CompTIA® Network+ Lab Exercise : Arranging The Color Codes Used In The Tia/eia 568a Wiring Standard

examguides.com/Netplus-labsims/netplus-labsim-1.htm

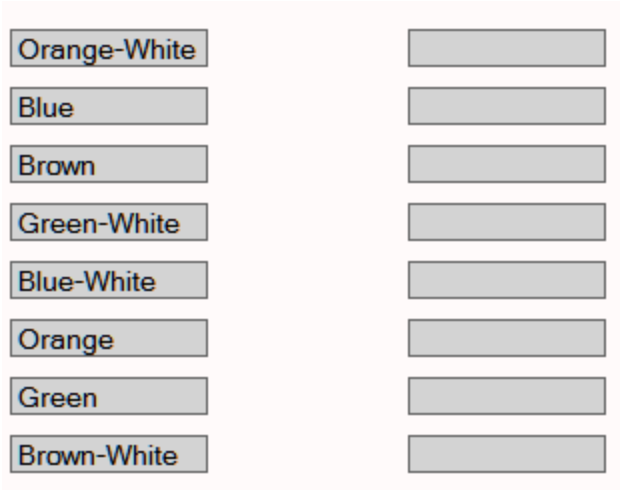
1. Arrange the color codes used in the TIA/EIA 568A wiring standard

Description: This lab exercise helps to identify the color code of the TIA/EIA 568A connector.

Instructions:

1. The following are the shuffled color codes of TIA/EIA 568A connector

2. Arrange them in a proper sequence by dragging the text from left to a empty box given on the right



Explanation:

Correct Order is given on Right:

There are two major Unshielded Twisted Pair Cable wiring standards used widely in networking industry. Telecommunications Industry Association (TIA)/Electronic Industries Alliance (EIA) developed the TIA/EIA 568A & TIA/EIA 568B standards for Unshielded Twisted Pair wiring.

TIA/EIA 568A and TIA/EIA-568B standards determine the order of the wires placed in theRJ45 connector.

Functionally, there is no difference between TIA/EIA 568A and TIA/EIA-568B standards. Only the difference is that the position of Green and Orange wires are switched.

If you terminate the RJ45 jacks at both ends of a patch cable with same standard (either TIA/EIA 568A on both sides or TIA/EIA 568B on both sides), you will get a Straight-through cable. If you terminate RJ45 jacks at both ends with different TIA/EIA 568 standards (one side TIA/EIA 568A and other side TIA/EIA 568B) you will get a Crossover cable.

Memorizing UTP cabling pinouts

First of all, we know that UTP cabling is composed of 8 wires, grouped in 4 pairs. Each wire has a different color. Some have just one color, and others have a color together with white. So, let's take this, as it's the first thing in common between both standards.

(Abbreviations: G=Green, O=Orange, W=White, Bl=Blue, Br=Brown)

As we can see, "odd wires" (cables whose position is an odd number) always have two colors, that is, White + Green/Orange/Blue/Brown. If you have to memorize, first try to remember this fact. Odd wires always have White + some color.

T568A	T568B
1 = ?/W	1 = ?/W
2 =	2 =
3 = ?/W	3 =?/W
4=	4 =
5 =Bl/W	5 = Bl/W
6 =	6 =
7 = Br/W	7 = Br/W
8 =	8 =

The question marks (?) were put there because these pins will have different colors in the two standards. They will be introduced later in this text.

For the wires left, the "even wires", there's only one color. These are not shown in the previous table. Even wires always have one color

CompTIA® Network+ Lab Exercise : Identifying The Netstat Command From The Following Output

examguides.com/Netplus-labsims/netplus-labsim-2.htm

2. Identify the netstat command from the following output

Description: This lab exercise helps you to identify a CLI troubleshooting command.

Instructions:

The figure below displays an output from netstat command.

Identify the command that results in the displayed output.

Note: Click on appropriate command option to select the same. Use Reset button to reset the answer.

Explanation:

In this lab, the query used is netstat -r. The output displayed by using netstat -r command is shown in the figure below:

Netstat: The netstat command displays the protocol statistics and current TCP/IP connections on the local system. Used without any switches, the netstat command shows the active connections for all outbound TCP/IP connections. In addition, several switches are

available that change the type of informationnetstat displays. Table below shows the various switches available for the netstat utility.

Switch	Description
-a	Displays the current connections and listening ports
-e	Displays Ethernet statistics
-n	Lists addresses and port numbers in numeric form
-p	Shows connections for the specified protocol
-r	Shows the routing table
-s	Lists per-protocol statistics
interval	Specifies how long to wait before redisplaying statistics

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CompTIA® Network+ Lab Exercise : Configuring Ip Address, Subnet Mask, Default Gateway Statically On A Windows Client

examguides.com/Netplus-labsims/netplus-labsim-3.htm

3. Configuring IP address, subnet mask, default gateway statically on a Windows client

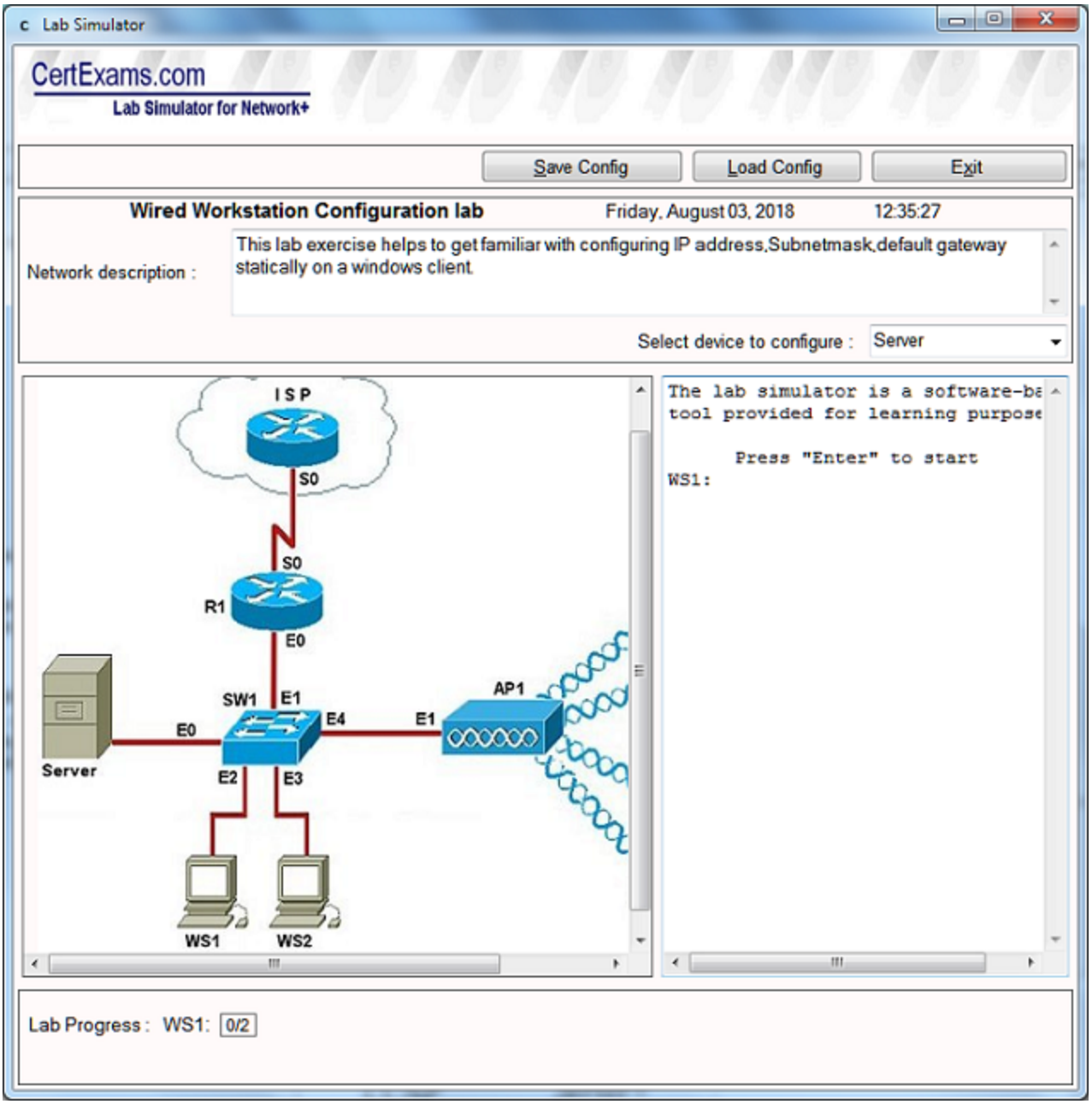
Description: Configure IP address, subnet mask, default gateway statically on Windows client workstation WS1 with the following IPv4 configuration settings:

IP address: 192.168.1.3

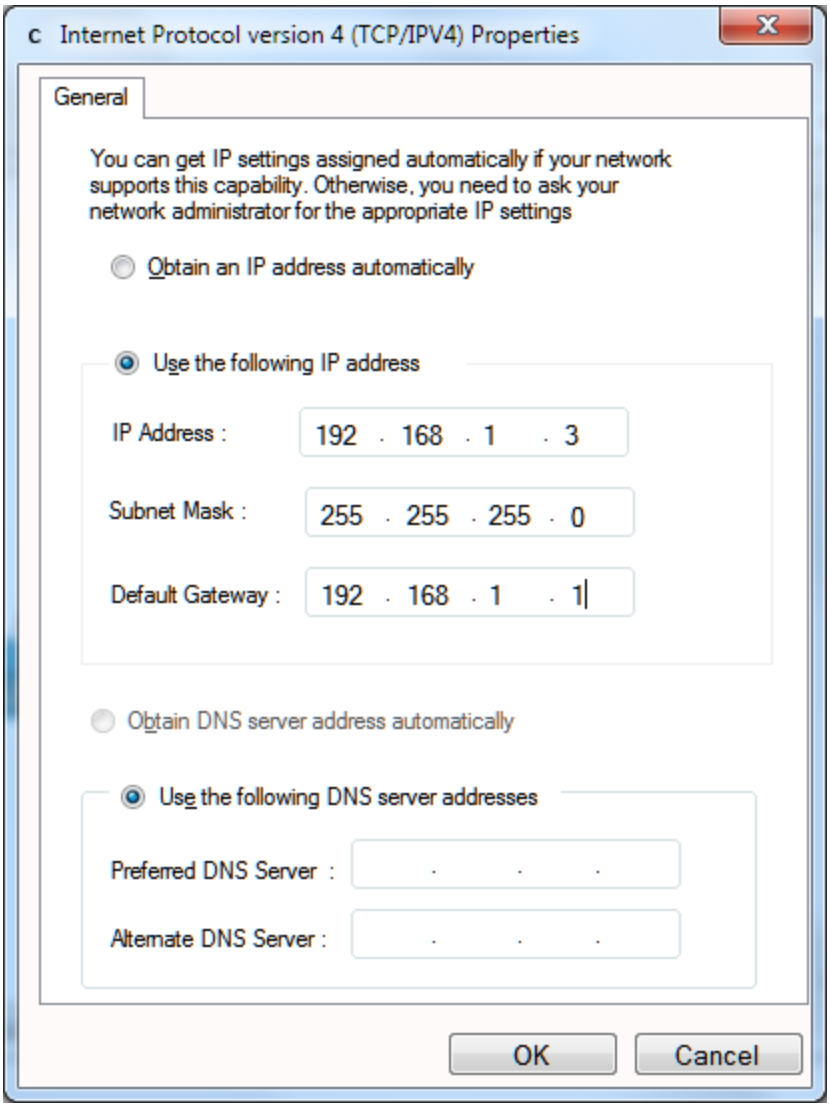
Subnet mask: 255.255.255.0

Default gateway: 192.168.1.1

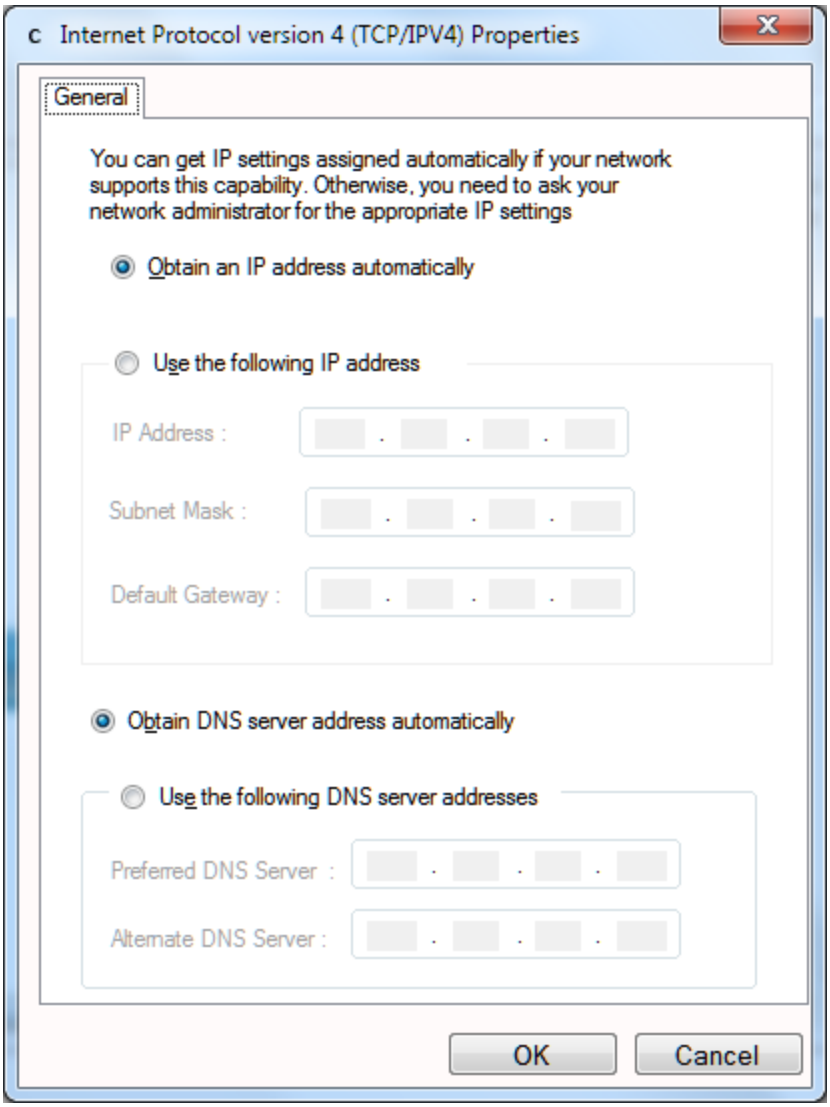
Instructions:



1. Click on WS1 in the network diagram this will open Windows Networking dialog box.



2. Click the option button "Use the following IP address" and configure the IP address as 192.168.1.3, subnet mask 255.255.255.0 and default gateway as 192.168.1.1 and click OK button



Notes: *IPv4 configuration parameters at the minimum include IP address and subnet mask. If you want to communicate outside of the local area network (LAN), you need to configure default gateway also. Additionally, if you want to communicate using hostnames or domain names (for example when accessing the Internet), you need to configure DNS Server IP addresses also.*

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CompTIA® Network+ Lab Exercise : Configuring A Dhcp Server For Offering Dhcp Parameters To A Dhcp Client Computer

examguides.com/Netplus-labsims/netplus-labsim-4.htm

4. Configuring a DHCP server for offering DHCP parameters to a DHCP client computer

Your task is to configure DHCP server (Server) for the following:

Server Network IP Address:

Server IP address: 192.168.1.2

Subnet mask: 255.255.255.0

Default Gateway: 192.168.1.1

DHCP Configuration parameters:

IP address range: 192.168.1.3 to 192.168.1.254

Subnet mask: 255.255.255.0

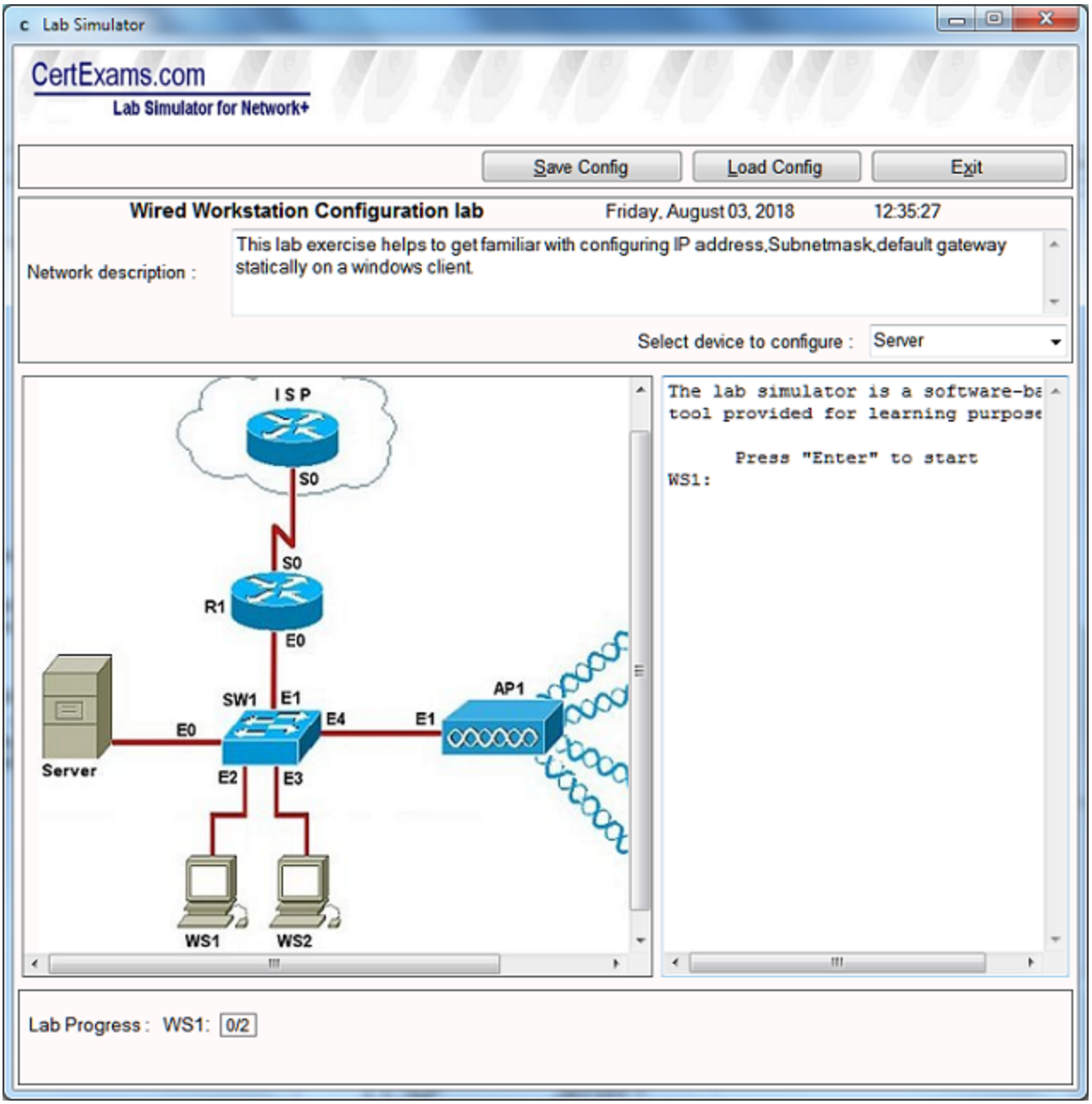
Default Gateway: 192.168.1.1

DNS Primary: 8.8.8.8

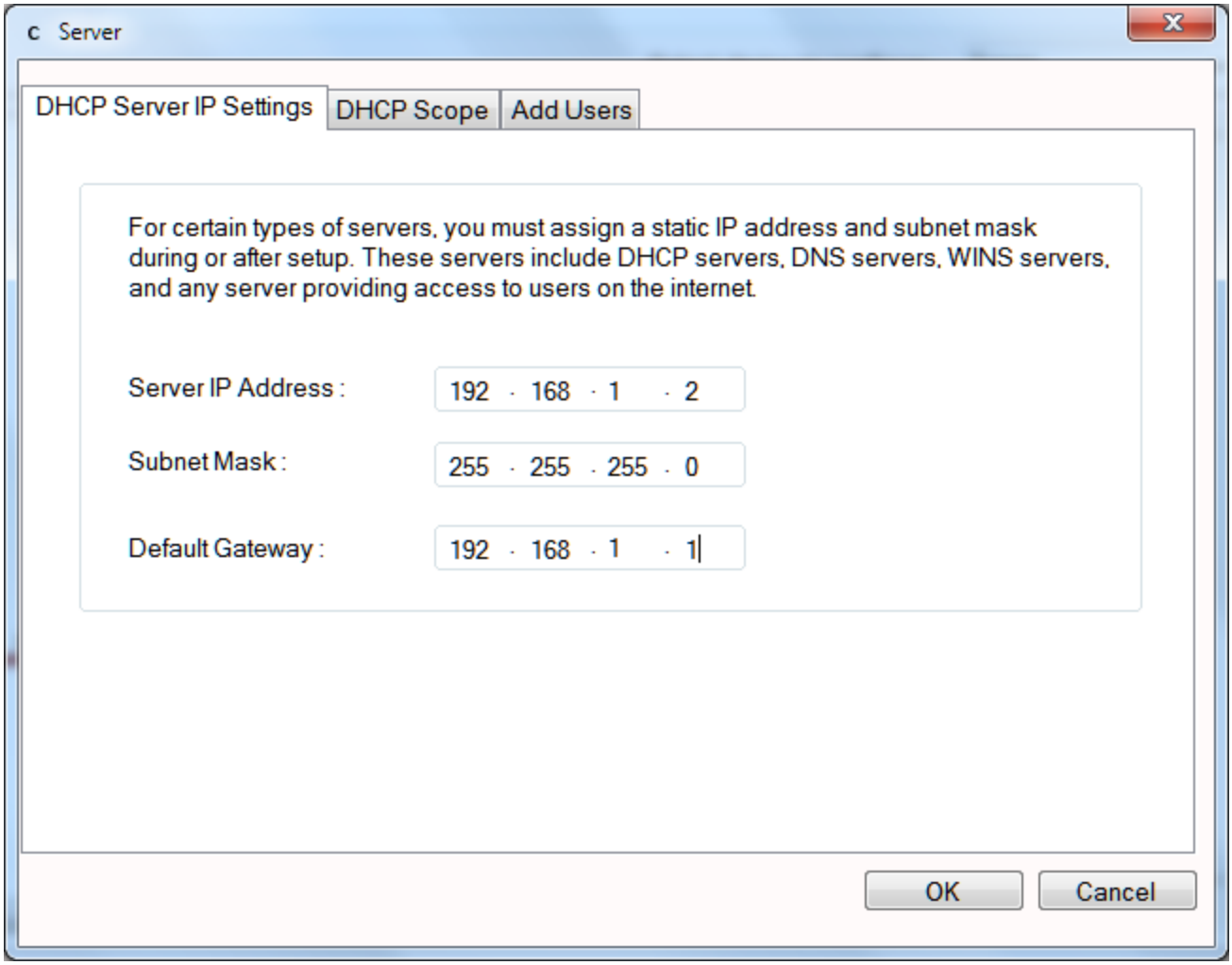
DNS Secondary: 8.8.4.4

Instructions:

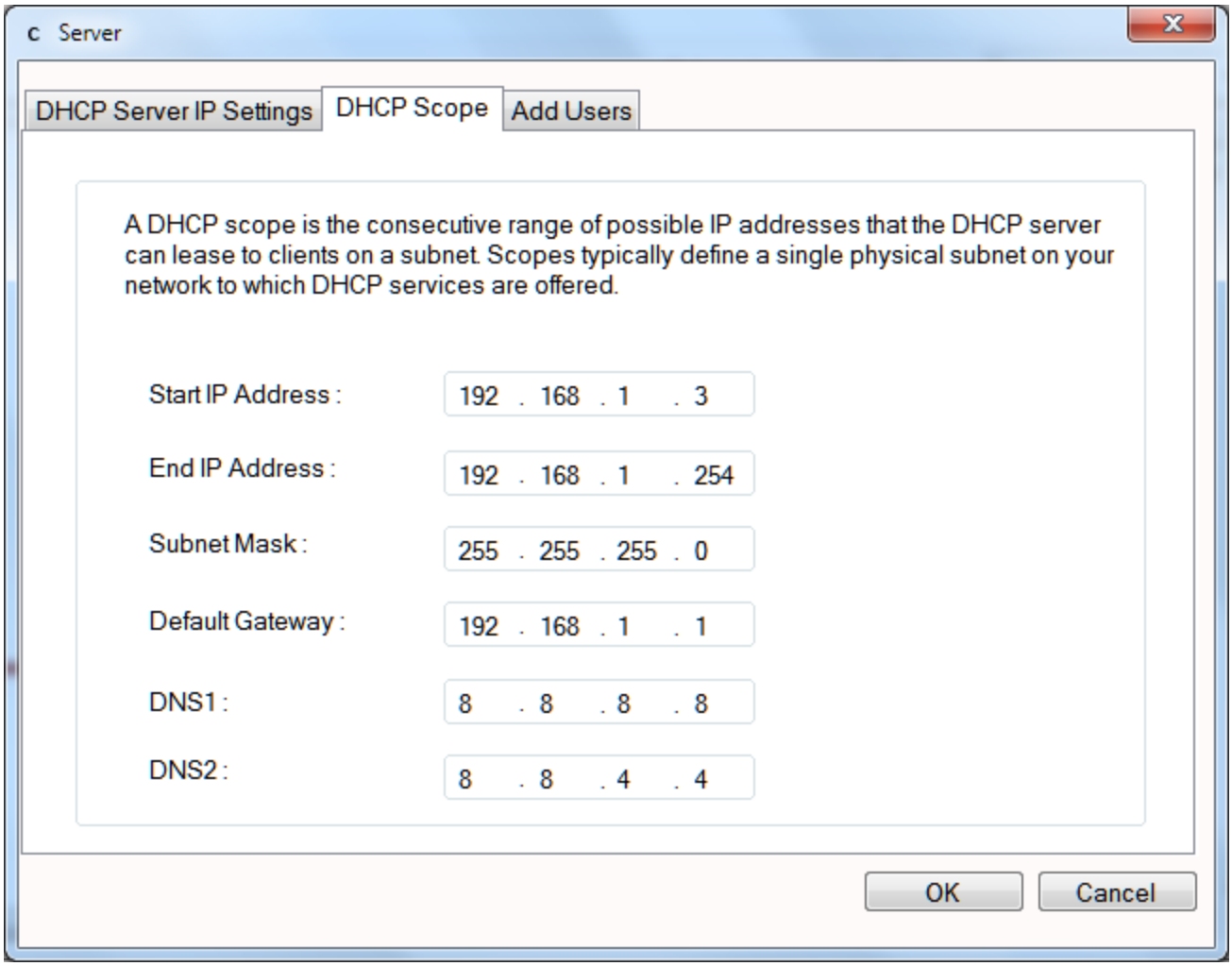
1. Click on Server in the network diagram this will open Windows Networking dialog box.



2. Configure IP address, subnet mask and default gateway on the Server with 192.168.1.2, 255.255.255.0, and 192.168.1.1 respectively in DHCP Server IP settings tab

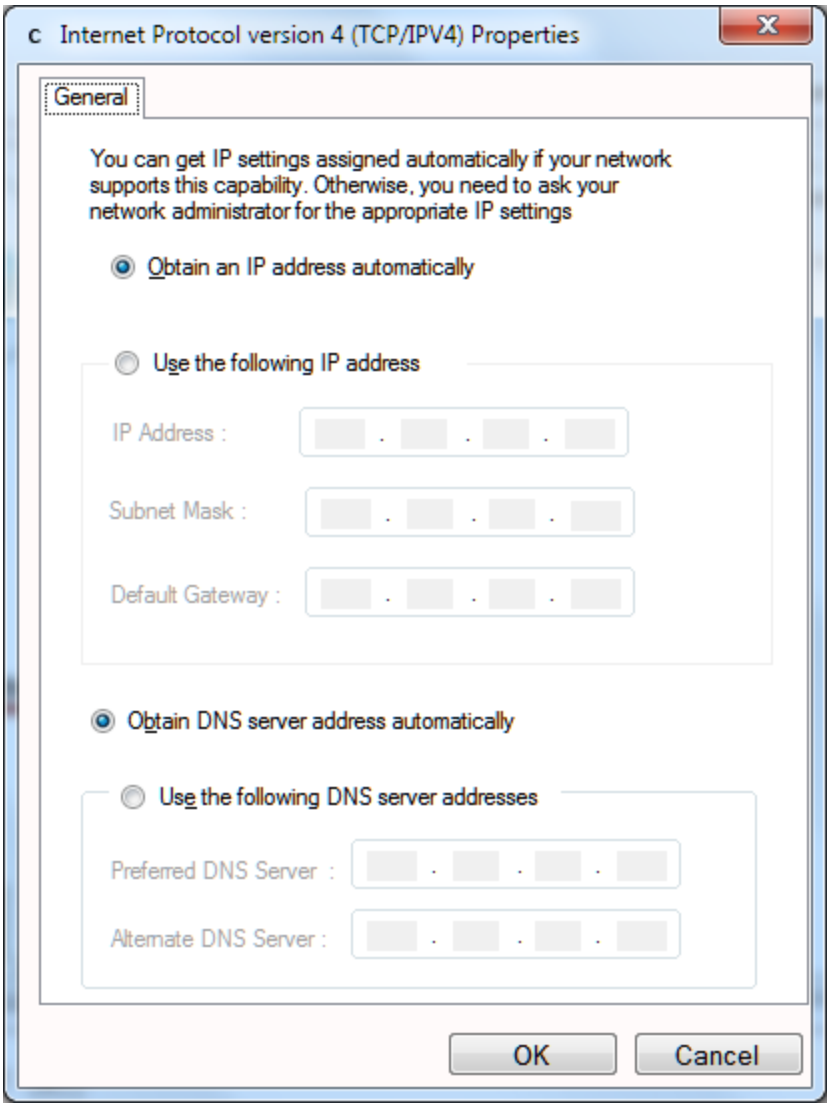


3. Click on DHCP scope tab and enter the Start IP address range 192.168.1.3 and End IP address as 192.168.1.254 , Subnet Mask 255.255.255.0 , Default-gateway 192.168.1.1 , DNS Primary as 8.8.8.8 and 8.8.4.4 for DNS Secondary.

