



UNIUNEA EUROPEANĂ



GUVERNUL ROMÂNIEI



Instrumente Structurale  
2007-2013



# Platformă de e-learning și curriculum e-content pentru învățământul superior tehnic

## Proiectarea Rețelelor

### 37. Implementarea mecanismelor de garantare a nivelului de serviciu

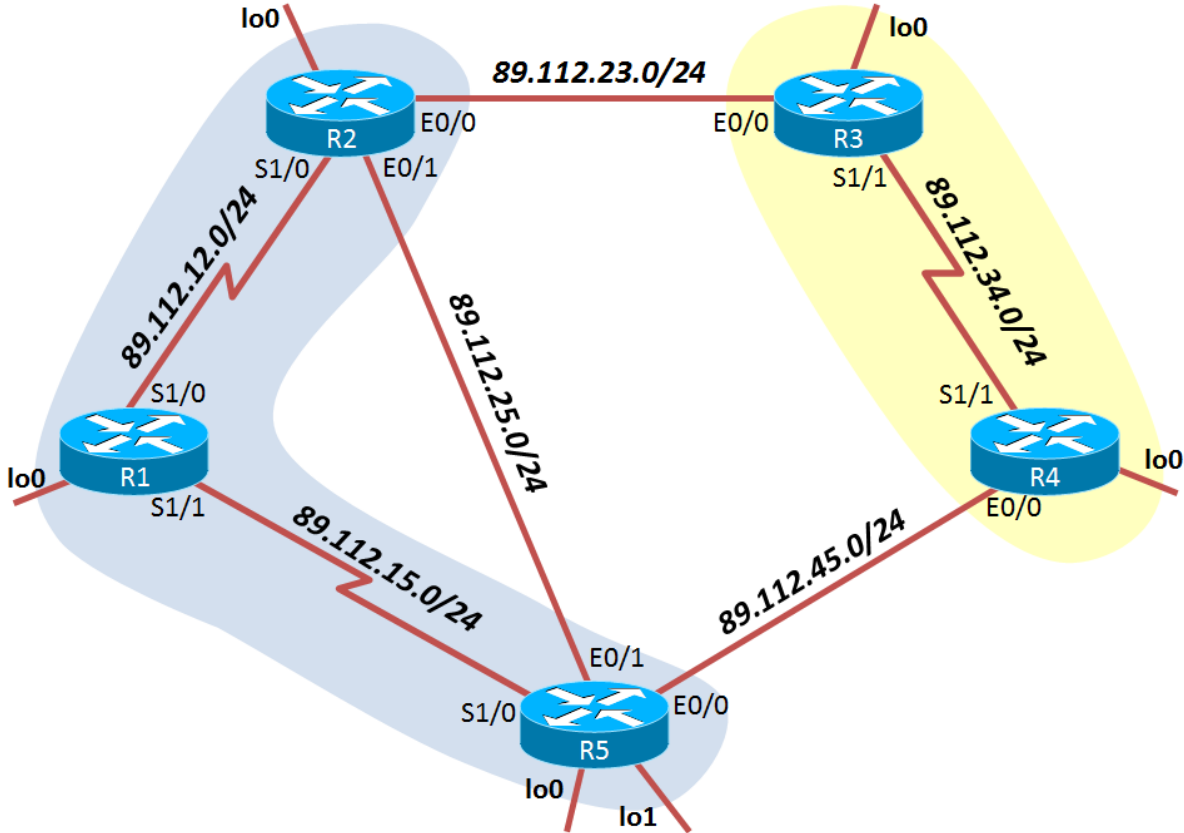
# Adresare IP

- Configurați adresele IP ale interfețelor de loopback conform tabelul de mai jos.

