and run the following command to trace the IP address:

   tracert *IP address or website*

   For example, **tracert www.example.com**

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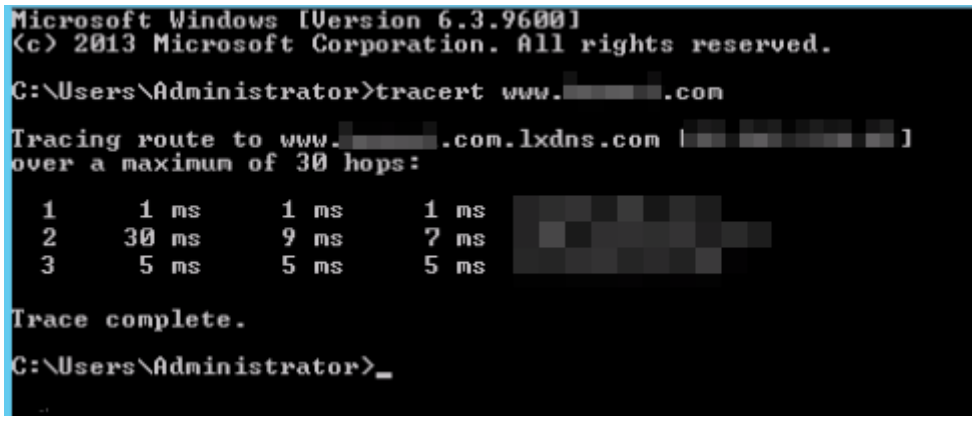
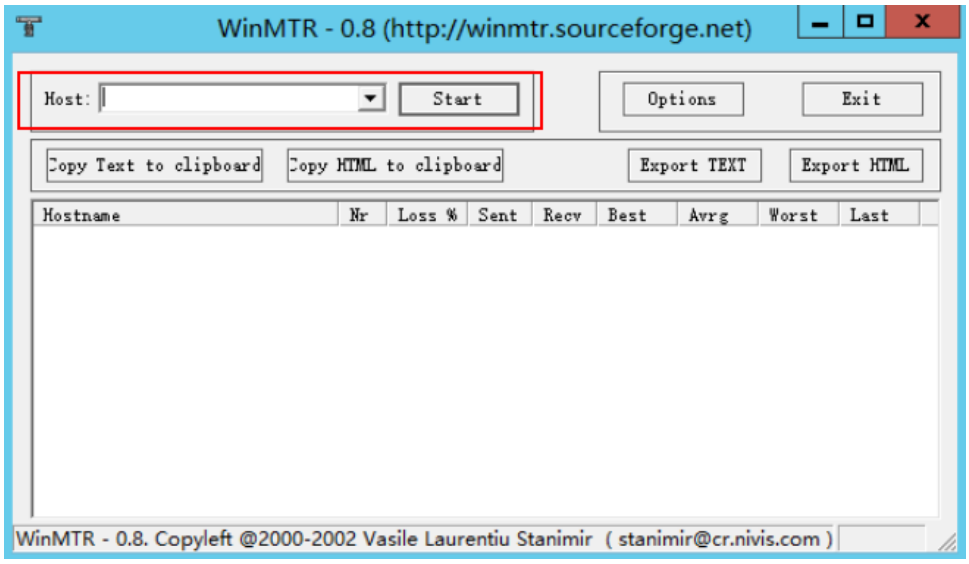


The command output shows that:

- The maximum number of hops is 30 by default. The first column shows the sequence number of the start hop.
- Tracert sends three packets each time. The second, third, and fourth columns show the time when the three packets are returned. The last column shows the IP addresses of the nodes where the packets were redirected.
- If the message *** * * request timed out** was reported, troubleshoot the affected link and node.

Using WinMTR in Windows

1. Log in to the Windows ECS.
2. Download the WinMTR installation package on the official website based on the OS.
3. Decompress the WinMTR installation package.
4. Double-click **WinMTR.exe** to start the tool.
5. In the WinMTR window, enter the IP address or domain name of the destination server in **Host** and click **Start**.



6. Wait for WinMTR to run for a period of time and click **Stop** to stop the test.

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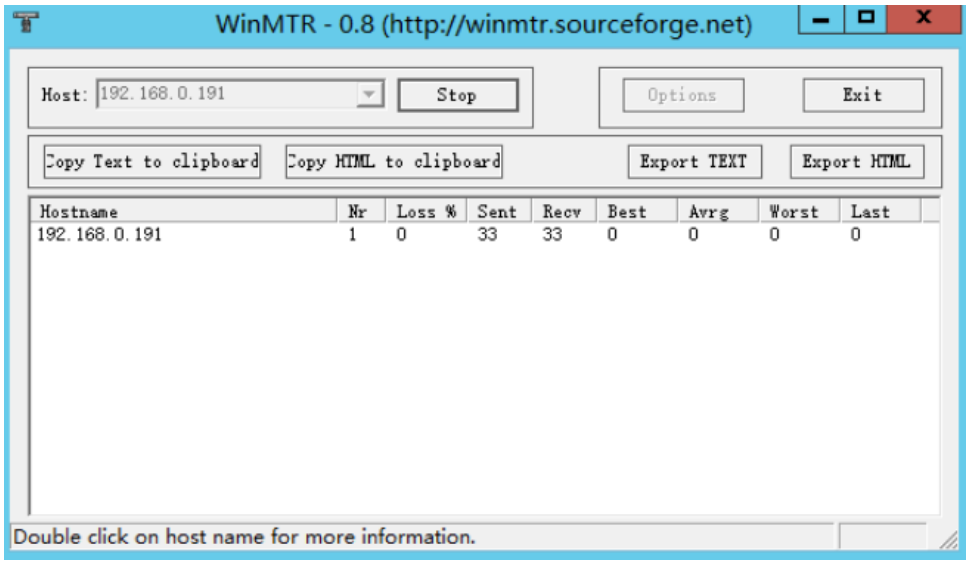

The test results are as follows:

- **Hostname**: IP address or domain name of each node that the packets pass through to the destination server
- **Nr**: Number of nodes that the packets pass through
- **Loss%**: Packet loss rate of a node
- **Sent**: Number of sent data packets
- **Recv**: Number of received responses
- **Best**: Shortest response time
- **Avrg**: Average response time
- **Worst**: Longest response time
- **Last**: Last response time

Using WinMTR in Linux

Installing MTR

MTR has been installed on all Linux distributions. If MTR is not installed on your Linux ECS, run the following command to install it:

- CentOS
  ```
  yum install mtr
  ```
- Ubuntu
  ```
  sudo apt-get install mtr
  ```

MTR parameters

- **-h/--help**: Help menu
- **-v/--version**: MTR version
- **-r/--report**: Results of all traces
- **-p/--split**: Results of each trace
- **-c/--report-cycles**: Number of packets (**10** by default) sent per second
- **-s/--psize**: Size of a packet

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- **-n/--no-dns**: Domain name resolution is not performed for IP addresses
- **-a/--address**: IP address for sending packets, which is set if a single host has multiple IP addresses
- **-4**: IPv4
- **-6**: IPv6

The following uses the link between the local server and the destination server with IP address 119.xx.xx.xx as an example.

Run the following command to obtain the MTR diagnosis results in a report:

mtr 119.xx.xx.xx -- report

Information similar to the following is displayed:

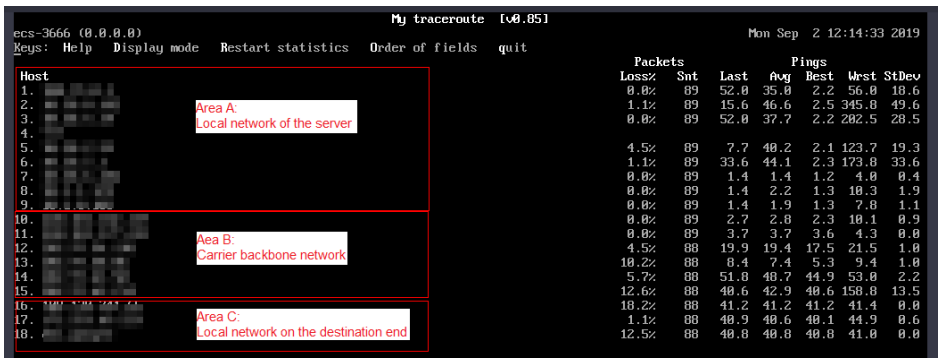
```
[root@ecs-420652 ~]# mtr 119.xx.xx.xx --report
Start: Thu Aug 22 15:41:22 2019
HOST: ecs-652                Loss%   Snt   Last   Avg  Best  Wrst StDev
  1.|-- 100.70.0.1            0.0%    10    3.0   3.4   2.8   7.5   1.3
  2.|-- 10.242.7.174           0.0%    10   52.4  51.5  34.2  58.9   6.3
  3.|-- 10.242.7.237           0.0%    10    3.2   5.0   2.7  20.8   5.5
  4.|-- 10.230.2.146           0.0%    10    1.0   1.0   1.0   1.1   0.0
  5.|-- 192.168.21.1           0.0%    10    3.5   4.2   2.8  11.6   2.5
  6.|-- 10.242.7.238           0.0%    10   35.3  34.5   6.0  56.4  22.6
  7.|-- 10.242.7.173           0.0%    10    3.3   4.7   3.1  14.7   3.6
  8.|-- ???                  100.0    10    0.0   0.0   0.0   0.0   0.0
```

The following information is displayed:

- **HOST**: IP address or domain name of the node
- **Loss%**: Packet loss rate
- **Snt**: Number of packets sent per second
- **Last**: Last response time
- **Avg**: Average response time
- **Best**: Shortest response time
- **Wrst**: Longest response time
- **StDev**: standard deviation, a larger deviation indicates a larger difference between the response time for each data packet on the node

Handling WinMTR and MTR Reports

The following figure is an example of analyzing the reports of WinMTR and MTR.



- Local network of the server: Area A in the preceding figure, indicating that the local area network and local ISP network.

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  - If a node in the local network of the client malfunctions, check the local network.
  - If the local ISP network malfunctions, report the issue to the local carrier.
- Carrier backbone network: Area B in the preceding figure. If an error occurs in this area, locate the carrier to which the faulty node belongs based on the node IP address and report the issue to the carrier.
- Local network on the destination end: Area C in the preceding figure, indicating the network of the provider to which the destination server belongs.
  - If packet loss occurs on the destination server, the network configuration of the destination server may be incorrect. Then, check the firewall configuration on the destination server.
  - If packet loss occurs on certain nodes with several hops close to the destination server, the network of the provider to which the destination server belongs may be faulty.

Common Link Faults

- Incorrectly configured destination server

  As shown in the following example, 100% of packets are lost at the destination address. According to the data, the data packets are not received by the destination server. The fault might be caused by incorrect network configuration on the destination server. In such a case, check the firewall configuration on the destination server.

Host	Loss%	Snt	Last	Avg	Best	Wrst	StDev
1. ???							
2. ???							
3. 1XX.X.X.X	0.0%	10	521.3	90.1	2.7	521.3	211.3
4. 11X.X.X.X	0.0%	10	2.9	4.7	1.6	10.6	3.9
5. 2X.X.X.X	80.0%	10	3.0	3.0	3.0	3.0	0.0
6. 2X.XX.XX.XX	0.0%	10	1.7	7.2	1.6	34.9	13.6
7. 1XX.1XX.XX.X	0.0%	10	5.2	5.2	5.1	5.2	0.0
8. 2XX.XX.XX.XX	0.0%	10	5.3	5.2	5.1	5.3	0.1
9. 1XX.1XX.XX.X	**100.0%**	**10**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

- ICMP rate limit

  As shown in the following example, packet loss occurs on the fifth hop, but the issue does not occur on subsequent nodes. Therefore, it is determined that the fault is caused by ICMP rate limit on the fifth node. This issue does not affect data transmission between the client and the destination server. Therefore, ignore this issue.

Host	Loss%	Snt	Last	Avg	Best	Wrst	StDev
1. 1XX.XX.XX.XX	0.0%	10	0.3	0.6	0.3	1.2	0.3
2. 1XX.XX.XX.XX	0.0%	10	0.4	1.0	0.4	6.1	1.8
3. 1XX.XX.XX.XX	0.0%	10	0.8	2.7	0.8	19.0	5.7
4. 1XX.XX.XX.XX	0.0%	10	6.7	6.8	6.7	6.9	0.1
5. 1XX.XX.XX.XX	**0.0%**	**10**	**27.2**	**25.3**	**23.1**	**26.4**	**2.9**
6. 1XX.XX.XX.XX	0.0%	10	39.1	39.4	39.1	39.7	0.2
7. 1XX.XX.XX.XX	0.0%	10	39.6	40.4	39.4	46.9	2.3
8. 1XX.XX.XX.XX	0.0%	10	39.6	40.5	39.5	46.7	2.2

- Loop

  As shown in the following example, the data packets are cyclically transferred after the fifth hop. As a result, they cannot reach the destination server. This fault is caused by incorrect routing configuration on the nodes of the carrier. Contact the carrier to rectify the fault.

Host	Loss%	Snt	Last	Avg	Best	Wrst	StDev
1. 1XX.XX.XX.XX	0.0%	10	0.3	0.6	0.3	1.2	0.3

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```
2. 1XX.XX.XX.XX                0.0%    10    0.4   1.0   0.4   6.1   1.8
3. 1XX.XX.XX.XX                  0.0%    10    0.8   2.7   0.8  19.0   5.7
4. 1XX.XX.XX.XX                  0.0%    10    6.7   6.8   6.7   6.9   0.1
5. 1XX.XX.XX.65                0.0%    10    0.0   0.0   0.0   0.0   0.0
6. 1XX.XX.XX.65                  0.0%    10    0.0   0.0   0.0   0.0   0.0
7. 1XX.XX.XX.65                0.0%    10    0.0   0.0   0.0   0.0   0.0
8. 1XX.XX.XX.65                0.0%    10    0.0   0.0   0.0   0.0   0.0
9. ???                         0.0%    10    0.0   0.0   0.0   0.0   0.0
```

- Link interruption

  As shown in the following example, no response can be received after the data packets are transferred to the fourth hop. This is generally caused by link interruption between the affected nodes. You are advised to perform a further check using a reverse link test. In such a case, contact the carrier to which the affected nodes belong.

```
Host                           Loss%   Snt   Last   Avg  Best  Wrst StDev
1. 1XX.XX.XX.XX                  0.0%    10    0.3   0.6   0.3   1.2   0.3
2. 1XX.XX.XX.XX                0.0%    10    0.4   1.0   0.4   6.1   1.8
3. 1XX.XX.XX.XX                    0.0%    10    0.8   2.7   0.8  19.0   5.7
4. 1XX.XX.XX.XX                    0.0%    10    6.7   6.8   6.7   6.9   0.1
5. 1XX.XX.XX.XX                  0.0%    10    0.0   0.0   0.0   0.0   0.0
6. 1XX.XX.XX.XX                    0.0%    10    0.0   0.0   0.0   0.0   0.0
7. 1XX.XX.XX.XX                  0.0%    10    0.0   0.0   0.0   0.0   0.0
8. 1XX.XX.XX.XX                  0.0%    10    0.0   0.0   0.0   0.0   0.0
9 1XX.XX.XX.XX                     0.0%    10    0.0   0.0   0.0   0.0   0.0
```

1.3 Troubleshooting Network Freezing on an ECS

Symptom

A complete HTTP request includes domain name resolution, TCP connection establishment, request initiation, processing of the request received by the server and returning a processing result, parsing of the HTML code by the browser and requesting other resources, and rendering and presentation of the page. The HTTP request process goes through a local client of the user, network nodes between the client and the access server, and the access server. An error occurred on any of the preceding nodes will lead to network freezing on the ECS.

Checking Whether DNS Has Been Correctly Configured

1. Open the **cmd** window and run **ipconfig /all** to check whether a default HUAWEI CLOUD DNS server address is used.

   You are advised to use the default HUAWEI CLOUD DNS server addresses.

   NOTE

   To obtain the addresses, see **What Are the Private DNS Server Addresses Provided by the DNS Service?**

2. Run the following command to check whether your ECS and the DNS server are reachable to each other:

   ping *IP address of the DNS server*

   Taking the CN North-Beijing 1 region as an example, run the **ping 100.125.1.250** command.

3. Run the following command to check whether domain name resolution is functional:

   nslookup *Target website*

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For example, **nslookup www.example.com**

Access the target website again and check whether the fault has been rectified.

If the fault persists, perform the following operations to continue the fault locating.

Checking Network Links

1. On the local client, ping the public IP address of the server to check whether packet loss or network delay occurs.
   - If packet loss or long network delay occurs, use MTR to locate the fault. For details, see **Troubleshooting a Ping Failure or Packet Loss Using a Link Test**.
   - If not, go to step 2.
2. Run the **dig/nslookup** command to check whether the DNS resolution is functional. Alternatively, use the public IP address to access the target web page and check whether the slow access is caused by a DNS fault.

   For details, see:
   - **Why Does My Record Set Not Take Effect?**
   - **How Do I Test Whether a Record Set Is Working?**

Checking the ECS

1. Log in to the management console.
2. Click  in the upper left corner and select the desired region and project.
3. Under **Computing**, click **Elastic Cloud Server**.
4. In the search box above the upper right corner of the ECS list, enter the ECS name, IP address, or ID for searching.
5. Click the name of the target ECS. The page providing details about the ECS is displayed.
6. Click the **Monitoring** tab to view the monitoring data.

Check whether there are any applications running on the ECS have strict requirements on network and CPU configurations.

- If the CPU or memory usage is too high, see **Troubleshooting High Bandwidth or CPU Usage of a Windows ECS** or **Troubleshooting High Bandwidth or CPU Usage of a Linux ECS** for troubleshooting.
- If the bandwidth usage is too high, see **Troubleshooting High Bandwidth Usage on an ECS** for troubleshooting.
  - To upgrade ECS specifications, see **General Operations for Modifying Specifications**.
  - To upgrade the bandwidth, see **Modifying EIP Bandwidth**.

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1.4 Troubleshooting a Website Access Error Occurred on an ECS

Scenarios

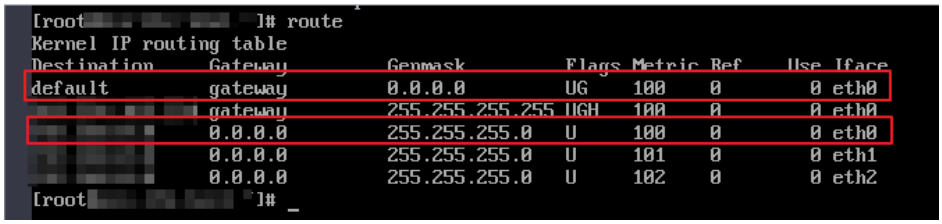
If an error is displayed when you access a website, identify possible causes based on the error message.

Identify possible causes based on error code description in **Returned Values for General Requests**.

If the website is inaccessible, the network is disconnected. In such a case, check whether the **routing**, **port**, **security groups**, and **system firewall** are correctly configured.

Routing Configurations

- Linux
  a. Run the **route** command to check the routing policy. Ensure that the default route of 0.0.0.0 is destined for the gateway and that the IP address and the gateway are in the same network segment, as shown in the first and third lines in the following figure.



  b. Run the **ifconfig** or **ip addr** command to obtain the ECS IP address.

Figure 1-1 ifconfig command output

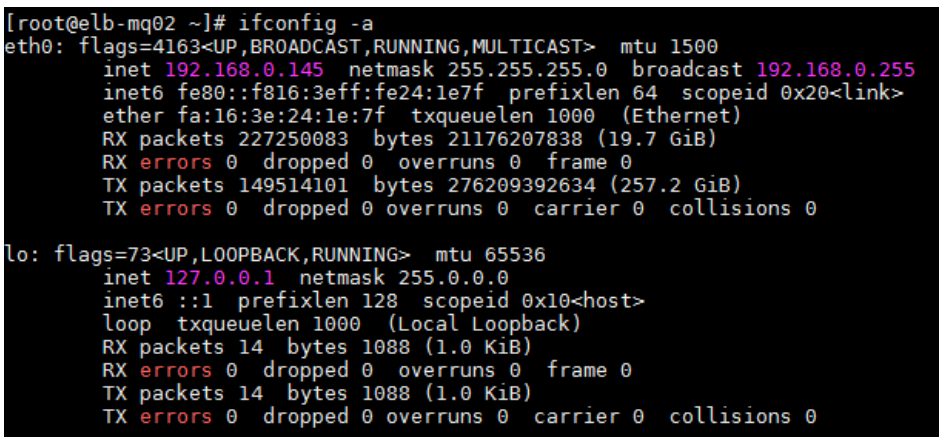


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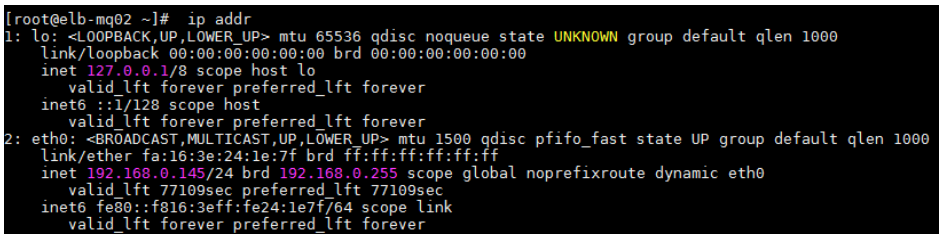
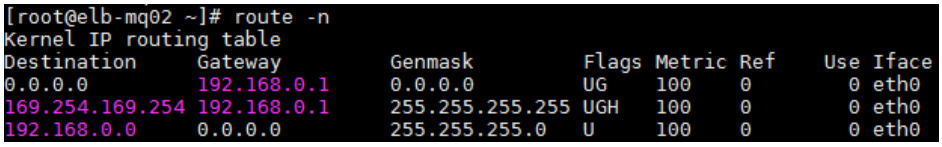
Figure 1-2 ip addr command output



c. Run the **route -n** command to obtain the gateway in the routing table.

Figure 1-3 route -n command output

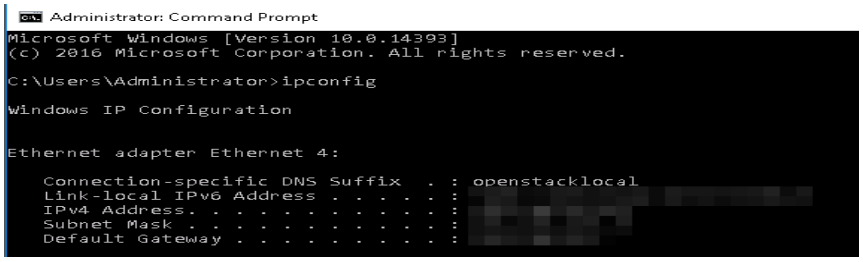


- Windows

a. Run **cmd.exe**.

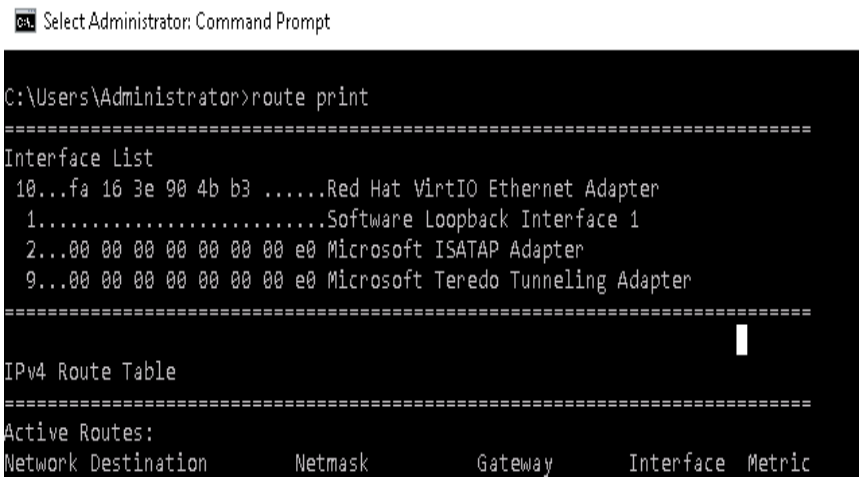
b. Run the **ipconfig** command to obtain the ECS IP address.

Figure 1-4 ipconfig command output



c. Run the **route print** command to obtain the gateway in the routing table.

Figure 1-5 route print command output



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Port Communication

Ensure that service processes and ports are in **LISTEN** state. The following table lists common TCP statuses.

TCP Status	Description	Application Scenario
LISTEN	Listens for network connection requests from a remote TCP port.	The TCP server is running properly.
ESTABLISHED	Indicates that a connection has been set up.	A TCP connection is properly set up.
TIME-WAIT	Waits until the remote TCP server receives the acknowledgement after sending a disconnection request.	The TCP connection is disconnected, and this state is cleared in 1 minute.
CLOSE-WAIT	Waits for a disconnection request sent by a local user.	An application program fault leads to an open socket. This state is displayed after the network is disconnected, indicating that a process is in a dead cycle or waiting for certain requirements to be met. To resolve this issue, restart the affected process.
FIN-WAIT-2	Waits for the network disconnection request from a remote TCP server.	The network has been disconnected and requires 12 minutes to automatically recover.
SYN-SENT	Waits for the matched network connection request after a network connection request is sent.	The TCP connection request failed, which is generally caused by the delayed handling of high CPU usage on the server or by a DDoS attack.
FIN-WAIT-1	Waits for the remote TCP disconnection request, or the acknowledgement for previous disconnection request.	If the network has been disconnected, this state may not automatically recover after 15 minutes. If the port has been used for a long period of time, restart the OS to resolve this issue.

- Linux
  a. Run the **netstat -antp** command to check whether the port is in **LISTEN** state.

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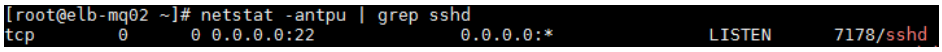
Figure 1-6 Checking port listening status



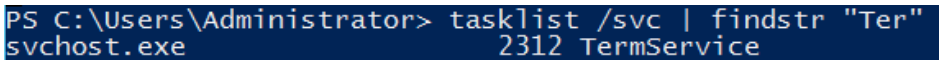
- Windows

  Perform the following operations to check port communication:

  a. Run **cmd.exe**.

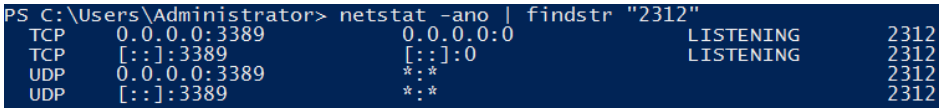
  b. Run the **Tasklist /svc | findstr "Ter"** command to obtain the TermService PID.

  Figure 1-7 Checking the TermService PID

  c. Run the **netstat -ano | findstr "***PID***"** command to obtain the PID used by the process.

  Figure 1-8 Checking the PID used by the process

Security Group Rules

If the port used by the target website or remote connection tool is denied in the security group, add a rule to the security group to allow the access of the port.

1. Log in to the management console.
2. Under **Computing**, click **Elastic Cloud Server**.
3. In the ECS list, click the name of the ECS with security group rules to be modified.
4. Click the **Security Groups** tab and view security group rules.
5. Click **Modify Security Group Rule**.
6. Configure the rule to allow the access of the port used by the website.

Firewall Configurations

- A Linux ECS cannot be logged in using SSH, and the login is successful after the system firewall is disabled.

  a. Run the **iptables -nvL --line-number** command to obtain firewall policies.

  b. Run the following commands to allow the access of default SSH port 22:

  iptables -A INPUT -p tcp --dport 22 -j ACCEPT

  iptables -A OUTPUT -p tcp --sport 22 -j ACCEPT

  c. Run the **service iptables save** command to save the added rules.

  d. Run the **service iptables restart** command to restart iptables.

  e. Run the **iptables -nvL --line-number** command to check whether the added rules have taken effect.

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f. Use SSH to access the ECS again.

- A Windows ECS cannot be remotely logged in, and the login is successful after the OS firewall is disabled.
  a. Modify the firewall policy so that the remote access port on the local end is allowed on the firewall. The default port is TCP 3389.
  b. After the firewall policy is modified, log in to the ECS again.

1.5 Troubleshooting an Unreachable ECS Port

Scenarios

If a website cannot be accessed, the security group may deny traffic to the port used by the website or remote connection tool.

This section uses port 80 as an example to describe how to troubleshoot an unreachable ECS port.

Locating the Fault

If the affected ECS cannot provide the HTTP service, check whether the port used by the web service (TCP 80 by default) is working properly.

1. On the ECS management console, ensure that the port is permitted in the security group.
2. Remotely log in to the ECS and ensure that HTTP is enabled on it.
3. Ensure that the port is listened to properly. If not, change the listened IP address.
4. Ensure that HTTP is permitted on the ECS firewall.

Windows

The following uses an ECS running Windows Server 2012 with Internet Information Services (IIS) deployed as an example.

Step 1 Ensure that port 80 is permitted in the security group.

1. Log in to the management console.
2. Click  in the upper left corner and select the desired region and project.
3. Under **Computing**, click **Elastic Cloud Server**.
4. On the **Elastic Cloud Server** page, click the name of the target ECS.

   The page providing details about the ECS is displayed.
5. Click the **Security Groups** tab and view security group rules.
6. Make sure that the following security group rules have been added to the security group to which the ECS belongs:

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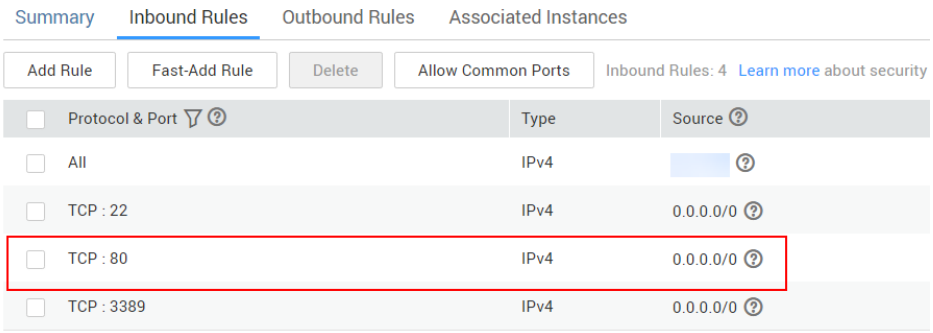


Step 2 Remotely log in to the ECS and verify that IIS is enabled on it.

1. In the **Server Manager** window, choose **Tools** > **Internet Information Services (IIS) Manager**.

   If this option is unavailable, IIS is not successfully deployed. In such a case, deploy IIS again.

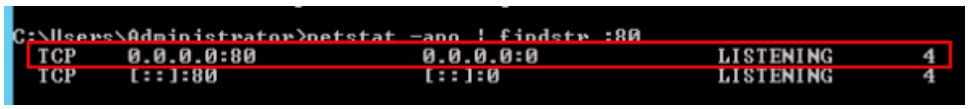
2. In the **Internet Information Services (IIS) Manager** window, check the following information:
   - In the **Connections** navigation pane, right-click the ECS ID. If **Connect** is unavailable, IIS has been enabled.
   - Click **Sites**. Then, view the website status on the right side of the page. If the website is stopped, click the website and then **Start** under **Manage Server** on the right side of the page to start the website.

Step 3 Check whether the port is properly listened to on the ECS.

Open the cmd window and run the following command:

netstat -ano | findstr :80

If information similar to the following is displayed, port 80 is being properly listened to on the entire network. If not, change the listened IP address.



Step 4 Ensure that HTTP is permitted on the firewall.

1. Choose **Control Panel** > **Windows Firewall**.
2. Perform operations based on the firewall status.
   - If the firewall is disabled, no further action is required.
   - If the firewall is enabled, perform the following operations:
     i. Click **Advanced settings**.
     ii. In the navigation pane, click **Inbound Rules**.
     iii. Select **World Wide Web Services (HTTP Traffic-In)**. If it is disabled, enable the rule.

----End

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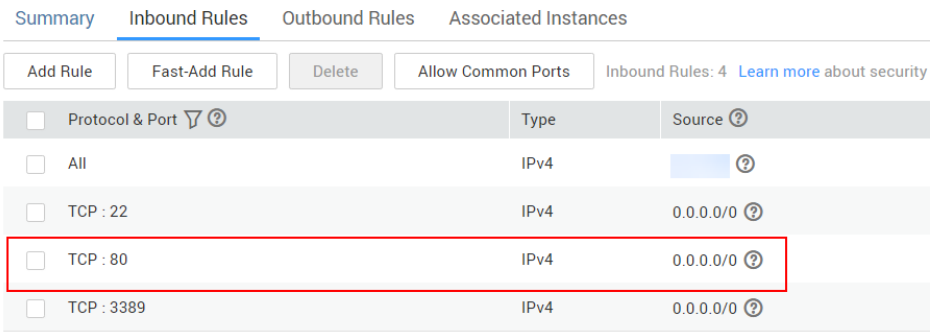
Linux

The following uses an ECS running CentOS 6 with Nginx deployed as an example.

Step 1 Ensure that port 80 is permitted in the security group.

1. Log in to the management console.
2. Click in the upper left corner and select the desired region and project.
3. Under **Computing**, click **Elastic Cloud Server**.
4. On the **Elastic Cloud Server** page, click the name of the target ECS.

   The page providing details about the ECS is displayed.
5. Click the **Security Groups** tab and view security group rules.
6. Make sure that the following security group rules have been added to the security group to which the ECS belongs:



Step 2 Remotely log in to the ECS and ensure that Nginx is enabled on it.

Run the following command to check whether Nginx has been enabled:

systemctl status nginx

If the following information is displayed, Nginx has been enabled:

```
[root@iZ7jvkxk5ylphzZ ~]# systemctl status nginx
● nginx.service - The nginx HTTP and reverse proxy server
   Loaded: loaded (/usr/lib/systemd/system/nginx.service; disabled; vendor prese
t: disabled)
   Active: active (running) since Tue 2017-09-12 21:14:08 CST; 44s ago
  Process: 9624 ExecStart=/usr/sbin/nginx (code=exited, status=0/SUCCESS)
  Process: 9622 ExecStartPre=/usr/sbin/nginx -t (code=exited, status=0/SUCCESS)
  Process: 9620 ExecStartPre=/usr/bin/rm -f /run/nginx.pid (code=exited, status=
0/SUCCESS)
 Main PID: 9627 (nginx)
   CGroup: /system.slice/nginx.service
           ├─9627 nginx: master process /usr/sbin/nginx
           └─9628 nginx: worker process

Sep 12 21:14:08 iZ7jvkxk5ylphzZ systemd[1]: Starting The nginx HTTP and reve....
Sep 12 21:14:08 iZ7jvkxk5ylphzZ nginx[9622]: nginx: the configuration file /...k
Sep 12 21:14:08 iZ7jvkxk5ylphzZ nginx[9622]: nginx: configuration file /etc/...l
Sep 12 21:14:08 iZ7jvkxk5ylphzZ systemd[1]: Failed to read PID from file /ru...t
Sep 12 21:14:08 iZ7jvkxk5ylphzZ systemd[1]: Started The nginx HTTP and rever....
Hint: Some lines were ellipsized, use -l to show in full.
```

If Nginx has not been enabled, run the following command to enable it:

systemctl start nginx

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Step 3 Run the following command to check whether the port is properly listened to on the ECS:

netstat -an | grep 80

If information similar to the following is displayed, port 80 is being properly listened to on the entire network. If not, change the listened IP address.

```
tcp   0 0 0.0.0.0:80    0.0.0.0:*     LISTEN
```

Step 4 View the iptables rules of the ECS firewall.

Run the following command to obtain the iptables rules of the ECS firewall:

iptables --line -vnL

- If port TCP 80 is intercepted by default, run the following command to add a rule to permit the port:

  iptables -A INPUT -p tcp --dport 80 -j ACCEPT
- If port TCP 80 is set to **DROP**, run the following command to permit the port:

  iptables -R INPUT [*Rule ID for port TCP 80***] -p tcp --dport 80 -j ACCEPT**

  Run the following command to save the rules:

  service iptables save

----End

1.6 Troubleshooting High Bandwidth Usage on an ECS

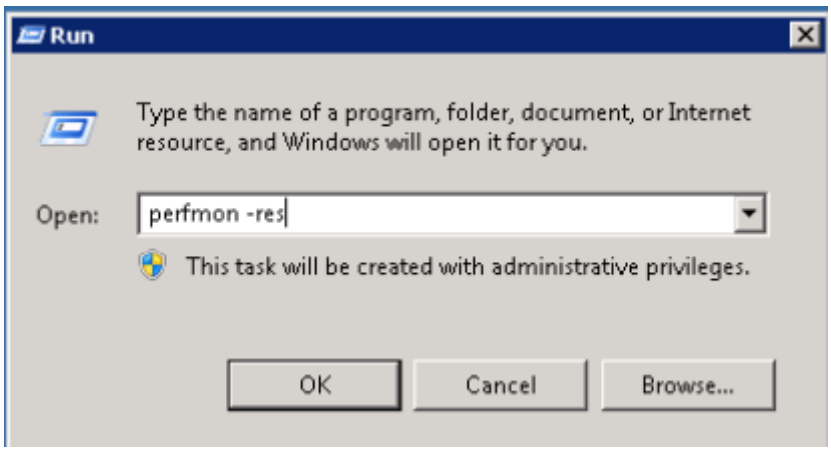
Scenarios

If an ECS responds slowly or even cannot be accessed, this issue may be caused by high bandwidth usage. To troubleshoot this issue, see this section.

Windows

1. Remotely log in to the ECS on the management console.

   The following uses an ECS running Windows Server 2012 as an example.
2. In the lower left corner of the ECS desktop, choose **Start** > **Run**.
3. In the **Open** dialog box, enter **perfmon -res**.



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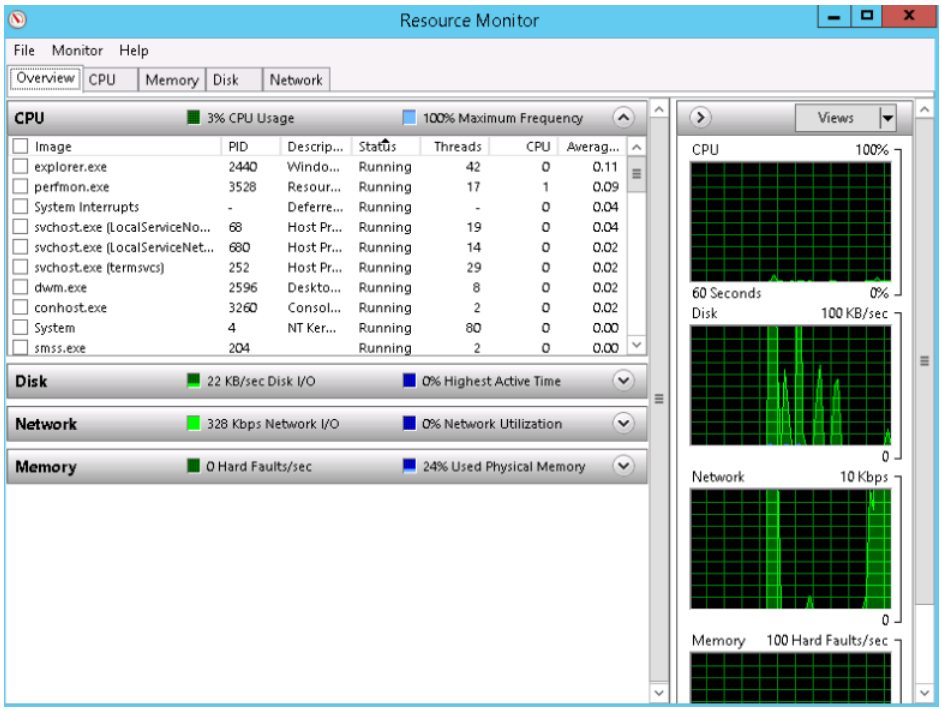
4. On the **Resource Monitor** page, click the **CPU** or **Network** tab to view the CPU or bandwidth usage.



5. View the processes with high bandwidth usage.
   - If such processes are service processes, you are advised to **modify ECS specifications**.
   - If such processes are abnormal ones, they may be caused by viruses or Trojan horses. You are advised to stop the processes or use security software to scan for and stop them.

Linux

1. Log in to the ECS through the management console.

   The following uses an ECS running CentOS 6.8 64bit as an example.

2. Run the following command to install the Linux traffic monitoring tool iftop:

   yum install iftop -y

