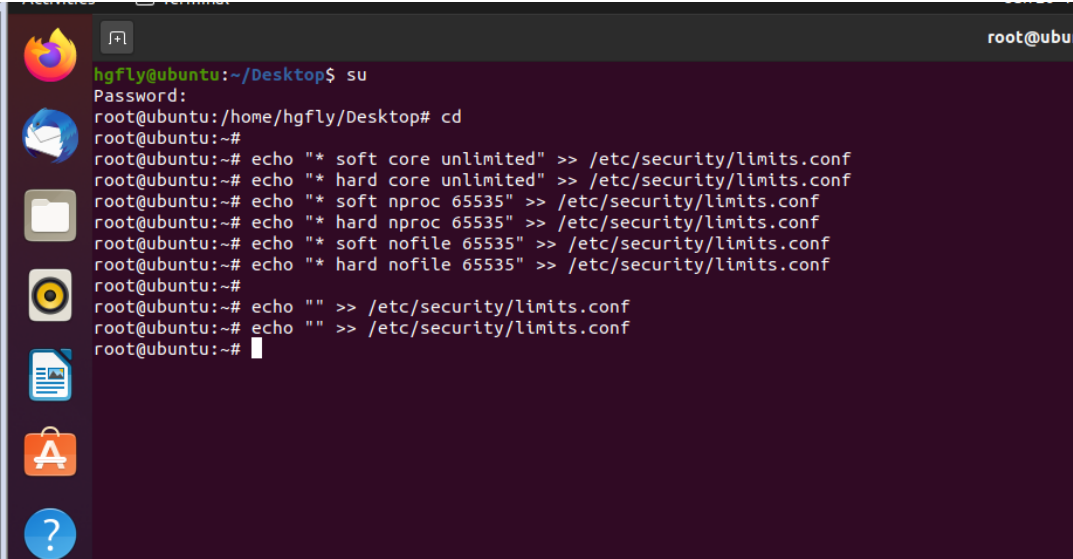


## B.Modify through the terminal.



```

hgfly@ubuntu:~/Desktop$ su
Password:
root@ubuntu:/home/hgfly/Desktop# cd
root@ubuntu:~#
root@ubuntu:~# echo "* soft core unlimited" >> /etc/security/limits.conf
root@ubuntu:~# echo "* hard core unlimited" >> /etc/security/limits.conf
root@ubuntu:~# echo "* soft nproc 65535" >> /etc/security/limits.conf
root@ubuntu:~# echo "* hard nproc 65535" >> /etc/security/limits.conf
root@ubuntu:~# echo "* soft nofile 65535" >> /etc/security/limits.conf
root@ubuntu:~# echo "* hard nofile 65535" >> /etc/security/limits.conf
root@ubuntu:~#
root@ubuntu:~# echo "" >> /etc/security/limits.conf
root@ubuntu:~# echo "" >> /etc/security/limits.conf
root@ubuntu:~#

```

Open the terminal, change to the root user, enter “cd”, press “Enter”, enter the following content **once only**.

```

echo "* soft core unlimited" >> /etc/security/limits.conf
echo "* hard core unlimited" >> /etc/security/limits.conf
echo "* soft nproc 65535" >> /etc/security/limits.conf
echo "* hard nproc 65535" >> /etc/security/limits.conf
echo "* soft nofile 65535" >> /etc/security/limits.conf
echo "* hard nofile 65535" >> /etc/security/limits.conf
echo "" >> /etc/security/limits.conf
echo "" >> /etc/security/limits.conf

```

After modification, execute “cat /etc/security/limits.conf” to check.

```

hard core unlimited
* soft nproc 65535
* hard nproc 65535
* soft nofile 65535
* hard nofile 65535

##          soft      core
#root      hard      core      0
##          hard      rss       10000
#@student  hard      nproc      20
#@faculty  soft      nproc      20
#@faculty  hard      nproc      50
#ftp       hard      nproc      0
#ftp       -         chroot     /ftp
#@student  -         maxlogins   4

# End of file
* soft core unlimited
* hard core unlimited
* soft nproc 65535
* hard nproc 65535
* soft nofile 65535
* hard nofile 65535

root@ubuntu:~#

```

Exit the root user, execute command “exit” and enter “cd” to the home directory.

The system will then execute as below.

echo "ulimit -HSn 65535" >> .bashrc

echo "ulimit -c unlimited" >> .bashrc

echo "" >> .bashrc

echo "" >> .bashrc

```

root@ubuntu:~# exit
exit
hgfly@ubuntu:~/Desktop$ cd
hgfly@ubuntu:~$ echo "ulimit -HSn 65535" >> .bashrc
hgfly@ubuntu:~$ echo "ulimit -c unlimited" >> .bashrc
hgfly@ubuntu:~$
hgfly@ubuntu:~$ echo "" >> .bashrc
hgfly@ubuntu:~$ echo "" >> .bashrc
hgfly@ubuntu:~$

```

Execute “cat .bashrc” and check whether the last two lines have been added.

```

alias gloga='/home/hgfly/run_server.sh loga'
alias run='/home/hgfly/run_server.sh r'

ulimit -HSn 65535
ulimit -c unlimited

hgfly@ubuntu:~$

```

Execute “source .bashrc” and “ulimit –a” in sequence. Check whether the two contents have been successfully modified as in the two red boxes in the figure

below.

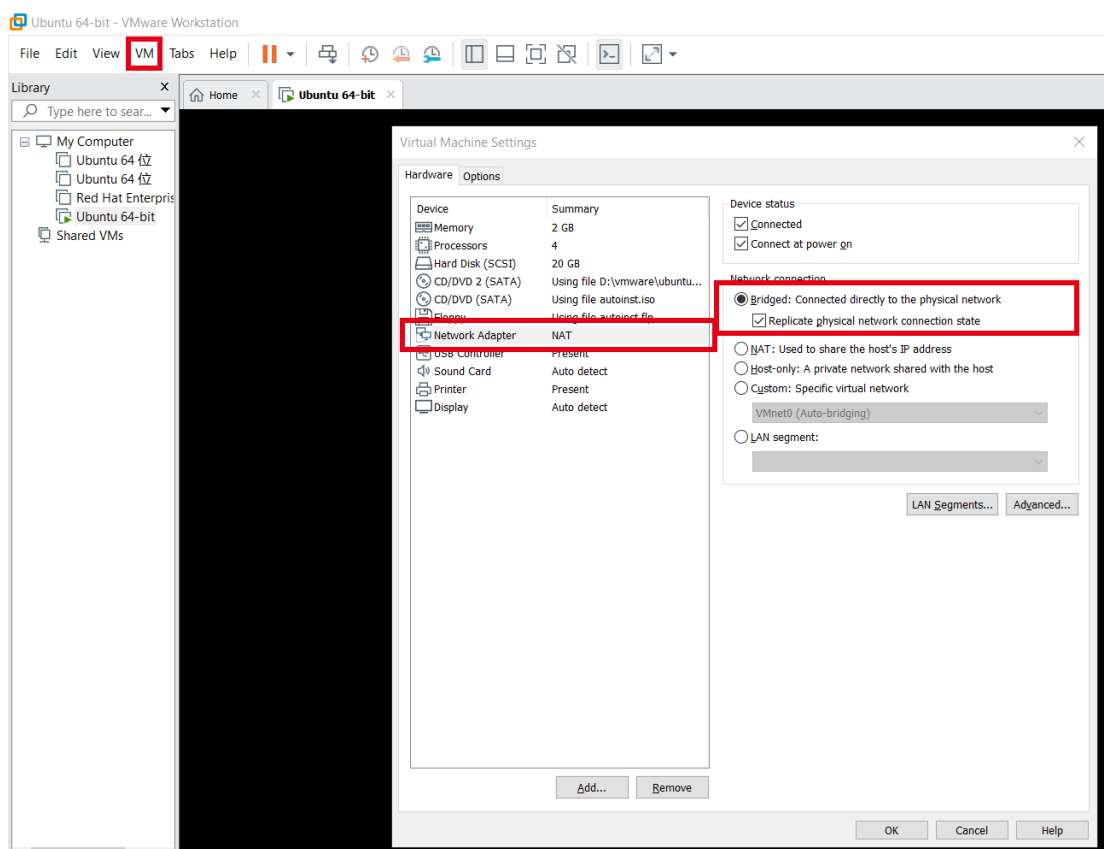
```

file locks (-x) unlimited
hgfly@ubuntu:~$ source .bashrc
hgfly@ubuntu:~$ ulimit -a
core file size (blocks, -c) unlimited
data seg size (kbytes, -d) unlimited
scheduling priority (-e) 0
file size (blocks, -f) unlimited
pending signals (-i) 7619
max locked memory (kbytes, -l) 65536
max memory size (kbytes, -m) unlimited
open files (-n) 65535
pipe size (512 bytes, -p) 8
POSIX message queues (bytes, -q) 819200
real-time priority (-r) 0
stack size (kbytes, -s) 8192
cpu time (seconds, -t) unlimited
max user processes (-u) 7619
virtual memory (kbytes, -v) unlimited
file locks (-x) unlimited
hgfly@ubuntu:~$

```

## 2.1.5. Bridge the network and modify the static IP.

As in the figure below, click “Virtual machine (M)”, “Network adapter”, “Networking” and “OK” in sequence.

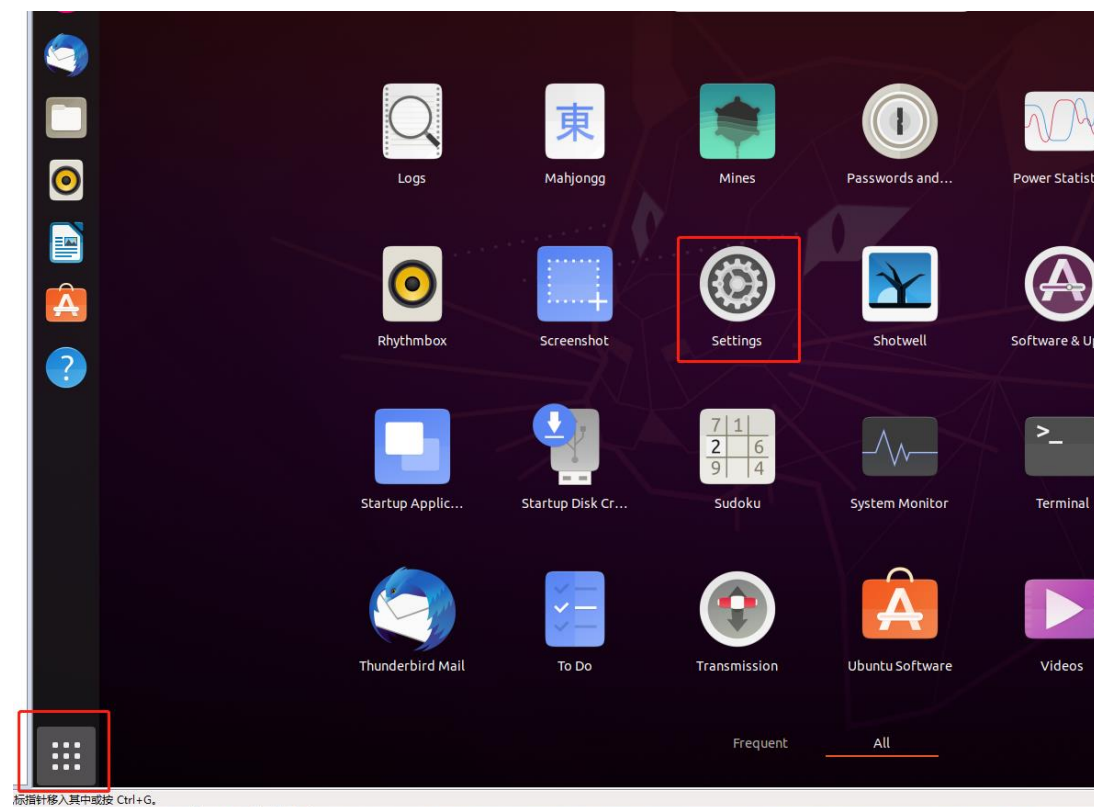


The setup of the ubuntu of the latest edition differs from that of the previous editions: It includes setup through the user interface and setup through the terminal. If setup through the user interface is feasible, setup through the terminal will not be necessary. In the part below, solution A or B is chosen for setup. Solution A is not applicable to the Linux system of lower editions.

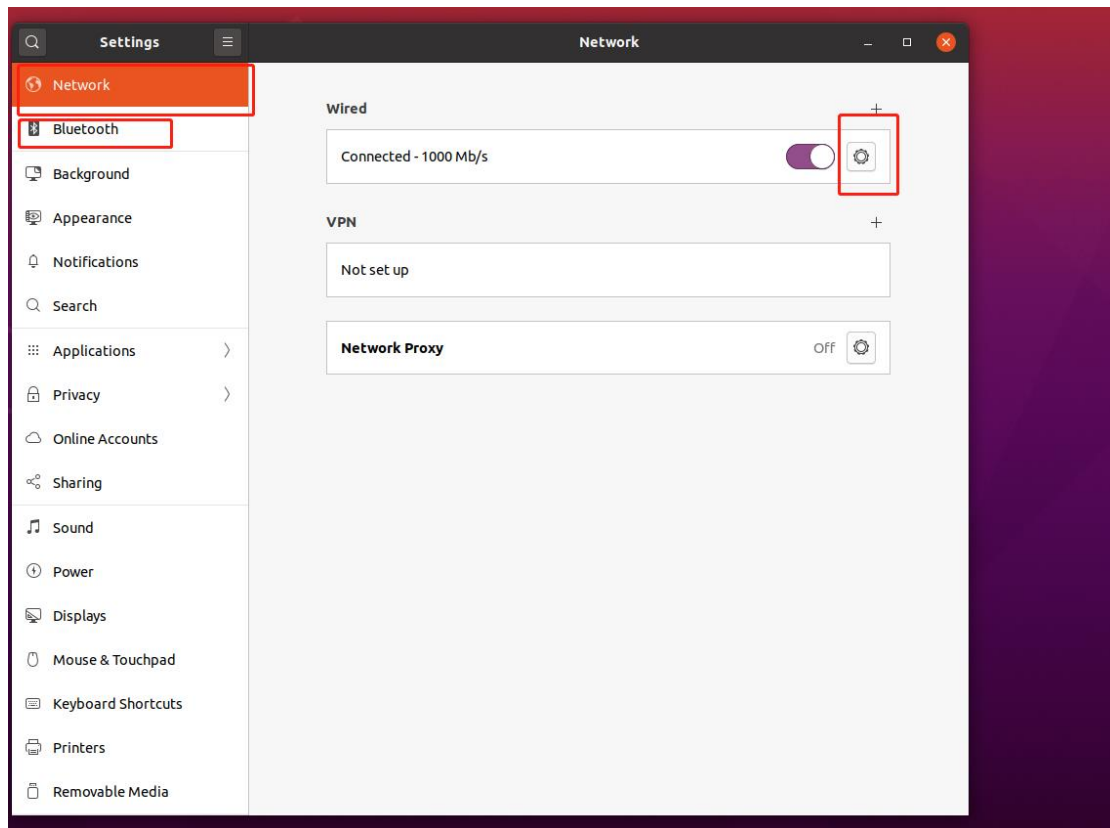
## 1.Setup IP

A:Set IP through the user interface.

Click the “Start” menu of the Linux system. After that, click “Set”.

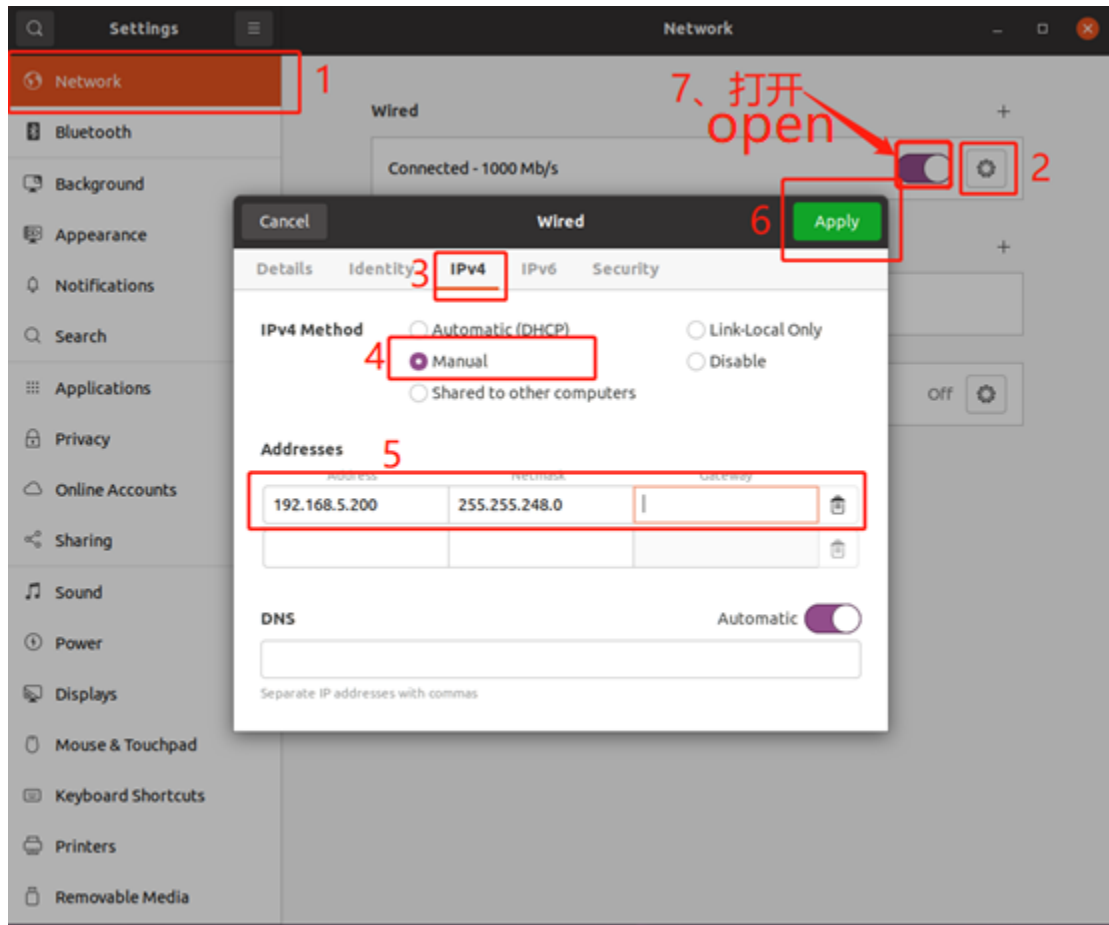


Click “Network” and the setup symbol in sequence.

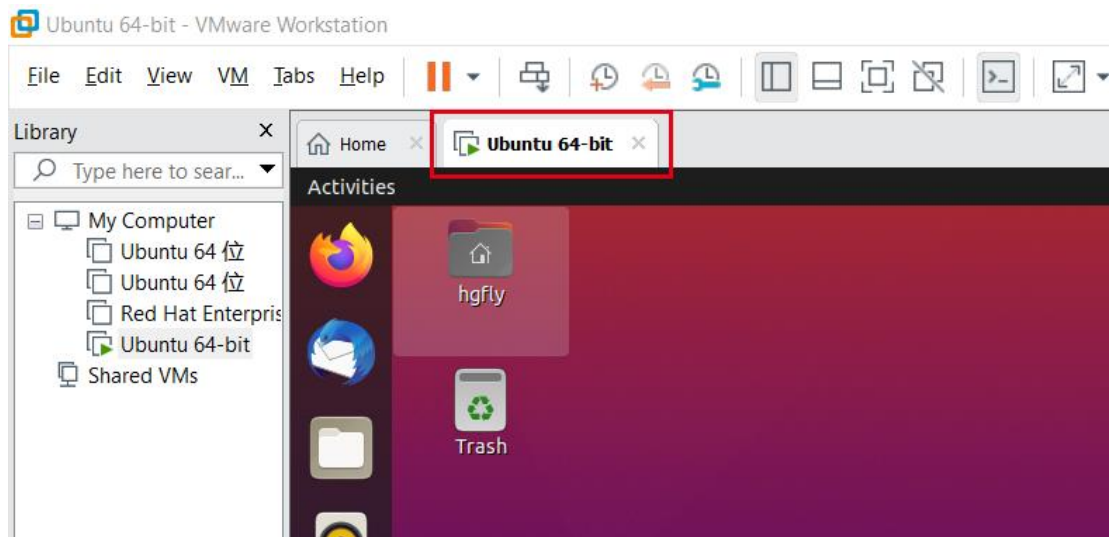


As in the figure below, click as below to set the corresponding IP gateway and port. The IP will be configured according to the actual conditions.

If there are less than 1,000 drones, the IP will be configured as “192.168.5.200 255.255.248.0 192.168.5.1”; if there are more than 1,000 drones, the IP will be configured as “192.168.200.200 255.255.0.0 192.168.200.1”.



After setup, reboot the Linux system. On the virtual machine, close the popup menu and click “Close”.



B:Set IP through the terminal.

1.Check the IP, enter command “ifconfig”. The network card device number is

“ens33”.

```
Get:1 http://us.archive.ubuntu.com/ubuntu bionic/main amd64 net-tools amd64 1.60+git20161116.90da8a
Fetched 194 kB in 9s (22.2 kB/s)
Selecting previously unselected package net-tools.
(Reading database ... 125928 files and directories currently installed.)
Preparing to unpack .../net-tools_1.60+git20161116.90da8a0-1ubuntu1_amd64.deb ...
Unpacking net-tools (1.60+git20161116.90da8a0-1ubuntu1) ...
Processing triggers for man-db (2.8.3-2) ...
Setting up net-tools (1.60+git20161116.90da8a0-1ubuntu1) ...
root@ubuntu:~# ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.58.128 netmask 255.255.255.0 broadcast 192.168.58.255
    inet6 fe80::51d7:7eec:dc91:6e3e prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:43:f7:e6 txqueuelen 1000 (Ethernet)
    RX packets 447138 bytes 594471199 (594.4 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 209845 bytes 13062364 (13.0 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 1037 bytes 93113 (93.1 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 1037 bytes 93113 (93.1 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@ubuntu:~#
```

2.Open the static IP modification file.

