

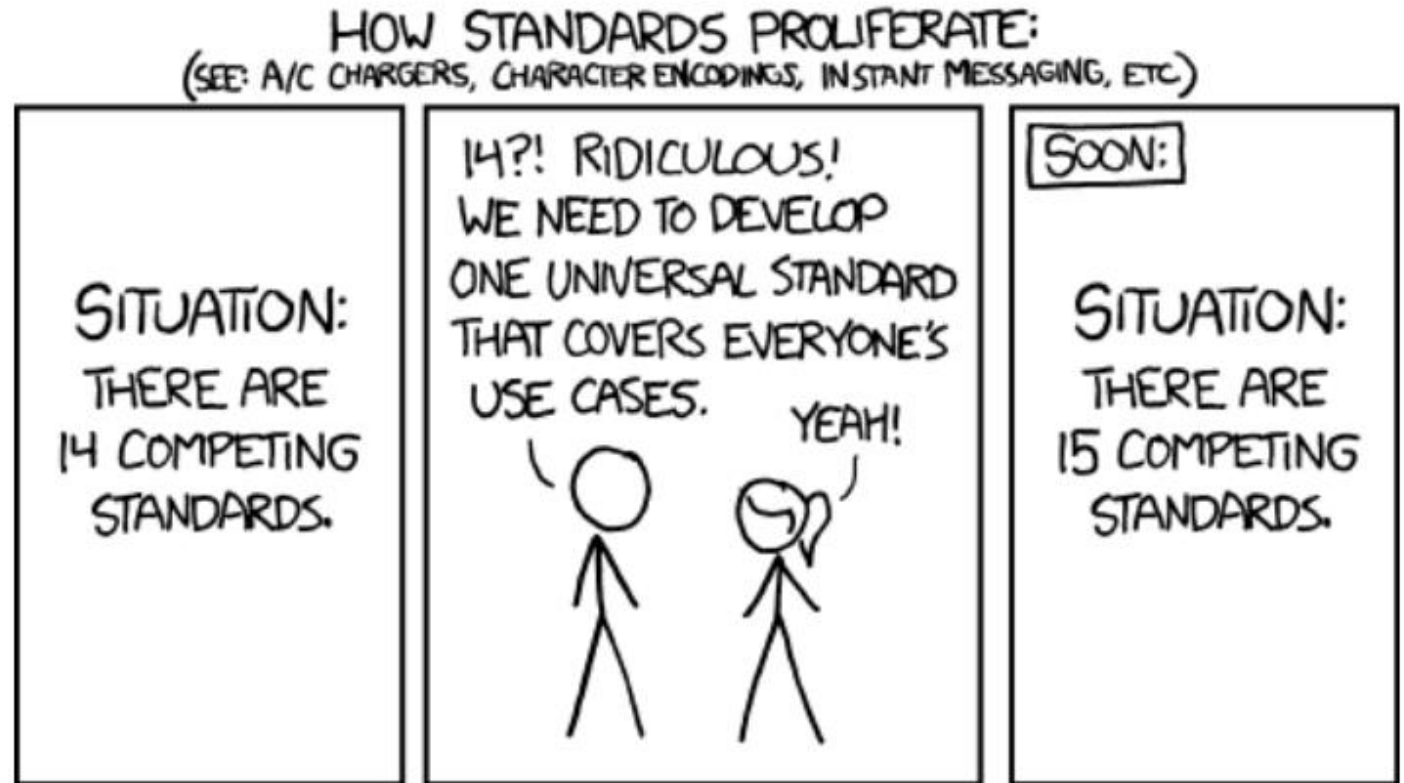
Protocolo MQTT para IoT



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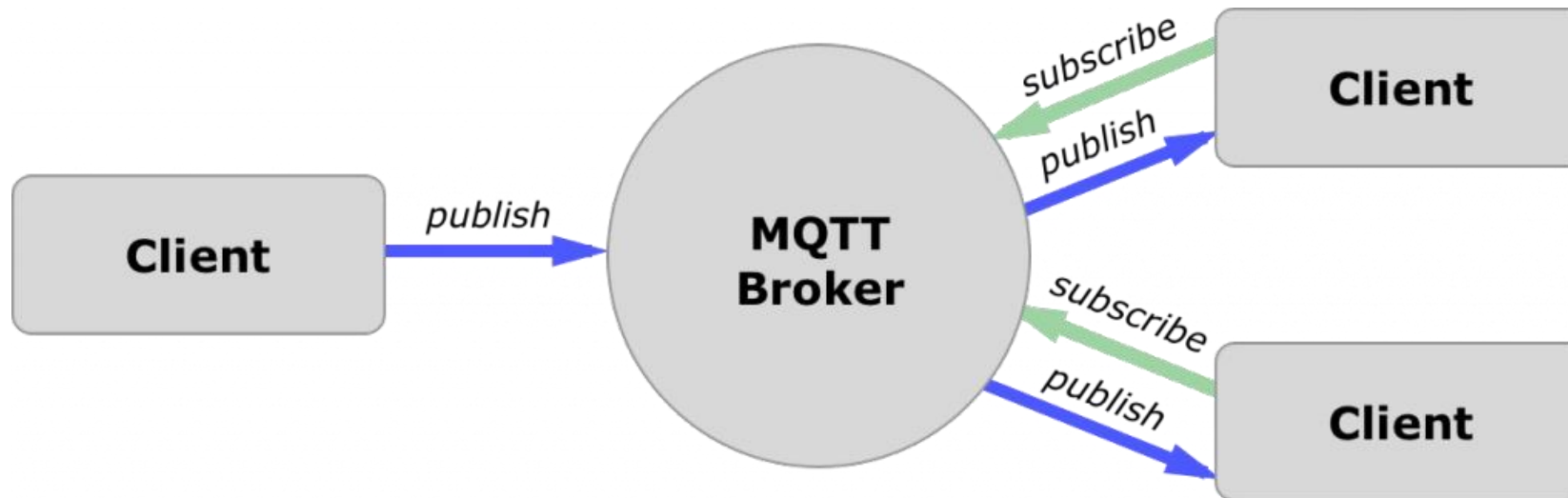
Protocolos de comunicación

- MQTT (Message Queuing Telemetry Transport)
- CoAP (Constrained Application Protocol)
- REST (HTTP)
- AMQP (Advanced Message Queuing Protocol)
- DDS (Data Distribution Service)
- Y más...



Protocolo MQTT

