# Joining of OSCOAP multicast groups in ACE

draft-tiloca-ace-oscoap-joining-00

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# Motivation

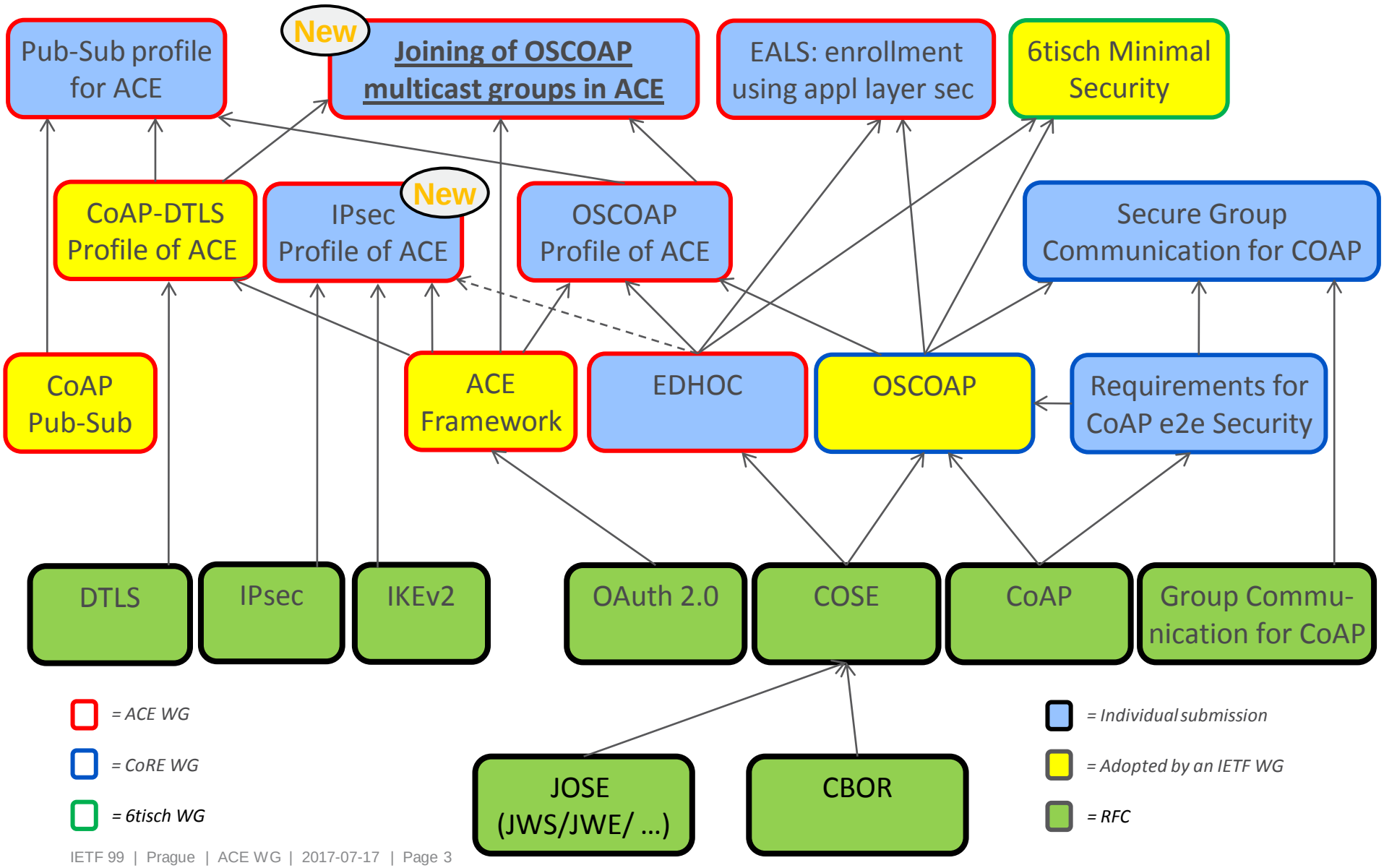
- Specify how to join OSCOAP multicast groups through a Group Manager
  - Use the existing ACE framework (*) and profiles (**) for this specific scenario
  - Keep the approach as such oblivious to the specific underlying profile

