**SPAWAR HNAD Project**   
Progress report for January to March 2012  
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**Project Scope**

The scope of this project is to develop and implement an Android application that implements a Handheld Network Access Device (HNAD) according to the Interface Control Document (ICD) provided by SPAWAR. This program will act as a portable datacenter that is able to communicate with several Electronic Chain of Custody (ECoC) devices that are part of an 802.15.4 wireless network. In addition to this, the HNAD will be able to authenticate with a Data Consolidation Point (DCP) server, and retrieve the necessary encryption keys perform secure communication with the ECoC devices.

To demonstrate the proper operation of this application, a reference ECoC device will be used to test that the HNAD follows the communication specification from the ICD documentation.

Since Android phones do not have a built in 802.15.4 radio, a USB-to-802.15 dongle will be built to provide this functionality and demonstrate the project.

A partial implementation of the DCP server will also be developed in order to demonstrate the proper operation of the network communications of the HNAD.

HNAD

Arduino+USB

Xbee Radio

Serial

USB

ECoC

802.15.4

TCP

DCP

Server

Web GUI

HTTP

FTP Server

Server

FTP

FTP

Figure 1: Project Components

**Project Progress as of March 2012**

**802.15.4 ICD Components**

Completed:

* USB-to-802.15.4 bridge adapters
  + 2 bridges built using the Arduino platform, USB host boards, and XBEE radios
  + Arduino bridge program
* Network Access Discovery Announcement (NADA) routine and message waiting implementation
* ICD message parsing and generation
* ICD message retransmission and ascension handling
* CCM encryption/decryption for use in secure message communications

To Do:

* ECM encryption for the purpose of temporary key generation

**Networking Components**

Completed:

* HNAD network client
* TCP Packet parser and generation

To do:

* User authentication
* HNAD FTP client process
* DCP server implementation
  + User and key database access
  + FTP client process
  + Web service GUI

**Android Application Components**

Completed:

* Android background service for the HNAD
* Android USB handler process and XBEE API frame parser and generation
* Local database for ECOC settings and event log storage
* GUI layouts for the following screens:

|  |  |  |  |
| --- | --- | --- | --- |
| * Login | * HNAD Settings | * ECoC Details | * Device List |
| * HNAD Event Log | * ECoC Event Log | * ECoC Edit | * Key Generation |