



Bachelor Cycle

Cisco Networking

PW #8

Summary

- Open Shortest Path First
 - ✧ Description
 - ✧ Advantages / Inconvenients
- OSPF
 - ✧ Configuration
 - ✧ Authentication
- Practical Work

Open Shortest Path First (1/2)

- Link State Protocol
- SPF algorithm based on Dijkstra
- Created to cover RIP weakness
- Multicast sending on 224.0.0.5
- Use 3 types of packets (hello, db description, flooding)

Open Shortest Path First (2/2)

- Advantages
 - ✧ Works with AS (each router knows its area)
 - ✧ Convergence time is shorter
 - ✧ Route summary by areas
 - ✧ Hierarchical Routing on large network
 - ✧ Reliable
- Inconvenients
 - ✧ More complex to configure
 - ✧ More resource are needed due to SPF algorithm

OSPF Configuration (1/2)

- To activate OSPF, you must choose a process ID
- This ID can be identical on different servers

```
Lab1-ro1841-1(config)#>router ospf [id]  
Lab1-ro1841-1(config-router)#>network [addr_network] [wildcard] area [num_area]
```

- **Warning : Each area must be link to an area « 0 » (Backbone)**

OSPF Configuration (2/2)

- The Neighbors table, store the neighbors data

```
Lab1-ro1841-1#>show ip ospf neighbor
```

- The database table, which contains the topology

```
Lab1-ro1841-1#>show ip ospf database
```

- Detail OSPF routes

```
Lab1-ro1841-1#>show ip route ospf
```


OSPF Authentication (1/2)

- Simple authentication

```
Lab1-ro1841-1(config)#>interface Serial 0/0/0  
Lab1-ro1841-1(config-if)#>ip ospf authentication-key [password]
```

```
Lab1-ro1841-1(config)#>router ospf [id]  
Lab1-ro1841-1(config-router)#>area [num_area] authentication
```

OSPF Authentication (2/2)

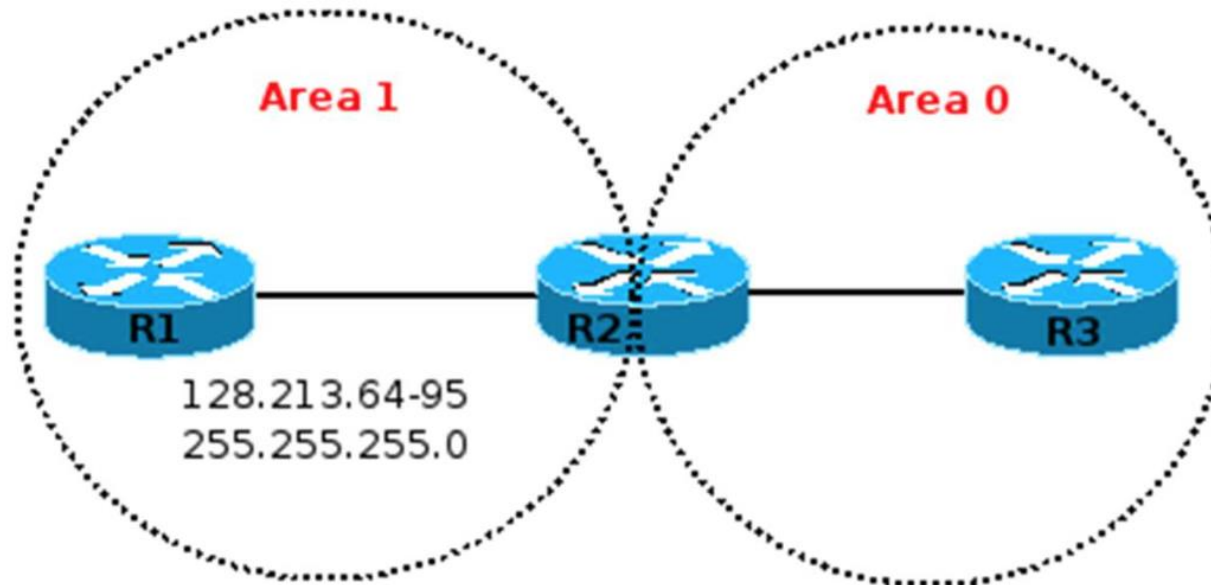
- MD5 Authentication

```
Lab1-ro1841-1(config)#>interface Serial 0/0/0  
Lab1-ro1841-1(config-if)#>ip ospf message-digest-key [id_key] md5 [password]
```

```
Lab1-ro1841-1(config)#>router ospf [id]  
Lab1-ro1841-1(config-router)#>area [num_area] authentication message-digest
```

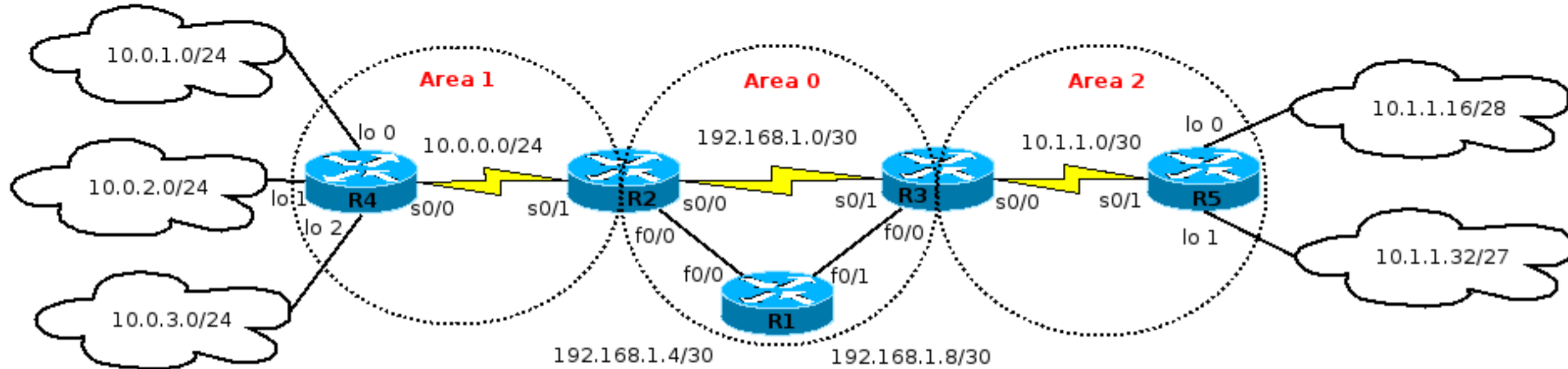

OSPF Inter-Area Route Summary

- The inter-area summarization must be done on ABR



```
Lab1-ro1841-1(config)#>router ospf [id]  
Lab1-ro1841-1(config-router)#>area 1 range 128.213.64.0 255.255.224.0
```

Practical Work (1/2)



Practical Work (2/2)

- Reproduce the topology and configure Ospf on every routers
- Create an MD5 authentication on each area
- Configure the backbone for area1 and 2 so they can communicate solely via serial link
- Configure the route summary for area 1 and 2