## **Advantech AE Technical Share Document**

Date	2022/7/22	SR#	1-4410434351			
Category	■FAQ □ SOP	<b>Related OS</b>	N/A			
Abstract	How to connect WISE-2410 to ChirpStack via WISE-6610?					
Keyword	WISE, LoRaWAN					
Related						
Product	WISE-6610, WISE-2410	WISE-6610, WISE-2410, ChirpStack				

#### Brief Description

This FAQ would like to explain how to make WISE-6610 constantly upload uplink data to <u>ChirpStack Server</u> and how to use the mechanism of OTAA mode on <u>ChirpStack Server</u> to add information about WISE-2410. The topology of the scenario is shown as below.



Figure 1. Topology of the scenario

#### Tested Environment

- 1. Operating System installing ChirpStack docker images is Windows 10
- 2. Docker and Docker Compose version on Windows are 20.10.14 and 1.29.2 respectively
- 3. ChirpStack version is latest v3, please follow below website's instruction <u>https://github.com/brocaar/chirpstack-docker</u>
- 4. WISE-6610 user module version is lora.v3-2.1.4-20220120T022753Z
- 5. WISE-2410 firmware version is WISE-2410\_vA113B02\_T\_UT

#### ■ Brief Solution – Step by Step

<u>Step 1</u>: Connect WISE-2410 to WISE-6610 by using LoRa. Please follow the below FAQ documents, which is "How to connect WISE-2410 with WISE-6610" Ref: <u>https://www.advantech.com/support/details/faq?id=1-1RTJSL4</u>

Noted: The tested LoRa frequency is AS923, which ChirpStack setting needs to refer to.

<u>Step 2</u>: Set IP and port of <u>ChirpStack Server</u> on WISE-6610 webpage, like Figure 2, to make WISE-6610 send (upload) packet forward to the <u>ChirpStack Server</u>. In this case, IP and port of the <u>ChirpStack Server</u> are "192.168.50.225" and "1700". The setting path is WISE-6610 LoRaWAN Gateway User Module > LoRaWAN Radio > Packet Forward.

				LoRaWAN Gateway Setting
LoRaWAN Gateway Identifier	74FE48FFFE4FBB1A	]		
	IP address	Upstream Port	Downstream Port	
Network server	192.168.50.225	1700	1700	]
Backup server	127.0.0.1	1680	1680	]
Backup Enable	Off 🗸			
Backup Timeout(15-120sec.)	15	]		
	Username	Password	TLS	HTTP port
Remote Network Server	root	root	Off 🗸	8080
Save				

Figure 2. Setting LoRaWAN Gateway on WISE-6610

<u>Step3</u>: Before running the <u>ChirpStack Server</u>, please make sure that chirpstack-networkserver.toml file, which is downloaded from GitHub, is set correctly corresponding to WISE-6610 LoRa frequency. Figure 3 and Figure 4 are the setting file's relative location and frequency setting sample.

> Users → danny.lu → Documents → Serv	/ers > chirpstack-docker-m	aster > configuration	> chirpstack-network-server
Name	Date modified	Туре	Size
📙 examples	11/17/2021 6:15 PM	File folder	
chirpstack-network-server.toml	6/8/2022 1:16 PM	Toml 來源檔案	2 KB

Figure 3. Relative location of ChirpStack Network Server setting file



Figure 4. Frequency setting sample

Note: More setting about <u>ChirpStack Server</u> setting, please refer to following website <u>https://www.chirpstack.io/network-server/install/config/</u>

Note: Please follow instruction of README.md file to run ChirpStack Docker https://github.com/brocaar/chirpstack-docker

<u>Step4</u>: After running <u>ChirpStack Server</u>, please complete the basic setting, including Networkservers, Gateway-profiles, Services-profiles, Gateways and Applications on <u>ChirpStack</u> <u>Server</u> webpage (Figure 5) in advance. This step will describe every setting below following sections.

