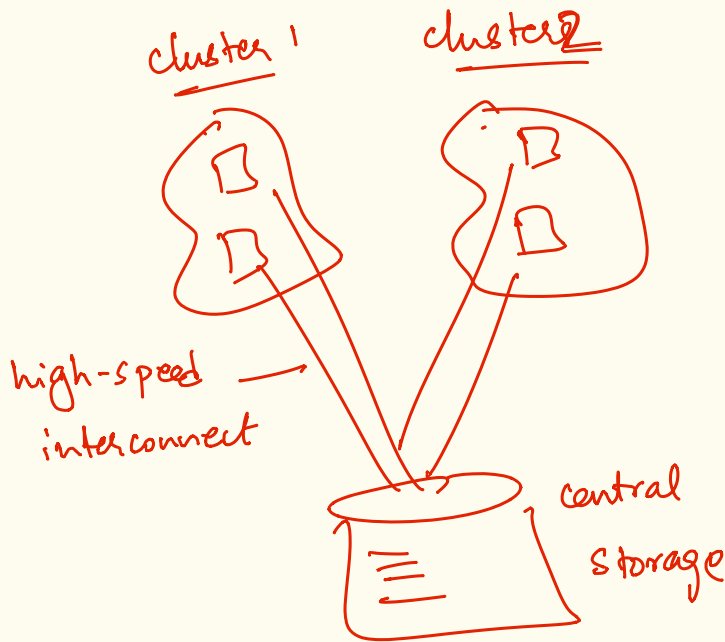


CS 695

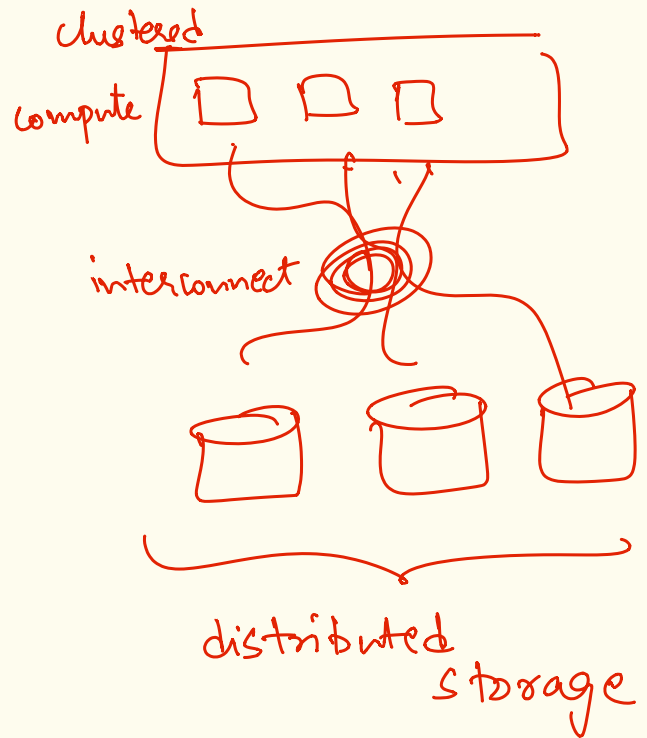
① data-centre architectures.

