

Why is MQTT Important for the Internet of Things, and what is it?



Zurich, Switzerland Nov 29, 2022 ([Issuewire.com](https://www.issuewire.com)) - [Akenza](https://www.akenza.io) leads the Internet of Things toward broad applicability by reducing technical complexity and empowering companies to create smart applications. According to insights, the number of connected devices is expected to exceed 13.1 Billion worldwide this year. With that vast number of devices comes the need for them to communicate across networks and cloud platforms, which is where IoT protocols come into play. Protocols provide a

seamless mode of communication for data exchanged between connected devices while ensuring optimum security for that data.

What is MQTT?

Message queuing telemetry transport (MQTT) is a standard messaging protocol for IOT applications. Andy Stanford-Clark and Arlen Nipper worked at IBM's Cambridge software lab and developed [MQTT](#). MQTT has become a widely used protocol for the Internet of Things due to its publish and subscribe model, which facilitates communication between various devices. This protocol is based on the TCP/IP standard and is recognized by OASIS.

How does MQTT work?

The MQTT protocol enables IoT devices to connect from any location, even when networks are unreliable or unresponsive. As we've discussed, the MQTT protocol uses a publish and subscribe model. This model is designed to let messages be sent in either direction between the client and server. It ensures that messages are delivered through an acknowledgment system that confirms whether the data was received correctly.

Here's how publishing and subscribing work.

The Public and Subscribe model

In this model, the publisher sends messages to any device that wishes to receive them. Subscribers interested in receiving the data send back an acknowledgment if the message was received correctly. The publisher and subscribers do not communicate directly; a broker is responsible for filtering incoming messages and distributing them to the appropriate subscribers.

Clients, topics, and brokers represent MQTT components that illustrate these concepts.

- MQTT Broker

Subscribers receive messages from MQTT brokers, which filter them and send them to subscribers; here are the MQTT clients. An MQTT broker can handle millions of connected MQTT clients.

- MQTT Client

A client is a device that can communicate with the broker to send and receive messages. It can be a small IoT sensor that sends data regularly or a computer application that displays the IoT data graphically. Clients can subscribe to a topic in the broker to receive messages related to that topic, and they can also publish messages to a topic, which the broker will then forward to subscribers.

- MQTT Topic

Subscribers can register interest in a topic by subscribing to that topic. Messages published on the topic are then delivered to any subscribers. Topics can contain several levels, separated by a forward slash, and subscribers can subscribe to an entire topic or a specific group within the topic. Outbound messages can be published on a particular topic, and subscribers will receive the message.

Here are some examples of topics:

mycompany/meetingroom/temperature

mycompany/meetingroom/lamp

Why is MQTT Important for IoT

MQTT is a popular protocol for the Internet of Things due to its lightweight nature. The open standard can be implemented on any hardware or software. In order to create IoT applications, all major programming languages have client libraries available.

Due to several factors, MQTT has become one of the main protocols for IoT solutions.

MQTT's publish and subscribe model offers great flexibility, allowing various use cases and project architectures. Publishers and subscribers don't need to be aware of each other, as the broker handles all connections. This protocol enables the creation of highly scalable projects, connecting millions of IoT devices. Furthermore, MQTT's bi-directional communication allows for broadcasting messages to large groups of devices and data security mechanisms and provides numerous authentication, such as TLS encryption.

How to integrate an Arduino device via MQTT on Akenza

MQTT is supported by the Akenza IoT platform, along with HTTP, CoAP, and LoRaWAN, and Eclipse Mosquitto acts as the MQTT broker in the system.

We have prepared a tutorial that will help you through the integration of an Arduino device via MQTT. Let's get started with MQTT on Akenza.

[How to integrate an Arduino device via MQTT on Akenza](#)

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