

High Availability Web-servers using Adaptive Load Balancing & Live Migration of Containers

Abstract-With the advent of IoT and an increase in embedded devices, there are many devices that may rely on a single web-service. It is vital that the service should be available to the user at any cost irrespective of the number of requests or the downtime of the servers. The current state-of-the-art will give continued service using either live migration or load balancing. In this project, we propose building failsafe web-servers based on live migration of containers and using a 2-tier adaptive load balancing architecture to ensure high availability of the service. Live migration is transferring application instances across nodes without disconnecting the clients. It helps to solve many problems such as downtime during hardware maintenance or unexpected failure. The first level of the architecture will contain a cluster of containers implementing web-servers. To provide high availability of service if a container goes down, live migration of the container will be implemented. The second level of the architecture will contain load balancers implemented in cluster managers that balances the load across cluster of containers. To mitigate failsafe cluster managers, the system will have live migration of managers that will come into action when any one of the manager fails. There will be a data store acting as a third level in the architecture which has the information about the managers and will take care of load balancing and live migration of the managers. Using this concept, failure of web-service can be avoided and constant load balancing can be ensured. This architecture is scalable and eliminates single point of failure, unexpected downtime and thus provides very high availability of service.