Installation guide of a Debian 11 server equipped with Apache, PostgreSQL, and PHP

I. Debian installation

1. First, launch your virtual machine Qemu/KVM by typing this command in the terminal:

S2.03-lance-installation

This command contains a command to launch Qemu:

lance_qemu="qemu-system-x86_64 -M q35 -cpu host -m 4G -enable-kvm -device VGA,xres=1024,yres=768 -display gtk,zoom-to-fit=off -drive $drive -device e1000,netdev=net0 -netdev user,id=net0,hostfwd=tcp::2222-:22,hostfwd=tcp::4443-:443,hostfwd=tcp::8080-:80,hostfwd=tcp::5432-:5432"

Explanation of this command:

-*M q35*: Specifies the virtual machine model (q35 here).

-*cpu host*: Using the same processor type as the host for the virtual machine.

-*m 4G*: Allocates 4 Go of RAM to the virtual machine

-*enable-kvm*: Activates the hardware virtualization support (KVM).

-*device VGA,xres=1024,yres=768*: Allocates a graphics device VGA with a 1024x768 resolution to the virtual machine.

-*display gtk,zoom-to-fit=off*: Displays the graphical output of the virtual machine in a GTK window and deactivates the automatic zoom. OBJ

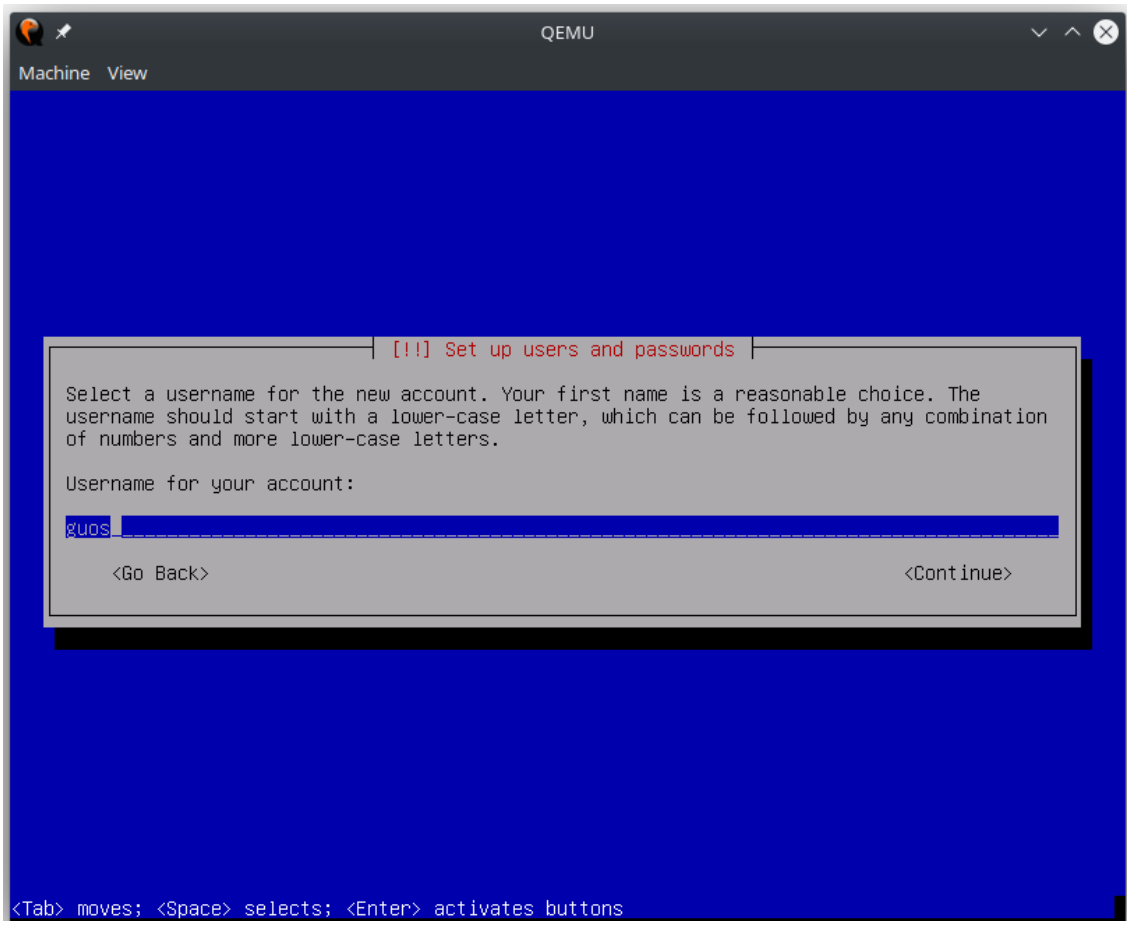
-drive $drive: Specifies the disk image's path used by the virtual machine.

