# Apache Myriad UI

Notes

# Overview

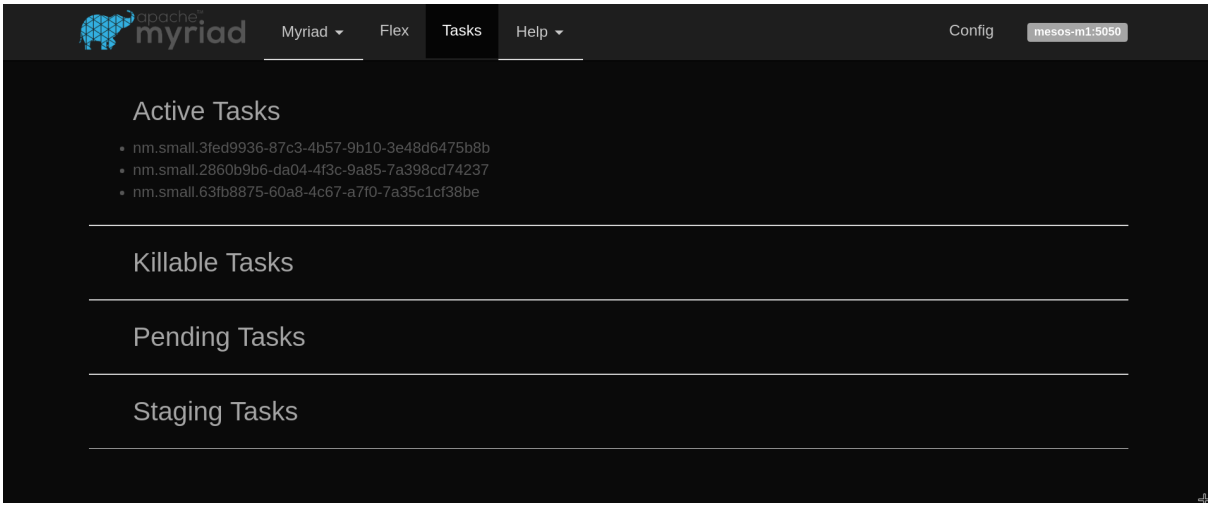
In the context of umbrella JIRA ticket:

https://issues.apache.org/jira/browse/MYRIAD-279 (Reworking a new UI design)

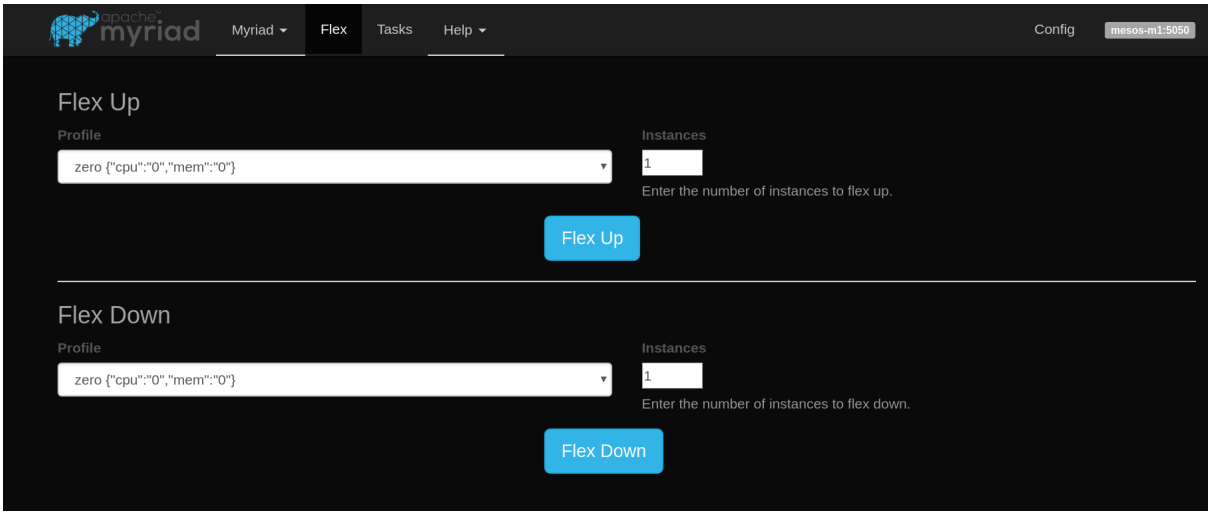
We are planning to modify the Myriad UI with a lot of new ideas, dashboards, metrics, alerts and so on. This document put together all the new ideas and will be development design document.

