



Lora\_server 安装部署说明

版本 **1.00** 本文档可以不经通知自行调整

文档信息

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## 1 概述

本文档安装步骤是基于 Ubuntu16.04 系统下的 docker 安装,所以先从 WIN10 系统下 Hyper-V 配置开始,其他虚拟机环境操作类似,请自行选择安装,不再赘述。

## 2 WIN10 系统下开启 Hyper-V

Hyper-V 是微软的一款虚拟化产品,是微软第一个采用类似 Vmware 和 Citrix 开源 Xen 一样的基于 hypervisor 的技术。这也意味着微软会更加直接地与市场先行者 VMware 展开竞争。Hyper-V 作为 Windows Server 2008 中最耀眼的部分,自问世以来一直吸引了太多的关注。

Hyper-v 要求:

1.Intel 或者 AMD64 位处理器。

2.Windows Server 2008 R2 及以上(服务器操作系统); Windows 7/8 及以上(桌面操作系统)。 3.硬件辅助虚拟化。这是在现有的处理器,包括一个虚拟化的微软虚拟化构架。 4.CPU 必须具备硬件的数据执行保护( DEP )功能,而且该功能必须启动。

5.内存最低限度为 2GB

win10 自带的 Hyper-V 产品,对 win10 用户来说,即为方便。用户们不在需要多个物理机,而是在一个物理机上实现多个操作系统的运行,极大的提高的物理机的使用效能。

在 win10 系统中 hyper-v 工具不是直接开启的,需要用户手动开启,操作如下:

打开控制面板。在 win10 左下角处右键,弹出快捷菜单。 在快捷菜单中选择控制面板,点击后进入控制面板菜单栏。 在控制面板菜单栏中,选择程序。

### 🔝 控制面板

← → ~ ↑ 100 × 控制面積	<b>反</b> >	✓ Č
	调整计算机的设置	查看方式: 类别 ▼
	系统和安全         查看你的计算机状态         通过文件历史记录保存你的文件备份副本           通份和还原(Windows 7)         ●	用户帐户 • 更改账户类型 • 办观和个性化
	网络和 Internet            查看网络状态和任务            选择家庭组和共享选项	时钟、语言和区域
	硬件和声音 查看设备和打印机 添加设备	更换输入法 更改日期、时间或数字格式 轻松使用 使用 Windows 建议的设置
	程序	优化视觉显示



在程序菜单中,选择程序和功能下的启用或关闭 windows 功能

← → ▼ ↑ 🚺 > 控制[	■板 > 程序 >
控制面板主页 系统和安全 网络和 Internet	程序和功能 卸载程序 使 <u>启用或关闭 Windows 功能</u> 查看已安装的更新 运行为以前版本的 Windows 编写的程序 如何安装程序
硬件和声音 • 程序	<b>默认程序</b> 更改媒体或设备的默认设置
用户帐户 外观和个性化 时轴 语言和区域	<b></b> Java (32 位)
轻松使用	

勾选 Hyper-V,点击应用后确定。

应用完成后需要重启电脑才能完成更新安装。

启用或关闭 Windows 功能       ?         若要启用一种功能,请选择其复选框。若要关闭一种功能,请清除其复选框。填充的框表示仅启用该功能的一部分。       ●         ●       NET Framework 3.5 (包括 .NET 2.0 和 3.0)       ^         ●       NET Framework 4.7 高级服务       ^         ●       Active Directory 轻型目录服务       ^         ●       Hyper-V       ^         ●       Internet Explorer 11       ^         ●       Internet Information Services       ^         ●       Media Features       ^         ●       Microsoft Message Queue (MSMQ) 服务器       ^         ●       Microsoft XPS Document Writer       ^         ●       NItiPoint Connector       >         ●       NFS 服务       >	Winc Winc	lows 功能	+	<u></u>		×
<ul> <li>若要启用一种功能,请选择其复选框。若要关闭一种功能,请清除其复选框。填充的框表示仅启用该功能的一部分。</li> <li>● ● NET Framework 3.5 (包括 .NET 2.0 和 3.0)</li> <li>● ● NET Framework 4.7 高级服务</li> <li>● Active Directory 轻型目录服务</li> <li>● Hyper-V</li> <li>● Internet Explorer 11</li> <li>● Internet Information Services</li> <li>● Inf Finds and displays information and Web sites on the Information Services</li> <li>● Media Features</li> <li>● Microsoft Message Queue (MSMQ) 服务器</li> <li>● Microsoft XPS Document Writer</li> <li>● MultiPoint Connector</li> <li>● NFS 服务</li> </ul>	启用或	关闭 Windows	功能			?
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Microsoft XPS Document Writer		Microsoft Print to	PDF			
		Microsoft XPS Do	ocument Writer			
	± 🗌	MultiPoint Conne	ctor			
	± 🗌	NFS 服务				~



安装完成后,系统会新增该功能。



## 3 Hyper-V 下 Ubuntu 系统安装

#### 一、安装 ubuntu

首先打开我们的 Hyper-V 管理器,是这个样子的:

11		Hy	per-V 管理器				- 🗆 💌
文件(F) 操作(A) 查看(V) 帮	3助(H)						
🗢 🏟 🖄 📆 🚺 📆							
I Hyper-V 管理器	虚拟机①					操作	
	名称	状态	CPU 使用率	分配的内存	运行时间 ^	1VIZ.3	
	Emulator 8.0 Update 3 WVGA.mzs	关机					
	Emulator 8.0 Update 3 WIGA.mzs	关机					
	Emulator 8.1 WVGA 4 inch 512MB(ZH-HANS).mzs	关机				F Hyper-V 设置	
	Emulator WVGA 512MB(ZH-HANS). momovy	关机				· 虚拟交换机管理器	
	🚦 Emulator WVGA 512MB(ZH-HANS).mzs	关机				▲ 虚拟 SAN 管理器	
	Emulator WXGA(ZH-HANS). momovv	关机				💋 编辑磁盘	
	Emulator WXGA(ZH-HANS).mzs	关机				□ 检查磁盘	
	ubuntu	关机				● 停止服务	
				_	~	★ 删除服务器	
	<u> </u>				2	Q 刷新	
	检查点( <u>C</u> )				$\odot$	音吾	
	⊡-∰s ubnutu - (2015/1/23 - 23:35:23)						
	└─▶ 当前					1 ++ A)	
						ubuntu	•
						连接	
						23 设置	
						◎ 启动	
						132 松音点	
						5 £25.5	
						· 杨山	
						→	
	ubuntu					■ 重命名	
				1000		影除	
	创建时间: 1601/1/1 8:00:00		已群集:	台		12 帮助	
	版本: 5.0 作為・1						
	说明: 无						
	描要  P]仔  P]路						
MZS: 选择了1个虚拟机。							

可以看到里面已经装好了好多 windowsphone 各种版本的虚拟机了。我们的任务是要装 ubuntu,但是, 在这之前我们要先新建一个网络交换机: 点击右侧"虚拟机管理器"出现下图



