# WisGate OS 2 User Manual

# Overview

This document describes in detail the functionality of the WisGateOS 2. The system builds on top of OpenWRT and runs on all RAK WisGate Edge V2 gateways. The guide presents general overview and provides guides and detailed configuration of the gateway. It functions as reference for several products with similar functionality. Thus, some sections will apply to certain products and not others.

### **Gateway Start-up**

To power up the gateway, check the Quick Start guide of the respective device. There are two ways to access the gateway (**Wi-Fi AP Mode** and **WAN Port (Ethernet)**) explained in the corresponding document.

#### **NOTE**

Make sure all the antennas are connected before powering the Gateway.

# Access the WisGateOS 2 Web UI

1. For security reasons, upon first login, the user must set a login password. This is done by filling in the desired password and confirming it in the provided fields.

The password needs to comply with the following rules:

- Should be at least 12 characters long;
- Has at least one special character (!"#\$%&\'()\*+,-./:;<=>?@[]^\_`{|}~);
- Has at least one number;
- Has at least one standard Latin letter (used in the English alphabet).

Wis Gate	
Set your password Before your first login, you need to set a password for your account. Password Confirm password I hereby acknowledge and agree with the Licence Agreement	
Set pässword	Simple access to your gateways Set up, connect, monitor, analyze and run gateways.

Figure 1: First login page

- 2. When the fields are filled in, click the **Set password** button to apply it. The Web UI is now accessible and it will load the **LoRaWAN Statistics** page (Figure 4).
- 3. On the next login, the user needs to use the set password for access. The default login username is root.

Login	
Password Ø	
Login	Simple access to your gateways Set up, connect, monitor, analyze and run gateways.

Figure 2: Login page

### **Web Management Platform**

After the user have entered the correct credentials and logged in the gateway, they can start exploring the configuration and monitoring interface of the device starting with the **LoRaWAN Statistics** page that opens automatically.

#### 📝 NOTE

In WisGateOS 2, the menu names are hidden for esthetic reasons and only the icons are visible.

The user can click on the WisGate logo (WisGate) in the upper left corner to expand the menu on the left and see the full names of the tabs. When the user clicks anywhere else on the page, the menu folds again.



Figure 3: Folded and unfolded sidebar

### Dashboard

This is where statistics about the gateway behavior can be monitored in real time.

### **LoRaWAN Statistics**

The page consists of several blocks where the user can see the overview of some metrics and basic information about the traffic of messages.

### Schementation Center

Gate	CVerview LoRaWAN Statistics	
	RAK7268C       918100KV6020         MODEL       SENAL NUMBER         AC1F09FFFE       NA         EU       NA         AC1F199       REFORTED COORDINATES         MC ADDRESS       S88 MHZ         PCHANNEL       NB 201         NUMBER OF CHANNELS       NB 201         FIM MR 18 11:12:53 2022       DTIME         LOCAL TIME       MISGateOS_2.xmaster         FIRMWARE       Firmware details	Packet capture Record data packets transmitted in the retwork for analysis. Performance Cru ⊙ 28 / 100k UIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
	WAN Interfaces	
	LAN Interfaces       →         DHCP Server       192.168.       255.255.         1º A DOBESS       NETMARK         • Ethernet          • WI-Fi       NO_ENC         RK7268C.       NO_ENC         SUGUESTION       SUGUESTION	
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Figure 4: LoRaWAN Statistics tab

- **Packets** Shows the total number of received and transmitted packets by the gateway (uplinks and downlinks). Here are displayed not only messages from devices connected to the gateway directly but from any device that is within the coverage of the gateway and transmitting LoRa messages.
- End devices Shows the number of end devices within the gateway's coverage that sent data:
  - Active The number of the end devices that have sent data in the past hour.
  - **Busy** The number of the end devices that have sent an average of 1 uplink packet every minute in the past 10 minutes.
- **Channel Usage** Shows the frequency channel load. The green color indicates low load and the red color indicates high load. The user can use the **Timespan** drop-down menu and **Range** scale to set timespan and range for the channel usage to be shown in the graph.
- **SNR & RSSI** These graphs show the total number of packets with RSSI/SNR value within a specific range. This is also shown in a pie chart to the side of the graphs.
- Uplink Traffic Shows the packet per minute rate as a function of time and airtime (sec) per minute. Above the graphs, the user can see the color-coding of the different Data Rates, where the actual height of the values is a sum of all the packets overall data rates for the time sample. The user can set a time span to be shown for the uplink traffic via the Timespan drop-down menu.
- **Downlink Traffic** Shows the packet per minute rate as a function of time and airtime (sec) per minute. Above the graphs, the user can see the color-coding of the different Data Rates, where the actual height of the values

is a sum of all the packets overall data rates for the time sample. The user can set a different time span to be shown for the downlink traffic via the **Timespan** drop-down menu.

### **Overview**

The page consists of several blocks where the user can see information about the gateway model, firmware, WAN and LAN interfaces. In addition, the user can monitor the performance of the gateway or its packet traffic.

Gate	RAK7268C	
2	Overview LoRaWAN Statistics	
	RAK7288C       918100KV6020         MODEL       EENAL NUMBER         MODEL       DENAL NUMBER	Packet capture Record date packets transmitted in the network for analysis. Performance 28 / 1005 ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
	WAN Interfaces	
	Cellular → LAN Interfaces	
	192.168.     255.255.       IN ADDRESS     NETMARK       Ethernet	
) c	2012 RAKwireless Technology Limited. Ali Rights Reserved. WisGateOS 2.0	Privacy Policy - Te

Figure 5: Overview tab

- In the first block, the user can see the general information about the gateway:
  - Model The model of the gateway.
  - Serial number The serial number of the gateway.
  - EUI The Extended Unique Identifier of the gateway. It is used to register the gateway in LoRaWAN Network servers.
  - **Coordinates** Coordinates of the gateway.
  - MAC address The Media Access Control address of the gateway.
  - **Frequency band** The frequency band set on the gateway.
  - Number of channels The number of the channels of the gateway (8-channel/16-channel).
  - **Uptime –** The time the gateway has been working for.

- Local time- The local time set to the gateway\*\*.\*\*
- **Firmware** The details about the firmware version. The **Firmware details** button will redirect the user to the **General settings**, which are explained in the **Settings** menu further down this document.
- Packet capture This is the feature that records data packets transmitted in the network. By clicking the arrow

 $( \rightarrow )$  ), the user will be redirected to the **Gateway Packet Capture** menu.

	Gatewa	iy Packe	et Capt	ure									RAK7268C
	Overview	> RAK7268C											
	00 Pause	session	Download	session	Filter ~								
	TIME	туре 🥐	FREQ.	DEVICE ADDRESS	DEVICE EUI	RSSI	SNR	MODULAT.	CODE RATE	DATE RATE	FRAME COUNT	AIR TIME	
	12:52:23	0	868.3	N/A	55BE0799A2	-36	13.8	LORA	4/5	SF7BW125	N/A	57	i
•	12:52:15	0	868.3	N/A	55BE0799A2	-36	13.8	LORA	4/5	SF7BW125	N/A	57	i
	12:52:09	0	868.3	N/A	55BE0799A2	-36	13.3	LORA	4/5	SF7BW125	N/A	57	i
	12:52:09	$\bigcirc$	868.1	0271C308	N/A	-44	13.8	LORA	4/5	SF7BW125	1080	98	i
	12:52:01	0	868.3	N/A	55BE0799A2	-36	13.5	LORA	4/5	SF7BW125	N/A	57	i
	12:51:54	0	868.5	N/A	55BE0799A2	-36	10.5	LORA	4/5	SF7BW125	N/A	57	i
	12:51:47	0	868.5	N/A	55BE0799A2	-36	10	LORA	4/5	SF7BW125	N/A	57	i
	12:51:01	$\bigcirc$	867.9	0271C308	N/A	-42	13.5	LORA	4/5	SF7BW125	1079	98	i
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Figure 6: Gateway Packet Capture page

#### Gateway Packet Capture menu:

- **Pause/Restart session** The button pauses or restarts the session.
- Download session The button downloads a .json file with packets data in it.
- Filter The button drops-down a filter menu. The Reset filter text, will reset the filter to default. The user can
  filter the packets by:
  - **Type** Type of the packet.
  - Frequency The frequency on which the packet is received/sent.
  - **RSSI** Range of the RSSI.
  - **SNR** Range of the SNR.
  - Device address In the Search Device address field, the user can manually type a device address and the packets sent by that devices will be filtered.
  - Hide CRC\_ERR Packets When enabled, the filter will hide all packets with CRC Error.
- Performance This block shows the CPU load and memory used by the gateway in real time.
- WAN Interfaces Shows the available and active interfaces. Clicking the arrow ( ), will redirect the user to the Network menu that is explained in detail further down this document.
- LAN Interfaces Shows the available and LAN interfaces and the active one. Clicking the arrow ( ), will redirect the user to the Network menu that is explained in detail further down this document.

### LoRa

### Configuration

In the Configuration tab, the user can set the working mode of the gateway. In the **Work mode** setting the user can set the mode to **Packet forwarder**, **Basics station** or **Built-in network server**.

In addition, the user can set the **Log Level** to **Error** (shows only error logs), **Warning** (shows warnings logs), **Notice** (shows notice logs), **Info** (shows all notice, error, and warning logs) or **Debug**\*\* (this is full log, it shows all types of logs, it is used for debugging).

Depending on the chosen mode, the other available settings and tabs change. By default, the gateway is configured to work in **Built-in network server**.

WS Gate	RAK7268C		
::	Overview Configuration	Applications Gateways	
.≞ .∿ ¢	Work mode	Packet forwarder     Basics station     Built-In network server	
*	Log Level	Log Level  NOTICE	
	Frequency Plan	Region EU868 V	
		View detailed regional parameters of the frequency plan.	~ ©
	Protocol	Choose from the available protocols.	~ 0
	Class B Settings	Configure the beacon period and ping slots of class B devices to use time-sync beacons sent by the gateways.	~ 0
	GPS Information	Add your GPS info manually.	~ 0
	Packet Filter	Allows to optimize bandwidth by filtering and forwarding packets from chosen end devices.	~ 0
		Save changes	
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Figure 7: Configuration tab

### **Packet Forwarder Mode Settings**

When you choose **Packet forwarder** work mode, the settings will change to the corresponding ones for this mode. The user can set a packet forwarder and point to a chosen third-party LoRaWAN Network Server.

