

Linux vSVM Priorities and Challenges

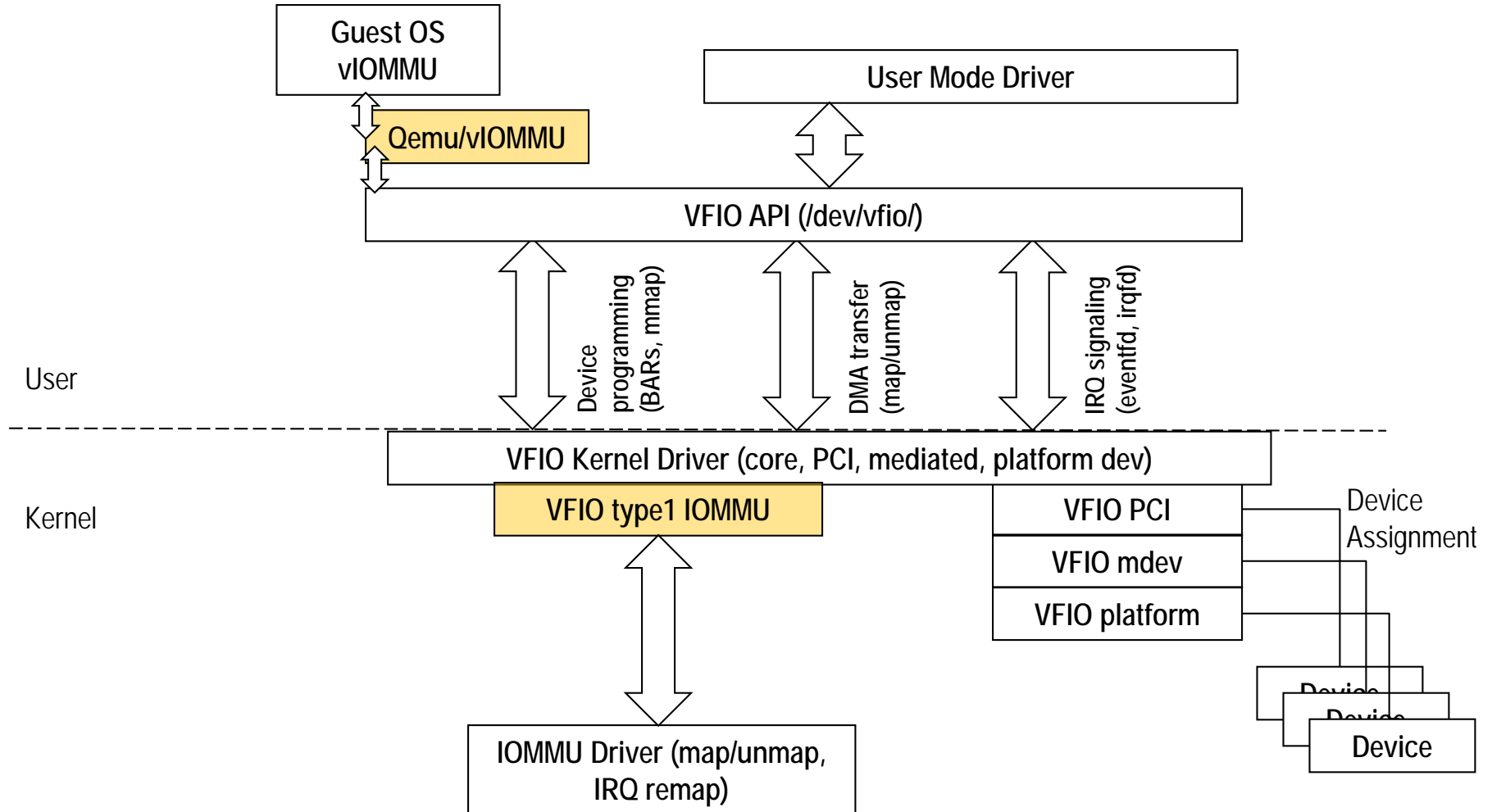
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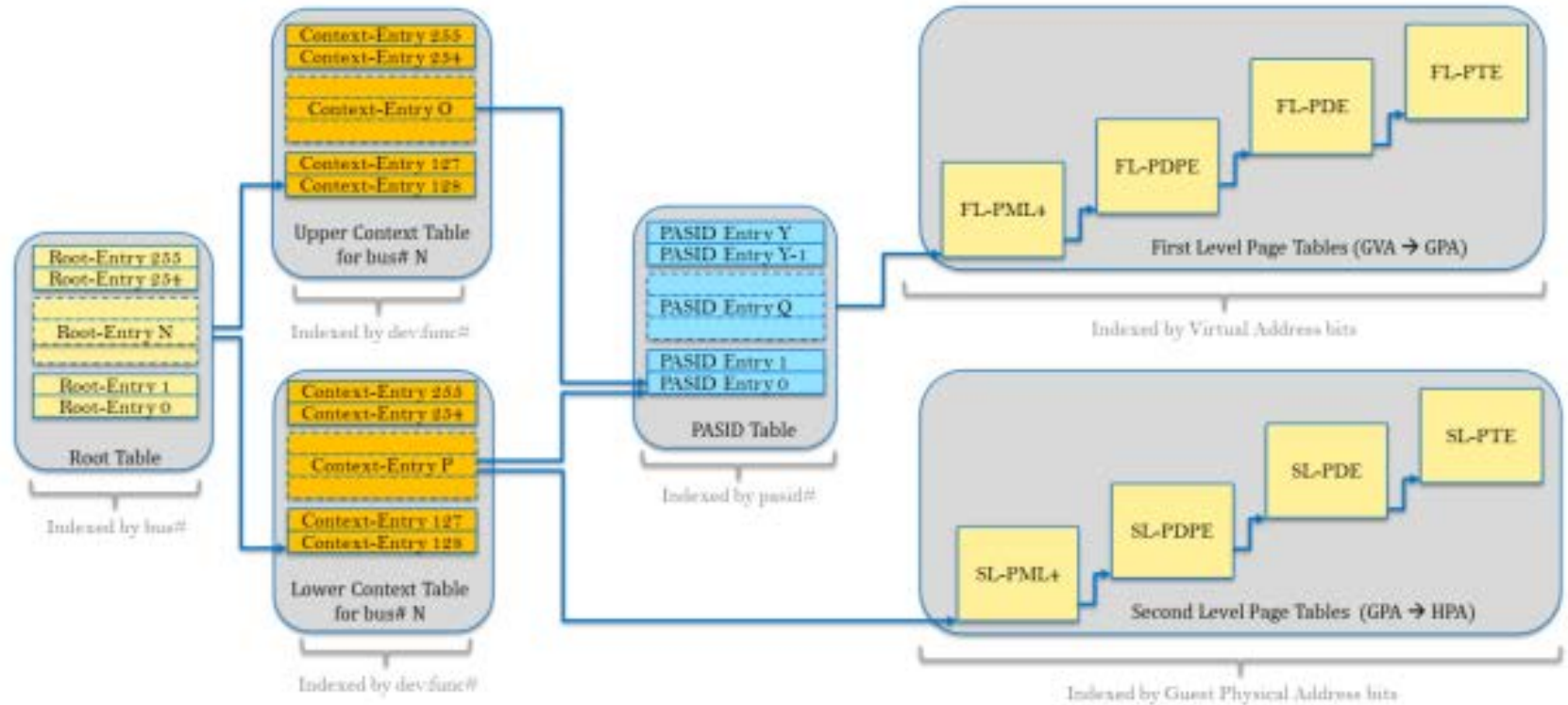
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September 2017

vIOMMU Architecture



Intel IOMMU SVM



vIOMMU/vSVM Priorities

- ✓ IOMMU provides protection between VM's for direct assigned devices.
- vIOMMU
 - Priorities:
 - Use of DPDK inside guest.
 - gVFIO->vIOMMU->Qemu->kVFIO->IOMMU
 - vSVM – direct user mode support in guest.
 - X2APIC, Intr remapping for guests with > 255 vCPUs.
 - Others:
 - IOVA inside guest
 - IOVA for virtio devices.

Intel SVM Current Plans

- New Capability – PASID Support Limitation (PSL)
 - Only allows either a 2nd level (gIOVA), or vSVM. NOT BOTH!
 - Default: Translation in Pass through.
- Global PASID table for the system.
 - Currently they are per-iommu.
- Direct assigned devices (Covered in Yi's/Jacob's talk)
 - PASID table per device for SVM enabled PCIe endpoints and SR-IOV devices
- Dealing with PF/VF differences.
 - PASID & PRI – PF attributes,
 - ATS – VF attribute.
 - MAX_PASID_WIDTH. If not supporting full 20bits, treat it as if device has no pasid capability.

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