

# Rethinking UX for AI-driven Monitoring Tools

Steve Boak

*Director, Product Design @ Datadog*

<https://bit.ly/2MND1Z9>

#talk-stephen-boak

2016–Present

**Datadog**



2015–2016

**Opsee**



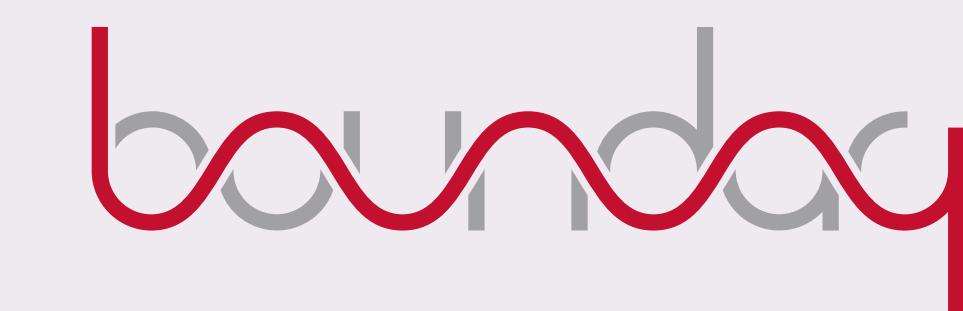
2013–2015

**Opsmatic**



2011–2013

**Boundary**



# About Datadog

EMPLOYEES

700+

FOUNDED

2010

ENGINEERING

300+

BUSINESS

SaaS



# Infrastructure

2011–Today



# Servers



Clouds & VMs



Containers

$f(x)$  $f(x)$  $f(x)$ 

[REDACTED]

Serverless

# User Experience

2011–Today

# Alert Creation UX (2011)

01 Define Scope

02 Choose Metric

03 Set Threshold

04 Set Time

# Alert Creation UX (2018)

01 Define Scope

02 Choose Metric

03 Set Threshold

04 Set Time

## ▼ Configure

Configuration Options

## ▼ Configuration Tools

Configuration Wizards

Auto-Discovery

Manage Templates

## ▼ Advanced Configuration

Core Config Manager

## ▼ More Options

My Account Settings

System Configuration

User Management

Unconfigured Objects

Deadpool Settings



# Configuration Wizard: Postgres Server - Step 1



## Postgres Server

Specify the details for connecting to the Postgres server you want to monitor.

**Address:**

The IP address or FQDN name of the Postgres server.

**Port:**

The port to use to connect to the Postgres server.

**Username:**

The username used to connect to the Postgres server.

**Password:**

The password used to connect to the Postgres server.

**Database:**

The database to connect to on the Postgres server.

[◀ Back](#)[Next ▶](#)

## ▼ Configure

Configuration Options

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Configuration Wizards

Auto-Discovery

Manage Templates

## ▼ Advanced Configuration

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## ▼ More Options

My Account Settings

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Unconfigured Objects

Deadpool Settings

Host Name:

172.16.0.1

The name you'd like to have associated with this Postgres server.

Port:

5432

Username:

postgres

Password:

\*\*\*\*\*

Database:

postgres

## Postgres Server Metrics

Specify the metrics you'd like to monitor on the Postgres server.

**Connection Status**

Monitor the ability to connect to the server.

**Backend Connections**

Monitor the time the number of connections to the server.



10



30

**WAL Files**

Monitor the time the number of WAL files in the pg\_xlog directory.



10



20

◀ Back

Next ▶

# Select a metric to monitor

## 1 Choose the detection method

## Threshold Alert | Change Alert | Anomaly Detection | Outlier Detection | Forecast Alert

An alert is triggered whenever a metric crosses a threshold.

## ② Define the metric

## Get Select a metric

postgresql

## Sim postgresql.table\_size

## postgresql.index\_size

## Set `postgresql.table.count`

## postgresql\_index\_scans

**say** PostgreSQL connections

Digitized by srujanika@gmail.com

www.english-test.net

## postgreSQL\_were\_deleted



## 1 Choose the detection method

**Threshold Alert** Change Alert Anomaly Detection Outlier Detection Forecast Alert

An alert is triggered whenever a metric crosses a threshold.



## 2 Define the metric

Source Edit

Get postgresql.connections from role:  
role:ctx-p shard-master  
role:monitoring-client  
role:ctx-p shard-replica  
role:host-p shard-master  
role:ctx-p shard-standby  
role:host-p shard-extract  
role:host-p shard-replica

Advanced...

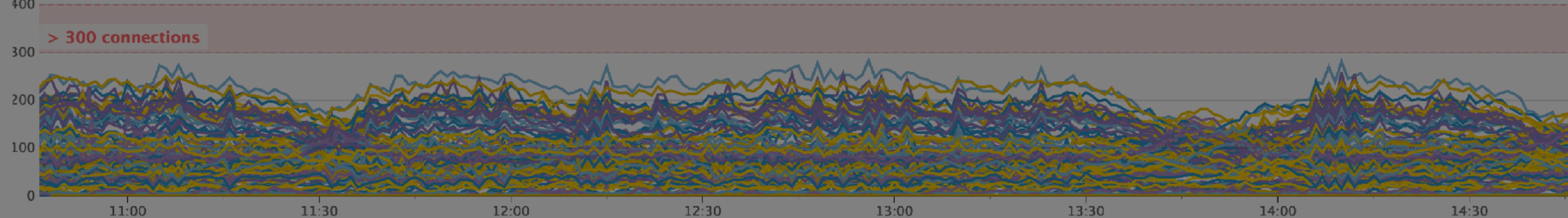


## 3 Set alert conditions

Trigger when the metric is above  
Alert threshold:

during the last 5 minutes





## 1 Choose the detection method

Threshold Alert Change Alert Anomaly Detection Outlier Detection Forecast Alert

An alert is triggered whenever a metric crosses a threshold.



## 2 Define the metric

Source Edit

Get postgresql.connections from role:ctx-pshard-replica x excluding (none) avg by host x +

</>

Advanced...

Multi Alert Trigger a separate alert for each host x reporting your metric



## 3 Set alert conditions

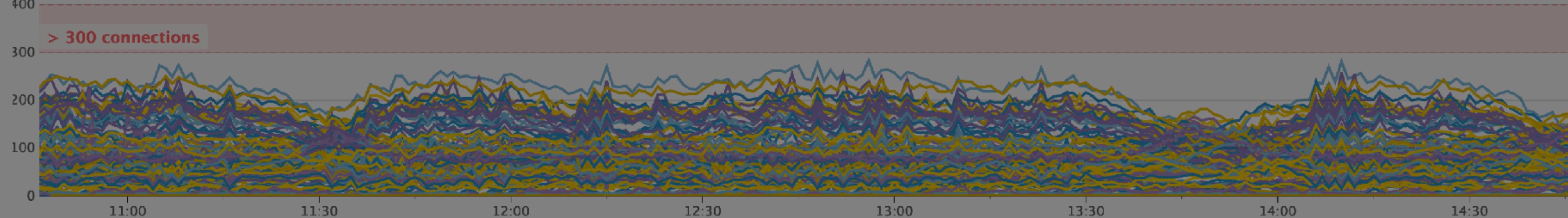
Trigger when the metric is above the threshold on average during the last 5 minutes for any host

Alert threshold: 300 (300 connections)

Warning threshold: Warning threshold (optional)

Alert recovery threshold: Alert recovery threshold (optional)

Warning recovery threshold: Warning recovery threshold (optional)



## 1 Choose the detection method

Threshold Alert Change Alert Anomaly Detection Outlier Detection Forecast Alert

An alert is triggered whenever a metric crosses a threshold.



## 2 Define the metric

Source Edit

Get postgresql.connections from role:ctx-pshard-replica x excluding (none) avg by host x +

</>

Advanced...

Multi Alert Trigger a separate alert for each host x reporting your metric



## 3 Set alert conditions

Trigger when the metric is above the threshold on average during the last 5 minutes for any host

Alert threshold: 300 (300 connections)

Warning threshold: Warning threshold (optional)

Alert recovery threshold: Alert recovery threshold (optional)

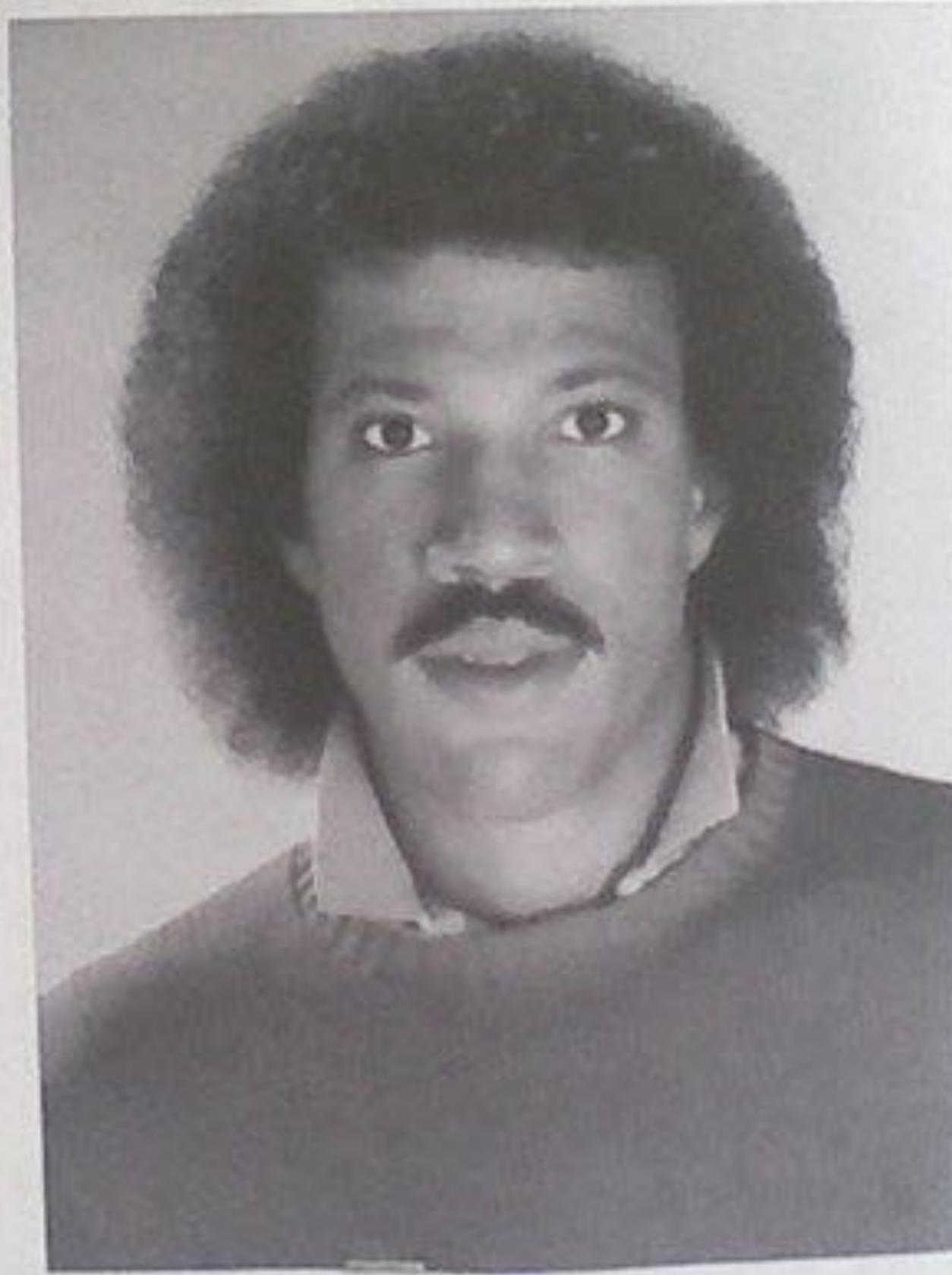
Warning recovery threshold: Warning recovery threshold (optional)



Aditya Mukerjee, Stripe

Monitorama PDX 2018

# Hello?



**Is it me you're looking for?**

I can see it in  
your eyes

I can see it in  
your smile

You're all I've  
ever wanted

(and) my arms  
are open wide

'Cause you know  
just what to say

And you know  
just what to do

And I want to  
tell you so much

I love you

"Cause I wonder  
where you are

And I wonder  
what you do

Are you somewhere  
feeling lonely

Or is someone  
loving you?

