SuperMicro (UCPE) setup

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Follow this guild to setup the SuperMicro box for use with V7 network. The OS for this white box will be Ubuntu 20.04

1. Introduction

We have not decided how to deliver our installation media to the customer yet. That will be determined later on based on the system integrator we pick.

There are three approaches on how to deliver the image.

- Build a installation media with Cubic. Ship the installation media to the integrator.
- Create an ansible image for the integrator.
- Create a golden image for the integrator.

2. Cubic Approach

2.1 General info

With the Cubic approach, the customer get a modified Ubuntu 20.04 installation image. This section is going to cover how to create that image. The image will not be CIS hardened. The CIS hardening script renders the installation image useless. The CIS hardening will need to be called via cloud-init after the installation, which makes the installation process much longer. So this approach is not desirable.

2.2 Obtain the installation media and create installation USB

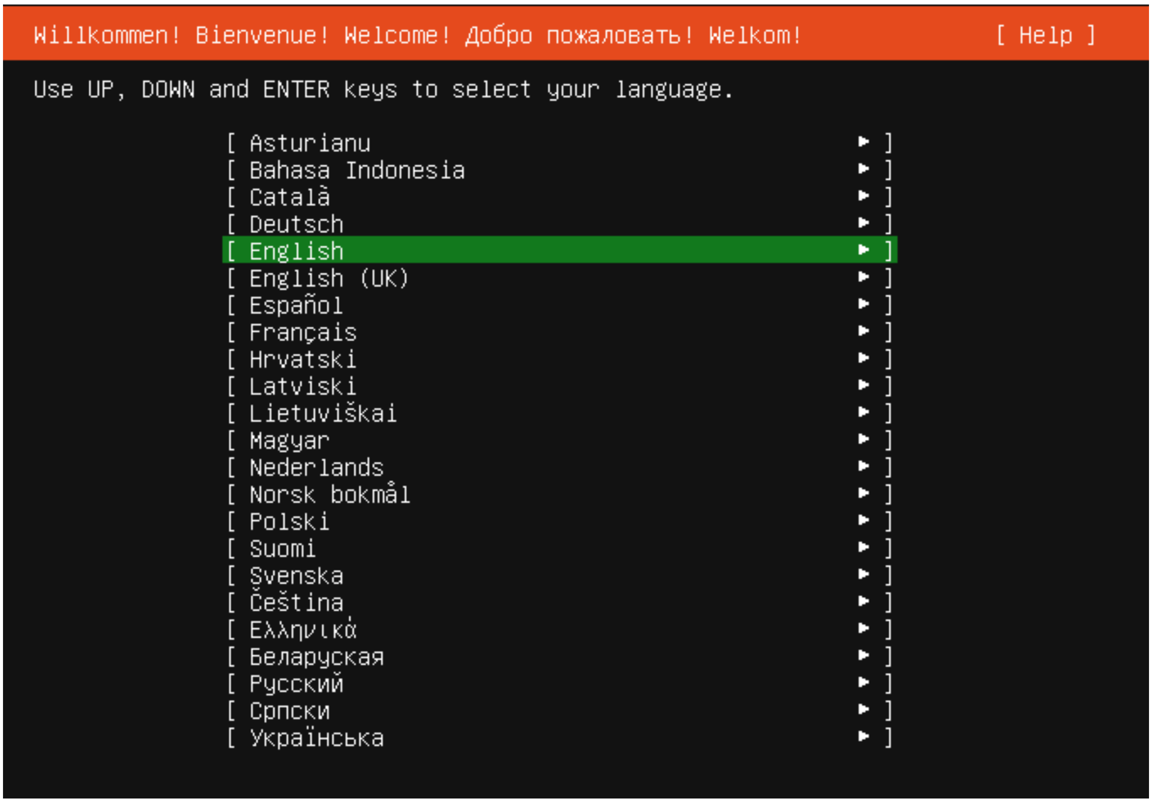
The Cubic requires GUI to run, so the installation ISO can be the desktop version of the Ubuntu20.04. But the installation ISO we going to create is based on the server version, so we going to cover the steps based on Ubuntu 20.04 server installation.

This document is not going to cover how to create USB installation stick.

2.3 Install Ubuntu 20.04 server on Supermicro

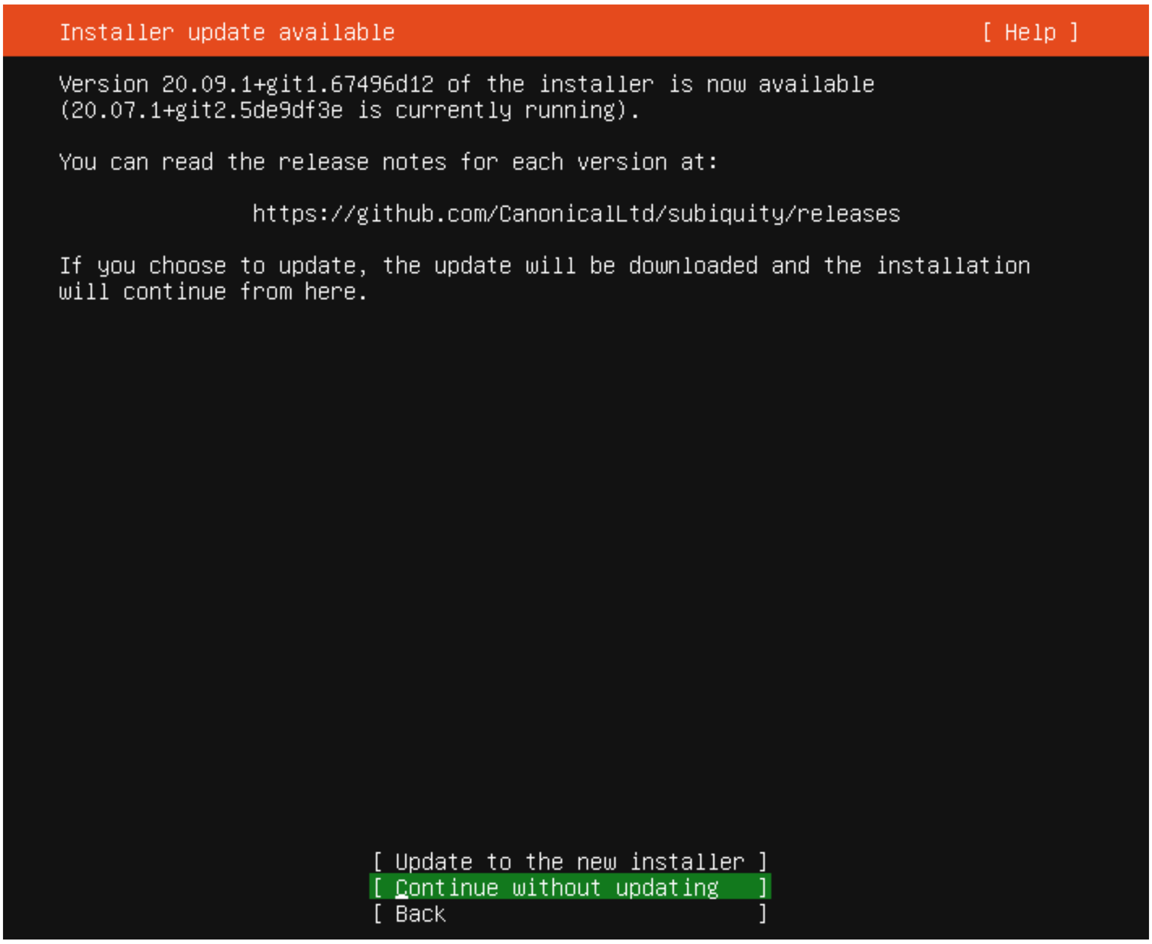
Before your installation starts, make sure you connect the ethernet cable to the first interface on the box. This will make setup the interface a little easier.

Boot up the installation media and start the installation.



