

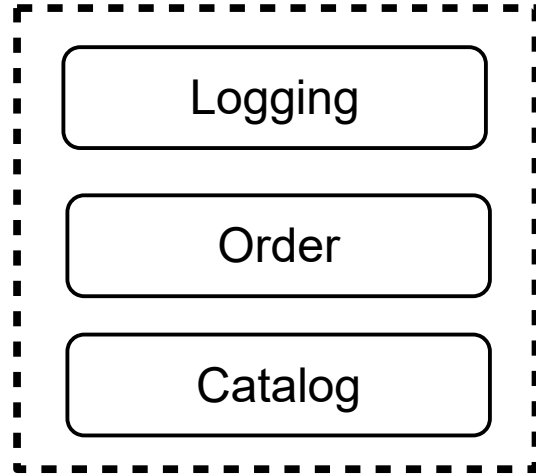
ToroV, a kernel in user-space to deploy server-less applications

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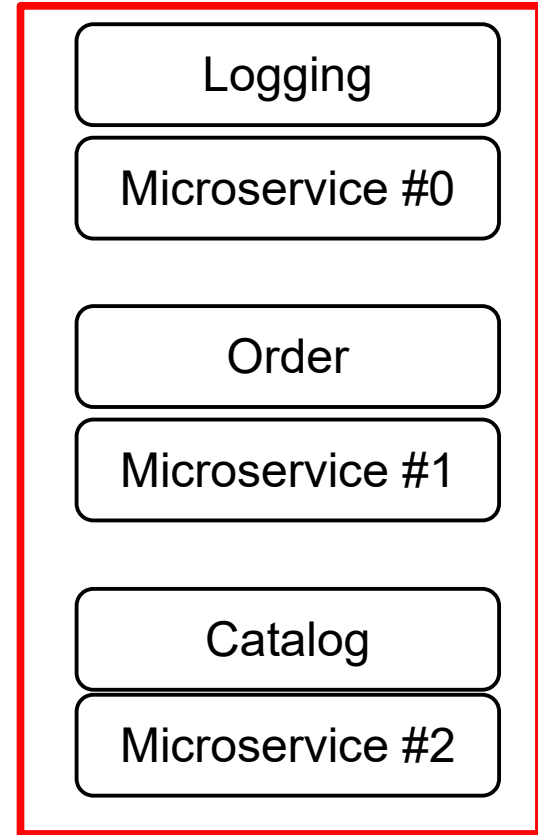
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The Cloud provider
deals with deployment,
i.e., performance and isolation



