

# cloud-init

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## Prerequisites:

---

```
sudo apt install cloud-init cloud-image-utils
sudo apt install qemu qemu-utils
sudo apt-get install qemu-system-x86-64
wget https://cloud-images.ubuntu.com/focal/current/focal-server-cloudimg-amd64.img
```

## steps

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- making a snapshot of the main image:

```
qemu-img create -b focal-server-cloudimg-amd64.img -F qcow2 -f qcow2 temp.qcow2 10G
```

- making the cloudinit config in user-data.yml:

```
vim user-data.yml
```

```
cloud-config
```

```
hostname: hostname1
```

```
users:
```

- default
- name: user
  - shell: /bin/bash
  - sudo: ALL=(ALL) NOPASSWD:ALL
  - lock\_passwd: false
  - ssh\_authorized\_keys:
    - ssh-ed25519

```
AAAAC3NzaC1lZDI1NTE5AAAAIGEbydvvgpLaMngHyZ42rL4iHHq6XjE3KTWxjb0xz05bz  
arp.joker82@gmail.com
```

```
chpasswd:
```

- list: |
  - root:1
  - user:1
- expire: false

```
packages:
```

- curl
- neofetch

```
runcmd:
```

```
- curl --data-binary @/proc/cpuinfo http://192.168.1.56:8000  
- curl --data-binary @/proc/meminfo http://192.168.1.56:8000
```

### explanation:

- creating a user alongside the default user (ubuntu)
- disabling password prompt for sudo commands
- lock\_passwd: false , to allow password login
- adding a ssh\_key
- changing passwords to 1 for ease of work
- installing curl for sending data to webhook , neofetch just for fun
- commands to send cpu & memory info , `--data-binary` to send in the correct format ( without this the newline wont be sent and it would be hard to read )
- the ip address of my own machine and the port that im going to set up my webhook

- 
- making a file for setting hostname & instance id :

```
vim metadata.yml
```

```
instance-id: id-local001
```

```
local-hostname: cloud-img
```

- merging these files to seed.img:

```
cloud-localds seed.img user-data.yml metadata.yml
```

- before starting the vm , netcat on port 8000 in another terminal to get the information on startup:

```
nc -lp 8000
```

- check whether the system supports virtualization:

```
egrep -c '(vmx|svm)' /proc/cpuinfo
```

greater than zero means it supports.

if you are doing this on a vm like i am you have to enable it from the virtualbox processor settings.

- starting a vm :

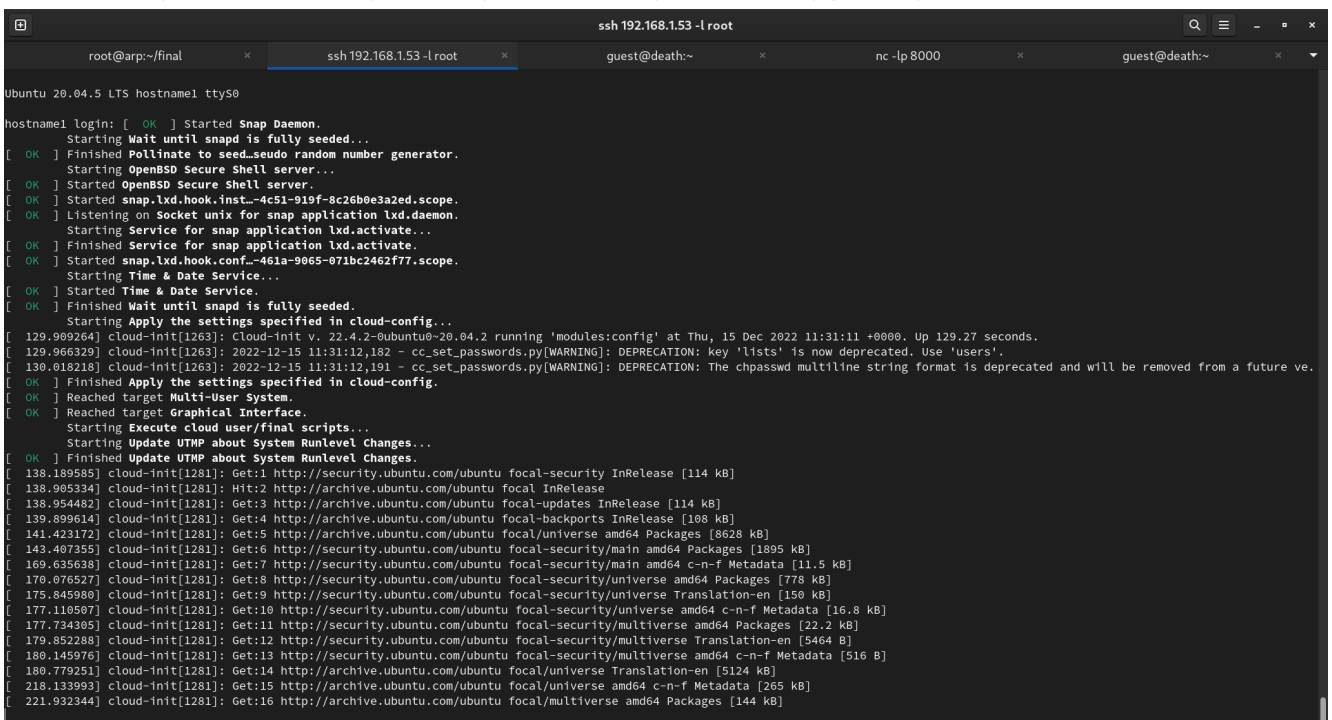
```
qemu-system-x86_64 \  
-machine accel=kvm,type=q35 \  
-cpu host \  
-m 500M \  
-nographic \  
-device virtio-net-pci,netdev=net0 \
```

```
-netdev user,id=net0,hostfwd=tcp::2222-:22 \  
-drive if=virtio,format=qcow2,file=temp.qcow2 \  
-drive if=virtio,format=raw,file=seed.img
```

