

**LAPORAN PRAKTIKUM CODELAB JARINGAN KOMPUTER 5F  
MODUL 1**



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## PART 1

Device	Interface	IP Address	Subnet Mask	Default Gateway
CustomerRouter	G0/0	192.168.0.1	255.255.255.192	N/A
	G0/1	192.168.0.65	255.255.255.192	
	S0/1/0	209.165.201.2	255.255.255.252	
LAN-A Switch	VLAN1	192.168.0.2	255.255.255.192	192.168.0.1
LAN-B Switch	VLAN1	192.168.0.66	255.255.255.192	192.168.0.65
PC-A	NIC	192.168.0.62	255.255.255.192	192.168.0.1
PC-B	NIC	192.168.0.126	255.255.255.192	192.168.0.65
ISPRouter	G0/0	209.165.200.225	255.255.255.224	N/A
	S0/1/0	209.165.201.1	255.255.255.252	
ISPSwitch	VLAN1	209.165.200.226	255.255.255.224	209.165.200.225
ISP Workstation	NIC	209.165.200.235	255.255.255.224	209.165.200.225
ISP Server	NIC	209.165.200.240	255.255.255.224	209.165.200.225

d. Jawablah pertanyaan-pertanyaan berikut untuk membantu membuat skema *subnetting* yang memenuhi persyaratan jaringan yang disebutkan:

Berapa banyak alamat *host* yang dibutuhkan di subnet terbesar?

Host terbesar terdapat pada LAN-A yaitu 50 host, maka untuk mencukupinya dibutuhkan 64 alamat host

Berapa jumlah minimum subnet yang dibutuhkan?

4 Subnet (LAN-A, LAN-B, dan 2 cadangan)

Jaringan yang ditugaskan kepada Anda untuk di-subnet adalah 192.168.0.0/24. Bagaimana bentuk biner dari *subnet mask* /24?

Subnet mask /24 dalam bentuk biner adalah:

11111111.11111111.11111111.00000000

e. *Subnet mask* terdiri dari dua bagian, yaitu bagian jaringan (*network portion*) dan bagian *host* (*host portion*). Ini direpresentasikan dalam biner oleh angka satu dan angka nol di dalam *subnet mask*.

Pertanyaan:

Dalam *network mask*, apa yang direpresentasikan oleh angka satu?

Angka satu (1) dalam subnet mask mempresentasikan bagian jaringan dari alamat IP (Network Portion)

Dalam *network mask*, apa yang direpresentasikan oleh angka nol?

Angka nol (0) dalam subnet mask mempresentasikan bagian host dari alamat IP (Host Portion)

f. Untuk melakukan *subnetting* sebuah jaringan, bit dari bagian *host* pada *network mask* asli diubah menjadi bit subnet. Jumlah bit subnet menentukan jumlah subnet yang bisa dibuat.

Pertanyaan:

- Dengan masing-masing kemungkinan *subnet mask* yang digambarkan dalam format biner berikut, berapa banyak subnet dan berapa banyak *host* yang dapat dibuat dari setiap contoh?

Karena kita membutuhkan 64 alamat host jadi kita menggunakan /26 dimana kita dapat membuat 4 subnet dan dapat menampung 62 host (64-2).

Notasi prefiks dan setara dengan *dotted decimal mask* 255.255.255.0.

1. ( /25) 1111111.1111111.1111111.10000000

- Padanan *subnet mask dotted decimal*:

255.255.255.128

- Jumlah subnet: 2

- Jumlah host:  $2^7 - 2 = 128 - 2 = 126$

2. ( /26) 1111111.1111111.1111111.11000000

- Padanan *subnet mask dotted decimal*:

255.255.255.192

- Jumlah subnet: 4

- Jumlah host:  $2^6 - 2 = 64 - 2 = 62$

3. ( /27) 1111111.1111111.1111111.11100000

- Padanan *subnet mask dotted decimal*:

