

# MQTT what is the purpose or usage of Last Will Testament?

Asked 11 years, 6 months ago   Modified 9 years, 9 months ago

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I'm surely missing something about how the whole MQTT protocol works, as I can't grasp the usage pattern of *Last Will Testament* messages: what's their purpose?

One example I often see is about informing that a device has gone offline. It doesn't make very much sense to me, since it's obvious that if a device isn't publishing any data it may be offline or there could be some network problems.

So, what are some practical usages of the LWT? What was it invented for?

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asked Jun 24, 2013 at 8:17



Alessandro Da Rugna

4,695 ● 20 ● 43 ● 66

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97



LWT messages are not really concerned about detecting whether a client has gone offline or not (that task is handled by keepAlive messages). LWT messages are about **what happens after the client has gone offline**.

The analogy is that of a *real* last will: If a person dies, she can formulate a testament, in which she declares what actions should be taken after she has passed away. An executor will heed those wishes and execute them on her behalf. The analogy in the MQTT world is that a client can formulate a testament, in which it declares what message should be sent on it's behalf by the broker, after it has gone offline.

### A fictitious example:

I have a sensor, which sends crucial data, but very infrequently. It has formulated a last will statement in the form of [topic: '/node/gone-offline', message: ':id'], with :id being a unique id for the sensor. I also have a *emergency-subscriber* for the topic 'node/gone-offline', which will send a SMS to my phone every time a message is published on that channel.

During normal operation, the sensor will keep the connection to the MQTT-broker open by sending periodic keepAlive messages interspersed with the actual sensor readings. If the sensor goes offline, the connection to the broker will time out, due to the lack of keepAlives.

This is where LWT comes in: If no LWT is specified, the broker doesn't care and just closes the connection. In our case however, the broker will execute the sensor's last will and publish the LWT-message `/node/gone-offline: :id'`. The message will then be consumed to my *emergency-subscriber* and I will be notified of the sensor's ID via SMS so that I can check up on what's going on.

### In short:

Instead of just closing the connection after a client has gone offline, LWT messages can be leveraged to define a message to be published by the broker on behalf of the client, since the client is offline and cannot publish anymore.

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answered Jun 29, 2013 at 22:30

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lowi

986 ● 6 ● 3

- 
- 2 Furthermore, keepAlive messages are only sent and received by the broker and there's the main difference with the Last Will: anyone can suscribe to this topic and be aware of the client going offline – [Joaquín L. Robles](#) Jul 27, 2016 at 13:30
- 



Just because a device is not publishing does not mean it is not online or there is a network problem.

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Take for example a sensor that monitors a value that only changes very infrequently, good design says that the



sensor should only publish the changes to help reduce bandwidth usage as periodically publishing the same value is wasteful. If the value is published as a retained value then any new subscriber will always get the current value without having to wait for the sensor value to change and it publish again.

In this case the LWT is used to published when the sensor fails (or there is a network problem) so we know of the problem as soon at the client keep alive times out.

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answered Jun 24, 2013 at 8:26

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hardillb

59.3k ● 11 ● 79 ● 116



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A in-depth article about Last-Will-and-Testament messages is available in the MQTT Essentials Blog Post series: <http://www.hivemq.com/mqtt-essentials-part-9-last-will-and-testament/>.

To summarize the blog post:

The *Last Will and Testament* feature is used in MQTT to notify other clients about an ungracefully disconnected client.

MQTT is often used in scenarios were unreliable networks are very common. Therefore it is assumed that some clients will disconnect ungracefully from time to time, because they lost the connection, the battery is empty or any other imaginable case. It would be good to

know if a connected client has disconnected gracefully (which means with a MQTT *DISCONNECT* message) or not, in order to take appropriate action.

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answered Mar 20, 2015 at 0:44

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**Dominik Obermaier**

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