

# Tìm hiểu FTP Active và Passive mode

## Nhóm 7:

22520235 – Thái Vĩnh Đạt

22520167 – Đinh Lê Thành Công

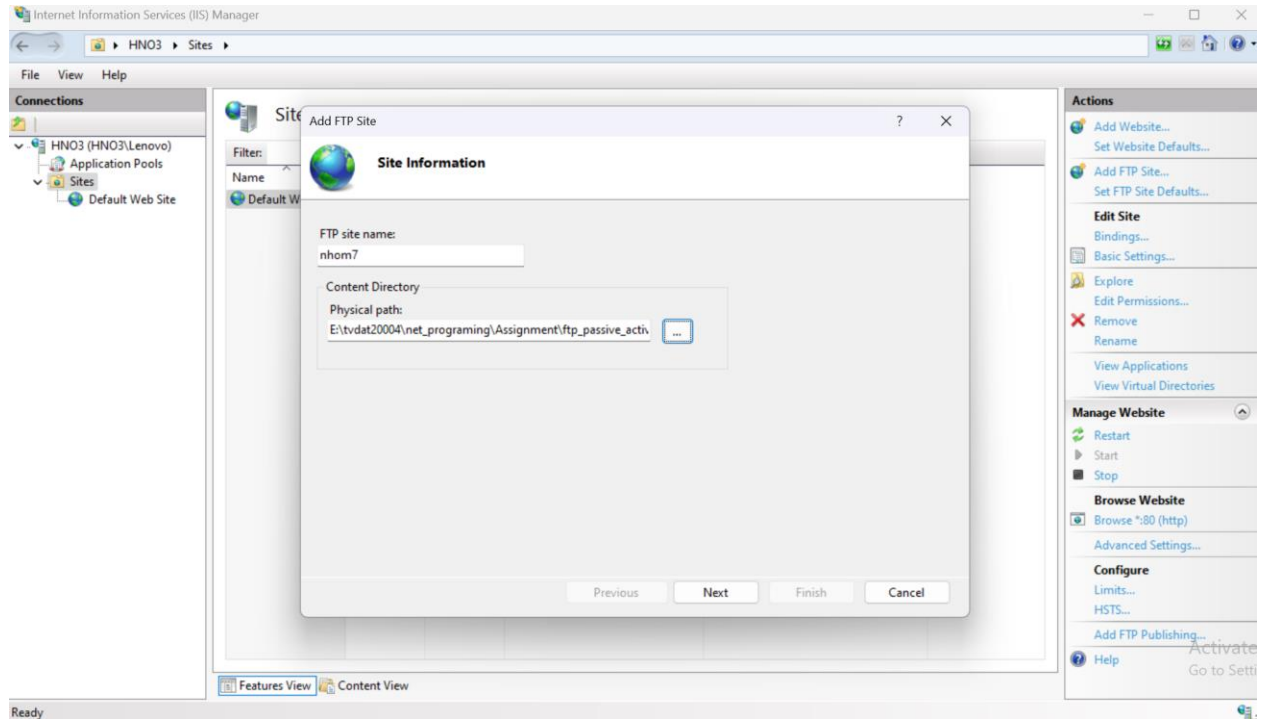
22520059 – Nguyễn Nhật Anh

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## 1. Setup server


- Cấu hình và cài đặt server theo hướng dẫn



Add FTP Site

?

×



**Binding and SSL Settings**

Binding

IP Address:

127.0.0.1

▼

Port:

21

☐ Enable Virtual Host Names:

Virtual Host (example: ftp.contoso.com):

☒ Start FTP site automatically

SSL

☒ No SSL

☐ Allow SSL

☐ Require SSL

SSL Certificate:

Not Selected

▼

Select...

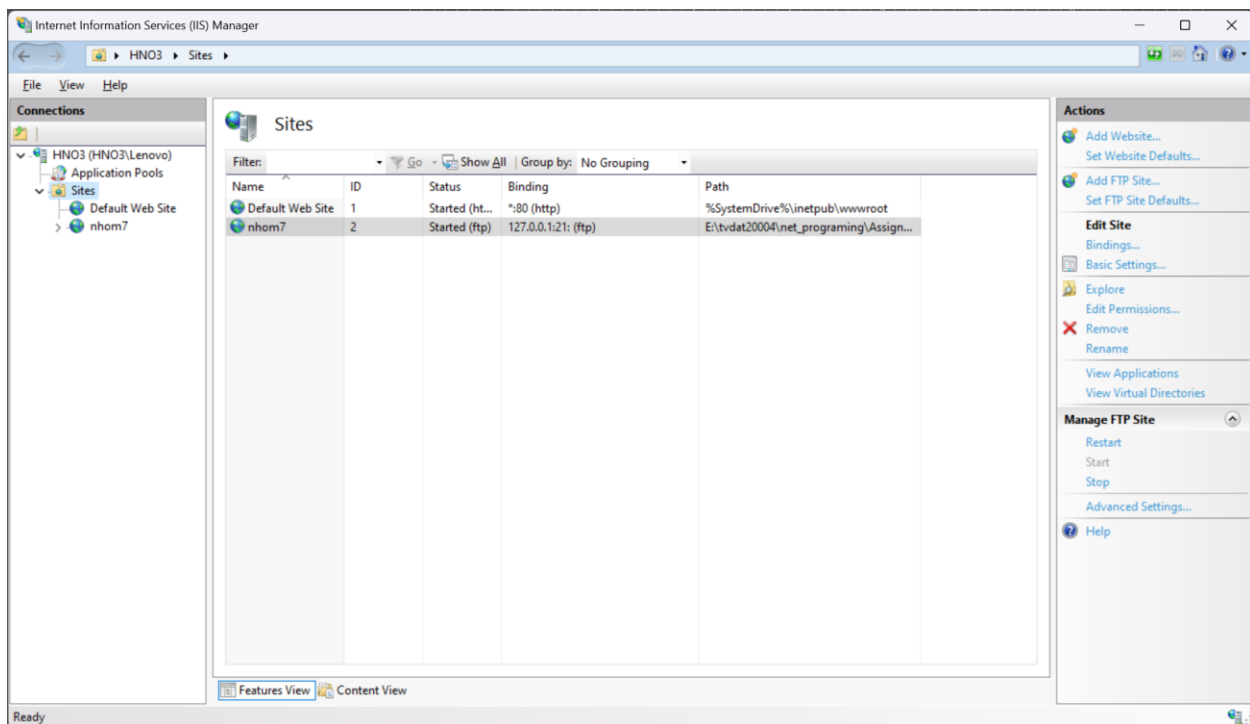
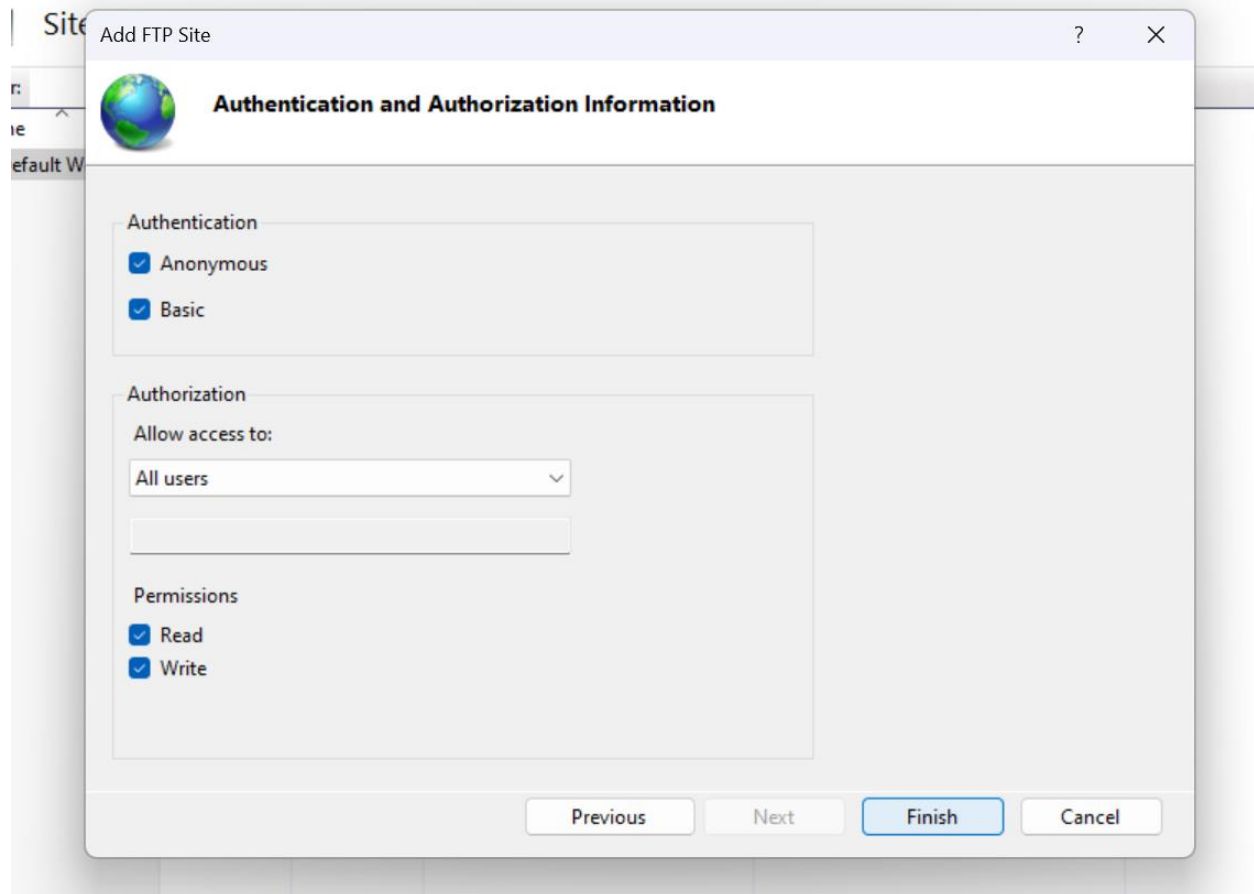
View...

