How to Define and Impelement Service Level Objectives (SLO)

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November 7th 2020

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Outline

- What is Service Level Objectives (SLO)?
- Define and Implement SLO
- Operationalize SLO
- Advance Practices
- How HappyFresh implement SLO

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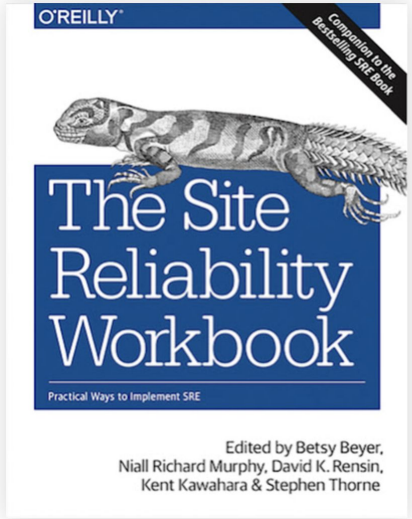
Service Level Objective

Site Reliability Engineering



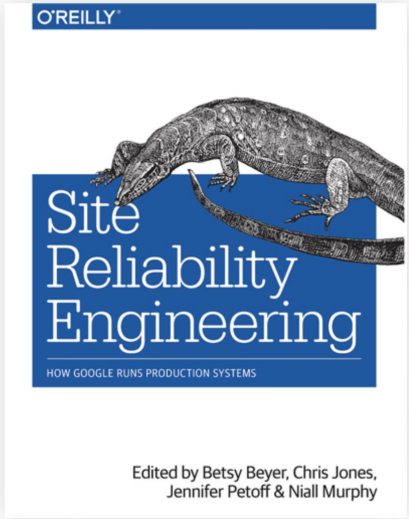


Image source: https://landing.google.com/sre/books/

"SRE is what happens when you ask a software engineer to design an operations team"

SRE has an intentionally narrowed focus on keeping services and platforms available to customers.

Image source: https://www.atlassian.com/incident-management/kpis/sla-vs-slo-vs-sli

