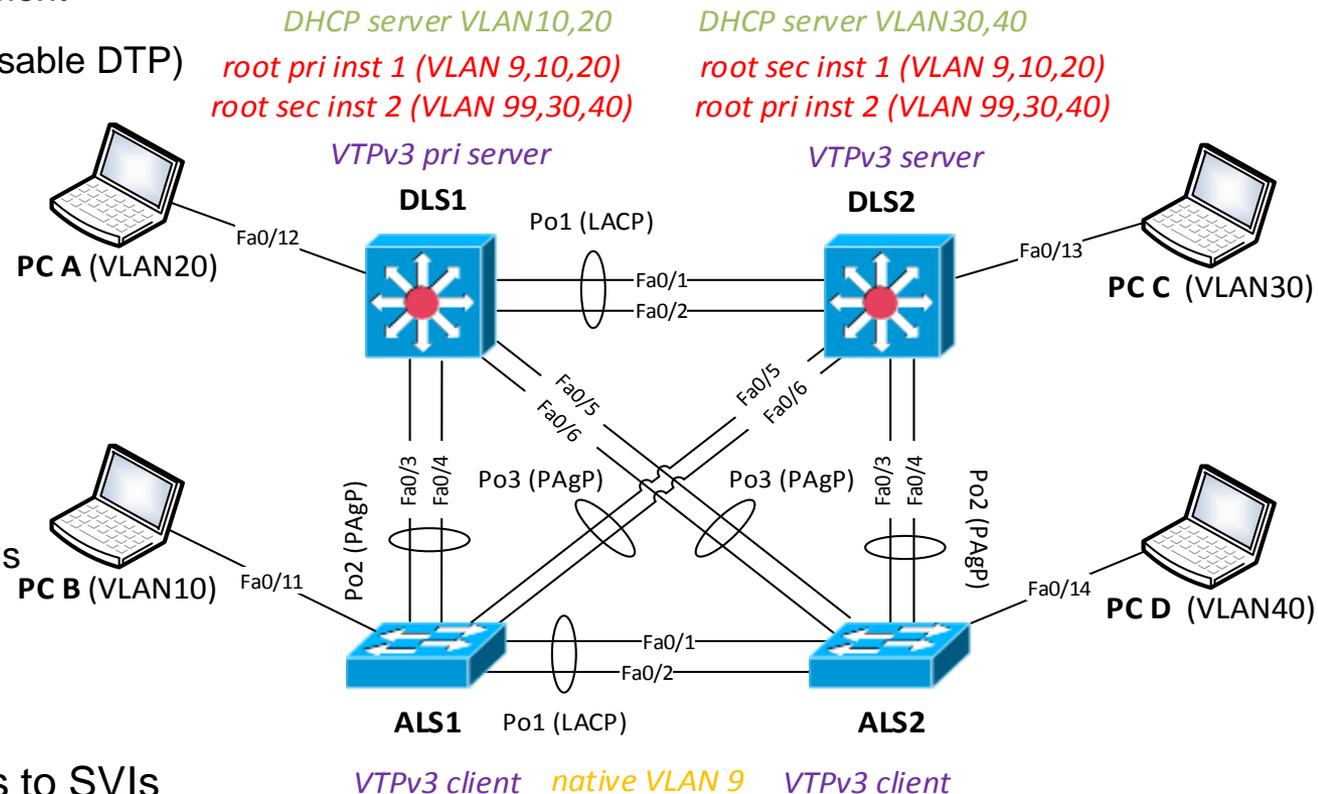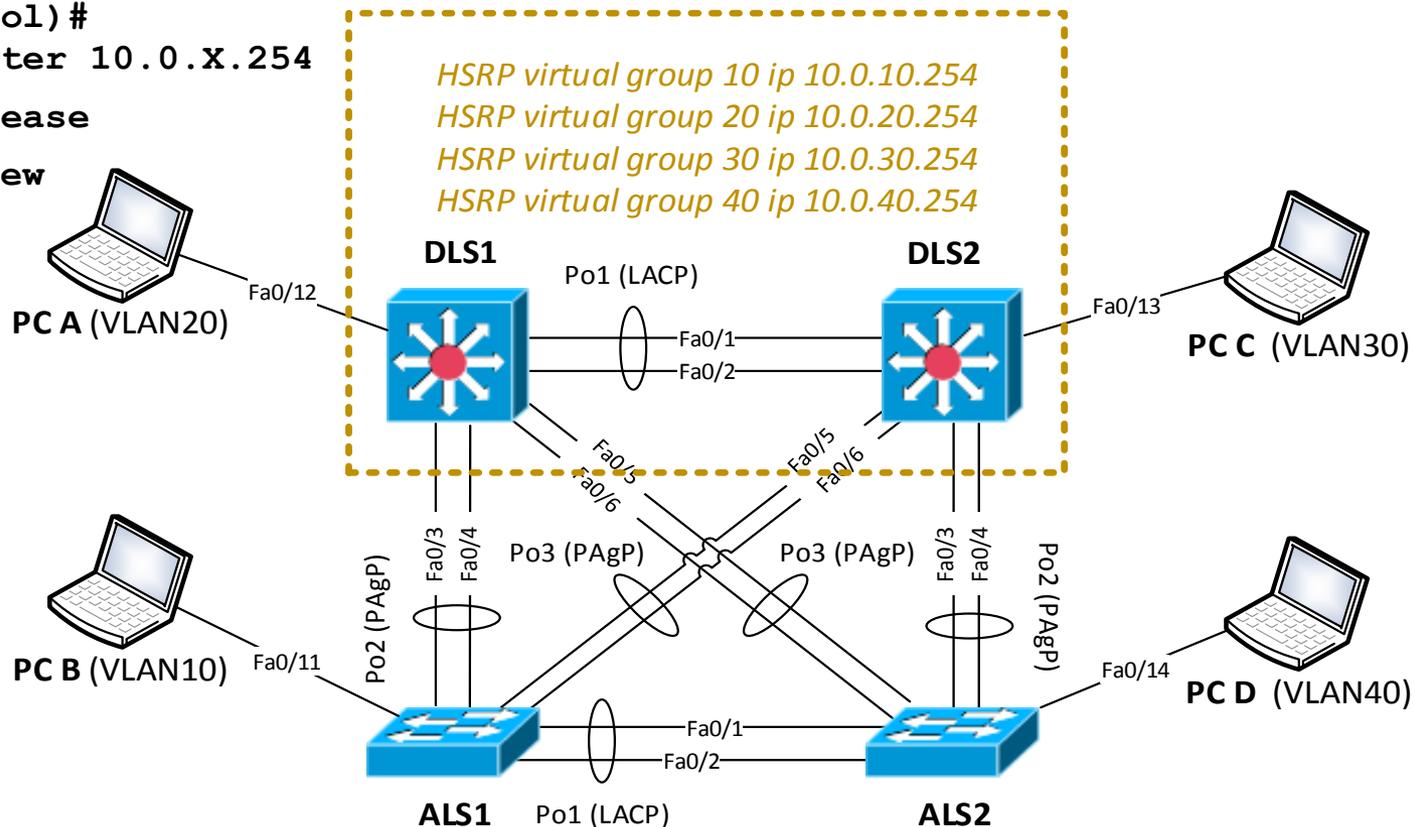# FHRP

