



Rutarea între VLAN-uri

Capitolul 6



Întrebarea zilei

❓ Am 3 departamente separate la nivel logic;
cum pot comunica între ele?



Soluții de rutare Inter-VLAN



Remember: VLAN-uri

- 💡 VLAN de management
- 💡 Legătură de tip trunk
- 💡 Trafic etichetat



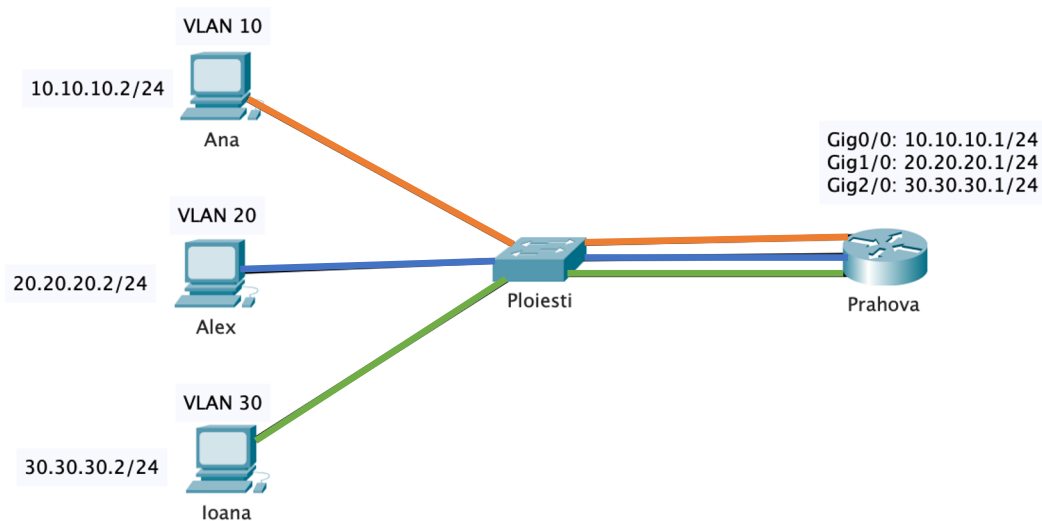
Comunicarea între VLAN-uri

- E necesar un echipament de nivel 3
 - Router
 - Switch Layer 3
- Tipuri de rutare Inter-VLAN
 - Legacy
 - Router on a Stick (RoaS)
 - Sw Layer 3 Inter-VLAN Routing



Legacy Inter-VLAN Routing

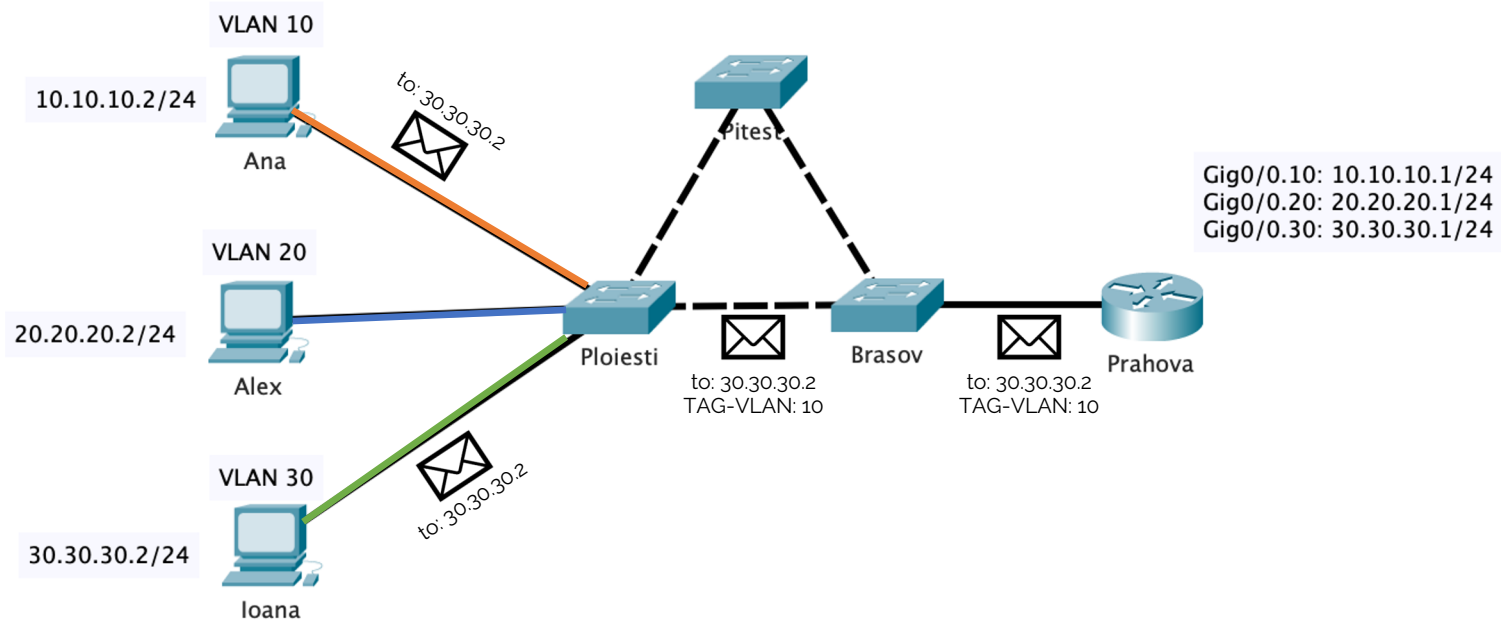
- ⊕ Lățime de bandă dedicată
- ⊖ Nu scalează pentru multe VLAN-uri





