Spark 初始

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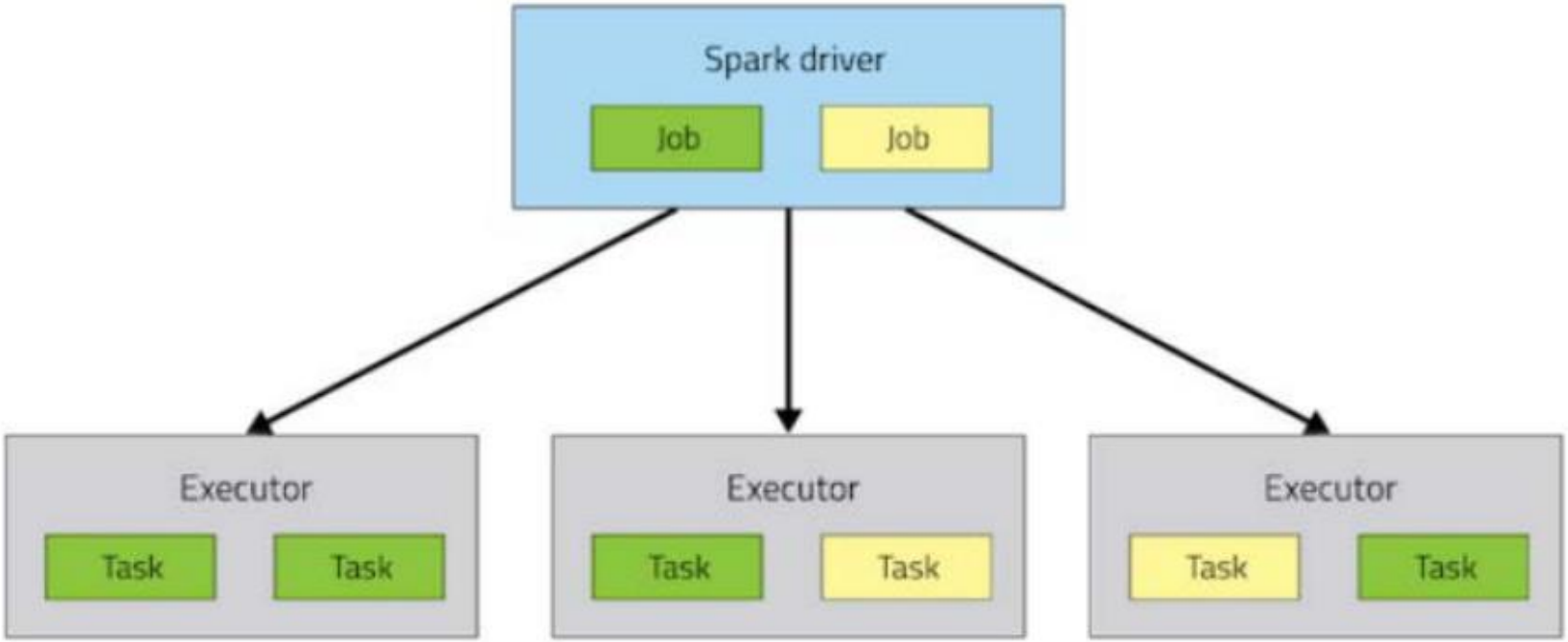
为什么要用YARN