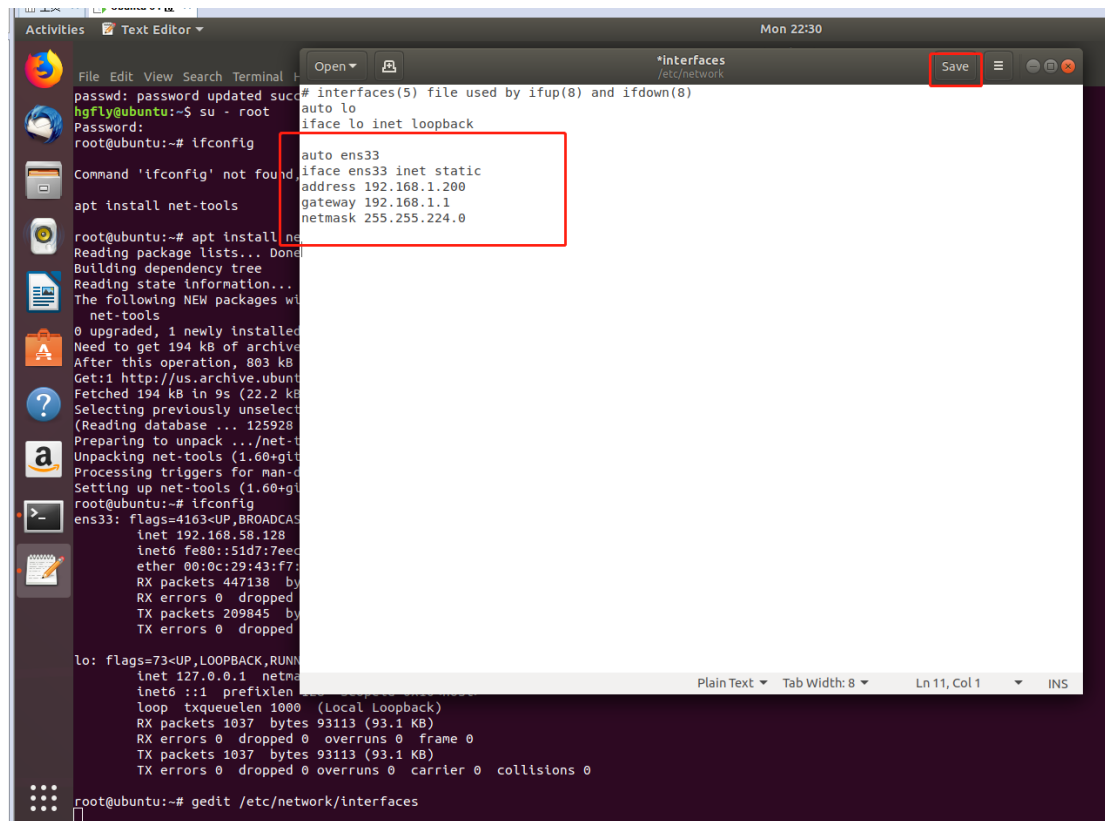
Enter command “gedit /etc/network/interfaces”.

```
Processing triggers for man-db (2.8.3-2) ...
Setting up net-tools (1.60+git20161116.90da8a0-1ubuntu1) ...
root@ubuntu:~# ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.58.128 netmask 255.255.255.0 broadcast 192.168.58.255
    inet6 fe80::51d7:7eec:dc91:6e3e prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:43:f7:e6 txqueuelen 1000 (Ethernet)
    RX packets 447138 bytes 594471199 (594.4 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 209845 bytes 13062364 (13.0 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 1037 bytes 93113 (93.1 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 1037 bytes 93113 (93.1 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@ubuntu:~# gedit /etc/network/interfaces
```

3.Modify the static IP configuration. According to step 1, the network card device number is “ens33”.



```

root@ubuntu:~# apt install net-tools
Reading package lists... Done
Building dependency tree
Reading state information...
The following NEW packages will be installed:
net-tools
0 upgraded, 1 newly installed, 0 to remove and 0 not installed.
Need to get 194 kB of archive.
After this operation, 803 kB of additional disk space will be used.
Get:1 http://us.archive.ubuntu.com/ubuntu/pool/main/n/net-tools [194 kB]
Fetched 194 kB in 9s (22.2 kB/s)
Selecting previously unselected package net-tools.
(Reading database ... 125928 files and directories currently installed.)
Preparing to unpack .../net-tools_1:2.9.92-1ubuntu1.1_amd64.deb ...
Unpacking net-tools (1:2.9.92-1ubuntu1.1) ...
Setting up net-tools (1:2.9.92-1ubuntu1.1) ...
root@ubuntu:~# ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.58.128 netmask 255.255.252.0 broadcast 192.168.59.255
        inet6 fe80::51d7:7ee0:1111:1111 prefixlen 64 scopeid 0x0
        ether 00:0c:29:43:f7:11 txqueuelen 1000 (Local Loopback)
        RX packets 1037 bytes 93113 (93.1 KB)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 1037 bytes 93113 (93.1 KB)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

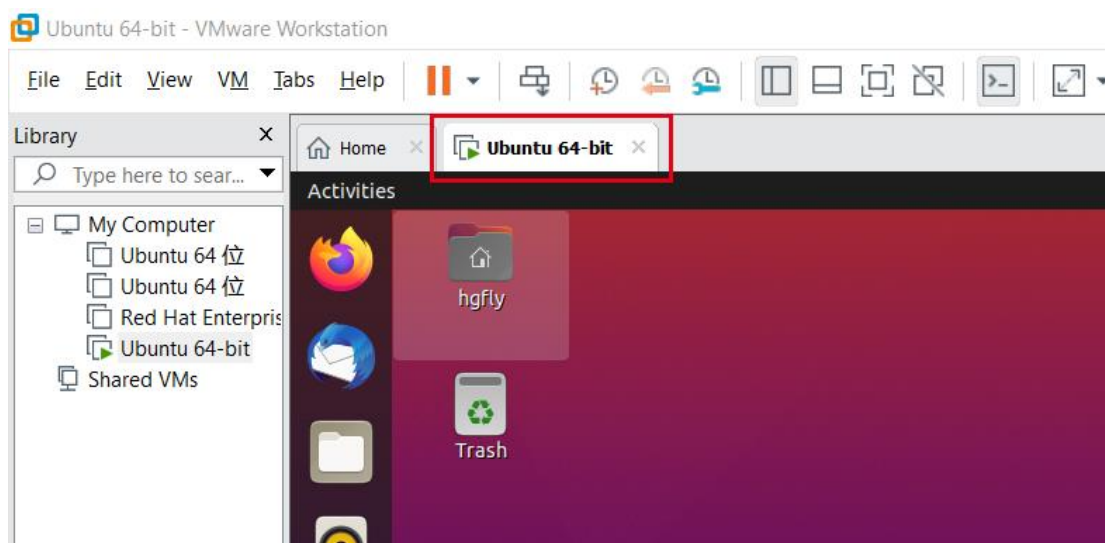
lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1 netmask 255.255.255.255
        inet6 ::1 prefixlen 128 scopeid 0x0
        loop txqueuelen 1000 (Local Loopback)
        RX packets 1037 bytes 93113 (93.1 KB)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 1037 bytes 93113 (93.1 KB)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@ubuntu:~# gedit /etc/network/interfaces

```

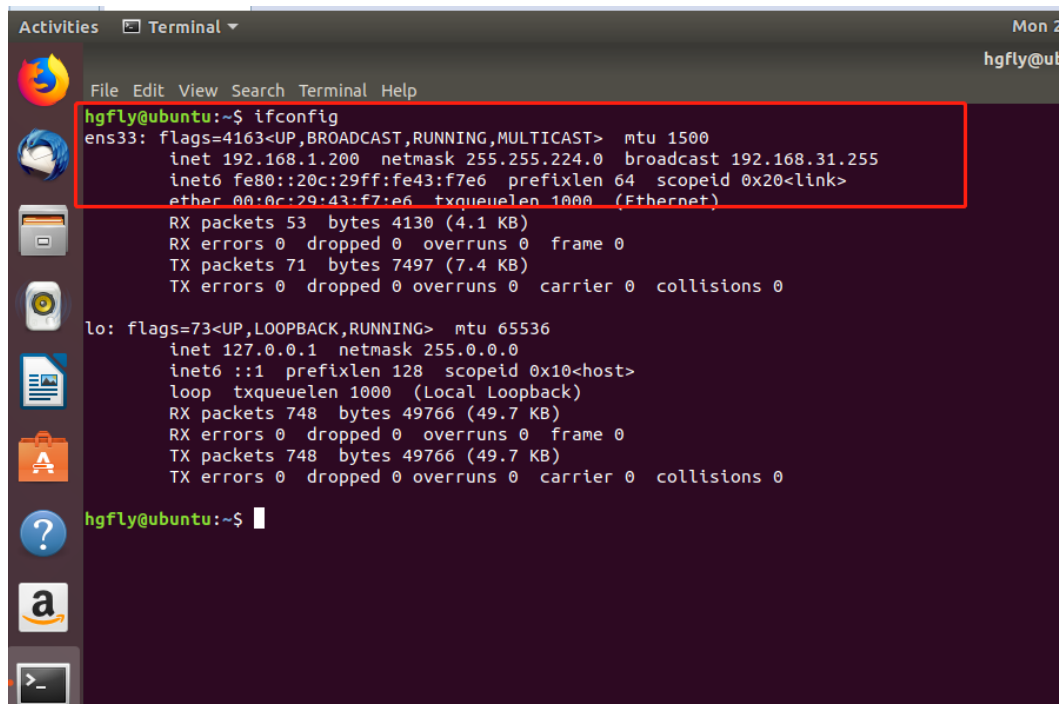
The terminal output shows the successful installation of net-tools and the execution of ifconfig, which displays the network configuration for ens33 and the loopback interface lo. The ifconfig command is highlighted with a red box. The gedit window shows the /etc/network/interfaces file, which is also highlighted with a red box.

4. Close the virtual machine and reboot the computer.



5. Boot the virtual machine, open the terminal, enter command “ifconfig” and check whether the IP is correct.  
Mainly check the IP and the mask.





```

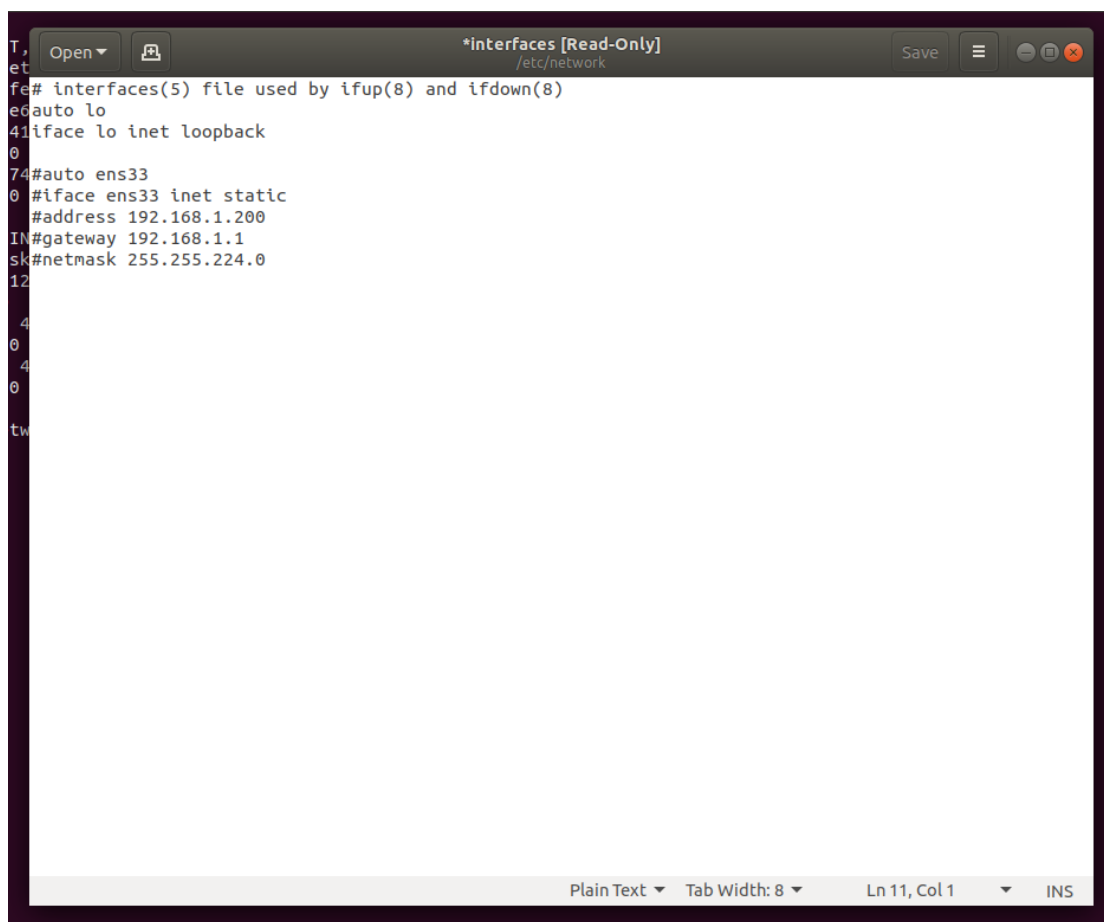
hgfly@ubuntu:~$ ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
    inet 192.168.1.200  netmask 255.255.224.0  broadcast 192.168.31.255
    inet6 fe80::20c:29ff:fe43:f7e6  prefixlen 64  scopeid 0x20<link>
    ether 08:0c:29:43:f7:e6  txqueuelen 1000  (Ethernet)
    RX packets 53  bytes 4130 (4.1 KB)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 71  bytes 7497 (7.4 KB)
    TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
    inet 127.0.0.1  netmask 255.0.0.0
    inet6 ::1  prefixlen 128  scopeid 0x10<host>
    loop txqueuelen 1000  (Local Loopback)
    RX packets 748  bytes 49766 (49.7 KB)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 748  bytes 49766 (49.7 KB)
    TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

hgfly@ubuntu:~$

```

6. This setup is not necessary. After the static IP is modified, the Internet service will not be available for the Linux system but the Windows system. To make the Internet service available for the Linux system, change to the root user, have the modified part of the static IP commented out by adding a “#” at the beginning of a line, close the virtual machine and reboot the computer.



The screenshot shows a text editor window titled "\*interfaces [Read-Only]" with the path "/etc/network". The content of the file is as follows:

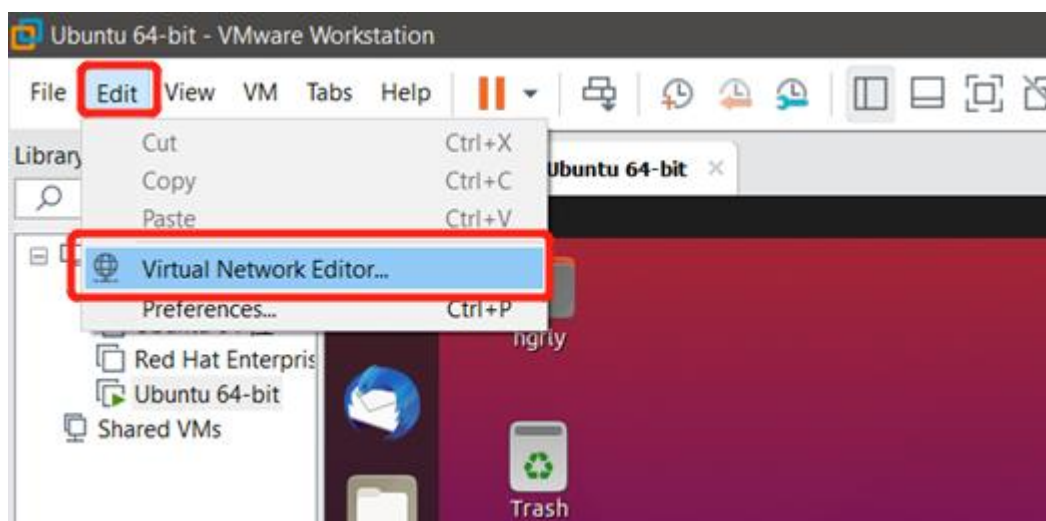
```
# interfaces(5) file used by ifup(8) and ifdown(8)
auto lo
iface lo inet loopback

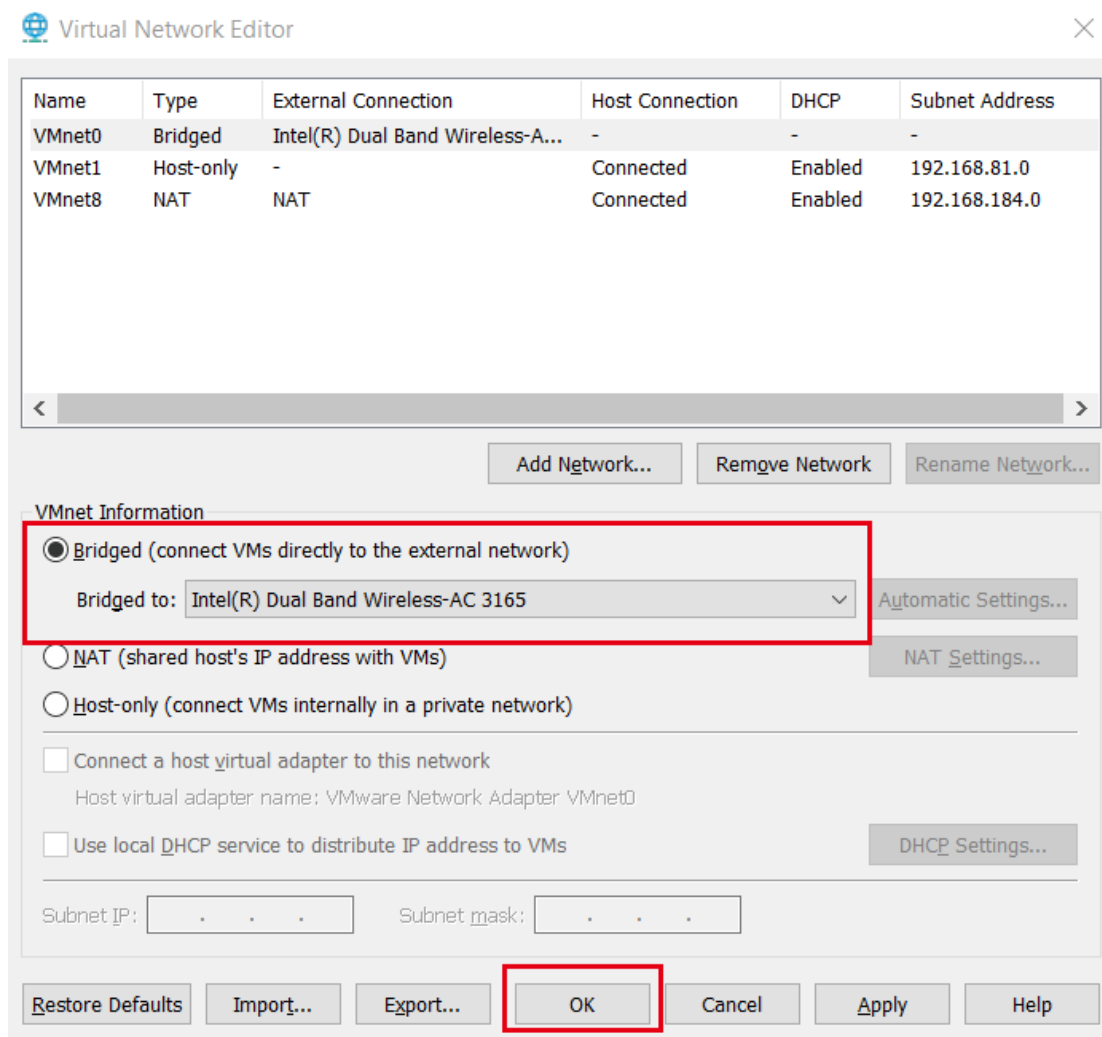
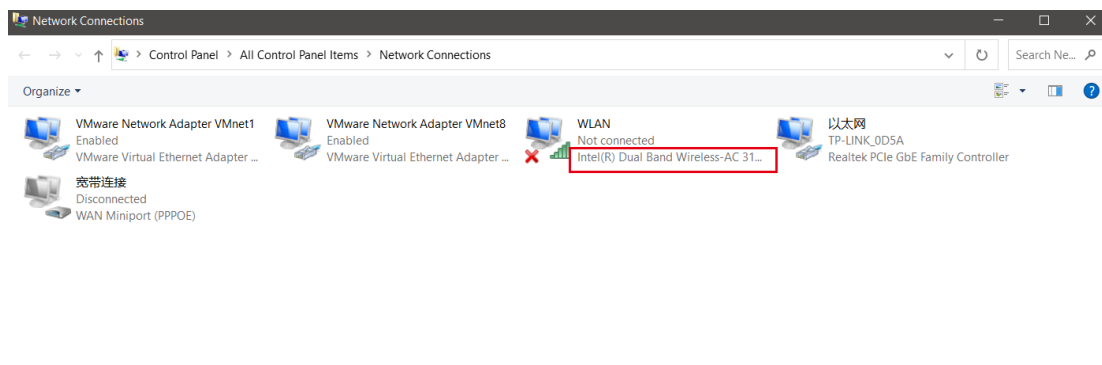
#auto ens33
#iface ens33 inet static
#address 192.168.1.200
#gateway 192.168.1.1
#netmask 255.255.224.0
```

The status bar at the bottom indicates "Plain Text", "Tab Width: 8", "Ln 11, Col 1", and "INS".

