PiHole - Add KeepAlive on two Pi's

Setting up `keepalived` for dual Pi-holes requires installing the package on both machines, writing a short configuration file on each, and pointing your network/AD DNS forwarder to the shared Virtual IP (VIP).

Prerequisites & Example Values

Check your network interface name using `ip a` (usually `eth0` for wired or `wlan0` for Wi-Fi).

- **Pi-hole A (Primary):** `192.168.1.10` (Interface: `eth0`)
- **Pi-hole B (Secondary):** `192.168.1.11` (Interface: `eth0`)
- **Shared Virtual IP (VIP):** `192.168.1.99` (Choose an unused static IP outside your DHCP range)

Step 1: Install `keepalived` on Both Pi-holes

Run the following commands on **both** Pi-hole servers:

```
sudo apt update
sudo apt install -y keepalived
```

Allow the Linux kernel to bind to non-local IP addresses (needed so Pi-hole can bind to the VIP even when it's not the active master):

```
echo "net.ipv4.ip_nonlocal_bind=1" | sudo tee -a /etc/sysctl.d/99-keepalived.conf
sudo sysctl --system
```

Step 2: Configure Pi-hole A (Primary / MASTER)

Create the configuration file on **Pi-hole A**:

```
sudo nano /etc/keepalived/keepalived.conf
```

Paste the following configuration:

```
vrrp_script check_pihole {
    # Verify Pi-hole DNS service is answering queries locally
    script "dig +short +time=1 +tries=1 @127.0.0.1 google.com > /dev/null 2>&1"
    interval 2
    weight -20
}

vrrp_instance VI_PIHOLE {
    state MASTER
    interface eth0              # Replace with your interface if different (e.g., wlan0)
    virtual_router_id 51        # Must be identical on both Pis (1-255)
    priority 100                # Higher priority = primary holder of VIP
    advert_int 1

    authentication {
        auth_type PASS
        auth_pass SecretPass123  # Must match on both Pis (max 8 chars)
    }

    virtual_ipaddress {
        192.168.1.99/24         # Your shared VIP
    }
```

```
    track_script {
        check_pihole
    }
}
```

Save and exit (`Ctrl+O`, `Enter`, `Ctrl+X`).

Step 3: Configure Pi-hole B (Secondary / BACKUP)

Create the configuration file on **Pi-hole B**:

```
sudo nano /etc/keepalived/keepalived.conf
```

Paste the following configuration:

```
vrrp_script check_pihole {
    script "dig +short +time=1 +tries=1 @127.0.0.1 google.com > /dev/null 2>&1"
    interval 2
    weight -20
}

vrrp_instance VI_PIHOLE {
    state BACKUP
    interface eth0              # Replace with your interface if different
    virtual_router_id 51        # Must match Pi-hole A
    priority 90                 # Lower priority than Master
    advert_int 1

    authentication {
```

```
    auth_type PASS
    auth_pass SecretPass123  # Must match Pi-hole A
  }

  virtual_ipaddress {
    192.168.1.99/24          # Same shared VIP
  }

  track_script {
    check_pihole
  }
}
```

Save and exit (`Ctrl+O`, `Enter`, `Ctrl+X`).

Step 4: Start and Enable the Services

Run these commands on **both** Pi-holes:

```
sudo systemctl enable keepalived
sudo systemctl restart keepalived
```

Step 5: Verify Failover Operation

1. **Check which Pi holds the VIP:** On **Pi-hole A**, run:

   ```
   ip a show eth0
   ```

   You should see `inet 192.168.1.99/24` listed as a secondary IP on the interface.
2. **Test Failover:**
   - Stop the service on Pi-hole A:

     ```
     sudo systemctl stop keepalived
     ```

   - Run `ip a show eth0` on **Pi-hole B** — `192.168.1.99` will immediately appear on Pi-hole B.
   - Start `keepalived` back up on Pi-hole A:

```
sudo systemctl start keepalived
```

- Pi-hole A will reclaim the VIP because its priority (`100`) is higher than Pi-hole B's (`90`).

3. **Update Upstream Settings:** Set the DNS forwarder address on your Active Directory DNS server, Synology NAS, or pfSense/DHCP scope to point strictly to the Virtual IP (**`192.168.1.99`**).

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