点击创建之后,出现下图,点击确定。



5.5	MZS的虚拟交换机管理器 - □ ×
<ul> <li> <b>虚拟交换机</b> 義建虚拟网络交换机 受 素, virtual switch inner</li></ul>	▲ 虚拟交换机属性 名称①: virtual switch outer 说明①: 追接类型 你要将此虚拟交换机连接到什么地方? 吉 ⊆ 夕 农
2、选择外	● 外部网络但: Qualcomm Atheros AR8171/8175 PCLE Gigabit Ethernet Controller (NDIS 6. ▼ ☑ 允许管理操作系统共享此网络适配器(M) 部网络的曲频器例卡,如果有多个要记住选的是哪个 ○ 专用网络(2) VLAN ID □ 为管理操作系统启用虚拟 LAN 标识(M) VLAN 标识符指定虚拟,LAN,管理操作系统使用该 LAN 通过此网络适配器进行 KADIF 指定层版 LAN,管理操作系统使用该 LAN 通过此网络适配器进行
	7) HYPSEIDINE 2 2 3、点击确定 确定() 取消(C) 应用(A)

点击"新建"->"虚拟机"

<b>1</b>	新建虚拟机向导	
加 开始之前		
<ul> <li>井始之前</li> <li>指定名称和位置</li> <li>指定代数</li> <li>分配内存</li> <li>配置网络</li> <li>连接虚拟硬盘</li> <li>安装选项</li> <li>摘要</li> </ul>	本向导可帮助你创建虚拟机。你可以使用虚拟机代替物理计算机实现各种用途。可以立即使用本向导配置虚拟机,也可以稍后使用 Hyper-V 管理器更改配置。 若要创建虚拟机,请执行下列操作之一: • 单击"完成"创建使用默认值配置的虚拟机。 • 单击"下一步"创建具有自定义配置的虚拟机。	
	□ 不再显示此页[2]	
	<上一步(P) 下一步(M) 完成(C) 取消	

如下图操作



<b>1</b>	新建虚拟机向导	×
指定名称和位	問	
开始之前 <u>指定名称和位置</u> 指定代数 分配内存 配置网络 连接虚拟硬盘 安装选项 摘要	为此虚拟机选择名称和位置。 名称显示在 Hyper-V 管理器中。建议你使用有助于轻松识别此虚拟机的名称,如系 或负载的名称。 名称(M): ubuntu 可以创建一个文件夹或使用现有文件夹来存储虚拟机。如果没有选择文件夹,虚 为此服务器配置的默认文件夹中。 ✓ 将虚拟机存储在其他位置(S) 位置(L): D:\Hyper-V_ubuntu_workplace\ ① 如果计划获取此虚拟机的检查点,请选择具有足够可用空间的位置。检查点行 据,因此可能需要大量空间。	来宾操作系统 拟机将存储在 浏览⑥… 包含虚拟机数
	< 上一步(P) 下一步(P) 完成(F) 完成(F)	取消

名称自己起一个,默认是把虚拟机保存在 c 盘,勾选"将虚拟机存储在其他位置",选择你要存储的位置。选择第一代。。。

8	新建虚拟机向导	×
道 指定代数		
开始之前 指定名称和位置 <mark>指定代数</mark> 分配内存 配置网络 连接虚拟硬盘 安装选项 摘要	<ul> <li>选择此虚拟机的代数。</li> <li>第一代(1) 此虚拟机版本为虚拟机提供的虚拟硬件与以前版本的Hyper-V中的虚拟硬件相同。</li> <li>第二代(2) 此虚拟机版本可支持多项功能,例如使用标准网络适配器进行安全启动、SCSI启动和PXE 启动。来宾操作系统必须至少运行的是 Windows Server 2012或64 位版本的 Windows 8。</li> <li>▲ 虚拟机一旦创建后,你将无法更改其版本。</li> </ul>	:
	< 上一歩 (2) 下一歩 (2) 一 定成 (2) 取消	

分配内存



<b>1</b> 2	新建虚拟机向导	×
分配内存		
开始之前 指定名称和位置 指定代数 分配内存 配置网络 连接虚拟硬盘 安装选项 摘要	指定分配给此虚拟机的内存量。指定的内存里可在 32 MB 到 6396 MB 之间。若要提高性能,指 定的内存里应大于操作系统的最低推荐重。 启动内存(M): 1024 MB ) 为此虚拟机使用动态内存(U)。 ① 当你决定向虚拟机分配多少内存时,请考虑你要使用虚拟机的方式及它运行的操作系统。	
	<上一步(2) 下一步(2) > 完成(E) 取消	

#### 接下来,选择刚才创建的虚拟交换机

<b>a</b>	新建虚拟机向导	×
配置网络		
开始之前 指定名称和位置 指定代数 分配内存 配置网络 连接虚拟硬盘 安装选项 摘要	每个新虚拟机包含一个网络适配器。你可以配置网络适配器以使用虚拟交换机,召 持断开连接状态。 连接(C): switch inner	5则,它将保 ✓
	<上一步@ 下一步@ > 完成@	取消

下一步,设置好硬盘大小



<b>A</b>	新建虚拟机向导
连接虚拟硬度	<sup></sup> 문
开始之前 指定名称和位置 指定代数 分配内存 配置网络 连接虚拟硬盘 安装选项 摘要	<ul> <li>虚拟机需要具有存储空间,以便可以安装操作系统。可以立即指定存储空间,也可以稍后通过 修改虚拟机的属性来配置存储空间。</li> <li>● 创建虚拟硬盘(C) 使用此选项可创建 VHDX 劫态扩展虚拟硬盘。</li> <li>名称(M): ubuntu.vhdx</li> <li>位置(L): D:\Hyper-V_ubuntu_workplace\ 大小(S): 127 GB (最大值: 64 TB)</li> <li>● 使用现有虚拟硬盘(L) 使用此选项可附加一个 VHD 或 VHDX 格式的现有虚拟硬盘。</li> </ul>
	位置U: C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks\ 浏览(8) 〇 以后附加虚拟硬盘(A) 使用此选项可先跳过此步骤,并在以后附加一个现有的虚拟硬盘。
	<上一步 ↓ 下一步 ↓ 完成 ↓ 取消

下一步,选择安装系统的 iso 文件。(Ubuntu 的 ISO 安装镜像请自行下载)

8	新建虚拟机向导	×
安装选项 安装选项		
开始之前 指定名称和位置 指定代数 分配内存 配置网络 连接虚拟硬盘 安装选项 摘要	如果你拥有对安装介质的访问权限,则可以立即安装操作系统,或者也可在以后安装。 ○ 以后安装操作系统(L) ④ 从可启动的 CD/DVD-ROM 安装操作系统(C) 媒体 ④ 物理 CD/DVD 驱动器(L):	
	< 上一步(2) 下一步(2) > 完成(2) 取消	

下一步,最后的配置信息,配置无误点击完成。



8.	新建虚拟机向导
直 正在完成	新建虚拟机向导
开始之前 指定名称和位置 指定代数 分配内存 配置网络 连接虚拟硬盘 安装选项 摘要	你已经成功完成了新建虚拟机向导。即将创建下列虚拟机。 描述: 名称: ubnutu_sample 代数: 第一代 内存: 1024 MB 了了一正在创建 DVD 驱动器 mple\Virtual Hard Disks\ubnutu_sample 支装 取消
	<上一歩(2) 下一歩(2) > 完成(2) 取消

稍等待安装完毕! 回到主页面

名称		状态	CPU 使用率	分配的内存	运行时间	
Emulator 8.0	Update 3 WVGA.mzs	关机				
📕 Emulator 8.0	Vpdate 3 WXGA.mzs	关机				
📕 Emulator 8.1	WVGA 4 inch 512MB(ZH-HANS).mzs	关机				
🚪 Emulator WVG	A 512MB(ZH-HANS).momovy	关机				
🚪 Emulator WVG	A 512MB(ZH-HANS).mzs	关机				
📕 Emulator WXG	A(ZH-HANS). momovy	关机				
📕 Emulator WXG	A(ZH-HANS).mzs	关机				
ubuntu		关机				

