



Creating a Linux VM

(Because Linux is better, that's why)

Overview

1. Choose and download your distribution software
2. Create your VM using VMware Workstation
3. Launch your VM and perform initial startup
4. Install Ignition and Designer Launcher
5. Install SQL Server and MSSQL-Tools

Step 1. Choose and download your distribution

- I like Ubuntu. <https://ubuntu.com/download>
- Debian is also a solid choice. <https://www.debian.org/distrib/netinst>
- There are thousands of others. Mint and RedHat are also popular, but you'll have the most support online for specific problems with Ubuntu or Debian.
- Unless you're super comfortable with Linux, I recommend sticking to a popular one.
- For this guide, I will be using Ubuntu 20.04.1 LTS.

Look at how ridiculously low these requirements are! →

Ubuntu 20.04.1 LTS

Download the latest LTS version of Ubuntu, for desktop PCs and laptops. LTS stands for long-term support — which means five years, until April 2025, of free security and maintenance updates, guaranteed.

[Ubuntu 20.04 LTS release notes](#)

Recommended system requirements:

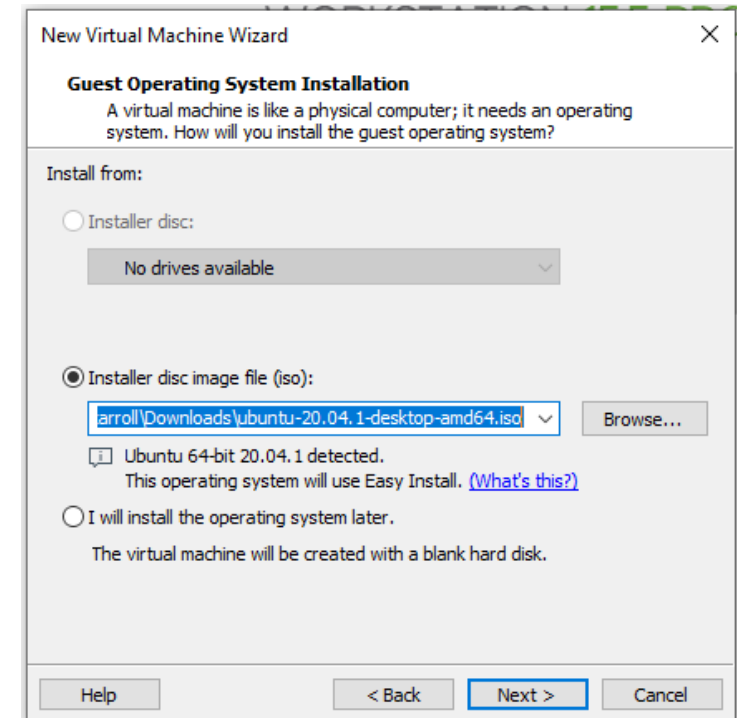
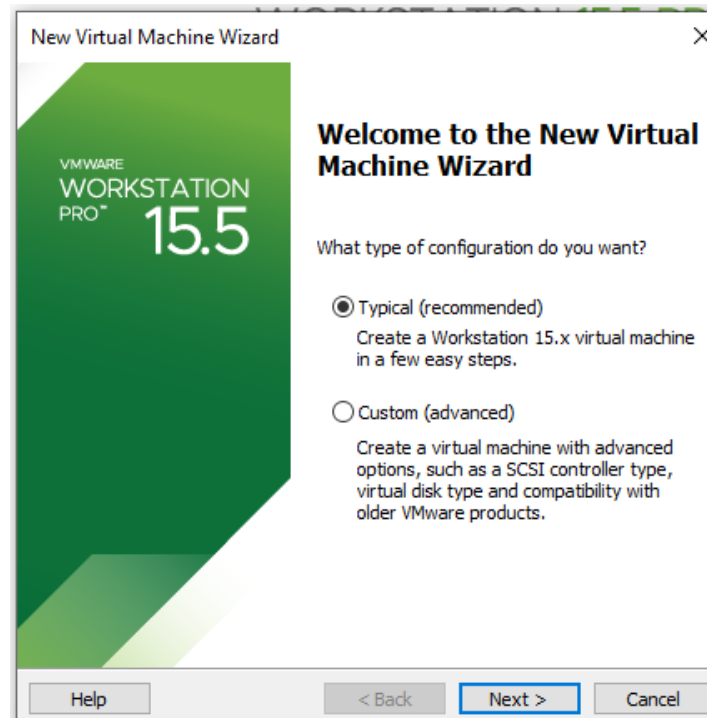
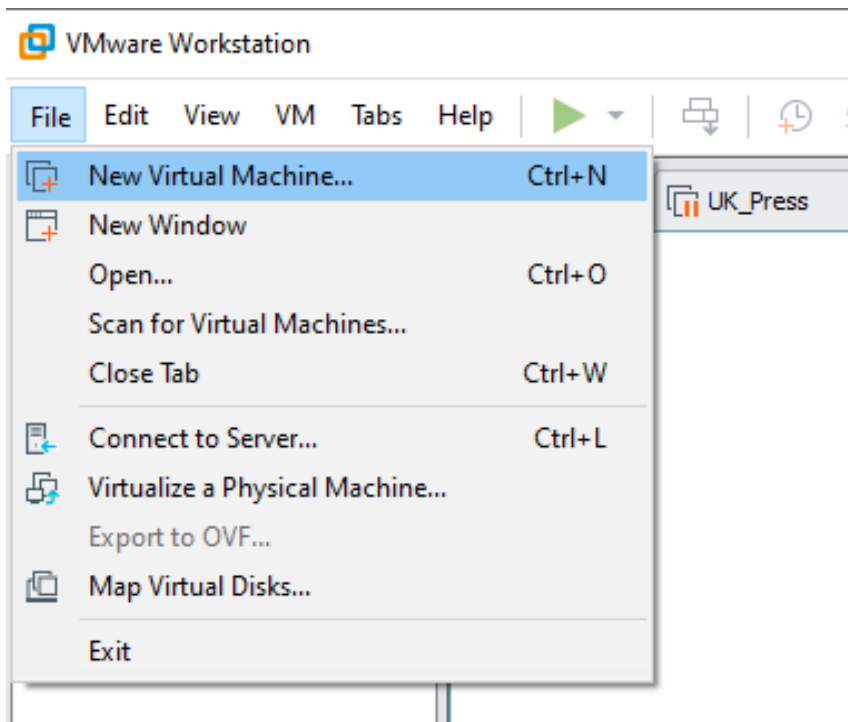
- ✓ 2 GHz dual core processor or better
- ✓ 4 GB system memory
- ✓ 25 GB of free hard drive space
- ✓ Internet access is helpful
- ✓ Either a DVD drive or a USB port for the installer media

Download

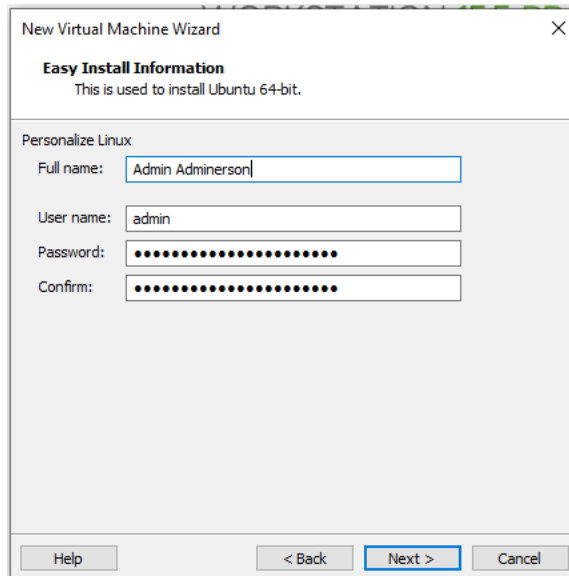
For other versions of Ubuntu Desktop including torrents, the network installer, a list of local mirrors, and past releases [see our alternative downloads](#).

Step 2. Create your VM using VMware (or any other software you choose)

- Create a blank machine and follow wizard to set up OS, Memory, CPU, etc.



Step 2. Create your VM using VMware



New Virtual Machine Wizard

Easy Install Information
This is used to install Ubuntu 64-bit.

Personalize Linux

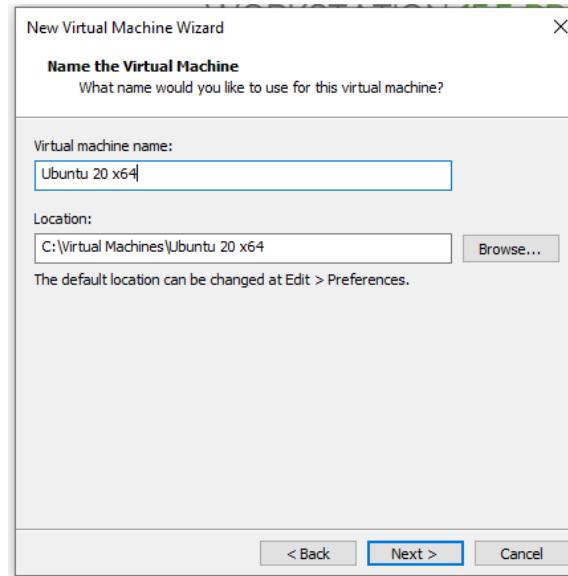
Full name:

User name:

Password:

Confirm:

Help < Back Next > Cancel



New Virtual Machine Wizard

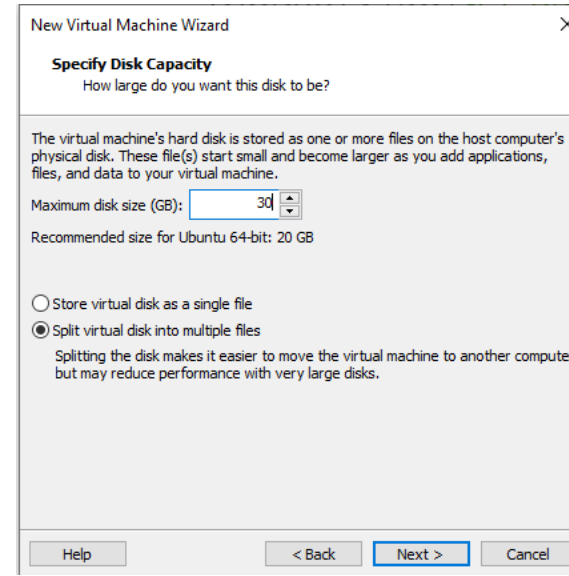
Name the Virtual Machine
What name would you like to use for this virtual machine?