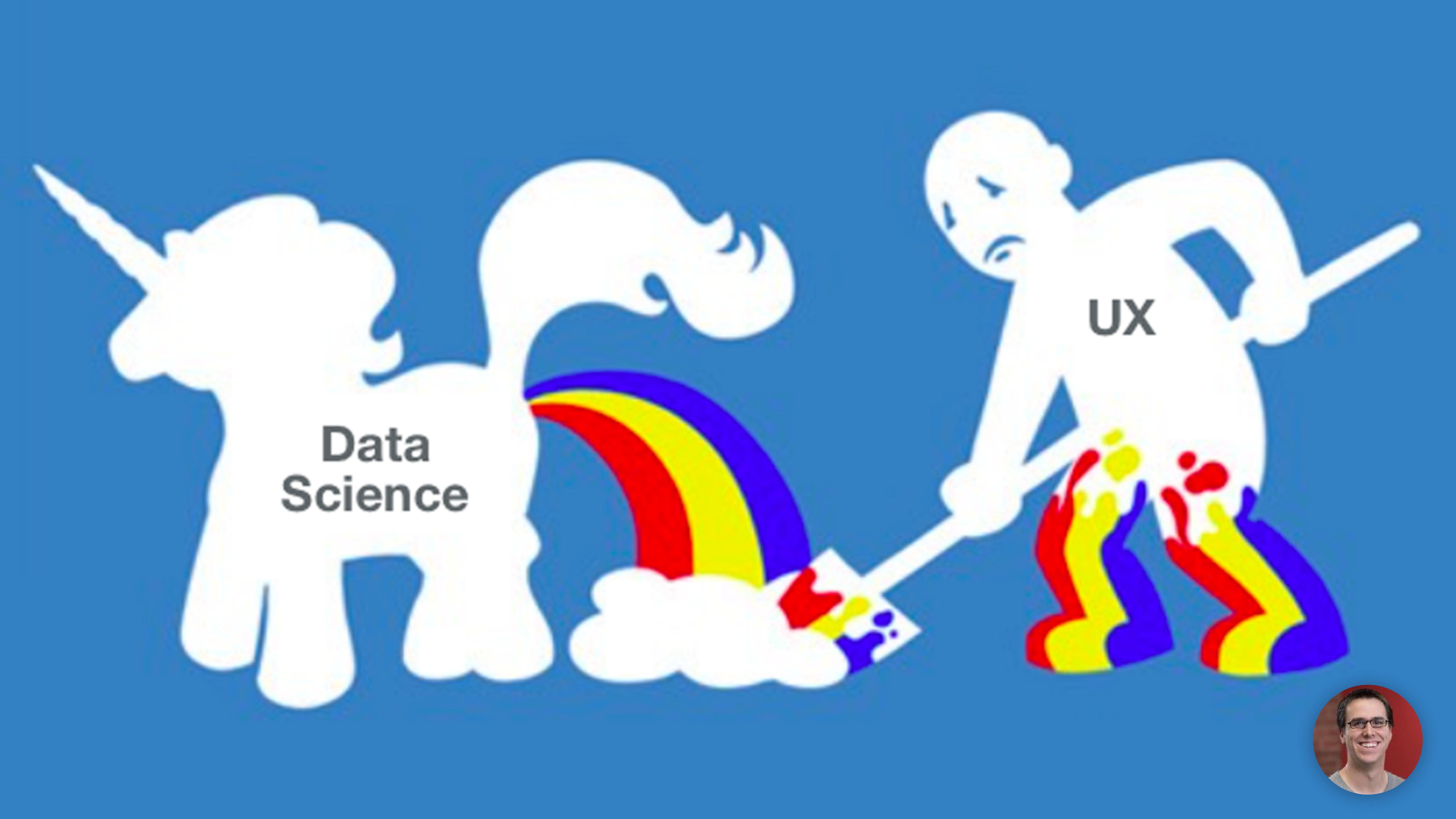
Tell me how to  
win your heart

For I haven't got  
a clue

But let me start

by saying

I love you

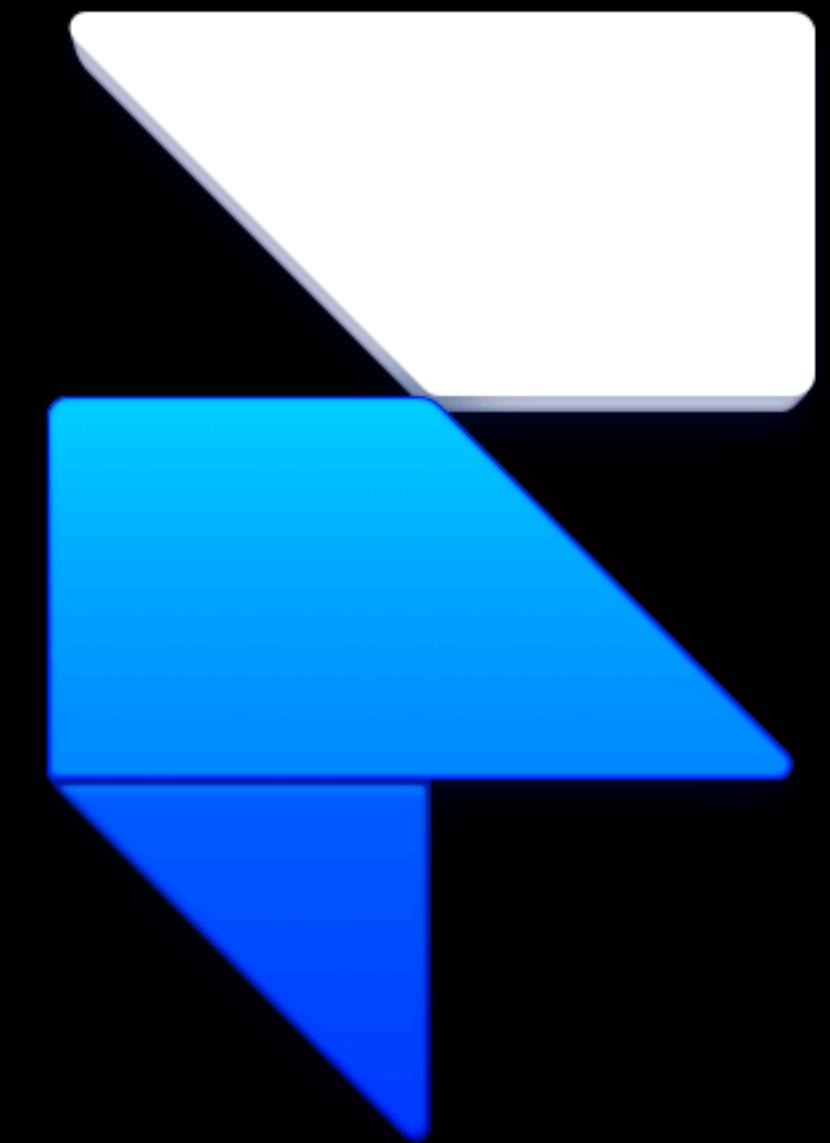


Data  
Science

UX



# Open-source Design



Search... ≡

Video

FOCUS +

July 24

# The Arctic Circle

The Arctic is the most northerly of the five circles of latitude.

Focus

144 T

38 L 38 R

145 B

Width: 375 Fixed

Height: 20 Fixed

Opacity: 100%

Rotation: 0°

Status Bar

Carrier: Framer

Appearance: Light

Battery: 100

Functions +

+

≡

Video Player Spotify

Unsplash Mapbox

iOS Components

Statusbar Slider

Switch Spinner

Loaders

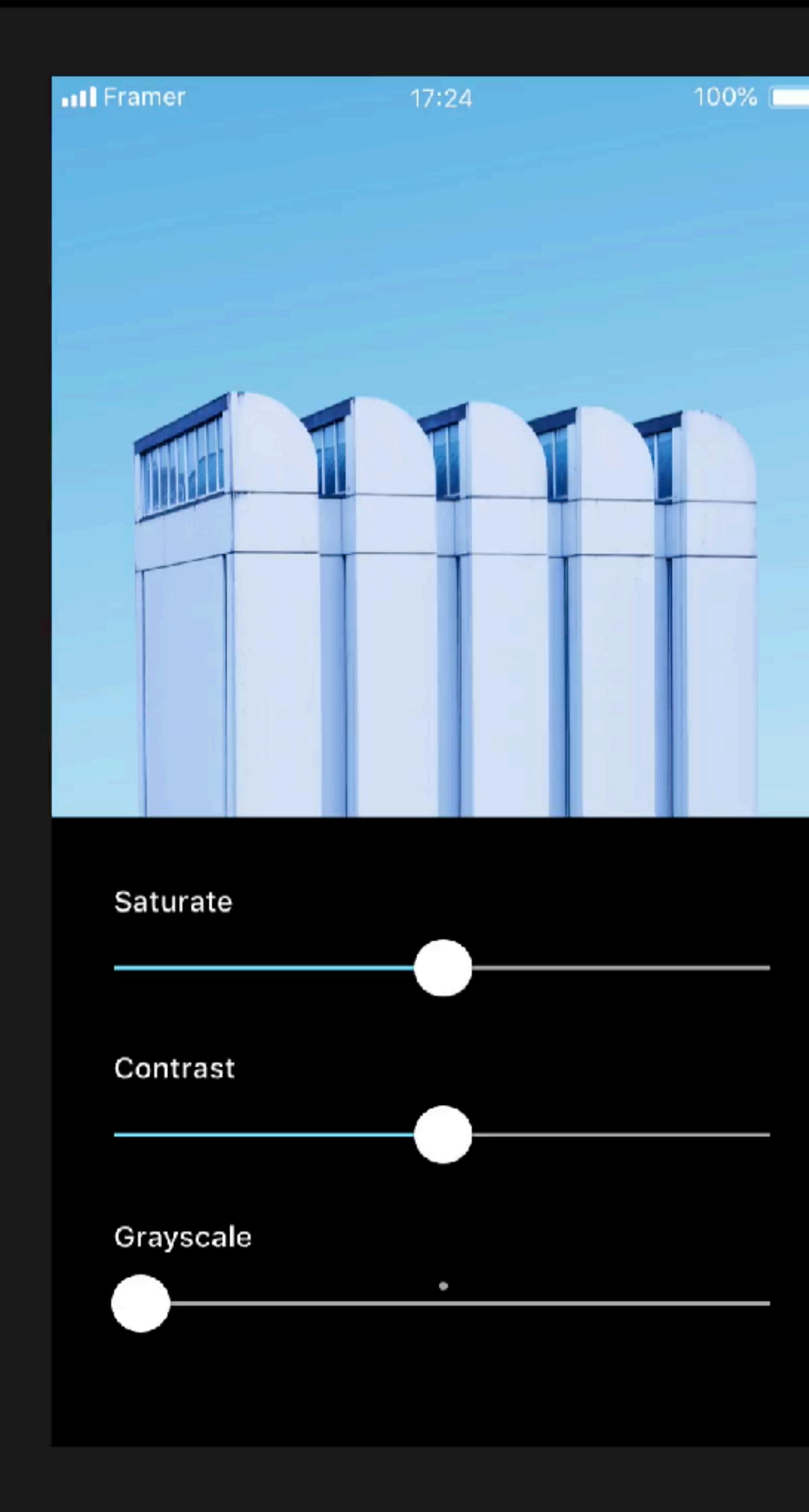
New Component

Search icon

Heart icon

Lightning bolt icon

Search bar



The Framer interface shows a building image with three sliders below it:

- Saturate: A slider with a white knob at the center.
- Contrast: A slider with a white knob at the center.
- Grayscale: A slider with a white knob at the far left.

The Framer canvas has a blue background. The top bar shows "Framer" and the time "17:24". The right panel displays component properties and code.

**Properties Panel (Top Right):**

- Width: 315, Fixed
- Height: 40, Fixed
- Opacity: 100%
- Rotation: 0°

**Code Panel (Bottom Right):**

```
import * as React from "react"
import { Frame, Point, Draggable, PropertyControls, ControlType } from "framer"

interface Props {
  value: number
  onValueChange: (value: number) => void
  knob: string
  track: string
  tint: string
  width: number
  height: number
}

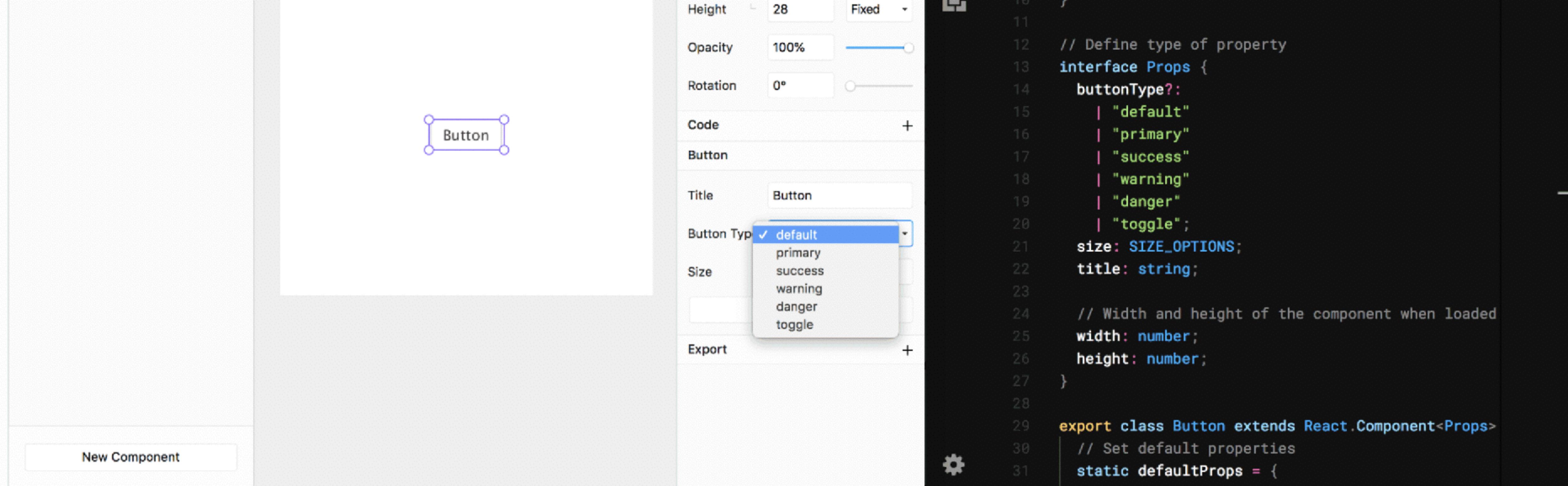
interface State {
  value: number
}

export class Slider extends React.Component<Partial<Props>, State> {
  static defaultProps = {
    width: 120,
    height: 44,
    value: 50,
    knob: "white",
    track: "#A4AAB3",
    tint: "#007AFF",
  }

  static propertyControls: PropertyControls<Props> = {
    value: { type: ControlType.Number, title: "Value" },
    tint: { type: ControlType.Color, title: "Tint" },
  }

  static knobSize = 28

  state = {
    value: Slider.defaultProps.value,
  }
}
```



## Getting started

This guide assumes you have a basic development environment setup with [Node](#), [Yarn](#) and [Git](#), as well as basic Javascript and React knowledge. Let's start by cloning the build system repository:

```
git clone https://github.com/shiftsave/framerx-build-system.git
```

