OpenStack && DPU

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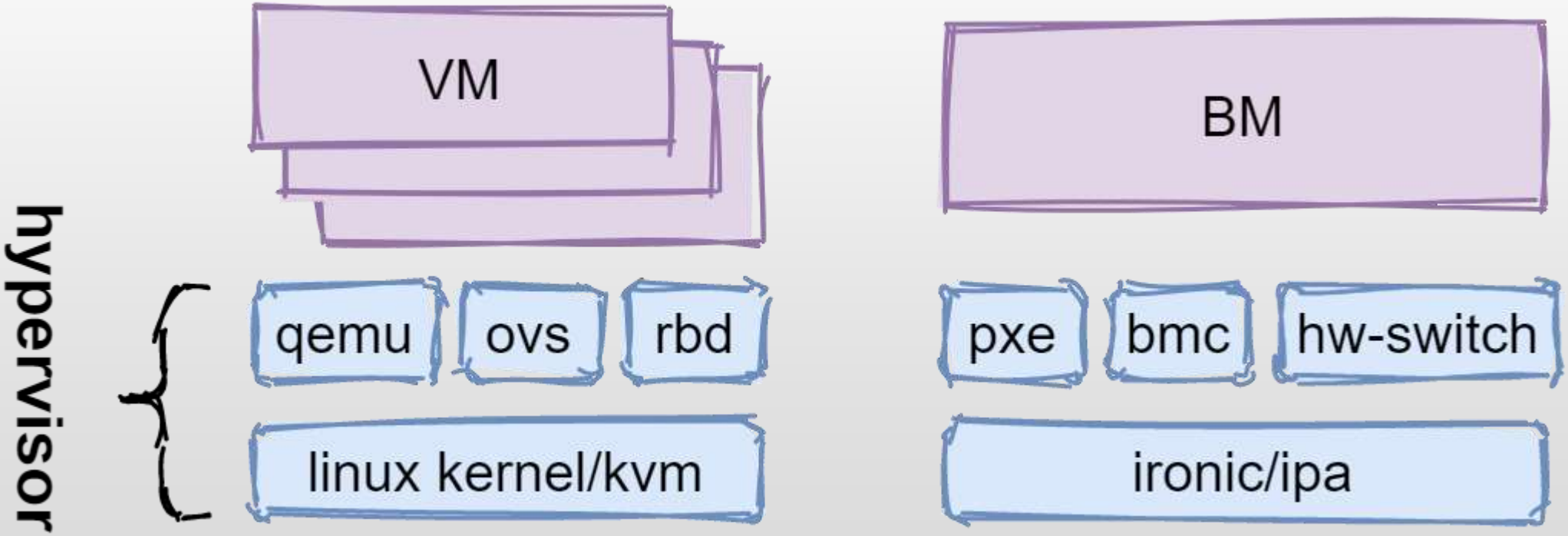
outlines

- Limitations of existing OpenStack hypervisors
- DPU can be a good hypervisor
- OpenStack and DPU integration
- DPU capability requirements

Hypervisor

- hypervisor is the foundation of openstack(iaas)



Limitation of existing hypervisors

Flexibility(for BM case)