# Myriad UI Screenshots

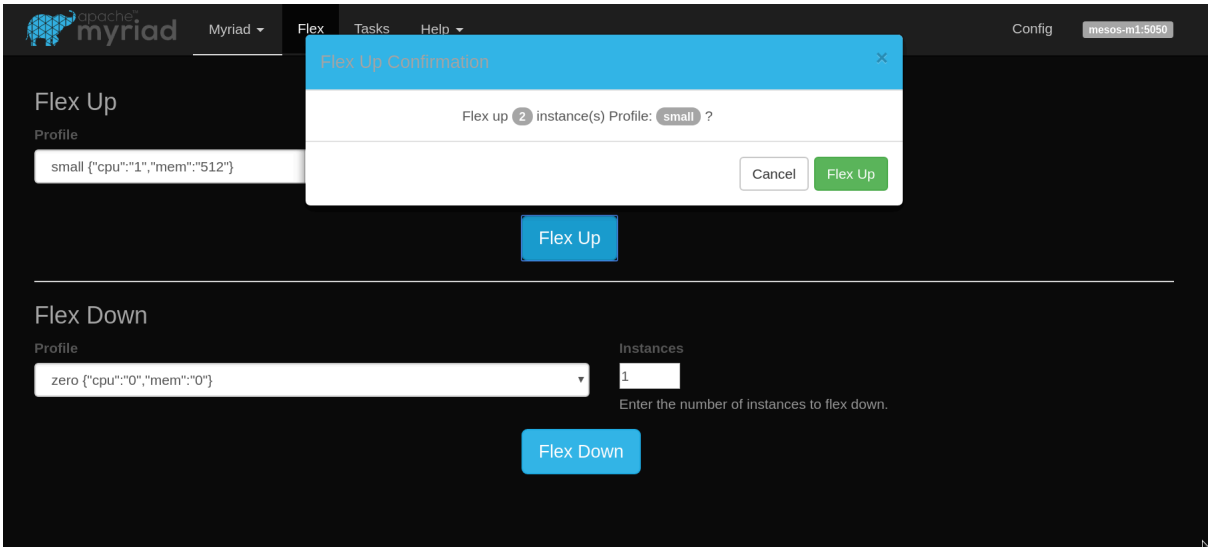
## Myriad Tasks



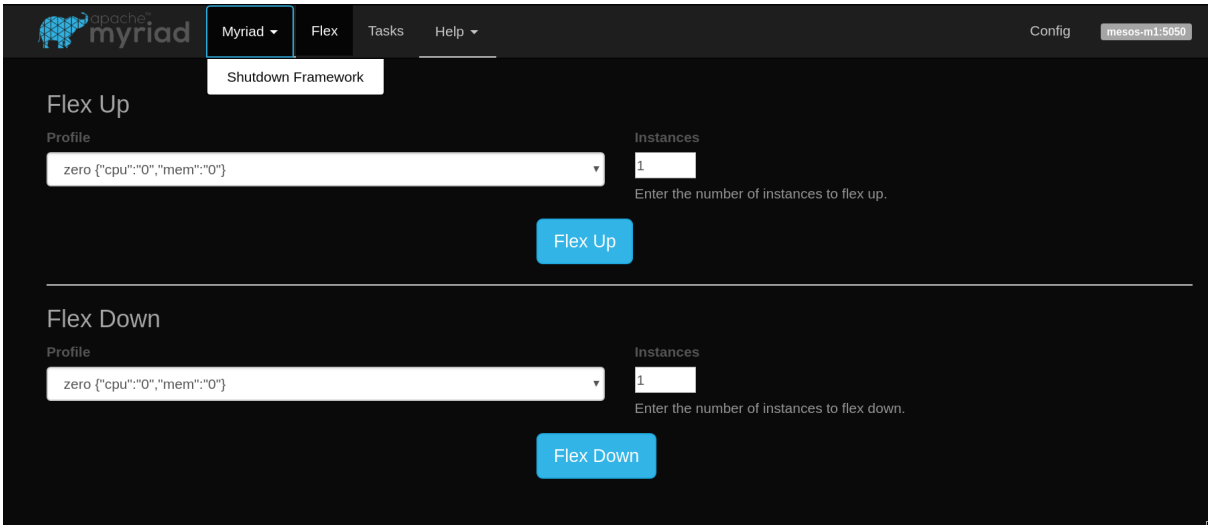
