

Experiment 5: SSH

Aim: Installation of Open SSH between two ubuntu machines.

Description:

Remote File Sharing using SSH

OpenSSH is a powerful collection of tools for the remote control of, and transfer of data between, networked computers. You will also learn about some of the configuration settings possible with the OpenSSH server application and how to change them on your Ubuntu system.

OpenSSH is a freely available version of the Secure Shell (SSH) protocol family of tools for remotely controlling, or transferring files between computers. Traditional tools used to accomplish these functions, such as telnet or rcp, are insecure and transmit the user's password in cleartext when used. OpenSSH provides a server daemon and client tools to facilitate secure, encrypted remote control and file transfer operations, effectively replacing the legacy tools.

Port No: 22

Package name: openssh-client

Configuration file: /etc/ssh/sshd_config

Procedure:

1. create two EC2 instance of ubuntu ssh client and ssh server
2. Create the password for the instance of ssh server by `$sudo passwd ubuntu` 3.

Now check whether the ssh server is running by the command `$sudo service ssh status`

4. configure the sshd_config file by the following command `$sudo vim /etc/ssh/sshd_config` and include the following changes

PasswordAuthentication yes , KbdInteractiveAuthentication

no ,KerberosGetAFSToken no

5. Now check the status of the ssh server by the command `$sudo service ssh status`

6. Now create a text file by the command `$touch text.txt`

7. Now log in to the ssh_client and create a ssh_keygen by the command `$ssh_keygen`

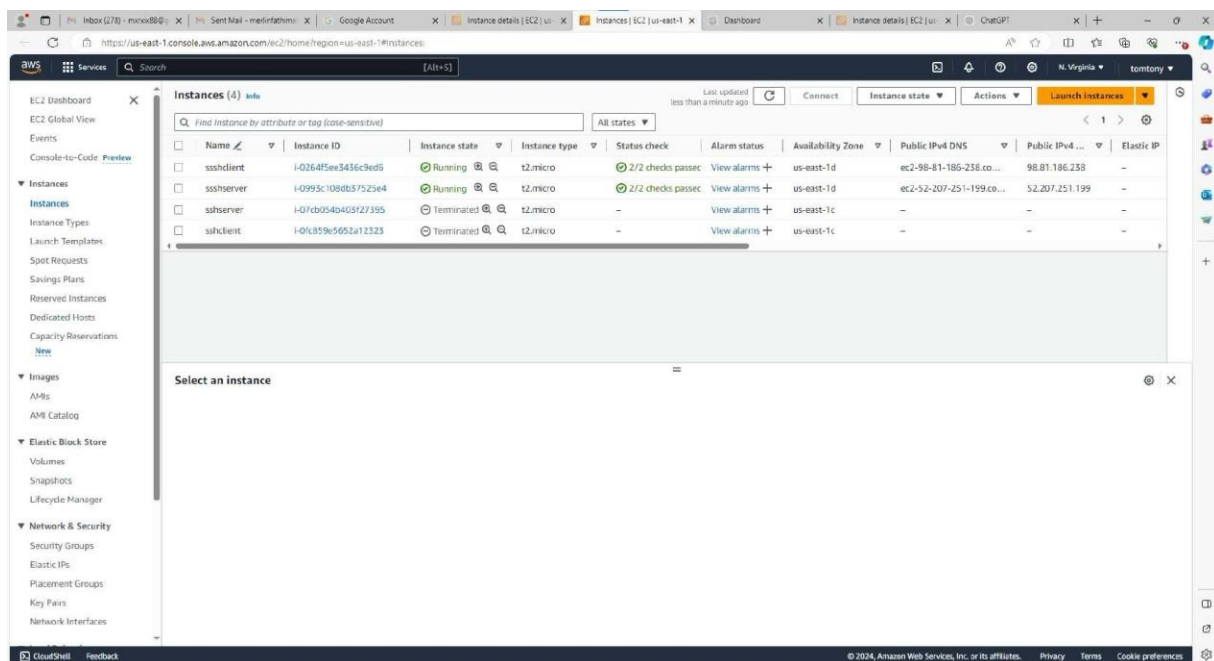
8. Now copy the ssh_keygen form the ssh_client `$ssh-copy-id ubuntu@privateip`

