

ALTERA DESIGN SOFTWARE 7.2 INSTALLATION MANUAL FOR THE UBUNTU LINUX ENVIRONMENT

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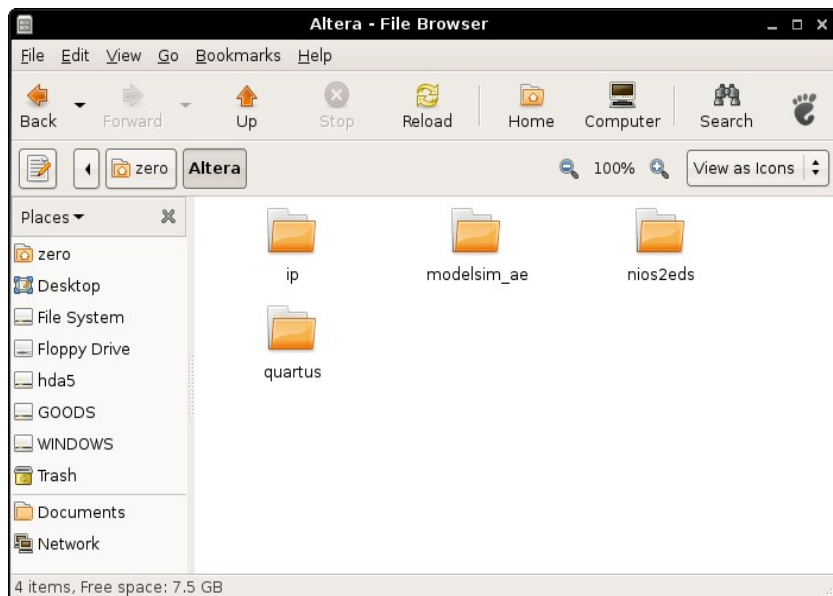
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Foreword

- Altera Design Software for Linux was designed to work on a very old version of Red Hat Linux. So if you still haven't chosen a Linux to work with, CentOS is a good Linux distribution which is based on Red Hat Linux but modern and compatible.
- Some changes are required to be done before it will work on a more modern distribution of Linux, like Ubuntu.
- This tutorial is written with for Ubuntu version 7.10 in mind, however it should apply for later (or older) versions.
- This tutorial only applies for Quartus / Nios / Megacore IP version 7.2 and Modelsim version 6.1g which are the latest at time of writing. Future or previous versions might probably need a little change in the path settings.
- Altera Quartus II for Linux currently only accepts a floating license. There is no such thing as a web-edition, nor does it support a T-guard license or any kind of hardware based fixed PC license.

The Installation Process

1. Download the installation files (for Linux, not UNIX) from the Altera website :
 - Quartus II Subscription Edition Software
 - MegaCore IP Library
 - Nios II Embedded Design Suite.
 - ModelSim-Altera
2. Extract all the files to a single folder called “**Altera**”. Please make sure the whole path for this folder **does not contain any spaces**. This folder should contain four folders :
 - Extract the “Quartus II Subscription Edition Software” zip file into “**quartus**”
 - Extract the “MegaCore IP Library” zip file into “**ip**”
 - Extract the “Nios II Embedded Design Suite” zip file into “**nios2eds**”
 - Extract the “ModelSim-Altera” zip file into “**modelsim_ae**”



3. Then open up a terminal. Type (one by one) :

```
sudo apt-get remove csh tesh  
sudo apt-get install tesh
```

4. Next, cd to your Altera folder.
5. Then type this :

```
cd quartus/linux  
sudo ./install
```

6. Go through the installation steps, but insert the following as the installation directory : **/opt/altera7.2/quartus7.2**

Wait for the installation to complete.

7. Next, type this :

```
cd ..  
cd ..  
cd ip/linux  
sudo ./install
```

8. Go through the installation steps, but insert the following as the installation directory : **/opt/altera7.2/megacore**

Wait for the installation to complete.

9. Next, type this :

```
cd ..  
cd ..  
cd nios2eds/linux  
gedit install
```

10. An instance of *gedit* will open. Go to line 143 of the file and then put a double hash “##” in front of the file to comment out the line. It should be :

```
From      :      x=${x/~/$HOME}  
To        :      ##x=${x/~/$HOME}
```

This script command will give an error and based on the usage, it is OK to remove this line entirely.

11. Once done, save the file and close *gedit*. Then type this :-

```
export QUARTUS_ROOTDIR=/opt/altera7.2/quartus7.2  
sudo ./install
```

12. Go through the installation steps, but insert the following as the installation directory : **/opt/altera7.2/nios2_7.2**

Wait for the installation to complete.

