Access control, REST and sessions

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Interactions with REST APIs are stateless

each request contains all ... information necessary ... to understand the request

Motivation:

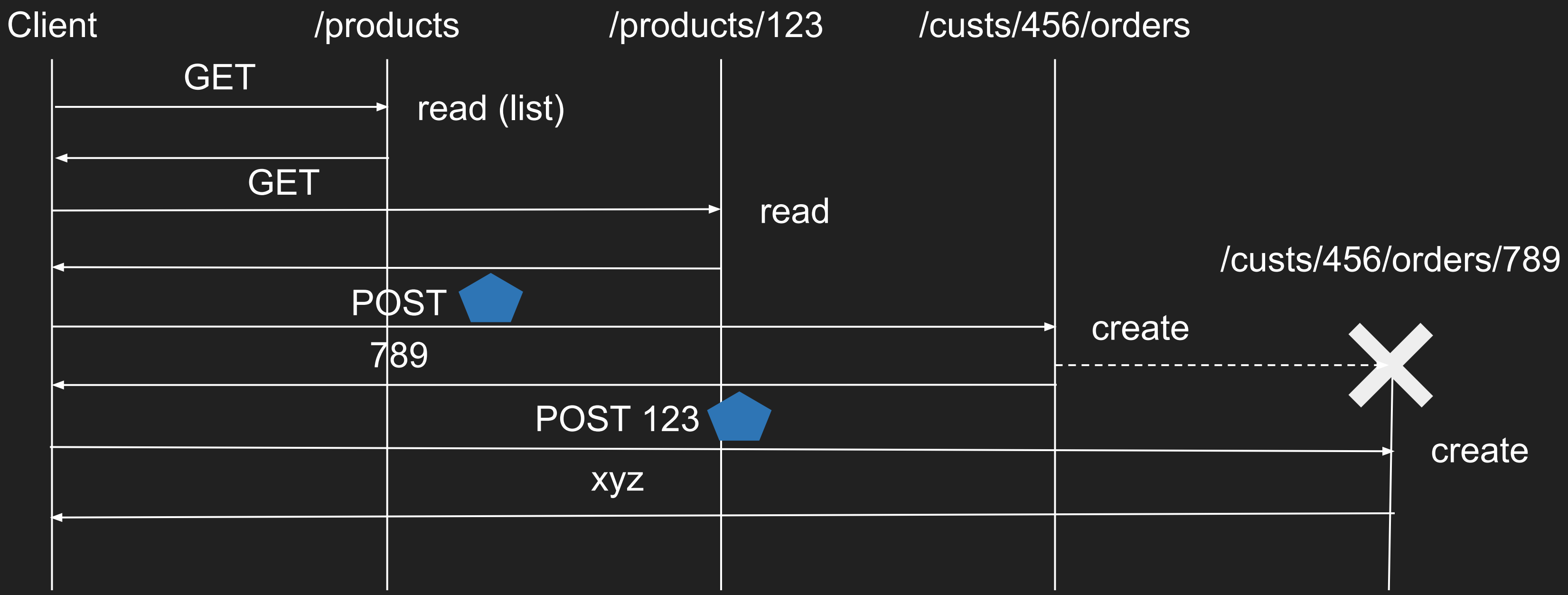
1. scalability
2. processing need not understand interaction semantics (service orchestration)
3. services may be dynamically rearranged
4. cacheable

Fielding, PhD dissertation, p. 93

5. security

Stateless interaction means:
no sessions!

How do you do e-commerce without state?



E-commerce is stateful

State is in

- the resources
- the client

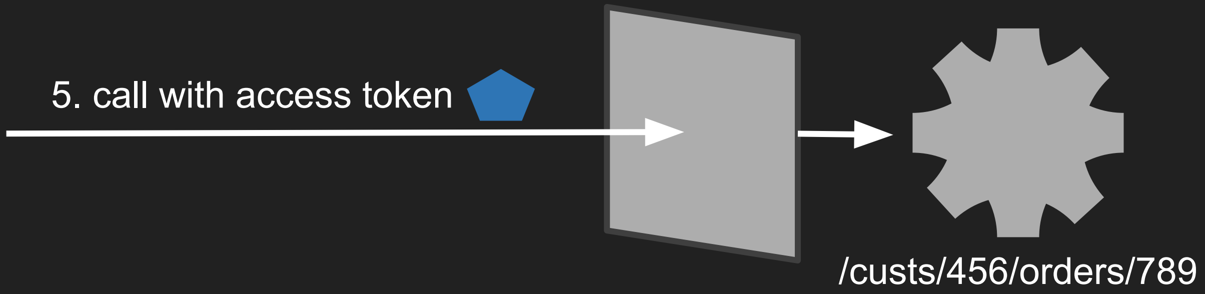
but interaction is stateless.