Previous

Next

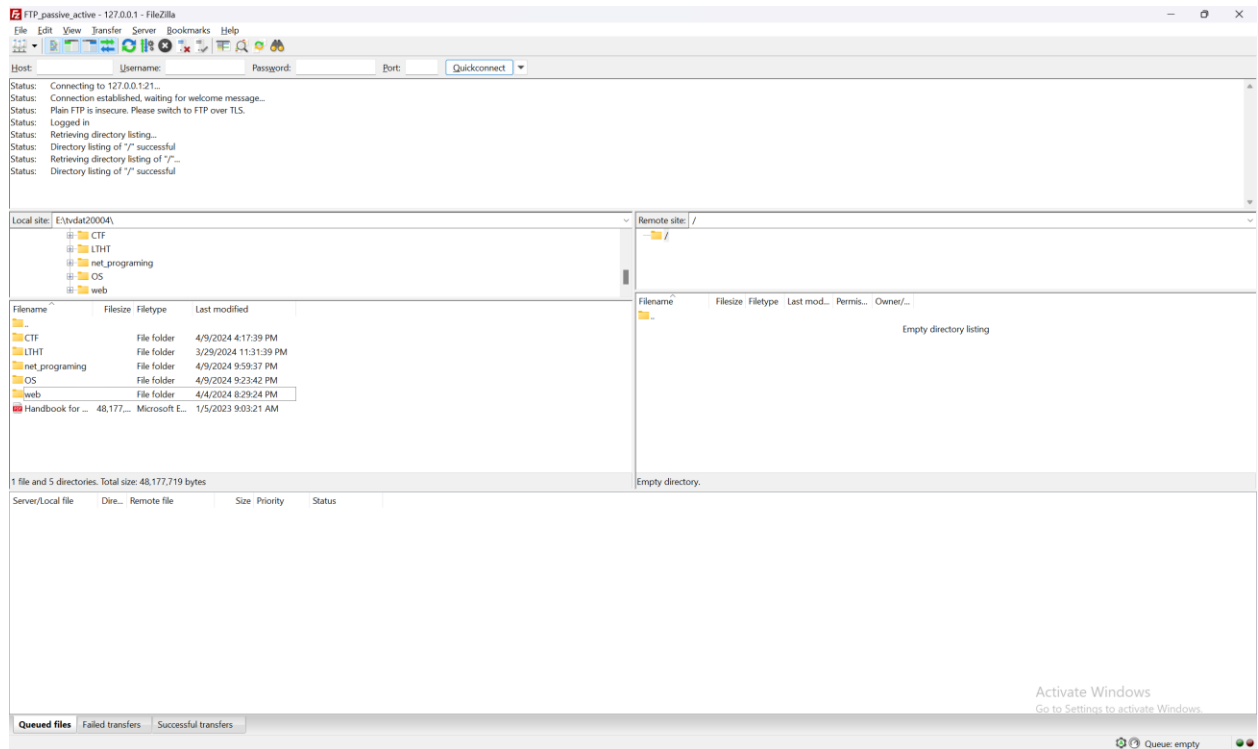
Finish

Cancel



## 2. Kết nối với FTP server bằng FileZilla

Đây là giao diện của FileZilla sau khi kết nối tới FTP server thành công.

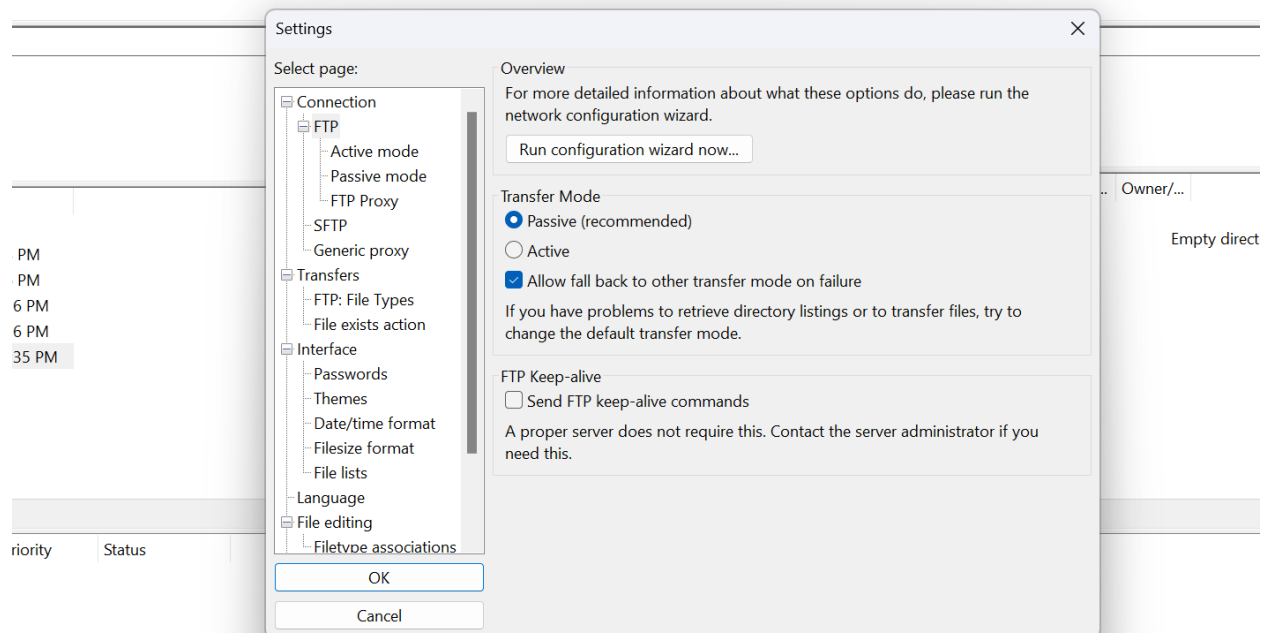


## 3. Demo upload và download file ở passive mode:

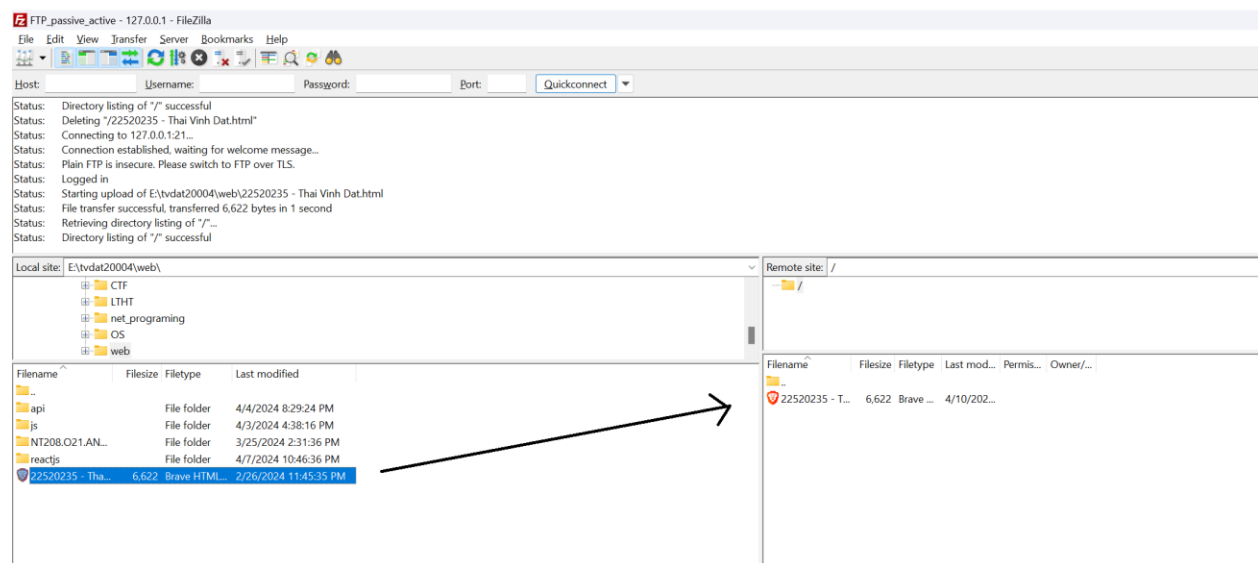
### a. Upload

- Đầu tiên, ta vào Setting, sau đó chọn FTP -> passive để chuyển chế độ truyền file sang passive mode, sau đó nhấn OK

i Vinh Dat.html  
ond



- Tiến hành kéo thả 1 file bên phía local site (client) sang remote site (server)



Trong lúc đó, ta tiến hành bật Wireshark ở địa chỉ loopback để bắt các gói tin thì ta thu được như sau:

Adapter for loopback traffic capture

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

ftp-data || ftp

No.	Time	Source	Destination	Protocol	Length	Info
4	0.000316	127.0.0.1	127.0.0.1	FTP	71	Response: 220 Microsoft FTP Service
6	0.004153	127.0.0.1	127.0.0.1	FTP	60	Request: USER anonymous
8	0.004216	127.0.0.1	127.0.0.1	FTP	116	Response: 331 Anonymous access allowed, send identity (e-mail name) as password.
10	0.004291	127.0.0.1	127.0.0.1	FTP	72	Request: PASS anonymous@example.com
12	0.004814	127.0.0.1	127.0.0.1	FTP	65	Response: 230 User logged in.
14	0.004963	127.0.0.1	127.0.0.1	FTP	58	Request: OPTS UTF8 ON
16	0.005029	127.0.0.1	127.0.0.1	FTP	102	Response: 200 OPTS UTF8 command successful - UTF8 encoding now ON.
18	0.006761	127.0.0.1	127.0.0.1	FTP	51	Request: CWD /
20	0.006883	127.0.0.1	127.0.0.1	FTP	73	Response: 250 CWD command successful.
22	0.007019	127.0.0.1	127.0.0.1	FTP	52	Request: TYPE A
24	0.007060	127.0.0.1	127.0.0.1	FTP	64	Response: 200 Type set to A.
26	0.007114	127.0.0.1	127.0.0.1	FTP	50	Request: PASV
28	0.007259	127.0.0.1	127.0.0.1	FTP	91	Response: 227 Entering Passive Mode (127,0,0,1,32,226).
30	0.007335	127.0.0.1	127.0.0.1	FTP	80	Request: STOR 22520235 - Thai Vinh Dat.html
35	0.007543	127.0.0.1	127.0.0.1	FTP	85	Response: 150 Opening ASCII mode data connection.
37	0.007615	127.0.0.1	127.0.0.1	FTP-DA	6666	FTP Data: 6622 bytes (PASV) (STOR 22520235 - Thai Vinh Dat.html)
43	0.007871	127.0.0.1	127.0.0.1	FTP	68	Response: 226 Transfer complete.
45	0.016124	127.0.0.1	127.0.0.1	FTP	52	Request: TYPE I
47	0.016218	127.0.0.1	127.0.0.1	FTP	64	Response: 200 Type set to I.
49	0.016284	127.0.0.1	127.0.0.1	FTP	50	Request: PASV
51	0.016433	127.0.0.1	127.0.0.1	FTP	91	Response: 227 Entering Passive Mode (127,0,0,1,32,228).
53	0.016507	127.0.0.1	127.0.0.1	FTP	50	Request: LIST

> Frame 16: 102 bytes on wire (816 bits), 102 bytes captured (816 bits) on interface \Device\NPF{...} Null/Loopback

> Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

> Transmission Control Protocol, Src Port: 21, Dst Port: 8417, Seq: 121, Ack: 59, Len: 5

> File Transfer Protocol (FTP)

[Current working directory: ]

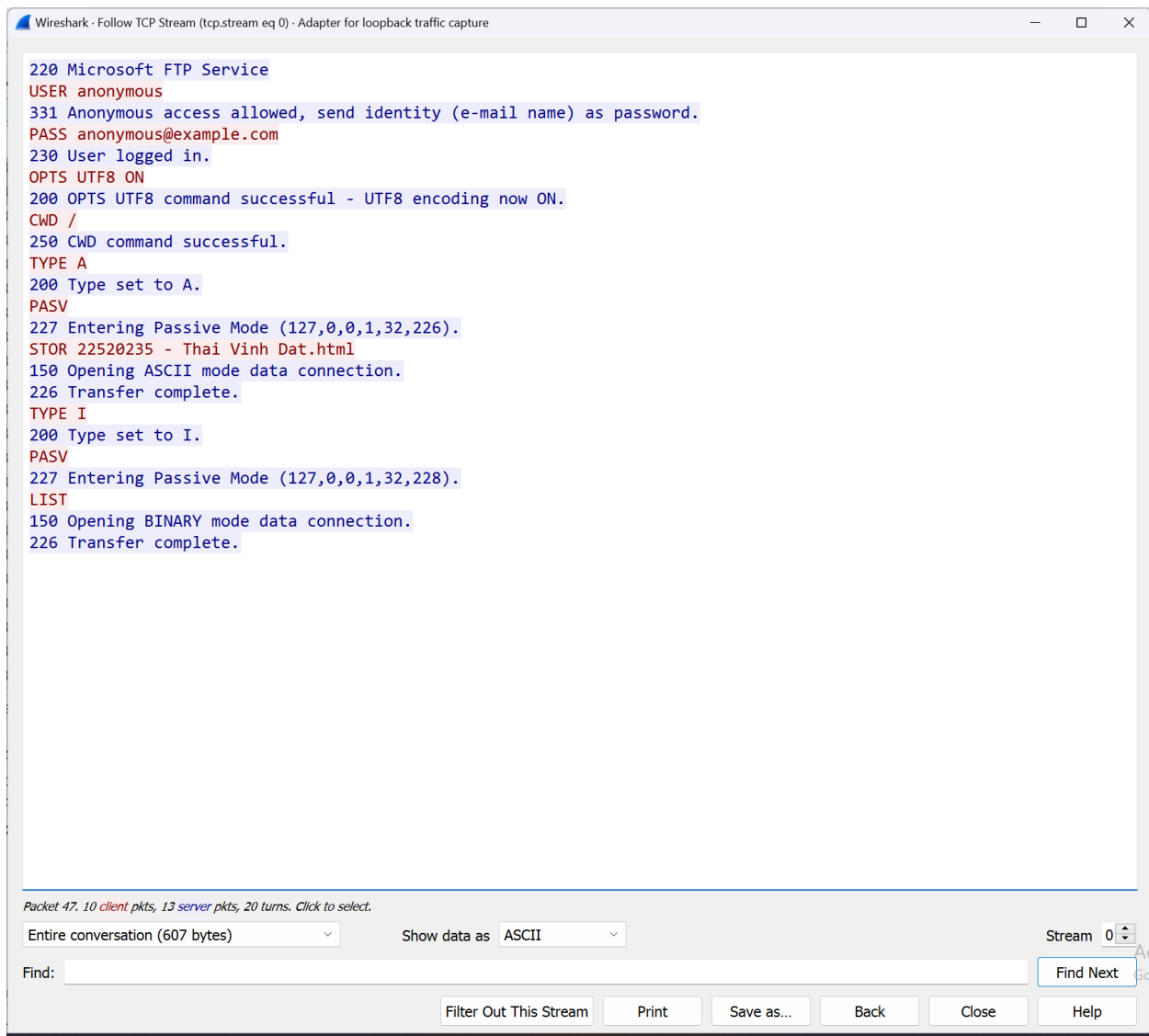
0000 02 00 00 00 45 00 00 62 23 fe 40 00 80 06 00 00 .....E:b#@.....  
0010 7f 00 00 01 7f 00 00 01 00 15 20 e1 de 00 f7 ed .....P.....200  
0020 2c a1 fa 20 50 18 20 fa 90 b0 00 00 32 30 30 20 ....P.....200  
0030 4f 50 54 53 20 55 54 46 38 20 63 6f 6d 6d 61 6e OPTS UTF 8 comman  
0040 64 20 73 75 63 63 65 73 73 66 75 6c 20 2d 20 55 d succes sful - U  
0050 54 46 38 20 65 6e 63 6f 64 69 6e 67 20 6e 6f 77 TF8 enco ding now  
0060 20 4f 4e 2e 0d 0a ON...

Activate Windows  
Go to Settings to activate Windows.

File Transfer Protocol (FTP): Protocol | Packets: 67 - Displayed: 25 (37.3%) - Dropped: 0 (0.0%) | Profile: Default

Có thể thấy client và server sẽ giao tiếp với nhau bằng 2 giao thức là FTP (dùng để gửi các command kết nối và lắng nghe) và FTP-data (dùng để trao đổi dữ liệu hay còn gọi là truyền file)

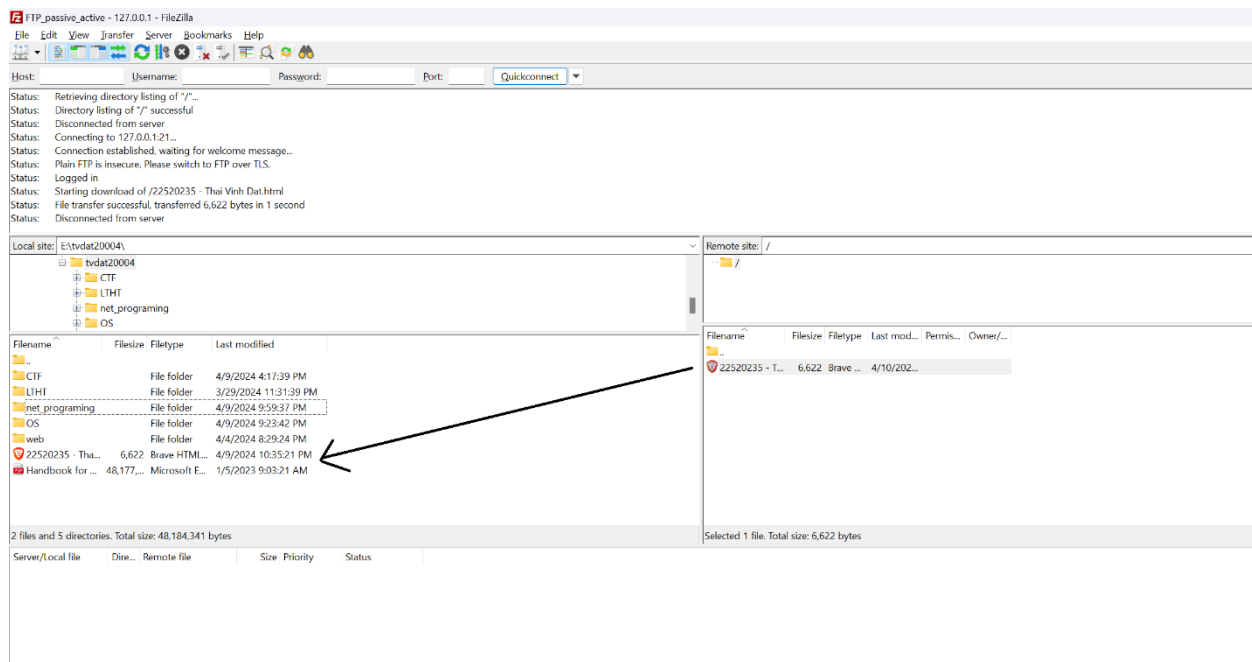
Follow TCP stream của 1 gói FTP, ta thấy được các command giao tiếp của client và server.



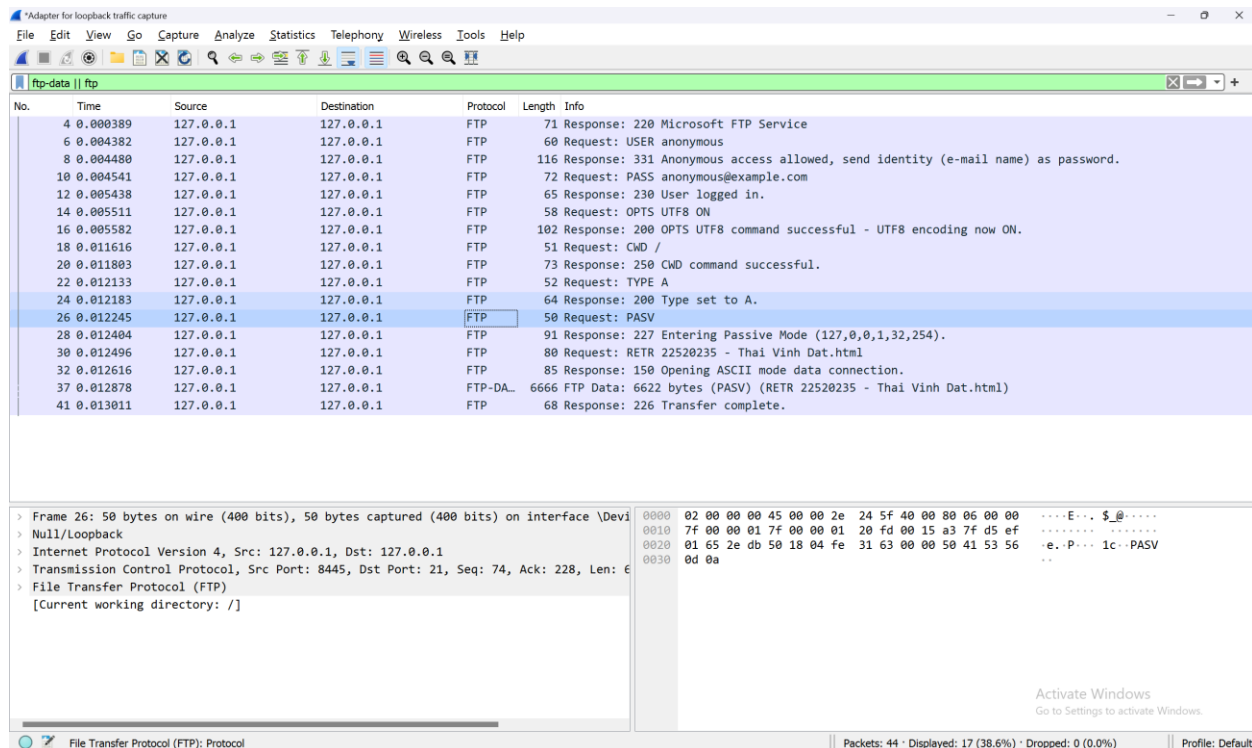
## b. Download:

Tiến hành kéo file từ phía remote site (server) về phía local site (client) trên giao diện của FileZilla



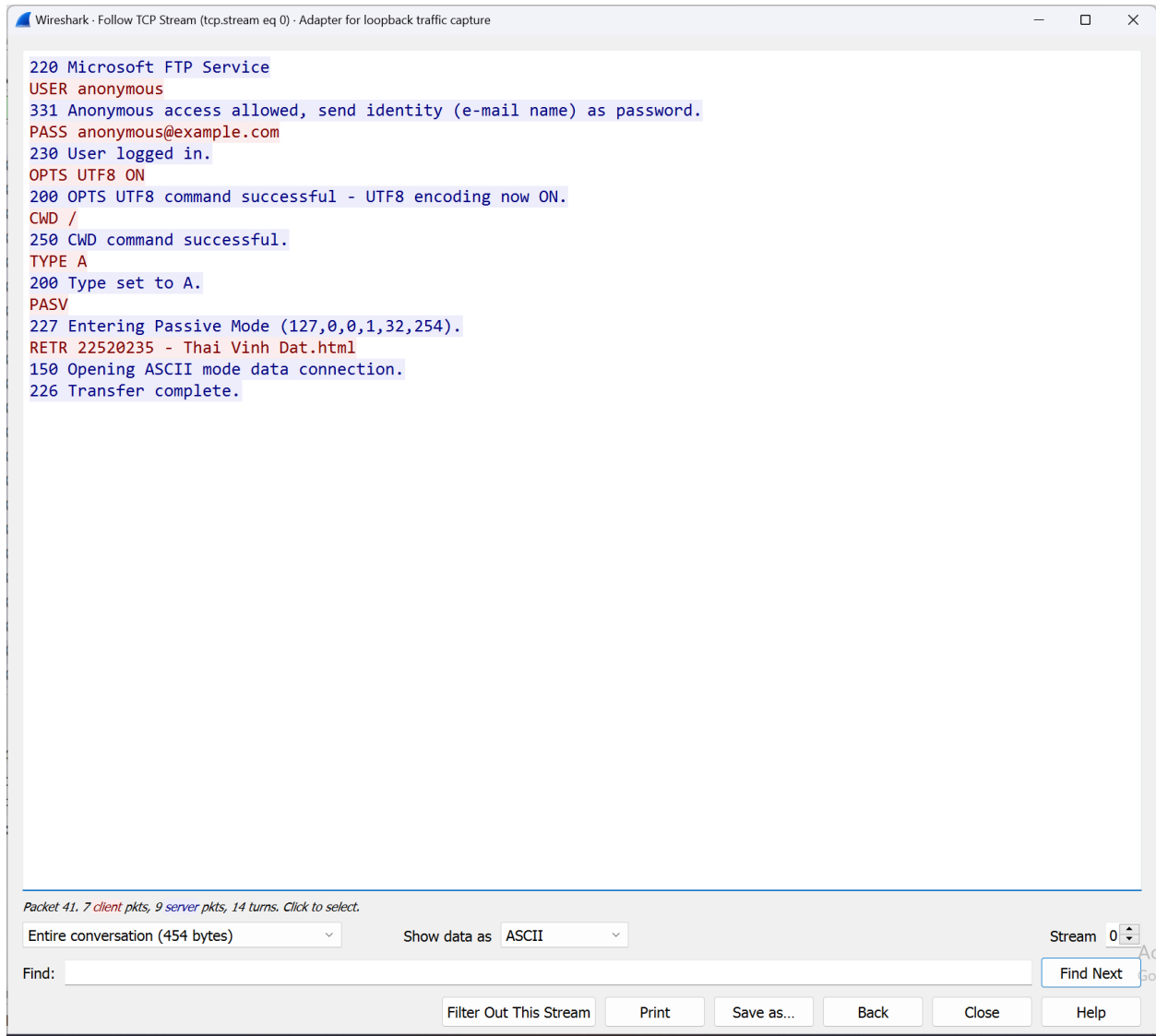


Trong lúc đó, ta tiến hành bật Wireshark ở địa chỉ loopback để bắt các gói tin thì ta thu được như sau:



Tương tự như trên upload, nó cũng sẽ có 2 giao thức giúp trao đổi dữ liệu là FTP và FTP-DATA.

Follow TCP stream của một gói tin FTP, ta xem được các command giao tiếp giữa server và client.



The image shows a Wireshark window titled "Follow TCP Stream (tcp.stream eq 0) - Adapter for loopback traffic capture". The main pane displays the text of a TCP stream, which is an FTP session. The text is color-coded: client commands are in red, server responses are in blue, and data is in black. The session starts with a 220 message from the server, followed by a USER command from the client. The server responds with 331, asking for a password. The client sends a PASS command. The server responds with 230, indicating the user is logged in. The client then sends an OPTS UTF8 ON command, and the server responds with 200, indicating UTF8 encoding is now on. The client sends a CWD / command, and the server responds with 250, indicating the command was successful. The client then sends a TYPE A command, and the server responds with 200, indicating the type is set to A. The client sends a PASV command, and the server responds with 227, indicating it is entering passive mode. The client then sends a RETR 22520235 - Thai Vinh Dat.html command, and the server responds with 150, indicating it is opening an ASCII mode data connection. Finally, the client sends a 226 message, indicating the transfer is complete.

```
220 Microsoft FTP Service
USER anonymous
331 Anonymous access allowed, send identity (e-mail name) as password.
PASS anonymous@example.com
230 User logged in.
OPTS UTF8 ON
200 OPTS UTF8 command successful - UTF8 encoding now ON.
CWD /
250 CWD command successful.
TYPE A
200 Type set to A.
PASV
227 Entering Passive Mode (127,0,0,1,32,254).
RETR 22520235 - Thai Vinh Dat.html
150 Opening ASCII mode data connection.
226 Transfer complete.
```

Packet 41. 7 client pkts, 9 server pkts, 14 turns. Click to select.

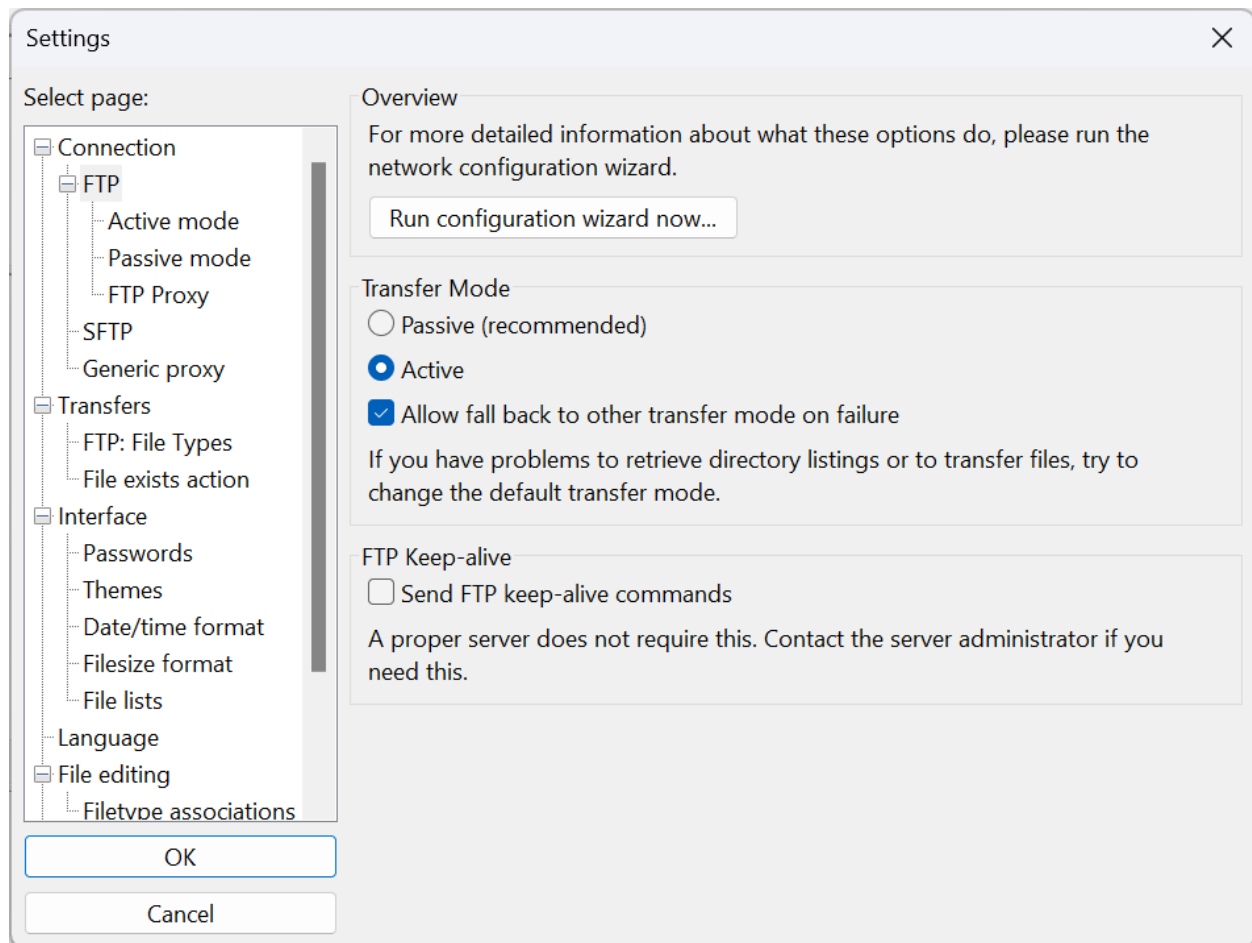
Entire conversation (454 bytes) Show data as ASCII Stream 0

