- 1. Paper
- 2. KVM Forum
- 3. Linux
- 4. qemu
- 5. cloud-hypervisor
- 6. maintainer info

1. Paper

vIOMMU: Efficient IOMMU Emulation, 2011

https://www.usenix.org/conference/usenixatc11/viommu-efficient-iommu-emulation

https://www.usenix.org/legacy/events/atc11/tech/final_files/Amit.pdf

2. KVM Forum

https://kvmforum2017.sched.com/event/BnoZ/viommuarm-full-emulation-and-virtio-iommu-approaches-eric-auger-red-hat-inc

[2017] vIOMMU/ARM: Full Emulation and virtio-iommu Approaches by Eric Auger: https://www.youtube.com/watch?v=7aZAsanbKwI ,

https://events.static.linuxfound.org/sites/events/files/slides/viommu_arm_upload_1.pdf

3. Linux

KVM patchsets: https://patchwork.kernel.org/project/kvm/list/?submitter=Jean-Philippe Brucker&state=*&archive=both&param=2&page=3

virtio-iommu: a paravirtualized IOMMU

- [RFC 0/3]: a paravirtualized IOMMU, spinics, lore kernel
  - [RFC 1/3] virtio-iommu: firmware description of the virtual topology: spinics, lore kernel

    - [RFC 2/3] virtio-iommu: device probing and operations: spinice, lore kernel
    - [RFC 3/3] virtio-iommu: future work: https://www.spinics.net/lists/kvm/msg147993.html
- [RFC PATCH linux] iommu: Add virtio-iommu driver, lore kernel, patchwork
- [RFC PATCH kvmtool 00/15] Add virtio-iommu, lore kernel
- RFC 0.4: https://www.spinics.net/lists/kvm/msg153881.html
    - [RFC] virtio-iommu v0.4 - IOMMU Device: https://www.spinics.net/lists/kvm/msg153882.html
    - [RFC] virtio-iommu v0.4 - Implementation notes: https://www.spinics.net/lists/kvm/msg153883.html

Add virtio-iommu driver

> (2017 ~ 2019): 前几个版本在 kvm 中, 后面的在 pci 中

- RFC: patchwork,
- RFC v2: patchwork,
- v1: https://www.spinics.net/lists/kvm/msg164322.html , https://patchwork.kernel.org/project/kvm/patch/20180214145340.1223-2-jean-philippe.brucker@arm.com/
- v2: https://www.spinics.net/lists/kvm/msg170655.html , https://patchwork.kernel.org/project/kvm/patch/20180621190655.56391-3-jean-philippe.brucker@arm.com/
- v3: https://patchwork.kernel.org/project/linux-pci/cover/20181012145917.6840-1-jean-philippe.brucker@arm.com/
- v4: https://patchwork.kernel.org/project/linux-pci/cover/20181115165234.43990-1-jean-philippe.brucker@arm.com/
- v5: https://patchwork.kernel.org/project/linux-pci/cover/20181122193801.50510-1-jean-philippe.brucker@arm.com/
- v6: https://patchwork.kernel.org/project/linux-pci/cover/20181211182104.18241-1-jean-philippe.brucker@arm.com/
- v7: patchwork,
- v8(Final version): patchwork,

Add virtio-iommu device specification(virtio-spce, https://github.com/oasis-tcs/virtio-spec/blob/master/virtio-iommu.tex):

- https://lists.oasis-open.org/archives/virtio-comment/201901/msg00017.html

virtio-iommu on non-devicetree platforms/virtio-iommu on x86 and non-devicetree platforms/Add virtio-iommu built-in topology

> (2019 ~ 2020):
>
> Hardware platforms usually describe the IOMMU topology using either device-tree pointers or vendor-specific ACPI tables.

