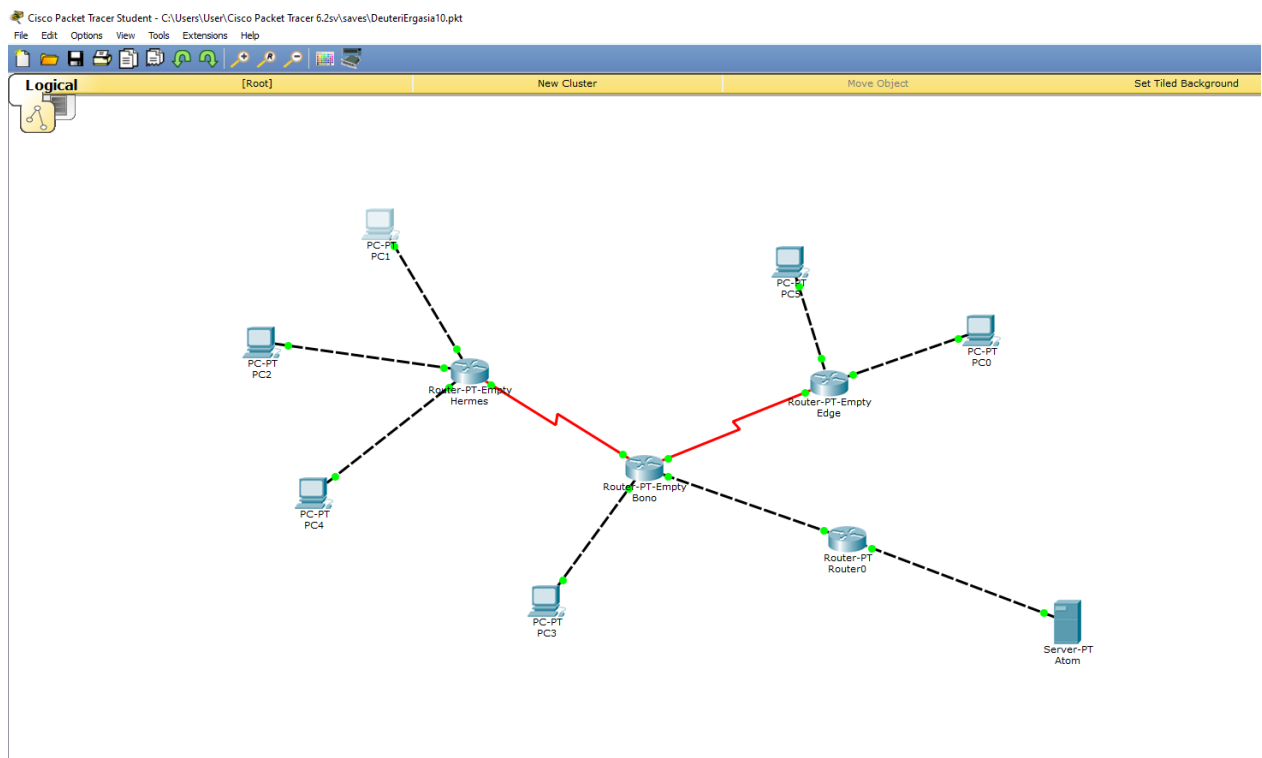


Στο παρακάτω στιγμιότυπο οθόνης φαίνεται η τοπολογία που κατασκευαστική :



Οι HERMES BONO και EDGE έχουν συνδεθεί με τοις διευθύνσεις :

HERMES

	IP Address	Mask
Serial 0	10.10.10.2	255.255.255.252

BONO

	IP Address	Mask
Serial 0	10.10.10.1	255.255.255.252
Serial 1	10.10.10.5	255.255.255.252

Όπου Serial 0 συνδέεται με τον HERMES και Serial 1 με τον EDGE

EDGE

	IP Address	Mask
Serial 0	10.10.10.6	255.255.255.252

Οι 6 Η/Υ έχουν τοις παρακάτω ip διευθύνσεις

	IP Address	Netmask	Gateway
PC 0	172.16.160.1	255.255.224.0	172.16.160.2
PC 1	172.16.32.1	255.255.224.0	172.16.32.2
PC 2	172.16.64.1	255.255.224.0	172.16.64.2
PC 3	172.16.128.1	255.255.224.0	172.16.128.2
PC 4	172.16.96.1	255.255.224.0	172.16.96.2
PC 5	172.16.192.9	255.255.255.252	172.16.192.10

Router0 έχει συνδεθεί με Ethernet με τον BONO χρησιμοποιώντας τοις ip διευθύνσεις