## 2. Set up the bridged connection

Click Edit -> Virtual Network Editor

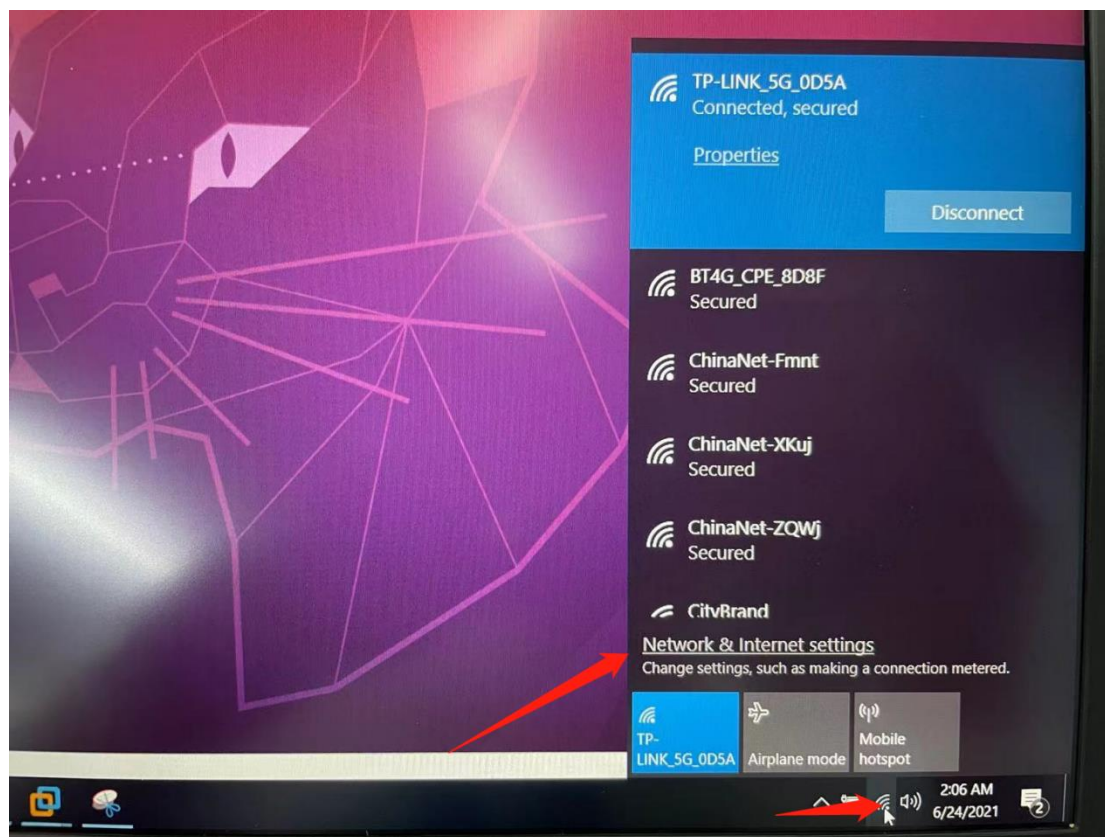




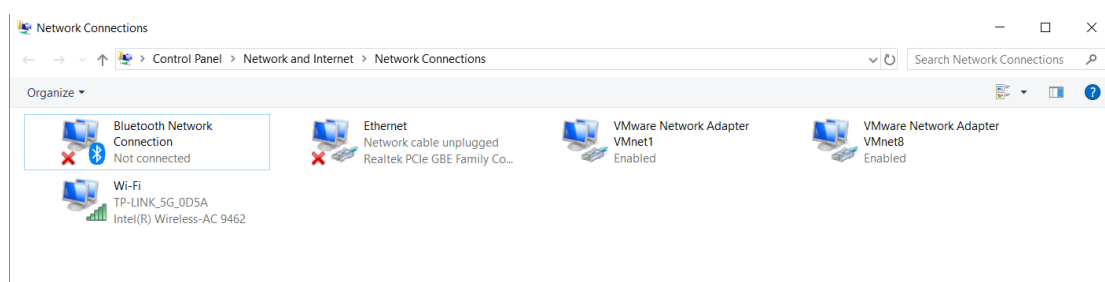
According to the connection of the bridged windows, the bridging mode defaults to "auto". Choose WiFi or Ethernet according to your own connection method; in addition, the ip address of the windows connection ipv4 should be set to automatically obtain. In this example, the notebook is bridged through WLAN.

### 3. IP Configuration Strategy

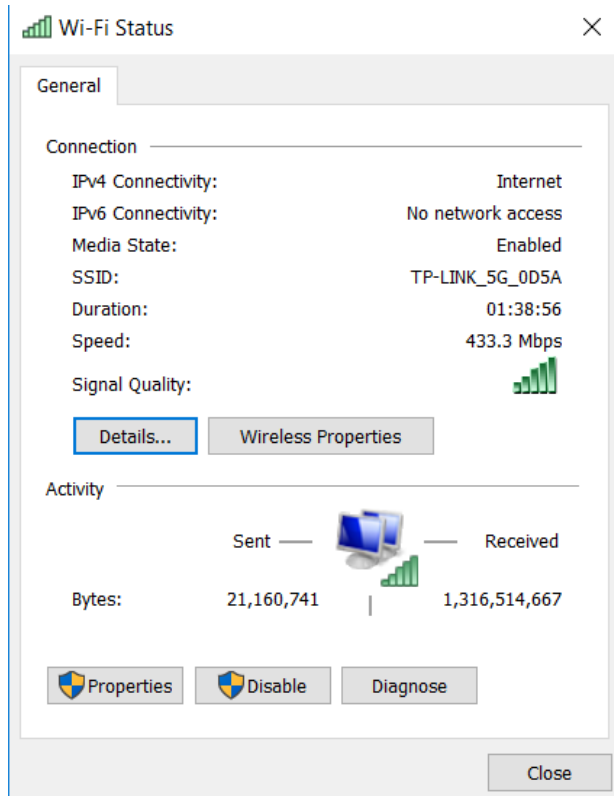
Click the computer icon in the lower right corner, then click network and internet settings



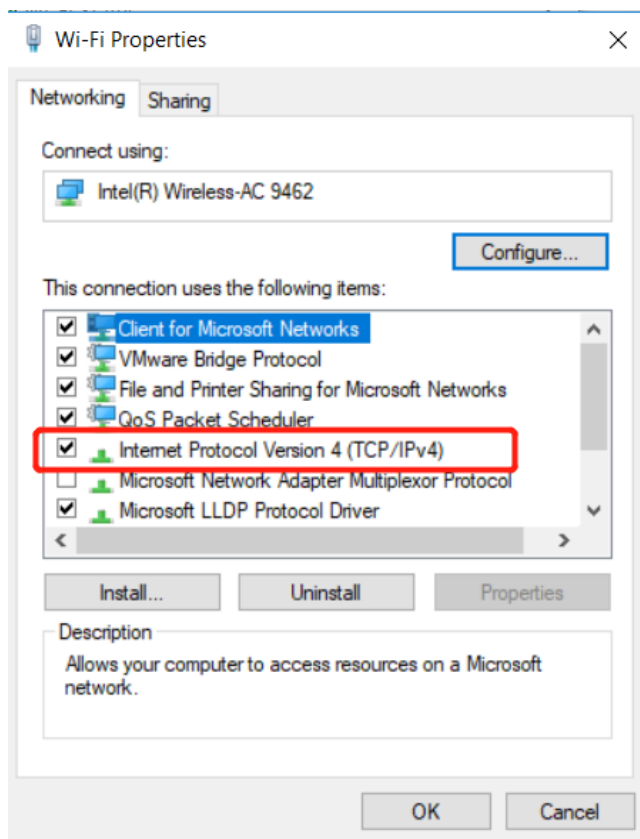
Enter the following screen and find the network resource you are connected to (here, the example computer is connected to the Ethernet)



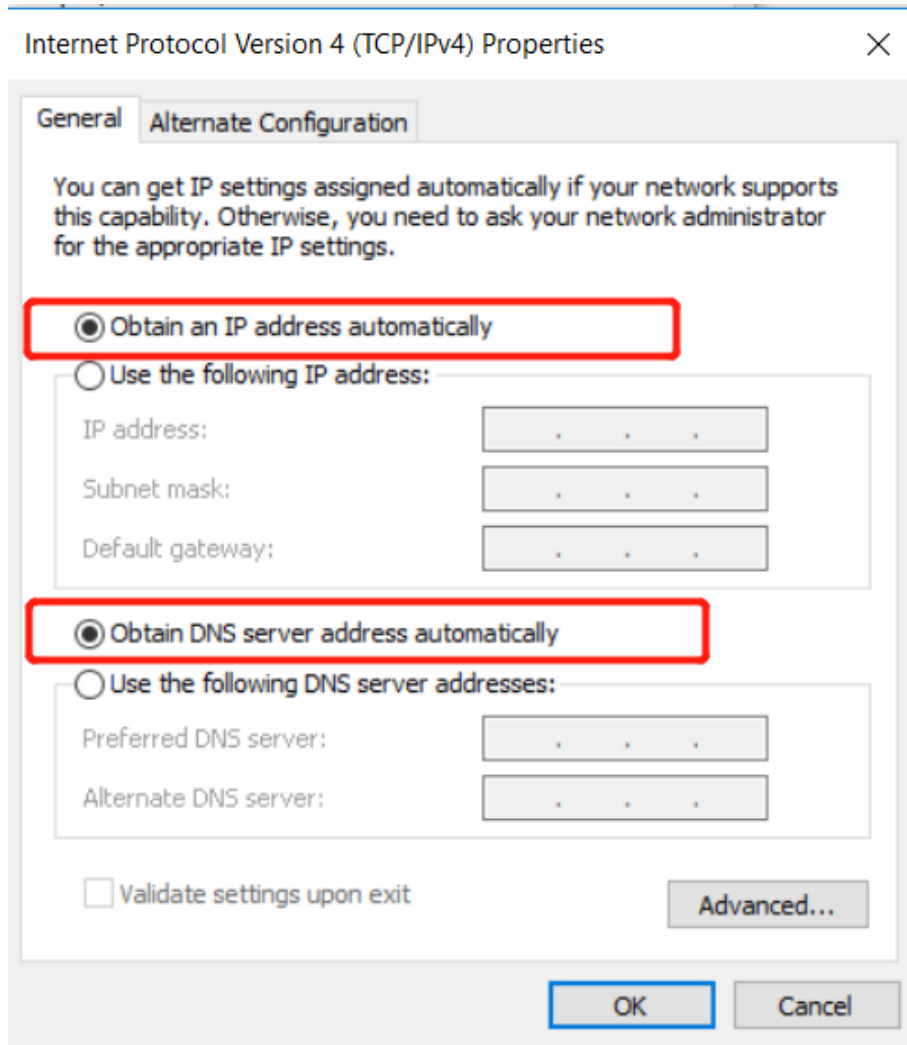
Double-click the Ethernet and the following picture will appear



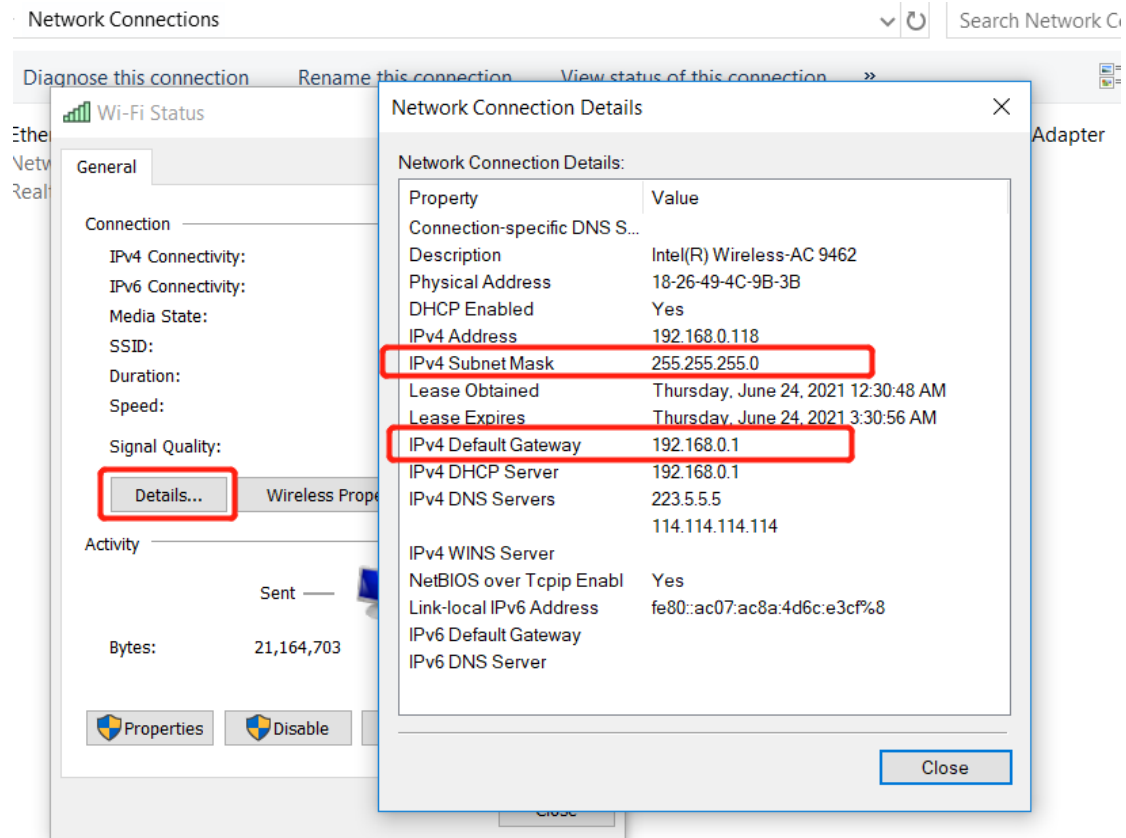
Click “Properties”



Double-click the TCP/IPv4 setting as shown in the figure above, and set the IP to be automatically obtained



Close these windows again. Double-click the Ethernet to view "Detailed Information" to get the current subnet mask and gateway.

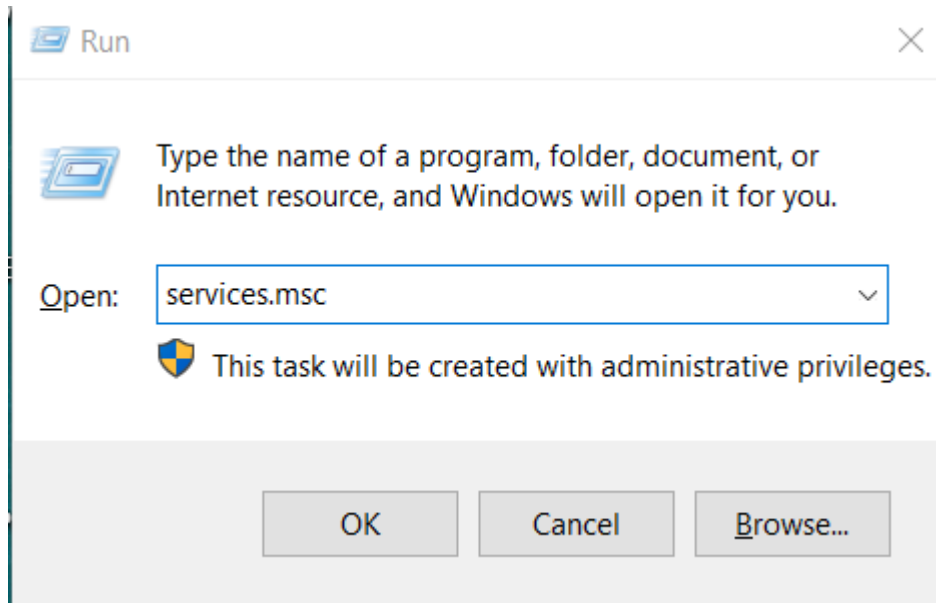


Configure IP and mask according to gateway and subnet mask

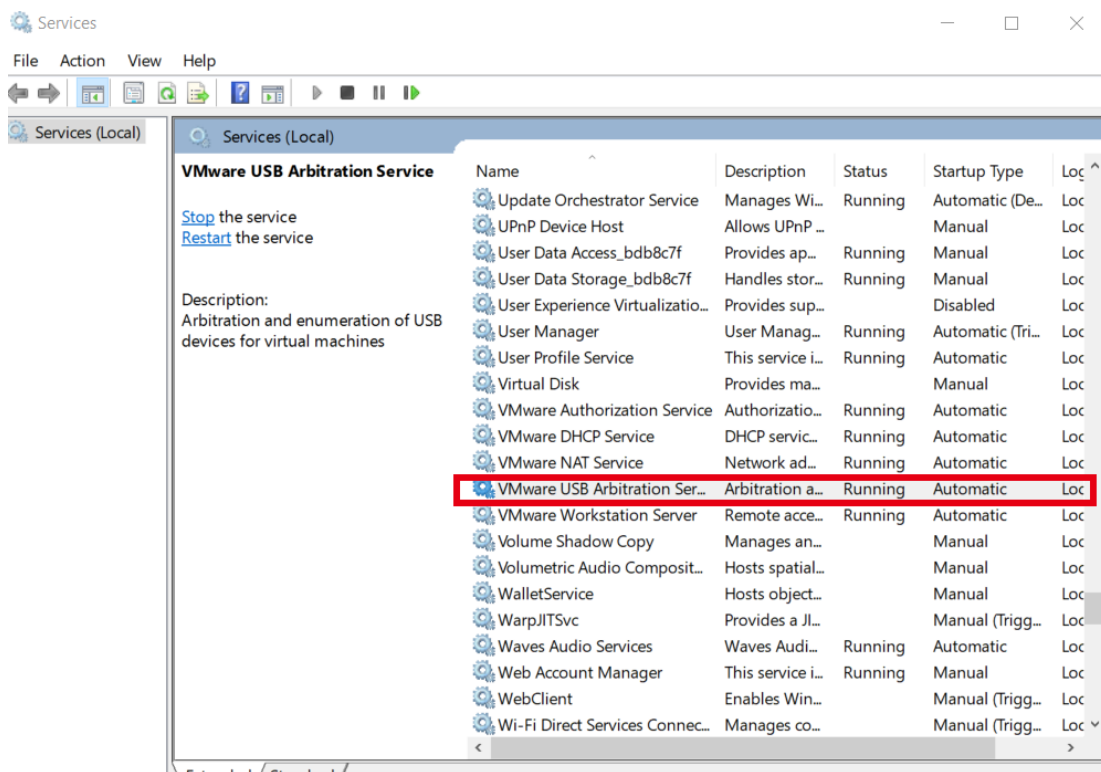
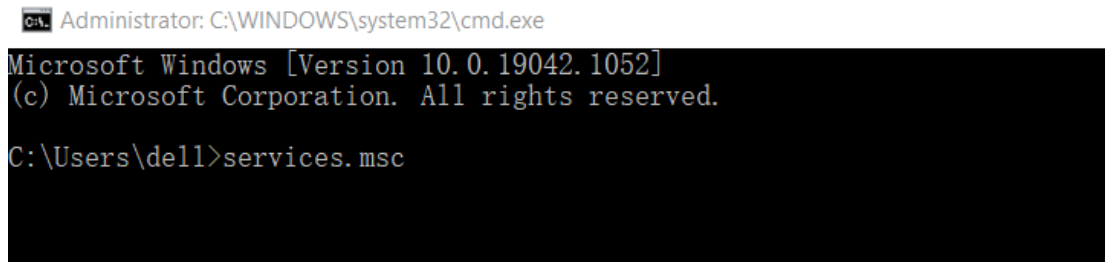
The configured IP prefix means that the first three digits are the same as the gateway, and the last digit is 200

## 2.1.6 Close the virtual machine and check the USB.

1. Open the Run dialog box: Press “Window” and button “r” on the keyboard at the same time and enter “services.msc” as in the figure below.



