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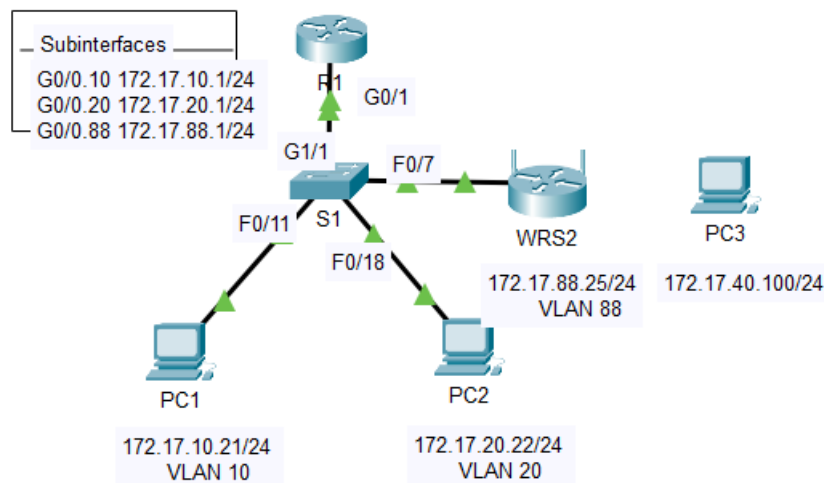
Lớp: IT005.N16

## Lab 5: cấu hình mạng không dây

### Task 1: Cấu hình thiết bị mạng không dây.

#### 1.1 Kết nối thiết bị mạng không dây vào mô hình.

- Sử dụng cáp thẳng (Copper Straight-through) để kết nối từ cổng Internet của wireless router đến cổng Fa0/7 của switch.



Hình 1.1.1 Kết nối từ cổng internet của WR đến cổng Fa0/7 của switch.

#### 1.2 Cấu hình cơ bản.

- Cấu hình phần Internet connection

| Internet Setup           |           |     |     |    |
|--------------------------|-----------|-----|-----|----|
| Internet Connection type | Static IP |     |     |    |
| Internet IP Address:     | 172       | 17  | 88  | 25 |
| Subnet Mask:             | 255       | 255 | 255 | 0  |
| Default Gateway:         | 172       | 17  | 88  | 1  |
| DNS 1:                   | 0         | 0   | 0   | 0  |
| DNS 2 (Optional):        | 0         | 0   | 0   | 0  |
| DNS 3 (Optional):        | 0         | 0   | 0   | 0  |

