HyperTracing
Tracing Through Virtualization Layers

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What is hypertracing?

**Hypertracing** = Offloading traces from virtual machine to host
How to do hypertracing?

Communication Channels:
- Shared Memory
- Socket (Virtio-serial)
- Network TCP/IP
- Hypercall

Virtual Machine:
- Qemu
- Kernel
- Offloader

Host:
- Probes
- Buffer
- Sync
- Async

Traces:
- Data
- Consumer

Graphical representation of the communication channels and their relation to Qemu, kernel, offloader, probes, buffer, and consumer.
Hypertracing

With

Hypercarr
Nested Virtualization

Remove Exit Multiplication

Qemu (not involved)

Host Hypervisor

Hardware

Single level
Two levels
Three levels
Exit-handling code in the hypervisor is slower when run in L1 or L2 than the same code running in L0.

Transition between L1, L2, ... Ln involve an exit to L0 and then an entry.
Demo
Hypergraph
Feedbacks & Questions

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