5G MARITIME BROADBAND SOLUTION

SailaDome / SailaLite User Manual

Version 1.0.0

Contact Us: sales@saila-wave.com

Table of Content

Foreword

SailaDome is an outdoor 5G CPE equipment, It is a wireless terminal equipment that converts high-speed 5G signals into wired signals.

Definitions of the acronyms shown in Table 1.

Table 1 Definitions of Acronyms

Acronyms	Definition
10000Base-T	10000Mbit/s Baseband Unshielded Twisted Pair Cable
PoE	Power Over Ethernet
IP	Internet Protocol
HTTP	hypertext transmission protocol
ETH	Ethernet

1. Overview

1.1 Main features and application

SailaDome/SailaLite is an outdoor 5G CPE device that supports 5G NR / LTE, frequency bands locks, cells and PLMN locks, supports IPV4 / 6, PIN / DNS / APN, together with an integrated software features and user-friendly interface.

2. Working Conditions

Power Supply: PoE (802.11at). The normal working mode of the device ＜ 25W；

1) Operating Temperature：-20℃~+55℃；
2) Dimensions（Length × Width × Height）：φ275mm x 312.5mm / φ275mm x 119mm
3) Weight：< 4Kg / <2.5Kg

TX Power: 23dBm

Frequency Band:

Network	Duplex Mode	Band	Uplink (MHz)	Downlink (Mhz)
4G LTE	FDD	B1 B3 B5 B7 B8 B20 B28 B32	1920 – 1980 1710 – 1785 824 – 849 2500 – 2570 880 – 915 832 – 862 703 – 748 -	2110 – 2170 1805 -1880 869 – 894 2620 – 2690 925 – 960 791 – 821 758 – 803 1452 - 1496
	TDD	B34 B38 B40 B41 B42 B43	2010 – 2025 2570 – 2620 2300 – 2400 2496 – 2690 3400 – 3600 3600 – 3800	
5G NR	FDD	n1 n3 n5 n7 n8 n20 n28	1920 – 1980 1710 – 1785 824 – 849 2500 – 2570 832 – 862 703 – 748	2110 – 2170 1805 – 1880 869 – 894 2620 – 2690 791 – 821 758 – 803
	TDD	n38 n40 n41 n77 n78	2570 – 2620 2300 – 2400 2496 – 2690 3300 – 4200 3300 – 3800	

2.1 Product Description

SailaDome / SailaLite appearance as shown in Figure 2-1

Figure 2-1 SailaDome/SailaLite appearance

2.2 LAN Ethernet Port

The LAN / PoE interface supports 100 / 1000 / 10000BASE-T Ethernet transmission and supports 802.11at protocol POE power supply.

2.3 SIM Card Slots

4 USIM card slot interfaces, support 1.8V and 3.3V SIM cards, and USIM cards.

(SailaLite 2USIM card slot interfaces)

2.4 Status LEDs

4 x Blue Status LEDs status as shown in Figure 2-3

Figure 2-3 Status LEDs Description

Code	Name of the LED	Status	Description
1	RUN Status LED	Off	Power is off or failures detected
		On	Power is on without failures
2	SIM Card Status LED	Off	SIM card not detected
		On	SIM card detected
3	4G Status LED	Off	No 4G Network
		On	Connected 4G Network
4	5G Status LED	Off	No 5G Network
		On	Connected 5G Network

3. Installation Guide

3.1 Installation Kit

Installation Kit required for securing the SailaDome / SailaLite to the vessel as shown in Table 3-1

Table3-1 Installation Kit

Recommended Tools:	To do this:
Power Drill (exclude) 	For drill holes in Φ10 and Φ20 diameter
Adjustable Wrench (exclude) 	13mm
Phillips Screwdriver 	φ5mm
Hexagon Nut Wrench 	Remove and tight the SIM card bracket and installation of the supporting unit

3.2 Installation Procedure

Step 1: According to the below diagram prepare the mounting holes.

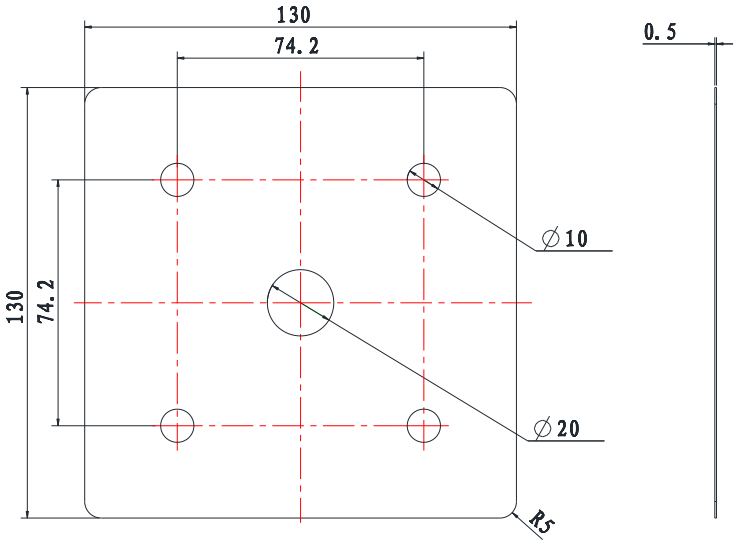
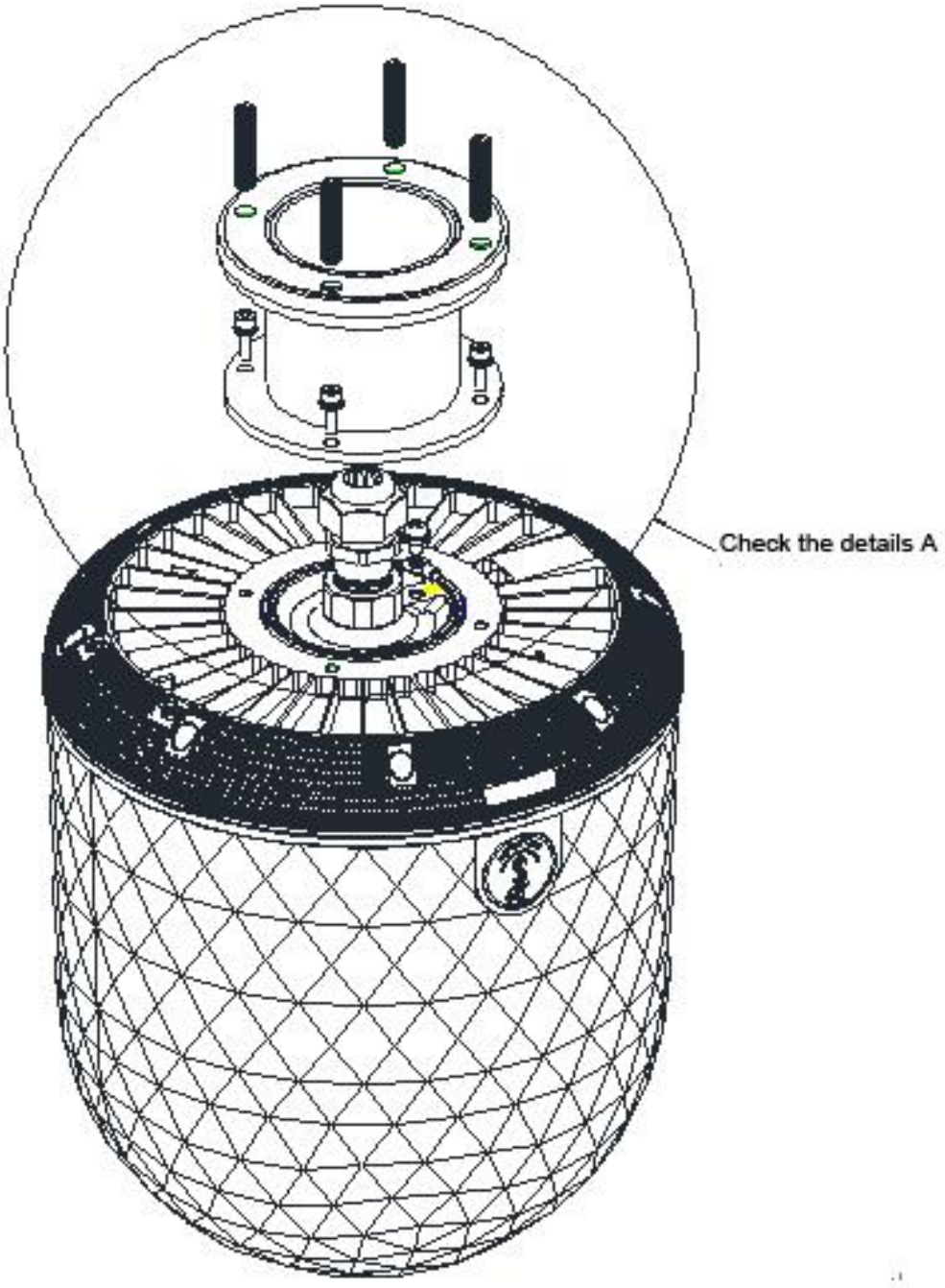


Figure 3-1 Dimensioning Holes diagram

Step 2: Connect the PoE cable with seal grounding wire coming out from the supporting unit, secure the grounding wire, and fixed the supporting unit with 4 screws.



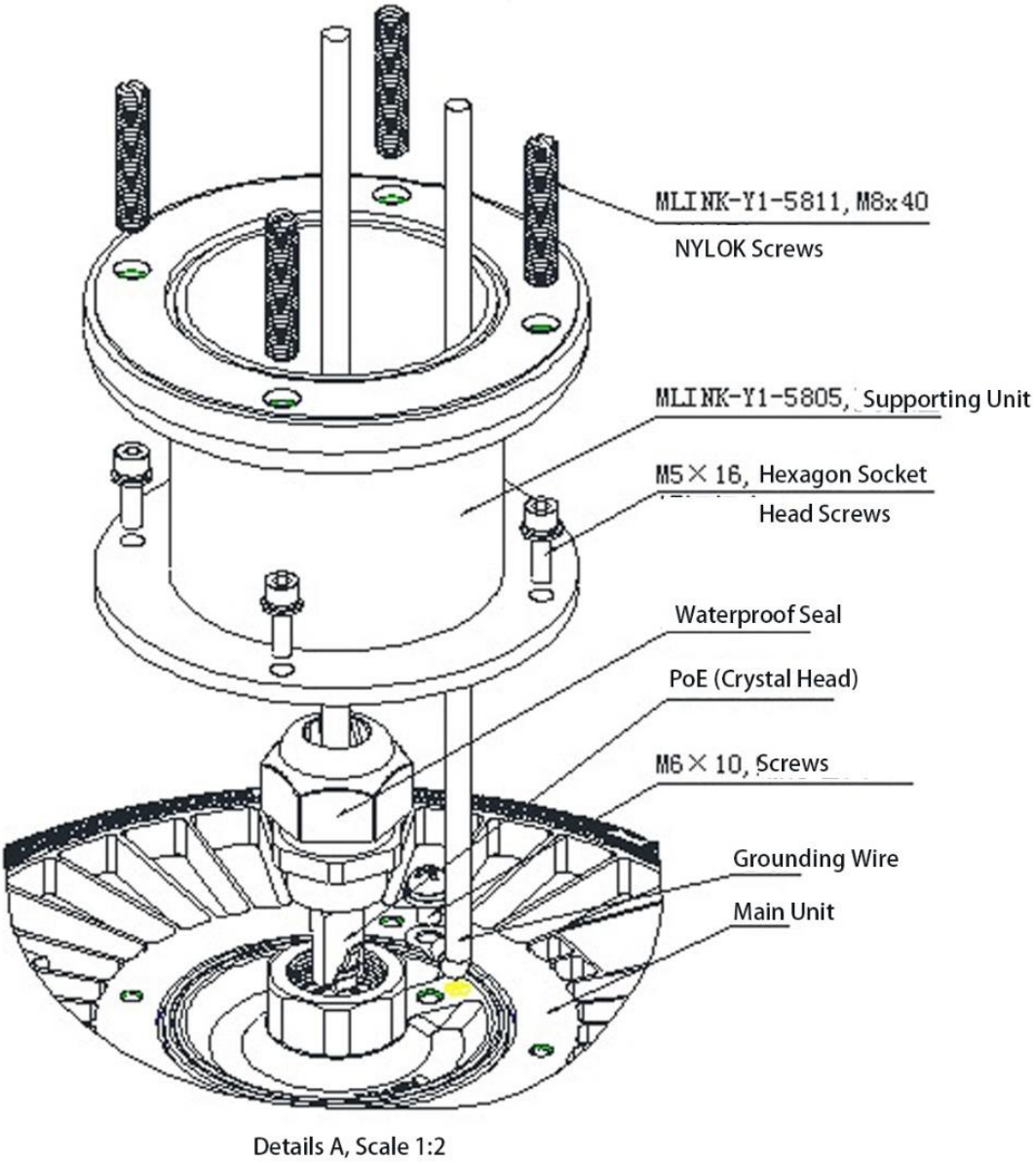


Figure 3 Secure the device and supporting unit

Step 3：Tighten the 4 screws of the main unit through the drilled mounting holes and fix the main unit with 4 hexagonal flange nuts, and the installation is complete.

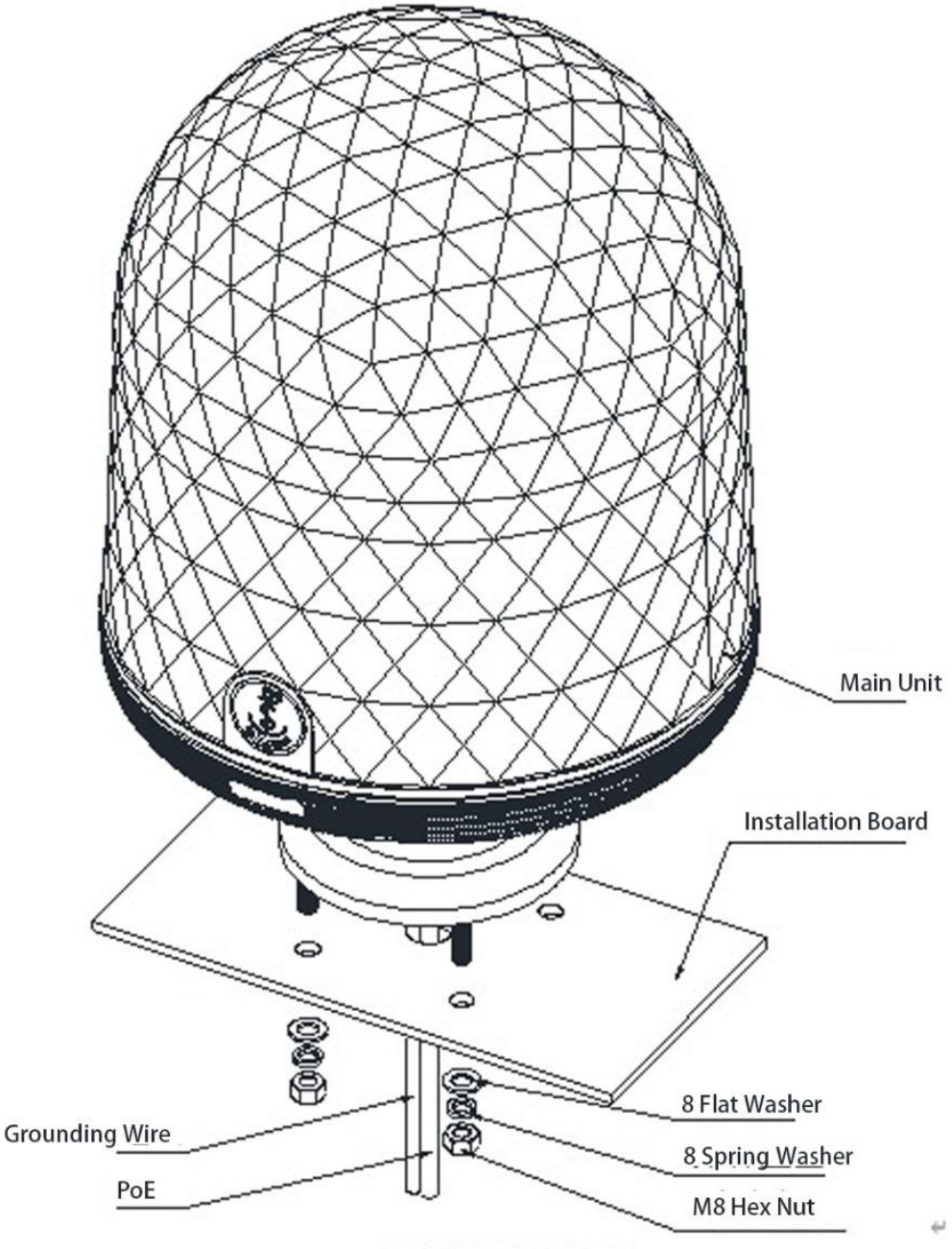


Figure 3-3 SailaDome Installation Diagram

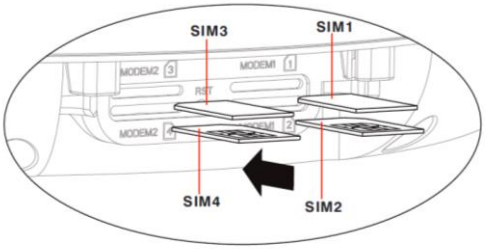


Figure 3-4 The insertion of SIM cards

4. Introduction

For the application of SailaDome, as long as the sim card is inserted into the SailaDome, it can dial-up Internet access without any other configuration. For details, please refer to the following introduction:

4.1 Login to Device

As shown in Figure 4-1, After the device is powered on, please log in to the browser connected to the computer: 192.168.197.1, enter the username “admin”, and password #EDC4rfv%TGB, then click ">" to the configuration page.

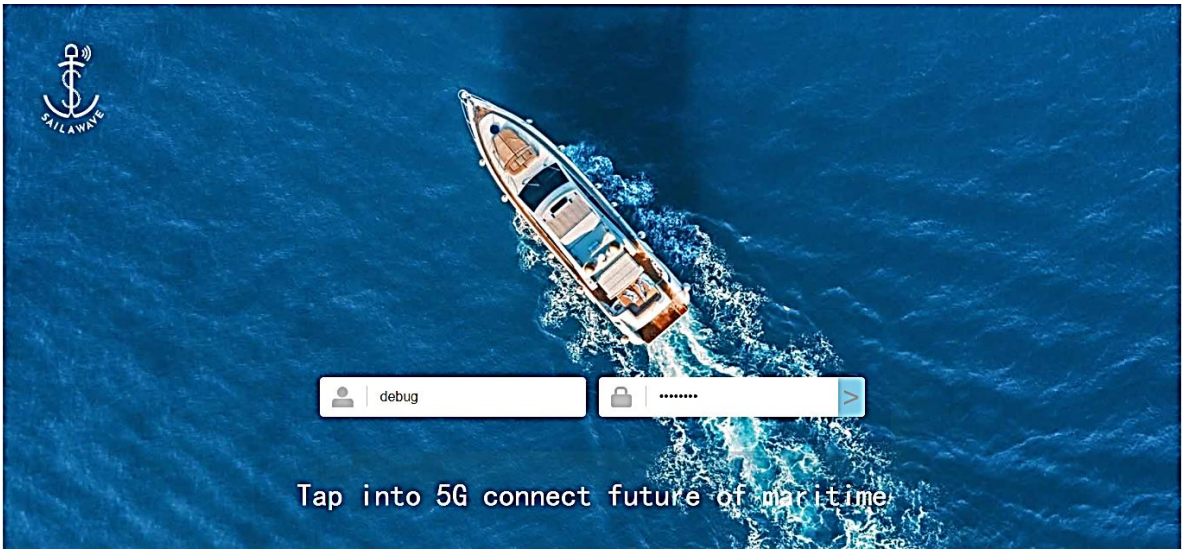


Figure 4-1 Login Interface

4.2 Information Check

In the Menu, click "Dashboard" to check the device connection status, software version, system information and other information, as shown in Figure 4-2, move the cursor to the corresponding NE

icon to view the related NE information; and click the NE icon navigate to the NE configuration interface.

