



CISCO ITU MUDAH

SIAPA BILANG CISCO ITU SULIT ?



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Kata Pengantar

Syukur Alhamdulillah kami panjatkan kehadiran allah swt.atas berkah rahmat,taufik serta karunianya pembuatan jobsheet dapat saya selesaikan penyusunannya.sholawat dan salam semoga senantiasa tercurah atas nabi besar Muhammad SAW,keluarganya,sahabatnya termasuk pengikutnya hingga akhir zaman. Jobsheet ini memuat tentang cisco dari konsep hingga konfigurasi pada cisco itu sendiri, sehingga penyusunan jobsheet ini diperlukan sebagai informasi yang dapat digunakan dengan semestinya. Ucapan terima kasih yang sedalam-dalamnya kami sampaikan kepada :

- 1.Bapak Dedi Gunawan selaku pimpinan di PT.Integrasi Data Nusantara
- 2.para senior di PT.Integrasi Data Nusantara yang telah membimbing dan mengarahkan saya dalam membuat jobsheet ini
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- 4.serta kepada orang tua yang telah memberikan dukungan baik material maupun moril.

Saya menyadari bahwa jobsheet ini baik dari susunan kalimat maupun isinya masih terdapat banyak kekurangan.oleh karena itu saran dan kritik demi penyempurnaan jobsheet ini sangat saya hargai.

Akhirnya dengan mengharap banyak petunjuk,bimbingan serta ridhonya mudah-mudahan jobsheet ini dapat memenuhi fungsinya sebagaimana yang diharapkan.Amin.

Depok, 30 April 2015

Rivaldo Ibrahim

Sejarah Cisco

Pada awal 1980-an, ada sepasang suami istri yaitu Len dan Sandy Bosack yang dulu bekerja di dua departemen komputer yang berbeda yang terletak di Stanford University. Pasangan ini sedang menghadapi masalah dalam membuat komputer mereka berkomunikasi satu sama lain. Untuk mengatasi masalah ini, mereka membuat sebuah server gateway di ruang tamu mereka yang menuju cara sederhana membuat dua departemen berkomunikasi satu sama lain dengan bantuan protokol IP. Mereka mendirikan cisco Systems (dengan c kecil) pada tahun 1984, memiliki server gateway komersial kecil yang membawa sebuah revolusi dalam Networking. Nama perusahaan diubah menjadi Cisco Systems, Inc pada tahun 1992. Advanced Gateway Server (AGS) adalah produk pertama yang dipasarkan perusahaan. Setelah ini datang Mid-Range Gateway Server (MGS), Compact Gateway Server (cgs), Integrated Gateway Server (IGS) dan AGS +.

Akhirnya menciptakan router cisco 4000, 7000, 2000, dan 3000 series. Router ini masih ada dan meningkatkan setiap hari. Cisco adalah pemimpin besar dunia ketika datang ke jaringan untuk Internet. Produk perusahaan ini mengarah pada kemudahan dalam mengakses dan mentransfer informasi terlepas dari perbedaan waktu, tempat atau platform. Sertifikasi CCNA adalah sertifikat yang pertama dalam jajaran sertifikasi Cisco dan merupakan pendahulu untuk semua sertifikasi Cisco. Program CCNA dibuat untuk memberikan dasar yang kokoh yang tidak hanya untuk Cisco Internetwork Operating System (IOS) dan hardware Cisco, tetapi juga internetworking secara umum. Untuk mendapatkan Cisco Certified Internetwork Expert (CCIE) maka Ciscon membuat suatu seri sertifikasi, yaitu:

- CCNA (Cisco Certified Network Associate)
- CCNP (Cisco Certified Network Professional)
- CCIE (Cisco Certified Internetwork Expert)

Lab 1 Pengenalan dasar

-Tujuh OSI layer



Penjelasannya :

7. Application Layer

Layer ini bertanggung jawab atas pertukaran informasi antara program komputer, dan service lain yang jalan di jaringan, seperti server printer atau aplikasi komputer lainnya. Lapisan ini juga menyediakan jasa untuk aplikasi pengguna. Contoh Email, Web Browser dan lain lainnya.

6. Presentation Layer

Layer ini bertanggung jawab bagaimana data dikonversi dan diformat untuk transfer data. Contoh konversi format text ASCII untuk dokumen, gif dan JPEG untuk gambar. Layer ini juga membentuk kode konversi, translasi data, enkripsi, dan kompresi.

5. Session Layer

Layer ini menentukan bagaimana dua terminal menjaga, memelihara dan mengatur koneksi mereka saling berhubungan satu sama lain. Membentuk Virtual Circuit, dan membentuk komunikasi antar sistem. Contohnya Client Software.

4. Transport Layer

Layer ini bertanggung jawab membagi data menjadi segmen, menjaga koneksi logika "end to end" antar terminal, dan menyediakan penanganan eror. Pengiriman data yang handal, pengurutan, keabsahan data, transmisi ulang, dan flow control.

3. Network Layer

Layer ini bertanggung jawab menentukan alamat jaringan, menentukan rute yang harus diambil selama perjalanan, dan menjaga antrian trafik di jaringan. Data pada layer ini berbentuk paket. Terdapat juga Pengapsulan, Packet Forwarding, Packet Filtering, dan fragmentation.

2. Data Link Layer

Layer ini menyediakan link untuk data, memaketkannya menjadi frame yang berhubungan dengan hardware kemudian diangkat melalui media. Komunikasinya dengan kartu jaringan, mengatur komunikasi layer physical antara sistem koneksi dan penanganan eror. Pada layer ini juga dapat mengubah bit ke byte dan byte ke dalam frame, acces ke media menggunakan MAC address, error detection dan not connection.

1. Physical Layer

Bertanggung jawab atas proses data menjadi bit dan mengirimkan melalui media, seperti kabel dan menjaga koneksi fisik antar sistem.

Lihatlah table berikut :

Layer	Nama	Perangkat	Data unit	Pengalamatan
Layer 1	Physical	Hub	Bit	0111001110
Layer 2	Data Link	Switch	Frame	MAC address
Layer 3	Network	Router	Paket	IP address

Jika kita menghafal 7 layer osi secara satu per satu saya yakin anda akan bingung,jika anda berkecimpung di dunia network maka anda harus hafal layer 1,2 dan 3,berikut ini perbedaannya :

Perangkat	Layer	Konektivitas	Pengiriman Data	Memory
Hub	Layer 1	Antar network yang sama	Broadcast ke semua port	Tidak punya
Switch	Layer 2	Antar network yang sama	Berdasar MAC address Tujuan	MAC address Tabel
Router	Layer 3	Antar network yang berbeda	Berdasar IP address Tujuan	Routing Tabel

Berdasarkan jarak,jaringan di bagi menjadi 3 :

- LAN,bandwitch kecepatan tinggi,jarak jangkauan terbatas,kabelnya UTP dan Optic
- MAN,bandwitch kecepatan tinggi,jarak jangkauan satu kota,kabelnya Optic
- WAN,bandwitch rendah,jarak bisa antar pulau ataupun Negara,kabelnya serial

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Lab 2

Pengecekan IOS software atau hardware

Pada pembahasan ini saya akan membahas tentang pengecekan IOS, perangkat cisco ini juga mempunyai cpu, disk, memory, power supply, disini kita akan melihat kapasitas dari bagian yang tadi di sebutkan. langsung saja kita praktikkan, berikut ini langkah-langkahnya :

```
Router#show version

Cisco IOS Software, 1841 Software (C1841-ADVIPSERVICESK9-M) ,
Version 12.4(15)T1, RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2007 by Cisco Systems, Inc.
Compiled Wed 18-Jul-07 04:52 by pt_team
ROM: System Bootstrap, Version 12.3(8r)T8, RELEASE SOFTWARE
(fc1)
System returned to ROM by power-on
System image file is "flash:c1841-adipservicesk9-mz.124-
15.T1.bin"
This product contains cryptographic features and is subject to
United
States and local country laws governing import, export,
transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use
encryption.
Importers, exporters, distributors and users are responsible
for
compliance with U.S. and local country laws. By using this
product you
agree to comply with applicable laws and regulations. If you
are unable
to comply with U.S. and local laws, return this product
immediately.
A summary of U.S. laws governing Cisco cryptographic products
may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html
If you require further assistance please contact us by sending
email to
export@cisco.com.
Cisco 1841 (revision 5.0) with 114688K/16384K bytes of memory.
Processor board ID FTX0947Z18E
M860 processor: part number 0, mask 49
2 FastEthernet/IEEE 802.3 interface(s)
191K bytes of NVRAM.
```

63488K bytes of ATA CompactFlash (Read/Write)
Configuration register is 0x2102

Keterangan :

Versi yang digunakan adalah : Version 12.4(15)T1

Nama file ios adalah : System image file is "flash:c1841 advipservicesk9-mz.124-15.T1.bin"

Nilai configuration registernya adalah : 0x2102

Ada 2 configuration register yaitu :

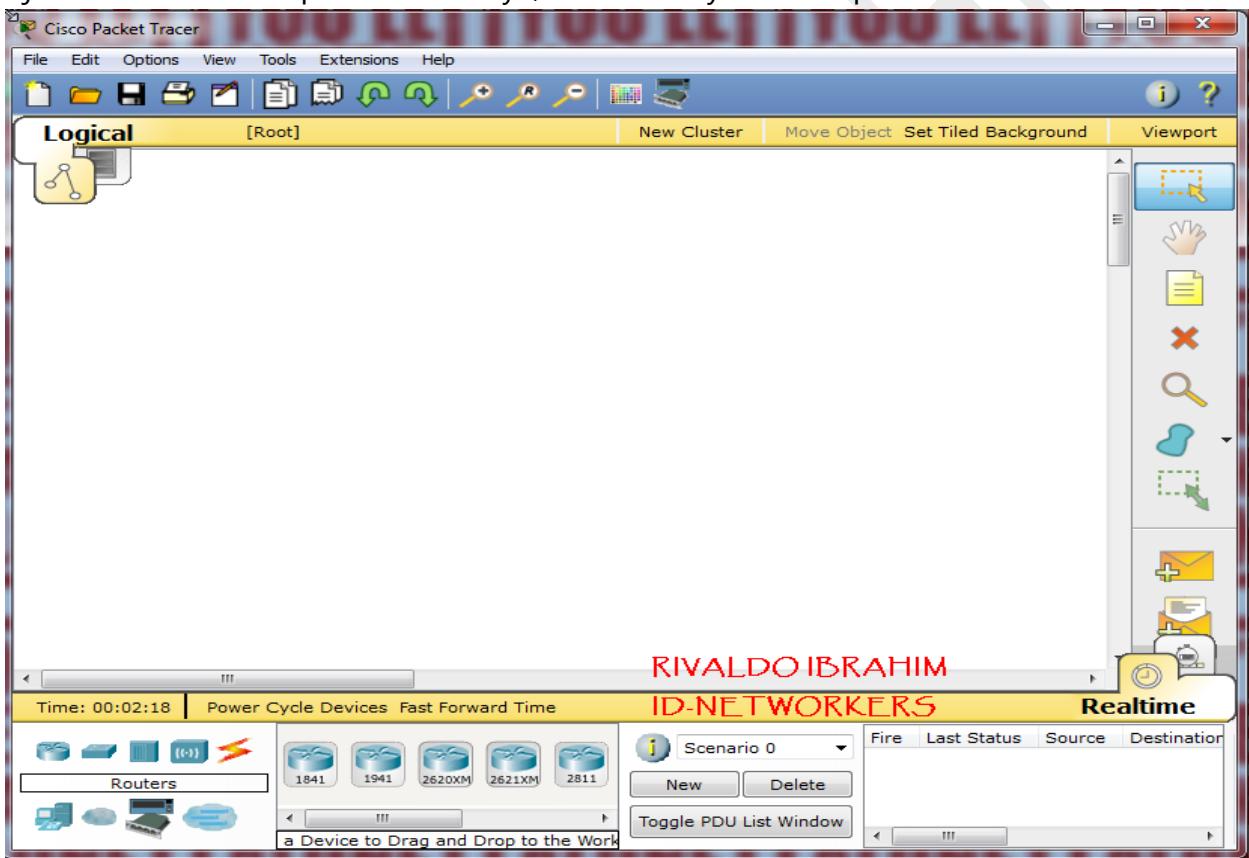
- 0x2102 yaitu router akan membaca konfigurasi startup pada NVRAM ketika dinyalakan
- 0x2142 yaitu router akan membypass konfigurasi startup ketika dinyatakan, berguna misalnya lupa password karena password disimpan di konfigurasi startup.

Lab 3

Menjalankan cisco dengan packet tracer

Pada pembahasan kali ini,saya akan menjelaskan tentang cisco packet tracer.packet tracer merupakan aplikasi ang digunakan untuk membuat simulasi jaringan,jadi kita tidak usah membeli router dan switch lagi dan kabelnya karena kita sudah punya simulasinya,bedanya dengan simulasi yang lain adalah kalau packet tracer ini bawaan dari cisco,kalau untuk mikrotik tidak bisa khusus cisco saja,langsung saja kita kenalkan,berikut pengenalannya :

- kita install terlebih dahulu packet tracernya,jika belum tahu sofwarenya bisa download di internet atau minta sama temannya
- jika sudah di install packet tracernya,maka hasilnya akan seperti ini :



-lalu,disini saya akan mengenalkan lembar kerja yang sering digunakan untuk simulasi jaringan pada cisco.bisa di lihat ada title bar,menu bar,perangkat cisco yang disediakan,bagian-bagian yang ada di dalam device dan properties.pokoknya silahkan di pilah-pilah device yang digunakan bisa di lihat di perangkat cisco yang disediakan,ada router,switch,hub,wireless,PC,laptop,server dan lain-lain,sebagai berikut :

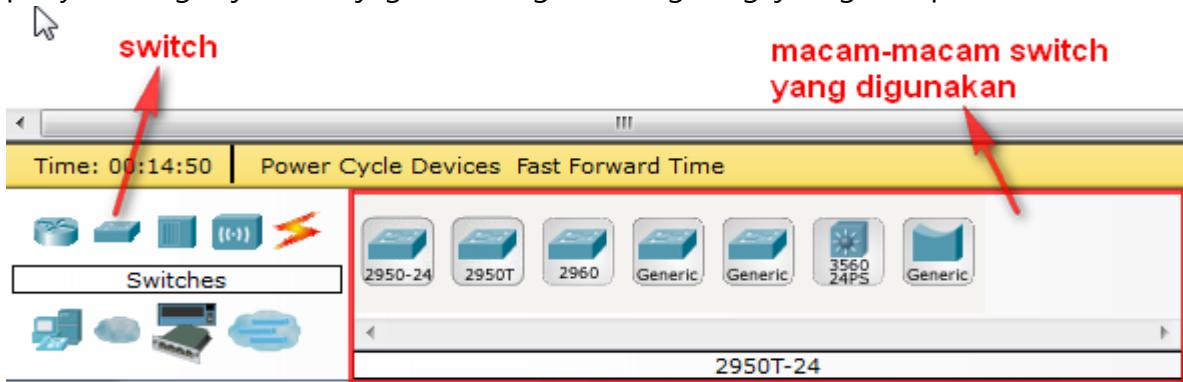


-nah,disini saya akan mengenalkan perangkat router di dalam packet tracer,fungsi router adalah untuk menghubungkan sebuah network yang berbeda.seperti di bawah ini :

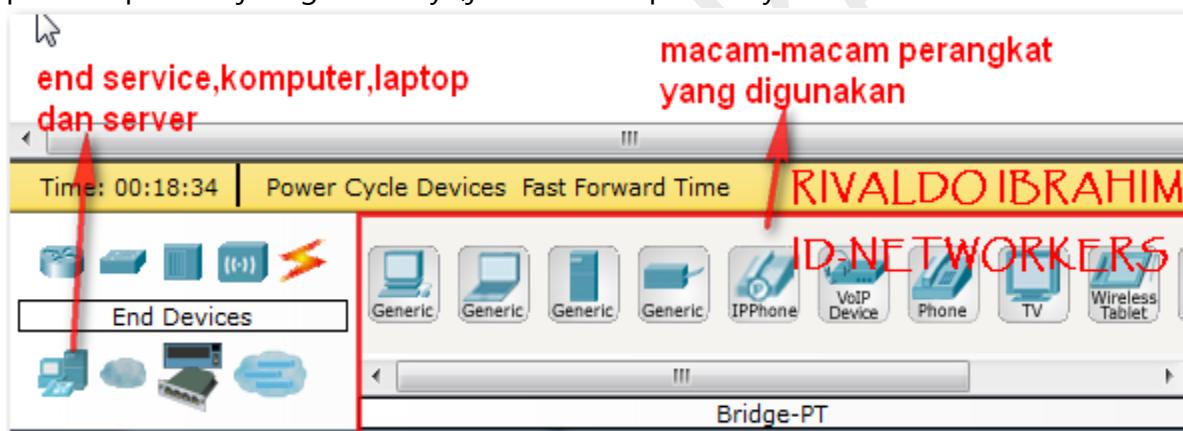


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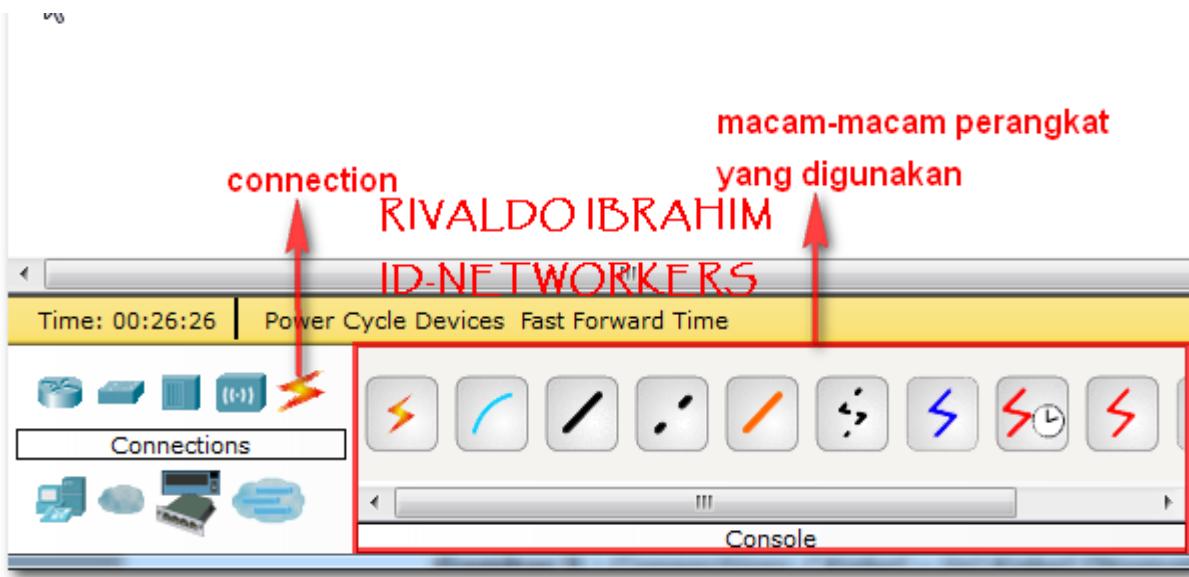
-lalu setelah router,ada perangkat switch di dalam packet tracer,fungsi switch adalah untuk menghubungkan banyak computer yang mempunyai port-port penyambungan,jadi bisa juga di bilang membagi-bagi jaringan seperti di bawah ini :



-lalu,saya akan mengenalkan bagian di end service,yang sering di gunakan ini ada 3 yaitu : computer,laptop dan server.nah,3 perangkat itu sering kita praktekkan dalam praktek-praktek jaringan lainnya,jadi harus di pahami ya ...



-sekarang,saya akan mengenalkan kabel dalam packet tracer,tetapi yang sering digunakan ini ada 3 yaitu : kabel otomatis,kabel straight dan kabel crossover,jadi kabel ini sering digunakan setiap saat,fungsi dari kabel untuk menyambungkan dari satu perangkat ke perangkat lainnya,berikut ini macam kabel-kabel yang ada pada cisco :

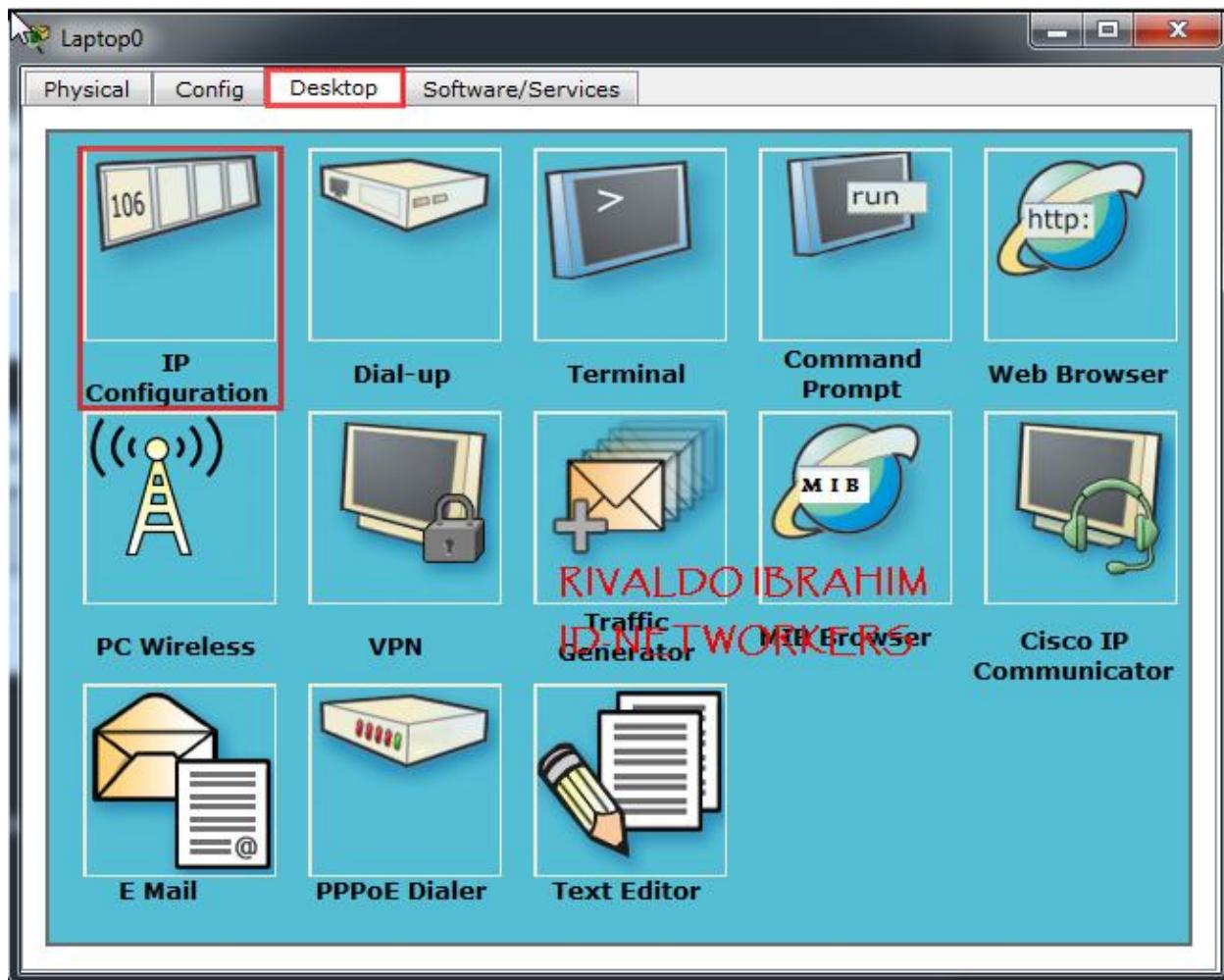


-coba kita buat sebuah jaringan,misalkan peer to peer,seperti ini.

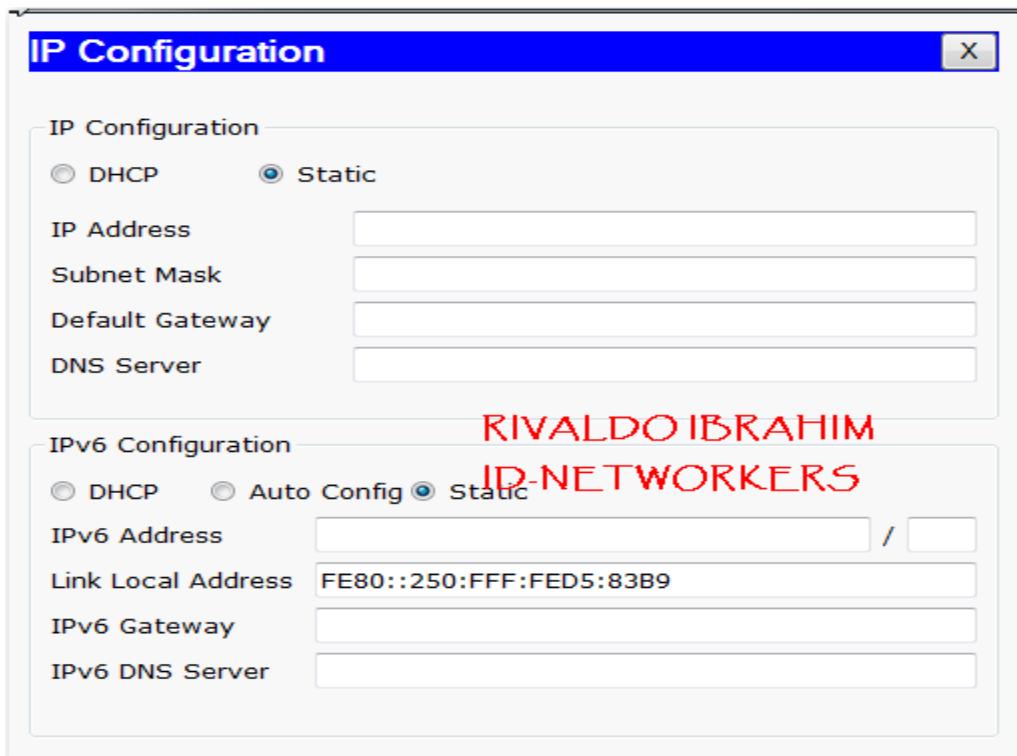


Sekarang,kita akan menyebutkan bagian-bagian yang ada di sana :

- ada 2 laptop
- 1 kabel crossover
- Saya akan mengenalkan cara menyetting ipnya,kita klik 2x pada laptop,kita ke tab desktop pilih ip configuration,seperti di bawah ini :

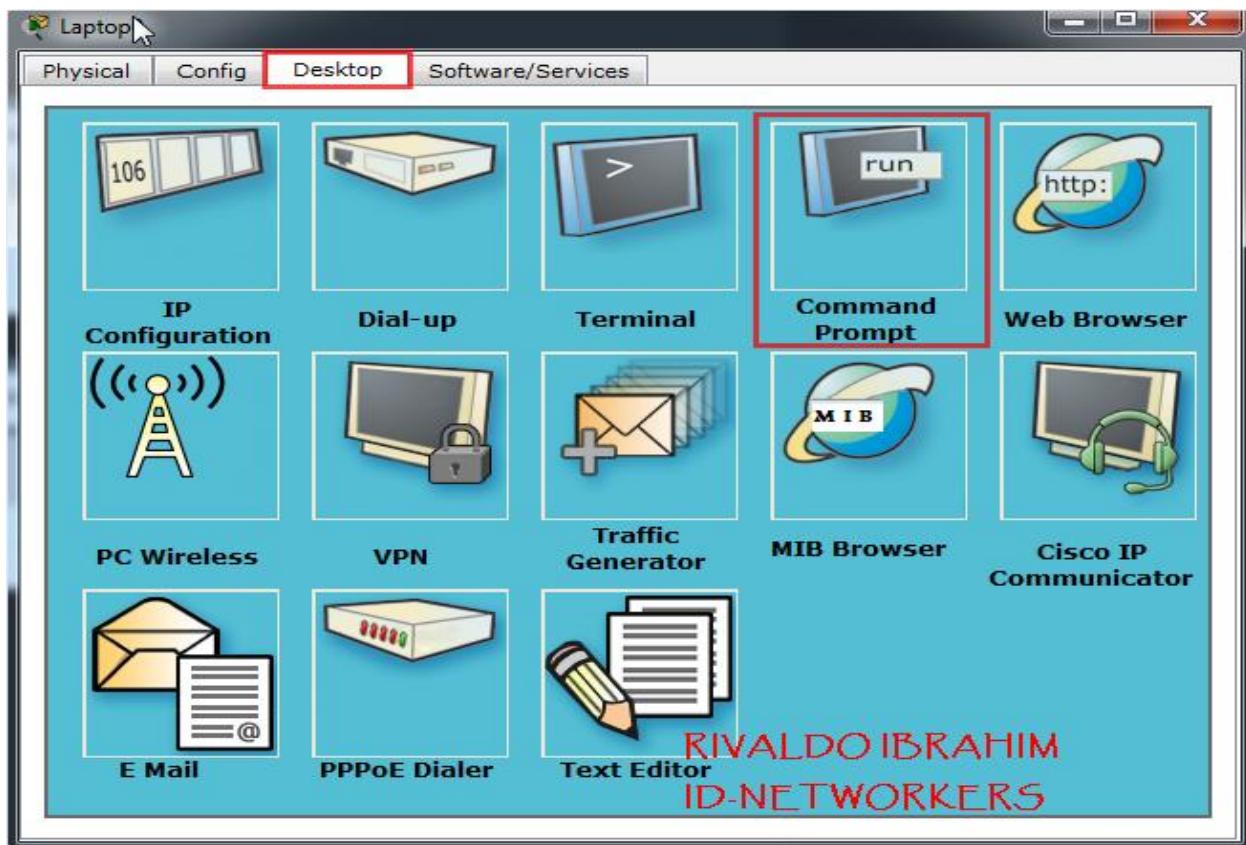


-setelah itu,kita setting ipnya,jika ingin setting manual kita pilih static dan bila ingin setting secara otomatis pilih DHCP,untuk gambarannya seperti ini :



-saya juga akan mengenalkan CMD atau command prompt di dalam packet tracer,klik 2x pada laptop lalu kita pilih tab desktop lalu klik 2x pada command prompt,gambaran seperti ini :

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-jika sudah inilah bentuk CMD pada cisco,sebagai berikut :

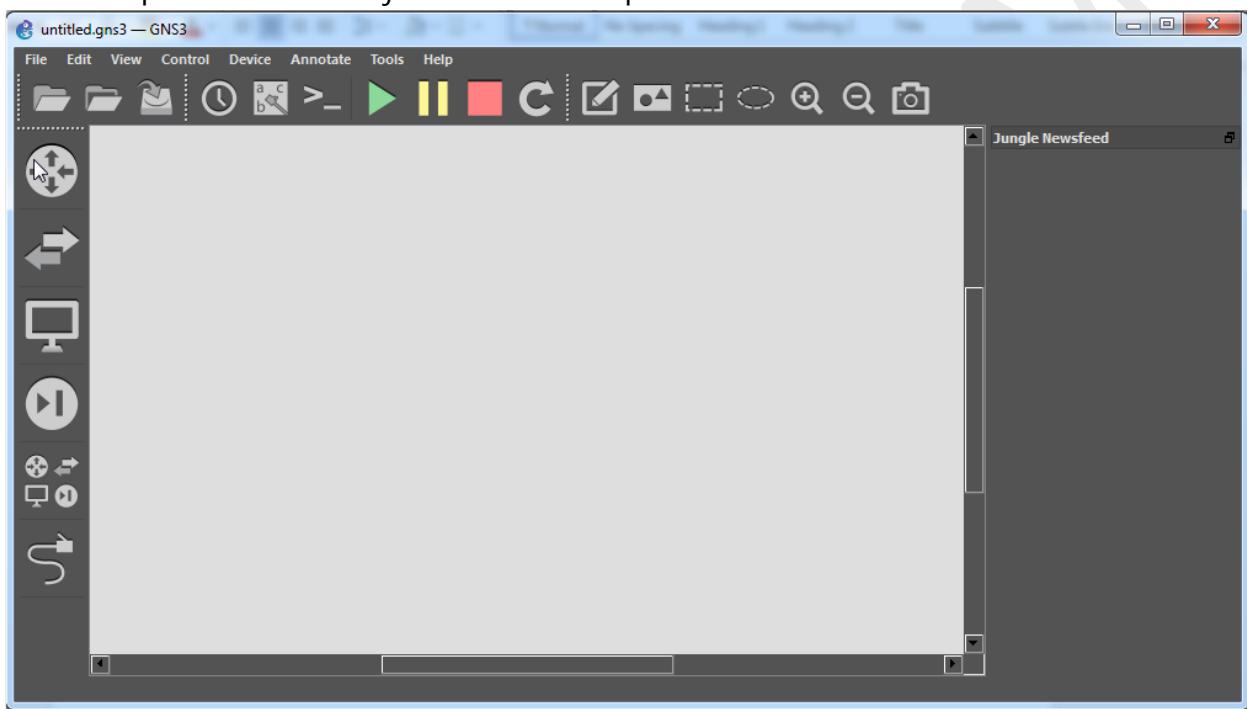
The screenshot shows a window titled "Command Prompt" with a blue header bar. The main area is black and displays the text "Packet Tracer PC Command Line 1.0" and "PC>". In the bottom right corner of the black area, the text "RIVALDO IBRAHIM" and "ID-NETWORKERS" is displayed in red.

