

Internet dan Aplikasinya
TUGAS 3 : Collision pada Hub dan Switch



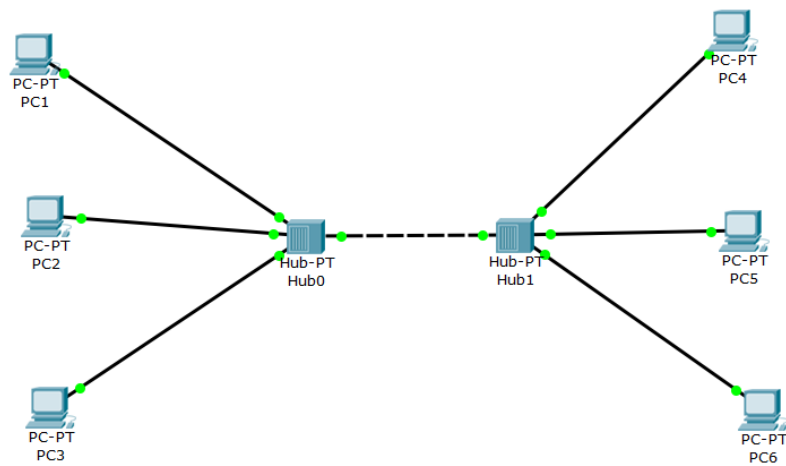
Oleh :

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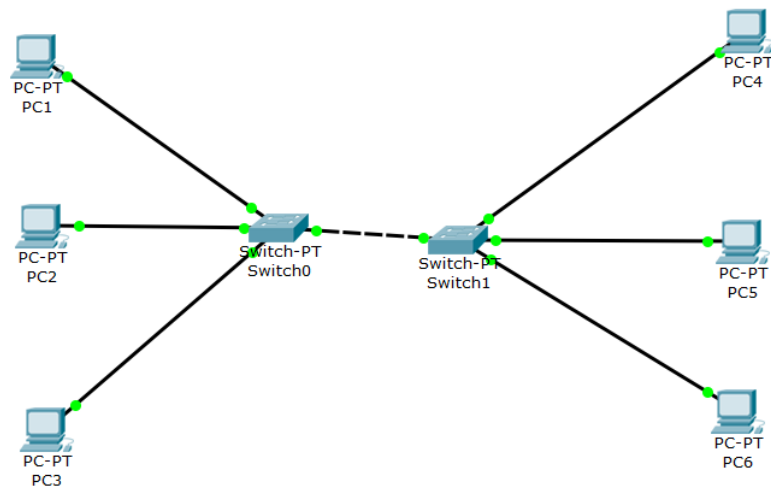
PROGRAM STUDI INFORMATIKA
FAKULTAS SAINS DAN TEKNOLOGI
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YOGYAKARTA
2022

A. Screenshot Topologi

a. HUB



b. SWITCH



B. Screenshot IP setiap PC

PC1 :

MAC Address	0001.AAAA.AAAA
IP Configuration	
<input type="radio"/> DHCP	
<input checked="" type="radio"/> Static	
IP Address	192.168.105.1
Subnet Mask	255.255.255.0

PC2 :

MAC Address	0002.BBBB.BBBB
IP Configuration	
<input type="radio"/> DHCP	
<input checked="" type="radio"/> Static	
IP Address	192.168.105.2
Subnet Mask	255.255.255.0

PC3 :

MAC Address	0003.CCCC.CCCC
IP Configuration	
<input type="radio"/> DHCP	
<input checked="" type="radio"/> Static	
IP Address	192.168.105.3
Subnet Mask	255.255.255.0

PC4 :

MAC Address	0004.DDDD.DDDD
IP Configuration	
<input type="radio"/> DHCP	
<input checked="" type="radio"/> Static	
IP Address	192.168.105.4
Subnet Mask	255.255.255.0

PC5 :

MAC Address	0005.EEEE.EEEE
IP Configuration	
<input type="radio"/> DHCP	
<input checked="" type="radio"/> Static	
IP Address	192.168.105.5
Subnet Mask	255.255.255.0

