Application Note
FTP_Client Example

Version 1.0.0

For more information, visit our website at http://www.wiznet.io

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1 Introduction

This Application Note covers the implementation of FTP client on WIZnet's TOE Chip.

2 Github Link

https://github.com/WIZnet-ioNIC/WIZnet-PICO-C/tree/main/examples/ftp/client

3 Applicable products

Raspberry Pi Pico & WIZnet Ethernet HAT
W5100S-EVB-Pico
W5500-EVB-Pico
W55RP20-EVB-Pico
W5100S-EVB-Pico2
W5500-EVB-Pico2

4 How to Test FTP Client Example

4.1 Step 1: Prepare software

The following serial terminal program and FTP server are required for FTP Client example test, download and install from below links.

- **Tera Term**
- **FileZilla Server Interface**

4.2 Step 2: Prepare hardware

If you are using W5100S-EVB-Pico, W5500-EVB-Pico, W55RP20-EVB-Pico, W5100S-EVB-Pico2 or W5500-EVB-Pico2, you can skip '1. Combine...'

1. Combine WIZnet Ethernet HAT with Raspberry Pi Pico.
2. Connect ethernet cable to WIZnet Ethernet HAT, W5100S-EVB-Pico, W5500-EVB-Pico, W55RP20-EVB-Pico, W5100S-EVB-Pico2 or W5500-EVB-Pico2 ethernet port.
3. Connect Raspberry Pi Pico, W5100S-EVB-Pico or W5500-EVB-Pico to desktop or laptop using 5 pin micro USB cable. W55RP20-EVB-Pico, W5100S-EVB-Pico2 or W5500-EVB-Pico2 require a USB Type-C cable.

4.3 Step 3: Setup FTP Client Example

To test the FTP client example, minor settings shall be done in code.

1. Setup SPI port and pin in 'w5x00_spi.h' in 'WIZnet-PICO-C/port/ioLibrary_Driver/' directory.

Setup the SPI interface you use.

- If you use the W5100S-EVB-Pico, W5500-EVB-Pico, W5100S-EVB-Pico2 or W5500-EVB-Pico2,

```
/* SPI */
#define SPI_PORT spi0

#define PIN_SCK 18
#define PIN_MOSI 19
#define PIN_MISO 16
#define PIN_CS 17
#define PIN_RST 20
```

- If you want to test with the FTP client example using SPI DMA, uncomment USE_SPI_DMA.

```
/* Use SPI DMA */
//#define USE_SPI_DMA // if you want to use SPI DMA, uncomment.
```

- If you use the W55RP20-EVB-Pico,

```
/* SPI */
#define USE_SPI_PIO

#define PIN_SCK 21
#define PIN_MOSI 23
#define PIN_MISO 22
#define PIN_CS 20
#define PIN_RST 25
```

2. Setup network configuration such as IP in ' w5x00_ftp_client.c', which is the FTP client example in 'WIZnet-PICO-C/examples/ftp/client' directory.

- Setup IP, other network settings to suit your network environment.

```
/* Network */
static wiz_NetInfo g_net_info =
    {
        .mac = {0x00, 0x08, 0xDC, 0x12, 0x34, 0x56}, // MAC address
        .ip = {192, 168, 11, 2},                     // IP address
        .sn = {255, 255, 255, 0},                    // Subnet Mask
        .gw = {192, 168, 11, 1},                     // Gateway
        .dns = {8, 8, 8, 8},                         // DNS server
```

```
        .dhcp = NETINFO_STATIC            // DHCP enable/disable
};
```

3. Setup FTP client configuration

- If you use the Setup FTP client configuration in 'ftpc.c' in 'WIZnet-PICO-C/libraries/ioLibrary_Driver/Internet/FTPClient' directory.

```
uint8_t FTP_destip[4] = {192, 168, 11, 230};
    // For FTP client examples; destination network info
uint16_t FTP_destport = 21;
    // For FTP client examples; destination network info
```