~	$\rightarrow$ C () localhost:8080/#/organizations/1		@		
€	ChirpStack				
<ul> <li>♠</li> <li>●</li> <li>●</li> <li>●</li> <li>●</li> </ul>	Dashboard Organizations / chirpstack Network-servers section1 Gateway-profiles section2 DASHBOARD CONFIGURATION				
∎ •	All users Active devices API keys No data available.	Active gateways	Device data-rate usage No data available.		
chir	stack     Org. dashboard  Org. users	Adve			
<b>∝</b> ∥ ∰	Org. API keys Service-profiles Device-profiles		_		
®	Gateways Section4 Gateways Applications section5				

Figure 5. <u>ChirpStack Server</u> webpage

Section1: Click Network-servers and click ADD button to add a new network server, The

following is the field introduction in Figure 6.

- (a) ADD: Click this button to add a new network-server.
- (b) **Network-server name**: The network server name is user defined. In this case, the server is named as "Advantech".
- (c) **Network-server** server: The network server domain name is user defined. In this case, this field is filled in as "chirpstack-network-server:8000".
- (d) ADD NETWORK SERVER: Click the button to save the setting.

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	ChirpStack				8	B admi	In
<b>^</b>	Dashboard Section: Network-servers	Network-servers		(a)		+ ADE	2
© ₽	Gateway-profiles Organizations	Name Server					
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€	ChirpStack		Q Search organization, application, gateway or device		?	e adr	min
<b>↑</b>	Dashboard Network-servers	Network-servers / Add					
@ #	Gateway-profiles Organizations	GENERAL GATEWAY DISCOVERY TLS CERTIFICATES					
•	All users	Network-server name * (b)					_
٩	API keys	Networks of destruction of the service R000 (C)					
chi	rpstack 👻	The 'hostname:port' of the network-server, e.g. 'localhost:8000'.					- 1
<b>↑</b>	Org. dashboard Org. users		(d)	ADD NE	TWORK	SERVE	R

Figure 6. Add a new network server

**Section2**: Click **Gateway-profiles** to create a kind of gateway. The following is the field introduction in Figure 7.

- (a) **CREATE**: Click the button to create a new gateway-profile.
- (b) **Name**: The gateway profile is user defined. In this case, the field is named as **WISE-6610**".
- (c) **Stats interval**: The gateway will report statistics in this interval. In this case, the field is set as "1" second.
- (d) Enabled channel: The channels active in this gateway-profile as specified in the LoRaWAN Regional Parameters specification. Separate channels by comma, e.g. 0, 1, 2. In this case, the WISE-6610 using AS923-1 enables channel from 0 to 7, "0,1,2,3,4,5,6,7".
- (e) Network-server: Choose the network server created in section 1 of step 4.
- (f) **CREATE GATEWAY-PROFILE**: Click the button to save the setting.

$\leftarrow$	ightarrow $ m C$ $ m (i)$ localhos	st:8080/#/gateway-profiles	
∉	ChirpStack		Q. Search organization, application, gateway or device ? early admin
•	Dashboard Network-servers	Gateway-profiles	(a) + CREATE ③ HELP
	Gateway-profiles Organizations	Section2 Name Network-server	
÷	ightarrow $ m C$ (i) localhos	st.8080/#/gateway-profiles/create	ମ୍ୟ କରି 👌 କି 🙆 "
	ChirpStack		Q Search organization, application, gateway or device ? each admin
<b>^</b>	Dashboard Network-servers	Gateway-profiles / Create	
$\bigcirc$	Gateway-profiles	Norma t	
	Organizations	WISE-6610 (b) A short name identifying the optewar-profile	
•	All users	State interval (seconds) *	
٩	API keys	1 The stats interval in which the gateway reports its statistics. The recommended value is 30 seconds.	
chirp	stack 👻	Enabled channels *	
A	Org. dashboard	0,12,3,4,5,6,7 (C) The channels active in this gateway-profile as specified in the LoRaWAN Regional Parameters specification. Separate channel	s by comma, e.g. 0, 1, 2. Extra channels must not be included in this list.
•	Org. users	Advantech (e)	(f) -
٩	Org. API keys		
E	Service-profiles		ADD EXTRA CHAINNEE OREATE GALEWAPPROFILE

Figure 7. Add a new gateway profile

<u>Section3</u>: Click Service-profiles to create a kind of service. The following is the field introduction in Figure 8.

