PES UNIVERSITY

EC CAMPUS,
BANGLORE

NAME: SUHAN B
REVANKAR

SRN: PES2UG19CS412

SUBJECT: COMPUTER NETWORKS LAB WEEK 7 ASSIGNMENT

OBJECTIVE: Designing and Simulation of Network Topology using Cisco Packet Tracer

To understand the purpose of Cisco Packet Tracer.

- To navigate, choose network and end devices and customize them.
- To interconnect devices and configure them using simple interface.
- To become familiar with building topologies in Packet Tracer.
- To simulate data interactions traveling through a network

EXCERCISE 1:

Using Cisco packet tracer understand the life of packet in internet.

Create the following topology in packet tracer.

/---DNS

A – R1—R2

\--- Web Server

Open the browser in A and access the webserver using sitename (not using IP Address). Traverse each packet (in simulation mode) and answer the following for each packet

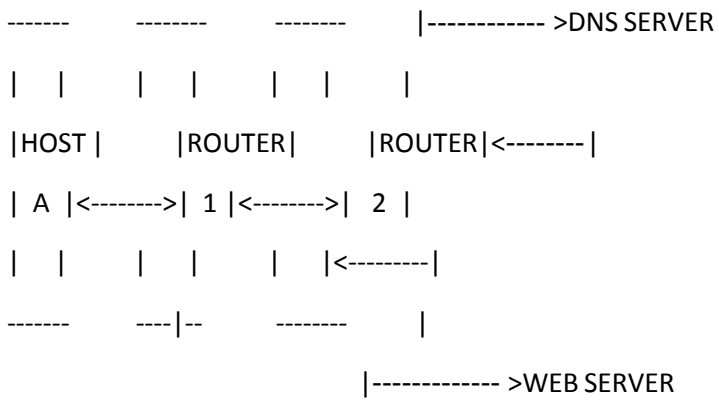
Src IP, Dstn IP, Src Mac, Dstn MAC, pkt type (e.g. DNS, ARP, HTTP, TCP)

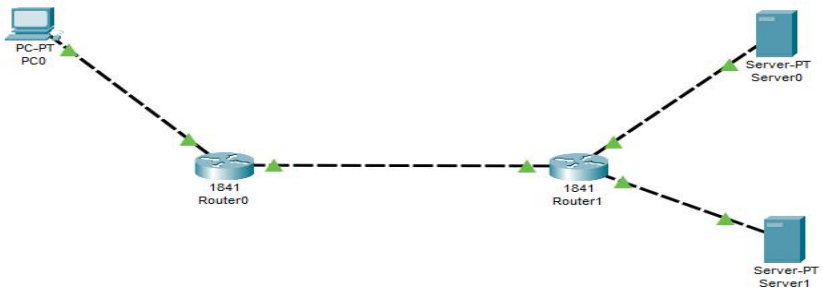
Observation: Does the number of packets traversed in the network change with second invocation of web request.

Experiment : Understanding the life of packet in internet.

Components Used : PC-Devices, DNS server, Web Server, Routers (everything on cisco packet tracer)

Topology Created :





CONFIGURATIONS :

HOST A : IP Address ---> 10.10.1.1

Gateway------> 10.10.1.2

DNS Server--- > 192.168.1.2

ROUTER 1 : Incoming Interface IP --> 10.10.1.2 (Fast ethernet 0)
OUtgoing Interface IP --> 10.10.2.1 (Fast ethernet 1)

ROUTER 2 : Incoming Interface IP --> 10.10.2.2(Fast ethernet 0)

OUtgoing Interface1 IP --> 192.168.1.1 (Fast ethernet 1)

Outgoing Interface2 IP --> 192.168.2.1 (External added interface)

DNS Server : IP Address---- > 192.168.1.2

Default Gateway : 192.168.1.1

WEB Server : IP Address---- > 192.168.2.2

Default Gateway : 192.168.2.1

ROUTING TABLE ENTRIES :

Router name	Network	Gateway
ROUTER 1	192.168.1.0	10.10.2.2
ROUTER 1	192.168.2.0	10.10.2.2
ROUTER 2	10.10.1.0	10.10.2.1

STEPS OF EXECUTION :

