

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

TechTalkThursday@nine
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Go to www.menti.com and use the code 22 10 84

What does «reliability» mean to you?

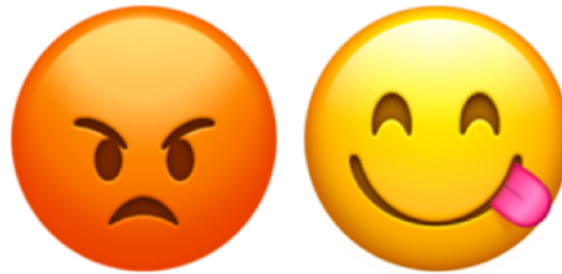
**Reliability is the most
important feature
of any system**

SLI: Service Level Indicator

A quantifiable measure of service reliability

SLO: Service Level Objective

Set a reliability target for an SLI



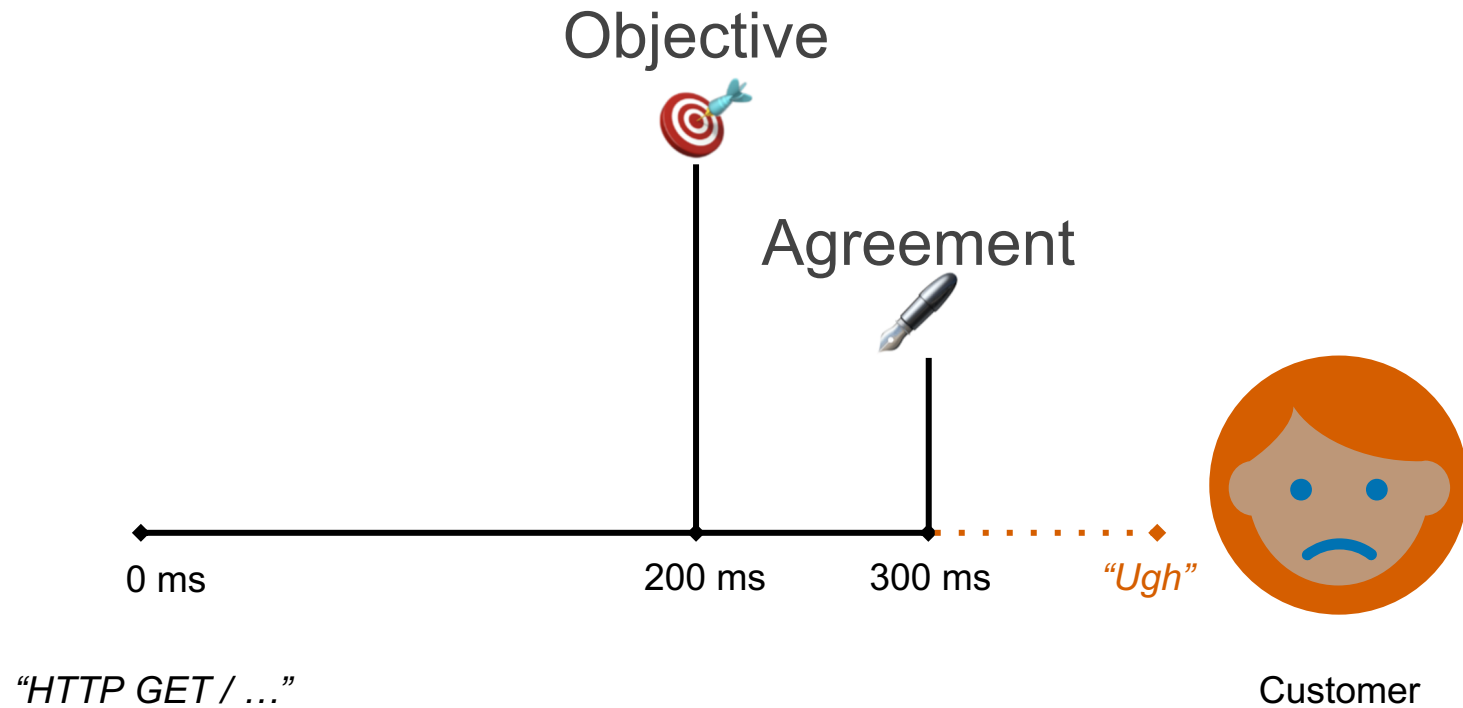
SLOs should capture the performance and availability levels that, if **barely met**, would keep the **typical customer** of a service happy

“meets SLO targets” ⇒ “happy customers”

“sad customers” ⇒ “misses SLO targets”