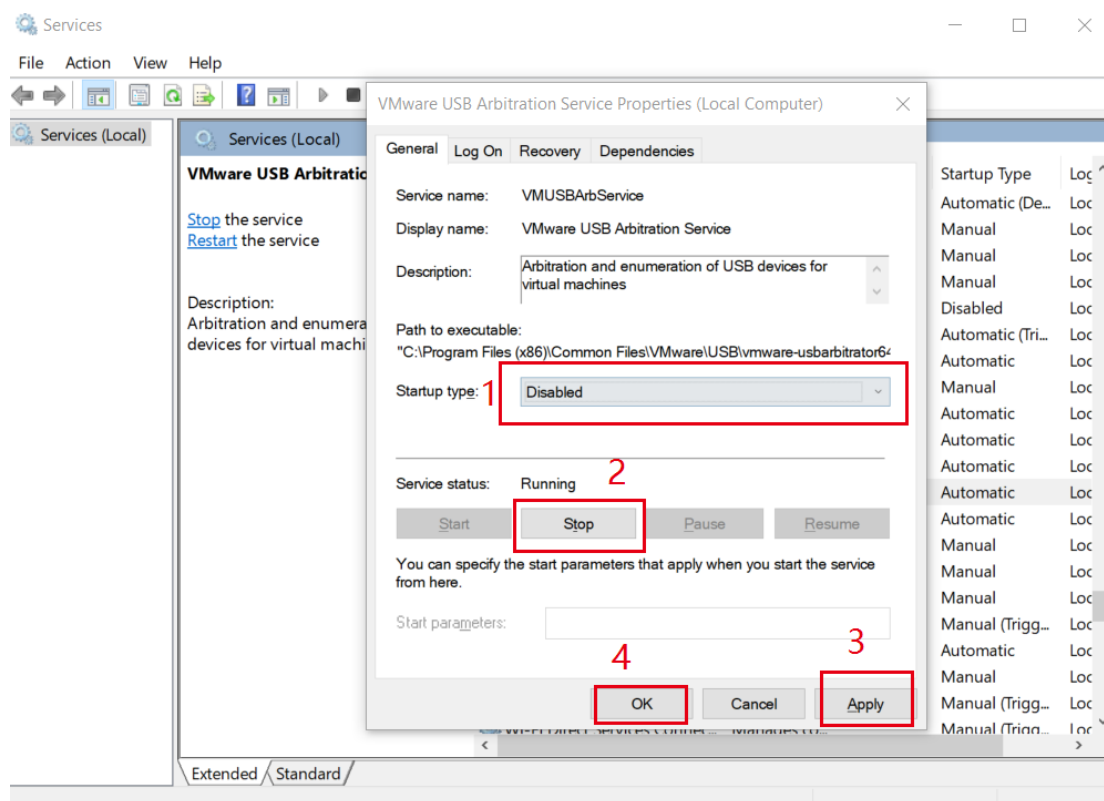
Or enter as below in the command line.



2.After the service command is run, close the virtual machine and check the USB. Find “VMware USB Arbitration Service”, open the service by double



clicking the mouse, change “Auto” into “Disabled” and click “Disable” to disable the service.



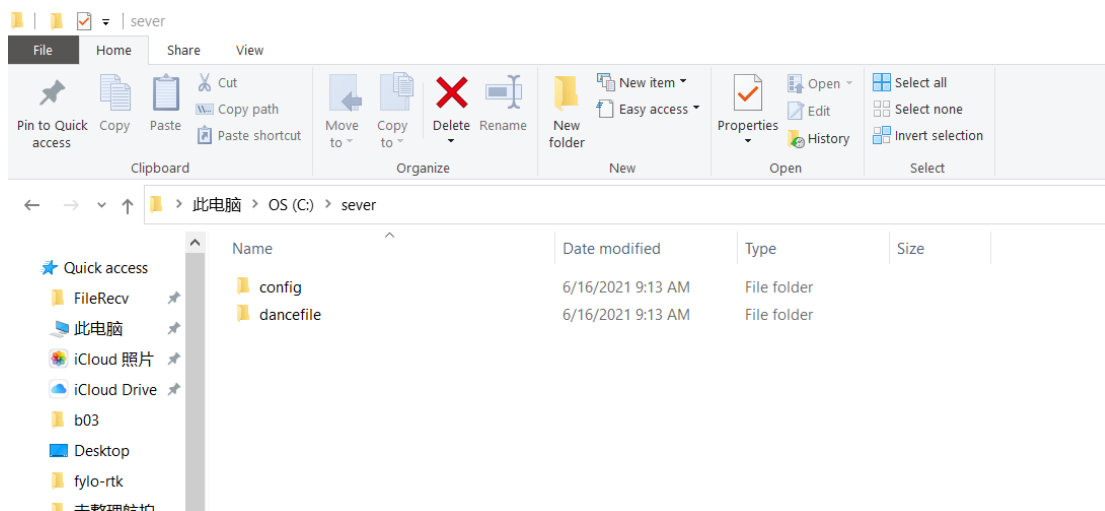
## 2.1.7. Deploy the formation service program.

Note: If VMware Tools installation fails, copying and pasting will fail in this step.

### 1. Get the key required for service startup

Create a “server” folder on the c drive of windows, then create a “dancefile” folder and a “config” folder;

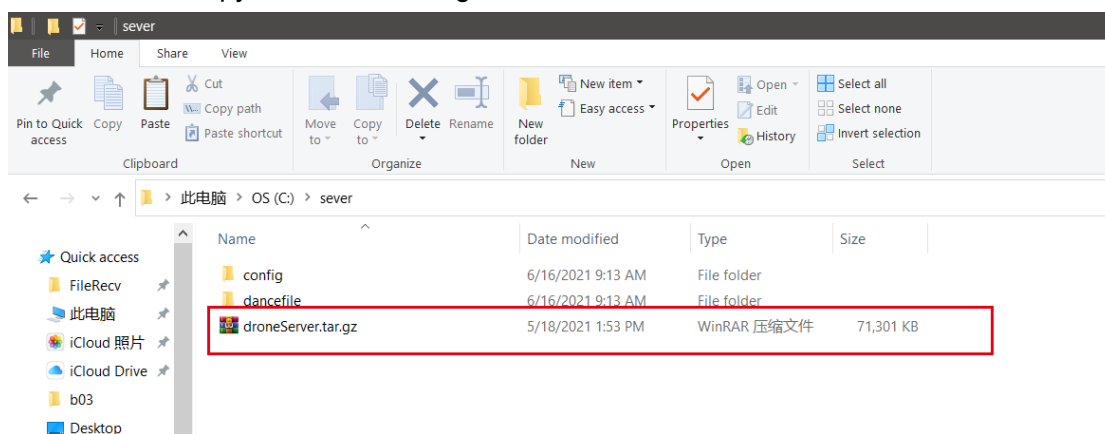
Log in to the upper computer (register first without an account) to obtain the key required by the formation server. If the upper computer successfully logs in, the key required by the drone server will be written in c:\\server\\config\\server.key.



## 2. Deploy service pack

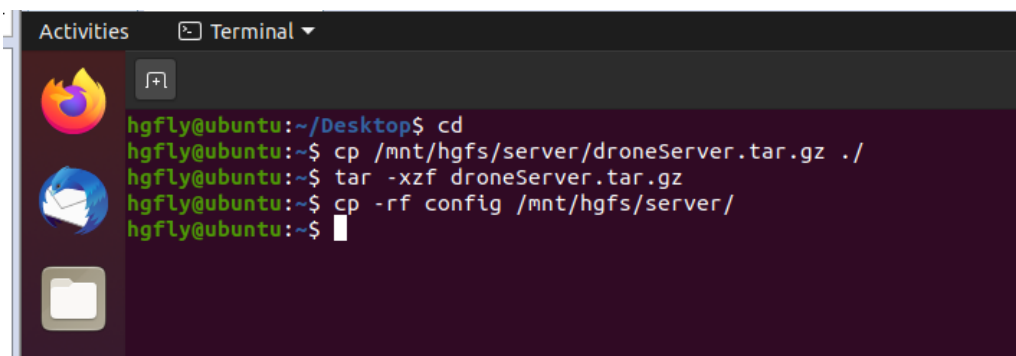
Follow the steps a, b, and c to execute.

a. Copy droneServer.tar.gz to c:\\server folder



b. Decompress the file, copy back the configuration, enter “cd” and execute the following commands.

```
cp /mnt/hgfs/server/droneServer.tar.gz ./
tar -xzf droneServer.tar.gz
cp -rf config /mnt/hgfs/server/
```

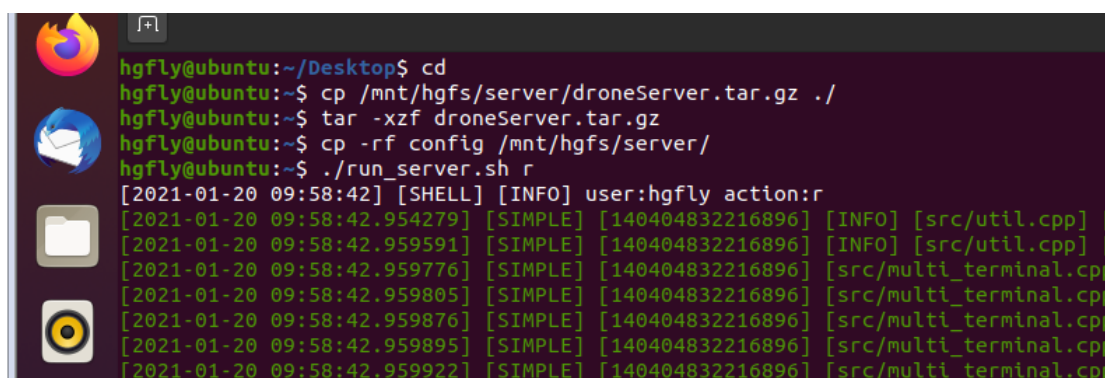


```

hgfly@ubuntu:~/Desktop$ cd
hgfly@ubuntu:~$ cp /mnt/hgfs/server/droneServer.tar.gz ./
hgfly@ubuntu:~$ tar -xzf droneServer.tar.gz
hgfly@ubuntu:~$ cp -rf config /mnt/hgfs/server/
hgfly@ubuntu:~$

```

c. Start through command “./ run\_server.sh r” (Stop through command “./run\_server.sh s”. **Note: The formation service will not stop if the terminal window is closed).**



```

hgfly@ubuntu:~/Desktop$ cd
hgfly@ubuntu:~$ cp /mnt/hgfs/server/droneServer.tar.gz ./
hgfly@ubuntu:~$ tar -xzf droneServer.tar.gz
hgfly@ubuntu:~$ cp -rf config /mnt/hgfs/server/
hgfly@ubuntu:~$ ./run_server.sh r
[2021-01-20 09:58:42] [SHELL] [INFO] user:hgfly action:r
[2021-01-20 09:58:42.954279] [SIMPLE] [140404832216896] [INFO] [src/util.cpp] [
[2021-01-20 09:58:42.959591] [SIMPLE] [140404832216896] [INFO] [src/util.cpp] [
[2021-01-20 09:58:42.959776] [SIMPLE] [140404832216896] [src/multi_terminal.cpp]
[2021-01-20 09:58:42.959805] [SIMPLE] [140404832216896] [src/multi_terminal.cpp]
[2021-01-20 09:58:42.959876] [SIMPLE] [140404832216896] [src/multi_terminal.cpp]
[2021-01-20 09:58:42.959895] [SIMPLE] [140404832216896] [src/multi_terminal.cpp]
[2021-01-20 09:58:42.959922] [SIMPLE] [140404832216896] [src/multi_terminal.cpp]

```

d. executive command“source .bashrc”, then executive command “start stop update”

## 2.1.8Update the service software.

For instance, user can put new service package “server\_1.1.1.tar.gz” into the “server” folder on disc C (**Note: there should be only one package named “server\*.tar.gz” in the “server” folder. Any other file there should be deleted manually.**) and enter “update” in the virtual machine’s terminal command line to update the service software. After the update, run “source .bashrc”,click “Start” to run the service again. Check whether the current service edition is the latest one as in the red box in the figure below.

Example: Execute the “update” service program.

```

gfly@HighGreat-LSJ: ~$
gfly@HighGreat-LSJ: ~$
gfly@HighGreat-LSJ: ~$ update
2021-03-02 16:29:57] [SHELL] [INFO] win_dir:/mnt/c!
2021-03-02 16:29:57] [SHELL] [INFO] begin check and update server, please waiting!
2021-03-02 16:29:57] [SHELL] [INFO] curVerion:1.2.4, /mnt/c/server/server_1.2.5.tar.gz!
2021-03-02 16:29:58] [SHELL] [INFO] update version 1.2.5!
2021-03-02 16:29:58] [SHELL] [INFO] update succ!
2021-03-02 16:29:58] [SHELL] [INFO] update server finish!
gfly@HighGreat-LSJ: ~$
    
```

```

hgfly@HG-zenghao: ~$
hgfly@HG-zenghao: ~$ source .bashrc
hgfly@HG-zenghao: ~$
    
```

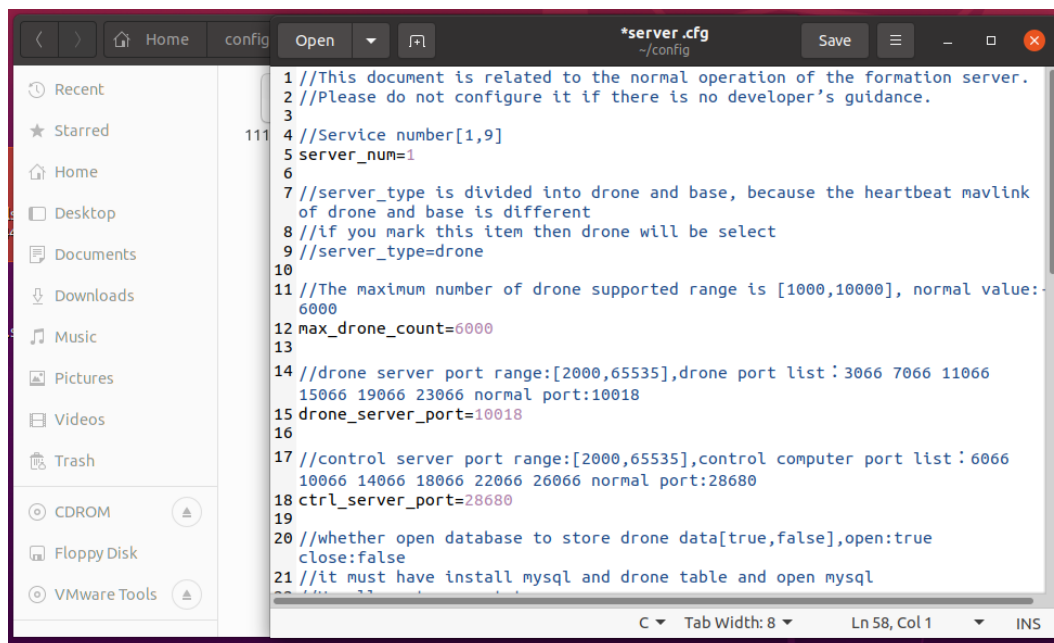
Example: Check the current version of the service, as shown in the red box below is the current version.

```

actory /mnt/c!
n:r
] [INFO] [src/uttl.cpp] [1300] send_file_time:500000!
] [INFO] [src/uttl.cpp] [1329] current server type is drone!
] [src/multi_terminal.cpp] [329]
] [src/multi_terminal.cpp] [330]
] [src/multi_terminal.cpp] [331]
] [src/multi_terminal.cpp] [332]
] [src/multi_terminal.cpp] [333]
] [src/multi_terminal.cpp] [334]
] [src/multi_terminal.cpp] [335]
] [src/multi_terminal.cpp] [336]
] [src/multi_terminal.cpp] [337]
] [src/multi_terminal.cpp] [338]
] [src/multi_terminal.cpp] [339]
] [src/multi_terminal.cpp] [340]
] [src/multi_terminal.cpp] [341]
] [src/multi_terminal.cpp] [342] [HG dance drone server 1.1.1 server number:1]
] [src/multi_terminal.cpp] [343]
service.cpp] [175] apply share memory size:4787(k)
[INFO] [src/CThreadPool.cpp] [479] memory pool block count:204!
ThreadPool.cpp] [1170] drone server control thread run...
ThreadPool.cpp] [1210] drone server event thread running
    
```

### 2.1.9.Modify the service configuration.

Double click the “config” folder in the “server” folder on disc C to modify parameters.

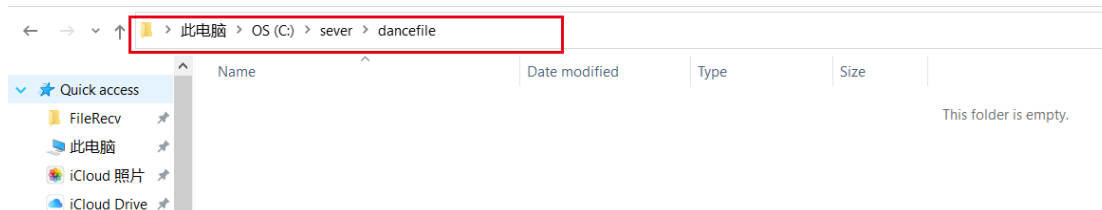


```

1 //This document is related to the normal operation of the formation server.
2 //Please do not configure it if there is no developer's guidance.
3
4 //Service number[1,9]
5 server_num=1
6
7 //server_type is divided into drone and base, because the heartbeat mavlink
  of drone and base is different
8 //if you mark this item then drone will be select
9 //server_type=drone
10
11 //The maximum number of drone supported range is [1000,10000], normal value:
  6000
12 max_drone_count=6000
13
14 //drone server port range:[2000,65535],drone port list:3066 7066 11066
  15066 19066 23066 normal port:10018
15 drone_server_port=10018
16
17 //control server port range:[2000,65535],control computer port list:6066
  10066 14066 18066 22066 26066 normal port:28680
18 ctrl_server_port=28680
19
20 //whether open database to store drone data[true,false],open:true
  close:false
21 //it must have install mysql and drone table and open mysql
  
```

### 2.1.10.Load dance steps quickly.

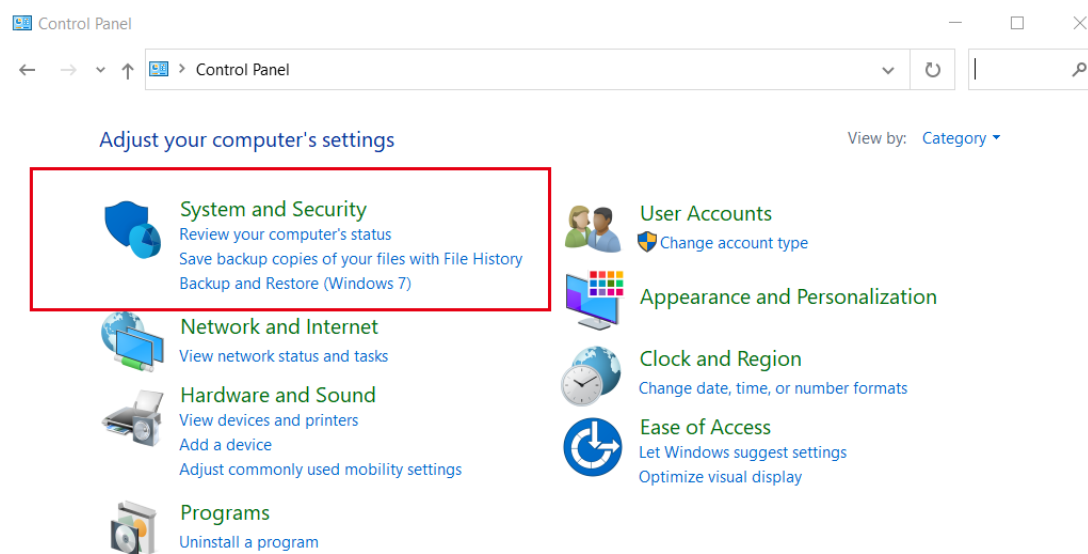
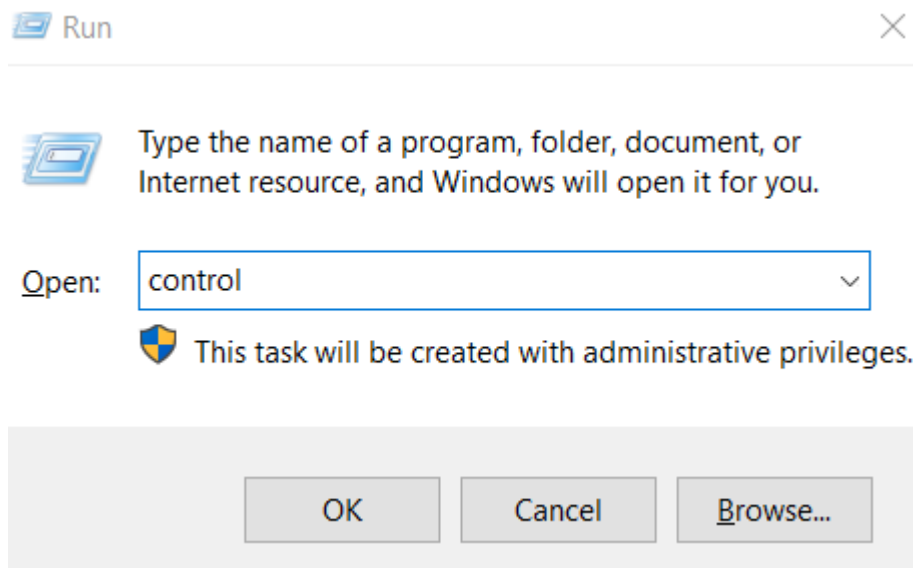
Put the dance step file into the “dancefile” folder in the “server” folder on disc C so that the dance steps can be loaded automatically to the server after restart.



