AMPS Monitoring Reference Guide

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4.3

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1. administrator

The `administrator` interface provides administrative actions for this AMPS instance.

clients. Selecting the `clients` resource will list all connected clients by name. Selecting a single client will permit them to be disconnected.

authorization . Selecting the `authorization` resource will allow the `authentication` or `entitlement` resources to be reset. Selecting either one of these will present a `reset` link, which calls the reset function as defined by the respective authentication or entitlement resource.

minidump . Selecting the `minidump` resource will create a minidump of the currently running AMPS instance. The minidump will be saved in directory specified by the `MiniDumpDirectory`, or `/tmp` if no directory is specified. See the *AMPS Configuration Guide* for more information.

replication . Selecting the `replication` resource will list all currently configured replications. Selecting any individual replication destination will permit them to be downgraded.

2. Host Interface

The `host` URI contains information about the current operating system devices, such as the CPU, memory, disk and network. In addition, a host's network hostname and system timestamp time are also exposed through the monitoring interface.

CPUs

The `cpu` resource allows an administrator to view the CPU devices attached to the host. Selection of the `cpu` link in the `host` resource generates a list of all CPUs attached to the host, and also an aggregate `all` option.

Table 1. CPU Statistics

Element	Description
`idle_percent`	Percent of CPU time that the system did not spend waiting on an I/O request to complete.
`iowait_percent`	Percent of CPU time spent waiting for I/O requests to complete.
`system_percent`	Percent of CPU utilization time which occurred while executing kernel processes.
`user_percent`	Percent of CPU utilization time which occurred while running at the application level.

Disks

The `disks` resource lists each of the disk devices attached to the host and permits the inspection of disk usage statistics. This information is a readily consumable version of the file `/proc/diskstats`. Statistics reported are based on the statistics monitoring update frequency (see `Interval` in ???). This means, for example, that `reads` is the number of disk-reads for the given statistics update interval.

Table 2. Disks Statistics

`filesystem_free_percent`	Percentage of the filesystem currently free.
`in_progress`	Number of I/O requests waiting to be processed.
`read_await`	Average read time completion in milliseconds.
`write_await`	Average write time completion in milliseconds.

Memory

The `memory` resource gives details about the system memory statistics. All statistics reported are based on the current system statistics reported by examining the file `/proc/meminfo`. These statistics are updated based on the statistics monitoring update frequency (see `Interval` in *AMPS Configuration Reference Guide* All memory statistics are reported in kB.

Table 3. Memory Statistics

Element	Description
`available`	The total amount of memory available. Calculated as the sum of `free`, `buffers` and `cached`.
`buffers`	The amount of physical memory available for file buffers.
`cached`	The amount of physical memory used as cache memory.
`free`	The amount of physical memory left unused by the system.
`in_use`	The amount of memory currently in use. Calculated ask `total - (free + buffers + cached)`.

Element	Description
swap_free	The amount of swap memory which is unused.
swap_total	The total amount of physical swap memory.
total	Total amount of RAM.

Name

The name resource displays the network DNS name for the host.

Network

The network resource allows an administrator to examine networking interface statistics on the host. Selecting the network resource displays a list of the network interfaces attached to the host. Selecting one of the interfaces will list the available properties. Reported statistics are rate-based and based on the statistics monitoring update frequency (see Interval in ???). For example, collisions for interface eth0 would report the total number of collisions since the last statistics update interval.

Table 4. Network Statistics

Element	Description
bytes_in	Number of bytes received by the interface.
bytes_out	Number of bytes transmitted by the interface.
errors	Total errors both incoming and outgoing. This number includes packets dropped, collisions, fifo, frame, and carrier errors.
packets_in	The total number of packets received by the interface.
packets_out	The total number of packets sent by the interface.

UTC time

The utc_time resource displays the system time on the host. Note: the utc_time time reflects the time on the host that the HTTP GET was processed. This differs from all other resources in the host interface as their update frequencies are determined by the Interval tag in the configuration for the Admin interface. For more information on configuring the Administrative Interface and the Interval tag, see the *AMPS Configuration Guide*.

