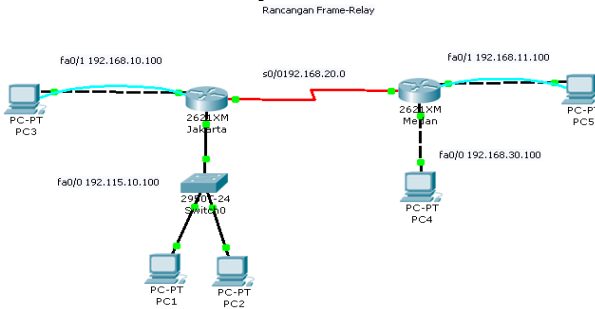


LAMPIRAN

LAMPIRAN

Konfigurasi X.25 dan *Frame-Relay*



Gambar 4.3 Rancangan Frame-Relay

Rancangan sederhana *Frame-Relay* ini menggunakan aplikasi *Packet Tracer* v5.2, yang mana aplikasi ini sangat membantu.

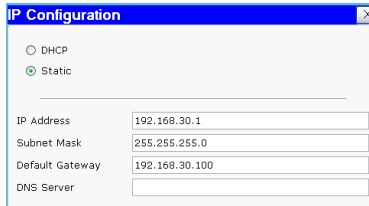
Hardware yang digunakan adalah sebagai berikut :

- PC 5 buah;
- Switch 1 Buah dengan tipe 2950T-24 CISCO;
- Router 2 Buah dengan tipe 2621XM;
- Kabel *Staight* 3 buah dengan masing kegunaan antara lain PC 1, PC 2 ke *Switch*, dan *Switch* ke *Router*;
- Kabel *Cross* 3 buah dengan masing-masing kegunaan PC 3 ke *Router*, PC 4 ke *Router*, dan PC 5 ke *Router*. Kegunaan kabel *cross* ialah karena penyambungan PC ke *Router* ialah sama *device*;
- Kabel *Console* 2 Buah dengan masing kegunaan PC 3 ke *Router* dan PC 5 ke *Router*. Kabel *Console* berguna sebagai konfigurasi *router* pada PC atau *me-remote* lewat PC

1. Router Medan

- Fa0/0 pada PC 4 yaitu 192.168.30.100
- Fa0/1 pada PC 5 yaitu 192.168.11.100
- Network Fa0/0 yaitu 192.168.30.0
- Network Fa0/1 yaitu 192.168.11.0
- S0/0 192.168.20.1
- Subnet Mask 255.255.255.0

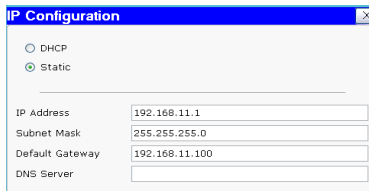
PC 4



The screenshot shows the 'IP Configuration' window for PC 4. It features a blue title bar with the text 'IP Configuration' and a close button. Below the title bar, there are two radio buttons: 'DHCP' (unselected) and 'Static' (selected). Underneath, there are four input fields: 'IP Address' with the value '192.168.30.1', 'Subnet Mask' with '255.255.255.0', 'Default Gateway' with '192.168.30.100', and 'DNS Server' which is empty.

Gambar 4.4 IP Konfigurasi PC 4

PC 5



The screenshot shows the 'IP Configuration' window for PC 5. It features a blue title bar with the text 'IP Configuration' and a close button. Below the title bar, there are two radio buttons: 'DHCP' (unselected) and 'Static' (selected). Underneath, there are four input fields: 'IP Address' with the value '192.168.11.1', 'Subnet Mask' with '255.255.255.0', 'Default Gateway' with '192.168.11.100', and 'DNS Server' which is empty.

