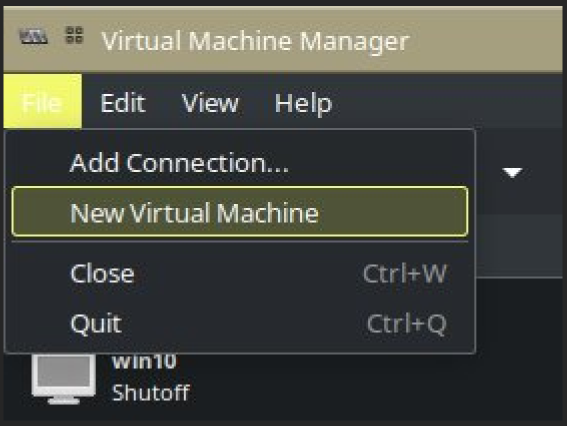
MK Mahwete

Indexer, Search Head and Universal Forwarder Server Setup

This documentation will take you through a step by step installation of Ubuntu Server for our 3 Virtual Machines to forward log files from the host, store all our log files , and analyze them.

Step 1 : The first thing you will do is to open up QEMU/KVM application and create a new VM and go through all the step for setting up the server.
Here are the configuration settings for the **index**, **search** & **forwarder** clusters:

- CPU: 1 core
- RAM: 1024 MB (1 GB)
- Storage: 15 GB (index VM) - 10 GB (search & Forwarder VM)
- Network: NAT or internal network (for private communication)

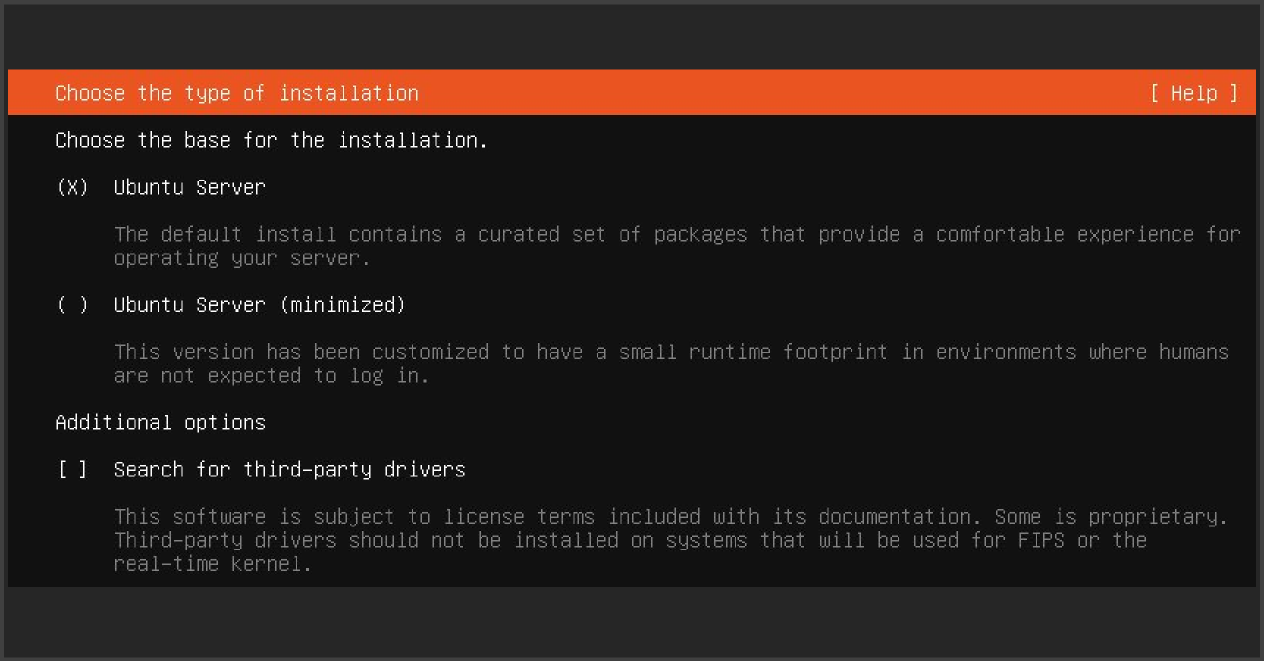


- go through the steps to select the iso image from your downloads file and create the VM with the setting above

>> $ ——————————————————————————[08 April 2025]