- (a) **CREATE**: Click the button to create a new service profile.
- (b) **Name**: The service profile is user defined. In this case, the field is named as **WISE-6610-AS923**" because, in this case, AS923 frequency of WISE-6610 is used.
- (c) Network-server: Choose the network server created in section 1 of step 4.

The other setting is default by <u>ChirpStack Server</u> system, and, in this case, the other setting is not changed.

(d) **CREATE SERVICE-PROFILE**: Click the button save the setting.



÷	ightarrow C () loc	calhost:8080/#/organizations/1	/service-profiles	) / A Q 🏠 🖆 🚇 🥥 🤫
€	ChirpStack			Q. Search organization, application, gateway or device 🕑 🖨 admin
*	Dashboard Network-servers	Service-profiles		(a) + CREATE
R	Gateway-profiles	Name	a	Network Server
•	All users	$\leftarrow$ $\rightarrow$ G () ke	allost 808 ganizations/1/service-profiles/create	© 2 A Q ta ta ta €
٩	API keys	← 🖉 ChirpStack	- <b>-</b>	Q. Search organization, application, gateway or device 🛛 🥹 admin
chir	ostack 👻	Dashboard     Network-servers	Service-profiles / Create	
A	Org. dashboard	Gateway-profiles	Service-profile name*	
• «	Org. users Section3 Org. API keys	Organizations     All users     API keys	WISE-4410-54922         D           Aname to control the service-process.         Networks every service.           Mittander of the service-process.         C           Aname to mare with this service-process.         Anameters	
4 HH @	Device-profiles Gateways	chirpstack 👻	Add gateway meta-data OW metadata (855, KM, GM gaviec, etc.) are added to the packet sent to the application-enver.	
	Applications	Org. users     Org. API keys	Enable network geolocation  When enabled, the network-server will try to resolve the location of the devices under this service-profile. Please note that you no	eed to have gateways supporting the fine-timestamp feature and that the network-server needs to be configured in order to provide geolocation support.
		±≡ Service-profiles	Device status request frequency 0	
		註 Device-profiles	Frequency to initiate an End-Device status request (request/day). Set to 0 to disable. Minimum allowed data-rate *	
		(g) Gateways	0 Manman shared data ran. Van far ABR. Manman shared datarater * 0 Manman shared data ran. Vane far ABR.	
			Private gateways     Gateways under this service-profile are private. This means that these gateways can only be used by devices under the same see	versaufie (d)
				CREATE SERVICE-PROFILE

Figure 8. Add a new service profile

<u>Section4</u>: Click Gateways to create a kind of service. The following is the field introduction in Figure 9.

- (a) **CREATE**: Click the button to create a new gateway.
- (b) **Gateway name**: The gateway is user defined. In this case, the field is named as WISE-6610 with suffix about last four WISE-6610's ID, **"WISE-6610-BB1A"**.
- (c) Gateway description: The field is user defined.
- (d) **Gateway ID**: Every gateway has its own identifier, please fill in its ID to this field. In this case, the field is filled in the WISE-6610's ID, "74FE48FFFE4FBB1A".
- (e) Network-server: Choose the network server created in section 1 of step 4.
- (f) Service-profile: Choose the service profile created in section 3 of step 4.
- (g) Gateway-profile: Choose the gateway profile created in section 2 of step 4.

The other setting is default by <u>ChirpStack Server</u> system, and, in this case, the other setting is not changed.

(h) **CREATE GATEWAY**: Click the button to save the setting.

