



SLOs for Data-Intensive Services

Yoann Fouquet
Booking.com

● Agenda

- 1 SLO Refresher**
- 2 Our reservation system**
- 3 SLO definition journey**
- 4 Benefits**

- **SLIs, SLOs**

**Service Level
Indicator**

quantitative measure

availability

**Service Level
Objective**

$SLI \geq \text{target}$

availability for 1 week
over 99.99%

● Scale highlights



1,500,000+
experiences booked
every 24 hours

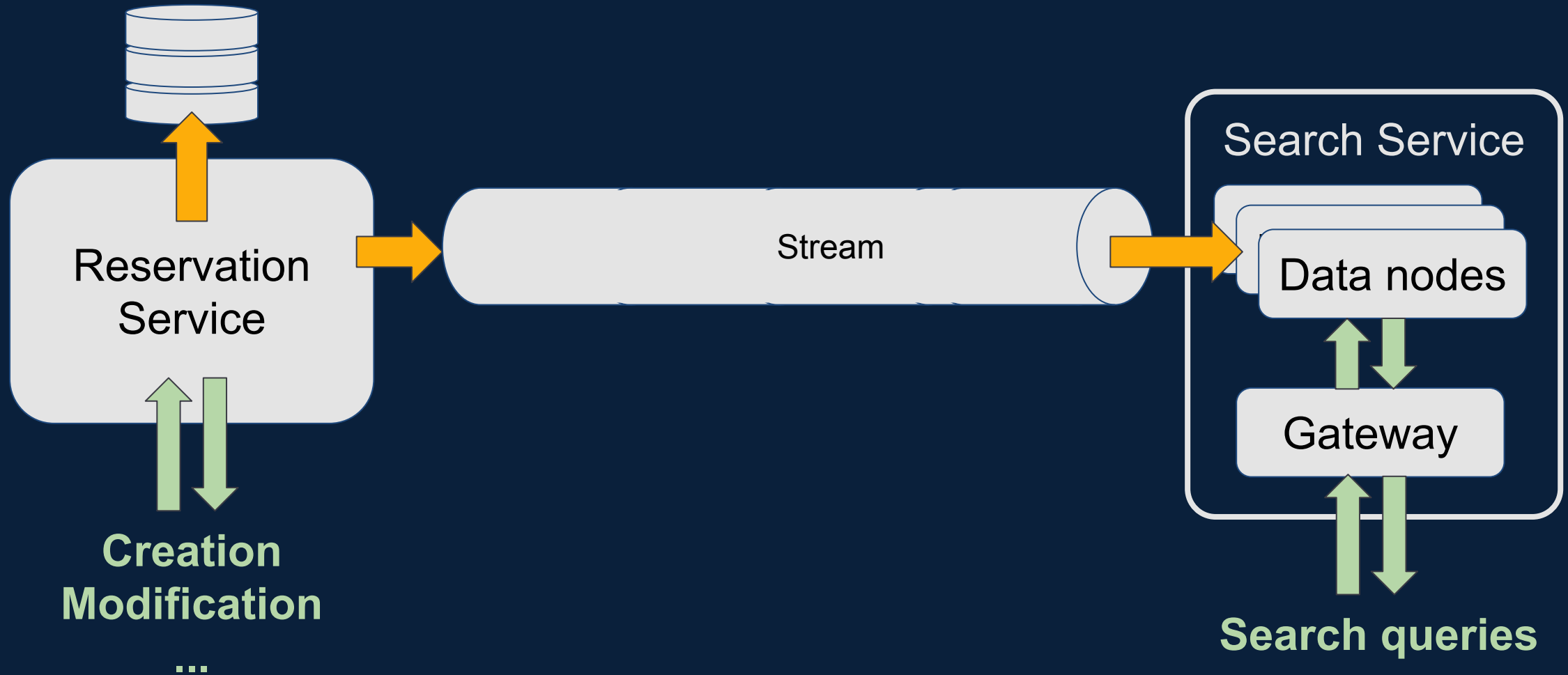


23
years since launch
founded in 1996

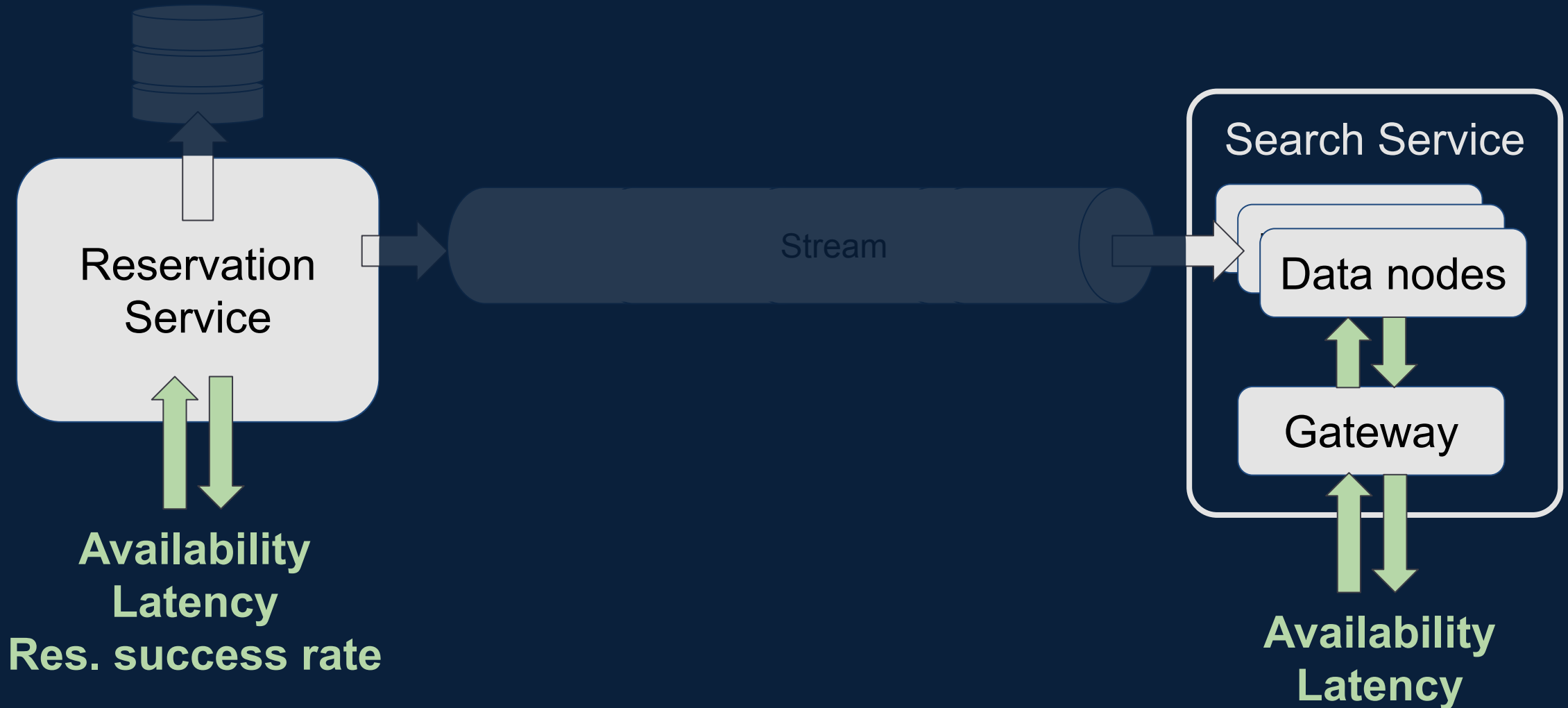


50,000+
physical servers
across 4 datacenters

● Reservation system



• First SLOs



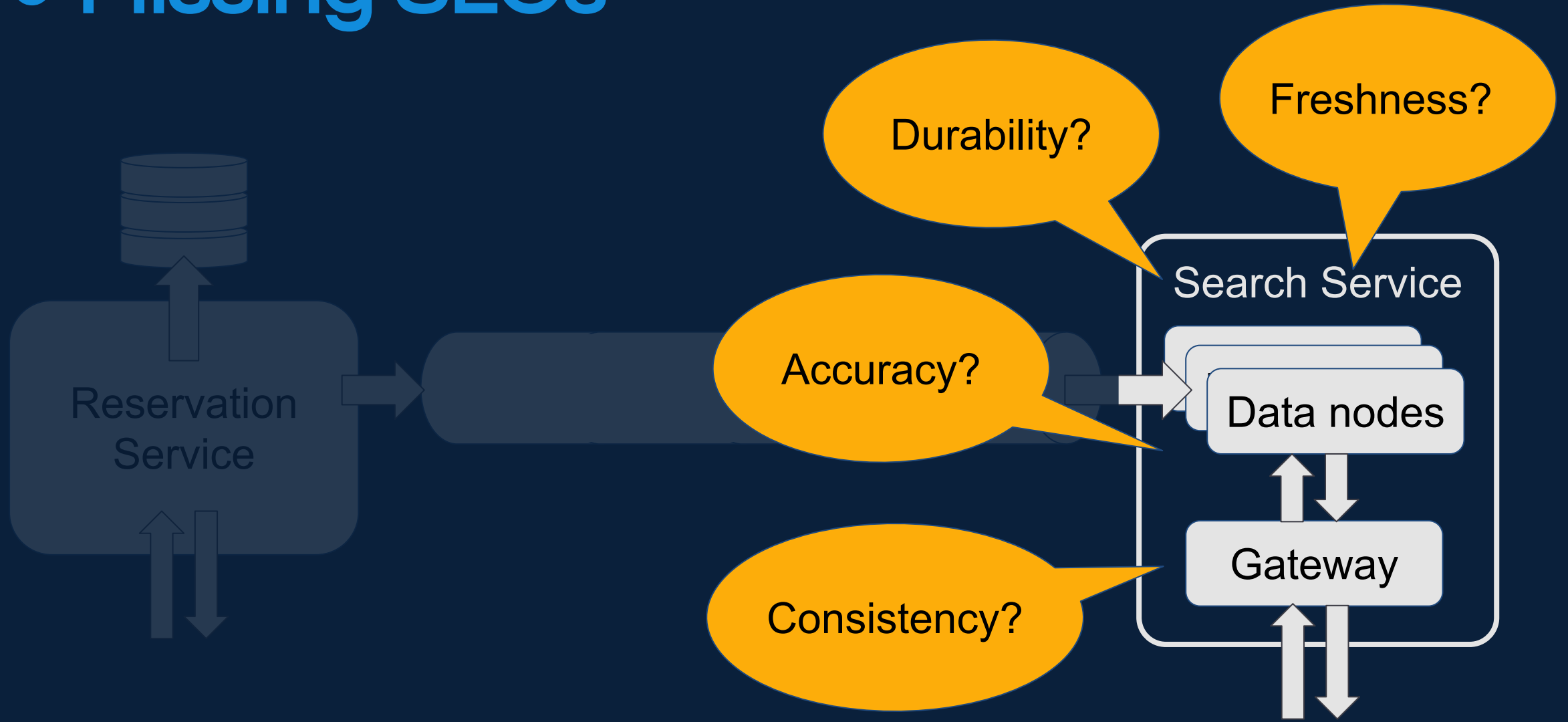
- Stakeholders reaction
Reservation service