DevOps → DesignOps

# UX Examples

01  
Static  
Threshold

02  
Forecast

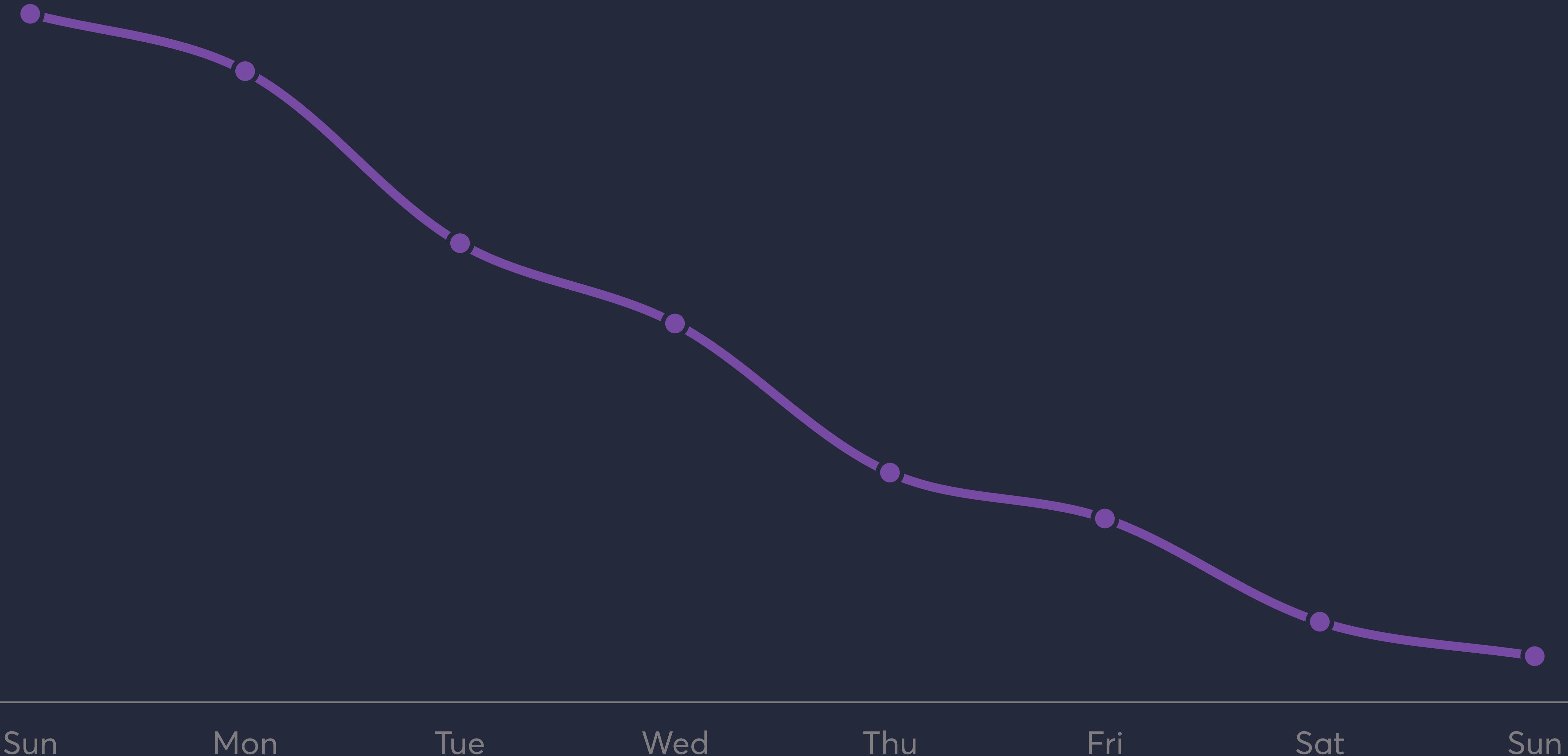
03  
Anomaly

04  
Algorithmic  
Feed

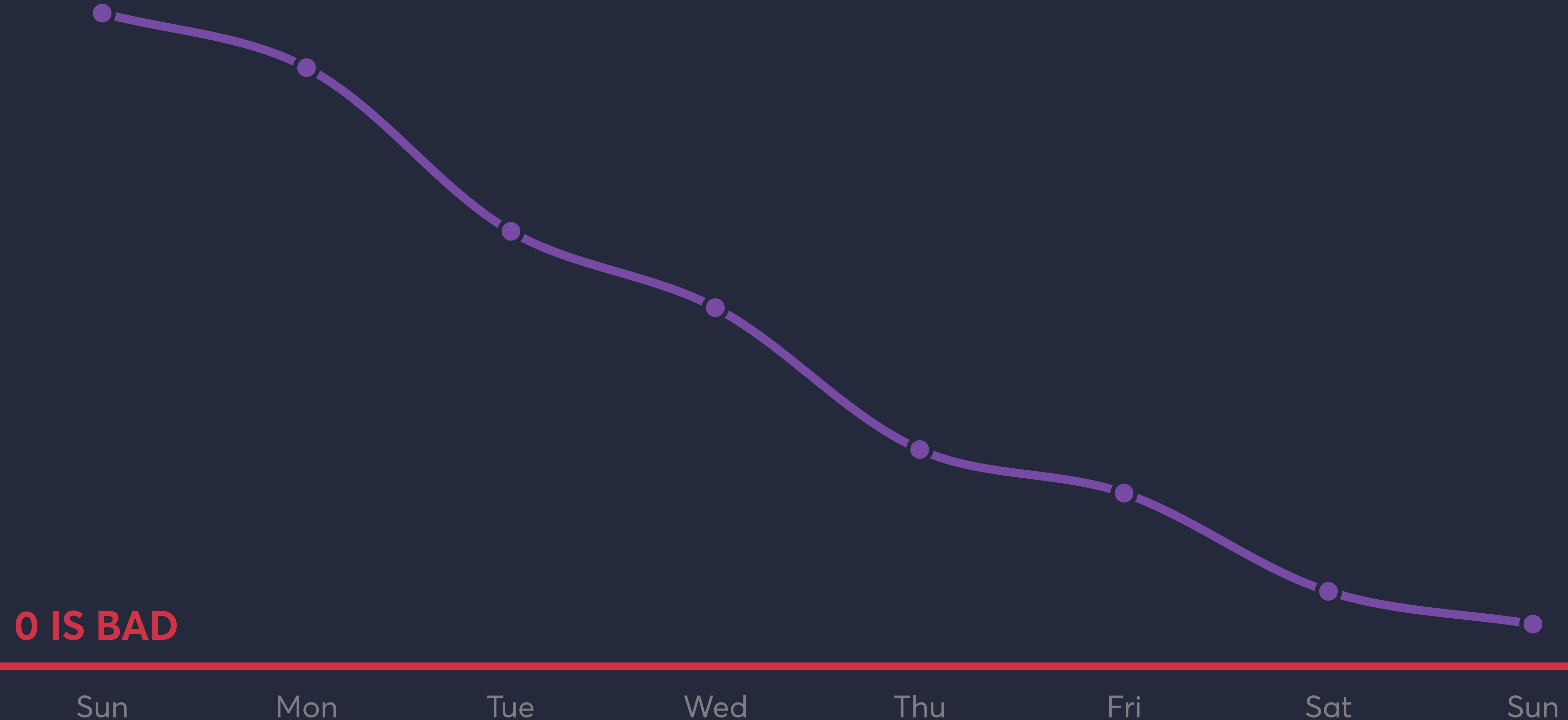
05  
Machine  
Learning

# Static Threshold

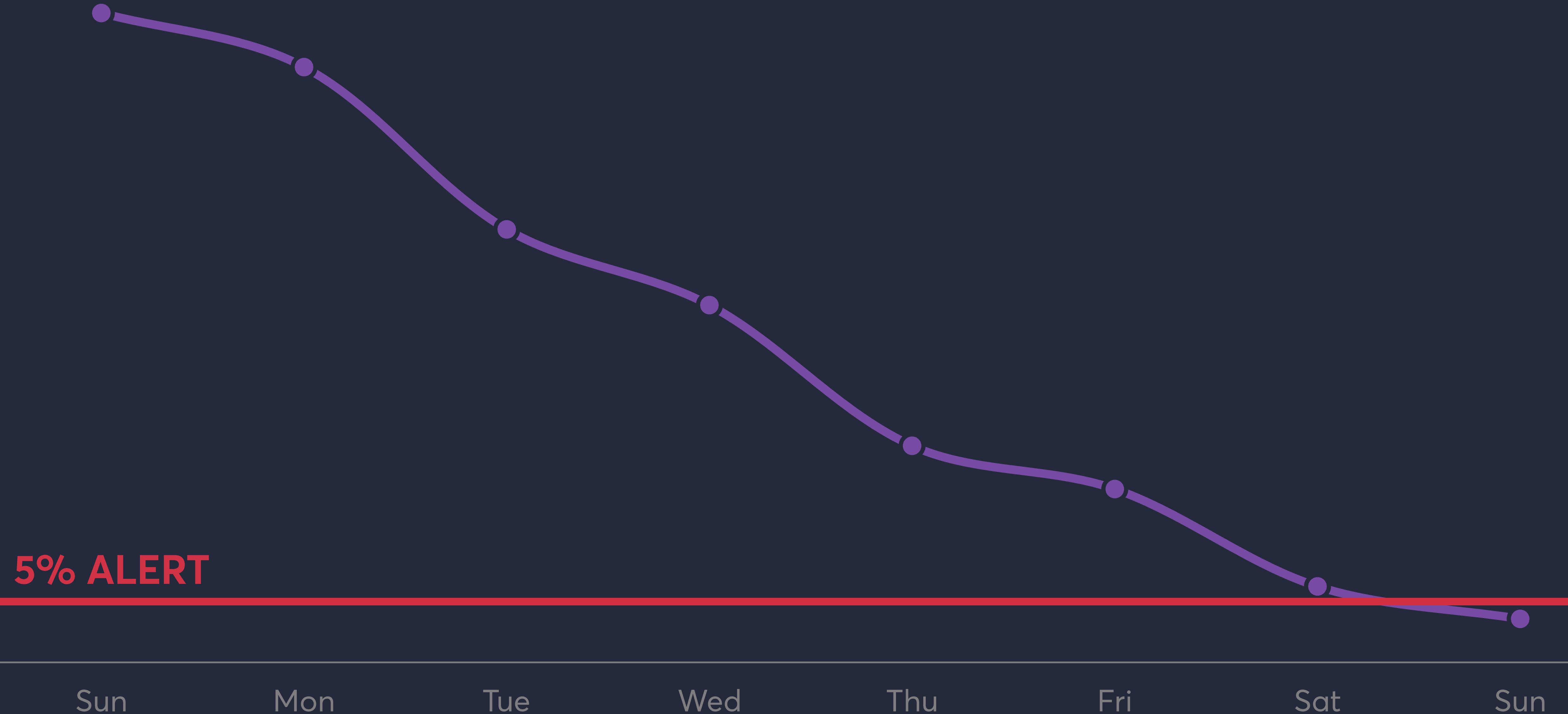
# Free Disk Space



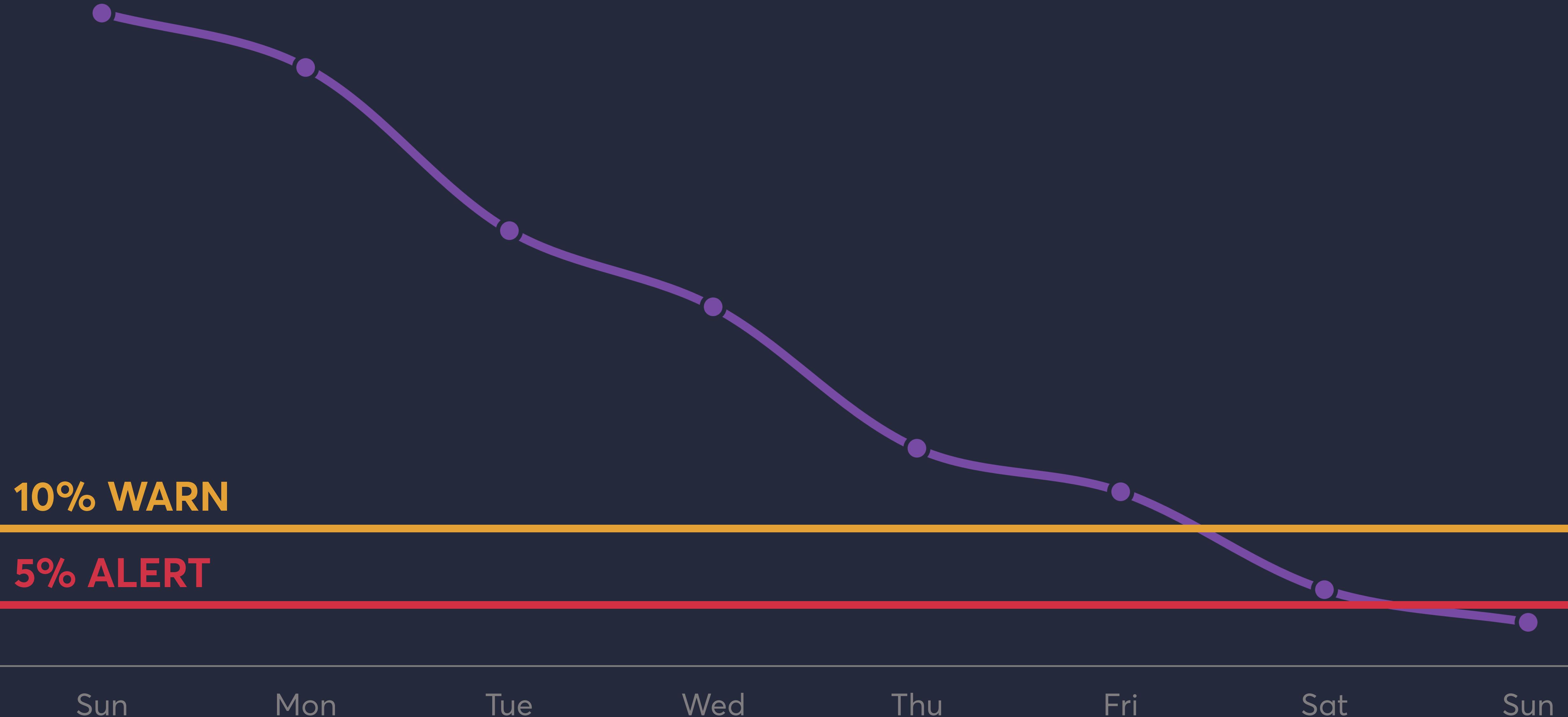
# Free Disk Space



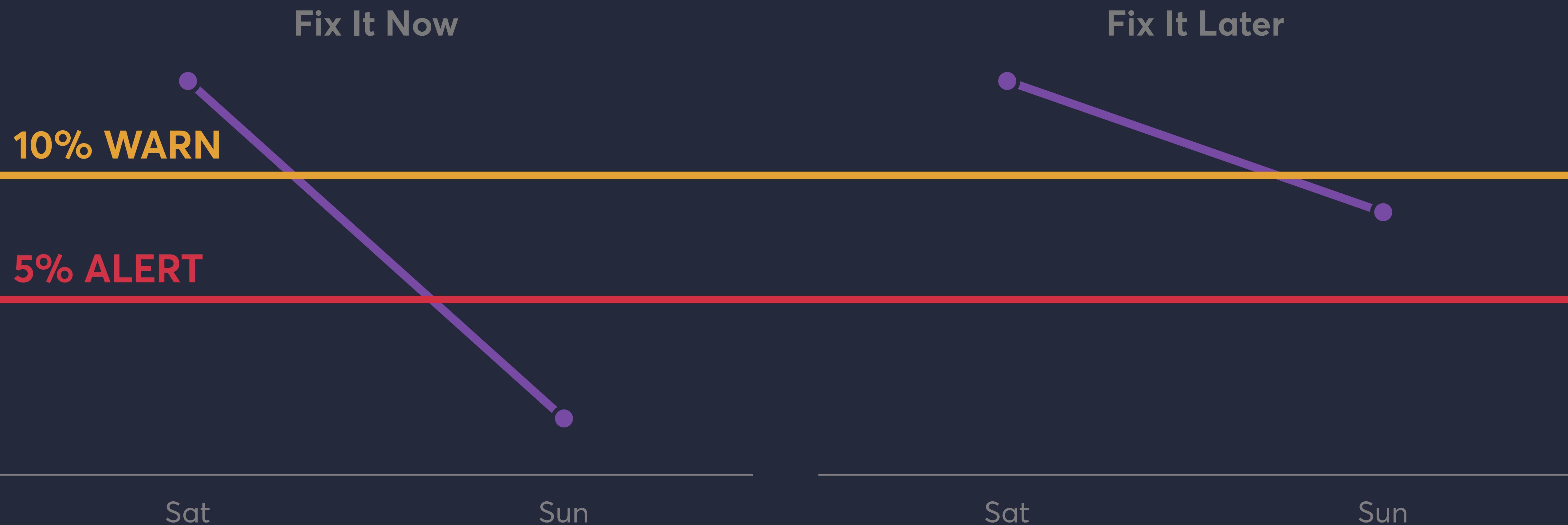
# Free Disk Space



# Free Disk Space



# Manual Assessment

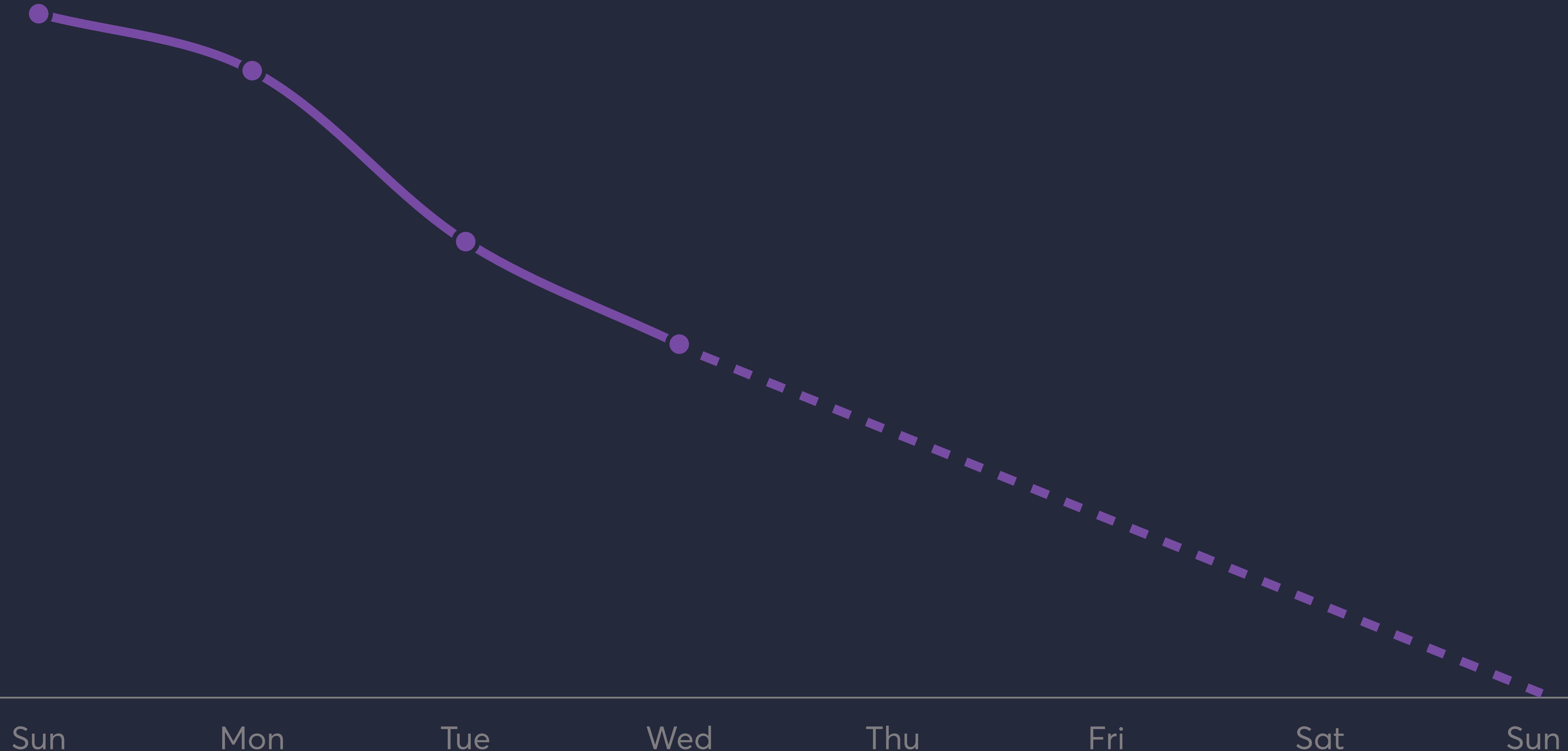