3. Instance Interface

The Instance resource provided by the AMPS monitoring interface is the administrative overview of a running AMPS instance. At a glance an administrator has access to a wide view of statistic and configuration information related to AMPS usage.

clients

Selecting the `clients` resource will list all connected clients by name. Selecting a single client will grant the user the ability to view various properties regarding a client.

Table 5. Client Statistics

Element	Description
`authenticated_id`	The id used to authenticate this client, if any.
`bytes_in`	Number of bytes received.
`bytes_in_per_sec`	Rate of bytes received.
`bytes_out`	Number of bytes sent.
`bytes_out_per_sec`	Rate of bytes sent.
`client_name`	Identifier for the client, set during the logon.
`connect_time`	UTC time client connection is established.
`connection_name`	Name of the connection.
`correlation_id`	The `CorrelationId` provided with the logon command, if any.
`messages_in`	Number of messages received from client.
`messages_in_per_sec`	Rate of messages received.
`messages_out`	Number of messages sent to the client.
`messages_out_per_sec`	Rate of messages sent to the client.
`query_time`	The amount of time spent for queries from this client.
`queue_depth_out`	Number of messages queued to be sent to client.
`queue_max_latency`	The age of the oldest item in the queue which has not yet been sent. This is used as a measure of how far behind AMPS believes a subscribing client is.
`queued_bytes_out`	Number of queued bytes waiting to be sent.
`remote_address`	IP and port of the client connection.
`subscription_count`	Number of subscriptions the client has requested.

config.xml

Selecting this will display the current AMPS configuration file, by default called `config.xml`.

config_path

Filesystem location of the configuration file.

conflated topics

Selecting the `conflated_topics` resource will display a list of the conflated topics in the instance.

Table 6. Conflated Topics

Element	Description
`conflation_ratio`	Ratio representing the amount of conflation for this topic.
`interval`	Conflation interval
`message_type`	Message type for this topic.
`topic`	Name of this conflating topic replica.
`total_executions`	Total number of times the conflation algorithm has been executed.
`total_time`	Amount of time spent processing this topic.
`underlying_topic`	Name of the underlying topic that this topic conflates.

cpu

The CPU resource lists properties related to overall CPU usage of the AMPS instance. Selecting the items below give more specific information to the type of CPU utilization being consumed by the AMPS user.

Table 7. CPU Statistics

Element	Description
`system_percent`	Percent of CPU utilization time consumed while executing kernel processes.
`total_percent`	Total percent of CPU utilization.
`user_percent`	Percent of CPU utilization time consumed while processing non-I/O events.

cwd

The current working directory from which the AMPS instance was invoked.

logging

The `logging` resource contains information about the resources consumed during various AMPS logging processes. Selecting a logging mechanism (console, file or syslog) will first list all logs of that particular type. Drilling down into one of those logs will pull up more granular information about logging. If a

logging mechanism is not defined in the configuration, then the results will be blank when the logging resource is selected.

console . Below are the options available for reporting when `console` logging is enabled.

Table 8. Console Logging Statistics

Element	Description
`bytes_written`	Number of bytes written to the console.
`exclude_errors`	Errors which are excluded from logging.
`include_errors`	Errors which are included during logging.
`log_levels`	Log level used to control logging output.
`target`	Console to which logging output is directed. Default is `stdout`.

file . Below are the options available for reporting when `file` logging is enabled.

Table 9. File Logging Statistics

Element	Description
`bytes_written`	Number of bytes written to the console.
`exclude_errors`	Errors which are excluded from logging.
`file_name`	File defined in the `config.xml` where the log file is written to.
`file_name_mask`	Make of the logging output file name, if available.
`file_system_free_percent`	Amount of file system available.
`include_errors`	Errors which are included during logging.
`log_levels`	Log level used to control logging output.
`rotation`	Boolean representation denoting if log rotation is turned on.
`rotation_threshold`	Log size at which log rotation will occur.

syslog . Below are the options available for reporting when `syslog` logging is enabled

Table 10. System Logging Statistics

Element	Description
`bytes_written`	Number of bytes written to the console.
`exclude_errors`	Errors which are excluded from logging.
`facility`	Integer enumeration of the logging facility used by syslog.
`ident`	Syslog name of the logging instance.
`include_errors`	Errors which are included during logging.
`log_levels`	Log level used to control logging output.
`logopt`	Bitfield of possible log options included. These values are configured in the config.xml file in the `<Options>` tag.

memory

AMPS can provide information regarding the process's memory usage in its RSS and VMSize via the `memory` resource in the monitoring interface.