```
[root@ecs-fccf ~]# yum install iftop -y
Loaded plugins: fastestmirror, security
Setting up Install Process
Determining fastest mirrors
epel/metalink
 * base: mirrors.163.com
 * epel: mirrors.njupt.edu.cn
 * extras: ftp.sjtu.edu.cn
 * updates: ftp.sjtu.edu.cn
base
base/primary_db                                        69%
```

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3. Run the following command to check the ports that cause heavy traffic and the IP addresses that consume high bandwidth (taking port **eth0** as an example):

   iftop -i *eth0* **-P**

   

4. Run the following command to check the processes related to the port (taking port 38366 as an example):

   netstat -tunlp |grep *38366*

   - **=>** indicates transmitted data, and **<=** indicates received data.
   - **TX** indicates TX traffic, **RX** indicates RX traffic, and **TOTAL** indicates the total traffic.
   - **cum** indicates the total traffic in the first column.
   - **peak** indicates the peak traffic in the first column.
   - **rates** indicates the average traffic within 2, 10, and 40 seconds in the first column.

5. View the processes with high bandwidth usage.
   - If such processes are service processes, you are advised to **modify ECS specifications**.
   - If such processes are abnormal ones, they may be caused by viruses or Trojan horses. You are advised to stop the processes or use security software to scan for and stop them.

1.7 Troubleshooting High Bandwidth or CPU Usage of a Windows ECS

If your Windows ECS runs slowly or is inaccessible unexpectedly, the bandwidth or CPU usage of the ECS may be excessively high. If you have **created an alarm rule** using Cloud Eye, the system automatically sends an alarm to you when the bandwidth or CPU usage reaches the threshold specified in the rule.

To handle this issue, perform the following operations:

1. Fault locating: identifies the processes leading to high bandwidth or CPU usage.

   Windows OSs offer multiple tools to locate faults, including Task Manager, Performance Monitor, Resource Monitor, Process Explorer, Xperf (supported by versions later than Windows Server 2008), and obtained full memory dump. When traffic is heavy, you can also use Wireshark to obtain network packets for a period of time for traffic analysis.

2. Troubleshooting: Check whether the processes are malicious and handle the issue accordingly.
   - If the processes are not malicious, optimize their programs or **modify ECS specifications**.

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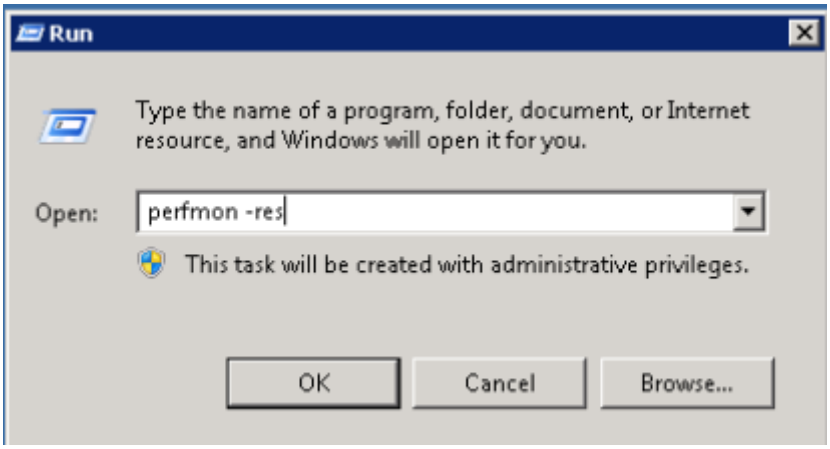
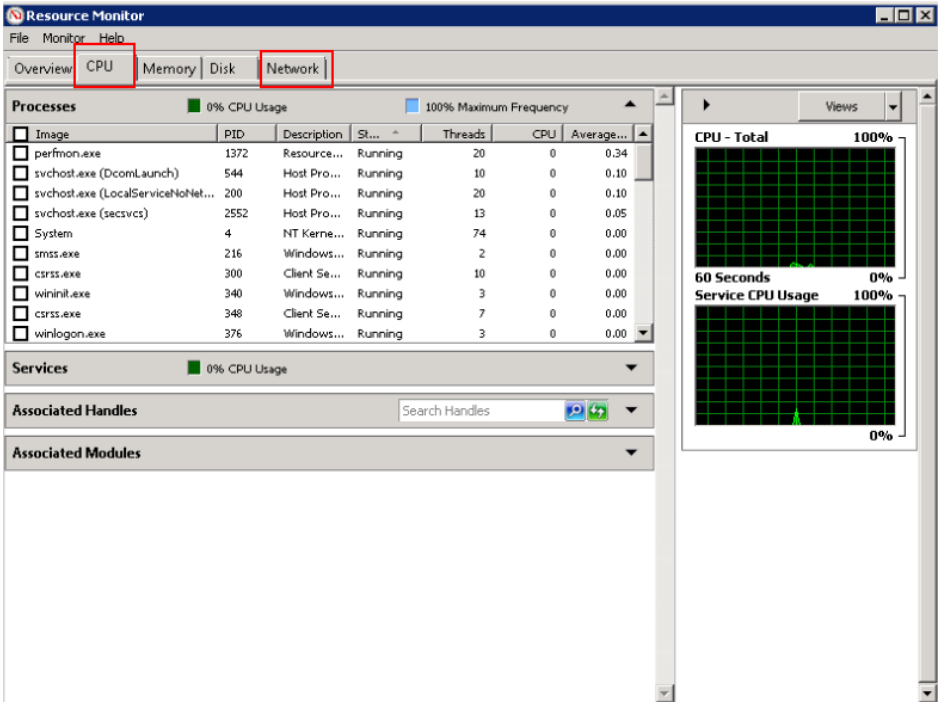
- If the processes are malicious, use a third-party tool to automatically stop the processes.

Locating the Fault

1. In the lower left corner of the ECS desktop, choose **Start** > **Run**.
2. In the **Open** dialog box, enter **perfmon -res**.



3. On the **Resource Monitor** page, click the **CPU** or **Network** tab to view the CPU or bandwidth usage.



4. Obtain the IDs and names of the processes with high CPU or bandwidth usage.
5. Press **Ctrl+Alt+Delete** to start Windows Task Manager.

   The following describes how to display PIDs in Task Manager, locate a process, and check whether it is malicious.

   a. Click the **Processes** tab.

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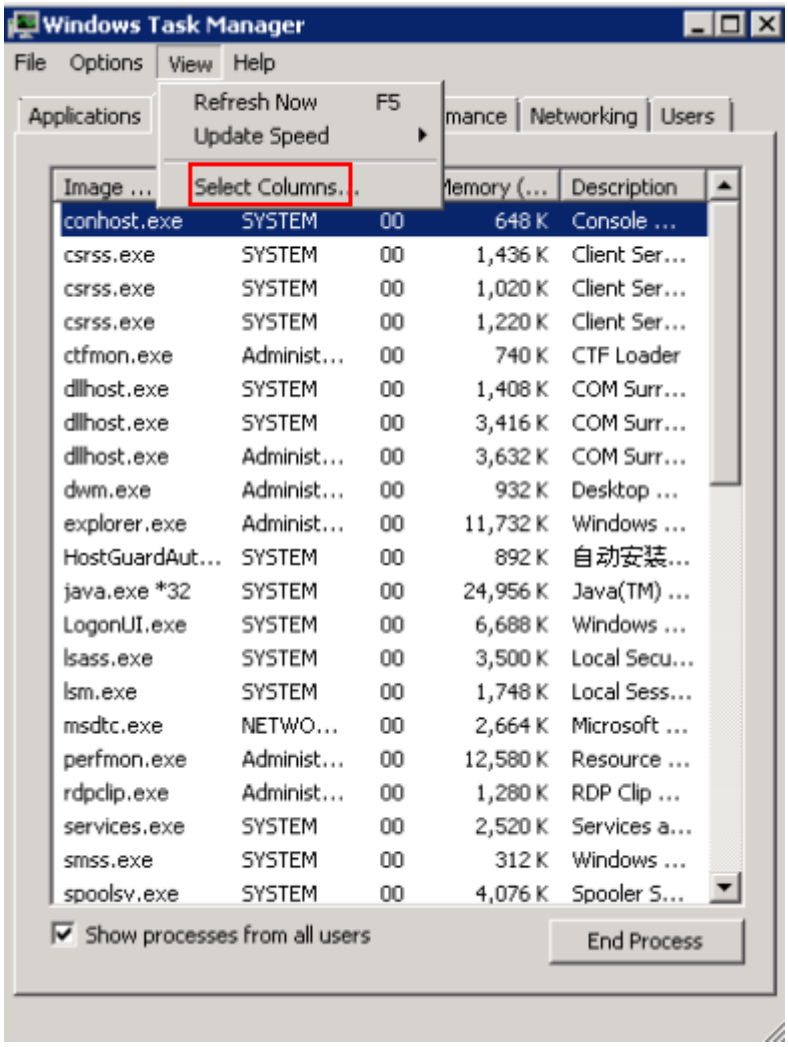
b. Choose **View** > **Select Columns**.



c. Select **PID (Process Identifier)**.

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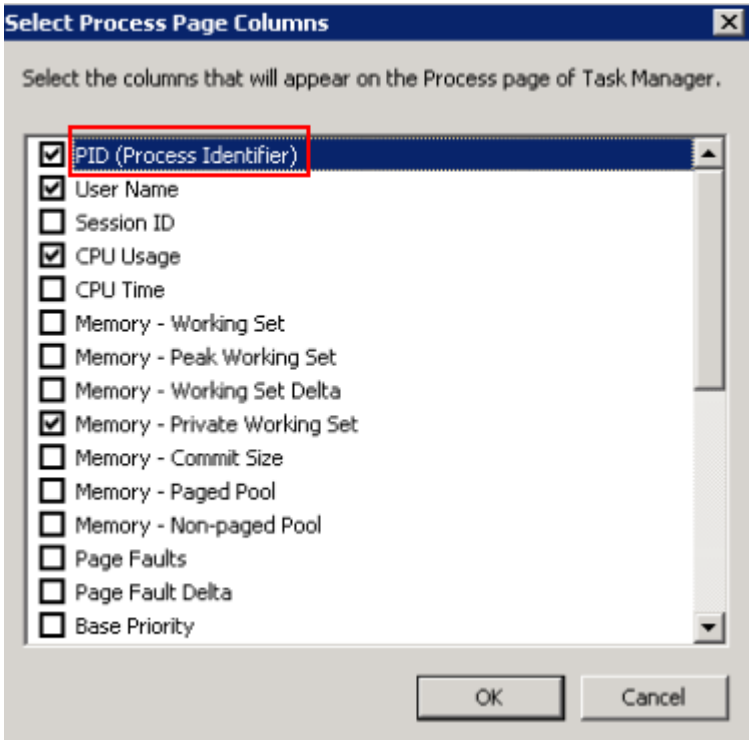

d. Click **OK**.

   On the **Processes** tab, the **PID** column is displayed.

e. Click **PID** to sort the data.

f. Right-click the process with high CPU or bandwidth usage and choose **Open File Location** from the shortcut menu.

g. Check whether the process is malicious.

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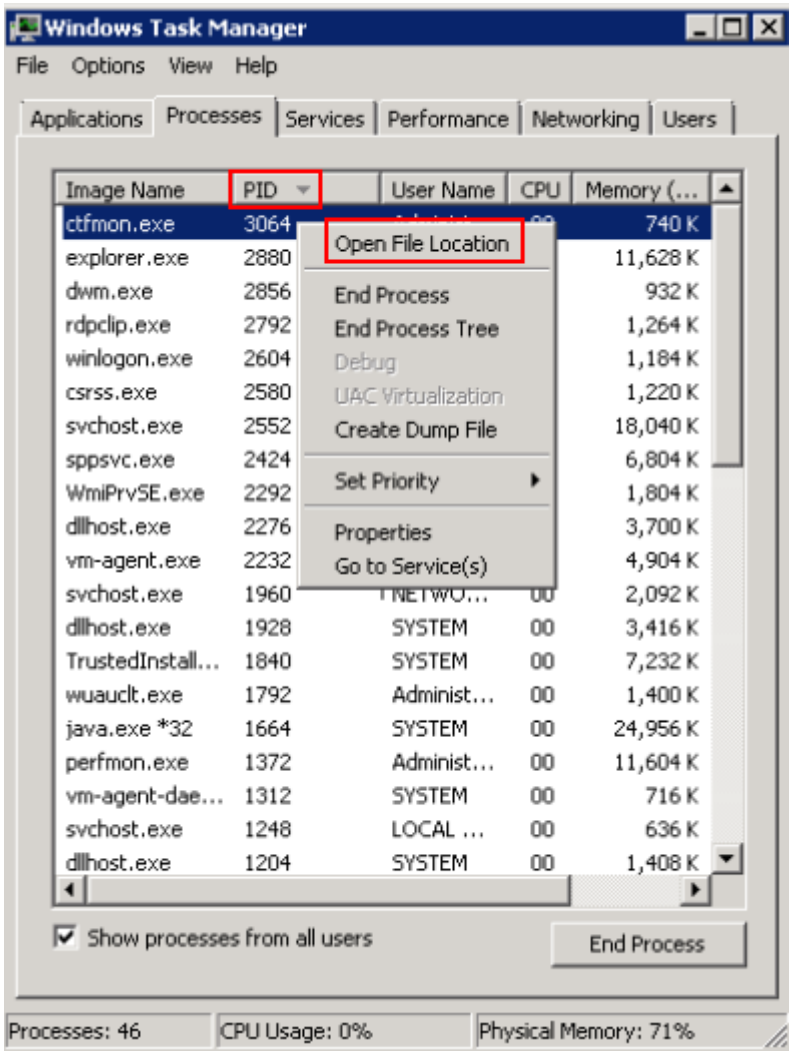

Solution

Before troubleshooting, determine whether the process leading to the high CPU or bandwidth usage is malicious, and then take measure accordingly.

Suggestions for non-malicious processes

1. If your ECS runs Windows Server 2008 or 2012, ensure that the available memory capacity is 2 GB or higher.
2. Check whether Windows Update is running on the backend.
3. Check whether the antivirus software is scanning on the backend.
4. Check whether there are applications running on the ECS with strict requirements on CPU or bandwidth usage. If so, **modify ECS specifications** or **enlarge bandwidth**.
5. If the ECS configuration meets application requirements, deploy applications separately. For example, deploy the database and applications separately.

Suggestions for malicious processes

If the high CPU or bandwidth usage is due to viruses or Trojan horses, manually stop the affected processes. The recommended processing sequence is as follows:

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1. Use the commercial-edition antivirus software or install **Microsoft Safety Scanner** to scan for viruses in security mode.
2. Install the latest patches for Windows.
3. Run **MSconfig** to disable all drivers that are not delivered with Microsoft and check whether the fault is rectified. For details, see **How to perform a clean boot in Windows**.
4. If the ECS or site encounters a DDoS or CC attack, which leads to a large number of access requests within in a short period of time, log in to the management console and perform the following operations:
   - Check whether Anti-DDoS has been enabled and whether the protection rules are proper. To configure a protection rule, see **Enabling Anti-DDoS**.
   - Check whether CC attack protection has been enabled and whether the protection rules are proper. To configure a protection rule, see **Configuring CC Attack Protection Rules**.

1.8 Troubleshooting High Bandwidth or CPU Usage of a Linux ECS

If your Linux ECS runs slowly or is inaccessible unexpectedly, the bandwidth or CPU usage of the ECS may be excessively high. If you have **created an alarm rule** using Cloud Eye, the system automatically sends an alarm to you when the bandwidth or CPU usage reaches the threshold specified in the rule.

To handle this issue, perform the following operations:

1. Fault locating: identifies the processes leading to high bandwidth or CPU usage.
2. Troubleshooting: Check whether the processes are malicious and handle the issue accordingly.
   - If the processes are not malicious, optimize their programs or **modify ECS specifications**.
   - If the processes are malicious, use a third-party tool to automatically stop the processes or manually stop them.

Common Commands

The following uses the CentOS 7.2 64bit OS as an example to describe common commands. The commands may vary depending on Linux OS editions. For details, see the official documentation for the specific OS edition.

The common commands for checking Linux ECS performance metrics, such as CPU usage are as follows:

- **ps -aux**
- **ps -ef**
- **top**

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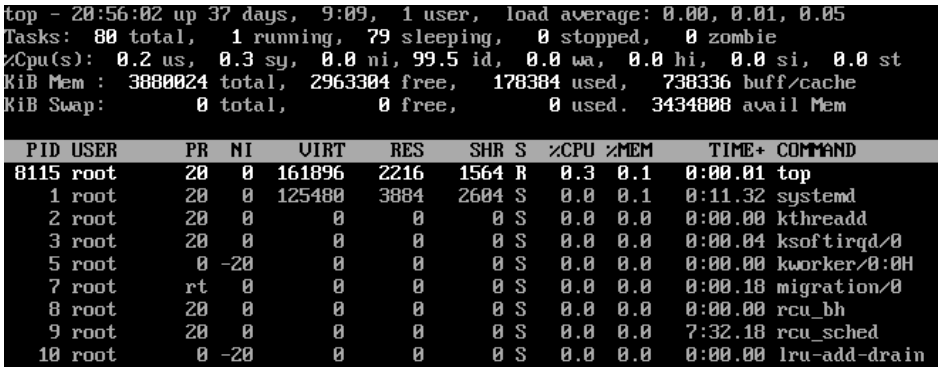
Locating High CPU Usage

1. Log in to the ECS using VNC.
2. Run the following command to check the OS running status:

   top

   Information similar to the following is displayed.



3. View the command output.
   - The first line in the command output is "20:56:02 up 37 days, 1 user, load average: 0.00, 0.01, 0.05", indicating that:

     The current system time is 20:56:02; the ECS has been running for 37 days; there is one login user; the last three values indicate the average CPU load in the last 1 minute, 5 minutes, and 15 minutes, respectively.
   - The third line in the command output shows the overall CPU usage.
   - The fourth line in the command output shows the overall memory usage.
   - The lower part of the command output shows the resource usage of each process.

     NOTE

     1. On the **top** page, enter **q** or press **Ctrl+C** to exit.
     2. Alternatively, click **Input Command** in the upper right corner of the VNC login page, paste or enter commands in the displayed dialog box, and click **Send**.
     3. Common parameters in top commands are as follows:

        s: Change the image update frequency.

        l: Show or hide the first line for the top information.

        t: Show or hide the second line for tasks and the third line for CPUs.

        m: Show or hide the fourth line for Mem and the fifth line for Swap.

        N: Sort processes by PID in ascending or descending order.

        P: Sort processes by CPU usage in ascending or descending order.

        M: Sort processes by memory usage in ascending or descending order.

        h: Show help for commands.

        n: Set the number of processes displayed in the process list.
4. Run the **ll /proc/***PID***/exe** command to obtain the program file specified by a PID.



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Troubleshooting High CPU Usage

If the processes leading to high CPU usage are malicious, run the top command to stop them. If the **kswapd0** process leads to high CPU usage, optimize the program for the process or upgrade the ECS specifications for a larger memory capacity.

kswapd0 is a virtual memory management process. When the physical memory becomes insufficient, **kswapd0** runs to allocate disk swap capacity for caching. This uses a large number of CPU resources.

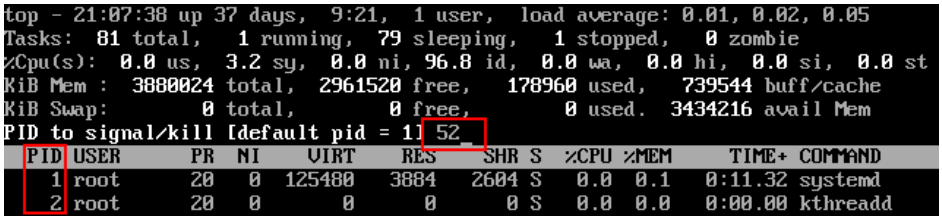
- For the detected malicious processes

  Quickly stop such processes on the top page. To do so, perform the following operations:

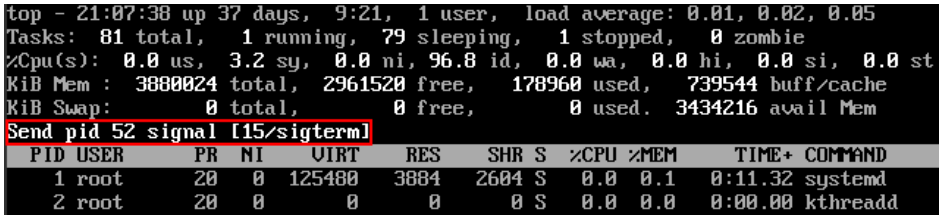
  a. Press the **k** key during the execution of the top command.

  b. Enter the PID of the process to be stopped.

  The PID of the process is the value in the first column of the top command output. For example, to stop the process with PID 52, enter **52** and press **Enter**.



  c. After the operation is successful, information similar to the following is displayed. Press **Enter**.

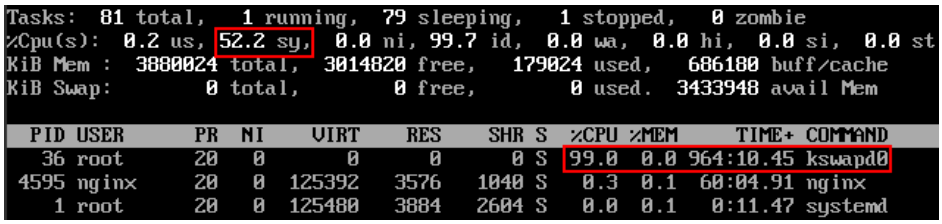


- For the **kswapd0** process

  To check the memory usage of a process, perform the following operations:

  a. Run the top command to check the resource usage of the **kswapd0** process.

  b. If the process remains in non-sleeping state for a long period of time, you can preliminarily determine that the system is consistently paging. In such a case, the high CPU usage is caused by insufficient memory.



  c. Run the **vmstat** command to check the virtual memory usage of the system.

  If the **si** and **so** values are large, the system is frequently paging and the physical memory of the system is insufficient.

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- **si**: Volume of data written from the swap partition to the memory per second, which is transferred from the disk to the memory.
- **so**: Volume of data written from the memory to the swap partition per second, which is transferred from the memory to the disk.

d. Further identify the causes of high memory usage. Run commands, such as **free** and **ps** to check the memory usage of the system and processes in the system.

e. Restart the application or release the memory when traffic is light.

To handle this issue, expand the ECS memory. If memory expansion is not allowed, optimize the application and enable hugepage memory.

Handling High Bandwidth Usage

If the high bandwidth usage is caused by normal service access of non-malicious processes, enlarge the bandwidth to handle this issue. If the high bandwidth usage is caused by abnormal service access, for example, malicious access from certain IP addresses, CC attacks on the ECS, or malicious processes, use the traffic monitoring tool **nethogs** to monitor the bandwidth usage of each process in real time and identify faulty processes.

- Using **nethogs** for troubleshooting

  a. Run the following command to install **nethogs**:

  yum install nethogs -y

  After the installation, run the **netgos** command to check bandwidth usage.

  Parameters in the **nethogs** command are as follows:

  - **-d**: Set the update interval in the unit of second. The default value is **1**.
  - **-t**: Enable tracing.
  - **-c**: Set the number of updates.
  - **device**: Set the NIC to be monitored. The default value is **eth0**.

  The following parameters are involved in command execution:

  - **q**: Exit **nethogs**.
  - **s**: Sort processes in the process list by TX traffic in ascending or descending order.
  - **r**: Sort processes in the process list by RX traffic in ascending or descending order.
  - **m**: Switch the display unit in the sequence of KB/s, KB, B, and MB.

  b. Run the following command to check the bandwidth usage of each process on the specified NIC:

  nethogs *eth1*

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The parameters in the command output are as follows:

- **PID**: ID of the process.
- **USER**: user who runs the process.
- **PROGRAM**: IP addresses and port numbers of the process and connection, respectively. The former is for the server and the latter is for the client.
- **DEV**: Network port to which the traffic is destined.
- **SENT**: Volume of data sent by the process per second.
- **RECEIVED**: Volume of data received by the process per second.

c. Stop malicious programs or blacklist malicious IP addresses.

To stop a malicious process, run the **kill** *PID* command.

To blacklist a malicious IP address or limit its rate, use iptables.

- Using Web Application Firewall (WAF) to protect the ECS against CC attacks

  If your ECS has encountered a CC attack, enable CC security protection on the WAF console. For instructions about how to use WAF, see **Configuring CC Attack Protection Rules**.

1.9 How Can I Handle Slow ECS Startup?

If an ECS requires a long period of time to start, you can change the default timeout to speed up the startup.

1. Log in to the ECS.
2. Run the following command to switch to user **root**:

   sudo su
3. Run the following command to obtain the grub version:

   rpm -qa | grep grub

   Figure 1-9 Viewing the grub version

   

4. Change the timeout in the grub file to 0s.
   - If the grub version is earlier than 2:

     Open the **/boot/grub/grub.cfg** or **/boot/grub/menu.lst** file and change the **timeout** value to **0**.
   - If the grub version is 2:

     Open the **/boot/grub2/grub.cfg** file and change the **timeout** value to **0**.

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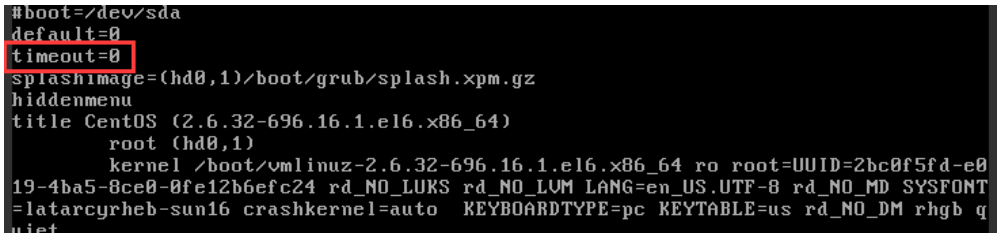
Figure 1-10 Changing timeout duration



1.10 Troubleshooting Multi-IP-Address Access on an ECS with Multiple NICs Attached

Symptom

If an ECS has multiple NICs, perform the following operations to configure policy-based routing for the ECS to enable the network communication of secondary NICs.

Possible Causes

No routing rules are configured for the EIPs bound to the extension NICs.

Linux

1. Run the following command to add the priority value and name of the route table for each NIC to the **/etc/iproute2/rt_tables** file. A smaller priority value represents a higher priority. In this example, **250** and **net0** indicate the route table priority value and name of eth0, respectively. **251** and **net1** indicate the route table priority value and name of eth1, respectively. If there are multiple NICs, add the route table priority value and name of each NIC one by one.

   vi /etc/iproute2/rt_tables

   ```
   # added for dual net
   250     net0
   251     net1
   ```

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

   vi /etc/rc.local

   eth0 is used as an example here. If an IPv4 NIC is used, obtain the following information:

   IPv4 address (192.168.0.129), subnet (192.168.0.0/24), gateway address (192.168.0.1), and route table added in step **1** (net0)

   ```
   # wait for nics up
    sleep 5
    # Add v4 routes for eth0
    ip route flush table net0
    ip route add default via 192.168.0.1 dev eth0 table net0
    ip route add 192.168.0.0/24 dev eth0 table net0
    ip rule add from 192.168.0.129 table net0
    # Add v4 routes for eth1
    ip route flush table net1
    ip route add default via 192.168.1.1 dev eth1 table net1
    ip route add 192.168.1.0/24 dev eth1 table net1
    ip rule add from 192.168.1.138 table net1
   ```

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Before configuring policy-based routing for NICs using IPv6 addresses, ensure that IPv6-related configurations have been performed. For details, see "Linux (Automatic Configuration of IPv6)" in **Dynamically Assigning IPv6 Addresses**.

eth0 is used as an example here. If an IPv6 NIC is used, obtain the following information:

IPv6 address (2407:c080:802:1be:2233:64bf:b095:54bf), subnet (2407:c080:802:1be::/64), gateway address (fe80::f816:3eff:fef3:20dc), and route table added in step1 is net0

Run the command **ip -6 route show| grep default** to view the IPv6 gateway address of a NIC.

```
[root@ecs-3c3f ~]# ip -6 route show| grep default
default via fe80::f816:3eff:fef3:20dc dev eth0 proto ra metric 100 pref medium
default via fe80::f816:3eff:fe10:5447 dev eth1 proto ra metric 101 pref medium
```

If there are multiple NICs, add their routing information one by one.

```
# Add v6 routes for eth0
 ip -6 route flush table net0
 ip -6 route add default via fe80::f816:3eff:fef3:20dc dev eth0 table net0
 ip -6 route add 2407:c080:802:1be::/64 dev eth0 table net0
 ip -6 rule add from 2407:c080:802:1be:2233:64bf:b095:54bf table net0
 # Add v6 routes for eth1
 ip -6 route flush table net1
 ip -6 route add default via fe80::f816:3eff:fe10:5447 dev eth1 table net1
 ip -6 route add 2407:c080:802:1bf::/64 dev eth1 table net1
 ip -6 rule add from 2407:c080:802:1bf:39ea:bffe:13a2:7a1f table net1
```

3. Run the following command to add the execute permission for the **rc.local** file:

   # chmod +x /etc/rc.local

4. Run the **reboot** command to restart the ECS.
5. After the restart, run the following command to check whether the configured routes and route tables take effect.

   For IPv4 NICs:

   ip rule

   ip route show table net0

   ip route show table net1

```
[root@ecs-3c3f ~]# ip rule
0:      from all lookup local
32764:  from 192.168.1.138 lookup net1
32765:  from 192.168.0.129 lookup net0
32766:  from all lookup main
32767:  from all lookup default
[root@ecs-3c3f ~]# ip route show table net0
default via 192.168.0.1 dev eth0
192.168.0.0/24 dev eth0 scope link
[root@ecs-3c3f ~]# ip route show table net1
default via 192.168.1.1 dev eth1
192.168.1.0/24 dev eth1 scope link
[root@ecs-3c3f ~]#
```

   For IPv6 NICs:

   ip -6 rule

   ip -6 route show table net0

   ip -6 route show table net1

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```
[root@ecs-3c3f ~]# ip -6 rule
0:      from all lookup local
32764:  from 2407:c080:802:1bf:39ea:bffe:13a2:7a1f lookup net1
32765:  from 2407:c080:802:1be:2233:64bf:b095:54bf lookup net0
32766:  from all lookup main
[root@ecs-3c3f ~]# ip -6 route show table net0
2407:c080:802:1be::/64 dev eth0 metric 1024 pref medium
default via fe80::f816:3eff:fef3:20dc dev eth0 metric 1024 pref medium
[root@ecs-3c3f ~]# ip -6 route show table net1
2407:c080:802:1bf::/64 dev eth1 metric 1024 pref medium
default via fe80::f816:3eff:fe10:5447 dev eth1 metric 1024 pref medium
[root@ecs-3c3f ~]#
```

6. Specify the source addresses for the test.

   For IPv4 addresses:

   ping -I 192.168.0.129 xxx

   ping -I 192.168.1.138 xxx

   For IPv6 addresses:

   ping -I 2407:c080:802:1be:2233:64bf:b095:54bf xxx

   ping -I 2407:c080:802:1bf:39ea:bffe:13a2:7a1f xxx

Windows

1. Choose **Control Panel** > **Network and Internet** > **Network Connections**. Right-click **Local Area Connection 2** and then click **Properties**.

   NOTE

   Right-click to add NICs based on the site requirements. If there are multiple NICs, there will be multiple local area connections. Configure them one by one.

2. On the **Network** tab page, select **Internet Protocol Version 4 (TCP/IPv4)**.
3. Click **Properties**.
4. On the **General** tab page, click **Advanced**.
5. On the **IP Settings** tab, click **Add** in the **Default gateways** area.

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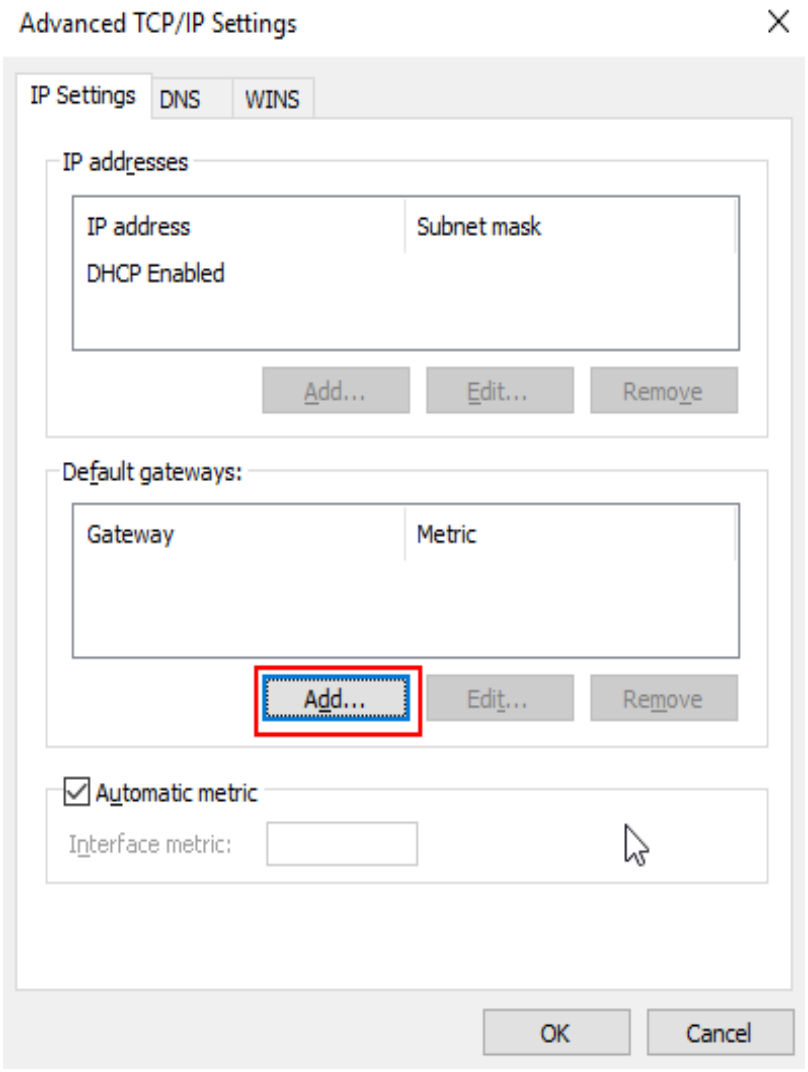
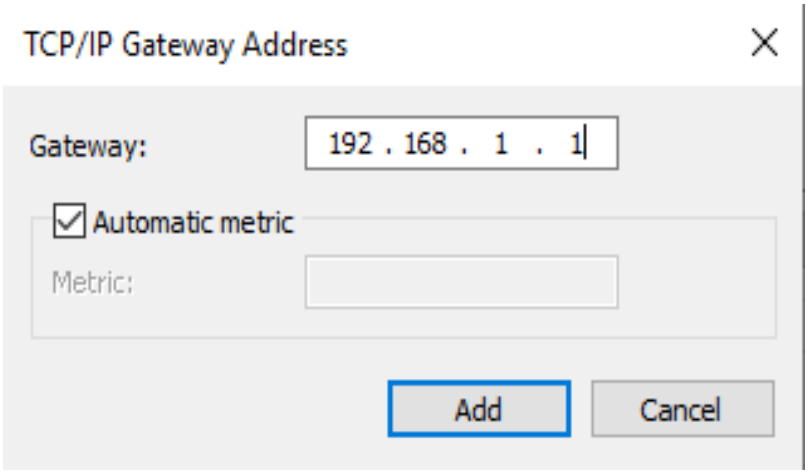
Figure 1-11 Advanced TCP/IP settings



6. Enter the gateway address of the secondary NIC and click **Add**.

Figure 1-12 TCP/IP Gateway Address



7. Click **OK**.

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8. Open the command line interface (CLI) of the Windows OS and enter **route print** to view the policy-based routes.

```
C:\Users\Administrator>route print
===========================================================================
Interface List
  7...fa 16 3e 64 94 ae ......Red Hat VirtIO Ethernet Adapter
 29...fa 16 3e 00 42 c9 ......Red Hat VirtIO Ethernet Adapter #3
  1...........................Software Loopback Interface 1
===========================================================================

IPv4 Route Table
===========================================================================
Active Routes:
Network Destination        Netmask          Gateway       Interface  Metric
          0.0.0.0          0.0.0.0      192.168.1.1    192.168.1.138     261
          0.0.0.0          0.0.0.0      192.168.0.1    192.168.0.129       5
        127.0.0.0        255.0.0.0         On-link         127.0.0.1     331
        127.0.0.1  255.255.255.255         On-link         127.0.0.1     331
  127.255.255.255  255.255.255.255         On-link         127.0.0.1     331
  169.254.169.254  255.255.255.255    192.168.0.254    192.168.0.129       6
      192.168.0.0    255.255.255.0         On-link     192.168.0.129     261
    192.168.0.129  255.255.255.255         On-link     192.168.0.129     261
    192.168.0.255  255.255.255.255         On-link     192.168.0.129     261
      192.168.1.0    255.255.255.0         On-link     192.168.1.138     261
    192.168.1.138  255.255.255.255         On-link     192.168.1.138     261
    192.168.1.255  255.255.255.255         On-link     192.168.1.138     261
        224.0.0.0        240.0.0.0         On-link         127.0.0.1     331
        224.0.0.0        240.0.0.0         On-link     192.168.0.129     261
        224.0.0.0        240.0.0.0         On-link     192.168.1.138     261
  255.255.255.255  255.255.255.255         On-link         127.0.0.1     331
```

9. Specify the source addresses for the test.

   ping -S 192.168.0.129 xxx

   ping -S 192.168.1.138 xxx

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2 Windows Issues

2.1 Retaining a Session on a Windows ECS

Scenarios

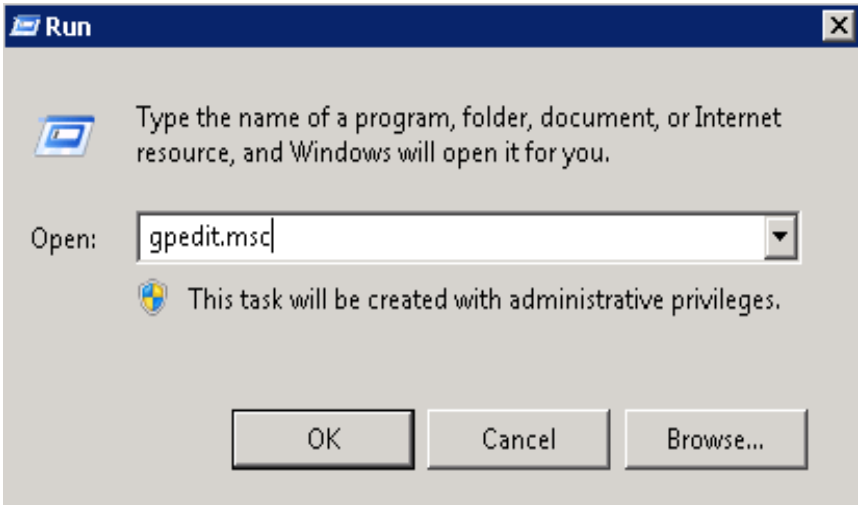
This section describes how to configure a Windows ECS so that its remote desktop connection will not be automatically disconnected.

Procedure

The following uses an ECS running Windows Server 2008 as an example.

1. Choose **Start** > **Run**. In the **Run** dialog box, enter **gpedit.msc** and click **OK** to start Local Group Policy Editor.

   Figure 2-1 gpedit.msc

2. Choose **Computer Configuration** > **Administrative Templates** > **Windows Components** > **Remote Desktop Services** > **Remote Desktop Session Host** > **Session Time Limits**.

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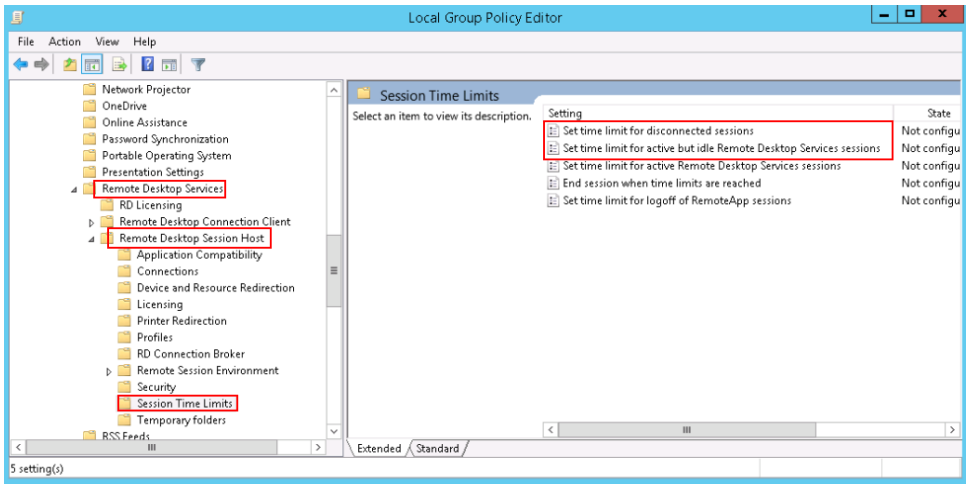
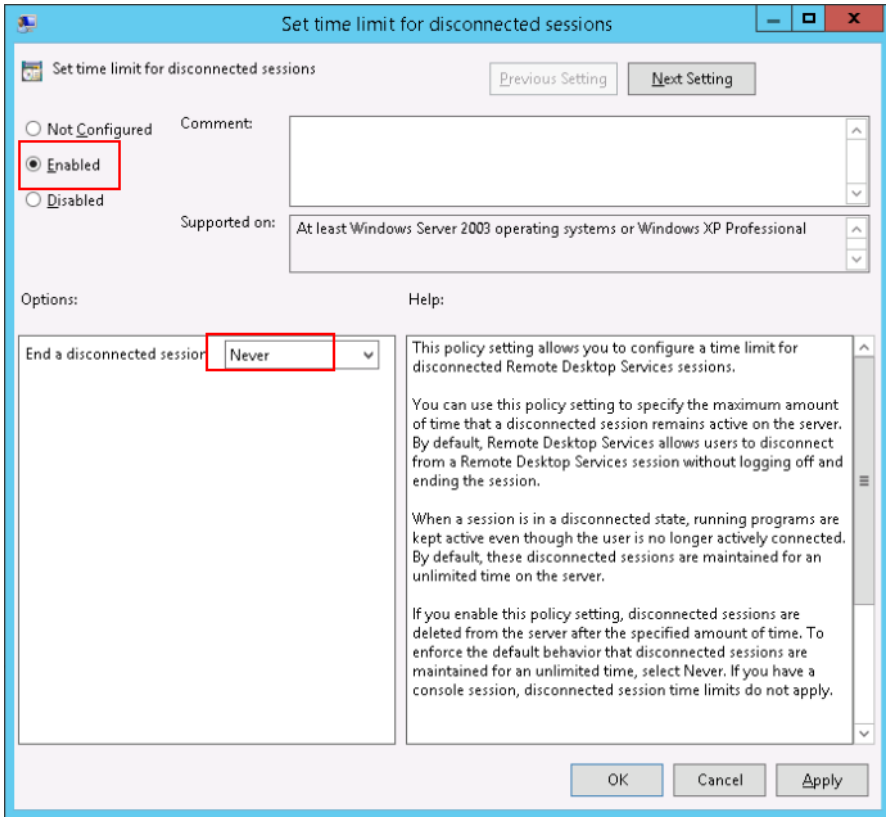


3. Set time limit for disconnected sessions.
   - Select **Enabled**.
   - Set **End a disconnected session** to **Never**.



4. Set time limit for active but idle Remote Desktop Services sessions.
   - Select **Enabled**.
   - Set **Idle session limit** to **Never**.