CO 'PRO' averal la Macinata		RAK7268C		
		Overview Configuration Application	is Gateways	
		Work mode	Packet forwarder     Basics station     Built-in network server	
*		Log Level	Log Level NOTICE	
		Frequency Plan	Region  EU868	
			View detailed regional parameters of the frequency plan.	~ 0
		Protocol	Choose from the available protocols.	~ 0
		Class B Settings	Configure the beacon period and ping slots of class B devices to use time-sync beacons sent by the gateways.	~ 0
		GPS Information	Add your GPS Info manually.	~ 0
		Packet Filter	Allows to optimize bandwidth by filtering and forwarding packets from chosen end devices.	~ 0
			Save changes	
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Figure 8: Packet forwarder settings

• Frequency Plan - Here, the user can change the frequency plan of the gateway. Click on View detailed regional parameters of the frequency plan to expand the options.

For middle band gateways (supporting **RU864**, **IN865**, and **EU868** LoRaWAN regions) and for high band gateways (supporting **US915**, **AU915**, **KR920**, and **AS923** LoRaWAN regions) there are differences in the frequency sub-bands section.

Frequency Plan	Region
	EU868 👻
	View detailed regional parameters of the frequency plan. $\sim$ $\odot$
	Conform to LoRaWAN
	LoRaWAN Public
	$\fbox{868.1 \text{ MHz}} \fbox{868.3 \text{ MHz}} \fbox{868.5 \text{ MHz}} \fbox{867.1 \text{ MHz}} \times \fbox{867.3 \text{ MHz}} \times \fbox{867.5 \text{ MHz}} \times$
	867.7 MHz × 867.9 MHz ×
	Multi-SF LoRa Channel Frequency (MHz)
	868.3 MHz SF 7 BW 250 KHz
	Standard LoRa Channel Frequency (MHz)
	868.8 MHz 50 Kbps $\times$
	FSK Channel Frequency (MHz)
	Add

Figure 11: Frequency plan settings for different LoRaWAN regions

Frequency Plan	Region US915 -
	View detailed regional parameters of the frequency plan. $\sim$ $\oslash$
	Conform to LoRaWAN
	LoRaWAN Public
	Frequency Sub-Band
	Channel
	channel 8 ~ 15, channel 65 🔹

Figure 12: Frequency plan settings for different LoRaWAN regions

- **Region** Here is where the region is set. Note that different hardware supports different LoRaWAN regions.
- **Conform to LoRaWAN** When enabled (by default), the gateway will comply to the LoRaWAN protocol. The user can disable it and set their own channels.

When **Conform to LoRaWAN** is disabled, you can either **Select a template** or manually **Edit** the LoRa channels for each concentrator.

Frequency Plan		
	View detailed regional parameters of the frequency plan.	$\sim$
	Conform to LoRaWAN	
	LoRaWAN Public	
	Select a template	
	You can use existing templates to apply configuration.	
	LoRa Concentrator 0	
	MULTI-SF LORA CHANNEL FREQUENCY (MHZ)	
	867.1 MHz         867.3 MHz         867.5 MHz         867.7 MHz	
	867.9 MHz 868.1 MHz 868.3 MHz 868.5 MHz	
	STANDARD LORA CHANNEL FREQUENCY (MHZ)	
	868.3 MHz SF 7 BW 250 KHz	
	FSK CHANNEL FREQUENCY (MHZ)	
	868.8 MHz 50 Kbps	

Figure 10: Confirm to LoRaWAN is disabled

- Select a template The user have a list of templates for frequency plans to choose from depending on the LoRaWAN region that the gateway supports.
- Edit button Clicking the button will redirect the user to the LoRa Concentrator settings, where they can set custom channels.

LoRa Concentrator 0 - settings							
Radio 0 Center Frequency (Mhz) 867.5 Channels Each LoRa Concentrator supports up to	Radio 1 Center Frequency (Mhz) 868.5 o eight MultiSF channels, one standard LoF	Minimum TX frequency (Mhz) 863 ta channel, and one FSK channel.	Maximum TX frequency (Mhz) 870				
FREQUENCY - 867.1 MHZ	Radio 0 🔻	IF Bandwidth -400000 125 KHz	Data Rate All SF				
MultiSF 1 FREQUENCY - 867.3 MHZ	Radio 0 👻	IF Bandwidth -200000 125 KHz	Data Rate All SF				
MultiSF 2 FREQUENCY - 867.5 MHZ	Radio 0 🔻	IF Bandwidth 0 125 KHz	Data Rate All SF				
Confirm Ca	incel						

Figure 9: LoRa Concentrator settings

- Radio 0 Center Frequency (Mhz) The center frequency for radio 0.
- Radio 1 Center Frequency (Mhz) The center frequency for radio 1.
- Minimum TX frequency (Mhz) The minimum frequency for transmission.
- Maximum TX frequency (Mhz) The maximum TX frequency for transmission.

- **Channels** The user can enable/disable channels with the corresponding switch. In the **Radio** field, the user can select what radio the channel must use. In the **IF** field, the difference of the frequency of the selected radio center frequency in kHz is written.
- **LoRaWAN Public** When enabled (by default), the gateway will process data from all end devices. If you want to create a private network, you can turn it off. The gateway will process the data only from the end devices, which sync word is changed to private.
- Additional for the middle band gateways (supporting RU864, IN865, and EU868 LoRaWAN regions) Under the LoRaWAN Public switch, the user sees the default channels and can remove them by clicking on the X next to each.
  - Multi-SF LoRa Channel Frequency (MHz) The user can add a frequency for the Multi-SF LoRa channel.
  - Standard LoRa Channel Frequency (MHz) The user can add a frequency for the standard LoRa channel.
  - FSK Channel Frequency (MHz) The user can add a frequency for the FSK channel.
- Additional for the high band gateways (supporting US915, AU915, KR920, and AS923 LoRaWAN regions) Under the LoRaWAN Public switch, the user sees the Frequency Sub-band section. From the drop-down menu, the user can choose sub-bands to use for the uplink traffic.
- **Protocol** Here, click on **Choose from the available protocols** and expand the options, the user can choose which protocol to use as well as the **Static Interval (sec)** (the time interval of how often statistics are pushed to the server).
- Semtech UDP GWMP Protocol Choosing this option will give the user the ability to set UDP Protocol Parameters.
  - Server address The address of the LoRa Network Server (LNS).
  - Server Port Up/Down The ports of the LoRa Server that are going to be used for inbound and outbound traffic.
  - Push Timeout (sec) The time delay for the server response after sending uplink data.
  - **Keepalive Interval (sec)** The interval of which the gateway sends data to make sure that the server is aware that the gateway is online.
  - Auto-restart Threshold This variable defines how many times the Keepalive Interval can expire before the Packet Forwarder restarts.

Protocol						
	Choose from the availab	e protocols.		^ 🖸		
	Protocol					
	Semtech UDP GWM	IP Protocol				
	LoRa Gateway MQT	T Bridge				
	Statistic Interval (s) 30					
	Sarver Address					
UDP Protocol Parameters	rak.eu1.cloud.thethings.industries					
	Server Port Up	Server Port Down				
	1700	1700				
	Push Timeout (ms)	Keepalive Interval (s)				
	200	5				
	Auto-restart Treshold					
	30					

Figure 13: UDP Protocol Parameters

- LoRa Gateway MQTT Bridge Choosing this option will give the user the ability to set LoRa Gateway MQTT Bridge Parameters.
  - MQTT Protocol From the drop-down menu, the user can choose the MQTT protocol of the MQTT bridge (MQTT for Built-in LoRa Network Server, MQTT for ChirpStack 2.x, MQTT for ChirpStack 3.x (JSON) or MQTT for ChirpStack 3.x (Protobuf)). Note that the MQTT topics change depending on the chosen protocol.
  - **MQTT Broker Address** The IP address of the gateway where the MQTT Broker is hosted.
  - **MQTT Broker Port** The corresponding port (default port is 1883).
  - **MQTT Protocol Version -** You can choose between V3.1 and V3.1.1. There is very little difference between them, more information can be found here 🖸 .
  - QoS You can set the desired Quality of Service level.
  - Keepalive Interface (sec) The keepalive interval in seconds (10 default).
  - **Clean Session** When this function is enabled, the Broker will not store any subscription information or undelivered messages.
  - Retain When this function is enabled, the last message published will be retained.
  - Enable User Authentication This function enables user authentication via username and password.
  - SSL/TLS Mode When enabled (disabled by default), you can choose between three modes CA signed server certificate, Self-signed server certificate, and Self-signed server & client certificate, with their corresponding options.
  - Uplink/Downlink/Downlink Acknowledge/Gateway Statistic Topic MQTT template topics. These topics cannot be changed.

Protocol			^	0
	Choose from the available protocols.			
	Protocol			
	Semtech UDP GWMP Protocol			
	LoRa Gateway MQTT Bridge			
	Statistic Interval (s)			
	30			
LoRa Gateway MQTT Bridge	MQTT Protocol			
Parameters	MQTT for Build-in LoRa N	Network Server 👻		
	MQTT Broker Address			
	127.0.0.1			
	MQTT Broker Port	MQTT Version		
	1883	v3.1 👻		
	QoS	Keepalive Interval (s)		
	1 - At Least Once 💌	10		
	Clean session	Retain		
	Enable User Authen	tication		
	SSL/TLS Mode			
	None	•		

Figure 14: LoRa Gateway MQTT Bridge Parameters

- Class B Settings Here, the user can enable/disable the class B beaconing. Click on Configure the beacon
  period and ping slots of class B devices to use time-sync beacons sent by the gateways to expand class
  B settings.
  - Enable Beacon Enables the class B beacon.
  - Beacon Tx Power The power for transmitting the beacon ping.

Class B Settings	Configure the beacon period and ping slots of class B devices to use time-sync beacons sent by $\land \oslash$ the gateways.
	Beacon Tx Power 16

Figure 15: Class B Settings

• **GPS Information** Here, the user can set fake GPS coordinates (disabled by default). Click on **Add your GPS info manually** to expand the GPS settings and enable **Fake GPS** with the switch.

GPS Information	Add your GPS info manually.		∧ Ø
	Fake GPS		
	Latitude	Longitude	
	48.507925	-35.087627	
	Altitude 50		



- Packet Filter Here, the user can set a filter for the packets from chosen devices (disabled by default). Click on Allows to optimize bandwidth by filtering and forwarding packets from chosen end devices to expand packet filter settings. If White List Mode and Auto Filter are enabled, the user have the options:
  - **OUI** This is white list filtering option to filter by Organizationally Unique Identifier of the end device.
  - Network ID This is a white list filtering option to filter by Network ID.
  - Discard Period (s) This is a period threshold of discard time for nodes (in seconds).
  - Join Period (s) This is a period threshold of Statistics on the latest join request (in seconds).
  - Join Interval (s) This is a time interval threshold of the same device EUI twice-consecutive join request (in seconds).
  - Join Count 1 This is the maximum count of join requests allowed during Join Interval.
  - Join Count 2 this is the maximum count of join requests allowed during the Join Period.

### **Basics Station Mode Settings**

When the **Basics station** work mode is chosen, the corresponding settings pop up replacing the ones for other work modes.