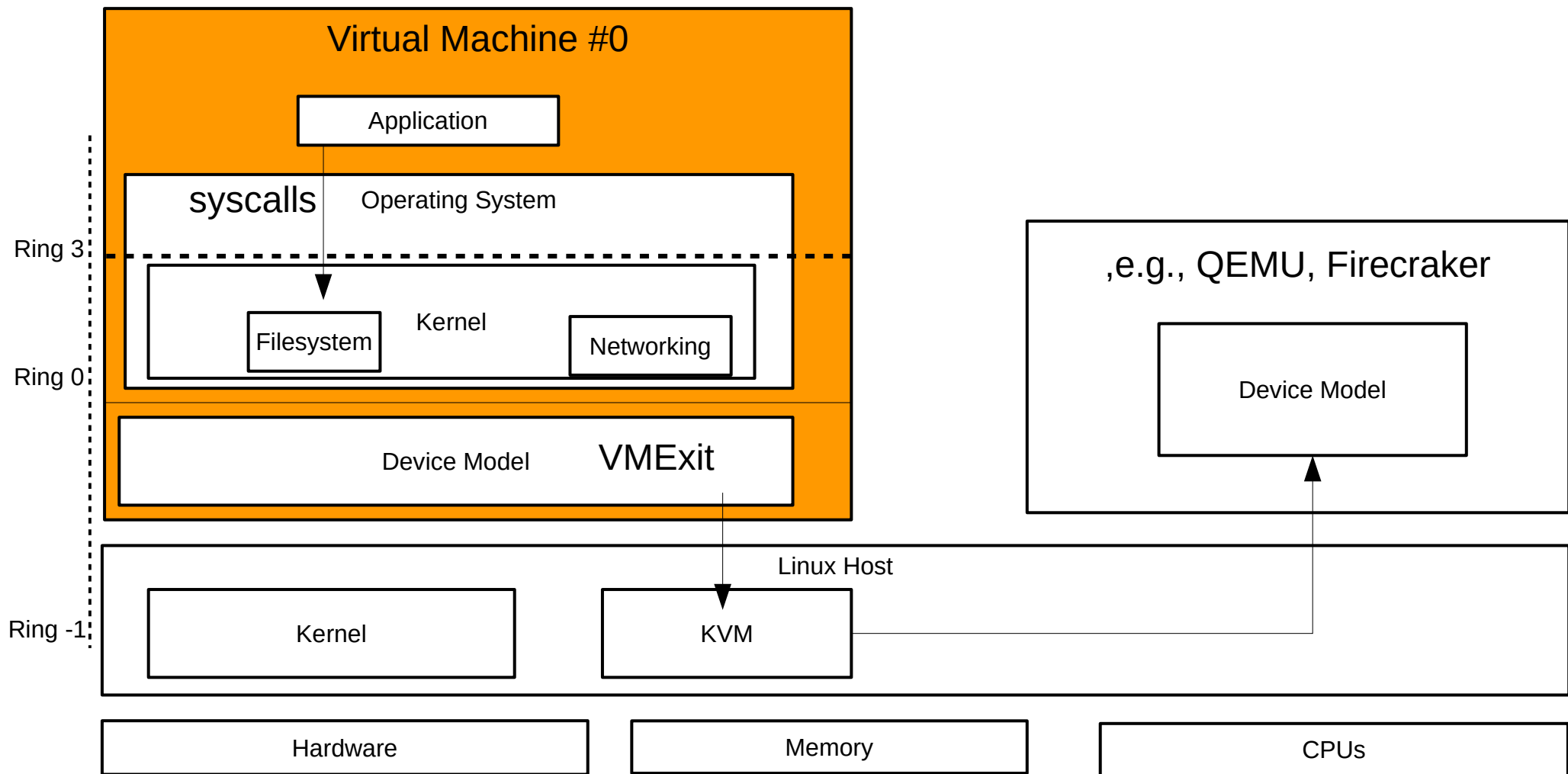
Monolithic Application

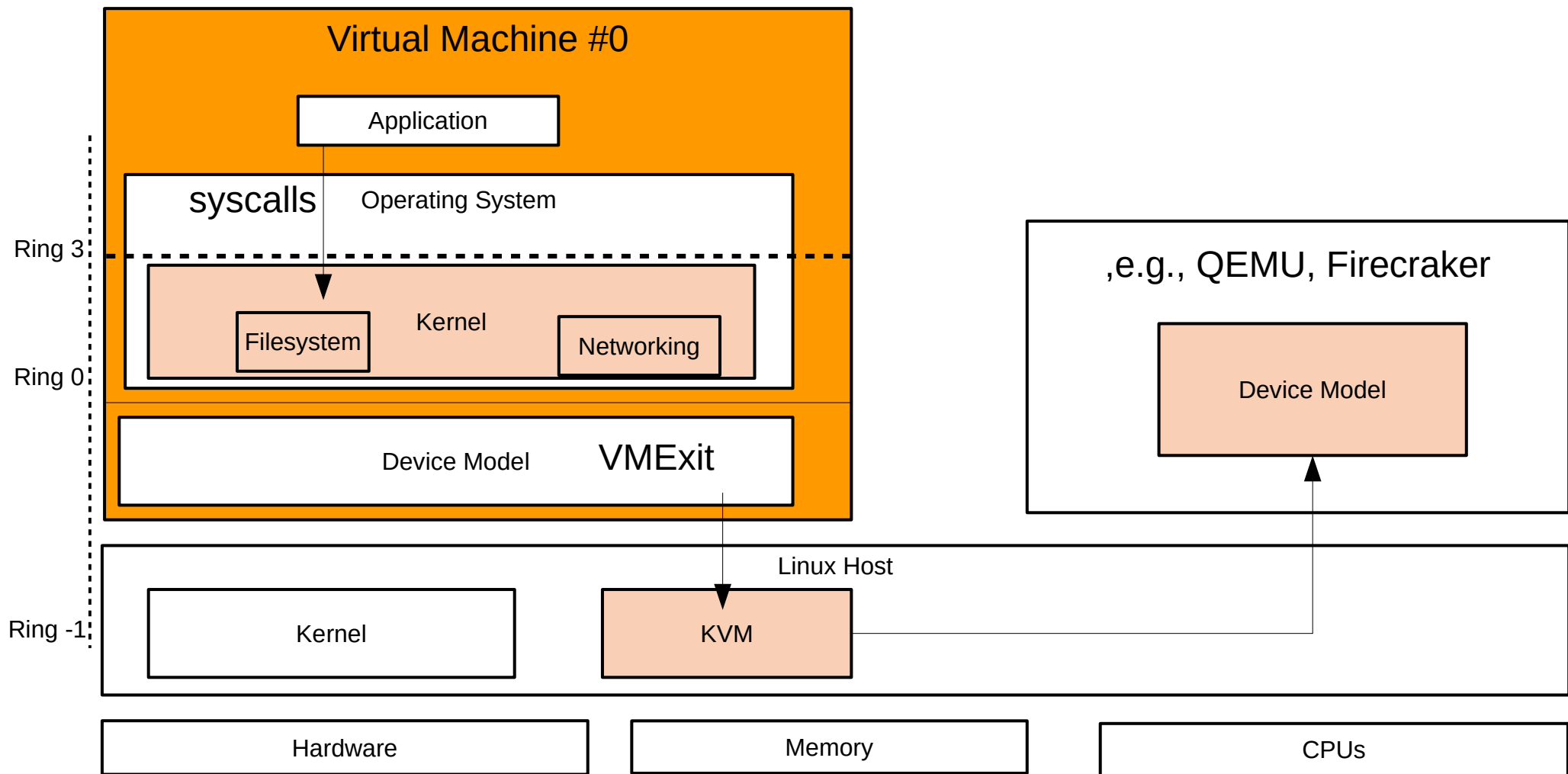


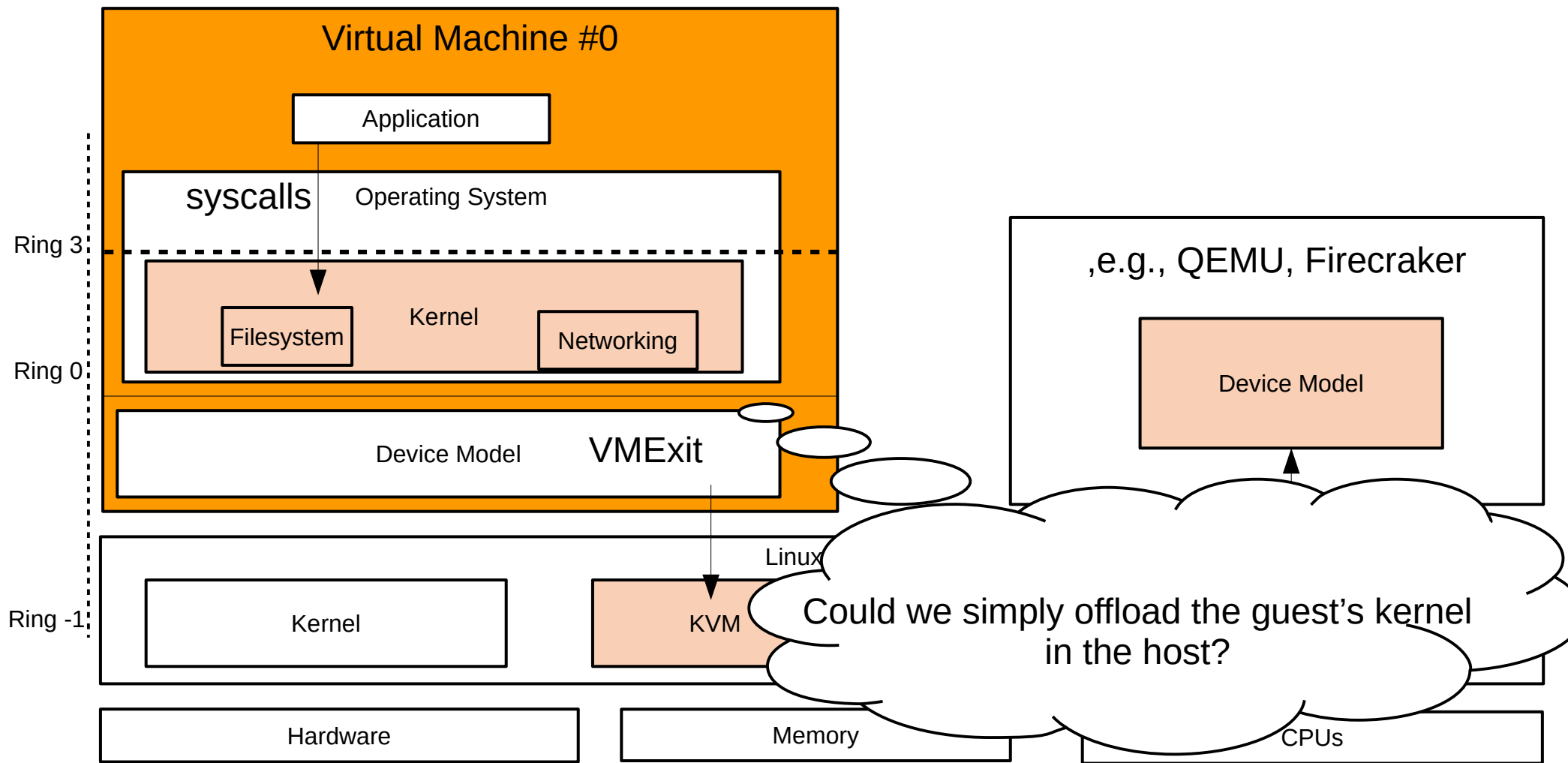
Deployed as server-less