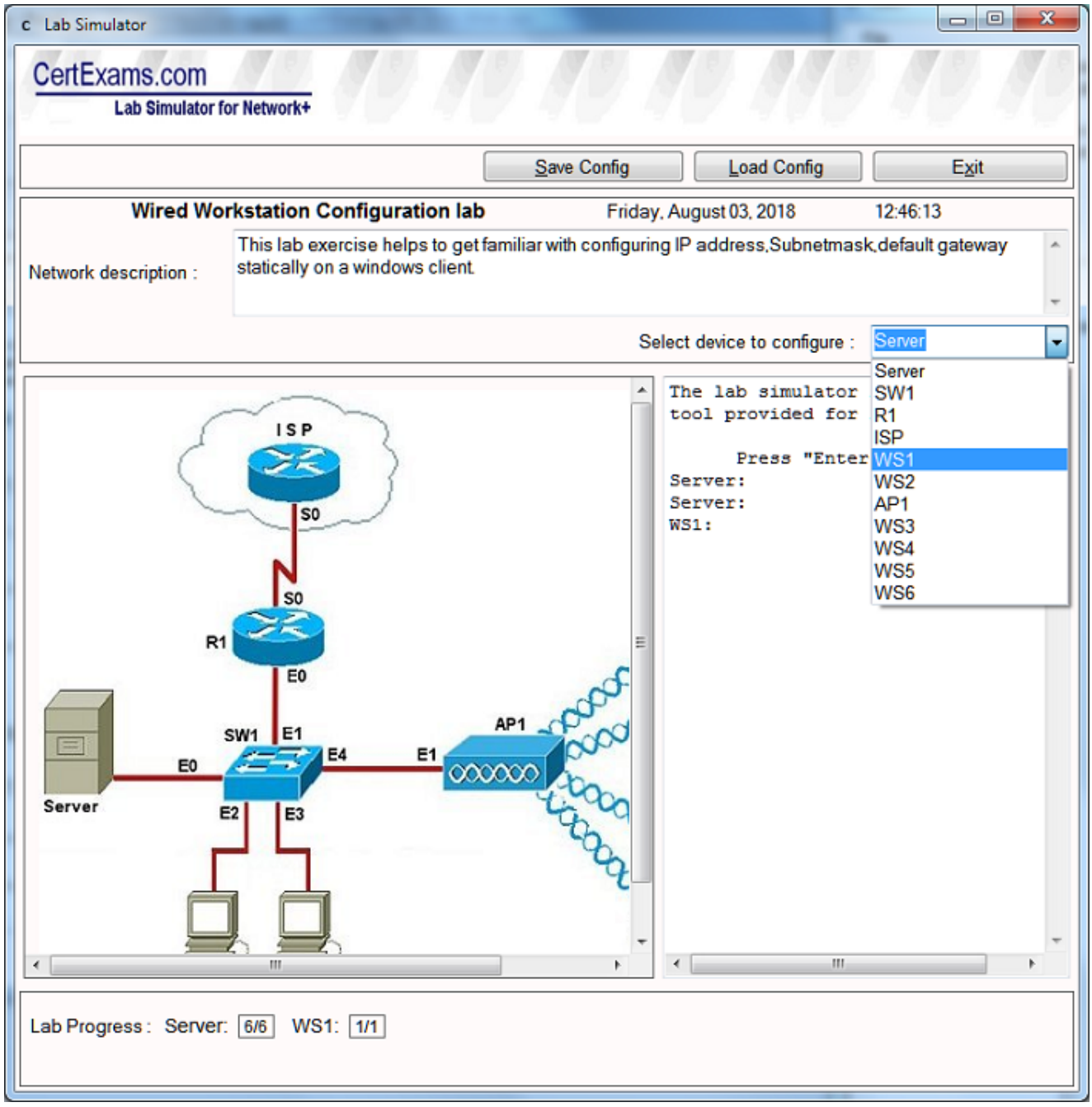


4. Click OK button

5. Click on WS1 this will open Windows Networking dialog box. Click on "Obtain IP Address automatically" option button (if it has not selected already) and click OK button.



6. Select WS1 from "Select device to configure" drop down and issue command "ipconfig /all". You will see that IP address, subnet mask, and default gateway, DNS server address assigned.




```
WS1:ipconfig /all
Ethernet adapter Local Area Connection:
Host Name .....................: WS1
Connection-specific DNS Suffix.:
Description ...................: Wired Network Adapter
Physical Address ..............: 00A0.c914.f5c5
DHCP Enabled ..................: Yes
IPv4 Address ..................: 192.168.1.3
Subnet Mask ...................: 255.255.255.0
Default Gateway ...............: 192.168.1.1
DHCP Server ...................: 192.168.1.2
DNS Server1 ...................: 8.8.8.8
DNS Server2 ...................: 8.8.4.4
```

Notes: *The DNS server itself requires an IP address, and subnet mask, at the minimum, to be addressable in the network. Therefore, you need to set these IP settings first. Also, note that the IP settings for DNS server must be configured statically. It cannot obtain it's own IP address from another DHCP server. Next, you configure the DHCP parameters that need to be passed on to the DHCP client computers as and when required by the client computers. Usually, DHCP will be able to pass several other parameters, but most widely used options are given here.*

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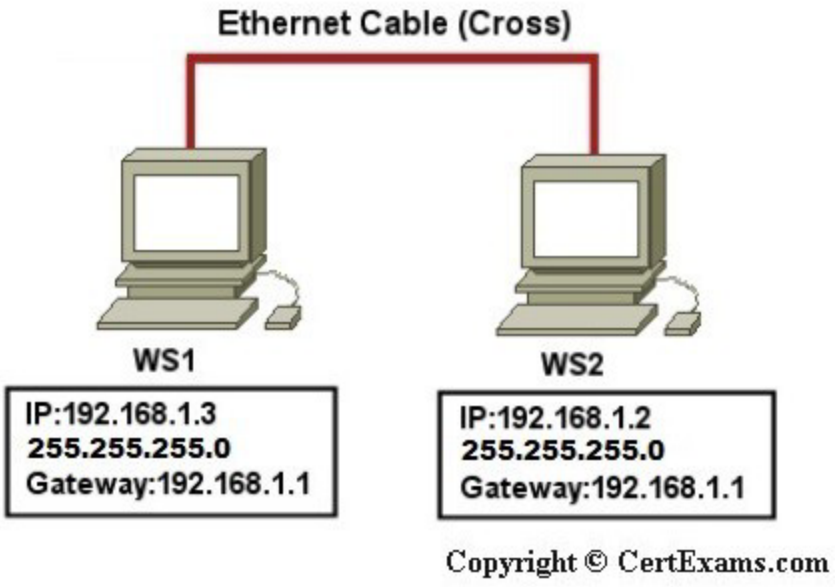
CompTIA® Network+ Lab Exercise : Troubleshooting PC-to-PC communication

examguides.com/Netplus-labsims/netplus-labsim-5.htm

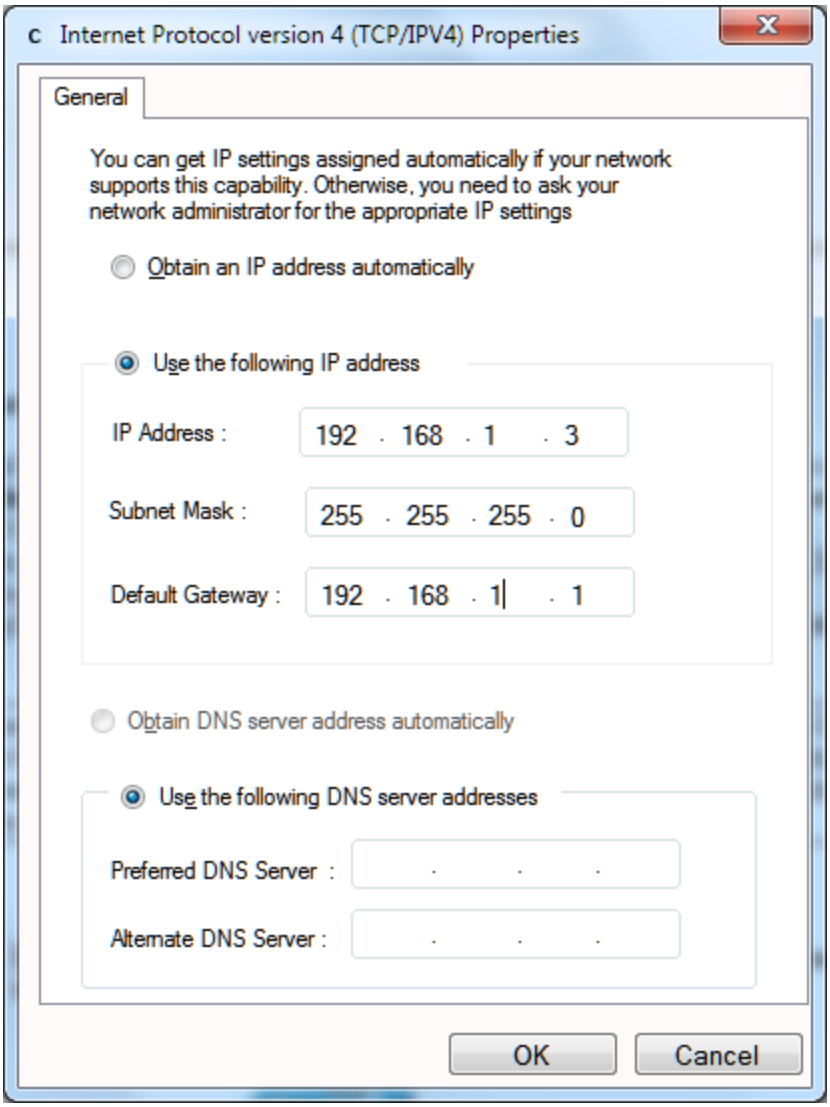
5. Troubleshooting PC-to-PC communication

Network Diagram :

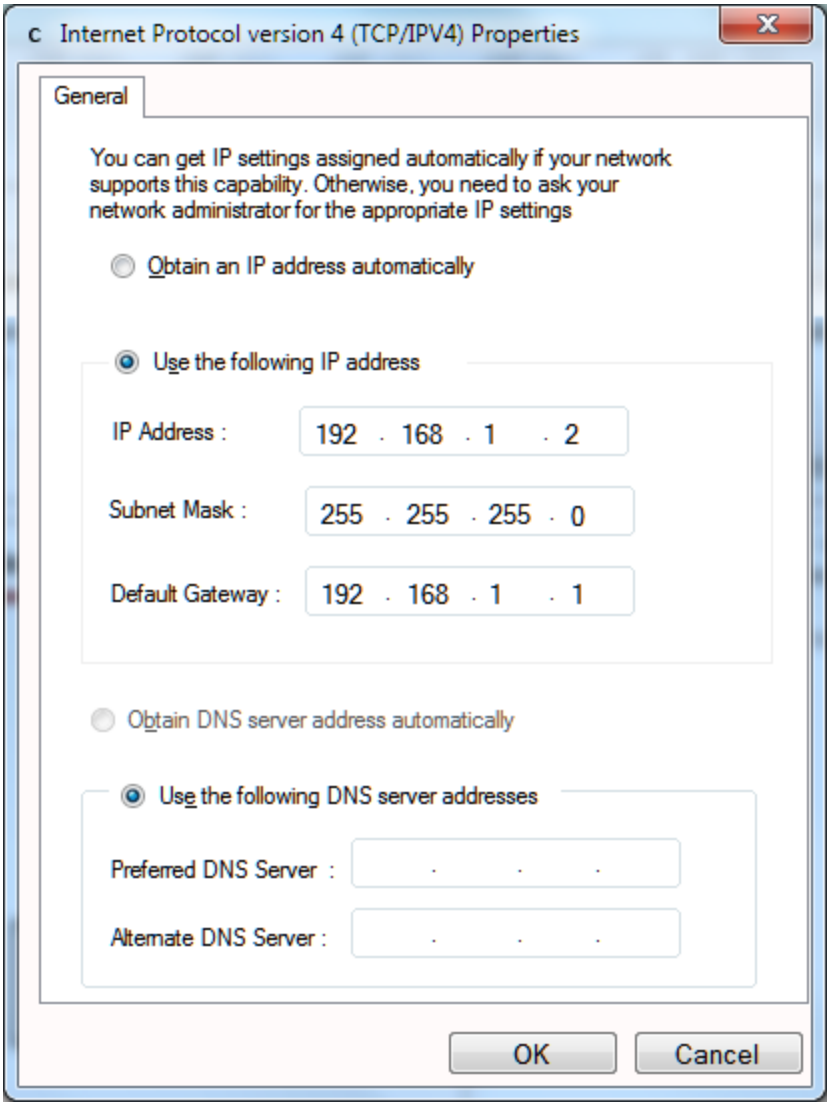


Instructions:

1.Click WS1 from network diagram and in WS1 configuration window click the option button "Use the following IP Address" and configure IP address as 192.168.1.3 , Subnet mask 255.255.255.0 and default-gateway 192.168.1.1 and click OK button.