4.4 Step 4: Setup FileZilla Server program

1. Execute FileZilla server program and open FTP server.

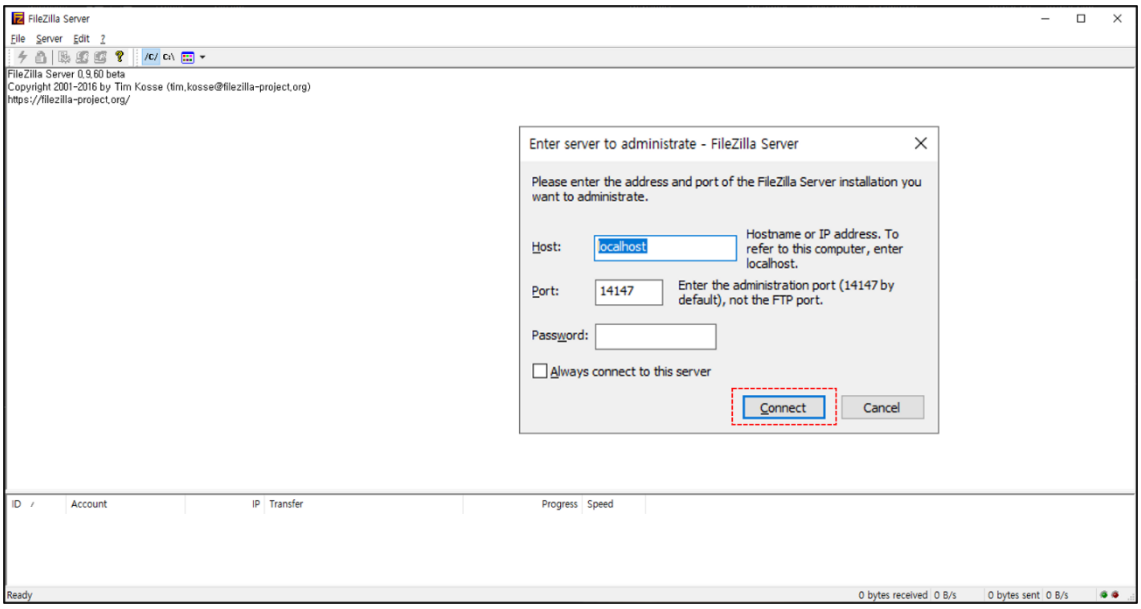

Figure 1. FileZilla server open

2. Add user and set password

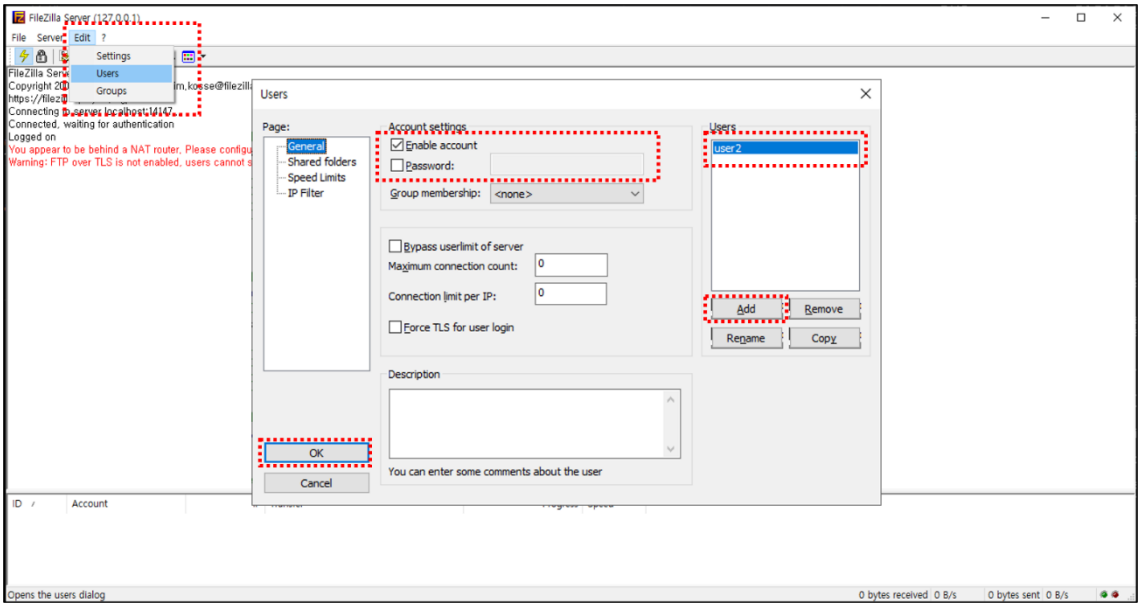

Figure 2. Add user

3. Set folder path to share

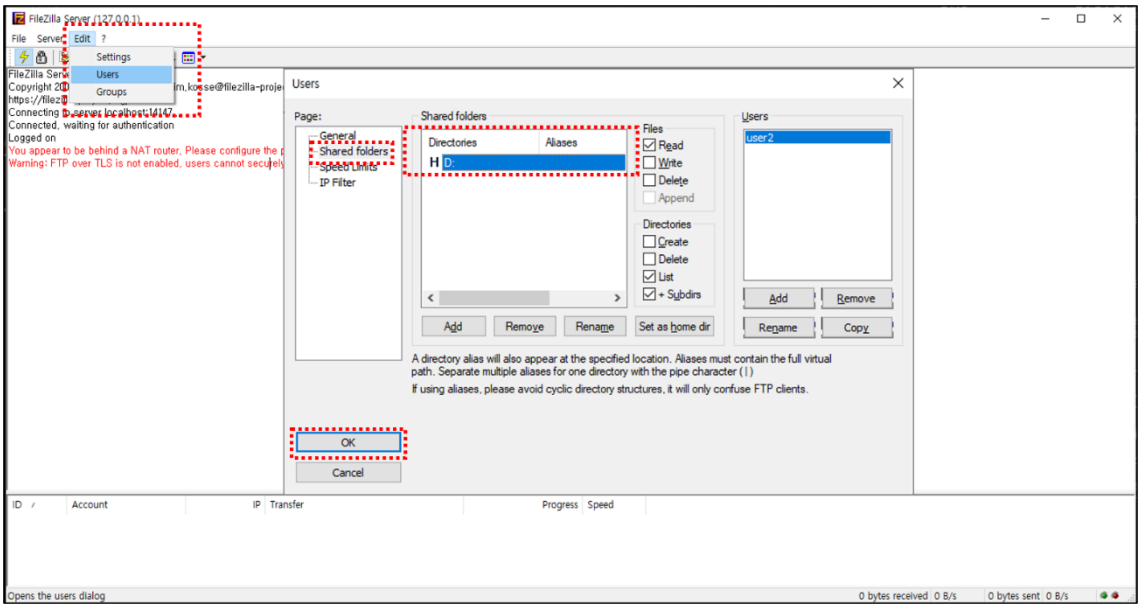

Figure 3. Set path

4. General stings

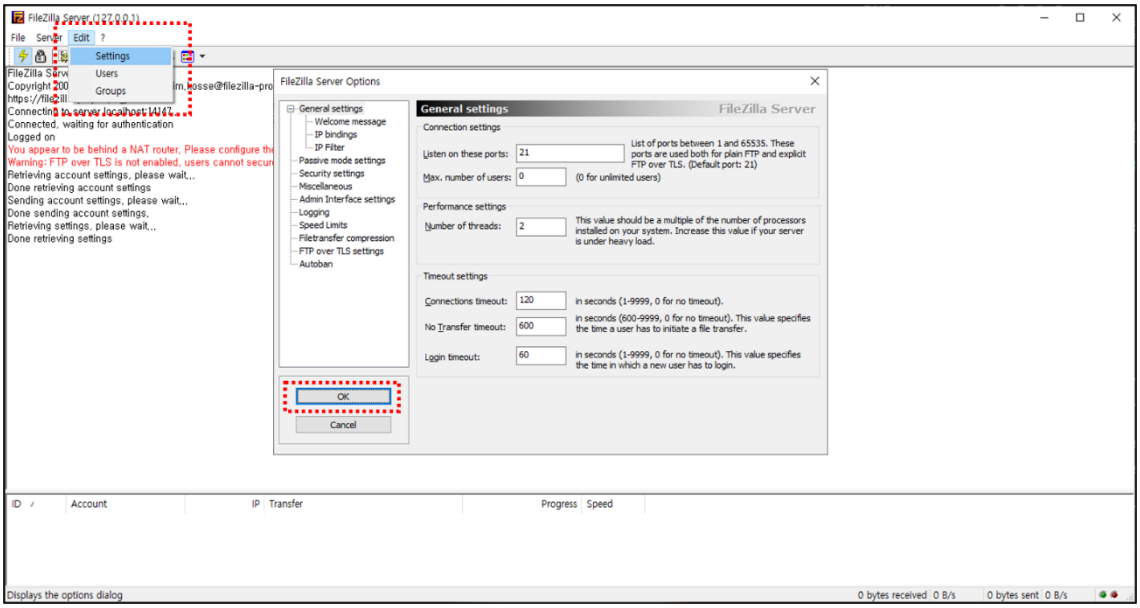

Figure 4. Set general strings

