Admin Interface for the OSCORE Group Manager

draft-tiloca-ace-oscore-gm-admin-02

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Recap

- Admin interface at the OSCORE Group Manager
  - Create and configure an OSCORE group, before a first joining can start
  - Same pattern intended the CoAP pub-sub Broker
  - Supporting both: i) Link Format and CBOR ; ii) CoRAL

- Two new types of resources at the Group Manager
  - A <u>single</u> *group-collection* resource, at /manage
  - One *group-configuration* resource per group, at /manage/GROUP_NAME

- Also using ACE for authentication and authorization
  - The Administrator is the Client
  - The Group Manager is the Resource Server
  - For secure communication, use transport profiles of ACE

Overview

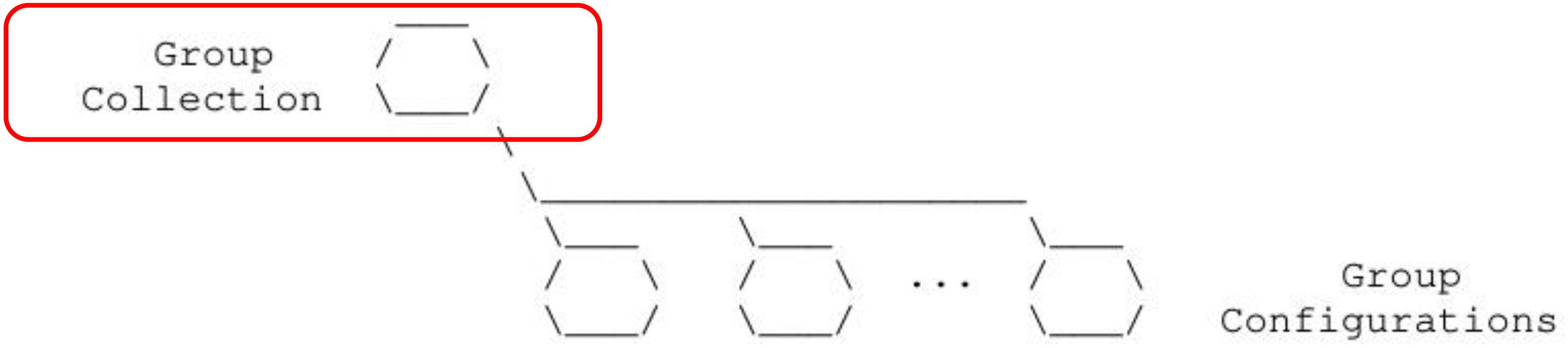


Figure 1: Resources of a Group Manager

- *Group-collection* resource
  - Create a new OSCORE group (POST)
    - A group-configuration resource is created
    - A group-membership for joining nodes is also created
  - Retrieve the list of OSCORE groups and their configuration
    - All groups (GET), or groups selected by filters (FETCH)

