BLOCKSTACK BERLIN

A SIGNATURE FUND EVENT

Gaia Storage: User-owned Data

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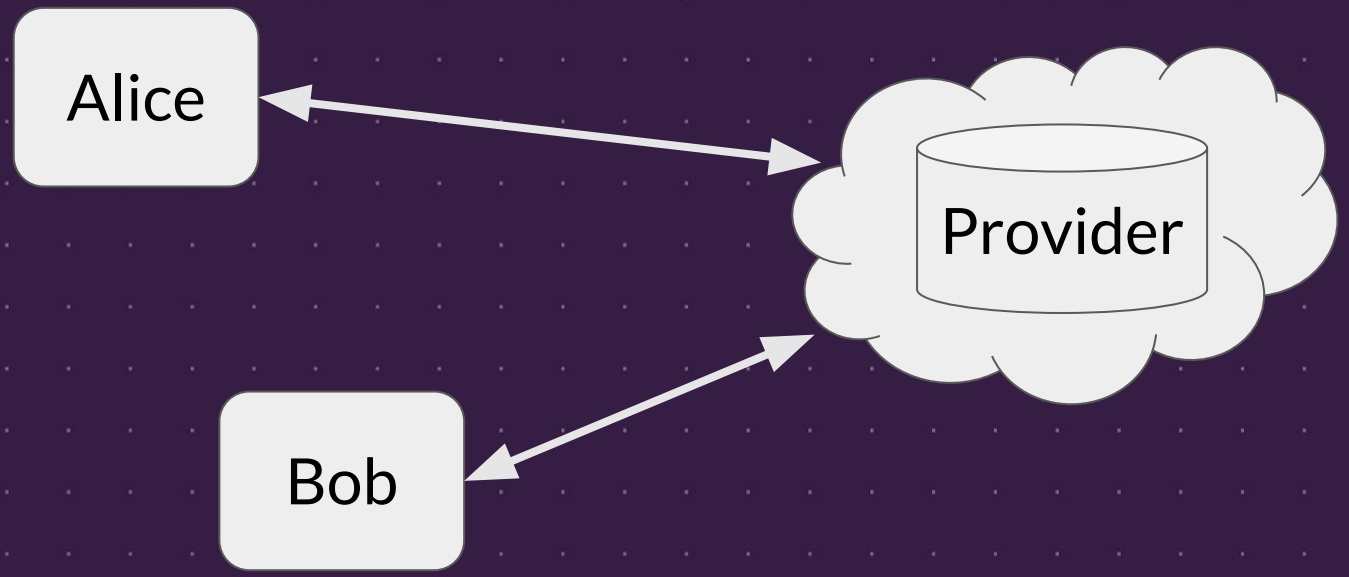
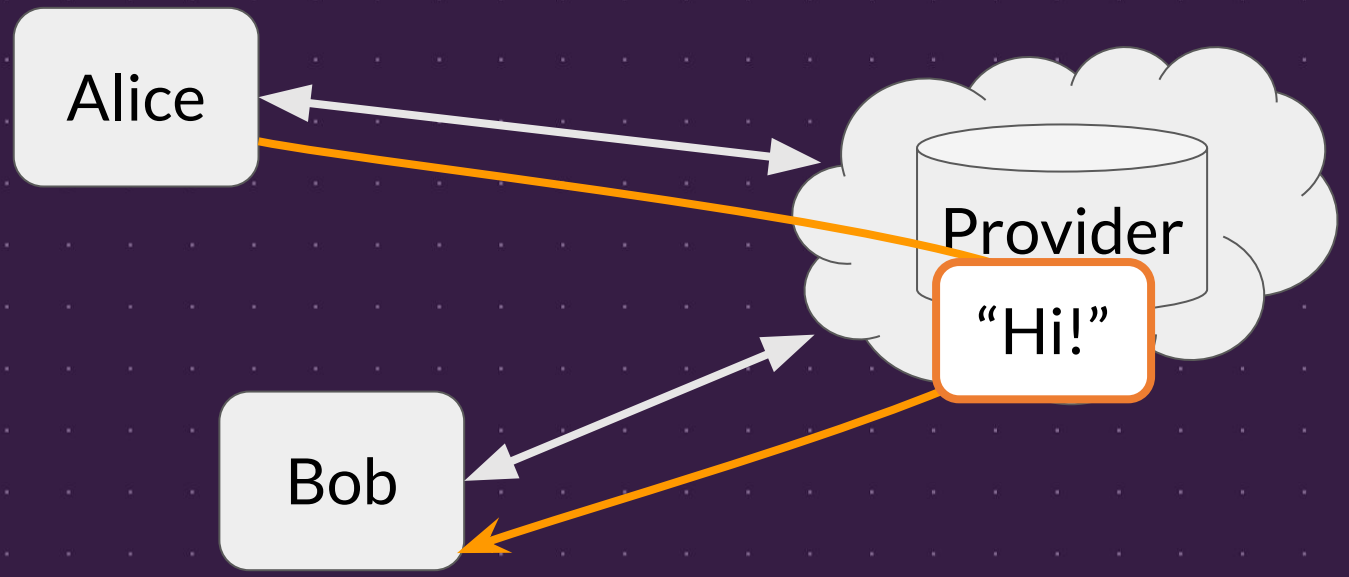
BLOCKSTACK

