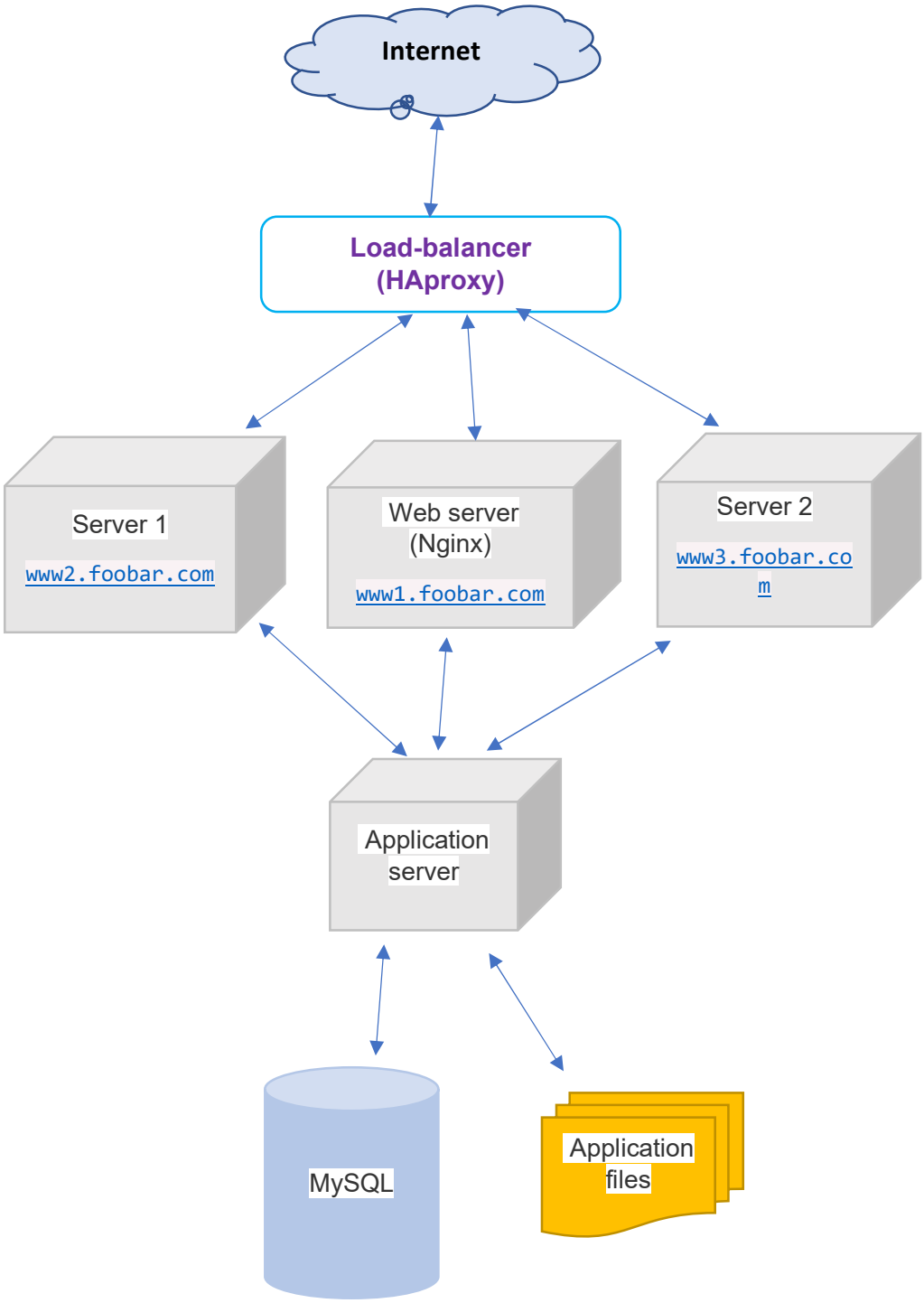
Design of three server web infrastructure that hosts the website www.foobar.com.



Roles of each element:

1) The open source **HAProxy** load balancer is capable of balancing any TCP-based service. It is commonly used for HTTP balancing and can help troubleshoot traffic issues on your web server. In addition, it allows traffic to be distributed over several servers, which facilitates management.

   The distribution algorithm with which the load distributor is configured is the "**Least connection"** (leastconn) algorithm.

   The **least connection** prevents server overloading by distributing request according to the existing connections of the respective server: The one with the lowest number of active connections receives the request following the load balancer.

2) **Load-balancer enabling an Active-Active.**

   Differences between Active-Active or Active-Passive setup:

Active-Active	Active-Passive
Two servers are configured as companion servers, each with independent workloads. These companions run on the primary and secondary nodes respectively, as individual servers until one fails over.	A single server runs either on the primary node or on the secondary node. The server runs on the primary node before a fail over and the secondary node after fail over.
Failback is a planned event during which the primary companion takes back its devices and client connections from the secondary companion to resume its devices.	Failback is a planned failover or relocation of the server and its resources to the primary node. Failback is not required, but can be done for administrative purposes.

3) **Database Primary-Replica (Master-Slave) cluster.**

   It is a distributed processing architecture (or computer model) in which a machine called the master node, acts as the central machine of the architecture, while a set of machines called slave nodes execute the tasks that are sent by the master. The requests addressed to the system (a cluster for example) are distributed to each machine of the system by the "master node". The entire management of the cluster is the responsibility of this master node: we are talking about replication.
   Simply put, replication allows changes that occur in the primary database cluster to be copied to the standby database on another server. What's the point of that?
   Replication distributes the database across multiple different machines. This way we have a backup and queries can be processed without downtime.

4) **The issues are with this infrastructure:**

   - Security problem: access is not secure due to the use of HTTP instead of HTTPs.
   - Lack of monitoring to ensure the proper functioning of the servers.