Router-on-a-stick

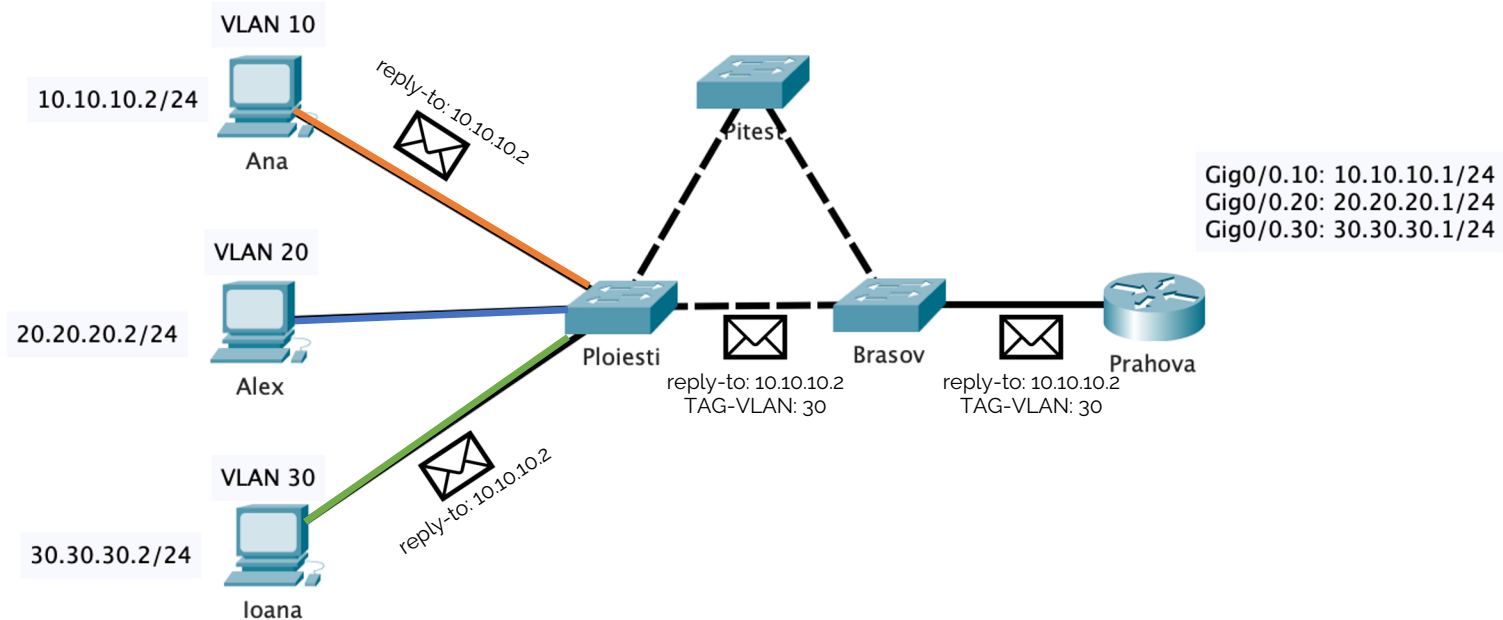
- Interfața ruterului e împărțită în subinterfețe
- Interfața switchului către ruter este trunk





