

## ESERCIZIO EPICODE W2D1

L'esercizio consiste nella creazione di una rete di calcolatori per mezzo del tool *CISCO Packet Tracer*. L'obiettivo è imparare il più possibile riguardo l'interazione dei livelli 2 e 3 del modello *OSI*.

1. Mettere in comunicazione il Laptop-PT0 con IP 192.168.100.100 con il PC-PT-PC0 avente IP 192.168.100.103.

Laptop-PT

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.100.103

Pinging 192.168.100.103 with 32 bytes of data:

Reply from 192.168.100.103: bytes=32 time<1ms TTL=128
Reply from 192.168.100.103: bytes=32 time<1ms TTL=128
Reply from 192.168.100.103: bytes=32 time<1ms TTL=128
Reply from 192.168.100.103: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.100.103:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Laptop-PT0 ping  
PC\_PT\_PC0

PC\_PT\_PC0

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.100.100

Pinging 192.168.100.100 with 32 bytes of data:

Reply from 192.168.100.100: bytes=32 time<1ms TTL=128
Reply from 192.168.100.100: bytes=32 time<1ms TTL=128
Reply from 192.168.100.100: bytes=32 time<1ms TTL=128
Reply from 192.168.100.100: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.100.100:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

PC\_PT\_PC0 ping  
Laptop-PT0

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.100.100

Subnet Mask 255.255.255.0

Default Gateway 192.168.100.102

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::20A:F3FF:FEE1:40AD

Default Gateway

DNS Server

802.1X

Laptop-PT0 configuration

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.100.103

Subnet Mask 255.255.255.0

Default Gateway 192.168.100.102

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::2E0:B0FF:FE25:D07C

Default Gateway

DNS Server

802.1X

PC-PT-PC0 configuration

2. Mettere in comunicazione il Laptop-PT0 con IP 192.168.100.100 con il laptop-PT2 avente IP 192.168.200.100.

<b>GLOBAL</b>	GigabitEthernet0/0/0	
Settings		
Algorithm Settings		
<b>ROUTING</b>		
Static		
RIP		
<b>SWITCHING</b>		
VLAN Database		
<b>INTERFACE</b>		
GigabitEthernet0/0/0		
GigabitEthernet0/0/1		

  

GigabitEthernet0/0/0		
Port Status	<input checked="" type="checkbox"/> On	
Bandwidth	<input checked="" type="radio"/> 1000 Mbps <input type="radio"/> 100 Mbps <input type="radio"/> 10 Mbps <input checked="" type="checkbox"/> Auto	
Duplex	<input type="radio"/> Half Duplex <input checked="" type="radio"/> Full Duplex <input checked="" type="checkbox"/> Auto	
MAC Address	00E0.8F94.4201	
IP Configuration		
IPv4 Address	Router-GBE0/0/0 configuration	192.168.100.102
Subnet Mask		255.255.255.0
Tx Ring Limit		
		10

Physical Config CLI Attributes

<b>GLOBAL</b>	GigabitEthernet0/0/1	
Settings		
Algorithm Settings		
<b>ROUTING</b>		
Static		
RIP		
<b>SWITCHING</b>		
VLAN Database		
<b>INTERFACE</b>		
GigabitEthernet0/0/0		
GigabitEthernet0/0/1		

  

