

CoAP Publish-Subscribe

draft-ietf-core-coap-pubsub-19

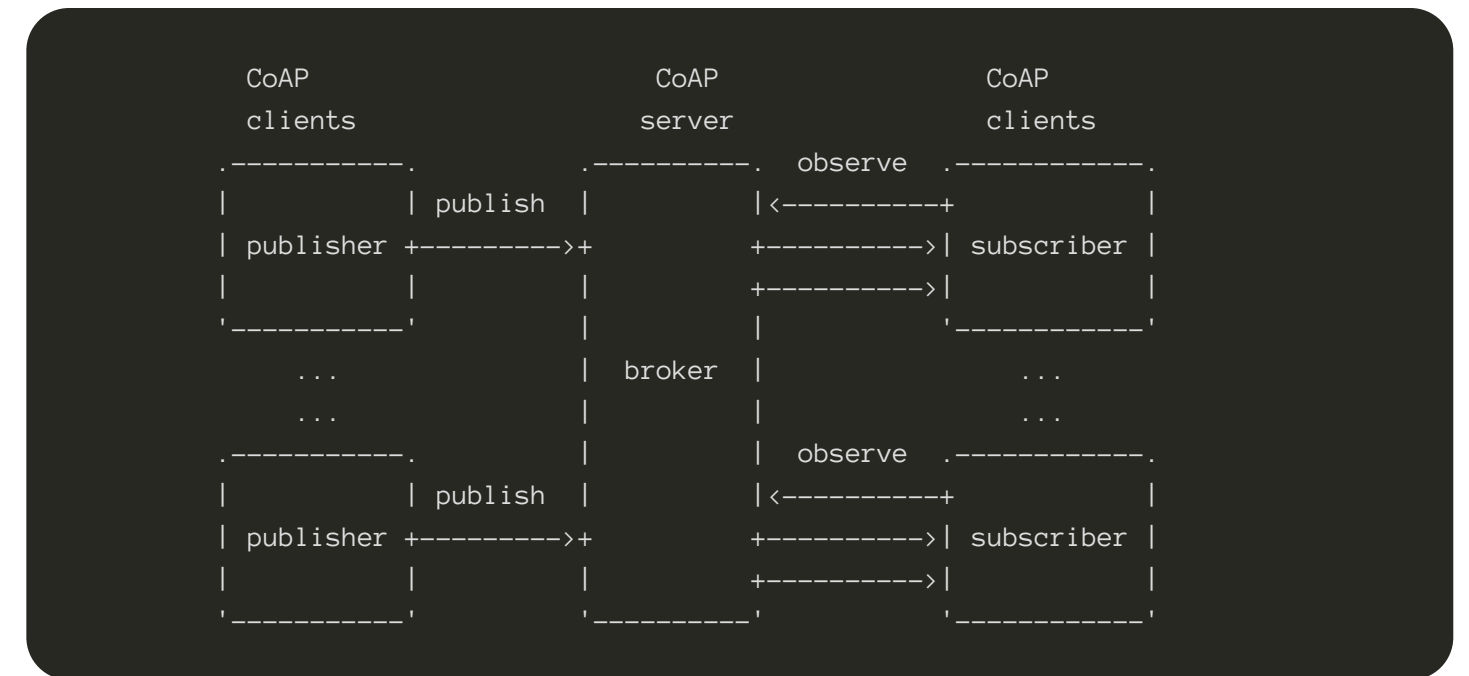
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20 March 2026