点击连接。。。 点击,启动安装开始。。。 安装过程,我就不赘述了。。。 下图为安装完成的 Ubuntu 系统界面。



🕎 SC-201711131206 上的 新疆虚拟机 - 虚拟机连接	• – D X
文件(F) 操作(A) 媒体(M) 節贴版(C) 查看(V) 帮助(H)	
C	□ ● ○ -
状态: 正在运行	
Ubuntu 设置 ssh 服务:	
第一步:ubuntu 开启 ssh	
为了方便,切换 ubuntu 管理员账户	
1、 打开 Terminal (ctrl+alt+t)	
2、 输入 sudo passwdroot	
3、 输入当前密码	
$\Lambda = \frac{4}{3} \lambda \text{ root } \overline{\infty} \overline{\Omega}$	

- 5、 重复输入 root 密码
- 6、 切换到 root, su root
- 7、 输入 root 密码
- 第二步:安装 ssh

输入命令: apt-get install openssh-server 安装 ssh

安装完成后,开启服务

#### /etc/init.d/ssh start

之后使用如下命令查看是否正确启动

ps -e | grep ssh

出现如下图, sshd 和 ssh-agent 才算启动成功

root@lookingfor-pc:/home/lookingfor# ps -e | grep ssh
1020 ? 00:00:00 sshd
1732 ? 00:00:00 ssh-agent



第三步:关闭防火墙 ufw disable 查看防火墙状态 ufw status 如果关闭的话是 inactive 现在可以远程登陆了。

设置 ssh IP、用户名、密码,连接成功,如下图:

lora@lora-Virtual-Machine:~
login as: lora
lora@192.168.1.120's password:
Welcome to Ubuntu 16.04 LTS (GNU/Linux 4.4.0-21-generic x86\_64)
\* Documentation: https://help.ubuntu.com/
562 packages can be updated.
262 updates are security updates.
The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/\*/copyright.
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.
lora@lora-Virtual-Machine:~\$

## 4 Ubuntu 系统 docker 环境配置

参照 docker 官网文档,完成 Docker CE 安装,链接如下: https://docs.docker.com/engine/installation/linux/docker-ce/ubuntu/#supported-storage-drivers

参照下文完成 docker-compose 安装: https://docs.docker.com/compose/install/#install-compose

## 5 Lora\_server 安装

为该项目创建一个目录:
 mkdir loraserver\_test
 cd loraserver\_test
 2、复制下文内容,在目录下创建 docker-compose.yml 文件:



version: "2"

services:

loraserver:

image: loraserver/loraserver environment:

- DB\_AUTOMIGRATE=true
- LOG\_NODE\_FRAMES=true
- NET\_ID=010203
- BAND=EU\_863\_870
- REDIS\_URL=redis://redis:6379
- GW\_MQTT\_SERVER=tcp://mosquitto:1883
- GW\_SERVER\_JWT\_SECRET=verysecret

POSTGRES\_DSN=postgres://loraserver\_ns:loraserver\_ns@postgresql\_ns/loraserver\_ns?sslmode=disable

- JS\_SERVER=http://appserver:8003

appserver:

image: loraserver/lora-app-server

ports:

- 8080:8080

environment:

- DB\_AUTOMIGRATE=true

- REDIS\_URL=redis://redis:6379

POSTGRES\_DSN=postgres://loraserver\_as:loraserver\_as@postgresql\_as/loraserver\_as?sslmode=disable

- MQTT\_SERVER=tcp://mosquitto:1883

- JWT\_SECRET=verysecret

- HTTP\_TLS\_CERT=/etc/lora-app-server/certs/http.pem

- HTTP\_TLS\_KEY=/etc/lora-app-server/certs/http-key.pem
- AS\_PUBLIC\_SERVER=appserver:8001

gatewaybridge:

ports:

```
- 1700:1700/udp
```

image: loraserver/lora-gateway-bridge

environment:

- MQTT\_SERVER=tcp://mosquitto:1883

postgresql\_ns:

image: postgres:9.6-alpine

ports:

- 5432

environment:

- POSTGRES\_PASSWORD=loraserver\_ns
- POSTGRES\_USER=loraserver\_ns
- POSTGRES\_DB=loraserver\_ns



postgresql\_as:

image: postgres:9.6-alpine

ports:

- 5432

environment:

- POSTGRES\_PASSWORD=loraserver\_as

- POSTGRES\_USER=loraserver\_as

- POSTGRES\_DB=loraserver\_as

redis:

ports:

- 6379

image: redis:4-alpine

mosquitto:

ports:

- 1883:1883

image: eclipse-mosquitto

使用 sudo docker-compose up 命令启动 lora\_server 服务,在此过程中会自动从 dockerHUB 上拉取相应 得文件进行编译,之后运行。

compose		
% Total % Received % Xferd Average Speed Time Time Cur	rent	
Dload Upload Total Spent Left Spe	ed	
100 617 0 617 0 0 235 0::- 0:00:02::	235	
100 8280k 100 8280k 0 0 586k 0 0:00:14 0:00:14::- 6	90k	
root@lora-Virtual-Machine:/home/lora# sudo chmod +x /usr/local/bin/docker-c	ompos	e
root@lora-Virtual-Machine:/home/lora# docker-composeversion		
docker-compose version 1.18.0, build 8dd22a9		
root@lora-Virtual-Machine:/home/lora# mkdir loraserver_test		
root@lora-Virtual-Machine:/home/lora# cd loraserver_test		
root@lora-Virtual-Machine:/home/lora/loraserver_test# nano docker-compose.y	ml	
root@lora-Virtual-Machine:/home/lora/loraserver_test#		
root@lora-Virtual-Machine:/home/lora/loraserver_test# ls		
docker-compose.yml		
root@lora-Virtual-Machine:/home/lora/loraserver_test# sudo docker-compose u	р	
Creating network "loraservertest_default" with the default driver		
Pulling postgresql_as (postgres:9.6-alpine)		
9.6-alpine: Pulling from library/postgres		
550fe1bea624: Pull complete		
04bf519c70df: Pull complete		
2af56c798cc1: Pull complete		
9ad5d4394eec: Pull complete		
df51d99b22c1: Pull complete		
o8d2552ec456: Pull complete		
f8ef74d64f40: Pull complete		
dbf7954a040a: Pull complete		
3250b956dc72: Pull complete		
Digest: sha256:bf87ee22821e1bc5cedd5da2def1700685a9e3828605b31162d8f04e16c0	6385	
Status: Downloaded newer image for postgres:9.6-alpine		
Pulling loraserver (loraserver/loraserver:latest)		
latest: Pulling from loraserver/loraserver		
ff3a5c916c92: Downloading [====================================	]	1.179MB/2.066MB
df0d49b750d4: Download complete		
ad303d98fe40: Downloading [=======>	]	1.294MB/5.221MB