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←	ightarrow C () lo	calhost:8080/#/organizations/					G 🕘 👘
€	ChirpStack						?  admin
<b>^</b>	Dashboard Network-servers	Gateways				(a	+ CREATE
@ #	Gateway-profiles Organizations	Last seen	Name	Gateway ID	Network server	Gateway activity (30d)	~ @ <b>@</b>
•1 «	All users API keys	← 🥜 ChirpStack	annoscouou/#/organizations/1/gatewa		Q. Sea	ch organization, application, gateway or device	.= 🕊 🥶 "@
chir;	Org. dashboard	Dashboard     Deshboard     Network-servers	Gateways / Create				
*	Org. users Org. API keys	Gateway-profiles     Organizations	GENERAL TAGS	METADATA			_
1	Service-profiles	All users	The name may only contain words, numbers and dashed Gaseway description * No (C)				
# @	Gateways Applications	Org. dashboard     Org. users	Gaterway 10 * 74 FE 48 FF FE 4F BB 1A (d)				MSB C
		Q Org. API keys 副 Service profiles 部 Device-profiles	Advantech (e) Select the network-server to which the gateway will con Service profile WISE-6610-AS923 (f)	neet. When no network-servers are available in the dropdown, n	whe same a service-profile exists for this segarization.		v
		Applications	Select the service-profile under which the gateway must Gateway-profile (g) WISE-6610 (g) Optional. When assigning a gateway-profile to the gatew	the added. The available service-profiles depend on the selects	d network-nerver, which must be selected first. ay according to the gateway-profile. Note that this does require a gateway with	ChirpStack Concentratord.	
			Gateway discovery enabled When enabled (and ChirpStack Network Server is config Gateway altitude (meters) * 0	pred with the gateway discover feature enabled), the gateway v	ill send out periodical pings to test its coverage by other gateways in the same	ntwak.	(h)

Figure 9. Add a new gateway

<u>Section5</u>: Click Applications to create an application, which can contain many registered Lora end node. The following is the field introduction in Figure 10.

- (a) **CREATE**: Click the button to create a new application.
- (b) **Application name**: The application is user defined. In this case, the field is named as **"Advantech-WISE"**.
- (c) Application description: The field is user defined.
- (d) Service-profile: Choose the service profile created in section 3 of step 4.
- (e) **CREATE APPLICATION**: Click the button to save the setting.

~	$\rightarrow$ C (	) loc	alhost:8080/#/organiza	ations/1/applications			<u>}</u>	œ		0
€	ChirpStack							?	\varTheta admin	
<b>^</b>	Dashboard Network-servers		Applications				(a)		CREATE	
@ #1	Gateway-profiles Organizations		ID	Name	Service-profile	Description				
<u>.</u>	All users	~	$\rightarrow$ C ()	localhost:8080/#/organizations/1/applicatic	aate	© 2 A <sup>\</sup> Q ⊊			•	0
٩	API keys	€	ChirpStack			${f Q}_{{f c}}$ Search organization, application, gateway or device		?	\varTheta admin	
chir	pstack 👻	<b>n</b>	Dashboard	Applications / Create						
ŧ	Org. dashboard		Network-servers							
•	Org. users	R	Gateway-profiles	Application name* (b)						
٩	Org. API keys		Organizations	Advantech-WISE The name may only contain words, numbers and dashes.						
<u>.</u> ≡	Service-profiles	* a	All users	Application description *						
	Device-profiles	chir	pstack *	Service-profile* (d)					_	
R	Gateways		Ora daebhoard	The service-profile to which this application will be attached	d. Note that you can't change this value after the application has been created.		_			
	Applications	п ÷	Org. users			(e)	) ст	REATE AP	PLICATION	
S	ection5	٩	Org. API keys							

Figure 10. Add a new application

<u>Step5</u>: After above setting is done, please go to **Gateways** page to check whether <u>ChirpStack</u> <u>Server</u> receives the any uplink data from WISE-6610 like below Figure 11.

