Load Balancing Algorithms

Multiple algorithms can be used for the efficient distribution of load across different nodes or servers. The algorithm should depend on the type of application the load balancer has to be used for. Here are some load balancing algorithms:

1. Round Robin :
   Round robin is one of the most used and simplest load balancing algorithms. The user's requests are distributed to the server in a rotation fashion.
   Example: Suppose there are five servers(A, B, C, D, E) in a distributed system. There are ten requests from the client. The first request would go to A; the second request would go to B; the third request would go to C; the fourth request would go to D; the fifth request would go to E and then back to the first. The sixth would go back to A, seventh to B and so on.

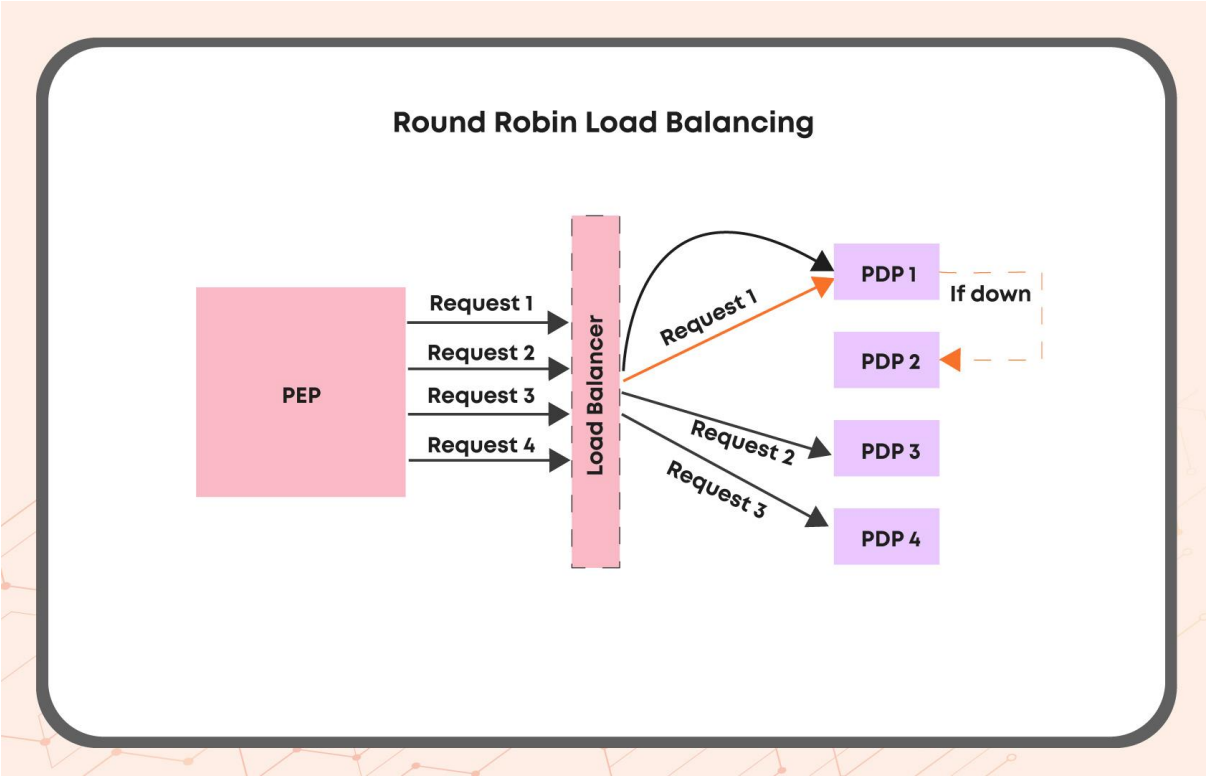

Fig: Round Robin Load Balancing Algorithm

2. Weighted Round Robin:
   It is similar to the Round Robin when the servers are of different capacities.

Example: Suppose there are two servers(A. B) in a distributed system. There are four client requests. The capacity of Server B is twice the capacity of Server A. The first request is distributed to server A, the second request is given to server B, but since the capacity of server B is twice server A, the third request should be given to B. The fourth request is passed to server A then.