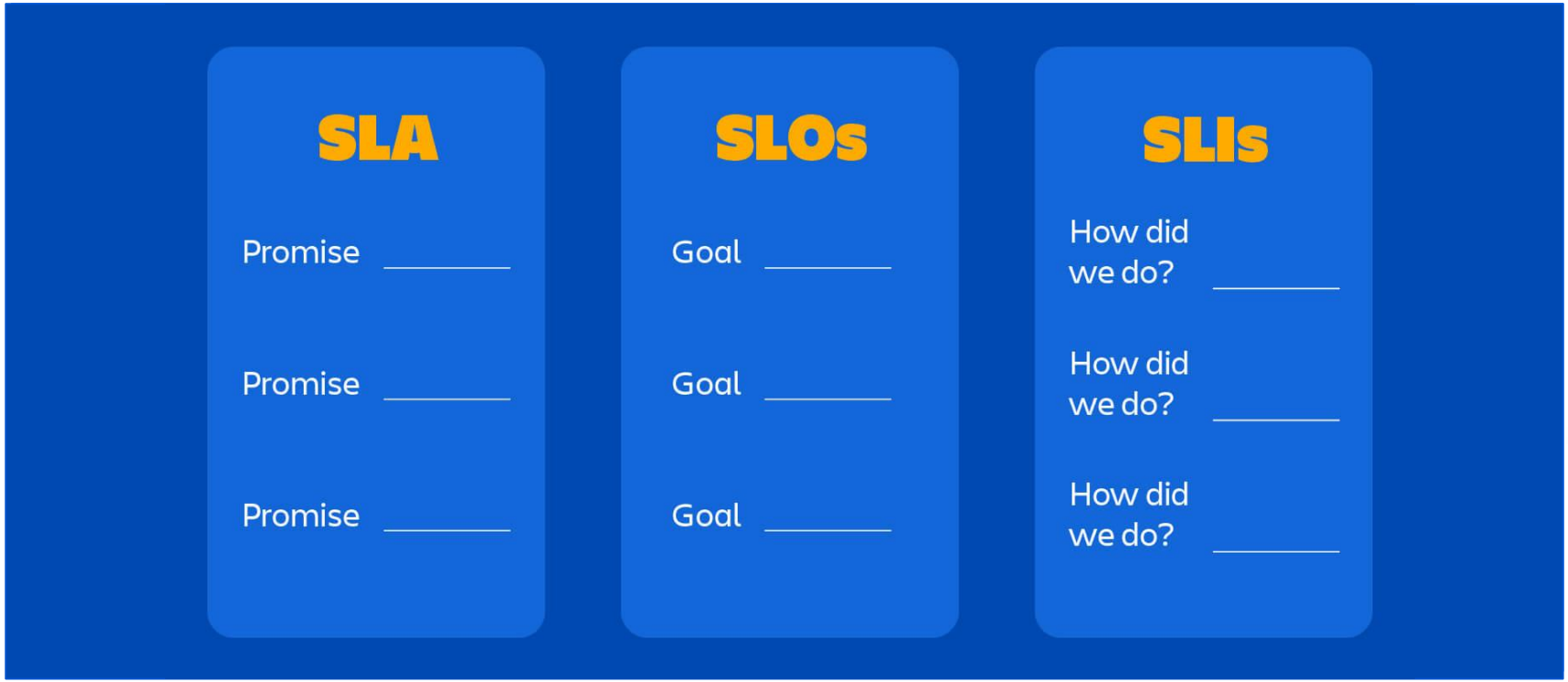


Image source: https://www.atlassian.com/incident-management/kpis/sla-vs-slo-vs-sli

	Product & Eng	Operations	Business
Focus	Prioritizing & Building Functionality	Minimizing Business Risk	Protecting Customer Experience and $$$
Metrics	Feature Velocity CSAT & Churn	Availability, Latency, Throughput, etc.	SLA Adherence Customer Impact
SLO Value	Data-driven way to focus scarce engineering resources	Help dev teams increase velocity without sacrificing quality	Show leading instead of lagging indicators of CX to Board, key stakeholders

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Define & Implement SLO

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Setting Up SLO

1. List down the Critical User Journeys (CUJ) of services
2. Construct the SLIs
3. Determine the SLOs

List Down the CUJs

A few example:

- Show home page of web application
- User sign in through mobile application
- User add to cart an item with multiple quantity
- User can see their transaction history in the last 90 days

Constructing SLIs

- **Availability**: How much uptime does your services have?
  - Measured in 9s (99%, 99,9%, 99,99%, etc.)
- **Performance**: How responsive is you services?
  - Traffic
  - Error rate
  - Latency
  - etc.
- **Durability**: How resilient is your services to data loss?
  - Measured in 9s (99%, 99,9%, 99,99%, etc.)

Determining SLOs

- Make it measurable– such as 100 ms. latency
- Allow some space (error budget) such as 100 ms. 99.9% of the time - 100% is a wrong target.
- Be clear on what you promise, for example 99.9% of the time (averaged over 10 minutes), HTTP calls are completed under 100 ms.
- Consider product and business implications because setting the right objectives for SLOs aren't purely technical.

An Example

CJU:

User sign in through mobile application

SLO:

99,99% availability

100 ms. latency, 99% of the time

SLI:

Availability measured by *response_code* HTTP response from LB

Latency measured by *response_time* HTTP response from LB

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Operationalize SLO

Operationalize SLO

- Having a weekly/ bi-weekly operational meeting with cross-functional team to review SLOs.
- Capturing commentary and discussion around SLO violations or trends.
- Tracking follow-up action items from SLO violations
- Reporting on SLOs to the management/ product team to validate prioritization of engineering investment.

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Advance SLO Practices

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Advance SLO Practices

- Alerting on Error Budget
- Create a composite SLO
- Treating SLO violations as incidents
- Correlating changes to SLO