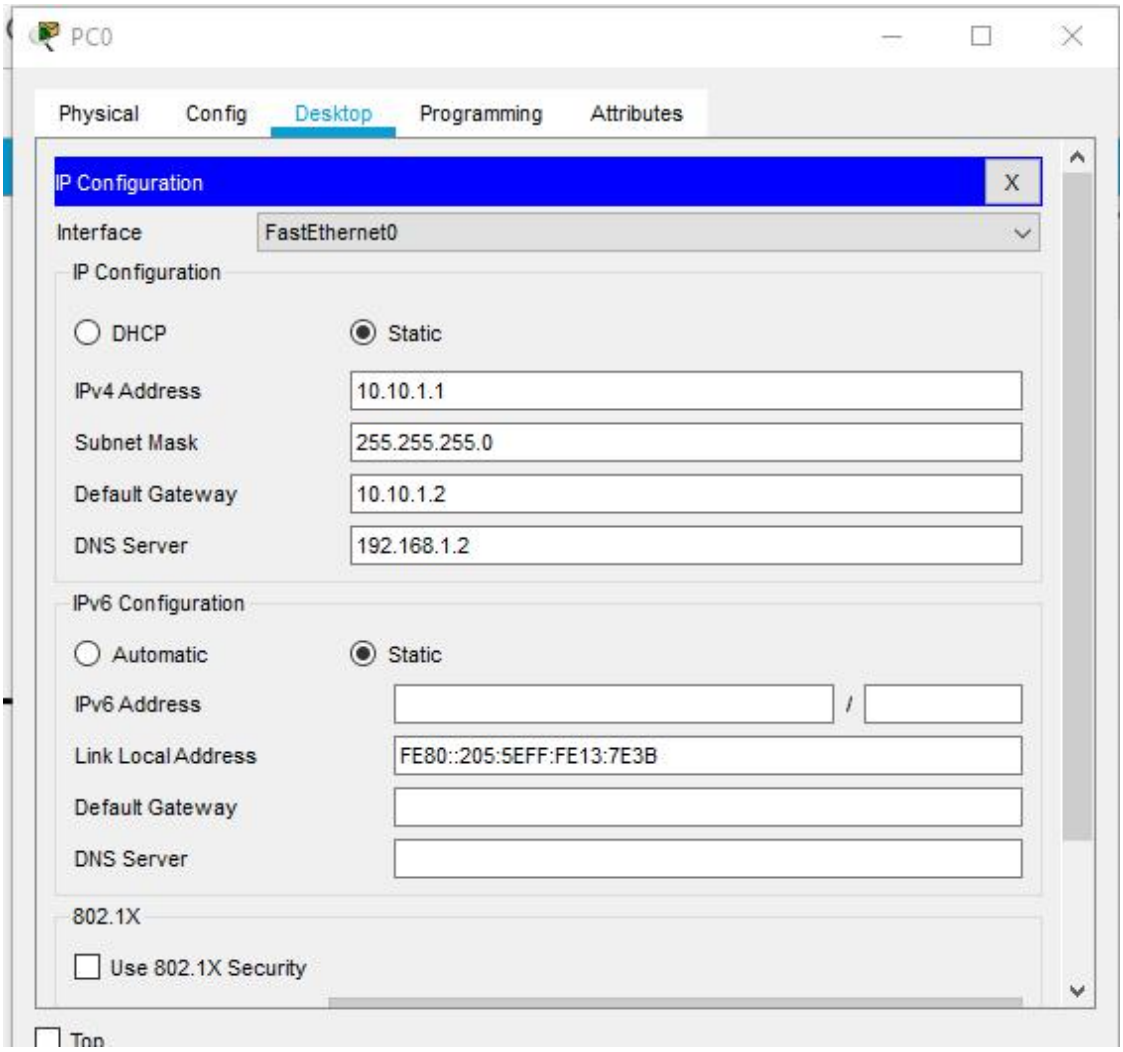
1. Firstly the topolgy was constructed and configured using the above details.
2. While configuing the DNS server (with the above information), a type-A record was also added :
   Record-type : Type-A
   Name : google.com (NAME OF THE DOMAIN)
   Address : IP address of web-server i.e. 192.168.2.2 (DOMAIN'S IP Address)
3. While configuring the Web Server (with the above information), the HTML page in the HTTP config information is checked and we can add information over there to see the output over there.

4. As the topology is created and all the devices are configured, we open the PC's Desktop on the cisco packet tracer and type the name of the domain to be looked for as "google.com".

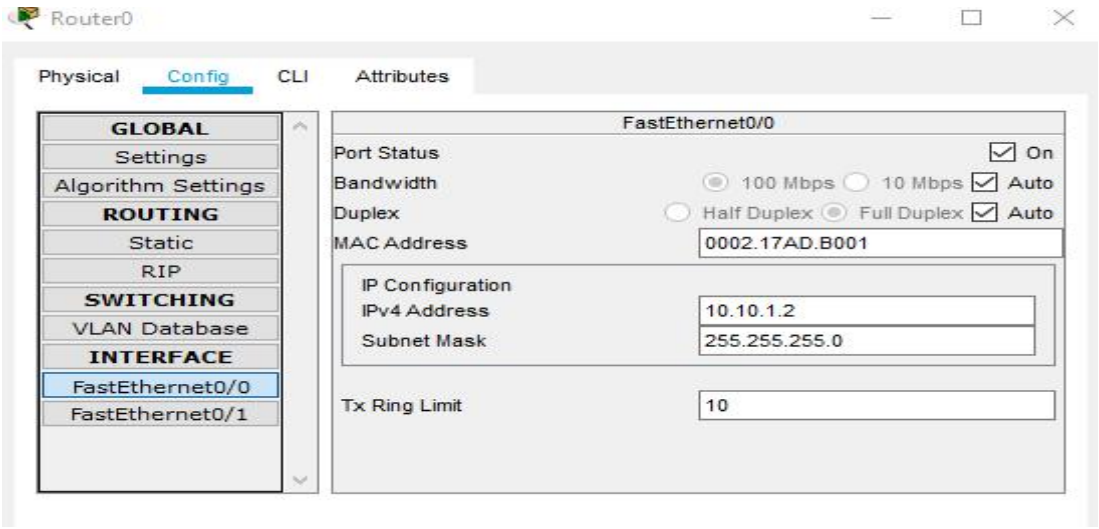
5. Now we open the packet tracer in th SIMULATION MODE and apply the filters on it fo capturing only the following protocols :
    a. Transmission Control Protocol
    b. Address Resolution Protocol
    c. Domain Name Service
    d. Hyper Text Transfer Protocol

