Notification of Revoked Access Tokens in the ACE Framework

draft-tiloca-ace-revoked-tokens-notification-04

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Recap

- An Access Token may be revoked, before expiration
  - Client or RS has been compromised, or decommissioned
  - Changed access policies or outcome of their evaluation
  - Changed ACE profile to use
- Token introspection at the AS is available only for the RS
  - Validate one Access Token at the time
- New interface at the Authorization Server (AS)
  - The AS maintains one Token Revocation List (TRL) resource
  - The TRL contains the hashes of revoked, not-yet-expired tokens
  - C/RS can GET or GET-Observe from the TRL
  - C/RS retrieve only their own pertaining portion of the TRL
- Benefits
  - Complement token introspection
  - No need for new endpoints at C or RS

How

- Token hashes computed as per RFC 6920 (binary format)
  - Hash input: what in ‘access_token’ of the AS response from /token
- TRL resource at the AS
  - CBOR array of Token hashes
  - Add token hashes when Tokens are revoked
  - Remove token hashes when revoked Tokens expire
- Interaction
  - C and RS get the URL to the TRL endpoint upon registration
  - C and RS obtain only hashes of their own pertaining Tokens
  - A registered Administrator gets all Token hashes in the TRL

Modes of operation

- Common features
  - Response limited to the portion of the TRL pertaining the requester
  - TRL filtering based on authenticated identity of the requester (secure session)
- **Full Query - *GET [Observe: 0] coaps://example.as.com/revoke/trl***
  - Get all the pertaining token hashes in the TRL
  - The AS MUST support it
- **Diff Query - *GET [Observe: 0] coaps://example.as.com/revoke/trl?diff=3***
  - Get the N most recent, pertaining updates to the TRL
  - The AS MAY support it
- **STP-based query** – Appendix B
  - Extends the two modes above, using the Series Transfer Pattern (STP)
  - Based on a review from Carsten and on input from Ben

Updates from -04

- Early clarifications, at protocol overview
  - What the different modes of operations offer
  - The registration process at the AS is out of scope in ACE
- Added error handling at the AS
  - Covered all modes of operations
- Response format for the STP-based query mode
  - New content format *application/ace-trl+cbor*
  - New registry “Token Revocation List”
  - Response payload as a CBOR map
  - Message processing updated accordingly
- Got comments on -04 from Michael Richardson [1] – Thanks!
  - Early response provided; useful input for clarifications

[1] https://mailarchive.ietf.org/arch/msg/ace/TYfW7aT8dR7sXDvIcJfHOVTJWeA/

Summary and next steps

- Notification of revoked Access Token
  - GET or GET-Observe; for both Client and Resource Server
  - (i) full query; (ii) diff query; (iii) query with Series Transfer Pattern (STP)

- Version -04 incorporates:
  - Error handling and response payload in the STP-based query mode
  - Review from Carsten and comments from Ben on -01
  - Earlier review from Travis Spencer and comments from Jim

- Next steps
  - Address recent comments from Michael Richardson
  - STP-based query mode in the document body

- WG adoption ?

