IOT STUDY FOR FLIGHT TEST

Overall Picture:

LwM2M for registration of resources,

Configuration management,

Health status and updates

CoAP Message exchange

Sensor

Mocked Sensor to showcase LwM2M functionality

DAR Network

CBOR Data Format

DAR Network

Data Acquisition Unit

Configuration Server

DeCom Engine

Management Server

Kraken

**Scope of Work**:

1. Implement CoAP (Constrained Application Protocol) and LwM2M (Lightweight Machine to Machine Protocol) on Configuration Server that connects to Client (Sensor). The Client sends messages in CBOR format to Data Acquisition Unit.
2. Analyze performance of CoAP packets transfer in local machine and Boeing network using Wireshark. Prepare Report for same.
3. Prepare dependencies for creating development environment for implementing CoAP using python libraries.

Phase 1:

1. Study of CoAP protocol for constrained devices to be used in Flight Test – **Completed**

2. Study of LwM2M protocol for device to device communication – **Completed**

**Outcome:** Created a Document for understanding of LwM2M and CoAP protocol for IOT.

Phase 2:

1. Prototype for Client Server using CoAP as application layer – **Completed**

1. CoAP implemented using txthings , twisted library in python to request data from client to server(configuration file) and server to client(observe temperature values)
2. GUI for client server is developed using Python Kivy library as it is most compatible with txthings.

Outcome:

CoAP Server

**Thermocouple Sensor**

CoAP Client

GET /TEMPERATURE Observe Token: 1234

Content Message ID: 23 Token: 1234

92

Token 0x14

Observe

Notify

Notify

Content Message ID: 65 Token: 1234

112

Reset Message ID: 81

Cancel Observation

1. Prototype for showing registering LwM2M objects from client to server and exchange of data – **In** **Progress**.

* Client getting Configuration updates (min, max, sample rates) from Server.
* Server getting updates from client for registered objects.

LwM2M Client

LwM2M Server

POST /rd?ep=temp-client

Registration

</1/1>,</1/2>,</2/0>,</2/1>,</3/0>,</4/0>

2.01 Created Location: /rd/5a3f

POST /rd/5a3f?lt=60000

2.04 Changed

Update

2.04 Deleted

DELETE /rd/5a3f

Delete