R1	Lo0	11.10.1.1 /24
R2	Lo0	12.14.14.1 /24
R3	Lo0	13.13.13.1 /24
R4	Lo0	14.14.14.1 /24
R5	Lo0	15.12.13.1 /26
	Lo1	15.12.13.65 /26

- 10 puncte

# Adresare IP



## R1

```
int 10
 ip add 11.10.1.1 255.255.255.0
int 11
 ip add 11.10.2.1 255.255.255.0
```

```
R1#sh ip int brief
```

Interface	IP-Address	OK?	Method	Status	Protocol
[...]					
Loopback0	11.10.1.1	YES	manual	up	up
Loopback1	11.10.2.1	YES	manual	up	up

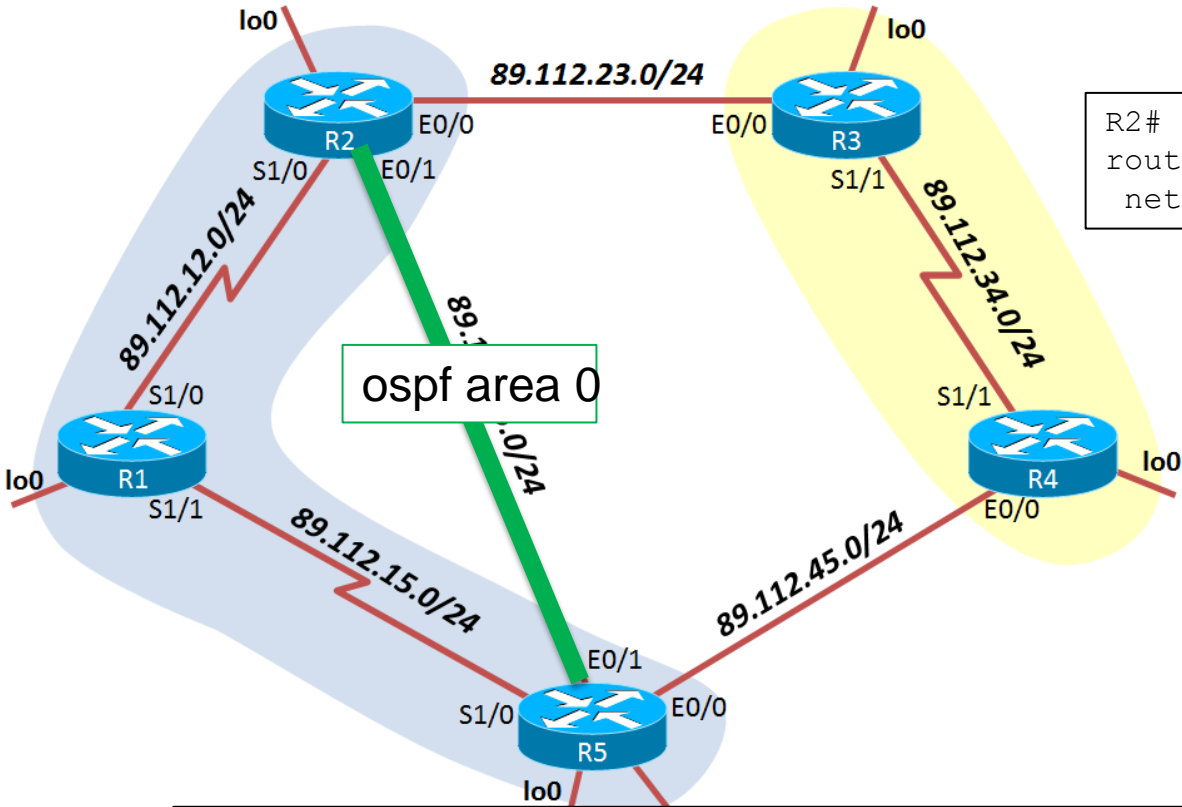
# OSPF

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- a. Configurați OSPF aria 0 pe segmentul Ethernet dintre R2 și R5.
- b. Configurați OSPF aria 1 pe segmentul Serial dintre R1 și R2 și pe interfața de loopback lo0 a lui R2.
- c. Configurați OSPF aria 2 pe interfața lo0 a lui R1.