- Protocolo M2M (machine to machine) sobre TCP/IP
- Se basa en **publicaciones y suscripciones** a “tópicos”
- Liviano. Ideal para dispositivos con bajos recursos
- Topología de estrella (un broker, múltiples clientes)
- Estandar detallado en <https://mqtt.org/>



Tópicos

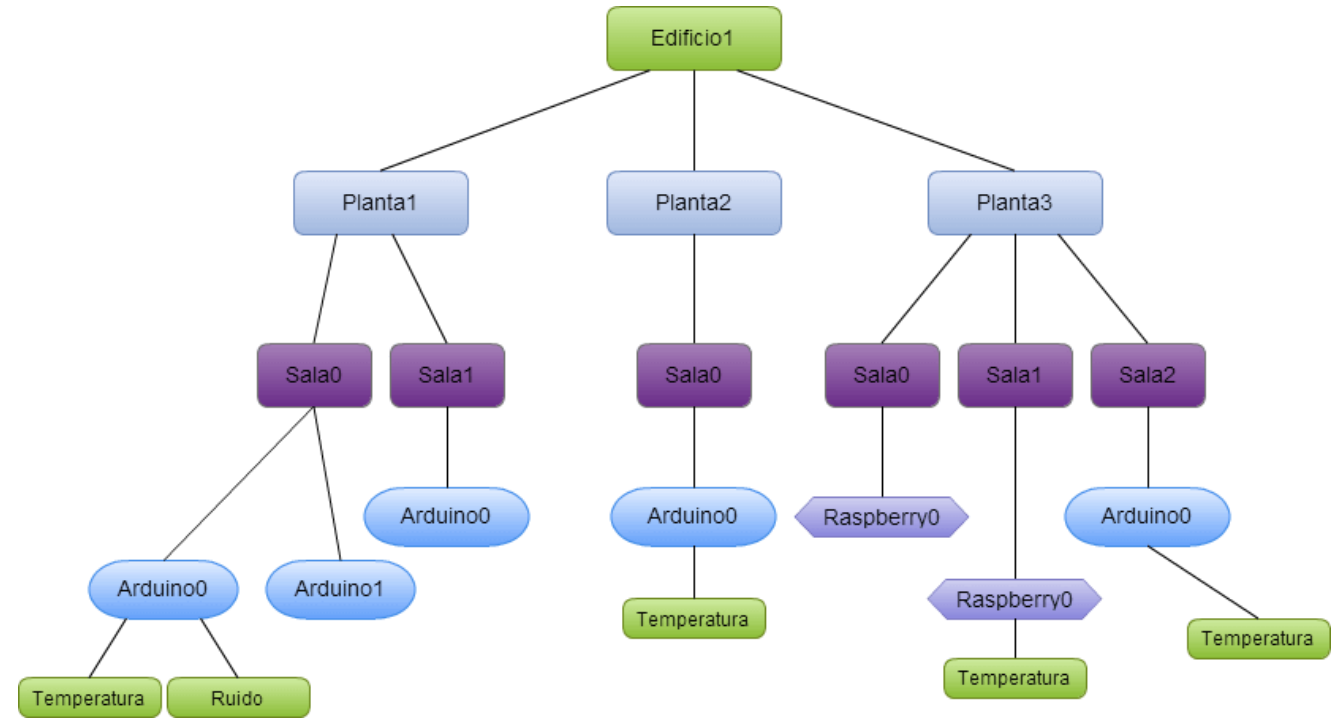
Los tópicos son la forma en que se organiza la información.
Se dividen en jerarquías, similar al concepto de carpetas y archivos.