Find: Find Next

Filter Out This Stream Print Save as... Back Close Help

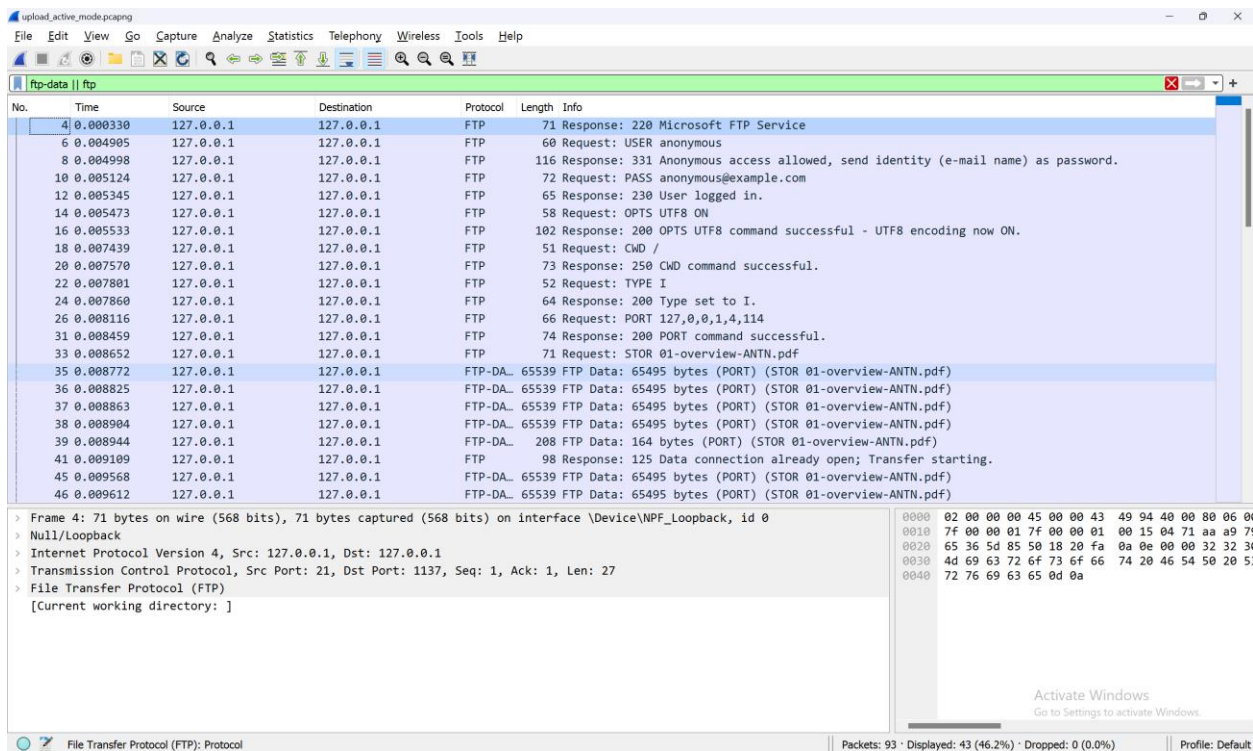
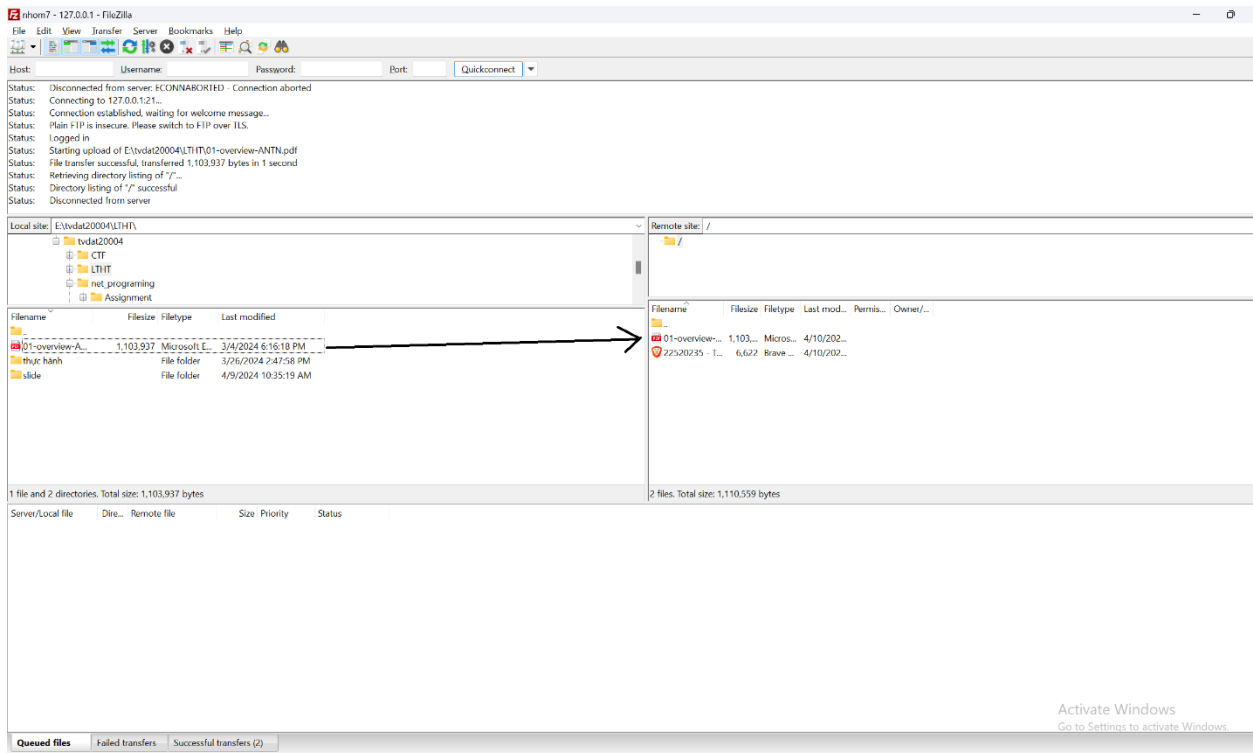
#### 4. Demo upload và download file ở active mode:

Đầu tiên, ta phải vào FileZilla để chuyển lại sang active mode

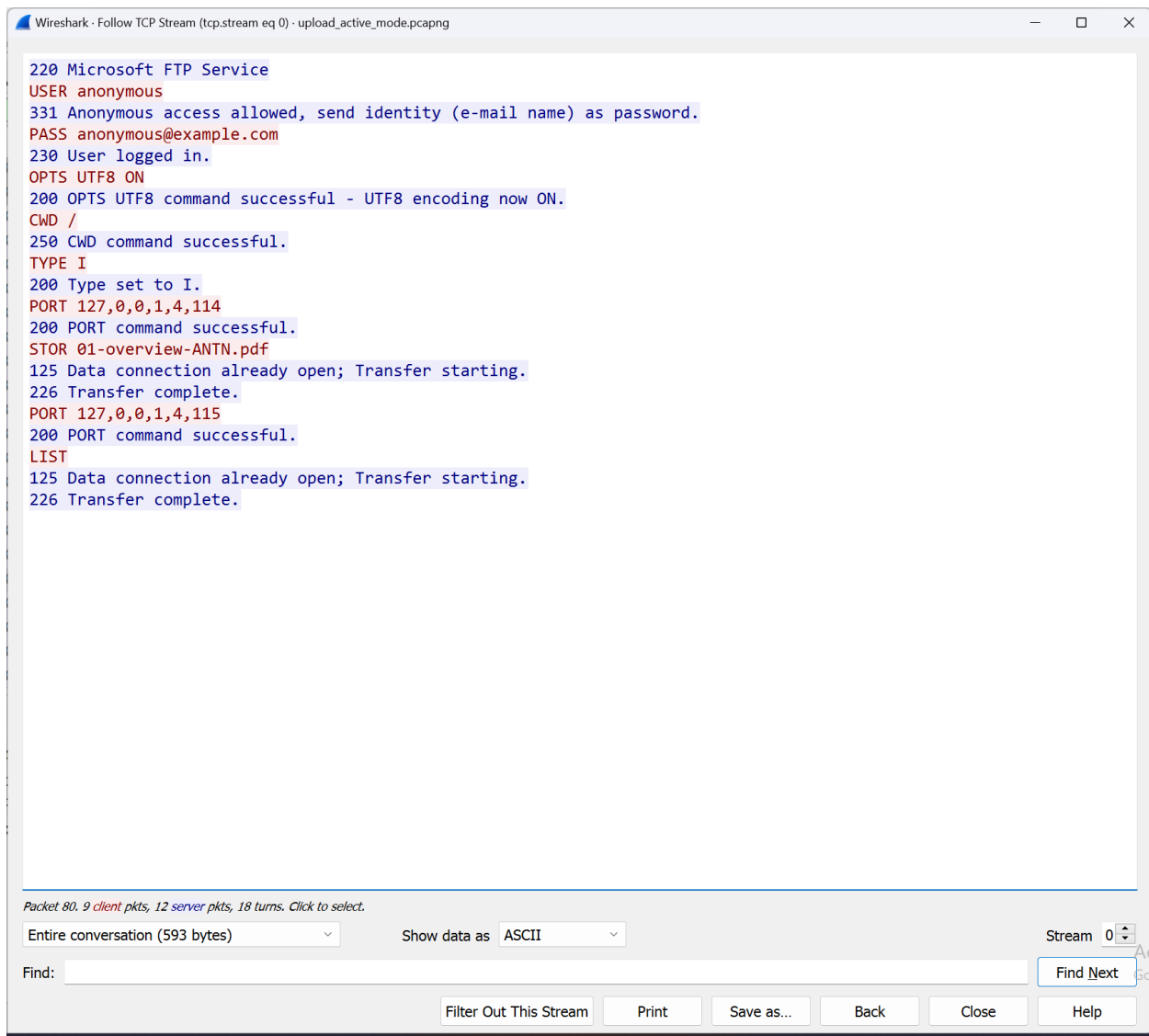


#### a. Upload:

Thực hiện các bước tương tự như ở passive mode.



Lưu ý: vì file khá lớn nên giao thức sẽ chia file thành các mẫu data nhỏ và gởi nhiều lần, cho nên sẽ có rất nhiều gói tin có giao thức FTP-DATA hiện ra.



## b. Download

Thực hiện các bước tương tự như passive mode.