COTPRO Decenter Marches	RAK7268C
	Overview Configuration Applications Gateways
■ ☆ *	Work mode     Packet forwarder <ul> <li>Basics station</li> <li>Built-In network server</li> </ul> <ul> <li>Log Level</li> <li>Log Level</li> <li>Log Level</li> <li>Log Level</li> <li>TOTICE</li> <li> </li></ul>
	Basics station server setup Configure Basics Station server setup.
	Save changes
<b>e</b>	©2022 RAKwireless Technology Limited, All Rights Reserved. WisGateOS 2.0 Privacy Policy - Terms and Conditions

Figure 17: Basics station settings

• To expand the **Basics station server setup** menu, the user needs to click on **Configure Basics Station** server setup.

Gate	RAK7268C	
	Overview Configuration Applications Gate	ways
₩ ☆ ★	Work mode Pac Bas Log Level Log Level	eet forwarder cs station -in network server E
	Basics station server setup Configur	e Basics Station server setup.
	s	we changes
2	@2022 RAKwireless Technology Limited. All Rights Reserved. WisGateOS 2.0	Privacy Policy - Terms and Conditions

Figure 18: Basics station server setup

- Basics Station Server Type The user can choose between CUPS-BOOT Server, CUPS Server, LNS Server.
- Server URL The address of the server to which the gateway is going to connect.
- Server Port This is the corresponding port of the server.
- Authentication Mode The user can choose between four options with their corresponding fields:
  - No Authentication The server requires no authentication.
  - TLS Server Authentication The server requires a trust file for authentication.
  - TLS Server and Client Authentication The server requires trust, certificate, and key files for authentication.
  - TLS Server Authentication and Client Token The server requires a trust file and a client token.

### **Built-in Network Server Mode Settings**

When the **Built-in network server** work mode is chosen, the corresponding settings pop up replacing the ones for other work modes.

CO "PRO" anne 2 march and	RAK7268C	
<u> </u>	Overview <b>Configuration</b> Applications Gateways	
₽ -:	Work mode Packet forwarder Basics station Built-in network server	
*	Log Level    Log Level  NOTICE	•
	Frequency Plan           Region           EU868	
	View detailed regional param	ters of the frequency plan.
	Network Server Parameters Network server parameters a section is required for filling-h	e used to configure general setup for your LoRa built-in server. This 🛛 🗸 💿
	Gateway backend Configure the Gateway Backer MQTT.	nd to allow the central gateway and extenders to communicate via $\sim$ $\oslash$
	Class B Settings Configure the beacon period the gateways.	nd ping slots of class B devices to use time-sync beacons sent by 🛛 🗸 📀
	Integration Interface Parameters Configure the Integration Inte	face to forward all received data to an external network server.
	Save changes	
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Figure 19: Built-in network server settings

• Frequency Plan - Here, the user can change the frequency plan of the gateway. Click on View detailed regional parameters of the frequency plan to expand the options.

For middle band gateways (supporting **RU864**, **IN865**, and **EU868** LoRaWAN regions) and for high band gateways (supporting **US915**, **AU915**, **KR920**, and **AS923** LoRaWAN regions) there are differences in the frequency sub-bands section.

WIS Gate	RAK7268C	
::	Overview Configuration Applications Gateways	
.≟ .∿ ≎	Work mode Packet forwarder Basics station Built-in network server	
*	Log Level NOTICE -	
	Frequency Plan Region EU868 -	
	View detailed regional parameters of the frequency plan.	~ 0
	Network Server Parameters Network server parameters are used to configure general setup for your LoRa built-in server. This section is required for filling-in.	~ 0
	Gateway backend Configure the Gateway Backend to allow the central gateway and extenders to communicate via MQTT.	~ 0
	Class B Settings Configure the beacon period and ping slots of class B devices to use time-sync beacons sent by the gateways.	~ 0
	Integration Interface Parameters Configure the Integration Interface to forward all received data to an external network server.	• •
	Save changes	
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Figure 20: Frequency plan settings for different LoRaWAN regions

- **Region** Here is where the region is set. Note that different hardware supports different LoRaWAN regions.
- LoRaWAN Public When enabled (by default), the gateway will process data from all end devices. If you
  want to create a private network, you can turn it off. The gateway will process the data only from the end
  devices, which sync word is changed to private.
- Additional for the middle band gateways (supporting RU864, IN865, and EU868 LoRaWAN regions) -Under the LoRaWAN Public switch, the user sees the default channels and can remove them by clicking on the X next to each.
  - Multi-SF LoRa Channel Frequency (MHz) The user can add a frequency for the Multi-SF LoRa channel.
  - Standard LoRa Channel Frequency (MHz) The user can add a frequency for the standard LoRa channel.
  - FSK Channel Frequency (MHz) The user can add a frequency for the FSK channel.
- Additional for the high band gateways (supporting US915, AU915, KR920, and AS923 LoRaWAN regions) Under the LoRaWAN Public switch, the user sees the Frequency Sub-band section. From the drop-down menu, the user can choose sub-bands to use for the uplink traffic.
- Network Server Parameters The user needs to click on Network server parameters are used to configure general setup for your LoRa built-in server. This section is required for filling-in. to expand the settings menu.

Network Server Parameters	Network server parameters section is required for filling-	are used to configure general -in.	setup for your LoRa built-in server. This	~ •
	Network ID			
	Enable ADR			
	Min Allowed TX Data Rate	Max Allowed TX Data Rate	ADR Margin (dB)	
	DR_0 SF12 BW1 👻	DR_7 FSK 50Kb 👻	5	
	Rx1 Delay (s)	RX1 Data Rate Offset		
	1	0 -		
	RX2 Frequency (MHz)	RX2 Data Rate		
	869.525	DR_0 SF12 BW1		
	Downlink Tx Power (dBm)			
	20 -			
	Disable Frame-coun	ter Validate		
	End device-status request interval(s)	Statistic Interval (s)		
	0	600		

Figure 21: Network Server Parameters

- Network ID This is a decimal number to distinguish between networks if the user is deploying multiple ones.
- **Enable ADR** The switch enables/disables Adaptive Data Rate. The built-in server will optimize the data rates, airtime, and energy consumption in the network depending upon the prevailing channel conditions.
- Minimum/Maximum Allowed TX Data-Rate DR0 to DR7 can be selected to limit the ADR possible values range. Depends on the Region.
- ADR Margin (dB) This is visible only when ADR is enabled. It is a value to keep in dB to make sure that the
  data rate is not overestimated resulting in poor performance (error rate and range).
- Rx1 Delay (s) This is the delay of the first receive window in seconds.
- RX1 Data Rate Offset This determines the data rate of the downlink frames originating from the Gateway for the Rx1 window. By default, it is 0 – identical to the uplink.
- RX2 Frequency (MHz) This is the frequency of the second receive window in Hz.
- RX2 Data Rate The Data Rate of the frames to be sent in the second receive window.
- Downlink Tx Power (dBm) It is useful, if you want to use a larger antenna with more gain. Values from -6 to 20 are permissible.
- Disable Frame-counter Validate this function turns on/off the Frame counter validation.
- End device-status request interval (s) This shows how often should the end-devices be polled for their status Log Level.
- Statistic Interval (sec) This shows how often the statistics will be gathered.
- Gateway backend To extend the settings field, the user needs to click on Configure the Gateway Backend to allow the central gateway and extenders to communicate via MQTT.

Gateway backend	Configure the Gateway Backend to allow the central gateway and extenders to communicate via $\land$ <a> MQTT.</a>
	MQTT Broker Address
	127.0.0.1
	MQTT Broker Port MQTT Version
	1883 3.1 -
	QoS Keepalive Interval (s)
	1 - At Least Once 👻 10
	Clean session Retain
	Enable User Authentication
	gateway/{{eui}}/rx
	Downlink Topic
	gateway/{{eui}}/tx
	Downlink Acknowledge Topic
	gateway/{{eui}}/ack
	Gateway Statistic Topic
	gateway/{{eui}}/stats

Figure 22: Gateway backend

- **MQTT Broker Address** The IP address of the machine where the MQTT Broker is hosted (default is 127.0.0.1 for the built-in one).
- MQTT Broker Port The corresponding port (default port is 1883).
- MQTT Protocol Version You can choose between V3.1 and V3.1.1. There is very little difference between them, more information can be found here □ .
- **QoS** You can set the desired Quality of Service level. More information about QoS can be found here  $\square$  .
- Keepalive Interval (s) The keepalive interval in seconds (10 default).
- Clean session When this function is enabled (disabled by default), the Broker will not store any subscription information or undelivered messages.
- Retain When this function is enabled (disabled by default), the last message published will be retained.
- Enable User Authentication This function enables Encryption of the transmitted data (disabled by default). The user needs to configure the credentials (username and password) used to encrypt the data to secure authentication being performed.
- SSL/TLS Mode When this mode is enabled (disabled by default), you can choose between three modes CA signed server certificate, Self-signed server certificate, Self-signed server & client certificate, with their corresponding options.

- Uplink/Downlink/Downlink Acknowledge/Gateway Statistic Topic These are MQTT topic templates. They
  cannot be changed.
- Class B Settings Here. the user can enable/disable the class B beaconing. To expand the menu, click on Configure the beacon period and ping slots of class B devices to use time-sync beacons sent by the gateways.

Class B Settings	Configure the beacon period and ping slots of class B devices to use time-sync beacons sent by the gateways.
	PingSlot Channel Frequency     PingSlot Datarate       923.3     DR_8 SF12 BW5 ▼
	Enable Hopping Beacon Tx Power 27

Figure 23: Class B Settings

- Enable Beacon The switch enables/disables Class B beaconing.
- PingSlot Channel Frequency The frequency used for the beacon ping.
- PingSlot Datarate The minimum duration of each beacon ping slot.
- **Enable Hopping** Enables/disables Class B hopping as the class B beacon is transmitted following a frequency hopping pattern.
- Beacon TX Power This is the transmit power of the beacon ping.
- Integration Interface Parameters Here, the user can configure an integration to an external server. To expand the menu, the user needs to click on Configure the Integration Interface to forward all received data to an external network server. The settings change depending on the chosen Integration mode.