## Myriad Flex



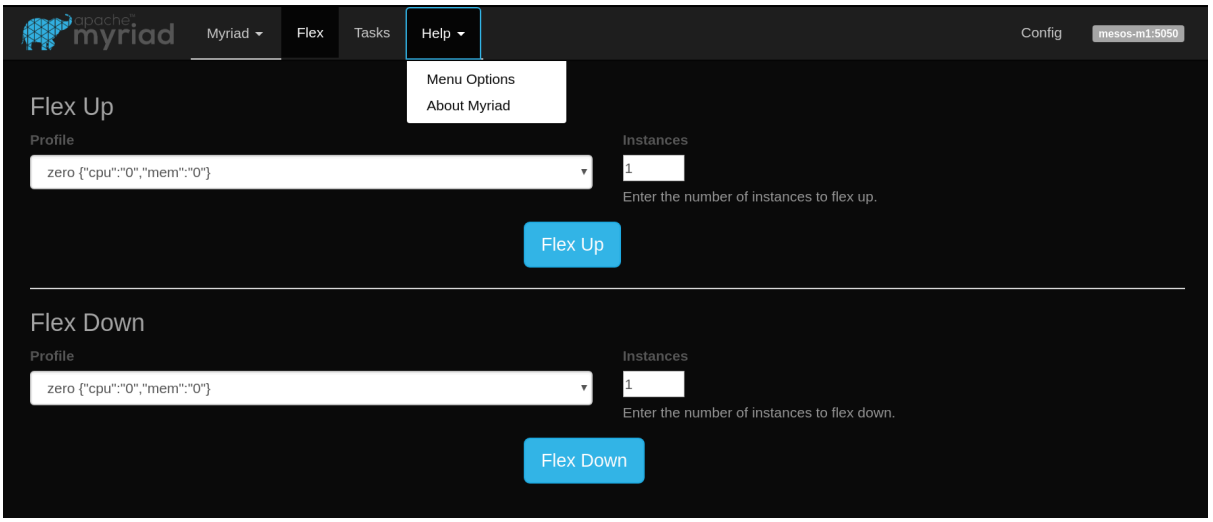

## Myriad Flex Up



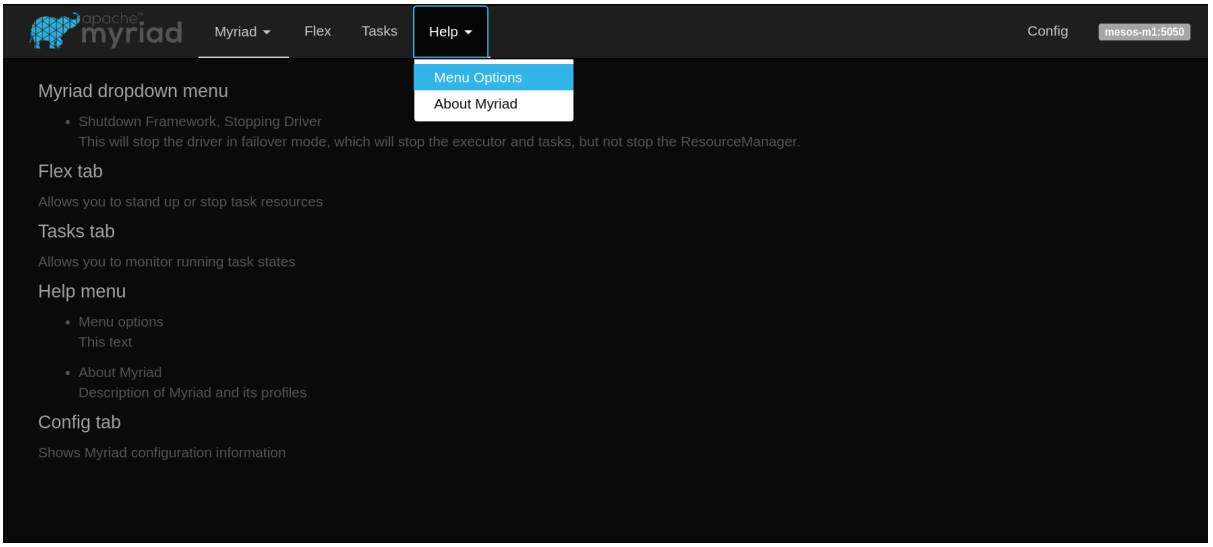

## Myriad Menu -> Shutdown