Blu900 Solution – March 2023

The Blu900 Mesh Solution

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Blu900 Solution-2024

Features:

(i) 900MHz mesh radio based on Digi 900HP radio

(ii) Bluetooth BT5.2 on each module that will listen to advertising beacons from BluTech Ecosystem.

(iii) 900MHz Settings configurable from BluPoint App.

(iv) Local data-logging and buffering 30k readings, download over BT5 to BluPoint App.

(v) Over-the-Air (OTA) firmware updates.

(vi) Battery powered (4 or 8 D-cell)
2 years min at 1 reading/hr.

(vii) External power and PoE available.

(viii) Detailed Health Monitoring.

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Blu900 Solution for OT

OT has used YP's 900MHz 1F1 radio solution for several years now. YP's BluTech adventure started at OT where engineers asked Whether BT devices could be used to manage telemetry systems in 2019.

Blu900 has been developed as a powerful successor to 1F1. It is based on BlueTooth 5.2 enabled CPU (ARM Cortex M3 and M33) which combine high performance and low power consumption.

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Blu900 Solution for OT

The implementation of Bluetooth 5 with the 1F1 radio offers Several conveniences:

1. Blutooth can be used to configure the Blu900 Nodes
2. The Blu900 nodes are now dataloggers and the data can be downloaded to an Android device over BT
3. Low cost BluLinks can beacon data away from dangerous locations without adding to the complexity of the 900MHz mesh.
4. FW updates can be written to future-proof the products.

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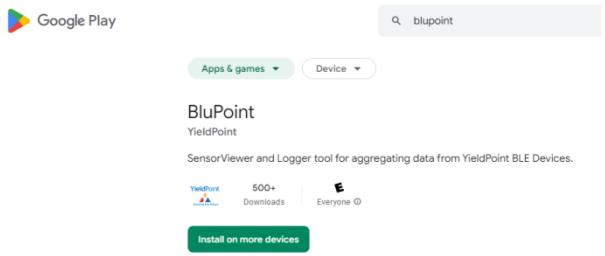
Blu900 Solution: Getting Started

In September 2023 YP has finished FW and Android development of the Blu900 solution.

It will be necessary to upgrade the FW on existing gateways and nodes. All the files need are bundled with the BluPoint Android APK from the Google Play store



1. Update FW (OTA Update) on Blu900 GW CPU
2. Update the Firmare on the ESP32 Wifi Modem
3. Update FW (OTA Update) on Blu900 Node

Instruction are provided below.

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Outline:

1. Hardware
2. Principles
3. The BluPoint App
4. Blu900GW Browser configuration
5. Health Monitoring
6. Blu900GW FW Update
7. WiFi Modem FW Update
8. Restart a Blu900 mesh

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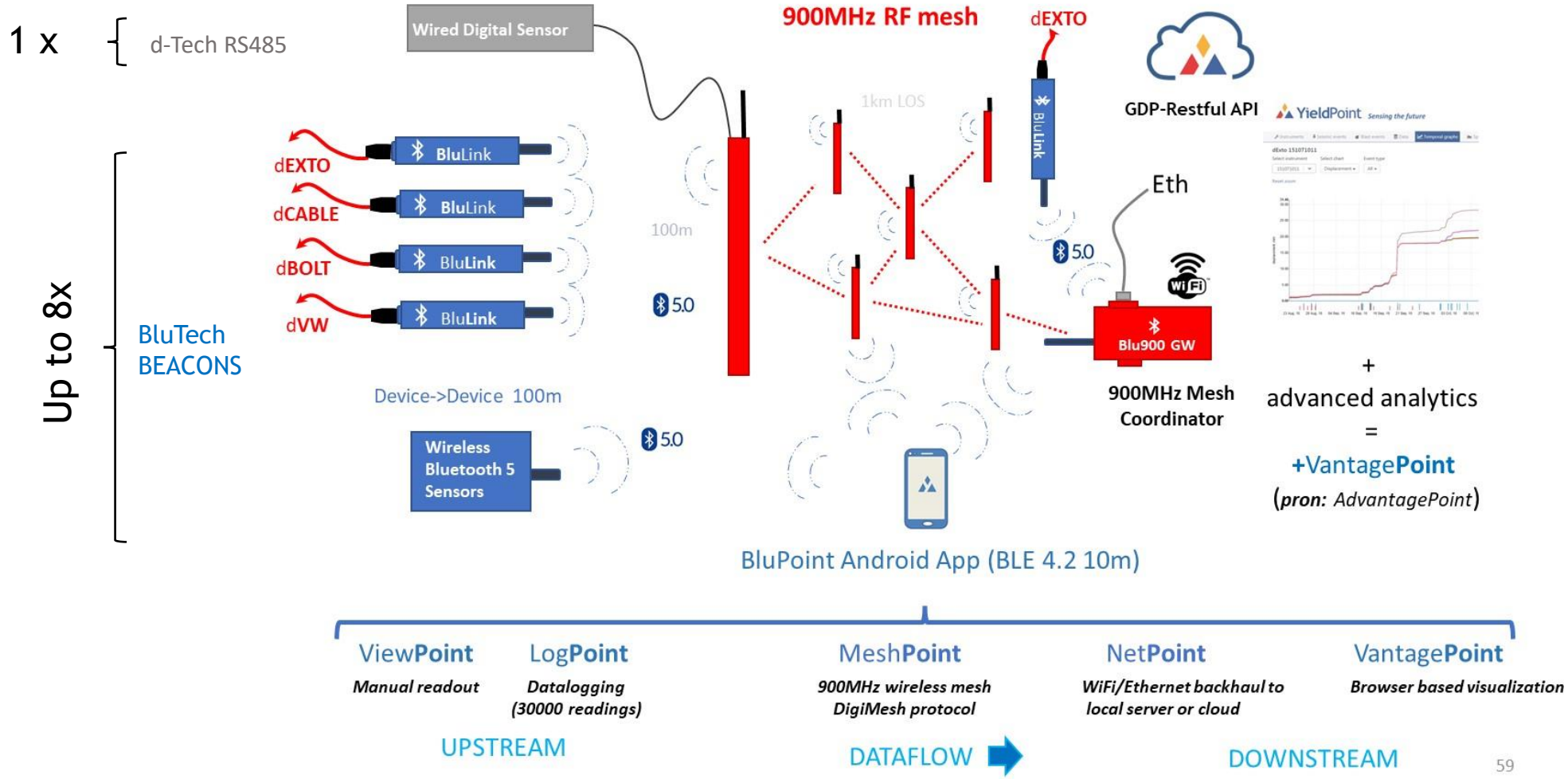
Architecture



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The Blu900 EcoSystem

The Blu900 Gateway

The Blu900 GW is normally externally powered. It has 4 x D-cell batteries as a backup

Types of Blu900 GW:

1. 12V power supply + 4 x D-cell Battery lithium preferred.
2. 12V power supply, available from YieldPoint.
3. PoE up to 57V.

Note: if equipped with more than one power source, Blu900 GW will run off the source with the highest voltage value.

Three form factors for the Blu900Node

The Blu900 Node is a BluTech SCANNER that reads from:

(i) 1 x Blu-Tech instrument
(ii) Up to 16 x BluTech BEACONs

It has 3 form factors:

1. Enclosure - 4 x D-cell (lithium or alkaline)

2. Borehole radio - 4 x D-cell (lithium or alkaline)

3. Borehole radio - 8 x D-cell (lithium or alkaline)

The 900 MHz & 2.4 GHz (BT) Antenna

It is imperative that the correct antenna be used for the radio. 900MHz antenna.

The standard antenna has a +1dB Gain.

IMPORTANT:

Female connector on 900MHz Node antenna.

Male connector on 900Mhz Gateway antenna.

Antenna always shipped with hardware.

900MHz

Bluetooth 2.4GHz

IMPORTANT: Always check the gender of the antenna versus that of it6s connector.

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Antenna details

Antenna performance

Antenna location is important for optimal performance. The following suggestions will help you achieve optimal antenna performance.

- Point the antenna up vertically (upright). Antennas radiate and receive the best signal perpendicular to the direction they point, so a vertical antenna's omnidirectional radiation pattern is strongest across the horizon.

- Position the antennas away from metal objects whenever possible. Metal objects between the transmitter and receiver can block the radiation path or reduce the transmission distance. Objects that are often overlooked include:
  - Metal poles
  - Metal studs
  - Structural concreate beams, which is usually reinforced with metal rods

- If you place the device inside a metal enclosure, use an external antenna. Common objects that have metal enclosures include:
  - Metal poles
  - Vehicles
  - Elevators
  - Ventilation ducts
  - Refrigerators Hardware power, and signal planes are vacant immediately below the antenna section.

Batteries for a Blu900 Node

Nodes are always and only battery powered.

They only use primary batteries, not rechargeable batteries.

The 900MHz node can operate from 4 or 8 x Lithium (preferred) or Alkaline (lower capacity) D-Cells

The nominal voltage for a single alkaline D-Cell is 1.5V and for a lithium is 3.6V.

4 x D-cell Alkaline = 6V
4 x D-cell Lithium = 14.4V

Both chemistries have a capacity around 18,000mAhrs which corresponds to 27Whr for alkaline and 64.8Whrs for lithium.

Lithium primary batteries will last 2.4x as long as alkaline and perform much better under sub-zero temperatures.

Alkaline
1.5V 17000mAh

Lithium primary
3.6V 18000mAh

- (Blk)

+ (Red)

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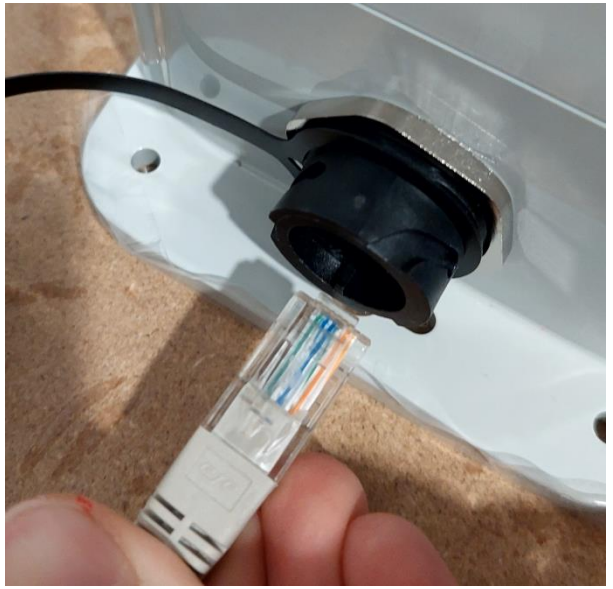
Power up Blu900 Node

Power up the Blu900 Gateway

Option 1: 12V DC. Power supply provided by YieldPoint upon request.



Option 1: PoE for **PoE Blu900 GWs only.**
PoE can be an external or an internal option.

The Red (Associate) LEDs on Nodes and Gateways

The Red LED on a Blu900 Node or Gateway provides an indication of the device's sleep status and diagnostic information.

The Red LED indicates the synchronization status of a sleep compatible 900MHz RF Module.

Blu900 Node LED

Blinking fast (250ms)	The Blu900Node is properly synchronized with the network. The mesh is awake.
Off	The Blu900 Node is in low power mode. The mesh is asleep.

Blu900 GW

Blinking Fast (500ms)	The Blu900GW is properly synchronized. The mesh is awake.
On (solid)	The mesh is asleep and synchronized.

10 Key Principles

YieldPoint's Blu900 solution is based on Digi International's 900HP wireless module.

The full manual is here:

https://hub.digi.com/support/products/digi-xbee/digi-xbee-pro-900hp/?path=/support/asset/xbee-pro-900hp-and-xsc-rf-modules-user-guide/

The main operating principles are explained below:

1. Coordinator and Nodes
2. Status indicators
3. Mesh ID
4. RSSI and Radio Tx Power
5. Mesh Cycle Settings
6. Mesh Cycle Operation
7. Mesh Cycle/ Reading Interval Synchronization
8. BluLinks on a Blu900 mesh
9. Mesh Optimization and max_tx Setting
10. Cloud Upload to VantagePoint

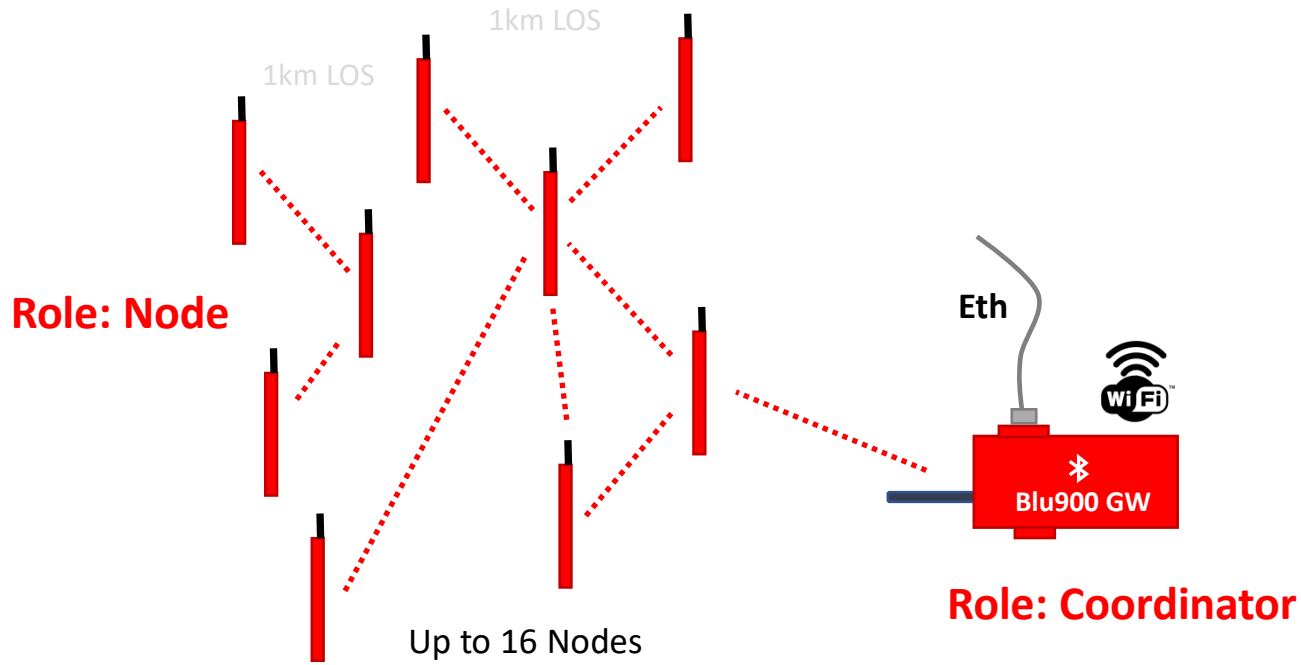
1: Coordinator & Nodes

A Blu900 GW has an internal 900MHz radio that is configured to be the preferred **Coordinator.**

For a Blu900 mesh a Coordinator is a Master Radio that is permanently powered up. It controls and synchronizes the **Mesh Cycle**. There can only be one Coordinator for a mesh.

Blu900 **Nodes** are battery powered devices that can self-configure as a mesh. They wake up and sleep according to a schedule defined by the Coordinator (Blu900GW).

Blu900 Nodes are SCANNERS can take simultaneous readings from (i) a d-Tech instrument and (ii) 8 x BluTech BEACON cluster.



Nodes
Synchronous Sleep
Battery Powered

Coordinator
Always Awake:
Mains powered or PoE (specify).

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#1. Coordinator & Nodes

2 : Status Indicators

The Blu900GW is a 3-way “bridge” between the 900MHz mesh (coordinator), a WiFi/Ethernet (IP host) and a BT4.2 Android device (phone or tablet).

Device Status: Idle /low power mode
Preparing for Mesh Wakeup / 10sec window where certain tasks are disabled
Coordinate Mesh / talk to the 900MHz mesh
Read Instrument /Read d-Tech instrument
Scan BT /Scan for BT5 beacons

Mesh Status: No Mesh
Sleep (HH:MM:SS countdown until wakeup)
Awake

BT Status: Connected **or** Disconnected

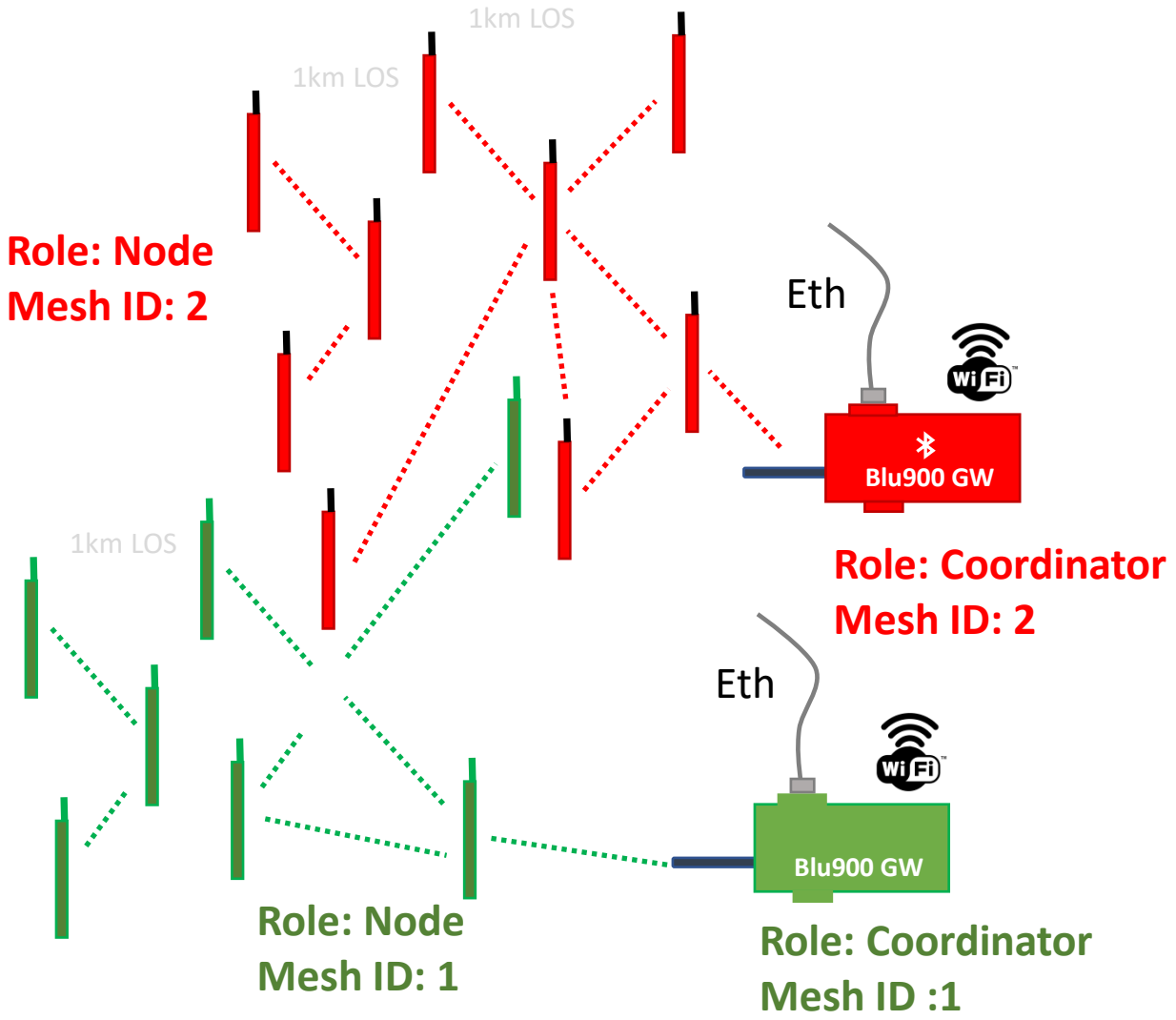
3. Mesh ID

Mesh ID (Preamble ID in the older Digimesh) is an ID for devices that communicate together as a mesh. Only devices with matching Mesh IDs can communicate with each other.