Integration Interface Parameters	Configure the Integration Interface to forward all received data to an external network server. $\sim$ $\oslash$
	Enable Integration Interface
	Integration mode
	Generic MQTT AWS IoT Core
	MQTT Broker Address
	127.0.0.1
	MQTT Broker Port MQTT Version
	1883 v3.1 👻
	QoS Keepalive Interval (s)
	1 - At Least Once 💌 10
	Clean session Retain
	Enable User Authentication
	SSL/TLS Mode
	None 👻
	Join Topic
	application/{{application_name}}/device_{{device_EUI}}/join
	Uplink Topic
	application/{{application_name}}/device/{{device_EUI}}/rx
	Downlink Topic
	application/{{application_name}}/device/{{device_EUI}}/tx
	··· - ·· ·· - ··
	Downlink Acknowledge Topic
	approauou/(approauou_name)//device_LOI}//ack
	Status Topic
	application_fapplication_name}//device_fature_EUI}/status

Figure 24: Integration Interface Parameters

- Enable Integration Interface This switch enables the Integration Interface switch enables/disables the integration.
- Generic MQTT integration mode:
  - **MQTT Broker Address** The IP address of the machine where the MQTT Broker is hosted (default is 127.0.0.1 for the built-in one).
  - **MQTT Broker Port** The corresponding port (default port is 1883).
  - **MQTT Protocol Version** You can choose between V3.1 and V3.1.1. There is very little difference between them, more information can be found here 2.
  - QoS You can set the desired Quality of Service level. More information about the QoS can be found here ⊡
  - Keepalive Interval (s) The keepalive interval in seconds (10 default).
  - Clean session When this function is enabled, the Broker will not store any subscription information or undelivered messages.
  - Retain When this function is enabled, the last message published will be retained
  - Enable User Authentication This function enables user authentication via username and password.
  - SSL/TLS Mode When this mode is enabled (disabled by default), you can choose between three modes
     CA signed server certificate, Self-signed server certificate, with

their corresponding options.

- **Join/Uplink/Downlink/Downlink Acknowledge/Status Topic** These are MQTT topic templates. They cannot be changed.
- AWS IOT Core integration mode:
  - AWS IOT Core endpoint URL This is the address of the AWS.
  - AWS IoT Core endpoint Port The corresponding port of the server.
  - Root CA CA certificate provided by the AWS IoT Core.
  - Certificate Certificate for the gateway, generated by AWS IoT Core.
  - **Key** Private key for the gateway, generated by AWS IoT Core.

### **Applications**

In this tab, the user can create an application and register end devices in the Built-in Network Server. By default, there will be no created Applications. Note that this tab is available only when the gateway is in Built-in Network Server working mode.

Gate	RAK7268C	Add application
	Overview Configuration Applications	Gateways
□ ~		
ø		
*		
		You haven't added any applications yet. You may choose to add one now
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Figure 25: Applications tab

### Gateways

In this tab, the user can add **extender** gateways to work with the LNS. The current gateway do not need to be added as the Network Server is working on it and it acts as the **central** gateway. Note that this tab is available only when the gateway is in Built-in Network Server working mode.

Wis Gate	RAK7268C	Add extender gateway
::	Overview Configuration Applications Gateways	ys
±		
¢		
*		
		0 0 0 0
	Y	You haven't added any extender gateways yet. You may choose to add one now
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Figure 26: Gateways tab

### **Overview**

In this tab, the user can see information about the end devices and traffic going thru the extender gateways and the central gateway. Note that this tab is available only when the gateway is in Built-in Network Server working mode.

Gate	RAK7268C
	Overview Configuration Applications Gateways
4	SNR & RSSI 🔊
	TOTAL DOWNLINK TOTAL UPLINK Packets
	1 0 2
	CATEMATS         LIND DEVICES           0         0           10TAL OTAA REQUESTS         0           4-415         4-415           4-415         4-415           4-415         4-415           5NR (68)
	35m 55s 5 5 4 4
	, 0 ←-140 ←-122 ←-120 ←80 ←80 ←40 >40 =5551 (dBm)
	Traffic History ①
	FILTER • Uplink • Downlink
	Packets 4
	3 
	1
	° oelis oeis oeis oris oris oris oelis o
	DataRate 💿
	Packets
	1 DATA BATE
	DRO DRI DR2 DR3 DR4 DRS DRS DR7
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Figure 27: Overview tab

- In the first block, the user can see information about the traffic and the end devices of the central gateway and all extender gateways if any.
  - Total Downlink Total downlink frames transmitted.
  - Total uplinks Total uplink frames transmitted.
  - **Gateways** The total amount of extender gateways that are forwarding frames to the built-in server plus the central one.
  - End Devices The total amount of end-devices that are currently authenticated with the server.
  - Total OTAA Requests The total authentication requests submitted by end-nodes.
  - Rejected OTAA Request The total authentication requests that were rejected.
  - Uptime The time the built-in server has been working without interruption.
- SNR & RSSI In the SNR & RSSI block, the user can see information about the Signal to Noise Ratio (SNR) and Received Signal Strength Indicator (RSSI) of the packets in a grapf form.
- Traffic History This block shows a general graph of the amount of traffic in packets versus time.
- DataRate In this block, the user can see the number of packets as per Data Rate (DR0 to DR7).

### Network

In the Network menu, the user can do changes on the **WAN** (Wide Area Network) and **LAN** (Local Area Network) interfaces. The WAN menu contains the interfaces for communication with the Internet. The LAN menu contains the interfaces for the local networking.

### WAN

In the WAN menu, the user can change the priority of the WAN interfaces. If the highest priority interface goes down, the next in line will be used to access the Internet. The red/green light on the left of the WAN interface name shows if that interface is available.

Gate	Network	
::	WAN LAN	
	PRIMARY Set Mary	
~ o	Ethernet ~	
*	SECONDASY	
	• Wi-Fi ~	
	Тніяр	
	Cellular	
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Figure 28: WAN tab

To rearrange the default order click on the Change priority button. The priority is changed with the arrows left of

the interface name( ). The arrow pointing up will increase the priority, and the arrow pointing down – will lower it. To save the changes, you need to click on **Save priorities**.

Via Gate	Network	
	WAN LAN	_
≜ ≁	The second secon	Save priorities Cancel
o *	SECONDARY	
	<ul> <li>⊕ ④ ● Wi-Fi</li> </ul>	~
	THIRD	~
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Figure 29: Editing WAN interface's priority

The user can expand each interface window by clicking on the name of the interface or the arrow on the left of the interface (  $\checkmark$  ).

• Ethernet - The user can see information about the selected interface. There is also a Settings button which redirects to the selected interface's settings.

DHCP client	192.168. IP ADDRESS	255.255. NETMASK	14h 50m 33s connection time	
8.1 MB (101840 Pkts.)	<b>18.1 MB</b> (64996 Pkts.) ⊤×	8.8.8.8 8.8.4.4		
		202		

#### Figure 30: Ethernet

- **Protocol client** The type of the protocol.
- IP Address The address assigned to the gateway.
- **Netmask** The netmask of the gateway.
- Connection time The time of the gateway's connection to that interface.
- **RX** Packets received.
- TX Packets sent.
- **DNS** DNS server addresses.
- Ethernet settings General tab

WSGate	Ethernet settings	
::	③   Network → Ethernet Settings	
	General Tracking	
÷.		
^ ★	Interface	Enable WAN and disable LAN
0 *	Protocol	Static address DHCP client PPPoE
		Use DNS servers advertised by router
		Save
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Figure 31: Ethernet settings General tab

- Interface When switched on, this option enables the WAN and disables the LAN interface.
- **Protocol** The user can choose the type of the protocol. By default, DHCP client is selected.

- Static address The user can set a static address for the gateway.
  - IPv4 Address The desired static address of the gateway in IPv4.
  - IPv4 Netmask The netmask of the gateway in IPv4.
  - **IPv4 Router** The address of the router in IPv4.
  - DNS Server Custom DNS server address.
- DHCP client The router's DHCP server will assign an IP to the gateway. The Use DNS server advertised by router switch allows the gateway to assign DNS address from the router. If the user wants to use custom one, they need to disable it.
- PPPoE The user can set Point-to-Point Protocol over Ethernet, with username and password provided by the internet provider. The DNS server advertised by router switch allows the gateway to assign DNS address from the router. If you want to use custom one, you need to disable it.
- Ethernet settings Tracking tab Here, the user can set up continuous tracking of the interface to automatically switch the gateway to the next available interface when the current interface is no longer stable.

WIS Gate	Ethernet settings	
::	O   Network ⇒ Ethernet Settings	
	General Tracking	
÷.		
^ ∽	Tracking 🕝	(88.8.8 ×) (208.67.220.220 ×) (114.114.114.114.114 ×)
*		
		Relability (?)
		Ping count     Ping timeout (s)     Ping interval       1     2     5 seconds
		Down         ①         Up         ①           3         8         8
		Save Close
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Figure 32: Ethernet settings Tracking tab

- $\circ~$  IP The user can add an IP address to send the ping test.
- Reliability The added minimum number of IP addresses that must respon to confirm a successful ping test.
- **Ping count** Counter of the pings.
- **Ping timeout (s)** Timeout of the pings.
- **Ping interval** The ping interval.
- **Down** The number of the ping test that must fail consecutively to confirm the interface is down.
- Up The number of the ping test that must fail consecutively to confirm the interface is up.
- Wi-Fi The user can see information about the selected interface. There is also a **Settings** button which redirects to the selected interface's settings.

N/A	N/A	N/A	N/A	
protocol type	IP ADDRESS	Netmask	connection time	
N/A	N/A	N/A	N/A	
CHANNEL	(E)SSID	BSSID ?	Bitrate	
N/A DNS				

Figure 33: Wi-Fi

- **Protocol Type** The type of the protocol.
- **IP Address** The IP assigned to the gateway.
- $\circ \hspace{0.1 cm} \textbf{Netmask} \textbf{The netmask assigned to the gateway}.$
- **Connection time** The time the gateway is connected to the Wi-Fi interface.
- Channel This field shows which operating frequency will be used.
- **(E)SSID** The SSID of the Wi-Fi network.
- **BSSID** The MAC address of the wireless access point or a router in the wireless network.
- Bitrate The bitrate of the wireless network.
- Wi-Fi settings General tab Here, the user can set a connection to the wireless network.

₩5 Gate	Wi-Fi settings		
::	③   Network > Wi-Fi settings		
<b></b>	General Tracking		
*	Interface	Enabled Disabled	
Ŷ		Available (E)SSID networks	
*		Scan	
		Click scan to find available Wi-Fi networks or enter network (EISSID manually,	
		Farmelia	
		No Encryption	
	Protocol	Static address DHCP client	
		Use DNS servers advertised by router	
		If disabled, the advertised DNS server addresses will be ignored.	
		Save	
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#### Figure 34: Wi-Fi settings General tab

- Interface
  - Enabled/Disabled The user can turn the interface on/off.