Overview

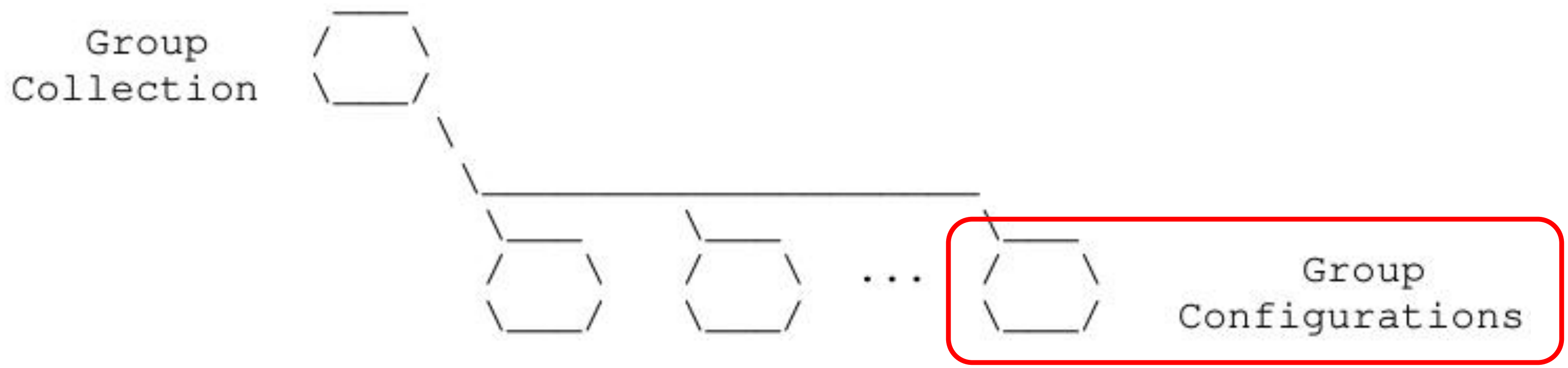


Figure 1: Resources of a Group Manager

- *Group-configuration* resource
  - Retrieve the group configuration (GET)
  - Update the group configuration (PUT)
  - Delete the group (DELETE)

Updates from -02

- Addressed the review from Jim [1] – Thanks!

- Addressed comments from Christian [2] and Carsten – Thanks!

- Default values of configuration parameters (‘*alg*’, ‘*hkdf*’, …)
  - Moved to *draft-ietf-ace-key-groupcomm-oscore*

- Revised text on side effects, following a group update
  - Current Section 2.6.5.2, hopefully easier to read now

[1] https://mailarchive.ietf.org/arch/msg/ace/q55WDjJLdEMVvI0bV7k_VrzRgIY/

[2] https://mailarchive.ietf.org/arch/msg/ace/gLr5NgAURoi5P9f6RcgHkL2jFr8/

Updates from -02

- Payload in the response to a group creation/update
  - *‘joining_uri’*
  - *‘as_uri’*
  - *‘group_name’*

- Clarified scope in the introduction
  - In some deployments, the GM application is very knowledgeable
  - The GM can autonomously create and configure OSCORE groups
  - Downside: the GM is application-specific, error prone, and non flexible

- Guidance on registering the OSCORE group to the RD
  - Either the Group Manager or the Administrator can do it
  - Aligned with *draft-tiloca-core-oscore-discovery*

Open points

- Different group name for management and joining nodes [1]
  - ‘group_name_admin’ , for admin operations
  - ‘group_name_members’ , to be advertised for joining nodes
  - Possible, with no big penalty. Any big advantage?

- Who takes the final decision on the group name?
  - Now: the Administrator proposes a name, the GM may change it
  - Proposed update: the Administrator gives the exact name to use
  - In either case, en error is returned if the name is already taken
  - Issues with that? Opinions?

[1] https://mailarchive.ietf.org/arch/msg/ace/q55WDjJLdEMVvI0bV7k_VrzRgIY/

Open points

- Cover the case of multiple administrators [2]
  - The Admin creating a group G is allowed to configure it
  - Another Admin may read and/or modify G
  - Define a proper ‘scope’ format also enabling this

- Register also the names of the application groups
  - All those using the created OSCORE group
  - Suggested by Jim in the “CoRAL and forms” discussion [3]
  - The Group Manager is also aware of application groups
    - Assumed when registering the OSCORE Group to the RD [4]

[2] https://mailarchive.ietf.org/arch/msg/ace/gLr5NgAURoi5P9f6RcgHkL2jFr8/
[3] https://mailarchive.ietf.org/arch/msg/core/BoYGYmEpJMUS8bk4PNHOEaFFcdU/
[4] https://mailarchive.ietf.org/arch/msg/core/h62d2c2mYmG43ykz52KvbbEpgDc/

Summary and next steps

- Admin interface at the OSCORE Group Manager
  - Create and delete OSCORE groups; set and retrieve configurations

- Next steps
  - Address the open points
  - Format of scope, using AIF
  - PATCH, to selectively update a group configuration
  - More info in response payloads, as CoRAL forms [3]
    - Guidance on group creation and other possible operations
    - In a 4.00 response, what went wrong and how to fix things

- Adoption call ended on the 6th of July – Chairs evaluation?