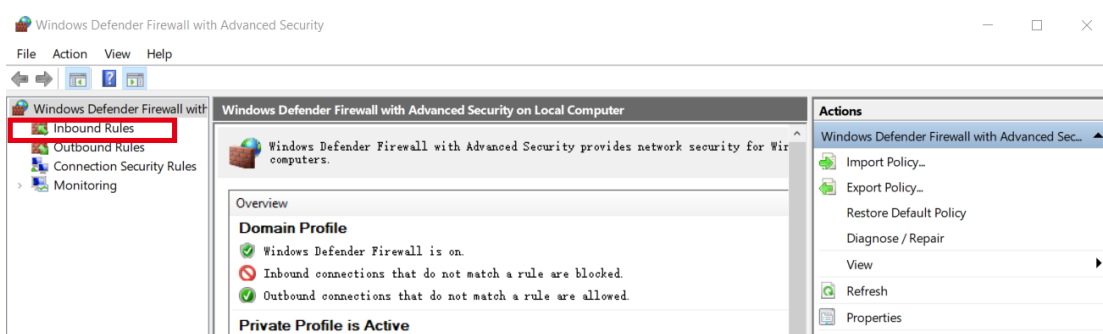
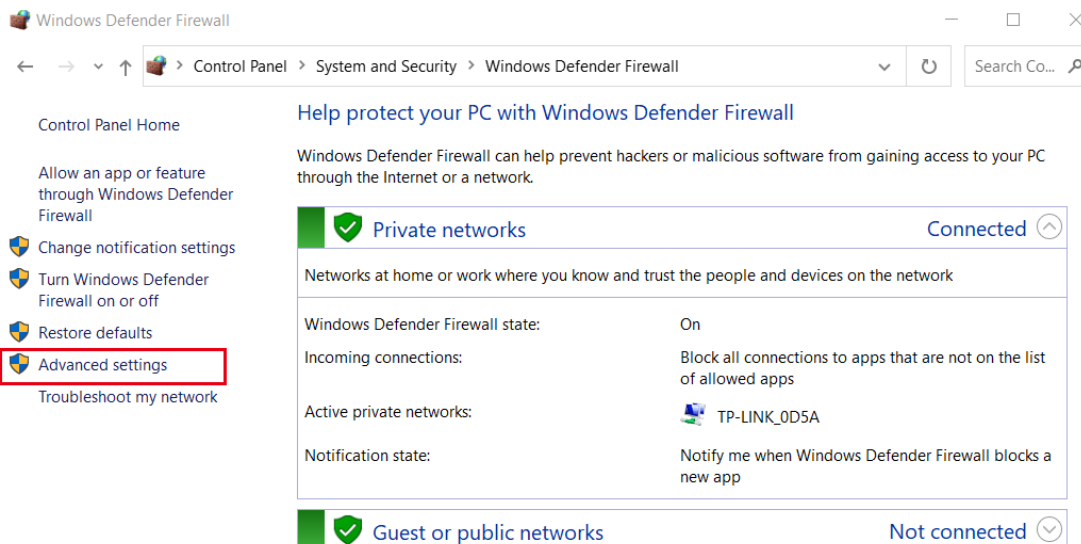
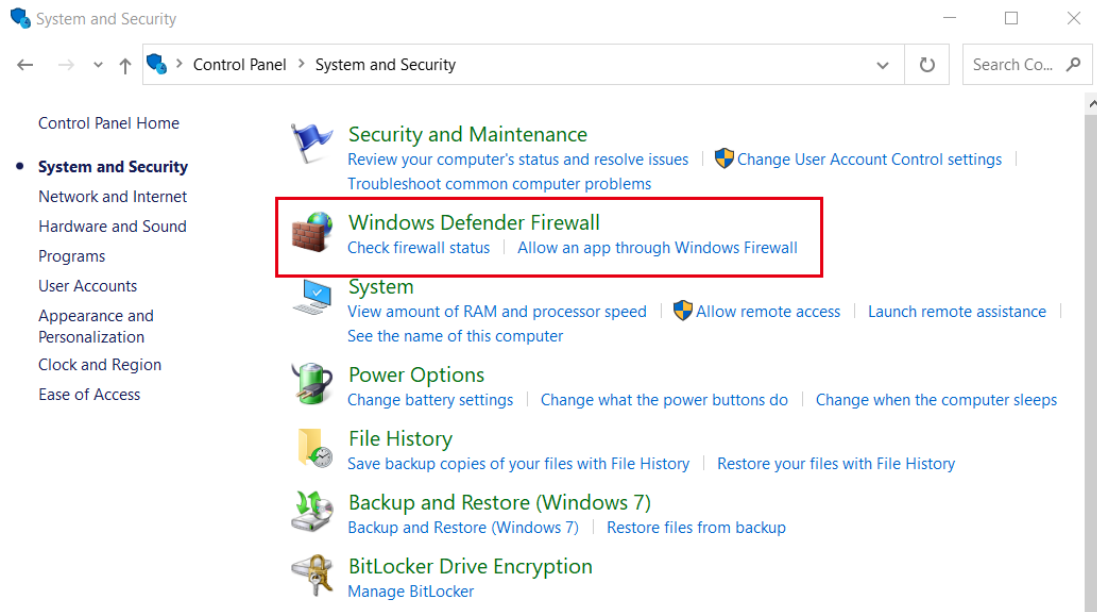
### 2.1.11Enable firewall ports and antivirus software.

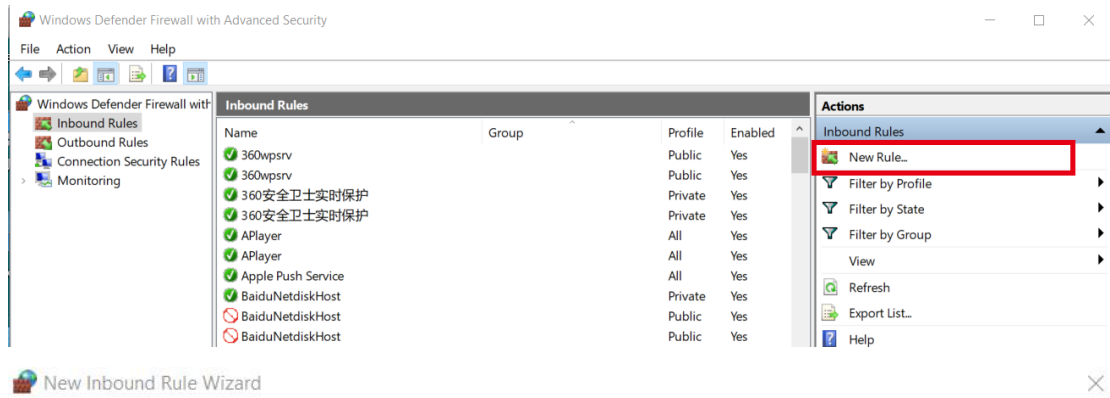
Two TCP ports (10018 and 28680) are needed by the formation server. Different antivirus software has different ways to enable. User should search for the relevant information on the Internet. The firewall port enabling way in the Windows system is as below.

Press shortcut keys “Win” and “R” to call the “Run” dialog box, enter “control” and click “OK”. See the figure below.



Click “System and security” to enter the following pages.







New Inbound Rule Wizard

### Protocol and Ports

Specify the protocols and ports to which this rule applies.

**Steps:**

- Rule Type
- Protocol and Ports
- Action
- Profile
- Name

Does this rule apply to TCP or UDP?

☒ TCP

☐ UDP

Does this rule apply to all local ports or specific local ports?

☐ All local ports

☒ Specific local ports:

Example: 80, 443, 5000-5010

< Back Next > Cancel

New Inbound Rule Wizard

### Action

Specify the action to be taken when a connection matches the conditions specified in the rule.

**Steps:**

- Rule Type
- Protocol and Ports
- Action
- Profile
- Name

What action should be taken when a connection matches the specified conditions?

☒ Allow the connection

This includes connections that are protected with IPsec as well as those

☐ Allow the connection if it is secure

This includes only connections that have been authenticated by using IPsec. Connections will be secured using the settings in IPsec properties and rules in the Connection Security Rule node.

[Customize...](#)

☐ Block the connection

< Back Next > Cancel

New Inbound Rule Wizard

### Profile

Specify the profiles for which this rule applies.

**Steps:**

- Rule Type
- Protocol and Ports
- Action
- Profile
- Name

When does this rule apply?

- ☒ **Domain**  
Applies when a computer is connected to its corporate domain.
- ☒ **Private**  
Applies when a computer is connected to a private network location, such as a home or work place.
- ☒ **Public**  
Applies when a computer is connected to a public network location.

< Back   Next >   Cancel

New Inbound Rule Wizard

### Name

Specify the name and description of this rule.

**Steps:**

- Rule Type
- Protocol and Ports
- Action
- Profile
- Name

Name:

10018\_tcp

Description (optional):

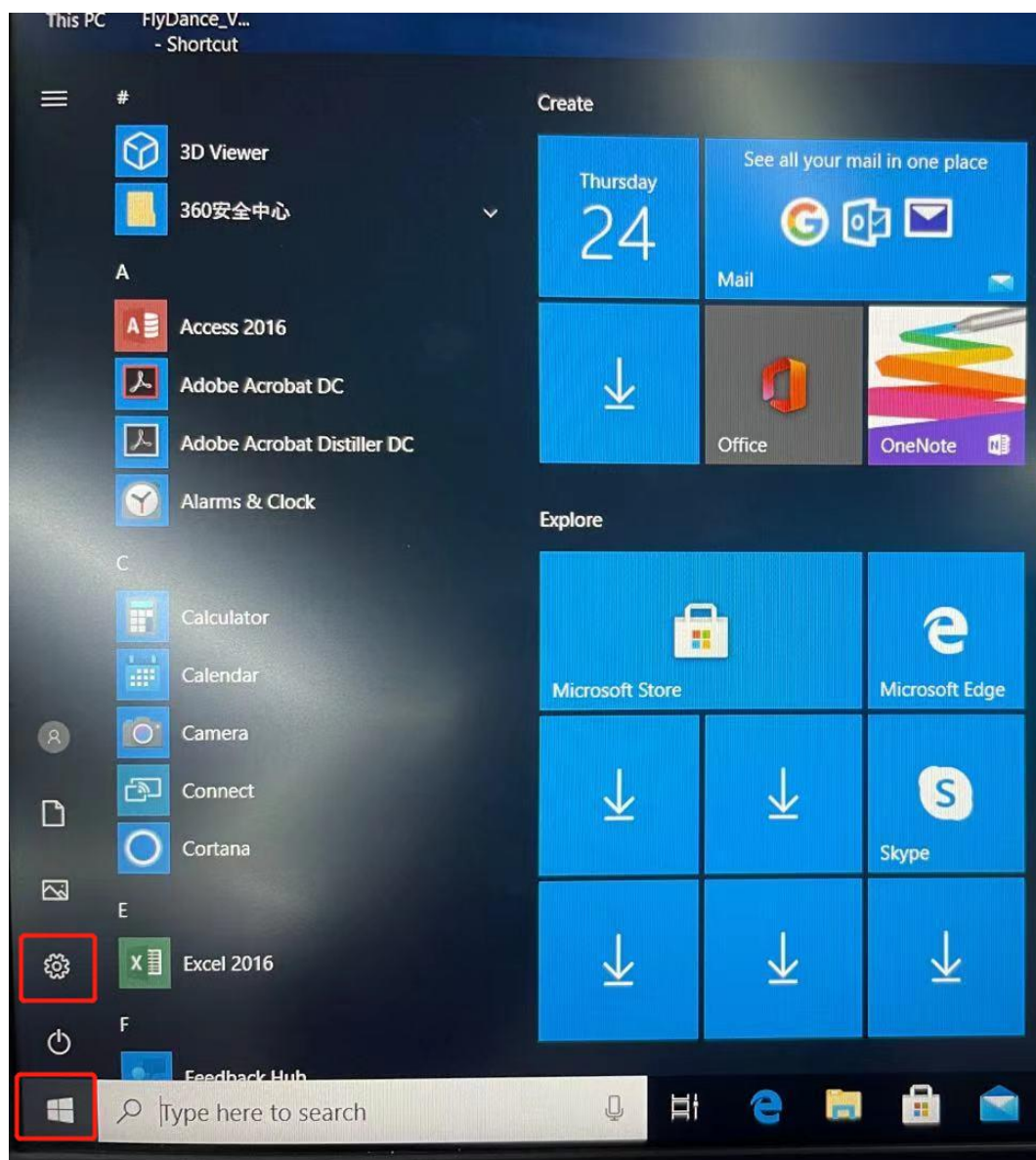
< Back   Finish   Cancel

Finally, click "Finish". Enable another TCP port (28680) in the same way.

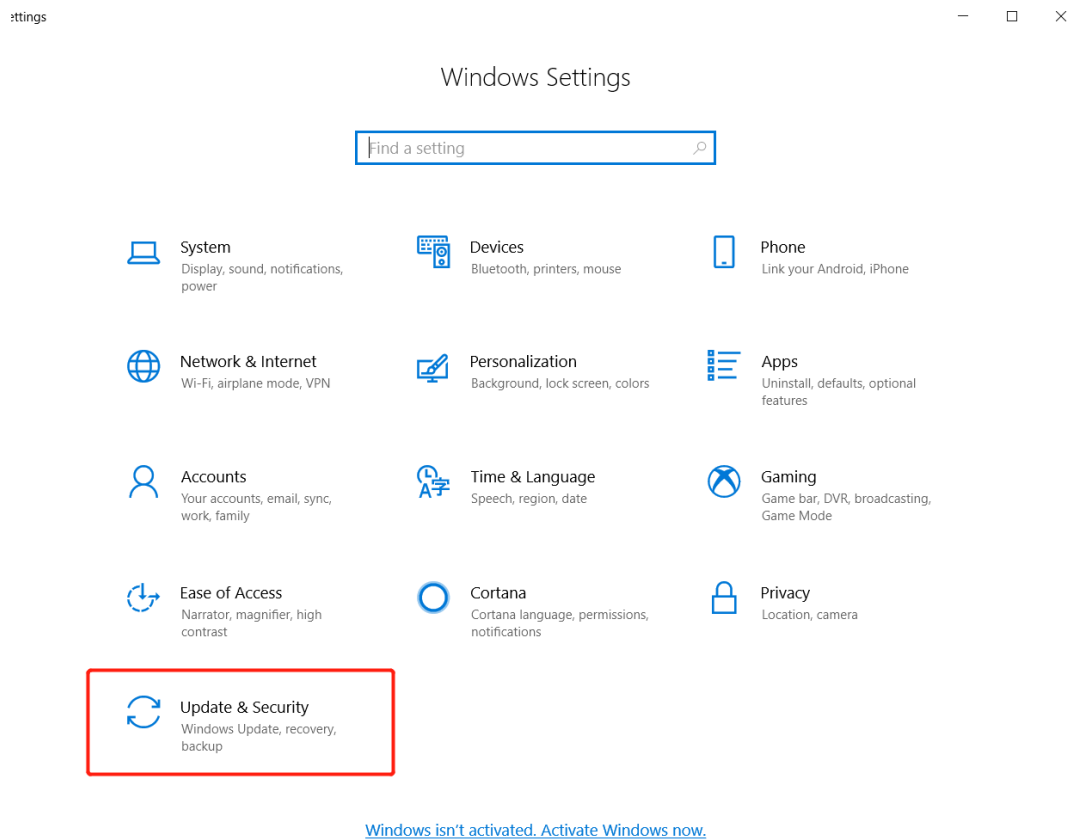
## 2.2 Win10 comes with Linux server installation

### 1.First, open the developer options and adaptation subsystem

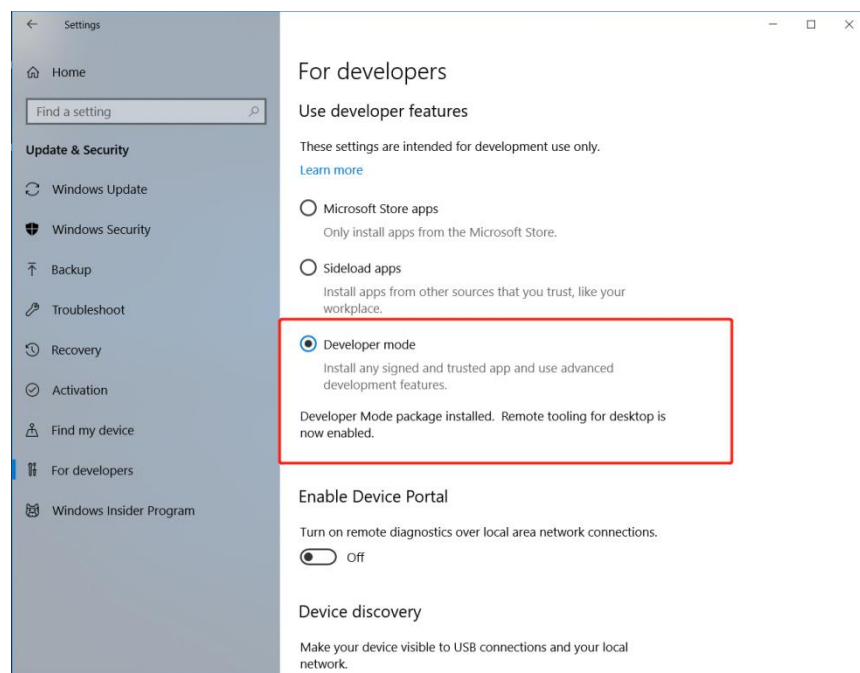
Click “Start”, click “Settings”



