

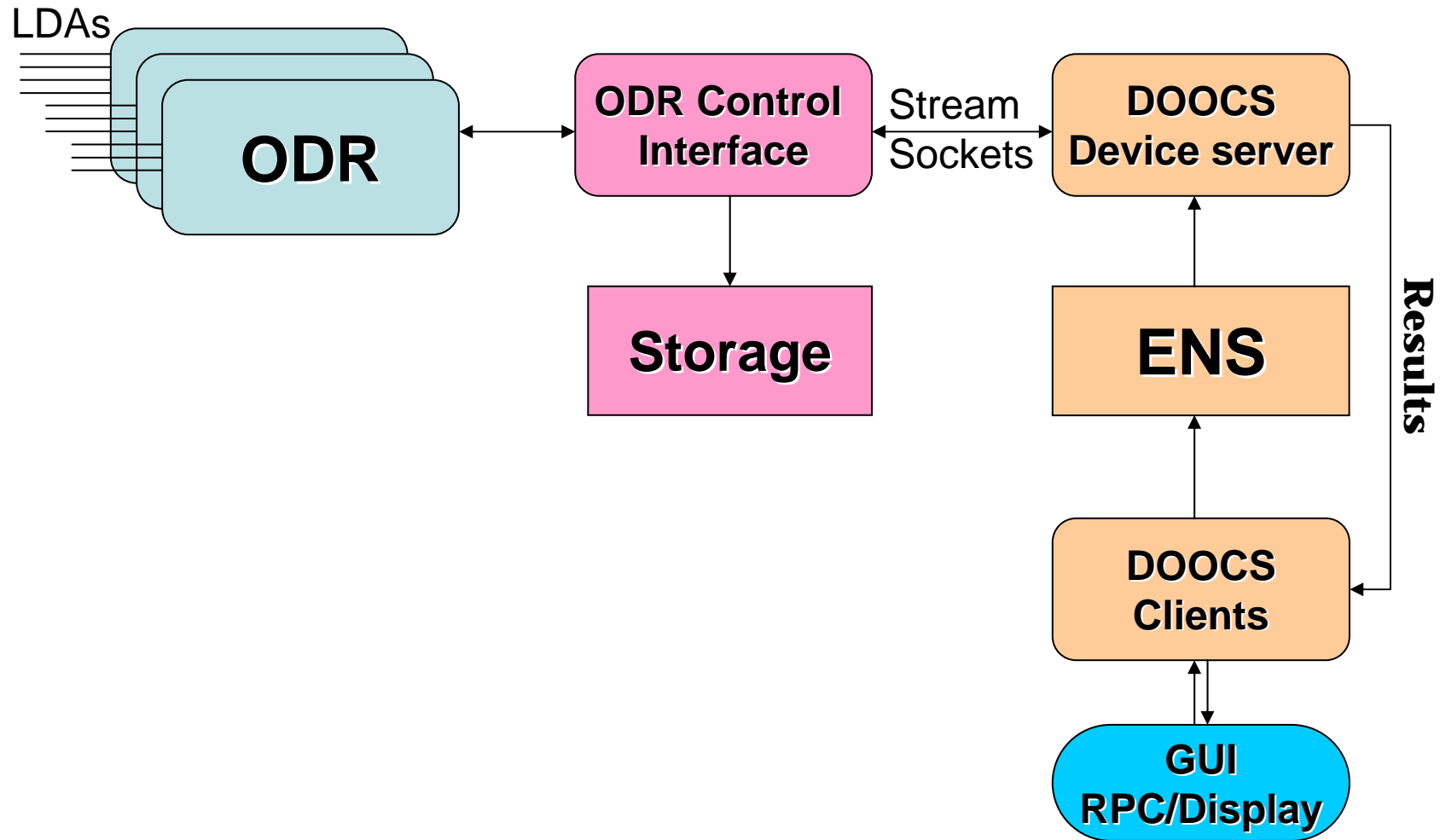
Recent developments of communication between DOOCS & ODR