[3] https://mailarchive.ietf.org/arch/msg/core/BoYGYmEpJMUS8bk4PNHOEaFFcdU/

Thank you!

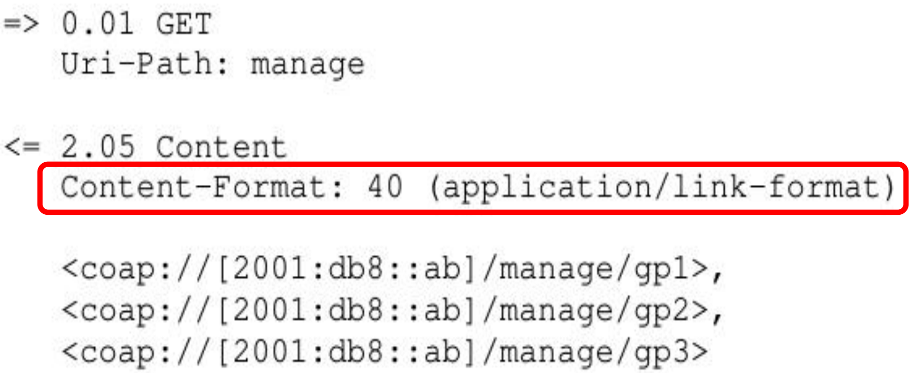
Comments/questions?

https://gitlab.com/crimson84/draft-tiloca-ace-oscore-gm-admin

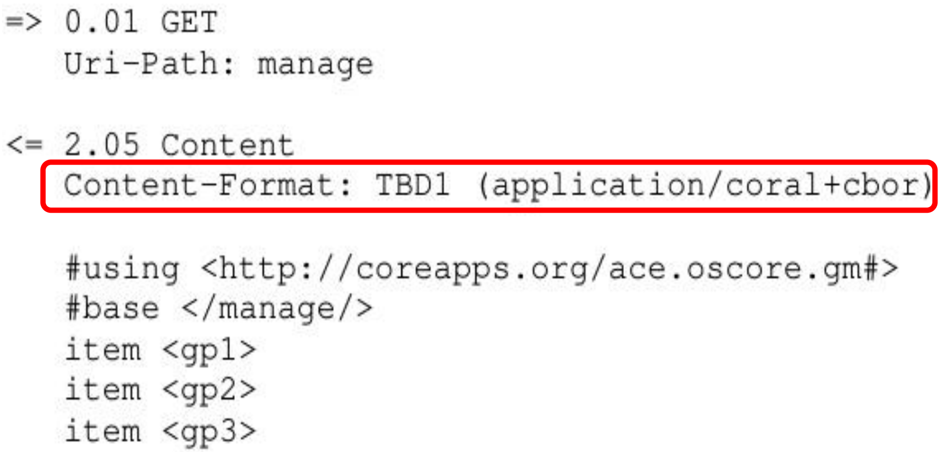
Backup

Group-collection resource

- **GET**
  - Retrieve the list of existing OSCORE groups
  - In fact, the list of links to the respective *group-configuration* resource