- Focus on
  - Authorize a node to join according to group policies
  - Secure channel establishment with the Group Manager
  - Initialization of joining nodes and provisioning of public keys

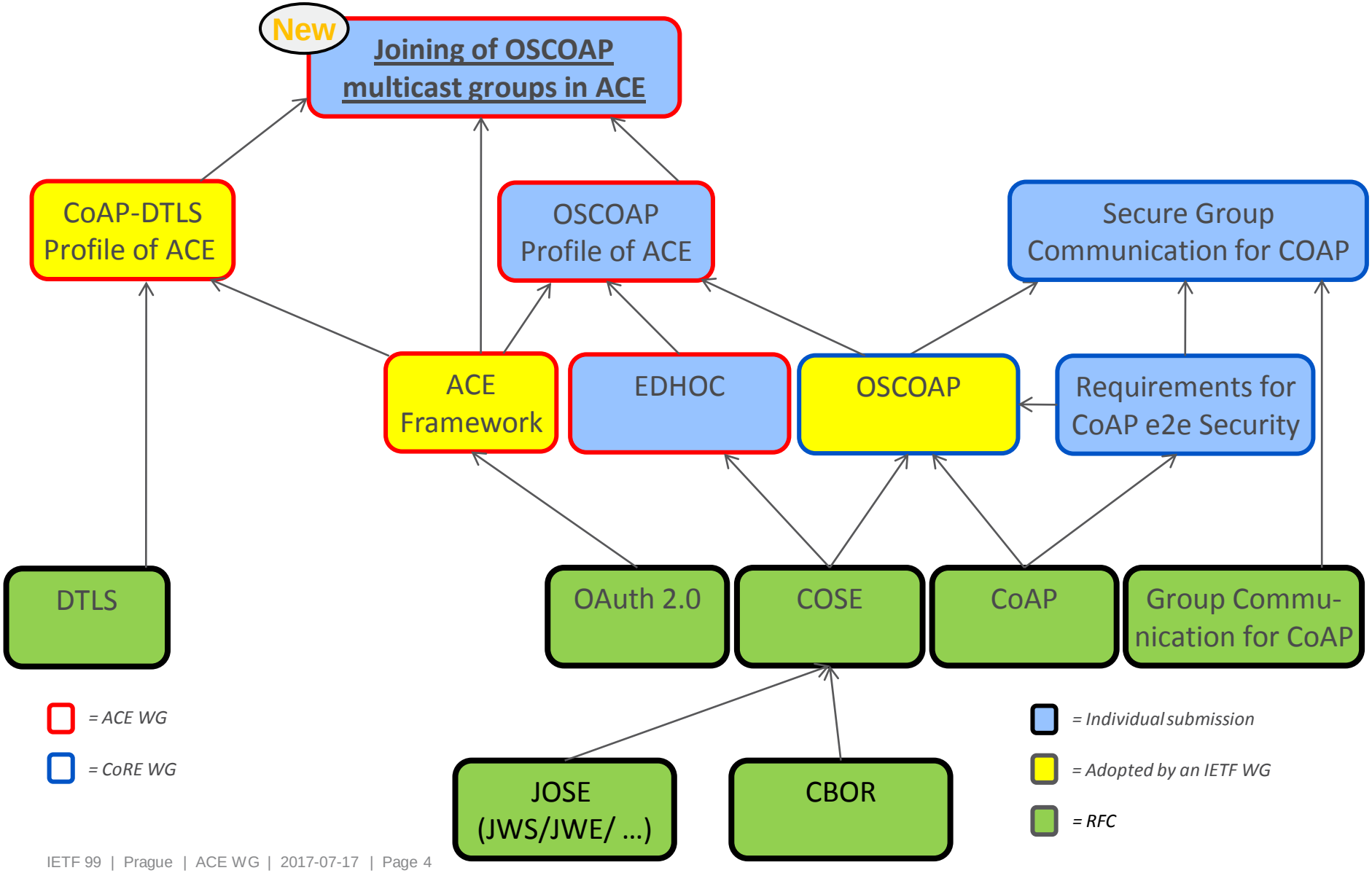
- Covered by other documents
  - Authorization to access protected resources at group members (*) (**)
  - Actual secure communication in the multicast group (***)