←	$\rightarrow$ C (	localhost 8080/#/organizations/1/gateways	A) Q Ga 🔁 🖷 🥥 …
€	ChirpStack		Q. Search organization, application, gateway or device 🕜 😝 admin
* 11	Dashboard Network-servers	Gateways	+ CREATE
®	Gateway-profiles Organizations	Last seen Name Osteway ID	Network server Qateway activity (30d)
<u>*</u>	All users	a few seconds ago Z WISE-6610-BB1A 74fe8fffe4fbb1a	Advantech
٩	API keys	alhost:8080/#/organizations/1/gateways/74fe48fffe4fbb1a/frames	^ ⊂ & @
chir	pstack		Q Search organization, application, gateway or device 📀 🕒 admin
↑ ±	Org. dashboard Org. users	Gateways / WISE-6610-BB1A	DELETE
٩	Org. API keys	GATEWAY DETAILS GATEWAY CONFIGURATION CERTIFICATE GATEWAY DISCOVERY LIVE LORAWAN FRAMES 3	
	Service-profiles Device-profiles	1	⑦ HELP II PAUSE
Ŵ	Gateways	Jun 27 11:57:43 AM UnconfirmedDataUp) (922.2 MHz) (SF11) (BW125) (FPort. 6) (FCnt: 18235) (DevAdd:: fe16802c)	v
	Applications	Jun 27 11:57:39 AM (UnconfirmedDataUp) (923.4 MHz) (\$F11) (BW125) (FPort 11) (FOnt 18234) (DevAddr: fe168b2c)	~
		Jun 27 11:57.39 AM (UnconfirmedDataUp) (923.4 MHz) (SF11) (BW125) (FPort: 11) (FCnt: 18234) (DevAddr: fe168b2c)	~
		Jun 27 11:57.28 AM (ConfirmedDataUp) (923.4 MHz) (SF7) (BW125) (FPort: 1) (FCrt: 4) (DevAddr: ff549a99)	~
		Jun 27 11:56:58 AM (UnconfirmedDataUp) (922.6 MHz) (SF11) (BW125) (FPort. 6) (FCnt: 18233) (DevAdd:: fe168b2c)	~
		Jun 27 11:56:58 AM (UnconfirmedDataUp) (922.6 MHz) (SF11) (BW125) (FPort. 6) (FCnt: 18233) (DevAdd:: fe168b2c)	~
		Jun 27 11:56:54 AM (UnconfirmedDataUp) (923.2 MHz) (SF11) (BW125) (FPort: 11) (FCnt: 18232) (DevAddr: fe168b2c)	~

Figure 11. ChirpStack Server receives uplink data from WISE-6610

<u>Step6</u>: Create the WISE-2410 device profiles on <u>ChirpStack Server</u>, and please notice the uplink interval parameter on <u>ChirpStack Server</u> setting page (7<sup>th</sup> field of Figure 12) must correspond to measurement interval on WISE-2410 webpage (Figure 13). The following is the field introduction in Figure 12.

- (a) **CREATE**: Click the button to create a new device-profile.
- (b) **Device-profile name**: The device profile is user defined. In this case, the field is named as **"WISE-2410-OTAA"**.
- (c) Network-server: Choose the network server created in section 1 of step 4.
- (d) **LoRaWAN MAC version**: Choose the LoRaWAN version of the customer's LoRa end node. In this case, the firmware version of WISE-2410 is using LoRaWAN "1.0.2" so far.
- (e) LoRaWAN Regional Parameter revision: Choose the LoRaWAN Regional Parameter revision of the customer's LoRa end node. In this case, the revision of WISE-2410 is "RP002-1.0.2" so far.
- (f) **ADR algorithm**: Choose ADR algorithm of the customer's LoRa end node. In this case, the WISE-2410 uses "**Default ADR algorithm (LoRa only)**".
- (g) **Max EIRP**: Maximum EIRP supported by the customer's end node. In this case, the field is set as default value, **"0**".
- (h) Uplink interval (seconds): It must correspond to uplink interval of the customer's LoRa end node. In this case, the field is set as "60" seconds because WISE2410 sends uplink data per minute.
- (i) Device supports OTAA (In JOIN (OTAA/ABP page)): It means the customer's LoRa end node will be in OTAA mode. In this case, the field is checked due to the WISE-2410 in OTAA mode.

(j) **CREATE DEVICE-PROFILE**: Click the button to save the setting.