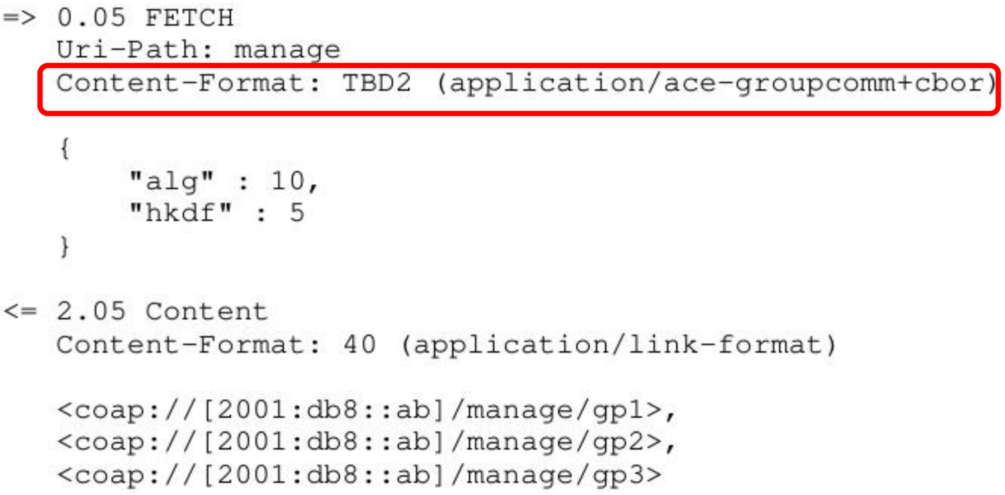
```
=> 0.01 GET
   Uri-Path: manage

<= 2.05 Content
   Content-Format: 40 (application/link-format)

   <coap://[2001:db8::ab]/manage/gp1>,
   <coap://[2001:db8::ab]/manage/gp2>,
   <coap://[2001:db8::ab]/manage/gp3>
```



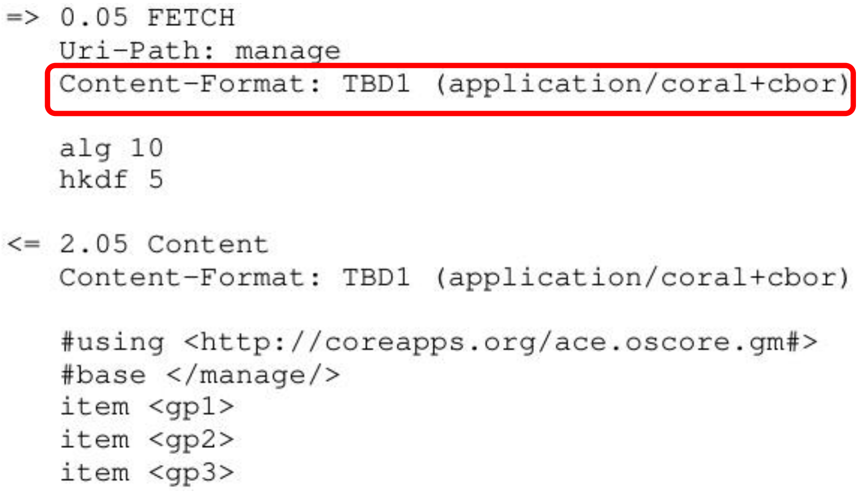
```
=> 0.01 GET
   Uri-Path: manage

<= 2.05 Content
   Content-Format: TBD1 (application/coral+cbor)

   #using <http://coreapps.org/ace.oscore.gm#>
   #base </manage/>
   item <gp1>
   item <gp2>
   item <gp3>
```

Group-collection resource

- **FETCH**
  - Retrieve the list of existing OSCORE groups, by filters
  - In fact, the list of links to the respective *group-configuration* resource



```
=> 0.05 FETCH
   Uri-Path: manage
   Content-Format: TBD2 (application/ace-groupcomm+cbor)

   {
       "alg" : 10,
       "hkdf" : 5
   }

<= 2.05 Content
   Content-Format: 40 (application/link-format)

   <coap://[2001:db8::ab]/manage/gp1>,
   <coap://[2001:db8::ab]/manage/gp2>,
   <coap://[2001:db8::ab]/manage/gp3>
```



