

HDFS Architecture

Part - 2



HDFS

Hadoop Distributed File System

by Sumit Mittal

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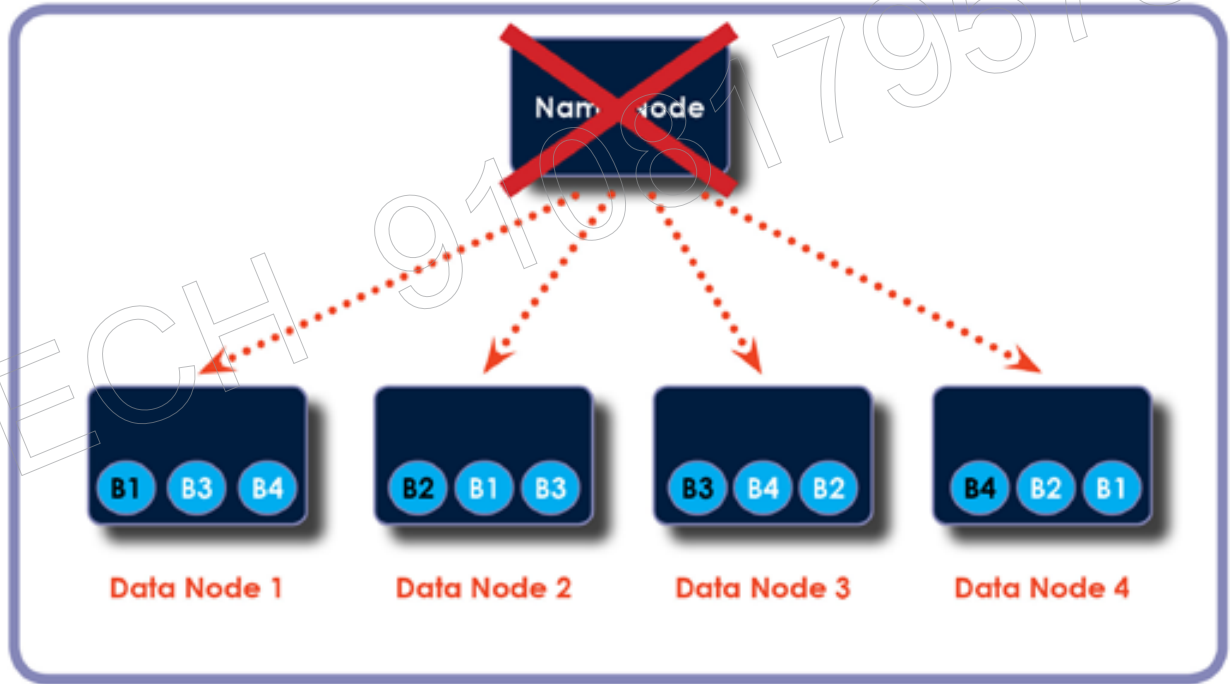
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HDFS ARCHITECTURE