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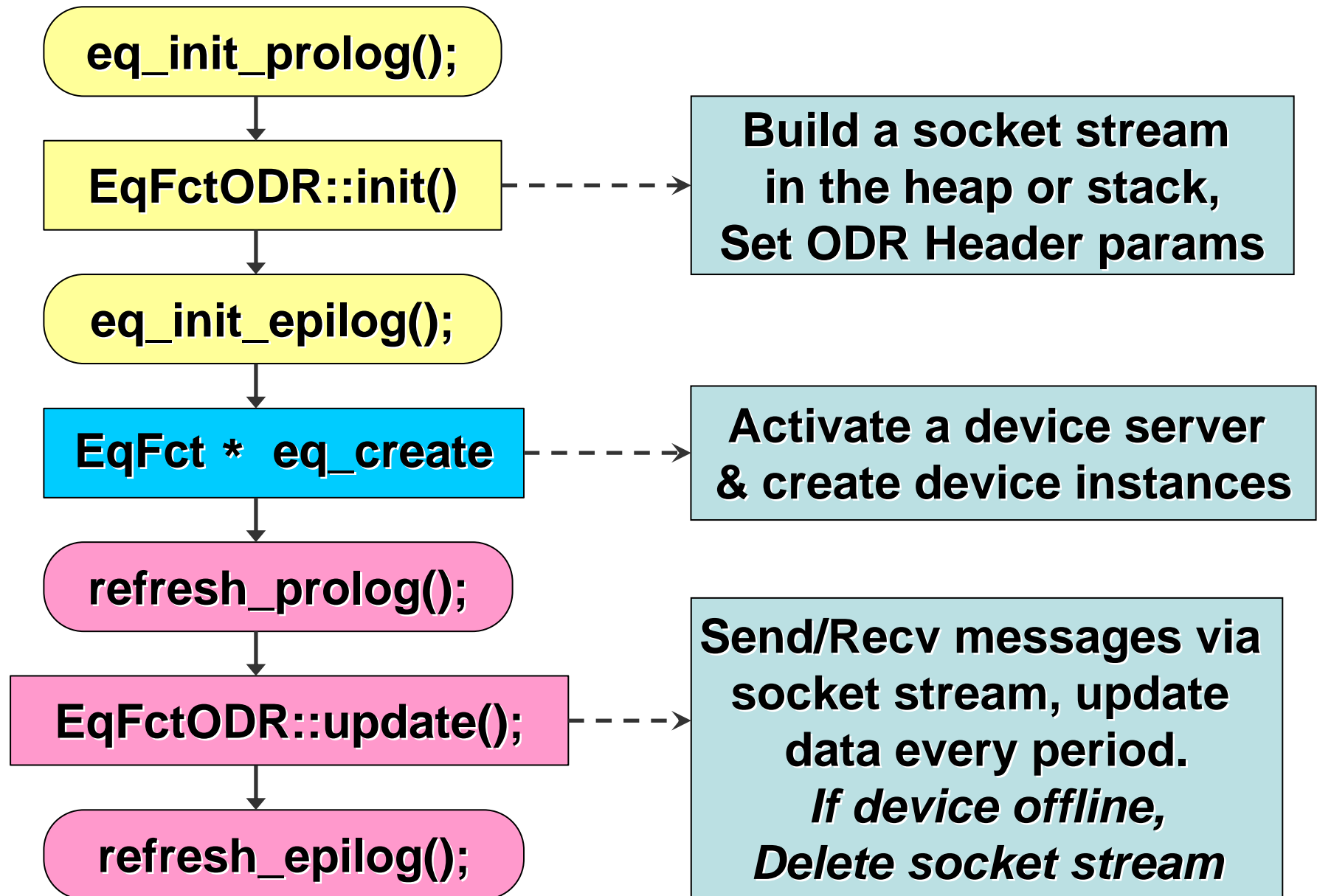
Andrzej **M**isiejuk