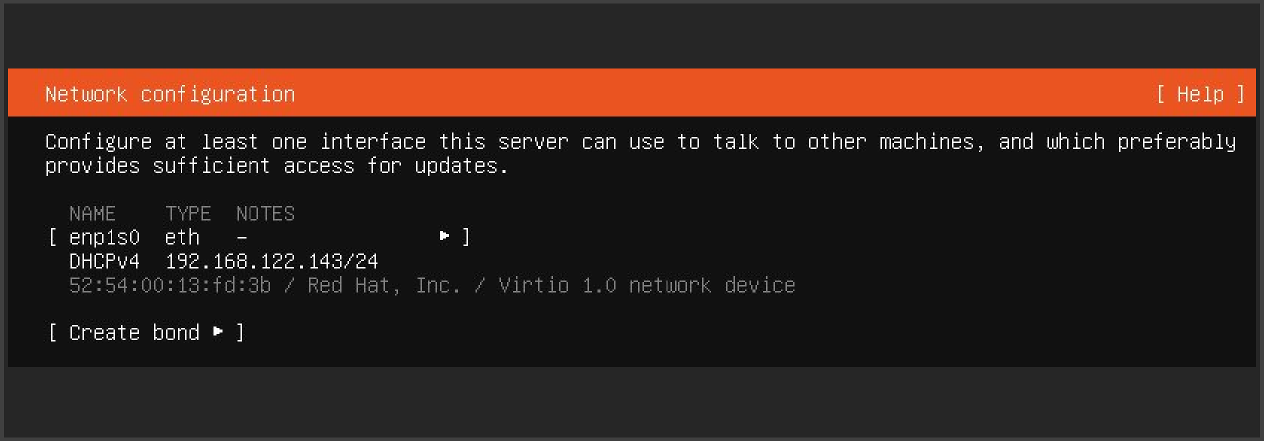
Step 2: Installing and configuring the server and Network (setting up IP Addresses for communication).
Now, the following steps will take you through installing and configuring the indexer server from selecting the image, networking and all the way to configuring the storage.

NOTE: it’s important to pay attention while going through this phase to avoid any incorrect configuration.



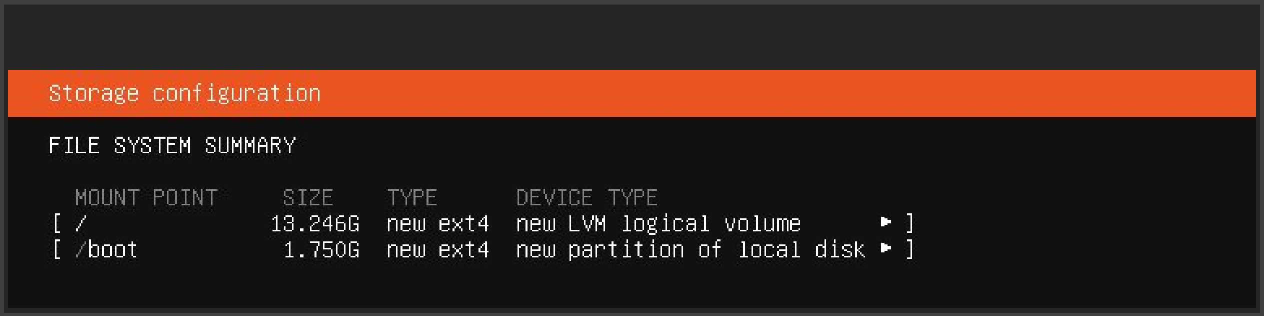
```
Choose the type of installation                                          [ Help ]
Choose the base for the installation.

(X)  Ubuntu Server

     The default install contains a curated set of packages that provide a comfortable experience for
     operating your server.

( )  Ubuntu Server (minimized)

     This version has been customized to have a small runtime footprint in environments where humans
     are not expected to log in.

Additional options

[ ]  Search for third-party drivers

     This software is subject to license terms included with its documentation. Some is proprietary.
     Third-party drivers should not be installed on systems that will be used for FIPS or the
     real-time kernel.
```

