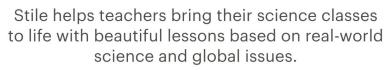# Watching the Watchers

Generating absent alerts for Prometheus metrics

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Set up a trial

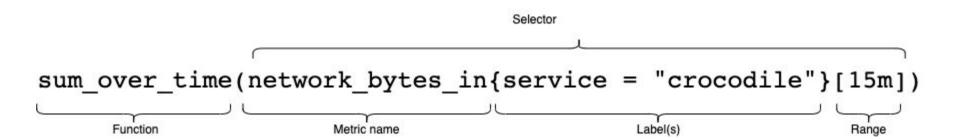We're hiring! https://stileeducation.com/who-we-are/engineering-at-stile/

Absent alerts?

- Alerts need that exist value
- You care if the metrics go away

The manual approach

```
sum(avg_over_time(aws_elasticache_network_bytes_in_sum[5m])) / 1e+09 > 2.0
    or absent_over_time(aws_elasticache_network_bytes_in_sum[5m])
```

AUTOMATE ALL THE THINGS

imgflip.com

The anatomy of a Prometheus expression

sum_over_time(network_bytes_in{service = "crocodile"}[15m])

Function — sum_over_time(
Metric name — network_bytes_in
Selector — network_bytes_in{service = "crocodile"}[15m]
Label(s) — {service = "crocodile"}
Range — [15m]

Prometheus alert rules

```
alert: api_errors_critical_alert
expr: stack:api_errors_percentage > 10
for: 30s
annotations:
    summary: Percentage of errors is critical
    description:
        The API error percentage on across all routes is
        critical. Something has clearly gone wrong, and it is up to you
        to fix it!
```

What do we need to do?

1. Find the metrics and recording rules used by alerts and other recording rules

2. Generate the absent alert rule for each selector we retrieved

3. Generate a file with alerts

4. Regenerate the absent alerts whenever Prometheus rules files are changed

```
6b9dffa579e Autosurgeon autosurgeon_prometheus changes
diff --git a/operations/docker/prometheus/alerts/absent.rules.yml b/operations/docker/prometheus/alerts
/absent.rules.yml
index d8b956bd91a..7dbd6cfc523 100644
--- a/operations/docker/prometheus/alerts/absent.rules.yml
+++ b/operations/docker/prometheus/alerts/absent.rules.yml
@@ -731,6 +731,14 @@ groups:
              for: 1h
              labels:
                severity: low_urgency_page
+          - expr: "absent(global:saml_idp_signing_certificate_days_until_expiry)"
+            alert: "absent_global:saml_idp_signing_certificate_days_until_expiry"
+            annotations:
+              description: "No data for 'global:saml_idp_signing_certificate_days_until_expiry'. This alert rule
was generated by prometheus-absent-data-alert-rule-generator."
+              summary: "No data for 'global:saml_idp_signing_certificate_days_until_expiry'"
+            for: 1h
+            labels:
+              severity: low_urgency_page
           - expr: "absent(global:saml_idp_sso_target_url_ssl_days_until_expiry)"
             alert: "absent_global:saml_idp_sso_target_url_ssl_days_until_expiry"
             annotations:
@@ -2147,6 +2155,14 @@ groups:
              for: 1h
              labels:
                severity: low_urgency_page
+          - expr: absent(saml_idp_signing_certificate_days_until_expiry)
+            alert: absent_saml_idp_signing_certificate_days_until_expiry
+            annotations:
+              description: "No data for 'saml_idp_signing_certificate_days_until_expiry'. This alert rule was
generated by prometheus-absent-data-alert-rule-generator."
+              summary: "No data for 'saml_idp_signing_certificate_days_until_expiry'"
+            for: 1h
+            labels:
+              severity: low_urgency_page
           - expr: absent(saml_idp_sso_target_url_ssl_days_until_expiry)
             alert: absent_saml_idp_sso_target_url_ssl_days_until_expiry
             annotations:
```

How's it gone?

- We've improved the way in which some of our alerts are written

- Metrics that were previously absent in normal conditions are initialised at startup

- We can triangulate if a service is down or there is another problem

- We found metrics that weren't actually being exported

- It's been pretty awesome!

What else can we do?

- Unit testing with promtool
- Improve the for-clause derivation
- Open source!

Thanks!

If you want to talk about this more, hit me up in the SRECon21 Slack channel, or email me at nicholas.spain@stileeducation.com