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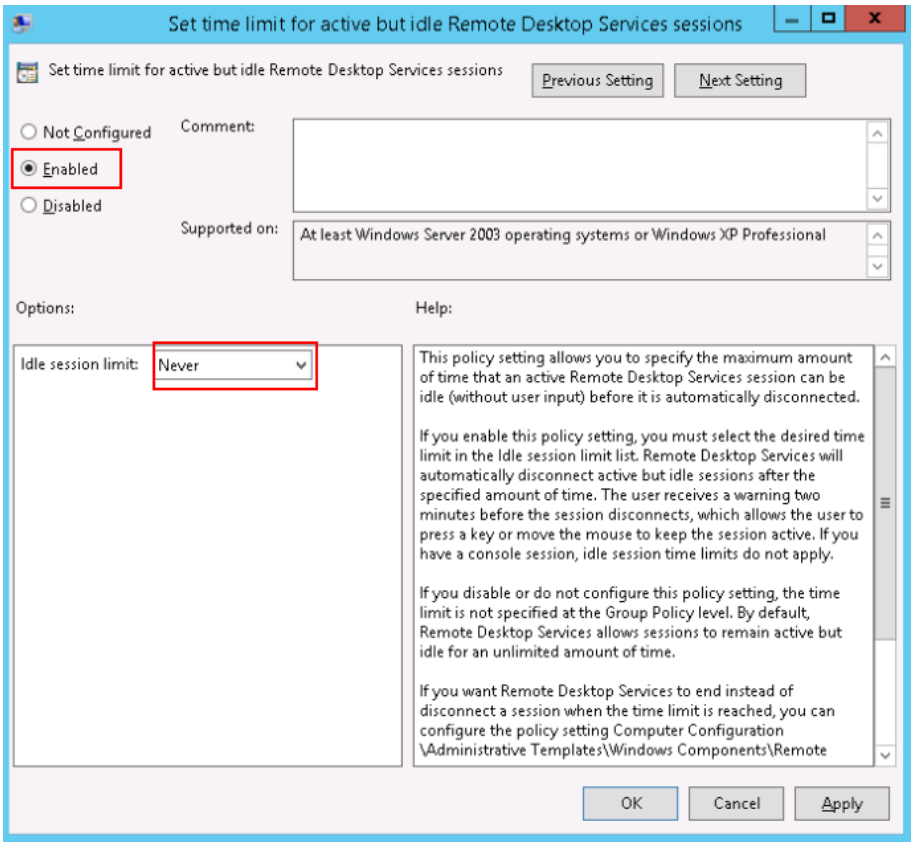
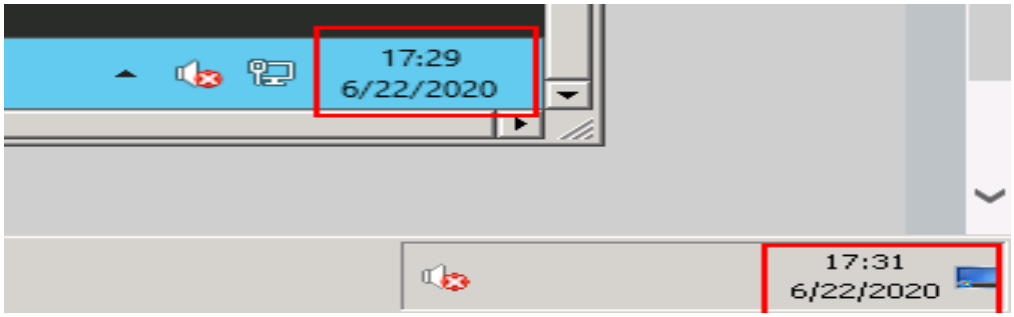


2.2 Troubleshooting Difference Between System Time and Local Standard Time

Symptom

The system time on my Windows ECS is different from the local standard time.

Figure 2-2 Difference between system time and local standard time



Possible Causes

Affected by the network state, some drivers, or processes, the system time may be different from the standard time.

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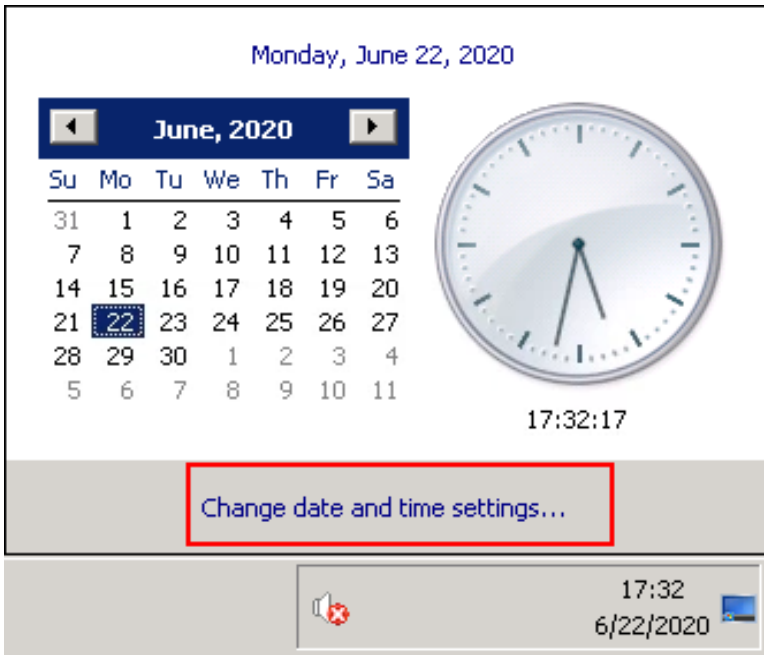
Solution 1

Manually synchronize system time.

1. Click **Change date and time settings** in the lower right corner of the desktop. The **Date and Time** window is displayed.

   Figure 2-3 Date and time



2. Click the **Internet Time** tab.

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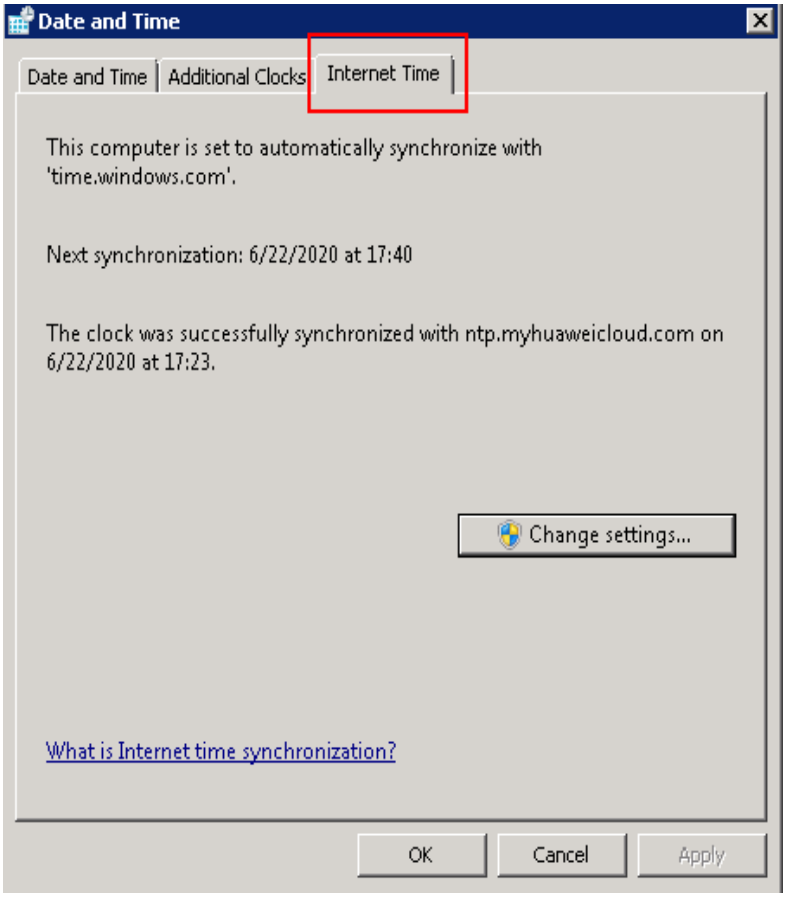
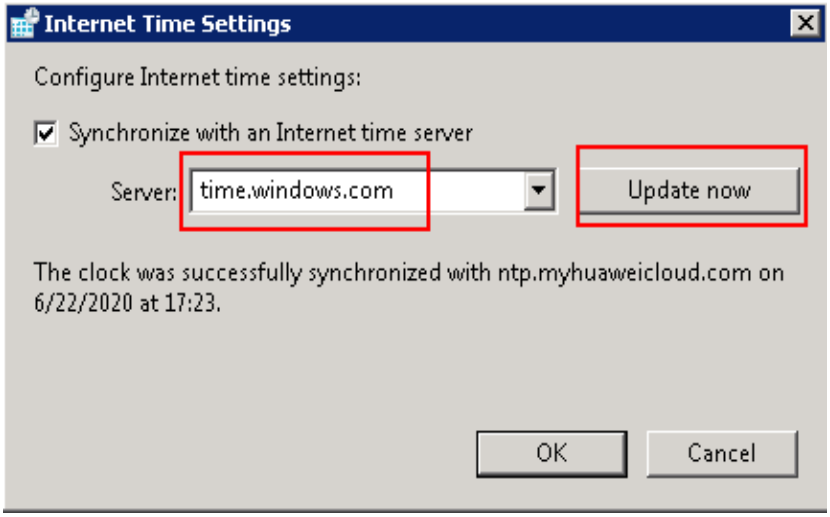
Figure 2-4 Internet time



3. Click **Change settings** and select a time source.
   The default time source is **time.windows.com**.
4. Click **Update now** and then click **OK**.

Figure 2-5 Selecting a time source



5. Check whether system time is consistent with the local standard time.

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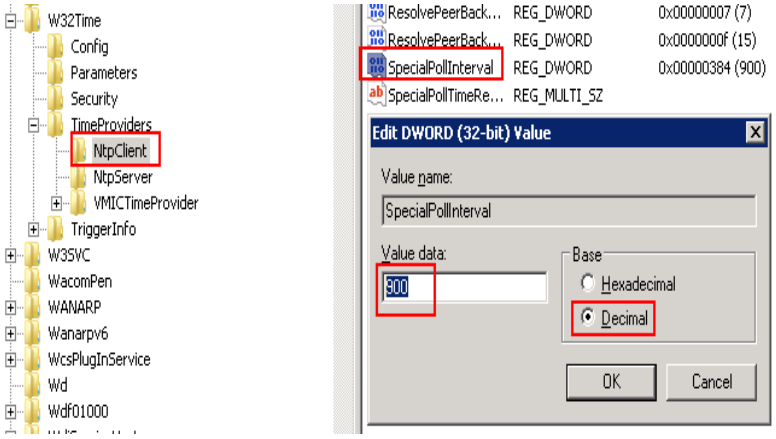
Solution 2

Change the update frequency of system time by editing the Windows registry.

1. In the **Run** dialog box, enter **regedit** to access the registry editor.
2. Choose **HKEY_LOCAL_MACHINE** > **SYSTEM** > **CurrentControlSet** > **Services** > **W32Time** > **TimeProviders** > **NtpClient** and double-click **SpecialPollInterval**.
3. In the dialog box that is displayed, set **Base** to **Decimal**.
4. Set the time synchronization interval.

   The value displayed in **Value data** is the interval (in seconds) for automatic time synchronization. Set this parameter as required.

   Figure 2-6 Setting the time synchronization interval

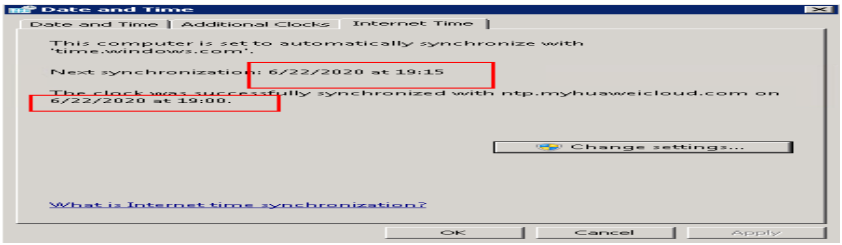


5. Click **OK**.
6. After the configuration is complete, enter **cmd** to open the CLI and run the following command to update the group policy:

   gpupdate

7. Check the Internet time. As shown in **Figure 2-7**, the time synchronization frequency is changed to once every 15 minutes.

   Figure 2-7 Viewing time synchronization frequency



Solution 3

Install the NTP server. For details, see **Does HUAWEI CLOUD Provide the NTP Server and How Can I Install It?**

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2.3 Troubleshooting Internet Access on an Extension NIC Newly Attached to a Windows ECS

Scenarios

A Windows ECS has one primary NIC and one extension NIC attached. Both the NICs have an EIP bound to access the Internet.

Constraints

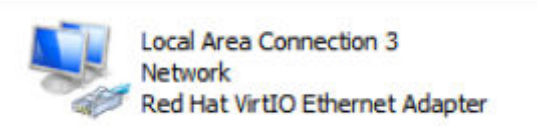
Do not modify the primary NIC settings.

Procedure

1. Log in to the management console and click **Elastic Cloud Server** under **Computing**.
2. On the **Elastic Cloud Server** page, select the target ECS.
3. Click the name of the ECS to switch to the page providing details about the ECS.
4. Click the **NICs** tab.
5. Click **Add NIC** and add an extension NIC as prompted.

   Ensure that the security group and subnet of the extension NIC are the same as those of the primary NIC.

   After the extension NIC is added, the system automatically obtains a private IP address.
6. Remotely log in to the ECS.
7. Click **Open Network and Sharing Center** in the lower right corner. Then, click **Change adapter settings** in the upper left corner and find the newly added NIC.

8. Right-click the target network connection and choose **Properties** from the shortcut menu.
9. In the **Local Area Connection 3 Properties** dialog box, click the **Networking** tab, select **Internet Protocol Version 4 (TCP/IPv4)**, and click **Properties**.
10. In the **Internet Protocol Version 4 (TCP/IPv4) Properties** dialog box, click the **General** tab and configure the private IP address automatically obtained in step **5** for the newly added NIC.

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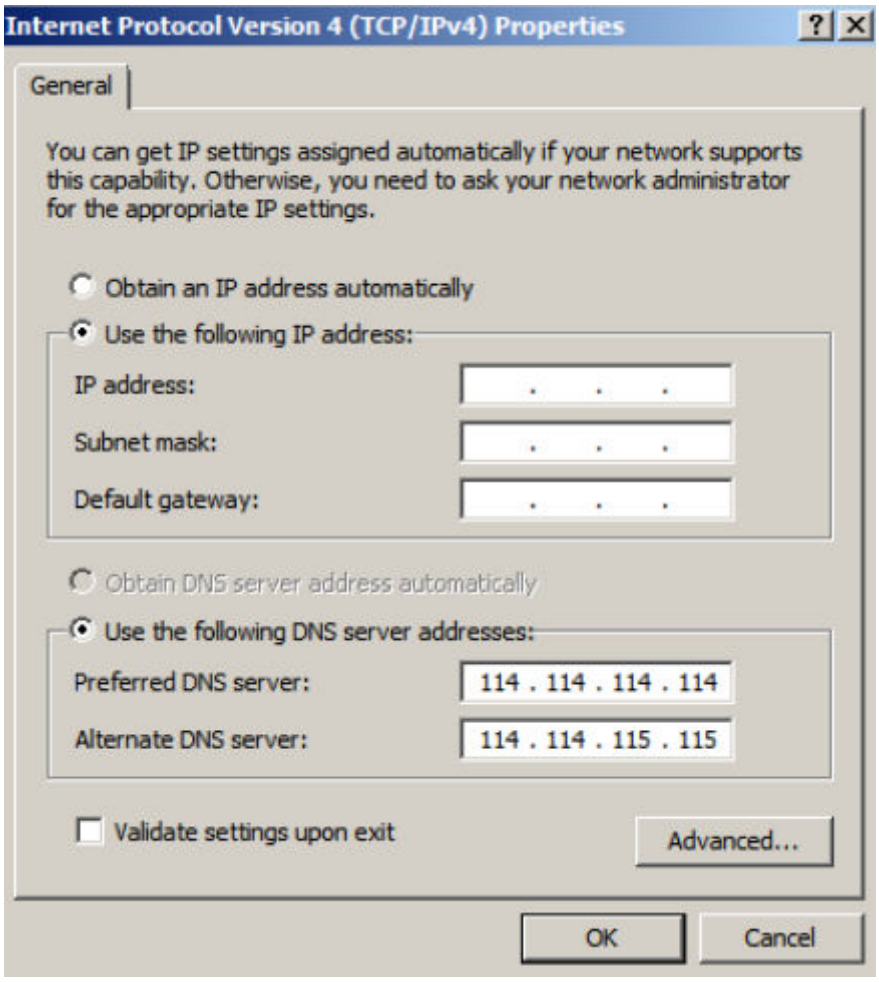

Example configurations:

- Private IP address: 192.168.1.11
- IP address: 192.168.1.11
- Subnet mask: 255.255.255.0
- Default gateway: 192.168.1.1
- Preferred DNS server: 114.114.114.114
- Alternate DNS server: 114.114.115.115

11. After the configuration, select **Validate settings upon exit**.
12. Restart the NIC and bind an EIP to it.

2.4 Troubleshooting Disabled Copy and Paste Options

Symptom

After remotely logging in to a Windows ECS, I cannot copy or paste content and find that the **Paste** option grayed out.

Possible Causes

- Local drive is not mapped.

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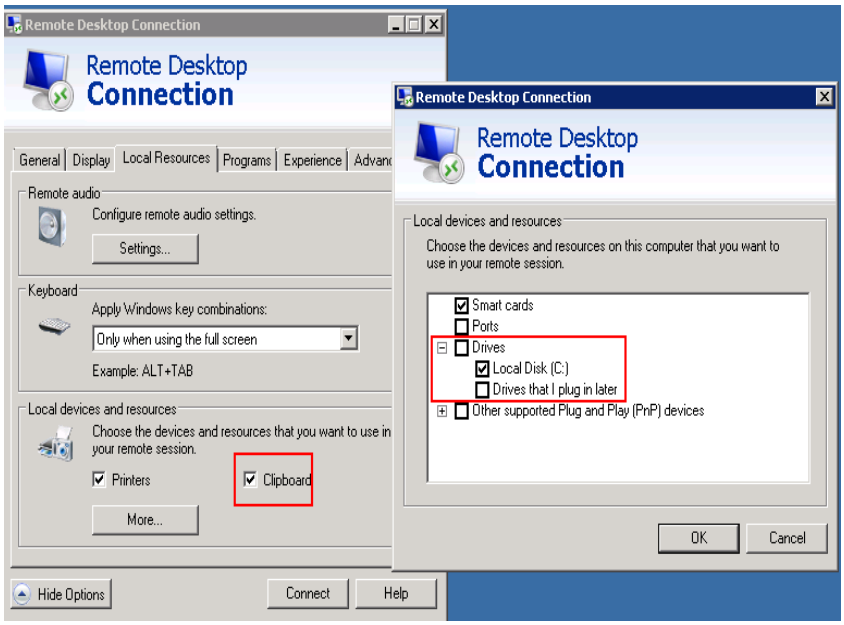
- An error has occurred in the **rdpclip.exe** process.
- Data cannot be copied and pasted between the ECS and the local server.

Solution

- The local drive is not mapped. **Figure 2-8** uses local drive C and drive D as an example.
  a. Open the **Run** dialog box, enter **mstsc**, and click **OK** to start **Remote Desktop Connection**.
  b. Click the **Local Resources** tab and select **Clipboard** in the **Local devices and resources** pane. Click **More** and select the drives you want to use in the remote session.
  c. Click **OK** and check whether the copy and paste options work.

  Figure 2-8 Local resources



- An error has occurred in the **rdpclip.exe** process.
  a. Enable remote desktop connection, start **Windows Task Manager**, and stop the **rdpclip.exe** process on the **Processes** tab page.

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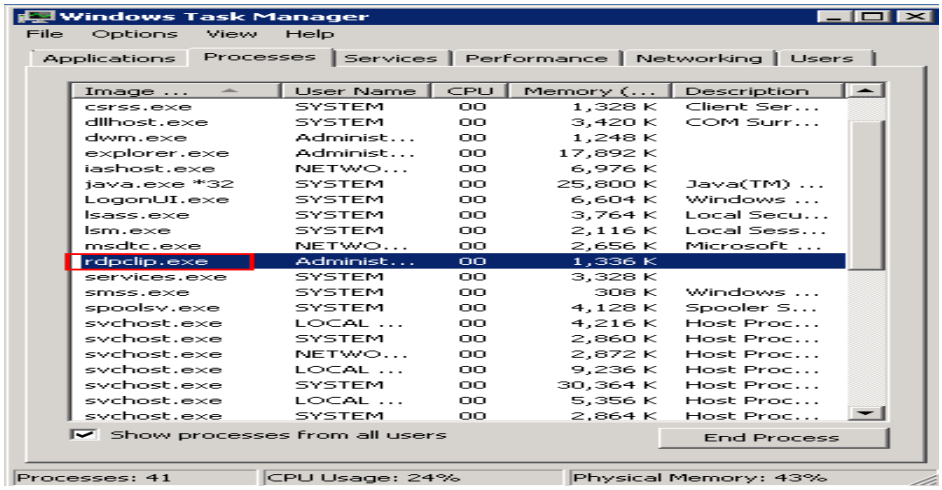
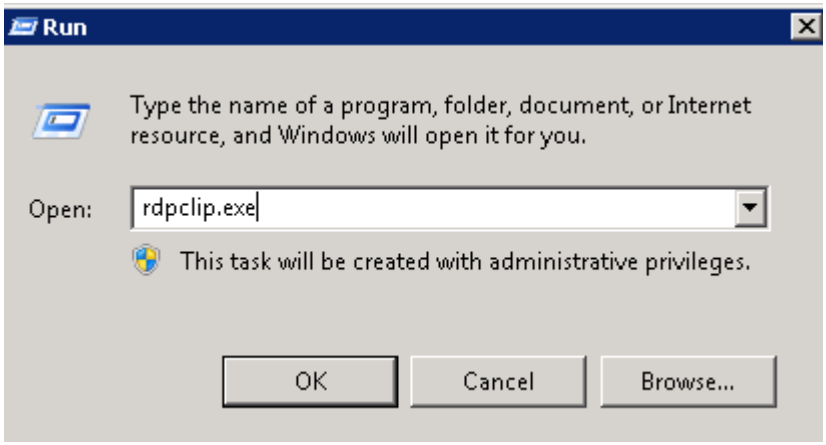
Figure 2-9 Ending the **rdpclip.exe** process



b. Open the **Run** dialog box, enter **rdpclip.exe**, and click **OK** to restart it.

Figure 2-10 Starting the **rdpclip.exe** process



c. Check whether the copy and paste options work.

- Data cannot be copied and pasted between the ECS and the local server.

  a. Choose **Start** > **Run**. In the **Run** dialog box, enter **gpedit.msc** and click **OK** to start Local Group Policy Editor.

  b. Choose **Computer Configuration** > **Administrative Templates** > **Windows Components** > **Remote Desktop Services** > **Remote Desktop Session Host** > **Device and Resource Redirection**.

  c. Set **Do not allow Clipboard redirection**, **Do not allow COM port redirection**, **Do not allow drive redirection**, and **Do not allow LPT port redirection** to **Disabled**.

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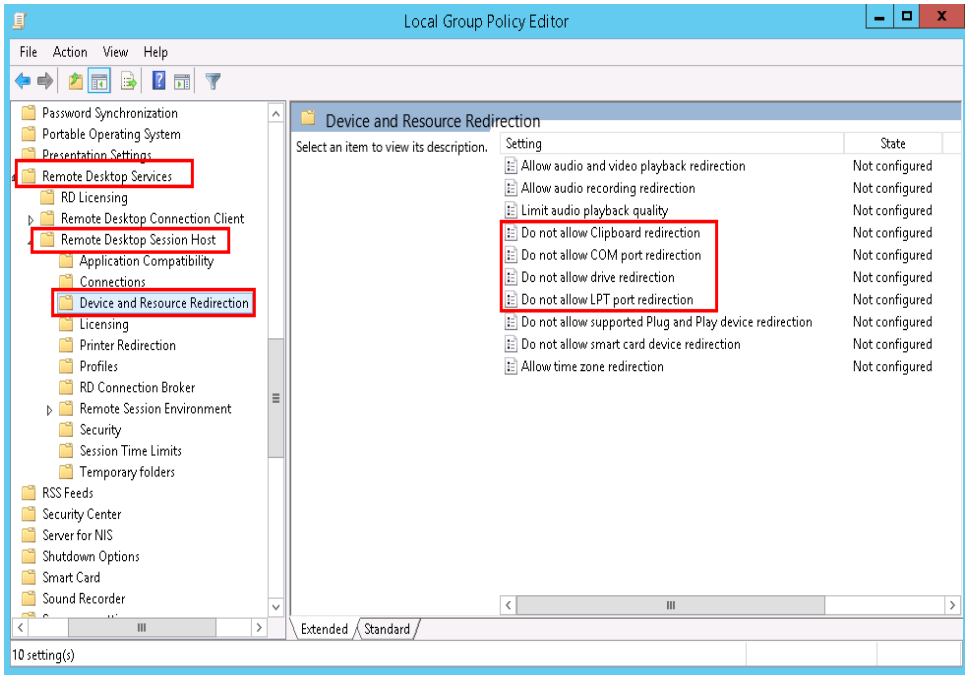
Figure 2-11 Device and resource redirection



d. Restart the ECS and check whether the copy and paste options work.

2.5 Configuring File Sharing and Network Disk Mapping for a Windows ECS

Scenarios

This section describes how to share a folder between Windows ECSs over an intranet.

Constraints

Some carriers may block ports 139 and 445. As a result, you cannot access the shared folders over the Internet. Therefore, you are advised to share a folder between Windows ECSs only over an intranet.

Procedure

Step 1 Check whether the two Windows ECSs that are to share a folder are correctly configured.

- Ensure that **TCP/IP NetBIOS Helper** is started.

  Open the CLI, run the **services.msc** command, and locate **TCP/IP NetBIOS Helper** to check its status.

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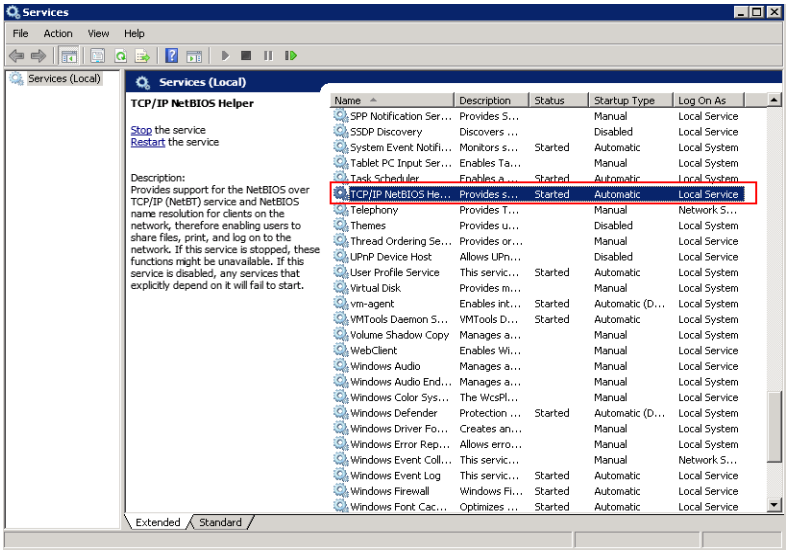
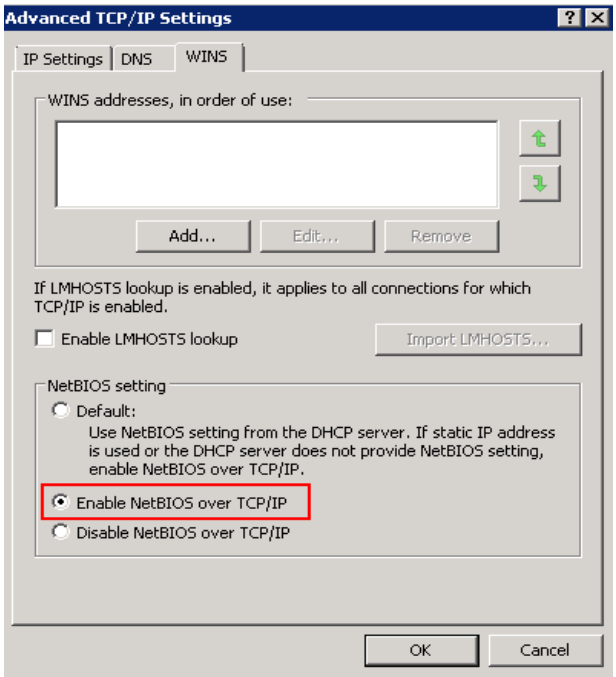
Figure 2-12 Tcp/IP NetBIOS Helper



- Ensure that **Enable NetBIOS over TCP/IP** is selected on the NIC.

Figure 2-13 Enabling NetBIOS over TCP/IP



- Ensure that the inbound rules are added for ports 139 and 445 on the Windows ECS firewall.

Step 2 Configure **Network and Sharing Center**

1. Click **Open Network and Sharing Center**.
2. Click **Change advanced sharing settings**.

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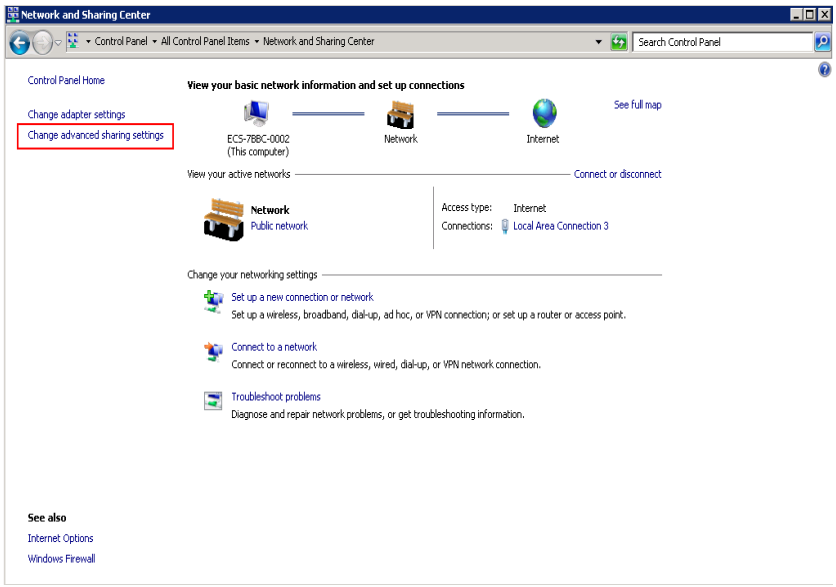
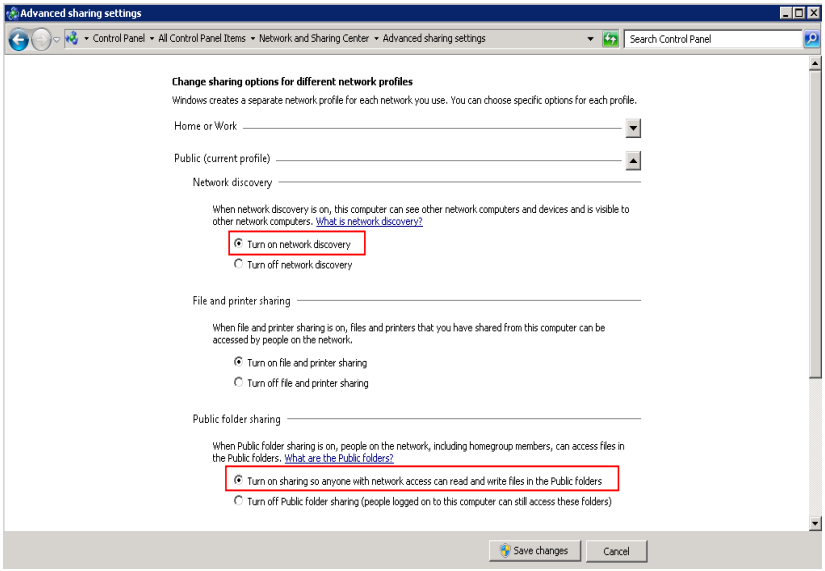
Figure 2-14 Change advanced sharing settings



3. Ensure the network types of the two Windows ECSs are same. For example, both are public or private. Select **Turn on network discovery** and **Turn on sharing so anyone with network access can read and write files in the Public folder**.

Figure 2-15 Advanced sharing settings



If the network discovery function cannot be enabled, you can run the **services.msc** command to start the Services manager. Check whether the following services on which the network discovery function depends are enabled:

- Function Discovery Resource Publication
- SSDP Discovery
- UPnP Device Host

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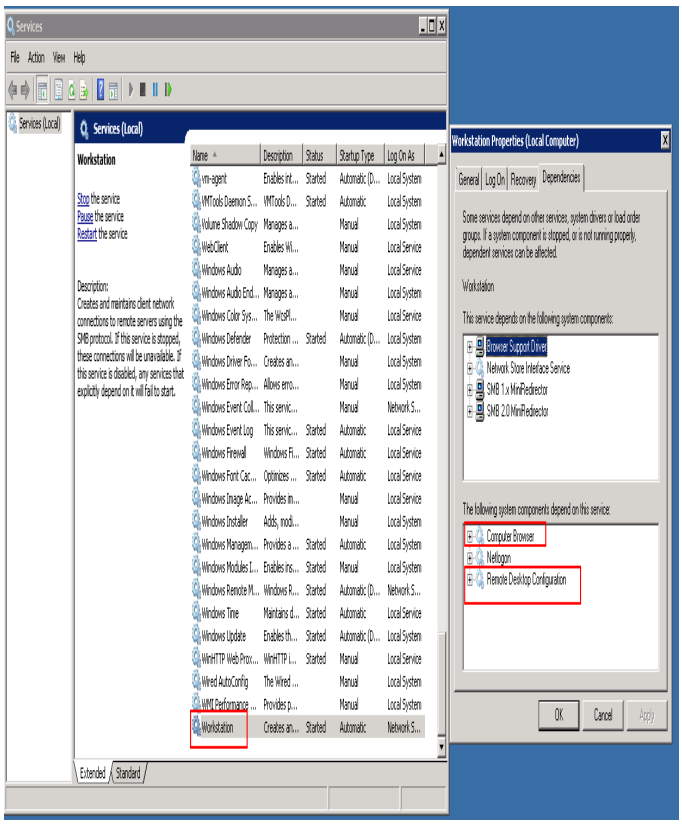
4. In the Services manager, start the **Workstation** service.

   This service depends on the **Computer Browser** and **Remote Desktop Configuration** components. Before starting the **Workstation** service, you need to start the two components.

   Figure 2-16 Enabling the **Workstation** service



Step 3 Configure disk sharing on the ECS that needs to access the shared disk.

1. Right-click the disk to be shared and select **Properties**.
2. Click the **Sharing** tab and then click **Advanced Sharing**.

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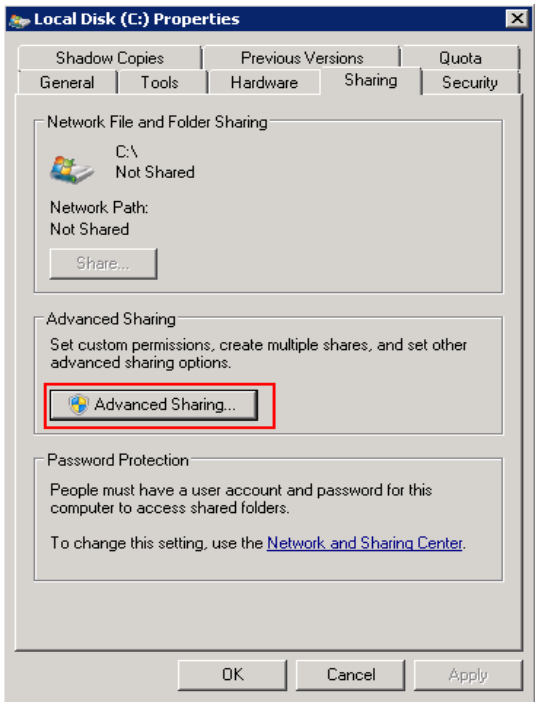
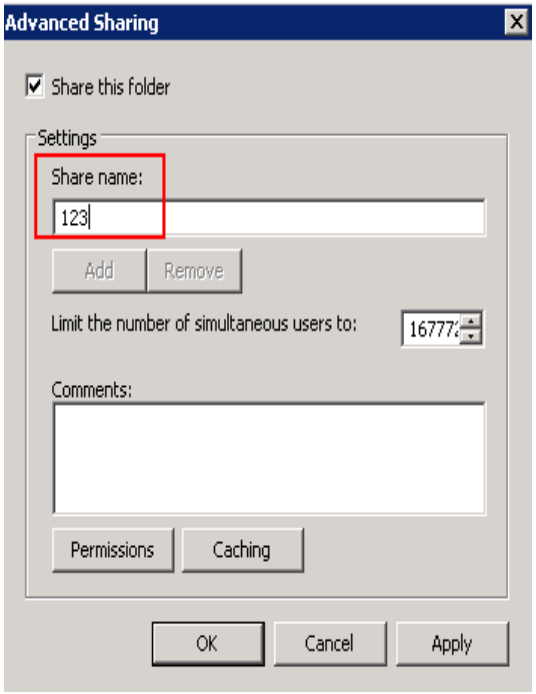
Figure 2-17 Configuring disk sharing



3. Set **Share name** and click **OK**.

   Customize a name for the folder to be shared.

Figure 2-18 Entering a name for the folder to be shared



Step 4 Start another ECS in the same region and access the shared folder over the intranet.

1. Start the **Run** dialog box.

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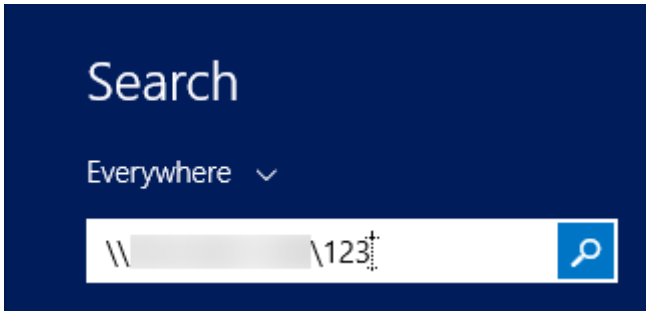
2. Enter *****Intranet IP address*\123** and click **OK** to open the shared folder.

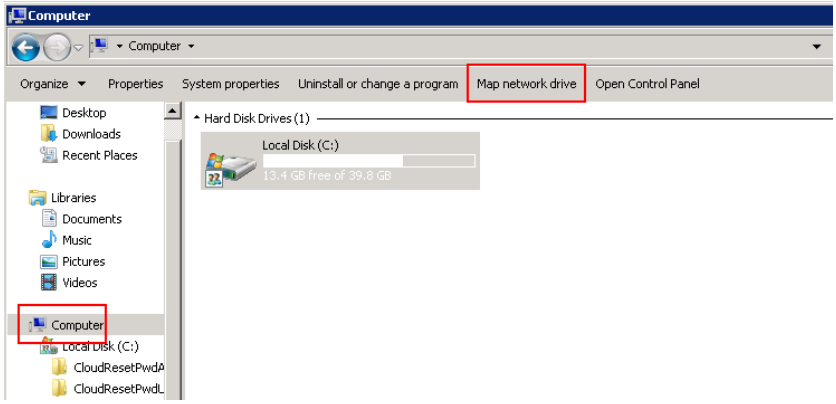
Figure 2-19 Assessing the shared folder



Step 5 (Optional) Create a network drive mapping for the shared path. Perform this operation to access the shared folder more conveniently.

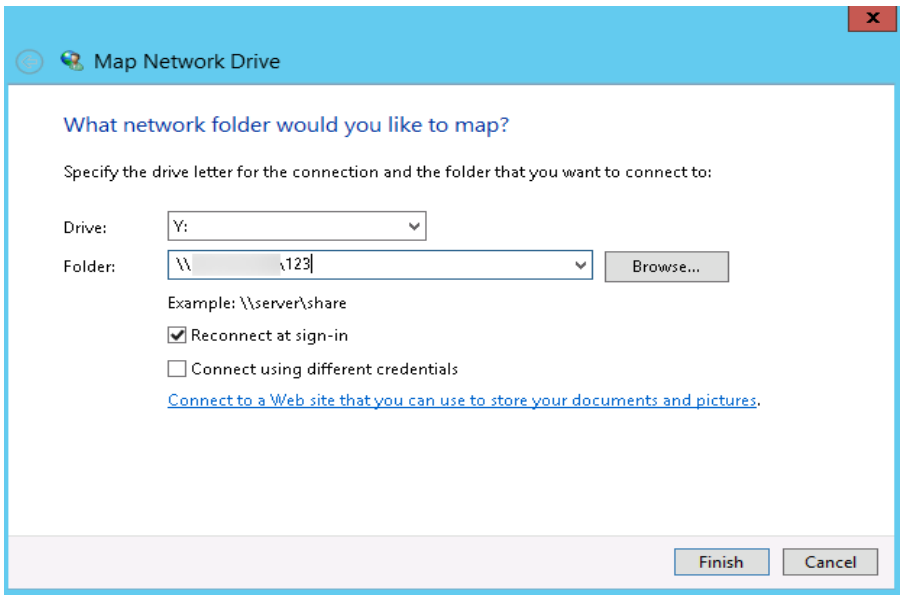
1. Click **Map network drive**.

Figure 2-20 Creating a mapping



2. Map the network drive.

Figure 2-21 Mapping the network drive



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3. Right-click the name of the mapped network drive, choose **Create Shortcut**, and send the shortcut to the desktop.
4. Double-click the shortcut to quickly access the shared folder.

Figure 2-22 Creating a shortcut



----End

2.6 Troubleshooting an In-Service Port During Tomcat Startup

Symptom

The system prompts that the required port is being used when Tomcat is started on a Windows ECS.

This section uses Windows Server 2008 R2 and port 80 as an example describe how to resolve this issue.

Possible Causes

The port 80 required by Tomcat is being used by other programs, viruses, or Trojan horses.