Lab 4

Menjalankan cisco dengan GNS3

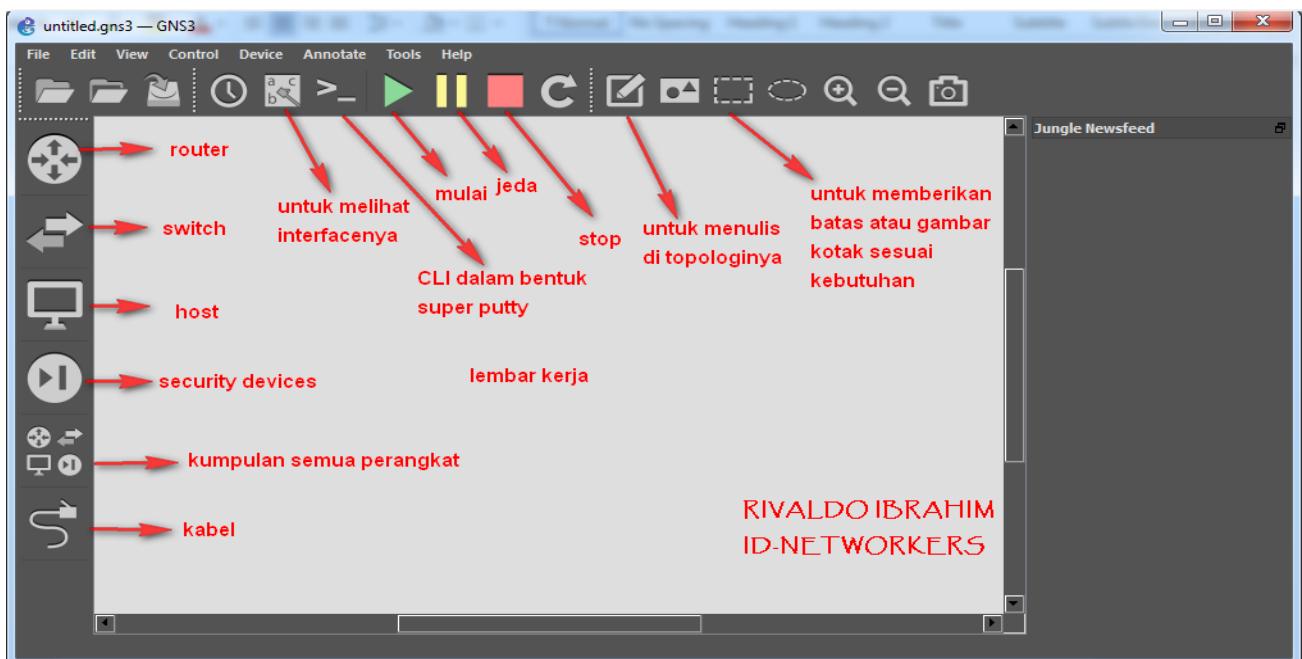
Pada pembahasan ini,saya akan mengenalkan tentang GNS3,GNS3 disini fungsinya untuk simulasi jaringan,sama seperti packet tracer perbedaannya pada keduanya ini,kalau packet tracer itu bawaan dari cisconya,kalau GNS3 bisa digunakan oleh mikrotik,bisa juga oleh cisco dan lainnya.langsung saja kita ke TKP,berikut pengenalannya :

-ini merupakan lembar kerja dari GNS3 tetapi versi baru 1.2



-disini macam-macam bagian yang ada dalam GNS3,seperti di bawah ini :

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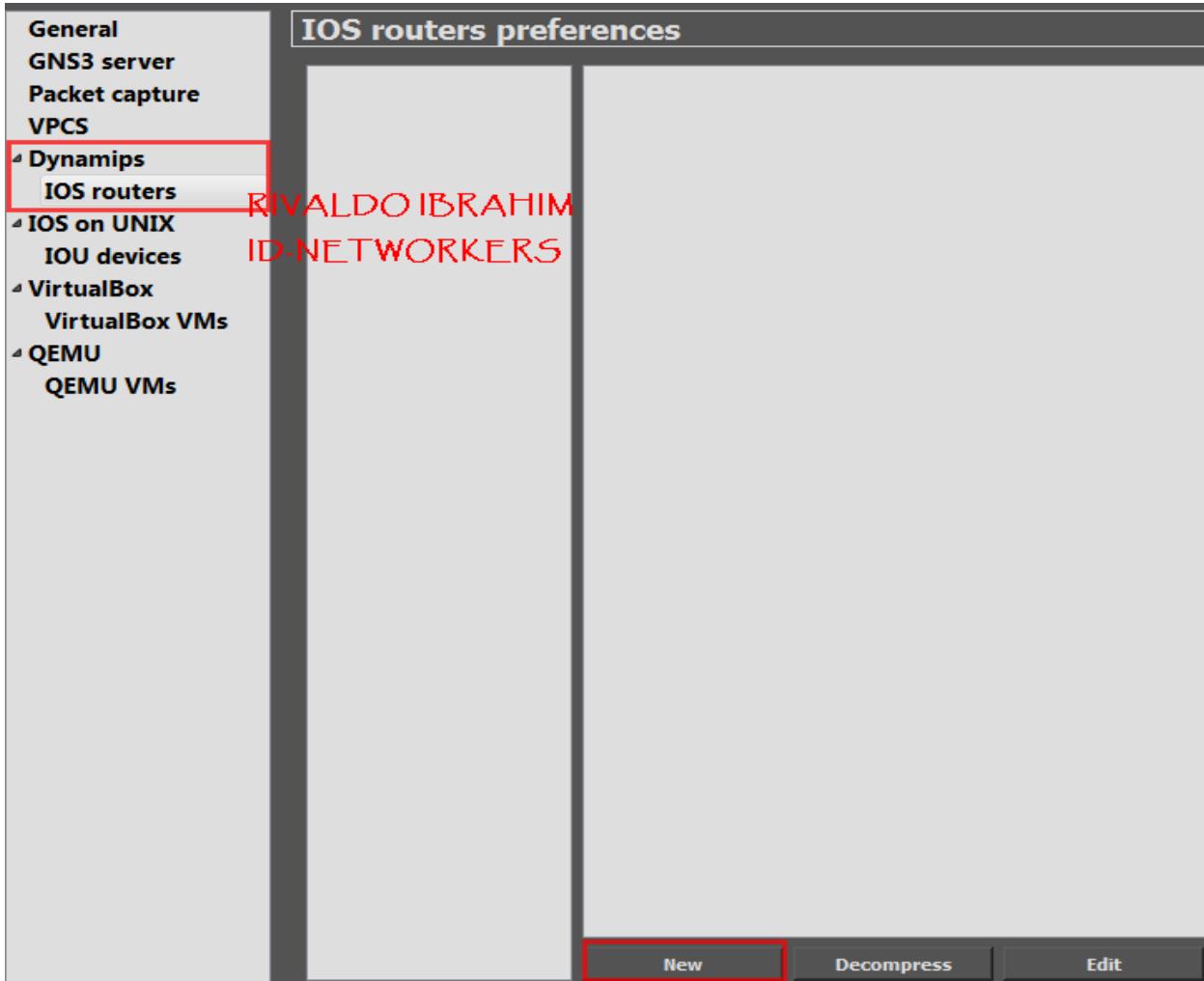


-setelah itu,kita install perangkat cisco nya,caranya kita ke tab edit,lalu klik preferences,seperti di bawah ini :

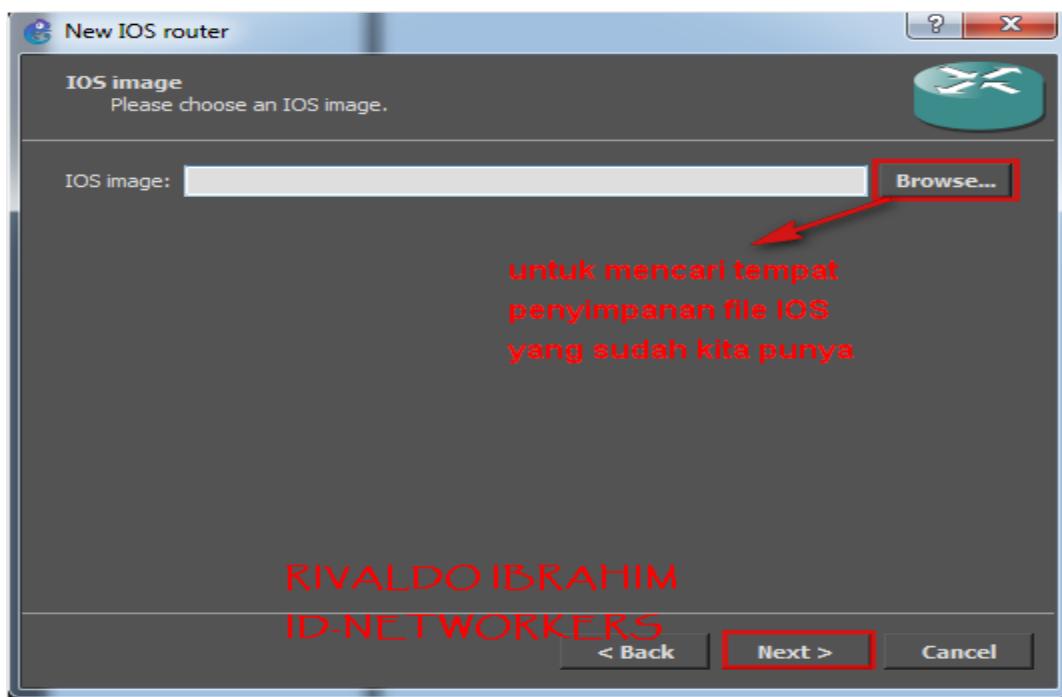


RIVALDO IBRAHIM
ID-NETWORKERS

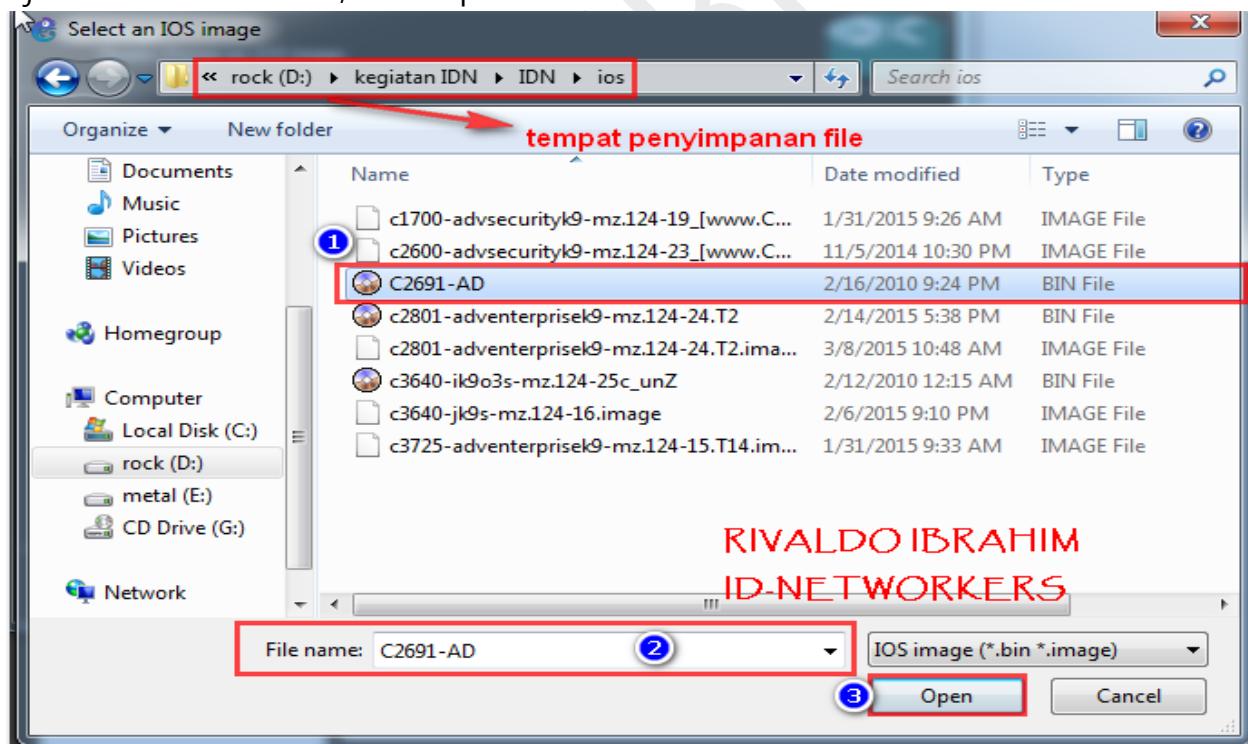
-lalu,kita pilih dynamips-IOS routers,klik new



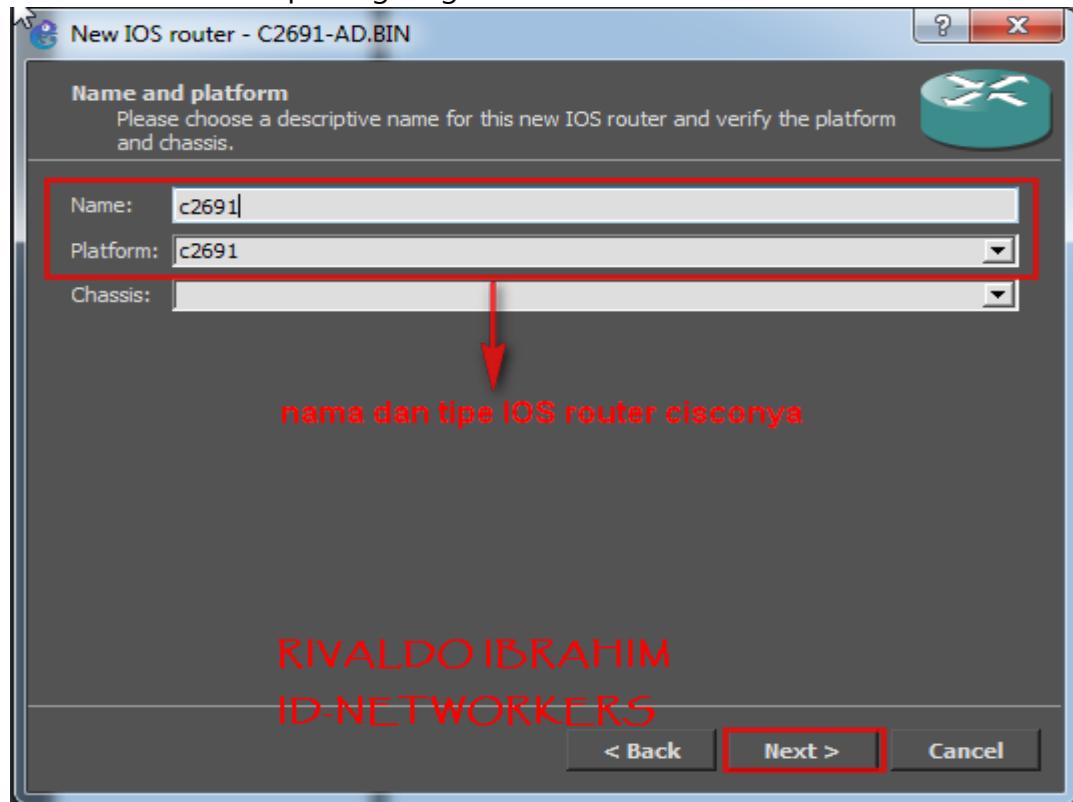
-lalu,kita cari dulu IOS yang sudah kita download atau ada di PC/Laptop kita,klik next



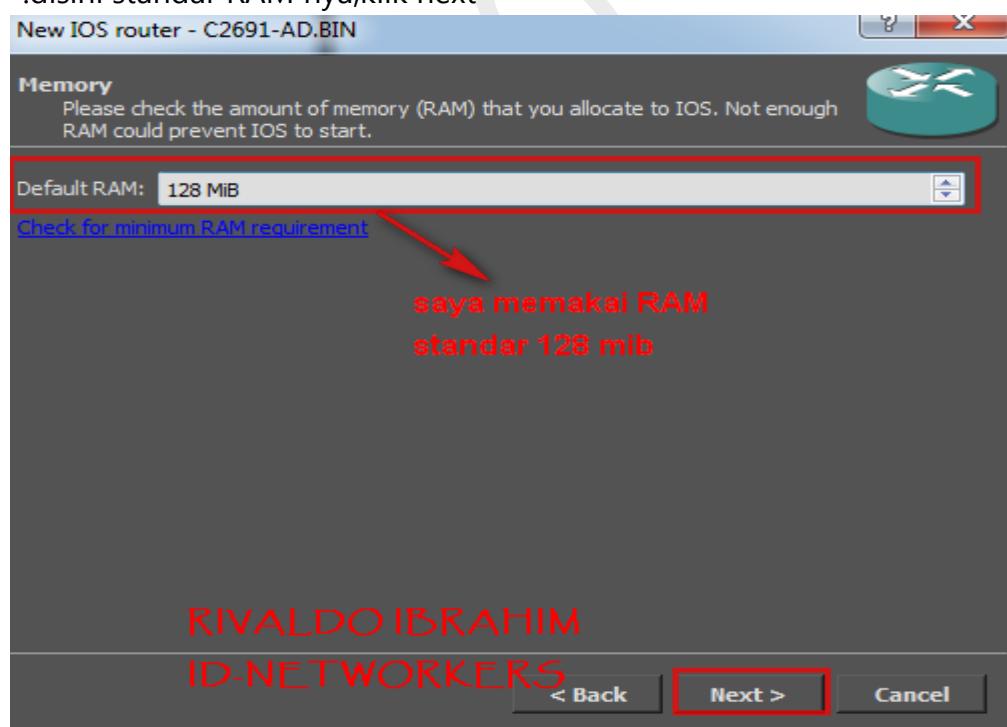
-jika sudah ketemu IOS,sama seperti di bawah ini :



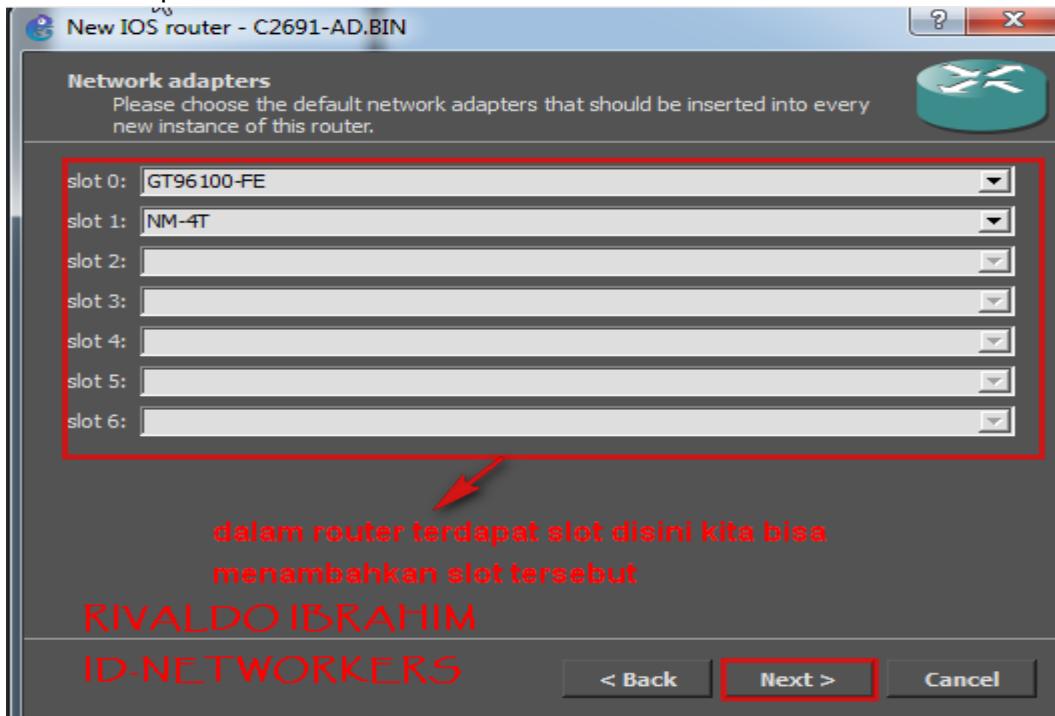
-untuk nama dan tipe,langsung di next



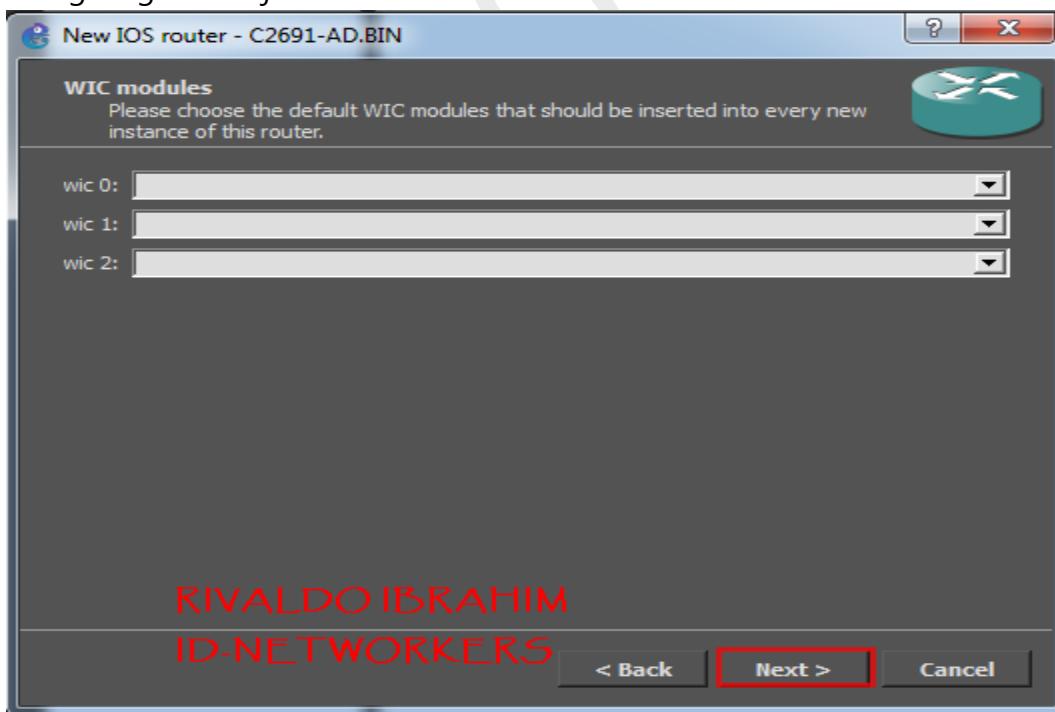
-disini standar RAM nya,klik next



-setelah itu,kita setting dulu slotnya,saya juga menambahkan kabel serial di perangkat tersebut,seperti dibawah ini :

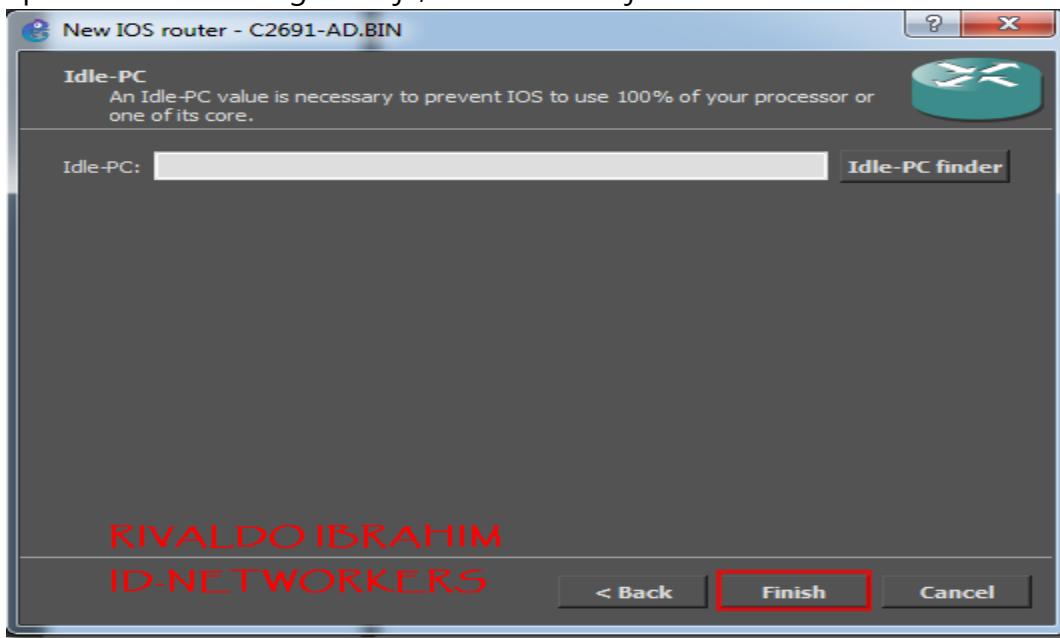


-langsung next saja

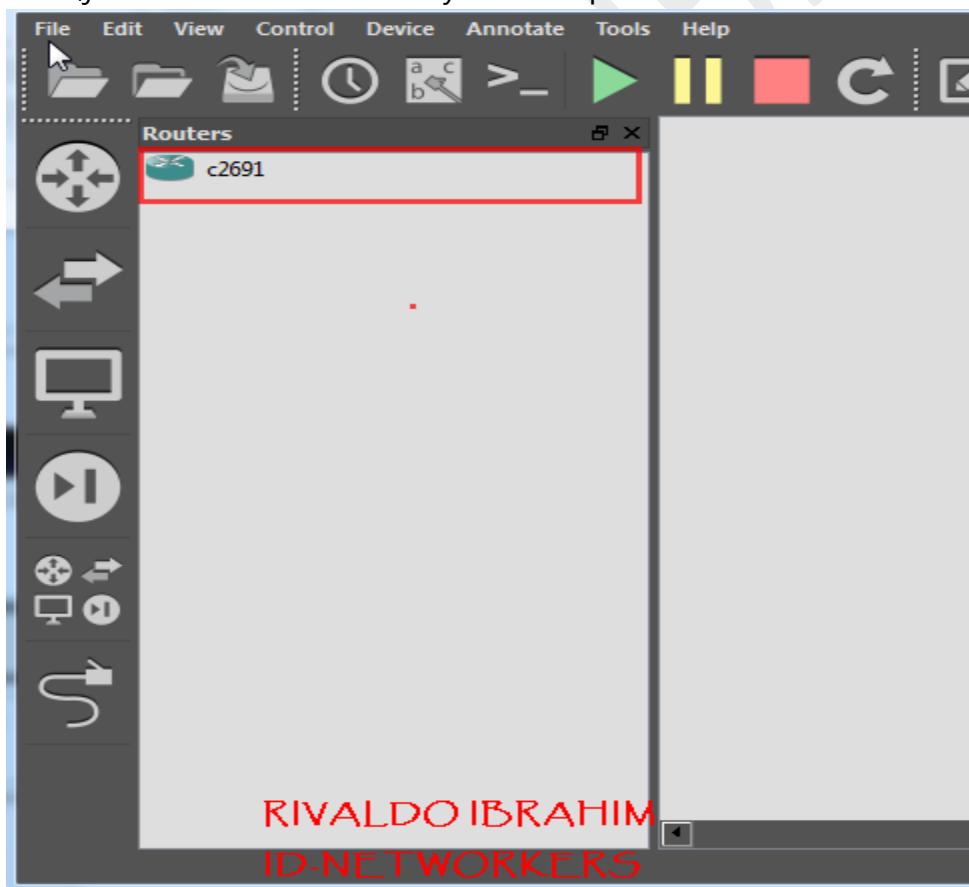


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-disini idle-PC untuk menstabilkan atau menurunkan kinerja prosesor pada pc/laptop apabila GNS3 sedang bekerja,ini kita next saja



-nah,jika sudah di install hasilnya akan seperti di bawah ini :



Lab 5

Konfigurasi dasar router & switch

Di konfigurasi dasar ini ada 3 mode :

- 1.user mode yaitu pada saat pertama kita masuk ke CLI dan tandanya seperti ini "router>"
- 2.privilege mode yaitu pada saat kita sudah bisa melewati user mode tandanya seperti ini "router#" biasanya digunakan untuk mengecek settingan kita
- 3.global mode yaitu pada saat kita mengonfigurasi dan tandanya "router(config)#"

Berikut user mode :

```
Router>  user mode
Router>?
Exec commands:
<1-99>      Session number to resume
connect       Open a terminal connection
disable       Turn off privileged commands
disconnect    Disconnect an existing network connection
enable        Turn on privileged commands
exit          Exit from the EXEC
logout        Exit from the EXEC
ping          Send echo messages
resume        Resume an active network connection
show          Show running system information
ssh           Open a secure shell client connection
telnet        Open a telnet connection
terminal      Set terminal line parameters
traceroute   Trace route to destination
Router>enable
```

Privilege mode :

```
Router# → privilege mode
Router#?
Exec commands:
<1-99>      Session number to resume
auto          Exec level Automation
clear          Reset functions
clock          Manage the system clock
configure      Enter configuration mode
connect        Open a terminal connection
copy           Copy from one file to another
debug          Debugging functions (see also 'undebbug')
delete         Delete a file
dir            List files on a filesystem
disable        Turn off privileged commands
disconnect     Disconnect an existing network connection
enable         Turn on privileged commands
erase          Erase a filesystem
exit           Exit from the EXEC
logout         Exit from the EXEC
mkdir          Create new directory
more           Display the contents of a file
no             Disable debugging informations
ping           Send echo messages
reload         Halt and perform a cold restart
resume         Resume an active network connection
rmdir          Remove existing directory
send           Send a message to other tty lines
setup          Run the SETUP command facility
show           Show running system information
ssh            Open a secure shell client connection
telnet         Open a telnet connection
terminal       Set terminal line parameters
traceroute    Trace route to destination
undebbug      Disable debugging functions (see also 'debug')
vlan           Configure VLAN parameters
write          Write running configuration to memory, network, or terminal
Router# disable
```

Global mode :

```
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# → global mode
```

Lalu perintah show, disini digunakan untuk mengecek settingan yang kita buat di cisco jika ingin melakukan pengecekan di awali dengan "sh" seperti berikut :

- disini jika belum mengetahui cara melihat ketikkan "show ?"

