



SYSDESIGN REFERENCE

Design a Notification System

Requirements-to-architecture reference walkthrough.

Accept notification intent and deliver through multiple channels with policy, retries, and preference enforcement.

VERSION 1.0 REVIEW

REVIEWED THROUGH 2026-07-18

STATUS HUMAN REVIEW REQUIRED

SYSDESIGN / NOTIFICATION-SYSTEM

SYSDESIGN

Design a Notification System

CORE IDEA

Accept notification intent and deliver through multiple channels with policy, retries, and preference enforcement.

Reference architecture decision chain

01 Templates	02 Routing	03 User Preferences	04 Deduplication
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Decisions to defend

- + Templates
- + routing
- + user preferences
- + deduplication
- + provider abstraction
- + and receipts.

Failure modes to test

- + Duplicate sends
- + provider outage
- + invalid tokens
- + and runaway campaigns.

Interview flow

- ☐ Clarify users, critical paths, and non-goals
- ☐ Estimate only scale that changes a decision
- ☐ Define API, data model, and source of truth
- ☐ Draw synchronous and asynchronous paths
- ☐ Pressure-test timeout, retry, overload, and recovery
- ☐ Close with tradeoffs and one alternative

Deep-dive drill

Design a Notification System

Probe	What a strong answer makes explicit
How does the design behave during a regional dependency failure?	Requirement, decision, cost, failure behavior, and observable metric.
Which metric reveals the first bottleneck?	Requirement, decision, cost, failure behavior, and observable metric.
What consistency does the user actually observe?	Requirement, decision, cost, failure behavior, and observable metric.
How would the design change at ten times the traffic?	Requirement, decision, cost, failure behavior, and observable metric.

Data questions

- + Partition key
- + Versioning
- + Uniqueness
- + Retention
- + Reconciliation

Operations questions

- + SLO
- + Backlog
- + Capacity
- + Alert
- + Failover test

DESIGN DISCIPLINE

For every box: which requirement justifies it, what cost does it introduce, and what happens when it fails?

PUBLISHING STATUS

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