Quick Start Guide

Prerequisites

What do you need?

- 1. RAK7246G WisGate Developer D0 Gateway
- 2. 16GB SD Card (included) + Card Reader
- 3. 5V at least 2.5A Micro USB Power Supply (not included)
- 4. A Windows/Mac OS/Linux Computer

What's included in the Package?



Raspberry Pi Zero W



RAK2246 Pi HAT (SX1308) (1x)



Plastic Enclosure (1x)









Micro USB Cable (1x)







Figure 1: RAK7246G Package Contents

Product Configuration

Accessing your Gateway

After burning the image into the SD Card, make sure you have inserted the SD Card with the Latest Firmware installed to the RAK7246G WisGate Developer D0 Gateway and the LoRa and GPS Antenna attached to it. After which, you can now safely power on the gateway.

WARNING

Before powering the RAK7246G WisGate Developer D0 Gateway, you must install the LoRa and GPS antennas. Not doing so might damage the boards.

Wi-Fi AP Mode

By default, the Gateway will work in Wi-Fi AP Mode which means that you can find an SSID named like "Rakwireless_XXXX" on your PC Wi-Fi Network List.

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Rakwireless_AA67 Secured	lly	1.	Rakwireless_AA67 Secured Enter the network secur	ity key	
			lakwireless		101
	Connect		Next	Cancel	



VOTE:

"XXXX" is the last 2 bytes of your RAK7246's WiFi MAC address. Connect to this Wi-Fi SSID using the password provided below. Take note also of the default IP address of the Gateway provided below as this will be needed in connecting via SSH.

- Wi-Fi Password: rakwireless
- Default IP Address: 192.168.230.1

Log into the Gateway

1. Windows OS

SSH (Secure Shell) is typically used to log in to a remote machine and execute commands. There are a lot of free and good SSH Clients out there namely **Putty** , **BitVise SSH Client**, **MobaXterm** and many more. Feel free to choose one that fits your needs, you will be using Putty for this guide.

🔀 PuTTY Config	uration						?	\times
Category:								
Session Logging Terminal Keyboard Bell Features Window Appearance Behaviour Translation Selection Colours Connection Proxy Telnet Rlogin SSH Serial		Specify Host <u>N</u> 192.16 Conne Ray Load, sa Sav <u>e</u> d Defau	Ba the de lame (68.230 ction t sessi ave or Sessi ult Sett	sic option estination or IP add .1 ype: 	s for your PuTT you want to cor ress) Rlogin () stored session er () Only ()	Y ses nnect	ssion to Port 22 Coa Loa Say Dele	Serial ad ge
About	<u>H</u> elp				<u>O</u> pen		<u>C</u> an	cel

Figure 3: Putty Software for SSH in Windows

- If you have connected to the Gateway through Wi-Fi AP Mode, the IP Address is 192.168.230.1
- It will then prompt you to enter the username and password. The default username is "pi" and the default password is "raspberry"



Figure 4: Command line after log in

2. Mac OS

Open the Terminal of Mac OS. Launch the **Terminal** application, which is found in "/Applications/Utilities/" directory but you can also launch it from Spotlight by hitting Command + Spacebar and typing "Terminal" and then return:

् terminal	×
ТОР НІТ	
🛅 Terminal	
DEFINITION	
🀱 terminal	>
SIRI KNOWLEDGE	-
leathrow Terminal 3	
🗟 Terminal 3	
< Terminal 3 station	
Terminal 3 station	Terminal
WEBSITES	Version: 2.9.5
🛩 manila-airport.net	
🤣 miaa.gov.ph	
w en.wikipedia.org	Kind Application
DEVELOPER	Size 10.1 MB
Terminal.php	Created 26/02/2019 Modified 13/03/2020
Terminal.php — Projects	Last opened 22/05/2020

Figure 5: Opening Terminal in Mac OS

Open the terminal of Mac OS. Enter root mode by typing the following command: sudo -i

• If you are not in root mode, enter ssh pi@192.168.230.11 in the terminal to login to your Gateway, the default password is "**raspberry**".

3. Linux OS

If the OS of your PC is Linux, you should do the same as the Mac OS, except the root mode.