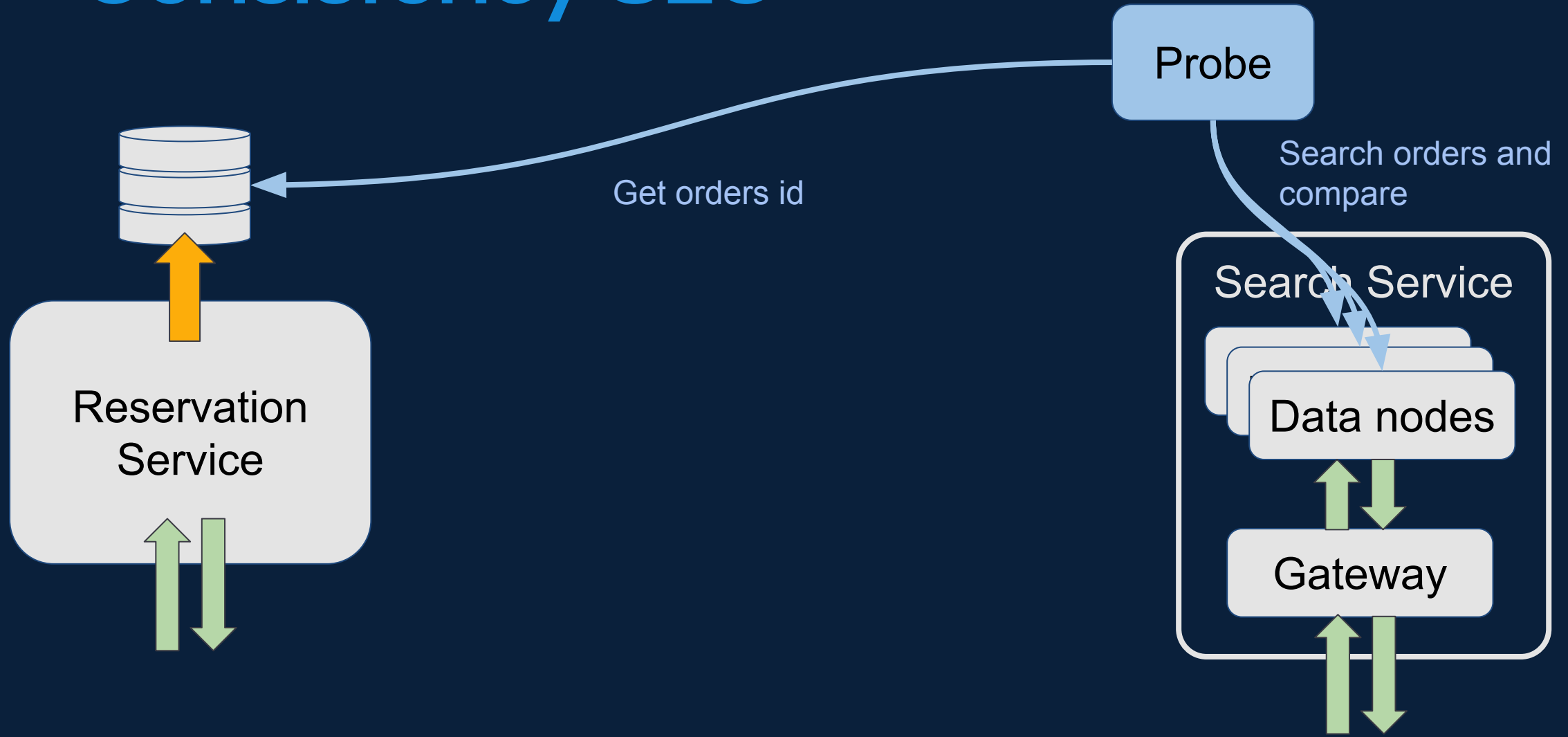
- Stakeholders reaction
Search service



● Missing SLOs



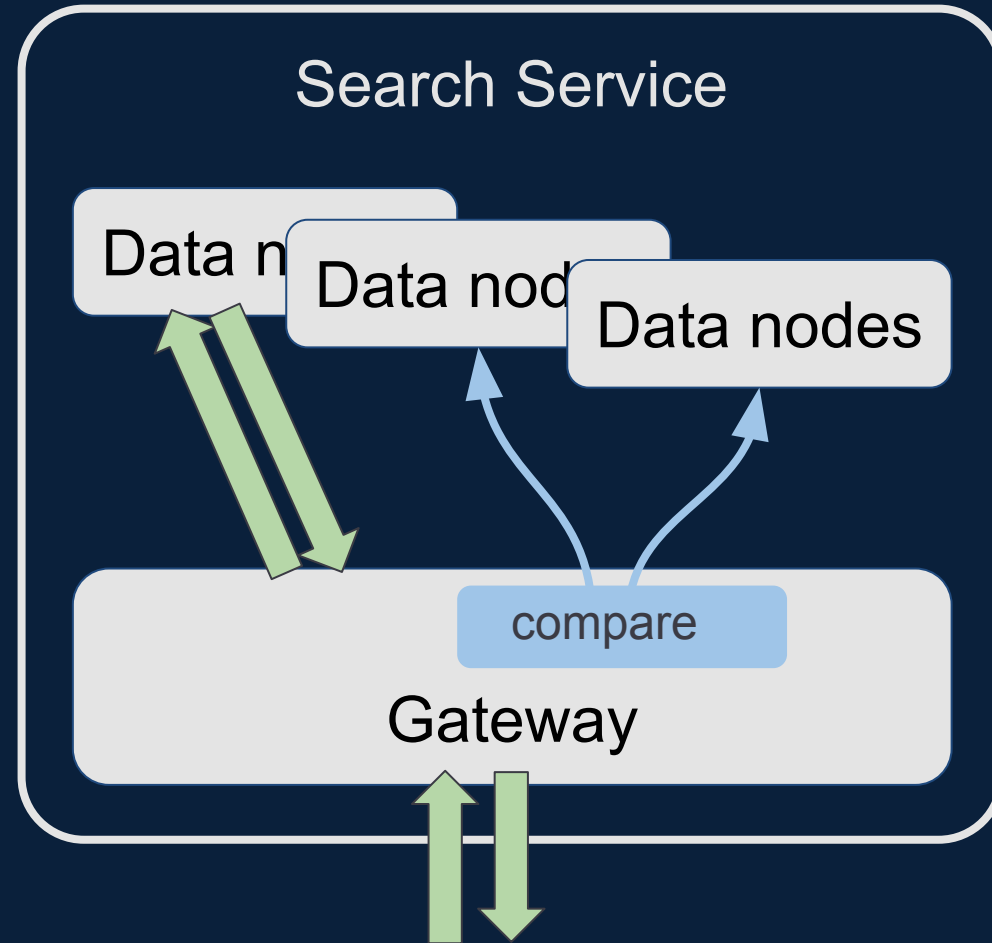
● Consistency SLO



- Consistency SLO

