DATA PLANE

Notes and Ideas

The purpose of the network is to see if it is enabled or not. If not, the data is dropped

Ideally, the application network intercection would conatin this so we can save the network call

The purpose of the application is 1 To find out if the application is running (if no drop data) 2 To find out the integration information

Requirements

- Should support Downlink as well as uplink
- Should allow a single application to support multiple integrations
- Should allow a single device on multiple applications (?) *Not sure about this*
- Should support payload analysis for trouble shooting in UI

API and Data Shape

Uplink data from a Device via a Network Server

```
POST /api/uplink/:applicationId/:networkId
```

```
{
   applicationID: 'string',
   applicationName: 'string',
   deviceName: 'string',
   devEUI: 'string, base64',
   rxInfo:[
   {
       gatewayID: 'string, base64',
       name: 'string',
       time: 'string, time-ISO',
       rssi: 'number',
       loRaSNR: 'number',
       location:{
```

```
            latitude: 'number',
            longitude: 'number',
            altitude: 'number'
         }
    }],
    txInfo:{
        frequency: 'number',
        dr: 'number'
    },
    adr: 'boolean',
    fCnt: 'number',
    fPort: 'number',
    data:'string, base64 e.g. eyJXRCI6ICJOVyIsICJIIC...',
  }
```

Downlink to All Devices

```
POST /api/downlink/:applicationId
```

```
{
  "multicastQueueItem": {
    "data": "string",
    "fCnt": 0,
    "fPort": 0,
  }
}
```

Downlink to a Single Device

```
POST /api/downlink/:applicationId/:devEUI
```

```
{
  "deviceQueueItem": {
    "confirmed": true,
    "data": "string",
    "devEUI": "string",
    "fCnt": 0,
    "fPort": 0,
    "jsonObject": "string"
  }
}
```

Application Server Payload

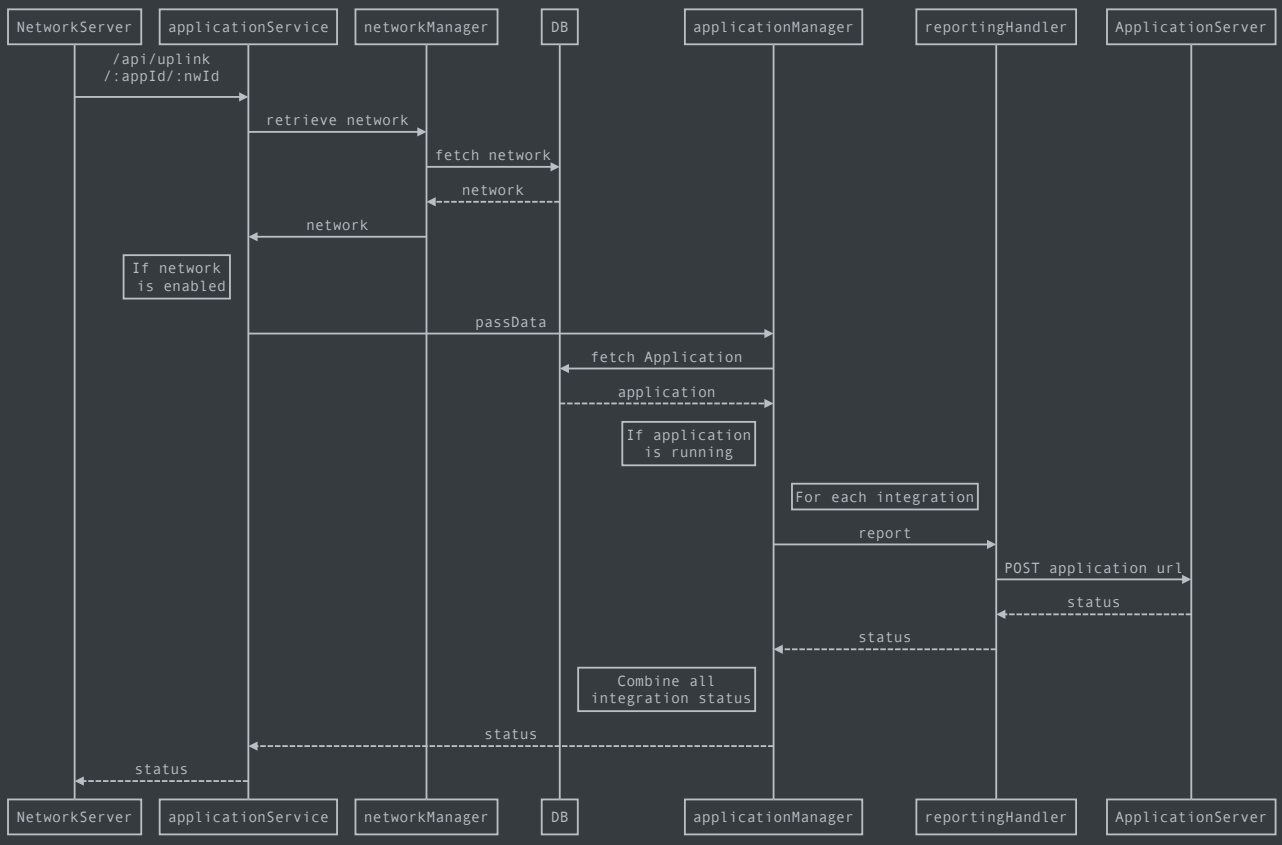
Note Application Server API is application dependent

```
  {
    applicationID: 'string',
    applicationName: 'string',
    deviceName: 'string',
    devEUI: 'string, base64',
    rxInfo:[
    {
        gatewayID: 'string, base64',
        name: 'string',
        time: 'string, time-ISO',
        rssi: 'number',
        loRaSNR: 'number',
        location:{
            latitude: 'number',
            longitude: 'number',
            altitude: 'number'
         }
    }],
    txInfo:{
        frequency: 'number',
        dr: 'number'
    },
    adr: 'boolean',
    fCnt: 'number',
    fPort: 'number',
```