13. Next type this :

```
cd ..  
cd ..  
cd modelsim_ae  
gedit install.ms
```

14. An instance of *gedit* will open. Hack the install script file like this (thanks to Ruben “LaRusa”) :

```
At line 172 :  
From : tar xfo ${script_path}/modeltech_altera_unix.tar  
To   : tar xfo ${script_path}/modeltech_altera_unix.tar --no-same-permissions  
At line 174 :  
From : tar xfo ${script_path}/modeltech_altera_unix.tar $file1.Z $file2.Z $file3.Z  
To   : tar xfo ${script_path}/modeltech_altera_unix.tar $file1.Z $file2.Z $file3.Z --no-same-permissions
```

15. Save the changes and close *gedit*. Then type this :

```
sudo ./install.ms
```

16. Go through the installation steps, but insert the following as the installation directory : **/opt/altera7.2/modelsim**

Wait for the installation to complete.

Note : Modelsim is version 6.1g, but it is installed in folder altera7.2 to avoid confusion.

That's it for the installation. But it will not work without setting up the required paths.

Setting the Paths and Environment Variables

1. Open a terminal, then type this :

```
cd
gedit .bashrc
```

2. An instance of *gedit* will open up. Add the following at the end of the file :

```
## Altera Quartus and Nios environment variables
LM_LICENSE_FILE=1800@localhost
QUARTUS_64BIT=0
MWOS=linux
MWARARCH=i86
QUARTUS_MWWM=allwm
SOPC_KIT_NIOS2=/opt/altera7.2/nios2_7.2
SOPC_BUILDER_PATH=/opt/altera7.2/nios2_7.2+$SOPC_BUILDER_PATH_72+$SOPC_BUILDER_PATH_61
QUARTUS_ROOTDIR=/opt/altera7.2/quartus7.2
SOPC_BUILDER_PATH_72=SOPC_BUILDER_PATH_72=/opt/altera7.2/nios2_7.2+$SOPC_BUILDER_PATH_72
SOPC_BUILDER_PATH_61=/opt/altera7.2/nios2_7.2+/opt/altera7.2/megacore/ddr_ddr2_sdram/lib/sopc_builder+/opt/altera7.2/megacore/pci_compiler/lib/sopc_builder
PATH=$PATH:$HOME/bin:/opt/altera7.2/quartus7.2/bin:/opt/altera7.2/nios2_7.2/bin:/opt/altera7.2/quartus7.2/linux
PATH=$PATH:/opt/altera7.2/modelsim/linuxaloem:/opt/altera7.2/nios2_7.2/bin/nios2-gnutools/H-i686-pc-linux-gnu/bin:/opt/nios2/bin
LD_LIBRARY_PATH=/lib:/usr/lib:/opt/altera7.2/quartus7.2/linux
unset GCC_EXEC_PREFIX
export LM_LICENSE_FILE QUARTUS_ROOTDIR SOPC_KIT_NIOS2 SOPC_BUILDER_PATH_72
export SOPC_BUILDER_PATH_61 PATH LD_LIBRARY_PATH SOPC_BUILDER_PATH QUARTUS_MWWM QUARTUS_64BIT MWOS MWARCH
```

3. Make sure the above commands are inserted correctly. Set your license server in the LM_LICENSE_FILE variable. Then save the file and close *gedit*.
4. Now you can run any program you want from the terminal.
 - Quartus II 7.2 : type **quartus**.
 - Nios II IDE : type **nios2-ide**.
 - All the command line tools : **nios2-download**, **nios2-terminal** and so on.
 - **nios2-configure-sof** can be used to download a .sof file into the board.
 - **lmgrd -c /home/myname/mylicensefile** can be used to set up your license.
 - Now you have a platform to begin programming for uClinux.

USB-Blaster Setup

1. To use the USB-Blaster, we need to just add a little info in the udev rules. Ubuntu uses udev for USB hot plugging.

2. First, open a terminal. Then type this :

```
sudo gedit /etc/udev/rules.d/40-permissions.rules
```

3. Then add these lines at the end of the file :

```
# Altera USB-Blaster  
BUS=="usb", SYSFS{idVendor}=="09fb", SYSFS{idProduct}=="6001", MODE=="0666", SYMLINK+="usbblaster"
```

4. Next, go to your home directory and create and a new file called “**.jtag.conf**”.

5. That's it. You should be able to use the USB-Blaster now.