



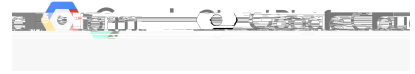
I

G C I A

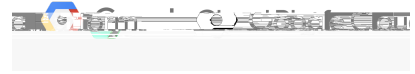


A B PD

J



	I				
	B	D	B	D	
					P F P DK
	J C				



C

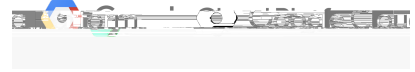
G C I

A

C

C E

1



D

A

C L A

A

A

G

G

A

C I A
I

G

G

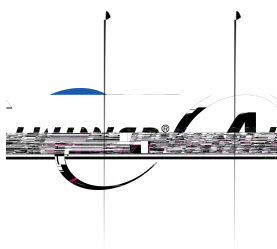
A

C



E

Definitions



PM DK A GPIO D DRAM

AP B F B P

L L F M

Prerequisites

P O D L DK D C F P

O D A

D G C I PC D C I A

C G C I D C P I A G

Create project ⋮

wangxiao@allwinnertech.com created allwinner-164401

April 12, 2017 at 9:27:52 AM UTC+8

User	wangxiao@allwinnertech.com
Resource name	projects/allwinner-164401
Request	
Project	
Create time	2017-04-12T01:27:45.209Z
Lifecycle state	ACTIVE
Name	Allwinner
Project id	allwinner-164401
Project number	280303967737

F P G C P

E



Google Cloud Platform Allwinner

API Manager Dashboard [+ ENABLE API](#)

API	Requests	Errors	Error ratio	Latency, median	Latency, 98%	
BigQuery API	-	-	-	-	-	Disable
Google Cloud APIs	-	-	-	-	-	Disable
Google Cloud Datastore API	-	-	-	-	-	Disable
Google Cloud IoT API	-	-	-	-	-	Disable
Google Cloud Pub/Sub API	-	-	-	-	-	Disable
Google Cloud SQL	-	-	-	-	-	Disable
Google Cloud Storage	-	-	-	-	-	Disable
Google Cloud Storage JSON API	-	-	-	-	-	Disable
Google Service Management API	-	-	-	-	-	Disable
Stackdriver Debugger API	-	-	-	-	-	Disable

IAM D F C E I A API G

Set IAM policy on project

wangxiao@allwinertech.com has set the project's IAM policy
April 19, 2017 at 6:40:54 PM UTC+8

User	wangxiao@allwinertech.com
Resource name	projects/allwinner-164401
Added pubsub.publisher	gcp@allwinner-164401.iam.gcp.cn

C D F C I A IAM G



Create device registry

wangxiao@allwinnertech.com created my-registry-id
April 19, 2017 at 6:56:30 PM UTC+8

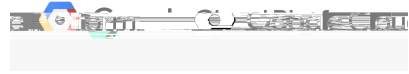
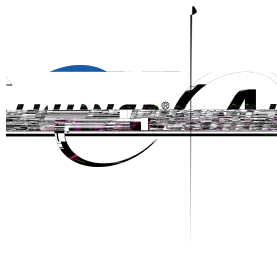
User	wangxiao@allwinnertech.com
Resource name	projects/allwinner-164401/locations/us-central1/registries/my-registry-id
Request	
Device registry	
Default monitoring config	MONITORING_ENABLED
Id	my-registry-id
Parent	projects/allwinner-164401/locations/us-central1
Response	
Default monitoring config	MONITORING_ENABLED
Id	my-registry-id
Name	projects/allwinner-164401/locations/us-central1/registries/my-registry-id

F C

C D C I A G

O C I A G

B G C I I C I A G



C D G

1 Download Tina Linux from GitHub or FTP server

L F G H A
I

```

$ curl https://raw.githubusercontent.com/tinalinux/repo/stable/repo > ~/bin/repo
$ chmod +x ~/bin/repo
$ export PATH=$PATH:~/bin/
$ mkdir tina && cd tina
$ repo init -u https://github.com/tinalinux/manifest -b r18-v0.9 -m r18/v0.9.xml
$ repo sync
$ repo start r18-v0.9 --all

