

# Runtime Cluster Hosts and Role Assignments

Cluster hosts can be broadly described as master hosts, utility hosts, gateway hosts, or worker hosts.

- **Master hosts run Hadoop master processes such as the HDFS NameNode and YARN Resource Manager.**
- **Utility hosts run other cluster processes that are not master processes such as Cloudera Manager and the Hive Metastore.**
- **Gateway hosts are client access points for launching jobs in the cluster. The number of gateway hosts required varies depending on the type and size of the workloads.**
- **Worker hosts primarily run DataNodes and other distributed processes such as Impalad.**

## Important

Cloudera recommends that you always enable high availability when Runtime is used in a production environment.

The following tables describe the recommended role allocations for different cluster sizes:

### 3 - 10 Worker Hosts without High Availability

Master Hosts	Utility Hosts	Gate
<b>Master Host 1:</b> NameNode YARN ResourceManager JobHistory Server ZooKeeper Kudu master Spark History Server	<b>One host for all Utility and Gateway roles:</b> Secondary NameNode Cloudera Manager Cloudera Manager Management Service Hive Metastore HiveServer2 Impala Catalog Server Impala StateStore Hue Oozie	

Flume  
Gateway configuration

### 3 - 20 Worker Hosts with High Availability

Master Hosts	Utility Hosts	Gate
<b>Master Host 1:</b> NameNode JournalNode FailoverController YARN ResourceManager ZooKeeper JobHistory Server Spark History Server Kudu master <b>Master Host 2:</b> NameNode JournalNode FailoverController YARN ResourceManager ZooKeeper Kudu master <b>Master Host 3:</b> Kudu master (Kudu requires an odd number of masters for HA.)	<b>Utility Host 1:</b> Cloudera Manager Cloudera Manager Management Service Hive Metastore Impala Catalog Server Impala StateStore Oozie ZooKeeper (requires dedicated disk) JournalNode (requires dedicated disk)	<b>One Gate</b> Hue Hive Flume Gate confi

### 20 - 80 Worker Hosts with High Availability

Master Hosts	Utility Hosts	Gate
<b>Master Host 1:</b> NameNode JournalNode FailoverController YARN ResourceManager ZooKeeper Kudu master <b>Master Host 2:</b> NameNode JournalNode FailoverController YARN ResourceManager ZooKeeper Kudu master <b>Master Host 3:</b> ZooKeeper JournalNode JobHistory Server Spark History Server Kudu master	<b>Utility Host 1:</b> Cloudera Manager <b>Utility Host 2:</b> Cloudera Manager Management Service Hive Metastore Impala Catalog Server Oozie	<b>One Gate</b> Hue Hive Flume Gate con

## 80 - 200 Worker Hosts with High Availability

Master Hosts	Utility Hosts	Gateways
<b>Master Host 1:</b> NameNode JournalNode FailoverController YARN ResourceManager ZooKeeper Kudu master <b>Master Host 2:</b> NameNode JournalNode FailoverController YARN ResourceManager ZooKeeper Kudu master <b>Master Host 3:</b> ZooKeeper JournalNode JobHistory Server Spark History Server Kudu master	<b>Utility Host 1:</b> Cloudera Manager <b>Utility Host 2:</b> Hive Metastore Impala Catalog Server Impala StateStore Oozie <b>Utility Host 3:</b> Activity Monitor <b>Utility Host 4:</b> Host Monitor <b>Utility Host 5:</b> Navigator Audit Server <b>Utility Host 6:</b> Navigator Metadata Server <b>Utility Host 7:</b> Reports Manager <b>Utility Host 8:</b> Service Monitor	On Ga Hu Hiv Flu Gat cor

## 200 - 500 Worker Hosts with High Availability

Master Hosts	Utility Hosts	Gateways
<b>Master Host 1:</b> NameNode JournalNode FailoverController ZooKeeper Kudu master <b>Master Host 2:</b> NameNode JournalNode FailoverController ZooKeeper Kudu master <b>Master Host 3:</b> YARN ResourceManager ZooKeeper JournalNode Kudu master <b>Master Host 4:</b> YARN ResourceManager ZooKeeper JournalNode <b>Master Host 5:</b>	<b>Utility Host 1:</b> Cloudera Manager <b>Utility Host 2:</b> Hive Metastore Impala Catalog Server Impala StateStore Oozie <b>Utility Host 3:</b> Activity Monitor <b>Utility Host 4:</b> Host Monitor <b>Utility Host 5:</b> Navigator Audit Server <b>Utility Host 6:</b> Navigator Metadata Server <b>Utility Host 7:</b> Reports Manager <b>Utility Host 8:</b> Service Monitor	Or Ga Hu Hiv Flu Ga co

JobHistory Server Spark History Server ZooKeeper JournalNode We recommend no more than three Kudu masters.		
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## 500 -1000 Worker Hosts with High Availability

Master Hosts	Utility Hosts	Gateways
<b>Master Host 1:</b> NameNode JournalNode FailoverController ZooKeeper Kudu master <b>Master Host 2:</b> NameNode JournalNode FailoverController ZooKeeper Kudu master <b>Master Host 3:</b> YARN ResourceManager ZooKeeper JournalNode Kudu master <b>Master Host 4:</b> YARN ResourceManager ZooKeeper JournalNode <b>Master Host 5:</b> JobHistory Server Spark History Server ZooKeeper JournalNode We recommend no more than three Kudu masters.	<b>Utility Host 1:</b> Cloudera Manager <b>Utility Host 2:</b> Hive Metastore Impala Catalog Server Impala StateStore Oozie <b>Utility Host 3:</b> Activity Monitor <b>Utility Host 4:</b> Host Monitor <b>Utility Host 5:</b> Navigator Audit Server <b>Utility Host 6:</b> Navigator Metadata Server <b>Utility Host 7:</b> Reports Manager <b>Utility Host 8:</b> Service Monitor	On Gat Hu Hiv Flu Gat cor