

Measurements

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Retrieves measurements collected by the Monitoring and Automation Agents for your MongoDB processes, databases, and hardware disks. Monitoring Agents collect process and database measurements using MongoDB diagnostic commands, including `serverStatus` and `dbStats`. Automation Agents collect measurements for servers that run managed `mongod` and `mongos` processes.

Query Parameters

When you issue a GET command to retrieve measurements through the measurements endpoint, you must include the `granularity` parameter and either the `period` or `start` and `end` parameters.

Each endpoint supports the following query parameters:

Parameter	Description
<code>granularity</code>	<p>An ISO-8601 -formatted time period that specifies the interval between measurement data points. For example, <code>PT30S</code> specifies 30-second granularity.</p> <p>The supported values for this parameter are the same as are available in the Granularity drop-down list when you view metrics in the Ops Manager interface.</p>
<code>period</code>	<p>How far back in the past to retrieve measurements, as specified by an ISO-8601 period string. For example, setting <code>PT24H</code> specifies 24 hours. An ISO-8601-formatted time period that specifies how far back in the past to query. For example, to request the last 36 hours, specify: <code>period=P1DT12H</code>.</p>
<code>start</code>	<p>The time at which to start retrieving measurements, as specified by an ISO-8601 timestamp string. If you specify <code>start</code> you must also specify <code>end</code>.</p>
<code>end</code>	<p>The time at which to stop retrieving measurements, as specified by an ISO-8601 timestamp string. If you specify <code>end</code> you must also specify <code>start</code>.</p>

Parameter	Description
m	<p>Specifies which measurements to return. If m is not specified, all measurements are returned.</p> <p>To specify multiple values for m, you must repeat the m parameter. For example:</p> <pre>../measurements?m=CONNECTIONS&m=OPCOUNTER_CMD&m=OPCOUNTER_QUERY</pre> <p>You must specify measurements that are valid for the host. Ops Manager returns an error if any specified measurements are invalid. For available measurements, see Measurement Types.</p>

Endpoints

Get Host, Process, and System Measurements

You must include the `granularity` parameter and either the `period` or `start` and `end` parameters.

```
GET /api/public/v1.0/groups/GROUP-ID/hosts/HOST-ID/measurements?granularity=ISO-8601-P
```

Host measurements provide data on the state of the MongoDB process. The Monitoring Agent collects host measurements through the MongoDB `serverStatus` [↗](#) and `dbStats` [↗](#) commands.

System and process measurements provide data on the CPU usage of the servers that run MongoDB. The Automation Agent collects these measurements. You must run Ops Manager Automation to retrieve system and process measurements.

Get Disk Partition Measurements

You must include the `granularity` parameter and either the `period` or `start` and `end` parameters.

```
GET /api/public/v1.0/groups/GROUP-ID/hosts/HOST-ID/disks/PARTITION-NAME/measurements
```

Disk measurements provide data on IOPS, disk use, and disk latency on the servers running MongoDB, as collected by the Automation Agent. You must run Ops Manager Automation to retrieve disk measurements.

Get Database Measurements

You must include the `granularity` parameter and either the `period` or `start` and `end` parameters.

```
GET /api/public/v1.0/groups/GROUP-ID/hosts/HOST-ID/databases/DATABASE-NAME/measurement
```

Database measurements provide statistics on database performance and storage. The Monitoring Agent collects database measurements through the `dbStats` command.

Get a List of Measurement Types

To retrieve the **applicable** Measurement Types without returning a large document, issue the following GET command with a value of PT5M for both the `granularity` and `period`. This returns a document with only one data point for each measurement.

```
GET /api/public/v1.0/groups/GROUP-ID/hosts/HOST-ID/measurements?granularity=PT5M&period=PT5M
```

Ops Manager filters out any measurement types that are **not** applicable. For example, if you are querying a replica set's primary, Ops Manager will not return measurements specific to replica set secondaries, such as replication lag.