	IP Address	Mask
FastEthernet 1/0	143.233.173.1	255.255.255.252

Και για τον BONO

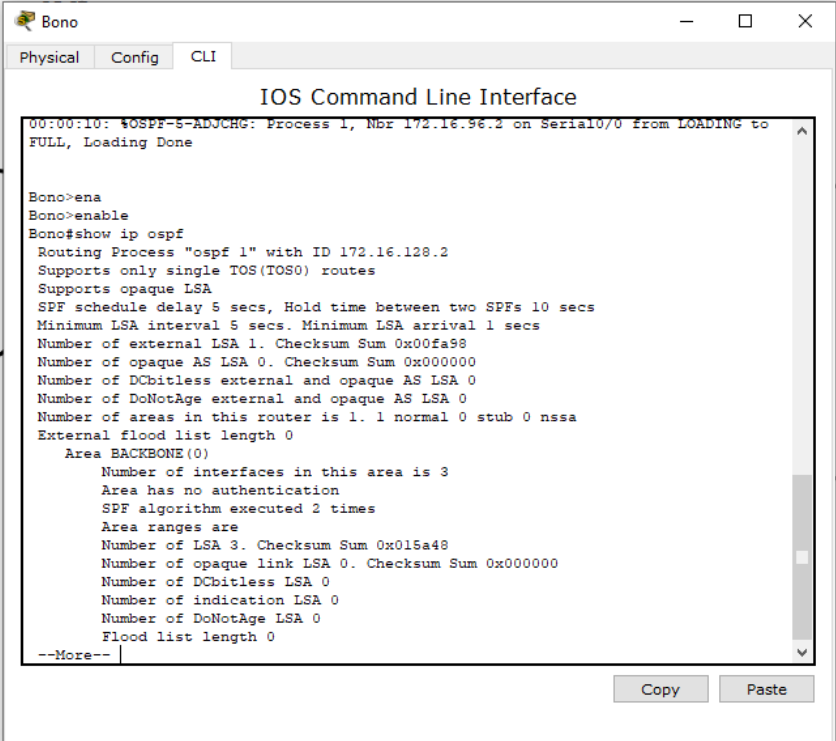
	IP Address	Mask
Ethernet 3/0	143.233.173.2	255.255.255.252

Τέλος ο server Atom έχει συνδεθεί με τον Router0 με

	IP Address	Netmask	Gateway
Atom	10.10.60.21	255.255.255.252	10.10.60.22

To show ip ospf μας δείχνει γενικές πληροφορίες για το Open Shortest Path First (OSPF) routing processes

