



Server Installation

ALERTIA - SERVER

Thibaut De Laere | AUSY | 25/02/2020

Intro

In this guide I'm going to show you how to setup the Debian 10 (Buster) Server for the AlertIA Project. We're going to install Debian as a virtual machine on the host computer.

Debian Project has released its latest and stable operating system as Debian 10, code name for Debian 10 is "Buster", this release will get 5 years of support. Debian 10 is available for both 32-bit and 64-bit systems.

On the virtual machine (VM) I'll show you how to install MongoDB, MariaDB and NodeRED. During the installation process I'll also show how to securely install the software.

Prerequisites

Debian 10 has recommended system requirements :

- 2 GB RAM
- 2 GHz Dual Core Processor
- 10 GB Free Hard disk space
- Bootable Installation Media (USB/ DVD)
- Internet connectivity (Optional)

For running the VM we're going to use a hosted hypervisor : VMWare Workstation. Without any further ado we're going to get started with the installation.



Installation

DEBIAN 10

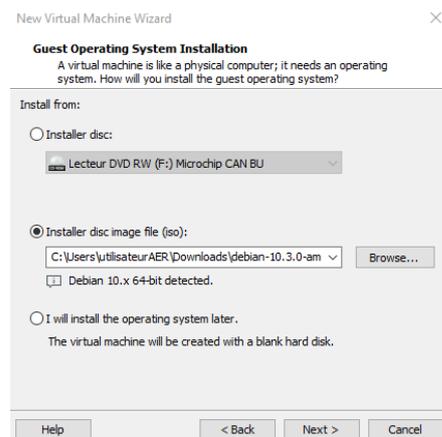
Download Debian 10 ISO file

You can download the ISO on [the Debian website](#). Because we are using VMWare Workstation, there's no need to burn the ISO on either a DVD or a USB.

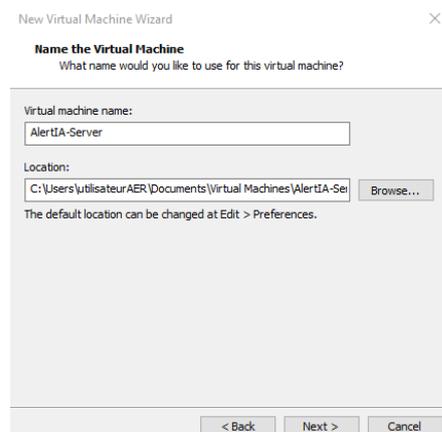
VMWare setup



We're going to chose for a typical install. This part of the installation is pretty self explanatory.



Find the ISO on your computer. VMWare will automatically detect that it's Debian 10 and adjust the settings to accommodate for the OS.



Then choose a name for the VM and a location where to save the VM.

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):

Recommended size for Debian 10.x 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

