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|  | **Q1.If 7TB is the available disk space per node (9 disks with 1 TB, 2 disk for operating system etc. were excluded.). Assuming initial data size is 600 TB. How will you estimate the number of data nodes (n)?** |
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|  | The formula to estimate the number of data nodes (n):  n= H/d = c\*r\*S/(1-i)\*d |
|  | c = average compression ratio. It depends on the type of compression used (Snappy, LZOP, ...) and size of the data. |
|  | When no compression is used, c=1. |
|  | r = replication factor. It is usually 3 in a production cluster. |
|  | S = size of data to be moved to Hadoop. This could be a combination of historical data and |
|  | incremental data. The incremental data can be daily for example and projected over a period of time (3 years for example). |
|  | i = intermediate factor. It is usually 1/3 or 1/4. Hadoop's working space dedicated to storing intermediate results of Map phases. |
|  | d= disk space available per node. All other parameters remain the same as in 1. |
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|  | here, H=600TB |
|  | d=7TB |
|  | therefore, n=H/d |
|  | n=600/7 |
|  | =85.71 |
|  | total number of data nodes=86. |
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|  | **Q2.Imagine that you are uploading a file of 500MB into HDFS.100MB of data is successfully uploaded into HDFS and another** |
|  | **client wants to read the uploaded data while the upload is still in progress. What will happen in such a scenario, will the** |
|  | **100 MB of data that is uploaded will it be displayed?** |
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|  | Although the default blocks size is 64 MB in Hadoop 1x and 128 MB in Hadoop 2x whereas in such a scenario let |
|  | us consider block size to be 100 MB which means that we are going to have 5 blocks replicated 3 times (default replication factor). |
|  | Let, We have 5 blocks (A/B/C/D/E) for a file, a client, a namenode and a datanode. So, first the client will take Block A and |
|  | will approach namenode for datanode location to store this block and the replicated copies. Once client is aware about the datanode |
|  | information, it will directly reach out to datanode and start copying Block A which will be simultaneously replicated to other 2 datanodes. |
|  | Once the block is copied and replicated to the datanodes, client will get the confirmation about the Block A storage and then, it |
|  | will initiate the same process for next block “Block B”. |
|  | So, during this process if 1st block of 100 MB is written to HDFS and the next block has been started by the client to store then |
|  | 1st block will be visible to readers. Only the current block being written will not be visible by the readers. |
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