BONO

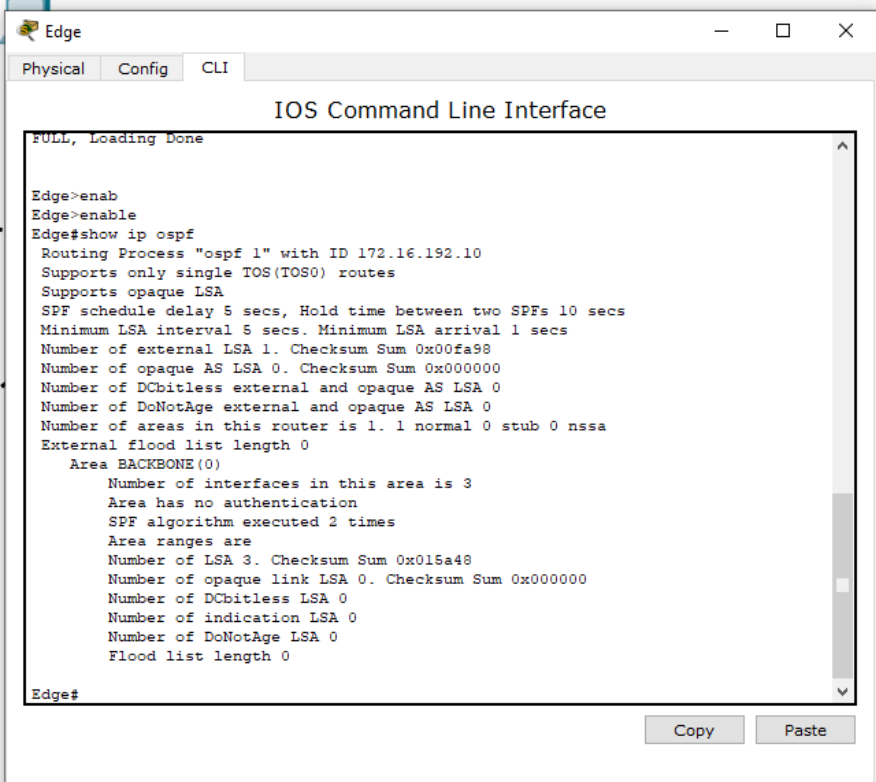


The screenshot shows a window titled "Bono" with tabs for "Physical", "Config", and "CLI". The "CLI" tab is active, displaying the "IOS Command Line Interface". The output of the "show ip ospf" command is shown, indicating that the OSPF process is running with ID 172.16.128.2. The output includes details about the routing process, LSA intervals, and the configuration of Area BACKBONE(0). The window has a scroll bar on the right and "Copy" and "Paste" buttons at the bottom right.

```
00:00:10: %OSPF-5-ADJCHG: Process 1, Nbr 172.16.96.2 on Serial0/0 from LOADING to FULL, Loading Done

Bono>ena
Bono>enable
Bono#show ip ospf
Routing Process "ospf 1" with ID 172.16.128.2
Supports only single TOS(TOS0) routes
Supports opaque LSA
SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
Minimum LSA interval 5 secs. Minimum LSA arrival 1 secs
Number of external LSA 1. Checksum Sum 0x00fa98
Number of opaque AS LSA 0. Checksum Sum 0x000000
Number of DCbitless external and opaque AS LSA 0
Number of DoNotAge external and opaque AS LSA 0
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
External flood list length 0
  Area BACKBONE(0)
    Number of interfaces in this area is 3
    Area has no authentication
    SPF algorithm executed 2 times
    Area ranges are
    Number of LSA 3. Checksum Sum 0x015a48
    Number of opaque link LSA 0. Checksum Sum 0x000000
    Number of DCbitless LSA 0
    Number of indication LSA 0
    Number of DoNotAge LSA 0
    Flood list length 0
--More--
```

EDGE



The screenshot shows the Edge router's CLI interface. The window title is "Edge". The tabs are "Physical", "Config", and "CLI". The main text area displays the following commands and output:

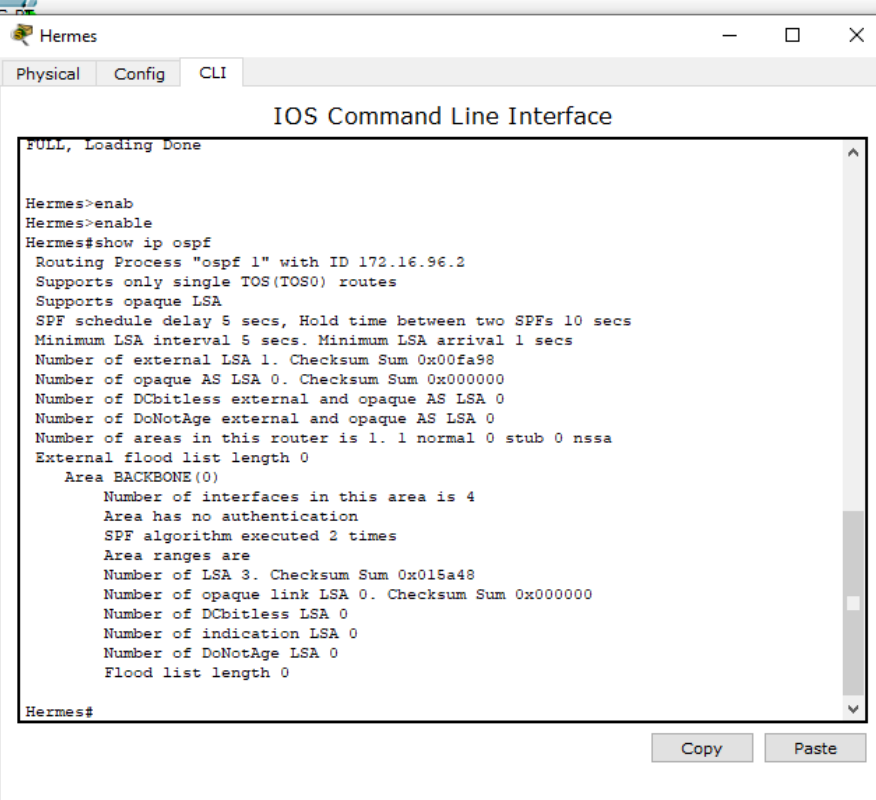
```
FULL, Loading Done

Edge>enab
Edge>enable
Edge#show ip ospf
Routing Process "ospf 1" with ID 172.16.192.10
Supports only single TOS(TOS0) routes
Supports opaque LSA
SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
Minimum LSA interval 5 secs. Minimum LSA arrival 1 secs
Number of external LSA 1. Checksum Sum 0x00fa98
Number of opaque AS LSA 0. Checksum Sum 0x000000
Number of DCbitless external and opaque AS LSA 0
Number of DoNotAge external and opaque AS LSA 0
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
External flood list length 0
  Area BACKBONE(0)
    Number of interfaces in this area is 3
    Area has no authentication
    SPF algorithm executed 2 times
    Area ranges are
    Number of LSA 3. Checksum Sum 0x015a48
    Number of opaque link LSA 0. Checksum Sum 0x000000
    Number of DCbitless LSA 0
    Number of indication LSA 0
    Number of DoNotAge LSA 0
    Flood list length 0

Edge#
```

At the bottom right, there are "Copy" and "Paste" buttons.