```

F F C L
C DK C DN

```

$ curl https://code.csdn.net/tinalinux/repo/blob/stable/repo > ~/bin/repo
$ chmod +x ~/bin/repo
$ export PATH=$PATH:~/bin/
$ mkdir tina && cd tina
$ repo init -u https://code.csdn.net/tinalinux/manifest.git -b r18-v0.9 -m r18/v0.9-csdn.xml
$ repo sync
$ repo start r18-v0.9 --all

```

F D L C DN C

2 Necessary modules needed by Google Cloud IoT demo on Tina SDK

P L
O L DK M



DK

L 0

F

L

```

You're building on Linux
Lunch menu... pick a combo:
 1. octopus_dev-tina
 2. octopus_dev-dragonboard
 3. tulip_m64-tina
 4. tulip_m64-dragonboard
 5. astar_evb-tina
 6. tulip_pine64-tina
 7. tulip_pine64-dragonboard
 8. octopus_sch-tina
 9. octopus_sch-dragonboard
10. sitar

pragoc@pragoc:~/tina$

```

F

N I

P

P

L

P



M

P

G C I

```

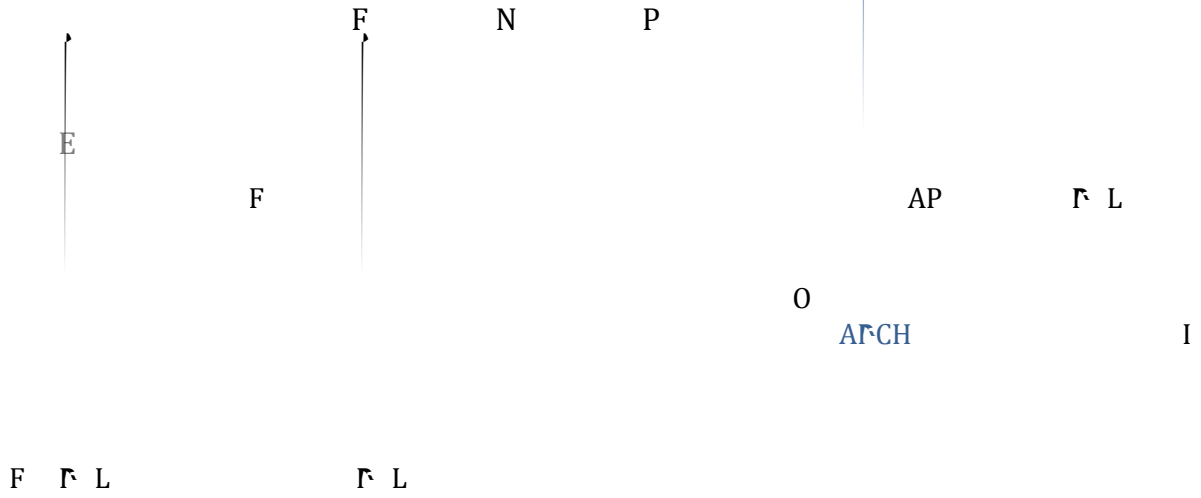
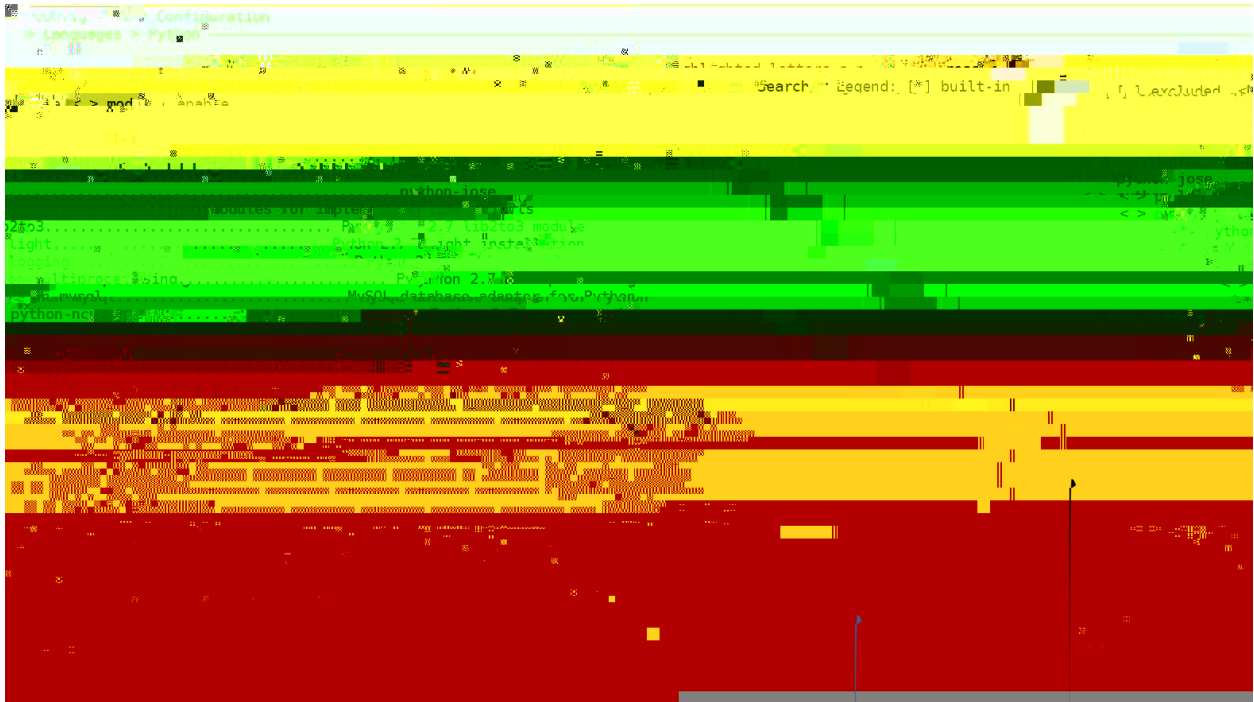
config - Tina Configuration
> Languages > Python
Python
Arrow keys navigate the menu. <Enter> selects submenus --- (or empty submenus ---). Highlighted letters are hotkeys. Pressing
<Y> includes, <N> excludes, <M> modularize features. Press <Esc><Esc> to 'exit', </?> for help.

Python 2.7 programming language
python-attrs..... python-attrs
Python 2.7 interpreter
python-base..... python-base
Python 2.7 codecs module support
python-computer..... python-computer module
python-crcmod..... python-crcmod
python-crypto..... python-crypto
python-cryptography..... python-cryptography

python-iana..... python-iana

