

⑧ IO virtualization

① Emulated IO (full virtualization)

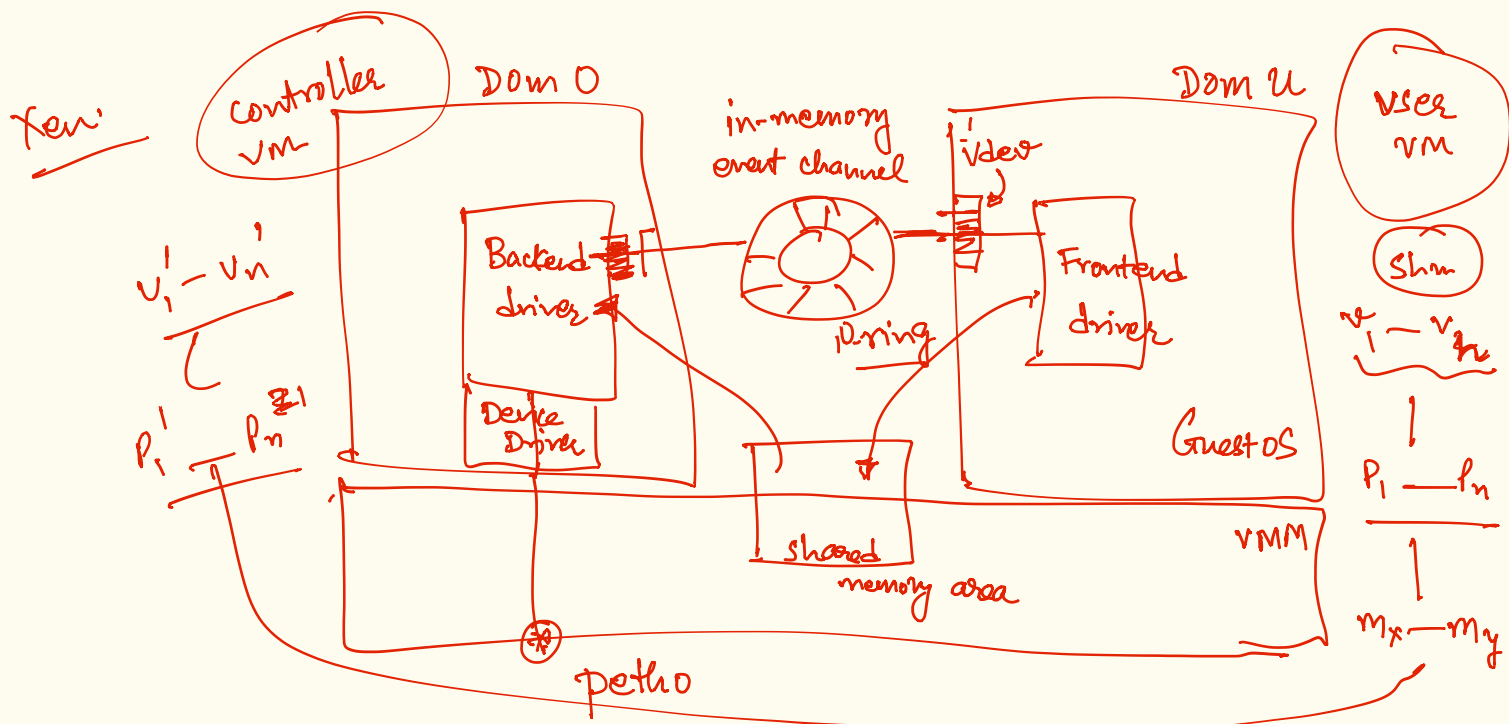
- entire device interfaces are virtualized.
- vmm emulates the vdev interface.

e.g: e1000 NIC to the VM.

vmm needs to know all spec. & actions & side effects of the e1000 interface & emulate them.

② PV model. ~ split device IO model.