**Hình 1.2.1** Cấu hình phần Internet Connection.

- Cấu hình phần Network Setup

**Network Setup**

**Router IP**

IP Address: 172 . 17 . 40 . 1

Subnet Mask: 255.255.255.0

**DHCP Server Settings**

DHCP Server: ☒ Enabled ☐ Disabled DHCP Reservation

Start IP Address: 192.168.1. 100

Maximum number of Users: 50

IP Address Range: 192.168.1. 100 - 149

**Hình 1.2.2** Cấu hình phần Network Setup.

**1.3 Cấu hình truy cập và bảo mật.**

**Basic Wireless Settings**

Network Mode: Wireless-N Only

Network Name (SSID): WRS\_LAN

Radio Band: Auto

Wide Channel: Auto

Standard Channel: 1 - 2.412GHz

SSID Broadcast: ☐ Enabled ☒ Disabled

**Hình 1.3.1** Basic wireless setting.

**Wireless Security**

Security Mode: WPA2 Personal

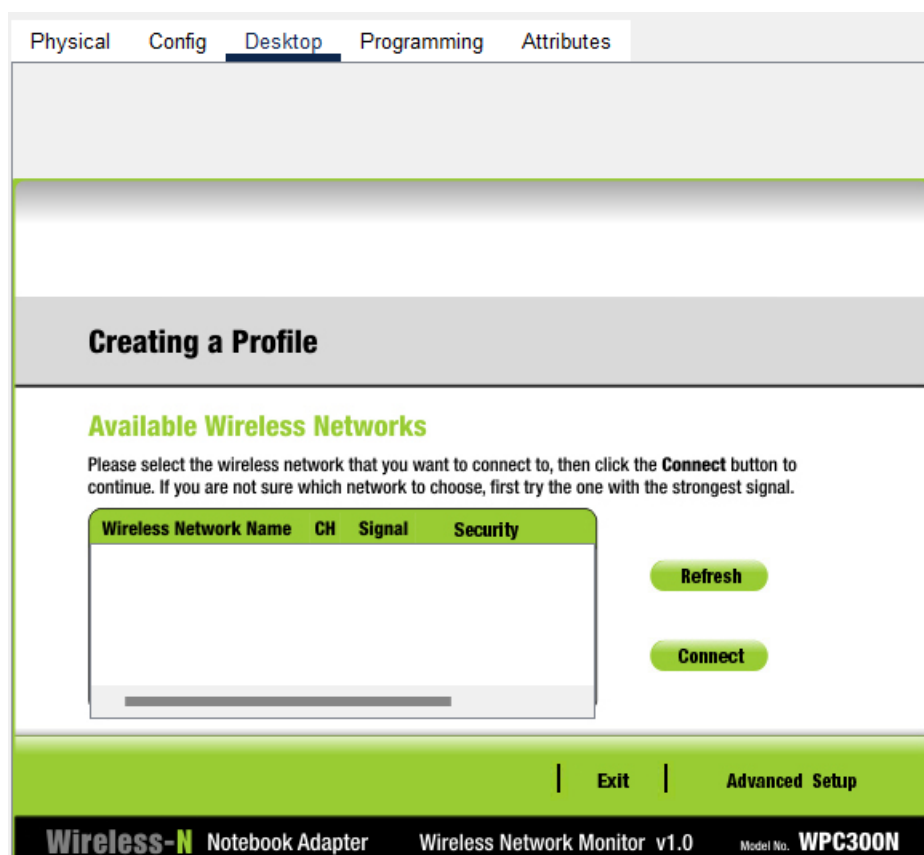
Encryption: AES

Passphrase: cisco123

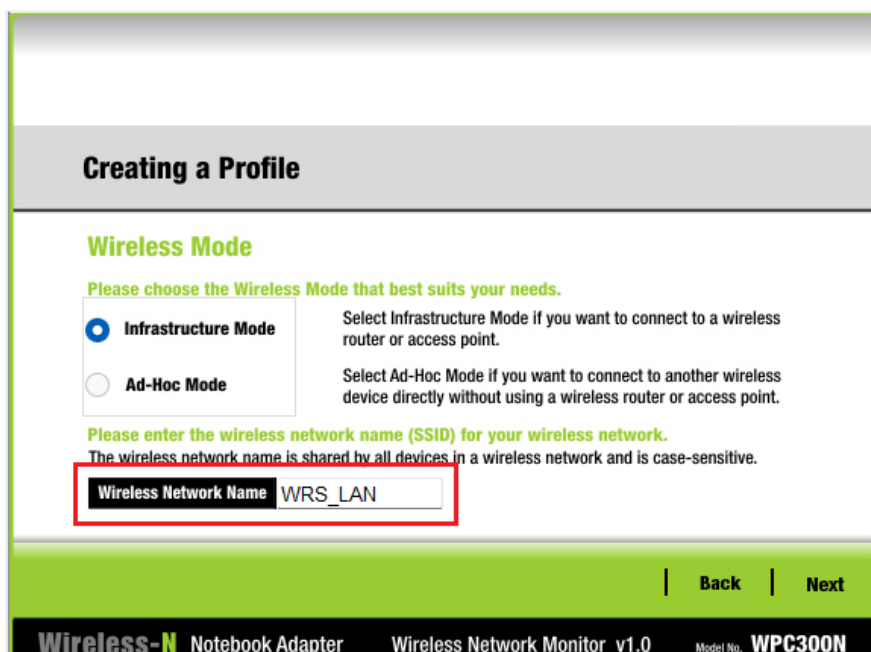
Key Renewal: 3600 seconds

**Hình 1.3.2** Wireless security.

## 1.4 Cấu hình Wireless Client.



Hình 1.4.1 Sau khi đặt tên wireless access.



Hình 1.4.2 Đặt Wireless Network Name là WRS\_LAN.

Creating a Profile

Network Settings

☒ **Obtain network settings automatically (DHCP)**  
Select this option to have your network settings assigned automatically.

