



EMC® Watch4net®

Version 6.3u2

Spatial Aggregation Filter Administration Guide

P/N: pending

Rev : 40030

EMC²

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Published April, 2014

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Preface

Purpose

The purpose of this guide is to provide configuration and usage information about the Spatial Aggregation Filter.

Intended Audience

APG administrators and system integrators, as well as users responsible of managing data collection configuration should read this document.

Prerequisites

The *APG* collector manager must be installed. This filter module may be used with *APG* versions 5.0 and later.

Document Organization

1. Description	A description of this filter function.
2. Installation	Instructions on how to install this filter.
3. Configuration	Instructions on how to configure this filter.
4. Questions and answers	A list of common questions and answers about this filter.

Common Abbreviations and Acronyms

Not Applicable There are no abbreviations used in this document.

Where to get help

EMC support, product, and licensing information can be obtained as follows:

PRODUCT INFORMATION - For documentation, release notes, software updates, or information about EMC products, go to EMC Online Support at:

<https://support.emc.com>

TECHNICAL SUPPORT - Go to EMC Online Support and click Service Center. You will see several options for contacting EMC Technical Support. Note that to open a service request, you must have a valid support agreement. Contact your EMC sales representative for details about obtaining a valid support agreement or with questions about your account.

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Description

The Spatial Aggregation Filter is used to aggregate data on metric instances which have a specific “name” property value. For instance, a device with several interfaces is polled and the desired result is the sum of the inbound traffic (raw value property name=“ifInOctets”).

The following aggregation calculations are provided:

- Sum;
- Average;
- Minimum;
- Maximum.

The following aggregation triggers are supported:

Time based: the first raw value received by the filter sets the bucket initialization timestamp. The aggregation is calculated 't' seconds after this first raw value was received. Once the calculation is done, the bucket is once again ready to receive the next raw values.

This mode has the advantage of being able to send aggregated results in near real-time (if the aggregation time-span is set to a low value and the watchdog-period is set to an even lower value). This mode's drawback is that it may produce more aggregated values than desired if the time-span is

set to a value that's too low: aggregations are then performed before the raw value which should be part of it has been received.

Upon detection of the next polling cycle. This is a failsafe mode of operation as the aggregation will be triggered only when an already existing value is received in the aggregation bucket. This is a failsafe condition which occurs only when a new polling cycle has started. The drawback of this mode is that raw values will be sent only when the next polling cycle starts (although the aggregated rawvalue's timestamp will be set at the time of the first received raw value used in the calculation).

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Installation

The Spatial Aggregation Filter module may be installed like any other module. The package name is: “spatial-aggregation-filter”. Use the module manager to install this module.

Then, edit the `APG/Collecting/Collector-Manager/Default/conf/collecting.xml` file (location may vary depending upon installation location and Collector-Manager instance name) and insert the following line in the existing configuration. Please refer to the *APG* Backend Administration Guide if unsure on how to do this.

```
<?xml version="1.0" encoding="UTF-8"?>
<config ...>
  <connectors>
    ... connector already defined ...
  </connectors>
  <filters>
    ... next filter ...
    <filter enabled="true" name="Spatial-Aggregation-Filter" next="NextFilter"
      config="Spatial-Aggregation-Filter/Default/conf/aggregation.xml" />
    ... previous filter ...
  </filters>
```

The “aggregation.xml” configuration file should be located in the APG/Collecting/Spatial-Aggregation-Filter/Default/conf/ directory. This file will contain your customized configuration for this filter. Create and edit as explained in this document’s Configuration section. Then restart the *APG Collector Manager* service.

Configuration

This section contains a configuration example as well as the description of the available configuration elements.

