

Firmware Status

7/20/2020

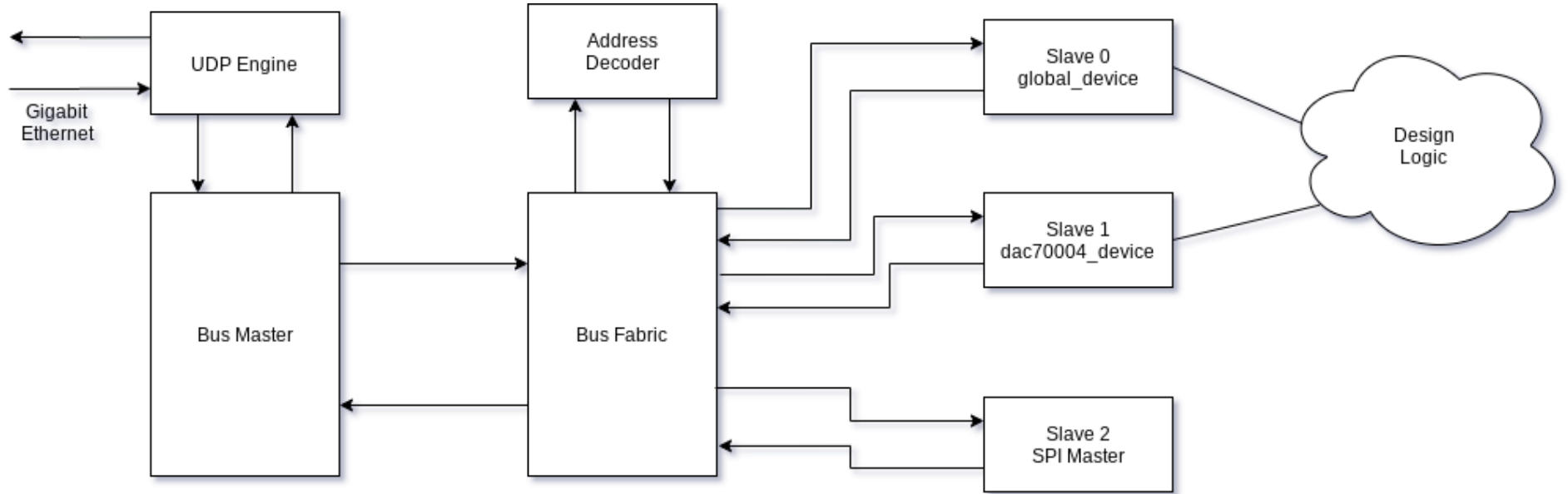
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Implement

- Firmware:
 - IPbus Infrastructure(Master/Ethernet/Fabric)
 - IPbus slaves: DAC70004, SPI master, global
- Software:
 - Address tables
 - Python Scripts

Firmware Structure



Software

Address tables:

- Connection/address
- Device

Python scripts:

- JadePixCtrl.py
- lib
 - |-- dac70004_defs.py
 - |-- dac70004_device.py
 - |-- global_device.py
 - |-- spi_device.py

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<node id="JadePix.udp.0">
  <node id="global_dev" module="file:///dev/global_dev.xml" address="0x00000000" tags="slave" />
  <node id="dac70004_dev" module="file:///dev/dac70004_dev.xml" address="0x40000000" tags="slave" />
  <node id="spi_dev" module="file:///dev/opencores_spi.xml" address="0x80000000" tags="slave" />
</node>
```

