

# Remote Login

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## Remote Login

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## 1.4 Remote Login

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This chapter is intended to introduce users who need to remotely access the development board through their personal computer (PC) on how to remotely login via serial port and network (VNC, SSH) methods.

tip

Before remote login via network, the development board needs to be connected to the network via wired Ethernet or wireless WiFi, and the IP address needs to be configured:

- Wired Ethernet: The development board defaults to static IP mode. For the IP address, refer to the [Network Status Confirmation] section.
- Wireless WiFi: The development board's IP address is generally assigned by the router and can be viewed in the device command line using the `ifconfig` command for the wlan0 network.

## Serial Port Login

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Before using serial port login, it is necessary to confirm that the serial port cable of the development board is correctly connected to the computer. Refer to the [Serial Port Debugging] chapter to verify the serial connection.

Serial port login requires a PC terminal tool. The commonly used tools are `Putty`, `MobaXterm`, etc. Users can select their terminal tool according to their own preferences, as the port configuration process is similar for different tools. Below is an example with `MobaXterm` to explain the process of creating a new serial port connection:

- When the USB-to-Serial adapter is first plugged into the computer, the serial port driver needs to be installed. After the driver is installed, the Device Manager can recognize the serial port board port normally, as shown in the figure below:

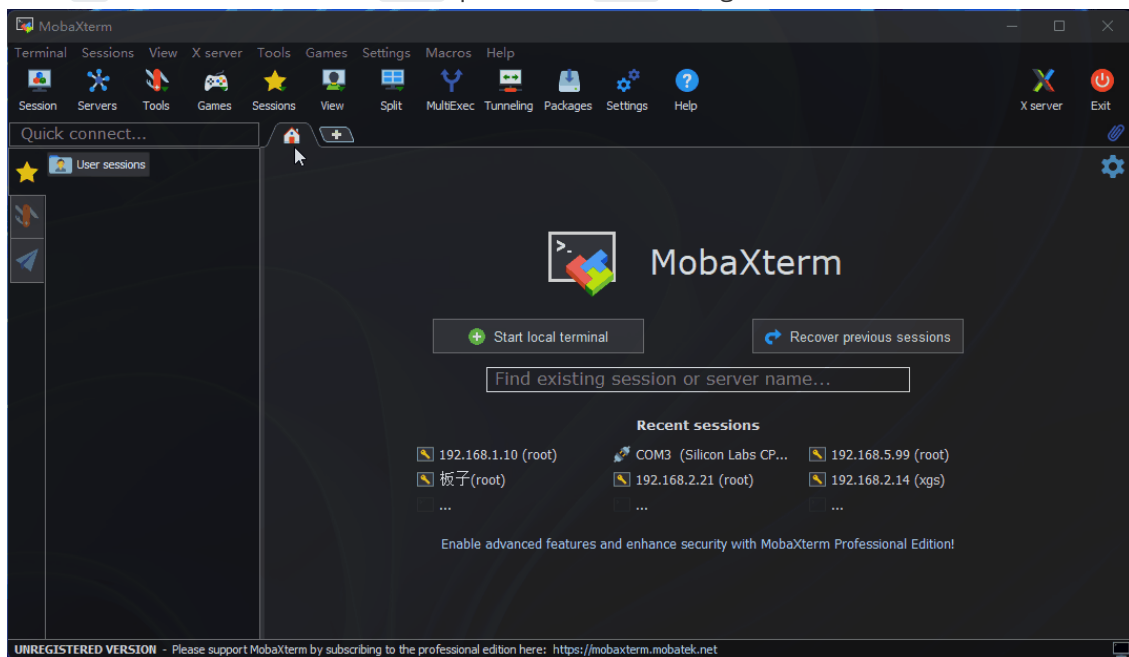


- Open the `mobaXterm` tool, click `Session`, and then select `Serial`.
- Configure the port number, for example, `COM7`. The actual serial port number used depends on the serial port number recognized by the PC.