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- Available (E)SSID networks The Scan button scans for available wireless networks. The user can select the desired network or enter it manually.
- Encryption The user can choose what encryption the wireless network uses and type in the password in the Key field. The options are No Encryption, WPA-PSK, WPA2-PSK, and WPA-PSK/WPA2-PSK Mixed Mode (recommended).
- Protocol The user can set a static IP address for the gateway or let the router's DHCP address to assign one.
  - Static address Here, the user can set a static address for the gateway.
    - IPv4 Address The desired static address of the gateway in IPv4.
    - IPv4 Netmask The netmask of the gateway in IPv4.
    - IPv4 Router The address of the router in IPv4.
    - DNS Server Custom DNS server address.
  - DHCP client The router's DHCP server will assign IP to the gateway.
    - Use custom DNS server When disabled, the DNS server addresses advertised from the router will be ignored.
    - DNS Server The user can add custom DNS.
- Wi-Fi settings Tracking tab Here, the user can set up continuous tracking of the interface to automatically switch the gateway to the next available interface when the current interface is no longer stable.

Gate		
	General Tracking	
~ ~ *	Tracking 💿	88.8.8 ×       208.67.220.220 ×       114.114.114 ×         p       T         Add         Refability       T         1       Even thread (a)         Pero interval
		1     2     5 seconds       Down     0     0       3     8
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Figure 35: Wi-Fi settings Tracking tab

- IP The user can add IP address to send the ping test.
- Reliability The added minimum number of IP addresses that must respond to confirm a successful ping test.
- Ping count The counter of the pings.
- **Ping timeout (s)** timeout of the pings.
- **Ping interval** The ping interval.
- **Down** The number of the ping test that must fail consecutively to confirm the interface is down.
- Up The number of the ping test that must fail consecutively to confirm the interface is up.
- **Cellular** The user can see information about the selected interface. There is also a **Settings** button which redirects to the selected interface's settings.

N/A ICCID	N/A	N/A connection time	
Card is absent SIM CARD STATUS			

Figure 36: Cellular

- ICCID The Integrated Circuit Card Identifier.
- IMEI The International Mobile Equipment Identity.
- Connection time The time the gateway was connected to the interface.
- SIM Card Status The status of the SIM card.
- Cellular settings General tab Here, the user can set a cellular connection.

Wis Cate	Cellular settings	
	O     Metwork → Collular Settings	
m	General Tracking	
ė.		
∿	LTE Network Enabled Disabled	
٥		
*	APN	
	User (optional)	
	Password (optional)	
	PIN code (optional)	
	Save Close	
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Figure 37: Cellular settings General tab

- Enable/Disable The user can enable/disable the interface.
- **APN** The Access Point Name.

- User (optional) Username used for authorization (leave empty if there is none).
- Password (optional) Password used for authorization (leave empty if there is none).
- PIN code (optional) The PIN code of the SIM Card (leave empty if there is none).
- Cellular settings Tracking tab Here, the user can set up continuous tracking of the interface to automatically switch the gateway to the next available interface when the current interface is no longer stable.

Will Gate	Cellular settings	
<ul> <li>▲</li> <li>●</li> <li>●</li></ul>	Tracking ①              8.8.8.8 × 208.67.220.220 × 114.114.114.114 ×             IP             ①	
	Down T Up T 3 8 Close	
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Figure 38: Cellular settings Tracking tab

- IP The user can add IP address to send the ping test.
- Reliability The added minimum number of IP addresses that must respond to confirm a successful ping test.
- Ping count Counter of the pings.
- Ping timeout (s) Timeout of the pings.
- **Ping interval** The ping interval.
- **Down** The number of the ping test that must fail consecutively to confirm the interface is down.
- Up The number of the ping test that must fail consecutively to confirm the interface is up.

### LAN

In the LAN tab, the user can see and edit information about the Local Area Network.

The red/green light on the left shows if the interface is enabled/disabled. You can expand each LAN interface window, by clicking on its name or the arrow on the right (  $\checkmark$  ) of the interface.

WIS Gate	Network	
<b>::</b> 	WAN LAN	
.≟ .∿	DHCP Server ~	
0 *	• Ethernet ~	
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#### Figure 39: LAN tab

#### DHCP Server

DHCP Server		
192.168. IP ADDRESS	<b>255.255.</b> Netmask	
Settings		
Network interface preference	or DHCP server.	

Figure 40: DHCP Server

- IP Address The IP address of the gateway DHCP server.
- Netmask The netmask of the DHCP server of the server.
- The **Settings** button redirects you to the LAN DHCP settings.
- **DHCP Settings** Here, the user can change the **IPv4 address** of the LAN DHCP server.

WS Gate	Gate DHCP settings	
::	B O   Network → DHCP Settings	
	General	
÷.	A	
-∿ <b>∽</b>	✓ IPv4 Address 192.168. 230 .1	
*	* Netmask 255.255.	
	Save Close	
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• Ethernet - The field only shows if the interface is active. The Settings button redirects you to the LAN Ethernet settings.

• Ethernet		^
Settings Network interface and Tracking preferences for		
ethernet mode.	 	

#### Figure 42: Ethernet

• Ethernet settings - Here, the user can enable the LAN Ethernet interface and disable the WAN Ethernet interface.

WsGate	Ethernet settings
::	() > Network → Ethernet Settings
	General
÷.	
4	Interface Enable LAN and disable WAN
•	
Ĩ	
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Figure 43: Ethernet settings

• Wi-Fi

(E)SSID	NO_ENC Encryption	
Settings		

#### Figure 44: Wi-Fi

- (E)SSID SSID of the Access Point (AP) of the gateway.
- **Encryption** Encryption of the AP.
- $\circ~$  The Settings button redirects you to the LAN Wi-Fi settings.
- Wi-Fi settings Here, the user can manage the LAN Wi-Fi settings.

Wis Gate	Wi-Fi settings		
	C Network VVI-Fill settings		
.≟ ≁	Interface	Enabled Disabled	
0 #		Channel Auto ~	
		Available network (E)SSID RAK7268CV2_2512	
		Encryption   No Encryption  Hide (E)SSID	
		Save Close	
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Figure 45: Wi-Fi settings

- Enabled/Disabled Enables/disables the LAN Wi-Fi interface.
- Channel The user can set a channel for the Wi-Fi. Default is Auto, the gateway will automatically choose a channel.
- (E)SSID The name of the AP.
- Encryption The user can set an encryption of the AP with a password written in the Key field. The options are No Encryption, WPA-PSK, WPA2-PSK, and WPA-PSK/WPA-PSK2 Mixed Mode (recommended).
- $\circ$  Hidden The user can hide the AP.

### **Diagnostics**

In the **Diagnostics** menu, the user can review the logs on the gateway and perform checks.

### System log

On this page, the user can see the complete system logs. It is mainly used for debugging purposes. The System Log reports both system information and actual data from LoRa frames coming from the end nodes.

At the top right corner there is the **Auto Refresh** button. Depending on the state (ON or OFF) the auto-refresh will be enabled or disabled.

