•••			☐ localhost:8080/?4	#/organizations/1/applications	Ċ	A 0 +
∉	C LoRaServer			<b>Q</b> Search organization, applic	ation, gateway or device	? 8 admin
** **	Network-servers	Applications				+ CREATE
$\mathbb{R}$	Gateway-profiles					
▦	Organizations	ID	Name	Service-profile	Description	
•	All users	1	air-quality	EU868	Air-quality application	
lorase	erver 👻	2	parking-sensor	EU868	Parking sensor application	ı
ф	Org. settings	3	weather-station	EU868	Weather-station application	on
•	Org. users				Rows per page: 10 ▼ 1-3 of	3 < >
<b>.</b>	Service-profiles					
	Device-profiles					
$\bigcirc$	Gateways					
	Applications					



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# 目录

LoRa Server 安装	4
1.1 LoRa Sever 安装相关软件	4
1.2 安装 mosquitto	4
1.3 安装 PostgreSQL	5
1.4 启动 LoRa Server	7
LoRa Server 配置使用	8
2.1 登录 Lora Server 配置系统	9
2.2 配置规范文件	10
2.3 添加网关	13
2.4 添加终端	14
2.5 向终端下发数据	16



### LoRa Server 安装

注意:

本程序包要求运行环境为 64 位的 Windows7/10 操作系统,本文操作以 Windows 7 64 位操作系统为例。 此文件夹不能放在中文路径下。

## 1.1 LoRa Sever 安装相关软件

安装 LoRa Server 需要的相关软件,我们已整理放在"LoRa Server Software"目录,如下:

## 1.2 安装 mosquitto

1.进入"Mosquitto"目录,双击"mosquitto-1.4.14-install-win32",按默认方式安装。

注:如果安装时提示缺少 dll 文件,请将 mosquitto\_dll 目录下的 dll 文件复制到 C:\windows\syswow64, 如果仍然提示缺少 dll 文件,可自行从网上下载。

2.WIN+R 键运行 services.msc,启动 Mosquitto Broker 服务。

💷 运行		X	5					
	Wind 件夹、	dows 将根据您所输入的名称,为您打开相应的程序、文 、文档或 Internet 资源。						
打开( <u>O</u> ):	services.msc 🔹							
	<del>)</del> (	使用管理权限创建此任务。	-					
		确定 取消 浏览( <u>B</u> )						

#### 图 1-1 打开服务配置

Mosquitto Broker	名称	描述	状态	启动类型	登录为
	Microsoft .NET Framework NGEN v2.0.50727_X86	Microsoft .NET Framewor		手动	本地系统
启动此服务	Microsoft .NET Framework NGEN v4.0.30319_X64	Microsoft .NET Framewor		自动(延	本地系统
	Microsoft .NET Framework NGEN v4.0.30319_X86	Microsoft .NET Framewor		自动(延	本地系统
描述:	Microsoft iSCSI Initiator Service	管理从这台计算机到远程 iS		手动	本地系统
MQTT v3.1 broker	Microsoft Software Shadow Copy Provider	管理发影复制服务制作的其		壬勳	木地玄统
-	🔍 Mosquitto Broker	MQTT v3.1 broker		自动	本地系统
	👒 Multimedia Class Scheduler	基士系统范围内的任务优先…	匕后	自动	本地系统
	🔍 Net.Msmq Listener Adapter	通过 net.msmq 和 msmq.f		禁用	网络服务

图 1-2 双击 Mosquitto Broker



Mosquitto E	Broker	的属性(4	5地计算机)			-	X
常规	学录	恢复	依存关系				
服务名称	<:	mosqu:	itto				
显示名称	š:	Mosqu	itto Brok	er			
描述:		MQTT	v3.1 brok	er			*
可执行文 C:\Prog:	[件的路 ram Fi]	径: les (x8	6)\mosqui	tto\mos	quitto.ex	e run	
启动类型	(E):	自动					•
<u>帮助我配</u>	出版务	启动选项	<u>.</u>				
服务状态		已停止	:				
自己	)(S)	停	5止(T)	暂	亭(P)	恢复(R)	
当从此处	启动职	务时,您	可指定所述	€用的启i	动参数。		
	((M):						
			確	定	取消	应月	Ħ(A)

图 1-3 启动 Mosquitto Broker

## 1.3 安装 PostgreSQL

进入 PostgreSQL 目录,双击 "postgresql-9.6.5.1-windows-x64",按默认方式安装。

注:

请将 PostgreSQL 安装在默认路径(C:\Program Files\PostgreSQL\9.6\),这样脚本语句才能自动配置用户和数据库。

配置密码时请将密码配置为: postgres 。



Setup	
Password	
Please provide a password for the database superuser (postgres).	
Password	
Retype password ••••••• postgres	
InstallBuilder	
< Back N	ext > Cancel

图 1-4 设置密码 postgres



图 1-5 忽略 Stack Builder



1. 双击 "postgresql\_cfg",该脚本语句自动配置用户和数据库。

▶ Loraserver 安装调试 ▶ LoRa Server Software ▶ PostgreSQL							
工具(T) 帮助(H)							
共享▼ 刻录 新建文件夹							
名称	修改日期	类型	大小				
loraserver.sql	2019/7/24 13:42	SQL 文件 Windows 批协理	1 KB				
postgresql-9.6.5-1-windows-xo4	2017/10/3 21:50	windows 抗处理 应用程序	1 КВ 172,448 КВ				

图 1-6 运行配置文件



图 1-7 配置运行结果

## 1.4 启动 LoRa Server

1.双击 lora server.bat 运行程序:



```
图 1-8 Lora Server 运行文件
```

2. 浏览器会自动打开 LoRa Server,进入登录界面,用户名:admin,密码:admin;

	ACTO A REAL	
$\leftrightarrow$ $\rightarrow$ C O localhost:8080/#/login		
	Login	
	Username *	
	admin 🔶	
	Password *	
	LOGIN	

图 1-9 用户登录界面

走到这一步, LoRa Server 已经完成了部署。

## LoRa Server 配置使用

在本地部署完 LoRa Server 后, 直接点 LoRa Server.bat 程序, 会自动启动 Redis,lora-gateway-bridge.exe,loraserver.exe,lora-app-server.exe,并打开浏览器,进入 Localhost:8080 loraserver 管理界面。

注: LoRa 终端入网后的工作频率范围需在 loraserver.toml 配置中更改。默认为 CN470 的第 0,1,2,3,4,5,6,7 信 道。如图所示:

```
221 # Example:
```

```
222 enabled_uplink_channels=[0, 1, 2, 3, 4, 5, 6, 7]
223 #enabled_uplink_channels=[80,81,82,83,84,85,86,87]
```

224

如果不是工作在 CN470 模式, 需要更改 loraserver.toml 中的如下参数:

#### ALINKWISE 睿联末来科技

110	[network_server.band]
111	# LoRaWAN band to use
112	#
113	<pre># Valid values are:</pre>
114	# * AS_923
115	# * AU_915_928
116	# * CN_470_510
117	# * CN_779_787
118	# * EU_433
119	# * EU_863_870
120	# * IN_865_867
121	# * KR_920_923
122	# * RU_864_870
123	# * US_902_928
124	name="CN_470_510"
105	

默认终端的网络 ID(NetID)必须为 0。 如果需要禁止 mac 命令和 adr 功能,如图:

```
# only.
disable_mac_commands=true
# Disable ADR
#
# When set, this globally disables ADR.
disable_adr=true
```

# Enable only a given sub-set of channels

## 2.1 登录 Lora Server 配置系统

Localhost:8080,打开登录界面,输入用户名: admin,密码: admin,登录成功后,进入系统首页。



$\leftarrow \rightarrow$	C O localhost.8080/#/organizations/1/applications						
∉	<b>DoRa</b> Server			Q Search organization, a	pplication, gateway or device ?		
R	Network-servers Gateway-profiles	Applications					
	Organizations	ID	Name	Service-profile	Description		
•	All users	1	test	CN470	测试		
loras	erver 👻				Rows per page: 10 ▼ 1-1 of 1		
¢	Org. settings						
•	Org. users						
<u>.</u> ≡	Service-profiles						
낦	Device-profiles						
$\bigcirc$	Gateways						
	Applications						
2	Multicast-groups						

图 2-1 系统首页

## 2.2 配置规范文件

(1) Network-server

€	<b>LoRa</b> Server	Q Search organization, application, gateway or device	?	e admin
• ©	Network-servers Gateway-profiles	Network-servers		+ ADD
<b>.</b>	Network-servers Gateway-profiles	Network-servers / Add		
•	Organizations All users	GENERAL GATEWAY DISCOVERY TLS CERTIFICATES		
lora	aserver 👻	IS A name to identify the network-server.		¥
\$	Org. settings	Network-server * localhost:8000		
*	Org. users	The hostnameport of the network-server, e.g. localhost.8000.		Ī
.≜≡	Service-profiles	ADD	NETWOF	K-SERVER
莊	Device-profiles			