99.99% of reservations are
consistent among all data nodes

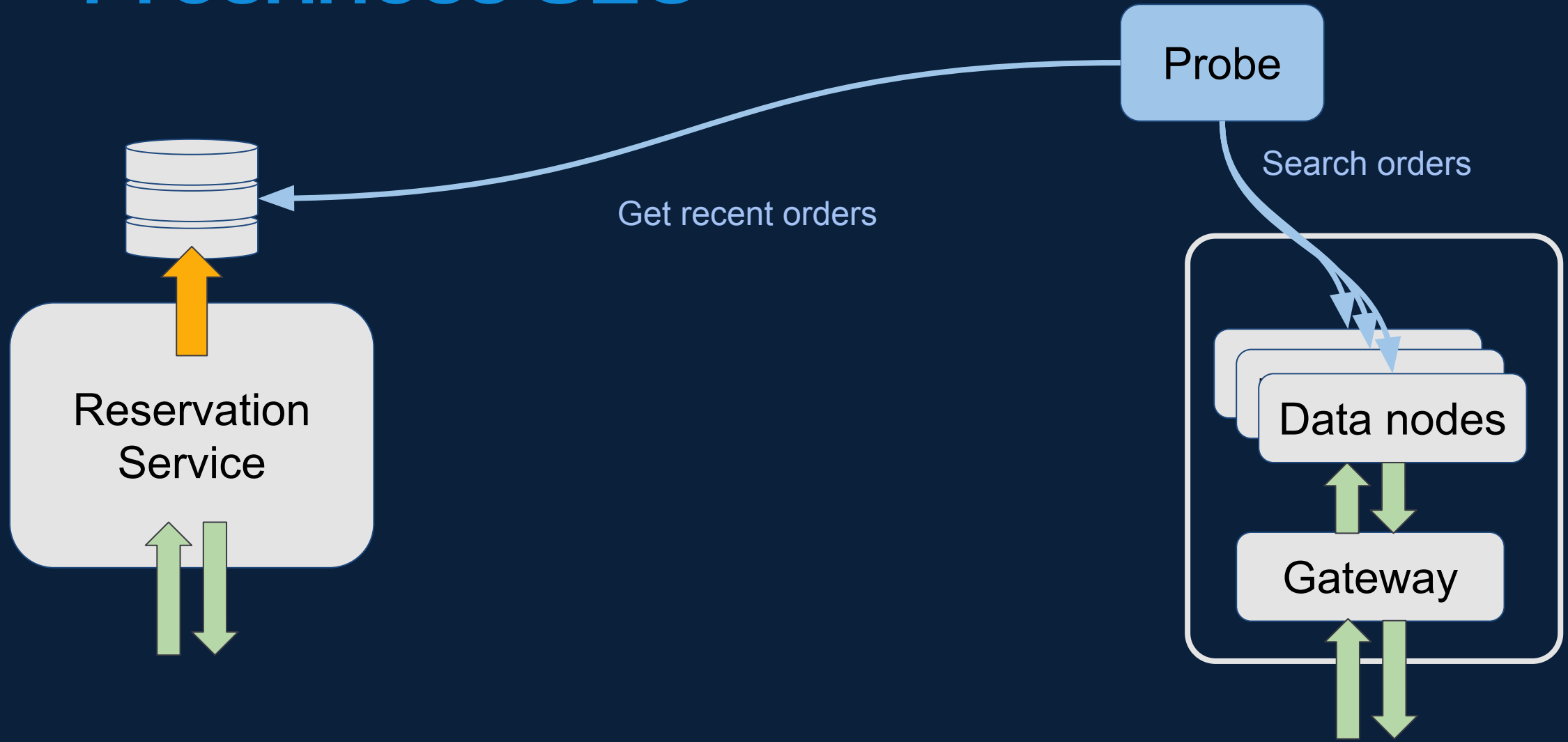
- Consistency SLO (2nd attempt)



- Consistency SLO (2nd attempt)