System log       Mount utilities	Wis Gate	Diagnostics	
<pre>Main Set Set Set Set Set Set Set Set Set Set</pre>	::	System log Network utilities	Auto refresh
<ul> <li>Note Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; # CR_0K: 0.00%, CR_FAL: 0.00%, ND_CRC: 0.00%</li> <li>Wed Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; # BP packets forvarded: 0 (0 bytes)</li> <li>Wed Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; # DUSt_DATA datagrams set: 1 (125 bytes)</li> <li>Wed Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; # DUSt_DATA datagrams set: 1 (125 bytes)</li> <li>Wed Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; # DUSt_DATA datagrams received: 0 (0 bytes)</li> <li>Wed Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; # DUSt_DATA atomicedged; 0.00%</li> <li>Wed Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; # DULL_DATA set: 6 (100.00% acknowledged)</li> <li>Wed Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; # DULL_DATA set: 6 (0 bytes)</li> <li>Wed Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; # DULL_DATA set: 6 (0 bytes)</li> <li>Wed Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; # DULL_DATA set: 6 (0 bytes)</li> <li>Wed Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; # TX errors: 0</li> <li>Wed Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; # TX errors: 0</li> <li>Wed Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; # TX errors: 0</li> <li>Wed Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; # TX errors: 0</li> <li>Wed Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; # TX errors: 0</li> <li>Wed Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; # TX errors: 0</li> <li>Wed Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; # TX errors: 0</li> <li>Wed Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; # EACON set to far: 0</li> <li>Wed Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; ## [DTI] ##</li> <li>Wed Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; ## [DTI] ##</li> <li>Wed Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; ## [DTI] ##</li> <li>Wed Mar 0 00:43:00 2022 user.notice lorg_kt_fnd[933]; ## [DTI] ##</li> <li>Wed Mar 0 00:43:</li></ul>	m		
<ul> <li>Wed Mar 9 00:43:00 2022 user.notice lora_kt_fw1933); # R packets forwarded: 0 (0 bytes)</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_kt_fw1933); # R packets forwarded: 0 (0 bytes)</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_kt_fw1933); # R packets forwarded: 0 (0 bytes)</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_kt_fw1933); # R packets forwarded: 0 (0 bytes)</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_kt_fw1933); # R packets sent 1 (122 bytes)</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_kt_fw1933); # R packets sent 0 (0 bytes)</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_kt_fw1933); # R packets sent to concentrator: 0 (0 bytes)</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_kt_fw1933); # R packets sent to concentrator: 0 (0 bytes)</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_kt_fw1933); # R packets sent to concentrator: 0 (0 bytes)</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_kt_fw1933); # R packets sent to concentrator: 0 (0 bytes)</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_kt_fw1933); # R packets sent to concentrator: 0 (0 bytes)</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_kt_fw1933); # R packets sent to form: 0</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_kt_fw1933); # R packets sent to form: 0</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_kt_fw1933); # R packets sent to for: 0</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_kt_fw1933); # R packets sent to for: 0</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_kt_fw1933); # R packets sent for 0</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_kt_fw1933); # R packets sent for: 0</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_kt_fw1933); # R packets sent for for: 0</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_kt_fw1933); # R packets sent for for: 0</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_kt_fw1933); # R packets sent for: 0</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_kt_fw</li></ul>			
<ul> <li>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fw19353]; # RF packets forwarded: 0 (0 bytes)</li> <li>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fw19353]; # PUSI_DAT datagrams sent: 1 (125 bytes)</li> <li>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fw19353]; # PUSI_DAT datamveldegd: 0.0%</li> <li>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fw19353]; # PULL_DATs sent: 6 (100.0% achnowledged)</li> <li>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fw19353]; # PULL_DATs sent: 6 (100.0% achnowledged)</li> <li>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fw19353]; # PULL_DATs sent: 6 (00.0% bytes)</li> <li>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fw19353]; # PULL_DATs sent: 6 (100.0% achnowledged)</li> <li>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fw19353]; # PLPLATS sent: 6 (00.0% bytes)</li> <li>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fw19353]; # PLPLATS sent to concentrator: 0 (0 bytes)</li> <li>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fw19353]; # FLP packets sent to concentrator: 0 (0 bytes)</li> <li>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fw19353]; # FLP packets sent to concentrator: 0 (0 bytes)</li> <li>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fw19353]; # FLP packets sent to concentrator: 0 (0 bytes)</li> <li>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fw19353]; # FLP packets sent to concentrator: 0 (0 bytes)</li> <li>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fw19353]; # FLP packets sent to concentrator: 0</li> <li>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fw19353]; # FLP packets sent to concentrator: 0</li> <li>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fw19353]; # FLP packets sent to concentrator: 0</li> <li>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fw19353]; # FLP packets sent to concentrator: 0</li> <li>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fw19353]; # FLP packets sent to concentrator: 0</li> <li>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fw19353]; # FLP packets sent to concent</li></ul>		Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fud/9353]: # CRC_OK: 0.00%, CRC_FAIL: 0.00%, NO_CRC: 0.00%	
<ul> <li>Wed Mar 0 08:43:00 2022 user.notice lora_kbt_fw1g0331; # PUSH_DATA datagrams sent: 1 (125 bytes)</li> <li>Wed Mar 0 08:43:00 2022 user.notice lora_kbt_fw1g0351; # PUSH_DATA acknowledged: 0.00%</li> <li>Wed Mar 0 08:43:00 2022 user.notice lora_kbt_fw1g0351; # PULL_DATA sent: 0 (100.00% acknowledged)</li> <li>Wed Mar 0 08:43:00 2022 user.notice lora_kbt_fw1g0351; # PULL_DATA sent: 0 (100.00% acknowledged)</li> <li>Wed Mar 0 08:43:00 2022 user.notice lora_kbt_fw1g0351; # PULL_RESP(onse) datagrams received: 0 (0 bytes)</li> <li>Wed Mar 0 08:43:00 2022 user.notice lora_kbt_fw1g0351; # TK packets sent to concentrator: 0 (0 bytes)</li> <li>Wed Mar 0 08:43:00 2022 user.notice lora_kbt_fw1g0351; # TK packets sent to concentrator: 0 (0 bytes)</li> <li>Wed Mar 0 08:43:00 2022 user.notice lora_kbt_fw1g0351; # TK packets sent to concentrator: 0 (0 bytes)</li> <li>Wed Mar 0 08:43:00 2022 user.notice lora_kbt_fw1g0351; # TK packets sent to concentrator: 0 (0 bytes)</li> <li>Wed Mar 0 08:43:00 2022 user.notice lora_kbt_fw1g0351; # TK packets sent to concentrator: 0 (0 bytes)</li> <li>Wed Mar 0 08:43:00 2022 user.notice lora_kbt_fw1g0351; # TK packets sent to concentrator: 0 (0 bytes)</li> <li>Wed Mar 0 08:43:00 2022 user.notice lora_kbt_fw1g0351; # TK packets sent to concentrator: 0 (0 bytes)</li> <li>Wed Mar 0 08:43:00 2022 user.notice lora_kbt_fw1g0351; # TK packets sent to concentrator: 0</li> <li>Wed Mar 0 08:43:00 2022 user.notice lora_kbt_fw1g0351; # TK packets 0</li> <li>Wed Mar 0 08:43:00 2022 user.notice lora_kbt_fw1g0351; # TK packets 0</li> <li>Wed Mar 0 08:43:00 2022 user.notice lora_kbt_fw1g0351; # TK packets 0</li> <li>Wed Mar 0 08:43:00 2022 user.notice lora_kbt_fw1g0351; # TK packets 0</li> <li>Wed Mar 0 08:43:00 2022 user.notice lora_kbt_fw1g0351; ## TGON sent so far: 0</li> <li>Wed Mar 0 08:43:00 2022 user.notice lora_kbt_fw1g0351; # TK packets 0</li> <li>Wed Mar 0 08:43:00 2022 user.notice lora_kbt_fw1g0351; # TK packets</li></ul>	~	Wed Mar 908:43:00 2022 user.notice lora_pkt_fwd[9353]: # RF packets forwarded: 0 (0 bytes)	
<ul> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # PUL_DATA acknowledged: 0.00%</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # PUL_DATA sectnowledged]</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # PUL_DESP[onse] datagrams received: 0 (0 bytes)</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # PLL_ESP[onse] datagrams received: 0 (0 bytes)</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # FTk errors: 0</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # TK errors: 0</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # SX1802 Status ###</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # SX1802 Status ###</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # SX1802 Status ###</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # SX1802 Status ###</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # SX1802 Status ###</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # SX1802 Status ###</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # SX1802 Status ###</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # SX1802 Status ###</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # SX1802 Status ##</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # SX1802 Status ##</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # SXI802 Status ##</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # SXI802 Status ##</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # SXI802 Status ##</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # SXI802 Status ##</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: ### [DY]</li> <li>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: ### [DY]</li> <li>Wed Mar 9 00:43:00 2022 user.notice lo</li></ul>		Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: # PUSH_DATA datagrams sent: 1 (125 bytes)	
<pre>Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(935); ### [DULL_RESP[onse] datagrams received: 0 (0 bytes) Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(935); # FULL_RESP[onse] datagrams received: 0 (0 bytes) Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(935); # FULL_RESP[onse] datagrams received: 0 (0 bytes) Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(935); # FT packets sent to concentrator: 0 (0 bytes) Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(935); # FT packets sent to concentrator: 0 (0 bytes) Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(935); ## SX1802 Cutture (1NT): 3664460191 Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(9353); ## SX180X counter (INT): 3664460191 Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(9353); # SX180X counter (INT): 3664460191 Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(9353); # SX180X counter (INT): 3664460191 Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(9353); # BACON queued: 0 Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(9353); # BACON sent so far: 0 Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(9353); ## [INT] ## Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(9353); ### [INT] ## Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(9353); ### [INT] ## Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(9353); ### [INT] ## Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(9353); ### [INT] ## Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(9353); ### [INT] ## Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(9353); ### [INT] ## Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(9353); ### [INT] ## Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(9353); ### [INT] ## Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(9353); ### [INT] ### Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(9353); ### [INT] ### Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(9353); ### [INT] ### Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(9353); ### [INT] ### Wed Mar 0 00:43:00 2022 user.notice lora_pkt_fw1(9353); ### [INT] ### Wed Mar 0 00:43:00 2022 user.no</pre>	٥.	Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: # PUSH_DATA acknowledged: 0.00%	
<pre>Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); # PULL_BXTA sent: 6 (100.00% acknowledged) Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); # FULL_RESPONSe) datagrams received: 0 (0 bytes) Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); # TX errors: 0 Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); # TX errors: 0 Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); # TX errors: 0 Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); # TX arrors: 0 Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); # TX arrors: 0 Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); # SX130X time (PPS): 0, offset us 0 Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); # BEACON queued: 0 Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); # BEACON queued: 0 Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); # BEACON sent so far: 0 Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); # # DEACON queued: 0 Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); # # DEACON sent so far: 0 Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); ## EACON sent so far: 0 Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); ## EACON sent so far: 0 Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); ## EACON sent so far: 0 Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); ## EACON sent so far: 0 Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); ## EACON sent so far: 0 Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); ### Consentator [0 temperature: 30 C ## Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); #### EMD #### Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); ### EACON sent so far: 0 Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); #### EMD ##### Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); #### EMD #### Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); #### EMD #### Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); #### EMD #### Wed Mar 0 00:43:00 2022 user.notice lora.pkt_fw10353); #### EMD ##### Wed Mar 0 00:43:00 2022 user</pre>		Wed Mar 908:43:00 2022 user.notice lora_pkt_fwd[9353]: ### [DOWNSTREAM] ###	
<pre>Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; # PLL_RESP(onse) datagrams received 0 (0 bytes) Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; # TX errors: 0 Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; # TX errors: 0 Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; # SX130X counter (INST): 3064400101 Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; # SX130X time (PPS): 0, offset us 0 Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; # BEACON queued: 0 Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; # BEACON rejected: 0 Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; # BEACON rejected: 0 Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; # BEACON rejected: 0 Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; # BEACON rejected: 0 Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; # # EACON rejected: 0 Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; ## IIIT ## Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; ## IIIT ## Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; ## Gesp; ### [Gesp] ## Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; # Gesp; ### Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; ## Gesp; ### Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; ## Gesp; ### Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; ## Gesp; ### Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; ## Gesp; ### Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; ### EMEM Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; ### EMEM Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; ### Gesp; ### Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; #### Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; #### Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; #### EMEM Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; #### EMEM Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; #### EMEM Wed Mar 9 00:43:00 2022 user.notice lora.pkt_fw19353]; ##### Wed Mar 0 00:43:00 2022 user.notice lor</pre>	*	Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: # PULL_DATA sent: 6 (100.00% acknowledged)	
