Proposal for progress on Virtio for OpenAMP

This proposal is high level by design. Much needs to be worked out at the detail level but it is important to get agreement at a very high level before digging into these details.

End State

- openamp library w/ support for virtio other than rpmsg
    - existing support for remoteproc, virtio, and rpmsg
    - virtio-mmio support (device and driver sides)
    - enhanced virtio layer to support openamp-virtio needs
        - support copy based buffer management API pattern
        - support zero copy buffer management API pattern
    - support for virtio-{console,net,rng,vsock,p9fs,blk,scmi}
        - supports driver and device side usage
        - future: virtio-{gpio,i2c,spi}
    - All code under a BSD or MIT license

- optimized libmetal
    - same scope of use cases
    - smaller footprint when all abstractions are not needed

All libraries integrate well with Zephyr but can also be used with other RTOSes.

- Drivers should integrate with Zephyr's driver model when using Zephyr

The openamp libraries can carry some Zephyr specific code.

TBD: perhaps more config items will be needed

- Will attempt to try without and rely on function level linking to only include the portions of the library that are needed
- If that gets too complex for the library maintainers or end user, add config options

Initial Steps

- Initial work will focus only on the virtio driver side and virtio-{console,net,rng} as is done today in Zephyr work
- Move/(Copy) Dan's existing Zephyr repo to openamp/zephyr
    - May not be end state but will always be useful for CI
- Start by modifying Zephyr code to use openamp lib
    - import virtio-mmio based on Vincent's work
    - Enhance openamp virtio layer as needed
    - Test with Zephyr driver side and QEMU as device side
    - Test with Zephyr driver side and kvmtool-hvl as device side
- 2nd Phase
    - Move virtio code to openamp
    - re-license from Apache to BSD 2 or 3 Clause
    - Figure out how to integrate tightly with Zephyr but still build for bare-metal etc
- No pull-requests to Zephyr until Openamp based solution is stable
    - Don't want to add a bunch of stuff to Zephyr that we then ask to drop

Refinement over time

Move toward end state w/o having to go through Zephyr

- add virtio-mmio capababilities to openamp lib
    - Use Vincent's virtio-mmio and WR virtio-mmio implementations as starting points
- enhance virtio-layer for needs of openamp-virtio
- remove code from openamp-virtio library,
  as it becomes supported in base openamp library
- add device side functionality to openamp-virtio
- add additional capabilities to openamp-virtio
    - virtio-vsock
    - virtio-p9fs
    - virtio-{gpio,i2c,spi}
- support zero copy pattern in openamp-virtio where it make sense
- figure out scmi integration story