Observability is a technical  
measure with human limits

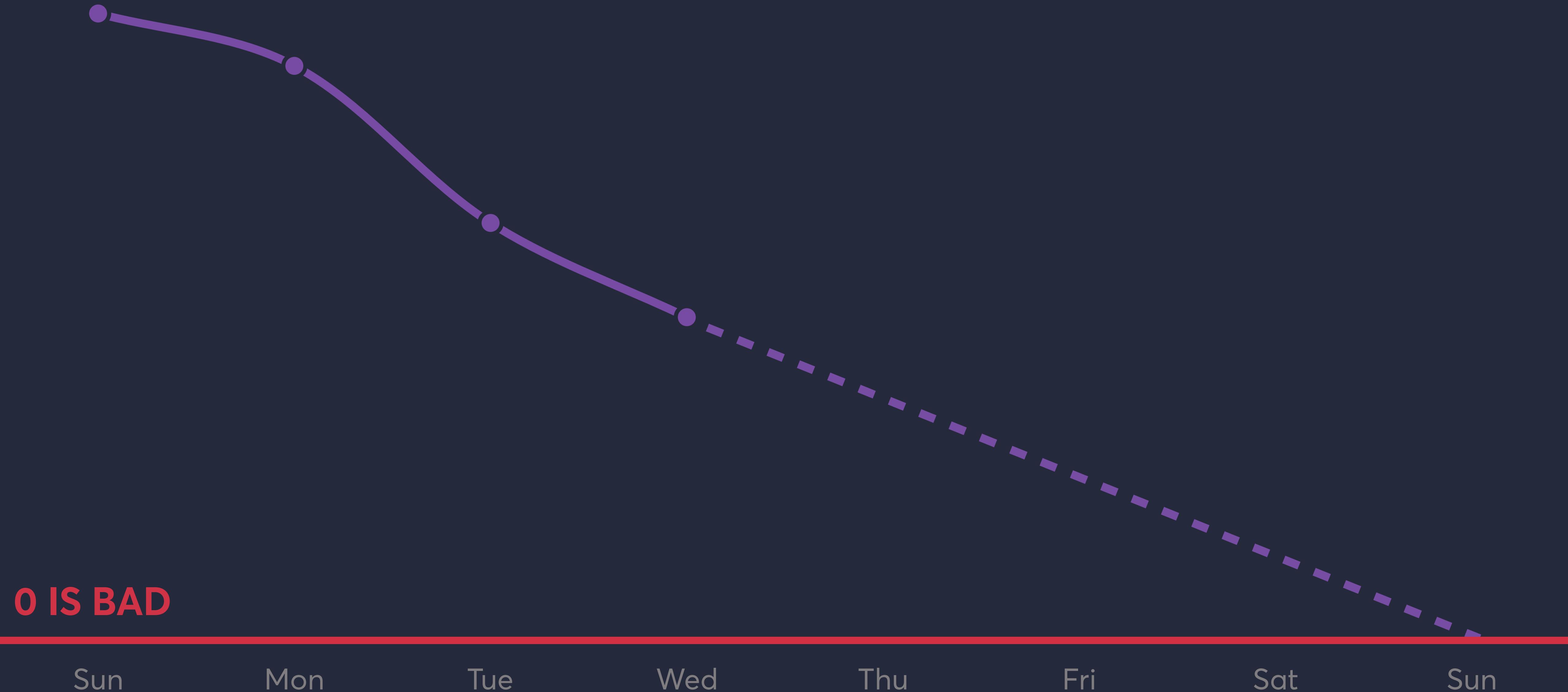
Machines Can Do the Observing

Forecast

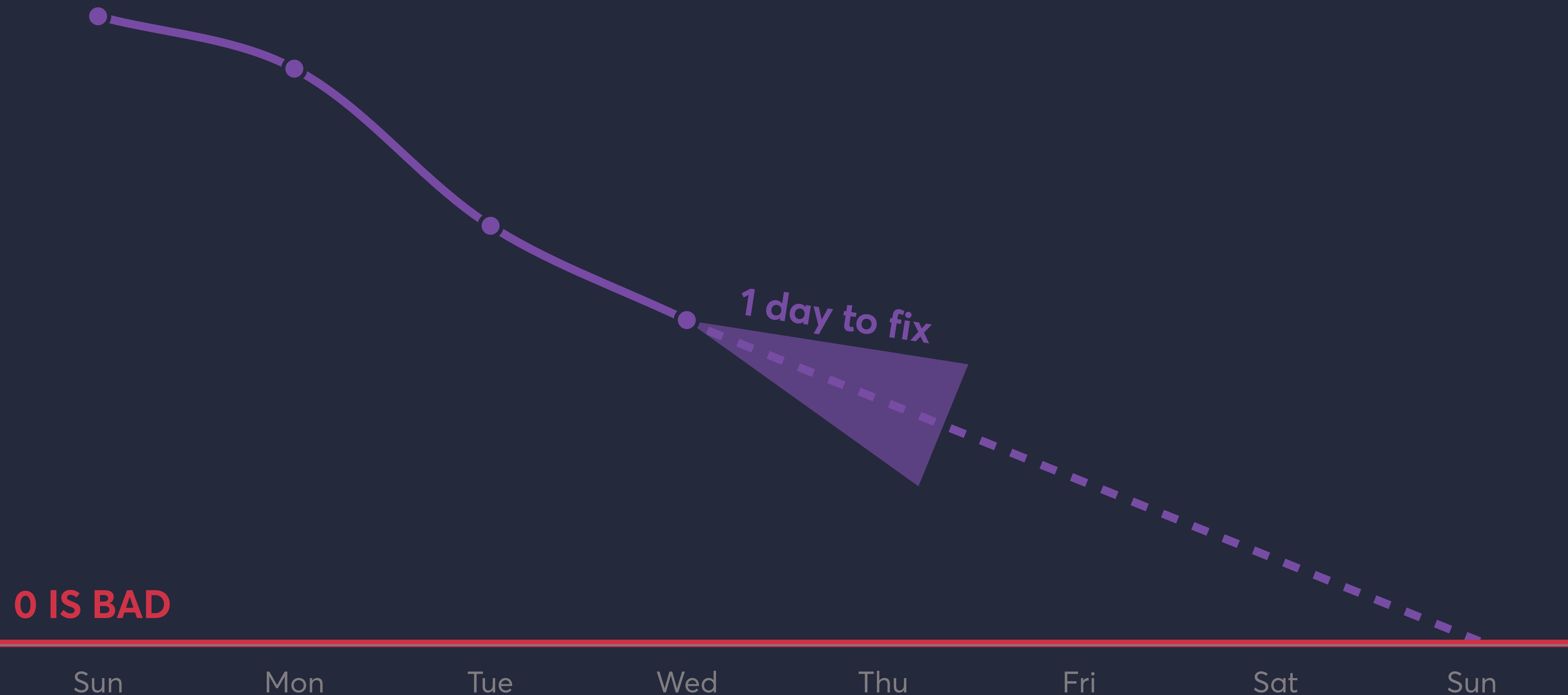
# Free Disk Space Forecast



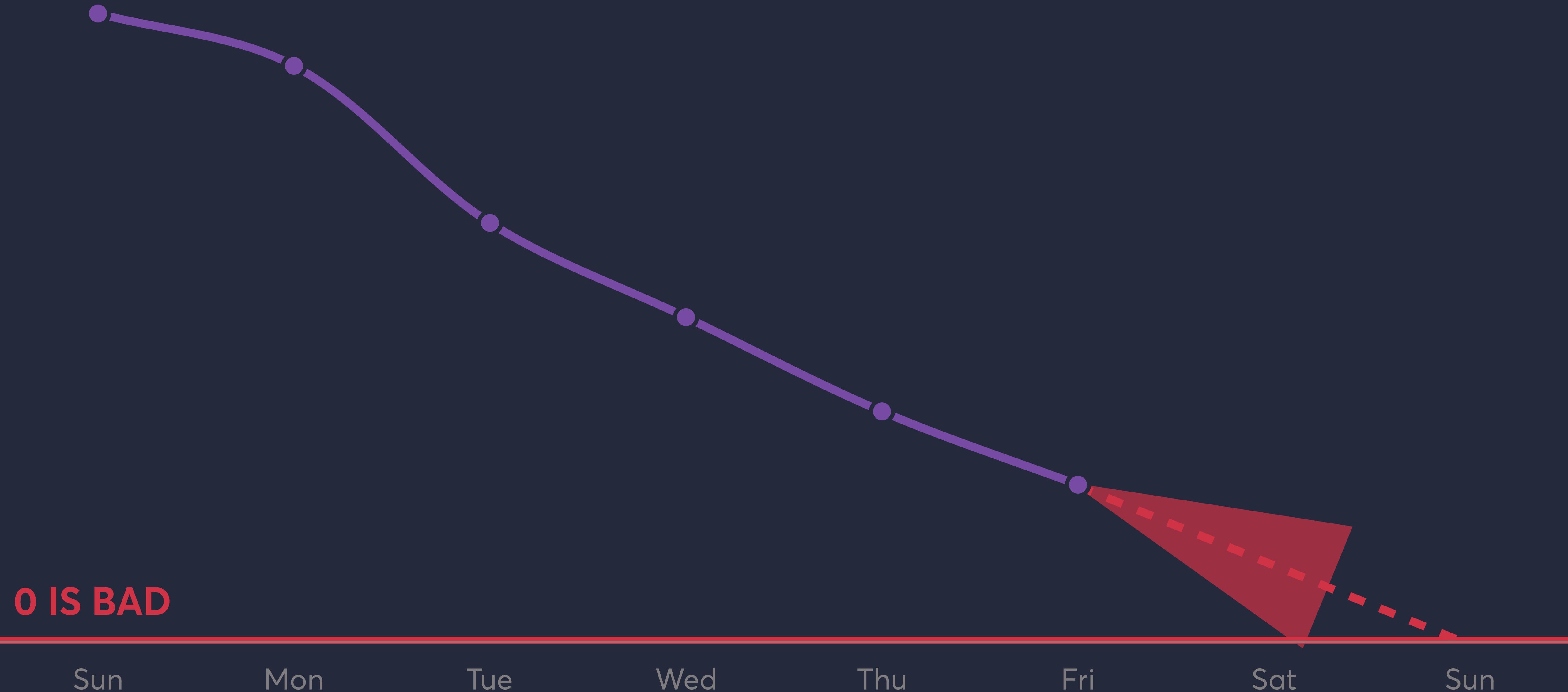
# Free Disk Space Threshold



# Time Required to Fix



# Always Enough Time



“You have [a certain amount of time]  
to repair this system before it reaches  
[the critical threshold]”