## Click Update and Security

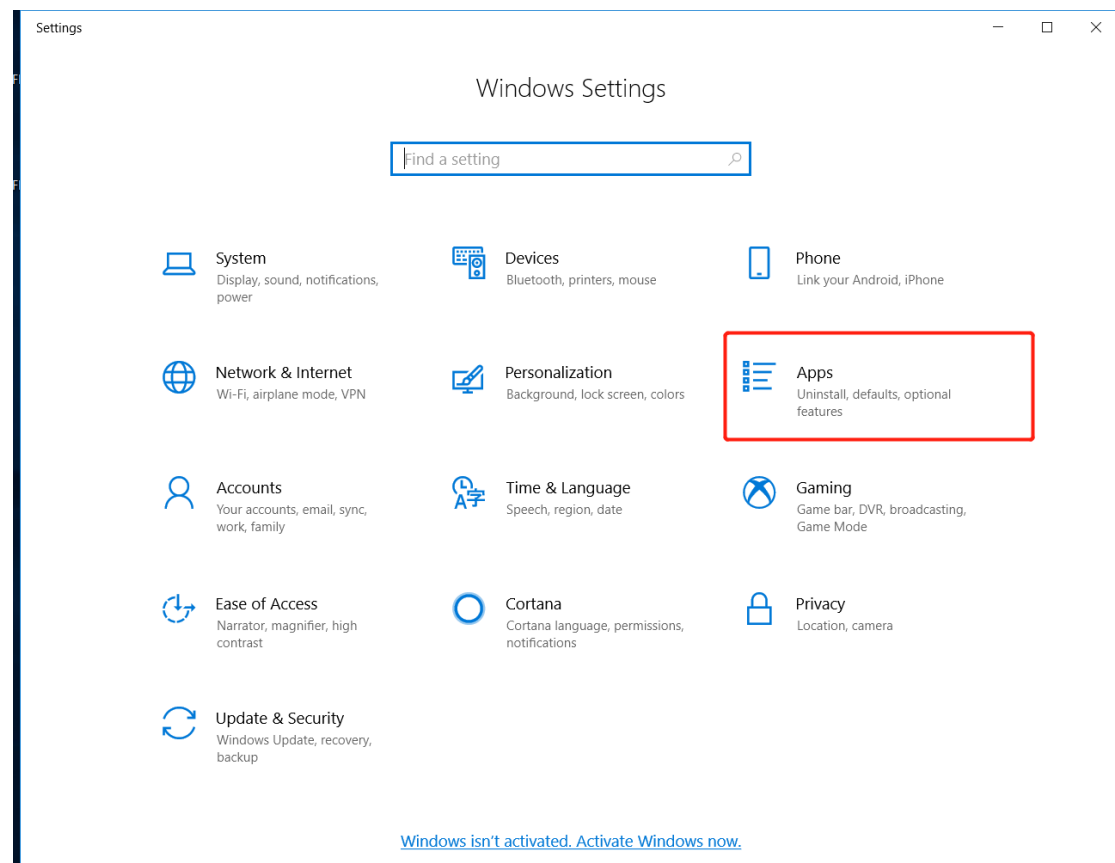


## Open the developer options and select "Yes" to confirm

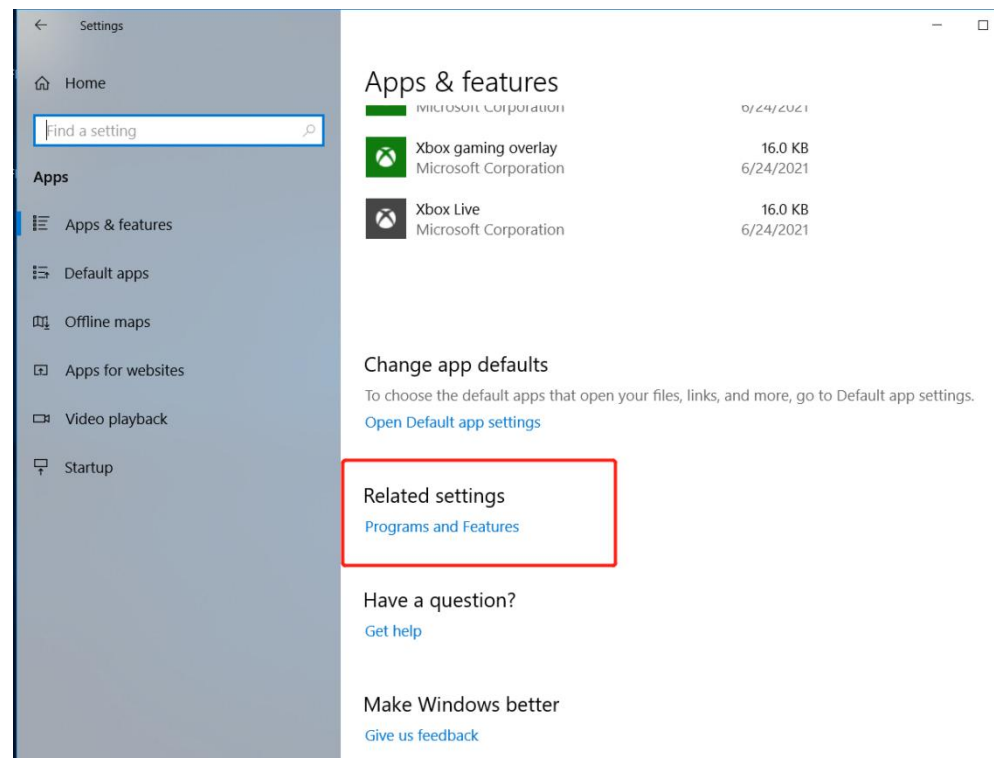


Then return to the previous page or re-enter from the "Start" menu and open the

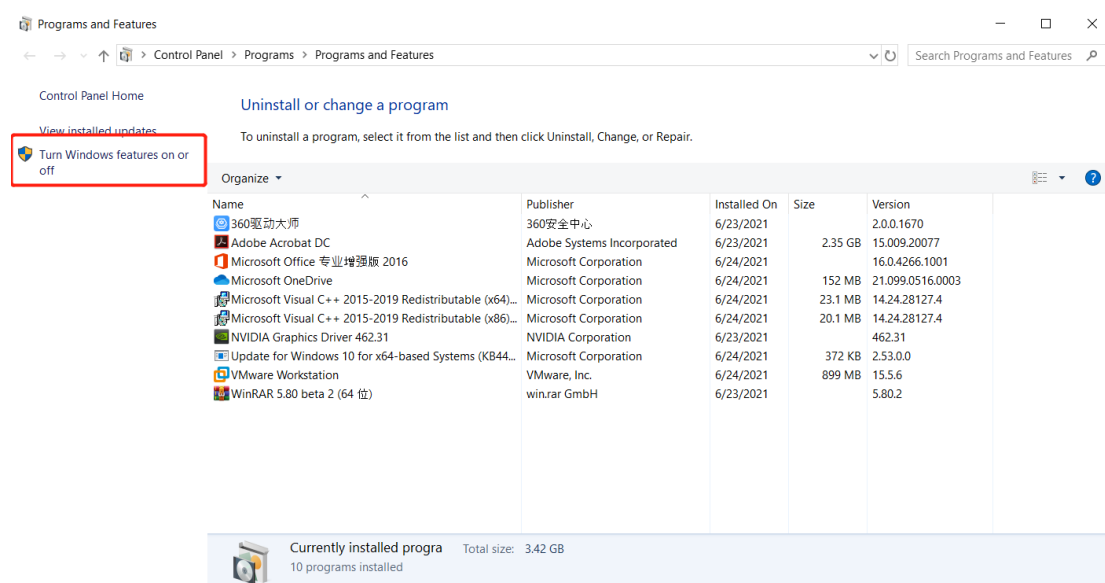
## application



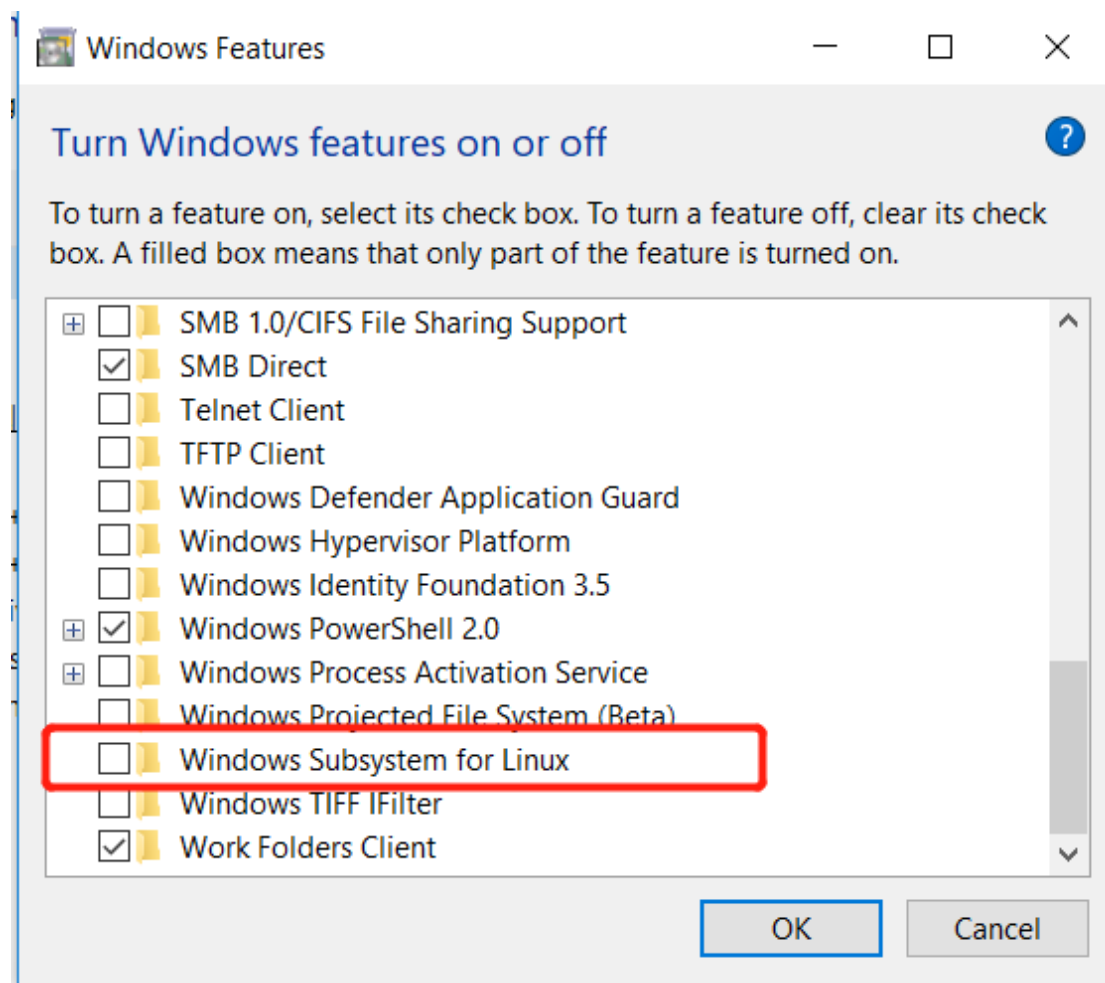
Scroll to the bottom of the page  
Open programs and functions



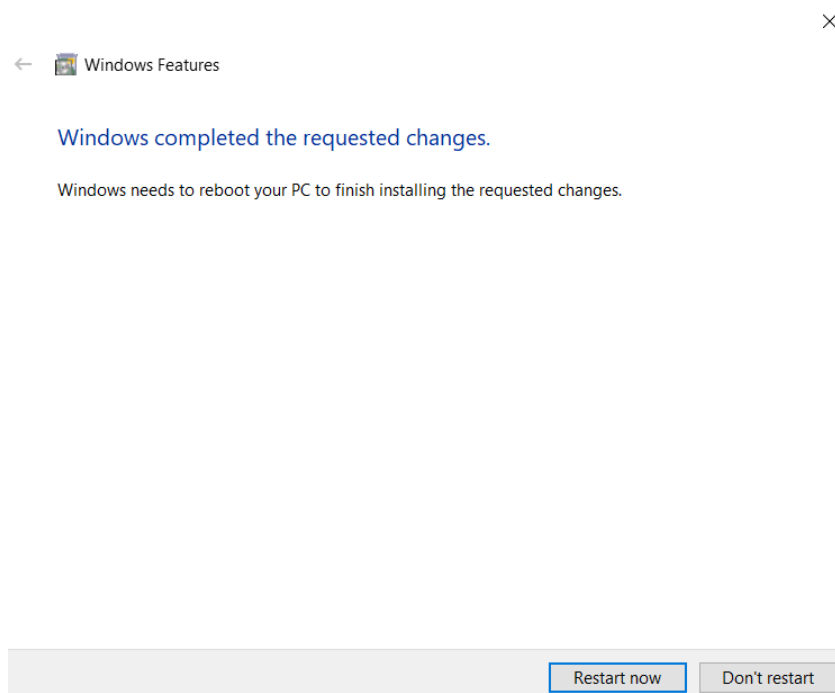
## Turn on or off the windows function



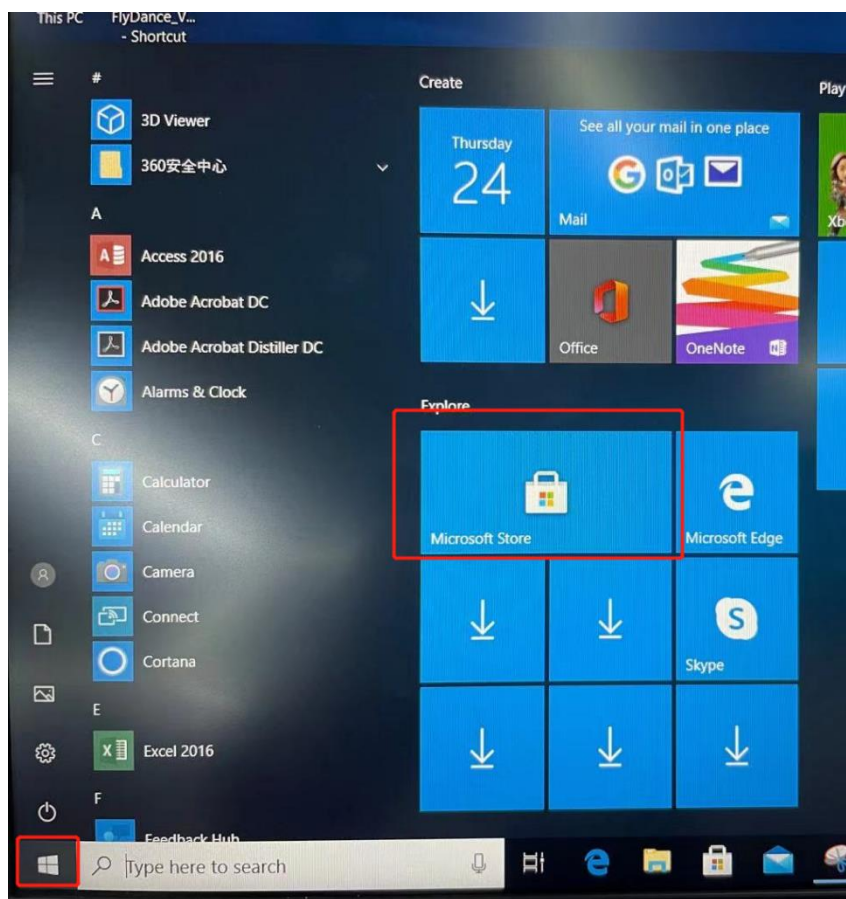
## Check "Windows Subsystem for Linux" and click "Confirm"



Then click "Yes" to restart the computer.



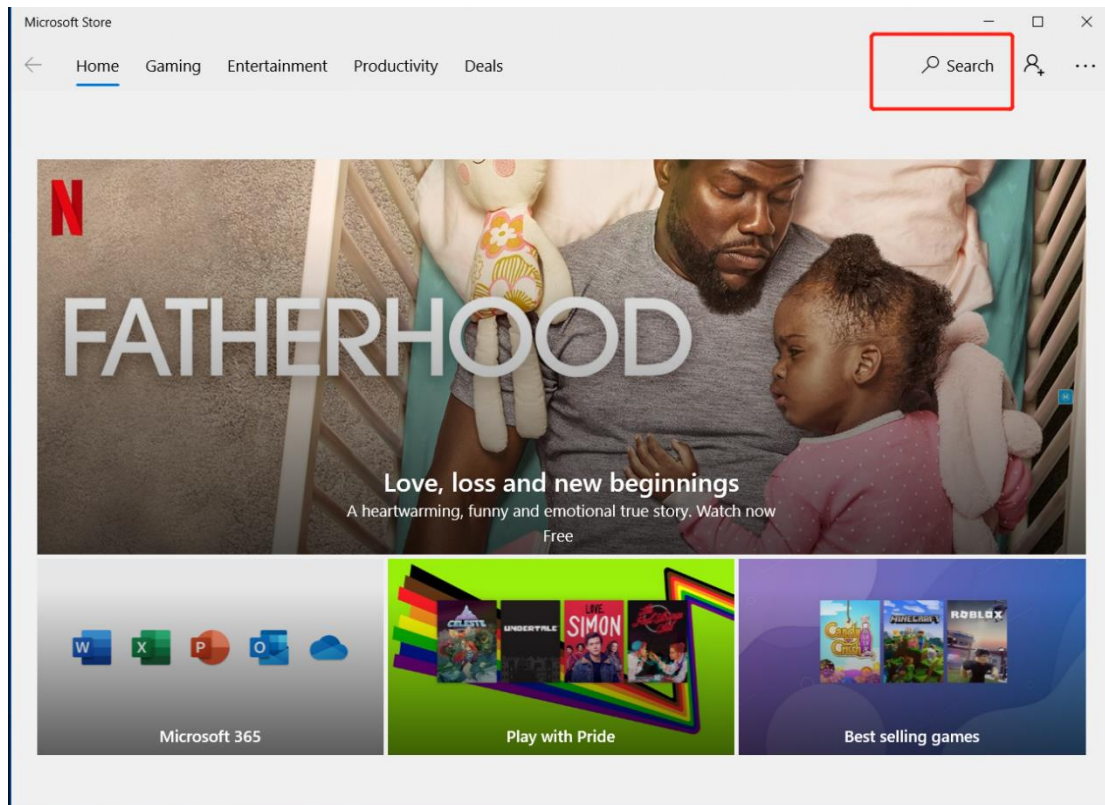
## 2.Second, install ubuntu



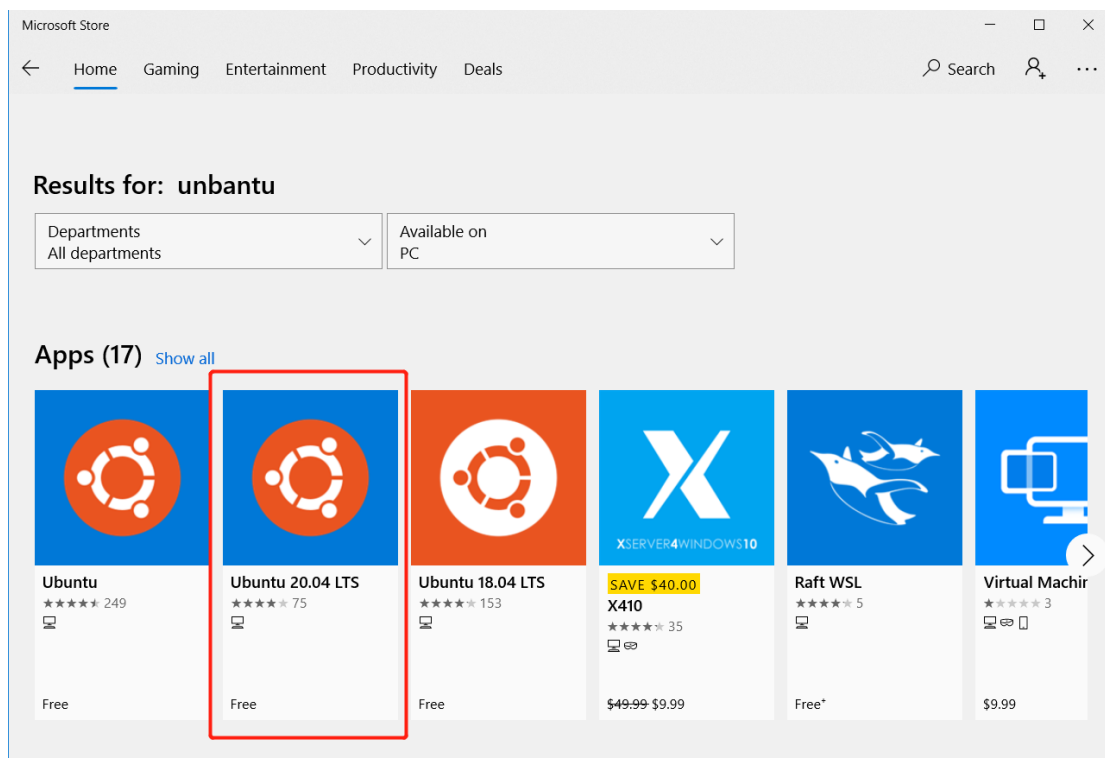


Click "Start" menu and click "Microsoft Store"

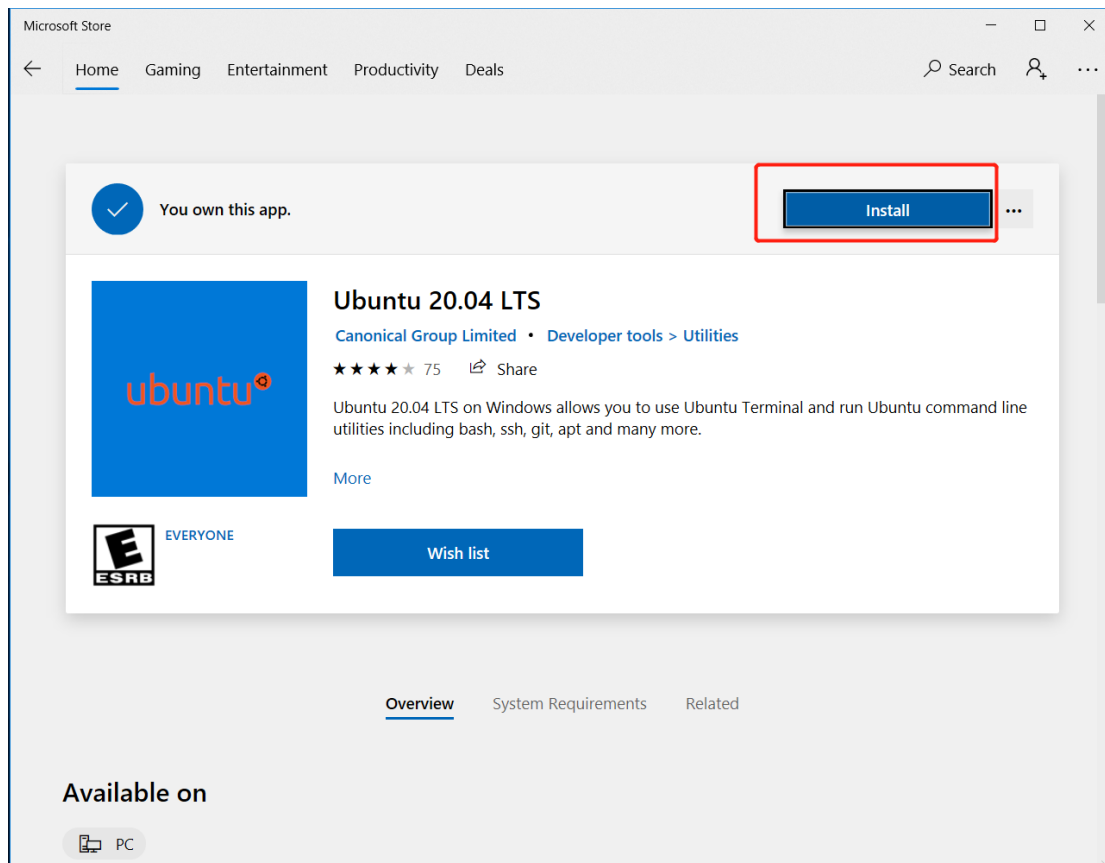
Click "search" and enter "ubuntu"