HERMES



The screenshot shows the Hermes router's CLI interface. The window title is "Hermes". The tabs are "Physical", "Config", and "CLI". The main text area displays the following commands and output:

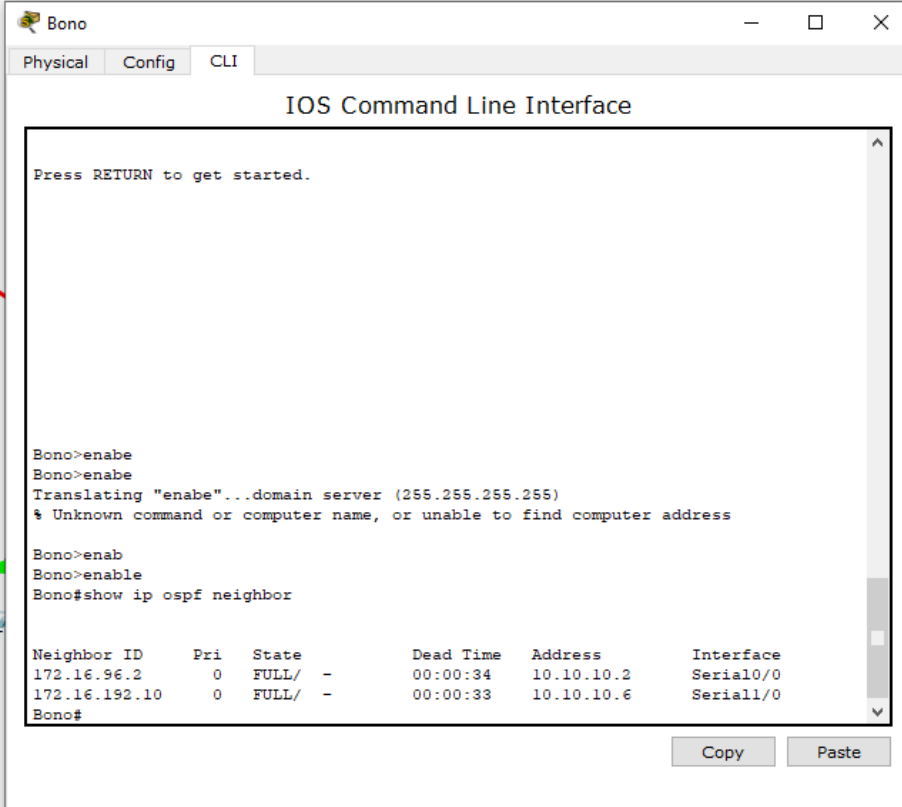
```
FULL, Loading Done

Hermes>enab
Hermes>enable
Hermes#show ip ospf
Routing Process "ospf 1" with ID 172.16.96.2
Supports only single TOS(TOS0) routes
Supports opaque LSA
SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
Minimum LSA interval 5 secs. Minimum LSA arrival 1 secs
Number of external LSA 1. Checksum Sum 0x00fa98
Number of opaque AS LSA 0. Checksum Sum 0x000000
Number of DCbitless external and opaque AS LSA 0
Number of DoNotAge external and opaque AS LSA 0
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
External flood list length 0
  Area BACKBONE(0)
    Number of interfaces in this area is 4
    Area has no authentication
    SPF algorithm executed 2 times
    Area ranges are
    Number of LSA 3. Checksum Sum 0x015a48
    Number of opaque link LSA 0. Checksum Sum 0x000000
    Number of DCbitless LSA 0
    Number of indication LSA 0
    Number of DoNotAge LSA 0
    Flood list length 0

Hermes#
```

At the bottom right, there are "Copy" and "Paste" buttons.