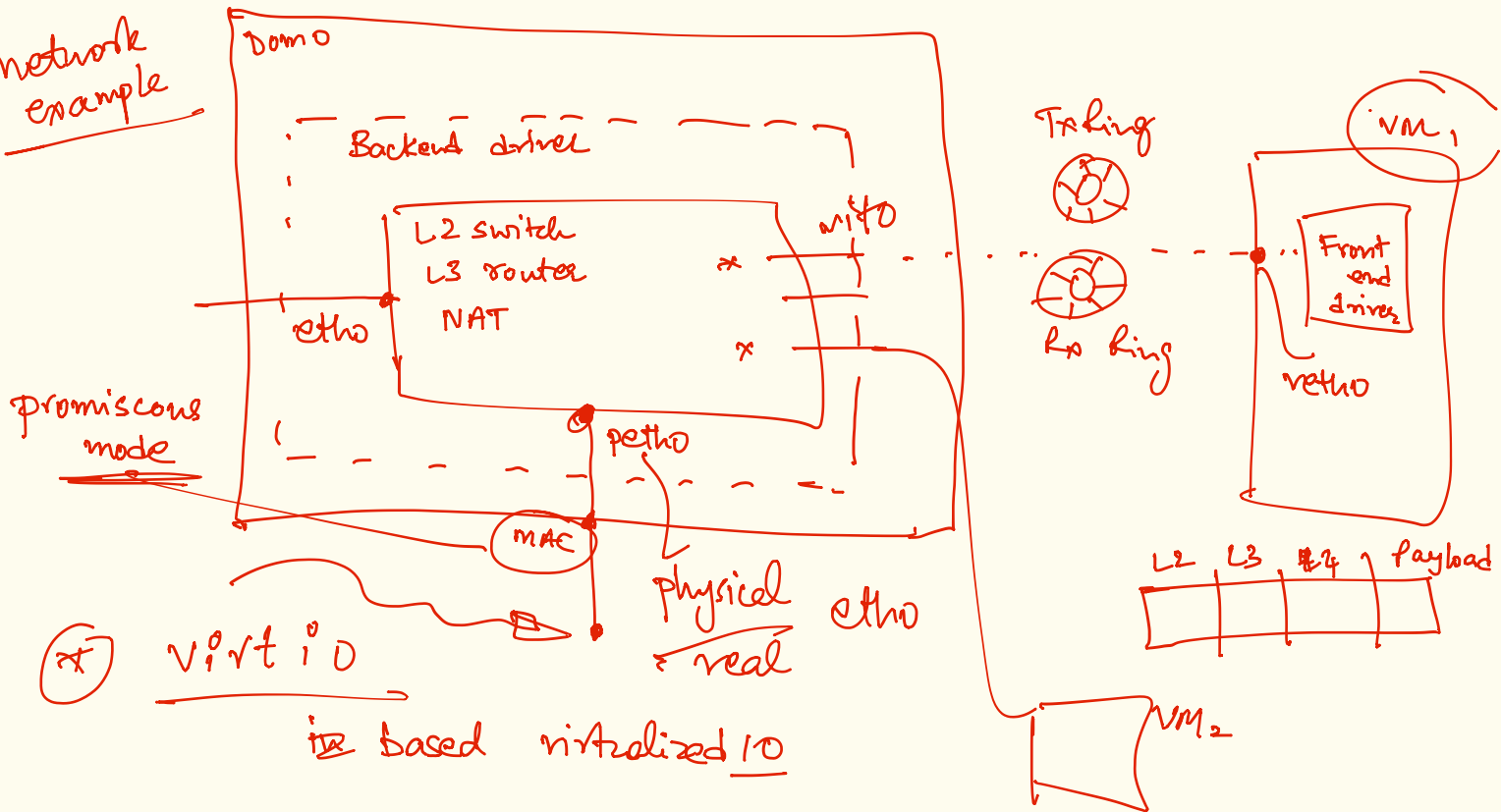
- simply the device model for VMs. $\Rightarrow$ interface changes.
 - "custom" device driver in the guest OS.
 - fake device virtual
- equivalence divergence.