GigabitEthernet0/0/1		
Port Status	<input checked="" type="checkbox"/> On	
Bandwidth	<input checked="" type="radio"/> 1000 Mbps <input type="radio"/> 100 Mbps <input type="radio"/> 10 Mbps <input checked="" type="checkbox"/> Auto	
Duplex	<input type="radio"/> Half Duplex <input checked="" type="radio"/> Full Duplex <input checked="" type="checkbox"/> Auto	
MAC Address	00E0.8F94.4202	
IP Configuration		
IPv4 Address	Router1GBE0/0/1 configuration	192.168.200.102
Subnet Mask		255.255.255.0
Tx Ring Limit		
		10

```
C:\>ping 192.168.200.100

Pinging 192.168.200.100 with 32 bytes of data:

Reply from 192.168.200.100: bytes=32 time<lms TTL=127
Reply from 192.168.200.100: bytes=32 time<lms TTL=127
Reply from 192.168.200.100: bytes=32 time<lms TTL=127
Reply from 192.168.200.100: bytes=32 time<lms TTL=127

Ping statistics for 192.168.200.100:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

Laptop-PT2 ping Laptop-PT0

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.100.100

Pinging 192.168.100.100 with 32 bytes of data:

Reply from 192.168.100.100: bytes=32 time<lms TTL=127
Reply from 192.168.100.100: bytes=32 time<lms TTL=127
Reply from 192.168.100.100: bytes=32 time<lms TTL=127
Reply from 192.168.100.100: bytes=32 time<lms TTL=127

Ping statistics for 192.168.100.100:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Laptop-PT2 ping Laptop-PT0

3. Mostrare quantitativamente come cambiano <<source MAC e destination MAC>> e <<source IP & destination IP>> quando un pacchetto viene inviato dal Laptop-PT0 verso il Laptop-PT2

At Device: Switch1  
Source: Laptop-PT0  
Destination: Laptop-PT2

In Layers

Layer7

Layer6

Layer5

Layer4

Layer3

Layer 2: Ethernet II Header  
000A.F3E1.40AD >> 00E0.8F94.4201

Layer 1: Port FastEthernet0/1

Out Layers

Layer7

Layer6

Layer5

Layer4

Layer3

Layer 2: Ethernet II Header  
000A.F3E1.40AD >> 00E0.8F94.4201

Layer 1: Port(s): GigabitEthernet0/1

1. FastEthernet0/1 receives the frame.

At Device: Router1  
Source: Laptop-PT0  
Destination: Laptop-PT2

In Layers

Layer7

Layer6

Layer5

Layer4

Layer 3: IP Header Src. IP:  
192.168.100.100, Dest. IP:  
192.168.200.100 ICMP Message  
Type: 8

Layer 2: Ethernet II Header  
000A.F3E1.40AD >> 00E0.8F94.4201

Layer 1: Port GigabitEthernet0/0/0

Out Layers

Layer7

Layer6

Layer5

Layer4

Layer 3: IP Header Src. IP:  
192.168.100.100, Dest. IP:  
192.168.200.100 ICMP Message Type:  
8

Layer 2: Ethernet II Header  
00E0.8F94.4202 >> 0002.16CB.C35E

Layer 1: Port(s):  
GigabitEthernet0/0/1

1. The device looks up the destination IP address in the CEF table.

At Device: Switch2  
Source: Laptop-PT0  
Destination: Laptop-PT2

#### In Layers

Layer7
Layer6
Layer5
Layer4
Layer3
Layer 2: Ethernet II Header 00E0.8F94.4202 >> 0002.16CB.C35E
Layer 1: Port GigabitEthernet0/1

#### Out Layers

Layer7
Layer6
Layer5
Layer4
Layer3
Layer 2: Ethernet II Header 00E0.8F94.4202 >> 0002.16CB.C35E
Layer 1: Port(s): FastEthernet0/2

1. GigabitEthernet0/1 receives the frame.

At Device: Laptop-PT2  
Source: Laptop-PT0  
Destination: Laptop-PT2

#### In Layers

Layer7
Layer6
Layer5
Layer4
Layer 3: IP Header Src. IP: 192.168.100.100, Dest. IP: 192.168.200.100 ICMP Message Type: 8
Layer 2: Ethernet II Header 00E0.8F94.4202 >> 0002.16CB.C35E
Layer 1: Port FastEthernet0

#### Out Layers

Layer7
Layer6
Layer5
Layer4
Layer 3: IP Header Src. IP: 192.168.200.100, Dest. IP: 192.168.100.100 ICMP Message Type: 0
Layer 2: Ethernet II Header 0002.16CB.C35E >> 00E0.8F94.4202
Layer 1: Port(s): FastEthernet0

1. The packet's destination IP address matches the device's IP address or the broadcast address. The device de-encapsulates the packet.
2. The packet is an ICMP packet. The ICMP process processes it.
3. The ICMP process received an Echo Request message.