- I recommend choosing an Ubuntu server for a smooth experience

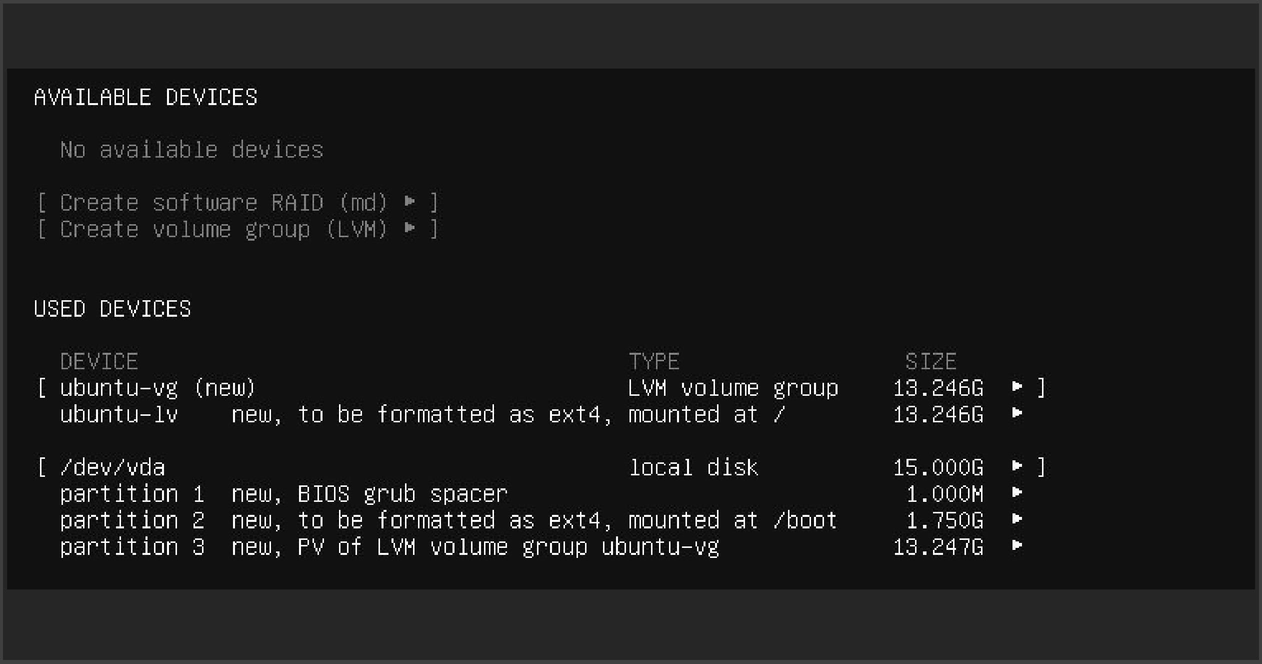


```
Network configuration                                                      [ Help ]
Configure at least one interface this server can use to talk to other machines, and which preferably
provides sufficient access for updates.

  NAME    TYPE  NOTES
[ enp1s0  eth   -                ► ]
  DHCPv4  192.168.122.143/24
  52:54:00:13:fd:3b / Red Hat, Inc. / Virtio 1.0 network device

[ Create bond ► ]
```

- for now I will leave everything as DHCP for all VMs (I will create or edit the YAML file in the netplan directory later on for a static IP address)

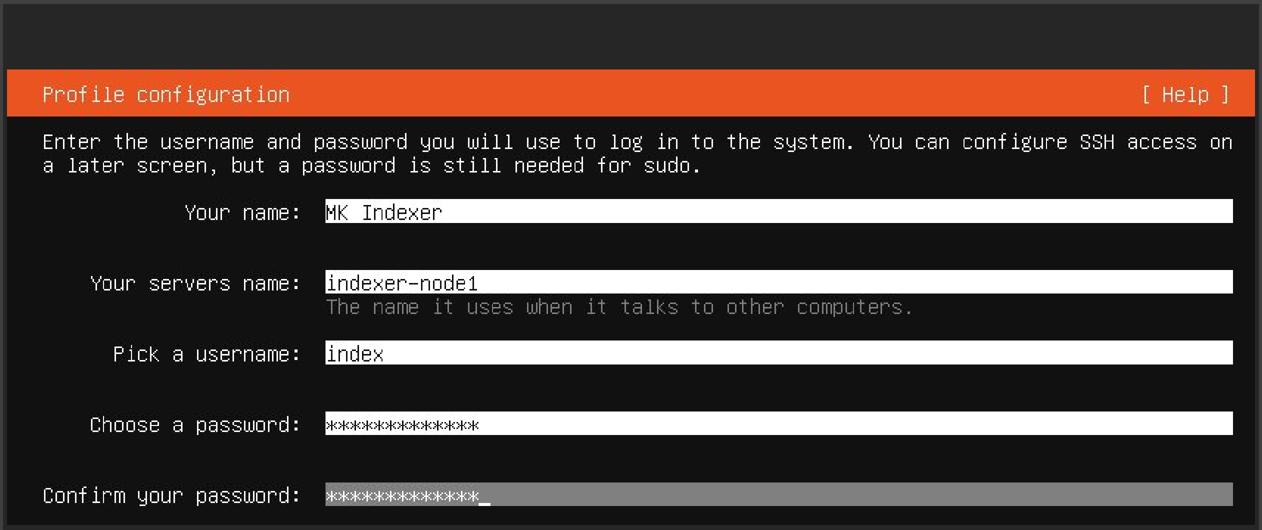


```
Storage configuration
FILE SYSTEM SUMMARY

  MOUNT POINT     SIZE    TYPE      DEVICE TYPE
[ /             13.246G  new ext4  new LVM logical volume      ► ]
[ /boot          1.750G  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    13.246G  ▸ ]
  ubuntu-lv     new, to be formatted as ext4, mounted at /          13.246G  ▸
                                                                    
[ /dev/vda                                      local disk          15.000G  ▸ ]
  partition 1  new, BIOS grub spacer                                 1.000M  ▸
  partition 2  new, to be formatted as ext4, mounted at /boot        1.750G  ▸
  partition 3  new, PV of LVM volume group ubuntu-vg                13.247G  ▸
```

