

# remote access

## remote access

1. Preliminary preparation
  - 1.1. Enable SSH and VNC
    - Graphical interface
    - Command Line
  - 1.2. Obtain IP
    - Graphical interface
2. SSH remote control
3. VNC remote login

We often use SSH and VNC tools to remotely control the Raspberry Pi system.

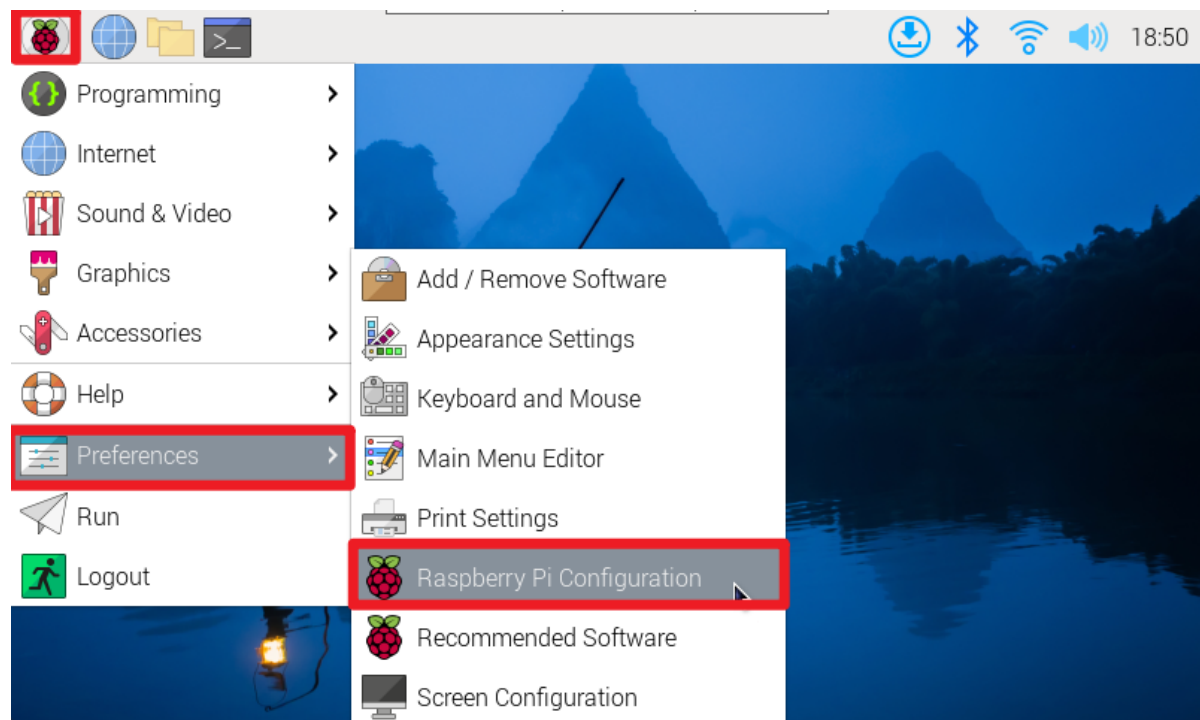
## 1. Preliminary preparation

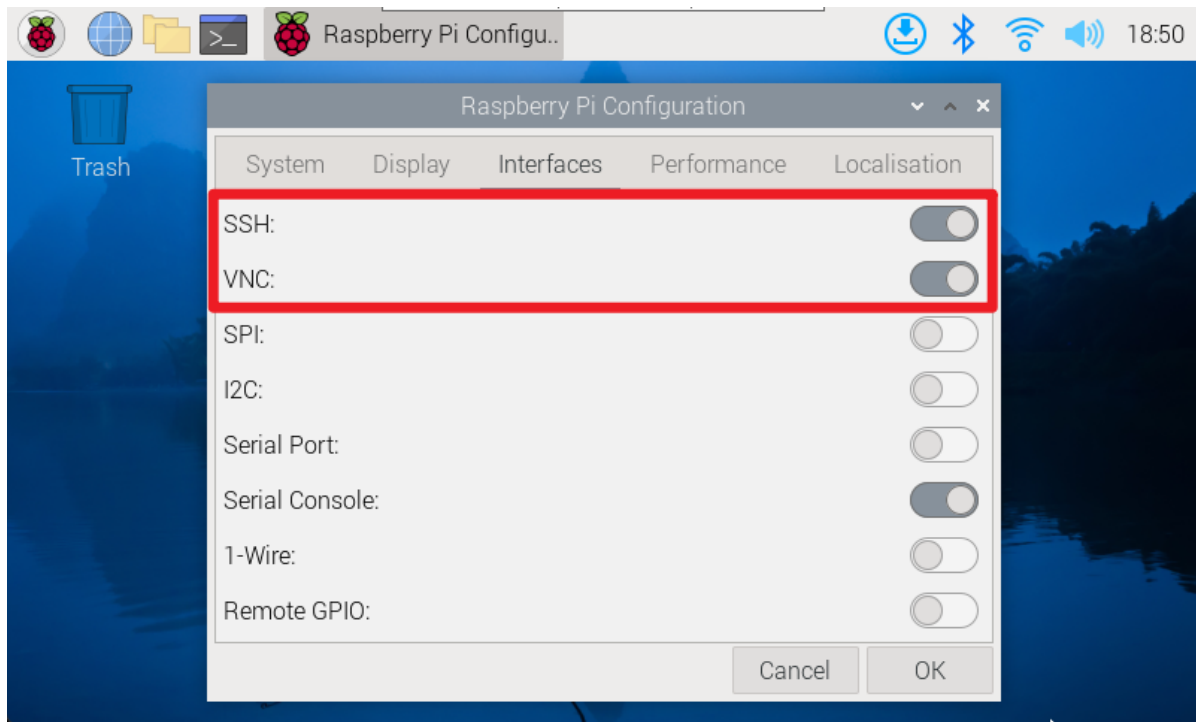