Anomaly

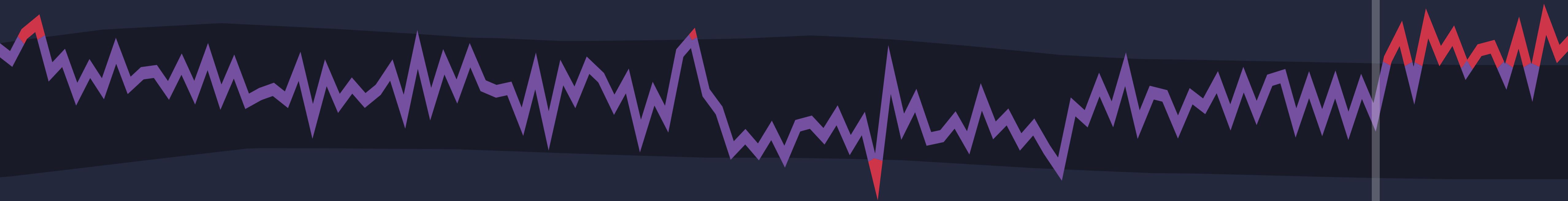
# Web Traffic







# Percentage Outside



63% Outside

“[X]% of points in a [specified window  
of time] are outside the [critical  
range]”

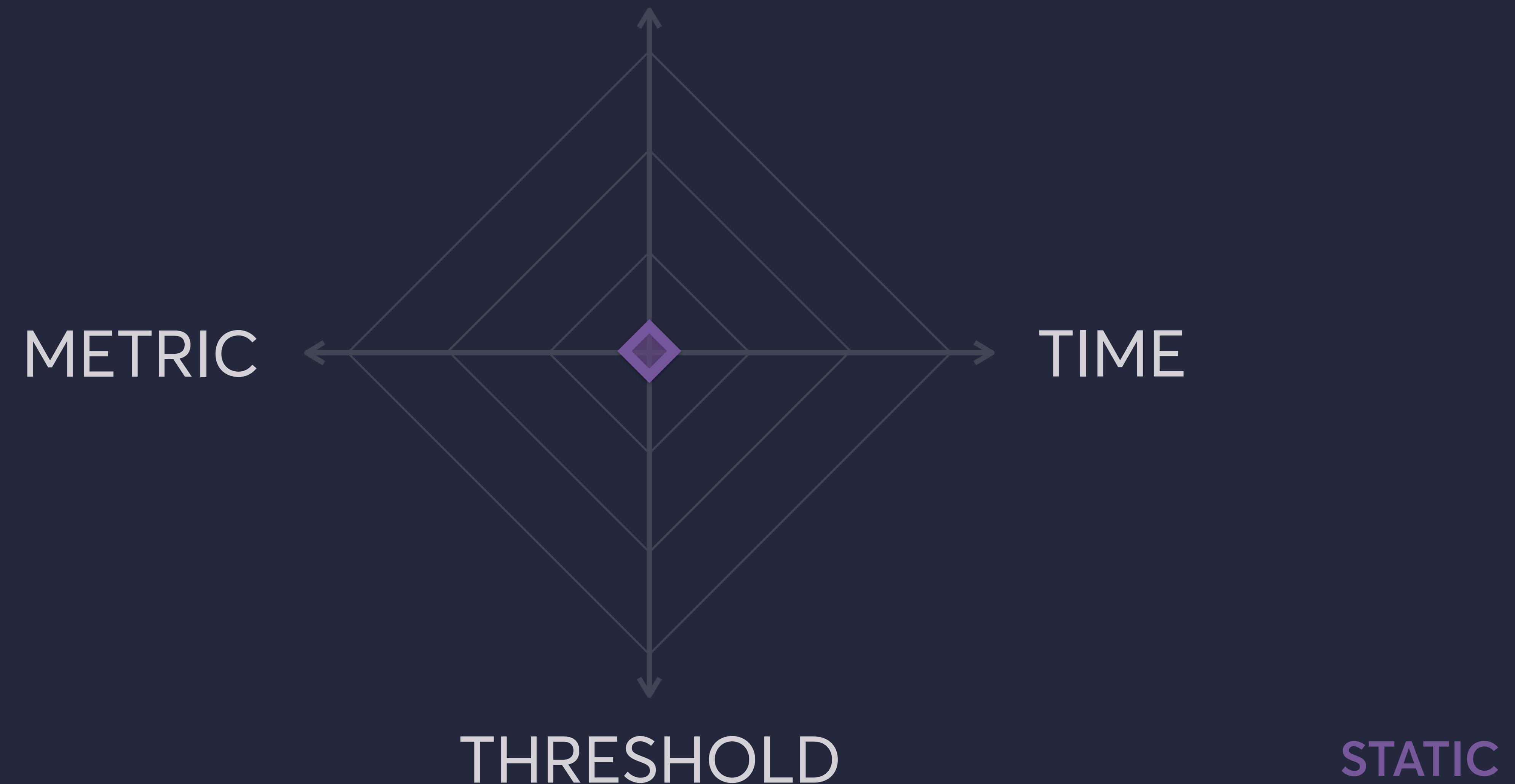
# Algorithmic Alert Creation

01 Define Scope

02 Choose Metric



SCOPE



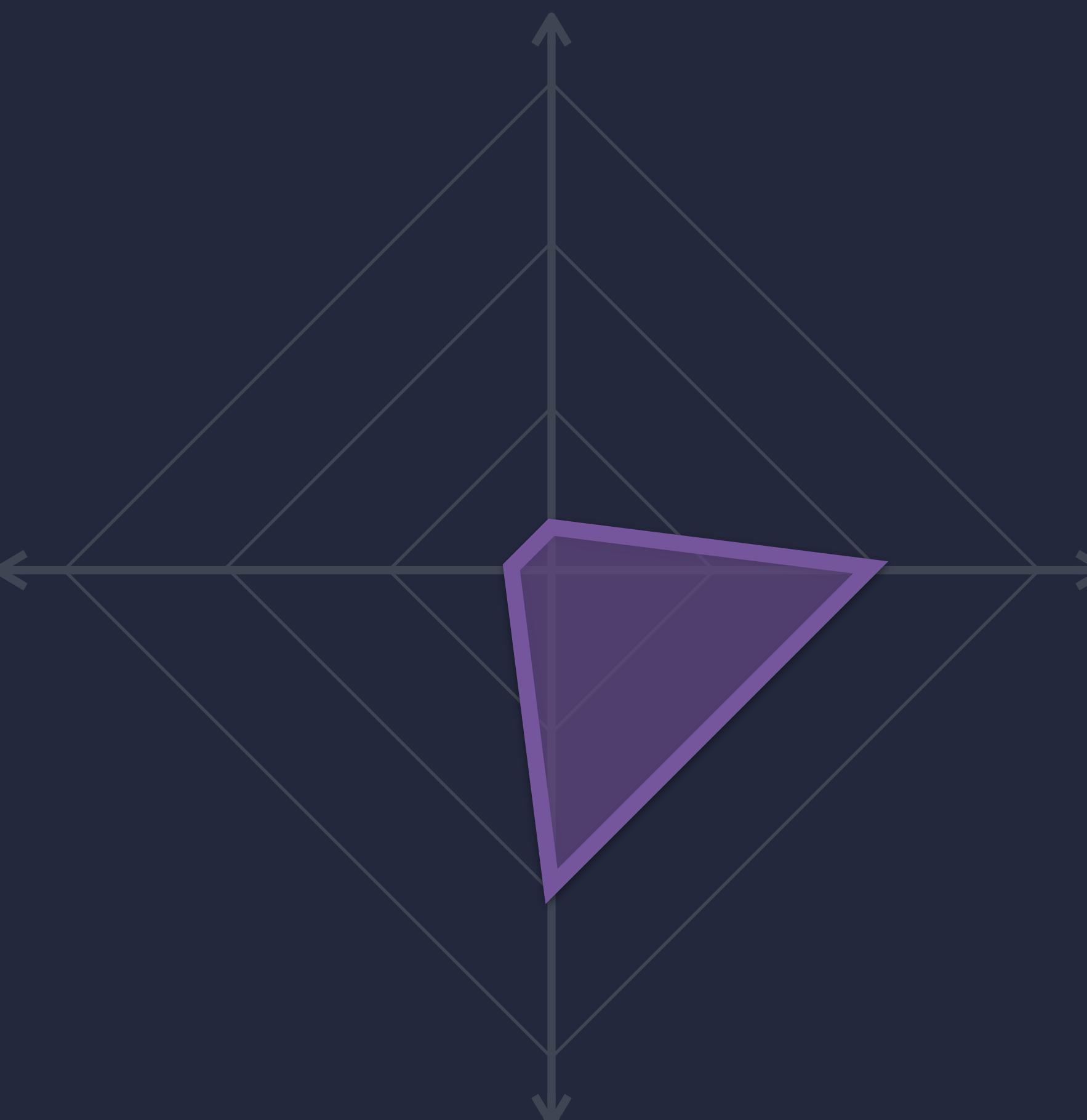
SCOPE

METRIC

TIME

THRESHOLD

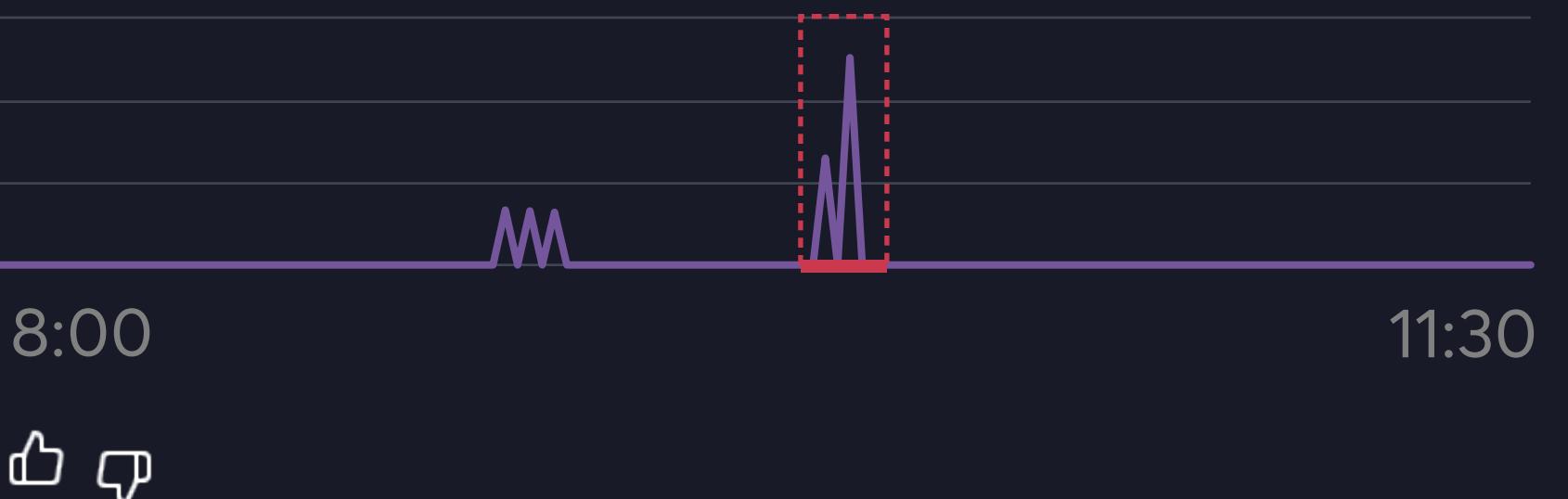
ALGORITHMIC



# Algorithmic Feed

% of TCP Retransmits was high in **us-east**

23min ago



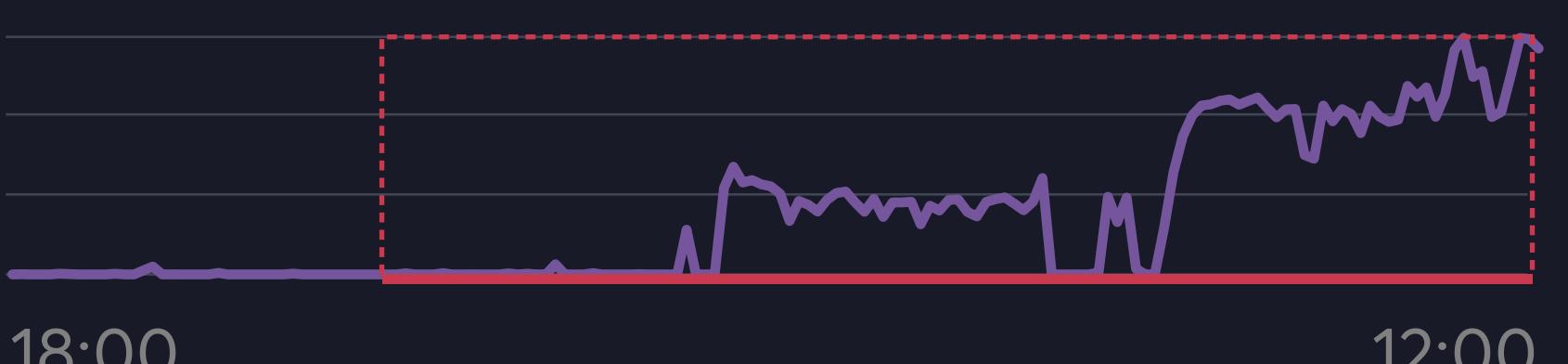
Hit rate was down for 4 hours on **web**

