Key Provisioning for Group Communication using ACE

draft-ietf-ace-key-groupcomm-14

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Updates since IETF 111

- **Completed WGLC, with two reviews – Thanks a lot!**
  - Göran [1a] – Responses at [1b][1c]
  - Cigdem [2a] – Responses at [2b][2c]

- **Addressed both reviews; updates split into three categories**
  - Editorial/nits
  - Clarifications
  - Design changes

[1a] https://mailarchive.ietf.org/arch/msg/ace/pr2gBhvqy9j8AfUdQVTZLwamXac/

[1b] https://mailarchive.ietf.org/arch/msg/ace/dEU04pB3u-iYNBwSlfjJaqkEvgo/

[1c] https://mailarchive.ietf.org/arch/msg/ace/Yo2T3febqosQJ94qcVxo9YaR1nc/

[2a] https://mailarchive.ietf.org/arch/msg/ace/gv_uRo2Y45jqOLJghVSbAARWky0/

[2b] https://mailarchive.ietf.org/arch/msg/ace/IL72zPmsIgF2j0Bgm7zO2fUTEm8/

[2c] https://mailarchive.ietf.org/arch/msg/ace/eE6H9kJbkS9GAIUFbVhQqPC_-H8/

Selected clarifications (1/2)

- **General**
  - Early definition of "group" as security group
  - Format/encoding of scope in Token Request/Response and token

- **Token transferring to the KDC**
  - Fixed ambiguity of "POST /token" and "Token POST“
  - Semantics of request/response to/from /authz-info
  - Early explanation of what 'kdcchallenge' is intended for
  - Semantics of 'sign_info‘ in request and response

- **Joining process**
  - Approaches for early knowledge of group configuration
  - Association between public key and (NODENAME, GROUPNAME, token)
  - More details on 'control_uri' and 'group_policies‘
  - Example of administrative keying material transported in 'mgt_key_material'

Selected clarifications (2/2)

- **Revised presentation of KDC interface**
  - Overview, operations and error handling
  - Resource 1
    - handler 1 and example;
    - handler 2 and example; ...
  - Resource 2
    - handler 1 and example;
    - handler 2 and example; ...
  - ...
- **Error handling**
  - Revised use of CoAP error codes
  - Common checks and actions collected in a single early section (see above)
  - Resource-specific checks that are common to all handlers are mentioned as early as possible
- **And many more editorial improvements …**

Design changes (1/3)

- **New parameters**
  - Imported from *key-groupcomm-oscore* : 'kdc_nonce', 'kdc_cred', 'kdc_cred_verify'
    - Potentially relevant to all profiles, e.g., due to signed one-to-many rekeying messages
  - Brand new parameters 'group_rekeying_scheme' and 'control_group_uri‘
    - Intended especially, but not only, to support advanced rekeying schemes (e.g., over multicast)
    - New IANA registry for values of 'group_rekeying_scheme‘
    - 'group_rekeying_scheme‘ = 0 is the basic point-to-point rekeying scheme

- **New resource ace-group/GROUPNAME/kdc_pub_key**
  - Imported from *key-groupcomm-oscore*
  - Used by current group members to retrieve the KDC’s public key

Design changes (2/3)

- **Reasoned categorization of parameters – Expected support by ACE Clients**
  - MUST/SHOULD/MAY support categories; profiles may upgrade requirements to be stricter
  - Some are "conditional to support"; a profile must say if those are MUST/SHOULD/MAY to support
  - Profiles must categorize possible new parameters accordingly

- **Reasoned categorization of KDC functionalities**
  - What is minimally supported by ACE Clients (primary operations)
  - What can be additionally supported by ACE Clients (secondary operations)
  - Profiles must categorize possible new functionalities accordingly
  - Profiles must say if the KDC does not provide some of these functionalities

- **Guidelines on enhanced error responses, with ‘error’ and ‘error_description’**
  - Expected reaction from ACE Clients supporting these error responses
  - No need to use ‘error_description’ if no human intervention is expected

Design changes (3/3)

- **Possible approaches for group rekeying**
  - All in a dedicated new Section 6 “Group Rekeying Process”
  - Minimal ACE Groupcomm parameters to be included
  - Public keys of about-to-join new members can be provided in a rekeying done upon their joining
  - Relevant approaches presented at a high-level
    - (A) Point-to-point, possibly aided by CoAP Observe, with practical recommendations
    - (B) Based on separate pub-sub rekeying topics
    - (C) Based on one-to-many messages sent over multicast
    - For (B)(C), proposal of message protection using COSE and administrative keying material

- **(B)(C): details expected from separate specifications profiling the group rekeying scheme**

Summary

- **Version -14 addresses all comments from the WGLC reviews**

- **Addressed also further comments from IETF 111**
  - Abstract/introduction - Clarified scope and goal within the “ACE Groupcomm” landscape
  - Security considerations - Clarified level of trust on the KDC and related implications

- **No further issues or open points are known**

- **Ready for Shepherd review and write-up?**

Thank you!