Accessing the Internet

Assuming you have successfully logged into your Gateway using SSH, enter the following command in the command line:

sudo gateway-config	
Sudo gateway contrig	

You will now then see a page like the following picture below

RAK7246 (Gateway ID:B827EBFFFEDBB038) Version: 4.1.1R) Configuration options: Set pi password 2 Setup RAK Gateway LoRa concentrator 3 Restart packet-forwarder 4 Edit packet-forwarder config 5 Configure WIFI	
< 0 K > < Quit >	

Figure 6: Configuration Options for the Gateway

- 1. Set pi password used to set/change the password of the gateway.
- 2. Set up RAK Gateway LoRa Concentrator used to configure the frequency, which the gateway will operate on, and the LoRaWAN Server which the gateway will work with.
- 3. Restart packet -forwarder used to restart the LoRa packet forwarded process.
- 4. Edit packet-forwarder config- used to open the global_conf.json file, in order to edit LoRaWAN parameters manually.
- 5. Configure Wifi used to configure the Wi-Fi settings in order to connect to a network.

Connect through Wi-Fi

If you want to connect through Wi-Fi, it can easily be done with the Wireless capabilities of the Raspberry Pi Zero W by choosing "**5 Configure WIFI**". By default, the RAK7246G WisGate Developer D0 Gateway works in Wi-Fi AP Mode. In order for the Gateway to connect to the router, it must work in Wi-Fi Client Mode.



Figure 7: Configuration options for WIFI

There are 5 options to choose from in the Wi-Fi configuration menu:

- 1. Enable AP Mode/Disable Client Mode the Gateway will work in Wi-Fi Access Point Mode after rebooting while the Wi-Fi Client Mode will be disabled (this is the default mode).
- 2. Enable Client Mode/Disable AP Mode the Gateway will work in Wi-Fi Client mode after rebooting, while Wi-FI AP Mode will be disabled.
- Modify SSID and pwd for AP Mode used to modify the SSID and password of the Wi-Fi AP. Only works if the Wi-Fi AP Mode is enabled.
- 4. Add New SSID for Client this is used if you want to connect to a new Wi-Fi Network. Only works in Wi-Fi Client mode.
- 5. Change Wi-Fi Country this is used to modify the Resident Country to match with Wi-Fi standards.

VOTE:

In order to enable Wi-Fi Client Mode, you have to disable first the Wi-Fi AP Mode

Once Wi-Fi AP Mode has been disabled by choosing "2 Enable Client Mode/Disable AP Mode", you can now then connect to a new Wi-Fi Network by choosing "4 Add New SSID for Client":



Figure 8: Add a New SSID

• Start by selecting your country of residence:



Figure 9: Selecting Country of Residence

• Enter the SSID of the network you want to connect:

WARNING

Please ensure to input the correct Wi-Fi SSID and Password or you will not be able to connect to the RAK7246G again via SSH in Wi-Fi AP Mode. If stuck in this situation, follow this procedure listed in the Accessing the Internet document which is applicable for all Raspberry Pi based gateways to work again in Wi-Fi AP mode.

Please enter SSID
<0k>

Figure 10: SSID of the Network you want to connect to.

• Enter also the password. Just leave it empty if None.

Please enter passphrase. Leave it empty if none. 	
<0k>	Please enter passphrase. Leave it empty if none.
	<0k>

Figure 11: Password of the Wi-Fi

• Lastly, reboot the gateway using the command sudo reboot in the command line and it will connect to the router successfully.



Optional Configurations

These configurations under this section are only optional and situational.

Reverting Back to Wi-Fi AP Mode

In the event that you have entered either or both incorrect Wi-Fi SSID and Password in the Wi-Fi Client Mode setup for the RAK7246G WisGate Developer D0 Gateway to connect to the router, follow these set of steps for you to work again in Wi-Fi AP Mode and redo the setup.

 Remove the SD Card from your RAK7246G WisGate Developer D0 Gateway and insert it into your PC. Your PC should be able to detect it same with the image below:



Figure 12: Creating rak_ap file to your SD Card

• Using your "Command Prompt" or "Terminal", navigate to your SD Card and type this command to generate the "rak_ap" file.



 Check if the rak_ap file is created successfully. If so, re-insert the SD Card into your RAK7246G WisGate Developer D0 Gateway and it should work again in Wi-Fi AP Mode.

Configuring the Gateway

Assuming you have successfully logged into your Gateway using SSH, enter the following command in the command line:



You will see a page like the following picture below:

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Figure 13: Config Options for the Gateway

- 1. Set pi password used to set/change the password of the Gateway.
- 2. Set up RAK Gateway LoRa Concentrator used to configure the frequency, which the Gateway will operate on, and the LoRaWAN Server which the Gateway will work with.
- 3. Restart packet -forwarder used to restart the LoRa packet forwarded process.
- Edit packet-forwarder config- used to open the global_conf.json file, in order to edit LoRaWAN parameters manually.
- 5. Configure Wifi used to configure the Wi-Fi settings in order to connect to a network.

