

**CS550 Advanced Operating Systems**  
**Programming Assignment 3**

**Evaluation**  
**Experiment-2**  
**Amazon AWS cloud**

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The assignment carries out Evaluation of the Decentralized Indexing server and Peer server on 10k operations and runs Amazon Aws Cloud.

I've evaluated the time taken to **Register ,Search** operations on a Indexing server a single node ,two nodes ,four nodes and eight running concurrently over **10k** operations.

And Evaluated the time taken to **Obtain** Files on a Peer server a single node ,two nodes ,four nodes and eight running concurrently over 10k operations. And File Size is **10KB**.

### 1. Register:

**single node:** The time taken to Register 10k Files on a single node at is 2066 **milliseconds**.

**Two nodes :** The time taken to Register 10k Files on each of 2 nodes is :

node 1 - 3963milliseconds

node 2 - 4252 milliseconds

Average time taken by a node to Register 10k Files is :  $3963+4252/2$

**= 4107 milliseconds**

**Four nodes :** The time taken to Register 10k Files on each of four nodes is :

node 1 - 5571 milliseconds

node 2 - 5591 milliseconds

node 3- 4722 milliseconds

node 4- 5791milliseconds

Average time taken by a node to Register 10k Files is: $5571+5591+4722+5791/4$

**=5418 milliseconds**

**Eight nodes :** The time taken to Register 10k Files on each of Eight nodes is :

node 1 - 6902 milliseconds

node 2 - 6569 milliseconds

node 3- 6703 milliseconds

node 4 - 6069 milliseconds

node 5 - 6489 milliseconds

node 6- 6187milliseconds

node 7 - 6255 milliseconds

node 8 - 6894 milliseconds

Average time taken by a node to Register 10k Files is:

$6902+6569+6703+6069+6489+6187+6255+6894 / 8 = 6508.5$  millisecs

**Average time taken for a single node per Register 10k Files : 2.066 secs**

**Average time taken for two concurrent nodes per Register 10k Files : 4.107 secs**

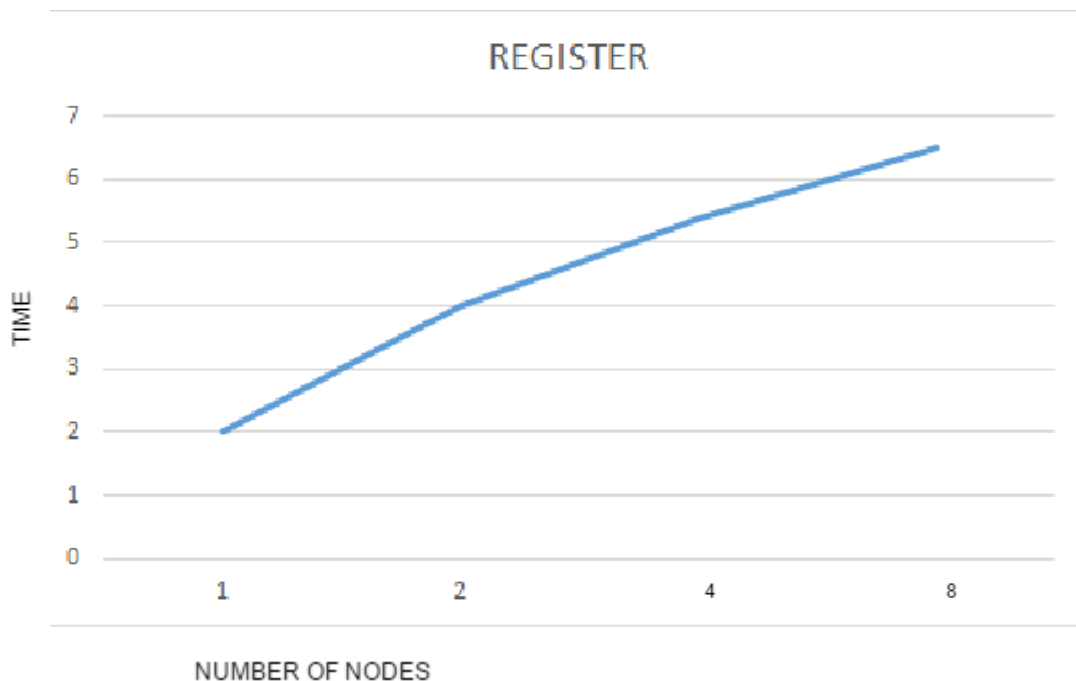
**Average time taken for four concurrent nodes per Register 10k Files : 5.418 secs**

