

# Verification

## A Simple Peer to Peer File Sharing System

Consider an example like peer1 has two file one hundredmb.txt with size 100Mb and other fivehundredmb.txt of size 500Mb. And we request these files on the peer 2 and peer 3 respectively, as shown in the image below.

```
× SERVER 1 (Python)
OSError: [Errno 48] Address already in use
Vishants-MacBook-Pro:Downloads vishantbhole$ python3 ~/Downloads/Peer1.py server peer1 localhost 9039

Server started. One time ops. Update all files to index server

Index server Updation complete

Waiting patiently for new download requests
Received file request from ('127.0.0.1', 51775)
New sender started for client - ('127.0.0.1', '51775', './peer1/hundredmb.txt')

Waiting patiently for new download requests

## Successfully sent - ./peer1/hundredmb.txt
Received file request from ('127.0.0.1', 51780)
New sender started for client - ('127.0.0.1', '51780', './peer1/fivehundredmb.txt')

Waiting patiently for new download requests

## Successfully sent - ./peer1/fivehundredmb.txt
[]

× SERVER 2 (Python)
File "/Users/vishantbhole/Downloads/Peer1.py", line 109, in <module>
    receiveConnection(peerId, ip, int(port))
File "/Users/vishantbhole/Downloads/Peer1.py", line 34, in receiveConnection
    sock.bind((ip, port))
OSError: [Errno 48] Address already in use
Vishants-MacBook-Pro:Downloads vishantbhole$ python3 ~/Downloads/Peer1.py server peer2 localhost 9037

Server started. One time ops. Update all files to index server

Index server Updation complete

Waiting patiently for new download requests
Received file request from ('127.0.0.1', 51152)
New sender started for client - ('127.0.0.1', '51152', './peer2/twentykb.txt')

Waiting patiently for new download requests

## Successfully sent - ./peer2/twentykb.txt
[]

× SERVER 3 (Python)
Vishants-MacBook-Pro:Downloads vishantbhole$ clear
Vishants-MacBook-Pro:Downloads vishantbhole$ python3 ~/Downloads/Peer1.py server peer3 localhost 9038

Server started. One time ops. Update all files to index server

Index server Updation complete

Waiting patiently for new download requests
Received file request from ('127.0.0.1', 51171)
New sender started for client - ('127.0.0.1', '51171', './peer3/sixtykb.txt')

Waiting patiently for new download requests

## Successfully sent - ./peer3/sixtykb.txt
Received file request from ('127.0.0.1', 51782)
New sender started for client - ('127.0.0.1', '51782', './peer3/hundredmb.txt')

Waiting patiently for new download requests

## Successfully sent - ./peer3/hundredmb.txt
[]

× INDEX SERVER (Python)
'tenkb.txt': {'localhost:peer3:9038'}, 'localhost:peer1:9036', 'localhost:peer1:9039', 'twentykb.txt': {'localhost:peer2:9037', 'localhost:peer1:9036'}, 'localhost:peer1:9039', 'localhost:peer1:9039', 'thirtykb.txt': {'localhost:peer2:9037'}, 'sixtykb.txt': {'localhost:peer2:9037', 'localhost:peer3:9038'}, 'fiftykb.txt': {'localhost:peer3:9038'}, 'hundredmb.txt': {'localhost:peer3:9038', 'localhost:peer1:9039', 'fivehundredmb.txt': {'localhost:peer1:9039'}}

Waiting patiently for search queries
Updated index - ('127.0.0.1', '51784', 'fivehundredmb.txt')
{'onekb.txt': {'localhost:peer1:9036', 'localhost:peer2:9037', 'localhost:peer1:9039'}, 'localhost:peer1:9039', 'localhost:peer1:9039', 'DS_Store': {'localhost:peer3:9038', 'localhost:peer2:9037', 'localhost:peer1:9036'}, 'tenkb.txt': {'localhost:peer3:9038', 'localhost:peer1:9036', 'localhost:peer1:9039'}, 'twentykb.txt': {'localhost:peer2:9037', 'localhost:peer1:9036'}, 'localhost:peer2:9037', 'sixtykb.txt': {'localhost:peer2:9037', 'localhost:peer3:9038'}, 'fiftykb.txt': {'localhost:peer3:9038'}, 'hundredmb.txt': {'localhost:peer3:9038', 'localhost:peer1:9039'}, 'fivehundredmb.txt': {'localhost:peer2:9037', 'localhost:peer1:9039'}}

Waiting patiently for search queries

× CLIENT 1 (Python)
Client closed connection. Now updating index server

## Please input file name with extension. Or exit() to close.
onekb.txt
onekb.txt Already exists for this peer. No need to download from remote

## Please input file name with extension. Or exit() to close.
fivehundredmb.txt
Sorry file can not be found in any of the peer

## Please input file name with extension. Or exit() to close.
[]

× CLIENT 2 (Python)
receiving data...
receiving data...
receiving data...
receiving data...
receiving data...
receiving data...
receiving data...
receiving data...
Successfully received entire file

Client closed connection. Now updating index server

## Please input file name with extension. Or exit() to close.
[]

× CLIENT 3 (Python)
Client closed connection. Now updating index server

## Please input file name with extension. Or exit() to close.
Sorry file can not be found in any of the peer

## Please input file name with extension. Or exit() to close.
hundredmb.txt
receiving data...
Successfully received entire file

Client closed connection. Now updating index server

## Please input file name with extension. Or exit() to close.
[]
```

