

# JSON format published by MQTT Modules

The MQTT Modules publish data in a JSON format with each message comprising a Topic and Payload.

The Topic contains the following key/value pairs:

- namespace
  - Set as "spBv1.0"
- edgeNodeDescriptor
  - The combination of the Group ID and Edge Node ID which provides a unique identifier for the Edge Node
- groupId
  - The Group ID
- edgeNodeid
  - The Edge Node ID
- deviceId
  - The Device ID
- type
  - Message type including:
    - [NBIRTH](#)
    - [DBIRTH](#)
    - [NDATA](#)
    - [DDATA](#)
    - [NDEATH](#)
    - [DDEATH](#)



The deviceId is only included for the device level message types of DBIRTH, DDATA and DDEATH

The Payload contains the following key/value pairs:

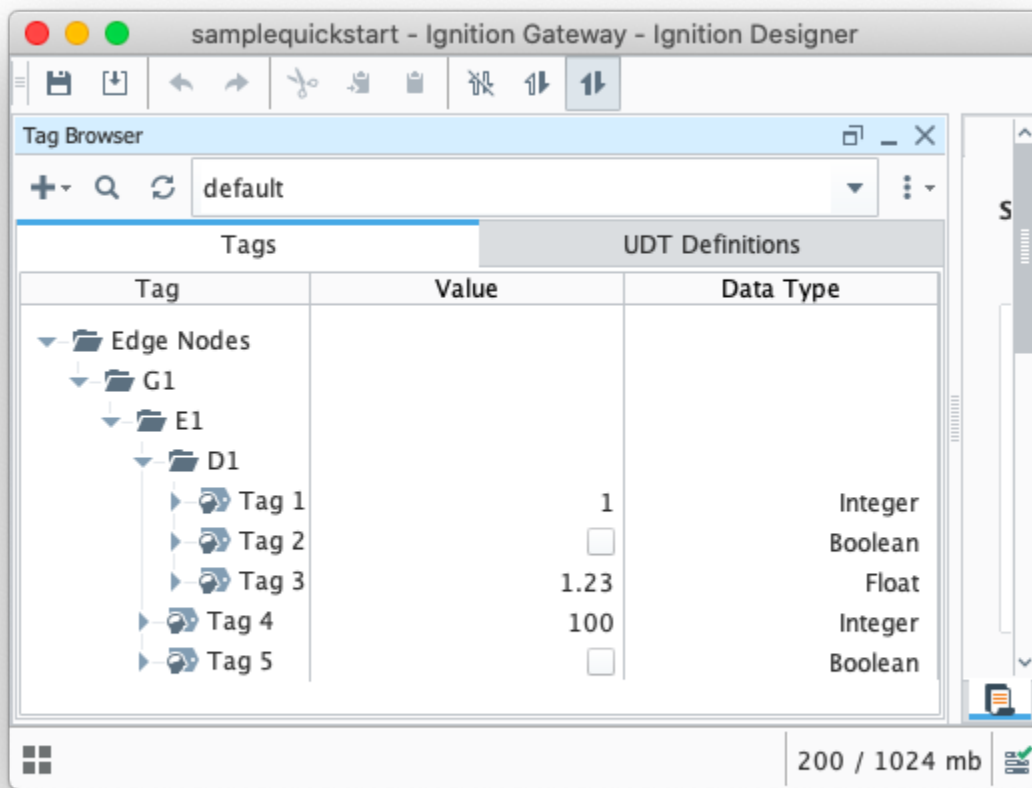
- timestamp
  - The time stamp that the payload was created
- metrics
  - An array containing data specific to the message type being published
  - Each object in the array will include the following name/value pairs:
    - name
    - timestamp
    - dataType
    - value
  - Optional name/value pairs include:
    - metaData
      - Meta Data property values, including Tooltip and Documentation, are included if they have been changed from the Ignition default. See the Ignition [Tag Properties](#) reference for all available properties.
    - properties
      - The Quality property. See the Ignition [Tag Quality Code Reference](#) for the Data Quality value reference.
        - If the Quality property is not included, the quality of the tag data is considered Good.
      - Additional property values such as engHigh, engLow etc are included if they have been changed from the Ignition default or if they are custom properties. See the Ignition [Tag Properties](#) reference for all available properties.
- seq
  - The message sequence number used to ensure that messages are processed in the correct order



metaData and property values, other than Quality, are only included in the NBIRTH or DBIRTH messages and only if they have changed from the Ignition default.