Name Node Failure

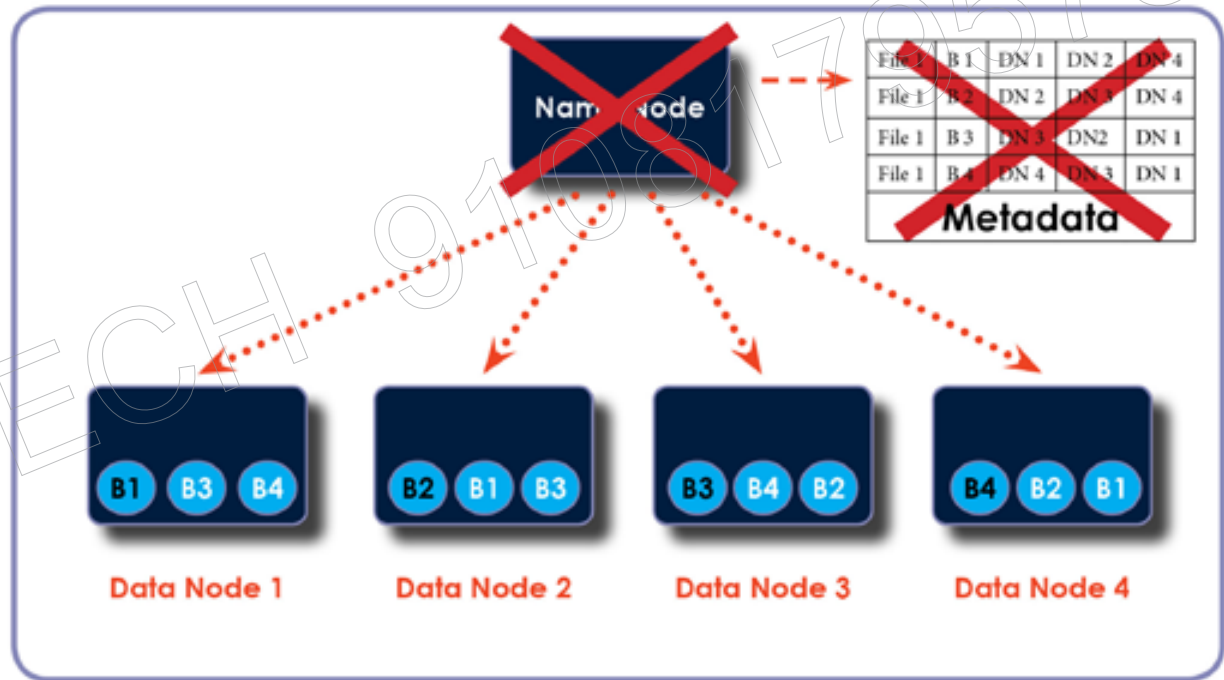


4 node Cluster

HDFS ARCHITECTURE

Name Node Failure

Name Node fails means **no access** to Metadata



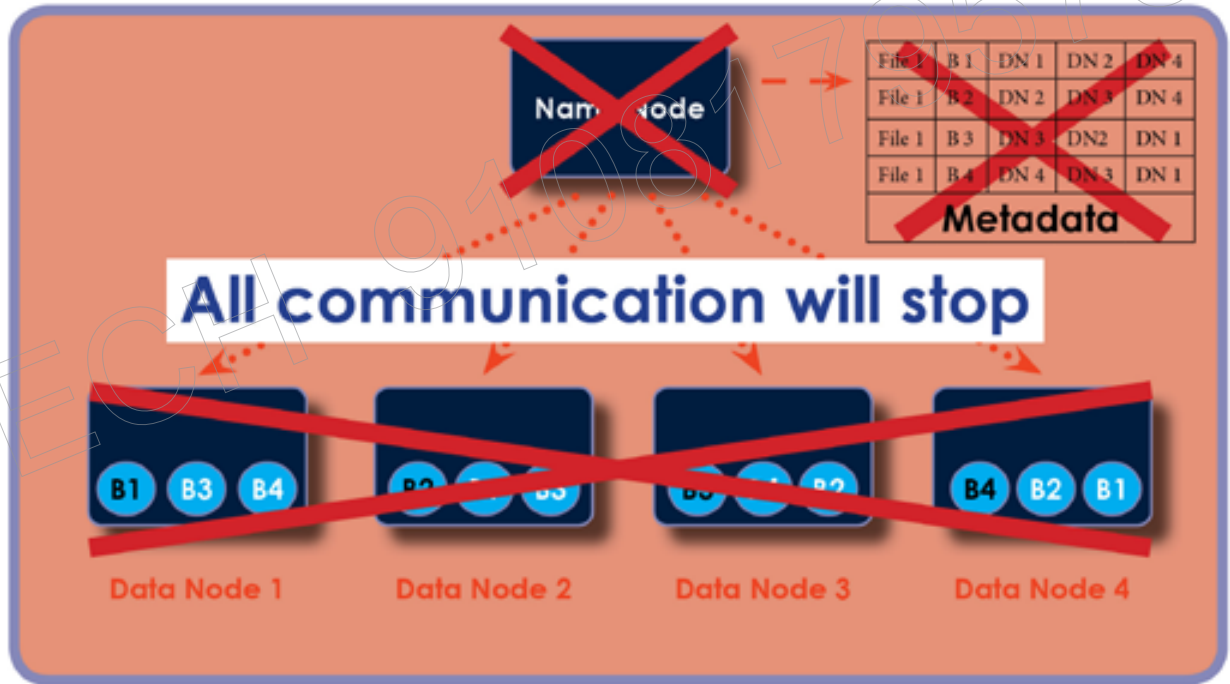
4 node Cluster

HDFS ARCHITECTURE

Name Node Failure