Virtual machine name:

Location: Browse...

The default location can be changed at Edit > Preferences.

< Back Next > Cancel



New Virtual Machine Wizard

Specify Disk Capacity
How large do you want this disk to be?

The virtual machine's hard disk is stored as one or more files on the host computer's physical disk. These file(s) start small and become larger as you add applications, files, and data to your virtual machine.

Maximum disk size (GB): GB

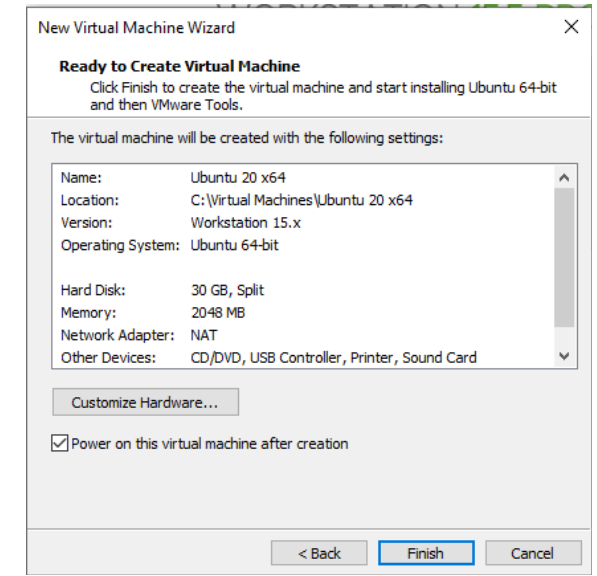
Recommended size for Ubuntu 64-bit: 20 GB

Store virtual disk as a single file

Split virtual disk into multiple files

Splitting the disk makes it easier to move the virtual machine to another computer but may reduce performance with very large disks.

Help < Back Next > Cancel



New Virtual Machine Wizard

Ready to Create Virtual Machine
Click Finish to create the virtual machine and start installing Ubuntu 64-bit and then VMware Tools.

The virtual machine will be created with the following settings:

Name:	Ubuntu 20 x64
Location:	C:\Virtual Machines\Ubuntu 20 x64
Version:	Workstation 15.x
Operating System:	Ubuntu 64-bit
Hard Disk:	30 GB, Split
Memory:	2048 MB
Network Adapter:	NAT
Other Devices:	CD/DVD, USB Controller, Printer, Sound Card

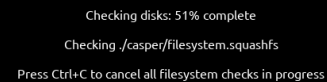
Customize Hardware...

Power on this virtual machine after creation

< Back Finish Cancel

- After creation, increase the memory of the VM for better performance.
- You can also increase the number of processors or add more cores.
- This can only be done while the VM is shut down.

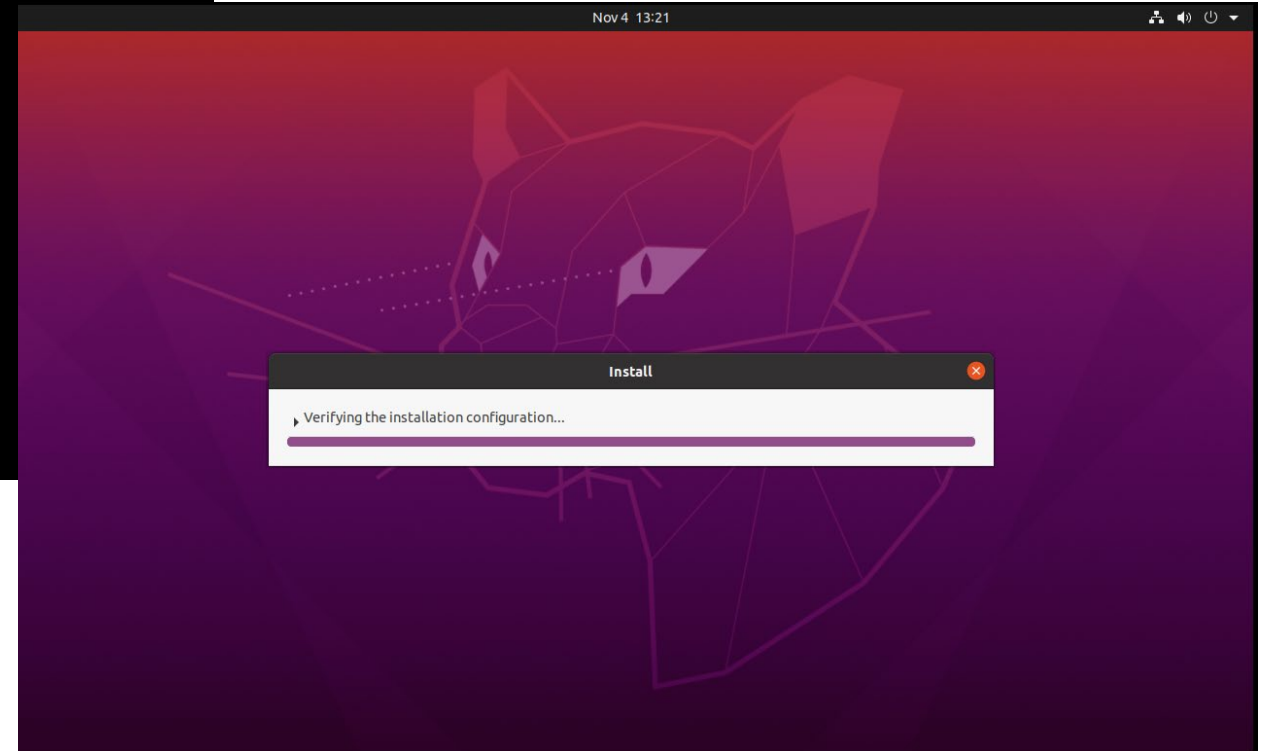
Step 3. Launch VM and perform initial startup



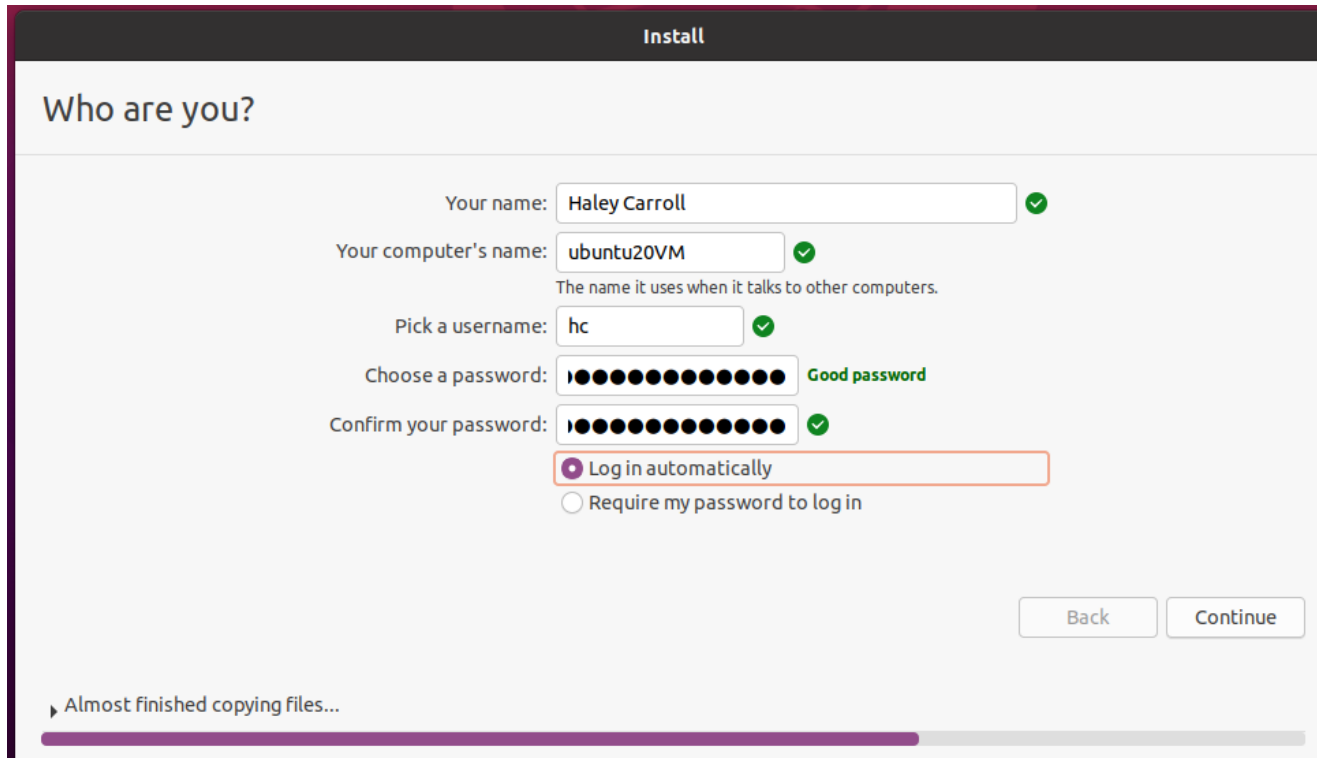
Checking disks: 51% complete
Checking `/casper/filesystem.squashfs`
Press Ctrl+C to cancel all filesystem checks in progress



