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Dokumentasi Hasil Praktikum

Tabel Perhitungan Subnet & CIDR

Subnet Mask / CIDR	Network Address	Broadcast Address	Host Range
/29	x.x.x.0	x.x.x.7	x.x.x.1 - x.x.x.6
/30	x.x.x.0	x.x.x.3	x.x.x.1 - x.x.x.2
/24	x.x.x.0	x.x.x.255	x.x.x.1 - x.x.x.254

Penjelasan Konsep

- **Subnetting:** Teknik pembagian jaringan IP menjadi beberapa subnet yang lebih kecil. Hal ini mempermudah pengelolaan dan meningkatkan keamanan serta efisiensi jaringan.
- **CIDR (Classless Inter-Domain Routing):** Metode untuk penulisan alamat IP dan subnets yang memungkinkan penggunaan ukuran subnet yang fleksibel.
- **Langkah-langkah Perhitungan:**
 1. Tentukan kebutuhan host untuk masing-masing subnet.
 2. Pilih subnet mask yang sesuai dengan jumlah host.
 3. Hitung network address, broadcast address, dan host range untuk setiap subnet.
- **Implementasi:** Setelah perhitungan, subnet yang telah ditentukan diimplementasikan pada perangkat jaringan untuk memastikan komunikasi yang efisien antar segmen jaringan.

Contoh Perhitungan Subnet Mask dan CIDR

1. Subnet /29

- **IP Awal:** 192.168.1.0
- **CIDR:** /29
- **Subnet Mask:** 255.255.255.248
- **Jumlah Bit Host:** $32 - 29 = 3 \text{ bit} \rightarrow 2^3 = 8 \text{ alamat}$
- **Alamat Host yang Tersedia:** $8 - 2 = 6$ (dikurangi network dan broadcast)
- **Perhitungan:**
 - **Network Address:** 192.168.1.0
 - **Broadcast Address:** 192.168.1.7
 - **Host Range:** 192.168.1.1 - 192.168.1.6

2. Subnet /30

- **IP Awal:** 192.168.1.0
- **CIDR:** /30

- **Subnet Mask:** 255.255.255.252
- **Jumlah Bit Host:** $32 - 30 = 2 \text{ bit} \rightarrow 2^2 = 4 \text{ alamat}$
- **Alamat Host yang Tersedia:** $4 - 2 = 2$
- **Perhitungan:**
 - **Network Address:** 192.168.1.0
 - **Broadcast Address:** 192.168.1.3
 - **Host Range:** 192.168.1.1 - 192.168.1.2

3. Subnet /24

- **IP Awal:** 192.168.1.0
- **CIDR:** /24
- **Subnet Mask:** 255.255.255.0
- **Jumlah Bit Host:** $32 - 24 = 8 \text{ bit} \rightarrow 2^8 = 256 \text{ alamat}$
- **Alamat Host yang Tersedia:** $256 - 2 = 254$
- **Perhitungan:**
 - **Network Address:** 192.168.1.0
 - **Broadcast Address:** 192.168.1.255
 - **Host Range:** 192.168.1.1 - 192.168.1.254

Langkah-langkah Perhitungan Subnet

1. Tentukan jumlah host yang dibutuhkan untuk masing-masing segmen jaringan.
2. Hitung jumlah total alamat: Tambahkan dua alamat untuk network dan broadcast.
3. Tentukan nilai bit host ($32 - \text{CIDR}$) untuk mendapatkan jumlah total alamat pada subnet.
4. Sesuaikan IP awal dengan melakukan increment berdasarkan jumlah alamat per subnet.