-device e1000,netdev=net0: Adds an e1000 type network card to the virtual machine and it connects it to a virtual network.

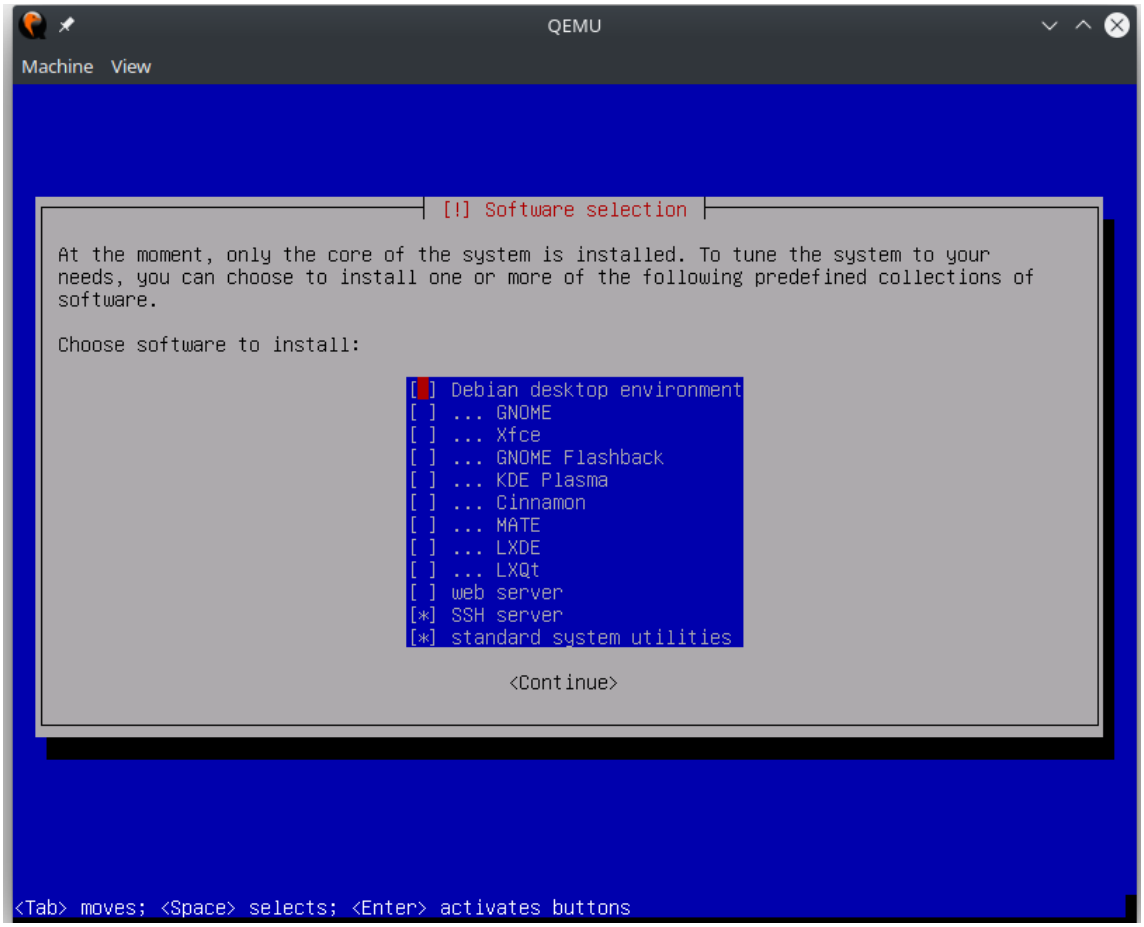
-netdev user, id=net0, hostfwd=tcp::2222-:22, hostfwd=tcp::4443-:443, hostfwd=tcp::8080-:80,hostfwd=tcp::5432-:5432: Configures the virtual network of the virtual machine. The TCP ports of the host machine (2222, 4443, 8080, 5432) are redirected to the corresponding ports on the virtual machine (22, 443, 80, 5432).

