AppChains & Rollup Clusters

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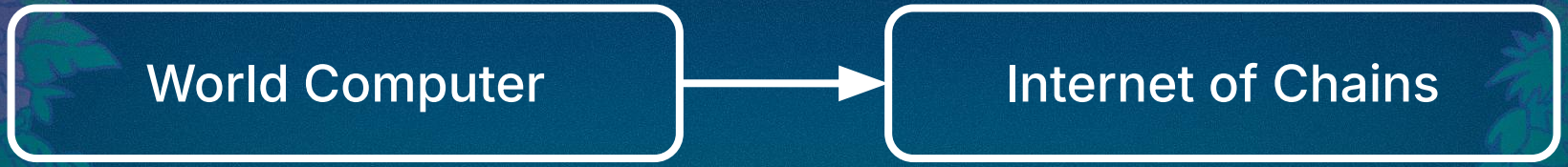
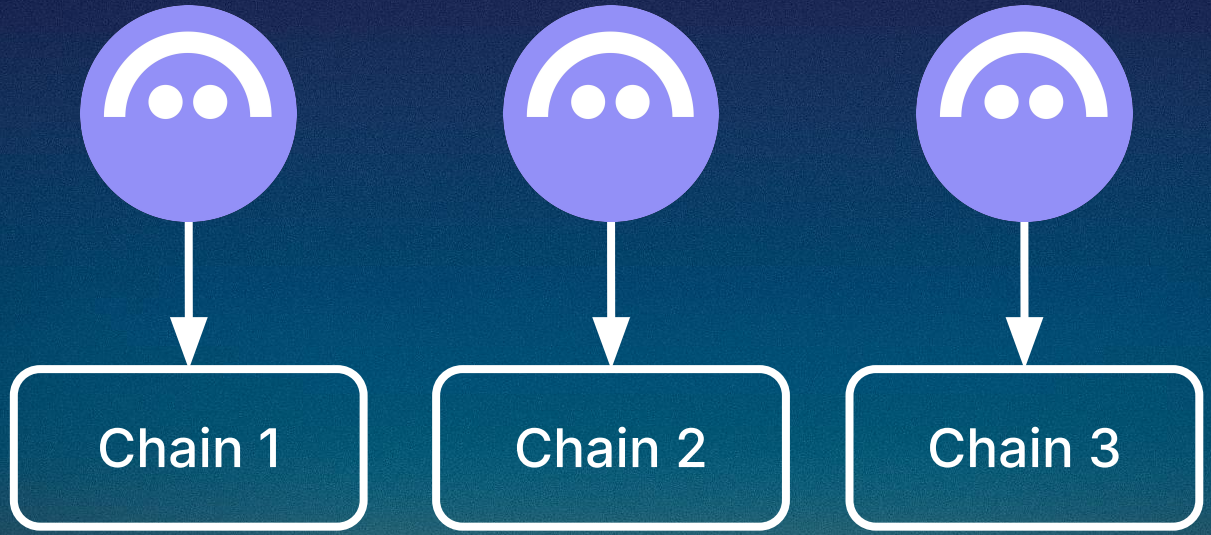
Rollup-centric Ethereum

