Erlang Application Metrics with Folsom

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Who Am I?

- Joe Williams
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  - Ops at Boundary

What is Boundary?

- Realtime Monitoring and Analytics Platform
- We're hiring!
- TRY MY PRODUCT

Agenda

- Current and Future Monitoring Systems
- Define “Application Metrics”
- What is Folsom?
- How do you use Folsom?

Legacy Monitoring Tools

- Consumers of application metrics
  - Munin, Ganglia, etc
- Wide variety of protocols, interfaces and formats
- Usually RRD, results in inflexible, infrequently refreshed PNGs on HTML
- **Not what this talk is about.**

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Current Monitoring Tools

- Consumers of application metrics
  - OpenTSDB, statsd, Rienmann, etc are a steps in the right direction
- Hopefully fewer protocols, interfaces and formats
- Realtime, dynamic graphing
- **Not what this talk is about.**

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Application Metrics

- ".. code generates business value when it runs." ~ Coda Hale

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Application Metrics

- Code instrumentation
  - Write code to measure code
  - Verify code behaves as you expect
- Exporting results of instrumentation
- General VM health

Folsom

- Application-level metrics
- Multiple metric types
- Powerful statistical analysis
- Easily extensible

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Folsom

DEMO!

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Metric Types

- Counters
- Gauges
- Histograms
- Histories
- Meters
- Erlang VM Metrics

Counters

- Counter metrics provide increment and decrement capabilities for a single scalar value.

Counters

```
> folsom_metrics:new_counter(Name).
> folsom_metrics:notify({Name, {inc, Value}}).
> folsom_metrics:notify({Name, {dec, Value}}).
```

Gauges

- Gauges are point-in-time single value metrics.

Gauges

```
> folsom_metrics:new_gauge(Name).
> folsom_metrics:notify({Name, Value}).
```

Histograms

- Histograms are collections of values that have statistical analysis done to them, such as mean, min, max, kurtosis and percentile.

- The can be used like "timers" as well with the timed update functions.

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Histograms

```
> folsom_metrics:new_histogram(Name).
> folsom_metrics:histogram_timed_update(Name, Mod, Fun, Args).
> folsom_metrics:histogram_timed_update(Name, Fun, Args).
> folsom_metrics:histogram_timed_update(Name, Fun).
> folsom_metrics:notify({Name, Value}).
```

Histories

- Histories are a collection of past events, such as errors or log messages.

Histories

```
> folsom_metrics:new_history(Name).
> folsom_metrics:get_history_values(Name, Count).
> folsom_metrics:notify({Name, Value}).
```

Meters

- Meters are increment only counters with mean rates and exponentially weighted moving averages applied to them, similar to a unix load average.

Meters

```
> folsom_metrics:new_meter(Name).
> folsom_metrics:notify({Name, Value}).
```

Erlang VM

- General VM metrics provided by Erlang VM.

Erlang VM

```
> folsom_vm_metrics:get_memory().
> folsom_vm_metrics:get_system_info().
> folsom_vm_metrics:get_statistics().
> folsom_vm_metrics:get_port_info().
> folsom_vm_metrics:get_process_info().
```

Statistics

- Statistical Analysis
  - Exponentially Weighted Moving Average (EWMA)
  - Rate / Acceleration
  - Avg, Mean, Min, Max, etc
  - Distribution
  - Percentiles / Histograms
  - Covariance / Correlation

Sampling

- Exponentially decaying
- Uniform
- None

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Extensibility

- Clean Native API
- Folsom Wrappers
  - REST+JSON
    - Munin plugins!
  - SNMP? Graphite? CollectD?

Future Work

- Metrics REST+JSON Spec
- Performance Improvements
- Better Querying, Slicing and etc of metric values
- More metric types (meter reader, timer, etc)

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Similar Tools

- Coda Hale's Metrics (JVM) - github.com/coda/metrics
- Ruby - github.com/johnewart/ruby-metrics
- JavaScript - github.com/mikejihbe/metrics
- .NET Metrics - github.com/danielcrenna/metrics-net
- Ostrich - github.com/twitter/ostrich
- Python Ostrich - github.com/wadey/python-ostrich
- .Net Ostrich - github.com/ewhauser/OstrichNet

Folsom

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Questions?

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https://github.com/boundary/folsom

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