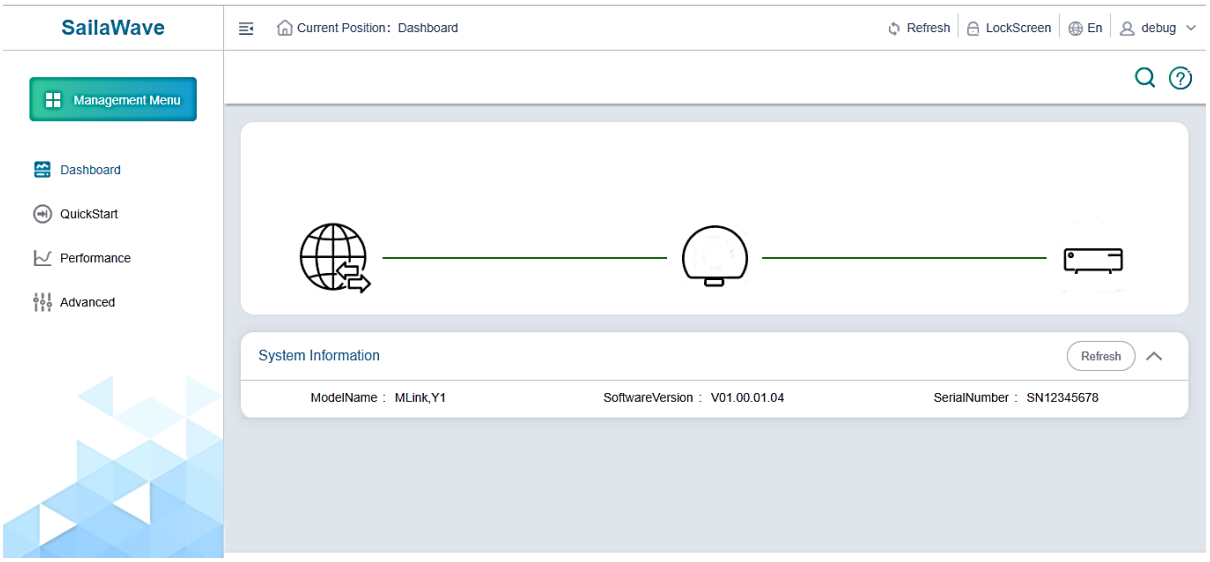


Figure 4-2 SailaDome Status Check

4.3 Device Status Check

As shown in Figure 4-3, click the SailaDome icon in the Dashboard to check the cellular network status in the Modem page.

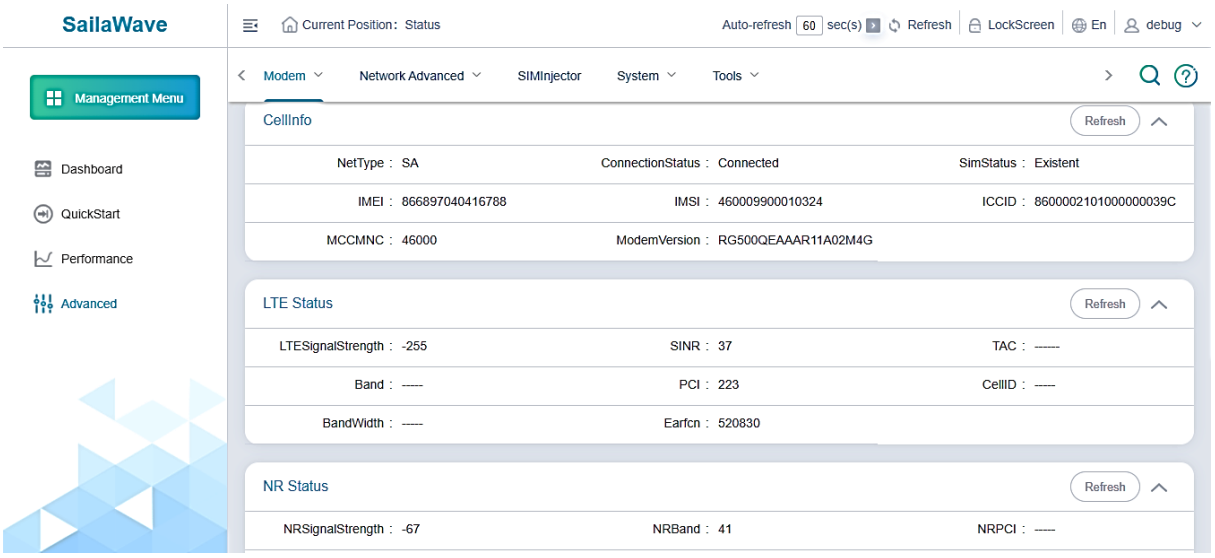


Figure 4-3 Modem Information

5. Basic Configuration

5.1 Quick Configuration

5.1.1 SIM Position Configuration

As shown in Figure 5-1, click “Quick Start” in the Menu，according to the SIM card position to select SailaDome or SailaJoint，represents the SIM card inserted in the SailaDome or in SailaJoint, to configure the SIM settings, navigate to SailaDome / SailaJoint > Next

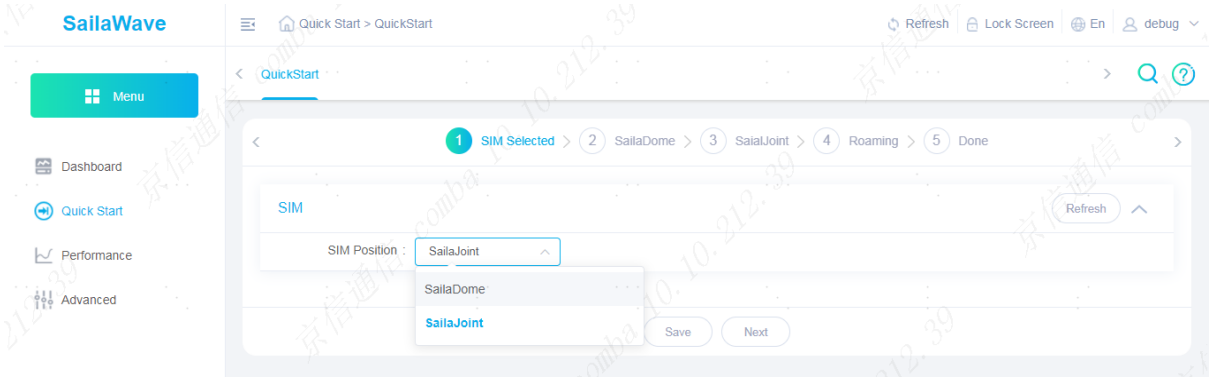


Figure 5-1 SIM Position Configuration

5.1.2 Local / Remote SIM Configuration

Local SIM / Remote SIM selection based on SIM card location, both Local and Remote SIM provide Auto and Manual modes configurable selection, Auto mode means that the local operator network will be preferred among all available SIM cards based on SailaDome GPS location information, if local operator network is not available, determine whether to select a roaming network according to whether roaming is allowed or not configured by the user, and Manual mode will give priority to the local operator network in some of the available SIM cards selected by the user as shown in Figure 5-2, 5-3, 5-4, 5-5, click Next to configure the next setting.

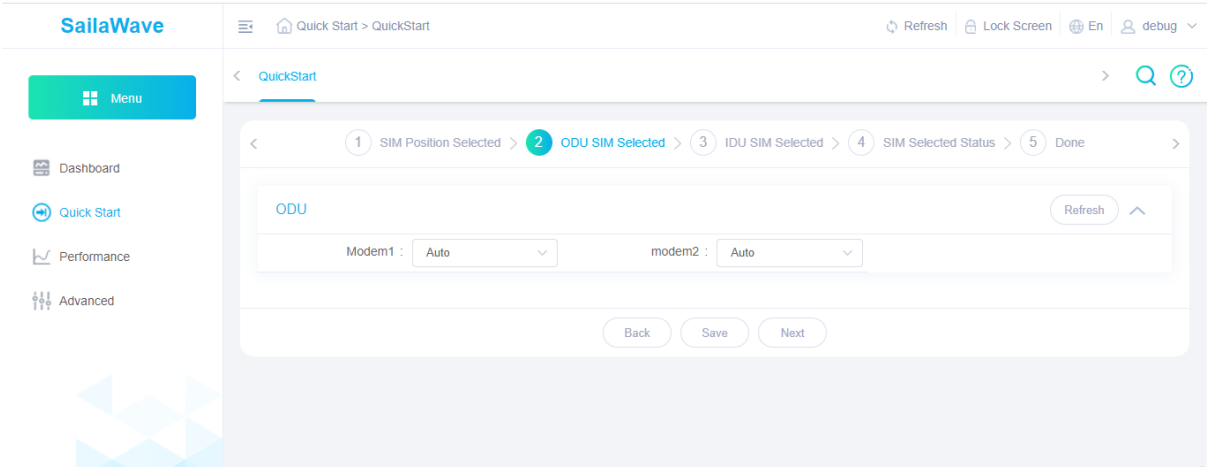


Figure 5-2 Local SIM Auto Mode Configuration

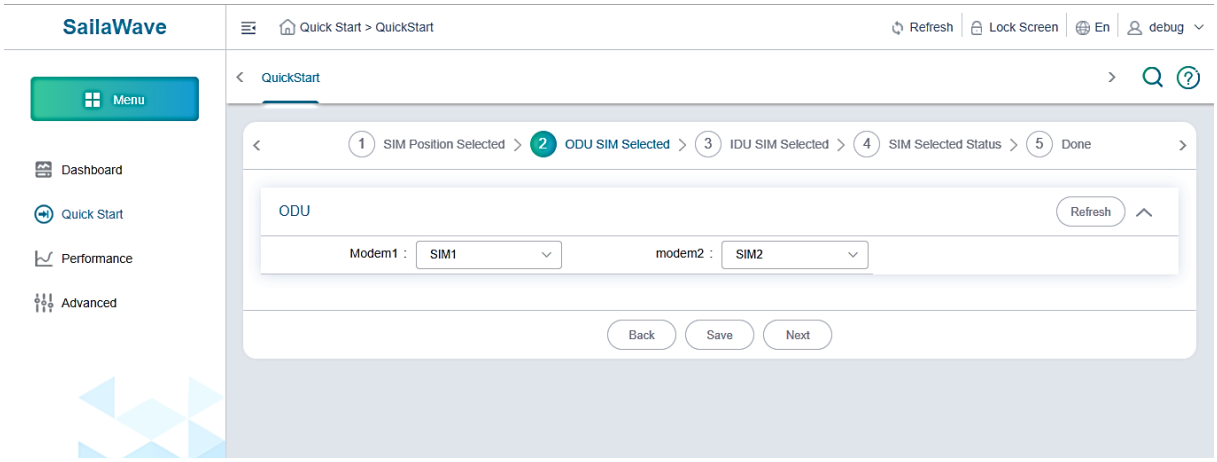


Figure 5-3 Local SIM Manual Mode Configuration

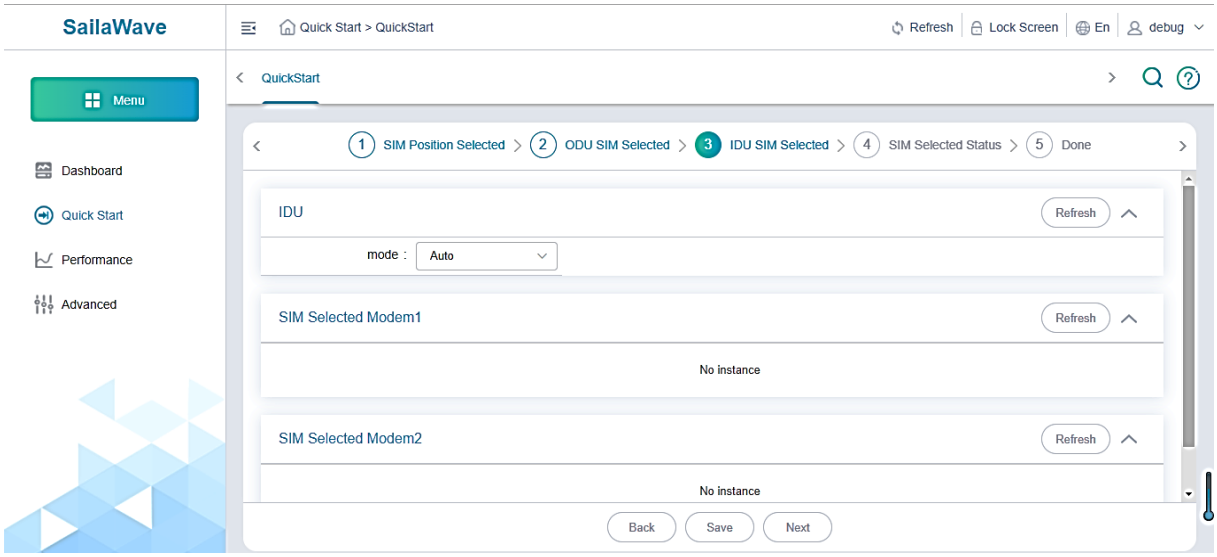


Figure 5-4 Remote SIM Auto Mode Configuration

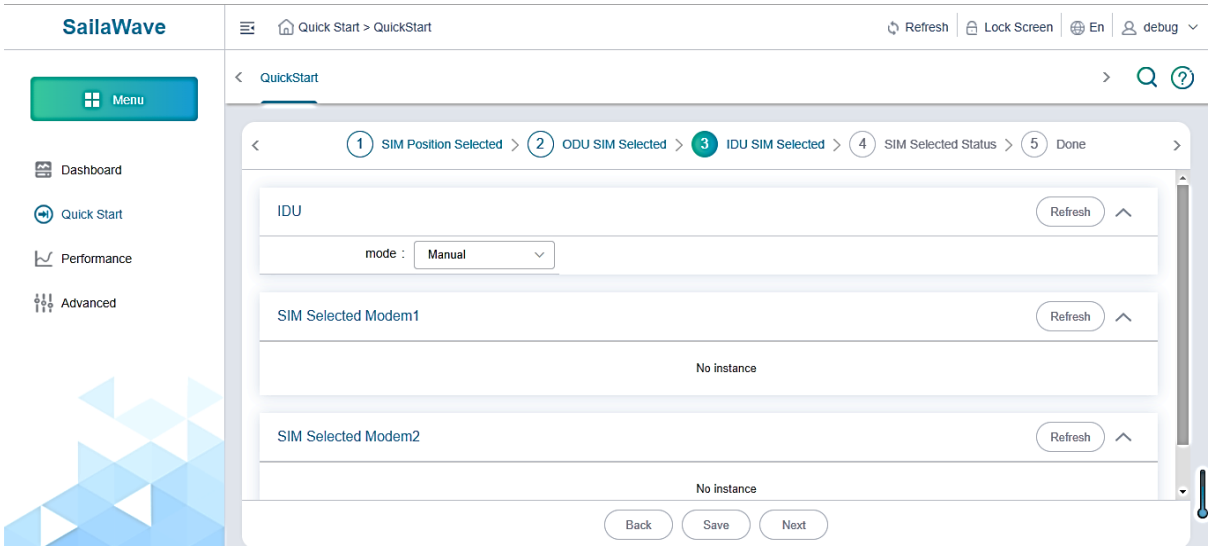


Figure 5-5 Remote SIM Manual Mode Configuration

5.1.3 Status of selected SIM Card

As shown in Figure 5-6, based on the status of selected SIM card, click Next to configure the next settings.

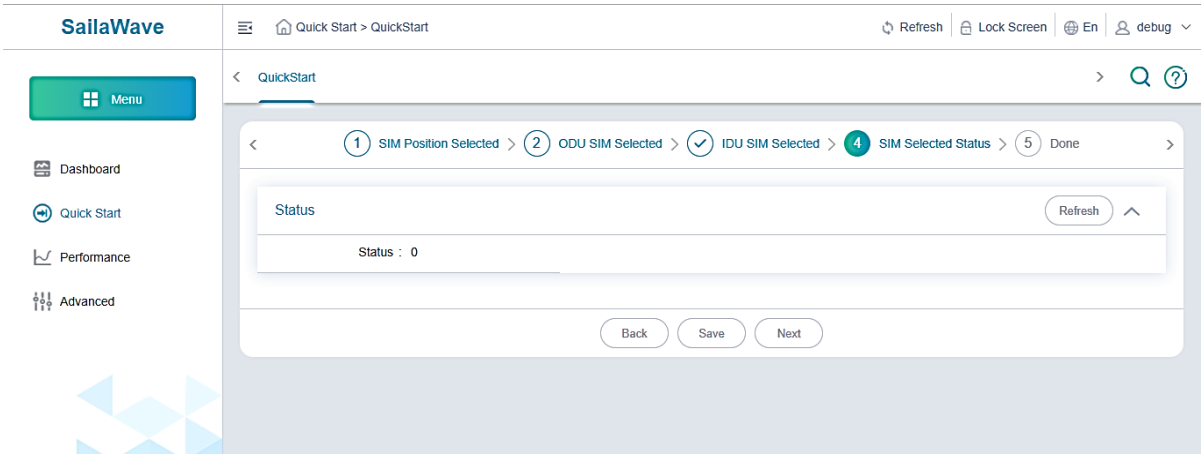
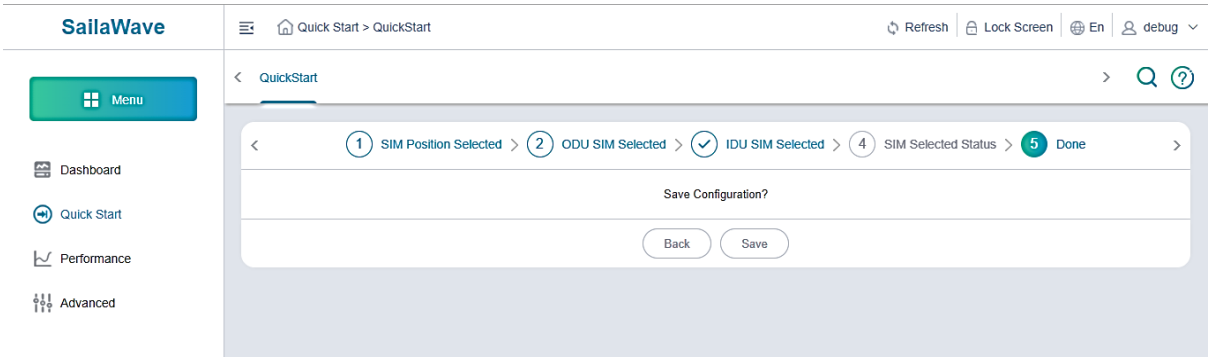


Figure 5-6 Selected SIM card status

5.1.4 Maintain Configuration

As shown in Figure 5-7, Click Save to maintain the SIM card configuration.