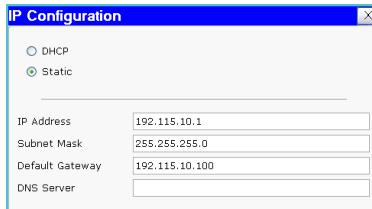
Gambar 4.5 IP Konfigurasi PC 5

2. Router Jakarta

- Fa0/0 pada PC 1 dan 2 yaitu 192.115.10.100
- Fa0/1 pada PC 3 yaitu 192.168.10.100
- Network Fa0/0 yaitu 192.115.10.0
- Network Fa0/1 yaitu 192.168.10.0
- S0/0 192.168.20.2

- *Subnet Mask 255.255.255.0*

PC 1

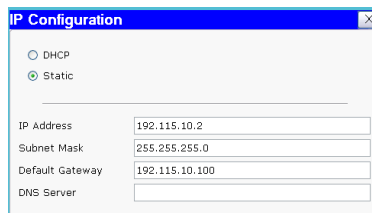


The screenshot shows the 'IP Configuration' dialog box for PC 1. The 'Static' radio button is selected. The IP Address is 192.115.10.1, Subnet Mask is 255.255.255.0, and Default Gateway is 192.115.10.100. The DNS Server field is empty.

Field	Value
IP Address	192.115.10.1
Subnet Mask	255.255.255.0
Default Gateway	192.115.10.100
DNS Server	

Gambar 4.6 IP Konfigurasi PC 1

PC 2

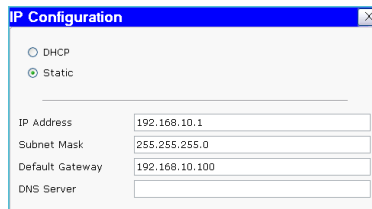


The screenshot shows the 'IP Configuration' dialog box for PC 2. The 'Static' radio button is selected. The IP Address is 192.115.10.2, Subnet Mask is 255.255.255.0, and Default Gateway is 192.115.10.100. The DNS Server field is empty.

Field	Value
IP Address	192.115.10.2
Subnet Mask	255.255.255.0
Default Gateway	192.115.10.100
DNS Server	

Gambar 4.7 IP Konfigurasi PC 2

PC 3



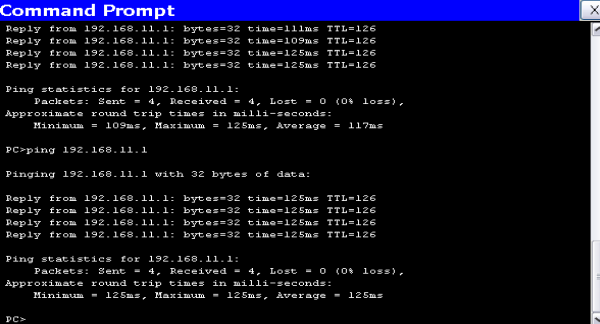
The screenshot shows the 'IP Configuration' dialog box for PC 3. The 'Static' radio button is selected. The IP Address is 192.168.10.1, Subnet Mask is 255.255.255.0, and Default Gateway is 192.168.10.100. The DNS Server field is empty.

Field	Value
IP Address	192.168.10.1
Subnet Mask	255.255.255.0
Default Gateway	192.168.10.100
DNS Server	

Gambar 4.8 IP Konfigurasi PC

4.4.5 Ping Test

4.4.5.1 Jakarta ke Medan



```
Command Prompt
Reply from 192.168.11.1: bytes=32 time=111ms TTL=126
Reply from 192.168.11.1: bytes=32 time=109ms TTL=126
Reply from 192.168.11.1: bytes=32 time=125ms TTL=126
Reply from 192.168.11.1: bytes=32 time=125ms TTL=126

Ping statistics for 192.168.11.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 109ms, Maximum = 125ms, Average = 117ms

PC>ping 192.168.11.1

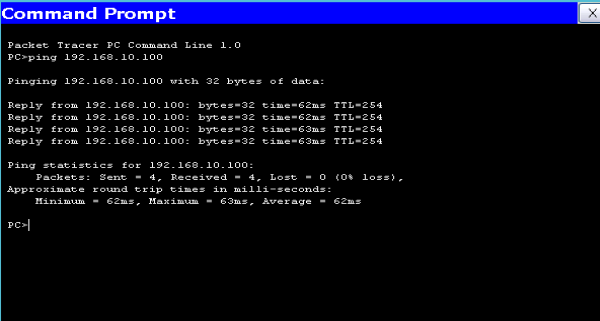
Pinging 192.168.11.1 with 32 bytes of data:
Reply from 192.168.11.1: bytes=32 time=125ms TTL=126
Reply from 192.168.11.1: bytes=32 time=125ms TTL=126
Reply from 192.168.11.1: bytes=32 time=125ms TTL=126
Reply from 192.168.11.1: bytes=32 time=125ms TTL=126

Ping statistics for 192.168.11.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 125ms, Maximum = 125ms, Average = 125ms

PC>
```