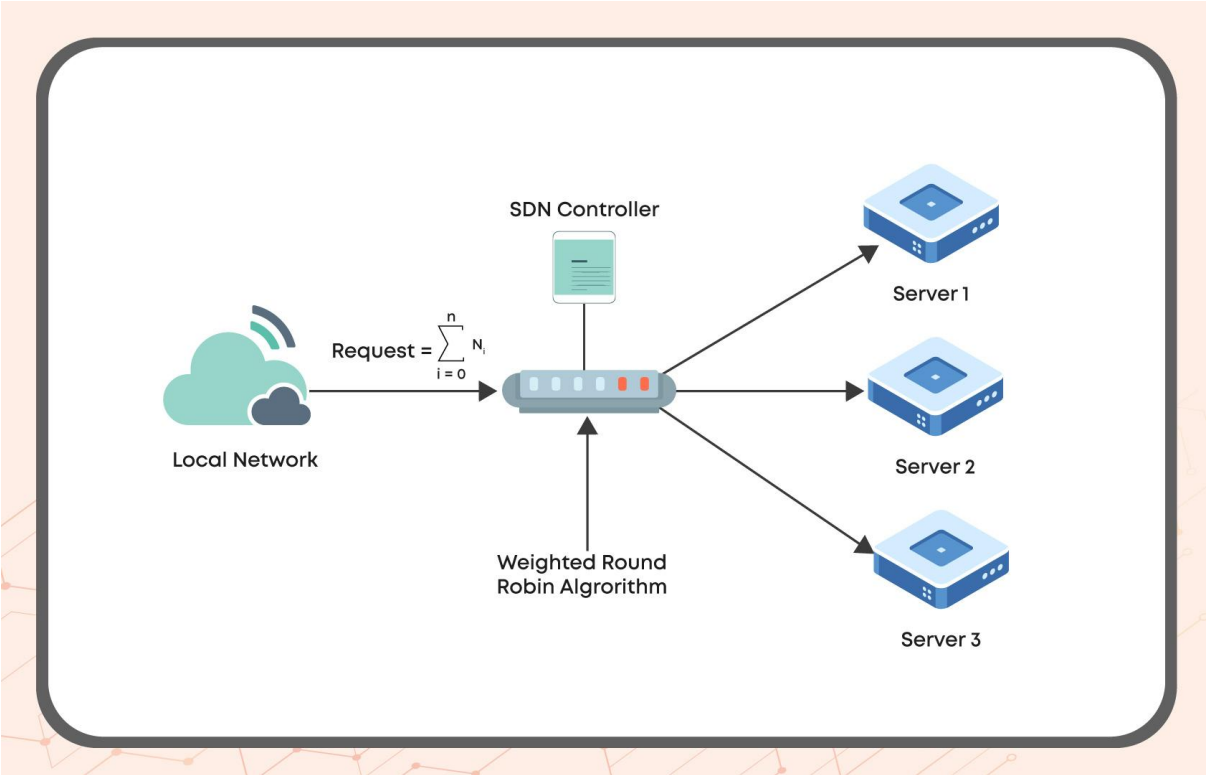

Fig: Weighted Round Robin Algorithm

3. Source IP Hash:
   Source IP Hash combines the server and client's source and destination IP addresses to produce a hash key. The key can be used to determine the request distribution.

4. IP Hash Algorithm:
   The servers have almost equal capacity, and the hash function is used for random or unbiased distribution of requests to the nodes.

5. Least Connection Algorithm:
   This algorithm is used when deciding based on the availability of open connections on a server.

6. Least Response Time:
   In this algorithm, the request is distributed based on the server which has the least response time.