Observe Notifications as CoAP Multicast Responses

draft-ietf-core-observe-multicast-notifications-13

Using Proxies for Observe Notifications as CoAP Multicast Responses

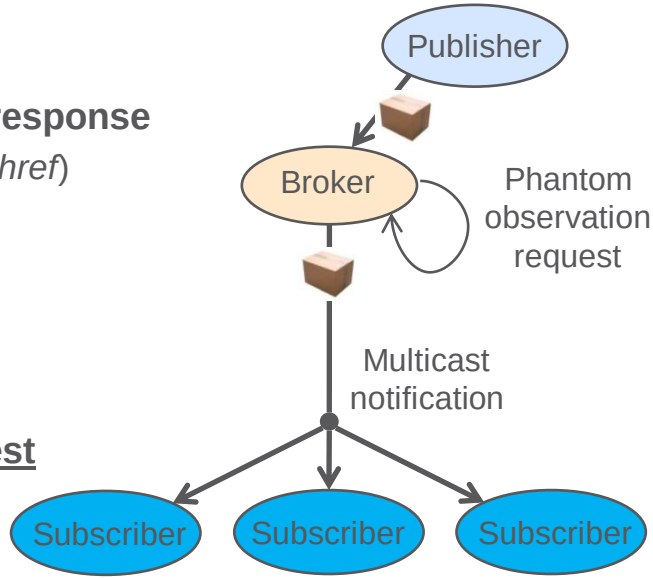
draft-ietf-core-multicast-notifications-proxy-00

Marco Tiloca, RISE
Rikard Höglund, RISE
Christian Amsüss
Francesca Palombini, Ericsson

IETF 124 meeting – Montreal – November 7th, 2025

Recap

- **Observe notifications as multicast responses**
  - Many clients observe the same resource on a server (e.g., pub-sub)
  - Improved performance due to multicast delivery
- **Clients configured by the server, with a 5.03 error informative response**
  - Transport-specific information are provided as CRIs (*draft-ietf-core-href*)
- **All clients in a group observation use the same Token value**
  - The Token space belongs to the group (clients)
  - The group entrusts the server to manage the token space
- **Multicast notifications bound to a Phantom Observation Request**
  - By means of the same Token value for that observation
- **Group OSCORE to protect multicast notifications**
  - The server aligns all clients of an observation on a same *external_aad*
  - All notifications for a resource are protected using that *external_aad*



Example in a pub-sub scenario

Latest updates

Main document: *draft-core-observe-multicast-notifications-13*

- **Editorial fixes and improvements**

- **Updated references**
  - *draft-amsuess-core-cachable-oscore* → *draft-ietf-core-cacheable-oscore*
  - More entries added (see next slides)

- **Addressed two comments from IANA at IETF 123**
  - In the new registry "CoAP Transport Information", column 'Transport Information Details'
    - Different elements to be separated by comma instead of new lines
  - Provided a preferred value range for registered CoAP Option Numbers
    - "Multicast-Response-Feedback-Divider" – Range 0-255; preferred option number: 18

CoAP Transport	Transport Information Details	Reference
CoAP over UDP	tpi_client,tpi_token	Section 4.2.1.1 of [RFC-XXXX]

Latest updates

Main document:

draft-core-observe-multicast-notifications-13

```
informative_response_payload = {
    0 => array,  ; 'tp_info' (transport-specific information)
  ? 1 => bstr,   ; 'ph_req' (transport-independent information)
  ? 2 => bstr,   ; 'last_notif' (transport-independent information)
  ? 3 => uint    ; 'next_not_before',
  ? 4 => uint    ; 'ending'
}

tp_info = [
    tpi_server: CRI-no-local,  ; Addressing information of the server
  ? tpi_details                ; Further information about the request
]

tpi_details = (
  + elements  ; Number, format, and encoding of the elements depend
              ; on the scheme-id of the CRI specified as 'tpi_server'
)
```

- **Clearer phrasing on avoiding link-local addresses**
  - Old text: “MUST NOT encode link-local addresses”
- **Section 4.2 “Informative response” (Server-Side Requirements)**
  - ... such a response ... MUST NOT have link-local source or destination addresses, and MUST NOT provide link-local or site-local addresses in the transport-specific information specified in its payload …”
- **Section 5.1 “Request” (Client-Side Requirements)**
  - “The request MUST NOT have link-local source or destination addresses.”

