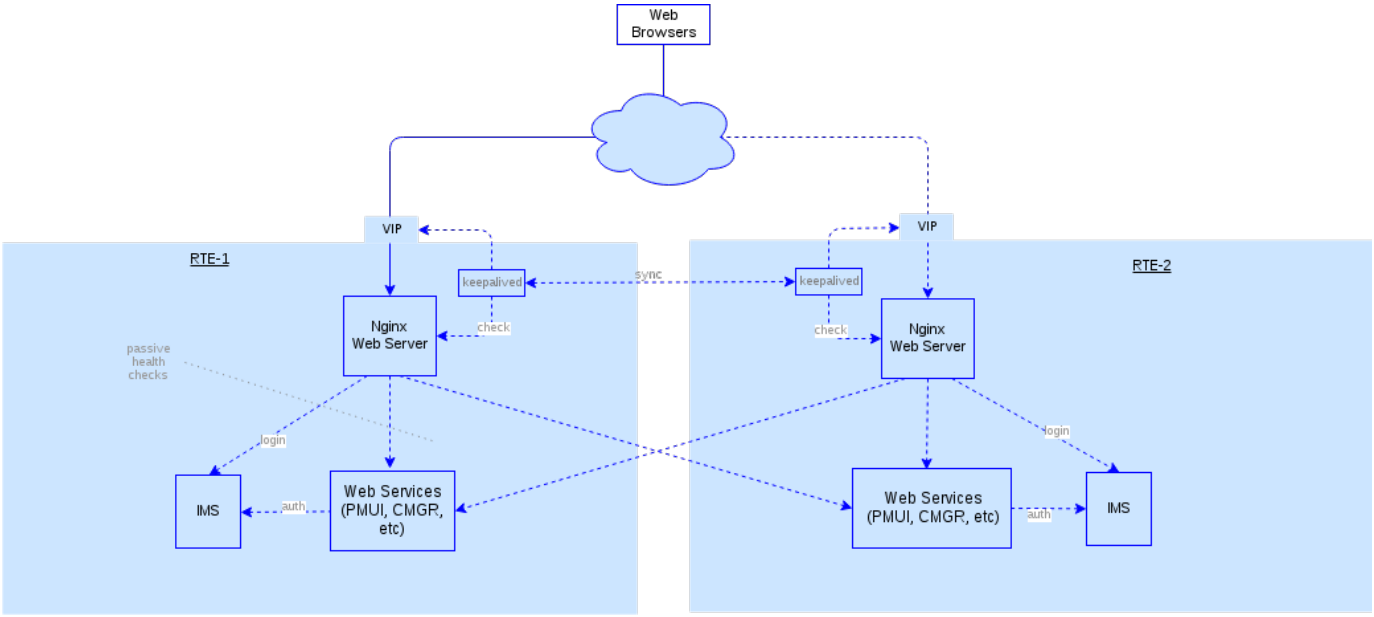
PMUI Deployment Architecture

General Context



Notes:

General

- PMUI deployed on two RTE nodes.
- Nginx web proxy deployed as an entry point on each node
- Nginx web proxy offers a following advantages
  - Load-balancing
  - Audit Logs
  - SSL termination (if needed)
  - Protection against DOS attacks
- Authentication is done between back end web-service and IMS. (Previously IMS was used as a secure proxy)

High Availability

- Virtual/Floating IP address shared between two VMs
- Initialy floating IP address tied to RTE-1
- keepalived linux daemon is used to check health status of nginx web proxy and move floating ip address to RTE-2 if Nginx on goes down on RTE-1
- Floating ip address atuomatically moved back to RTE-1 if nginx recovers.
- Under the hood keepalived use VRRP (https://en.wikipedia.org/wiki/Virtual_Router_Redundancy_Protocol)

Upstream Load Balancing

- Nginx configured to load balance requests across upstream web services
- By default nginx use passive health checks to monitor health of upstream web services
  - See https://www.nginx.com/resources/admin-guide/load-balancer/
  - Uses client traffic to detect failed upstream services
  - Stops sending requests to that server until it is considered active again
  - Means that client request that detected failure of the upstream server fails.

Nginx

TODO

Keepalived

1. Install and configure keepalived

   ```
   yum install -y keepalived

   systemctl enable keepalived
   ```

2. Set up /etc/keepalived/keepalived.conf

   RTE-1 config:

```
vrrp_script chk_nginx {
        script "pidof nginx"
        interval 2
        weight 2
}

vrrp_instance VI_1 {
        interface eth0                  # insert interface name here
        state MASTER
        virtual_router_id 1
        priority 101                    # 101 on master, 100 on backup
        virtual_ipaddress {
           192.168.1.25                 # insert virtual ip address
here
        }
        track_script {
            chk_nginx
        }
}
```

RTE-2 config:

```
vrrp_script chk_nginx {
        script "pidof nginx"
        interval 2
        weight 2
}

vrrp_instance VI_1 {
        interface eth0                  # insert interface name here
        state SLAVE
        virtual_router_id 1
        priority 100                    # 101 on master, 100 on backup
        virtual_ipaddress {
           192.168.1.25                 # insert virtual ip address
here
        }
        track_script {
            chk_nginx
        }
}
```

3. Start keealived

   ```
   service keepalived start
   ```

4. Verification checks
   a. See log files on each node.. tail /var/log/messages
   b. To check which VM the VIP is attached to..
      i. `ip addr show "interface"`

   c. Initially the virtual ip address (192.168.1.178) will be linked to the interface on the primary node If you kill nginx on the primary node the virtual ip address is moved over to the secondary node If you restart nginx on the primary node the virtual ip address is moved back accross to it.