compute
storage

② clustered compute
vs centralized storage

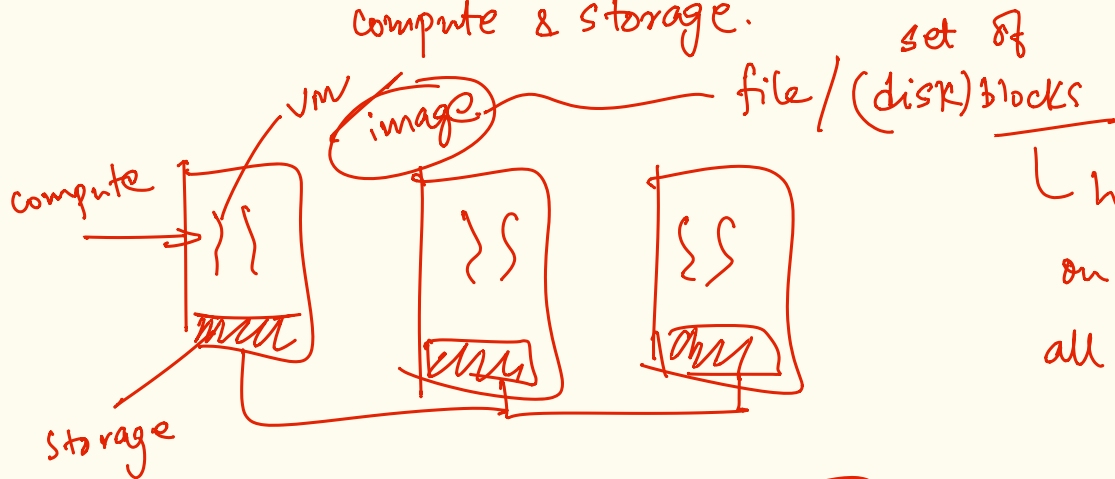


③ clustered compute
clustered storage
networked



④ HCI - hyper converged infrastructure

⇒ all nodes contribute to
compute & storage.



└ have to managed
on storage of
all servers.



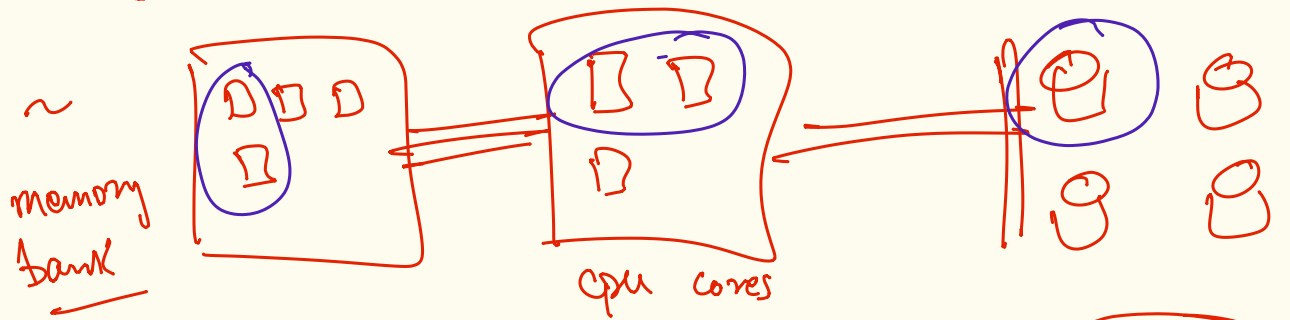
metadata
server

} all FS
metadata
~~are~~ across
HCI nodes

① rack-scale architecture

~ disaggregate & ~~se~~ provision & manage
all / individual resources separately.

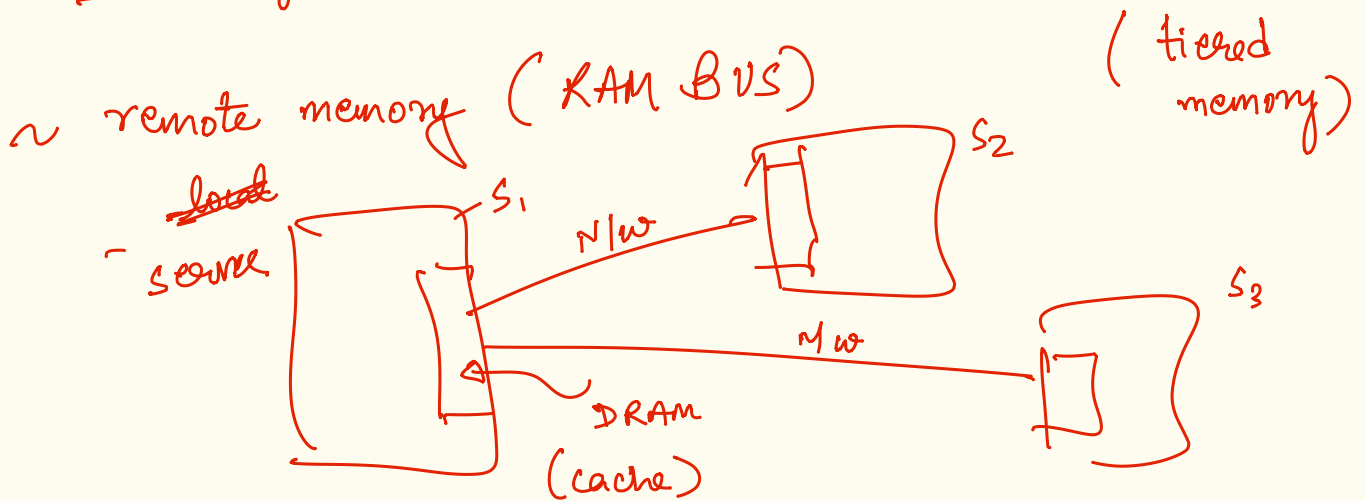
~ decouple all resource mgmt. & provisioning.