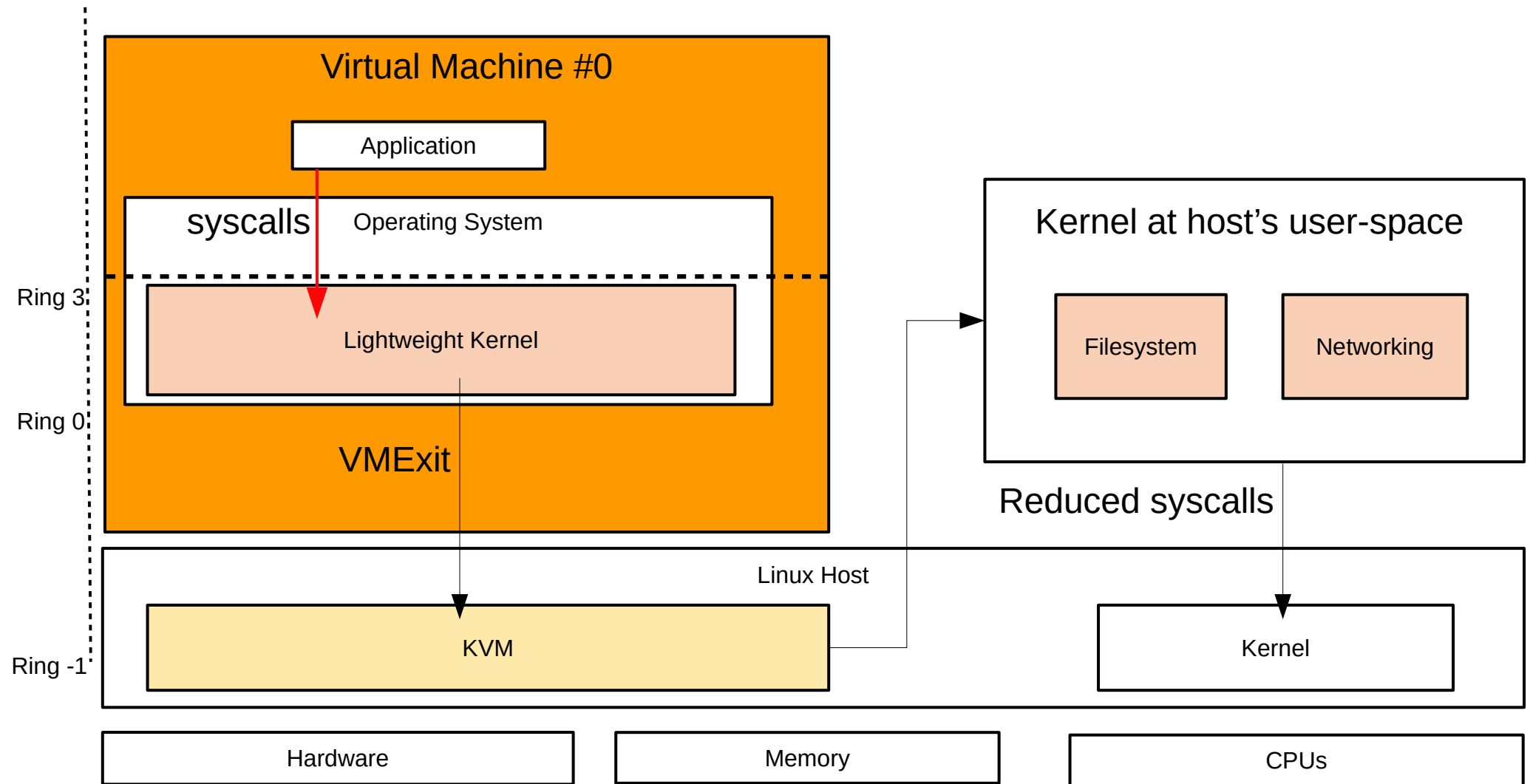
How server-less applications are deployed?

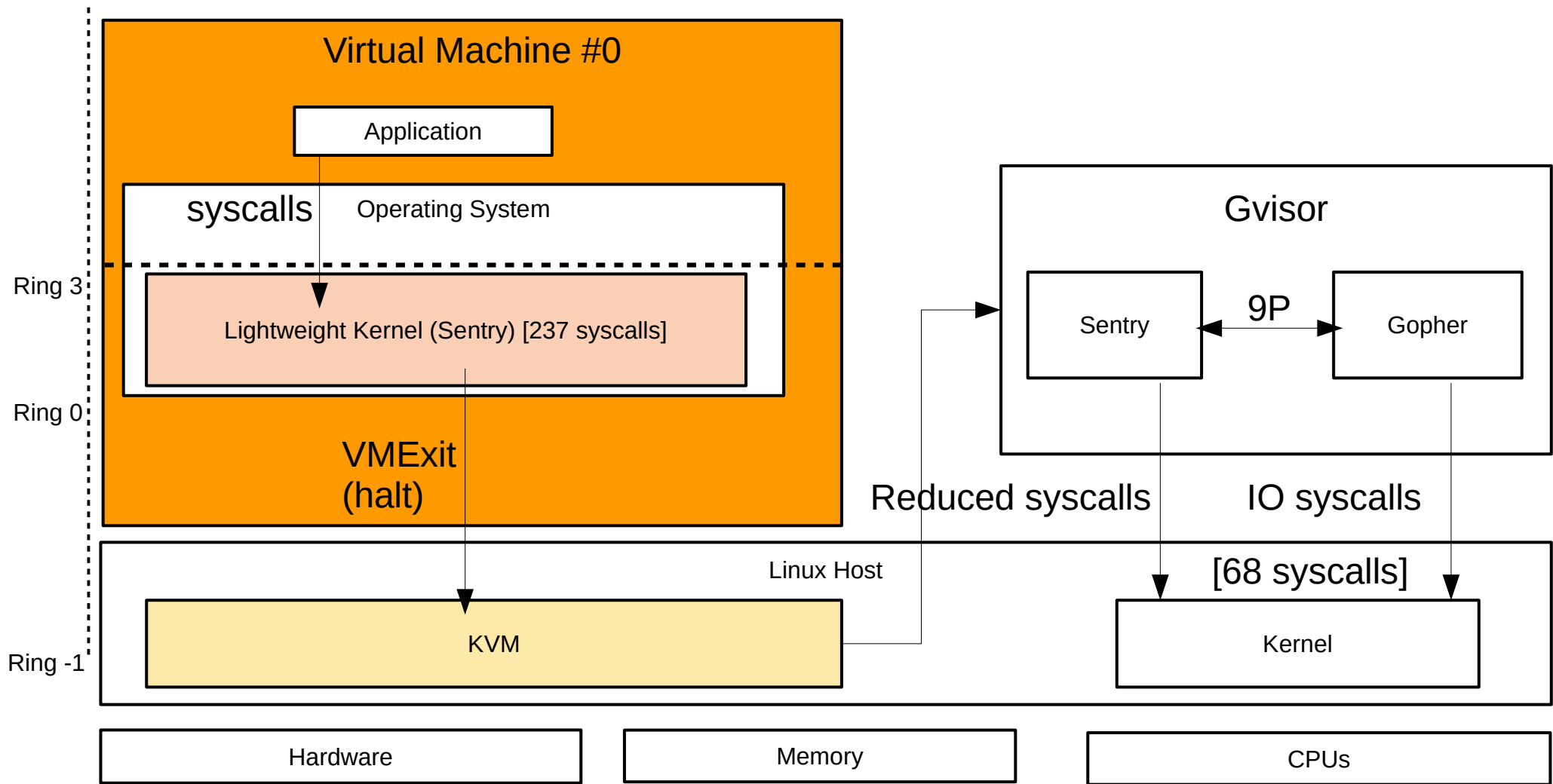
- By using containers, e.g., cname, namespaces
- By using VMs, e.g., General Purpose OS, unikernel
- By using a combination of containers/VMs, e.g., kata containers
- These mechanisms are chosen based on a trade-off between performance and security