```
1 #!/usr/bin/env python
2
3 #####
4 import time
5 import uhal
6 import logging
7
8 from lib.global_device import GlobalDevice
9 from lib.dac70004_device import Dac70004Device
10 from lib.dac70004_defs import *
11
12 #####
13
14 logging.basicConfig(level=logging.DEBUG, format='%(asctime)s - %(name)s - %(levelname)s - %(message)s')
15 log = logging.getLogger(__name__)
16 log.setLevel(logging.DEBUG)
17
18 __author__ = "Sheng Dong"
19 __email__ = "s.dong@mails.ccnu.edu.cn"
20
21 if __name__ == '__main__':
22     # if len(sys.argv) < 3:
23     #     log.info("Please specify the device IP address and the top-level address table file to use")
24     #     sys.exit(1)
25     device_ip = "192.168.3.16"
26     device_uri = "ipbusudp-2.0://" + device_ip + ":50001"
27     # address_table_name = sys.argv[2]
28     address_table_name = "./etc/address.xml"
29     address_table_uri = "file://" + address_table_name
30
31     uhal.setLogLevelTo(uhal.LogLevel.WARNING)
32     hw = uhal.getDevice("HappyDaq.udp.0", device_uri, address_table_uri)
33
34     global_dev = GlobalDevice(hw)
35     dac70004_dev = Dac70004Device(hw)
36
37     ## Soft global reset
38     global_dev.set_soft_rst()
39
40     ## SET DAC70004
41     dac70004_dev.soft_reset()
42     dac70004_dev.soft_clr()
43     dac70004_dev.w_power_chn(DAC70004_PW_UP, 0xf) # Power up all channels
44     dac70004_dev.w_chn_update_chn(DAC70004_CHN_A, dac70004_dev.out_to_din(1.5)) # Set channle A to 1.5V
45     dac70004_dev.w_chn_update_chn(DAC70004_CHN_B, dac70004_dev.out_to_din(2.0)) # Set channle B to 2.0V
```

Plan

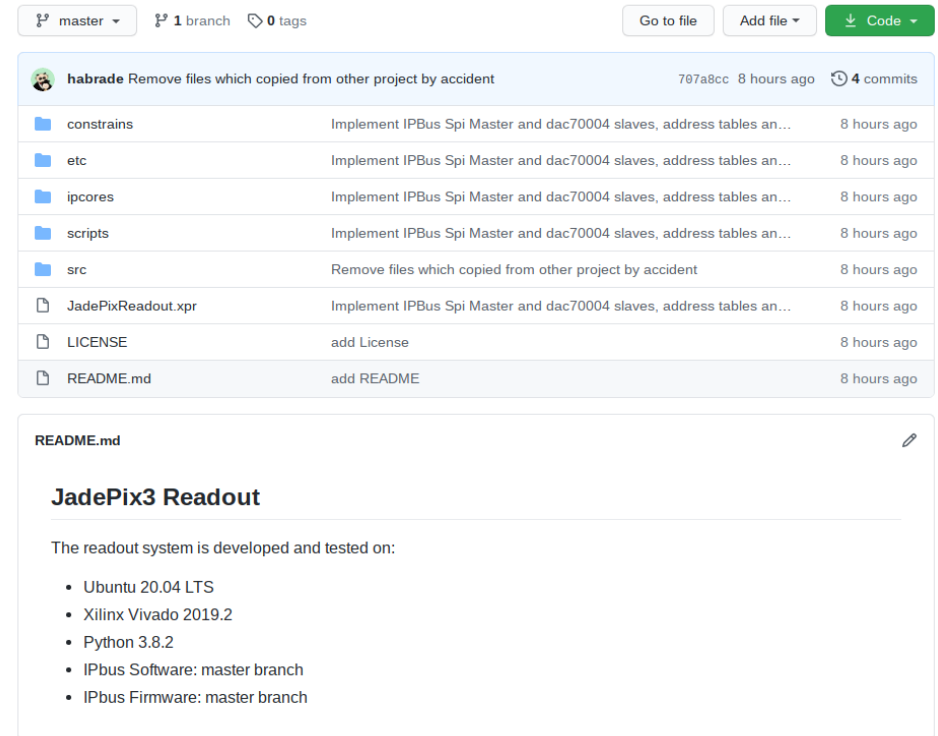
- More control modules and data link implement in firmware
- Run software as server mode

Code Repository

https://github.com/habrade/JadePix3_Readout

To be done:

- Script/Makefile to auto build project
- Release bit/mcs files



The screenshot shows a GitHub repository page for 'habrade/JadePix3_Readout'. At the top, there are navigation elements: 'master' branch selected, '1 branch', and '0 tags'. There are buttons for 'Go to file', 'Add file', and 'Code'. Below this is a commit history table with columns for the commit author (habrade), commit message, commit hash (797a8cc), time (8 hours ago), and number of commits (4). The commit messages include 'Remove files which copied from other project by accident' and 'Implement IPBus Spi Master and dac70004 slaves, address tables an...'. Below the table is a preview of the 'README.md' file, which contains the title 'JadePix3 Readout' and a list of development and testing environments: Ubuntu 20.04 LTS, Xilinx Vivado 2019.2, Python 3.8.2, IPbus Software: master branch, and IPbus Firmware: master branch.

Author	Message	Hash	Time	Commits
habrade	Remove files which copied from other project by accident	797a8cc	8 hours ago	4
	Implement IPBus Spi Master and dac70004 slaves, address tables an...		8 hours ago	
	Implement IPBus Spi Master and dac70004 slaves, address tables an...		8 hours ago	
	Implement IPBus Spi Master and dac70004 slaves, address tables an...		8 hours ago	
	Implement IPBus Spi Master and dac70004 slaves, address tables an...		8 hours ago	
	Remove files which copied from other project by accident		8 hours ago	
	Implement IPBus Spi Master and dac70004 slaves, address tables an...		8 hours ago	
	add License		8 hours ago	
	add README		8 hours ago	

README.md

JadePix3 Readout

The readout system is developed and tested on:

- Ubuntu 20.04 LTS
- Xilinx Vivado 2019.2
- Python 3.8.2
- IPbus Software: master branch
- IPbus Firmware: master branch

Backup

- Pin issue: DAC70004 can't be connected to KC705 via FMC(HPC400)?