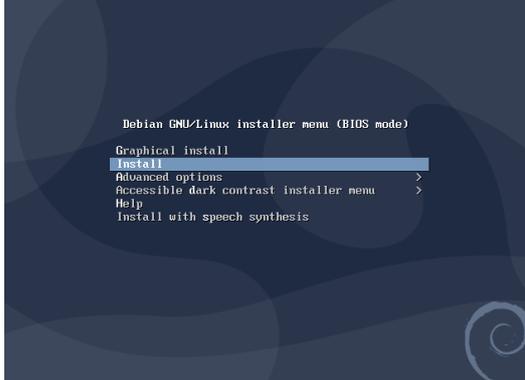
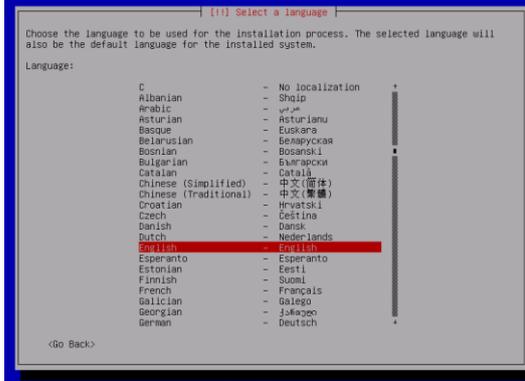
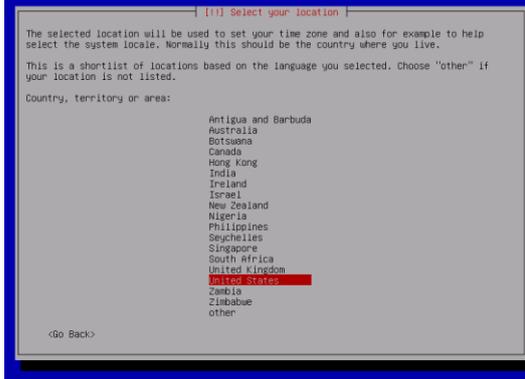
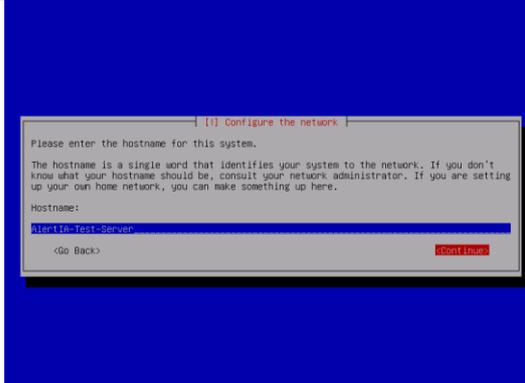
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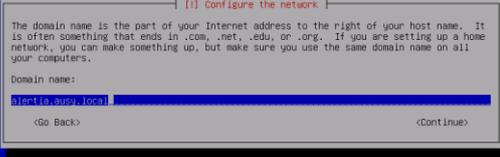
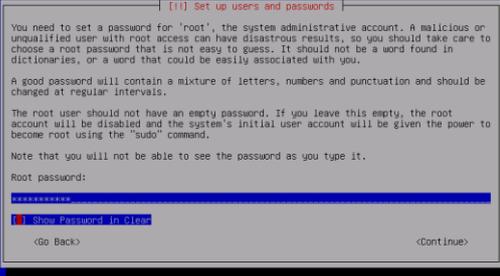
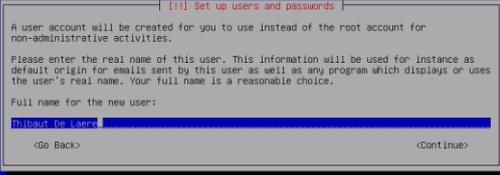
Next >

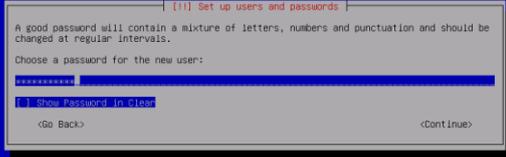
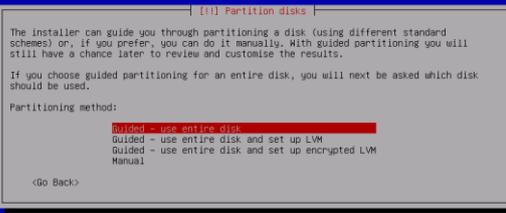
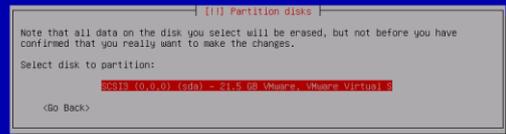
Cancel

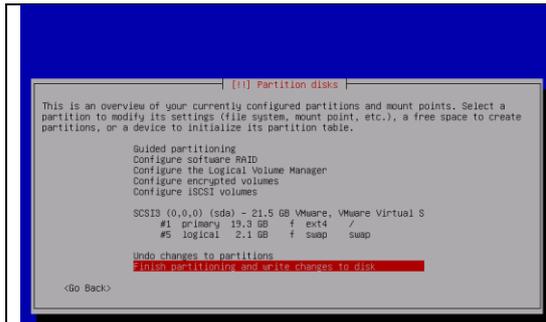
× I like to store my virtual disk as a single file so it's easier to move.