- Set the serial port configuration parameters as follows:

Configuration Item	Parameter Value
Baud rate	921600
Data bits	8
Parity	None
Stop bits	1
Flow Control	None

- Click **OK**, enter the username: `root`, password: `root` to log in to the device



At this point, you can use the `ifconfig` command to query the IP address of the development board, where `eth0` and `wlan0` represent the wired and wireless networks respectively:

```
root@ubuntu:~# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.1.10 netmask 255.255.255.0 broadcast 192.168.1.255
    inet6 fe80::211:22ff:feaa:7637 prefixlen 64 scopeid 0x20<link>
    ether 00:11:22:aa:76:37 txqueuelen 1000 (Ethernet)
    RX packets 767 bytes 54006 (54.0 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 5766 bytes 246466 (246.4 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
    device interrupt 43 base 0xa000

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 3847 bytes 339115 (339.1 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 3847 bytes 339115 (339.1 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
wlan0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
    ether 08:e9:f6:ae:f8:8a 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
```

## Network Status Confirmation

tip

The IP addresses corresponding to different versions of the images are as follows:

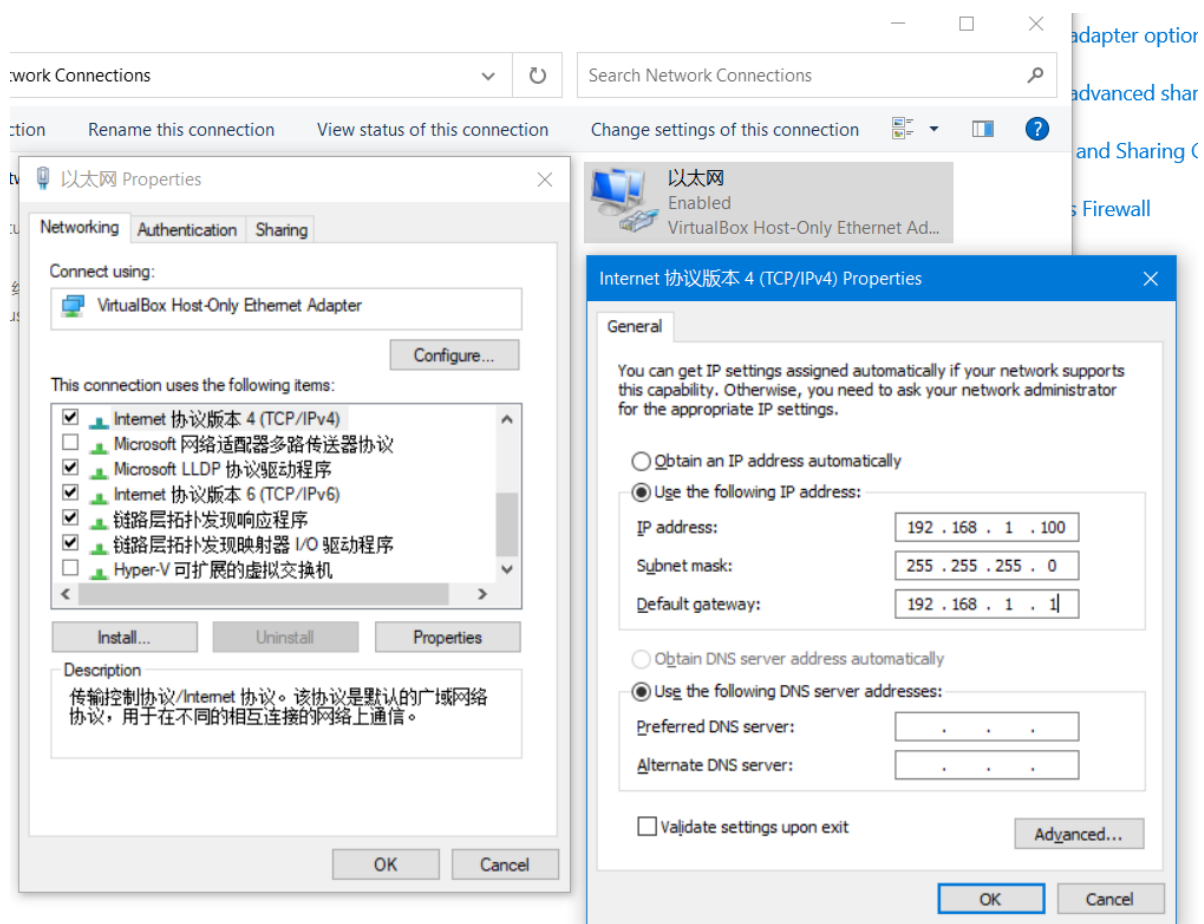
Board Series	Image Version	Ethernet Port IP Address
X3	Less than or equal to 2.0.0	192.168.1.10/24
X3	Greater than or equal to 2.1.0	192.168.127.10/24
X5	3.0.0	192.168.127.10/24
Board Series	Image Version	Flash Connection Port (USB Device) IP Address
X5	3.0.0	192.168.128.10/24

Before using remote login, it is necessary to confirm that the computer and development board are connected correctly.