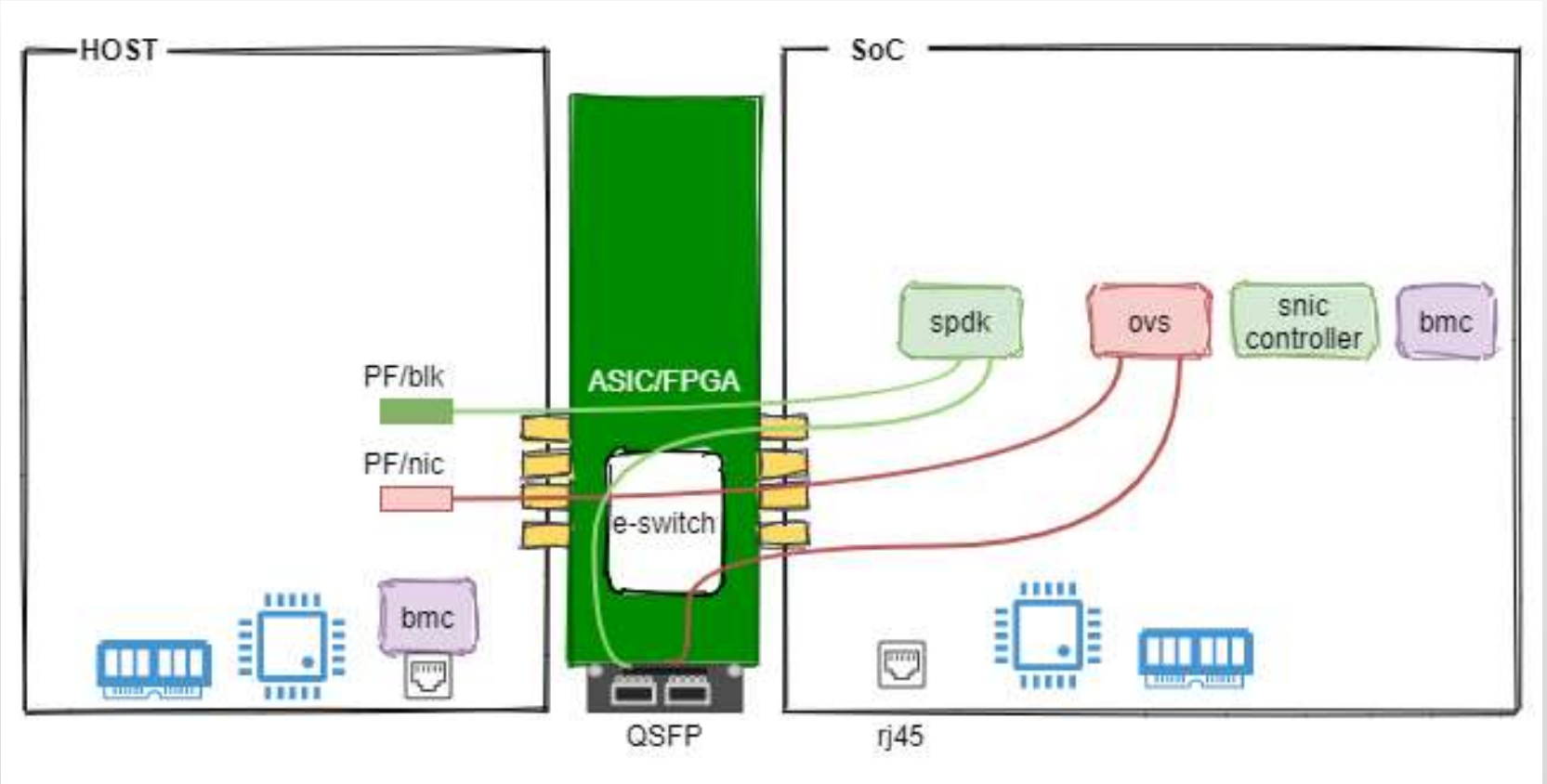
- Hard to implement runtime block storage add/del
- Limited function on nic runtime add/del
- HW switch dependence
- pxe+ipa is slow and complicated

Performance(for VM case)