NOTE:

A unique ID will be generated in for Gateway. This is also called Gateway EUI squared in red in the figure above and is essential for registering the gateway with any LoRa Network Server (TTN, ChirpStack)

There is also another way to get your "Gateway ID", just enter the command below in the command line:



Figure 14: Gateway ID using the command line

Setting a new password for the Gateway

It is a good security practice to change the default password "**raspberry**" which is the same on all Raspberry Pi devices.

1. First, choose "1 Set pi password" option referred on the image below.

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Configu	RAK7246 (Gateway ID:B827EBFFFEDBB038 Version: 4.1.1R) uration options: Set pi password 2 Setup RAK Gateway LoRa concentrator 3 Restart packet-forwarder 4 Edit packet-forwarder config 5 Configure WIFI	
	< <mark>0% ></mark> < Quit >	

Figure 15: Set Pi Password

2. Next, press "Yes" and you will be asked to enter your new password twice then press "Enter".

You will be asked to enter a new password.

Figure 16: Confirm Password Change

3. Alright, the success message for changing password will then pops up.

Setup pi password Password has been changed succesfully. < OK >	

Figure 17: Successful Password Change

Setup RAK Gateway LoRa Concentrator

This menu allows you to select your LoRa frequency band and one of the two available Networks Server options by choosing "2 Setup RAK Gateway LoRa concentrator"



Figure 18: Choosing Setup RAK Gateway LoRa concentrator

You can choose one of two supported LoRa Servers here: **TTN** or **ChirpStack**.

Server is TTN

Server-plan configuration Select the Server-plan:
Server is TTN 2 Server is Other server
< OK > <cancel></cancel>

Figure 19: Server is TTN

• TTN (The Things Network) - If you choose TTN as the LoRa Server, you will see the following page. Visit this article 🖾 for more information on your local TTN frequency plan. This will allow you to choose the correct plan.

TIN Channel-plan configuration Select the Channel-plan : AS_923 2 AU_915_928 2 AU_915_928 3 CN_470_510 4 EU_863_870 5 IN_865_867 6 KR_920_923 7 RU_864_870 8 US_902_928 US_902_928	
< OK > <cancel></cancel>	

Figure 20: Selecting the TTN Channel Plan

After choosing the correct frequency, the success message will appear as shown below.

Server-plan configuration Server-plan configuration has been copied.

Figure 21: Successfully Changed the Frequency

Server is Chirpstack

Server-plan configuration Select the Server-plan:	
1 Server is TTN Server is Other server	
< <mark>OK ></mark> <cancel></cancel>	

Figure 22: Server Is Chirpstack

• **ChirpStack** - If you choose Chirpstack as your LoRa Server, choose "2 Server is Other server". First, configure your Regional Frequency Band by choosing the option below:

Server Channel-plan configuration Server Channel-plan:
Server Channel-plan configuration
< OK > <cancel></cancel>

Figure 23: Regional Frequency Band Option

For this example, we will be using EU868 Frequency Plan.

	Server Channel-plan configuration Server Channel-plan:	
	AS_923 2 AU_915_928 3 CN_470_510 4 EU_433 5 EU_863_870 6 IN_865_867 7 KR_920_923 8 RU_864_870 9 US_902_928	
-	< OK > <cancel></cancel>	

Figure 24: Selecting the Chirpstack Channel Plan

Then, set the IP address of the ChirpStack which you want your Gateway to work with:

server IP
SERVER_IP:
< OK >

Figure 25: Default LoRaServer IP Address

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NOTE:

Unlike the other RAK boards, the RAK7246G WisGate Developer D0 Gateway does not have a Built-in LoRa Server. In this document, the IP Address of the Chirpstack is shown above. If you have another ChirpStack, you can fill its IP address here too.

You can then open your Chirpstack webpage by using the link below as an example. Make sure to have the [IP Address] changed same with what you have input in the previous step.

http://[IP Address]:8080/#/login

Connecting to the Things Network (TTN)

The Things Network is about enabling low power devices to use long range gateways to connect to an opensource, decentralized network to exchange data with Application. Learn more about the Things Network through their documentation .