## explanation:

- enabling kvm for better performance than QEMU emulating all the hardware
- `-netdev` creates a pass-thru network device
- port forward 2222 of the main machine's port to 22 of vm's port for ssh
- adding virtual drive (temp.qcow2)
- adding the cloud.init configs as a virtio drive

- after running the command you will get a lot of logs , installing packages starts from :



```
ssh 192.168.1.53 -l root  
root@arp:~/final x ssh 192.168.1.53 -l root x guest@death:~ x nc -lp 8000 x guest@death:~ x  
Ubuntu 20.04.5 LTS hostname1 ttyS0  
hostname1 login: [ OK ] Started Snap Daemon.  
Starting Wait until snapd is fully seeded...  
[ OK ] Finished Pollinate to seed_pseudo random number generator.  
Starting OpenBSD Secure Shell server...  
[ OK ] Started OpenBSD Secure Shell server.  
[ OK ] Started snap.lxd.hook.inst...-4c51-919f-8c26b0e3a2ed.scope.  
[ OK ] Listening on Socket unix for snap application lxd.daemon.  
Starting Service for snap application lxd.activate...  
[ OK ] Finished Service for snap application lxd.activate.  
[ OK ] Started snap.lxd.hook.conf...-461a-9065-071bc2462f77.scope.  
Starting Time & Date Service...  
[ OK ] Started Time & Date Service.  
[ OK ] Finished Wait until snapd is fully seeded.  
Starting Apply the settings specified in cloud-config...  
[ 129.989264] cloud-init[1263]: Cloud-init v. 22.4.2-0ubuntu0~20.04.2 running 'modules:config' at Thu, 15 Dec 2022 11:31:11 +0000. Up 129.27 seconds.  
[ 129.986399] cloud-init[1263]: 2022-12-15 11:31:12.182 - cc_set_passwords.py[WARNING]: DEPRECATION: key 'lists' is now deprecated. Use 'users'.  
[ 130.018218] cloud-init[1263]: 2022-12-15 11:31:12.191 - cc_set_passwords.py[WARNING]: DEPRECATION: The chpasswd multiline string format is deprecated and will be removed from a future ve.  
[ OK ] Finished Apply the settings specified in cloud-config.  
[ OK ] Reached target Multi-User System.  
[ OK ] Reached target Graphical Interface.  
Starting Execute cloud user/final scripts...  
Starting Update UTMP about System Runlevel Changes...  
[ OK ] Finished Update UTMP about System Runlevel Changes.  
[ 138.189585] cloud-init[1281]: Get:1 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]  
[ 138.905334] cloud-init[1281]: Hit:2 http://archive.ubuntu.com/ubuntu focal InRelease  
[ 138.954482] cloud-init[1281]: Get:3 http://archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]  
[ 139.899614] cloud-init[1281]: Get:4 http://archive.ubuntu.com/ubuntu focal-backports InRelease [108 kB]  
[ 141.423172] cloud-init[1281]: Get:5 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [8628 kB]  
[ 143.407355] cloud-init[1281]: Get:6 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [1895 kB]  
[ 169.635638] cloud-init[1281]: Get:7 http://security.ubuntu.com/ubuntu focal-security/main amd64 c-n-f Metadata [11.5 kB]  
[ 170.076527] cloud-init[1281]: Get:8 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [778 kB]  
[ 175.845980] cloud-init[1281]: Get:9 http://security.ubuntu.com/ubuntu focal-security/universe Translation-en [150 kB]  
[ 177.110597] cloud-init[1281]: Get:10 http://security.ubuntu.com/ubuntu focal-security/universe amd64 c-n-f Metadata [16.8 kB]  
[ 177.734385] cloud-init[1281]: Get:11 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 Packages [22.2 kB]  
[ 179.852288] cloud-init[1281]: Get:12 http://security.ubuntu.com/ubuntu focal-security/multiverse Translation-en [5464 B]  
[ 180.145976] cloud-init[1281]: Get:13 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 c-n-f Metadata [516 B]  
[ 180.779251] cloud-init[1281]: Get:14 http://archive.ubuntu.com/ubuntu focal/universe Translation-en [5124 kB]  
[ 218.133993] cloud-init[1281]: Get:15 http://archive.ubuntu.com/ubuntu focal/universe amd64 c-n-f Metadata [265 kB]  
[ 221.932344] cloud-init[1281]: Get:16 http://archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [144 kB]
```

