

The following are the steps required to build a Ubuntu 18.04.4 LTS server based on the Raspberry Pi 4B (4GB) platform supporting the Apache NetBeans 11.2 IDE with the NetBeans 8.2 C/C++ plugin. If you are already well versed in Ubuntu and Raspberry Pi you may find the instructions a tad verbose. However, in order to reach the widest possible audience, I've taken the time to illustrate in excruciating detail. Please forward any changes or correction to nonsequitur@fastmail.com.

Required:

1. Raspberry Pi 4B 4GB
  - a) HDMI monitor
  - b) USB Keyboard and mouse
  - c) USB power supply
2. 16GB MicroSD
3. Windows 10 or equivalent PC (to burn Ubuntu image to MicroSD card)

Windows PC Steps:

1. Wipe-clean (delete all existing partitions) and format the 16GB MicroSD card using MiniTool Partition Wizard or equivalent
2. Download file [ubuntu-18.04.4-preinstalled-server-arm64+raspi3.img](https://ubuntu.com/download/raspberry-pi) from site <https://ubuntu.com/download/raspberry-pi>
3. Using Win32 Disk Imager or equivalent, write the ubuntu-18.04.4-preinstalled-server-arm64+raspi3.img to the MicroSD card.

Raspberry PI 4B (RPi4):

1. With power off, connect monitor, keyboard and mouse to the RPi4
2. Insert imaged MicroSD card into the RPi4 and power up
3. Login using username "ubuntu" and password "ubuntu"
4. Respond to the change password request as appropriate and login
5. Update configuration sources by entering: `sudo apt-get update`
6. Install xubuntu desktop environment by entering: `sudo apt-get install xubuntu-desktop`
7. Login to RPi4 using the changed password
8. Run the Software Updater application, if it doesn't start automatically, to update the various operating system components before continuing further; this include any requested reboots
9. Using the Firefox browser, download file [jdk-8u241-linux-arm64-vfp-hflt.tar.gz](https://www.oracle.com/java/technologies/javase/javase-jdk8-downloads.html) from site URL <https://www.oracle.com/java/technologies/javase/javase-jdk8-downloads.html>
10. Bring up a Terminal window and enter the following commands to expand and install the java components necessary to run NetBeans-11.2:
  - a) `cd Downloads`
  - b) `sudo mkdir /usr/lib/jvm`

- c) `sudo tar xvf jdk-8u241-linux-arm64-vfp-hflt.tar.gz --directory /usr/lib/jvm/`
  - d) `/usr/lib/jvm/jdk1.8.0_241/bin/java -version`
  - e) `/usr/lib/jvm/jdk1.8.0_241/bin/javac -version`
  - f) `sudo apt-get install openjdk-11-jdk`
  - g) `java -version`
  - h) `sudo update-alternatives --install /usr/bin/java java /usr/lib/jvm/jdk1.8.0_241/bin/java 1`
  - i) `sudo update-alternatives --install /usr/bin/javac javac /usr/lib/jvm/jdk1.8.0_241/bin/javac 1`
  - j) `sudo update-alternatives --config java`
  - k) `sudo update-alternatives --config javac`
11. Using the same Terminal window, enter the following command to baseline the NetBeans dependencies:
- a) `sudo apt-get install g++`
  - b) `sudo apt-get make`
12. Using the same Firefox browser, download file [Apache-NetBeans-11.2-bin-linux-x64.sh](https://www.apache.org/dyn/closer.cgi/netbeans/netbeans/11.2/Apache-NetBeans-11.2-bin-linux-x64.sh), to the Downloads directory, from site URL <https://www.apache.org/dyn/closer.cgi/netbeans/netbeans/11.2/Apache-NetBeans-11.2-bin-linux-x64.sh>
13. From the Terminal window, enter the following to begin the installation of the NetBeans 11.2 application:
- a) `sudo chmod +x Apache-NetBeans-11.2-bin-linux-x64.sh`
  - b) `sudo ./Apache-NetBeans-11.2-bin-linux-x64.sh`
  - c) Note: The installation procedure will prompt for the location of the JDK for the Apache NetBeans IDE:... Select the `/usr/lib/jvm/java-1.11.0-openjdk-arm64`
14. When the installation procedure completes, which may or may not require a restart, start the NetBeans 11.2 application from the start menu, path Whisker Menu→Development→Apache NetBeans 11.2 IDE, and execute the following to setup NetBeans 8.2 C++ support:
- a) Bring up the Plugins Settings menu by following Tools→Plugins→Settings
  - b) Under the Configuration of Update Centers, check the NetBeans 8.2 Plugin Portal box
  - c) Under the Automatically Check for Updates drop-down menu select Every Startup
  - d) Close the Plugins window and restart the NetBeans application
  - e) When the application restarts, bring up the Available Plugins menu by following Tools→Plugins→Available Plugins
  - f) Check the box for C/C++
  - g) Click the Install button and proceed with the installation
  - h) Once again close the Plugins window and restart the NetBeans application

15. For my particular application, I did the following to verify the installation; simple but effective:

- a) Start the Apache NetBeans 11.2 IDE application
- b) File→New Project→C/C++→C/C++ Application→Next >
- c) Leave all of the defaults, with the exception of changing version to C++14→Finish
- d) To compile press Fn/F11

Note: This configuration compiled slightly more than 100,000 lines of code in about 28 seconds, a coarse estimate. Not too bad.