- Why YARN?
- Hadoop MR
- Spark
- MPI
- Storm
- 共享数据，更方便的管理集群

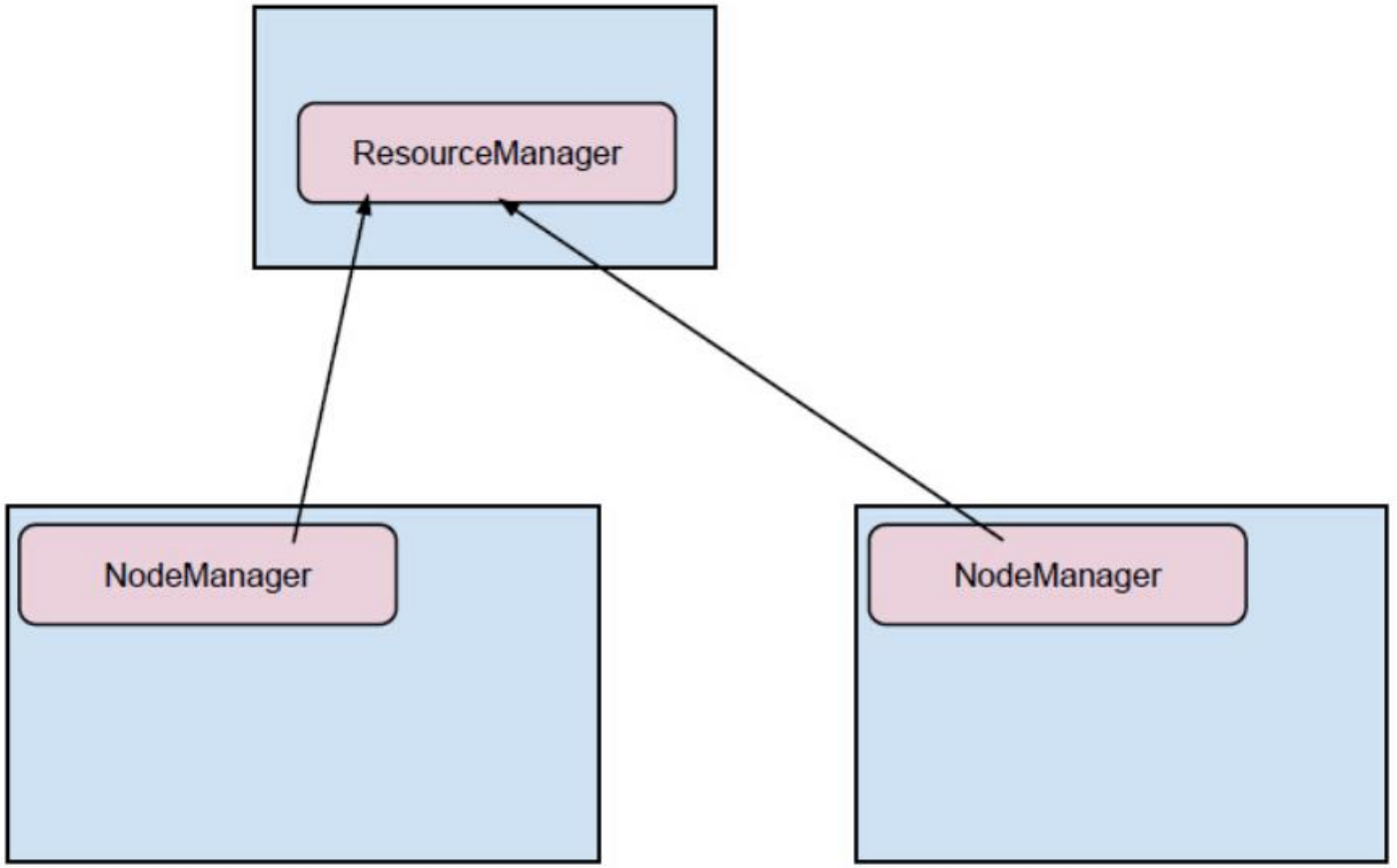
YARN组件

- ResourceManager
- ApplicationMaster