☐ **Specify network settings**  
Select this option to specify the network settings for the adapter.

IP Address

DNS 1

Subnet Mask

DNS 2

Default Gateway

Back

Next

Wireless-N Notebook Adapter

Wireless Network Monitor v1.0

Model No. WPC300N

Hình 1.4.3 Network Settings.

Creating a Profile

Wireless Security

Security WPA2-Personal

Please select the wireless security method used by your existing wireless network.  
**WEP** stands for Wired Equivalent Privacy.  
**WPA-Personal**, also known as Pre-shared Key, is a security standard stronger than WEP encryption.  
**WPA2-Personal** is the newer version with stronger encryption than WPA-Personal.  
**WPA-Enterprise**, **WPA2-Enterprise** and **RADIUS** use Remote Authentication Dial-In User Service (RADIUS).

Back

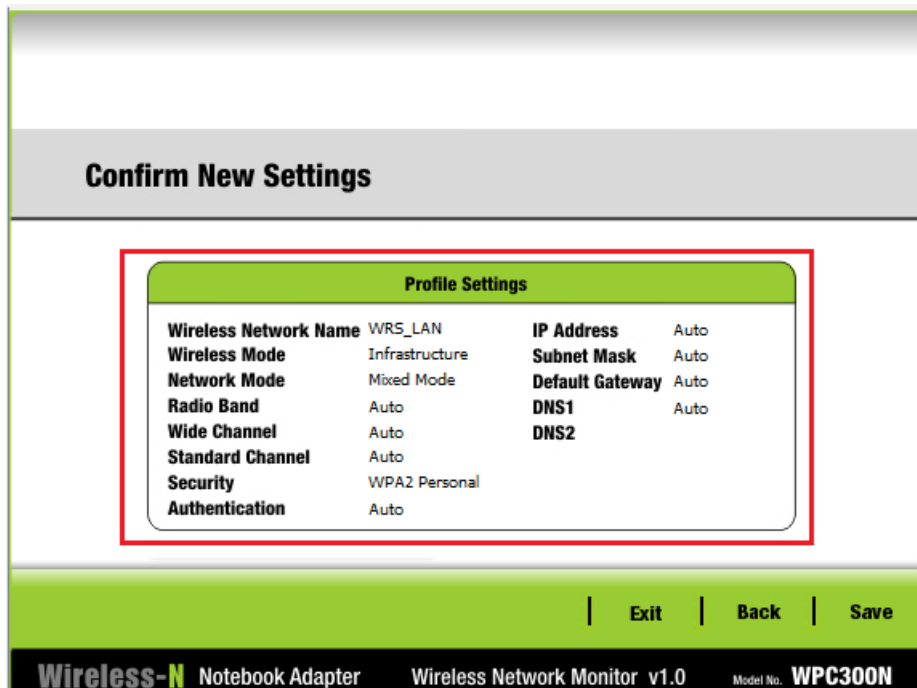
Next

Wireless-N Notebook Adapter

Wireless Network Monitor v 1.11

Model No. WPC300N

Hình 1.4.4 Wireless Security.



Hình 1.4.5 Profile settings.



