Cut and Paste Attack

Oauth WG @ IETF95

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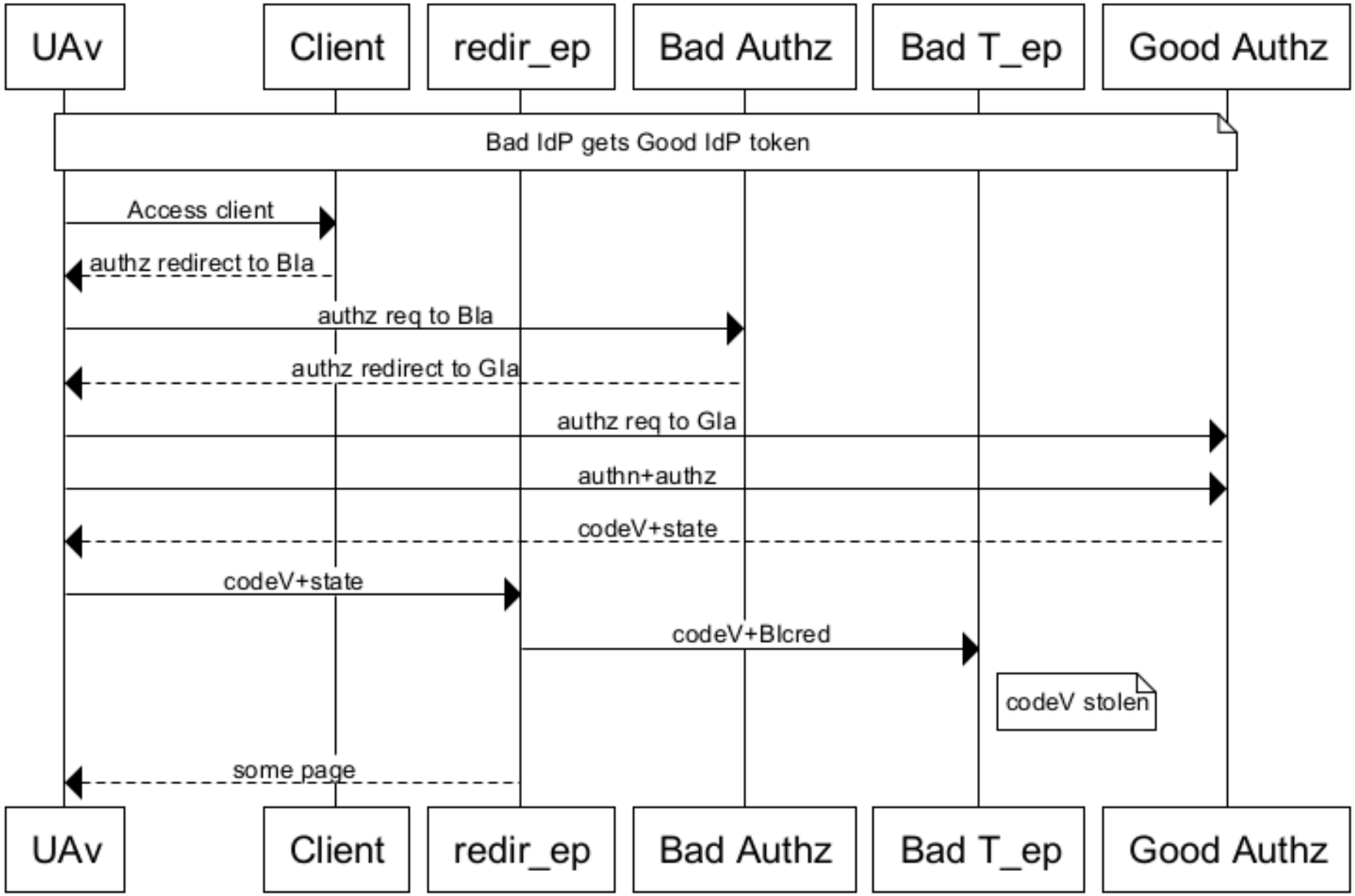
Cut and paste attack in essence is:

- Attacker
  - gets “code” or “token” of the victim somehow; and
  - pastes it to his own session.
- It has been known for a long time
  - E.g. Bradley, J. “The problem with OAuth for Authentication”