- d. Configure rețeaua OSPF astfel încât să aveți ping între R5 și interfața lo0 a lui R1
- e. Configurați rețeaua OSPF astfel încât R2 să fie mereu ales DR pe legătura dintre R2 și R5.
- f. Introduceți în OSPF, ca rute externe cu cost cumulativ, DOAR interfețele lo0 și lo1 ale lui R5.
- g. Introduceți în OSPF rețeaua lo2 a lui R2 ca rută internă în aria 0.
- h. Sumarizați rețele de pe lo0 și lo1 ale lui R5.
- i. Configurați aria 2 astfel încât această să nu accepte LSA-uri de tip 5. Verificați acest lucru.

► 35 puncte

# OSPF - a



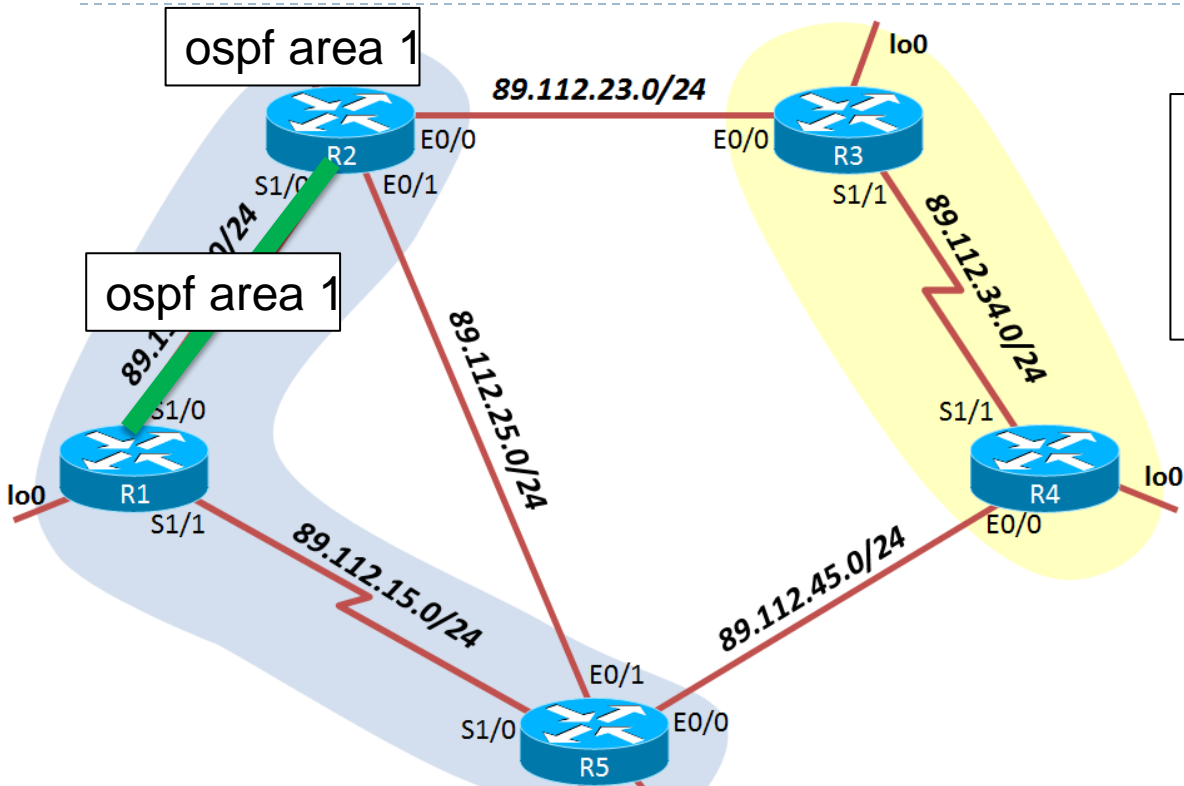
```
R2#
router ospf 1
network 89.112.25.0 0.0.0.255 area 0
```

```
R5#
router ospf 1
!
int e0/1
ip ospf 1 area 0
```

```
*Mar 1 00:46:06.519: %OSPF-5-ADJCHG: Process 1, Nbr 12.14.14.1 on Ethernet0/1
rom LOADING to FULL, Loading Done
R5#sh ip ospf nei
```