Framework



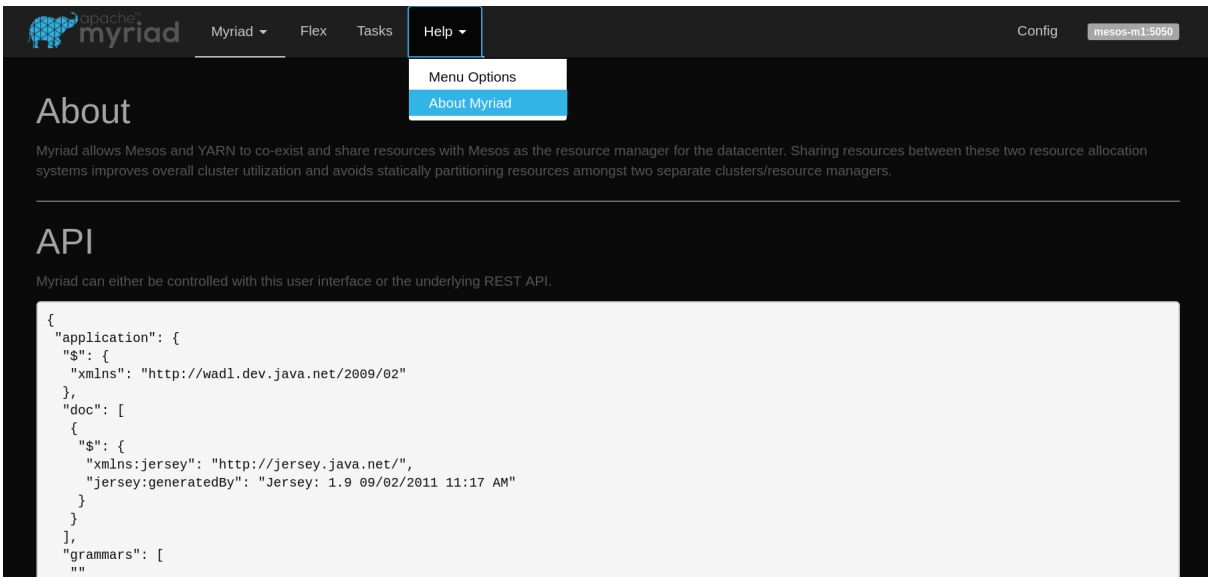

Myriad Help




Myriad Help -> Options




Myriad Help -> About




