

A Simplified Approach to Bluetooth Mesh

Everything You Need to Know to Get Started

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BLE Mesh

Twitter for Things

- Many to many topology
- Connectionless data transfer

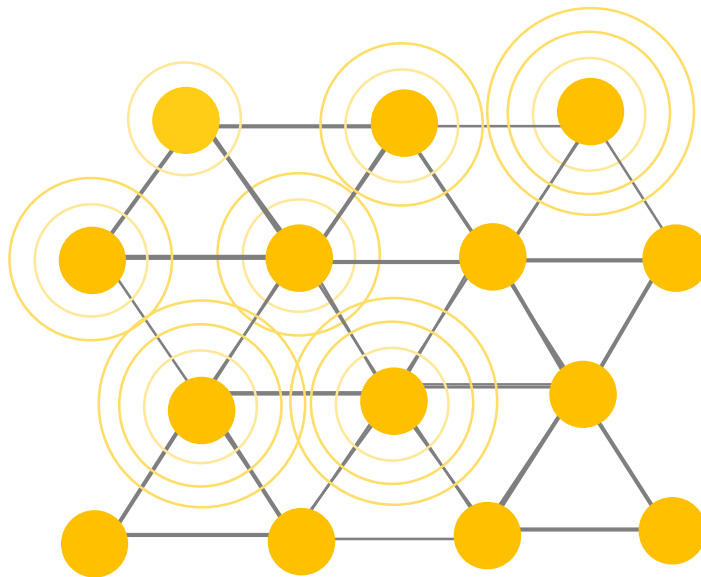


BLE Mesh

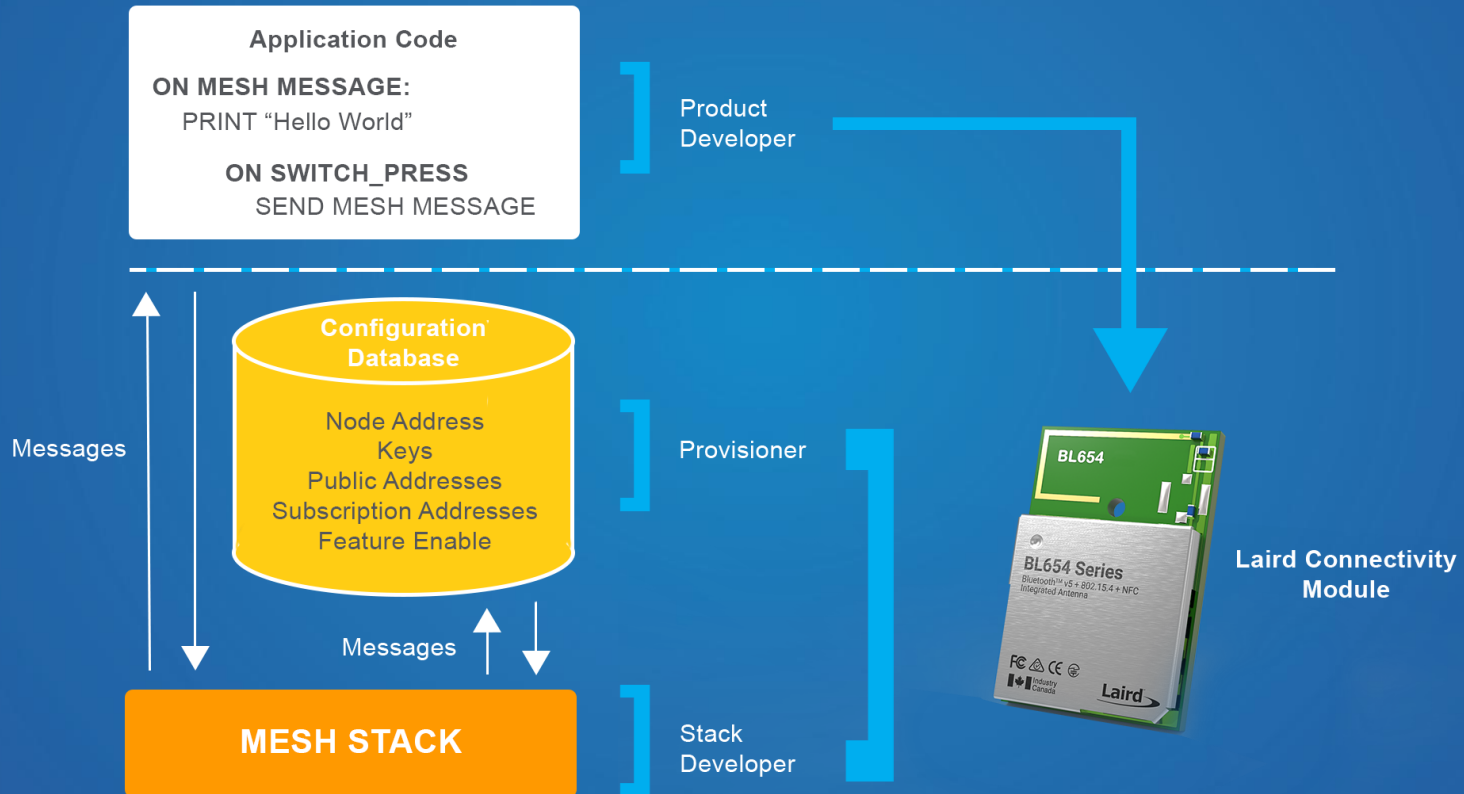


Managed Flood Network

- Publish/Subscribe Architecture
- Resending received packets
- BLE advertising and scanning
- Allows range extension
- Limited by TTL
- Message cache
- Optional relay



