Getting started guide

Functionality

The R312A is a long-range emergency button device for Netvox ClassA type devices based on the LoRaWAN open protocol and is compatible with the LoRaWAN protocol.

Install CLI for AWS IoT Things Graph

```
## Install AWS CLI
https://docs.aws.amazon.com/cli/latest/userguide/cli-chap-install.html

## Install preview Things Graph API models
https://docs.aws.amazon.com/cli/latest/reference/configure/add-model.html

aws configure add-model --service-name iotthingsgraph --service-model file://service-2.json

## Install jq
https://stedolan.github.io/jq/

## Verify preview model installed
aws iotthingsgraph map-property help

expected to see help output instead of "Invalid choice" error message
```

Find your desired device

1. Go to AWS device catalog page: https://devices.amazonaws.com
2. Locate your desired sensor.
3. For private beta, Things Graph is using API v1. For API v1, use the model file sensor_model.json (device manufacturer enters their model file name). For production, Things Graph will use API v2. For API v2, please use the S3 URL link that you see in the Device catalog page.

Using the device model

The following tests will show the different use cases and binary messages than be used with the model. You can use the binary test data to verify correct functionality of the model.

1. Test name: Report Data Command
    a. Mapping used: map_R312A_Uplink
    b. Use case tested: Report Data
    c. Payload format: port = 6

Bytes	1	1	1	Var(Fix=8 Bytes)
	Version	DeviceType	ReportType	NetvoxPayLoadData

Version:1 bytes – 0x01——the Version of NetvoxLoRaWAN Application Command Version
DeviceType: 1 byte – Device Type of Device
ReportType: 1 byte –the Presention of the NetvoxPayLoadData, according the devicetype
NetvoxPayLoadData: Fixed bytes (Fixed = 8bytes)

Device	DeviceType	ReportType	NetvoxPayLoadData		
R312A	0x4D	0x01	Battery (1Byte,unit:0.1V)	Alarm (1Byte,0:noalarm 1:alarm) /Doorbell (1Byte,0:nodoorbell 1:doorbell)	Reserved(6Bytes,fixed 0x00

    d. Input binary data: 0x014D011C00000000000000
        (DeviceType: 0x4D, ReportType: 0x01, Battery:$1C_{hex} = 28_{dec}$)

    e. API call (V1):

```
aws iotthingsgraph map-property \
    --region us-east-1 \
    --endpoint-url "https://iotthingsgraph.us-east-1.amazonaws.com" \
    --namespace-snapshot file:///path/to/model/json/file \
    --property-value "014D011C00000000000000" \
    --mapping-info '{"mappingId":"urn:tdm:us-east-
1/000000000000/default:mapping:map_R312A_Uplink","mappingDirection": "FORWARD",
"contextProvider":{"json": "{\"port\":6}"}}'
```

    f. Expected results (V1)

```
{
  "propertyId": "Netvox_R312A_Uplink/types/UplinkPort6Payload",
  "propertyValue":"{
    "DeviceType":"R312A",
    "Version":1,
    "Battery":2.8,
    "AlarmStatus":"NoAlarm",
    "ReportType":1
  }"
}
```

2. Test name: Set configuration & read configuration
    a. Mapping used: map_R312A_Uplink
    b. Use case tested:
        (1). Configure MaxTime, MinTime and BatteryChange
        (2). Read configuration
    c. Payload format: port = 7

Bytes	1	1	Var(Fix =9 Bytes)
	CmdID	DeviceType	NetvoxPayLoadData

CmdID– 1 bytes
DeviceType– 1 byte – Device Type of Device
NetvoxPayLoadData– var bytes (Max=9 bytes)

Description	CmdID	Device Type	NetvoxPayLoadData			
Config ReportReq	0x01	0x4D	MinTime (2bytes Unit:s)	MaxTime (2bytes Unit:s)	BatteryChange (1byte Unit:0.1v)	Reserved (4Bytes,Fixed 0x00)
Config ReportRsp	0x81		Status (0x00_success)	Reserved (8Bytes,Fixed 0x00)		
ReadConfig ReportReq	0x02		Reserved (9Bytes,Fixed 0x00)			
ReadConfig ReportRsp	0x82		MinTime (2bytes Unit:s)	MaxTime (2bytes Unit:s)	BatteryChange (1byte Unit:0.1v)	Reserved (4Bytes,Fixed 0x00)

    d. Input binary data:
        i. **Set Configuration**
        MinTime = 5min(300s)、MaxTime = 15min(900s)、BatteryChange = 0.1v

        Downlink: 014D012C03840100000000 $012C_{hex} = 300_{dec}$,$0384_{hex} = 900_{dec}$
        0.1v(Unit:0.1v) => 0.1 ÷ 0.1 = 1, $01_{hex} = 1_{dec}$
        Response: 814D000000000000000000 (Configuration success)
        814D010000000000000000 (Configuration failure)

        ii. **Read Configuration**
        Downlink: 024D000000000000000000
        Response: 824D012C03840100000000 (Current configuration)

e. API call (**Set configuration**):

```
aws iotthingsgraph map-property \
    --region us-east-1 \
    --endpoint-url "https://iotthingsgraph.us-east-1.amazonaws.com" \
    --namespace-snapshot file:///path/to/model/json/file \
    --property-value "014D012C03840100000000" \
    --mapping-info '{"mappingId":"urn:tdm:us-east-
1/000000000000/default:mapping:map_R312A_Uplink","mappingDirection": "FORWARD",
"contextProvider":{"json": "{\"port\":7}"}}'
```

f. Expected results

```
{
  "propertyId":"{
    "DeviceType":"Netvox_R312A_Uplink/types/DeviceTypeEnum",
    "CmdId":"Netvox_R312A_Uplink/types/CmdIdEnum",
    "Payload":"Netvox_R312A_Uplink/types/ConfigureCmdPayload"
    }",
  "propertyValue":"{
    "DeviceType":"R312A",
    "CmdId":"ConfigReportReq",
    "Payload":{
      "MaxTime":900,
      "MinTime":300,
      "BatteryChange":0.1
      }
  }"
}
```

g. Expected results (input data: 814D000000000000000000)

```
{
  "propertyId":"{
    "DeviceType":"Netvox_R312A_Uplink/types/DeviceTypeEnum",
    "CmdId":"Netvox_R312A_Uplink/types/CmdIdEnum",
    "Payload":"Netvox_R312A_Uplink/types/ConfigureCmdPayload"
    }",
  "propertyValue":"{
    "DeviceType":"R312A",
    "CmdId":"ConfigReportRsp",
    "Payload":{
      "Status":"Success"
    }
  }"
}
```

h. API call (**Read configuration**):

```
aws iotthingsgraph map-property \
    --region us-east-1 \
    --endpoint-url "https://iotthingsgraph.us-east-1.amazonaws.com" \
    --namespace-snapshot file:///path/to/model/json/file \
    --property-value "024D000000000000000000" \
    --mapping-info '{"mappingId":"urn:tdm:us-east-
1/000000000000/default:mapping:map_R312A_Uplink","mappingDirection": "FORWARD",
"contextProvider":{"json": "{\"port\":7}"}}'
```

i. Expected results

```
{
  "propertyId":"{
    "DeviceType":"Netvox_R312A_Uplink/types/DeviceTypeEnum",
    "CmdId":"Netvox_R312A_Uplink/types/CmdIdEnum"
    }",
  "propertyValue": "{
    "DeviceType":"R312A","CmdId":"ReadConfigReportReq"
    }"
}
```

j. Expected results (input data: 824D012C03840100000000)

```
{
  "propertyId":"{
    "DeviceType":"Netvox_R312A_Uplink/types/DeviceTypeEnum",
    "CmdId":"Netvox_R312A_Uplink/types/CmdIdEnum",
    "Payload":"Netvox_R312A_Uplink/types/ConfigureCmdPayload"
    }",
  "propertyValue":"{
    "DeviceType":"R312A",
    "CmdId":"ReadConfigReportRsp",
    "Payload":{
      "MaxTime":900,
      "MinTime":300,
      "BatteryChange":0.1
    }
  }"
}
```

3. Test name: ConfigButtonPressTime
    a. Mapping used: map_R312A_Uplink
    b. Use case tested: Set and Read the ButtonPressTime
    c. Payload format: port = 13

Description	CmdID	PayLoad (Var bytes)
SetButtonPress TimeReq	0x01	PressTime (1bytes, 0x00_QuickPush_Less then 1 Second, 0x01_1 Second push, 0x02_2 Seconds push, 0x03_3 Seconds push, 0x04_4 Seconds push, 0x05_5 Seconds push, Other value is reserved)
SetButtonPress TimeRsp	0x81	Status (0x00_Success 0x01_Failure)
GetButtonPress TimeReq	0x02	
GetButtonPress TimeRsp	0x82	PressTime(1bytes, 0x00_QuickPush_Less then 1 Second, 0x01_1 Second push, 0x02_2 Seconds push, 0x03_3 Seconds push, 0x04_4 Seconds push, 0x05_5 Seconds push, Other value is reserved)

    d. Input binary data:
        i. **Set ButtonPressTime**
        Downlink: 0103
        Response: 8100 (Configuration success)
        8101 (Configuration failure)

        ii. **Get ButtonPressTime**
        Downlink: 02
        Response: 8203 (Current configuration)

e. API call(**SetButtonPressTime**):

```
aws iotthingsgraph map-property \
    --region us-east-1 \
    --endpoint-url "https://iotthingsgraph.us-east-1.amazonaws.com" \
    --namespace-snapshot file:///path/to/model/json/file \
    --property-value "0103" \
    --mapping-info '{"mappingId":"urn:tdm:us-east-
1/000000000000/default:mapping:map_R312A_Uplink","mappingDirection": "FORWARD",
"contextProvider":{"json": "{\"port\":13}"}}'
```

f. Expected results

```
{
  "propertyId":"{
    "CmdId":"Netvox_R312A_Uplink/types/CmdIdPort0D_Enum",
    "PressTime":"aws/iot/thingsgraph/v1/types/Duration_s"
    }",
  "propertyValue":"{
    "CmdId":"SetButtonPressTimeReq",
    "PressTime":3
  }"
}
```

g. Expected results (input data: 8100)

```
{
  "propertyId":"{
    "Status":"Netvox_R312A_Uplink/types/ConfigReportRspStatus\",
    "CmdId":"Netvox_R312A_Uplink/types/CmdIdPort0D_Enum"
  }",
  "propertyValue":"{
    "Status":"Success",
    "CmdId":"SetButtonPressTimeRsp"
  }"
}
```

h. API call(**GetButtonPressTime**):

```
aws iotthingsgraph map-property \
    --region us-east-1 \
    --endpoint-url "https://iotthingsgraph.us-east-1.amazonaws.com" \
    --namespace-snapshot file:///path/to/model/json/file \
    --property-value "02" \
    --mapping-info '{"mappingId":"urn:tdm:us-east-
1/000000000000/default:mapping:map_R312A_Uplink","mappingDirection": "FORWARD",
"contextProvider":{"json": "{\"port\":13}"}}'
```

i. Expected results

```
{
  "propertyId":"{
    "CmdId":"Netvox_R312A_Uplink/types/CmdIdPort0D_Enum"
  }",
  "propertyValue":"{
    "CmdId":"GetButtonPressTimeReq"
  }"
}
```

j. Expected results (input data: 8203)

```
{
  "propertyId":"{
    "CmdId":"Netvox_R312A_Uplink/types/CmdIdPort0D_Enum",
    "PressTime":"aws/iot/thingsgraph/v1/types/Duration_s"
  }",
  "propertyValue":"{
    "CmdId":"GetButtonPressTimeRsp",
    "PressTime":3
  }"
}
```

Support

For questions on this model, please contact: support@netvox.com.tw