sungen-Virtual-Machine:-/composetest\$ sudo docker-compose up Starting composetest web ] ... done Attaching to composetest web ]... (22 Jan 08:11:77.809 # 0000x00000 Redis is starting 00000000000 modified=0, pid=1, just started redis.] (1:C 22 Jan 08:11:78.809 # Warning: no config file specified, using the default config. In order to specify a config fi redis.] (1:C 22 Jan 08:11:78.809 # Warning: no config file specified, using the default config. In order to specify a config file redis.] (1:R 22 Jan 08:11:17.804 # WarNiNG: The TCP backlog setting of Sll cannot be enforced because /proc/sys/net/core/somaxc redis.] (1:R 22 Jan 08:11:17.804 # WARNING web ransparent Huge Pages (THP) support enabled in your kernel. This will creat s root, and add it to your /etc/rc.local in order to retain the setting after a reboot. Redis must be restarted after THP is disa redis.] (1:R 22 Jan 08:11:17.894 # WARNING you have Transparent Huge Pages (THP) support enabled in your kernel. This will creat s root, and add it to your /etc/rc.local in order to retain the setting after a reboot. Redis must be restarted after THP is disa redis.] (1:R 22 Jan 08:11:17.895 \* Ready to accept connections web.] i \* Restarting with stat web.] i \* Debugger IN: 6095-510-241 CGreaterUUS stopping. (press CTHC again to force) Stopping composetest web ] ... done sungeun-Virtual-Machine:-/foraserver test/ sungeun-Virtual-Machine:-/foraserver test/ sungeun-Virtual-Machine:-/foraserver test/ sungeun-Virtual-Machine:-/foraserver test is docker-compose.yml docker-compose.yml.save docker-compose up Starting loraservertest postgresql\_ns ].... Starting loraservertest postgresql\_ns ].... Starting loraservertest postgresql\_ns ].... Starting loras

## 6 Lora\_server 服务配置

6.1 将 lorabridge 服务停止 sudo systemctl stop lorabridge sudo systemctl disable lorabridge sudo systemctl status lorabridge

```
pi@raspberrypi:~ $ sudo systemctl stop lorabridge
pi@raspberrypi:~ $ sudo systemctl disable lorabridge
Removed symlink /etc/systemd/system/multi-user.target.wants/lorabridge.service.
pi@raspberrypi:~ $ sudo systemctl status lorabridge.service
• lorabridge.service - senzflow lorabridge
Loaded: loaded (/lib/systemd/system/lorabridge.service; disabled)
Active: inactive (dead)
Jan 23 06:17:03 raspberrypi systemd[1]: Starting senzflow lorabridge...
Jan 23 06:17:03 raspberrypi systemd[1]: Started senzflow lorabridge.
Jan 24 02:23:21 raspberrypi systemd[1]: Stopping senzflow lorabridge...
Jan 24 02:23:21 raspberrypi systemd[1]: Stopping senzflow lorabridge...
Jan 24 02:23:21 raspberrypi systemd[1]: Stopping senzflow lorabridge.
```

如要回复进行以下操作: sudo systemctl start lorabridge sudo systemctl enable lorabridge

sudo systemctl status lorabridge



6.2 网关数据指向配置

cd lora/packet\_forwarder/gps\_pkt\_fwd/

#### nano global\_conf.json

"gateway_conf": {
"gateway_ID": "AA555A000000000",
<pre>/* change with default server address/ports, or overway</pre>
"server address": "192.168.1.120",
"serv port up": 1700,
"serv port down": 1700,
<pre>/* adjust the following parameters for your network */</pre>
"keepalive interval": 10,
"stat interval": 30,
"push timeout ms": 100,
/* forward only valid packets */
"forward crc valid": true,
"forward crc error": false,
"forward crc disabled": false,
/* GPS configuration */
"gps_tty_path": "/dev/nmea"

修改好之后保存退出,执行下述命令重启 lrgateway 服务

sudo systemctl restart lrgateway.service

#### 6.3 启动 loraserver

在启动 loraserver 前修改 docker-compose.yml 中得两个地方, 使之与节点配套

sudo nano docker-compose.yml

- NET\_ID=666888 - BAND=CN 470 510

其中 band 支持以下频段: AS\_923, AU\_915\_928, CN\_470\_510, CN\_779\_787, EU\_433, EU\_863\_870,

IN\_865\_867, KR\_920\_923, US\_902\_928

修改好之后保存退出。

启动上文安装好的虚拟机,启动 docker

#### cd loraserver\_test

sudo docker-compose up

```
Last login: Tue Jan 23 13:17:18 2018 from 192.168.1.101
lora@lora-Virtual-Machine:~$ ls
Desktop Downloads Music Public
Documents loraserver_test Pictures Templates
lora@lora-Virtual-Machine:~$ cd loraserver_test/
lora@lora-Virtual-Machine:~/loraserver test$ ls
docker-compose.yml
lora@lora-Virtual-Machine:~/loraserver_test$ sudo docker-compose up
[sudo] password for lora:
Starting loraservertest_appserver_1 ...
Starting loraservertest_postgresql_ns_1 ...
Starting loraservertest_postgresql_as_1 ...
Starting loraservertest_postgresql_as_1 ...
Starting loraservertest_loraserver_1 ...
Starting loraservertest_gatewaybridge_1 ...
Starting loraservertest_postgresql_ns_1 ... done
Attaching to loraservertest_loraserver_1, loraservertest_postgresql_as_1, lorase
rvertest_gatewaybridge_1, loraservertest_redis_1, loraservertest_mosquitto_1, lo
raservertest_appserver_1, loraservertest_postgresql_ns_1
loraserver_1 | time="2018-01-24T02:52:58Z" level=info msg="starting LoRa Ser
ver" band=EU 863 870 docs="https://docs.loraserver.io/" net id=010203 version=ec
2d6fd
                      | time="2018-01-24T02:52:58Z" level=info msg="setup redis conne
ction pool" url="redis://redis:6379"
```



6.4 配置 lorawanserver 进入 loraserver 得 webUI 进行配置,注意使用 https://

⇒ c	▲ 不安全	https://192.168.1.120:8080		☆
		A		
		您的连接不	是私密连接	
		攻击者可能会试 自、 <b>、 ス</b> 紀送は	图从 192.168.1.120 窃取您的信息(例如:密码、通讯内容或信用卡信	
		NET::ERR_CERT_AU	[HORITY_INVALID	
		L) 범페미 Google	为这一些 <u>系统信息系则的贝内普</u> ,以带助检测范度应用和网站。 <u>是私仪改革</u>	
		15.00° ±/0	に同け合いた	
		NC38801-11	<b>医四文主由</b> 文	
		此服务器无法证明的原用可能是	月它是 <b>192.168.1.120</b> ;您计算机的操作系统不信任其安全证书。出现此问 日素有温动你的证法如此 <sup>出</sup> 新了	
		巡미기차스 빅 태天티		
		继续前往192.168.1	120 (不安全)	

## 用户名:admin 密码:admin

🗋 LoRa	Server X	Θ	1	
$\leftrightarrow \rightarrow c$	▶ 🛦 不安全   https://192.168.1.120:8080/#/login			ē <sub>r</sub>
	LoRa Server			
	Login			
	Username admin			
	Password			
		Ì	LOGIN	