99.99% of search results are
consistent

● Freshness SLO



- Freshness SLO

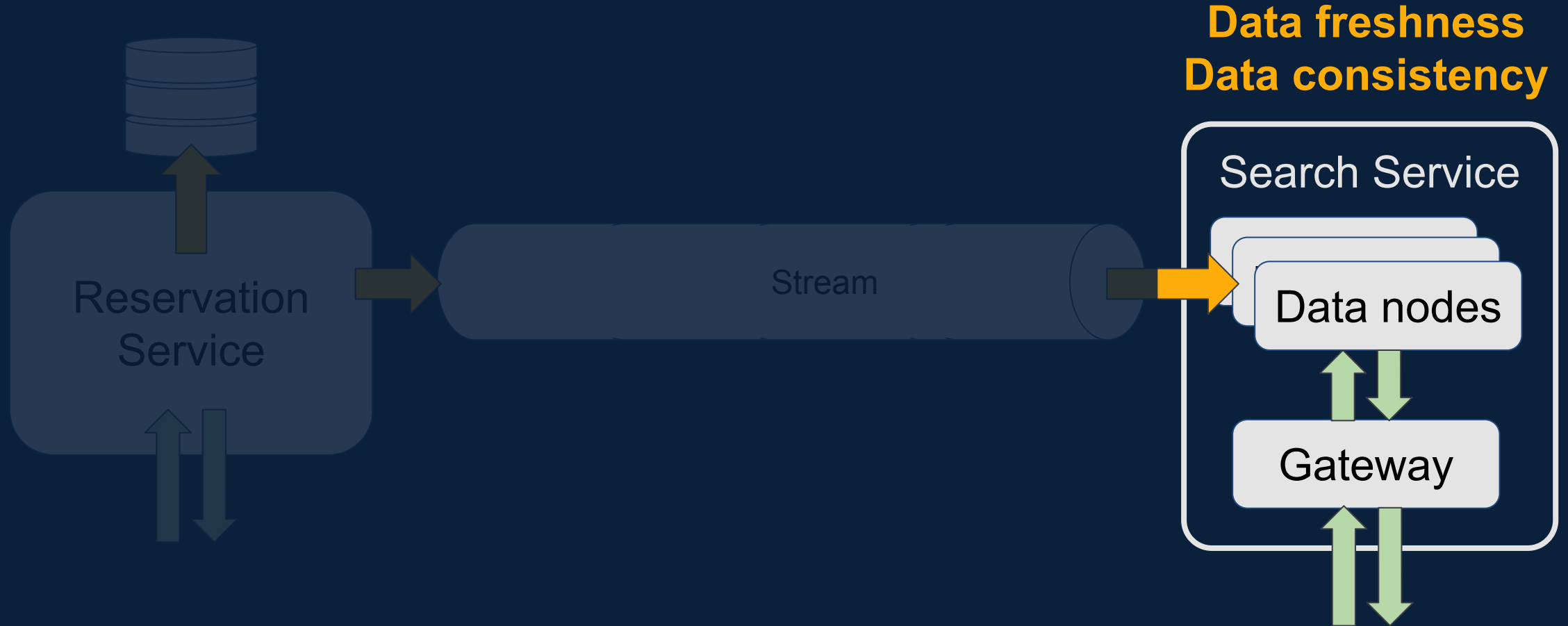
99.9% of reservations are
available within xx seconds