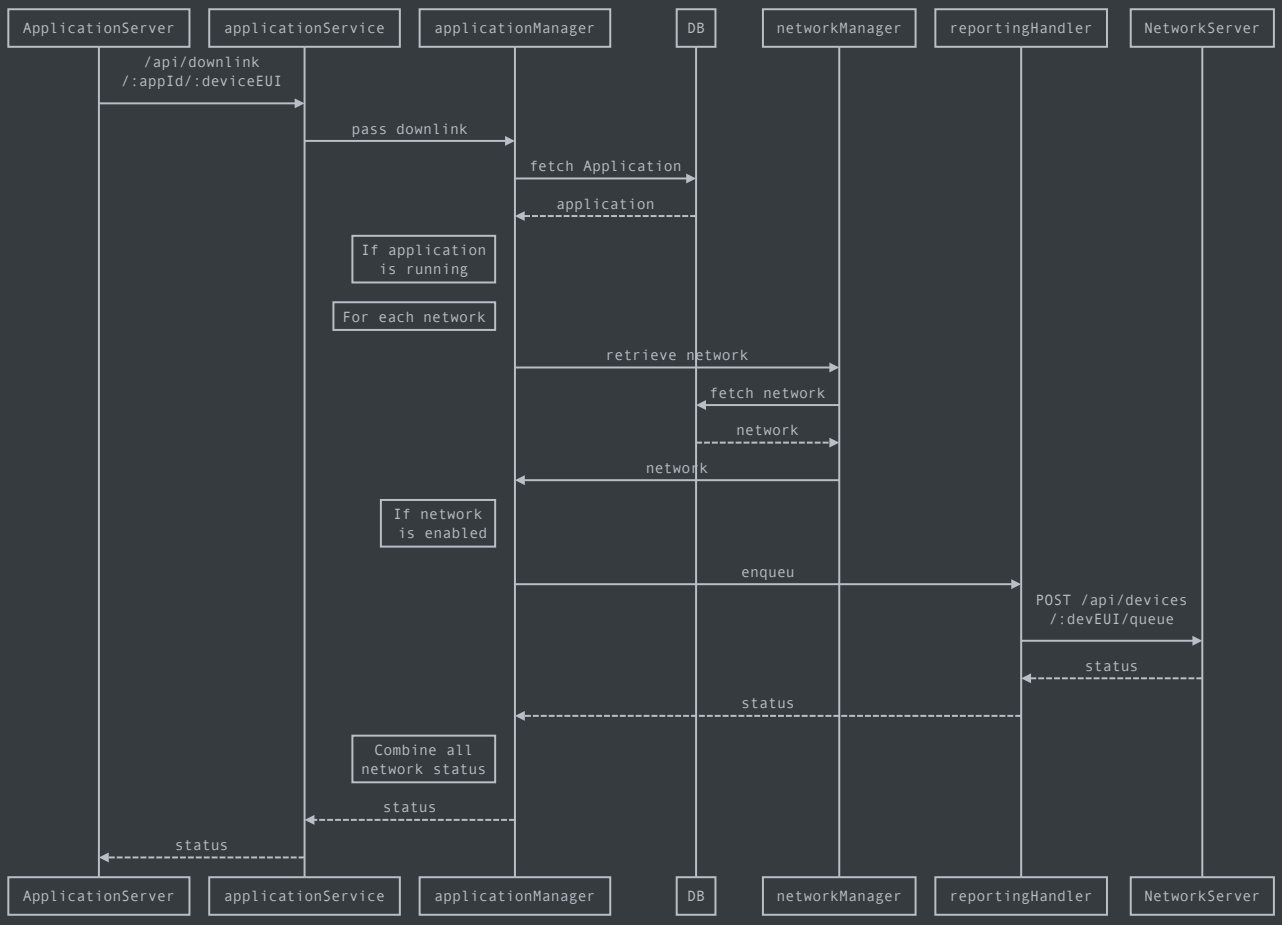
```
    data:'string, base64 e.g.
eyJXRCI6ICJOVyIsICJIIjogIjAiLCAidGltZSI6IC...',
  }
```