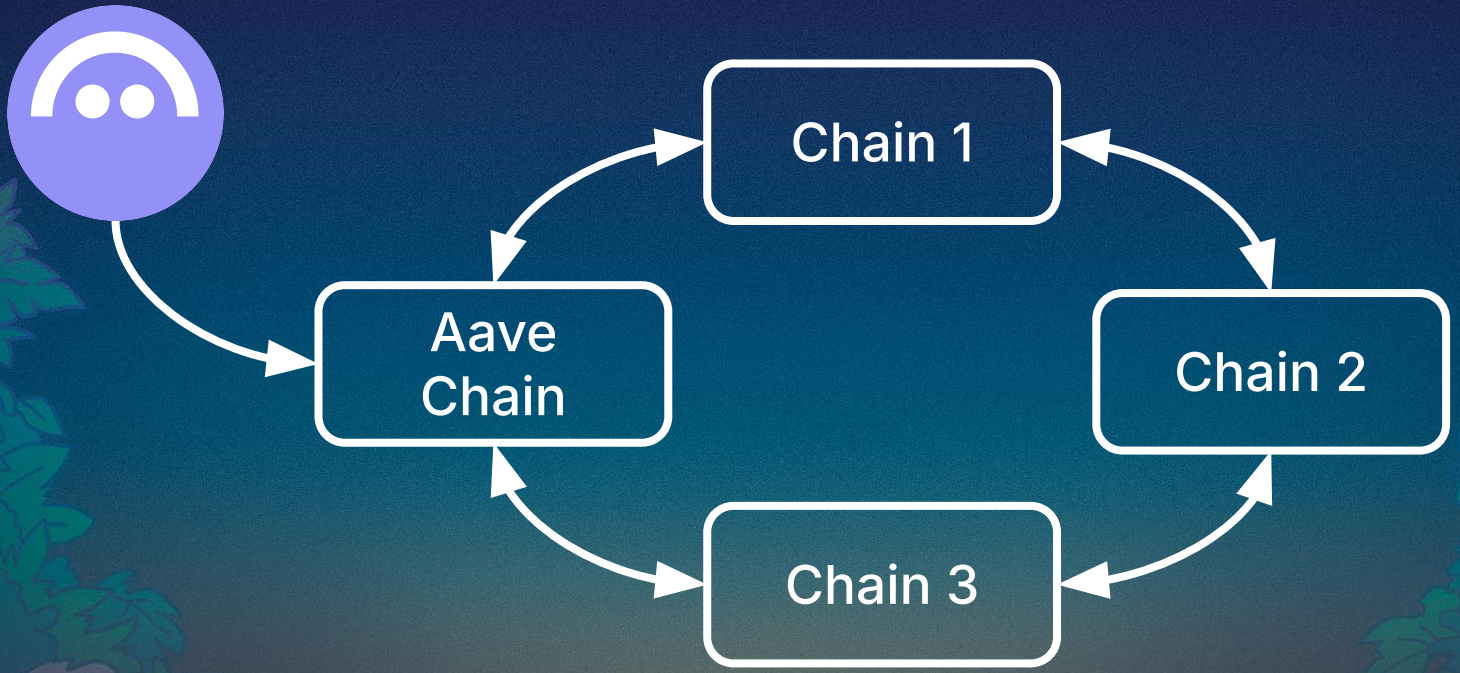


DApps → AppChains

Going from this...



...to this



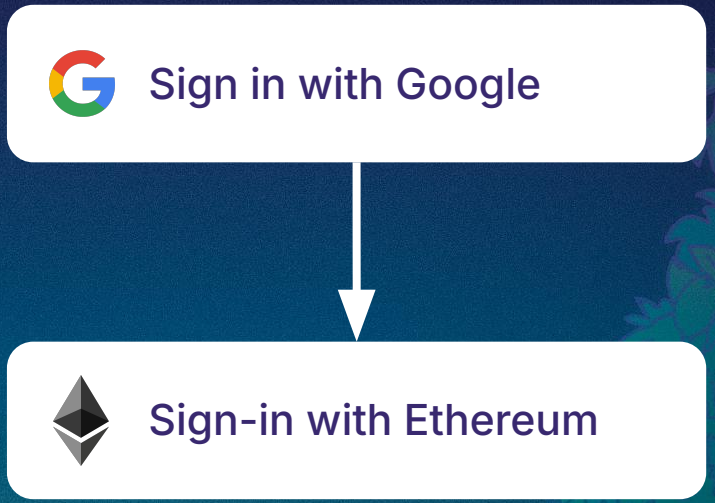
Why apps want this?

DevEx + Customizations + Ownership

Main blocker:
Lack of *native* interop

What’s a perfect interop UX?