Gambar 4.9 Ping Jakarta ke Medan

4.4.5.2 Medan Ke Jakarta



```
Command Prompt
Packet Tracer PC Command Line 1.0
PC>ping 192.168.10.100

Pinging 192.168.10.100 with 32 bytes of data:
Reply from 192.168.10.100: bytes=32 time=62ms TTL=254
Reply from 192.168.10.100: bytes=32 time=62ms TTL=254
Reply from 192.168.10.100: bytes=32 time=63ms TTL=254
Reply from 192.168.10.100: bytes=32 time=63ms TTL=254

Ping statistics for 192.168.10.100:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 62ms, Maximum = 63ms, Average = 62ms

PC>
```

Gambar 4.10 Ping Medan ke Jakarta

4.4.6 Bahasa Konfigurasi

4.4.6.1 Router Jakarta

Router>en

Router#config t

Enter configuration commands, one per line. End with
CNTL/Z.

```
Router(config)#int f0/0
Router(config-if)#ip addr 192.168.11.100 255.255.255.0
Router(config-if)#no shut
%LINK-5-CHANGED: Interface FastEthernet0/0, changed
state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/0, changed state to up
Router(config-if)#exit
Router(config)#int f0/1
Router(config-if)#ip addr 192.168.10.100 255.255.255.0
Router(config-if)#no shut

%LINK-5-CHANGED: Interface FastEthernet0/1, changed
state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/1, changed state to up
Router(config-if)#exit
Router(config)#int s0/0
Router(config-if)#ip addr 192.168.20.1 255.255.255.0
Router(config-if)#clock rate 64000
Router(config-if)#no shut
%LINK-5-CHANGED: Interface Serial0/0, changed state
to down
Router(config-if)#exit
Router(config)#router eigrp 100
Router(config-router)#network 192.168.11.0
Router(config-router)#network 192.168.10.0
Router(config-router)#network 192.168.20.0
```

```
Router(config-router)#^Z
%SYS-5-CONFIG_I: Configured from console by console
Router#config t
Enter configuration commands, one per line. End with
CNTL/Z.
Router(config)#int s0/0
Router(config-if)#bandwidth 64
Router(config-if)#no keepalive
Router(config-if)#encapsulation frame-relay ietf
Router(config-if)#frame-relay map ip 192.168.20.2 103 ietf
broadcast
Router(config-if)#^Z
%SYS-5-CONFIG_I: Configured from console by console
Router#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
Router#sh run
Building configuration...
Current configuration : 683 bytes !
version 12.2
no service password-encryption
!
hostname Router
!
!
!
!
```

```
!  
ip ssh version 1  
!  
!  
interface FastEthernet0/0  
ip address 192.168.11.100 255.255.255.0  
duplex auto  
speed auto  
!  
interface FastEthernet0/1  
ip address 192.168.10.100 255.255.255.0  
duplex auto  
speed auto  
!  
interface Serial0/0  
bandwidth 64  
ip address 192.168.20.1 255.255.255.0  
encapsulation frame-relay ietf  
frame-relay map ip 192.168.20.2 103 broadcast ietf  
no keepalive  
clock rate 64000  
!  
interface Serial0/1  
no ip address  
shutdown  
!  
router eigrp 100  
network 192.168.11.0
```



```
network 192.168.10.0
network 192.168.20.0
auto-summary
!
ip classless
!
!
!
!
!
line con 0line vty 0 4
login
!
!
end
Router#
%LINK-5-CHANGED: Interface Serial0/0, changed state
to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface
Serial0/0, changed state to up
%DUAL-5-NBRCHANGE: IP-EIGRP 100: Neighbor
192.168.20.2 (Serial0/0) is up: new adjacency
Router con0 is now available
Press RETURN to get started.
```