Router-on-a-stick

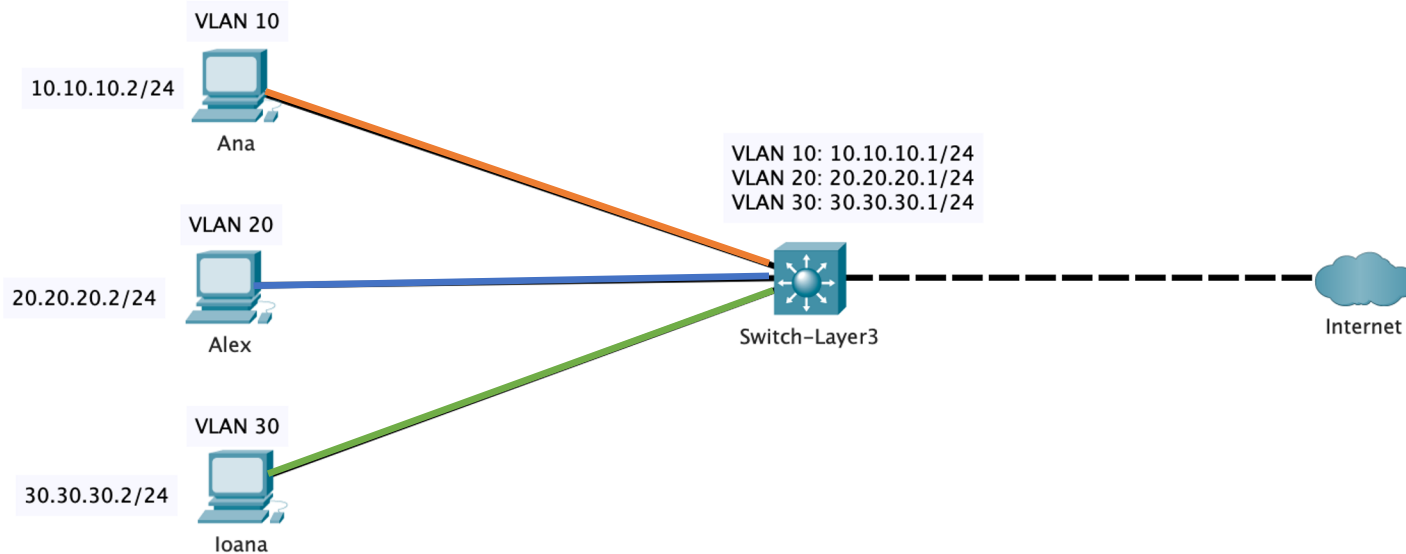
- Interfața ruterului e împărțită în subinterfețe
- Interfața switchului către ruter este trunk





Switch de nivel 3

- Un switch care are și funcții de nivel 3
- Poate ruta pachete pe baza adreselor IP



