

# Packet Tracer - Use Diagnostic Commands

## Objectives

**Part 1: Gather End User Device Settings**

**Part 2: Gather Information about Network Devices**

**Part 3: Diagnose Connectivity Issues**

## Background / Scenario

In this Packet Tracer (PT) activity, you will use various commands to gather device information and troubleshoot device configuration and connectivity issues. Device information includes IP address, default gateway, and DNS server settings. These settings are critical to enable a device to communicate on networks and connect to the internet.

## Instructions

### Part 1: Gather End User Device Settings

In this part, you will document the IP address settings for end devices.

#### Step 1: Document the IP address settings for HQ-Laptop-1.

- The activity opens in the **HQ** cluster. The **Wiring Closet** is the tall, black chassis in the bottom left corner of the first floor. Locate all the devices on the first floor: PCs **1-1**, **1-2**, **1-3**, and **1-4**; printer **FL-1P**; and **HQ-Laptop-1**.
- Click **HQ-Laptop-1** > **Desktop** tab > **Command Prompt**.
- Enter the **ipconfig** command.

Which IPv4 address is displayed for the **Wireless0 Connection**?

Answer Area

Alamat tersebut mungkin ditampilkan sebagai 169.254.0.0/16 karena koneksi nirkabel mungkin belum terbentuk. Alamat tersebut akan berada dalam jaringan 192.168.50.0/24.

Show Answer

If the IPv4 address is in the 169.254.0.0/16 range, what method is being used to assign IPv4 addresses? Why is the laptop assigned an IPv4 address in the 169.254.0.0/16 range?

Answer Area

Alamat IPv4 berada dalam rentang 169.254.0.0/16, metode yang digunakan untuk menetapkan alamat tersebut adalah APIPA (Automatic Private IP Addressing). APIPA secara otomatis memberikan alamat IP kepada perangkat ketika perangkat gagal mendapatkan alamat IP dari server DHCP.

Show Answer

If the IPv4 address is in the 169.254.0.0/16, wait a few seconds and repeat the **ipconfig** command.

Overview

When the IPv4 address is no longer from 169.254.0.0/16 range, what is the IP addressing information displayed? Record your answers in the table below.

Wireless0	IP Addressing Information
Link-local IPv6 Address	<div>Answer Area</div> <div>FE80::20A:F3FF:FEE4:EEAA</div>
IPv6 Address	<div>Answer Area</div> <div>::</div>
IPv4 Address	<div>Answer Area</div> <div>192.168.50.4</div>
Subnet Mask	<div>Answer Area</div> <div>255.255.255.0</div>
Default Gateway	<div>Answer Area</div> <div>192.168.50.1</div>
DNS Servers	<div>Answer Area</div> <div>Tidak tersedia</div>

Blank Line. No additional information

Click **Show Answer** to a sample answer table.

Show Answer

Blank Line. No additional information

Do you see a DNS server address? Explain.

Answer Area

Output pada perintah ipconfig tidak menampilkan informasi alamat server DNS.

Show Answer

- d. Enter the **ipconfig /all** command.

Question:  
Do you see the DNS server address? What is it?

Answer Area

10.2.0.125

Show Answer

Step 2: Document the IP address settings for Net-Admin.

- a. Click **Wiring Closet > Net-Admin > Desktop** tab > **Command Prompt**.
- b. Enter the **ipconfig /all** command.

Question:  
What is the IP addressing information displayed under the FastEthernet0 interface? Record your answers in the table below.

FastEthernet0	IP Addressing Information
Physical Address	<div>Answer Area</div> <div>0001.C910.22D6</div> <div></div>
Link-local IPv6 Address	<div>Answer Area</div> <div>FE80::201:C9FF:FE10:22D6</div> <div></div>
IPv6 Address	<div>Answer Area</div> <div>::</div> <div></div>
IPv4 Address	<div>Answer Area</div> <div>192.168.99.9</div> <div></div>
Subnet Mask	<div>Answer Area</div> <div>255.255.255.0</div> <div></div>

FastEthernet0	IP Addressing Information
Default Gateway	<div>Answer Area</div> <div>192.168.99.1</div>
DNS Servers	<div>Answer Area</div> <div>10.2.0.125</div>

Blank Line. No additional information.

Click **Show Answer** to a sample answer table.

Show Answer

Blank Line. No additional information.

