Υλοποίηση Δικτυακών Υποδομών και Υπηρεσιών: OSPF δρομολόγηση με κριτήρια

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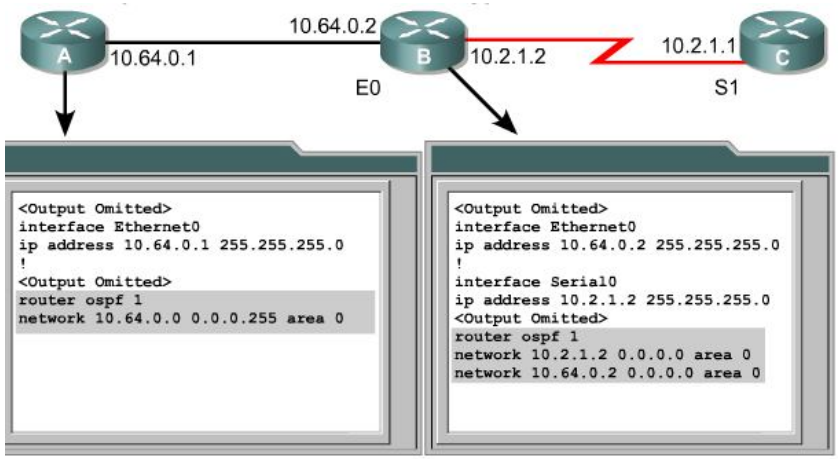
ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΕΛΟΠΟΝΝΗΣΟΥ
ΤΜΗΜΑ ΕΠΙΣΤΗΜΗΣ ΚΑΙ ΤΕΧΝΟΛΟΓΙΑΣ ΤΗΛΕΠΙΚΟΙΝΩΝΙΩΝ

Configuring the OSPF Routing Process



Network area Command	Description
address	Can be the network address, subnet, or the address of the interface. Instructs router to know which links to advertise, which links to listen to advertisements on, and what networks to advertise.
wildcard-mask	An inverse mask used to determine how to read the address. The mask has wildcard bits where 0 is a match and 1 is "do not care"; for example, 0.0.255.255 indicates a match in the first two bytes. (the equivalent REGULAR subnet mask would be a 16 bit mask of 255.255.0.0) If specifying the interface address, use mask 0.0.0.0.
area-id	Specifies the area to be associated with the address. Can be a number or can be similar to an IP address A.B.C.D. For a backbone area, the ID must equal 0.

Modifying OSPF Cost Metric

Medium	Cost
56 kbps serial link	1785
T1 (1.544 Mbps serial link)	64
E1 (2.048 Mbps serial link)	48
4 Mbps Token Ring	25
Ethernet	10
16 Mbps Token Ring	6
100 Mbps Fast Ethernet, FDDI	1

```
Sydney2(config-if)#ip ospf cost ?
  <1-65535>  Cost
Sydney2(config-if)#ip ospf cost 1
```

Verifying OSPF Configuration

- show ip protocol
- show ip route
- show ip ospf interface
- shop ip ospf
- show ip ospf neighbor detail
- show ip ospf database

The debug and clear Commands for OSPF Verification

Command	Description
`clear ip route *`	Clear all routes in routing table
`clear ip route a.b.c.d`	Clear route to a.b.c.d in routing table
`debug ip ospf events`	Report all OSPF events
`debug ip ospf adj`	Report OSPF adjacency events

Computed cost

- Each interface has an associated cost. It is computed as follows:
  - reference bandwidth / configured bandwidth of interface in kbps
- On Cisco routers, the reference bandwidth defaults to 10000. So, a DS-3 interface, with a configured bandwidth of 45000, has a cost of:
- 100000000 / 45000 = 2222

Computed cost

- The interface bandwidth must be explicitly configured. If not, the router will probably get it wrong. It is configured using the following syntax:
  - int h1/0
  - bandwidth 45000
- Different manufacturers use different reference bandwidths. It is therefore common practice for every router to have it's OSPF reference bandwidth set. Many sysadmins set it to 10000(k) using the following syntax:
  - router ospf 100
  - auto-cost reference-bandwidth 10000

Configured cost

- You may want to configure the costs on some of your interfaces, for instance to make the interface costs of both ends of a link match, to make path cost computation simpler for humans, or to force OSPF to prefer certain paths. To do this, use the following syntax:
  - int h1/0
  - ip ospf cost 200
- Now the OSPF cost of my DS-3 is 200.

Route metrics

- To compute the OSPF cost of a route, start at the router doing the calculation and sum the costs of the interfaces used to **exit** each router that is traversed.
- Note that the costs of the same path in the reverse direction will be different, if the exit interfaces have different costs than the interfaces used in the forward direction. This causes asymmetrical path costs, and may even result in asymmetrical routes.