To show ip ospf neighbor μας δείχνει πληροφορίες για τους (OSPF) γείτονες κάθε router με βάσει το interface



The screenshot shows a window titled "Bono" with tabs for "Physical", "Config", and "CLI". The "CLI" tab is active, displaying the "IOS Command Line Interface". The interface shows a series of commands and their outputs. The command "show ip ospf neighbor" is executed, resulting in a table of OSPF neighbors. The table has columns for Neighbor ID, Pri, State, Dead Time, Address, and Interface. Two neighbors are listed: 172.16.96.2 on Serial0/0 and 172.16.192.10 on Serial1/0. Both are in the FULL/ state with a dead time of 00:00:34 and 00:00:33 respectively.

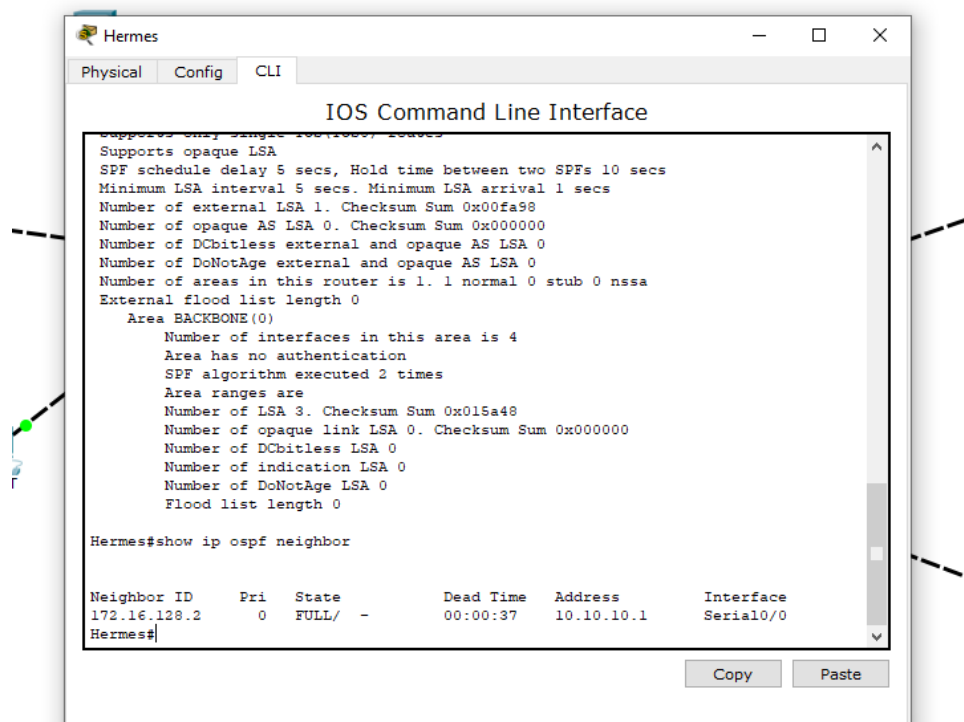
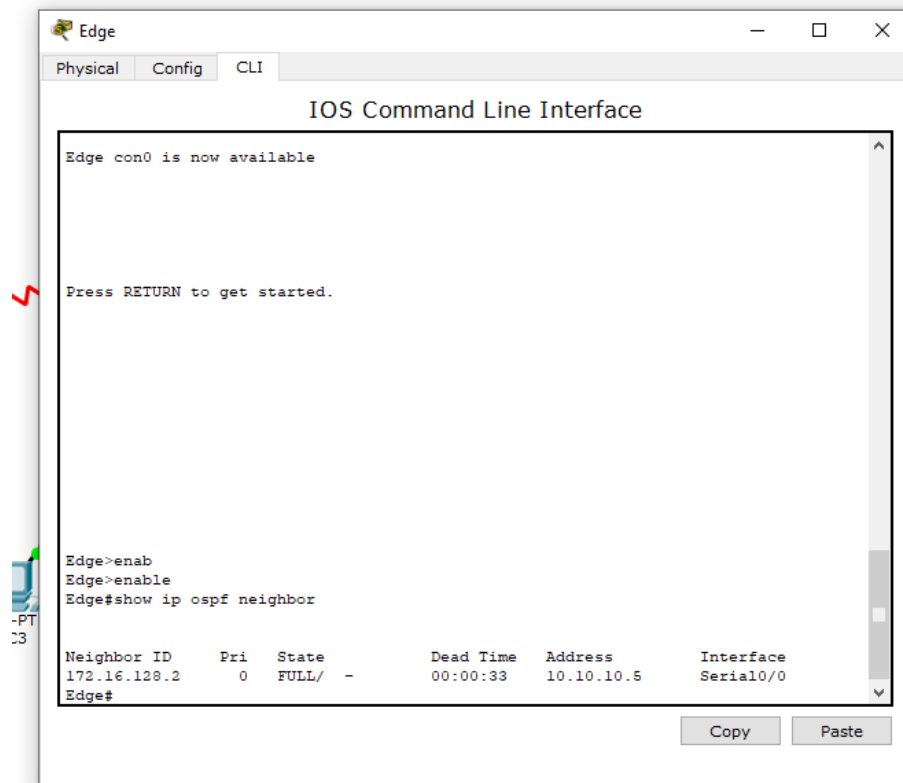
```
Press RETURN to get started.

Bono>enab
Bono>enab
Translating "enab"...domain server (255.255.255.255)
% Unknown command or computer name, or unable to find computer address

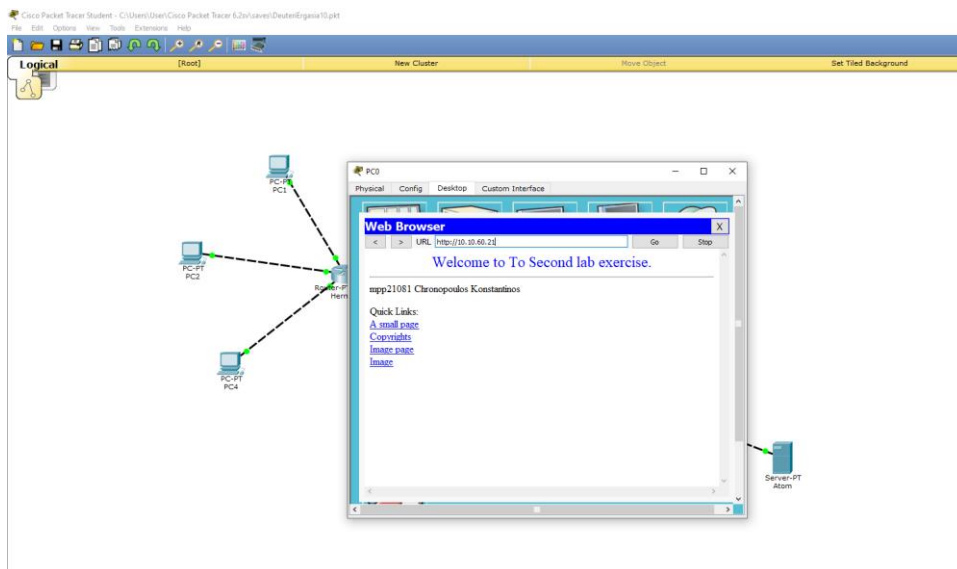
Bono>enab
Bono>enable
Bono#show ip ospf neighbor

Neighbor ID    Pri   State       Dead Time   Address        Interface
172.16.96.2    0     FULL/ -     00:00:34    10.10.10.2     Serial0/0
172.16.192.10  0     FULL/ -     00:00:33    10.10.10.6     Serial1/0
Bono#
```