No sessions!

What about access control?

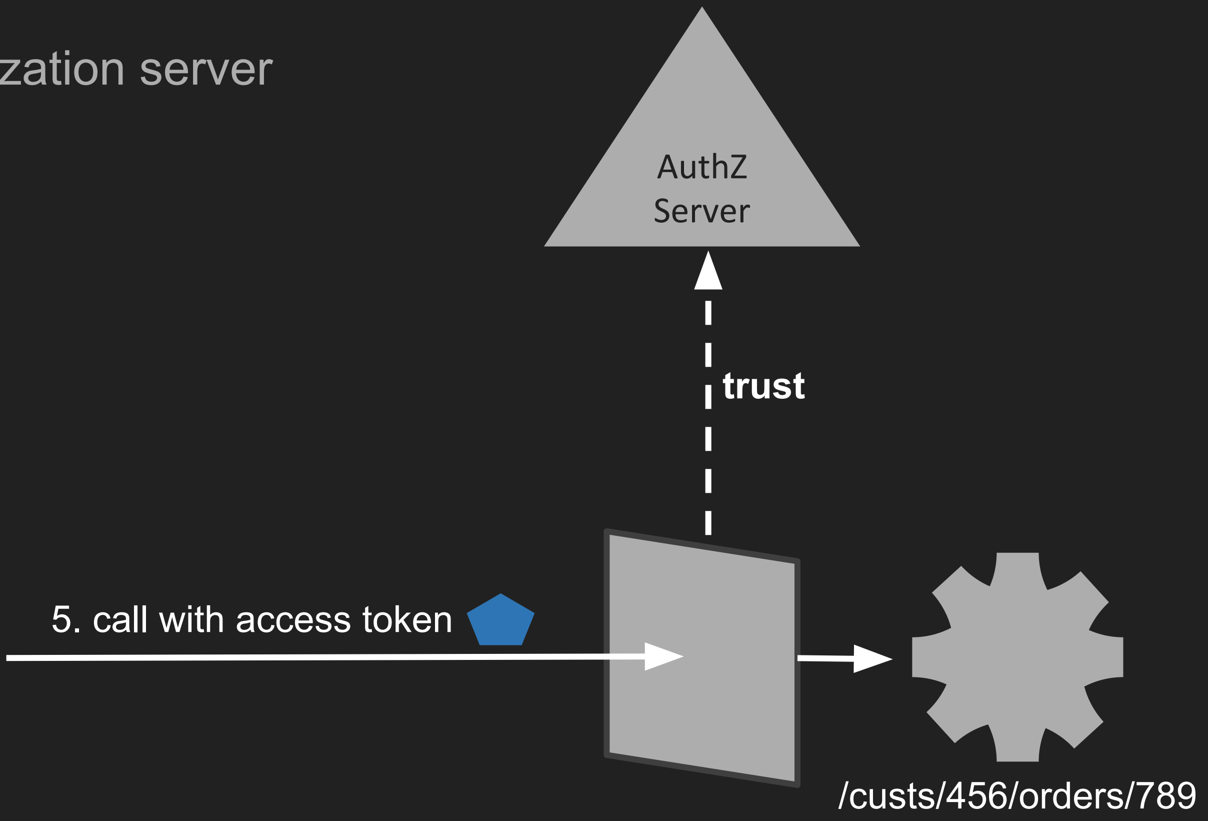
Sensitive resources require a valid access token