- now it's time to configure and confirm your storage setup



```
Profile configuration                                                          [ Help ]
Enter the username and password you will use to log in to the system. You can configure SSH access on
a later screen, but a password is still needed for sudo.

          Your name:  MK Indexer

  Your servers name:  indexer-node1
                      The name it uses when it talks to other computers.

    Pick a username:  index

  Choose a password:  **************

Confirm your password:  **************_
```

NOTE: the screenshot provided here is for the index machine & you should set different names for each machine/VM.

- now it's time to setup a username and a password for the index node

NOTE: after the installation is complete, reboot our server

Step 3: Updating the system and installing openssh server for remote access control.

Before doing a lot of things to the server, the most important and should be your first step is to keep our system up to date and then install openssh for remote access. Run the following command to update our system:

```
sudo apt update && sudo apt upgrade
```

- This should keep our system up to date with the latest packages

Now, the next step is to install Openssh server

```
sudo apt install openssh-server
```

>> $ ————————————————————————————[08 April 2025]

Step 4: Customizing the CLI and installing useful tools

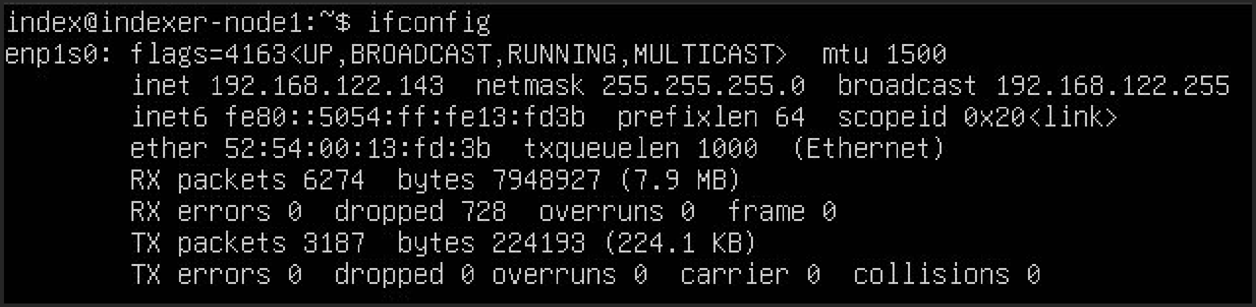
To finish the installation, I will ssh into the index server in install zshell and oh-my-zsh for a better CLI look and feel. Before ssh-ing into the server, I need to get it's IP Address by running this command:

```
Ifconfig
```

- If the command output says command not found, install it with this command:

```
sudo apt install net-tools
```

