**Mqtt Heartbeat Spec**

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# **Foreword**

This document describes the MQTT Heartbeat software developed by Pete Reeves, it’s methodology, the data it communicates, the purpose and advantages of using the software.

Based on the MQTT protocol, the Heartbeat software allows the remote monitoring of JACE/TONN/Supervisor health. It periodically publishes data from the station to a remote broker, which can then be subscribed to by either a MQTT Viewer such as MQTT Explorer or by another application. Heartbeat has the ability to receive and monitor publishes as well in order to reconnect back into the Niagara network. From here, normal escalation policies can be enacted.

# **Methodology**

The Heartbeat software extends upon the com.tridium abstractMQTTDriver set of classes. It consists of a Network, Device and set of transmission and receiver points. These can all be viewed through the AX Property sheet view, but ideally the user will use the included WbViews.

There is a single transmission point known as the beat point. All outgoing data is sent to this point, along with a topic. The beat point then handles the transmission, ensuring data is sent correctly before proceeding with the next value. This methodology allows a single point on the JACE license to transmit the data from many points.

# **Installation Process**

3.1 Engineer (SITE)

* Ensure the latest version of Heartbeat is installed onto your N4 installation by dragging the .JAR file into the modules folder (C:/Niagara/[Niagara Version]/modules)
* Access the JACE/TONN platform. Open the software manager and use this to install Heartbeat onto the controller. Wait for the reboot.
* Open the station. Drag a Heartbeat Network under the Drivers slot.
* Using either the configuration WbViews of the AX Property sheet. Set the Device properties as follows
  + IP Address : mqtt.eclipse.org [Subject to change]
  + Port : 1883 [Almost always 1883 or 8883]
  + Connection Type : Anonymous [Running unsecured for now. This may change later. There is a username and password field for secured connections]
  + Interval Time : Varies by site [Please ask OB\_Office if unsure]
* Run the connect action on the device. You should see the status change to ok.
* Record the host-ID and Station Name of the JACE/TONN and sent to OB\_Office so that they can register the controller.

3.2 OB\_Office (Supervisor)

* Follow the steps as above.
* Run the add Receiver action on the network and enter the Host-ID and Station Name of the JACE.
* Navigate to the points folder where you should now see the hostID.
* Configure the missed messages limit [default:3] and the time interval [default:1min] to match that of the controller.
* Alarms will now be generated is the site goes offline

You will now also (using MQTT Explorer) be able to monitor the history health of the site. This is not currently implemented to be read by the supervisor but may become available in a future patch.

# **Data Content**

* Optimised\_heartbeat
  + [Host-ID] ([StationName])
    - System\_heartbeat
    - Config
    - Devices
      * [NetworkName]
        + [DeviceName]

LastOkTime OR LastFailTime

Health

HistoryHealth

Total

Percentage

Failed

Successful

DeviceName

NetworkName

* + - * historyHealth (Aggregated)

Note: Subject to change