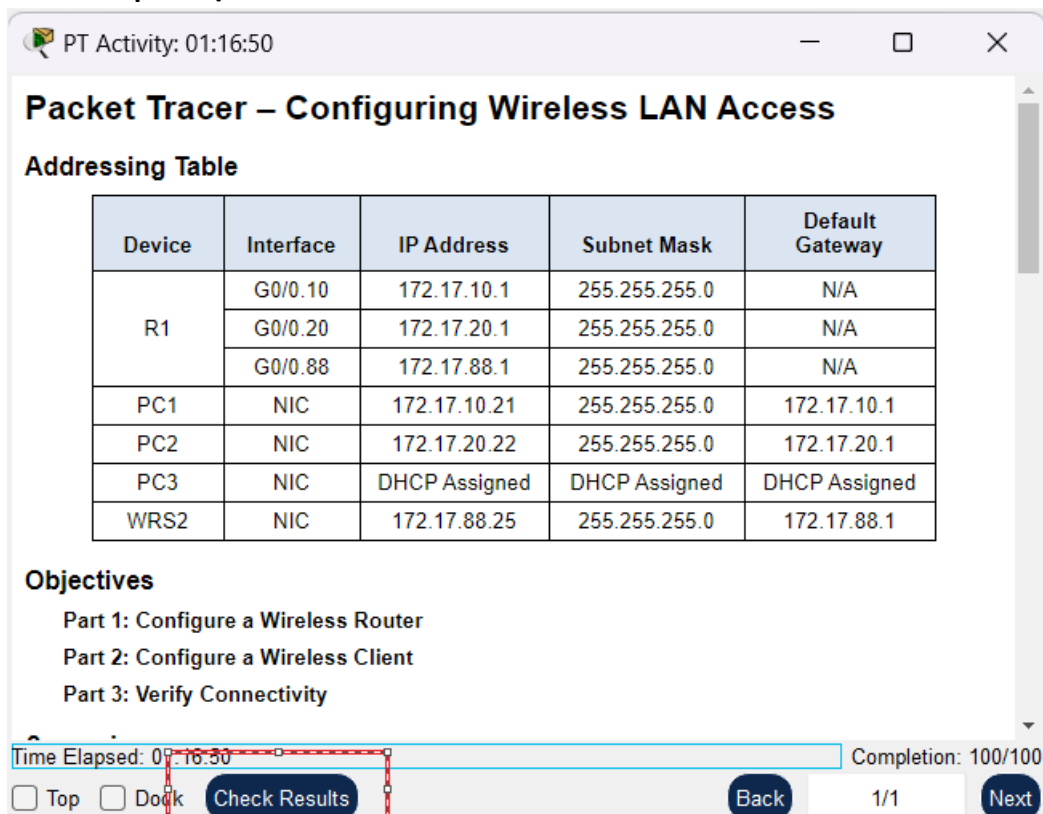
Hình 1.4.6 Sau khi click Connect To Network.

## 1.5 Kiểm tra kết nối

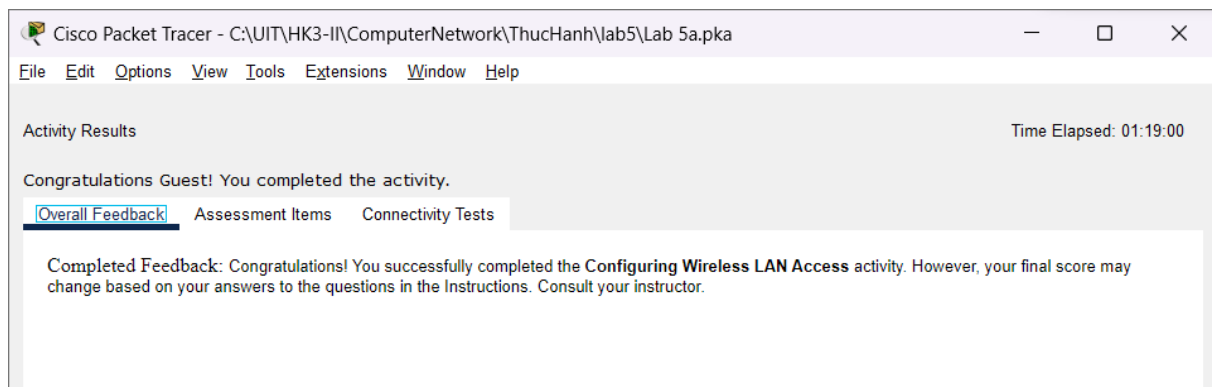


Hình 1.5.1 Wireless Network Status.

## 1.6 Kiểm tra kết quả thực hành



Hình 1.6.1 PT Activity.

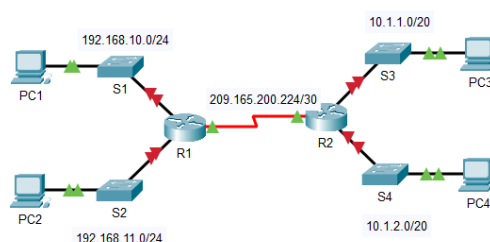


Hình 1.6.2 Overall Feedback.

