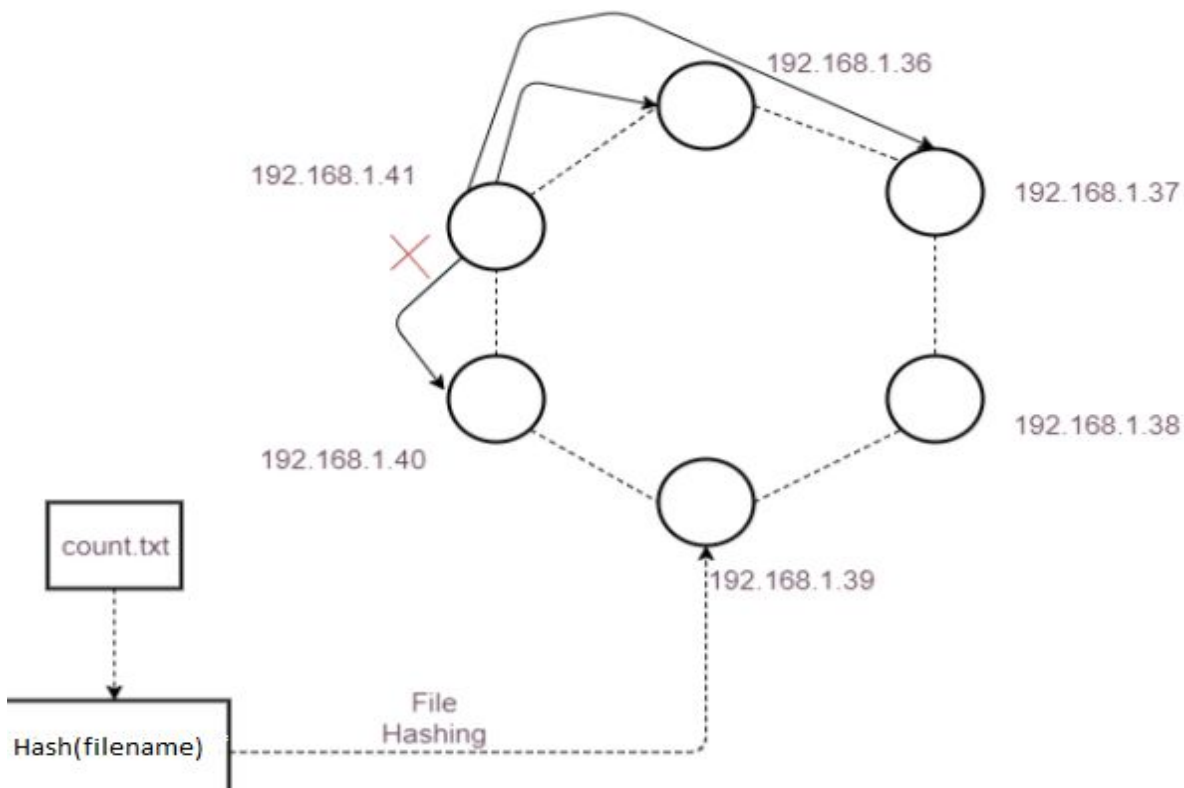


CS 425 - MP2 - Group 30

Lavanya Piramanayagam - lavanyap

Rahul Shivu Mahadev - rahulsm2

ALGORITHM AND DESIGN



We built upon MP2 and used the failure detector and membership lists from MP2. MP3 added a FTP Library, Master Re-election and chord like routing. Any node of the system can behave like the master, but the master whose IP address octets are the largest is chosen as the leader from the membership lists. All requests are routed through the master. Chord like hashing is done for file-names and this hash is universally accurate from any node. Whenever a put request is received master gives 3 IP addresses for the client to upload the data to, so that 2 replicas are maintained. When a node fails , the hashing algorithm changes a little, hence the monitor which continuously runs in the background monitors the local file-system for files and runs them with the algorithm to check the status of replicas, if replicas are not present, file is pushed to the respective nodes. Similarly redundant files are deleted.

We used MP1 for debugging the replica management and Master(leader) re-election. MP1 also had some code which was reused in the form of TCP servers for the file transfers.

DATA PLOTS

The data point measurements are as follows:

1. The re-replication time is 2.12 seconds, bandwidth upon failure is 40MB + few 100 bytes for the heartbeat.

The data points were as follows: 2.25, 2.14, 2.06, 1.98, 2.17. Mean is 2.12 seconds and the standard deviation is 0.103 seconds.

2. The following are the insert, read and update times (upon no failures):

For file size: **25MB**

Insert: 4.7 s; Data points: 4.6, 4.45, 4.8, 4.75, 4.9; S.Dev: 0.17

Read: 1.36 s; Data points: 1.3, 1.26, 1.4, 1.34, 1.5; Standard deviation: 0.09

Update: 4.6 s; Data points: 4.7, 4.55, 4.65, 4.54, 4.56; S.Dev: 0.07

For file size: **500MB**

Insert: 46.8s; Data points: 47.5, 46.7, 47, 46.9, 45.9; Standard deviation: 0.5

Read: 16.5s; Data points: 16.7, 16.8, 15.95, 16.4, 16.65; Standard deviation: 0.34

Update: 46s; Data points: 46.5, 47, 45.5, 46.3, 44.7; Standard deviation: 0.9

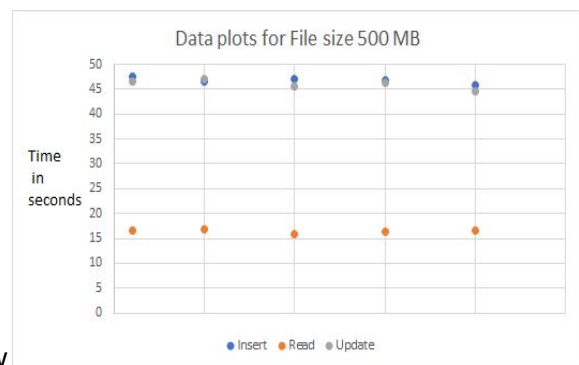
3. Time to detect write-write conflicts for two consecutive writes within 1 minute to the same file is 0.1 seconds.

Time to store the entire English Wikipedia corpus into SDFS with 4 machines and 8 machines are as follows:

4 machines: 123.5 seconds

8 machines: 127.6 seconds

(The time taken for 4 machines and 8 machines is similar as the replication happens on 2 machines and data is inserted into one machine)



Plots for the file operations are as show below