Proposed Flow

Uplink

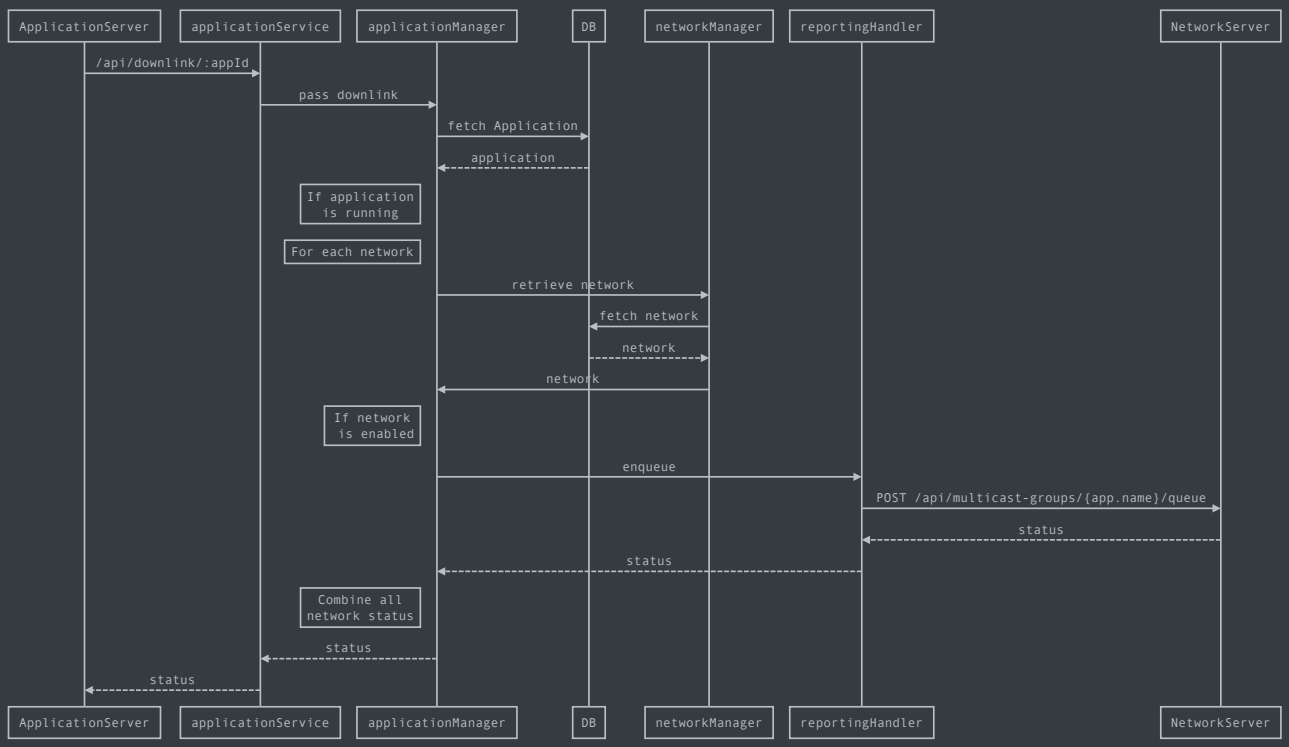


Downlink to Single Device



Downlink to All Devices

Note we assume the multicast group for the application has been created with groupId = application.name



