Firmware Status

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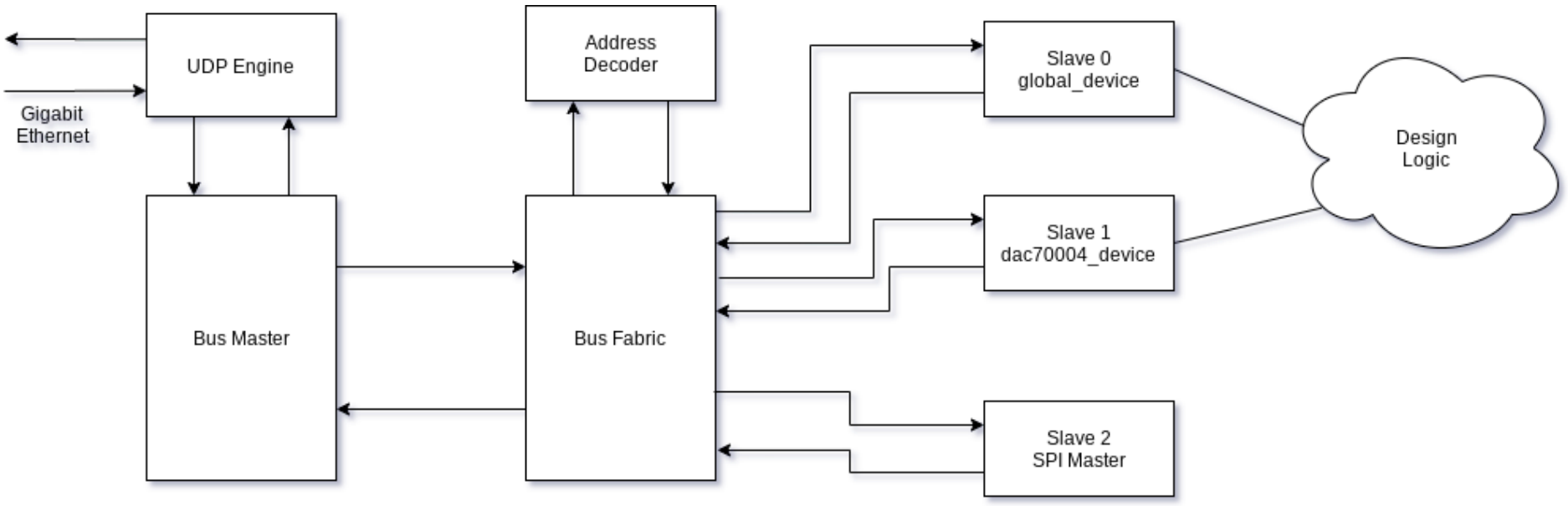
Implement

- 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
<?xml version="1.0" encoding="ISO-8859-1"?>
<node id="JadePix3.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>
```

```python
#!/usr/bin/env python

############################################################
import time
import uhal
import logging

from lib.global_device import GlobalDevice
from lib.dac70004_device import Dac70004Device
from lib.dac70004_defs import *

############################################################

logging.basicConfig(level=logging.DEBUG, format='%(asctime)s - %(name)s - %(levelname)s - %(message)s')
log = logging.getLogger(__name__)
log.setLevel(logging.DEBUG)

__author__ = "Sheng Dong"
__email__ = "s.dong@mails.ccnu.edu.cn"

if __name__ == '__main__':
    # if len(sys.argv) < 3:
    #     log.info("Please specify the device IP address and the top-level address table file to use")
    #     sys.exit(1)
    device_ip = "192.168.3.16"
    device_uri = "ipbusudp-2.0://" + device_ip + ":50001"
    # address_table_name = sys.argv[2]
    address_table_name = "../etc/address.xml"
    address_table_uri = "file://" + address_table_name

    uhal.setLogLevelTo(uhal.LogLevel.WARNING)
    hw = uhal.getDevice("HappyDaq.udp.0", device_uri, address_table_uri)

    global_dev = GlobalDevice(hw)
    dac70004_dev = Dac70004Device(hw)

    ## Soft global reset
    global_dev.set_soft_rst()

    ## SET DAC70004
    dac70004_dev.soft_reset()
    dac70004_dev.soft_clr()
    dac70004_dev.w_power_chn(DAC70004_PW_UP, 0xf)  # Power up all channels
    dac70004_dev.w_chn_update_chn(DAC70004_CHN_A, dac70004_dev.out_to_din(1.5))  # Set channle A to 1.5V
    dac70004_dev.w_chn_update_chn(DAC70004_CHN_B, dac70004_dev.out_to_din(2.0))  # Set channle B to 2.0V
```

Plan

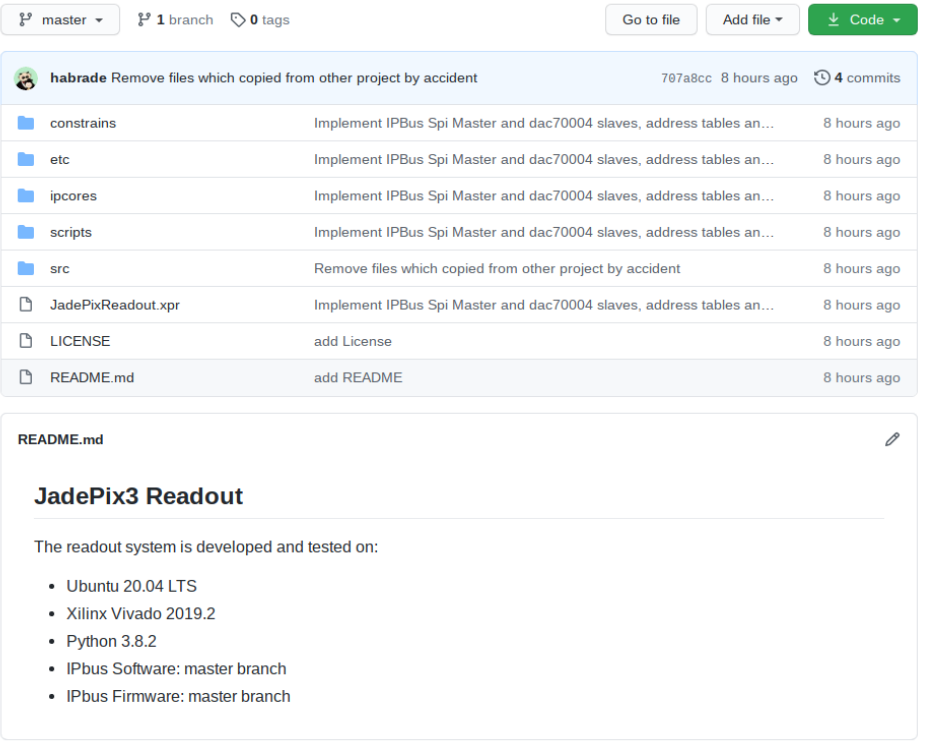
- More control modules and data link implement in firmware
- Run software as server mode

Code Repository

https://github.com/habrade/JadePix3_Readout

To be done:

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



Backup

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