Name Node fails means **no access** to Metadata

No Metadata means **no access** to Cluster



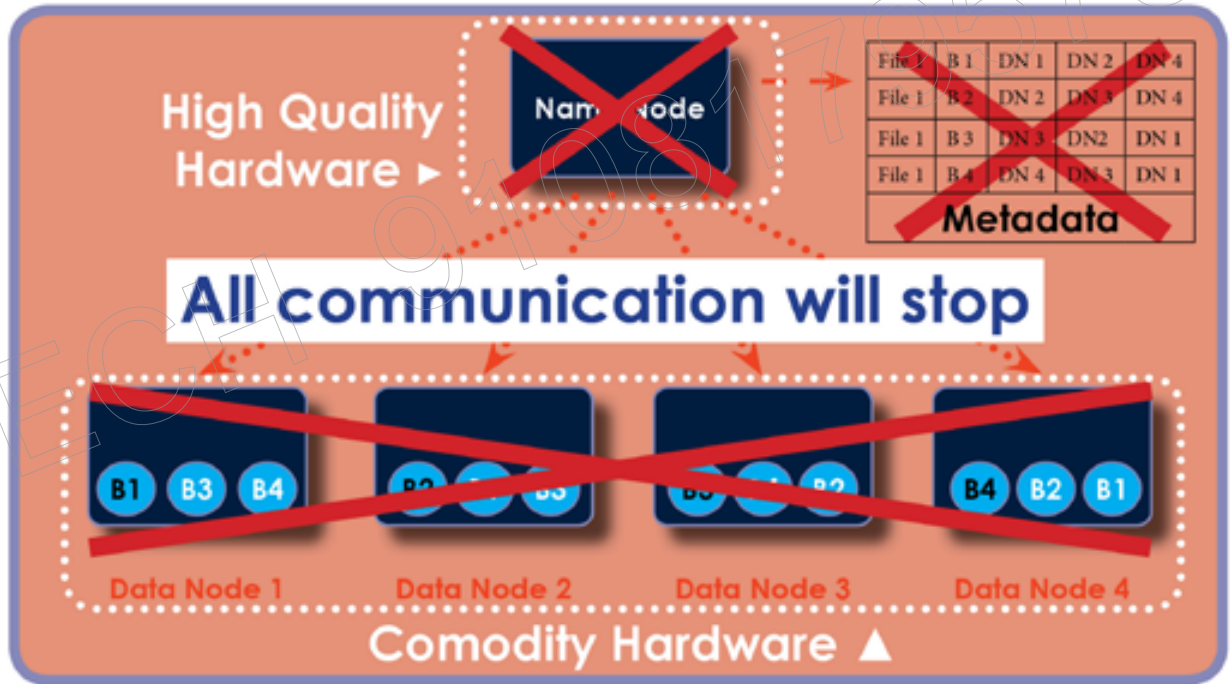
4 node Cluster

HDFS ARCHITECTURE

Name Node Failure

Name Node is a single point of failure in **Hadoop v1**

Name Node is no longer a single point of failure in **Hadoop v2**

