



# Hardware Requirements

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## Motadata Installation

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# 1 Introduction

Motadata has a powerful engine that collects the information from your network and process it to alert you in critical cases. Motadata along with the engine uses different components (GUI, storage device, memory etc.) so you can conveniently use Motadata through a simple user interactive screen.

Based on the network and its requirements, Motadata offers following types of installation.

- Standalone Server
- Distributed Server (Standalone + RPE Server)
- HA Server (Standalone + Standalone)

## Important Points!

- The CPU should support SSE 4.2 (or higher) instruction set. (Read more: [https://groups.google.com/forum/#!topic/clickhouse/mjNwX\\_OtsZM](https://groups.google.com/forum/#!topic/clickhouse/mjNwX_OtsZM))
- For deployment over WAN, **2 MBPS** bandwidth should be available between Master and RPE.
- In hardware calculations, Assumed Cores are Virtual Core. When you calculate the Physical Core so please consider 1:2 Ratio for core calculation

## 2 Hardware Requirements

### 2.1 Hardware Requirement for NMS

Installation size	Number of Monitors	Installation Type	CPU	Memory	Disk (GB) 6 Months
Extra Small	< 500	Stand Alone	8 core	8 GB	300 GB
Small	500 to 1500	Stand Alone	12 core	24 GB	300 GB
Medium	1500 to 2500	Stand Alone	16 core	32 GB	300 GB
Large	2500 to 5000	Master Server	32 core	64 GB	500 GB
		Data Node	24 core	32 GB	1 TB
XLarge	5000 to 10000	Master Server	32 Core	64 GB	500 GB
		Data Node	48 Core	48 GB	2 TB
		RPE	32 Core	64 GB	200 GB

Note:

- The disk size above is for basic installation only. The additional DB storage requirement to store polling data is 2.7 MB/per device/per day. Calculate your required disk size accordingly.
- For HA, you need to replicate the same hardware with an additional Observer server
- Metric Polling interval will be 5 minutes and Availability polling interval will be 120 Seconds.

Hardware Requirements					
Installation Type	Installation Unit	Installation Type	CPU	Memory	Disk
HA	Observer Server	Single box	4 core	8 GB	50 GB

### 2.2 Hardware Requirements for Ping Device

Installation size	Number of Monitors	Installation Type	CPU	Memory	Disk (GB) 6 Months
Small	< 15000	Stand Alone	16 core	32 GB	300 GB
Medium	15000 to 30000	Stand Alone	12 core	24 GB	400 GB
Large	30000 to 50000	Master	16 core	32 GB	500 GB
		RPE	16 core	32 GB	200 GB



## 2.3 Flow Events

In Motadata, DB Storage requirement per Flow Event is 200 Bytes. Based on this, use the following table to identify suitable hardware size.

Rate of Flow/Second	Disk Space Required ( one time )	CPU	RAM
Up to 5000	85 GB	4 Core	4 GB
5000 to 10000	170 GB	6 Core	6 GB
10000 to 15000	255 GB	8 Core	8 GB
15000 to 20000	340 GB	10 Core	10 GB
20000 to 25000	425 GB	12 Core	12 GB

## 2.4 Log Events

In Motadata, DB Storage requirement per log Event is 100 Bytes. Based on this, use the following table to identify suitable hardware size for up to 1000 Logs/Second.

Rate of Log/Second	Disk Space Required ( Per Day )	CPU	RAM
Up to 500	5 GB	2 Core	2 GB
500 to 1000	10 GB	4 Core	4 GB

For more than 1000 EPS (up to 8000 EPS) we need additional (4 Core/4 GB RAM/ Additional data storage in Master) for every 2000 EPS log. For Example, 8000 Logs/Second, you will need 4 Log RPE Machine with each machine having configuration of (4GB/ 4 Core/Additional data storage in Master).

Assumption:

- 1) The Total disk space for Logs can be calculated based on actual retention period requested in the deployment.
- 2) The average size of the Event is considered as 100 bytes. In case it is more than 100 bytes, than EPS is considered in multiple of 100 bytes. Suppose the Average Event size is 180 bytes, then single event is considered as two events.
- 3) Full text search should be kept off.
- 4) RTT Should be less the 500 ms

## 2.5 IPAM

Hardware Requirements					
OS	Number of IP	Installation Type	CPU	Memory	Disk
Windows 7/10	1000	Stand Alone	4 core	4 GB	10 GB



## 3 Configuration Changes in Master

When you change the size of hardware, you also need to change some configuration values in Motadata backend. In this section, we'll see all the files that needs change. A table associated with file shall help you in choosing the right value.

