Building with Bandada

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Privacy & Scaling Explorations | Ethereum Foundation

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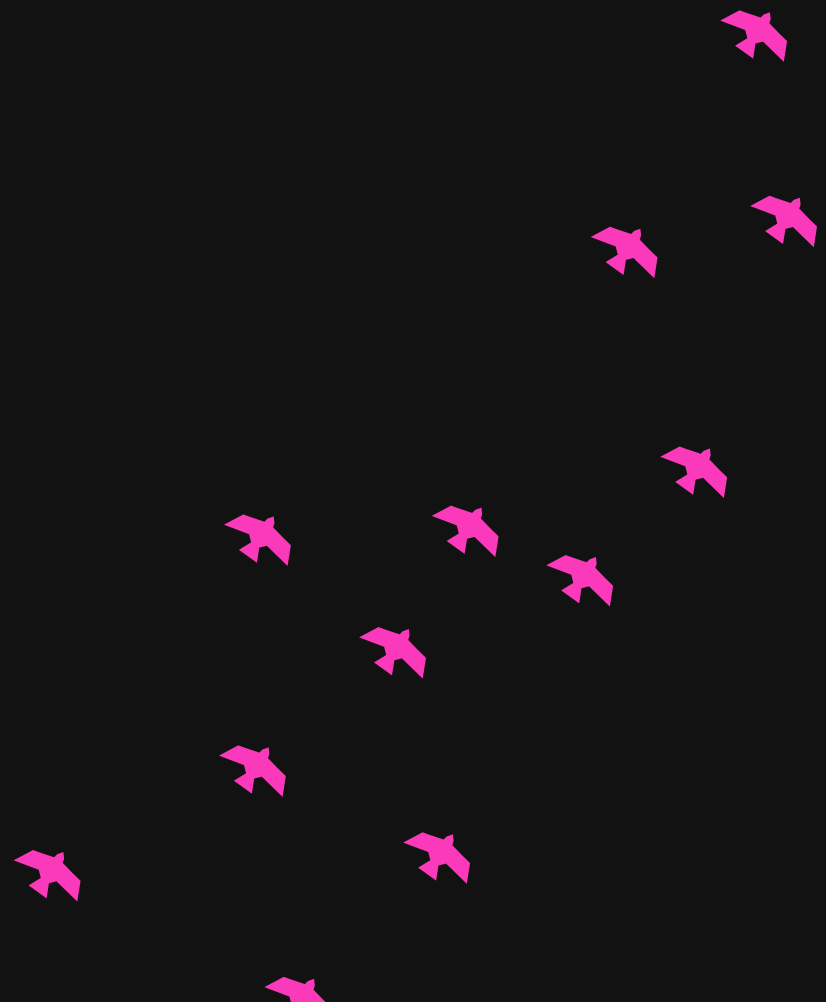


What is Bandada?

bandada.pse.dev

Bandada is an infrastructure to manage privacy-preserving groups. It also provides antisybil mechanisms by using credential groups so that you can only join a group if you meet a specific criteria.

Bandada is a public good project. It is free and open source. Everyone can use it and contribute to it.

- Bandada is a Spanish word that means group of birds. It is the same as the English word flock.

Use cases

- Platforms for DAOs
- Group of people in a private organization
- Groups of wallets holding a specific NFT
- Group of members with +500 Twitter (X) followers
- Group of members who have contributed to a specific GitHub repository and have +300 number of transactions on a specific network

Ideas to build with Bandada: github.com/orgs/bandada-infra/discussions/367

Functionalities

Functionalities	Off-chain	On-chain
Create group(s)	✅	✅
Update group(s)	✅	❌
Remove group(s)	✅	N/A
Invite code to join a group	✅	❌
Credentials to join a group	✅	❌
Add member(s)	✅	✅
Remove member(s)	✅	✅

Credential Groups

Providers	Validators
GitHub	Followers Personal Stars Repository Commits
Twitter (X)	Followers Following User
Blockchain	Balance Transactions
EAS	Attestations

- Groups support multiple credentials using logical operators such as AND, OR, NOT and XOR.

Credentials package: github.com/bandada-infra/bandada/tree/main/libs/credentials

Interact with Bandada

Tools	Off-chain	On-chain
API	✅	N/A
API SDK	✅	N/A
Dashboard	✅	✅

- Currently, the Bandada on-chain groups are Semaphore groups. You can work with them using the following Semaphore packages: @semaphore-protocol/contracts and @semaphore-protocol/data.

Learn more about Semaphore: semaphore.pse.dev

Start using Bandada

There are 4 ways you can start using Bandada in your project:

- API
- API SDK
- Installing packages manually
- Boilerplate

Bandada documentation

docs.bandada.pse.dev

API

The API has a list of endpoints to interact with the Bandada infrastructure.

It is compatible with any programming language that supports REST API requests.

api.bandada.pse.dev

Github

Bandada API Docs v2.4.0

A system for managing privacy-preserving groups.

invites

POST /invites

GET /invites/{code}

groups

GET /groups

POST /groups

API SDK

The API SDK is a wrapper of the API.

It is a JavaScript package that provides a list of functions to make it easier to work with the Bandada API.