2. Now, you will arrive at the installation steps. Choose to install Debian **without graphical interface**. Then, **except for a few steps** which will be detailed below, always make the default choice:

- Hostname: Use server-"your UGA login"
- User name: Your UGA login name (like the screenshot below)



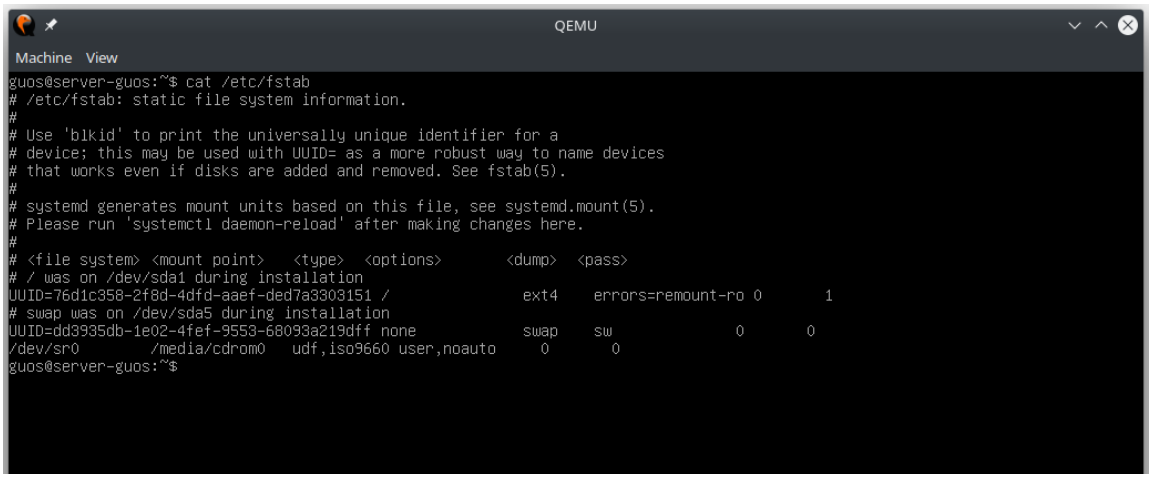
- Partition disks: Guided - use entire disk
- Partition disks: All files in one partition
- Partition disks: Yes
- Software Selection: **“Debian desktop” must not be checked, but "ssh server" must** (like the screenshot below)



- Install Grub: Yes
- Device for boot loader: /dev/sda

Then, log into the **root** count with the command ***su -***. Turn off your virtual machine properly by taping ***poweroff***. You can restart your virtual machine by taping ***S2.03-lance-machine-virtuelle*** in the terminal of the host machine.

3. You can type ***cat /etc/fstab*** in your VM (virtual machine) to list all disks and partitions.

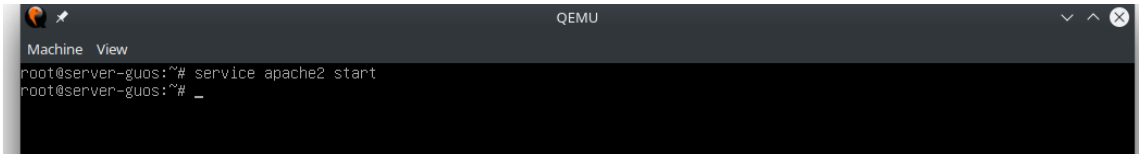


II. Apache, PostgreSQL, and PHP installation

When there is “#” in front of a command, it means it is on root. Otherwise, it will be written “$”. Those 2 symbols must **not** be typed. If you want to logout (from root to non-root or from postgreSQL to root from example), type ***exit***.

1. Apache

Connect in **root** (su -) and write ***apt install apache2***. Type ***yes*** or ***y*** according to what the terminal request. Apache needs to be started. Type # ***service apache2 start.*** And this is installed.



Verify Apache is started by writing ***systemctl status apache2*** in root.

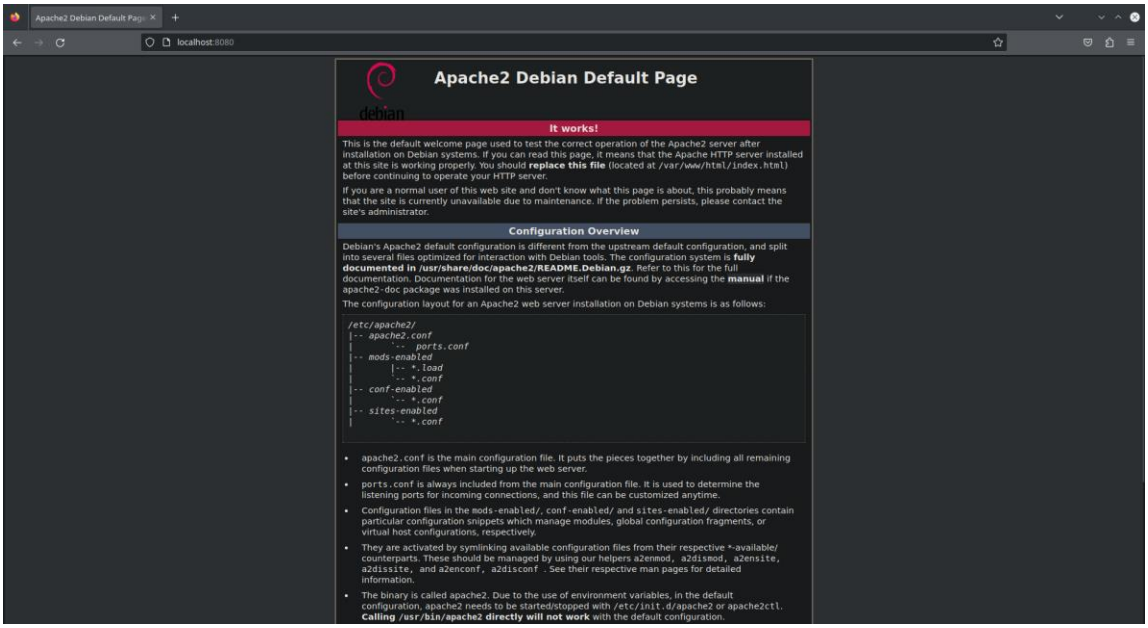
If Apache is not started, restart it: # ***systemctl restart apache2***