Neighbor ID	Pri	State	Dead Time	Address	Interface
12.14.14.1	1	FULL/BDR	00:00:37	89.112.25.2	Ethernet0/1

# OSPF - b



```
R1#  
router ospf 1  
!  
int se 1/0  
ip ospf 1 area 1
```

```
R2#  
int se 1/0  
ip ospf 1 area 1  
int lo  
ip ospf 1 area 1
```

```
*Mar 1 01:01:04.835: %OSPF-5-ADJCHG: Process 1, Nbr 12.14.14.1 on Serial1/0 fro  
m LOADING to FULL, Loading Done  
R1#sh ip route ospf  
89.0.0.0/24 is subnetted, 3 subnets  
O IA 89.112.25.0 [110/74] via 89.112.12.2, 00:00:06, Serial1/0  
12.0.0.0/32 is subnetted, 1 subnets  
O 12.14.14.1 [110/65] via 89.112.12.2, 00:00:06, Serial1/0
```

# OSPF - c

```
R1(config)#int l0
R1(config-if)#ip ospf 1 area 2
R1#sh ip ospf database

        OSPF Router with ID (11.10.2.1) (Process ID 1)

          Router Link States (Area 1)

Link ID        ADV Router    Age           Seq#           Checksum Link count
11.10.2.1     11.10.2.1    455           0x80000002    0x00CFCD 2
12.14.14.1    12.14.14.1  448           0x80000002    0x00341C 3

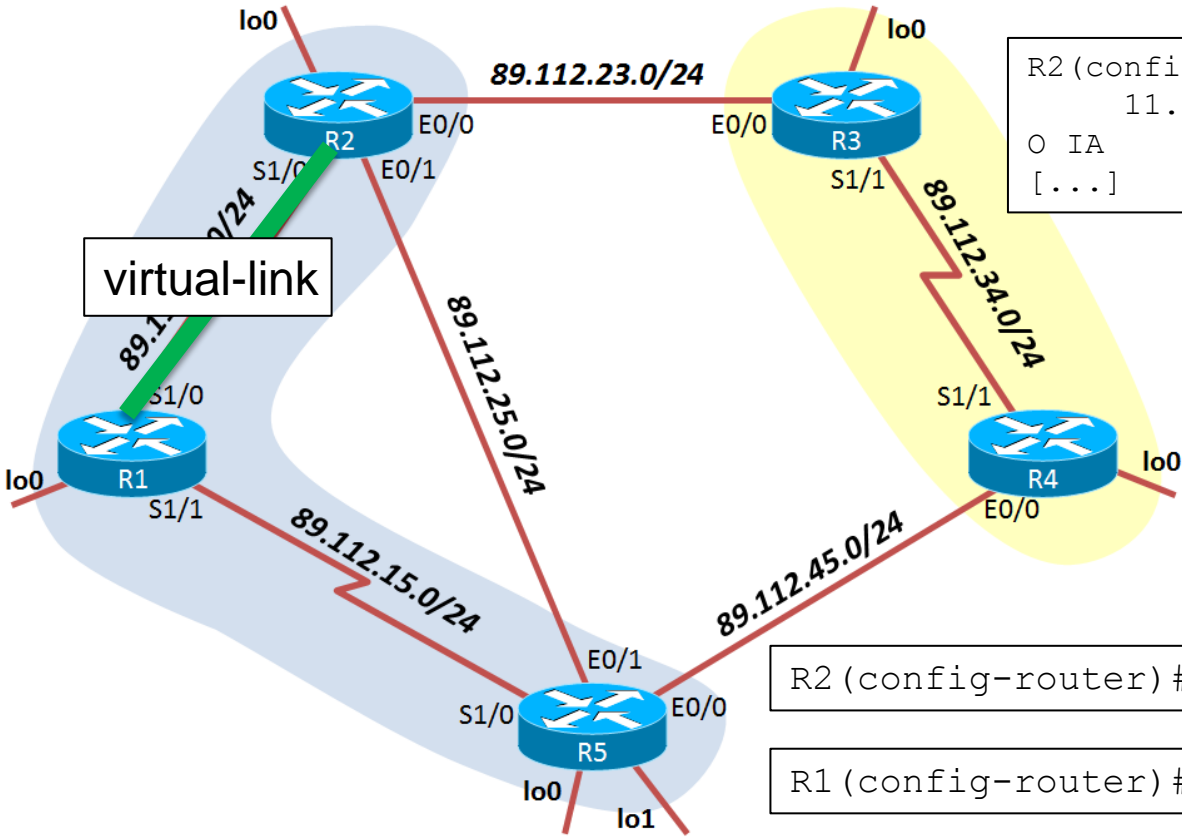
          Summary Net Link States (Area 1)

Link ID        ADV Router    Age           Seq#           Checksum
89.112.25.0    12.14.14.1  456           0x80000001    0x00C561

          Router Link States (Area 2)

Link ID        ADV Router    Age           Seq#           Checksum Link count
11.10.2.1     11.10.2.1    8             0x80000001    0x00BB2F 1
```