Sample Entity

```
{
  "groupId" : "533c5895b910306f21033a",
  "hostId" : "1db152b29e319f270e4c34b52b01fd2e",
  "start" : "2016-08-23T17:47:44Z",
  "end" : "2016-08-23T22:22:44Z",
  "granularity" : "PT5M",
  "databaseName" : "products",
  "measurements" : [
    {
      "dataPoints" : [ {
        "timestamp" : "2016-08-23T17:47:44Z",
        "value" : 0.46137412902281843
      },
      ...
    ],
    "name" : "PROCESS_NORMALIZED_CPU_CHILDREN_KERNEL",
    "units" : "PERCENT"
  ]
},
"links" : [ ... ]
}
```

Entity Fields

Name	Type	Description
groupId	string	ID of the group that owns the host.

Name	Type	Description
hostId	string	ID of the host to which the measurements pertain.
start	string	The beginning of the period for which to retrieve measurements, specified as an ISO-8601 timestamp .
end	string	The end of the period for which to retrieve measurements, specified as an ISO-8601 timestamp .
granularity	string	An ISO-8601 duration -formatted time period that specifies the size of the interval covered by each data point. For example, PT5M specifies a 5-minute granularity.
databaseName	string	The database to which the measurement applies. Only present for the following endpoint and its children: ../groups/GROUP-ID/hosts/HOST-ID/databases/DATABASE-NAME/measurements
measurements	object array	An array of measurements and their data points.
measurements.dataPoints	object array	An array of objects, where each object represents a single data point. If there is no data point available for a particular moment in time (i.e., a timestamp), the value field is set to null.
measurements.dataPoints.timestamp	string	The timestamp of the beginning of the time interval represented by this data point.
measurements.dataPoints.value	float	The value of the data point.
measurements.name	string	The name of the measurement. For possible values, see Measurement Types below on this page.
measurements.units	string	How the measurement is quantified. Possible units are: <ul style="list-style-type: none">• PERCENT• MILLISECONDS• BYTES• GIGABYTES• BYTES_PER_SECOND• MEGABYTES_PER_SECOND• GIGABYTES_PER_HOUR• SCALAR_PER_SECOND• SCALAR

Measurement Types

The `measurements` endpoint returns measurement types in the `measurements.name` field.