Install the API SDK package

```
npm install @bandada/api-sdk
```

docs.bandada.pse.dev/api/api-sdk

API SDK Demo

github.com/bandada-infra/bandada-sdk-demo

API SDK Example

```
import { ApiSdk, GroupCreationDetails } from "@bandada/api-sdk"

const apiSdk = new ApiSdk()

const apiKey = "70f07d0d-6aa2-4fe1-b4b9-06c271a641dc"

const groupCreationDetails: GroupCreationDetails = {
  name: "Group 1",
  description: "This is Group 1",
  treeDepth: 16,
  fingerprintDuration: 3600
}

const group = await apiSdk.createGroup(groupCreationDetails, apiKey)

const members = ["1", "2", "3"]

await apiSdk.addMembersByApiKey(group.id, members, apiKey)

await apiSdk.removeMemberByApiKey(group.id, "1", apiKey)
```

Installing packages manually

@bandada/credentials: This library provides functions to validate users' credentials.

```
npm install @bandada/credentials
```

@zk-kit/logical-expressions: This library facilitates the work with logical (boolean) expressions. It allows you to tokenize and evaluate any logical expression. It supports the use of parentheses.

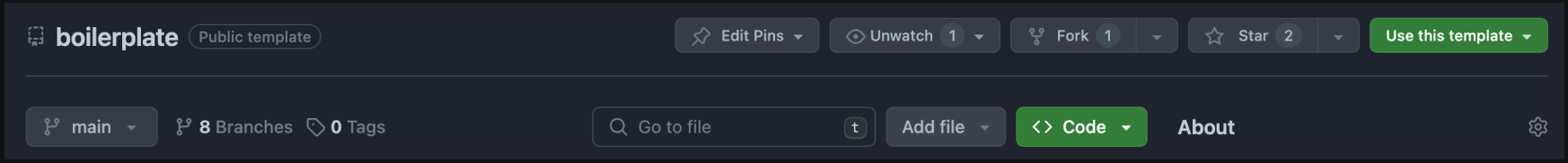
```
npm install @zk-kit/logical-expressions
```

Boilerplate

Boilerplate live app:
demo.bandada.pse.dev

You can fork it, clone it or use it as a template:

github.com/bandada-infra/boilerplate



Roadmap

- Improve developer experience (Documentation, SDKs, CLI, templates).
- Integrate other protocols like POAP, Zupass, etc.
- Work on the concept of Universal Groups, which are groups compatible with other protocols such as Semaphore, MACI and RLN.
- Work on on-chain groups to have the same functionalities that off-chain groups have now (join groups with invite link, credential groups, etc.).
- Build a modular architecture that supports several data structures and different types of groups.

github.com/orgs/bandada-infra/discussions/350

Hacker Guide

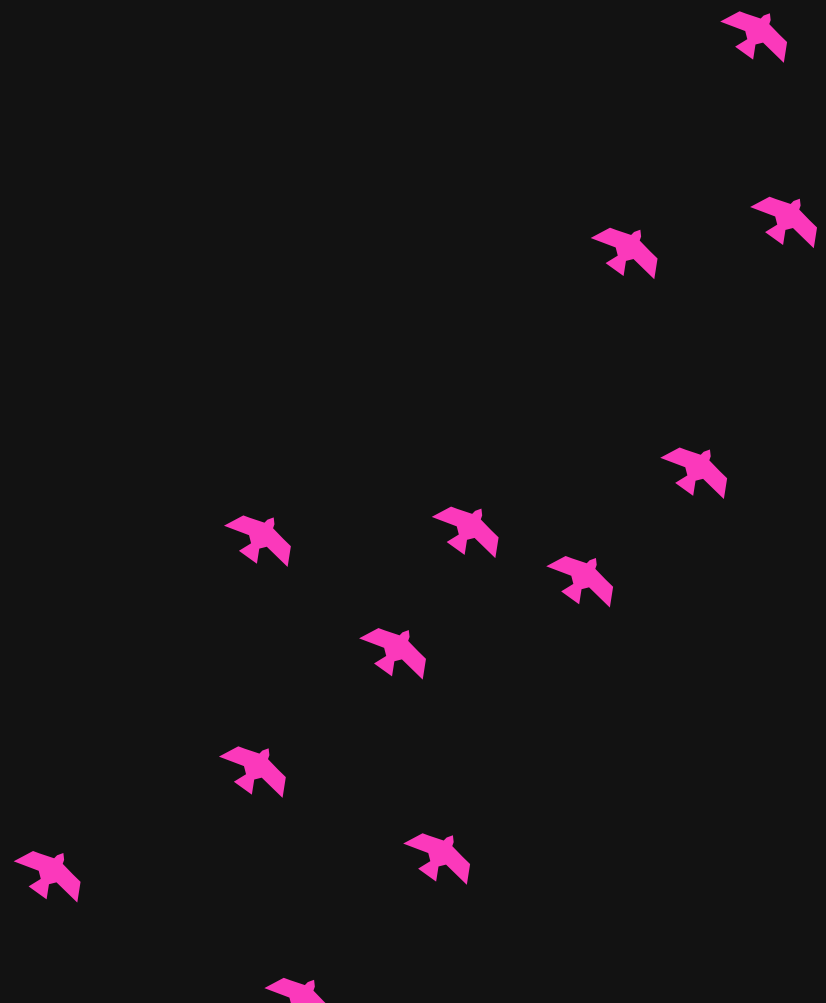
Document with the main Bandada information and links for hackers.

bandada.pse.dev/hackathon-guide

Presentation slides

This presentation is open source, you can check the slides and code.

vplasencia.github.io/ethrome-2024-bandada-slides



Connect

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