**Average time taken for a eight concurrent nodes per Register 10k Files :6.5085 secs**

#### **PLOT FOR REGISTER :**

**X-axis : nodes**

**Y-Axis : time (secs)**



#### **2. SEARCH :**

**single node:** The time taken to Search 10k Files on a single node at is 1199**milliseconds**.

**Two nodes :** time taken to Search 10k Files on each of 2 nodes is :

node 1 - 3036milliseconds

node 2 - 3158 milliseconds

Average time taken by a node to Search 10k Files is :  $3036+3158/2$

**= 3097 milliseconds**

**Four nodes :** Time taken to Search 10k Files on each of four nodes is :

node 1 - 5026milliseconds

node 2 - 4216milliseconds

node 3- 4385milliseconds

node 4- 4531milliseconds

Average time taken by a node to make Search 10k Files is

$5026+4216+4385+4531/4= 4539.5$  **milliseconds**

**Eight nodes :** Time taken to Search 10k Files on each of Eight nodes is :

node 1 - 5348milliseconds

node 2 -4937 milliseconds

node 3- 5145milliseconds

node 4 - 4825milliseconds

node 5 - 4756 milliseconds

node 6- 5132milliseconds

node 7 - 5248milliseconds

node 8 - 5388 milliseconds

Average time taken by a node to Search 10k Files is  $/8= 5097.6$  **milliseconds**

**Average time taken for a single nodes per 10k Search Files : 1.199secs**

**Average time taken for two concurrent nodes per 10k Search Files : 3.0972 secs**

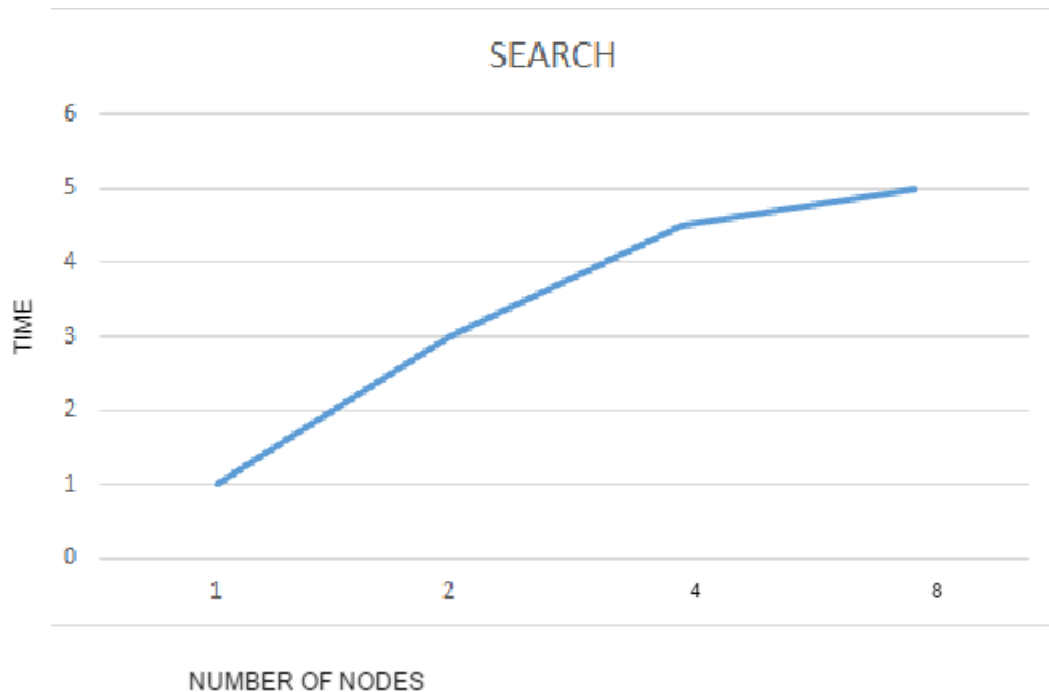
**Average time taken for four concurrent nodes per 10k Search Files : 4.5385secs**

**Average time taken for a eight concurrent nodes per 10k Search Files : 5.0966secs**

### PLOT FOR SEARCH:

X-axis : nodes

Y-axis : time (secs)



