

A person stands on a dark rock in the foreground, looking up at a vast night sky filled with stars and the Milky Way galaxy. The galaxy's bright, colorful band stretches diagonally across the frame. The overall scene is dark and atmospheric, with the light from the stars illuminating the person's silhouette.

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# KALISTA IO

Get ready for a data storage revolution

# Phalanx intelligent storage system overview

# Executive summary

## Beyond cold storage

Kalista IO is expanding the use case of SMR beyond archival storage — into SW development, database, web and cryptocurrency applications.

## Just works

Phalanx enables SMR and next gen technologies on existing systems and software — all without application changes nor kernel modifications.

## Performance at scale

Phalanx's device friendly design minimizes IO contentions and hot spots to deliver consistent and predictable performance at any scale.

## Run everywhere

Phalanx is designed to fit into your existing workflows and environments. Deploy and operate Phalanx using existing orchestration and provisioning frameworks such as Kubernetes<sup>®</sup> and vSphere<sup>®</sup>.

Enterprise/web apps

Orchestration/provisioning frameworks

IoT

AI/ML

Big data

### Kalista IO

#### Storage device

#### Performance at scale

#### Advance services

#### Just works

Optimized for  
SMR, EAMR, MA

Device friendly  
IO

Scale performance  
with capacity

Minimize  
device contention

Device health  
mgmt

Data services

No application  
change required

No kernel  
change required

Device aware  
data placement

Future ready

Intelligent  
IO prioritization

Eliminate  
hot write areas

Compute services

Intelligent storage

Software-defined  
architecture

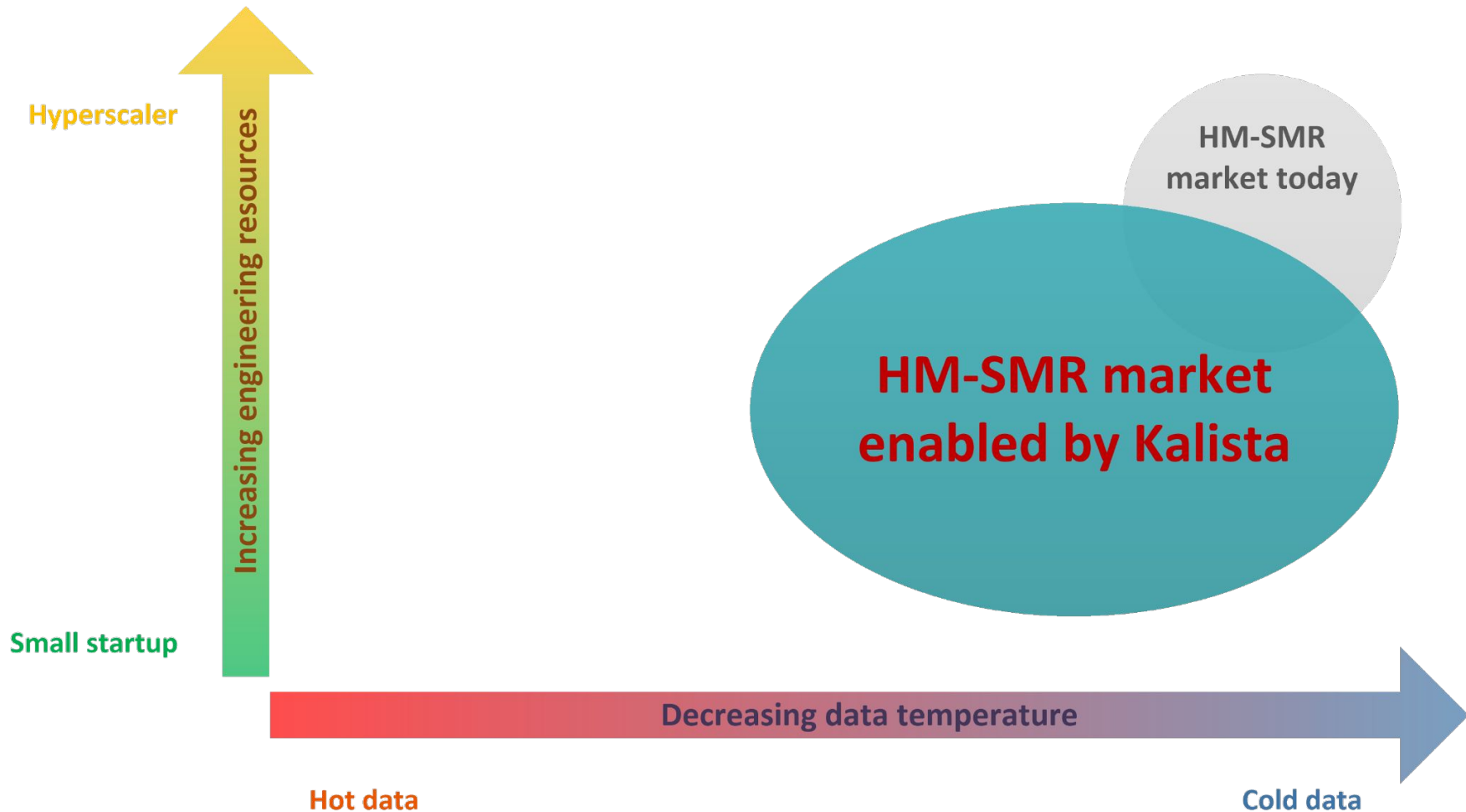
Dynamic scaling

HDD/SSD

Multi-cloud

Value beyond capacity

Orchestration/provisioning frameworks



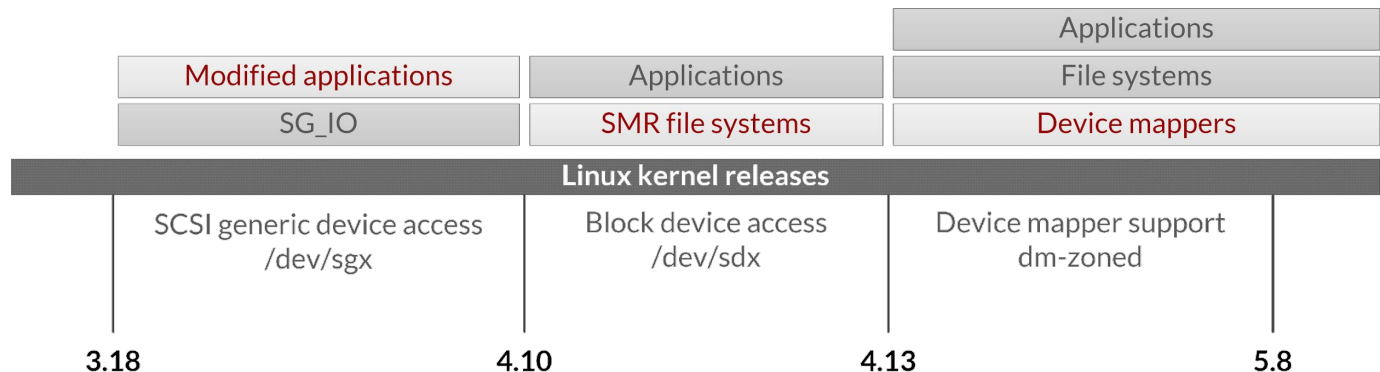




# Phalanx

Reinventing the storage system

Current SMR compatibility solutions have **dependencies** and **limitations**



Phalanx is **kernel agnostic** and requires **no application changes**



# Easy to deploy Simple to operate Runs everywhere

Deploy and operate Phalanx using existing orchestration and provisioning frameworks such as Kubernetes® and vSphere®. Phalanx is designed to fit within your current workflow and environment.



