Vivado hardware manager

mini how-to guide

Version 3.0 11-03-2016 prepared by Andrea Borga

1 Starting the hardware server

In the Atlas playground the Xilinx hardware server (hw_server) runs on **rother.nikhef.nl**.
The hardware server is used to program the Xilinx FPGAs attached to it, through either the programming cables (Digilent naked or rubber) or the on-board Digilent programmer (on eval kits).

Here is the procedure to start the server, normal users have the rights to do it:

```
$ ssh rother.nikhef.nl
$ source /project/et/fpga/Xilinx/Vivado/2015.4/settings64.sh
$ cd /project/et/fpga/Xilinx/Vivado/2015.4/bin/
$ ./hw_server -d
```

Here is the procedure to kill the server, required when the client becomes irresposive (it happens...):

```
$ ssh rother.nikhef.nl
$ killall hw_server
  or
$ ps -A |grep hw_server
$ kill -9 proc_id
  or sudo the command if the process is not yours
```

Here is the procedure to re-start the server, after a crash:

```
$ ssh rother.nikhef.nl
$ source /project/et/fpga/Xilinx/Vivado/2015.4/settings64.sh
$ cd /project/et/fpga/Xilinx/Vivado/2015.4/bin/
$ ./hw_server -d -stcp::3121
```

If the server crashed it normally doesn't want to restart on the same TCP port: use ports 3121 (default), or 3122, 3123. One it crashed on one port and restarted on another, the next restart can be done on the previous port again.

Here is the procedure to hard-restart the server:

```
$ ssh rother.nikhef.nl
$ sudo shutdown -r now
  wait for reboot
$ ssh rother.nikhef.nl
$ source /project/et/fpga/Xilinx/Vivado/2015.4/settings64.sh
$ cd /project/et/fpga/Xilinx/Vivado/2015.4/bin/
$ ./hw_server -d
```

2 Connecting to the hardware server

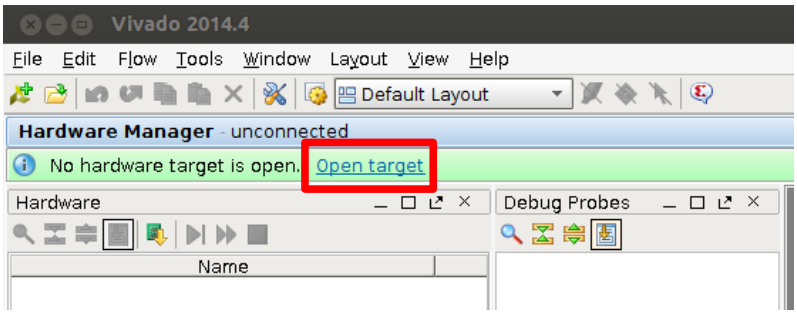
The hardware server can be accessed to program the cards or monitor their activity with chipscope.