Debian 10 Installation

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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|  <p>Debian GNU/Linux installer menu (BIOS mode)</p> <ul style="list-style-type: none">Graphical installInstallAdvanced options >Accessible dark contrast installer menu >HelpInstall with speech synthesis | <p>Choose « Install » because we don't need a GUI for this server. By doing this we don't get as much overhead as with a GUI.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  <p>(1) Select a language</p> <p>Choose the language to be used for the installation process. The selected language will also be the default language for the installed system.</p> <p>Language:</p> <table><tr><td>C</td><td>- No localization</td></tr><tr><td>Albanian</td><td>- Shqip</td></tr><tr><td>Arabic</td><td>- العربية</td></tr><tr><td>Asturian</td><td>- Asturianu</td></tr><tr><td>Basque</td><td>- Euskara</td></tr><tr><td>Belarusian</td><td>- Беларуская</td></tr><tr><td>Bosnian</td><td>- Bosanski</td></tr><tr><td>Bulgarian</td><td>- Български</td></tr><tr><td>Catalan</td><td>- Català</td></tr><tr><td>Chinese (Simplified)</td><td>- 中文(简体)</td></tr><tr><td>Chinese (Traditional)</td><td>- 中文(繁體)</td></tr><tr><td>Croatian</td><td>- Hrvatski</td></tr><tr><td>Czech</td><td>- Čeština</td></tr><tr><td>Danish</td><td>- Dansk</td></tr><tr><td>Dutch</td><td>- Nederlands</td></tr><tr><td>English</td><td>- English</td></tr><tr><td>Esperanto</td><td>- Esperanto</td></tr><tr><td>Estonian</td><td>- Eesti</td></tr><tr><td>Finnish</td><td>- Suomi</td></tr><tr><td>French</td><td>- Français</td></tr><tr><td>Galician</td><td>- Galego</td></tr><tr><td>Georgian</td><td>- ქართული</td></tr><tr><td>German</td><td>- Deutsch</td></tr></table> <p><Go Back></p> | C | - No localization | Albanian | - Shqip | Arabic | - العربية | Asturian | - Asturianu | Basque | - Euskara | Belarusian | - Беларуская | Bosnian | - Bosanski | Bulgarian | - Български | Catalan | - Català | Chinese (Simplified) | - 中文(简体) | Chinese (Traditional) | - 中文(繁體) | Croatian | - Hrvatski | Czech | - Čeština | Danish | - Dansk | Dutch | - Nederlands | English | - English | Esperanto | - Esperanto | Estonian | - Eesti | Finnish | - Suomi | French | - Français | Galician | - Galego | Georgian | - ქართული | German | - Deutsch | <p>Choose a language</p> |
| C | - No localization | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Asturian | - Asturianu | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Basque | - Euskara | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Belarusian | - Беларуская | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bosnian | - Bosanski | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bulgarian | - Български | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Catalan | - Català | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chinese (Simplified) | - 中文(简体) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chinese (Traditional) | - 中文(繁體) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Croatian | - Hrvatski | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Czech | - Čeština | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Danish | - Dansk | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dutch | - Nederlands | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| English | - English | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Esperanto | - Esperanto | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Estonian | - Eesti | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Finnish | - Suomi | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| French | - Français | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Galician | - Galego | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Georgian | - ქართული | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| German | - Deutsch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  <p>(1) Select your location</p> <p>The selected location will be used to set your time zone and also for example to help select the system locale. Normally this should be the country where you live.</p> <p>This is a shortlist of locations based on the language you selected. Choose "other" if your location is not listed.</p> <p>Country, territory or area:</p> <table><tr><td>Antigua and Barbuda</td></tr><tr><td>Australia</td></tr><tr><td>Botswana</td></tr><tr><td>Canada</td></tr><tr><td>Hong Kong</td></tr><tr><td>India</td></tr><tr><td>Ireland</td></tr><tr><td>Israel</td></tr><tr><td>New Zealand</td></tr><tr><td>Nigeria</td></tr><tr><td>Philippines</td></tr><tr><td>Seychelles</td></tr><tr><td>Singapore</td></tr><tr><td>South Africa</td></tr><tr><td>United Kingdom</td></tr><tr><td>United States</td></tr><tr><td>Zambia</td></tr><tr><td>Zimbabwe</td></tr><tr><td>other</td></tr></table> <p><Go Back></p> | Antigua and Barbuda | Australia | Botswana | Canada | Hong Kong | India | Ireland | Israel | New Zealand | Nigeria | Philippines | Seychelles | Singapore | South Africa | United Kingdom | United States | Zambia | Zimbabwe | other | <p>Choose a region</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antigua and Barbuda | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Australia | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Botswana | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Canada | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hong Kong | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| India | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ireland | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Israel | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| New Zealand | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nigeria | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Philippines | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Seychelles | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Singapore | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| South Africa | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| United Kingdom | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| United States | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Zambia | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Zimbabwe | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| other | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  <p>(1) Configure the network</p> <p>Please enter the hostname for this system.</p> <p>The hostname is a single word that identifies your system to the network. If you don't know what your hostname should be, consult your network administrator. If you are setting up your own home network, you can make something up here.</p> <p>Hostname:</p> <p>client10-Test-Server</p> <p><Go Back> Continue</p> | <p>Choose a hostname for the machine</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | |
|---|--|
|  <p>Tab) moves: <Space> selects: <Enter> activates buttons</p> | <p>Choose a domainname. I chose alertia.ausy.local.</p> |
|  <p>Tab) moves: <Space> selects: <Enter> activates buttons</p> | <p>Set a root password. After entering the password and confirming you'll be prompted to retype the password so it's the same.</p> |
|  <p>Tab) moves: <Space> selects: <Enter> activates buttons</p> | <p>Create a user, use your full name.</p> |
|  | <p>Choose a username for the user.</p> |