4.4.6.2 Router Medan

```
Router>en
Router#config t
```

Enter configuration commands, one per line. End with
CNTL/Z.

```
Router(config)#int f0/0
```

```
Router(config-if)#ip addr 192.115.20.100 255.255.255.0
```

```
Router(config-if)#no shut
```

```
%LINK-5-CHANGED: Interface FastEthernet0/0, changed  
state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface  
FastEthernet0/0, changed state to up
```

```
Router(config-if)#exit
```

```
Router(config)#int f0/1
```

```
Router(config-if)#ip addr 192.168.30.100 255.255.255.0
```

```
Router(config-if)#no shut
```

```
%LINK-5-CHANGED: Interface FastEthernet0/1, changed  
state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface  
FastEthernet0/1, changed state to up
```

```
Router(config-if)#exit
```

```
Router(config)#int s0/0
```

```
Router(config-if)#ip addr 192.168.20.2 255.255.255.0
```

```
Router(config-if)#no shut
```

```
%LINK-5-CHANGED: Interface Serial0/0, changed state  
to up
```

```
Router(config-if)#router eigrp 100
```

```
Router(config-router)#exit
```

```
Router(config)#int s0/0
```

```
Router(config-if)#exit
```

```
Router(config)#router eigrp 100
```

```
Router(config-router)#network 192.115.20.0
Router(config-router)#network 192.115.30.0
Router(config-router)#network 192.168.30.0
Router(config-router)#exit
Router(config)#no router eigrp
% Incomplete command.
Router(config)#no router eigrp 100
Router(config)#router eigrp 100
Router(config-router)#network 192.115.20.0
Router(config-router)#network 192.168.30.0
Router(config-router)#network 192.168.20.0
Router(config-router)#exit
Router(config)#int s0/0
Router(config-if)#bandwidth 64
Router(config-if)#no keepalive
%LINEPROTO-5-UPDOWN: Line protocol on Interface
Serial0/0, changed state to upRouter(config-if)#
Router(config-if)#encapsulation frame-relay ietf
%LINEPROTO-5-UPDOWN: Line protocol on Interface
Serial0/0, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface
Serial0/0, changed state to upRouter(config-if)#frame-relay
map ip 192.168.20.1 103 ietf broadcast
Router(config-if)#
%DUAL-5-NBRCHANGE: IP-EIGRP 100: Neighbor
192.168.20.1 (Serial0/0) is up: new adjacency
Router(config-if)#^Z
%SYS-5-CONFIG_I: Configured from console by console
```

```
Router#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
Router#ping 192.168.11.100
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.11.100,
timeout is 2 seconds:
!!!! Success rate is 100 percent (5/5), round-trip
min/avg/max = 31/31/32 ms
Router#ping 192.168.11.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.11.1, t
imeout is 2 seconds:
!!!! Success rate is 80 percent (4/5), round-trip
min/avg/max = 62/62/63 ms
Router#ping 192.168.11.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.11.1, timeout
is 2 seconds:
!!!! Success rate is 100 percent (5/5), round-trip
min/avg/max = 62/62/63 ms
Router#
```

4.4.6.3 Konfigurasi X.25

X.25 dengan perintah encapsulation pada cisco router beserta penjelasan :

```
Router(config)#int s0
```

Router(config-if)#encapsulation x25

Router(congif-if)#x25

Address dengan metode X.121

Router(config-if)#x25 ips<16-4096>ips adalah input packet size

Router(config-if)#x25 win<1-127>win adalah window size

Perintah yang dapat digunakan untuk memeriksa konfigurasi X.25 antara lain :

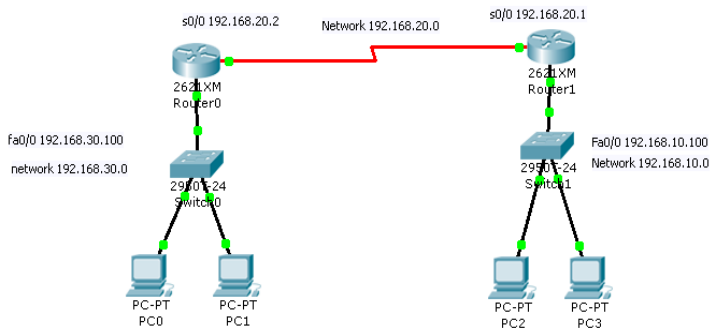
Router#show x.25 map menampilkan peta alamat x.25

