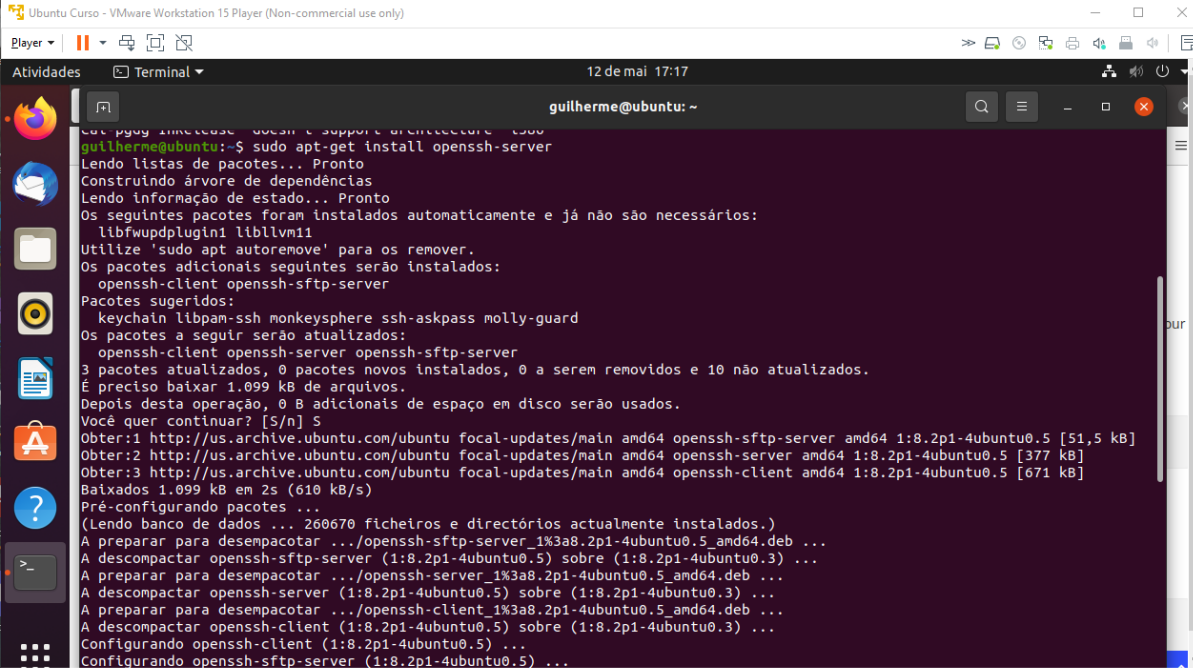


Sistemas Operacionais de Redes II

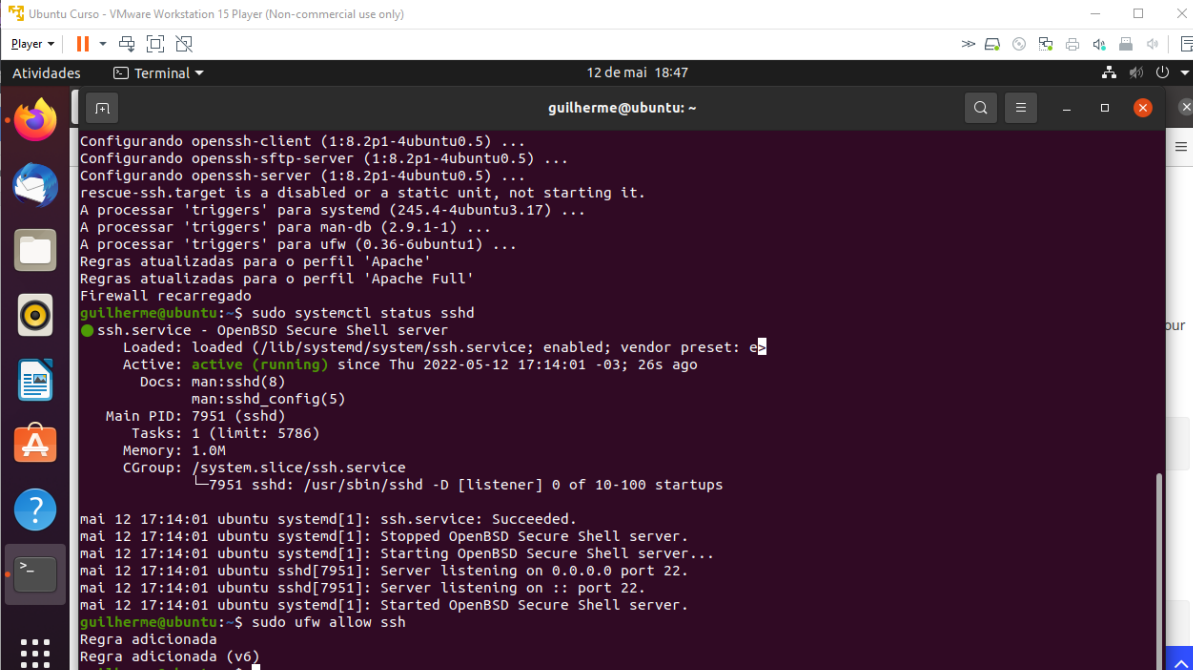
Guilherme Estevam de Castro

1) Instalar o OpenSSH server em uma máquina virtual Linux Instalando o OpenSSH



```
Player ▾ 12 de mai 17:17
guilherme@ubuntu: ~
guilherme@ubuntu:~$ sudo apt-get install openssh-server
Lendo listas de pacotes... Pronto
Construindo árvore de dependências
Lendo informação de estado... Pronto
Os seguintes pacotes foram instalados automaticamente e já não são necessários:
  libfupdplugin1 liblvm1
Utilize 'sudo apt autoremove' para os remover.
Os pacotes adicionais seguintes serão instalados:
  openssh-client openssh-sftp-server
Pacotes sugeridos:
  keychain libpam-ssh monkeysphere ssh-askpass molly-guard
Os pacotes a seguir serão atualizados:
  openssh-client openssh-server openssh-sftp-server
3 pacotes atualizados, 0 pacotes novos instalados, 0 a serem removidos e 10 não atualizados.
É preciso baixar 1.099 kB de arquivos.
Depois desta operação, 0 B adicionais de espaço em disco serão usados.
Você quer continuar? [S/n] S
