

Server Installation

ALERTIA - SERVER

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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

Dowload Debian 10 ISO file

You can download the ISO on <u>the Debian website</u>. Because we are using VMWare Workstation, there's no need to burn the ISO on either a DVD or a USB.

VMWare setup

<text><text><text><text><text><text><text><text></text></text></text></text></text></text></text></text>	We're going to chose for a typical install. This part of the installation is pretty self explanitory.
New Virtual Machine Wizard X Guest Operating System Installation	Find the ISO on your computer. VMWare will
A virtual machine is like a physical computer; it needs an operating system. How will you install the guest operating system?	the settings to assemble data for the OS
Install from:	the settings to accommodate for the OS.
Installed Glace I	
● Installer disc image file (iso): C:\Users\utilisateurAER\Downloads\debian-10.3.0-am ∨ Browse □ Debian 10.x 64-bit detected. ○ I will install the operating system later. The virtual machine will be created with a blank hard disk. Help < Rack Next > Cancel	
New Virtual Machine Wizard X Name the Virtual Machine What name would you like to use for this virtual machine? Virtual machine name:	Then choose a name for the VM and a location where to save the VM.
Virtual machine name: AlertIA-Server Location: C:\Users\utilsateurAER\Documents\Virtual Machines\AlertIA-Sei 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): 20.0 -Recommended size for Debian 10.x 64-bit: 20 GB

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

 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

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Debian 10 Installation

Debian GNU/Linux installer menu (BIOS mode) Braphical install Advanced options Accessible dark contrast installer menu Debian GNU/Linux installer menu Advanced options Help Install with speech synthesis
Debian GNU/Linux installer menu (BIOS mode) Graphical install Install Advanced options Accessible dark contrast installer menu Help Install with speech synthesis
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Graphical install Install Advamced options Accessible dark contrast installer nemu → Help Install with speech synthesis
Hestall Advanced options → Accessible dark contrast installer menu → Help Install with speech synthesis
Help Install with speech synthesis
Choose a language
also be the default language for the installed system.
C - No localization
Arabic vija Arabic vija Asturian - Asturianu Beogue - Fuckana
Belanusian - Benapyckaa Bosnian - Bosanski - Bularaian - Starancou
Catalan - Català Chinese (Simplified) - 中文(何体) Chinese (Traditiona) - 中文(常備)
Croatian - Hrvatski Czech - Čeština Danish - Dansk
Dutch – Wederlands Frylich – English Espenanto – Espenanto
Estonian – Eesti Finnish – Suomi French – Français
Georgian - Galego Georgian - Jokago German - Deutsch +
<bo back=""></bo>
(Tab) moves: (Soace) selects: (Enter) activates buttons
The selected location will be used to set your time zone and also for example to help Choose a region
select the system locale. Normally this should be the country where you live. This is a shortlist of locations based on the language you selected. Choose "other" if
your location is not listed. Country, territory on anea:
Antigua and Barbuda Australia
Du siteria Canada Hong Kong
Instand Ireland Israel Mar Zeal and
Nigeria Philippines Seuche Ines
Singapore South Africa United Vicedom
United States Zambia Zimbiaue
othen (Go Back)
(Tab) moves: (Soace) selects: (Enter) activates buttons
Choose a nostname for the machine
[1] Configure the network Please enter the hostname for this system.
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 nome network, you can make sometning up here. Hostname:
Rieria-Test-Server

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	Choose a domainname. I chose
	alertia.ausv.local.
	·····
[1] Configure the network	
The domain name is the part of your Internet address to the right of your host name. It is often sourching that ends in .com, .net, .edu, or .org. If you are setting up a home retuork, you can make something up, but make sure you use the same domain name on all	
your computers. Domain name:	
plent (a.ausy. local	
(no Back) (Courtines	
(Tab> moves: <soace> selects: <enter> activates buttons</enter></soace>	Sat a root password After entering the
	set a root password. After entering the
You need to set a password for 'root', the system administrative account. A malicious or	password and committing you if be
choose a not passion data is not easy to guess. It should not be a word found in dictionaries, or a word that could be easily associated with you.	the same
A good password will contain a mixture of letters, numbers and punctuation and should be changed at regular intervals.	the same.
The root user should not have an empty password. If you leave this empty, the root account will be disabled and the system's initial user account will be given the power to become root using the "sudd" command.	
Note that you will not be able to see the password as you type it.	
Root password:	
Go Back> (Continue>	
(Tab> moves: <soace> selects: <enter> activates buttons</enter></soace>	
	Create a user, use your full name.
[11] Set up users and passwords	
A user account will be created for you to use instead of the root account for non-administrative activities.	
Please enter the real name of this user. This information will be used for instance as default origin for emails sent by this user as well as any program which displays or uses the user's real name. Your full name is a reasonable choice.	
Full name for the new user: Thibaut De Laere	
<go back=""> <continue></continue></go>	
<pre>(Tab> moves: <space> selects: <enter> activates buttons</enter></space></pre>	
	Choose a username for the user.
[11] Set up users and passwords	
Select a username for the new account. Your first name is a reasonable choice. The username should start with a lower-case letter, which can be followed by any combination	
Username for your account:	
Koo Back> (Continue)	