5.2 NR / LTE Configuration

5.2.1 Modem Configuration

In Figure 5-1, you can configure the Network Mode, Lock Cell / Band / PLMN mode, APN mode in the Modem1 and Modem2, to configure navigate to Advance > Modem

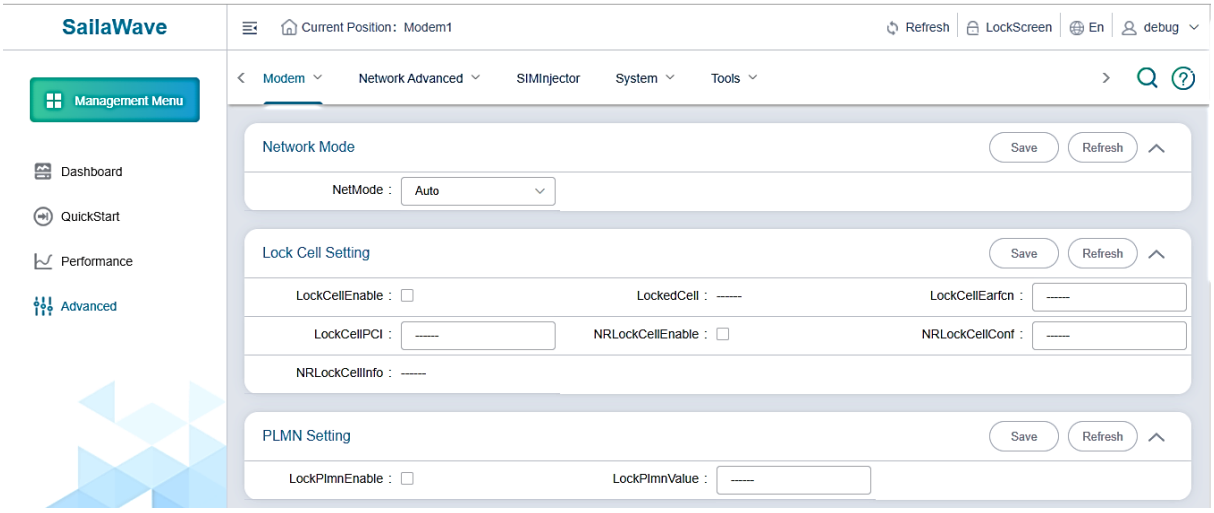


Figure 5-1 Network Mode Configuration

5.2.2 Load Balancing Configuration

In the Menu, click "Advanced" → "NetWork" → "MultiWan" to select the WAN port mode, including Single, HA, Double; when Double mode is selected, three load balancing modes can be selected, including RR (round-robin Scheduling), ShortDelay (shortest delay), SH (default, multi-user, IP), as shown in Figure 5-2 (Recommend to keep the default setting to enjoy the superior performance)

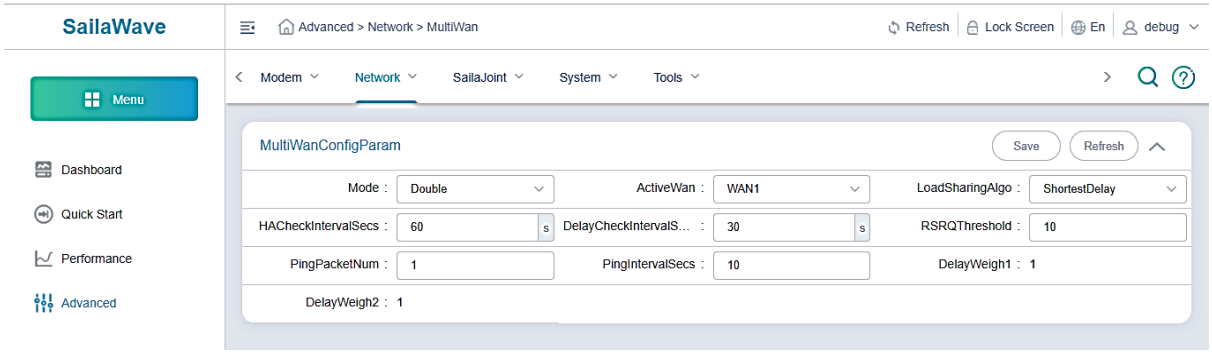


Figure 5-2 Load Balancing Configuration

5.2.3 Software Upgrade

In Figure 5-3 under the Menu navigate to “Advanced”→“System” →“Firmware Management” to configure software upgrade.

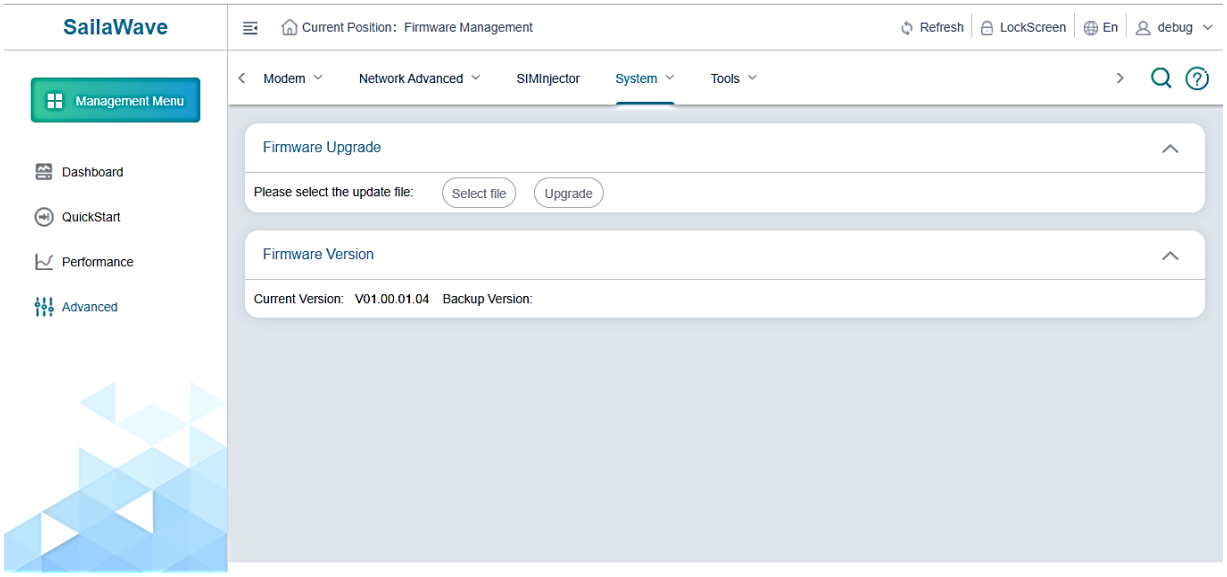


Figure 5-3 Software Upgrade

6. Maintenance and diagnostic

6.1 Route Maintenance

Route maintenance please follow Table 6-1

Table 6-1 Route Maintenance Table

Item	Operation
Hardware Inspection	Periodic inspection of cable connections and installation components. Make sure the device has not been maliciously damaged.
Grounding Inspection	Make sure the equipment is well grounded
Environmental Inspection	Make sure that the device is not disturbed by strong electric field signals.

6.2 Troubleshooting

Do not disassemble the device if you are experiencing any malfunction symptoms on the device, follo ws are help to troubleshoot and resolve the issue:

1) Check the RUN status LED if always On
2) Check whether the device has been registered on the 4G / 5G network through the 4G/5G status LED

Important: Do not disassemble the device, please contact the local operator or technician to arrange maintenance.

6.3 Maintenance

1) Maintenance must be carried out under the guidance of experienced technicians；
2) Turn off the power of the device and then turn on the power to restart the device, after about 60 seconds the device will work normally;
3) Do not change the parameter during the maintenance process, if there is any change, be sure to reset the original parameters after maintenance.

7. Package, Logo, Transportation, Storage

1) The nametag of the product placed on the device in the specified position, the content including: manufacturer name (or company name), product name, product model, product manufacturing number, date of manufacture
2) Packaging materials and packaging methods should comply with the product packaging requirements
3) User manual, certificate of approval、packing list are packed in a plastic bag and put into carton box with the device.
4) It's recommended to transport the device by railway, road, or air transportation, and impact of wind, rain, snow, as well as any form of physical impact, should be avoided.
5) The storage of device should be stored in a dry and cool warehouse. The temperature of the warehouse should be kept between -10℃～+40℃, the humidity should not exceed 85%, and there should be no acid, alkali or corrosive gas in the warehouse.

8. Appendix I

Declaration of Conformity

Product Details

Trademark:

Product description: SailaDome

Type designation(s): MLink-5355M4

CE

Object of the declaration described above **is in conformity with the relevant Union harmonization legislation as below:**

Radio Equipment Directive: **2014/53/EU**	**Article 3.1a:** EN IEC 62311:2020 EN 62368-1:2014+A11:2017 **Article 3.1b:** EN 55032:2015+A1:2020 EN 55035:2017+A11:2020 EN 301 489-1 V2.2.3 EN 301 489-3 V2.1.1 EN 301 489-17 V3.2.4 EN 301 489-19 V2.2.1 EN 301 489-52 V1.2.1 **Article 3.2:** EN 300 328 V2.2.2 EN 301 893 V2.1.1 EN 300 440 V2.2.1 EN 301 908-1 V15.1.1 EN 301 908-2 V13.1.1 EN 301 908-13 V13.2.1 EN 301 908-25 V15.1.1_15.0.3

Furthermore, The Notified Body [SGS North America, Inc.], with Notified Body number [2906] performed Modules B in Annex III of Directive [2014/53/EU], and issued the EU TEC No. [ ]

Signed for and on behalf of: Comba Network Systems Company Limited

Signature: Airman Huang

Place and date： GuangZhou 2022-10-10

Printed name：Airman Huan

EU Member States List for Allowed to Operate

Austria	Estonia	Italy	Portugal
Belgium	Finland	Latvia	Romania
Bulgaria	France	Lithuania	Slovakia
Croatia	Germany	Luxembourg	Slovenia
Cyprus	Greece	Malta	Spain
Czech Republic	Hungary	Netherlands	Sweden
Denmark	Ireland	Poland	

9. Appendix II

Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

5G MARITIME BROADBAND SOLUTION

SailaJoint User Manual

Version 1.0.0

Contact Us: sales@saila-wave.com

PACKING LIST

Contents

Foreword

SailaJoint is an Access Point independently developed by Comba. It is a wireless equipment that provide wireless connection.

Definitions of the acronyms shown in Table 1.

Table 1 Definitions of Acronyms

Acronyms	Definition
10000Base-T	10000Mbit/s Baseband Unshielded Twisted Pair Cable
PoE	Power Over Ethernet
IP	Internet Protocol
HTTP	hypertext transmission protocol
ETH	Ethernet

1. Overview

1.1 Main features and application

SailaJoint is an Access Point developed by Comba that is support IEEE802.11ax/ac/n/b/a/g wireless standards.

2. Working Conditions

Power Supply: Power Adaptor (DC 9~36V). The normal working mode of the device < 35W；

4) Operating Temperature：-5℃~+45℃；
5) Dimensions（Length × Width × Height）：200mm x 140mm x 40mm；
6) Weight：< 1.5Kg。

2.1 Product Description

SailaJoint appearance as shown in Figure 2-1

Figure 2-1 SailaJoint appearance

2.2 LAN Ethernet Port & WiFi

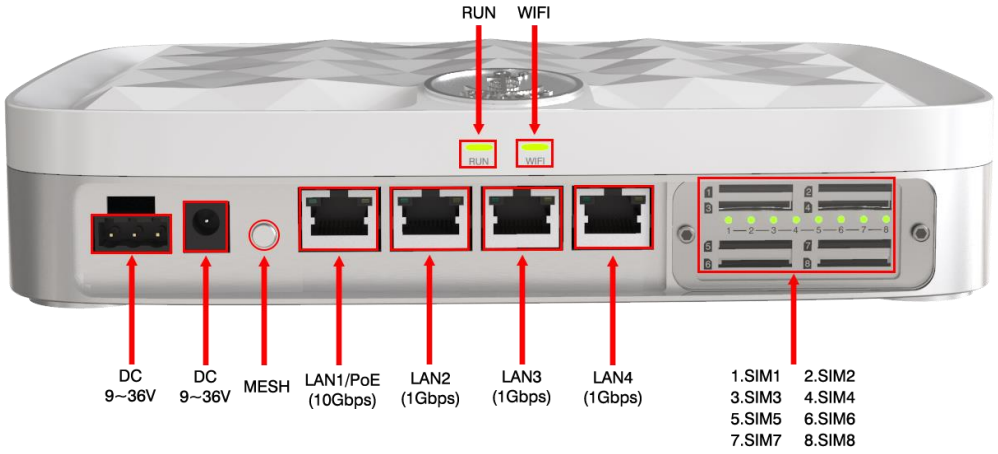


Table 1 Interfaces (From left to right)

No.	Interface Name	Function	Specification
1	DC Interface 1	DC 9~36V Input	Phoenix 3pin
	DC Interface 2	DC 9~36V Input	DC JACK
2	LAN/PoE1	LAN network connection /PoE Connection	100/1000/10000Mbps, IEEE802.3af (RJ45)
3	LAN2~4	LAN network connection	100/1000Mbps (RJ45)
4	MESH	MESH: Press and hold for 2~3 seconds to enable mesh mode Reset: Press and hold for 12 seconds to reset to factory setting	/

Table 2 WiFi Specification

Wireless protocol	802.11 a/b/g/n/ac
Tx Power	<20dBm
2.4GHz Frequency Band	2412~2472MHz 2412~2462MHz 2412~2472MHz
5GHz Frequency Band	5180~5320MHz, 5745~5825MHz (China) 5180~5320MHz, 5500~5720MHz,5745~5825MHz (USA) 5160~5340MHz, 5480~5720MHz, 5745~5865MHz (India) ,5160~5340MHz, 5480~5720MHz, 5745~5825MHz (UAE) 5745~5805MHz (Indonesia)

Caution:

the device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

2.3 SIM Card Slot

4 USIM card slot interfaces, support 1.8V and 3.3V SIM cards, and USIM cards.

2.4 Status LEDs

4 x Blue Status LEDs status as shown in Figure 2-3

Figure 2-3 Status LEDs Description

Code	Name of the LED	Status	Description
1	RUN Status LED	Off	Power is off or failures detected
		On	Power is on without failures
2	SIM Card Status LED	Off	SIM card not detected
		On	SIM card detected
3	WiFi Status LED	Off	No wireless Network
		On	Wireless network available

3. Introduction

For the application of SailaJoint, as long as the sim card is inserted into the SailaJoint, it can dial-up Internet access without any other configuration. For details, please refer to the following introduction:

3.1 Login to Device

As shown in Figure 4-1, after the device is powered on, please log in to the browser connected to the computer: 192.168.197.3, enter the username “admin”, and password #EDC4rfv%TGB, then click “Login” to the configuration page. Also, language can be changed at top right corner. Sailawave is currently supporting English and Chinese.

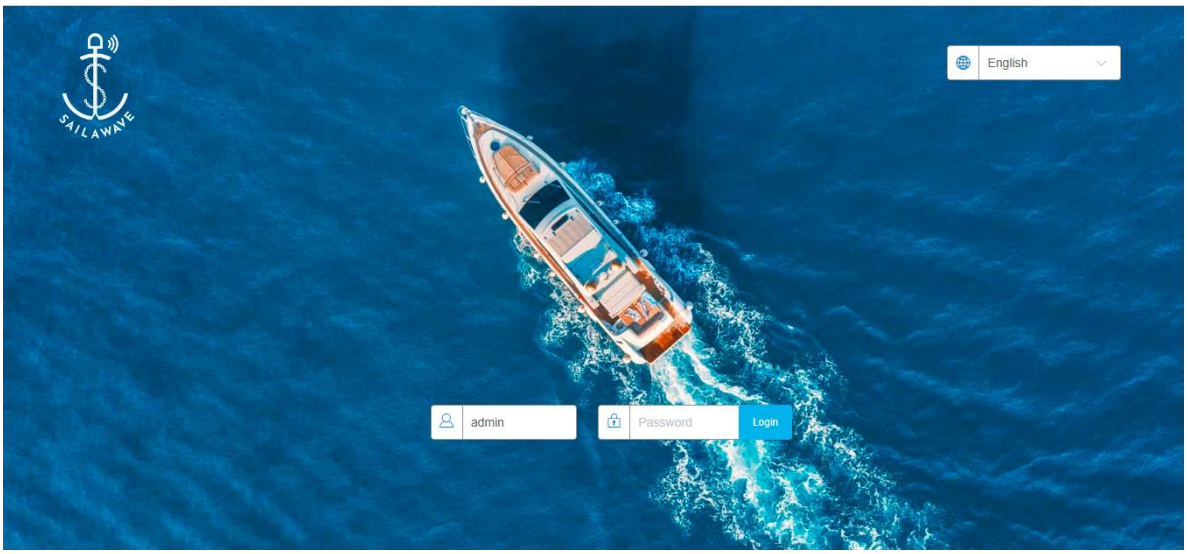


Figure 3-1 Login Interface

3.2 Status

802.Status – Info

After logged in, three sectors are shown at left of the screen: Status, Settings and Tools. Click on “Status”. Then, four tabs will be shown in the “Status” sector: Info, Statistics, Network and System Log. Click on “Info”. The information included system detail, network, wireless and station list will be shown in this tab.

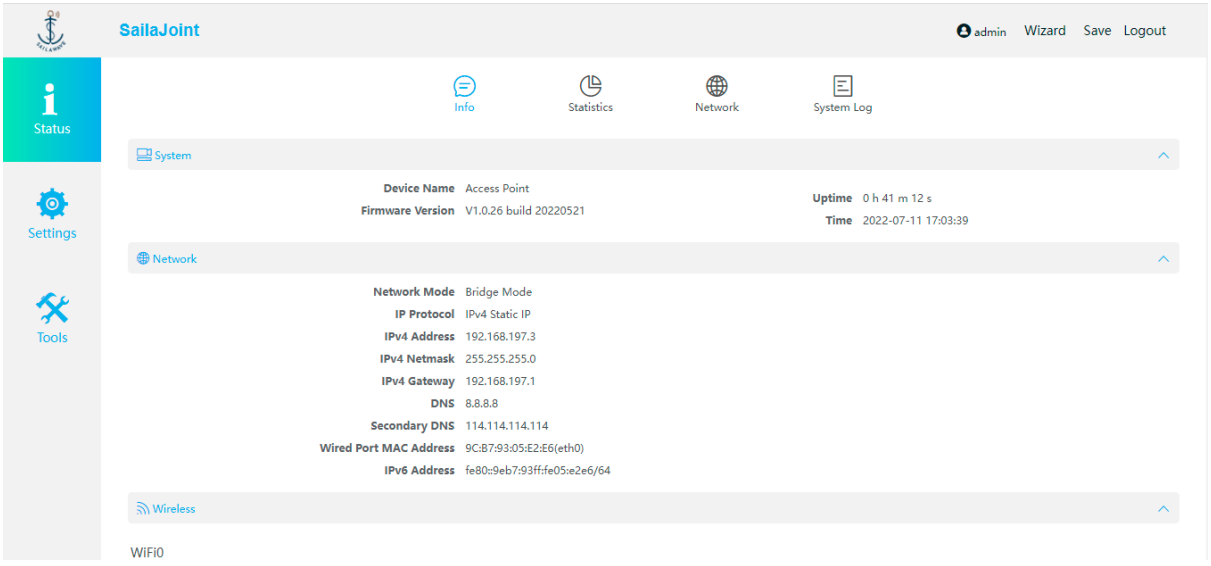


Figure 3-2 Status – Info

3.2.2 Status – Statistics

On the same sector, click on “Statistics”. The information of interface statistic (includes wired and wireless) and throughput will be shown.