Provider-Oriented Storage



Provider-Oriented Storage



Provider-Oriented Storage

This is centralization!

Provider writes data on behalf of Alice and Bob
Provider governs how it is shared

Centralized Information Routing

How does Bob find Alice's message?

In a centralized system, the provider is *always* the source of information: Bob's client just asks the provider for the message

Problems of Centralized Storage

- Reads/writes are not strictly associated with the user
- Users cannot choose different storage providers
- Users cannot control who sees their data

For a user to own their data, these problems must be solved

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Lookup Specification

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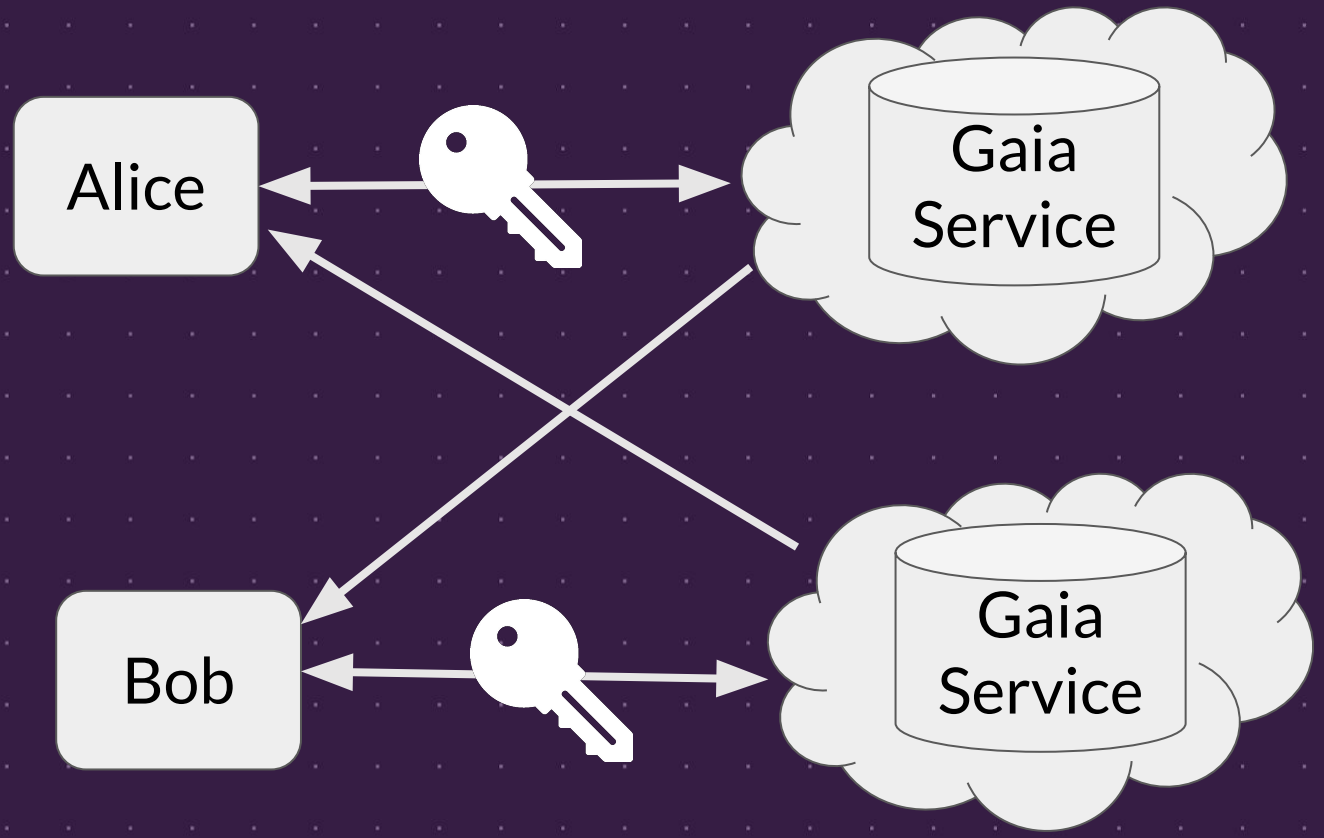
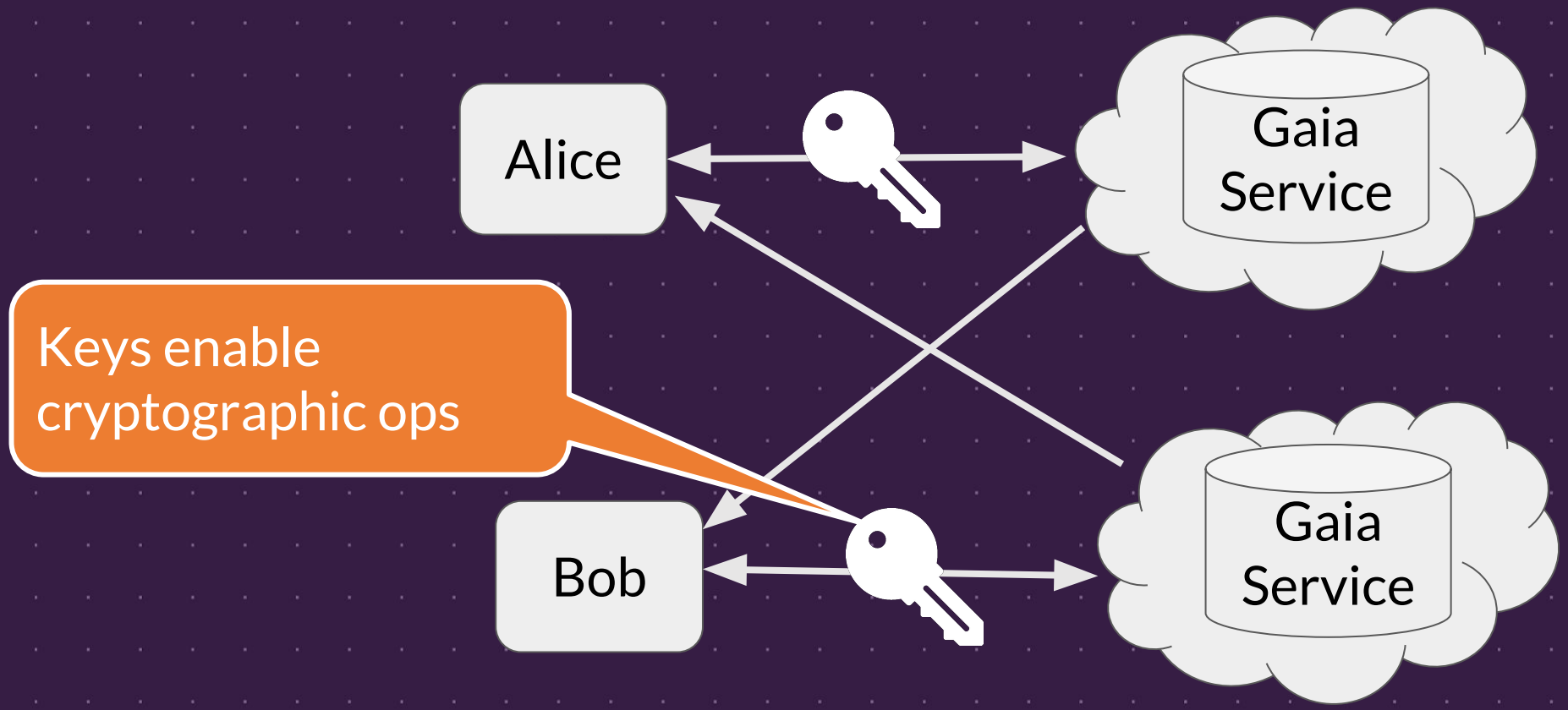
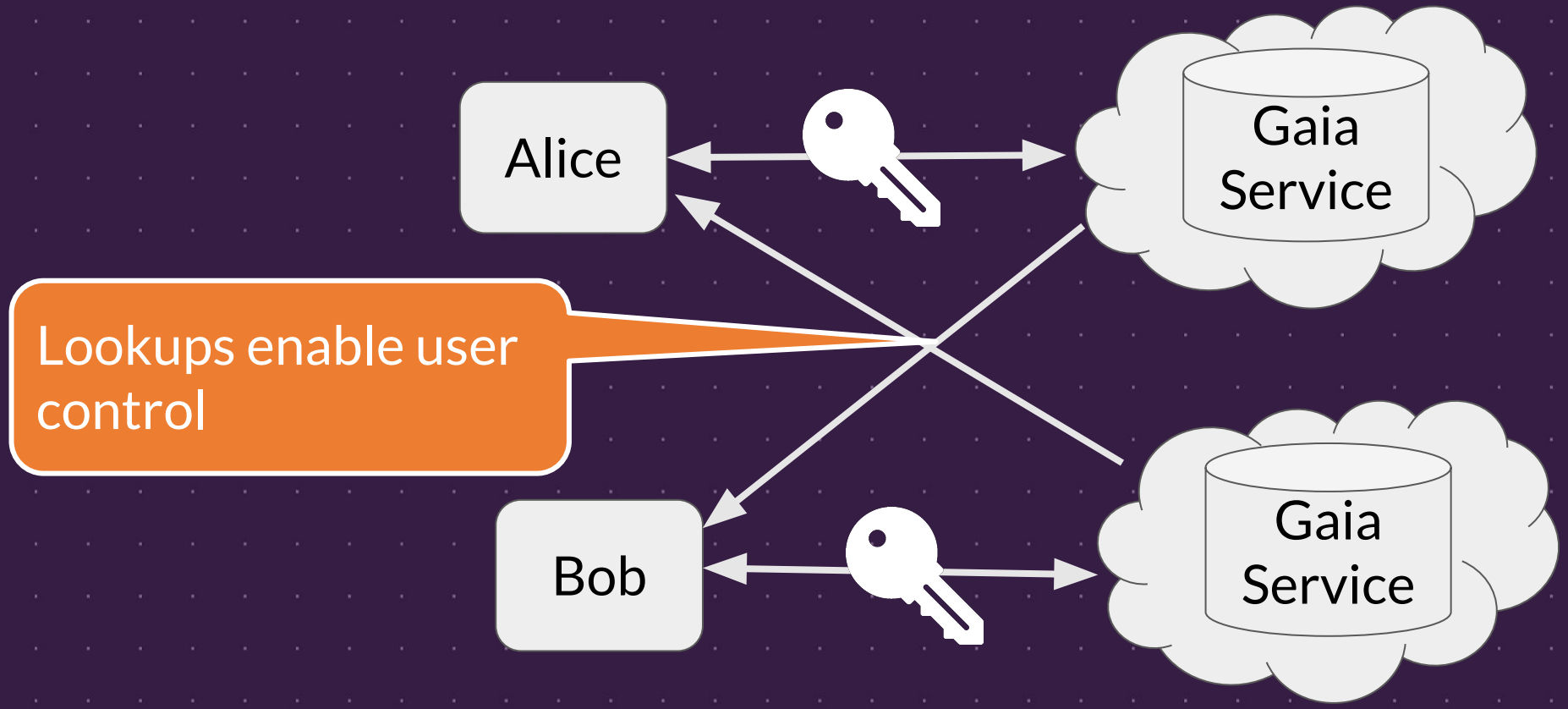
Gaia: User-Owned Storage