PC13 :

MAC Address	0006.FFFF.FFFF
IP Configuration	
<input type="radio"/> DHCP	
<input checked="" type="radio"/> Static	
IP Address	192.168.105.6
Subnet Mask	255.255.255.0

C. Tabel IP

PC	MAC	IP	SubNet Mask
1	0001.AAAA.AAAA	192.168.<105>.1	255.255.255.0
2	0002.BBBB.BBBB	192.168.<105>.2	255.255.255.0
3	0003.CCCC.CCCC	192.168.<105>.3	255.255.255.0
4	0004.DDDD.DDDD	192.168.<105>.4	255.255.255.0
5	0005.EEEE.EEEE	192.168.<105>.5	255.255.255.0
6	0006.FFFF.FFFF	192.168.<105>.6	255.255.255.0

D. Screenshot Langkah-langkah (Sesuai dengan langkah Langkah pengamatan di modul)

1. Sebelum masuk mode simulasi pastikan semua komputer telah terkoneksi (ping sukses)

PC1 > PC2

```
PC>ping 192.168.105.2

Pinging 192.168.105.2 with 32 bytes of data:

Reply from 192.168.105.2: bytes=32 time=1ms TTL=128
Reply from 192.168.105.2: bytes=32 time=1ms TTL=128
Reply from 192.168.105.2: bytes=32 time=0ms TTL=128
Reply from 192.168.105.2: bytes=32 time=1ms TTL=128

Ping statistics for 192.168.105.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

PC1 > PC3

```
PC>ping 192.168.105.3

Pinging 192.168.105.3 with 32 bytes of data:

Reply from 192.168.105.3: bytes=32 time=0ms TTL=128
Reply from 192.168.105.3: bytes=32 time=1ms TTL=128
Reply from 192.168.105.3: bytes=32 time=0ms TTL=128
Reply from 192.168.105.3: bytes=32 time=4294967295ms TTL=128

Ping statistics for 192.168.105.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 4294967295ms, Average = 0ms
```

PC1 > PC4

```
PC>ping 192.168.105.4

Pinging 192.168.105.4 with 32 bytes of data:

Reply from 192.168.105.4: bytes=32 time=1ms TTL=128
Reply from 192.168.105.4: bytes=32 time=0ms TTL=128
Reply from 192.168.105.4: bytes=32 time=0ms TTL=128
Reply from 192.168.105.4: bytes=32 time=1ms TTL=128

Ping statistics for 192.168.105.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

PC1 > PC5

```

PC>ping 192.168.105.5

Pinging 192.168.105.5 with 32 bytes of data:

Reply from 192.168.105.5: bytes=32 time=0ms TTL=128
Reply from 192.168.105.5: bytes=32 time=0ms TTL=128
Reply from 192.168.105.5: bytes=32 time=0ms TTL=128
Reply from 192.168.105.5: bytes=32 time=0ms TTL=128

Ping statistics for 192.168.105.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

