

What is Keepalived?

Keepalived Basic Explanation

Keepalived is an open-source service commonly used to ensure high availability for network services. It helps by monitoring the health of services and automatically switching over to a backup server if the primary server goes down. This process is known as failover. Keepalived works by using a protocol called VRRP (Virtual Router Redundancy Protocol) to create a virtual IP address that is shared between multiple servers. The virtual IP always points to the currently active (healthy) server, ensuring that users can access services without interruption, even if one server fails.

Keepalived constantly monitors the health of the primary server. If a failure is detected, it assigns the virtual IP address to a backup server, which takes over, keeping the service running smoothly.

Why Use Keepalived for Syncing Docker Swarm Nodes?

In a Docker Swarm environment, you may want to ensure that your services are highly available even if a node goes down. This is where Keepalived becomes useful. By using Keepalived, you can provide a single, consistent virtual IP address that always points to the active node in your cluster. This means that users or external services only need to connect to one IP address, and they will always be directed to a healthy node.

When used on the host system rather than inside Docker, Keepalived can manage failovers at the network level. This ensures that the Docker Swarm services running in replicated mode remain accessible through a single virtual IP, even if the node hosting the service fails. It provides seamless failover without relying on Docker's internal mechanisms, giving more flexibility and reliability in how the swarm nodes are managed.

By using Keepalived, you make sure that the services running on Docker Swarm remain accessible at all times, providing an extra layer of high availability on top of the replication and scaling features of Docker Swarm.

Simple Explanation of a 3-Node Docker Swarm with Keepalived

In a 3-node Docker Swarm setup, you have three Raspberry Pis (or servers) working together to run your services. Docker Swarm distributes your services across the nodes for high availability and load balancing.

By adding Keepalived to this setup, you can ensure that the cluster is always accessible through a single virtual IP (VIP). In this example, the VIP is `192.168.0.200`. Keepalived monitors the health of the nodes, and if the active node fails, it automatically assigns the VIP to another healthy node.

So, any traffic to `192.168.0.200` is always directed to an available node, ensuring uninterrupted service even if one node goes down.

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