2η ΕΡΓΑΣΙΑ ΕΡΓΑΣΤΗΡΙΟΥ ΔΙΚΤΥΩΝ

Όνομα: Γεώργιος

Επώνυμο: Βέργος

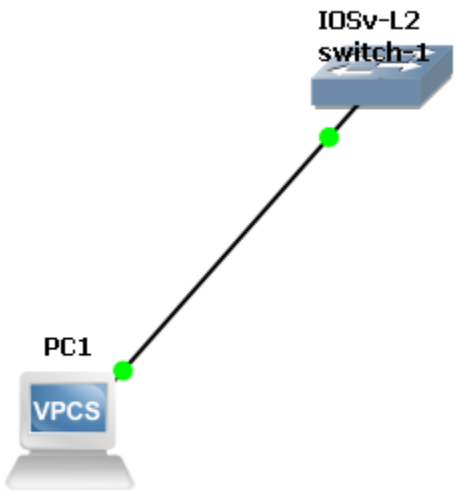
Αριθμός μητρώου: 1072604

Εξάμηνο:6ο

Ημερομηνία:14/4/2022

Άσκηση 4

‘Εχουμε την εξής τοπολογία:



Διαμορφώνω το όνομα του switch με τον αριθμό μητρώου μου, ρυθμίζω τον κωδικό πρόσβασης για προνομιακή λειτουργία με τον αριθμό 1072604 και ρυθμίζω την κρυπτογράφηση κωδικού πρόσβασης στο switch :

```
vIOS-L2-01>enable
vIOS-L2-01#hostname 1072604
           ^
% Invalid input detected at '^' marker.

vIOS-L2-01#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
vIOS-L2-01(config)#hostname 1072604
% Hostname contains one or more illegal characters.

1072604(config)#enable secret 1072604
1072604(config)#service password-encryption
1072604(config)#
```

Έπειτα διαμορφώνω την πρόσβαση στη κονσόλα με τις παρακάτω ρυθμίσεις:

```
1072604#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
1072604(config)#line con 0
1072604(config-line)#password 1072604
1072604(config-line)#history size 15
1072604(config-line)#exec-timeout 6 45
1072604(config-line)#logging synchronous
1072604(config-line)#
```

Στη συνέχεια ρυθμίζω την πρόσβαση telnet με τις ακόλουθες ρυθμίσεις:

```
1072604(config)#line vty 0 15
1072604(config-line)#password 1072604
1072604(config-line)#history size 15
1072604(config-line)#exec-timeout 8 20
1072604(config-line)#login
1072604(config-line)#logging synchronous
1072604(config-line)#exit
1072604(config)#exit
1072604#wr
Building configuration...
Compressed configuration from 5004 bytes to 1983 bytes
*Apr 13 11:13:38.708: %SYS-5-CONFIG_I: Configured from console by console[OK]
1072604#
1072604#
*Apr 13 11:13:42.845: %GRUB-5-CONFIG_WRITING: GRUB configuration is being updated on disk. Please wait...
*Apr 13 11:13:43.580: %GRUB-5-CONFIG_WRITTEN: GRUB configuration was written to disk successfully.
1072604#
```

Ρυθμίζουμε τη ip διεύθυνση του switch με τις εξής ρυθμίσεις: ip=192.168.1.2 μάσκα:255.255.255.0

```
1072604#
*Apr 13 10:54:07.484: %SYS-5-CONFIG_I: Configured from console by console
1072604#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
1072604(config)#interface Vlan1
1072604(config-if)#ip ad
*Apr 13 10:54:18.730: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to down
1072604(config-if)#ip address 192.168.1.2 255.255.255.0
1072604(config-if)#exit
1072604(config)#exit
1072604#
*Apr 13 10:54:37.694: %SYS-5-CONFIG_I: Configured from console by console
1072604#wr
Building configuration...
Compressed configuration from 4976 bytes to 1972 bytes[OK]
1072604#
*Apr 13 10:54:42.335: %GRUB-5-CONFIG_WRITING: GRUB configuration is being updated on disk. Please wait..
*Apr 13 10:54:43.076: %GRUB-5-CONFIG_WRITTEN: GRUB configuration was written to disk successfully.
1072604#
```