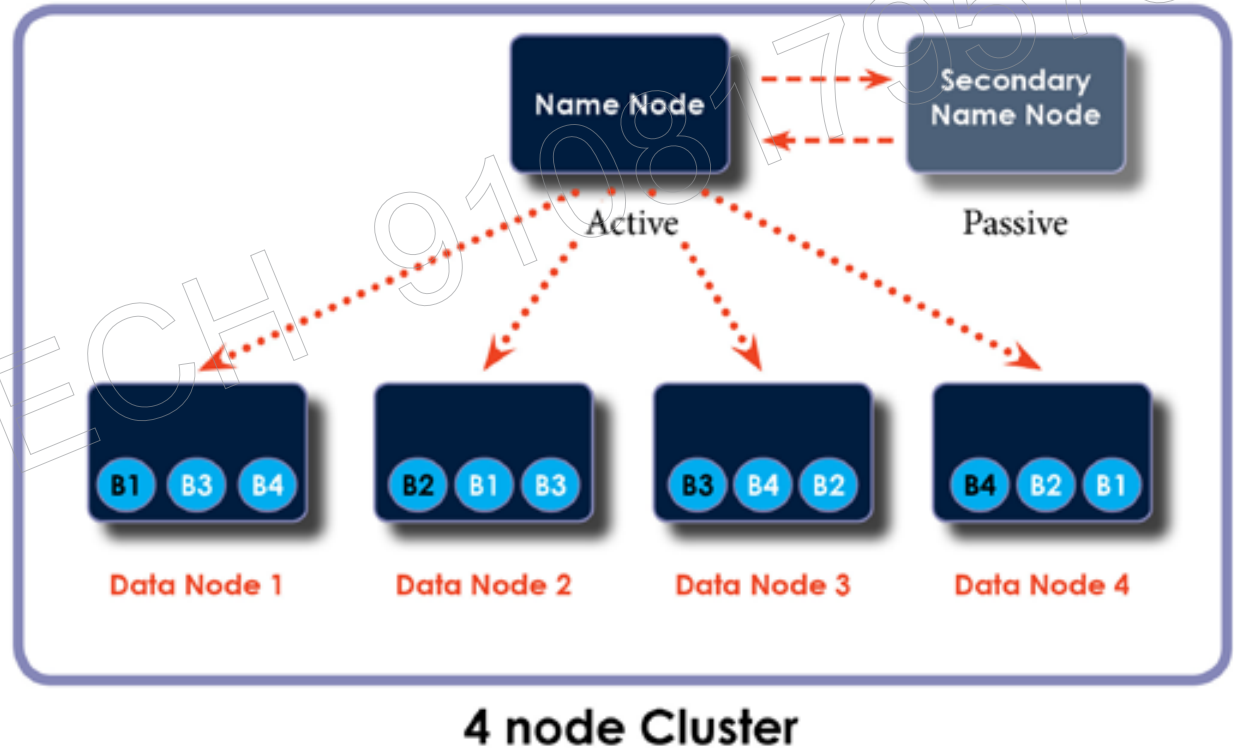


HDFS ARCHITECTURE

Name Node Failure

Name Node is a single point of failure in **Hadoop v1**

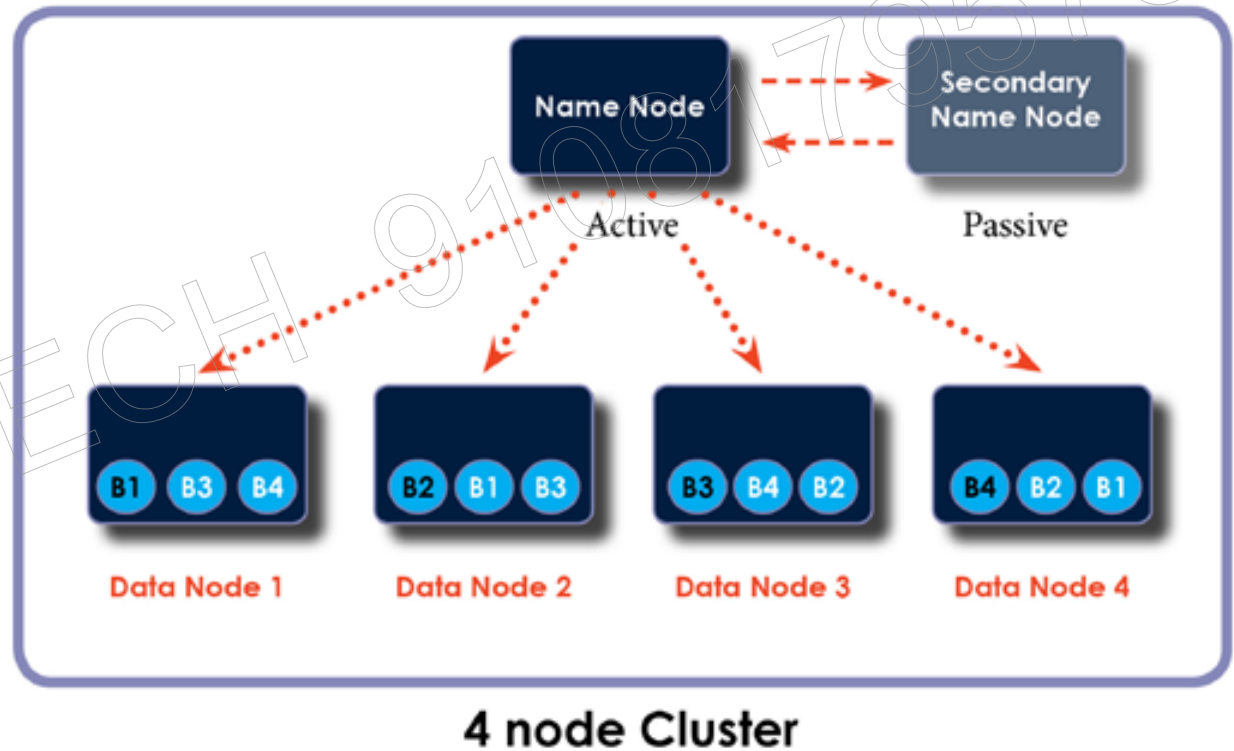
Name Node is no longer a single point of failure in **Hadoop v2**