1. Run the **netstat -ano | find "80"** command and find that the ID of the process that is using port 80 is 4.

   NOTE

   Change the port number as required.

   Figure 2-23 Checking the process using port 80

   ```
   C:\Users>netstat -ano | find ″:80″
     TCP    0.0.0.0:80             0.0.0.0:0              LISTENING       4
   ```

2. Run the **tasklist /svc | find "4"** command and find that the process using port 80 is the System process.

   NOTE

   Change the process ID as required.

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Figure 2-24 System process



Port 80 is used by the System process.

Solutions

NOTE

Stopping the process that is using port 80 may stop the applications that are running or restart the ECS.

Solution 1:

1. Run the **cmd** command as the administrator and enter **net stop http**.
2. To stop the process that is using port 80, enter **y**.
3. Run the **sc config http start= disabled** command.

Solution 2:

1. In the **cmd** window, run **regedit** to open the registry editor.
2. In **Registry Editor**, choose **HKEY_LOCAL_MACHINE** > **SYSTEM** > **CurrentControlSet** > **Services** > **HTTP** and change the value of **Start** to **0**.
3. Restart the ECS.

2.7 Troubleshooting Unavailable Input Methods

Symptom

- On your Windows ECS, you cannot switch input methods using **Ctrl**+**Shift**. The input method is not shown.
- You do not know how to add a language to the input methods.

Possible Causes

- The **ctfmon.exe** process is not started.
- The input indication icon is turned off.

Solutions to Unavailable Input Methods

Check whether the **ctfmon.exe** process is started.

1. Open the **C:\Windows\System32** file.
2. Double-click **ctfmon.exe** and check whether the input method is shown in the lower right corner and whether you can switch the input method.
3. Enable the automatic input method startup upon ECS startup.
   a. In the **Run** dialog box, enter **regedit** and click **OK** to open the registry editor.

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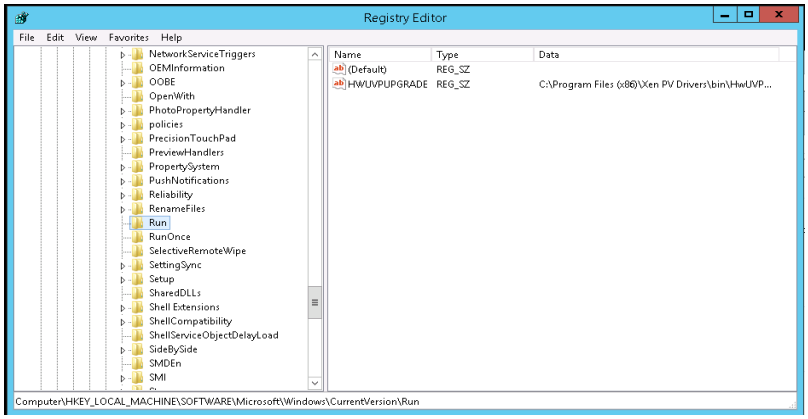
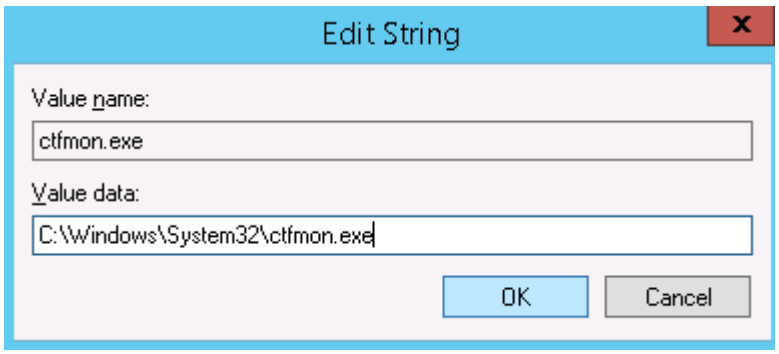
b. In the **HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows \CurrentVersion\Run** directory, create a file named **ctfmon.exe** in string type.

Figure 2-25 Registry Editor



c. Right-click the file you create and click **Modify**. Change the value data to **C:\Windows\System32\ctfmon.exe** in which **ctfmon.exe** is stored.

Figure 2-26 Editing the value data



d. In the **Run** dialog box, enter **msconfig** and click **OK** to open the **System Configuration**.

e. Click the **Start** tab, find and select **ctfmon.exe**, and click **Apply** and **OK**. Save the configurations and log out. Restart the ECS.

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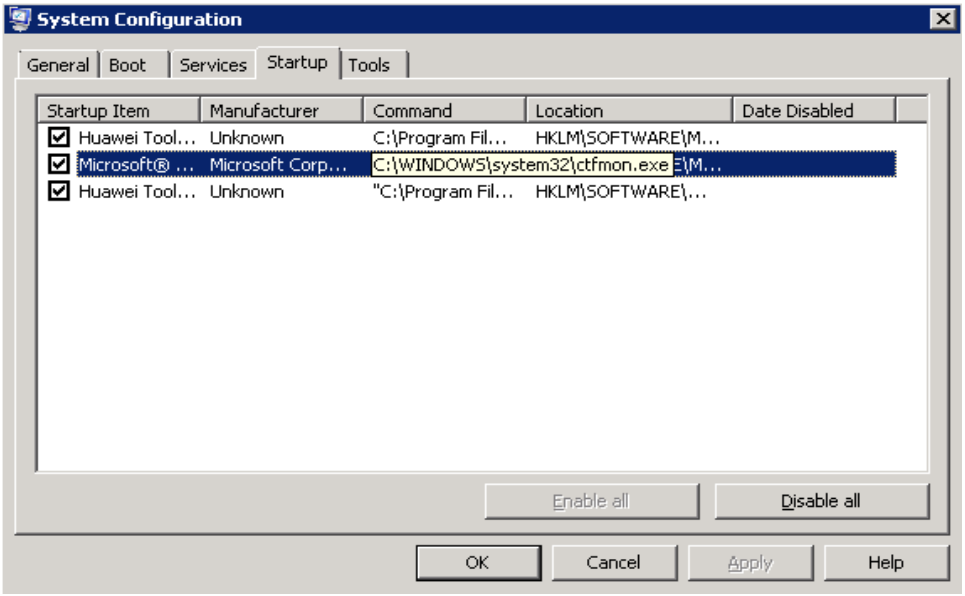
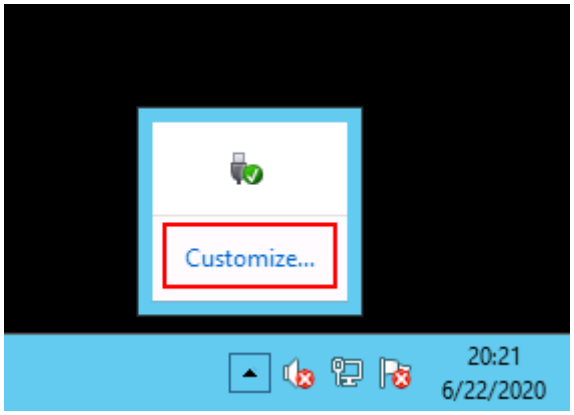
Figure 2-27 Selecting **ctfmon.exe**



Enable the input indication icon.

1. Log in to the ECS and click **Customize** in the lower right corner.

   Figure 2-28 Clicking **Customize**

2. In the **Notification Area Icon** window, click **Turn system icons on or off**.

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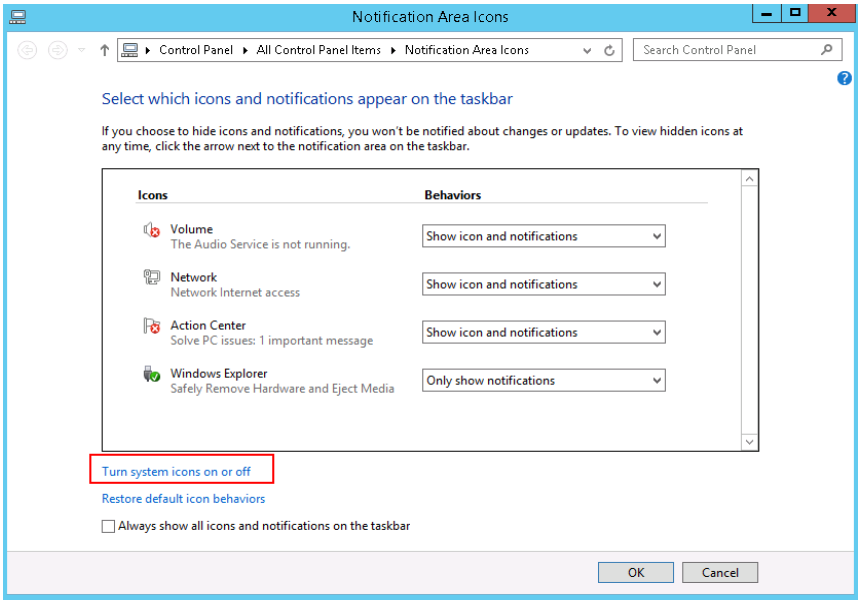
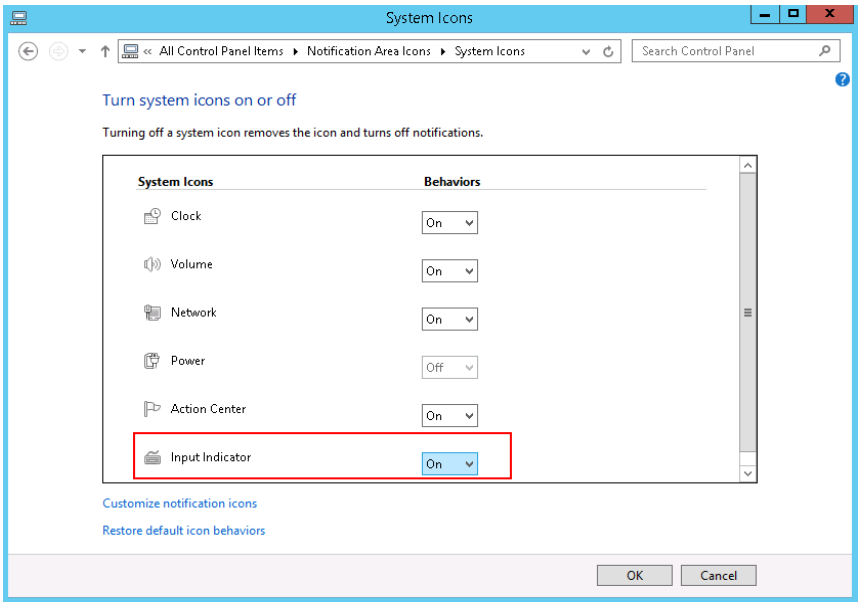
Figure 2-29 Turning system icons on or off



3. Set **Input Indicator** to **On** and click **OK**.

Figure 2-30 Turning input indicator on



Adding Another Input Language

For example, add Japanese on an ECS running Windows Server 2008.

1. Log in to the ECS and choose **Start** > **Control Panel**.
2. Click **Region and Language**.

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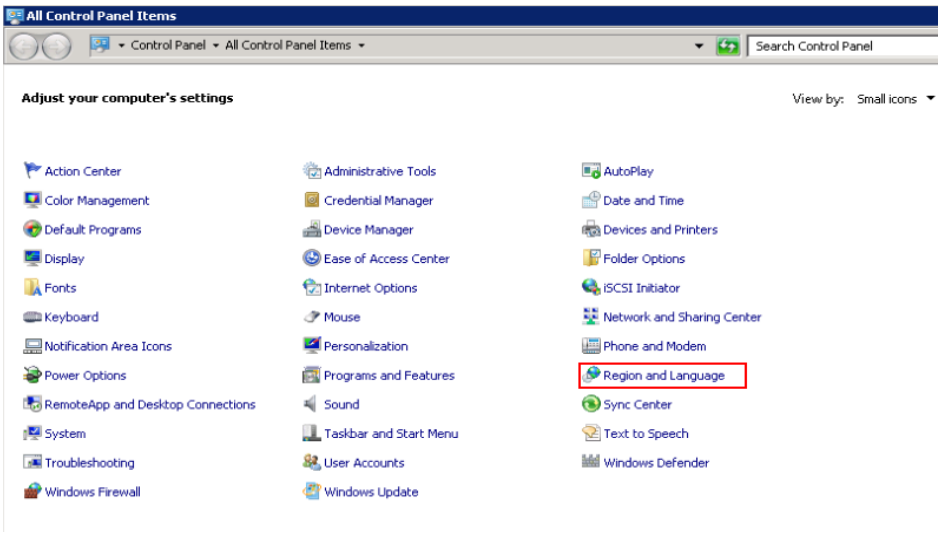
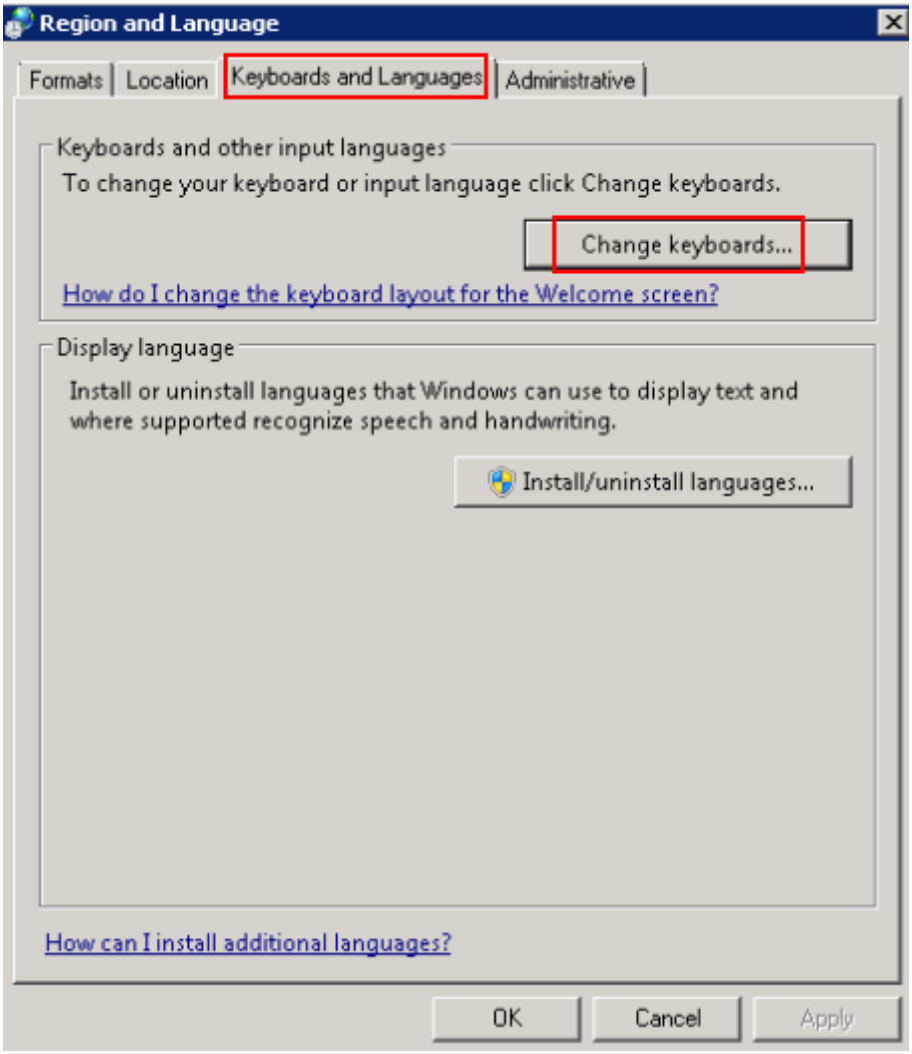
Figure 2-31 Region and Language



3. On the **Keyboards and Languages** tab, click **Change keyboards**.

Figure 2-32 Keyboards and Languages



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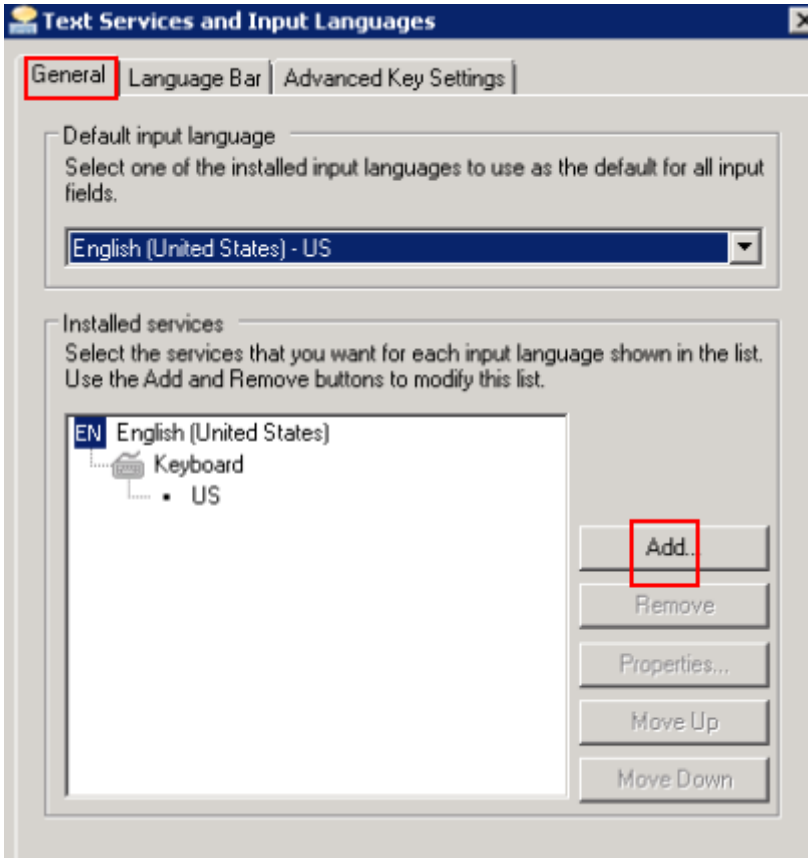
4. Right-click the language bar and click **Settings** to open the **Text Services and Input Languages** dialog box. On the **General** tab, click **Add**.

Figure 2-33 Text Services and Input Languages



5. In the **Add Input Language** dialog box, find and double-click **Japanese (Japan)** and then **Keyboard**.

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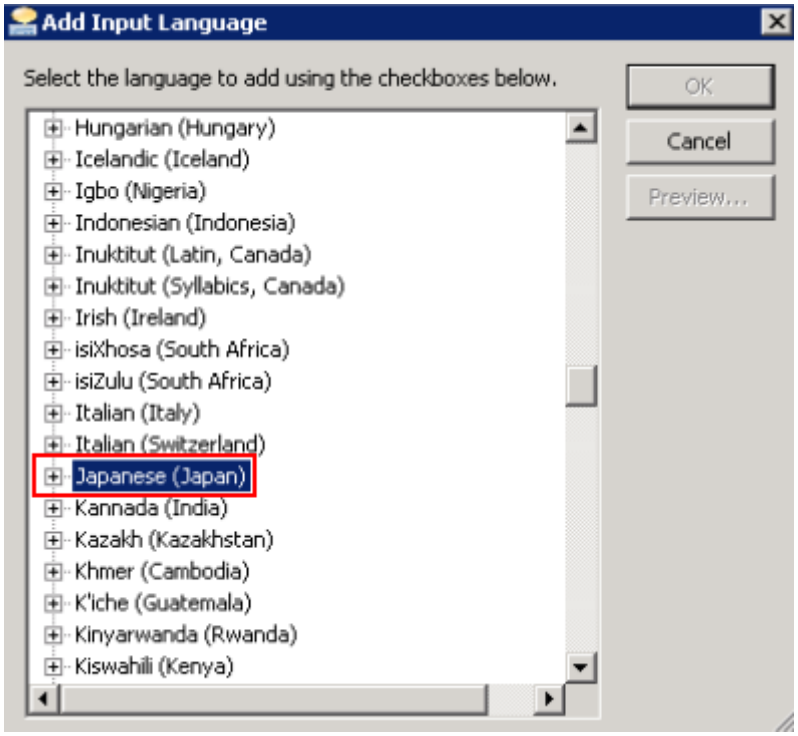
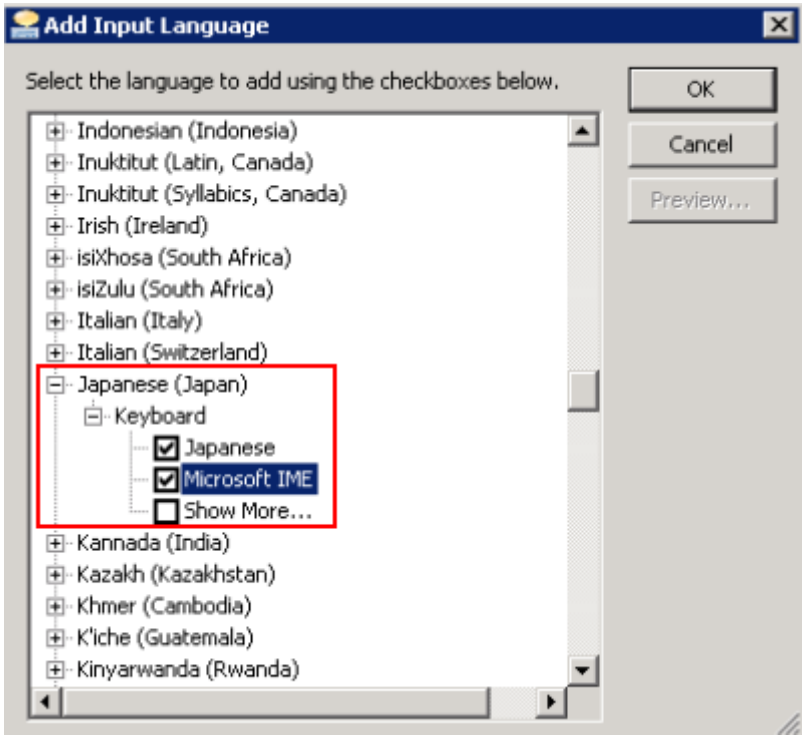
Figure 2-34 Adding input language



6. Select **Japanese** and **Microsoft IME**. Click **OK** and then **Apply** to save the configurations.

Figure 2-35 Selecting Japanese



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2.8 Troubleshooting File Sharing Between Windows ECSs

Scenarios

This section describes how to share files between Windows ECSs in the same subnet.

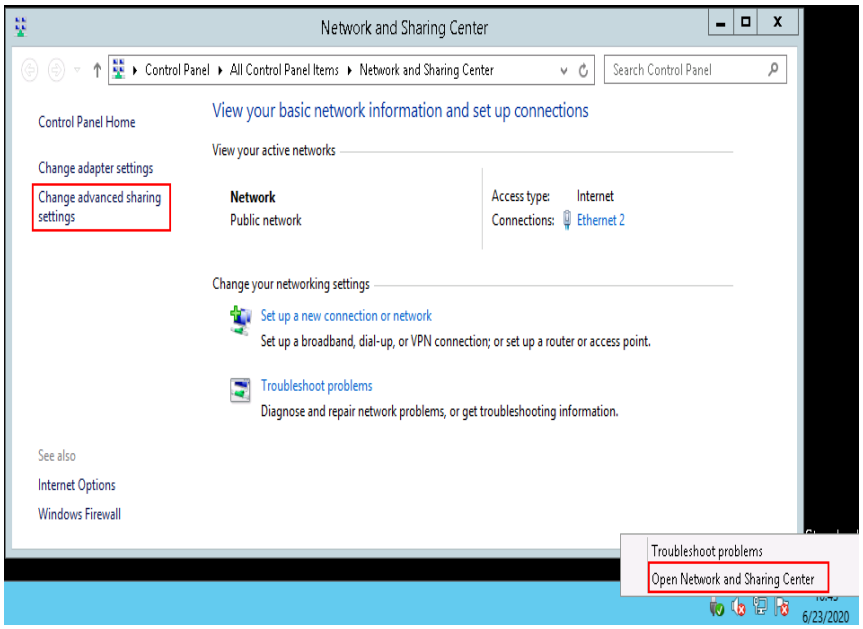
Prerequisites

ECSs that share files are in the same subnet and can communicate with each other.

Procedure

1. Log in to the ECS. Right-click the **Network** icon in the lower right corner and choose **Open Network and Sharing Center** from the shortcut menu.

   Figure 2-36 Open Network and Sharing Center



2. Click **Change advanced sharing settings**. On the displayed page, select **Turn on file and printer sharing** for the **Private** and **Guest or Public** areas and click **Save changes**.

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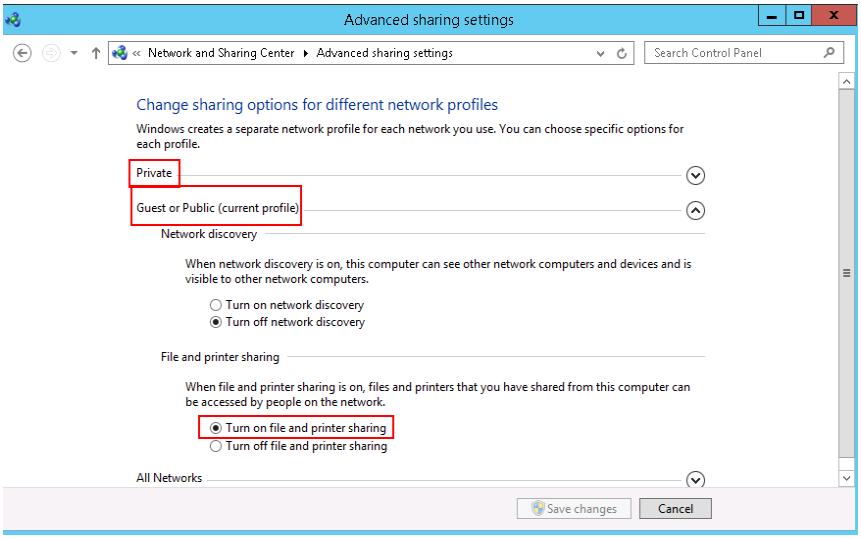
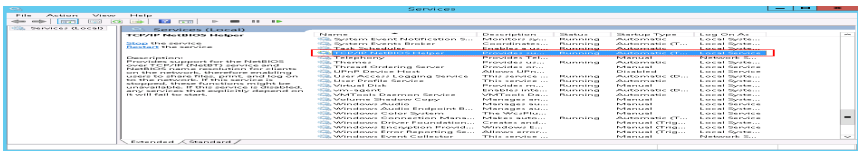
Figure 2-37 Turning system icons on or off



3. In the **cmd** window, run the **services.msc** command, find and enable the **TCP/IP NetBIOS Helper** service.

   If the service is disabled, right-click it and choose **Properties** from the shortcut menu. Set the **Startup Type** to **Automatic** or **Manual** and then enable the service.

Figure 2-38 Enabling TCP/IP NetBIOS Helper



2.9 Troubleshooting Data Restoration in the Event of a Startup Failure on a Windows ECS

Symptom

If logging in to a Windows ECS failed, the system automatically starts the recovery option. However, an error is reported after the recovery option is selected, and the system recovery cannot continue.

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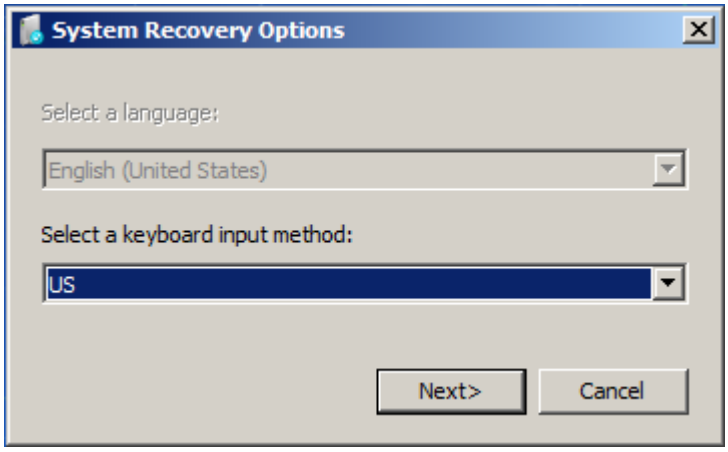
Figure 2-39 Auto-starting system recovery mode



Possible Causes

Windows files have been damaged.

Solution

1. Log in to the management console and click **Elastic Cloud Server** under **Computing**.
2. Detach data disks from the ECS.

   Click the name of the target ECS. On the page providing details about the ECS, click the **Disks** tab. Locate the target disk and click **Detach**.
3. Reinstall the OS of the ECS

   Locate the row containing the target ECS. Click **More** in the **Operation** column and select **Reinstall OS**.

   NOTICE

   - If the ECS is not **Stopped**, stop the ECS before proceeding with reinstallation.
   - Reinstalling the OS will clear the system disk. Back up data before proceeding with reinstallation.
4. Attach the data disk to the ECS again and check whether you can log in to the ECS.

2.10 Viewing Login Logs of a Windows ECS

Scenarios

This section describes how to view the login logs of a Windows ECS.

Procedure

The following operations are performed on an ECS running Windows Server 2012.

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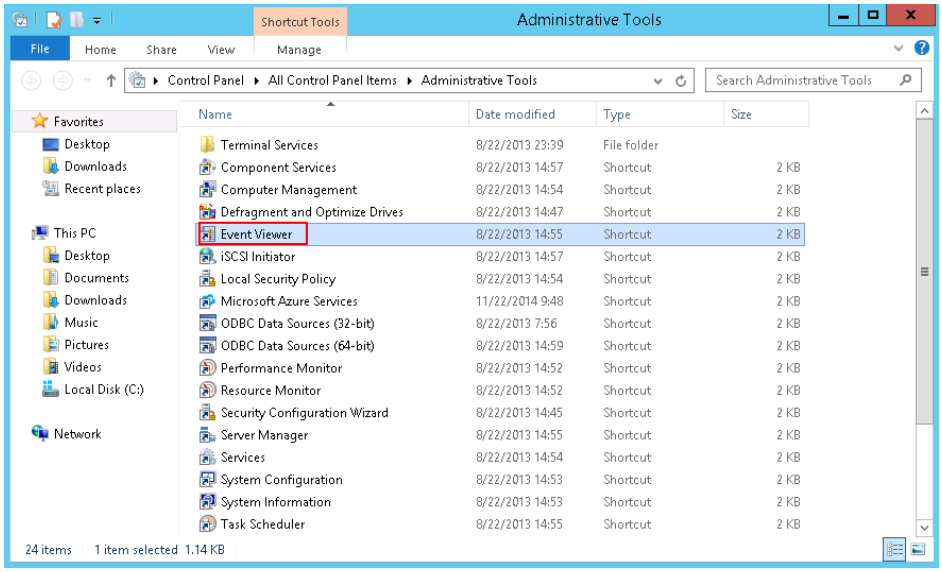
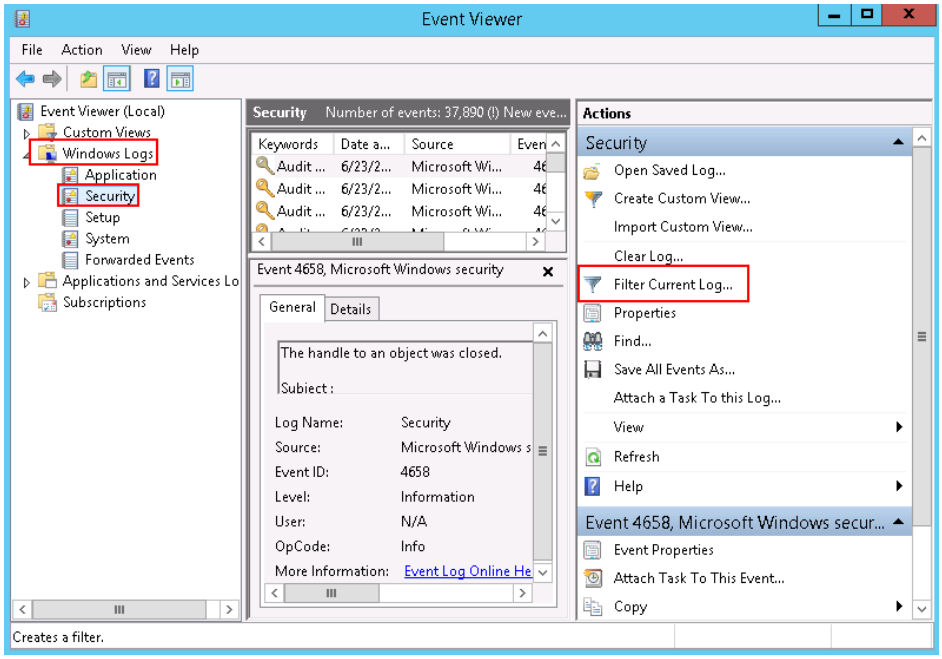
1. Log in to the ECS.
2. Choose **Start** > **Administrative Tools** > **Event Viewer**.



3. On the **Event Viewer** window, choose **Windows Logs** > **Security** > **Filter Current Logs**.



4. Filter events with ID 4776 to obtain remote login logs.

NOTE

You can also use 4624 and 4625 to view login information.

- 4624: ID of successful login events
- 4625: ID of failed login events

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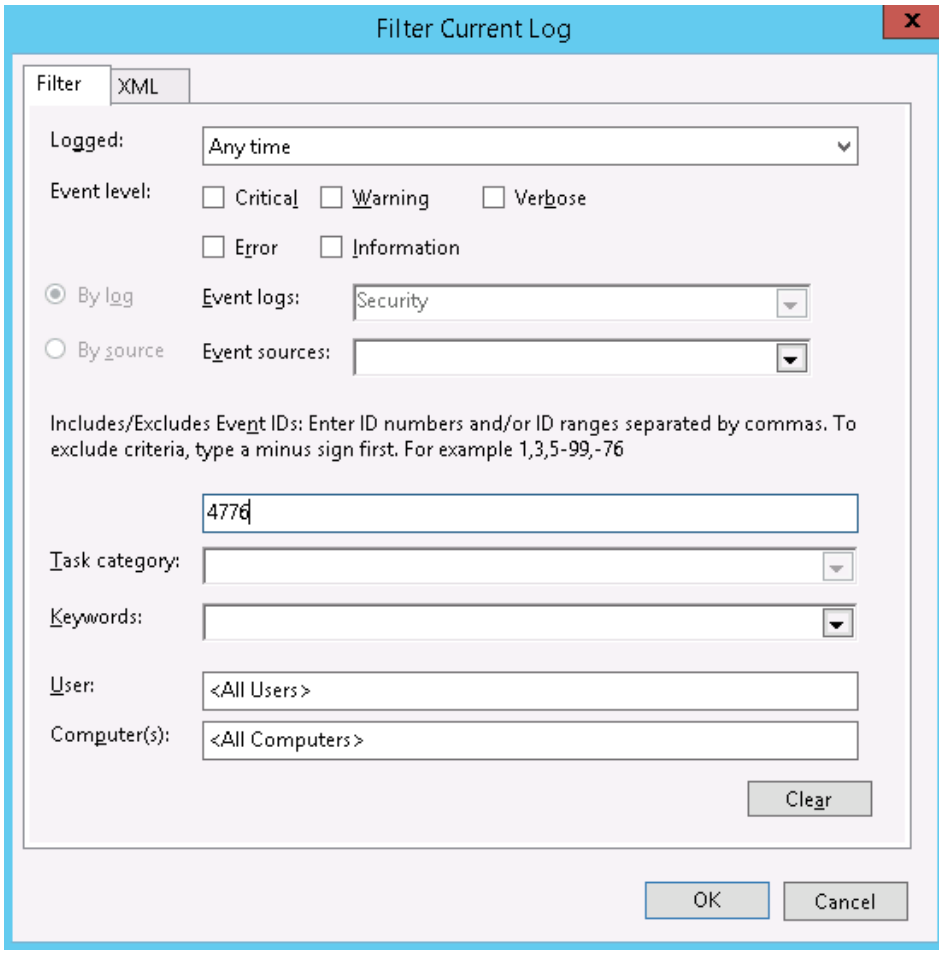
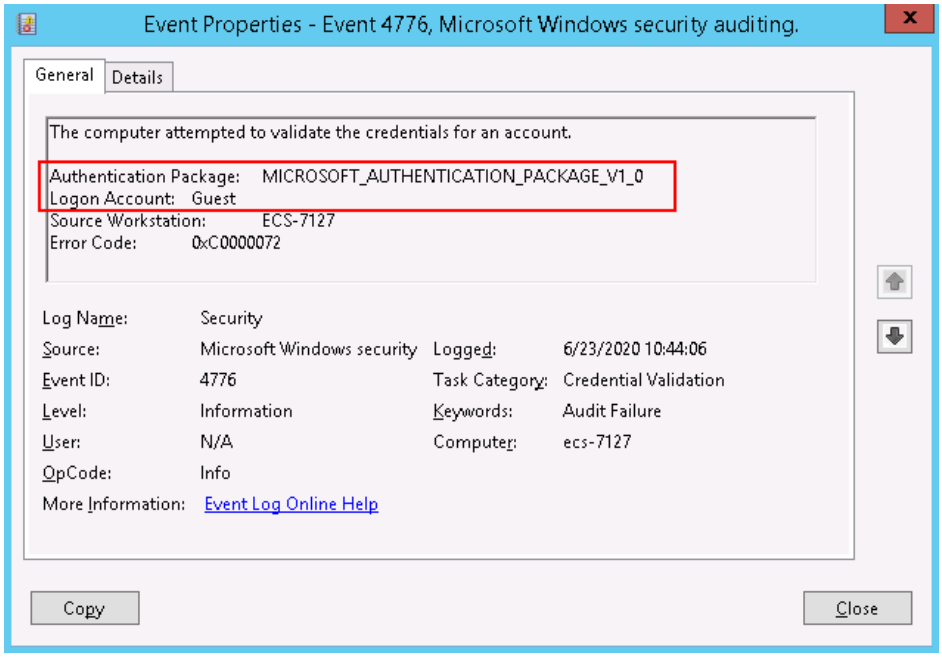


5. Right-click an event and choose **Event Properties** from the shortcut menu. The logon account of the event is displayed.



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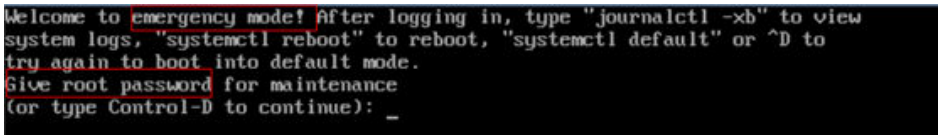
3 Linux Issues

3.1 Troubleshooting Emergency Mode

Symptom

When a Linux ECS enters the emergency mode during startup, the system displays the message "Welcome to emergency mode" and asks you to enter the password of user **root** for maintenance.

Figure 3-1 Emergency mode



Possible Causes

The emergency mode allows you to recover the system even if the system fails to enter the rescue mode. In emergency mode, the system installs only the root file system for data reading. It does not attempt to install any other local file systems or activate network interfaces.

The emergency mode is generally due to:

- An error occurred in the **/etc/fstab** file, leading to the failure in mounting the file system.
- An error occurred in the file system.

Constraints

The operations in this section are applicable to the Linux emergency mode. The operations involve recovering the file system, which may lead to loss of data. Therefore, back up data before recovering the file system.

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Solution

1. Enter the password of user **root** and press **Enter** to enter the recovery mode.
2. In emergency mode, the root partition is mounted in read-only mode. To modify the files in the root directory, run the following command to mount the root partition in read-write mode:

   # mount -o rw,remount /
3. Run the following command to try to mount all unmounted file systems and check whether the **fstab** file is correct:

   # mount -a

   - If the message "mount point does not exist" is displayed, the mount point is unavailable. In such a case, create the mount point.
   - If the message "no such device" is displayed, the file system device is unavailable. In such a case, comment out or delete the mount line.
   - If the message "an incorrect mount option was specified" is displayed, the mount parameter has been incorrectly set. In such a case, correct the parameter setting.
   - If no error occurs and the message "UNEXPECTED INCONSISTENCY;RUN fsck MANUALLY" is displayed, the file system is faulty. In such a case, go to step 7.
4. Run the following command to open the **/etc/fstab** file and correct the error:

   # vi /etc/fstab

   The **/etc/fstab** file contains the following parameters separated by space:

   [file system] [dir] [type] [options] [dump] [fsck]

   Table 3-1 /etc/fstab parameters

Parameter	Description
[file system]	Specifies the partition or storage device to be mounted. You are advised to set **file system** in UUID format. To obtain the UUID of a device file system, run the **blkid** command. Format for reference: # <device> <dir> <type> <options> <dump> <fsck> UUID=b411dc99-f0a0-4c87-9e05-184977be8539 /home ext4 defaults 0 2 UUIDs are independent of disk order. If the sequence of storage devices is changed manually or undergoes some random changes by some BIOSs, or the storage devices are removed and installed again, using UUIDs is more effective.
[dir]	Specifies the mount point of a file system.

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Parameter	Description
[type]	Specifies the type of the file system to which a device or partition is mounted. The following file systems are supported: ext2, ext3, ext4, reiserfs, xfs, jfs, smbfs, iso9660, vfat, ntfs, swap, and auto. If **type** is set to **auto**, the **mount** command will speculate on the type of the file system that is used, which is useful for mobile devices, such as CD-ROM and DVD.
[options]	Specifies the parameters used for mounting. Some parameters are available only for specific file systems. For example, **defaults** uses default mounting parameters of a file system. The default parameters of the ext4 file system are **rw**, **suid**, **dev**, **exec**, **auto**, **nouser**, and **async**. For more parameters, run the **# man mount** command to view the man manual.
[dump]	Specifies whether file system data is backed up. The parameter value can be **0** or **1**. **0** indicates that data is not backed up, and **1** indicates that data is backed up. If you have not installed dump, set the parameter value to **0**.
[fsck]	Specifies the sequence of checking file systems. The parameter value can be **0**, **1**, or **2**. **0** indicates that the devices will not be checked by fsck. **1** indicates the highest priority of the root directory to be checked by fsck, and **2** indicates the lower priority of other devices to be checked.