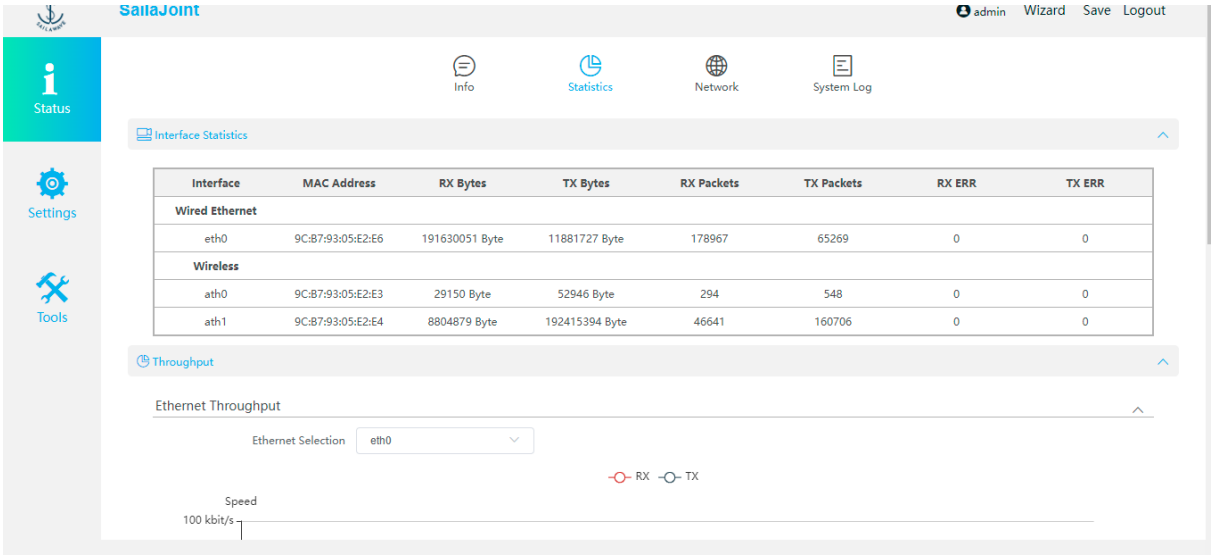


Figure 3-3 Status – Statistics

3.2.3 Status – Network

Click on “Network” tab at “Status” sector. The information of Ipv4 route table, Ipv6 route table, ARP table and Bridge table will be shown.

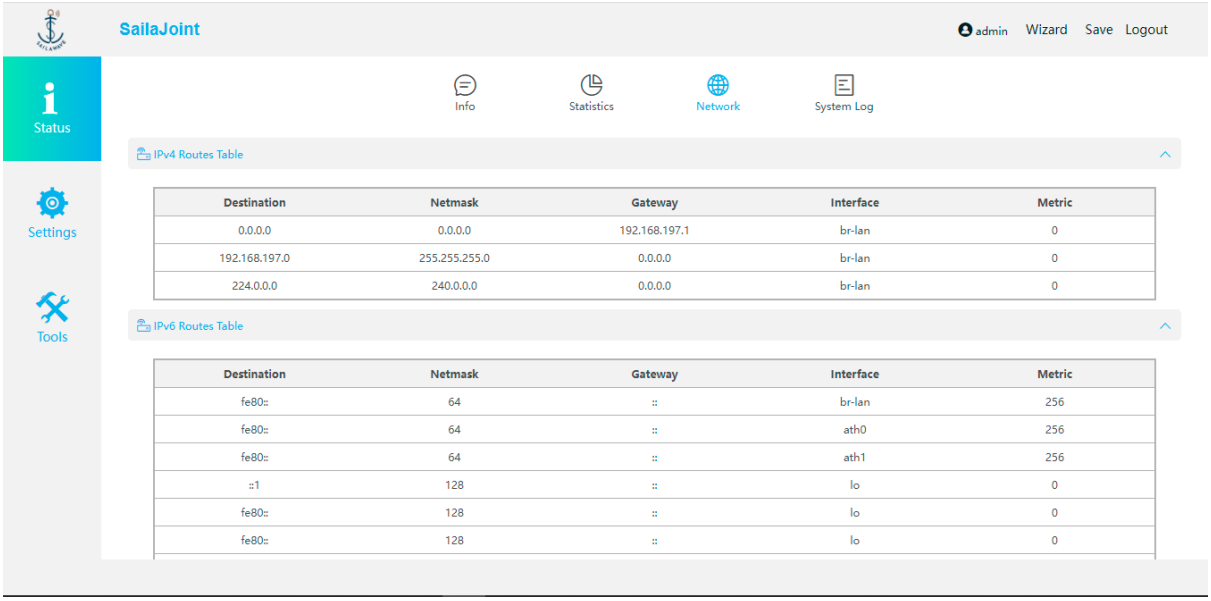


Figure 3-4 Status – Network

3.2.4 Status – System Log

The last tab of “Status” sector is “System Log”. In this tab, the logs of handshake, authentication, association, accounting, etc. will be shown. A “Clear” button at the top right corner can be used to erase the entire logs.

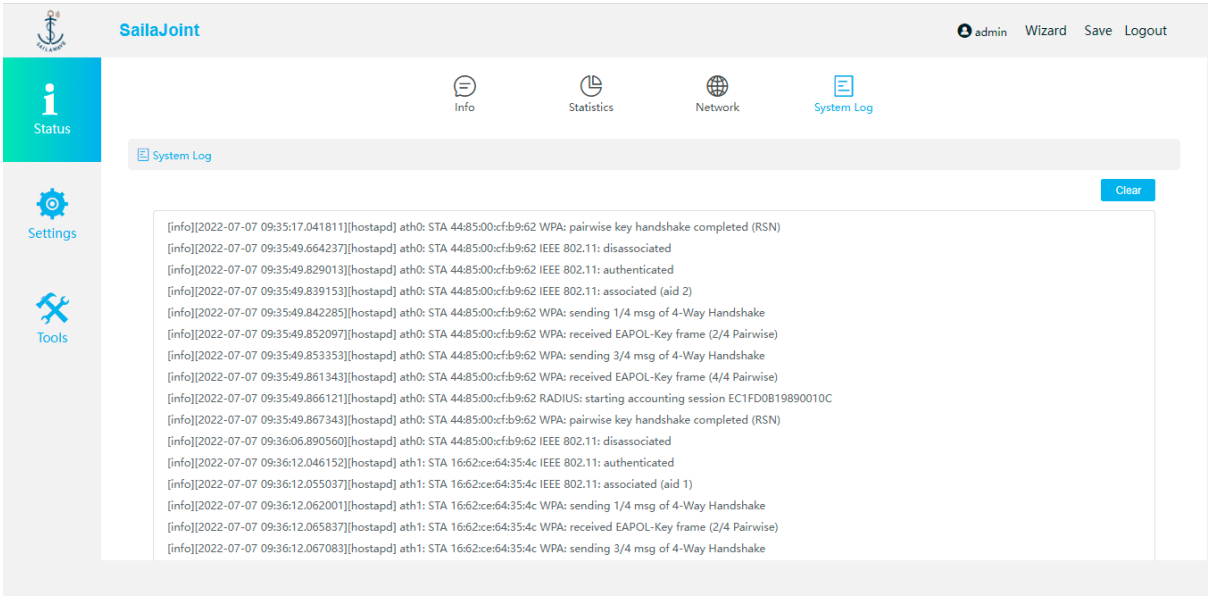


Figure 3-5 Status – System Log

3.3 Settings

803.Settings – Wireless

Under “Settings” sector, click on “Wireless”. Wireless setting such as radio setting and wireless interface setting can be modified in this tab.

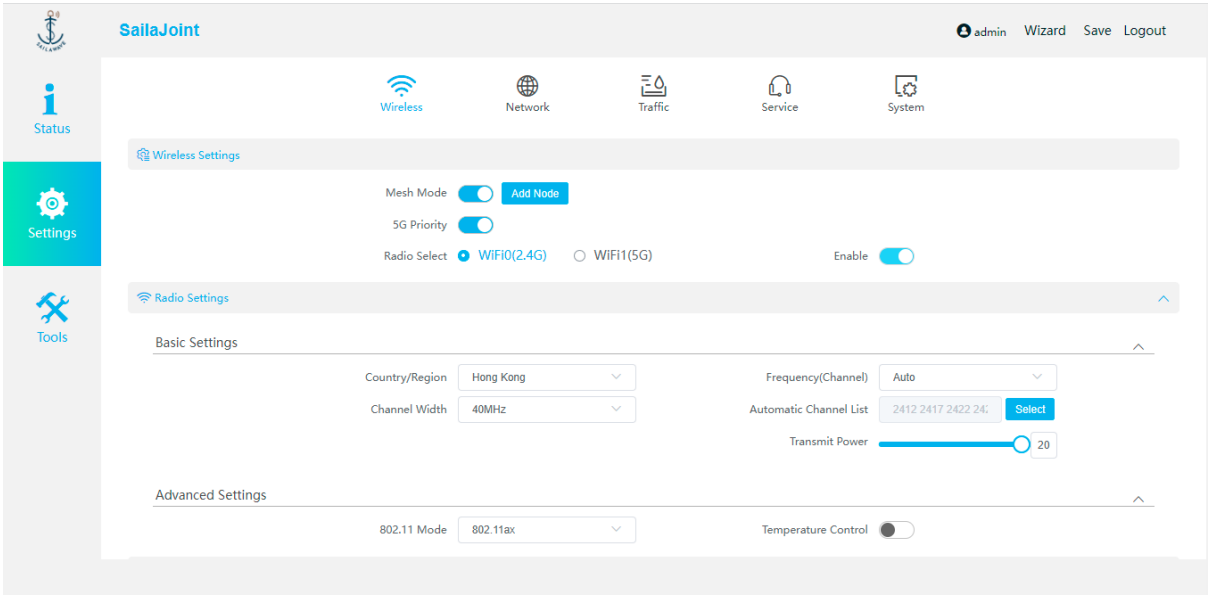


Figure 3-6 Settings – Wireless

1. Wireless Settings
    - Mesh mode: Enable/Disable, “Add Node”: Manually search for mesh node.
    - 5G Priority: Enable/Disable (If enabled, user will be assigned to 5G radio frequency in prior)
    - Radio Select: WiFi0(2.4G)/WiFi1(5G) (Either one)
2. Radio Settings
    - Country/Region: Select Country or Region
    - Channel Width: Select channel width (20MHz/40MHz)
    - Frequency (Channel): Select Channel (Auto/1/2/3/4/5/6/7/8/9/10/11/12/13)
    - Automatic Channel List: Select which of the channels will be automatically choose (Only available for “Auto”)
    - Transmit Power: Adjust the transmit power (20 the highest/3 the lowest)
    - 802.11mode: select WiFi mode (802.11ax/802.11b/g/n)

- Temperature Control: Enable/Disable

3. Wireless Interface Settings
   View the list of available WiFi interfaces. Feature of WiFi interface can be edited: SSID, Encryption mode, password, etc.

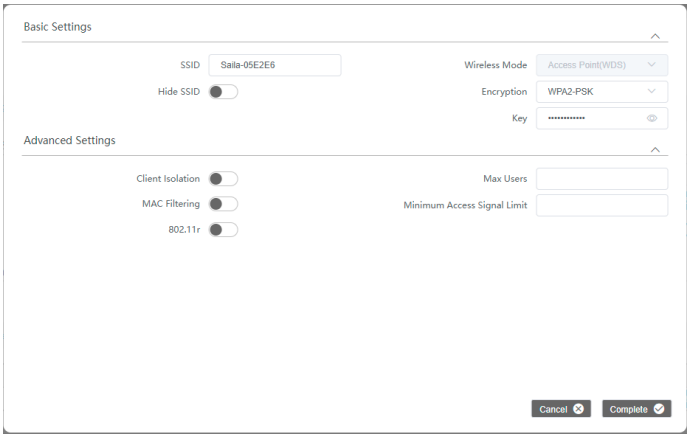


Figure 3-7 Wireless Interface Setting

Remarks: Click “Save” at the top right corner (near “Logout”) after changed all setting

3.3.2 Settings – Network

Under “Settings” sector, click on “Network”. Network settings such as VLAN, STP, static routes, DHCP, etc. can be modified.

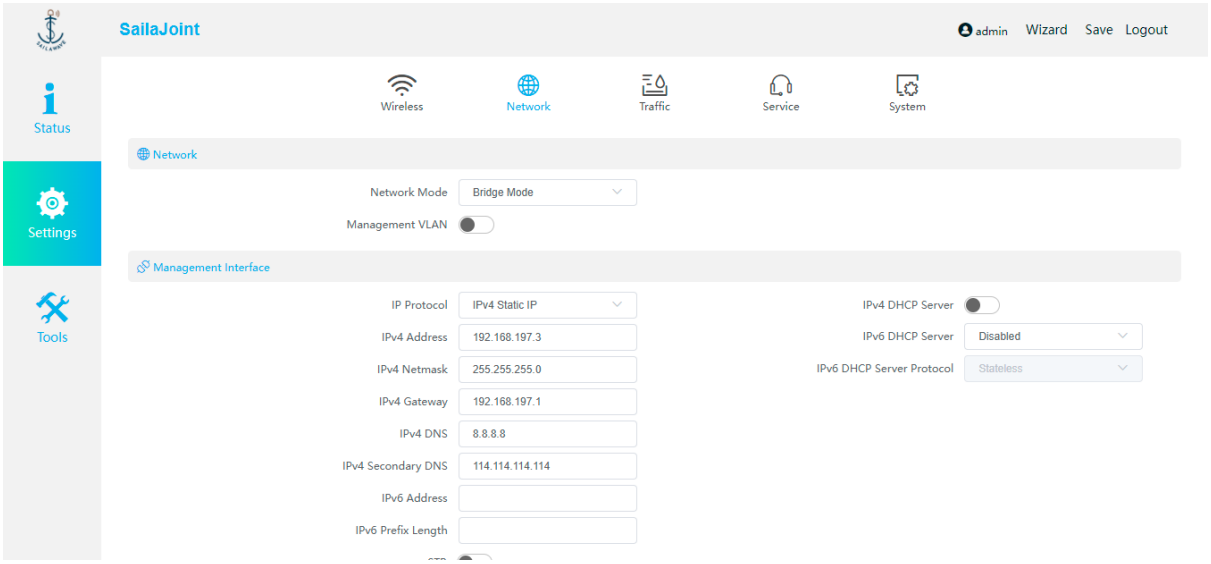


Figure 3-8 Settings – Network

1. Network
    - Bridge Mode: Bridge Mode/Route Mode
    - Management VLAN: Enable/Disable
    - Management VLAN ID: Enter with number (only available when VLAN is enabled)
    - Ipv4 Address: Enter with IP address (only available when VLAN is enabled)
    - Ipv4 Netmask: Enter with subnet mask (only available when VLAN is enabled)
    - Ipv4 Gateway: Enter with IP address of the gateway (only available when VLAN is enabled)
2. Management Interface
    - IP Protocol: Ipv4 Static IP/DHCPv4 Client/DHCPv6 Client
    - Ipv4 Address: Enter with IP address
    - Ipv4 Netmask: Enter with subnet mask
    - Ipv4 Gateway: Enter with IP address of the gateway
    - Ipv4 DNS: Enter with DNS server address
    - Ipv4 Secondary DNS: Enter with secondary DNS server address
    - Ipv6 Address: Enter with IP address in version 6
    - Ipv6 Prefix Length: Enter with Ipv6 prefix length
    - STP: Enable/Disable
    - Ipv4 DHCP Server: Enable/Disable
    - Start Address: Enter with the first available address (Only available when DHCP Server mode enabled)
    - End Address: Enter with last available address (Only available when DHCP Server mode enabled)
    - Leasetime: Enter with number in hours (Only available when DHCP Server mode enabled)
    - Gateway: Enter with IP address of the gateway (Only available when DHCP Server mode enabled)

- DNS: Enter with IP address of the DNS server (Only available when DHCP Server mode enabled)
- Ipv6 DHCP Server: Disabled/Server

3. Advance Setting
    - Bridge Interface Setting: Shows a list of bridged devices (Able to manually add bridge device and modify existing devices)
    - Ethernet Interface Setting: Shows a list of ethernet interface
    - Ipv4 Static Routes: Shows Ipv4 static routes table (Manually added static routes)
    - Ipv6 Static Routes: Shows Ipv6 static routes table (Manually added static routes)
    - Interface Isolation

3.3.3 Settings – Traffic

Under “Settings” sector, click on “Traffic”. In this tab, traffic management settings such as Firewall, Traffic shaping and QoS priority can be modified.

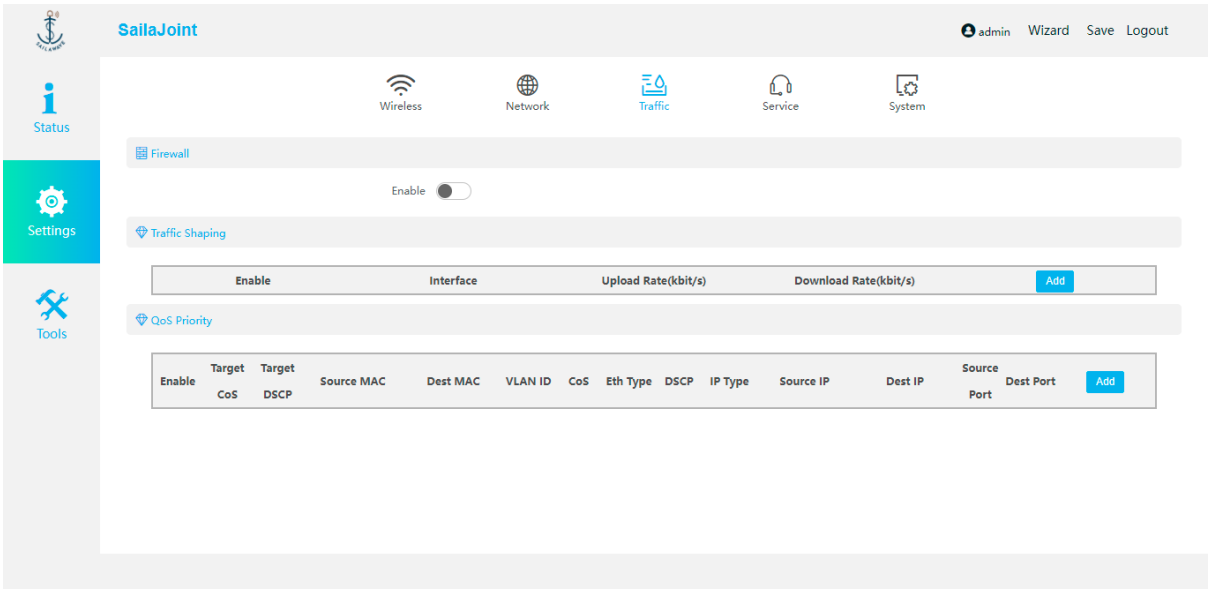


Figure 3-9 Settings – Traffic

1. Firewall
    - Firewall Enable/Disable
    - Firewall Default Policy: Accept/Deny
    - IP Filter Setting: Available to add IP filter
    - MAC Filter Setting: Available to add MAC filter
2. Traffic Shaping
3. QoS Priority

3.3.4 Settings – Service

Under “Settings” sector, click on “Service”. In this tab, services such as time zone, NYP server, SSH, web services, etc. can be modified.

