

Low Energy Clouds

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Problem Statement

Testing LE Profiles & Services should be easy!

Currently Requires:

- Flying to over side of the planet
- Attending a testing event like an UnPlugFest
- Sitting down next to somebody and trying to test stuff

Problems:

- Flights cost lots of money
- Time is short at a UPF, can't test with everybody
- What happens if you can't fix your bug until after the event?
- How do you retest it?

Possible Solutions

1) Very long HCl cables

UART cables typically not rated at greater than 2 km

2) UART over TCP

Firewalls don't allow incoming connections

What if the “controller” doesn't work - how do you reset it?

“Remote Hands” difficult over TCP

3) Virtualize controllers in the cloud

emm....

Proposed Solution

Have a “server” on the Internet

Allow anybody to make TCP/IP connection from their office

Each connection creates a “virtual controller”

Each controller has a unique BD_ADDR

Allows multiple controllers to be instantiated from a single computer

Each connection is an HCI transport

Allowing any host software to run over this “HCI Transport”

Use Cases

Remote Testing

Publish your implementation of a service

Allows others to connect, discover, connect and test against your implementation

Regression Testing

Publish all “shipped” versions of your implementation

Allows others to test their new software against all your old versions

Possible Issues

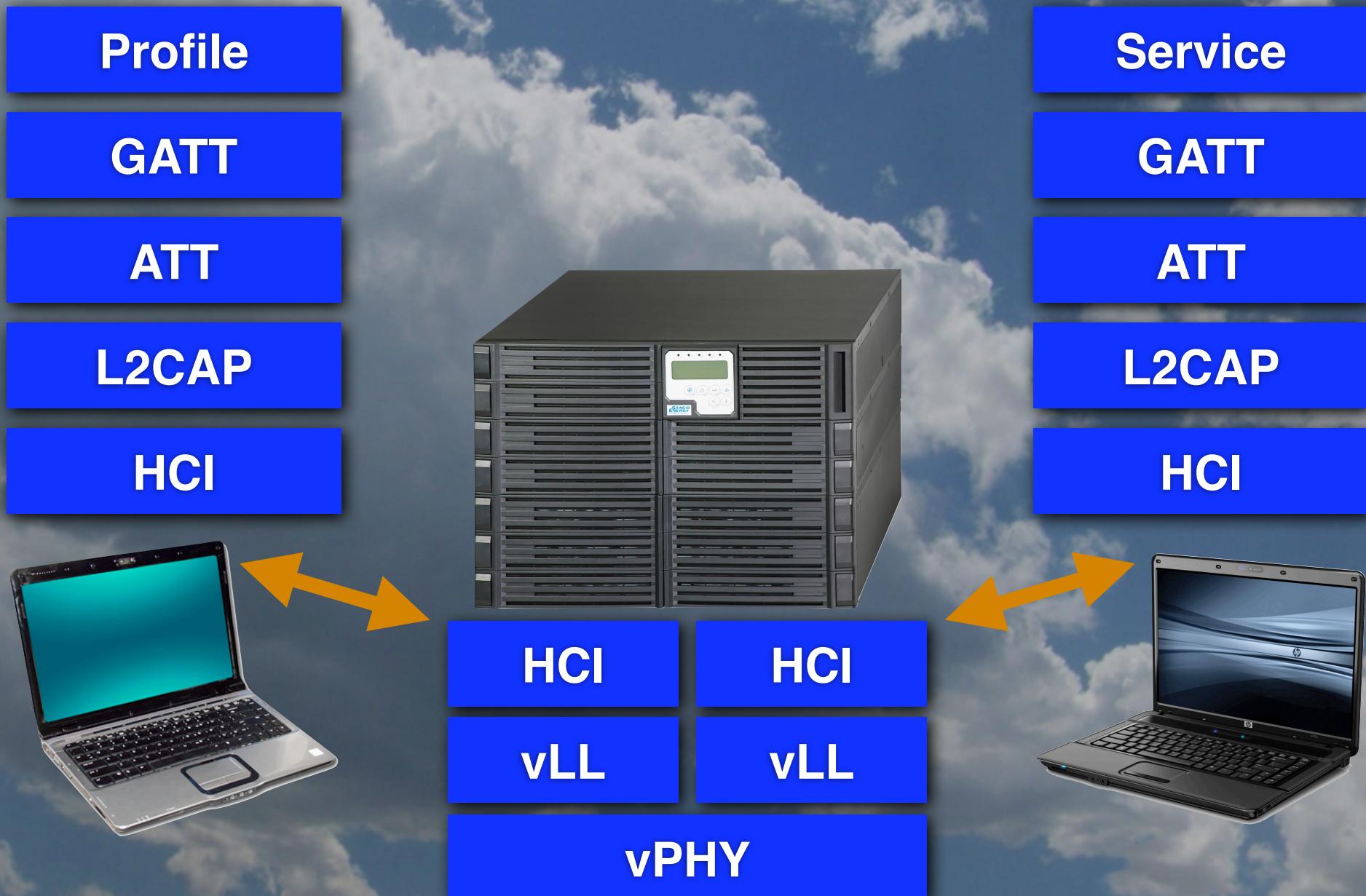
Scaling

- Do we need multiple “areas”?
- Do we need multiple “rooms”?
- Do we need a “room” per company?

Remote Interaction

- How can we trigger something on peer device?
 - Pressing of a button to start pairing
- How can we get peer device state?
 - Status of an LED on the device

System Architecture



Some Specifics...

HCI over TCP/IP Specification

TCP connection to Port 0xb1ee to address b1ee.com

Consider TCP as a “serial port”

Run HCI (Core Specification Volume 4, Part A) over TCP

0x01 = Command

0x02 = ACL Data

0x04 = Event

Disconnect TCP to “terminate” HCI

Virtual controller disappears

All connections drop

All advertising stops

System Maturity

Single Mode LE controller only

Advertising / Scanning works

Creating Connections a little unreliable today

Could be fixed pretty quickly

Single “Physical Channel”

All scanners pick up all advertisers

System Debugging

In discussions with Frontline to provide a “sniffer” interface

Questions

Is this Interesting?

What features does it need to support?

Who can help move this forward?

Who can help beta-test?