

Laporan Tugas Praktikum ke-5 Jaringan Komputer

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BAB 1

TEORI DASAR

A. Landasan Teori

a. VLAN

Virtual Local Area Network atau VLAN adalah sekumpulan perangkat yang ada di satu atau lebih jaringan LAN dan dikonfigurasi oleh perangkat lunak sehingga dapat berkomunikasi antara satu dengan lainnya seolah-olah berada di saluran yang sama. VLAN sendiri sebenarnya merupakan sebuah jaringan yang berada di dalam Local Area Network (LAN) sehingga dalam satu jaringan LAN bisa terdiri atas lebih dari satu jaringan VLAN. Secara umum, konfigurasi jaringan Virtual Local Area Network (VLAN) dilakukan oleh perangkat lunak atau software.

b. VLAN ID

VLAN ID digunakan untuk memberi identitas sebuah VLAN digunakan nomor identitas VLAN yang dinamakan VLAN ID. Digunakan untuk menandai VLAN yang terkait. Dua range VLAN ID adalah:

a. Normal Range VLAN (1 – 1005)

Digunakan untuk jaringan skala kecil dan menengah.

- Nomor ID 1002 s.d. 1005 dicadangkan untuk Token Ring dan FDDI VLAN.
- ID 1, 1002 – 1005 secara default sudah ada dan tidak dapat dihilangkan.
- Konfigurasi disimpan di dalam file database VLAN, yaitu vlan.dat. file ini disimpan dalam memori flash milik switch.
- VLAN trunking protocol (VTP), yang membantu manajemen VLAN, hanya dapat bekerja pada normal range VLAN dan menyimpannya dalam file database VLAN.

b. Extended Range VLANs (1006 – 4094)

Memungkinkan para service provider untuk memperluas infrastrukturnya kepada konsumen yang lebih banyak. Dibutuhkan untuk perusahaan skala besar yang membutuhkan jumlah VLAN lebih dari normal. Memiliki fitur yang lebih sedikit dibandingkan VLAN normal range.

- Disimpan dalam NVRAM (file running configuration).
- VTP tidak bekerja di sini.

c. Tipe – Tipe VLAN

Terdapat lima jenis VLAN, yaitu default VLAN, data VLAN, native VLAN, voice VLAN, dan juga management VLAN. Berikut penjelasannya:

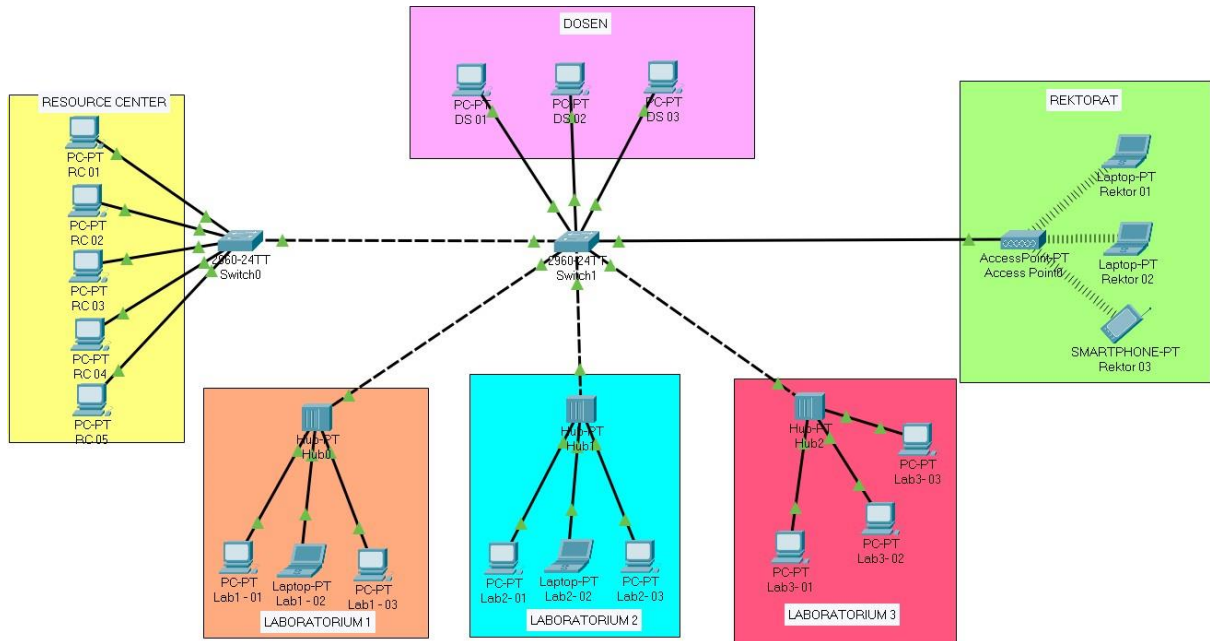
- Default VLAN adalah VLAN yang sudah ada semenjak switch diaktifkan dan secara otomatis dinamakan dengan VLAN1. Biasanya VLAN default tidak bisa diubah maupun dinonaktifkan.
- Berdasarkan GeeksforGeeks, data VLAN yaitu VLAN yang digunakan untuk membagi seluruh jaringan menjadi dua kelompok. VLAN data hanya mengatur lalu lintas data yang dibuat oleh pengguna.
- Native VLAN merupakan VLAN asli yang dapat diubah dan juga dinonaktifkan. Native VLAN juga tidak ditandai secara otomatis (untagged) saat diterima di port trunk.
- Voice VLAN yakni VLAN suara yang menggunakan IP voice over (VoIP). Seperti VLAN lainnya, voice VLAN dapat mengatur lalu lintas data secara terpisah dari VLAN lainnya.
- Management VLAN ialah VLAN yang bertujuan untuk mengatur switch atau saklar. Management VLAN berfungsi mengatur switch seperti dalam pengawasan, manajemen bandwidth, dan pencatatan sistem.