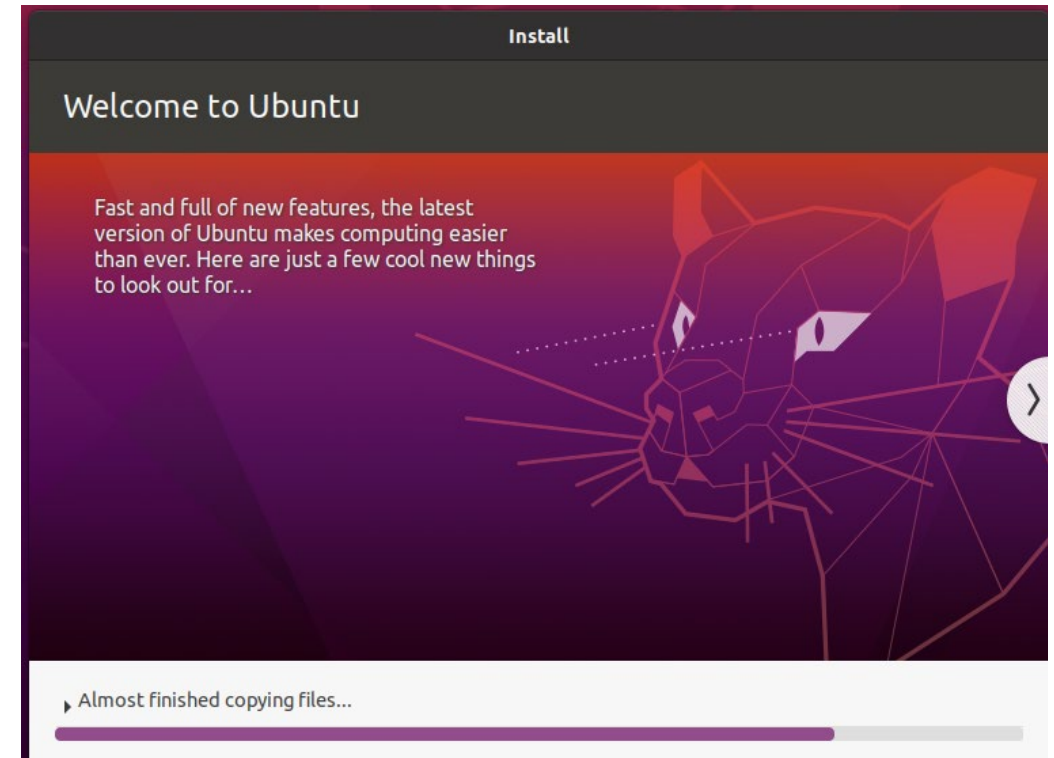
ubuntu



Step 3. Launch VM and perform initial startup

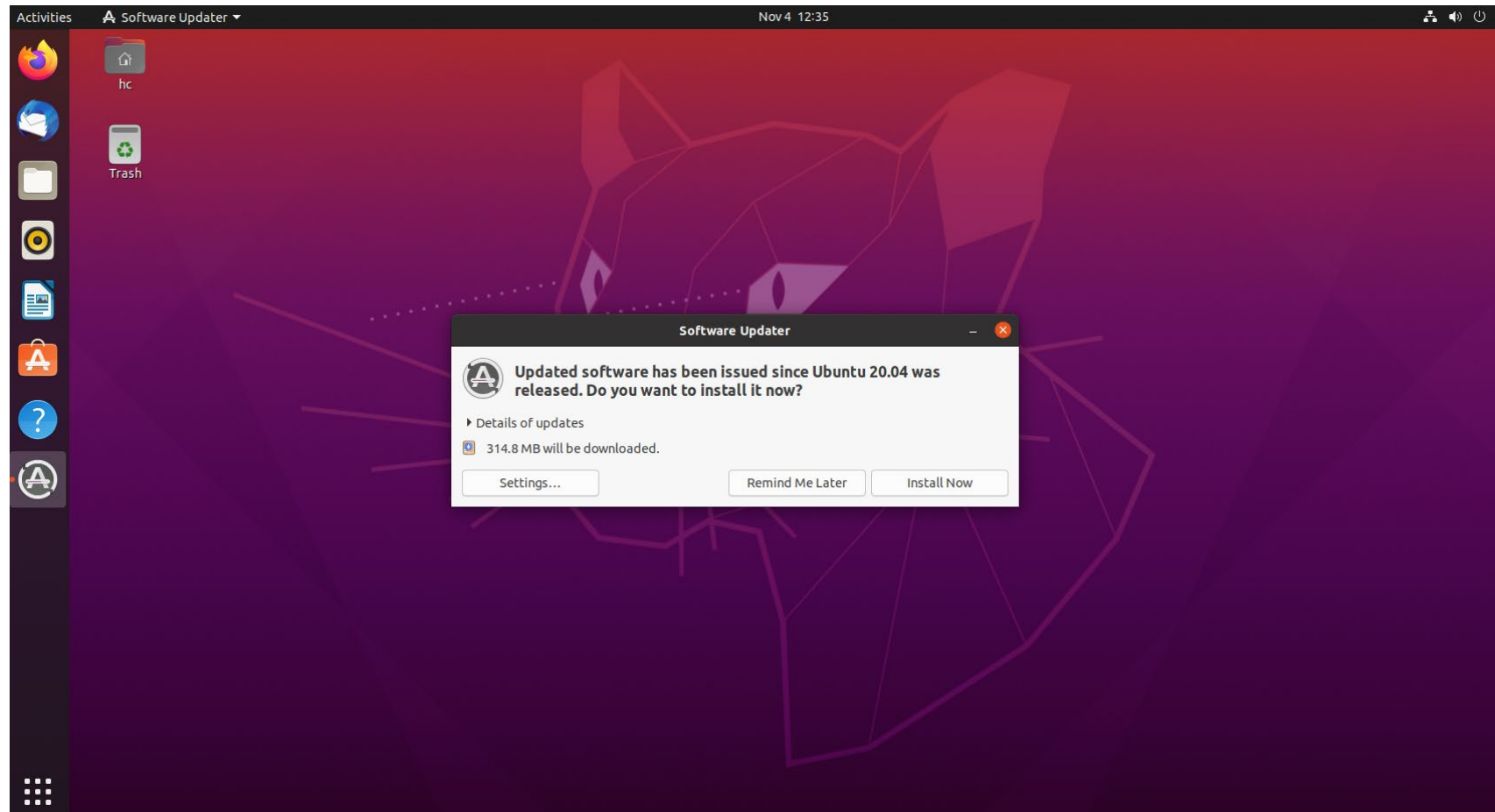


The screenshot shows the 'Who are you?' configuration screen in the Ubuntu installer. It includes fields for 'Your name' (Haley Carroll), 'Your computer's name' (ubuntu20VM), 'Pick a username' (hc), 'Choose a password' (Good password), and 'Confirm your password'. There are radio buttons for 'Log in automatically' (selected) and 'Require my password to log in'. A progress bar at the bottom indicates 'Almost finished copying files...'. Buttons for 'Back' and 'Continue' are visible.



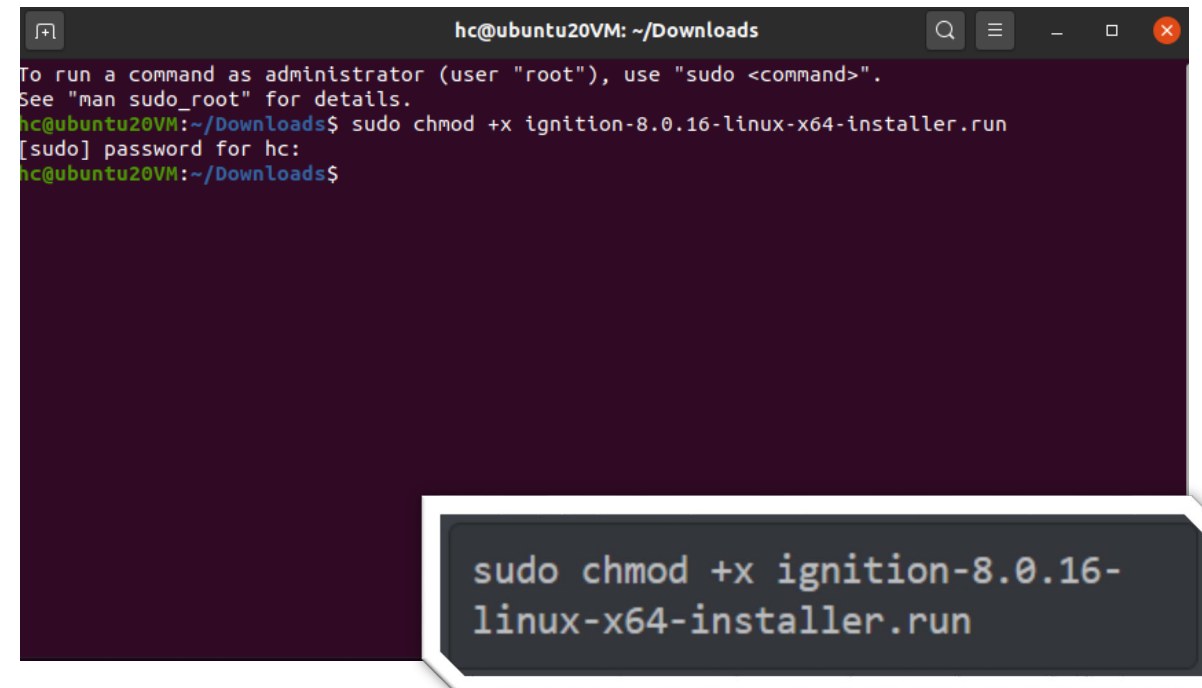
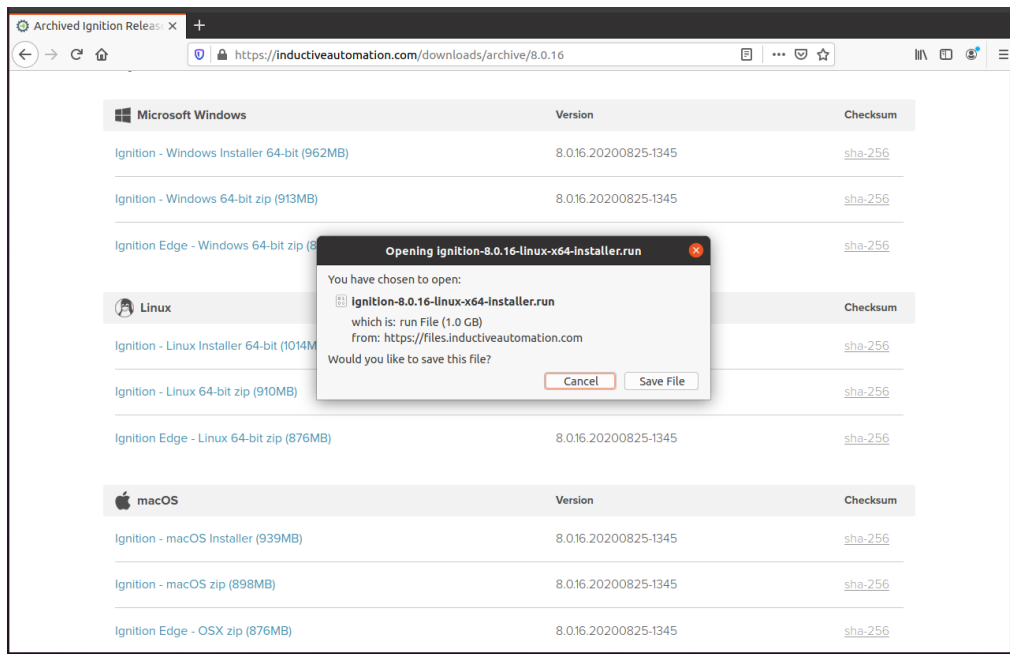
So far, the longest part of this process was downloading the iso...