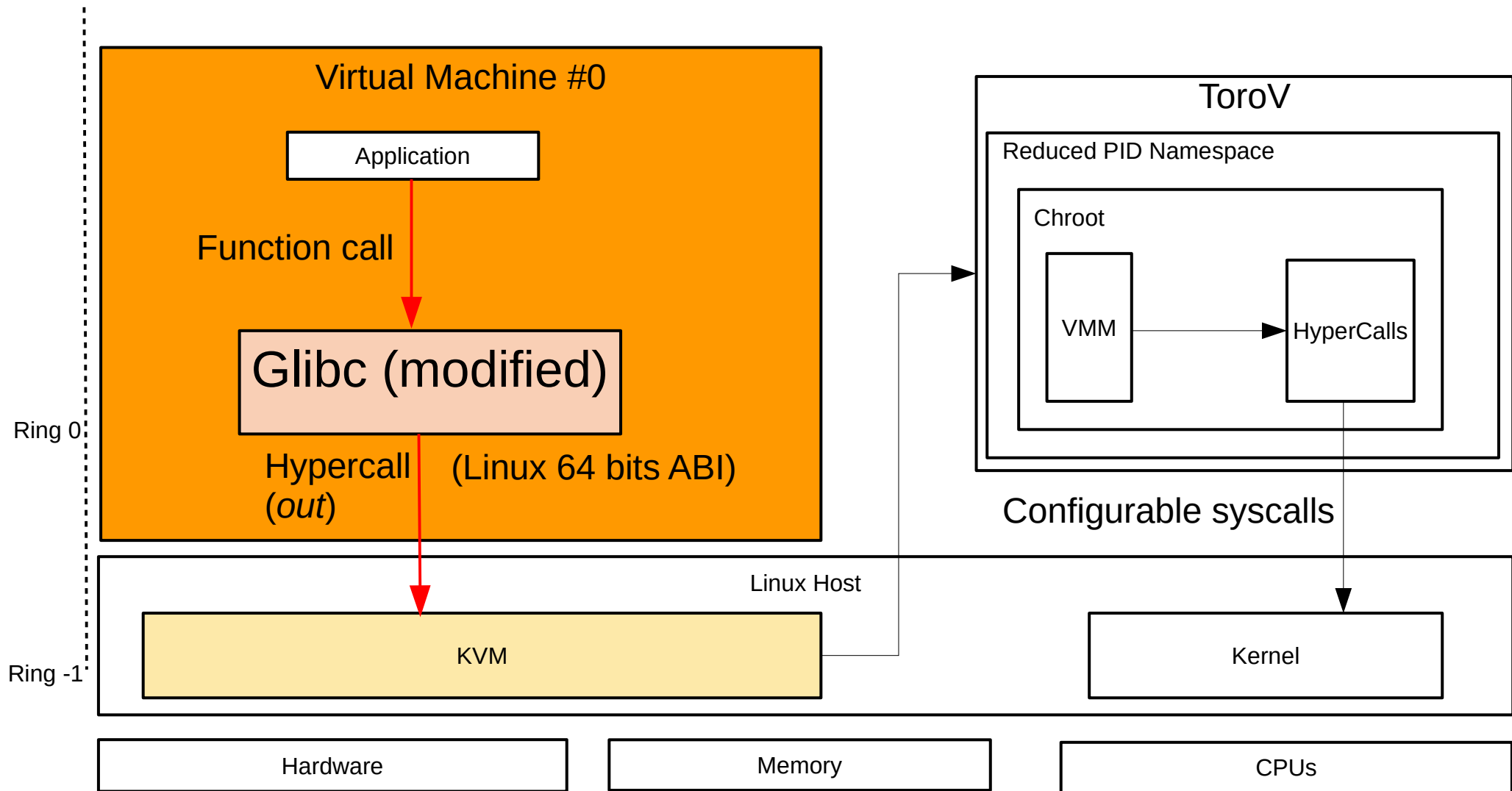


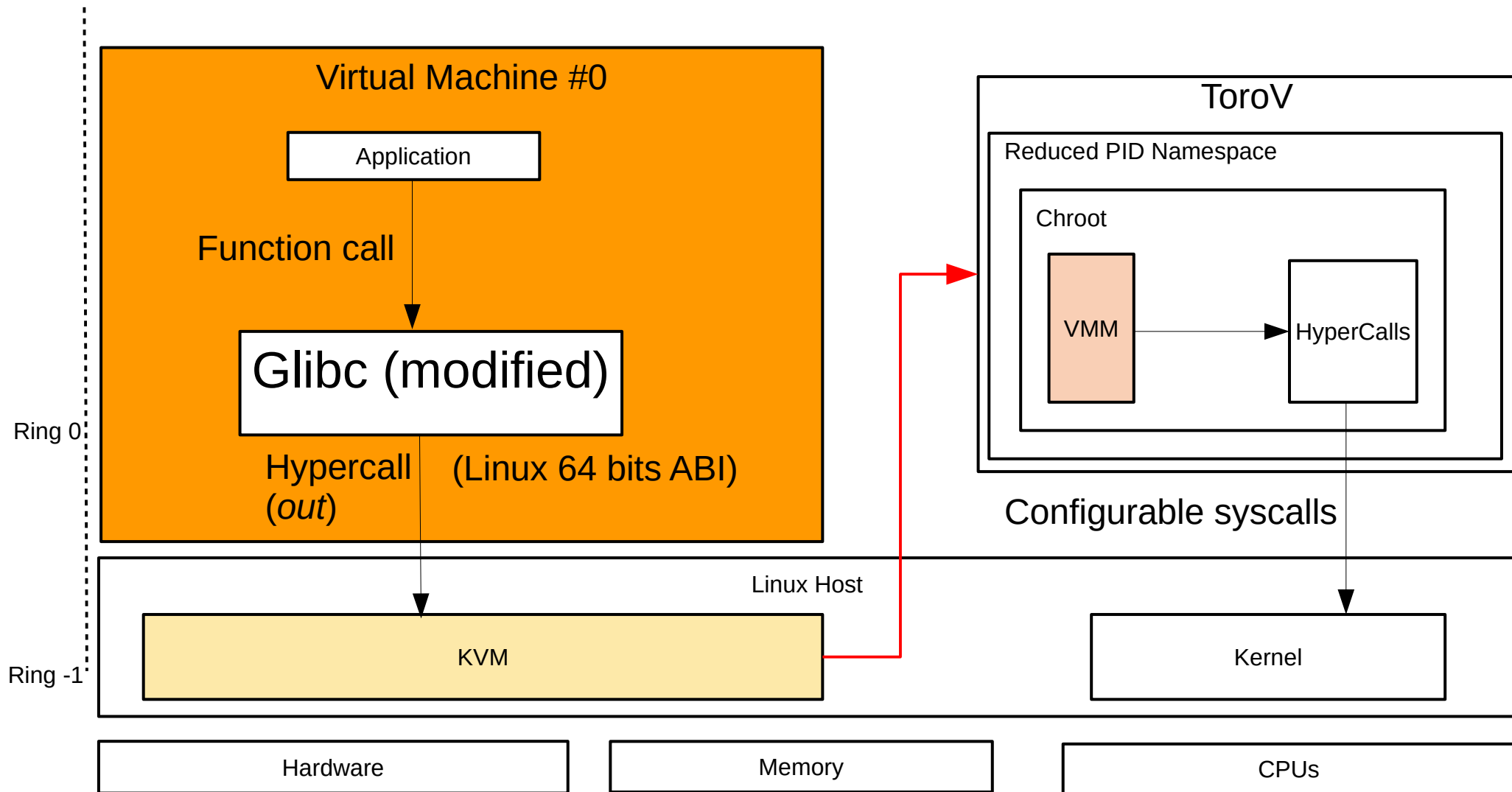


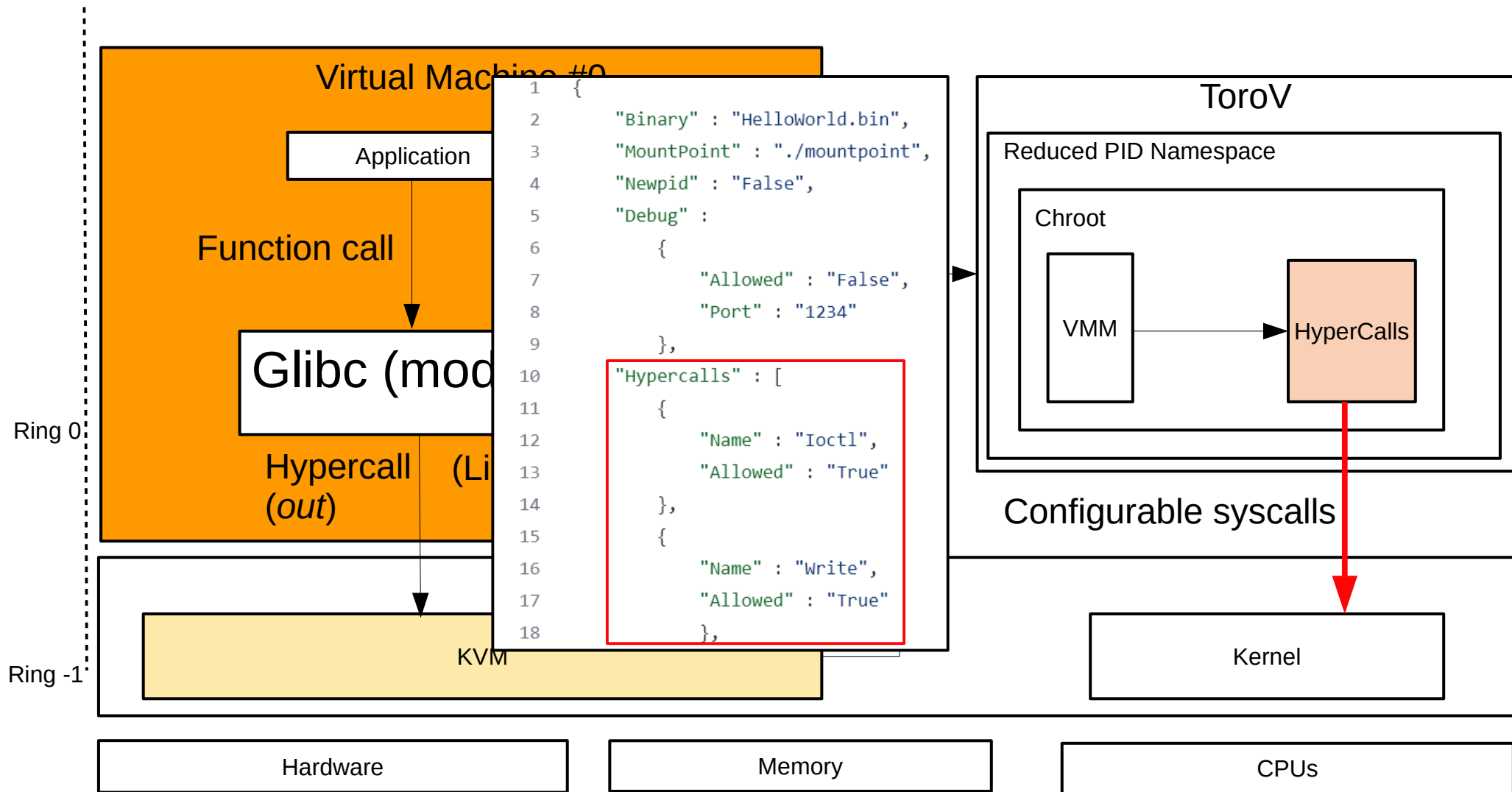


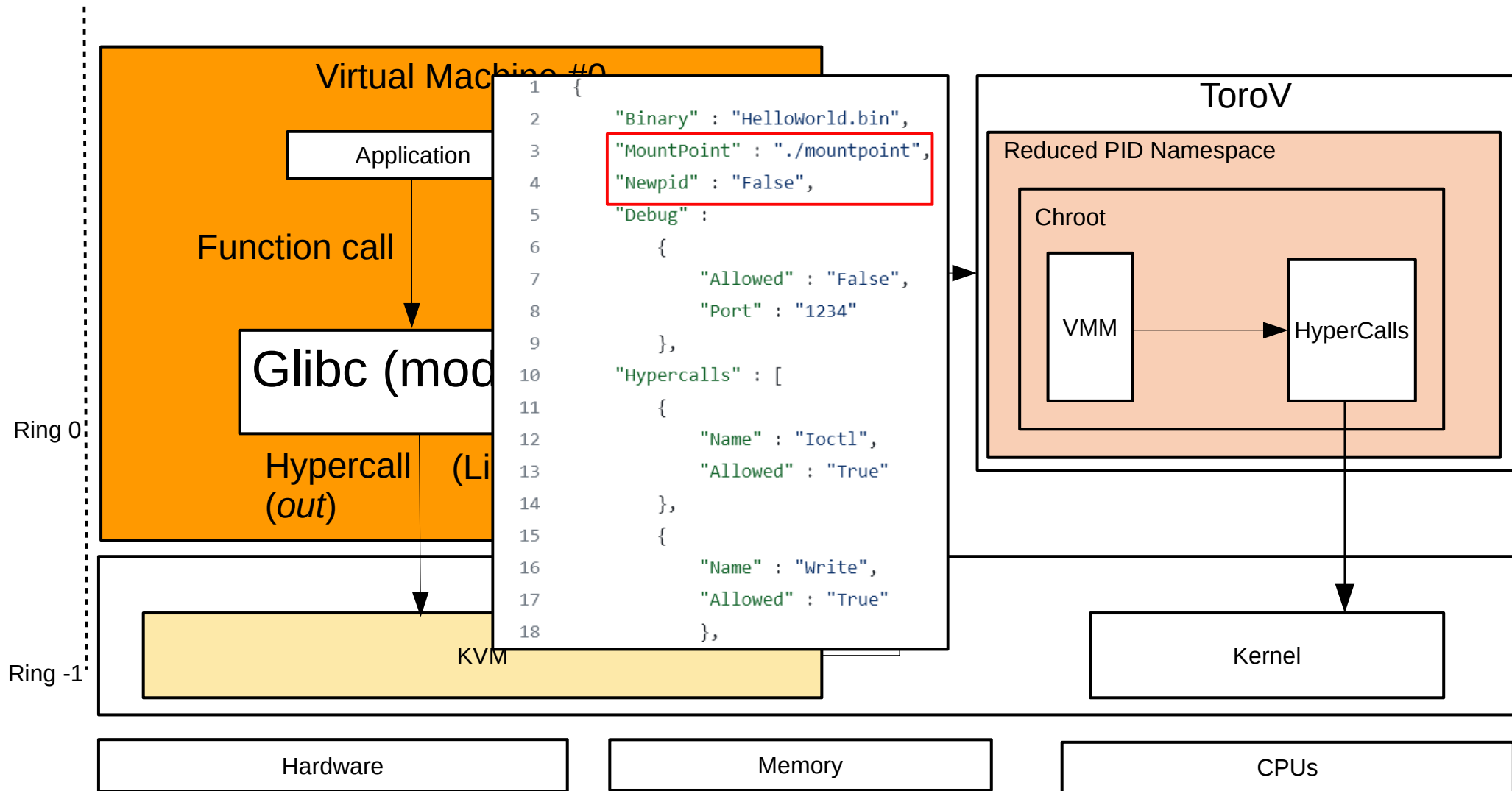