BAB II

PEMBAHASAN DAN ANALISIS

A. PEMBAHASAN

- Skema Topologi Jaringan**



- Tabel IP Address dan WEP Key**

Byte1 = Angkatan 19

Byte2 = $(19 * 152) \% 255 = 83$

Byte3 = $(12 * 152) \% 255 = 39$

Device	IP Address	Subnet	Device	IP Address	Subnet
RC 01	19.83.39.1	255.255.255.0	Rektor 01	19.83.39.15	255.255.255.0
RC 02	19.83.39.2	255.255.255.0	Rektor 02	19.83.39.16	255.255.255.0
RC 03	19.83.39.3	255.255.255.0	Rektor 03	19.83.39.17	255.255.255.0
RC 04	19.83.39.4	255.255.255.0	DS 01	19.83.39.18	255.255.255.0
RC 05	19.83.39.5	255.255.255.0	DS 02	19.83.39.19	255.255.255.0
Lab1-01	19.83.39.6	255.255.255.0	DS 03	19.83.39.20	255.255.255.0
Lab1-02	19.83.39.7	255.255.255.0			
Lab1-03	19.83.39.8	255.255.255.0			
Lab2-01	19.83.39.9	255.255.255.0			
Lab2-02	19.83.39.10	255.255.255.0			
Lab2-03	19.83.39.11	255.255.255.0			
Lab3-01	19.83.39.12	255.255.255.0			
Lab3-02	19.83.39.13	255.255.255.0			
Lab3-03	19.83.39.14	255.255.255.0			

- **Configurasi VLAN**

- a. **Switch0**

```
Switch>enable
Switch#config term
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name resocenter
Switch(config-vlan)#exit
Switch(config)#int range fa0/1-5
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 10
Switch(config-if-range)#exit
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
write
Building configuration...
[OK]
Switch#
```

=

```
Switch(config)#do show vlan brief
```

VLAN	Name	Status	Ports
1	default	active	Fa0/6, Fa0/7, Fa0/8, Fa0/9 Fa0/10, Fa0/11, Fa0/12, Fa0/13 Fa0/14, Fa0/15, Fa0/16, Fa0/17 Fa0/18, Fa0/19, Fa0/20, Fa0/21 Fa0/22, Fa0/23, Fa0/24, Gig0/1 Gig0/2
10	resource_center	active	Fa0/1, Fa0/2, Fa0/3, Fa0/4 Fa0/5
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

```
Switch(config)#
```

- b. **Switch1**

```
Switch>enable
Switch#config term
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 11
Switch(config-vlan)#name dosen
Switch(config-vlan)#exit
Switch(config)#vlan 12
Switch(config-vlan)#name rektor
Switch(config-vlan)#exit
Switch(config)#vlan 13
Switch(config-vlan)#name lab1
Switch(config-vlan)#exit
Switch(config)#vlan 14
Switch(config-vlan)#name lab2
Switch(config-vlan)#exit
Switch(config)#vlan 15
Switch(config-vlan)#name lab3
Switch(config-vlan)#exit
Switch(config)#int range fa0/1-3
```

```

Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 11
Switch(config-if-range)#exit
Switch(config)#int range fa0/5
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 12
Switch(config-if-range)#exit
Switch(config)#int range fa0/7
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 13
Switch(config-if-range)#exit
Switch(config-if-range)#int range fa0/6
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 14
Switch(config-if-range)#int range fa0/8
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 15
Switch(config-if-range)#exit
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
write
Building configuration...
[OK]
Switch#

```

=

```

Switch#config term
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#do show vlan brief