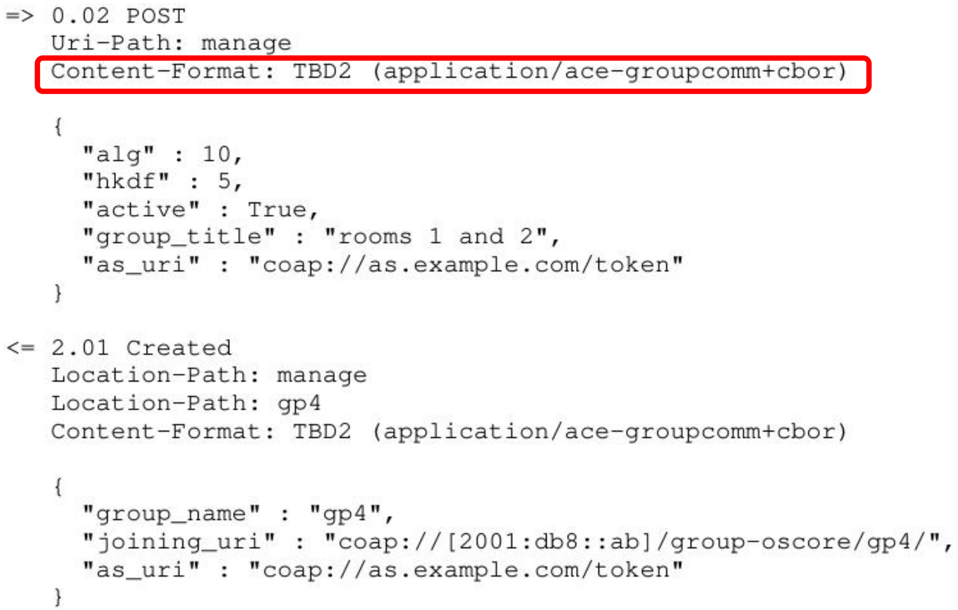
```
=> 0.05 FETCH
   Uri-Path: manage
   Content-Format: TBD1 (application/coral+cbor)

   alg 10
   hkdf 5

<= 2.05 Content
   Content-Format: TBD1 (application/coral+cbor)

   #using <http://coreapps.org/ace.oscore.gm#>
   #base </manage/>
   item <gp1>
   item <gp2>
   item <gp3>
```

Group-collection resource

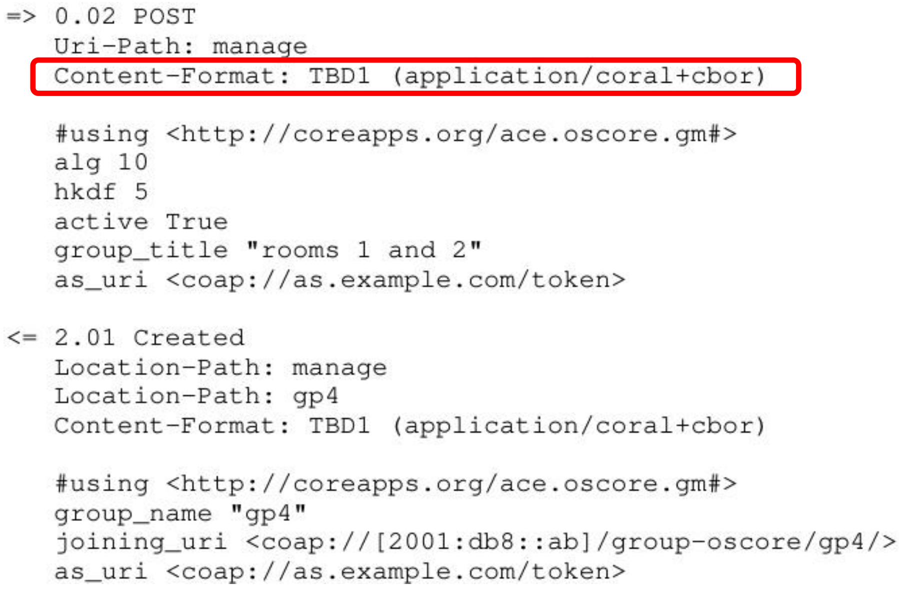
› **POST**

– Create a new OSCORE group.