2hr ago

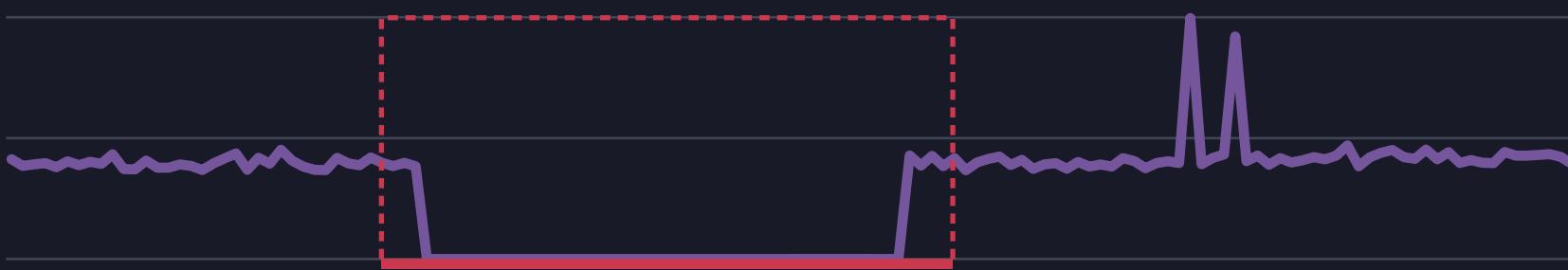


Error rate has been up for 20 hours on **replica**

22hr ago



2hr ago

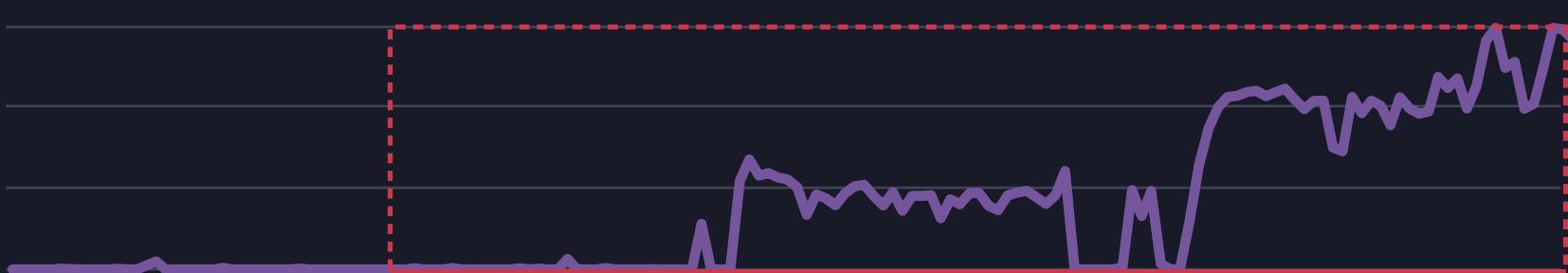


6:00 21:00



Error rate has been up for 20 hours on **replica**

22hr ago

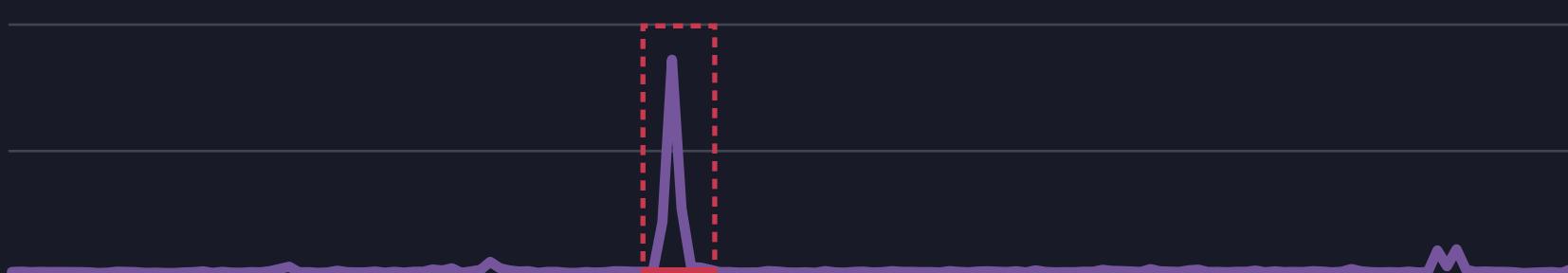


18:00 12:00



Latency was up for 1 hour on **web**

23hr ago



15:00 19:00



# All Unreads

50+ messages | Sorted alphabetically ▾



## Highlights

[Dismiss All](#)

### #feat-experiments ☆

@spark and 4 others reacted to...

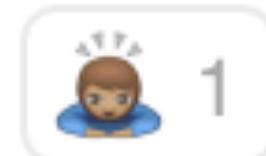
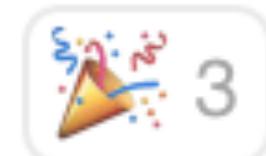


**Meghan Earley** 2:45 PM

Hi there 🙌 here are the results from our latest experiment:

<https://docs.google.com/presentation/edit#slide=id.12345325>

Don't hesitate to let me know if you have any questions!



Is this helpful? [thumb up](#) [thumb down](#) • [Dismiss](#)

All Starred Activity

AUGUST 11TH, 2017

Faulty monitor - NR Staging: Agent Service... 1:00 pm

Detected high percentage of failures: 100.0% 0

Faulty monitor - Support Landing (staging) Vie... 1:00 pm

Detected high percentage of failures: 100.0% 0

Dependency Updates Available - Collector 11:01 am

New versions of 1 packages are available. 0

Host outliers - Mobile Connect Endpoint 10:02 am

Anomalous discrepancies between hosts running Mobile Connect Endpoint have been detected 0

Host outliers - agent-router 10:02 am

Anomalous discrepancies between hosts running agent-router have been detected 0

Anomalous behavior detected - Metric Timeslic... 8:31 am

A significant anomaly in Datastore/allWeb averageresponsetime in Metric Timeslice Service was... 0

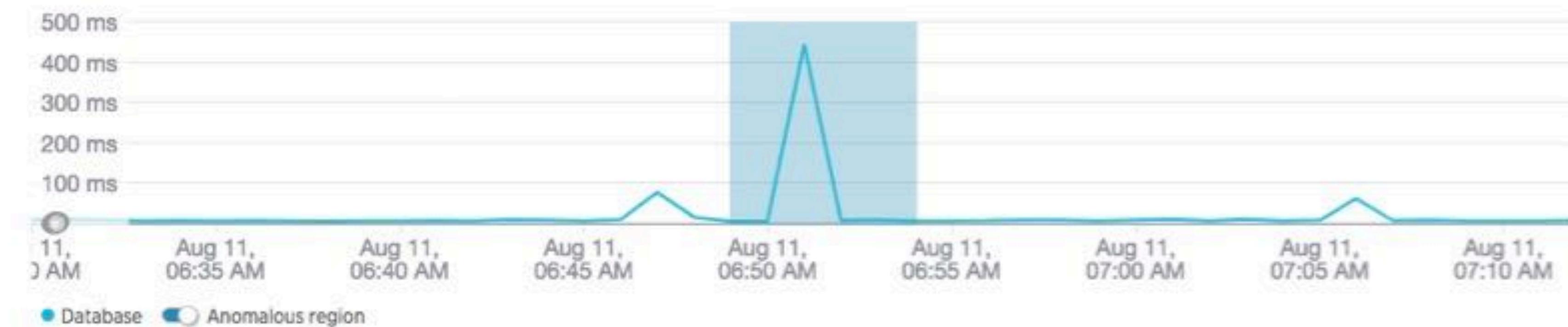
Application deployment - Evaluation Cache... 8:01 am

## Anomalous behavior detected - Metric Timeslice Service

[View in APM](#)

A significant anomaly in Datastore/allWeb averageresponsetime in Metric Timeslice Service was detected

August 11, 8:31 am [Advice](#)

[Star](#)[Share to Slack](#)[Permalink](#)[Upvote](#)[Downvote...](#)

A very significant anomaly in **average response time** was detected in the **Datastore/all** metric, which tracks all database transactions for both relational and non-relational databases.

Anomalous behaviors lasted a total of about **3 minutes** between **01:50:00 PM UTC** and **01:53:00 PM UTC**.

More information about this application during the anomalous time period is available in APM.

Start typing a message...



env:prod ▾ availability-zone:\* ▾

Web DB Cache Custom

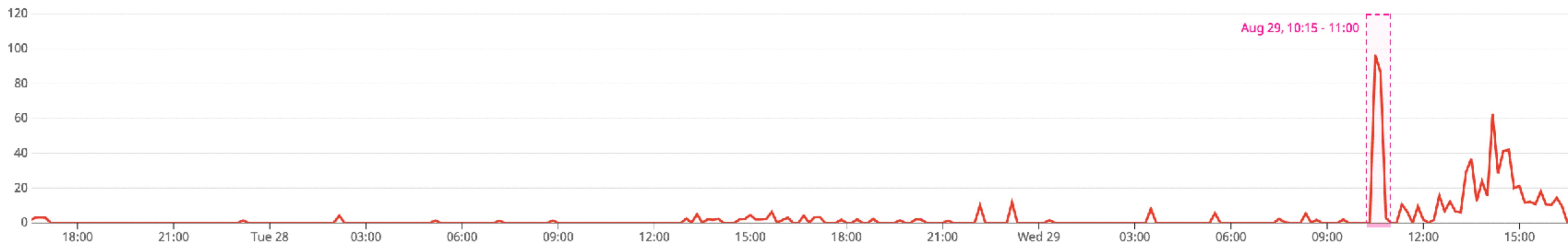
Filter stories

9 stories found



### Error rate was up for less than 1 hour today on **delancie-insights**

⚙️ 🟢 **delancie-insights** (1 resource involved)

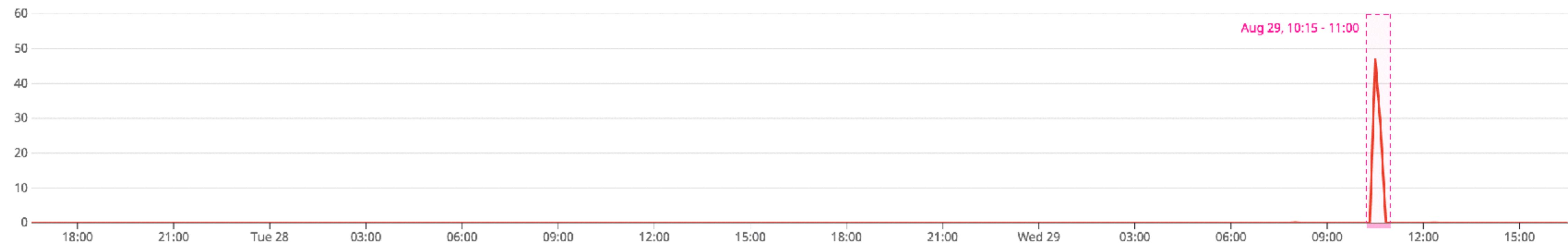


[Details →](#)



### Error rate was up for less than 1 hour today on **rocky.grpc**

⚙️ 🟣 **rocky.grpc** (1 resource involved)



### Error rate was up for less than 1 hour today on multiple resources in **grpc.client**

⚙️ 🟤 **grpc.client** | /alertingpb.Evaluator/Evaluate (+1 other resource)