4.5 Step 5: Build

1. After completing the FTP client example configuration, click 'build' in the status bar at the bottom of Visual Studio Code or press the 'F7' button on the keyboard to build.
2. When the build is completed, 'w5x00_ftp_client.uf2' is generated in 'WIZnet-PICO-C/build/examples/ftp/client' directory.

4.6 Step 6: Upload and Run

1. While pressing the BOOTSEL button of Raspberry Pi Pico, W5100S-EVB-Pico, W5500-EVB-Pico, W55RP20-EVB-Pico, W5100S-EVB-Pico2 or W5500-EVB-Pico2 power on the board, the USB mass storage 'RPI-RP2' is automatically mounted.

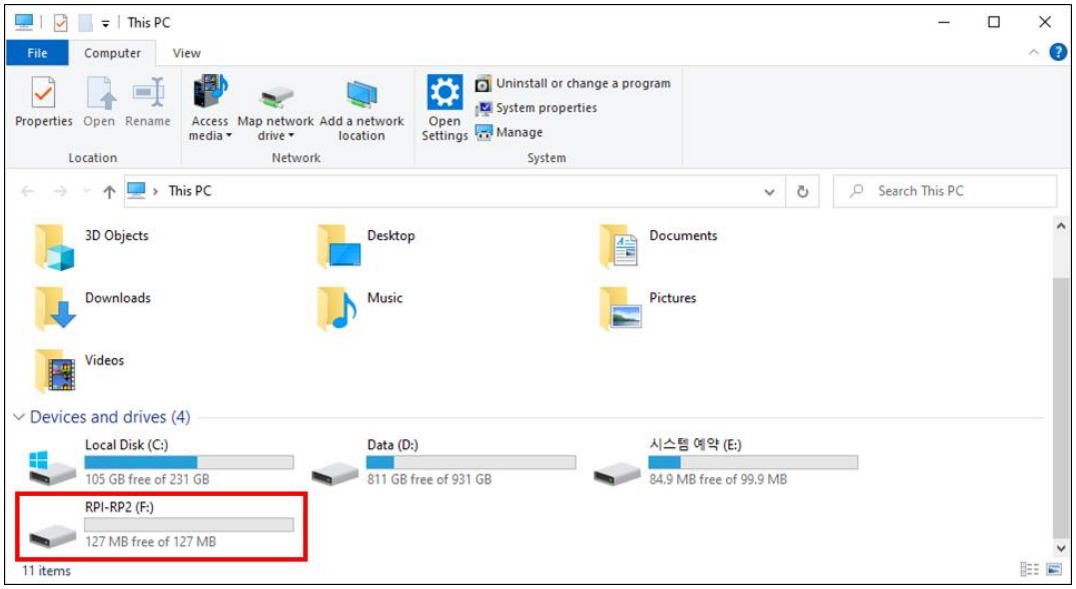

Figure 5. USB mass storage

2. Drag and drop ' w5x00_ftp_client.uf2' onto the USB mass storage device 'RPI-RP2'.
3. Connect to the serial COM port of Raspberry Pi Pico, W5100S-EVB-Pico, W5500-EVB-Pico, W55RP20-EVB-Pico, W5100S-EVB-Pico2 or W5500-EVB-Pico2 with Tera Term.