– The GM decides the name, if not specified.



```
=> 0.02 POST
   Uri-Path: manage
   Content-Format: TBD2 (application/ace-groupcomm+cbor)

   {
     "alg" : 10,
     "hkdf" : 5,
     "active" : True,
     "group_title" : "rooms 1 and 2",
     "as_uri" : "coap://as.example.com/token"
   }

<= 2.01 Created
   Location-Path: manage
   Location-Path: gp4
   Content-Format: TBD2 (application/ace-groupcomm+cbor)

   {
     "group_name" : "gp4",
     "joining_uri" : "coap://[2001:db8::ab]/group-oscore/gp4/",
     "as_uri" : "coap://as.example.com/token"
   }
```



```
=> 0.02 POST
   Uri-Path: manage
   Content-Format: TBD1 (application/coral+cbor)

   #using <http://coreapps.org/ace.oscore.gm#>
   alg 10
   hkdf 5
   active True
   group_title "rooms 1 and 2"
   as_uri <coap://as.example.com/token>

<= 2.01 Created
   Location-Path: manage
   Location-Path: gp4
   Content-Format: TBD1 (application/coral+cbor)

   #using <http://coreapps.org/ace.oscore.gm#>
   group_name "gp4"
   joining_uri <coap://[2001:db8::ab]/group-oscore/gp4/>
   as_uri <coap://as.example.com/token>
```