- network performance
- storage performance

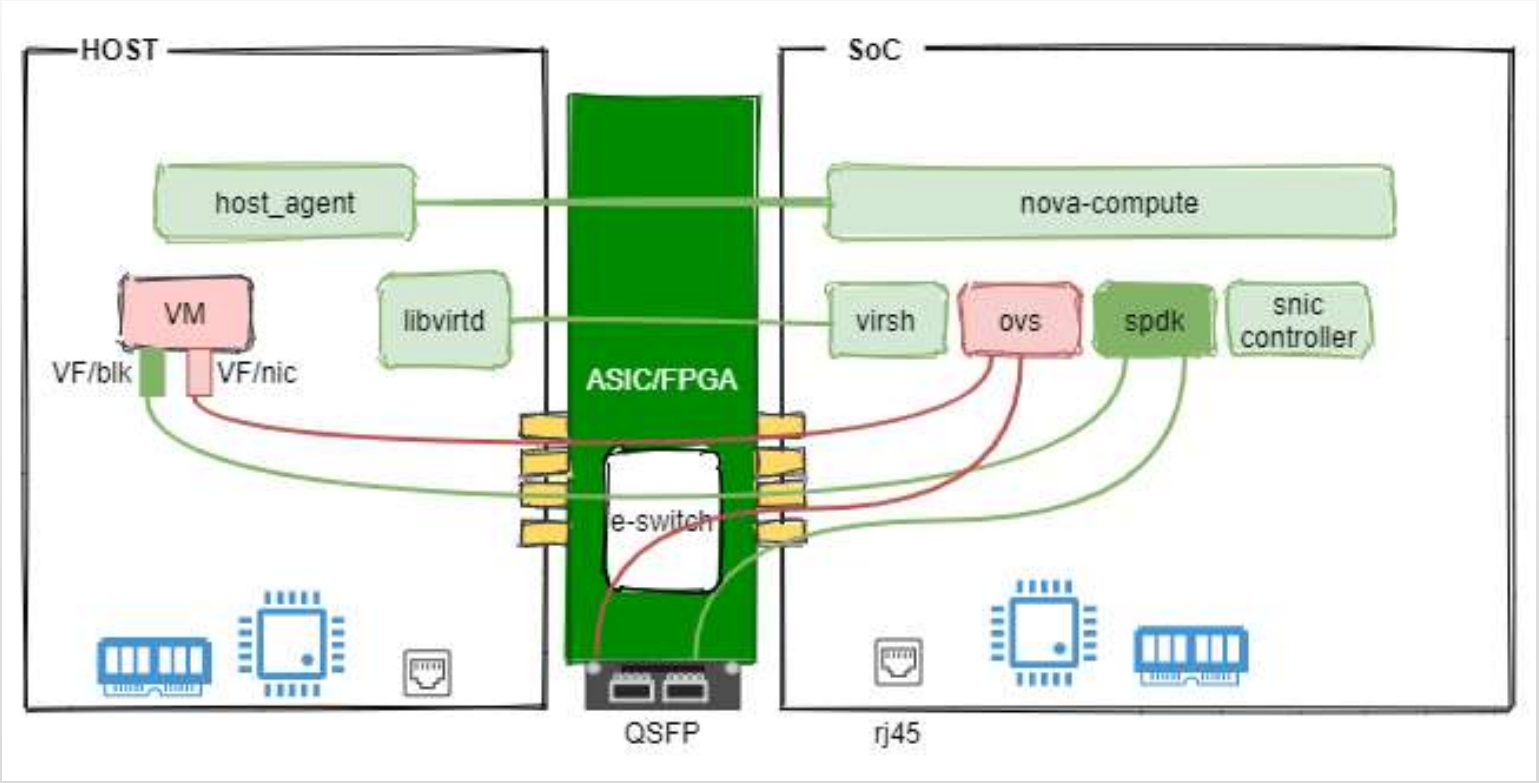
DPU as BM hypervisor

- runtime nic/blk control
- ovs offload (HW switch decouple)
- no pxe(boot from volume)