Router#show ? → **bila tidak tahu kita bisa
meminta bantuan**

- lalu show version untuk melihat versi dan lisensi dari perangkat cisco

Router#sh version → **untuk melihat versi di perangkat cisco tersebut**

- show flash digunakan untuk mengecek database

```
Router#sh flash → untuk mengecek database yang sudah tersetting  
di perangkat tersebut  
System flash directory:  
File Length Name/status  
3 33591768 c1841-advpipservicesk9-mz.124-15.T1.bin  
2 28282 sigdef-category.xml  
1 227537 sigdef-default.xml  
[33847587 bytes used, 30168797 available, 64016384 total]  
63488K bytes of processor board System flash (Read/Write)
```

-show start

```
Router#sh start → untuk memulai  
startup-config is not present
```

-show run

```
Router#sh run → untuk melihat settingan yang berjalan  
Building configuration...  
  
Current configuration : 489 bytes  
!  
version 12.4  
no service timestamps log datetime msec  
no service timestamps debug datetime msec  
no service password-encryption  
!  
hostname Router  
!
```

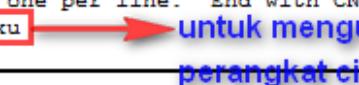
-show ip interface brief

```
Router#sh ip int brief → untuk melihat ether yang sedang berjalan  
+-----+-----+-----+-----+  
Interface IP-Address OK? Method Status Protocol  
+-----+-----+-----+-----+  
FastEthernet0/0 unassigned YES unset administratively down down  
FastEthernet0/1 unassigned YES unset administratively down down  
Vlan1 unassigned YES unset administratively down down
```

-show clock

```
Router#sh clock → untuk melihat waktu  
*3:1:46.825 UTC Mon Mar 1 1993  
Router#
```

-hostname digunakan untuk merubah identitas

```
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname punyaku
punyaku(config)#



untuk mengubah identitas di  
perangkat cisco



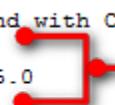
ini hasilnya


```

-untuk memberikan password,tetapi perbedaan diantara password dan secret adalah kalau password tidak di enkripsi jadi untuk keamanan bisa terlihat sedangkan secret itu menggunakan enkripsi,jika anda ingin tahu lebih lanjut coba anda ketikkan "show run" dan pada bagian password bisa dilihat kalau password bisa kita tahu apa passwordnya,sedangkan secret akan muncul hexadecimal.

```
punyaku(config)#enable password #isikan#
punyaku(config)#enable secret 123
    . . .
```

-cara setting ip address di cisco,saat kita buat topologi di packet tracer seperti ini

```
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int fa0/0
Router(config-if)#ip add 10.10.10.1 255.255.255.0
Router(config-if)#no shutdown


setting ip address


Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
```

-cara menyimpan konfigurasi

```
Router#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]


untuk menyimpan konfigurasi


```

-cara menghapus seluruh konfigurasi

```
Router#write erase


menghapus konfigurasi


Erasing the nvram filesystem will remove all configuration files! Continue? [con
firm]
[OK]
Erase of nvram: complete
%SYS-7-NV_BLOCK_INIT: Initialized the geometry of nvram
```

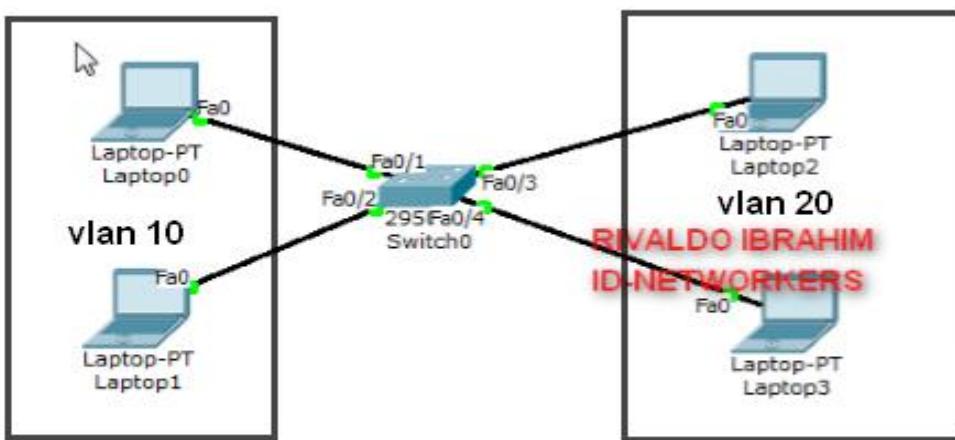
Lab 6

Membuat vlan dengan switch

Pada pembahasan kali ini kita akan membahas tentang membuat vlan,tapi sebelumnya apa itu vlan ?,vlan merupakan child dari LAN interface fisiknya ,jadi dari LAN local bisa kita bagi-bagi dari network satu ke network lainnya.setiap network memiliki LAN sendiri,sehingga pada sebuah switch seolah-olah terdapat beberapa vlan.

Dengan adanya vlan maka kita bisa memisahkan atau mengelompokkan user sesuai kebutuhannya masing-masing.misal kita membuat VLAN sekolah,VLAN tata usaha,VLAN kelas,VLAN hubin,dll.bisa juga berdasarkan lantai.tetapi disini saya akan menggunakan switch untuk membagi jaringan,oke langsung saja kita praktikan :

3



Bisa dilihat topologi di atas,disini kita akan coba buat vlan terlebih dahulu baru kita setting ip address di pc.berikut langkah-langkahnya :

Buat vlan di switch :

```
Switch(config)#vlan 10
Switch(config-vlan)#name rivaldo

Switch(config)#vlan 20
Switch(config-vlan)#name Ibrahim
```

Nah disini saya buat 2 vlan yaitu vlan 10 dan vlan 20,lalu saya beri nama masing-masing pada vlan,jika sudah kita assign vlan ke portnya dengan ketikkan :

.setting int fa0/1

```
Switch(config)#int fa0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10
```

.setting int fa0/2

```
Switch(config)#int fa0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10
```

-setting int fa0/3

```
Switch(config)#int fa0/3
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
```

-setting int fa0/4

```
Switch(config)#int fa0/4
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
```

Coba lakukan pengecekan saat kita sudah menyetting apakah sudah sesuai apa belum ? pastikan fa0/1 dan fa0/2 itu merupakan anggota dari vlan 10 sedangkan fa0/3 dan fa0/4 itu merupakan anggota dari vlan 20,seperti berikut :

Switch#sh vlan  untuk mengecek hasil settingan vlan di switch

VLAN Name	Status	Ports
1 default	active	Fa0/5, 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
10 rivaldo	active	Fa0/1, Fa0/2
20 ibrahim	active	Fa0/3, Fa0/4
1002 fddi-default	act/unsup	
1003 token-ring-default	act/unsup	
1004 fddinet-default	act/unsup	
1005 trnet-default	act/unsup	

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-sekarang kita setting pc kita ke switch dari fa0/1-4 dengan kabel straight.kemudian kita setting ip pada vlan 10 untuk pc 1 : 12.12.12.1/24 dan pc 2:12.12.12.2/24 sedangkan pada vlan 20 untuk pc kita pada pc 1: 13.13.13.1/24 pc2:13.13.13.2/24,seperti ini :

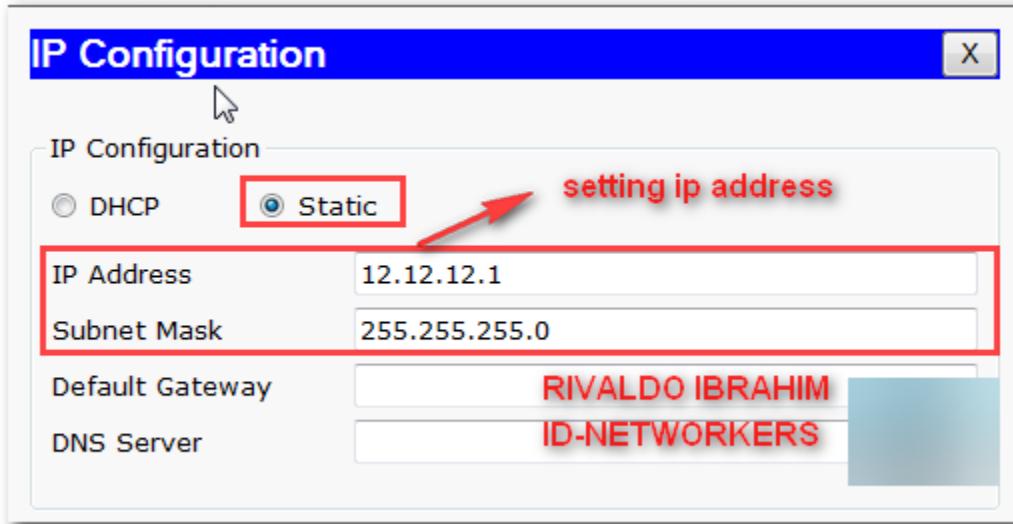
-pada pc 1

Klik 2 x pada pc

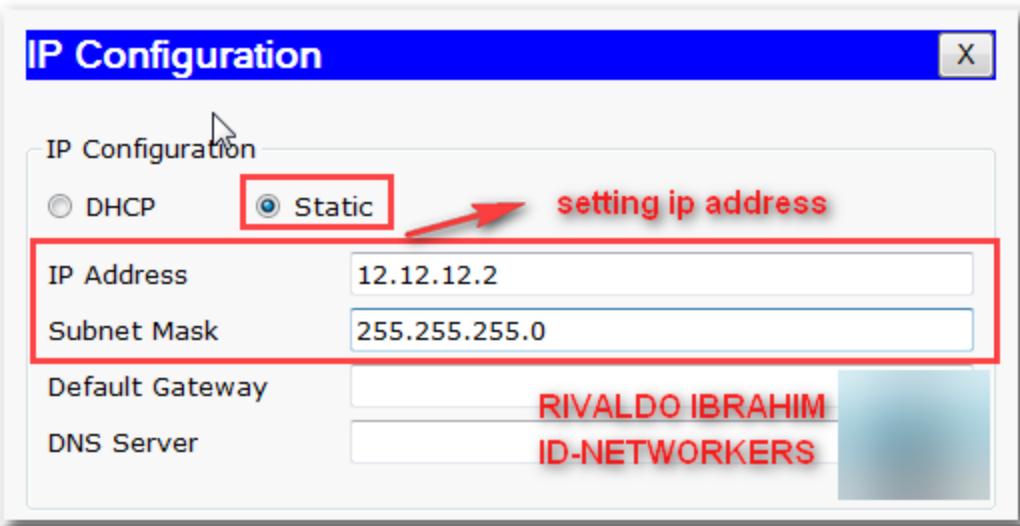
Lalu pada tab desktop klik ip configuration :



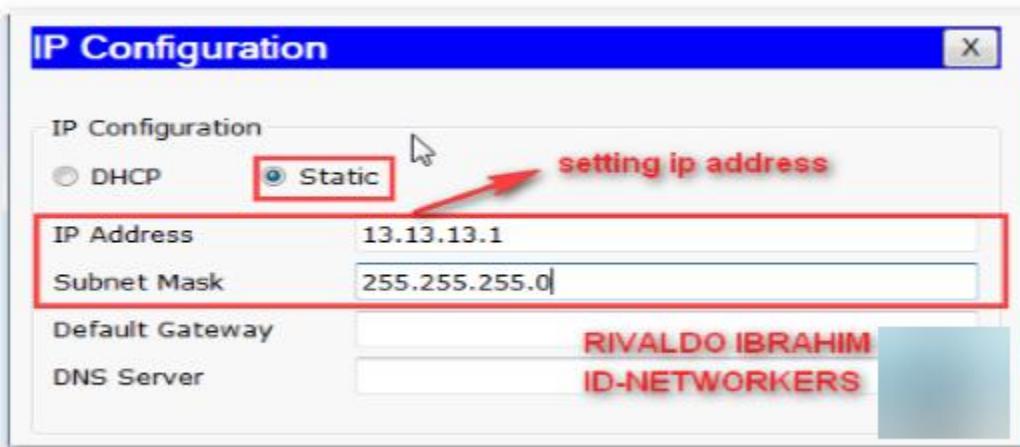
-setelah itu setting ip addressnya pada pc 1 :



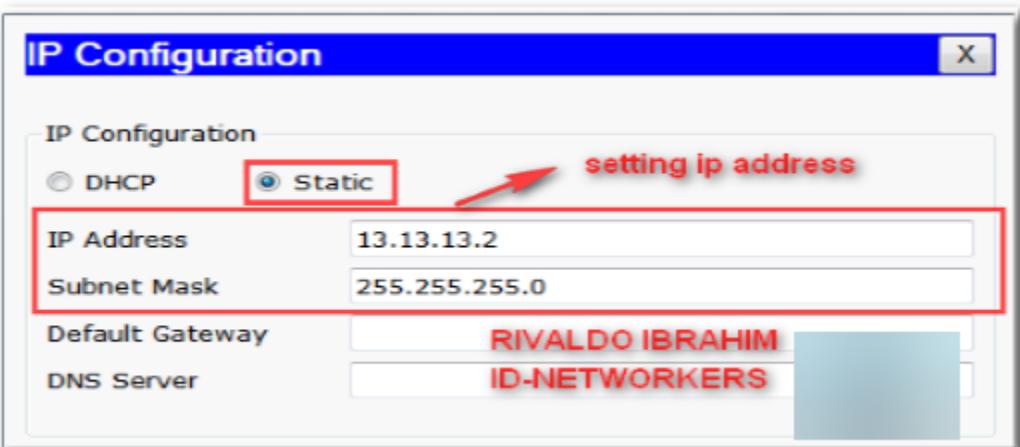
- Setting ip address untuk pc 2



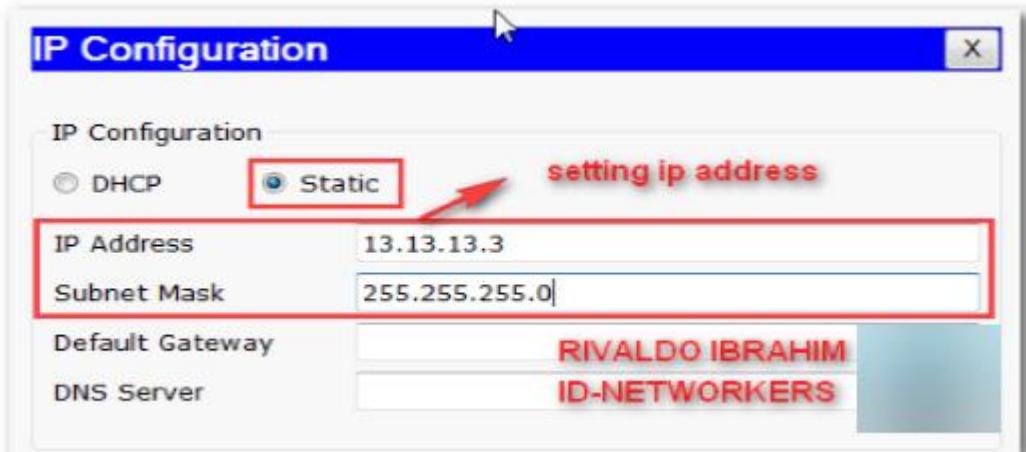
-setting ip address di pc 3



-setting ip address di pc 4



-setting ip address di pc 4



Jika sudah di setting ip pada masing-masing pc/laptop sekarang kita coba tes ping dan coba ping beda vlan bisa atau tidak ?

The screenshot displays two terminal windows. The top window shows the command 'PC>ping 12.12.12.2' followed by four successful ping responses from '12.12.12.2'. The bottom window shows the command 'PC>ping 13.13.13.1' followed by four 'Request timed out.' messages. Red arrows point from the text 'satu vlan' to the first window and from 'beda vlan' to the second window. The background of the windows features a watermark with the text 'RIVALDO IBRAHIM' and 'ID-NETWORKERS'.

```
PC>ping 12.12.12.2
Pinging 12.12.12.2 with 32 bytes of data:
Reply from 12.12.12.2: bytes=32 time=2ms TTL=128
Reply from 12.12.12.2: bytes=32 time=0ms TTL=128
Reply from 12.12.12.2: bytes=32 time=1ms TTL=128
Reply from 12.12.12.2: bytes=32 time=0ms TTL=128

Ping statistics for 12.12.12.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 0ms

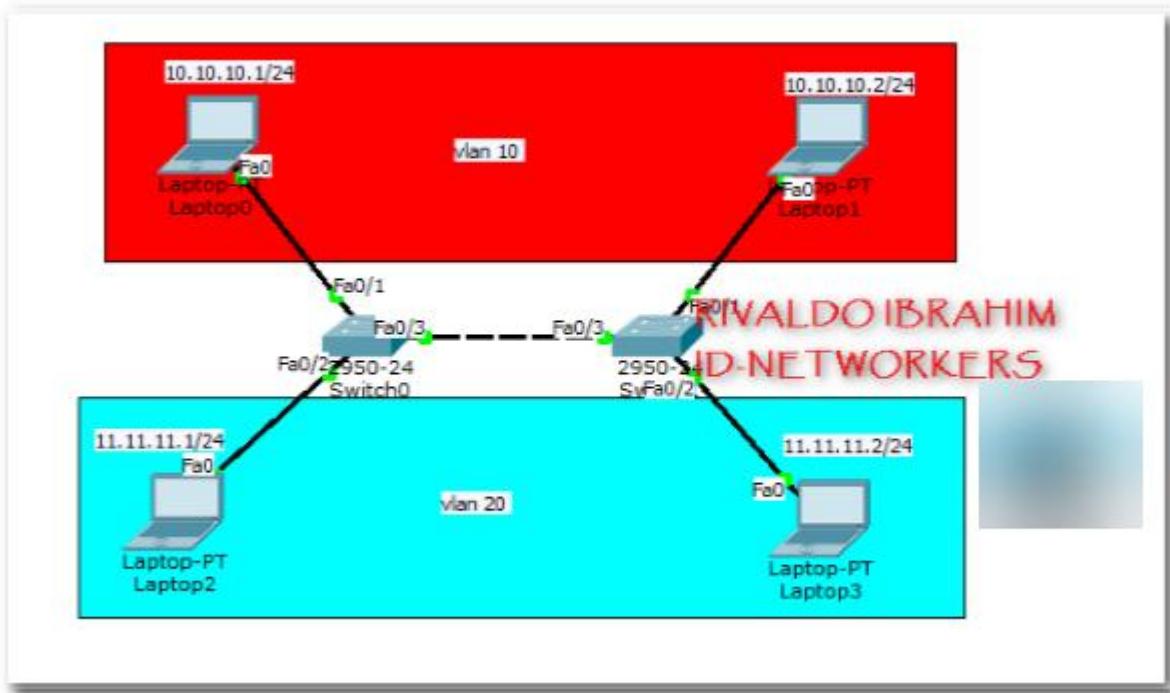
PC>ping 13.13.13.1
Pinging 13.13.13.1 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
```

Mengapa beda vlan tidak bisa nyambung ? karena beda network, di cisco kalau beda network maka tidak akan bisa koneksi.

Lab 7

Menghubungkan antar switch (Trunking Vlan)

Pada pembahasan kali ini saya akan membahas tentang menghubungkan antar switch ,jadi konsepnya kita buat sebuah 2 VLAN. Nah, di lab sebelumnya kita tidak bisa terhubung beda vlan sekarang kita bisa saling berkomunikasi dengan menggunakan trunk dan untuk melakukan trunk ini harus menggunakan kabel cross.langsung saja berikut langkah-langkahnya :



-pertama,setting vlan pada switch 1 :

```

Switch(config)#vlan 10
Switch(config-vlan)#name rivaldo
Switch(config-vlan)#int fa0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10

Switch(config)#vlan 20
Switch(config-vlan)#name smk
Switch(config-vlan)#int f0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
  
```

-setting ip pada pc

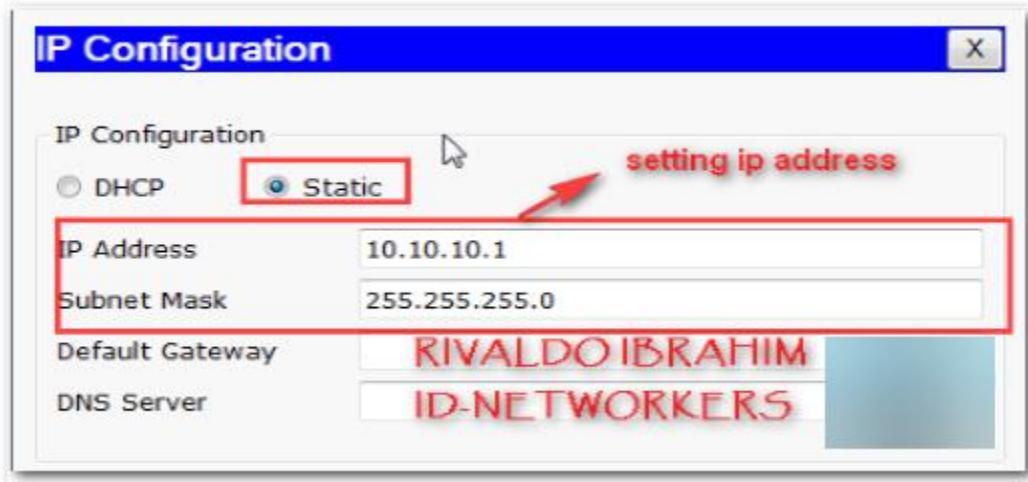
Pc 1 :

-klik 2x pada laptop/pc

-pada tab desktop klik ip configuration



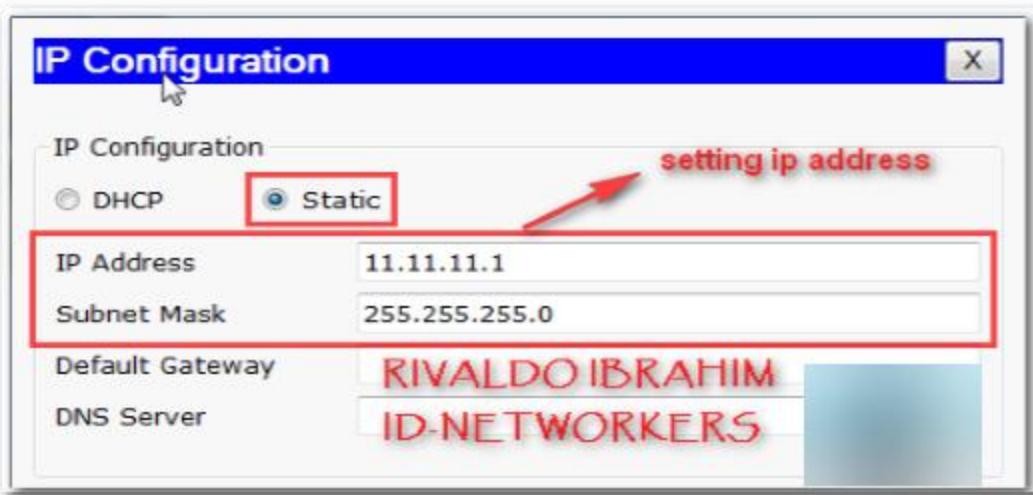
-setting ip nya pilih static dan ketikkan ip sesuai keinginan,con : 10.10.10.1 pada pc 1



Pc 2 :

-Ikuti langkah seperti di atas

-Lalu setting ipnya pilih static ip addressnya con : 11.11.11.1 pada pc 2



-kedua,kita setting ip pada switch 2 :

```
Switch(config)#vlan 10
Switch(config-vlan)#name ibrahim
Switch(config-vlan)#int fa0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10

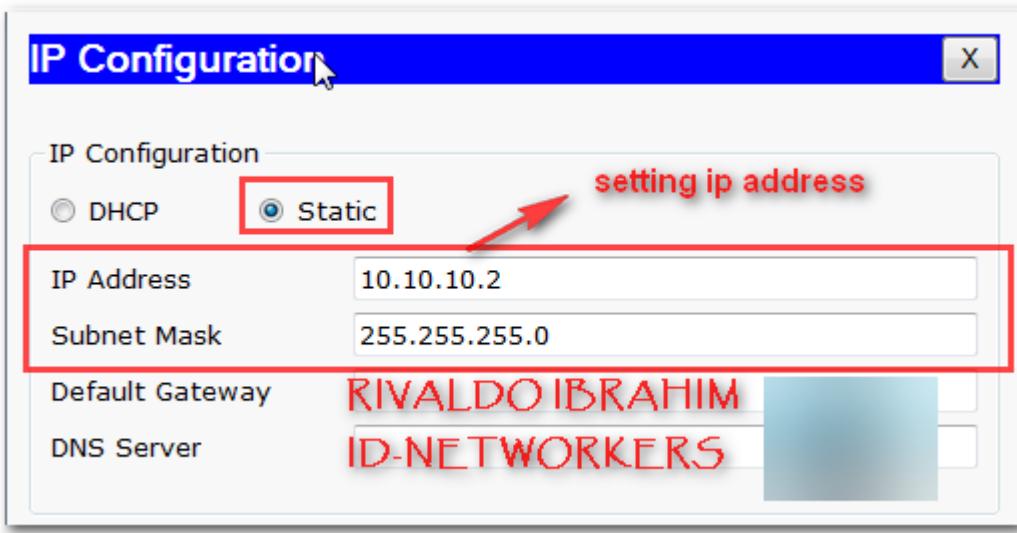
Switch(config)#vlan 20
Switch(config-vlan)#name bisa
Switch(config-vlan)#int f0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
```

-setting ip pada pc

Pc 3

Ikuti seperti yang di atas

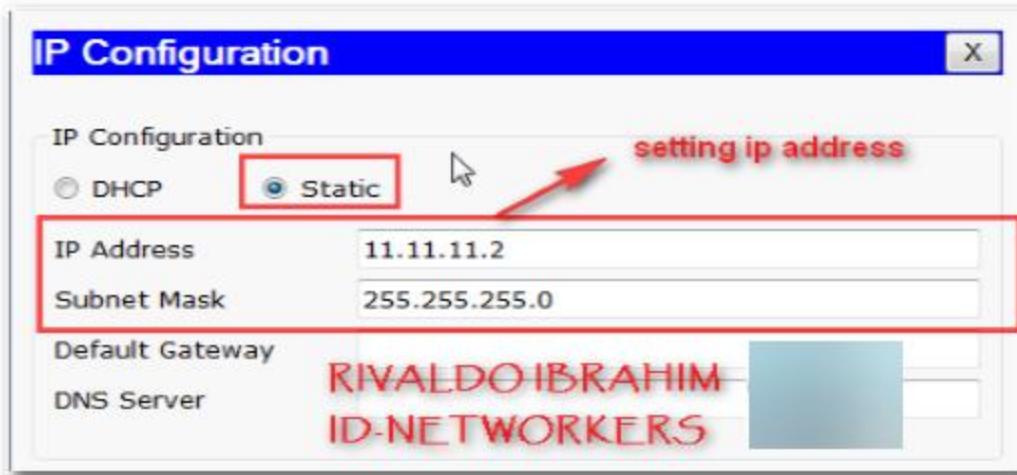
-setting ip address pilih static dan ip nya con : 10.10.10.2



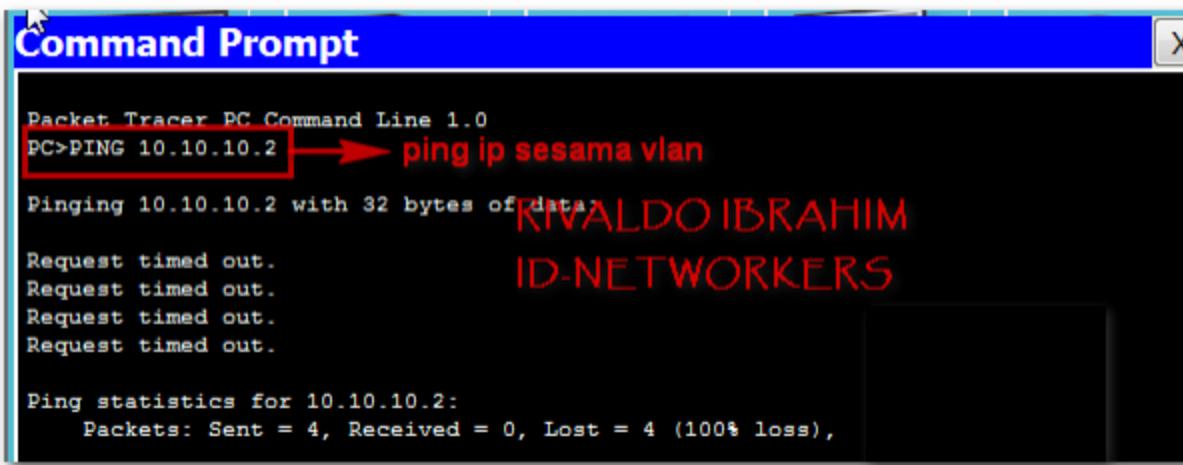
Pc 4 :

Ikuti seperti yang di atas

- .setting ip address pilih static,ipnya con : 11.11.11.2



- .coba kita tes ping dari 10.10.10.1 ke 10.10.10.2,bisa ping atau tidak



Mengapa tidak bisa ping ? karena kita belum trunk pada masing-masing switch ini.jadi kita harus setting trunk di switch 1 dan 2,berikut caranya :

-pada switch 1 :

```
Switch(config)#int fa0/3
Switch(config-if)#switchport mode trunk
Switch(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/3, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/3, changed state to up
```

-pada switch 2 :

```
Switch(config)#int fa0/3
Switch(config-if)#switchport mode trunk
```

-coba kita ping satu vlan

Dari 10.10.10.1 ke 10.10.10.2

```

Command Prompt
PC>PING 10.10.10.2
Pinging 10.10.10.2 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 10.10.10.2:
  Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
PC>PING 10.10.10.2
Pinging 10.10.10.2 with 32 bytes of data:
Reply from 10.10.10.2: bytes=32 time=43ms TTL=128
Reply from 10.10.10.2: bytes=32 time=0ms TTL=128
Reply from 10.10.10.2: bytes=32 time=1ms TTL=128
Reply from 10.10.10.2: bytes=32 time=0ms TTL=128

Ping statistics for 10.10.10.2:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
  Minimum = 0ms, Maximum = 43ms, Average = 1ms
PC>

```

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- dari 11.11.11.1 ke 11.11.11.2

```

Packet Tracer PC Command Line 1.0
PC>ping 11.11.11.2
Pinging 11.11.11.2 with 32 bytes of data:
Reply from 11.11.11.2: bytes=32 time=11ms TTL=128
Reply from 11.11.11.2: bytes=32 time=4ms TTL=128
Reply from 11.11.11.2: bytes=32 time=0ms TTL=128
Reply from 11.11.11.2: bytes=32 time=0ms TTL=128

Ping statistics for 11.11.11.2:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
  Minimum = 0ms, Maximum = 11ms, Average = 3ms

```

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- Untuk mengetahui settingan trunk kita bisa cek dengan ketikkan "sh int trunk"

Switch 1 :

```
Switch#sh int trunk
Port      Mode          Encapsulation  Status        Native VLAN
Fa0/3    on           802.1q         trunking    1
Port      Vlans allowed on trunk
Fa0/3    1-1005
Port      Vlans allowed and active in management domain
Fa0/3    1,10,20
Port      Vlans in spanning tree forwarding state and not pruned
Fa0/3    1,10,20
```

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ini hasil settingan trunk

Switch 2 :

```
Switch#sh int trunk
Port      Mode          Encapsulation  Status        Native VLAN
Fa0/3    on           802.1q         trunking    1
Port      Vlans allowed on trunk
Fa0/3    1-1005
Port      Vlans allowed and active in management domain
Fa0/3    1,10,20
Port      Vlans in spanning tree forwarding state and not pruned
Fa0/3    1,10,20
```

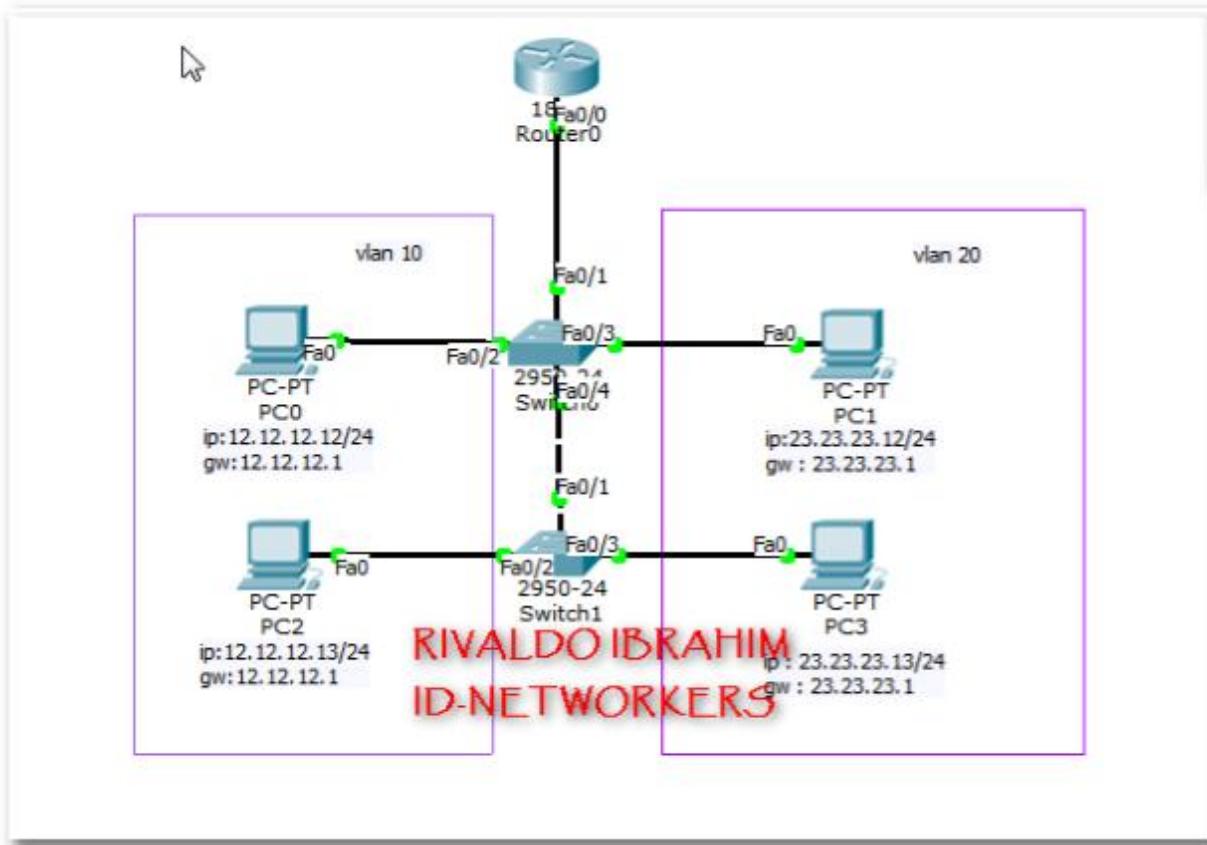
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ini hasil settingan trunk

Dan ingat,kalau beda network di dalam cisco tidak bisa saling berkomunikasi atau terhubung,kita hanya bisa saling berkomunikasi dengan satu network dan hanya menghubungkan antar switch,untuk beda network saling berkomunikasi ada pada lab selanjutnya.