| Overall Feedback <u>Assessment Items</u> Connectivity Tests |         |        |
|---|---------|--------|
| Expand/Collapse All Show Incorrect Items                    |         |        |
| Assessment Items  | Status  | Points |
| Network   |         |        |
| PC3   |         |        |
| Wireless  |         |        |
| Security Mode   |         |        |
| Authen Type   | Correct | 1      |
| Pass Phrase   | Correct | 4      |
| SSID  | Correct | 5      |
| WRS2  |         |        |
| Default Gateway   | Correct | 10     |
| DHCP Server   |         |        |
| DHCP Enable   | Correct | 10     |
| Pools   |         | 0      |
| Pool linksysPool  |         | 0      |
| Default Gateway   | Correct | 10     |
| Ports   |         |        |
| Internet  |         |        |
| IP Address  | Correct | 10     |
| Link to S1  |         |        |
| Connects to FastEthernet0/7                                 | Correct | 5      |
| Type  | Correct | 5      |
| Wireless  |         | 0      |
| Wireless  |         |        |
| Security Mode   |         |        |
| Authen Type   | Correct | 10     |
| Pass Phrase   | Correct | 10     |
| SSID  | Correct | 10     |
| SSID BroadCast  | Correct | 10     |

Hình 1.6.3 Assessment Items.

## Task 2: Cấu hình địa chỉ IP trên router.



**Hình 2.1** Mô hình mạng thực hành Cấu hình địa chỉ IP trên router.

| Device | Interface    | IP Address      | Subnet Mask     | Default Gateway |
|--------|--------------|-----------------|-----------------|-----------------|
| R1     | G0/0         | 192.168.10.1    | 255.255.255.0   | N/A             |
|        | G0/1         | 192.168.11.1    | 255.255.255.0   | N/A             |
|        | S0/0/0 (DCE) | 209.165.200.225 | 255.255.255.252 | N/A             |
| R2     | G0/0         | 10.1.1.1        | 255.255.255.0   | N/A             |
|        | G0/1         | 10.1.2.1        | 255.255.255.0   | N/A             |
|        | S0/0/0       | 209.165.200.226 | 255.255.255.252 | N/A             |
| PC1    | NIC          | 192.168.10.10   | 255.255.255.0   | 192.168.10.1    |
| PC2    | NIC          | 192.168.11.10   | 255.255.255.0   | 192.168.11.1    |
| PC3    | NIC          | 10.1.1.10       | 255.255.255.0   | 10.1.1.1        |
| PC4    | NIC          | 10.1.2.10       | 255.255.255.0   | 10.1.2.1        |

**Hình 2.2** Bảng địa chỉ IP.

## 2.1 Cấu hình địa chỉ IP cho router

- R1:

```

R1>enable
Password:
R1#config t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#interface gigabitethernet 0/0
R1(config-if)#ip address 192.168.10.1 255.255.255.0
R1(config-if)#no shutdown

R1(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed
state to up
r
^
% Invalid input detected at '^' marker.

R1(config-if)#interface gigabitethernet 0/1
R1(config-if)#ip address 192.168.11.1 255.255.255.0
R1(config-if)#no shutdown

R1(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed
state to up

```

**Hình 2.1.1** R1#config t



```

R1#show run
Building configuration...

Current configuration : 1314 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname R1
!
!
!
enable secret 5 $1$mERr$9cTjUIEqNGurQiFU.ZeCil
!
!
!
!
!
ip cef
no ipv6 cef
--More--

```

Hình 2.1.2 R1#show run

```

R1#show ip interface brief

```

| Interface          | IP-Address      | OK? | Method | Status                |
|--------------------|-----------------|-----|--------|-----------------------|
| Protocol           |                 |     |        |                       |
| GigabitEthernet0/0 | 192.168.10.1    | YES | manual | up                    |
| GigabitEthernet0/1 | 192.168.11.1    | YES | manual | up                    |
| Serial0/0/0        | 209.165.200.225 | YES | manual | up                    |
| Serial0/0/1        | unassigned      | YES | unset  | administratively down |
| FastEthernet0/1/0  | unassigned      | YES | unset  | administratively down |
| FastEthernet0/1/1  | unassigned      | YES | unset  | administratively down |
| FastEthernet0/1/2  | unassigned      | YES | unset  | administratively down |
| FastEthernet0/1/3  | unassigned      | YES | unset  | administratively down |
| Vlan1              | unassigned      | YES | unset  | administratively down |

```

R1#