Before performing SSH or VNC remote login, you need to enable SSH and VNC functions in the Raspberry Pi system settings or use the raspi-config tool.

### 1.1. Enable SSH and VNC

#### Graphical interface

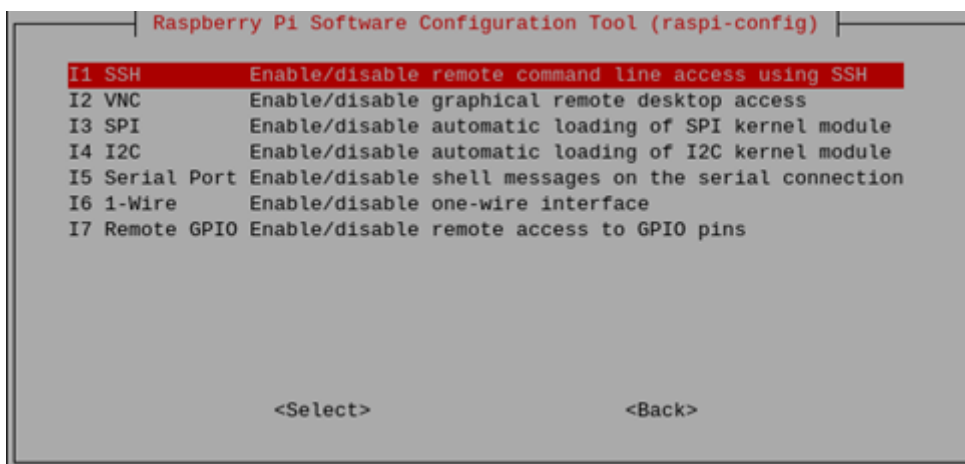
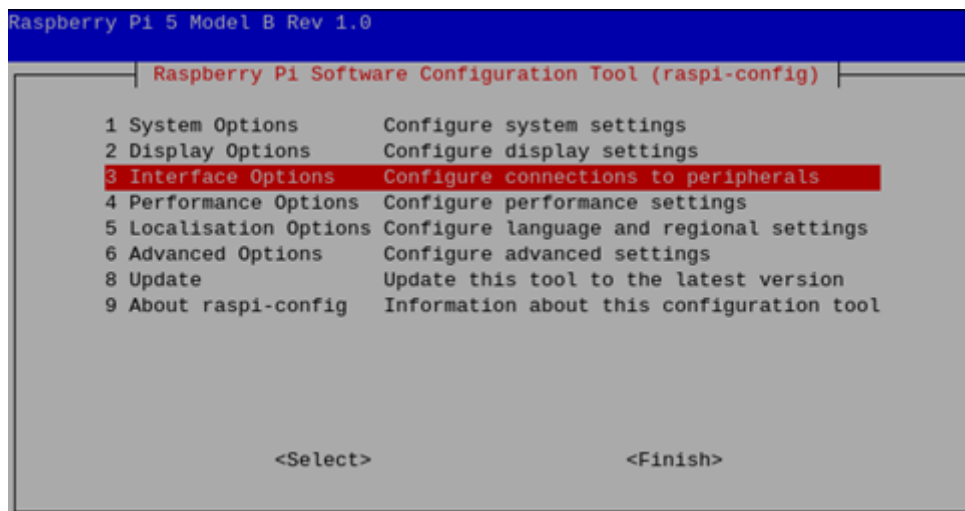
Enable SSH and VNC: applications menu → Preferences → Raspberry Pi Configuration

