

Performance Evaluation

- To evaluate the performance of the system, especially, LOOKUP and DOWNLOAD operations, I created a Test program (file Test.java)
- The Test programs asks you whether you want to evaluate LOOKUP or DOWNLOAD operation.
- For evaluating LOOKUP operation, it requires the Indexing Server IP address and name of the file to be searched. It creates three threads each searching for the given file 1000 times i.e. 3000 requests one after the other. This program was run on two nodes simultaneously. So the test environment was as follows:

Total no. of peers connected: 4

Configuration of each peer: 2 core processor, 1 GB RAM virtual machine (Ubuntu Linux OS)

Configuration of indexing server: 2 core processor, 1 GB RAM virtual machine (Ubuntu Linux OS)

Test program running on no. of peers in parallel: 2

Total instances of lookup operation in parallel: 6 (2 peer having 3 instances each)

Total no. of requests sent to the server: 6000

I ran the test program for lookup operation 5 times and results were as follows:

Sr. No.	Avg. lookup time (Peer 1)	Avg. lookup time (Peer 2)	Avg. lookup time
1	0.022 seconds	0.039 seconds	0.030 seconds
2	0.034 seconds	0.028 seconds	0.031 seconds
3	0.024 seconds	0.026 seconds	0.025 seconds
4	0.040 seconds	0.035 seconds	0.037 seconds
5	0.029 seconds	0.031 seconds	0.030 seconds
AVERAGE LOOKUP TIME PER REQUEST FOR ENTIRE TEST			0.0306 seconds

- So, as we can see from the above results, the average lookup time remains around 0.03 seconds which was the same in most my cases when I was debugging my program. Sometimes, it went to 0.04 as well but that cases were very few.
- For evaluating DOWNLOAD operation, it requires the any of Peer's IP address and name of two files which are to be downloaded from the peer. It creates two threads each downloading one file 1000 times i.e. 2000 download requests one after the other. This program was run on two nodes simultaneously. So the test environment was as follows:

Total no. of peers connected: 4

Configuration of each peer: 2 core processor, 1 GB RAM virtual machine (Ubuntu Linux OS)

Test program running on no. of peers in parallel: 2

Total instances of lookup operation in parallel: 4 (2 peer having 2 instances each)

Total no. of requests sent to the peer: 4000

I ran the test program for download operation 4 times and results were as follows:

Sr. No.	File Info	Avg. speed (Peer 1)	File Info	Avg. speed (Peer 2)	Avg. speed
1	File 1: 800 KB	24.406 MB/s	File 1: 200 KB	24.680 MB/s	24.543 MB/s
	File 2: 205 KB		File 2: 10 KB		
2	File 1: 20 KB	24.760 MB/s	File 1: 2120 KB	24.103 MB/s	24.431 MB/s
	File 2: 300 KB		File 2: 10 KB		
3	File 1: 800 KB	24.124 MB/s	File 1: 800 KB	25.105 MB/s	24.614 MB/s
	File 2: 1011 KB		File 2: 205 KB		
4	File 1: 1740 KB	24.850 MB/s	File 1: 1600 KB	24.356 MB/s	24.603 MB/s
	File 2: 205 KB		File 2: 50 KB		
5	File 1: 2150 KB	24.005 MB/s	File 1: 2150 KB	23.952 MB/s	23.978 MB/s
	File 2: 1200 KB		File 2: 2155 KB		
AVERAGE DOWNLOAD SPEED IN MB/s FOR ENTIRE TEST					24.433 MB/s

- From the above results, we can see that the average download speed is 24.433 MegaBytes/s.