

BUILDING A DISTRIBUTED KEY VALUE STORE BIG DATA 2016 - CLASS PROJECT



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INTRODUCTION

A distributed data store is a computer network where information is stored on more than one node, often in a replicated fashion. It is usually specifically used to refer to either a distributed database where users store information on a number of nodes, or a computer network in which users store information on a number of peer network nodes.



ALGORITHM AND DESIGN

1. Creation of a Client and Server java files using socket programming.
2. Start ZooKeeper and creation of Master Znode
3. Check for the presence of Master using ZooKeeper



SERVER OPERATION

- ☐ Clients will send requests to the server
- ☐ Server will determine request type – put, get
- ☐ Server will determine if it can process the request or the request has to be serviced by other servers
- ☐ For self-served requests – it will process the request and send back status of response

SERVER REPLICATION

- ❑ Based on the server name a hash code function assigns a random number.
- ❑ This random number is used to assign the last 8 bytes of the IP Address for the server.

Example: If the hash code returns a value 1234. Then
required value = $(1234) \% 255$ Required value = 214
So, IP Address for the server will be 127.0.0.214 Its
replica would be hash code return value of
`hashcode(servername+r)`.



HANDLING SERVER FAILURE

- ☐ Client tries connecting to server with key.
- ☐ On server failure, connects to master to get new list of keyserver mapping.
 - ☐ Talks to the replica to retrieve data



EXPERIMENTAL RESULTS

- ❑ Successfully established connection between client and server.
- ❑ Successful querying of keys by the client from various servers with distributed key value pairs.
 - ❑ Server failure handled, its contents replicated in a replica-server and client retrieval from replica-server.



FUTURE ENHANCEMENTS



Handling additional servers, more
than three



REFERENCES

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<https://tutorialpoint.com/zookeeper>

<https://zookeeper.apache.org/hadoop/zookeeper>

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<https://javatpoint.com/socket-programming>





THANK YOU