5. After the modification, run the following command to check the **fstab** file:

   # mount –a

6. Run the following command to restart the ECS:

   # reboot

7. If no error occurred, the fault may be caused by the file system. Then, run the following command:

   # dmesg |egrep "ext[2..4]|xfs" |grep –i error

   NOTE

   - If the error message "I/O error... inode" is displayed, the fault is caused by a file system error.
   - If no file error is found in the log system, the fault is generally caused by the damaged superblock. The superblock is the header of the file system. It records the status, size, and idle disk blocks of the file system.
   - If the superblock of a file system is damaged, for example, data is written to the superblock partition of the file system by mistake, the system may fail to identify the file system. As a result, the system enters the emergency mode during startup. The ext2fs file system backs up the superblock and stores the backup at the blockgroup boundary of the driver.

8. Run the following command to unmount the directory where the file system error occurred:

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 # Unmount *Mount point*

9. Check and recover the damaged file system.

NOTICE

Recovering the file system may lead to loss of data. Back up data before the recovery.

- For the ext file system, run the following command to check whether the file system is faulty:

  # fsck -n /dev/vdb1

  NOTE

  If the message "The super block Cloud no be read or does not describe a correct ext2 filesystem" is displayed, go to step 10.

  To recover the file system, run the following command:

  # fsck /dev/vdb1

- For the xfs file system, run the following command to check whether the file system is faulty:

  # xfs_repair -n /dev/vdb1

  To recover the file system, run the following command:

  # xfs_repair /dev/vdb1

10. (Optional) If the message "The super block Cloud no be read or does not describe a correct ext2 filesystem" is displayed, the superblock is damaged. In such a case, use the superblock backup for recovery.

Figure 3-2 Damaged superblock

```
[root@ecs ~]# fsck -n /dev/vda2
fsck from util-linux-ng 2.17.2
e2fsck 1.41.12 (17-May-2010)
fsck.ext2: No such file or directory while trying to open /dev/vda2

The superblock could not be read or does not describe a correct ext2
filesystem.  If the device is valid and it really contains an ext2
filesystem (and not swap or ufs or something else), then the superblock
is corrupt, and you might try running e2fsck with an alternate superblock:
    e2fsck -b 8193 <device>
```

Run the following command to replace the damaged superblock using the superblock backup:

 # e2fsck -b 8193 *Device name*

As shown in **Figure 3-3**, the superblock has been replaced.

Figure 3-3 Replacing the damaged superblock

```
[root@ecs ~]# e2fsck -b 8193 /dev/xvda
e2fsck 1.41.12 (17-May-2010)
/dev/xvda is in use.
e2fsck: Cannot continue, aborting.
```

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NOTE

- **-b 8193** indicates that the backup of superblock 8193 in the file system is used. The backup is used when the active superblock is damaged. The location of the superblock backup varies depending on the block size of the file system.

  For a file system with a 1 KB block size, locate the backup at superblock 8,193.

  For a file system with a 2 KB block size, locate the backup at superblock 16,384; for a 4 KB block size, locate the backup at superblock 32,768.
- **Device name** is the disk name but not the partition name.

11. Run the following command to restart the ECS:

    # reboot

3.2 Configuring atop and kdump on Linux ECSs for Performance Analysis

Scenarios

This section describes how to configure atop and kdump on Linux ECSs for performance analysis.

The method for configuring atop varies with ECS OS version.

atop

- **Configuring atop on CentOS 6 or RHEL 6**
- **Configuring atop on CentOS 7 or EulerOS**
- **Configuring atop on SLES 10 or SLES 11**
- **Configuring atop on SLES 12**

kdump

1. **Precautions for Configuring kdump**
2. **How kdump Works**
3. **Configuring kdump**
4. **Checking Whether kdump Configurations Have Taken Effect**

Configuring atop on CentOS 6 or RHEL 6

1. Run the following command to download the atop package:

   # wget https://www.atoptool.nl/download/atop-2.3.0-1.el6.x86_64.rpm
2. Run the following command to install atop:

   # rpm -ivh atop-2.3.0-1.el6.x86_64.rpm
3. Run the following command to modify atop configuration file:

   # vi /usr/share/atop/atop.daily

   Change the value of parameter **INTERVAL** to, for example, **15**.

   ```
   INTERVAL=15
   ( (sleep 3; find $LOGPATH -name 'atop_*' -mtime +28 -exec rm {} \;)& )
   ```

   Save the file and exit the editing mode.

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4. Run the following command to start atop:

   # service atop restart

5. Run the following command to check whether atop has been started:

   # service atop status

   If atop is running properly, it will sample system performance data every 15 seconds and save the data to the **/var/log/atop/** directory.

Configuring atop on CentOS 7 or EulerOS

1. Run the following command to download the atop package:

   # wget https://www.atoptool.nl/download/atop-2.3.0-1.el7.x86_64.rpm

   Upload the **atop-2.3.0-1.el7.x86_64.rpm** package to the target ECS.

2. Run the following command to install atop:

   # rpm -ivh atop-2.3.0-1.el7.x86_64.rpm

3. Run the following command to modify atop configuration file:

   # vi /usr/share/atop/atop.daily

   Make the following changes:

   - Change the value of **INTERVAL** to, for example, **10** or **15**. The default value of **INTERVAL** is **600**, and the unit is second.
   - Change the value following **-mtime** if needed. The default retention period of atop logs is **28** days.

   ```
   INTERVAL=15
   ( (sleep 3; find $LOGPATH -name 'atop_*' -mtime +28 -exec rm {} \;)& )
   ```

   Save the file and exit the editing mode.

4. Run the following command to start atop:

   # systemctl start atop

5. Run the following command to check the status of atop:

   # systemctl status atop

   ```
   atop.service - Atop advanced performance monitor
   Loaded: loaded (/usr/lib/systemd/system/atop.service; enabled; vendor preset: disabled)
   since 2019-04-02 11:12:30 CST; 10s ago active (running)Active:
   Docs: man:atop(1)
   Main PID: 6251 (atop)
   CGroup: /system.slice/atop.service
   └─6251 /usr/bin/atop -R -w /var/log/atop/atop_20190402 600

   11:12:30 ecs-242c-test-lxy2 systemd[1]: Started Atop advanced performance monitor.
   11:12:30 ecs-242c-test-lxy2 systemd[1]: Starting Atop advanced performance monitor...
   ```

   If **active(running)** is displayed in the output, atop is running properly.

   In this way, atop will sample system performance data every 10 or 15 seconds and save the data to the **/var/log/atop/** directory.

Configuring atop on SLES 10 or SLES 11

1. Run the following command to download the atop package:

   # wget https://www.atoptool.nl/download/atop-1.27-3.x86_64.rpm

2. Run the following command to install the package:

   # rpm -ivh atop-1.27-3.x86_64.rpm

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3. Run the following command to modify atop configuration file:

   # vi /etc/atop/atop.daily

   - Change the value of **INTERVAL** to **15**. After the modification takes effect, atop will sample system performance data every 15 seconds.
   - Change the value following **-mtime** if needed. The default retention period of atop logs is **28** days.

   ```
   INTERVAL=15
   ( (sleep 3; find $LOGPATH -name 'atop_*' -mtime +28 -exec rm {} \;)& )
   ```

4. Runing the following command to restart atop:

   # service atop restart

5. Run the following command to check whether the atop process has been started and whether the modifications have taken effect:

   # ps -elf |grep atop

   If **15** is displayed in the output, the modifications have taken effect. atop will sample system performance data every 15 seconds and save the data to the **/var/log/atop/** directory.

Configuring atop on SLES 12

1. Run the following command to download the atop package:

   # wget https://www.atoptool.nl/download/atop-2.2-3.systemd.x86_64.rpm

2. Run the following command to install the package:

   # rpm -ivh atop-2.2-3.systemd.x86_64.rpm

3. Run the following command to modify atop configuration file:

   # vi /etc/atop/atop.daily

   ```
   #!/bin/bash

   CURDAY=`date +%Y%m%d`
   LOGPATH=/var/log/atop
   BINPATH=/usr/bin
   PIDFILE=/var/run/atop.pid
   INTERVAL=15                              # interval 10 minutes
   ```

   - Change the value of **INTERVAL** to **15**. After the modification takes effect, atop will sample system performance data every 15 seconds.
   - Change the value following **-mtime** if needed. The default retention period of atop logs is **28** days.

   ```
   INTERVAL=15
   ( (sleep 3; find $LOGPATH -name 'atop_*' -mtime +28 -exec rm {} \;)& )
   ```

4. Save the file and exist. Then run the following commands to restart atop and set atop to automatically run at system startup:

   # systemctl start atop

   # systemctl enable atop

5. Run the following command to check the status of atop:

   # systemctl status atop

   ```
   ● atop.service - Atop advanced performance monitor
   Loaded: loaded (/usr/lib/systemd/system/atop.service; enabled; vendor preset: disabled)
   Active: active (running) since Thu 2019-05-16 12:34:00 CST; 1s ago
   ```

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```
Docs: man:atop(1)
Main PID: 3023 (atop)
Tasks: 3 (limit: 512)
CGroup: /system.slice/atop.service
├─3023 /usr/bin/atop -a -R -w /var/log/atop/atop_20190516 600
├─3037 /bin/bash /etc/atop/atop.daily
└─3039 sleep 3
May 16 12:34:00 ecs-6a85-sles12sp2-lxy systemd[1]: Stopped Atop advanced performance monitor.
May 16 12:34:00 ecs-6a85-sles12sp2-lxy systemd[1]: Started Atop advanced performance monitor.
```

6. Run the following command to check whether the sampling interval is 15:

   # ps -elf |grep atop

```
ecs-6a85-sles12sp2-lxy:~ # ps -elf |grep atop
4 S root      3074     1  1  60 -20 -  6053 pause  12:37 ?        00:00:00 /usr/bin/atop -a -R -w /var/log/atop/atop_20190516 15
0 R root      3092  2642  0  80   0 -  2312 -      12:37 pts/0    00:00:00 grep --color=auto atop
ecs-6a85-sles12sp2-lxy:~ #
```

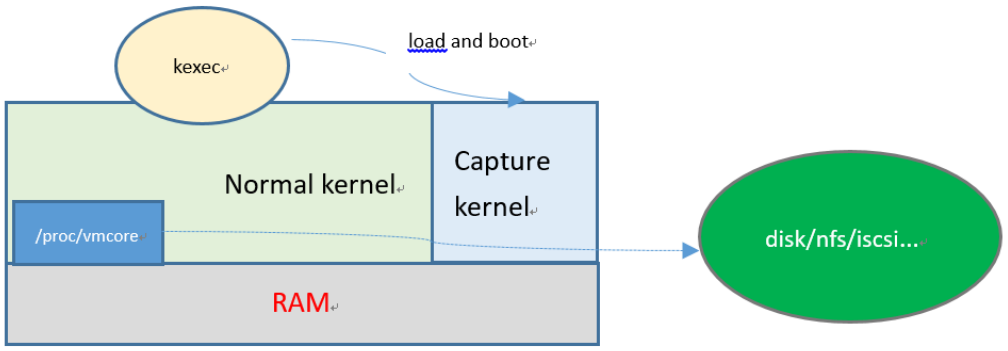
   If **15** is displayed in the output, the modifications have taken effect as expected.

Precautions for Configuring kdump

The method for configuring kdump described in this section applies only to KVM ECSs running EulerOS or CentOS 7. For details, see **Documentation for Kdump**.

How kdump Works

kdump, short for kernel dump, is a kernel crash dumping mechanism that allows you to save the contents of the system's memory for later analysis.



As shown in the preceding figure, the physical memory RAM is divided into two parts. One part is used to run the normal kernel, and the other part is reserved for a capture kernel. After the normal kernel is booted, kdump uses kexec to load the capture kernel to the reserved memory in both user mode and kernel mode.

NOTE

In case of system crash, such as die, panic, oops, or SysRq not working, the normal kernel calls the **crash_kexec()** function to create a **/proc/vmcore** file and boots the capture kernel. Then the capture kernel copies the data in the **/proc/vmcore** file of the normal kernel to the newly created file and reboot the normal kernel.

Configuring kdump

1. Run the following command to check whether kexec-tools has been installed:

   # rpm -q kexec-tools

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2. If it is not installed, run the following command to install it:

   # yum install -y kexec-tools

3. Run the following command to enable kdump to run at startup by default:

   # systemctl enable kdump

4. Run the following command to check whether the **crashkernel** parameter has been configured, which is used to reserve memory for the capture kernel.

   # grep crashkernel /proc/cmdline

5. If there is command output, this parameter has been configured. If no output is displayed, set this parameter by editing file **/etc/default/grub**.

   ```
   GRUB_TIMEOUT=5
   GRUB_DEFAULT=saved
   GRUB_DISABLE_SUBMENU=true
   GRUB_TERMINAL_OUTPUT="console"
   GRUB_CMDLINE_LINUX="crashkernel=auto rd.lvm.lv=rhel00/root rd.lvm.lv=rhel00/swap
   rhgb quiet"
   GRUB_DISABLE_RECOVERY="true"
   ```

6. Locate parameter **GRUB_CMDLINE_LINUX** and add **crashkernel=auto** after it.

7. Run the following command for the configuration to take effect:

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

8. Open the **/etc/kdump.conf** file, locate parameter **path**, and add **/var/crash** after it.

   ```
   path  /var/crash
   ```

   By default, the file is saved in the **/var/crash** directory.

   You can save the file to another directory, for example, **/home/kdump**. Then add **/home/kdump** after parameter **path**:

   ```
   path   /home/kdump
   ```

   NOTE

   There must be enough space in the specified path for storing the vmcore file. It is recommended that the available space be greater than or equal to the RAM size. You can also store the vmcore file on a shared device such as SAN or NFS.

9. Set the vmcore dump level.

   Add the following content to file **/etc/kdump.conf**. If these parameters exist, skip this step.

   ```
   core_collector makedumpfile -d 31 -c
   ```

   where

   -c indicates compressing the vmcore file.

   -d indicates leaving out irrelevant data. Generally, the value following **-d** is **31**, which is calculated based on the following values. You can adjust the value if needed.

   ```
   zero pages   = 1
   cache pages   = 2
   cache private = 4
   user  pages   = 8
   free  pages   = 16
   ```

10. Set kernel parameters.

    Some kernel parameters control that when kdump will be triggered. It is recommended that you enable all the following parameters and set them as follows:

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```
kernel.hardlockup_panic=1
kernel.panic=5
kernel.panic_on_oops=1
kernel.softlockup_panic=1
kernel.unknown_nmi_panic=1
kernel.nmi_watchdog=1
```

11. Modify the preceding parameters in file **/etc/sysctl.conf** file and save the file. In addition, you can add the following parameters to the **/etc/sysctl.conf** file:

```
kernel.panic_on_io_nmi=1
kernel.panic_on_warn=1
```

12. Run the following command to restart the system for the configurations to take effect:

    # reboot

Checking Whether kdump Configurations Have Taken Effect

1. Run the following command and check whether **crashkernel=auto** is displayed in the output:

   # cat /proc/cmdline |grep crashkernel

```
BOOT_IMAGE=/boot/vmlinuz-3.10.0-514.44.5.10.h142.x86_64 root=UUID=6407d6ac-c761-43cc-a9dd-1383de3fc995 ro crash_kexec_post_notifiers softlockup_panic=1 panic=3 reserve_kbox_mem=16M nmi_watchdog=1 rd.shell=0 fsck.mode=auto fsck.repair=yes net.ifnames=0 spectre_v2=off nopti noibrs noibpb crashkernel=auto LANG=en_US.UTF-8
```

2. Run the following command and check whether the values of the parameters in bold are the same as the following:

   # **sysctl -a |grep panic**

```
kernel.hardlockup_panic = 1
kernel.hung_task_panic = 0
kernel.panic = 5
kernel.panic_on_io_nmi = 0
kernel.panic_on_oops = 1
kernel.panic_on_stackoverflow = 0
kernel.panic_on_unrecovered_nmi = 0
kernel.panic_on_warn = 0
kernel.softlockup_panic = 1
kernel.unknown_nmi_panic = 1
vm.panic_on_oom = 0
```

3. Run the following command and check whether the configuration in the output is correct:

   # grep core_collector /etc/kdump.conf |grep -v ^"#"

```
core_collector makedumpfile -l --message-level 1 -d 31
```

4. Run the following command and check whether the path configuration in the output is correct:

   # grep path /etc/kdump.conf |grep -v ^"#"

```
path /var/crash
```

5. Run the following command and check whether the value of **Active** in the output is **active (exited)**:

   # systemctl status kdump

```
● kdump.service - Crash recovery kernel arming
Loaded: loaded (/usr/lib/systemd/system/kdump.service; enabled; vendor preset: enabled)
Active: active (exited) since Tue 2019-04-09 19:30:24 CST; 8min ago
Process: 495 ExecStart=/usr/bin/kdumpctl start (code=exited, status=0/SUCCESS)
Main PID: 495 (code=exited, status=0/SUCCESS)
CGroup: /system.slice/system-hostos.slice/kdump.service
```

6. Run the following test command:

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 # echo c > /proc/sysrq-trigger

After the command is executed, kdump will be triggered, the system will be restarted, and a generated vmcore file will be saved to the path specified by **path**.

7. Run the following command to check whether the vmcore file has been generated in the specified path, for example, **/var/crash/**:

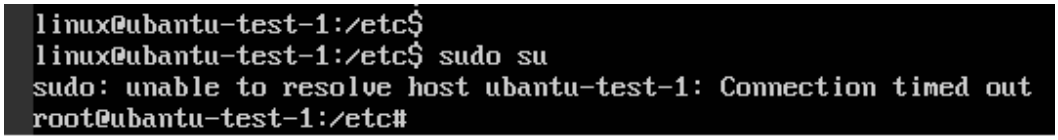
   # ll /var/crash/

3.3 What Can I Do If Switching from a Non-root User to User root Times Out?

Symptom

When you run the **sudo** command to switch to user **root** on an Ubuntu or Debian ECS, the system prompts connection timeout.

Figure 3-4 Connection timeout



Solution

1. Log in to the ECS.
2. Run the following command to edit the hosts configuration file:

   vi /etc/hosts
3. Press **i** to enter editing mode.
4. Add the IP address and hostname to the last line of the hosts configuration file.

   Private IP address hostname

   An example is provided as follows:

   If the ECS hostname is **hostname** and the private IP address of the ECS is 192.168.0.1, add the following statement:

   192.168.0.1 hostname
5. Press **Esc** to exit editing mode.
6. Run the following command to save the configuration and exit:

   :wq

NOTE

To update the hostname of an Ubuntu or Debian ECS, set the value of parameter **manage_etc_hosts** in the **/etc/cloud/cloud.cfg** file to **false** and update the new hostname in the **/etc/hosts** file. When editing the **/etc/hosts** file, do not delete the statement in the line where **127.0.0.1** is located. Otherwise, switching from a non-root user to user **root** will time out.

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4 Managing Disk Space

4.1 Troubleshooting the Creation of a Swap Partition or File on Linux

Scenarios

This section uses an ECS running CentOS 6.8 as an example to describe how to create a swap partition.

Constraints

A file of a specified size is to be created. Therefore, ensure that the available system disk capacity meets the task requirement.

Scenario 1: Creating a Swap Partition on a Block Storage Device

1. Run the following command to create a partition of 2 GB, for example:

   # fdisk /dev/vdb

   Information similar to the following is displayed:

```
Command (m for help): n
Partition type:
   p   primary (0 primary, 0 extended, 4 free)
   e   extended
Select (default p):
Using default response p
Partition number (1-4, default 1):
First sector (2048-20971519, default 2048):
Using default value 2048
Last sector, +sectors or +size{K,M,G} (2048-20971519, default 20971519): +2G
Partition 1 of type Linux and of size 2 GiB is set
Command (m for help): p

Disk /dev/vdb: 10.7 GB, 10737418240 bytes, 20971520 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0x1f02f438
```

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```
  Device Boot      Start         End      Blocks   Id  System
/dev/vdb1            2048     4196351     2097152   83  Linux