- RFC: virtio-iommu on non-devicetree platforms,
- v1: patchwork,
- v2: patchwork,
- v3: patchwork,

Add support for ACPI VIOT

> (2021, linux-acpi), 给 acpi viot table 添加一个driver, 从而可以在non-devicetree 平台(比如x86)使用 virtio-iommu

- RFC:
- V1: https://patchwork.kernel.org/project/linux-acpi/cover/20210316191652.3401335-1-jean-philippe@linaro.org/
- V2: https://patchwork.kernel.org/project/linux-acpi/cover/20210423113836.3974972-1-jean-philippe@linaro.org/
- v3: https://patchwork.kernel.org/project/linux-acpi/cover/20210602154444.1077006-1-jean-philippe@linaro.org/
- v4: https://patchwork.kernel.org/project/linux-acpi/cover/20210610075130.67517-1-jean-philippe@linaro.org/
- v5: https://patchwork.kernel.org/project/linux-acpi/cover/20210618152059.1194210-1-jean-philippe@linaro.org/

4. qemu

https://patchwork.kernel.org/project/qemu-devel/list/?state=*&q=virtio-iommu&archive=both&param=2&page=3

VIRTIO-IOMMU device

> 2017 ~ 2020, implements the QEMU virtio-iommu device.
> 必须 virtio-iommu on non-devicetree platforms 的 kernel patchset 合入才生效

- RFC v7: https://patchwork.kernel.org/project/qemu-devel/cover/1533586484-5737-1-git-send-email-eric.auger@redhat.com/
- v10: https://patchwork.kernel.org/project/qemu-devel/cover/20190730172137.23114-1-eric.auger@redhat.com/
- v15: https://patchwork.kernel.org/project/qemu-devel/cover/20200208120022.1920-1-eric.auger@redhat.com/
- v16: https://patchwork.kernel.org/project/qemu-devel/cover/20200214132745.23392-1-eric.auger@redhat.com/

virtio-iommu: VFIO integration (还未合入)

> 2017 ~ 2020.
> This patch series allows PCI pass-through using virtio-iommu.

- RFC: https://patchwork.kernel.org/project/qemu-devel/patch/1499927922-32303-3-git-send-email-Bharat.Bhushan@nxp.com/
- RFC v2: https://patchwork.kernel.org/project/qemu-devel/patch/1500017104-3574-3-git-send-email-Bharat.Bhushan@nxp.com/
- RFC v3: https://patchwork.kernel.org/project/qemu-devel/patch/1503312534-6642-3-git-send-email-Bharat.Bhushan@nxp.com/
- RFC v5: https://patchew.org/QEMU/20181127064101.25887-1-Bharat.Bhushan@nxp.com/
-
- v10: https://patchwork.kernel.org/project/qemu-devel/cover/20201008171558.410886-1-jean-philippe@linaro.org/
- v11: https://patchwork.kernel.org/project/qemu-devel/cover/20201030180510.747225-1-jean-philippe@linaro.org/

virtio-iommu: Built-in topology and x86 support (还未合入)

> 2020

v1: https://patchwork.kernel.org/project/qemu-devel/cover/20200821162839.3182051-1-jean-philippe@linaro.org/

virtio-iommu: Add ACPI support (还未合入)

> 2021

- v1: https://patchwork.kernel.org/project/qemu-devel/cover/20210810084505.2257983-1-jean-philippe@linaro.org/

- v2: https://patchwork.kernel.org/project/qemu-devel/cover/20210903143208.2434284-1-jean-philippe@linaro.org/
- v3: https://patchwork.kernel.org/project/qemu-devel/cover/20210914142004.2433568-1-jean-philippe@linaro.org/
- v4: https://patchwork.kernel.org/project/qemu-devel/cover/20211001173358.863017-1-jean-philippe@linaro.org/

Add dynamic iommu backed bounce buffers

https://lwn.net/Articles/865617/

https://lwn.net/ml/linux-kernel/20210806103423.3341285-1-stevensd@google.com/

5. cloud-hypervisor

https://github.com/cloud-hypervisor/cloud-hypervisor.git

6. maintainer info

Jean-Philippe Brucker

author personal site: https://jpbrucker.net/

qemu branch: https://jpbrucker.net/git/qemu/log/?h=virtio-iommu/acpi

SPEC: https://jpbrucker.net/virtio-iommu/spec/