SSH Basics / Training

Adam Kalisz

adam.kalisz@notnullmakers.com

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SSH Components

Client `ssh`

Server `sshd`

Connect

`ssh user@destination`

Like e-mail

Connect

```
ssh root@162.55.58.201
ssh abel@2a01:4f8:1c1b:84b8::1
ssh bob@training.notnullmakers.com
```

nnm-101-<user>

```
abel bob carmen dido elias fred gustav
hank ian jules karel luna mia nina
oleg paul quentin richard simon tomas
ursula vit walter xena yale zara adam
bert cameron david eva felix gabriel
hunter ivan jana kevin leo mark nadia
omar pablo qasim rose saul tara uma
vivian wren xavier yael zelda
```

nnm-101-<user>

Connect

```
The authenticity of host
'training.notnullmakers.com (162.55.58.201)' can't
be established.
ED25519 key fingerprint is
SHA256:fVqPzg1RbU0/cDGUB5sckqgzzULGVNbiEuDzlxArOG4.
This key is not known by any other names.
Are you sure you want to continue connecting
(yes/no/[fingerprint])?
```

Keys

```
ssh-keygen -t ed25519 -C "training"
```

```
-> /home/user/.ssh/id_ed25519
-> /home/user/.ssh/id_ed25519.pub
```

More Keys

```
ssh-keygen -t ed25519 -C "training" \
  -f training_key -N ''
```

Authorized Keys

```
~/.ssh/authorized_keys

ssh-copy-id -i <pubkey> user@host

ssh-copy-id -i .ssh/id_ed25519 \
  <user>@training.notnullmakers.com
```

Authorized Keys

```
cat ~/.ssh/id_ed25519.pub | \
  ssh user@host "mkdir -p .ssh && \
  cat - >> .ssh/authorized_keys"
```

Known Hosts

```
~/.ssh/known_hosts
|1|+cerzND2aFOgYWkP2/HT41sQ0Lk=|
aCOFWYM9HhjeZTLif7G5I9Q6OdU= ssh-ed25519
AAAAC3NzaC1lZDI1NTE5AAAAID3JIjt4i+tq2If+QityO8pu+
Qv49VegOAuVtrIWzh7r
|1|OMbjux2v31Jap4mbBZeABYRMo1U=|
fEcByJzGBqFc1YX9eVEHdhQ2CHY= ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAABgQC1TLqUZsONda1wXuP98
nFZSuPODZhywuC6dzOVqgd9rrJk8x0+gDgpa8aWBfWP0oxMsA
Zw1mwDwj905L2tO013LTk...
```

Host Keys

```
/etc/ssh/ssh_host_ecdsa_key
/etc/ssh/ssh_host_ecdsa_key.pub
/etc/ssh/ssh_host_ed25519_key
/etc/ssh/ssh_host_ed25519_key.pub
/etc/ssh/ssh_host_rsa_key
/etc/ssh/ssh_host_rsa_key.pub
```

SSH Config

~/.ssh/config or /etc/ssh/ssh_config

```
Host europe
  HostName 162.55.58.201
  User <user>
  IdentityFile %d/.ssh/id_ed25519
  IdentitiesOnly yes
```

Connect Revisited

~~ssh root@162.55.58.201~~
~~ssh abel@2a01:4f8:1c1b:84b8::1~~
~~ssh bob@training.notnullmakers.com~~

```
ssh europe
```

SSH-Agent

```
ssh-add ~/.ssh/id_ed25519
```

```
ssh-add -d ~/.ssh/id_ed25519
```

Copy File To Remote Destination

```
scp <file> europe:~/<file>
```

Copy Files To Remote Destination

```
scp <file1> <file2> europe:~/
```

```
scp -pr <dir> europe:~/
```

SFTP

Interactive or batched

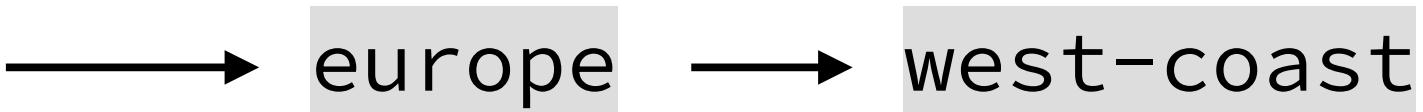
Rsync

Saving data transfers

Piping Over SSH

`cat, dd, tar`

Training Setup



ProxyJump - Intermediary Host

```
ssh -J europe <user>@west-coast
```

```
-> west-coast in /etc/hosts
```

Tunneling over SOCKS

```
ssh -D 9999 -J europe \
  <user>@west-coast
```

Other Tunneling Options

- Local Port Forwarding (-L)
- Remote Port Forwarding (-R)

Only SFTP Server

In /etc/ssh/sshd_config

```
Subsystem sftp internal-sftp
Match Group sftponly
        ChrootDirectory /uploads
        ForceCommand internal-sftp
        PermitTunnel no
        X11Forwarding no
        AllowTcpForwarding no
```

Only SFTP Server Continued

```
groupadd sftponly
useradd -d /uploads -g sftponly \
  -s /sbin/nologin -M upload
mkdir -p /uploads/new
chown upload:sftponly /uploads/new
passwd upload

systemctl restart sshd
```

Only SFTP Server Continued

```
groupadd sftponly
useradd -d /uploads -g sftponly \
  -s /sbin/nologin -M upload
mkdir -p /uploads/new
chown upload:sftponly /uploads/new
passwd upload

systemctl restart sshd
```

Forwarding and Reverse Proxying

- nftables - Network Address/ Port Translation
- nginx - Reverse proxy

Thank You

For later questions, feedback:

adam.kalisz@notnullmakers.com

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