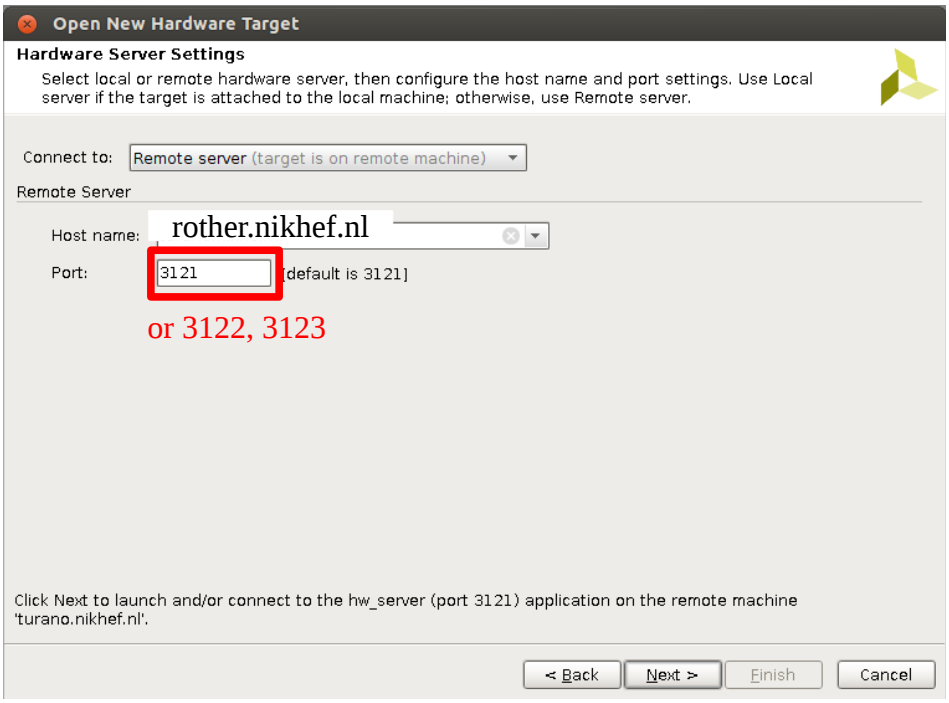
2.1.1 Launch vivado

From any host with access to the */project* directory:

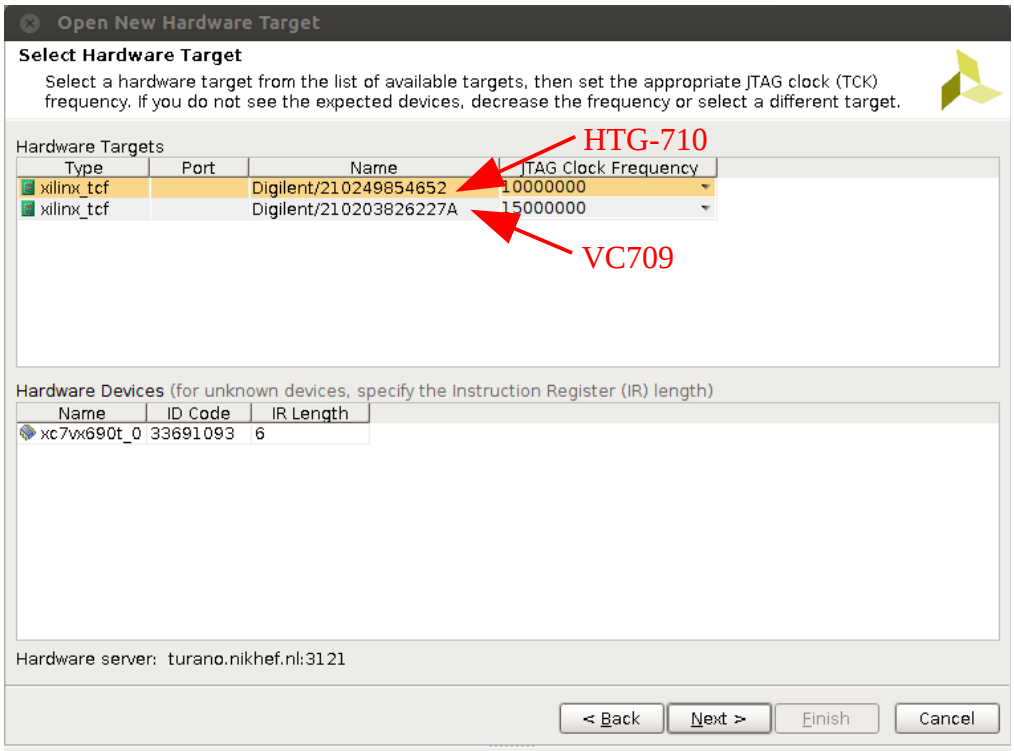
```
$ ssh -Y hostname.nikhef.nl
  or use x2goclient or VNC
$ source /project/et/fpga/Xilinx/Vivado/2015.4/settings64.sh
$ vivado &
```

