

AEROSPIKE

IN-MEMORY + NOSQL + ACID

AEROSPIKE DEPLOYMENT

MONITORING

Aerospike aer. o. spike [air-oh- spahyik]
noun, 1. tip of a rocket that enhances speed and stability

Objectives

At the end of this module, you will be able to use:

- Aerospike Management Console
- asmonitor
- asloglatency



Aerospike Management Console (AMC)

Aerospike Management Console (AMC)

The AMC is a web interface to managing/monitoring the Aerospike database.

- Cluster summary
- Node info
- Storage info
- Definitions
- Jobs
- Alerts
- Cross Datacenter Replication (XDR) stats
- Latency stats
- Backup/restore
- Edit configuration

AMC Community Edition is for Monitoring only.

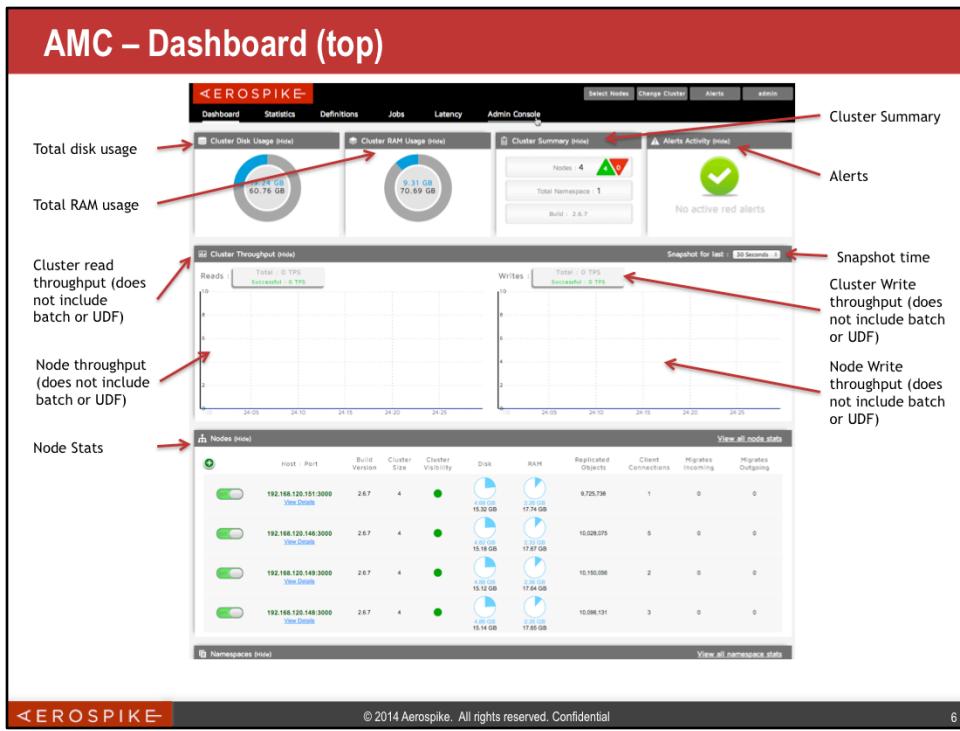
AMC Enterprise Edition includes management functions.

AMC - Dashboard

The AMC Dashboard provides many of the high level health statistics. This is often used in NOCs to see if there are any problems with the Aerospike clusters.