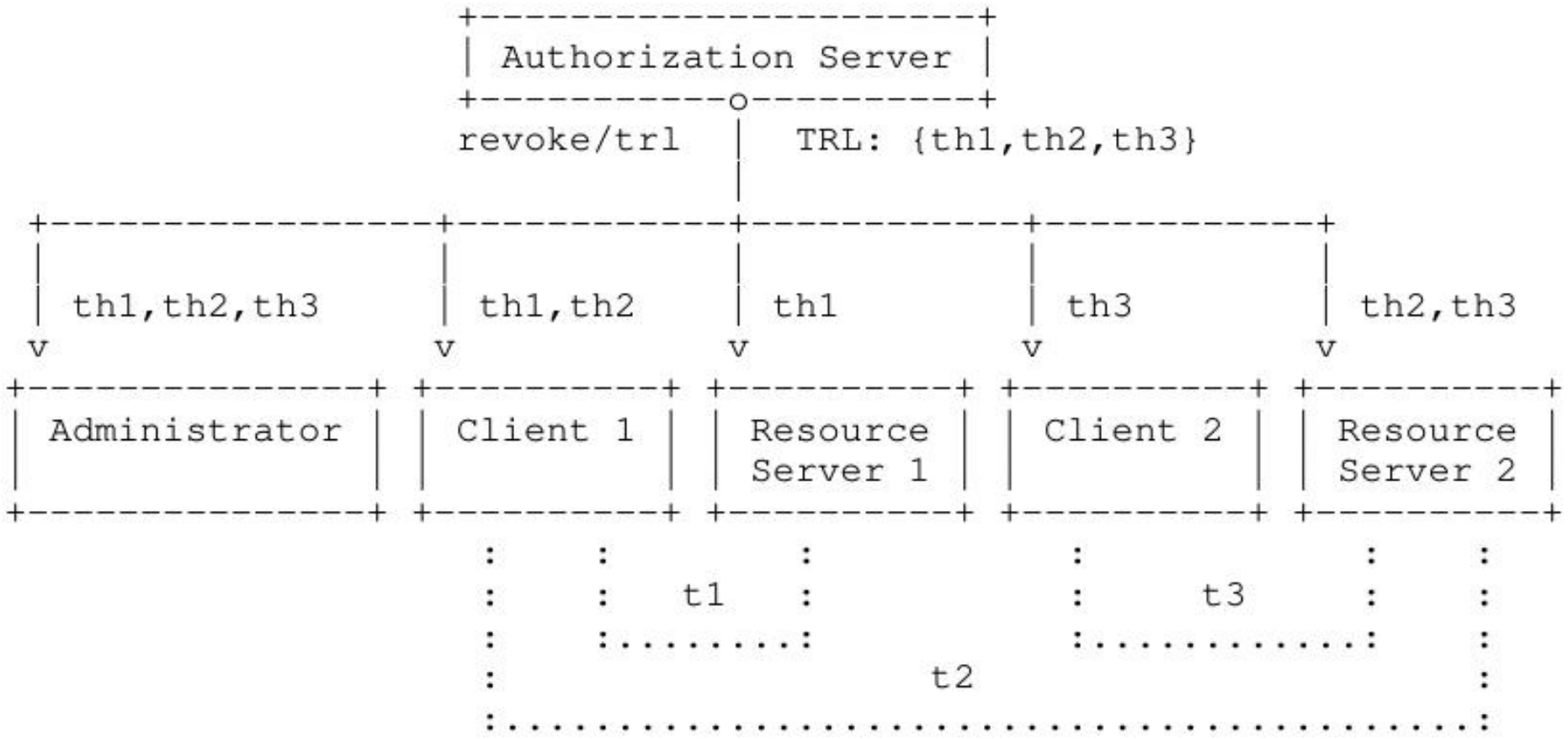
Thank you!

Comments/questions?

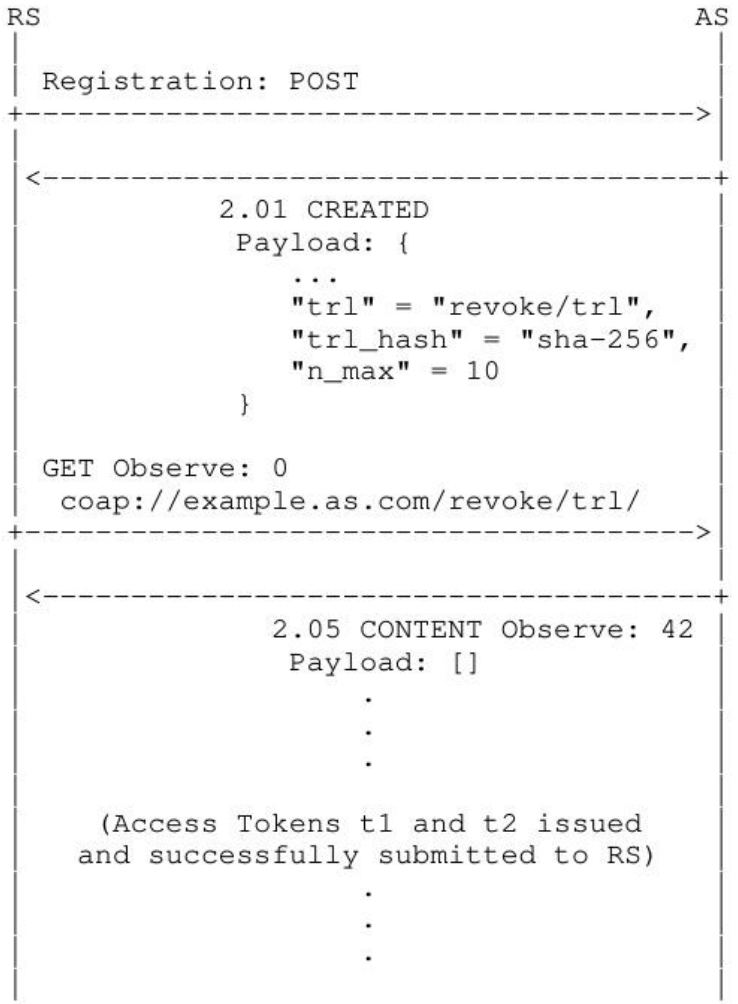
https://gitlab.com/crimson84/draft-tiloca-ace-revoked-token-notification