Lab 8

Menghubungkan router ke switch

Pada pembahasan kali ini saya akan membahas tentang menghubungkan router ke switch, disini kita akan mencoba untuk menghubungkan antar vlan yang masih belum dapat berkomunikasi kita membutuhkan perangkat pada layer 3 atau router, berikut langkah-langkahnya :



-Konfigurasi vlan nya sebagai berikut :

```
SW1 (config) #vlan 10
SW1 (config) #vlan 20
```

```
SW2 (config) #vlan 10
SW2 (config-if) #vlan 20
```

-lalu kita masukkan port ke vlan yang kita buat tadi :

```
SW1 (config-vlan) #int f0/2
SW1 (config-if) #switchport mode access
SW1 (config-if) #switchport access vlan 10
SW1 (config-vlan) #int f0/3
SW1 (config-if) #switchport mode access
SW1 (config-if) #switchport access vlan 20
```

```
SW2(config-vlan)#int f0/2
SW2(config-if)#switchport mode access
SW2(config-if)#switchport access vlan 10
SW2(config-if)#int f0/3
SW2(config-if)#switchport mode access
SW2(config-if)#switchport access vlan 20
```

-setelah itu,kita trunk antar switch agar saling terhubung :

```
SW1(config)#int f0/4
SW1(config-if)#switchport mode trunk
SW1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/4, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/4, changed state to up
SW1(config-if)#int f0/1
SW1(config-if)#switchport mode trunk
```

Biasanya,dalam sebuah simulasi jaringan jika kita ingin menggunakan router pasti harus di aktifkan dulu,beda dari yang lain secara otomatis siap untuk di konfigurasi untuk itu kita harus aktifkan dulu perangkat routernya.

-Untuk mengaktifkan router adalah sebagai berikut :

```
Router(config-if)#int f0/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/0, changed state to up
```

Disini interface f0/0 yang terhubung dengan router,dan no shutdown untuk menyalakan si interface tersebut.

-sekarang kita buat gateway di router yang fungsinya untuk menghubungkan antar pc dan antar vlan jadi beda network pun kita bisa saling berkomunikasi ,berikut konfigurasinya :

```
Router(config-if)#int f0/0.10
Router(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.10, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/0.10, changed state to up
Router(config-subif)#encapsulation dot1Q 10
Router(config-subif)#ip add 12.12.12.1 255.255.255.0
Router(config-subif)#int f0/0.20
Router(config-subif)#

```

CISCO ITU MUDAH

```
%LINK-5-CHANGED: Interface FastEthernet0/0.20, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.20, changed state to up
Router(config-subif)#encapsulation dot1Q 20
Router(config-subif)#ip add 23.23.23.1 255.255.255.0
```

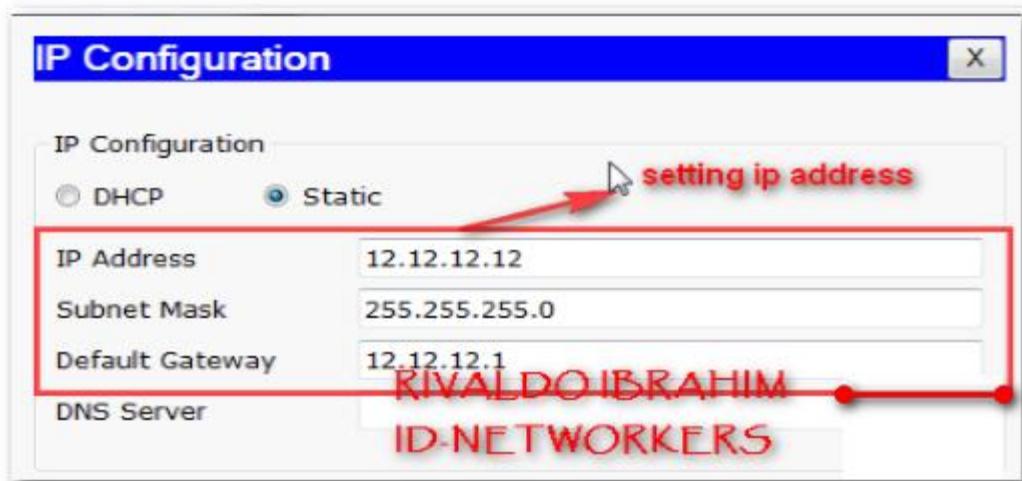
Pada int f0/0.10 / f0/0.20 nah itu disebut dengan sub interface,sedangkan dot1q itu tipe encapsulation yang default.

-kita cek apakah konfigurasi yang kita setting ada di router atau tidak,berikut hasilnya :

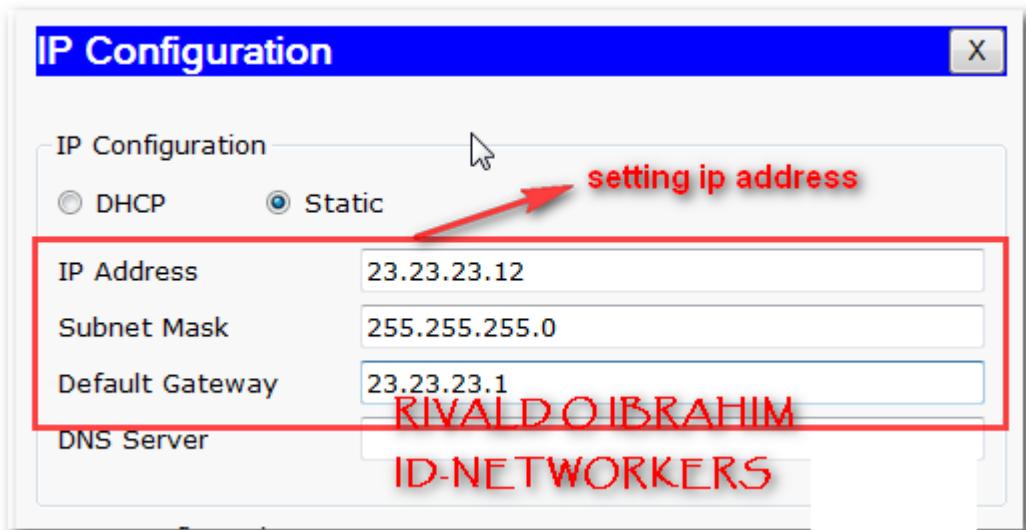
```
Router#sh ip int br
Interface          IP-Address      OK? Method Status   Protocol
FastEthernet0/0    unassigned      YES  unset   up        up
FastEthernet0/0.10 12.12.12.1  YES  manual  up        up
FastEthernet0/0.20 23.23.23.1  YES  manual  up        up
FastEthernet0/1    unassigned      YES  unset   up        down
Vlan1              unassigned      YES  unset   administratively down
down
```

-setting ip address pada PC :

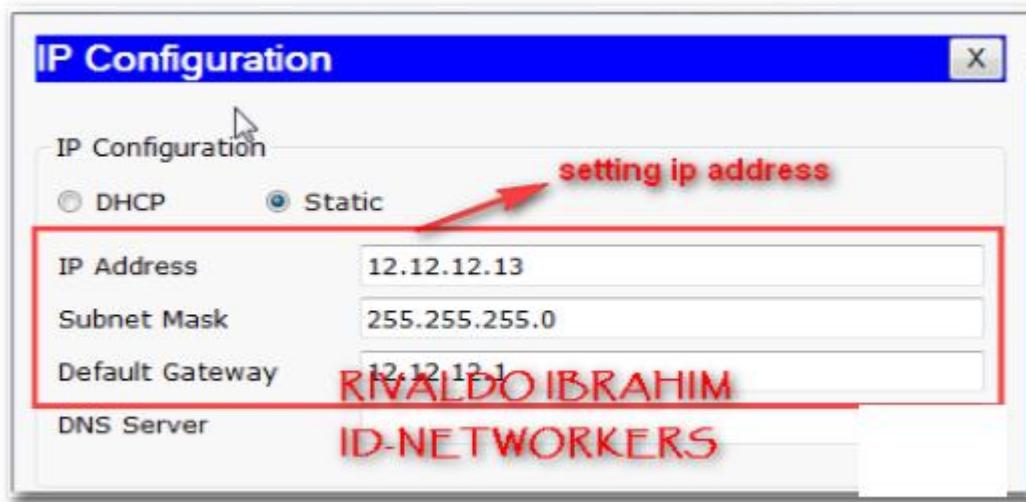
PC 0 : 12.12.12.12/24 gateway 12.12.12.1



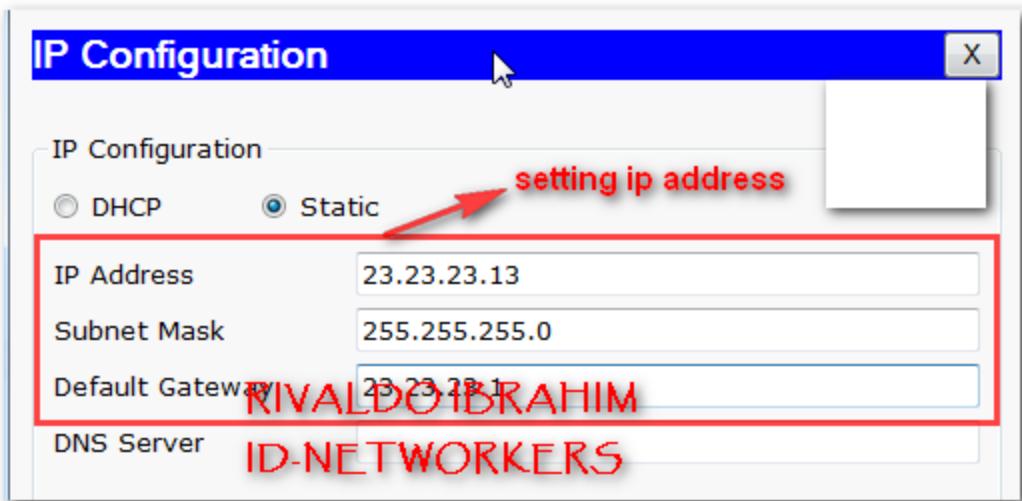
PC 1 :23.23.23.12/24 gateway 23.23.23.1



PC 2 :12.12.12.13/24 gateway 12.12.12.1



PC 3 :23.23.23.13/24 gateway 23.23.23.1



-setelah itu,kita ping dari pc 0 :

```
PC>ping 12.12.12.13 → ping sesama vlan ke pc 2
Pinging 12.12.12.13 with 32 bytes of data:

Reply from 12.12.12.13: bytes=32 time=1ms TTL=128
Reply from 12.12.12.13: bytes=32 time=2ms TTL=128
Reply from 12.12.12.13: bytes=32 time=13ms TTL=128
Reply from 12.12.12.13: bytes=32 time=0ms TTL=128

Ping statistics for 12.12.12.13:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 13ms, Average = 4ms
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```

```
PC>ping 12.12.12.1 → ping ip gateway
Pinging 12.12.12.1 with 32 bytes of data:

Reply from 12.12.12.1: bytes=32 time=39ms TTL=255
Reply from 12.12.12.1: bytes=32 time=0ms TTL=255
Reply from 12.12.12.1: bytes=32 time=0ms TTL=255
Reply from 12.12.12.1: bytes=32 time=0ms TTL=255

Ping statistics for 12.12.12.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 39ms, Average = 5ms
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```

PC>ping 23.23.23.1 → ip gateway vlan 20

Pinging 23.23.23.1 with 32 bytes of data:

```
Reply from 23.23.23.1: bytes=32 time=1ms TTL=255
Reply from 23.23.23.1: bytes=32 time=0ms TTL=255
Reply from 23.23.23.1: bytes=32 time=0ms TTL=255
Reply from 23.23.23.1: bytes=32 time=0ms TTL=255
```

Ping statistics for 23.23.23.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms

PC>ping 23.23.23.12 → ping beda vlan

Pinging 23.23.23.12 with 32 bytes of data:

```
Reply from 23.23.23.12: bytes=32 time=2ms TTL=127
Reply from 23.23.23.12: bytes=32 time=0ms TTL=127
Reply from 23.23.23.12: bytes=32 time=0ms TTL=127
Reply from 23.23.23.12: bytes=32 time=2ms TTL=127
```

Ping statistics for 23.23.23.12:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 2ms, Average = 1ms

PC>ping 23.23.23.13 → ping beda vlan

Pinging 23.23.23.13 with 32 bytes of data:

```
Reply from 23.23.23.13: bytes=32 time=1ms TTL=127
Reply from 23.23.23.13: bytes=32 time=0ms TTL=127
Reply from 23.23.23.13: bytes=32 time=0ms TTL=127
Reply from 23.23.23.13: bytes=32 time=0ms TTL=127
```

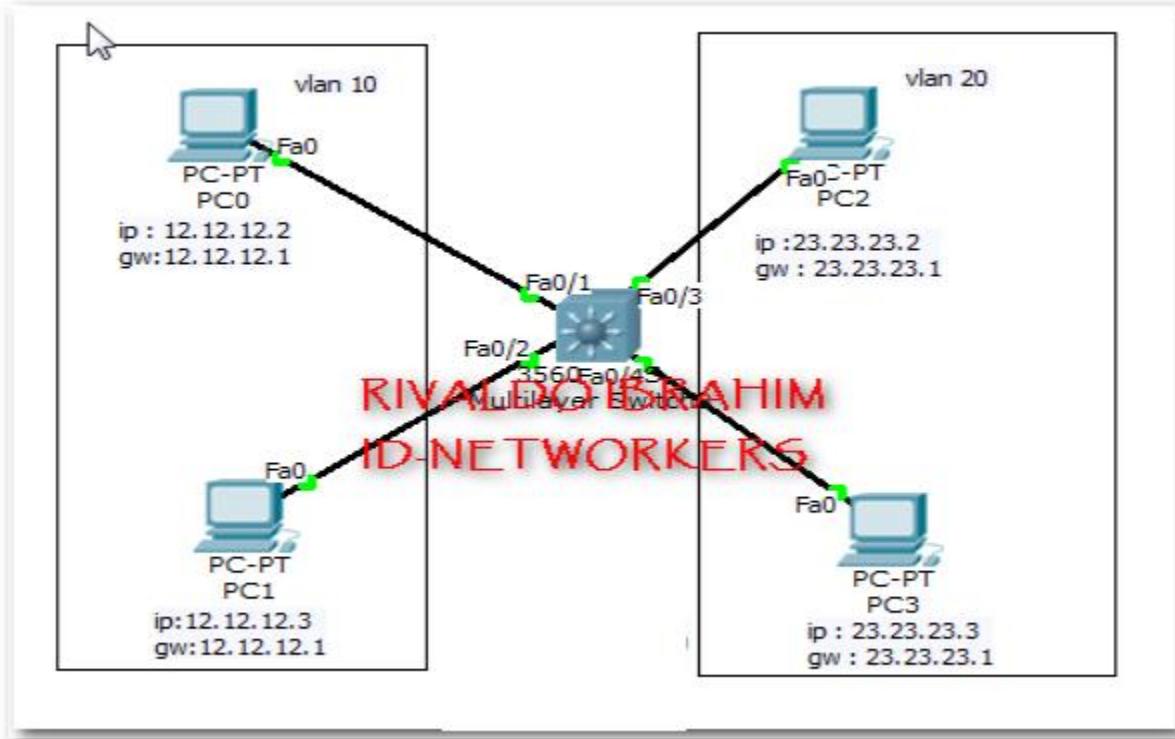
Ping statistics for 23.23.23.13:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms

Kita cek di pc 0 saja karena cara ngeceknya hampir sama dengan pc lainnya.

Lab 9

Menghubungkan multilayer switch ke pc

Pada pembahasan kali ini,kita akan membahas seperti yang sebelumnya yaitu menghubungkan router ke switch,tetapi disini kita akan menggunakan 1 perangkat dan juga masuk ke layer 3,yaitu multi layer switch.langsung saja berikut langkahnya :



-kita setting vlan pada switchnya :

```
Switch(config)#vlan 10
Switch(config)#vlan 20
```

-lalu kita masukkan port ke vlannya :

```
Switch(config-vlan)#int f0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10

Switch(config-if)#int f0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10

Switch(config-vlan)#int f0/3
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
```

```
Switch(config-if)#int f0/4
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
```

-lalu,kita konfigurasi ip gateway vlan pada switch :

```
Switch(config)#int vlan 10
Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan10, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan10, changed
state to up
Switch(config-if)#ip add 12.12.12.1 255.255.255.0

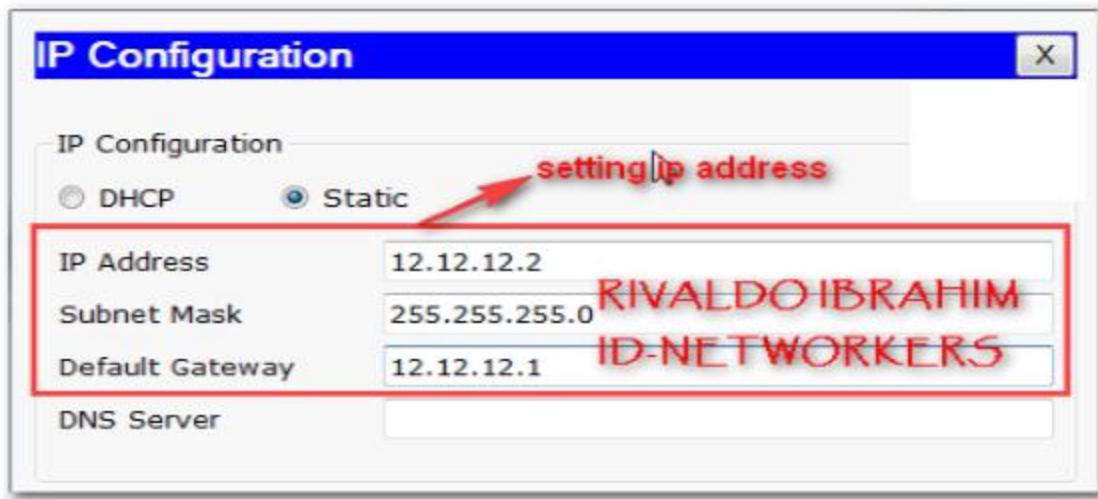
Switch(config-if)#int vlan 20
Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan20, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan20, changed
state to up
Switch(config-if)#ip add 23.23.23.1 255.255.255.0
```

-agar beda vlan bisa saling terhubung,kita aktifkan routing pada switch :

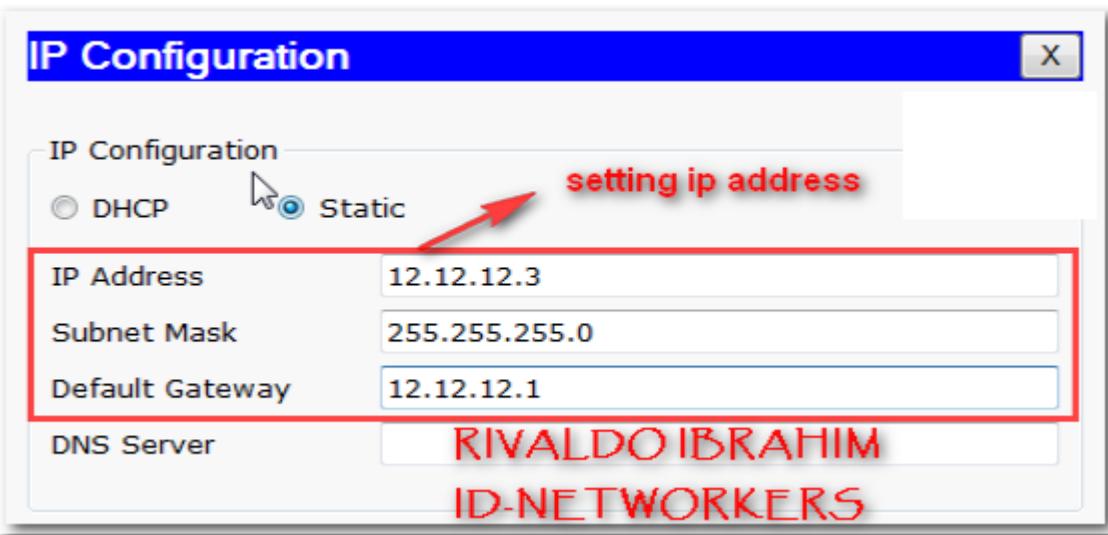
```
Switch(config)#ip routing
```

-setelah itu kita konfigurasi ip address pada tiap-tiap PC :

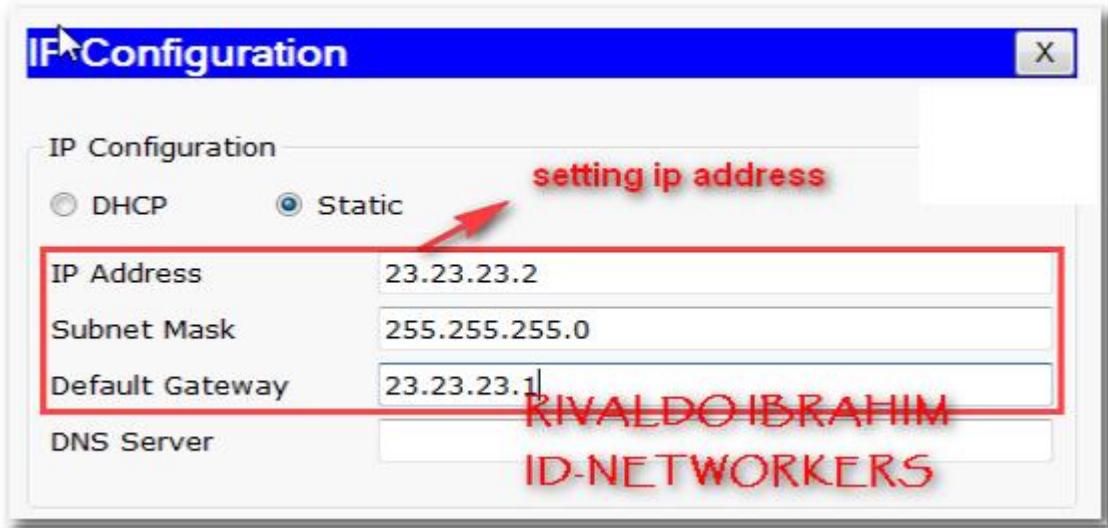
Pada pc 0 :



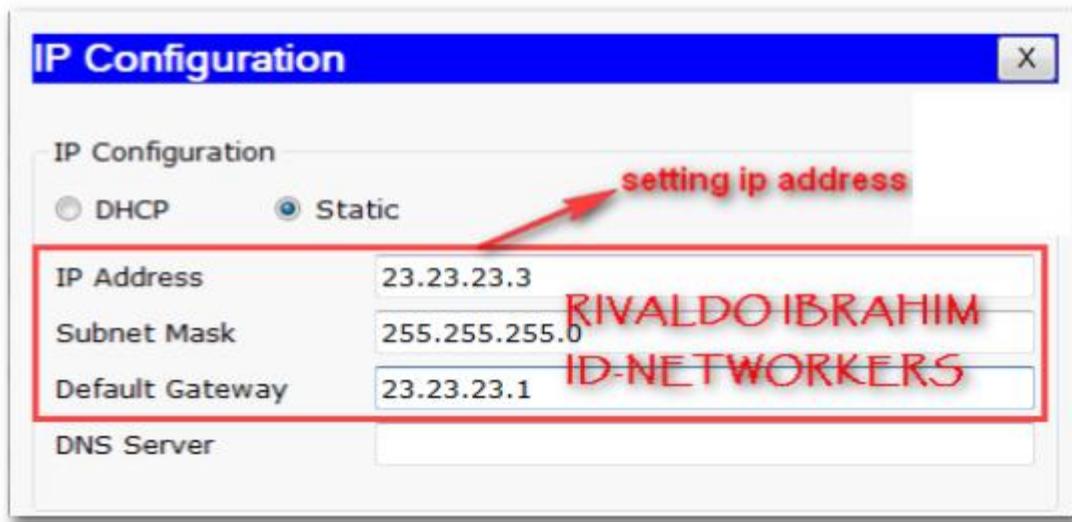
Pada pc 1 :



Pada pc 2 :



Pada pc 3 :



-kita ping sesama vlan dulu

```
Packet Tracer PC Command Line 1.0
PC>ping 12.12.12.3 → ping sesama vlan 10
Pinging 12.12.12.3 with 32 bytes of data:

Reply from 12.12.12.3: bytes=32 time=2ms TTL=128
Reply from 12.12.12.3: bytes=32 time=0ms TTL=128
Reply from 12.12.12.3: bytes=32 time=1ms TTL=128
Reply from 12.12.12.3: bytes=32 time=0ms TTL=128

Ping statistics for 12.12.12.3:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
  Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 2ms, Average = 0ms
```

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-kita ping gatewaynya

```
PC>ping 12.12.12.1 → ping ip gateway
Pinging 12.12.12.1 with 32 bytes of data:

Reply from 12.12.12.1: bytes=32 time=1ms TTL=255
Reply from 12.12.12.1: bytes=32 time=0ms TTL=255
Reply from 12.12.12.1: bytes=32 time=0ms TTL=255
Reply from 12.12.12.1: bytes=32 time=0ms TTL=255

Ping statistics for 12.12.12.1:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
  Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

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-sekarang kita ping beda vlan

PC>ping 23.23.23.2 → ping beda vian 20

Pinging 23.23.23.2 with 32 bytes of data:

```
Reply from 23.23.23.2: bytes=32 time=1ms TTL=127
Reply from 23.23.23.2: bytes=32 time=0ms TTL=127
Reply from 23.23.23.2: bytes=32 time=0ms TTL=127
Reply from 23.23.23.2: bytes=32 time=0ms TTL=127
```

```
Ping statistics for 23.23.23.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

.-kita ping ip gateway lawan

PC>ping 23.23.23.1 → ping ip gateway lawan

Pinging 23.23.23.1 with 32 bytes of data:

```
Reply from 23.23.23.1: bytes=32 time=0ms TTL=255
```

```
Ping statistics for 23.23.23.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

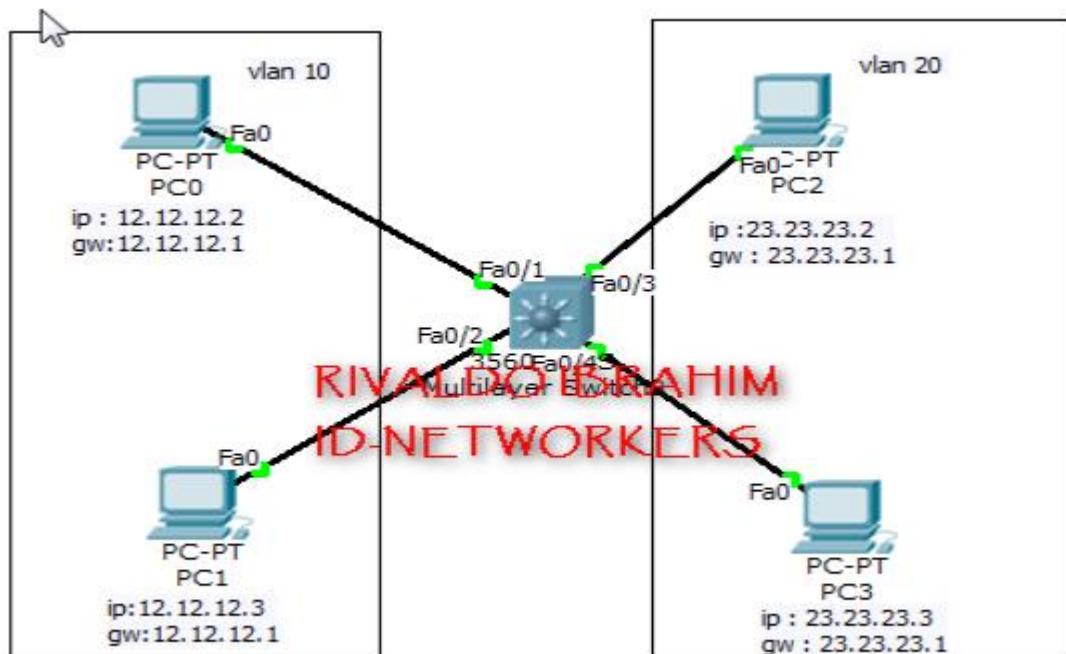
Ini saya baru me-ping pada pc 1, apalagi pc lainnya, intinya semua sudah bisa saling ping dan bisa saling berkomunikasi.

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Lab 10

Mengkonfigurasikan switch sebagai DHCP

Pada pembahasan kali ini,kita akan membahas tentang mengkonfigurasi switch dengan DHCP tujuannya agar pc mendapatkan ip secara otomatis jadi tidak perlu di konfigurasi ke pc lagi dan hanya mengobtain saja,hanya switch yang kita konfigurasi topologinya tetap sama seperti lab sebelumnya,langsung saja berikut langkahnya :



-Kita tambahkan konfigurasi DHCP server berikut :

