ODR hardware and software

ODR – PCI-type card

Main features:

- FPGA

- 32 kB memory(*)

 - 1 GBE port(**)

- PCI express

VHDL code:
- Multiple DMA channels,
- Memory manager,
- Internal Data Generator,
- GBE interface support.

* will increase up to 128 kB

**plans to add 1 GBE port

Driver:
- ODR driver: mapping card memory to user space,
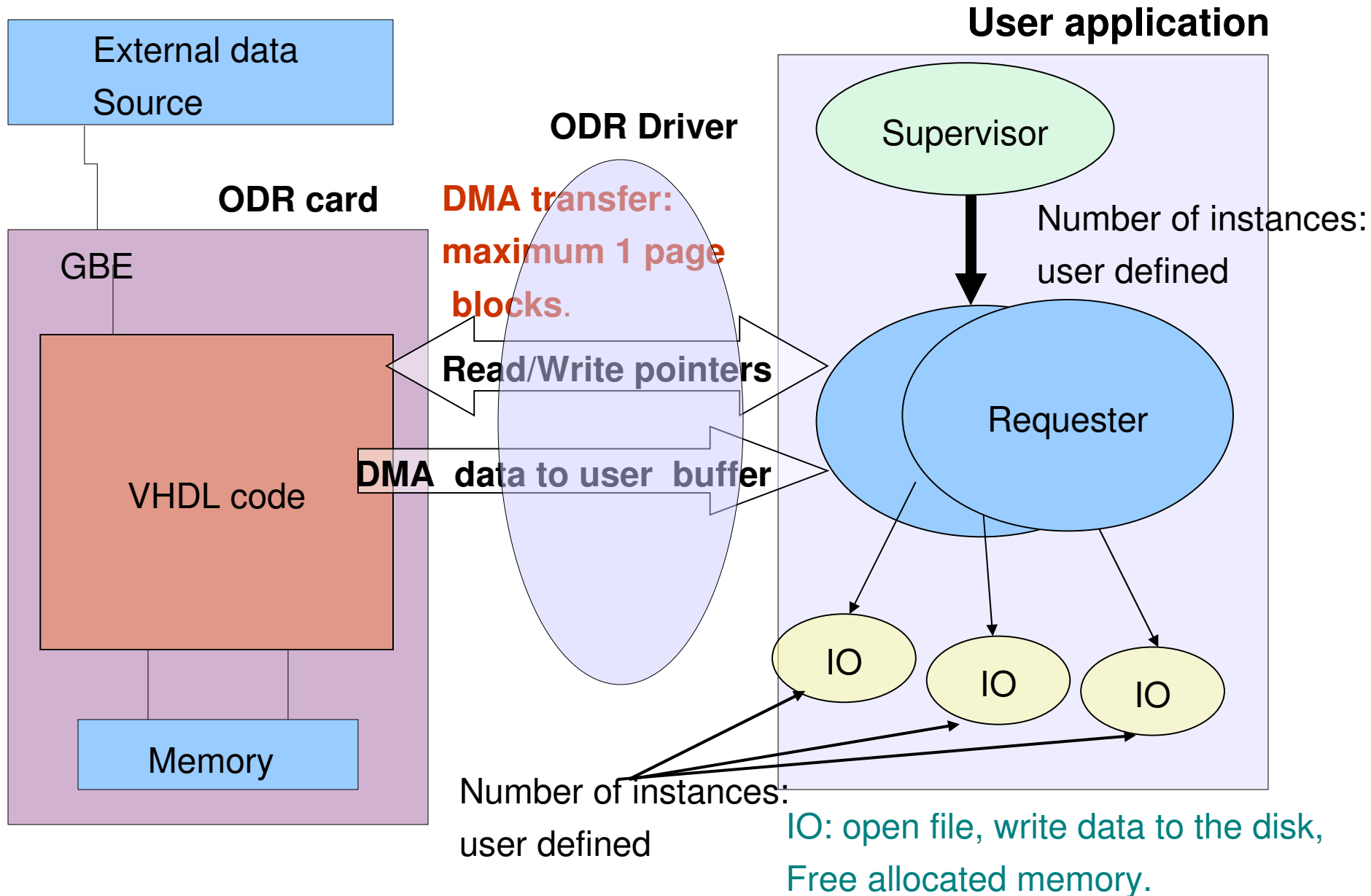- DMA functions: allocating DMA buffer, mapping DMA buffer to user space.

Requester:
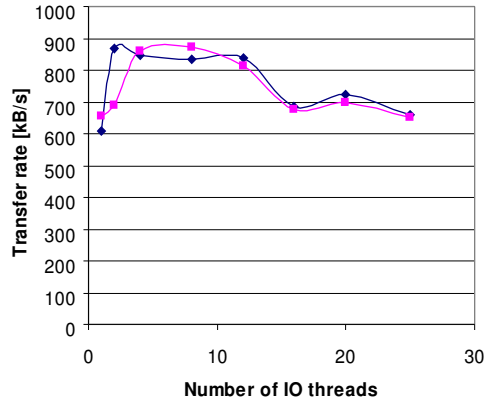- Multi-threaded, user programmable application.