Router#show x.25 route menampilkan table routing x.25

Router#show x.25 vc menampilkan daftar SVC dan PVC aktif

Router#show x.25 remote-red tampil mapping local dan remote IP address

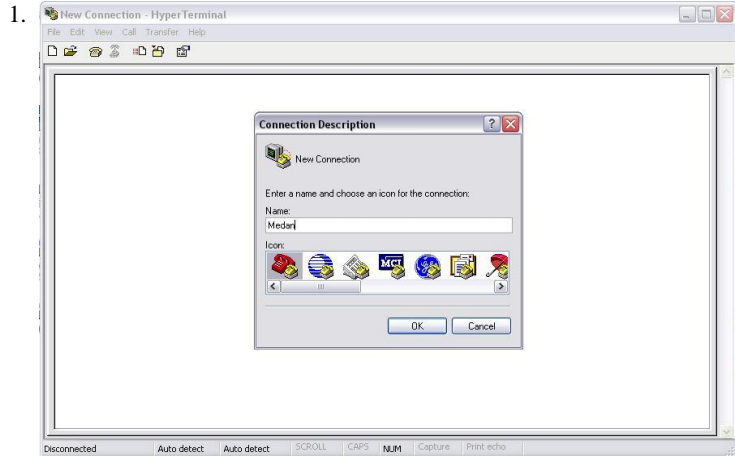
4.5 Hasil Penelitian Menggunakan Router CISCO



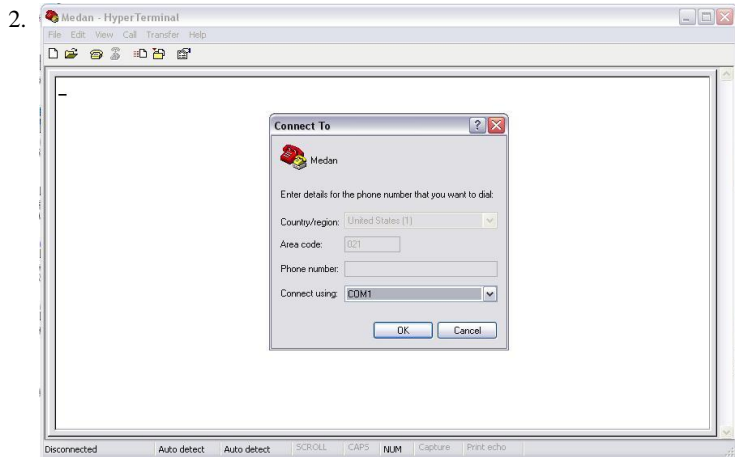
Gambar 4.11 Contoh Router Asli dalam Simulasi

