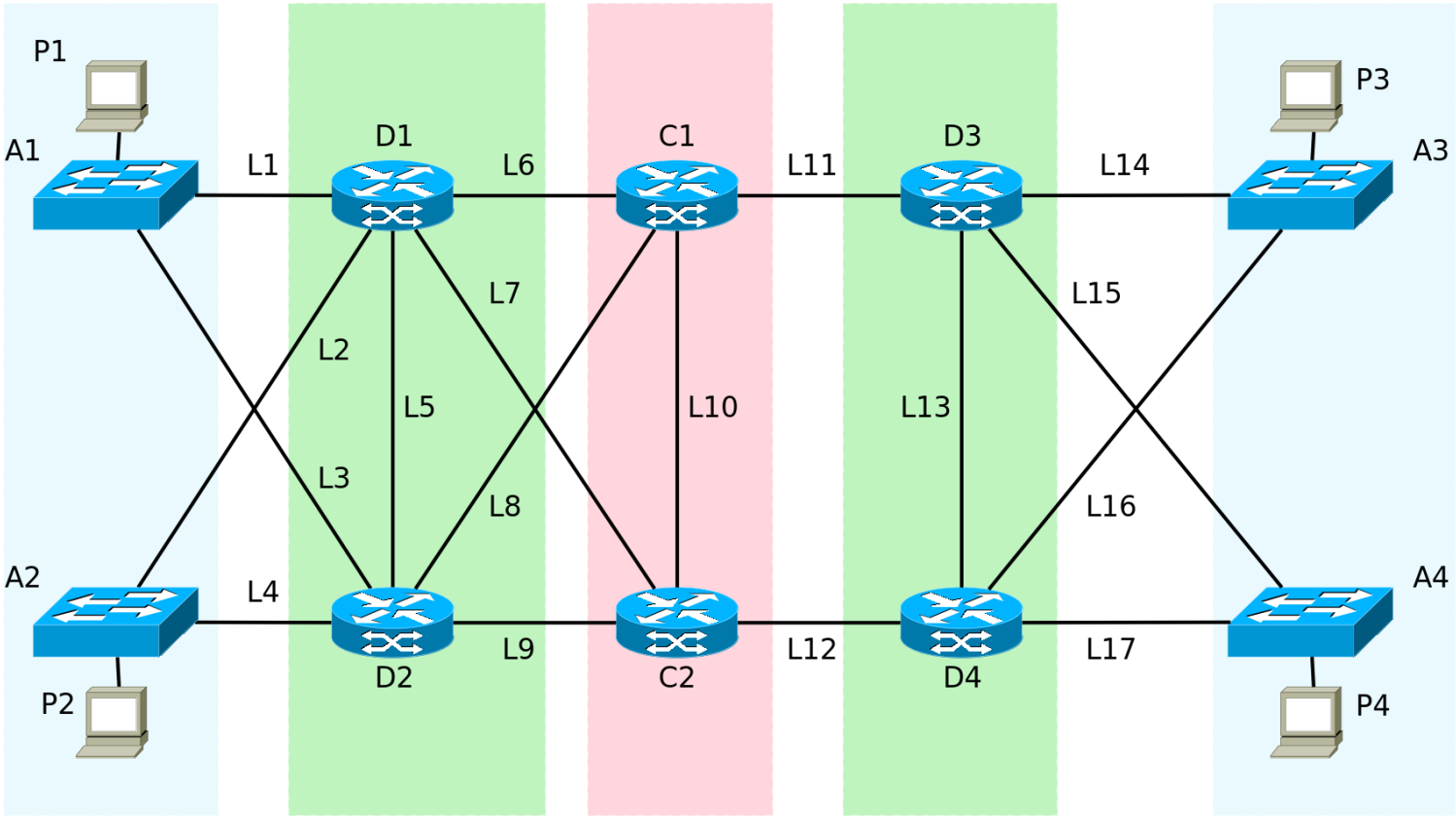
LAB 2: L3 topology & OSPFv2

Topology: routed campus (routing between core and distribution layer, switching between distribution and access layer)



LAB 2: description

device	description
A1, A2, A3, A4	access-switch
D1, D4	primary STP root
D2, D3	secondary STP root
C1, C2	core routers
P1	VLAN 10, 192.168.10.10/24
P2	VLAN 20, 192.168.20.20/24
P3	VLAN 30, 192.168.30.30/24
P4	VLAN 40, 192.168.40.40/24

VLAN	description
10 (HQ)	HSRP: D1 primary, D2 secondary, default GW: 192.168.10.1
20 (ENG)	HSRP: D2 primary, D1 secondary, default GW: 192.168.20.1
30 (PR)	HSRP: D3 primary, D4 secondary, default GW: 192.168.30.1
40 (HR)	HSRP: D4 primary, D3 secondary, default GW: 192.168.40.1

LAB 2: description

line	description
L1, L2, L3, L4, L5, L14, L15, L16, L17	switched, 802.1Q trunk
L6	routed, 192.168.0.0/30, cost 50
L7	routed, 192.168.0.4/30, cost 1
L8	routed, 192.168.0.8/30, cost 10
L9	routed, 192.168.0.12/30, cost 50
L10	routed, 192.168.0.16/30, cost 1
L11	routed, 192.168.0.20/30, cost 1
L12	routed, 192.168.0.24/30, cost 20
L13	routed, 192.168.0.28/30, cost 1

All links and IP networks are in OSPF area 0 (backbone), including all VLANs (advanced: VLANs as OSPF passive interfaces).

LAB 2, task 1: topology and packet path

1. run `traceroute` command between hosts P1 and P4
2. find out L3 path of packets between P1 and P4
3. find out L2 path of packets between P1 and P4

LAB 2: commands to use

```
D1#vlan database                                  create VLANs
D1(vlan)#vlan 10 name HQ
D1(vlan)#vlan 20 name ENG
D1(vlan)#apply
D1(vlan)#exit

D1#conf t
D1(config)#int Vlan 10                            configure VLAN interface
D1(config-if)#ip address 192.168.10.2 255.255.255.0
D1(config-if)#standby 10 ip 192.168.10.1          default GW address
D1(config-if)#standby 10 priority 100             HSRP priority, higher is better
D1(config-if)#no shut

D1(config)#int FastEthernet 0/0
D1(config-if)#ip address 192.168.0.5 255.255.255.252
D1(config-if)#no shut
D1(config-if)#ip ospf cost 50

D1(config)#router ospf 1                                    run OSPF process
D1(config-router)#network 192.168.0.0 0.0.0.3 area 0        networks where OSPF runs
D1(config-router)#network 192.168.0.4 0.0.0.3 area 0
D1(config-router)#passive-interface Vlan10   OSPF process doesn't listen on this interface


D1#show ip route <Px IP address>
```

LAB 2, task 2: L3 convergence

1. run `ping` command between hosts P1 and P4,
2. disconnect line L7 and observe how many ping packets are lost.
3. Connect line L7 and observe packet loss, if any.
4. Try to minimize convergence time by lowering OSPF hello and dead timers on interfaces (advanced: OSPF point-to-point link definition on point to point links)
5. Rerun this test again.