Table 11. AMPS Instance Memory

Element	Description
`caches`	Information about AMPS memory caches.
`maps`	Information about AMPS memory maps.
`rss`	The resident set size of the AMPS process.
`vmsize`	The virtual memory size of the AMPS process.

Table 12. AMPS Instance Memory Caches

Element	Description
`allocations`	Number of memory allocations for this cache.
`bytes`	Number of bytes allocated to this cache.
`description`	Description of the cache.
`efficiency`	Ratio of hits to requests for this cache.
`entries`	Number of entries in this cache.
`evictions`	Count of evictions from this cache.
`fetches`	Count of fetches from this cache.

message_types

Information regarding the message types used by AMPS are maintained in the `message_types` resource. AMPS can track the following information for all message types loaded into the instance. By default, AMPS loads `fix`, `nfvix`, `xml`, and `json` message types.

Table 13. AMPS Instance Message Types

Element	Description
`module`	The name of the module that implements the message type.
`name`	The name of the message type.
`options`	Any options provided to the module.
`type`	The Type configured for the message type module. *this configuration parameter is obsolete in 4.0 and later releases*

name

Name of the AMPS Instance.

pid

The process ID of the current ampServer process.

processors

Selecting the `processors` resource will list all the available message processors that the AMPS instance has invoked to handle messages. Each AMPS message processor will be listed individually, or selecting the `all` resource will list an aggregate of the available message processors. All AMPS message processors have the following attributes available:

Table 14. AMPS Message Processors

Element	Description
`denied_reads`	Number of read requests which have been denied.
`denied_writes`	Number of write requests which have been denied.
`description`	Descriptor of the processors resource.
`last_active`	Number of seconds since a processor was last active.
`matches_found`	Number of messages found.
`matches_found_per_sec`	Rate of messages found.
`messages_received`	Number of messages received.
`messages_received_per_sec`	Rate of messages received.
`throttle_count`	Number of times the processor has found no available work.

queries

The `queries` resource lists all available information regarding the query messages sent to AMPS.

queued queries

A count of all queries which have not yet completed processing.

replication

Selecting the `replication` resource will display a list of available downstream replication instances used by this instance of AMPS. Selecting an individual replication instance will display the following statistics.

Table 15. Replication

Element	Description
`authenticated_id`	The ID used to authenticate this connection.

Element	Description
bytes_out	Number of bytes sent.
bytes_out_per_sec	Rate of bytes sent.
client_type	Specifies whether client is a replication source or destination.
connect_time	Time connected to replication instance.
destination_admin_addr	The admin address of the destination.
destination_group_name	The group name of the destination.
destination_name	The name of the destination.
disconnect_count	Number of times replication destination has been disconnected.
disconnect_time	Total amount of time in which the replication destination has been disconnected.
is_connected	Boolean telling whether replication destination is currently connected.
messages_out	Number of messages sent.
messages_out_per_sec	Rate of messages sent.
name	Name of replication configuration.
pass_through	Boolean stating whether messages can only be sent to one client, or can messages be sent on to other downstream clients.
replication_type	One of either sync or async.
seconds_behind	The number of seconds the destination is behind, as measured by the oldest message which has not yet been replicated.

The replication resource also provides options for managing replication instances. The following mangagement functions are available.

Table 16. Replication

Element	Description
downgrade	Change the replication type of this connection from sync to async.
reconnect	Close and reopen the connection to the remote instance.

SOW

Clicking the sow link will list all available SOW topics for the AMPS instance. Selecting a single sow topic will list the following available statistics about the sow topic:

Table 17. SOW Interface

Element	Description
delete_count	Number of deletes processed by the SOW.
deletes_per_sec	Number of deletes per second processed by the SOW.