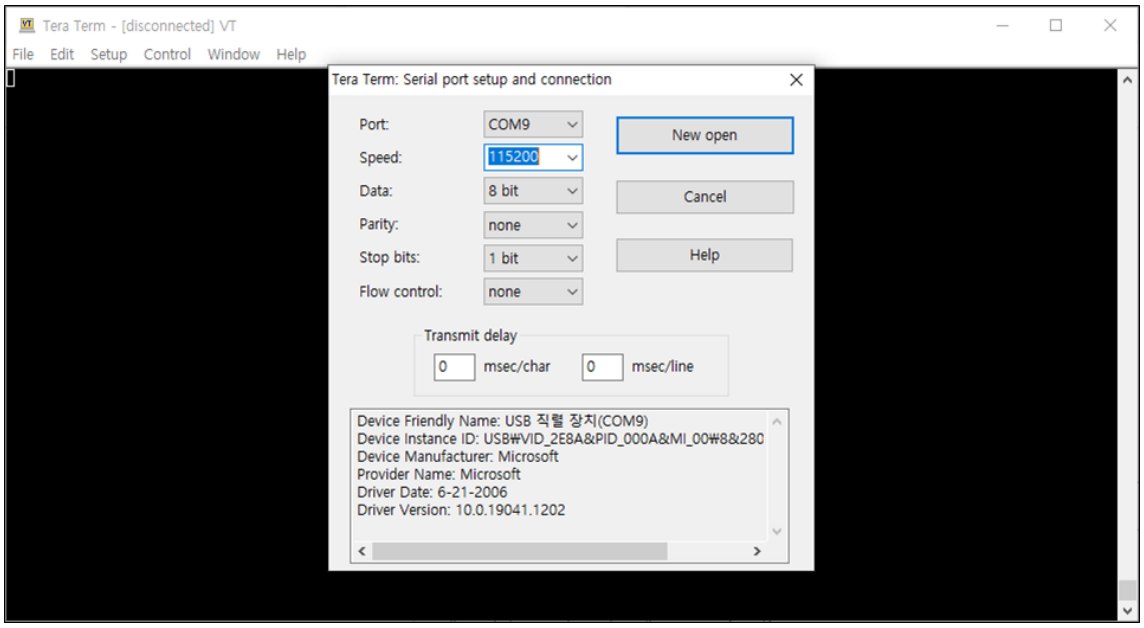

Figure 6. Tera Term

4. Reset your board.
5. If the FTP Client example works normally on Raspberry Pi Pico, W5100S-EVB-Pico, W5500-EVB-Pico, W55RP20-EVB-Pico, W5100S-EVB-Pico2 or W5500-EVB-Pico2, you can see the network information of Raspberry Pi Pico, W5100S-EVB-Pico, W5500-EVB-Pico, W55RP20-EVB-Pico, W5100S-EVB-Pico2 or W5500-EVB-Pico2 and the FileZilla web site URL.

