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OAuth WG Virtual Interim
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TMI-BFF

Token Mediating and session Information Backend For Frontend

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TL;DR

- Mechanism for a JS frontent to delegate token requests and storage to its backend, while retaining the ability to invoke API directly from frontend code
- Formalization of a common practice

Important Note

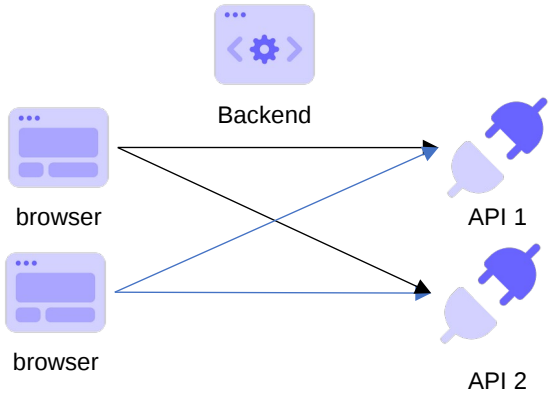
- Some people interpret BFF as “the backend does everything, including routing API calls”
- That’s NOT how we use the term here. We call that “Full BFF”
- In this document we use BFF to indicate that the backend exists and does some of the work
- BFF TMI does NOT describe a Full BFF
- BFF TMI does NOT try to replace a Full BFF

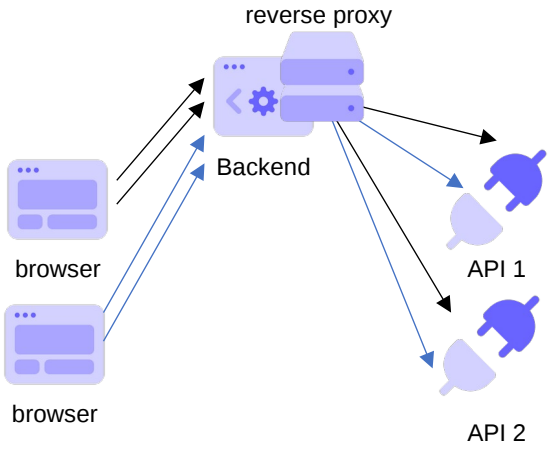
Agenda

- Why TMI-BFF
- Main Flow
- Discussion

Why TMI BFF (1/3) – vs Full BFF, Reverse Proxy

- Whenever possible, it is more secure to keep tokens out of the browser
  - Eg JS frontend accessing API via reverse proxy on backend
- But it is not always possible
  - Performance
  - Costs
  - Backend limitations
  - Misc requirements
    - Regions, etc





Why TMI BFF (2/3) – vs Code+PKCE

- Code+PKCE from JS is viable, but complex
  - Config settings
  - Many moving parts
  - Requirements not satisfied by every AS (RT rotation, CORS)

Why TMI BFF (3/3) – Common Workaround

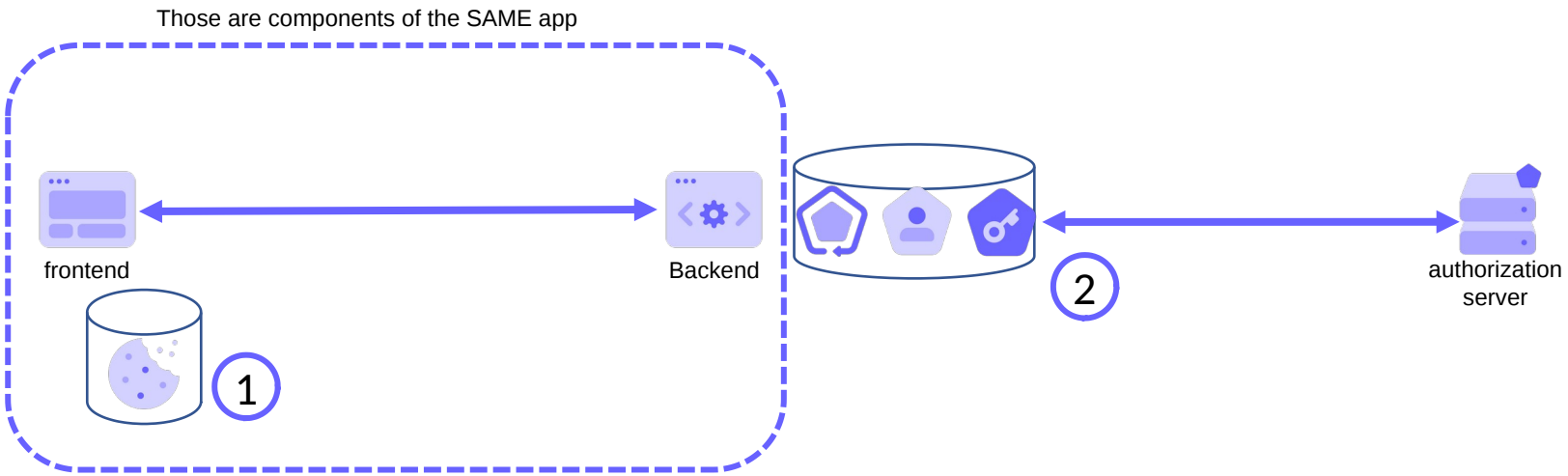
- Developers use confidential code flows on the backend to obtain ATs…
- …and pass them back to their JS to perform API calls from the browser
- Issues
  - Custom code
  - Custom frontend-backed protocol
  - No threat model
  - No interop, every app/dev stack reinvents the frontend-backend relationship