←	ightarrow C (i) k	ocalhost:8080/#/organizations/1/device-profiles	A) Q G 👍 🖨 🥥 😘
€	ChirpStack		Q. Search organization, application, gateway or device 🕜 😝 admin
★ III © III • √	Dashboard Network-servers Gateway-profiles Organizations All users API keys	Device-profiles            ← → C ○ ○ loahodt 6000/#/organizations/1/device-profiles/create             ← Cashoard	(a) + create A C 22 2000 € 1000
chirp: ♣ • • • • • • • • • • • • •	org. dashboard Org. users Org. API keys Service-profiles 1	Constantiation     CLASS & CLASS & CODEC     Consequences and the proceeding of the proceeding the description of the desc	Electric designed GMA. (j) (j) Constructions reports
© 	Gateways Applications	Line     (d)       Table Mark Mark Annuel Angementer In the neurone     (b)       Table Mark Mark Annuel Angementer In the Neurone     (b)       Stream Sar Line Mark Mark Mark Mark Mark Mark Mark Mark	

Figure 12. Creating WISE-2410's device profile on ChirpStack Server

WISE-2410	
Information	
✗ Configuration	Seconfiguration
ևա I/O Status	Information RF Module Scheduling Control General Firmware
🛦 Site Survey	Scheduling
📽 Advanced 🔻	Schedule Mode Basic
	Measurement Interval 60 sec
	✓ Submit

Figure 13. WISE-2410 Scheduling setting

<u>Step7</u>: To add the WISE-2410 node to <u>ChirpStack Server</u>, please go to **Applications** > {**Advantech-WISE**} > **DEVICES** and click **CREATE** button to add a new WISE-2410 node like Figure 14 shown as below.

←	$\rightarrow$ C () k	calhost:8080/#/organizations/1/applications		P	A <sup>N</sup> Q Co	¢= @		
€	ChirpStack					0	🔒 adr	nin
÷	Dashboard Network-servers	Applications					+ CREA	TE
@ ==	Gateway-profiles Organizations	ID Name	Service-profile	De	scription			
<u>*</u>	All users	1 2 Advantech-WISE	WISE-6610-AS923	No				
٩	API keys	calhost:8080/#/organizations/1/applications/1		G	Rows per page: 10 -	1-1 of 1	(O)	
chirg	pstack 👻					3	e ad	min
A	Org. dashboard							_
*	Org. users	Applications / Advantech-WISE					DELE	TE .
٩	Org. API keys		INTEGRATIONS					
å≡	Service-profiles							
배	Device-profiles				3 + CREATE	SELEC		εs
R	Gateways 1					_		
	Applications	Last seen Device name	Device EUI	Device profile Link r	nargin	Battery		



And fill out the WISE-2410's information. The following is the field introduction in Figure 15.

- (a) **Device name**: The device is user defined. In this case, the field is named as WISE-2410 with suffix about last four characters of its device EUI, "WISE-2410-6E5E".
- (b) **Device-description**: The field is user defined.
- (c) **Device EUI**: Please fill in the device EUI of customer's LoRa end node. In this case, the device EUI is "74FE48FFFF556E5E".
- (d) **Device-profile**: Choose the device profile created in step 6.
- (e) **Disable frame-counter validation**: Disable that <u>ChirpStack Server</u> checks whether the message is repeated by Fcnt. In this case, the field is turned the checkbox off.
- (f) **Device is disabled**: if it's on, <u>ChirpStack Server</u> will ignore received uplink frames and join-requests from the device. In this case, the field is turned the checkbox off.
- (g) **CREATE DEVICE**: Click the button to save setting.

←	ightarrow C (i) k	calhost:8080/#/organizations/1/applications/1/devices/create			<b>.</b>
€	ChirpStack		Q Search organization, application, gateway or device	?	😝 admin
<b>★</b> III	Dashboard Network-servers	Applications / Advantech-WISE / Devices / Create			
@ #	Gateway-profiles Organizations	GENERAL VARIABLES TAGS			
•1 «	All users API keys	WSE-2410-65E (a) The same rise yold (contain words, numbers and dashes. Bened encounts)			_
chir	ostack 👻	No (b)			
ħ	Org. dashboard	74 FE 48 FF FF 55 6E 5E (C)		MSB	C
<u>*</u>	Org. users	Device-profile* WISE-2410-0TAA (d)			
٩	Org. API keys	Disable frame-counter validation (C)			
*≡	Service-profiles	Note that disabling the frame-counter validation will compromise security as it enables people to perform replay-attacks.			
# @	Device-profiles Gateways	Device is disabled (f)			
	Applications	Oxyduad Newald Server will space received uplied haves and join-requests from disabled devices.	(g)	CREAT	E DEVICE