## Part 2: Gather Information about Network Devices

In this part, you will document information about the link to ISP. You will then document the IP addressing information for all the end devices in HQ and discover that devices belong to different virtual local area networks (VLANs).

### Step 1: Gather network connection information about the link between HQ and ISP.

The **HQ-Edge** router is the router between the HQ network and the ISP. We need to identify the upstream device information located in the ISP.

- In the **Wiring Closet** left rack, click **HQ-Edge > CLI** tab.
- Press **Enter** to get the **HQ-Edge>** prompt, and then enter the **enable** command.
- Enter the **show ip route | begin Gateway** command.

Question:

What is the address for the gateway of last resort (or default gateway)?

Answer Area

0.0.0.0

Show Answer

Why is the next hop address not displayed?

Answer Area

Karena tidak  
dikonfigurasi  
secara eksplisit.

Show Answer

- d. Enter the **show running-config | begin ip route** command.

Question

How is the default route configured? Does it use the next hop address?

Answer Area

Rute default dikonfigurasi dengan antarmuka keluar, bukan alamat hop berikutnya.



Show Answer

- e. Enter the **show cdp neighbors detail** command.

Question

What is the IPv4 address of the next hop (ISP) address?

Answer Area

10.0.0.49



Show Answer

Which port on the ISP router is connected to **HQ-Edge**?

Answer Area

GigabitEthernet1/0



Show Answer

What IOS version is used on the ISP router?

Answer Area

Type your answer here.



Show Answer

- f. Enter the **ping 10.0.0.49** command.

- g. Enter the **show arp** command.

Question

What is the MAC address of the interface on the **ISP** router that is connected to **HQ-Edge**?

Answer Area

0060.2FE1.903B



Show Answer

h. Close **HQ-Edge** and exit the **Wiring Closet**.

Step 2: Gather network connection information about the devices in HQ.

a. From **1-1**, **1-2**, **1-3**, **1-4**, **FL-1P**, and **HQ-Laptop-1**, use the **ipconfig** command to find their IPv4 addresses and Default Gateways.

Device	IPv4 Address	Default Gateway
1-1	<div>Answer Area 192.168.10.4</div>	<div>Answer Area 192.168.10.1</div>
1-2	<div>Answer Area 192.168.10.3</div>	<div>Answer Area 192.168.10.1</div>
1-3	<div>Answer Area 192.168.20.3</div>	<div>Answer Area 192.168.20.1</div>
1-4	<div>Answer Area 192.168.20.2</div>	<div>Answer Area 192.168.20.1</div>
FL-1P	<div>Answer Area 192.168.50.2</div>	<div>Answer Area 192.168.50.1</div>
HQ-Laptop-1	<div>Answer Area 192.168.50.4</div>	<div>Answer Area 192.168.50.1</div>

Blank Line. No additional information

Click **Show Answer** to a sample answer table.

Show Answer

Blank Line. No additional information

b. From PC **1-1**, open **Command Prompt**, and then enter the **arp -a** command.

Question

What information is displayed?

Answer Area

Tidak Ada Entri ARP yang Ditemukan (No ARP Entries Found).



Show Answer

- c. Use the **ping** command to ping **1-2**, **1-3**, **1-4**, **FL-1P**, and **HQ-Laptop-1**.
- d. Enter the **arp -a** command.

Question

What information is displayed?

Answer Area

192.168.10.1	000a.41ea.6b47
dynamic	
192.168.10.3	0002.4a8a.d20e



Show Answer

Why do the entries in the ARP table not contain information about devices in the 192.168.20.0 and 192.168.50.0 networks while the ping is successful?

Answer Area

Dikarenakan 192.168.10.0/24, 192.168.20.0/24, dan 192.168.50.0/24 berada pada VLAN yang berbeda. Ping



Show Answer

- e. To find the route a packet takes to reach the DNS server, enter the **tracert 10.2.0.125** command.

Question

What information is displayed?

Answer Area

Tracing route to 10.2.0.125 over a maximum of 30 hops:

1	0 ms	2 ms	0 ms	192.168.10.1
2	12 ms	0 ms	0 ms	10.0.0.49
3	1 ms	0 ms	0 ms	10.2.0.125



Show Answer

How many routers, or hops, are between PC 1-1 and the DNS server?

Answer Area

2 buah router atau hop.