Για να δούμε την κατάσταση του interface (Vlan1) αν είναι δηλαδή up ή down καθώς και την ip του τρέχουμε: sh ip int br. Έπειτα με την εντολή no shut ενεργοποιούμε το interface:

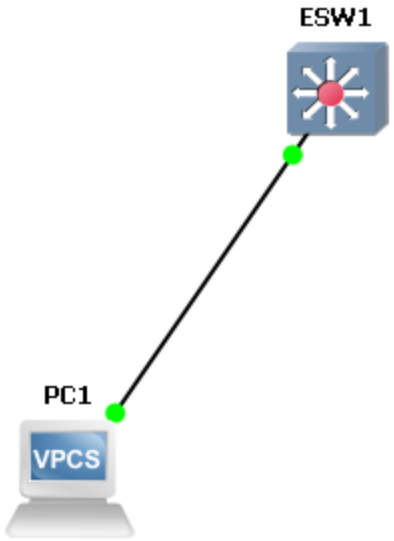
```
1072604#sh ip int br
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0     unassigned      YES unset  up                    up
Vlan1                  192.168.1.2     YES manual administratively down down
1072604#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
1072604(config)#int Vlan1
1072604(config-if)#no shut
1072604(config-if)#exit
1072604(config)#wr
*Apr 13 10:55:46.094: %LINK-3-UPDOWN: Interface Vlan1, changed state to up
*Apr 13 10:55:47.094: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up
1072604(config)#exit
1072604#wr
Building configuration...
Compressed configuration from 4966 bytes to 1964 bytes
*Apr 13 10:55:49.739: %SYS-5-CONFIG_I: Configured from console by console[OK]
1072604#
1072604#
*Apr 13 10:55:53.378: %GRUB-5-CONFIG_WRITING: GRUB configuration is being updated on disk. Please wait...
*Apr 13 10:55:54.119: %GRUB-5-CONFIG_WRITTEN: GRUB configuration was written to disk successfully.
1072604#sh ip int br
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0     unassigned      YES unset  up                    up
Vlan1                  192.168.1.2     YES manual up                    up
1072604#
```

Τέλος δοκιμάζουμε να συνδεθούμε στο switch με τα credentials που ορίσαμε: Στην αρχή βάζω λάθος κωδικό και δε με αφήνει να μπω στην κονσόλα όταν τον πληκτρολογώ σωστά με βάζει:

```
********************************************************************************
1072604>enable
Password:
Password:
1072604#
```

Άσκηση 5

Έχουμε τη παρακάτω τοπολογία:



Αρχικά αλλάζω το όνομα του switch με το ΑΜ=1072604:

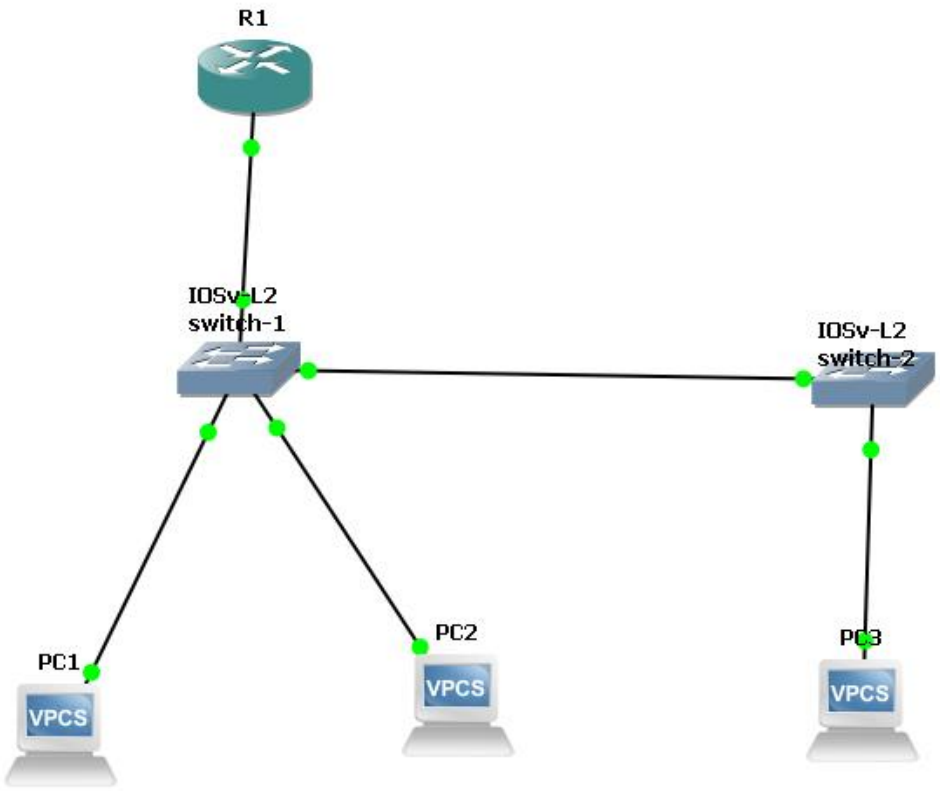
```
ESW1#config t
Enter configuration commands, one per line.  End with CNTL/Z.
ESW1(config)#hostname 1072604
% Hostname contains one or more illegal characters.

1072604(config)#exit
1072604#
*Mar  1 00:01:24.511: %SYS-5-CONFIG_I: Configured from console by console
1072604#
```