1. Single account



2. Interaction with any app, anywhere

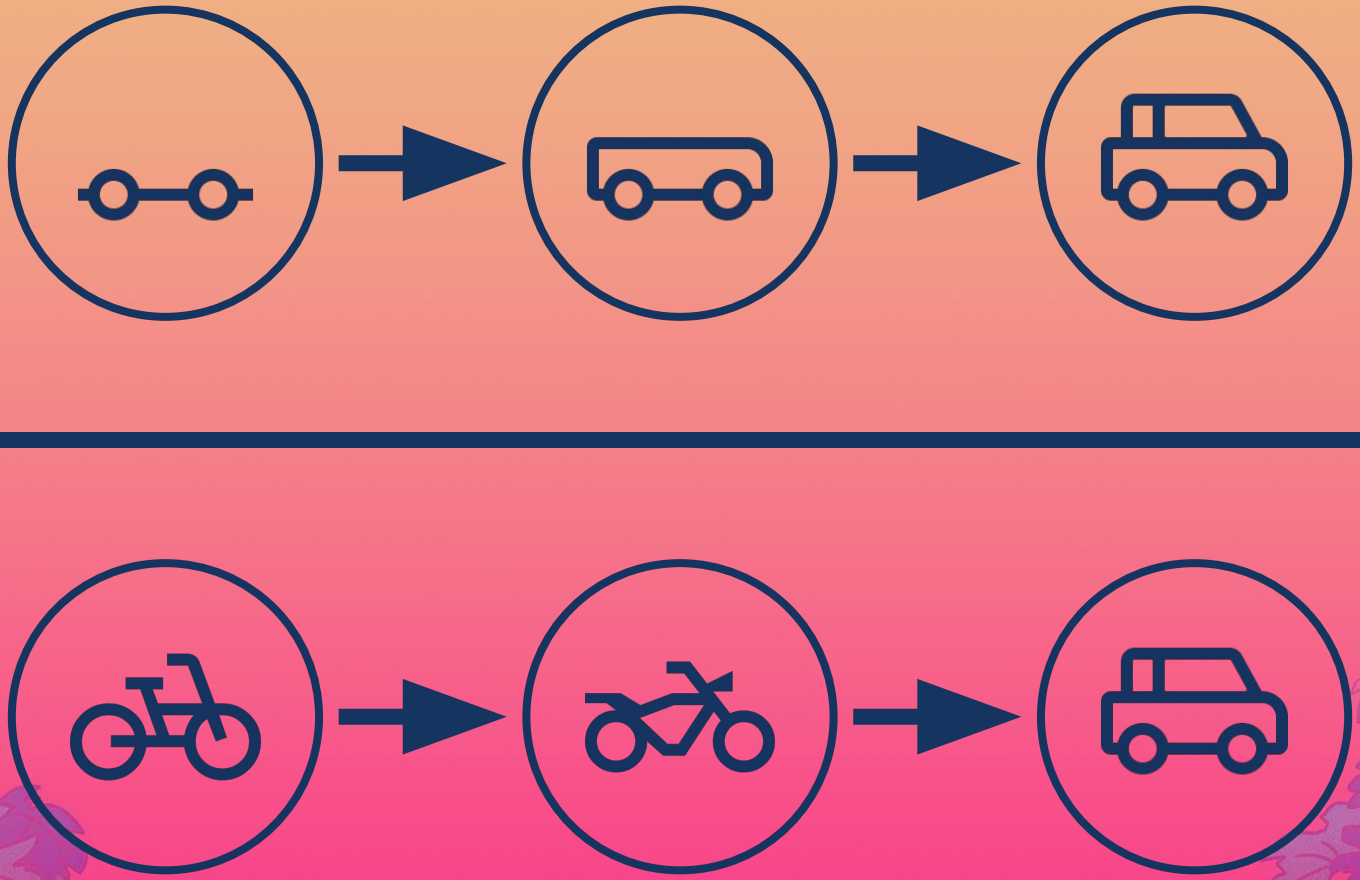
- No manual bridging
- No network switching
- Fast confirmation

3. Zero overhead

No bridging costs

No additional security risks

How to build it?