Obter:1 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 openssh-sftp-server amd64 1:8.2p1-4ubuntu0.5 [51,5 kB]
Obter:2 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 openssh-server amd64 1:8.2p1-4ubuntu0.5 [377 kB]
Obter:3 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 openssh-client amd64 1:8.2p1-4ubuntu0.5 [671 kB]
Baixados 1.099 kB em 2s (610 kB/s)
Pré-configurando pacotes ...
(Lendo banco de dados ... 260670 ficheiros e directórios actualmente instalados.)
A preparar para descompactar .../openssh-sftp-server_1%3a8.2p1-4ubuntu0.5_amd64.deb ...
A descompactar openssh-sftp-server (1:8.2p1-4ubuntu0.5) sobre (1:8.2p1-4ubuntu0.3) ...
A preparar para descompactar .../openssh-server_1%3a8.2p1-4ubuntu0.5_amd64.deb ...
A descompactar openssh-server (1:8.2p1-4ubuntu0.5) sobre (1:8.2p1-4ubuntu0.3) ...
A preparar para descompactar .../openssh-client_1%3a8.2p1-4ubuntu0.5_amd64.deb ...
A descompactar openssh-client (1:8.2p1-4ubuntu0.5) sobre (1:8.2p1-4ubuntu0.3) ...
Configurando openssh-client (1:8.2p1-4ubuntu0.5) ...
Configurando openssh-sftp-server (1:8.2p1-4ubuntu0.5) ...
```