File Transfer Protocol (FTP) Client Interface

Host: 127.0.0.1 Username: Password: Port: Quickconnect

Status: File transfer successful, transferred 1,103,937 bytes in 1 second  
Status: Retrieving directory listing of "/"...  
Status: Directory listing of "/" successful  
Status: Disconnected from server  
Status: Connecting to 127.0.0.1...  
Status: Connection established, waiting for welcome message...  
Status: Plain FTP is insecure. Please switch to FTP over TLS.  
Status: Logged in  
Status: Starting download of /01-overview-ANTN.pdf  
Status: File transfer successful, transferred 1,103,937 bytes in 1 second

Local site: F:\vtdat20004 Remote site: /

File Transfer Details:

Filename	Filesize	Filetype	Last modified
Handbook for...	48,177,719	Microsoft E...	1/5/2023 9:03:21 AM
22520235 - Tha...	6,622	Brave HTML...	4/9/2024 10:35:21 PM
01-overview-A...	1,103,937	Microsoft E...	4/10/2024 8:21:28 PM
web		File folder	4/9/2024 10:56:28 PM
RemoteUltrav...		File folder	4/10/2024 3:17:01 PM
OS		File folder	4/9/2024 9:23:42 PM
net_programing		File folder	4/10/2024 8:11:41 PM
LTHT		File folder	3/29/2024 11:31:39 PM
CTF		File folder	4/9/2024 4:17:39 PM

3 files and 6 directories. Total size: 49,288,278 bytes

Selected 1 file. Total size: 1,103,937 bytes

Adapter for loopback traffic capture

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

ftp-data || ftp

No.	Time	Source	Destination	Protocol	Length	Info
4	0.000345	127.0.0.1	127.0.0.1	FTP	71	Response: 220 Microsoft FTP Service
6	0.004791	127.0.0.1	127.0.0.1	FTP	60	Request: USER anonymous
8	0.004869	127.0.0.1	127.0.0.1	FTP	116	Response: 331 Anonymous access allowed, send identity (e-mail name) as password.
10	0.004936	127.0.0.1	127.0.0.1	FTP	72	Request: PASS anonymous@example.com
12	0.005098	127.0.0.1	127.0.0.1	FTP	65	Response: 230 User logged in.
14	0.005167	127.0.0.1	127.0.0.1	FTP	58	Request: OPTS UTF8 ON
16	0.005211	127.0.0.1	127.0.0.1	FTP	102	Response: 200 OPTS UTF8 command successful - UTF8 encoding now ON.
18	0.006680	127.0.0.1	127.0.0.1	FTP	51	Request: CWD /
20	0.006804	127.0.0.1	127.0.0.1	FTP	73	Response: 250 CWD command successful.
22	0.007141	127.0.0.1	127.0.0.1	FTP	52	Request: TYPE I
24	0.007197	127.0.0.1	127.0.0.1	FTP	64	Response: 200 Type set to I.
26	0.007448	127.0.0.1	127.0.0.1	FTP	66	Request: PORT 127,0,0,1,4,144
31	0.007825	127.0.0.1	127.0.0.1	FTP	74	Response: 200 PORT command successful.
33	0.007986	127.0.0.1	127.0.0.1	FTP	71	Request: RETR 01-overview-ANTN.pdf
35	0.008172	127.0.0.1	127.0.0.1	FTP	98	Response: 125 Data connection already open; Transfer starting.
37	0.008300	127.0.0.1	127.0.0.1	FTP-DA_	65539	FTP Data: 65495 bytes (PORT) (RETR 01-overview-ANTN.pdf)
39	0.008381	127.0.0.1	127.0.0.1	FTP-DA_	85	FTP Data: 41 bytes (PORT) (RETR 01-overview-ANTN.pdf)
41	0.008419	127.0.0.1	127.0.0.1	FTP-DA_	65539	FTP Data: 65495 bytes (PORT) (RETR 01-overview-ANTN.pdf)
42	0.008449	127.0.0.1	127.0.0.1	FTP-DA_	85	FTP Data: 41 bytes (PORT) (RETR 01-overview-ANTN.pdf)
44	0.008506	127.0.0.1	127.0.0.1	FTP-DA_	65539	FTP Data: 65495 bytes (PORT) (RETR 01-overview-ANTN.pdf)
45	0.008536	127.0.0.1	127.0.0.1	FTP-DA_	85	FTP Data: 41 bytes (PORT) (RETR 01-overview-ANTN.pdf)
47	0.008610	127.0.0.1	127.0.0.1	FTP-DA_	65539	FTP Data: 65495 bytes (PORT) (RETR 01-overview-ANTN.pdf)

> Frame 10: 72 bytes on wire (576 bits), 72 bytes captured (576 bits) on interface \Device\NPF\_{...} id 0

> Null/Loopback

> Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

> Transmission Control Protocol, Src Port: 1167, Dst Port: 21, Seq: 17, Ack: 100, Len: 28

> File Transfer Protocol (FTP)

[Current working directory: ]

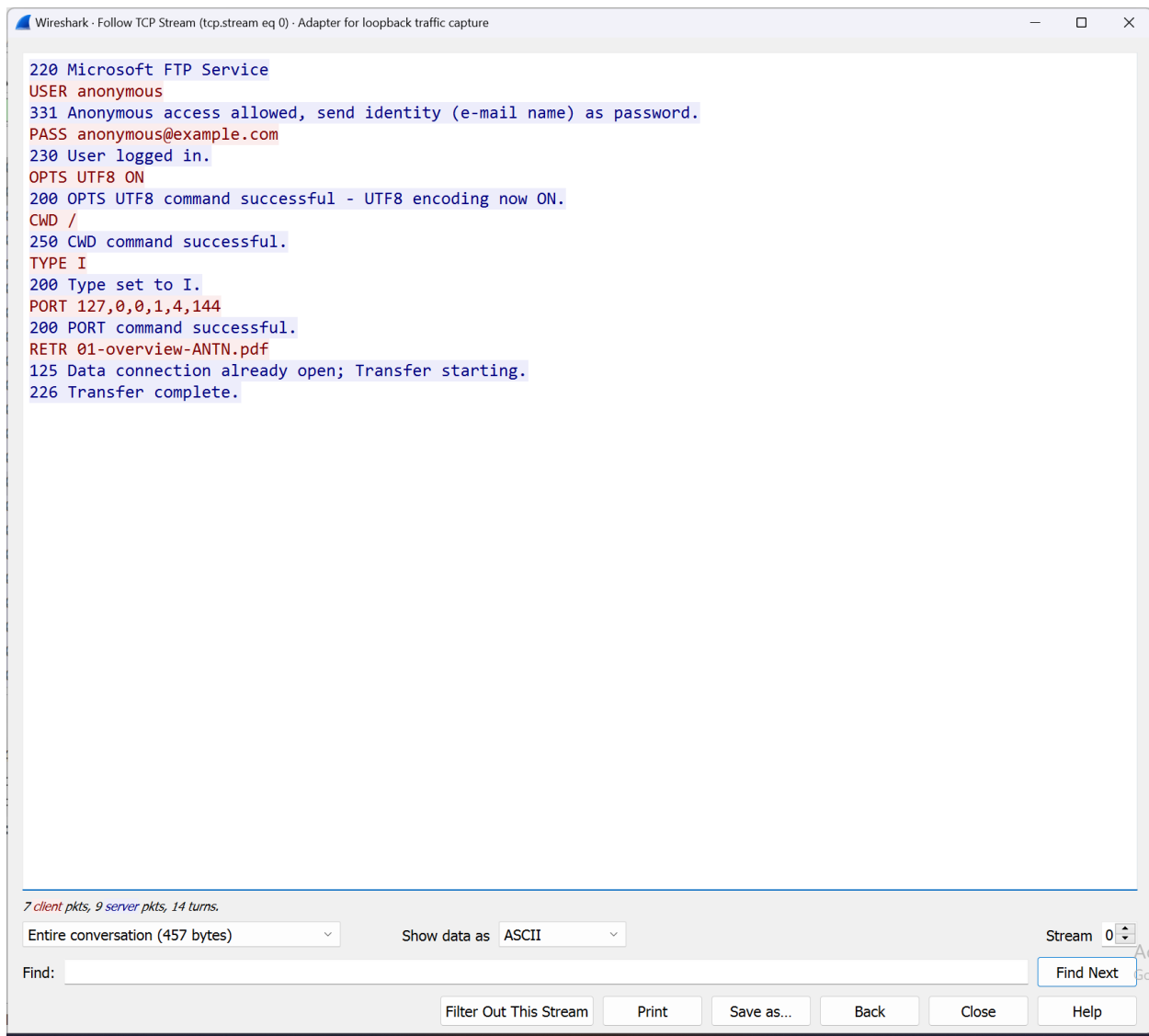
0000 02 00 00 00 45 00 00 44 4a 07 40 00 80 06 06  
0010 7f 00 00 01 7f 00 00 01 04 8f 00 15 5c f3 a8  
0020 e3 9a a5 05 50 18 04 fe 58 ab 00 00 50 41 53  
0030 20 61 6e 6f 6e 79 6d 6f 75 73 40 65 78 61 66  
0040 6c 65 2e 63 6f 6d 0d 0a

Activate Windows  
Go to Settings to activate Windows.

File Transfer Protocol (FTP): Protocol

Packets: 93 · Displayed: 49 (52.7%) · Dropped: 0 (0.0%)

Profile: Default



## 5. Nhận xét:

### Passive mode

- Client sẽ mở 2 cổng kết nối ngẫu nhiên (port > 1023 ) tới cổng 21 của server. Một port dùng để gửi command, một port dùng để gửi data.

download\_passive\_mode.pcapng

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

ftp-data || ftp

No.	Time	Source	Destination	Protocol	Length	Info
4	0.000389	127.0.0.1	127.0.0.1	FTP	71	Response: 220 Microsoft FTP Service
6	0.004382	127.0.0.1	127.0.0.1	FTP	60	Request: USER anonymous
8	0.004480	127.0.0.1	127.0.0.1	FTP	116	Response: 331 Anonymous access allowed, send identity (e-mail name) as password.
10	0.004541	127.0.0.1	127.0.0.1	FTP	72	Request: PASS anonymous@example.com
12	0.005438	127.0.0.1	127.0.0.1	FTP	65	Response: 230 User logged in.
14	0.005511	127.0.0.1	127.0.0.1	FTP	58	Request: OPTS UTF8 ON
16	0.005582	127.0.0.1	127.0.0.1	FTP	102	Response: 200 OPTS UTF8 command successful - UTF8 encoding now ON.
18	0.011616	127.0.0.1	127.0.0.1	FTP	51	Request: CWD /
20	0.011803	127.0.0.1	127.0.0.1	FTP	73	Response: 250 CWD command successful.
22	0.012133	127.0.0.1	127.0.0.1	FTP	52	Request: TYPE A
24	0.012183	127.0.0.1	127.0.0.1	FTP	64	Response: 200 Type set to A.
26	0.012245	127.0.0.1	127.0.0.1	FTP	50	Request: PASV
28	0.012404	127.0.0.1	127.0.0.1	FTP	91	Response: 227 Entering Passive Mode (127,0,0,1,32,254).
30	0.012496	127.0.0.1	127.0.0.1	FTP	80	Request: RETR 22520235 - Thai Vinh Dat.html
32	0.012616	127.0.0.1	127.0.0.1	FTP	85	Response: 150 Opening ASCII mode data connection.
37	0.012878	127.0.0.1	127.0.0.1	FTP-DA	6666	FTP Data: 6622 bytes (PASV) (RETR 22520235 - Thai Vinh Dat.html)
41	0.013011	127.0.0.1	127.0.0.1	FTP	68	Response: 226 Transfer complete.

