CC3200 实现 TCP Client 双向通讯笔记

1、资料说明

如下目录

①网络说明文档

cc3200 开发文档\网络部分说明\Internet on chip

**②OTA** 库文档

cc3200 开发文档\库文件\CC3200 Simplelink OTA Extlib API User's Guide

③网络接口文档

cc3200 开发文档\库文件\simplelink\_api

#### 2、概念

正式开讲之前, 先介绍几个概念, 有主意我们接下来的说明。

AP(Access Point):无线接入点,这个概念特别广,在这里,用大白话 说,你可以把 CC3200 当做一个无线路由器,这个路由器的特点不能 插入网线,没有接入 Internet,只能等待其他设备的链接,并且智能 接入一个设备。类似于点对点模式啦。

STA(Station): 任何一个接入无线 AP 的设备都可以称为一个站点。大白话说也就是平时接入路由器的设备,哈哈。

SSID(Service Set Identifier):SSID,每个无线 AP 都应该有一个标示用于用户识别,SSID 就是这个用于用户识别的的名字,也就是我们经常说到的 wifi 名。

BSSID:每一个网络设备都有其用于识别的物理地址,这个东西呢就叫 MAC 地址,这个东西一般情况下出厂会有一个默认值,可更改,也有 其固定的命名格式,也是设备识别的标识符。这个 BSSID 呢是针对设 备说的,对于 STA 的设备来说,拿到 AP 接入点的 MAC 地址就是这个 BSSID。

RSSI:这个理解起来更简单,就是通过 STA 扫描到 AP 站点的信号强度。

#### 2. 工程导入

#### 2.1 导入的工程

①ti\_rtos\_config:TI RTOS 配置工程库

②oslib:因为TI的工程能同时支持TI rtos和Free RTOS,所以又在此基础上写了一个通用的 os 库,我个人感觉有些东西好用,有些东西不好用,到时候再说

③simplelink: 网络连接库, 想要使用 CC3200 的网络必须包含这个

库,别无他法,至少我现在没有发现其他的方式。

④tcp\_socket: 这个就是我们要调试的程序主题。

⑤Driverlib:这个是 GPIO 和串口用的库(在这个工程里)。

#### 2.2 导入过程

导入过程上一贴已经讲过了,所以就不多讲了,主要注意的是 ①②③的导入不要 copy,④的导入 copy 就行。看图

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导入完成,如下图所示



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## 2.3 编译工程

编译的顺序一定要严格按照下边的顺序,因为每个库之间是有相互依 赖关系的,不按照套路编译,就会出错

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# 2、编译 oslib

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	Show advanced settings  New Add Files Copy Paste Copy Paste Delete Refactor Source Move Rename Import Export Show Build Settings Build Project Clean Project Rebuild Project Clean Project Rebuild Project Clean Project Rebuild Project Clean Project Build Configurations Make Targets Index Debug As Team Compare With	ASSERT ON_EBROR(INTERNET_COMME connection is successf SS; Cbf+V Delete cting to a NLAN Access on connects to the rec specified in te form of rec If the NLAN connection ddress, It will be sto Connect() f5 t secParams = (0); = 0; Manage Set Active Build All Clean All Build Selected	ECTION_FAILED); ful spoint quired AP (SSID_NAME) with Security of mecros at the top of this file n fails or we don't aquire an IP seck in this function forever. N_KEY; 1 NON_OS (Simplelink for Non-OS) 2 NON_OS_PM (Simplelink for Non-OS) 2 NON_OS_PM (Simplelink for Non_O V 3 OS (Simplelink with OS config) 4 PM_Framework (Simplelink for Powe	OK Cancel
	Show advanced settings  New Add Files Copy Paste Copy Paste Delete Refactor Source Mow Rename Import Export Show Build Settings Build Project Clean Project Rebuild Project Clean Project Rebuild Project Clean Project Rebuild Project Clean Project Build Configurations Make Targets Index Debug As Team Compare With Restore from Local History	ASSERT ON_EBROR(INTERNET_COMME connection is successf Cbf+C Cbf+V Delete cting to a MLAN Access on connects to the rec specified in te form of rec if the MLAN connection ddress, It will be sto Connect() f5 t secParams = (0); a 0; Manage Set Active Build All Clean All Build Selected	ECTION_FAILED); ful spoint quired AP (SSID_NAME) with Security of mecros at the top of this file n fails or we don't aquire an IP ock in this function forever. I NON_OS (Simplelink for Non-OS) 2 NON_OS_PM (Simplelink for Non-OS) (V 3 OS (Simplelink with OS config) 4 PM_Framework (Simplelink for Power I I NON_COS_PM (Simplelink for Power I I NON_OS_PM (Simplelink for Power I I NON_COS_PM (Simplelink for Power I N N N N N N N N N N N N N N N N N N N	OK Cancel