#### a)配置网络服务器

Organizations Users Network servers admin -	Network servers / Add network-server
1	
	Network-server name
	loratest
	A memorable name of the network-server.
ADD NETWORK-SERVER	Network-server server
2	loraserver:8000
其他保持默认	



ame	Server	
ratest	loraserver:8000	
和服务描述		
Ra Server	Organization	ns Users Network servers
nizations	1	
		CREATE ORG
Name	Display name	Can have gateways
loraserver 2	LoRa Server	4
oRa Server	Organizations Us	ers Network servers admin <del>-</del>
Organizations / LoRa Server Applications Gateways Organization configu	uration Organization users Service profiles Device profiles3	DELETE ORGANIZATION
Organizations / LoRa Server	uration Organization users Service profiles	DELETE ORGANIZATION
Drganizations / LoRa Server	uration Organization users Service profiles Device profiles	DELETE ORGANIZATION
Applications / LoRa Server Applications Gateways Organization configu Name	uration Organization users Service profiles	DELETE ORGANIZATION
Applications / LoRa Server  Applications Gateways Organization configu  Name  Create service-profile Service-profile name	uration Organization users Service profiles	DELETE ORGANIZATION
Applications / LoRa Server  Applications Gateways Organization configu  Name  Create service-profile Service-profile name Ioratest	uration Organization users Service profiles	DELETE ORGANIZATION
Applications / LORa Server  Applications Gateways Organization configu  Name	uration Organization users Service profiles 3	DELETE ORGANIZATION
Applications / LoRa Server  Applications Gateways Organization configu  Name   Create service-profile  Service-profile name  Ioratest  A memorable name for the service-p  Network-server	uration Organization users Service profiles Device profiles 3	DELETE ORGANIZATION
Applications / LoRa Server  Applications Gateways Organization configu  Name  Create service-profile Service-profile name Ioratest A memorable name for the service-p Network-server Irtest	uration Organization users Service profiles 3 profile. <u>此处为勾选项,为之前配置得网络服务器</u>	DELETE ORGANIZATION
Organizations / LoRa Server         Applications       Gateways       Organization configure         Name         Create service-profile         Service-profile name         Ioratest         A memorable name for the service-profile         Network-server         Irtest         Irtest	uration Organization users Service profiles	CREATE SERVICE-PROFILE

创建好得服务描述如下:



LoRa Se	rver					Organizations
Organizations	/ LoRa Server					
Applications	Gateways	Organization configuration	Organization users	Service profiles	Device profiles	
Name	7					
loratest						

## c)添加设备描述

		1		
ganizations				
			CREATE ORG	ANIZA
) Name	Display name		Can have gateways	
loraserver 2	LoRa Server		4	
Organizations / LoRa Server				
undications . Cataviaus . Organization cont	iguration Orangization users Service profiles Device profiles		DELETE ORGANIZ	ZATIO
uppications Gateways organization com	guration organization users service promes Device promes 3			
			CREATE DEVICE-PR	ROFILE



General	Join (OTAA / ABP) Class-C
Device-profile	ame
loratest	
A memorable i	name for the device-profile.
Network-serve	r
Irtest	
The network-s	ver on which this device-profile will be provisioned. After creating the device-pro-
LoRaWAN MA	C version
1.0.1	
Version of the	LoRaWAN supported by the End-Device.
LoRaWAN Reg	enal Parameters revision
A	

Max EIRP

#### 创建好得设备描述如下:

Name			

#### d)添加网关

#### 在虚拟机后台中查看有数据过来得网关 MAC:b827ebfffe4c6a9c

1 lorase	erver 2		LoRa Server				1	
ID Name	9		Display name				Can have gateways	
							CREATE ORG	ANIZATIC
Organizations								
					1			
LoRa Server				Org	ganizations	Users	Network servers	admin
atewaybridge_1 atewaybridge_1	time="2 time="2	2018-01-24T03:39:16Z" 2018-01-24T03:39:18Z" 2018-01-24T03:39:18Z"	level=info msg="gate level=info msg="gate level=info msg="gate	eway: sending udp r eway: received udp	packet to packet fi	gatewa com gat	y" addr="192 eway" addr=" v" addr="172	172.18.
oraserver_1 oraserver_1 atewaybridge_1	time="2   time="2   time="2	2018-01-24T03:39:16Z" 2018-01-24T03:39:16Z" 2018-01-24T03:39:16Z"	level=info msg="back level=error msg="back level=info msg="back	kend/gateway: gatew ndle stats packet e kend: publishing pa	way stats error: get acket" tor	packet gatew	received" m ay error: qa eway/b827ebf	ac=b827 teway d



Applications	vays Organization configuration	Organization users	Service profile	s Device profiles		DELETE ORGANIZATION
	, in the second					
						CREATE GATEWAY
Nome	мар				Rataway antivity (2011)	4
LoRa Serve	er					
Applications G	ateways Organization con	figuration Organiz	zation users	Service profiles		
Create gateway						
,						
Gateway name						
loratestgw						
The name may only	contain words, numbers and o	lashes.				
Gateway description	n					
estgw						
estgw						
estgw						
estgw						
estgw MAC address						
MAC address b827ebfffe4c6a	9c					
MAC address b827ebfffe4c6a Enter the gateway N	9c 1AC address as configured in t	he packet-forwarder c	configuration or	the gateway.		
estgw MAC address b827ebfffe4c6a Enter the gateway N Network-server	9c 1AC address as configured in t	he packet-forwarder c	onfiguration on	the gateway.		
estgw MAC address b827ebfffe4c6a Enter the gateway N Network-server	9c MAC address as configured in t	he packet-forwarder o	configuration on	the gateway.		
MAC address b827ebfffe4c6a Enter the gateway N Network-server Irtest Select the network-	9c IAC address as configured in t server to which the gateway wi	he packet-forwarder o Il connect. When no n	configuration on	the gateway. are available in the		
MAC address b827ebfffe4c6a Enter the gateway N Network-server Irtest Select the network-s Channel-configurati	9c IAC address as configured in t server to which the gateway wi	he packet-forwarder o	configuration on etwork-servers	i the gateway. are available in the		

## 其他保持默认,添加好的网关如下所示:

Applications	Gateways	Organization configuration	Organization users	Service profiles	Device profiles		
							CREATE GATEWAY
Name		MAC				Gateway activity (30d)	
loratestgw		b827ebfffe	4c6a9c				1

