BLE Mesh Quick Start Guide

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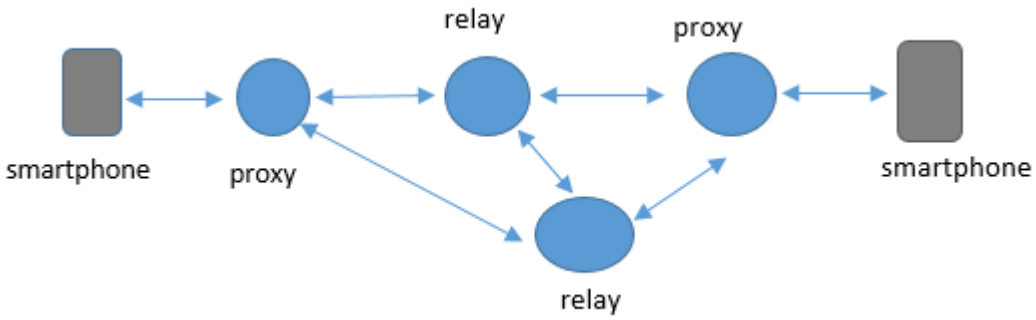
1. Mesh Network

A typical network setup:



2. Quick Start Instructions

To demonstrate Mesh with three modules, use the following procedure:

2.1. Use 0001 node as the on/off switch (client).

2.2. Use 0003 node as the target (server).

2.3. Use 0002 node as the relay.

2.4. Be sure the three encryption keys are set properly. Use the AT command SetKeyPass.

- 2.4.1. at+ab SetKeyPass dev [Device]
- 2.4.2. at+ab SetKeyPass app [Application]
- 2.4.3. at+ab SetKeyPass net [Network]

2.5. Use distance to separate 0001 and 0003 so that they cannot communicate directly. Alternatively, use the AT Block command to block messages between 0001 and 0003.

- 2.5.4. at+ab Block [local BD Address]

2.6. The RSSI command can be used to test and determine the strength of the received Mesh messages.

2.7. Use the AT OnOff command on 0001 to send an On or Off command to 0003. Once the on/off msg is received, 0003 will respond by sending its status to 0001.

2.8. Since 0001 and 0003 is either too far or have its messages blocked from each other, these messages should be relayed through 0002.

3. General setup

- Serial COM port settings: 115200/N/8/1
- All AT commands must terminate with a CRLF.
- AT commands may be sent over the BLE link or the COM port/module UART.
- Commands are non-case sensitive, except device names and passwords/passcodes.
- Command parameters use ASCII format, unless stated in ASCII hex format. ASCII hex uses 2 characters per hex byte.

4. Examples.

4.1. Be sure to use a build version of at least **240411A Mesh**.

4.2. Set all node addresses. See config **var92**.

4.3. Set the key passwords using the **SetKeyPass** AT command.

4.4. For testing, use the **block** AT command.

4.5. The following are the example config settings for Nodes 0001, 0002, and 0003.

4.5.1. Node 0001

```
at+ab config
System Configuration Settings - Version 1.7
var01 BuildVersion              = 240411A Mesh
var02 BD_ADDR                   = 00043e260777
var03 DeviceName                = Art Mesh
var04 StreamingSerial           = true
var05 PIN                       = 0000
var06 UartBaudrate              = 115200
var07 UartParity                = none
var08 UartDataBits              = 8
var09 UartStopBits              = 1
var10 UartTimeout               = 16
var11 HostShallowSleepEn        = true
var12 HostDeepSleepEn           = false
var13 GPIO_HostKeepAwake        = none
var14 GPIO_HostWakeup           = none
var15 UseSmallPackets           = false
var16 EnableAFH                 = true
var17 ATReply                   = AT-AB
var18 QoS_Latency               = 20
var19 CpuMHz                    = 50
var20 HciBaudrate               = 230400
var21 COD                       = 250540
var22 HostEvents                = true
var23 BondingAllowed            = true
var24 PageScan                  = true
var25 InquiryScan               = true
var28 DefaultAuth               = 5
var29 EnableIAP                 = false
var30 EnableSPP                 = true
var31 EnableHID                 = true
var33 iAPAppID                  = A1B2C3D4E5
var34 iAPAppIDStr               = com.AmpedRFTech.Demo
var35 iAPProtocolStrMain        = com.AmpedRFTech.Demo
var36 iAPProtocolStrAlt         = com.AmpedRFTech.ProtocolAlt
var37 CPI2CMode                 = 3
var40 HardwareType              = BT24B
var42 CreditMax                 = 11
var43 AccName                   = ART
var44 AccManufacturer           = ART
var45 AccModelNumber            = Demo
var46 AccSerialNumber           = Amp'ed Up!
var47 MITMEvent                 = false
var48 ProfileRole               = p
```

```
var49 AdvIntMin                = 256
var50 AdvIntMax                = 512
var51 ScanInt                  = 32
var52 ScanWindow               = 18
var53 ConnectIntMin            = 912
var54 ConnectIntMax            = 1000
var58 BatteryEnable            = true
var59 CharacteristicMax        = 4
var60 ServiceUUID              = 26cc3fc06241f5b4534763a3097f6764
var85 MeshVersion              = 0x0001
var86 MeshRelay                = true
var87 MeshProxy                = true
var88 MeshBle                  = false
var89 MeshFriend               = false
var90 MeshLPN                  = false
var91 MaxTTL                   = 4
var92 NodeAddr                 = 0001
var93 PublishAddr              = 0000
var94 SubscribeAddr            = 0000
```

