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INTERNET PROTOCOL LAB – 10

ANALYZING PEER TO PEER NETWORK TRAFFIC USING VARIOUS NETWORK SNIFFERS

AIM:

To analyze peer to peer network traffic using various network sniffers.

TOOLS REQUIRED:

Wireshark, BitTorrent.

PROCDURE:

1. Download the BitTorrent software from the given link https://www.bittorrent.com/.

2. Then download any one Torrent file and then save it on your device.

3. Open Wireshark in the background by choosing the appropriate interface.

4. Then open your torrent file and start the download at least 20%. Stop the capture and document the answers to the following questions:

a. Give a detailed study about the working of BitTorrent in your downloading scenario.

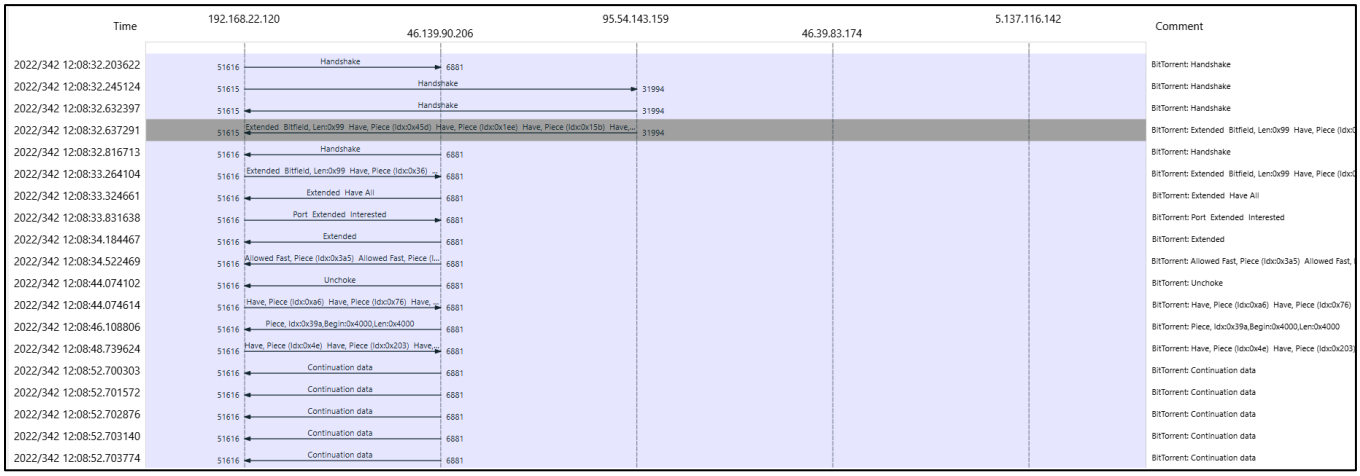
BitTorrent is a peer-to-peer protocol, which means that the computers in a BitTorrent "swarm" (a group of computers downloading and uploading the same torrent file) transfer data between each other without the need for a central server.

b. Working of BitTorrent.

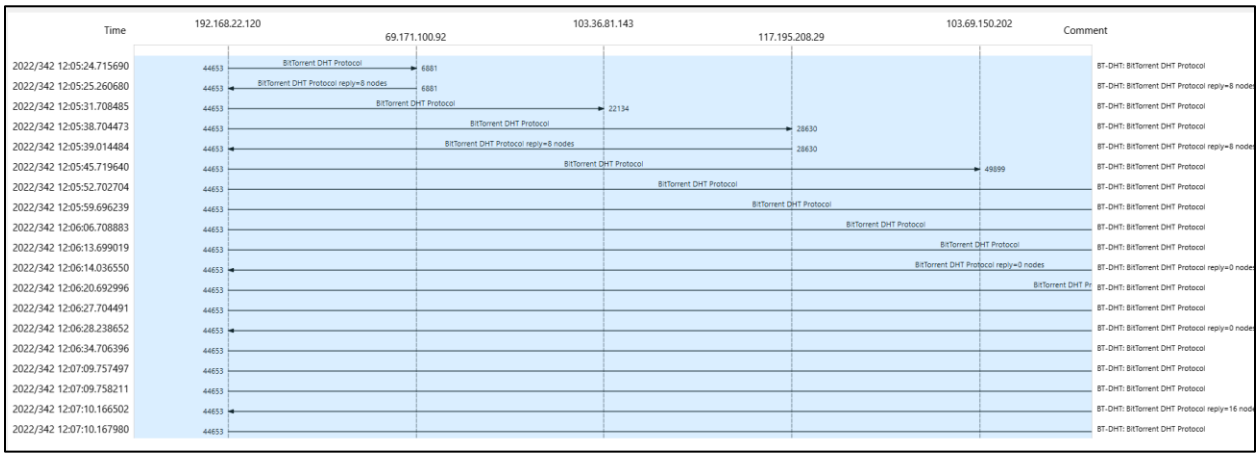
- The Client contacts a tracker specified in the .torrent file. The tracker is a special server that keeps track of the connected computers.
- The tracker shares their IP addresses with other BitTorrent clients in the swarm, allowing them to connect to each other.
- Once connected, a BitTorrent client downloads bits of the files in the torrent in small pieces, downloading all the data it can get.
- Once the BitTorrent client has some data, it can then begin to upload that data to other BitTorrent clients in the swarm.
- In this way, everyone downloading a torrent is also uploading the same torrent. This speeds up everyone's download speed.