- First, you should have connected your Gateway into the internet through a router according to the method which has been introduced in the Accessing the Internet section.
- Second, config your Gateway and choose TTN as the LoRa Server and choose a correct frequency according to the method which has been introduced in the Configuring the Gateway section.
- Now go to the TTN Website ☐ and Login. You will then see the following page:



Figure 26: The Things Network Home Page

• Choose Console then Click Gateways.



Figure 27: The Things Network Console Page

• All of your Registered Gateways will be displayed here in this page. Click "register gateway"

ETHINGS				Applications	Gateways	Support	\Lambda RAKwireless 🗸
Gateways							
GATEW	AYS					🕂 <u>register</u>	<u>gateway</u>
		You do not	have any gateways				
		Get started	<u>l by registering one!</u>				
		You are the network. Let's build	this thing together. — <u>The Things Network</u>				

Figure 28: Adding a Gateway to TTN

THE THINGS CON	SOLE	Applications	Gateways	Support	🗛 RAKwireless 🗸
Gateway	vs > Register				
REG	ISTER GATEWAY				
Gat The	teway EUI EUI of the gateway as read from the LoRa module				
Ва	3 27 EB FF FE DB BO 38			2 8 bytes	
	I'm using the legacy packet forwarder Select this if you are using the legacy <u>Semtech packet forwarder</u> .				
Des A hu	scription Jman-readable description of the gateway				
RA	AKwireless Test Gateway			0	
Free The	quency Plan <u>frequency plan</u> this gateway will use				
Eu	Jrope B68MHz			\$	
Rou The	ster router this gateway will connect to. To reduce latency, pick a router that is in a region which is close to the location of the g	ateway.		-	

Figure 29: Registering your Gateway

• **Gateway EUI** - refers to the Gatway ID you obtained from the previous steps. In case you forgot, just type gateway-version in the command line. This must be the same with the Gateway's True Gateway ID otherwise you will fail to register your Gateway on TTN.

	RAK7240 (Gateway ID:B827EBFFFEDBB038 Version: 4.1.1R) Configuration options: Set pi password Setup RAK Gateway LoRa concentrator Restart packet-forwarder Edit packet-forwarder config Configure WIFI Gateway UP:B827EBFFFEDBB038 Version: 4.1.1R) Configure WIFI Set pi password Set password Set pi password Set pi password Set password <li< th=""><th></th></li<>	
-	< <mark>0K ></mark> < Quit >	

Figure 30: RAK7246G WisGate Developer D0 Gateway ID in SSH

VOTE:

Make sure to select the "I'm using the legacy packet forwarder" check box.

- **Description** A human readable description of your Gateway.
- Frequency Plan This is the frequency you want to use and it must be the same with Gateway and the Node.
- **Router** The router this gateway will connect to. To reduce latency, pick a router that is in a region which is close to the location of the gateway.
- Location Choose the location of the Gateway by entering its coordinates. This is reflected on the Gateway World Map.
- Antenna Placement Where is your antenna placed? Is it placed indoors or outdoors?

Click Register Gateway and wait for a couple of minutes . If the status of your gateway is **Connected**, Congratulations! **S** Your Gateway is now connected to the The Things Network (TTN).

THE THINGS CONSOLE N E T W O R K COMMUNITY EDITION		Applications	Gateways	Support	🗛 RAKwireless 🗸
Gateways > 🏷 eui-b827ebi	ffbb038				
			Overview	Traffic	Settings
GATEWAY OVERVIE	w				o settings
Gateway Descripti Own Stat Frequency Pl Rout Gateway K Last Sev	D eui-b827ebfffbb038 om RAKwireless Test Gateway er RAKwireless 1 Transfer ownership us • connected an Europe 868MHz er ttn-router-eu ey • 1 en 21 minutes ago			···↓ ♦ base64	1 E
Received Messag	es 19				

Figure 31: RAK7246G WisGate Developer D0 Gateway TTN Connection Success

Connect the Gateway with Chirpstack

The ChirpStack or previously known as LoRaServer project provides open-source components for building LoRaWAN networks. You can learn more about ChirpStack here

Using an Independent ChirpStack

You can setup an Independent ChirpStack by yourself. This is a lot more complicated having to deploy a remote ChirpStack by yourself but Chirpstack provided a detailed guide on how to do it here \square .



Figure 32: Chirpstack Getting Started Guide on Ubuntu

WARNING

Remember to run the sudo gateway-config command in the CLI and point the Gateway to the IP address of the machine you just installed Chirpstack on. This can be done in item 2 in the menu "Setup RAK Gateway LoRa concentrator"!