### 3.1 Motadata Metric Configuration

File access command: `vi /motadata/motadata motadata-metric.config`

```
option -Xms1000m
option -Xmx3000m

option -Djava.rmi.server.hostname=0.0.0.0
option -Dcom.sun.management.jmxremote
option -Dcom.sun.management.jmxremote.port=35003
option -Dcom.sun.management.jmxremote.authenticate=false
option -Dcom.sun.management.jmxremote.ssl=false

option -XX:MaxDirectMemorySize=5g
option -Dsun.reflect.inflationThreshold=2147483647
option -Dcom.sun.CORBA.transport.ORBUseNIOSelectToWait=false
option -XX:+UseCompressedOops
option -XX:+UseParallelOldGC
option -d64
option -server
option -XX:+AggressiveOpts
option -Dio.netty.noPreferDirect=true
option -Dio.netty allocator.type=unpooled
option -Dio.netty.transport.outboundBufferEntrySizeOverhead=0
option -Dio.netty.transport.pendingWriteSizeOverhead=0
option -Djava.security.egd=file:/dev/./urandom

jre_order c
jvmdll ./jdk/jre/lib/amd64/server/libjvm.so

forcecwd .
stderr /dev/null
stdout /dev/null
```

Monitor Size	Value
< 500	-Xmx3000m
500 to 2500	-Xmx2000m
2500 to 5000	-Xmx3000m
5000 to 10000	-Xmx3000m

## 3.2 [Motadata RPE Master](#)

File access command: `vi /motadata/motadata motadata-rpe-master.config`

```
classpath lib/*.jar
classpath motadata-lib/*.jar
classpath plugin-lib/*.jar

option -Xms500m
option -Xmx1000m

option -Djava.rmi.server.hostname=0.0.0.0
option -Dcom.sun.management.jmxremote
option -Dcom.sun.management.jmxremote.port=35007
option -Dcom.sun.management.jmxremote.authenticate=false
option -Dcom.sun.management.jmxremote.ssl=false

option -XX:MaxDirectMemorySize=5g
option -Dsun.reflect.inflationThreshold=2147483647
option -Dcom.sun.CORBA.transport.ORBUseNIOSelectToWait=false
option -XX:+UseCompressedOops
option -XX:+UseParallelOldGC
option -d64
option -server
option -XX:+AggressiveOpts
option -Dio.netty.noPreferDirect=true
option -Dio.netty allocator.type=unpooled
option -Dio.netty.transport.outboundBufferEntrySizeOverhead=0
option -Dio.netty.transport.pendingWriteSizeOverhead=0
option -Djava.security.egd=file:/dev/./urandom

jre_order c
jvmdll ./jdk/jre/lib/amd64/server/libjvm.so

forcecwd .
stderr /dev/null
stdout /dev/null
```

Monitor Size	Value
500 to 2500	-Xmx6000m
2500 to 5000	-Xmx12000m
5000 to 10000	-Xmx16000m

### 3.3 Kernel

File access command: vi /motadata/motadata motadata.config

```
classpath lib/*.jar
classpath motadata-lib/*.jar
classpath plugin-lib/*.jar

option -Xms500m
option -Xmx800m

option -Dcom.sun.management.jmxremote.port=35004
option -Dcom.sun.management.jmxremote.authenticate=false
option -Dcom.sun.management.jmxremote.ssl=false
option -Djava.rmi.server.hostname=0.0.0.0

option -XX:MaxDirectMemorySize=5g
option -Dsun.reflect.inflationThreshold=2147483647
option -Dcom.sun.CORBA.transport.ORBUseNIOSelectToWait=false
option -XX:+UseCompressedOops
option -XX:+UseParallelOldGC
option -d64
option -server
option -XX:+AggressiveOpts
option -Dio.netty.noPreferDirect=true
option -Dio.netty allocator.type=unpooled
option -Dio.netty.transport.outboundBufferEntrySizeOverhead=0
option -Dio.netty.transport.pendingWriteSizeOverhead=0
option -Djava.security.egd=file:/dev/./urandom

jre_order c
jvmdll ./jdk/jre/lib/amd64/server/libjvm.so

forcewd .
stderr /dev/null
stdout /dev/null
```