# New Myriad UI Proposal

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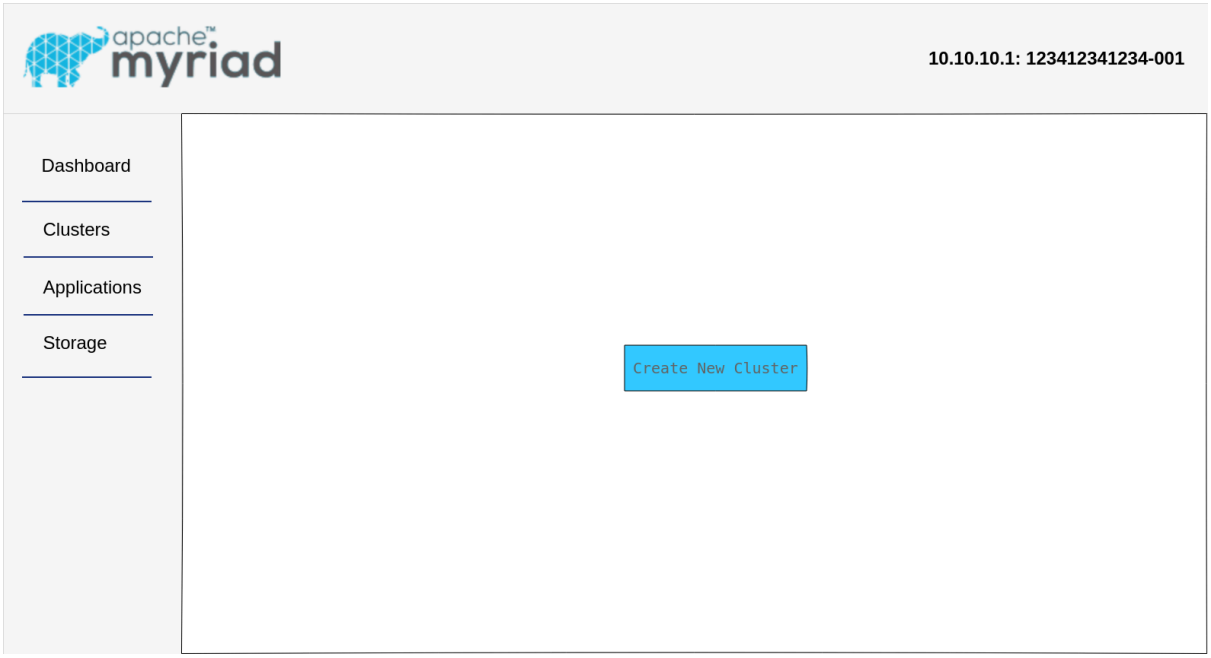
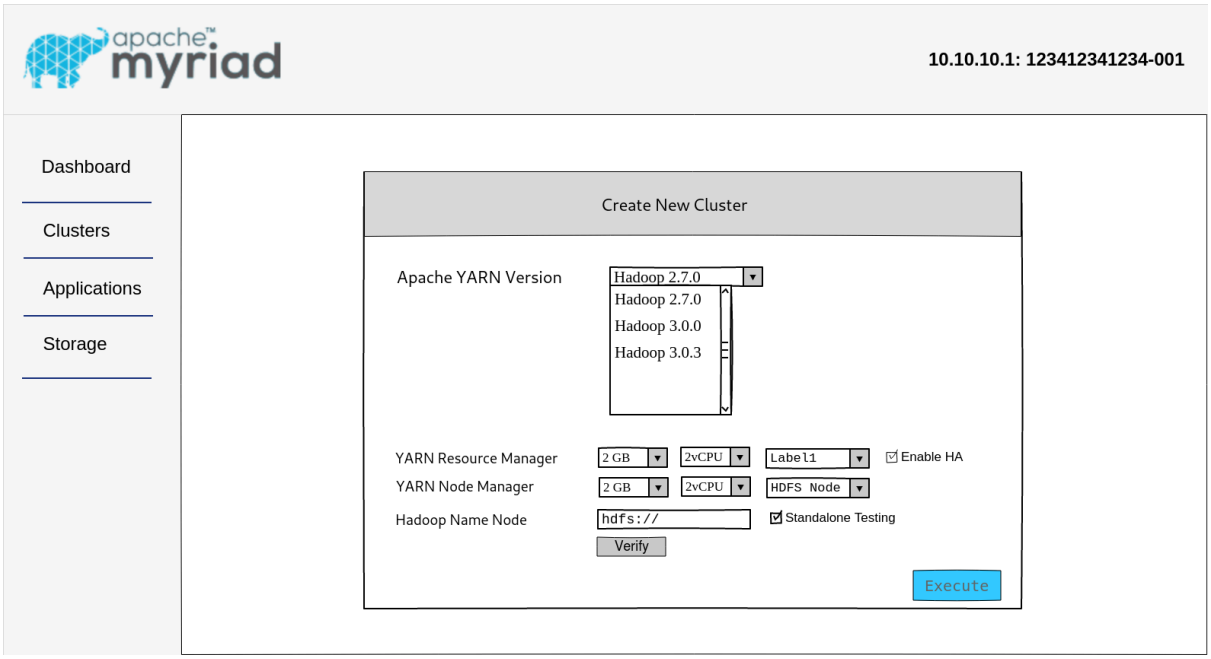