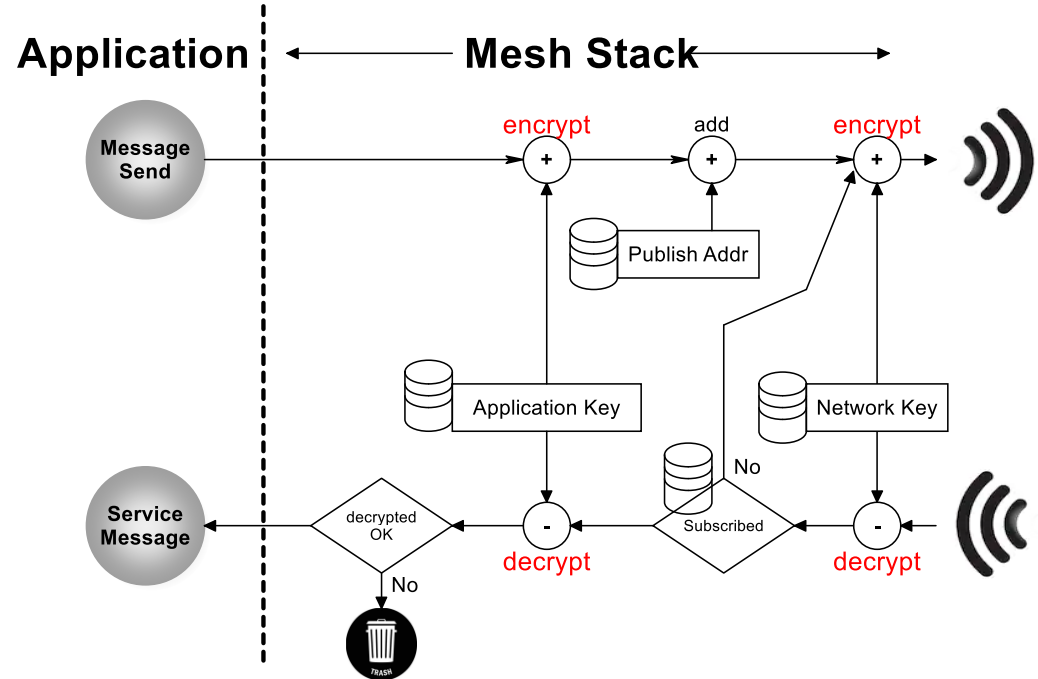
Simple Coding Teardown of a BLE Mesh Node



BLE Mesh Security

Developers treat mesh stack as a black box

Send and Receive unencrypted messages



Built in security with **two layers** of encryption

Coding for BLE Mesh is Actually Easy. Here is an example.

Step 1

```
. . . .  
RegisterModel(modelIDa, msgIDa, msgIDb. msgIDc . . . . .)  
RegisterModel(modelIDb, msgIDx, msgIDy. msgIDz . . . . .)
```

Step 2

```
. . . .  
StartMesh()
```

Step 3

```
. . . .  
OnMessageReceive(msgID, payload)  
    IF msgID == LIGHT_ON  
        switch_on_light(payload)  
    ELSEIF msgID == LIGHT_OFF  
        switch_off_light(payload)  
    ELSEIF msgID == AIRCON_ON  
        switch_on_AirCon(payload)  
    ELSEIF msgID == AIRCON_SET_TEMPERATURE  
        set_ AirCon_temperature(payload)  
    . . . .
```

Figure A

Sending Messages is Simple Too.

```
Publish(msgId, payload)
```

```
PublishReliable(msgId, payload, ackmsgid, timeout)
```

```
PublishReply(msgId, payload, rxmsginfo)
```

Provisioning a Device

08:41

< Scanner Provision

Node provision

NODE SETTINGS

Name Jenni_Server >

Unicast Address 0x0001 >

AppKey 1 0xBF0252876528A9CA54C0303EB6DBC2FA >

IDENTIFICATION

Element Count 1

Algorithm FIPS-256 Elliptic curve

Public Key Type Public Key information unavailable

Static OOB Type Static OOB information available

Supported Output Actions Not supported

Output OOB Size 0

Supported Input Actions Not supported

Input OOB Size 0

08:43

< Publication Settings Apply Publication

PUBLICATION ADDRESS

Publication Address 0xC000 >

RETRANSMISSION

Retransmit Count 1 Times >

Interval Steps 1 Steps >

PUBLISH PERIOD

Steps 0 Steps >

Resolution 100s of Milliseconds >

SECURITY CREDENTIALS

AppKey Index Key index 0 >

Friendship Credential Flag ☐

TTL

Publish TTL Default TTL

SAVE

Clear Publication Data

BLE Mesh is Power Hungry

But it is Possible to
Operate on Battery Power



Jumpstart Your Bluetooth Mesh Development



BL654

Bluetooth 5 Low Energy (BLE) Module + Thread (802.15.4) + NFC

- Built upon the latest generation BLE Silicon (Nordic nRF52840) with ARM Cortex M4F (1MB Flash / 256K RAM) for hostless operation
- Integrated PCB Antenna or IPEX MHF4 connector options available, certified with multiple antenna options
- Features event driven smartBASIC programming language to simplify BLE module integration
- Ultra-small 10 x 15mm footprint

[Learn More](#)



BL652

Bluetooth 5 Low Energy (BLE) + NFC Module

- Features Nordic nRF52 with ARM Cortex M4F (512K Flash / 64K RAM) for hostless operation
- On-board Chip Antenna or IPEX MHF4 connector options available, certified with multiple antenna options
- Features event driven *smartBASIC* programming language to simplify BLE module integration
- Ultra-small 10 x 14mm

[Learn More](#)