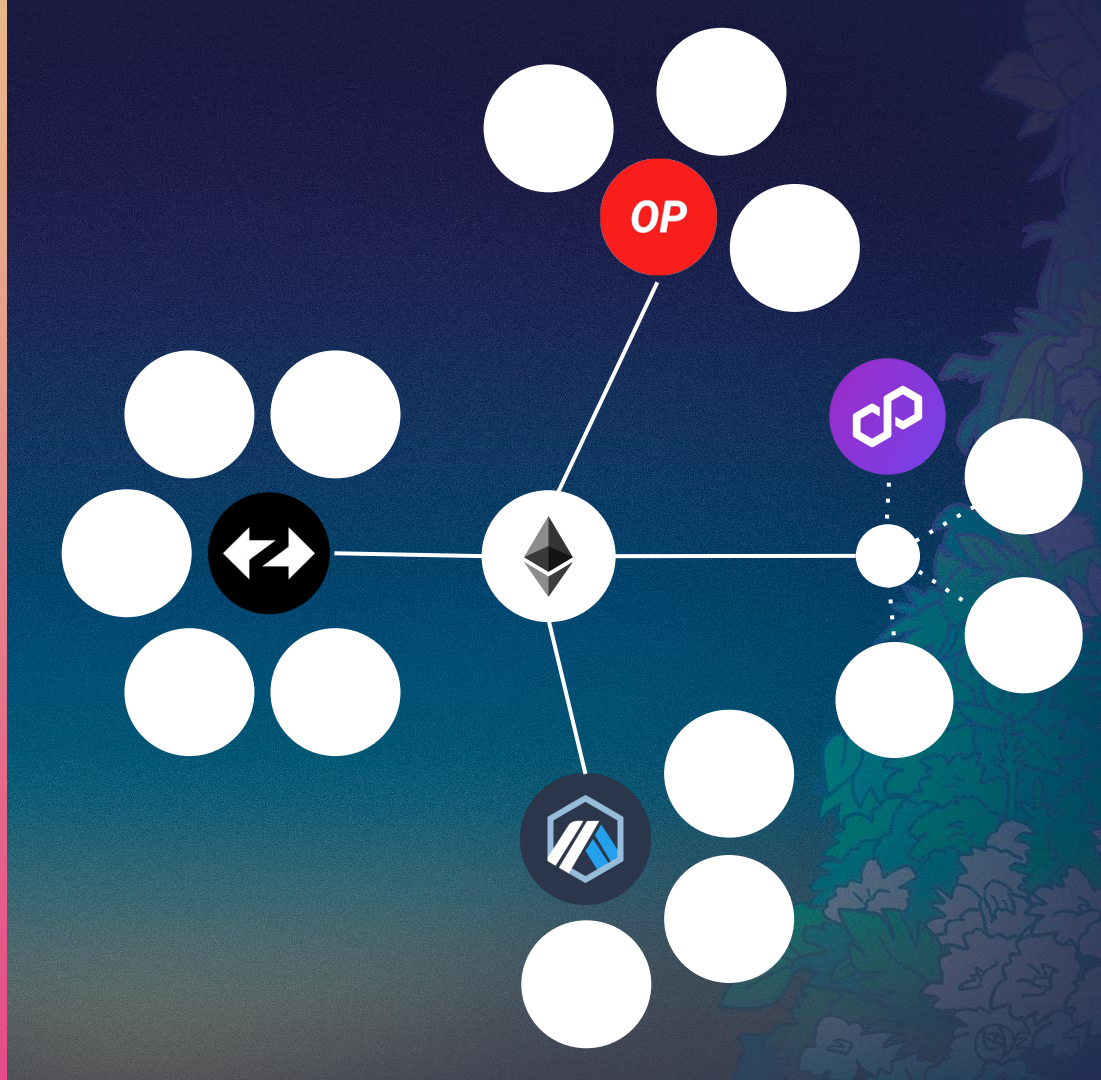
Interop standards

Intertop standards

- Hierarchical chain registry
- Chain-specific address format:
  0x123... 890@zksync.eth
- Cross-chain calls API

Rollup clusters

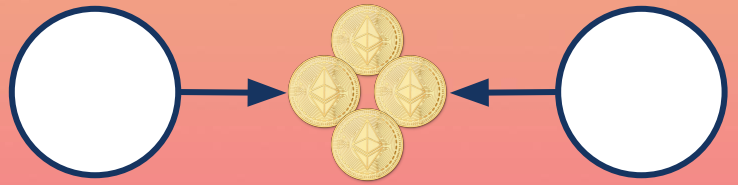
Rollup clusters



Intertop enshrined on L1

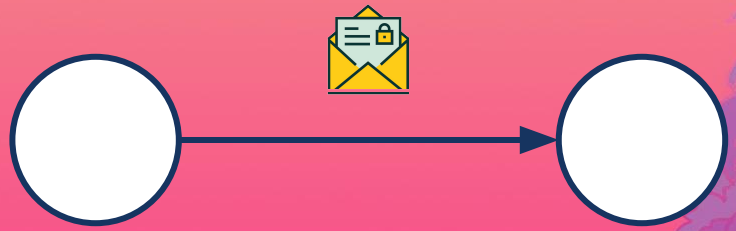
How rollup clusters work?