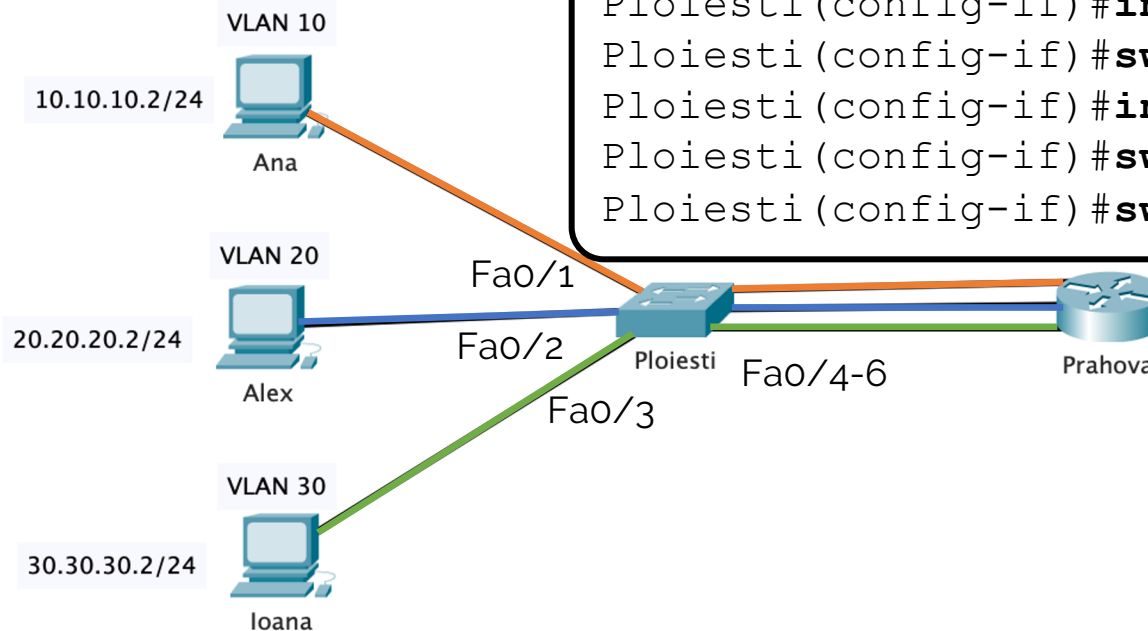


Configurare



Configurare Legacy (1)

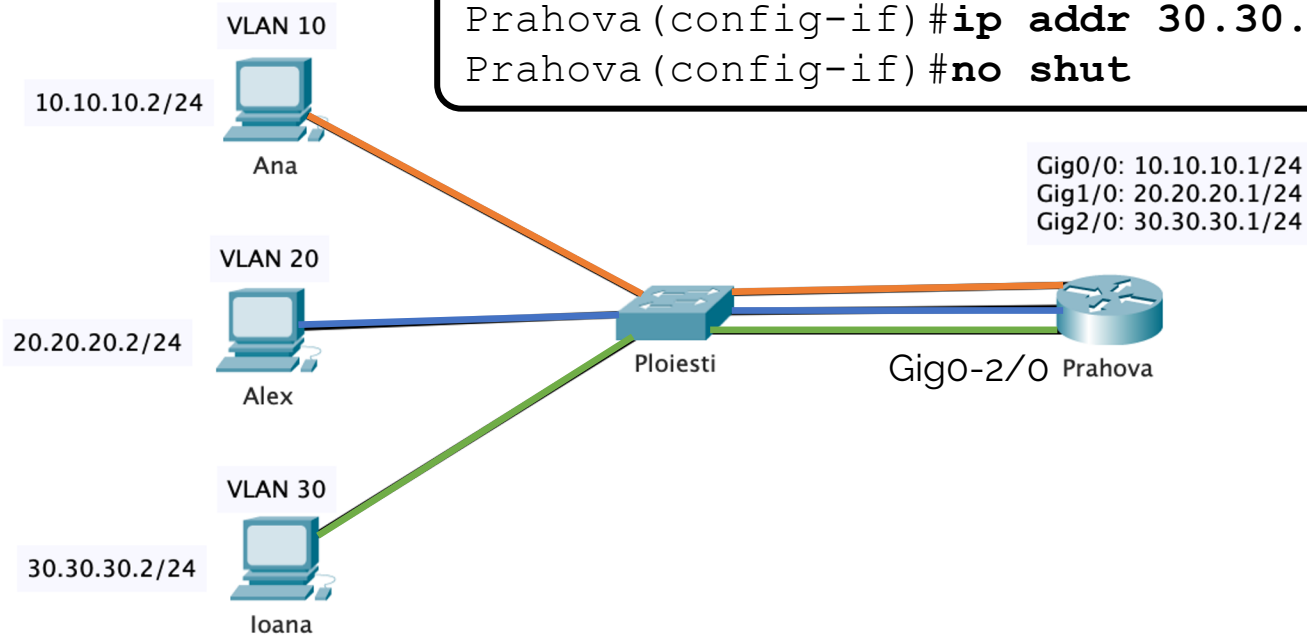
```
Ploiesti(config)#interface range fa0/1 - 8
Ploiesti(config-if)#switchport mode acces
Ploiesti(config-if)#interface fa0/1
Ploiesti(config-if)#switchport access vlan 10
Ploiesti(config-if)#interface fa0/4
Ploiesti(config-if)#switchport access vlan 10
[...]
Ploiesti(config-if)#interface fa0/3
Ploiesti(config-if)#switchport access vlan 40
Ploiesti(config-if)#interface fa0/6
Ploiesti(config-if)#switchport mode acces
Ploiesti(config-if)#switchport access vlan 40
```





Configurare Legacy (2)

