

Gigabit Ethernet for DATE

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DATE Data Acquisition software

<http://ph-dep-aid.web.cern.ch/ph-dep-aid/>

phos@aldaqpc019/

DATEALLDETECTORS_DAQ::ALLDETECTORS_CONTROL

File View Options Windows Status updated

ALLDETECTORS
DAQ - Run Control

HI running on aldaqpc019 with PID 4083
RC running on aldaqpc019 with PID 4027

Disconnected Configuration < > Connected Run Parameters < >

Ready to start Data Taking

Start processes Start

AFFAIR EDM GDC Stop

HLT mode A: DAQ only v Abort

Recording on device v

RUN NUMBER : 295 Run Control Status : CONNECTED

Trace Wed 08 11:48:28 (HI) Current RC options loaded from : DATE_CONFIG

Clear Wed 08 11:48:26 (RC) READOUT start phase timeout on ALONELDC

Debug Wed 08 11:48:16 (RC) Starting run 295

Pause Wed 08 11:48:16 (RC) Get and update run number from database

Bigger Wed 08 10:57:09 (HI) Current RC options loaded from : DATE_CONFIG

Smaller Wed 08 10:57:07 (RC) Aborting from STARTING LDCS...

Sub-events recorded 0

Sub-event recorded rate 0

Bytes injected 0

Byte injected rate 0 B/s

Bytes recorded 0

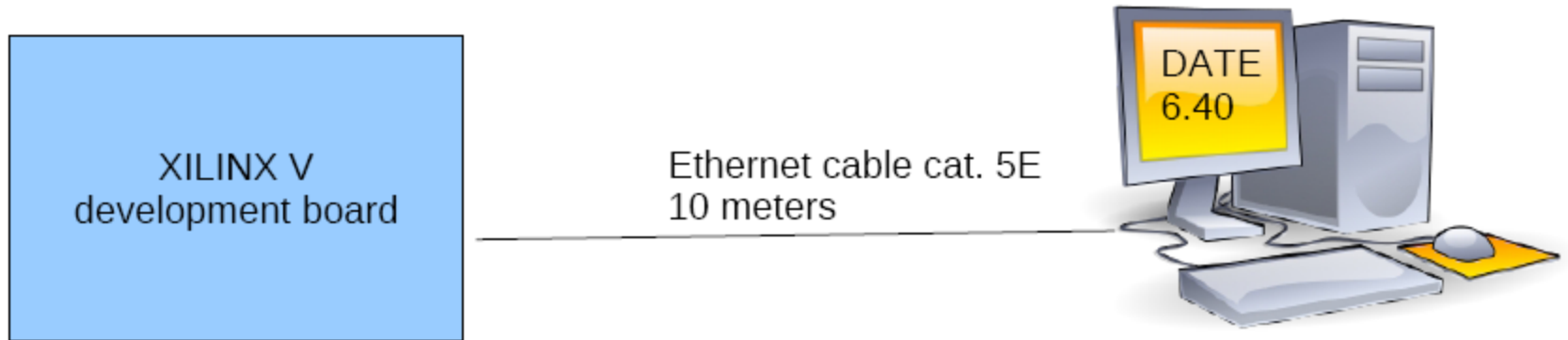
Byte recorded rate 0 B/s

DATEALLDETECTOR ALLDETECTORS phos@aldaqpc019/ Wed Mar 08 11:51 AM

ALLDETECTORS Show

- Linux-based
- baseline for all ALICE detectors
- also used by other users
- easy User interface
- very well documented
- in use both for test-systems and full ALICE detector system
- Root file storage
- I/O interface to MM fiber
- porting to GBE over MM fiber : first results reported here

Communication test

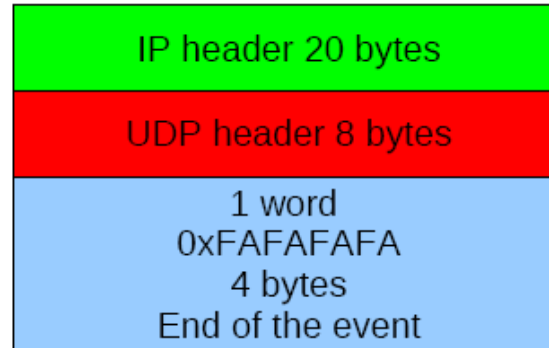
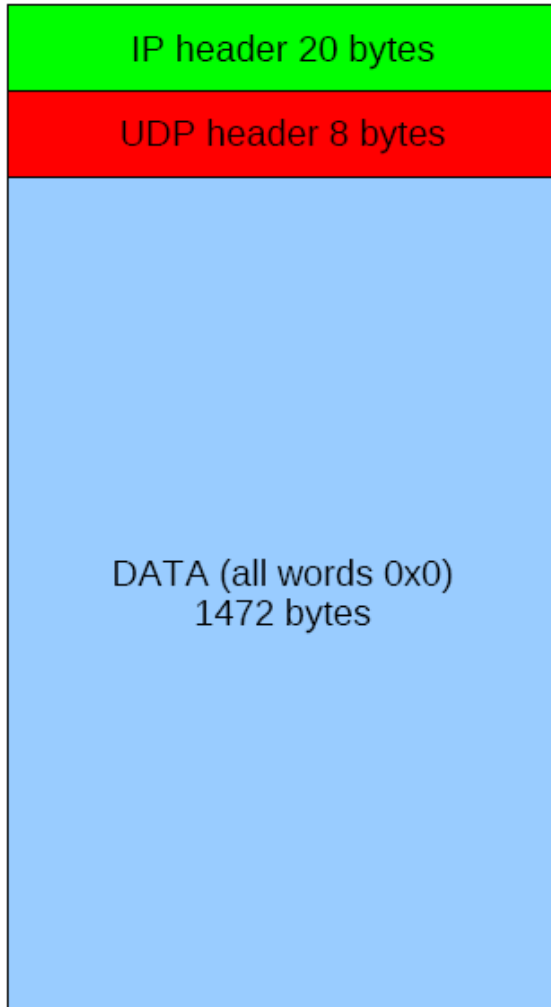


