

MONITORING YOUR ELIXIR APPLICATION WITH PROMETHEUS

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SMARTLOGIC

We build web and mobile applications

Have a project? We can help.

smartlogic.io // contact@smartlogic.io

- » Context
- » Setup
- » Metrics
- » Instrument
- » Prometheus
- » Grafana
- » Alerting

PROMETHEUS

From metrics to insight

prometheus.io



GRAFANA

The open platform for beautiful analytics
and monitoring

grafana.com



OTHER OPTIONS

- » NewRelic
- » CloudWatch
- » DataDog
- » Scout
- » statsd
- » Graphite
- » . . .

GRAPEVINE

Community site for text based games

grapevine.haus

<https://github.com/oestrich/grapevine>



```
grapevine
```

SETUP

`mix.exs`

```
[  
  {:prometheus_ex, "~> 3.0"},  
  {:prometheus_plugs, "~> 1.1"},  
  {:telemetry, "~> 0.3"},  
]
```


DEFINE YOUR METRICS EXPORTER

```
defmodule Metrics.PlugExporter do  
  use Prometheus.PlugExporter  
end
```

ADD TO ENDPOINT

```
defmodule Web.Endpoint do
  # ...
  plug Metrics.PlugExporter
  # ...
end
```

METRICS SETUP

```
defmodule Metrics.Setup do
  def setup do
    Metrics.PlugExporter.setup()
  end
end
```

ADD SETUP TO YOUR APPLICATION

```
defmodule Grapevine.Application do
  def start(_type, _args) do
    # ...
    Metrics.Setup.setup()
    # ...

    Supervisor.start_link(children, opts)
  end
end
```

METRICS!

Available at

<http://localhost:4100/metrics>

```
# TYPE erlang_vm_atom_count gauge
```

```
# HELP erlang_vm_atom_count The number of atom ...
```

```
erlang_vm_atom_count 38398
```

```
# TYPE erlang_vm_atom_limit gauge
```

```
# HELP erlang_vm_atom_limit The maximum number ...
```

```
erlang_vm_atom_limit 1048576
```

```
# Many more
```

CUSTOM INSTRUMENTATION

OUR FIRST INSTRUMENTER

```
defmodule Metrics.AccountInstrumenter do
  use Prometheus.Metric

  def setup() do
    events = [
      [:create],
      [:session, :login],
      [:session, :logout],
    ]

    Enum.each(events, &setup_event/1)
  end
end
```

OUR FIRST INSTRUMENTER

```
defmodule Metrics.AccountInstrumenter do
  defp setup_event(event) do
    name = Enum.join(event, "_")
    name = "grapevine_accounts_#{name}"

    Counter.declare(
      name: String.to_atom("#{name}_total"),
      help: "Total of account event #{name}"
    )

    # ...
  end
end
```


PROMETHEUS NAMING

- » Prefix with application name
- » Use base units (seconds not milliseconds)
- » Suffix with unit

Prometheus Docs

ADD TO OUR SETUP MODULE

```
def setup do
  Metrics.AccountInstrumenter.setup()
  Metrics.PlugExporter.setup()
end
```

METRICS

```
# TYPE grapevine_accounts_session_login_total counter
# HELP grapevine_accounts_session_login_total Total count ...
grapevine_accounts_session_login_total 0
```

TRIGGERING EVENTS

0.3.0

```
:telemetry.execute([:grapevine, :accounts, :create], 1)
```

TRIGGERING EVENTS

0.4.0

```
:telemetry.execute([:grapevine, :accounts, :create],  
  %{value: 1})
```

REGISTER TELEMETRY CALLBACKS

```
defmodule Metrics.AccountInstrumenter do
  defp setup_event(event) do
    name = Enum.join(event, "_")
    name = "grapevine_accounts_#{name}"

    Counter.declare(
      name: String.to_atom("#{name}_total"),
      help: "Total of account event #{name}"
    )

    # [:grapevine, :accounts, :create]
    event = [:grapevine, :accounts | event]
    :telemetry.attach(name, event, &handle_event/4, nil)
  end
end
```

ATTACH VS ATTACH_MANY

HANDLING EVENTS

```
def handle_event(event, count, metadata, config)

def handle_event([:grapevine, :accounts, :create], __, __, __) do
  Logger.info("New account created!")
  Counter.inc(name: :grapevine_accounts_create_total)
end
```