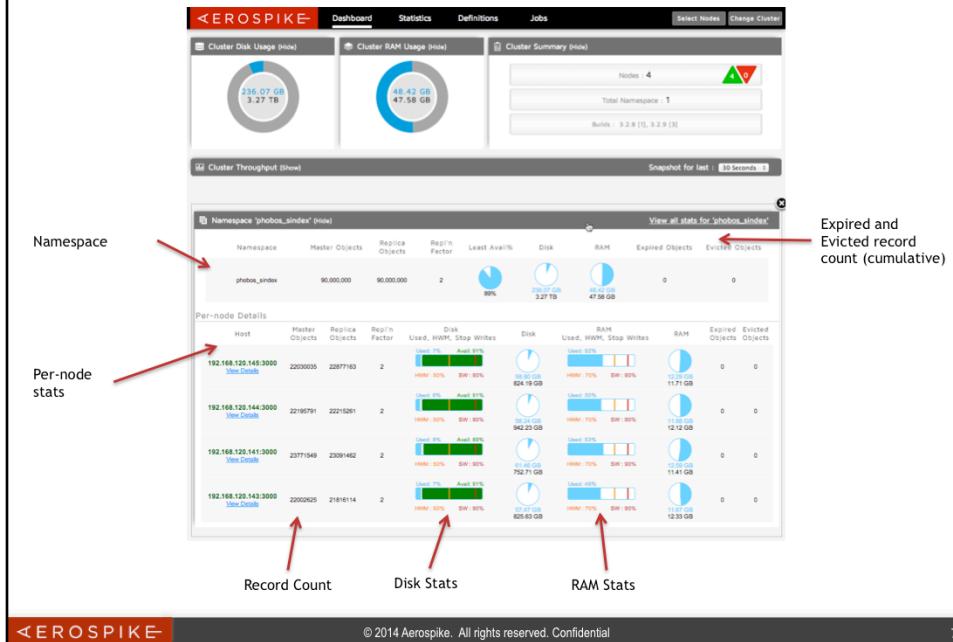
A listing of different plug-ins is also available at:

<http://www.aerospike.com/docs/operations/monitor/>



This interface is sometimes used in NOCs.

AMC – Dashboard (bottom)



AMC - Statistics

The statistics page shows all statistics and configuration variables related to:

- Nodes
- Namespaces
- Secondary Indexes

These statistics show how these are being used.

These interfaces can be used to quickly find where there are differences in the cluster.

AMC – Statistics: Nodes

Select “Statistics”

Select “Nodes”

Search for attributes

Change refresh interval

The screenshot shows the 'Statistics' tab selected in the top navigation bar. A red arrow labeled 'Select "Statistics"' points to the tab. Another red arrow labeled 'Select "Nodes"' points to the 'Nodes' radio button under 'View Attributes For (Hide)'. A third red arrow labeled 'Search for attributes' points to the search input field. A fourth red arrow labeled 'Change refresh interval' points to the 'Refresh Interval (Seconds)' input field with a value of 5. The main content area displays a table comparing attributes across four nodes: 192.168.120.145:3000, 192.168.120.144:3000, 192.168.120.141:3000, and 192.168.120.143:3000. The table includes columns for Attribute Name and values for each node. The table has 10 rows, corresponding to the attributes listed in the first column.

Attribute Name	192.168.120.145:3000	192.168.120.144:3000	192.168.120.141:3000	192.168.120.143:3000
1 accounting-patch	N/A	N/A	N/A	N/A
2 address	192.168.120.145:3000	192.168.120.144:3000	192.168.120.141:3000	192.168.120.143:3000
3 allow-intra-transactions	true	true	true	true
4 auto-dur	false	false	false	false
5 auto-undo	false	false	false	false
6 batch-max-requests	5000	5000	5000	5000
7 batch-priority	200	200	200	200
8 batch-threads	4	4	4	4
9 batch-errors	0	0	0	0
10 batch-initiate	544876	435946	329803	507914

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You can quickly find differences between different nodes.

AMC – Statistics: Namespaces

Select "Namespaces"

Select "Statistics"

Select Namespace

Search for attributes

Change refresh interval

The screenshot shows the 'AMC – Statistics: Namespaces' interface. At the top, there are tabs for Dashboard, Statistics (which is selected), Definitions, and Jobs. Below the tabs, there's a search bar with 'View Attributes For (None)' and a dropdown menu with options Nodes, Namespace (selected), Select Namespace, Secondary Index. A red circle labeled '1' is over the Statistics tab. A red circle labeled '2' is over the Namespace dropdown. A red circle labeled '3' is over the 'photos_index' namespace selection. A red circle labeled '4' is over the search bar containing 'photos_index'. A red circle labeled '5' is over the 'Asking' button next to the 'Refresh Interval (Seconds)' input field.