2. Next, click on WS2, and configure IP address 192.168.1.2, Subnet mask 255.255.255.0 and default-gateway 192.168.1.1 and click OK button.



3. Ping from WS1 to WS2. It should be successful for verifying proper configuration.

```
WS1:ping WS2
Type escape sequence to abort.
Sending 5,100-byte ICMP Echos to  192.168.1.2 ,
Timeout is 2 seconds:
 !!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 6/6/6 ms
```

Notes: *Two workstations or client PC can communicate with each other using a Cross Cable. Note that a straight Ethernet cable is used for connecting a workstation (or a host) to a Switch or Hub, whereas a cross Ethernet cable is used for connecting a host to host or a switch to switch or workstation to workstation directly.*

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CompTIA® Network+ Lab Exercise : Configuring Wep On Client Computers In Wireless Network Environment

examguides.com/Netplus-labsims/netplus-labsim-6.htm

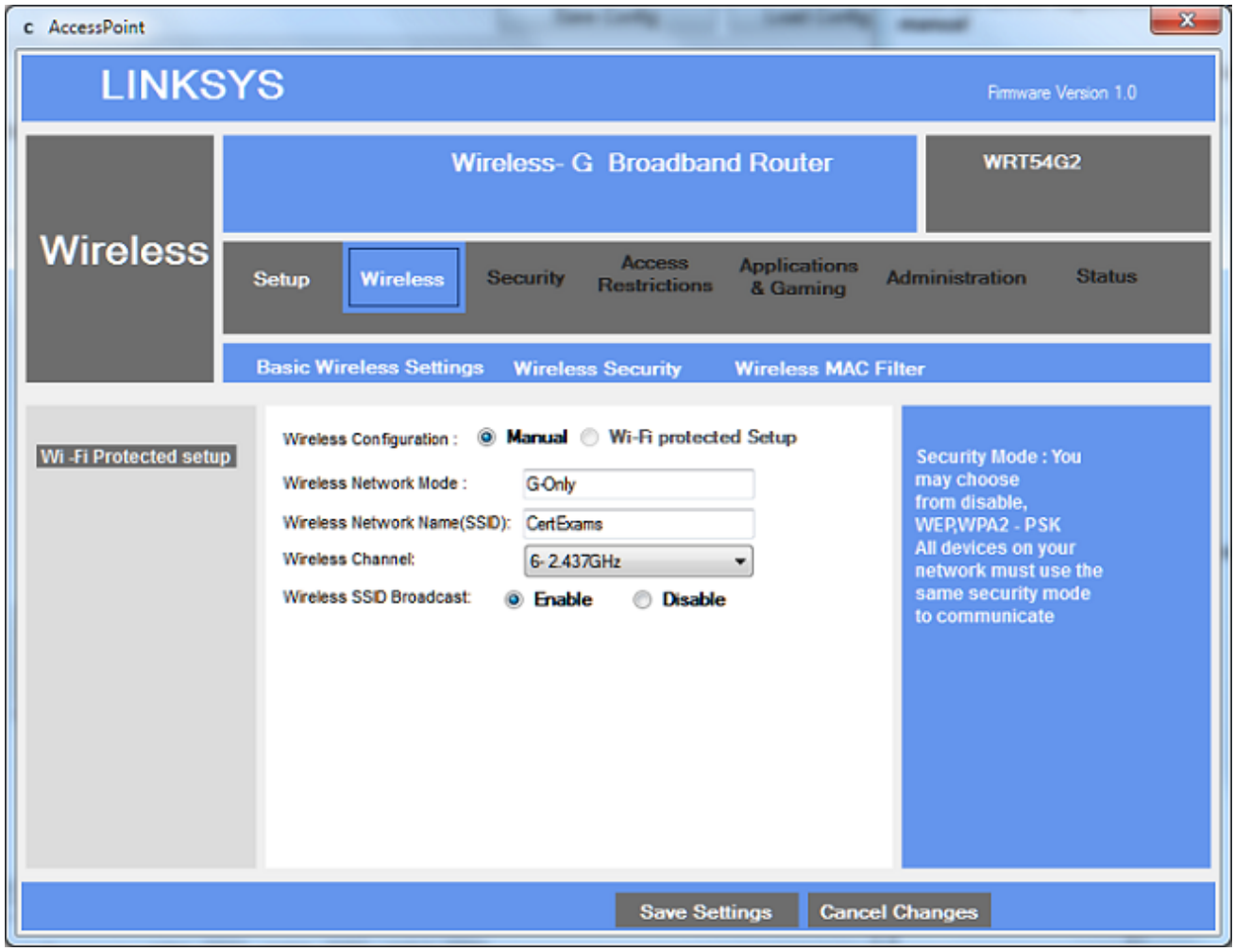
6. Configuring WEP on client computers in wireless network environment

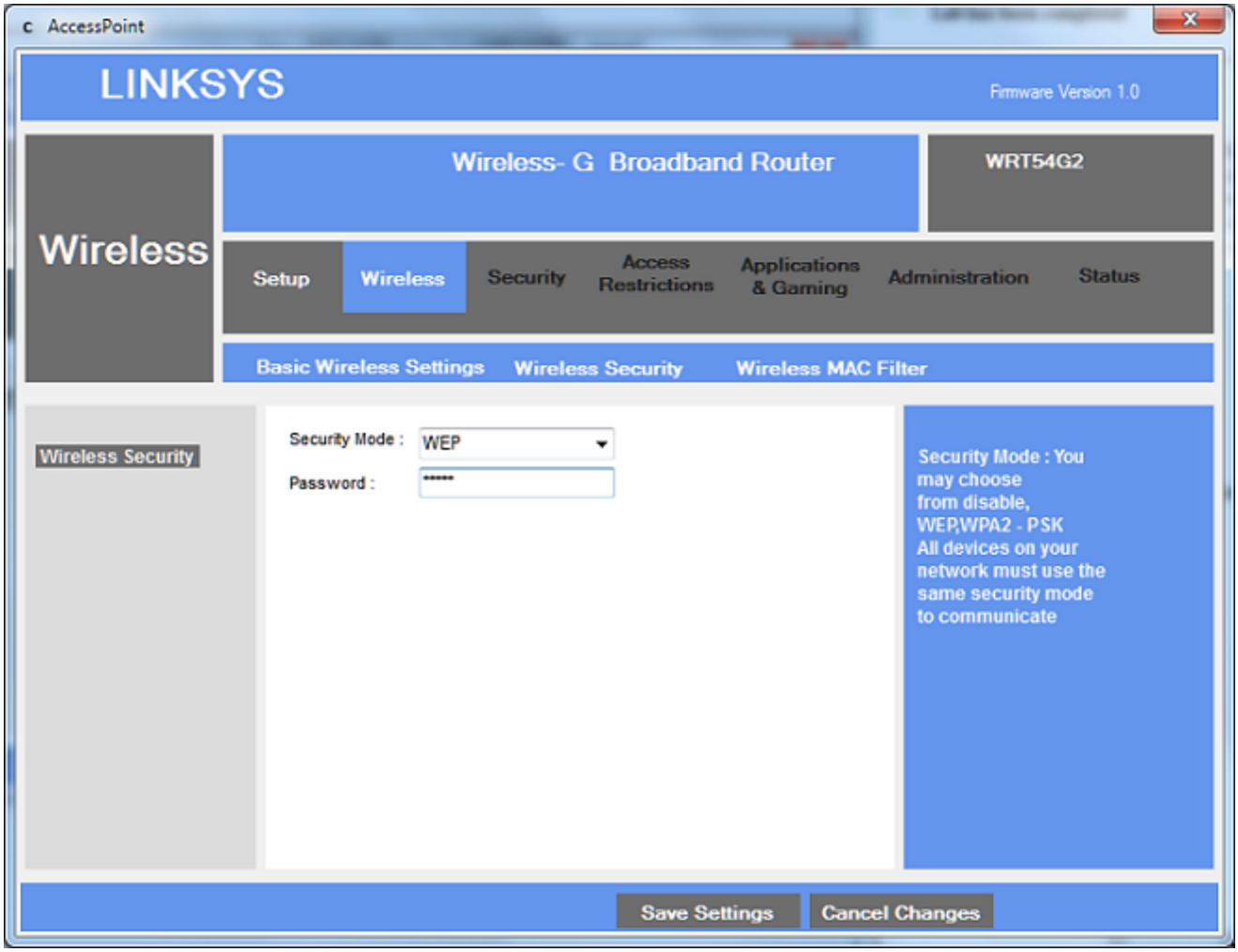
Scenario: Configure a wireless WiFi connection on client computers WS3 and WS4 to connect to Access Point AP1 using WEP key "Cert1" and SSID "CertExams". Verify communication between the workstation WS3 and DHCP server (192.168.1.2) using Ping command from WS3 or WS4. Note that AP1 is already configured with appropriate SSID and WEP code (5/13 char long) DHCP is also configured with IP address 192.168.1.2 and subnet mask 255.255.255.0

Instructions:

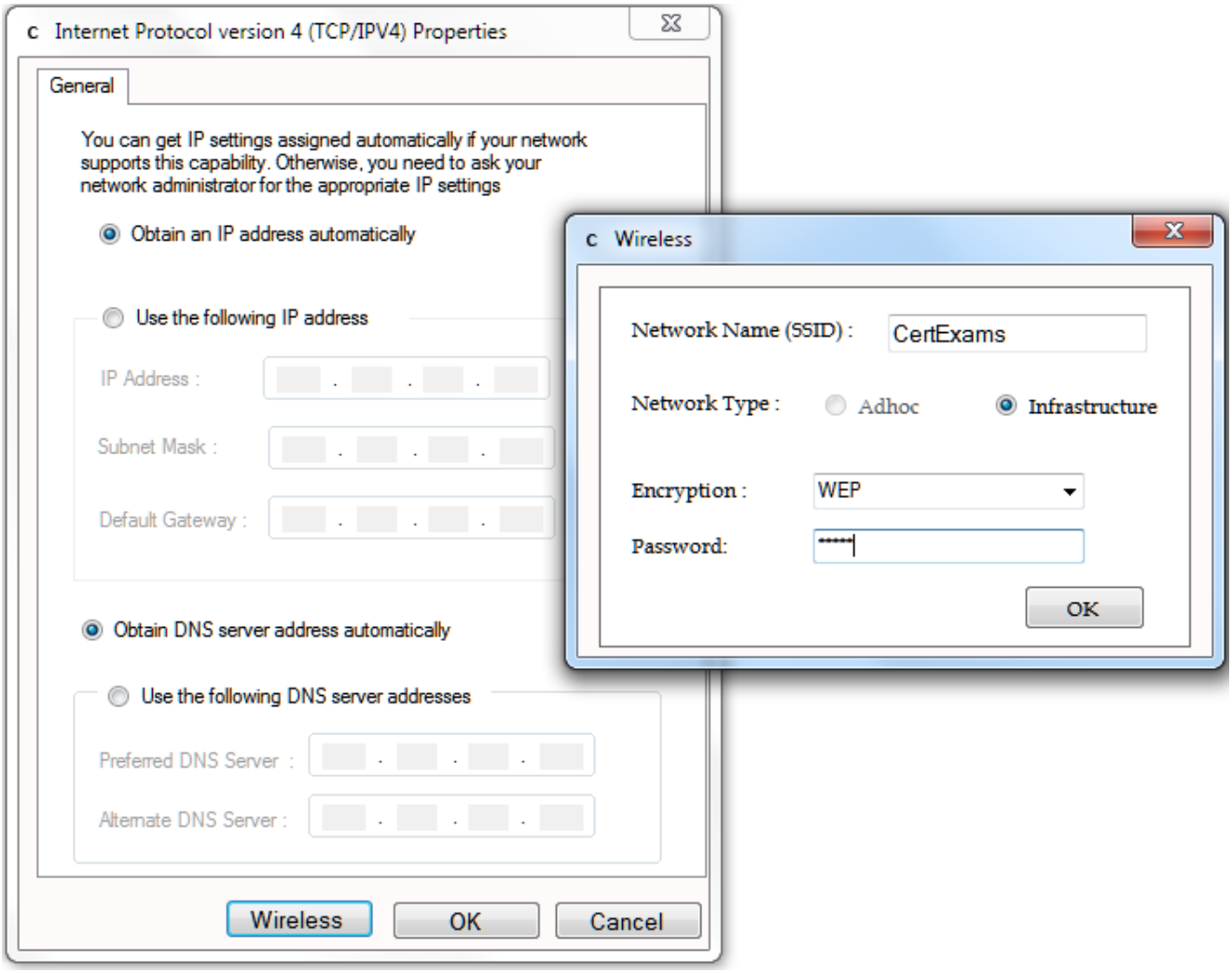
1. Click AP1 in the network diagram , this will open Access Point configuration window enter ip address 192.168.1.2 in Local IP address box , select 255.255.255.0 as subnet mask from subnet mask drop down , Click option button Enable from DHCP Server and enter starting ip address as 192.168.1.3 and maximum number of DHCP users as 254 .

2. Click Wireless tab enter Wireless Network Name (SSID) as CertExams , Click Wireless Security tab and select WEP from Security Mode drop down and enter "Cert1" in Password field and click Save Settings button.


AccessPoint
LINKSYS
Firmware Version 1.0
Wireless
Wireless- G Broadband Router
WRT54G2
Setup
Wireless
Security
Access Restrictions
Applications & Gaming
Administration
Status
Basic Wireless Settings
Wireless Security
Wireless MAC Filter
Wi -Fi Protected setup
Wireless Configuration :
Manual
Wi-Fi protected Setup
Wireless Network Mode :
G-Only
Wireless Network Name(SSID):
CertExams
Wireless Channel:
6- 2.437GHz
Wireless SSID Broadcast:
Enable
Disable
Security Mode : You may choose from disable, WEP,WPA2 - PSK All devices on your network must use the same security mode to communicate
Save Settings
Cancel Changes



3. Click WS3 this will open Windows Networking dialog box. Click on "Obtain IP Address automatically" option button (if it has not selected already) and click wireless button and enter Network Name (SSID) same as AP1 that is "CertExams" and select WEP from Encryption drop down and enter "Cert1" in Password field and click OK button and then click OK button to close the WS3 configuration window.



4. At the command prompt, ping from WS3 to 192.168.1.2 and see that the ping is successful.

```
WS3:ping 192.168.1.2
Type escape sequence to abort.
Sending 5,100-byte ICMP Echos to  192.168.1.2 ,
Timeout is 2 seconds:
 !!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 6/6/6 ms
```

5. Repeat steps 3- 4 for WS4

Notes: WEP (short for Wireless Equivalent Privacy) is used to secure wireless LAN. The password could be 5/13 characters long. Necessary conditions to communicate in wireless environment using WEP are:

1. IP address, subnet mask, and default gateway are configured properly

2. SSID and WEP password are configured properly.

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CompTIA® Network+ Lab Exercise : Configuring Wep On A Wireless Access Point

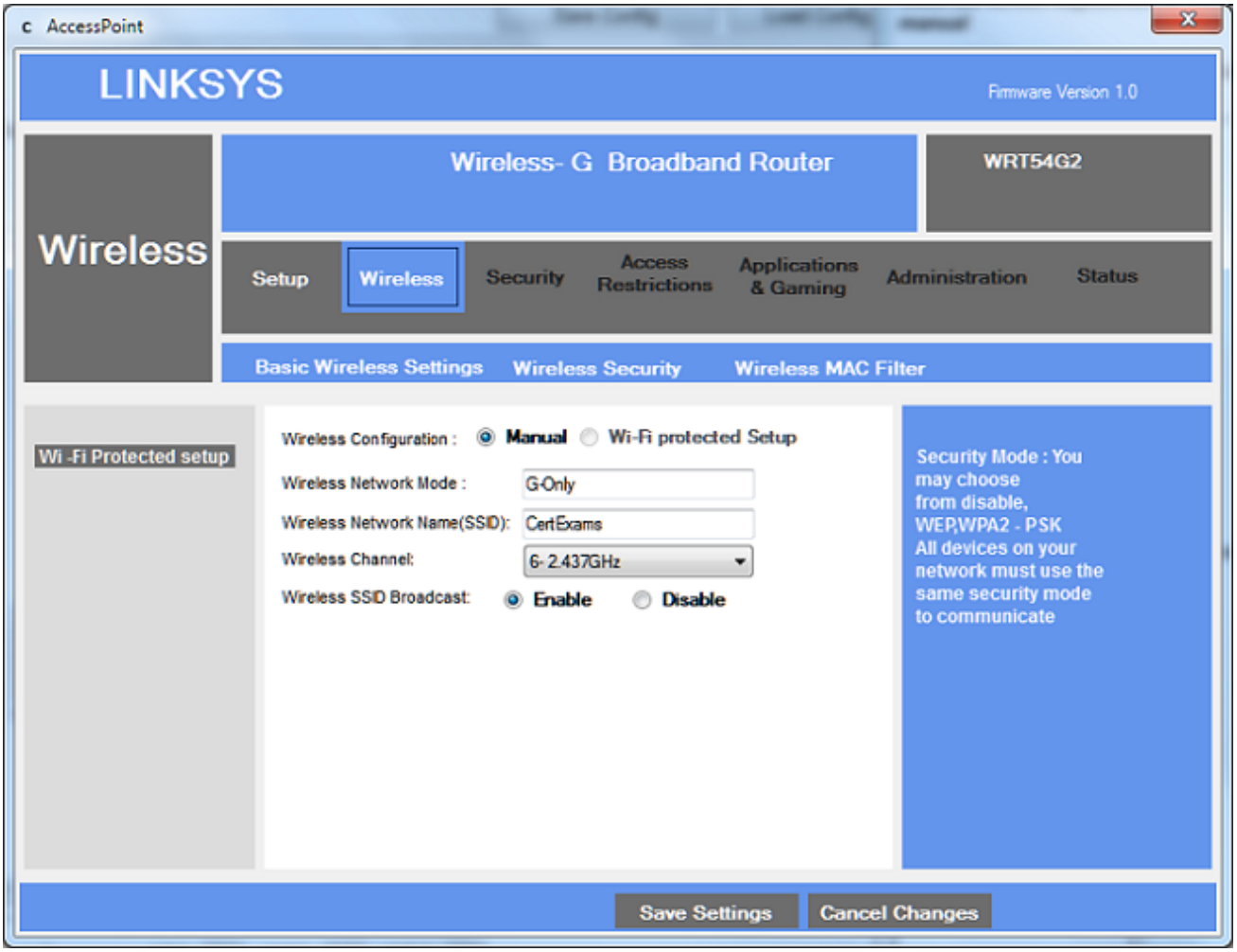
examguides.com/Netplus-labsims/netplus-labsim-7.htm

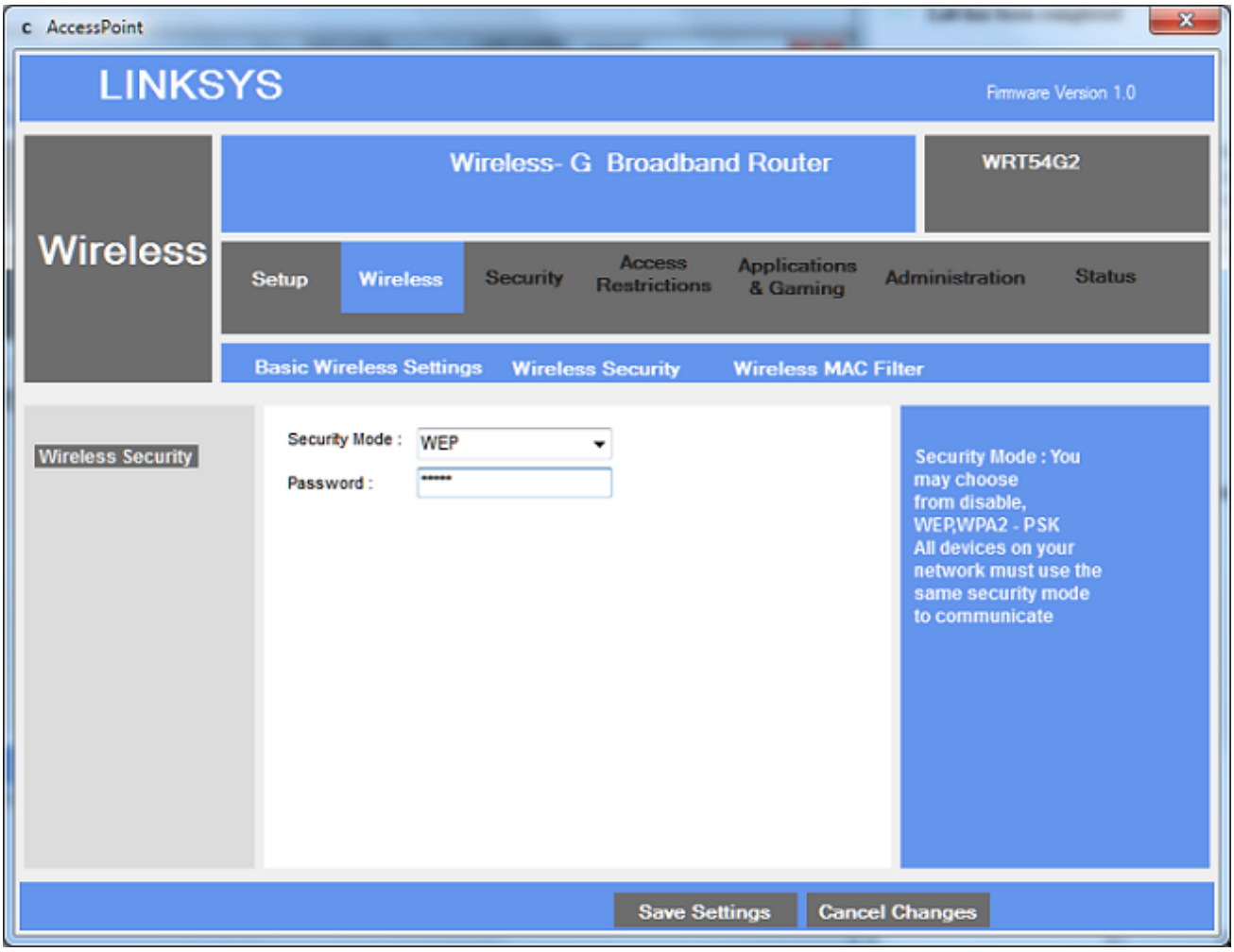
7. Configure WEP on a Wireless Access Point

Your task is to configure WEP on AP1 with a password "cert1" . Also verify that the SSID is set to "CertExams".