Un nodo puede subscribirse a un tópico específico:
"Edificio1/Planta2/Sala0/Arduino0/Temperatura"

O varios usando wildcards (+ o #):

"Edificio1/Planta2/#"

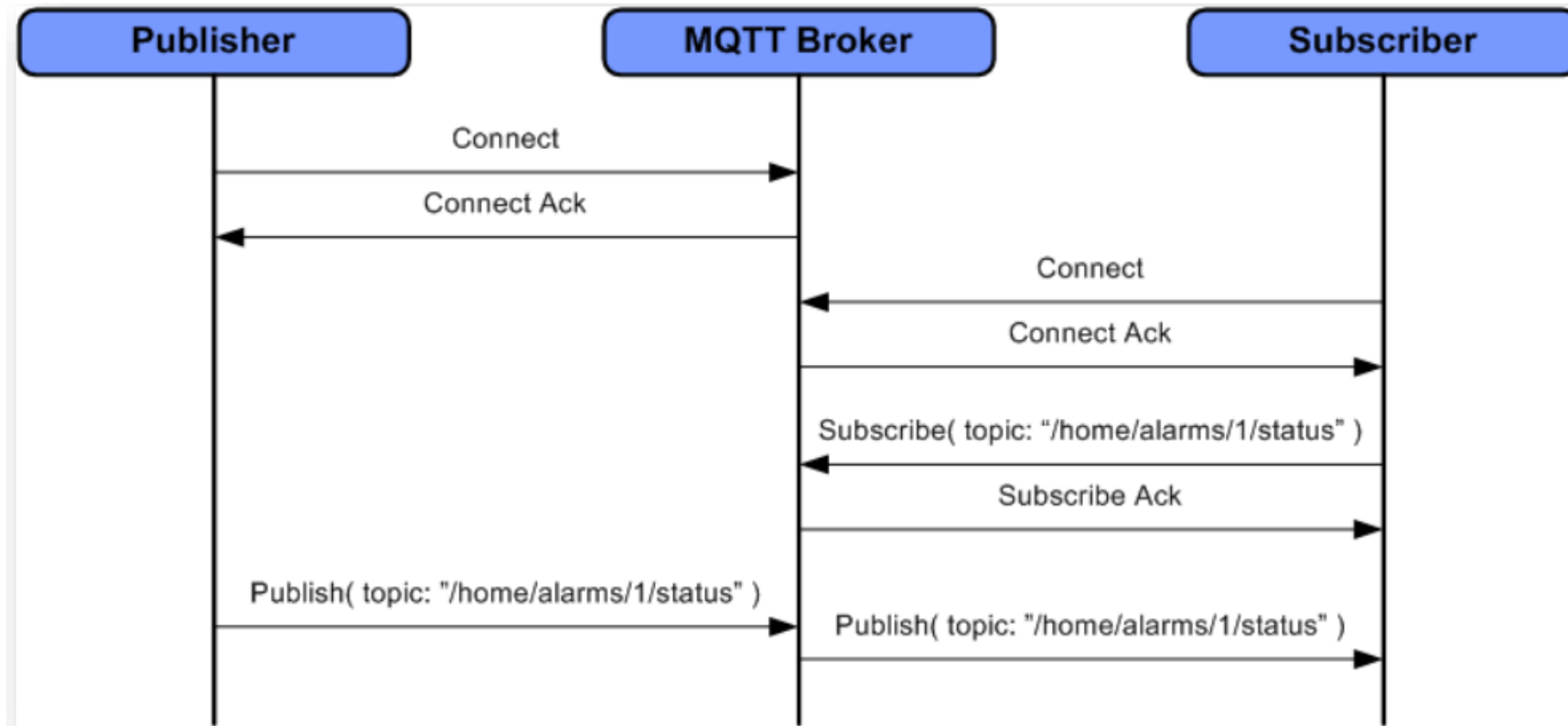
"Edificio1/+/Sala0/+/Temperatura"