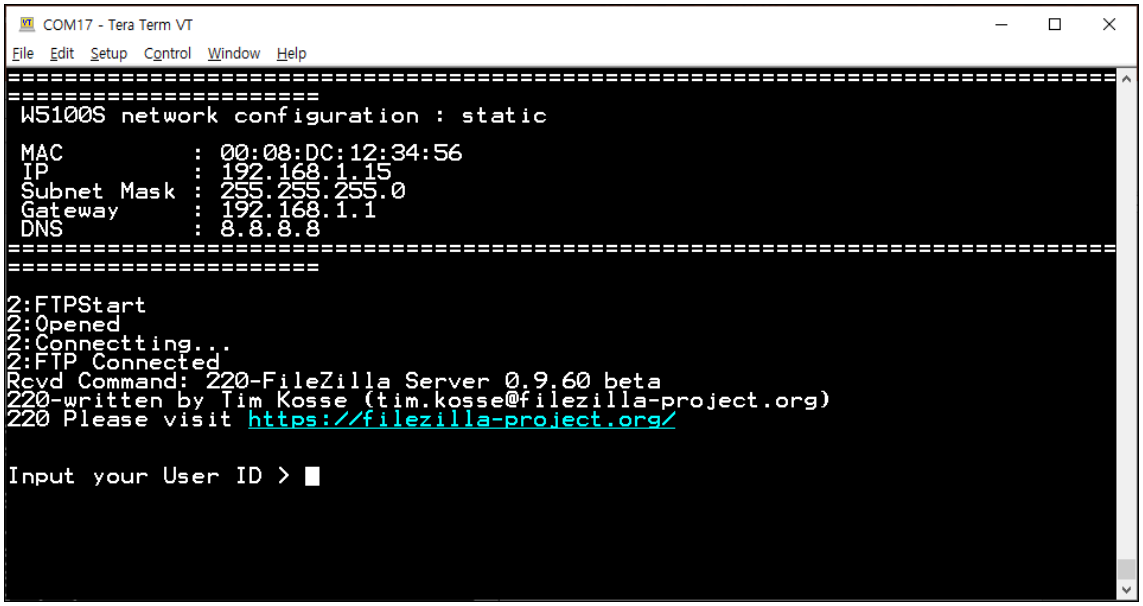

Figure 7. Network Information

6. Input the user ID created in step 4.

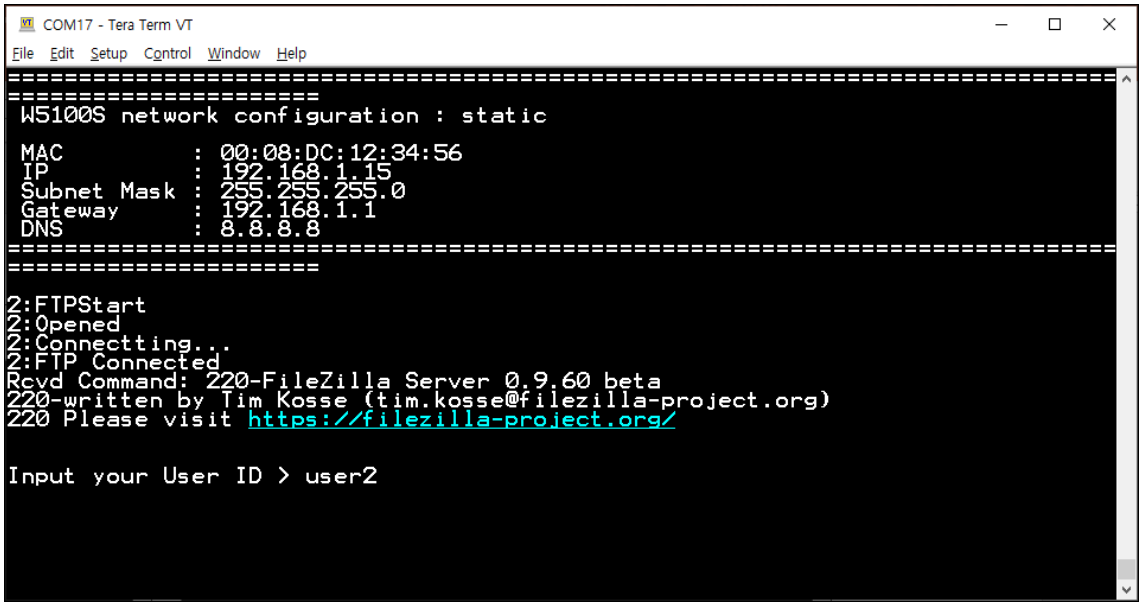

Figure 8. Input user ID