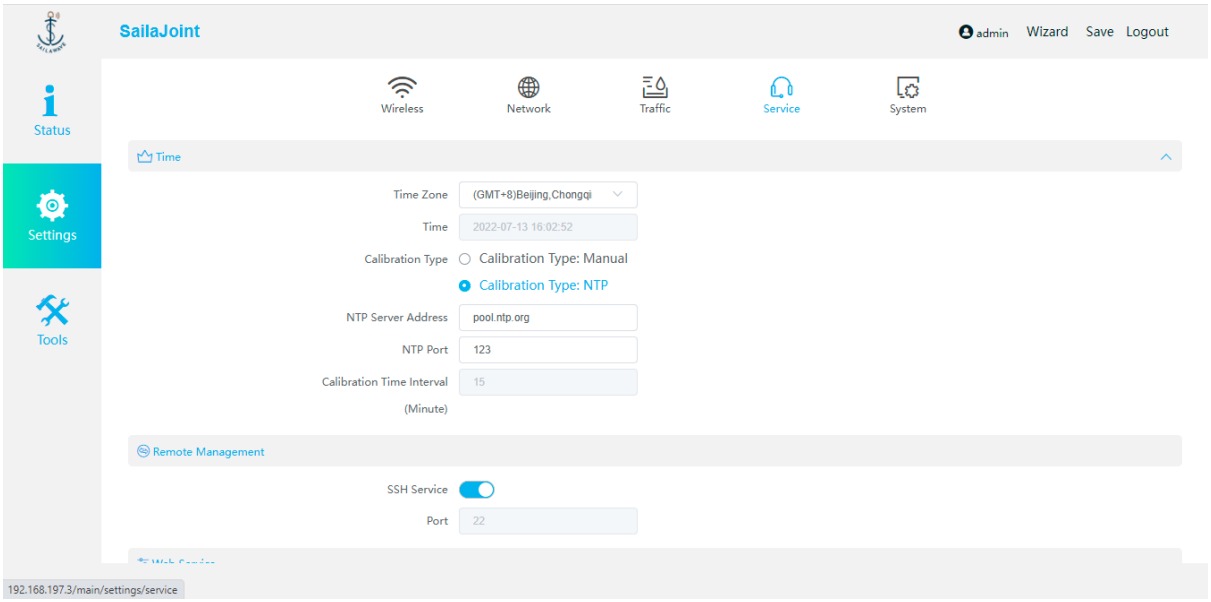


Figure 3-10 Settings – Service

1. Time
    - Time Zone
    - Time: Only available for Calibration mode: Manual
    - Calibration Type: Manual/NTP
    - NTP Server Address: Enter with IP address of NTP server (Only available for Calibration mode: NTP)
    - NTP Port: Enter with NTP Server port
2. Remote Management
    - SSH Service: Enable/Disable
    - Port: Modify as other port number (Only available when SSH service is enabled)
3. Web Service
    - Web Service: HTTPS/HTTP & HTTPS
4. Device Discovery
    - Device Discovery: Enable/Disable
5. Timed Restart
    - Timed Restart: Enable/Disable
6. External System Log Server Setting
    - External System Log Server IP: Enter with external server IP address
    - External System Log Server Port: Enter with external server port

7. AC Setting
    - Enable/Disable
    - Interface: lan
    - Location: Enter with location
    - Way of discovery: Manually specified/Auto
    - Main/Secondary AC address: Enter with ip address
    - Client Retrieving: Enable/Disable
8. Ping Watchdog
    - Enable/Disable
    - Ping IP: Enter with IP address
    - Ping Interval: Enter with number (in second)
    - Start Delay: Enter with number (in second)
    - Ping failed times: Enter with number

3.3.5 Settings – System

Under “Settings” sector, click on “System”. This is the page of system management that allows user to manage the device.

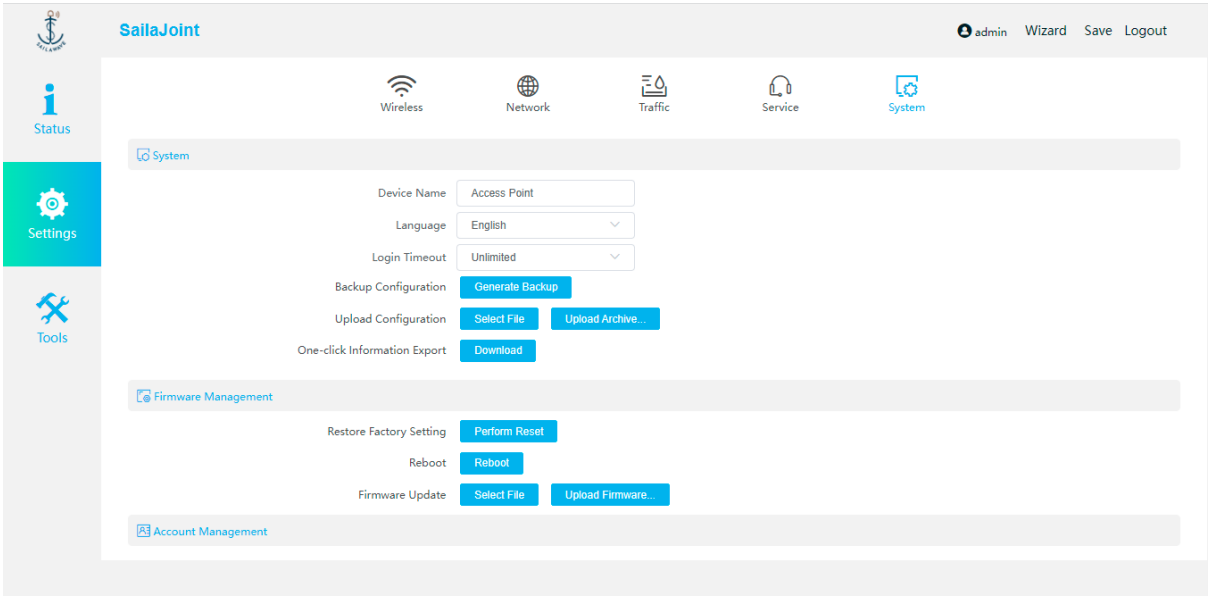


Figure 3-11 Settings – System

2. System
    - Device name
    - Language: Currently only support English and Chinese
    - Login timeout: 5/10/30/unlimited mins

- Backup Configuration: Backup the configuration made previously
- Upload Configuration: Upload the configuration file to restore the configuration
-

3. Firmware Management

   Firmware management will be described in detail in chapter 4

4. Account Management
   - Enable/Disable
   - Old password: Enter the old password
   - New password: Enter the new password
   - New password verification: Enter the new pass again

3.4 Tools

802.Tools – Ping IP

The tab “Ping IP” under sector “Tools” can be used to ping any other hosts.

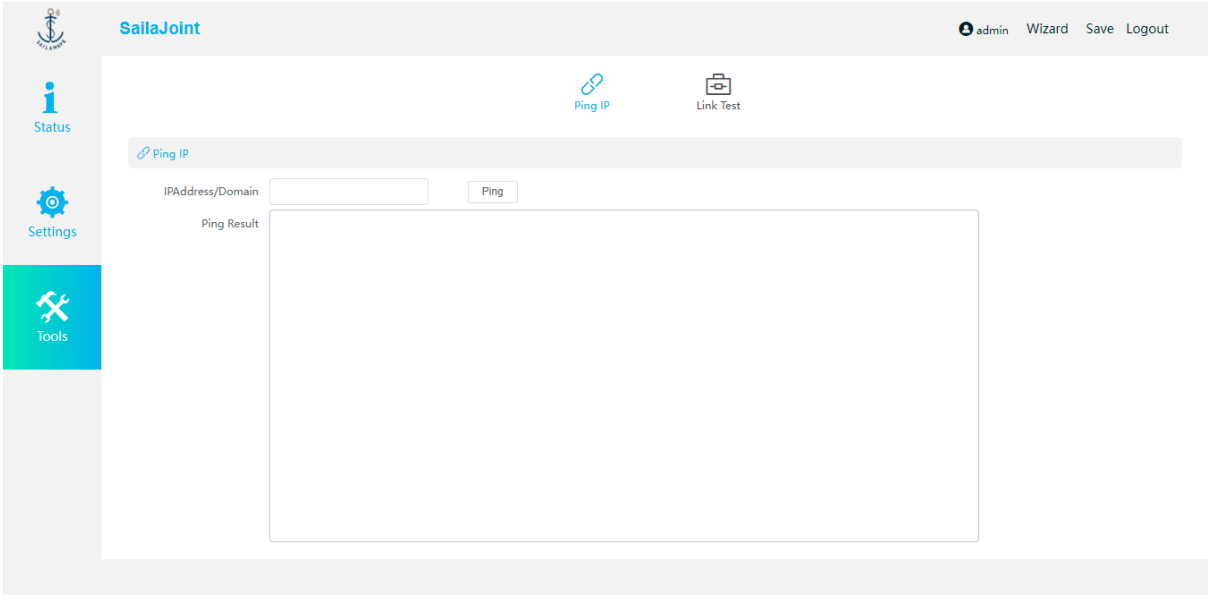


Figure 3-12 Tools – Ping IP

- IP Address/Domain: Enter with IP address and click “Ping”.
- Ping Result: The result will be shown in this box.

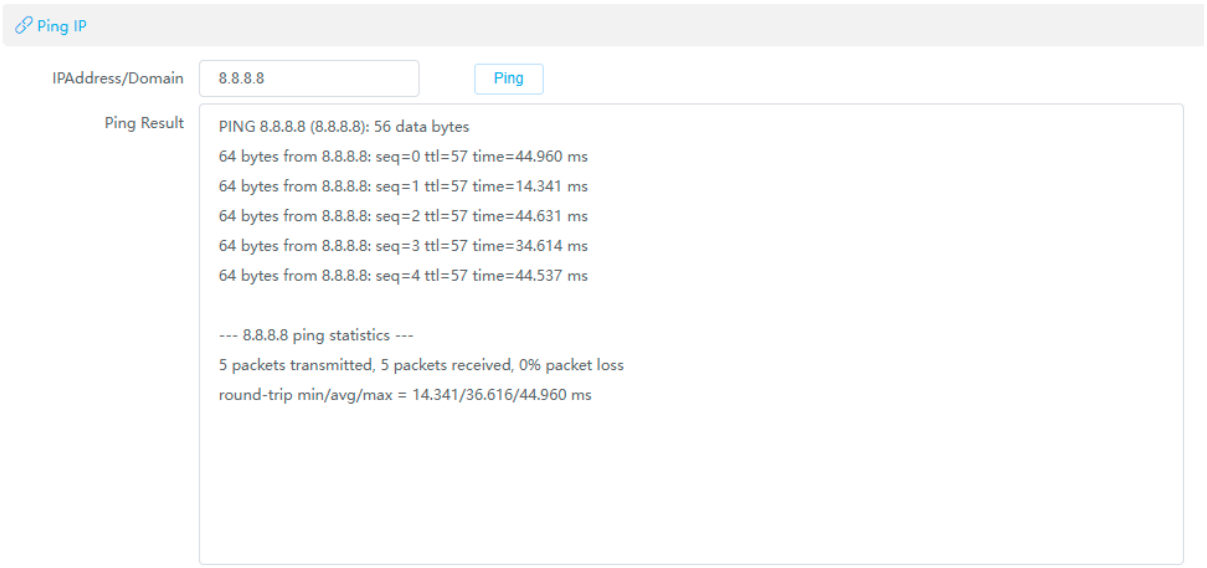


Figure 3-13 Ping Result

803.Tools – Link Test

"Link Test" supports "iPerf" to measure the throughput of a network.

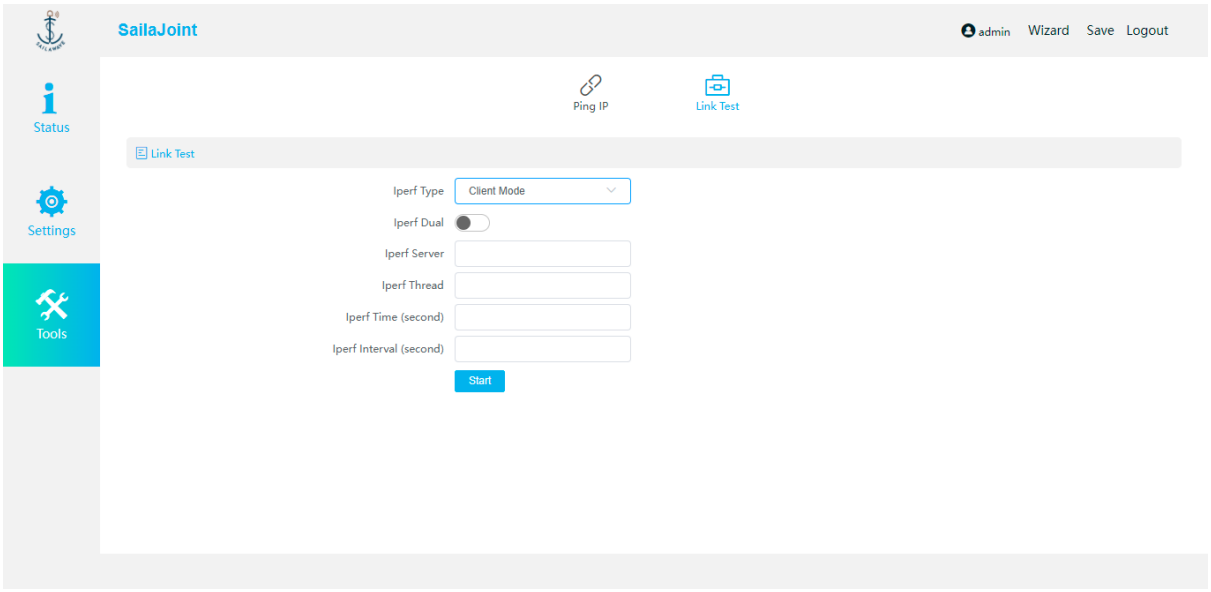


Figure 3-14 Tools – Link Test

- iPerf Type:
  a) Disable

b) Client mode: Start as a client
   I. Dual: Enable/Disable
   II. Server: Enter with server IP address
   III. Thread: Enter with thread
   IV. Time: Enter with a number (in second)
   V. Interval: Enter with a number (in second)
c) Server mode: Start as a server

4. Firmware Management

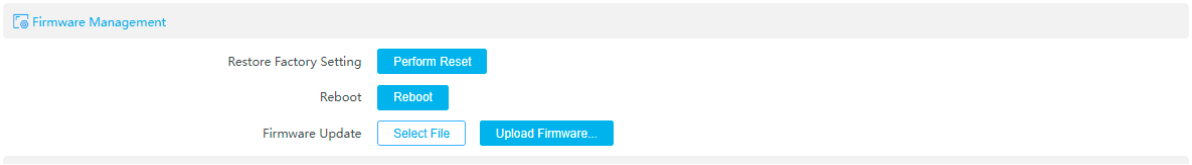


Figure 4-1 Firmware Management

4.1 Restore Factory Setting

SailaJoint is capable to restore factory setting if some failure happens. Since the action of reset will erase all current configuration, user should be careful and make sure no other way to resolve any failure appeared. This action should be considered as the last resort.

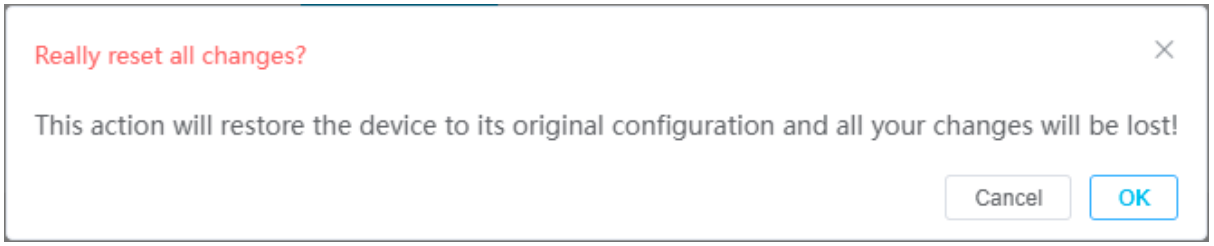


Figure 4-2 Restore Factory Settings

4.2 Reboot

SailaJoint supports manually reboot via “Reboot” function in “Firmware Management”.

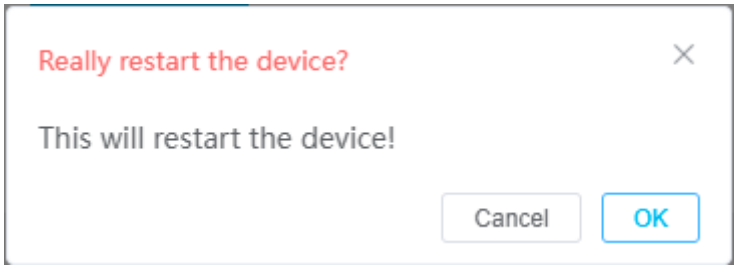


Figure 4-3 Reboot

4.3 Firmware Update

To update the firmware version, click on “Select File”. Then, search for the update packet and double click on the packet.

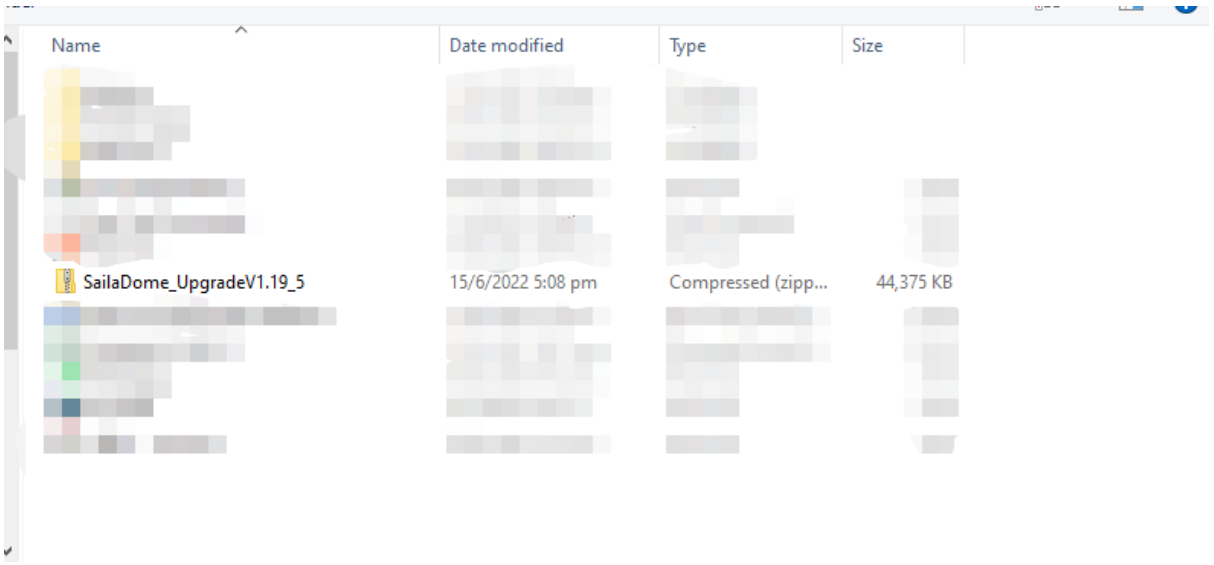


Figure 4-4 Firmware Update

After that, click on “Upload Firmware”. It may need a few minutes to accomplish.