c. Protocol Level Analysis.

The filter ‘bittorrent’ is used here. This is the flow graph.



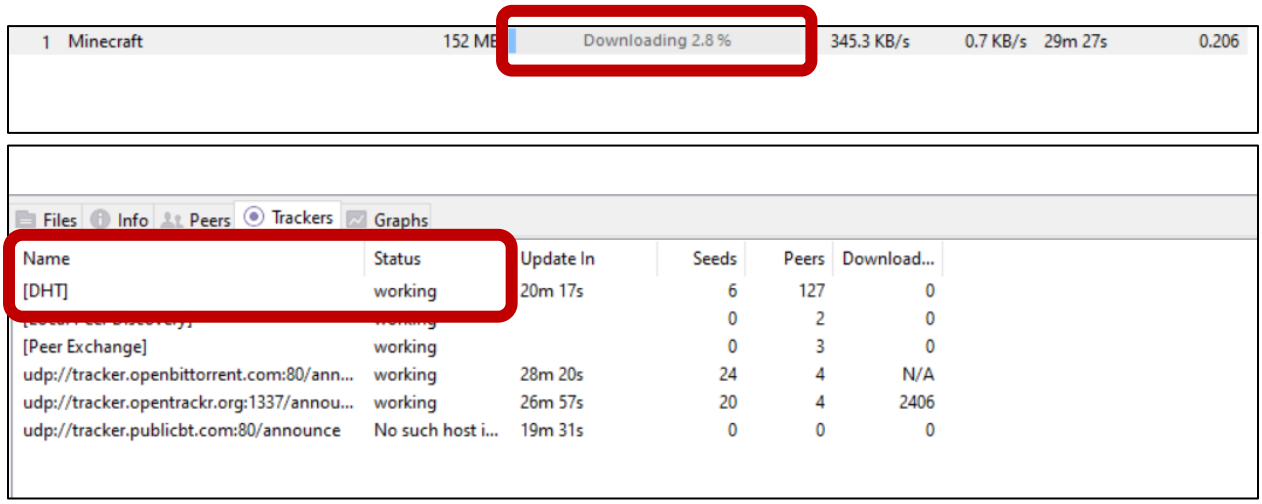
The filter ‘bt-dht’ is used here. This is the flow graph.