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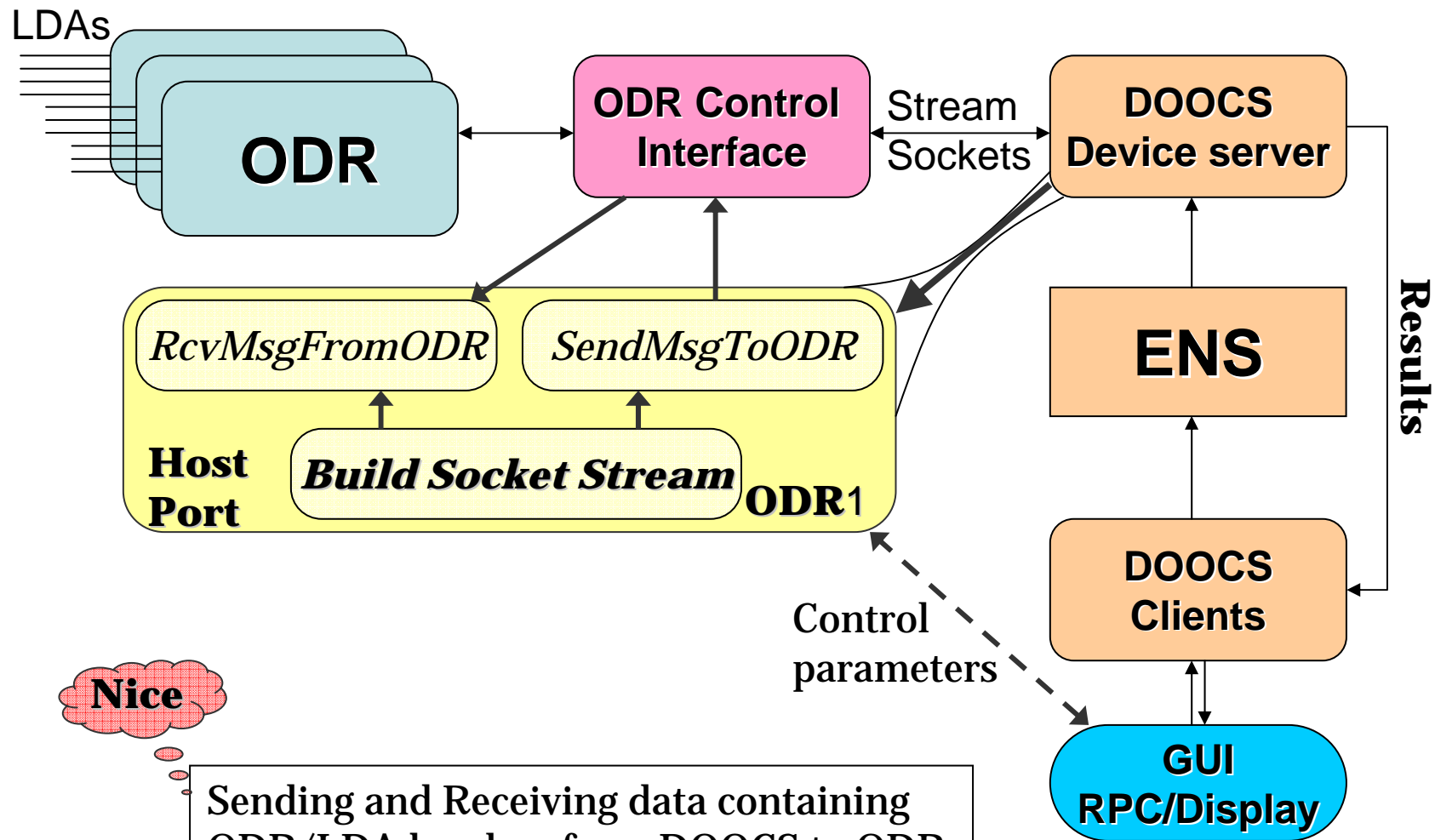
How to communicate?