5. Package, Logo, Transportation, Storage

1) The nametag of the product placed on the device in the specified position, the content including: manufacturer name (or company name), product name, product model, product manufacturing number, date of manufacture
2) Packaging materials and packaging methods should comply with the product packaging requirements
3) User manual, certificate of approval、packing list are packed in a plastic bag and put into carton box with the device.
4) It's recommended to transport the device by railway, road, or air transportation, and impact of wind, rain, snow, as well as any form of physical impact, should be avoided.
5) The storage of device should be stored in a dry and cool warehouse. The temperature of the warehouse should be kept between -10℃～+40℃, the humidity should not exceed 85%, and there should be no acid, alkali or corrosive gas in the warehouse.

6. Troubleshooting

804.What should I do if I forget the IP address of the device?

① Confirm that the device is connected correctly and the network cable is not loose.

② Confirm whether the device IP has been modified.

③ Confirm that the computer IP address is 192.168.197.X (X is 2~254, except the device IP).

④ Restore the device to factory settings and log in again.

(2) How to restore factory settings?

① System settings page, firmware management > factory reset.

② Press and hold the reset button for 10 seconds to reset the hardware.

(3) What should I do if I cannot open the device web interface?

① Open the computer and run cmd, check whether the IP of the ping device can be pinged, and confirm whether the IP address is correct;

② Determine that the IP address of the local computer and the IP address of the bridge are in the same local area network;

③ Try to clear the browser cache, or try another browser (Google, etc.).

(4) The terminal cannot access the Internet after it is associated with the AP?

① Confirm whether the upper-layer router can access the Internet.

②Confirm whether the terminal can obtain the correct IP address, please re-associate and check whether the terminal IP is the network segment address allocated by the upper-layer routing.

(5) The terminal cannot connect to the AP?

①The signal strength is too poor, check whether the transmit power is set to the highest, if there are obstacles, you need to adjust the AP deployment position or add Aps.

②Check whether the wireless key is correct.

③ Check whether the DHCP server is enabled on the AP, and whether the terminal device (mobile phone, computer, etc.) has obtained the IP address assigned by the AP.

④ Check whether MAC address filtering is set, and add the MAC address of the terminal to the whitelist.

805. What should I do if the video connection lags on the terminal equipment (mobile phone, computer, etc.)?

① Check whether the wireless connection of the device is normal. If it is not associated, please check whether the wireless configuration of the access point and the terminal device (mobile phone, computer, etc.) is consistent; such as network name, channel width, encryption method, etc.

② Check whether the installation location is blocked; it is necessary to ensure that the device antenna is facing the terminal device (mobile phone, computer, etc.) without blocking.

③ Check whether the wired link is normal. Methods as below:

Check whether the wired connection interface is firm and in good contact to avoid wired faults caused by loose or damaged interfaces;

Use the computer to connect the device directly, open the cmd command line, and enter the command to check whether the delay is less than 13ms: ping [device IP] -t -l 60000. Example ping 192.168.197.3 -t -l 60000. When the delay is abnormal, it is recommended to replace the network cable or remake the crystal head.

7. Appendix I

Declaration of Conformity

Product Details

Trademark:

Product description: SailaJoint

Type designation(s): MLink-18D59

CE

Object of the declaration described above **is in conformity with the relevant Union harmonization legislation as below:**

Radio Equipment Directive: **2014/53/EU**	**Article 3.1a:** EN IEC 62311:2020 EN 62368-1:2014+A11:2017 **Article 3.1b:** EN 55032:2015+A1:2020 EN 55035:2017+A11:2020 EN 301 489-1 V2.2.3 EN 301 489-3 V2.1.1 EN 301 489-17 V3.2.4 EN 301 489-19 V2.2.1 EN 301 489-52 V1.2.1 **Article 3.2:** EN 300 328 V2.2.2 EN 301 893 V2.1.1 EN 300 440 V2.2.1 EN 301 908-1 V15.1.1 EN 301 908-2 V13.1.1 EN 301 908-13 V13.2.1 EN 301 908-25 V15.1.1_15.0.3

Furthermore, The Notified Body [SGS North America, Inc.], with Notified Body number [2906] performed Modules B in Annex III of Directive [2014/53/EU], and issued the EU TEC No. [ ]

Signed for and on behalf of: Comba Network Systems Company Limited

Signature: Airman Huang

Place and date： GuangZhou 2022-10-10

Printed name：Airman Huang

Title： Product Manager

EU Member States List for Allowed to Operate

Austria	Estonia	Italy	Portugal
Belgium	Finland	Latvia	Romania
Bulgaria	France	Lithuania	Slovakia
Croatia	Germany	Luxembourg	Slovenia
Cyprus	Greece	Malta	Spain
Czech Republic	Hungary	Netherlands	Sweden
Denmark	Ireland	Poland	

8. Appendix II

Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

5G MARITIME BROADBAND SOLUTION

SailaPoint User Manual

Version 1.0.0

Contact Us: sales@saila-wave.com

PACKING LIST

Contents

Foreword

SailaPoint is an Access Point independently developed by Comba. It is a wireless equipment that provide wireless connection.

Definitions of the acronyms shown in Table 1.

Table 1 Definitions of Acronyms

Acronyms	Definition
10000Base-T	10000Mbit/s Baseband Unshielded Twisted Pair Cable
PoE	Power Over Ethernet
IP	Internet Protocol
HTTP	hypertext transmission protocol
ETH	Ethernet

1. Overview

1.1 Main features and application

SailaPoint is an Access Point that is support IEEE802.11ax/ac/n/b/a/g wireless standards.

2. Working Conditions

Power Supply: Power Adaptor (DC 9~36V). The normal working mode of the device < 35W；

7) Operating Temperature：-5℃~+45℃；
8) Dimensions（Length × Width × Height）：200mm x 140mm x 40mm；
9) Weight：< 1.5Kg。

2.1 Product Description

SailaPoint appearance as shown in Figure 2-1

Figure 2-1 SailaPoint appearance

2.2 LAN Ethernet Port & WiFi

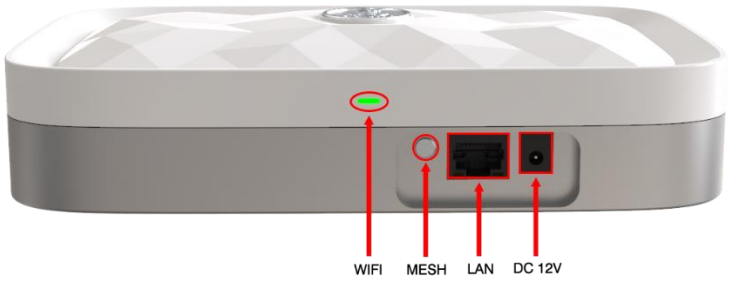


Table 2 Interfaces (From left to right)

No.	Interface Name	Function	Specification
1	DC Interface 2	DC 9~36V Input	DC JACK
2	LAN/PoE1	LAN network connection /PoE Connection	100/1000/10000Mbps, IEEE802.3af (RJ45)
3	WiFi signal light	Indication of WiFi status, light on means WiFi is working normally	Green LED light
4	MESH	MESH: Press and hold for 2~3 seconds to enable mesh mode Reset: Press and hold for 12 seconds to reset to factory setting	/

Table 2 WiFi Frequency Band

Wireless protocol	802.11 a/b/g/n/ac
Tx Power	<20dBm
2.4GHz Frequency Band	2412~2472MHz 2412~2462MHz 2412~2472MHz
5GHz Frequency Band	5180~5320MHz, 5745~5825MHz (China) 5180~5320MHz, 5500~5720MHz,5745~5825MHz (USA) 5160~5340MHz, 5480~5720MHz, 5745~5865MHz (India) ,5160~5340MHz, 5480~5720MHz, 5745~5825MHz (UAE) 5745~5805MHz (Indonesia)

Caution:

the device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

3. Introduction

For the application of SailaPoint, as long as the sim card is inserted into the SailaPoint, it can dial-up Internet access without any other configuration. For details, please refer to the following introduction:

3.1 Login to Device

As shown in Figure 4-1, after the device is powered on, please log in to the browser connected to the computer: 192.168.197.3, enter the username “admin”, and password #EDC4rfv%TGB, then click "Login" to the configuration page. Also, language can be changed at top right corner. Sailawave is currently supporting English and Chinese.

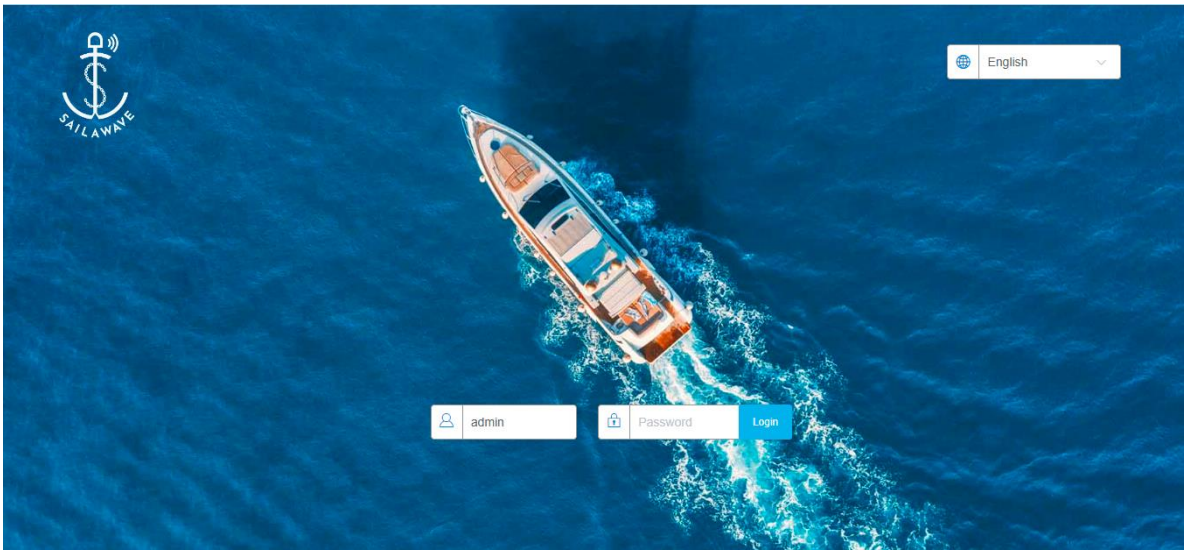


Figure 3-1 Login Interface

3.2 Status

3.2.1 Status - Info

After logged in, three sectors are shown at left of the screen: Status, Settings and Tools. Click on “Status”. Then, four tabs will be shown in the “Status” sector: Info, Statistics, Network and System Log. Click on “Info”. The information included system detail, network, wireless and station list will be shown in this tab.

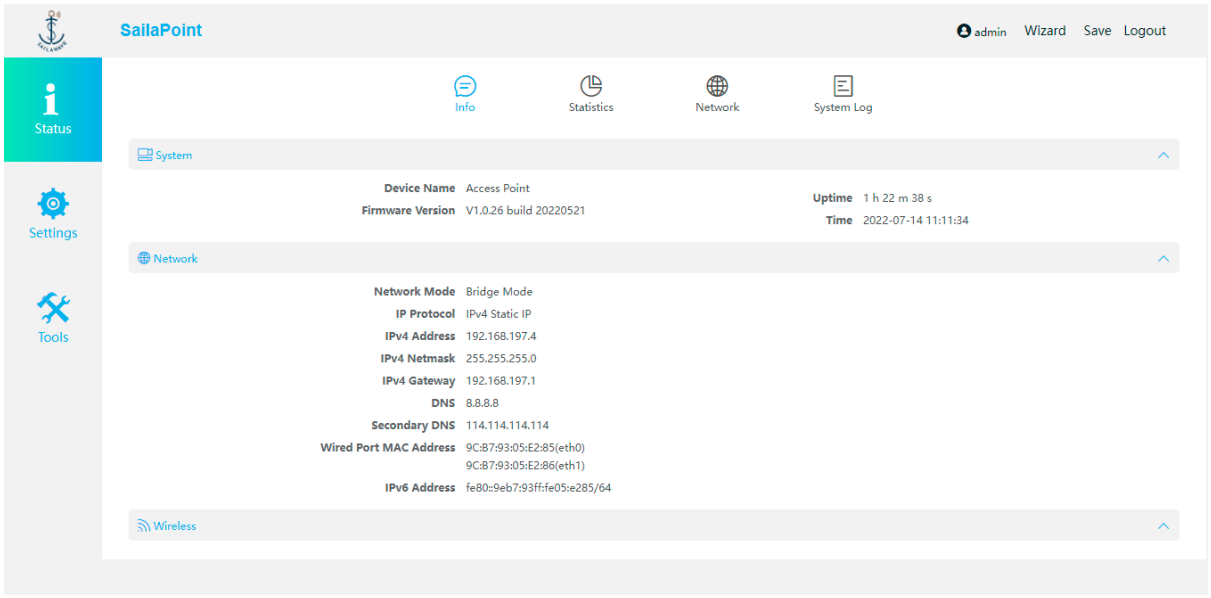


Figure 3-2 Status - Info

3.2.2 Status - Statistics

On the same sector, click on “Statistics”. The information of interface statistic (includes wired and wireless) and throughput will be shown.

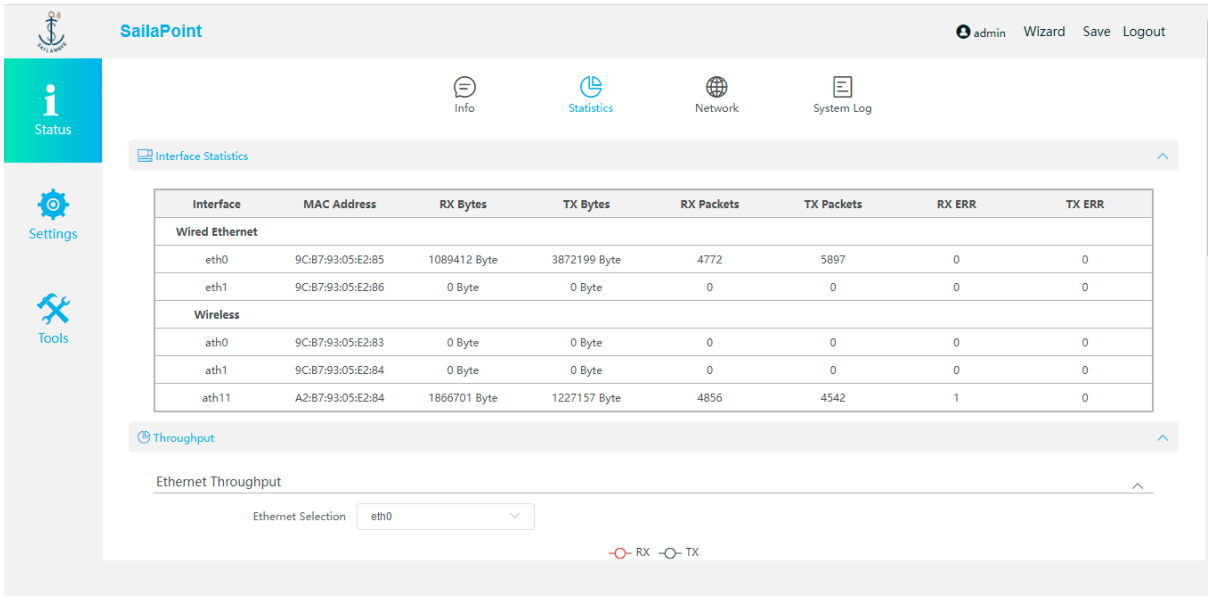


Figure 3-3 Status - Statistics

3.2.3 Status – Network

Click on “Network” tab at “Status” sector. The information of IPv4 route table, IPv6 route table, ARP table and Bridge table will be shown.

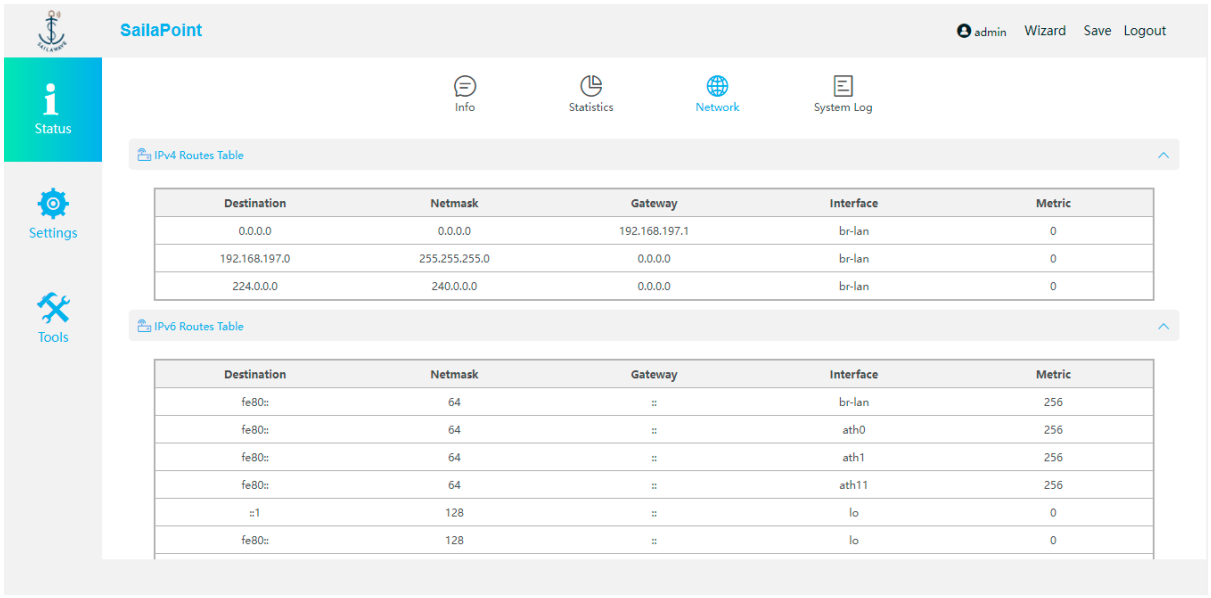


Figure 3-4 Status - Network

3.2.4 Status – System Log

The last tab of “Status” sector is “System Log”. In this tab, the logs of handshake, authentication, association, accounting, etc. will be shown. A “Clear” button at the top right corner can be used to erase the entire logs.