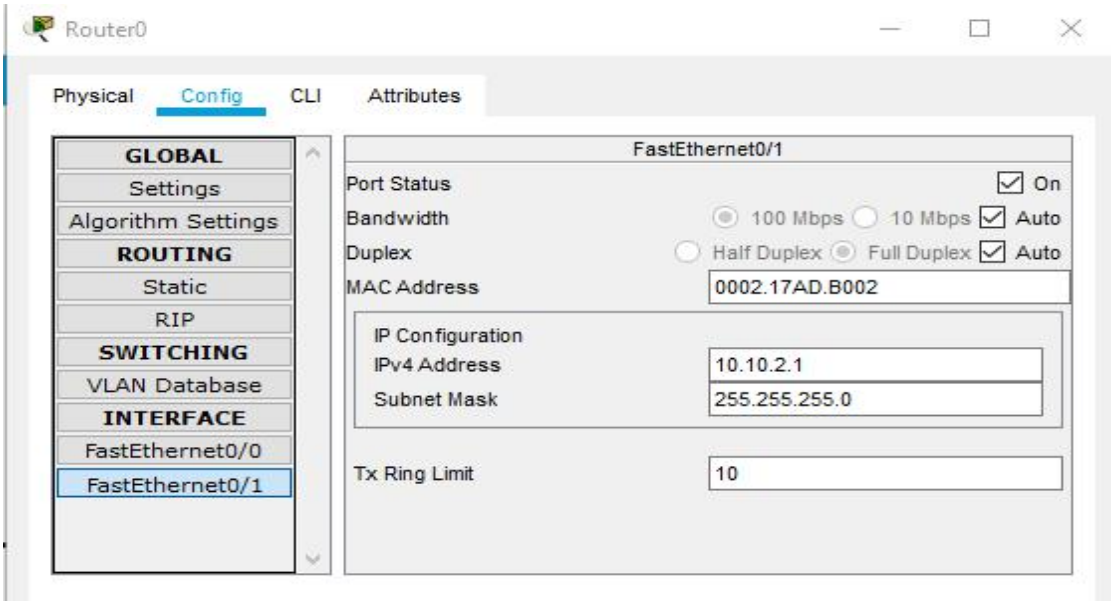
Now, on a proper configuration based topology, we achieve the web request from the web-server.

