

How to implement FTP client in W5200

Version 1.0



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1. Introduction

This document describes in detail all steps required to implement FTP client using basic TCP socket API available in W5200 driver.

IAR 5.41 is required to compile this FTP client application note. W5200E01-M3 board is required to run this FTP client application note.

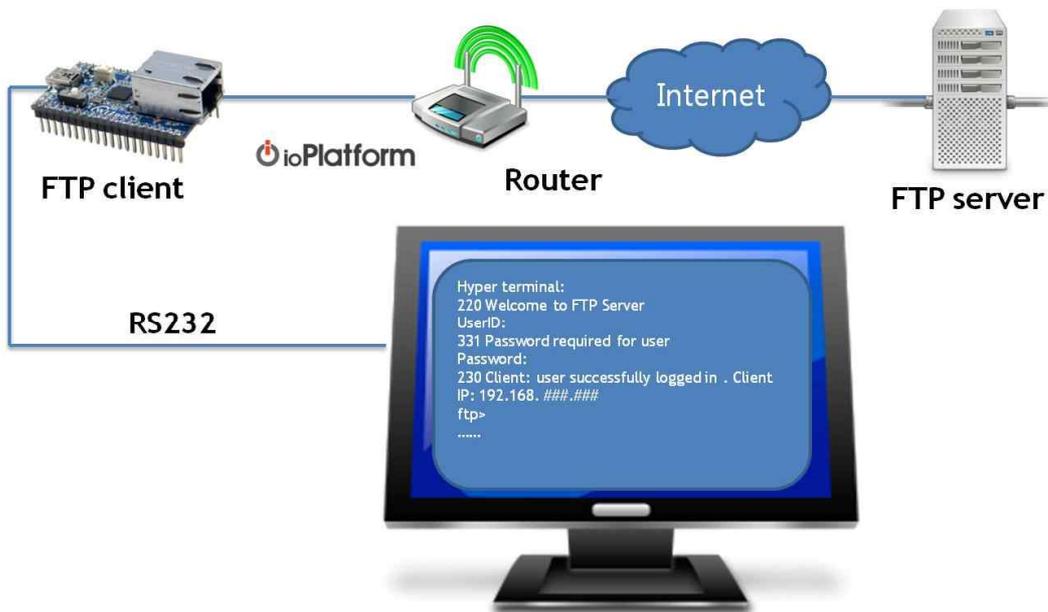


Figure 1. Big picture for FTP client

All codes and files mentioned in this document are available for download from www.wiznet.co.kr/w5200/download.

2. FTP Client

As per standard FTP client implementation, there are two channels associated with any FTP connection, a Session channel and a Data channel. A Session channel is required to exchange standard FTP commands between the FTP server and client. A Data channel is used for to communicate data (like uploading or downloading a file).

With this in mind, two TCP requests to the FTP server must be created. One TCP client is created for the Session channel and the second for the TCP server, as the Data channel.

Follow the procedure below to establish the clients. See the following section for applicable examples.

- 1> Create a TCP server listening on a specific port. This server will be used as the Data channel (for In-Bound DATA connection from the FTP server).
- 2> Perform a TCP client request through port 21 to any FTP server. This will be used as the Session channel.
- 3> After successfully establishing a connection, issue the required Log-in credentials (using standard FTP commands) to the connected FTP server. The server would respond back with Log-in success indication.

Note: Considering the memory size and the popularity of commands, this application note supports ls, cd, put ,get and bye. Other commands are not available here.

- 4> As per FTP standards, if any data related operation has to be performed, it requires being performed in a new Data channel [which is inbound from the FTP server]. Hence to achieve/create this data connection the FTP client has to provide the details of the IP address and the socket at which it would accept the in-bound data connection from the FTP server. To perform this, FTP protocol suggests usage of command "PORT". [This PORT command has 6 parameters. The first 4 parameters establish the IP address and the last 2 parameters establish the port for communication.
- 5> If the FTP server returns a success message for the issued PORT command, the connection is ready for data communication.
- 6> Upon issuing any data related FTP command, the FTP server initiates an in-bound data channel to the TCP server that is in the listening mode in W5200. The FTP server uses the information provided by the PORT command to initiate this data connection.
- 7> After the data transfer ends, the data channel is closed by the FTP server.
- 8> For further data related activities, re-enable the data channel by issuing another PORT command, again through the session channel.

3. Code Examples

The table below presents examples applicable to the procedure above.

Code	Description
<pre>TCPServerOpen(sock, DTP_Port++); //ftp.c : ftp_client_DTP()</pre>	In Chap 2 Sequence 1>
<pre>TCPCClientOpen(sock, any_port++, FTP_SERVER_IP, FTP_Server_CMD_Port); //ftp.c : ftp_client_PI()</pre>	In Chap 2 Sequence 2>
<pre>Send_USER_ID(s,msg); //ftp.c : ftp_client_PI() Send_PW(s,msg); //ftp.c : ftp_client_PI()</pre>	In Chap 2 Sequence 3>
<pre>Send_Port(sock, IP, DTP_Port); // ftp.c : ftp_client_PI()</pre>	In Chap 2 Sequence 4>
<pre>Send_cmd(s,msg); // ftp.c : ftp_client_PI()</pre>	In Chap 2 Sequence 5>