Mockup version of device server



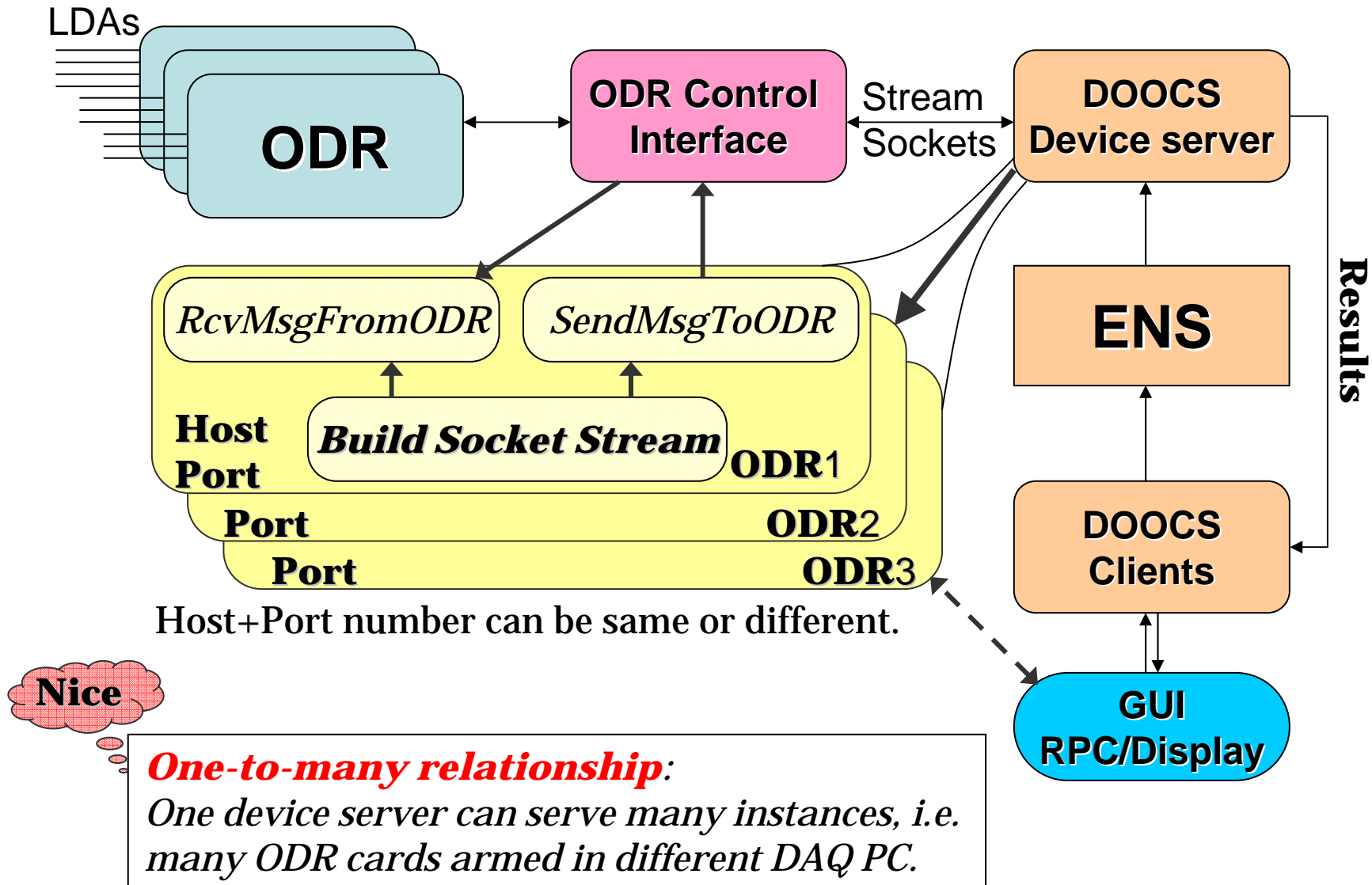
Talk to ODR Control Interface



Nice

Sending and Receiving data containing ODR/LDA headers from DOOCS to ODR Control interface have been tested;