Different Mesh IDs minimize interference between multiple sets of devices operating in the same vicinity. When receiving a packet, the device checks Mesh ID, as it is encoded in the packet.

Parameter range 0 - 7 **Default 7**

Each Blu900 mesh has a SINGLE coordinator which is *typically* the Blu900 Gateway.



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#3. Mesh ID

4 : RSSI and Radio Tx Power

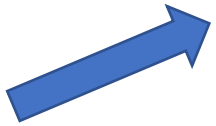
RSSI, or "**R**eceived **S**ignal **S**trength **I**ndicator," is a measurement of how well your device can hear a signal from an access point or router. It's a value that is useful for determining whether you have enough signal to achieve a reliable wireless connection. For any Blu900 device the **RSSI** value indicates the 900MHz signal strength of the last/proximal hop. It does not provide an accurate quality measurement for a multi-hop link. A multi-hop network will only be as robust as its weakest link.

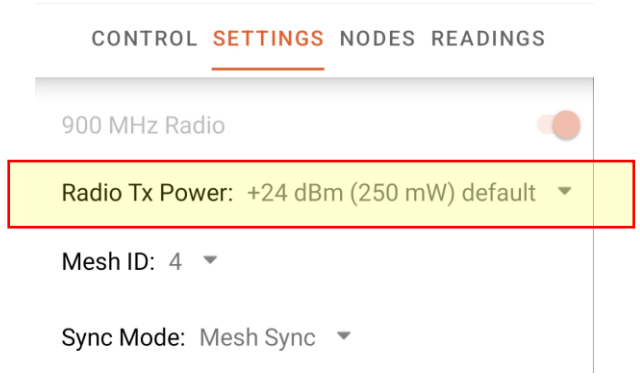
RSSI (dBm):

>-60	Good
-60 to -80	Moderate
<-80	Poor

Tx Power Level setting sets/displays the power level at which the radio transmits conducted power. The **Tx Power Levels** are approximate.

Tx Power level	dBm (Power)
0	+7.0 dBm (5mW)
1	+15.0 dBm (32mW)
2	+18.0 dBm (63mW)
3	+21dBm (125mW)
4	+24dBm (250mW)/default





INCREASING Tx Power level will increase RSSI

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#4. RSSI and Tx Power

5: Mesh Cycle Settings

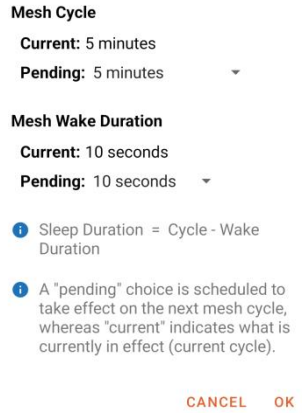
The mesh is synchronous so that all nodes wake up at the same time. Mesh Cycle can only be set on the Blu900GW (mesh role: Coordinator).

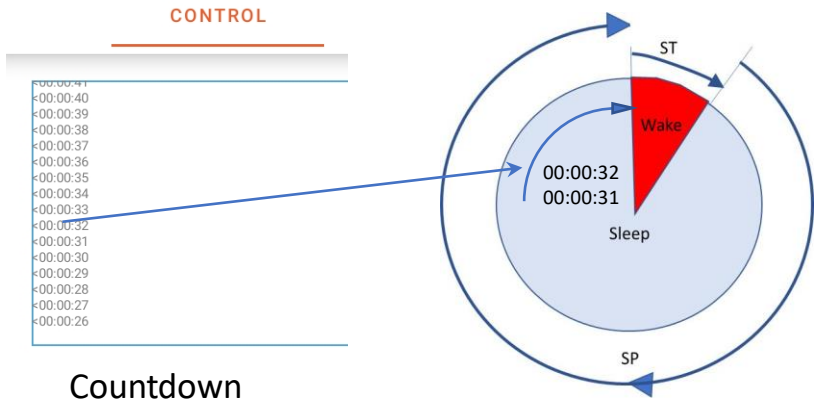
Sleep Duration (SP) Sets or displays the mesh's sleep time. This command defines the amount of time the mesh sleeps per cycle.

Wake Duration (ST) defines the amount of time that a device stays awake when operating in cyclic sleep mode. The command adjusts the value upwards automatically if it is too small to function properly based on other settings.

Mesh Cycle = Sleep Duration + Wake Duration

If a mesh has formed, the **MeshPoint** activity in **BluPoint** will count
down to the next wake-up event. Otherwise, the mesh status will be *no mesh*.





Countdown
until wake

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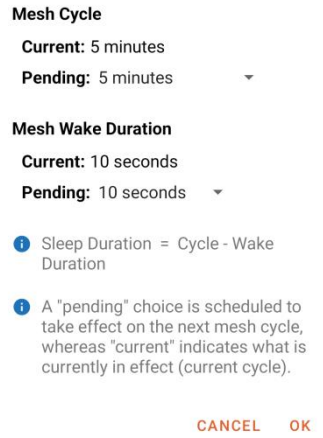
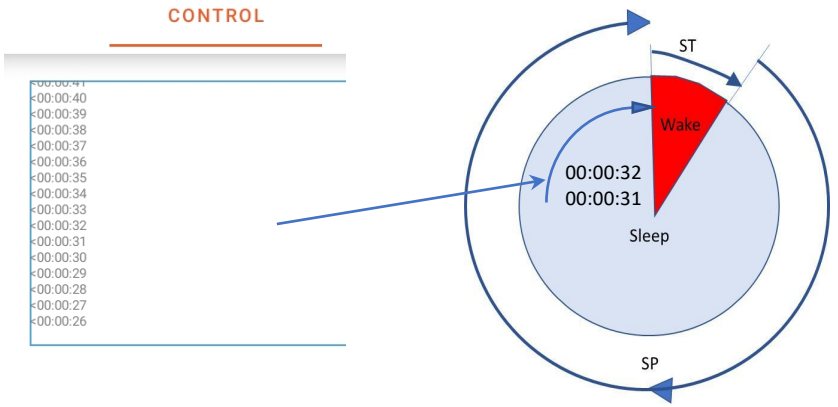
#5. Mesh Cycle

6: Mesh Cycle Operation

- **Mesh Cycle** is configured by the Blu900 Coordinator (SETTINGS tab)
- When a mesh is asleep the Blu900 nodes are not accessible
- The Blu900GW can only set the “operational” mesh cycle when the mesh wakes up. Until then the mesh Cycle is ***Pending***
- Until the Mesh wakes up the Mesh Cycle settings can only be set once the mesh wakes up.
- If the Blu900GW is powered cycled while the mesh is asleep the mesh cannot ‘heal’ until the nodes wake up. Until then there will be *no mesh*

MeshPoint > SETTINGS > Mesh Cycle





The **Mesh Cycle** should not be confused with the instrument **Reading Interval.** There may be several readings during each mesh cycle (see Principle 7 below). The mesh Cycle and reading interval can be synchronized or not using **Sync Mode**

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#6: Mesh Cycle

7: Mesh Cycle/ Reading Interval Synchronization

The reading interval for Blu900 Nodes can be set in three ways which must be configured on the Blu900GW:

(i) MESH SYNC (sync_mode=2). Full Synchronization between Mesh Cycle and Reading Intervals. 1 reading /mesh cycle. Set on Blu900GW **(Default).**

(ii) GATEWAY SYNC (sync_mode=1). Gateway dynamically controls Reading Interval but this is decoupled from Mesh Cycle.

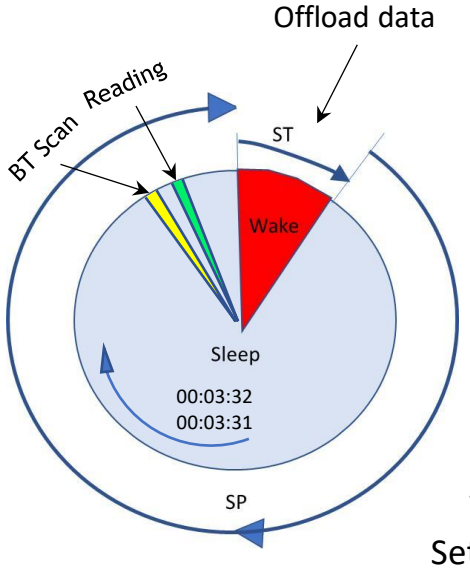
(iii) NODE SYNC (sync_mode=0). Reading Interval set by the BluPoint App on each individual node. Reading Interval set to NODE_SYNC on Gateway.

MESH SYNC is the most SIMPLE. GATEWAY SYNC allows reading intervals to be modified remotely depending on ground conditions. NODE_SYNC can be used to more finely manage battery life on individual nodes.

7: Mesh Cycle/ Reading Interval Synchronization

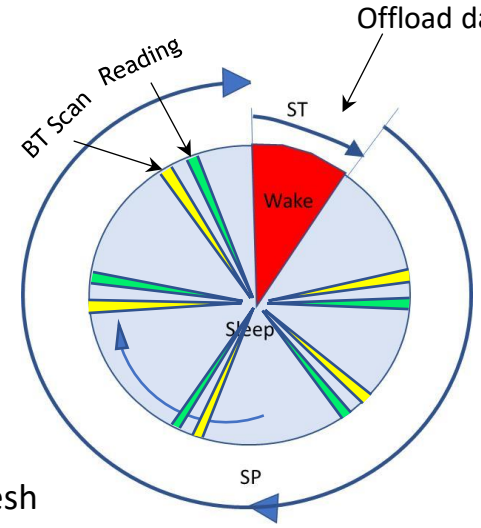
All Nodes are synchronized by Blu900GW

MESH SYNC. 1 Reading /mesh cycle.



sync_mode=2

GATEWAY SYNC. Gateway dynamically controls reading Interval but this is decoupled from the Mesh Cycle.

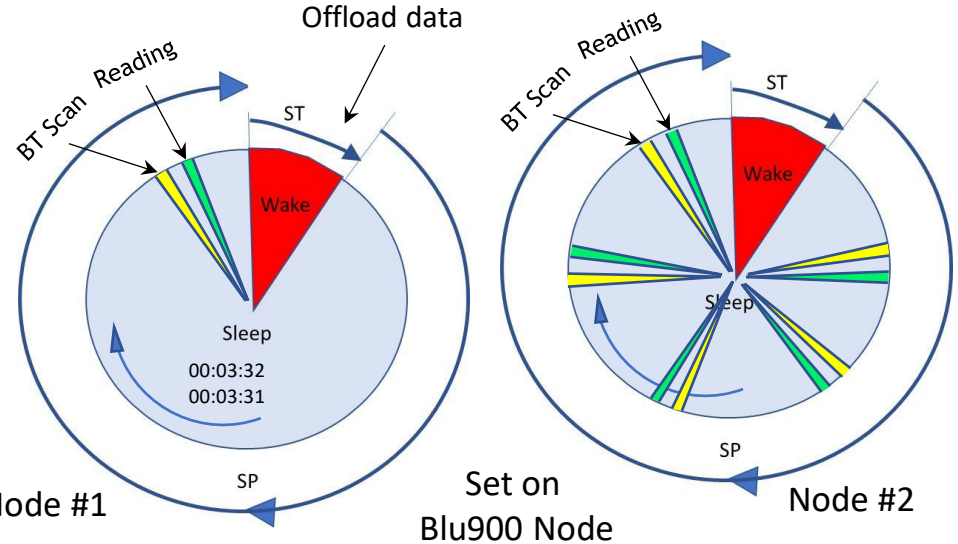


Whole mesh
Set on Blu900GW

sync_mode=1

Nodes are independently synchronized

NODE SYNC. Reading Interval set by the BluPoint App on each individual node. **sync_mode** set to **NODE SYNC** on Gateway.



sync_mode=0

sync_mode is set on Blu900GW.

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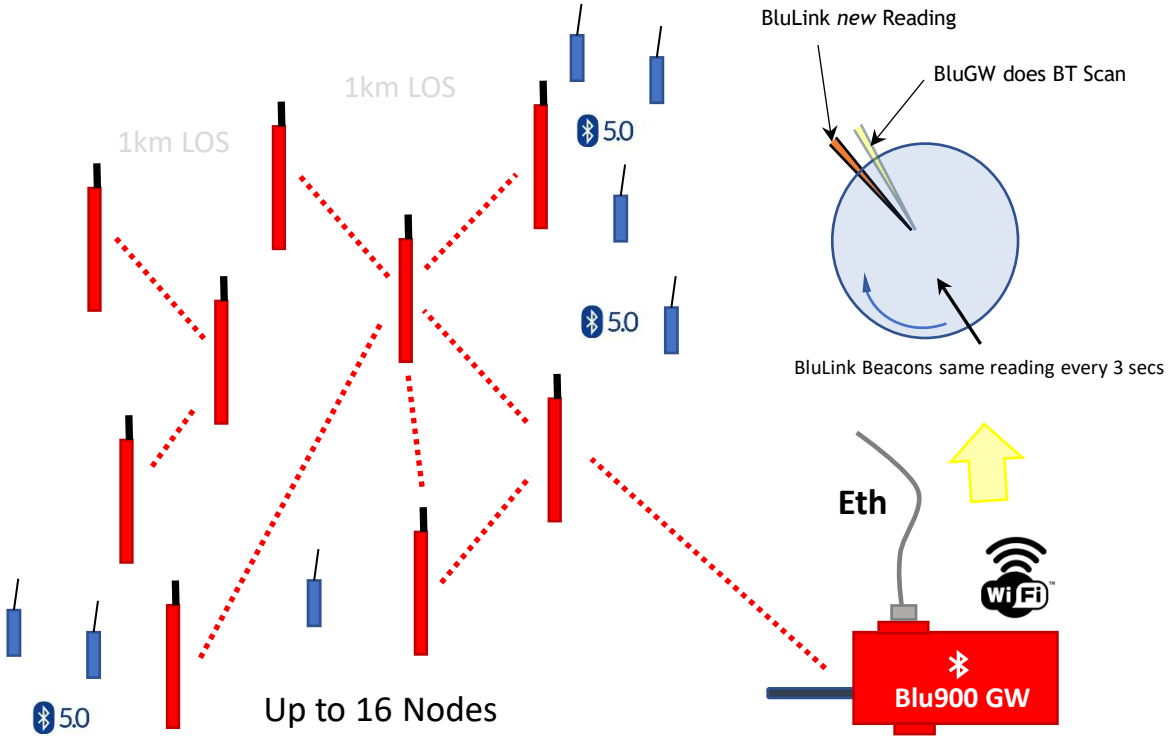
#7: Reading Synch

8: BluLinks on a Blu900 mesh



Role: Coordinator
Mesh Cycle

A BluLink takes a new reading based on its **Reading Interval** setting. Then it "beacons" the same reading every 3 seconds until the next reading is taken.

Blu900 Nodes can listen to beacons from nearby BluLinks, and will transmit the data when the mesh wakes up.

If the BluLink is within range of a parent Blu900 device, Blu900GW or Blu900 Node, in order to have a *new* reading each time its parent executes a BT Scan, the BluLink will synchronize its **Reading Interval** to that of the parent.

The parental **Reading Interval** is in turn set by configuring **sync_mode** on the Blu900GW.

9: Mesh Optimization and max_tx Setting

Blu900 Mesh optimization is a compromise between (i) battery life (ii) the number of readings (iii) the mesh topology.

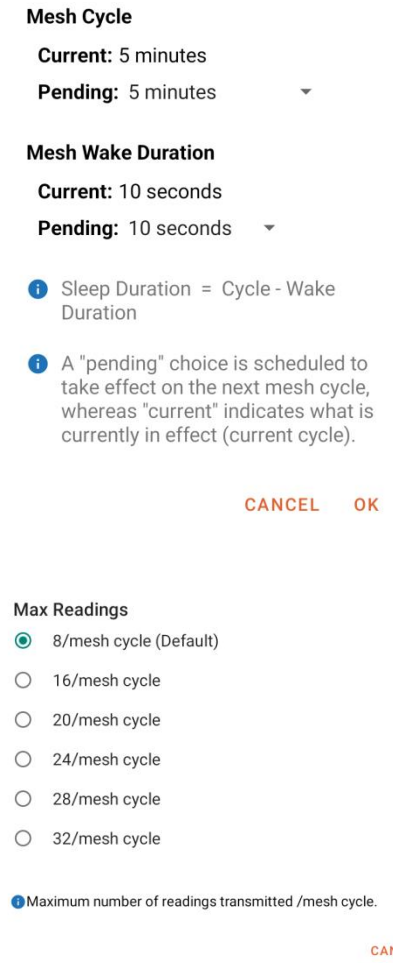
Battery life is primarily affected by the Mesh Cycle settings.