同样的编译没有错误,就算编译完成

# 4、编译 driverlib

type filter text	General			\$ • \$ • •
<ul> <li>Besource</li> <li>General</li> <li>Build</li> <li>ARM Compiler</li> </ul>	Configuration: Release	[Active ]	▼ Manage	Configurations
Optimization	🖾 Main			
Include Options	Device			
MISRA-C:2004 ULP Advisor	Eamily: ARM			÷
Advanced Options	Variant: <select or<="" td=""><td>type filter text&gt; +</td><td>CC3200</td><td></td></select>	type filter text> +	CC3200	
ARM Archiver	Connections		* (applies to	whole project)
Debug	Manage	the project's target-configura	ation automatically	
	Advanced settings			
	Compiler version:	TI v5.2.7		More
	Output type:	Static Library		
	Output format:	eabi (ELF)	•	
	Device endianness:	little	•	
	Linker command file:		-	Browse
	Runtime support library	T I	*	Browse
	1			
(?) Show advanced settings			OK	Cancel

同样设置完成后编译,如果没有错误就算编译完成

# 5、编译 tcp\_socket\_client

filter text	General			< ⇒ < < <
Resource				
Seneral	Configuration Release L	Active 1	· Maaaa	Configurations
Build	Conliguration: Inclease [1	Active 1	manage	Comigurations
Processor Options				
Optimization	Main			
Include Options	Device			
MISRA-C:2004	Family: ARM			~
Advanced Options	Variant scalect or t	une filter texts -	CC3200	-
ARM Linker	vananc select of t	ype inter texts	003200	•
ARM Hex Utility [Disabled]	Connection:		<ul> <li>(applies t)</li> </ul>	o whole project)
)ebug	✓ Manage t	the project's target-configura	ation automatically	
	Advanced settings			
	Compiler version:	TI v5.2.7	•	More
	Output type:	Executable	+	
	Output formati	ashi (ELE)	-	
	Output Ionnat:	eaoi (ccr)		
	Device endianness:	little	•	
	Linker command file:	cc3200v1p32.cmd	•	Browse
	Runtime support library:	<automatic></automatic>	•	Browse
Show advanced settings			ОК	Cancel

如果没有出现任何错误,就证明编译完成,

## 3、修改参数

下边我们就让 cc3200 的设备连接到相应的网络上

修改参数



SECURITY\_KEY: 是你要连接的无线 AP 的名称 路由的密码

SECURITY\_TYPE: 要连接的无线 AP 的加密方式

SSID\_NAME: 要连接的 AP 的名称 路由的名字

## 3.1 更改 BsdTcpClient 函数

BsdTcpClient	函数更改为如下:	
SlSockAddrIn	_t sAddr;	
int	iAddrSize;	
int	iSockID;	
int	iStatus;	
//filling	g the TCP server socke	t address
sAddr.si	n_family = SL_AF_INET;	
sAddr.si	n_port = sl_Htons((uns	<pre>igned short)usPort);</pre>
sAddr.si	n_addr.s_addr = <mark>sl_Hto</mark>	<pre>nl((unsigned int)g_ulDestinationIp);</pre>
iAddrSize	e = <b>sizeof</b> (SlSockAddrI	n_t);
// creat:	ing a TCP socket	
iSockID :	= <b>sl_Socket</b> (SL_AF_INET	,SL_SOCK_STREAM, 0);
<pre>if( iSocl</pre>	<id )<="" 0="" <="" td=""><th></th></id>	
{		

```
ASSERT_ON_ERROR(SOCKET_CREATE_ERROR);
}
// connecting to TCP server
iStatus = sl_Connect(iSockID, ( SlSockAddr_t *)&sAddr, iAddrSize);
if( iStatus < 0 )</pre>
{
   // error
   sl_Close(iSockID);
   ASSERT_ON_ERROR(CONNECT_ERROR);
}
//set nonblocking mode
long lNonBlocking = 1;
iStatus = sl_SetSockOpt(iSockID,SL_SOL_SOCKET,SL_SO_NONBLOCKING,
        &lNonBlocking,sizeof(lNonBlocking));
if( iStatus < 0 )</pre>
{
  sl_Close(iSockID);
 UART_PRINT("TCP Client failed\n\r");
}
//wifi uart transfer
iStatus = WuartTransfer(UARTA0 BASE,iSockID);
if( iStatus < 0 )</pre>
{
    UART_PRINT("WUART Transfer failed\n\r");
}
return SUCCESS;
```

