

## **PDE3411 Laboratory Worksheet 7**

**Installing Xilinx Vivado Design Suite and PetaLinux SDK  
in Your VM Ubuntu 18.04**

**09/11/2020**

## Aim

Prepare your computing environment for hardware software co-design using Vivado and PetaLinux. An important step to enjoy the true power of FPGA. **You need to work in your VMWare Linux environment! Your VMWare Linux should have ~70GB in storage capacity.**

## Objectives

After completing this lab, you will be able to:

- Use the Vivado Design Suite in Linux
- Use the PetaLinux SDK in Linux

## Equipment & Tools

Your laptop, VMWare,

Ubuntu 18.04, Xilinx

## Installing Vivado and Cable Driver

### Part 1

Step 1: Install Vivado Design Suite **Webpack** Edition Version 2019.1 for Linux (link name **Xilinx Unified Installer 2019.1: Linux Self Extracting Web Installer**) at: [xilinx.com/support/download.html](http://xilinx.com/support/download.html)

The download and installation steps are very much similar as you installed Vivado on your Windows system. If you already installed Vivado, carry on with installation of the cable driver below. If you forget the download and licensing steps, take a reference of this website: <https://www.cl.cam.ac.uk/~jrk2/docs/xilinx/>

After you've installed Vivado, you now need to install the JTAG cable driver in Ubuntu. Please follow the pg. 18 and 19 in this link to do the work.

[https://www.xilinx.com/support/documentation/sw\\_manuals/xilinx2016\\_4/ug973-vivado-release-notes-install-license.pdf](https://www.xilinx.com/support/documentation/sw_manuals/xilinx2016_4/ug973-vivado-release-notes-install-license.pdf)

## Installing PetaLinux SDK

### Part 2

**Step 2:** Install PetaLinux SDK Version 2019.1.

Make sure that you need to install **the same version of PetaLinux as Vivado** in your Linux.

1. Go to [xilinx.com/support/download.html](http://xilinx.com/support/download.html), select the PetaLinux tab, download PetaLinux shown below.

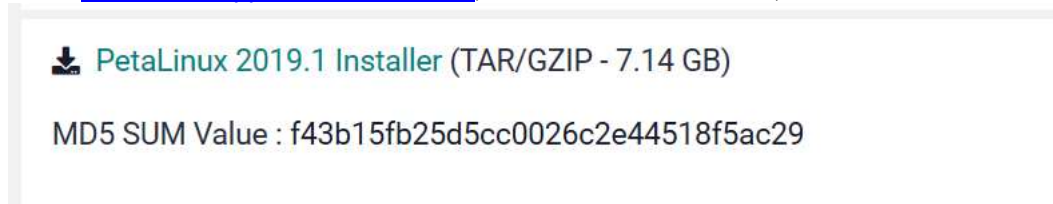


Figure 1: PetaLinux Installer.

2. Install the necessary dependency files in your linux.

```
% sudo apt-get update -y
```

```
% sudo apt-get upgrade -y
```

```
% sudo apt-get install -y flex bison build-essential libssh-dev gcc git make net-tools libncurses5-dev tftpd  
zlib1g-dev libssl-dev bison libselinux1 gnupg wget diffstat chrpath socat xterm autoconf libtool tar unzip  
texinfo zlib1g-dev gcc-multilib zlib1g:i386 screen pax gzip gawk
```

```
% sudo dpkg-reconfigure dash
```

Then select NO in the popup menu.