Instructions:

1. Open AP1 properties by clicking on the icon. Click Wireless tab and in Basic Wireless Settings enter Network Name(SSID) as "CertExams" , click Wireless Security tab and select WEP from Security Mode drop down and enter "cert1" as password and click "Save Settings" button.





Notes: *WEP stands for Wireless Equivalent Privacy. There are several other security mechanisms available for securing wireless networks. These include WPA, MAC filtering, Authentication.*

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CompTIA® Network+ Lab Exercise : Configuring Loopback Interface

examguides.com/Netplus-labsims/netplus-labsim-8.htm

8. Configuring Loopback Interface

Description: The purpose of this exercise is to configure a loop back interface and test it for connectivity. The loopback interface is a logical interface internal to a router. It is not connected to any other device. A loopback interface is UP as long as the router is up and running. It is useful in managing a router as there will always be at least one interface available on the router, irrespective of other physical interfaces.

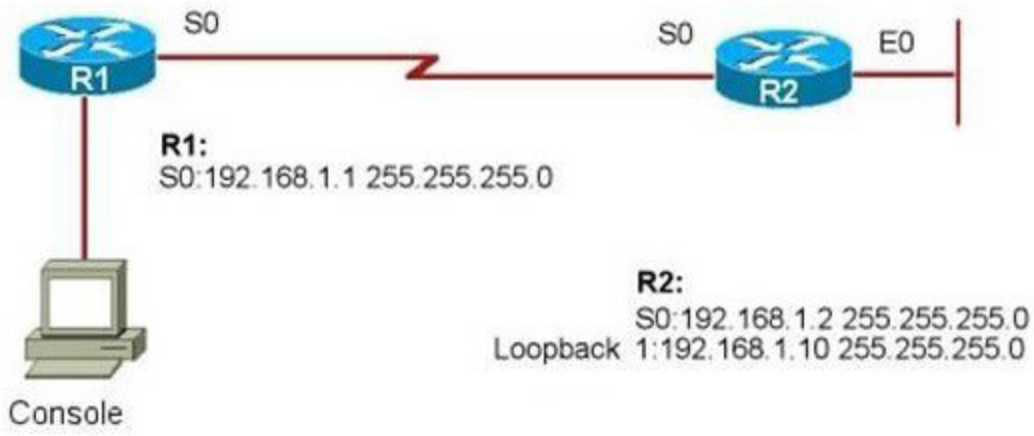
The command used for assigning loopback interface is:

Router(config)#interface loopback <*number*>

The number can be between 0 and 2147483647

A loopback interface is automatically put in "no shutdown" state when created. However, you need to assign an ip address to use a loopback interface.

Network Diagram :



Instructions:

1. Configure s0 on R1 with ip address and subnet mask as shown in the diagram

2. Configure s0 and loopback 1 on router R2 as shown in the diagram

3. Ping loopback 1 and verify connectivity

R1>enable
R1#configure terminal
R1(config)# interface serial 0
R1(config-if)#ip address 192.168.1.1 255.255.255.0
R1(config-if)#no shutdown
R1(Config-if)#end
R1#

R2>enable
R2#configure terminal
R2(config)#interface serial 0
R2(config-if)#ip address 192.168.1.2 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#exit
R2(config)#interface loopback 1
R2(config-if)#ip address 192.168.1.10 255.255.255.0
R2(config-if)#end
R2#

R1>enable
R1#ping 192.168.1.10

```
Type escape sequence to abort.
Sending 5,100-byte ICMP Echos to  192.168.1.10 ,
Timeout is 2 seconds:
 !!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 6/6/6 ms
```

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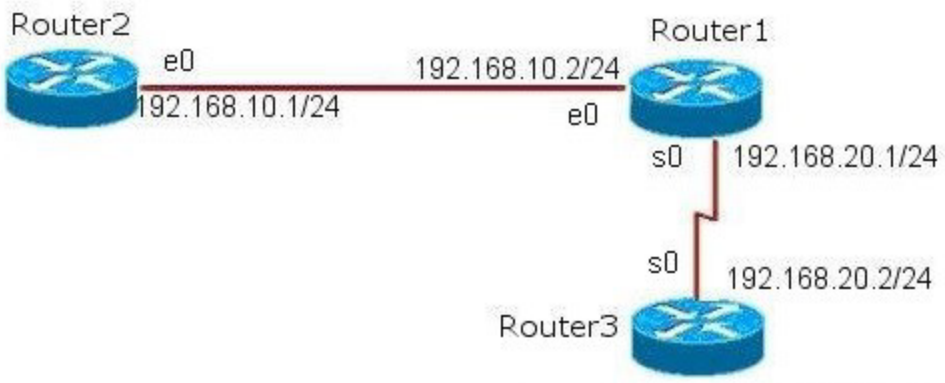
CompTIA® Network+ Lab Exercise : Connectivity Test With Traceroute

examguides.com/Netplus-labsims/netplus-labsim-9.htm

9. Connectivity test with Traceroute

Description: Use the traceroute command to map the IP addresses that a packet travels through to get from one device to another



Instructions:

1. Configure routers to the specification given below

2. Enable RIP routing across all three routers

3. From Router1, ping the directly connected routers and their interfaces which are Router2 etherneto and Router3 serial o

4. You should be able to ping non-directly connected routers as RIP routing is enabled

5. Next , the traceroute command is entered which helps in determining the path of a packet to its destination.

IP Address Assignment Table

Device	Router1	Router2	Router3
Hostname	Router1	Router2	Router3
Ethernet 0	192.168.10.2 /24	192.168.10.1 /24	
Serial 0	192.168.20.1		192.168.20.2/24

R1>enable
R1#configure terminal
R1(config)#hostname Router1
Router1(config)# interface ethernet 0
Router1(config-if)#ip address 192.168.10.2 255.255.255.0
Router1(config-if)#no shutdown
Router1(config-if)#exit
Router1(config)# interface serial 0
Router1(config-if)#ip address 192.168.20.1 255.255.255.0
Router1(config-if)#no shutdown
Router1(config-if)#exit
Router1(config)#router rip
Router1(config-router)#network 192.168.10.0
Router1(config-router)#network 192.168.20.0
Router1(config-router)#exit
Router1(config)#exit

R2>enable
R2#configure terminal
R2(config)#hostname Router2
Router2(config)# int ethernet 0
Router2(config-if)#ip address 192.168.10.1 255.255.255.0
Router2(config-if)#no shutdown
Router2(config-if)#exit
Router2(config)#router rip
Router2(config-router)#network 192.168.10.0
Router2(config-router)#exit
Router2(config)#exit
Router2#

R3>enable
R3#configure terminal
R3(config)#hostname Router3
Router3(config)# int serial 0
Router3(config-if)#ip address 192.168.20.2 255.255.255.0
Router3(config-if)#no shutdown
Router3(config-if)#exit
Router3(config)#router rip
Router3(config-router)#network 192.168.20.0

Router3(config-router)#exit
Router3(config)#exit
Router3#

Router1#ping 192.168.10.1

```
Type escape sequence to abort.
Sending 5,100-byte ICMP Echos to  192.168.10.1 ,
Timeout is 2 seconds:
 !!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 6/6/6 ms
```

Router1#ping 192.168.20.2

```
Type escape sequence to abort.
Sending 5,100-byte ICMP Echos to  192.168.20.2 ,
Timeout is 2 seconds:
 !!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 6/6/6 ms
```

Router2#ping 192.168.20.2

```
Type escape sequence to abort.
Sending 5,100-byte ICMP Echos to  192.168.20.2 ,
Timeout is 2 seconds:
 !!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 6/6/6 ms
```

Router2#traceroute 192.168.20.2

```
Type escape sequence to abort.
Tracing route to  192.168.10.1 1000 msec 8 msec 4 msec
Type escape sequence to abort.
Tracing route to  192.168.10.2 1000 msec 8 msec 4 msec
Type escape sequence to abort.
Tracing route to  192.168.20.1 1000 msec 8 msec 4 msec
Type escape sequence to abort.
Tracing route to  192.168.20.2 1000 msec 8 msec 4 msec
```