```

F N P





```
config - Linux/arm64 3.10.65 Kernel Configuration...
^ device drivers ^ Wireless LAN support > Wireless LAN
  Array keys navigate the menu. <Enter> selects submenus ---. Highlighted letters are hotkeys.

  Wireless LAN
  [ ] enable WiFi control function abstraction
  < >atheros Wireless Cards --->
  < >Broadcom FullMAC wireless cards support
  < >Broadcom IEEE802.11n embedded FullMAC WLAN driver
  < >IEEE 802.11 for Host AP (Prism2/2.5/3 and WEP/TKIP/CCMP)
  < >Marvell 8xxx Libertas WLAN driver support
  [ ] Intel Wireless LAN support --->
  < >Marvell WiFi-Ex Driver
  < >Realtek 8192E USB WiFi
  < >Realtek 8723B SDIO or SPI WiFi
  < >XRadio WLAN support --->

  <Select> <Exit> <Help> <Save> <Load>
```

E F Γ
Γ L



F

F

F

F

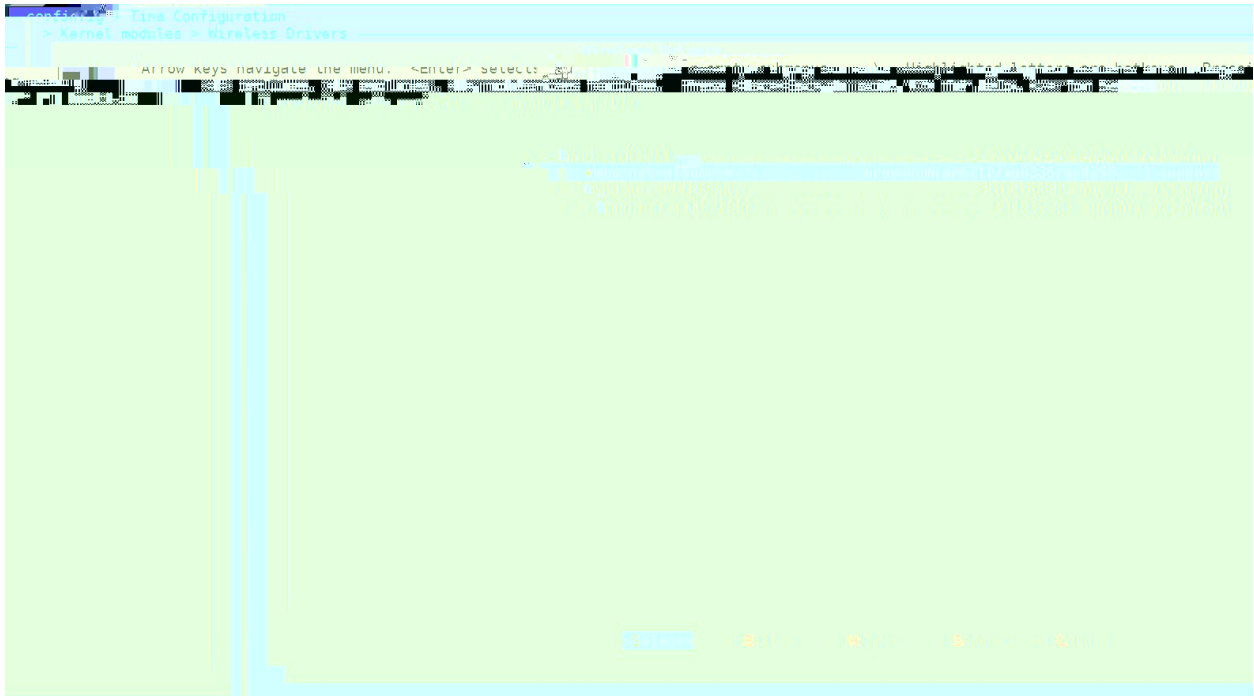


```
.config - Tina Configuration
> Allwinner > wifimanager..... Tina-wifi-manager
```

F B P M F AP
LAN
C B F MAC M



F C I B I



P F K
AP AP



```

.config - Tina Configuration
> Firmware
      Firmware
Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty submenus ----). Highlighted letters are hotkeys. Pressing
<Y> includes, <N> excludes, <M> modularizes features. Press <Esc><Esc> to exit, <?> for Help, </> for Search. Legend: [ ] built-in
[ ] excluded <M> module <> module capable

< > ap6212-firmware..... Broadcom AP6212 firmware
< > ap6212a-firmware..... Broadcom AP6212A firmware
< > ap6255-firmware..... Broadcom AP6255 firmware
< > ap6355-firmware..... Broadcom AP6355 firmware
< > ap6356-firmware..... Broadcom AP6356 firmware
< > r8188eu-firmware..... Realtek RTL8188EU firmware
< > r8723ba-firmware..... Realtek RTL8723BS firmware
< > xr819-firmware..... Xradio xr819 firmware

<Select> < Exit > < Help > < Save > < Load >

```

F AP

B F F I

E

G C I

PC

E



```

.config - Tina Configuration
> Utilities
  <Y> includes, <N> excludes, <M> modularizes features. Press <Esc><Esc> to exit, <?> for Help, </> for Search. Legend: [*] built-in
  [ ] excluded <M> module <> module capable
  < > ineg-tools ..... The Independent JPEG Group's JPEG manipulation library
  < > lua ..... LUAF implementation
  < > openssl ..... Open source SSL implementation
  < > playdemo ..... music play
  < > prlimit ..... get and set process resource limits
  < > util ..... Open source utilities
  < > xcalc ..... address calculator
  < > xmodem ..... 3 kinds of mode
  < > xterm ..... resource limits

```

F

3 Compile the Tina Linux and flash the firmware on board

N O G C I

```

make[2]: Leaving directory `/home/wangxiao/workspace/tina_2.0'
make[1]: Leaving directory `/home/wangxiao/workspace/tina_2.0'

#### make completed successfully (44 seconds) ####

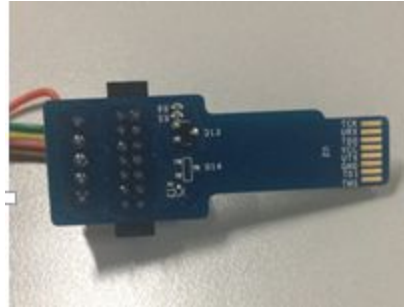
```