e)添加应用



particultors			Organizations Users Network servers ad
particultors  CREATE ORDANIZAT  CREATE ORDANIZA	particultors		1
Name Display name Can have gateways   Torsaerer 2 Lofa Server   2 Lofa Server ~   Cognitations / Lofa Server   Cognitations / Lofa Server Cognitation configuration   Applications Organization configuration Organization configuration   Applications Gateways Organization configuration   Create application Create application   Application name   Ioratestrode   The name muy only contain words, numbers and dashes.   Application description   testndoe   Service profile   Service profile   The service profile	Name       Display name       Can have gateways         Conserver       Image: Can have gateways       Image: Can have gateways         Conserver       Image: Can have gateways       Image: Can have gateways         Conserver       Image: Can have gateways       Image: Can have gateways         Conserver       Image: Can have gateways       Image: Can have gateways         Conserver       Image: Can have gateways       Orgenization configuration       Orgenization         Applications       Gateways       Orgenization configuration       Orgenization         Applications       Gateways       Orgenization configuration       Orgenization         Applications       Gateways       Orgenization configuration       Orgenization         Create application       Gateways       Orgenization configuration       Orgenization         Applications       Gateways       Orgenization configuration       Orgenization         Applications       Gateways       Orgenization configuration       Orgenization         Applications       Gateways       Orgenization configuration       Orgenization         The name may contain words, numbers and dashes:       Application description       Image: Can have based base	anizations	
Name Display name Can have gateways   Conserver 2   LORA SErver    Corperations / Lafa Bever   Corperations / Lafa Bever   Create application   Create application   Create application   Create application   Create application Create application words, numbers and dashes.   Application description   testndoe   Service-profile   Service-profile   The service-profile To which this application will be attached. Note that	Name Display name Can have gateways		CREATE ORGANIZA
Lotaserver 2   Lota Server    Cogenerations / Lota Server    Cogenerations / Lota Server    Cogenerations / Lota Server      Applications    Create application  Application ame  Ioratestinode  The name may only contain words, numbers and dashes.  Application description testinde  Free service-profile  Free service-profile  The service-profile  Create application will be attached. Note that	Lota Server   2   Lota Server     Corparizations   Corparizations   Cateways   Organization configuration   Organizations   Create applications   Create application   Create application   Create application   Create application   Intername   In	Name Display name	Can have gateways
LORA SErver Organizations / Lofa Server CEEEE ORGANIZZATION Applications Gateways Organization configuration Granization configuration Granization configuration Granization configuration Granization	LORA Server to the server and the service profiles of the server of the service profiles of the server of the service profiles of the service profile of the ser	loraserver LoRa Server	4
Create application	Create application Create applic	LoRa Server	Organizations Users Network servers admin
Application Gateways Organization configuration Organization users Service profiles     Applications Gateways Organization configuration Organization     Applications Gateways Organization configuration Organization     Create application   Application name   Ioratestnode   The name may only contain words, numbers and dashes.   Application description   testndoe   Service-profile   Tratest   Toratest   The service-profile to which this application will be attached. Note that	Application       Granization configuration       Granization users       Bervice profiles         3       CREATE APPLICATION    Applications        Gateways     Organization configuration    Create application        Application name       Loratestnode       The name may only contain words, numbers and dashes.    Application description        testndoe       Service profile       Viratest       The service-profile to which this application will be attached. Note that       Payload codec       None	Organizations / LoRa Server	
Application Gateways Organization configuration Organization users Device profiles     3     Applications Gateways Organization configuration Organi     Create application        Application name   Ioratestnode   The name may only contain words, numbers and dashes.        Application description        Service-profile     Ioratest   Ioratest   Ioratest   Ioratest   Ioratest   Ioratest   Ioratest   Ioratest	Application       Granization configuration       Organization users       Device profiles         3       CREATE APPLICATION         Applications       Gateways       Organization configuration       Organization         Create application       Gateways       Organization configuration       Organization         Create application       Gateways       Organization configuration       Organization         Create application       Gateways       Organization configuration       Organization         Ioratestnode       Gateways       Organization dashes.       Application description         testndoe       Gratest       Gratest       Gratest         The service-profile       Units application will be attached. Note that       Payload codec         None       None       None       None		DELETE ORGANIZATION
Applications       Gateways       Organization configuration       Organi         Create application         Application name         Ioratestnode         The name may only contain words, numbers and dashes.         Application description         testndoe         Service-profile         Ioratest         The service-profile         to which this application will be attached. Note that	Applications       Gateways       Organization configuration       Organi         Create application         Application name         Ioratestnode         The name may only contain words, numbers and dashes.         Application description         testndoe         Service-profile         The service-profile         The service-profile         The service-profile         The service-profile         None	Applications Gateways Organization configuration Organization users Service profiles	Device profiles
Applications Gateways Organization configuration Organization   Create application   Application name   Ioratestnode   The name may only contain words, numbers and dashes.   Application   testndoe   Service-profile   Ioratest   Ioratest   Ioratest   Ioratest	Applications       Gateways       Organization configuration       Organi         Create application         Application name         Ioratestnode         The name may only contain words, numbers and dashes.         Application description         testndoe         Service-profile         Ioratest         Payload codec:         None	5	
Applications       Gateways       Organization configuration       Organization         Create application       Image: Create structure       Image: Create structure         Application name       Image: Create structure       Image: Create structure         Ibratestnode       Image: Create structure       Image: Create structure         The name may only contain words, numbers and dashes.       Image: Create structure       Image: Create structure         Service-profile       Image: Create structure       Image: Create structure       Image: Create structure         Image: Create structure       Image: Create structure       Image: Create structure       Image: Create structure         Service-profile       Image: Create structure       Image: Create structure       Image: Create structure         Image: Create structure       Image: Create structure       Image: Create structure       Image: Create structure         Service-profile       Image: Create structure       Image: Create structure       Image: Create structure       Image: Create structure         Image: Create structure       Image: Create structure       Image: Create structure       Image: Create structure       Image: Create structure         Image: Create structure       Image: Create structure       Image: Create structure       Image: Create structure       Image: Create structure       Image: Create structure </td <td>Applications       Gateways       Organization configuration       Organization         Create application         Application name         Ioratestnode         The name may only contain words, numbers and dashes.         Application description         testndoe         Service-profile         Ioratest         Ioratest         Payload codec         None</td> <td></td> <td></td>	Applications       Gateways       Organization configuration       Organization         Create application         Application name         Ioratestnode         The name may only contain words, numbers and dashes.         Application description         testndoe         Service-profile         Ioratest         Ioratest         Payload codec         None		
Create application         Application name         loratestnode         The name may only contain words, numbers and dashes.         Application description         testndoe         Service-profile         loratest         Interset         Interset	Create application Application name Ioratestnode The name may only contain words, numbers and dashes. Application description testndoe Service-profile Ioratest The service-profile to which this application will be attached. Note that Payload codec None		CREATE APPLICATION
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Ioratestnode         The name may only contain words, numbers and dashes.         Application description         testndoe         Service-profile         Ioratest         The service-profile to which this application will be attached. Note that	Ioratestnode The name may only contain words, numbers and dashes. Application description testndoe Service-profile Ioratest The service-profile to which this application will be attached. Note that Payload codec None	Applications Gateways Organization configuration Organi Create application	CREATE APPLICATION
The name may only contain words, numbers and dashes. Application description testndoe Service-profile loratest The service-profile to which this application will be attached. Note that	The name may only contain words, numbers and dashes. Application description testndoe Service-profile loratest The service-profile to which this application will be attached. Note that Payload codec None	Applications       Gateways       Organization configuration       Organi         Create application       Application name       Application       Application	CREATE APPLICATION
Application description testndoe Service-profile loratest The service-profile to which this application will be attached. Note that	Application description testndoe Service-profile loratest The service-profile to which this application will be attached. Note that Payload codec None	Applications       Gateways       Organization configuration       Organi         Create application	CREATE APPLICATION
testndoe         Service-profile         loratest         The service-profile to which this application will be attached. Note that	testndoe Service-profile Ioratest The service-profile to which this application will be attached. Note that Payload codec None	Applications       Gateways       Organization configuration       Organi         Create application	CREATE APPLICATION
Service-profile loratest The service-profile to which this application will be attached. Note that	Service-profile loratest The service-profile to which this application will be attached. Note that Payload codec None	Applications       Gateways       Organization configuration       Organi         Create application	CREATE APPLICATION
loratest The service-profile to which this application will be attached. Note that	Ioratest The service-profile to which this application will be attached. Note that Payload codec None	Applications       Gateways       Organization configuration       Organi         Create application	CREATE APPLICATION
The service-profile to which this application will be attached. Note that	The service-profile to which this application will be attached. Note that Payload codec None	Applications       Gateways       Organization configuration       Organi         Create application	CREATE APPLICATION
	Payload codec None	Applications       Gateways       Organization configuration       Organi         Create application	CREATE APPLICATION
Payload codec	None	Applications Gateways Organization configuration Organi   Create application   Application name   Ioratestnode   The name may only contain words, numbers and dashes.   Application description   testndoe   Service-profile   Ioratest   The service-profile	CREATE APPLICATION
None		Applications       Gateways       Organization configuration       Organi         Create application       Intervention       Intervention       Intervention         Application name       Intervention       Intervention       Intervention         Ioratestnode       Intervention       Intervention       Intervention         Service-profile       Intervention       Intervention       Intervention         Ioratest       Intervention       Intervention       Intervention         Payload codec       Intervention       Intervention       Intervention	CREATE APPLICATION
	By defining a payload codec. LoRa App Server can encode and decode t	Applications       Gateways       Organization configuration       Organi         Create application       Intersection       Intersection         Application name       Intersection       Intersection         Ioratestnode       Intersection       Intersection         The name may only contain words, numbers and dashes.       Application description       Intersection         Service-profile       Intersection       Intersection         Intersection       Intersection       Intersection         Application description       Intersection       Intersection         Intersection       Intersection <t< td=""><td></td></t<>	
The service-profile to which this application will be attached. Note that	The service-profile to which this application will be attached. Note that Payload codec None	Applications       Gateways       Organization configuration       Organi         Create application	CREATE APPLICATIO