```

PC1 > PC6

```

PC>ping 192.168.105.6

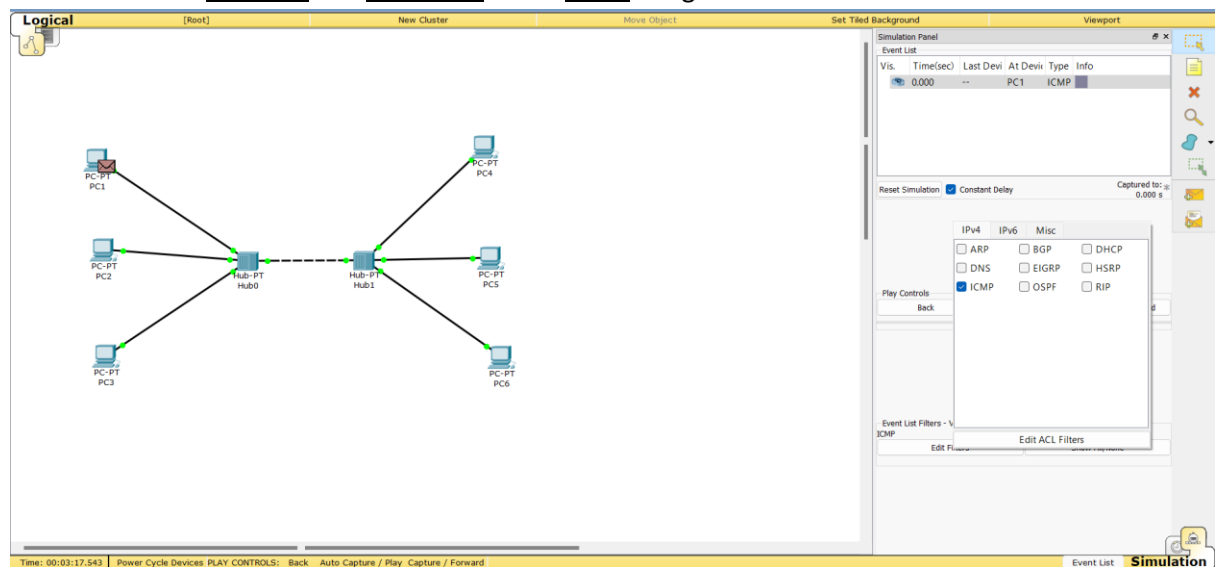
Pinging 192.168.105.6 with 32 bytes of data:

Reply from 192.168.105.6: bytes=32 time=2ms TTL=128
Reply from 192.168.105.6: bytes=32 time=4ms TTL=128
Reply from 192.168.105.6: bytes=32 time=1ms TTL=128
Reply from 192.168.105.6: bytes=32 time=1ms TTL=128

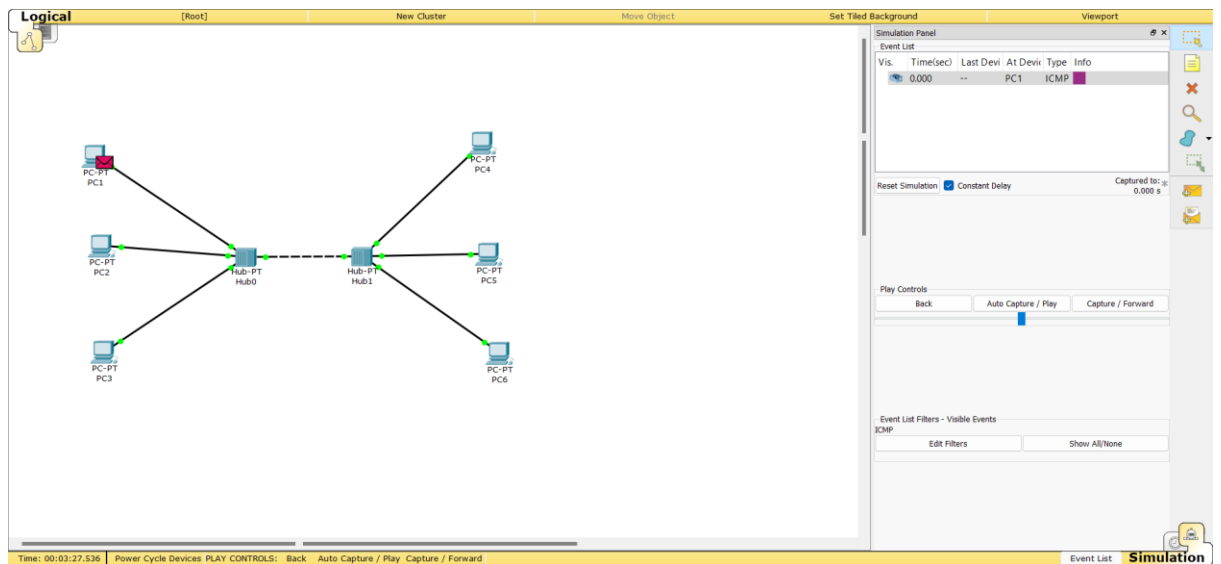
Ping statistics for 192.168.105.6:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 4ms, Average = 2ms