~ distributed OSes.

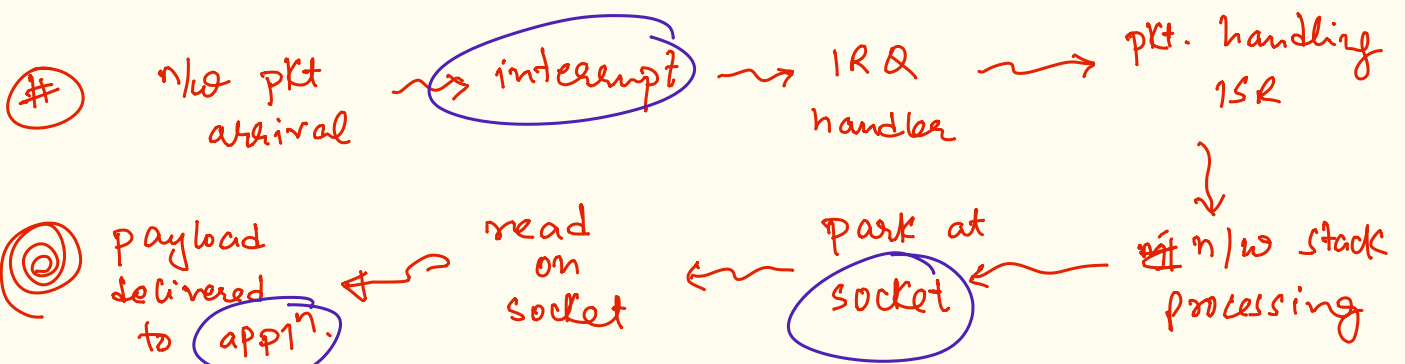
- manage multiple machines / hw via single OS.