## Sample JSON messages

Using a simple tag tree structure shown below, we can show how these JSON formatted messages will be generated:



## NBIRTH

The metrics array for the Edge Node BIRTH message will contain:

- A Birth/Death sequence number to track the Sparkplug session of the Edge client
- Any Edge Node tags defined in the Edge Node folder

## Edge Node BIRTH message

```
{
  "topic": {
    "namespace": "spBv1.0",
    "edgeNodeDescriptor": "G1/E1",
    "groupId": "G1",
    "edgeNodeId": "E1",
    "type": "NBIRTH"
  },
  "payload": {
    "timestamp": 1638223073190,
    "metrics": [
      {
        "name": "bdSeq",
        "timestamp": 1638223073187,
        "dataType": "Int64",
        "value": 5
      },
      {
        "name": "Tag 4",
        "timestamp": 1638223073156,
        "dataType": "Int32",
        "metaData": {},
        "properties": {
          "Quality": {
            "type": "Int32",
            "value": 192
          }
        },
        "value": 100
      },
      {
        "name": "Tag 5",
        "timestamp": 1638223073001,
        "dataType": "Boolean",
        "metaData": {},
        "properties": {
          "Quality": {
            "type": "Int32",
            "value": 192
          }
        },
        "value": false
      }
    ],
    "seq": 0
  }
}
```

## DBIRTH

The metrics array for the Device BIRTH message will contain:

- Any Device tags defined in the Device folder

## Device BIRTH message

```
{
  "topic": {
    "namespace": "spBv1.0",
    "edgeNodeDescriptor": "G1/E1",
    "groupId": "G1",
    "edgeNodeId": "E1",
    "deviceId": "D1",
    "type": "DBIRTH"
  },
  "payload": {
    "timestamp": 1638223073192,
    "metrics": [
      {
        "name": "Tag 1",
        "timestamp": 1638223073192,
        "dataType": "Int32",
        "metaData": {},
        "properties": {
          "Quality": {
            "type": "Int32",
            "value": 192
          }
        },
        "value": 1
      },
      {
        "name": "Tag 2",
        "timestamp": 1638223073011,
        "dataType": "Boolean",
        "metaData": {},
        "properties": {
          "Quality": {
            "type": "Int32",
            "value": 192
          }
        },
        "value": false
      },
      {
        "name": "Tag 3",
        "timestamp": 1638223073041,
        "dataType": "Float",
        "metaData": {},
        "properties": {
          "Quality": {
            "type": "Int32",
            "value": 192
          }
        },
        "value": 1.23
      }
    ],
    "seq": 1
  }
}
```

## NDATA

The metrics array for the Edge Node NDATA message will contain:

- Any tags defined in the Edge Node folder that have changed, For example if we write the value 10 to Tag 4

### Edge Node DATA message

```
{
  "topic": {
    "namespace": "spBv1.0",
    "edgeNodeDescriptor": "G1/E1",
    "groupId": "G1",
    "edgeNodeId": "E1",
    "type": "NDATA"
  },
  "payload": {
    "timestamp": 1638223663812,
    "metrics": [
      {
        "name": "Tag 4",
        "timestamp": 1638223662800,
        "dataType": "Int32",
        "value": 10
      }
    ],
    "seq": 2
  }
}
```

## DDATA

The metrics array for the Device DDATA message will contain:

- Any tags defined in the Device folder that have changed, For example if we write the value 10 to Tag 1

### Device DATA message

```
{
  "topic": {
    "namespace": "spBv1.0",
    "edgeNodeDescriptor": "G1/E1",
    "groupId": "G1",
    "edgeNodeId": "E1",
    "deviceId": "D1",
    "type": "DDATA"
  },
  "payload": {
    "timestamp": 1638223663812,
    "metrics": [
      {
        "name": "Tag 1",
        "timestamp": 1638223662800,
        "dataType": "Int32",
        "value": 10
      }
    ],
    "seq": 3
  }
}
```

## NDEATH

The metrics array for the Edge Node DEATH message will contain:

- A Birth/Death sequence number to track the Sparkplug session of the Edge client

#### Edge Node DEATH message

```
{
  "topic": {
    "namespace": "spBv1.0",
    "edgeNodeDescriptor": "G1/E1",
    "groupId": "G1",
    "edgeNodeId": "E1",
    "type": "NDEATH"
  },
  "payload": {
    "timestamp": 1638223073190,
    "metrics": [
      {
        "name": "bdSeq",
        "timestamp": 1638223073187,
        "dataType": "Int64",
        "value": 5
      }
    ]
  }
}
```

## DDEATH

The metrics array for the DDEATH message will be empty.

#### Device DEATH message

```
{
  "topic": {
    "namespace": "spBv1.0",
    "edgeNodeDescriptor": "G1/E1",
    "groupId": "G1",
    "edgeNodeId": "E1",
    "deviceId": "D1",
    "type": "DDEATH"
  },
  "payload": {
    "timestamp": 1638223073192,
    "metrics": []
  }
}
```

## Additional Resources

- Inductive Automation's Ignition download with free trial
  - [Current Ignition Release](#)
- Cirrus Link Solutions Modules for Ignition
  - [Ignition Strategic Partner Modules](#)
- Support questions
  - Check out the Cirrus Link Forum: <https://forum.cirrus-link.com/>
  - Contact support: [support@cirrus-link.com](mailto:support@cirrus-link.com)
- Sales questions
  - Email: [sales@cirrus-link.com](mailto:sales@cirrus-link.com)

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