Choose 20.04 or the latest version to install





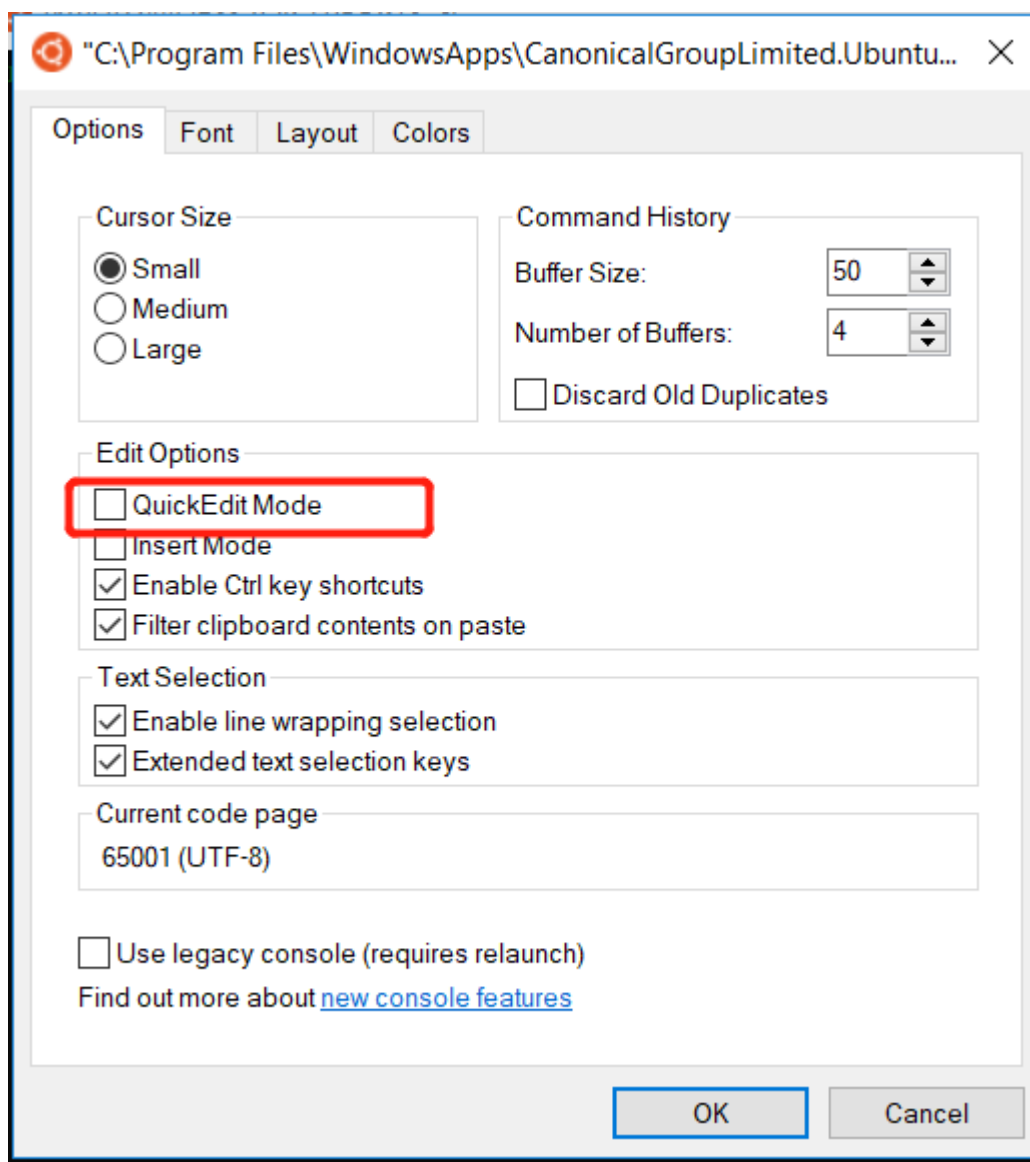
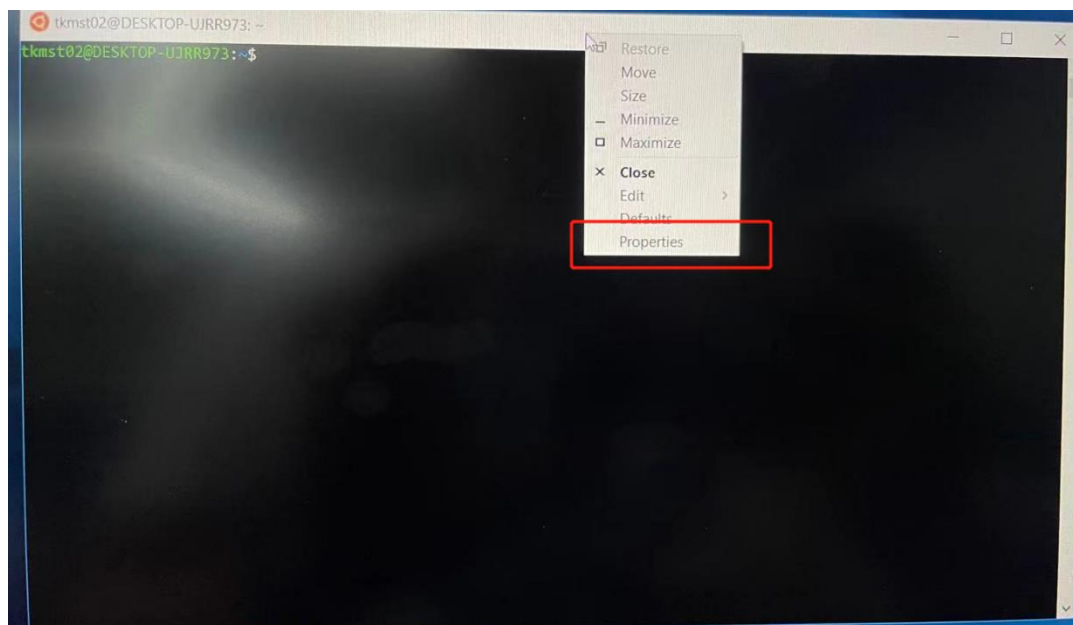


### 3.deploy services and modify system parameters

Refer to Chapter 4 "Modify System Parameters" of Virtual Machine Installation and Chapter 7 to 8 "Deploying Fleet Services and Service Software Updates", and Chapter 2 Section 3 to reset the root password. There are also anti-virus software and firewall that are configured in the virtual machine installation.

### 4.window output settings

Click the right mouse button in the ubuntu window and select properties. Uncheck the "Quick Edit Mode".



## 5.pay attention

The difference between the virtual machine and the built-in ubuntu, the virtual machine access c:\\server path is /mnt/hgfs/server, and the built-in ubuntu is /mnt/c/server, one is through shared file access, the other is direct access.

## 2.3FAQ

1. Files cannot be copied from the Windows system to the Linux system of the virtual machine, or shared files are unavailable on the virtual machine.

It is because VMware Tools installation has failed. Install it again as instructed in section 9 of chapter II hereof.

2. Install a gedit editor.

As in the figure below, it is prompted that no gedit editor is installed.

```

weixin@DESKTOP-H3D9UFC: ~$ su
Password:
root@DESKTOP-H3D9UFC:/home/weixin# passwd weixin
New password:
Retype new password:
passwd: password updated successfully
root@DESKTOP-H3D9UFC:/home/weixin# cd
root@DESKTOP-H3D9UFC:~# gedit /etc/se
security/      selinux/      sensors.d/      sensors3.conf  services
root@DESKTOP-H3D9UFC:~# gedit /etc/security/limits.conf

Command 'gedit' not found, but can be installed with:

apt install gedit

root@DESKTOP-H3D9UFC:~#
  
```

Change the way of IP configuration as “Auto”, or have the modified static IP commented out to make sure the Internet service is available for the Linux system. Install the gedit editor as below. Enter “apt install gedit” and press “Enter”.

```
root@DESKTOP-H3D9UFC:~# gedit /etc/se
security/          selinux/          sensors.d/          sensors3.conf
root@DESKTOP-H3D9UFC:~# gedit /etc/security/limits.conf

Command 'gedit' not found, but can be installed with:
apt install gedit
root@DESKTOP-H3D9UFC:~# apt install gedit
```

### 3. Connect mysql.

```
sed: -e expression #1, char 21: unknown option to 's'
/e]2;linsj@a[linsj@izwz93g1c5ttsm027r3broz ~]$ mysql -ulinsj -plinsj
ERROR 2002 (HY000): can't connect to local MySQL server through socket '/var/lib/mysql/mysql.sock' (2)
sed: -e expression #1, char 21: unknown option to 's'
/e]2;linsj@a[linsj@izwz93g1c5ttsm027r3broz ~]$
```

Check whether the database has been started with help of “ps -ef|grep mysql”.  
If it was not, start it through command “service mysql start”.

4. In the case of the following circumstance, it suggests the necessity to add right 755 (chmod -R 755 log) to “my.cnf” and “.passwd.txt”. Note that right 777 should not be added to “my.cnf”.

```
[2019-06-16 18:43:57.513886] [SIMPLE] [140312339547968] [WARN] [src/CMessage.cpp] [33] key:666903066 get mes
[2019-06-16 18:43:57.513905] [INFO] [140312286529280] [CtrlService.cpp] [1010] the control server task thre
[2019-06-16 18:43:57.541058] [SIMPLE] [140312339547968] [INFO] [src/CMessage.cpp] [56] create pipe succ!
linsj@zlxhg03-PC:~$ [2019-06-16 18:43:59.546033] [SIMPLE] [140718053852992] [INFO] [src/CMySQL.cpp] [50] Con
[2019-06-16 18:43:59.548796] [SIMPLE] [140718053852992] [INFO] [src/CMySQL.cpp] [50] Connection mysql succes
[2019-06-16 18:43:59.551052] [SIMPLE] [140718053852992] [INFO] [src/CMySQL.cpp] [50] Connection mysql succes
[2019-06-16 18:43:59.553662] [SIMPLE] [140718053852992] [INFO] [src/CMySQL.cpp] [50] Connection mysql succes
[2019-06-16 18:43:59.659642] [SIMPLE] [140718053852992] [INFO] [DBStore.cpp] [479] get db data count:0
mysql: [Warning] World-writable config file '/etc/mysql/my.cnf' is ignored.
mysql: [Warning] World-writable config file '/home/linsj/log/.passwd.txt' is ignored.
ERROR 1045 (28000): Access denied for user 'linsj'@'localhost' (using password: NO)
[2019-06-16 18:44:09.813073] [SIMPLE] [140718053852992] [INFO] [DBStore.cpp] [479] get db data count:0
mysql: [Warning] World-writable config file '/etc/mysql/my.cnf' is ignored.
mysql: [Warning] World-writable config file '/home/linsj/log/.passwd.txt' is ignored.
ERROR 1045 (28000): Access denied for user 'linsj'@'localhost' (using password: NO)
/run_server.sh s
[2019-06-16 18:44:12] [SHELL] [INFO] user:linsj action:s
[2019-06-16 18:44:12.572051] [SIMPLE] [139909648535879] [WARN] [src/CMessage.cpp] [33] key:666903066 get mes
```

5. In the case of an errno of “38” (Funtion not implemented) during database creation or any other operation, it suggests a wrong system edition. Check the Linux system edition through command “sudo lsb\_release -a”. The current ubuntu edition compatible with Win10 is F16.02.2.

```
hgfly@dp-autopilot:~$ cat /etc/issue
Ubuntu 16.04.2 LTS \n \l

hgfly@dp-autopilot:~$
hgfly@dp-autopilot:~$ sudo lsb_release -a
[sudo] password for hgfly:
Sorry, try again.
[sudo] password for hgfly:
Sorry, try again.
[sudo] password for hgfly:
No LSB modules are available.
Distributor ID: Ubuntu
Description:    Ubuntu 16.04.2 LTS
Release:        16.04
Codename:       xenial
hgfly@dp-autopilot:~$
```

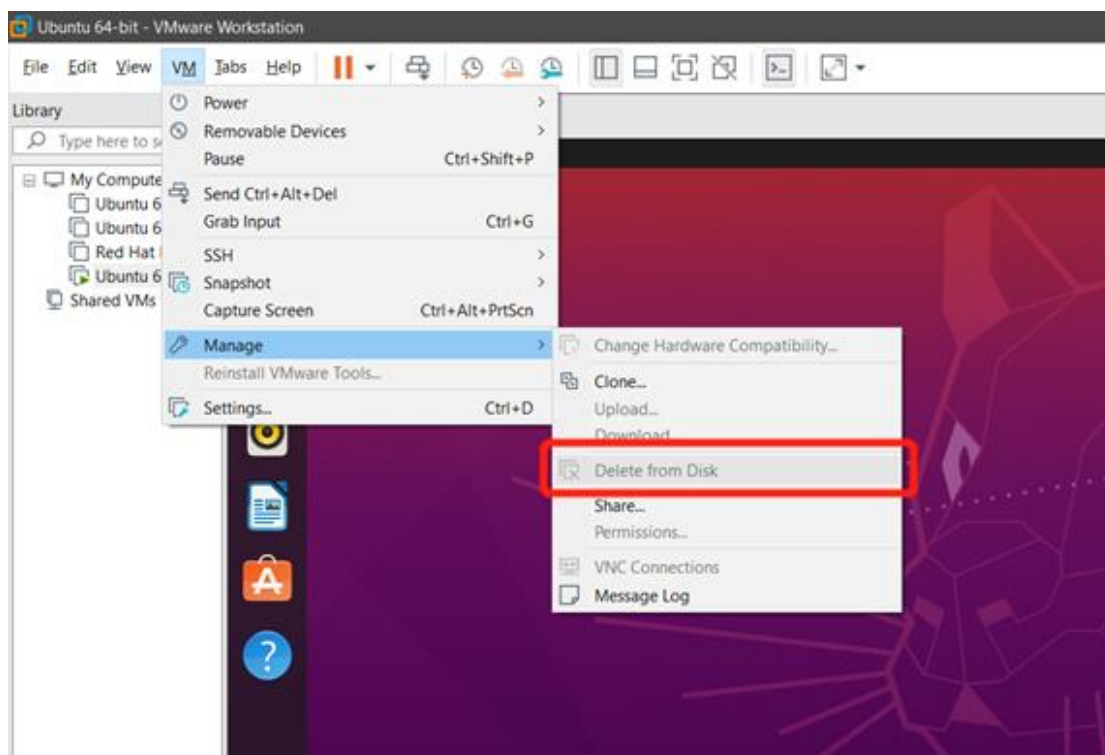
6. If mysql connection fails, it is due to excessive authorization.

```
-sh-4.2$ exit
logout
[root@izwz96id2tw1nty2x1lu5z ~]# mysql -ulinsj -p'linsj'
Warning: Using a password on the command line interface can be insecure.
ERROR 1045 (28000): Access denied for user 'linsj'@'localhost' (using password: YES)
[root@izwz96id2tw1nty2x1lu5z ~]#
```

grant select,insert,update,delete on dancefly.\* to linsj@"%" identified by "linsj";  
flush privileges;

```
2019-11-19 11:18:49.758296] [SIMPLE] [140469860108096] [INFO] [src/CMessage.cpp] [56] create pipe succ!
hgfly@dp-autopilot:~$ [2019-11-19 11:18:51.812800] [SIMPLE] [139710444013376] [INFO] [DBStore.cpp] [481] get db data
ERROR 1142 (42000) at line 1: INSERT command denied to user 'linsj'@'localhost' for table 'dronerecord1'
2019-11-19 11:19:01.913126] [SIMPLE] [139710444013376] [INFO] [DBStore.cpp] [481] get db data count:0
ERROR 1142 (42000) at line 1: INSERT command denied to user 'linsj'@'localhost' for table 'dronerecord1'
hgfly@dp-autopilot:~$
```

7. Delete the Linux system thoroughly in the virtual machine.



## 8. VMware Tools turns gray

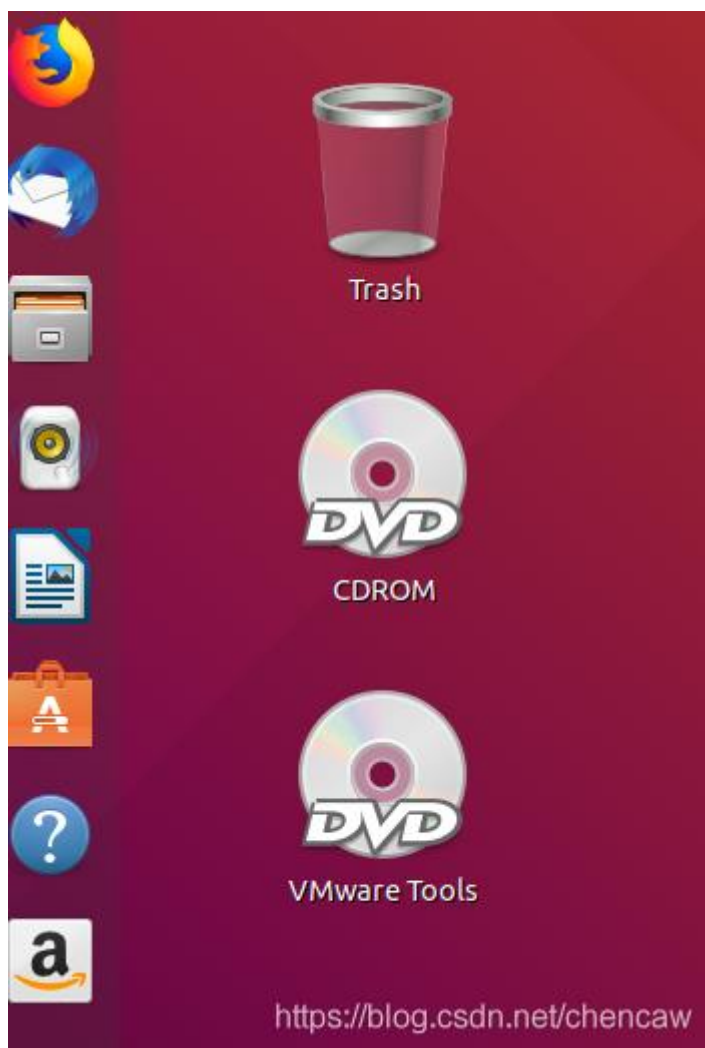
(1) In the virtual machine settings, add a CD, select

D:\Program Files (x86)\VMware\VMware Workstation\linux.iso

Note that the path may be different, you can search for the location of linux.iso on the disk.

(2) Enter the virtual machine,

Find the CD vmware tools on the desktop



## 9. Linux disconnects the network at an interval

```
sudo gedit /etc/ppp/options
```

Change the default lcp-echo-failure 4 to lcp-echo-failure 40

The server side modifies the `/etc/ssh/sshd_config` configuration file `ClientAliveInterval 300` (default is 0). The parameter means that the server sends a message to the client every 5 minutes to maintain the connection.

## 10. Shared folders cannot be used

First use the root terminal to delete `hgfs`, delete the shared folder configured by the virtual machine, reinstall `vmtoolsd`, and then set up the virtual machine shared folder.

## 3.Operation Manual of FlyDance Host Computer

### 3.1 Product introduction

As professional control software for drone formation flying, FlyDance enjoys the simple whole software design and relevant modularized functions, which enables users to operate and use it conveniently and quickly.

### 3.2 Operating environment

Recommended computer configuration:

Windows 10 or above operating systems and i5 (7th generation) or above processors;

SSD hard disk above 256G; (C disk enjoys free 20G, and other disks need 30G to install virtual machines)

Memory above 8GB;


Discrete graphics card has above 2GB of video memory;

Wireless network card, supporting 802.11 ac wireless protocol and dual frequency (2.4 GHz+5GHz);

With RJ45 network cable interface and USB interface.

### 3.3 Software installation

This software does not need to be installed. The compressed folder is unzipped and opened for use. After unzipping, it is necessary to find the FlyDance.exe execution file and double-click to open it.

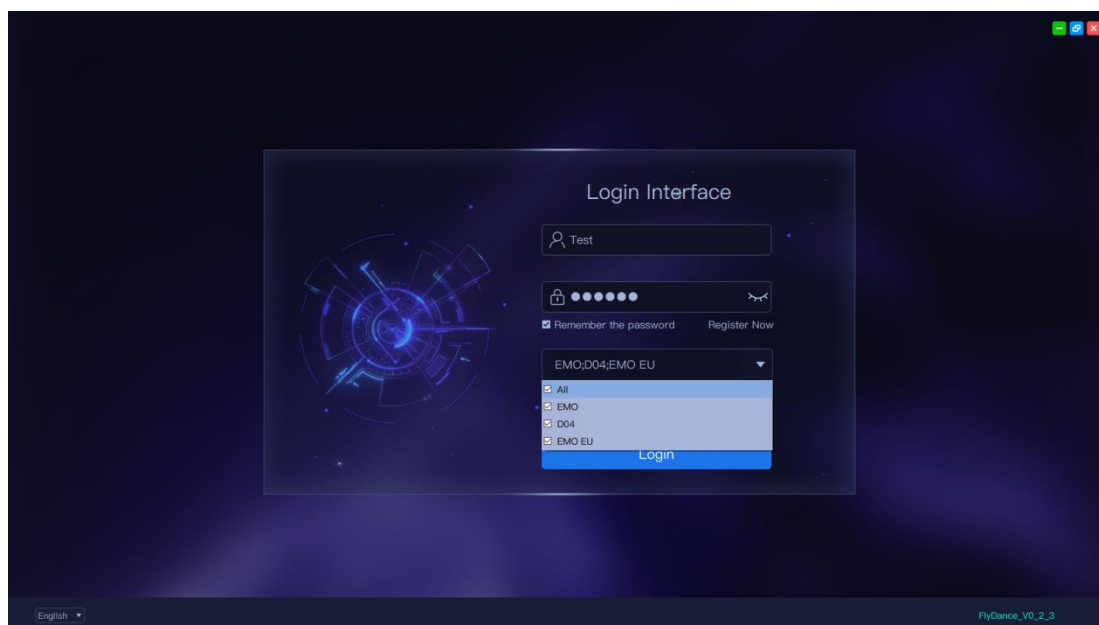
ServerDanceStep	6/29/2021 3:59 PM	File folder	
SkyShow	6/29/2021 3:23 PM	File folder	
cache.ini	6/29/2021 3:11 PM	Configuration sett...	1 KB
config.ini	6/29/2021 4:00 PM	Configuration sett...	1 KB
 FlyDance_V0_1_4.exe	6/8/2021 2:33 PM	Application	58,080 KB
PingFang Medium.ttf	6/10/2015 1:10 PM	TrueType font file	10,712 KB
PingFang.ttf	6/10/2015 1:10 PM	TrueType font file	10,747 KB
WinRAR.exe	8/18/2016 9:17 AM	Application	1,470 KB
Zlib.dll	12/4/1998 5:33 AM	Application exten...	68 KB



However, to realize drone networking communication, it is necessary to install a server on the PC side. Please refer to [Installation guide for wifi formation](#)

## 3.4 Introduction to function interface

### 3.4.1 User login interface



The user needs to submit account registration information, and waits for the approval and audit by manufacturer before completing account registration. Before logging into the system, **users need to choose the UAV model to use**, or they can choose multiple models to fly in mixed formation at the same time.

After entering the system, the system will provide relevant software update push service according to the selected model. The user can get the latest version update by clicking the download button in the lower right corner.

- Update of host computer version

After the user downloads the host computer version, the host computer compressed folder is stored in the Downsoftware folder of the installation directory, which requires the user to manually unzip it to obtain the latest FlyDance version.

AutoNumber	6/29/2021 3:59 PM	File folder
Downsoftware	4/2/2021 9:51 AM	File folder
FlyContrlUpdate	6/29/2021 3:11 PM	File folder
LocalDanceStep	6/29/2021 3:18 PM	File folder
LogFile	6/8/2021 2:14 PM	File folder

### ● Update of firmware version

After the user downloads the firmware version, the firmware file in .RiFF format is stored in the Downsoftware folder of the installation directory, and the user needs to manually drag and drop the latest firmware file in .RiFF format to the FlyContrlUpdate folder of the installation directory.

