MQTT

```
┌─────────────────────────────┐        ┌────────────────────────────────────┐
│                             │───────→│ 0: Entrega como máximo una vez      │
│                             │        └────────────────────────────────────┘
│ Quality of Service levels,  │───────→┌────────────────────────────────────┐
│            QoS              │        │ 1: Entrega al menos una vez         │
│                             │        └────────────────────────────────────┘
│                             │───────→┌────────────────────────────────────┐
└─────────────────────────────┘        │ 2: Entrega exactamente una vez      │
                                       └────────────────────────────────────┘
```
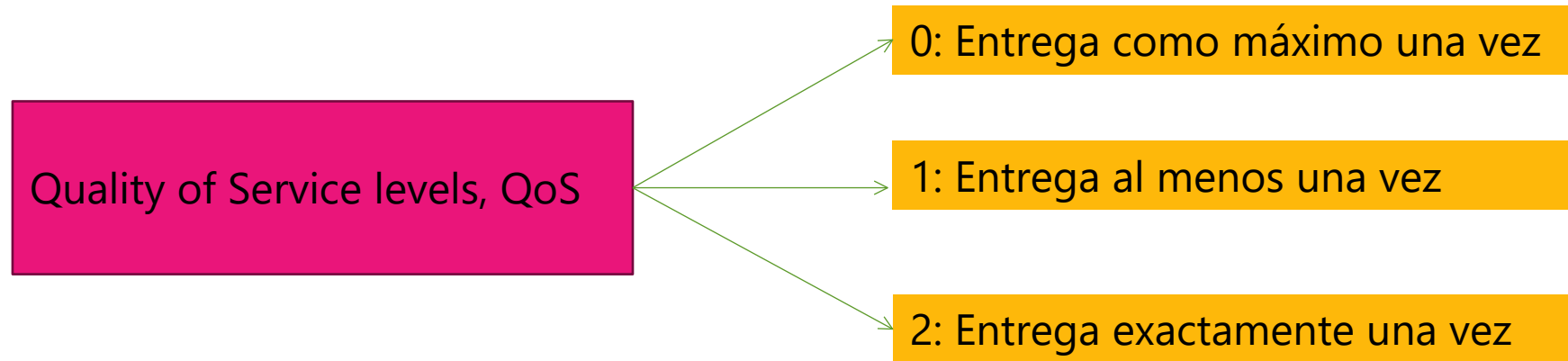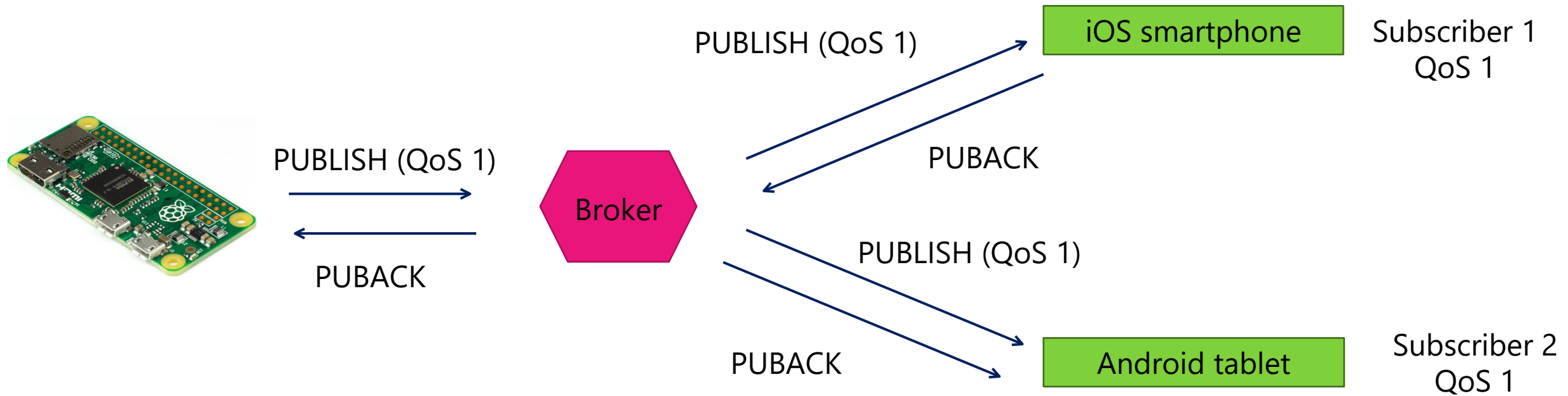
QoS 1