SWITCH Module 5

Lab 5.0: Prepare Topology

- Create VLANs
  - 10 – UIFS, 20 – UPSY, 30 – UPGM, 40 – UITS
  - 9 – Native, 99 – Management
- Establish trunks (Dot1Q, Disable DTP)
- VTPv3
- Create Etherchannels
- Employ MSTP
  - Instances 1
    - VLAN 9, 10, 20
  - Instance 2
    - VLAN 99, 30, 40
  - Instance 0 all other VLANs
  - setup root bridges
    - DLS1 for instance 1
    - DLS2 for instance 2
- Assign first four addresses to SVIs
  - VLAN10 – 10.0.10.X /24, VLAN20 – 10.0.20.X /24
  - VLAN30 – 10.0.30.X /24, VLAN40 – 10.0.40.X /24
- Use DHCP servers on DLS1 and DLS2 to assigning addresses to hosts

DHCP server VLAN10,20
root pri inst 1 (VLAN 9,10,20)
root sec inst 2 (VLAN 99,30,40)
VTPv3 pri server

DHCP server VLAN30,40
root sec inst 1 (VLAN 9,10,20)
root pri inst 2 (VLAN 99,30,40)
VTPv3 server

DLS1   Po1 (LACP)   **DLS2**

PC A (VLAN20)   Fa0/12   Fa0/1   Fa0/2   Fa0/13   PC C (VLAN30)