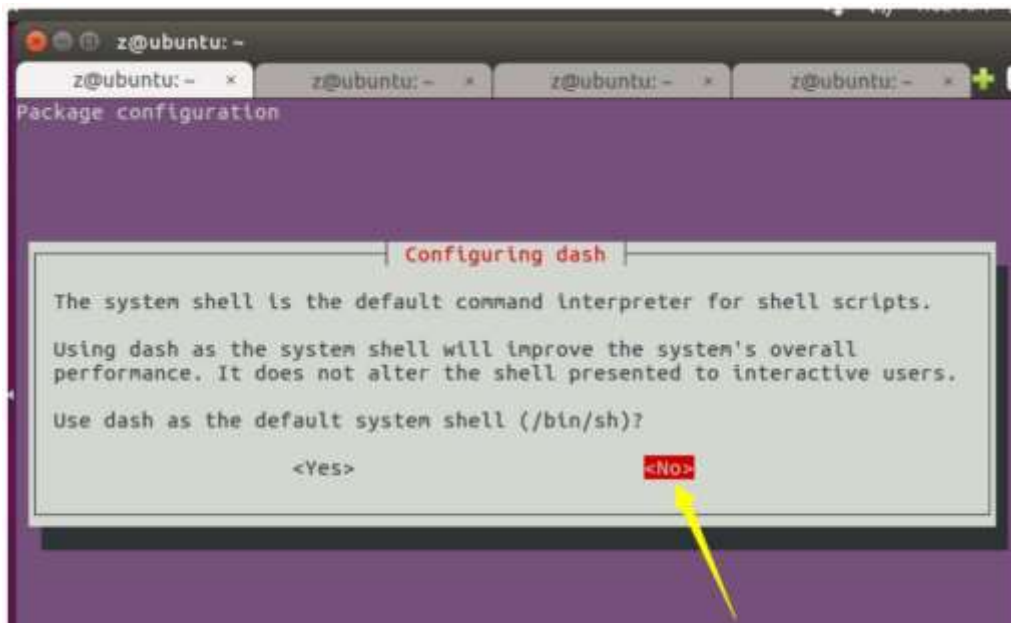


Figure 2: Popup menu

Now you should have downloaded the PetaLinux file with the name `petalinux-v2019.1-final-installer.run`. Save the file in the following newly created directory.

Create a directory for your petalinux file.

```
% cd ~
```

```
% mkdir PetaLinux2019.1
```

Go to the directory and make the file runnable.

```
% cd ~/PetaLinux2019.1
```

```
% chmod a+x ./petalinux-v2019.1-final-installer.run
```

Now you can install the PetaLinux system in your Ubuntu

```
% ~/PetaLinux2019.2/petalinux-v2019.1-final-installer.run
```

Wait until the license file reading and query. Press **Enter** key for reading, press **q** key for exit reading, and **y** key for accepting terms and conditions. Repeat this same process for 3 times as you have 3 files to accept.

Now waiting for completion of installation.

3. After installing, you need to install TFTP server.

- Run the following command:

```
% sudo apt-get install xinetd tftpd tftp
```

- Create `/etc/xinetd.d/tftp` and put the following entry,

```
service tftp
{
protocol    = udp
port        = 69
socket_type = dgram
wait        = yes
user        = nobody
server      = /usr/sbin/in.tftpd
server_args = /tftpboot
disable     = no
}
```

- Create a folder /tftpboot this should match whatever you gave in server\_args. mostly it will be tftpboot

```
% sudo mkdir /tftpboot
```

```
% sudo chmod -R 777 /tftpboot
```

```
% sudo chown -R nobody /tftpboot
```

- Restart the xinetd service.

```
Newer systems: % sudo service xinetd restart
```

```
Older systems: % sudo /etc/init.d/xinetd restart
```

Now your tftp server should be up and running.

#### 4. Set the environment variable

```
% source ~/PetaLinux2019.1/settings.sh
```

```
And put it in the .bashrc for your convenience.
```

```
% echo 'source ~/PetaLinux2019.1/settings.sh'>> ~/.bashrc
```

- Now check the installation.

```
% echo $PETALINUX
```

You should get the installation path. So far you have installed PetaLinux.

For PetaLinux SDK installation official guide:

[https://www.xilinx.com/support/documentation/sw\\_manuals/petalinux2013\\_10/ug976-petalinux-installation.pdf](https://www.xilinx.com/support/documentation/sw_manuals/petalinux2013_10/ug976-petalinux-installation.pdf)