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SLO at HappyFresh

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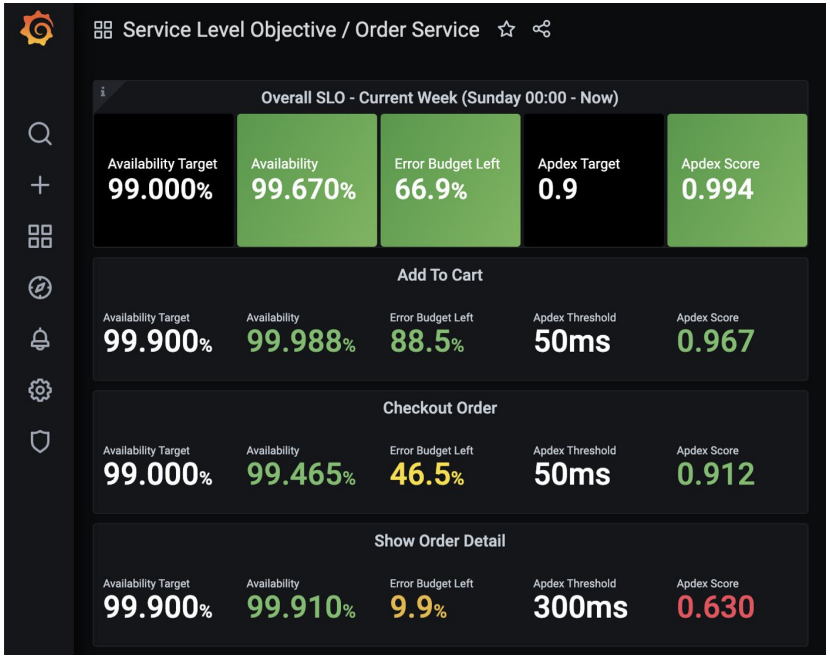
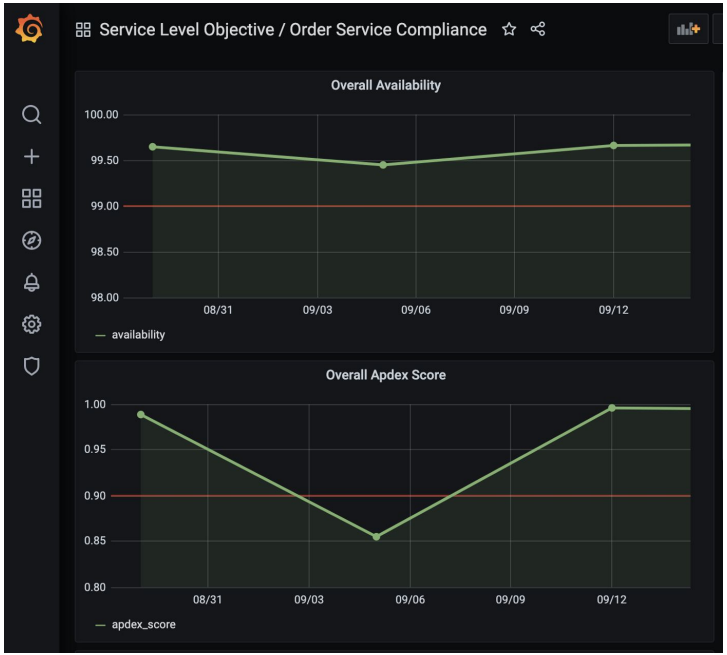
SLO Implementation at HappyFresh

- *Event-based* calculation instead of *time-based* calculation.
- Using Apdex to measure performance.
- 7-days time window SLO



SLO Operation at HappyFresh



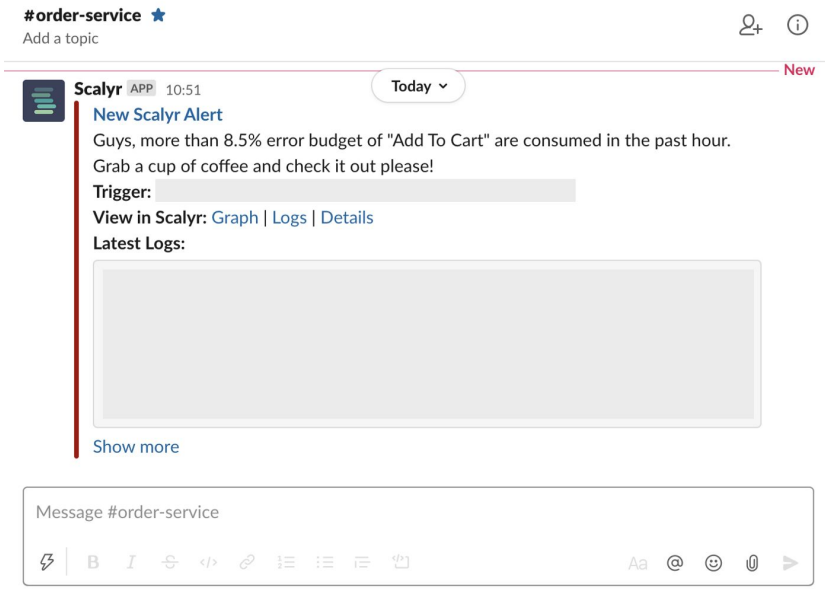
- Having SLO compliance dashboard for every service.
- Held bi-weekly SLO review meeting with Tech Leads

More on:

https://medium.com/happytech/how-happyfresh-implements-slo-slo-series-part-1-f8f56a0b56a7

Advance Practices at HappyFresh

- Alerting the Error Budget consumption to Slack
- Utilize composite SLO



More on:

https://medium.com/happytech/alerting-on-error-budget-slo-series-part-2-f5c41e335148

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Let’s discuss!

Thank You

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