(*) *draft-ietf-ace-oauth-authz-06*
(**) *draft-ietf-ace-dtls-authorize-01 ; draft-seitz-ace-oscoap-profile-03*
*(***) draft-tiloca-core-multicast-oscoap-02*

# Related Work



# Related Work



# Background - Multicast OSCOAP

## › draft-tiloca-core-multicast-oscoap-02

- Support for OSCOAP (*) in group communication contexts
- Secure end-to-end communication in the presence of intermediaries

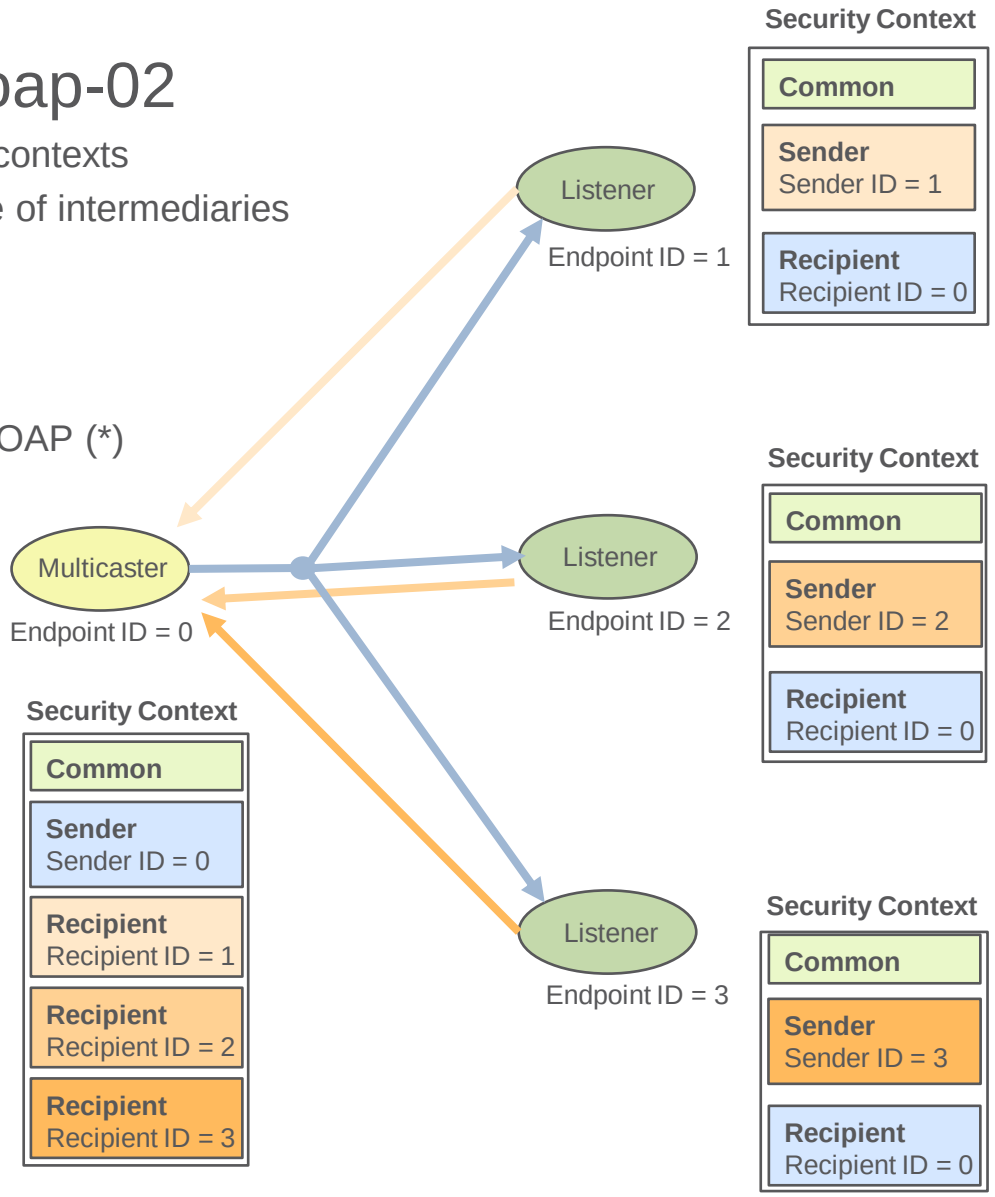
## › Main features

- Same structures, constructs, mechanisms of OSCOAP (*)
- Confidentiality, integrity, replay protection
- Source authentication through digital signatures
- Request-response binding

## › Alternative modes

- Group authentication only (appendix)
- Unencrypted unicast w/ signatures (appendix)

(*) *draft-ietf-core-object-security-03*



# Group Manager (GM)

- Can be responsible of multiple groups
  - Join of new group members
  - Renewal of group keying material

- Drive the joining process
  - Contact point for joining the group
  - Actual admission of new nodes in the group
  - Provides keying material to joining nodes (incl. security context)

- Possibly act as key repository
  - Store public keys of group members

# Protocol overview

- Join an OSCOAP multicast group over the ACE framework
  - Joining node → Client
  - Group Manager → Resource Server (one *join resource* per group)
  - The AS enforces join policies on behalf of the Group Manager

- Leverage protocol-specific profiles of ACE
  - CoAP-DTLS profile *draft-ietf-ace-dtls-authorize-01*
  - OSCOAP profile *draft-seitz-ace-oscoap-profile-03*

- Related to Appendix A of Group OSCOAP v-02 (*)