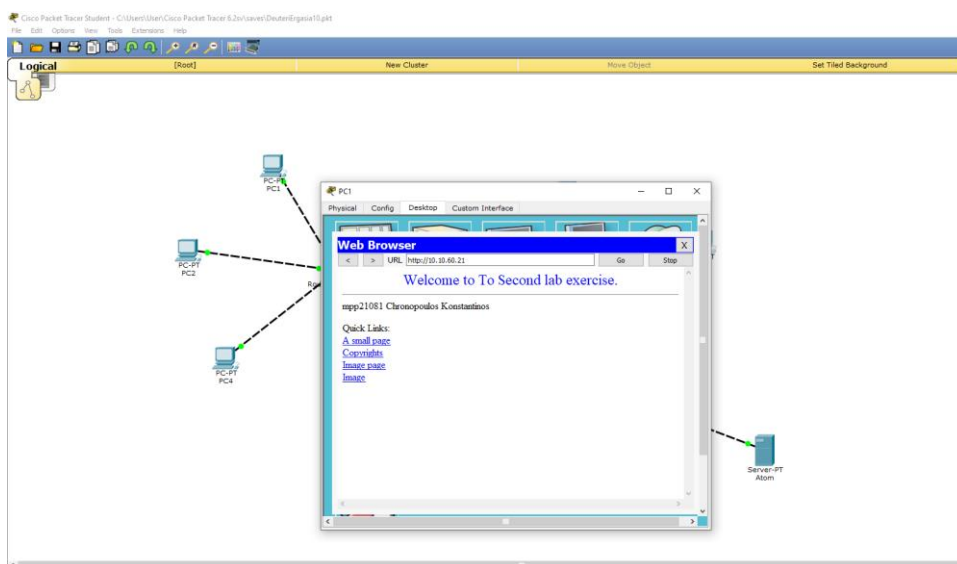
Copy Paste



Ο Η/Υ PC0 έχει πρόσβασης στην διαδικτυακή υπηρεσία HTTP



Ο Η/Υ PC1 έχει πρόσβασης στην διαδικτυακή υπηρεσία HTTP

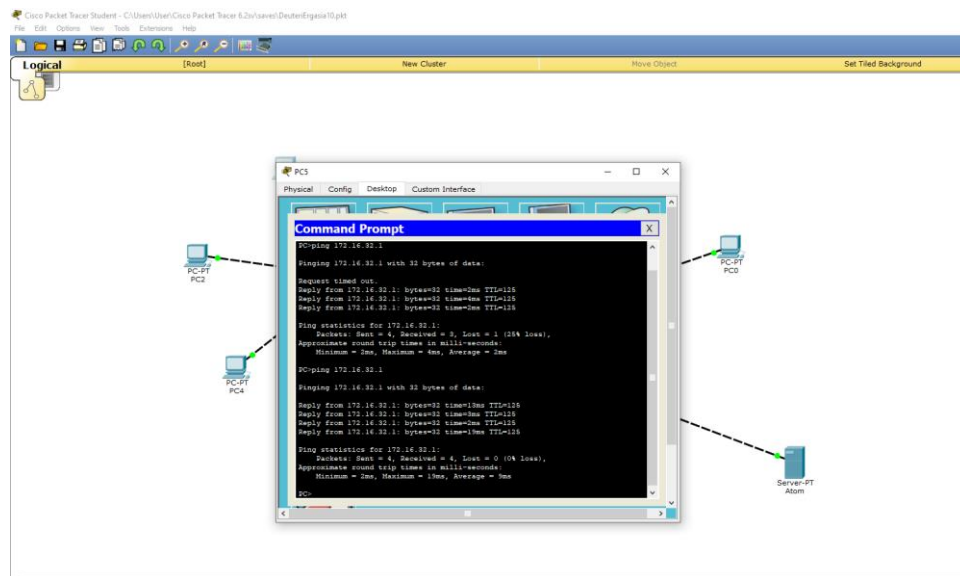


Όλοι οι Η/Υ στο δίκτυο έχουν πρόσβαση μόνο στις υπηρεσίες HTTP και σε καμία άλλη .Αυτό για να το καταφέρουμε Δημιουργήσαμε την access-list 121 εκτελώντας τον κώδικα :

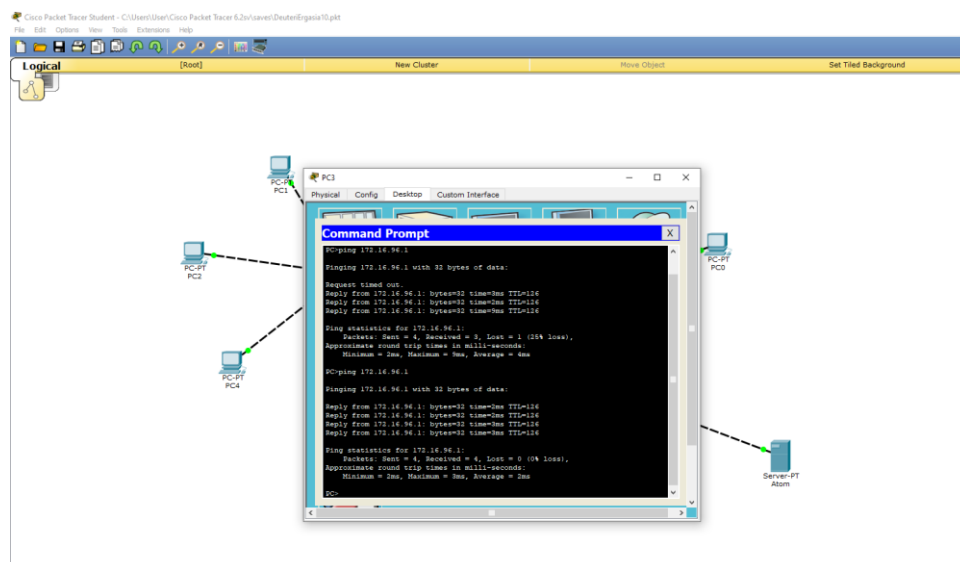
“access-list 121 permit tcp any any eq www” και το εφαρμόσαμε στα ethernet 3/0 του BONO στα outgoi

Η access-list αφήνει να περνάνε οι υπηρεσίες διαδικτύου αλλά λόγω του explicit deny μπλοκάρει όλα τα υπόλοιπα .