- NodeManager
- Container

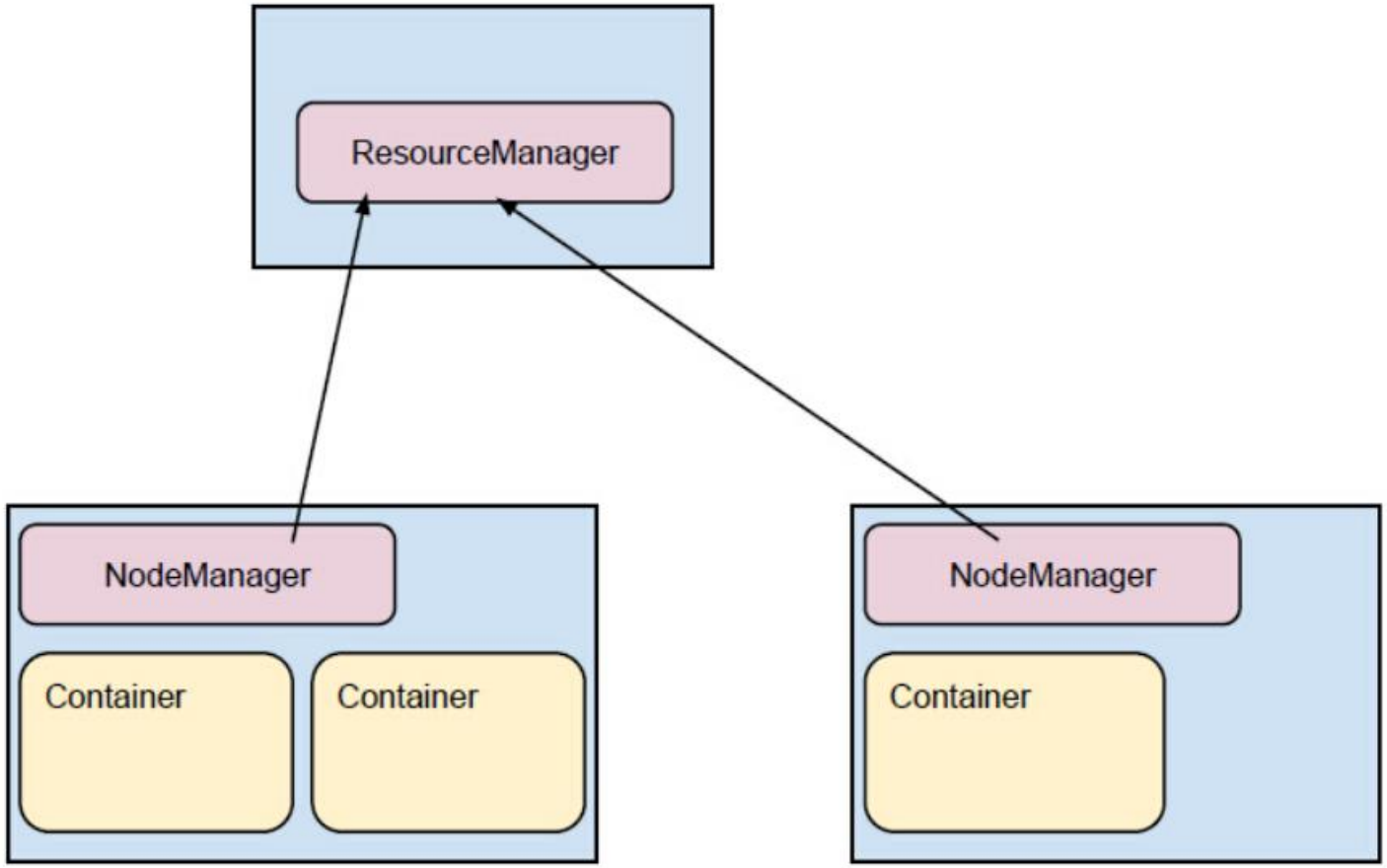
Spark架构图


Spark driver
Job
Job
Executor
Task
Task
Executor
Task
Task
Executor
Task
Task