QoS 1

```
C:\Program Files\mosquitto>mosquitto_sub -t sensors/+/altitude -q 1 -i MosquitoSub -d
Client MosquitoSub sending CONNECT
Client MosquitoSub received CONNACK (0)
Client MosquitoSub sending SUBSCRIBE (Mid: 1, Topic: sensors/+/altitude, QoS: 1, Options: 0x00)
Client MosquitoSub received SUBACK
Subscribed (mid: 1): 1
```

```
C:\Program Files\mosquitto>mosquitto_pub -t sensors/drone02/altitude -m "65 m" -q 1 -i MosquittoPub -d
Client MosquittoPub sending CONNECT
Client MosquittoPub received CONNACK (0)
Client MosquittoPub sending PUBLISH (d0, q1, r0, m1, 'sensors/drone02/altitude', ... (4 bytes))
Client MosquittoPub received PUBACK (Mid: 1, RC:0)
Client MosquittoPub sending DISCONNECT
```

```
Client MosquitoSub sending PINGREQ
Client MosquitoSub received PINGRESP
Client MosquitoSub sending PINGREQ
Client MosquitoSub received PINGRESP
Client MosquitoSub received PUBLISH (d0, q1, r0, m1, 'sensors/drone02/altitude', ... (4 bytes))
Client MosquitoSub sending PUBACK (m1, rc0)
65 m
```

QoS 2
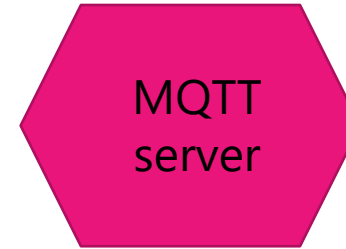

PUBLISH (QoS 2)

PUBREC

PUBREL

PUBCOMP

Cliente MQTT
Publisher

MQTT
server

QoS 2

```
C:\Program Files\mosquitto>mosquitto_sub -t sensors/drone03/# -q 2 -i MosquittoSub -d
Client MosquittoSub sending CONNECT
Client MosquittoSub received CONNACK (0)
Client MosquittoSub sending SUBSCRIBE (Mid: 1, Topic: sensors/drone03/#, QoS: 2, Options: 0x00)
Client MosquittoSub received SUBACK
Subscribed (mid: 1): 2
```

```
C:\Program Files\mosquitto>mosquitto_pub -t sensors/drone03/speed/rotor/1 -m "362 m" -q 2 -i MosquittoPub -d
Client MosquittoPub sending CONNECT
Client MosquittoPub received CONNACK (0)
Client MosquittoPub sending PUBLISH (d0, q2, r0, m1, 'sensors/drone03/speed/rotor/1', ... (5 bytes))
Client MosquittoPub received PUBREC (Mid: 1)
Client MosquittoPub sending PUBREL (m1)
Client MosquittoPub received PUBCOMP (Mid: 1, RC:0)
Client MosquittoPub sending DISCONNECT
```

```
Client MosquittoSub received PUBLISH (d0, q2, r0, m1, 'sensors/drone03/speed/rotor/1', ... (5 bytes))
Client MosquittoSub sending PUBREC (m1, rc0)
Client MosquittoSub received PUBREL (Mid: 1)
Client MosquittoSub sending PUBCOMP (m1)
362 m
```

Taller

Muestre un ejemplo del uso de las siguientes opciones en Mosquitto MQTT. Ponga en texto los comandos enviados e incluya capturas de pantalla de la terminal mostrando el resultado. Los comandos se deben ejecutar con la opción - d activa. Explique a detalle el resultado observado en la terminal.

– Uso de wildcard +.
– Uso de wildcard #.
– Uso de QoS 1.
– Uso de QoS 2.
– Retain flag - r.
– Limpiar un tema retenido - n.