Fa0/5   Fa0/5
Fa0/6   Fa0/6

Po2 (PAgP)   Fa0/3 Fa0/4   Po3 (PAgP)   Po3 (PAgP)   Fa0/3 Fa0/4   Po2 (PAgP)

PC B (VLAN10)   Fa0/11   Fa0/14   PC D (VLAN40)

Fa0/1
Fa0/2

ALS1   Po1 (LACP)   **ALS2**

VTPv3 client   *native VLAN 9*   *VTPv3 client*

Lab 5.1: Basic HSRP Deployment

- Use the last usable address as HSRP virtual-gateway for hosts in VLANs 10,20,30,40
  - `(conf)# interface vlan [10,20,30,40]`
  - `(conf-if)# standby version 2`
  - `(conf-if)# standby X ip 10.0.X.254`
- Alter DHCP appropriately and renew leases
  - `(conf-dhcp-pool)#`
    `default-router 10.0.X.254`
  - `ipconfig /release`
  - `ipconfig /renew`

HSRP virtual group 10 ip 10.0.10.254
HSRP virtual group 20 ip 10.0.20.254
HSRP virtual group 30 ip 10.0.30.254
HSRP virtual group 40 ip 10.0.40.254

PC A (VLAN20) Fa0/12

DLS1   Po1 (LACP)   DLS2
Fa0/1
Fa0/2

Fa0/13   PC C (VLAN30)

Fa0/5
Fa0/6
Fa0/5
Fa0/6

Fa0/3 Fa0/4   Po3 (PAgP)   Po3 (PAgP)   Fa0/3 Fa0/4

Po2 (PAgP)   Po2 (PAgP)

PC B (VLAN10)   Fa0/11

Fa0/14   PC D (VLAN40)

