

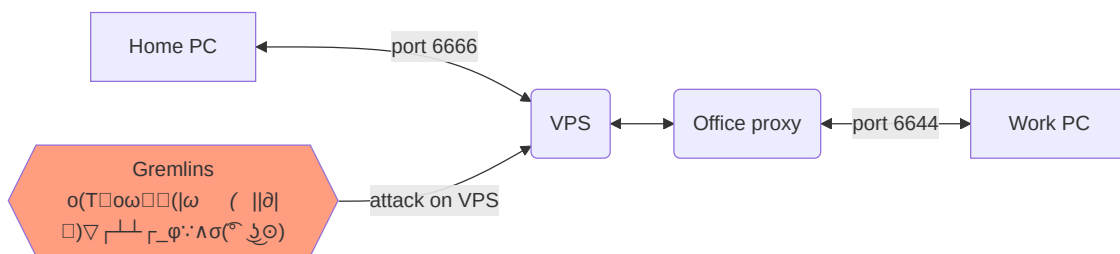
HopBit — There and Back Again

This guide describes how to set up an SSH tunnel between two computers via an external gateway. A basic understanding of the `ssh` command (particularly the `-R` and `-p` options) is sufficient for following this guide.

The `corkscrew` utility is used to bypass internal firewalls that block direct SSH access to a VPS over the standard port 22. This can be useful in corporate environments where the IT or security department restricts outbound connections.

Security note: For better protection against unauthorized access, configure SSH key-based authentication and disable password logins. This is not covered in detail here.

Network Layout



Hosts:

- **Home PC**
 - `home_ip`
 - `home_user`
- **VPS**
 - `vps_ip`
 - `vps_user`
- **Work PC**
 - `work_ip`
 - `work_user`

Ports:

- Random port 1 — **6666**
- Random port 2 — **6644**

Quick Reference

Tunnel from VPS to Home PC

1. On the Home PC, open a reverse SSH tunnel (keep it running):
`home@ ssh -R 6666:localhost:22 vps_user@vps_ip`

2. From the VPS, connect to the Home PC:

```
vps@ ssh -CX home_user@localhost -p 6666
```

Connect from Work PC to VPS

1. Install **corkscrew** on the Work PC: <https://github.com/bryanpkc/corkscrew>
2. Configure SSH on the Work PC, replacing `INTERNAL_PROXY_IP` and `INTERNAL_PROXY_PORT` with your office proxy details:

```
host name_vps
  HostName vps_ip
  Port 443
  User vps_user
  ProxyCommand /usr/local/bin/corkscrew INTERNAL_PROXY_IP
INTERNAL_PROXY_PORT %h %p

host name_home
  HostName localhost
  User home_user
  Port 6666
  ProxyJump name_vps
```

3. Connect to the VPS:

```
work@ ssh -CX name_vps
```

Connect from Work PC to Home PC

1. Ensure the Home PC has the reverse tunnel running:

```
home@ ssh -R 6666:localhost:22 vps_user@vps_ip
```

2. From the Work PC:

```
work@ ssh -CX name_home
```

Connect from Home PC to Work PC

1. On the Work PC, start a reverse SSH tunnel:

```
work@ ssh -R 6644:localhost:22 name_vps
```

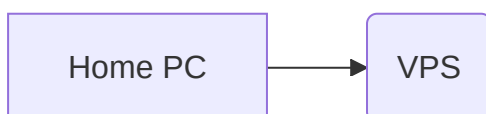
2. From the Home PC:

```
home@ ssh -CX vps_user@vps_ip
```

```
vps@ ssh -CX work_user@localhost -p 6644
```

Detailed Instructions

1. Connect to VPS



From the Home PC:

```
home@ ssh vps_user@vps_ip
```

Initial setup on VPS (optional)

Verify that networking, package management, and basic tools are working:

```
vps@ apt update
```

```
vps@ apt install mc htop
```

If your VPS provider gives you only the `root` account:

```
sudo useradd vps_user
sudo usermod -aG sudo vps_user
sudo usermod -aG root vps_user
```

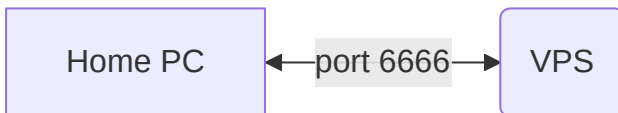
Disable direct root login in `/etc/ssh/sshd_config` :

```
PermitRootLogin no
```

Restart the SSH service:

```
sudo service ssh restart
```

2. Reverse Tunnel from VPS to Home PC



A VPS cannot initiate an SSH connection to a home machine with a private (NAT) IP address. Instead, the Home PC must establish a reverse tunnel **to the VPS**.

1. Open Remote tunnel on Home PC (should be running):

```
home@ ssh -R 6666:localhost:22 vps_user@vps_ip
```

2. Connect to Home PC from VPS:

```
vps@ ssh -CX home_user@localhost -p 6666
```

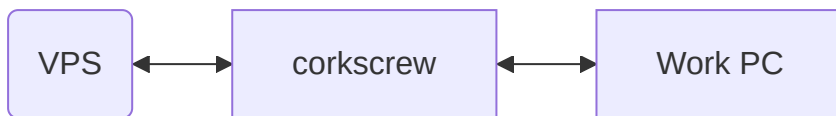
3. Keep the tunnel alive automatically:

autossh ins't standart util

```
home@ sudo apt install autossh
```

```
home@ autossh -f -N -R 6666:localhost:22 vps_user@vps_ip
```

3. Connect from Work PC to VPS



If the office network restricts outbound SSH:

1. Install corkscrew:

<https://github.com/bryanpkc/corkscrew>

2. Configure SSH on the Work PC:

```

host name_vps
    HostName vps_ip
    Port 443
    User vps_user
    ProxyCommand /usr/local/bin/corkscrew INTERNAL_PROXY_IP
INTERNAL_PROXY_PORT %h %p
  
```

3. Connect:

```
work@ ssh -CX name_vps
```

4. Connect from Home PC to Work PC



1. On the Work PC:

```
work@ ssh -R 6644:localhost:22 name_vps
```

2. On the Home PC:

```
home@ ssh -CX vps_user@vps_ip
```

```
vps@ ssh -CX work_user@localhost -p 6644
```

SSH Config Examples

Home PC

```

host *
    ForwardX11 yes
    Compression yes

host name_vps
    HostName vps_ip
    User vps_user

host name_vps_R
    HostName vps_ip
  
```

```
User vps_user
RemoteForward 6666 localhost:22
```

Work PC

```
host *
  ForwardX11 yes
  Compression yes

host name_vps
  HostName vps_ip
  Port 443
  User vps_user
  ProxyCommand /usr/local/bin/corkscrew 192.168.172.129 3128 %h %p

host name_vps_R
  HostName vps_ip
  User vps_user
  RemoteForward 6644 localhost:22

host name_home
  HostName localhost
  User home_user
  Port 6666
  ProxyJump name_vps
```

VPS

```
host *
  ForwardX11 yes
  Compression yes

host name_home
  HostName localhost
  User home_user
  Port 6666

host name_work
  HostName localhost
  User work_user
  Port 6644
```

Using `autossh`

```
sudo apt install autossh
export AUTOSSH_DEBUG=1
export AUTOSSH_GATETIME=0
```

```
export AUTOSSH_PORT=20037  
autossh -f -N vps_user@vps_ip -R 6666:127.0.0.1:22
```