HDFS ARCHITECTURE

Two Important Metadata Files

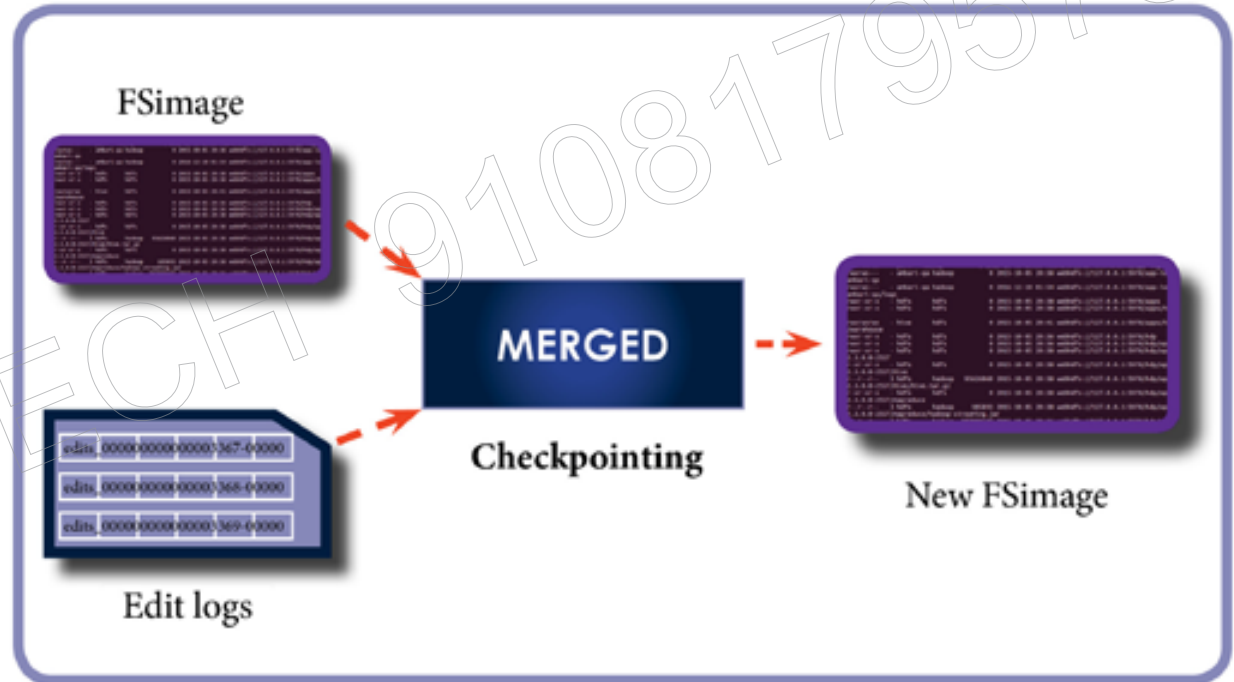
1. FSimage
2. Edit logs



HDFS ARCHITECTURE

Two Important Metadata Files

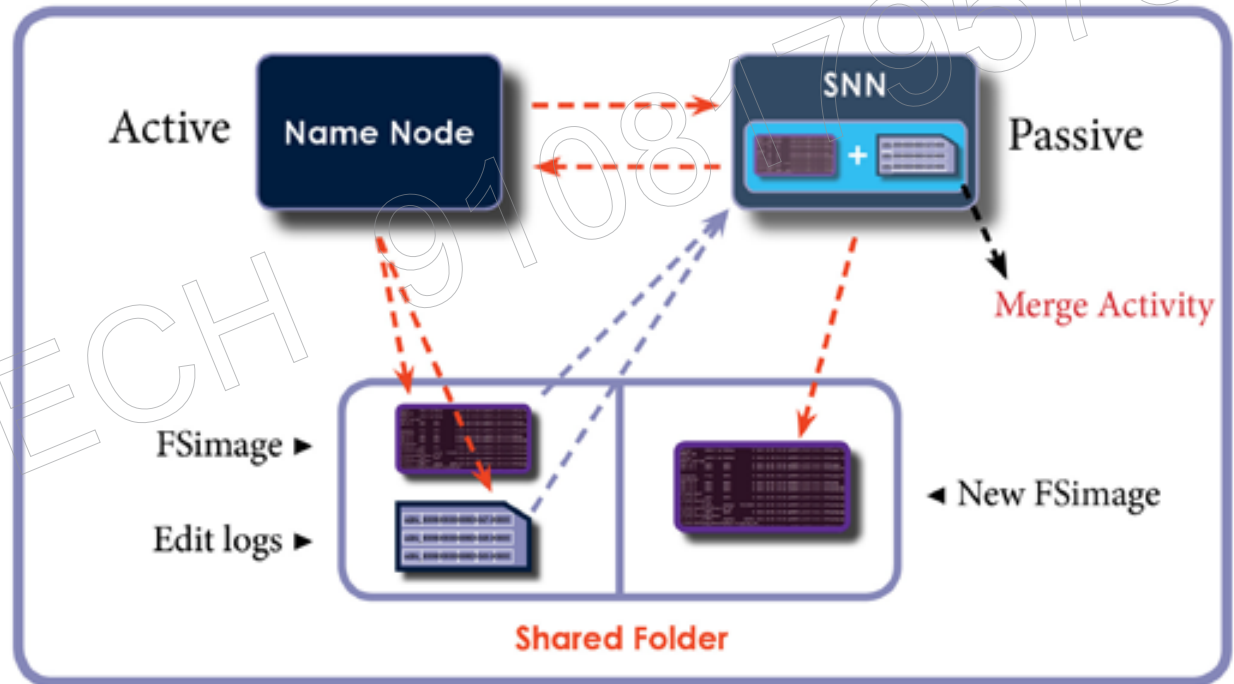
1. **FSimage**: Snapshot of the file system at a particular time
2. **Edit logs**: transaction logs that changes in the HDFS file system