For verifying the results we can use the terminal and look in the peer folder for the files which was downloaded is present or not and can also check the time at which the file is transferred, which is shown below.

```
Vishants-MacBook-Pro:peer3 vishantbhole$ ls -la
total 204840
drwxr-xr-x  7 vishantbhole  staff    224 Sep 23 00:31 .
drwx-----+ 155 vishantbhole  staff   4960 Sep 23 00:30 ..
-rw-r--r--@  1 vishantbhole  staff   6148 Sep 23 00:30 .DS_Store
-rw-r--r--@  1 vishantbhole  staff    178 Sep 22 17:38 fiftykb.txt
-rw-r--r--@  1 vishantbhole  staff 104857600 Sep 23 00:30 hundredmb.txt
-rw-r--r--@  1 vishantbhole  staff    178 Sep 22 17:38 sixtykb.txt
-rw-r--r--  1 vishantbhole  staff    178 Sep 22 22:11 tenkb.txt
Vishants-MacBook-Pro:peer3 vishantbhole$ cd ..
Vishants-MacBook-Pro:Downloads vishantbhole$ cd peer2
Vishants-MacBook-Pro:peer2 vishantbhole$ ls -la
total 1048608
drwxr-xr-x  7 vishantbhole  staff    224 Sep 23 00:26 .
drwx-----+ 155 vishantbhole  staff   4960 Sep 23 00:30 ..
-rw-r--r--  1 vishantbhole  staff 524288000 Sep 23 00:26 fivehundredmb.txt
-rw-r--r--@  1 vishantbhole  staff    178 Sep 22 17:38 onekb.txt
-rw-r--r--  1 vishantbhole  staff    178 Sep 22 22:09 sixtykb.txt
-rw-r--r--@  1 vishantbhole  staff    178 Sep 22 17:38 thirtykb.txt
-rw-r--r--@  1 vishantbhole  staff    178 Sep 22 17:38 twentykb.txt
Vishants-MacBook-Pro:peer2 vishantbhole$
```

And for more verification we can check the conditions where the file is not present in any of the peer and the file is already present in the peer which has requested for it to download.

```
× SERVER 1 (Python)
Vishants-MacBook-Pro:Downloads vishantbhale$ python3 ~/Downloads/Pe
er1.py server peer1 localhost 9036

Server started. One time ops. Update all files to index server

Index server Updation complete

Waiting patiently for new download requests
Recieved file request from ('127.0.0.1', 51180)
New sender started for client - ('127.0.0.1', '51180', './peer1/te
nkb.txt')

## Successfully sent - ./peer1/tenkb.txt
Waiting patiently for new download requests
[]

× SERVER 3 (Python)
Vishants-MacBook-Pro:Downloads vishantbhale$ python3 ~/Downloads/Pe
er1.py server peer3 localhost 9038

Server started. One time ops. Update all files to index server

Index server Updation complete

Waiting patiently for new download requests
Recieved file request from ('127.0.0.1', 51171)
New sender started for client - ('127.0.0.1', '51171', './peer3/si
xtykb.txt')

Waiting patiently for new download requests

## Successfully sent - ./peer3/sixtykb.txt
[]

× CLIENT 1 (Python)
twentykb.txt
receiving data...
receiving data...

Successfully received entire file

Client closed connection. Now updating index server

## Please input file name with extension. Or exit() to close.
onekb.txt
onekb.txt Already exists for this peer. No need to download from re
mote

## Please input file name with extension. Or exit() to close.
[]

× CLIENT 2 (Python)
## Please input file name with extension. Or exit() to close.
sixtykb.txt
receiving data...
receiving data...

Successfully received entire file

Client closed connection. Now updating index server

## Please input file name with extension. Or exit() to close.
fourtykb.txt
Sorry file can not be found in any of the peer

## Please input file name with extension. Or exit() to close.
[]

× CLIENT 3 (Python)
Vishants-MacBook-Pro:Downloads vishantbhale$ python3 ~/Downloads/Pe
er1.py client peer3 localhost 9038

## Please input file name with extension. Or exit() to close.
tenkb.txt
receiving data...
receiving data...

Successfully received entire file

Client closed connection. Now updating index server

## Please input file name with extension. Or exit() to close.
[]

× INDEX SERVER (Python)
Waiting patiently for search queries
Sent serach result to - ('127.0.0.1', '51178', 'tenkb.py', 'notfo
und')

Waiting patiently for search queries
Sent serach result to - ('127.0.0.1', '51179', 'tenkb.txt', 'loca
lhost|peer1|9036')

Waiting patiently for search queries
Updated index - ('127.0.0.1', '51181', 'tenkb.txt')
{'onekb.txt': {'localhost|peer1|9036', 'localhost|peer2|9037', 'loc
alhost|peer1|9035'}, '.DS_Store': {'localhost|peer3|9038', 'localho
st|peer2|9037', 'localhost|peer1|9036'}, 'tenkb.txt': {'localhost|p
eer3|9038', 'localhost|peer1|9036'}, 'twentykb.txt': {'localhost|p
eer2|9037', 'localhost|peer1|9036'}, 'thirtykb.txt': {'localhost|p
eer2|9037'}, 'sixtykb.txt': {'localhost|peer2|9037', 'localhost|p
eer3|9038'}, 'fiftykb.txt': {'localhost|peer3|9038'}}

Waiting patiently for search queries
Sent serach result to - ('127.0.0.1', '51206', 'fourtykb.txt', 'n
otfound')

Waiting patiently for search queries
[]
```