2.1.2 Open the Hardware Manager

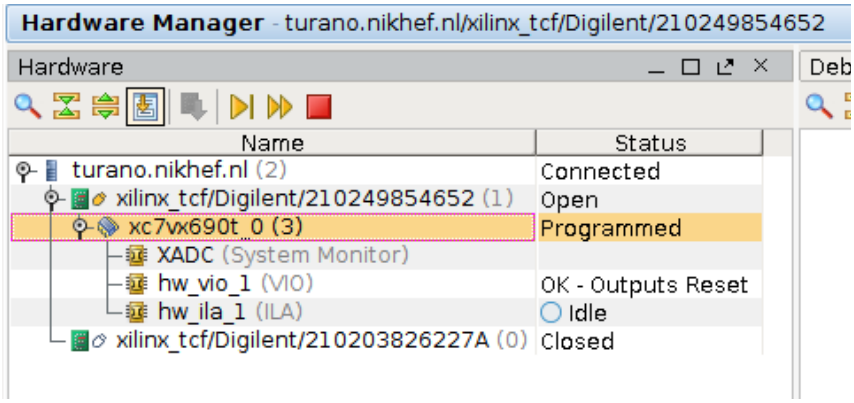




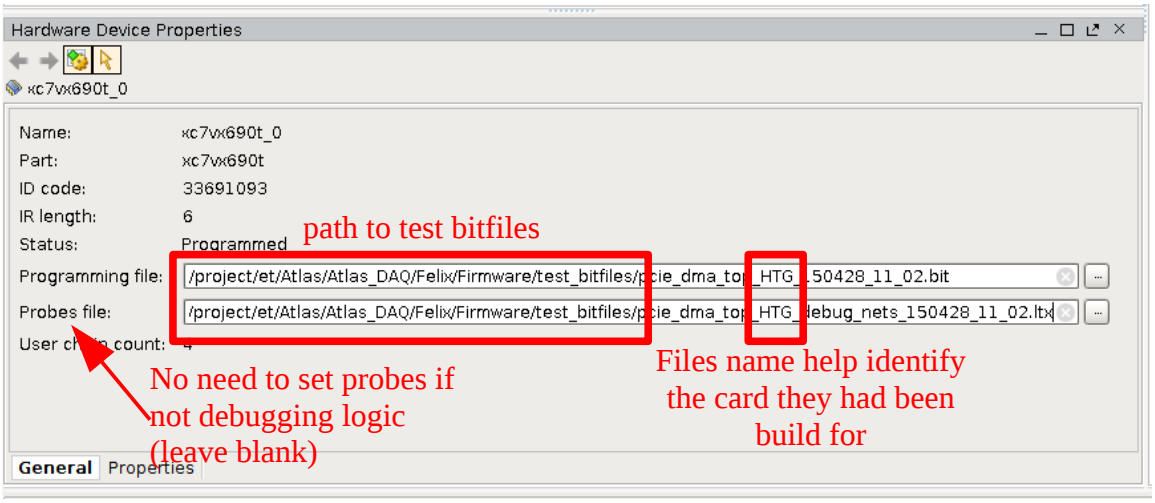
2.1.3 Select the target FPGA

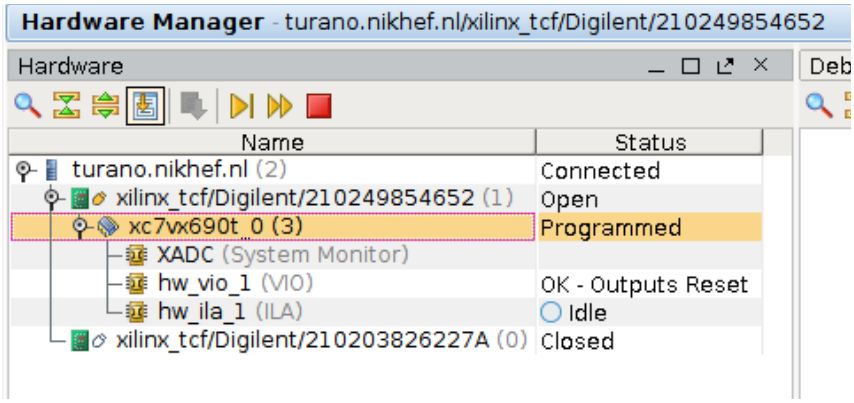


3 Load firmware to the FPGA

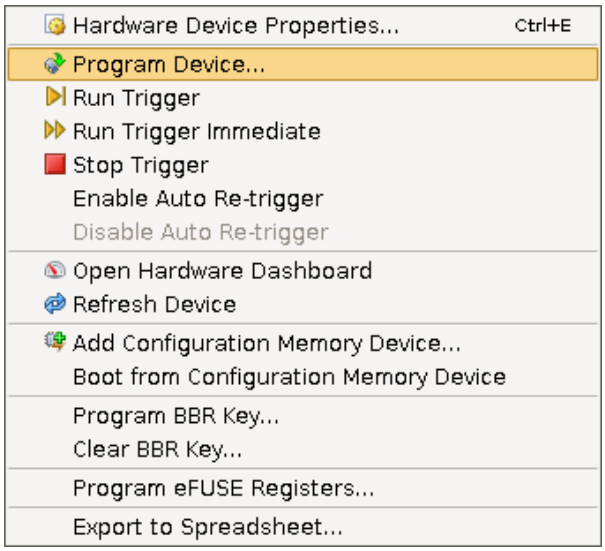


Click on the device you want to program