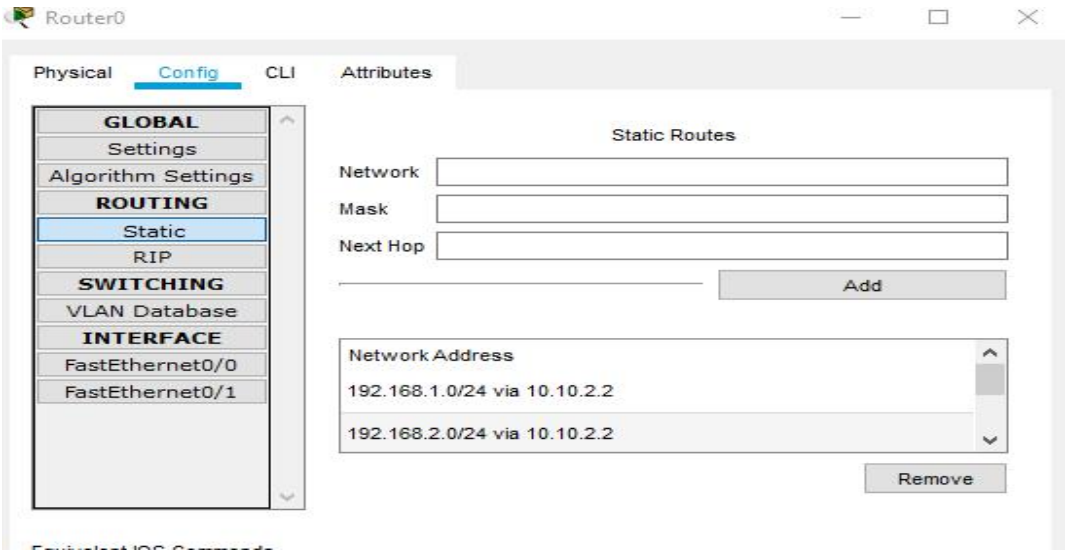
Pc0



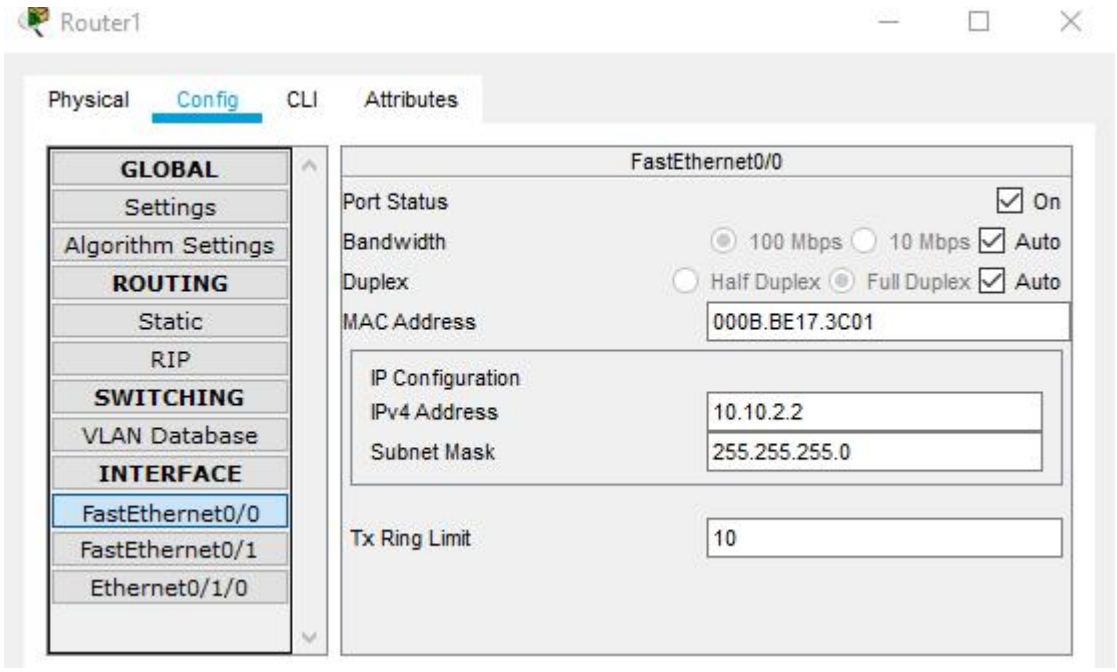
Router 0

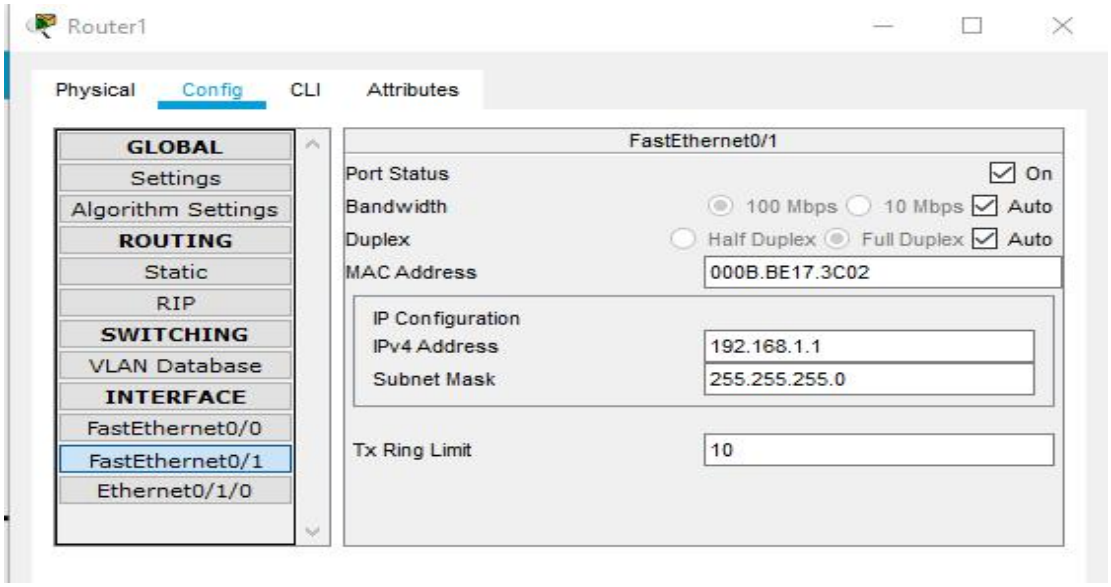

Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0002.17AD.B001
IP Configuration
IPv4 Address
10.10.1.2
Subnet Mask
255.255.255.0
Tx Ring Limit
10


Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
FastEthernet0/1
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0002.17AD.B002
IP Configuration
IPv4 Address
10.10.2.1
Subnet Mask
255.255.255.0
Tx Ring Limit
10


Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Static Routes
Network
Mask
Next Hop
Add
Network Address
192.168.1.0/24 via 10.10.2.2
192.168.2.0/24 via 10.10.2.2
Remove

Router 1


Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Ethernet0/1/0
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
000B.BE17.3C01
IP Configuration
IPv4 Address
10.10.2.2
Subnet Mask
255.255.255.0
Tx Ring Limit
10