- **Accuracy/Durability SLO**

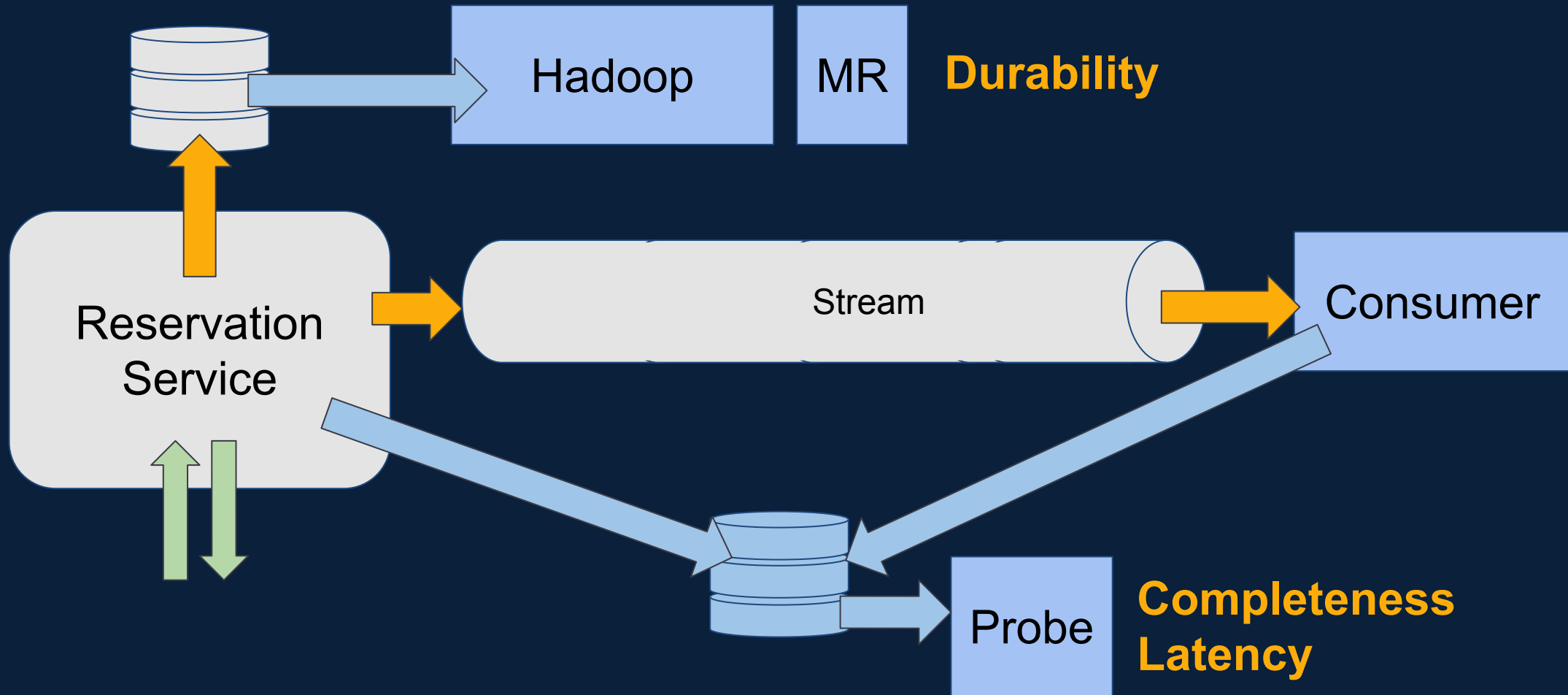
- Accuracy/Durability SLO



● Current data SLOs

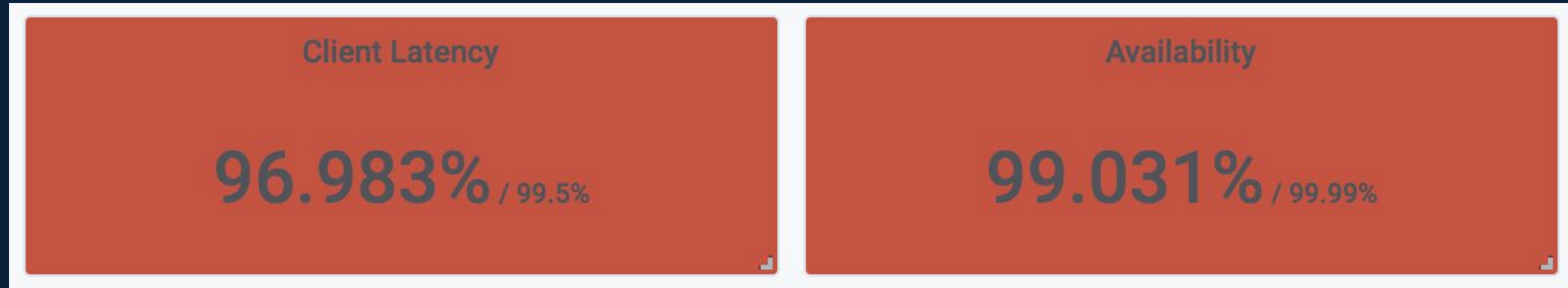


• Reservation SLOs





- **Availability / Latency SLOs**



● Availability / Latency SLOs

Buckets (manual)

Query 1
Query 5



SLO latency: 50 ms
SLO availability

Query 8
Query 2



SLO latency: 100 ms
SLO availability

Query 3
Query 4
Query 6
Query 7



No objectives

- **Availability / Latency SLOs**
Buckets (automated)