https://github.com/ace-wg/ace-key-groupcomm

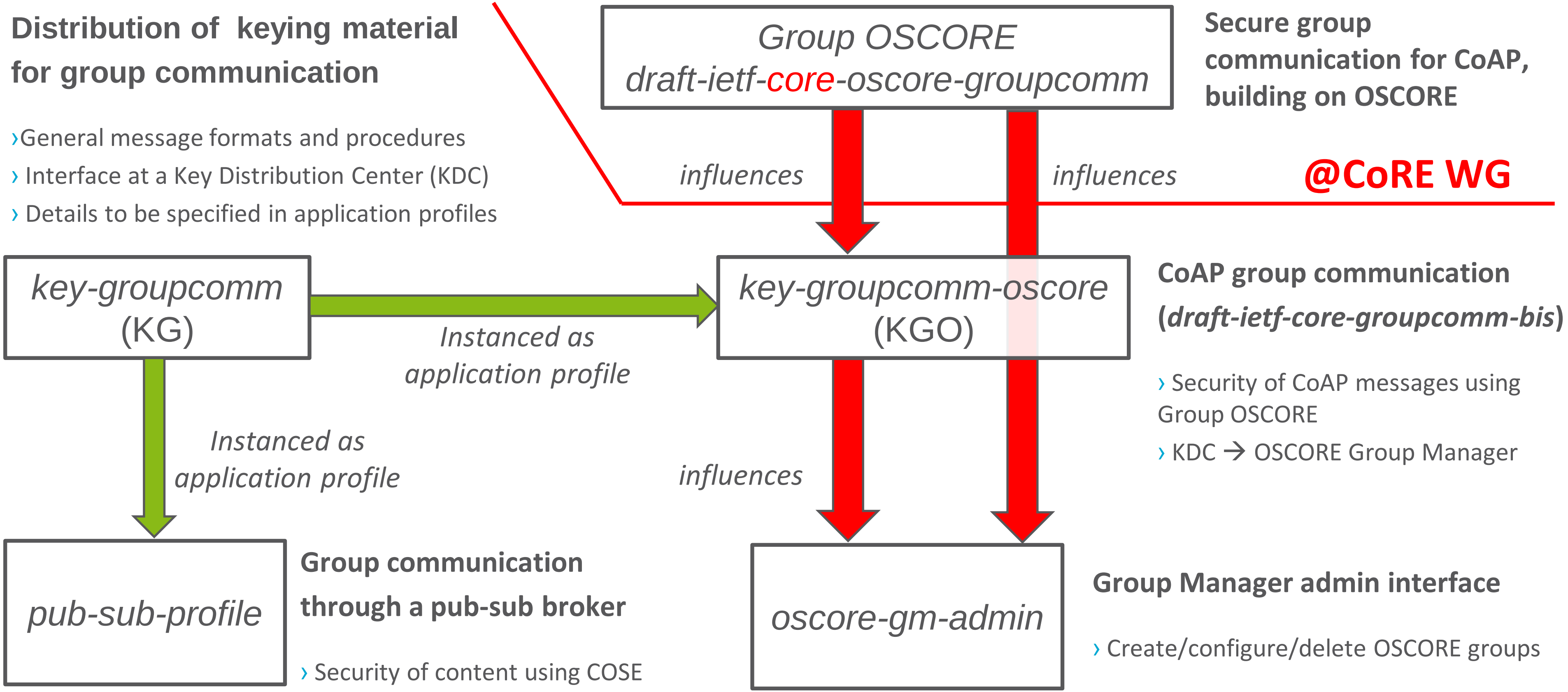
New requirements in v -14

- **Mandatory-to-address requirements**
  - REQ2 : registration of “Toid” and “Tperm” if AIF-based scopes are used
  - REQ8 : define if the KDC has a public key to be provided with ‘kdc_cred’
  - REQ9 : specify if part of the KDC interface is not supported
  - REQ12: categorize possible new operations as primary or secondary for ACE Clients
  - REQ21: specify approaches to compute/verify the PoP evidence for the KDC’s public key
  - REQ29: categorize possible new parameters as MUST/SHOULD/MAY be supported by ACE Clients
  - REQ30: define if conditional parameters from this document MUST/SHOULD/MAY be supported

- **Optional-to-address requirements**
  - OPT9 : define a default group rekeying scheme for ACE Client to consider
  - OPT10: specify functionalities implemented at ‘control_group_uri’
  - OPT14: specify any additional parameters to include in a “Point-to-Point” rekeying message
  - OPT15: specify if optional parameters from this document MUST/SHOULD be supported

- **Requirements are now explicitly split into Mandatory- and Optional-to-addres**

Recap of groupcomm documents



Distribution of keying material for group communication

- General message formats and procedures
- Interface at a Key Distribution Center (KDC)
- Details to be specified in application profiles

Group OSCORE
draft-ietf-core-oscore-groupcomm

Secure group communication for CoAP, building on OSCORE

influences

influences

@CoRE WG

key-groupcomm
(KG)

Instanced as application profile

key-groupcomm-oscore
(KGO)

CoAP group communication (*draft-ietf-core-groupcomm-bis*)

- Security of CoAP messages using Group OSCORE
- KDC → OSCORE Group Manager

Instanced as application profile

influences

pub-sub-profile

Group communication through a pub-sub broker

- Security of content using COSE

oscore-gm-admin

Group Manager admin interface

- Create/configure/delete OSCORE groups