Assuming you have set it up correctly, Login to your ChirpStack to register your Gateway by opening the ChirpStack's web page in a browser by entering "**IP Address of ChirpStack:8080**".

- If you are using an Independent Chirpstack, use the IP Address you have set in the Configuring the Gateway document.
- If you are using the RAK Free Cloud Server Chirpstack 209.250.251.9

Login ^{Username *} admin	
Password *	
LOGIN	

Figure 33: ChirpStack Login Page

• The default username is "admin" and the password is also "admin"

NOTE:

If you are using the RAK Cloud Testing ChirpStack, input the account and password you have asked in the forum provided beforehand.

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∉	ChirpStack				Q Search organization, appl	ication, gateway or device		?	admin
80 80 80	Network-servers	Δ	Applications					+	CREATE
\bigcirc	Gateway-profiles								
	Organizations		ID	Name	Service-profile	Descripti	on		
•	All users					Rows per page: 10 👻	0-0 of 0	<	
chirp	ostack 👻					none por page. To -			
\$	Org. settings								
•	Org. users								
.≞≡	Service-profiles								
	Device-profiles								
\bigcirc	Gateways								
	Applications								
2	Multicast-groups								

Figure 34: ChirpStack Home Page

• Click "Gateways" in the left menu and Press "+ CREATE" to register your Gateway

∉	ChirpStack			Q Search organization, application, gateway or device	? 🔒 admin
** **	Network-servers	Gateways			+ CREATE
\bigcirc	Gateway-profiles				
	Organizations	LIST	MAP		
.	All users				
chirp	ostack 👻	Name	Gateway ID	Gateway activity (30d)	
۵	Org. settings			Rows per page: 10 💌	0-0 of 0 < >
•	Org. users				
.≟≡	Service-profiles				
	Device-profiles				
R	Gateways				
	Applications				
۳	Multicast-groups	-			

Figure 35: ChirpStack Registered Gateways

• Click "Create" to register your Gateway and fill up the necessary information.

€	ChirpStack	Q Search organization, application, gateway or device ? O	admin
** **	Network-servers	Gateways / Create	
\bigcirc	Gateway-profiles		
	Organizations	Gateway name *	
*	All users	RAKwireless_Gateway	_
chirp	ostack 👻	Gateway description *	
\$	Org. settings		C
•	Org. users		_
<u>.</u> ≡	Service-profiles	Gateway ID * b8 27 eb ff fe 4f e9 5f	G
븄	Device-profiles	Network-server *	
\bigcirc	Gateways	Select the network-server to which the gateway will connect. When no network-servers are available in the dropdown, make sure a service-profile exists this organization.	for
	Applications	Gateway-profile	

Figure 36: Registering your own Gateway

• Fill in the Gateway ID that we got from the last section (Configuring the Gateway), also called Gateway EUI.

Figure 37: Gateway ID

• If you have properly configured your Gateway and there is a network connection between the external ChirpStack and your Gateway, you should see the following page and status:

€	ChirpStack	Q Search organization, application, gateway or device ? e admin
	Network-servers Gateway-profiles Organizations	Gateways / RAKwireless_Gateway
•	All users	Laisos Lompound
chir	ostack 👻	Gateway details +
\$	Org. settings	Gateway ID b827ebfffedbb038
•	Org. users	Altitude
•	Service-profiles	0 meters GPS coordinates
	Device-profiles	8.226554624641178, 124.24129766694024
\bigcirc	Gateways	a few seconds ago
	Applications	

Figure 38: Successfully Registered the Gateway

 By clicking the Live LORAWAN® FRAMES tab, you can check the LoRa packets sent by the nodes into your RAK7246G WisGate Developer D0 Gateway

Congratulations! Kou have connected your Gateway to an external ChirpStack Successfully!

Connecting to ResIOT

ResIOT is a platform for LoRaWAN/LPWAN Networks and IoT Projects for Smart City or Industry 4.0. Costeffective High availability and scalability. Open ResIOT's webpage to sign-up using you e-mail.