HDFS ARCHITECTURE

Name Node Recovery

Secondary NameNode
performs FSimage and Edit
logs merging to get new
updated FSimage

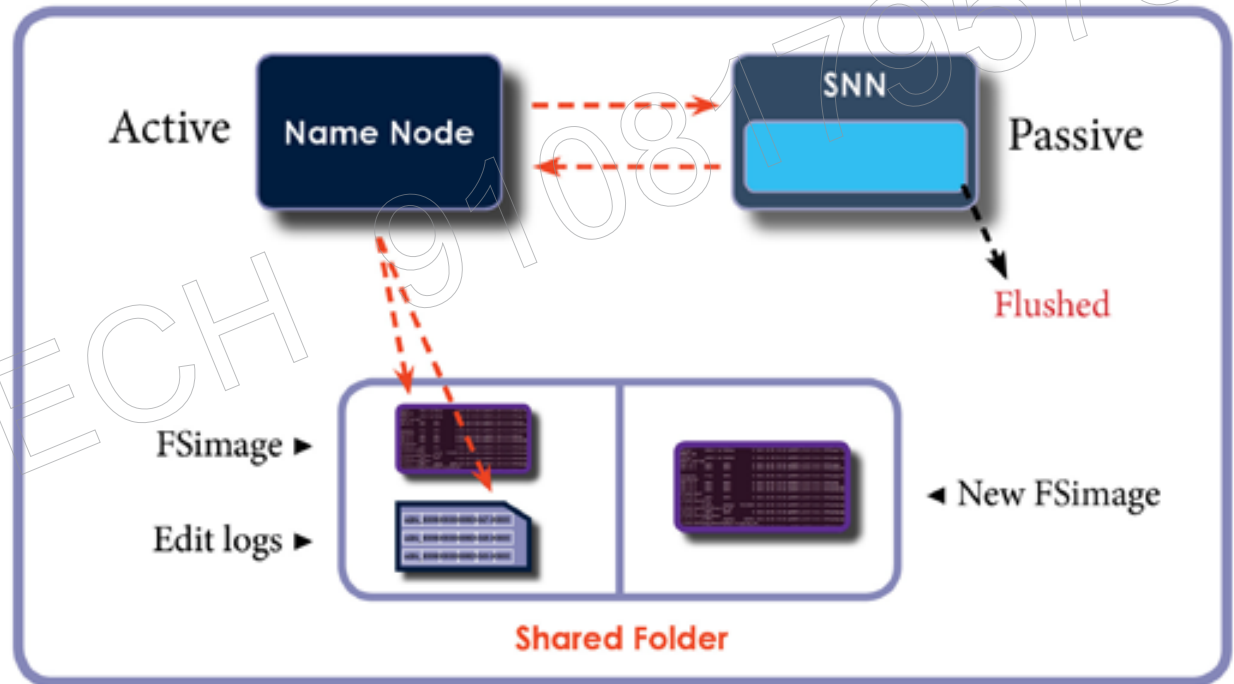


HDFS ARCHITECTURE

Recovering Name Node

Secondary NameNode performs FSimage and Edit logs merging to get new updated FSimage