9. Now restart the client machine

10. Then connect to the ssh_server by ssh_client

11. then type ls you will be prompted with the screen with your text file which you have created

Result:



```
ubuntu@ip-172-31-92-136: ~  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
ubuntu@ip-172-31-92-136:~$ sudo passwd ubuntu  
New password:  
Retype new password:  
passwd: password updated successfully  
ubuntu@ip-172-31-92-136:~$ sudo service  
Usage: service < option > | --status-all | [ service_name [ command | --full-restart ] ]  
ubuntu@ip-172-31-92-136:~$ sudo service ssh status  
• ssh.service - OpenBSD Secure Shell server  
  Loaded: loaded (/usr/lib/systemd/system/ssh.service; disabled; preset: enabled)  
  Drop-In: /usr/lib/systemd/system/ssh.service.d  
           └─ec2-instance-connect.conf  
  Active: active (running) since Wed 2024-09-04 08:34:09 UTC; 45min ago  
  TriggeredBy: • ssh.socket  
  Docs: man:sshd(8)  
         man:sshd_config(5)  
  Process: 1000 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)  
  Main PID: 1002 (sshd)  
    Tasks: 1 (limit: 1130)  
  Memory: 3.2M (peak: 3.8M)  
    CPU: 40ms  
  CGroup: /system.slice/ssh.service  
           └─1002 "sshd: /usr/sbin/sshd -D -o AuthorizedKeysCommand /usr/share/ec2-instance-connect/eic_run_authori  
Sep 04 08:34:09 ip-172-31-92-136 systemd[1]: Starting ssh.service - OpenBSD Secure Shell server...  
Sep 04 08:34:09 ip-172-31-92-136 sshd[1002]: Server listening on :: port 22.  
Sep 04 08:34:09 ip-172-31-92-136 systemd[1]: Started ssh.service - OpenBSD Secure Shell server.  
Sep 04 08:34:09 ip-172-31-92-136 sshd[1003]: Connection reset by 68.183.137.128 port 26368 [preauth]
```

```

ubuntu@ip-172-31-28-62: ~
Sep 04 10:52:37 ip-172-31-28-62 sshd[1000]: Accepted publickey for ubuntu from 103.135.95.46 port 59576 ssh2: RSA SH
Sep 04 10:52:37 ip-172-31-28-62 sshd[1000]: pam_unix(sshd:session): session opened for user ubuntu(uid=1000) by ubun

ubuntu@ip-172-31-28-62:~$ sudo vim /etc/ssh/sshd_config
ubuntu@ip-172-31-28-62:~$ sudo service ssh status
● ssh.service - OpenBSD Secure Shell server
   Loaded: loaded (/usr/lib/systemd/system/ssh.service; disabled; preset: enabled)
   Drop-In: /usr/lib/systemd/system/ssh.service.d
            └─ec2-instance-connect.conf
   Active: active (running) since Wed 2024-09-04 10:52:01 UTC; 5min ago
 TriggeredBy: ● ssh.socket
   Docs: man:sshd(8)
        man:sshd_config(5)
   Process: 995 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
   Main PID: 997 (sshd)
     Tasks: 1 (limit: 1130)
    Memory: 3.9M (peak: 4.5M)
       CPU: 42ms
    CGroup: /system.slice/ssh.service
            └─997 "sshd: /usr/sbin/sshd -D -o AuthorizedKeysCommand /usr/share/ec2-instance-connect/eic_run_authori

Sep 04 10:52:01 ip-172-31-28-62 systemd[1]: Starting ssh.service - OpenBSD Secure Shell server...
Sep 04 10:52:01 ip-172-31-28-62 sshd[997]: Server listening on :: port 22.
Sep 04 10:52:01 ip-172-31-28-62 systemd[1]: Started ssh.service - OpenBSD Secure Shell server.
Sep 04 10:52:04 ip-172-31-28-62 sshd[998]: Invalid user toor from 2.55.64.191 port 40214
Sep 04 10:52:04 ip-172-31-28-62 sshd[998]: Connection closed by invalid user toor 2.55.64.191 port 40214 [preauth]
Sep 04 10:52:37 ip-172-31-28-62 sshd[1000]: Accepted publickey for ubuntu from 103.135.95.46 port 59576 ssh2: RSA SH
Sep 04 10:52:37 ip-172-31-28-62 sshd[1000]: pam_unix(sshd:session): session opened for user ubuntu(uid=1000) by ubun
...skipping...
● ssh.service - OpenBSD Secure Shell server