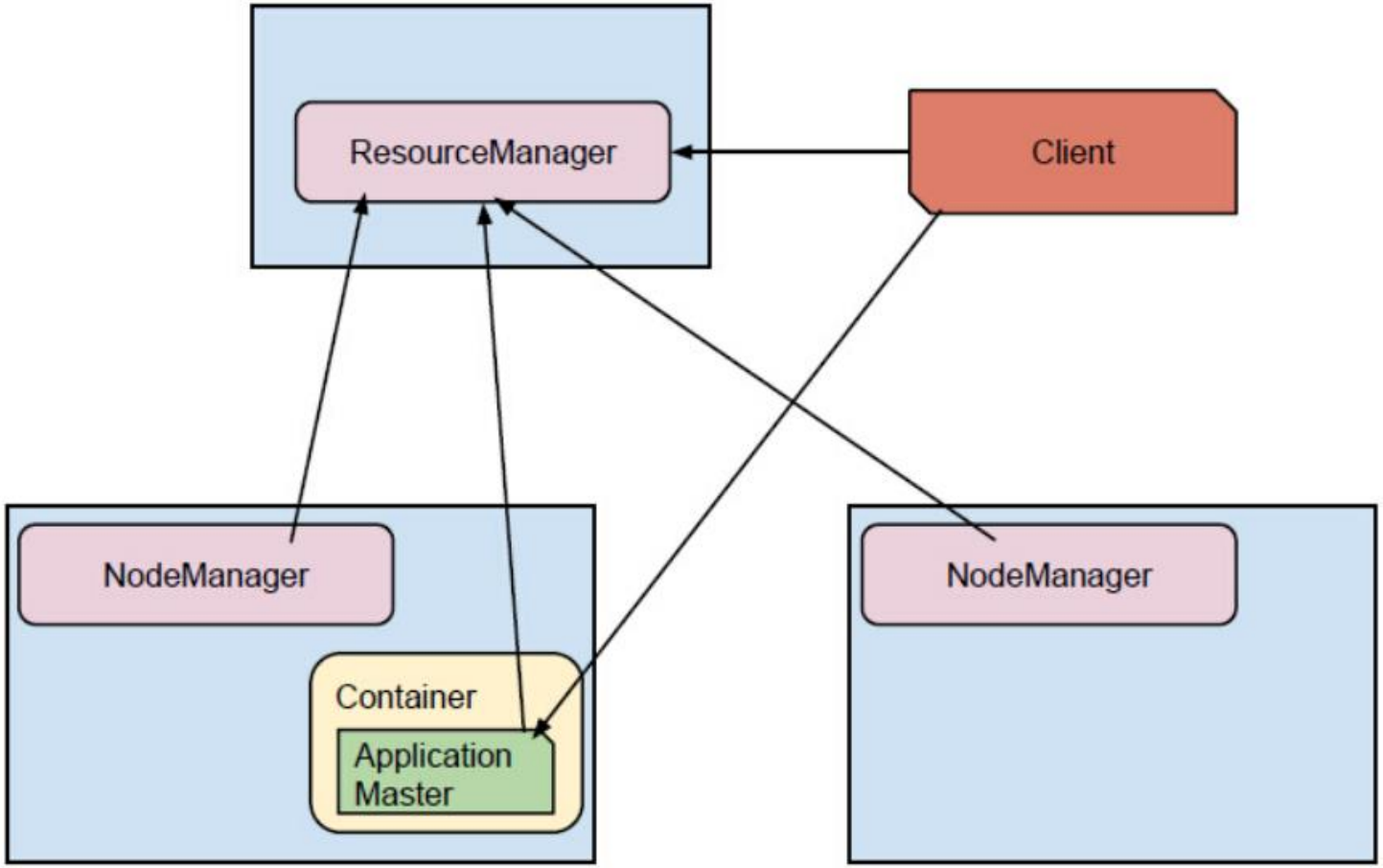
YARN架构图



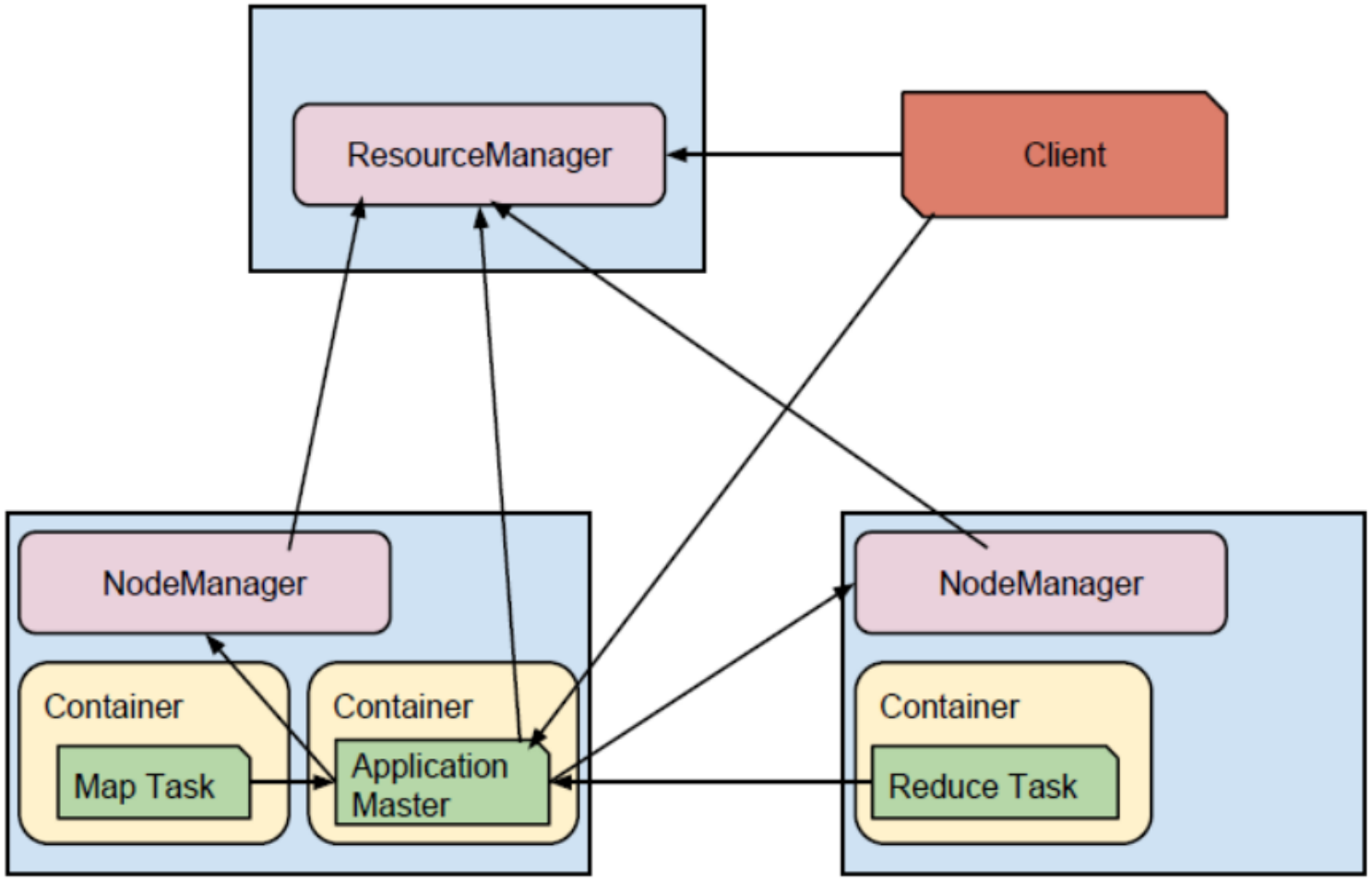
YARN架构图


ResourceManager
NodeManager
Container
Container
NodeManager
