# Module 1: Understanding Big Data and Hadoop

Assignment

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### Introduction

Let's assume that, you have 100 TB of data to store and process with Hadoop. The configuration of each available DataNode is as follows:

- 8 GB RAM
- 10 TB HDD
- 100 MB/s read-write speed

You have a Hadoop Cluster with replication factor = 3 and block size = 64 MB.

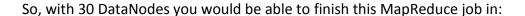
In this case, the number of DataNodes required to store would be:

- Total amount of Data \* Replication Factor / Disk Space available on each DataNode
- 100 \* 3 / 10
- 30 DataNodes

Now, let's assume you need to process this 100 TB of data using MapReduce.

And, reading 100 TB data at a speed of 100 MB/s using only 1 node would take:

- Total data / Read-write speed
- 100 \* 1024 \* 1024 / 100
- 1048576 seconds
- 291.27 hours



- 291.27 / 30
- 9.70 hours

#### 1. Problem Statement

How many such Data Nodes you would need to read 100TB data in 5 minutes in your Hadoop Cluster?