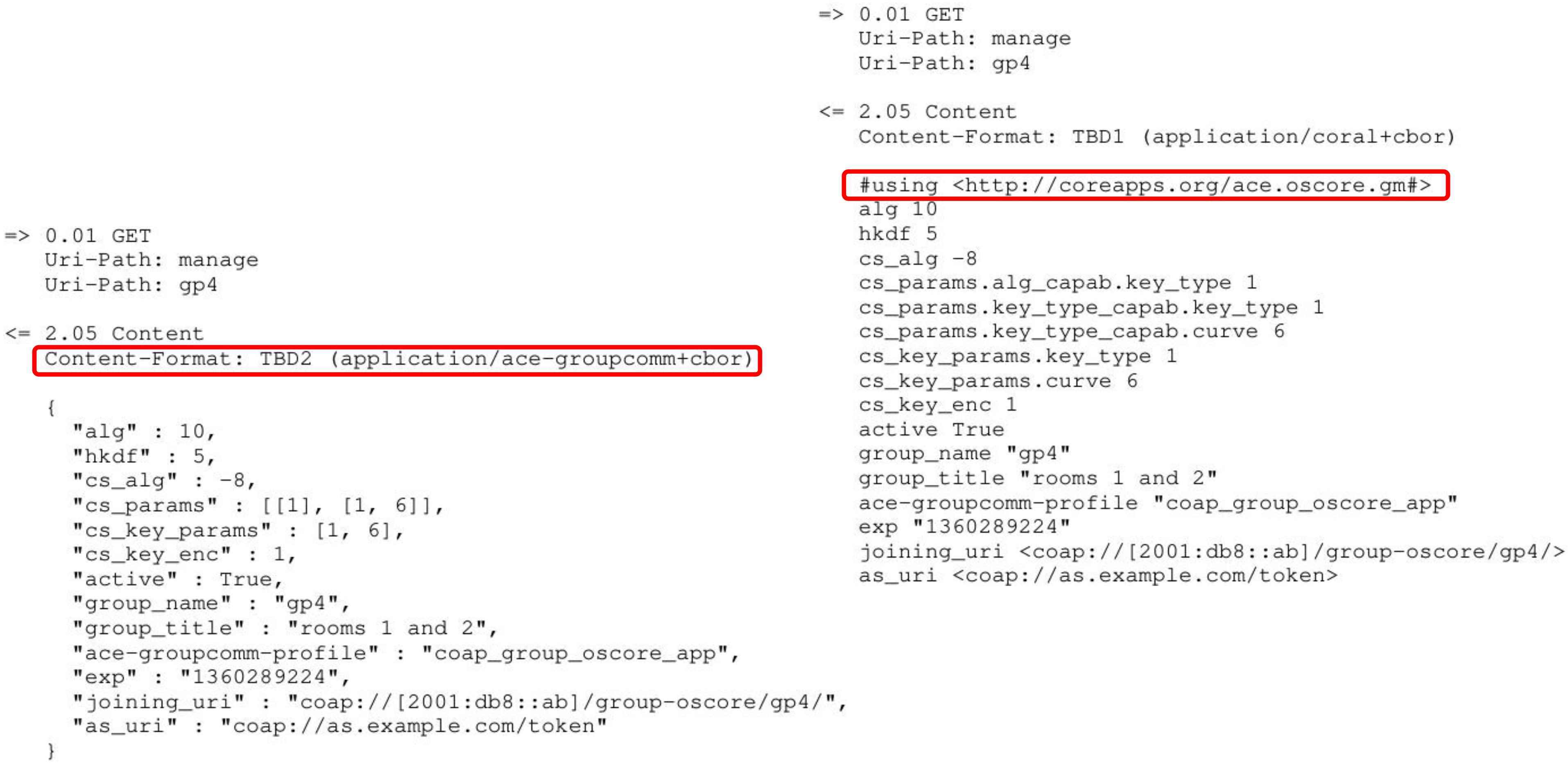
› The Group Manager

– Creates a new *group-configuration* resource (for the Administrator)

– Creates a new *group-membership* resource (for joining nodes)

Group-configuration resource

- **GET**
  - Retrieve the current configuration of the OSCORE group

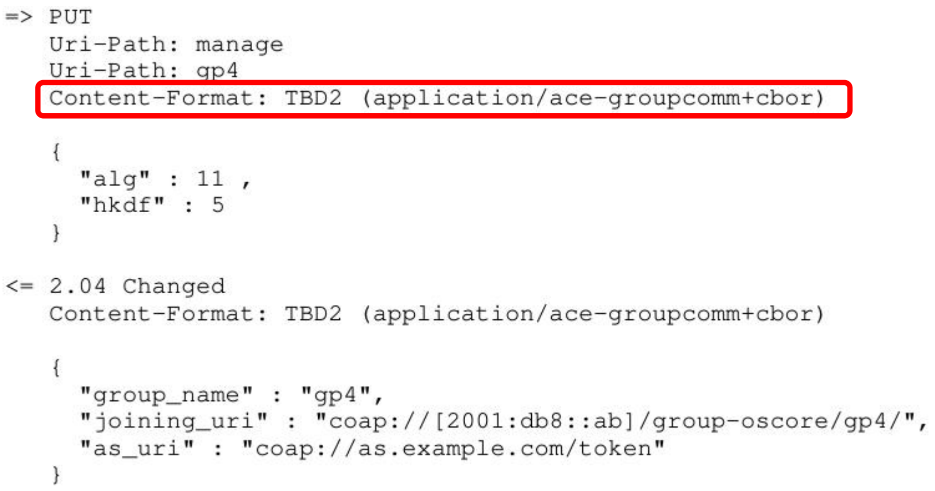


```
=> 0.01 GET
   Uri-Path: manage
   Uri-Path: gp4

<= 2.05 Content
   Content-Format: TBD2 (application/ace-groupcomm+cbor)

   {
     "alg" : 10,
     "hkdf" : 5,
     "cs_alg" : -8,
     "cs_params" : [[1], [1, 6]],
     "cs_key_params" : [1, 6],
     "cs_key_enc" : 1,
     "active" : True,
     "group_name" : "gp4",
     "group_title" : "rooms 1 and 2",
     "ace-groupcomm-profile" : "coap_group_oscore_app",
     "exp" : "1360289224",
     "joining_uri" : "coap://[2001:db8::ab]/group-oscore/gp4/",
     "as_uri" : "coap://as.example.com/token"
   }
```

