Site Reliability Engineering:
What you need to know about Service Level Indicators (SLIs), Service Level Objectives (SLOs) and Error Budgets

TechTalkThursday@nine
22.07.2020
Daniel Lorch

Go to www.menti.com and use the code 22 10 84
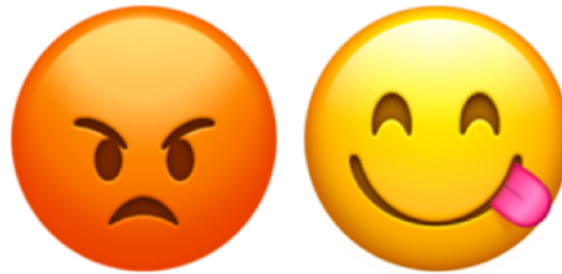
What does «reliability» mean to you?

Reliability is the most important feature of any system

SLI: Service Level Indicator

A quantifiable measure of service reliability

SLO: Service Level Objective

Set a reliability target for an SLI
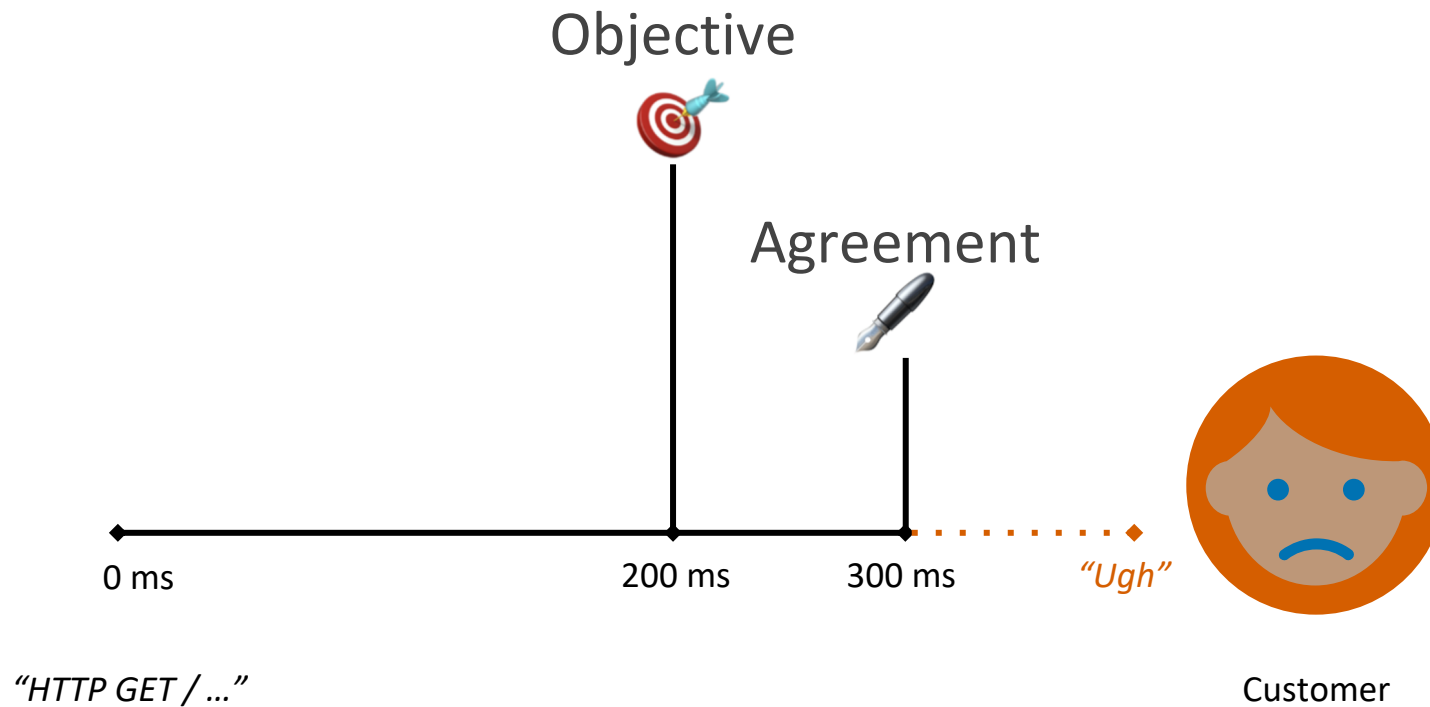
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SLOs should capture the performance and availability levels that, if **barely met**, would keep the **typical customer** of a service happy

"meets SLO targets" ⇒ "happy customers"
"sad customers" ⇒ "misses SLO targets"