Attribute Name	192.168.120.145:3000	192.168.120.144:3000	192.168.120.141:3000	192.168.120.143:3000
1 allow_versions	false	false	false	false
2 available-bin-names	32761	32761	32761	32761
3 available_pct	91	91	89	91
4 config-store-event-id	4294967295	4294967295	4294967295	4294967295
5 conflict-resolution-policy	generation	generation	generation	generation
6 current-time	136227906	136227906	136227906	136227907
7 data-in-memory	false	false	false	false
8 data-used-bytes-memory	0	0	0	0
9 default-ttl	345600	345600	345600	345600
10 defrag-lsm-pct	50	50	50	50

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AMC – Statistics: Secondary Indexes

Select "Secondary Index"

Select "Statistics"

Select secondary index

Search for attributes

Change refresh interval

The screenshot shows the Aerospire AMC Statistics interface. At the top, there are tabs for Dashboard, Statistics (which is selected), Definitions, and Jobs. Below the tabs, there are buttons for Select Nodes and Change Cluster. A dropdown menu labeled 'Attributes For (Hide)' is open, showing options: Nodes, Namespace, and Secondary Index. The Secondary Index option is selected and highlighted with a red circle. To the right of this dropdown is a search bar containing 'phobos_sindex'. A dropdown menu titled 'Select Index' is open next to it, showing 'phobos_sindex' (selected) and 'str_unix_idx' and 'int_unix_idx'. Below these dropdowns is a search bar with the placeholder 'Search for attributes' and a 'Refresh Interval (Seconds)' input field set to '5' with an 'Apply' button. The main table displays statistics for four nodes: 192.168.120.145:3000, 192.168.120.144:3000, 192.168.120.141:3000, and 192.168.120.143:3000. The table has 10 rows, each representing a different attribute. The first row is highlighted in light blue. The columns are labeled 'Attribute Name' and '192.168.120.145:3000', '192.168.120.144:3000', '192.168.120.141:3000', and '192.168.120.143:3000'. The data for the first row is: avg_record_size (N/A), avg_selectivity (N/A), data_max_memory (18446744073709551615), data_memory_used (N/A), gc_max_units (1000), gc_period (1000), histogram (false), lru_memory_used (2304437432), and ignore-not-sync (true). The table includes a footer with a 'Page' indicator showing '1 of 5'.

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AMC - Definitions

The Definitions page shows how the following are defined:

- Namespaces
- User Defined Functions (UDFs)

AMC – Definitions: Namespaces

The screenshot shows the 'Definitions' tab in the AEROSPIKE interface. Several sections are highlighted with red arrows and numbers:

- Select "Namespace"**: Points to the 'Select Namespace' dropdown menu at the top.
- Select the namespace**: Points to the dropdown menu where 'photos_index' is selected.
- Secondary Indexes**: Points to the 'Secondary Index (Hide)' section, which lists three entries: 'str_100_idx', 'str_uniq_idx', and 'int_uniq_idx'. Each entry has columns for Index Name, Bin, Set, Bin Type, and Synced on all nodes?
- Sets**: Points to the 'Sets (Hide)' section, which displays a single set named 'longevity' with details like Objects (46863011), Stop Writes Count (0), Evict HWM Count (0), Delete (false), and Enable XDR (use-default).
- Storage**: Points to the 'Storage (Hide)' section, which lists storage devices: 'device' with path '/dev/sdb, /dev/sdc, /dev/sdd, /dev/sde' and Synced on all nodes? (YES).
- Select "Definitions"**: Points to the 'Definitions' tab itself.
- 1**: Points to the 'Definitions' tab.
- 2**: Points to the 'Select Namespace' dropdown.
- 3**: Points to the 'photos_index' selection in the dropdown.
- 4**: Points to the 'Secondary Index (Hide)' section header.
- 5**: Points to the 'Sets (Hide)' section header.
- 6**: Points to the 'Storage (Hide)' section header.

At the bottom, it says '© 2014 Aerospike. All rights reserved. Confidential' and '13'.

AMC – Definitions: User Defined Functions

Select "UDF"

Select "Definitions"

1

2

3

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AMC - Jobs

The Jobs page allows you to see what jobs are currently running on the server.