€	<b>LoRa</b> Server		Q Search organization, applica
	Network-servers Gateway-profiles	Network-servers	
	Organizations	Name	Server
loras	All users	ns	localhost:8000

### 图 2-2 配置 Network-servers

#### (2) 配置 Gateway-profiles

		Q. Search organization, application, gateway or device 2 e admin
R	Network-servers Gateway-profiles	Gateway-profiles
-		
	Network-servers	Gateway-profiles / Create
R	Gateway-profiles	
₽	Organizations	Name *
:	All users	Gateway-CN470-0 A short name identifying the gateway-profile.
loras	erver 👻	Enabled channels "
¢ •	Org. settings Org. users	0, 1, 2, 3, 4, 5, 6, 7 The channels active in this gateway-profile as specified in the LoRaWAN Regional Parameters sepecification. Separate channels by comma, e.g. 0, 1, 2. Extra channels must not be included in this list. Network-server- hs
.≞≡	Service-profiles	
	Device-profiles	ADD EXTRA CHANNEL CREATE GATEWAY-PROFILE
0	<u> </u>	
83 83 83	Network-servers	
R	Gateway-profiles	Gateway-profiles + CREATE
	Organizations	
•	All users	Name Network-server
-		Gateway-CN470-0 ns
loras	erver 👻	Rows per page: 10    1-1 of 1    < >

#### 图 2-3 配置 Gateway-profiles

#### (3) 配置 Service-profiles



∉	<b>DoRa</b> Server	Q Search organization, application, gateway or device	? 🕒 admin
©	Network-servers Gateway-profiles Organizations All users	Service-profiles Name CN470	+ CREATE
loras	erver 🔹	Rows per page: 10 ▼	1-1 of 1 < >
* · · · · · · · · · · · · · · · · · · ·	Org. settings Org. users Service-profiles Device-profiles Gateways		
	Service-profile name * CN470 A name to identify the service-profile Network-server * ns The network-server on which this se Add gateway meta-data When enabled, the network-server w needs to be configured in order to p Device-status request frequency D Frequency to initiate an End-Device Winimum allowed data-rate * D Minimum allowed data-rate * Minimum allowed data	e. rvice-profile will be provisioned. After creating the service-profile, this value can't be changed. c, etc.) are added to the packet sent to the application-server. on ill try to resolve the location of the devices under this service-profile. Please note that you need to have gateways supporting the fine-timestamp feature and rovide geolocation support. or ADR. or ADR.	that the network-server
		CREATE	SERVICE-PROFILE
Se (	Name CN470	Rows per page: 10 マ 1-1 of	+ CREATE
	CN470	Rows per page: 10 <del>▼</del> 1-1 of	1 < )

图 2-4 配置 Service-profiles



#### (3) 配置 Device-profiles

Device-profiles	+ CREATE
Device-profiles / Create	
GENERAL JOIN (OTAA / ABP) CLASS-B CLASS-C CODEC	
CN470-NODE-0 1	
A name to identify the device-profile.	
Networkserver*	*
The network-server on which this device-profile will be provisioned. After creating the device-profile, this value can't be changed.	
LoRaWAN MAC version * 1.0.2	•
The LoRaWAN MAC version supported by the device.	
LoRaWAN Regional Parameters revision *	
Revision of the Regional Parameters specification supported by the device.	
Max EIRP *	
3 5	
Maximum EIRP supported by the device.	
	CREATE DEVICE-PROFILE
Device-profiles / Create	
GENERAL JOIN (OTAA / ABP) CLASS-B CLASS-C CODEC	
Device supports OTAA 6	7
	*

evice-profiles				+	CREAT
Name					
CN470-NUDE-0	Powe por page	10-	11of1	1	

#### 图 2-5 配置 Device-profiles

## 2.3 添加网关

CREATE DEVICE-PROFILE



€	<b>DoRa</b> Server				Q Search organization, application, gateway or de	vice	?	θ.	dmin
-	Network-servers	Gateways	e .			Alabert	Г	+ CRE/	ATE
R	Gateway-profiles	outenuje	, ,			创建网大			_
	Organizations	Name		Gateway ID	Gateway activity (30d)				
*	All users	gw470-0	)	0000ab124209fefd					
loras	server 👻				Rows per page:	10 - 1-1 0	f1	$\langle \rangle$	
\$	Org. settings				 				
•	Org. users								
.≞≡	Service-profiles								
	Device-profiles								
R	Gateways 网关选项								