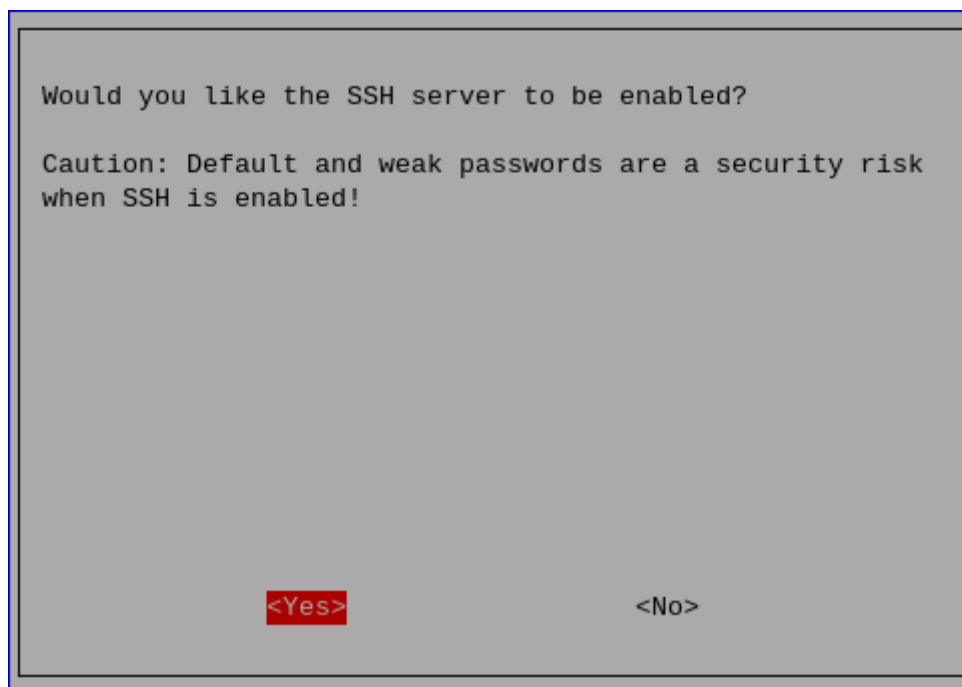




## Command Line

Use the raspi-config tool to enable SSH and VNC functions: Interface Options → SSH/VNC: enable





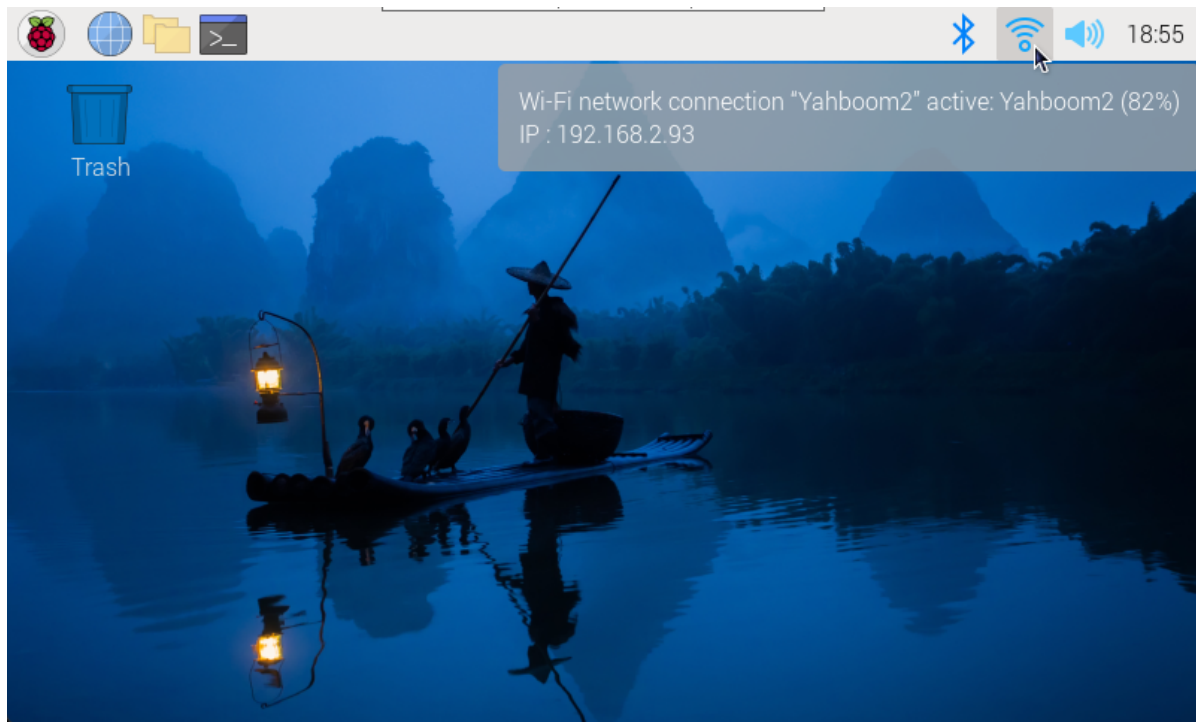
The steps to enable the VNC function are the same, just follow the steps above!  
Note: If opening the VNC service fails, check whether the system has been updated; update the software and restart the system before reopening the VNC service.