Figure 39: ResIOT Home Page

IoT Platform and LoRaWAN™ Netvavailability and scalability	vork Server On-Premises or Cloud High	HOME	FEATURES	PRICING	INFO 👻		C LOGIN	୍ତୁ sto
gn Up Free 15 Devices and 1 G	ateway							
Register your free ResIOT™ L	niversal IoT Platform accour	t in 10 se	conds! Imm	ediate act	ivation!			
Enter your email address								
Enter your email address								
Enter your email address								
Enter your email address								
Enter your email address fomi@rakwireless.com Select the desired free serv	ice							
Enter your email address fomi@rakwireless.com Select the desired free serv FREE Private Cloud	ice	_	On-pre	mise FSI F	REE Lice	ense		
Enter your email address fomi@rakwireless.com Select the desired free serv FREE Private Cloud 15 devices	ice	7	On-pre	mise FSI F	REE Lice	ense		
Enter your email address Image: formi@rakwireless.com Select the desired free serv FREE Private Cloud 15 devices 1 LoRaWAN™ gateway	ice	7	On-pre 5 device 1 LoRaV	mise FSI F s VAN™ gate	REE Lice	ense		
Enter your email address fomi@rakwireless.com Select the desired free serv FREE Private Cloud 15 devices 1 LoRaWAN™ gateway Unlimited uplinks/downlink	ice]	On-pre 5 device 1 LoRaV	mise FSIF s VAN™ gate d uplinks/dd	REE Lice	ense		
Enter your email address fomi@rakwireless.com Select the desired free serv FREE Private Cloud 15 devices 1 LoRaWAN™ gateway Unlimited uplinks/downlinkk LoRaWAN™ Network Serv	ice s]	On-pre 5 device 1 LoRaV Unlimite LoRaV/A	mise FSIF s VAN™ gate d uplinks/dd	REE Lice way ownlinks ork Server	ense		
Enter your email address fomi@rakwireless.com Select the desired free serv FREE Private Cloud 15 devices 1 LoRaWAN™ gateway Unlimited uplinks/downlinkk LoRaWAN™ Network Serv API/Connectors/Smart Scer	ice s er bes/LUA Scripting Advanced Scer	ies	On-pre 5 device 1 LoRaV O Unlimite LoRaWA API/Con	mise FSI F s VAN™ gate d uplinks/do AN™ Netwo nectors/Sm:	REE Lice way ownlinks ork Server art Scenes	ense s/LUA Scripting Ad	dvanced Scen	les
Enter your email address fomi@rakwireless.com Select the desired free serv FREE Private Cloud 15 devices 1 LoRaWAN™ gateway ● Unlimited uplinks/downlinkk LoRaWAN™ Network Serv API/Connectors/Smart Scerv 5 days data retention	ice s er nes/LUA Scripting Advanced Scer	ies	On-pre 5 device 1 LoRaV Unlimite LoRaWA API/Con Available	mise FSI F s VAN™ gate d uplinks/dc AN™ Netwo nectors/Sm e for Windo	Way way wornlinks rk Server art Scenes ws/Linux	e nse s/LUA Scripting Ac	dvanced Scen	ies

Figure 40: ResIOT Sign-up Page

• After clicking the "**Sign up free**" button, a new window shows up in which you will fill in the necessary information to complete your registration. Afterwhich, click the "SIGN UP FREE" button at the bottom of the webpage.

forr	i@rakwireless.com
۶	•••••
۶	•••••
•	Fomi
•	Tong
٢	Default Language (English)
۲	United Kingdom
Ņ	Company Name (Optional)
	Street Address
	City
٠	State
*	Postcode

Figure 41: ResIOT Registration Credentials

• Once registration is done, a new page will be shown in your screen with you username and a link which will be is your ResIOT application site.

<mark>ジ</mark> ReslOT	IoT Platform and LoRaWAN™ Network Server On-Premises or Cloud High availability and scalability	НОМЕ	FEATURES	PRICING	INFO 👻	e LOGIN
Sign Uj	o Free 15 Devices and 1 Gateway					
ť۵ Y	ou have successfully registered!					
You	r Lisername: B104648					
Link	<pre>k to the application site: https://eu72.resiot.io</pre>					
Che	ck your email inbox to activate your account and retrieve your p	assword!				
Lini Che	x to the application site: <mark>https://eu72.resiot.io</mark> ck your email inbox to activate your account and retrieve your p	assword!				

Figure 42: ResIOT Application Site Link

• Upon clicking the application site link, you will see the login page:

	Login to your account	ジ ResIOT	
	Username		
	🚢 R104648		
-	Password		
-	<i>Q</i> _e		-
	Language		
-	English	T	
	Remember me	+) Login	
	New user? Create New Account!	V.2.4.1000	
	ResIOT is supported by the following Browsers: Chrome, Firef	Fox and Safari.	

