6TiSCH Testbed

JSON from Gateway to Cloud

Topology Data

New device topology data

```
msg": {
    "data": {
        "_id": 4,
        "address": "2001:db8:1234:ffff::ff:fe00:4",
        "parent": 67,
        "eui64": "00-12-4b-00-12-05-21-e0",
        "gps": [
            41.80670888614393,
            -72.25271098086125
        ],
        "type": "SensorTag",
        "power": "battery"
    }
}
```

Network basic data of device

```
"msg": {
    "_id": 37,
    "data": {
        "curParent": 7,
        "numParentChange": 2,
        "numSyncLost": 2,
        "avgDrift": 157,
        "maxDrift": 396,
        "numMacOutOfBuffer": 0,
        "numUipRxLost": 0,
        "numLowpanTxLost": 0,
        "numLowpanRxLost": 0,
        "numCoapRxLost": 0,
        "numCoapObsDis": 0
    }
}
```

Network latency data of device

```
"msg": {
    "_id": 37,
    "rtt": 3.924
  }
```

Network advanced data of device

64 channel information

```
"msg":{
    "_id":3,
    "data":{
        "ch":{
            "0":{
                "rssi":1,
                "rxRssi":2,
                "txNoAck":3,
                "txTotal":0
            },
            ...
        },
        "appPer":{
            "last_seq":160,
            "sent":27,
            "lost":0
        },
        "txFail":116,
        "txNoAck":2,
        "txTotal":89,
        "rxTotal":87,
        "txLengthTotal":4792,
        "macTxNoAckDiff":2,
        "macTxTotalDiff":36,
        "macRxTotalDiff":34,
        "macTxLengthTotalDiff":2087,
        "appLostDiff":0,
        "appSentDiff":12
    }
}
}'
```

Sensing data

```
"msg": {
    "_id": 18,
    "data": {
        "temp": 21.5,
        "rhum": 0,
```

```
        "lux": 55,
        "press": 972,
        "accelx": -0.66,
        "accely": -0.63,
        "accelz": -0.24,
        "led": 0,
        "eh": 0,
        "eh1": 0,
        "cc2650_active": 2,
        "cc2650_sleep": 2,
        "rf_tx": 11.5,
        "rf_rx": 30.36,
        "msp432_active": 0,
        "msp432_sleep": 0,
        "gpsen_active": 16.5,
        "gpsen_sleep": 49.8,
        "others": 5,
        "sequence": 145,
        "asn_stamp1": 0,
        "asn_stamp2": 0,
        "channel": 14,
        "bat": 2.69,
        "latency": 1.05
    }
}
```

JSON retrieved for Frontend (Cloud API)

Common JSON Format

```
{
    // results
    "data": {},
    // 1: success, 0: some error occured
    "flag": 1,
    // "success" or error message
    "msg": "success"
}
```

Common Parameters

Time range: `range=hour|day|week|month`, default query all data.

Advanced info flag: `advanced=1|0`

GET /api/gateway

Get gateway name list

Params: `range`

Example:

```
data": [
    "UCONN_GW",
    "UCONN_GWX"
],
```

GET /api/:gateway/topology

Get topology data for a gateway.

Params: range

Example:

```
"data": [
    ...
    {
        "datetime": "2019-11-06 16:55:34",
        "timestamp": 1573077334467,
        "gateway": "UCONN_GW",
        "sensor_id": 1,
        "address": "2001:db8:1234:ffff::ff:fe00:1",
        "parent": 0,
        "eui64": "",
        "position": {
            "lat": 41.806737363265306,
            "lng": -72.25269334242424
        },
        "type": "LaunchPad",
        "power": "USB"
    },
    ...
],
```

GET /api/:gateway/nwstat

Get network statistic data for all sensors under a gateway.

Params: range

Example:

```
"data": [
    ...
    {
        "sensor_id": 3,
        "gateway": "UCONN_GW",
```

```
            "avg_rtt": 1.4585000276565552,
            "avg_mac_tx_total_diff": 27.4,
            "avg_mac_tx_noack_diff": 0,
            "avg_app_per_sent_diff": 8.8,
            "avg_app_per_lost_diff": 0
        },
        ...
    ],
```

GET /api/:gateway/nwstat/:sensorID

Get detail network statistic data for one sensor under a gateway.

Params: range, advanced

Example:

advanced=0

```
    "data": [
        ...
        {
            "timestamp": 1573077385010,
            "avg_rssi": -44,
        },
        ...
    ]
```

advanced=1

```
    "data": [
        ...
        {
            "timestamp": 1573077385010,
            "mac_tx_total_diff": 35,
            "mac_tx_noack_diff": 1,
            "app_per_sent_diff": 12,
            "app_per_lost_diff": 0
        }
        ...
    ]
```

GET /api/:gateway/battery

Get battery data for all sensors under a gateway.

Params: none

Example:

```
"data": [
    ...
    {
        "gateway": "UCONN_GW",
        "sensor_id": 3,
        "avg_cc2650_active": 2,
        "avg_cc2650_sleep": 2,
        "avg_rf_rx": 90.34433875893647,
        "avg_rf_tx": 13.936226430928931,
        "bat_remain": "96%:31D"
    },
    ...
]
```