| | |
|--|--|
|  <p>A good password will contain a mixture of letters, numbers and punctuation and should be changed at regular intervals. Choose a password for the new user: ***** [] Show Password in Plain Text <Go Back> <Continue></p> | <p>Choose a password for the user.</p> |
|  <p>The installer can guide you through partitioning a disk (using different standard schemes) or, if you prefer, you can do it manually. With guided partitioning you will still have a chance later to review and customise the results. If you choose guided partitioning for an entire disk, you will next be asked which disk should be used. Partitioning method: Guided - use entire disk Guided - use entire disk and set up LVM Guided - use entire disk and set up encrypted LVM Manual <Go Back></p> | <p>Select the default option of « Guided – Use entire disk ».</p> |
|  <p>Note that all data on the disk you select will be erased, but not before you have confirmed that you really want to make the changes. Select disk to partition: SCSI3 (0,0,0) (sda) - 21.5 GB (VMware, VMware Virtual) <Go Back></p> | <p>Select a disk.</p> |
|  <p>Selected for partitioning: SCSI3 (0,0,0) (sda) - VMware, VMware Virtual S: 21.5 GB The disk can be partitioned using one of several different schemes. If you are unsure, choose the first one. Partitioning scheme: Guided - use entire disk (recommended for new users) Separate /home partition Separate /home, /var, and /tmp partitions <Go Back></p> | <p>I like to keep all my files in the same place but you can chose which fits your preferences best.</p> |



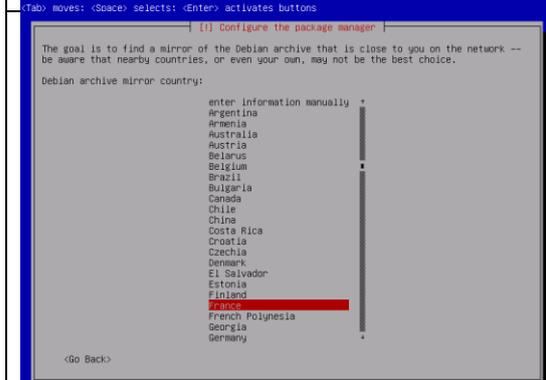
<Tab> for help; <Tab> moves; <Space> selects; <Enter> activates buttons

Check if your partitioning preferences are right and press « Finish » to continue.