CONCURRENCY

- » `:telemetry.execute` runs in the process that calls it
- » Prometheus counters/gauges/etc are tracked via public ETS tables

VIEWING OUR METRICS

- » `/metrics`
- » Prometheus server
- » Grafana

BASIC PROMETHEUS SETUP

» Scrape configs

» Rules

SCRAPE CONFIG

```
scrape_configs:
```

```
- job_name: 'grapevine'
```

```
  static_configs:
```

```
    - targets: ['localhost:4100']
```

Targets

All Unhealthy

grapevine (1/1 up) [show less](#)

Endpoint	State	Labels	Last Scrape	Scrape Duration	Error
http://localhost:4100/metrics	UP	instance="localhost:4100" job="grapevine"	6.079s ago	47.1ms	

☐ Enable query history

telnet_client_count

Load time: 21ms
Resolution: 1s
Total time series: 2

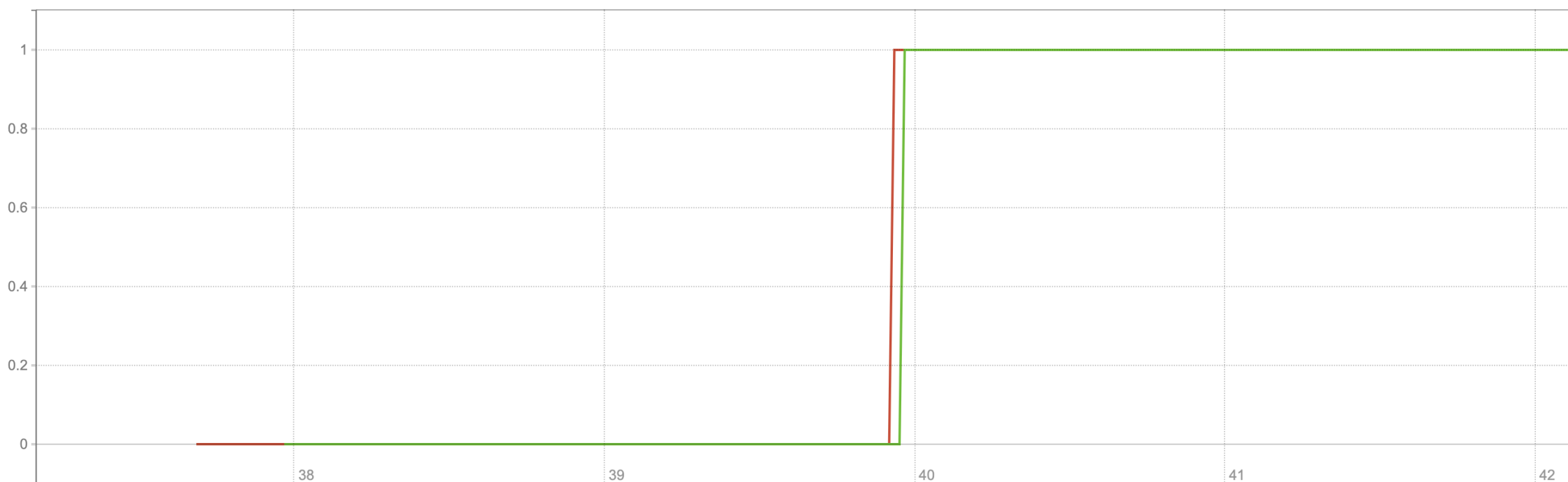
Execute

- insert metric at cursor -

Graph

Console

- 5m + ⏪ Until ⏩ Res. (s) ☐ stacked



✓ ■ telnet_client_count{instance="localhost:4101",job="grapevine"}
✓ ■ telnet_client_count{instance="localhost:4100",job="grapevine"}

[Remove Graph](#)

RULES

alert: New User Registered

expr: increase(grapevine_account_create_total[5m]) > 0

annotations:

subject: "Grapevine - New user registered"

description: ""

Alerts

☐ Show annotations

Web Client Open (1 active)

```
alert: Web
  Client Open
expr: telnet_client_count
  > 0
annotations:
  description: ""
  subject: Grapevine - Web Client Open
```

Labels	State	Active Since	Value
<div>alertname="Web Client Open"instance="localhost:4100"job="grapevine"</div>	FIRING	2019-02-26 02:46:50.013528578 +0000 UTC	1

GMCP flood (0 active)

New User Registered (0 active)