Router1
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Attributes
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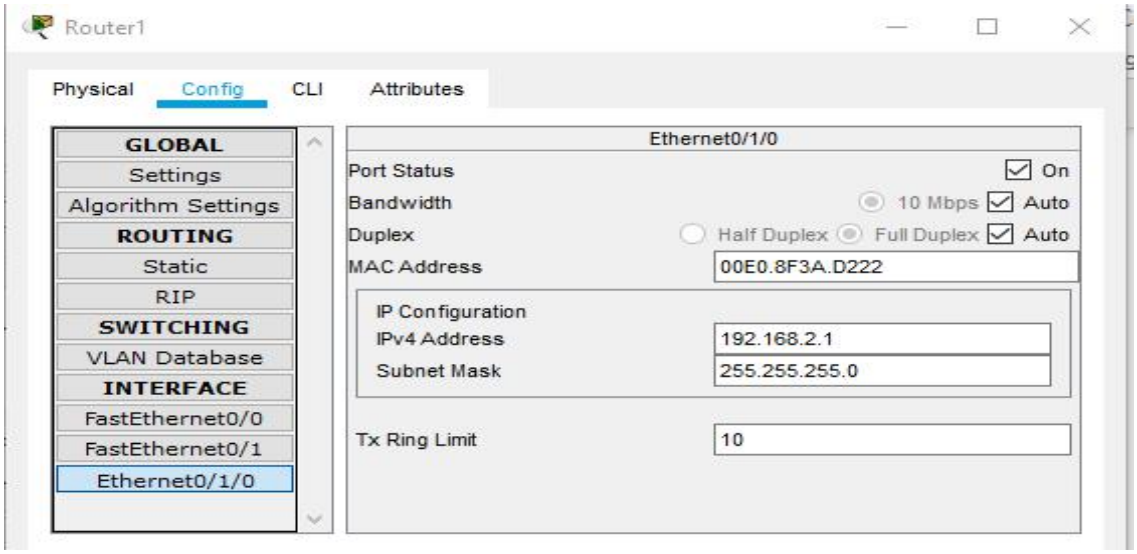
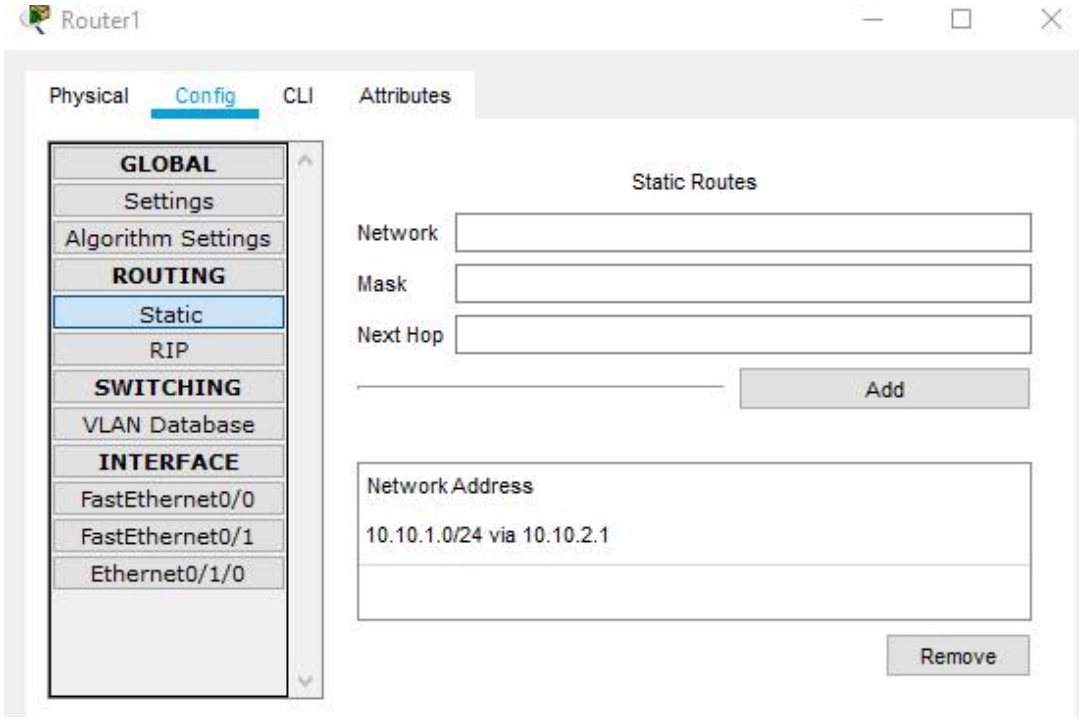
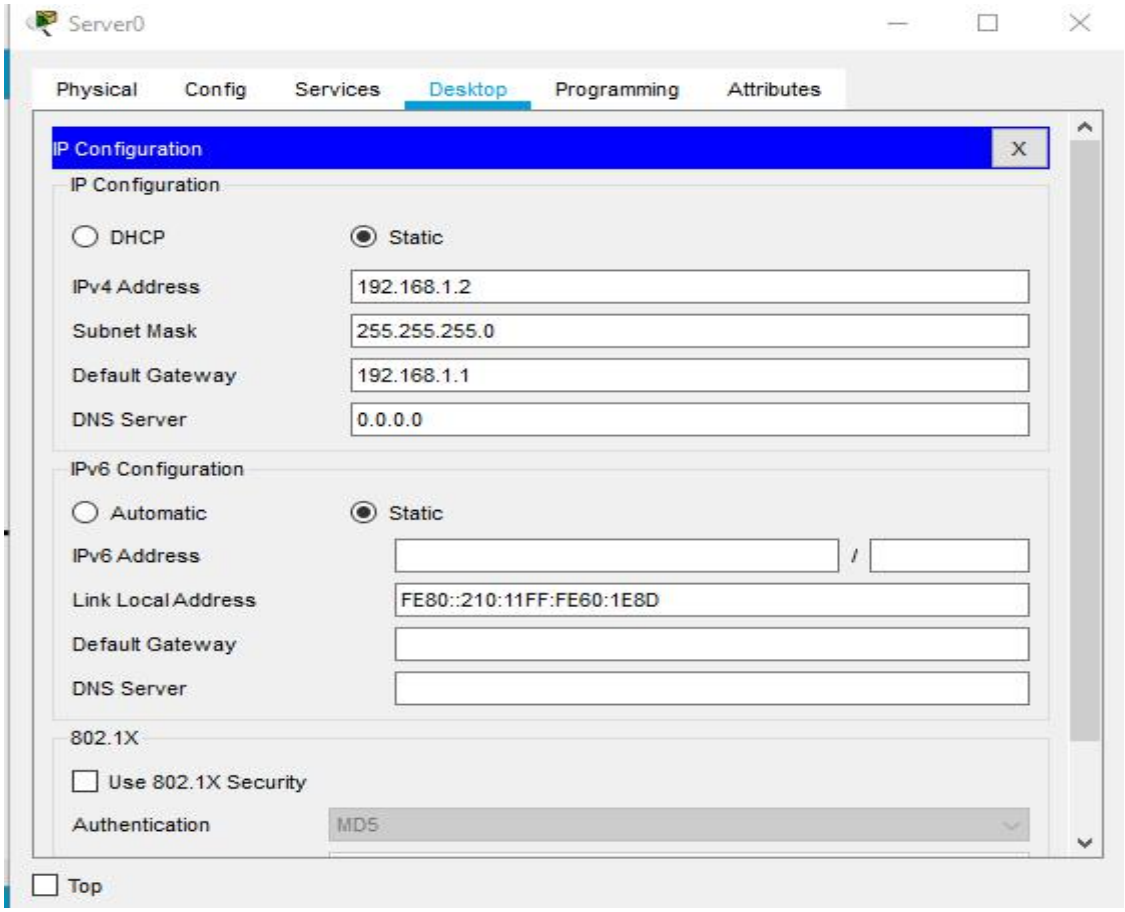
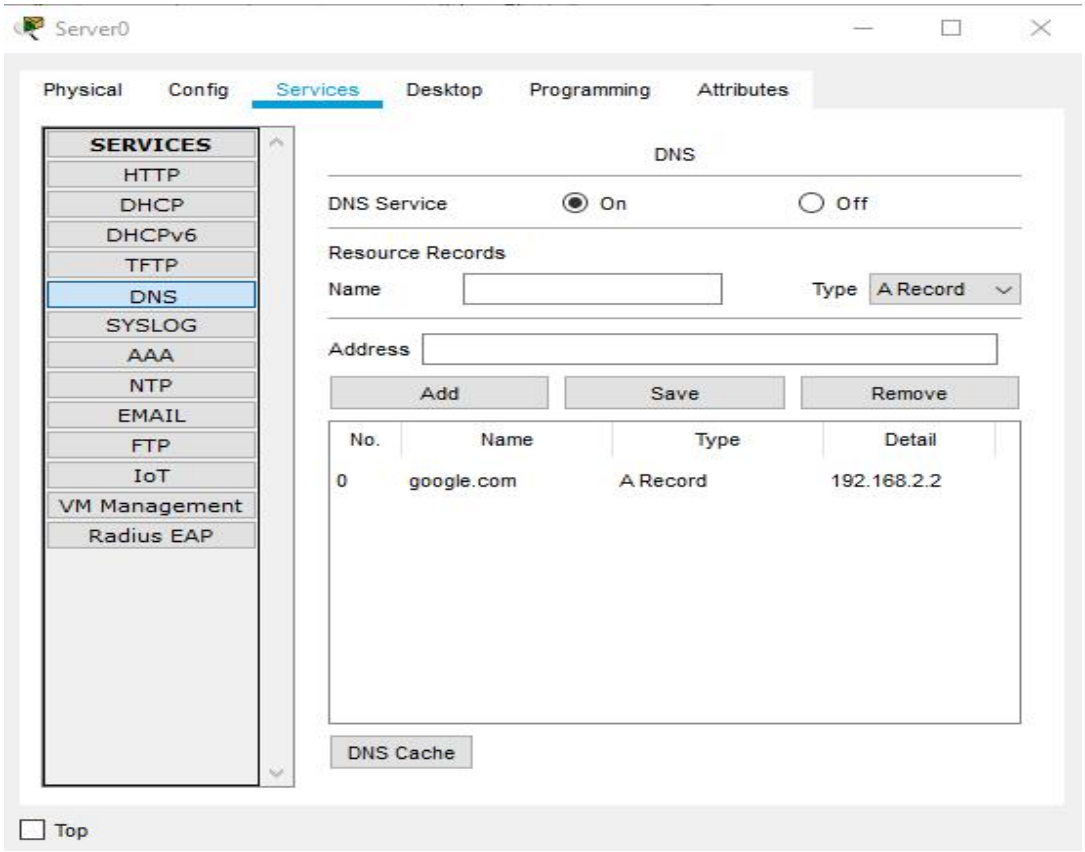
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Ethernet0/1/0
FastEthernet0/1
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
000B.BE17.3C02
IP Configuration
IPv4 Address
192.168.1.1
Subnet Mask
255.255.255.0
Tx Ring Limit
10


Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Ethernet0/1/0
Ethernet0/1/0
Port Status
On
Bandwidth
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
00E0.8F3A.D222
IP Configuration
IPv4 Address
192.168.2.1
Subnet Mask
255.255.255.0
Tx Ring Limit
10

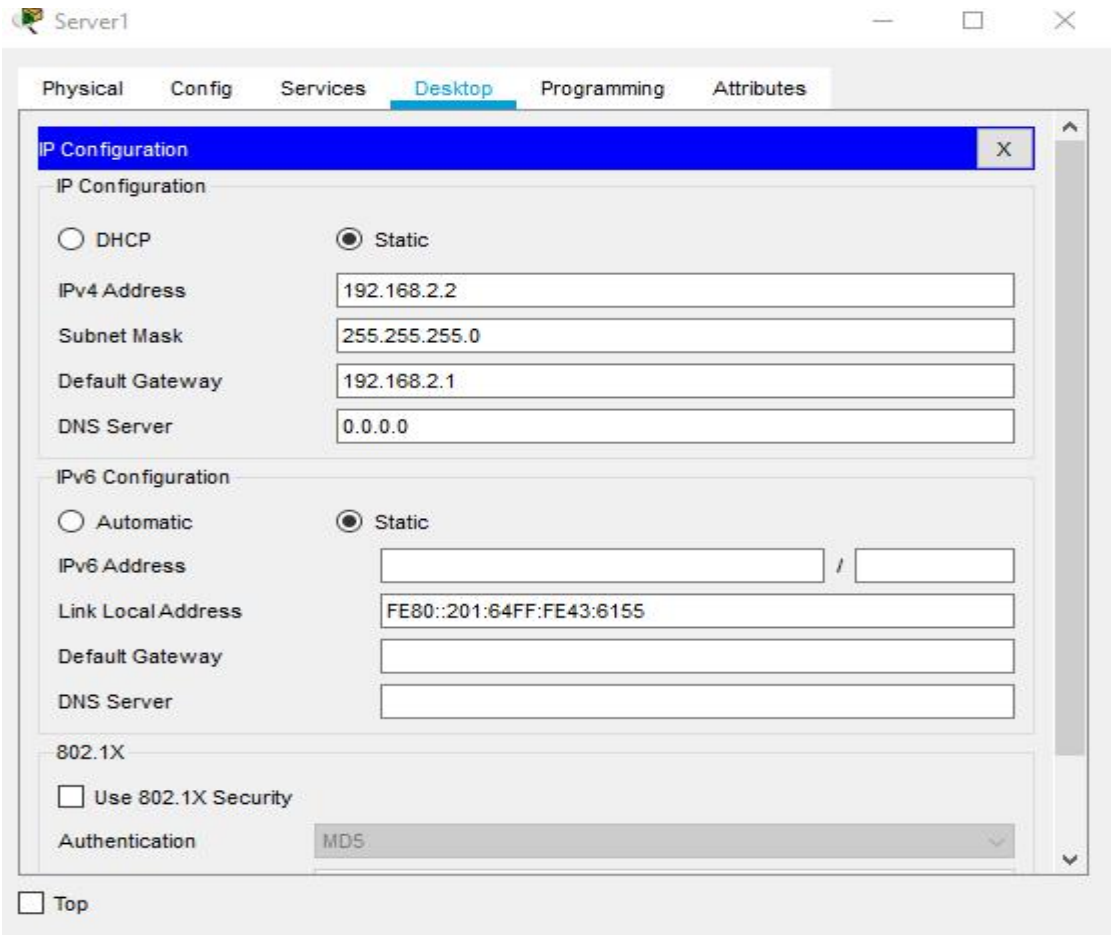

Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Ethernet0/1/0
Static Routes
Network
Mask
Next Hop
Add
Network Address
10.10.1.0/24 via 10.10.2.1
Remove