right-click the device and click “program device”

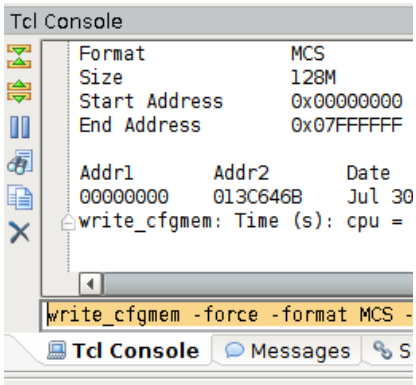


NOTE: remember to reboot the machine after every FPGA reprogram!

4 Program the Flash EEPROM

4.1.1 Create a PROM .mcs file

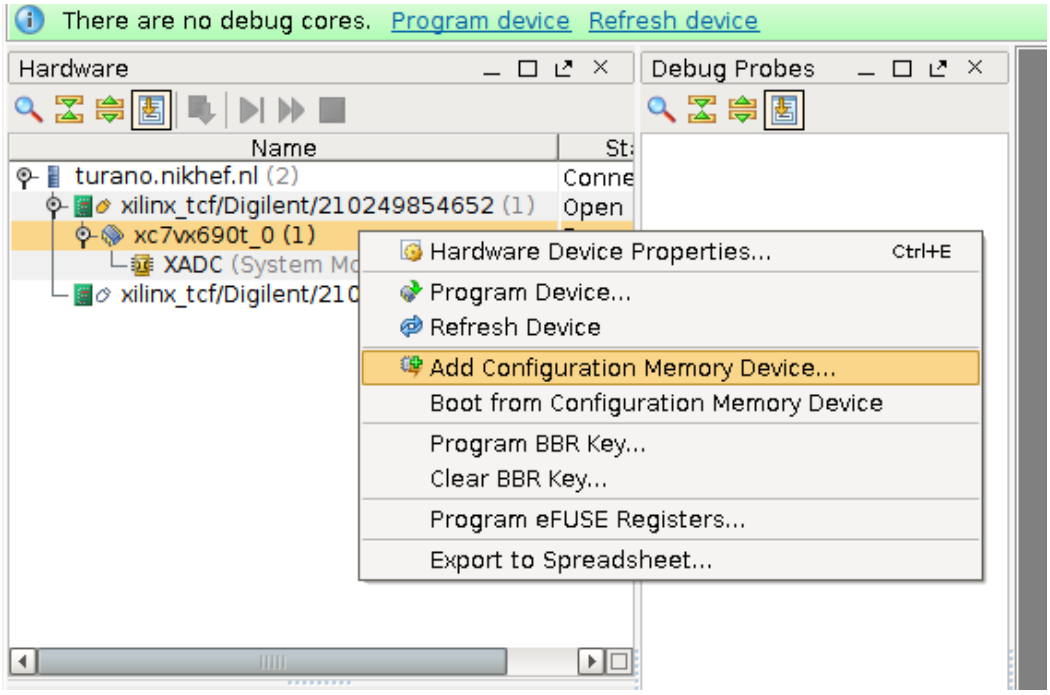
From the Tcl console in vivado run the command below