4.5.1 Langkah-langkah

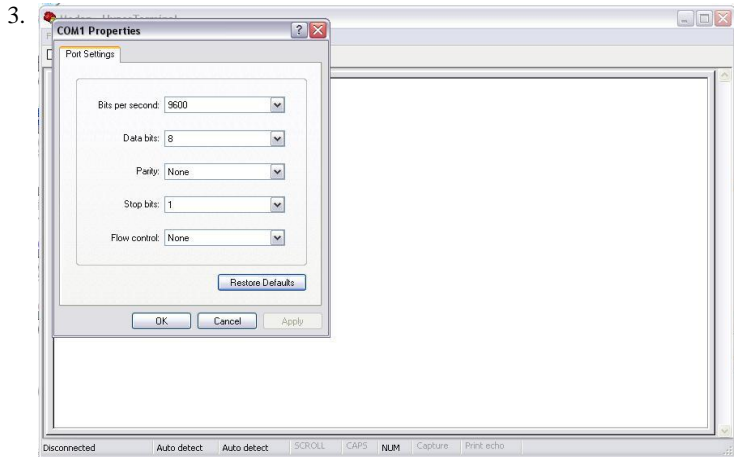
4.5.1.1 Router Medan



Gambar 4.12 Langkah Hyper Terminal 1 Medan

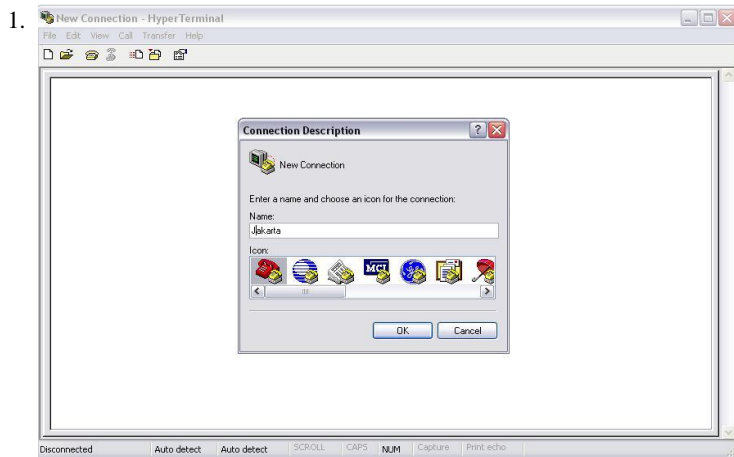


Gambar 4.13 Langkah Hyper Terminal 2 Medan

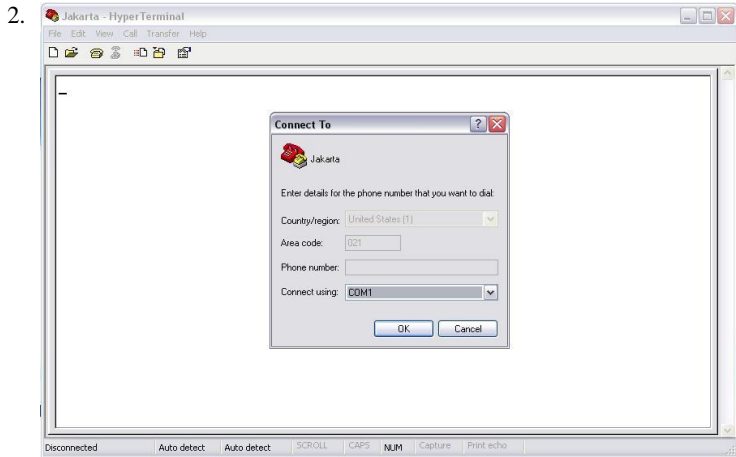


Gambar 4.14 Langkah Hyper Terminal 3 Medan

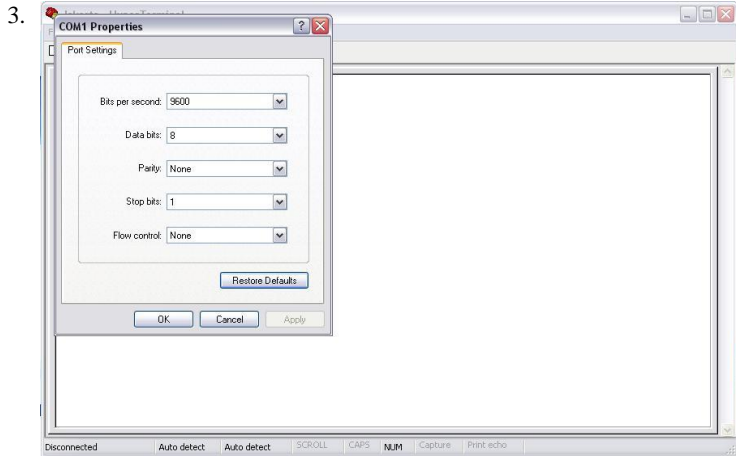
4.5.1.2 Router Jakarta



Gambar 4.15 Langkah Hyper Terminal 1 Jakarta

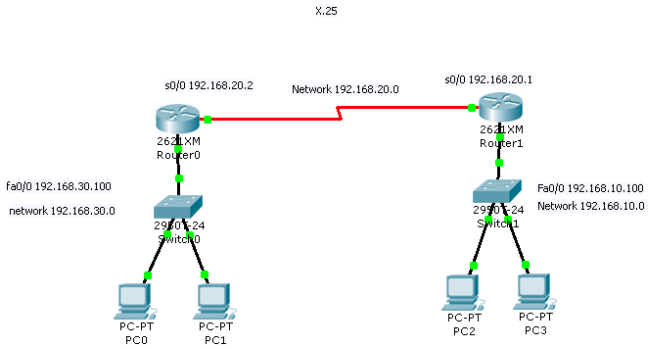


Gambar 4.16 Langkah Hyper Terminal 2 Jakarta



Gambar 4.17 Langkah Hyper Terminal 3 Jakarta

4.6 Hasil Kecepatan dalam Detik pada X.25



Gambar 4.18 X.25

Event List

Vis.	Time (sec)	Last Device	At Device	Type	Info
	0.002	PC0	Switch0	ICMP	Blue
	0.002	Switch0	Router0	ICMP	Red
	0.003	Switch0	Router0	ICMP	Blue
	0.003	Router0	Router1	ICMP	Red
	0.004	Router0	Router1	ICMP	Blue
	0.004	Router1	Switch1	ICMP	Red
	0.005	Router1	Switch1	ICMP	Blue
	0.005	Switch1	PC3	ICMP	Red
	0.006	Switch1	PC3	ICMP	Blue
	0.006	PC3	Switch1	ICMP	Red
	0.007	PC3	Switch1	ICMP	Blue
	0.007	Switch1	Router1	ICMP	Red
	0.008	Switch1	Router1	ICMP	Blue
	0.008	Router1	Router0	ICMP	Red
	0.009	Router1	Router0	ICMP	Blue
	0.009	Router0	Switch0	ICMP	Red