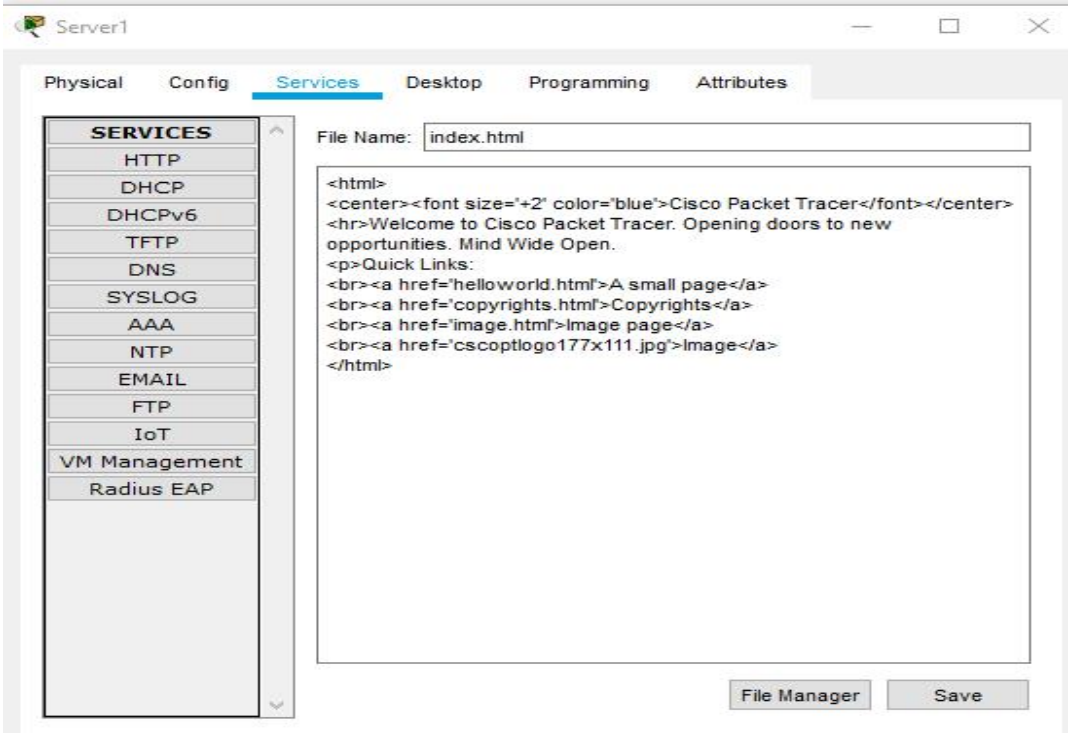
DNS SERVER


Server0
Physical
Config
Services
Desktop
Programming
Attributes
IP Configuration
IP Configuration
DHCP
Static
IPv4 Address
192.168.1.2
Subnet Mask
255.255.255.0
Default Gateway
192.168.1.1
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address
FE80::210:11FF:FE60:1E8D
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Top


Server0
Physical
Config
Services
Desktop
Programming
Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
DNS
DNS Service
On
Off
Resource Records
Name
Type
A Record
Address
Add
Save
Remove
No.
Name
Type
Detail
0
google.com
A Record
192.168.2.2
DNS Cache
Top

WEB SERVER


Server1
Physical
Config
Services
Desktop
Programming
Attributes
IP Configuration
X
IP Configuration
DHCP
Static
IPv4 Address
192.168.2.2
Subnet Mask
255.255.255.0
Default Gateway
192.168.2.1
DNS Server
0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
/
Link Local Address
FE80::201:64FF:FE43:6155
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Top

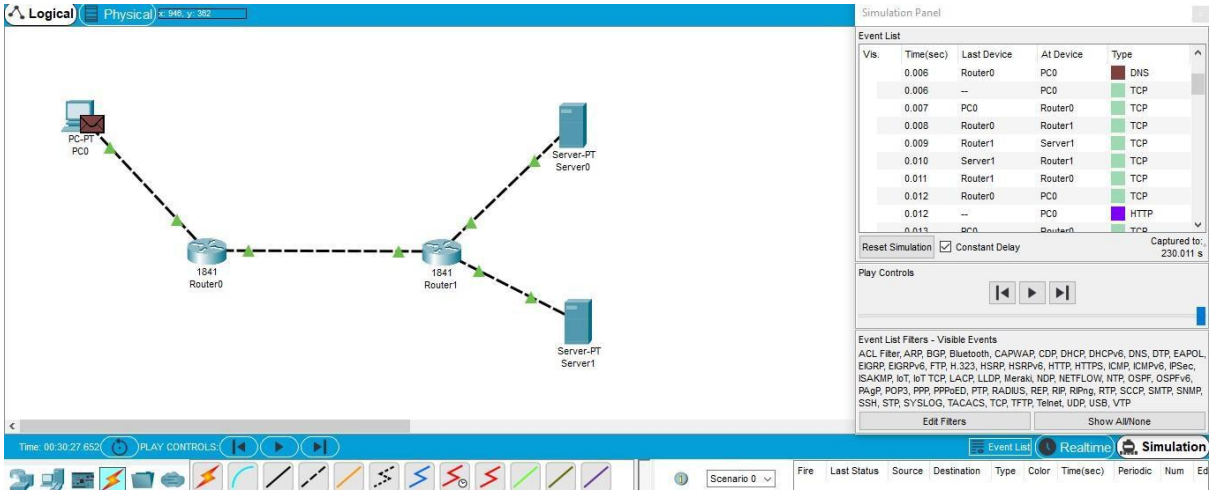

Server1
Physical
Config
Services
Desktop
Programming
Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
File Name:
index.html
<html>
Cisco Packet Tracer
<hr>Welcome to Cisco Packet Tracer. Opening doors to new opportunities. Mind Wide Open.
<p>Quick Links:

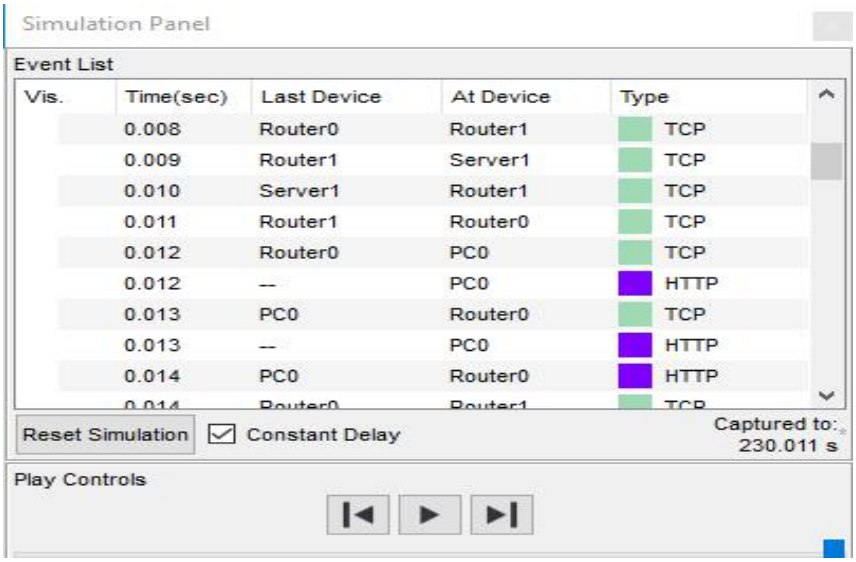
A small page

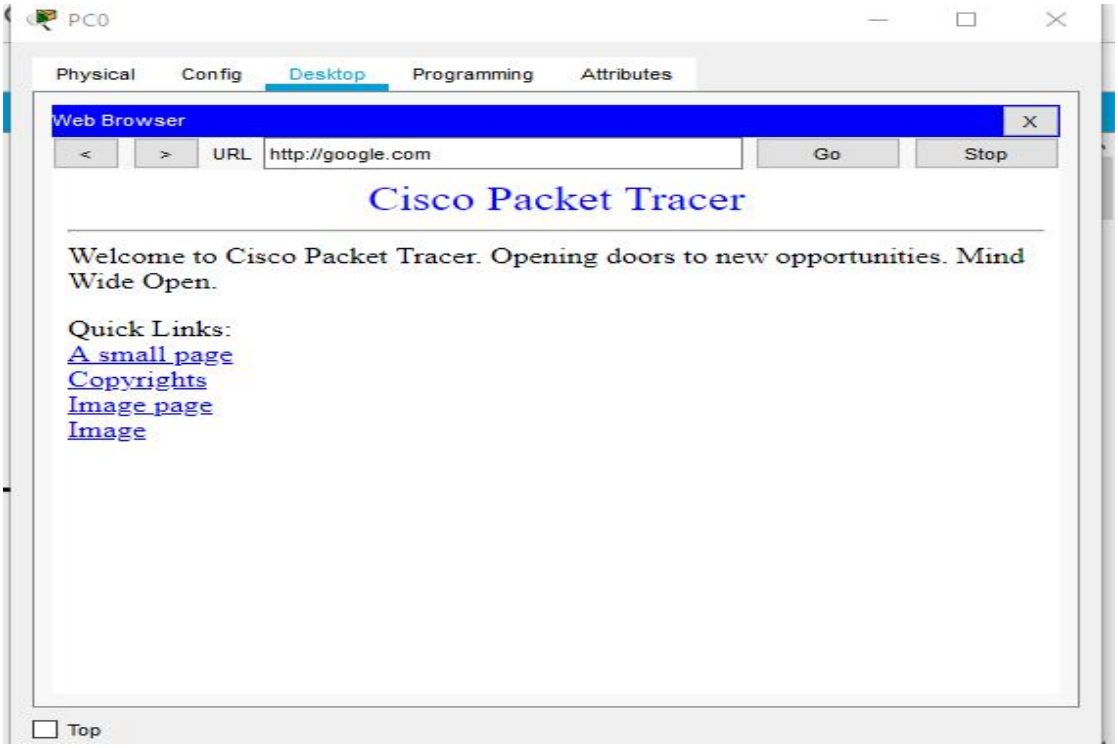
Copyrights

Image page

Image
</html>
File Manager
Save


Logical
Physical
PC-PT
PC0
Server-PT
Server0
1841
Router0
1841
Router1
Server-PT
Server1
Simulation Panel
Event List
Vis. Time(sec) Last Device At Device Type
0.006 Router0 PC0 DNS
0.006 -- PC0 TCP
0.007 PC0 Router0 TCP
0.008 Router0 Router1 TCP
0.009 Router1 Server1 TCP
0.010 Server1 Router1 TCP
0.011 Router1 Router0 TCP
0.012 Router0 PC0 TCP
0.012 -- PC0 HTTP
Reset Simulation
Constant Delay
Captured to: 230.011 s
Play Controls
Event List Filters - Visible Events
Edit Filters
Show All/None
Realtime
Simulation


Simulation Panel
Event List
Vis. Time(sec) Last Device At Device Type
0.008 Router0 Router1 TCP
0.009 Router1 Server1 TCP
0.010 Server1 Router1 TCP
0.011 Router1 Router0 TCP
0.012 Router0 PC0 TCP
0.012 -- PC0 HTTP
0.013 PC0 Router0 TCP
0.013 -- PC0 HTTP
0.014 PC0 Router0 HTTP
Reset Simulation
Constant Delay
Captured to: 230.011 s
Play Controls


PC0
Physical
Config
Desktop
Programming
Attributes
Web Browser
URL
http://google.com
Go
Stop
Cisco Packet Tracer
Welcome to Cisco Packet Tracer. Opening doors to new opportunities. Mind Wide Open.
Quick Links:
A small page
Copyrights
Image page
Image
Top

EXCERCISE 2 : Connect DNS Server and Web Sever for the blow toplogy and transmit the packets.