Paquetes

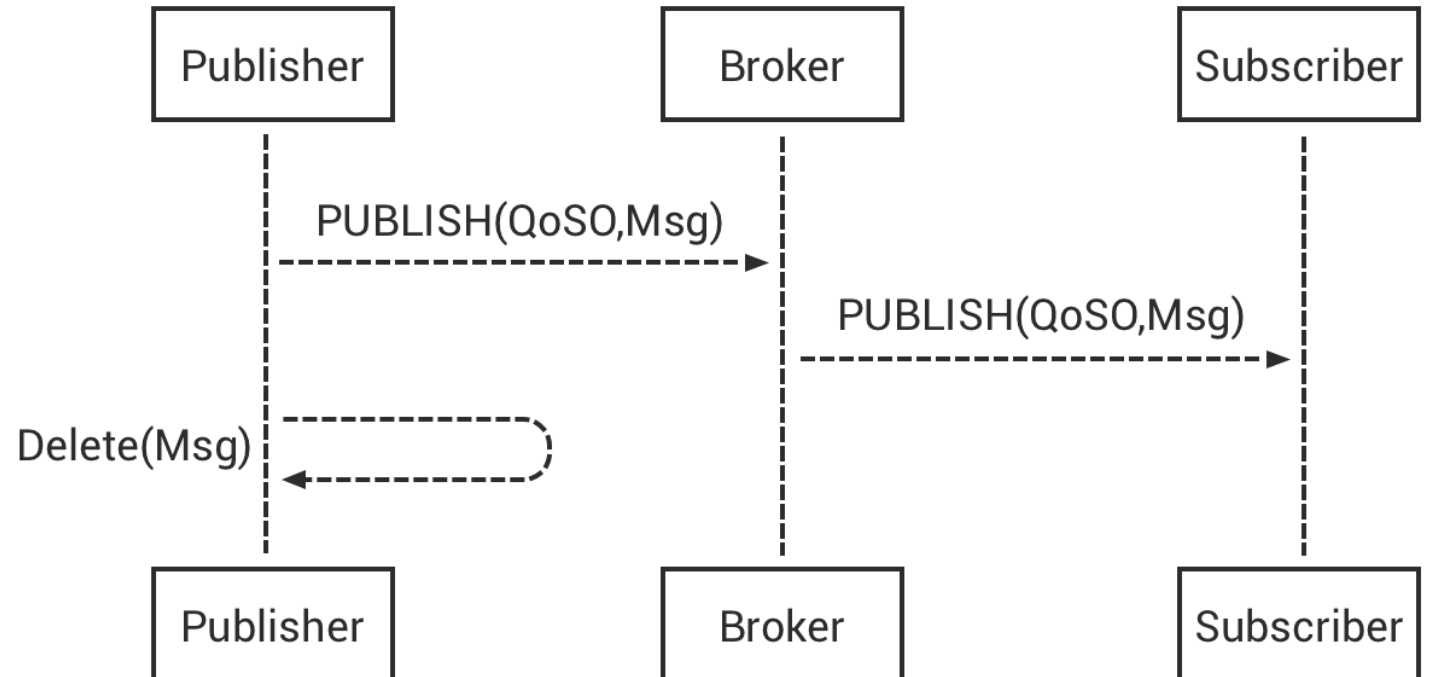
Control packet	Direction of flow	Description
CONNECT	Client to Server	Client request to connect to Server
CONNACK	Server to Client	Connect acknowledgment
PUBLISH	Client to Server or Server to Client	Publish message
PUBACK	Client to Server or Server to Client	Publish acknowledgment
PUBREC	Client to Server or Server to Client	Publish received (assured delivery part 1)
PUBREL	Client to Server or Server to Client	Publish release (assured delivery part 2)
PUBCOMP	Client to Server or Server to Client	Publish complete (assured delivery part 3)
SUBSCRIBE	Client to Server	Client subscribe request
SUBACK	Server to Client	Subscribe acknowledgment
UNSUBSCRIBE	Client to Server	Unsubscribe request
UNSUBACK	Server to Client	Unsubscribe acknowledgment
PINGREQ	Client to Server	PING request
PINGRESP	Server to Client	PING response
DISCONNECT	Client to Server	Client is disconnecting