```

```

ubuntu@ip-172-31-28-62: ~
| ..=0= . |
+----[SHA256]-----+
ubuntu@ip-172-31-28-62:~$ ssh-copy-id ubuntu@172.31.20.99
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/ubuntu/.ssh/id_ed25519.pub"
The authenticity of host '172.31.20.99 (172.31.20.99)' can't be established.
ED25519 key fingerprint is SHA256:ZBspwJCEoyTS062v4kxt70iMWvFDomAfQmJhyfRjZ8.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new keys
ubuntu@172.31.20.99: Permission denied (publickey).
ubuntu@ip-172-31-28-62:~$ ssh-copy-id ubuntu@ip-172-31-28-68
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/ubuntu/.ssh/id_ed25519.pub"
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed

/usr/bin/ssh-copy-id: ERROR: ssh: connect to host ip-172-31-28-68 port 22: No route to host

ubuntu@ip-172-31-28-62:~$ ssh-copy-id ubuntu@ip-172-31-28-68
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/ubuntu/.ssh/id_ed25519.pub"
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed

/usr/bin/ssh-copy-id: ERROR: ssh: connect to host ip-172-31-28-68 port 22: No route to host

ubuntu@ip-172-31-28-62:~$ ssh-copy-id ubuntu@ip-172-31-28-62
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/ubuntu/.ssh/id_ed25519.pub"
The authenticity of host 'ip-172-31-28-62 (172.31.28.62)' can't be established.
ED25519 key fingerprint is SHA256:aqQrh2Bmw3WZoaeXyfiWiZyJPhejkP7/xjaYNFxD7ww.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed

```

```
ubuntu@ip-172-31-28-62: ~
Number of key(s) added: 1

Now try logging into the machine, with: "ssh 'ubuntu@ip-172-31-28-62'"
and check to make sure that only the key(s) you wanted were added.

ubuntu@ip-172-31-28-99:~$ ssh ubuntu@ip-172-31-28-62
Welcome to Ubuntu 24.04 LTS (GNU/Linux 6.8.0-1012-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Wed Sep  4 11:06:34 UTC 2024

System load:  0.0          Processes:           109
Usage of /:   22.9% of 6.71GB    Users logged in:    1
Memory usage: 20%          IPv4 address for enX0: 172.31.28.62
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

ubuntu@ip-172-31-28-62: ~

ubuntu@ip-172-31-28-99:~$ ssh
usage: ssh [-46AaCfGgKkMnNqsTtVvXxYy] [-B bind_interface] [-b bind_address]
        [-c cipher_spec] [-D [bind_address:]port] [-E log_file]
        [-e escape_char] [-F configfile] [-I pkcs11] [-i identity_file]
        [-J destination] [-L address] [-l login_name] [-m mac_spec]
        [-O ctl_cmd] [-o option] [-P tag] [-p port] [-R address]
        [-S ctl_path] [-W host:port] [-w local_tun[:remote_tun]]
        destination [command [argument ...]]
        ssh [-Q query_option]
ubuntu@ip-172-31-28-99:~$ ssh-keygen
Command 'ssh-keygen' not found, did you mean:
  command 'ssh-keygen' from deb openssh-client (1:9.6p1-3ubuntu13.4)
Try: sudo apt install <deb name>
ubuntu@ip-172-31-28-99:~$ ssh-keygen
Generating public/private ed25519 key pair.
Enter file in which to save the key (/home/ubuntu/.ssh/id_ed25519):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/ubuntu/.ssh/id_ed25519
Your public key has been saved in /home/ubuntu/.ssh/id_ed25519.pub
The key fingerprint is:
SHA256:QWY2ULQbZAcDG2TKGRamX+/yqE7a5M0pkIJR9Z9Auhk ubuntu@ip-172-31-28-99
The key's randomart image is:
+--[ED25519 256]--+
|  .o*O&..         |
|  .oo+oB =        |
|  ..oE++ +        |
|  .  .+= + =       |
|.. .+ S           |
```

```
ubuntu@ip-172-31-28-62: ~
Microsoft Windows [Version 10.0.19045.3693]
(c) Microsoft Corporation. All rights reserved.

C:\Users\PC-1>cd Downloads

C:\Users\PC-1\Downloads>ssh -i "clientkey.pem" ubuntu@ec2-98-81-186-238.compute-1.amazonaws.com
The authenticity of host 'ec2-98-81-186-238.compute-1.amazonaws.com (98.81.186.238)' can't be established.
ECDSA key fingerprint is SHA256:HNj2Q9gBCSe53NNoMw/3acy0M8rI7aJn1kJ//QdvelQ.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-98-81-186-238.compute-1.amazonaws.com,98.81.186.238' (ECDSA) to the list of known hosts.

Welcome to Ubuntu 24.04 LTS (GNU/Linux 6.8.0-1012-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Wed Sep  4 10:53:28 UTC 2024

System load:  0.12          Processes:           107
Usage of /:   22.8% of 6.71GB Users logged in:          0
Memory usage: 21%          IPv4 address for enX0: 172.31.20.99
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Select ubuntu@ip-172-31-28-62: ~
Sep 04 10:52:01 ip-172-31-28-62 systemd[1]: Starting ssh.service - OpenBSD Secure Shell server...
Sep 04 10:52:01 ip-172-31-28-62 sshd[997]: Server listening on :: port 22.
Sep 04 10:52:01 ip-172-31-28-62 systemd[1]: Started ssh.service - OpenBSD Secure Shell server.
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Sep 04 10:52:04 ip-172-31-28-62 sshd[998]: Connection closed by invalid user toor 2.55.64.191 port 40214 [preauth]
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Sep 04 10:52:37 ip-172-31-28-62 sshd[1000]: pam_unix(sshd:session): session opened for user ubuntu(uid=1000) by ubun
~
~
~
~
~
lines 1-23/23 (END)
ubuntu@ip-172-31-28-62:~$ sudo service ssh restart
ubuntu@ip-172-31-28-62:~$ touch test.txt
ubuntu@ip-172-31-28-62:~$ sudo service ssh restart
ubuntu@ip-172-31-28-62:~$ ls
test.txt
ubuntu@ip-172-31-28-62:~$ touch anda.txt
ubuntu@ip-172-31-28-62:~$
```

```
ubuntu@ip-172-31-28-62: ~  
Enable ESM Apps to receive additional future security updates.  
See https://ubuntu.com/esm or run: sudo pro status  
  
The list of available updates is more than a week old.  
To check for new updates run: sudo apt update  
  
Last login: Wed Sep  4 10:52:39 2024 from 103.135.95.46  
ubuntu@ip-172-31-28-62:~$ ls  
test.txt  
ubuntu@ip-172-31-28-62:~$ ls  
anda.txt  test.txt  
ubuntu@ip-172-31-28-62:~$
```

Conclusion: All the commands have been executed and the output has been obtained successfully.