Index node IP

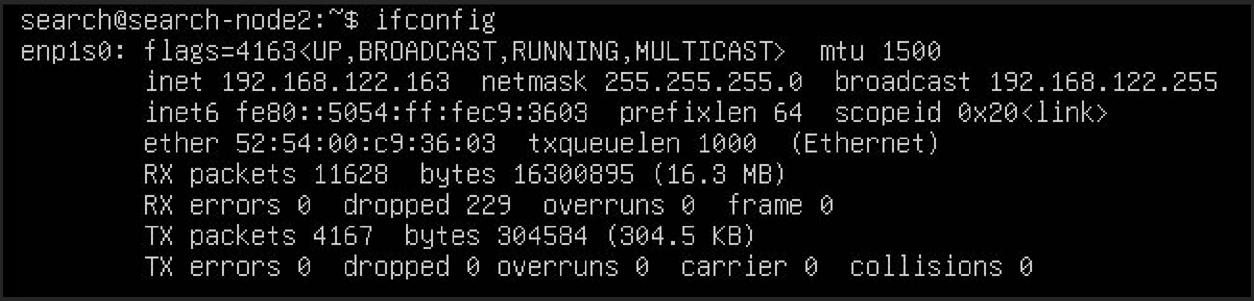


```
index@indexer-node1:~$ ifconfig
enp1s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.122.143  netmask 255.255.255.0  broadcast 192.168.122.255
        inet6 fe80::5054:ff:fe13:fd3b  prefixlen 64  scopeid 0x20<link>
        ether 52:54:00:13:fd:3b  txqueuelen 1000  (Ethernet)
        RX packets 6274  bytes 7948927 (7.9 MB)
        RX errors 0  dropped 728  overruns 0  frame 0
        TX packets 3187  bytes 224193 (224.1 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

- the IP Address is indicated by (look where is says): inet 192.168.122.143 for the index.

NOTE: for now this is just a DHCP address and we need a Static address so we gonna set one up

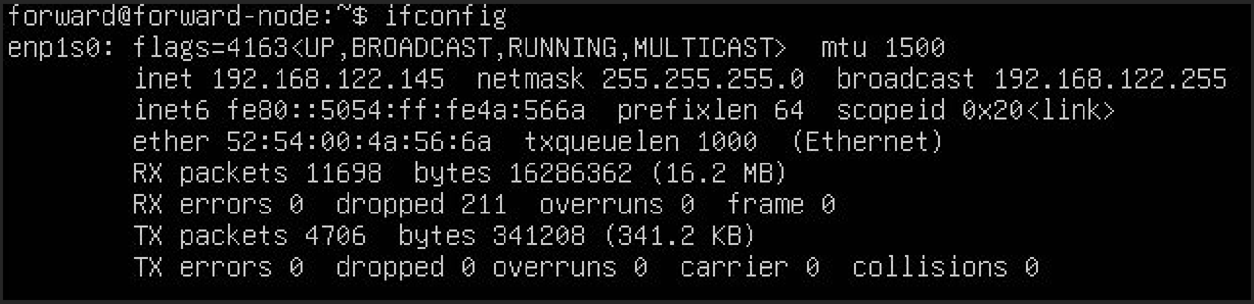
Search node IP



```
search@search-node2:~$ ifconfig
enp1s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.122.163  netmask 255.255.255.0  broadcast 192.168.122.255
        inet6 fe80::5054:ff:fec9:3603  prefixlen 64  scopeid 0x20<link>
        ether 52:54:00:c9:36:03  txqueuelen 1000  (Ethernet)
        RX packets 11628  bytes 16300895 (16.3 MB)
        RX errors 0  dropped 229  overruns 0  frame 0
        TX packets 4167  bytes 304584 (304.5 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

- the IP Address is indicated by (look where is says): inet 192.168.122.163 for the search.