# OSPF - d



```
R2(config-router)#do sh ip route ospf
      11.0.0.0/32 is subnetted, 1 subnets
O IA    11.10.1.1 [110/65] via 89.112.12.1,
[...]
```

```
R2(config-router)#area 1 virtual-link 11.10.2.1
```

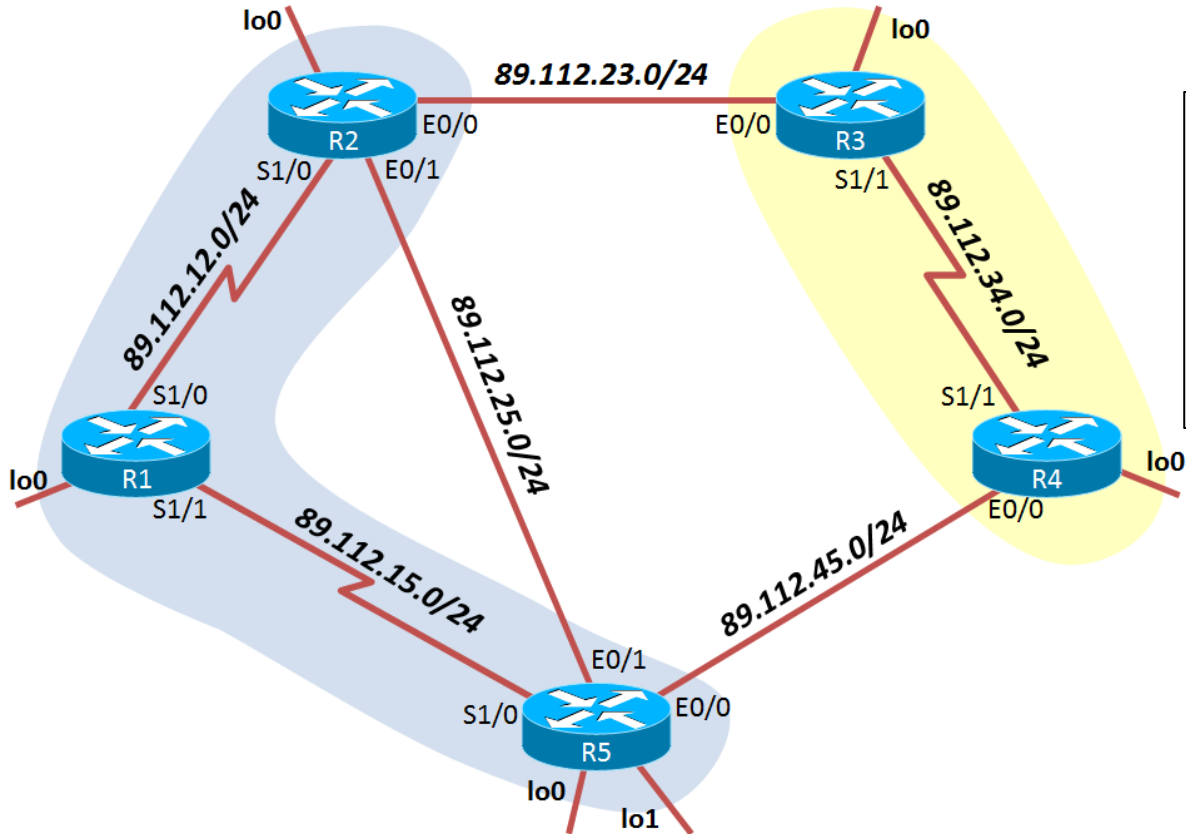
```
R1(config-router)#area 1 virtual-link 12.14.14.1
```

```
R1(config-router)#do sh ip ospf nei
```