Step 3. Launch VM and perform initial startup



Step 4. Install Ignition

- We'll go through installing Ignition 8.
- Once downloaded use a chmod command to make the installer useable.
- Ignition works great in Linux. If you're lucky, you might also encounter a rare Linux customer.



Step 4. Install Ignition

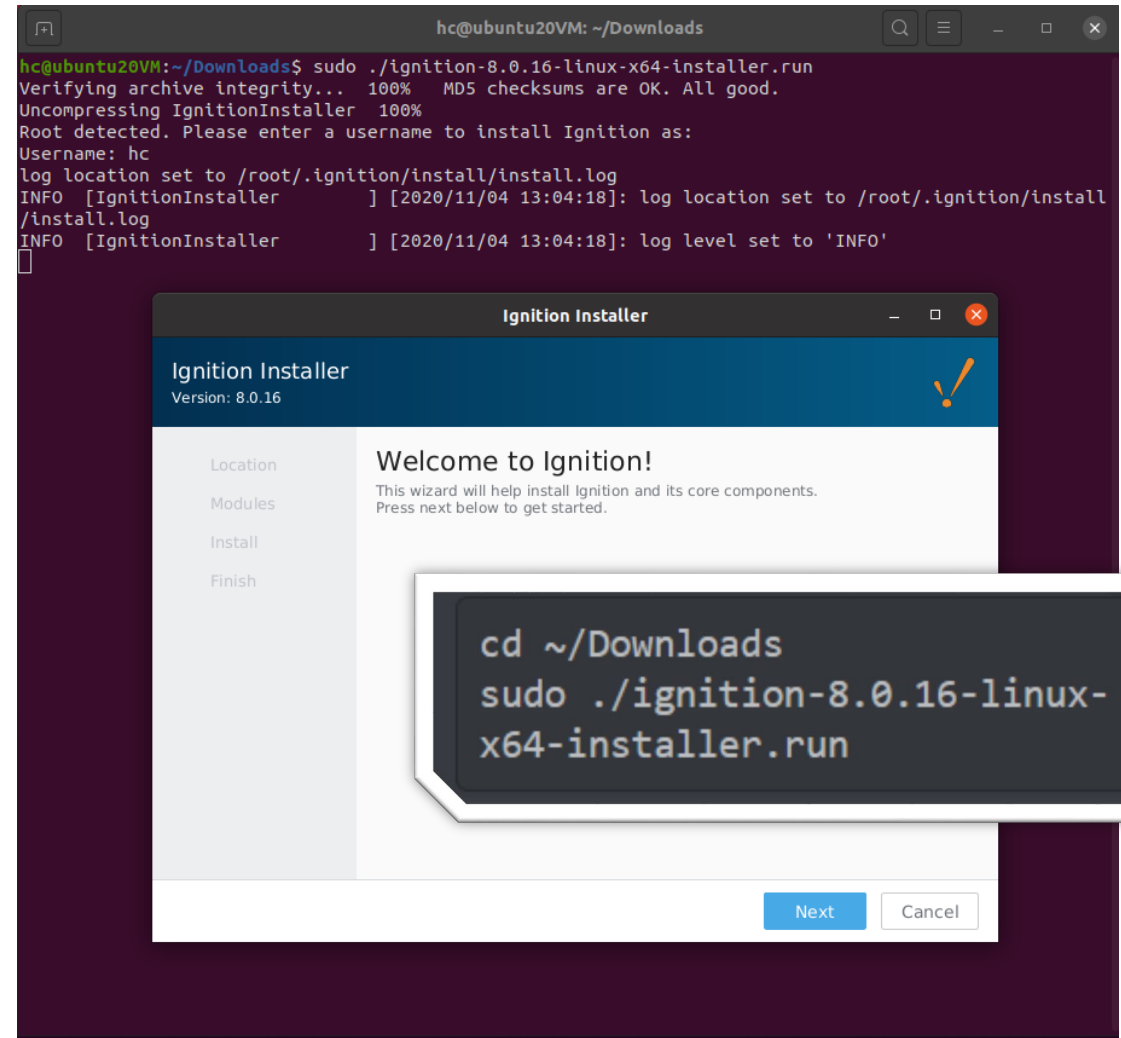
- Update the system to make sure everything is installed.

```
hc@ubuntu20VM: ~  
hc@ubuntu20VM:~$ sudo apt-get update  
[sudo] password for hc:  
Hit:1 http://us.archive.ubuntu.com/ubuntu focal InRelease  
Hit:2 http://us.archive.ubuntu.com/ubuntu focal-updates InRelease  
Hit:3 http://us.archive.ubuntu.com/ubuntu focal-backports InRelease  
Hit:4 http://security.ubuntu.com/ubuntu focal-security InRelease  
Reading package lists... Done  
hc@ubuntu20VM:~$ sudo apt-get upgrade  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
Calculating upgrade... Done  
The following package was automatically installed and is no longer required:  
  libfprint-2-tod1  
Use 'sudo apt autoremove' to remove it.  
The following packages will be upgraded:  
  alsa-utils libasound2 libasound2-data libatopology2 libnetplan0  
  libnss-systemd libpam-systemd libsystemd0 netplan.io python3-distupgrade  
  systemd systemd-sysv systemd-timesyncd ubuntu-release-upgrader-core  
  ubuntu-release-upgrader-gtk  
15 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.  
Need to get 6,068 kB of archives.  
After this operation, 324 kB of additional disk space will be used.  
Do you want to continue? [Y/n] Y  
Get:1 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 libnss-systemd amd64 245.4-4ubuntu3.3 [95.9 kB]  
Get:2 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 systemd-timesyncd amd64 245.4-4ubuntu3.3 [28.1 kB]  
Get:3 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 systemd-sysv amd64 245.4-4ubuntu3.3 [10.3 kB]  
Get:4 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 libpam-systemd amd64 245.4-4ubuntu3.3 [186 kB]  
Get:5 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 systemd amd64 245.4-4ubuntu3.3 [3,804 kB]  
Get:6 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 libsystemd0 amd64 245.4-4ubuntu3.3 [272 kB]  
Get:7 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 libnetplan0 amd64 0.100-0ubuntu4~20.04.1 [10.3 kB]  
Get:8 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 netplan.io amd64 0.100-0ubuntu4~20.04.1 [10.3 kB]  
Get:9 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 ubuntu-release-upgrader-gtk all 1:20.04.1 [1,024 kB]  
Get:10 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 ubuntu-release-upgrader-core all 1:20.04.1 [1,024 kB]  
Get:11 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 python3-distupgrade all 1:20.04.1 [1,024 kB]
```

```
sudo apt-get update  
sudo apt-get upgrade
```