```

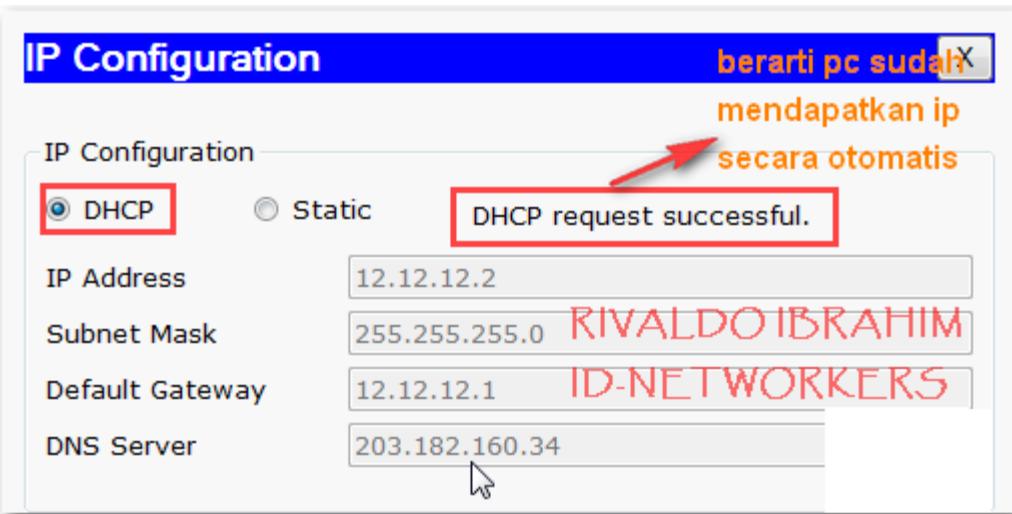
Switch(config)#ip dhcp pool VLAN10
Switch(dhcp-config)#network 12.12.12.0 255.255.255.0
Switch(dhcp-config)#dns-server 203.182.160.34
Switch(dhcp-config)#default-router 12.12.12.1
Switch(dhcp-config)#ex

Switch(config)#ip dhcp pool VLAN20
Switch(dhcp-config)#network 23.23.23.0 255.255.255.0pc
Switch(dhcp-config)#dns-server 203.182.160.34
Switch(dhcp-config)#default-router 23.23.23.1

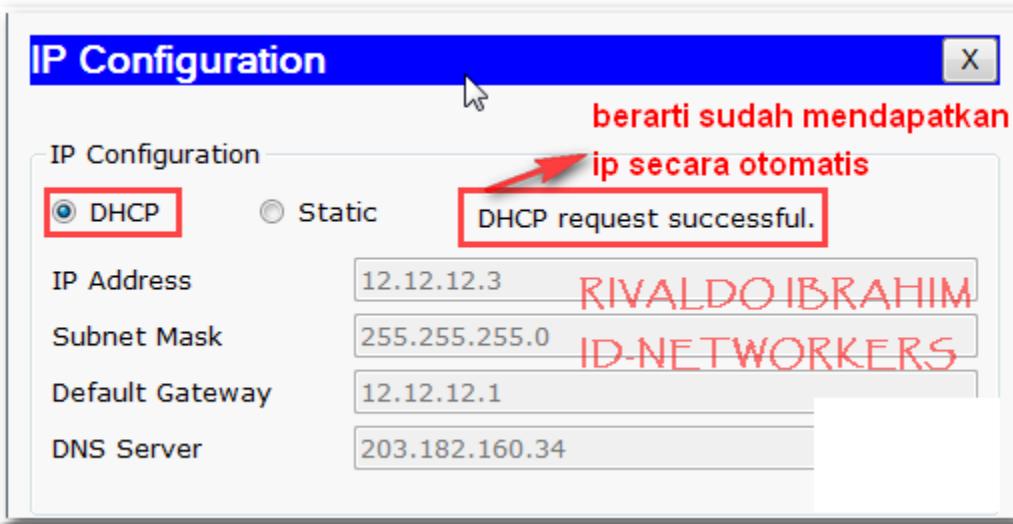
```

-setelah itu kita ke pc,kita ubah settingan ip kita dari static menjadi dhcp atau di obtain agar mendapat ip secara otomatis,maka hasilnya akan seperti ini :

Pada pc 1 :



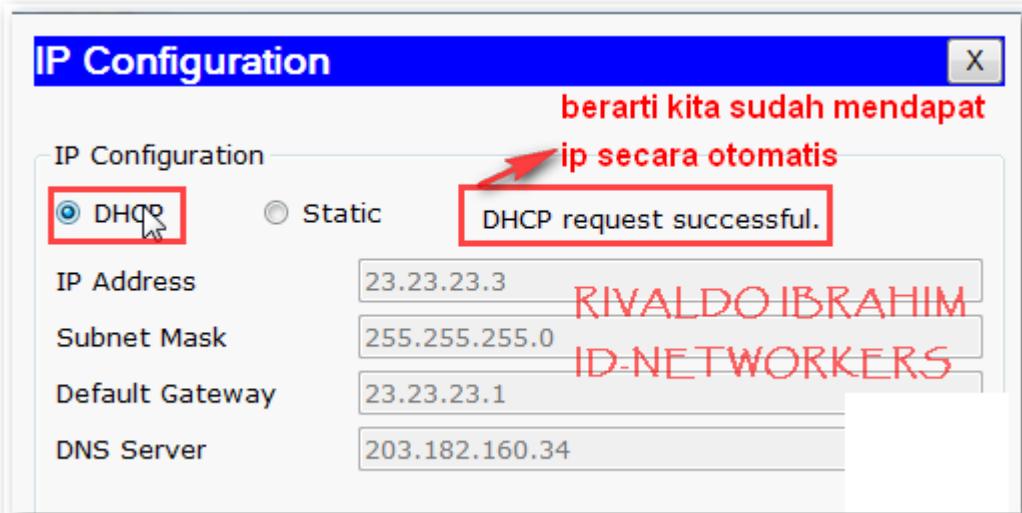
Pada pc 2 :



Pada pc 3 :



Pada pc 4 :



-setelah itu,kita buka command prompt dan ketikkan "ipconfig" saya hanya mengecek pada pc 1 ,dan ini hasilnya :

```
PC>ipconfig → untuk mencek alokasi ip address sudah ada
FastEthernet0 Connection: (default port)
Link-local IPv6 Address . . . . . : FE80::20B:BEFF:FE63:AC0D
IP Address . . . . . : 12.12.12.2 RIVALDO IBRAHIM
Subnet Mask . . . . . : 255.255.255.0 ID-NETWORKERS
Default Gateway . . . . . : 12.12.12.1
```

-lalu semua pc mendapatkan ip address,pada switch kita bisa mengetahui pc siapa dan mendapatkan ip berapa,ketikkan "show ip dhcp binding",seperti ini hasilnya :

IP address	Client-ID/ Hardware address	Lease expiration	Type
12.12.12.2	000B.BE63.AC0D	--	<u>Automatic</u>
12.12.12.3	0050.0FDA.8339	--	<u>Automatic</u>
23.23.23.2	0001.631B.E841	--	<u>Automatic</u>
23.23.23.3	0005.5ECA.1462	--	<u>Automatic</u>
-			

Lab 11

Mengamankan port interface pada switch

Pada pembahasan kali ini,saya akan menjelaskan tentang mengamankan port interface pada switch.disini maksudnya adalah kita bisa mengatur agar port yang biasanya digunakan oleh pc atau server tidak bisa digunakan oleh pc lainnya,sehingga jika ada yang menggunakan port tersebut maka tidak akan bisa menggunakan port tersebut.

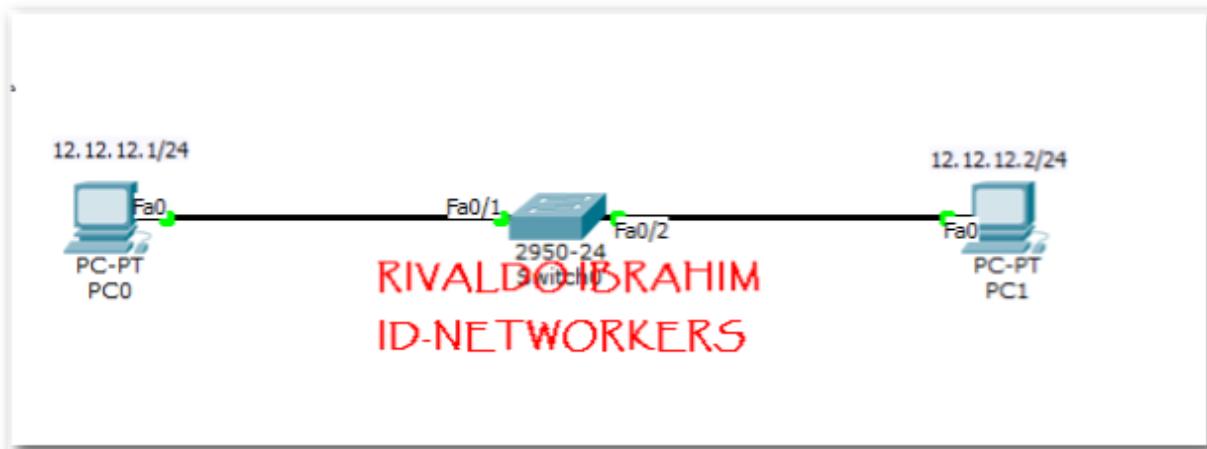
Ada 3 violation yang bisa kita jadikan sebagai pilihan untuk kita pasang pada port di switch yang digunakan oleh pc yang tidak semestinya ,sebagai berikut :

-protect merupakan data yang dikirim melalui port tersebut akan dibiarkan tidak dikirimkan,jadi jika kita ingin mengirim sesuatu maka si protect ini akan membiarkan datanya begitu saja.

-restrict sama seperti protect tetapi dengan mengirimkan notifikasi dengan SNMP

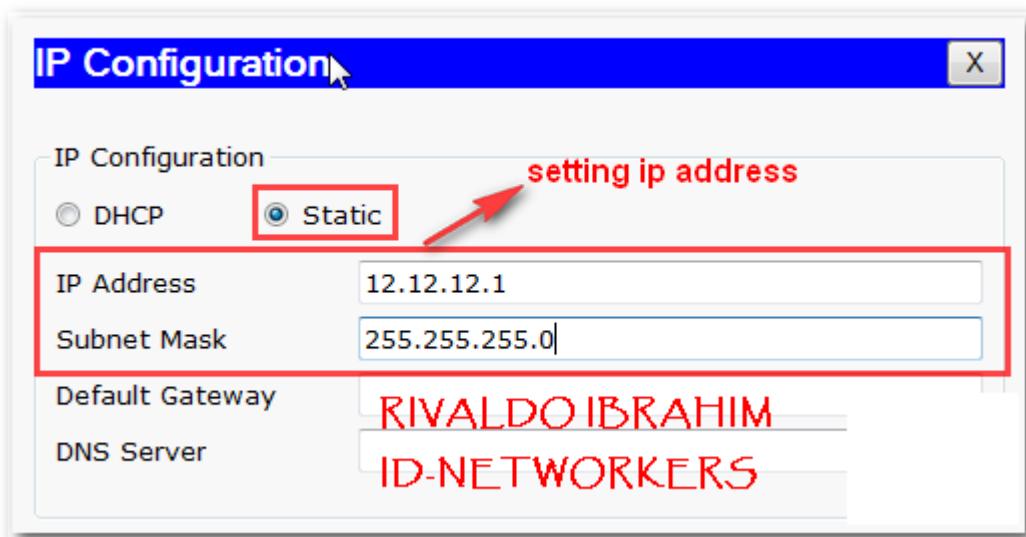
-shutdown merupakan port nya akan di shutdown secara otomatis,untuk mengembalikannya shutdown lagi portnya secara manual,kemudian no shutdown kembali.

Berikut ini langkah-langkahnya :

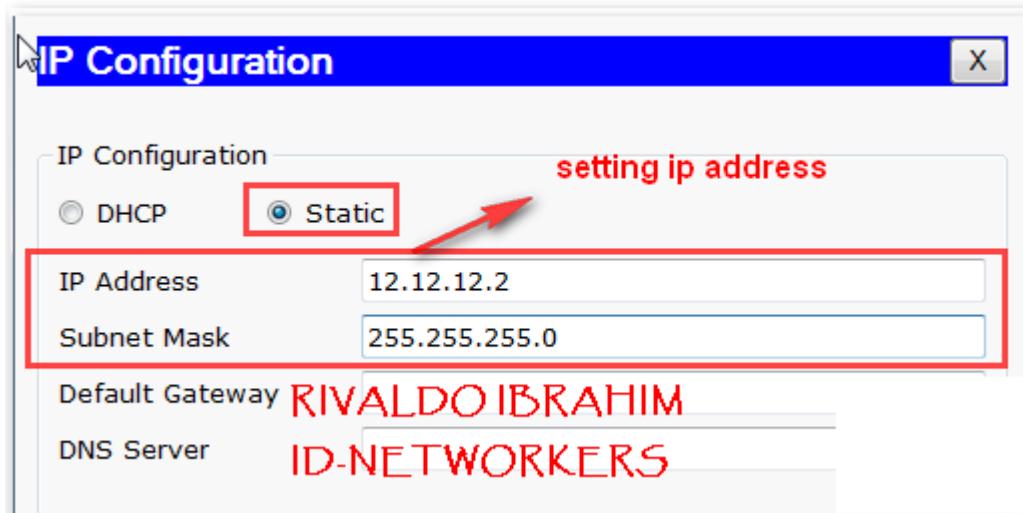


-kita setting ip pada pc terlebih dahulu :

Pada pc 0 :



Pada pc 1 :



-lalu coba kita ping antar pc

dari pc 0 ke pc 1 :

```
PC>ping 12.12.12.2 → ping ke pc 1
Pinging 12.12.12.2 with 32 bytes of data:
Reply from 12.12.12.2: bytes=32 time=1ms TTL=128
Reply from 12.12.12.2: bytes=32 time=0ms TTL=128
Reply from 12.12.12.2: bytes=32 time=0ms TTL=128
Reply from 12.12.12.2: bytes=32 time=0ms TTL=128
```

sudah terhubung

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Ping statistics for 12.12.12.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms

dari pc 1 ke pc 0 :

```
PC>ping 12.12.12.1 → ping ke pc 0
Pinging 12.12.12.1 with 32 bytes of data:
Reply from 12.12.12.1: bytes=32 time=0ms TTL=128
Reply from 12.12.12.1: bytes=32 time=2ms TTL=128
Reply from 12.12.12.1: bytes=32 time=0ms TTL=128
Reply from 12.12.12.1: bytes=32 time=0ms TTL=128 → sudah terhubung

Ping statistics for 12.12.12.1:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
  Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 2ms, Average = 0ms
```

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-setelah itu,kita ke switch,saya akan menggunakan violation restrict dan shutdown dan konfigurasinya sebagai berikut :

```
Switch(config)#int f0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport port-security
Switch(config-if)#switchport port-security mac-address sticky
Switch(config-if)#switchport port-security violation restrict

Switch(config)#int f0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport port-security
Switch(config-if)#switchport port-security mac-address sticky
Switch(config-if)#switchport port-security violation shutdown
```

-kemudian tes ping lagi,dan masing-masing pc harus reply,kemudian lepas kabel dan tukarkan portnya,lakukan tes ping lagi dan topologinya pun berubah dari sebelumnya ,hasilnya seperti ini :



-coba kita tes ping

```
PC>ping 12.12.12.2| ping pc 1
Pinging 12.12.12.2 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 12.12.12.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
                                          RIVALDO IBRAHIM
                                          ID-NETWORKERS
```

-lalu untuk mengecek di switch,ketikkan "show port-security",seperti berikut :

```
Switch>en
Switch#show port-security
Secure Port MaxSecureAddr CurrentAddr SecurityViolation Security Action
          (Count)      (Count)      (Count)
-----  
Fa0/1      1          1          4      Restrict
Fa0/2      1          1          1      Shutdown
```

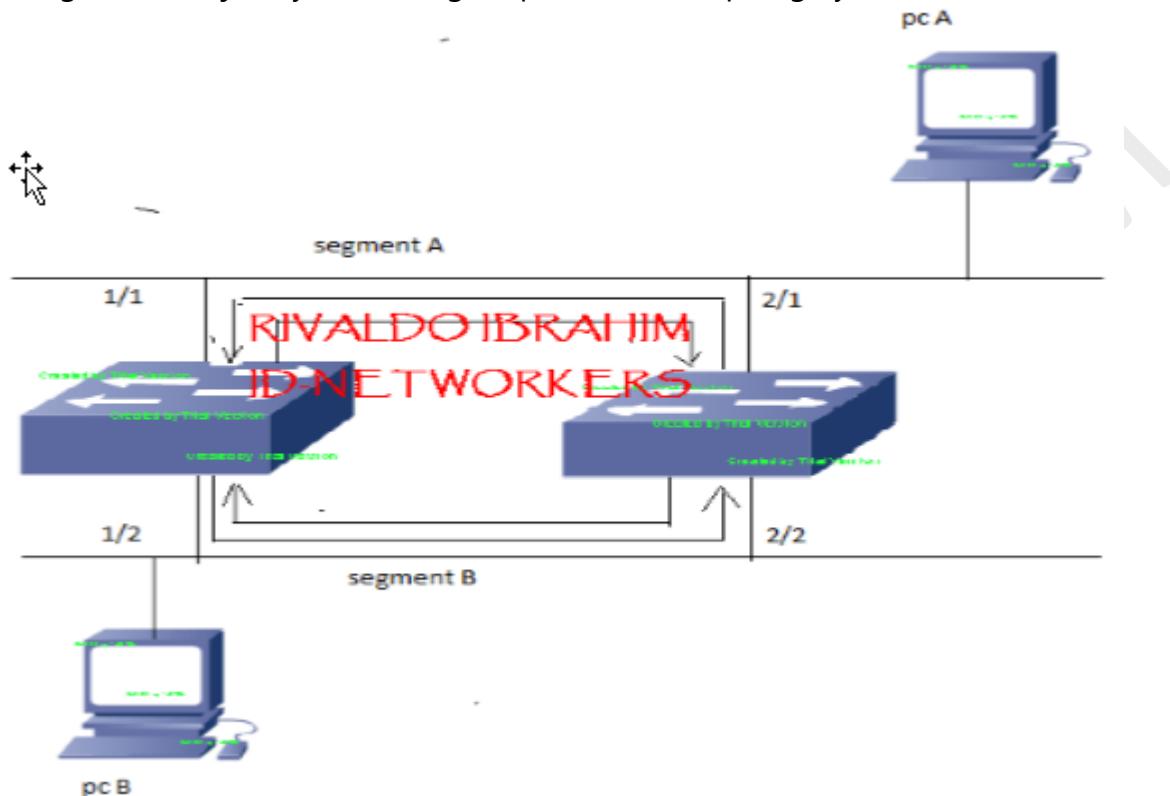
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Berarti kita sudah berhasil dalam mengamankan port pada interface di switch.

Lab 12

Spanning tree protocol

Pada pembahasan kali ini ,saya akan membahas tentang spanning tree protocol.spanning tree protocol merupakan mekanisme yang berfungsi untuk menghindari terjadinya switching loop.berikut ini topologinya :

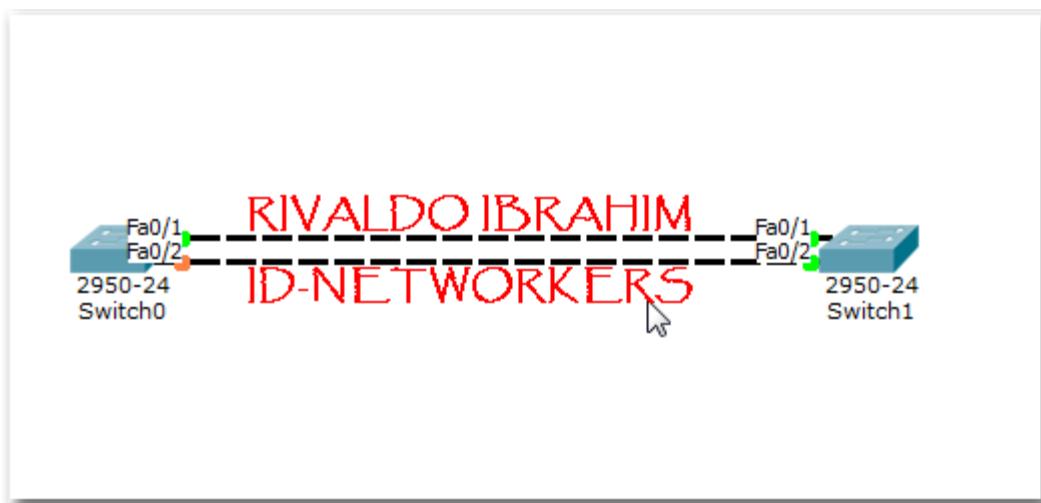


Misal switch disebelah kiri ada data yang dia tidak tahu harus dikirim ke mana.oleh karena itu,data tersebut di pindahkan ke switch kanan,demikian juga switch kanan tidak tahu data akan dikirimkan kemana dan di kirimkan kembali ke switch kiri seterusnya sehingga muter-muter saja bisa mengakibatkan networknya down.

Tapi dengan menggunakan STP,maka salah satu dari port akan menjadi blocking sehingga hanya satu link saja yang digunakan agar tidak ngeloop.spanning tree protocol ini sudah otomatis,jadi kita tidak perlu mengkonfigurasi lagi.pada masing-masing switch, port nya ada yang disebut root port,designated port dan blocking port.berikut ini adalah adlah penjelasannya :

- ➔ root port merupakan port pada switch yang arahnya menuju ke arah root bridge
- ➔ Designated port merupakan port pada switch yang arahnya meninggalkan root bridge
- ➔ Semua portnya,adalah designated port.

Berikut ini cara mengeceknya :



-setelah beberapa saat,ketikkan konfigurasi "show spanning tree" :

Pada switch 0 :

```
SW0#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
    Root ID      Priority    32769
                  Address     0003.E488.BA8A
                  Cost        19
                  Port        1 (FastEthernet0/1)
                  Hello Time  2 sec  Max Age 20 sec  Forward
                  Delay 15 sec

    Bridge ID   Priority    32769  (priority 32768 sys-id-ext
1)
                  Address     0006.2A3A.3538
                  Hello Time  2 sec  Max Age 20 sec  Forward
                  Delay 15 sec
                  Aging Time  20

    Interface      Role Sts Cost      Prio.Nbr Type
    -----  -----
    Fa0/2          Altn BLK 19      128.2      P2p
    Fa0/1          Root FWD 19      128.1      P2p
```

Pada switch 1 :

```
SW1#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
    Root ID      Priority    32769
                  Address     0003.E488.BA8A
                  This bridge is the root
```

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```
Hello Time 2 sec Max Age 20 sec Forward Delay  
15 sec  
  
Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)  
Address 0003.E488.BA8A  
Hello Time 2 sec Max Age 20 sec Forward Delay  
15 sec  
Aging Time 20  
  
Interface Role Sts Cost Prio.Nbr Type  
-----  
-----  
Fa0/1 Desg FWD 19 128.1 P2p  
Fa0/2 Desg FWD 19 128.2 P2p
```

-Jika switch1 terpilih menjadi root bridge,maka tambahkan konfigurasi pada SW1 ,seperti ini :

```
SW1(config)#spanning-tree vlan 1 priority 0
```

-lalu cek lagi show-spanning-tree pada kedua switch dan lihat perbedaannya apa ?

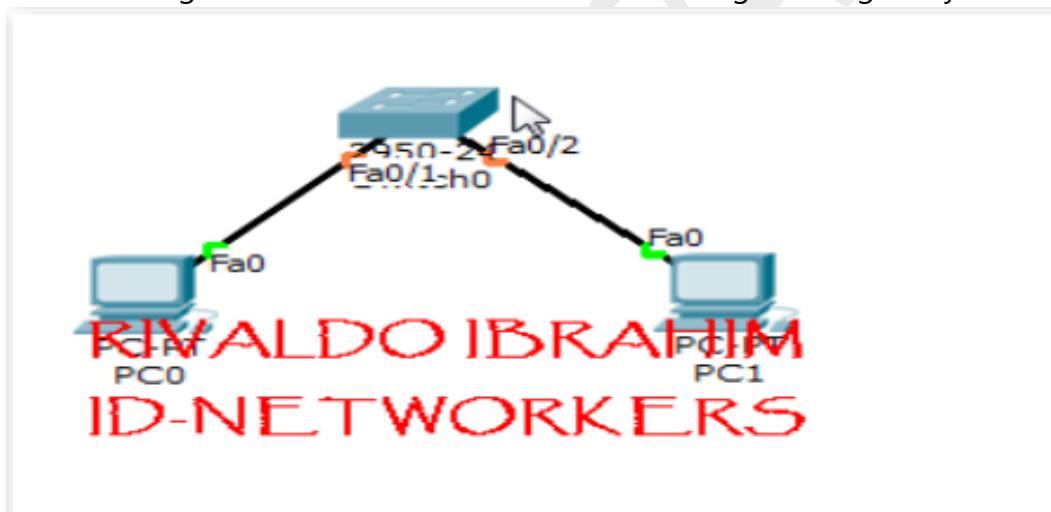
Lab 13

Spanning tree portfast

Pada pembahasan kali ini,kita akan membahas tentang spanning tree portfast,melihat kasus yang ada biasanya jika kita ingin mencolokkan kabel ke switch membutuhkan waktu agak lama portnya dari warna orange ke warna hijau,sedangkan total waktu yang digunakan adalah 50 detik.jadi kita bila mencolokkan kabel langsung hijau.berikut ilustrasinya :

Blocking -----→ listening-----→learning-----→forwarding
(max age;optional) (forward delay) (forward delay)
20 S 15 S 15 S

Dari kita mencolokkan kabel utp ke switch,ada 4 proses seperti di atas,untuk proses 1 sampai 3 berwarna orange,sedangkan proses 4 berwarna hijau.dan tujuan kita disini untuk langsung melewati proses 1-3 dan langsung ke proses 4 yaitu berwarna hijau portfast ini biasa digunakan untuk switch ke PC.berikut langkah-langkahnya :

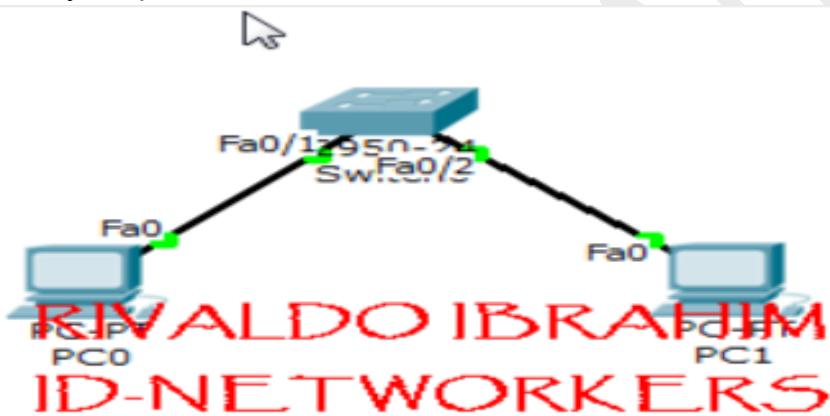


-Pada switch ketikkan konfigurasi berikut :

```
Switch(config)#int f0/1
Switch(config-if)#spanning-tree portfast
%Warning: portfast should only be enabled on ports connected to
a single
host. Connecting hubs, concentrators, switches, bridges, etc...
to this
interface when portfast is enabled, can cause temporary
bridging loops.
Use with CAUTION
%Portfast has been configured on FastEthernet0/1 but will only
have effect when the interface is in a non-trunking mode.
```

```
Switch(config)#int f0/2
Switch(config-if)#spanning-tree portfast
%Warning: portfast should only be enabled on ports connected to
a single
host. Connecting hubs, concentrators, switches, bridges, etc...
to this
interface when portfast is enabled, can cause temporary
bridging loops.
Use with CAUTION
%Portfast has been configured on FastEthernet0/2 but will only
have effect when the interface is in a non-trunking mode.
```

-kemudian lepas kabel pada masing-masing PC dan colokkan kembali.pastikan pada saat dihubungkan sudah langsung hijau,karena di portfast prosesnya jumping ke forwarding,hasilnya seperti berikut :

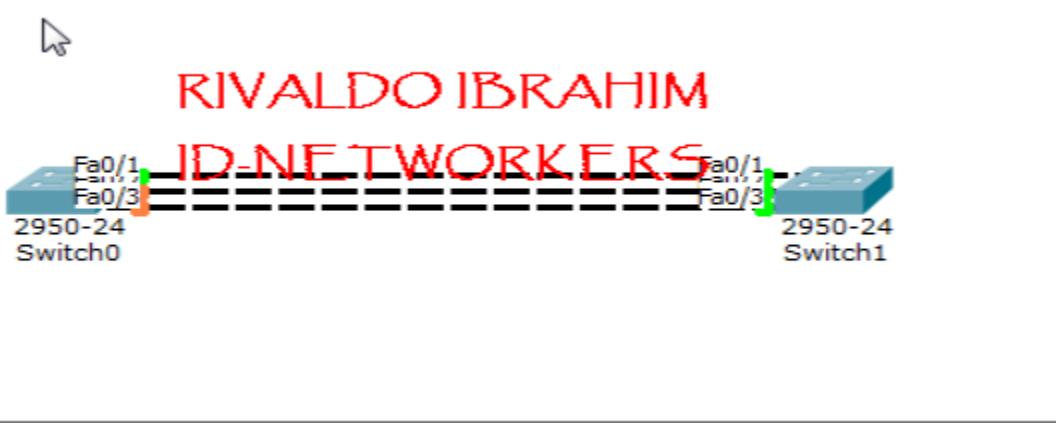


Lab 14 Etherchannel

Pada pembahasan kali ini saya akan membahas tentang etherchannel,digunakan untuk membundle link tersebut sehingga seolah-olah menjadi 1 link saja.pada switch bila kita mengoneksikan beberapa kabel maka konsepnya sama seperti spanning tree tidak semua link yang bisa mengirim paket data.ada 3 tipe dalam etherchannel,yaitu :

- L2 etherchannel LACP (open standard)
- L2 etherchannel PAGP (cisco proprietary)
- L3 etherchannel

Berikut langkah-langkahnya :



-kita konfigurasi etherchannel L2 LaCP :

```
SW.KIRI(config)#int range f0/1-3
SW.KIRI(config-if-range)#channel-group 1 mode active
SW.KIRI(config-if-range)#
Creating a port-channel interface Port-channel 1
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/2, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/3, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/3, changed state to up

SW.KIRI(config-if-range)#int port-channel 1
SW.KIRI(config-if)#switchport mode trunk
```

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```
SW.KIRI(config-if)#  
%LINEPROTO-5-UPDOWN: Line protocol on Interface  
FastEthernet0/1, changed state to down  
%LINEPROTO-5-UPDOWN: Line protocol on Interface  
FastEthernet0/1, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface  
FastEthernet0/2, changed state to down  
%LINEPROTO-5-UPDOWN: Line protocol on Interface  
FastEthernet0/2, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface  
FastEthernet0/3, changed state to down  
%LINEPROTO-5-UPDOWN: Line protocol on Interface  
FastEthernet0/3, changed state to up  
  