Έπειτα δημιουργώ μία βάση vlan , προσθέτω ένα vlan κάνω exit και τέλος δείχνω τη λίστα όλων των vlan στο switch:

```
1072604#
*Mar  1 00:01:24.511: %SYS-5-CONFIG_I: Configured from console by console
1072604#vlan database
1072604(vlan)#vlan 35
VLAN 35 added:
    Name: VLAN0035
1072604(vlan)#exit
APPLY completed.
Exiting....
1072604#show vlan-switch

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Fa0/0, Fa0/1, Fa0/2, Fa0/3
                                                Fa0/4, Fa0/5, Fa0/6, Fa0/7
                                                Fa0/8, Fa0/9, Fa0/10, Fa0/11
                                                Fa0/12, Fa0/13, Fa0/14, Fa0/15
                                                Fa1/0, Fa1/1, Fa1/2, Fa1/3
                                                Fa1/4, Fa1/5, Fa1/6, Fa1/7
                                                Fa1/8, Fa1/9, Fa1/10, Fa1/11
                                                Fa1/12, Fa1/13, Fa1/14, Fa1/15
35   VLAN0035                         active
1002 fddi-default                     active
1003 token-ring-default               active
1004 fddinet-default                  active
1005 trnet-default                    active

VLAN Type  SAID       MTU   Parent RingNo BridgeNo Stp  BrdgMode Trans1 Trans2
---- ----- ---------- ----- ------ ------ -------- ---- -------- ------ ------
1    enet  100001     1500  -      -      -        -    -        1002   1003
35   enet  100035     1500  -      -      -        -    -        0      0
1002 fddi  101002     1500  -      -      -        -    -        1      1003
1003 tr    101003     1500  1005   0      -        -    srb      1      1002
1004 fdnet 101004     1500  -      -      1        ibm  -        0      0
1005 trnet 101005     1500  -      -      1        ibm  -        0      0
1072604#
1072604#
```

Άσκηση 6

Έχω τη παρακάτω τοπολογία:



Αναθέτω ip στο PC1:

```
PC1> ip 192.168.5.5/24 192.168.5.1
Checking for duplicate address...
PC1 : 192.168.5.5 255.255.255.0 gateway 192.168.5.1

PC1> save
Saving startup configuration to startup.vpc
.  done

PC1>
```

Αναθέτω ip στο PC2:

```
PC2> ip 192.168.10.10/24 192.168.10.1
Checking for duplicate address...
PC2 : 192.168.10.10 255.255.255.0 gateway 192.168.10.1

PC2> save
Saving startup configuration to startup.vpc
.  done

PC2>
```

Αναθέτω ip στο PC3:

```
PC3> ip 192.168.5.10/24 192.168.5.1
Checking for duplicate address...
PC3 : 192.168.5.10 255.255.255.0 gateway 192.168.5.1

PC3> save
Saving startup configuration to startup.vpc
.  done

PC3>
```