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

Calling ioctl() to re-read partition table.
Syncing disks.
```

2. Run the following command to create the swap partition:

   # mkswap /dev/vdb1

3. Run the following command to activate the swap partition:

   # swapon /dev/vdb1

   Run the following command to query the in-service swap:

   # swapon -s

4. Run the following command to obtain the swap partition UUID:

   # blkid |grep swap |awk '{print $2}'

   ```
   UUID="1ee90e3c-1538-453b-9240-ad430f835f6f"
   ```

5. Enable automatic swap partition mounting upon system startup and write the mounting information to **/etc/fstab**.

   Obtain the swap partition UUID in step 4. For example, if the obtained UUID is **1ee90e3c-1538-453b-9240-ad430f835f6f**, run the following command:

   # echo "UUID=1ee90e3c-1538-453b-9240-ad430f835f6f swap swap defaults 0 0" >>/etc/fstab

6. Run the following command to mount the swap partition:

   # mount -a

Scenario 2: Creating a Swap Partition Using a Block Storage Device Simulated by a File

NOTE

The performance of the block storage device simulated by a file is not as good as that of the passthrough block storage device.

1. Run the following command to create a swap file of 1 GB, for example:

   # dd if=/dev/zero of=/swapfile bs=1M count=1000

2. Run the following command to modify the file:

   # chmod 600 /swapfile

3. Run the following command to modify the file attribute:

   # mkswap /swapfile

4. Run the following command to enable swap:

   # swapon /swapfile

5. Enable automatic swap partition mounting upon system startup and write the mounting information to **/etc/fstab**.

   # echo "/swapfile swap swap defaults 0 0" >>/etc/fstab

6. Run the following command to mount the swap partition:

   # mount -a

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5 Multi-user Login Issues

5.1 Troubleshooting Multi-User Logins for an ECS Running Windows Server 2012

Scenarios

This section uses an ECS running Windows Server 2012 as an example to describe how to enable concurrent logins by multiple users.

An ECS running Windows Server 2012, by default, allows concurrent logins by two users. To allow the logins by more users, configure the remote desktop session host and remote desktop licensing.

NOTE

- After multi-user logins are configured, different users can log in to the ECS without affecting each other.
- The configuration in this section enables concurrent logins by multiple users or multiple concurrent logins using one account. However, a remote desktop license is valid for only 120 days. After the license expires, multi-user logins will be unavailable. For instructions about how to activate Remote Desktop Licensing, see **Applying for a License for Authenticating Multi-User Sessions and Activating the ECS**.
- However, a remote desktop license is valid for only 120 days. After the license expires, multi-user logins will be unavailable. In this case, delete the remote desktop service. For details, see **What Should I Do If the System Displays No Remote Desktop License Servers Available to Provide a License When I Log In to a Windows ECS?**
- After multi-user logins are configured on a Windows ECS, the browser may fail to be opened by multiple users. For details about how to handle the problem, see **Troubleshooting a Browser Launch Error Occurred in Multi-User Login**.

Procedure

1. **Configuring Remote Desktop Session Host and Remote Desktop Licensing**
2. **Enabling Multi-User Logins**
3. **Adding a New User to the Remote Desktop Users Group**

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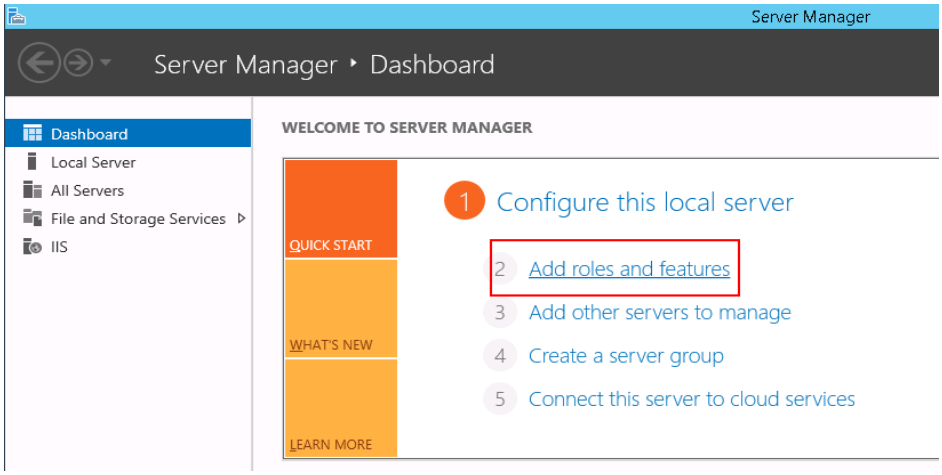
Configuring Remote Desktop Session Host and Remote Desktop Licensing

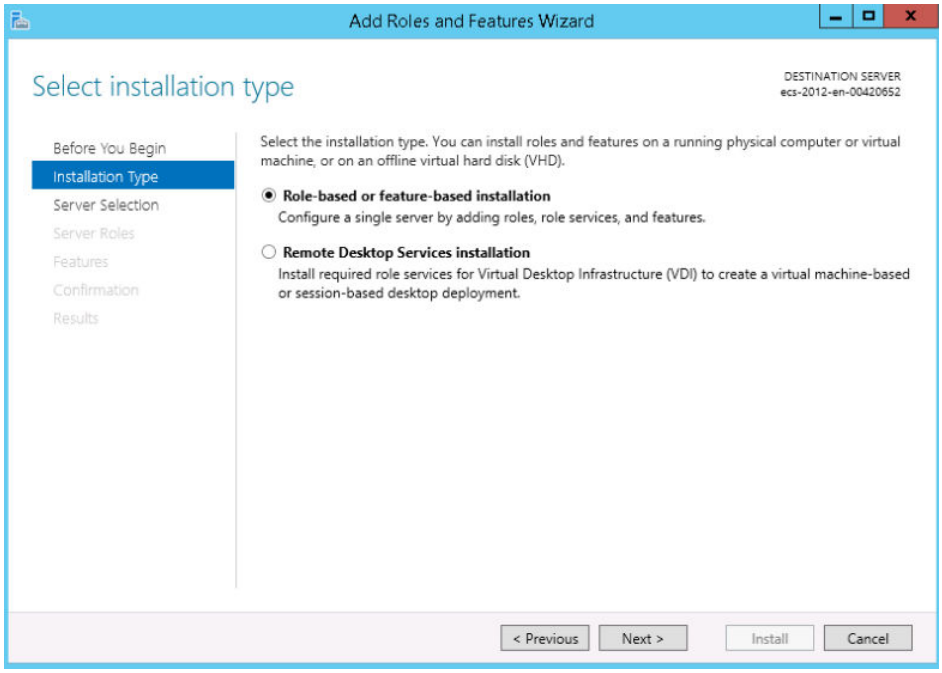
1. Log in to the Windows ECS.
2. On the OS, click  to open **Server Manager**. Click **Add roles and features**.

   Figure 5-1 Adding roles and features



3. Retain default settings and click **Next**. On the displayed installation page, select **Role-based or feature-based installation** and click **Next**.

   Figure 5-2 Selecting an installation type



4. Choose **Server Selection**, select **Select a server from the server pool**, and click **Next**.
5. Choose **Server Roles**, select **Remote Desktop Services**, and click **Next**.

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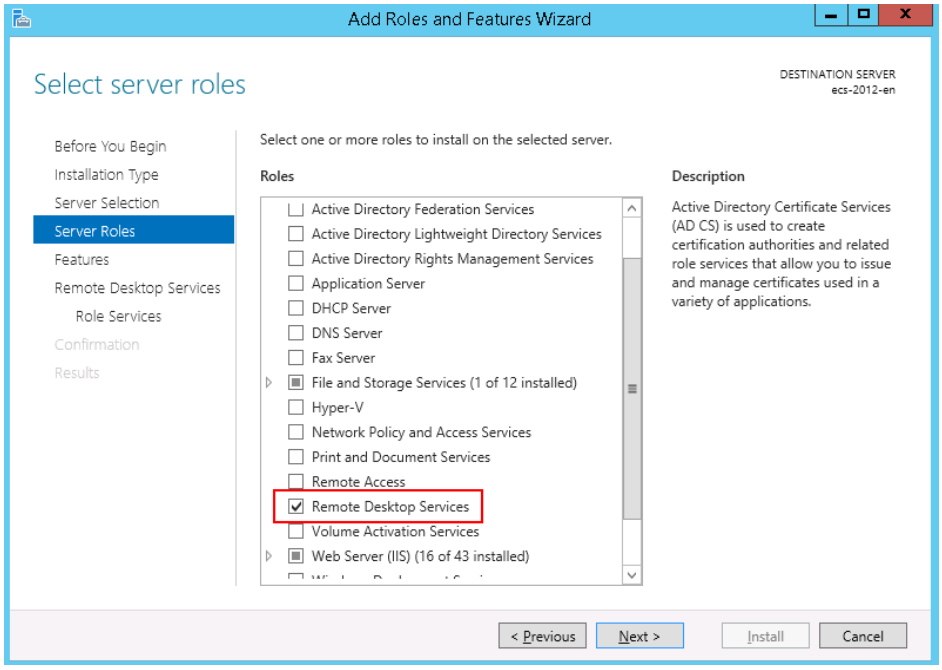
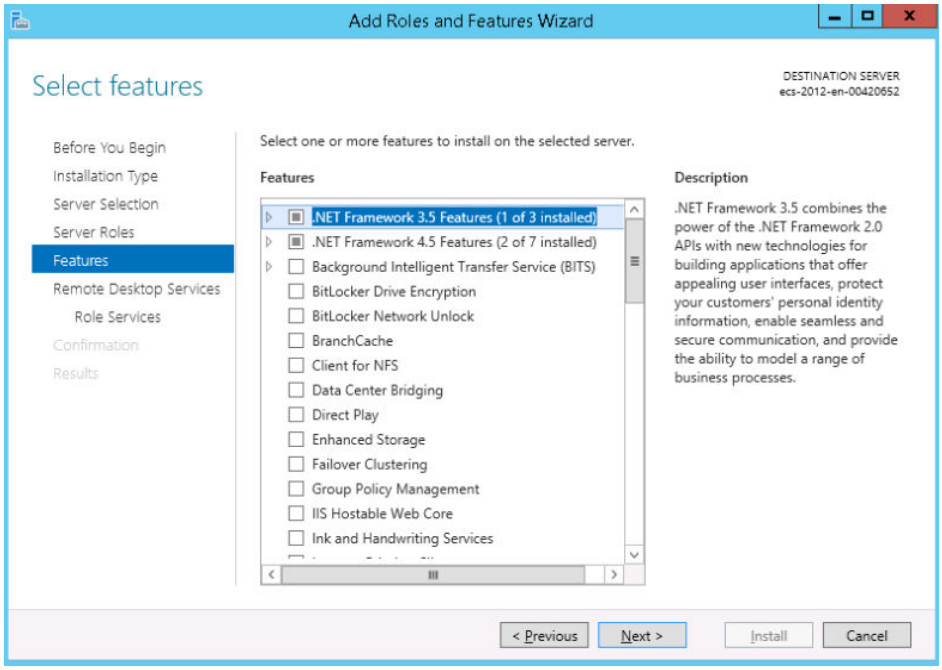
Figure 5-3 Selecting Remote Desktop Services



6. On the **Features** page, retain default settings and click **Next** twice.

Figure 5-4 Features



7. On the **Role Services** page, select **Remote Desktop Session Host** and **Remote Desktop Licensing**. In the displayed dialog box, click **Add Features** and then **Next**.

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Figure 5-5 Adding features

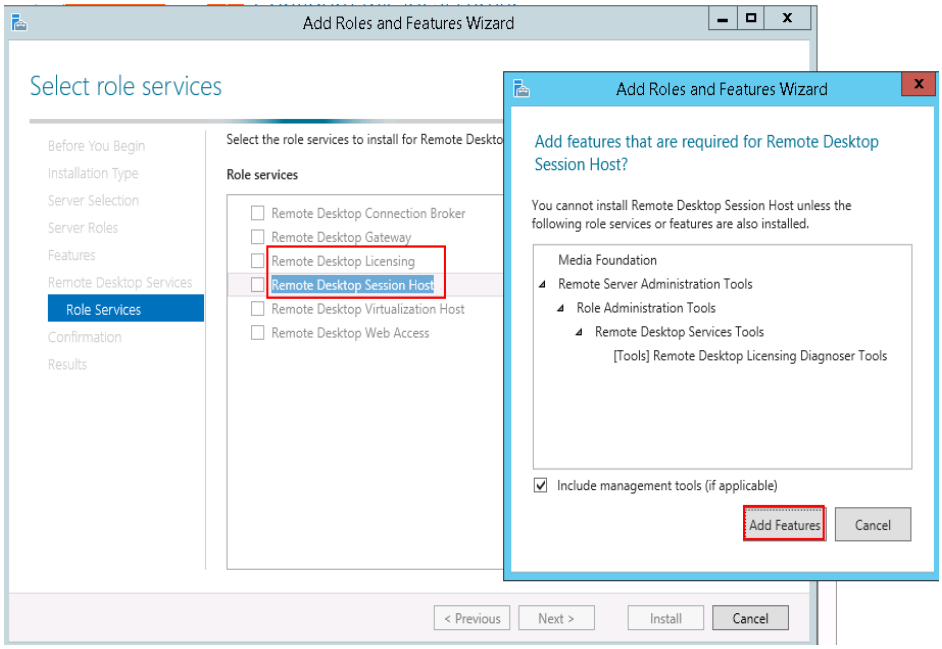
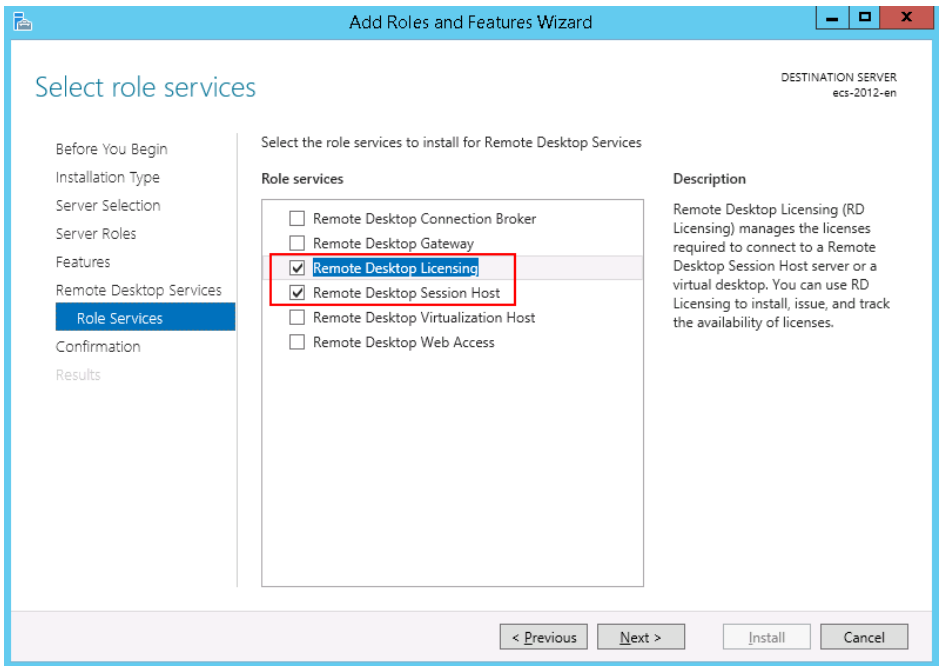


Figure 5-6 Selecting Remote Desktop Licensing



8. Confirm installation selections and click **Install**.

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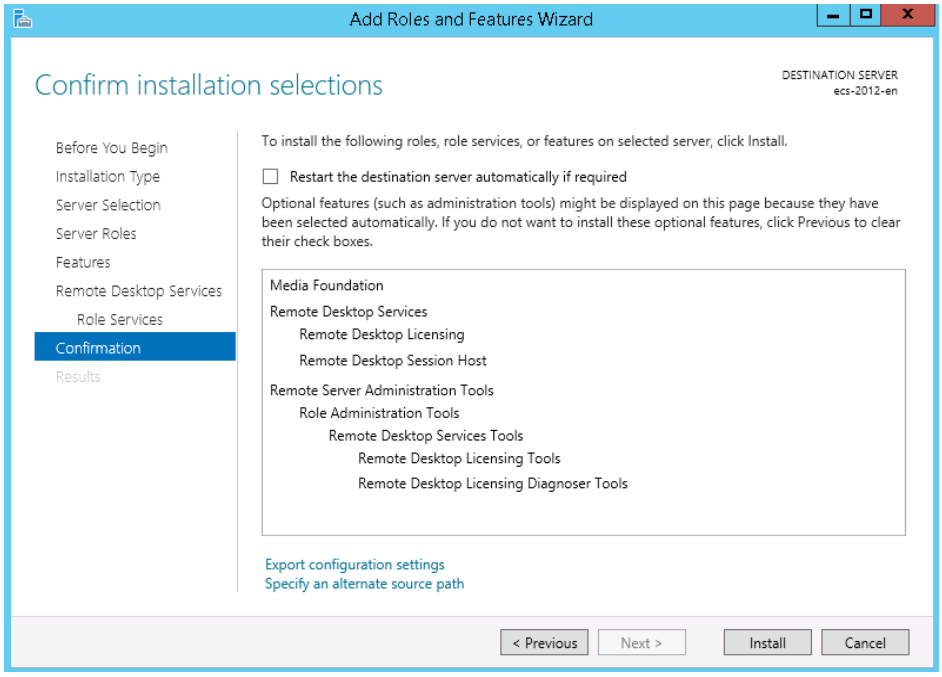
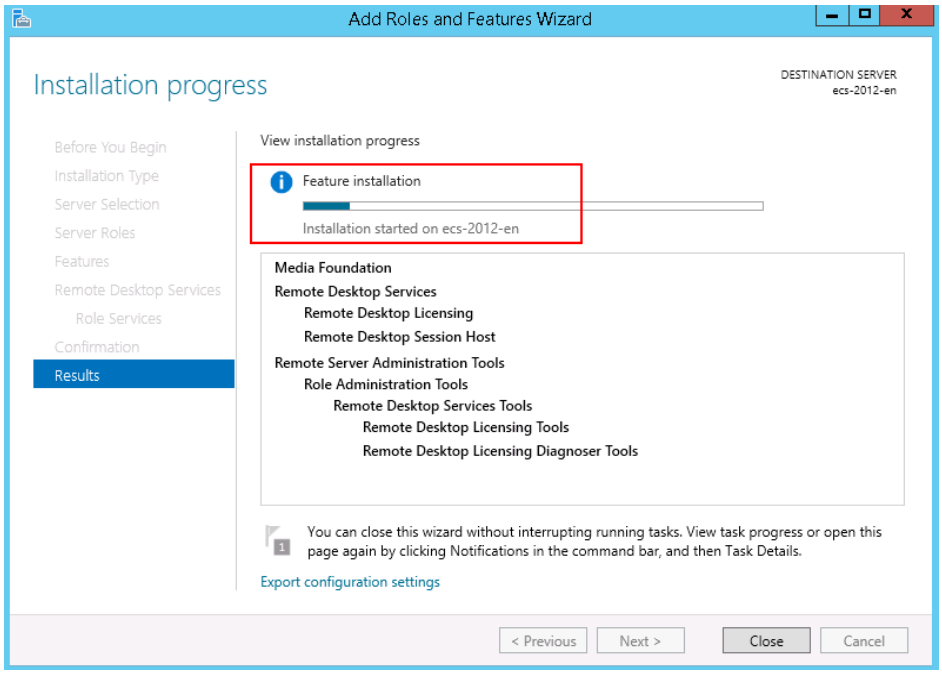
Figure 5-7 Confirming installation selections



9. After the installation is complete, restart the destination server as prompted and click **Close**.

Figure 5-8 Installation progress



Enabling Multi-User Logins

1. In the **Run** dialog box, enter **gpedit.msc** and click **OK** to start Local Group Policy Editor.

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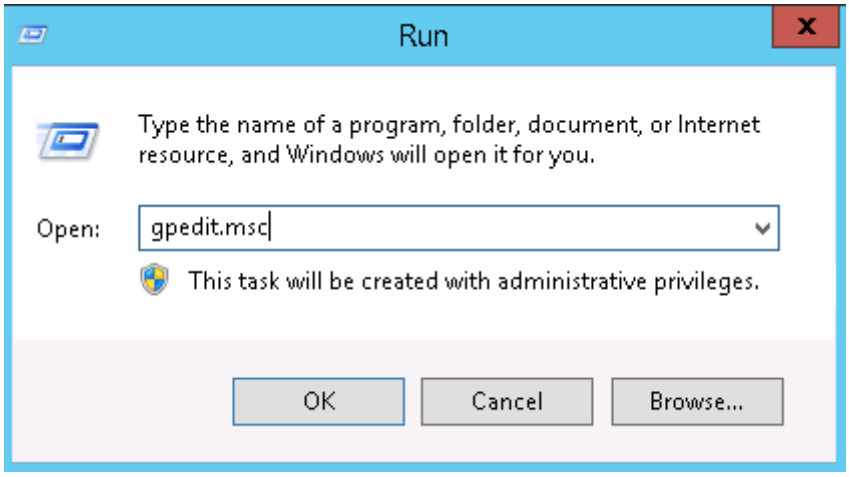
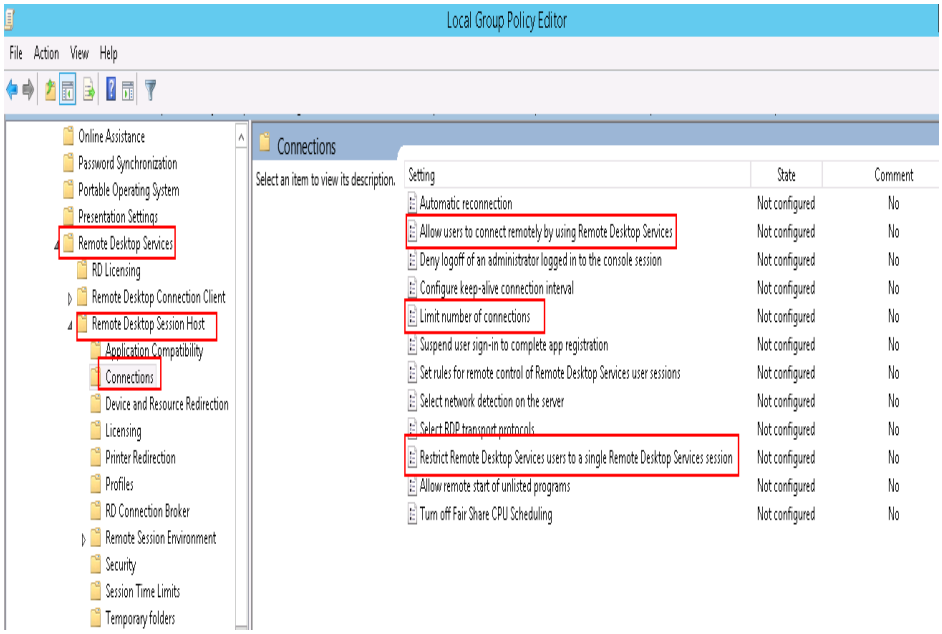
Figure 5-9 gpedit.msc



2. Choose **Computer Configuration** > **Administrative Templates** > **Windows Components** > **Remote Desktop Services** > **Remote Desktop Session Host** > **Connections**. Configure **Allow user to connect remotely by using Remote Desktop Services**, **Limit number of connections** (based on site requirements), and **Restrict Remote Desktop Services users to a single Remote Desktop Services session**.

Figure 5-10 Configuring Connections



3. Right-click **Allow users to connect remotely by using Remote Desktop Services** and choose **Edit**. Then, set the status to **Enabled**.

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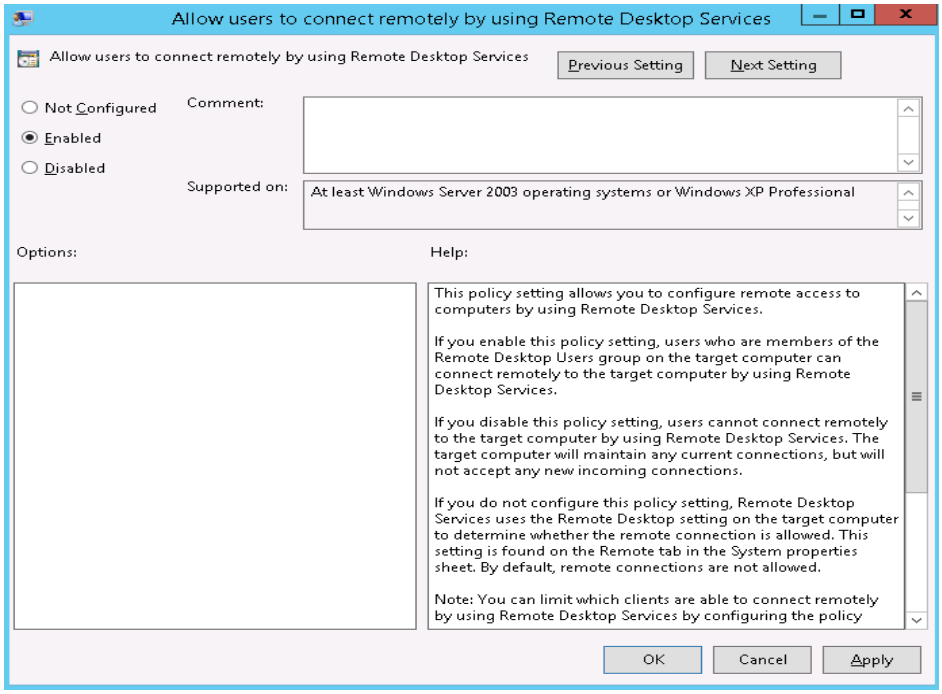
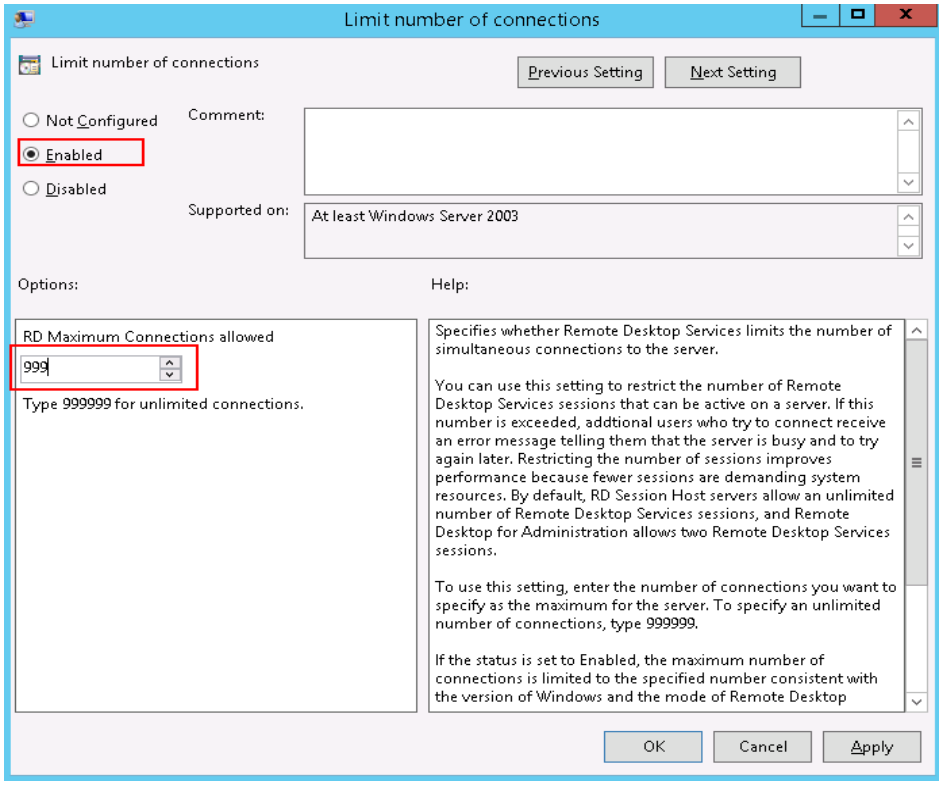
Figure 5-11 Allowing users to connect remotely by using Remote Desktop Services



4. Set **Limit number of connections** to **Enabled** and set the number based on site requirements.

Figure 5-12 Setting limit number of connections



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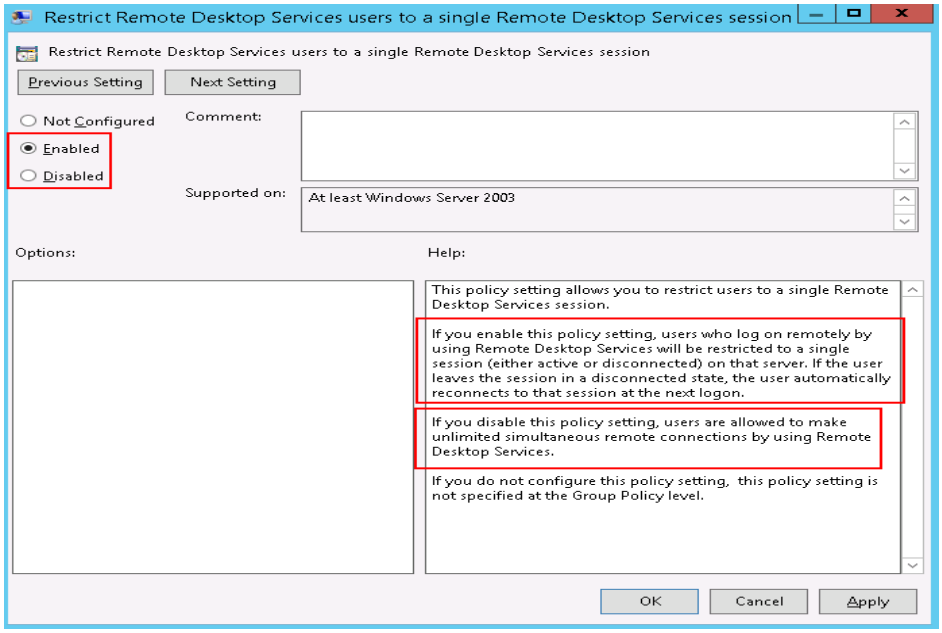
5. Set **Restrict Remote Desktop Services users to a single Remote Desktop Services session** to **Enabled** or **Disabled** as required. In this example, **Enabled** is selected.
   - **Enabled**: allows concurrent logins by multiple users, but not allowing multiple logins using one account.

     For example, users A, B, and C can concurrently log in to an ECS using account A, B, and C, respectively. However, users A, B, and C cannot use the same account to log in to the ECS.
   - **Disabled**: allows multiple users to concurrently log in to an ECS using one account.

     For example, users A, B, and C can use the same account to concurrently log in to an ECS.

     Figure 5-13 Restricting Remote Desktop Services users to a single Remote Desktop Services session



6. Run **cmd** and then **gpupdate /force** to forcibly start Local Group Policy Editor and restart the ECS.

Adding a New User to the Remote Desktop Users Group

After enabling multi-user login, add new users to the remote desktop users group. This section describes how to create a user and add the user to remote desktop users group.

1. Open the **Run** dialog box, enter **lusrmgr.msc**, and click **OK** to open **Local Users and Groups**.

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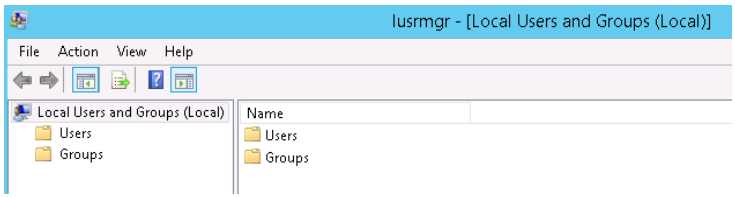
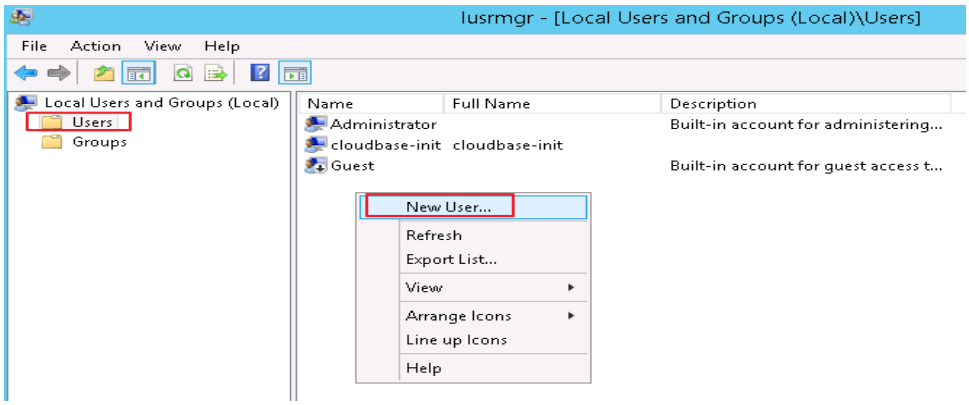
Figure 5-14 Local Users and Groups



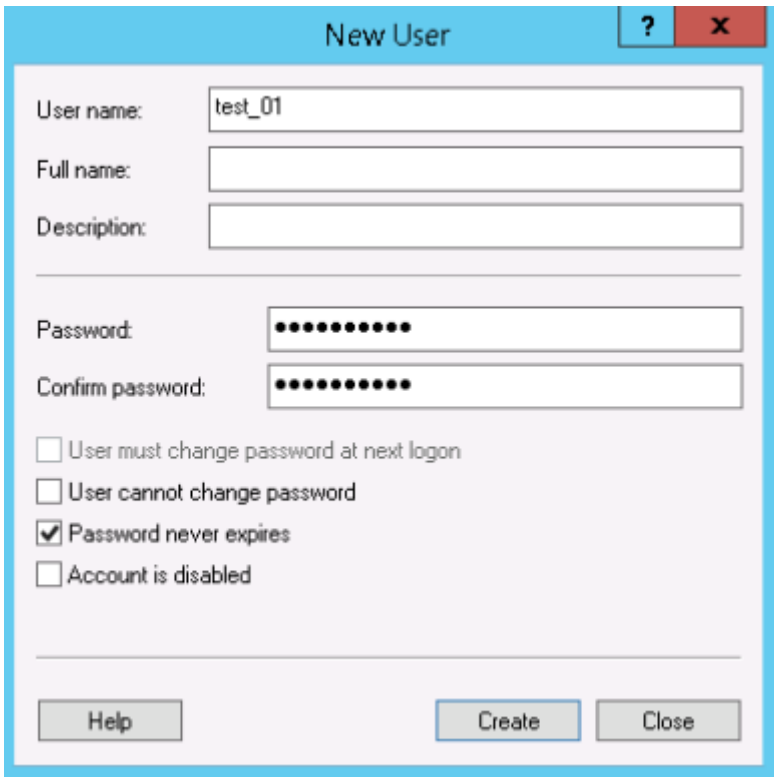
2. Select **Users**, right-click the blank area, and choose **New User** from the shortcut menu.

Figure 5-15 Adding a new user



3. Set user information and click **Create**.

Figure 5-16 Setting user information



4. Select **Groups**, double-click **Remote Desktop Users**, and click **Add**.

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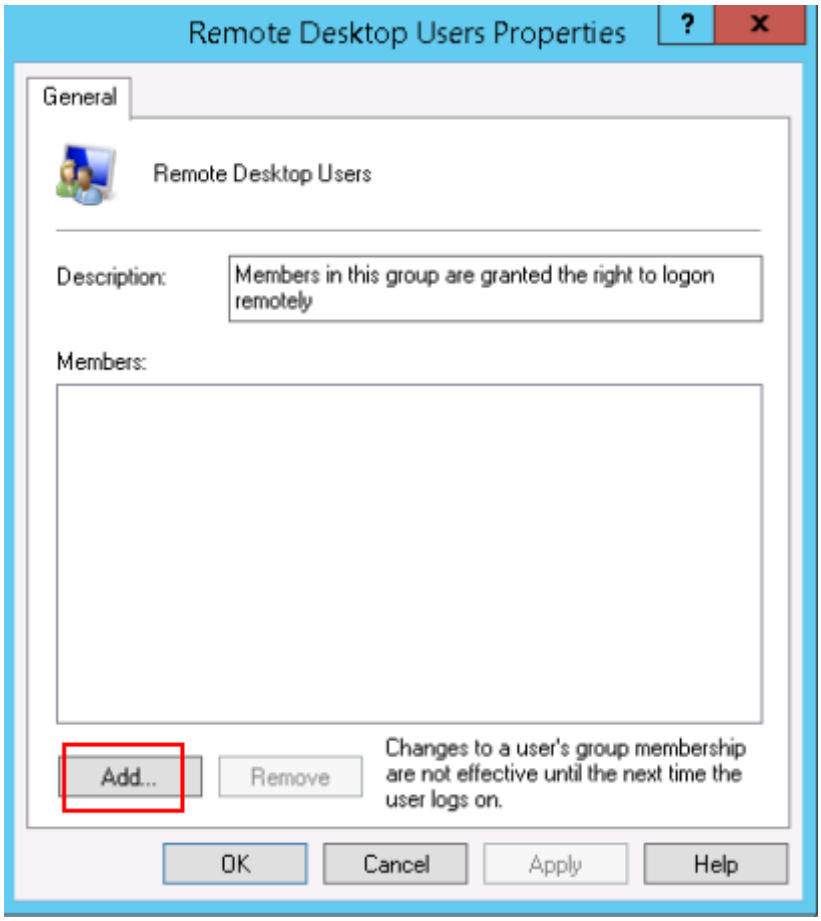
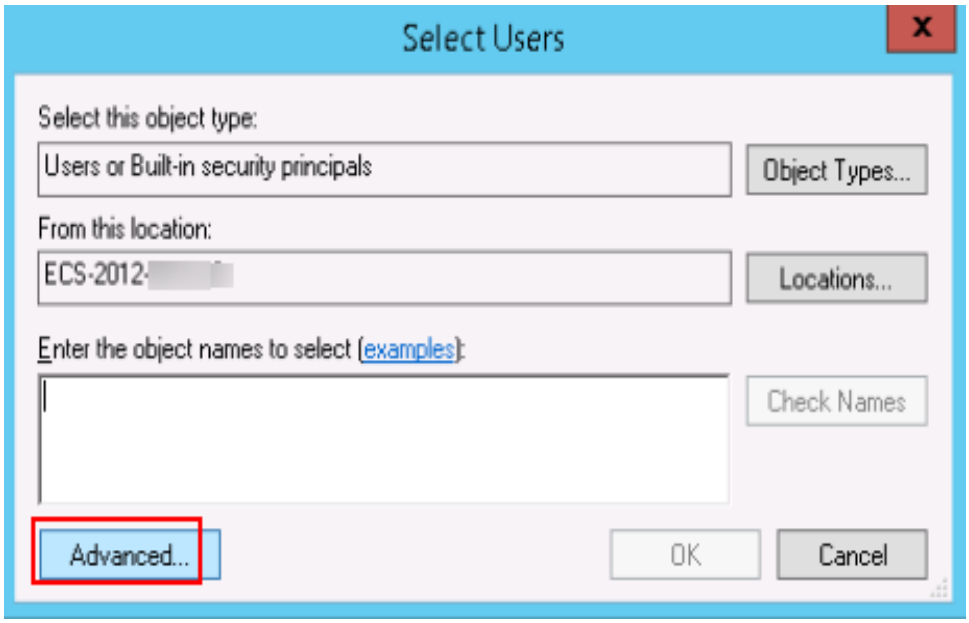
Figure 5-17 Remote Desktop Users Properties



5. In the **Select Users** dialog box, click **Advanced**.

Figure 5-18 Selecting users (Advanced)



6. Click **Find Now**, select the user for remote login in the search results, and click **OK**.

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Figure 5-19 Selecting users (Find Now)

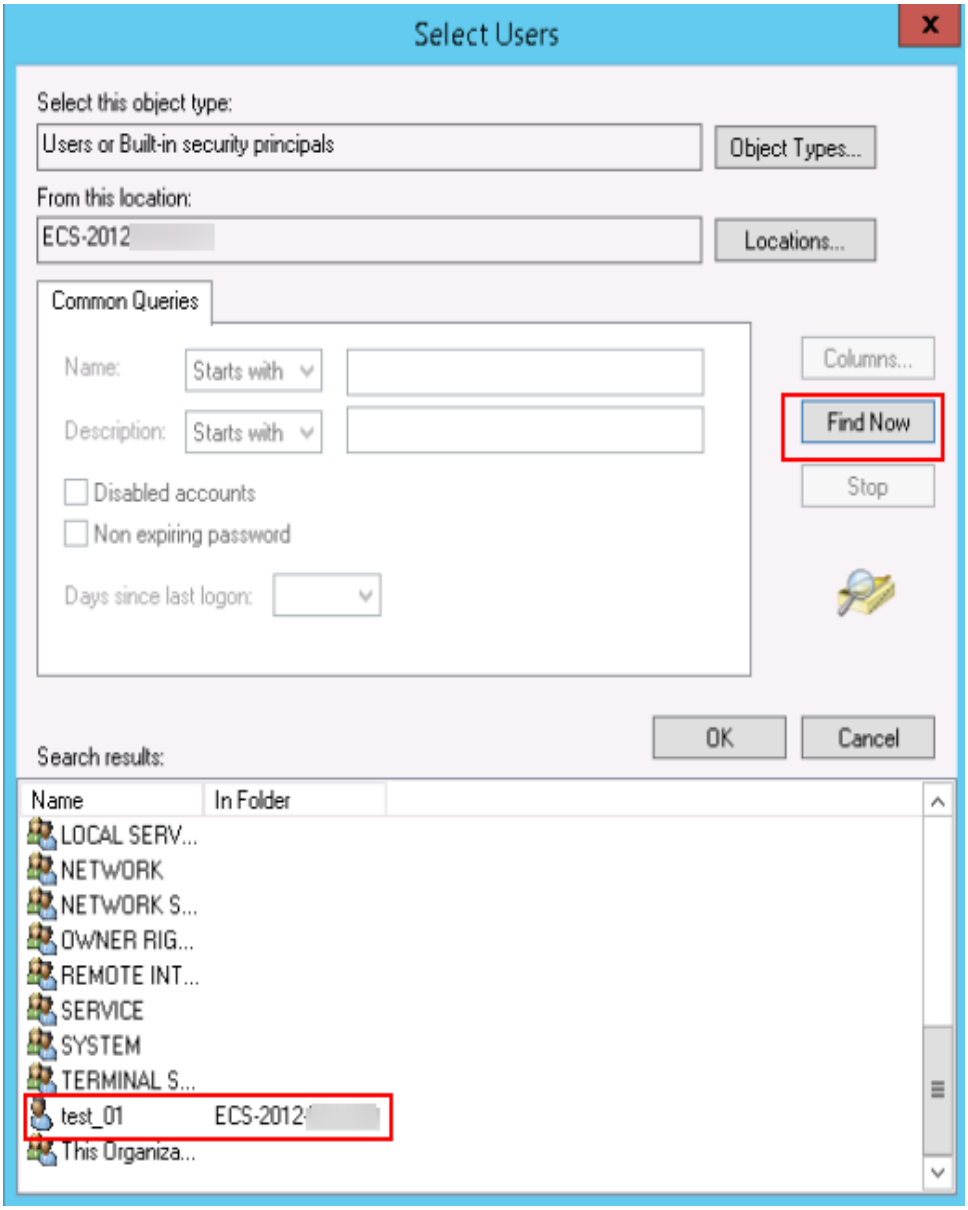

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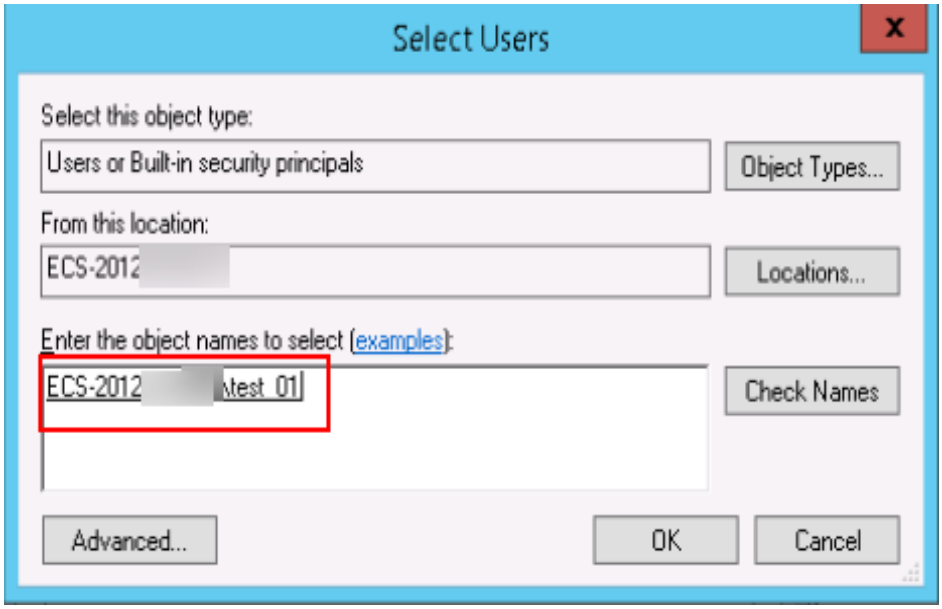
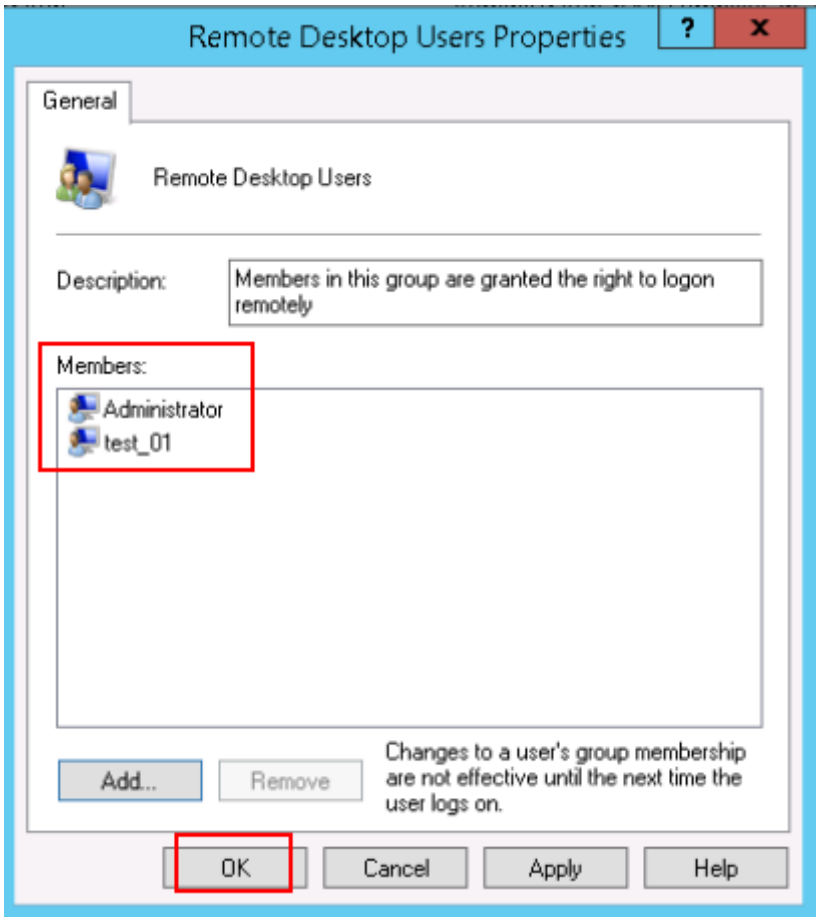
Figure 5-20 Adding a user



7. Click **OK** to add the user to the Remote Desktop Users group.

Figure 5-21 Confirming user information



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Follow-up Operations

For instructions about how to activate Remote Desktop Licensing, see **Applying for a License for Authenticating Multi-User Sessions and Activating the ECS**.

5.2 Troubleshooting a Browser Launch Error Occurred in Multi-User Login

Symptom

When multiple users log in to an ECS running Windows Server 2008, Windows Server 2012, or Windows Server 2016, a user opens the browser and other users failed.

Solution

This section uses Internet Explorer as an example.

1. Right-click the browser icon and choose **Create shortcut**.
2. Right-click the created shortcut and choose **Properties**.
3. On the **Shortcut** tab, add the following content to the end of **Target**.

   --user-data-dir="c:\MyInternetExplorerData"

   NOTE

   - There is a space between **.exe** and **--user**.
   - **c:\MyInternetExplorerData** indicates the directory where the Internet Explorer data files are stored. You can set it to any valid directory. If this directory does not exist, the browser automatically creates one.

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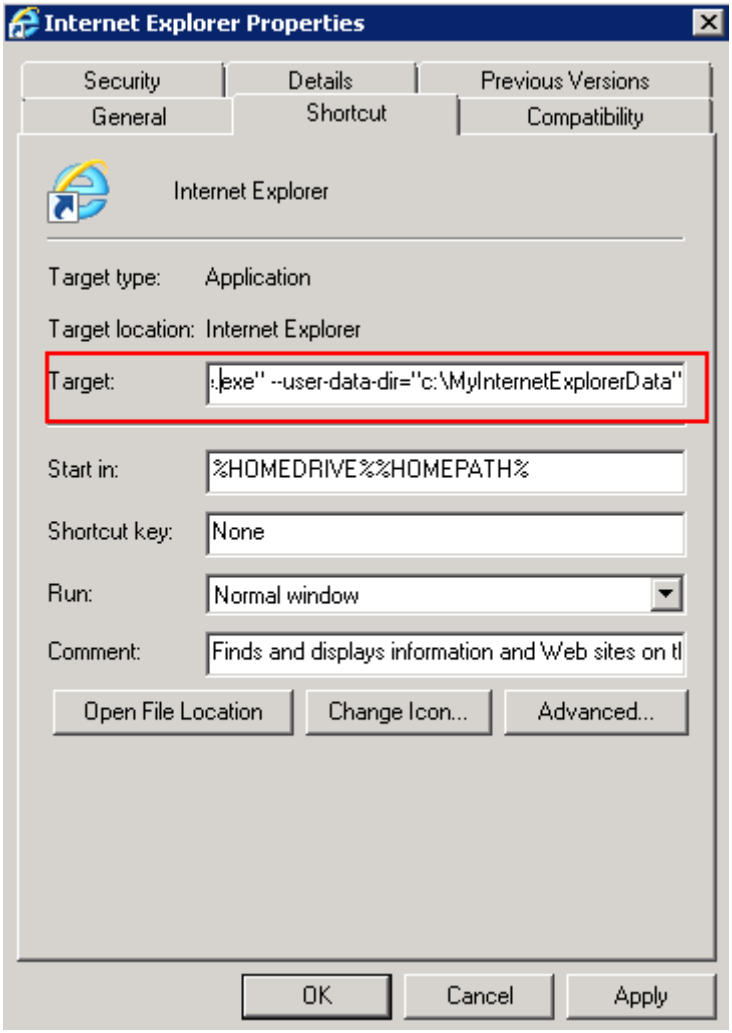
Figure 5-22 Internet Explorer properties



4. Save the modification and multiple users can use the browser at the same time.

5.3 Applying for a License for Authenticating Multi-User Sessions and Activating the ECS

Scenarios

This section describes how to configure remote desktop services and activate the ECS.

The ECS running Windows Server 2012 is used as an example.

Procedure

1. **Applying for a License for Authenticating Multi-User Sessions**
2. **Activating the ECS**
3. **Configuring the Licensing Server for Remote Desktop Session Host**

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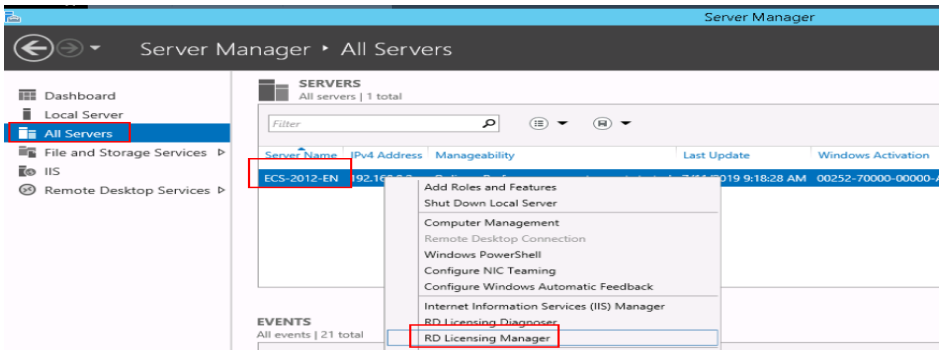
Applying for a License for Authenticating Multi-User Sessions

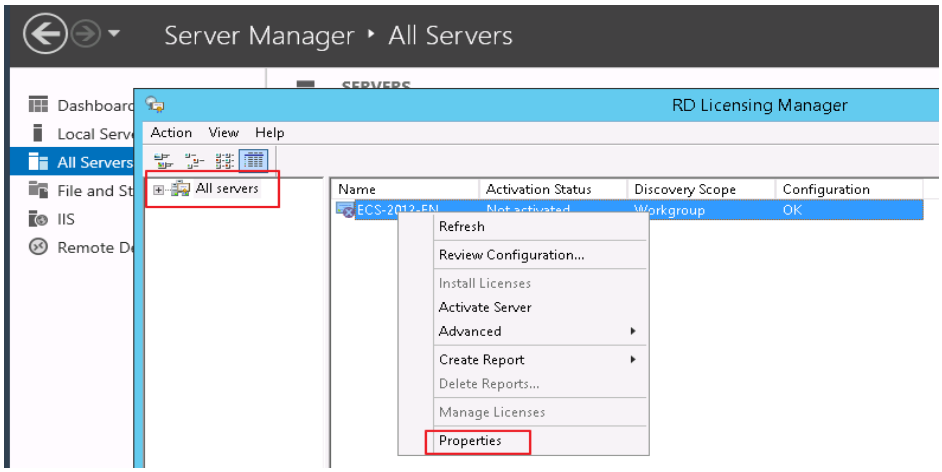
1. Log in to the Windows ECS.
2. On the OS, click  to open **Server Manager**.
3. On the **Server Manager** page, click **All Servers**, right-click the server name, and choose **RD Licensing Manager** from the shortcut menu.

   Figure 5-23 Selecting RD Licensing Manager

4. Right-click the unactivated server and choose **Properties** from the shortcut menu.

   Figure 5-24 Selecting properties of the unactivated server

5. In the **Properties** dialog box, set **Connection Method** to **Web Browser**. Record the product ID which will be required for obtaining a server license.

NOTICE

If the destination server is not displayed in **RD Licensing Manager**, choose **Action** > **Connect**, and enter the server IP address.

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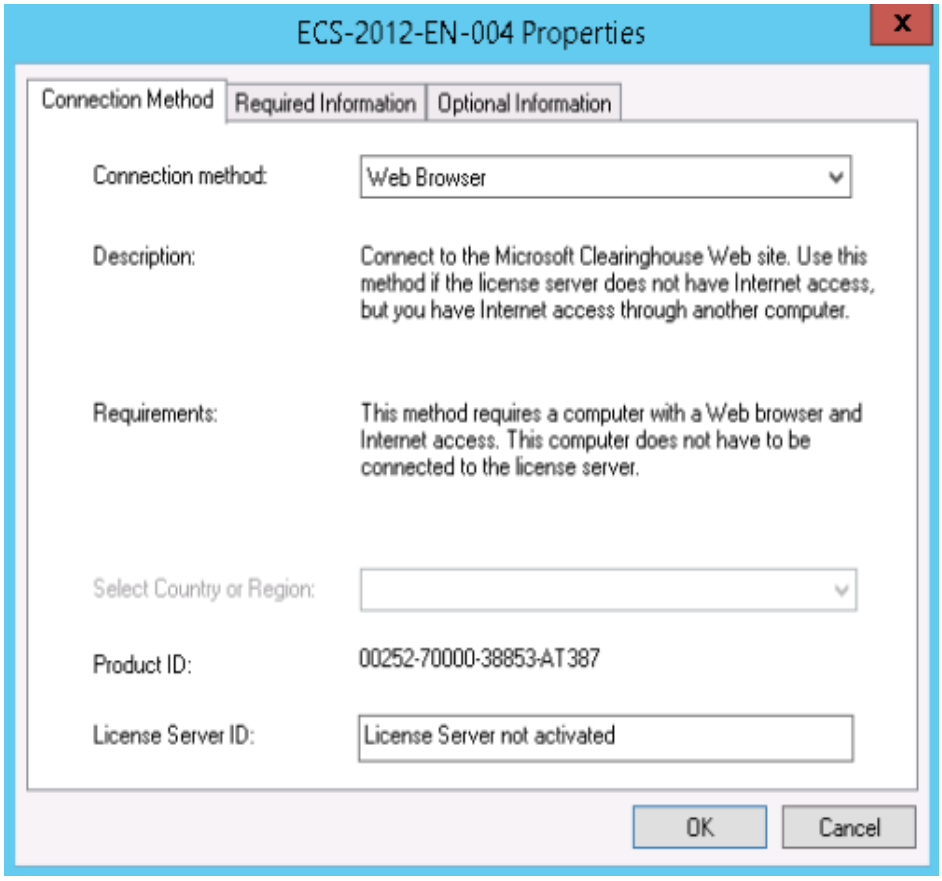
Figure 5-25 Web browser for connection



6. Set parameters and click **OK**.

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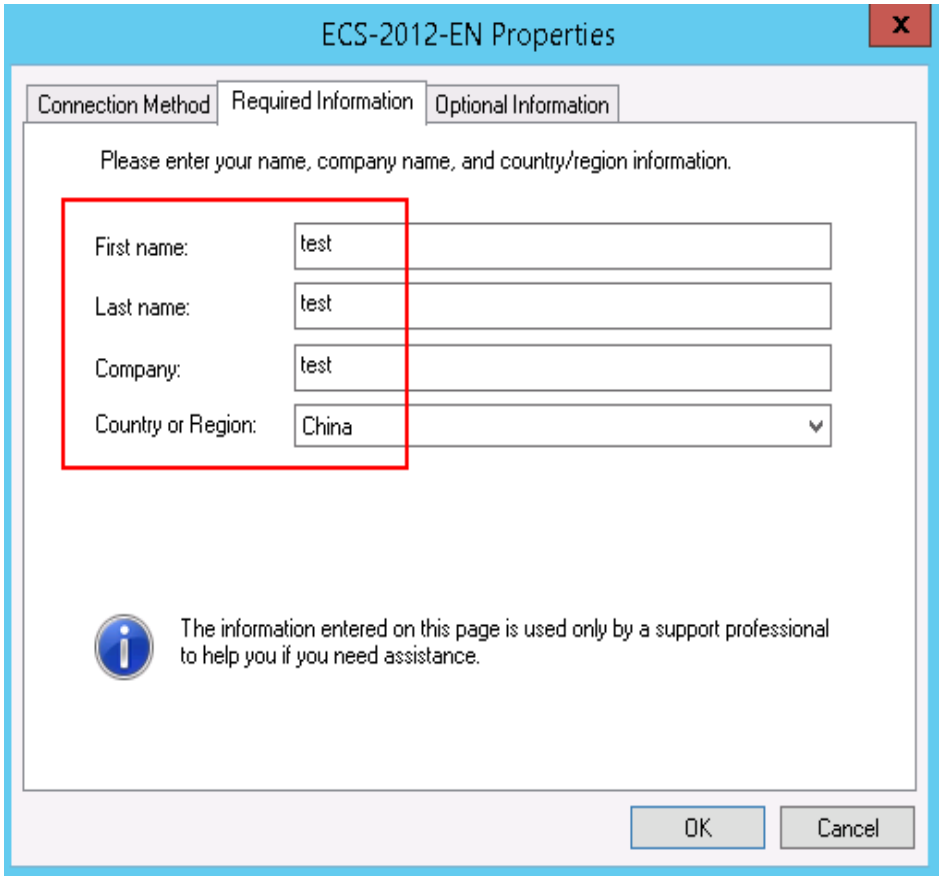
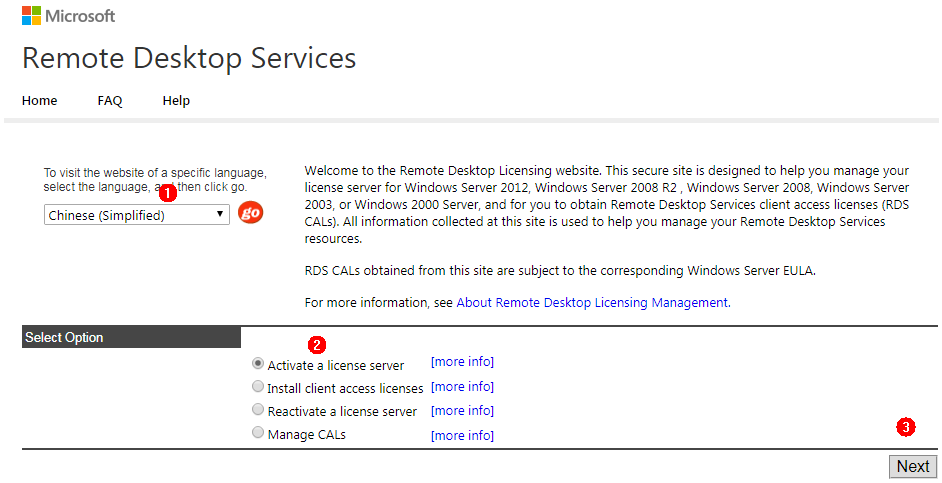
Figure 5-26 Setting parameters



7. Access **https://activate.microsoft.com** using Internet Explorer.
   Select **Activate a license server** and click **Next**.

Figure 5-27 Activating the license server



8. Set parameters and click **Next**. Confirm the product information and click **Next**.

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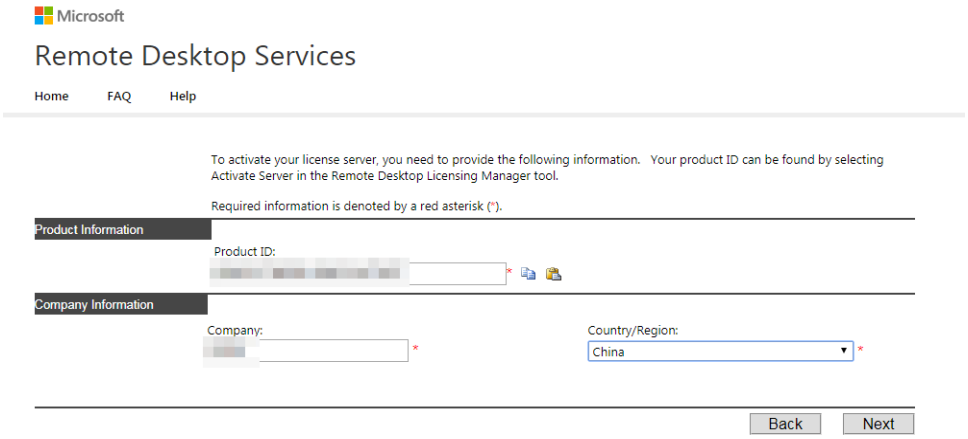
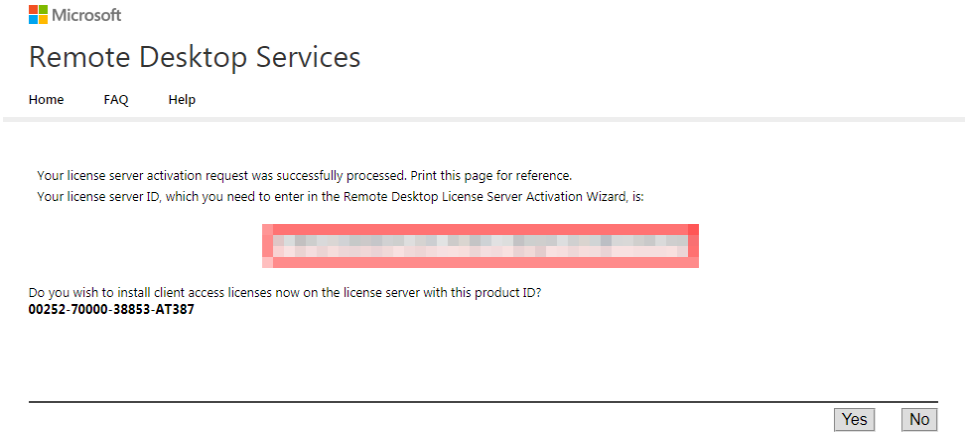
Figure 5-28 Configuring the server



9. Record the license server ID and click **Yes**.

Figure 5-29 Obtaining the license server ID



10. If the license server ID is not available, set **License Program** to **Enterprise agreement** and click **Next**.

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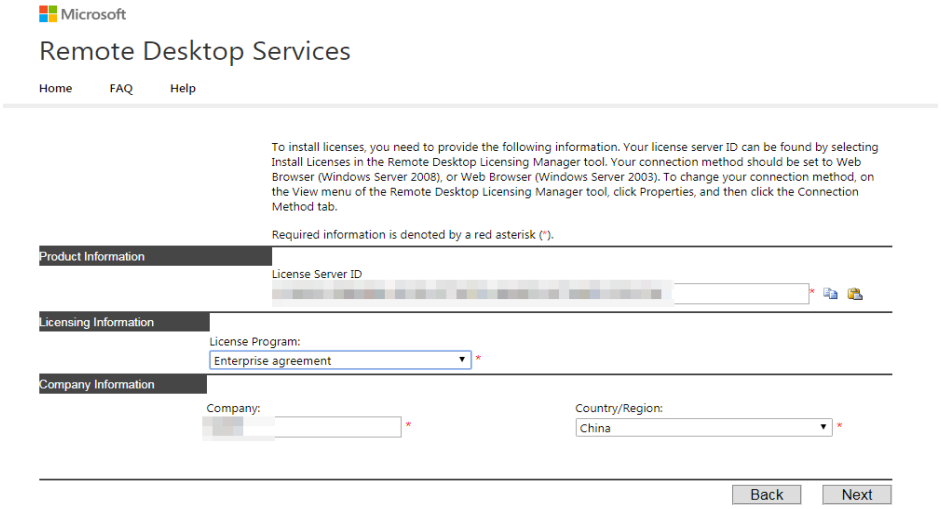