PC0 (Subnet A):

IP Address: 192.168.100.2

Subnet Mask: 255.255.255.240

Default Gateway: 192.168.100.1

PC1 (Subnet B):

IP Address: 192.168.100.18

Subnet Mask: 255.255.255.240

Default Gateway: 192.168.100.17

PC2 (Subnet C):

IP Address: 192.168.100.34

Subnet Mask: 255.255.255.224

Default Gateway: 192.168.100.33

Router1

Physical

Config

CLI

Attributes

MODULES

HWIC-1GE-SFP

HWIC-2T

HWIC-4ESW

HWIC-8A

HWIC-AP-AG-B

WIC-1AM

WIC-1ENET

WIC-1T

WIC-2AM

WIC-2T

WIC-Cover


GLC-LH-SMD

Physical Device View

Zoom In

Original Size


Zoom Out



Customize Icon in Physical View

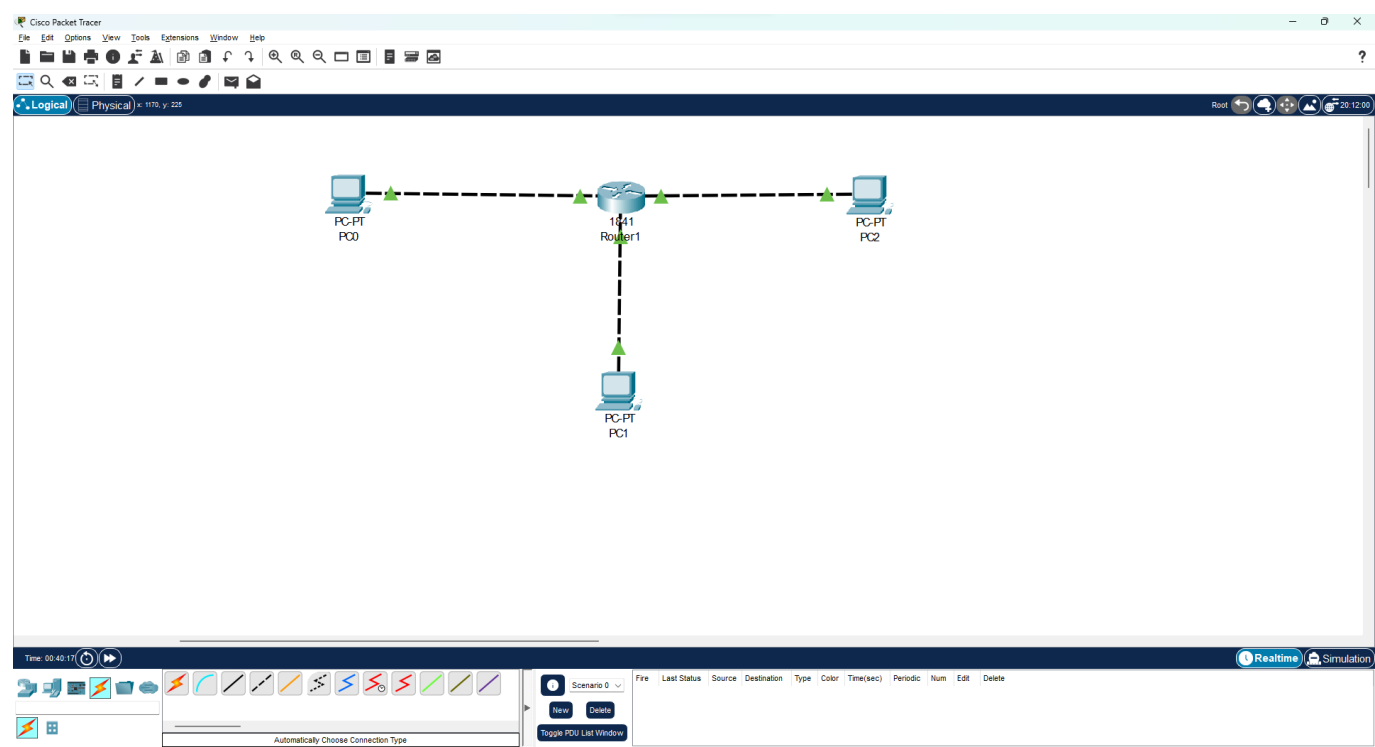
Customize Icon in Logical View

The HWIC-1GE-SFP is a single-wide HWIC with one Small Form-Factor Pluggable (SFP) slot. The SFP slot can be populated with Cisco copper and optical Gigabit Ethernet SFPs to provide 1-port Gigabit Ethernet connectivity on all Cisco Integrated Services Routers