SW.KANAN(config)#int range f0/1-3  
SW.KANAN(config-if-range)#channel-group 1 mode active  
SW.KANAN(config-if-range)#  
Creating a port-channel interface Port-channel 1  
%LINEPROTO-5-UPDOWN: Line protocol on Interface  
FastEthernet0/1, changed state to down  
%LINEPROTO-5-UPDOWN: Line protocol on Interface  
FastEthernet0/1, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface  
FastEthernet0/2, changed state to down  
%LINEPROTO-5-UPDOWN: Line protocol on Interface  
FastEthernet0/2, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface  
FastEthernet0/3, changed state to down  
%LINEPROTO-5-UPDOWN: Line protocol on Interface  
FastEthernet0/3, changed state to up  
%LINK-5-CHANGED: Interface Port-channel 1, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel 1,  
changed state to up  
  
SW.KANAN(config-if-range)#int port-channel 1  
SW.KANAN(config-if)#switchport mode trunk  
SW.KANAN(config-if)#  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel 1,  
changed state to down  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel 1,  
changed state to up
```

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-Disini mode yang digunakan boleh active-passive,active-active,tetapi tidak boleh passive-passive,coba kita cek settingan kita ketikkan "show etherchannel summary" :

```
SW.KIRI#show etherchannel summary
Flags:  D - down          P - in port-channel
        I - stand-alone   S - suspended
        H - Hot-standby   (LACP only)
        R - Layer3         S - Layer2
        U - in use          f - failed to allocate aggregator
        u - unsuitable for bundling
        w - waiting to be aggregated
        d - default port

Number of channel-groups in use: 1
Number of aggregators:           1

Group  Port-channel  Protocol      Ports
-----+-----+-----+-----+
-----+
1      Po1 (SU)       LACP      Fa0/1 (P)  Fa0/2 (P)  Fa0/3 (P)
```

Lab 15

VTP (virtual trunking protocol)

Pada pembahasan kali ini,saya akan membahas tentang virtual trunking protocol.dalam VTP ada 3 mode :server,client dan transparent.berikut fungsinya :

- VTP server bisa membuat,merubah dan menghapus vlan,memforward VTP update serta memproses VTP update yang diterimanya.
- VTP transparent sifatnya independent,jika dia membuat dan merubah VLAN maka hanya untuk switch tersebut dan tidak di advertise ke switch-switch yang lain.dan hanya meneruskan data saja.
- VTP client tidak bisa membuat vlan.hanya bisa memproses vlan yang di terimanya melalui VTP update yang di kirimkan oleh vtp server.

Berikut langkah-langkahnya :



-kita konfigurasi trunk pada switch :

```
SW1(config)#int range f0/1-2
SW1(config-if-range)#switchport mode trunk
SW1(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/1, changed state to up

SW2(config)#int range f0/2-1
SW2(config-if-range)#switchport mode trunk
SW2(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/2, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/2, changed state to up
```

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```
SW3(config)#int range f0/2-1
SW3(config-if-range)#switchport mode trunk
SW3(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/2, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/2, changed state to up
```

-setting ip address pada interface vlan 1 :

```
SW1(config)#interface vlan 1
SW1(config-if)#ip add 12.12.12.1 255.255.255.0
SW1(config-if)#no shut
SW1(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed
state to up

SW2(config)#interface vlan 1
SW2(config-if)#ip add 12.12.12.2 255.255.255.0
SW2(config-if)#no shut
SW2(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed
state to up

SW3(config)#interface vlan 1
SW3(config-if)#ip add 12.12.12.3 255.255.255.0
SW3(config-if)#no shut
SW3(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed
state to up

SW4(config)#interface vlan 1
SW4(config-if)#ip add 12.12.12.4 255.255.255.0
SW4(config-if)#no shut
SW4(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed
state to up
```

-lalu kita konfigurasi vtp nya sebagai berikut :

```
SW1(config)#vtp mode server
SW1(config)#vtp domain belajar
SW1(config)#vtp password 123
```

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```
SW2(config)#vtp mode transparent  
SW2(config)#vtp domain belajar  
SW2(config)#vtp password 123
```

```
SW3(config)#vtp mode client  
SW3(config)#vtp domain belajar  
SW3(config)#vtp password 123
```

```
SW4(config)#vtp mode server  
SW4(config)#vtp domain belajar  
SW4(config)#vtp password 123
```

-setelah itu,kita buat vlan pada masing-masing switch :

```
SW1(config)#vlan 10  
SW1(config)#vlan 20
```

```
SW2(config)#vlan 30  
SW2(config)#vlan 40
```

```
SW4(config)#vlan 70  
SW4(config)#vlan 80
```

-lalu coba kita lakukan pengetesan,pada setiap switch contoh switch 1 :

SW1#sh vtp status

```
VTP Version : 2  
Configuration Revision : 4  
Maximum VLANs supported locally : 255  
Number of existing VLANs : 9  
VTP Operating Mode : Server  
VTP Domain Name : belajar  
VTP Pruning Mode : Disabled  
VTP V2 Mode : Disabled  
VTP Traps Generation : Disabled  
MD5 digest : 0x7F 0x86 0x75 0xB9 0xE2 0x58  
0x95 0x06  
Configuration last modified by 12.12.12.4 at 3-1-93 00:29:43  
Local updater ID is 12.12.12.1 on interface V11 (lowest  
numbered VLAN interface found)
```

Lab 16

Static route

Pada pembahasan kali ini,saya akan membahas tentang static route.apa itu static route ?,Static route adalah routing yang path/jalurnya ditentukan oleh network administrator ke dalam router,bagaimana router akan sampai ke subnet dengan menggunakan jalur tertentu.administrative distance static route adalah 1 (satu).rumus dalam mengerjakan static route :

Router(config)#ip route A.B.C.D (destination network/host) A.B.C.D(subnet mask)

A.B.C.D(next-hop/ip tetangga).

Langsung saja kita praktekkan,berikut langkah-langkahnya :



-pertama,kita setting router 1 :

```
R1(config)#line vty 0 4
R1(config-line)#login local
R1(config-line)#enable secret rivaldo
R1(config-line)#username rivaldo password Ibrahim
R1(config-line)#int s1/0
R1(config-if)#ip add 12.12.12.2 255.255.255.0
R1(config-if)#no shutdown
R1(config-if)#
*Mar 1 00:05:06.983: %LINK-3-UPDOWN: Interface Serial1/0,
changed state to up
R1(config-if)#
*Mar 1 00:05:07.987: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up
R1(config-if)#exit
```

-lalu kita setting router 2 :

```
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#line vty 0 4
R2(config-line)#login local
R2(config-line)#enable secret rivaldo
R2(config)#username rivaldo password ibrahim
R2(config)#int s1/0
R2(config-if)#ip add 12.12.12.1 255.255.255.0
```

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```
R2(config-if)#no shut
R2(config-if)#
*Mar 1 00:12:49.739: %LINK-3-UPDOWN: Interface Serial1/0,
changed state to up
R2(config-if)#
*Mar 1 00:12:50.743: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up
R2(config-if)#ex
R2(config)#int f0/0
R2(config-if)#ip add 192.168.1.2 255.255.255.0
R2(config-if)#no shut
R2(config-if)#
*Mar 1 00:13:39.171: %LINK-3-UPDOWN: Interface
FastEthernet0/0, changed state to up
*Mar 1 00:13:40.171: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/0, changed state to up
```

-setelah itu,kita setting router 3 :

```
R3(config)#line vty 0 4
R3(config-line)#login local
R3(config-line)#enable secret rivaldo
R3(config-line)#username rivaldo password ibrahim
R3(config-line)#int f0/0
R3(config-if)#ip add 192.168.1.3 255.255.255.0
R3(config-if)#no shut
R3(config-if)#
*Mar 1 00:18:48.167: %LINK-3-UPDOWN: Interface
FastEthernet0/0, changed state to up
*Mar 1 00:18:49.167: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/0, changed state to up
```

-setting ip route pada router :

```
R1(config)#ip route 192.168.1.0 255.255.255.0 12.12.12.1
R3(config-if)#ip route 12.12.12.0 255.255.255.0 192.168.1.2
```

-setelah itu,kita cek pada masing-masing router dengan ketikkan "show ip route" :

```
R1#sh ip route
Codes:C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter
area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
user static route
```

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```
o - ODR, P - periodic downloaded static route
Gateway of last resort is not set
    12.0.0.0/24 is subnetted, 1 subnets
C          12.12.12.0 is directly connected, Serial1/0
S      192.168.1.0/24 [1/0] via 12.12.12.1

R2#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
       inter area
           N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
       type 2
           E1 - OSPF external type 1, E2 - OSPF external type 2
           i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
       IS-IS level-2
           ia - IS-IS inter area, * - candidate default, U - per-
       user static route
           o - ODR, P - periodic downloaded static route
Gateway of last resort is not set
    12.0.0.0/24 is subnetted, 1 subnets
C          12.12.12.0 is directly connected, Serial1/0
C          192.168.1.0/24 is directly connected, FastEthernet0/0

R3#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
       inter area
           N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
       type 2
           E1 - OSPF external type 1, E2 - OSPF external type 2
           i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
       IS-IS level-2
           ia - IS-IS inter area, * - candidate default, U - per-
       user static route
           o - ODR, P - periodic downloaded static route
Gateway of last resort is not set
    12.0.0.0/24 is subnetted, 1 subnets
S      12.12.12.0 [1/0] via 192.168.1.2
C          192.168.1.0/24 is directly connected, FastEthernet0/0
```

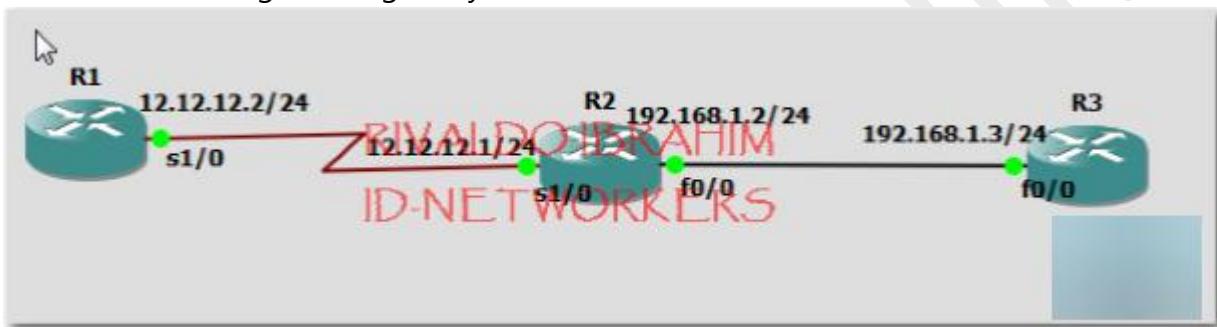
Untuk static routing ditandai dengan S dan administrative distance adalah 1.

Lab 17

Dynamic route-RIP

Pada pembahasan kali ini saya akan menjelaskan tentang RIP, apa itu RIP ? RIP singkatan dari routing information protocol merupakan jenis distance-vector. RIP ini mengirimkan routing table dan menggunakan HOP COUNT untuk menemukan jalur terbaik.

RIP versi 1 menggunakan hanya *classful routing* berarti semua yang ada di network harus menggunakan subnet mask yang sama, sedangkan RIP versi 2 menyediakan sesuatu yaitu prefix routing dan bisa mengirimkan informasi subnet. berikut langkah-langkahnya :



-setting RIP pada router 1 :

```
R1(config)#int lo0
R1(config-if)#
*Mar 1 00:42:14.967: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R1(config-if)#ip add 1.1.1.1 255.255.255.255
R1(config-if)#router rip
R1(config-router)#version 2
R1(config-router)#network 12.12.12.0
R1(config-router)#network 1.1.1.1
R1(config-router)#no auto-summary
```

-setting RIP pada router 2 :

```
R2(config)#int lo0
R2(config-if)#
*Mar 1 00:43:22.663: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R2(config-if)#ip add 2.2.2.2 255.255.255.255
R2(config-if)#router rip
R2(config-router)#version 2
R2(config-router)#network 12.12.12.0
R2(config-router)#network 192.168.1.0
R2(config-router)#network 2.2.2.2
R2(config-router)#no auto-summary
```

-setting RIP pada router 3 :

```
R3(config)#int lo0
R3(config-if)#
*Mar 1 00:46:09.663: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R3(config-if)#ip address 3.3.3.3 255.255.255.255
R3(config-if)#router rip
R3(config-router)#version 2
R3(config-router)#network 192.168.1.0
R3(config-router)#network 3.3.3.3
R3(config-router)#no auto-summary
```

-lalu kita cek pada router 1 :

```
R1#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
      inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
      type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
      IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
      user static route
      o - ODR, P - periodic downloaded static route
Gateway of last resort is not set
      1.0.0.0/32 is subnetted, 1 subnets
C        1.1.1.1 is directly connected, Loopback0
 2.0.0.0/32 is subnetted, 1 subnets
 R    2.2.2.2 [120/1] via 12.12.12.1, 00:00:21, Serial1/0
 3.0.0.0/32 is subnetted, 1 subnets
 R    3.3.3.3 [120/2] via 12.12.12.1, 00:00:21, Serial1/0
 12.0.0.0/24 is subnetted, 1 subnets
C        12.12.12.0 is directly connected, Serial1/0
S        192.168.1.0/24 [1/0] via 12.12.12.1
```

-coba lakukan tes ping :

```
R1#ping 2.2.2.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2.2.2.2, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
36/72/96 ms
```

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```
R1#ping 3.3.3.3
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 3.3.3.3, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
56/118/232 ms

R1#traceroute 3.3.3.3
Type escape sequence to abort.
Tracing the route to 3.3.3.3
 1 12.12.12.1 112 msec 108 msec 72 msec
 2 192.168.1.3 104 msec 132 msec 104 msec

R1#traceroute 2.2.2.2
Type escape sequence to abort.
Tracing the route to 2.2.2.2
 1 12.12.12.1 144 msec 108 msec 64 msec
```

-setelah itu,kita cek pada router 2 :

```
R2#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
user static route
      o - ODR, P - periodic downloaded static route
Gateway of last resort is not set
1.0.0.0/32 is subnetted, 1 subnets
R   1.1.1.1 [120/1] via 12.12.12.2, 00:00:09, Serial1/0
      2.0.0.0/32 is subnetted, 1 subnets
C       2.2.2.2 is directly connected, Loopback0
      3.0.0.0/32 is subnetted, 1 subnets
R   3.3.3.3 [120/1] via 192.168.1.3, 00:00:02,
FastEthernet0/0
      12.0.0.0/24 is subnetted, 1 subnets
C       12.12.12.0 is directly connected, Serial1/0
C       192.168.1.0/24 is directly connected, FastEthernet0/0
```

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-coba lakukan tes ping :

```
R2#ping 1.1.1.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 1.1.1.1, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
32/65/116 ms
```

```
R2#ping 3.3.3.3
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 3.3.3.3, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
32/83/120 ms
```

```
R2#traceroute 1.1.1.1
Type escape sequence to abort.
Tracing the route to 1.1.1.1

 1 12.12.12.2 20 msec 72 msec 56 msec
```

```
R2#traceroute 3.3.3.3
Type escape sequence to abort.
Tracing the route to 3.3.3.3
 1 192.168.1.3 88 msec 104 msec 104 msec
```

- Jika pada show ip route muncul R maka settingan RIPnya sudah ada dan memiliki 1 hop count ke tujuannya ,dan untuk melihat ip tetangga bisa cek dengan ketikkan "show cdp neighbors" hasilnya bisa kita lihat di atas.

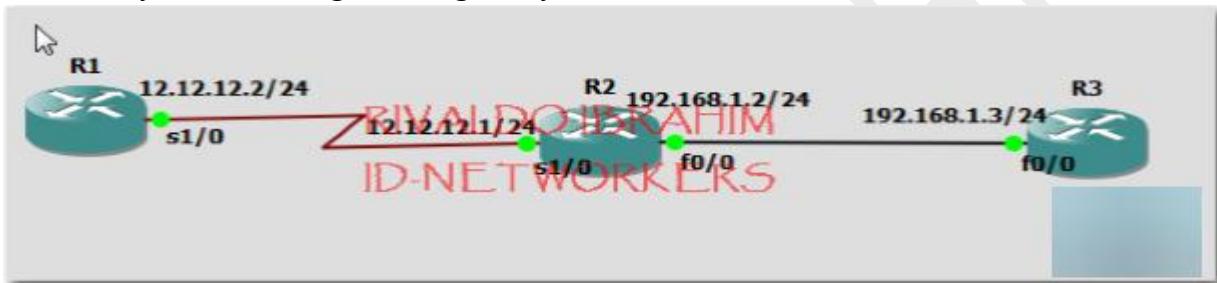
```
R2#sh cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source
Route Bridge
                               S - Switch, H - Host, I - IGMP, r - Repeater
Device ID  Local Intrfce Holddme Capability Platform Port ID
R3          Fas    0/0      174      R S I       2691     Fas  0/0
R1          Ser    1/0      138      R S I       2691     Ser  1/0
```

Lab 18

Dynamic routing-EIGRP

Pada pembahasan kali ini,kita akan membahas tentang EIGRP.apa itu EIGRP ?
EIGRP singkatan dari enhanced interior gateway routing protocol adalah protocol routing yang termasuk priority cisco yang hanya bisa di jalankan di cisco,

kelebihannya dari pada protocol routing lainnya adalah EIGRP menawarkan fitur backup route,backup route disini jika mengalami perubahan pada network,maka EIGRP ini tidak mengkalkulasi ulang tetapi menggunakan backup route ini.kalkulasi ulang pun juga dilakukan jika backup routenya gagal dan termasuk protocol routing distance tingkat lanjut.langsung saja kita ke TKP masih menggunakan topologi sebelumnya,berikut langkah-langkahnya :



-pertama,kita hapus konfigurasi RIP :

```
R1(config)#no router rip
R2(config)#no router rip
R3(config)#no router rip
```

-lalu,kita setting EIGRP pada router 1 :

```
R1(config)#router eigrp 10
R1(config-router)#network 12.12.12.0
R1(config-router)#network 1.1.1.1
R1(config-router)#no auto-summary
R1(config-router)#
*Mar 1 01:31:11.927: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 12.12.12.1 (Serial1/0) is up: new adjacency
R1(config-router)#
*Mar 1 01:31:39.903: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 12.12.12.1 (Serial1/0) is resync: peer graceful-
restart
```

-lalu,kita setting EIGRP pada router 2 :

```
R2(config)#router eigrp 10
R2(config-router)#network 12.12.12.0
R2(config-router)#network
*Mar 1 01:30:47.943: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 12.12.12.2 (Serial1/0) is up: new adjacency
```

```
R2(config-router)#network 192.168.1.0
R2(config-router)#network 2.2.2.2
R2(config-router)#no auto-summary
R2(config-router)#
*Mar 1 01:31:15.759: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 12.12.12.2 (Serial1/0) is resync: summary configured
R2(config-router)#
*Mar 1 01:32:14.959: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 192.168.1.3 (FastEthernet0/0) is up: new adjacency
```

-lalu,kita setting EIGRP pada router 3 :

```
R3(config)#router eigrp 10
R3(config-router)#network 192.168.1.0
R3(config-router)#network
*Mar 1 01:32:29.895: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 192.168.1.2 (FastEthernet0/0) is up: new adjacency
R3(config-router)#network 3.3.3.3
R3(config-router)#no auto-summary
R3(config-router)#
*Mar 1 01:32:49.055: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 192.168.1.2 (FastEthernet0/0) is resync: summary
configured
```

-setelah itu,kita lakukan pengecekan di router 1 :

```
R1#show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
      inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
      type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
      IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
      user static route
      o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

      1.0.0.0/32 is subnetted, 1 subnets
C          1.1.1.1 is directly connected, Loopback0
      2.0.0.0/32 is subnetted, 1 subnets
D          2.2.2.2 [90/2297856] via 12.12.12.1, 00:04:54,
Serial1/0
      3.0.0.0/32 is subnetted, 1 subnets
```

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```
D      3.3.3.3 [90/2323456] via 12.12.12.1, 00:03:35,
Serial1/0
```

```
 12.0.0.0/24 is subnetted, 1 subnets
 C      12.12.12.0 is directly connected, Serial1/0
 S      192.168.1.0/24 [1/0] via 12.12.12.1
```

bila ada tanda D maka settingan EIGRP kita sudah ada, 90 itu adalah administrative distance dari EIGRP, 2297856 metric ke tujuannya.

-kita tes ping :

```
R1#ping 2.2.2.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2.2.2.2, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
24/56/100 ms
```

```
R1#ping 3.3.3.3
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 3.3.3.3, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
64/110/168 ms
```

- Jika pada show ip route muncul R maka settingan RIPnya sudah ada dan memiliki 1 hop count ke tujuannya , dan untuk melihat ip tetangga bisa cek dengan ketikkan "show cdp neighbors" hasilnya bisa kita lihat di atas.

```
R1#sh cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source
Route Bridge
                               S - Switch, H - Host, I - IGMP, r - Repeater
Device ID Local Intrfce Holdtme Capability Platform Port ID
R2          Ser 1/0        145         R S I       2691      Ser 1/0
```

-coba kita cek di eigrp topologinya :

```
R1#sh ip eigrp topology
IP-EIGRP Topology Table for AS(10)/ID(1.1.1.1)
Codes: P - Passive, A - Active, U - Update, Q - Query, R -
Reply,
          r - reply Status, s - sia Status
P 3.3.3.3/32, 1 successors, FD is 2323456
          via 12.12.12.1 (2323456/409600), Serial1/0
P 2.2.2.2/32, 1 successors, FD is 2297856
          via 12.12.12.1 (2297856/128256), Serial1/0
```

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```
P 1.1.1.1/32, 1 successors, FD is 128256
  via Connected, Loopback0
P 12.12.12.0/24, 1 successors, FD is 2169856
  via Connected, Serial1/0
P 192.168.1.0/24, 0 successors, FD is Inaccessible
  via 12.12.12.1 (2195456/281600), Serial1/0
```

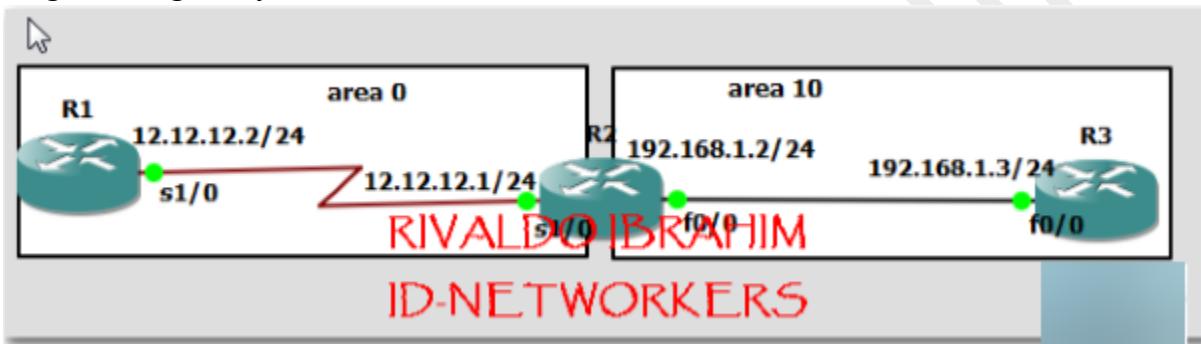
RIVALDO IBRAHIM

Lab 19

Dynamic routing-ospf

Pada pembahasan kali ini,saya akan membahas tentang ospf,apa itu ospf ? ospf singkatan dari open source path first adalah link-state routing protocol,router tahu topologi dari network sehingga bisa memperkecil kesalahan saat melakukan routing,

Ospf menggunakan algoritma djikstra atau algoritma jarak terpendek.ospf di desain secara hirarki dalam artian misalnya ada server dan client jika server ini down maka clientnya akan ikut juga down.jadi mengandalkan pada 1 sumber.di ospf itu dibagi berdasarkan area.oke kalau belum paham langsung saja kita praktekkan,berikut langkah-langkahnya :



-pertama,masih menggunakan topologi sebelumnya,hapus dulu konfigurasi EIGRP :

```
R1(config)#no router eigrp 10
R2(config)#no router eigrp 10
R3(config)#no router eigrp 10
```

-lalu,kita konfigurasikan OSPFnya :

Pada switch 1 :

```
R1(config)#router ospf 10
R1(config-router)#network 12.12.12.0 0.0.0.3 area 0
R1(config-router)#network 1.1.1.1 0.0.0.0 area 0
R1(config-router)#
*Mar 1 02:26:41.147: %OSPF-5-ADJCHG: Process 10, Nbr 2.2.2.2
on Serial1/0 from LOADING to FULL, Loading Done
```

Pada switch 2 :

```
R2(config)#router ospf 10
R2(config-router)#network 12.12.12.0 0.0.0.3 area 0
R2(config-router)#network
*Mar 1 02:26:17.163: %OSPF-5-ADJCHG: Process 10, Nbr 1.1.1.1
on Serial1/0 from LOADING to FULL, Loading Done
R2(config-router)#network 192.168.1.0 0.0.0.3 area 10
R2(config-router)#network 2.2.2.2 0.0.0.0 area 10
R2(config-router)#

```

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```
*Mar 1 02:27:17.351: %OSPF-5-ADJCHG: Process 10, Nbr 3.3.3.3  
on FastEthernet0/0 from LOADING to FULL, Loading Done
```

Pada switch 3 :

```
R3(config)#router ospf 10  
R3(config-router)#network 192.168.1.0 0.0.0.3 area 10  
R3(config-router)#netw  
*Mar 1 02:27:42.299: %OSPF-5-ADJCHG: Process 10, Nbr 2.2.2.2  
on FastEthernet0/0 from LOADING to FULL, Loading Done  
R3(config-router)#network 3.3.3.3 0.0.0.0 area 10
```

-setelah itu,lakukan pengecekan di router 2 :

```
R2#sh ip route  
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP  
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF  
inter area  
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external  
type 2  
      E1 - OSPF external type 1, E2 - OSPF external type 2  
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -  
IS-IS level-2  
      ia - IS-IS inter area, * - candidate default, U - per-  
user static route  
      o - ODR, P - periodic downloaded static route  
  
Gateway of last resort is not set
```

```
1.0.0.0/32 is subnetted, 1 subnets  
o 1.1.1.1 [110/65] via 12.12.12.2, 00:03:12, Serial1/0  
  2.0.0.0/32 is subnetted, 1 subnets  
c    2.2.2.2 is directly connected, Loopback0  
3.0.0.0/32 is subnetted, 1 subnets  
o 3.3.3.3 [110/11] via 192.168.1.3, 00:02:10,  
FastEthernet0/0  
  12.0.0.0/24 is subnetted, 1 subnets  
c    12.12.12.0 is directly connected, Serial1/0  
c    192.168.1.0/24 is directly connected, FastEthernet0/0
```

Jika ada tanda O maka settingan ospfnya sudah ada dan ospf satu area,110 itu adalah administrative distancenya,dan 65 itu costnya ke tujuan

-coba kita lihat table ospf neighbornya :

```
R2#sh ip ospf neighbor  
  
Neighbor ID Pri State Dead Time Address Interface  
1.1.1.1      0   FULL/ - 00:00:37 12.12.12.2 Serial1/0  
3.3.3.3      1   FULL/BDR 00:00:35 192.168.1.3 FastEthernet0/0
```

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-coba kita lihat table route :

```
R1#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
      inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
      type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
      IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
      user static route
      o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

      1.0.0.0/32 is subnetted, 1 subnets
C          1.1.1.1 is directly connected, Loopback0
      2.0.0.0/32 is subnetted, 1 subnets
O IA    2.2.2.2 [110/65] via 12.12.12.1, 00:08:22, Serial1/0
      3.0.0.0/32 is subnetted, 1 subnets
O IA    3.3.3.3 [110/75] via 12.12.12.1, 00:07:35, Serial1/0
      12.0.0.0/24 is subnetted, 1 subnets
C          12.12.12.0 is directly connected, Serial1/0
S          192.168.1.0/24 [1/0] via 12.12.12.1
```

O IA disini adalah ospf intra area dalam artian ospf yang berasal dari area lain atau ip tetangga.

-coba kita lihat database di ospfnya :

```
R1#sh ip ospf database

OSPF Router with ID (1.1.1.1) (Process ID 10)

        Router Link States (Area 0)

Link ID      ADV Router      Age      Seq#      Checksum Link count
1.1.1.1      1.1.1.1        666      0x80000003  0x006CC6 3
2.2.2.2      2.2.2.2        647      0x80000002  0x0063E1 2

        Summary Net Link States (Area 0)

Link ID      ADV Router      Age      Seq#      Checksum
2.2.2.2      2.2.2.2        633      0x80000001  0x00FA31
3.3.3.3      2.2.2.2        586      0x80000001  0x0031EC
192.168.1.0   2.2.2.2        643      0x80000001  0x00F4CB
```

-sekarang coba ping ip loopbacknya

```
R1#ping 2.2.2.2
```

```
Type escape sequence to abort.  
Sending 5, 100-byte ICMP Echos to 2.2.2.2, timeout is 2  
seconds:  
!!!!!  
Success rate is 100 percent (5/5), round-trip min/avg/max =  
44/74/136 ms
```

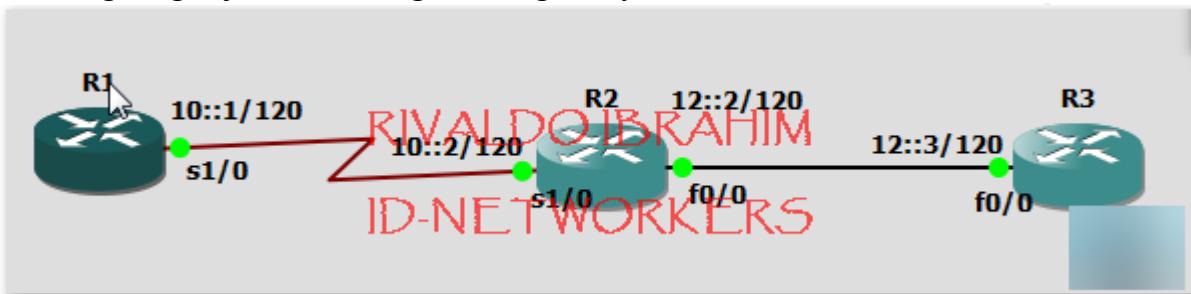
```
R1#ping 3.3.3.3
```

```
Type escape sequence to abort.  
Sending 5, 100-byte ICMP Echos to 3.3.3.3, timeout is 2  
seconds:  
!!!!!  
Success rate is 100 percent (5/5), round-trip min/avg/max =  
64/138/224 ms
```

Lab 20

RIPng (next generation)

Pada pembahasan kali ini,saya akan membahas tentang RIPng,dimana RIPng ini di rancang agar bisa memproses network IPV6.setiap router yang menggunakan RIPng mempunyai routing proses yang mengirim datagram pada UDP port number 512.langsung saja berikut langkah-langkahnya :



-setting router 1 :

```
R1(config)#ipv6 unicast-routing
R1(config)#int s1/0
R1(config-if)#ipv6 add 10::1/120
R1(config-if)#no sh
R1(config-if)#
*Mar 1 00:01:31.747: %LINK-3-UPDOWN: Interface Serial1/0,
changed state to up
R1(config-if)#
*Mar 1 00:01:32.763: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up
R1(config-if)#ipv6 rip 1 enable
R1(config-if)#int lo0
R1(config-if)#
*Mar 1 00:04:35.607: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R1(config-if)#ipv6 add 1::1/128
R1(config-if)#ipv6 rip 1 enable
```

-setting router 2 :