Configure the IP address of the computer to be on the same subnet as the development board.

For example, the development board: 192.168.1.10 and the computer: 192.168.1.100.

Assigning an IP address depends on the Operating System of the computer. Taking the WIN10 system as an example, the method to modify the static IP of the computer is as follows:



If you want to configure the wired network of the development board to obtain IP dynamically via DHCP mode, please refer to the [Wired Network] chapter for configuration.

To confirm that the connection is working, execute `ping 192.168.1.10` from the computer (change the command to the IP address of the development board). If the `ping` command receives responses, then the connection is working; otherwise, check the network configurations are correct, and that the network firewall of the computer is turned off.

## VNC Login

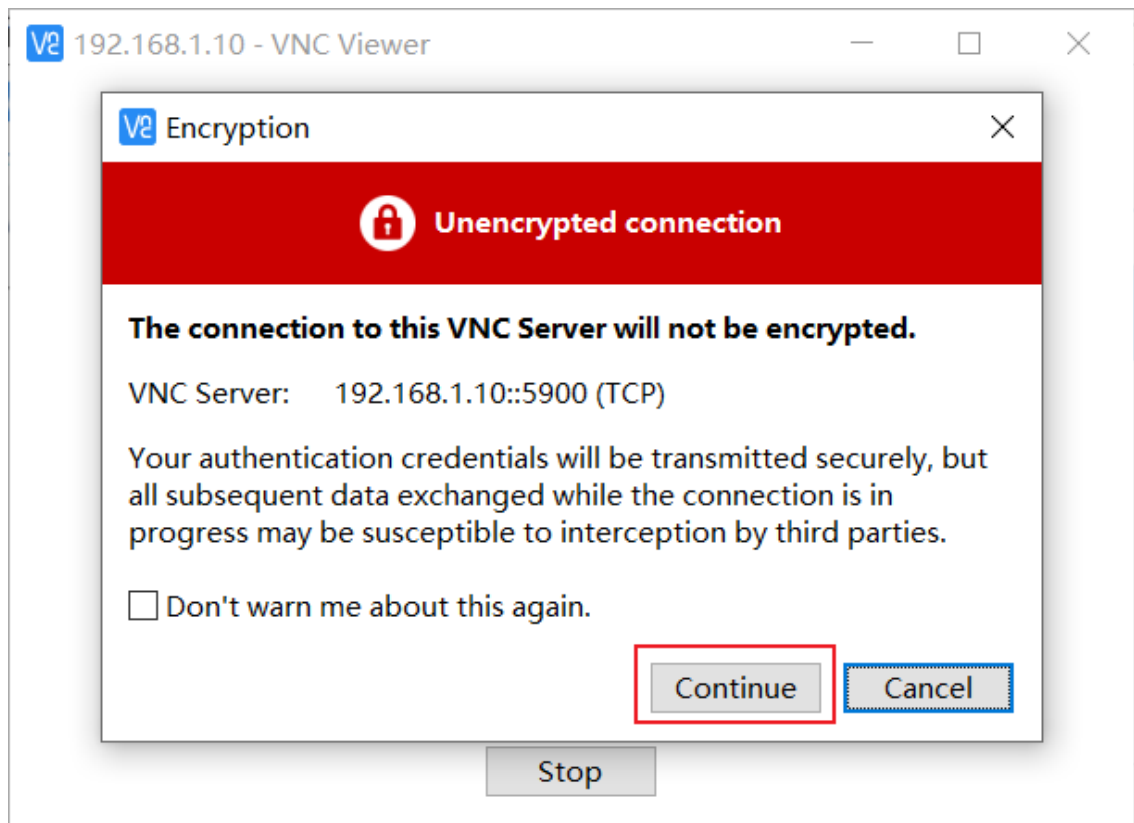
This section is for users using the Ubuntu Desktop system version, and it explains how to use "VNC Viewer" to achieve remote desktop login. "VNC Viewer" is a graphical desktop sharing software that allows you to remotely log in and control the desktop of the device on your computer. With this software, you can preview the system desktop of the development board on your computer screen and use your computer's mouse and keyboard for remote operation. By using VNC Viewer, you can achieve the same effect as local operation on the development board. You can download VNC Viewer from the following link: [VNC Viewer](#).