Show Answer

### Part 3: Diagnose Connectivity Issues

In this part, you will use a variety of diagnostic commands and techniques. You will use the **nslookup** command to query a DNS server and troubleshoot a DNS database. You will then diagnose why a ping fails but web access is successful. Finally, you will use the **netstat** command to discover which ports are listening on the target device.

#### Step 1: Test a URL to investigate a connectivity issue.

- On PC 1-1, close the **Command Prompt**, and then click **Web Browser**.
- Enter the URL **test.ptsecurity.com**.

Question:

Does the web page display? If not, what is the message?

Answer Area

Tidak, tidak. Pesannya adalah "Host Name Unresolved".



Show Answer

- Enter the IP address **192.168.75.2**.

Question:

Does the web page display?

Answer Area

Iya ditampilkan.



Show Answer

Why does the web page display by using the IP address but not the domain name?

Answer Area

Karena PC tidak dapat menguraikan nama domain ke alamat IP.



Show Answer

#### Step 2: Use the nslookup command to verify DNS service.

- Close **Web Browser**, and then click **Command Prompt**.
- Enter the **ping test.ptsecurity.com** command.

Question:

What message is displayed?

Answer Area

Ping request could not find host test.ptsecurity.com. Please check the name and try again.





Show Answer

What does the message indicate?

Answer Area

Yang ditunjukkan adalah entri DNS tidak ada dalam basis data server DNS.

Show Answer

- c. Enter the **nslookup test.ptsecurity.com** command.

Question:

What message is displayed?

Answer Area

Server : [10.2.0.125]

Address: 10.2.0.125

\*\*\* UnKnown can't find test.ptsecurity.com: Non-existent domain.

Show Answer

Which server is the default DNS server?

Answer Area

10.2.0.125

Show Answer

- d. The **nslookup** command supports the use of alternate DNS server. Enter the **nslookup /?** command to learn options available for the command.
- e. Enter the **nslookup test.ptsecurity.com 192.168.99.3** command and press **Enter**.

**Note:** Packet Tracer may take several seconds to converge.

Question:

What message is displayed?

## Answer Area

```
C:\>nslookup test.ptsecurity.com 192.168.99.3
```

```
Server: [192.168.99.3]
Address: 192.168.99.3
DNS request timed out.
    timeout was 15000 milli seconds.
```

```
Server: [192.168.99.3]
Address: 192.168.99.3
```

```
Non-authoritative answer:
Name:   test.ptsecurity.com
Address: 192.168.75.2
```

Show Answer

In Step 2c, why is the domain name unable to be resolved?

## Answer Area

Karena ketika nama domain dimasukkan  
kedalam kotak URL, PC mencoba  
mengatasinya melalui server DNS

Show Answer

### Step 3: Use output from the ping command to diagnose connectivity issues.

- a. Enter the **ping mail.cybercloud.com** command.

Question

What message is displayed?

## Answer Area

```
C:\>ping mail.cybercloud.com
```

```
Pinging 172.19.0.4 with 32 bytes of data:
```

```
Request timed out.
Request timed out.
Request timed out.
Request timed out.
```

```
Ping statistics for 172.19.0.4:
```

```
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

Show Answer

What information is indicated by the message?

## Answer Area

Yang ditunjukkan dalam pesa tersebut adalah resolusi nama DNS berhasil. Namun, ping gagal. Kemungkinan



Show Answer

- b. Enter the **ping www.ptsecurity.com** command.

Questions:

What message is displayed?

## Answer Area

```
C:\>ping www.ptsecurity.com
```

```
Pinging 10.0.0.3 with 32 bytes of data:
```

```
Request timed out.
```

```
Request timed out.
```

```
Reply from 10.0.0.3: Destination host unreachable.
```

```
Reply from 10.0.0.3: Destination host unreachable.
```

```
Ping statistics for 10.0.0.3:
```

```
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```



Show Answer

What information is indicated by the message?

## Answer Area

Terdapat firewall di jalur yang memblokir ping ke tujuan



Show Answer

- c. Close the **Command Prompt**, open **Web Browser**, and then navigate to **www.ptsecurity.com**.

Questions:

Does the web page display?

## Answer Area

Iya ditampilkan.



Show Answer

What conclusion can be drawn?

## Answer Area

Host web berjalan; namun, ping ke server web diblokir.