Wed Mar 9 00:43:00 2022 user.notice Ora_pkt_fwd[933]; # T X errors: 0 Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; # T X errors: 0 Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; # St302 Status ### Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; # St304 Conter [INIT]: 3684460191 Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; # St304 Conter [INIT]: 3684460191 Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; # St304 Conter [INIT]: 3684460191 Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; # BEACON queued: 0 Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; # BEACON queued: 0 Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; # BEACON set so far: 0 Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; # ## [INIT] ### Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; # ## [INIT] ### Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; ### [INIT] ### Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; ### [INIT] ### Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; ### [INIT] ### Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; ### [INIT] ### Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; ### [INIT] ### Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; ### [INIT] ### Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; ### [INIT] ### Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; ### [INIT] ### Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; ### [INIT] ### Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; ### [INIT] ### Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; ### [INIT] ### Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; ### [INIT] ### Wed Mar 9 00:43:00 2022 user.notice Iora_pkt_fwd[933]; ### [INIT] ####################################		Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]; # PULL_RESP(onse) datagrams received: 0 (0 bytes)	
<pre>Wed Mar 0 00:43:00 2022 user.notice lora_htt_fwl(933); ## SX130S tatus ### Wed Mar 0 00:43:00 2022 user.notice lora_htt_fwl(9333); # SX130S counter (INST): 8084400101 Wed Mar 0 00:43:00 2022 user.notice lora_htt_fwl(9333); # SX130S time (PPS): 0, offset us 0 Wed Mar 0 00:43:00 2022 user.notice lora_htt_fwl(9333); # BEACON queued: 0 Wed Mar 0 00:43:00 2022 user.notice lora_htt_fwl(9333); # BEACON sent so far: 0 Wed Mar 0 00:43:00 2022 user.notice lora_htt_fwl(9333); # BEACON rejected: 0 Wed Mar 0 00:43:00 2022 user.notice lora_htt_fwl(9333); # BEACON rejected: 0 Wed Mar 0 00:43:00 2022 user.notice lora_htt_fwl(9333); ## EACON sent so far: 0 Wed Mar 0 00:43:00 2022 user.notice lora_htt_fwl(9333); ## EACON rejected: 0 Wed Mar 0 00:43:00 2022 user.notice lora_htt_fwl(9333); ### Wed Mar 0 00:43:00 2022 user.notice lora_htt_fwl(9333); ### [JTT] ## Wed Mar 0 00:43:00 2022 user.notice lora_htt_fwl(9333); ### [GPS] ### Wed Mar 0 00:43:00 2022 user.notice lora_htt_fwl(9333); ### [GPS] ### Wed Mar 0 00:43:00 2022 user.notice lora_htt_fwl(9333); ### [GPS] ### Wed Mar 0 00:43:00 2022 user.notice lora_htt_fwl(9333); ### [GPS] ### Wed Mar 0 00:43:00 2022 user.notice lora_htt_fwl(9333); ### [GPS] ### Wed Mar 0 00:43:00 2022 user.notice lora_htt_fwl(9333); ### [GPS] ### Wed Mar 0 00:43:00 2022 user.notice lora_htt_fwl(9333); ### [GPS] ### Wed Mar 0 00:43:00 2022 user.notice lora_htt_fwl(9333); ### [GPS] ### Wed Mar 0 00:43:00 2022 user.notice lora_htt_fwl(9333); ### [GPS] ### Wed Mar 0 00:43:00 2022 user.notice lora_htt_fwl(9333); ### [GPS] ### Wed Mar 0 00:43:02 2022 user.notice lora_htt_fwl(9333); ## EACON queue: 30 C ### Wed Mar 0 00:43:02 2022 user.notice lora_htt_fwl(9333); ### [GPS] #### Wed Mar 0 00:43:02 2022 user.notice lora_htt_fwl(9333); ### [GPS] #### Wed Mar 0 00:43:02 2022 user.notice lora_htt_fwl(9333); ### [GPS] ####################################</pre>		Wed Mar 9 08:43:00 2022 user.notice lora_pkt_TWd[9353]: # RF packets sent to concentrator: 0 (0 bytes)	
<pre>wed Mar 0 08:43:00 202 user.notice lon_alkt_fwl(1933); # \$X130X cure(INST): 3084460101 Wed Mar 0 08:43:00 2022 user.notice lon_alkt_fwl(1933); # \$X130X cure(INST): 3084460101 Wed Mar 0 08:43:00 2022 user.notice lon_alkt_fwl(1933); # BEACON youed: 0 Wed Mar 0 08:43:00 2022 user.notice lon_alkt_fwl(1933); # BEACON youed: 0 Wed Mar 0 08:43:00 2022 user.notice lon_alkt_fwl(1933); # BEACON youed: 0 Wed Mar 0 08:43:00 2022 user.notice lon_alkt_fwl(1933); # BEACON youed: 0 Wed Mar 0 08:43:00 2022 user.notice lon_alkt_fwl(1933); # BEACON youed: 0 Wed Mar 0 08:43:00 2022 user.notice lon_alkt_fwl(1933); ## [IT] ## Wed Mar 0 08:43:00 2022 user.notice lon_alkt_fwl(1933); ## [IT] ## Wed Mar 0 08:43:00 2022 user.notice lon_alkt_fwl(1933); ## [IT] ## Wed Mar 0 08:43:00 2022 user.notice lon_alkt_fwl(1933); ## GFS ync is disabled Wed Mar 0 08:43:00 2022 user.notice lon_alkt_fwl(1933); ### [IT] ## Wed Mar 0 08:43:00 2022 user.notice lon_alkt_fwl(1933); ### [IT] ## Wed Mar 0 08:43:00 2022 user.notice lon_alkt_fwl(1933); ### GFS ync is disabled Wed Mar 0 08:43:00 2022 user.notice lon_alkt_fwl(1933); ### GFS ync is disabled Wed Mar 0 08:43:00 2022 user.notice lon_alkt_fwl(1933); ### [IT] ### Wed Mar 0 08:43:00 2022 user.notice lon_alkt_fwl(1933); ### [IT] ### Wed Mar 0 08:43:00 2022 user.notice lon_alkt_fwl(1933); ### [IT] #### Wed Mar 0 08:43:00 2022 user.notice lon_alkt_fwl(1933); ### [IT] ##### Wed Mar 0 08:43:00 2022 user.notice lon_alkt_fwl(1933); ### [IT] #### Wed Mar 0 08:43:00 2022 user.notice lon_alkt_fwl(1933); ##### END ##### Wed #### 08:43:02 2022 user.notice lon_alkt_fwl(1933); ## GFS ync is disabled Wed Mar 0 08:43:00 2022 user.notice lon_alkt_fwl(1933); ## [IT] ##### Wed #### 08:43:02 2022 user.notice lon_alkt_fwl(12467); nequestRegistrationState2 MCC: 284, MNC: 3, PS: Detached, DataCap: UNNOW Wed Mar 0 08:43:02 2022 kern.info quectel-CM[12467]; Dail Failed 16 Wed Mar 0 08:43:02 2022 kern.info quectel-CM[12467]; Dail Failed 16 Wed Mar 0 08:43:02 2022 user.info restify: 127.0.0.1 [09/Mar/2022 08:43:02] "[]37m</pre>		WearMar 9 08:43:00 2022 User notice (or pyter indiges); # ix errors: 0	
<pre>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwlq1933]; # SX130X time (PPS): 0, offset us 0 Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwlq1933]; # BEACON queued: 0 Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwlq1933]; # BEACON rejected: 0 Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwlq1933]; # BEACON rejected: 0 Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwlq1933]; ## EACON rejected: 0 Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwlq1933]; ## EACON rejected: 0 Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwlq1933]; ## EACON rejected: 0 Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwlq1933]; ## EACON rejected: 0 Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwlq1933]; ## EACON rejected: 0 Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwlq1933]; ## EACON rejected: 0 Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwlq1933]; ## EACON rejected: 0 Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwlq1933]; ## EACON rejected: 0 Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwlq1933]; ## EACON rejected: 0 Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwlq1933]; ### (DS); ### (DS) Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwlq1933]; ### (DS); ### ENO #### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwlq1933]; ### Concentrator[0] temperature: 30 C ### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwlq1933]; ### ENO ###############################</pre>		We had 9 00:43:00 2022 user notice for ant full disting state (INST) - 3684460101	
<pre>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: # DEACON queued: 0 Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: # DEACON queued: 0 Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: # DEACON queued: 0 Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ### [JIT] ## Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ##= [JIT] ## Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ##= [JIT] ## Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ##= [JIT] ## Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ## [JIT] ## Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ## [JIT] ## Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ## [JIT] ## Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ## [JIT] ## Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ## [JIT] ## Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ## [JIT] ## Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ## [JIT] ## Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ## [JIT] ## Wed Mar 9 08:43:02 2022 user.notice lora_pkt_fwd[9353]: ## [JIT] ## Wed Mar 9 08:43:02 2022 user.notice lora_pkt_fwd[9353]: ## [JIT] ## Wed Mar 9 08:43:02 2022 user.notice lora_pkt_fwd[9353]: ## [JIT] ## Wed Mar 9 08:43:02 2022 user.notice lora_pkt_fwd[9353]: ## [JIT] ## Wed Mar 9 08:43:02 2022 user.notice lora_pkt_fwd[9353]: ## [JIT] ## Wed Mar 9 08:43:02 2022 user.notice lora_pkt_fwd[9353]: ## [JIT] ## Wed Mar 9 08:43:02 2022 user.notice lora_pkt_fwd[935]: ## [JIT] ## Wed Mar 9 08:43:02 2022 user.notice lora_pkt_fwd[935]: ## [JIT] ## Wed Mar 9 08:43:02 2022 user.notice lora_pkt_fwd[935]: ## [JIT] ## Wed Mar 9 08:43:02 2022 user.notice lora_pkt_fwd[935]: ## [JIT] ## Wed Mar 9 08:43:02 2022 user.notice lora_pkt_fwd[935]: DEAEABA [JIT] ## Wed Mar 9 08:43:02 2022 user.notice lora_pkt_fwd[935]: ## Wed Mar 9 08:43:</pre>		Wed Mar 9 08:43:00 /2022 user-notice loca akt fud[9353]; # \$X130 time (PDS): 0, offset us 0	
<pre>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: # BEACON sent so far: 0 Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: # BEACON rejected: 0 Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: ### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: ###.III] ### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: ###.III] ### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: ###.III] ### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: ###.III] ### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: ###.III] ### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: ###.III] ### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: ###.III] ### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: ### Concentrator[0] temperature: 30 C ### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: ### END ##### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: ### Concentrator[0] temperature: 30 C ### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: ### END ##### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: ### END ##### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: ### END ##### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: ### END ##### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: ### END ##### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: #### END ##### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: ##I III] #III] #IIII] #III] #III] #III] #III] #III] #III] #III]</pre>		Wed Mar 9 08:43:00 2022 user.notice lora pkt fwd[9353]: # BEACON gueued: 0	
<pre>Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # BEACON rejected: 0 Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: ### [JIT] ### Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: ### [GP5] ### Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: ### [GP5] ### Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: ### [GP5] ### Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: ### END ##### Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: ### END ##### Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: ### END ###############################</pre>		Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: # BEACON sent so far: 0	
Wed Mar       9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ### [JIT] ###         Wed Mar       9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ### [GPS] ###         Wed Mar       9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ## [GPS] ###         Wed Mar       9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ## [GPS] ##         Wed Mar       9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ## [GPS] ##         Wed Mar       9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ## [GPS] ##         Wed Mar       9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ## [GPS] ##         Wed Mar       9 08:43:02 2022 user.notice lora_pkt_fwd[9353]: ## [GPS] ##         Wed Mar       9 08:43:02 2022 user.notice lora_pkt_fwd[9353]: ### [CPS] ###         Wed Mar       9 08:43:02 2022 kern.info quectel-CM[12467]: requestRegistrationState2 MCC: 204, MNC: 3, PS: Detached, DataCap: UNKNOW         Wed Mar       9 08:43:02 2022 kern.info quectel-CM[12467]: Dall Failed 16         Wed Mar       9 08:43:02 2022 user.info restify: 127.0.0.1 [09/Mar/2022 08:43:02] "[[37mGET /diag/syslog HTTP/1.0][0m" 200 -		Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: # BEACON rejected: 0	
Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[0353]: ###         Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[0353]: ### [GPS]         Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[0353]: ## GPS sync is disabled         Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[0353]: ### Concentrator[0] temperature: 30 C ###         Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[0353]: ### Concentrator[0] temperature: 30 C ###         Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[0353]: ##### END #####         Wed Mar 9 08:43:02 2022 user.notice lora_pkt_fwd[0353]: #####         Wed Mar 9 08:43:02 2022 kern.ninfo quectel-CM[12467]: requestRegistrationState2 MCC: 204, MNC: 3, PS: Detached, DataCap: UNNNOW         Wed Mar 9 08:43:02 2022 kern.info quectel-CM[12467]: Dail Failed 16         Wed Mar 9 08:43:02 2022 user.infor restify: 127.0.0.1 - [09/Mar/2022 08:43:02] "D[37mGET /diag/syslog HTTP/1.00](0m" 200 -		Wed Mar 908:43:00 2022 user.notice lora_pkt_fwd[9353]: ### [JIT] ###	
<pre>Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ## [GPS] ### [GPS] ### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ## Goncentrator[0] temperature: 30 C ### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ##### END ##### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ##### END ##### Wed Mar 9 08:43:02 2022 kern.info quectel-CM[12467]: requestRegistrationState2 MCC: 284, MNC: 3, PS: Detached, DataCap: UNKNOW Wed Mar 9 08:43:02 2022 kern.info quectel-CM[12467]: Dail Failed 16 Wed Mar 9 08:43:02 2022 user.info restify: 127.0.0.1 [09/Mar/2022 08:43:02] "[[37mGET /diag/syslog HTTP/1.0][0m" 200 -</pre>		Wed Mar 9 00:43:00 2022 user.notice lora_pkt_fwd[9353]: #	
Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: # GPS sync is disabled Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: #### END #### Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[935]: #### END #### Wed Mar 9 08:43:00 2022 kern.info quectel-CM[12467]: requestRegistrationState2 MCC: 204, MNC: 3, PS: Detached, DataCap: UNKNOW Wed Mar 9 08:43:02 2022 kern.info quectel-CM[12467]: Dail Failed 16 Wed Mar 9 08:43:02 2022 user.info restify: 127.0.0.1 [09/Mar/2022 08:43:02] "[[37mGET /diag/syslog HTTP/1.0][0m" 200 -		Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]: ### [GPS] ###	
Wed Mar 9 08:43:00 2022 user.notice lora_bkt_hd(953): ## Concentrator[0] temperature: 30 C ### Wed Mar 9 08:43:00 2022 user.notice lora_bkt_hd(953): ### END #### Wed Mar 9 08:43:02 2022 kern.info quectel-CM[12467]: requestRegistrationState2 MCC: 204, MNC: 3, PS: Detached, DataCap: UNNNOW Wed Mar 9 08:43:02 2022 kern.info quectel-CM[12467]: Dail Failed 16 Wed Mar 9 08:43:02 2022 user.info restify: 127.0.0.1 - [09/Mar/2022 08:43:02] "[[37mGET /diag/syslog HTTP/1.0[[0m" 200 -		Wed Mar 908:43:00 2022 user notice lora_pkt_fwd[9353]: # GPS sync is disabled	
Wed Mar 908:43:002022 user.notice lora_bit_hid1933]: ##### BND ##### Wed Mar 908:43:0222 kern.info quectel-(M[12467]) EndlestRegistrationState2 MCC: 284, MNC: 3, PS: Detached, DataCap: UNNNOW Wed Mar 908:43:022 kern.info quectel-(M[12467]) Endle Tailed 16 Wed Mar 908:43:022022 user.info restify: 127.0.0.1 [09/Mar/202208:43:02] "[[37mGET /diag/syslog HTTP/1.0][0m" 200 -		Wed Mar 9 08:43:00 2022 user.notice lora_pkt_fwd[9353]; ### Concentrator[0] temperature: 30 C ###	
wed Mar 9 00:43:02 2022 kern.info quectet-(M 12467]; Dail Failed 16 Wed Mar 9 00:43:02 2022 kern.info quectet-(M 12467]; Dail Failed 16 Wed Mar 9 00:43:02 2022 user.info restify: 127.0.0.1 [09/Mar/2022 00:43:02] "[]37mGET /diag/syslog HTTP/1.0[[0m" 200 -		Wed Mar 9 08:43:00 2022 user.notice [ora_pkt_Twd[9353]: ##### ND #####	
meu mai 9 00:43:02 2022 kernining quecker⊂n[1240/]. Dalt Parkeu 10 Wed Mar 9 00:43:02 2022 user.info restify: 127.0.0.1 [09/Mar/2022 00:43:02] "[[37mGET /diag/syslog HTTP/1.0][0m" 200 -		Wed Mar 9 08:43:02 2022 kern.info quecte(-CM[12467]: requestRegistrationState2 MCC: 284, MMC: 3, PS: Detached, DataCap: UNNNUW	
ned nam a dotadine zozz dachizmio reachiy. zzhonari – (dajnamizezz dotadioz) Ulpinoch jozagrayakog ministreglem zod		Web Mar 9 90:45:02 2022 KETHLIND QUELICE-(M[1240]); UBIL FALCED 10 Mar(2022 00:42:03) MIL27wGET (disp(sur]oo MTTD/1 01(0m) 200 -	
		aco nar a doravas zass nacirinio iserià. Istrarari - [daludi/sass doravas] [[sumpri/datadora]] [[sumpri/datadora]]	
Occup RAWireless Technology Limited. All Rights Reserved. WisGateOS 2.0     Privacy Policy - Terms and Condition		©2022 RAKwireless Technology Limited. All Rights Reserved. WisGateOS 2.0	Privacy Policy · Terms and Condition

