1. Distributed web infrastructure

Specifics about the Infrastructure:

Additional Elements:

- Load Balancer: Added to distribute incoming traffic among multiple servers, ensuring better resource utilisation and preventing overload on a single server.
- Additional Servers: Added to handle increased load and provide redundancy, improving overall system reliability.

Distribution Algorithm:

- Round Robin: The load balancer is configured with a Round Robin distribution algorithm, evenly distributing incoming requests among the available servers in a cyclic manner.

Active-Active vs. Active-Passive Setup:

- Active-Active Setup: The load balancer is configured for an Active-Active setup, where all servers actively handle incoming requests simultaneously, providing increased capacity and redundancy.
- Active-Passive Setup: In an Active-Passive setup, some servers remain idle until needed. If the active server fails, the passive one takes over.

Database Primary-Replica (Master-Slave) Cluster:

- Working: The database is configured as a Primary-Replica (Master-Slave) cluster, where the primary node (master) handles write operations, and replica nodes (slaves) replicate the data from the primary, serving read operations.

Difference Between Primary Node and Replica Node:

- Primary Node: Handles write operations, such as inserting, updating, or deleting data. It is the authoritative source for changes.
- Replica Node: Mirrors data from the primary node and serves read operations. It provides redundancy and helps distribute the read load.

Issues with the Infrastructure:

Single Points of Failure (SPOF):

Load Balancer: If the load balancer fails, the entire system might experience disruptions as traffic won't be distributed efficiently.

Security Issues:

No Firewall: Absence of a firewall exposes the infrastructure to potential security threats and unauthorised access.

No HTTPS: Lack of HTTPS encryption leaves communication between clients and servers vulnerable to interception and data compromise.

Monitoring:

No Monitoring: Without proper monitoring, it becomes challenging to detect and address performance issues, potential failures, or security breaches in a timely manner.