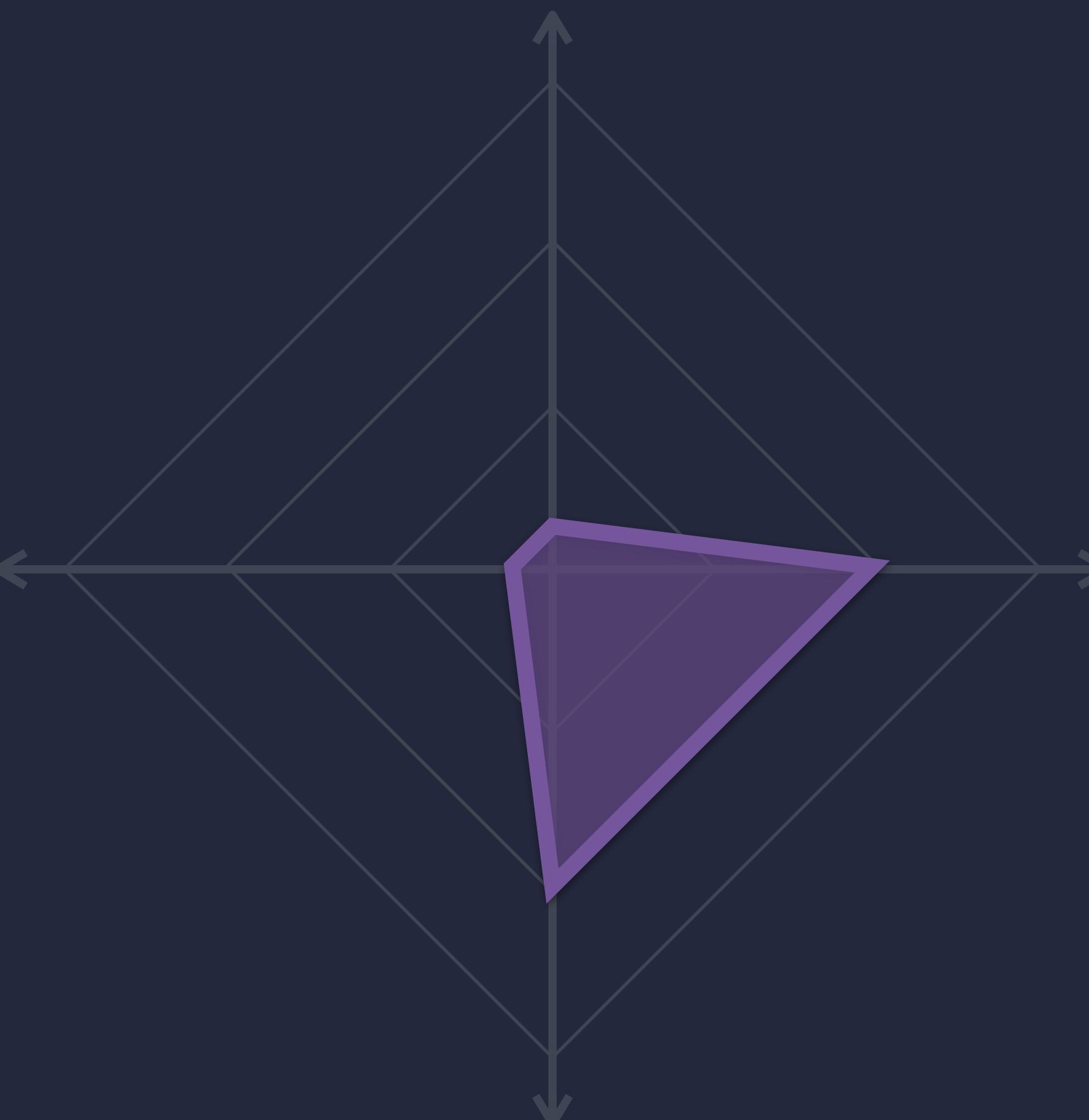
SCOPE

METRIC

TIME

THRESHOLD

ALGORITHMIC



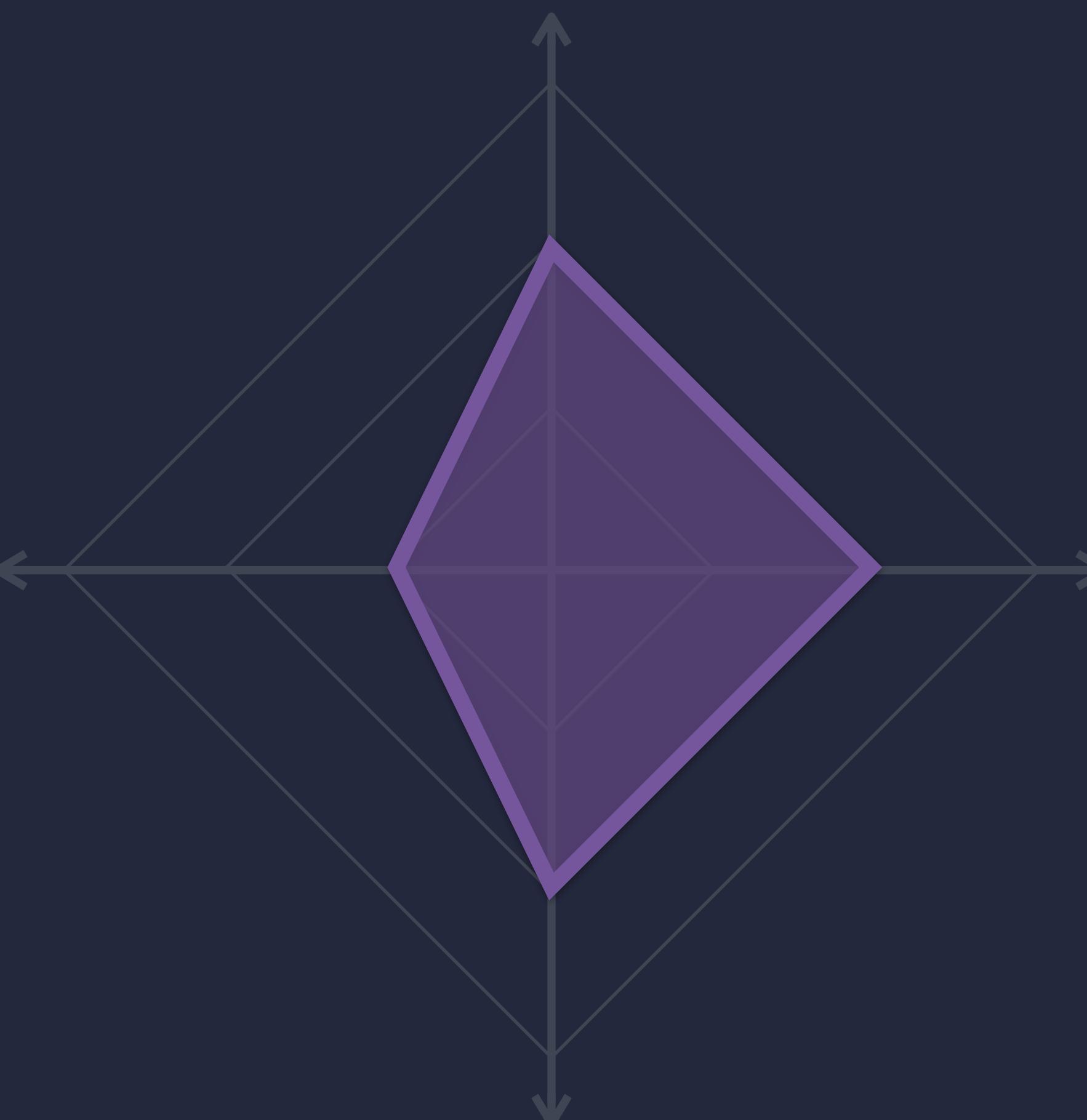
SCOPE

METRIC

TIME

THRESHOLD

FEEDS



# Machine Learning

# All Unreads

50+ messages | Sorted alphabetically ▾



## Highlights

Dismiss All

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Is this helpful? • Dismiss

All Starred Activity

AUGUST 11TH, 2017

Faulty monitor - NR Staging: Agent Service... 1:00 pm  
Detected high percentage of failures: 100.0% 0

Faulty monitor - Support Landing (staging) Vie... 1:00 pm  
Detected high percentage of failures: 100.0% 0

Dependency Updates Available - Collector 11:01 am  
New versions of 1 packages are available. 0

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Anomalous discrepancies between hosts running Mobile Connect Endpoint have been detected 0

Host outliers - agent-router 10:02 am  
Anomalous discrepancies between hosts running agent-router have been detected 0

Anomalous behavior detected - Metric Timeslic... 8:31 am  
A significant anomaly in Datastore/allWeb averageresponsetime in Metric Timeslice Service was... 0

Application deployment - Evaluation Cache... 8:01 am

## Anomalous behavior detected - Metric Timeslice Service

A significant anomaly in Datastore/allWeb averageresponsetime in Metric Timeslice Service was detected

August 11, 8:31 am Advice

[View in APM](#)

Star Share to Slack Permalink

Upvote Downvote...



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Start typing a message...



env:prod ▾ availability-zone:\* ▾

Web

DB

Cache

Custom

Filter stories

9 stories found



### Error rate was up for less than 1 hour today on **delancie-insights**

⚙️ 🟢 **delancie-insights** (1 resource involved)

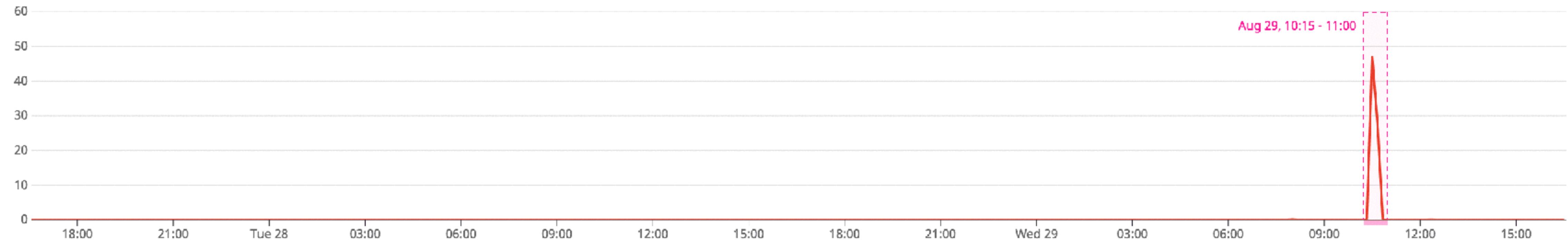


[Details →](#)



### Error rate was up for less than 1 hour today on **rocky.grpc**

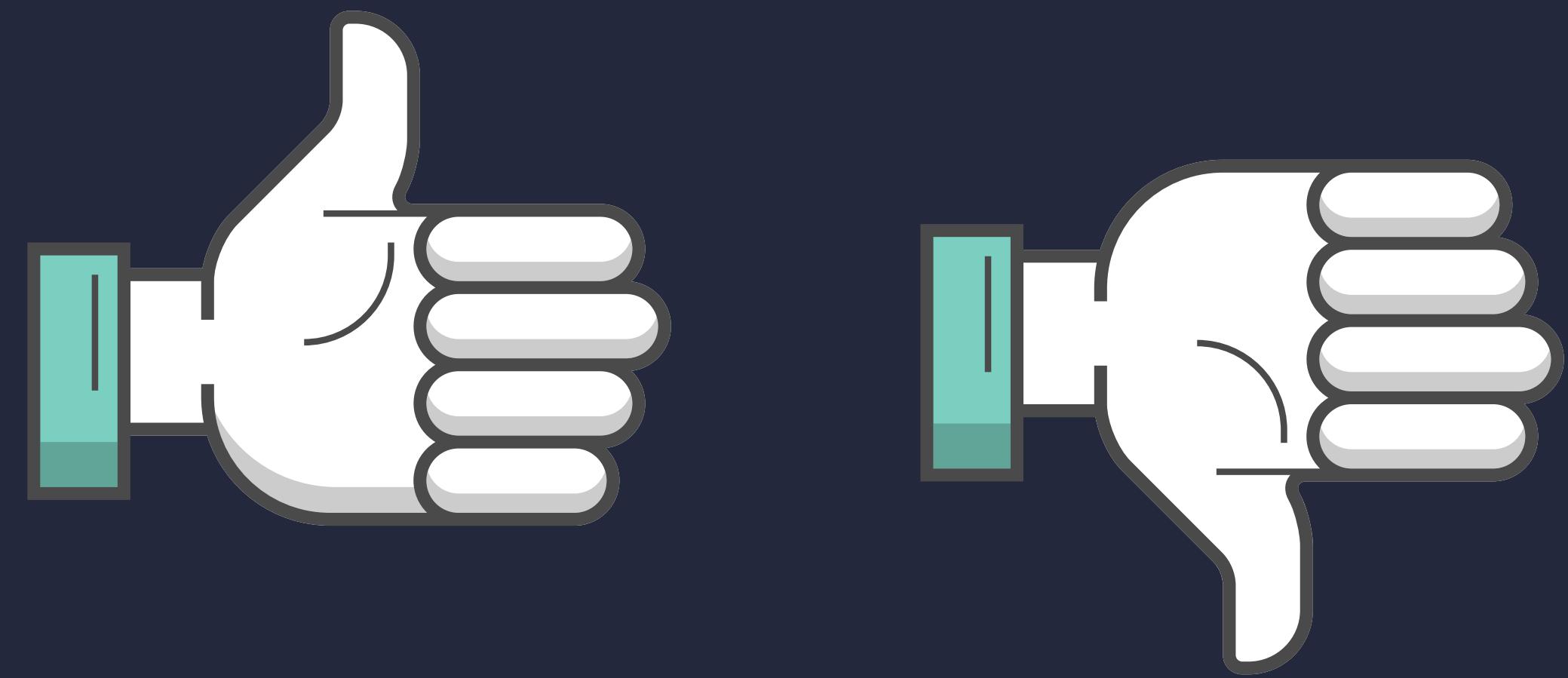
⚙️ 🟣 **rocky.grpc** (1 resource involved)



### Error rate was up for less than 1 hour today on **multiple resources in grpc.client**

⚙️ 🟤 **grpc.client** | /alertingpb.Evaluator/Evaluate (+1 other resource)