Because most queries are fast, you will only be able to see very long running ones.

AMC – Jobs

Select “Jobs”

1

2

Running Jobs (hide)

Host : Port Job ID ↑ Progress Status Memory Namespace Run Time Module Type

Currently running jobs will be shown.

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AMC – Admin Console

The AMC admin console gives you added functionality to manage a cluster.

- Backup a cluster
- Restore a cluster
- Dynamically change configuration node variables
- Dynamically change configuration namespace variables
- View Cross Datacenter Replication (XDR) stats

AMC – Admin Console: Backups

Select "Admin Console"

Select "Cluster Backup"

Fill out info on backup

(Optional) select data only from specific sets

(Optional) select high priority only if necessary

The screenshot shows the AMC Admin Console interface for performing cluster backups. The top navigation bar includes 'Dashboard', 'Statistics', 'Definitions', 'Jobs', 'Latency', 'Admin Console' (which is highlighted with a red circle), 'Select Nodes', 'Change Cluster', 'Alerts', and 'admin'. On the left, a sidebar lists 'General Settings', 'User Accounts', 'Cluster Backup' (which is highlighted with a red circle), and 'Cluster Restore'. The main panel is titled 'AMC Settings (hide)' and contains a 'Cluster Backup' section. It includes fields for 'Namespace' (set to 'test_namespace'), 'Destination Network Address' (set to '127.0.0.1'), 'Destination Filesystem Path' ('/data/backups'), 'Username' ('aerospike'), and 'Password' (redacted). Below these are 'Advanced' settings: a 'Sets' dropdown menu (set to 'All') which is circled with a red circle labeled '4', an 'Only Metadata' checkbox (unchecked), a 'Terminate backup on cluster change' checkbox (checked), and 'Backup priority' radio buttons ('Low', 'Medium', 'High', which is checked). A large blue 'Backup' button is at the bottom. Red arrows and numbers 1 through 5 point to specific UI elements: 1 points to the 'Admin Console' tab; 2 points to the 'Cluster Backup' sidebar item; 3 points to the 'Namespace' input field; 4 points to the 'Sets' dropdown; and 5 points to the 'High' priority radio button.

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AMC – Admin Console: Restore

The screenshot shows the 'Cluster Restore' page in the AMC Admin Console. The page has a left sidebar with 'General Settings', 'User Accounts', 'Cluster Backup' (highlighted with a red box and labeled 'Select "Cluster Backup"', step 2), and 'Cluster Restore' (highlighted with a red box and labeled 'Select "Admin Console"', step 1). The main area shows fields for 'Source Network Address' (127.0.0.1), 'Source Filesystem Path' (/data/backups), 'Username' (aerospike), and 'Password'. A 'Get Available Backups' button is present. Below it, under 'Advanced', are fields for 'Namespace' (set to 'Take from backup file'), 'Threads' (set to 20), 'Missing Records Only' (unchecked), and 'Ignore Generation Number' (unchecked). A 'Restore' button is at the bottom. Red numbers 1 through 6 are overlaid on the interface:

- 1 Select "Admin Console"
- 2 Select "Cluster Backup"
- 3 Cluster Restore
- 4 Fill out info on restore
- 5 (Optional) Change namespace name
- 6 (Optional) Alter the number of threads only if you need to restore quickly.
- (Optional) Rarely used.

AMC – Admin Console: Change Node Variables

Select "Nodes"

Select "Admin Console"

Edit variables

Changes will be made dynamically (if possible) to all nodes in the cluster.