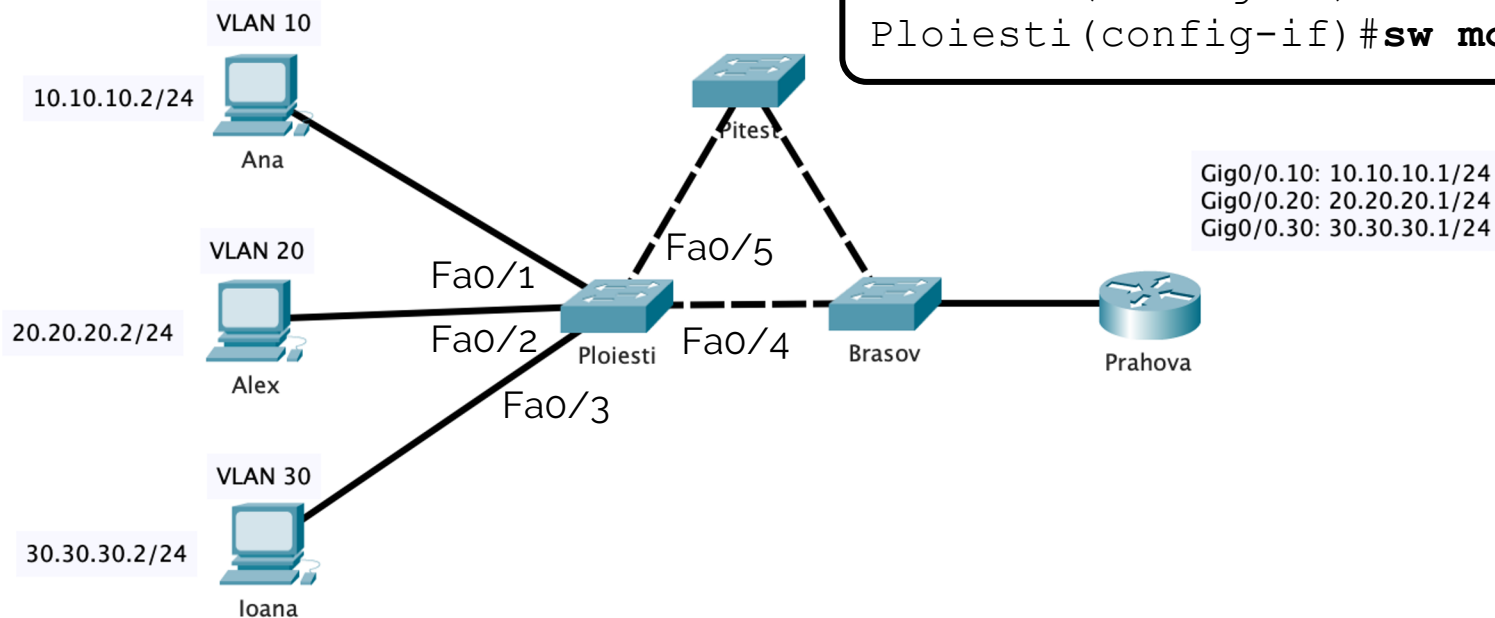
```
Prahova(config)#interface gig0/0  
Prahova(config-if)#ip addr 10.10.0.1 255.255.255.0  
Prahova(config-if)#no shut  
Prahova(config-if)#interface gig1/0  
Prahova(config-if)#ip addr 20.20.20.1 255.255.255.0  
Prahova(config-if)#no shut  
Prahova(config-if)#interface gig2/0  
Prahova(config-if)#ip addr 30.30.30.1 255.255.255.0  
Prahova(config-if)#no shut
```





Configurare RoaS (1)