This shows that the file does not exists in any peer.

```
× SERVER 1 (Python)
Vishants-MacBook-Pro:Downloads vishantbhale$ python3 ~/Downloads/Pe
er1.py server peer1 localhost 9036

Server started. One time ops. Update all files to index server

Index server Updation complete

Waiting patiently for new download requests
Recieved file request from ('127.0.0.1', 51180)
New sender started for client - ('127.0.0.1', '51180', './peer1/te
nkb.txt')

## Successfully sent - ./peer1/tenkb.txt
Waiting patiently for new download requests
[]

× SERVER 3 (Python)
Vishants-MacBook-Pro:Downloads vishantbhale$ python3 ~/Downloads/Pe
er1.py server peer3 localhost 9038

Server started. One time ops. Update all files to index server

Index server Updation complete

Waiting patiently for new download requests
Recieved file request from ('127.0.0.1', 51171)
New sender started for client - ('127.0.0.1', '51171', './peer3/si
xtykb.txt')

Waiting patiently for new download requests

## Successfully sent - ./peer3/sixtykb.txt
[]

× CLIENT 1 (Python)
twentykb.txt
receiving data...
receiving data...

Successfully received entire file

Client closed connection. Now updating index server

## Please input file name with extension. Or exit() to close.
onekb.txt
onekb.txt Already exists for this peer. No need to download from re
mote

## Please input file name with extension. Or exit() to close.
[]

× CLIENT 2 (Python)
Vishants-MacBook-Pro:Downloads vishantbhale$ python3 ~/Downloads/Pe
er1.py client peer2 localhost 9037

## Please input file name with extension. Or exit() to close.
sixtykb.txt
receiving data...
receiving data...

Successfully received entire file

Client closed connection. Now updating index server

## Please input file name with extension. Or exit() to close.
[]

× CLIENT 3 (Python)
Vishants-MacBook-Pro:Downloads vishantbhale$ python3 ~/Downloads/Pe
er1.py client peer3 localhost 9038

## Please input file name with extension. Or exit() to close.
tenkb.txt
receiving data...
receiving data...

Successfully received entire file

Client closed connection. Now updating index server

## Please input file name with extension. Or exit() to close.
[]

× INDEX SERVER (Python)
er1|9036'}, 'thirtykb.txt': {'localhost|peer2|9037'}, 'sixtykb.txt'
: {'localhost|peer2|9037', 'localhost|peer3|9038'}, 'fiftykb.txt':
{'localhost|peer3|9038'}}

Waiting patiently for search queries
Sent serach result to - ('127.0.0.1', '51178', 'tenkb.py', 'notfo
und')

Waiting patiently for search queries
Sent serach result to - ('127.0.0.1', '51179', 'tenkb.txt', 'loca
lhost|peer1|9036')

Waiting patiently for search queries
Updated index - ('127.0.0.1', '51181', 'tenkb.txt')
{'onekb.txt': {'localhost|peer1|9036', 'localhost|peer2|9037', 'loc
alhost|peer1|9035'}, '.DS_Store': {'localhost|peer3|9038', 'localho
st|peer2|9037', 'localhost|peer1|9036'}, 'tenkb.txt': {'localhost|p
eer3|9038', 'localhost|peer1|9036'}, 'twentykb.txt': {'localhost|p
eer2|9037', 'localhost|peer1|9036'}, 'thirtykb.txt': {'localhost|p
eer2|9037'}, 'sixtykb.txt': {'localhost|peer2|9037', 'localhost|p
eer3|9038'}, 'fiftykb.txt': {'localhost|peer3|9038'}}

Waiting patiently for search queries
[]
```

This shows that file is already present the peer1 which has requested for the file which is there.