Virtio-loopback proposals

2023-04-18

Virtio-loopback wrap-up

virtio-loopback activity started in March 22 and ended in December 23.

➢ Virtio-loopback has been designed and implemented in AGL
  – First round of benchmark optimizations done
➢ Yocto patches are available for everybody to test (#28257)
➢ Code shared with virtio-dev

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virtio-dev message

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Subject: **Virtio-loopback: PoC of a new Hardware Abstraction Layer for non-Hypervisor environments based on Virtio**

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- *To*: virtio-dev@lists.oasis-open.org
- *Date*: Thu, 13 Apr 2023 16:35:59 +0300

Dear virtio-dev community,

I would like to introduce you Virtio-loopback, Proof of Concept (PoC) that
we have been working on at Virtual Open Systems in the context of the
Automotive Grade Linux community (Virtualization & Containers expert
group - EG-VIRT).

We consider this work as a PoC and we are not currently planning
upstream. However, if the zero-copy or any other aspect of this work
is interesting for other Virtio implementations, we would be glad to
discuss more.

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Virtio-loopback 2023 Proposed features

The first virtio-loopback proof of concept demonstrated the feasibility of the concept and good performance (potentially to be improved). What could be next?
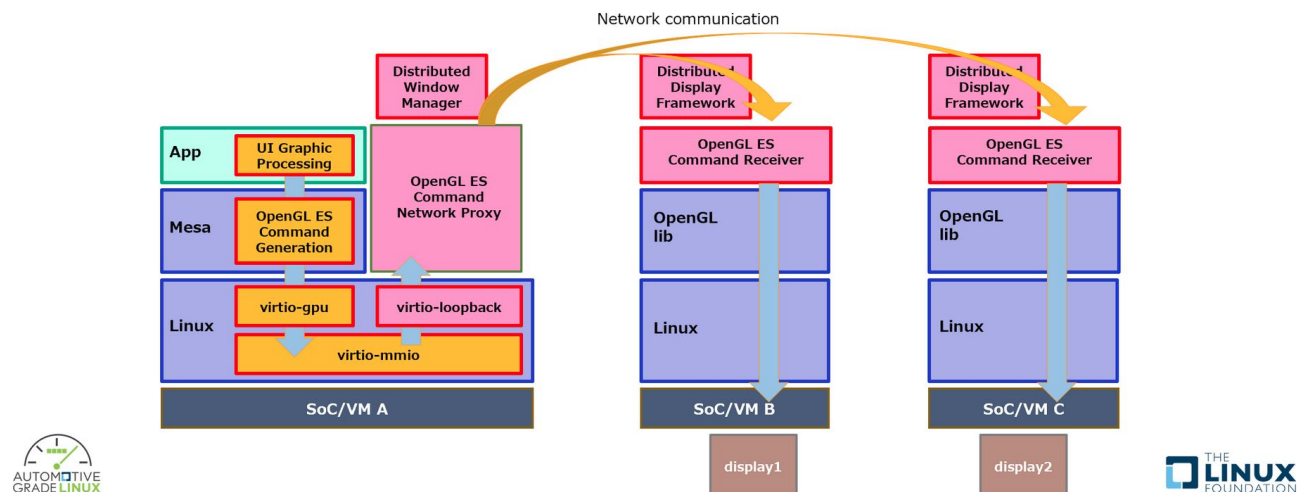
1) Add support for new devices
  • Add support for gpu, audio and can
2) Unified HMI demo with virtio-loopback (enables zero copy!)
  • Speed up Unified HMI demo with zero copy
3) AGL Firecraker support
  • Enable AGL as a Firecraker host
4) Non-Virt VirtIO AGL in Graviton A1 instance
  • Enable and benchmark virtio-loopback in the cloud

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2023 activities possible use cases

Virtio-loopback devices and optimizations (Points 1 and 2)

- ➢ Add new virtio-loopback devices support
    - – display/GPU, can, audio (from AGL communities priorities)
    - – Virtio-gpu performance profiling and optimization
- ➢ Optimize Unified HMI
- ➢ Prototype device remoting for other devices (e.g., CAN)

Source : https://jira.automotivelinux.org/browse/SPEC-4744?jql=project%20%3D%20SPEC%20AND%20component%20%3D%20VirtIO

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2023 activities possible use cases

Compile application once and run everywhere (Points 3 and 4)

- ➢ Enable AGL as a Firecraker host
- ➢ Run virtio-loopback in AWS (Graviton A1 instance)
  - – Benchmark virtio-loopback in the cloud
- ➢ Move binary applications transparently from a VM in AGL to a non hypervisor deployment in the cloud

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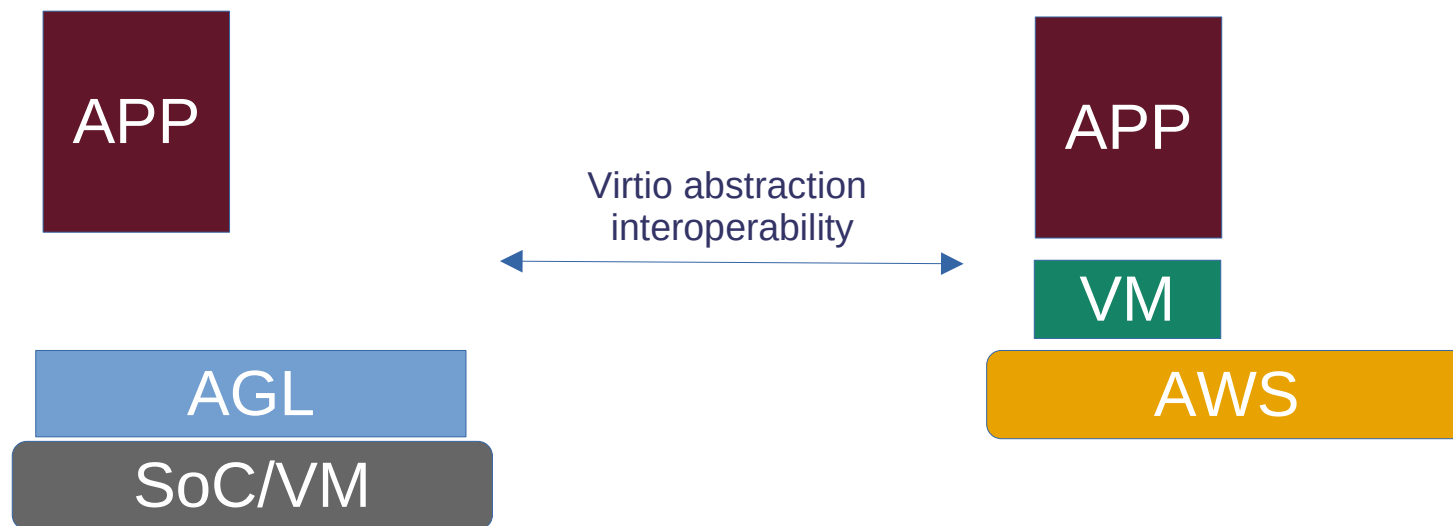
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