One server, many instances



Hostname & Port number

DOOCS Communication and Plot Utility (Version 5.6.4) wutao@isis.pp.rhul.ac.uk

| Property | Description |
|-----------------------------------|-------------|
| SEND_CTL bit0 of Sender | BOOL |
| RECV_CTL bit1 of Receiver | BOOL |
| PORT_NUM integer test value | INT |
| PC_HOSTNAME a machine hostname | STRING |
| SOCKET_MESS message to a pc | STRING |
| SEND_RECV_CTL integer value | INT |
| CTL_CMD Control CMD 1/7 | INT |
| ODR_LDA choose marker 1:odr 2:lda | INT |

reconnect Sorting All Locations

INT Format: dec

 Format: none

Result: 2 **← Hostname + Port: in configuration file**

 Send - Type: INT Send Data: 2

DOOCS host= isis.pp.rhul.ac.uk (svr_mask=2 auth=15 opt=0 status=ok)

Socket Stream Communication test

DOOCS Communication and Plot Utility (Version 5.6.4) wutao@isis.pp.rhul.ac.uk

TEST.DOOCS PCIX_DMA ODR1 SEND_RECV_CTL

Facility
TEST.DOOCS

Device
RUN.CTR
LOCALHOST_888
LOCALHOST_888
SINGENERATOR
PCIX_DMA

Location
ODR._SVR
ODR1

| Property | Description |
|---------------------------|-------------------------------|
| SEND_CTL bit0 of Sender | BOOL |
| RECV_CTL bit1 of Receiver | BOOL |
| PORT_NUM | integer test value INT |
| PC_HOSTNAME | a machine hostname STRING |
| SOCKET_MESS | message to a pc STRING |
| SEND_RECV_CTL | integer value INT |
| CTL_CMD | Control CMD 1/7 INT |
| ODR_LDA | choose marker 1:odr 2:lda INT |

reconnect **Sorting** **All Locations**

INT Format:

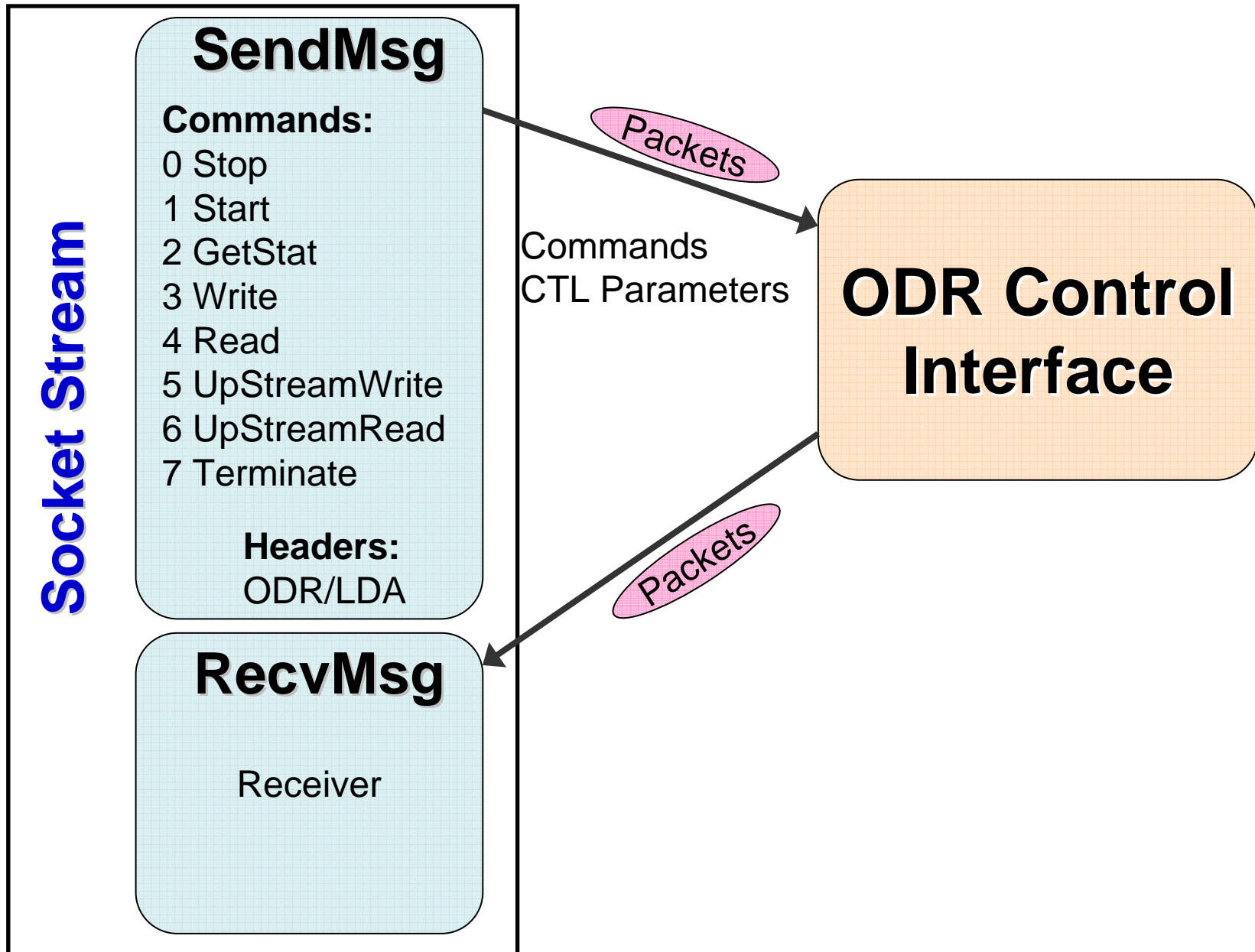
Result : 2

 Send - Type: **Send Data:**

DOOCS host= isis.pp.rhul.ac.uk (svr_mask=2 auth=15 opt=0 status=ok)

Sender/Receiver Control *Marker/Commands Control*

DOOCS ↔ ODR Control Interface



DOOCS: Send & Receive

Send message

```
Sock send ODR packet : Success
                        16 th Packet message is sent .
                        15 th Packet message is received .
-----in DOOCS client Packets Statistics block:-----
Run time                43
Data fragments          22218556
Received                13420007424.00 [bytes]
Average size            604.00 [bytes]
15th dataRate           308.485 [MB]
ODR Marker
```

Show statistics

Receive Packet

Change to
LDA Marker
Send message

Receive Packet
Show statistics

```
LDA Marker ...
Sock send ODR packet : Success
                        3 th Packet message is sent .
-----
Sock send ODR packet : Success
                        4 th Packet message is sent .
                        2 th Packet message is received .
-----in DOOCS client Packets Statistics block:-----
Run time                53
Data fragments          27276044
Received                16474731520.00 [bytes]
Average size            604.00 [bytes]
ODR Marker ...
```

ODR Control Interface

```
FreePageFIFOfill19
IO pool 0 at 0x523c70
All IO threads have signaled "ready"
number of cards: 1
All Requester threads have signaled "ready"
```

CMD = Start

```
ODR Marker detected 8 seconds
Processing command
Processing ODRGETSTAT
```

CMD = GetStat

Change to LDA Marker

```
LDA Marker detected, sending LDA msg
Running
```

```
ODR Marker detected
Processing command
Processing ODRSTOP
```