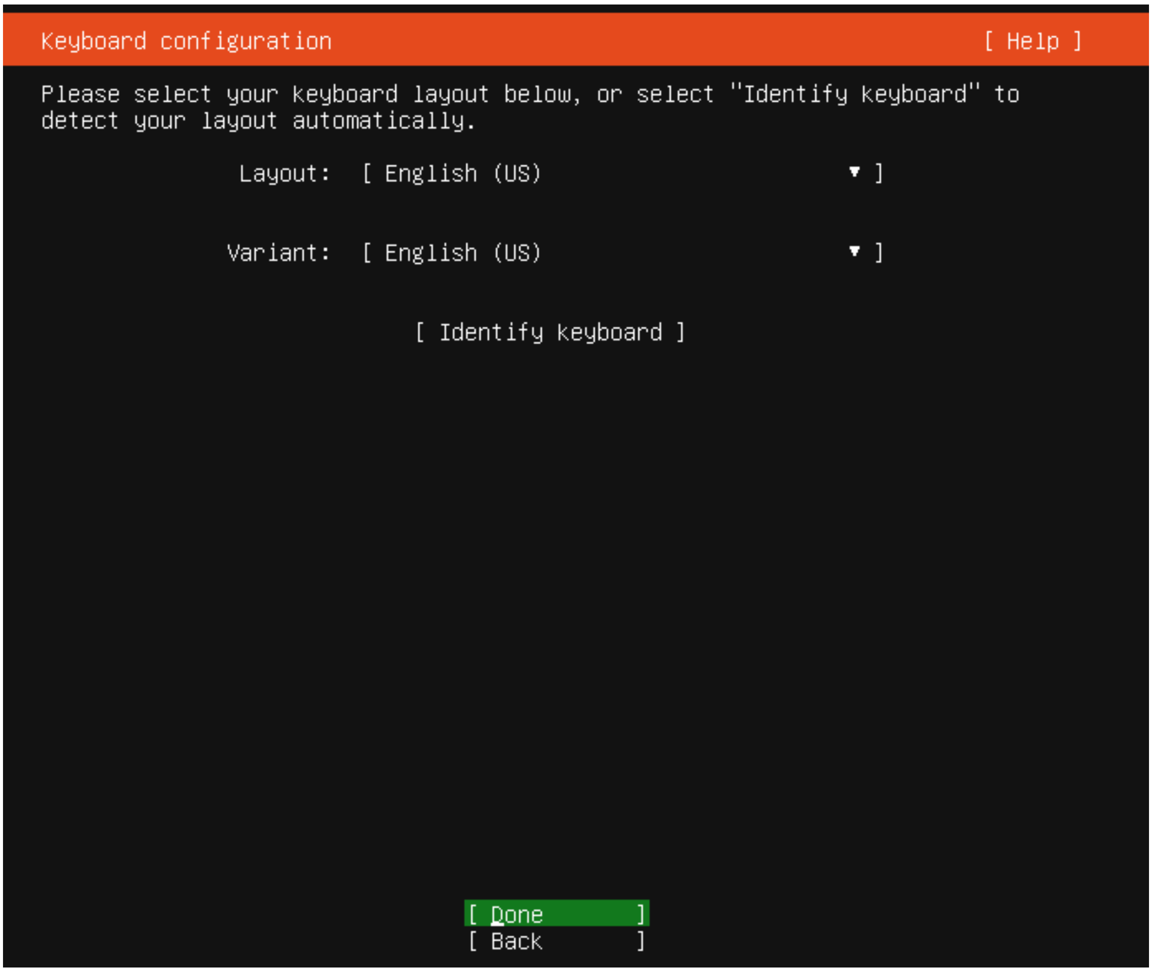
```
Willkommen! Bienvenue! Welcome! Добро пожаловать! Welkom!                [ Help ]

Use UP, DOWN and ENTER keys to select your language.

                [ Asturianu                                          ▶ ]
                [ Bahasa Indonesia                                   ▶ ]
                [ Català                                             ▶ ]
                [ Deutsch                                            ▶ ]
                [ English                                            ▶ ]
                [ English (UK)                                       ▶ ]
                [ Español                                            ▶ ]
                [ Français                                           ▶ ]
                [ Hrvatski                                           ▶ ]
                [ Latviski                                           ▶ ]
                [ Lietuviškai                                        ▶ ]
                [ Magyar                                             ▶ ]
                [ Nederlands                                         ▶ ]
                [ Norsk bokmål                                       ▶ ]
                [ Polski                                             ▶ ]
                [ Suomi                                              ▶ ]
                [ Svenska                                            ▶ ]
                [ Čeština                                            ▶ ]
                [ Ελληνικά                                           ▶ ]
                [ Беларуская                                         ▶ ]
                [ Русский                                            ▶ ]
                [ Српски                                             ▶ ]
                [ Українська                                         ▶ ]
```

Choose the default "English" language or choose your desired language.



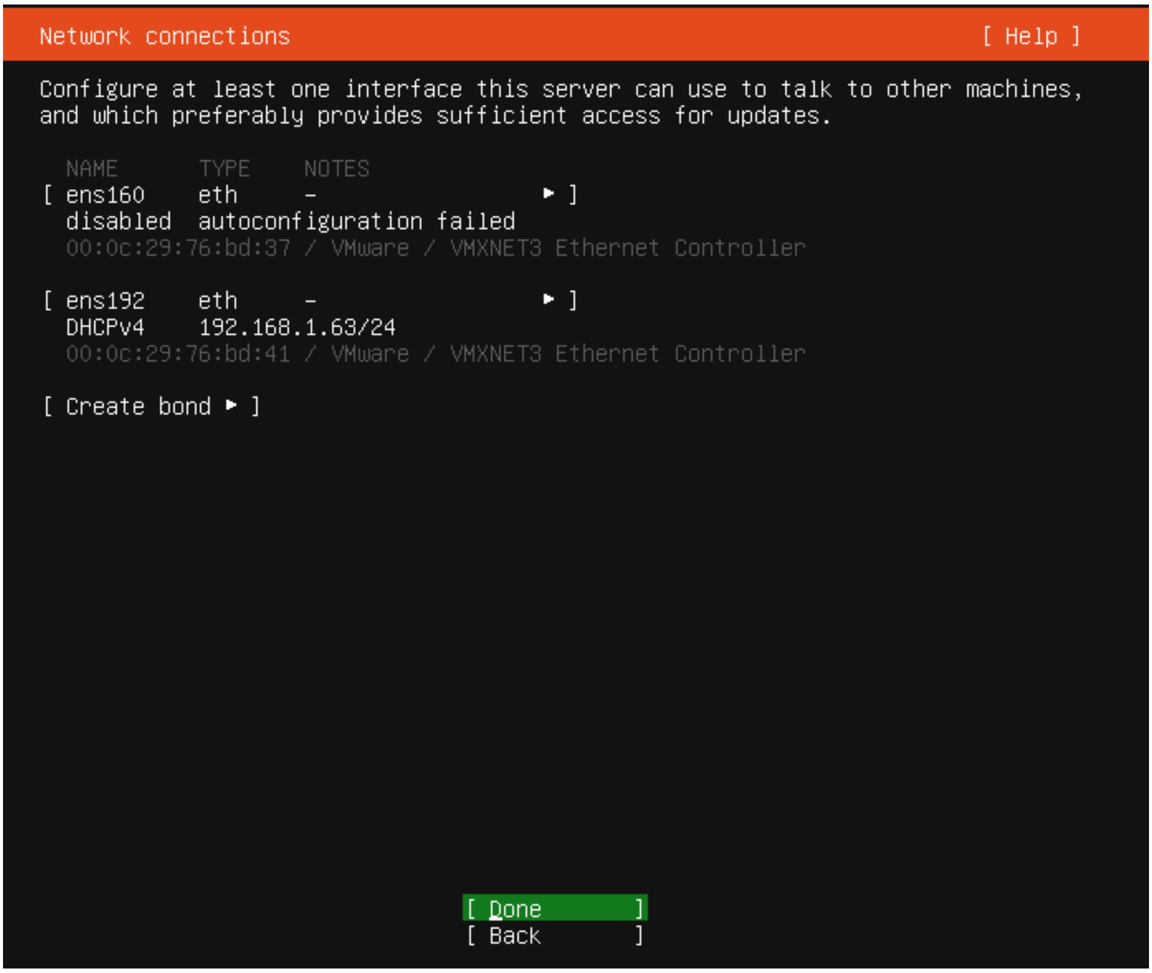
```
  Installer update available                                    [ Help ]
  Version 20.09.1+git1.67496d12 of the installer is now available
  (20.07.1+git2.5de9df3e is currently running).

  You can read the release notes for each version at:

                 https://github.com/CanonicalLtd/subiquity/releases

  If you choose to update, the update will be downloaded and the installation
  will continue from here.

                          [ Update to the new installer ]
                          [ Continue without updating   ]
                          [ Back                        ]
```

Choose "Continue without updating".



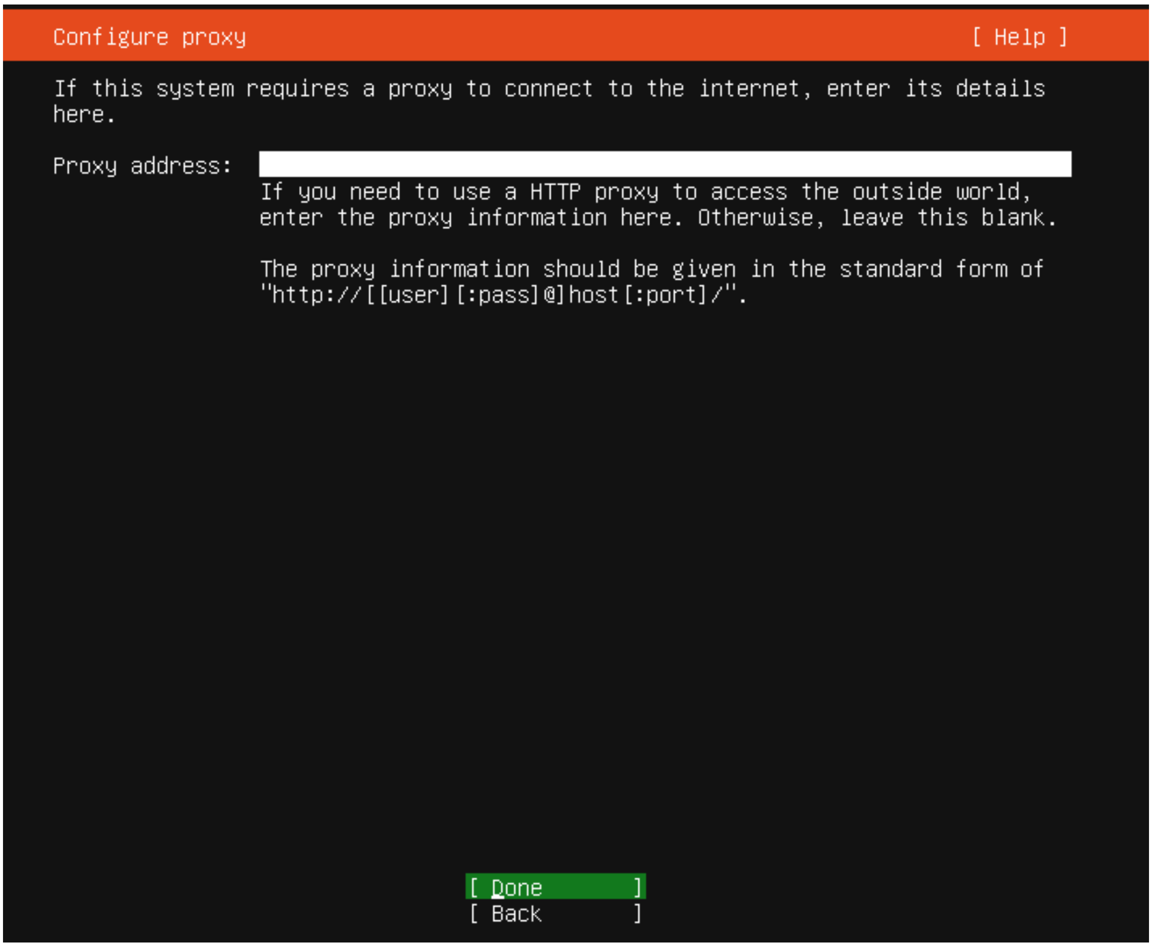
```
Please select your keyboard layout below, or select "Identify keyboard" to
detect your layout automatically.

                Layout:  [ English (US)                         ▼ ]

               Variant:  [ English (US)                         ▼ ]

                              [ Identify keyboard ]
```

