# Linux Remote Connection

## Introduction

Remote connection tools allow users to access Linux machines from different locations. The two most common methods for remote access are:

* **SSH (Secure Shell):** A protocol for secure remote login and command execution.
* **VNC (Virtual Network Computing):** A graphical desktop sharing system.

SSH is widely used for terminal-based remote administration, while VNC is useful for accessing a Linux desktop remotely.

# Common Practical Examples

## 1. Connecting to a Remote Server via SSH

### Basic SSH connection

ssh user@remote-server

### Connect with a specific port

ssh -p 2222 user@remote-server

### Enable verbose mode for debugging

ssh -v user@remote-server

### Use a private key for authentication

ssh -i ~/.ssh/id\_rsa user@remote-server

### Run a command on the remote server

ssh user@remote-server "ls -l /var/log"

### Copy files from local to remote server

scp file.txt user@remote-server:/home/user/

### Copy files from remote server to local machine

scp user@remote-server:/home/user/file.txt .

## 2. Setting Up a VNC Server

### Install VNC server

sudo apt update  
sudo apt install xfce4 xfce4-goodies -y  
sudo apt install tightvncserver -y  
vncserver

### Set a VNC password

vncpasswd

### Start VNC server on display :1

vncserver :1

### Stop VNC server

vncserver -kill :1

### Configure VNC to start with a specific resolution

#!/bin/sh  
  
xrdb "$HOME/.Xresources"  
xsetroot -solid grey  
#x-terminal-emulator -geometry 80x24+10+10 -ls -title "$VNCDESKTOP Desktop" &  
#x-window-manager &  
# Fix to make GNOME work  
export XKL\_XMODMAP\_DISABLE=1  
/etc/X11/Xsession  
gnome-panel &  
gnome-settings-daemon &  
metacity &  
nautilus &  
startxfce4 &

### Make file executable and restart server

chmod +x ~/.vnc/xstartup  
vncserver -localhost

## 3. Connecting to a VNC Server

### Secure access via tunneling (SSH or PowerShell)

ssh -L 59000:localhost:5901 -C -N -l student 192.168.1.100

### Connect from Linux using vncviewer

sudo apt install tigervnc-viewer  
vncviewer -via student@192.168.1.100 localhost:1

### Connect using SSH tunnel for security

ssh -L 5901:localhost:5901 user@remote-server

Then, open a VNC client and connect to localhost:1.

### Connect from Windows using VNC Viewer

1. Install **RealVNC Viewer** or **TightVNC Viewer**.
2. Open the application and enter remote-server:1.
3. Enter the VNC password and connect.

# Additional Notes

* SSH provides secure, encrypted remote access.
* VNC is useful for GUI-based remote access but should be used with SSH tunneling for security.
* Always disable root login over SSH for security (PermitRootLogin no in /etc/ssh/sshd\_config).
* To improve SSH security, use **key-based authentication** instead of passwords.
* Use ufw or iptables to restrict remote access to SSH and VNC ports.

# Configuration

### Configure SSH for Key-Based Authentication

1. Generate SSH key pair on the client machine:

* ssh-keygen -t rsa -b 4096

1. Copy the public key to the remote server:

* ssh-copy-id user@remote-server

1. Disable password authentication (optional for security): Edit /etc/ssh/sshd\_config and set:

* PasswordAuthentication no

1. Restart SSH service:

* sudo systemctl restart ssh

### Configure VNC for Persistent Sessions

1. Edit the VNC configuration file (~/.vnc/xstartup):

* #!/bin/bash  
  xrdb $HOME/.Xresources  
  startxfce4 &

1. Set correct permissions:

* chmod +x ~/.vnc/xstartup

1. Restart the VNC server:

* vncserver -kill :1  
  vncserver :1