Container

YARN架构图

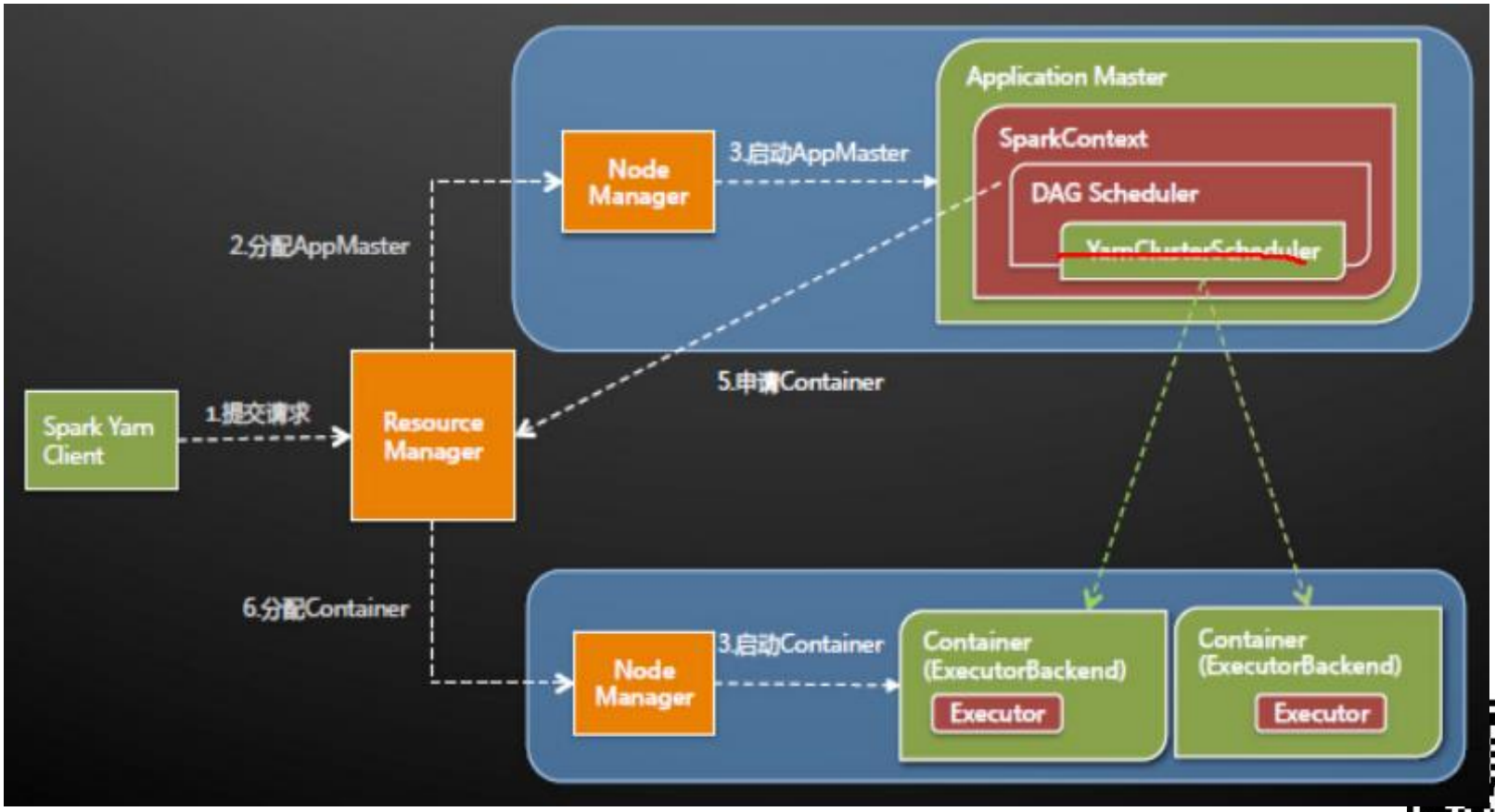

ResourceManager
Client
NodeManager
Container
Application Master
NodeManager

YARN架构图