Δημιουργώ τα 2 vlans και τους αναθέτω αντίστοιχα ονόματα:

```
vIOS-L2-01>enable
vIOS-L2-01#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
vIOS-L2-01(config)#vlan 5
vIOS-L2-01(config-vlan)#name 1072604
vIOS-L2-01(config-vlan)#exit
vIOS-L2-01(config)#vlan 10
vIOS-L2-01(config-vlan)#name SALES
vIOS-L2-01(config-vlan)#exit
vIOS-L2-01(config)#end
vIOS-L2-01#w
*Apr 13 11:57:35.507: %SYS-5-CONFIG_I: Configured from console by console
vIOS-L2-01#wr
Building configuration...
Compressed configuration from 4955 bytes to 1898 bytes[OK]
*Apr 13 11:57:48.030: %GRUB-5-CONFIG_WRITING: GRUB configuration is being updated on disk. Please wait...
*Apr 13 11:57:48.878: %GRUB-5-CONFIG_WRITTEN: GRUB configuration was written to disk successfully.
vIOS-L2-01#
```

Παραμετροποιώ τα interfaces του πρώτου switch:

```
vIOS-L2-01#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
vIOS-L2-01(config)#interface gigabitethernet 0/1
vIOS-L2-01(config-if)#switchport mode access
vIOS-L2-01(config-if)#switchport access vlan 5
vIOS-L2-01(config-if)#exit
vIOS-L2-01(config)#
*Apr 13 12:32:47.129: %PLATFORM-5-SIGNATURE_VERIFIED: Image 'flash0:/vios_l2-adventerprisek9-m' passed code signing verifica
tion
vIOS-L2-01(config)#wr
                   ^
% Invalid input detected at '^' marker.

vIOS-L2-01(config)#interface gigabitethernet 0/2
vIOS-L2-01(config-if)#switchport mode access
vIOS-L2-01(config-if)#switchport access vlan 10
vIOS-L2-01(config-if)#exit
vIOS-L2-01(config)#interface gigabitethernet 0/3
vIOS-L2-01(config-if)#switchport trunk encapsulation dot1q
vIOS-L2-01(config-if)#switchport mode trunk
vIOS-L2-01(config-if)#exit
vIOS-L2-01(config)#interface gigabitethernet 0/0
vIOS-L2-01(config-if)#switchport trunk encapsulation dot1q
vIOS-L2-01(config-if)#switchport mode trunk
vIOS-L2-01(config-if)#exit
vIOS-L2-01(config)#end
vIOS-L2-01#wr
Building configuration...
Compressed configuration from 5130 bytes to 1994 bytes
*Apr 13 12:35:30.270: %SYS-5-CONFIG_I: Configured from console by console[OK]
vIOS-L2-01#
*Apr 13 12:35:37.440: %GRUB-5-CONFIG_WRITING: GRUB configuration is being updated on disk. Please wait...
*Apr 13 12:35:38.259: %GRUB-5-CONFIG_WRITTEN: GRUB configuration was written to disk successfully.
vIOS-L2-01#
```

Δημιουργώ το vlan5 και παραμετροποιώ κατάλληλα το δεύτερο switch:

```
vIOS-L2-01>enable
vIOS-L2-01#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
vIOS-L2-01(config)#vlan 5
vIOS-L2-01(config-vlan)#name 1072604
vIOS-L2-01(config-vlan)#exit
vIOS-L2-01(config)#interface gigabitethernet 0/1
vIOS-L2-01(config-if)#switchport mode access
vIOS-L2-01(config-if)#switchport access vlan 5
vIOS-L2-01(config-if)#exit
vIOS-L2-01(config)#interface gigabitethernet 0/0
vIOS-L2-01(config-if)#switchport trunk encapsulation dot1q
vIOS-L2-01(config-if)#switchport mode trunk
vIOS-L2-01(config-if)#exit
vIOS-L2-01(config)#end
vIOS-L2-01#wr
*Apr 13 12:38:53.778: %SYS-5-CONFIG_I: Configured from console by console
vIOS-L2-01#wr
Building configuration...
Compressed configuration from 4888 bytes to 1876 bytes[OK]
vIOS-L2-01#
*Apr 13 12:39:01.694: %GRUB-5-CONFIG_WRITING: GRUB configuration is being updated on disk. Please wait...
*Apr 13 12:39:02.658: %GRUB-5-CONFIG_WRITTEN: GRUB configuration was written to disk successfully.
vIOS-L2-01#
```