Host Measurements

<ul style="list-style-type: none"> • ASSERT_REGULAR • ASSERT_WARNING • ASSERT_MSG • ASSERT_USER 	Measure the rate of asserts for a MongoDB process, as collected from the MongoDB <code>serverStatus</code> ↗ command's <code>asserts</code> document.
<ul style="list-style-type: none"> • BACKGROUND_FLUSH_AVG 	Measurement found on the host's <code>background_flush_avg</code> chart. To view the chart, see View Metrics .
<ul style="list-style-type: none"> • CACHE_BYTES_READ_INTO • CACHE_BYTES_WRITTEN_FROM • CACHE_USAGE_DIRTY • CACHE_USAGE_USED • TICKETS_AVAILABLE_READS • TICKETS_AVAILABLE_WRITES 	Apply to a MongoDB process's <code>WiredTiger</code> ↗ storage engine, as collected from the MongoDB <code>serverStatus</code> ↗ command's <code>wiredTiger.cache</code> and <code>wiredTiger.concurrentTransactions</code> documents.
<ul style="list-style-type: none"> • CONNECTIONS 	Measures connections to a MongoDB process, as collected from the MongoDB <code>serverStatus</code> ↗ command's <code>connections</code> document.
<ul style="list-style-type: none"> • CURSORS_TOTAL_OPEN • CURSORS_TOTAL_TIMED_OUT 	Measure the number of cursors ↗ for a MongoDB process, as collected from the MongoDB <code>serverStatus</code> ↗ command's <code>metrics.cursor</code> document.
<ul style="list-style-type: none"> • EXTRA_INFO_PAGE_FAULTS • GLOBAL_ACCESSES_NOT_IN_MEMORY • GLOBAL_PAGE_FAULT_EXCEPTIONS_THROWN 	Measurements found on the host's <code>Record Stats</code> and <code>Page Faults</code> charts. To view the charts, see View Metrics .
<ul style="list-style-type: none"> • GLOBAL_LOCK_CURRENT_QUEUE_TOTAL • GLOBAL_LOCK_CURRENT_QUEUE_READERS • GLOBAL_LOCK_CURRENT_QUEUE_WRITERS 	Measure operations waiting on locks, as collected from the MongoDB <code>serverStatus</code> ↗ command. Ops Manager computes these values based on the type of storage engine.
<ul style="list-style-type: none"> • GLOBAL_LOCK_PERCENTAGE 	Applicable only to hosts running MongoDB 2.0 and earlier. Measures operations waiting on the global lock, as collected from the MongoDB <code>serverStatus</code> ↗ command.
<ul style="list-style-type: none"> • INDEX_COUNTERS_BTREE_ACCESSES • INDEX_COUNTERS_BTREE_HITS • INDEX_COUNTERS_BTREE_MISSES • INDEX_COUNTERS_BTREE_MISS_RATIO 	Measurements found on the host's <code>btree</code> chart. To view the chart, see View Metrics .
<ul style="list-style-type: none"> • JOURNALING_COMMITS_IN_WRITE_LOCK • JOURNALING_MB • JOURNALING_WRITE_DATA_FILES_MB 	Measurements found on the host's <code>journal - commits in write lock</code> chart and <code>journal stats</code> chart. To view the charts, see View Metrics .

<ul style="list-style-type: none"> • MEMORY_RESIDENT • MEMORY_VIRTUAL • MEMORY_MAPPED • COMPUTED_MEMORY 	Measure memory for a MongoDB process, as collected from the MongoDB <code>serverStatus</code> ↗ command's <code>mem</code> document.
<ul style="list-style-type: none"> • NETWORK_BYTES_IN • NETWORK_BYTES_OUT • NETWORK_NUM_REQUESTS 	Measure throughput for MongoDB process, as collected from the MongoDB <code>serverStatus</code> ↗ command's <code>network</code> document.
<ul style="list-style-type: none"> • OPLOG_SLAVE_LAG_MASTER_TIME • OPLOG_MASTER_TIME • OPLOG_MASTER_LAG_TIME_DIFF • OPLOG_RATE_GB_PER_HOUR 	Measurements that apply to the MongoDB process's <code>oplog</code> ↗ .
<ul style="list-style-type: none"> • DB_STORAGE_TOTAL • DB_DATA_SIZE_TOTAL 	Measurements displayed on the host's <code>db_storage</code> chart. To view the chart, see View Metrics .
<ul style="list-style-type: none"> • OPCOUNTER_CMD • OPCOUNTER_QUERY • OPCOUNTER_UPDATE • OPCOUNTER_DELETE • OPCOUNTER_GETMORE • OPCOUNTER_INSERT 	Measure the rate of database operations on a MongoDB process since the process last started, as collected from the MongoDB <code>serverStatus</code> ↗ command's <code>opcounters</code> document.
<ul style="list-style-type: none"> • OPCOUNTER_REPL_CMD • OPCOUNTER_REPL_UPDATE • OPCOUNTER_REPL_DELETE • OPCOUNTER_REPL_INSERT 	Measure the rate of database operations on MongoDB secondaries ↗ , as collected from the MongoDB <code>serverStatus</code> ↗ command's <code>opcountersRepl</code> document.
<ul style="list-style-type: none"> • HOTTEST_LOCK_PERCENTAGE 	Applicable only to hosts running MongoDB versions 2.2 through 2.6. Measures the amount of time hosts are write locked. For more information see Lock % .