Figure 15. Create a device on Application page

<u>Step8</u>: After creating a device on <u>ChirpStack Server</u> in step 7, please go to **Applications** > {**Advantech-WISE**} > {**WISE-2410-6E5E**} > **KEYS (OTAA)** to set for OTAA mode. Path of the setting is in Figure 16 shown as below.

÷	$- \rightarrow \mathbb{C}$ () localhost 8080/#/organizations/1/applications $\mathcal{P}$ A <sup>N</sup> Q $c_{00}$						æ	<b>@0</b>
€	ChirpStack						3	e admin
<b>^</b>	Dashboard Network-servers	Applications						+ CREATE
@ 11	Gateway-profiles Organizations	10 Name	Service-profile WISE-6610-AS923		Description			
• «	All users API keys	calhost:8080/#/organizations/1/applications/1			Rows per page: 11 2 A <sup>N</sup> 역 순	i ~ 1. 5 €	1 of 1	<b>.</b>
chi	rpstack 👻						?	\varTheta admin
♠	Org. dashboard Org. users	Applications / Advantech-WISE						DELETE
1 1 12	Service-profiles	DEVICES MULTICAST GROUPS APPLICATION CONFIGURATION	INTEGRATIONS					
R	Gateways 1				+	CREATE		
	Applications	Last seen Device name	Device EUI	Device profile	Link margin	в	attery	
		7 days ago 3 WINE 24104655	74fe48fff556e5e	WISE-2410-OTAA	n/a Rows per page: 1	n 0 + 1-	/a 1 of 1	< >

Figure 16. Path of the registered WISE-2410 page on ChirpStack Server

In the setting page, please generate and copy a random number of **Application key** from <u>ChirpStack Server</u> like Figure 17, and paste to the **Application Key** field of WISE-2410 like Figure 18.

€	ChirpStack	Q. Search organization, application, geterrary or device	e admin
<b>↑</b>	Dashboard Network-servers	Applications / Advantech-WISE / Devices / WISE-2410-6E5E	DELETE
R	Gateway-profiles	DETAILS CONFIGURATION KEYS (OTAA) ACTIVATION DEVICE DATA LORAVIAN FRAMES	
	Organizations	2. Click this is a to second a new low shows on left a	
*	All users	Appleanty 2. Click this icon to generate a new key shown on left	_
٩	API keys	O6 c3 ad 66 da e5 92 6e 97 84 1b 91 54 03 2a 27 MSB C  For LoBanian 1.0 denote to care your denote subgrowt LARWINN 1.1, update the denote-profile fort. C  Click, the Laren ta care your denote subgrowt LARWINN 1.1, update the denote-profile fort.	Ø 0
chirp	ostack 👻	3. Click the icon to copy the new generated key 4	VICE-KEYS
ŧ.	Org. dashboard		

Figure 17. ChirpStack Server generates random number of Application Key

WISE-2410							Í
Information							П
F Configuration	📌 Configurati	on					.
الله I/O Status	Information RF Module	Time & Date Scheduling	Control Gene	eral Firmware			
🛔 Site Survey	RE Module						
🎝 Advanced 🔻							
	Operation Region	TW	~				
	ISM Band	AS923MHz					
	RF Operation Mode	LoRaWAN	~	Device Class	Class A	~	
	Activation Mode	ΟΤΑΑ	~				
	Adaptive Data Rate						1
	Device EUI	74FE48FFFF556E5E					
	Application Information	1	Paste the ke	y from <u>Chirr</u>	oStack to this field		
	Application EUI	000000032343130					
	Application Key	06C3ADD6DAE5926E97841B9	9154032A27				

Figure 18. WISE-2410 of OTAA mode for ChirpStack Server's Application Key

Note: Cannot use the default Application Key on WISE-2410 on this application scenario.