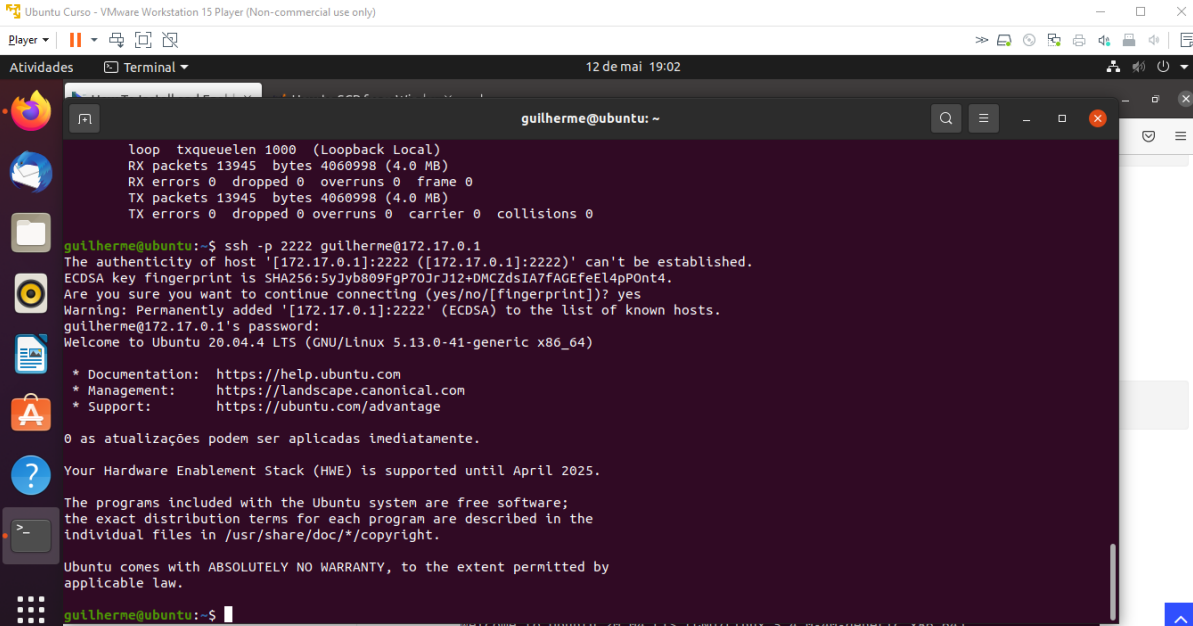
OpenSSH ativo e ativando firewall



```
Player ▾ 12 de mai 18:47
guilherme@ubuntu: ~
Configurando openssh-client (1:8.2p1-4ubuntu0.5) ...
Configurando openssh-sftp-server (1:8.2p1-4ubuntu0.5) ...
Configurando openssh-server (1:8.2p1-4ubuntu0.5) ...
rescue.ssh.target is a disabled or a static unit, not starting it.
A processar 'triggers' para systemd (245.4-4ubuntu3.17) ...
A processar 'triggers' para man-db (2.9.1-1) ...
A processar 'triggers' para ufw (0.36-6ubuntu1) ...
Regras atualizadas para o perfil 'Apache'
Regras atualizadas para o perfil 'Apache Full'
Firewall recarregado
guilherme@ubuntu:~$ sudo systemctl status sshd
● ssh.service - OpenBSD Secure Shell server
   Loaded: loaded (/lib/systemd/system/ssh.service; enabled; vendor preset: en
   Active: active (running) since Thu 2022-05-12 17:14:01 -03; 26s ago
     Docs: man:sshd(8)
           man:sshd_config(5)
   Main PID: 7951 (sshd)
     Tasks: 1 (limit: 5786)
    Memory: 1.0M
   CGroup: /system.slice/ssh.service
           └─7951 sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups

mai 12 17:14:01 ubuntu systemd[1]: ssh.service: Succeeded.
mai 12 17:14:01 ubuntu systemd[1]: Stopped OpenBSD Secure Shell server.
mai 12 17:14:01 ubuntu systemd[1]: Starting OpenBSD Secure Shell server...
mai 12 17:14:01 ubuntu sshd[7951]: Server listening on 0.0.0.0 port 22.
mai 12 17:14:01 ubuntu sshd[7951]: Server listening on :: port 22.
mai 12 17:14:01 ubuntu systemd[1]: Started OpenBSD Secure Shell server.
guilherme@ubuntu:~$ sudo ufw allow ssh
Regra adicionada
Regra adicionada (v6)
guilherme@ubuntu:~$
```