We checked the communication between the development board and the DATE software. The board was generating packet of 1500 bytes size and the software correctly received them on the other side.

COMMUNICATION TEST



UDP Datagram format



UDP datagrams format, generated by the development board.
The event is closed when DATE receives and recognizes the word **0xFAFAFAFA**

Throughput/Frequency test

During our test we reached a trigger rate of 14 KHz and 20 MB/s ... the setup still needs to be tuned.

To obtain higher throughput it is necessary to use bigger UDP packets, otherwise the system will reach the maximum frequency without reaching high throughput.

Throughput using a software UDP data generator

UDP Packet Size	Event Size	Byte injected rate (MB/s)
8000 byte	400100 Bytes	290.865
16000 byte	800100 Bytes	449.858
24000 byte	1200100 Bytes	505.962
40000 byte	2100000 Bytes	495.224
64000 byte	1280100 Bytes	533.289

Using UDP packet of 8000 byte
Event size 400100 Bytes

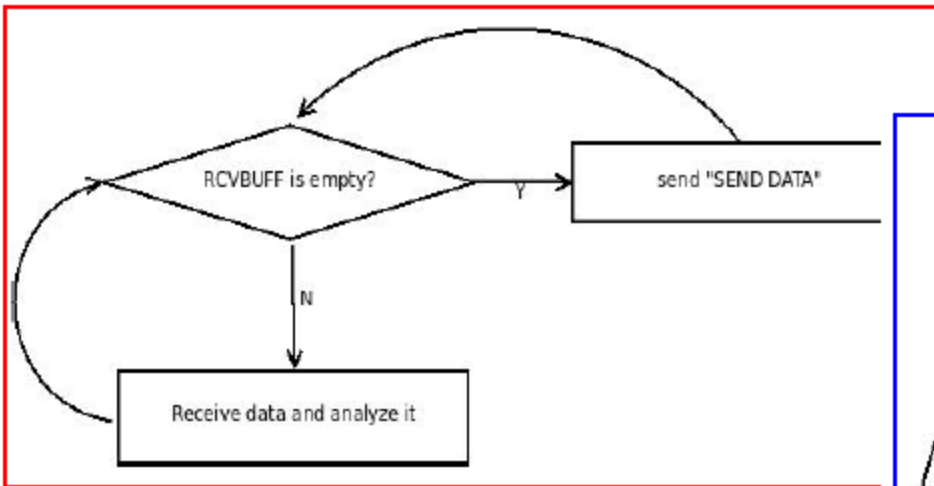
Using UDP packet of 16000 byte
Event size 800100 Bytes

Using UDP packet of 24000 byte
Event size 1200100 Bytes

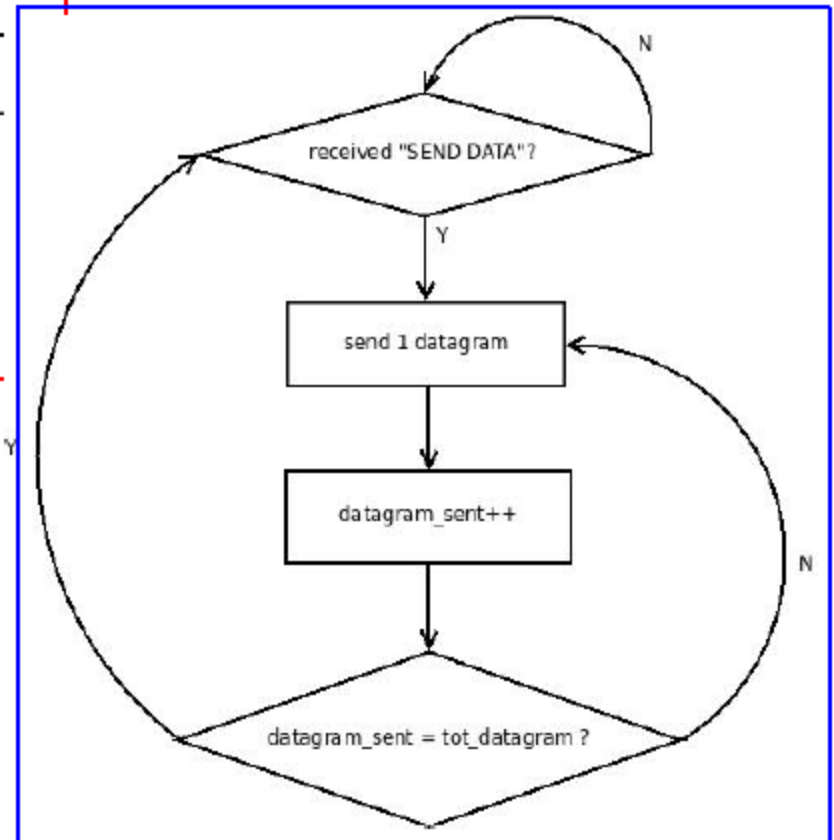
Using UDP packet of 40000 byte
Event size 2100000 Bytes