Mesh Cycle = Mesh Sleep Time + Mesh Wake Time

Increasing the **Mesh Cycle** will result in more readings to send each time the mesh is awake. **Mesh Wake Time** of the Blu900 mesh is 10sec by default. The longer the mesh is awake the more readings that can be sent at one time. If remaining time is insufficient then the readings will be buffered.

max_tx (8-32, default=8) sets the maximum number of readings sent during mesh wakeup. This setting help control traffic on the mesh**.** A higher **max_tx** may require a longer **Mesh Wake Time.**

Large complex mesh topologies involving many radio hops with low signal strength (RSSI) are inefficient and result in a *low packet transmission rate*. In such cases the wakeup time mat need to be increased



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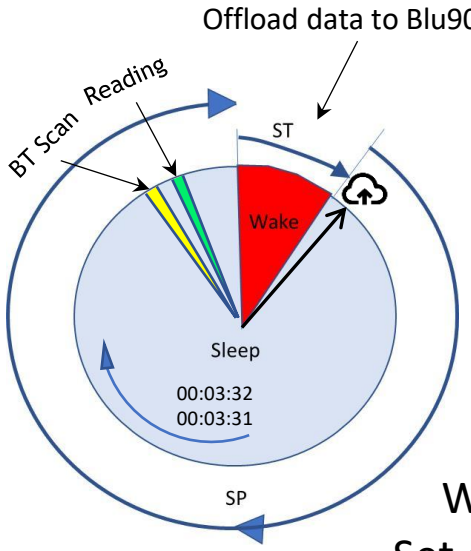
#9. Mesh Optimization

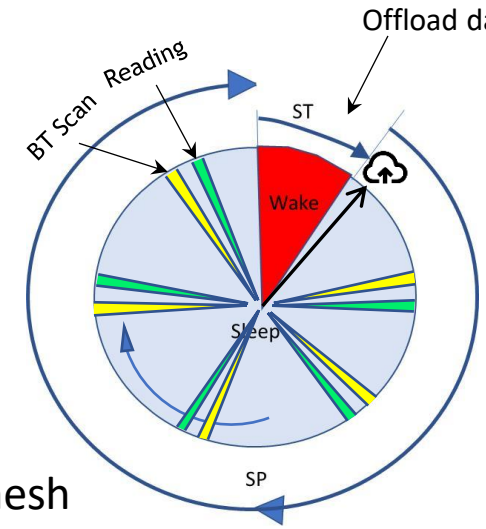
10: Cloud Upload to VantagePoint

All Nodes are synchronized by Gateway

MESH SYNC. 1 Reading /mesh cycle.

GATEWAY SYNC. Gateway dynamically controls reading Interval but this is decoupled from the Mesh Cycle.





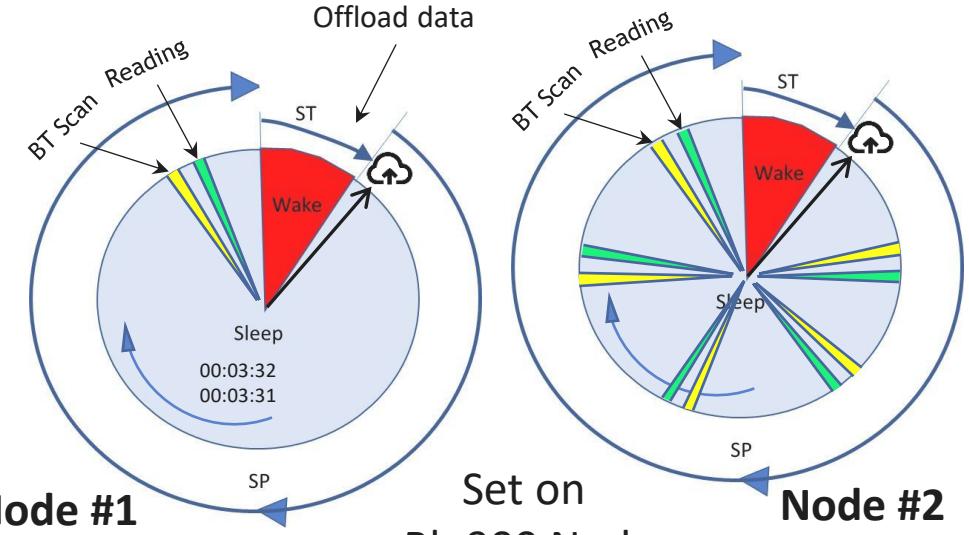
Whole mesh
Set on Blu900GW

sync_mode=2

sync_mode=1

Nodes are independently synchronized

NODE SYNC. Reading Interval set by the BluPoint App on each individual node. Sync_mode set to **NO SYNC** on Gateway.



sync_mode=0

VP Cloud Upload always Synchronized to follow Mesh Cycle Wakeup

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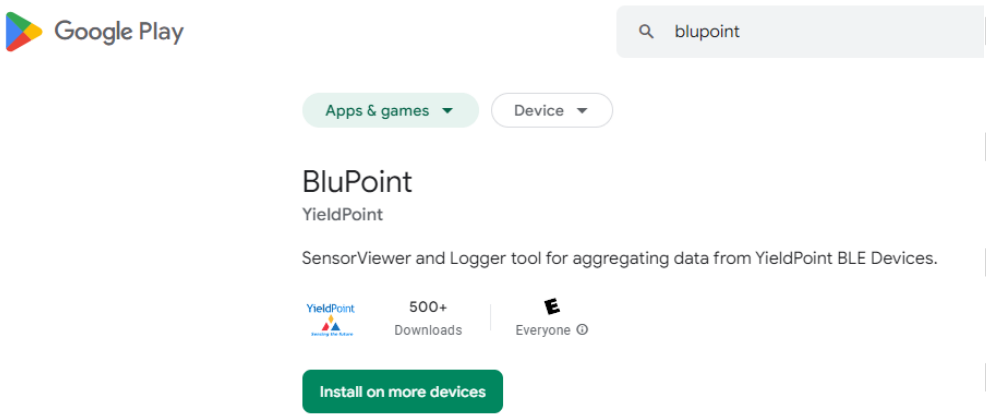
#10. Cloud Upload Sync

Download the BluPoint App from the Google Play store



The **BluPoint App** has full control over Blu900 devices through the LogPoint, MeshPoint and NetPoint activities.

Blu900GW:

LogPoint: Manage Logged data collected on the entire mesh

MeshPoint: Configure Blu900 mesh

NetPoint: Configure access to internet over WiFi/Eth

Blu900 Node:

LogPoint: Manage data collected by this Blu900 node

MeshPoint: Monitor and control this Blu900 node

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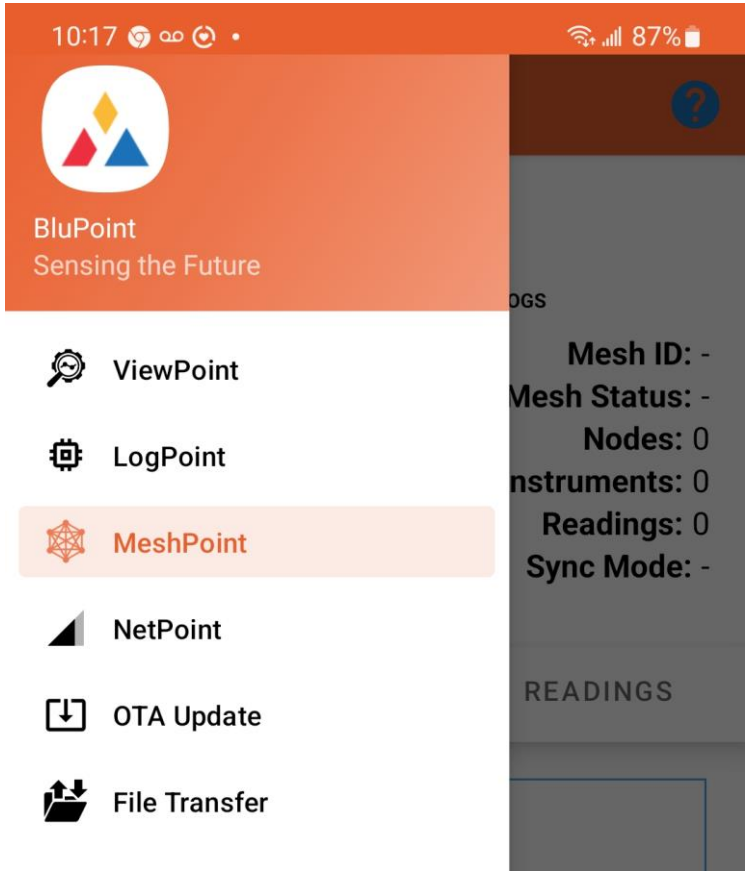
The BluPoint App

BluPoint Activities

ViewPoint
Instrument
Manual Readout Android Device.
Replaces dReader.

MeshPoint
Configure and Monitor 900MHz Mesh. Set mesh ID, mesh cycle, Sync_mode, wakeup time.

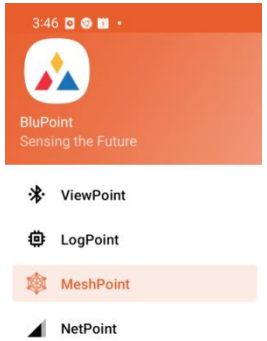


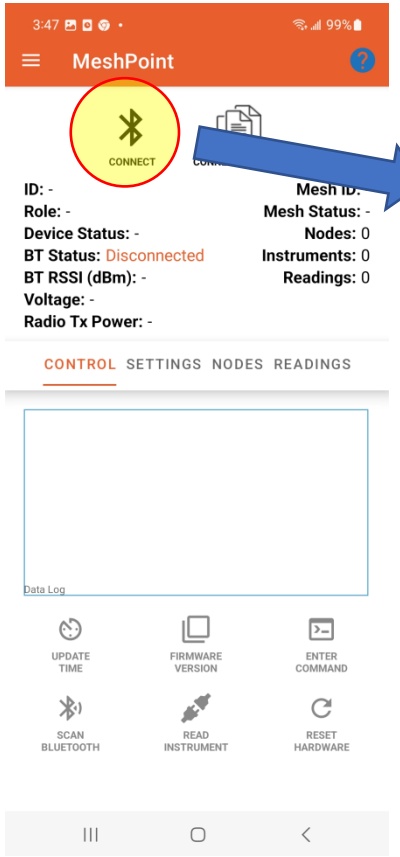
LogPoint
Manage stored/logged data
For the BluTech device.
Set reading interval, time. Wipe Logger.

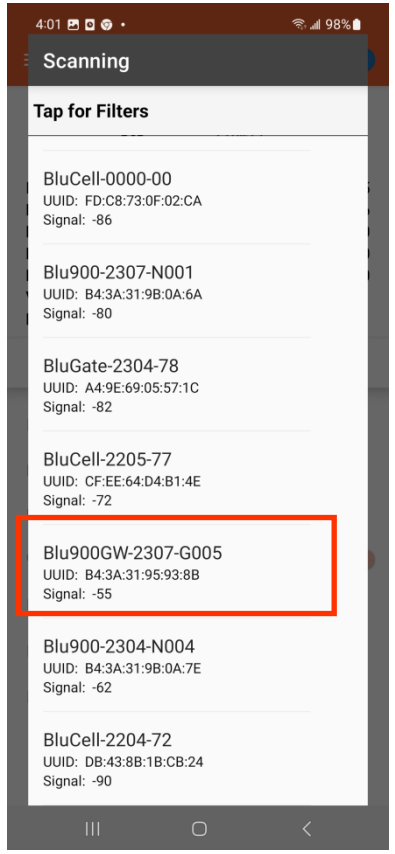
NetPoint
Manage, test and Monitor internet connectivity and access to VantagePoint cloud database

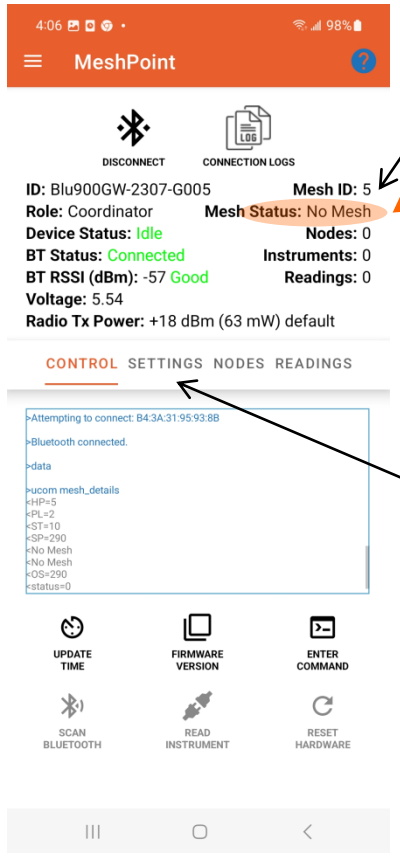
OTA Update and File Transfer
Use android device to update FW for all YP devices.

Connect using Bluetooth to the Blu900 Gateway





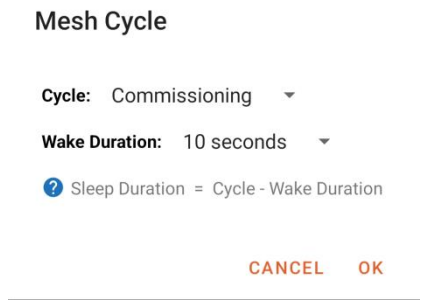




Mesh ID = 5

No mesh can exist until a Node with the same Mesh ID is provisioned

In the SETTINGS tab change the Mesh Cycle setting to **Commissioning** (1 min mesh cycle)



IMPORTANT: Mesh Cycle can only be set on the Mesh Coordinator (not on a Blu900 Node)

YieldPoint *Sensing the future*

MeshPoint GW

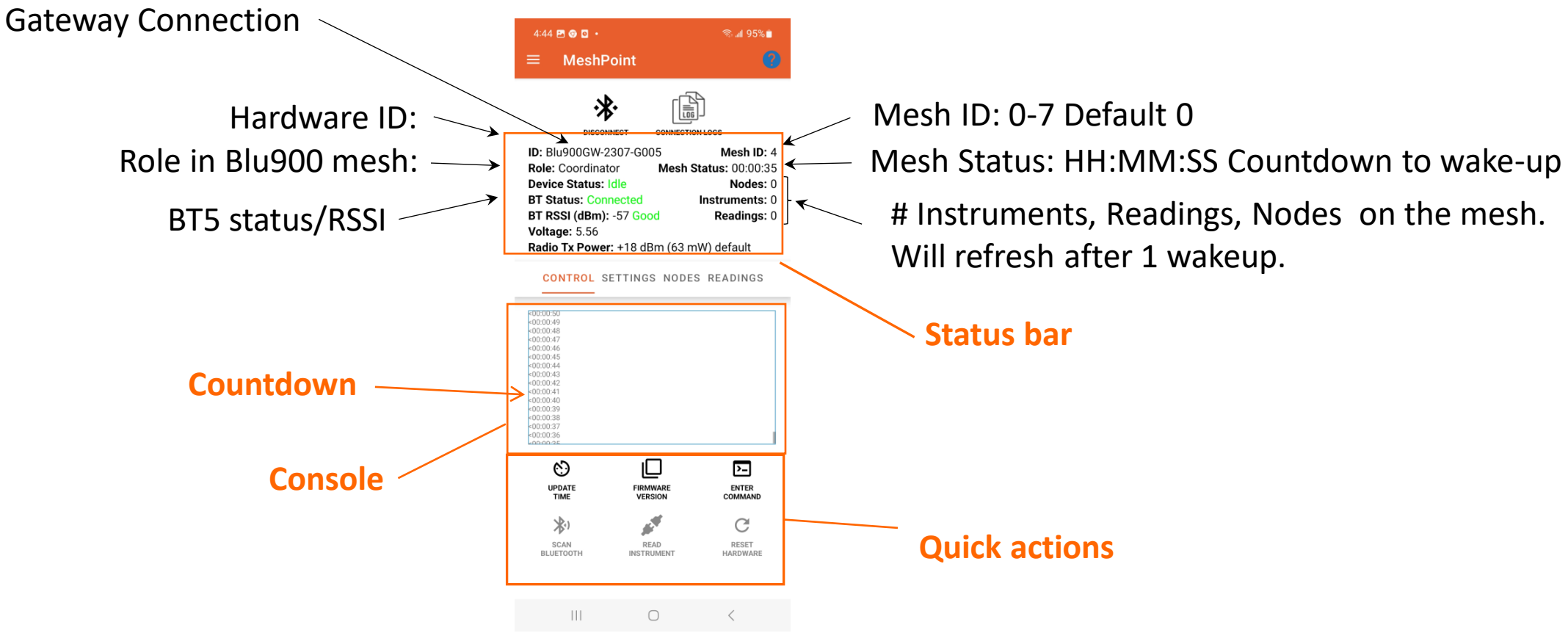
BT5 Signal strength or RSSI

RSSI (Received Signal Strength Indicator in dB): Radios can communicate down to an RSSI of -92.