# The Future of Monitoring UX



# We Get Paged





We Get Paged



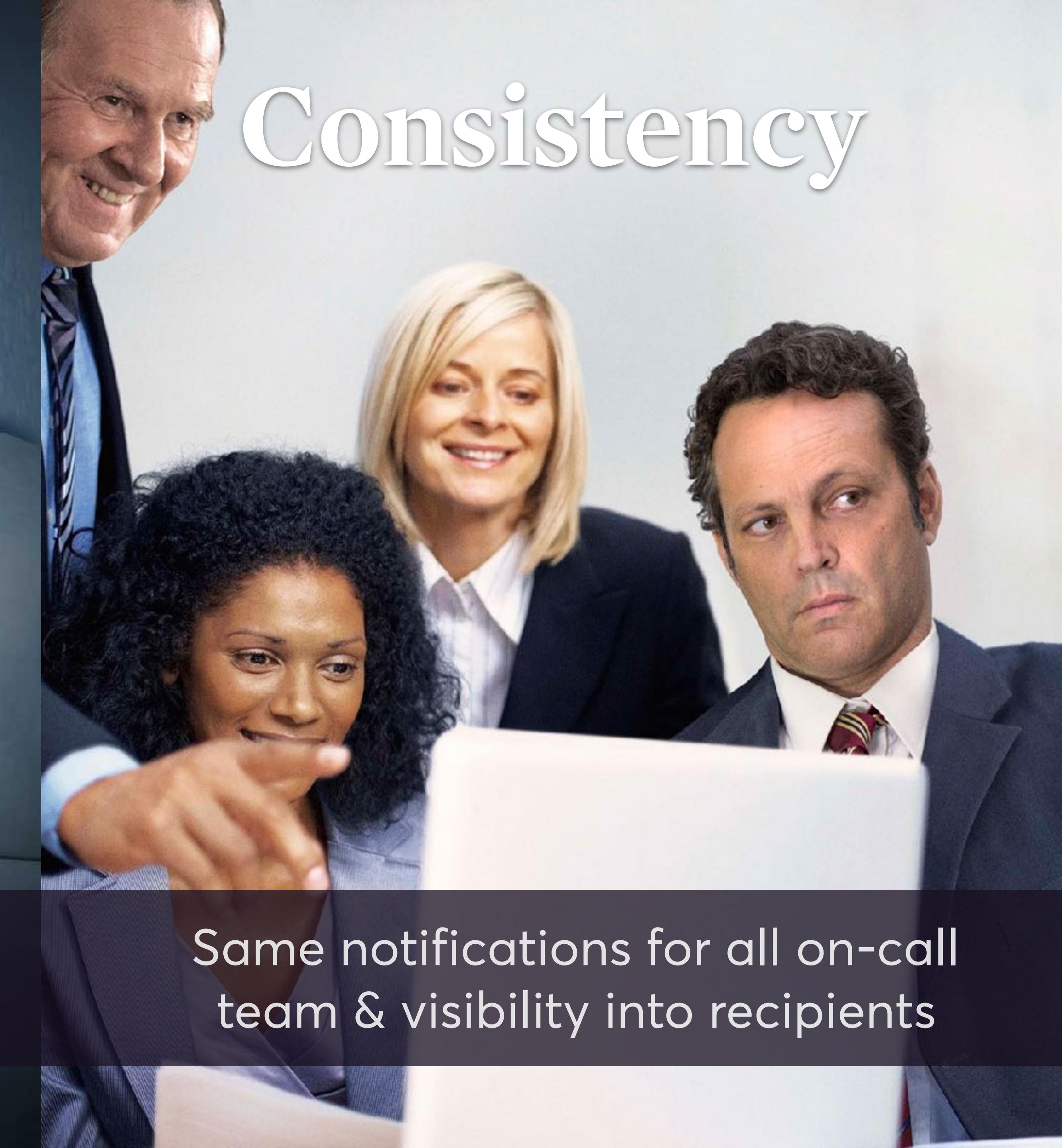
We're on Teams

# Transparency



Why it alerted: specific **scope, time, metric** attributes

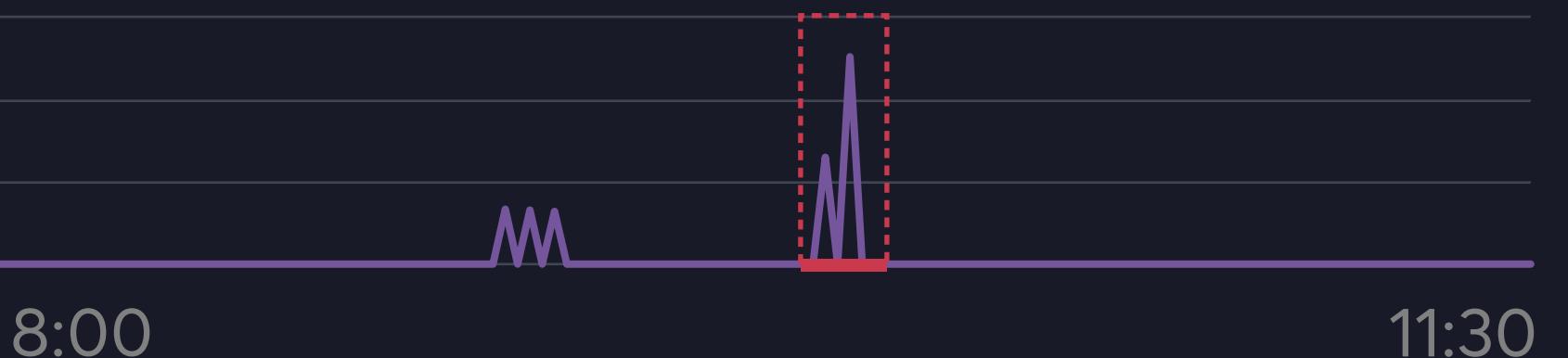
# Consistency



Same notifications for all on-call team & visibility into recipients

**% of TCP Retransmits was high in us-east**

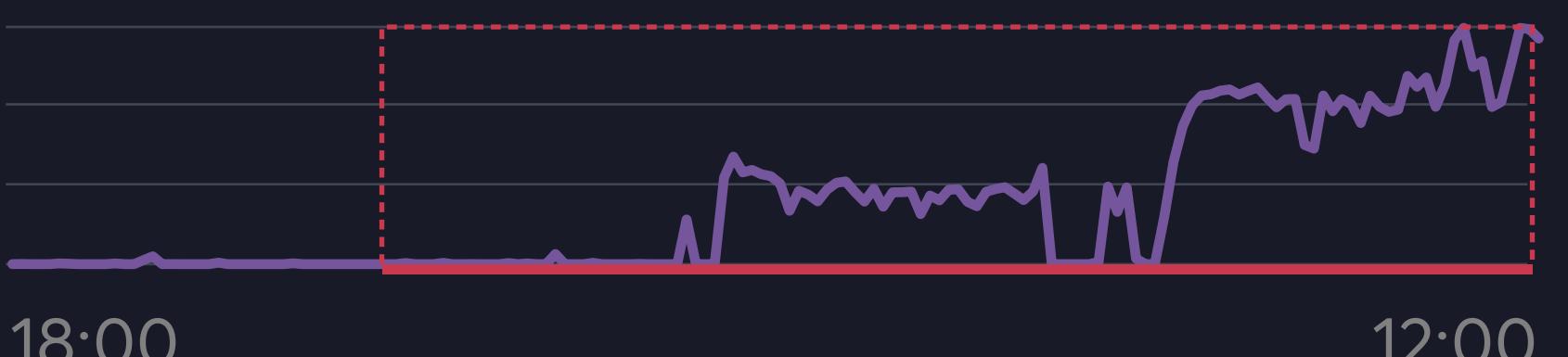
23min ago



👍 💬

**Error rate has been up for 20 hours on web**

22hr ago



▼

**Hit rate was down for 4 hours on web**

2hr ago



👍 💬

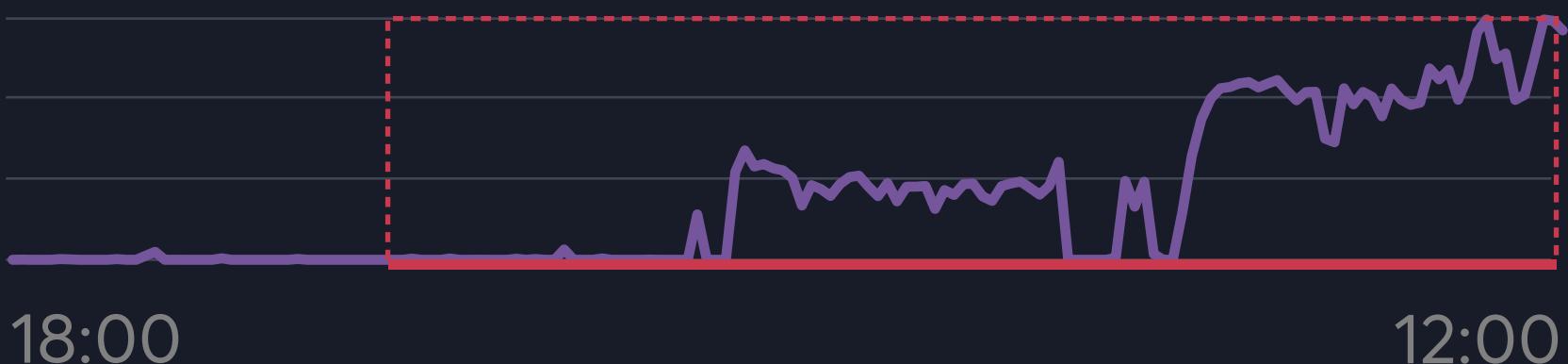
8:00

11:30



Error rate has been up for 20 hours on **web**

22hr ago



1 of your teams watches the  
**web** service

UNWATCH

Error rate correlates highly  
with other metrics you watch



3 of your teammates also  
saw this notification

SEE WHO

Hit rate was down for 4 hours on **web**

2hr ago

Patterns → People

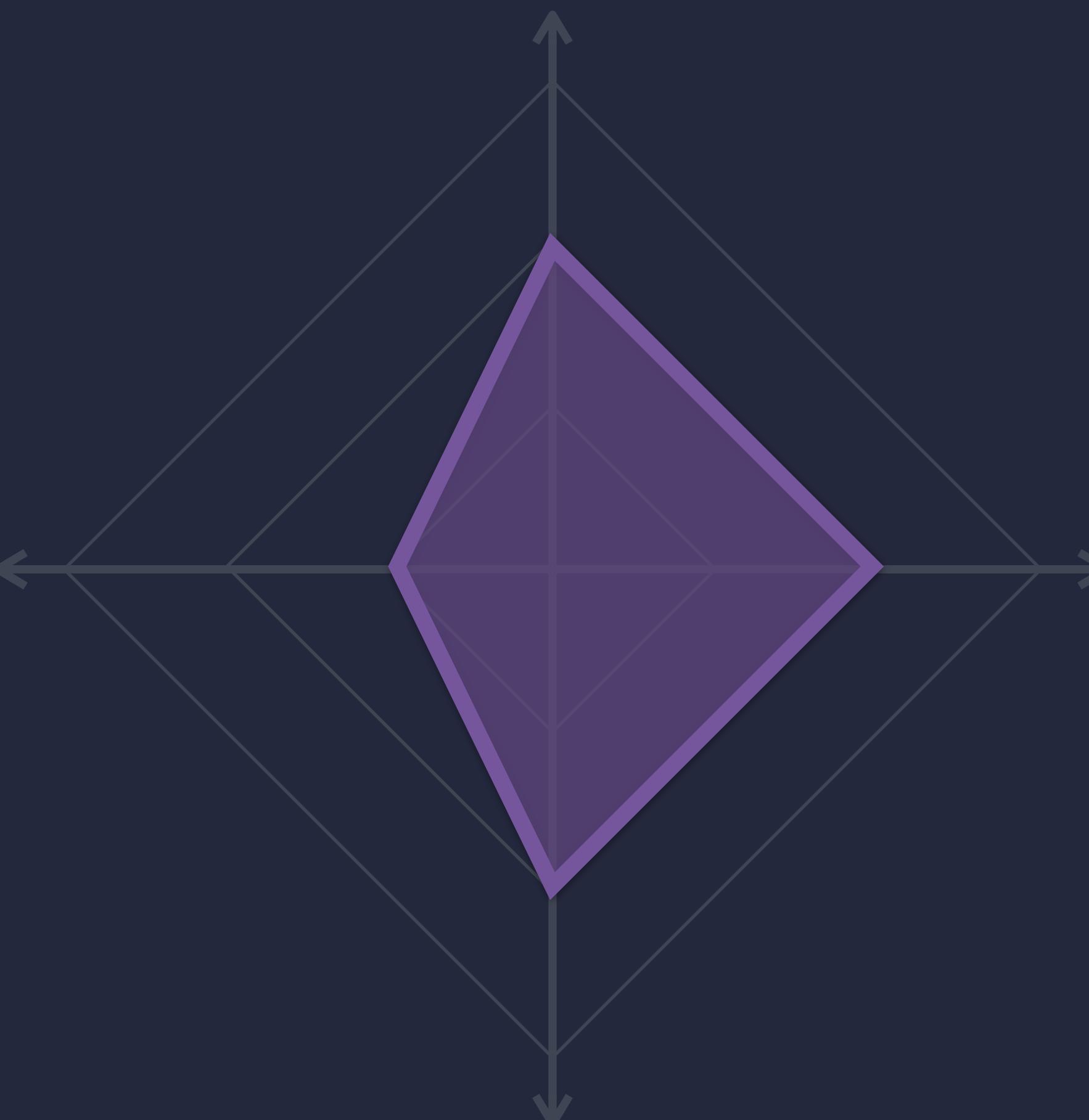
SCOPE

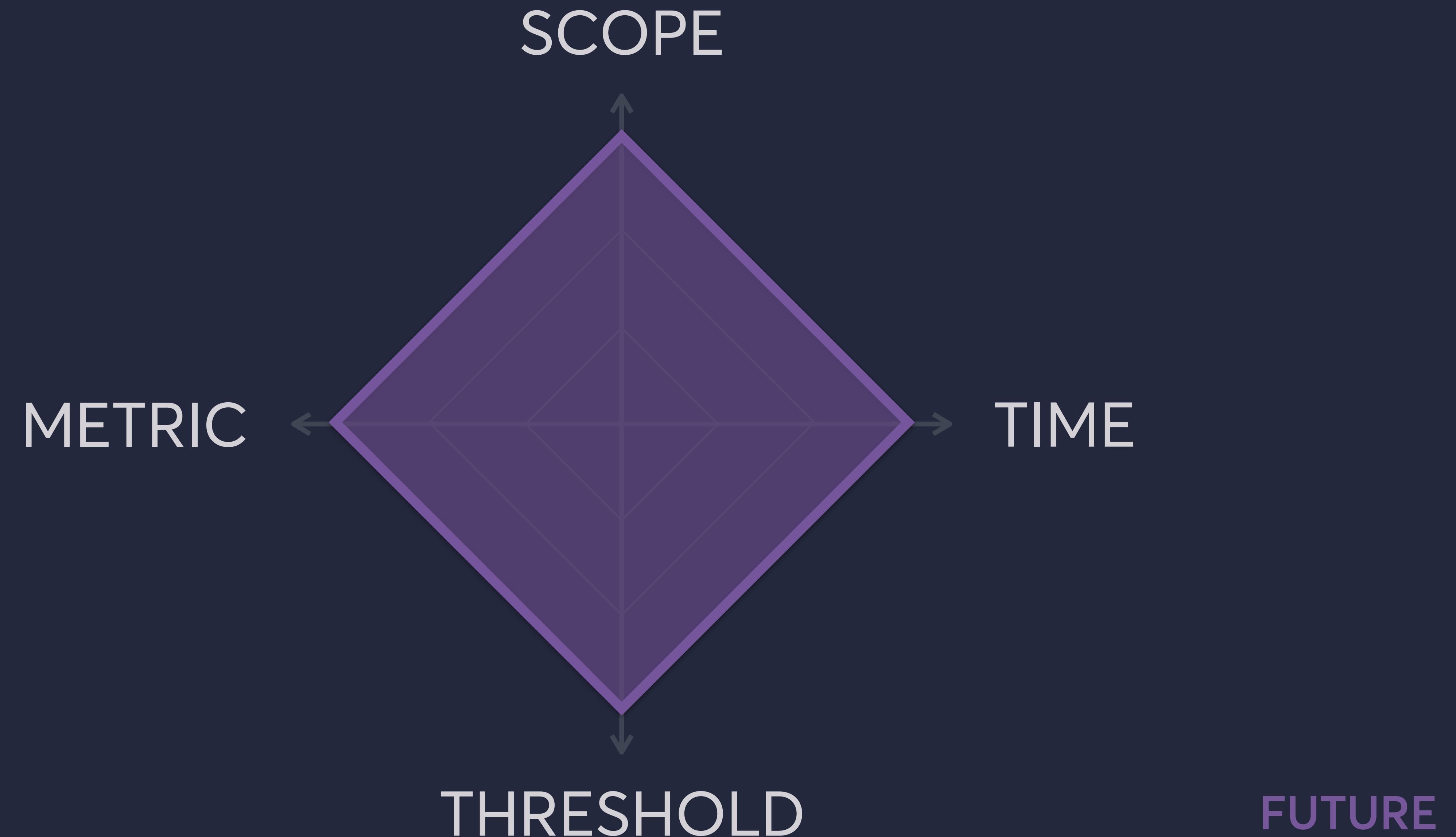
METRIC

TIME

THRESHOLD

FEEDS







# DEMOS

<https://bit.ly/2MND1Z9>

# Thank You!

 sboak