```

VLAN	Name	Status	Ports
1	default	active	Fa0/4, Fa0/9, Fa0/10, Fa0/11 Fa0/12, Fa0/13, Fa0/14, Fa0/15 Fa0/16, Fa0/17, Fa0/18, Fa0/19 Fa0/20, Fa0/21, Fa0/22, Fa0/23 Fa0/24, Gig0/1, Gig0/2
11	dosen	active	Fa0/1, Fa0/2, Fa0/3
12	rektor	active	Fa0/5
13	lab1	active	Fa0/7
14	lab2	active	Fa0/6
15	lab3	active	Fa0/8
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

- Test PING

1. RESOURCE CENTER

a. Dalam

```

C:\>ping 19.83.39.1

Pinging 19.83.39.1 with 32 bytes of data:

Reply from 19.83.39.1: bytes=32 time=1ms TTL=128
Reply from 19.83.39.1: bytes=32 time=6ms TTL=128
Reply from 19.83.39.1: bytes=32 time=5ms TTL=128
Reply from 19.83.39.1: bytes=32 time=5ms TTL=128

Ping statistics for 19.83.39.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 6ms, Average = 4ms

```

b. Luar

```
C:\>ping 19.83.39.10

Pinging 19.83.39.10 with 32 bytes of data:

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

Ping statistics for 19.83.39.10:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
C:\>
```

2. LAB 1

a. Dalam

```
Pinging 19.83.39.7 with 32 bytes of data:

Reply from 19.83.39.7: bytes=32 time<1ms TTL=128
Reply from 19.83.39.7: bytes=32 time<1ms TTL=128
Reply from 19.83.39.7: bytes=32 time<1ms TTL=128
Reply from 19.83.39.7: bytes=32 time<1ms TTL=128

Ping statistics for 19.83.39.7:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

b. Luar

```
C:\>ping 19.83.39.16

Pinging 19.83.39.16 with 32 bytes of data:

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

Ping statistics for 19.83.39.16:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

3. LAB 2

a. Dalam

```
C:\>ping 19.83.39.10

Pinging 19.83.39.10 with 32 bytes of data:

Reply from 19.83.39.10: bytes=32 time<1ms TTL=128
Reply from 19.83.39.10: bytes=32 time=4ms TTL=128
Reply from 19.83.39.10: bytes=32 time=5ms TTL=128
Reply from 19.83.39.10: bytes=32 time=5ms TTL=128

Ping statistics for 19.83.39.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 5ms, Average = 3ms
```

b. Luar

```
Packet 12801 to Command Line 170
C:\>ping 19.83.39.20

Pinging 19.83.39.20 with 32 bytes of data:

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

Ping statistics for 19.83.39.20:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

4. LAB 3

a. Dalam

```
C:\>ping 19.83.39.13

Pinging 19.83.39.13 with 32 bytes of data:

Reply from 19.83.39.13: bytes=32 time<1ms TTL=128
Reply from 19.83.39.13: bytes=32 time<1ms TTL=128
Reply from 19.83.39.13: bytes=32 time<1ms TTL=128
Reply from 19.83.39.13: bytes=32 time<1ms TTL=128

Ping statistics for 19.83.39.13:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

b. Luar

```
C:\>ping 19.83.39.18

Pinging 19.83.39.18 with 32 bytes of data:

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

Ping statistics for 19.83.39.18:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

5. REKTOR

a. Dalam

```
C:\>ping 19.83.39.16

Pinging 19.83.39.16 with 32 bytes of data:

Reply from 19.83.39.16: bytes=32 time<1ms TTL=128
Reply from 19.83.39.16: bytes=32 time=4ms TTL=128
Reply from 19.83.39.16: bytes=32 time=2ms TTL=128
Reply from 19.83.39.16: bytes=32 time=4ms TTL=128

Ping statistics for 19.83.39.16:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 4ms, Average = 2ms
```


b. Luar

```
Pinging 19.83.39.20 with 32 bytes of data:

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

Ping statistics for 19.83.39.20:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

6. DOSEN

a. Dalam

```
Pinging 19.83.39.20 with 32 bytes of data:

Reply from 19.83.39.20: bytes=32 time=10ms TTL=128
Reply from 19.83.39.20: bytes=32 time=6ms TTL=128
Reply from 19.83.39.20: bytes=32 time=4ms TTL=128
Reply from 19.83.39.20: bytes=32 time=4ms TTL=128

Ping statistics for 19.83.39.20:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 4ms, Maximum = 10ms, Average = 6ms
```

b. Luar

```
Pinging 19.83.39.1 with 32 bytes of data:

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

Ping statistics for 19.83.39.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

BAB III

KESIMPULAN

Berikut ini adalah kesimpulan yang didapatkan:

1. Test pengiriman PING pada device yang berada pada VLAN yang sama berhasil, tetapi test pengiriman PING pada device yang berada pada VLAN yang berbeda gagal,