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PC0

Physical

Config

Desktop

Programming

Attributes

IP Configuration

X

Interface

FastEthernet0

IP Configuration

DHCP

Static

IPv4 Address

192.168.100.2

Subnet Mask

255.255.255.240

Default Gateway

192.168.100.1

DNS Server

0.0.0.0

IPv6 Configuration

Automatic

Static

IPv6 Address

/

Link Local Address

FE80::290:2BFF:FE74:792D

Default Gateway

DNS Server

802.1X

Use 802.1X Security

Authentication

MD5

Username

Password

PC1

Physical

Config

Desktop

Programming

Attributes

IP Configuration

X

Interface

FastEthernet0

IP Configuration

DHCP

Static

IPv4 Address

192.168.100.18

Subnet Mask

255.255.255.240

Default Gateway

192.168.100.17

DNS Server

0.0.0.0

IPv6 Configuration

Automatic

Static

IPv6 Address

/

Link Local Address

FE80::205:5EFF:FE14:E306

Default Gateway

DNS Server

802.1X

Use 802.1X Security

Authentication

MD5

Username

Password

Top

PC2

Physical

Config

Desktop

Programming

Attributes

IP Configuration

X

Interface

FastEthernet0

IP Configuration

DHCP

Static

IPv4 Address

192.168.100.34

Subnet Mask

255.255.255.224

Default Gateway

192.168.100.33

DNS Server

0.0.0.0

IPv6 Configuration

Automatic

Static

IPv6 Address

/

Link Local Address

FE80::2E0:8FFF:FE01:929E

Default Gateway

DNS Server

802.1X

Use 802.1X Security

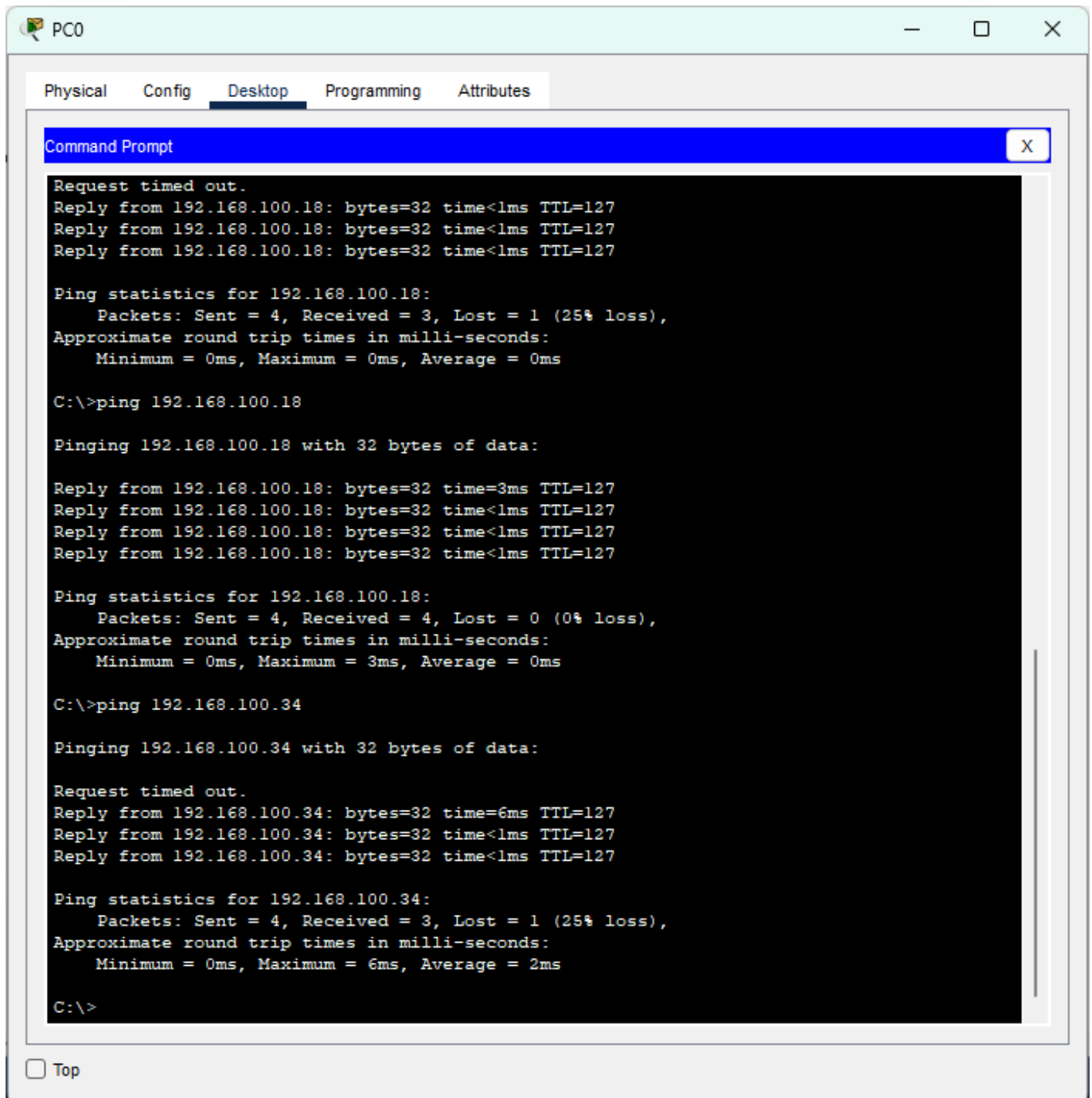
Authentication

MD5

Username

Password

Top