Latest updates

Main document: *draft-core-observe-multicast-notifications-13*

- **Aligned with latest updates about CRIs in *draft-ietf-core-href***

- **Application-extension identifier “cri”**
  - Used to notate a CBOR Extended Diagnostic Notation (EDN) literal for a CRI
    - E.g., cri'coap://SRV_ADDR:SRV_PORT/'
  - Definition moved from *draft-ietf-core-href* to *draft-ietf-cbor-edn-literals* (now also a reference)

- **Involved IANA registry**
  - Transport-specific information is parsed according to a CRI → CRI scheme ID → CRI scheme number
  - Section 4.2.1: *The latter identifies the corresponding registered URI scheme, per the associated entry in the “Uniform Resource Identifier (URI) Schemes” registry defined in [RFC7595] and updated in Section 11.1 of [I-D.ietf-core-href].*
  - ➔ Rely only on registered URI schemes in the “Uniform Resource Identifier (URI) Schemes” registry
  - ➔ Do not rely on the registry “CRI Scheme Numbers for Certain Unregistered Scheme Names” defined in *-core-href*

Latest updates

- **Content split into two documents**
  - Strongly wished at IETF 122, then confirmed at IETF 123

- **Main document: *draft-core-observe-multicast-notifications-13***
  - Taken out all the content about proxies and setups with proxies
  - Content moved to the new document *draft-core-multicast-notifications-proxy*
  - Now mentioned: "…*Alternative network setups that rely on intermediaries such as proxies are discussed in [I-D.ietf-core-multicast-notifications-proxy].*"

- **Proxy document: *draft-core-multicast-notifications-proxy-00* (Informational)**
  - Self-standing, discussing how the main protocol can be used with proxies
  - Normative reference to version -12 of the main document
    - Only for this version -00, with a clarifying note in the abstract
    - The next version of this document will refer to version -13 (or later) of the main document
  - Provided a preferred value range for registered CoAP Option Numbers
    - "Listen-To-Multicast-Responses" – Range 0-255; preferred option number: 47

Next steps

- **Main document (*-core-observe-multicast-notifications)***
  - Have max-age for the first notification INIT_NOTIF stored at the server?
  - Now "tp_info" **MUST** be included in the payload of the error informative response
    - In some corner cases, "tp_info" might be redundant, e.g., in a setup with a reverse-proxy (see below)
    - Alternative to consider: "tp_info" **SHOULD** be included and is almost always expected to be

```
informative_response_payload = {
   0 => array,  ; 'tp_info' (transport-specific information)
 ? 1 => bstr,   ; 'ph_req' (transport-independent information)
 ? 2 => bstr,   ; 'last_notif' (transport-independent information)
 ? 3 => uint    ; 'next_not_before',
 ? 4 => uint    ; 'ending'
}

tp_info = [
    tpi_server: CRI-no-local,  ; Addressing information of the server
  ? tpi_details                ; Further information about the request
]

tpi_details = (
  + elements  ; Number, format, and encoding of the elements depend
              ; on the scheme-id of the CRI specified as 'tpi_server'
)
```

- **Proxy document (*-core-multicast-notifications-proxy)***
  - Align with latest version of the main document
  - Progress on the setup with a reverse-proxy and end-to-end security
    - Include example with message exchange
- **Both documents: align with upcoming updates in their normative references**
  - After addressing IESG Evaluation reviews of *draft-ietf-core-groupcomm-bis* and *draft-ietf-core-oscore-groupcomm*
  - After addressing IETF Last Call reviews of *draft-ietf-ace-key-groupcomm-oscore*

Thank you!

Comments/questions?

https://github.com/core-wg/observe-multicast-notifications

https://github.com/core-wg/multicast-notifications-proxy