Ejemplo

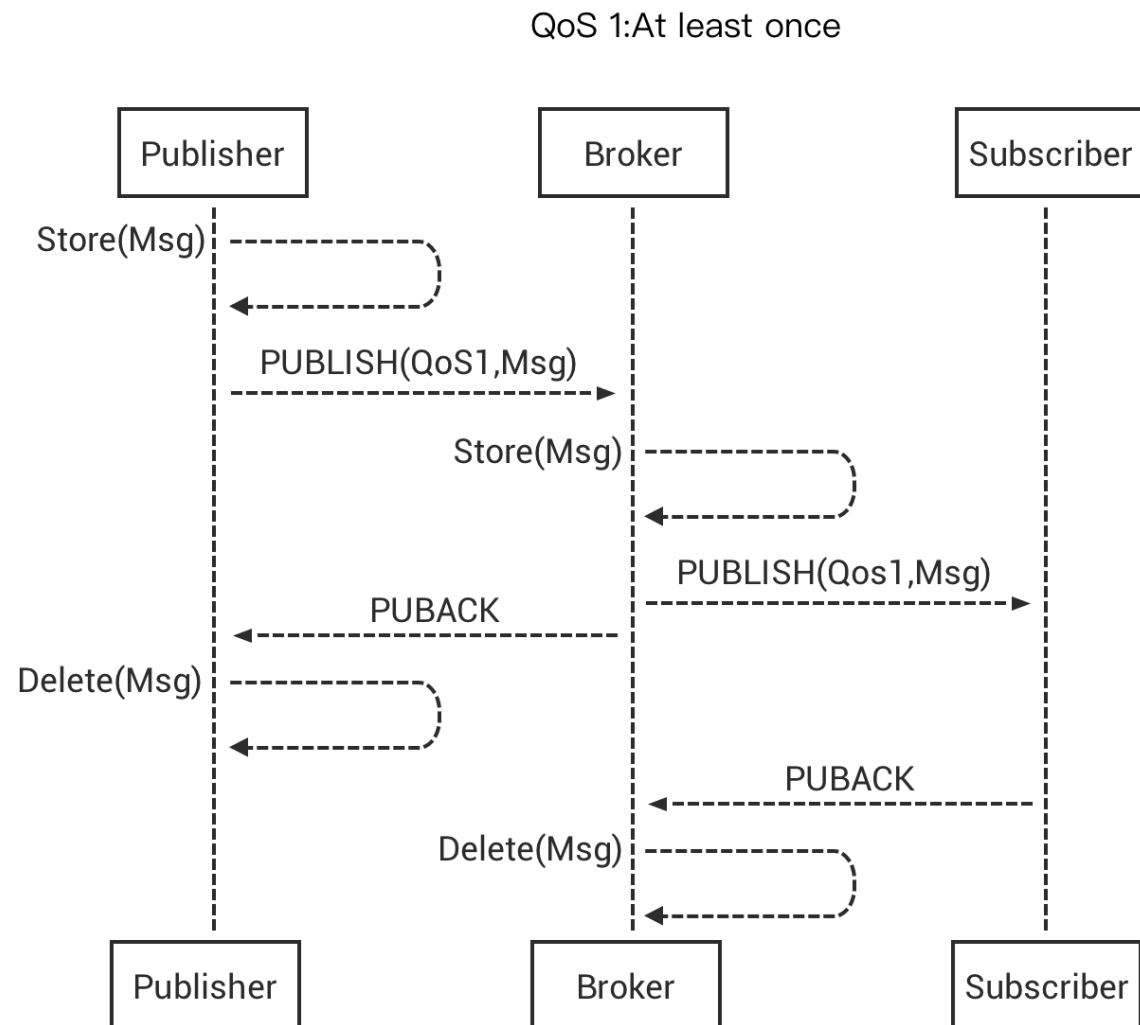


QoS 0:At most once(deliver and forgot)