```

2. Masuk ke mode **Simulasi** dan **Edit Filter** untuk **ICMP** dengan cara



3. **Kirimkan paket** dari PC 1 ke PC 3 kemudian jalankan animasi:



4. Amati Jalannya Simulasi

- HUB

Vis.	Time(sec)	Last Devi	At Devi	Type	Info
	0.000	--	PC1	ICMP	
	0.001	PC1	Hub0	ICMP	
	0.002	Hub0	PC2	ICMP	
	0.002	Hub0	PC3	ICMP	
	0.002	Hub0	Hub1	ICMP	
	0.003	PC3	Hub0	ICMP	
	0.003	Hub1	PC4	ICMP	

	0.003	Hub1	PC5	ICMP	
	0.003	Hub1	PC6	ICMP	
	0.004	Hub0	PC1	ICMP	
	0.004	Hub0	PC2	ICMP	
	0.004	Hub0	Hub1	ICMP	
	0.005	Hub1	PC4	ICMP	
	0.005	Hub1	PC5	ICMP	
	0.005	Hub1	PC6	ICMP	

- SWITCH

Simulation Panel					
Event List					
Vis.	Time(sec)	Last Devi	At Devic	Type	Info
	0.000	--	PC1	ICMP	
	0.001	PC1	Switch0	ICMP	
	0.002	Switch0	PC3	ICMP	
	0.003	PC3	Switch0	ICMP	
	0.004	Switch0	PC1	ICMP	

5. Inspeksi Paket ketika keluar dari asal – yang dilewati – sampai tujuan (PC1 – hub – PC3)

- HUB

PDU Information at Device: PC1

OSI Model

Outbound PDU Details

PDU Formats

Ethernet II

0	4	8	14	19	bytes
PREAMBLE: 101010...1011		DEST MAC: 0003.CCCC.C		SRC MAC: 0001.AAAA.A	
TYPE: 0x800	DATA (VARIABLE LENGTH)			FCS: 0x0	

IP

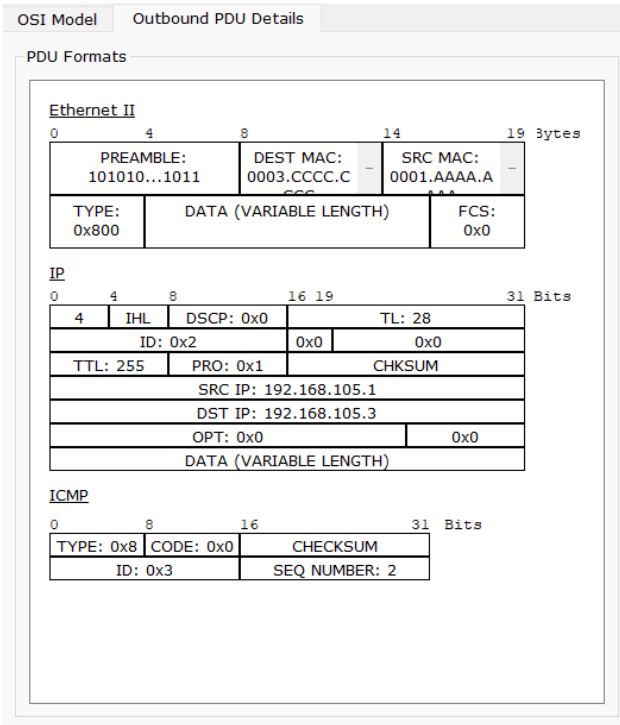
0	4	8	16	19	31	Bits
4	IHL	DSCP: 0x0	TL: 28			
ID: 0x16		0x0	0x0			
TTL: 255	PRO: 0x1	CHKSUM				
SRC IP: 192.168.105.1						
DST IP: 192.168.105.3						
OPT: 0x0				0x0		
DATA (VARIABLE LENGTH)						