Επιχειρούμε ping στο PC3 δηλαδή ping 192.168.5.10:

```
PC1> ping 192.168.5.10

84 bytes from 192.168.5.10 icmp_seq=1 ttl=64 time=16.020 ms
84 bytes from 192.168.5.10 icmp_seq=2 ttl=64 time=7.463 ms
84 bytes from 192.168.5.10 icmp_seq=3 ttl=64 time=2.531 ms
84 bytes from 192.168.5.10 icmp_seq=4 ttl=64 time=1.703 ms
84 bytes from 192.168.5.10 icmp_seq=5 ttl=64 time=9.116 ms

PC1>
```

Όπως και από το PC3 στο PC1:

```
PC3> ping 192.168.5.5

84 bytes from 192.168.5.5 icmp_seq=1 ttl=64 time=1.252 ms
84 bytes from 192.168.5.5 icmp_seq=2 ttl=64 time=5.101 ms
84 bytes from 192.168.5.5 icmp_seq=3 ttl=64 time=7.605 ms
84 bytes from 192.168.5.5 icmp_seq=4 ttl=64 time=4.774 ms
84 bytes from 192.168.5.5 icmp_seq=5 ttl=64 time=9.583 ms

PC3>
```

Όμως όταν κάνουνε ping 192.168.10.10 δε παίρνουμε απάντηση:

```
PC1> ping 192.168.10.10

host (192.168.5.1) not reachable

PC1>
```

Ομοίως για το PC3:

```
PC3> ping 192.168.10.10

host (192.168.5.1) not reachable

PC3>
```

Όπως και από το PC2 προς τα άλλα PC:

```
PC2> ping 192.168.5.5

host (192.168.10.1) not reachable

PC2> ping 192.168.5.10

host (192.168.10.1) not reachable

PC2>
```

Παρατηρώ ότι τα PC στο ίδιο υποδίκτυο επικοινωνούν μεταξύ τους(PC1,PC3) ενώ τα με το PC σε άλλο υποδίκτυο το PC2 όχι.

Κάνω τις απαραίτητες παραμετροποιήσεις για να μπορούν τα επικοινωνούν τα δύο διαφορετικά υποδίκτυα μεταξύ τους.

```
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#interface ethernet 0/0
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#
*Mar  1 00:20:06.798: %LINK-3-UPDOWN: Interface Ethernet0/0, changed state to up
*Mar  1 00:20:07.799: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0/0, changed state to up
R1(config)#interface ethernet 0/0.5
R1(config-subif)#encapsulation dot1q 5
R1(config-subif)#ip address 192.168.5.1 255.255.255.0
R1(config-subif)#no shut
R1(config-subif)#no shutdown
R1(config-subif)#exit
R1(config)#interface ethernet 0/0.10
R1(config-subif)#encapsulation dot1q 10
R1(config-subif)#ip address 192.168.10.1 255.255.255.0
R1(config-subif)#no shut
R1(config-subif)#no shutdown
R1(config-subif)#exit
R1(config)#end
R1#wr
*Mar  1 00:21:59.495: %SYS-5-CONFIG_I: Configured from console by console
R1#wr
Warning: Attempting to overwrite an NVRAM configuration previously written
by a different version of the system image.
Overwrite the previous NVRAM configuration?[confirm]
Building configuration...
[OK]
R1#
```