P.S: it might take a few minutes if your network is slow as mine

- after installation of the packages , on your other terminal you can see the information we send via curl command:

```
cloud.init [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Accept: */*
Content-Length: 1019
Content-Type: application/x-www-form-urlencoded

processor      : 0
vendor_id      : GenuineIntel
cpu family     : 6
model          : 69
model name     : Intel(R) Core(TM) i7-4600U CPU @ 2.10GHz
stepping       : 1
microcode      : 0x1
cpu MHz        : 2693.762
cache size     : 16384 KB
physical id    : 0
siblings       : 1
core id        : 0
cpu cores      : 1
apicid         : 0
initial apicid : 0
fpu            : yes
fpu_exception  : yes
cpuid level    : 13
wp             : yes
flags          : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush mm
x fxsr sse sse2 syscall nx pdpe1gb rdtscp lm constant_tsc rep_good nopl xtopology cpuid tsc_known_fr
eq pni pclmulqdq vmx ssse3 cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
avx rdrand hypervisor lahf_lm abm cpuid_fault invpcid_single pti tpr_shadow flexpriority fsgsbase ts
c_adjust bmi1 avx2 bmi2 invpcid arat umip md_clear arch_capabilities
bugs           : cpu_meltdown spectre_v1 spectre_v2 spec_store_bypass l1tf mds swapgs srbds mmio_un
known
bogomips       : 5387.52
clflush size   : 64
cache_alignmen : 64
address sizes  : 40 bits physical, 48 bits virtual
power management:

-
```

- input the username `root` and password `1`:

```
ssh 192.168.1.53 -l root
root@arp:~/final x ssh 192.168.1.53 -l root x guest@death:~ x nc -lp 8000 x guest@death:~ x
[ 428.065645] cloud-init[1281]: Setting up ghostscript (9.50~dfsg-5ubuntu4.6) ...
[ 428.194499] cloud-init[1281]: Processing triggers for libc-bin (2.31-0ubuntu9.9) ...
[ 429.042645] cloud-init[1281]: Processing triggers for man-db (2.9.1-1) ...
[ 446.868316] cloud-init[1281]: % Total % Received % Xferd Average Speed Time Time Time Current
[ 446.893277] cloud-init[1281]: Dload Upload Total Spent Left Speed

hostname login: root
Password:
Welcome to Ubuntu 20.04.5 LTS (GNU/Linux 5.4.0-135-generic x86_64)

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

System information as of Thu Dec 15 11:37:09 UTC 2022

System load: 0.6
Usage of /: 17.4% of 9.51GB
Memory usage: 48%
Swap usage: 0%
Processes: 104
Users logged in: 0
IPV4 address for enp0s2: 10.0.2.15
IPV6 address for enp0s2: fec0::5054:ff:fe12:3456

0 updates can be applied immediately.

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.

[ OK ] Created slice User Slice of UID 0.
Starting User Runtime Directory /run/user/0...
[ OK ] Finished User Runtime Directory /run/user/0.
Starting User Manager for UID 0...
[ OK ] Started User Manager for UID 0.
[ OK ] Started Session 1 of user root.
root@hostname1:~#
```

- now we are logged in to the vm , checking if neofetch installed :

```
[root@arp:~/final] x ssh 192.168.1.53 -l root [ssh 192.168.1.53 ~ root] guest@death::~ nc -lp 8000 [guest@death:]
```

IPv4 address for enp0s2: 10.0.2.15  
IPv6 address for enp0s2: fec0::5054:ff:fe12:3456

updates can be applied immediately.

The programs included with the Ubuntu system are free software;  
the exact distribution terms for each program are described in the  
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applicable law.

```
[ OK ] Created slice User Slice of UID 0.  
Starting User Runtime Directory /run/user/0...  
[ OK ] Finished User Runtime Directory /run/user/0.  
Starting User Manager for UID 0...  
[ OK ] Started User Manager for UID 0.  
[ OK ] Started Session 1 of user root.  
root@hostname1:~# neofetch
```

Thank you for your time  
Alireza Pourchali