That’s not possible to display html pages because there is no graphical interface. However, we can display one on the host machine.

Connect to Apache: # ***telnet localhost 80***. Then, type ***"HEAD / HTTP/1.0"***. Warning, the quotes are important!

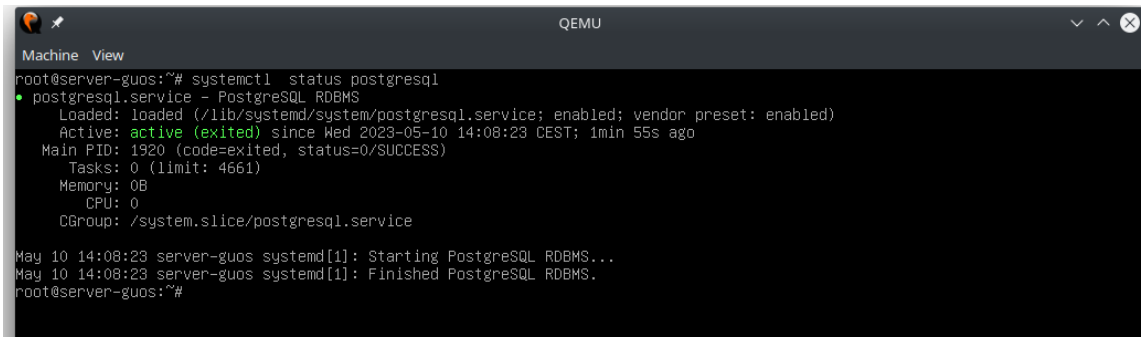
On the host machine now, open a web navigator and go to this URL: ***http://localhost:8080/***

You should arrive on the Apache2 Debian default page:



2. PostgreSQL

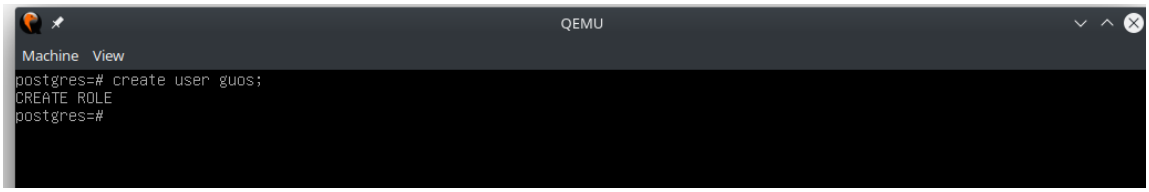
Install it: # ***apt install postgresql*** and verify it's started (# ***systemctl status postgresql***):



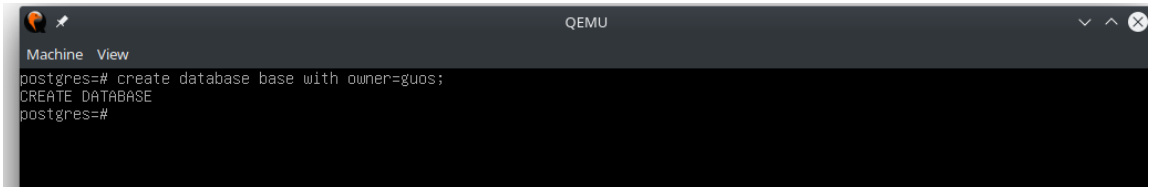
Verify it's installed: # ***su - postgres***. It will connect you with the login *postgres*.

$ ***psql –l*** to shows the default database list.

Create a user as your login name:



And create a database where you are the owner:



Create a table and insert or not some data:

We are going to configure PostgreSQL to be accessible by the host machine.