HTTP vs MQTT

Which Is Better for Embedded IoT Projects?

MQTT

?

HTTP

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Choosing the right protocol can define your system's performance, power efficiency, and responsiveness.

- **Both are widely used in IoT and embedded systems**
- **Each has its strengths depending on the application**
- **The wrong choice can slow down your project**
- **Let's explore when to use MQTT and when to choose HTTP**

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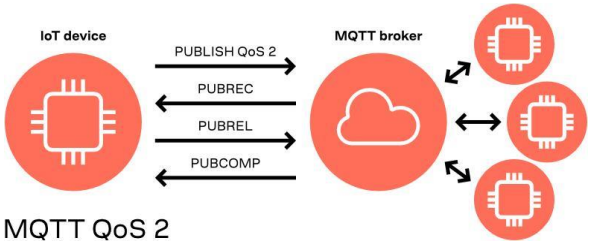
MQTT – Lightweight, Real-Time Messaging

Best for fast, low-power, small-payload communication

- **Publish/subscribe model – event-driven & async**
- **Persistent connection, low overhead**
- **Ideal for sensors, telemetry, and control loops**
- **Efficient on battery-powered devices**
- **Handles unreliable networks well**
- **Scales well with many devices**



MQTT QoS 2

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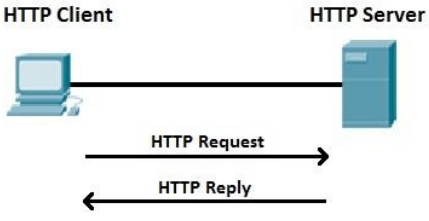
HTTP – Simple but Heavy

Best for occasional, large-payload communication

- **Request/response model – client initiates**
- **High overhead, large headers**
- **No persistent connection (unless HTTP/2 used)**
- **Perfect for large data transfers (images, logs, firmware)**
- **Easy integration with REST APIs and web servers**
- **Well supported and easy to debug**



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Key Differences

Feature	MQTT	HTTP
Model	Publish/Subscribe	Request/Response
Overhead	Very Low	High
Connection	Persistent	Stateless (unless HTTP/2)
Data Size	Small payloads	Large payloads
Power Usage	Low	High
Use-Case	Sensors, real-time alerts	Web, cloud, large data

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Final Thoughts

The protocol shapes your project's efficiency and performance.

- **Use MQTT for real-time, low-power, lightweight comms**
- **Use HTTP for heavy data, cloud APIs, or OTA firmware**
- **MQTT = efficient in limited-bandwidth networks**
- **HTTP = easier to test/debug and cloud-ready**
- **Hybrid systems are common – use each where it fits best**
- **Don't choose blindly — align protocol with your application needs**

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