Attribute Name #	Value	192.168.120.151.3000	192.168.120.146.3000	192.168.120.149.3000	192.168.120.148.3000
1 acclining-patch	New Value	0	0	0	0
2 address	New Value	192.168.120.151.3000	192.168.120.146.3000	192.168.120.149.3000	192.168.120.148.3000
3 auto-dns	New Value	false	false	false	false
4 auto-reload	New Value	false	false	false	false
5 batch-max-requests	New Value	6000	6000	6000	6000
6 batch-unit-size	New Value	200	200	200	200
7 batch-thresholds	New Value	4	4	4	4
8 debug-queue-escape	New Value	10	10	10	10
9 debug-queue-hwm	New Value	20	20	20	20
10 debug-queue-lwm	New Value	5	5	5	5
11 debug-queue-priority	New Value	1	1	1	1
12 dump-message-above-size	New Value	134217728	134217728	134217728	134217728
13 enable-xdr	New Value	true	true	true	true
14 listen-port	New Value	3001	3001	3001	3001
15 no-health-beat-pct	New Value	0	0	0	0
16 no-health-good-pct	New Value	30	50	50	50
17 no-health-mrg-per-burst	New Value	0	0	0	0
18 no-health-mrg-timeout	New Value	200	200	200	200
19 heartbeat-address	New Value	239.2.0.1	239.2.0.1	239.2.0.1	239.2.0.1
20 heartbeat-interval	New Value	150	150	150	150

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AMC – Admin Console: Change Namespace Vars

Select "Namespaces"

Select "Admin Console"

Edit variables

Changes will be made dynamically (if possible) to all nodes in the cluster.

Name	Value	192.168.120.151.3000	192.168.120.146.3000	192.168.120.149.3000	192.168.120.148.3000
allow-version	New Value	N/A	N/A	N/A	N/A
base-in-memory	New Value	True	True	True	True
default-lt	New Value	0	0	0	0
high-wm-pct	New Value	50	50	50	50
high-wm-blocks	New Value	5000	5000	5000	5000
log-level	New Value	1	1	1	1
log-period	New Value	0	0	0	0
log-startup-minimum	New Value	N/A	N/A	N/A	N/A
swt-pct	New Value	/shared/test/data	/shared/test/data	/shared/test/data	/shared/test/data
te	New Value	21474836480	21474836480	21474836480	21474836480
twemux	New Value	80	80	80	80
high-water-disk-pct	New Value	80	80	80	80
high-water-memory-pct	New Value	80	80	80	80
high-water-pct	New Value	N/A	N/A	N/A	N/A
load-at-startup	New Value	True	True	True	True
low-water-pct	New Value	0	0	0	0
max-tl	New Value	0	0	0	0
memory-size	New Value	21474836480	21474836480	21474836480	21474836480
name	New Value	192.168.120.151.3000	192.168.120.146.3000	192.168.120.149.3000	192.168.120.148.3000
node_value	New Value	on	on	on	on

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AMC – Admin Console: Change XDR Vars

Select "XDR" → Select "Admin Console"

Edit variables → Changes will be made dynamically (if possible) to all nodes in the cluster.

Attribute Name	Value	192.168.120.151:3000	192.168.120.146:3000	192.168.120.149:3000	192.168.120.148:3000
1 addresses	New Value	192.168.120.151:3000	192.168.120.146:3000	192.168.120.149:3000	192.168.120.148:3000
2 enable_xdr	N/A	N/A	N/A	N/A	N/A
3 forward_xdr_writes	New Value	N/A	N/A	N/A	N/A
4 max_xdr_latency	New Value	on	on	on	on
5 stop_xdr-on-dr	New Value	N/A	N/A	N/A	N/A
6 xdr_bach_size_max	New Value	0	0	0	0
7 xdr_batch_max_size	New Value	0	0	0	0
8 xdr_check_data_before_deltas	New Value	N/A	false	false	false
9 xdr_compression_threshold	New Value	N/A	N/A	N/A	N/A
10 xdr_forward-wr-gc-threshold	New Value	N/A	N/A	N/A	N/A
11 xdr_holiday-maskip	New Value	5	5	5	5
12 xdr_info-buckets	New Value	N/A	N/A	N/A	N/A
13 xdr-local-port	New Value	3000	3000	3000	3000
14 xdr-mx-threshold	New Value	0	0	0	0
15 xdr-read-batch-size	New Value	100	100	100	100
16 xdr-skip-batch-size	New Value	100	100	100	100
17 xdr-xdr-delay	New Value	0	0	0	0
18 xdr-xdr-paging-enabled	New Value	true	false	false	false
19 xdr-threads	New Value	3	3	3	3
20 xdr-timout	New Value	30000	30000	30000	30000

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asmonitor

asmonitor

asmonitor is a command line tool used to track the health of an Aerospike cluster.