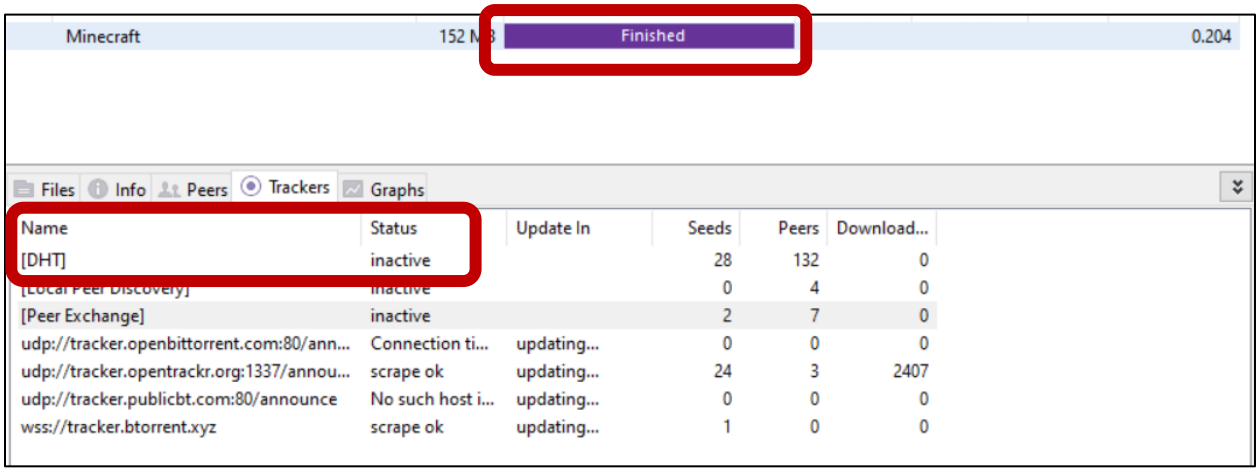
d. Tracker’s status.

e. DHT status.

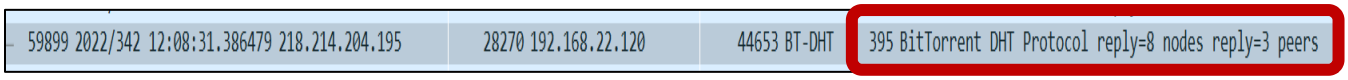
When downloading the status of DHT is displayed as working.



When downloading and seeding is finished the status of DHT is displayed as inactive.



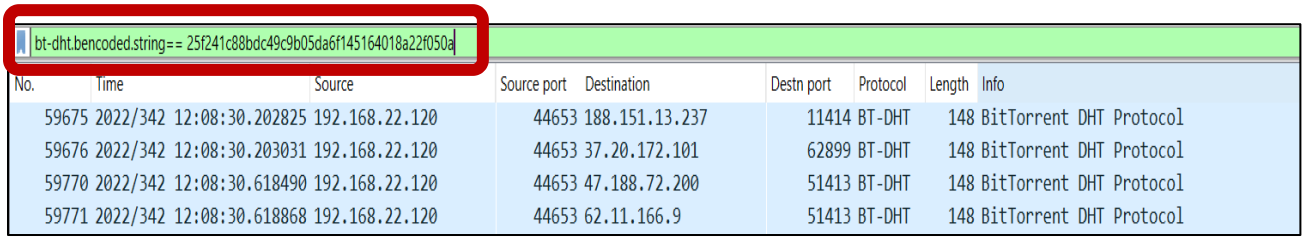
f. Identify other peers involved in the communication.



Here it is displayed as reply from 8 nodes and 3 peers. We can see the id, IP address, port number information of the peers and nodes.