Keep the default keyboard layout or choose your keyboard layout (for different language)



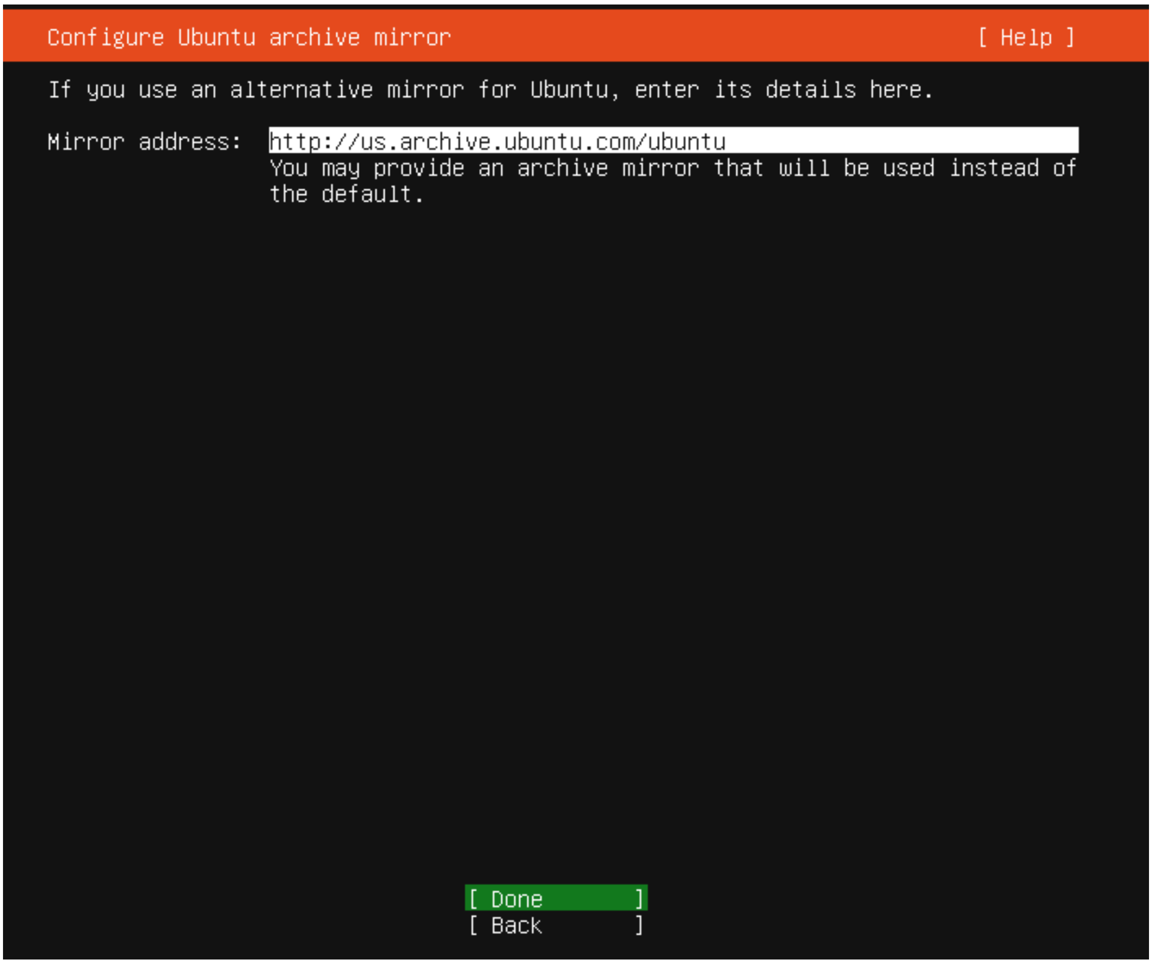
```
Network connections                                                   [ Help ]

Configure at least one interface this server can use to talk to other machines,
and which preferably provides sufficient access for updates.

  NAME      TYPE    NOTES
[ ens160    eth     -                    ► ]
  disabled  autoconfiguration failed
  00:0c:29:76:bd:37 / VMware / VMXNET3 Ethernet Controller

[ ens192    eth     -                    ► ]
  DHCPv4    192.168.1.63/24
  00:0c:29:76:bd:41 / VMware / VMXNET3 Ethernet Controller

[ Create bond ► ]

                                [ Done         ]
                                [ Back         ]
```

On the Network interface page, if the interface is connected, you should see an IP address assigned automatically. If you need to assign a manual IP, you can do so now. Please write down the IP address, you will need that for the later steps.



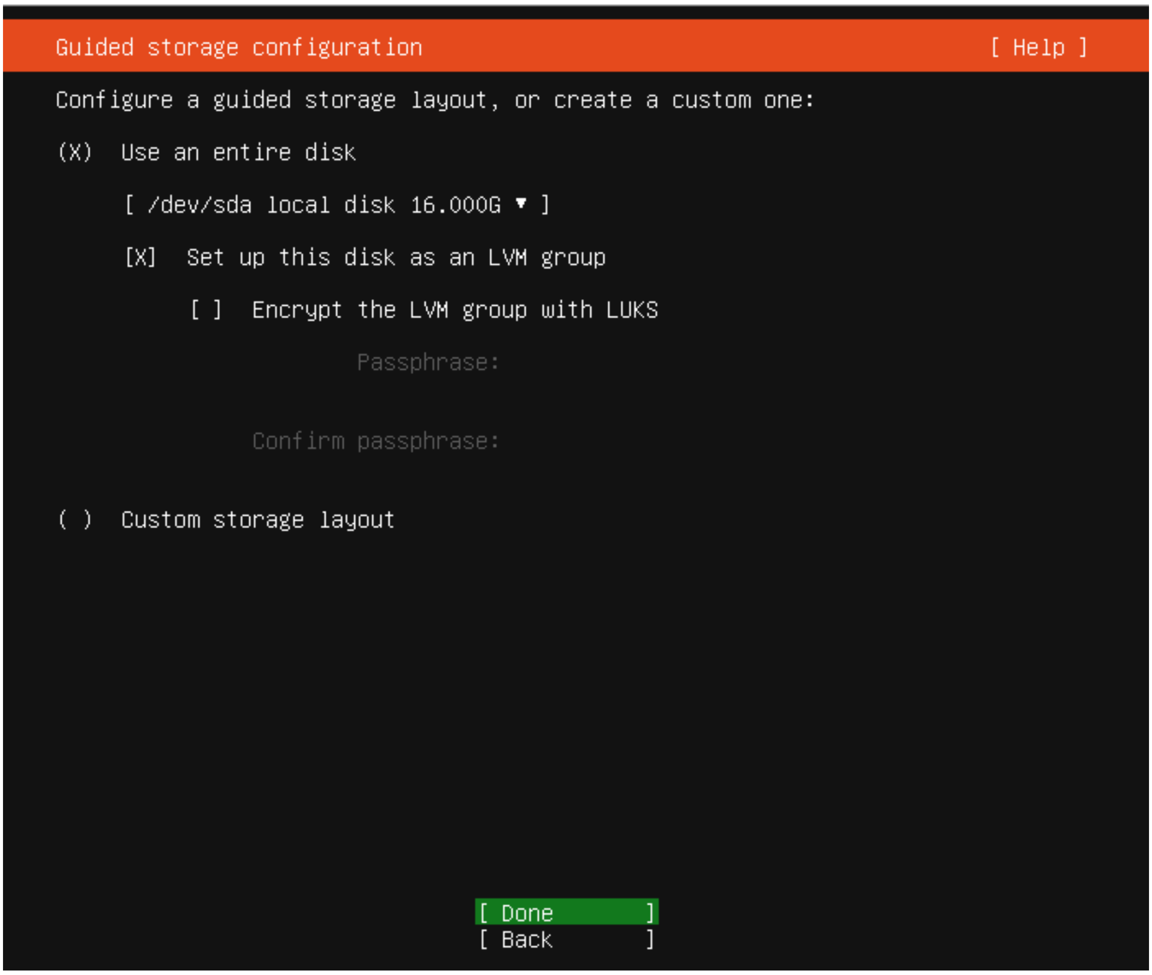
```
Configure proxy                                                     [ Help ]

If this system requires a proxy to connect to the internet, enter its details
here.

Proxy address:
                If you need to use a HTTP proxy to access the outside world,
                enter the proxy information here. Otherwise, leave this blank.

                The proxy information should be given in the standard form of
                "http://[[user][:pass]@]host[:port]/".
```

Skip the Proxy address if you don't use proxy.