7. Input the password.

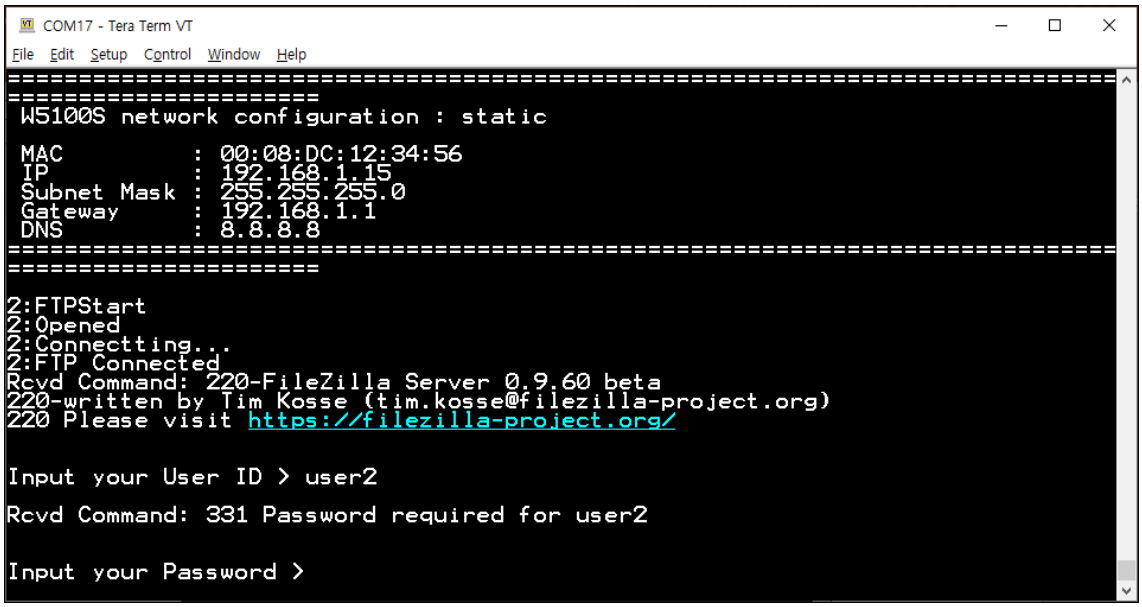

Figure 9. Input user Password

8. Press number '1'.

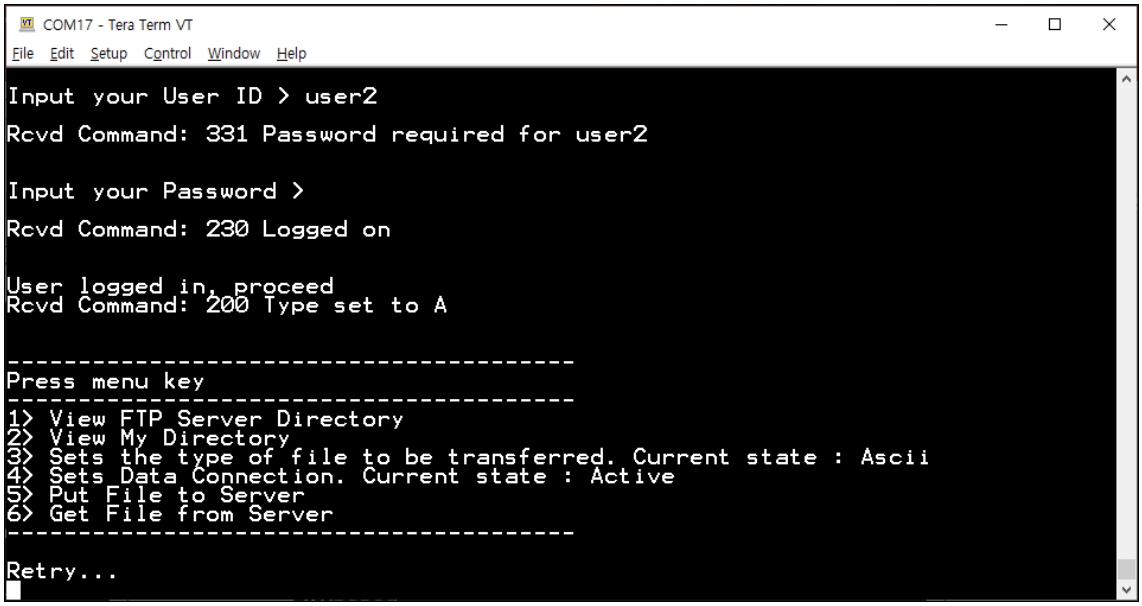

Figure 10. Press Number '1'