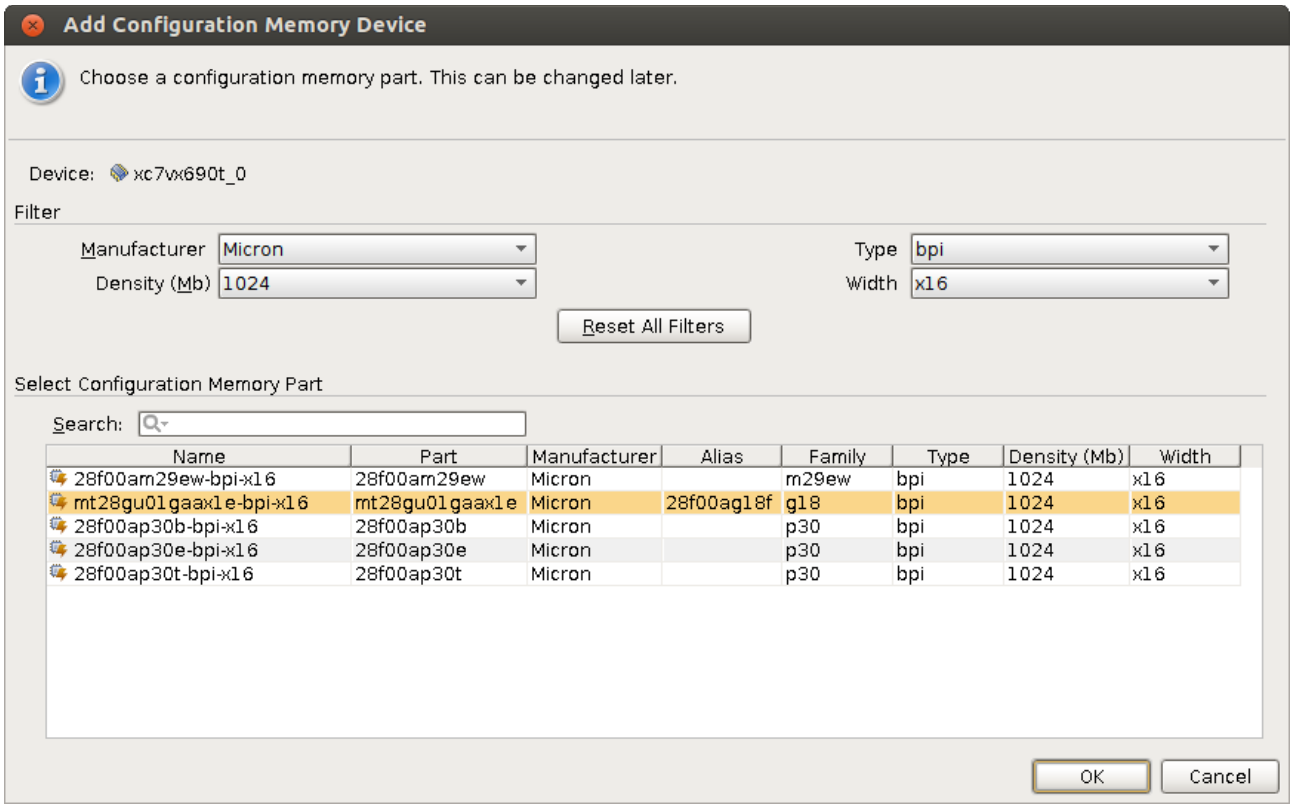



```
$ cd /path_to_bitfile

$ write_cfgmem -force -format MCS -size 128 -interface BPIx16 -loadbit "up
0x00000000 your_bitfile_name.bit" your_promfile_name.mcs
```