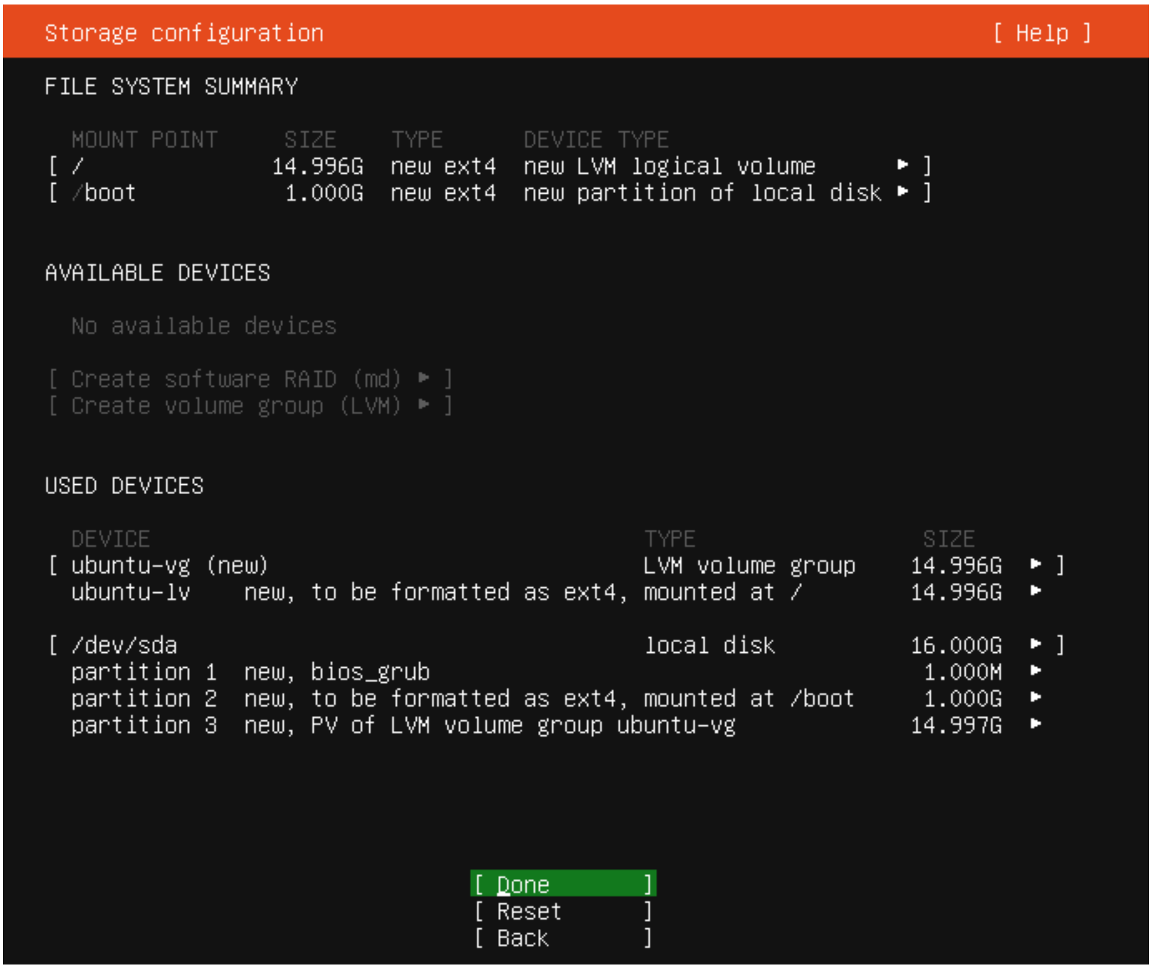
```
Configure Ubuntu archive mirror                                    [ Help ]

 If you use an alternative mirror for Ubuntu, enter its details here.

 Mirror address:  http://us.archive.ubuntu.com/ubuntu
                  You may provide an archive mirror that will be used instead of
                  the default.
```

Keep the default Mirror address and continue

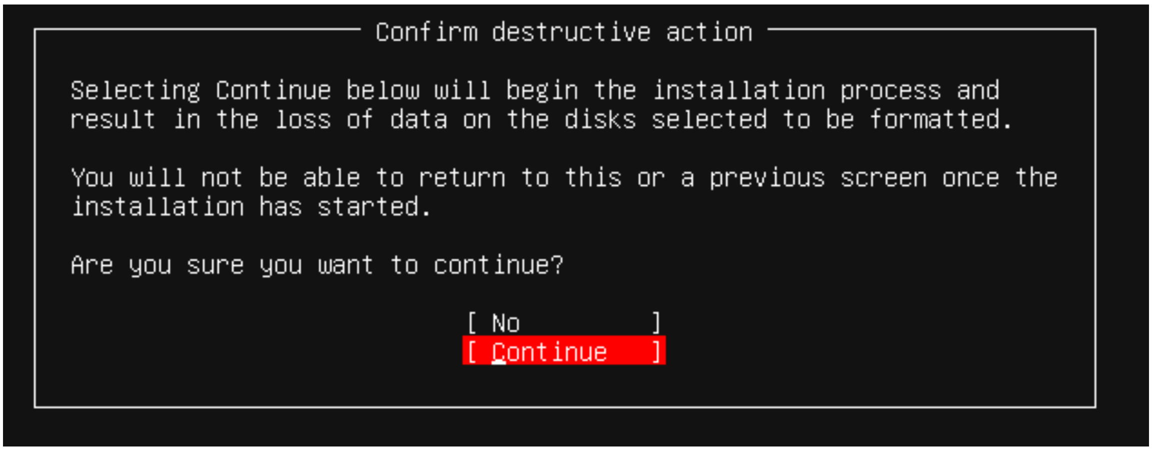


```
Guided storage configuration                                       [ Help ]
Configure a guided storage layout, or create a custom one:

(X)  Use an entire disk

     [ /dev/sda local disk 16.000G ▾ ]

     [X]  Set up this disk as an LVM group

          [ ]  Encrypt the LVM group with LUKS

                      Passphrase:


                Confirm passphrase:


( )  Custom storage layout
```

Use the entire disk (the default) for installation.

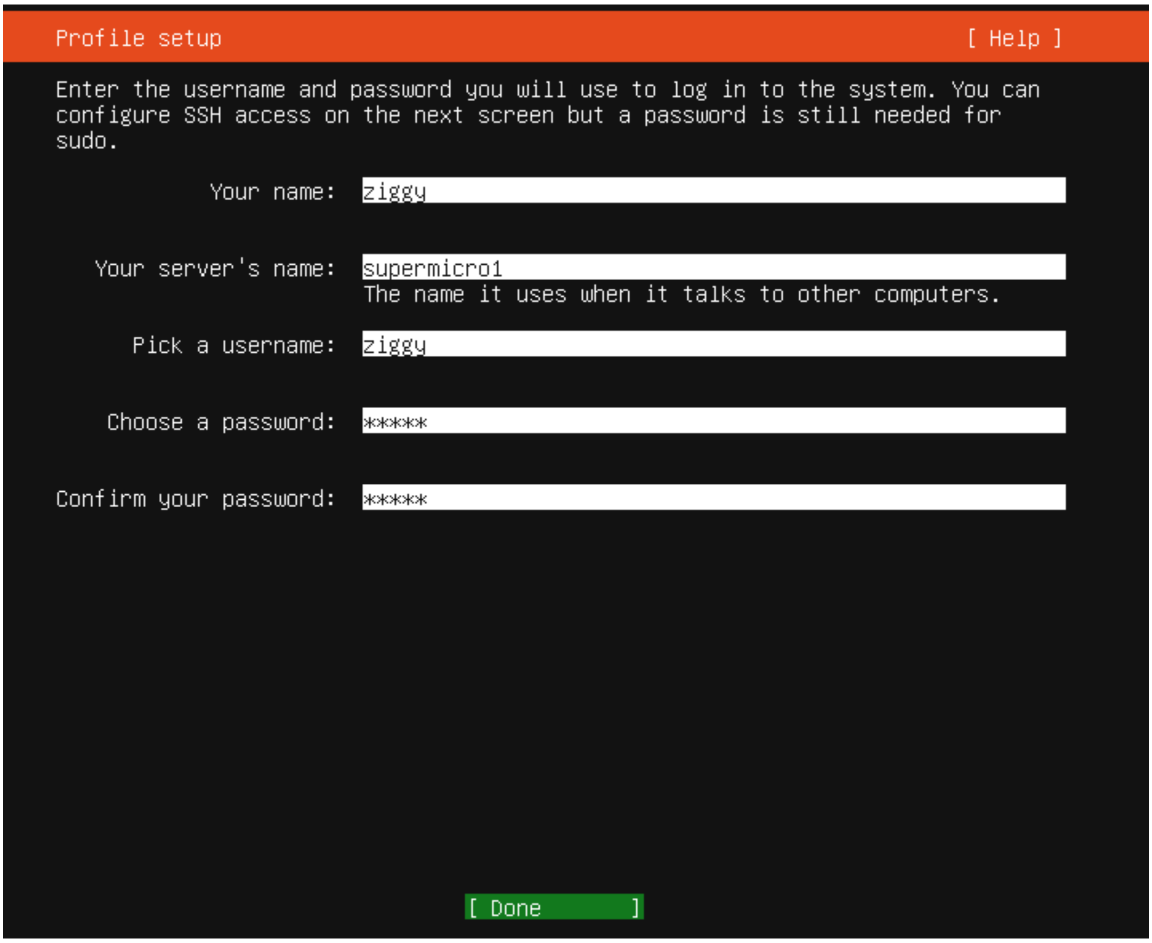


```
Storage configuration                                                  [ Help ]
FILE SYSTEM SUMMARY

  MOUNT POINT     SIZE    TYPE      DEVICE TYPE
[ /             14.996G  new ext4  new LVM logical volume      ► ]
[ /boot          1.000G  new ext4  new partition of local disk ► ]


AVAILABLE DEVICES

  No available devices

[ Create software RAID (md) ► ]
[ Create volume group (LVM) ► ]


USED DEVICES

  DEVICE                                   TYPE                SIZE
[ ubuntu-vg (new)                          LVM volume group    14.996G  ► ]
  ubuntu-lv    new, to be formatted as ext4, mounted at /      14.996G  ►

[ /dev/sda                                 local disk          16.000G  ► ]
  partition 1  new, bios_grub                                   1.000M  ►
  partition 2  new, to be formatted as ext4, mounted at /boot   1.000G  ►
  partition 3  new, PV of LVM volume group ubuntu-vg           14.997G  ►



                                  [ Done         ]
                                  [ Reset        ]
                                  [ Back         ]
```



```
                     Confirm destructive action

  Selecting Continue below will begin the installation process and
  result in the loss of data on the disks selected to be formatted.

  You will not be able to return to this or a previous screen once the
  installation has started.

  Are you sure you want to continue?

                          [ No           ]
                          [ Continue     ]
```