The screenshot shows a window titled "PC0" with tabs for "Physical", "Config", "Desktop", "Programming", and "Attributes". The "Desktop" tab is active, displaying a "Command Prompt" window. The Command Prompt shows the results of two ping commands. The first command is "C:\>ping 192.168.100.18", which shows a 25% loss of packets. The second command is "C:\>ping 192.168.100.34", which also shows a 25% loss of packets. The Command Prompt window has a blue title bar and a close button (X) in the top right corner. At the bottom left of the PC0 window, there is a checkbox labeled "Top".

```
Request timed out.  
Reply from 192.168.100.18: bytes=32 time<1ms TTL=127  
Reply from 192.168.100.18: bytes=32 time<1ms TTL=127  
Reply from 192.168.100.18: bytes=32 time<1ms TTL=127  
  
Ping statistics for 192.168.100.18:  
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),  
Approximate round trip times in milli-seconds:  
    Minimum = 0ms, Maximum = 0ms, Average = 0ms  
  
C:\>ping 192.168.100.18  
  
Pinging 192.168.100.18 with 32 bytes of data:  
  
Reply from 192.168.100.18: bytes=32 time=3ms TTL=127  
Reply from 192.168.100.18: bytes=32 time<1ms TTL=127  
Reply from 192.168.100.18: bytes=32 time<1ms TTL=127  
Reply from 192.168.100.18: bytes=32 time<1ms TTL=127  
  
Ping statistics for 192.168.100.18:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
    Minimum = 0ms, Maximum = 3ms, Average = 0ms  
  
C:\>ping 192.168.100.34  
  
Pinging 192.168.100.34 with 32 bytes of data:  
  
Request timed out.  
Reply from 192.168.100.34: bytes=32 time=6ms TTL=127  
Reply from 192.168.100.34: bytes=32 time<1ms TTL=127  
Reply from 192.168.100.34: bytes=32 time<1ms TTL=127  
  
Ping statistics for 192.168.100.34:  
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),  
Approximate round trip times in milli-seconds:  
    Minimum = 0ms, Maximum = 6ms, Average = 2ms  
  
C:\>
```

[GitHub Profile](#)