TMI-BFF Elements

- Two new endpoints on the app
  - **`bff-token`** – for the frontend to ask for ATs from the backend
  - **`bff-sessioninfo`** - for the frontend to ask the backend session info (eg username)
- Message format for requesting ATs, session info
- Error messages
- Security considerations

Main Flow (1/3) - Prerequisites

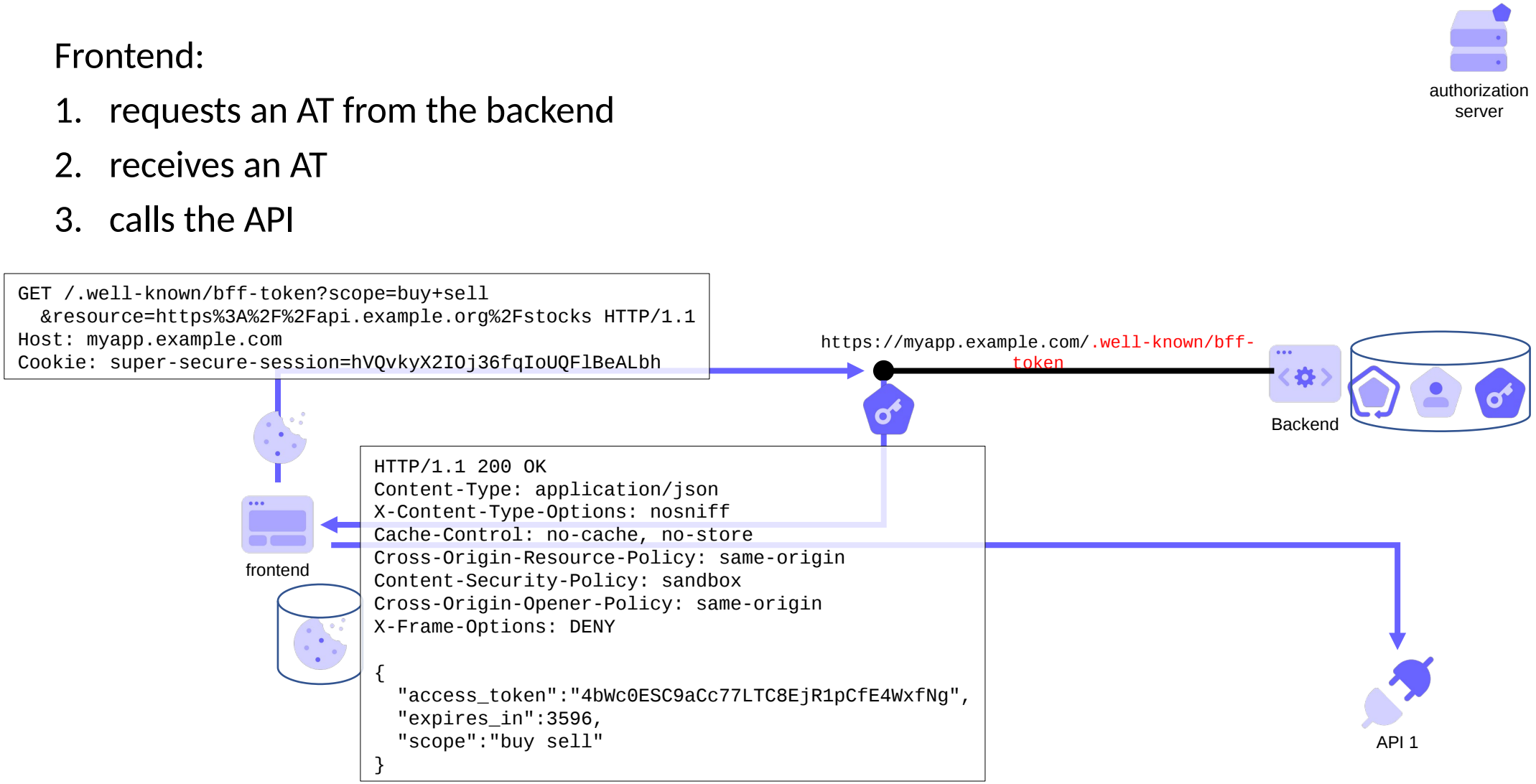
1. Classic web sign on the app, establish session
2. Get access token (AT), any other artifact (RTs?)