```

Hình 2.1.3 R1#show ip interface brief

```

R1#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter
area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

    192.168.10.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.10.0/24 is directly connected, GigabitEthernet0/0
L       192.168.10.1/32 is directly connected, GigabitEthernet0/0
    192.168.11.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.11.0/24 is directly connected, GigabitEthernet0/1
L       192.168.11.1/32 is directly connected, GigabitEthernet0/1
    209.165.200.0/24 is variably subnetted, 3 subnets, 3 masks
D       209.165.200.0/24 is a summary, 00:03:39, Null0
C       209.165.200.224/30 is directly connected, Serial0/0/0
L       209.165.200.225/32 is directly connected, Serial0/0/0

R1#

```

Hình 2.1.4 R1#show ip route

-R2:

```

R2>enable
Password:
R2#config t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#interface gigabitethernet 0/0
R2(config-if)#ip address 10.1.1.1 255.255.255.0
R2(config-if)#no shutdown

R2(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed
state to up
r
      ^
% Invalid input detected at '^' marker.

R2(config-if)#interface gigabitethernet 0/1
R2(config-if)#ip address 10.1.2.1 255.255.255.0
R2(config-if)#no shutdown

R2(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed
state to up

```

Hình 2.1.5 R2

```

R2#show run
Building configuration...

Current configuration : 923 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname R2
!
!
!
enable secret 5 $1$mERr$9cTjUIEqNGurQiFU.ZeCil
!
!
!
!
!
ip cef
no ipv6 cef
--More-- |

```

Hình 2.1.6 R2#show run

```

R2#show ip interface brief

```

| Interface          | IP-Address      | OK? | Method | Status                     |
|--------------------|-----------------|-----|--------|----------------------------|
| Protocol           |                 |     |        |                            |
| GigabitEthernet0/0 | 10.1.1.1        | YES | manual | up                         |
| GigabitEthernet0/1 | 10.1.2.1        | YES | manual | up                         |
| Serial0/0/0        | 209.165.200.226 | YES | manual | up                         |
| Serial0/0/1        | unassigned      | YES | unset  | administratively down down |
| Vlan1              | unassigned      | YES | unset  | administratively down down |

```

R2#

```

Hình 2.1.7 R2#show ip interface brief

```

R2#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter
       area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

10.0.0.0/8 is variably subnetted, 5 subnets, 3 masks
D    10.0.0.0/8 is a summary, 00:03:06, Null0
C    10.1.1.0/24 is directly connected, GigabitEthernet0/0
L    10.1.1.1/32 is directly connected, GigabitEthernet0/0
C    10.1.2.0/24 is directly connected, GigabitEthernet0/1
L    10.1.2.1/32 is directly connected, GigabitEthernet0/1
D    192.168.10.0/24 [90/2170112] via 209.165.200.225, 00:08:53, Serial0/0/0
D    192.168.11.0/24 [90/2170112] via 209.165.200.225, 00:08:04, Serial0/0/0
D    209.165.200.0/24 is variably subnetted, 3 subnets, 3 masks
D    209.165.200.0/24 is a summary, 00:03:06, Null0
C    209.165.200.224/30 is directly connected, Serial0/0/0
L    209.165.200.226/32 is directly connected, Serial0/0/0
--More--

```

Hình 2.1.8 R2#show ip route

PT Activity: 00:06:12

### Packet Tracer - Connect a Router to a LAN

#### Addressing Table

| Device | Interface    | IP Address      | Subnet Mask     | Default Gateway |
|--------|--------------|-----------------|-----------------|-----------------|
| R1     | G0/0         | 192.168.10.1    | 255.255.255.0   | N/A             |
|        | G0/1         | 192.168.11.1    | 255.255.255.0   | N/A             |
|        | S0/0/0 (DCE) | 209.165.200.225 | 255.255.255.252 | N/A             |
| R2     | G0/0         | 10.1.1.1        | 255.255.255.0   | N/A             |
|        | G0/1         | 10.1.2.1        | 255.255.255.0   | N/A             |
|        | S0/0/0       | 209.165.200.226 | 255.255.255.252 | N/A             |
| PC1    | NIC          | 192.168.10.10   | 255.255.255.0   | 192.168.10.1    |
| PC2    | NIC          | 192.168.11.10   | 255.255.255.0   | 192.168.11.1    |
| PC3    | NIC          | 10.1.1.10       | 255.255.255.0   | 10.1.1.1        |
| PC4    | NIC          | 10.1.2.10       | 255.255.255.0   | 10.1.2.1        |