Once the merge activity completed the FSimage and Edit logs reset to **empty**

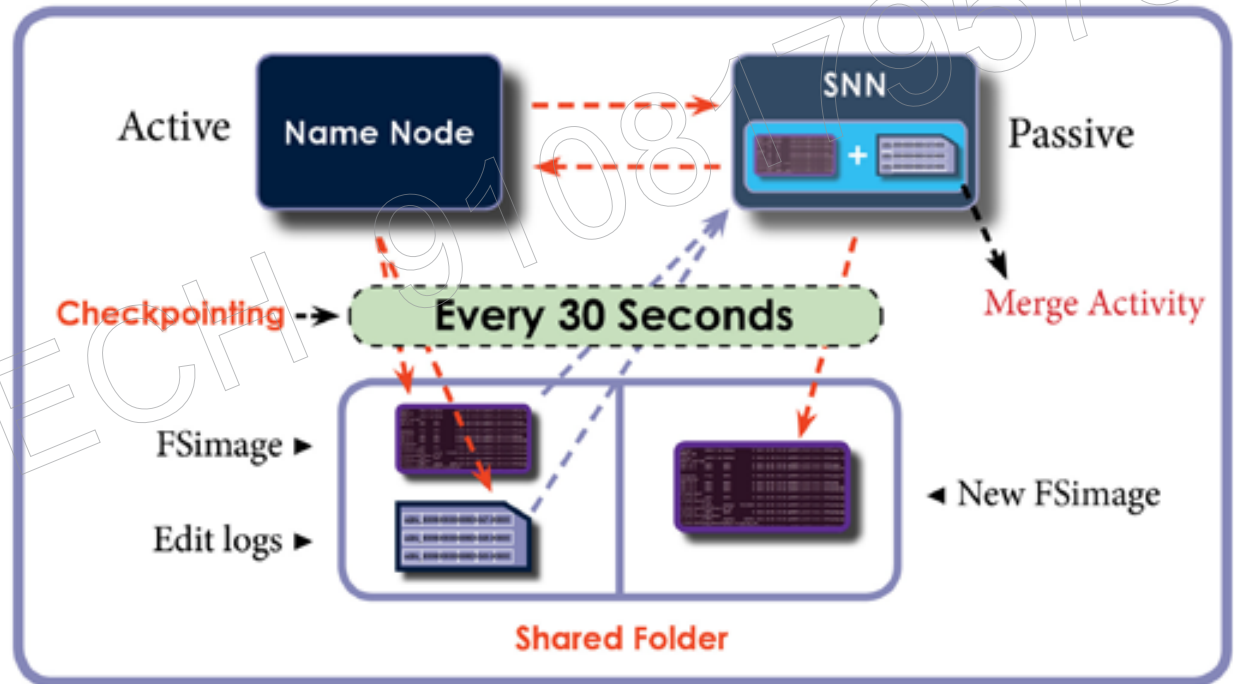


HDFS ARCHITECTURE

Checkpointing

Secondary NameNode performs FSimage and Edit logs **merging** to get new updated FSimage

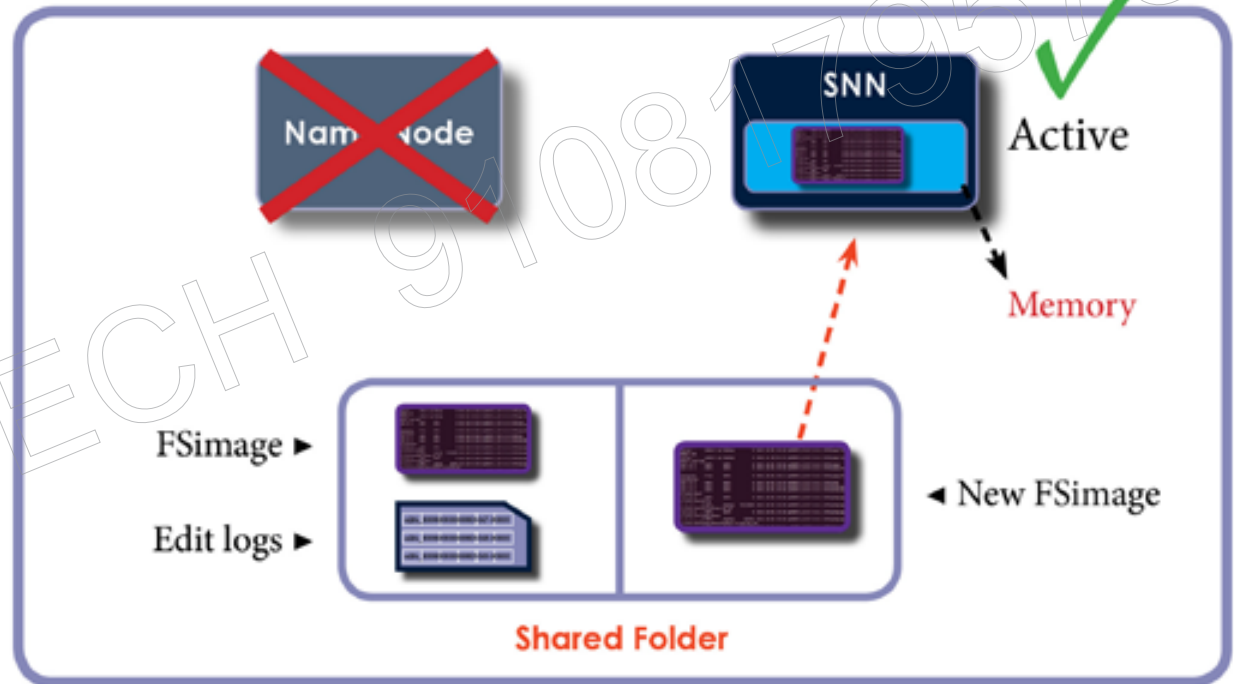
This process repeats after every **30** seconds