### 其他保持默认,添加好得应用如下:

Applications	Gateways	Organization configuration	Organization users	Service profiles	Device profiles	
						CREATE APPLICATION
ID	Name		Service-profile		Description	
1	loratestnode		loratest		testndoe	

f)添加终端节点设备

<b>6</b>	
Link	Ĭ

Applications Gateways Orr	anization configuration Organization	ization users Service pro	iles Davica profiles		DELETE ORGANIZATI
Applications Gateways Org	anzatori comgutation organi	ization users der vice pro	nes Device promes		
					CREATE APPLICATIO
ID Name	Serv	vice-profile	Description		
1 loratestnode	lorat	test	testndoe		
Application configuration	Integrations				
Q Device name or DevEUI					CREATE DEVIC
Device name	Device EUI	Dovice-profile		Device description	
		Device-profile		berioe deboription	
Devices Application co	nfiguration Integration	ns 💦 AT+RE	SCOM 3.3		
Devices Application co	nfiguration Integration	Ins AT *RE +REBO ******	SCOM 3.3 BOOT JT:MODULE REBOOT NOW! ************SVSTEM STAF JI ATBAND, HW VI.1, FW V INIT OK!	(T************************************	
Devices Application co	nfiguration Integration	Ins AT +RE *XEBO MDBM System +PEVA	SCOM 3.3 SOOT DT:MODULE REBOOT NOW! ********SYSTEM STAF J ATBARD, HW VI. 1, FW V INIT OK! A RUNNING **********************************	(T************************************	
Devices Application co Create device	nfiguration Integration	AT +RE +REBO ****** +DEVA +DEVA +DEVA +PEVA +PEVA +PEVA	SCOM 3.3 BOOT JT:MODULE REBOOT NOW! STANDULE REBOOT NOW! INT OK! INT OK! K RUNTIKG THIT OK! INT EDBREBEBEBEBE DIR: BEBEBEBEBEBEBE II: EDBREBEBEBEBEBE II: EDBREBEBEBEBEBE	XT************************************	
Devices Application co Create device Device name pmdtest	nfiguration Integration	IS AT+RE +REBO ***** LIMOD SUBJECT ***** +DEVA +DEVA +DEVA +DEVA +DEVA +DEVA +DEVA +DEVA +DEVA +DEVA	SCOM 3.3 SOT T. MOULE REBOOT NOW! *********SYSTEM STAF DI ATBAND, HW VI.1, FW V INIT OK! A KUNNING **********DEATCONFIG ST DIR: BBBBBBBBBB BBBBBBBBBBBBBBB YI: SBBBBBBBBBBBBBB YI: SBBBBBBBBBBBBBB YI: SBBBBBBBBBBBBBB YI: SBBBBBBBBBBBBBBB YI: SBBBBBBBBBBBBBBB YI: SBBBBBBBBBBBBBBBB YI: SBBBBBBBBBBBBBBBBBBBBB YI: SBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBB	TT************************************	
Devices Application co Create device Device name pmdtest The name may only contain	nfiguration Integration	AT +RE +AT +RE +	SCOM 3.3 BOOT JT:MODULE REBOOT NOW! STANDULE REBOOT NOW! STANDULE REBOOT NOW! INT OK! INT OK! RUNNIKG INT DREBBEBBEBBEBBEB II: EBBEBBEBBEBBEBBEB II: EBBEBBEBBEBBEBBEB II: EBBEBBEBBEBBEBBEB EI: SOBOBGBEBBEBBEBBE EI: SOBOBGBEBBEBBEBBEB II: SOBOBGBEBBEBBEBBEBBEB II: SOBOBGBEBBEBBEBBEBBEB II: SOBOBGBEBBEBBEBBEBBEBBEBBEB II: SOBOBGBEBBEBBEBBEBBEBBEB II: SOBOBGBEBBEBBEBBEBBEBBEBBEBBEBBEBBEB II: SOBOBGBEBBEBBEBBEBBEBBEBBEBBEBBEBBEBBEBBEBBE	XT************************************	
Devices Application co Create device Device name pmdtest The name may only contain Device description	nfiguration Integration	AT+RE AT+RE AT+RE AT+RE AT+RE AMDEM SUSTE AMDEM	SCOM 3.3 SOOT JT.MODULE REBOOT NOW! ********SVSTEM SIAF IA TRAND, HW VI.1, FW V INTI OK! NOT. SPEBBEB DI. SPEBBEB DI. SPEBBEBBEB DI. SPEBBEBBEBBEB TI. SPEBBEBBEBBEBBE TI. SPEBBEBBEBBEBBE TI. SPEBBEBBEBBEBBEB TI. SPEBBEBBEBBEBBEBBEB TI. SPEBBEBBEBBEBBEBBEB TI. SPEBBEBBEBBEBBEBBEB TI. SPEBBEBBEBBEBBEBBEB TI. SPEBBEBBEBBEBBEBBEBBEBBEBBEBBEBBEB TI. SPEBBEBBEBBEBBEBBEBBEBBEBBEBBEBBEBBEBBEBB	XT************************************	
Application co Create device levice name pondtest he name may only contain levice description est	nfiguration Integration	Ins AT+RE +EE0 ***** HIMODEM SUBJECT ***** +DEVA +D	SCOM 3.3 SOUT T. MODULE REBOOT NOW! **********SYSTEM STAF 11 ATBADD, HW VI. 1, FW V INT OK! A RUNNING INT OK! R BURBABBBBBBBBBBBBB II: SBBBBBBBBBBBBBB II: SBBBBBBBBBBBBBB II: SBBBBBBBBBBBBBB II: SBBBBBBBBBBBBBB II: SBBBBBBBBBBBBBB II: SBBBBBBBBBBBBBB II: SBBBBBBBBBBBBBB II: SBBBBBBBBBBBBBB II: SBBBBBBBBBBBBBBB II: SBBBBBBBBBBBBBBB II: SBBBBBBBBBBBBBBB II: SBBBBBBBBBBBBBBB SBBBBBBBBBBBBBBBBBBB II: SBBBBBBBBBBBBBBBB II: SBBBBBBBBBBBBBBB II: SBBBBBBBBBBBBBBB II: SBBBBBBBBBBBBBBB II: SBBBBBBBBBBBBBBBBB II: SBBBBBBBBBBBBBBBBBBBBBBBBBBB II: SBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBB	T*************************************	
Application co Create device Device name pmdtest The name may only contain Device description est	nfiguration Integration	AT +RE +KEBO +	SCOM 3.3 SOOT JT.MODULE REBOOT NOW! **********SYSTEM SINE I ATBAND, HW VI.1, FW V INTI OR! INTI OR! I EDBEDBEDBEDBEDBE II : EDBEDBEDBEDBEDBEDBE II : EDBEDBEDBEDBEDBEDBE II : EDBEDBEDBEDBEDBE II : EDBEDBEDBEDBEDBEDBE II : EDBEDBEDBEDBEDBEDBEDBE II : EDBEDBEDBEDBEDBEDBEDBEDBE II : EDBEDBEDBEDBEDBEDBEDBEDBE II : EDBEDBEDBEDBEDBEDBEDBE II : EDBEDBEDBEDBEDBEDBEDBEDBEDBEDBEDBEDBEDBE	XT ***************** Z. 09, AT V2. 00! ART************************************	
evices Application co create device evice name pomdtest he name may only contain evice description est evice EUI bbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbb	nfiguration Integration	Ins         AT +RE           +AT +RE         +AT +RE           +AT +RE         +A	SCOM 3.3 BOOT JT.MODULE REBOOT NOW! **********SVSTEM SIAF IA TRAND, HW VI. 1, FW V INT OK! INT OK! INT OK! INT OK! IEDBRBBBBBBBBBBBBBBBBB II: EBBBBBBBBBBBBBBBBB II: EBBBBBBBBBBBBBBBBB II: EBBBBBBBBBBBBBBBBB II: EBBBBBBBBBBBBBBBBB II: EBBBBBBBBBBBBBBBBBB II: EBBCBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBB	XT************************************	
Application co Create device evice name pmdtest he name may only contain evice description est evice EUI bbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbb	nfiguration Integration	AT +RE AT +RE	SCOM 3.3 SOOT JT.MDULE REBOOT NOW! **********SYSTEM SIAF IATBAND, HW VI. 1, FW V IATT OK! ARUNTIKG. IIII DEBEBBEBBEB JIII SEBBBEBBEBBEBBE VI SEBBEBBEBBEBBEB VI SEBBEBBEBBEBBEBBE VI SEBBEBBEBBEBBEBBE VI SEBBEBBEBBEBBEBBE VI SEBBEBBEBBEBBEBBE VI SEBBEBBEBBEBBEBBE VI SEBBEBBEBBEBBEBBEB VI SEBBEBBEBBEBBEBBEBBEB VI SEBBEBBEBBEBBEBBEBBEBBEBBEBBEBBEBBEBBEBB	XT***************** Z. 09, AT V2. 00! ART************************************	



