TCPIP Application Note for WCDMA Solution V2.0

Scope

SIM5218, SIM5215, SIM5216, SIM5320

Reference

SIMCOM_SIM5320_Serial_ATC_EN_V1.26.doc

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1. External PPP Setting

Port: USB->modem / UART, Hardware flow control

AT command:
AT+CGCONT=1,”IP”,”apn”
ATD*99#

Note, Sequence of +++ could be issued to exit data mode.

2. SIMCom Internal TCPIP Protocol

2.1 Network Environment

TCPIP application is based on GPRS network; so, ensure GPRS network is available before TCPIP setup. Following is the recommended steps.

AT+CSQ
+CSQ: 23,0

OK
AT+CREG?
+CREG: 0,1

OK
AT+CPSI?
+CPSI: GSM,Online,460-00 0x1816,63905,81 EGSM 900,-68,0,31-31

OK
AT+CGREG?
+CGREG: 0,1

OK

2.2 PDP Context Enable/Disable

APN setting：
AT+CGSOCKCONT=1,"IP","CMNET"
OK
AT+CSOCKSETPN=1
OK

Note, usually CSOCKAUTH and CSOCKSETPN parameter are kept default if not care about.

Enable PDP context:

AT+CIPMODE=0 *// command mode, if not configured, it's 0 as default. If want data mode, please configure before Net open.*
OK
AT+NETOPEN=,,1
Network opened

OK
AT+IPADDR
+IPADDR: 10.113.43.157

OK

Disable PDP context:

AT+NETCLOSE
Network closed

OK

2.3 Command Mode (Non-transparent mode)

Command mode is sometimes called non-transparent mode, which is default configured by module. Multi sockets are available under this mode.

2.3.1 TCP Client

AT+CIPOPEN=0,"TCP","116.236.221.75",8011
Connect ok

OK
AT+CIPSEND=0,5 // *only supports fixed-length to send*
>HELLO
OK

+CIPSEND: 5, 5

Send ok
AT+CIPCLOSE=0 // *close by local*
OK

Note, if connection closed by remote server, following URC will return:
+IPCLOSE: 0, 1, 116.236.221.75, 8011
Here, the meaning of second parameter in this URC is following,
0 - closed by local, active
1 - closed by remote, passive
3 - Reset

2.3.2 UDP Connetion

One socket could communicate with multiple UDP channels.

AT+CIPOPEN=0,"UDP",,,9000

OK
AT+CIPSEND=0,5,"16.236.221.75",9015
>hello
OK

+CIPSEND: 5, 5
AT+cipsend=0,5,"16.236.221.75",8058
>12345
OK

+CIPSEND: 5, 5

AT+CIPCLOSE=0
OK

2.3.3 Extended Information

Command AT+CIPHEAD is used to show IP head (data length) information, and command AT+CIPSRIP is used to show remote IP address and port once data received.

AT+CIPHEAD=1
AT+CIPSRIP=0
AT+CIPOPEN=0,"TCP","116.236.221.75",8011

Connect ok

OK
AT+CIPSEND=0,5

>11111
OK

+CIPSEND: 5, 5

Send ok
// here, remote data is coming
+IPD13
hello from pc
AT+CIPSRIP=1
OK
// here, remote data is coming
RECV FROM:116.236.221.75:8011
+IPD15
hello from pc 2
AT+CIPCLOSE=0
OK

2.3.4 TCP SERVER

Module supports 4 sockects to listen.

AT+CGSOCKCONT=1,"IP","CMNET"

OK
AT+NETOPEN=,,1
Network opened

OK
AT+SERVERSTART=8080,0
OK
AT+SERVERSTART=9090,1
OK
AT+SERVERSTART=7070,2
OK
AT+SERVERSTART=6060,3
OK
AT+TCPCLOSE=0 *// if unspicified, will close 0 channel*
OK
AT+TCPCLOSE=1
OK
AT+TCPCLOSE=2
OK
AT+TCPCLOSE=3
OK
AT+NETCLOSE
Network closed

OK

Note, we can check connection status with command AT+CIPOPEN. If some socket needs to close, please issue command AT+CIPCLOSE=<linked_num>.

2.3.5 Connection Status Checking

AT+CIPOPEN?
+CIPOPEN: 0
+CIPOPEN: 1
+CIPOPEN: 2
+CIPOPEN: 3
+CIPOPEN: 4
+CIPOPEN: 5
+CIPOPEN: 6
+CIPOPEN: 7
+CIPOPEN: 8
+CIPOPEN: 9

OK
AT+CIPOPEN=0,"TCP","116.236.221.75",8011
Connect ok

OK
+IPD15
hello from pc 3
AT+CIPOPEN?
+CIPOPEN: 0, "TCP", "116.236.221.75", 8011, -1 *// last parameter of -1 indicates this connection is active, module acts as client*
+CIPOPEN: 1
+CIPOPEN: 2
+CIPOPEN: 3
+CIPOPEN: 4
+CIPOPEN: 5
+CIPOPEN: 6
+CIPOPEN: 7
+CIPOPEN: 8
+CIPOPEN: 9

OK

2.4 Data mode (Transparent mode)

Currently, only one socket is available under transparent mode, either TCP client or TCP server. Command AT+CIPCCFG could be configured several parameters for data transmission under transparent mode..

2.4.1 TCP Client

AT+NETOPEN="TCP"
Network opened

OK
AT+TCPCONNECT="116.236.221.75",8011
CONNECT 9600
// sequence of +++ to quit data mode
OK
ATO *// command ATO to quit command mode*

CONNECT 9600
// sequence of +++ to quit data mode
OK
AT+TCPCLOSE
CLOSED

OK
AT+NETCLOSE
Network closed

OK

2.4.2 TCP Server

ATS0=7 *// ATS0 should be configured for TCP server application*
OK
AT+CIPMODE=1
OK
AT+NETOPEN=”TCP”
OK
AT+SERVERSTART=8080
OK

+CLIENT: 192.168.108.5 :57202
CONNECT 115200
// sequence of +++ to quit data mode
OK
AT+ACTCLIENT=0
OK
AT+CLOSECLIENT=0 *// close client connection*
CLOSED

OK
AT+TCPCLOSE *// close server socket*

OK

Note, the factors which influence data rate are following:
AT&E1 the data rate should be the serial connection rate;
AT&E0 the data rate is the wireless connection speed (based on QOS, refer to command AT+CGSOCKQREQ/AT+CGSOCKEQREQ/AT+CGSOCKQMIN/AT+CGSOCKEQMIN).

2.5 Switch between data mode and command mode

Hardware flow control is recommended.
Currently, USB->modem port, USB->AT port and UART port all support hardware flow control.

Software switching: escape sequence +++. Please take care, this is a complete command, do not separate each character, also take care that the time delay before and after this sequence should be more than 1000 milliseconds, the interval of each character should not more than 900 milliseconds.
Hardware switching: DTR pin could be used to trigger data mode and command mode changed. Command AT&D1 should be configured before application.

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