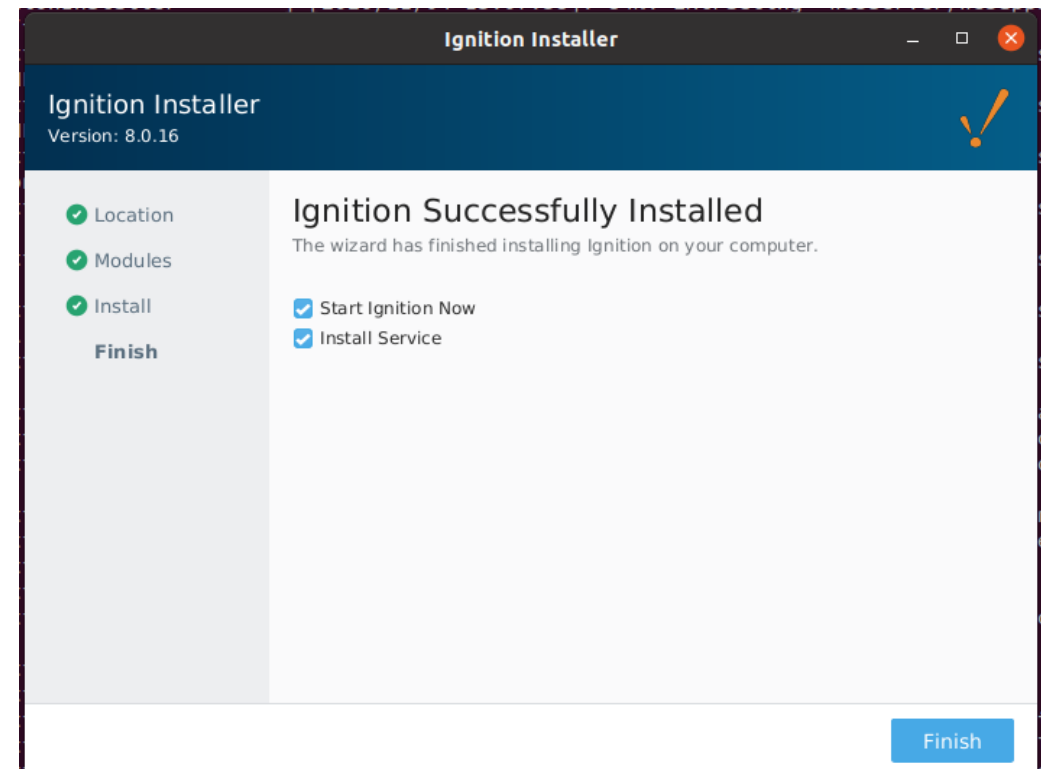
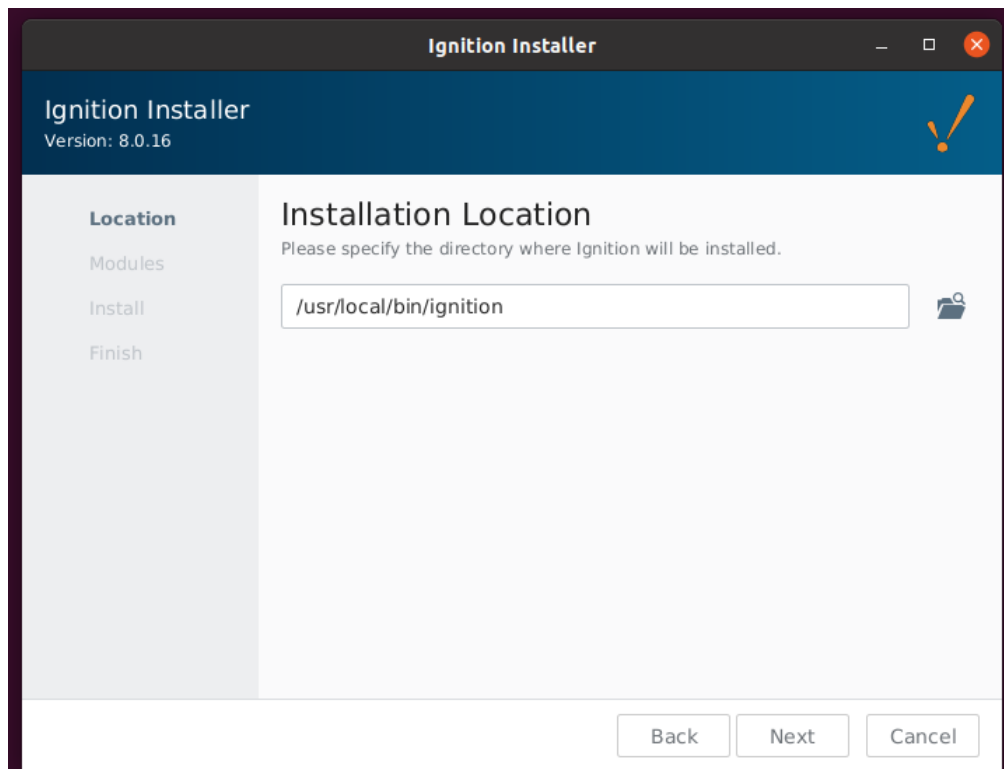
Step 4. Install Ignition

- Switch to the directory where you downloaded the installer and run it.



Step 4. Install Ignition

- Since we didn't specify to run it in text mode, the familiar UI installation will pop up.
- The default installation location for Linux is `/usr/local/bin/ignition`. This is analogous to `C:\Program Files\Inductive Automation\Ignition`



Step 4.5. Download the Designer Launcher



Download the Designer Launcher

[Download for Linux](#)

We've detected you're on Linux. Download the Designer Launcher for Linux and follow these steps below to install.

Download Ignition Designer Launcher



Ignition Designer Launcher

Download the Ignition Designer Launcher to create or modify your projects.

[Download](#)

Download Application Launchers



Vision Client Launcher

Download the Native Client Launcher to open Vision clients from any Ignition Gateway.

[Download Vision Client Launcher](#)

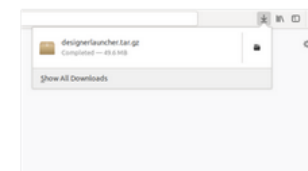


Perspective Session Launcher

Launch a Perspective session directly in your browser or download the native application.

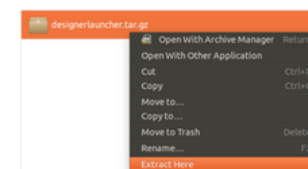
[View Projects](#)

These instructions aren't totally accurate, so we'll go through that here. →



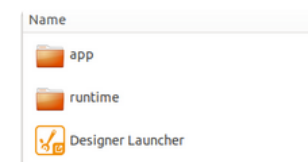
1. Download Designer Launcher

Once the download finishes, **Open** the file called "designerlauncher.tar.gz".



2. Extract the Application

Extract the contents of the tar.gz to your desired install location.

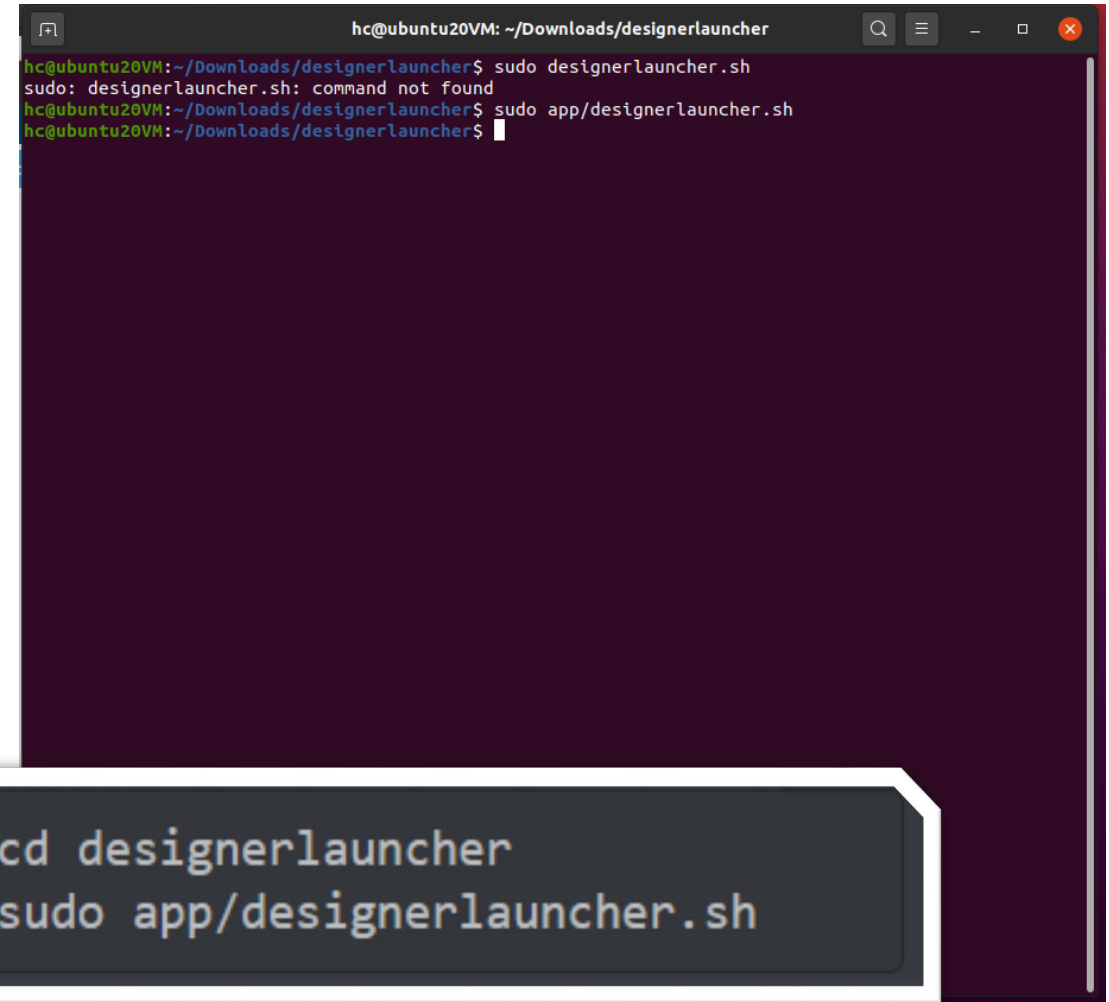
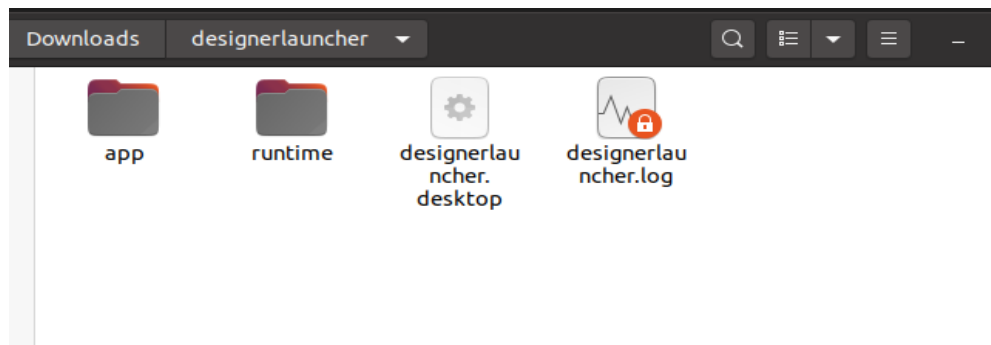


3. Open the Designer Launcher

Navigate to the install location and open the Designer Launcher.