HDFS ARCHITECTURE

Primary Name Node Failure

The Secondary Name Node becomes **active** Name Node

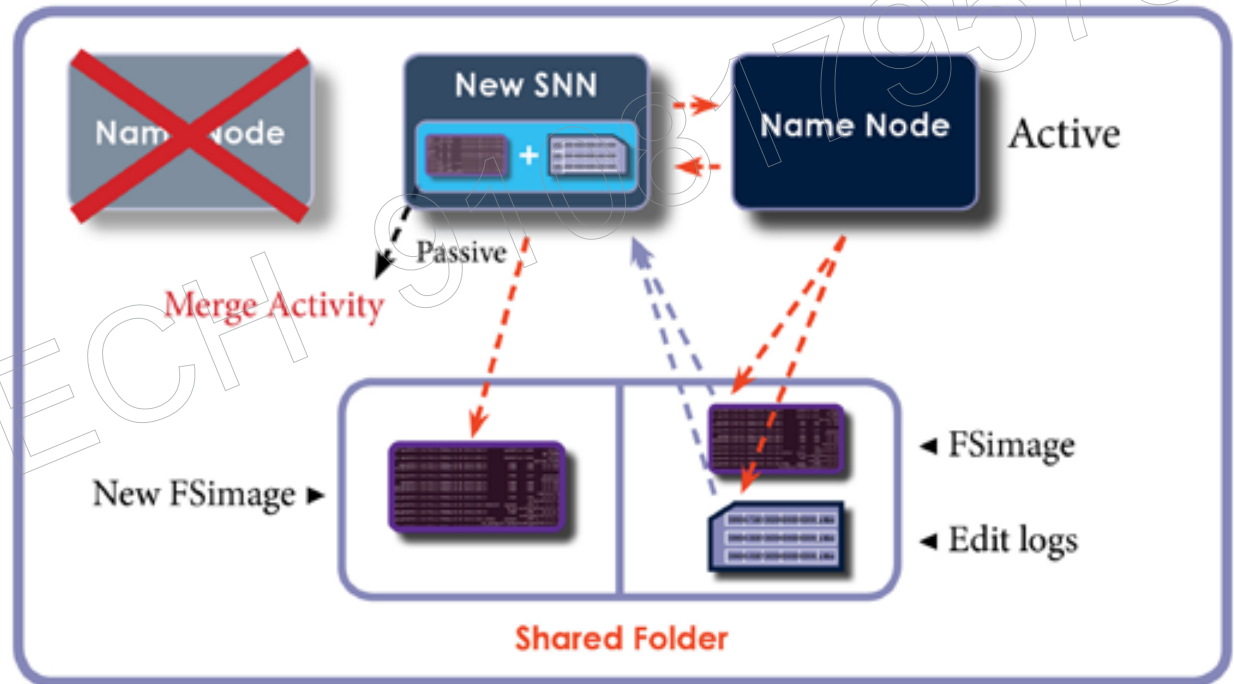


HDFS ARCHITECTURE

Primary Name Node Failure

The Secondary Name Node becomes active Name Node

Responsibility of Hadoop Admin to introduce a new Secondary Name Node





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