Figure 43: ResIOT Application Log-in Page

• Upon successful log-in, you shall then be asked to choose your LoRaWAN Frequency Plan. For this example, choose **EU868 Region.**

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Figure 44: ResIOT LoRaWAN Frequency Plan

 We will now then setup your RAK7246G WisGate Developer D0 Gateway by clicking the "Step 1: Add Gateway Wizard".



Figure 45: Adding your Gateway in ResIOT

• A list of LPWAN Gateways are then shown. Choose the item "IMST iC880a + Raspberry Pi".

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	<u>× ×</u> * 2 *			
# Dashboard		× # - Page1 + 🖺 🕑		
局 Nodes/Devic	es 🛛 🖨 Add 🕻	Gateway Wizard		
O Multicast	e		Models Code: Kerlink iBTS	*
⊟ LoRaWAN™	Gateways		- the	
≓ Data Conne	ctors C		(side in the second se	
Real Time N	Nonitor N		*	
Smart Scene	es/Lua Scripts			
🛗 Scheduler 🚺	0	LL-BST-8 LoRa/Symphony	IMST IC880a + Raspberry Pi	
Smart Action	ns 🖸	Models Code: LL-BST-8 LoRa/Symphony	Models Code: IMST IC880a; Raspberry Pi	
📩 Variables	e	1		
🗞 Tools	6			
lugins/Add	dons 🔃 🖸	4		
Communicat	tion Log			
🕑 Log				
Lill Stats / Char	ts C	Generic Packet Forwarder Connection: Only UDP	Sice IP68 Full Outdoor Gateway Frequencies: US 902-928, EU 863-870	
Settings	Class	Models Code: Semiter LoRa is trademark owned by Semtech. LoRaV	WAN™ is trademark owned by LoRa Alliance. All the other product	
Dashboard	Widget	names, logos, and bran	nds are property of their respective owners.	- 1 1 +
Sub Account	C Economy the	Mircosoft Azure 101,		

Figure 46: Choosing IMST iC880a + Raspberry Pi for your RAK7246G WisGate Developer D0 Gateway

• Afterwhich, a new page will show up asking you to fill in the necessary credentials.

	Frequencies: All	Models: IMST IC880a; Raspberry Pi	
	Connect with: ResIOT Base Station 2018	Client Connect with: Generic Semt Forwarder	ech Packet
	1. Choose the LoRaWAN [™] so 2. Copy the data of the UDP Server a 3. Follow the instruction on the page 4. Once the gateway is configured, copy the Gate 5. If in the configuration is present the Mac	erver you want to use in the form below, nd UDP Port that are shown in the greer https://docs.resiot.io/RaspberryGatewa way EUI from the Local Configuration ar below; Addres of the gateway, copy that too in	window; yGuide/; id enter it in the form the form below.
	LoRaWAN™ Server *	LoRaWAN™ Eu868 MHz-Class A+C UDP Server: eu7 UDP Server: eu72udp.resiot.io UDP Port: 7677 Region: EU 863-870	2udp.resiot.i 💌
	Name *	Name	
	Mac Address *	Mac Address	<u>e</u>
	Gateway EUI/ID *	Gateway EUI/ID	<u>e</u>
Back	LoRa is trademark owned by Semtech. LoRaW names, logos, and bran	/AN™ is trademark owned by LoRa Alliance. All the of ds are property of their respective owners.	her product Save Config

Figure 47: Adding Credentials in Gateway Setup

- 1. Name: You can fill in any content based on your preference
- 2. Mac Address: This is the Wi-Fi MAC Address of your RAK7246G WisGate Developer D0 Gateway. You can get the Mac Address by typing ifconfig command in the terminal you accessed through SSH.



Figure 48: Getting the Wi-Fi MAC Address of the RAK7246G WisGate Developer D0 Gateway

3. Gateway EUI/ID: This is the Gateway ID which you can get in the Configuring your Gateway section.

	RAK7246 (Gateway ID:B827EBFFFEDBB038 Version: 4.1.1R) Configuration options: Set pi password Set up RAK Gateway LoRa concentrator Restart packet-forwarder Edit packet-forwarder config Configure WIFI Gateway UP Set pi password Set pi	
-	< 0 <u>(></u> < Quit >	

Figure 49: Getting the Gateway ID of the RAK7246G WisGate Developer D0 Gateway

• After getting all the necessary credentials, fill in the data ang click "Save Config" button.