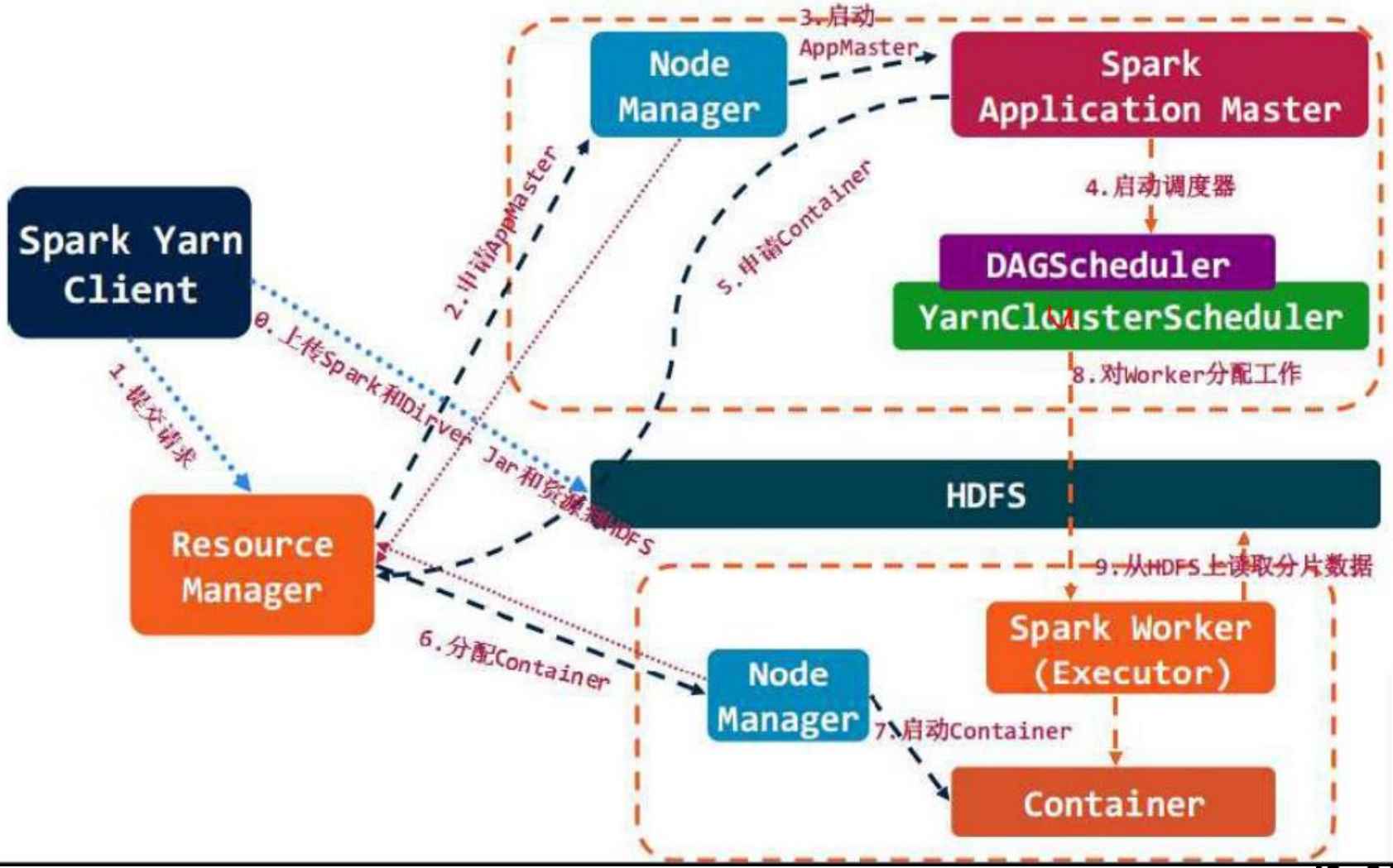

ResourceManager
Client
NodeManager
Container
Map Task
Container
Application Master
NodeManager
Container
Reduce Task