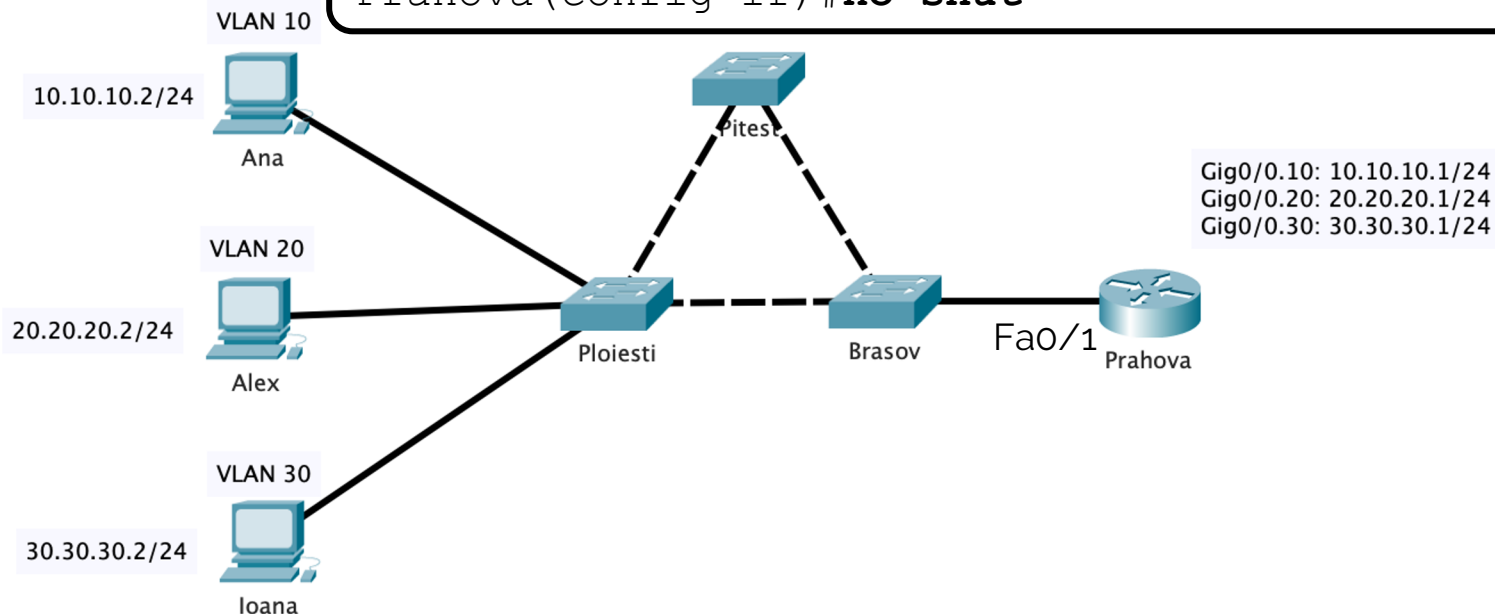
```
Ploiesti(config)#interface fa0/1
Ploiesti(config-if)#sw mo acc
Ploiesti(config-if)#sw acc vlan 10
[...]
Ploiesti(config-if)#int fa0/3
Ploiesti(config-if)#sw mo acc
Ploiesti(config-if)#sw acc vlan 30
Ploiesti(config-if)#int fa0/4-5
Ploiesti(config-if)#sw mo tr
```





Configurare RoaS (2)

```
Prahova(config)#interface fa0/0.10  
Prahova(config-subif)#encapsulation dot1q 10  
Prahova(config-subif)#ip addr 10.10.10.1 255.255.255.0  
[...]  
Prahova(config-subif)#interface fa0/0.30  
Prahova(config-subif)#encapsulation dot1q 30  
Prahova(config-subif)#ip addr 30.30.30.1 255.255.255.0  
Prahova(config-subif)#interface fa0/0  
Prahova(config-if)#no shut
```





Interfețele unui Switch N3

- Routed port
 - Similar cu o interfață de ruter
 - Point-to-point
 - Nu suportă subinterfețe
- SVI