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

SLOs and SLAs

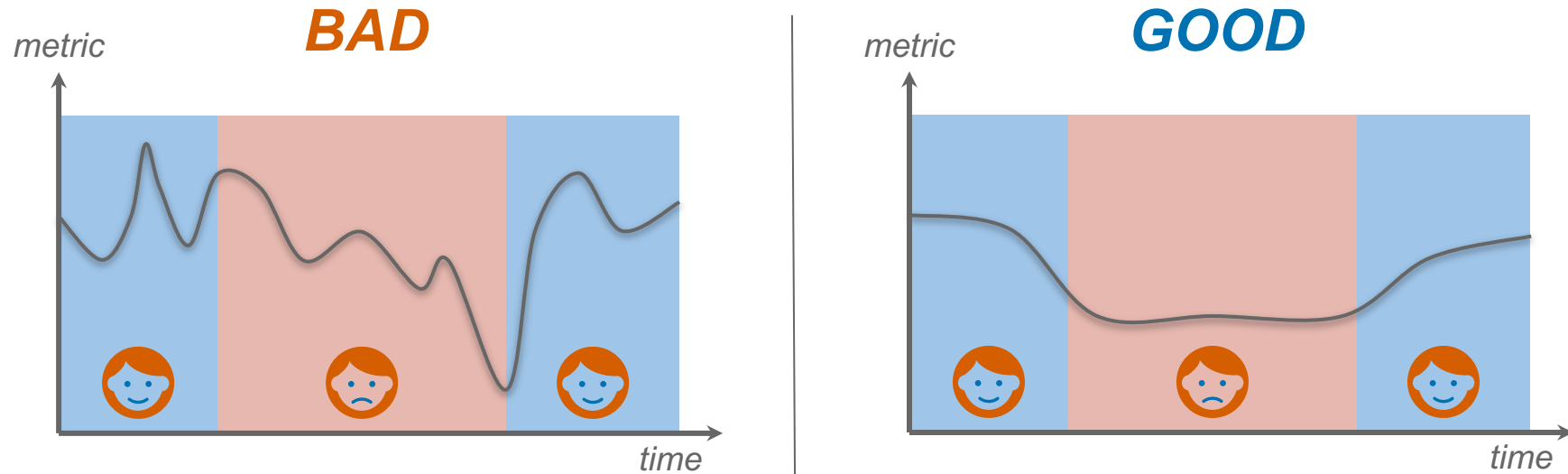


Source: The Art of SLOs by Google <https://cre.page.link/art-of-slos>

Error Budgets

- An SLO implies an acceptable level of unreliability
 - This is a budget that can be allocated

Choosing a good SLI



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

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



SLI Menu



Request / Response

Availability
Latency
Quality



Data Processing

Coverage
Correctness
Freshness
Throughput

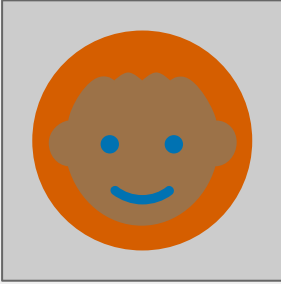


Storage

Throughput
Latency

Example: Fang Faction Game

https://fangfactiongame.com/profile/someuser



SomeUser
Tribe of Frog
 Faction Score: **31337**
[Midwest Canyon](#)

Faction Name:

Leader Name:

Email Address:

1. Tri-Bool 65535

2. 61995

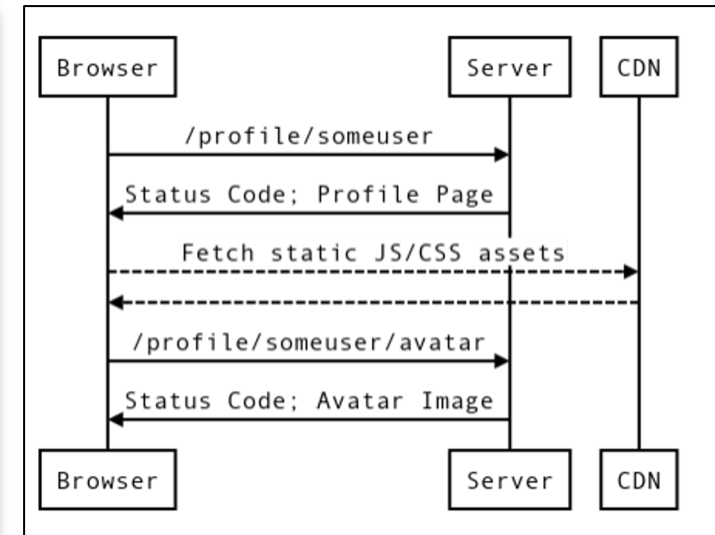
3. Tri Repetae 52391

4. Triassic Five 37164

5. Tricksy Hobbits 31337

6. Tribe of Frog 29243

Trite Examples



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**

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 / inverse of the SLO

Further Information

- The ART of SLOs:
<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/>