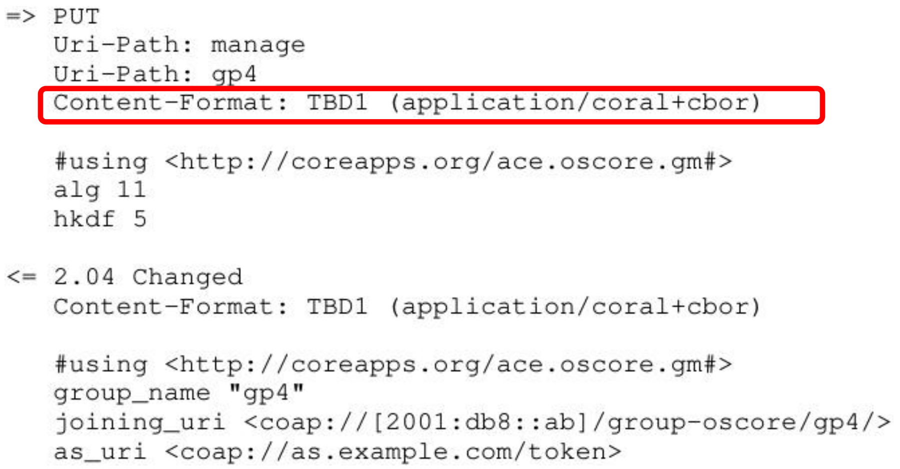
```
=> 0.01 GET
   Uri-Path: manage
   Uri-Path: gp4

<= 2.05 Content
   Content-Format: TBD1 (application/coral+cbor)

   #using <http://coreapps.org/ace.oscore.gm#>
   alg 10
   hkdf 5
   cs_alg -8
   cs_params.alg_capab.key_type 1
   cs_params.key_type_capab.key_type 1
   cs_params.key_type_capab.curve 6
   cs_key_params.key_type 1
   cs_key_params.curve 6
   cs_key_enc 1
   active True
   group_name "gp4"
   group_title "rooms 1 and 2"
   ace-groupcomm-profile "coap_group_oscore_app"
   exp "1360289224"
   joining_uri <coap://[2001:db8::ab]/group-oscore/gp4/>
   as_uri <coap://as.example.com/token>
```

Group-configuration resource

- **PUT**
  - Update the configuration of the OSCORE group
  - Default values apply, like when creating the group



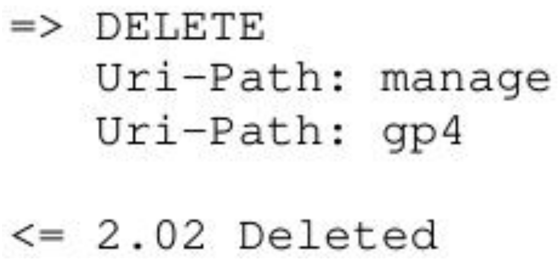
```
=> PUT
   Uri-Path: manage
   Uri-Path: gp4
   Content-Format: TBD2 (application/ace-groupcomm+cbor)

   {
     "alg" : 11 ,
     "hkdf" : 5
   }

<= 2.04 Changed
   Content-Format: TBD2 (application/ace-groupcomm+cbor)

   {
     "group_name" : "gp4",
     "joining_uri" : "coap://[2001:db8::ab]/group-oscore/gp4/",
     "as_uri" : "coap://as.example.com/token"
   }
```



```
=> PUT
   Uri-Path: manage
   Uri-Path: gp4
   Content-Format: TBD1 (application/coral+cbor)

   #using <http://coreapps.org/ace.oscore.gm#>
   alg 11
   hkdf 5

<= 2.04 Changed
   Content-Format: TBD1 (application/coral+cbor)

   #using <http://coreapps.org/ace.oscore.gm#>
   group_name "gp4"
   joining_uri <coap://[2001:db8::ab]/group-oscore/gp4/>
   as_uri <coap://as.example.com/token>
```

Group-configuration resource

- **DELETE**
  - Delete the OSCORE group



```
=> DELETE
   Uri-Path: manage
   Uri-Path: gp4

<= 2.02 Deleted
```

- The Group Manager
  - Deallocates the *group-configuration* resource
  - Deallocates the *group-membership* resource

Side effects

- When updating a group configuration or deleting a group
  - The Group Manager informs the group members individually

- When ‘active’ is changed to false
  - No new nodes can join, current members should stop communicating

- When ‘hkdf’ or ‘alg’ change
  - Group members can use the new values or leave the group

- When any ‘cs_*’ changes, group members can
  - Leave or rejoin, possibly providing a new public key
  - Stay in the group, use the new values, possibly provide a new public key