Figure 46: System log tab

### **Network utilities**

This is where the user can perform checks via the built-in tools: **Ping**, **Trace**, **Nslookup**. The user can either enter an URL or an IP Address in the text box and execute the command with one of the buttons. The results are conveniently displayed in a CLI box.

WIS Gate	D	Diagnostic	CS		
		System log	Network utilities	3	
4 ~	Tor	ols		IPv4 Address / Hostname (?) Ping Trace Nslookup	
*		Add IPv4 or a	a hostname to see resu	results here.	
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Figure 47: Network utilities tab

# Settings General settings

In this tab, the user can change the name of the gateway, setup a system log server or reboot the device.

# **AK** Documentation Center

Gate	Settings		
	General settings Backup and restore	Firmware File browser WisDM	
å ≁	Gateway name	name RAK7268C	
٠		Save	
*	System log	Buffer size (KiB) Log expiration	
		External system log server IP address Port 0.0.0.0 514	
		Save	
	Time synchronization	Enable NTP client	
		NTP server candidates	
		0.openwrt.pool.ntp.org	
		1.openwrt.pool.ntp.org ×     2.openwrt.pool.ntp.org ×	
		3.openwrt.pool.ntp.org	
		Add new server candidate	
		Save	
	Reboot	Reboots the operating system of your device.	
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Figure 48: General settings tab

- Gateway name The user can change the default name of the gateway by typing the desired name in the Name field and clicking the Save button.
- System log The user can point the gateway to a system log server where they can save logs.
  - Buffer size (KiB) This is the maximum size of the log file to be saved.
  - Log expiration How long does it take for the log file to be saved.
  - External system log server IP address The address of the external system log server.
  - $\circ \ \ \, \text{Port}-\text{corresponding port of the system log server}.$
- Time synchronization The switch enables/disables the time synchronization from a Network Time Protocol (NTP) server. In the NTP server candidates area, the user can add or remove NTP candidates. To add a new candidate, the user needs to click on the Add new server candidate text. A new field pops up, where the user needs to fill the server candidate.
- Reboot Here you can reboot the gateway. All unsaved changes will be discarded.

### **Backup and restore**

In this tab, the user can backup, restore or reset the gateway's settings.

Wis Gate		
	Settings	
::	General settings Backup and restore	Firmware File browser WisDM
<u>m</u>		
å	Backup	Use this option to create a backup image of the current configuration settings for the gateway.
		Generate and download backup
٥		
*	Restore	To restore the configuration file, you can upload a previously generated backup here.  Drop your archive file here or choose file Restore Restore
	Reset	This action will reset the gateway to its factory default settings, and your configuration will be lost permanently.

Figure 49: Backup and restore tab

- Backup The Generate and download backup button creates and downloads an archive file with all current settings.
- **Restore** Here, the user can upload an archive file by clicking **choose file** or drag-and-dropping it in the area and restore the previous settings.
- Reset With the Reset button, the user can restore the factory settings.

### **Firmware**

In this tab, the user can see the current version of the firmware and update it.

WSGate	Settings
	General settings Backup and restore Firmware File browser WisDM
	Firmware Current vession Curre
	02022 RAKwireless Technology Limited: AR Rights Reserved. WisGoteOS 2.0 Privacy Policy - Terms and Conditions

Figure 50: Firmware tab

To update the firmware, the user needs to flash a **RWI** file. This is done by using the **choose file** button to select the location of the new firmware file and the **Update** button to initiate the flashing process. There is a tick box to toggle the option of keeping the current settings of the gateway.

#### 📝 NOTE

The **Keep settings after updating** check box is selected by default, as unchecking it will results in having a gateway with stock settings after the firmware update.

When the **Enable FOTA** option from the **WisDM tab** is active, the user will not be able to update the firmware, as it is done via WisDM.

WS Gate	Settings
::	General settings Backup and restore Firmware File browser WisDM
₽ 4 ~ •	Firmware     Currently, firmware updates are managed by WisDM. To flash the new firmware locally please disable updating firmware over the air here.       TOTA settings
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#### Figure 51: Firmware tab inactive

### **File browser**

Through the **File browser** tab, the user can access the files in the **root** partition. System logs are saved there and can be downloaded from here.

Gate		Settings					
::		General settings	Backup and restore	Firmware	File browser	WisDM	
E E		() mnt					
~		mmcbik0p1	>				
•							
*							
	c	2022 RAKwireless Technology Lim	ited. All Rights Reserved. WisGateO	S 2.0		Privacy Po	licy - Terms and Conditions

Figure 52: File browser tab

### WisDM

Here, the user can enable/disable WisDM integration and FOTA (Firmware over the air).

# **AK** Documentation Center

WE Gate	Settings	
	General settings Backup and restore Firmware File browser WisDM	
₩ 六 ◆ ★	WisDM	
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Figure 53: WisDM tab

- Allow WisDM Integration Enables the WisDM. The gateway can be managed via the WisDM Platform  $\square$  .
- **Enable FOTA** When enabled, the gateway can be upgraded to a newer firmware version via the WisDM platform. If you want to upgrade the firmware via the Web UI, this function must be disabled.

### **Extensions**

Here, the user can install extensions to the gateway via drag-and-drop of an existing IPK file, the **Add new** extension button or install one now link.

WisiGate	Extensions	dd new extension
	Installed	
¢		
	You haven't installed any extensions yet. You	
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Figure 54: Extension

# **User preferences**

In the bottom left corner, the user can logout from the Web UI or choose User preferences.



Figure 55: User button

Choosing the **User preferences** option will redirect the user to the corresponding page.

WE Gate	User preferences Here you can set your personal preferences for the gateway, such as timezone or change your password.	
Ⅲ 古 ~ <b>◇</b>	Change password       Your new password should follow these rules: <ul> <li>Should be at least 12 characters long</li> <li>Has at least one special character (#\$\$%2(\0++,-/_2+4+2@0))_*(0)=)</li> <li>Has at least one latin letter</li> </ul> Current password <ul> <li>Mew password</li></ul>	
	Time settings       Local time         Fri Jun 17 09:45:17 2022       Sync with browser         Vour current timezone, please do so using the dropdown below.       Timezone         UTC	
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Figure 56: User preferences

- Change password Here, the user can change the password for access for the Web UI.
- Time settings Here, the user can set local time to the gateway.

Last Updated: 9/29/2022, 2:03:34 PM