```
R2(config-if)#ipv6 unicast-routing
R2(config)#int s1/0
R2(config-if)#ipv6 add 10::2/120
R2(config-if)#no shut
R2(config-if)#ipv6
*Mar 1 00:01:59.519: %LINK-3-UPDOWN: Interface Serial1/0,
changed state to up
R2(config-if)#ipv6
*Mar 1 00:02:00.531: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up
```

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```
R2(config-if)#ipv6 rip 1 enable
R2(config-if)#ipv6 add 12::2/120
R2(config-if)#no shu
R2(config-if)#
*Mar 1 00:03:15.207: %LINK-3-UPDOWN: Interface
FastEthernet0/0, changed state to up
*Mar 1 00:03:16.207: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/0, changed state to up
R2(config-if)#ipv6 rip 1 enable
R2(config-if)#int lo0
R2(config-if)#i
*Mar 1 00:03:41.099: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R2(config-if)#ipv6 add 2::2/128
R2(config-if)#ipv6 rip 1 enable
```

-setting router 3 :

```
R3(config)#ipv6 unicast-routing
R3(config)#int f0/0
R3(config-if)#ipv6 add 12::3/120
R3(config-if)#no sh
R3(config-if)#
*Mar 1 00:06:14.019: %LINK-3-UPDOWN: Interface
FastEthernet0/0, changed state to up
*Mar 1 00:06:15.019: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/0, changed state to up
R3(config-if)#ipv6 rip 1 enable
R3(config-if)#int lo0
R3(config-if)#
*Mar 1 00:05:49.227: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R3(config-if)#ipv6 add 3::3/128
R3(config-if)#ipv6 rip 1 enable
```

-coba kita cek di interfacanya pada router 1 :

```
R1#sh ipv6 int br
FastEthernet0/0                  [administratively down/down]
FastEthernet0/1                  [administratively down/down]
Serial1/0                      [up/up]
FE80::C201:EFF:FE48:0
10::1
Serial1/1                        [administratively down/down]
Serial1/2                        [administratively down/down]
Serial1/3                        [administratively down/down]
Loopback0                      [up/up]
FE80::C201:EFF:FE48:0
```

1:::1

-setelah itu,kita cek di table routenya apa sudah ada settingan RIP atau belum :

```
R1#sh ipv6 route
IPv6 Routing Table - 7 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
       U - Per-user Static route, M - MIPv6
       I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS -
ISIS summary
       O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext 1, OE2 -
OSPF ext 2
       ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
       D - EIGRP, EX - EIGRP external
LC  1:::1/128 [0/0]
    via ::, Loopback0
R  2::2/128 [120/2]
    via FE80::C202:11FF:FEA0:0, Serial1/0
R  3::3/128 [120/3]
    via FE80::C202:11FF:FEA0:0, Serial1/0
C  10::/120 [0/0]
    via ::, Serial1/0
L  10::1/128 [0/0]
    via ::, Serial1/0
R  12::/120 [120/2]
    via FE80::C202:11FF:FEA0:0, Serial1/0
L  FF00::/8 [0/0]
    via ::, Null0
```

-kita ping ke loopback tetangga :

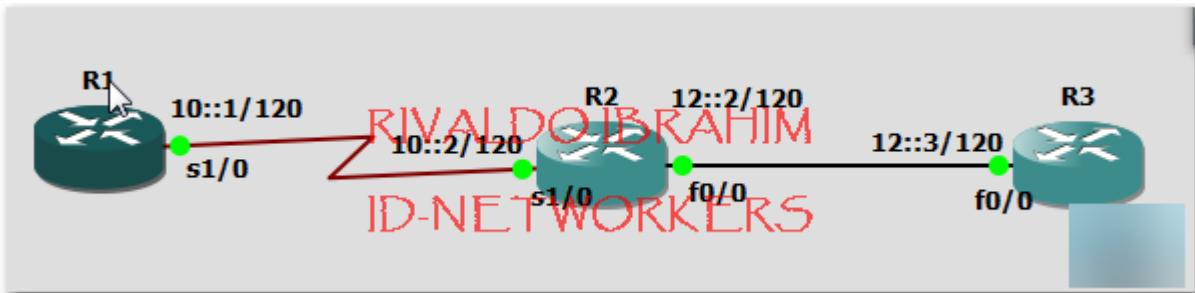
```
R1#ping 2::2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2::2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
28/39/52 ms
R1#ping 3::3

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 3::3, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
68/86/132 ms
```

Lab 21

OSPFv3

Pada pembahasan kali ini,saya akan membahas tentang OSPFv3,ospfv3 ini bisa menjalankan ipv4 dan ipv6,dan harus dijalankan juga ospfv2 dan ospfv3.masih menggunakan topologi sebelumnya.berikut ini langkah-langkahnya :



-pertama,kita hapus konfigurasi RIPng terlebih dahulu :

```
R1(config)#no ipv6 router rip 1  
R2(config)#no ipv6 router rip 1  
R3(config)#no ipv6 router rip 1
```

-lalu,kita seting ospfv3 pada router 1 :

```
R1(config)#ipv6 router ospf 10  
R1(config-rtr)#  
*Mar 1 01:06:19.659: %OSPFV3-4-NORTRID: OSPFv3 process 10  
could not pick a router-id,  
please configure manually  
R1(config-rtr)#router-id 1.1.1.1  
R1(config-rtr)#int s1/0  
R1(config-if)#ipv6 ospf 10 area 0  
R1(config-if)#int lo0  
R1(config-if)#ipv6 ospf 10 area 0  
R1(config-if)#  
*Mar 1 01:08:27.131: %OSPFV3-5-ADJCHG: Process 10, Nbr 2.2.2.2  
on Serial1/0 from LOADING to FULL, Loading Done
```

-setting ospfv3 pada router 2 :

```
R2(config)#ipv6 router ospf 10  
R2(config-rtr)#route  
*Mar 1 01:07:36.423: %OSPFV3-4-NORTRID: OSPFv3 process 10  
could not pick a router-id,  
please configure manually  
R2(config-rtr)#router-id 2.2.2.2  
R2(config-rtr)#int s1/0  
R2(config-if)#ipv6 ospf 10 area 0  
R2(config-if) #
```

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```
*Mar 1 01:08:01.923: %OSPFv3-5-ADJCHG: Process 10, Nbr 1.1.1.1  
on Serial1/0 from LOADING to FULL, Loading Done  
R2(config-if)#int f0/0  
R2(config-if)#ipv6 ospf 10 area 0  
R2(config-if)#int lo0  
R2(config-if)#ipv6 ospf 10 area 0  
R2(config-if)#  
*Mar 1 01:09:51.707: %OSPFv3-5-ADJCHG: Process 10, Nbr 3.3.3.3  
on FastEthernet0/0 from LOADING to FULL, Loading Done
```

-setting ospfv3 pada router 3 :

```
R3(config)#ipv6 router ospf 10  
R3(config-rtr)#  
*Mar 1 01:09:55.371: %OSPFv3-4-NORTRID: OSPFv3 process 10  
could not pick a router-id,  
please configure manually  
R3(config-rtr)#router-id 3.3.3.3  
R3(config-rtr)#int f0/0  
R3(config-if)#ipv6 ospf 10 area 0  
R3(config-if)#in  
*Mar 1 01:10:17.803: %OSPFv3-5-ADJCHG: Process 10, Nbr 2.2.2.2  
on FastEthernet0/0 from LOADING to FULL, Loading Done  
R3(config-if)#int lo0  
R3(config-if)#ipv6 ospf 10 area 0
```

-setelah itu,kita lakukan pengecekan :

```
R1#sh ipv6 route  
IPv6 Routing Table - 7 entries  
Codes: C - Connected, L - Local, S -  
Static, R - RIP, B - BGP  
U - Per-user Static route, M -  
MIPv6  
I1 - ISIS L1, I2 - ISIS L2, IA  
- ISIS interarea, IS - ISIS summary  
O - OSPF intra, OI - OSPF  
inter, OE1 - OSPF ext 1, OE2 - OSPF  
ext 2  
ON1 - OSPF NSSA ext 1, ON2 -  
OSPF NSSA ext 2  
D - EIGRP, EX - EIGRP external  
  
LC 1::1/128 [0/0]  
via ::, Loopback0  
O 2::2/128 [110/64]  
via FE80::C202:11FF:FEA0:0,  
Serial1/0
```

```
o  3::3/128 [110/74]
  via FE80::C202:11FF:FEA0:0,
Serial1/0
C  10::/120 [0/0]
  via ::, Serial1/0
L  10::1/128 [0/0]
  via ::, Serial1/0
o  12::/120 [110/74]
  via FE80::C202:11FF:FEA0:0,
Serial1/0
L  FF00::/8 [0/0]
  via ::, Null0
```

-coba lihat ospf neighbor:

```
R1#sh ipv6 ospf neighbor

Neighbor ID Pri  State          Dead Time  Interface ID
Interface
2.2.2.2      1    FULL/ -  00:00:30      6           Serial1/0
```

-coba tes ping :

```
R1#ping 2::2

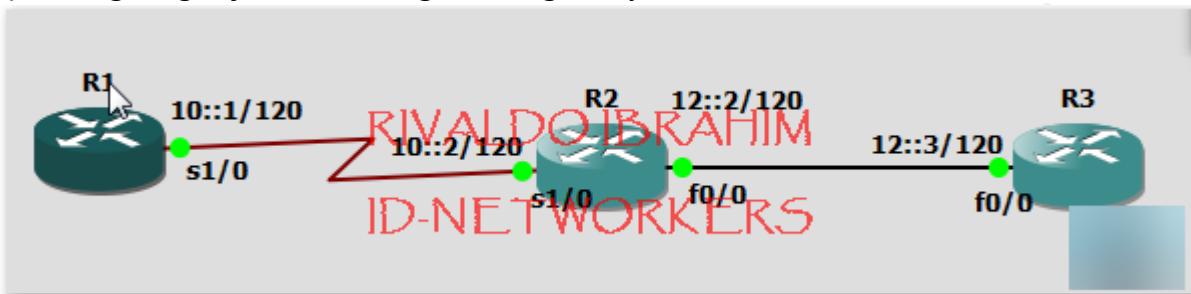
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2::2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
36/56/104 ms
```

```
R1#ping 3::3
```

```
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 3::3, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
76/108/140 ms
```

Lab 22 EIGRP ipv6

Pada pembahasan kita kali ini,saya akan membahas tentang EIGRP ipv6.untuk penjelasannya sama dengan EIGRP pada umumnya,tetapi di EIGRP ipv6 dikonfigure menggunakan interface command dan di rancang untuk memproses network ipv6.langsung saja berikut langkah-langkahnya :



-pertama,kita hapus konfigurasi ospfv3 :

```
R1(config)#no ipv6 router ospf 10
R1(config)#
*Mar 1 01:33:24.403: %OSPFV3-5-ADJCHG: Process 10, Nbr 2.2.2.2
on Serial1/0 from FULL to DOWN, Neighbor Down: Interface down
or detached
R2(config)#no ipv6 router ospf 10
R2(config)#
*Mar 1 01:34:35.259: %OSPFV3-5-ADJCHG: Process 10, Nbr 3.3.3.3
on FastEthernet0/0 from FULL to DOWN, Neighbor Down: Interface
down or detached
R3(config)#no ipv6 router ospf 10
```

-lalu,setting eigrp ipv6 pada router 1:

```
R1(config)#ipv6 router eigrp 10
R1(config-rtr)#router-id 1.1.1.1
R1(config-rtr)#no shut
R1(config-rtr)#int s1/0
R1(config-if)#ipv6 eigrp 10
R1(config-if)#int lo0
R1(config-if)#ipv6 eigrp 10
R1(config-if)#
*Mar 1 01:42:35.535: %DUAL-5-NBRCHANGE: IPv6-EIGRP(0) 10:
Neighbor FE80::C202:11FF:FEA0:0 (Serial1/0) is up: new
adjacency
```

-setting eigrp ipv6 pada router 2 :

```
R2(config)#ipv6 router eigrp 10
R2(config-rtr)#router-id 2.2.2.2
R2(config-rtr)#no shut
```

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```
R2(config-rtr)#int s1/0
R2(config-if)#ipv6 eigrp 10
R2(config-if)#
*Mar 1 01:42:10.247: %DUAL-5-NBRCHANGE: IPv6-EIGRP(0) 10:
Neighbor FE80::C201:EFF:FE48:0 (Serial1/0) is up: new adjacency
R2(config-if)#int f0/0
R2(config-if)#ipv6 eigrp 10
R2(config-if)#int lo0
R2(config-if)#ipv6 eigrp 10
R2(config-if)#
*Mar 1 01:44:38.155: %DUAL-5-NBRCHANGE: IPv6-EIGRP(0) 10:
Neighbor FE80::C203:13FF:FE1C:0 (FastEthernet0/0) is up: new
adjacency
```

-setting eigrp ipv6 pada router 3 :

```
R3(config)#ipv6 router eigrp 10
R3(config-rtr)#router-id 3.3.3.3
R3(config-rtr)#no shu
R3(config-rtr)#int f0/0
R3(config-if)#ipv6 eigrp 10
R3(config-if)#
*Mar 1 01:45:04.239: %DUAL-5-NBRCHANGE: IPv6-EIGRP(0) 10:
Neighbor FE80::C202:11FF:FEA0:0 (FastEthernet0/0) is up: new
adjacency
R3(config-if)#int lo0
R3(config-if)#ipv6 eigrp 10
```

-setelah itu kita lakukan pengecekan :

```
R1#sh ipv6 route
IPv6 Routing Table - 7 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
      U - Per-user Static route, M - MIPv6
      I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS -
ISIS summary
      O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext 1, OE2 -
OSPF ext 2
      ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
      D - EIGRP, EX - EIGRP external
LC 1::1/128 [0/0]
  via ::, Loopback0
D  2::2/128 [90/2297856]
  via FE80::C202:11FF:FEA0:0, Serial1/0
D  3::3/128 [90/2323456]
  via FE80::C202:11FF:FEA0:0, Serial1/0
C  10::/120 [0/0]
  via ::, Serial1/0
```

```
L 10::1/128 [0/0]
  via ::, Serial1/0
D 12::/120 [90/2195456]
via FE80::C202:11FF:FEA0:0, Serial1/0
L FF00::/8 [0/0]
  via ::, Null0
```

-lakukan tes ping :

```
R1#ping 2::2
```

```
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2::2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
36/44/56 ms
```

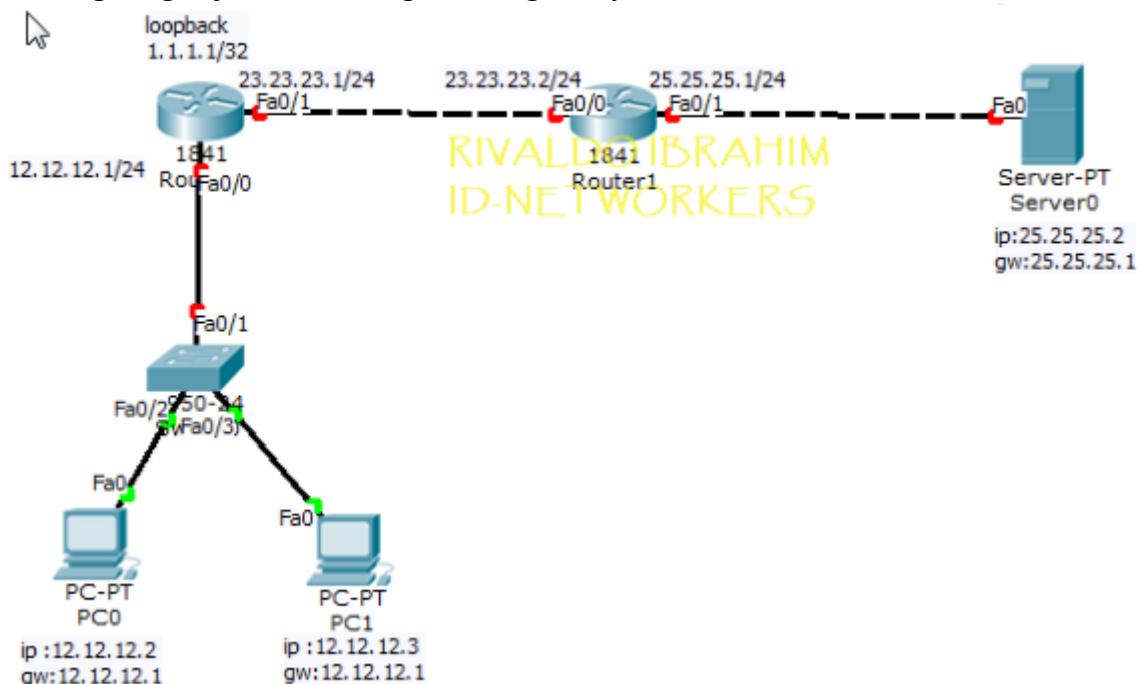
```
R1#ping 3::3
```

```
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 3::3, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
68/88/124 ms
```

Lab 23

Standard access list

Pada pembahasan kali ini,saya akan membahas tentang standard access list, standard access list merupakan paket filtering yang menentukan paket mana yang bisa di lewatkan,ACL menggunakan number dari 1-99,dan di konfigurasikan dekat dengan tujuan.langsung saja berikut langkah-langkahnya :

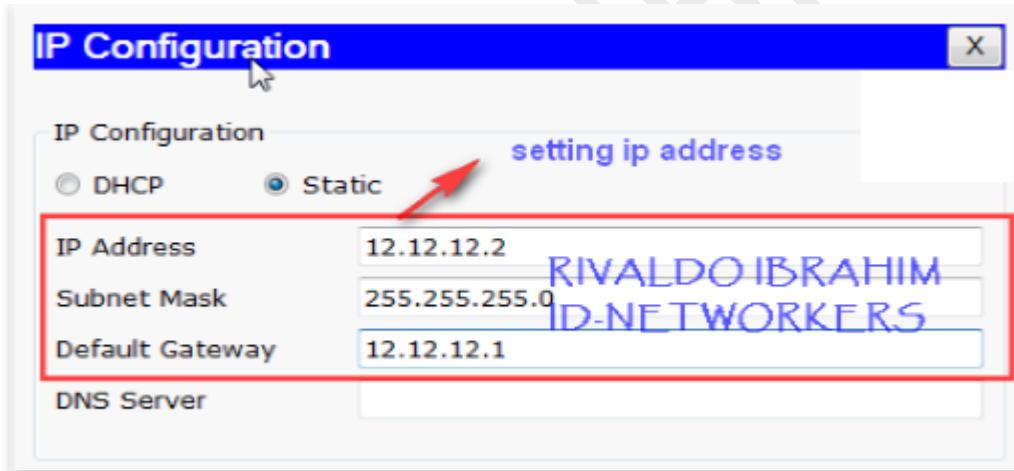


-kita setting ip pada masing-masing router,sebagai berikut :

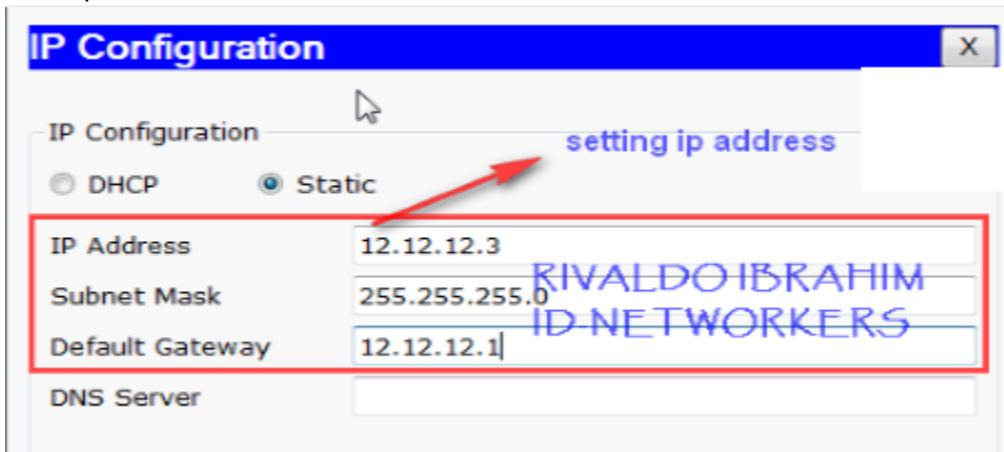
```
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface  
FastEthernet0/1, changed state to up  
  
R2(config)#int fa0/0  
R2(config-if)#ip add 23.23.23.2 255.255.255.0  
R2(config-if)#no shu  
R2(config-if)#  
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface  
FastEthernet0/0, changed state to up  
R2(config-if)#int fa0/1  
R2(config-if)#ip add 25.25.25.1 255.255.255.0  
R2(config-if)#no sh  
R2(config-if)#  
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface  
FastEthernet0/1, changed state to up
```

-setting ip pada pc:

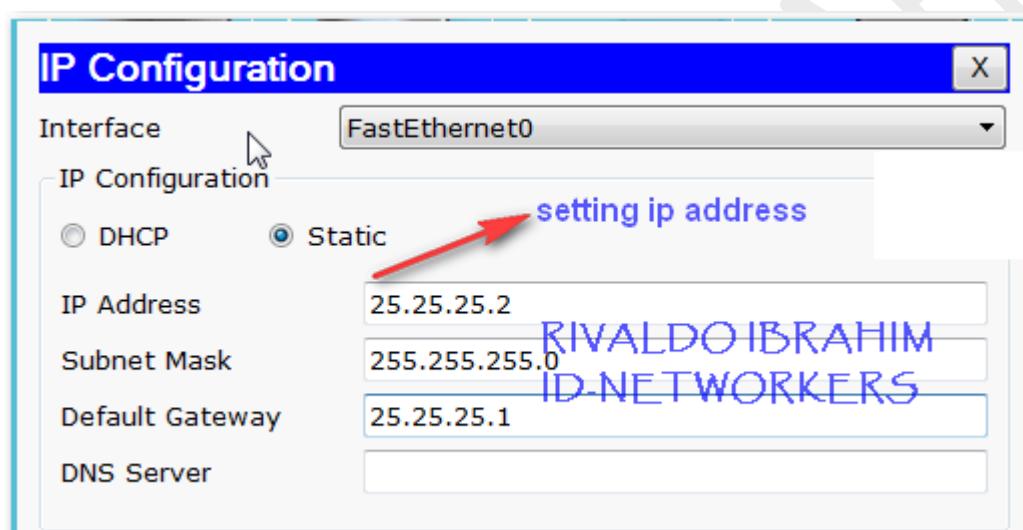
Pada pc 1:



Pada pc 2 :



Pada server :



-setting routing protocol pada router :

```
R1(config-if)#router eigrp 10
R1(config-router)#network 1.1.1.1
R1(config-router)#network 12.12.12.0
R1(config-router)#network 23.23.23.0
R1(config-router)#no auto-summary
R1(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 10: Neighbor 23.23.23.2
(FastEthernet0/1) is up: new adjacency
%DUAL-5-NBRCHANGE: IP-EIGRP 10: Neighbor 23.23.23.2
(FastEthernet0/1) is down: Interface Goodbye received
%DUAL-5-NBRCHANGE: IP-EIGRP 10: Neighbor 23.23.23.2
(FastEthernet0/1) is up: new adjacency
R2(config-if)#router eigrp 10
R2(config-router)#network 23.23.23.0
R2(config-router)#

```

```
%DUAL-5-NBRCHANGE: IP-EIGRP 10: Neighbor 23.23.23.1  
(FastEthernet0/0) is up: new adjacency  
R2(config-router)#network 25.25.25.0  
R2(config-router)#no auto-summary  
R2(config-router)#  
%DUAL-5-NBRCHANGE: IP-EIGRP 10: Neighbor 23.23.23.1  
(FastEthernet0/0) is up: new adjacency
```

-sebelum kita konfigurasi access-list,coba ping ke server :

```
PC>ping 25.25.25.2  
  
Pinging 25.25.25.2 with 32 bytes of data:  
  
Reply from 25.25.25.2: bytes=32 time=0ms TTL=126  
  
Ping statistics for 25.25.25.2:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

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-konfigurasi ACL di router 2 :

```
R2(config)#access-list 1 deny 12.12.12.0 0.0.0.255  
R2(config)#access-list 1 permit any  
R2(config)#int fa0/1  
R2(config-if)#ip access-group 1 out
```

-coba ping ke server

```
PC>ping 25.25.25.2  
  
Pinging 25.25.25.2 with 32 bytes of data:  
  
Reply from 23.23.23.2: Destination host unreachable.  
  
Ping statistics for 25.25.25.2:  
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

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-kemudian cek pada router 2,settingan ACLnya,sebagai berikut :

```
R2#sh access-lists  
Standard IP access list 1  
    deny 12.12.12.0 0.0.0.255 (4 match(es))  
    permit any
```

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-lalu lakukan ping lagi di router 1,selain source interfacenya 10.10.10.0/24 berarti menggunakan 1.1.1.1 dengan jumlah paket 5 :

```
Router#ping
Protocol [ip]:
Target IP address: 25.25.25.2
Repeat count [5]:
Datagram size [100]:
Timeout in seconds [2]:
Extended commands [n]: y
Source address or interface: 1.1.1.1
Type of service [0]:
Set DF bit in IP header? [no]:
Validate reply data? [no]:
Data pattern [0xABCD]:
Loose, Strict, Record, Timestamp, Verbose[none]:
Sweep range of sizes [n]:
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 25.25.25.2, timeout is 2
seconds:
Packet sent with a source address of 1.1.1.1
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
0/0/1 ms
```

-coba cek lagi acl di router 2 di permit any :

```
R2#sh access-lists
Standard IP access list 1
    deny 12.12.12.0 0.0.0.255 (4 match(es))
    permit any (5 match(es))
```

-coba lakukan tes ping menggunakan source 12.12.12.0/24 dengan jumlah paket 11 :

```
Router#ping
Protocol [ip]:
Target IP address: 25.25.25.2
Repeat count [5]: 11
Datagram size [100]:
Timeout in seconds [2]:
Extended commands [n]: y
Source address or interface: 12.12.12.1
Type of service [0]:
Set DF bit in IP header? [no]:
Validate reply data? [no]:
Data pattern [0xABCD]:
Loose, Strict, Record, Timestamp, Verbose[none]:
Sweep range of sizes [n]:
Type escape sequence to abort.
```

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```
Sending 11, 100-byte ICMP Echos to 25.25.25.2, timeout is 2  
seconds:  
Packet sent with a source address of 12.12.12.1  
UUUUUUUUUUUU  
Success rate is 0 percent (0/11)
```

-kemudian cek lagi di router 2 lihat ada tambahan paket 11 yang match pada rule deny 12.12.12.0/24:

```
R2#sh access-lists  
Standard IP access list 1  
    deny 12.12.12.0 0.0.0.255 (15 match(es))  
    permit any (5 match(es))
```

sekarang,kita ingin filter satu host saja,jadi ip 12.12.12.2 tidak boleh mengakses web,sedangkan pc 12.12.12.3 bisa mengakses web,caranya sebagai berikut :

-tambahkan konfigurasi ACL,pada router 2 :

```
R2(config)#access-list 2 deny 12.12.12.2 0.0.0.0  
R2(config)#access-list 2 permit any  
R2(config)#int fa0/1  
R2(config-if)#ip access-group 2 out
```

-coba ping ke server dari pc 1:

```
PC>ping 25.25.25.2  
  
Pinging 25.25.25.2 with 32 bytes of data:  
  
Reply from 23.23.23.2: Destination host unreachable.  
  