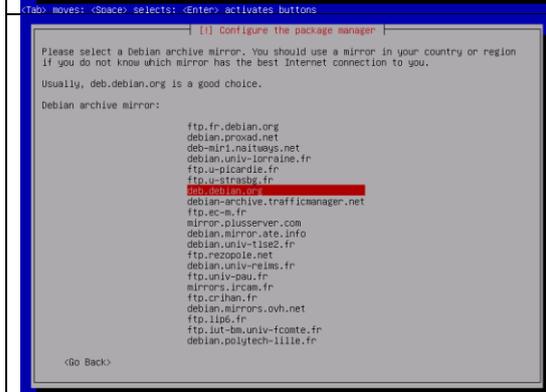
<Tab> moves; <Space> selects; <Enter> activates buttons

« Yes » If you want to write the changes to the disk.



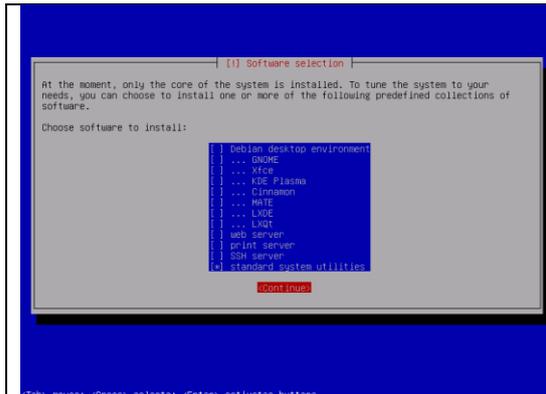
<Tab> moves; <Space> selects; <Enter> activates buttons

Select a country, preferably as close as possible to you. I chose « France ».



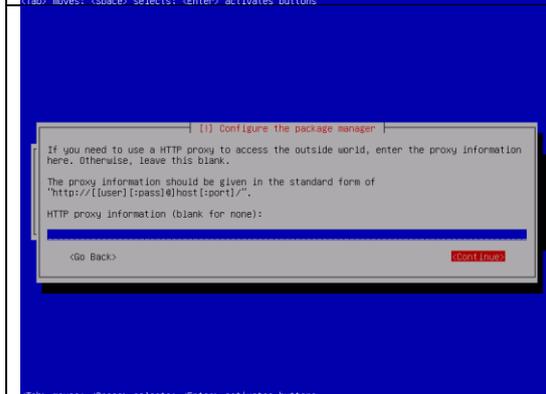
<Tab> moves; <Space> selects; <Enter> activates buttons

Choose an archive mirror. I chose deb.debian.org.



<Tab> moves: <Space> selects: <Enter> activates buttons

Only check the field of « Standard System Utilities ». All other necessary services we'll install ourselves.



<Tab> moves: <Space> selects: <Enter> activates buttons

Leave empty if you don't use a proxy.



<Tab> moves: <Space> selects: <Enter> activates buttons

It's a good idea to install the GRUB bootloader to the master boot record. This last step should conclude the installation process. Next time Debian boots you'll be able to log in with the user created.



Debian 10

Add non-root user to sudoers

```
//Login to root
su -

//Install sudo
apt install sudo

//Add non-root user to sudo
usermod -aG sudo laerie

//Exit to non-root user
exit

//Try out sudo by updating and upgrading the system
sudo apt update && sudo apt -y upgrade
```

Install OpenSSH-Server

```
//Install OpenSSH-Server
sudo apt install openssh-server

//Enable OpenSSH-Server on bootup
sudo systemctl enable ssh

//Start OpenSSH-Server
sudo systemctl start ssh

//Check if OpenSSH-Server is running
sudo systemctl status ssh

//Install UFW (Uncomplicated Firewall)
sudo apt install ufw

//Enable OpenSSH-Server on bootup
sudo systemctl enable ufw

//Start UFW
sudo systemctl start ufw

//Check if UFW is running
sudo systemctl status ufw

//Enable UFW
sudo ufw enable

//Allow port 22 for SSH
sudo ufw allow ssh
```

Setup static IP

```
//Find out which network interface you have  
ip a
```

```
//Edit /etc/network/interfaces  
sudo nano /etc/network/interfaces
```

```
GNU nano 3.2 /etc/network/interfaces Modified  
  
# This file describes the network interfaces available on your system  
# and how to activate them. For more information, see interfaces(5).  
  
source /etc/network/interfaces.d/*  
  
# The loopback network interface  
auto lo  
iface lo inet loopback  
  
# The primary network interface  
auto ens33  
allow-hotplug ens33  
iface ens33 inet static  
    address 192.168.152.137  
    gateway 192.168.152.2  
    netmask 255.255.255.0  
  
File Name to Write: /etc/network/interfaces
```

```
//Restart networking  
sudo systemctl restart networking
```

```
//Test network config  
ping 1.1.1.1
```