Fa0/1
Fa0/2

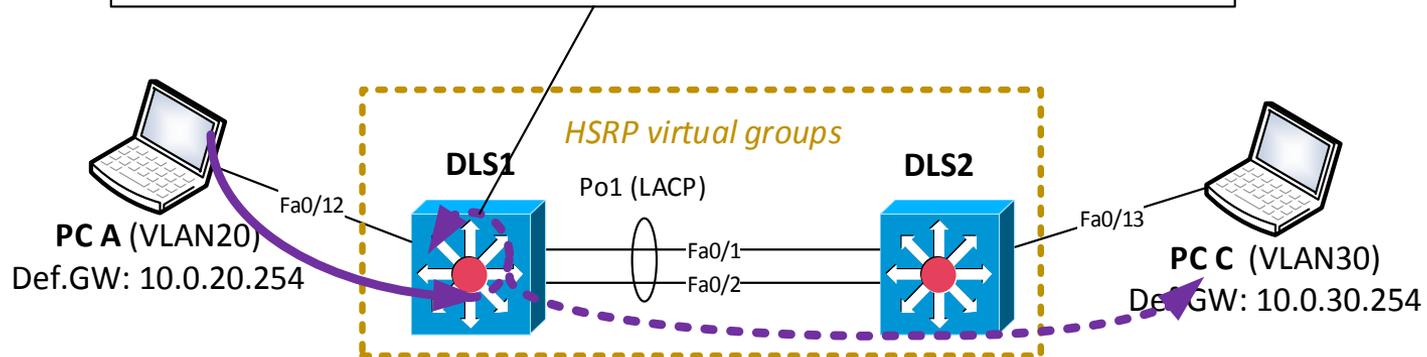ALS1   Po1 (LACP)   ALS2

Lab 5: Routing Mozkobrus

- *Beaware when playing with FHRP and pinging!*

```
show ip int brief
Vlan20 up/up
Vlan30 admin down/down

show ip route
C 10.0.20.0/24 is directly connected, Vlan20
```
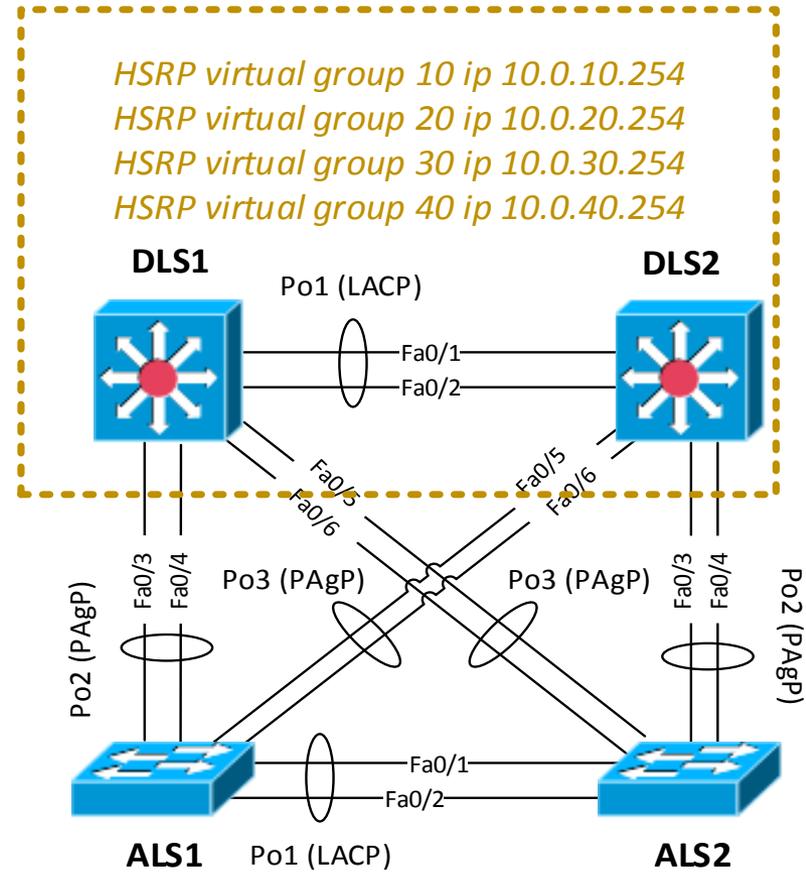
HSRP virtual groups

DLS1   Po1 (LACP)   **DLS2**

Fa0/12   Fa0/1   Fa0/13
                          Fa0/2

PC A (VLAN20)
Def.GW: 10.0.20.254

PC C (VLAN30)
Def.GW: 10.0.30.254

Lab 5.2: Prioritize Root Bridges

HSRP virtual group 10 ip 10.0.10.254
HSRP virtual group 20 ip 10.0.20.254
HSRP virtual group 30 ip 10.0.30.254
HSRP virtual group 40 ip 10.0.40.254

- *Who is active and standby router?*
  - `show standby brief`

- Increase/Decrease priority:
  - `DLS1(conf-if)# standby 10 priority 150`
  - `DLS1(conf-if)# standby 20 priority 150`
  - `DLS2(conf-if)# standby 30 priority 150`
  - `DLS2(conf-if)# standby 40 priority 150`
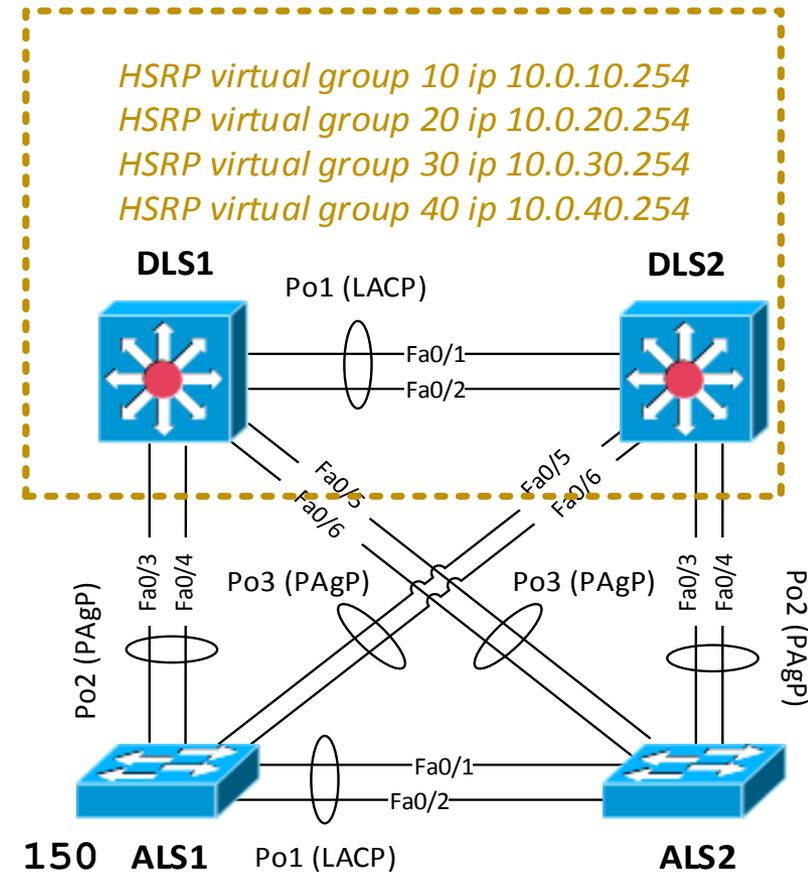
Lab 5.3: Understanding Preemption