Score $\leq X$
AND
Timeout $\geq x$



SLO latency: 50 ms
SLO availability

$X \leq \text{Score} \leq Y$
AND
Timeout $\geq y$



SLO latency: 100 ms
SLO availability

Score $\geq Y$
OR
Low timeout

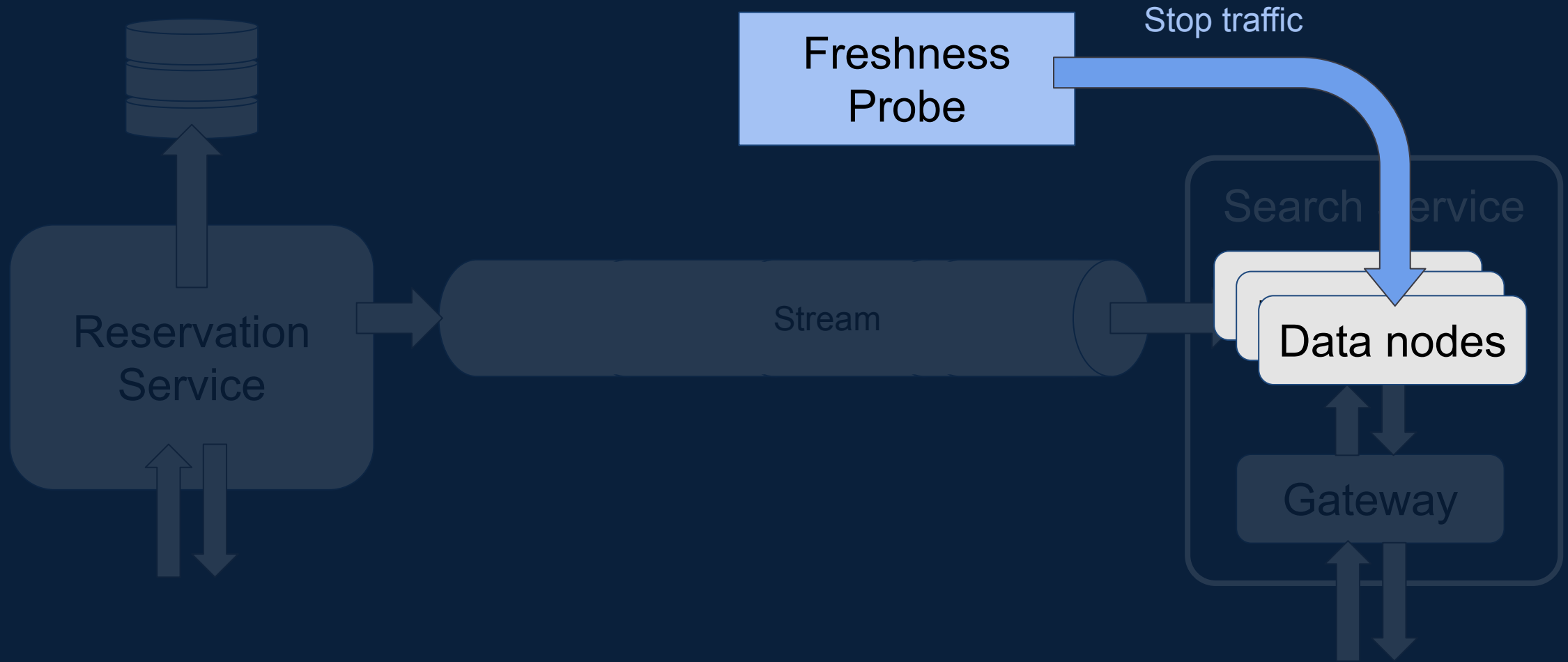