Neighbor ID	Pri	State	Dead Time	Address	Interface
12.14.14.1	0	FULL/ -	-	89.112.12.2	OSPF_VL0



# OSPF - e

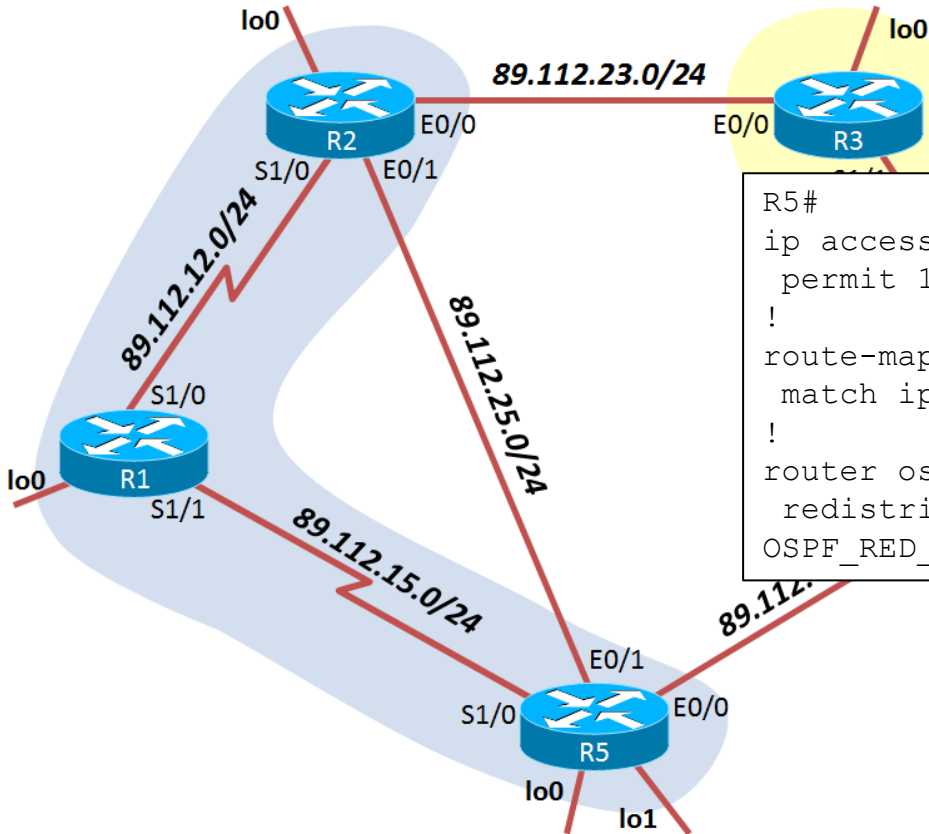


```
R2#
int e 0/1
 ip ospf priority 100
!
clear ip ospf 1 process
Reset OSPF process? [no]:
yes
```

```
R5#sh ip ospf nei
```