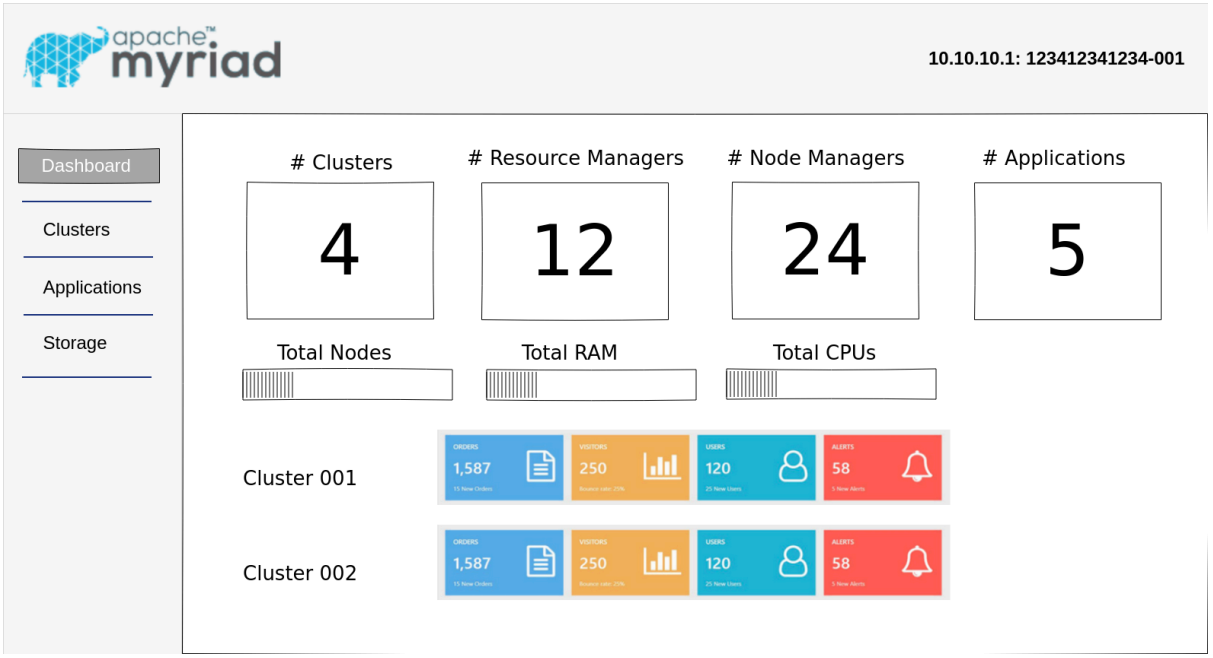
The following are a set of screenshots, a soft of prototype for the next generation Myriad UI.