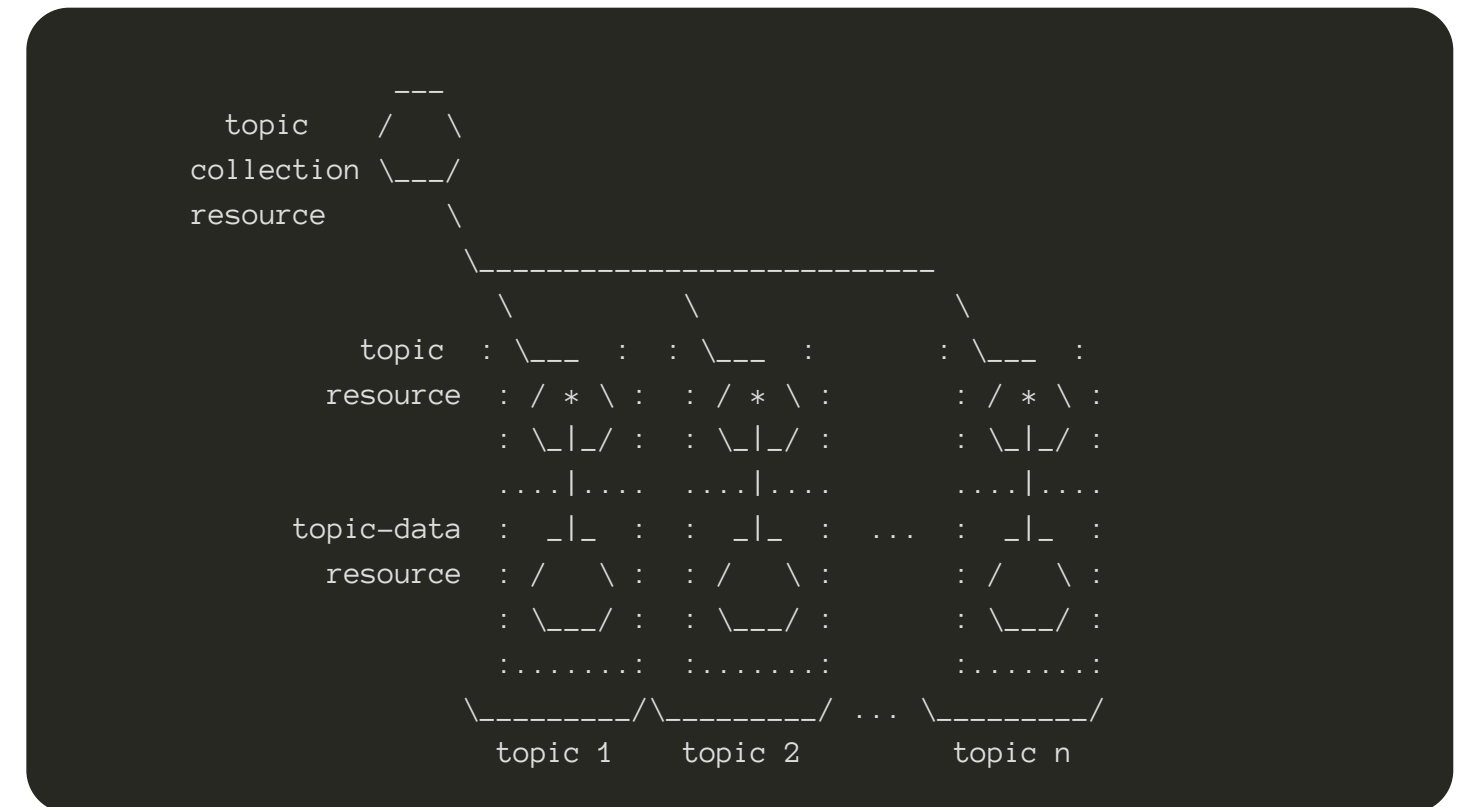
Architecture

- Broker does store-and-forward of topic data
- Publishers PUT to topic-data resources
- Subscribers use CoAP Observe (RFC 7641)
- Decouples producers from consumers