Typical syntax:

- `asmonitor [-h <host>[:<port>]] [-p <port>]`

This will put you into the asmonitor command line.

asmonitor – Commonly Used Commands

Command: `help`

Displays the full syntax of the asmonitor command.

asmonitor – Commonly Used Commands

Command: info

Displays cluster info similar to the dashboard on the AMC.

```
Monitor> info
==NODES==
2014-08-18 16:04:12.503857
Sorting by IP, in Ascending order:
ip:port          Build   Cluster    Free   Free   Migrates      Node      Principal   Replicated   Sys
.           .       Size  Visibility Disk   Mem   .           .           ID   ID   Objects   Free
.           .       .       pct   pct   .           .           .           .           .   Mem
v13.citrusleaf.local 3.3.15     3     true   93    88   (0,0) BB96CB06CA0568 BB979DF04CA0568 46,743,148 94
v14.citrusleaf.local 3.3.15     3     true   93    87   (0,0) BB968DF04CA0568 BB979DF04CA0568 48,463,949 94
v15.citrusleaf.local 3.3.15     3     true   92    87   (0,0) BB979DF04CA0568 BB979DF04CA0568 48,791,285 94
Number of nodes displayed: 3

==NAMESPACE==
Total (unique) objects in cluster for phobos sindex : 71,999,191
Note: Total (unique) objects is an under estimate if migrations are in progress.

ip/namespace          Avail   Evicted   Objects   Repl   Stop   Used   Used   Used   Used   hwm   hwm
.           Pct   Objects   .   Factor   Writes   Disk   Disk   Mem   Mem   Disk   Mem
.           .       .       .       .       .       %   %   %   %   .   %
v15.citrusleaf.local/phobos.sindex 89     0   23,999,732   2   false   63.92 G   8   2.91 G   13   50   70
v14.citrusleaf.local/phobos.sindex 89     0   24,153,960   2   false   63.49 G   7   2.89 G   13   50   70
v13.citrusleaf.local/phobos.sindex 89     0   23,846,499   2   false   61.24 G   7   2.79 G   12   50   70
Number of rows displayed: 3
```



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The most important things to note here are:

- The number of object are replicated.
- If the number of migrates is non-zero, the cluster is in a dynamic state.
- There are counters for the number of evicted objects, if this is increasing, the system is short on configured resources.

asmonitor – Commonly Used Commands

Command: stat

Displays node stats for each node in the cluster. Often used with the “-v” flag to filter the output, which can be very long.

```
Monitor> stat -v system
====192.168.120.143:3000====
system_free_mem_pct      94
system_swapping          false
====192.168.120.144:3000====
system_free_mem_pct      94
system_swapping          false
====192.168.120.145:3000====
system_free_mem_pct      94
system_swapping          false
```

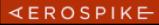
asmonitor – Commonly Used Commands

Command: latency

Displays latency stats for how long requests take to be filled as measured on the server. This may differ significantly from the client latency measures. There are additional parameters to take a look back at a specific time or gather other metrics. Useful for determining throughput.