Hit continue to confirm the selection



Enter the username and password you will use to log in to the system. You can configure SSH access on the next screen but a password is still needed for sudo.

Your name: ziggy

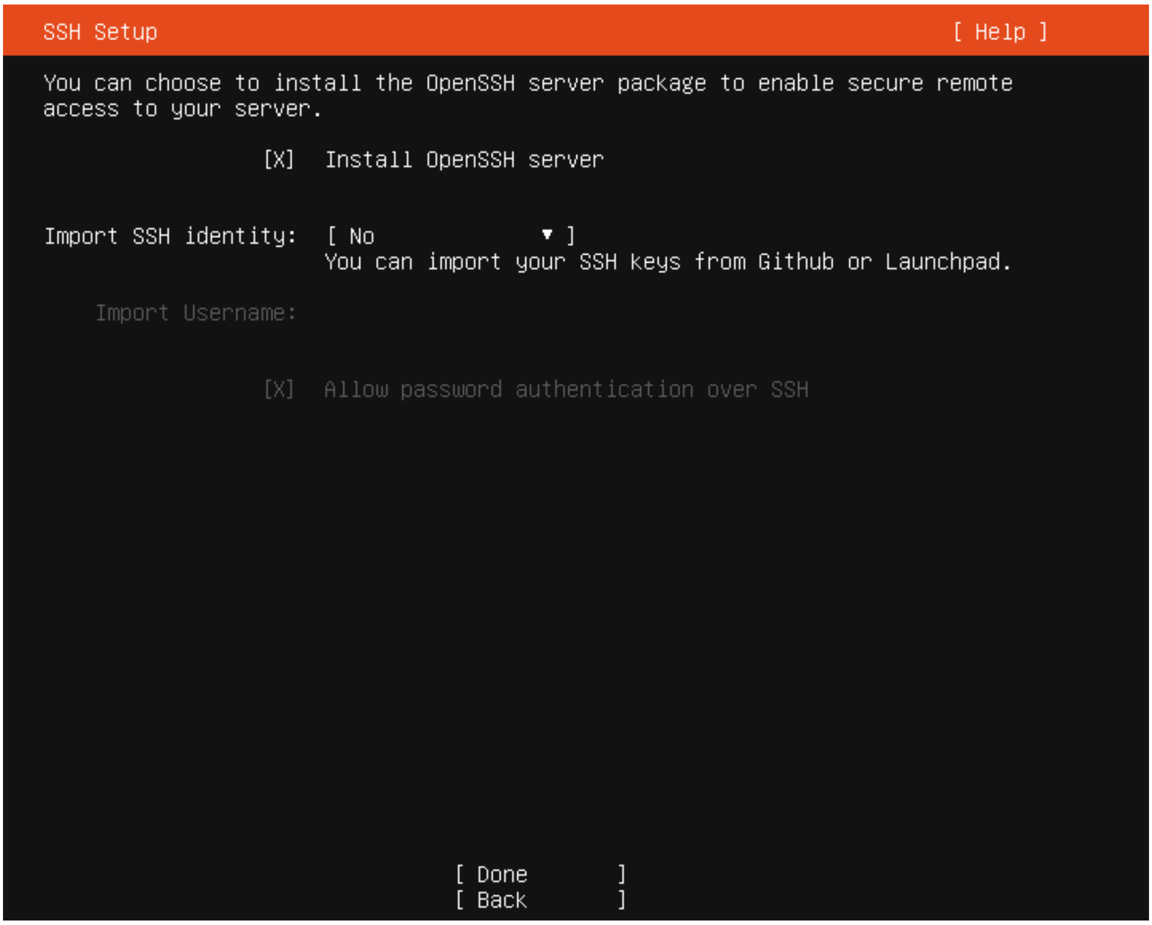
Your server's name: supermicro1
The name it uses when it talks to other computers.

Pick a username: ziggy

Choose a password: *****

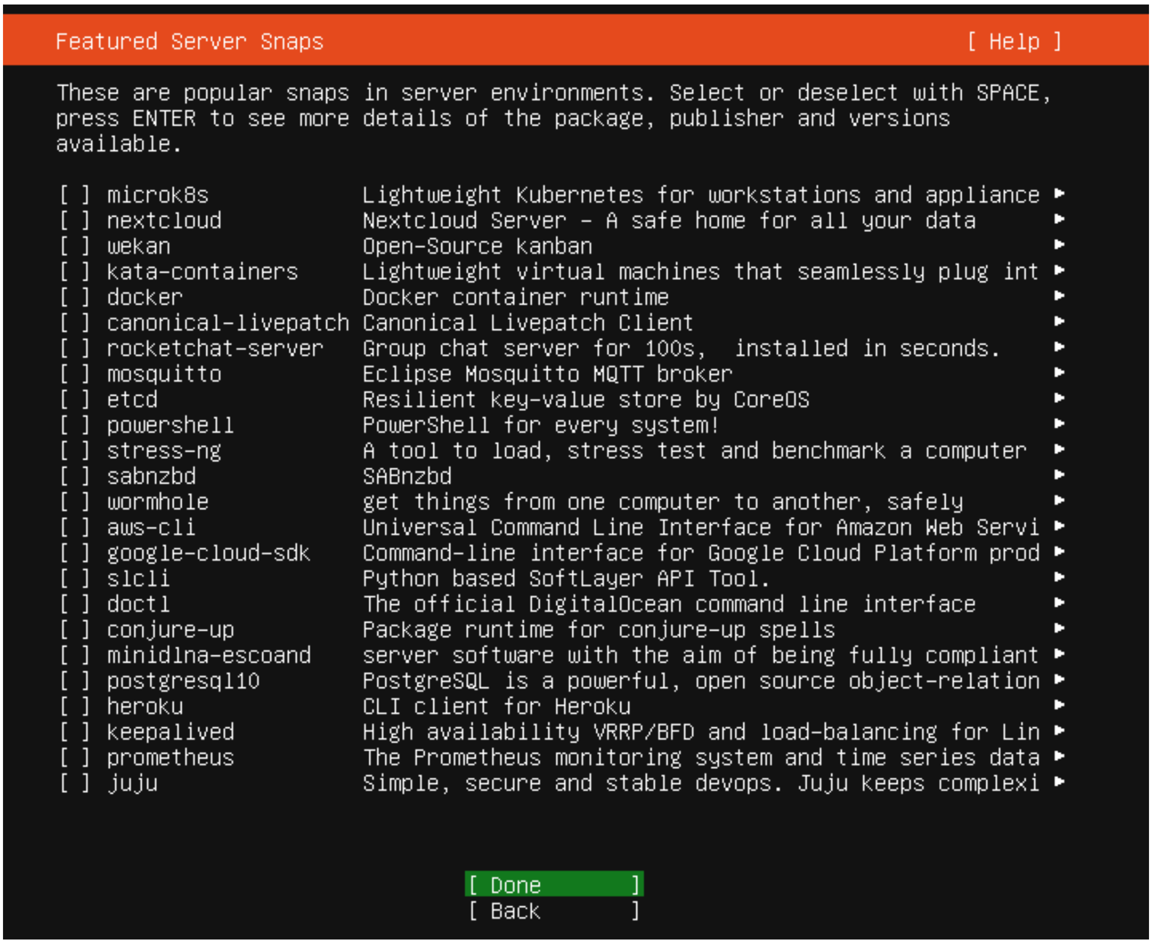
Confirm your password: *****

Choose your username and server name. Write down the username. We will need the username to login to the system to do future configuration.