255.255.255.224

- Jumlah subnet: 8

- Jumlah host:  $2^5 - 2 = 32 - 2 = 30$

4. ( /28) 1111111.1111111.1111111.11110000

- Padanan *subnet mask dotted decimal*:

255.255.255.240

- Jumlah subnet: 16

- Jumlah host:  $2^4 - 2 = 16 - 2 = 14$

5. ( /29) 1111111.1111111.1111111.11111000

- Padanan *subnet mask dotted decimal*:

255.255.255.248

- Jumlah subnet: 32

- Jumlah host:  $2^3 - 2 = 8 - 2 = 6$

6. ( /30) 1111111.1111111.1111111.11111100

- Padanan *subnet mask dotted decimal*:

255.255.255.252

- Jumlah subnet: 64

- Jumlah host:  $2^2 - 2 = 4 - 2 = 2$

Dengan mempertimbangkan jawaban Anda di atas, subnet mask mana yang memenuhi jumlah alamat host minimum yang diperlukan?

Karena kita membutuhkan minimal 50 alamat host untuk LAN-A dan 40 alamat host untuk LAN-B, subnet mask yang memenuhi kebutuhan ini adalah /26 (62 host per subnet)

**Mempertimbangkan jawaban Anda di atas, *subnet mask* manakah yang memenuhi jumlah minimum subnet yang dibutuhkan?**

Karena kita membutuhkan minimal 4 subnet (2 untuk LAN, 2 untuk masa depan), subnet mask yang memenuhi kebutuhan ini adalah /26 (4 subnet)

**Mempertimbangkan jawaban Anda di atas, *subnet mask* manakah yang memenuhi kedua persyaratan, yaitu jumlah minimum *host* dan jumlah minimum subnet yang dibutuhkan?**

subnet mask yang memenuhi kedua kondisi tersebut adalah /26

Subnet Address	Prefix	Subnet Mask
192.168.0.0	/26	255.255.255.192
192.168.0.64	/26	255.255.255.192
192.168.0.128	/26	255.255.255.192
192.168.0.192	/26	255.255.255.192

## PART 2

### Konfigurasi Customer Router

```
CustomerRouter
Physical Config CLI Attributes
IOS Command Line Interface
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up

Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname CustomerRouter
CustomerRouter(config)#enable secret Class123
CustomerRouter(config)#line console 0
CustomerRouter(config-line)#password Cisco123
CustomerRouter(config-line)#login
CustomerRouter(config-line)#interface g0/0
CustomerRouter(config-if)#ip address 192.168.0.1 255.255.255.192
CustomerRouter(config-if)#no shutdown

CustomerRouter(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
interface g0/1
CustomerRouter(config-if)#ip address 192.168.0.65 255.255.255.192
CustomerRouter(config-if)#no shutdown

CustomerRouter(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
interface s0/1/0
CustomerRouter(config-if)#ip address 209.165.201.2 255.255.255.252
CustomerRouter(config-if)#no shutdown
CustomerRouter(config-if)#end
CustomerRouter#
%SYS-5-CONFIG_I: Configured from console by console
write memory
Building configuration...
```

Copy      Paste

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Enable dan konfigurasi awal:

- Aktifkan konfigurasi dengan perintah enable dan configurasi terminal
- Atur password enable secret dan password pada line console 0 seperti pada modul, lalu login.
- Masukan nama untuk router

Konfigurasi interface GigabitEthernet:

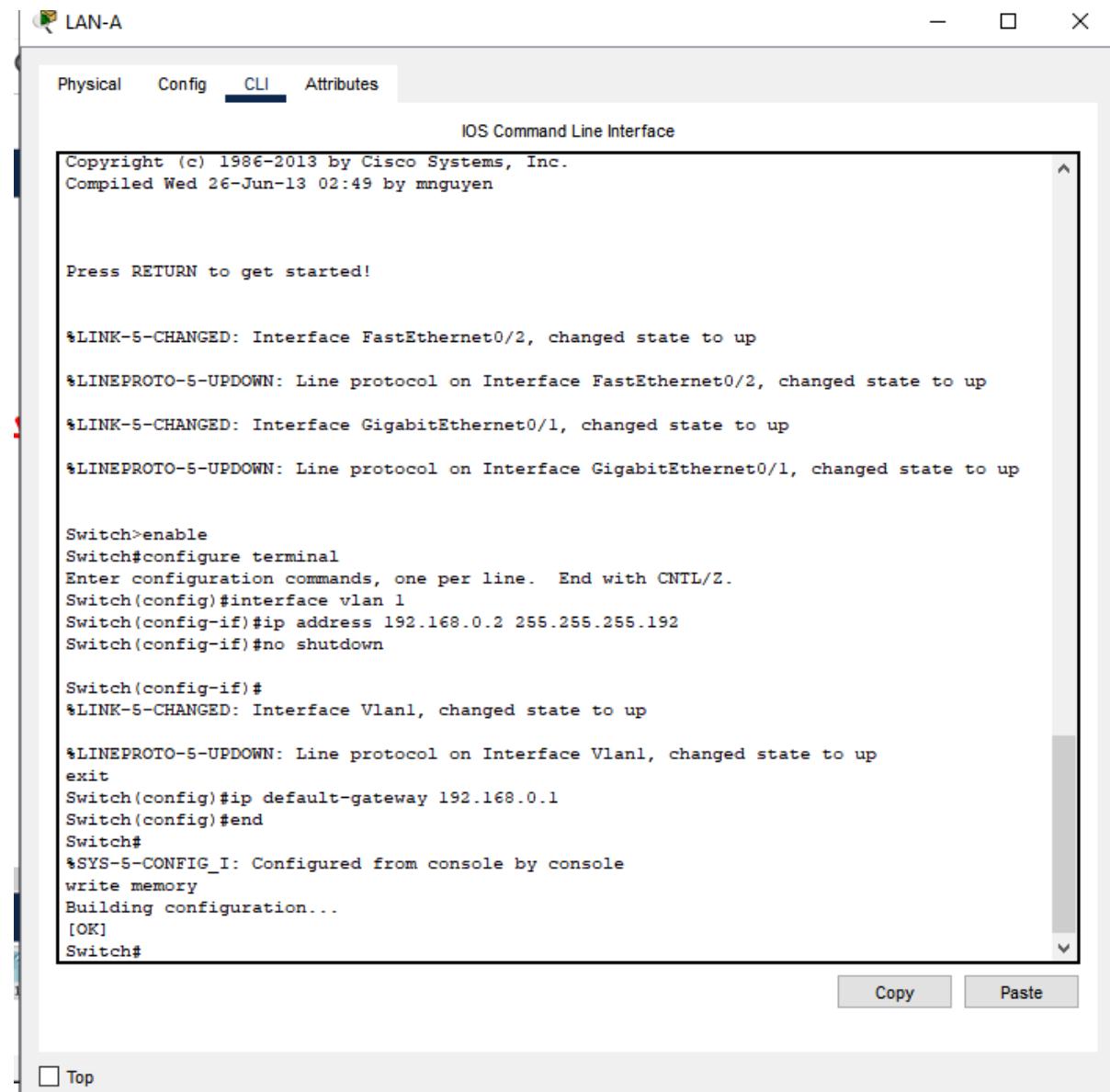
- Konfigurasi pada interface g0/0 ip addressnya 192.168.0.1 dengan subnet mask 255.255.255.192 lalu ketik no shutdown.
- Konfigurasi pada interface g0/1 ip addressnya 192.168.0.65 dengan subnet mask 255.255.255.192 lalu ketik no shutdown.
- Konfigurasi pada interface s0/1/0 ip address 209.165.201.2 255.255.255.252 lalu ketik no shutdown.