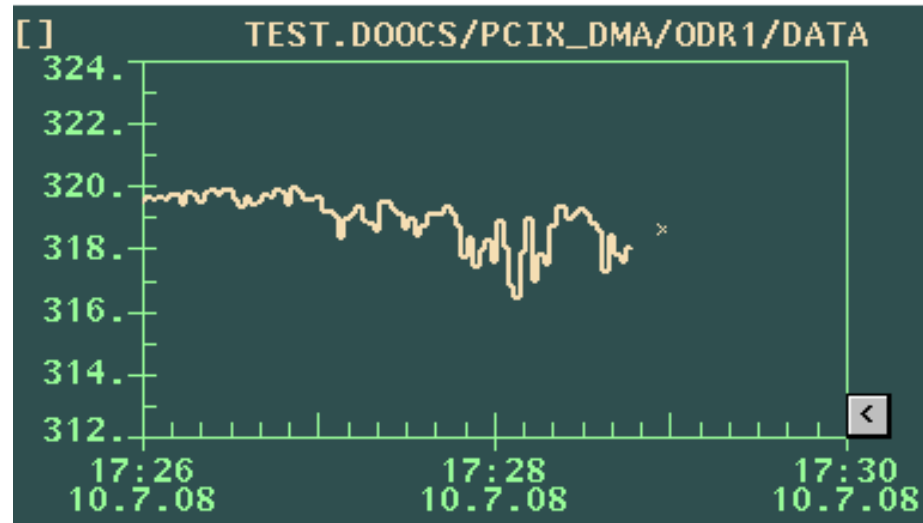
CMD = Stop

```
Freeing buffers
ODR Marker detected
Processing command
Processing ODRTERMINATE
```

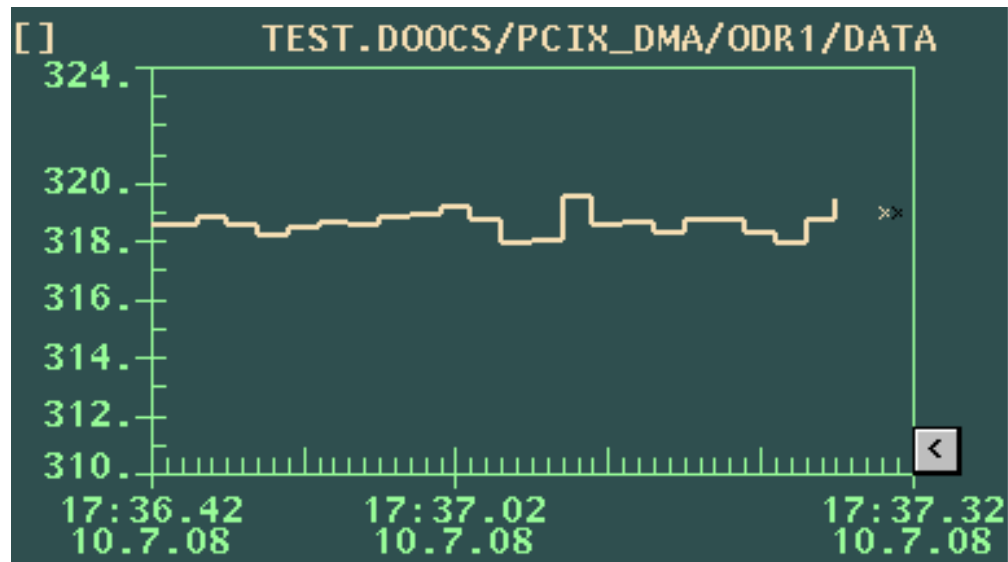
CMD = Terminate

```
00 00 00 00 00 00 00 00 3a 00
1c 00 1e 00 00 00 00 00 4d 00
00 00 00 00 00 00 00 00
00 00 !ee
```

Data Rate



~320 MB/s



Summary

- The communication between DOOCS device server and ODR Control Interface via socket streams has been successfully built and tested;
- A GUI control/display has been correctly configured for client server, one device server can serve many ODRs armed in PC(s);
- Use CVS to maintain the codes at DESY DOOCS [*source/server/calice/pcix_dma*](#);
- Some GUI [control buttons](#) need to be customized for a purpose of convenience.
- To plot more histograms in order to [monitor the statistics](#) during sending and receiving packets.

Summary

- The sending and receiving methods can be improved;
- Need to use threads to manage the sender and receiver;