Using UDP packet of 64000 byte
Event size 1280100 Bytes

Busy algorithm

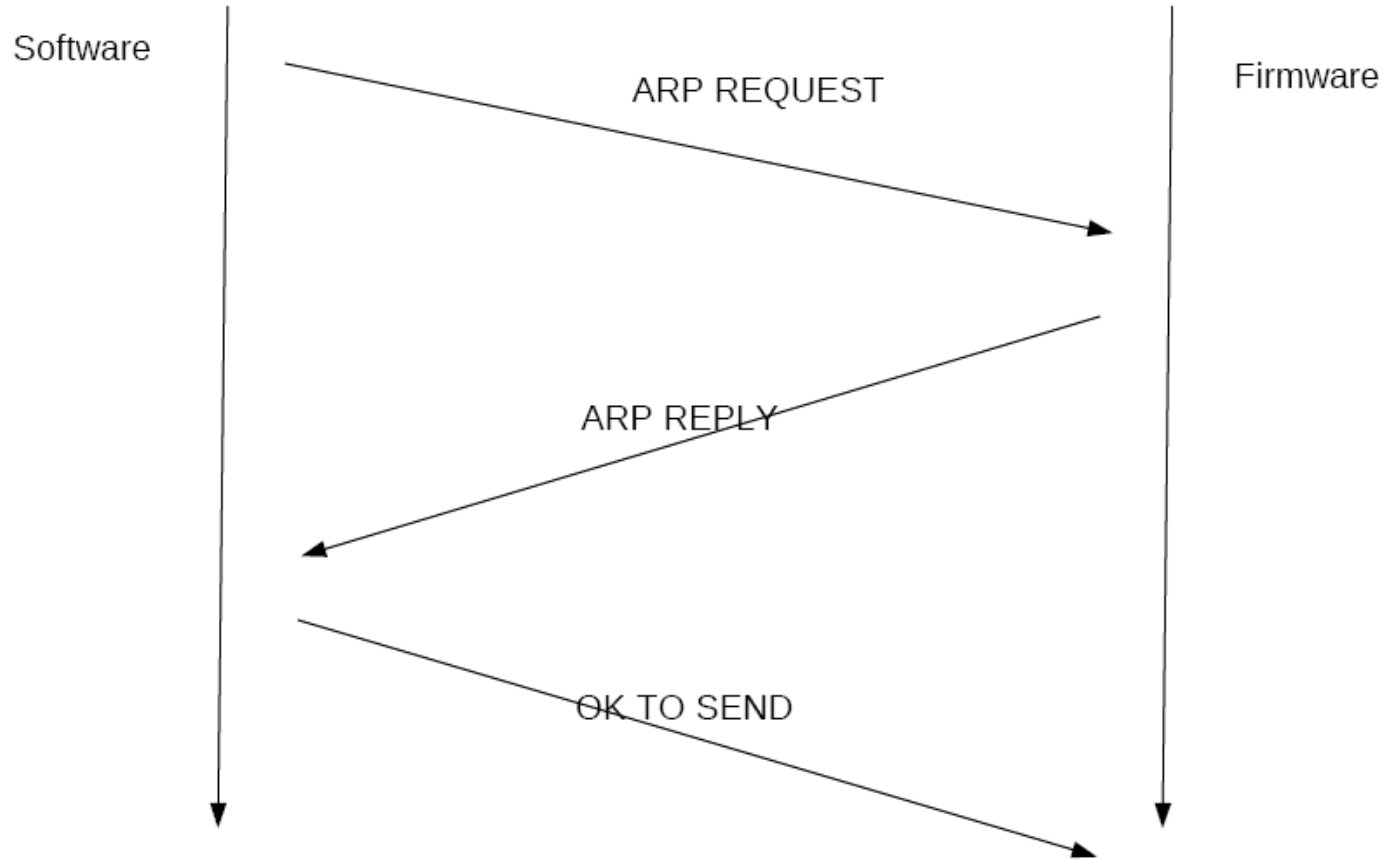


Software busy



Firmware busy

Communication during Busy



development platform for hardware –made UDP