CONNECTING GRAFANA

DASHBOARDS



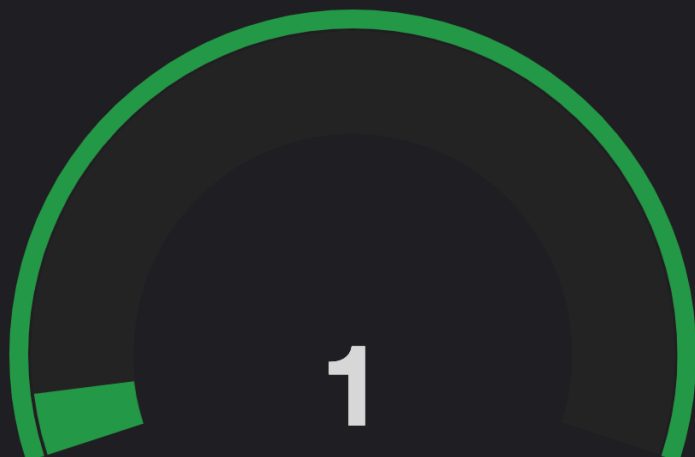
Gossip ▾



Last 5 minutes Refresh every 10s



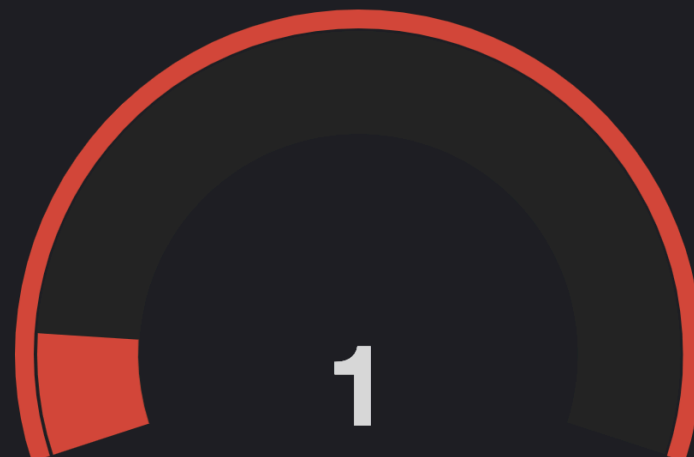
Connected Games



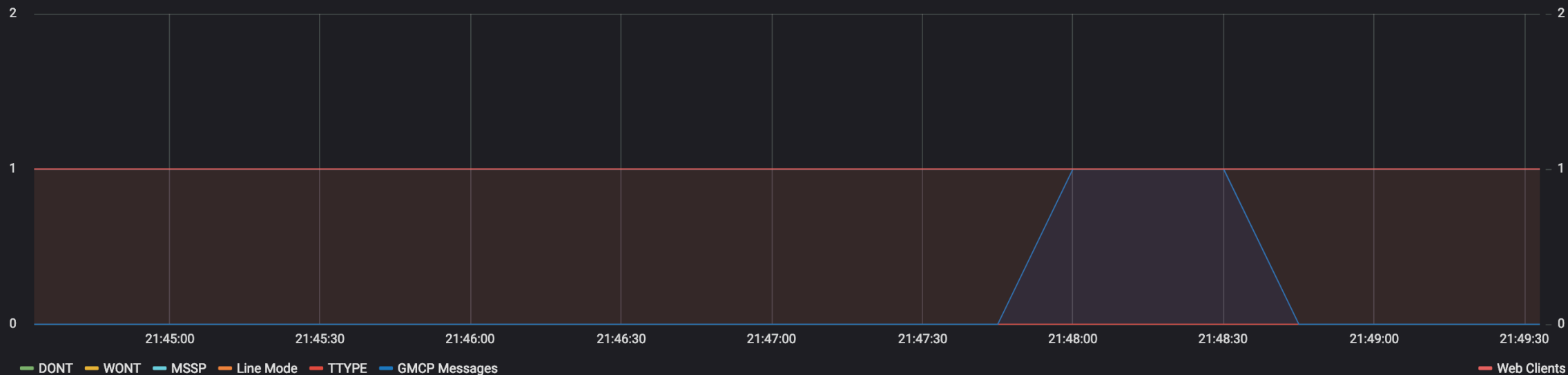
Connected Sockets



Open Web Clients



Telnet



DEMO

TWITCH

Live dev streams every Monday at 12PM
Eastern

twitch.tv/smartlogictv

SMART SOFTWARE

podcast.smartlogic.io



QUESTIONS?

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