



MirageOS

towards a **smaller** and **safer** OS

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Tarides

MirageOS

MirageOS



An Operating System by yourself

MirageOS

```
unipi$ ls -alh unipi.hvt  
-rwxr-xr-x 1 dinosaure dinosaure 16M ... unipi.hvt
```

An smaller one

MirageOS



A safe one

OCaml
type system
bounds checking

MirageOS - a tool

MirageOS - a tool

```
unipi$ opam install mirage
unipi$ mirage configure -t hvt
unipi$ make depends
unipi$ mirage build
unipi$ file unipi.hvt
unipi.hvt: ELF 64-bit LSB executable, x86-64
```

MirageOS - a tool

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unipi$ opam install mirage
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unipi.hvt: ELF 64-bit LSB executable, x86-64
```

A `config.ml` to describe your *unikernel*.

Your `unikernel.ml` to implement the first *entry-point* of your Operating System.

MirageOS - a tool

- **Multiple targets (KVM, Xen, Unix)**
- **Orchestration of libraries (Functoria)**
- **Package manager (OPAM)**
- **Linking-process according the target (mirage)**

MirageOS - an ecosystem

MirageOS - an ecosystem

Network interface	tuntap, vmnet, rawlink
Protocol	ethernet, ARP, ICMP, TCP, UDP, DNS, HTTP, Git, SMTP
Security	X509, ASN.1, TLS, SSH
Cryptography	BLAKE2, SHA, ECDH, AES, RSA
Format	ZLIB, GZIP, FAT, TAR, PACK

MirageOS - an ecosystem



Interfaces lead the ecosystem



Demo



Conclusion