#### Objectives

Time Elapsed: 00:06:12

Completion: 54/54

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Hình 2.1.9 Completion

| Overall Feedback <u>Assessment Items</u> Connectivity Tests |         |                      |                       |  |          |
|---|---------|----------------------|-----------------------|--|----------|
| Expand/Collapse All   |         | Show Incorrect Items |                       |  |          |
| Assessment Items  | Status  | Points               | Component(s)          |  | Feedback |
| Network   |         |                      |                       |  |          |
| R1  |         |                      |                       |  |          |
| Ports   |         |                      |                       |  |          |
| GigabitEthernet0/0  |         |                      |                       |  |          |
| ✓ Description   | Correct | 3                    | Device Interface C... |  |          |
| ✓ IP Address  | Correct | 3                    | Device Interface C... |  |          |
| ✓ Port Status   | Correct | 3                    | Device Interface C... |  |          |
| ✓ Subnet Mask   | Correct | 3                    | Device Interface C... |  |          |
| GigabitEthernet0/1  |         |                      |                       |  |          |
| ✓ Description   | Correct | 3                    | Device Interface C... |  |          |
| ✓ IP Address  | Correct | 3                    | Device Interface C... |  |          |
| ✓ Port Status   | Correct | 3                    | Device Interface C... |  |          |
| ✓ Subnet Mask   | Correct | 3                    | Device Interface C... |  |          |
| ✓ Startup Config  | Correct | 3                    | Configuration Man...  |  |          |
| R2  |         |                      |                       |  |          |
| Ports   |         |                      |                       |  |          |
| GigabitEthernet0/0  |         |                      |                       |  |          |
| ✓ Description   | Correct | 3                    | Device Interface C... |  |          |
| ✓ IP Address  | Correct | 3                    | Device Interface C... |  |          |
| ✓ Port Status   | Correct | 3                    | Device Interface C... |  |          |
| ✓ Subnet Mask   | Correct | 3                    | Device Interface C... |  |          |
| GigabitEthernet0/1  |         |                      |                       |  |          |
| ✓ Description   | Correct | 3                    | Device Interface C... |  |          |
| ✓ IP Address  | Correct | 3                    | Device Interface C... |  |          |
| ✓ Port Status   | Correct | 3                    | Device Interface C... |  |          |
| ✓ Subnet Mask   | Correct | 3                    | Device Interface C... |  |          |
| ✓ Startup Config  | Correct | 3                    | Configuration Man...  |  |          |

Hình 2.1.10 Assessment Item.

### Task 3: Áp dụng chia địa chỉ ip.

- Có 5 mạng con.

| STT | Địa chỉ mạng    | Địa chỉ đầu     | Địa chỉ cuối    | Địa chỉ broadcast |
|-----|-----------------|-----------------|-----------------|-------------------|
| 0   | 192.168.100.0   | 192.168.100.1   | 192.168.100.30  | 192.168.100.31    |
| 1   | 192.168.100.32  | 192.168.100.33  | 192.168.100.62  | 192.168.100.63    |
| 2   | 192.168.100.64  | 192.168.100.65  | 192.168.100.94  | 192.168.100.95    |
| 3   | 192.168.100.96  | 192.168.100.97  | 192.168.100.126 | 192.168.100.127   |
| 4   | 192.168.100.128 | 192.168.100.129 | 192.168.100.158 | 192.168.100.159   |
| 5   | 192.168.100.160 | 192.168.100.161 | 192.168.100.190 | 192.168.100.191   |
| 6   | 192.168.100.192 | 192.168.100.193 | 192.168.100.222 | 192.168.100.223   |
| 7   | 192.168.100.224 | 192.168.100.225 | 192.168.100.254 | 192.168.100.255   |

Hình 3.1 Thực hiện chia mạng con.