## 1.2. Obtain IP

After enabling SSH and VNC functions, you can remotely control the Raspberry Pi based on its IP!

### Graphical interface

After the system is connected to WiFi, hover the mouse on the WiFi icon to see the corresponding IP address.



Use the command to view the IP address: `hostname -I` or `ifconfig`

```
pi@raspberrypi:~$ hostname -I
192.168.2.93
pi@raspberrypi:~$ ifconfig
eth0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
    ether d8:3a:dd:bf:89:fd txqueuelen 1000 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
    device interrupt 107

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 182 bytes 15852 (15.4 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 182 bytes 15852 (15.4 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

wlan0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.2.93 netmask 255.255.255.0 broadcast 192.168.2.255
    inet6 fe80::d100:7e2e:737e:1e6e prefixlen 64 scopeid 0x20<link>
```

## 2. SSH remote control

After obtaining the IP address of the Raspberry Pi motherboard, you can perform SSH remote login on the terminal based on the user name and password of the Raspberry Pi system.

SSH remote login command: `ssh username@IP address`

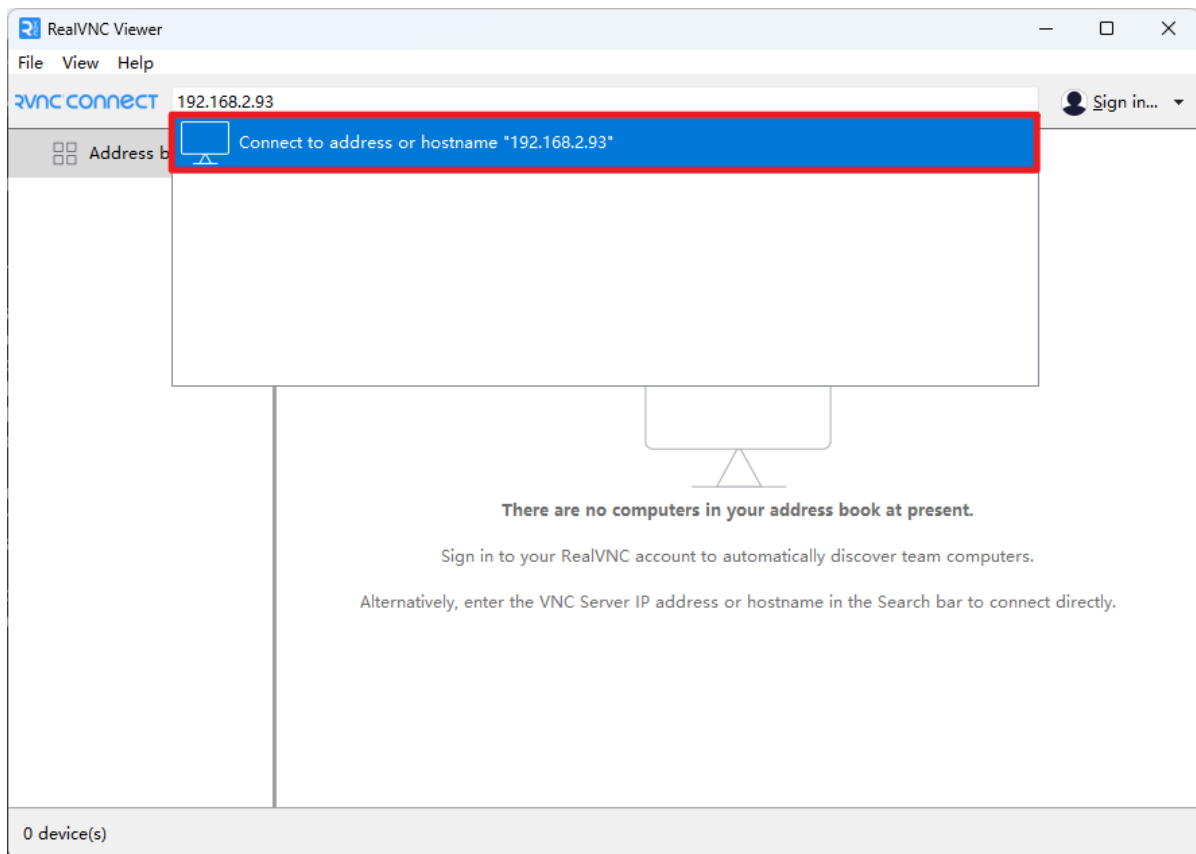
```
My current login user name is pi, the password is yahboom, and the IP address is
192.168.2.93
sshpi@192.168.2.93
```