	Frequencies: Models: All IMST IC880a; Raspberry Pi
A Company	
	Connect with: ResIOT Base Station Client 2018 Connect with: Generic Semtech Packet Forwarder
	 1. Choose the LoRaWAN[™] server you want to use in the form below; 2. Copy the data of the UDP Server and UDP Port that are shown in the green window; 3. Follow the instruction on the page https://docs.resiot.io/RaspberryGatewayGuide/; 4. Once the gateway is configured, copy the Gateway EUI from the Local Configuration and enter it in the form below; 5. If in the configuration is present the Mac Addres of the gateway, copy that too in the form below.
	LoRaWAN™ Server * LoRaWAN™ Eu868 MHz-Class A+C UDP Server: eu72udp.resiot.i ▼
	UDP Server: eu72udp.resiot.io UDP Port: 7677 Region: EU 863-870
	Name * RAK7246
	Mac Address * b8 : 27 : eb : 87 : 30 : 45 🖌
	Gateway EUI/ID * b8 : 27 : eb : ff : fe : 87 : 30 : 45
Back	LoRa is trademark owned by Semtech. LoRaWAN [™] is trademark owned by LoRa Alliance. All the other product names, logos, and brands are property of their respective owners.

Figure 50: Saving the Gateway Configuration for the RAK7246G in ResIOT

 Login back to the RAK7246G WisGate Developer D0 Gateway and choose "4 Edit packet-forwarder config" through SSH.

RAK7246 (Gateway ID:B827EBFFFE873045 Version: 4.1.1R) Configuration options:	1
<pre>1 Set pi password 2 Setup RAK Gateway LoRa concentrator 3 Restart packet-forwarder 6 Edit packet-forwarder config 5 Configure WIFI</pre>	
< [K > < Quit >	

Figure 51: Editing the packet-forwarder configuration through SSH

• It will then open the "global_conf.json" file. Edit it to update the LoRaWAN configuration by modifying the content with the data from the ResIOT website same with the image shown below:

Connect with: ResIOT Base Station 2018	Client Connect with: Generic Semtech Packet Forwarder							
1. Choose the LoRaWAN™ se 2. Copy the data of the UDP Server an 3. Follow the instruction on the page 4. Once the gateway is configured, copy the Gate 5. If in the configuration is present the Mac	1. Choose the LoRaWAN [™] server you want to use in the form below; 2. Copy the data of the UDP Server and UDP Port that are shown in the green window; 3. Follow the instruction on the page https://docs.resiot.io/RaspberryGatewayGuide/; 4. Once the gateway is configured, copy the Gateway EUI from the Local Configuration and enter it in the form below; 5. If in the configuration is present the Mac Addres of the gateway, copy that too in the form below.							
LoRaWAN™ Server *	LoRaWAN™ Eu868 MHz-Class A+C UDP Server: eu72udp.resiot.i ▼ UDP Server: eu72udp.resiot.io UDP Port: 7677 Region: EU 863-870							
Name *	RAK7246							
Mac Address *	b8:27:eb:87:30:45							
Gateway EUI/ID *	b8:27:eb:ff:fe:87:30:45 ✔							
Back LoRa is trademark owned by Semtech. LoRaW names, logos, and bran	/AN™ is trademark owned by LoRa Alliance. All the other product ds are property of their respective owners.							

Figure 52: ResIOT Data to be inserted in the LoRaWAN Configuration

• Modify the contents of the Json File with the data from the image shown in the previous step.



Figure 53: The Json Configuration File to be Modified

- Click the hotkey "Ctrl + X" to stop editing the Json File and Press "Y" to save the modifications.

BAK[®] Documentation Center

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-	 Gateway Stats 		K Go to page: 1							
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-	 Connection Settings 		Page 1 of 1 (1 - 15 of 1) Page loaded in: 17.035532ms							
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9	Communication Log		"mtype":"UnconfirmedDataUp", "devaddr":"2601224a", "fp	port":1,"fcounter":1	76}, "rfChain": "1", "rssi": "-113"	", "snr": "3.2", "spreadFactor"	:"7", "timeToAir": "61r	ns"},"Attempt":0}		
0	Log		7:18:38 comm_gwalive [LoRaWAN ** Network Serv "b827ebfffe873045"],"DT":"2020-01-15T10 <u>:18:38.340898</u>	er] comm_gwalive/ 3455+01:00","Attem	b827ebfffe873045 {"Comm1" pt":0}	ype : comm_gwalive","Con	nector : 69643d32",	Host : 219.144.189.172"	, GatewayEUIs":	
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Figure 54: ResIOT Connection Successful

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