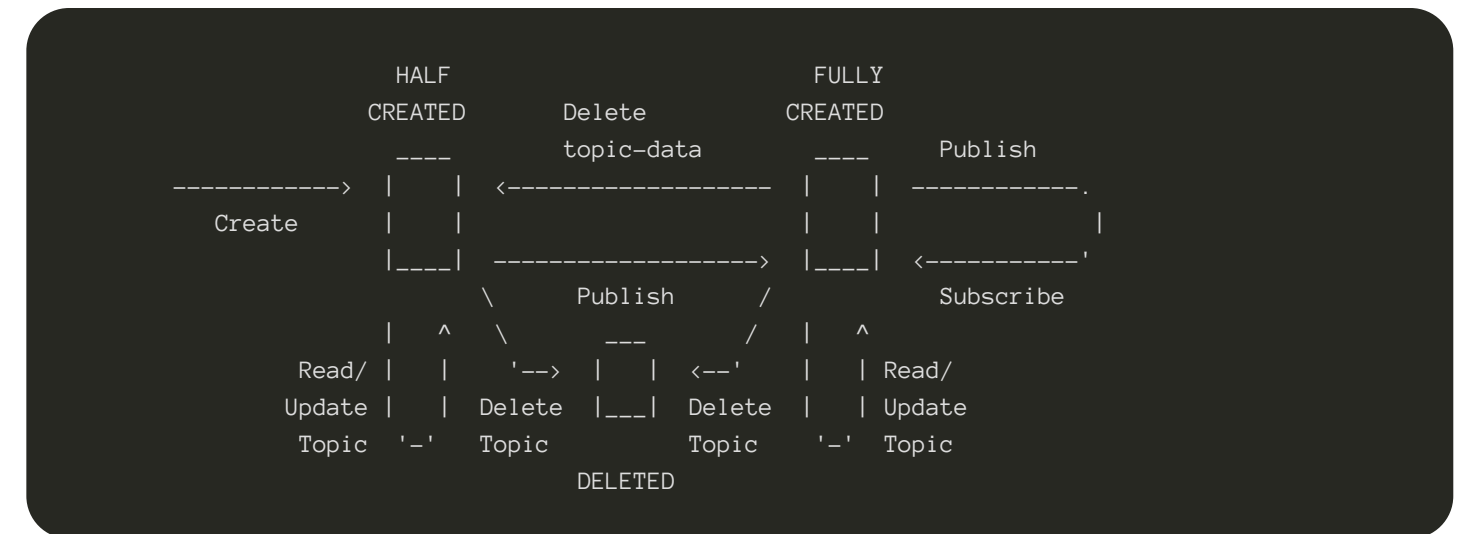
Topic Resources

- Topic collection (core.ps.coll) holds topic resources (core.ps.conf)
- Each topic points to its topic-data resource (core.ps.data)
- Topic-data URI can be on a different server than the broker



Topic Lifecycle

- HALF CREATED: config exists, no data yet, no subscriptions
- FULLY CREATED: first publish transitions the topic, subscriptions allowed
- initialize property can skip HALF CREATED (redesigned in v19)



What Changed in v19 (1/2)

initialize redesign

- Was a boolean, now a CBOR byte string carrying actual initial data
- Paired with `topic-content-format` to ensure Content-Format is set from the start
- Fixes RFC 7641 violation: notifications now always have a consistent Content-Format
- Example: CBOR SenML empty array
`h'80'`

Protocol fixes

- `expiration-date`: text string changed to CBOR tag 1 (epoch-based)
- `topic-data` property now persists through half-created state - publishers can always find where to PUT
- `topic-name`, `topic-data`, `resource-type` explicitly immutable post-creation
- `core-interfaces` reference made informative (was blocking publication)

What Changed in v19 (2/2)

Response codes relaxed

- Success: "returns a successful response (typically 2.05 Content)" instead of strict MUST
- Errors: "4.xx client error (such as 4.03 Forbidden)" instead of mandating specific codes
- Leaves room for 2.03 Valid, 4.29 Too Many Requests, and other standard CoAP mechanisms

Clarifications

- max-subscribers is now a hint; broker is the final arbiter of resource allocation
- topic-data URI explicitly may be on a different server
- Removed normative restatement of RFC 7641 unsubscribe
- Broker defined as "CoAP server component"

IANA & CBOR Keys

CBOR key registry

Name	Key	Type
topic-name	0	tstr
topic-data	1	tstr
resource-type	2	tstr
topic-content-format	3	uint
topic-type	4	tstr
expiration-date	5	#6.1(number)
max-subscribers	6	uint
observer-check	7	uint
initialize	8	bstr
conf-filter	9	array

Registration tiers (numeric only)

- Standards Action w/ Expert Review: -256 to 255
- Specification Required: -65536 to -257, 256 to 65535
- Expert Review: remaining

IANA early review addressed. Text string keys removed per Christian's recommendation.

Status

- WGLC feedback from Marco Tiloca and Christian Amsuess incorporated
- 27 comments from Christian's review + ~20 from Marco's review addressed
- IANA early review resolved
- Repo cleaned up, old reference files removed
- aiocoap-based broker implementation updated to match v19
- Marco's editorial nits merged (PR #71: broker/server distinction, CBOR diagnostic notation, registry types)

Next: IMO ready for shepherd review and AD evaluation

Q&A