Range: -40 to -60 Good
-60 to -80 Moderate
<-80 Poor

IMPORTANT: Whatever the orientation of the device, the antenna should be VERTICAL

Connect to the Gateway and check the Mesh ID

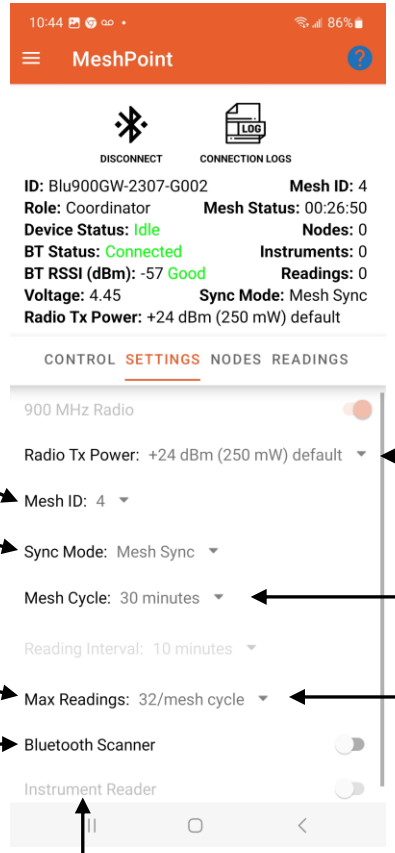


YieldPoint *Sensing the future*

CONTROL tab

The Settings Tab

The SETTINGS tab is used to configure the 900MHz mesh network



Mesh ID

Sync mode: Mesh, Gateway, or Node sync

Instrument Reading interval: Only in Gateway and Node Sync

Turn on/off scheduled BT instrument reading scanner

900MHz radio power

Mesh Cycle (sleep and wake time)

Maximum number of readings set on a single mesh cycle wakeup. A higher number may require a longer Mesh Wake Time

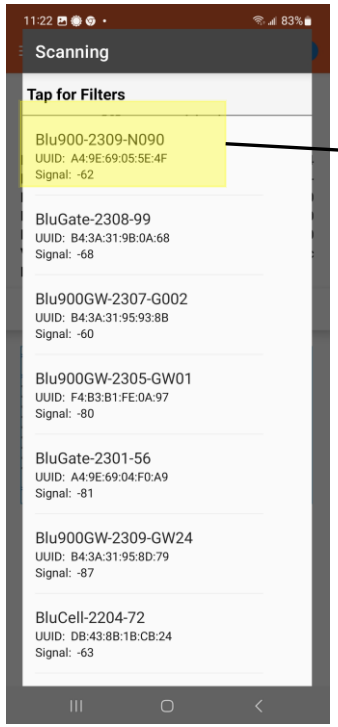
Turn on/off RS485 instrument reading (Node only)

YieldPoint Sensing the future

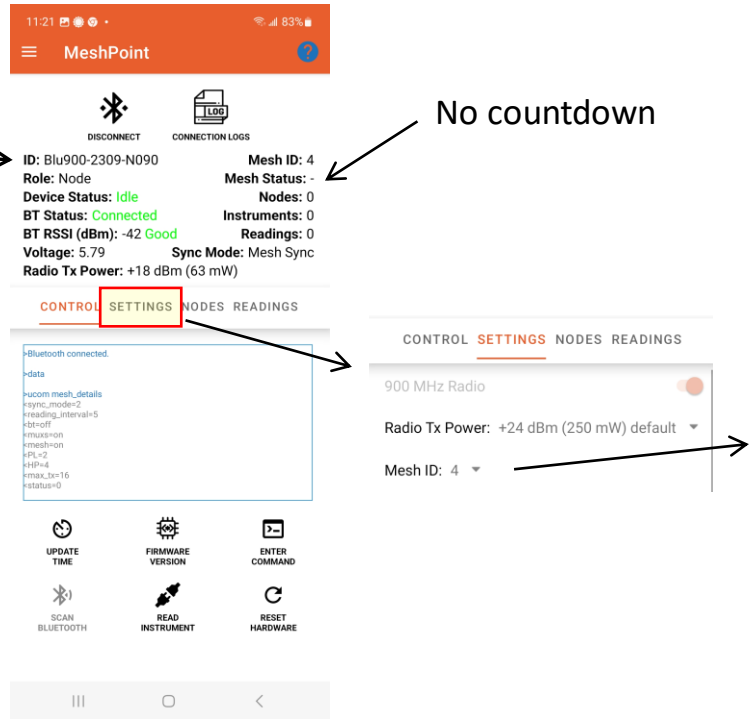
SETTINGS tab

Connect to and Set all Nodes to the same MeshID

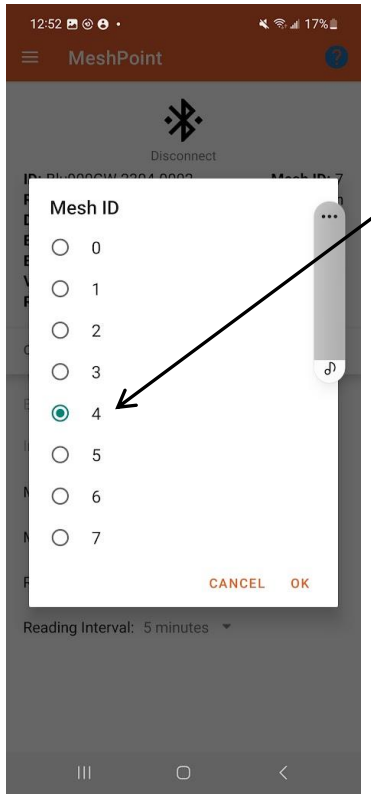
If no mesh countdown starts, use Bluetooth to connect to the Blu900 Node and set the **Mesh ID** under the SETTINGS tab to the same as the Blu900GW



Connect to Blu900 Node

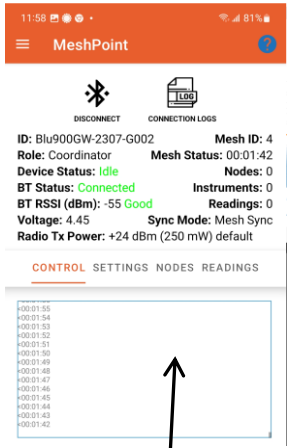


No countdown



Set Mesh ID

Mesh ID for Node must match that for Gateway(4)



Node has joined mesh.
Mesh will wake in 1m42s.
Counting down.

YieldPoint *Sensing the future*

SETTINGS tab: Mesh ID

Set the Mesh Cycle on a Blu900GW

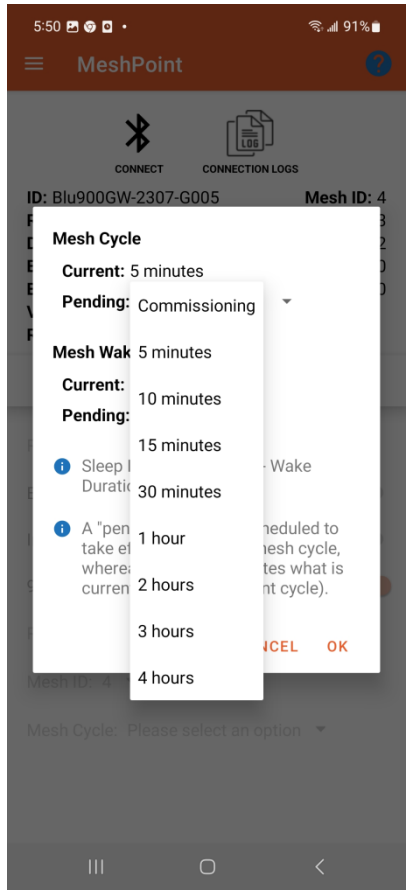
The Mesh Cycle can only be set on the Blu900GW

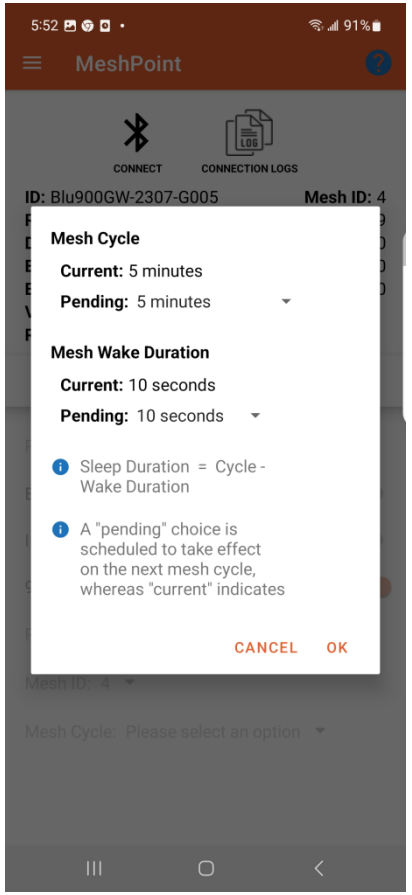
A 2 min mesh Cycle will quickly drain the battery. Battery life-time is primarily dependent on the Mesh Cycle (i.e. the ratio of wake and sleep time, or more precisely the Duty Cycle).

A 1hr Mesh Cycle will have the mesh asleep of 59min 50s and awake for 10s. That's a duty cycle of 1/360.

Pending status:

When a different mesh cycle is selected the values do not take effect until the mesh wakes up. Until then the changes are **"Pending"**

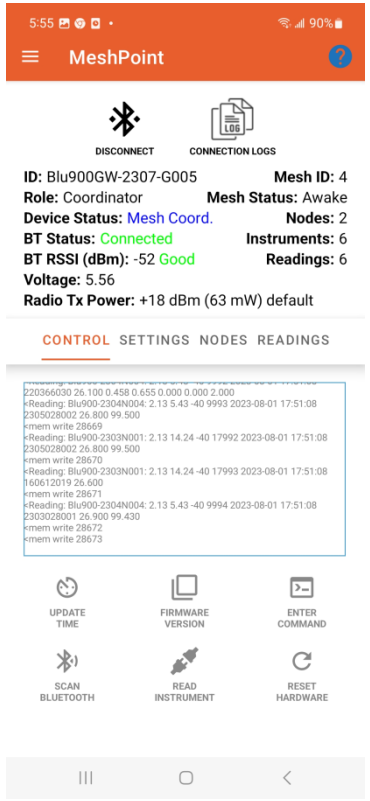




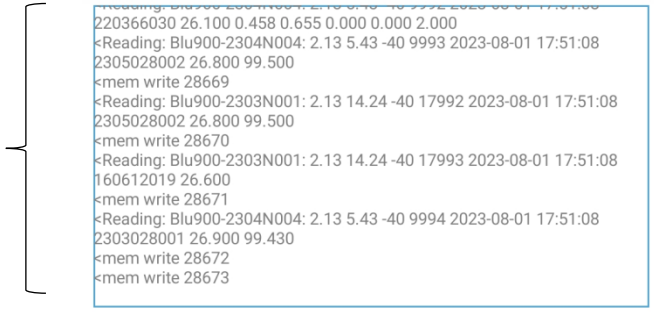
YieldPoint Sensing the future

SETTINGS tab: Mesh Cycle

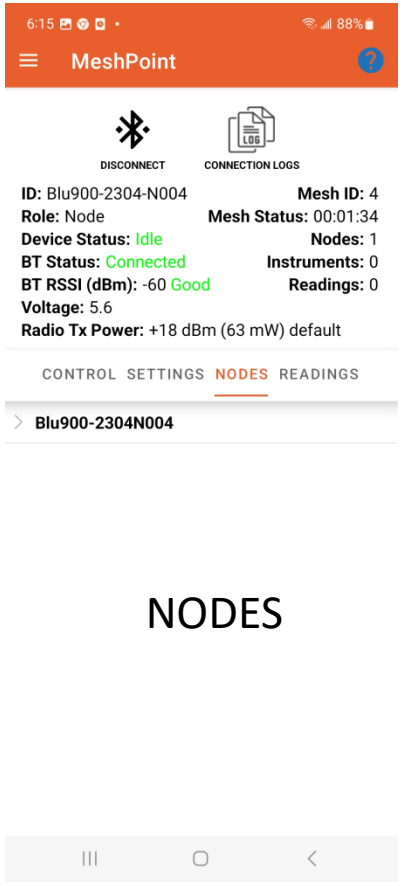
Following each count-down the mesh will (i) enter a 10s Mesh wake preparation, then (ii) wake up. If an instrument is connected or in BT5 range of the node the reading will be transmitted over the mesh.



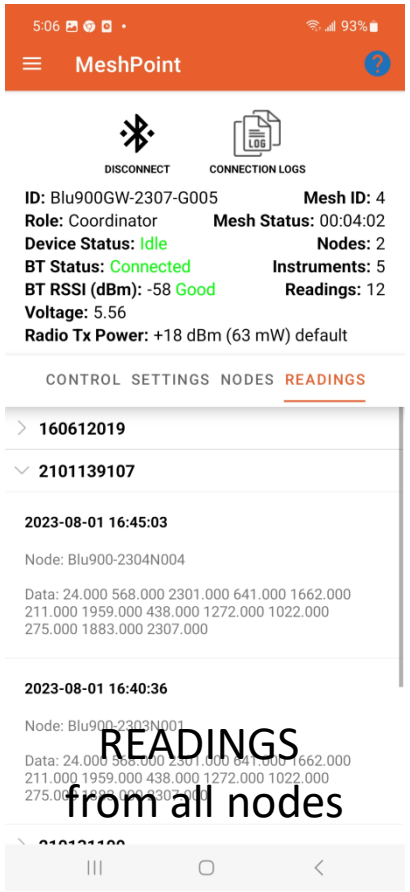
After one cycle
the READINGS and NODES tabs
will populate



Wakeup messages on console



NODES



READINGS
from all nodes

YieldPoint *Sensing the future*

NODES and READINGS tabs

Reset the mesh cycle to Commissioning when it already exists

Recommendations:

1. It is highly recommended that the user select a **Mesh Cycle** time and leave the mesh running like that indefinitely. **Hyper-managing a Blu900 mesh is not recommended.**

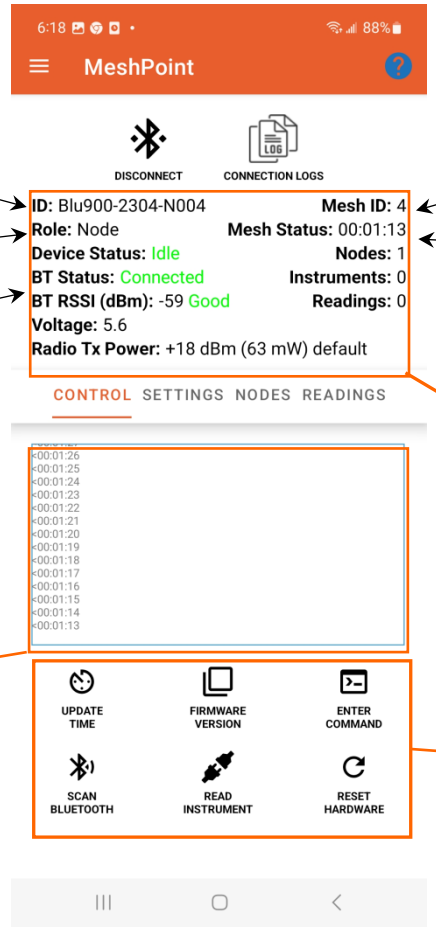
2. **Mesh Sync** is the simplest and most reliable synchronization setup, especially for inexperienced users. Node Sync is only recommended for final mesh optimization.

3. GateWays and nodes come configured with:
   mesh ID = 0,
   sync mode = mesh sync (2)
   mesh cycle = commission mode (2 min Mesh cycle)

When a synchronized mesh is Sleeping it is not reachable through the Blu900 mesh and in order not to lose its nodes a coordinator can only change cycle time at the next wakeup.

The way to force a change in Mesh Cycle for a GW coordinator is to power cycle the gateway. It will then be necessary to power cycle the nodes by toggling the 900MHz radio.

The MeshPoint Activity: Connect to a Node: CONTROL Tab Status



Hardware ID:

Role in Blu900 mesh:

BT5 status/RSSI

Mesh ID: 0-7 Default 0

Mesh Status: HH:MM:SS Countdown to wake-up

Status bar

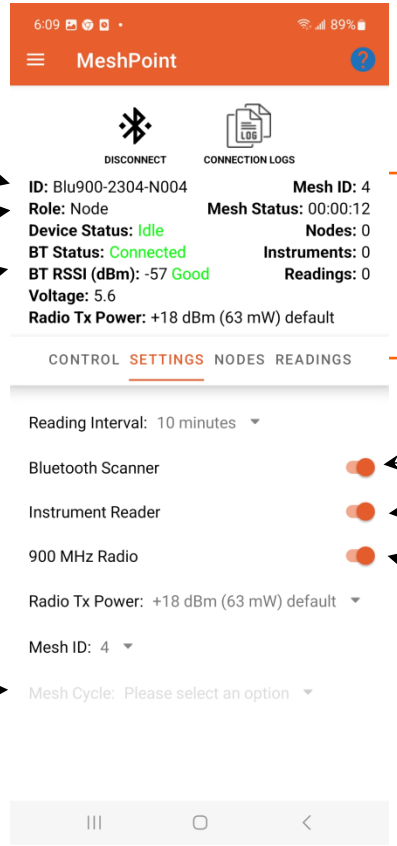
Console

Quick actions

YieldPoint *Sensing the future*

CONTROL Tab

The MeshPoint Activity: Connect to a Node : SETTINGS tab



Hardware ID:

Role in Blu900 mesh:

BT5 status/RSSI

Mesh ID: 0-7 Default 1

Mesh Status: HH:MM:SS Countdown to wake-up

Status bar

Turn off to improve battery life

Bluetooth Scan on each Reading interval

Read wired instrument on each Reading interval

Turn off 900MHz radio to use just as BluLogger

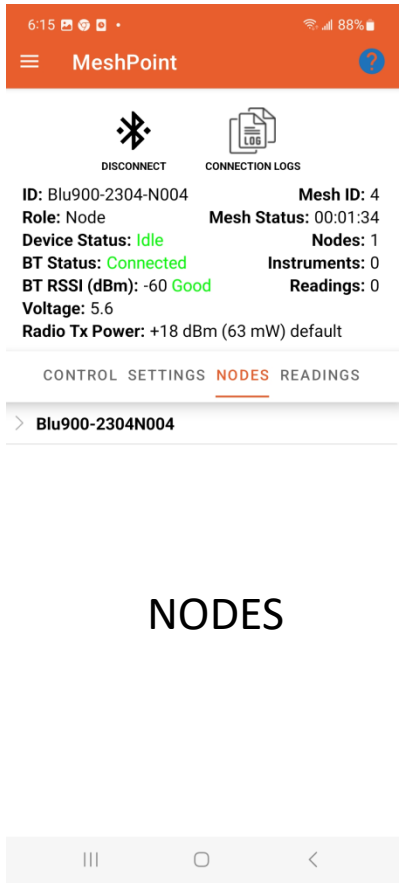
Mesh cycle can only be set on gateway

YieldPoint *Sensing the future*

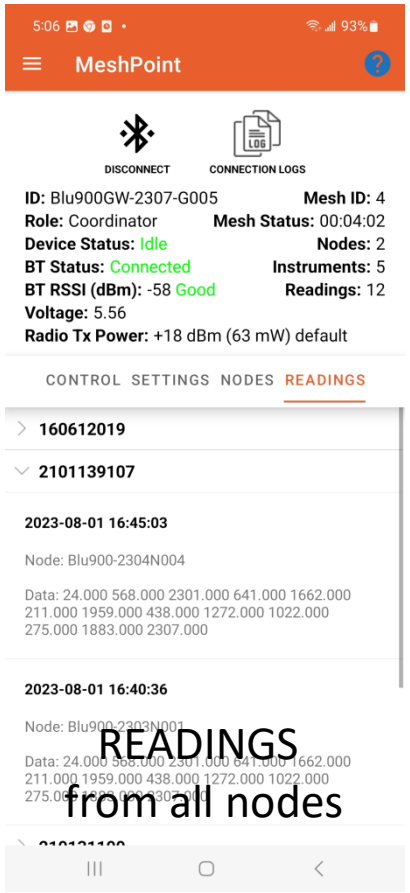
SETTINGS tab

The MeshPoint Activity: NODES and READINGS tab

Note: These tabs will only populate after the mesh has woken up.



