



SSH tunneling

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SSH tunneling is a method of connecting to machines on the other side of a gateway machine. The gateway machine will be 'tunneled' through in order to gain access to machines on the other side. This method presumes both these machines are running SSH (/wiki/SSH) making it possible to set up the tunnel (http://en.wikipedia.org/wiki/Tunneling_protocol).

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Usage

Begin with creating a ssh tunneling session:

```
user $ ssh -f <GATEWAY_USERNAME@>GATEWAY -L localhost:CPORT:SERVER:SPORT -N
```

The `-f` option instructs the ssh instance to go into the background, and `-N` instructs it to not launch a shell. Followed by:

```
user $ ssh -p CPORT <SUSERNAME@>localhost
```

The variables above represent:

GATEWAY

The hostname/IP address of the gateway machine.

GATEWAY_USERNAME

The username on the gateway (optional if this username is the same as on the client).

SERVER

The hostname/IP address of the server you wish to log into.

SUSERNAME

The username on the server (optional if this username is the same as on the client).

SPORT

The port number on which the server SSH daemon is listening, by default 22.

CPORT

The port number of your choosing on which the tunnel will be receiving connections on the client machine (should be greater than 1024 unless you are invoking as root).

You can scp (http://en.wikipedia.org/wiki/Secure_copy) files from the server as you would normally by specifying the tunnel port:

```
user $ scp -P CPORT localhost:REMOTE_PATH LOCAL_PATH
```

Similarly for sending files to the server:

```
user $ scp -P CPORT LOCAL_PATH localhost:REMOTE_PATH
```

Tips

In order to make this tunneling process less onerous in the future:

- Set these commands as shell aliases ([http://en.wikipedia.org/wiki/Alias_\(command\)](http://en.wikipedia.org/wiki/Alias_(command))) (in Bash (</wiki/Bash>), usually in `~/.bashrc`).
- To avoid typing passwords, copy the client key to the gateway, and the client and gateway keys to the server.
- If you rely upon keeping an unattended connection alive which may become dropped due to timeouts, consider altering the various TCP keepalive settings in the client and server configurations. Perhaps the most robust solution is to install a connection watchdog such as `net-misc/autossh` (<https://packages.gentoo.org/packages/net-misc/autossh>) which will babysit an ssh session and restart it if necessary.

X11 forwarding

To enable X11 forwarding, first the *X11Forwarding* and *ForwardX11* options must be set to `yes` for both the X client and server being connected to respectively. In your SSH client connection, add the `-Y` option to the second invocation above, and optionally the `-c` switch to also enable compression i.e:

```
user $ ssh -YC -p CPORT <USERNAME@>localhost
```

The following is required for the forwarding of X11 connections from the remote server to local client to work:

- The SSH daemon on the gateway machine must have TCP forwarding must be enabled, otherwise X11 connections won't be forwarded:

FILE `/etc/ssh/sshd_config` **On the gateway**

```
AllowTcpForwarding yes
```

- The **xauth** tool must be present on the local X server. Install `net-misc/openssh` (<https://packages.gentoo.org/packages/net-misc/openssh>) with the `x USE` flag set to pull it in or install `x11-apps/xauth` (<https://packages.gentoo.org/packages/x11-apps/xauth>).
- X11 forwarding must be enabled in the remote server SSH daemon configuration:

FILE /etc/ssh/sshd_config **On the server**

X11Forwarding yes

See also

- SSH jump host (/wiki/SSH_jump_host)

External resources

- net-misc/connect (<https://packages.gentoo.org/packages/net-misc/connect>) — SSH Proxy Command -- connect.c (<https://bitbucket.org/gotoh/connect/wiki/Home>)

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Category (/wiki/Special:Categories): SSH (/wiki/Category:SSH)

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