Process Measurements

<ul style="list-style-type: none"> • PROCESS_CPU_USER • PROCESS_CPU_KERNEL • PROCESS_CPU_CHILDREN_USER • PROCESS_CPU_CHILDREN_KERNEL 	The CPU usage of MongoDB. For servers with more than 1 CPU core, these values can exceed 100%. Only available if you use Ops Manager Automation.
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- PROCESS_NORMALIZED_CPU_USER
- PROCESS_NORMALIZED_CPU_KERNEL
- PROCESS_NORMALIZED_CPU_CHILDREN_USER
- PROCESS_NORMALIZED_CPU_CHILDREN_KERNEL

The CPU usage of MongoDB, scaled to a range of 0-100% by dividing by the number of CPU cores. Only available if you use Ops Manager Automation.

System Measurements

- SYSTEM_CPU_USER
- SYSTEM_CPU_KERNEL
- SYSTEM_CPU_NICE
- SYSTEM_CPU_IOWAIT
- SYSTEM_CPU_IRQ
- SYSTEM_CPU_SOFTIRQ
- SYSTEM_CPU_GUEST
- SYSTEM_CPU_STEAL

CPU usage of processes on the host server. For servers with more than 1 CPU core, this value can exceed 100%. Only available if you use Ops Manager Automation.

- SYSTEM_NORMALIZED_CPU_USER
- SYSTEM_NORMALIZED_CPU_KERNEL
- SYSTEM_NORMALIZED_CPU_NICE
- SYSTEM_NORMALIZED_CPU_IOWAIT
- SYSTEM_NORMALIZED_CPU_IRQ
- SYSTEM_NORMALIZED_CPU_SOFTIRQ
- SYSTEM_NORMALIZED_CPU_GUEST
- SYSTEM_NORMALIZED_CPU_STEAL

CPU usage of processes on the host server, scaled to a range of 0-100% by dividing by the number of CPU cores. Only available if you use Ops Manager Automation.

Disk Measurements

- DISK_PARTITION_IOPS_READ
- DISK_PARTITION_IOPS_WRITE
- DISK_PARTITION_IOPS_TOTAL

Measures throughput of I/O operations for the disk partition used for MongoDB. Only available if you use Ops Manager Automation.

- DISK_PARTITION_UTILIZATION

The percentage of time during which requests are being issued to and serviced by the partition. This includes requests from any process, not just MongoDB processes. Only available if you use Ops Manager Automation.

- DISK_PARTITION_LATENCY_READ
- DISK_PARTITION_LATENCY_WRITE

Measures latency per operation type of the disk partition used by MongoDB. Only available if you use Ops Manager Automation.

<ul style="list-style-type: none"> • DISK_PARTITION_SPACE_FREE • DISK_PARTITION_SPACE_USED • DISK_PARTITION_SPACE_PERCENT_FREE • DISK_PARTITION_SPACE_PERCENT_USED 	Measures the free disk space and used disk space on the disk partition used by MongoDB. Only available if you use Ops Manager Automation.
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Database Measurements

<ul style="list-style-type: none"> • DATABASE_WRITE_LOCK_PERCENTAGE 	Measures the amount of time the host is write locked ↗ .
<ul style="list-style-type: none"> • DATABASE_AVERAGE_OBJECT_SIZE • DATABASE_COLLECTION_COUNT • DATABASE_DATA_SIZE • DATABASE_FILE_SIZE • DATABASE_STORAGE_SIZE • DATABASE_INDEX_SIZE • DATABASE_INDEX_COUNT • DATABASE_EXTENT_COUNT • DATABASE_OBJECT_COUNT 	<p>Measures the database's on-disk storage space, as collected from the MongoDB dbStats ↗ command.</p> <p>The Monitoring Agent retrieves database measurements every 20 minutes by default but adjusts frequency when necessary to reduce the impact on database performance. You can disable the collection of database statistics through the Ops Manager interface by clicking Settings in the Ops Manager interface, then clicking Group Settings, and then setting Collect Database Specific Statistics to No.</p>

Links

Relation	Description
self	Me
http://mms.mongodb.com/group	The group the host belongs to.
http://mms.mongodb.com/host	The host the measurements pertain to.
http://mms.mongodb.com/measurements/disk/partition	The disk partition the measurements pertain to. This is available for disk measurements only.
http://mms.mongodb.com/measurements/database	The database the measurement pertain to. This is available for database measurements only.