| Device | Interface | IP address     | Subnet Mask     | Default Gateway |
|--------|-----------|----------------|-----------------|-----------------|
| R1     | G0/0      | 192.168.100.10 | 255.255.255.224 | N/A             |
|        | G0/1      | 192.168.100.33 | 255.255.255.224 | N/A             |

|     |        |                 |                 |                |
|-----|--------|-----------------|-----------------|----------------|
|     | S0/0/0 | 192.168.100.129 | 255.255.255.224 | N/A            |
| R2  | G0/0   | 192.168.100.65  | 255.255.255.224 | N/A            |
|     | G0/1   | 192.168.100.97  | 255.255.255.224 | N/A            |
|     | S0/0/0 | 192.168.100.158 | 255.255.255.224 | N/A            |
| S1  | VLAN1  | 192.168.100.2   | 255.255.255.224 | 192.168.100.1  |
| S2  | VLAN1  | 192.168.100.34  | 255.255.255.224 | 192.168.100.33 |
| S3  | VLAN1  | 192.168.100.66  | 255.255.255.224 | 192.168.100.65 |
| S4  | VLAN1  | 192.168.100.98  | 255.255.255.224 | 192.168.100.97 |
| PC1 | NIC    | 192.168.100.30  | 255.255.255.224 | 192.168.100.1  |
| PC2 | NIC    | 192.168.100.62  | 255.255.255.224 | 192.168.100.33 |
| PC3 | NIC    | 192.168.100.94  | 255.255.255.224 | 192.168.100.65 |
| PC4 | NIC    | 192.168.100.126 | 255.255.255.224 | 192.168.100.97 |

**Hình 3.2** Bảng địa chỉ.

PT Activity: 00:07:23

### Packet Tracer - Subnetting Scenario 1

#### Addressing Table

| Device | Interface | IP Address | Subnet Mask | Default Gateway |
|--------|-----------|------------|-------------|-----------------|
| R1     | G0/0      |            |             |                 |
|        | G0/1      |            |             |                 |
|        | S0/0/0    |            |             |                 |
| R2     | G0/0      |            |             |                 |
|        | G0/1      |            |             |                 |
|        | S0/0/0    |            |             |                 |
| S1     | VLAN 1    |            |             |                 |
| S2     | VLAN 1    |            |             |                 |
| S3     | VLAN 1    |            |             |                 |
| S4     | VLAN 1    |            |             |                 |
| PC1    | NIC       |            |             |                 |
| PC2    | NIC       |            |             |                 |
| PC3    | NIC       |            |             |                 |

Time Elapsed: 00:07:23

Completion: 30/30

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**Hình 3.3** Completion.

Overall Feedback

Assessment Items

Connectivity Tests

Expand/Collapse All

Show Incorrect Items

| Assessment Items   | Status  | Points | Component(s)          | Feedback |
|--------------------|---------|--------|-----------------------|----------|
| Network            |         |        |                       |          |
| PC4                |         |        |                       |          |
| ✓ Default Gateway  | Correct | 2      | Default Gateway ...   |          |
| Ports              |         |        |                       |          |
| FastEthernet0      |         |        |                       |          |
| ✓ IP Address       | Correct | 2      | IPv4 Host Address...  |          |
| ✓ Subnet Mask      | Correct | 2      | IPv4 Subnet Mask...   |          |
| R1                 |         |        |                       |          |
| Ports              |         |        |                       |          |
| GigabitEthernet0/0 |         |        |                       |          |
| ✓ IP Address       | Correct | 3      | IPv4 Host Address...  |          |
| ✓ Port Status      | Correct | 1      | Device Interface C... |          |
| ✓ Subnet Mask      | Correct | 3      | IPv4 Subnet Mask...   |          |
| GigabitEthernet0/1 |         |        |                       |          |
| ✓ IP Address       | Correct | 3      | IPv4 Host Address...  |          |
| ✓ Port Status      | Correct | 1      | Device Interface C... |          |
| ✓ Subnet Mask      | Correct | 3      | IPv4 Subnet Mask...   |          |
| S3                 |         |        |                       |          |
| ✓ Default Gateway  | Correct | 3      | Default Gateway ...   |          |
| Ports              |         |        |                       |          |
| Vlan1              |         |        |                       |          |
| ✓ IP Address       | Correct | 3      | IPv4 Host Address...  |          |
| ✓ Port Status      | Correct | 1      | Device Interface C... |          |
| ✓ Subnet Mask      | Correct | 3      | IPv4 Subnet Mask...   |          |

Hình 3.4 Assessment Items.