# One line to SMR.

```
] docker run --privileged -v /mnt:/mnt:rshared -v /md:/md:shared phalanx -d /dev/sdc -bm
```



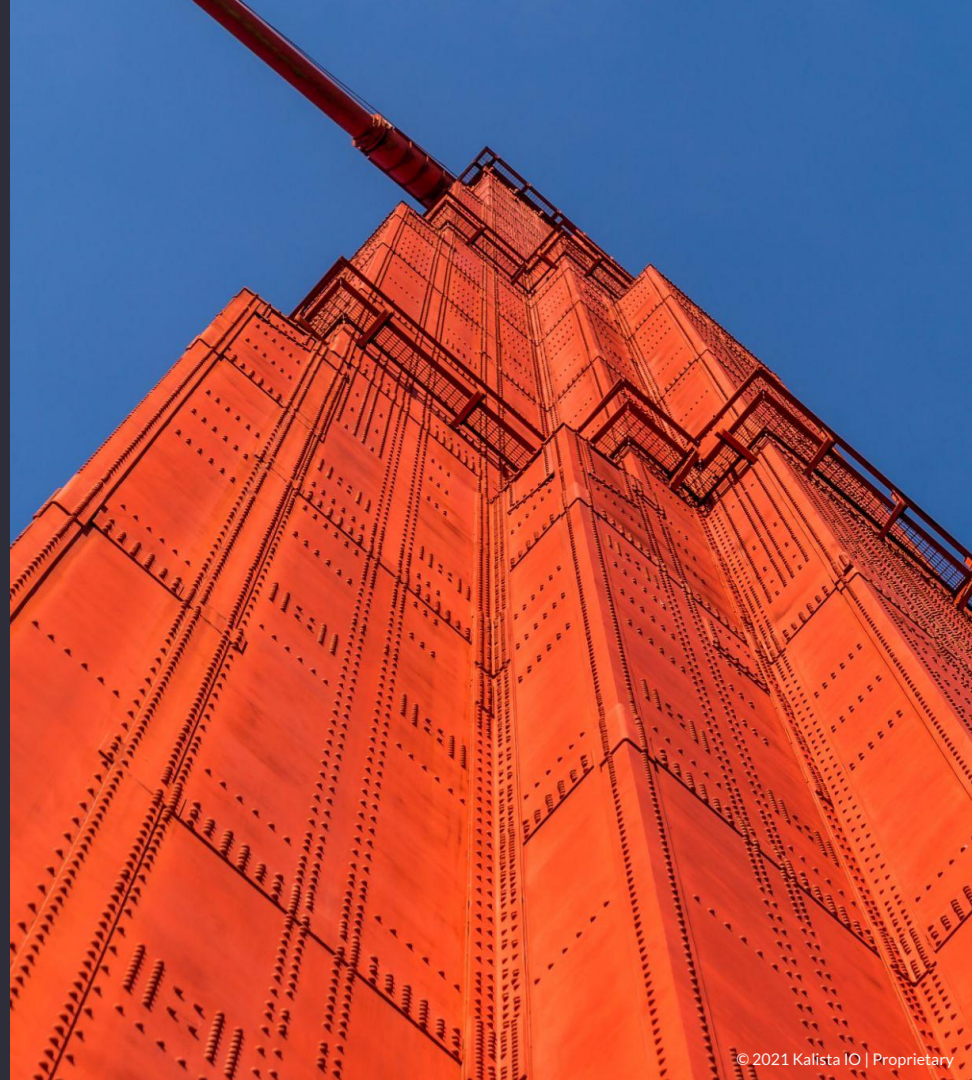
# No storage silos.