Backup

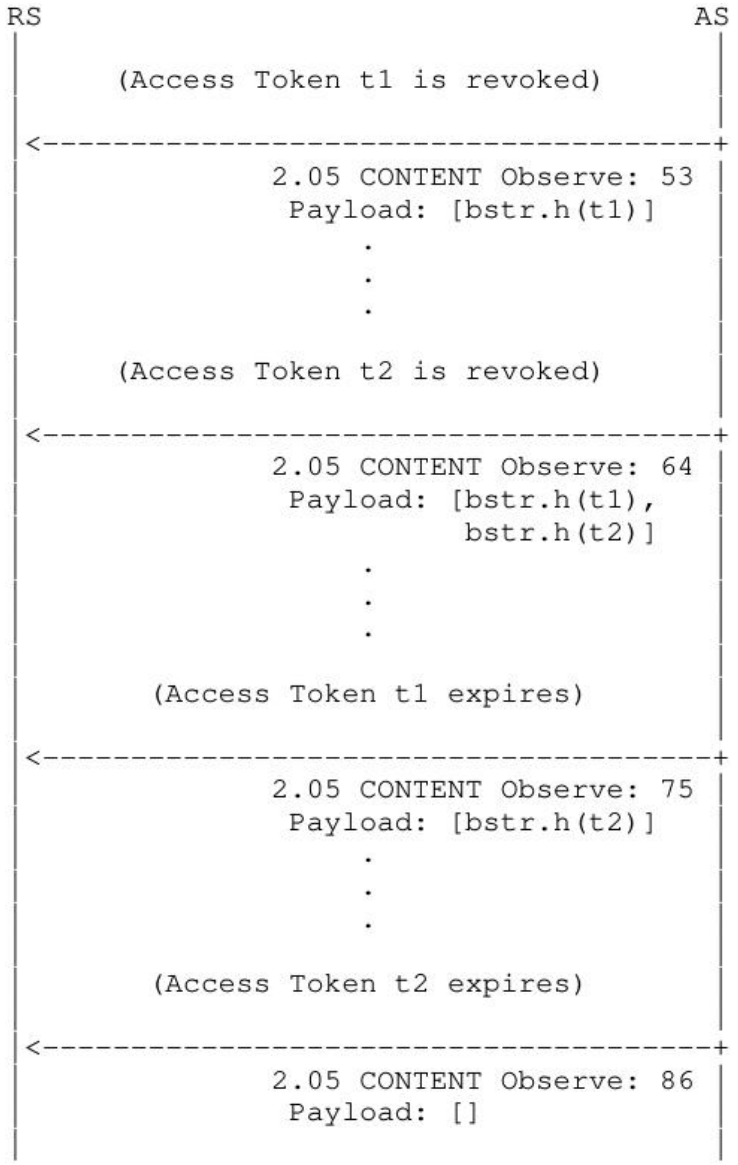
Protocol overview



Example with Full Query



Example with Full Query (ctd.)



Types of TRL queries

- Common features
  - Limited to the portion of the TRL pertaining the requester
  - TRL filtering based on authenticated identity of the requester (secure session)

- **Full Query – *GET [Observe: 0] coaps://example.as.com/revoke/trl***
  - Request for all pertaining token hashes in the TRL
  - Return a CBOR array, with the Token hashes as elements

- **Diff Query – *GET [Observe: 0] coaps://example.as.com/revoke/trl?diff=3***
  - Request for the latest N updates to the pertaining portion of the TRL list
  - Build N entries as CBOR arrays. Each entry refers to an update and has:
    - An element “deleted”, with a CBOR array of Token hashes.
    - An element “added”, with a CBOR array of Token hashes.
  - Return a CBOR array with the N arrays as element, in reverse chronological order

- **STB-based Query – Appendix B**
  - Builds on and extends the Full Query and Diff Query modes
  - Uses the Series Transfer Pattern (STB), to enable transfers in chunks and their “resumption”

STP-based query mode

- Rather than the N most recent TRL updates …
  - Get N updates “from where we stopped last time”
  - Revert to Full Query if not possible, e.g. information loss/removal at the AS
- Use the Series Transfer Patter (STP) and its “Cursor” pattern
  - Both (a) Full Query and (b) Diff Query requests return also a cursor
  - (a) Pointer to the most recent, pertaining TRL update
  - (b) Pointer to the most recent TRL update in the response
- In this “enhanced Diff Query” mode
  - A follow-up request may resume from after the cursor
  - Adjacent batches of TRL updates are possible, limiting excessive latencies
- Handled corner cases
  - No updates, or no updates after the cursor
  - Requested updates have been deleted as too old