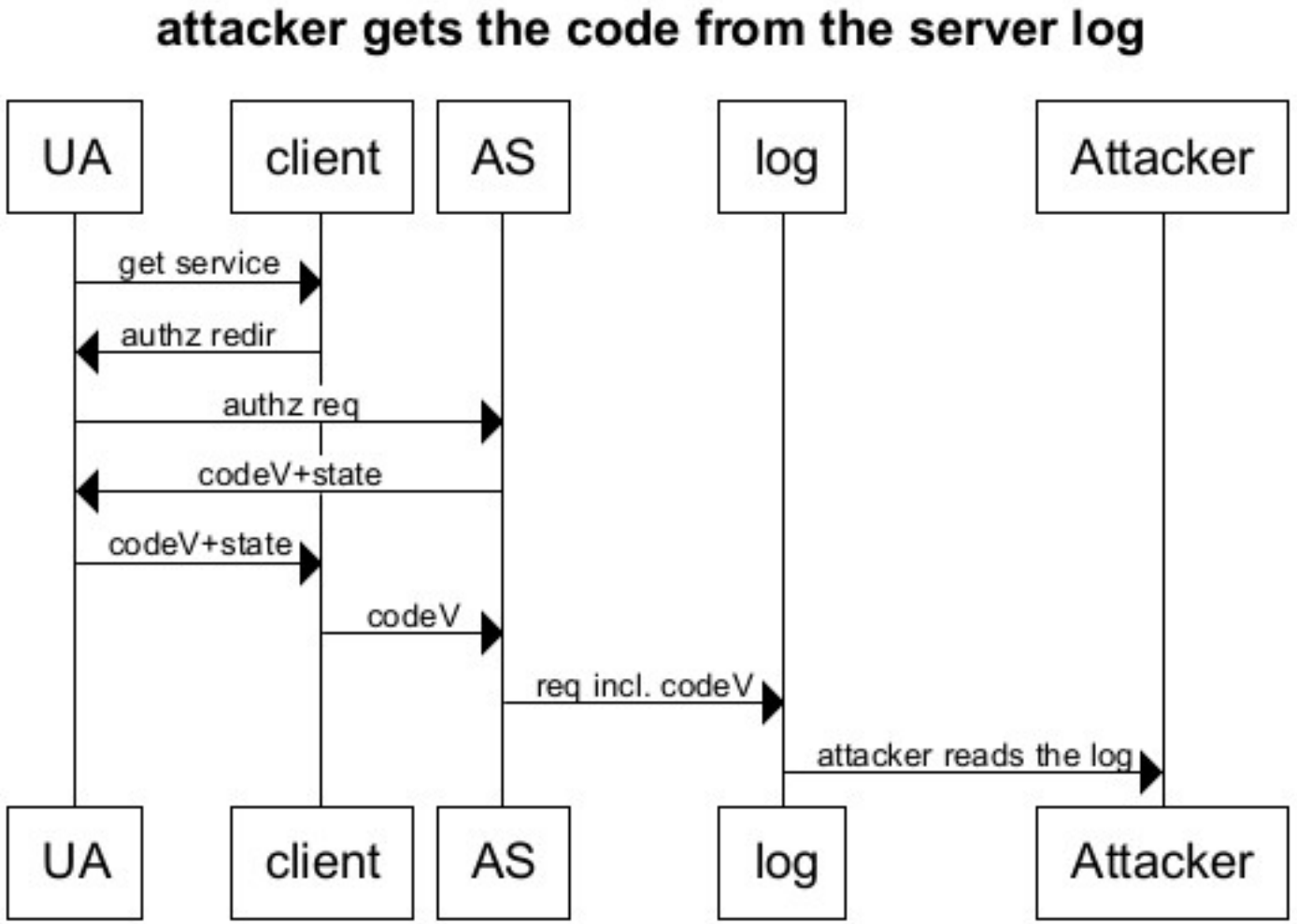
Why are we talking about it recently ag ain?

- Some new novel ways of stealing “code” are pointed out:
  - Stealing it from the server log;
  - Stealing it by inserting the attacker AS in the authz request;
  - Open redirectors; etc.
- Once the “code” has been stolen, the attacker can paste it in a ne w authorization response that he requested.

