# Components of Hadoop 2.x

## NameNode

* Contains Hadoop FileSystem Tree and other metadata information about files and directories.
* Contains in-memory mapping of which blocks are stored in which datanode.

## Secondary Namenode or Standby Node

* Performs house-keeping activities for namenode, like periodic merging of namespace and edits.
* Hadoop 1.x architecture Name Node was a single point of failure. Problem is solved in Hadoop 2.x with another standyby node which manages metadata same as Secondary Name Node in Hadoop 1.x. When Active Name Node is down, Standby Name Node takes over and will handle the client operations then after

## DataNode

• Stores actual data blocks of file in HDFS on its own local disk.

• Sends signals to NameNode periodically (called as Heartbeat) to verify it is active.

• They perform all the block operation including periodic checksum. They receive instructions from the name node of where to put the blocks and how to put the blocks.

## **Global Resource Manager**

* It is responsible for getting job submitted from client and schedule it on cluster, monitoring running jobs on cluster and allocating proper resources on each node
* It communicates with Node Manager daemon process on each node to track the resource utilization

## Node Manager

* Runs on each node and communicates with Resource Manager about resource usage on the machine.
* It receives requests from resource manager about resource allocation to jobs and maintains life cycle of containers.

## Application Master

* It is the actual instance which does processing.
* It requests Resource Manager for resources and works with NodeManager to get those resources for task execution. Application Master could be MapReduce or any other processing framework.

## Scheduler

It is plugged with Resource Manager to help in resource allocation. Different schedulers allocate resources using different algorithms.

## Container

It is a set of allocated system resources (CPU Core and Memory). Containers are allocated and managed by NodeManager and are used by tasks.