Configuration of devices - CHARMing Software Suite

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In the last year I worked on implementing a new software (https://github.com/zweistein-frm2/CHARMing) for fast Data Acquisition of Neutron X-Y data. It is called the CHARMing software suite. This software interfaces with the new CHARM detector and with existing Mesytec hardware as used for example in the SANS1 detector. The software was newly designed with the goal of highest data throughput, easy installation, highest reliability and full integration into the Entangle framework.

- Usually a dedicated network card is used to connect the CHARM or Mesytec hardware.
- Configuration file location: By default the configuration file is first searched in `/etc/CHARMing` .
  If not found there then it is searched for in `/home/yourusername/.CHARMing` .
- Configuration file name: Charm device configuration is `charmsystem.json` , mesytec device configuration is `mesytecsystem.json`
- A default configuration file is created if necessary by running "`sudo /usr/local/bin/charm`"
- An example configuration file for a charm device can be found here: https://github.com/zweistein-frm2/CHARMing/blob/master/charm/erwin-small.json
- An example configuration file for the SANS1 device can be found here: https://github.com/zweistein-frm2/CHARMing/blob/master/charm/sans1.json
- It is possible to use multiple charm- or mesytecdevices. Just add a MesytecDevice1 and CharmDevice1 json block similar to MestecDevice0 and CharmDevice0

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```
{
    "MsmtSystem": {
        "DataHome": "/home/localadmin",     # listmode files are written
                                            # here
        "BinningFile": "",                  # binning file in txt format
                                            # no binning for charm devices


      "MesytecDevice0": {                   # name is same for charm or
                                            # mesytec
        "mcpd_ip": "192.168.168.121",       # ip address of charm device
        "mcpd_port": "54321",               # port of charm device
        "mcpd_id": "0",                     # id of charm device
        "data_host": "0.0.0.0",             # leave 0.0.0.0
        "networkcard": "192.168.168.100",   # network card ip where charm
                                            # Detector is connected
        "eventdataformat": "Mdll",          # Mdll for charm devices
        "datagenerator": "Charm",          # Charm or CharmSimulator
        "CounterADC0": "",                  # see SANS1 example for Mesytec
devices
        "CounterADC1": "",                 # used only for Mesytec device
        "CounterADC2": "",                 # used only for Mesytec device
        "CounterADC3": "",                 # used only for Mesytec device
        "CounterADC4": "",                 # used only for Mesytec device
        "CounterADC5": "",                 # used only for Mesytec device
        "CounterADC6": "",                 # used only for Mesytec device
        "CounterADC7": "",                 # used only for Mesytec device
        "Threshold_and_Gains0": "",       # used only for Mesytec device
        "Threshold_and_Gains1": "",       # used only for Mesytec device
        "Threshold_and_Gains2": "",       # used only for Mesytec device
        "Threshold_and_Gains3": "",       # used only for Mesytec device
        "Threshold_and_Gains4": "",       # used only for Mesytec device
        "Threshold_and_Gains5": "",       # used only for Mesytec device
        "Threshold_and_Gains6": "",       # used only for Mesytec device
        "Threshold_and_Gains7": ""       # used only for Mesytec device
      },
      "CharmDevice0": {
        "n_charm_units": "2"            # number of Charm detector units
                                        #not considered for Mesytec devices
      }

    }
}
```

Example supporting multiple charm or mesytec devices:

```
{
"MsmtSystem": {

"DataHome": "/home/localadmin",

…

"MesytecDevice0": {
…

},
"CharmDevice0": {…}


"MesytecDevice1": {
…
},
"CharmDevice1": {…
"MesytecDeviceN": {
…
},
"CharmDeviceN": {…



}

}
```