YARN架构图

- 每个SparkContext对应一个ApplicationMaster
- 每个Executor对应一个Container

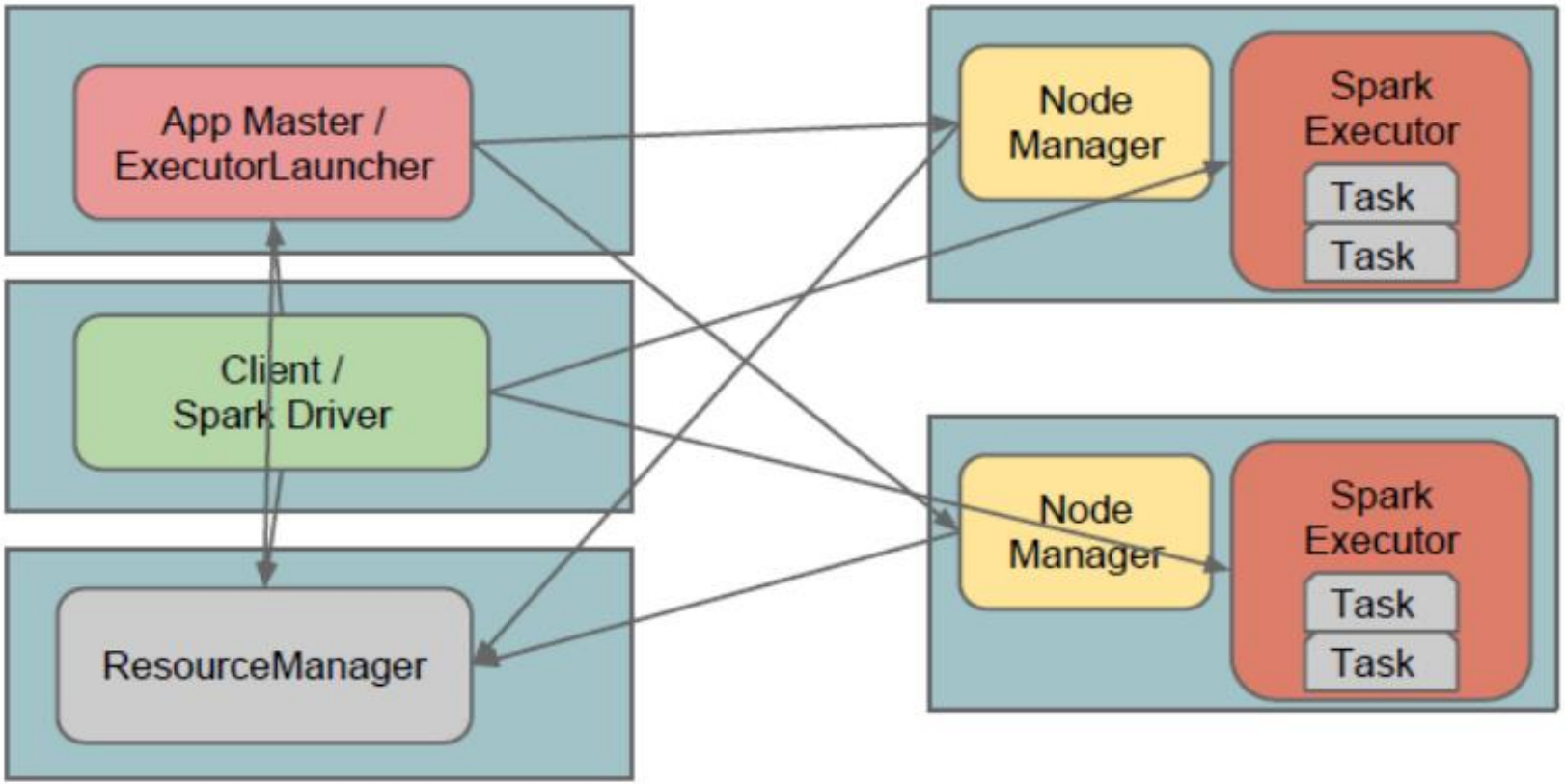


YARN架构图


Node Manager
3.启动AppMaster
Spark Application Master
4.启动调度器
DAGScheduler
YarnClusterScheduler
8.对Worker分配工作
Spark Yarn Client
2.申请AppMaster
5.申请Container
0.上传Spark和Dirver Jar和资源到HDFS
1.提交请求
HDFS
Resource Manager
9.从HDFS上读取分片数据
Spark Worker (Executor)
6.分配Container
Node Manager
7.启动Container
Container