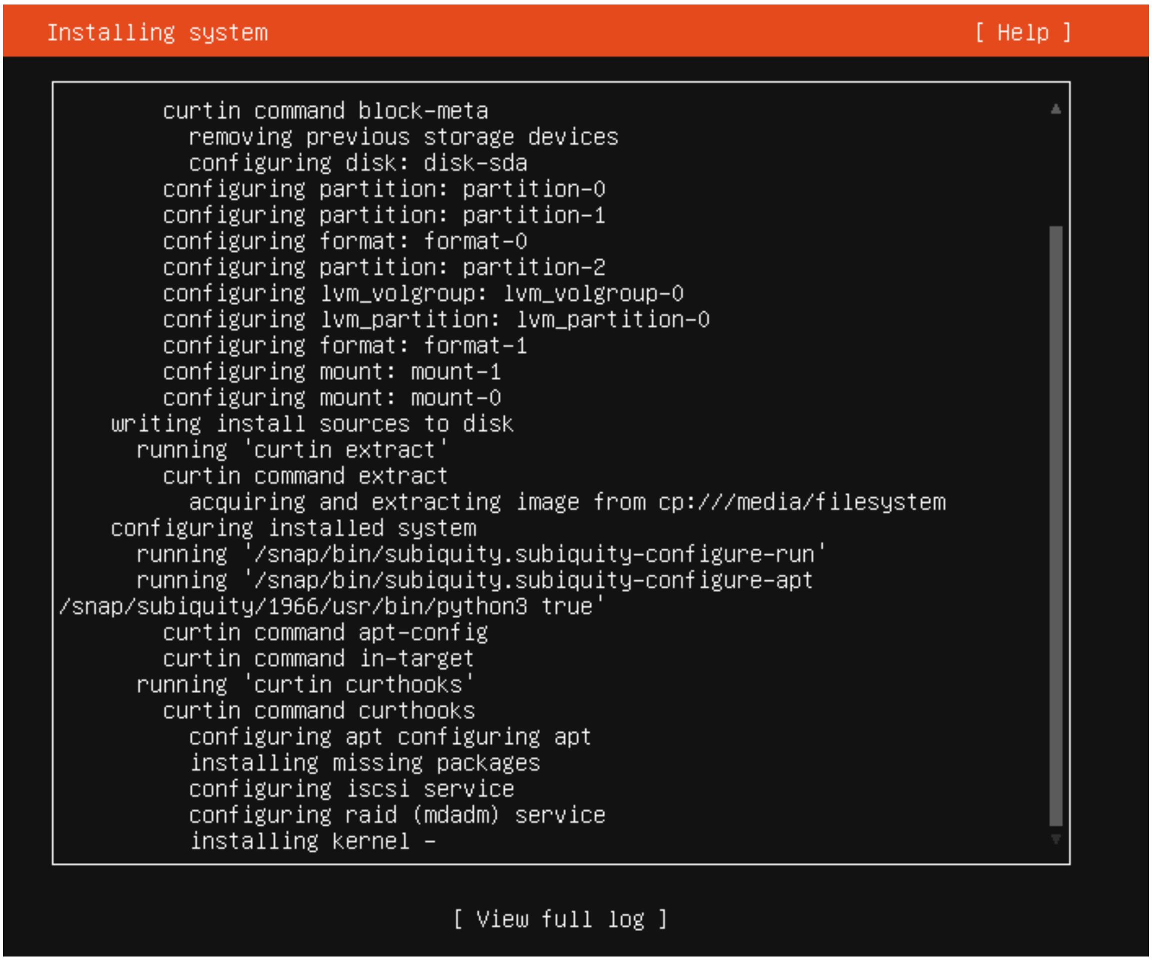
```
SSH Setup                                                        [ Help ]

You can choose to install the OpenSSH server package to enable secure remote
access to your server.

                 [X]  Install OpenSSH server


Import SSH identity:  [ No              ▼ ]
                      You can import your SSH keys from Github or Launchpad.

    Import Username:


                 [X]  Allow password authentication over SSH
```

Enable "Install OpenSSH server" for remote access to the server.



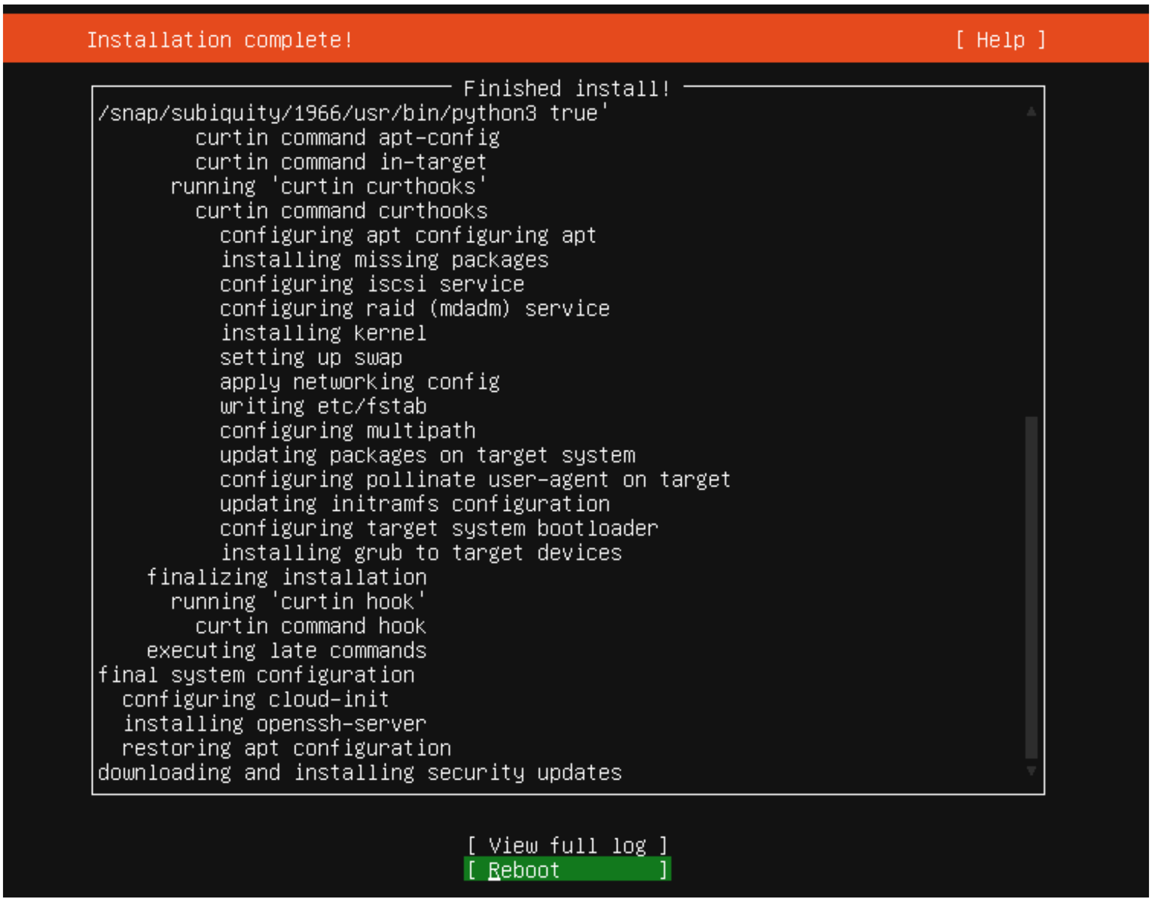
```
  Featured Server Snaps                                                 [ Help ]

  These are popular snaps in server environments. Select or deselect with SPACE,
  press ENTER to see more details of the package, publisher and versions
  available.

  [ ] microk8s            Lightweight Kubernetes for workstations and appliance ►
  [ ] nextcloud           Nextcloud Server - A safe home for all your data      ►
  [ ] wekan               Open-Source kanban                                    ►
  [ ] kata-containers     Lightweight virtual machines that seamlessly plug int ►
  [ ] docker              Docker container runtime                              ►
  [ ] canonical-livepatch Canonical Livepatch Client                            ►
  [ ] rocketchat-server   Group chat server for 100s,  installed in seconds.    ►
  [ ] mosquitto           Eclipse Mosquitto MQTT broker                         ►
  [ ] etcd                Resilient key-value store by CoreOS                   ►
  [ ] powershell          PowerShell for every system!                          ►
  [ ] stress-ng           A tool to load, stress test and benchmark a computer  ►
  [ ] sabnzbd             SABnzbd                                               ►
  [ ] wormhole            get things from one computer to another, safely       ►
  [ ] aws-cli             Universal Command Line Interface for Amazon Web Servi ►
  [ ] google-cloud-sdk    Command-line interface for Google Cloud Platform prod ►
  [ ] slcli               Python based SoftLayer API Tool.                      ►
  [ ] doctl               The official DigitalOcean command line interface      ►
  [ ] conjure-up          Package runtime for conjure-up spells                 ►
  [ ] minidlna-escoand    server software with the aim of being fully compliant ►
  [ ] postgresql10        PostgreSQL is a powerful, open source object-relation ►
  [ ] heroku              CLI client for Heroku                                 ►
  [ ] keepalived          High availability VRRP/BFD and load-balancing for Lin ►
  [ ] prometheus          The Prometheus monitoring system and time series data ►
  [ ] juju                Simple, secure and stable devops. Juju keeps complexi ►


                                  [ Done       ]
                                  [ Back       ]
```