ICMP

0	8	16	31	Bits
TYPE: 0x8	CODE: 0x0	CHECKSUM		
ID: 0x8		SEQ NUMBER: 22		

- SWITCH

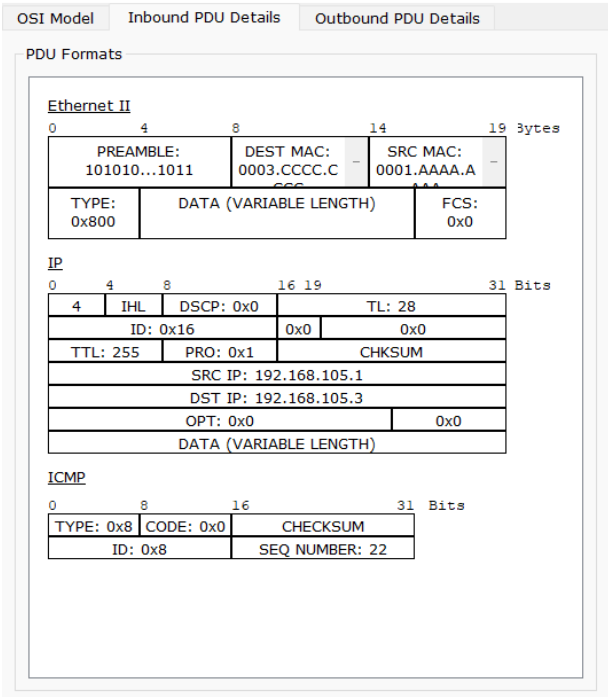
PDU Information at Device: PC1



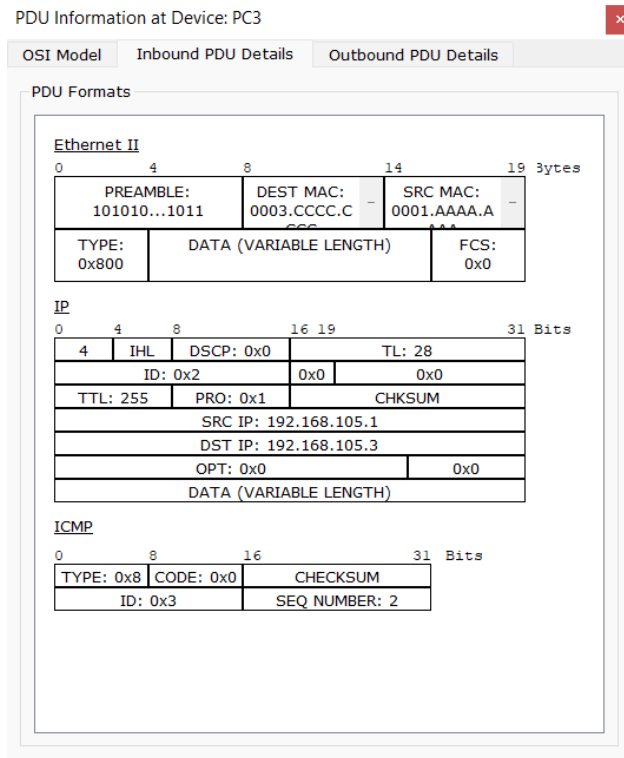
6. Inspeksi Paket ketika masuk ke tujuan paket (PC3)