Device configuration	Activate device (ABP)	Device activatio	K SSCOM 3.3
			HERBOOT MODULE REBOOT NOW! ************************************
Device address <mark>(gene</mark> ra	ate)		SYSTEM RUNNING **************DEATCONFIG START***************
BBBBBBBB	+		+DEVEVI : BEBBEBEBEBEBEB +DEVEVI : BEBBEBEBEBEBEB +AFFEUI : BEBBEBEBEBEBEB +AFFEUI : SESSESSESSESSESSESSESSESSESSESSESSESSES
Network session key (g	generate)		+NWKSKEY:888888888888888888888888888888888888
888888888888888888888888888888888888888	888888888888888888888888888888888888888		+CLASSMODE: CLASS A +EDAMODE: ABP +ADRMODE: ON
Application session ke	y (generate)		+PRTINFO:ON +PTPORT:187 +ATMODE:AT
888888888888888888888888888888888888888	388888888888888888888888888888888888888	1	**************************************
Uplink frame-counter			
0			
Downlink frame-counte	er		
0			
Disable frame-counter	validation		

添加好得节点设备如下所示:

Devices Application configuration	Integrations		
Q Device name or DevEUI			
Device name	Device EUI	Device-profile	Device description
Ipmdtest	bbbbbbbbbbbbbbbbb	loratest	test

### g)通信测试

	Created at	RX / TX parameters	Frame	
÷	Wednesday, January 24, 2018 1:09 PM	► txInfo: {} 7 keys	► phyPayload: {} 3 keys	
t	Wednesday, January 24, 2018 1:09 PM	<ul> <li>rxtnfoSet: [] 1 item</li> <li>0: {} 9 keys</li> <li>channel: 4</li> <li>codeRate: "4/5"</li> <li>frequency: "471500000"</li> <li>loRaSNR: 10.2</li> <li>rssi: -29</li> <li>time: "</li> <li>timestamp: 3283272268</li> <li>dataRate: {} 4 keys</li> <li>mac: "b827ebfffe4c6a9c"</li> </ul>	▶ phyPayload: () 3 keys           SINCLE-SEND-0, "HEX", 65, "963214"           *SEND: IN TARK, "           *SEND: IN TARK, SEN -61, SEN 9.8, PORT 0, EXSIZE 0, ""           *SEND: IN TARK, SEN -61, SEN 9.8, PORT 0, EXSIZE 0, ""           *SEND: IN TARK, SEN -61, SEN 9.8, PORT 0, EXSIZE 0, ""           *SEND: IN TARK (SEN -61, SEN 9.8, PORT 0, EXSIZE 0, ""	(ā th')
÷	Wednesday, January 24, 2018 11:53 AM	txinfo: {} 7 keys	▶ phyPayload: {) 3 keys ■口号 CONS ● 美闭串口 _ 帮助 _ 保存窗口	清除窗

### 更多使用开发细节请参考: https://docs.loraserver.io/loraserver/overview/



## 7 关于领派智能

## ● 核心业务:

专注为物联网(loT)提供"云、网、端"的服务方案提供商,为客户快速实现"端到端"自主网络的全产业链体系,以及云化服务平台,城市级网关路由器,设备通讯模块及应用产品,完全满足客户的各行各业的大规模自组网应用;实现设备数据采集、远程通讯,数据转发及垂直应用。

## ● 技术历程:

团队初创于 2008 年,远距离通讯技术,面向智慧城市、智慧停车、智慧能源、智慧农业、智慧畜牧、资产监管、物联网金融等行业,提供全面的 loT 解决方案和服务。

- 2008 年-以 433M 射频 zigbee 无线传感网起家
- 2010年-顺应物联网潮流进军物联网应用市场
- 2013年-陆续推出智能家居、农业等实用系统
- 2015 年-抢先研发 lorawan 为代表 LPWAN 系统
- 2017年-lorawan基站 NS 私有云服务全面商用

## 领派智能(无锡)(学蠡科技):

售前技术支持: 0510-85386543-801 王工 wangxuedan@lplinkpi.com 售后技术支持: 0510-85386543-807 孙工 sunlifang@lplinkpi.com

## 领派智能(深圳):

售前技术支持: 陈工 chengong@lplinkpi.com

国内外销售: sales@lplinkpi.com 技术售后: support@lplinkpi.com 网站(论坛): http://www.lplinkpi.com