## 3.2 增加 WuartTransfer 函数

```
int WuartTransfer(unsigned long ulBase, int iSockID)
{
   char
          cTxBuf[100],i;
   char
          cRxBuf[100];
   char
          cGetChar;
   int
          iStatus, iStatusRecv;
   int
           iCounter = 0;
   //UART_PRINT("\r\n\send:");
   while(1)
   {
       //uart get char
       cGetChar = MAP_UARTCharGetNonBlocking(ulBase);
```

```
if(cGetChar != 0xff)
{
   //uart display back
   MAP_UARTCharPut(ulBase,cGetChar);
   //save char of recv
   cTxBuf[iCounter++] = cGetChar;
   //enter 0x0d or esc 0x1b
   if((cGetChar == 0x0d)||(cGetChar == 0x1b))
   {
       //display back and save 0x0a
       MAP_UARTCharPut(ulBase,0x0a);
       cTxBuf[iCounter++] = 0x0a;
       //tcp send
       iStatus = sl_Send(iSockID, cTxBuf, iCounter, 0);
       if(iStatus <= 0)</pre>
       {
           ASSERT_ON_ERROR(sl_Close(iSockID));
           UART_PRINT("发送数据失败\n\r:");
           break;
       }
       if(cGetChar == 0x0d)
       {
           UART PRINT("send1:");
           iCounter = 0;
       }
       else
           break;
   }
}
//recv tcp
iStatus = sl_Recv(iSockID,cRxBuf,100,0);
if(iStatus > 0)
{
    iStatusRecv = sl_Send(iSockID, cRxBuf, iStatus, 0);
   if(iStatusRecv <= 0)</pre>
   {
       ASSERT_ON_ERROR(sl_Close(iSockID));
       UART_PRINT("发送数据失败\n\r:");
       break;
   }
   for(i = 0; i < iStatus; i++ )</pre>
   {
       UART_PRINT("send2: %2c \n\r", cRxBuf[i]);
   }
```

```
}
}
return(iStatus);
```

#### }

# 3.3 更改 Properties 中的 predefined Symbols 项

删除 USER\_INPUT\_ENABLE 宏定义

Toperties for top_socket		
type filter text	Predefined Symbols	
Resource		
General		
⊿ Build	Configuration: Release [ Active ]	<ul> <li>Manage Configurations</li> </ul>
▲ ARM Compiler		
Processor Options		
Optimization	Undefine NAME (undefine -U)	
Include Options	ondenne ronne ( andenne, o)	
MISRA-C:2004		
ULP Advisor		
Advanced Options		
Advanced Debug Optic		
Language Options		
Parser Preprocessing C		
Predefined Symbols		
Diagnostic Options		
Runtime Model Option:		
Advanced Optimization		
Entry/Exit Hook Option		
Feedback and Analysis		
Library Function Assum	Des defers MAME ( defers D)	8 8 8 8 b
Assembler Options	Pre-define INAIVIE (define, -D)	🖌 🕷 🖉 👌 🕅
File Type Specifier	LISER INPLIT ENARIE	
Directory Specifier	cc3200	
Default File Extensions		
Command Files		
ARM Linker		
ARM Hex Utility [Disabled]		
Debug		
4		
Show advanced settings		OK Cancel

# 3.4 删除 main 函数中 BsdTcpServer 相关

```
lRetVal = BsdTcpServer(PORT_NUM);
if(lRetVal < 0)
{
    UART_PRINT("TCP Server failed\n\r");
    LOOP_FOREVER();
}</pre>
```