> Frame 6: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface \Device\NPF\_{...}\_id 0

> Null/Loopback

> Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

> Transmission Control Protocol, Src Port: 8445, Dst Port: 21, Seq: 1, Ack: 28, Len: 16

Source Port: 8445

Destination Port: 21

[Stream index: 0]

[Conversation completeness: Incomplete, DATA (15)]

[TCP Segment Len: 16]

Sequence Number: 1 (relative sequence number)

Sequence Number (raw): 2743063974

[Next Sequence Number: 17 (relative sequence number)]

Acknowledgment Number: 28 (relative ack number)

Transmission Control Protocol (tcp), 20 bytes

Packets: 44 · Displayed: 17 (38.6%)

Profile: Default

0000 02 00 00 00 45 00 00 38 24 4b 40 00 80 06 06

0010 7f 00 00 01 7f 00 00 01 20 fd 00 15 a3 7f d5

0020 01 65 2e 13 50 18 04 ff 5b 2e 00 00 55 53 45

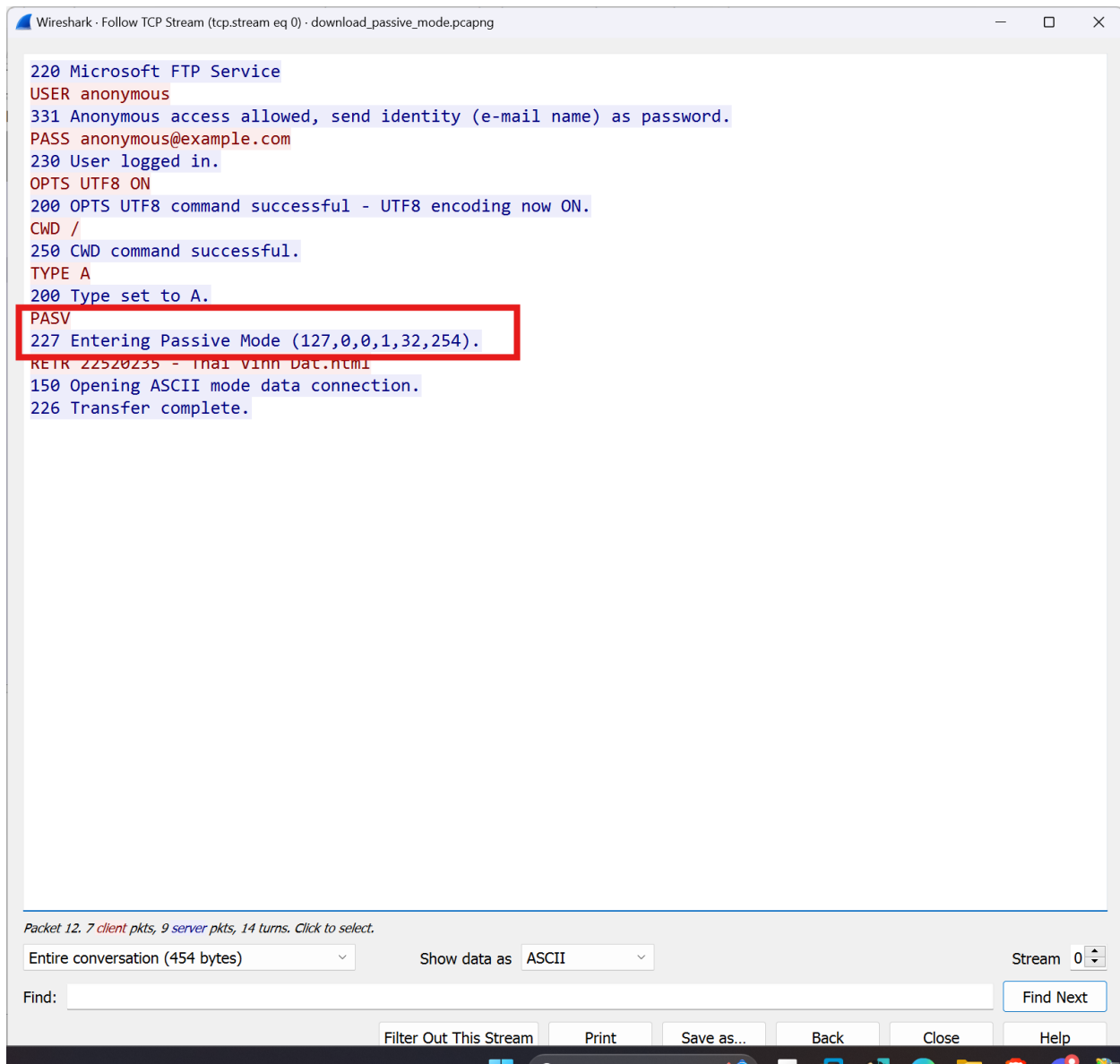
0030 20 61 6e 6f 6e 79 6d 6f 75 73 0d 0a

Activate Windows  
Go to Settings to activate Windows.

Ví dụ ở một gói tin request, port client ở đây là 8445 , port server là 21. Client đang gửi 1 command tới server.

- Client sẽ gửi lệnh PASV để yêu cầu server ở chế độ passive.





- Server sẽ khởi tạo một port ngẫu nhiên (port  $P > 1023$ ) và gửi P đến client địa chỉ ip và port đó trong gói tin response lệnh PASV ở trên.
- Client sẽ khởi tạo kết nối từ port  $N+1$  tới port P để truyền dữ liệu.

download\_passive\_mode.pcapng

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

ftp-data || ftp

No.	Time	Source	Destination	Protocol	Length	Info
4	0.000389	127.0.0.1	127.0.0.1	FTP	71	Response: 220 Microsoft FTP Service
6	0.004382	127.0.0.1	127.0.0.1	FTP	60	Request: USER anonymous
8	0.004480	127.0.0.1	127.0.0.1	FTP	116	Response: 331 Anonymous access allowed, send identity (e-mail name) as password.
10	0.004541	127.0.0.1	127.0.0.1	FTP	72	Request: PASS anonymous@example.com
12	0.005438	127.0.0.1	127.0.0.1	FTP	65	Response: 230 User logged in.
14	0.005511	127.0.0.1	127.0.0.1	FTP	58	Request: OPTS UTF8 ON
16	0.005582	127.0.0.1	127.0.0.1	FTP	102	Response: 200 OPTS UTF8 command successful - UTF8 encoding now ON.
18	0.011616	127.0.0.1	127.0.0.1	FTP	51	Request: CWD /
20	0.011803	127.0.0.1	127.0.0.1	FTP	73	Response: 250 CWD command successful.
22	0.012133	127.0.0.1	127.0.0.1	FTP	52	Request: TYPE A
24	0.012183	127.0.0.1	127.0.0.1	FTP	64	Response: 200 Type set to A.
26	0.012245	127.0.0.1	127.0.0.1	FTP	50	Request: PASV
28	0.012404	127.0.0.1	127.0.0.1	FTP	91	Response: 227 Entering Passive Mode (127,0,0,1,32,254).
30	0.012496	127.0.0.1	127.0.0.1	FTP	80	Request: RETR 22520235 - Thai Vinh Dat.html
32	0.012616	127.0.0.1	127.0.0.1	FTP	85	Response: 150 Opening ASCII mode data connection.
37	0.012878	127.0.0.1	127.0.0.1	FTP-DA	6666	FTP Data: 6622 bytes (PASV) (RETR 22520235 - Thai Vinh Dat.html)
41	0.013011	127.0.0.1	127.0.0.1	FTP	68	Response: 226 Transfer complete.

> Frame 37: 6666 bytes on wire (53328 bits), 6666 bytes captured (53328 bits) on interface \Device\NPF\_{...}\_Loopback, id 0

> Null/Loopback

> Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

Transmission Control Protocol, Src Port: 8446, Dst Port: 8447, Seq: 1, Ack: 1, Len: 6622

Source Port: 8446

Destination Port: 8447

[Stream index: 1]

[Conversation completeness: Incomplete (30)]

[TCP Segment Len: 6622]

Sequence Number: 1 (relative sequence number)

Sequence Number (raw): 3457589336

[Next Sequence Number: 6623 (relative sequence number)]

Acknowledgment Number: 1 (relative ack number)

Transmission Control Protocol (tcp), 20 bytes

Packets: 44 · Displayed: 17 (38.6%)

Profile: Default

0010 7f 00 00 01 7f 00 00 01 20 fe 20 ff ce 16

0020 2a 02 25 81 50 18 20 fa cf 40 00 00 3c 68

0030 6c 3e 0d 0a 3c 68 65 61 64 3e 0d 0a 20 20

0040 3c 74 69 74 6c 65 3e 0d 0a 20 20 20 20 20

0050 20 43 56 20 2d 20 32 32 35 32 30 32 33 35

0060 20 20 20 20 3c 2f 74 69 74 6c 65 3e 0d 0a

0070 3c 73 74 79 6c 65 3e 0d 0a 20 20 20 20 2e

0080 6f 66 69 6c 65 20 7b 0d 0a 20 20 20 20 20

0090 20 64 69 73 70 6c 61 79 3a 20 66 6c 65 78

00a0 0d 0a 20 20 20 20 20 20 20 20 61 6c 69 67

00b0 69 74 65 6d 73 3a 20 63 65 6e 74 65 72 3b

00c0 0a 20 20 20 20 20 20 20 20 6d 61 72 67 69

00d0 20 31 30 70 78 3b 20 0d 0a 20 20 20 20 7d

00e0 20 20 20 20 2e 70 72 6f 66 69 6c 65 20 69

Ví dụ ở gói tin gửi data, server sẽ gửi thông qua port 8446 (là port mà server phản hồi lệnh PASV) tới port 8447 (là port nhận dữ liệu của client).

## Active mode

- Client sẽ mở ngẫu nhiên một cổng kết nối (port > 1023, gọi là port S) tới port 21 của server.