Skip the snaps selection and continue.



```
        curtin command block-meta
          removing previous storage devices
          configuring disk: disk-sda
        configuring partition: partition-0
        configuring partition: partition-1
        configuring format: format-0
        configuring partition: partition-2
        configuring lvm_volgroup: lvm_volgroup-0
        configuring lvm_partition: lvm_partition-0
        configuring format: format-1
        configuring mount: mount-1
        configuring mount: mount-0
    writing install sources to disk
      running 'curtin extract'
        curtin command extract
          acquiring and extracting image from cp:///media/filesystem
    configuring installed system
      running '/snap/bin/subiquity.subiquity-configure-run'
      running '/snap/bin/subiquity.subiquity-configure-apt
/snap/subiquity/1966/usr/bin/python3 true'
        curtin command apt-config
        curtin command in-target
      running 'curtin curthooks'
        curtin command curthooks
          configuring apt configuring apt
          installing missing packages
          configuring iscsi service
          configuring raid (mdadm) service
          installing kernel -
```

Now system will go into installation and update of the security package. It will take few minutes to finish.



```
Installation complete!                                                    [ Help ]

              ──────────────── Finished install! ────────────────
/snap/subiquity/1966/usr/bin/python3 true'
        curtin command apt-config
        curtin command in-target
      running 'curtin curthooks'
        curtin command curthooks
          configuring apt configuring apt
          installing missing packages
          configuring iscsi service
          configuring raid (mdadm) service
          installing kernel
          setting up swap
          apply networking config
          writing etc/fstab
          configuring multipath
          updating packages on target system
          configuring pollinate user-agent on target
          updating initramfs configuration
          configuring target system bootloader
          installing grub to target devices
    finalizing installation
      running 'curtin hook'
        curtin command hook
    executing late commands
final system configuration
  configuring cloud-init
  installing openssh-server
  restoring apt configuration
downloading and installing security updates

                              [ View full log ]
                              [ Reboot        ]
```

When the installation completes, you can reboot the server.

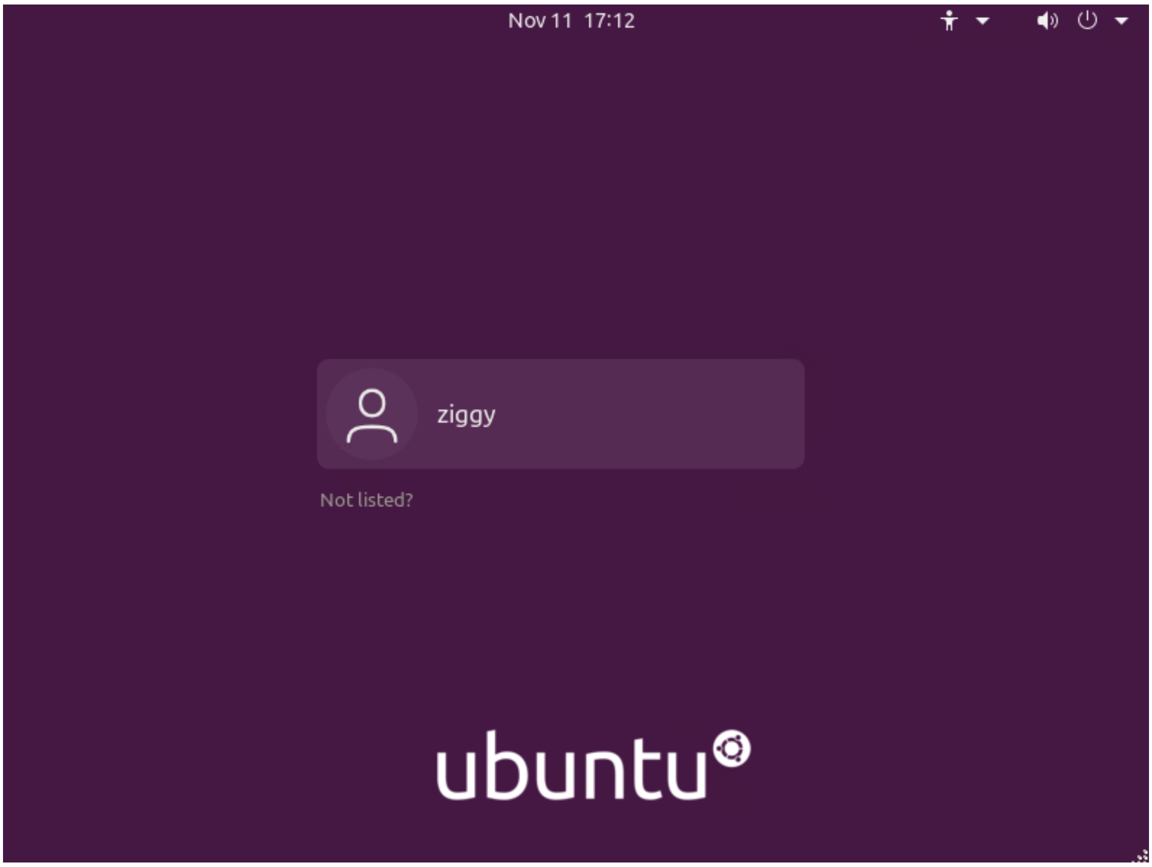
2.4 Install GUI

ssh into the box by using the IP address obtained above. Install the GUI and cubic

```
ssh ziggy@192.168.1.63
ziggy@192.168.1.63's password:
> sudo apt update
> sudo apt install tasksel
> sudo tasksel install ubuntu-desktop
> sudo apt-add-repository ppa:cubic-wizard/release
> sudo apt install cubic
```

Restart the box and login from the graphic terminal.

```
> sudo shutdown -r 0
```



2.5 Generate custom installer using Cubic

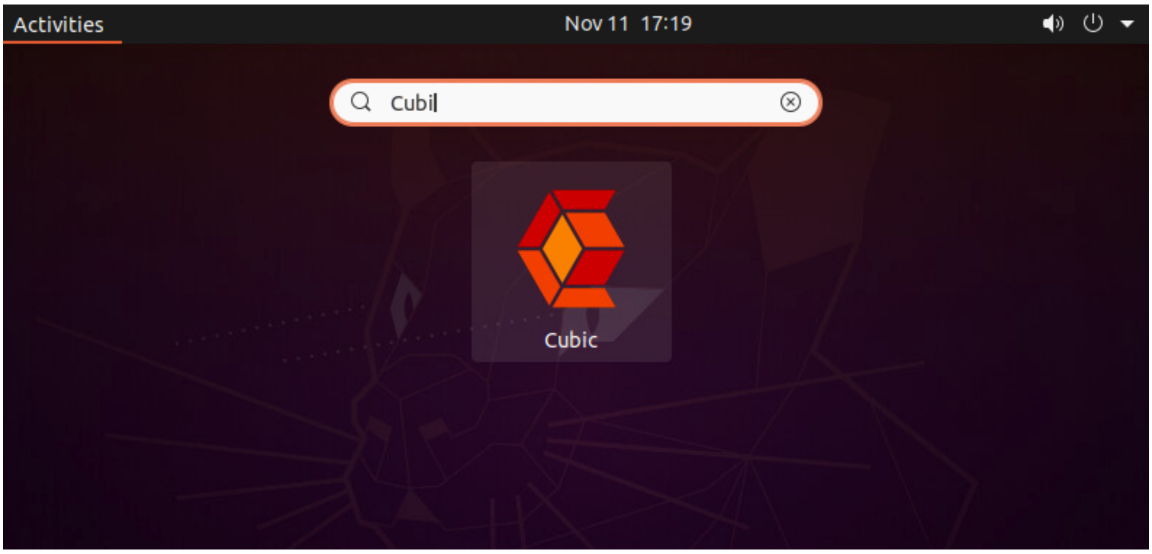
Copy Ubuntu 20.04 server image (ISO) into the box. If you have the image already, you can simply scp into the box. Or you can download it again into your box by using firefox browser.

```
> scp ubuntu-20.04.1-live-server-amd64.iso ziggy@192.168.1.63:
ziggy@192.168.1.63's password:
ubuntu-20.04.1-live-server-amd64.iso                                 100%
914MB  96.2MB/s   00:09
```

Copy setup ansible playbook to the box.

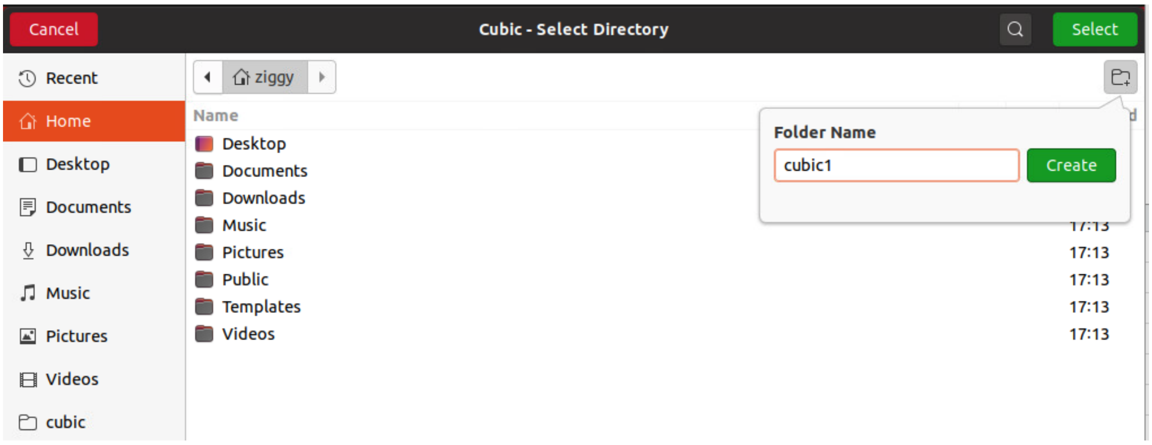
```
> scp supermicro_playbook.tgz ziggy@192.168.1.63:
ziggy@192.168.1.63's password:
supermicro_playbook.tgz                                              100%
147KB  24.4MB/s   00:00
```

Start the Cubic on the desktop.