Figure 5-30 Enterprise agreement

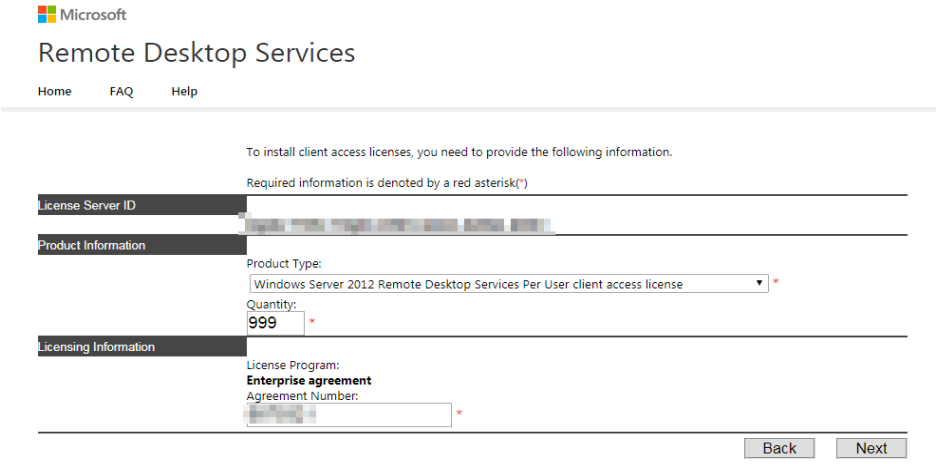


11. Set parameters.
    - **Product Type**: specifies the license server type, for example, **Windows Server 2012 Remote Desktop Services Per User client access license**.
    - **Quantity**: the maximum number of users allowed for remote desktop connections, for example, **999**.
    - **Agreement Number**: a 7-digit license registration number purchased at the official Microsoft website.

      NOTE

      HUAWEI CLOUD does not provide licenses for remote desktop connections. Purchase such a license at the official Microsoft website.

Figure 5-31 Setting license server information



12. Record the license server ID and license key pack ID and click **Finish**.

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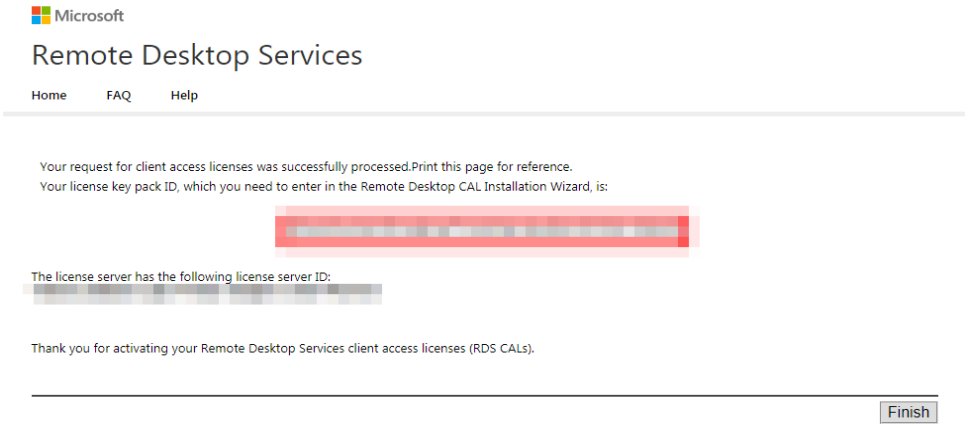
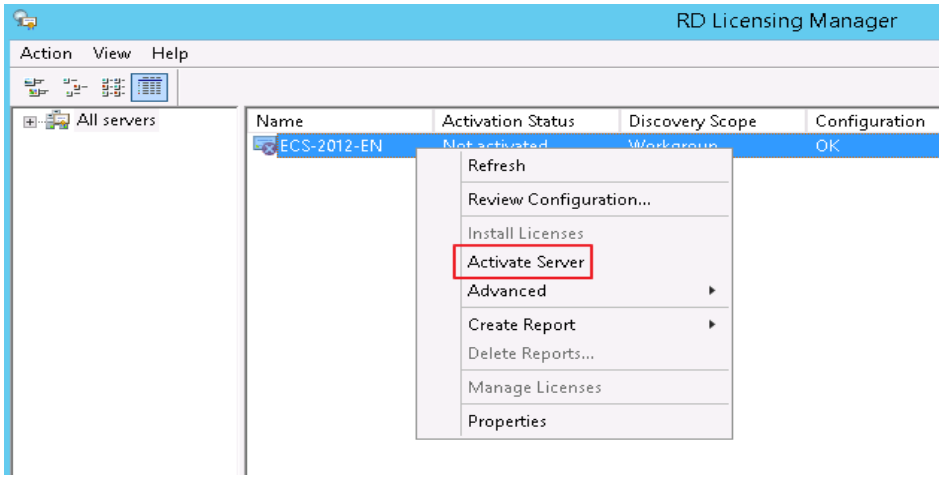
Figure 5-32 Obtaining a license key pack ID



Activating the ECS

1. Log in to the ECS. Open **RD Licensing Manager**, right-click the ECS, and choose **Activate Server**.

   Figure 5-33 Activating the ECS

2. In **Activate Server Wizard**, click **Next**.

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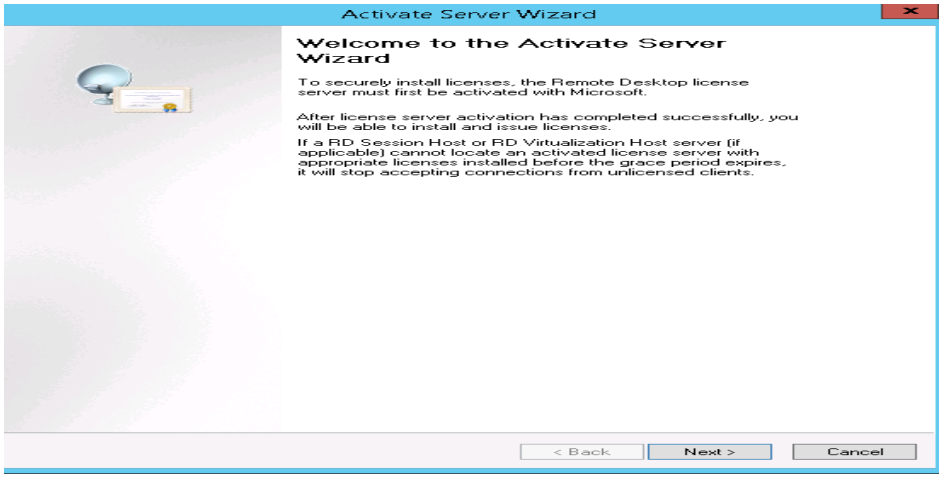
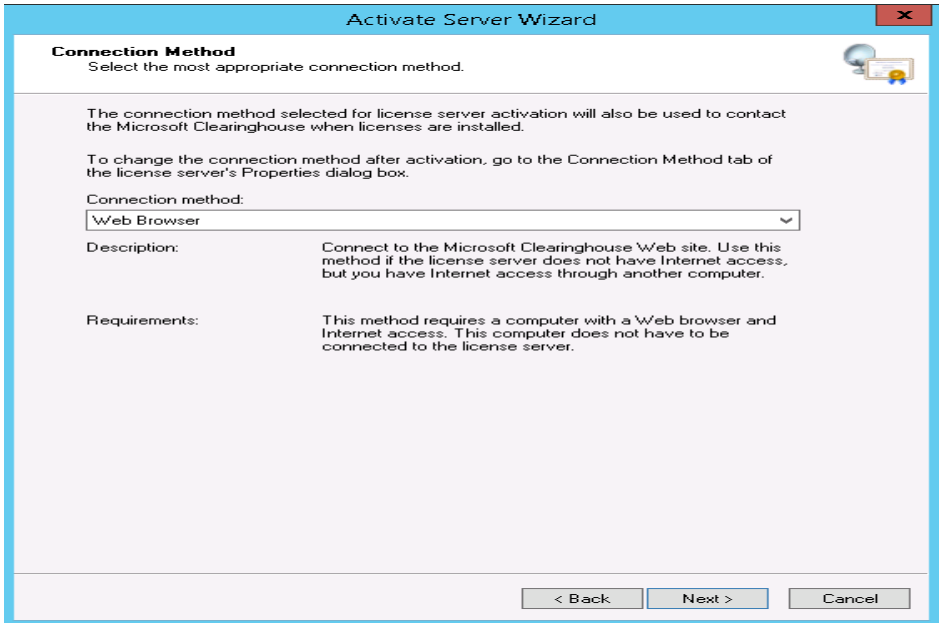
Figure 5-34 Activate Server Wizard



3. Set **Connection method** to **Web Browser** and click **Next**.

Figure 5-35 Web browser for connection



4. Enter the license server ID and click **Next**.
   The license server ID is the ID obtained in step **9**.

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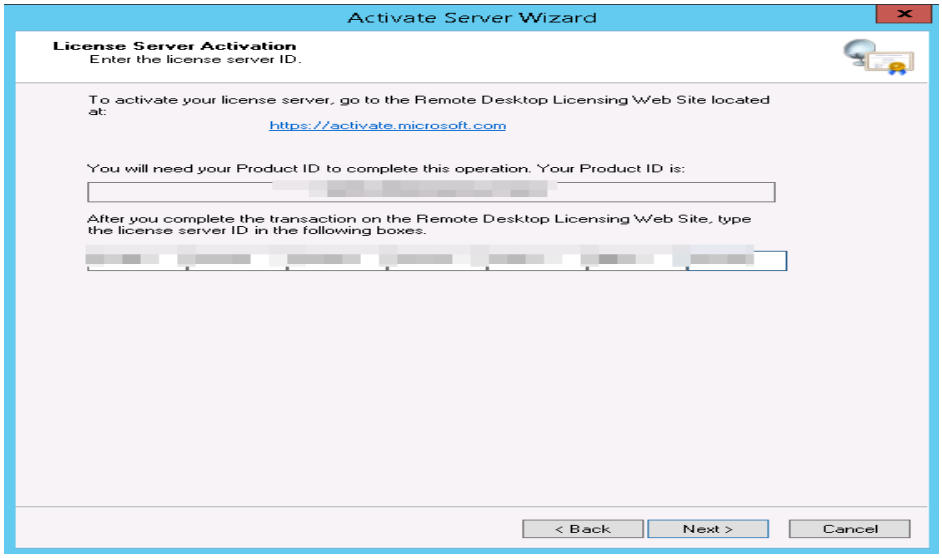
Figure 5-36 Entering the license server ID



5. Select **Start Install Licenses Wizard now** and click **Next**.

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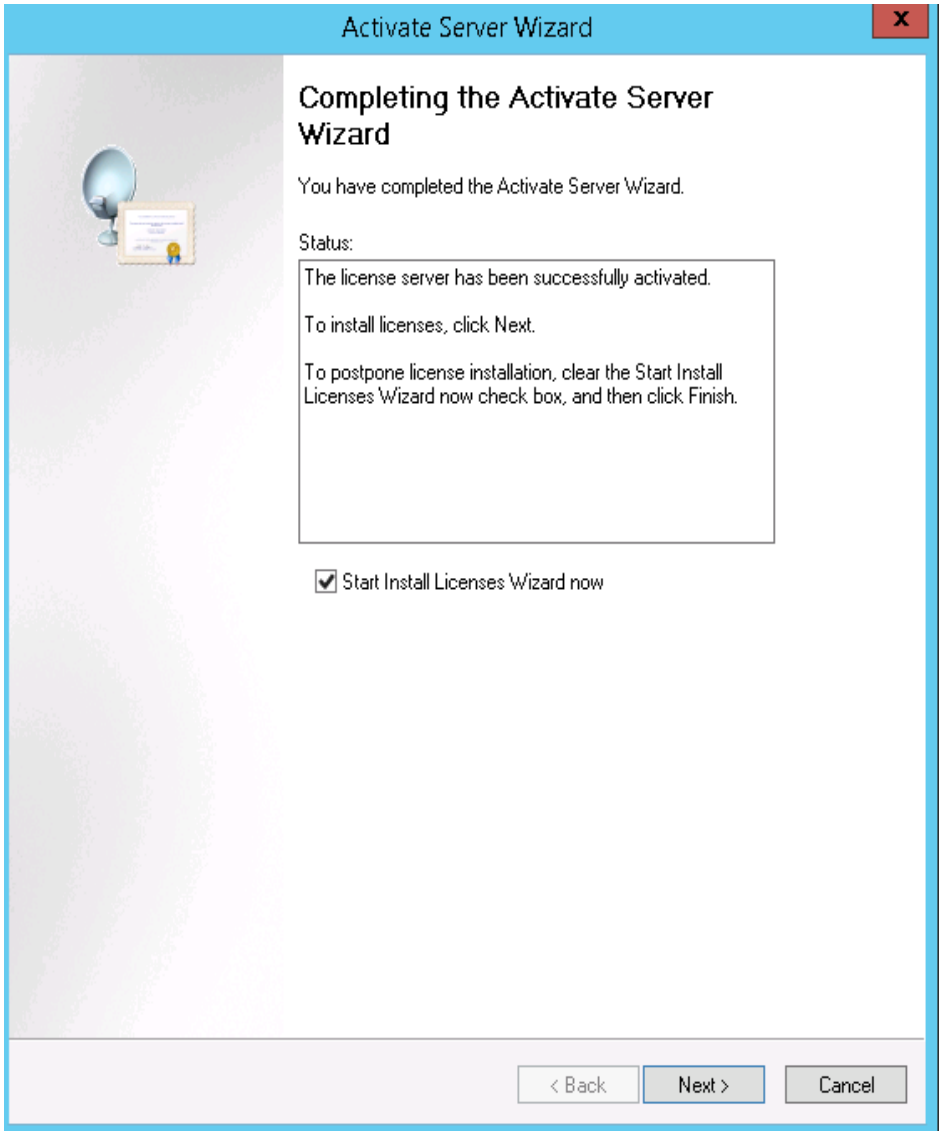
Figure 5-37 Starting license installation wizard



6. Enter the license key pack ID and click **Next**.
   The key pack ID is obtained in step 12.

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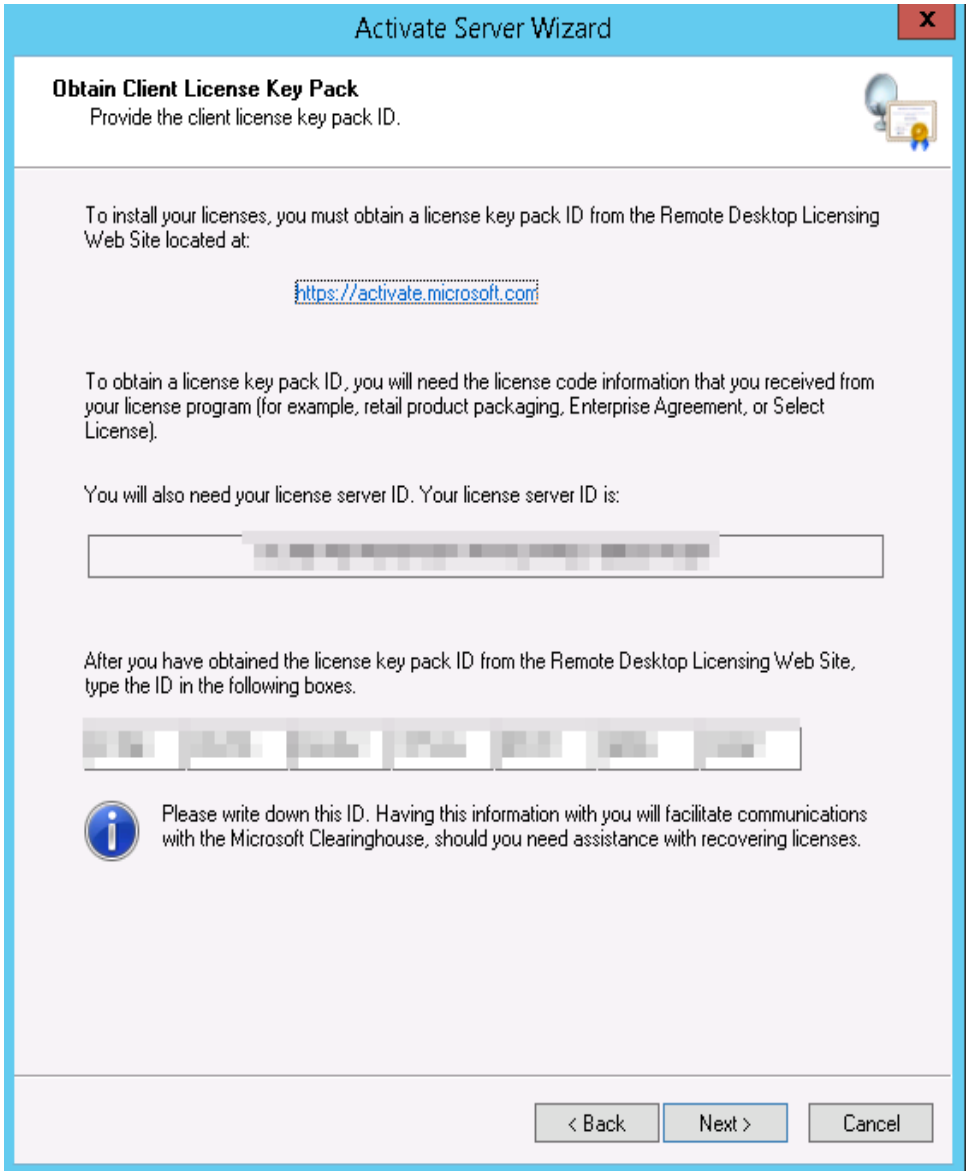
Figure 5-38 Entering the key pack ID



7. Click **Finish**.

Configuring the Licensing Server for Remote Desktop Session Host

1. Log in to the Windows ECS.
2. On the OS, click  to open **Server Manager**. Click **Tools** > **Terminal Services** > **RD Licensing Diagnoser** and check the ECS authorization status.

   As shown in the following figure, the system displays a message indicating that the licensing mode for the Remote Desktop Session Host Server is not configured.

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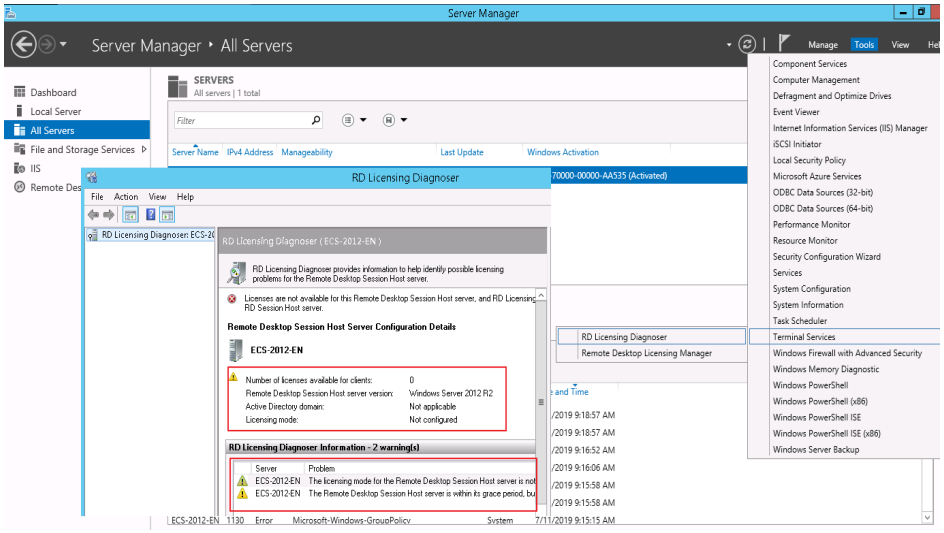
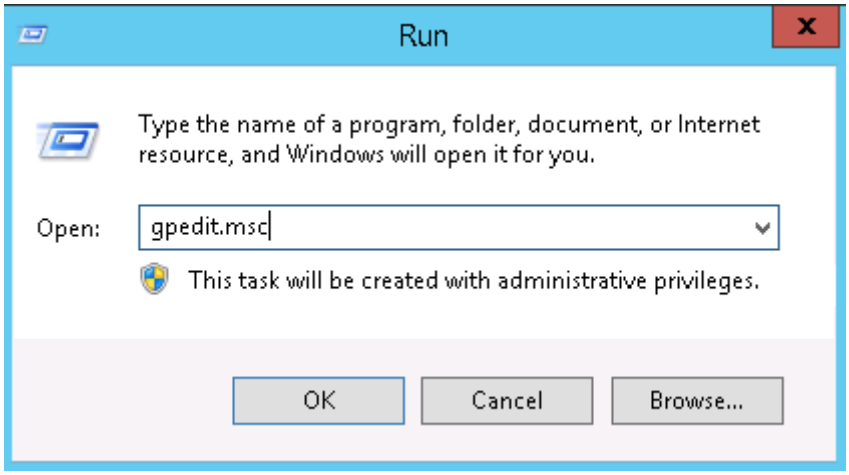
Figure 5-39 Checking the ECS authorization status



3. In the **Run** dialog box, enter **gpedit.msc** and click **OK** to start Local Group Policy Editor.

Figure 5-40 gpedit.msc



4. Choose **Computer Configuration** > **Administrative Templates** > **Windows Components** > **Remote Desktop Services** > **Remote Desktop Session Host** > **Licensing**.

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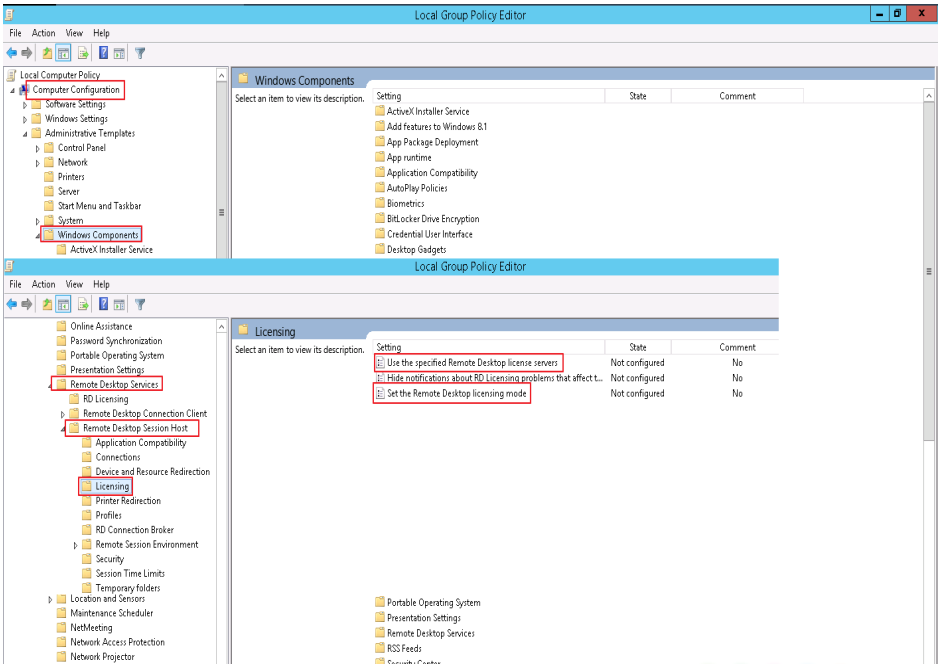
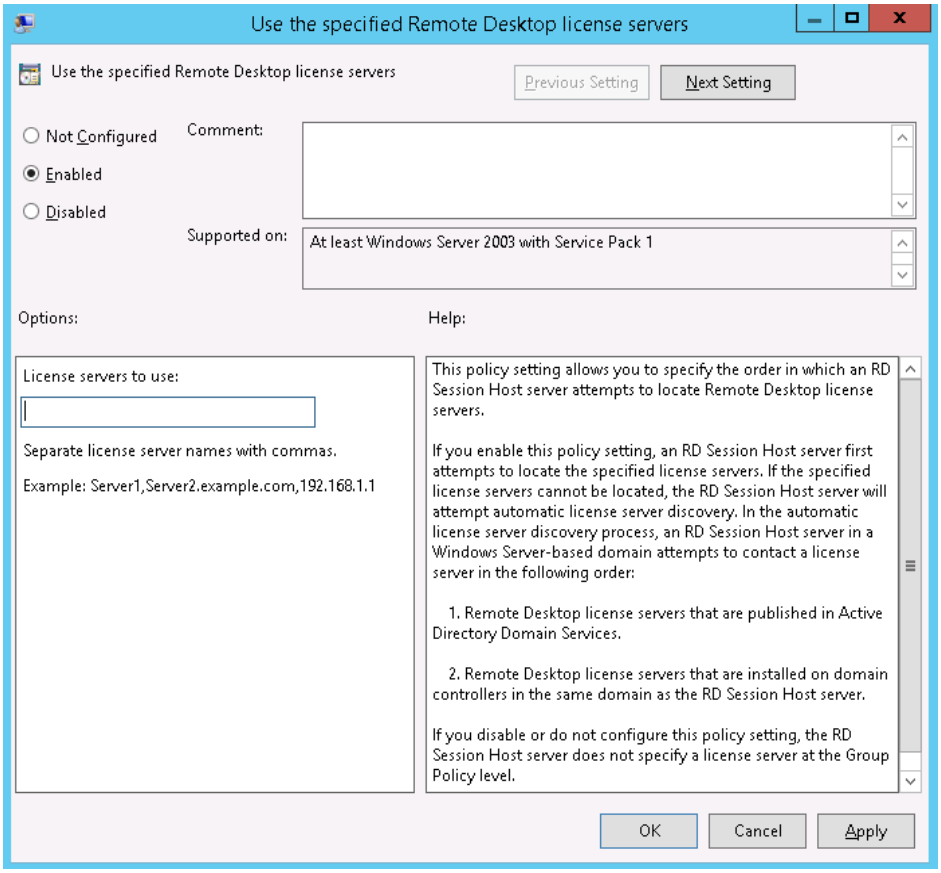
Figure 5-41 Modifying licensing items



5. Set **Use the specified Remote Desktop license servers** to **Enabled**, enter the private IP address or hostname of the ECS under **License servers to use**, and click **OK**.

Figure 5-42 Using the specified remote desktop license servers



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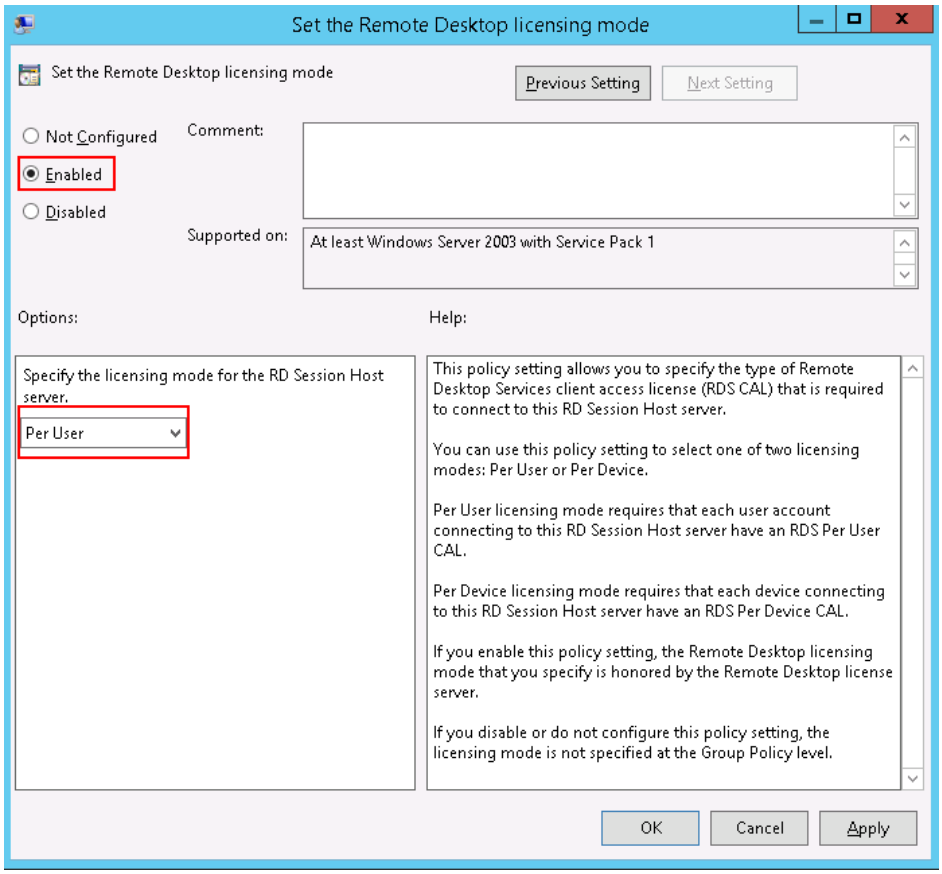
6. **Set the Remote Desktop licensing mode** to **Enabled**, and set the licensing mode to **Per User**.

   NOTE

   If a message is displayed indicating that there is a problem with remote desktop license, set the licensing mode to **Per Device**.

   Figure 5-43 Setting the remote desktop licensing mode



7. Run **cmd** and then **gpupdate /force** to forcibly start Local Group Policy Editor and restart the ECS.

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6 Passwords and Key Pairs

6.1 Troubleshooting Password Reset for User root in the Single-User Mode on a Linux ECS

Scenarios

- The one-click password reset function on the management console does not take effect.
- The password reset plug-in is not installed and the password of user **root** is lost.

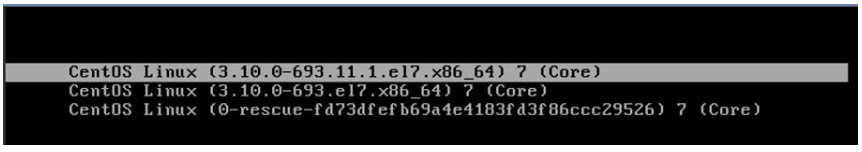
Constraints

Resetting the password of user **root** requires to restart the ECS and switch to the single-user mode. Therefore, identify the risks and back up your data.

CentOS 7 or EulerOS Series

1. On the ECS management console, restart the ECS and click **Remote Login**.
2. Press the up arrow key to prevent automatic system startup. When the kernels are displayed, press **e** to enter the editing mode.

   Figure 6-1 Entering the kernel editing mode

   NOTE

   The Euler image encrypts the GRUB file by default. When you edit the kernel parameters, you need to contact customer service to obtain username and password.

3. Locate the row containing **linux16** and perform the following operations:

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a. Delete the parameters not needed.

   Retain **console=tty0 console=ttyS0** for BMS.

b. Change **ro** to **rw** for mounting the root partition with read-write permissions.

c. Add **rd.break** and press **Ctrl+X**.

Figure 6-2 Before the modification

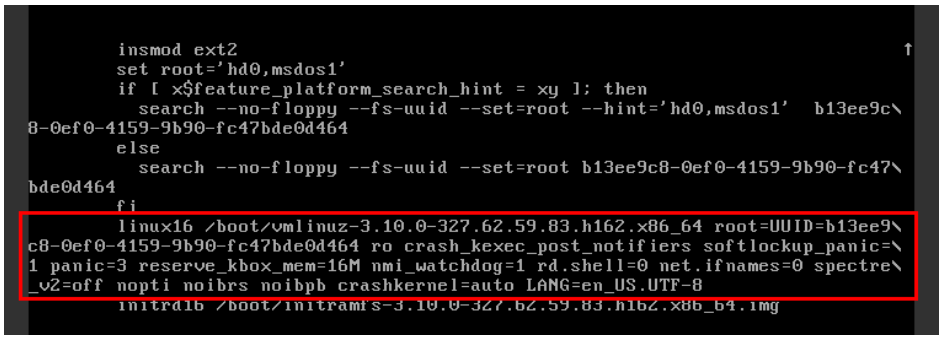
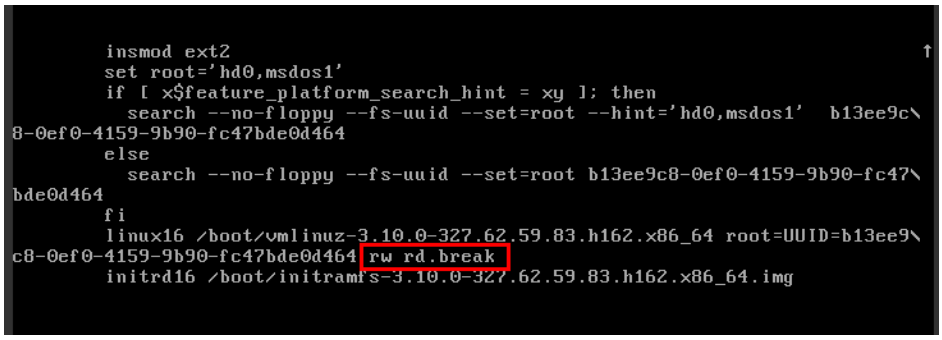


Figure 6-3 After the modification



4. Run the following command to go to the **/sysroot** directory:

   # chroot /sysroot

5. Reset the password of user **root**:

   # passwd root

6. (Optional) Run the following command to enable SELinux if required:

   # touch /.autorelabel

7. Exit the current root directory:

   # exit

8. Restart the ECS.

   # reboot

CentOS 6 or Red Hat 6 Series

1. On the ECS management console, restart the ECS and click **Remote Login**.

   When booting the system, press **Esc** to stop the countdown and enter a GRUB menu.

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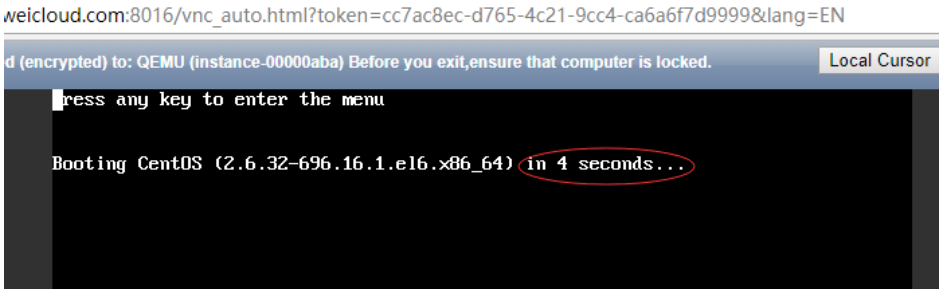
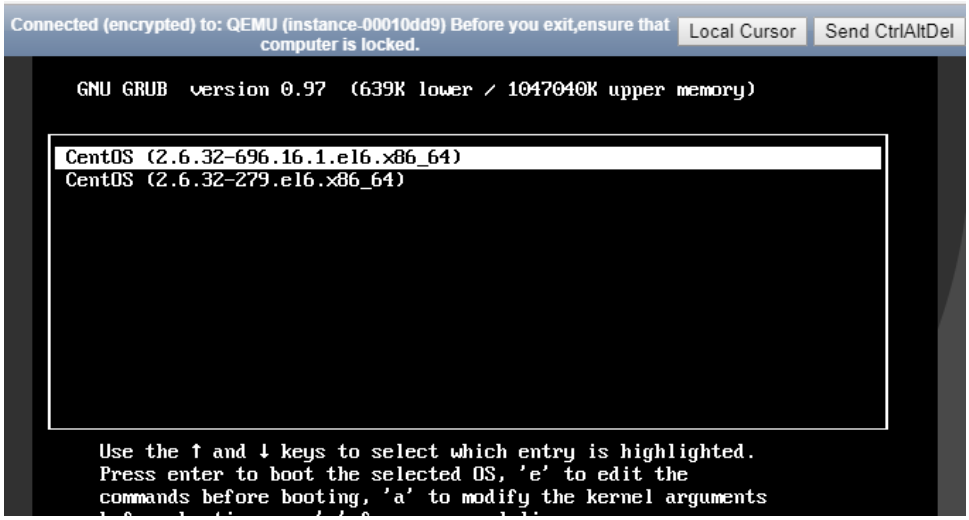
Figure 6-4 GRUB menu



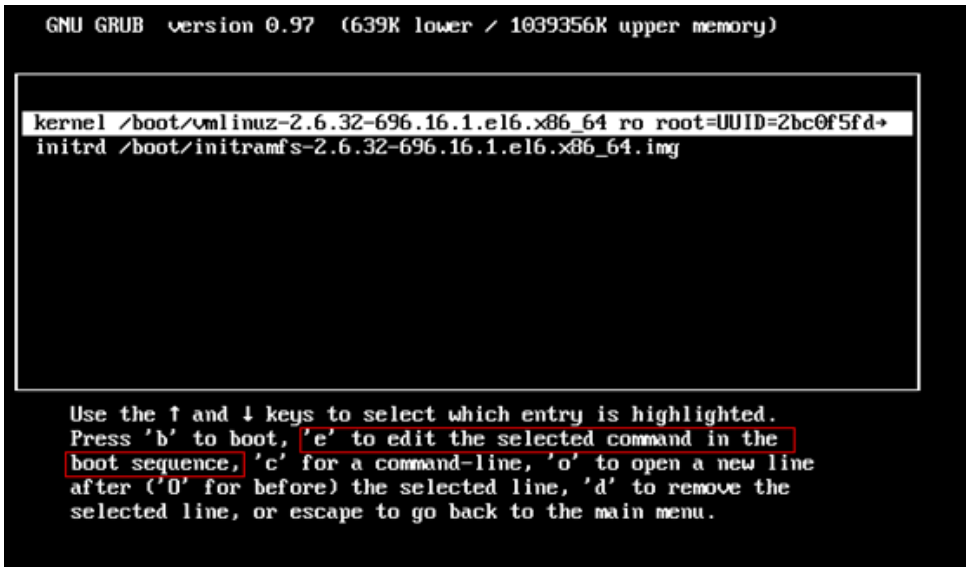
2. Move the cursor to the first default kernel and press **e** to edit the commands before booting.

Figure 6-5 Pressing **e** to edit commands



3. Move the cursor to the row containing **kernel** and press **e**.

Figure 6-6 Selecting the row that contains **kernel**



4. Move the cursor to the row that contains **quiet**, enter a space and **1** after **quiet**, and press **Enter**.

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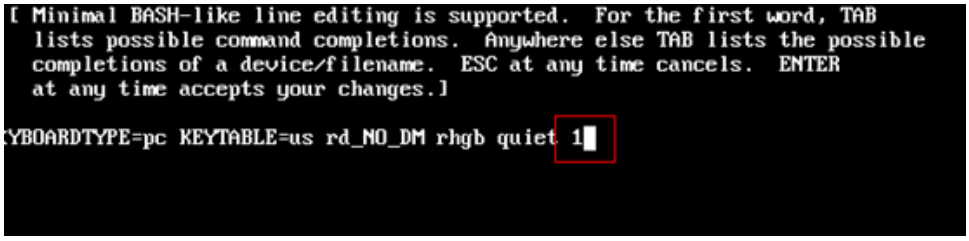
Figure 6-7 Editing in the row that contains **quiet**



5. Press **b** to boot the kernel and change to runlevel 1 (single-user mode).
6. When the prompt **#** is displayed, run the following command to reset the password:

   # passwd root
7. Restart the ECS.

   # reboot

Debian or Ubuntu Series

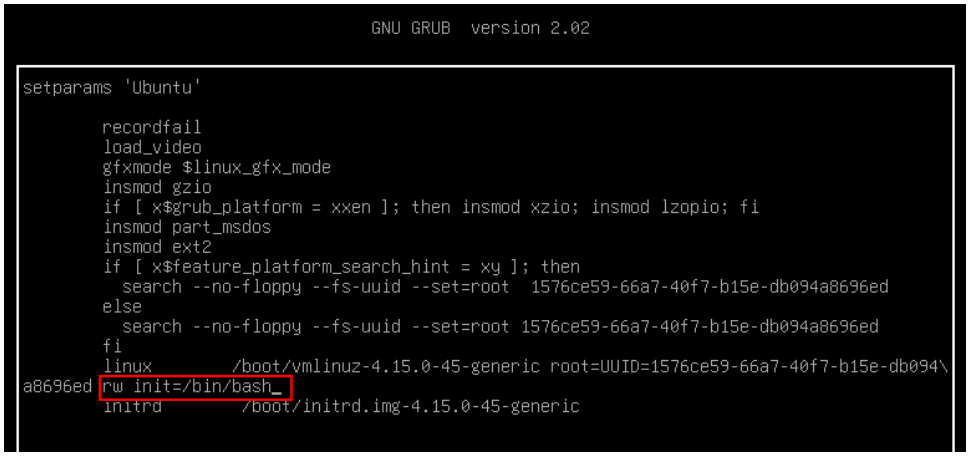
1. On the ECS management console, restart the ECS and click **Remote Login**. Press **Esc** to stop the countdown and enter a GRUB menu.

Figure 6-8 GRUB menu



2. Press **e** to enter the GRUB2 editing mode.
3. Locate the row that contains **linux**, delete the parameters not needed, and change **ro** to **rw** (mount the root partition in read-write mode), and add **init=/bin/bash** to the end of the row.

Figure 6-9 Modifying ro parameter



4. Press **Ctrl**+**X** to enter the rescue mode.

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5. Reset the password of user **root**:

   # passwd root

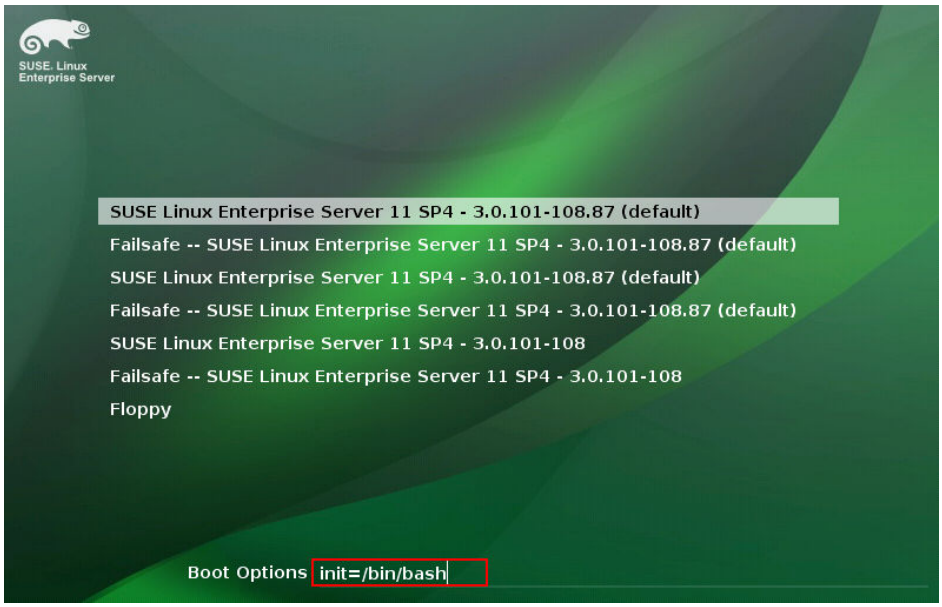
6. Restart the ECS.

   # reboot

SUSE 11 Series

1. On the ECS management console, restart the ECS and click **Remote Login**. Press the up arrow key to stop the countdown and enter a GRUB menu.
2. Delete the parameter of **Boot Options** and add **init=/bin/bash**.

   Figure 6-10 Boot options



3. Press **Enter** to switch to the single-user mode.
4. Reset the password of user **root**:

   # passwd root

5. Restart the ECS.

   # reboot

SUSE 12 Series

1. On the ECS management console, restart the ECS and click **Remote Login**. Press **Esc** to stop the countdown and enter a GRUB menu.

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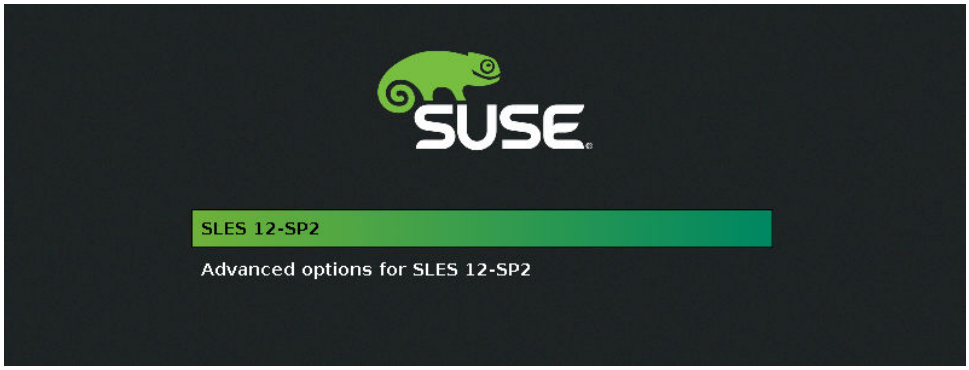
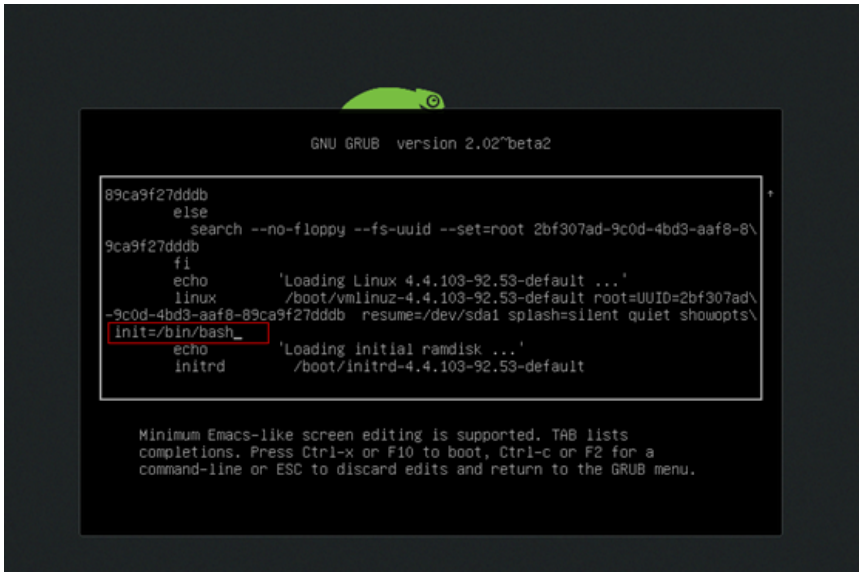
Figure 6-11 GRUB menu



2. Press **e** to enter the GRUB2 editing mode.
3. Move the cursor to the end of the row containing **linux** and add **init=/bin/bash** to the end of the row.

Figure 6-12 Adding **init=/bin/bash**



4. Press **Ctrl**+**X** to enter the rescue mode.
5. Reset the password of user **root**:

   # passwd root
6. Restart the ECS.

   # reboot

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7 Configuring a Firewall

7.1 Disabling a Windows ECS Firewall and Adding a Port Exception on a Windows ECS Firewall

Scenarios

This section describes how to disable a Windows ECS firewall and add a port exception on a Windows ECS firewall.

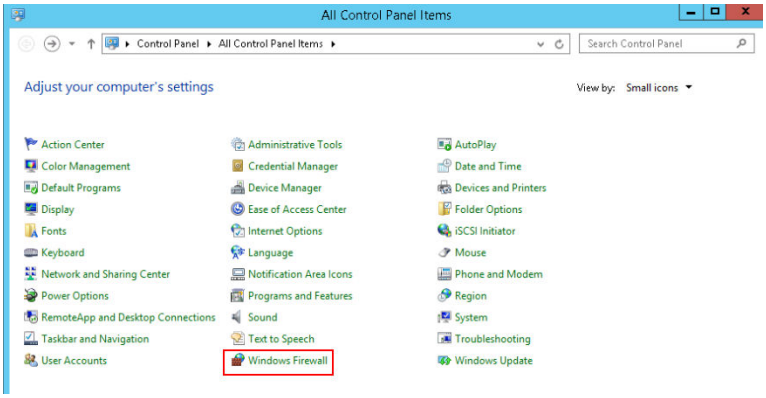
The following operations are performed on an ECS running Windows Server 2012.

CAUTION

Enabling a firewall and configuring a security group protect your ECSs. If you disable a firewall, exercise caution when you enable ports in the security group.

Enabling or Disabling a Firewall

1. Log in to the Windows ECS.
2. Click the Windows icon in the lower left corner of the desktop and choose **Control Panel** > **Windows Firewall**.



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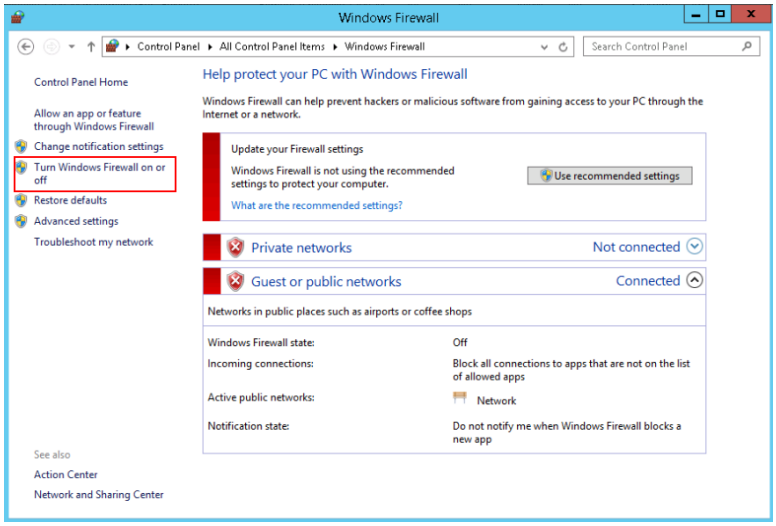
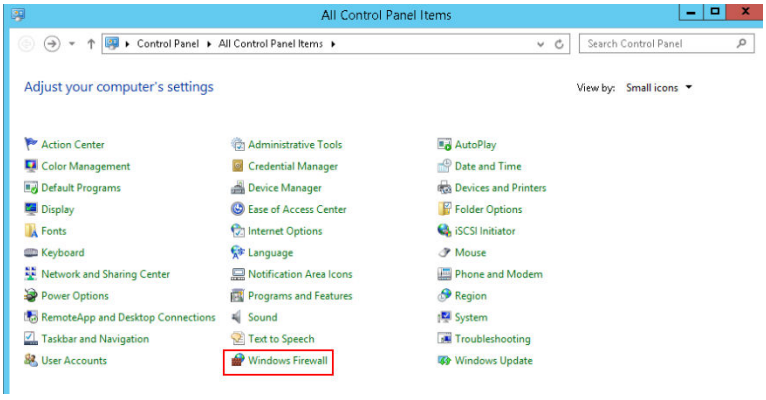
3. Click **Turn Windows Firewall on or off**.

   View and set the firewall status.



Adding a Port Exception on a Firewall

1. Log in to the Windows ECS.
2. Click the Windows icon in the lower left corner of the desktop and choose **Control Panel** > **Windows Firewall**.



3. In the navigation pane on the **Windows Firewall** page, choose **Advanced settings** > **Inbound Rules**.

   You can view details about the programs and ports that can be connected to the ECS.

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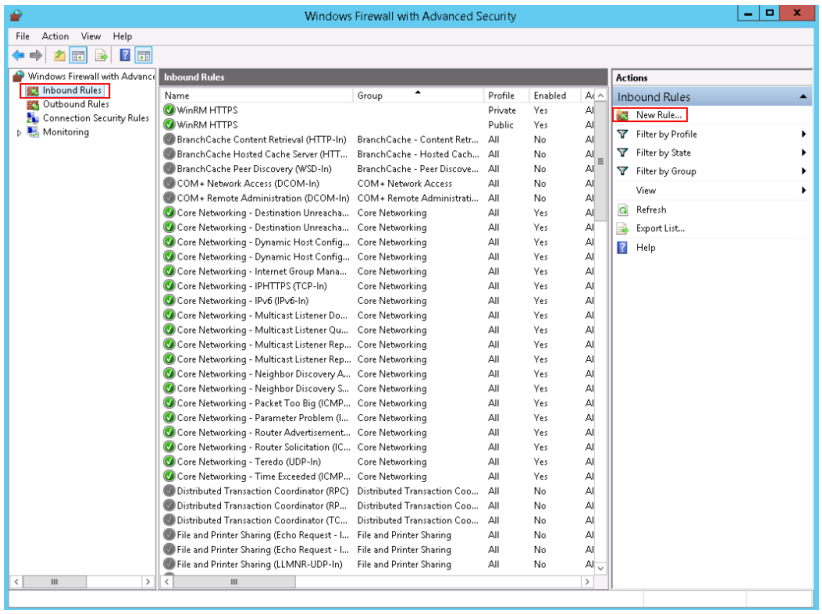
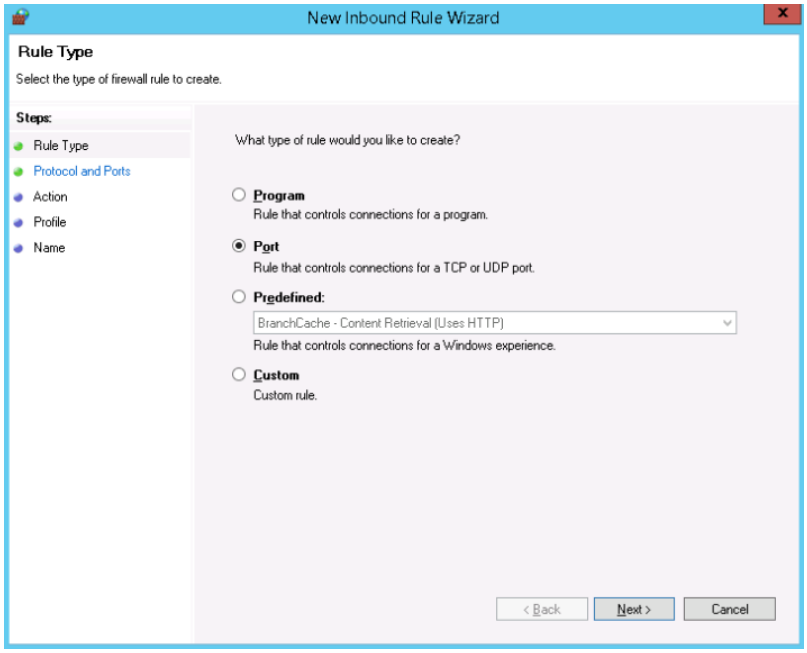


4. Click **New Rule** in the **Actions** column.

   Enable ports as prompted. This section uses port 3333 as an example. To permit port 3333, perform the following operations:

   Select **Port**.



   Select a protocol type and set the port.

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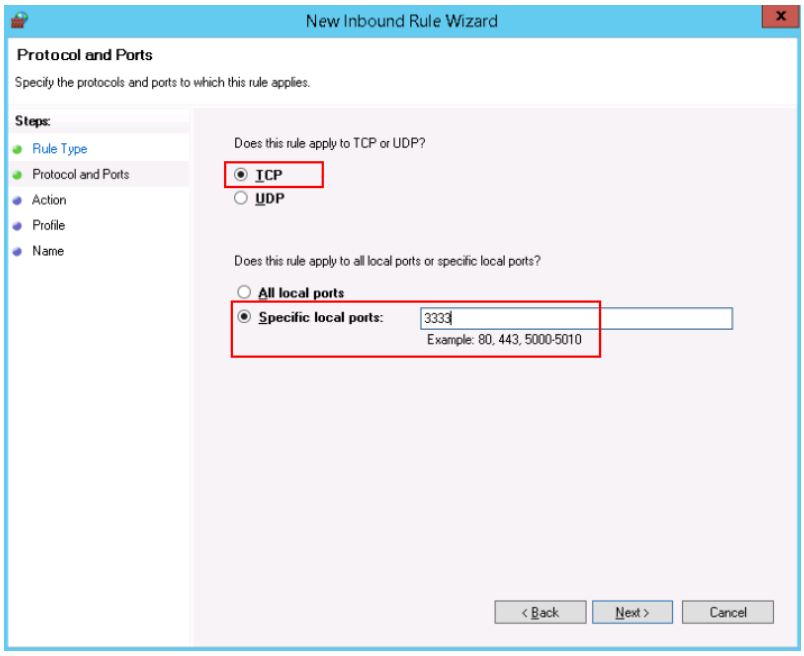
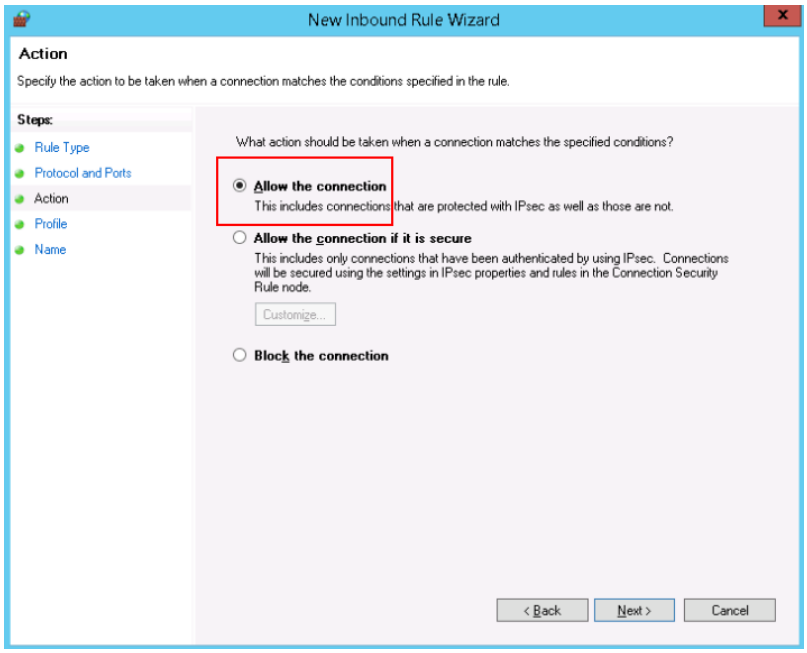


Set a connection rule.



Set the application scenarios of the rule.

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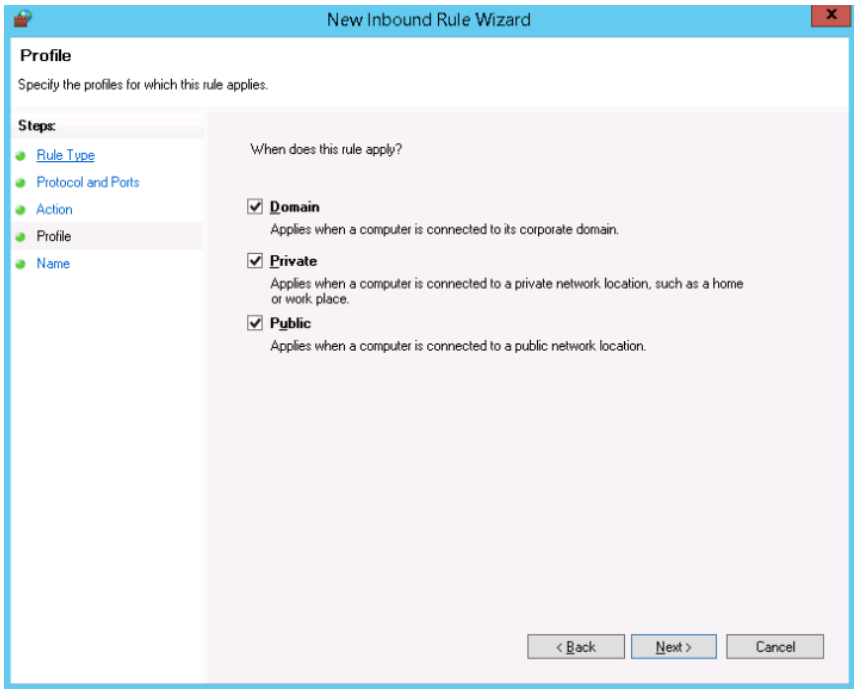
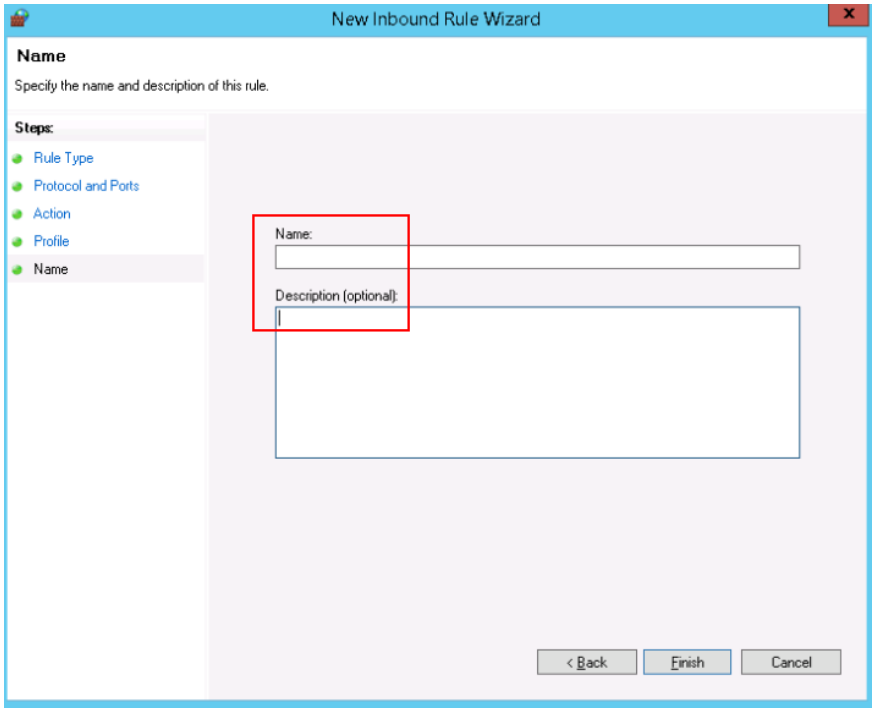


Name the rule.



5. Verify that the traffic to the port is permitted on the firewall.

   Click the newly added rule to view its details and set other information, such as computer connection, allowed IP connection, and protocol type.

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7.2 Disabling a Linux ECS Firewall and Adding a Port Exception on a Linux ECS Firewall

Scenarios

This section describes how to disable a Linux ECS firewall and add a port exception on a Linux ECS firewall.

CAUTION

Enabling a firewall and configuring a security group protect your ECSs. If you disable a firewall, exercise caution when you enable ports in the security group.

Disabling a Firewall

Run the following command to disable the firewall based on the ECS OS:

- CentOS 6

  service iptables stop
- CentOS 7

  systemctl stop firewalld.service
- Ubuntu

  ufw disable
- Debian

  /etc/init.d/iptables stop

Adding a Port Exception on a Firewall

- CentOS 6
  a. For example, to add TCP port 23, run the following command:

     iptables -A INPUT -m state --state NEW -m tcp -p tcp --dport 23 -j ACCEPT
  b. Save the configuration.

     service iptables save
  c. (Optional) Configure the firewall to automatically start upon ECS startup.

     chkconfig iptables on

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NOTE

- To disable automatic firewall startup, run the following command:

  chkconfig iptables off
- When the firewall is started on CentOS 6, the "iptables no config file" error may be displayed because the **iptables** configuration file is not detected. To handle this issue, perform the following operations:
  1. Add a new rule.

     iptables -P OUTPUT ACCEPT
  2. Save the configuration.

     service iptables save
  3. Start the firewall again.

     service iptables start

- CentOS 7

  a. Start the firewall.

  systemctl start firewalld.service

  Check whether the firewall is enabled.

  firewall-cmd --state

  Information similar to the following is displayed:

  ```
  [root@ecs-centos7 ~]# firewall-cmd --state
  running
  ```

  b. For example, to add TCP port 23, run the following command:

  firewall-cmd --zone=public --add-port=23/tcp --permanent

  The configuration is correct if the command output is as follows:

  ```
  [root@ecs-centos7 ~]# firewall-cmd --zone=public --add-port=23/tcp --permanent
  success
  ```

  c. Reload the policy configuration for the new configuration to take effect.

  firewall-cmd --reload

  d. Run the following command to view all enabled ports:

  firewall-cmd --list-ports

  ```
  [root@ecs-centos7 ~]# firewall-cmd --list-ports
  23/tcp
  ```

  e. (Optional) Configure the firewall to automatically start upon ECS startup.

  systemctl enable firewalld.service

  Check whether automatic firewall startup is enabled.

  systemctl is-enabled firewalld.service;echo $?

  The configuration is correct if the command output is as follows:

  ```
  [root@ecs-centos7 ~]# systemctl is-enabled firewalld.service;echo $?
  enabled
  0
  ```

  NOTE

  To disable automatic firewall startup, run the following command:

  systemctl disable firewalld.service

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8 Installing IIS

8.1 Troubleshooting IIS Installation on a Windows ECS

Scenarios

This section describes how to install IIS on an ECS running Windows Server 2012 R2 Standard.

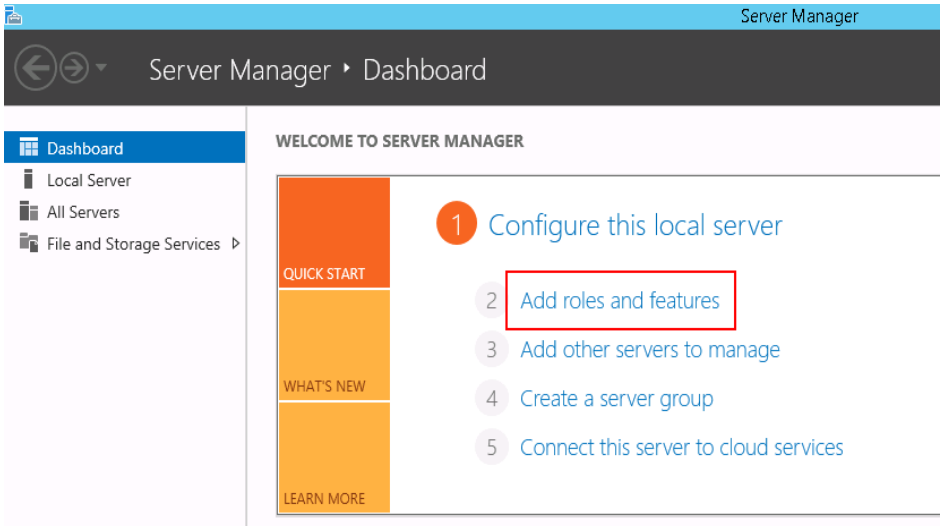
NOTE

Only the procedure for installing IIS will be described. The procedure for installing applications is subject to actual requirements.

Procedure

1. Open **Server Manager**.
2. Choose **Quick Start** > **Add roles and features**.

Figure 8-1 Adding roles and features



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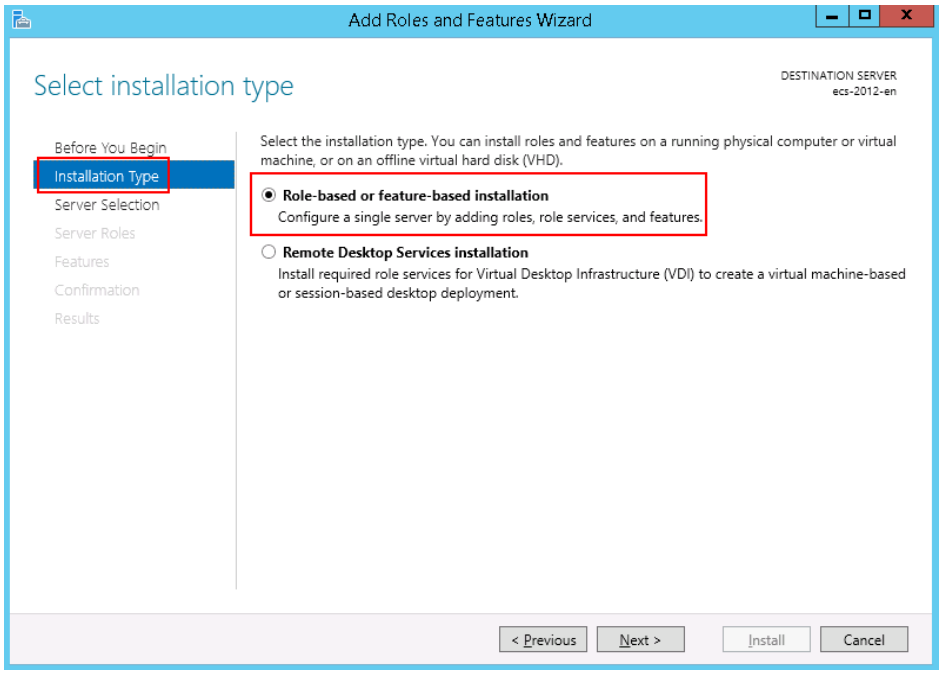
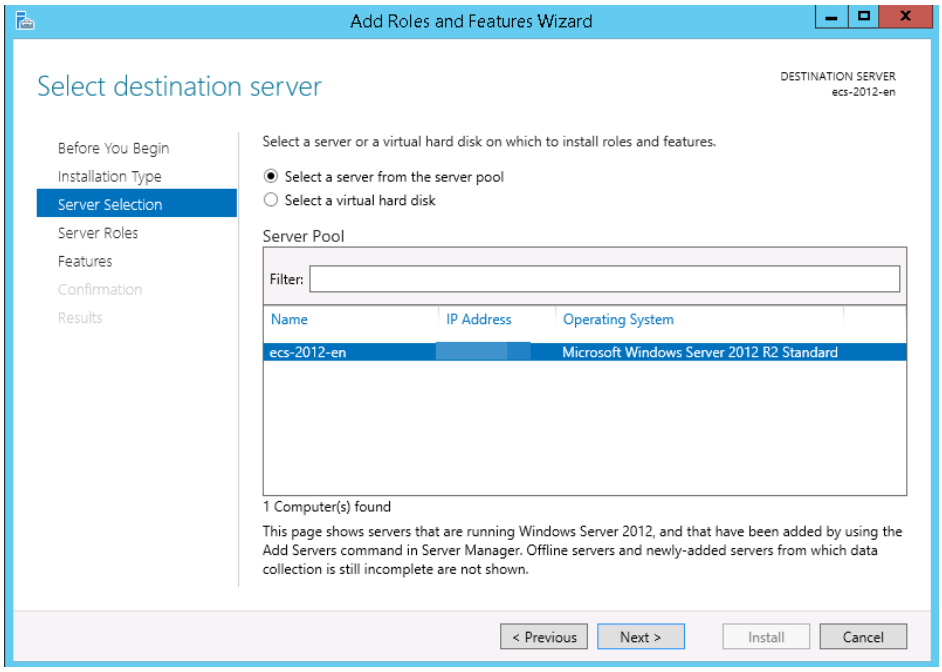
3. In the left navigation pane, choose **Installation Type**.

Figure 8-2 Installation type



4. Select **Role-based or feature-based installation** and click **Next**.
5. Click **Server Selection**.
6. Select **Select a server from the server pool** and select a server from **Server Pool**.

Figure 8-3 Selecting a server



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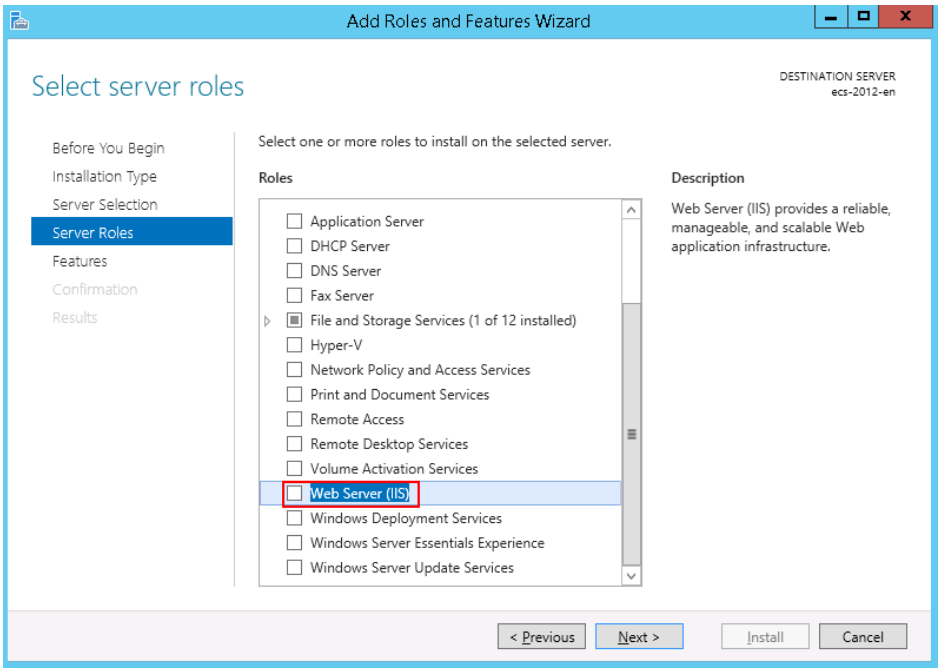
7. Click **Next**.
8. Click **Server Roles**.
9. In the role list, select **Web Server (IIS)**.

Figure 8-4 Web server (IIS)



10. In **Add Roles and Features Wizard**, click **Add Features**.

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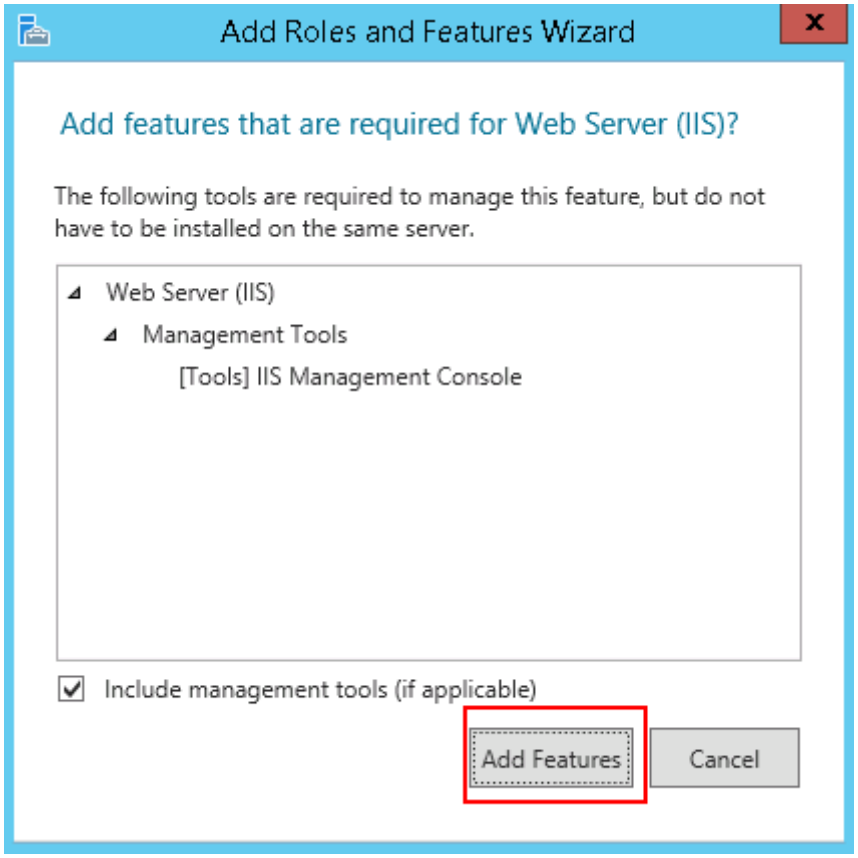
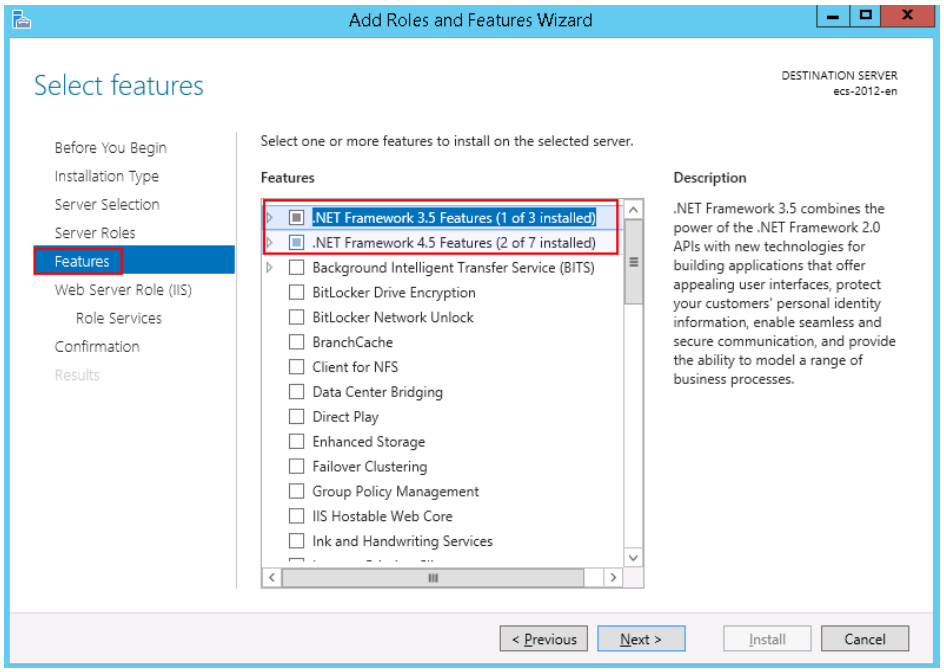
Figure 8-5 Adding features



11. Choose **Features** on the left and select **.Net Framework 3.5** and **.Net Framework 4.5**.

Figure 8-6 Selecting features



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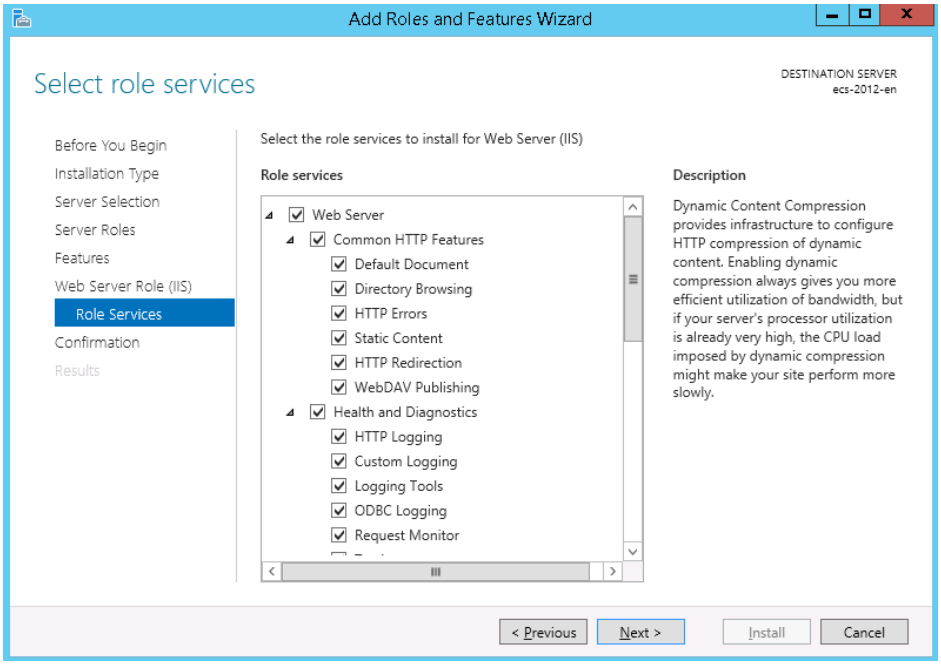
12. Choose **Web Server Roles (IIS)** > **Role Services**. Select the required role services.

    If you are not sure about which role service to install, you are advised to select all items except **FTP Server**.

    Figure 8-7 Selecting role services



13. Click **Next**, confirm the roles to be installed, and click **Install**.

Helpful Links

For instructions about how to configure a domain name for IIS, see **Troubleshooting Domain Name Modification on IIS Manager**.

8.2 Troubleshooting Domain Name Modification on IIS Manager

Symptom

A 404 error occurs on the website constructed using IIS.

Possible Causes

IP address of the domain name is not specified on the IIS Manager.

Procedure

This section describes how to edit site binding on the IIS Manager that is deployed on an ECS running Windows Server 2008 R2.

1. Log in to the ECS and choose **Start** > **Administrative Tools** > **IIS Manager**.

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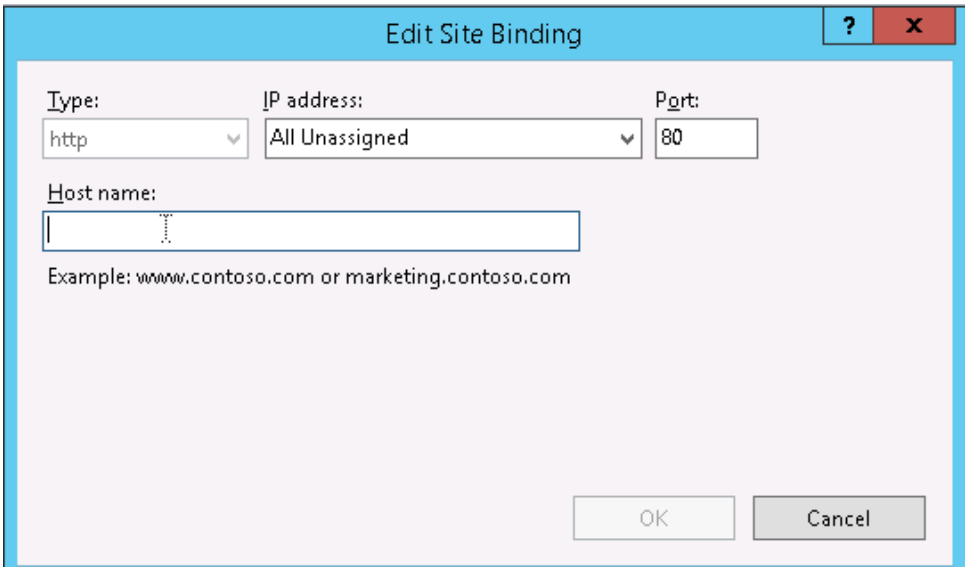
2. On the IIS Manager, click **Sites**.
3. Right-click the website to be modified and choose **Edit Bindings**.

   Select a domain name and click **Edit** to add the private IP address of the specified ECS.



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