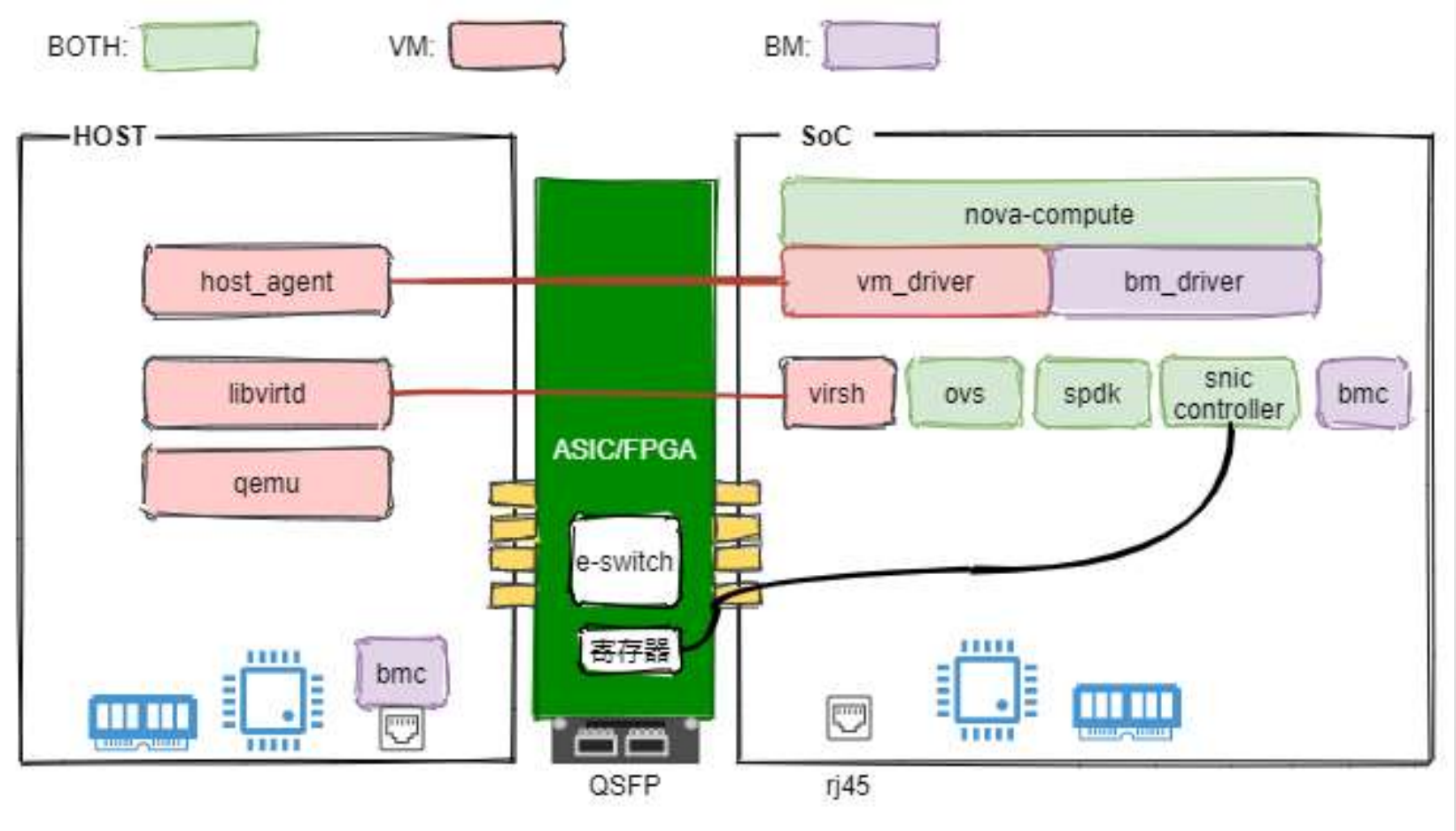
DPU as VM hypervisor

- ovs offload(performance improvement)
- storage offload(i.e. rdma)



DPU and OpenStack

- almost no code change until down to nova-compute driver



DPU capability requirement

- SoC has indivdual power
- Mac address can be specified when creating PF/VF
- bdf should be returned when creating PF/VF
- private channel between SoC and host(tcp/ip, or others?)
- ovs offload(i.e. vxlan, conntrack, qos)
- Storage offload

More points to think about

- VM hot migration solution?(network & storage)
- Offload libvirt and qemu?
- Is the requirement for DPU reasonable?
- ……

Thanks