Element	Description
historical_granularity	The granularity at which this SOW maintains history, if one is set.
historical_window	The window for which the SOW maintains history, if one is set.
insert_count	Count of the number of records inserted into the SOW.
inserts_per_sec	Rate of inserts into the SOW.
memory_bytes	The number of bytes of memory used for this SOW.
msg_type	Message type for this topic.
path	File system location of the SOW topics file store.
queries_per_sec	Rate of queries for this SOW topic.
query_count	Number of queries processed for this SOW.
record_size	Configured record size for the SOW.
stored_bytes	Number of bytes stored for this SOW
topic	Name of this SOW topic.
update_count	Number of updates processed by this SOW
updates_per_sec	Number of updates each second
valid_keys	Number of distinct messages in the SOW - defined by the SOW topic key.

statistics

The statistics resource contains information regarding how AMPS monitors its own statistics.

Table 18. Statistics Interface

Element	Description
disk_per_sample	Amount of storage the stats database has grown since the last sample interval.
file_name	Location where statistics are stored. Default is :memory:, which stores the statistics database in system memory.
file_size	Size on disk of the statistics database.
interval	Time in milliseconds between statistics database updates.
memory_used	Size in bytes of the system memory consumption of the statistics database.
queries	Number of queries processed from the statistics database.
time_per_sample	Time taken to process each statistics database query.
total_samples	Number of statistics database updates that have taken place since the AMPS server started.
total_time	Total amount of time spent publishing statistics.

subscriptions

Each client that submits a `subscribe` command message is tracked by AMPS, and their relevant metrics are captured in the monitoring instance database. Selecting the `subscriptions` resource lists the available subscribers. Selecting a subscriber will list the available statistics below:

Table 19. Subscriptions Interface

Element	Description
`client_id`	The ID of the subscribing client.
`entitlement_filter`	The filter applied by the entitlement module, if any.
`filter`	The filter requested on the subscription, if any.
`is_bookmark`	Boolean value to determine if the subscription is a bookmark.
`is_oof_enabled`	Boolean value to determine if the subscription has OOF (Out Of Focus Processing) enabled.
`is_replication`	Boolean value to determine if the subscription is applied to a replication.
`message_type`	Transport type of the subscription message. All return acknowledgments and messages use the same transport as the subscription.
`seconds_behind`	The number of seconds the client is running behind, as measured by the age of the oldest message enqueued for the client.
`send_empties`	Boolean to determine if sending empty messages is required/permitted.
`subscription_type`	Type of subscription.
`topic`	Subscription topic.

transports

Clicking the `transports` link will give a list of the transports defined in the configuration file for the AMPS instance. Clicking a view will display the detailed resources for views.

Table 20. Transports Interface

Element	Description
`is_enabled`	Indicates whether the transport is enabled.
`message_type`	The message type for this transport.
`name`	The name of this transport.
`options`	The options provided for this transport.
`type`	The type of transport.

tuning

Clicking the `tuning` link will give a list of the tuning parameters for the instance. Clicking a parameter will give the current value for the instance.

Table 21. Tuning Interface

Element	Description
`NUMA`	Indicates whether AMPS NUMA tuning is enabled.

uptime

The length of time that the AMPS instance has been running, which conforms to a `hh:mm:ss.uuuuuu` format. This format is explained in the table below.

Table 22. Time formatting used in `uptime`

Element	Description
`hh`	hours
`mm`	minutes
`ss`	seconds
`uuuuuu`	microseconds

user_id

The username for the owner for the `ampServer` process.

version

Version of the current running instance of AMPS.

views

Clicking the `views` link will give a list of the views defined in the configuration file for the AMPS instance. Clicking a view will display the detailed resources for views.

Table 23. Views Interface

Element	Description
`grouping`	List of one or more fields, which are used to determine message aggregation.
`message_type`	The message type of messages produced by this view.
`projection`	The formula defined in the AMPS config for the computed transformation of one or more fields onto a new field.

Element	Description
queue_depth	The number of messages in the view that have not yet completed processing.
topic	The name of the new AMPS topic created by this view.
underlying_topic	The source topic used to compute the projected view.