NODES



READINGS from all nodes

YieldPoint Sensing the future

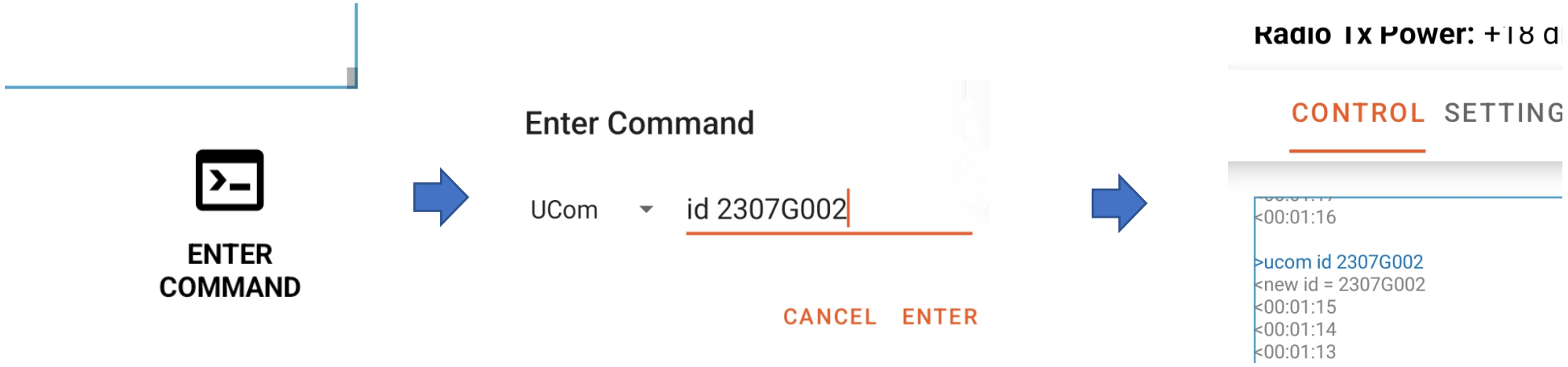
NODES and READINGS tabs

Change Device Name

The device name is an 8-character **Unique** Identifier
YieldPoint prefers to designate Nodes N and Gateways with a G.

Example Node: 2307N006
Example G/W: 2307G002

To change the Device Name, connect to that device enter the **ucom** command: id 2307G002.

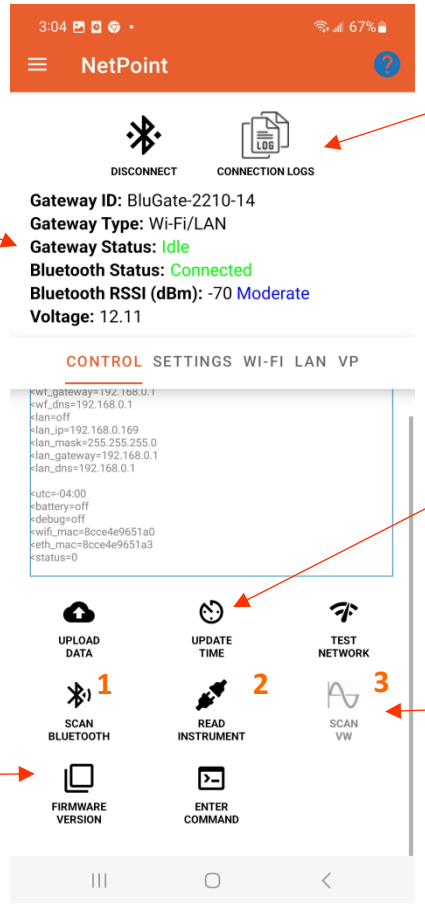


YieldPoint Sensing the future

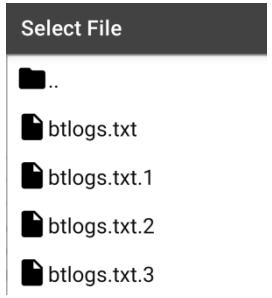
Change Device Name

Gateway Status:

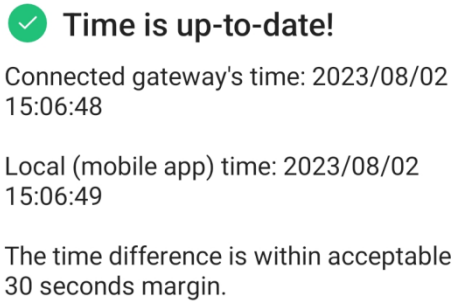
0: Idle (responsive)
1. BT Scan
2. Read Instrument
3. VW Scan
4: Uploading Data

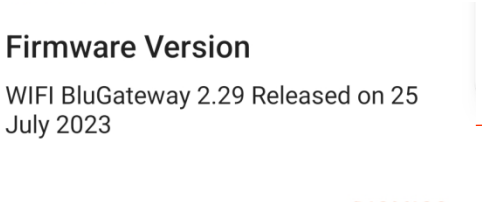


Console: Log of commands/ responses generated from session :



Share BT logs with YieldPoint for troubleshooting





1 8 x BT5 beacon scan
2 Mux RS485 d-Tech instruments
3 Mux VW (grey = No hardware)

YieldPoint Sensing the future

NetPoint Activity

Set Time on the Blu900GW

Having Connected to the Gateway in NetPoint:

a. From CONTROL tab in NetPoint, **Update Time** on GW for startup
b. From the SETTINGS tab in NetPoint, check and adjust the **Time Zone**.

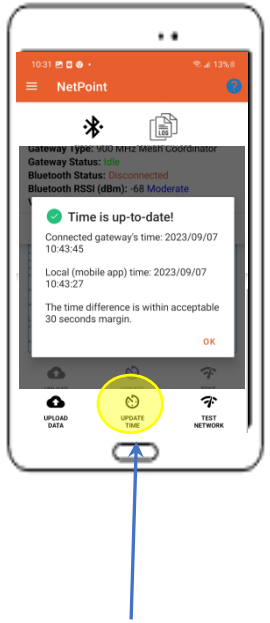
The Time Zone will be applied when the Gateway syncs its time to the VantagePoint Client at 12:00pm (Midday) local time each day.

All timestamps in VantagePoint are stored in UTC time.

c. Set the time zone in VantagePoint to view the on-line data in local time.

Set Time on the Blu900GW

Connect to NetPoint:

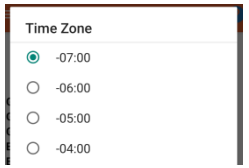


Set time from Tablet to Blu900GW

LOCAL Time

Blu900GW

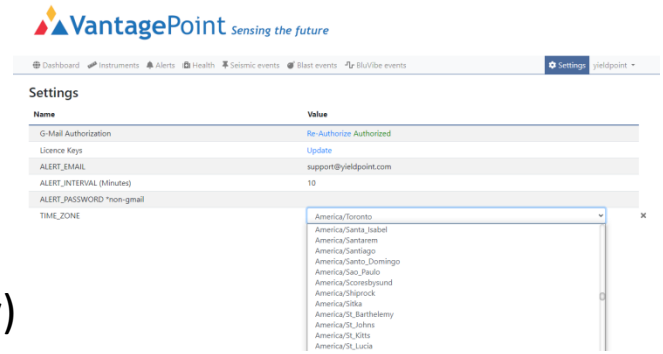
b. Check the Time Zone is correct



LOCAL <- UTC

12:00pm(Midday)

c. Set time zone in VP



VP Storage:
UTC time server

UTC->LOCAL

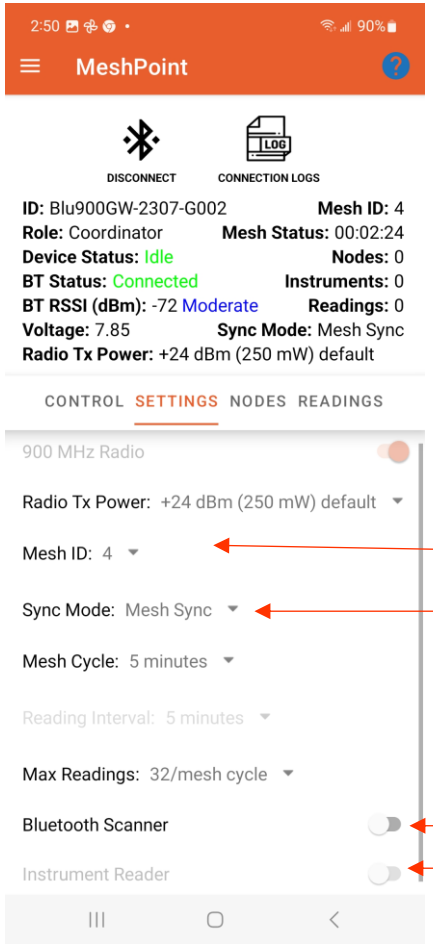
LOCAL Time

UI VantagePoint

a. Set local time on GW for startup. This will include Time and Time Zone

YieldPoint Sensing the future

NetPoint Activity: Time



Mesh ID mode (1-7)

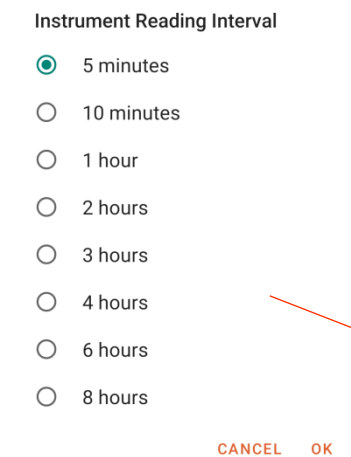
Sync mode (Mesh, Gateway, Node)

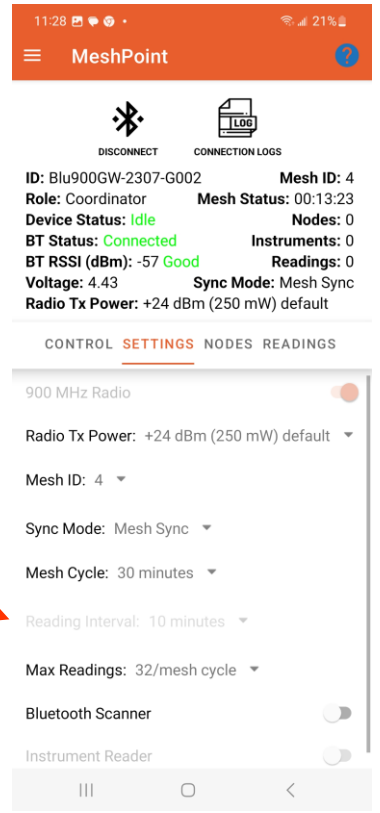
Disable the Bluetooth 5.2 scanning

Disable RS485 d-tech instrument scanning

Disable VW scanning (grey: hardware not present)

Greyed out in Mesh Sync

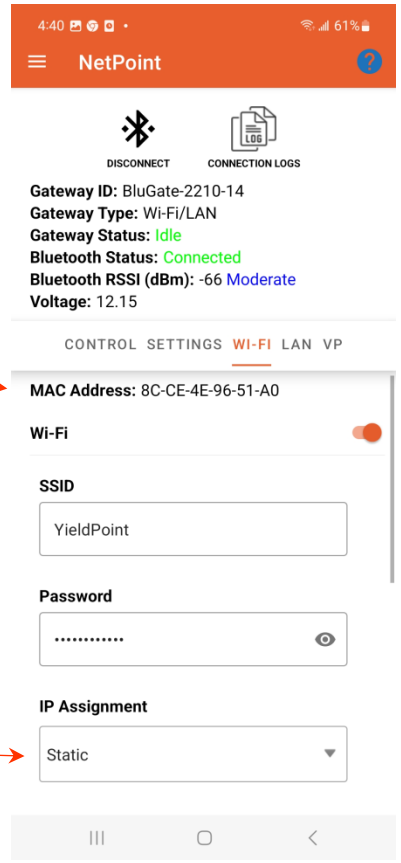




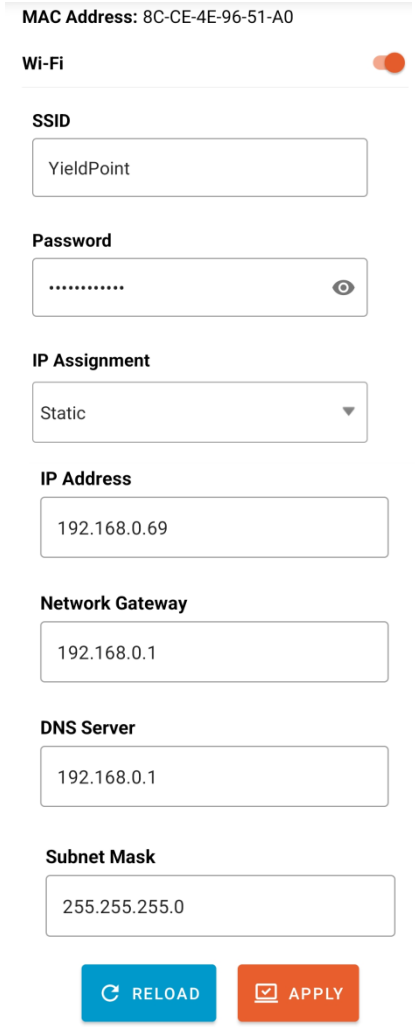
YieldPoint *Sensing the future*

NetPoint: SETTINGS tab

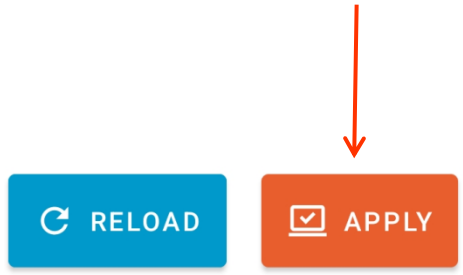
Wi-Fi Modem MAC address



ON /OFF



Applies entered values



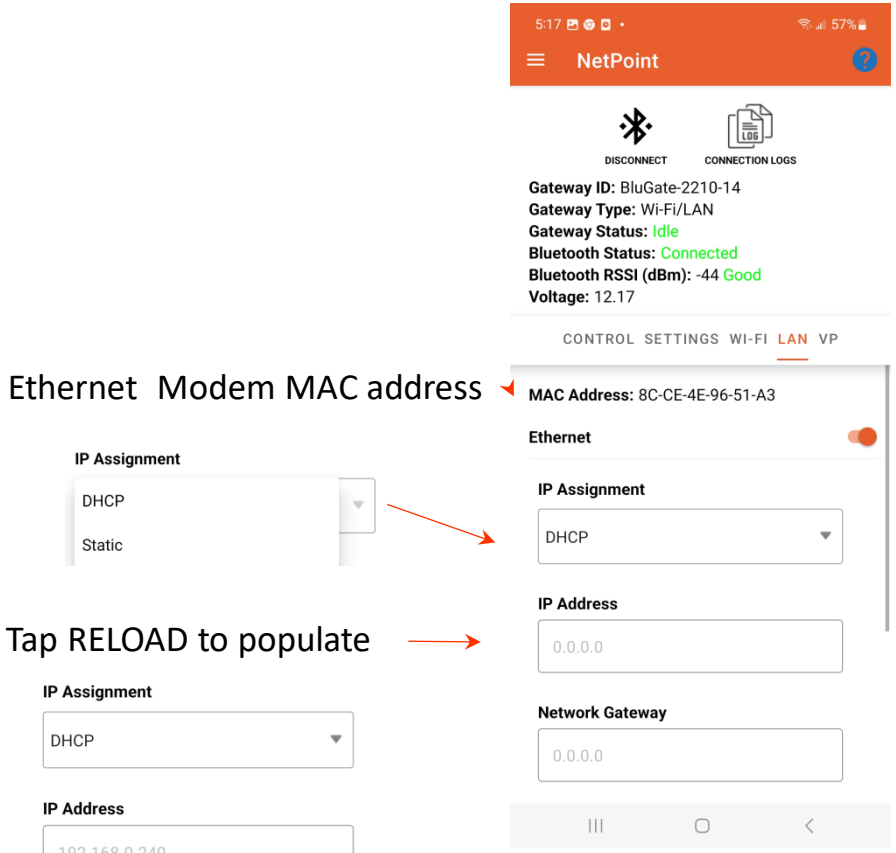
The button of “TRUTH”. Returns the true values of the IP settings.

