



Unikernels Are Here

Building, Running and Deploying Unikernels with 1 Command

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Application Workflows



build



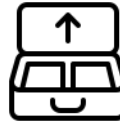
package



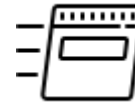
push



pull



unpack



run

Using VMs & Containers



run everywhere



no dependency issues



isolation



VMs

- overhead
- difficult to create recipes
- + good isolation
- + good resource control



Containers

- isolation issues
- imperfect resource control

- + recipes (Dockerfile)
- + registries (DockerHub)
- + tooling (Docker, Podman)
- + good performance

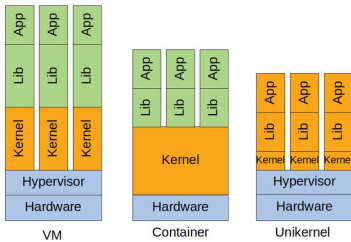


What We Want

- + good isolation
- + good resource control
- + recipes
- + registries
- + tooling
- + good performance



What We Want





Unikernels / Unikraft: We Are Here

- + good isolation: VMs
- + good resource control: VMs
- + recipes: Dockerfile, Kraftfile
- + registry: Unikraft OCI images
- + tooling: KraftKit
- + good performance: no domain transition,
extreme specialization



Before and After

configure kernel

pull and run prebuilt kernel

build kernel

single command build

run QEMU / Firecracker command line

single command run

port application to Unikraft

run native Linux applications (Docker-based)



Before: NGINX on Unikraft

<https://asciinema.org/a/635997>



After: NGINX on Unikraft (from Registry)

<https://asciinema.org/a/635998>



After: Python on Unikraft (from Registry)

<https://asciinema.org/a/635999>



After: Python Example

<https://asciinema.org/a/636002>



After: Python Flask

<https://asciinema.org/a/636003>



More

Catalog: <https://github.com/unikraft/catalog>

Guides: <https://unikraft.org/guides>



Unikernels Are Here

- + good isolation: VMs
- + good resource control: VMs
- + recipes: Dockerfile, Kraftfile
- + registry: Unikraft OCI images
- + tooling: KraftKit
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Catalog: <https://github.com/unikraft/catalog>

Guides: <https://unikraft.org/guides>

GitHub: <https://github.com/unikraft/>

Discord: <https://bit.ly/UnikraftDiscord>

KraftCloud: <http://kraft.cloud/>



Thanks!

<https://icons8.com/>

<https://ieeexplore.ieee.org/document/8567366>