apache myriad
10.10.10.1: 123412341234-001
Dashboard
Clusters
Applications
Storage
Create New Cluster


apache myriad
10.10.10.1: 123412341234-001
Dashboard
Clusters
Applications
Storage
Create New Cluster
Apache YARN Version
Hadoop 2.7.0
Hadoop 2.7.0
Hadoop 3.0.0
Hadoop 3.0.3
YARN Resource Manager
2 GB
2vCPU
Label1
Enable HA
YARN Node Manager
2 GB
2vCPU
HDFS Node
Hadoop Name Node
hdfs://
Standalone Testing
Verify
Execute




## Technology for the New Myriad UI

We are checking the used of Patternfly The open interface project. This project is ASL 2.0 so we can use it without license issues in Apache Myriad.

# Hadoop YARN API References

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- Hadoop YARN 2.7.0 Introduction to the web services REST API's
- Hadoop YARN 2.7.0 ResourceManager REST API's
- Hadoop YARN 2.7.0 NodeManager REST API's
- Metrics YARN Context
- How to monitor Hadoop metrics

# Hadoop YARN Metrics

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> From Apache Ambari 2.6.22 from Hortonworks (HDP 2.6.5 -> Apache Hadoop 2.7.3) (reference)

## YARN Applications

Metrics to see status of Applications on the YARN Cluster.

| Metrics | Description |
|---|---|
| **Applications By Running Time** | Number of apps by running time in 4 categories by default ( < 1 hour, 1 ~ 5 hours, 5 ~ 24 hours, > 24 hours). |
| **Apps Running vs Pending** | The number of running apps vs the number of pending apps in the cluster. |
| **Apps Submitted vs Completed** | The number of submitted apps vs the number of completed apps in the cluster. |
| **Avg AM Launch Delay** | The average time taken from allocating an AM container to launching an AM container. |
| **Avg AM Register Delay** | The average time taken from RM launches an AM container to AM registers back with RM. |

## YARN NodeManagers

Metrics to see status of YARN NodeManagers on the YARN cluster.

| Row | Metrics | Description |
|---|---|---|
| **NUM CONTAINERS** | **Containers Running** | Current number of running containers. |
| | **Containers Failed** | Accumulated number of failed containers. |
| | **Containers Killed** | Accumulated number of killed containers. |
| | **Containers Completed** | Accumulated number of completed containers. |
| **MEMORY UTILIZATION** | **Memory Available** | Available memory for allocating containers on this node. |
| | **Used Memory** | Used memory by containers on this node. |
| **DISK UTILIZATION** | **Disk Utilization for Good Log Dirs** | Disk utilization percentage across all good log directories. |
| | **Disk Utilization for Good Local Dirs** | Disk utilization percentage across all good local directories. |
| | **Bad Log Dirs** | Number of bad log directories. |
| | **Bad Local Dirs** | Number of bad local directories. |

| | | |
|---|---|---|
| **AVE CONTAINER LAUNCH DELAY** | **Ave Container Launch Delay** | Average time taken for a NM to launch a container. |
| **RPC METRICS** | **RPC Avg Processing Time** | Average time for processing a RPC call. |
| | **RPC Avg Queue Time** | Average time for queuing a PRC call. |
| | **RPC Call Queue Length** | The length of the RPC call queue. |
| | **RPC Slow Calls** | Number of slow RPC calls. |
| **JVM METRICS** | **Heap Mem Usage** | Current heap memory usage. |
| | **NonHeap Mem Usage** | Current non-heap memory usage. |
| | **GC Count** | Accumulated GC count over time. |
| | **GC Time** | Accumulated GC time over time. |
| **LOG4J METRICS** | **LOG ERROR** | Number of ERROR logs. |
| | **LOG FATAL** | Number of FATAL logs. |