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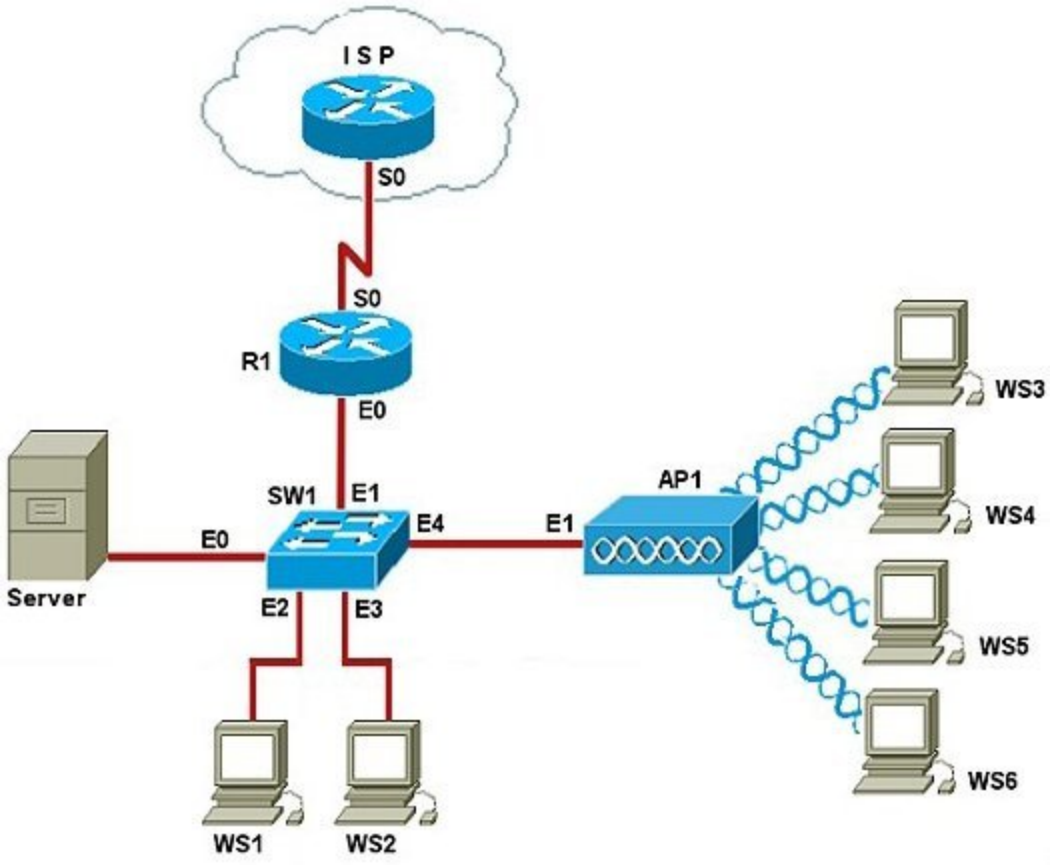
CompTIA® Network+ Lab Exercise : Designing A Home Network With A Router, Access Point, And Wireless Work Stations

examguides.com/Netplus-labsims/netplus-labsim-10.htm



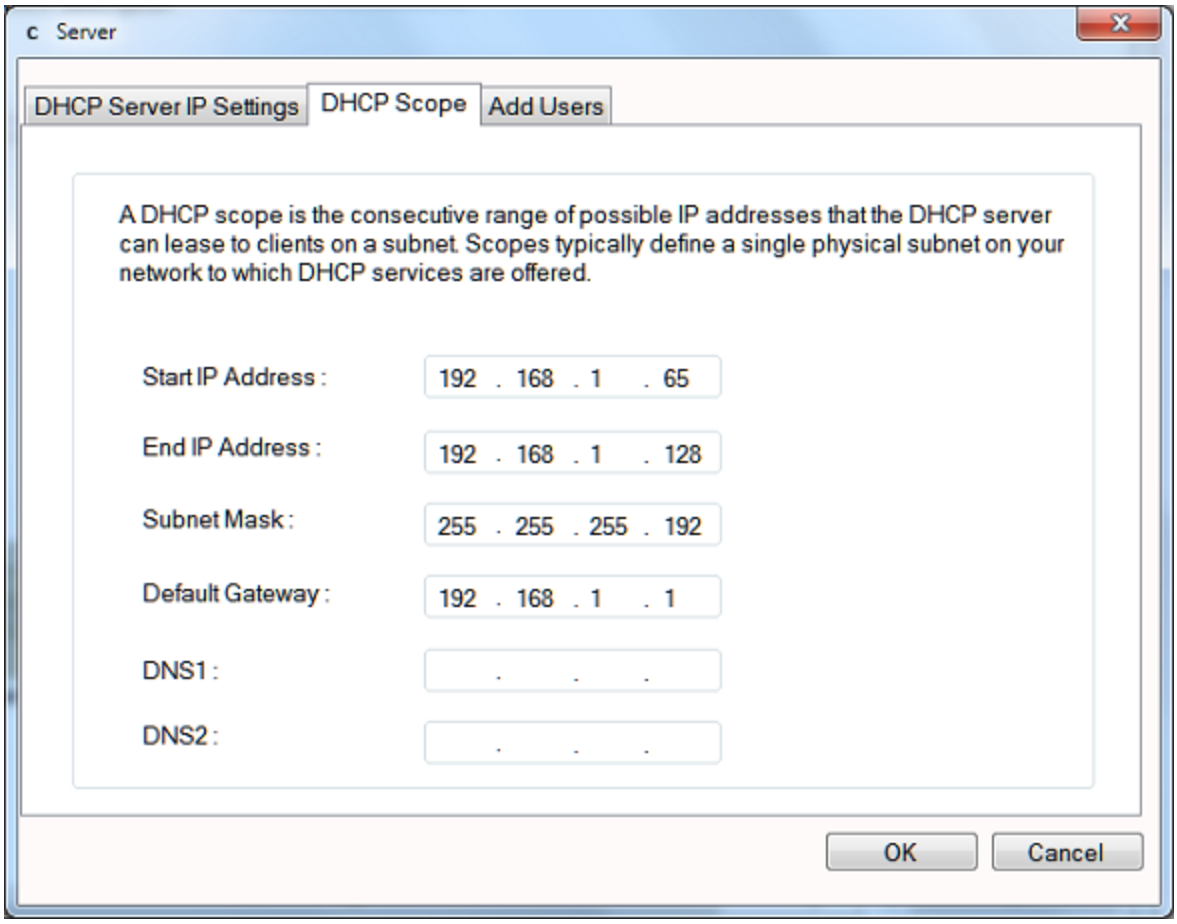
DHCP Range on Server:

Start IP: 192.168.1.65

Stop IP: 192.168.1.128

Subnet mask: 255.255.255.192

Default Gateway: 192.168.1.1



Router R1 configuration:

E0: 192.168.1.1

255.255.255.192

S0: 202.100.15.10

Subnet mask: 255.255.255.64

On R1

R1>enable
R1#configure terminal
R1(config)#interface ethernet 0
R1(config-if)#ip address 192.168.1.1 255.255.255.192
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#interface serial 0
R1(config-if)#ip address 202.100.15.10 255.255.255.64
R1(config-if)#no shutdown
R1(config-if)#exit

Client Configurations:

All wired workstations have been configured to obtain the IP settings from DHCP server. It was reported that none of the wired workstations WS1 and WS2 are able to ping the Router R1's E0 interface (Default Gateway). The technician had checked all the physical connections are found them to be in order.What is the most likely problem?

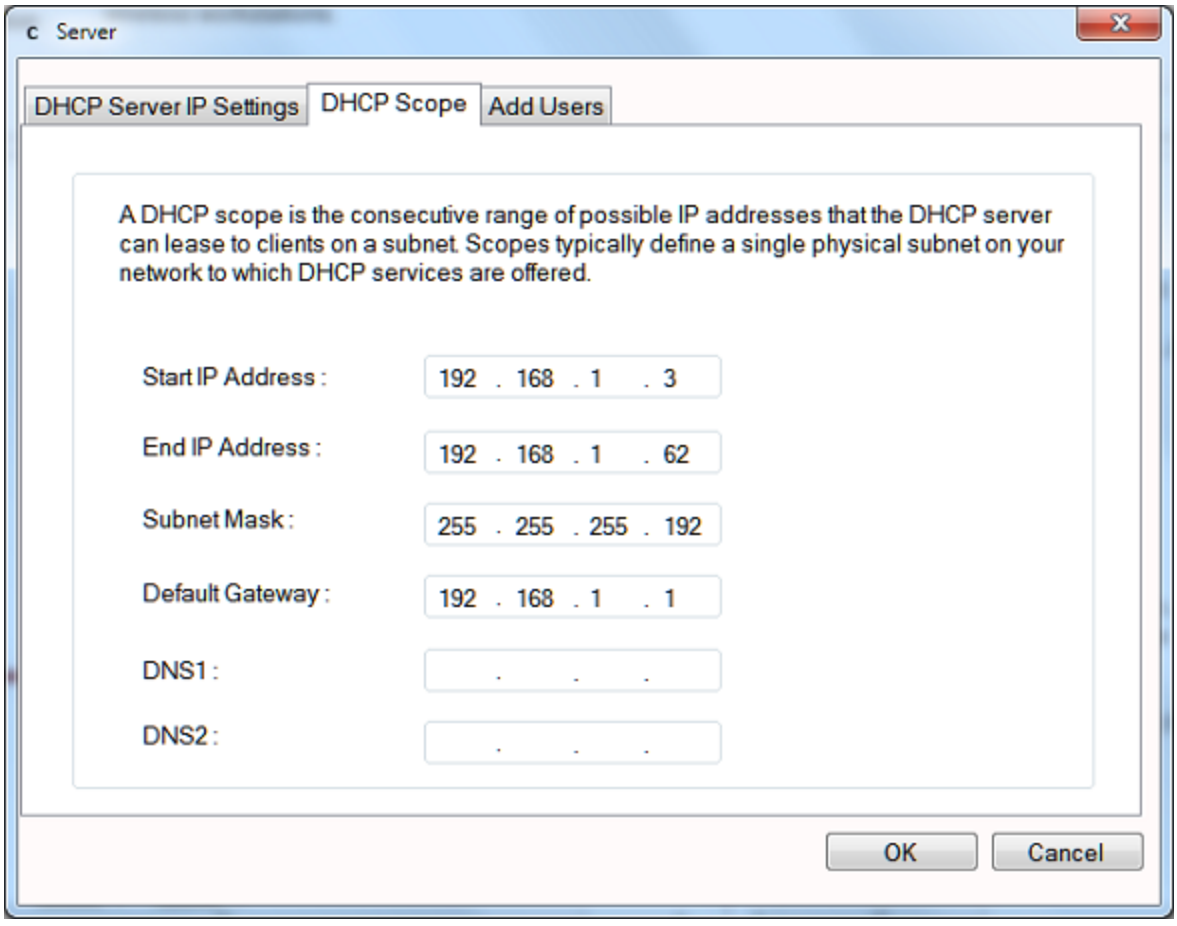
Solution:

In the above scenario, the DHCP scope was set wrongly on the DHCP Server. The DHCP scope of 192.168.1.65 to 192.168.1.128 corresponds to subnet ID 192.168.1.64 where as the default gateway (192.168.1.1) corresponds to subnet ID 192.168.1.0. By correcting the DHCP scope to 192.168.1.3 to 192.168.1.63 (note that 192.168.1.1 and 192.168.1.2 have been used for static assignment) the problem could be solved.

Instructions:

1. Open the Server configuration window.

2. Change the Start IP to 192.168.1.3 and Stop IP to 192.168.1.62 (Note that 192.168.1.63 is broadcast address and can't be used. 192.168.1.1 is the IP address of default gateway, and 192.168.1.2 is statically assigned to DHCP Server).



3. Ping to default gateway from WS1 or WS2 should success.

```
WS1:ping 192.168.1.1
Type escape sequence to abort.
Sending 5,100-byte ICMP Echos to  192.168.1.1 ,
Timeout is 2 seconds:
 !!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 6/6/6 ms
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