

Create private/public key pair

```
$ cd # On the London host
$ mkdir .ssh # Create directory for your ssh keys
$ cd .ssh
$ ssh-keygen # Create public and private key pair
Generating public/private rsa key pair.
Enter file in which to save the key (/home/dds/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/dds/.ssh/id_rsa.
Your public key has been saved in /home/dds/.ssh/id_rsa.pub.
The key fingerprint is:
fa:d5:52:0b:99:e0:9c:60:6f:b8:72:94:46:bb:09:1b dds@ohub.spinellis.gr
$ cat id_rsa.pub # Obtain your public key
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQ0TRaydLMhx0i0g2SANniZ8mf0TQKVjRxZbP+F02+/
QT2nlG2rjd0zCzoxUUKK5k6kVb8QbEhNdqPJ+Pyt0b+xU/f+cfg9thu/sJAA9yw+A8eR/RCZnJK/+dQy
USC8dryNaeqSaTkYl8jp2Ye+lsLal0Xp9vbM7p5jCqPftzpP08h1aLP0ilXdoRwrFDbuoe0XubAj8Wv
hkwP8u46FVGjbb/nvZMCuIv3UBdVu2Y5LcMzvwCpRH0BNCsUTJPAa8kvyRJJa1DahkhZ4kqSWXD8Y2HwL
c8MHgtCRxKmsL4lJzZQofmAXc+Ko2hXxB60K0/omGhwBVja9MaW2nLGNRINL dds@london.example.
com
$
```

Log into a remote host

```
$ cd # On the Paris host
$ mkdir -p .ssh # Create directory for your ssh keys
$ cd .ssh
$ cat >>authorized_keys # Add key to those with allowed access
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQ0TRaydLMhx0i0g2SANniZ8mf0TQKVjRxZbP+F02+/QT2nlG2rjd0zCzoxUUKK5k6kVb8QbEhNdqPJ+Pyt0b+xU/f+cfg9thu/s
ssh paris.example.com hostname # On the London host execute command on Paris
paris.example.com
$
```

Configure ssh

```
$ ssh -i ~/.ssh/ec2_id_rsa ec2-user@ec2-54-81-102-239.compute-1.amazonaws.com cat /etc/motd
  _| _|_ )
  _| ( _|_ /  Amazon Linux AMI
  _|\_|_|_|

$ cat >>~/.ssh/config <<EOF
Host aws
HostName ec2-54-81-102-239.compute-1.amazonaws.com
User ec2-user
IdentityFile ~/.ssh/ec2_id_rsa

EOF
$ ssh aws cat /etc/motd
  _| _|_ )
  _| ( _|_ /  Amazon Linux AMI
  _|\_|_|_|

$
```

Use ssh

```
$ hostname # We're in Amsterdam
amsterdam.example.com
$ date
Fri, Feb 21, 2020 12:36:50
$ ssh ny.example.com # Start interactive session in NY
Welcome to New York!
$ hostname # We're now executing commands in NY
ny.example.com
$ date
Fri, Feb 21, 2020 06:38:06
$ ssh amsterdam.example.com cat /etc/motd # Run a command back in Amsterdam
Welcome to Amsterdam!
$ ssh amsterdam.example.com cat /etc/passwd | wc -l # Count Amsterdam's users
1034
$
```

Pipe through ssh

```
$ tar -czf - work-directory | # Pack directory to standard output
> ssh backup-server dd of=/dev/st0 bs=1M # Send data to a remote tape
$ ssh backup-server dd if=/dev/st0 bs=1M | # Obtain data from a remote tape
> tar -xzf - # Unpack files from standard input
$ tar -czf - work-directory | # Pack directory to standard output
> ssh otherhost tar -xzf - # Unpack files from standard input
$
```

Traverse firewalls

```
$ curl ldap://ldap.example.com:389/ou=People,dc=example,dc=com'?cn?sub?(&(objectClass=person)
> (uid=dds))'
curl: (7) Failed to connect to ldap.example.com port 389: Connection timed out
$ ssh -f -L 8389:ldap.example.com:389 shell.example.com sleep 9999
$ curl ldap://localhost:8389/ou=People,dc=example,dc=com'?cn?sub?(&(objectClass=person)(uid=dds))'
DN: uid=dds,ou=People,dc=example,dc=com
cn: Diomidis Spinellis

$ ps x
  PID TTY          STAT       TIME COMMAND
24182 ?            S          0:00 sshd: dds@pts/1
24183 pts/1        Ss         0:00 -bash
27803 ?            Ss         0:00 ssh -f -L 8389:ldap.example.com:389 shell.example.com sleep 9999
27827 pts/1        R+         0:00 ps x

$ kill 27803
$ ps x
```

```
  PID TTY          STAT TIME  COMMAND
24182 ?            S    0:00  sshd: dds@pts/1
24183 pts/1        Ss   0:00  -bash
27827 pts/1        R+   0:00  ps x
$
```

Synchronize files

```
$ rsync -av host.example.com:/usr/share/sounds/alsa/ wav-files # Mirror remote
receiving incremental file list
created directory wav-files
./
Front_Center.wav
Front_Left.wav
Front_Right.wav
Noise.wav
Rear_Center.wav
Rear_Left.wav
Rear_Right.wav
Side_Left.wav
Side_Right.wav

sent 198 bytes  received 1,229,801 bytes  819,999.33 bytes/sec
total size is 1,228,928  speedup is 1.00
$ rsync -av host.example.com:/usr/share/sounds/alsa/ wav-files # Refresh
receiving incremental file list

sent 20 bytes  received 219 bytes  159.33 bytes/sec
total size is 1,228,928  speedup is 5,141.96
$ ls wav-files/
Front_Center.wav  Noise.wav          Rear_Right.wav
Front_Left.wav   Rear_Center.wav   Side_Left.wav
Front_Right.wav  Rear_Left.wav     Side_Right.wav
$ rm wav-files/Noise.wav
$ rsync -av host.example.com:/usr/share/sounds/alsa/ wav-files # Refresh
receiving incremental file list
./
Noise.wav

sent 46 bytes  received 135,499 bytes  90,363.33 bytes/sec
total size is 1,228,928  speedup is 9.07
$
```