sprite

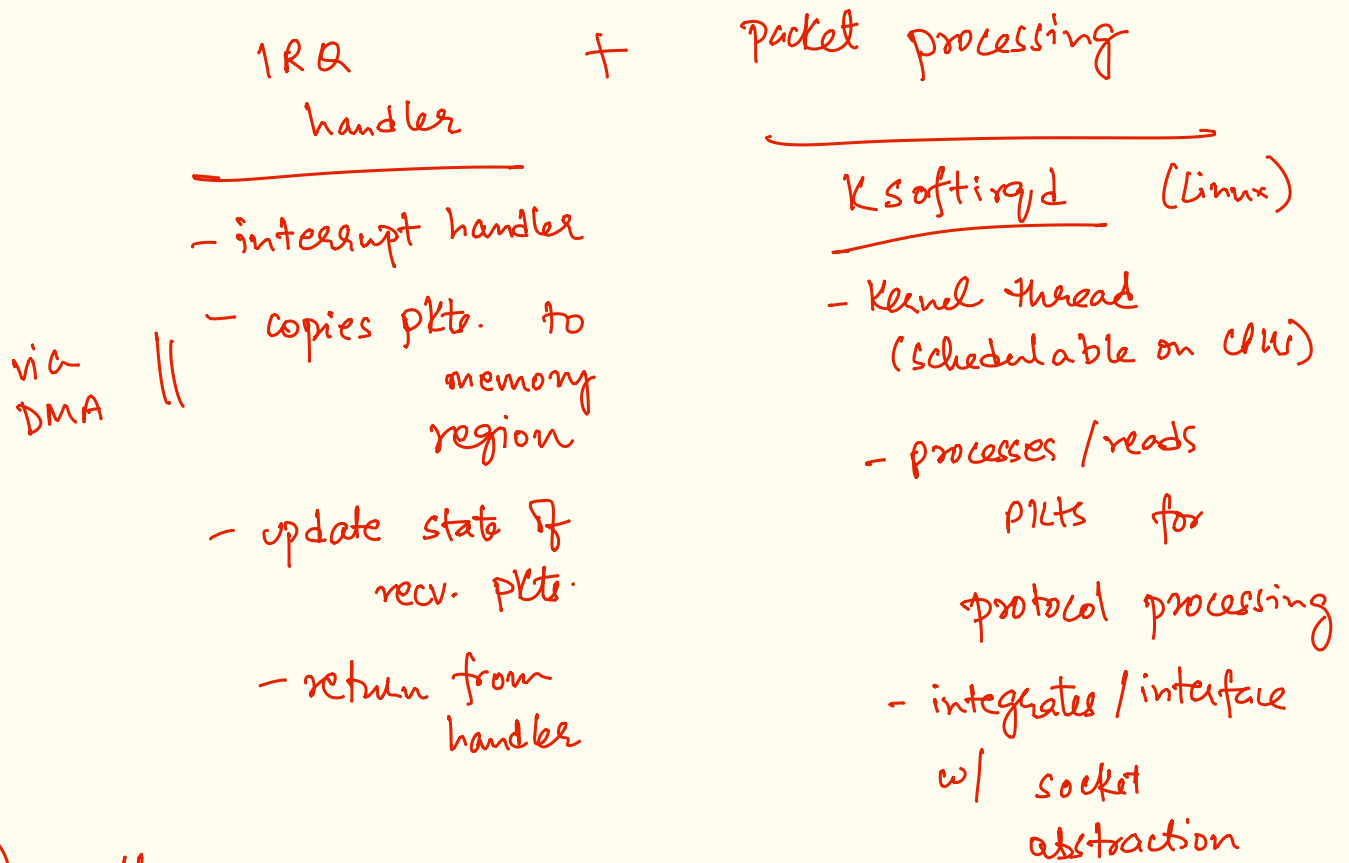


② networking in cloud-scale systems

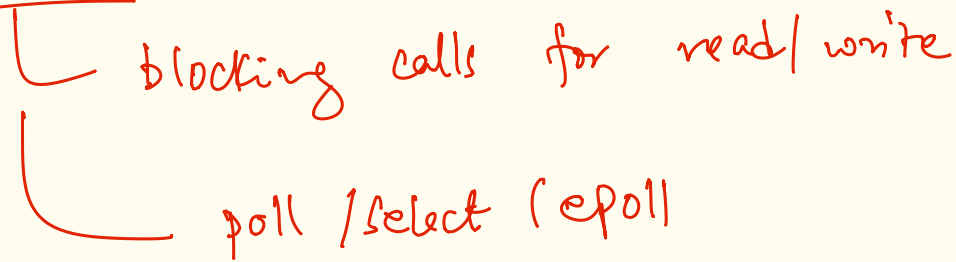
~ n/w traffic / n/w processing is non-trivial.



① split-driver IO model.