Cubi

Create a directory (cubic1) to save the custom image

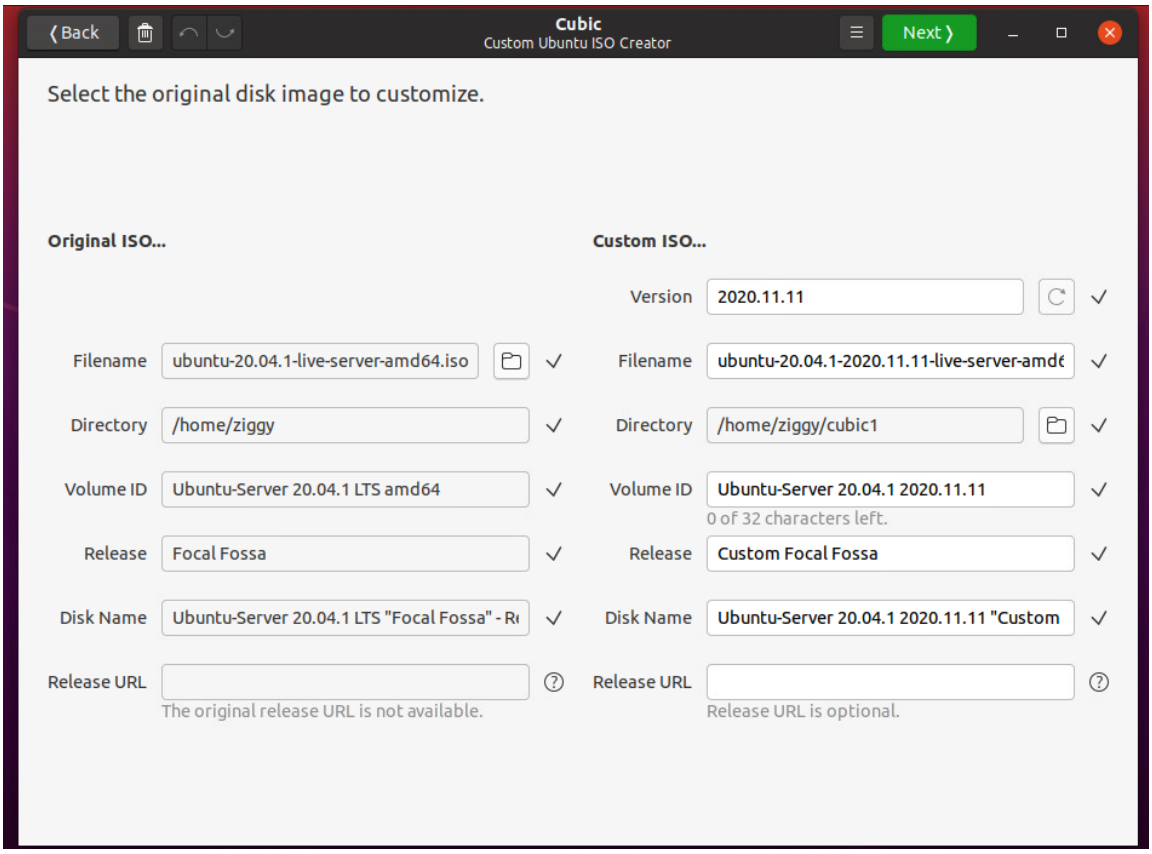


Name	
Desktop	
Documents	
Downloads	
Music	17:13
Pictures	17:13
Public	17:13
Templates	17:13
Videos	17:13

Folder Name

cubic1

Choose the Ubuntu 20.04 server image. (Rest of the fields will fill themselves)



Select the original disk image to customize.

Original ISO...

Filename: ubuntu-20.04.1-live-server-amd64.iso ✓

Directory: /home/ziggy ✓

Volume ID: Ubuntu-Server 20.04.1 LTS amd64 ✓

Release: Focal Fossa ✓

Disk Name: Ubuntu-Server 20.04.1 LTS "Focal Fossa" - R(✓

Release URL: The original release URL is not available.

Custom ISO...

Version: 2020.11.11 ✓

Filename: ubuntu-20.04.1-2020.11.11-live-server-amd(✓

Directory: /home/ziggy/cubic1 ✓

Volume ID: Ubuntu-Server 20.04.1 2020.11.11 ✓
0 of 32 characters left.

Release: Custom Focal Fossa ✓

Disk Name: Ubuntu-Server 20.04.1 2020.11.11 "Custom ✓

Release URL: Release URL is optional.

Once the image is decompressed, you will see a "Custom Ubuntu ISO Creator" window. Copy the supermicro ansible tarball into the that window. then do the following commands:

```
> sudo apt install ansible
> tar xf supermicro_playbook.tgz
> cd supermicro_playbook
> ansible-playbook -i hostfile ubbox.yml
```

Once the ansible successfully ran (if it is not successful, you can rerun it again), you can delete the playbook.

```
> cd
> rm -rf supermicro_playbook
> rm -rf supermicro_playbook.tgz
```

Hit Next on Cubic window and generate the installation image.

3 Create Ansible playbook for integrator

Follow section 2.3 to install Ubuntu 20.04 on the system.

Then copy the ansible playbook to the system.

```
> scp supermicro_playbook.tgz ziggy@192.168.1.63:
```

Login to the system.

```
> ssh ziggy@192.168.1.63
```

Perform the following command to run the playbook.

```
> tar xf supermicro_playbook.tgz
> mkdir supermicro_playbook
> cd supermicro_playbook
> tar xf ../supermicro_playbook.tgz
> sudo apt install ansible
> sudo su
> ansible-playbook -i hostfile image-build.yml
```

Note

If the default username (ziggy) changes, we will need to update the ansible-playbook accordingly.

4 Create an golden image for the integrator

Follow steps in section 3 to setup the box.

Use a live CD (for example Fedora LiveCD) to bootup the system. This ensures the Ubuntu 20.04 installation disk is not the running disk of the OS. We also need another USB stick to save the image (the live CD most likely will have a READ only system).

After boot up the system with the live CD, open a terminal windows and check what disks are on the system.

```
$ lsblk
NAME                  MAJ:MIN RM   SIZE RO TYPE MOUNTPOINT
sda                     8:0    1  14.5G  0 disk
└─sda1                  8:1    1  14.5G  0 part /run/initramfs/live
sdb                     8:16   1  28.9G  0 disk
└─sdb1                  8:17   1  28.9G  0 part /run/media/liveuser/ADATA UFD
loop0                   7:0    0    12K  1 loop
loop1                   7:1    0   1.8M  1 loop
└─live-osimg-min      253:3    0     6G  1 dm
loop2                   7:2    0   1.3G  1 loop
loop3                   7:3    0     6G  1 loop
├─live-rw             253:1    0     6G  0 dm   /
├─live-base           253:2    0     6G  1 dm
└─live-osimg-min      253:3    0     6G  1 dm
loop4                   7:4    0   512M  0 loop
└─live-rw             253:1    0     6G  0 dm   /
nvme0n1               259:0    0 238.5G  0 disk
├─nvme0n1p1           259:1    0   512M  0 part
├─nvme0n1p2           259:2    0     1G  0 part
└─nvme0n1p3           259:3    0   237G  0 part
  └─ubuntu--vg-ubuntu--lv
                      253:0    0 118.5G  0 lvm
```

As you can see, the "sda1" is the liveCD. "sdb1" is the USB disk for image. And "nvme0n1" is the internal disk that has our Ubuntu20.04 installed on.

Now, let's mount the "sdb1" and dump image into it. (Note, the image will be compressed to save disk storage.

```
$ mkdir outdisk
$ sudo mount /dev/sdb1 outdisk
$ cd outdisk/
$ sudo dd if=/dev/nvme0n1 |bzip2 --best >image.bz2
500118192+0 records in
500118192+0 records out
256060514304 bytes (256 GB) copied, 2268.42 s, 113 MB/s
$ ls -l
total 1942912
-rw-r--r--. 1 liveuser liveuser 1989533754 Nov 18 12:47 image.bz2
```

Summary

The "image.bz2" will be shipped to the integrator to burn into their units.

4 Procedure for burning the produced image

This section describes a way to burn the UCPE with the image produced in section 3.

Bootup the liveCD with the image USB inserted into the unit.

Open a terminal. And perform the following. (Please note, the "status=progress" is optional, but it does give good indication where the process is at the moment you monitor the action.

```
$ mkdir imagedisk
$ sudo mount /dev/sdb1 imagedisk
$ bunzip2 -c image.bz2 | sudo dd of=/dev/nvme0n1 status=progress
256045675008 bytes (256 GB) copied, 4797.524047 s, 53.4 MB/s
500118192+0 records in
500118192+0 records out
256060514304 bytes (256 GB) copied, 4798.08 s, 53.4 MB/s
```