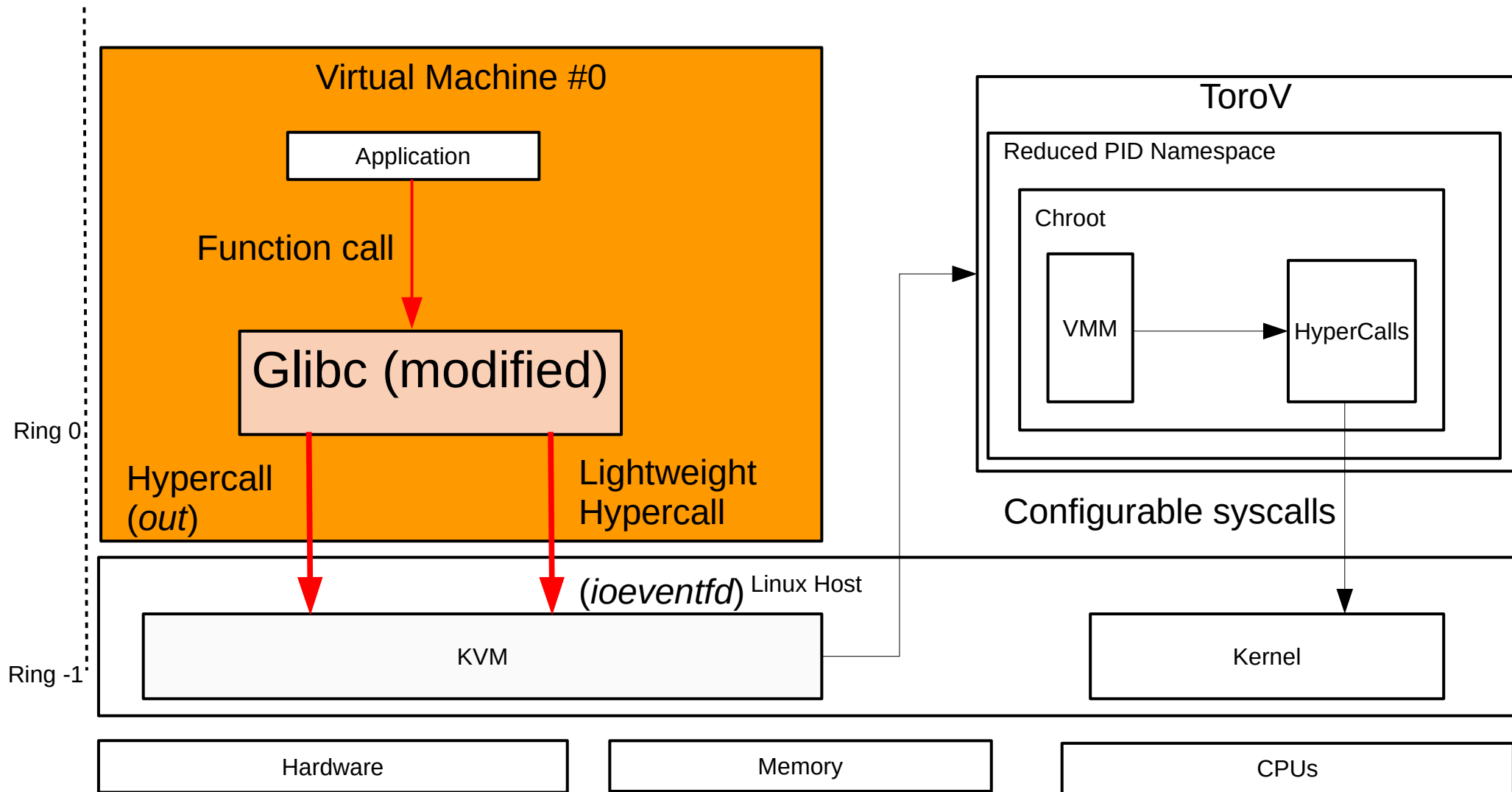


HelloWorld example

- ~ 1.5 MB of memory (top)
- ~ 7 ms (median)
- **Write() syscall ~ 0.10 ms ~ x10 slower (0.012 ms)**



Need a more efficient
syscall mechanism!



Features

- Configurable syscalls per application
- Support GDBStub to debug applications by using GDB
- Support the most used syscalls like open(), write(), read(), accept(), listen(), **map(), unmap()**
- <https://github.com/torokernel/torov>

Thanks!

www.torokernel.io