- HUB

PDU Information at Device: PC3



- SWITCH



E. Tabel PDU

- HUB

Pake t	Last Dev	At Dev	Inter - face	D.Mac	S.Mac	S.IP	D.IP
PC1 ke PC3	--	PC1	Out	000.3.CCCC.CCCC	0001.AAAA.AAAA	192.168.105.1	192.168.105.3
	PC1	Hub0	In	000.3.CCCC.CCCC	0001.AAAA.AAAA	192.168.105.1	192.168.105.3
	Hub0	PC3	In	000.3.CCCC.CCCC	0001.AAAA.AAAA	192.168.105.1	192.168.105.3
PC3 ke PC1	--	PC3	Out	0001.AAAA.AAAA	000.3.CCCC.CCCC	192.168.105.3	192.168.105.1
	PC3	Hub0	In	0001.AAAA.AAAA	000.3.CCCC.CCCC	192.168.105.3	192.168.105.1
	Hub0	PC1	In	0001.AAAA.AAAA	000.3.CCCC.CCCC	192.168.105.3	192.168.105.1
PC2 ke PC5	--	P2	Out	0005.EEEE.EEEE	0002.BBBB.BBBB	192.168.105.2	192.168.105.5
	PC2	Hub0	In	0005.EEEE.EEEE	0002.BBBB.BBBB	192.168.105.2	192.168.105.5
	Hub0	Hub1	In	0005.EEEE.EEEE	0002.BBBB.BBBB	192.168.105.2	192.168.105.5
	Hub 1	PC 5	In	0005.EEEE.EEEE	0002.BBBB.BBBB	192.168.105.2	192.168.105.5
PC5 ke PC2	--	P5	Out	0002.BBBB.BBBB	0005.EEEE.EEEE	192.168.105.5	192.168.105.2
	PC5	Hub1	In	0002.BBBB.BBBB	0005.EEEE.EEEE	192.168.105.5	192.168.105.2
	Hub1	Hub0	In	0002.BBBB.BBBB	0005.EEEE.EEEE	192.168.105.5	192.168.105.2
	Hub 0	PC 1	In	0002.BBBB.BBBB	0005.EEEE.EEEE	192.168.105.5	192.168.105.2

a. SWITCH

Paket	Last Dev	At Dev	Interface	D.Mac	S.Mac	S.IP	D.IP
PC1 ke PC3	--	PC1	Output	000.3.CCCC.CCCC	0001.AAAA.AAAA	192.168.105.1	192.168.105.3
	PC1	Switch 0	In	000.3.CCCC.CCCC	0001.AAAA.AAAA	192.168.105.1	192.168.105.3
	Switch 0	PC3	In	000.3.CCCC.CCCC	0001.AAAA.AAAA	192.168.105.1	192.168.105.3
PC3 ke PC1	--	PC3	Output	0001.AAAA.AAAA	000.3.CCCC.CCCC	192.168.105.3	192.168.105.1
	PC3	Switch 0	In	0001.AAAA.AAAA	000.3.CCCC.CCCC	192.168.105.3	192.168.105.1
	Switch 0	PC1	In	0001.AAAA.AAAA	000.3.CCCC.CCCC	192.168.105.3	192.168.105.1
PC2 ke PC5	--	P2	Output	0005.EEEE.EEEE	0002.BBBB.BBBB	192.168.105.2	192.168.105.5
	PC2	Switch 0	In	0005.EEEE.EEEE	0002.BBBB.BBBB	192.168.105.2	192.168.105.5
	Switch 0	Switch 1	In	0005.EEEE.EEEE	0002.BBBB.BBBB	192.168.105.2	192.168.105.5
	Switch 1	PC 5	In	0005.EEEE.EEEE	0002.BBBB.BBBB	192.168.105.2	192.168.105.5
PC5 ke PC2	--	P5	Output	0002.BBBB.BBBB	0005.EEEE.EEEE	192.168.105.5	192.168.105.2
	PC5	Switch 1	In	0002.BBBB.BBBB	0005.EEEE.EEEE	192.168.105.5	192.168.105.2
	Switch 1	Switch 0	In	0002.BBBB.BBBB	0005.EEEE.EEEE	192.168.105.5	192.168.105.2
	Switch 0	PC 1	In	0002.BBBB.BBBB	0005.EEEE.EEEE	192.168.105.5	192.168.105.2

F. Analisa

Dari pratikum ini, saya dapat mengetahui bahwa perangkat hub dan switch memiliki perbedaan. Seperti pengamatan disimulasi di langkah-langkah laporan, terlihat bahwa dalam perangkat hub untuk mengirim pesan harus dikirimkan terlebih dahulu ke semua computer dalam topologi agar bisa dicek siapa yang ingin dikirimkan, setelah itu dikirimkan kembali ke hub, supaya dikirimkan kembali ke computer yang mengirim pesan. Berbeda dengan perangkat switch, terlihat bahwa perangkat switch untuk mengirimkan pesan dapat mengatur sendiri computer yang ingin dikirimkan sehingga tidak diperlukan pengecekan di ke semua computer.