Tap RELOAD to Discover true DHCP IP address.

YieldPoint Sensing the future

NetPoint: WiFi tab

3.2 The NetPoint Activity



Ethernet Modem MAC address

IP Assignment

DHCP

Static

Tap RELOAD to populate

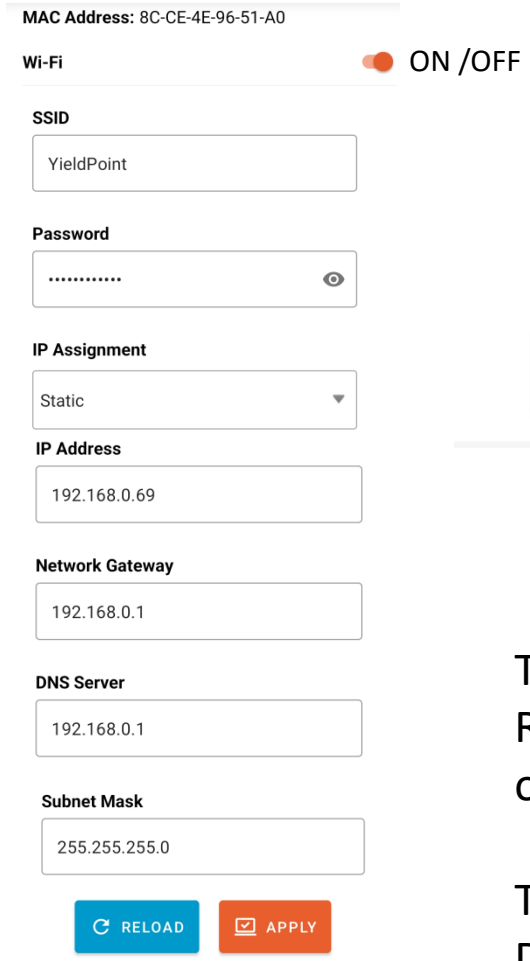
IP Assignment

DHCP

IP Address

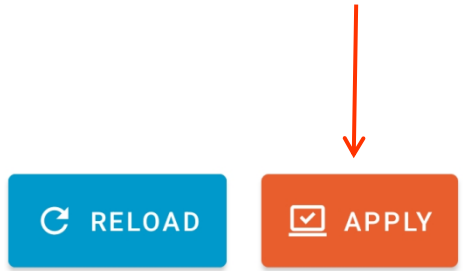
192.168.0.249

ON /OFF



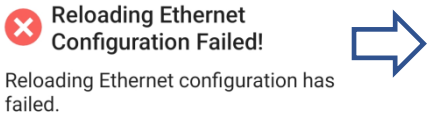
ON /OFF

Applies entered values



The button of “TRUTH”. Returns the true values of the IP settings.

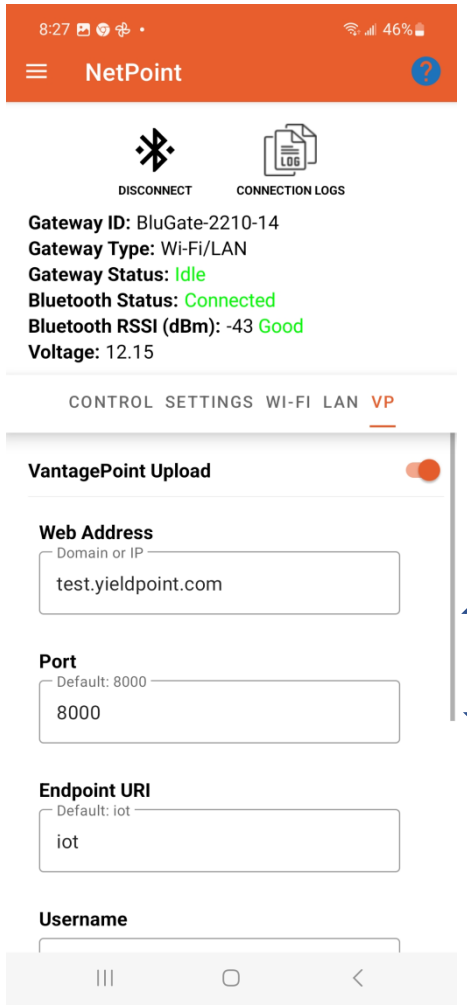
Tap RELOAD to Discover true DHCP IP address.



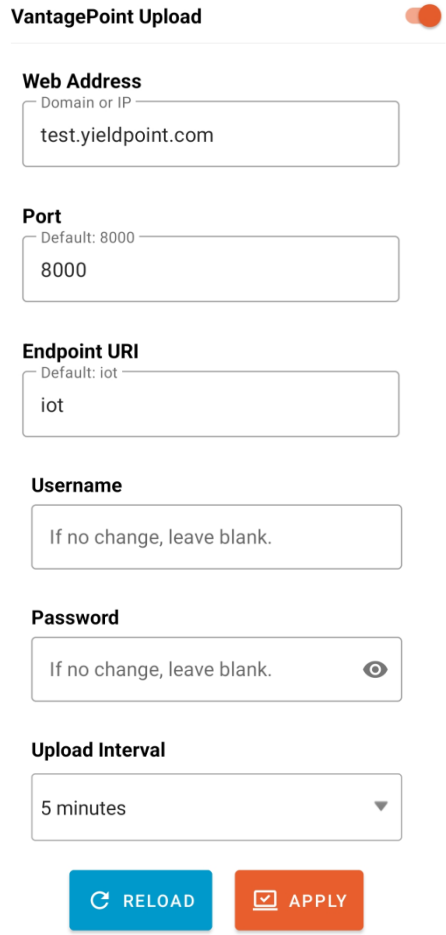
Check Ethernet connection

YieldPoint Sensing the future

NetPoint: LAN tab

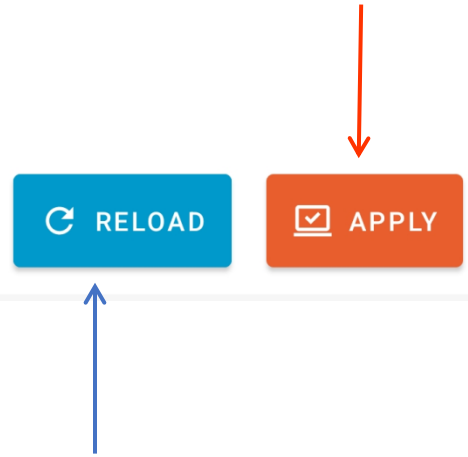


ON /OFF



ON /OFF

Applies entered values



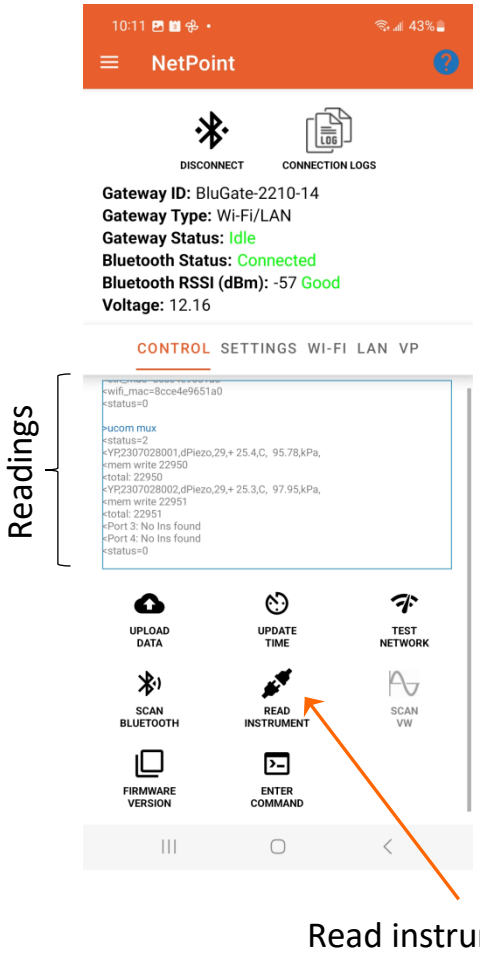
The button of “TRUTH”.
Returns the true values
of the VantagePoint settings.

Tap RELOAD to discover true
VP settings.

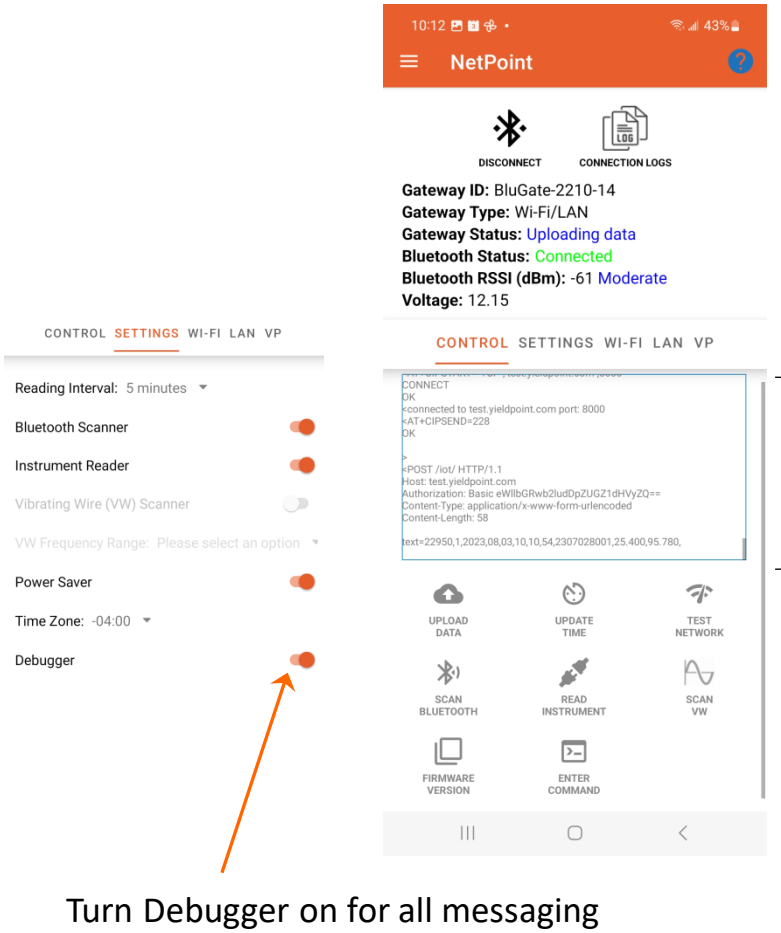
YieldPoint Sensing the future

NetPoint: VP tab

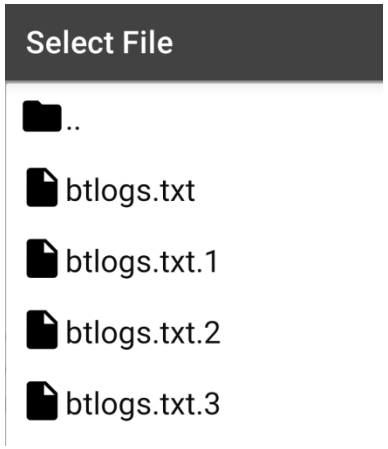
STEP 1: Generate some readings



STEP 2: Turn on Debugger and UPLOAD DATA



STEP 3: Share blogs files



The Logfiles will include all the messages on the console.

Share with YieldPoint for trouble shooting

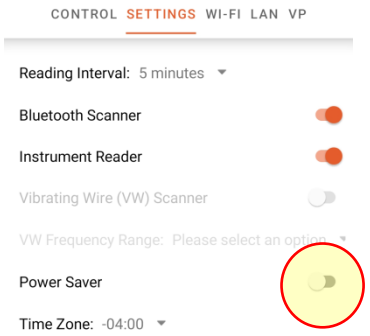
YieldPoint Sensing the future

NetPoint: Test GW

(i) Turn off Power Saver and (ii) Browse to Local IP address

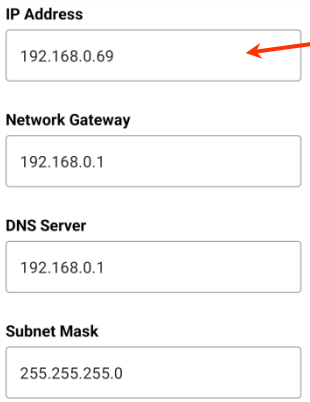
IMPORTANT: In NetPoint
Turn Power Saver OFF