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ftp-data | ftp

No.	Time	Source	Destination	Protocol	Length	Info
4	0.000345	127.0.0.1	127.0.0.1	FTP	71	Response: 220 Microsoft FTP Service
6	0.004791	127.0.0.1	127.0.0.1	FTP	60	Request: USER anonymous
8	0.004869	127.0.0.1	127.0.0.1	FTP	116	Response: 331 Anonymous access allowed, send identity (e-mail name) as password.
10	0.004936	127.0.0.1	127.0.0.1	FTP	72	Request: PASS anonymous@example.com
12	0.005098	127.0.0.1	127.0.0.1	FTP	65	Response: 230 User logged in.
14	0.005167	127.0.0.1	127.0.0.1	FTP	58	Request: OPTS UTF8 ON
16	0.005211	127.0.0.1	127.0.0.1	FTP	102	Response: 200 OPTS UTF8 command successful - UTF8 encoding now ON.
18	0.006680	127.0.0.1	127.0.0.1	FTP	51	Request: CWD /
20	0.006804	127.0.0.1	127.0.0.1	FTP	73	Response: 250 CWD command successful.
22	0.007141	127.0.0.1	127.0.0.1	FTP	52	Request: TYPE I
24	0.007197	127.0.0.1	127.0.0.1	FTP	64	Response: 200 Type set to I.
26	0.007448	127.0.0.1	127.0.0.1	FTP	66	Request: PORT 127,0,0,1,4,144
31	0.007825	127.0.0.1	127.0.0.1	FTP	74	Response: 200 PORT command successful.
33	0.007986	127.0.0.1	127.0.0.1	FTP	71	Request: RETR 01-overview-ANTN.pdf
35	0.008172	127.0.0.1	127.0.0.1	FTP	98	Response: 125 Data connection already open; Transfer starting.
37	0.008300	127.0.0.1	127.0.0.1	FTP-DA_	65539	FTP Data: 65495 bytes (PORT) (RETR 01-overview-ANTN.pdf)
39	0.008381	127.0.0.1	127.0.0.1	FTP-DA_	85	FTP Data: 41 bytes (PORT) (RETR 01-overview-ANTN.pdf)
41	0.008419	127.0.0.1	127.0.0.1	FTP-DA_	65539	FTP Data: 65495 bytes (PORT) (RETR 01-overview-ANTN.pdf)
42	0.008449	127.0.0.1	127.0.0.1	FTP-DA_	85	FTP Data: 41 bytes (PORT) (RETR 01-overview-ANTN.pdf)
44	0.008506	127.0.0.1	127.0.0.1	FTP-DA_	65539	FTP Data: 65495 bytes (PORT) (RETR 01-overview-ANTN.pdf)
45	0.008536	127.0.0.1	127.0.0.1	FTP-DA_	85	FTP Data: 41 bytes (PORT) (RETR 01-overview-ANTN.pdf)
47	0.008610	127.0.0.1	127.0.0.1	FTP-DA_	65539	FTP Data: 65495 bytes (PORT) (RETR 01-overview-ANTN.pdf)

> Frame 6: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface \Device\NPF\_{...} id 0

> Null/Loopback

> Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

> Transmission Control Protocol, Src Port: 1167, Dst Port: 21, Seq: 1, Ack: 28, Len: 16

Source Port: 1167

Destination Port: 21

[Stream index: 0]

[Conversation completeness: Incomplete, DATA (15)]

[TCP Segment Len: 16]

Sequence Number: 1 (relative sequence number)

Sequence Number (raw): 1559472260

[Next Sequence Number: 17 (relative sequence number)]

Acknowledgment Number: 28 (relative ack number)

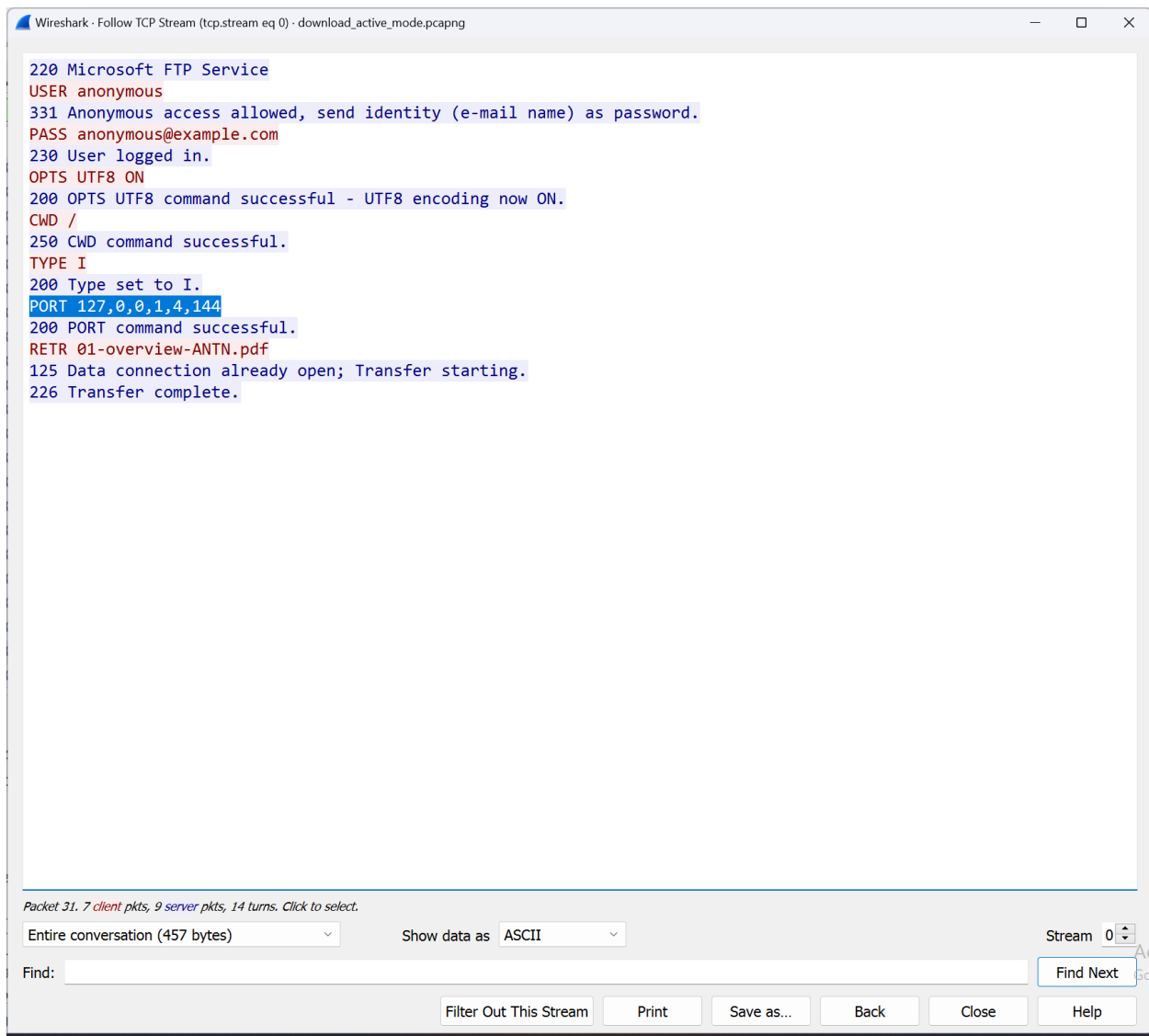
File Transfer Protocol (FTP): Protocol

Packets: 93 - Displayed: 49 (52.7%)

Profile: Default

Ở đây client sẽ mở port 1167 và giao tiếp với server tại port 21

- Client sẽ lắng nghe trên port S + 1 và gửi command “PORT S+1” tới server.



Client gửi lệnh port 127,0,0,1,4,144 (chính là 127.0.0.1:1168) đến server.

- Server sẽ kết nối tới port S+1 vừa nhận được từ client và gửi data qua port đó từ port mặc định của nó là port 20.

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ftp-data | ftp

No.	Time	Source	Destination	Protocol	Length	Info
4	0.000345	127.0.0.1	127.0.0.1	FTP	71	Response: 220 Microsoft FTP Service
6	0.004791	127.0.0.1	127.0.0.1	FTP	60	Request: USER anonymous
8	0.004869	127.0.0.1	127.0.0.1	FTP	116	Response: 331 Anonymous access allowed, send identity (e-mail name) as password.
10	0.004936	127.0.0.1	127.0.0.1	FTP	72	Request: PASS anonymous@example.com
12	0.005098	127.0.0.1	127.0.0.1	FTP	65	Response: 230 User logged in.
14	0.005167	127.0.0.1	127.0.0.1	FTP	58	Request: OPTS UTF8 ON
16	0.005211	127.0.0.1	127.0.0.1	FTP	102	Response: 200 OPTS UTF8 command successful - UTF8 encoding now ON.
18	0.006680	127.0.0.1	127.0.0.1	FTP	51	Request: CWD /
20	0.006804	127.0.0.1	127.0.0.1	FTP	73	Response: 250 CWD command successful.
22	0.007141	127.0.0.1	127.0.0.1	FTP	52	Request: TYPE I
24	0.007197	127.0.0.1	127.0.0.1	FTP	64	Response: 200 Type set to I.
26	0.007448	127.0.0.1	127.0.0.1	FTP	66	Request: PORT 127,0,0,1,4,144
31	0.007825	127.0.0.1	127.0.0.1	FTP	74	Response: 200 PORT command successful.
33	0.007986	127.0.0.1	127.0.0.1	FTP	71	Request: RETR 01-overview-ANTN.pdf
35	0.008172	127.0.0.1	127.0.0.1	FTP	98	Response: 125 Data connection already open; Transfer starting.
37	0.008300	127.0.0.1	127.0.0.1	FTP-DA_	65539	FTP Data: 65495 bytes (PORT) (RETR 01-overview-ANTN.pdf)
39	0.008381	127.0.0.1	127.0.0.1	FTP-DA_	85	FTP Data: 41 bytes (PORT) (RETR 01-overview-ANTN.pdf)
41	0.008419	127.0.0.1	127.0.0.1	FTP-DA_	65539	FTP Data: 65495 bytes (PORT) (RETR 01-overview-ANTN.pdf)
42	0.008449	127.0.0.1	127.0.0.1	FTP-DA_	85	FTP Data: 41 bytes (PORT) (RETR 01-overview-ANTN.pdf)
44	0.008506	127.0.0.1	127.0.0.1	FTP-DA_	65539	FTP Data: 65495 bytes (PORT) (RETR 01-overview-ANTN.pdf)
45	0.008536	127.0.0.1	127.0.0.1	FTP-DA_	85	FTP Data: 41 bytes (PORT) (RETR 01-overview-ANTN.pdf)
47	0.008610	127.0.0.1	127.0.0.1	FTP-DA_	65539	FTP Data: 65495 bytes (PORT) (RETR 01-overview-ANTN.pdf)

> Frame 37: 65539 bytes on wire (524312 bits), 65539 bytes captured (524312 bits) on interface \Device\NPF\_{Loopback}, id 0

> Null/Loopback

> Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

> Transmission Control Protocol, Src Port: 20, Dst Port: 1168, Seq: 1, Ack: 1, Len: 65495

Source Port: 20

Destination Port: 1168

[Stream index: 1]

[Conversation completeness: Incomplete (30)]

[TCP Segment Len: 65495]

Sequence Number: 1 (relative sequence number)

Sequence Number (raw): 3553373573

[Next Sequence Number: 65496 (relative sequence number)]

Acknowledgment Number: 1 (relative ack number)

File Transfer Protocol (FTP): Protocol

Packets: 93 - Displayed: 49 (52.7%)

Profile: Default

Ở thao tác upload, client (dùng port 1168) để gửi upload dữ liệu lên server (nhận data ở port 20)