Monitor Size	Value
< 500	-Xmx1000m
500 to 2500	-Xmx1000m
2500 to 5000	-Xmx1000m
5000 to 10000	-Xmx1000m

## 3.4 Jetty Configuration

File access command: `vi /motadata/motadata/config jetty-conf.yml`

```
root@ubuntu:/motadata/motadata/config# vi jetty-conf.yml
#jetty server http port
port: 8080

#jetty server https port
ssl-port: 8443

#jetty server min heap memory
min-memory: 1000

#jetty server max heap memory
max-memory: 2000
```

Monitor Size	Min Heap Memory	Max Heap Memory
< 500	1000	2000
500 to 2500	5000	10000
2500 to 5000	10000	15000
5000 to 10000	20000	30000

## 4 [Configuration Changes in RPE](#)

Similar to master server, you also need to make changes in RPE backend. In this section, we'll see all the files that needs change. A table associated with file shall help you in choosing the right value.

### 4.1 [Motadata Metric Configuration](#)

**File access command:** `vi /motadata/motadata motadata-metric.config`

```
option -Xms1000m
option -Xmx3000m

option -Djava.rmi.server.hostname=0.0.0.0
option -Dcom.sun.management.jmxremote
option -Dcom.sun.management.jmxremote.port=35003
option -Dcom.sun.management.jmxremote.authenticate=false
option -Dcom.sun.management.jmxremote.ssl=false

option -XX:MaxDirectMemorySize=5g
option -Dsun.reflect.inflationThreshold=2147483647
option -Dcom.sun.CORBA.transport.ORBUseNIOSelectToWait=false
option -XX:+UseCompressedOops
option -XX:+UseParallelOldGC
option -d64
option -server
option -XX:+AggressiveOpts
option -Dio.netty.noPreferDirect=true
option -Dio.netty allocator.type=unpooled
option -Dio.netty.transport.outboundBufferEntrySizeOverhead=0
option -Dio.netty.transport.pendingWriteSizeOverhead=0
option -Djava.security.egd=file:/dev/./urandom

jre_order c
jvmdll ./jdk/jre/lib/amd64/server/libjvm.so

forcecwd .
stderr /dev/null
stdout /dev/null
```

Monitor Size	Value
500 to 2500	-Xmx4000m
2500 to 5000	-Xmx8000m

## 4.2 Motadata RPE Client

File access command: vi /motadata/motadata motadata-rpe-client.config

```
classpath lib/*.jar
classpath motadata-lib/*.jar
classpath plugin-lib/*.jar

option -Xms500m
option -Xmx1000m

option -Djava.rmi.server.hostname=0.0.0.0
option -Dcom.sun.management.jmxremote
option -Dcom.sun.management.jmxremote.port=35007
option -Dcom.sun.management.jmxremote.authenticate=false
option -Dcom.sun.management.jmxremote.ssl=false

option -XX:MaxDirectMemorySize=5g
option -Dsun.reflect.inflationThreshold=2147483647
option -Dcom.sun.CORBA.transport.ORBUseNIOSelectToWait=false
option -XX:+UseCompressedOops
option -XX:+UseParallelOldGC
option -d64
option -server
option -XX:+AggressiveOpts
option -Dio.netty.noPreferDirect=true
option -Dio.netty allocator.type=unpooled
option -Dio.netty.transport.outboundBufferEntrySizeOverhead=0
option -Dio.netty.transport.pendingWriteSizeOverhead=0
option -Djava.security.egd=file:/dev/./urandom

jre_order c
jvmdll ./jdk/jre/lib/amd64/server/libjvm.so

forcecwd .
stderr /dev/null
stdout /dev/null
```

Monitor Size	Value
Up to 1500	1
Up to 3000	2

## 5 Polling Process and Queue Configuration

No. of Monitors	Ping Process	Ping Queue	Metric Process	Metric Queue	Faulty Process	Faulty Queue
500	1	100	4	20	1	3
1000	2	100	10	20	3	3
1500	2	100	20	15	3	3



## 6 NCM

- As a part of NCM, we recommend to put up an auto job of backup for 300 devices at an interval of every 4 hours to get an optimum performance.
- We have concluded that 50 SLA are working fine with each SLA have 30-35 Monitor with 10k normal monitor and 1k NCM monitor polling.

## Keep in touch

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