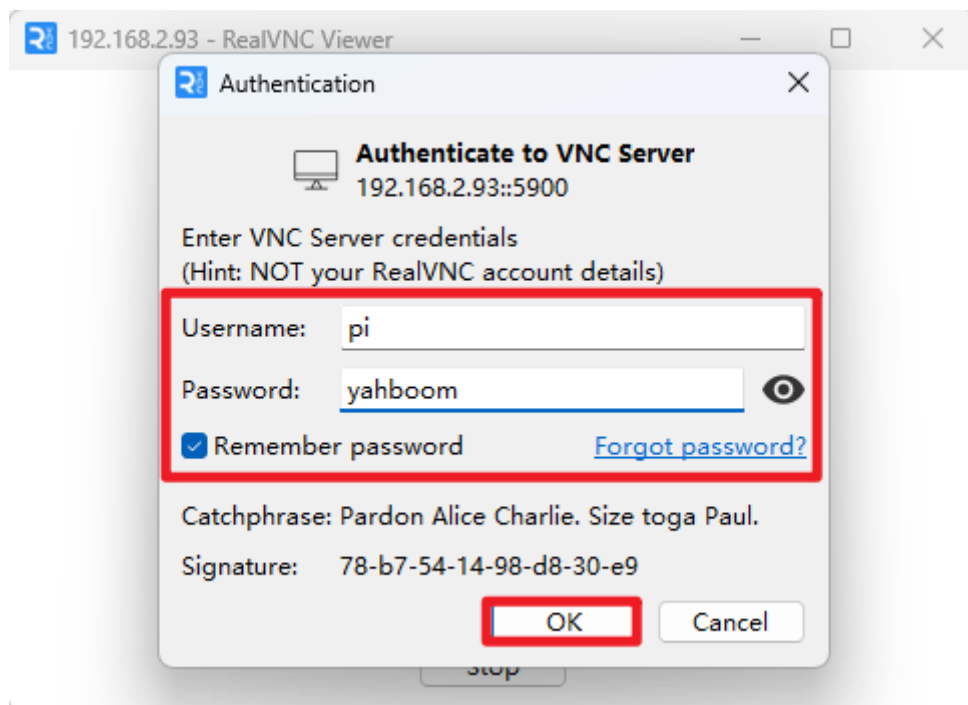
```
pi@raspberrypi: ~  
Microsoft Windows [版本 10.0.22621.2861]  
(c) Microsoft Corporation. 保留所有权利。  
  
C:\Users\W_ML>ssh pi@192.168.2.93  
The authenticity of host '192.168.2.93 (192.168.2.93)' can't be established.  
ED25519 key fingerprint is SHA256:AmyCUFkAYb3rKjKuYS9Jli0b39Pj03CmqWQpxokTOEk.  
This key is not known by any other names  
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes  
Warning: Permanently added '192.168.2.93' (ED25519) to the list of known hosts.  
pi@192.168.2.93's password:  
Linux raspberrypi 6.1.0-rpi7-rpi-2712 #1 SMP PREEMPT Debian 1:6.1.63-1+rpt1 (2023-11-24) aarch64  
  
The programs included with the Debian GNU/Linux system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  
permitted by applicable law.  
Last login: Mon Dec 18 18:20:58 2023  
pi@raspberrypi:~$
```

### 3. VNC remote login

After obtaining the IP address of the Raspberry Pi motherboard, you can use the RealVNC Viewer software to log in remotely.

My current login user name is pi, the password is yahboom, and the IP address is 192.168.2.93





After successful remote login, the Raspberry Pi system desktop will be displayed!