### 3. Obtain:

**single node:** The time taken to obtain 10k Files at a single node at is **300345 milliseconds**.

**two nodes :** Time taken to obtain 10k Files at 2 nodes concurrently i.e., 20k files on both nodes is :

node 1 - 314458 milliseconds

node 2 - 300898 milliseconds

Average time taken by a node to obtain 10k Files is :  $314458 + 300898 / 2$   
**= 307678 milliseconds**

**Four nodes :** Time taken to obtain 10k Files on each of four nodes is :

node 1 - 319874 milliseconds

node 2 - 334587 milliseconds

node 3- 302156 milliseconds

node 4- 325478milliseconds

Average time taken by a node to obtain 10k Files is :  $319874/4=$

**320523.75milliseconds**

**Eight nodes :** Time taken to obtain 10k Files on each of Eight nodes is :

node 1 - 294578 milliseconds

node 2 - 325426 milliseconds

node 3- 301475milliseconds

node 4 - 335472 milliseconds

node 5 - 298147milliseconds

node 6- 314567 milliseconds

node 7 - 345876milliseconds

node 8 - 354782 milliseconds

Average time taken by a node to obtain 10k Files is

$294578+325426+301475+335472+298147+314567+345876+354782 /8=$

**321290.375milliseconds**

**Average time taken for a single node to obtain 10k Files : 300.345 secs**

**Average time taken for two concurrent nodes to obtain 10k Files : 307.678 secs**

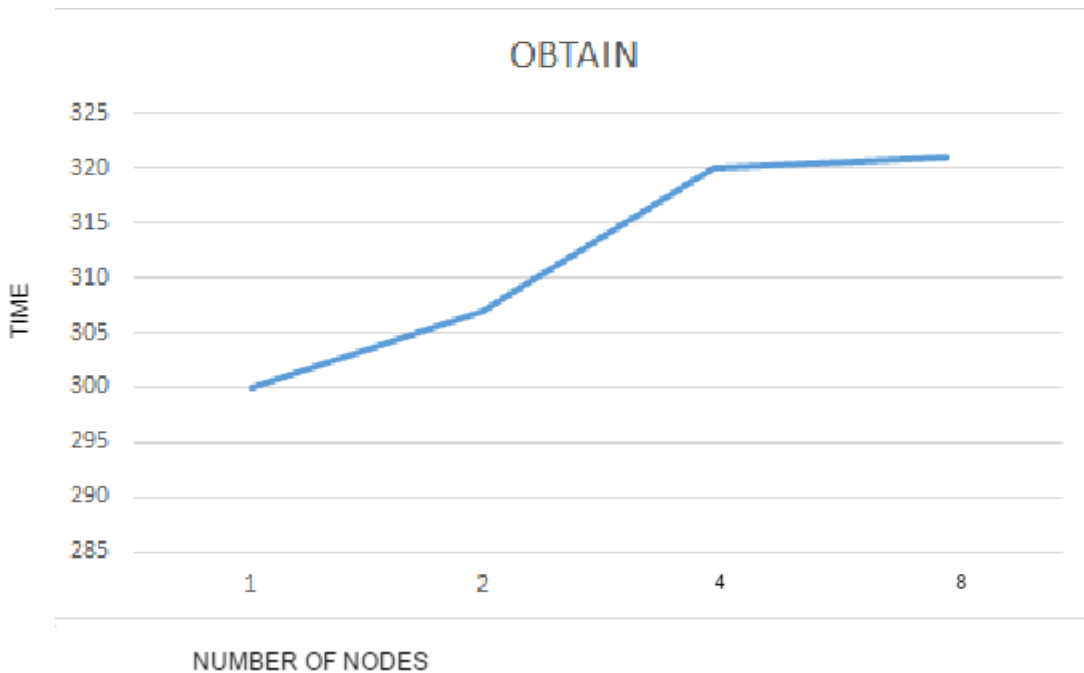
**Average time taken for four concurrent nodes to obtain 10k Files : 320.523secs**

**Average time taken for a eight concurrent nodes to obtain 10k Files: 321.290 secs**

**PLOT FOR OBTAIN:**

**X-axis : nodes**

**Y-axis : time(secs)**



### **Conclusion:**

Here, we have evaluated register, search and obtain the files of size 10kb. and it runs on Amazon AWS cloud over 10k files. As the number of nodes increases, time to register will increase in DIS, and search increases initially and slows down because in DHT, it runs on core uses maximum speed. And obtaining file also uses maximum core speed.