AutoNumber	6/29/2021 3:59 PM	File folder
Downsoftware	4/2/2021 9:51 AM	File folder
FlyContrlUpdate	6/29/2021 3:11 PM	File folder
LocalDanceStep	6/29/2021 3:18 PM	File folder
LogFile	6/8/2021 2:14 PM	File folder

### ● Update of server version

After downloading, the latest server file in .gz format is stored in the server folder of the C disk. The user needs to input update to update the server at the command line of the virtual machine terminal. After the update is completed, it is necessary to rerun the service and enter start. The red box in the following figure shows the currently used service version, and it is necessary to check whether the update is successful. Shutting down the server requires entering stop at the terminal.

```
hgfly@ubuntu:~$ update
[2021-06-23 09:42:12] [SHELL] [INFO] win_dir:/mnt/hgfs!
[2021-06-23 09:42:12] [SHELL] [INFO] begin check and update server, please waiting!
[2021-06-23 09:42:12] [SHELL] [INFO] curVerion:1.3.7,/mnt/hgfs/server/server_1.3.7.tar.gz!
[2021-06-23 09:42:12] [SHELL] [INFO] update server finish!
hgfly@ubuntu:~$
```

```
hgfly@ubuntu:~$ run
[2021-06-23 09:42:46] [SHELL] [INFO] win_dir:/mnt/hgfs!
[2021-06-23 09:42:47] [SHELL] [INFO] begin to calculate all dance file mds!
[2021-06-23 09:42:47] [SHELL] [INFO] calculate file EMO_Dance20-20210330182154(Bench).tgz mds finish!
[2021-06-23 09:42:49] [SHELL] [INFO] end to calculate all dance file mds!
[2021-06-23 09:42:49] [SHELL] [INFO] user:hgfly action:re
[2021-06-23 09:42:49] [SIMPLE] [T4912] [INFO] [src/uttl.cpp] [1465] send_file_time:200000!
[2021-06-23 09:42:49] [SIMPLE] [T4912] [INFO] [src/uttl.cpp] [1491] g_t0ls:80 move_step:8!
[2021-06-23 09:42:49] [SIMPLE] [T4912] [INFO] [src/uttl.cpp] [1504] current server type is drone!
[2021-06-23 09:42:49] [SIMPLE] [T4912] [INFO] [src/uttl.cpp] [1538] it haven't start mysql and close database store!
[2021-06-23 09:42:49] [SIMPLE] [T4912] [src/multi_terminal.cpp] [547]
[2021-06-23 09:42:49] [SIMPLE] [T4912] [src/multi_terminal.cpp] [548]
[2021-06-23 09:42:49] [SIMPLE] [T4912] [src/multi_terminal.cpp] [549]
[2021-06-23 09:42:49] [SIMPLE] [T4912] [src/multi_terminal.cpp] [550]
[2021-06-23 09:42:49] [SIMPLE] [T4912] [src/multi_terminal.cpp] [551]
[2021-06-23 09:42:49] [SIMPLE] [T4912] [src/multi_terminal.cpp] [552]
[2021-06-23 09:42:49] [SIMPLE] [T4912] [src/multi_terminal.cpp] [553]
[2021-06-23 09:42:49] [SIMPLE] [T4912] [src/multi_terminal.cpp] [554]
[2021-06-23 09:42:49] [SIMPLE] [T4912] [src/multi_terminal.cpp] [555]
[2021-06-23 09:42:49] [SIMPLE] [T4912] [src/multi_terminal.cpp] [556]
[2021-06-23 09:42:49] [SIMPLE] [T4912] [src/multi_terminal.cpp] [557]
[2021-06-23 09:42:49] [SIMPLE] [T4912] [src/multi_terminal.cpp] [558]
[2021-06-23 09:42:49] [SIMPLE] [T4912] [src/multi_terminal.cpp] [559]
[2021-06-23 09:42:49] [SIMPLE] [T4912] [src/multi_terminal.cpp] [560]
[2021-06-23 09:42:49] [SIMPLE] [T4912] [src/multi_terminal.cpp] [561]
hgfly@ubuntu:~$ [2021-06-23 09:42:51.104776] [SIMPLE] [T9472] [INFO] [src/uttl.cpp] [1465] send_file_time:200000!
[2021-06-23 09:42:51.105076] [SIMPLE] [T9472] [INFO] [src/uttl.cpp] [1491] g_t0ls:80 move_step:8!
[2021-06-23 09:42:51.105370] [SIMPLE] [T9472] [INFO] [src/uttl.cpp] [1504] current server type is drone!
[2021-06-23 09:42:51.171095] [SIMPLE] [T9472] [INFO] [src/multi_terminal.cpp] [634] begin check user permission!
[2021-06-23 09:42:51.180169] [SIMPLE] [T9472] [INFO] [src/multi_terminal.cpp] [648] user message:2020-12-10 15:57:26,2022-01-01 15:57:27,高巨
```

## 3.4.2 Configuration of server interface



After completing the installation of WIFI formation server, the user shall enter `cd` at the virtual machine terminal to return to the previous directory and enter the start command and click Enter to start the WIFI formation server. `ifconfig` is entered to **RIFF User Manual** virtual machine ip, as shown in the following figure.

```
hgfly@ubuntu:~$ ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.5.200 netmask 255.255.248.0 broadcast 192.168.7.255
    inet6 fe80::9b00:fec:6a41:bd0f prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:db:af:34 txqueuelen 1000 (Ethernet)
    RX packets 265 bytes 25915 (25.9 KB)
    RX errors 0 dropped 4 overruns 0 frame 0
    TX packets 160 bytes 17623 (17.6 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

It is necessary to enter the same ip and port as the virtual machine server in the host computer configuration server (example: server 192.168.5.200; server port 28680). After determining that the configured server is correct, it is necessary to click "Start Connection", and the FlyDance program will connect to the WIFI formation server.



※ When the program prompts "Unable to connect, please try again!", the server connection fails. Please follow the steps of [Installation guide for wifi formation](#) to check whether WIFI Formation Server is installed successfully!

## 3.5 Main interface



### 3.5.1 Information feedback of main interface

#### ● Device communication status



Wind speed





Base station communication


Xbee repeater connection


Data transmission

#### ● Wind speed state

\*This function requires firmware above [RIFF\\_03\\_20\\_028\(beta2\).RiFF](#)

Wind Speed	state	Icon color
0-5.5m/s (level0-3)	normal	 white
5.6-7.9m/s (level4)	note	 yellow
8-10.7m/s (level5)	alarm	 orange
10.8-13.8m/s (level6)	limit	 red

≥13.8m/s (level7 or above)	Danger	 red
----------------------------	--------	---

- 
-  ※ The wind speed warning is calculated based on the flight attitude, which is for reference only. Please be cautious when flying above 7.9m/s!
- ※ When the host computer prompts that the wind speed level reaches the standard of wind speed 6, the console operator must immediately suspend or terminate the performance.
- ※ When the wind speed exceeds the level 6 wind standard, please pay attention to safety. The drone will lose control and the system will automatically start the return procedure.
- 

#### ● Base station communication state

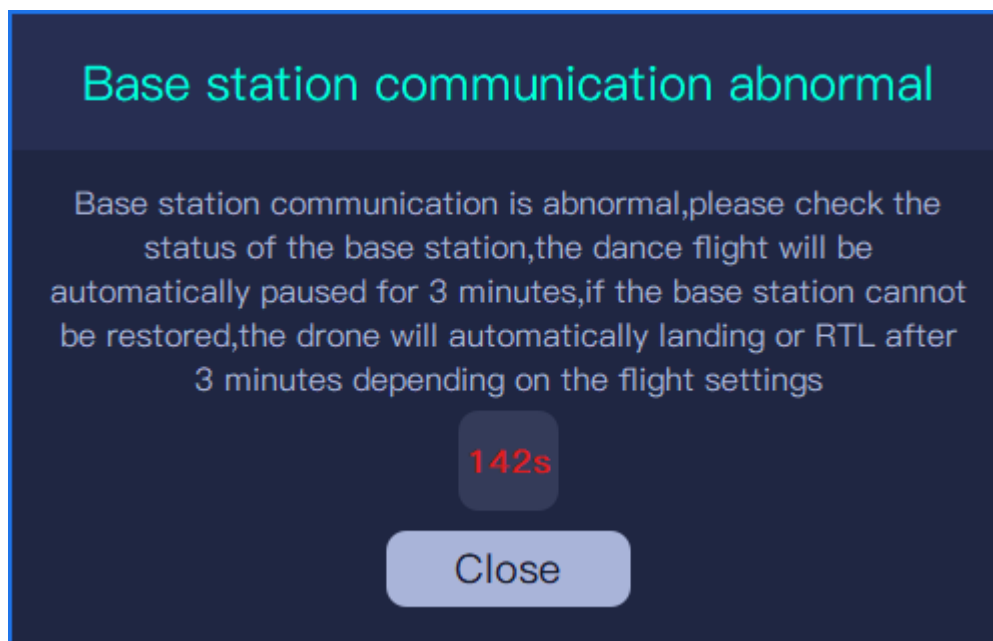


When the communication status icon of the base station is normal, it will display green;



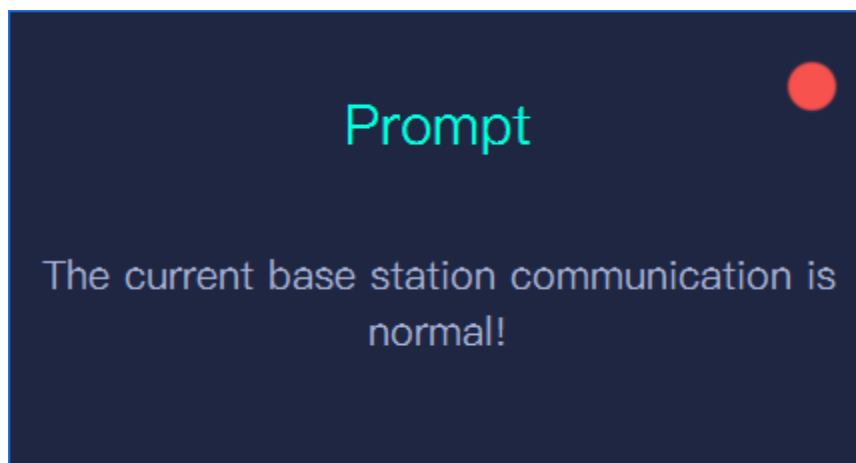
when the communication failure time is greater than 5 seconds, it will display red.

If the drone is flying in the sky, the following prompt will be displayed:



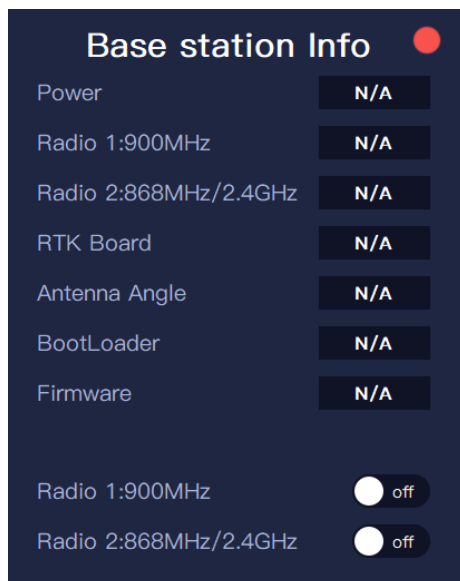
When the above failure occurs, all drones will automatically turn off their lights

and are in a hovering state. At this time, we need to check the base station immediately before deciding to perform subsequent flight operations. If more than 3 minutes have elapsed, the drone will initiate emergency procedures based on flight settings. During the performance, if the base station communication is restored, the host will give a prompt:



※ When there is a communication failure in the base station during the flight show, we should first check the base station antenna and other related connections. If the connection is no problem, please try to restart the base station. About 50 seconds after the communication of the base station is disconnected, the drone is still positioned in the Fix state and can perform normal flight performances. After about 50 seconds, the drone will exit the Fix state. If the communication can be quickly restored within 50 seconds, it will not affect the entire flight show. At this time, you can choose to continue the flight show or 'backward return'. Under normal circumstances, let the base station recover as much as possible before proceeding with subsequent operations. If the base station cannot be recovered, please choose to 'return' or 'land' according to the on-site situation.

Click the base station icon to view the status information of the base station (only valid for the integrated base station):



There are two frequency band switch at the bottom of the status bar. This switch is used to turn on/off the frequency of radio1 or radio2. This function is limited to the use of drones with dual frequency (2.4GHZ/868MHZ and 900MHZ). If it is not required by laws and regulations, turn on the 900MHZ frequency band switch, which has a better communication guarantee effect. It is recommended to keep it turned on. If the drone only uses a single frequency, do not turn on other useless frequencies, so as not to cause interference.

- **GCS switch Xbee radio connection state**



GCS switch Xbee radio connection works fine



GCS switch Xbee radio is disconnected.

- **Data transfer status**

When there is data transmission, the upstream and downstream data volume of the data is displayed on the right

- **Disconnect and reconnect server**



Click here to quickly disconnect and reconnect server.

- **RIFF User Manual**



Click to open the **mouse wheel**

- **Icon scaling:**

Press and hold Alt + mouse wheel to zoom the size of the drone icon. It is recommended that the user adjust the icon zoom according to the number of drones.

- Dance File/Firmware version:

Dance File: Please send the dance file    Firmware Version: Please send the firmware ▼

Display the dance file and firmware version pre-selected and sent by the current host computer.

- Time:

Time: 0/245s

Display the total duration and the progress of the current dance performance

- Bottom statistics display

Connected 0 / 1000	Status OK 0	Status NG 0	Low Battery 0	In Flight 0	Landing 0	Returning 0	Pausing 0
-----------------------	----------------	----------------	------------------	----------------	--------------	----------------	--------------

**Connected:** Take the above picture as an example, "1000" is the number of drones selected and displayed by the host computer (the default is the number of drones displayed in the settings). "0" is the number of drones that successfully connected to the server.

**State OK:** Within the selected number of drones, the drones in normal status (the drone box is green or blue)

**State NG:** Within the selected number of drones, the drones with abnormal status (the drone box is red or cyan)

**Low Battery:** Number of battery levels below the low battery warning threshold.

**In Flight:** The number of drone that are performing dance steps.

**Landing:** including the number of drone that landed abnormally, clicked "land" during flight operations, and clicked "land" in SkyShow.

**Returning:** Including the number of drones that returned from abnormal landing, clicked "Return" during flight operation, and clicked "Return" and "High Return" in SkyShow. (not including "Backward Return")

**Pausing:** the number of currently paused drone

Note:

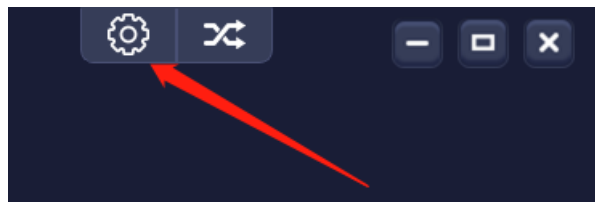
\*The "Connected\low battery\Status OK\Status NG" is counted by the number of selected drones. If you want accurate statistics, please select the number of drones to be the same as the number of dance steps, otherwise the drones are larger than the dance steps. The number



is also counted into it; "In flight\Landing\Returning\Pausing" is counted by the actual number of flights.


\*In the data statistics column at the bottom, except for offline statistics, all other data can only be counted when the drone is connected to the server. The offline drone is not within the scope of statistics because it cannot obtain the status.

### 3.5.2 Settings




Settings are a unified modification of some parameters of formation performance system, including low battery landing, ambient temperature setting, heading angle sensitivity, etc.

## Settings


 **Low Battery** 10 %

When the battery level is lower than the set percentage, an alarm will be given.


 **Low Battery Mode**

Need to be set before flight, check landing, the drone automatically lands with 5% battery remaining; check return, need to set the return power threshold (range 5~30%), below the power threshold the drone will RTL.

Land ☐ RTL ☐


 **Displayed number of drone**

Total 40000 2000 row 20 col

 **Take-off delay**


Set the waiting time after receiving the take off command. Range: 5~20s.

5 sec.

 **Timed take-off**


Preset a local time or TimeCode for timed takeoff, the local time must be greater than the current time by more than 5 seconds, and the preset TimeCode must be greater than the source TimeCode by more than 5 seconds.

Local ☐ TimeCode ☐

 **Ambient temperature**


The best performance based on current ambient temperature. Range: -20~40°C.

°C

 **Pause after \_ seconds**

Automatically pause when the dance flying reaches the set time. Range: 0~3600s, 0s means no pause.

0 sec.


 **Return altitude for abnormal landing**

The drone will automatically make a stratified return flight according to the height range, Please set the minimum height according to the highest obstacle of the return route. Minimum height range: 15~245m, 0 means invalid; Maximum height range: minimum height+5 ≤ the Maximum height ≤ minz-5, if it is not necessary, please default to auto.

Maximum height Auto m

Minimum height   m

Light Off

 **Heading angle sensitivity**

The smaller deviation means that the inspection for nose placement should be more strictly. The recommended default setting is 20°. When the nose placement is accurate, if the heading angle inspection cannot be passed, please try to set a larger deviation range.

± 20 °

Save
Cancel

- **Low battery** : Used to prompt and screen drone whose power is lower than the set percentage, and when the power is lower than the set threshold, the drone status icon on the host computer will automatically display red. and statistical display in the bottom status bar.
- **Low battery Mode**: Low Battery Mode: ticked by the user before take-off to select either landing or RTL or neither. Select landing, the drone will perform in-situ landing when the battery power is lower than 5% during flight (value can not be set). If you select return, you need to set the return battery

level (5-30%), when the battery level is lower than the threshold value during the flight, the drone will RTL. If none of them are selected, the drone will select until the battery is exhausted.



- ※ To ensure the smooth formation performance, the user must evaluate whether the current battery power of drone is enough to complete formation flight before take-off.
- ※ The threshold value of low battery landing is 5%, which cannot be changed.

- **Displayed number of drones:** Determine the displayed number of drones in the main interface by modifying rows and columns. It is suggested that the displayed number of drones to be set is slightly larger than the actual number of dance performance drones.
- **Take-off delay:** Set the waiting time after the drone receives the take-off command, with the delay range of 5-20 seconds.
- **Timed take-off:** Preset a local time for receiving take-off, and the time must be greater than 5 seconds of the current time. (Note that the local time of the computer is set correctly)
- **Ambient temperature:** Enter the current ambient temperature, and the drone will automatically adjust its flight performance based on the current ambient temperature to protect the drone's life to the greatest extent. The higher the ambient temperature, the darker the light will be appropriately, whereas the lower the temperature, the brighter the light will be. Ambient temperature entering range: -20~40℃. In case that the outdoor ambient temperature exceeds or falls below the threshold range, it is recommended to directly enter the limit threshold value to the host computer. The minimum value is -20℃, and the maximum value is 40℃. **Please enter the value according to the actual temperature, otherwise the life of drone may be reduced.**
- **Pause after \_ second when the preset dance starts:** Set the pause time of the dance in advance. When the dance reaches the preset time, the

drone will hover at the current position. The pre-set pause time range is 0-3600 seconds. When there is no need to pause, the pre-set pause time of dance is set to 0 seconds.

- **Retrun altitude for abnomarl landing:** Drone returns in layers based on the set altitude. Please set the lowest altitude according to the highest obstacle on the return route. Minimum height range: 15~255m. 0 means off and this function is not turned on. So if the drone with abnormal function will directly land. Maximum height range: currently set the minimum altitude+5 m  $\leq$  the maximum height  $\leq$  minZ-5 m of the dance step. If not necessary, set it to Auto by default, and the system will automatically calculate the maximum return altitude.

For example: set 15m as the minimum return altitude. When the drone is more than 5m and less than 15m, the drone will automatically rise to 15m and then return.

Layered return conditions:

- 1) When the maximum altitude defaults to Auto, the drone returns in layers from the set minimum altitude to the minimum dance step height (i.e. minZ) minus 5 meters. Each layer is 1 meter, with a minimum of 5 layers and a maximum of 50 layers. The more layers , the smaller probability of collision between the drone and the drone during the return flight, so try to ensure that the layered height of the return interval is more than 50 meters.
  - 2) When the maximum altitude is set manually, the drone returns in layers according to the range from the minimum altitude to the maximum altitude.
- **Light on/off**  
Whether to switch on the drone lights when returning or landing abnormally.



※ **Note:** This function has the following hard conditions:

1. It must be in the dance flight, Relevant parameters are RTL compliant
2. The drone lands at an altitude of more than 3 meters before triggering the homing function;
3. Have GPS positioning;

#### 4. Outside the takeoff area.

If the above conditions are not met and the homing function is not executed, the drone will land directly.

- 
- **Heading angle sensitivity:** The heading angle sensitivity can be set, and the smaller the deviation, the stricter the detection of drone nose placement. When the ground magnetic field interference is small, it is recommended to set it to 20 by default, which is beneficial to detect the placement deviation of drone nose. Please try to set the deviation range to be large, or try to re-adjust if the heading angle detection cannot be passed when the nose is placed accurately. When heading angle sensitivity is set to 0, it means that heading angle sensitivity is not checked.



※ There will be a flight risk if the deviation is set greater than 20°!

- 
- **Safe spacing range:** The safe spacing range is used to adjust the safety range detection of drone placement. The larger the value, the larger the safe range of detection, and the smaller the value, the higher the accuracy of system detection of drone spacing is required when drone is placed manually. Please increase the sensitivity of the safe distance range slightly according to the placement interval of the dance if the position check fails when the position of the drone is correctly placed according to the dance  
 \* Safety range: 0-3m. When the safe distance range is set to 0, it means that the safe distance is not checked.
  - **Inspection height:** inspection height means to check the height of the drone relative to the reference drone. If the drone is within the set reference drone height range, the drone is allowed to take off. The drone cannot take off when it is set outside the set reference drone height range. Please try to increase the height check range slightly if it fails.  
 \* Height check range is 0-3m. When the height check is 0, the height will not be checked.
  - **No-fly zone fence(kill the drones fence):**  
 Based on the fence designed for dance steps, the extended range is the l