

Test creaeting pdf from markdown

Consistent Hashing - Discussion Topics

Algorithm & Design

1. Why does modulo hashing fail in distributed systems?

- Calculate the percentage of keys remapped when adding/removing nodes
- Impact on cache hit rates and database performance

2. How do virtual nodes improve load distribution?

- Trade-offs between number of vnodes and memory usage
- Handling heterogeneous hardware with different capacities

3. Compare consistent hashing with rendezvous hashing

- When would you choose one over the other?
- Implementation complexity differences

Real-World Scenarios

1. Design a distributed cache using consistent hashing

- How to handle hot keys that receive disproportionate traffic?
- Replication strategy for fault tolerance

2. How does Cassandra use consistent hashing for data partitioning?

- Token ranges and vnode configuration
- Impact on read/write performance

3. What happens during a network partition in a consistent hash ring?

- Split-brain scenarios
- Consistency vs availability trade-offs

Implementation Challenges

1. How do you synchronize ring metadata across nodes?

- Gossip protocols vs centralized coordination
- Handling temporary inconsistencies

2. Describe a data migration strategy when adding nodes

- Background migration vs lazy migration
- Minimizing impact on live traffic

3. How would you implement weighted consistent hashing?

- Supporting servers with different capacities
- Dynamic weight adjustment

Advanced Topics

1. What is jump consistent hashing and when would you use it?

- Memory efficiency compared to ring-based approach
- Limitations and use cases