F



A

F



F

A

F

F

```
/home/wangxiao/workspace/tina_2.0/out/tulip-d1/tina_tulip-d1_card0.img
pack finish
```

F

P

M

4 Run Google Cloud IoT Demo on Tina

A

O

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```
BusyBox v1.24.1 () built-in shell (ash)
```

```
[ 8.110129] CPU1: shutdown  
[ 8.113114] psci: CPU1 killed.
```

```
Tina Linux  
-----  
Tina Linux (Netanel's 587,13054) 2017  
-----  
root@TinaLinux:/#
```

```
root@TinaLinux:/#
```

```
root@TinaLinux:/#
```

```
root@TinaLinux:/#
```

```
root@TinaLinux:/#
```

```
root@TinaLinux:/#
```

```
root@TinaLinux:/#
```

```
root@TinaLinux:/# echo 4 > /proc/sys/kernel/printk
```

```
printk printk_ratelimit
```

```
printk_delay printk_ratelimit_burst
```

```
root@TinaLinux:/# echo 4 > /proc/sys/kernel/printk
```

```
root@TinaLinux:/# python
```

```
Python 2.7.11 (default, Apr 17 2017, 07:00:02)
```

```
[GCC 5.2.1] on linux2
```

```
Type "help", "copyright", "credits" or "license" for more information
```

```
>>>
```

C	I	F	P	ID	PA	OFD
F	ID	P				

```
root@TinaLinux:/# wifi_connect_ap_test "SSID" "PASSWORD"
```

```
*****
```

```
***Start wifi connect ap test!***
```

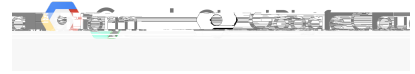
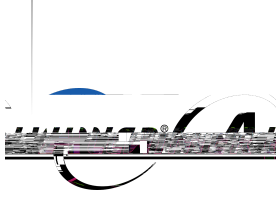
```
*****
```

```
wpa_supplicant not running!
```

```
ctrl_interface != /etc/wifi/sockets
```

```
F C I
```

```
F
```



O

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PÖ`ë eTMTM• T9

```

Publishing message 72/100: 'my-registry-id/my-rs256-device-id-payload-72'
on_publish
Publishing message 73/100: 'my-registry-id/my-rs256-device-id-payload-73'
on_publish
Publishing message 74/100: 'my-registry-id/my-rs256-device-id-payload-74'
on_publish
Publishing message 75/100: 'my-registry-id/my-rs256-device-id-payload-75'
on_publish
Publishing message 76/100: 'my-registry-id/my-rs256-device-id-payload-76'
on_publish
Publishing message 77/100: 'my-registry-id/my-rs256-device-id-payload-77'
on_publish
Publishing message 78/100: 'my-registry-id/my-rs256-device-id-payload-78'
on_publish
Publishing message 79/100: 'my-registry-id/my-rs256-device-id-payload-79'
on_publish
Publishing message 80/100: 'my-registry-id/my-rs256-device-id-payload-80'
on_publish
Publishing message 81/100: 'my-registry-id/my-rs256-device-id-payload-81'
on_publish
Publishing message 82/100: 'my-registry-id/my-rs256-device-id-payload-82'
on_publish

```

F D L

O MQ

¿ FYTMñ & A@ ¿!FYTMñ & AG84 • Aëñ eTMTM• `VC bA@Ù ¼ ¿al!Y\$D9x") H



```
Secret-Castle:~ Wang$ gcloud beta pubsub subscriptions pull --auto-ack projects/
allwinner-164401/subscriptions/my-subscription
```

DATA	MESSAGE ID	ATTRIBUTES
ice-id-payload-66 121017144547	121017144547	deviceRegistryId=us-central1-projectId=allwinner-164401 subFolder=
17740481950093 deviceRegistryId=us-central1-projectId=allwinner-164401 subFolder=		deviceRegistryLocation=us-central1-projectId=allwinner-164401 subFolder=

F

F

“Cloud IoT (Alpha) - User Guide”, handrei@, eschapura@, mkess@, malter@, indchak@google.com 02/20/2017



roots.pem PhoenixSuite