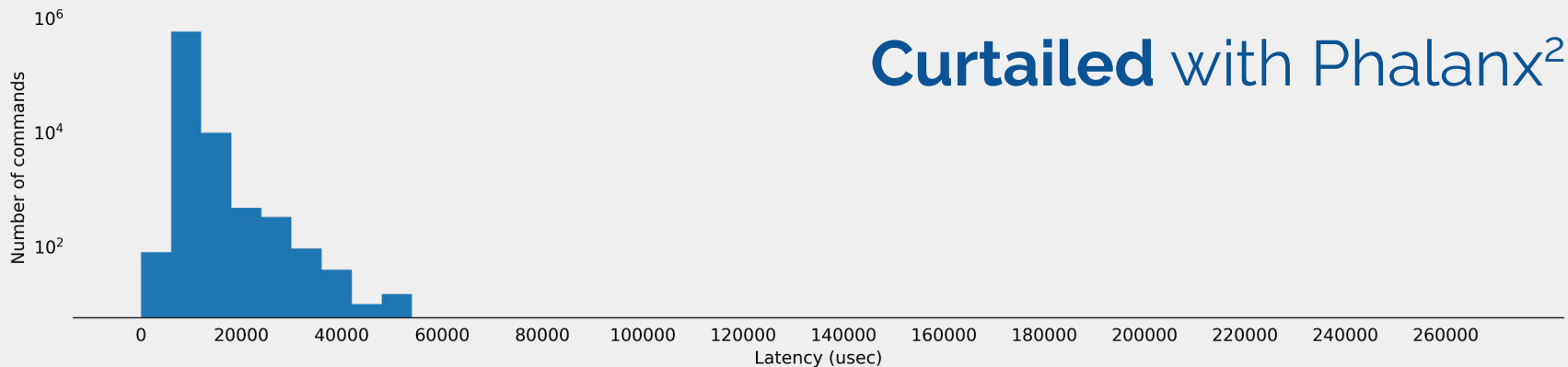
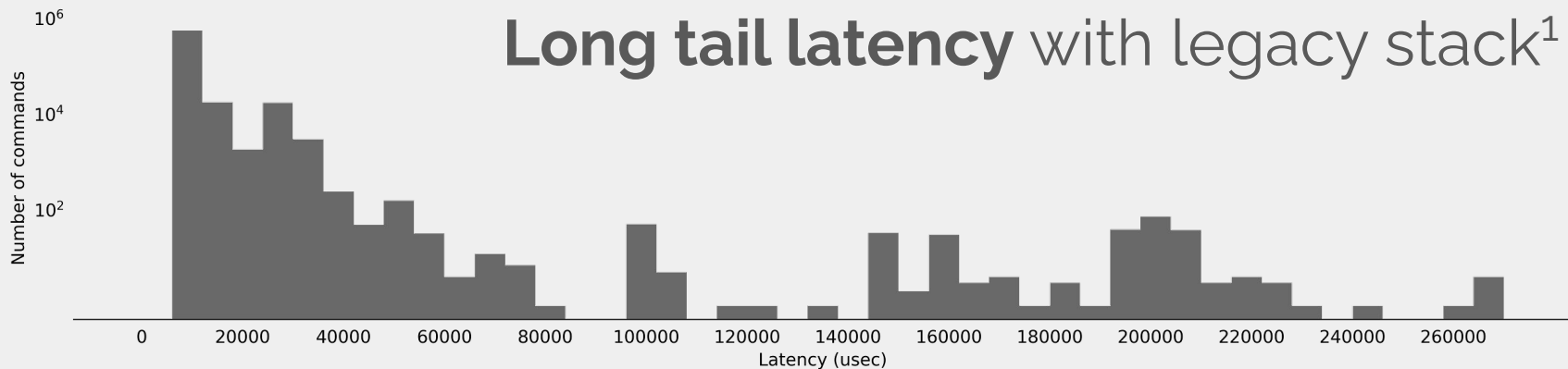
Unify and simplify — Phalanx supports both conventional as well as zoned devices. So you don't have to worry about mixing and matching devices.

Interop tested  
with major  
device  
vendors



Consistent,  
predictable  
performance at  
every scale — so  
your applications  
run at any scale.





Phalanx keeps devices  
**level headed**





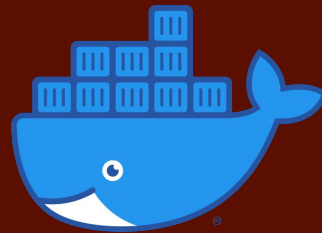
# There is **magic** in every IO.

Each request is intelligently prioritized and streamlined to reduce contention and eliminate hot spots.

# SMR use cases with Kalista IO

Phalanx + SMR =

# Going beyond blob storage



mongoDB®



GitLab

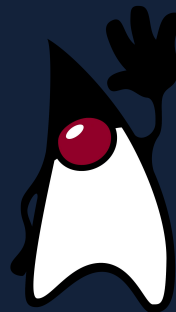
kubernetes



APACHE  
HTTP SERVER PROJECT

Phalanx + SMR + compute =

**Enabling**  
**innovation**



Phalanx + SMR + crypto =

**HODLing**

**your XCH**





Doing it **ALL**,  
with HM-SMR.



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# Contact

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"There is nothing impossible to him who will try." — Alexander

# References

1. Testing conducted by Kalista IO in July 2020 using XFS file system with Linux kernel 5.4.0-42-generic, and Intel® Core™ i7-4771 CPU 3.50GHz with 16GiB DDR3 Synchronous 2400 MHz RAM, and Western Digital Ultrastar DC HC530 CMR drive connected through SATA 3.2, 6.0 Gb/s interface. Write bench created a single 1GB file and executed 600,000 write commands each overwriting the first 64KB region of the file to capture latency values.
2. Testing conducted by Kalista IO in July 2020 using preproduction Olympus (Phalanx) software with Linux kernel 5.4.0-42-generic, and Intel® Core™ i7-4771 CPU 3.50GHz with 16GiB DDR3 Synchronous 2400 MHz RAM, and Western Digital Ultrastar DC HC620 host managed SMR drives connected through SATA 3.2, 6.0 Gb/s interface. Write bench created a single 1GB file and executed 600,000 write commands each overwriting the first 64KB region of the file capture latency values.

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