Introduction

The Bluetooth Mesh specifications being adopted in 2016 enables an interoperable mesh networking over the low Power Bluetooth low energy wireless technology. Mesh networking technology is critical in IoT, home automation and industrial applications. Bluetooth Mesh creates networks and extends the range of the Bluetooth-enabled device to cover entire buildings. Mindtree can help you add the Mesh capability to any of your products supporting Bluetooth version 4.0 and beyond. Our team is tracking Bluetooth Mesh specification from its evolution and will get you to product launch within weeks of specification adoption. The video demo of Mindtree’s current implementation of Bluetooth Mesh IP can be found here. Along with a clear compliance roadmap for Bluetooth Mesh specification throughout the process of adoption, we also support 128-bit Advanced Encryption Standard (AES) blocks as defined by the Mesh specification.

Bluetooth Mesh IP Suite – Product Features

Mindtree Bluetooth Mesh’s IP is aligned to draft Mesh specifications. It supports all mandatory and optional specifications, all states (Servers, Clients) and topology roles (Edge Node and Relay Nodes). The final version will be available as soon as Mesh specification is adopted.

Some of the key features of Bluetooth Mesh include:

- Flooding Mesh Network
- No limitation on number of Mesh Nodes
- Bearer Layer
  - Advertising (ADV) Bearer (Advertising data type to encapsulate the mesh packet)
  - GATT Bearer (Attribute protocol used to encapsulate the mesh packet) – Support by Q2-2016
- Provisioning Bearer (PB)
  Provisioning of nodes on the Bluetooth low energy-Mesh through PB-ADV, PB-Mesh and PB-GATT
- Mesh Security
  Encryption and authentication are based on 128-bit AES
  CCM (IETF RFC 3610) and CMAC (IETF RFC 4493)
Key Benefits

Reduced technical risk
- Current implementation tested as part of UnPlugFest-53, (January, 2016), UnPlugFest-54 (June, 2016), UnPlugFest-55 (Oct, 2016) and UnPlugFest-56 (Feb, 2017)
- Bluetooth-SIG certification will be complete on specification adoption (expected Q2 2017)

Faster time-to-market
- Complete implementation in ANSI C to enable easy portability across various microcontrollers
- Platform and operating system-agnostic and is designed for easy portability
- Proven portability across Mindtree as well as third-party Bluetooth Stack

Cost optimization
- Memory footprint of 25-35 KB Flash and very low ROM required
- Low MIPS requirement
- Proven on 8-bit, 16-bit and 32-bit microcontrollers
- Highly configurable to suit the product needs of OEMs, thereby enabling further optimizations

Key Deliverables
- Bluetooth Mesh IP implemented in ANSI C consisting of:
  - Mesh Profile (Servers, Clients roles)
  - Application-based encryption using 128-bit AES CCM (IETF RFC 3610) and CMAC (IETF RFC 4493)
  - Source code of transport abstraction layer and operating system abstraction layer
  - Source code of sample applications to illustrate the use of APIs
  - Documentation
    - API documents for Mesh profile and encryption blocks
    - API documents for the transport abstraction layer
    - API documents for the operating system abstraction layer
    - User manual describing how to build and run the sample application

Bluetooth Leadership Credentials

Mindtree is a pioneer in Bluetooth IP licensing and providing engineering services for semiconductor companies and OEMs.

50+ Proposal wins with IP
35 mn+ Products shipped with IP
500+ Person-years of investment
40+ Unplug Fests attended
4.0 & 4.1 specifications
5 Offshore development centers for top OEMs

Contact Mindtree

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ABOUT MINDTREE
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