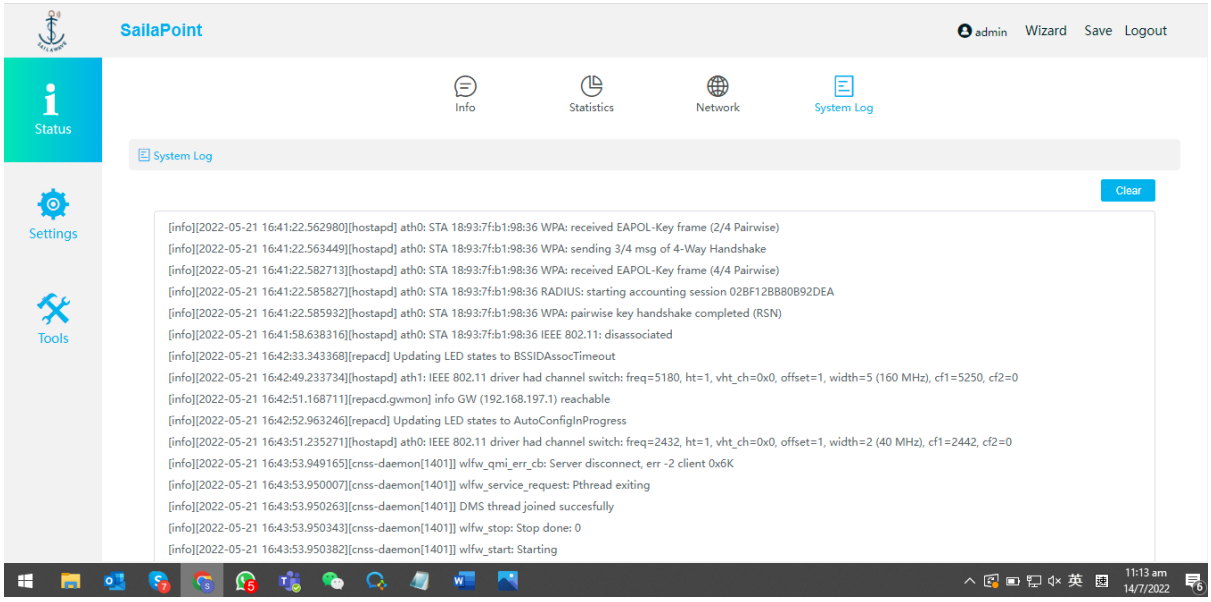


Figure 3-5 Status - System Log

3.3 Settings

3.3.1 Settings – Wireless

Under “Settings” sector, click on “Wireless”. Wireless setting such as radio setting and wireless interface setting can be modified in this tab.

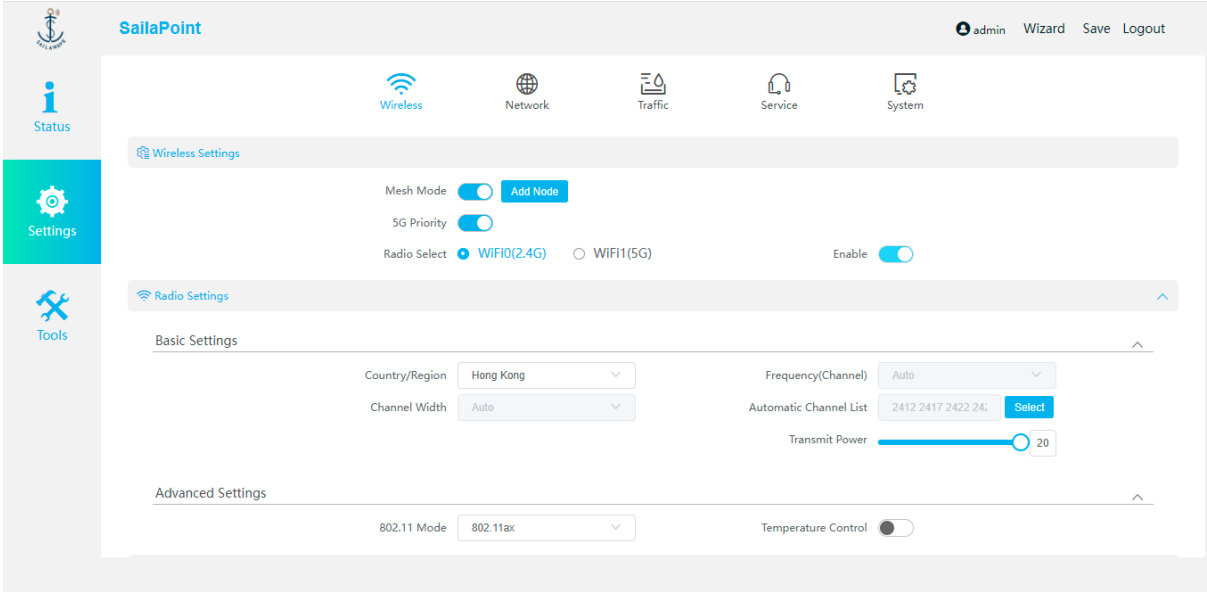


Figure 3-6 Settings – Wireless

4. Wireless Settings
    - Mesh mode: Enable/Disable, “Add Node”: Manually search for mesh node.
    - 5G Priority: Enable/Disable (If enabled, user will be assigned to 5G radio frequency in prior)
    - Radio Select: WiFi0(2.4G)/WiFi1(5G) (Either one)
5. Radio Settings
    - Country/Region: Select Country or Region
    - Channel Width: Select channel width (20MHz/40MHz)
    - Frequency (Channel): Select Channel (Auto/1/2/3/4/5/6/7/8/9/10/11/12/13)
    - Automatic Channel List: Select which of the channels will be automatically choose (Only available for “Auto”)
    - Transmit Power: Adjust the transmit power (20 the highest/3 the lowest)
    - 802.11mode: select WiFi mode (802.11ax/802.11b/g/n)
    - Temperature Control: Enable/Disable
6. Wireless Interface Settings
   View the list of available WiFi interfaces. Feature of WiFi interface can be edited: SSID, Encryption mode, password, etc.

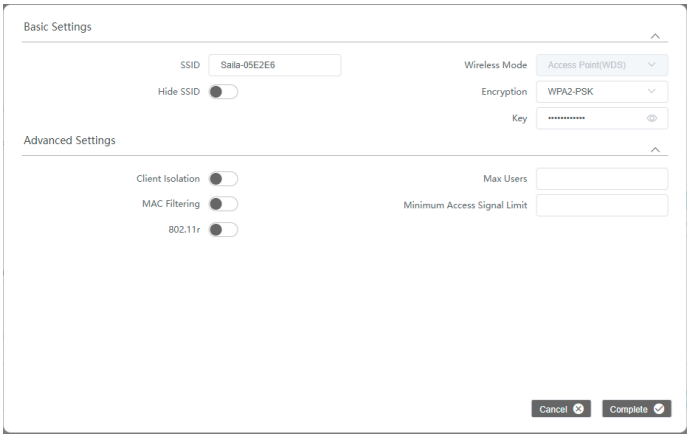


Figure 3-7 Wireless Interface Setting

Remarks: Click “Save” at the top right corner (near “Logout”) after changed all setting

3.3.2 Settings – Network

Under “Settings” sector, click on “Network”. Network settings such as VLAN, STP, static routes, DHCP, etc. can be modified.

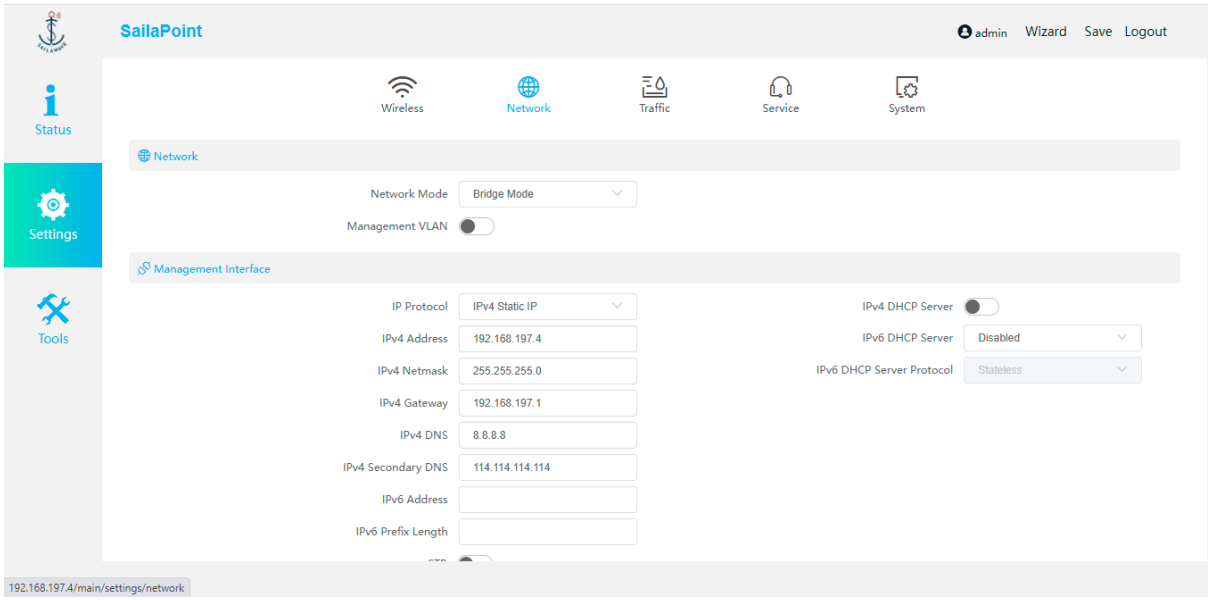


Figure 3-8 Settings – Network

4. Network
    - Bridge Mode: Bridge Mode/Route Mode
    - Management VLAN: Enable/Disable
    - Management VLAN ID: Enter with number (only available when VLAN is enabled)
    - IPv4 Address: Enter with IP address (only available when VLAN is enabled)
    - IPv4 Netmask: Enter with subnet mask (only available when VLAN is enabled)

- IPv4 Gateway: Enter with IP address of the gateway (only available when VLAN is enabled)

5. Management Interface
    - IP Protocol: IPv4 Static IP/DHCPv4 Client/DHCPv6 Client
    - IPv4 Address: Enter with IP address
    - IPv4 Netmask: Enter with subnet mask
    - IPv4 Gateway: Enter with IP address of the gateway
    - IPv4 DNS: Enter with DNS server address
    - IPv4 Secondary DNS: Enter with secondary DNS server address
    - IPv6 Address: Enter with IP address in version 6
    - IPv6 Prefix Length: Enter with IPv6 prefix length
    - STP: Enable/Disable
    - IPv4 DHCP Server: Enable/Disable
    - Start Address: Enter with the first available address (Only available when DHCP Server mode enabled)
    - End Address: Enter with last available address (Only available when DHCP Server mode enabled)
    - Leasetime: Enter with number in hours (Only available when DHCP Server mode enabled)
    - Gateway: Enter with IP address of the gateway (Only available when DHCP Server mode enabled)
    - DNS: Enter with IP address of the DNS server (Only available when DHCP Server mode enabled)
    - IPv6 DHCP Server: Disabled/Server
6. Advance Setting
    - Bridge Interface Setting: Shows a list of bridged devices (Able to manually add bridge device and modify existing devices)
    - Ethernet Interface Setting: Shows a list of ethernet interface
    - IPv4 Static Routes: Shows IPv4 static routes table (Manually added static routes)
    - IPv6 Static Routes: Shows IPv6 static routes table (Manually added static routes)
    - Interface Isolation

3.3.3 Settings – Traffic

Under “Settings” sector, click on “Traffic”. In this tab, traffic management settings such as Firewall, Traffic shaping and QoS priority can be modified.

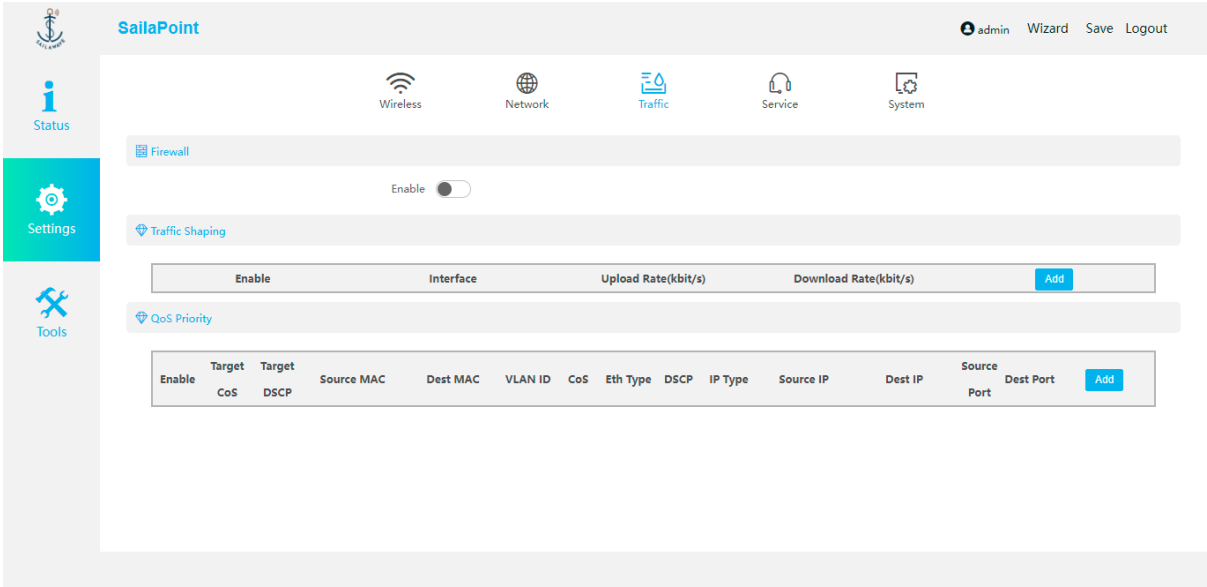


Figure 3-9 Settings – Traffic

4. Firewall
    - Firewall Enable/Disable
    - Firewall Default Policy: Accept/Deny
    - IP Filter Setting: Available to add IP filter
    - MAC Filter Setting: Available to add MAC filter
5. Traffic Shaping
6. QoS Priority

3.3.4 Settings – Service

Under “Settings” sector, click on “Service”. In this tab, services such as time zone, NYP server, SSH, web services, etc. can be modified.

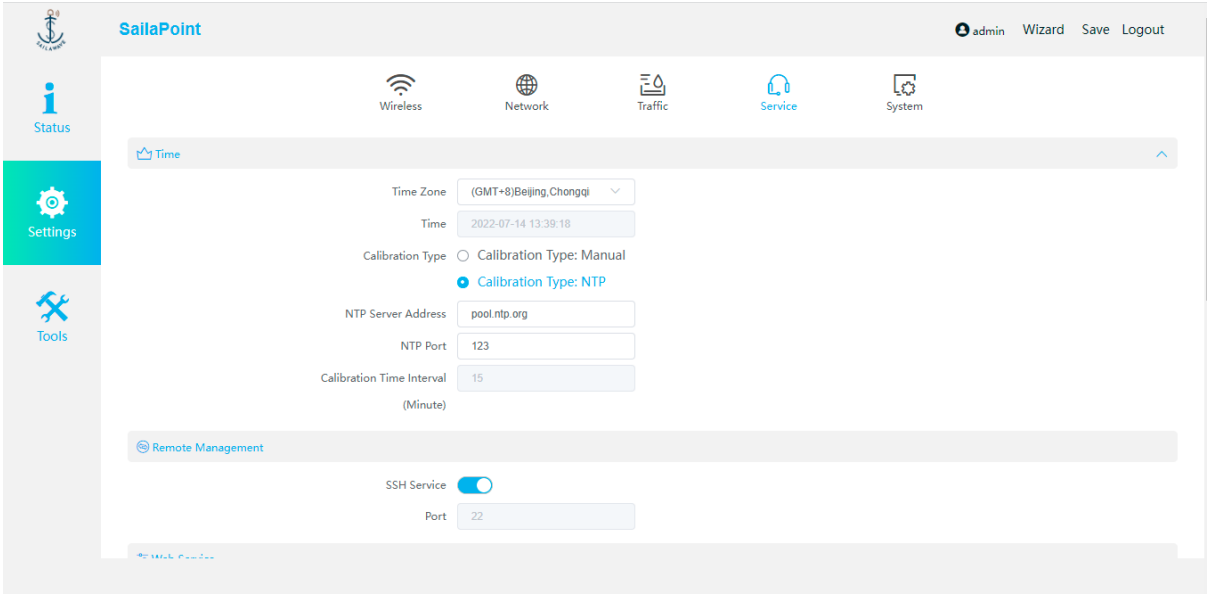


Figure 3-10 Settings - Service

9. Time
    - Time Zone
    - Time: Only available for Calibration mode: Manual
    - Calibration Type: Manual/NTP
    - NTP Server Address: Enter with IP address of NTP server (Only available for Calibration mode: NTP)
    - NTP Port: Enter with NTP Server port
10. Remote Management
    - SSH Service: Enable/Disable
    - Port: Modify as other port number (Only available when SSH service is enabled)
11. Web Service
    - Web Service: HTTPS/HTTP & HTTPS
12. Device Discovery
    - Device Discovery: Enable/Disable
13. Timed Restart
    - Timed Restart: Enable/Disable
14. External System Log Server Setting
    - External System Log Server IP: Enter with external server IP address
    - External System Log Server Port: Enter with external server port
15. AC Setting
    - Enable/Disable
    - Interface: lan
    - Location: Enter with location
    - Way of discovery: Manually specified/Auto
    - Main/Secondary AC address: Enter with ip address
    - Client Retrieving: Enable/Disable
16. Ping Watchdog
    - Enable/Disable
    - Ping IP: Enter with IP address
    - Ping Interval: Enter with number (in second)
    - Start Delay: Enter with number (in second)
    - Ping failed times: Enter with number

3.3.5 Settings – System

Under “Settings” sector, click on “System”. This is the page of system management that allows user to manage the device.