Forward node IP



```
forward@forward-node:~$ ifconfig
enp1s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.122.145  netmask 255.255.255.0  broadcast 192.168.122.255
        inet6 fe80::5054:ff:fe4a:566a  prefixlen 64  scopeid 0x20<link>
        ether 52:54:00:4a:56:6a  txqueuelen 1000  (Ethernet)
        RX packets 11698  bytes 16286362 (16.2 MB)
        RX errors 0  dropped 211  overruns 0  frame 0
        TX packets 4706  bytes 341208 (341.2 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

- the IP Address is indicated by (look where is says): inet 192.168.122.145 for the search.

>> $ ————————————————————————————[08 April 2025]

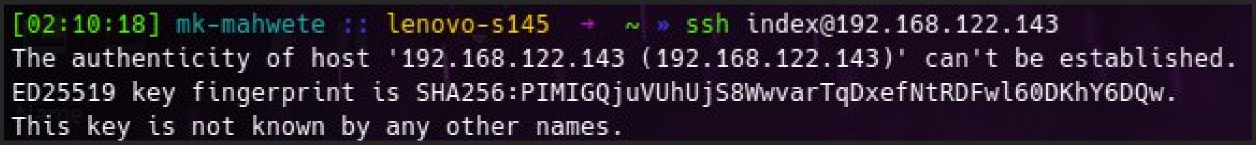
Step 5: ssh-ing into the system and finishing the installation by installing zshell and oh-my-zsh for a more better CLI took and feel.

Now that we found the our IP address. Lets ssh into the machine by using the following command to ssh into the Index Machine:

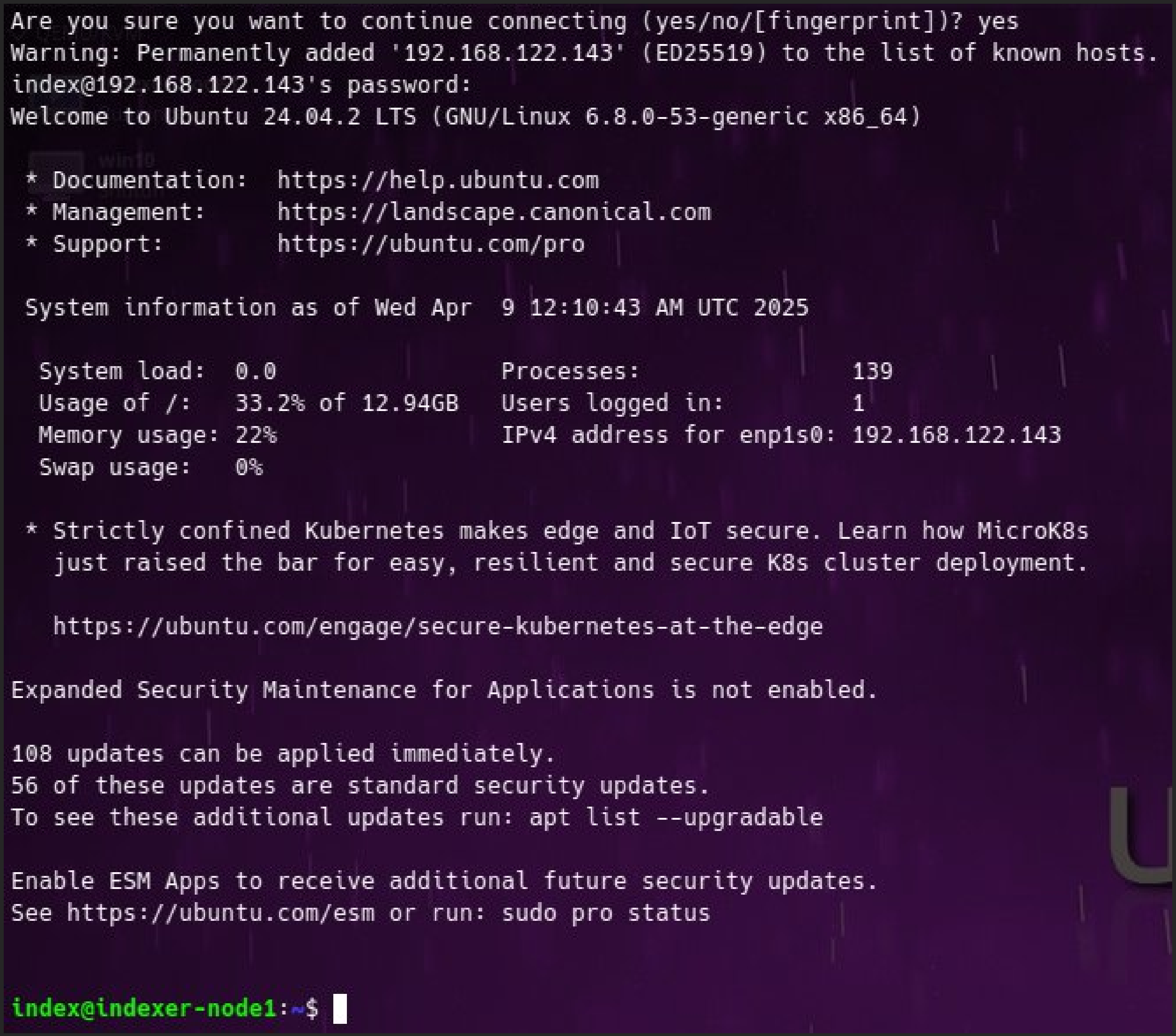
NOTE: You need to repeat step 5 for the remaining 2 VMs

ssh is a tool used for access other machines via the internet anywhere in the world

