

1. Distributed web infrastructure

Specifics about the Infrastructure:

Additional Elements:

- Load Balancer: Incorporated to evenly distribute incoming traffic among multiple servers, optimizing resource utilization and preventing overload on any single server.
- Additional Servers: Implemented to manage increased load and enhance system reliability through redundancy.

Distribution Algorithm:

- Round Robin: The load balancer employs a Round Robin distribution algorithm, cyclically allocating incoming requests among available servers.

Active-Active vs. Active-Passive Setup:

- Active-Active Setup: The load balancer is configured for an Active-Active setup, enabling all servers to concurrently handle incoming requests, thus boosting capacity and redundancy.
- Active-Passive Setup: In an Active-Passive setup, certain servers remain inactive until required. In case of failure in the active server, the passive one takes over.

Database Primary-Replica (Master-Slave) Cluster:

Working: The database is set up as a Primary-Replica (Master-Slave) cluster, with the primary node (master) managing write operations while replica nodes (slaves) replicate data from the primary node to serve read operations.

Difference Between Primary Node and Replica Node:

Primary Node: Responsible for write operations, including data insertion, updates, or deletions. It serves as the authoritative source for changes.

Replica Node: Mirrors data from the primary node and handles read operations, contributing to redundancy and load distribution.

Issues with the Infrastructure:

Single Points of Failure (SPOF):

- Load Balancer: A failure in the load balancer could disrupt the entire system's traffic distribution.

Security Concerns:

- Absence of Firewall: Without a firewall, the infrastructure is vulnerable to security threats and unauthorized access.
- Lack of HTTPS: Communication between clients and servers lacks HTTPS encryption, potentially exposing it to interception and data compromise.

Monitoring:

- Insufficient Monitoring: Inadequate monitoring makes it challenging to identify and resolve performance issues, potential failures, or security breaches promptly.