1) Start debugging HSRP FSM

   ▪ `# debug standby events`

2) Disable/Enable SVI10 on DLS1

   ▪ `(conf-if)# [no] shutdown`

3) Configure preemption on DLS*

   ▪ `(conf-if)#`
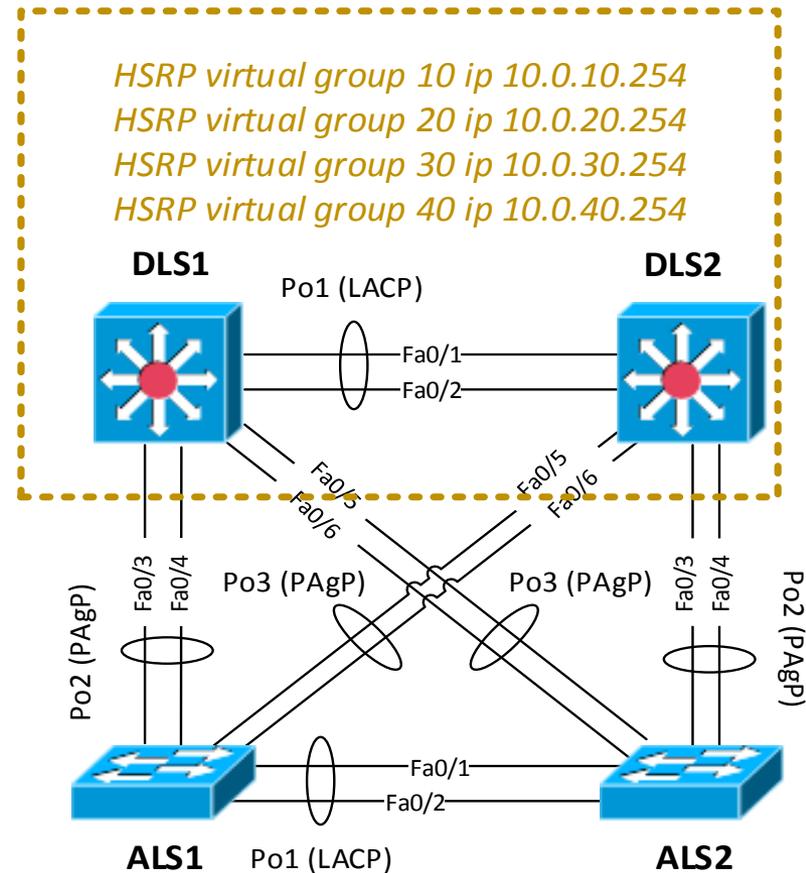   `standby` X `preempt`

4) Disable/Enable SVI10 on DLS1

HSRP virtual group 10 ip 10.0.10.254
HSRP virtual group 20 ip 10.0.20.254
HSRP virtual group 30 ip 10.0.30.254
HSRP virtual group 40 ip 10.0.40.254

DLS1   Po1 (LACP)   DLS2

Fa0/1
Fa0/2

Fa0/5
Fa0/6

Po2 (PAgP)   Fa0/3 Fa0/4   Po3 (PAgP)   Po3 (PAgP)   Fa0/3 Fa0/4   Po2 (PAgP)