### Connect to the Development Board

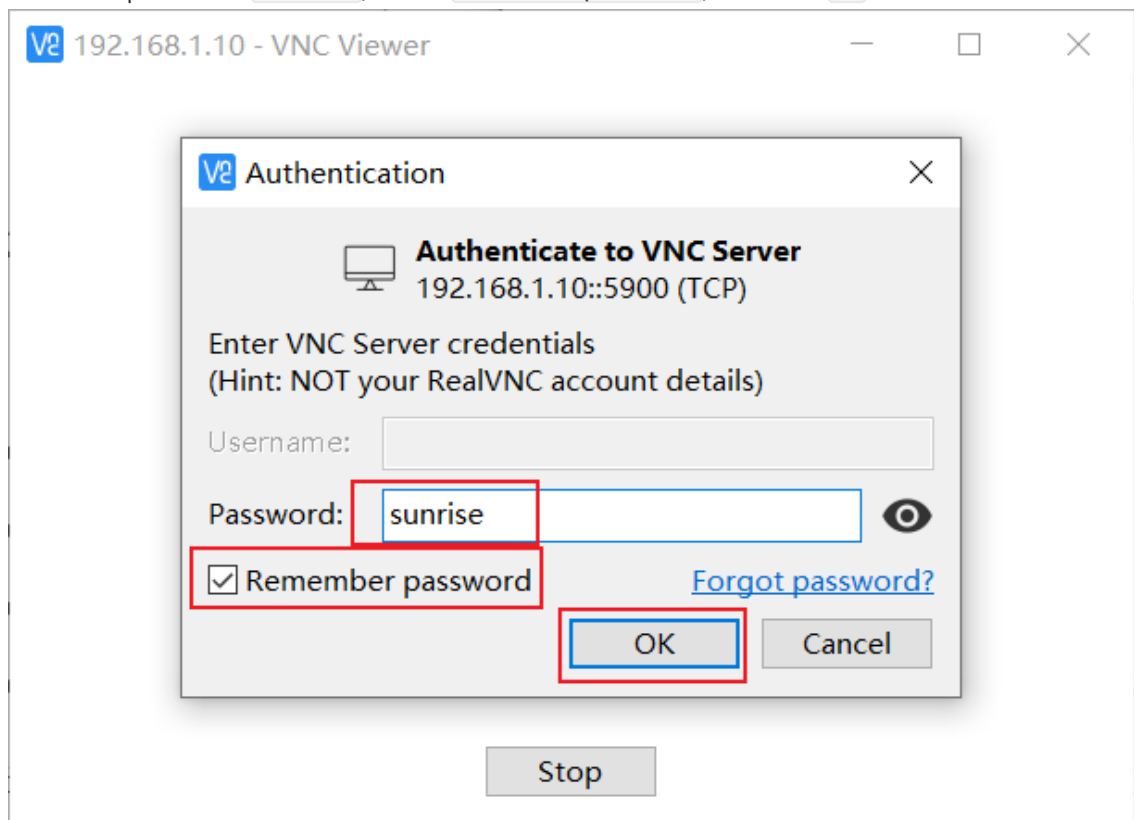
Currently, VNC supports two connection methods: direct connection and cloud connection. Users can choose according to their own needs. This article recommends using the direct connection method. The connection steps are as follows:- Enter the IP address of the input device, for example: 192.168.127.10



- After entering the IP address, press Enter, a prompt for an unencrypted connection will appear, click `Continue`



- Enter the password `sunrise`, check `Remember password`, and click `OK` to connect



## SSH Login

In addition to VNC login for remote desktop, you can also connect to the development board via SSH. The following steps describe how to create SSH connections using terminal software and terminal command line methods.

# Terminal Software

Commonly used terminal tools include **Putty**, **MobaXterm**, etc. Users can choose according to their own preferences. The configuration process for different tools is similar. The following example shows how to create a new SSH connection using **MobaXterm**:

1. Open the **mobaXterm** tool, click on **Session**, then select **SSH**.
2. Enter the development board IP address, for example: **192.168.1.10**.
3. Select **specify username**, enter **sunrise**.
4. After clicking OK, enter the username (sunrise) and password (sunrise) to complete the login.