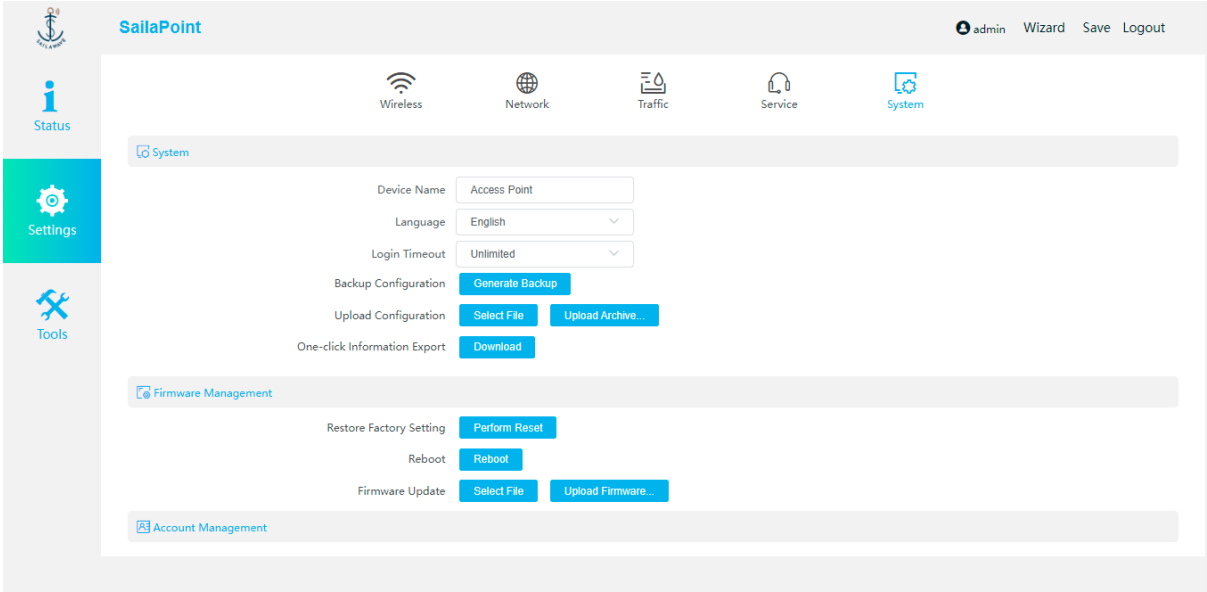


Figure 3-11 Settings - System

5. System
    - Device name
    - Language: Currently only support English and Chinese
    - Login timeout: 5/10/30/unlimited mins
    - Backup Configuration: Backup the configuration made previously
    - Upload Configuration: Upload the configuration file to restore the configuration
    -
6. Firmware Management

    Firmware management will be described in detail in chapter 4
7. Account Management
    - Enable/Disable
    - Old password: Enter the old password
    - New password: Enter the new password
    - New password verification: Enter the new pass again

3.4 Tools

3.4.1 Tools – Ping IP

The tab “Ping IP” under sector “Tools” can be used to ping any other hosts.

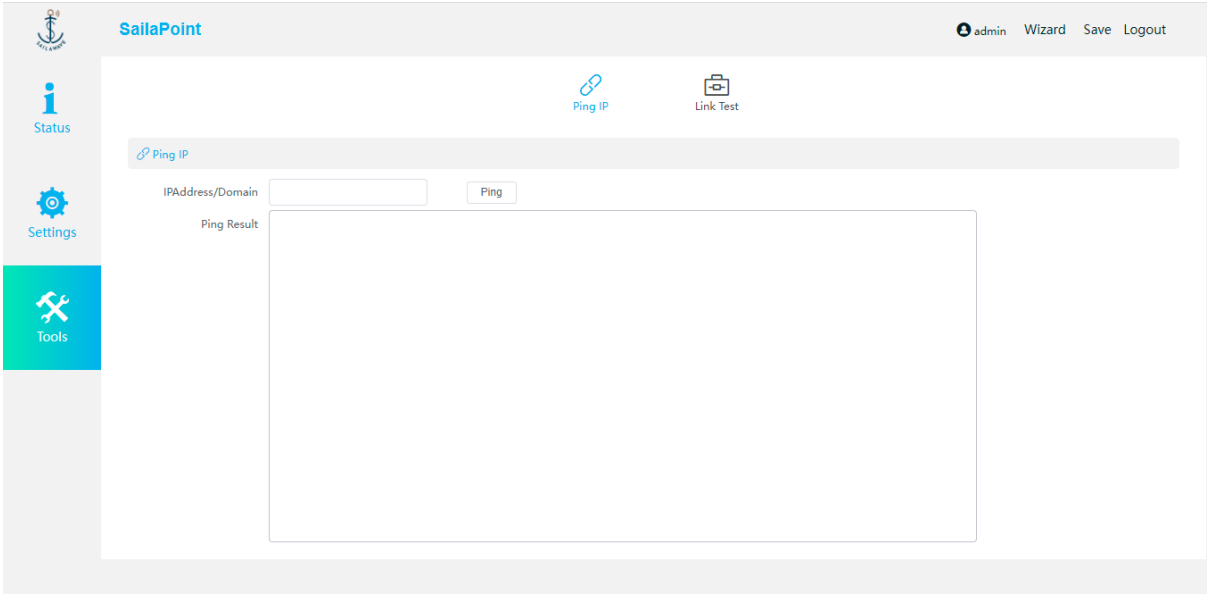


Figure 3-12 Tools - Ping IP

- IP Address/Domain: Enter with IP address and click “Ping”.
- Ping Result: The result will be shown in this box.

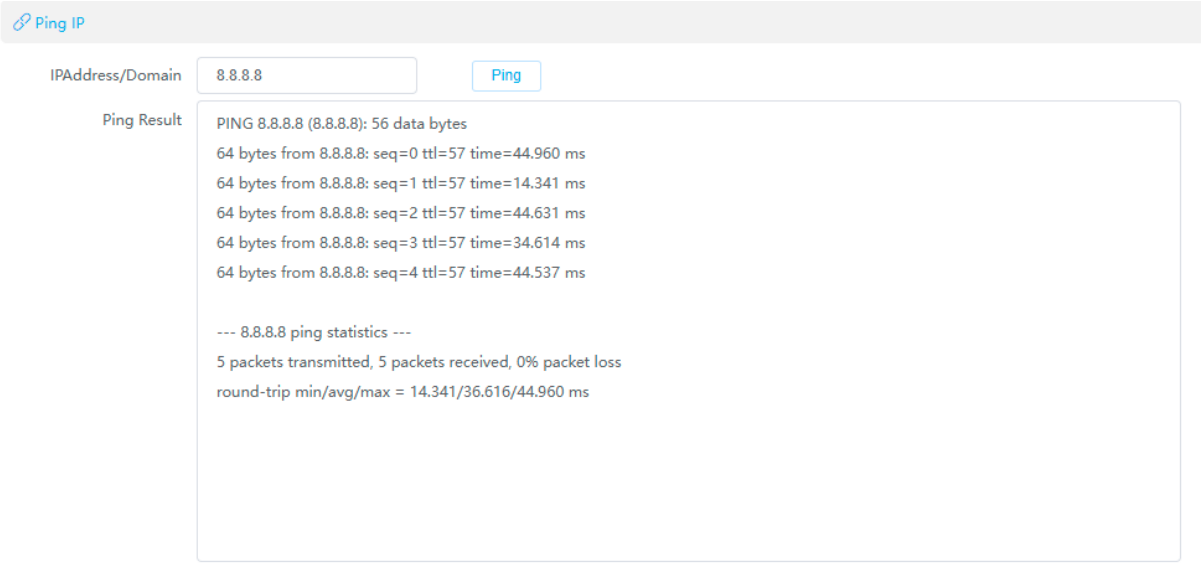


Figure 3-13 Ping Result

3.4.1 Tools – Link Test

“Link Test” supports “iPerf” to measure the throughput of a network.

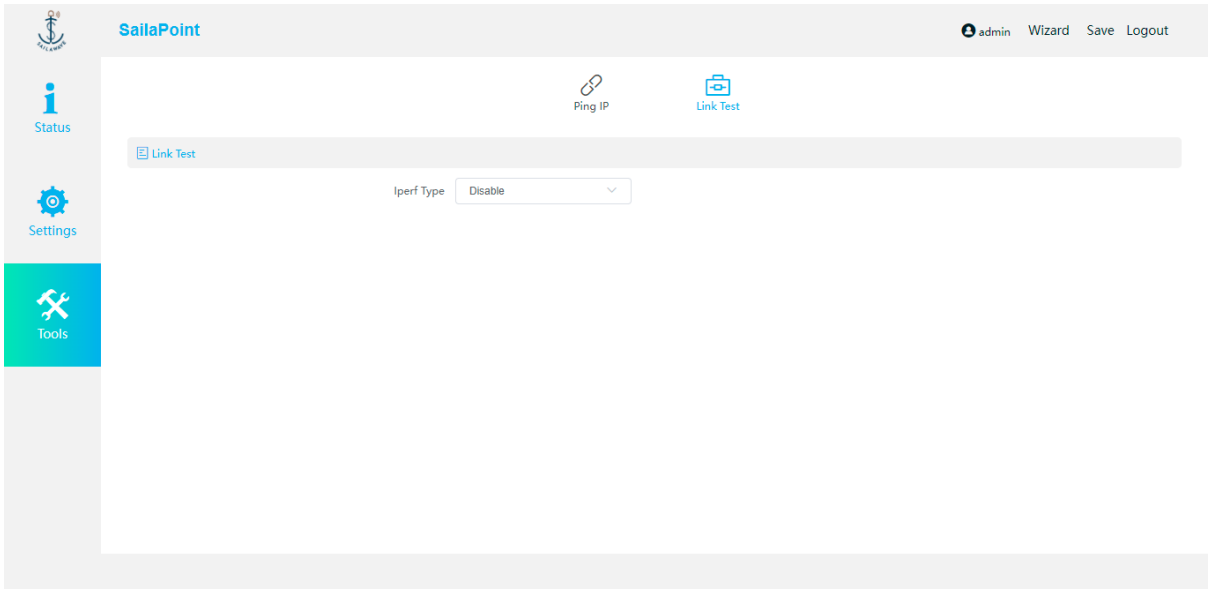


Figure 3-14 Tools - Link Test

- iPerf Type:
  a) Disable
  b) Client mode: Start as a client
     I. Dual: Enable/Disable
     II. Server: Enter with server IP address
     III. Thread: Enter with thread
     IV. Time: Enter with a number (in second)
     V. Interval: Enter with a number (in second)
  c) Server mode: Start as a server

4. Firmware Management

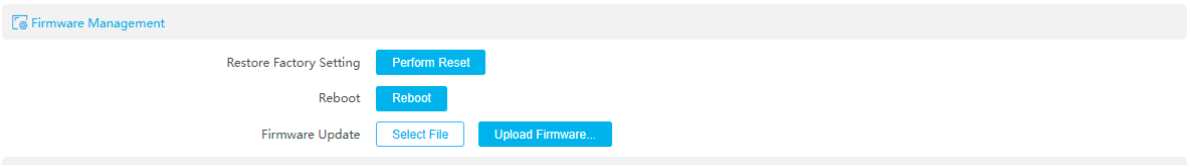


Figure 4-1 Firmware Management

4.1 Restore Factory Setting

SailaPoint is capable to restore factory setting if some failure happens. Since the action of reset will erase all current configuration, user should be careful and make sure no other way to resolve any failure appeared. This action should be considered as the last resort.

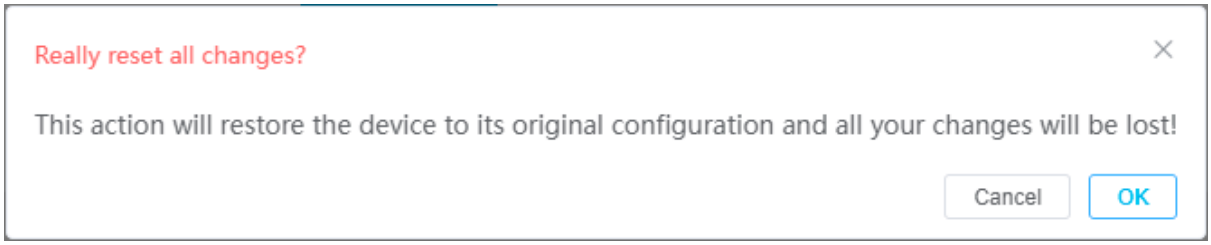


Figure 4-2 Restore Factory Settings

4.2 Reboot

SailaPoint supports manually reboot via “Reboot” function in “Firmware Management”.

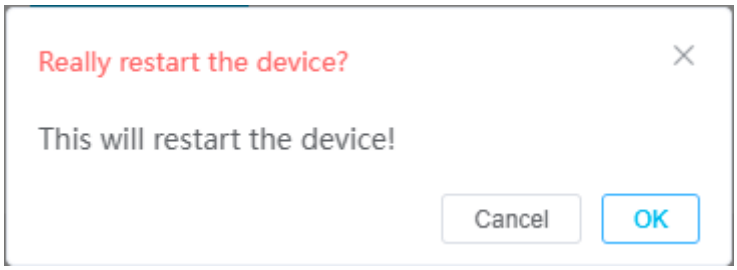


Figure 4-3 Reboot

4.3 Firmware Update

To update the firmware version, click on “Select File”. Then, search for the update packet and double click on the packet.

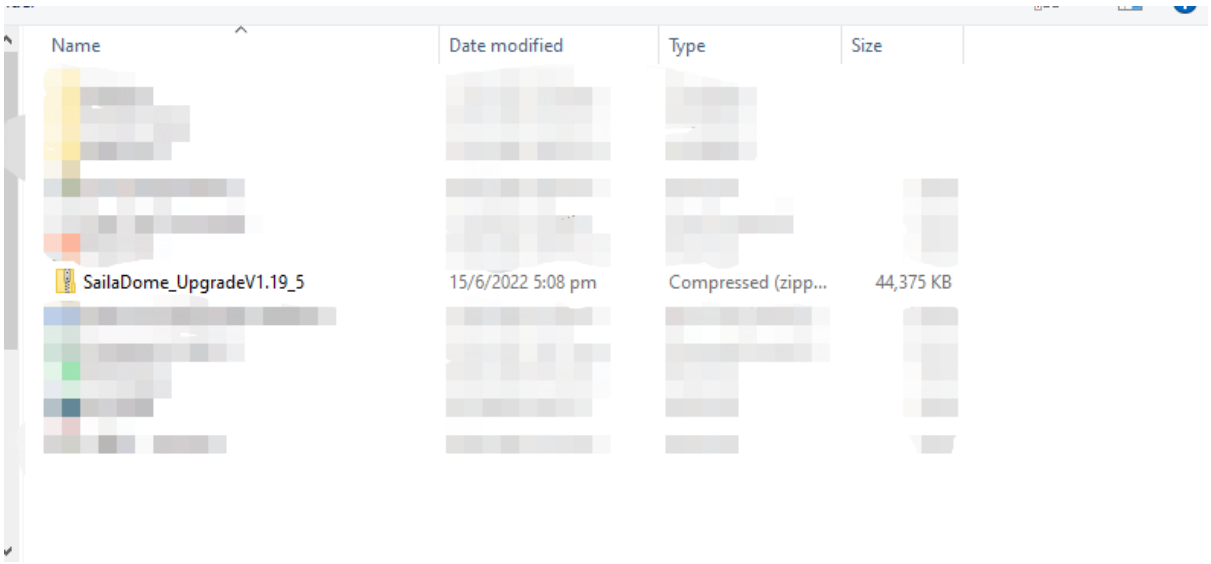


Figure 4-4 Firmware Update

After that, click on “Upload Firmware”. It may need a few minutes to accomplish.

5. Package, Logo, Transportation, Storage

1) The nametag of the product placed on the device in the specified position, the content including: manufacturer name (or company name), product name, product model, product manufacturing number, date of manufacture
2) Packaging materials and packaging methods should comply with the product packaging requirements
3) User manual, certificate of approval、packing list are packed in a plastic bag and put into carton box with the device.
4) It's recommended to transport the device by railway, road, or air transportation, and impact of wind, rain, snow, as well as any form of physical impact, should be avoided.
5) The storage of device should be stored in a dry and cool warehouse. The temperature of the warehouse should be kept between -10℃～+40℃, the humidity should not exceed 85%, and there should be no acid, alkali or corrosive gas in the warehouse.

6. Troubleshooting

(1) What should I do if I forget the IP address of the device?

① Confirm that the device is connected correctly and the network cable is not loose.

② Confirm whether the device IP has been modified.

③ Confirm that the computer IP address is 192.168.197.X (X is 2~254, except the device IP).

④ Restore the device to factory settings and log in again.

(2) How to restore factory settings?

① System settings page, firmware management > factory reset.

② Press and hold the reset button for 10 seconds to reset the hardware.

(3) What should I do if I cannot open the device web interface?

① Open the computer and run cmd, check whether the IP of the ping device can be pinged, and confirm whether the IP address is correct;

② Determine that the IP address of the local computer and the IP address of the bridge are in the same local area network;

③ Try to clear the browser cache, or try another browser (Google, etc.).

(4) The terminal cannot access the Internet after it is associated with the AP?

① Confirm whether the upper-layer router can access the Internet.

②Confirm whether the terminal can obtain the correct IP address, please re-associate and check whether the terminal IP is the network segment address allocated by the upper-layer routing.

(6) The terminal cannot connect to the AP?

①The signal strength is too poor, check whether the transmit power is set to the highest, if there are obstacles, you need to adjust the AP deployment position or add APs.

②Check whether the wireless key is correct.

③ Check whether the DHCP server is enabled on the AP, and whether the terminal device (mobile phone, computer, etc.) has obtained the IP address assigned by the AP.

④ Check whether MAC address filtering is set, and add the MAC address of the terminal to the whitelist.

(6) What should I do if the video connection lags on the terminal equipment (mobile phone, computer, etc.)?

① Check whether the wireless connection of the device is normal. If it is not associated, please check whether the wireless configuration of the access point and the terminal device (mobile phone, computer, etc.) is consistent; such as network name, channel width, encryption method, etc.

② Check whether the installation location is blocked; it is necessary to ensure that the device antenna is facing the terminal device (mobile phone, computer, etc.) without blocking.

③ Check whether the wired link is normal. Methods as below:

Check whether the wired connection interface is firm and in good contact to avoid wired faults caused by loose or damaged interfaces;

Use the computer to connect the device directly, open the cmd command line, and enter the command to check whether the delay is less than 13ms: ping [device IP] -t -l 60000. Example ping 192.168.197.3 -t -l 60000. When the delay is abnormal, it is recommended to replace the network cable or remake the crystal head.

7. Appendix I

Declaration of Conformity

Product Details

Trademark:

Product description: SailaPoint

Type designation(s): MLink-1893D59

CE

Object of the declaration described above **is in conformity with the relevant Union harmonization legislation as below:**

Radio Equipment Directive: **2014/53/EU**	**Article 3.1a:** EN IEC 62311:2020 EN 62368-1:2014+A11:2017 **Article 3.1b:** EN 55032:2015+A1:2020 EN 55035:2017+A11:2020 EN 301 489-1 V2.2.3 EN 301 489-3 V2.1.1 EN 301 489-17 V3.2.4 EN 301 489-19 V2.2.1 EN 301 489-52 V1.2.1 **Article 3.2:** EN 300 328 V2.2.2 EN 301 893 V2.1.1 EN 300 440 V2.2.1 EN 301 908-1 V15.1.1 EN 301 908-2 V13.1.1 EN 301 908-13 V13.2.1 EN 301 908-25 V15.1.1_15.0.3

Furthermore, The Notified Body [SGS North America, Inc.], with Notified Body number [2906] performed Modules B in Annex III of Directive [2014/53/EU], and issued the EU TEC No. [ ]

Signed for and on behalf of: Comba Network Systems Company Limited

Signature: Airman Huang

Place and date： GuangZhou 2022-10-10

Printed name：Airman Huang

Title： Product Manager

EU Member States List for Allowed to Operate

Austria	Estonia	Italy	Portugal
Belgium	Finland	Latvia	Romania
Bulgaria	France	Lithuania	Slovakia
Croatia	Germany	Luxembourg	Slovenia
Cyprus	Greece	Malta	Spain
Czech Republic	Hungary	Netherlands	Sweden
Denmark	Ireland	Poland	

8. Appendix II

Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body.