Fa0/1
Fa0/2

ALS1   Po1 (LACP)   ALS2

Lab 5.4: Subsecond HSRP Convergence

1) In case of HSRPv1 temporary remove HSRP config

2) Adjust timers

3) Disable SVI

4) Ping from any host machine default-gateway

- DLS*:
  - **(conf-if)# standby version 2**
  - **(conf-if)#**
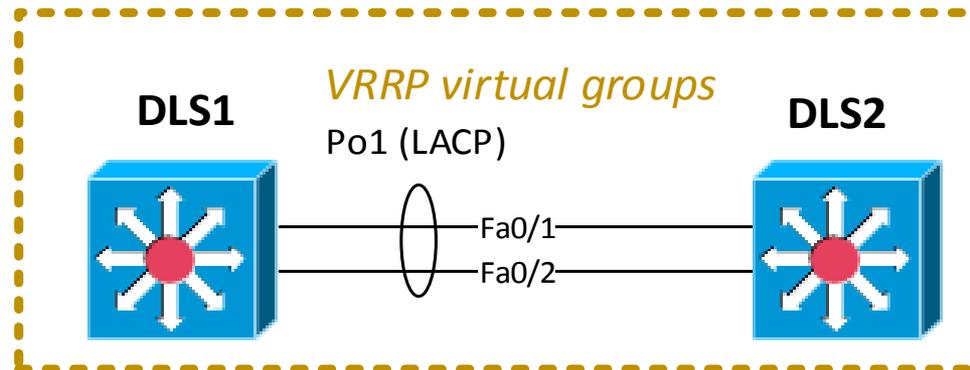   **standby X timers msec 300 msec 900**

HSRP virtual group 10 ip 10.0.10.254
HSRP virtual group 20 ip 10.0.20.254
HSRP virtual group 30 ip 10.0.30.254
HSRP virtual group 40 ip 10.0.40.254

DLS1

DLS2

Po1 (LACP)

Fa0/1
Fa0/2

Fa0/5
Fa0/6
Fa0/5
Fa0/6

Po2 (PAgP)

Fa0/3
Fa0/4

Po3 (PAgP)

Po3 (PAgP)

Fa0/3
Fa0/4

Po2 (PAgP)

Fa0/1
Fa0/2

ALS1

Po1 (LACP)

ALS2

Lab 5.5: Object Tracking

1) Add Router and connect it with DLS*
   via Fa0/24 routed interface

   - `(conf)# interface fa0/24`
   - `(conf-if)# no switchport`
   - `(conf-if)# ip address 192.0.2.`X`/30`

2) Configure tracking object on DLS*

   - `(conf)# track 1 interface Fa0/24`
     `line-protocol`

3) Bond HSRP functionality with tracking
   object on DLS*

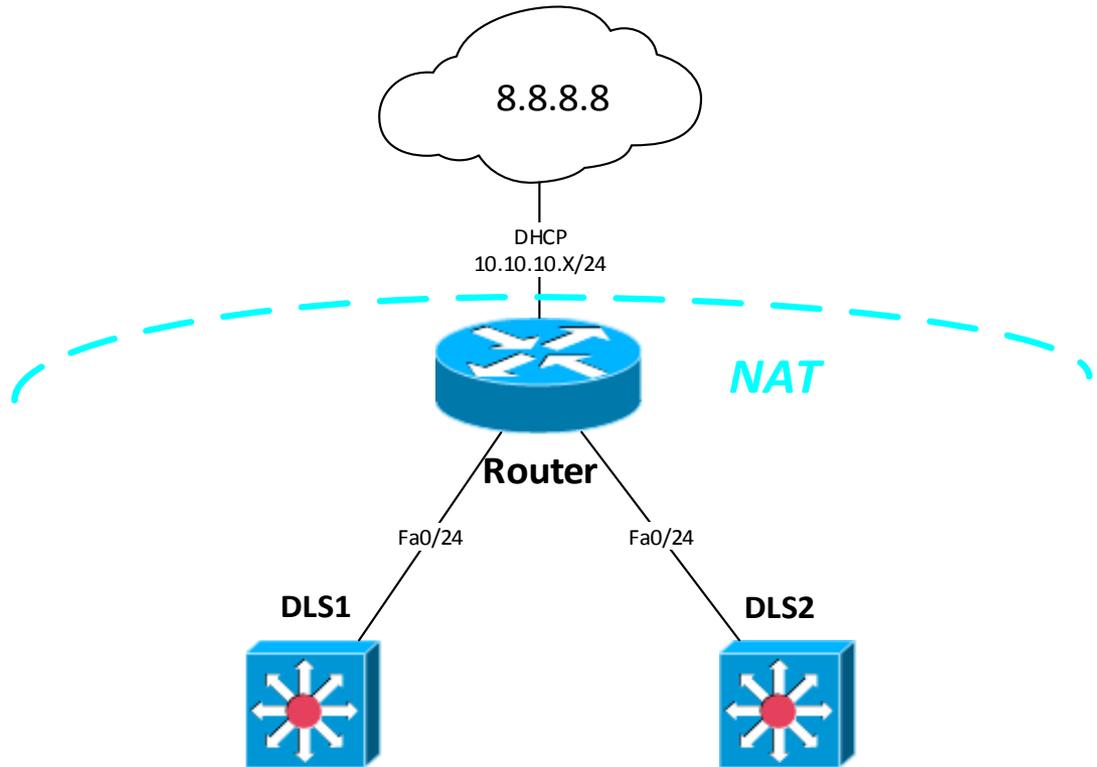   - `(conf-if)# standby `X` track 1`
     `decrement 60`