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(11) Set up users and passwords A good password will contain a sixture of letters, numbers and punctuation and should be changed at regular intervals. Choose a password for the new user: Intervals Intervals Intervals Ge Back> Chonyes: Cases Cabo powes: Cases Cases	Choose a password for the user.
III) Fartilion disks The installer can guide you through partitioning a disk (using different standard schemes) or, if you prefer, you can be it menually, with guided partitioning you will still have a chance later to review and customize the results. If you coose guided partitioning for an entire disk, you will next be asked which disk chandle used. Partitioning method: If you coose guided partitioning for an entire disk, you will next be asked which disk chandle used. Partitioning method: If you cooked as continue disk and set up LMM guided - use entire disk and set up encrypted LM Manual (Bo Back) Taby moves: (Space) selects: (Enter) activates buttons	Select the default option of « Guided – Use entire disk ».
III] Partition disks Note that all data on the disk you select will be ensed, but not before you have confirmed that you really want to make the changes. Select disk to partition: OSIS (0,0,0) (db) = 21.5 GS Where, Where Virtual a (do Back)	Select a disk.
[1] Partition disks Selected for partitioning: SC53 (0,0,0) (sda) - Whare, Whare 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: Separate /none, /van, and /tep partitions GB Back>	I like to keep all my files in the same place but you can chose which fits your preferences best.

		Check if your partitioning preferences
This is a partition	(III) Partition disks n overview of your currently configured partitions and mount points. Select a to modify its settings (file system, mount point, etc.), a free space to create	continue.
partition	s, or a device to initialize its partition table. Guided partitioning Configure software RAID Configure the Logical Volume Managen Configure encrysted volumes	
	Configure ISCST volumes SCSI3 (0,0,0) (sda) – 21.5 GB VMware, VMware Virtual S #1 primary 19.3 GB f ext4 / #5 logical 2.1 GB f swap swap	
<go b<="" th=""><th>Undo changes to partitions Einish partitioning and write changes to disk acto</th><th></th></go>	Undo changes to partitions Einish partitioning and write changes to disk acto	
<f1> for helo</f1>	: (Tab> moves: <seace> selects: <enter> activates buttons</enter></seace>	« Yes »If you want to write the changes
		to the disk.
If you will be	[11] Partition disks continue, the changes listed below will be written to the disks. Otherwise, you able to make further changes manually.	
The par SCSI The fol part	tilin tables of the following devices are changed: 3 (0,0) (sda) lowing partitions are going to be formatted: 110 # J of 25213 (0,0,0) (sda) as ext4	
White t	Hum #9 of Scial (0,0,0) (sold) as skep he changes to disks?	
(Tab) mouse:	/Onens calanter softens entilister bittone	
The goal be aware	[1] Configure the package manager is to find a mirror of the belian archive that is close to you on the network that nearby countries, or even your own, may not be the best choice.	Select a country, preferably as close as possible to you. I chose « France ».
Debian an	chive mirror country:	Proceeding and the second seco
Debian a	enter information manually · Prgenting Promotion	
Debian a	enter information manually * Argenting Argenting Austria Austria Beigium Brazin Brizin Buigering	
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Go Boyest	erter information manually ergening Australia Australia Australia Australia Belgium Brazii Bulgeria Chile	Choose an archive mirror. I chose
deutan a deutan a trab movern Piesse se if you do Usually, Debian a	<pre>erter information manually erter information manually erter information manually erter information erter informatio</pre>	Choose an archive mirror. I chose deb.debian.org.
<pre>cGo 8 cGo 8 cTab> noves: Piesse cs if you Usually, Debian an</pre>	<pre>enter information manually enter information manually enter information manually enter information dustria Belands Beland</pre>	Choose an archive mirror. I chose deb.debian.org.
<pre><go 8="" <="" pre=""> CTab moves: Please se If you do Usually, Debian an</go></pre>	<pre>exter information manually exception Austria Aust</pre>	Choose an archive mirror. I chose deb.debian.org.
<pre>Go B (Go B Fleese se If you do Usually, Debian an</pre>	<pre>eremina firemation manually eremina austria aust</pre>	Choose an archive mirror. I chose deb.debian.org.
(Go B CTO) noveli Please se If you do Usually, Debian an	<pre>eremina firemention manually eremina austria aust</pre>	Choose an archive mirror. I chose deb.debian.org.

<pre>(1) Software selection - needs, you can choose to install one on more of the following predefined collections of software. Dhoose software to install:</pre>	Only check the field of « Standard System Utilities ». All other necessary services we'll install ourselves.
[1] Configure the package manager [-] ? 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][cass]@]host[cort]/". HTTP proxy information (blank for none): GB Back>	Leave empty if you don't use a proxy.
Tabo moves: Gookep selects: (Enter) activates buttons (Tabo moves) Gookep selects: (Enter) activates buttons (1) Install the GRUB boot loader on a hand disk. It seems that this new installation is the only operating system on this computer. If so, it should be safe to install the GRUB boot loader to the master boot record will make that operating system that is present on your computer, modifying the master boot record will make that operating system that is present on your computer, modifying the master boot record will make that operating system that is present on your computer, modifying the master boot record will be the toperating system. Install the GRUB boot loader to the master boot record? Gookep 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.

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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

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Setup static IP

//Find out which network interface you have ip ${\boldsymbol{a}}$

//Edit /etc/network/interfaces
sudo nano /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] ${\ensuremath{ Y}}$
- 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 -q0 - 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/linuxinstallers/master/deb/update-nodejs-and-nodered)</pre>

//Autostart on boot
sudo systemctl enable nodered.service

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