Support software:
- simple data generator with the network interface. Currently only rawsocket supported.
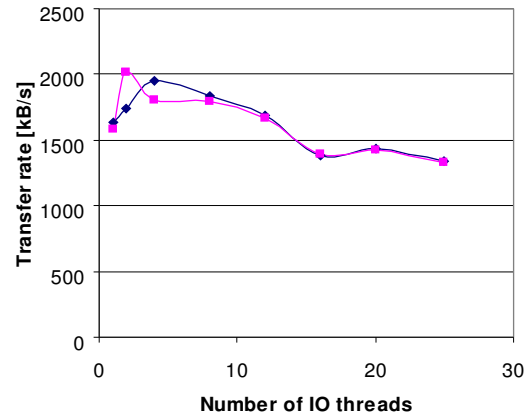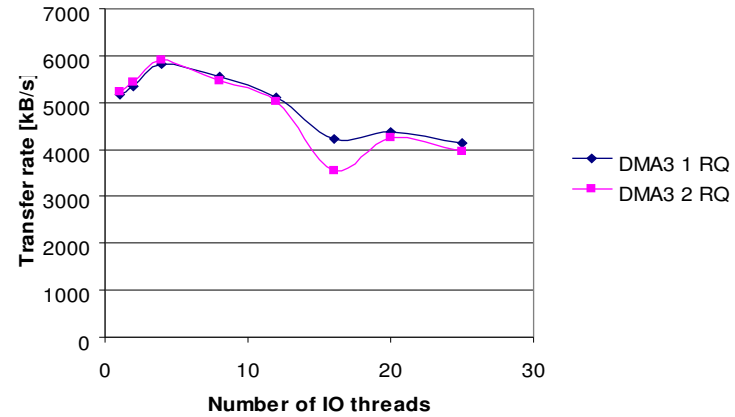
Architecture

Performance
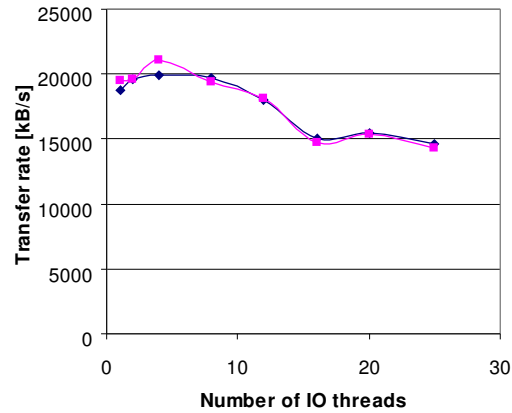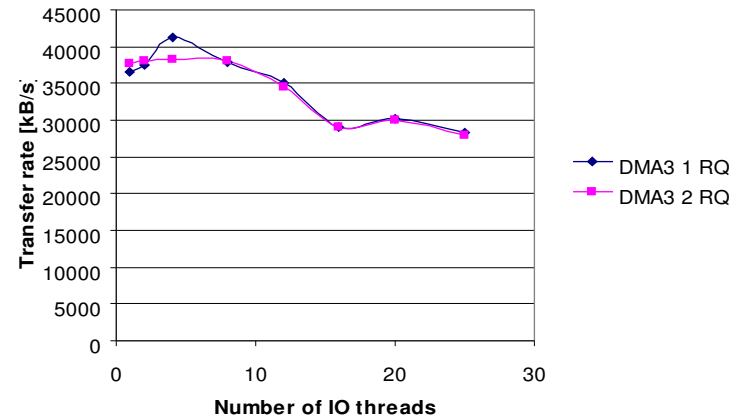
Performance, cnt

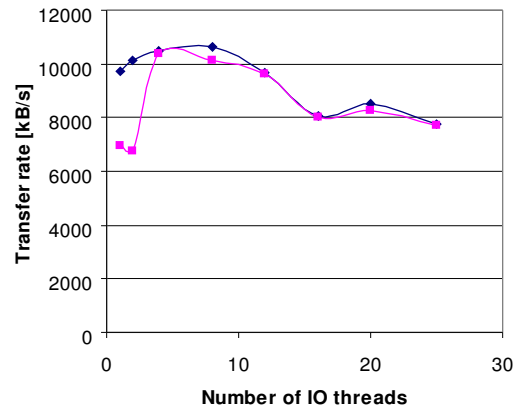**Performance improvement:**
  -DMA: usage of queued DMA might improve
    performance,
but, the bottle neck seems to be IO:

 IO:
  - File system: different performance for the
    different file system.
  - Writing data to (local) disk: single, separate
    file for each event ? Events grouping ?

Continuation

Improved VHDL support for the GBE interface

Performance measurement with the external data source:

-performance vs data size

 -performance vs different file system

 -performance vs user-defined parameters: number of

  requester threads, number of IO threads

 -performance vs PCI-express/system