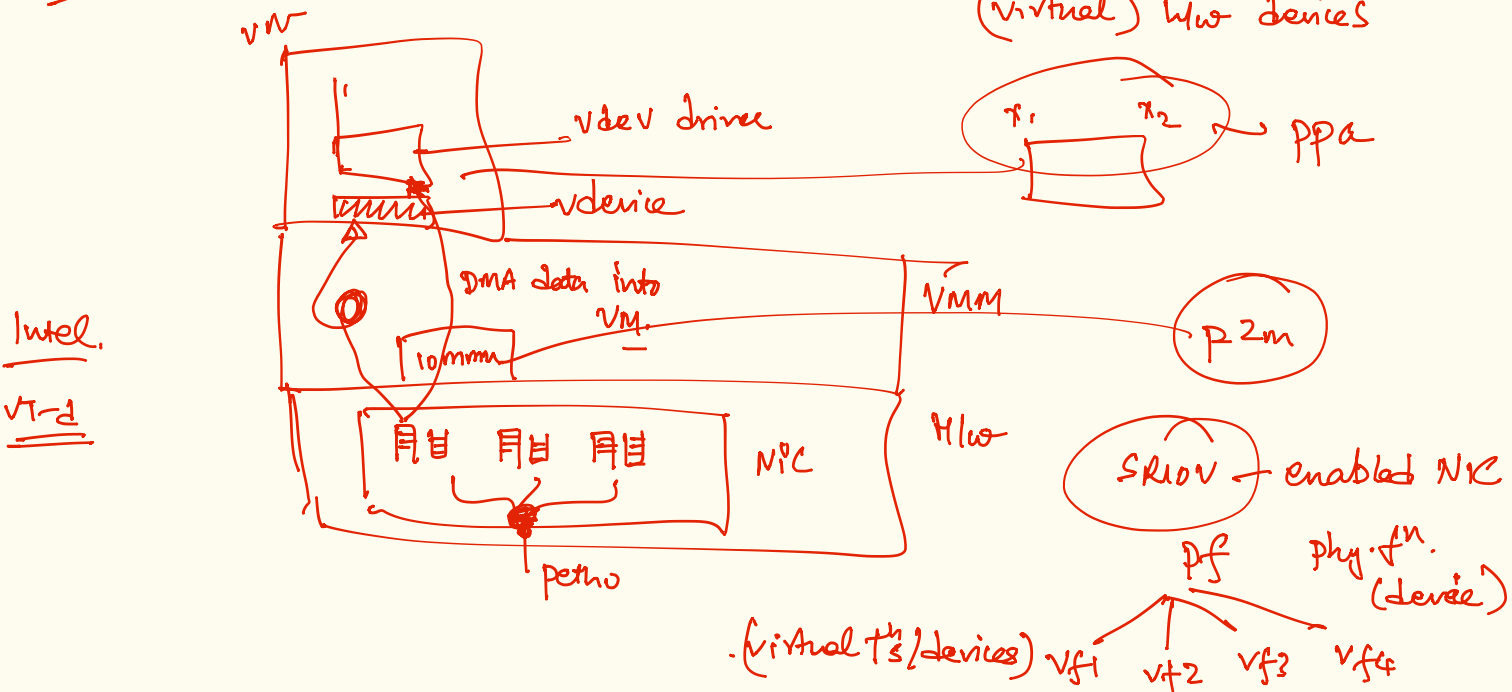
dom0

- registers event channels for IO interfaces.
- has logic to switch data & events to appropriate VMs.
- data is via shared memory.
- simplified IO stack in the guest.
- batching ~~and~~ and multi-event processing.

network example



(iii) hardware-assisted IO / ~ pass through / direct assignment
(virtual) HW devices



A2

Simple - kvm.c

guest.c

guest 16

guest16.s

guest32

guest 64

payload.12

pyload.o