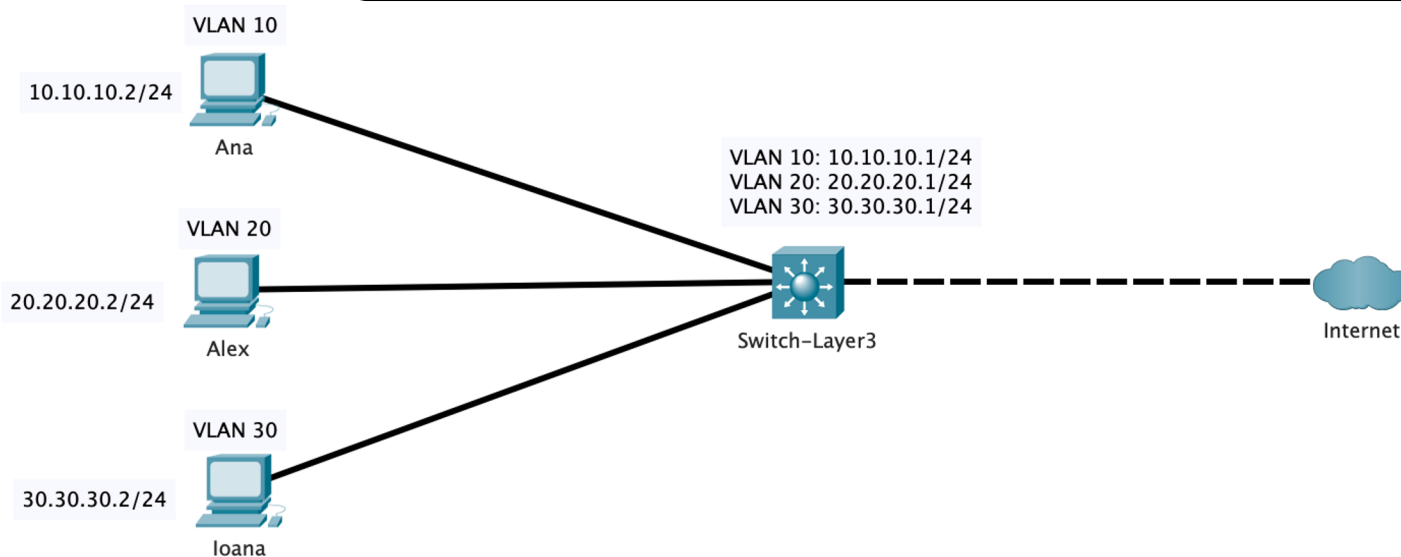
Interfețele unui Switch N3

- Routed port
- SVI = Switch Virtual Interface
 - Interfață virtuală, nu există port fizic dedicat
 - Gateway pentru VLAN, mai rapid ca RoaS



Configurare Sw L3 Inter-VLAN (1)

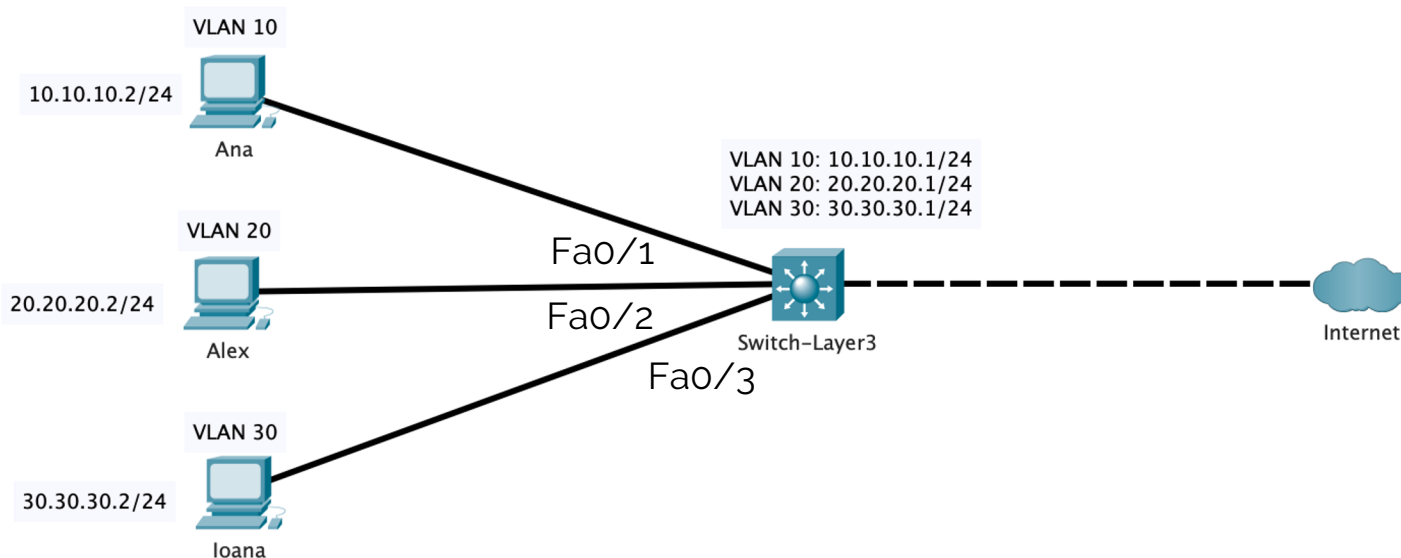
```
Sw-L3(config)#vlan 10
Sw-L3(config-vlan)#interface vlan 10
Sw-L3(config-if)#ip addr 10.10.10.1 255.255.255.0
Sw-L3(config-if)#no sh
[...]
Sw-L3(config)#vlan 30
Sw-L3(config-vlan)#interface vlan 30
Sw-L3(config-if)#ip addr 30.30.30.1 255.255.255.0
Sw-L3(config-if)#no sh
```