9. You can see FTP server directory.

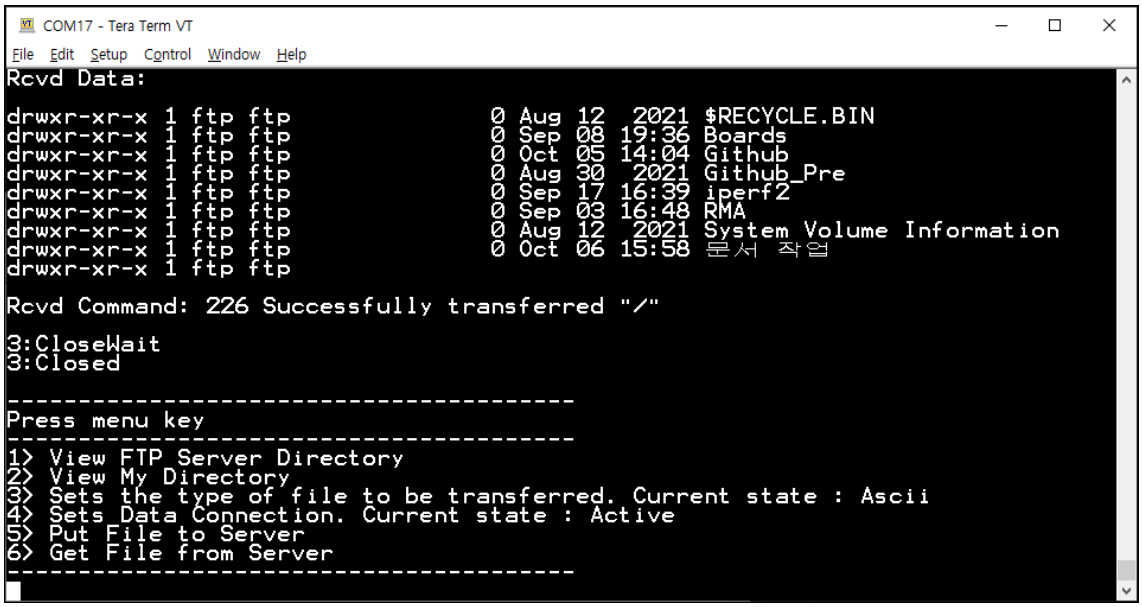

Figure 11. FTP server directory

10. Wireshark packet capture.

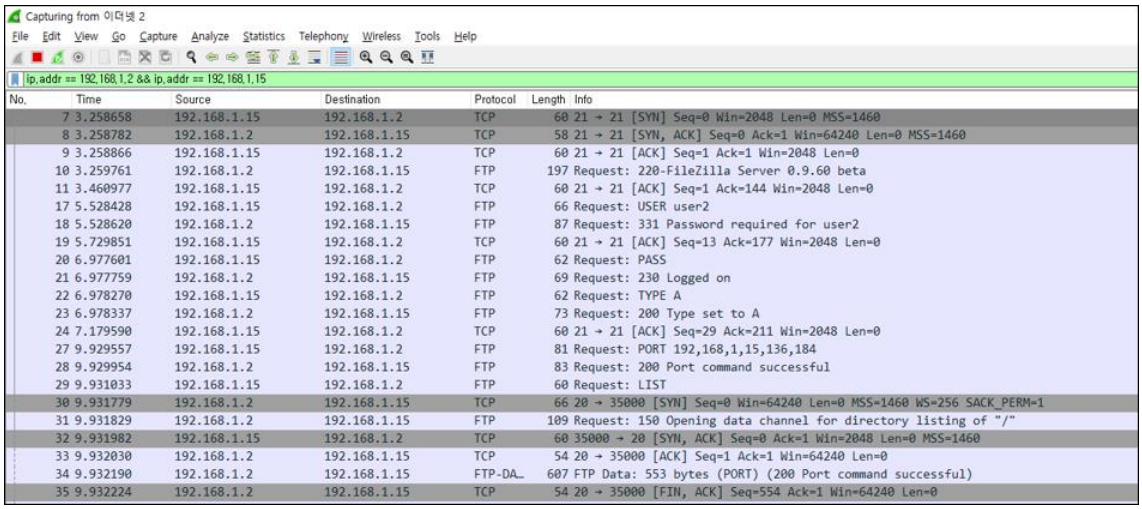

Figure 12. FTP wireshark result

Revision history

Version	Date	Descriptions
Ver. 1.0.0	Nov, 2024	Initial release.

Table 1. Revision history