  - Following comments at IETF97

- *(*) draft-tiloca-core-multicast-oscoap-02*

# Protocol steps

1. Joining node to Authorization Server (*)
   - Get an Access Token to access a join resource on GM
   - The response includes information to start a secure channel with GM
   - Possibly update previously released Access Tokens

2. Joining node to Group Manager (*)
   - Transfer the Access Token
   - Open a secure channel (if not already established)

3. Joining node to Group Manager
   - Access the related join resource at GM
   - Perform the joining process

*(*) Access Token and secure channel establishment are specified in the used profile*

# Joining process

- One separate CoAP request for each group to join

- The GM admits the joining node to the group
  - Provides the OSCOAP endpoint ID
  - Provides the OSCOAP Security Common Context

- The GM can store nodes' public keys
  - Receives the joining node's public key
  - Provides public keys of current group members to the joining node

# Planned next steps

- Ensure alignment with:
  - ACE framework for authentication and authorization
  - CoAP-DTLS and OSCOAP profiles of ACE

- Consider additional profiles:
  - E.g., IPsec profile of ACE (*)

- Get comments and feedback

(*) *draft-aragon-ace-ipsec-profile-00*

Thank you!

Comments/questions?

https://gitlab.com/crimson84/draft-tiloca-ace-oscoap-joining/

# Use cases for Multicast OSCOAP

- Lighting control
- Integrated building control
- Software and firmware updates
- Parameter and configuration updates
- Commissioning of LLNs systems
- Emergency multicast

See “Appendix B” of *draft-tiloca-core-multicast-oscoap-02*