Ο PC5 κάνει ping τον PC1



Ο PC3 κάνει ping τον PC4

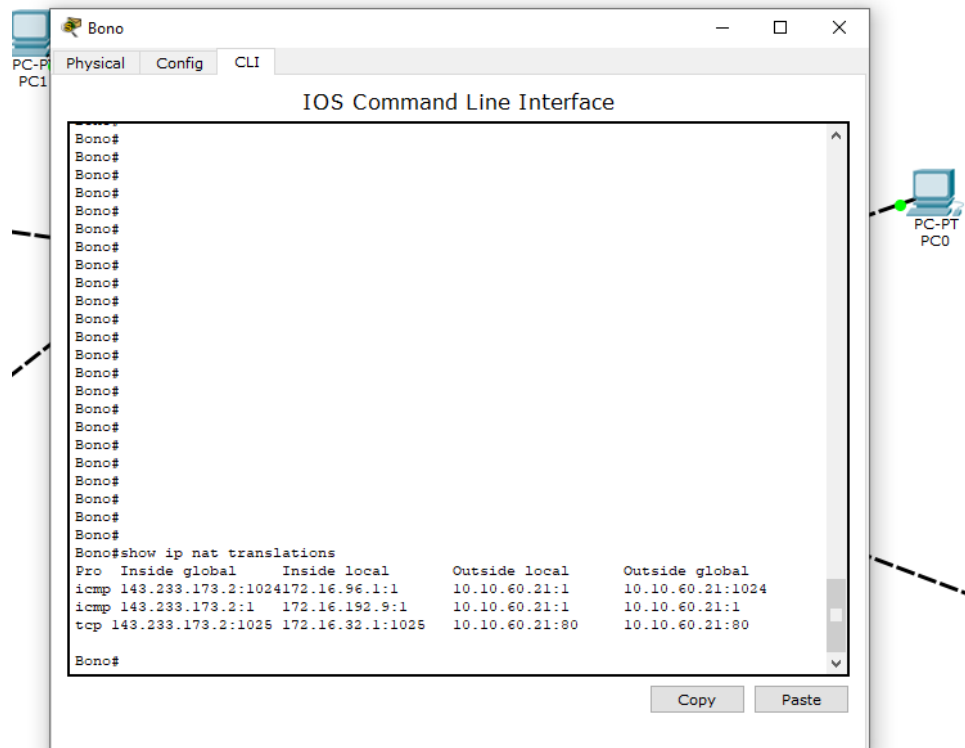


Οι Η/Υ εκτός του HERMIS δεν μπορούν να έχουν πρόσβαση σε άλλες υπηρεσίες.

Αυτό έχει επιτευχθεί με την δημιουργία της access-list 125 η οποία έχει εφαρμοστεί στην serial 0/0 του HERMIS .

Η access-list επιτρέπει σε ping και tracyrouts να περάσουν , στο OSPF routing protocol καθώς και σε responses του http έτσι ώστε να μπορούν να μπουν στο internet οι 3 Η/Υ το explicit deny μπλοκάρει όλα τα υπόλοιπα .

To show ip nat translations μας δείχνει τους μεταφορές που έχουν γίνει μέσω NAT



The screenshot shows a computer monitor displaying a window titled "Bono". The window has three tabs at the top: "Physical", "Config", and "CLI", with "CLI" being the active tab. Below the tabs, the title "IOS Command Line Interface" is centered. A large rectangular terminal area contains the following text:

```
Bono#  
Bono#  
Bono#  
Bono#  
Bono#  
Bono#  
Bono#  
Bono#  
Bono#  
Bono#  
Bono#  
Bono#  
Bono#  
Bono#  
Bono#  
Bono#  
Bono#  
Bono#show ip nat translations  
Pro   Inside global      Inside local           Outside local          Outside global  
icmp  143.233.173.2:1024 172.16.96.1:1         10.10.60.21:1        10.10.60.21:1024  
icmp  143.233.173.2:1    172.16.192.9:1       10.10.60.21:1        10.10.60.21:1  
tcp   143.233.173.2:1025 172.16.32.1:1025     10.10.60.21:80       10.10.60.21:80  
  
Bono#show ip nat statistics  
Total translations: 1 (0 static, 1 dynamic, 1 extended)  
Outside Interfaces: Ethernet3/0  
Inside Interfaces: Serial0/0 , Serial1/0 , Ethernet2/0  
Hits: 9 Misses: 9  
Expired translations: 3  
Dynamic mappings:  
Bono#
```

A vertical scrollbar is visible on the right side of the terminal area. At the bottom right of the window, there are two buttons labeled "Copy" and "Paste". On the left edge of the monitor, a portion of another window titled "PC-P" and "PC1" is visible.