```
ssh index@192.168.122.143
```



```
[02:10:18] mk-mahwete :: lenovo-s145  →  ~ » ssh index@192.168.122.143
The authenticity of host '192.168.122.143 (192.168.122.143)' can't be established.
ED25519 key fingerprint is SHA256:PIMIGQjuVUhUjS8WwvarTqDxefNtRDFwl60DKhY6DQw.
This key is not known by any other names.
```

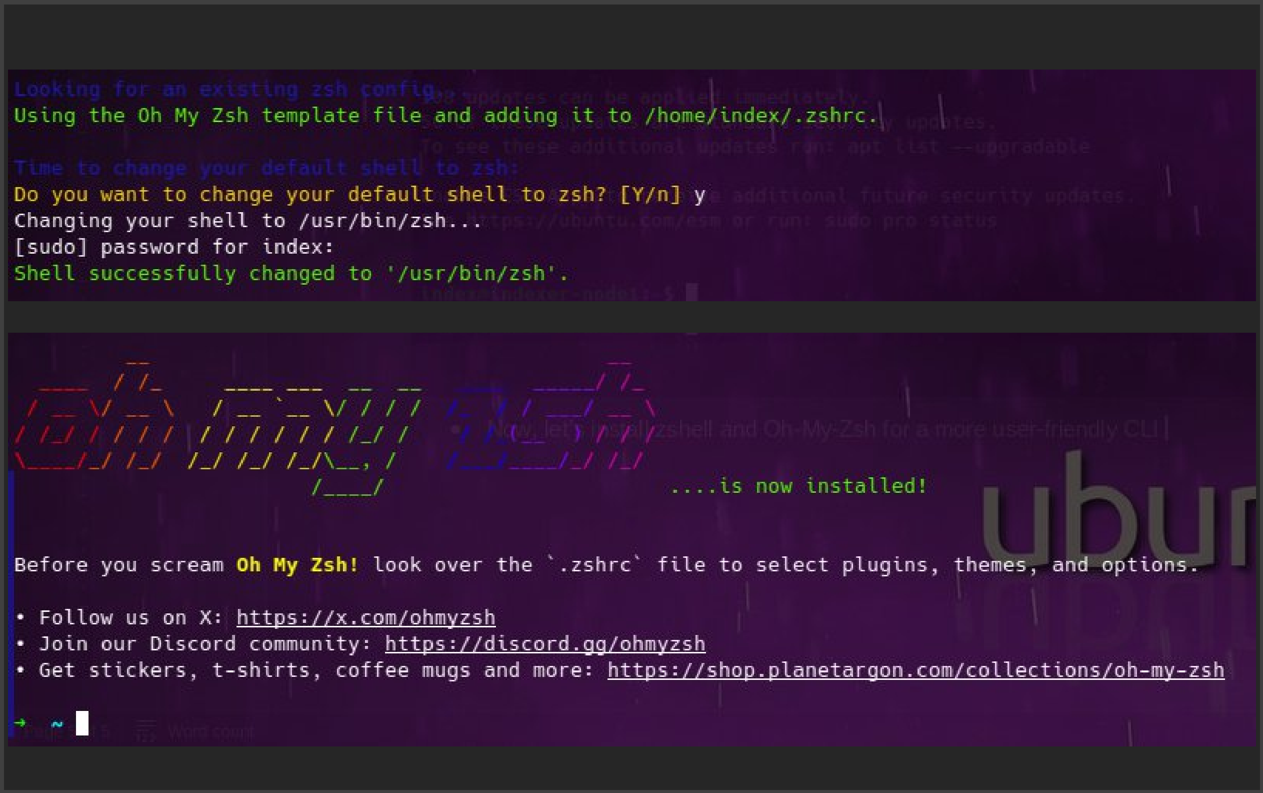


```
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.122.143' (ED25519) to the list of known hosts.
index@192.168.122.143's password:
Welcome to Ubuntu 24.04.2 LTS (GNU/Linux 6.8.0-53-generic x86_64)

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

 System information as of Wed Apr  9 12:10:43 AM UTC 2025

  System load:  0.0                Processes:               139
  Usage of /:   33.2% of 12.94GB   Users logged in:         1
  Memory usage: 22%                IPv4 address for enp1s0: 192.168.122.143
  Swap usage:   0%

 * Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
   just raised the bar for easy, resilient and secure K8s cluster deployment.

   https://ubuntu.com/engage/secure-kubernetes-at-the-edge

Expanded Security Maintenance for Applications is not enabled.

