The ABISS Elevator

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Why ?

Goal:

- Guaranteed data rate for “real-time” applications
- Elevator enforces, higher layers coordinate

Don’t we have enough elevators already ?

- Support for priorities
  (also when allocating requests)
- Better handling of barriers

The trouble with barriers

Existing Linux elevators:

- Barriers separate everything (reads and writes)
  May cause huge delays also for high priority
- No implicit serialization of overlapping requests
  OK for priorities, but ...

Minimum requirements:

- Don't move read across overlapping write separated by barrier
- Never move writes across barriers

What the ABISS elevator implements:

- Free ordering of reads, except ...
- No reordering (neither read nor write) across overlapping writes
- Never move writes across barriers

Implementation

Components:

- Elevator switching (by Nick Piggin)
- Request allocation priorities (by Jens Axboe)
- Elevator with priorities and overlap detection
  (stolen from VM: RPSTs by Rajesh Venkatasubramanian)

Code, talk, short paper:

`http://abiss.sourceforge.net/`

Time for more details ?