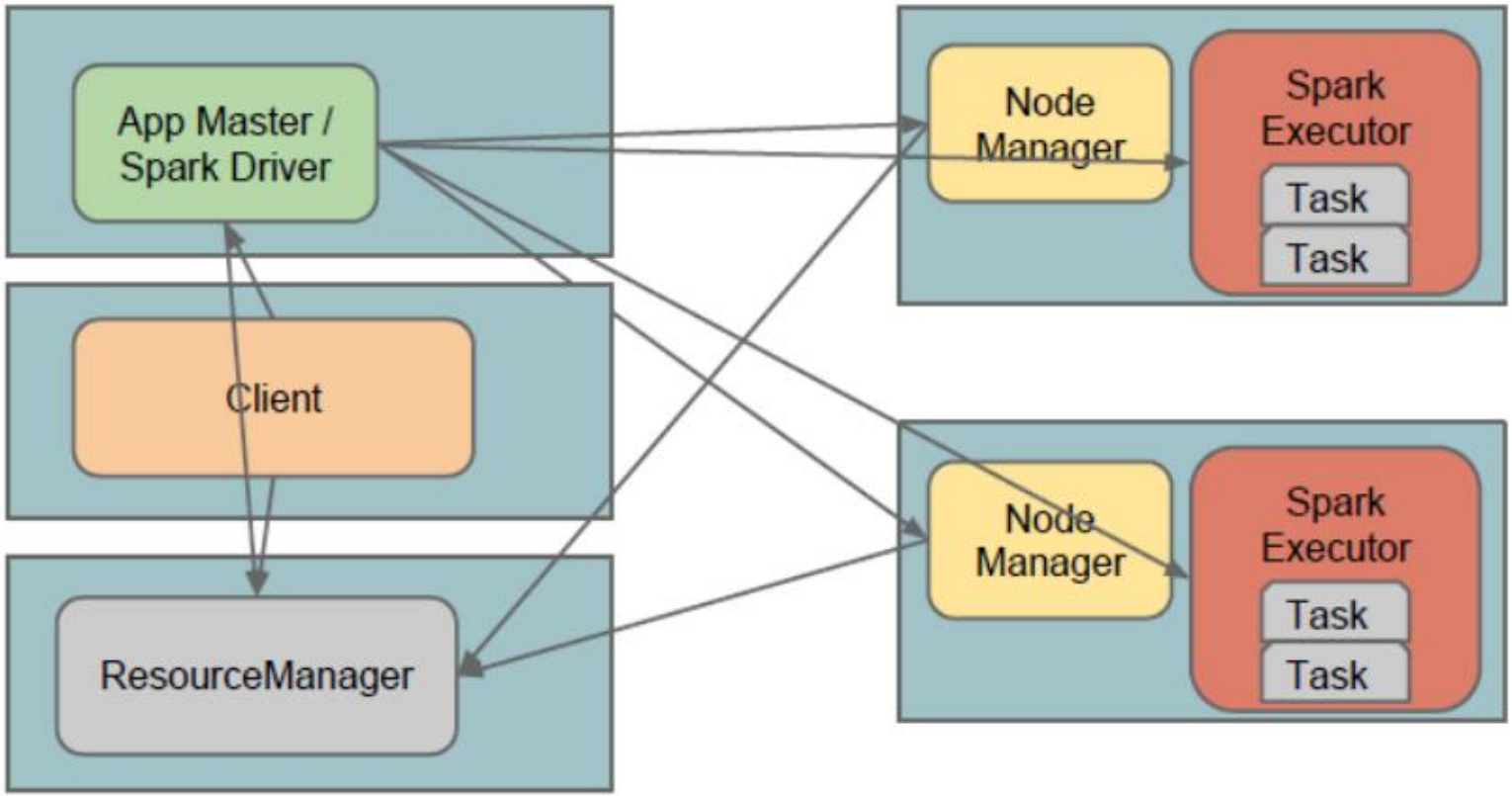
YARN client

- YarnClientClusterScheduler
- Client和Driver运行行在一起，AM只用用来获取资源



YARN cluster

- YarnClusterScheduler
- Driver和AM运行行在一一起，Client可以跑远



执行作业

- 确保HADOOP_CONF_DIR或YARN_CONF_DIR指向hadoop集群上含有客户端配置文档的目录。
- 这里有两种发布模式可以被用于在YARN上发布Spark应用，在yarn-cluster模式中，Spark驱动程序跑在一个集群上由YARN管理的Application Master线程中，并且客户端会消失当初始化应用后。在yarn-client模式中，驱动程序跑在客户端线程中，并且Application Master仅被用于请求YARN上面的资源。
- 不像Spark的standalone和Mesos模式，他们需要指定master的地址通过具体的”master”参数。在YARN模式中，资源管理ResourceManager的地址是自动由hadoop配置读取出来的，因此，主要的参数就是简单的yarn-client或者yarn-cluster。
- 去发布一个Spark应用通过yarn-cluster模式：
- ./bin/spark-submit --class path.to.your.Class --mater yarn-cluster [options] <app jar> [app options]

执行作业

- ./bin/spark-submit --class org.apace.spark.examples.SparkPi \
- --master yarn-cluster \
- --num-executors 3 \
- --driver-memory 4g \
- --executor-memory 2g \
- --executor-cores 1 \
- Lib/spark-examples*.jar \
- 10

执行作业

- 上面的代码将开始一个YARN客户端程序有一个默认的Application Master.然后SparkPi将会被作为一个Application Master的子线程运行。客户端将周期地将更新的状态告诉Application Master并将他们显示出来。客户端将推出一旦你的应用跑完了。
- 去发布一个Spark应用在yarn-client模式，一样的，只是用yarn-client取代yarn-cluster。去运行spark-shell：
- ./bin/spark-shell –master yarn-client