1) Shared liquidity mechanism



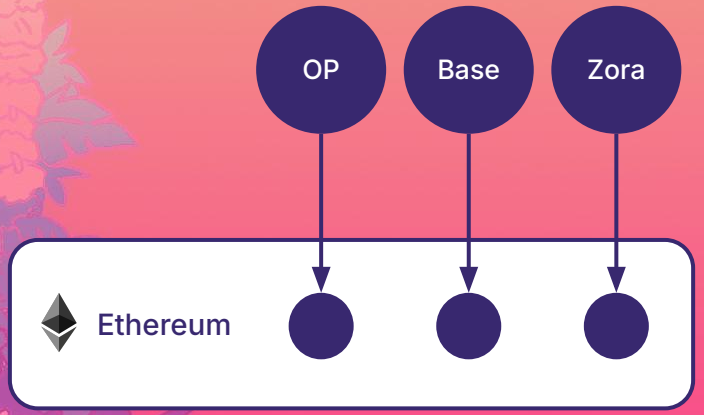
+

2) Native msg relay mechanism

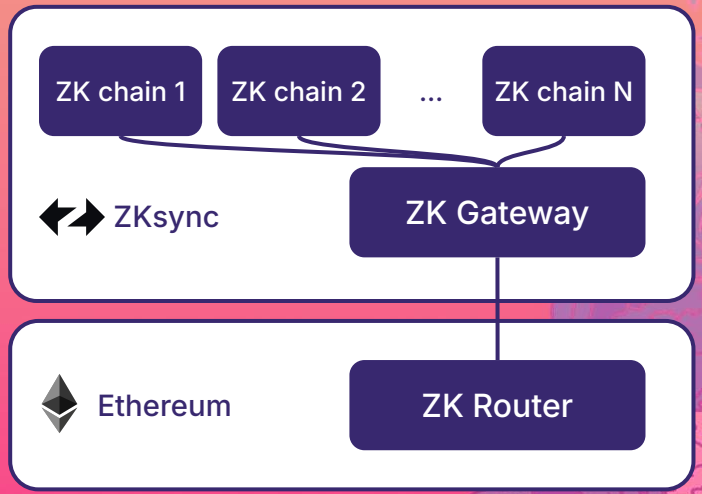


Shared liquidity

Separate bridges



Shared bridge



Native message relay

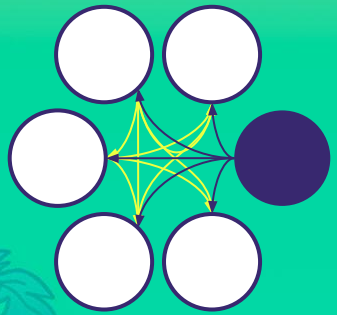
Proving that an event happened on the source chain without violating the security model of the cluster.

Native message relay

Optimistic

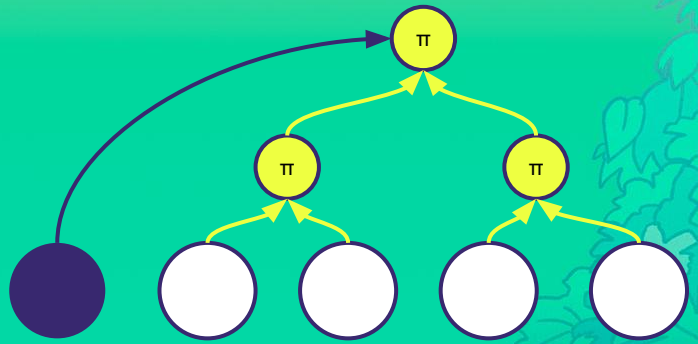
Every node verifies all transactions on all chains.

All chains link to all others here (to show too much work)



ZK

Every chain waits for proofs and DA aggregation from other chains.



Design differences

Optimistic

1) Trusted operators

ZK

1) Permissionless

Design differences

Optimistic

1) Trusted operators
2) Limited capacity

ZK

1) Permissionless
2) Uncapped

Design differences

Optimistic

1) Trusted operators
2) Limited capacity
3) Ethereum DA

ZK

1) Permissionless
2) Uncapped
3) Any DA

Design differences

Optimistic

1) Trusted operators
2) Limited capacity
3) Ethereum DA
4) Uniform architecture

ZK

1) Permissionless
2) Uncapped
3) Any DA
4) Custom designs

2025 is the year of AppChains