Simpan Konfigurasi:

Jika sudah semua lalu lalu simpan semua kofigurasi tadi dengan ketikan copy running-config startup-config

## Konfigurasi Customer LAN

### LAN-A



The screenshot shows a Windows application window titled "LAN-A". The window has tabs at the top: "Physical", "Config", "CLI" (which is selected), and "Attributes". Below the tabs is a title bar "IOS Command Line Interface". The main area contains the following text:

```
Copyright (c) 1986-2013 by Cisco Systems, Inc.  
Compiled Wed 26-Jun-13 02:49 by mnnguyen  
  
Press RETURN to get started!  
  
%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up  
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up  
  
Switch>enable  
Switch#configure terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
Switch(config)#interface vlan 1  
Switch(config-if)#ip address 192.168.0.2 255.255.255.192  
Switch(config-if)#no shutdown  
  
Switch(config-if)#  
%LINK-5-CHANGED: Interface Vlan1, changed state to up  
  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up  
exit  
Switch(config)#ip default-gateway 192.168.0.1  
Switch(config)#end  
Switch#  
%SYS-5-CONFIG_I: Configured from console by console  
write memory  
Building configuration...  
[OK]  
Switch#
```

At the bottom right of the window are "Copy" and "Paste" buttons. At the bottom left is a "Top" button.

Pada LAN-A hampir sama dengan customer router seperti mengaktifkan konfigurasi memasukan ip address, subnet mask lalu aktifkan dengan perintah no shutdown, lalu simpan.

### LAN-B

```
IOS Command Line Interface
Copyright (c) 1986-2013 by Cisco Systems, Inc.
Compiled Wed 26-Jun-13 02:49 by mnnguyen

Press RETURN to get started!

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface vlan 1
Switch(config-if)#ip address 192.168.0.66 255.255.255.192
Switch(config-if)#no shutdown

Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up
exit
Switch(config)#ip default-gateway 192.168.0.65
Switch(config)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console
write memory
Building configuration...
[OK]
Switch#
```

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Pada LAN-B sama dengan LAN-A seperti mengaktifkan konfigurasi memasukan ip address, subnet mask lalu aktifkan dengan perintah no shutdown, lalu simpan

## Konfigurasi PC

### PC A

Pada PC A Masukkan:

- IP Address: 192.168.0.62
- Subnet Mask: 255.255.255.192
- Default Gateway: 192.168.0.1

IPv4 Address	192.168.0.62
Subnet Mask	255.255.255.192
Default Gateway	192.168.0.1

### PC B

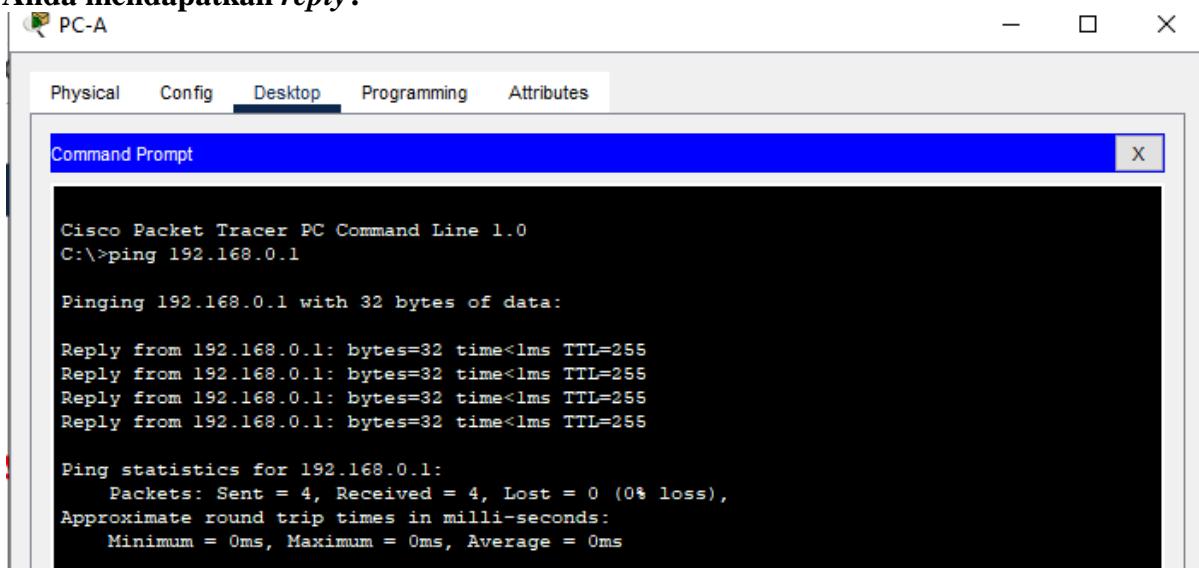
Pada PC B masukkan:

- IP Address: 192.168.0.62
- Subnet Mask: 255.255.255.192
- Default Gateway: 192.168.0.1

IPv4 Address	192.168.0.126
Subnet Mask	255.255.255.192
Default Gateway	192.168.0.65

### PART 3

Pastikan apakah PC-A dapat berkomunikasi dengan *default gateway*-nya. Apakah Anda mendapatkan *reply*?



The screenshot shows a Cisco Packet Tracer interface titled "PC-A". A tab bar at the top includes "Physical", "Config", "Desktop" (which is selected), "Programming", and "Attributes". Below the tabs is a "Command Prompt" window with a blue header bar containing "Command Prompt" and a close button "X". The window displays the following text:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.0.1

Pinging 192.168.0.1 with 32 bytes of data:

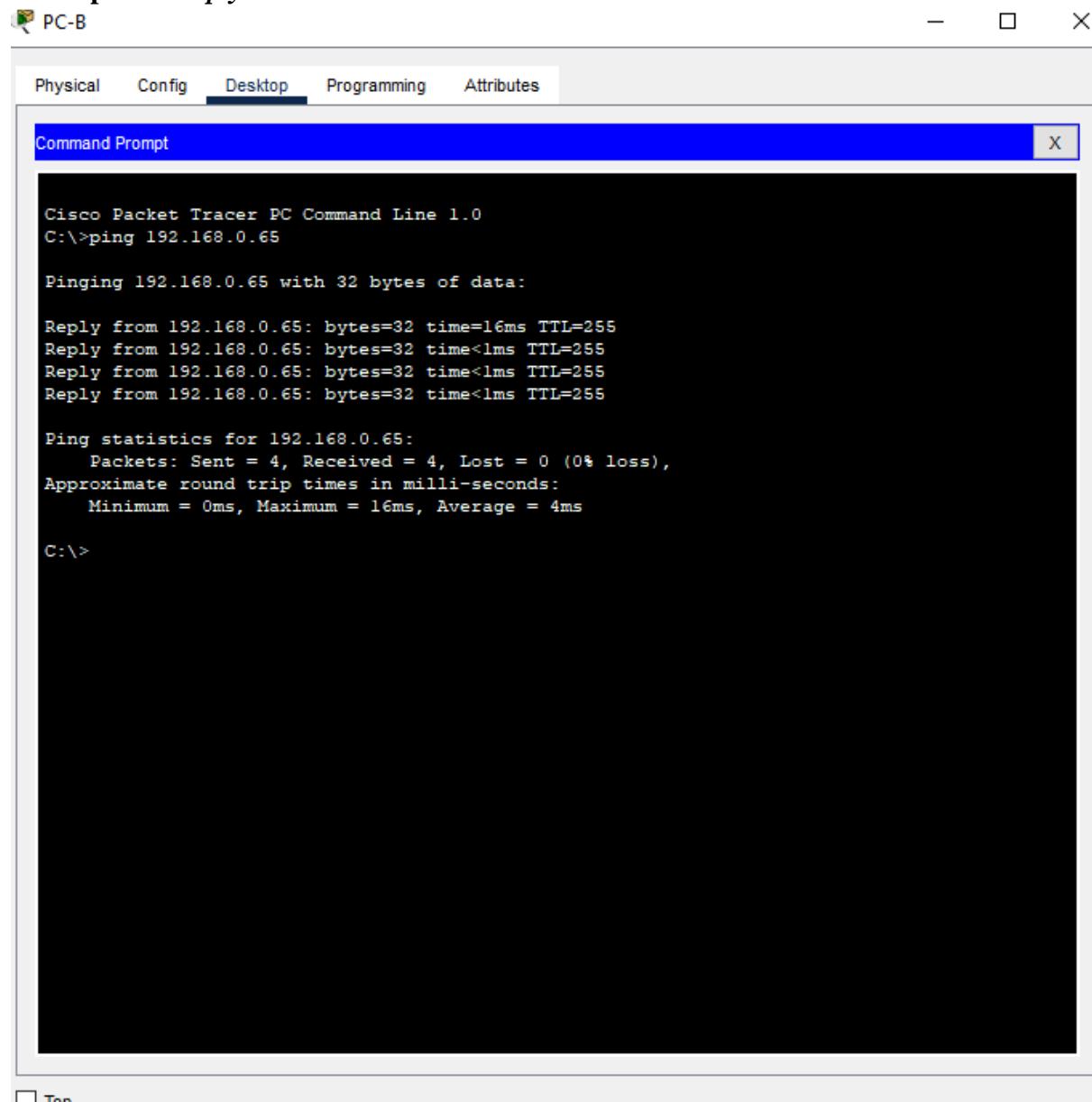
Reply from 192.168.0.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Hasil ping dari PC A saya sudah mendapat reply dari default gatewaynya.