1 Configuration example

Let's use the following example in order to create a configuration for this filter:

```
<?xml version="1.0" encoding="UTF-8"?>
<tns:spatial-aggregation-filter-config
  xmlns:tns="http://www.example.org/spatial-aggregation-filter"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.example.org/spatial-aggregation-filter
  □.../../spatial-aggregation-filter/src/conf/spatial-aggregation-filter.xsd□">
  <tns:spatial-aggregation aggregate-name="ifInOctetsSum" aggregation="sum" name="ifInOctets"
  forward-all-properties-from-all-rawvalues="false" send-all-original-raw-values="true"
  time-span="60" watchdog-period="35">
    <tns:group-by>source</tns:group-by>
    <tns:group-by>device</tns:group-by>
    <tns:group-by>parttype</tns:group-by>
    <tns:remove-property>part</tns:remove-property>
  </tns:spatial-aggregation>
</tns:spatial-aggregation-filter-config>
```

Note: Please use an XML editor which supports XML schema validation to edit this configuration file.

2 Configuration elements description

Elements and attributes are as follows:

```
<tns:spatial-aggregation aggregate-name="IfOutOctetsSum" aggregation="sum" name="ifOutOctets"
  forward-all-properties-from-all-rawvalues="true" send-all-original-raw-values="false"
  time-span="60" watchdog-period="35">
```

- aggregate-name="IfOutOctetsSum" : This element specifies the aggregated metric name property (IfOutOctetsSum);
- aggregation="sum" : The aggregation calculation (sum). Other valid aggregation modes include: avg (for average), min (for minimum) and max (for maximum).
- name="ifOutOctets" : The name property of the raw values to use as input for the aggregation (ifOutOctets);
- forward-all-properties-from-all-rawvalues="true" : The aggregated metric will have all the properties coming from the input raw values. If set to false: the properties from the first input raw value are used;

- `send-all-original-raw-values="false"` : The input raw values will not be sent to the backend (only dropped);
- `time-span="60"` : The SpatialAggregation bucket timespan (valid only if the watchdog-period is set), in seconds.
- `watchdog-period="35"` : Check the SpatialAggregation bucket every 35 seconds. Send the aggregated value if it aged out its timespan.

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Questions and answers

Q. Why set the time-span and watchdog-period?

A. The watchdog-period is optional and is used to activate a watchdog, which will check the SpatialAggregation bucket every “t” seconds. When the SpatialAggregation buckets time-span is exceeded ($\text{time-span} > \text{Now} - \text{T1}$, T1 being the time of arrival of the first raw value in the bucket), the aggregated value is calculated. Setting this parameter is only useful to simulate real-time spatial aggregation (the aggregated result will be sent sooner).

Q. How to set the time-span and watchdog-period?

A. Typically, aggregated values are calculated from metrics coming from one device (sum of bandwidth is an example). Depending on the collector being used, these metrics may be sent all at once or over a long period of time. The time-span parameter should be set to a value which gives enough time to the collector to send all values.

If using an Snmp collector to poll the values, values coming from the same table will be sent all at once (within a few seconds, real time). Therefore it may be a good idea to set the time-span

value to a small value, 15 seconds being typical. The watchdog-period can be set depending upon requirements: a value smaller than the time-span will enable the filter to send the aggregated values faster (the SpatialAggregation bucket is checked more frequently). But using a small value will impact performance as the watchdog thread will perform its duties more frequently. So, in this case, a value for watchdog-period="60" might be acceptable if the data flow can wait up to 60 minutes before getting the aggregated data.

Q. What if I do not set a watchdog-period?

The aggregation will be performed whenever a new polling cycle is detected: a SpatialAggregation bucket cannot contain 2 instances of the same metric (with different timestamps). The aggregation is performed whenever this condition is met.

Q. Why remove properties from an aggregated raw value?

Typically, some properties coming from the input raw values are completely irrelevant to the aggregated raw value. These properties include the instance names and index properties. They should be removed from the aggregated raw value.

Q. What is the variable format for the aggregated raw value?

The variable name for the aggregated raw value is as follows:

`groupByProperty1.groupByProperty2.groupByProperty3.groupByPropertyN.name`

Q. Can I sum the values of many metric names?

No. This is not supported. You can only sum the values on one (1) metric name. This filter is not meant to fully replace the spatial formulas provided in the front end (SpatialSum, SpatialMin, SpatialMax, ...) but to simply provide a way to send some aggregated data to a data flow filter or other connector.