SETTINGS TAB

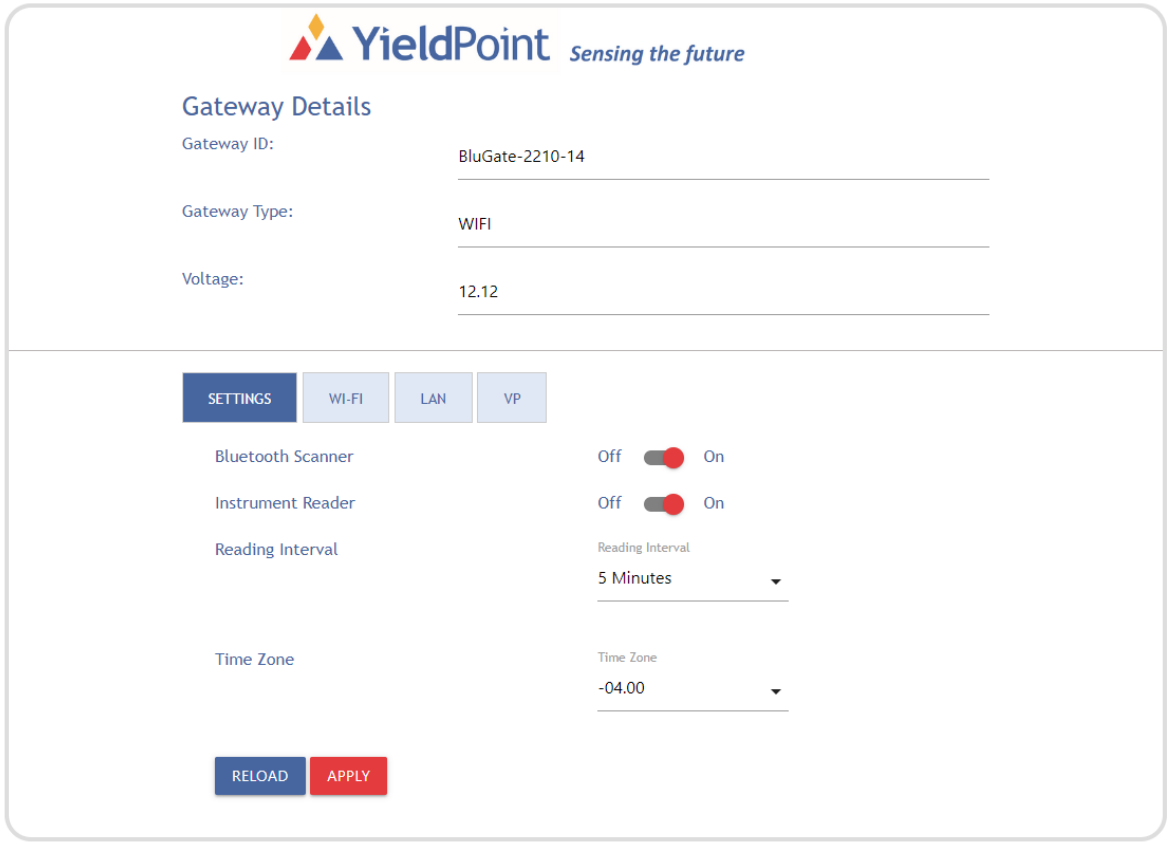


OFF

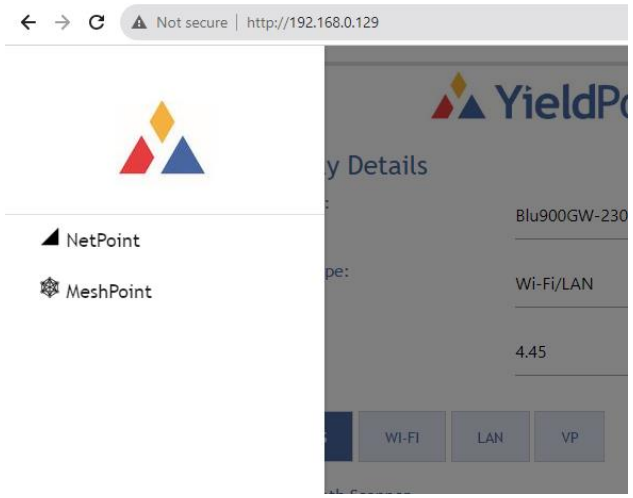
WIFI or LAN TAB

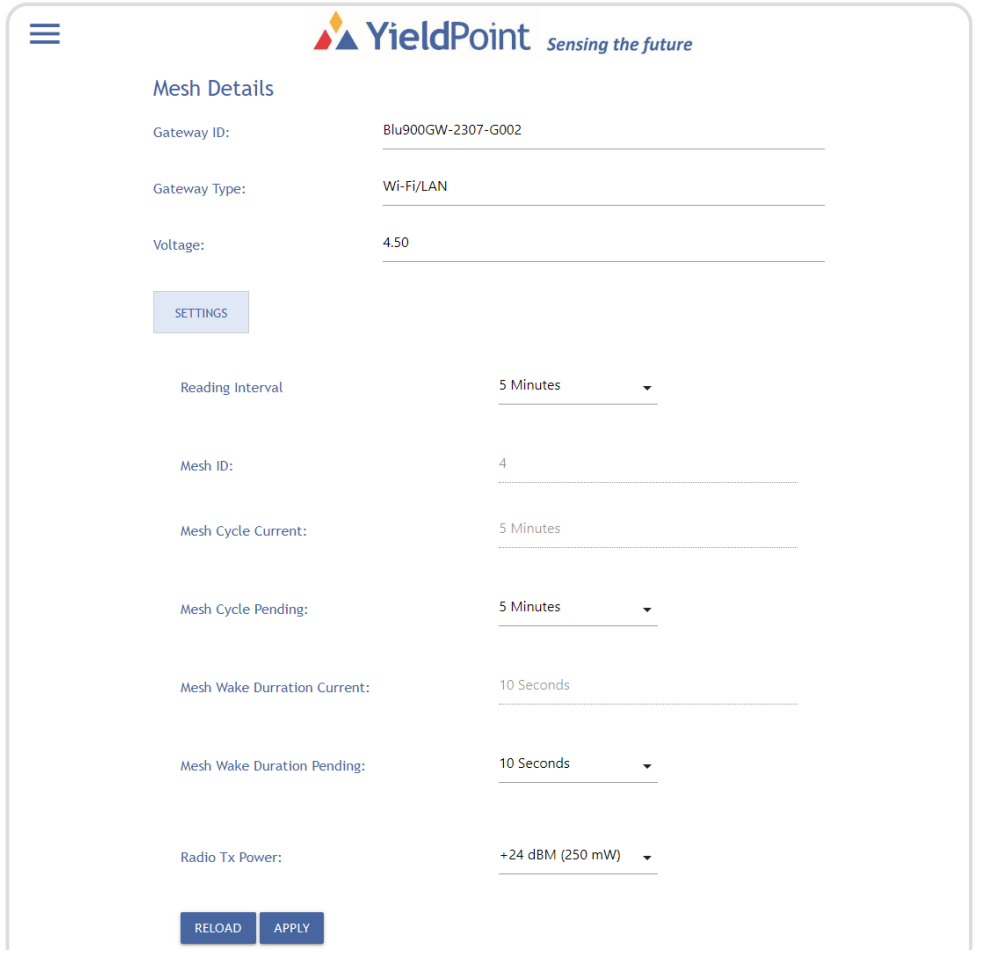


Browse to this IP address



MeshPoint: GW Browser Configuration





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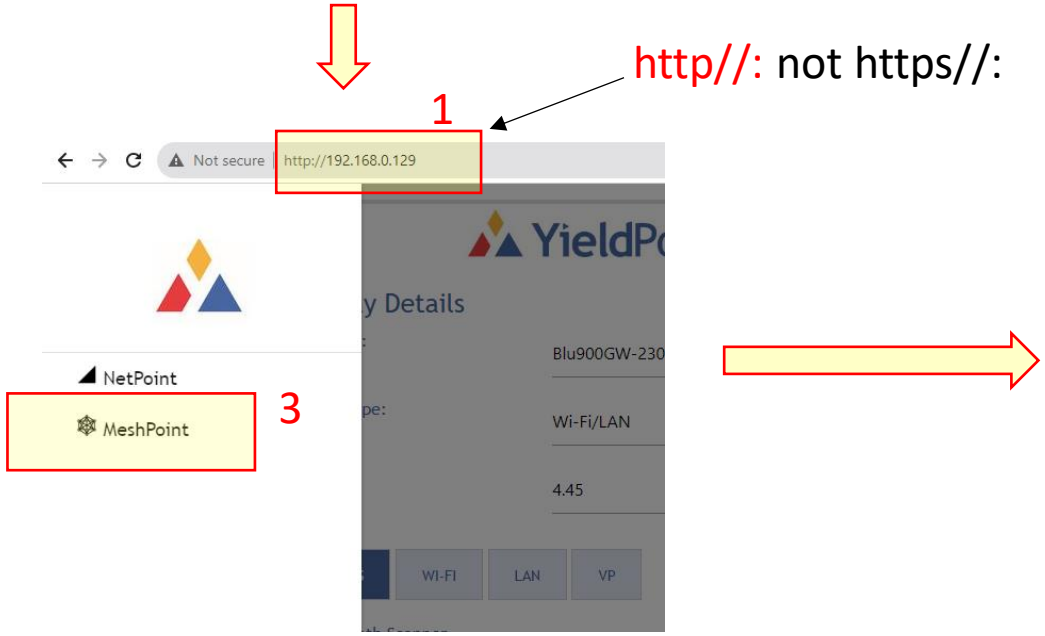
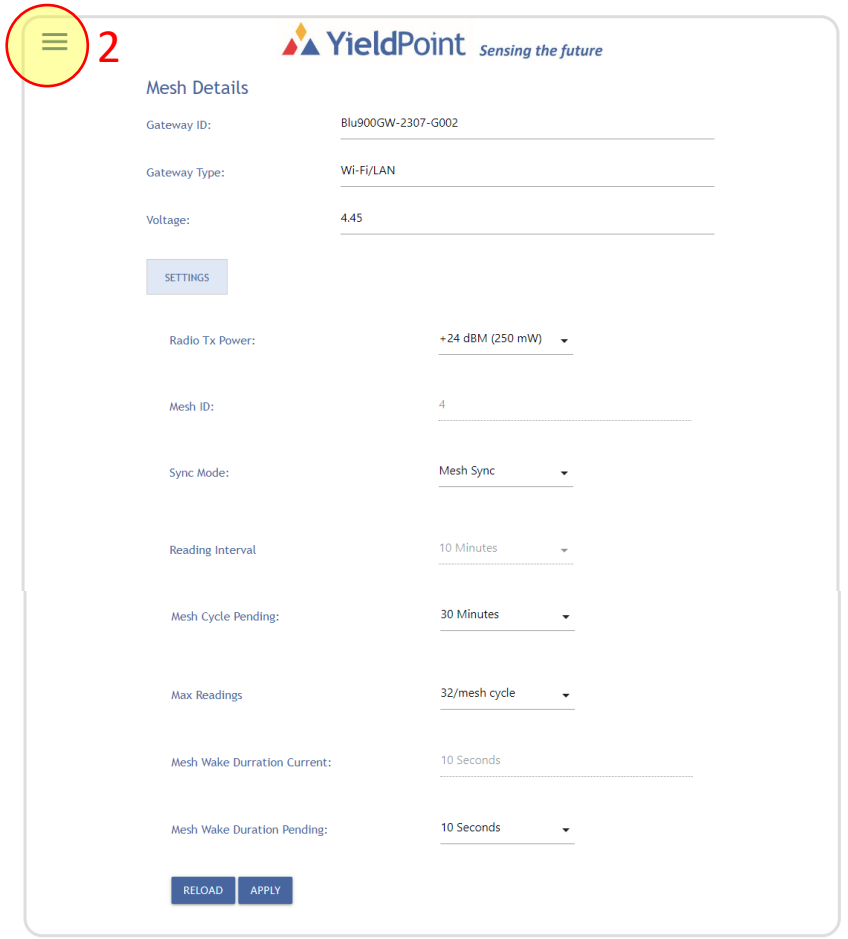
GW Browser Configuration

MeshPoint: GW Browser Configuration

IP address can be found using NetPoint Activity on Android devicez;





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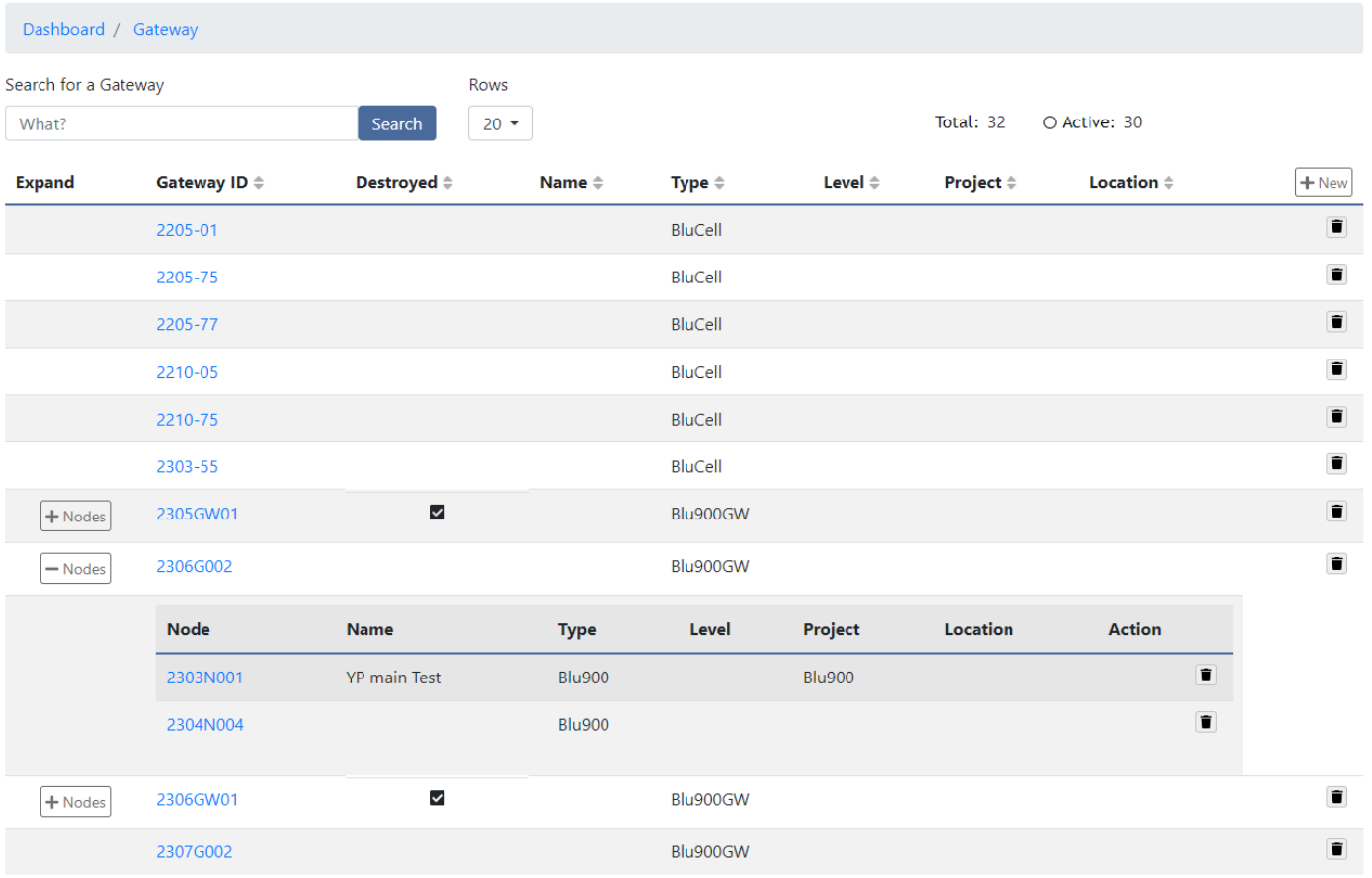
GW Browser MeshPoint

Health Monitoring in VantagePoint v 3.0



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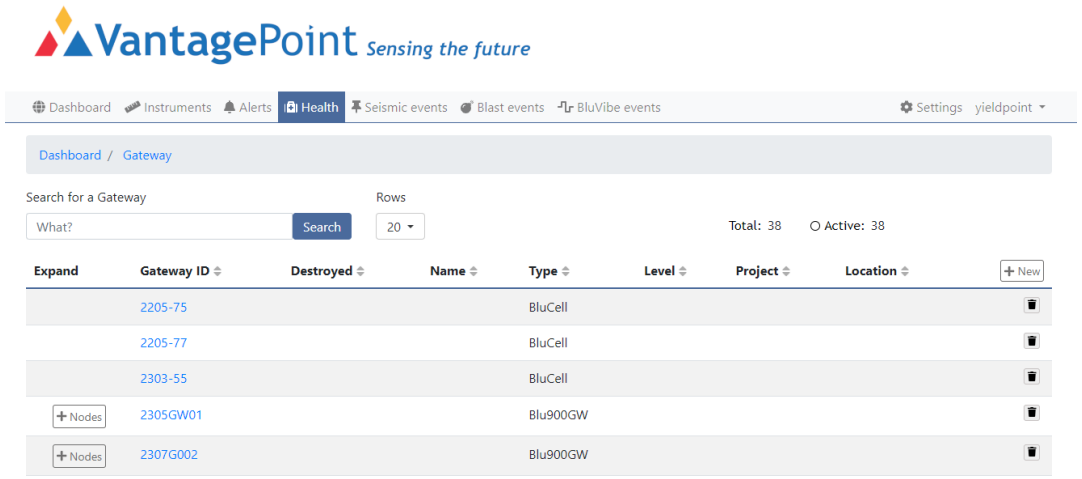
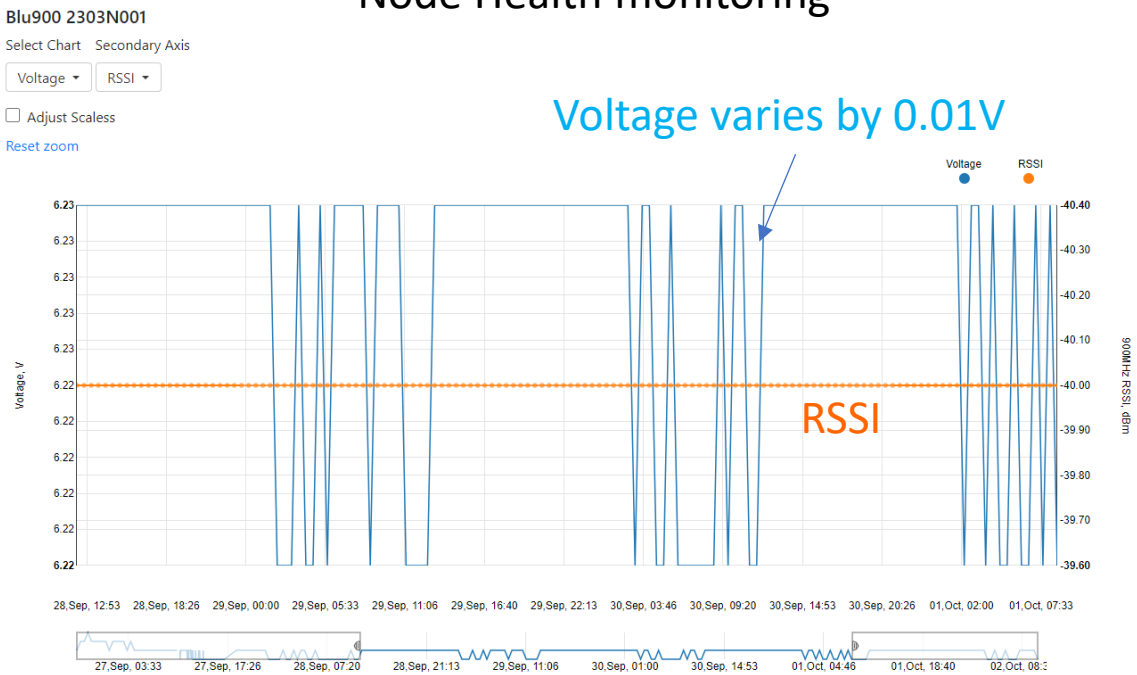
Health Monitoring

Health Monitoring in VantagePoint v3.0



Node Health monitoring



Radios close to gateway will indicate RSSI=-40dBm

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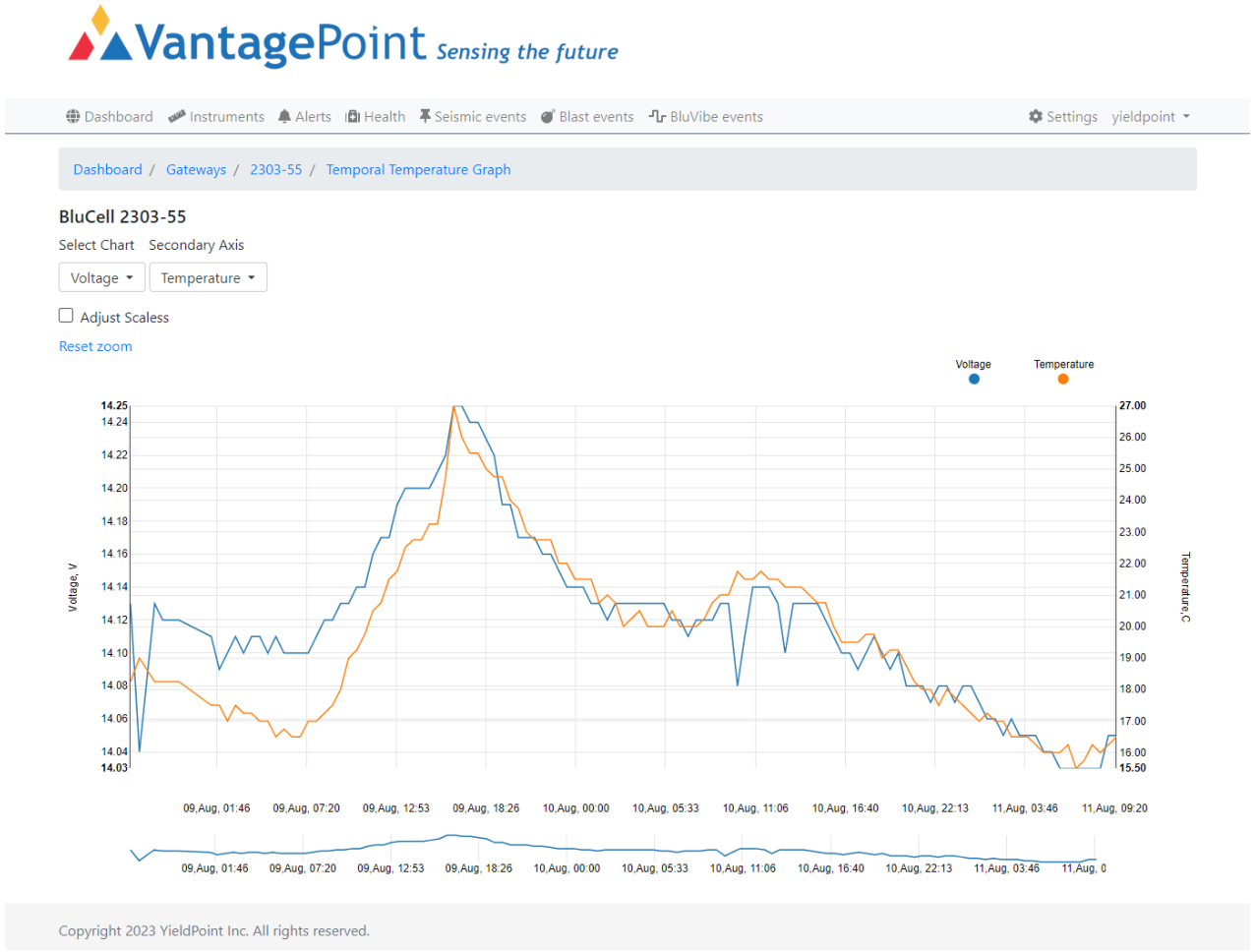
Health Monitoring

