Sentient VOC Monitoring System

Use Case: Connecting to Monitoring System

Version <5.0>

Revision History

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Use Case: Connecting to Monitoring System

# Connecting to Monitoring System

## Brief Description

This use case gives the VOC Monitor Manager the ability to connect to the Embedded VOC system. This will allow the information recorded by the embedded VOC monitor to be downloaded to a volatile system.

## Requirements Trace

6, 7, 8

## Involved Actors

VOC Monitor Manager

## Preconditions

* The Embedded VOC monitoring system is initialized

## Post conditions

* Connection established between XBee and Volatile system

## Invariants

* Volatile System’s distance from XBee is less than XBEE\_DISTANCE\_MAX

# Flow of Events

## Basic Flow

This use case starts when the VOC Monitor Manager wants to download VOC information from an Embedded VOC system.

1. VOC Monitor Manager selects ‘monitor within range’ query area.
2. Mobile client broadcasts an acknowledgment request packet.
3. Embedded VOC system receives acknowledgment request packet.
4. Embedded VOC system sends acknowledgment response packet.
5. Mobile client receives acknowledgment response packet.
6. Mobile client will notify VOC Monitor Manager of a connection with Embedded VOC system.

**2.2** **Alternate Course** – None

# Extension Points

None

# Scenarios

## Happy Day

Assumptions: VOC Monitor Manager – Curious George

Max Range: 300 Yards

Current Connection: Not Connected

New Connection: Connected

Steps:

1. Curious George selects ‘monitor within range’ query area for a monitor with the serial #34543.
2. Mobile client broadcasts an acknowledgment request packet with destination Zigbee address set to OxFFFF and source address set to 0xBE34.
3. Embedded VOC system receives acknowledgment request packet.
4. Embedded VOC System sends acknowledgment response packet with destination.
5. Mobile client receives Acknowledgment response packet.
6. Mobile Client will notify Curious George of a connection with Embedded VOC system.

## Rainy Day 1 – Two XBee’s respond to Acknowledgment request broadcast

Assumptions: VOC Monitor Manager – Curios George

Max Range: 300 Yards

Current Connection: Not Connected

New Connection: Connected

Steps:

1. Curious George selects ‘monitor within range’ query area.
2. Mobile client broadcasts an acknowledgment request packet with destination Zigbee address set to OxFFFF and source address set to 0xBE34.
3. Embedded VOC system receives acknowledgment request packet.
4. Embedded VOC System sends acknowledgment response packet with destination Zigbee address set to 0xBE34 and source address set to 0xD34D.
5. Mobile client receives Acknowledgment response packet from Embedded VOC System A and Embedded System B.
6. Curious George selects to connect to System A.
7. Mobile Client will notify Curious George of a connection with Embedded VOC system A.

## Rainy Day 1 – Monitor not responsive

Assumptions: VOC Monitor Manager – Curios George

Max Range: 300 Yards

Current Connection: Not Connected

Steps:

1. Curious George selects ‘monitor within range’ query area.
2. Mobile client broadcasts an acknowledgment request packet with destination Zigbee address set to OxFFFF and source address set to 0xBE34.
3. Embedded VOC system receives acknowledgment request packet.
4. Mobile Client does not receive an acknowledgment packet back.
5. Mobile Client notifies Curious George of unresponsive monitor.
6. Curious George notifies Sentient management of unresponsive monitor.

# Testing

## Connect

Precondition: Connection not established.

Assumptions: Not operating under rainy day situation.

At least one packet need be sent.

Steps:

1. Download Series2\_RX program onto Arduino Platform.
2. Run Mobile Client connect program. This goal is the Mobile Client will construct a packet, send it to the Arduino, and the Arduino will respond with an initial “Accept” packet. The Arduino will then send data packets to the Mobile Client.
3. Examine the Mobile Client console screen. The words “Connection Established” should appear. If they do not, the test was a failure.
4. Continue examining the Mobile Client console screen. The words “Wrote to File” should appear. This signifies data packets have been received and were successfully written to a file. If the text does not appear, the test was a failure.
5. If both lines of text appear in the Mobile Client console screen, the test was a success. If both did not appear, the test was a failure.