② polling



③ get kernel out of critical path

kernel by-pass

└ DPDK ~ data plane development kit

└ eg: firewalls

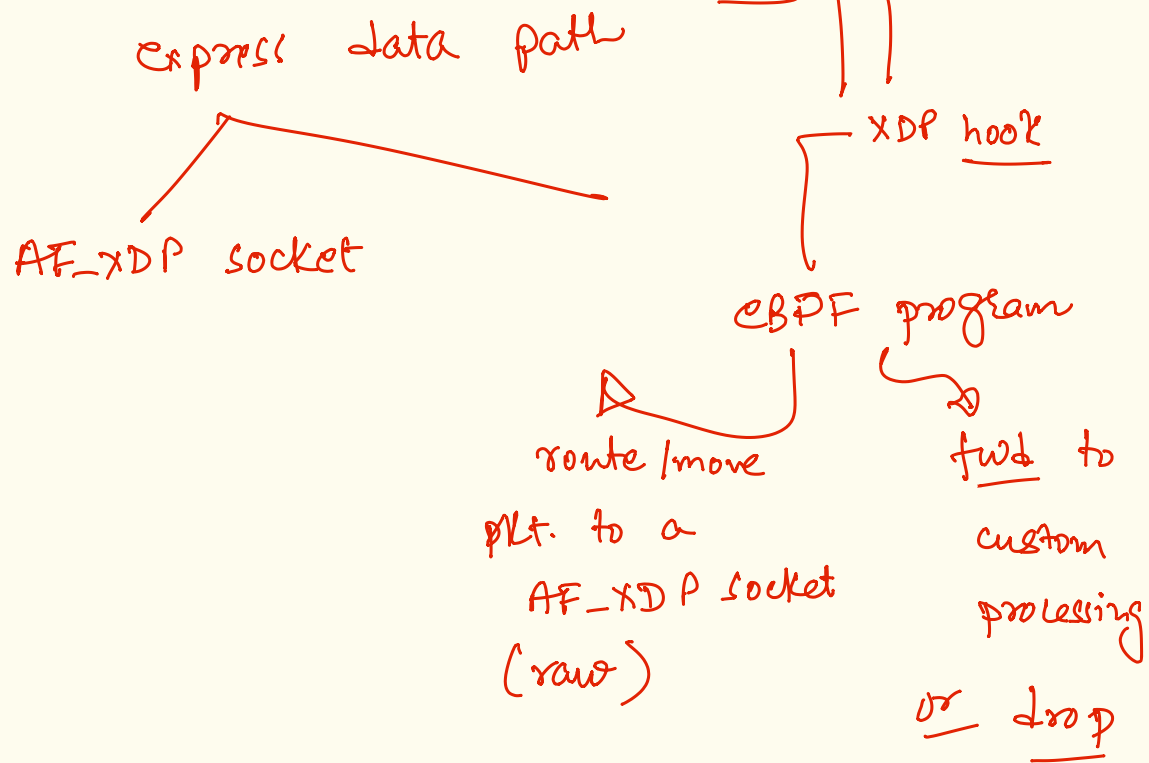
IDS

pkt. fingerprinting

NAT

} need access to either raw pkts.
or custom header processing
or both.

- eBPF's XDP hook



③ Storage

~ VMFS / GFS
~ at-scale FS / storage solutions.

VMFS

{ image
composition of blocks.

{ blocks are duplicated
network storage
caching / prefetching
deduplication

⑧

multi-cloud deployments

└ services across providers.

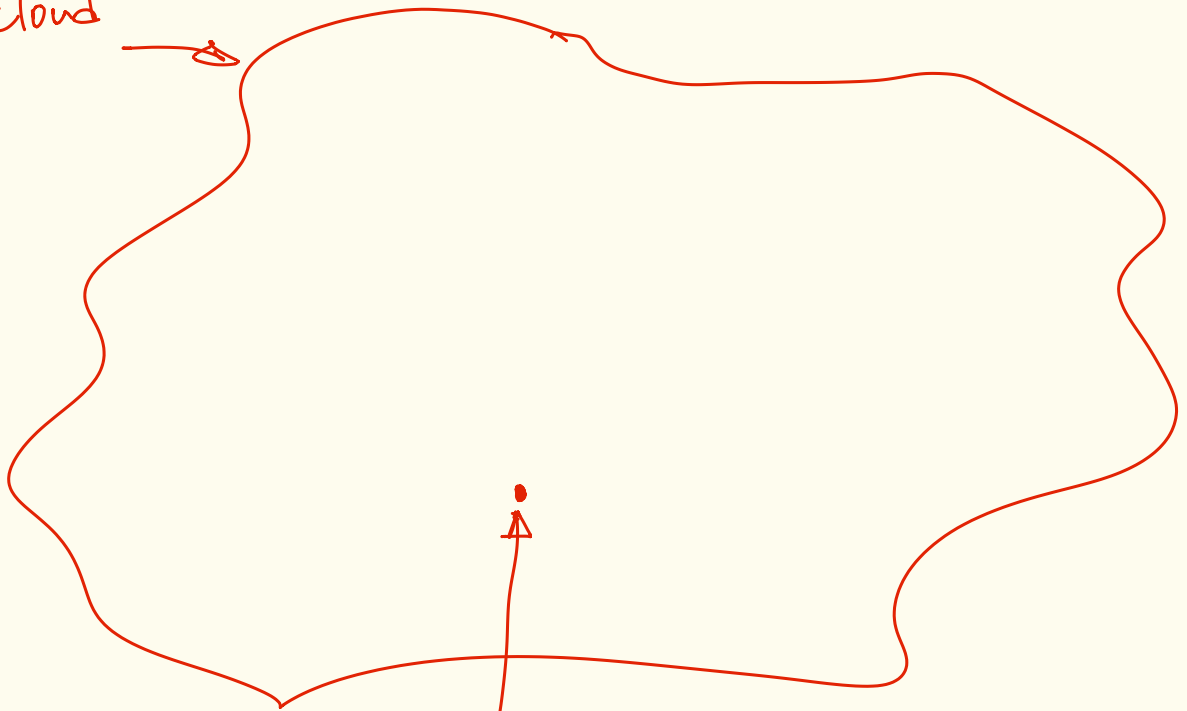
⑧

acceleration-as-service

└ via GPU.

└ at scale mgmt. of GPU provisioning & usage.

cloud



we are probably here!
(via CS695)