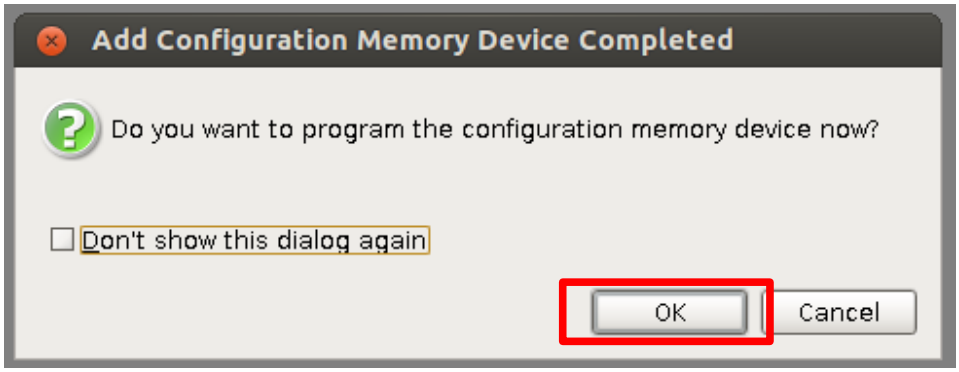
4.1.2 Add Configuration Memory Device to target card and flash chip

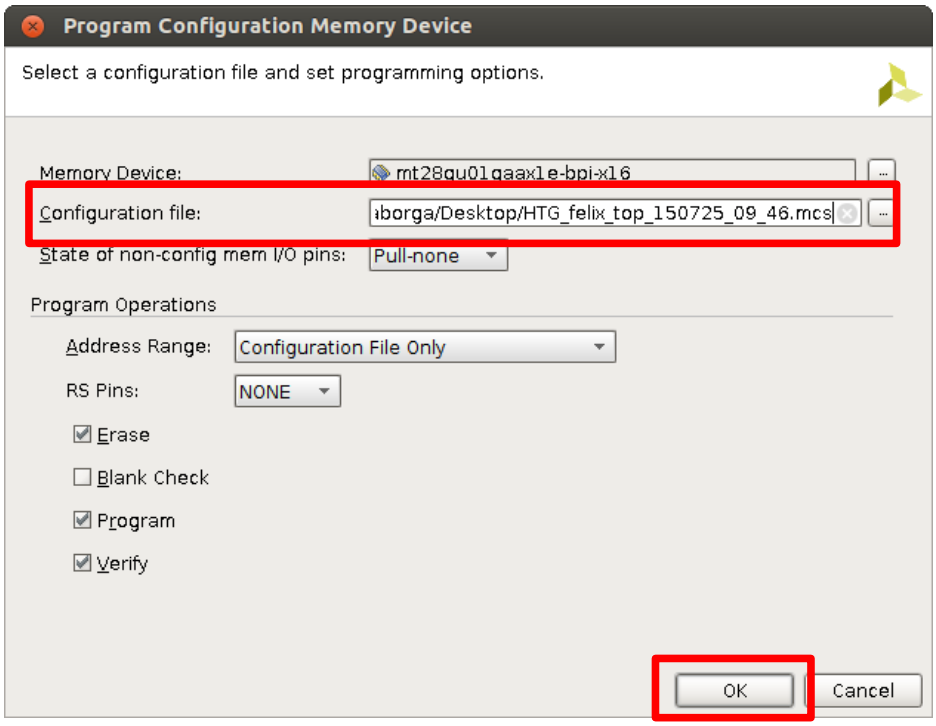




Both HTG710 and VC709 have the same type of EEPROM: use filters **Micron – 1024 – bpi – x16**.

Select “Alias” **28f00ag18f**





If you cancel the operation above you can reassign a configuration .mcs file at a later stage from: