Hola Intercom Design

# Revision History

* 09/01/2017: 1st draft
* 09/18/2017: Added buddy\_id to cloud api
* 10/02/2017: Added echo request and reply messages

# Version Control

<https://github.com/rlysens/particleIntercom/>

# Third Party Components

LCM: https://lcm-proj.github.io/

XTEA: mbedtls-2.5.1

XTEA Python: <https://pypi.python.org/pypi/xtea/0.4.0>

# Shell Commands

particle call Intercom1 en|dis\_prntgrp messages/stats/default

particle serial monitor COM3/COM4

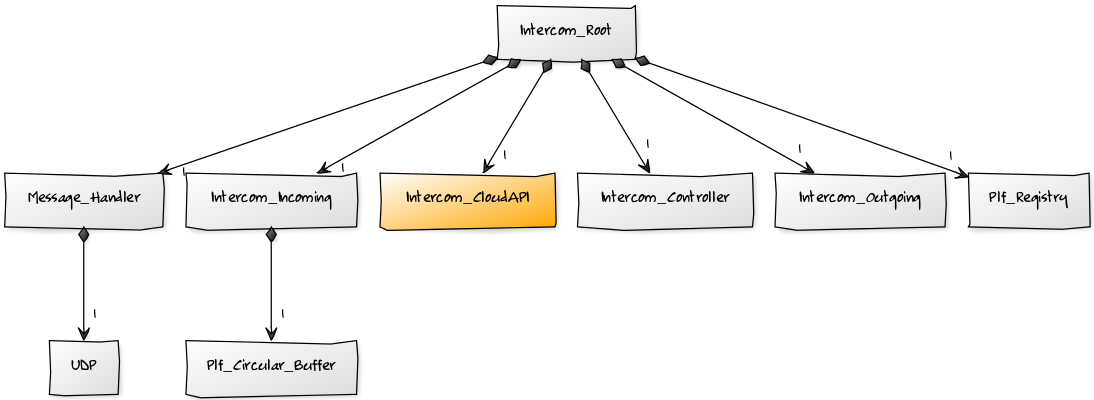
python build.py --device Intercom1/Intercom2/all [--flash]

copypython2amazon.bat

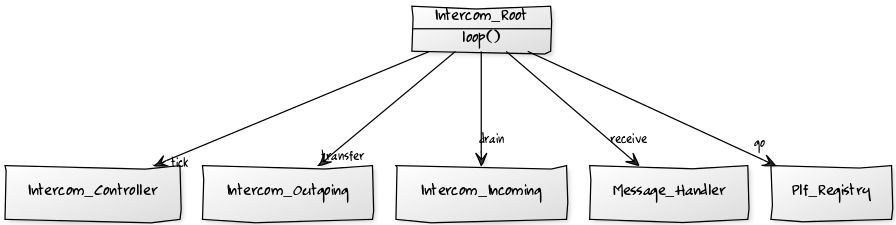
ssh2amazonec3.bat

# Firmware Design

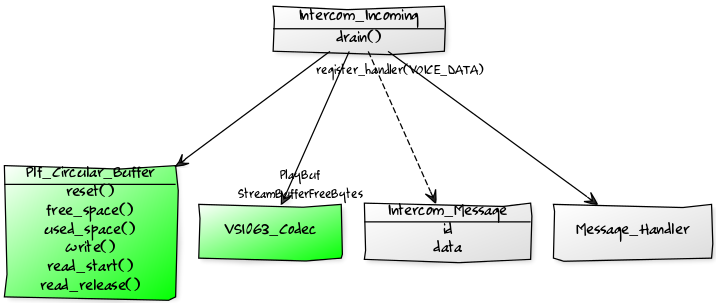
## Ownership



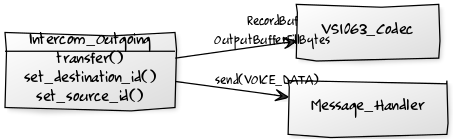
## Root



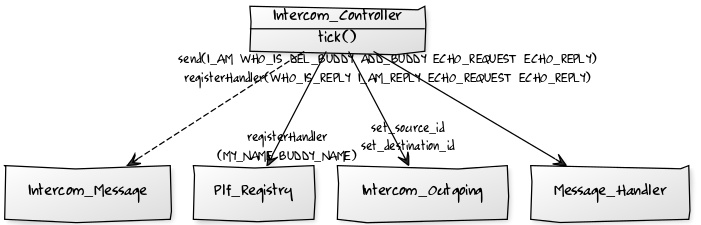
## Intercom Incoming



## Intercom Outgoing



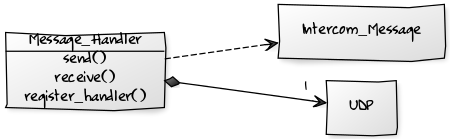
## Intercom Controller



## Codec



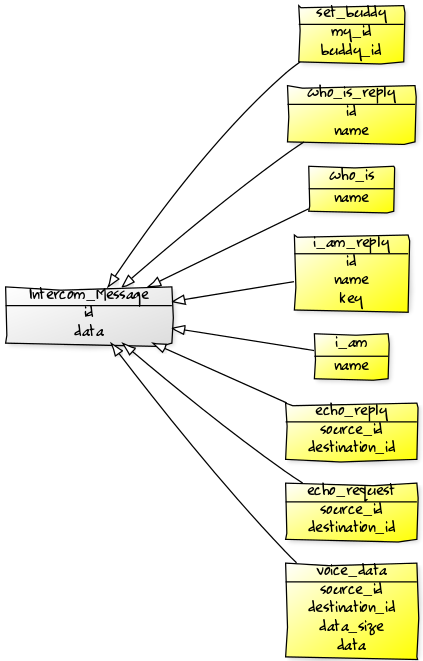
## Message Handler



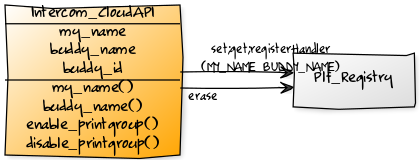
## Messages

Note that the message channel is not considered reliable. Messages can get lost and the message protocols must be robust against occasional message loss.

All messages except i\_am and i\_am\_reply are encrypted using XTEA block cipher.



## Intercom Cloud API



# Registry keys

REG\_KEY\_MY\_NAME persistent

REG\_KEY\_BUDDY\_NAME persistent

REG\_KEY\_BUDDY\_ID volatile

# Server Side

**MSG\_TABLE**

msg\_id -> msg\_handler\_fun

**Intercom\_name\_to\_id\_table**

Intercom\_name -> intercom\_id

**Intercom\_id\_to\_intercom\_table**

Intercom\_id -> intercom

**Message\_Handler**

**Send()**

**Receive()**

socket

**Intercom**

**sendTo()**

**addBuddy()**

**delBuddy()**

Msg\_voice\_data\_handler

Msg\_i\_am\_  
handler

Msg\_who\_is\_  
handler

Add\_buddy\_  
handler

del\_buddy\_  
handler

1..1

n..1

1..1

Msg\_echo\_request\_data\_handler

Msg\_echo\_reply\_data\_handler