### 4 编译下载

然后重新编译一下,没有出现错误就把程序下载到板子里

File Edit View Project Tools Run Scripts Window Help	-14-		Quick Access	THE CCS EAR PL CCS Debu
Debug IS     Wilen, station (Code Composer Statio - Device Debugging)     Statistics (Inc.Code Debug Interface, (InContex, MLA, Sixspended - SW Breakpoint)     Empirical at maincaffs Baccoster4     E	In Variables 20 MC Rape Nerre     Meree     Meree     M SF8711512     ob- RefVal	essen: IIII Registers Type unsigned char(5) Iong	Unive 04/20013327 -1578789022	Space         Space <td< th=""></td<>
🕼 main.c. 🕼 main.c. 53 😘 rom_map.h. 👔 au. Untau.c. 🍃 oct2004/g32.cmd 🐁 common A	n 📆 olandı 😤 intarraşt	a 🏗 houjintala	a pirmuz a sutfic	• <u> </u>

#### 打开串口助手

ATT XCOM V2.0	[	- 9 %
config1:config2:Host Driver Version: 1.0.1.6Build Version 2.6.0.5.31.1.4.0.1.1.0.3.34 main2:Device is configured in default state Device started as STATION Connecting to	串口选择	
AF: IF-LINK 666 [WLAN EVENT] STA Connected to the AP: TP-LINK_666 , BSSID: 8c:a6:df:ac:c9:b5[NETAPP EVENT] IF Acquired: IF=192.168.1.104 , Gateway=192.168.1.1Connected to AP: TP-LINK 666	COM22:CC3	200LP Dual F 🔻
Device IP: 192.168.1.104	波特率	115200 🔻
send1: send2: 1 send2: 2 send2: 3 send2: 4 send2: 5 send2: 6 ************************************	停止位	1 -
CC3200 TCP Socket Application ************************************	数据位	8 🗸
<pre>configl:config2:Host Driver Version: 1.0.1.6Build Version 2.6.0.5.31.1.4.0.1.1.0.3.34 main2:Device is configured in default state Device started as STATION Connecting to AP: TP-LINK 666</pre>	奇偶校验	无 •
[WLAN EVENT] STA Connected to the AP: TP-LINK_666 , BSSID: 8c:a8:df:ac:c9:b5[NETAPP EVENT] IP Acquired: IP=192.168.1.104 , Gateway=192.168.1.1Connected to AP: TP-LINK_666 Device IP: 192.168.1.104 1	串口操作	💓 关闭串口
sendi: 1	保存窗口	清除接收
send1: send2: 1 send2: 2 send2: 3 send2: 4 send2: 5 send2: 6 send2: 1 send2: 2 send2:	📄 16进制题	显示 🔲 白底黑字
3 send2: 4 send2: 5 send2: 6 1 send1:	RTS	
▼ 	□ 时间戳	以换行回车断帧)
甲条发送 多条发送 协议传输 帮助		
1		发送
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□ 16进制发送 ☑ 发送新行           0%         开源电子 №	3: www.op	benedv.com
O         ▼         www.openedv.com         S:12         R:1386         CTS=0 DSR=0 DCD=0         ≚	首前时间 17:4	15:47 .::

打开 TCP 测试软件



点击串口调试工具是发送,和 TCP 测试工具"send",从以上两图可以看到输出。

## 注意:

在线调试时,需要注意 lRetVal = sl\_Start(0, 0, 0);
 全速运行会卡在 sl\_Start 函数中的 spi\_Read\_CPU 函数内的

```
while(ulCnt--)
```

```
{
```

```
while(!( HWREG(ulStatusReg)& MCSPI_CH0STAT_TXS ));
HWREG(ulTxReg) = 0xFFFFFFF;
UtilsDelay(300*80/3);
while(!( HWREG(ulStatusReg)& MCSPI_CH0STAT_RXS ));
*ulDataIn = HWREG(ulRxReg);
ulDataIn++;
UtilsDelay(300*80/3);
```

}

不论是把这段函数注销还是删除,都会继续执行这段代码,不解。重启电脑,板子从上电,CCS 重启都是这样的结果。

但有时能通过,这个问题困扰我 2 天;据说这是 TI 的 API 的 BUG,目前没有解决,下载到 板子运行,没有问题。

2.运行前,需要先打开 TCP 测试工具。