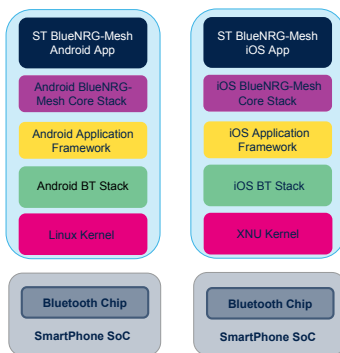


## Mesh over Bluetooth low energy

Applications & demonstrations	LED Light Demo (White, Cool-Warm, RGB)	Custom Application	
Middleware	ST BlueNRG-LP Mesh Library	ST BlueNRG-LP Core Stack	ST Cryptographic Library
Hardware Abstraction	Hardware Abstraction Layer API	Board Support Package	
Hardware	BlueNRG-LP		



### Features

- Mesh network with Bluetooth low energy (BLE) nodes enabling communication between a BLE device and a Smartphone
- Control and monitor applications involving short packets
- Advertising packets used for data communication using managed flooding method
- Multi-hop data transmission up to 126 hops
- Network node support up to 32,767 nodes
- Multiple communication scenario
  - Smartphone to node communication with unicast addressing
  - Smartphone to node communication with multicast (Group) addressing
  - Smartphone to node communication with broadcast addressing
  - Node to node communication
- Secure communication
  - Devices added to a network are provisioned using proven security algorithms using 256-bit elliptic curves
  - All messages in the network are encrypted with AES-128 CCM mode
  - Privacy through obfuscation
  - Protected against security attacks like Brute-force, Bit-Flipping, Eaves Dropping, Replay, Trashcan, Man in the middle and physical insecure device attacks
- Supported features
  - Publish-subscribe paradigm (up to 10 groups)
  - Node UUID configurable by user
  - Provisioning and network layer based on Mesh profile v1.0.1
  - Heartbeat
  - Provisioned node database transfer among smartphones via e-mail and cloud applications
  - Multiple element per node support
  - Key refresh
  - Initialization vector (IV) update procedure
  - Whitelist and blacklist filtering
  - Provisioning over advertising (PB-ADV)
  - Output OOB, Input OOB, Public Key OOB Provisioning
  - Single callback for multiple AD types in custom beacon
  - Firmware name shown in the BLE scanner
  - Multiple network and application key support
  - Embedded Provisioner implementation
  - Friendship and low power implementation

Product summary	
Mesh over Bluetooth low energy	STSW-BNRGLP-Mesh
Evaluation platform based on BlueNRG-355MC system-on-chip	STEVAL-IDB011V1
Applications	BLE Connected Nodes Smart Street Lighting Smart Home Smart City

- Supported models
  - Configuration model
  - Health model
  - Generic model on-off, level example
  - Generic Power on-off server
  - Generic Transition time server
  - Lighting model example (Lightness, CTL, HSL)
  - Light LC Server Models
  - Light LC controller
  - Vendor model
  - Template for Time, Sensor model and Scene model
- Embedded SDK available
  - Demo Application source code for user application development
  - Mesh stack provided as precompiled/object library
  - Support for [BlueNRG-LP](#) product family
  - Ready examples for [STEVAL-IDB011V1](#)
- Android and iOS SDK available
  - Demo App source code available
  - Mesh implementation provided as library
  - Android App available on Google Play Store
  - iOS App available on iTunes
- Supported devices:
  - [BlueNRG-LP](#)
  - Embedded SDK is easily portable on other evaluation boards using BlueNRG family of products by modifying the board support package (BSP)
- ST BLE Mesh library compliant with Bluetooth SIG Mesh Profile Specifications v1.0.1 (QDID:146387)
- Mesh Model Client Server compliant with Bluetooth SIG Mesh Model Specifications v1.0.1 (QDID = 151209)

## Description

BlueNRG-Mesh is a software solution for connecting multiple BLE (Bluetooth low energy) devices in Mesh networks for Internet of Things (IoT) solutions. It enables true two-way communication between Bluetooth-enabled devices in powerful, secure, integrated and range-extending Mesh networks.

The solution is compatible with the ST [BlueNRG-LP](#) device.

## Applications

- Smart home (lighting, HVAC, security and access control, healthcare)
- Asset tracking
- Assisted living
- Smart city (street lighting, general purpose messaging)

## **1 Licensing and other information**

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Developer-friendly license terms

The initial BlueNRG-Mesh is built over Motorola's Mesh Over Bluetooth Low Energy (MoBLE) technology.

The present solution involving both the Mesh library and applications is developed and maintained solely by STMicroelectronics.

## Revision history

**Table 1. Document revision history**

Date	Version	Changes
26-Oct-2020	1	Initial release
06-Sep-2021	2	Updated cover page image, features and product summary table.

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