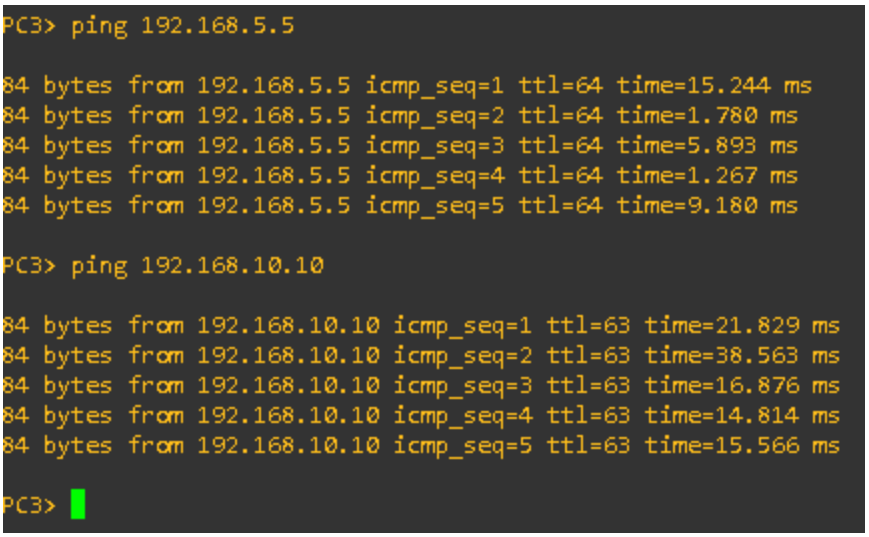
Δοκιμάζουμε να κάνουμε ping από κάθε υπολογιστή προς κάθε υπολογιστή:

```
PC1> ping 192.168.5.10

84 bytes from 192.168.5.10 icmp_seq=1 ttl=64 time=11.851 ms
84 bytes from 192.168.5.10 icmp_seq=2 ttl=64 time=2.399 ms
84 bytes from 192.168.5.10 icmp_seq=3 ttl=64 time=9.062 ms
84 bytes from 192.168.5.10 icmp_seq=4 ttl=64 time=3.843 ms
84 bytes from 192.168.5.10 icmp_seq=5 ttl=64 time=4.596 ms

PC1> ping 192.168.10.10

192.168.10.10 icmp_seq=1 timeout
84 bytes from 192.168.10.10 icmp_seq=2 ttl=63 time=14.937 ms
84 bytes from 192.168.10.10 icmp_seq=3 ttl=63 time=16.519 ms
84 bytes from 192.168.10.10 icmp_seq=4 ttl=63 time=15.593 ms
84 bytes from 192.168.10.10 icmp_seq=5 ttl=63 time=17.700 ms

PC1> ping 192.168.10.10

84 bytes from 192.168.10.10 icmp_seq=1 ttl=63 time=19.969 ms
84 bytes from 192.168.10.10 icmp_seq=2 ttl=63 time=18.554 ms
84 bytes from 192.168.10.10 icmp_seq=3 ttl=63 time=17.279 ms
84 bytes from 192.168.10.10 icmp_seq=4 ttl=63 time=16.308 ms
84 bytes from 192.168.10.10 icmp_seq=5 ttl=63 time=17.662 ms

PC1>
```

Από το PC2:

```
PC2> ping 192.168.5.5

84 bytes from 192.168.5.5 icmp_seq=1 ttl=63 time=30.360 ms
84 bytes from 192.168.5.5 icmp_seq=2 ttl=63 time=20.729 ms
84 bytes from 192.168.5.5 icmp_seq=3 ttl=63 time=15.222 ms
84 bytes from 192.168.5.5 icmp_seq=4 ttl=63 time=17.901 ms
84 bytes from 192.168.5.5 icmp_seq=5 ttl=63 time=14.938 ms

PC2> ping 192.168.5.10

192.168.5.10 icmp_seq=1 timeout
84 bytes from 192.168.5.10 icmp_seq=2 ttl=63 time=15.449 ms
84 bytes from 192.168.5.10 icmp_seq=3 ttl=63 time=17.558 ms
84 bytes from 192.168.5.10 icmp_seq=4 ttl=63 time=13.979 ms
84 bytes from 192.168.5.10 icmp_seq=5 ttl=63 time=16.021 ms

PC2> ping 192.168.5.10

84 bytes from 192.168.5.10 icmp_seq=1 ttl=63 time=17.174 ms
84 bytes from 192.168.5.10 icmp_seq=2 ttl=63 time=17.088 ms
84 bytes from 192.168.5.10 icmp_seq=3 ttl=63 time=26.136 ms
84 bytes from 192.168.5.10 icmp_seq=4 ttl=63 time=18.095 ms
84 bytes from 192.168.5.10 icmp_seq=5 ttl=63 time=17.976 ms

PC2>
```

Από το PC3:



Παρατηρώ ότι τα υποδίκτυα επικοινωνούν μεταξύ τους.