Configurare Sw L3 Inter-VLAN (2)

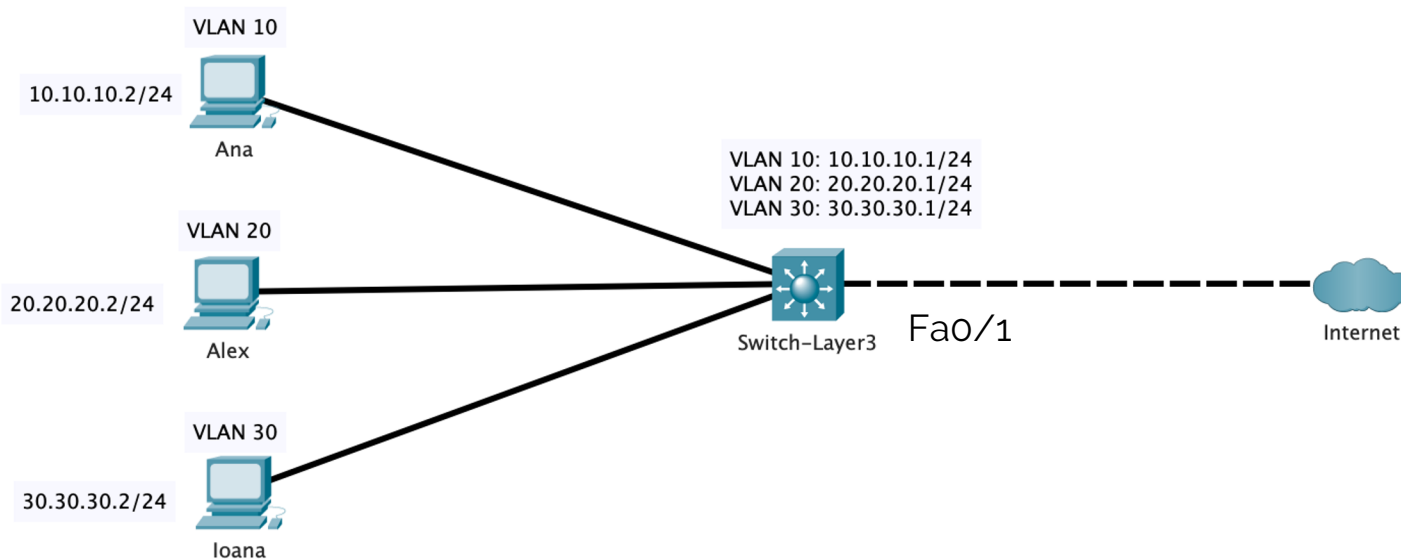
```
Sw-L3(config)#int fa0/1  
Sw-L3(config-if)#sw mode access  
Sw-L3(config-if)#sw access vlan 10  
[...]  
Sw-L3(config)#int fa0/3  
Sw-L3(config-if)#sw mode access  
Sw-L3(config-if)#sw access vlan 30
```





Configurare Sw L3 Inter-VLAN (3)

```
Sw-L3 (config) #ip routing  
Sw-L3 (config) #interface fa0/1  
Sw-L3 (config-if) #no switchport  
Sw-L3 (config-if) #ip address 192.168.0.1 255.255.255.0  
Sw-L3 (config-if) #no sh
```





Depanare configurări

Prahova#**show ip interface brief**

Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/0	unassigned	YES	unset	up	up
FastEthernet0/0.10	10.10.0.1	YES	manual	up	up
FastEthernet0/0.20	10.20.0.1	YES	manual	up	up
FastEthernet0/0.30	10.30.0.1	YES	manual	up	up
FastEthernet0/0.40	10.40.0.1	YES	manual	up	up

Ploiesti#**show interfaces trunk**

Port	Mode	Encapsulation	Status	Native vlan
Fa0/5	on	802.1q	trunking	1
Port	Vlans allowed on trunk			
Fa0/5	10,20,30,40			
Port	Vlans allowed and active in management domain			
Fa0/5	10,20,30,40			
Port	Vlans in spanning tree forwarding state and not pruned			
Fa0/5	10,20,30,40			



Răspunsul zilei



Răspunsul zilei

❗ Am 3 departamente separate la nivel logic;
cum pot comunica între ele?