Monitor> latency

```
---->writes_master----  
      timespan    ops/sec   >1ms   >8ms   >64ms  
192.168.120.143:3000  23:20:29-GMT->23:20:39    995.5  17.42  0.01  0.00  
192.168.120.144:3000  23:20:28-GMT->23:20:38    995.0  20.90  0.28  0.00  
192.168.120.145:3000  23:20:31-GMT->23:20:41    988.2  23.39  0.78  0.00  
  
---->writes_reply----  
      timespan    ops/sec   >1ms   >8ms   >64ms  
192.168.120.143:3000  23:20:29-GMT->23:20:39    996.5  0.85  0.00  0.00  
192.168.120.144:3000  23:20:28-GMT->23:20:38    2348.2  0.94  0.00  0.00  
192.168.120.145:3000  23:20:31-GMT->23:20:41    2342.8  0.97  0.00  0.00  
  
---->reads----  
      timespan    ops/sec   >1ms   >8ms   >64ms  
192.168.120.143:3000  23:20:29-GMT->23:20:39    2296.5  0.85  0.00  0.00  
192.168.120.144:3000  23:20:28-GMT->23:20:38    2348.2  0.94  0.00  0.00  
192.168.120.145:3000  23:20:31-GMT->23:20:41    2342.8  0.97  0.00  0.00  
  
---->udf----  
      timespan    ops/sec   >1ms   >8ms   >64ms  
192.168.120.143:3000  23:20:29-GMT->23:20:39    0.0  0.00  0.00  0.00  
192.168.120.144:3000  23:20:28-GMT->23:20:38    0.0  0.00  0.00  0.00  
192.168.120.145:3000  23:20:31-GMT->23:20:41    0.0  0.00  0.00  0.00  
  
---->proxy----  
      timespan    ops/sec   >1ms   >8ms   >64ms  
192.168.120.143:3000  23:20:29-GMT->23:20:39    0.0  0.00  0.00  0.00  
192.168.120.144:3000  23:20:28-GMT->23:20:38    0.0  0.00  0.00  0.00  
192.168.120.145:3000  23:20:31-GMT->23:20:41    0.0  0.00  0.00  0.00  
  
---->query----
```



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asmonitor – Commonly Used Commands

Command: collectinfo (not usually run from the asmonitor command line)

Sometimes you need to gather information for Aerospike support. This can be done using the collectinfo command. Note that you must have sudo/root privileges.

```
[root@v15 ~]# sudo asmonitor -e "collectinfo"
Enter help for commands
3 hosts in cluster: 192.168.120.143:3000,192.168.120.144:3000,192.168.120.145:3000
Data collection for collect_andcheck in progress..
Data collection for collect_params in progress..
Data collection for collect_loginfo in progress..
Data collection for collect_readlogs in progress..
sh: line 1: 0: command not found
Data collection for collect_sys in progress..
Data collection for collect_shell in progress..
sh: dpkg: command not found
running shell command: tar -czvf /tmp/as_log_1408404265.16.log.tgz /tmp/as_log_1408404265.16.log
tar: Removing leading '/' from member names
/tmp/as_log_1408404265.16.log

FILE /tmp/as_log_1408404265.16.log and /tmp/as_log_1408404265.16.log.tgz saved. Please send it to support@aerospike.com
END OF ASCOLLECTINFO
```

A

asloglatency

asloglatency

`asloglatency` is a command line tool used find the latency of the server in log files for specific types of transactions.

Typical syntax

```
> asloglatency -h <histogram> -l <log_file> -f <time_from> -d <duration>
```

Option	Default	Description
-l	/var/log/aerospike/aerospike.log	Log file to read from. Can be used to read from logs that have been rotated out.
-h	[none]	(required) One of read, writes_master, writes_reply, udf, proxy, query
-t	10	Analysis slice interval in seconds or time format. Time format is "HH:MM:SS"
-f	tail	Time_from may be in either form "Aug 6 2014 22:10:13", "-3600", "-1:00:00". Default is to tail the file.
-d		Maximum duration from which to analyze. Duration is in either form "3600" or "HH:MM:SS"
-n	3	Number of buckets to display.
-e	3	Show the 0-th and then every e-th bucket. Lower numbers show finer granularity. Examples:

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asloglatency - example

Suppose there was an issue in read latency 12 hours ago that lasted for an hour. You wish to review the read latencies from 12 hours ago to 10 hours ago. You can issue the command:

```
asloglatency -h reads -f -12:00:00 -d 2:00:00
```

```
reads
Aug 6, 2014 01:58:58
% > (ms)
slice-to (sec)      1      8      64  ops/sec
-----
01:59:08    10  1.13  0.04  0.00  4661.8
01:59:18    10  1.13  0.04  0.00  4661.8
01:59:28    10  1.13  0.04  0.00  4661.8
...
03:58:58    10  1.13  0.04  0.00  4661.8
03:59:08    10  1.13  0.04  0.00  4661.8
-----
avg            0.97  0.04  0.00  4188.0
max            1.34  0.05  0.00  4661.8
```

Summary

What we have covered:

- Aerospike Management Console
- asmonitor
- asloglatency