Router

192.0.2.0/30
Fa0/24

192.0.2.4/30
Fa0/24

VRRP virtual groups

DLS1

DLS2
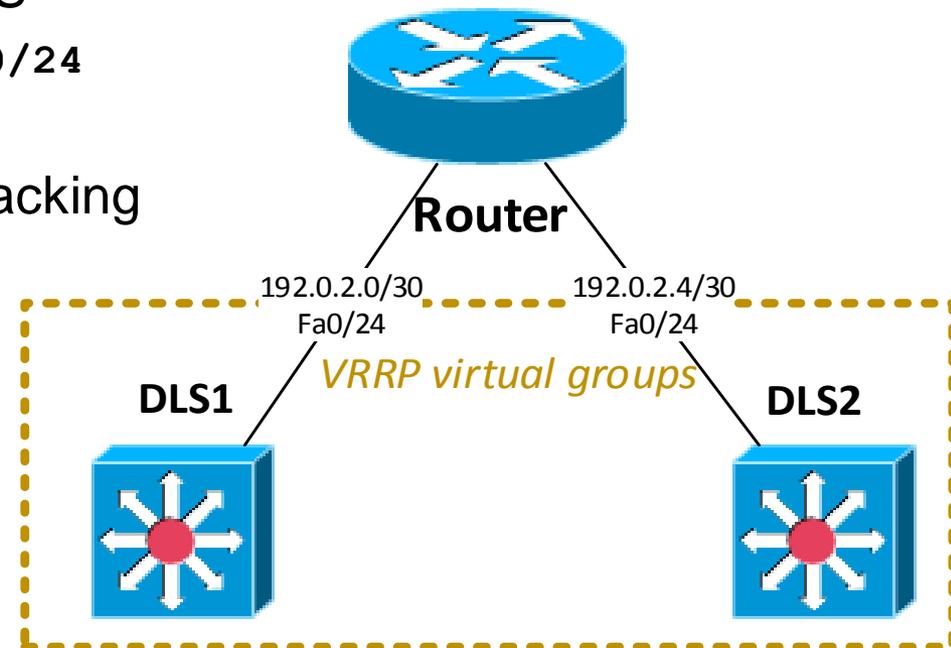
Lab 5.6: Migrate to VRRP

1) Remove all HSRP config

2) Configure VRRP with subsecond convergence tracking uplink to the Router

- **(conf)# interface vlan** *X*
- **(conf-if) vrrp** *X* **ip 10.0.**X**.254**
- **(conf-if) vrrp** *X* **priority**
- **(conf-if) vrrp** *X* **timers adv msec 300**
- **(conf-if) vrrp** *X* **track 1 decr 60**

DLS1   *VRRP virtual groups*   **DLS2**

Po1 (LACP)