Neighbor ID	Pri	State	Dead Time	Address	Interface
12.14.14.1	100	FULL/DR	00:00:35	89.112.25.2	Ethernet0/1

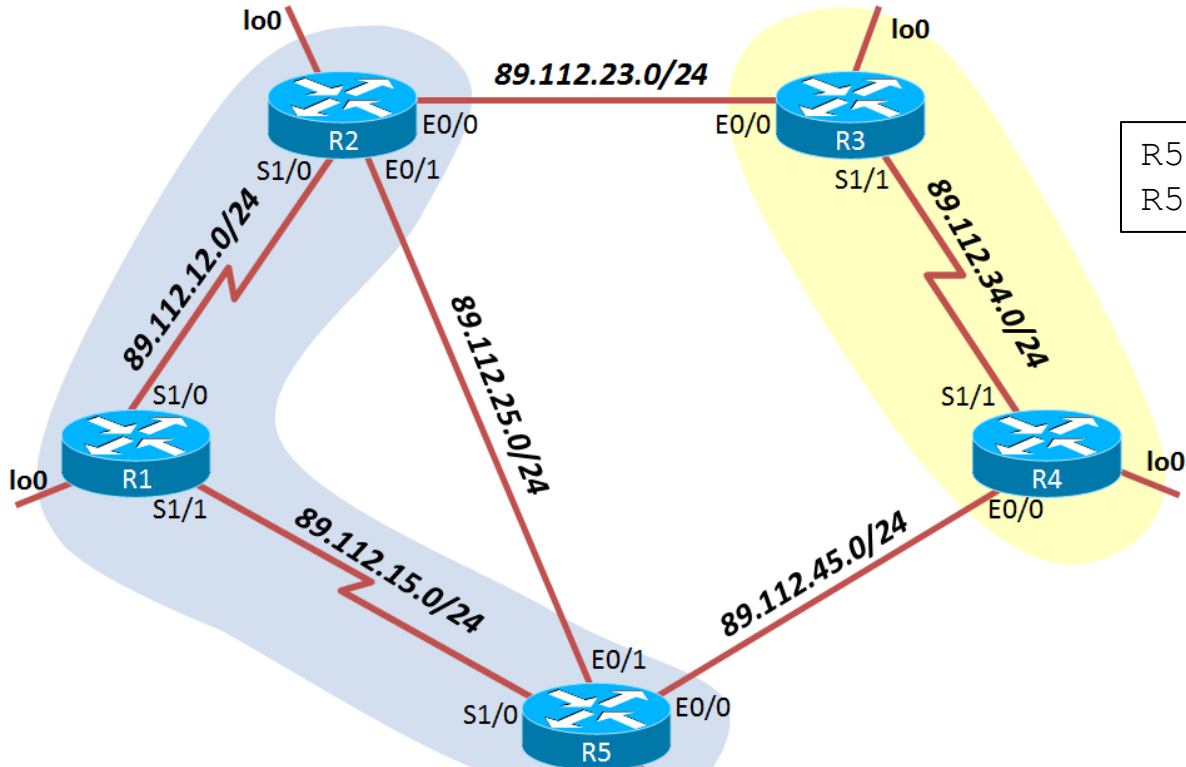
# OSPF - f



```
R5#
ip access-list standard ACL_OSPF_RED_CONN
 permit 15.12.13.0 0.0.0.127
!
route-map OSPF_RED_CONN
 match ip address ACL_OSPF_RED_CONN
!
router ospf 1
 redistribute connected subnets route-map
 OSPF_RED_CONN metric-type 1
```

```
R1#sh ip route ospf
[...]
 15.0.0.0/26 is subnetted, 2 subnets
 O E1   15.12.13.0 [110/94] via 89.112.12.2, 00:00:01, Serial1/0
 O E1   15.12.13.64 [110/94] via 89.112.12.2, 00:00:01, Serial1/0
```