Examples

Get Host, Process, and System Measurements

Request


```
curl -i -u "username:apiKey" --digest "https://<ops-manager-host>/api/public/v1.0/grou
```

Response

```
HTTP/1.1 200 OK
```

```
{
  "end" : "2016-08-10T20:47:41Z",
  "granularity" : "PT10M",
  "groupId" : "533c5895b910306f21033a",
  "hostId" : "814e70da8167883b9939608a12a",
  "links" : [ ... ],
  "measurements" : [ {
    "dataPoints" : [ {
      "timestamp" : "2016-08-10T20:47:41Z",
      "value" : 0.0
    }, ... ],
    "name" : "ASSERT_REGULAR",
    "units" : "SCALAR_PER_SECOND"
  }, ..., {
    "dataPoints" : [ {
      "timestamp" : "2016-08-10T20:47:39Z",
      "value" : 1.3203959480720555
    }, ... ],
    "name" : "SYSTEM_NORMALIZED_CPU_STEAL",
    "units" : "PERCENT"
  } ],
  "start" : "2016-08-08T20:57:38Z"
}
```

Get Disk Partition Measurements

Request

```
curl -i -u "username:apiKey" --digest "https://<ops-manager-host>/api/public/v1.0/grou
```

Response

HTTP/1.1 200 OK

```
{
  "end" : "2016-08-10T03:40:38Z",
  "granularity" : "PT5M",
  "groupId" : "533c5895b910306f21033a",
  "hostId" : "814e70da8167883b9939608a12a",
  "links" : [ ... ],
  "measurements" : [ {
    "dataPoints" : [ {
      "timestamp" : "2016-08-10T03:40:38Z",
      "value" : 0.0
    }, ... ],
    "name" : "DISK_PARTITION_IOPS_READ",
    "units" : "SCALAR_PER_SECOND"
  }, ..., {
    "dataPoints" : [ {
      "timestamp" : "2016-08-10T03:40:38Z",
      "value" : 3.2846554854156516
    }, ... ],
    "name" : "DISK_PARTITION_SPACE_PERCENT_USED",
    "units" : "PERCENT"
  } ],
  "partitionName" : "xvdf",
  "start" : "2016-08-09T03:50:21Z"
}
```

Get Database Measurements

Request

```
curl -i -u "username:apiKey" --digest "https://<ops-manager-host>/api/public/v1.0/group"
```

Response

HTTP/1.1 200 OK

```
{
  "databaseName" : "markets",
  "end" : "2016-08-11T21:08:40Z",
  "granularity" : "PT5M",
  "groupId" : "533c5895b910306f21033a",
  "hostId" : "fd5b59188dc13ad142493",
  "measurements" : [ {
    "dataPoints" : [ ],
    "name" : "DATABASE_WRITE_LOCK_PERCENTAGE",
    "units" : "PERCENT"
  },
  {
    "dataPoints" : [ {
      "timestamp" : "2016-08-11T21:08:40Z",
      "value" : 51.780589415213704
    } ... ],
    "name" : "DATABASE_AVERAGE_OBJECT_SIZE",
    "units" : "BYTES"
  },
  ...,
  {
    "dataPoints" : [ {
      "timestamp" : "2016-08-11T21:08:40Z",
      "value" : 32405.0
    } ],
    "name" : "DATABASE_OBJECT_COUNT",
    "units" : "SCALAR"
  } ],
  "start" : "2016-08-11T21:08:40Z",
  "links" : [ ... ]
}
```