Fa0/1
Fa0/2

Lab 5.7: IP SLA

8.8.8.8

DHCP
10.10.10.X/24

NAT

Router

Fa0/24   Fa0/24
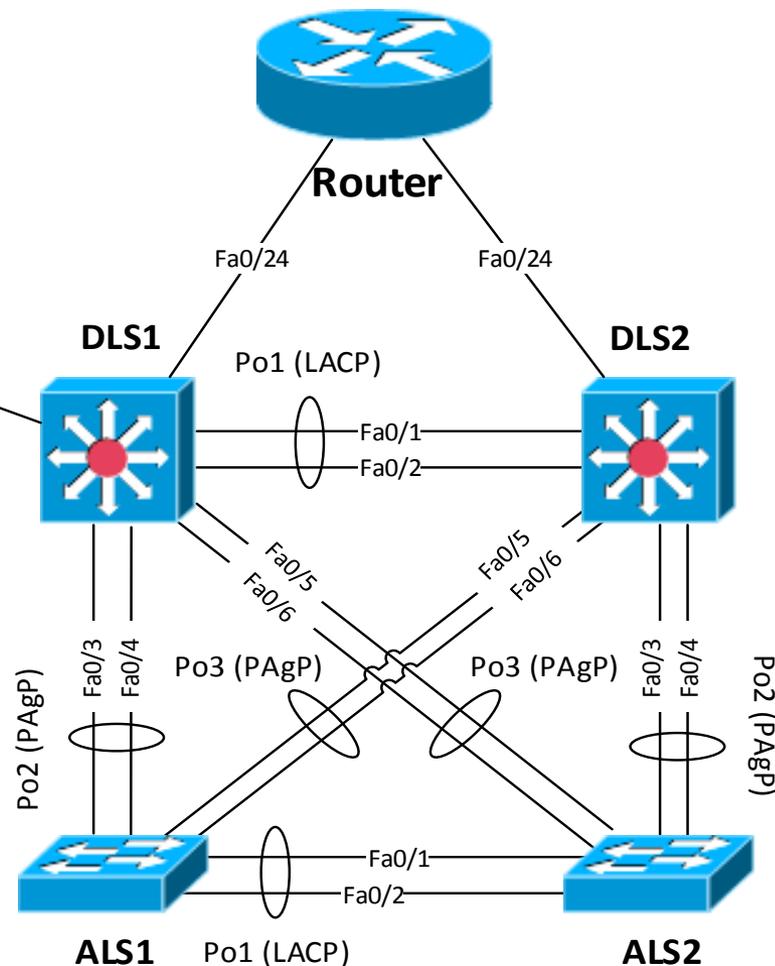
DLS1   **DLS2**

- Monitor reachability
  - `(conf)# ip sla 1`
  - `(conf-ip-sla)# icmp-echo 8.8.8.8`
  - `(conf-ip-sla-echo)# frequency 10`
  - `(conf)# ip sla schedule 1 life forever start-time now`
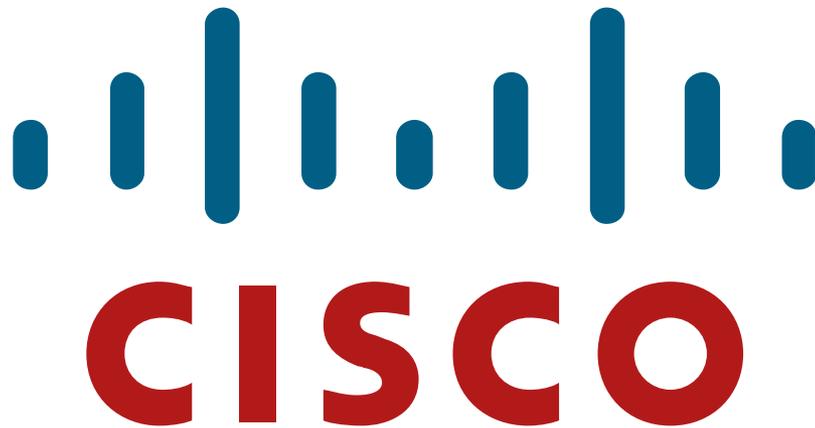- Verify
  - `# show ip sla statistics`

Lab 5.8: Event Logging
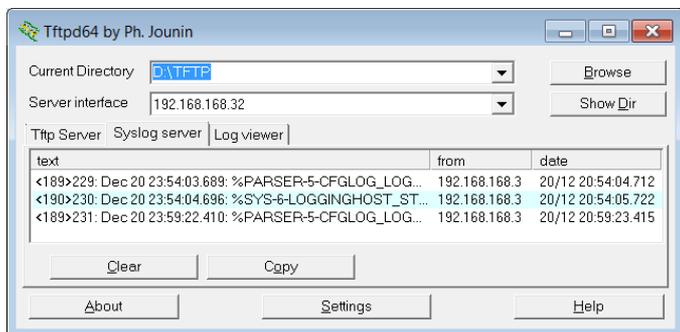
- Run TFTPD32 on PC_A

- Allow *LS* for syslog on PC_A:
  - `(conf)# logging host PC_Mgmt`
  - `(conf)# logging trap debugging`
  - `(conf)# logging buffered 65536 6`

Lab 5.8: SNMP

Labs created by Vladimír Veselý for C2P practice.

The last update: 2015-03-11