<u>Step9</u>: Please go to Application > {Advantech-WISE} > {WISE-2410-6E5E} > LORAWAN FRAMES information of WISE-2410 on <u>ChirpStack Server</u> to check whether the WISE-2410 send JoinRequest to <u>ChirpStack Server</u> and the DevEUI (74FE48FFFF556E5E) matches the WISE-2410's device EUI like below Figure 19.

N.	TECH	Enabling an Intelligent Planet	
€	ChirpStack		Q Search organization, application, gate
<b>↑</b>	Dashboard Network-servers	Applications / Advantech-WISE / Devices / WISE-2410-6E5E	
$\bigcirc$	Gateway-profiles	DETAILS CONFIGURATION KEYS (OTAA) ACTIVATION DEVICE D	DATA LORAWAN FRAMES
	Organizations		
•	All users		(2) HELP
٩	API keys	Jun 17 4:35:47 PM ConfirmedDataUp (923.2 MHz) SF7 (BW125) (FPort: 1) FCnt: 7) DevAddr: 008	3c1a15
chir	ostack 👻	Jun 17 4:34:47 PM         ConfirmedDataUp         (923.2 MHz)         (SF7)         (BW125)         (FPort: 1)         (FCnt: 6)         (DevAddr: 008)	3c1a15
ŧ	Org. dashboard	Jun 17 4:32:47 PM (ConfirmedDataUp) (923.2 MHz) (SF7) (BW125) (FPort: 1) (FCnt: 4) (DevAddr: 008	3c1a15
•	Org. users	Jun 17 4:31:52 PM         ConfirmedDataUp         (923.2 MHz)         (SF7)         (BW125)         (FPort: 1)         (FCnt: 3)         (DevAddr: 008)	3c1a15
٩	Org. API keys	Jun 17 4:30:53 PM ConfirmedDataUp 923.2 MHz SF7 BW125 (FPort: 1) (FCnt: 0) (DevAddr: 008	3c1a15
<u>.</u> ≡	Service-profiles	Jun 17 4:30:48 PM JoinRequest 923.4 MHz SF10 BW125 DevEUI: 74fe48ffff556e5e	

Figure 19. LORAWAN FRAMES of WISE-2410

Note: The DevAddr **008c1a15** is created by the Application Key and Application EUI handshake in OTAA mode.

#### **Result:**

Because, in this case, **measurement interval** of WISE-2410 is set as 60 seconds, every uplink data of WISE-2410 on <u>ChirpStack Server</u> webpage is uploaded every about 60 seconds. Please follow Figure 16 to go to WISE-2410 page to check whether every data is uploaded in correct interval like below Figure 20.

€	ChirpStack	Q Search organization,	application, ga
ŧ	Dashboard	Applications / Advantach-WISE / Devices / WISE-2410-6E5E	
	Network-servers	Applications / Advancesh Wide / Devices / Wide 2410 0202	
$\bigcirc$	Gateway-profiles	DETAILS CONFIGURATION KEYS (OTAA) ACTIVATION DEVICE DATA LORAWAN FRAM	IES
	Organizations		
•	All users	(2) HELF	
٩	API keys	Jun 17 4:35:47 PM ConfirmedDataUp 923.2 MHz SF7 (BW125) (FPort: 1) (FCnt: 7) (DevAddr: 008c1a15)	nde
chirp	ostack 👻	Jun 17 4:34:47 PM (ConfirmedDataUp) (923.2 MHz) (SF7) (BW125) (FPort: 1) (FCnt: 6) (DevAddr: 008c1a15)	nus
ŧ	Org. dashboard	Jun 17 4:32:47 PM         ConfirmedDataUp         (923.2 MHz)         (SF7)         (BW125)         (FPort: 1)         (Fort: 4)         (DevAddr: 008c1a15)	
	VV		

Figure 20. Every about 60 seconds of LORAWAN FRAME