SIM300 FTP IMPLEMENATION

(Step by Step Approach)

1. Introduction to FTP Implementation:

My task was to regularly write some binary data to a file located on a remote server. Server «strange», i.e. to establish that there is, moreover, that there are already - you can not. For my reasons, FTP is suitable for this task, as well as possible.

FTP - FILE TRANSFER PROTOCOL - is described in detail in
 http://www.rfc-editor.org/rfc/rfc959.txt
In the same way, you can find a description and HTTP, etc. Here I will only do that for me has proved important, and what had to deal.

The basic idea is that FTP uses two connections - Control Connection and Data Connection. The first one is for transmission of commands and responses encoded ASCII, and there is throughout a conversation exchange. A second set and closed as needed and are intended strictly for data transmission, which can be both text and binary.

Control Connection initiates a client - in this case the SIM300 modem. The second connection may initiate any of the parties. In our case, this will make the remote FTP-server (acting as a client), as well as the SIM300 at one time, there can be only one connection as a client and one - as a server (see the description of the command AT + IPCCON). How is the connection you want to transfer data, you can choose the command AT + IPCCON. (Choose Conenction)

2. AT Commands for the FTP Implementation

Below I give an example of data in the file, which I did, SIM300 connect to COM1, all the commands typed into Hyperterminal.

How to configure APN, I do not give, but write your configuration:

```
at + cipscont?           SHOW APPTCPIP CONTEXT
+ CDNSORIP: 0
+ CIPSPRT: 1
+ CIPHEAD: 0
+ CIPFLP: 1
+ CIPSRIP: 0
+ CIPCSGP: 1
Gprs Config APN: www.umc.ua
Gprs Config UserId:
Gprs Config Password:
Gprs Config inactivityTimeout: 0
+ CIPDPDP: 1
Detect PDP Inerval: 10
Detect PDP Timer: 3
App Tcpip Mode: 0

OK
```

So, firstly check the registration on the network, and the fact that we have the GPRS:

```
at + creg?
+ CREG: 0,1

OK
at + cgreg?
+ CGREG: 0,1

OK
at + cgatt?
+ CGATT: 1

OK
```

Now a number of commands, without which the TCP / IP does not work:
```
at + cstt
OK
at + ciicr
OK
at + cifsr
```

88.214.93.220

The last command returns this IP-address. It will change with the next register in the network.

Now the fun part.

Check the current port numbers:
at + clport?
TCP: 2020
UDP: 3030

OK

Start the server:
at + cipserver
SERVER OK

OK
Checking if desired that it works:
at + cipserver?
+ CIPSERVER: 1

OK
Important: if you first install the TCP-connection as a client, the server can not run until you change the port command AT + CLPORT.

So, we have the server running, it waits for someone to open the connection to port 2020. That would be Data Connection.
Out of curiosity can type in your browser (putting your IP!)
  http:// 88.214.93.220:2020 But if you want to continue the experiments with the FTP, so the connection should be closed.

Now we will connect to a remote FTP-server. But we can not do this until you change the port - it is we have a busy server.

at + clport = "TCP", "2021"
OK
at + clport?
TCP: 2021
UDP: 3030

OK

Port shifts, it is now possible to access FTP-server. If you know only the name of the server, you need to get its IP-address via the DNS (this is not considered). Port to access

the FTP-server standard - 21.

at + cipstart = "tcp", "70.84.17.228", "21"
OK

CONNECT OK
220---------- Welcome to Pure-FTPd [TLS] ----------
220-You are user number 5 of 30 allowed.
220-Local time is now 17:59. Server port: 21.
220-This is a private system - No anonymous login
220 You will be disconnected after 10 minutes of inactivity.

As we can see, the server is answered (you can try - a real address). Now he needs to say something in 10 minutes, otherwise it closes the connection.
This command will send the dialed line FTP-server
at + cipsend
>

We need to write on the server - for this command USER:

user vyy

There is an important point. For the FTP server, the end of the command is a sequence of characters <CR> <LF>, which correspond to the codes # 13, # 10. When you click <ENTER> in Hyperterminal, it forms the only <CR>. To add <LF>, you need to, keeping <ALT>, recruited additional keyboard «010». You'll notice that the cursor down one line down (<LF> - is «line»).
Now, to send a message, you press CTRL + Z.
So you need to do each time I send commands FTP-server. There are other ways of sending a message (see AT + CIPSEND).
As a result, we get:

at + cipsend
> User vyy

SEND OK
331 User vyy OK. Password required

We asked to have the password for this command PASS:

at + cipsend
> Pass mypass

SEND OK
230-User vyy has group access to: vyy
230 OK. Current restricted directory is /

We are authorized, we are in the root directory. We can create the directory TEST command MKD. When dialing command register does not matter, but in the file name and directories - no.

at + cipsend
> Mkd TEST

SEND OK
257 "TEST": The directory was successfully created

Now you have to enter into this directory (the command CWD):
at + cipsend
> Cwd TEST

SEND OK
250 OK. Current directory is / TEST

Now you have to tell the server that he set up Data Connection, where it will be necessary. For this PORT command must specify IP-address and port with which the FTP-server must set the Data Connection.

at + cipsend
> Port 88,214,93,220,7,228

SEND OK
200 PORT command successful

Note: IP Address, we obtain the command AT + CIFSR. But in the PORT command of the addresses are separated by a comma, not point. The port number is transmitted in the form of two numbers (senior and junior bytes) - 7 * 256 +228 = 2020 - this is our port, where we start the server.

You can now begin to transfer data. I enjoyed using APPE (append). If the file is there - it adds data to it, if not - create a file. There are other teams. In addition, it is necessary to choose the format of data transmission (transfer mode). This will depend, as the end record in the file. I still used the transfer mode by default.

at + cipsend
> Appe file.txt

SEND OK
150 Connecting to port 2020

REMOTE IP: 70.84.17.228

So, Data Connection is established. You can now send data. But for this we must switch to connect the server:

at + cipccon = 2
OK

Transmits data
at + cipsend
> Text for file 12345
SEND OK
Do not forget to send you press CTRL + Z. <Enter> Here, you can not recruit as These data are in the file, not in the command FTP-server.

To send a command, not data, we can go back to the Control Connection:

at + cipccon = 1
OK
And pass the FTP-server command ABOR (interrupt command APPE):

at + cipsend
> ABOR

SEND OK

CLOSED

CLOSED

As we can see - it's two CLOSED - that is, shut down both the connection and Control, and Data. Why - do not know yet. If you want to continue - we have to re-establish the connection:

at + cipstart = "tcp", "70.84.17.228", "21"
OK

CONNECT OK
220---------- Welcome to Pure-FTPd [TLS] ----------
220-You are user number 1 of 30 allowed.
220-Local time is now 18:41. Server port: 21.
220-This is a private system - No anonymous login
220 You will be disconnected after 10 minutes of inactivity.

If you go to the FTP-server through a browser - will see a folder TEST and file file.txt.

Regarding the reading of files from FTP-server - it works, instead of commands APPE file.txt type "RETR file.txt", or "LIST" to read the directory. There is however one

complication. When reading the file we will go and have the data from this file (on port 2020), and a message from the FTP-server (port 2021). But the modem will send them via COM-port mixed, and you'll see them on screen. Obviously, it is necessary to command AT + CIPHEAD allow the IP-headers, to distinguish the source of the data came. But I have not yet tried.

If you find inaccuracies or would like to supplement - will be grateful.
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Forum:
http://electronix.ru/forum/index.php?showtopic=34386