Health Monitoring in VantagePoint v3.0



Battery Voltage tracking Temperature for 4 x Tadiran D-cell lithium batteries

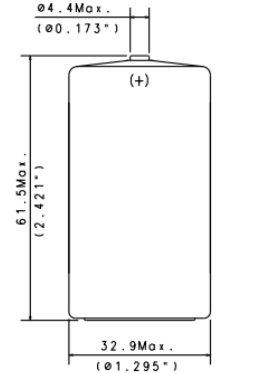
MODEL TL-4930

International size reference: D, ER32L615

TECHNICAL DATA
(Typical values @+25ºC for batteries stored for one year or less)

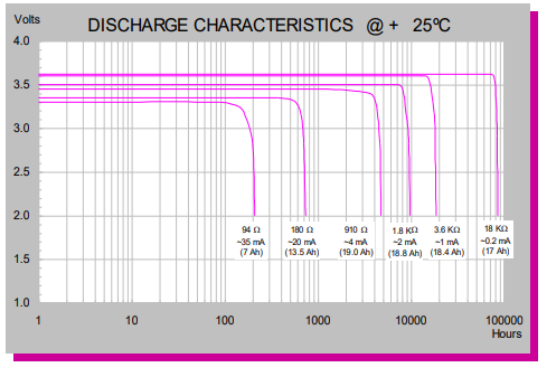
Nominal capacity @ 4 mA, to 2 V	19 Ah
Rated voltage	3.6 V
Maximum recommended continuous current	100 mA
Maximum 1 sec. pulse capability	250 mA
Weight	93 g (3.28 oz)
Volume	51 cc
Operating temperature range	-55 ºC to +85 ºC
IEC 60086-4 certified	
U.L. Component Recognition, MH 12193	

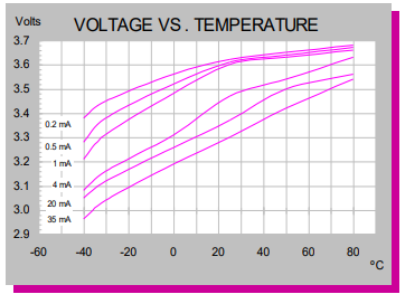
TADIRAN LITHIUM BATTERIES

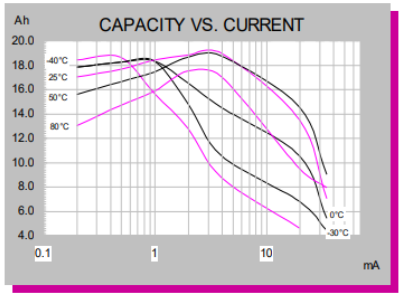


AVAILABLE TERMINATIONS

SUFFIX- /S STANDARD	15-4930-21000
SUFFIX- /T SOLDER TABS	15-4930-31000







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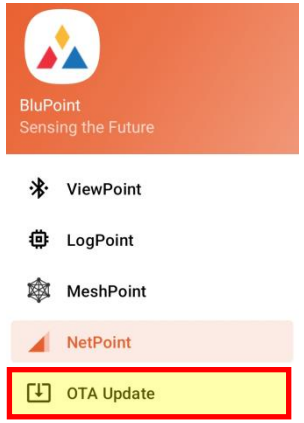
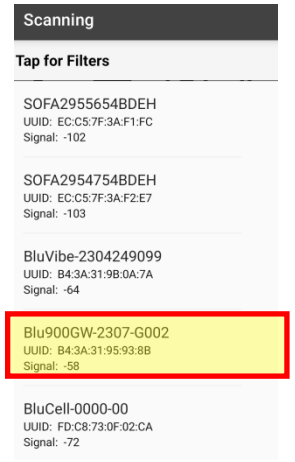
Health Monitoring

Update firmware on Blu900 GW and Node

The appropriate Blu900 Firmware for the both the Blu900GW and Blu900Node is bundled with the BluPoint Firmware

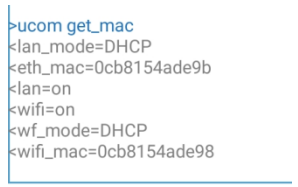




RUN the **CUSTOM** commands:

ucom preset

ucom get_mac



1: Open OTA (Over the Air) Update Activity

2: Connect to a GW or Node

3: Tap Firmware and select the bundled file to start the upload process

4: Wait for OTA Update to complete

5: Reconfigure

IMPORTANT: Always check all settings after a firmware update

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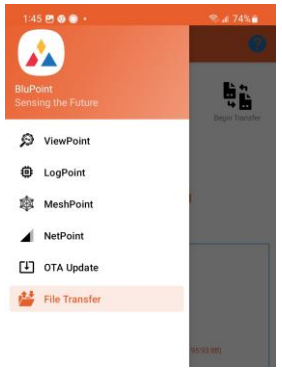
Blu900GW/Node FW Update

Update firmware ESP32 WiFi/Ethernet modem

The ESP32(WT32) WiFi update comes bundled with the BluPoint App.

1



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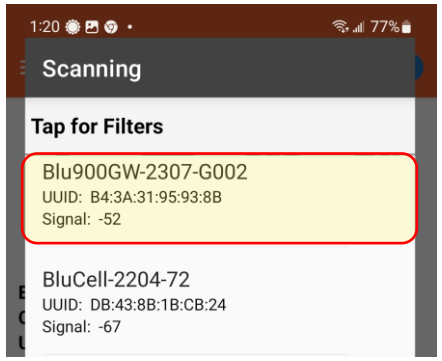

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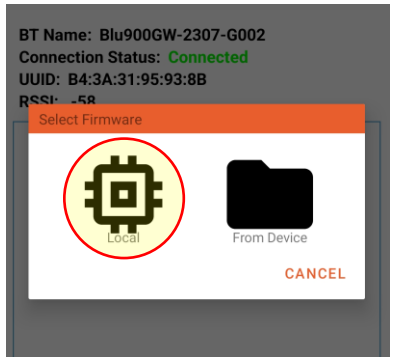

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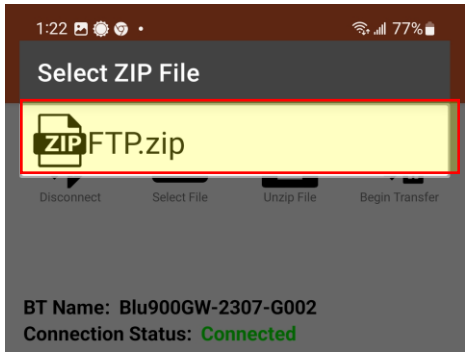

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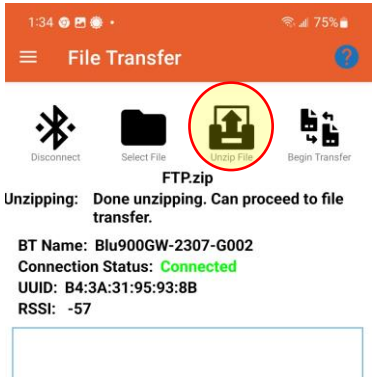

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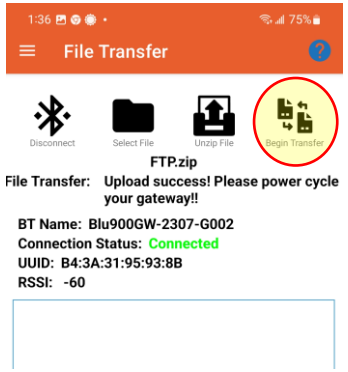

7

POWER CYCLE the Gateway

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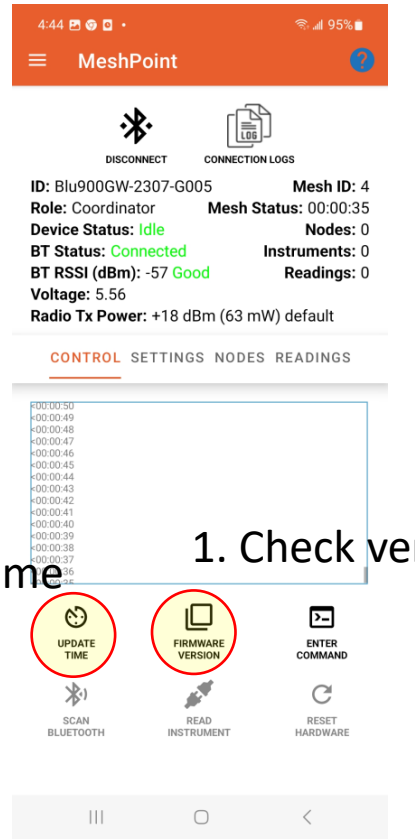
WiFi Modem FW Update

Best Practice: Restart a Blu900 mesh after OTA/FW Update.

Open BluPoint and connect to the GW using the **MeshPoint** Activity

GW



2.Update time

1. Check version

3. Make sure the **Mesh_ID** is correct

4. Set sync mode to **Mesh Mode**

5. Set Mesh Cycle to commissioning (2min cycle)

6. Set the **Tx_Power** to 250mW(default)

7. Configure the Bluetooth Scanner/Instr Reader as required

8. Power cycle the Blu900GW

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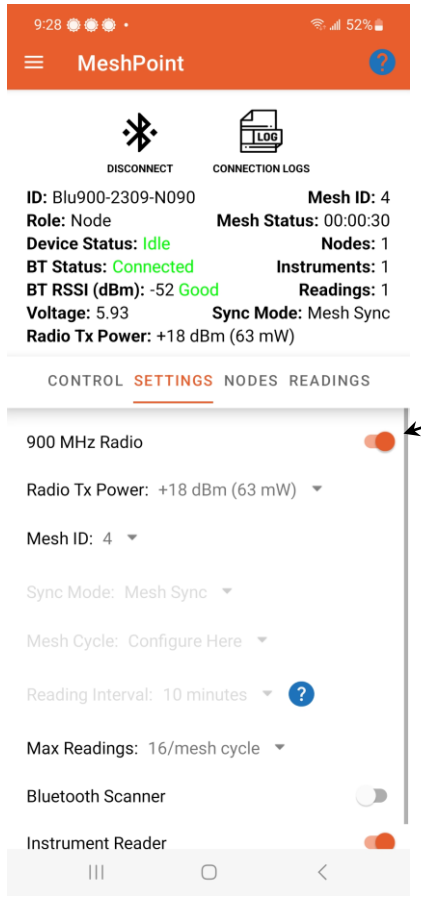
Restarting a Blu900 Mesh

Best Practice: Restart a Blu900 mesh after OTA/FW Update.

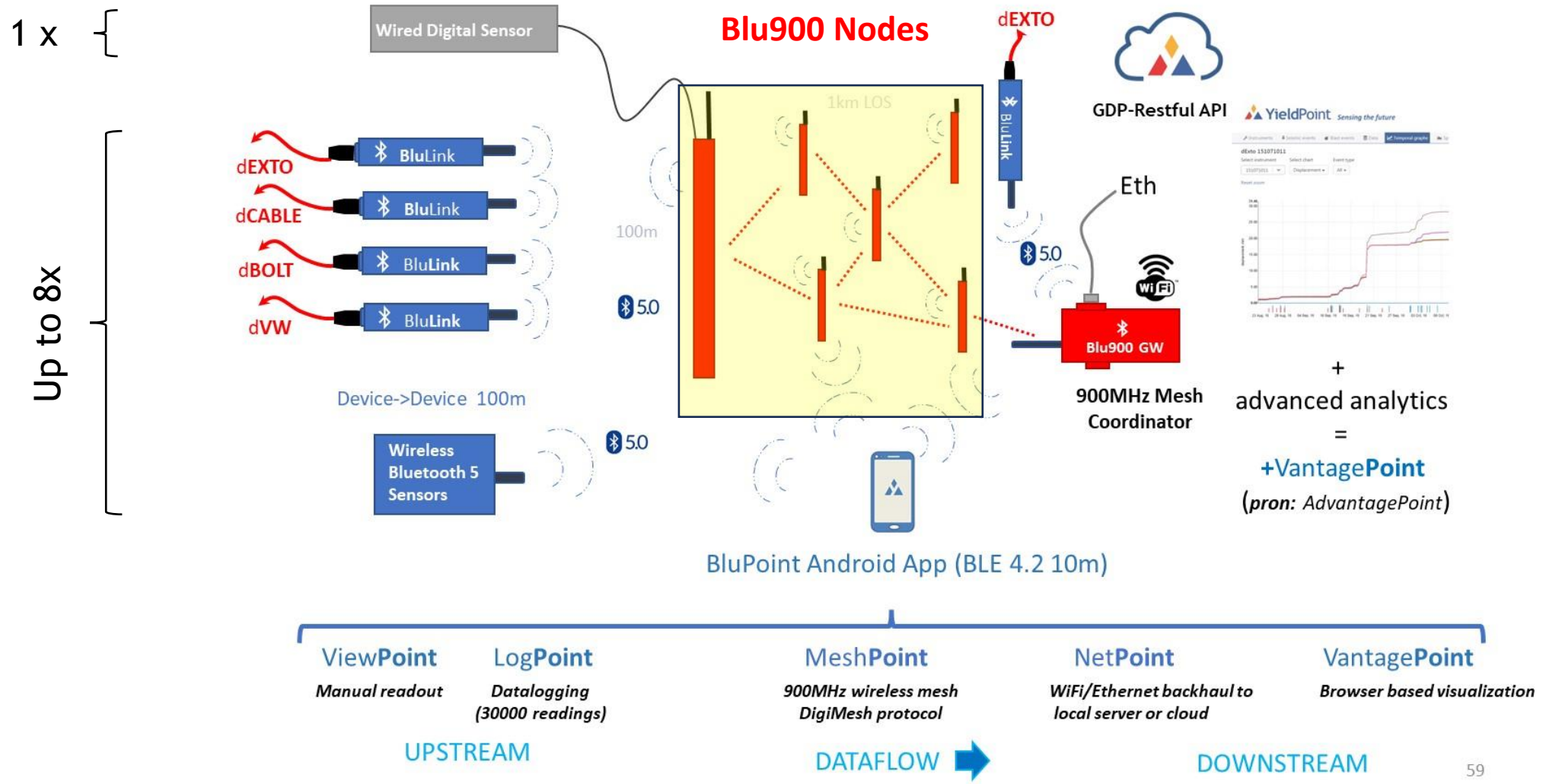


9. Connect to the Blu900 Nodes with MeshPoint

(i) Toggle the 900MHz radio. The radio will reboot and the mesh status will indicate "Sleep" but it will not count down.
(ii) Upon mesh wakeup the node will join the mesh and will count down while asleep.

REPEAT for each node.

Even if the nodes are not power cycled, they will *eventually* join the mesh.



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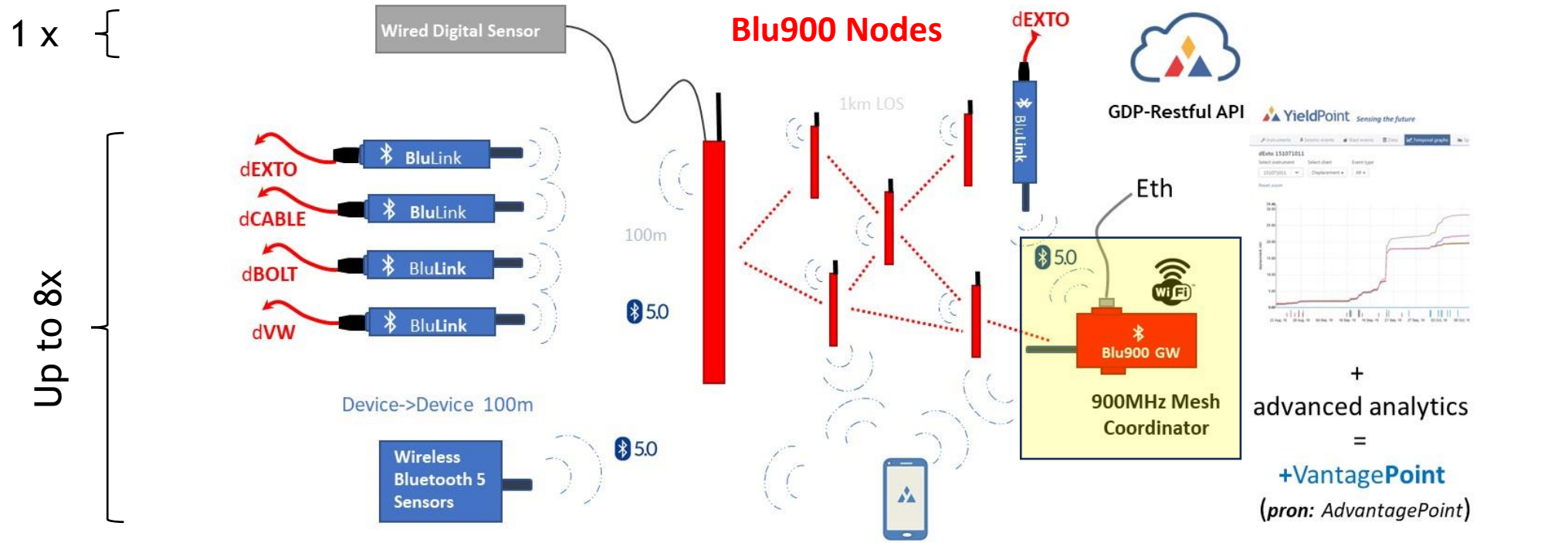
Blu900 Architecture



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Restarting a Blu900 Mesh