Step 4.75. Make Designer Launcher work

- Extract the tar.gz file to wherever you want.
- Go to that directory and enter the extracted designerlauncher folder.
- Run `sudo app/designerlauncher.sh` which will launch the Designer Launcher.
- If you want to have the Designer Launcher executable from a file, you will need to write a script that will do these commands.



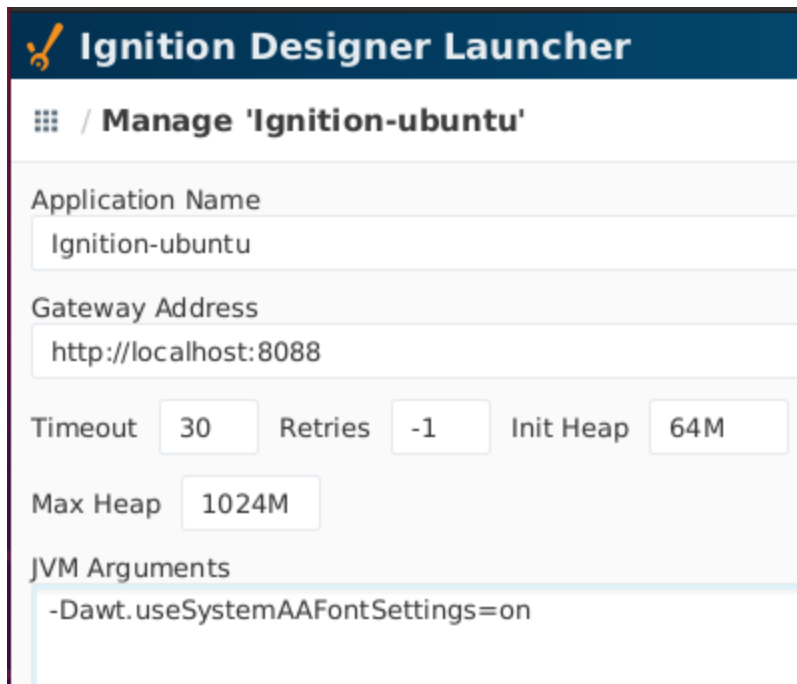
```
hc@ubuntu20VM: ~/Downloads/designerlauncher
hc@ubuntu20VM:~/Downloads/designerlauncher$ sudo designerlauncher.sh
sudo: designerlauncher.sh: command not found
hc@ubuntu20VM:~/Downloads/designerlauncher$ sudo app/designerlauncher.sh
hc@ubuntu20VM:~/Downloads/designerlauncher$
```

A terminal window showing the execution of the `designerlauncher.sh` script. The terminal title is `hc@ubuntu20VM: ~/Downloads/designerlauncher`. The output shows that the command `sudo designerlauncher.sh` is not found, and the command `sudo app/designerlauncher.sh` is executed successfully.

```
cd designerlauncher
sudo app/designerlauncher.sh
```

Step 4.99. Force nicer fonts

- For some reason, Java doesn't set fonts to be anti-aliased by default.
- In the Designer Launcher, click the 3 buttons on the right of the designer and select Manage.
- In the JVM Arguments add `-Dawt.useSystemAAFontSettings=on`



Ignition Designer Launcher

☰ / Manage 'Ignition-ubuntu'

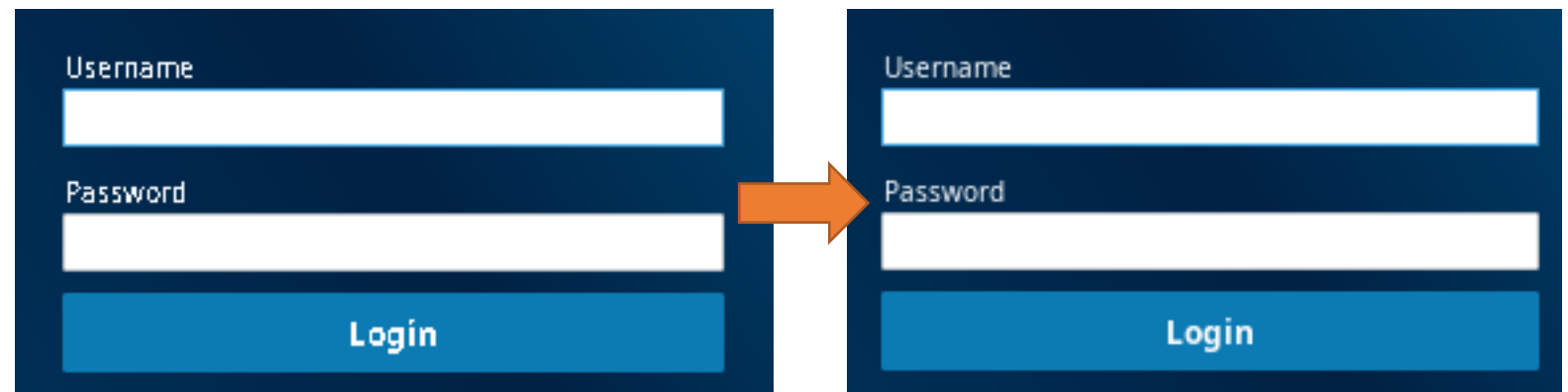
Application Name
Ignition-ubuntu

Gateway Address
http://localhost:8088

Timeout Retries Init Heap

Max Heap

JVM Arguments
`-Dawt.useSystemAAFontSettings=on`



Step 5. Install SQL Server

- First, get the public keys from Microsoft.
- Then get the SQL server repository.

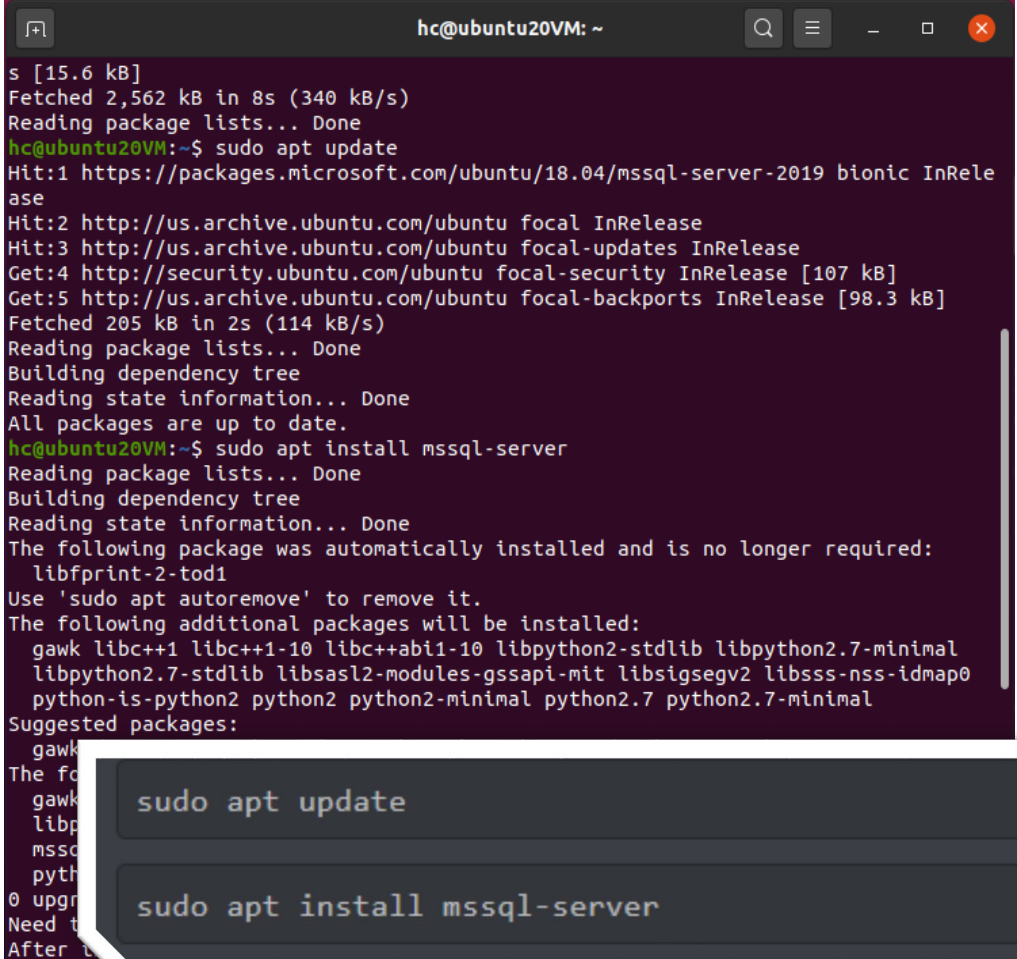
```
hc@ubuntu20VM: ~  
hc@ubuntu20VM:~$ sudo wget -q0- https://packages.microsoft.com/keys/microsoft.asc  
| sudo apt-key add -  
OK  
hc@ubuntu20VM:~$ sudo add-apt-repository "$(wget -q0- https://packages.microsoft.  
com/config/ubuntu/18.04/mssql-server-2019.list)"  
Get:1 https://packages.microsoft.com/ubuntu/18.04/mssql-server-2019 bionic InRele  
ase [10.5 kB]  
Get:2 https://packages.microsoft.com/ubuntu/18.04/mssql-server-2019 bionic/main a  
rm64 Packages [2,713 B]  
Hit:3 http://us.archive.ubuntu.com/ubuntu focal InRelease  
Get:4 https://packages.microsoft.com/ubuntu/18.04/mssql-server-2019 bionic/main a  
rmhf Packages [2,713 B]  
Get:5 https://packages.microsoft.com/ubuntu/18.04/mssql-server-2019 bionic/main a  
md64 Packages [13.4 kB]  
Get:6 http://security.ubuntu.com/ubuntu focal-security InRelease [107 kB]  
Get:7 http://us.archive.ubuntu.com/ubuntu focal-updates InRelease [111 kB]  
Get:8 http://us.archive.ubuntu.com/ubuntu focal-backports InRelease [98.3 kB]  
Get:9 http://us.archive.ubuntu.com/ubuntu focal-updates/main i386 Packages [366 k  
B]  
Get:10 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [638  
kB]  
Get:11 http://us.archive.ubuntu.com/ubuntu focal-updates/main arm64 Packages [4  
kB]  
Get:12 http://us.archive.ubuntu.com/ubuntu focal-updates/main i386 Packages [1  
kB]  
Get:13 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 Package  
Files [10.5 kB]  
Fetched 2,562 kB in 8s (340 kB/s)
```

```
sudo wget -q0-  
https://packages.microsoft.com/keys/microsoft.asc  
| sudo apt-key add -
```

```
sudo add-apt-repository "$(wget -q0-  
https://packages.microsoft.com/config/ubuntu/18.04  
/mssql-server-2019.list)"
```

Step 5. Install SQL Server

- Update the system and install mssql-server.