## YARN Queues

Metrics to see status of Queues on the YARN cluster.

| Row | Metrics | Description |
|---|---|---|
| **NUM APPS** | **Apps Runnning** | Current number of running applications. |
| | **Apps Pending** | Current number of pending applications. |
| | **Apps Completed** | Accumulated number of completed applications over time. |
| | **Apps Failed** | Accumulated number of failed applications over time. |
| | **Apps Killed** | Accumulated number of killed applications over time. |
| | **Apps Submitted** | Accumulated number of submitted applications over time. |

| | | |
|---|---|---|
| **NUM CONTAINERS** | **Containers Running** | Current number of running containers. |
| | **Containers Pending** | Current number of pending containers. |
| | **Containers Reserved** | Current number of Reserved containers. |
| | **Total Containers Allocated** | Accumulated number of containers allocated over time. |
| | **Total Node Local Containers Allocated** | Accumulated number of node-local containers allocated over time. |
| | **Total Rack Local Containers Allocated** | Accumulated number of rack-local containers allocated over time. |
| | **Total OffSwitch Containers Allocated** | Accumulated number of off-switch containers allocated over time. |

| | | |
|---|---|---|
| **MEMORY UTILIZATION** | **Allocated Memory** | Current amount of memory allocated for containers. |
| | **Pending Memory** | Current amount of memory asked by applications for allocating containers. |
| | **Available Memory** | Current amount of memory available for allocating containers. |
| | **Reserved Memory** | Current amount of memory reserved for containers. |
| | **Memory Used by AM** | Current amount of memory used by AM containers. |
| **CONTAINER ALLOCATION DELAY** | **Ave AM Container Allocation Delay** | Average time taken to allocate an AM container since the AM container is requested. |

YARN ResourceManager

Metrics to see status of ResourceManagers on the YARN cluster.

| Row | Metrics | Description |
|---|---|---|
| **RPC STATS** | **RPC Avg Processing / Queue Time** | Average time for processing/queuing a RPC call. |
| | **RPC Call Queue Length** | The length of the RPC call queue. |
| | **RPC Slow calls** | Number of slow RPC calls. |
| **MEMORY USAGE** | **Heap Mem Usage** | Current heap memory usage. |
| | **NonHeap Mem Usage** | Current non-heap memory usage. |
| **GC STATS** | **GC count** | Accumulated GC count over time. |
| | **GcTime** | Accumulated GC time over time. |
| **LOG ERRORS** | **Log Error / Fatal** | Number of ERROR/FATAL logs. |
| **AUTHORIZATION & AUTHENTICATION FAILURES** | **RPC Authorization Failures** | Number of authorization failures. |
| | **RPC Authentication Failures** | Number of authentication failures. |

## YARN TimelineServer

[Reference Timelime Server]

Metrics to see the overall status for TimelineServer.

| Row | Metrics | Description |
|---|---|---|
| **DATA READS** | **Timeline Entity Data Reads** | Accumulated number of read operations. |
| | **Timeline Entity Data Read time** | Average time for reading a timeline entity. |
| **DATA WRITES** | **Timeline Entity Data Write** | Accumulated number of write operations. |
| | **Timeline Entity Data Write Time** | Average time for writing a timeline entity. |
| **JVM METRICS** | **GC Count** | Accumulated GC count over time. |
| | **GC Time** | Accumulated GC time over time. |
| | **Heap Usage** | Current heap memory usage. |
| | **NonHeap Usage** | Current non-heap memory usage. |

## YARN MR JobHistory Server

MapReduce has two REST APIs:

1. MapReduce Application Master REST API
2. MapReduce History Server REST API

Metrics to see status of the Job History Server.

| Row | Metrics | Description |
| --- | --- | --- |
| **JVM METRICS** | **GC Count** | Accumulated GC count over time. |
| | **GC Time** | Accumulated GC time over time. |
| | **Heap Mem Usage** | Current heap memory usage. |
| | **NonHeap Mem Usage** | Current non-heap memory usage. |