No objectives

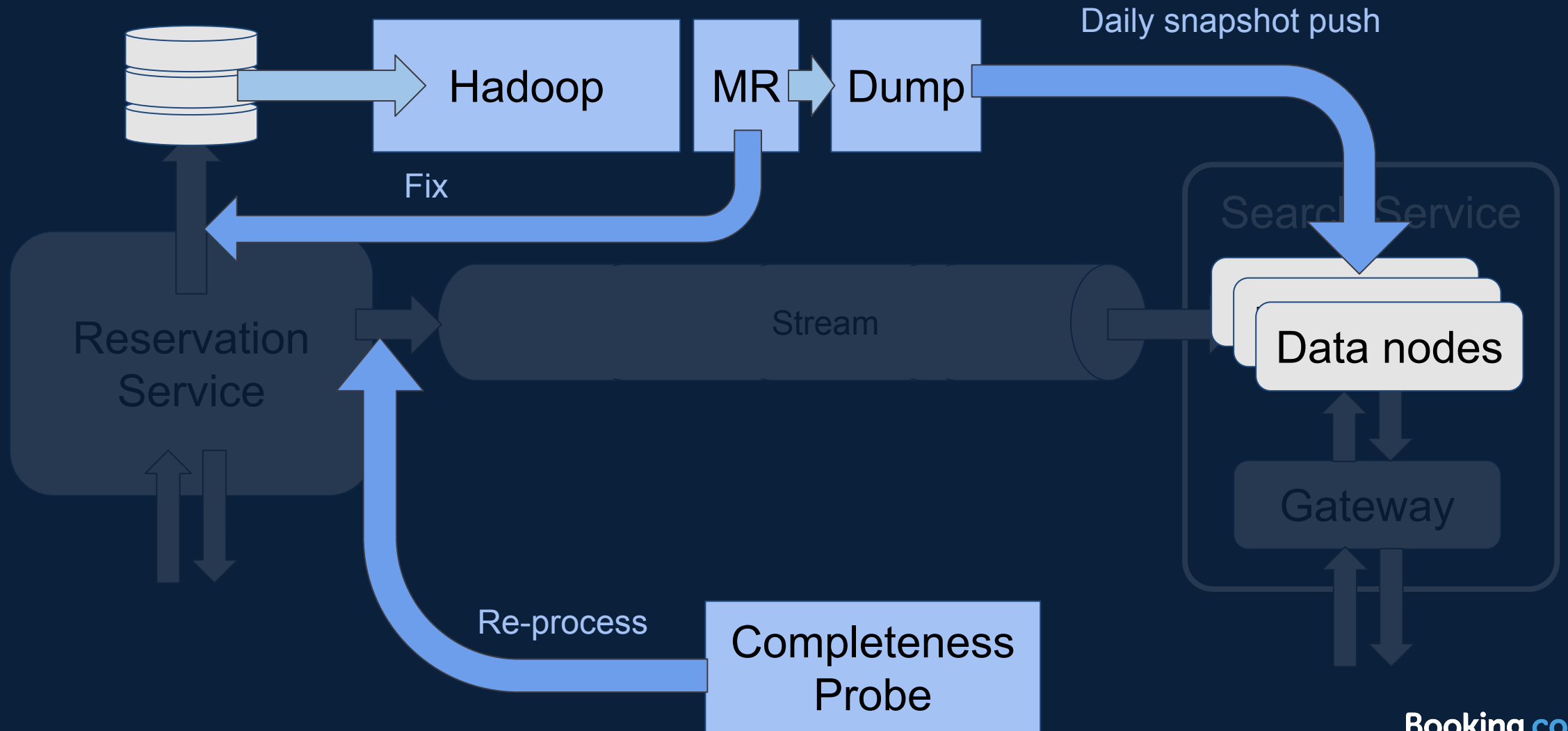


Was it worth it?

● Auto. Mitigation



● Auto. Repair



- **Biggest gains**

Awareness

Confidence



Thank you!

We're Hiring

careers.booking.com