	0.010	Router0	Switch0	ICMP	Blue
	0.010	Switch0	PC0	ICMP	Red
<input checked="" type="checkbox"/>	0.011	Switch0	PC0	ICMP	Blue

Constant Delay
 Captured to: 211.203 s *

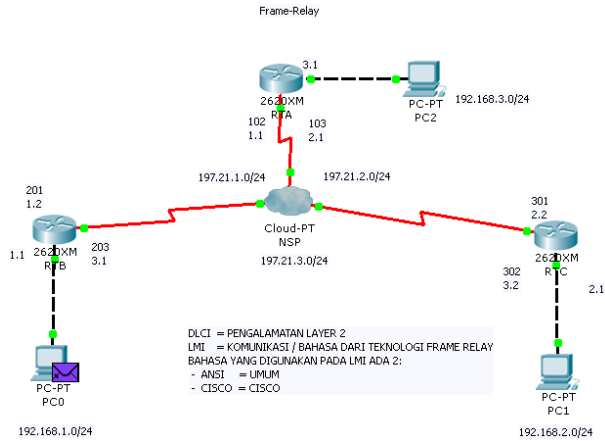
Play Controls

Event List Filters

Visible Events: DHCP, ICMP, TCP, Telnet, UDP

Gambar 4.18 Hasil X.25

4.7 Hasil Kecepatan dalam Detik pada *Frame-Relay* 64Kbps



Gambar 4.19 *Frame-Relay*

Event List

Vis.	Time (sec)	Last Device	At Device	Type	Info
	0.000	--	PC0	ICMP	
	0.001	PC0	RTB	ICMP	
	0.002	RTB	NSP	ICMP	
	0.003	NSP	RTA	ICMP	
	0.004	--	RTA	ICMP	
	0.005	RTA	PC2	ICMP	
	0.006	PC2	RTA	ICMP	
	0.007	RTA	NSP	ICMP	
	0.008	NSP	RTB	ICMP	
	0.009	RTB	PC0	ICMP	

Constant Delay
 Captured to: * 440.096 s

Play Controls

Event List Filters

Visible Events: DHCP, HTTP, ICMP, TCP, Telnet, UDP

Gambar 4.20 Hasil Frame-Relay

DAFTAR RIWAYAT HIDUP

DATA PRIBADI

Nama : Irvan Seprinal
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Motto Hidup : Bekerja dan Berdoa, Selalu Semangat, dan Tekun
dalam Meraih Cita-Cita.

RIWAYAT PENDIDIKAN

1994 – 2000 SDN 07, Pagi Pegangsaan Dua Jakarta Utara
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