108 updates can be applied immediately.
56 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

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


index@indexer-node1:~$
```

- Now, let’s install zshell and Oh-My-Zsh for a more user-friendly CLI

```
sudo apt install zsh

sh -c "$(wget -O- https://raw.githubusercontent.com/ohmyzsh/ohmyzsh/master/tools/install.sh)"
```

- To monitor processes we gonna install htop for a better view of our processes

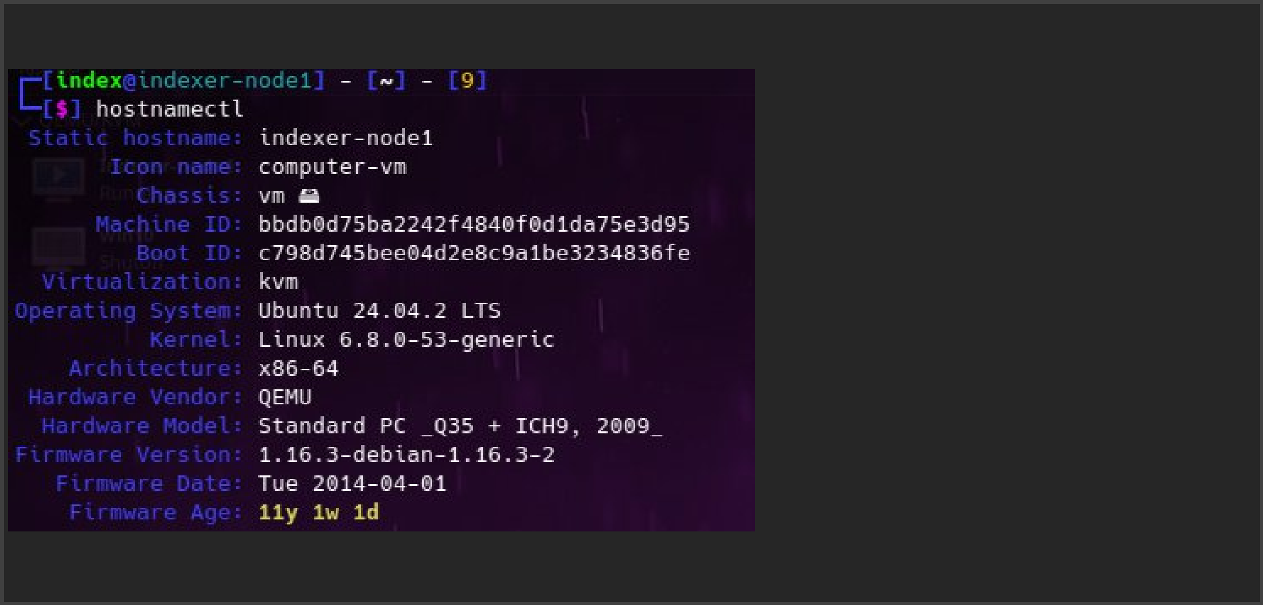


```
Looking for an existing zsh config...
Using the Oh My Zsh template file and adding it to /home/index/.zshrc.

Time to change your default shell to zsh:
Do you want to change your default shell to zsh? [Y/n] y
Changing your shell to /usr/bin/zsh...
[sudo] password for index:
Shell successfully changed to '/usr/bin/zsh'.
```

```
         __                                     __
  ____  / /_     ____ ___  __  __   ____  _____/ /_
 / __ \/ __ \   / __ `__ \/ / / /  /_  / / ___/ __ \
/ /_/ / / / /  / / / / / / /_/ /    / /_(__  ) / / /
\____/_/ /_/  /_/ /_/ /_/\__, /    /___/____/_/ /_/
                        /____/                       ....is now installed!


Before you scream Oh My Zsh! look over the `.zshrc` file to select plugins, themes, and options.

• Follow us on X: https://x.com/ohmyzsh
• Join our Discord community: https://discord.gg/ohmyzsh
• Get stickers, t-shirts, coffee mugs and more: https://shop.planetargon.com/collections/oh-my-zsh

➜  ~
```

- Our zshell & oh-my-zsh is now complete

The following screenshot provides with specifications for the index VMs.



```
┌─[index@indexer-node1] - [~] - [9]
└─[$] hostnamectl
 Static hostname: indexer-node1
       Icon name: computer-vm
         Chassis: vm 🖴
      Machine ID: bbdb0d75ba2242f4840f0d1da75e3d95
         Boot ID: c798d745bee04d2e8c9a1be3234836fe
  Virtualization: kvm
Operating System: Ubuntu 24.04.2 LTS
          Kernel: Linux 6.8.0-53-generic
    Architecture: x86-64
 Hardware Vendor: QEMU
  Hardware Model: Standard PC _Q35 + ICH9, 2009_
Firmware Version: 1.16.3-debian-1.16.3-2
   Firmware Date: Tue 2014-04-01
    Firmware Age: 11y 1w 1d
```

This is the end of our server setup. I will provide a step by step guide to install the .deb splunk enterprise