Show Answer

**Step 4: Use the netstat command to find active and listening ports.**

- Close **Web Browser**, and reopen **Command Prompt**.
- In **HQ**, click the **Wiring Closet**
- From the right rack, click the **FTP** server > **Desktop** tab > **Command Prompt**.
- Arrange the **PC 1-1** and FTP server **Command Prompt** windows side by side.
- From the **PC 1-1** window, enter the **netstat** command.

Question:


What message is displayed? Does it show any data?

Answer Area

```
C:\>netstat
```

Active Connections

Proto	Local Address	Foreign Address	State
-------	---------------	-----------------	-------



Show Answer

- From the **FTP** server, enter the **netstat** command.

Question:


What message is displayed? Does it show any data?

Answer Area

```
C:\>netstat
```

Active Connections

Proto	Local Address	Foreign Address	State
TCP	0.0.0.0:25	0.0.0.0:0	CLOSED
TCP	0.0.0.0:110	0.0.0.0:0	CLOSED
TCP	0.0.0.0:8443	0.0.0.0:0	CLOSED



Show Answer

- On **FTP** server, enter the **ipconfig** command to determine its IP address.
- From **PC 1-1**, start an FTP session with the FTP server.
- On the **FTP** server, enter the **netstat** command.

Question:

What message is displayed? Is there any new information?

Answer Area

```
C:\>netstat
```

Active Connections

Proto	Local Address	Foreign Address	State
TCP	0.0.0.0:25	0.0.0.0:0	CLOSED
TCP	0.0.0.0:110	0.0.0.0:0	CLOSED
TCP	0.0.0.0:8443	0.0.0.0:0	CLOSED
TCP	192.168.75.2:21	192.168.10.4:1027	ESTABLISHED

Show Answer

Which port is the listening port and what is the status of the connection?

Answer Area

Port pendengar adalah port TCP 21 dan koneksi TCP terjalin.

Show Answer

- j. From PC **1-1**, enter **bob** as the username.
- k. From the **FTP** server, enter the **netstat** command.

Question:

Does the displayed information change?

Answer Area

Tidak berubah.

No.

Hide Answer

- l. From **PC 1-1**, enter **cisco123** as the password.
- m. From **PC 1-1**, enter the **dir** command.
- n. From the **FTP** server, enter the **netstat** command.

Questions:

Does the displayed information change?

## Answer Area

Iya berubah, menampilkan sebagai berikut :  
C:\>netstat

## Active Connections

Proto	Local Address	Foreign Address	State
TCP	0.0.0.0:25	0.0.0.0:0	CLOSED
TCP	0.0.0.0:110	0.0.0.0:0	CLOSED
TCP	0.0.0.0:8443	0.0.0.0:0	CLOSED
TCP	192.168.75.2:21	192.168.10.4:1029	ESTABLISHED

## Show Answer

What is indicated by this new entry?

## Answer Area

Entry baru menunjukkan bahwa TCP baru dibuka untuk mentransfer nama file di direktori FTP dan koneksi ditutup

## Show Answer

- o. From **PC 1-1**, enter the **put Sample2.txt** command and press **Enter**. This will upload the Sample2.txt file to the **FTP** server.
- p. From the **FTP** server, enter the **netstat** command.

Questions:

Does the displayed information change?

## Answer Area

Iya berubah, baris baru menunjukkan :  
TCP 192.168.75.2:1032 192.168.10.4:1032 CLOSING

## Show Answer

- q. Wait for a few seconds and then enter the **netstat** command again.

Question:

Does the displayed information change?

## Answer Area

Iya berubah. Baris "CLOSING" sudah tidak ada lagi.

## Show Answer

- r. From **PC 1-1**, enter the **quit** command.
- s. From the **FTP** server, enter the **netstat** command.

Question:

Does the displayed information change?

Answer Area

Iya berubah, sekarang koneksi TCP antara 192.168.75.2:21 dan 192.168.10.4:1029 Tertutup



Show Answer

- t. From **PC 1-1**, close **Command Prompt**, and then open **Web Browser**.
- u. Navigate to **192.168.75.2**.
- v. From the **FTP** server, enter the **netstat** command.

Question:

Does the displayed information change?

Answer Area

Iya, baris baru menunjukkan :  
TCP 192.168.75.2:80  
192.168.10.4:1035 CLOSED



Show Answer

What does this new entry indicate?

Answer Area

Yang ditunjukkan oleh baris baru ini adalah permintaan pada halaman web yang dilakukan oleh host 192.168.10.2.



Show Answer

End of document

Show All Answers

Clear My Responses