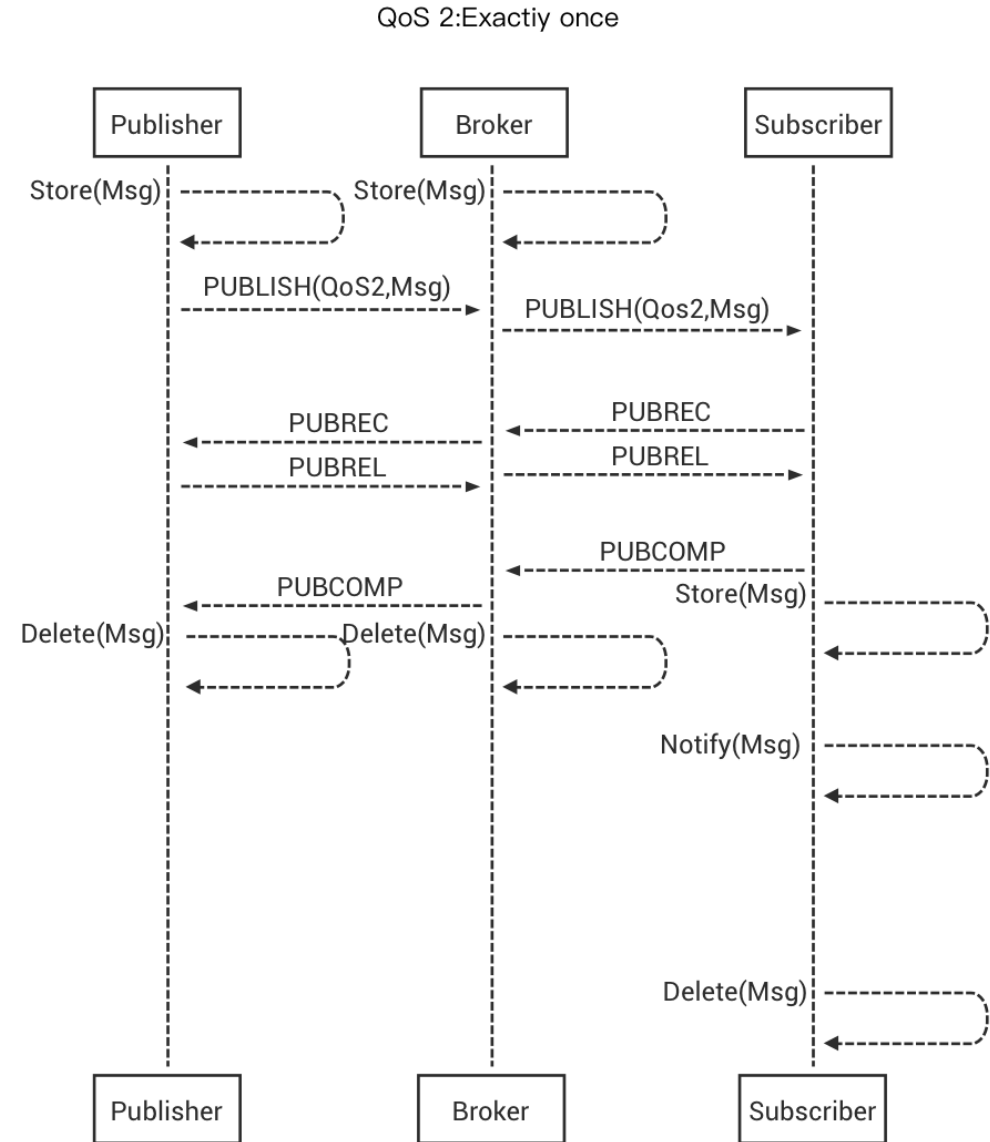
QOS = 0



QOS = 1



QOS = 2



Thingsboard



Documentación completa de MQTT en Thingsboard:
<https://thingsboard.io/docs/reference/mqtt-api/>

Connect

ACCESS TOKEN se usa como Username.

Password vacío

Device ID no importa, pero no puede ser vacío

Publish

Telemetry: v1/devices/me/telemetry

Client Attributes: v1/devices/me/attributes

Payload: {"key1":"value1"}

Subscribe

Shared Attributes: v1/devices/me/attributes

Payload: {"key1":"value1"}

Otras opciones

Comandos RPC

Firmware updates