attacker gets the code by inserting itself

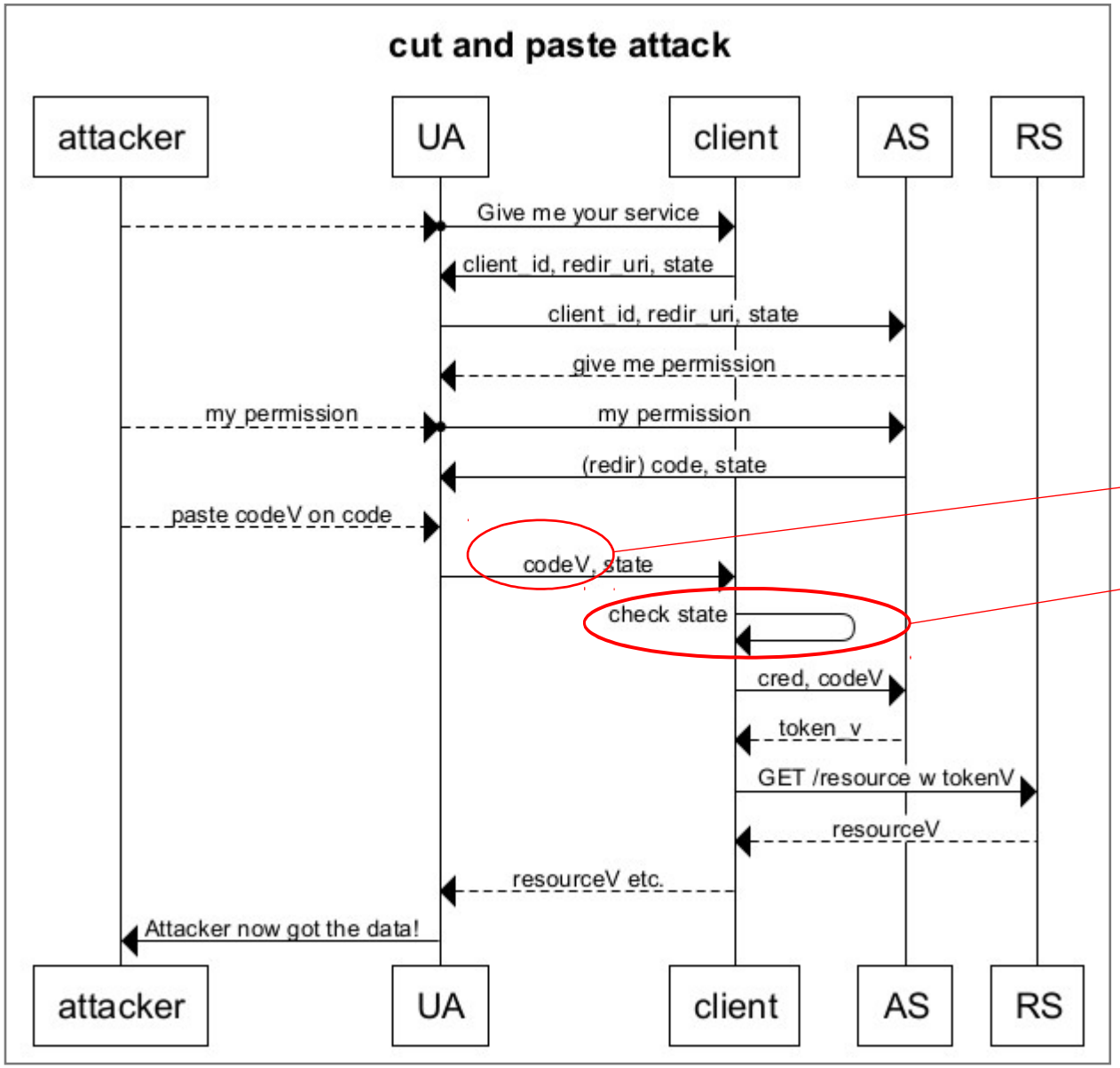


Attacker gets the code from server log



There are many other ways of steali
ng the “code”. (= cut)
It will be used by the attacker by ⋯

Pasting it to his own session



s/code/codeV/

State check succeeds

It succeeds because there is no way to find ou t that the Authz response has been tampered

- The browser redirect segment (both Authz res and Authz req) are not integrity protected.
- OpenID Connect expected this attack and has c_hash (code hash) in th e ID Token that comes back from the authorization endpoint: ID Token acts as the dethatched signature for the “code”.
- Similarly, the authz req tampering was dealt with the request object.

How do we want to deal with it?

1. JWT Dethatched signature
2. Bind the code to the state and pass the state with the code to the to ken endpoint. (Hacky..)
3. Hmac the state+client_id+authz_ep+token_ep+code using the “clien t secret” as the key, and send the hash in the response. The client th en sends the hash to the token endpoint for the AS to check against the hash that has been stored at the AS. (Reverse PKCE).
4. Do not care.