4.5.2. Node 0002

```
at+ab config
System Configuration Settings - Version 1.7
var01 BuildVersion             = 240411A Mesh
var02 BD_ADDR                  = 00043e850b83
var03 DeviceName               = Art Mesh
var04 StreamingSerial          = true
var05 PIN                      = 0000
var06 UartBaudrate             = 115200
var07 UartParity               = none
var08 UartDataBits             = 8
var09 UartStopBits             = 1
var10 UartTimeout              = 16
var11 HostShallowSleepEn       = true
var12 HostDeepSleepEn          = false
var13 GPIO_HostKeepAwake       = none
var14 GPIO_HostWakeup          = none
var15 UseSmallPackets          = false
var16 EnableAFH                = true
var17 ATReply                  = AT-AB
var18 QoS_Latency              = 20
var19 CpuMHz                   = 50
var20 HciBaudrate              = 230400
var21 COD                      = 250540
var22 HostEvents               = true
var23 BondingAllowed           = true
var24 PageScan                 = true
var25 InquiryScan              = true
var28 DefaultAuth              = 5
var29 EnableIAP                = false
var30 EnableSPP                = true
var31 EnableHID                = true
var33 iAPAppID                 = A1B2C3D4E5
var34 iAPAppIDStr              = com.AmpedRFTech.Demo
var35 iAPProtocolStrMain       = com.AmpedRFTech.Demo
var36 iAPProtocolStrAlt        = com.AmpedRFTech.ProtocolAlt
var37 CPI2CMode                = 3
var40 HardwareType             = BT24B
var42 CreditMax                = 11
var43 AccName                  = ART
var44 AccManufacturer          = ART
var45 AccModelNumber           = Demo
```

```
var46 AccSerialNumber          = Amp'ed Up!
var47 MITMEvent                = false
var48 ProfileRole              = p
var49 AdvIntMin                = 256
var50 AdvIntMax                = 512
var51 ScanInt                  = 32
var52 ScanWindow               = 18
var53 ConnectIntMin            = 912
var54 ConnectIntMax            = 1000
var58 BatteryEnable            = true
var59 CharacteristicMax        = 4
var60 ServiceUUID              = 26cc3fc06241f5b4534763a3097f6764
var85 MeshVersion              = 0x0001
var86 MeshRelay                = true
var87 MeshProxy                = true
var88 MeshBle                  = false
var89 MeshFriend               = false
var90 MeshLPN                  = false
var91 MaxTTL                   = 4
var92 NodeAddr                 = 0002
var93 PublishAddr              = 0000
var94 SubscribeAddr            = 0000
```

4.5.3. Node 0003

```
at+ab config
System Configuration Settings - Version 1.7
var01 BuildVersion             = 240411A Mesh
var02 BD_ADDR                  = 00043e260666
var03 DeviceName               = Art Mesh
var04 StreamingSerial          = true
var05 PIN                      = 0000
var06 UartBaudrate             = 115200
var07 UartParity               = none
var08 UartDataBits             = 8
var09 UartStopBits             = 1
var10 UartTimeout              = 16
var11 HostShallowSleepEn       = true
var12 HostDeepSleepEn          = false
var13 GPIO_HostKeepAwake       = none
var14 GPIO_HostWakeup          = none
var15 UseSmallPackets          = false
var16 EnableAFH                = true
var17 ATReply                  = AT-AB
var18 QoS_Latency              = 20
var19 CpuMHz                   = 50
var20 HciBaudrate              = 230400
var21 COD                      = 250540
var22 HostEvents               = true
var23 BondingAllowed           = true
var24 PageScan                 = true
var25 InquiryScan              = true
var28 DefaultAuth              = 5
var29 EnableIAP                = false
var30 EnableSPP                = true
var31 EnableHID                = true
var33 iAPAppID                 = A1B2C3D4E5
var34 iAPAppIDStr              = com.AmpedRFTech.Demo
var35 iAPProtocolStrMain       = com.AmpedRFTech.Demo
var36 iAPProtocolStrAlt        = com.AmpedRFTech.ProtocolAlt
var37 CPI2CMode                = 3
var40 HardwareType             = BT24B
var42 CreditMax                = 11
```

```
var43 AccName                  = ART
var44 AccManufacturer          = ART
var45 AccModelNumber           = Demo
var46 AccSerialNumber          = Amp'ed Up!
var47 MITMEvent                = false
var48 ProfileRole              = p
var49 AdvIntMin                = 256
var50 AdvIntMax                = 512
var51 ScanInt                  = 32
var52 ScanWindow               = 18
var53 ConnectIntMin            = 912
var54 ConnectIntMax            = 1000
var58 BatteryEnable            = true
var59 CharacteristicMax        = 4
var60 ServiceUUID              = 26cc3fc06241f5b4534763a3097f6764
var85 MeshVersion              = 0x0001
var86 MeshRelay                = true
var87 MeshProxy                = true
var88 MeshBle                  = false
var89 MeshFriend               = false
var90 MeshLPN                  = false
var91 MaxTTL                   = 4
var92 NodeAddr                 = 0003
var93 PublishAddr              = 0000
var94 SubscribeAddr            = 0000
```

4.6. Testing example. User input is shown as bold type.

Node	Display
0001	**at+ab block 00043e260666** Blocked: 00043E260666 **at+ab onoff 0003 setack on** >>Sending Msg from 0001 to 0003: Cmd setack to 1 * Relay msg (TTL=3) * 0001 SRC=0001 OnOffStatus state = 01
0002	* Relay msg (TTL=4) * Relay msg (TTL=4)
0003	**at+ab block 00043e260777** Blocked: 00043E260777 * Relay msg (TTL=3) WRAPPER STATE = 01 * 0003 SRC=0003 OnOffSet state = 01