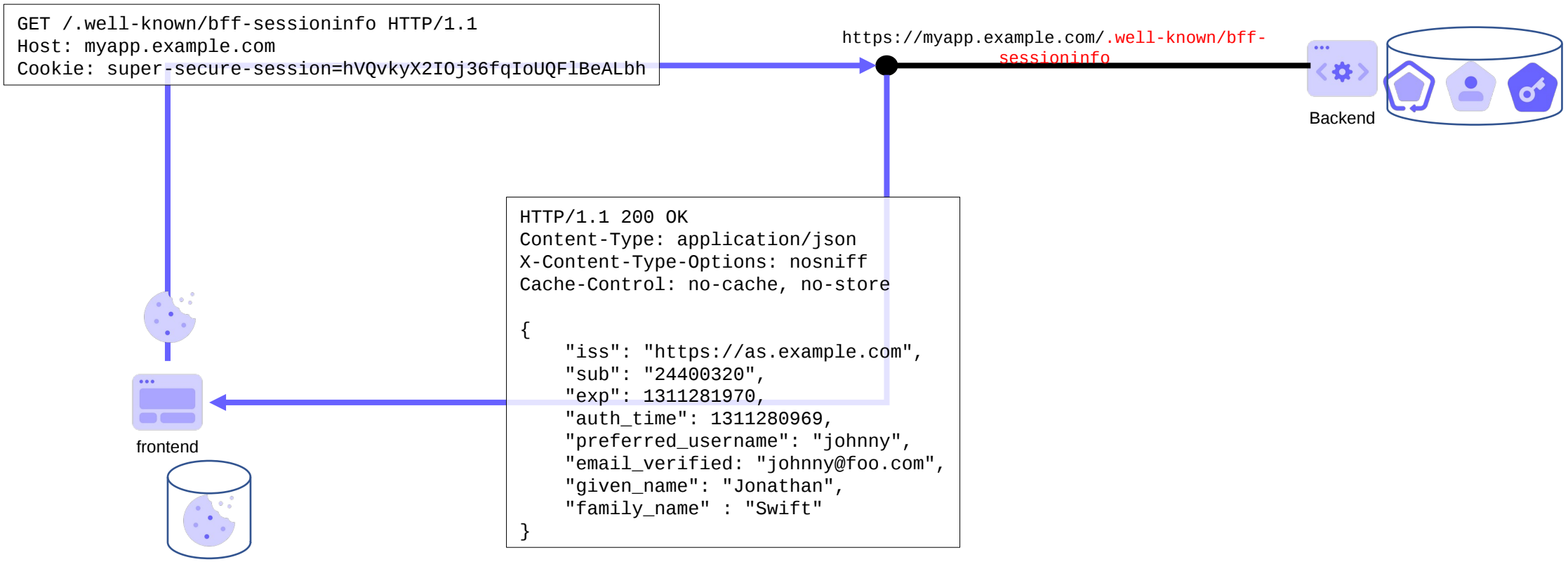
Main Flow (2/3) - getting an AT

Frontend:

1. requests an AT from the backend
2. receives an AT
3. calls the API



Main Flow (3/3) - Getting Session Info



Advantages

- JS is ultrasimple (no config whatsoever)
- The new endpoints can be easily added to existing middleware
- API calls are perfomed from the user-agent
  - Less burden on backend, better perf
- Works with any AS, including old implementations
- Easy mix & match interop between frontend stacks (react, angular etc) and backend stacks (Node, Ruby, ASP.NET etc)
- Works with any sign in tech (as long as it results in a session cookie)
- Easy testing, mocking, etc

Changes in draft -01

- Extra security measures in the HTTP headers when returning ATs
- Removal of all claims of security benefits
- Clarified “BFF” vs “Full BFF”
- Reccomandation to go Full BFF when viable
- More thorough explanation of prerequisites (preexisting session, tokens)
- Clarified relationship with the Browser BCP

https://tools.ietf.org/html/draft-bertocci-oauth2-tmi-bff-01

TL;DR 2

- People are doing this today, without any guidance. Two possibilities:
  - We find reasons for which this is so insecure NO ONE should do this. We articulate that super clearly and start a campaign against it
  - We find the approach acceptable. In that case, leaving developers to their own device without guidance is less than ideal

Open Issues

- Should we handle interactive token acquisition case?