Current Implementation

API

Uplink data from a Device via a Network Server

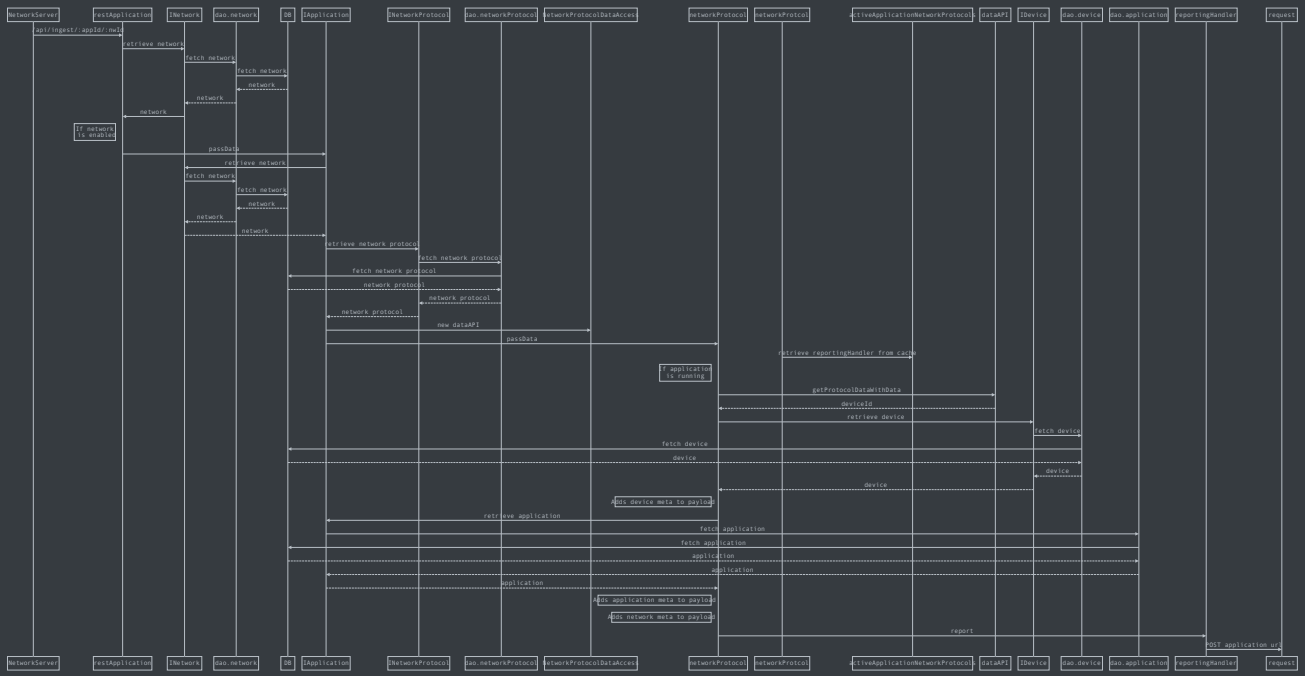
```
POST /api/ingest/:applicationId/:networkId
```

```
{
    applicationID: 'string',
    applicationName: 'string',
    deviceName: 'string',
    devEUI: 'string, base64',
    rxInfo:[
    {
        gatewayID: 'string, base64',
        name: 'string',
        time: 'string, time-ISO',
        rssi: 'number',
        loRaSNR: 'number',
        location:{
```

```
            latitude: 'number',
            longitude: 'number',
            altitude: 'number'
         }
    }],
    txInfo:{
        frequency: 'number',
        dr: 'number'
    },
    adr: 'boolean',
    fCnt: 'number',
    fPort: 'number',
    data:'string, base64 e.g.
eyJXRCI6ICJOVyIsICJIIjogIjAiLCAidGltZSI6IC...',
  }
```

Current Flow

Note that Downlinks are not supported in the current codebase



Application Server Payload

Note Application Server API is application dependent

```
  {
    applicationID: 'string',
    applicationName: 'string',
    deviceName: 'string',
    devEUI: 'string, base64',
    rxInfo:[
    {
        gatewayID: 'string, base64',
        name: 'string',
        time: 'string, time-ISO',
        rssi: 'number',
        loRaSNR: 'number',
        location:{
            latitude: 'number',
            longitude: 'number',
            altitude: 'number'
         }
    }],
    txInfo:{
        frequency: 'number',
        dr: 'number'
    },
    adr: 'boolean',
    fCnt: 'number',
    fPort: 'number',
    data:'string, base64 e.g.
eyJXRCI6ICJOVyIsICJIIjogIjAiLCAidGltZSI6IC...',
    deviceInfo: {
        name: 'string',
        description: 'string',
        model: 'string'
    },
    applicationInfo: {
        name: 'string'
    },
    networkInfo: {
        name: 'string'
    }
  }
```