Conectando ao OpenSSH Server na Porta 2222



The screenshot shows a terminal window titled 'guilherme@ubuntu: ~' within a 'VMware Workstation 15 Player' environment. The terminal output shows network statistics for the loopback interface 'lo', followed by an SSH command: `ssh -p 2222 guilherme@172.17.0.1`. The connection is established, displaying the host's ECDSA key fingerprint and a warning to add it to the known hosts. The user is prompted for a password, and upon successful authentication, the Ubuntu 20.04.4 LTS login banner is displayed, including documentation, management, and support links, as well as system information and warranty details.

```
loop txqueuelen 1000 (Loopback Local)
RX packets 13945 bytes 4060998 (4.0 MB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 13945 bytes 4060998 (4.0 MB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

guilherme@ubuntu:~$ ssh -p 2222 guilherme@172.17.0.1
The authenticity of host '172.17.0.1:2222 ([172.17.0.1]:2222)' can't be established.
ECDSA key fingerprint is SHA256:SyJyb809FgP70JrJ12+DNCZdsIA7fAGEfeEL4pP0nt4.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '172.17.0.1:2222' (ECDSA) to the list of known hosts.
guilherme@172.17.0.1's password:
Welcome to Ubuntu 20.04.4 LTS (GNU/Linux 5.13.0-41-generic x86_64)

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

0 as atualizações podem ser aplicadas imediatamente.

Your Hardware Enablement Stack (HWE) is supported until April 2025.


The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

guilherme@ubuntu:~$
```

2) Criar um Par de Chaves (Pública/Privada)

Gerando Chave SSH no Windows



The screenshot shows a Windows command prompt window with the following text: 'Generating public/private rsa key pair. Enter file in which to save the key (C:\Users\...): Enter passphrase (empty for no passphrase): Enter same passphrase again: Your identification has been saved in C:\Users\... Your public key has been saved in C:\Users\... The key fingerprint is: SHA256:dcmmCjG5VZKN008Fa9TFShFHakOwwDbIkh0... The key's randomart image is: +---[RSA 3072]---+ [ASCII art image] +---[SHA256]-----+'. The ASCII art image is a stylized representation of the key's randomart.

```
Generating public/private rsa key pair.
Enter file in which to save the key (C:\Users\...):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in C:\Users\...
Your public key has been saved in C:\Users\...
The key fingerprint is:
SHA256:dcmmCjG5VZKN008Fa9TFShFHakOwwDbIkh0...
The key's randomart image is:
+---[RSA 3072]---+
|  +==Bo+oo+*+  |
| o+++B+++o+.  |
| .*.+.o+O.    |
| * .+=O.      |
| o Soo.       |
| o =.         |
| E            |
+---[SHA256]-----+
```

Gerando Chave SSH no Ubuntu

```
guilherme@ubuntu:~$ ssh-keygen -t rsa
Generating public/private rsa key pair.
Enter file in which to save the key (/home/guilherme/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/guilherme/.ssh/id_rsa
Your public key has been saved in /home/guilherme/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:4z/RoeK8gf3567tsK0AMz8qbBe0FWlyU0feI860Mr9I guilherme@ubuntu
The key's randomart image is:
+---[RSA 3072]-----+
|      .  o++      |
|      . + . . .   |
|      0 .   o o   |
|      o * . + . . |
|      . =S. o +   |
|      o+=.o . o   |
|      .*++ + . .  |
|      o ++Eo+     |
|      .o=0X=      |
+-----[SHA256]-----+
```

3) Copiar a Chave Pública em uma Máquina Virtual que está executando o OpenSSH Server

```
C:\Users\Guii>scp C:/Users/Guii/.ssh/id_rsa.pub guilherme@192.168.31.128:~/.ssh/authorized_keys
guilherme@192.168.31.128's password:
id_rsa.pub                               100% 569   278.0KB/s   00:00
```

4) Testar a conexão entre a máquina Cliente e a Servidora

```
C:\Users\Guii>ssh guilherme@192.168.31.128
guilherme@192.168.31.128's password:
Welcome to Ubuntu 20.04.4 LTS (GNU/Linux 5.13.0-41-generic x86_64)

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

6 as atualizações podem ser aplicadas imediatamente.
Para ver as actualizações adicionais corre o comando: apt list --upgradable

Your Hardware Enablement Stack (HWE) is supported until April 2025.
Last login: Thu May 12 19:01:53 2022 from 192.168.31.128
```