MariaDB

Installing MariaDB

```
//Import key
sudo apt-get install software-properties-common dirmngr
sudo apt-key adv --fetch-keys 'https://mariadb.org/mariadb\_release\_signing\_key.asc'
sudo add-apt-repository 'deb [arch=amd64] http://ftp.utexas.edu/mariadb/repo/10.4/debian
buster main'

//Install MariaDB
sudo apt update
sudo apt install mariadb-server

//Securing MariaDB install
sudo mysql_secure_installation

  1. Switch to unix_socket authentication [Y/n] n
  2. Change the root password? [Y/n] Y
  3. Remove anonymous users? [Y/n] Y
  4. Disallow root login remotely? [Y/n] Y
  5. Remove test database and access to it? [Y/n] Y
  6. Reload privilege tables now? [Y/n] Y

//Test MariaDB Installation
sudo mysql -u root -p
```

Adding new Database and new User

```
//Creating the Database
CREATE DATABASE dbName;

//Switch to Database
USE dbName;

//Creating the User
CREATE USER 'username' IDENTIFIED BY 'password';

//Give access to SQL Server to user
GRANT USAGE ON 'dbName'.* TO 'username'@'%' IDENTIFIED BY
'password';

//Apply privileges to user
GRANT ALL privileges ON `dbName`.* TO 'username'@'%;

//Apply made changes
FLUSH PRIVILEGES;

//Control the configuration
SHOW GRANTS FOR 'username'@'%';
```

MongoDB

Installation

```
//Install gnupg
sudo apt-get install gnupg

//Get MongoDB public GPG key
wget -qO - https://www.mongodb.org/static/pgp/server-4.2.asc | sudo apt-key
add -

//Create list file
echo "deb http://repo.mongodb.org/apt/debian buster/mongodb-org/4.2
main" | sudo tee /etc/apt/sources.list.d/mongodb-org-4.2.list

//Refresh package database
sudo apt update

//Install MongoDB
sudo apt-get install -y mongodb-org

//Enable MongoDB
sudo systemctl enable mongod

//Start MongoDB
sudo systemctl start mongod

//Check MongoDB status
sudo systemctl status mongod

//Run MongoDB
mongo
```

Creating a Database and a User

```
//Start MongoDB
mongo

//Switch to Admin Database
use admin

//Create MongoDB Admin
db.createUser(
  {
    user: "mongoAdmin",
    pwd: "password",
    roles: [ { role: "userAdminAnyDatabase", db: "admin" } ]})

//Create MongoDB Root
db.createUser(
  {
    user: "mongoRoot",
    pwd: "passwordRoot",
    roles: [ { role: "root", db: "admin" } ]})

//Create MongoDB AlertIA-User
db.createUser(
  {
    user: "userAdmin ",
    pwd: "password",
    roles:[{role: "userAdmin" ,db:"AlertIA-Metrics"}]})

//Enable authentication
exit
sudo nano /etc/mongod.conf

//Uncomment security and add 'authorization: "enabled"'

//Set bindIp to 0.0.0.0 if you want to connect from outside of the vm

//Apply changes by restarting the service
sudo systemctl restart mongod

//Authenticate
use admin
db.auth("mongo-admin", "password" )
or
db.auth("mongo-root", "passwordRoot" )

//If DB doesn't exist MongoDB will create the DB
use AlertIA_Metrics

//Check the currently selected DB
db

//Show database list
show dbs

//Exit and allow port 27017 in UFW
sudo ufw allow 27017
```

NodeRED

Installation

```
//Install Build-Essentials and curl
sudo apt-get install build-essential curl

//Install Node-Red
bash <(curl -sL https://raw.githubusercontent.com/node-red/linux-
installers/master/deb/update-nodejs-and-nodered)

//Autostart on boot
sudo systemctl enable nodered.service

//Start Node-Red
sudo systemctl start nodered.service
```