Gaia: User-Owned Storage



Gaia: User-Owned Storage



Looking Up User-controlled Data

1. Resolve username to data root/user profile (controlled via BNS and Atlas)
2. Discover app root (stored in data root)
3. Fetch data from the app root (Gaia service specification)

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If Alice wants to change Gaia providers, or run her own:
She controls her data root (via name ownership in BNS), therefore, she can change the app root URL

Control of Data == Lookup Path

The method of *finding* data defines the control of data

By requiring applications to perform this multi-step lookup, we put control in the user's hands, because the lookup *starts* with a user-owned data source

The Gaia Interface

PUT /store/<public-key-hash>/<filename>

writes a file on behalf of user defined by public-key-hash

GET /<public-key-hash>/<filename>

reads file from user defined by public-key-hash

GET /hub_info/

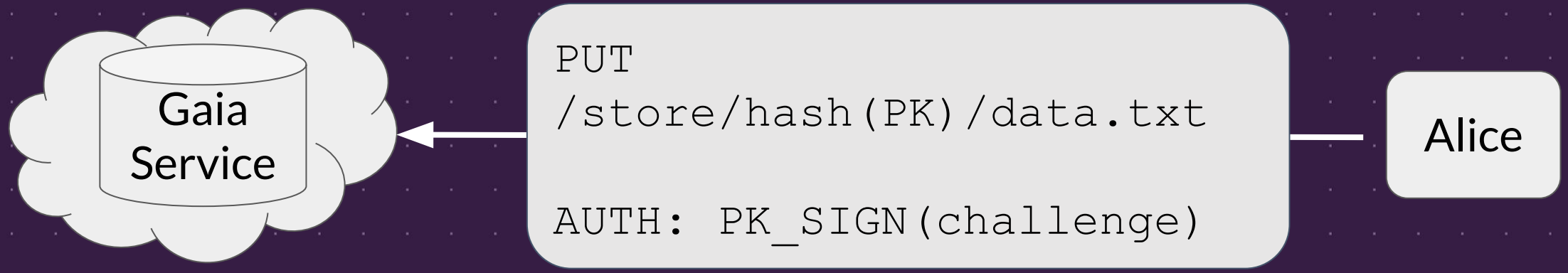
returns information about where the hub is writing

The Gaia Interface

The simplicity of this interface enables a wide range of implementations to exist:

A backend driver for Gaia needs to only be capable of writing a file to a given path

Writing to Gaia



Reading from Gaia

Reading from Gaia

Reading from Gaia

Using normal URL resolution allows for a multitude of protocols and deployment of best engineering practices (proxy caching, CDNs)

How we built a Gaia Provider

A data provider *may* operate multiple users' gaia stores and we provide a default one for Blockstack users

Gaia service provides a GET/PUT interface to a client

Write control is performed via user's ECDSA key signing (remember, each Blockstack user has an ECDSA key)

Thanks! And Now, Questions

Gaia Source Code: https://github.com/blockstack/gaia

We're looking for:

more deployments!

more backends (send PRs!)