MQTT Summary

What MQTT Is
MQTT (Message Queuing Telemetry Transport) is a lightweight messaging protocol designed for reliable communication between devices, especially in IoT systems where bandwidth and power may be limited.

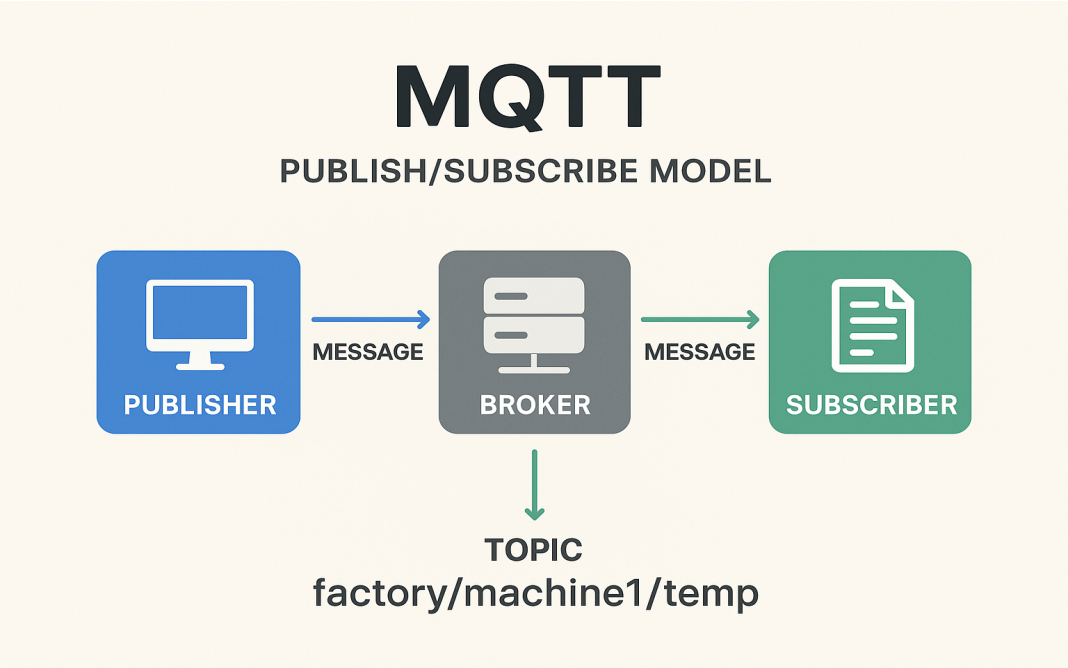
How It Works
MQTT uses a publish/subscribe model with three main components:
1. **Broker** – The central server that manages all messages.
2. **Publishers** – Devices or applications that send messages on specific topics.
3. **Subscribers** – Devices or applications that receive messages from topics they subscribe to.

Basic Flow
1. The broker sits in the middle.
2. A publisher sends a message to a topic (e.g., factory/machine1/temp).
3. The broker receives that message.
4. Any subscriber that has subscribed to that topic gets the message immediately.

It's asynchronous — publishers and subscribers don't need to know about each other or be online at the same time (depending on QoS settings).

Key Features
• Lightweight: Small packet size → perfect for embedded devices.
• QoS (Quality of Service): Controls message delivery reliability:
  0 – "At most once" (fire and forget)
  1 – "At least once" (acknowledged delivery)
  2 – "Exactly once" (safest, slowest)
• Persistent sessions: Subscribers can receive missed messages when they reconnect.
• Supports encryption via TLS for security.

Typical Uses
• IoT sensors sending data to the cloud
• Home automation systems (smart thermostats, lights)
• Industrial monitoring (PLCs, SCADA)
• Real-time dashboards and alerts


MQTT
PUBLISH/SUBSCRIBE MODEL
PUBLISHER
MESSAGE
BROKER
MESSAGE
SUBSCRIBER
TOPIC
factory/machine1/temp