Access token informs authZ decision

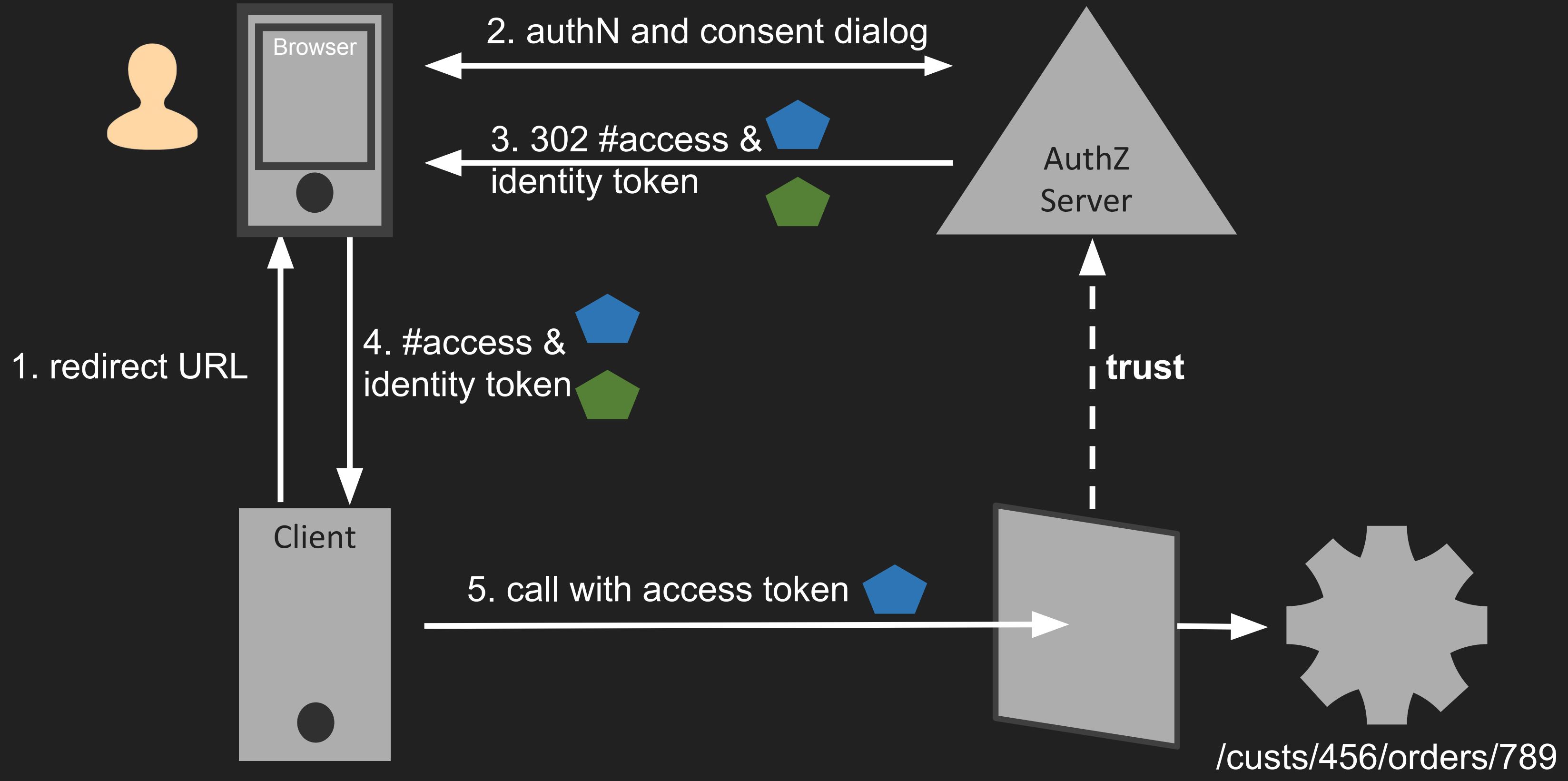


What is a valid access token?

Issued by an authorization server



How does the client obtain an access token?


Browser
2. authN and consent dialog
3. 302 #access & identity token
AuthZ Server
1. redirect URL
4. #access & identity token
trust
Client
5. call with access token
/custs/456/orders/789

What if...

token is stolen?

client goes rogue?

user loses trust in the client?

...