Gateway name * The name may only contain words, num	自定义网关名字 bers and dashes.		
Gateway description *	网关的描述		
Gateway ID *	网关EUI	MSB	C
Select network-server	选择创建的ns pateway will connect. When no network-servers are available in the dropdown, make sure a service-profile exists for this organization.		•
Gateway-profile Select gateway-profile An optional gateway-profile which can t	选择创建的网关规则文 件 ssisginged to a gateway. This configuration can be used to automatically re-configure the gateway when LoRa Gateway Bridge is configured so that it manages the packet-forwarder configuration.		•
Gateway discovery enabled			
When enabled (and LoRa Server is conf Gateway altitude (meters) * 0	igured with the gateway discover feature enabled), the gateway will send out periodical pings to test its coverage by other gateways in the same network.		

配置好后,最后点击 CREATE GATEWAY ,即可完成创建网关。

## 2.4 添加终端

€	<b>LoRa</b> Server				Q Search organization, application, gateway or device	? 😑 admin	D
	Network-servers	Applications				+ CREATE	
$\bigcirc$	Gateway-profiles	Applications					
	Organizations	ID	Name	Service-profile	Description		
•	All users	1	TEST	NODE	TEST		
loras	server 👻				Rows per page: 10 ▼ 1-1 of	(1 < >	
\$	Org. settings	选择进入要	添加终端的应用				
<u>.</u>	Org. users						
≞≣	Service-profiles						
	Device-profiles	_					
R	Gateways	-					
	Applications 选择A	pplications选项					
۳	Multicast-groups						



Applications / TI	EST			<b>DELETE</b>
DEVICES	APPLICATION CONFIGURATION INTEGRATIONS	FUOTA		
			点击创建终端	+ CREATE
Last seen	Device name	Device EUI	Link margin	Battery
2 hours ago	test	0102030405060708	n/a	n/a
			Rows per page: 10 👻	1-1 of 1 < >

GENERAL	VARIABLES TAGS						
Device name * The name may only contain wor	定义终端名字 ds, numbers and dashes.						
Device description *	添加终端描述						
Device EUI *	添加终端deveui					MSB	C
Device-profile * Device-profile	选择该终端需要使用的						*
Disable frame-count Note that disabiling the frame-c	设备文件 er validation unter validation will compromise security as it enables pe	sople to perform replay-attacks.			点击创建	CREATE I	DEVICE
DETAILS	CONFIGURATION KEYS (OTAA)	ACTIVATION DEVICE DATA	LORAWAN FRAMES	FIRMWARE			
Application key *		输入终端的APPKEY				мѕв С	Ø 5
Gen Application key	case your device supports consivery 1.1, opdate the device in the device implements the re-	ce-profile first. <b>和上面的相同</b> emote multicast setup specification / firmware up	odates over the air (FUOTA). Eise I	eave this field blank.		мѕв С	ð 8
					点击确定	SET DEV	ICE-KEYS

#### 至此终端创建已经完成,启动网关,并给终端上电,可在 web 界面上显示终端数据信息。

	DETAILS	CONFIGURATION	KEYS (OTAA)	ACTIVATION	DEVICE DATA	LORAWAN FRAMES	FIRMWARE
							HELP
DOWNLINK	1:45:04 F	PM Unconfirmed	DataDown 01d3f3	3cd			
UPLINK	1:45:04 F	PM ConfirmedDa	ataUp 01d3f3	3cd			



## 2.5 向终端下发数据

#### 终端入网成功后,可通过 web 界面,向终端下发数据。如图所示:

Details						
			Stat	us		
Name		test_node	La	st seen at	Sep 3, 2019 1:44 PM	
Description		test				
Device-profile		NODE-CN470-OTAA				
Enqueue downlink p Port * Please note that the rPort value must t Confirmed downlink BASE64 ENCODED Base64 encoded string *	payload 选择 JSON OBJECT 经base64编 用数据	释下发端口,必须大 且小于255 码后的应			点击确定	