Pastikan apakah PC-B dapat berkomunikasi dengan *default gateway*-nya. Apakah Anda

mendapatkan *reply*?



The screenshot shows a Cisco Packet Tracer interface titled "PC-B". A tab bar at the top includes "Physical", "Config", "Desktop" (which is selected), "Programming", and "Attributes". Below this is a "Command Prompt" window with the title "Cisco Packet Tracer PC Command Line 1.0". The window displays the following command and its output:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.0.65

Pinging 192.168.0.65 with 32 bytes of data:

Reply from 192.168.0.65: bytes=32 time=16ms TTL=255
Reply from 192.168.0.65: bytes=32 time<1ms TTL=255
Reply from 192.168.0.65: bytes=32 time<1ms TTL=255
Reply from 192.168.0.65: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.0.65:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 16ms, Average = 4ms

C:\>
```

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Hasil ping dari PC B saya sudah mendapat reply dari default gatewaynya.

**Pastikan apakah PC-A dapat berkomunikasi dengan PC-B. Apakah Anda mendapatkan *reply*?**

The screenshot shows a software interface for managing network devices. At the top, there's a toolbar with tabs: Physical, Config, Desktop, Programming, and Attributes. The Desktop tab is currently selected. Below the toolbar is a title bar for a Command Prompt window, which also has a close button ('X'). The main area of the window displays the output of several ping commands:

```
Reply from 192.168.0.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.0.126

Pinging 192.168.0.126 with 32 bytes of data:

Reply from 192.168.0.126: bytes=32 time=1ms TTL=127
Reply from 192.168.0.126: bytes=32 time<1ms TTL=127
Reply from 192.168.0.126: bytes=32 time<1ms TTL=127
Reply from 192.168.0.126: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.0.126:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 192.168.0.1

Pinging 192.168.0.1 with 32 bytes of data:

Reply from 192.168.0.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Hasil ping dari PC A saya sudah mendapat reply dari PC B yang berarti kedua PC ini sudah bisa saling berkomunikasi