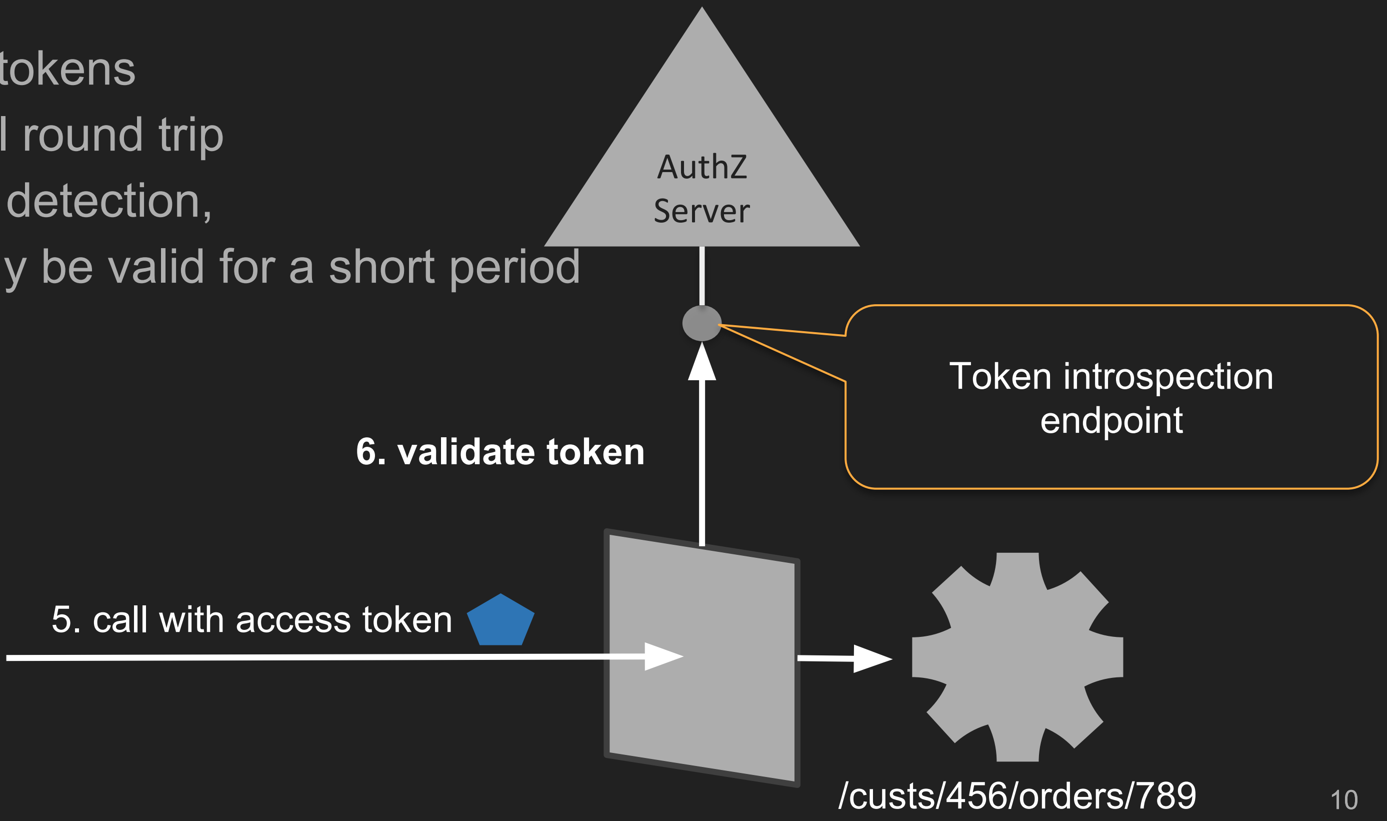
Revoke the access token!

So-called reference tokens

Downside: additional round trip

Revocation requires detection,

so tokens should only be valid for a short period



Short-lived tokens

Shorter access token lifetime → smaller window of opportunity for attacker

but requiring the user to authenticate frequently is anathema

Could we use OAuth 2 refresh tokens?

Yes, but...

A novel idea:

sessions

between user agent and authorization server

This is great because...

users only have to log in once per session

only session implementation in the authZ server

But important problems remain

1. users should not even be aware of a new access token request
2. how do users log out?

Silent authentication

hidden iframe

- makes token request with `prompt` parameter set to `none`
- receives access token
- sends it to parent with HTML5 `postMessage()`

brittle?

Log out

OAuth revocation endpoint? Perhaps partially

Some authZ servers provide a proprietary `/logout` endpoint

3 OIDC drafts:

- back-channel logout
- session management
- front-channel logout

Struggling with Single Log Out

Conclusions and recommendations

- keep your APIs RESTful and stateless - thus no sessions
- sessions between client and authZ server avoid need to re-authenticate
  - caveat: silent authentication is clunky
  - perhaps refresh tokens are not so bad
- Single Log Out may be a good deal more complex than Single Sign On

About me

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