Source: The Art of SLOs by Google https://cre.page.link/art-of-slos

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SLOs and SLAs

Objective

🎯

Agreement

🖋️

0 ms   200 ms   300 ms   *"Ugh"*
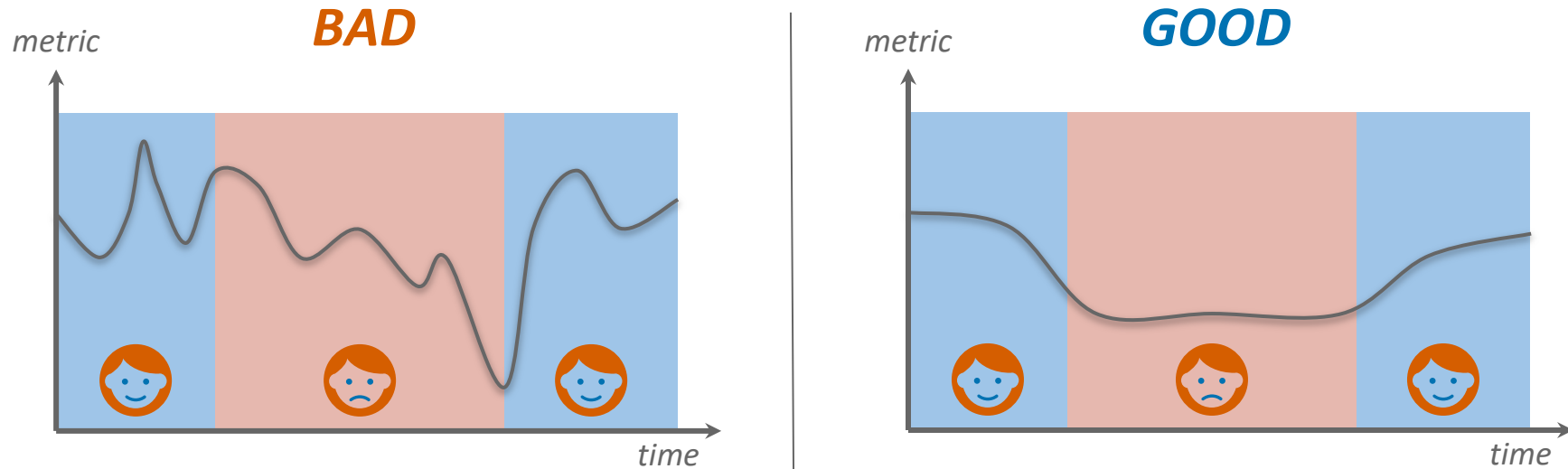
😦

"HTTP GET / ..."

Customer

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Error Budgets

- An SLO implies an acceptable level of unreliability

  - This is a budget that can be allocated

Choosing a good SLI

BAD

metric

time

GOOD

metric

time

$$\text{SLI}: \left(\frac{\textbf{good events}}{\textbf{valid events}} \right) \times 100\%$$

Source: The Art of SLOs by Google https://cre.page.link/art-of-slos

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SLI Menu

	Request / Response	Availability Latency Quality
	Data Processing	Coverage Correctness Freshness Throughput
	Storage	Throughput Latency
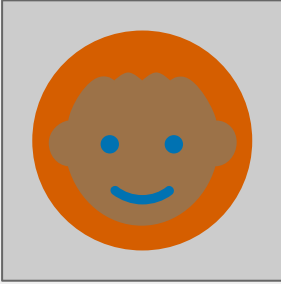
Source: The Art of SLOs by Google https://cre.page.link/art-of-slos

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Example: Fang Faction Game

Source: The Art of SLOs by Google https://cre.page.link/art-of-slos
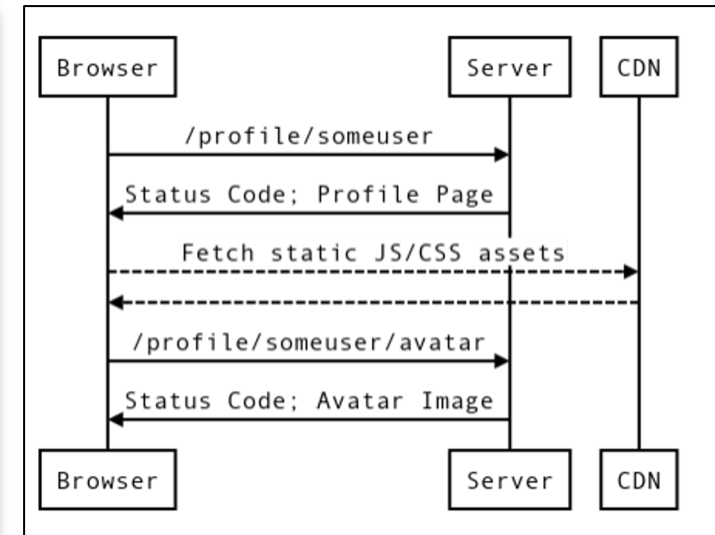
Example: SLO Definition

Availability

Proportion of **HTTP GET** requests

  for **/profile/{user}** or **/profile/{user}/avatar**

  that have *2XX*, *3XX* or *4XX* **(excl. 429)** status

  measured at the **load balancer**

and

Proportion of **HTTP GET** requests

  for **/profile/prober_user** and **all linked resources**

  returning **valid HTML containing "ProberUser"**

  measured by a **black-box prober** every 5s

Latency

Proportion of **HTTP GET** requests

  for **/profile/{user}**

  that send their **entire response within X ms**

  measured at the **load balancer**

Source: The Art of SLOs by Google https://cre.page.link/art-of-slos

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Summary

SLI

service level indicator: a monitoring metric that is indicative of a user's goal

SLO

service level objective: a target on an SLI that if barely met, keeps the user happy

SLA

service level agreement: SLO + consequences

Error Budget

the maximum amount of time the system can fail without contractual consequences. It is the remainder or inverse of the SLO

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Further Information

- **The ART of the SLO: https://cre.page.link/art-of-slos**
- **Site Reliability Engineering: Measuring and Managing Reliability https://www.coursera.org/learn/site-reliability-engineering-slos**
- **Site Reliability Engineering Books (free): https://landing.google.com/sre/books/**

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