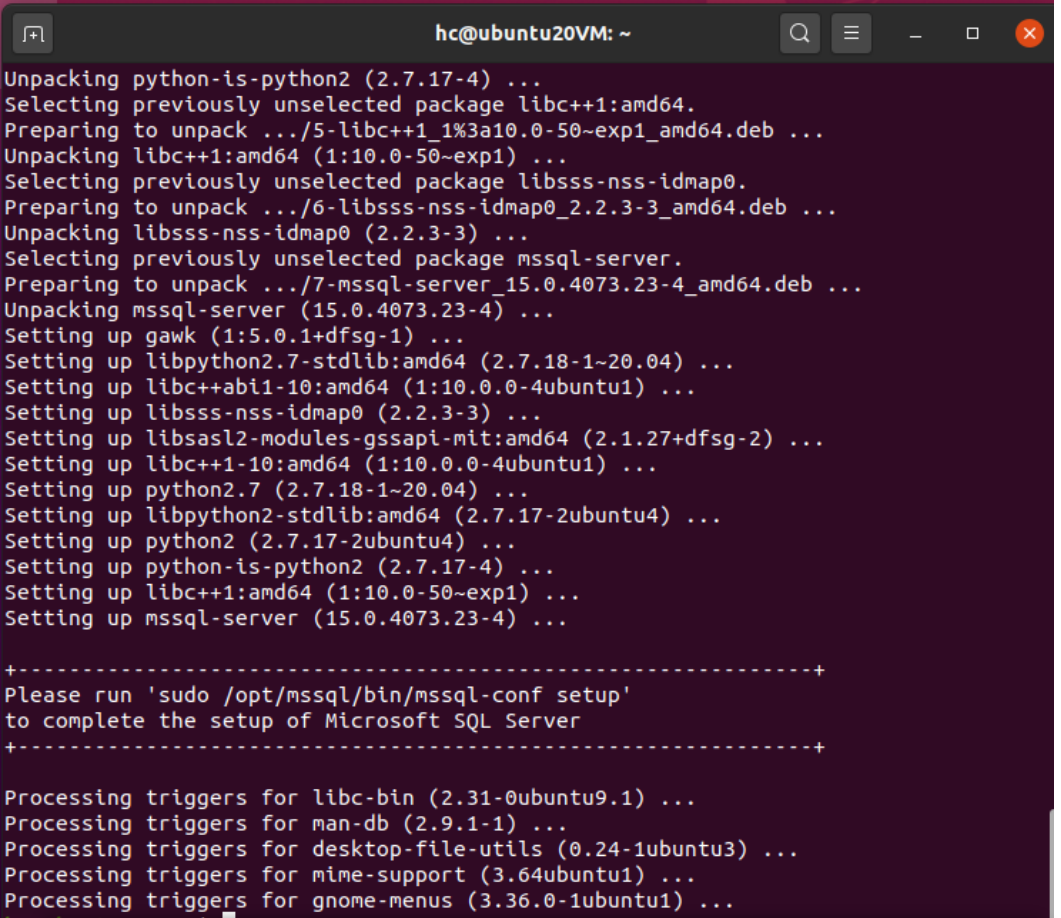
```
hc@ubuntu20VM: ~  
s [15.6 kB]  
Fetched 2,562 kB in 8s (340 kB/s)  
Reading package lists... Done  
hc@ubuntu20VM:~$ sudo apt update  
Hit:1 https://packages.microsoft.com/ubuntu/18.04/mssql-server-2019 bionic InRelease  
Hit:2 http://us.archive.ubuntu.com/ubuntu focal InRelease  
Hit:3 http://us.archive.ubuntu.com/ubuntu focal-updates InRelease  
Get:4 http://security.ubuntu.com/ubuntu focal-security InRelease [107 kB]  
Get:5 http://us.archive.ubuntu.com/ubuntu focal-backports InRelease [98.3 kB]  
Fetched 205 kB in 2s (114 kB/s)  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
All packages are up to date.  
hc@ubuntu20VM:~$ sudo apt install mssql-server  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
The following package was automatically installed and is no longer required:  
  libfprint-2-tod1  
Use 'sudo apt autoremove' to remove it.  
The following additional packages will be installed:  
  gawk libc++1 libc++1-10 libc++abi1-10 libpython2-stdlib libpython2.7-minimal  
  libpython2.7-stdlib libsasl2-modules-gssapi-mit libsigsegv2 libsss-nss-idmap0  
  python-is-python2 python2 python2-minimal python2.7 python2.7-minimal  
Suggested packages:  
  gawk  
The following packages will be installed:  
  gawk  
  libpython2-stdlib  
  mssql-server  
  python2  
  python2-minimal  
0 upgraded, 6 newly installed, 0 to remove and 0 not upgraded.  
Need to get 10.5 MB of archives.  
After this operation, 42.1 MB of additional disk space will be used.  
Do you want to continue? [Y/n]
```

`sudo apt update`

`sudo apt install mssql-server`

Step 5. Install SQL server

- Choose which version of SQL server to use and set up your SA password.



```
hc@ubuntu20VM: ~
Unpacking python-is-python2 (2.7.17-4) ...
Selecting previously unselected package libc++1:amd64.
Preparing to unpack .../5-libc++1_1%3a10.0-50~exp1_amd64.deb ...
Unpacking libc++1:amd64 (1:10.0-50~exp1) ...
Selecting previously unselected package libsss-nss-idmap0.
Preparing to unpack .../6-libsss-nss-idmap0_2.2.3-3_amd64.deb ...
Unpacking libsss-nss-idmap0 (2.2.3-3) ...
Selecting previously unselected package mssql-server.
Preparing to unpack .../7-mssql-server_15.0.4073.23-4_amd64.deb ...
Unpacking mssql-server (15.0.4073.23-4) ...
Setting up gawk (1:5.0.1+dfsg-1) ...
Setting up libpython2.7-stdlib:amd64 (2.7.18-1~20.04) ...
Setting up libc++abi1-10:amd64 (1:10.0.0-4ubuntu1) ...
Setting up libsss-nss-idmap0 (2.2.3-3) ...
Setting up libsasl2-modules-gssapi-mit:amd64 (2.1.27+dfsg-2) ...
Setting up libc++1-10:amd64 (1:10.0.0-4ubuntu1) ...
Setting up python2.7 (2.7.18-1~20.04) ...
Setting up libpython2-stdlib:amd64 (2.7.17-2ubuntu4) ...
Setting up python2 (2.7.17-2ubuntu4) ...
Setting up python-is-python2 (2.7.17-4) ...
Setting up libc++1:amd64 (1:10.0-50~exp1) ...
Setting up mssql-server (15.0.4073.23-4) ...

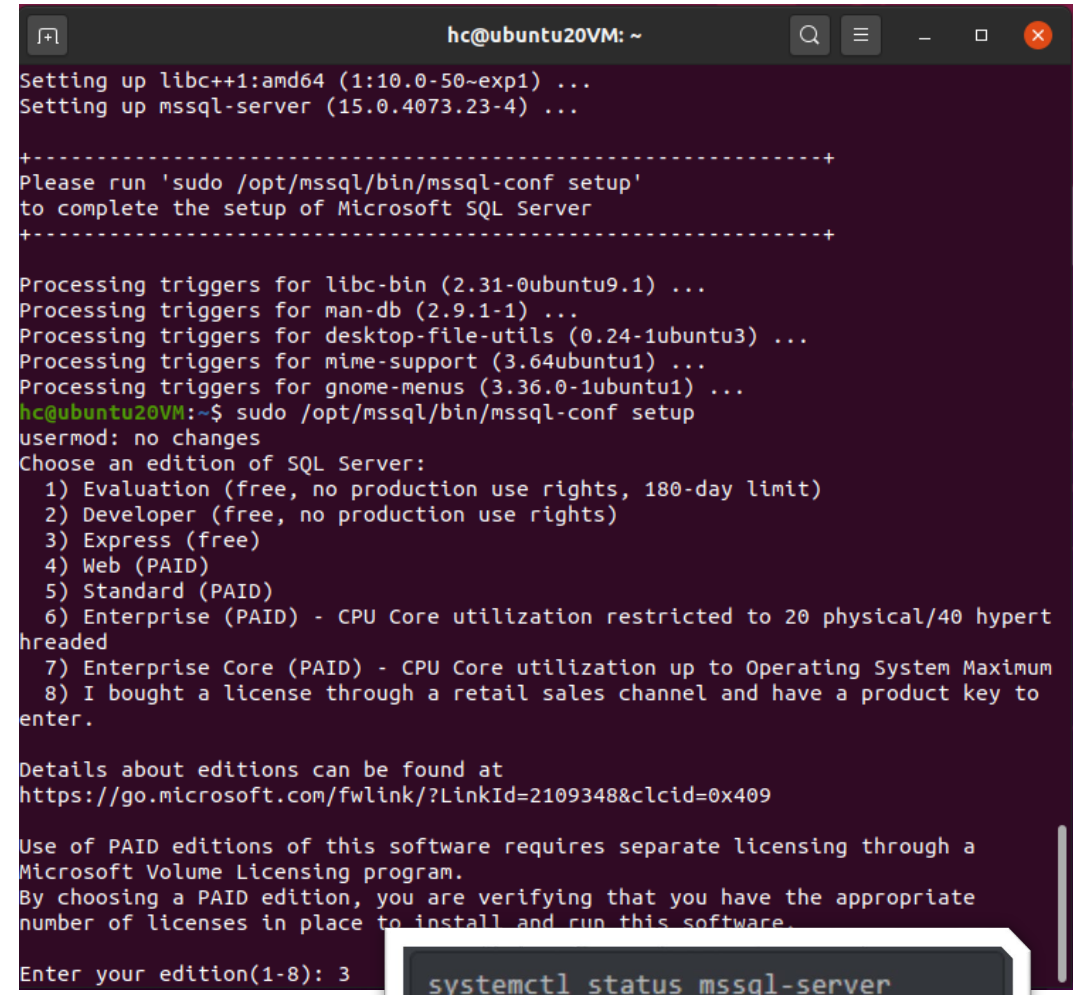
+-----+
Please run 'sudo /opt/mssql/bin/mssql-conf setup'
to complete the setup of Microsoft SQL Server
+-----+

Processing triggers for libc-bin (2.31-0ubuntu9.1) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for desktop-file-utils (0.24-1ubuntu3) ...
Processing triggers for mime-support (3.64ubuntu1) ...
Processing triggers for gnome-menus (3.36.0-1ubuntu1) ...
hc@
```

```
sudo /opt/mssql/bin/mssql-conf setup
```