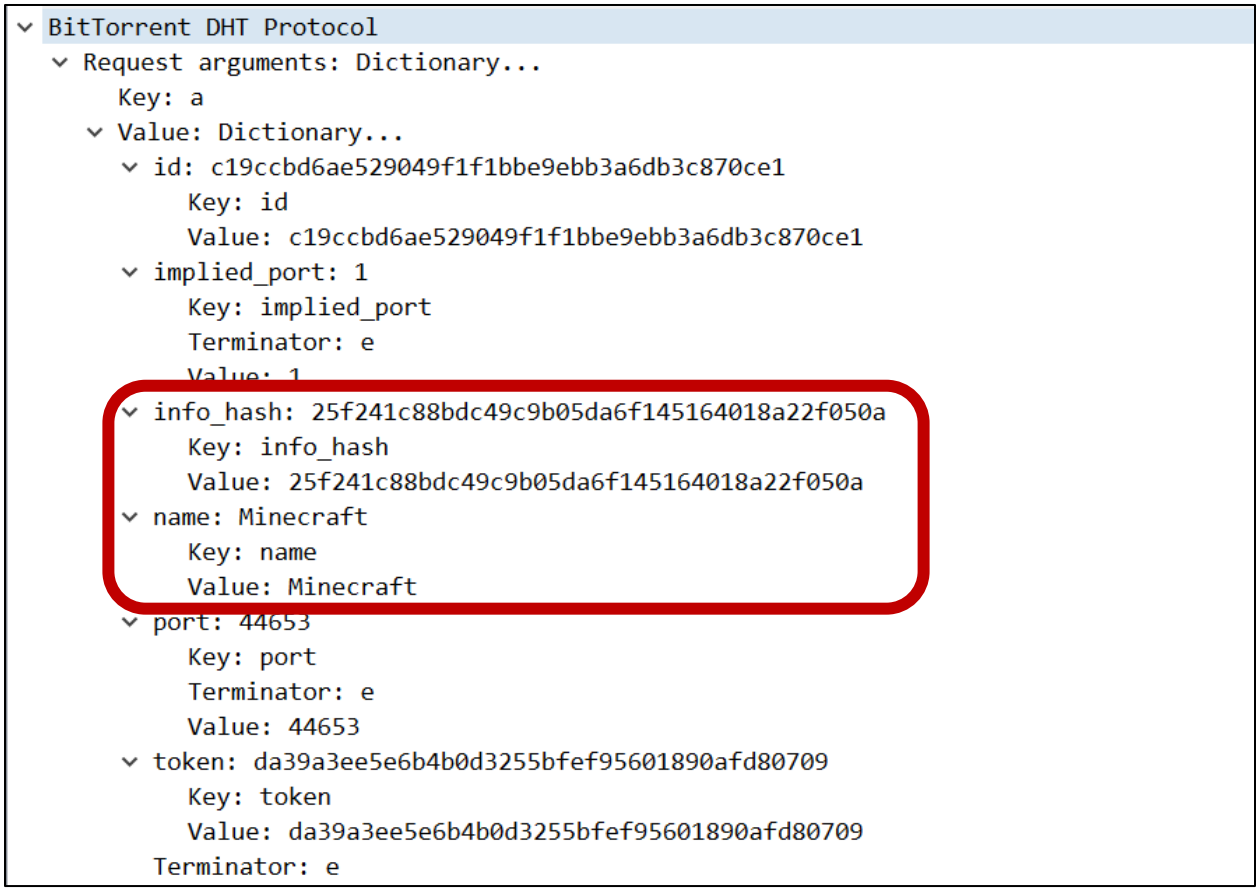
```
  Value: 8 nodes
    > Node 1 (id: 25f24850d6f776683cb9eda6bc3f8bde7698692a, IPv4/Port: 42.105.172.57:41734)
    > Node 2 (id: 25f25b9449c0f469a547def3f4381fb67db43f3f, IPv4/Port: 80.249.176.100:6881)
    > Node 3 (id: 25f264e7f1f37e93e9fab94e9bfe4c634283b726, IPv4/Port: 106.206.190.167:29351)
    > Node 4 (id: 25f27fb43dd6f5258d224b0211c529e0cbe790aa, IPv4/Port: 160.154.246.250:56305)
    > Node 5 (id: 25f20430e950dca201011b2ad57a0e7d9b2c2de3, IPv4/Port: 24.250.52.25:17550)
    > Node 6 (id: 25f21294cf9fb78d96c099b39d9f24457eefd053, IPv4/Port: 182.106.40.206:1025)
    > Node 7 (id: 25f22df02753c289a765230cbd8632bed0e5783f, IPv4/Port: 46.219.224.80:14493)
    > Node 8 (id: 25f232747edebf8891639083a71d89aeb75f7e6a, IPv4/Port: 180.74.216.168:31401)
  > token: 8387634d000620866cb6e0f1f43fc838800a75fb
  values: 3 peers
    Key: values
  Value: 3 peers
    Peer 1 (IP/Port: 193.106.1.145:49394)
      IP: 193.106.1.145
      Port: 49394
    Peer 2 (IP/Port: 89.113.140.161:6754)
      IP: 89.113.140.161
      Port: 6754
    Peer 3 (IP/Port: 94.181.246.57:32716)
      IP: 94.181.246.57
      Port: 32716
    Terminator: e
  Terminator: e
```

g. Try to identify the name of the file downloaded.



SHA1 Hash of info dictionary: 25f241c88bdc49c9b05da6f145164018a22f050a

The hash information of the file downloaded is found. When this is used in display filter we can see the name of the file downloaded.



5. Try to export the 20% of data you have captured as traffic in Wireshark while downloading files in Torrent.

6. After the Download completes and when it starts seeding, open the Wireshark and analyze the information being transferred in that traffic. Document the difference in Network traffic.

RESULT:

Thus, various network sniffers have been successfully used to analyze the network traffic in peer to peer networking.