4. Demonstration

- 1> Run FTP server and create an account

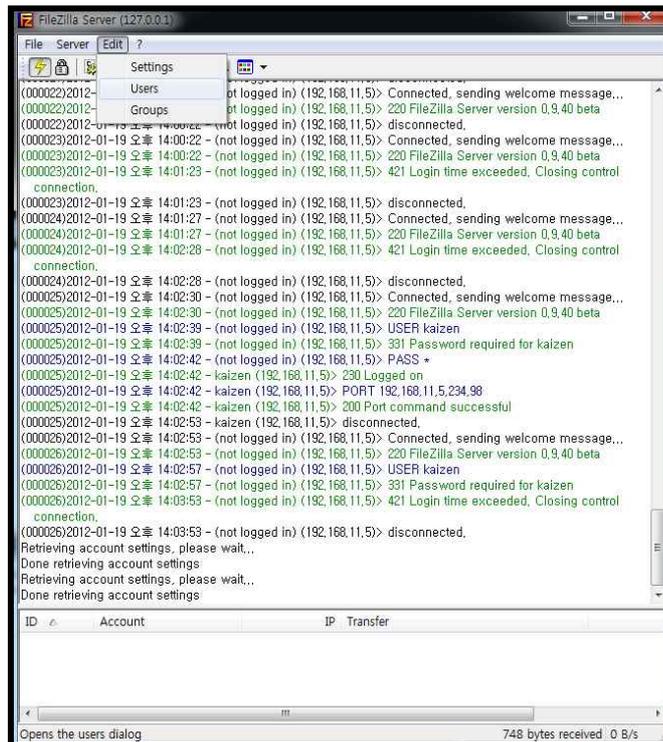


Figure 2. FTP server

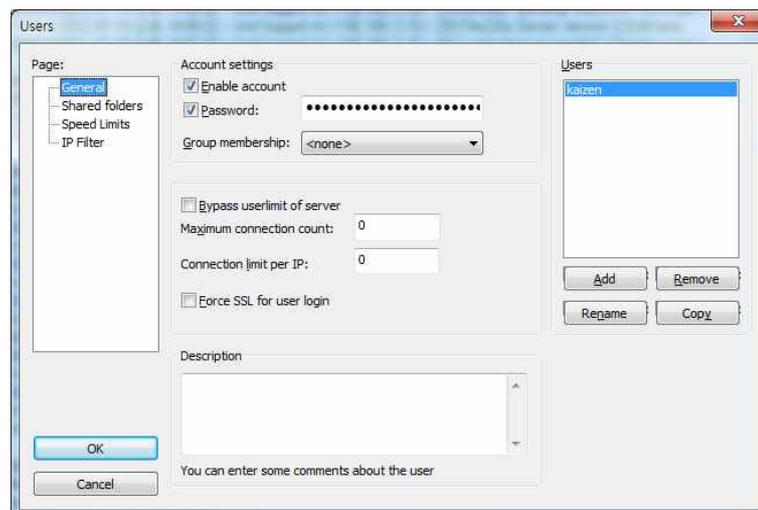


Figure 3. Create an account

- 2> Set proper network parameters using source code
 - 3> Compile source code and upload binary file to W5200E01-M3 board
 - 4> Open serial hyper terminal and let it ready to receive serial message from W5200E01-M3
- There are many free serial hyper terminal in internet. Download one of them and set as follows:

Baud-rate	Data bit	Parity	Stop bit	Flow control
115200	8	None	1	None

- 5> Run W5200E01-M3 board. It will automatically connect to the FTP server whose IP address is pre-defined in your source code.
- 6> If connection between W5200E01-M3 and FTP server is successfully established, hyper terminal prompt you for user ID and password information

```
-----  
W5200E01-M3  
Network Configuration Information  
-----  
MAC : 00.08.DC.11.22.33  
IP : 192.168.11.5  
SN : 255.255.255.0  
GW : 192.168.11.1  
DNS server : 168.26.63.1  
0 : FTP Client Start.  
  
0 : FTP Client Start.  
  
220 FileZilla Server version 0.9.40 beta  
  
Input your User ID > kaizen  
  
331 Password required for kaizen  
  
Input your Password >
```

Figure 4 login to FTP server

- 7> After successfully logged in FTP server, input `ls`, `put`, `get`, `cd` or `bye` to test FTP client function.

A) "ls" command:

```
ftp> ls
150 Opening data channel for directory list

ioPlatform
migration guide
migration guide.zip
w5100
w5200
w5300
w7100
226 Transfer complete.
FTP operation DONE
200 Port command successful.
Input FTP CMD >
```

B) "cd" command test:

```
ftp> cd w5100
250 "/w5100" is current directory.
200 Port command successful.
Input FTP CMD >
```

C) "put" command test:

```
ftp> cd ..
250 "/" is current directory.
200 Port command successful.

ftp> put ftp_client_test.txt
150 Opening BINARY mode data connection for file transfer.
226 Transfer complete.
FTP operation DONE
200 Port command successful.
```

D) "get" command test:

```
ftp> ls
ftp_client_test.txt
ioPlatform
migration guide
migration guide.zip
w5100
w5200
w5300
w7100
226 Transfer complete.
ftp> get ftp_client_test.txt
150 Opening BINARY mode data connection for file transfer.
This is the txt file for put cmd testing!!!!WIZnet!!!
226 Transfer complete.
FTP operation DONE
200 Port command successful.
ftp>
```

E) "bye" command test:

```
ftp> bye
Bye is DONE.
=====
W5200E01-M3
Network Configuration Information
=====
MAC : 00.08.DC.11.22.33
IP : 192.168.11.5
SN : 255.255.255.0
GW : 192.168.11.1
DNS server : 168.26.63.1
0: FTP Client Start
220 FileZilla Server version 0.9.40 beta
Input your USER ID:
```

Document History Information

Version	Date	Descriptions
Ver. 1.0	Jan, 2012	Release

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