Step 5. Install SQL server

- Use the `systemctl status` command to check the status of SQL server and confirm that it is running.
- At this point, SQL is installed on the host machine and you should be able to connect to this database through SSMS.



```
hc@ubuntu20VM: ~  
Setting up libc++1:amd64 (1:10.0-50~exp1) ...  
Setting up mssql-server (15.0.4073.23-4) ...  
  
+-----+  
Please run 'sudo /opt/mssql/bin/mssql-conf setup'  
to complete the setup of Microsoft SQL Server  
+-----+  
  
Processing triggers for libc-bin (2.31-0ubuntu9.1) ...  
Processing triggers for man-db (2.9.1-1) ...  
Processing triggers for desktop-file-utils (0.24-1ubuntu3) ...  
Processing triggers for mime-support (3.64ubuntu1) ...  
Processing triggers for gnome-menus (3.36.0-1ubuntu1) ...  
hc@ubuntu20VM:~$ sudo /opt/mssql/bin/mssql-conf setup  
usermod: no changes  
Choose an edition of SQL Server:  
 1) Evaluation (free, no production use rights, 180-day limit)  
 2) Developer (free, no production use rights)  
 3) Express (free)  
 4) Web (PAID)  
 5) Standard (PAID)  
 6) Enterprise (PAID) - CPU Core utilization restricted to 20 physical/40 hypert  
   headed  
 7) Enterprise Core (PAID) - CPU Core utilization up to Operating System Maximum  
 8) I bought a license through a retail sales channel and have a product key to  
   enter.  
  
Details about editions can be found at  
https://go.microsoft.com/fwlink/?LinkId=2109348&clid=0x409  
  
Use of PAID editions of this software requires separate licensing through a  
Microsoft Volume Licensing program.  
By choosing a PAID edition, you are verifying that you have the appropriate  
number of licenses in place to install and run this software.  
Enter your edition(1-8): 3
```

```
systemctl status mssql-server
```

Step 5.5. Install mssql-tools

```
hc@ubuntu20VM:~$ curl https://packages.microsoft.com/keys/microsoft.asc | sudo apt-key add -
% Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
           Dload  Upload  Total   Spent    Left   Speed
100  983    100  983    0     0    2700    0  --:--:--  --:--:--  --:--:--  2700
OK
hc@ubuntu20VM:~$ curl https://packages.microsoft.com/config/ubuntu/19.10/prod.list > /etc/apt/sources.list.d/mssql-release.list
bash: /etc/apt/sources.list.d/mssql-release.list: Permission denied
```

```
sudo apt install curl
```

```
curl
https://packages.microsoft.com/keys/microsoft.asc
| sudo apt-key add -
```

- Mssql-tools allows sqlcmd, so you don't have to connect your host machine to ssms to set up.
- Curl is used to transfer data similar to FTP. Get the public keys from Microsoft and download mssql-tools.
- After that, we'll run sudo apt update, upgrade and then install mssql-tools.

```
hc@ubuntu20VM:~$ curl https://packages.microsoft.com/config/ubuntu/19.10/prod.list | sudo tee /etc/apt/sources.list.d/msprod.list
[sudo] password for hc: % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
           Dload  Upload  Total   Spent    Left   Speed
100  87    100  87    0     0    154    0  --:--:--  --:--:--  --:--:--  154
deb [arch=amd64,arm64,armhf] https://packages.microsoft.com/ubuntu/19.10/prod eo
an mainhc@ubuntu20VM:~$ sudo apt update
Hit:1 https://packages.microsoft.com/ubuntu/20.04/prod focal InRelease
Get:2 https://packages.microsoft.com/ubuntu/19.10/prod eoan InRelease [10.4 kB]
Hit:3 http://archive.ubuntu.com/ubuntu focal InRelease
Get:4 https://packages.microsoft.com/ubuntu/19.10/prod eoan/main amd64 Packages
[39.3 kB]
Get:5 https://packages.microsoft.com/ubuntu/19.10/prod eoan/main arm64 Packages
[844 B]
Get:6 https://packages.microsoft.com/ubuntu/19.10/prod eoan/main armhf Packages
[554 B]
Fetched 51.1 kB in 1s (67.6 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
All packages are up to date.
hc@ubuntu20VM:~$ sudo apt install mssql-tool
Reading package lists... Done
Building dependency tree
Reading state information... Done
E: Unable to locate package mssql-tool
hc@ubuntu20VM:~$ sudo apt install mssql-tools
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libodbc1 msodbcsql17 odbcinst odbcinst-debian
Suggested packages:
  unixodbc-bin
The following NEW packages will be installed:
  libodbc1 msodbcsql17 mssql-tools odbcinst odbcinst-debian
0 upgraded, 6 newly installed, 0 to remove and 0 not installed.
Need to get 1,632 kB of archives.
After this operation, 1,059 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
```

```
curl
https://packages.microsoft.com/conf
ig/ubuntu/19.10/prod.list | sudo
tee
/etc/apt/sources.list.d/msprod.list
```

```
sudo apt update
```

```
sudo apt install mssql-tools
```

Step 5.75. Edit path for sqlcmd

```
hc@ubuntu: ~  
hc@ubuntu:~$ export PATH="$PATH:/opt/mssql-tools/bin"  
hc@ubuntu:~$ nano ~/.bashrc  
  
GNU nano 4.8 /home/hc/.bashrc  
if ! shopt -oq posix; then  
  if [ -f /usr/share/bash-completion/bash_completion ]; then  
    . /usr/share/bash-completion/bash_completion  
  elif [ -f /etc/bash_completion ]; then  
    . /etc/bash_completion  
  fi  
fi  
  
export PATH="$PATH:/opt/mssql-tools/bin"  
  
^G Get Help  ^O Write Out  ^W Where Is  ^K Cut Text  ^J Justify  ^C Cur Pos  
^X Exit      ^R Read File  ^_ Replace   ^U Paste Text ^T To Spell  ^_ Go To Line  
  
hc@ubuntu:~$ export PATH="$PATH:/opt/mssql-tools/bin"  
hc@ubuntu:~$ nano ~/.bashrc  
hc@ubuntu:~$ source ~/.bashrc  
hc@ubuntu:~$
```

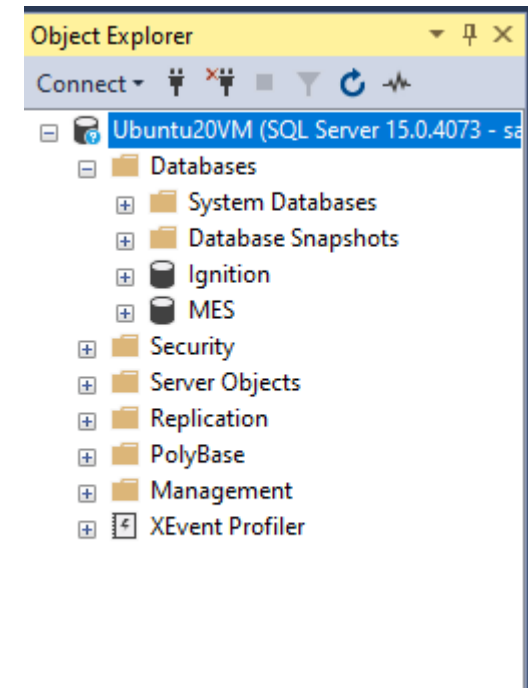
- Now, mssql-tools is installed. But unless we want to go to the installation directory every time, we'll need to add it to the path so it's accessible universally.
- To do that, enter the command `export PATH="$PATH:/opt/mssql-tools/bin"`. That will make this terminal session run `sqlcmd` from any directory.
- Since we this to be automatic, edit the `bashrc` file to include that same statement. `Bashrc` is a script that runs whenever a terminal session is opened.
- Run `source ~/.bashrc` to execute it.

```
export PATH="$PATH:/opt/mssql-tools/bin"  
nano ~/.bashrc  
source ~/.bashrc
```

Step 5.75. Edit path for sqlcmd

- Now we can use sqlcmd to connect to our local instance.
- Create a new database and then verify it in SSMS on the host machine.
- We can also add this database connection to Ignition. It should come back as a valid connection.

```
hc@ubuntu20VM: ~  
hc@ubuntu20VM:~$ sqlcmd -S localhost -U SA  
Password:  
1> CREATE DATABASE MES  
2> GO  
1>
```



Step 6. Laugh at people downloading 120 GB VMs

- Before you go back to work, make a copy of this VM.
- It's only a few gigs and you'll have a fresh, lightweight VM ready to go!

Thanks!