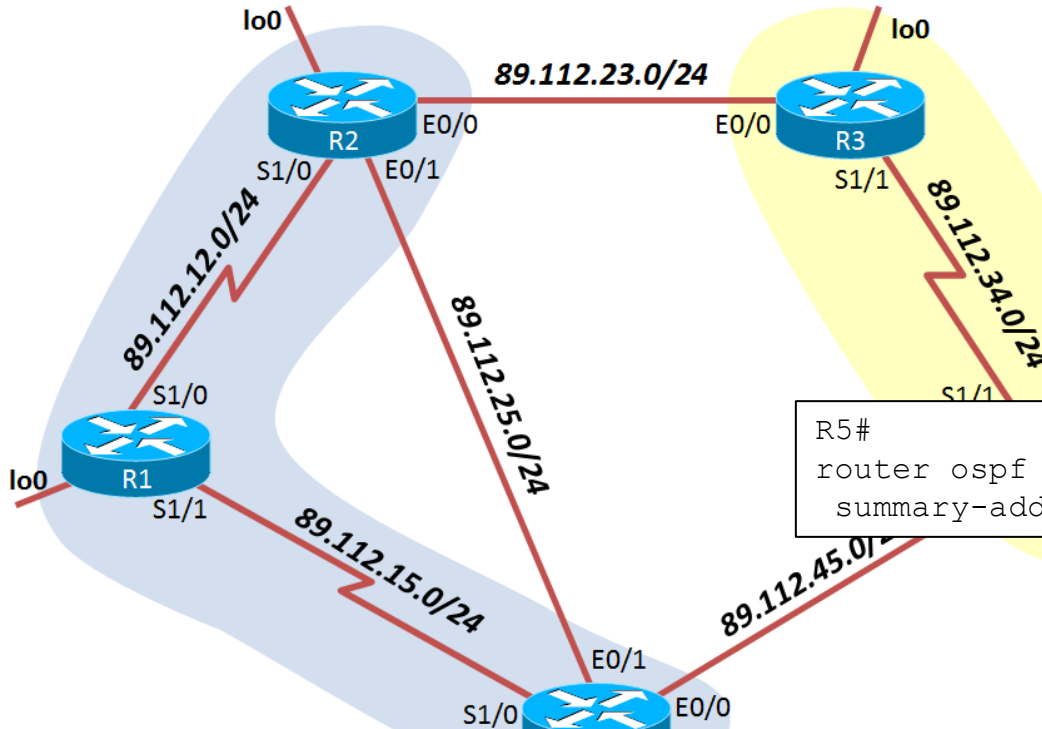
# OSPF - g



```
R5(config)#int 12
R5(config-if)#ip ospf 1 area 0
```

```
R1(config-router)#do sh ip route ospf
 89.0.0.0/24 is subnetted, 3 subnets
O   89.112.25.0 [110/74] via 89.112.12.2, 00:04:23, Serial1/0
 12.0.0.0/32 is subnetted, 1 subnets
O   12.14.14.1 [110/65] via 89.112.12.2, 00:32:23, Serial1/0
 15.0.0.0/8 is variably subnetted, 3 subnets, 2 masks
O   15.15.15.1/32 [110/75] via 89.112.12.2, 00:04:23, Serial1/0
```

# OSPF - h



```
R5#  
router ospf 1  
summary-address 15.12.13.0 255.255.255.128
```

```
R1(config-router)#do sh ip route ospf  
89.0.0.0/24 is subnetted, 3 subnets  
O      89.112.25.0 [110/74] via 89.112.12.2, 00:06:29, Serial1/0  
12.0.0.0/32 is subnetted, 1 subnets  
O      12.14.14.1 [110/65] via 89.112.12.2, 00:34:29, Serial1/0  
15.0.0.0/8 is variably subnetted, 2 subnets, 2 masks  
O      15.15.15.1/32 [110/75] via 89.112.12.2, 00:06:29, Serial1/0  
O E1   15.12.13.0/25 [110/94] via 89.112.12.2, 00:00:04, Serial1/0
```