Ping statistics for 25.25.25.2:  
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

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-coba ping ke server dari PC 2

```
Packet Tracer PC Command Line 1.0  
PC>ping 25.25.25.2  
  
Pinging 25.25.25.2 with 32 bytes of data:  
  
Reply from 25.25.25.2: bytes=32 time=0ms TTL=126  
Reply from 25.25.25.2: bytes=32 time=0ms TTL=126  
Reply from 25.25.25.2: bytes=32 time=1ms TTL=126  
Reply from 25.25.25.2: bytes=32 time=0ms TTL=126  
  
Ping statistics for 25.25.25.2:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

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-setelah itu kita ketikkan "ipconfig"

```
PC>ipconfig  
FastEthernet0 Connection: (default port)  
Link-local IPv6 Address.....: FE80::201:C7FF:FE46:6BD3  
IP Address.....: 12.12.12.3  
Subnet Mask.....: 255.255.255.0  
Default Gateway.....: 12.12.12.1
```

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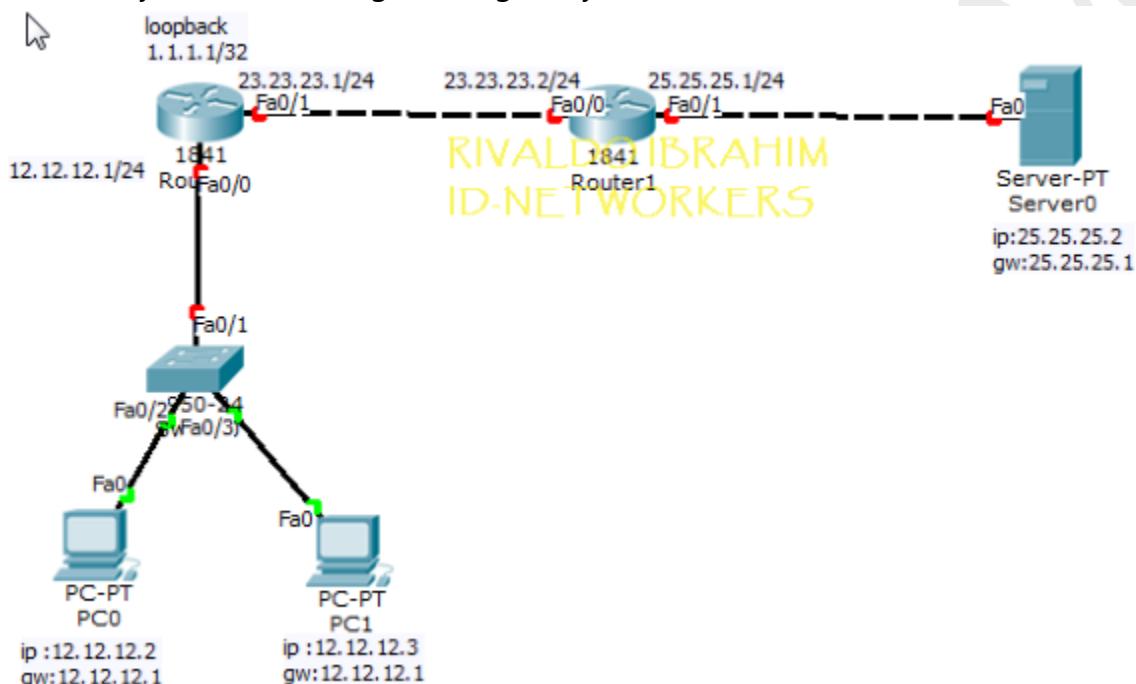
-cek aclnya lagi di R2 :

```
Router#sh access-lists  
Standard IP access list 1  
    deny 12.12.12.0 0.0.0.255 (15 match(es))  
    permit any (5 match(es))  
Standard IP access list 2  
    deny host 12.12.12.2 (4 match(es))  
    permit any (4 match(es))
```

Lab 24

Extended access list

Pada pembahasan ini,saya akan membahas tentang extended access list,bedanya dengan standard access list adalah paket filtering yang tidak tertuju berdasarkan sourcenyatetapi berdasarkan port dan protokolnya,disini kita bisa membatasi telnet,ftp,akses ke web atau email.disini saya akan mencoba untuk membatasi akses ke web,dan ACL extended ini memiliki number 100 – 199.masih menggunakan topologi sebelumnya.berikut ini langkah-langkahnya :



-pertama,kita hapus konfigurasi standard ACL pada router 2 :

```
Router(config) #no access-list 1
Router(config) #no access-list 2
```

-lalu kita setting konfigurasi extended ACL pada router 1 :

```
Router(config) #access-list 100 deny tcp 12.12.12.0 0.0.0.255
host 25.25.25.2 eq www
Router(config) #access-list 100 permit ip any any
Router(config) #int fa0/0
Router(config-if) #ip access-group 100 in
```

-coba kita ping ke server :

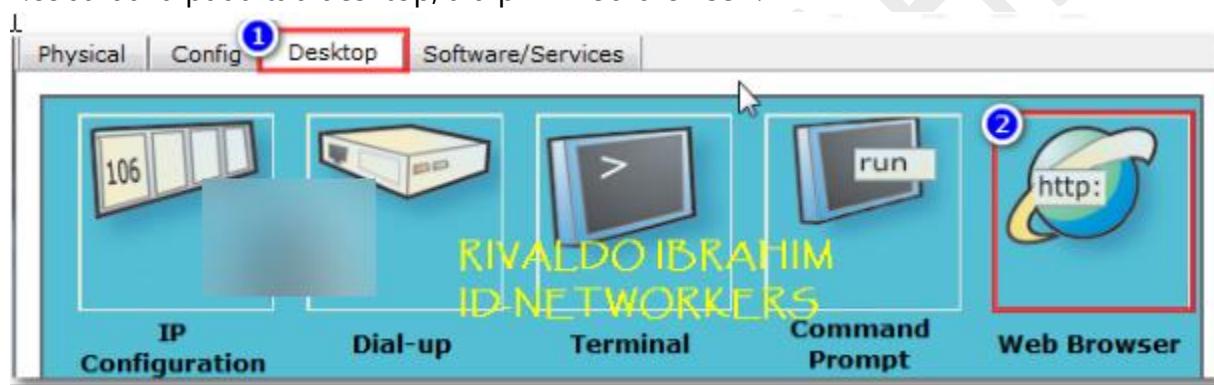
```
Packet Tracer PC Command Line 1.0
PC>ping 25.25.25.2

Pinging 25.25.25.2 with 32 bytes of data:

Reply from 25.25.25.2: bytes=32 time=0ms TTL=126
Reply from 25.25.25.2: bytes=32 time=0ms TTL=126
Reply from 25.25.25.2: bytes=32 time=1ms TTL=126
Reply from 25.25.25.2: bytes=32 time=0ms TTL=126

Ping statistics for 25.25.25.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

-coba buka pada tab desktop,lalu pilih web browser :



-. Pada address bar,ketikkan ip server,pastikan tidak bisa mengakses web :



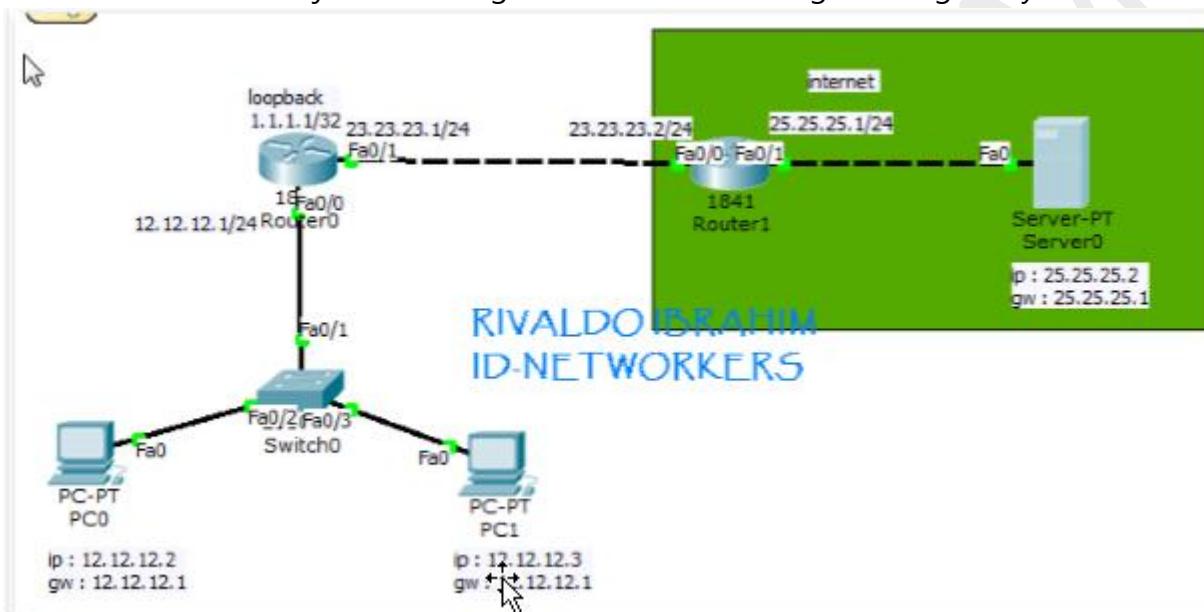
-coba kita cek ACL pada router 1 :

```
Router#sh access-lists
Extended IP access list 100
    deny tcp 12.12.12.0 0.0.0.255 host 25.25.25.2 eq www (12
match(es))
    permit ip any any (8 match(es))
```

Lab 25

Static NAT

Pada pembahasan kali ini,kita akan membahas tentang static NAT,sebelumnya apa itu NAT ?.NAT adalah singkatan dari network address translation merupakan fitur yang berfungsi untuk menerjemahkan dari ip satu di ubah ke ip lainnya,contoh ip private dan public.dan menggunakan konsep one to one mapping yaitu 1 private di terjemahkan untuk 1 public.masih menggunakan topologi yang sama tetapi pada router 2 dan server di jadikan sebagai internet,berikut langkah-langkahnya :



-pertama,hapus konfigurasi acl sebelumnya pada router 1 :

```
Router(config) #no access-list 100
```

-lalu, hapus konfigurasi routing eigrp tadi pada masing-masing router :

```
R1(config) #no router eigrp 10
R2(config) #no router eigrp 10
```

-setelah itu,konfigurasikan default route pada router 1 :

```
Router(config) #ip route 0.0.0.0 0.0.0.0 23.23.23.2
```

-lalu,kita konfigurasikan static NAT,berikut caranya :

```
Router(config) #ip nat inside source static 23.23.23.2
              23.23.23.23
Router(config) #int fa0/0
Router(config-if) #ip nat inside
Router(config-if) #int fa0/1
Router(config-if) #ip nat outside
```

.coba kita ping dari server :

```
SERVER>ping 12.12.12.2

Pinging 12.12.12.2 with 32 bytes of data:

Reply from 25.25.25.1: Destination host unreachable.

Ping statistics for 12.12.12.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

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sedangkan untuk ip local tidak perlu di ping,karena di internet tidak bisa di ping,bila anda tidak percaya berikut ini pengecekannya :

.coba tes ping :

```
SERVER>ping 12.12.12.2

Pinging 12.12.12.2 with 32 bytes of data:

Reply from 25.25.25.1: Destination host unreachable.

Ping statistics for 12.12.12.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

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.untuk melihat statistik natnya bisa kita cek,ketikkan "sh ip nat statistic pada router 1 :

```
Router#sh ip nat statistics
Total translations: 2 (3 static, 4294967295 dynamic, 0
extended)
Outside Interfaces: FastEthernet0/1
Inside Interfaces: FastEthernet0/0
Hits: 7 Misses: 12
Expired translations: 12
Dynamic mappings:
```

.dan cek lagi ip translation pada router 1 :

```
Router#sh ip nat translations
Pro      Inside global Inside local Outside local   Outside global
---      23.23.23.23  23.23.23.2        ---           ---
```

.coba kita cek hasil routing di tabel route,pada router 1 :

```
Router#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M -
mobile, B - BGP
          D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
inter area
```

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```
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E
- EGP
    i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia -
IS-IS inter area
    * - candidate default, U - per-user static route, o -
ODR
    P - periodic downloaded static route
```

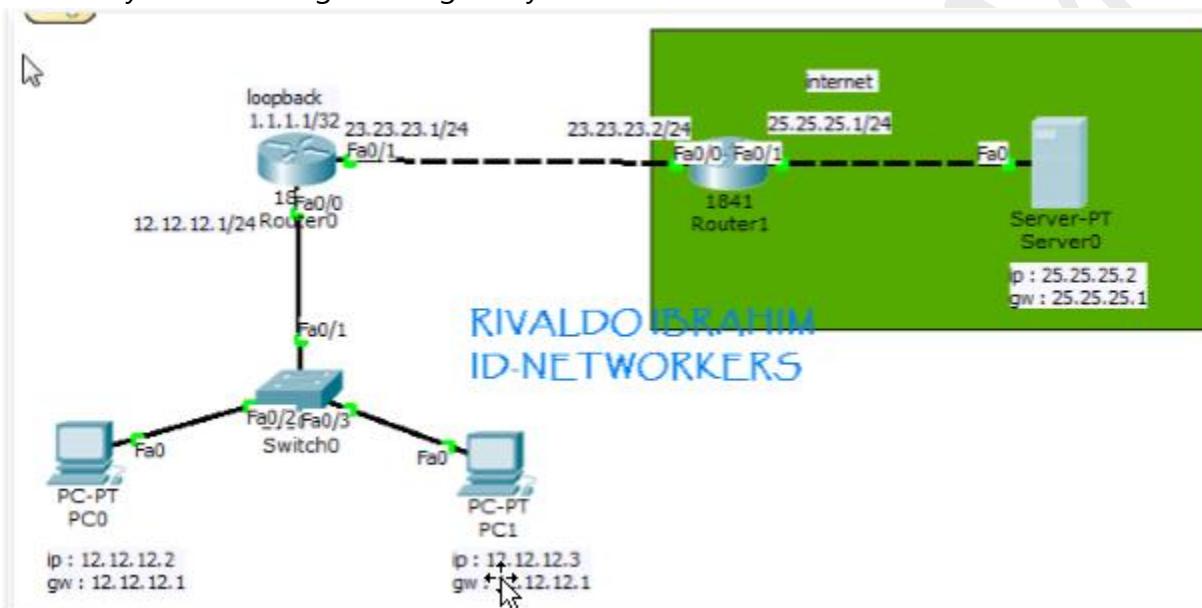
Gateway of last resort is 23.23.23.23 to network 0.0.0.0

```
      1.0.0.0/32 is subnetted, 1 subnets
C        1.1.1.1 is directly connected, Loopback0
      12.0.0.0/24 is subnetted, 1 subnets
C        12.12.12.0 is directly connected, FastEthernet0/0
      23.0.0.0/24 is subnetted, 1 subnets
C        23.23.23.0 is directly connected, FastEthernet0/1
S*  0.0.0.0/0 [1/0] via 23.23.23.23
                                [1/0] via 23.23.23.2
```

Lab 26

Dynamic NAT with overload

Pada pembahasan kali ini,saya akan membahas tentang dynamic NAT with overload.dynamic NAT with overload ini bisa menerjemahkan banyak ip private dengan atau hanya beberapa ip public.istilah lainnya adalah PAT (port address translation).bisa sebenarnya kita menggunakan dynamic NAT,tetapi tidak efektif karena membutuhkan jumlah ip private dan public yang sama.masih menggunakan topologi sebelumnya,berikut langkah-langkahnya :



-pertama,konfigurasikan dynamic nat with overload pada router 1 :

```
Router(config)#ip nat inside source list 1 int fa0/1 overload
Router(config)#access-list 1 permit 12.12.12.0 0.0.0.255
```

-jalankan debug ip nat pada router 1 :

```
Router#debug ip nat
IP NAT debugging is on
```

-lalu coba kita ping dari pc lokal ke pc internet :

```
PC>ping 25.25.25.2

Pinging 25.25.25.2 with 32 bytes of data:

Reply from 25.25.25.2: bytes=32 time=0ms TTL=126
Request timed out.
Reply from 25.25.25.2: bytes=32 time=0ms TTL=126
Request timed out.

Ping statistics for 25.25.25.2:
  Packets: Sent = 4, Received = 2, Lost = 2 (50% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

-coba, lihat efek dari kita melakukan tes ping,pada router 1 :

```
NAT*: s=25.25.25.2, d=23.23.23.1->12.12.12.3 [106]
NAT: s=12.12.12.3->23.23.23.1, d=25.25.25.2 [94]
NAT: s=12.12.12.3->23.23.23.1, d=25.25.25.2 [95]
NAT*: s=25.25.25.2, d=23.23.23.1->12.12.12.3 [107]
NAT: expiring 23.23.23.1 (12.12.12.3) icmp 77 (77)
NAT: s=12.12.12.3->23.23.23.1, d=25.25.25.2 [96]
NAT: expiring 23.23.23.1 (12.12.12.3) icmp 78 (78)
NAT: expiring 23.23.23.1 (12.12.12.3) icmp 79 (79)
```

-untuk menghentikan debug pada router 1,ketikkan :

```
Router#undisplay ip nat
IP NAT debugging is off
```

-lalu cek ip translations pada router 1 :

```
Router#sh ip nat translations
Pro Inside global Inside local Outside local Outside global
icmp 23.23.23.1:81 12.12.12.3:81 25.25.25.2:81 25.25.25.2:81
icmp 23.23.23.1:82 12.12.12.3:82 25.25.25.2:82 25.25.25.2:82
icmp 23.23.23.1:83 12.12.12.3:83 25.25.25.2:83 25.25.25.2:83
icmp 23.23.23.1:84 12.12.12.3:84 25.25.25.2:84 25.25.25.2:84
--- 12.12.12.12 12.12.12.2 --- ---
--- 23.23.23.23 23.23.23.2 --- ---
```

Lab 27

HDLC

Pada pembahasan ini kita akan membahas tentang HDLC, apa itu HDLC ?, HDLC merupakan singkatan dari high level datalink control, hdlc ini digunakan sebagai wan protocol yaitu menghubungkan network antar lokasi yang berjauhan, seperti Jakarta dan papua. dan hdlc ini biasanya menggunakan kabel serial dan merupakan cisco proprietary dan encapsulasinya secara default langsung saja berikut ini langkah-langkahnya :



- pertama, kita setting ip pada masing-masing router :

pada router 1 :

```
Router(config)#int se0/0/0
Router(config-if)#ip add 10.10.10.1 255.255.255.0
Router(config-if)#no sh
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0,
changed state to up
```

pada router 2 :

```
Router(config)#int se0/0/0
Router(config-if)#ip add 10.10.10.2 255.255.255.0
Router(config-if)#no sh
Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0,
changed state to up
```

- lalu , aktifkan hdlc nya pada masing-masing router :

```
Router#int se0/0/0
Router(config-if)#encapsulation hdlc
```

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-setelah itu,lakukan pengecekan apakah hdlcnya sudah aktif atau belum pada masing-masing router:

pada router 1 :

```
Router#sh int se0/0/0
Serial0/0/0 is up, line protocol is up (connected)
Hardware is HD64570
Internet address is 10.10.10.1/24
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
Encapsulation HDLC, loopback not set, keepalive set (10 sec)
Last input never, output never, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0 (size/max/drops); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
    Conversations 0/0/256 (active/max active/max total)
    Reserved Conversations 0/0 (allocated/max allocated)
    Available Bandwidth 1158 kilobits/sec
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
    0 packets input, 0 bytes, 0 no buffer
    Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0
abort
    0 packets output, 0 bytes, 0 underruns
    0 output errors, 0 collisions, 1 interface resets
    0 output buffer failures, 0 output buffers swapped out
    0 carrier transitions
    DCD=up  DSR=up  DTR=up  RTS=up  CTS=up
```

pada router 2 :

```
Router#sh int se0/0/0
Serial0/0/0 is up, line protocol is up (connected)
Hardware is HD64570
Internet address is 10.10.10.2/24
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
Encapsulation HDLC, loopback not set, keepalive set (10 sec)
Last input never, output never, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0 (size/max/drops); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
    Conversations 0/0/256 (active/max active/max total)
    Reserved Conversations 0/0 (allocated/max allocated)
```

CISCO ITU MUDAH

```
Available Bandwidth 1158 kilobits/sec
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
    0 packets input, 0 bytes, 0 no buffer
    Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0
abort
    0 packets output, 0 bytes, 0 underruns
    0 output errors, 0 collisions, 1 interface resets
    0 output buffer failures, 0 output buffers swapped out
    0 carrier transitions
    DCD=up  DSR=up  DTR=up  RTS=up  CTS=up
```

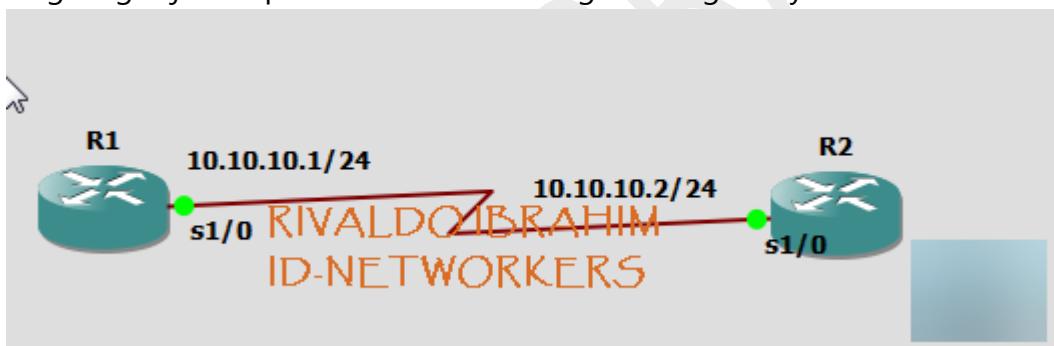
Lab 28

PPP

Pada pembahasan kali ini kita akan membahas tentang PPP. apa itu PPP ? PPP adalah singkatan dari point-to-point protocol, merupakan salah satu WAN protocol selain HDLC. PPP ini support dengan CHAP dan PAP. Sebelum itu apa sih PAP dan CHAP?. PAP (Password Authentication Protocol) yaitu prosedur otentifikasi dengan dua langkah yaitu :

- User yang akan mengakses sistem, akan mengirimkan otentifikasi identitas, biasanya berupa user dan password.
- Sistem akan mengecek identifikasi dan password dengan cara menerima atau menolak koneksi.

CHAP (Challenge Handshake Authentication) adalah protokol otentifikasi three-way-handshaking yang memberikan keamanan yang lebih tinggi dari PAP. Dalam metode ini password akan disimpan secara aman dan tidak pernah dikirimkan secara online. langsung saja kita praktikkan. berikut langkah-langkahnya :



- pertama, kita konfigurasi ppp terlebih dahulu :

```
R1(config)#username rivaldo password 123
R1(config)#int s1/0
R1(config-if)#encapsulation ppp
R1(config-if)#ppp authentication chap
R1(config-if)#ex
R2(config)#username ibrahim password 123
R2(config)#int s1/0
R2(config-if)#encapsulation ppp
R2(config-if)#ppp authentication chap
R2(config-if)#ex
```

- lalu, kita setting ip pada masing-masing router :

```
R1(config)#int s1/0
R1(config-if)#ip add 10.10.10.1 255.255.255.0
R1(config-if)#no sh
R1(config-if) #
```

CISCO ITU MUDAH

```
*Mar 1 00:04:09.367: %LINK-3-UPDOWN: Interface Serial1/0,
changed state to up
R2(config)#int s1/0
R2(config-if)#ip add 10.10.10.2 255.255.255.0
R2(config-if)#no sh
R2(config-if)#
*Mar 1 00:06:08.279: %LINK-3-UPDOWN: Interface Serial1/0,
changed state to up
```

-setelah itu,lakukan pengecekan ppp pada tiap router :

```
R1#debug ppp authentication
PPP authentication debugging is on
R1#
*Mar 1 00:08:56.631: Se1/0 PPP: Authorization required
R1#
*Mar 1 00:09:00.799: Se1/0 CHAP: O CHALLENGE id 56 len 23 from
"R1"
*Mar 1 00:09:00.803: Se1/0 CHAP: I CHALLENGE id 56 len 23 from
"R2"
*Mar 1 00:09:00.807: Se1/0 CHAP: Unable to authenticate for
peer
R1#
*Mar 1 00:09:02.871: Se1/0 PPP: Authorization required
R1#
*Mar 1 00:09:04.935: Se1/0 CHAP: O CHALLENGE id 57 len 23 from
"R1"
*Mar 1 00:09:04.935: Se1/0 CHAP: I CHALLENGE id 57 len 23 from
"R2"
*Mar 1 00:09:04.943: Se1/0 CHAP: Unable to authenticate for
peer
R1#
*Mar 1 00:09:08.983: Se1/0 PPP: Authorization required
*Mar 1 00:09:09.091: Se1/0 CHAP: O CHALLENGE id 58 len 23 from
"R1"
*Mar 1 00:09:09.155: Se1/0 CHAP: I CHALLENGE id 58 len 23 from
"R2"
*Mar 1 00:09:09.159: Se1/0 CHAP: Unable to authenticate for
peer
R1#undebbug
*Mar 1 00:09:11.255: Se1/0 PPP: Authorization required
R1#undebbug
*Mar 1 00:09:13.211: Se1/0 CHAP: O CHALLENGE id 59 len 23 from
"R1"
*Mar 1 00:09:13.255: Se1/0 CHAP: I CHALLENGE id 59 len 23 from
"R2"
```

CISCO ITU MUDAH

```
*Mar 1 00:09:13.259: Se1/0 CHAP: Unable to authenticate for
peer
R1#undebug ppp authentication
*Mar 1 00:09:17.303: Se1/0 PPP: Authorization required
*Mar 1 00:09:17.383: Se1/0 CHAP: O CHALLENGE id 60 len 23 from
"R1"
*Mar 1 00:09:17.407: Se1/0 CHAP: I CHALLENGE id 60 len 23 from
"R2"
R1#undebug ppp authentication
*Mar 1 00:09:19.467: Se1/0 PPP: Authorization required
*Mar 1 00:09:19.543: Se1/0 CHAP: O CHALLENGE id 61 len 23 from
"R1"
*Mar 1 00:09:19.543: Se1/0 CHAP: I CHALLENGE id 61 len 23 from
"R2"
*Mar 1 00:09:19.555: Se1/0 CHAP: Unable to authenticate for
peer
R2#debug ppp authentication
PPP authentication debugging is on
R2#
*Mar 1 00:10:42.451: Se1/0 CHAP: O CHALLENGE id 77 len 23 from
"R2"
*Mar 1 00:10:42.455: Se1/0 CHAP: I CHALLENGE id 77 len 23 from
"R1"
*Mar 1 00:10:42.463: Se1/0 CHAP: Unable to authenticate for
peer
R2#
*Mar 1 00:10:44.551: Se1/0 PPP: Authorization required
*Mar 1 00:10:44.631: Se1/0 CHAP: O CHALLENGE id 78 len 23 from
"R2"
*Mar 1 00:10:44.631: Se1/0 CHAP: I CHALLENGE id 78 len 23 from
"R1"
*Mar 1 00:10:44.647: Se1/0 CHAP: Unable to authenticate for
peer
R2#undebug ppp authentication
*Mar 1 00:10:46.791: Se1/0 PPP: Authorization required
*Mar 1 00:10:46.891: Se1/0 CHAP: O CHALLENGE id 79 len 23 from
"R2"
*Mar 1 00:10:46.895: Se1/0 CHAP: I CHALLENGE id 79 len 23 from
"R1"
*Mar 1 00:10:46.903: Se1/0 CHAP: Unable to authenticate for
peer
R2#undebug ppp authentication
*Mar 1 00:10:50.983: Se1/0 PPP: Authorization required
*Mar 1 00:10:51.063: Se1/0 CHAP: O CHALLENGE id 80 len 23 from
"R2"
```

CISCO ITU MUDAH

```
*Mar 1 00:10:51.063: Se1/0 CHAP: I CHALLENGE id 80 len 23 from  
"R1"  
*Mar 1 00:10:51.075: Se1/0 CHAP: Unable to authenticate for  
peer  
R2#undebug ppp authentication  
*Mar 1 00:10:55.111: Se1/0 PPP: Authorization required  
X*Mar 1 00:10:55.211: Se1/0 CHAP: O CHALLENGE id 81 len 23  
from "R2"  
*Mar 1 00:10:55.251: Se1/0 CHAP: I CHALLENGE id 81 len 23 from  
"R1"  
*Mar 1 00:10:55.255: Se1/0 CHAP: Unable to authenticate for  
peer
```

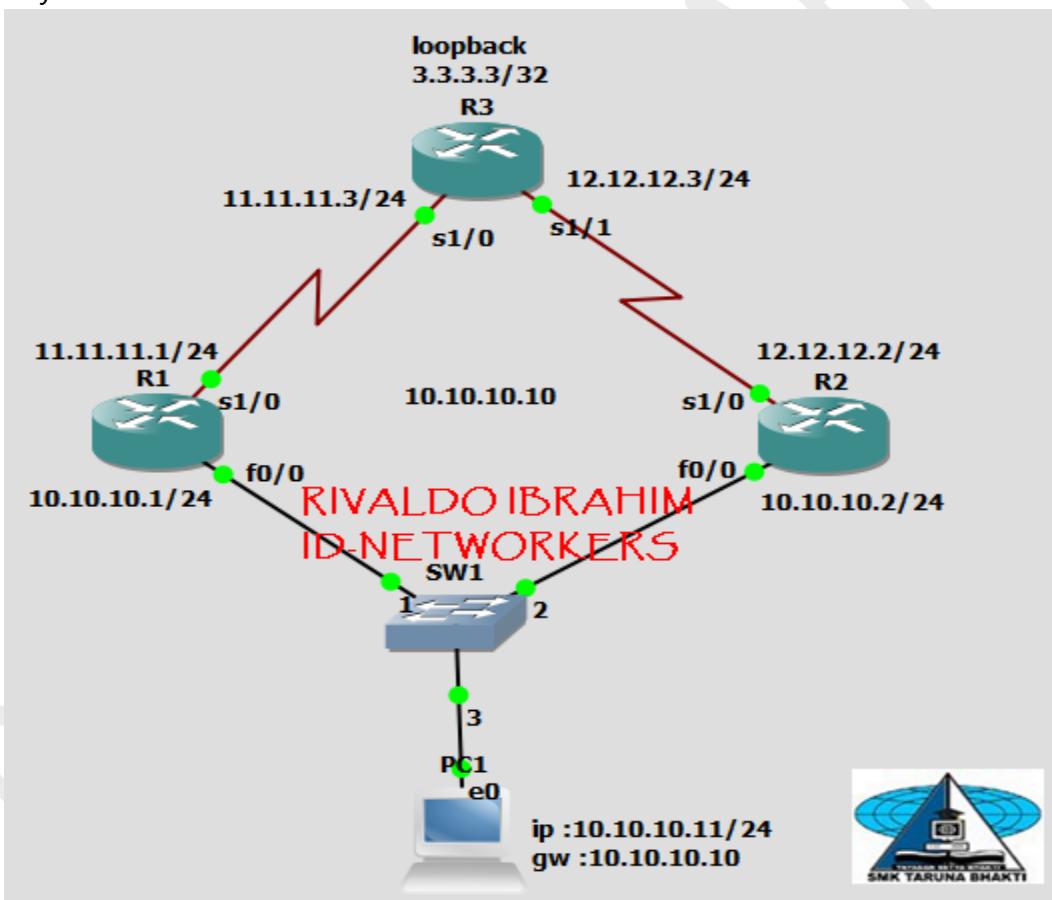
-.bila ingin menghentikan debug,maka ketikkan konfigurasi berikut :

```
R1#undebug ppp authentication  
PPP authentication debugging is off  
R2#undebug ppp authentication  
PPP authentication debugging is off
```

Lab 29

HSRP

Pada pembahasan kali ini kita akan membahas tentang HSRP. apa itu HSRP ?, HSRP singkatan dari hot standby redundancy protocol. HSRP adalah bawaan cisco dan hanya bisa berjalan apa bila router di network juga menggunakan router cisco. jadi HSRP adalah cisco proprietary. pada HSRP paket hello menggunakan UDP port 1985 dengan ip 224.0.0.2 pada HSRP versi 1 dan ip 224.0.0.102 pada HSRP versi 2 (IOS 12.2 (46)SE keatas sudah pakai versi 2. Ada 3 terminologi dalam HSRP,yaitu: Active Router: Router yang forward packet,- Standby Router: Router yang backup itu si Active Router kalo mati,- Standby Group: group HSRP = isinya router Active sama router-router Standby(seakan-akan itu 2 Router jadi 1), langsung saja kita praktekkan, berikut langkah-langkahnya :



- kita setting pada router 1 :

```
R1 (config)#int s1/0
R1 (config-if)#ip add 11.11.11.1 255.255.255.0
R1 (config-if)#no sh
R1 (config-if) #
```

CISCO ITU MUDAH

```
*Mar  1 00:35:42.443: %LINK-3-UPDOWN: Interface Serial1/0,
changed state to up
R1(config-if)#
*Mar  1 00:35:43.447: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up
R1(config-if)#description ### LINK KE INET ###
R1(config-if)#int fa0/0
R1(config-if)#ip add 10.10.10.1 255.255.255.0
R1(config-if)#no sh
R1(config-if)#
*Mar  1 00:26:06.303: %LINK-3-UPDOWN: Interface
FastEthernet0/0, changed state to up
*Mar  1 00:26:07.303: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/0, changed state to up
```

-setting hsrpnya :

```
R1(config-if)#standby 1 ip 10.10.10.10
R1(config-if)#standby 1 preempt
R1(config-if)#description ### LIN
*Mar  1 00:26:44.579: %HSRP-5-STATECHANGE: FastEthernet0/0 Grp
1 state Standby -> Active
R1(config-if)#description ### LINK KE LOCAL ###
R1(config-if)#
*Mar  1 00:30:08.747: %HSRP-5-STATECHANGE: FastEthernet0/0 Grp
1 state Standby -> Active
```

-berikan routing protokol dynamic,saya menggunakan eigrp :

```
R1(config-if)#router eigrp 1
R1(config-router)#network 12.12.12.0
R1(config-router)#network 13.13.13.0
R1(config-router)#passive-int f0/0
```

-kita setting pada router 2 :

```
R2(config)#int s1/0
R2(config-if)#ip add 12.12.12.2 255.255.255.0
R2(config-if)#no sh
R2(config-if)#
*Mar  1 00:19:46.835: %LINK-3-UPDOWN: Interface Serial1/0,
changed state to up
R2(config-if)#
*Mar  1 00:19:47.839: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up
R2(config-if)#description ### LINK KE INET ###
R2(config-if)#int fa0/0
R2(config-if)#
*Mar  1 00:20:13.847: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to down
```

CISCO ITU MUDAH

```
R2(config-if)#ip add 10.10.10.2 255.255.255.0
R2(config-if)#no sh
R2(config-if)#
*Mar 1 00:20:39.667: %LINK-3-UPDOWN: Interface
FastEthernet0/0, changed state to up
*Mar 1 00:20:40.667: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/0, changed state to up
```

-setting hsrpnya :

```
R2(config-if)#standby 1 ip 10.10.10.10
R2(config-if)#standby 1 preempt
R2(config-if)#standby 1 priority 105
R2(config-if)#
*Mar 1 00:21:21.323: %HSRP-5-STATECHANGE: FastEthernet0/0 Grp
1 state Standby -> Active
R2(config-if)#standby 1 track s1/0
R2(config-if)#description ### LINK KE LOCAL ###
R2(config-if)#
*Mar 1 00:23:43.111: %TRACKING-5-STATE: 1 interface Se1/0
line-protocol Down->Up
*Mar 1 00:23:43.687: %HSRP-5-STATECHANGE: FastEthernet0/0 Grp
1 state Standby -> Active
*Mar 1 00:23:43.815: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up
```

-berikan routing protokol dynamic,saya menggunakan eigrp :

```
R2(config-if)#router eigrp 1
R2(config-router)#network 12.12.12.0
R2(config-router)#network 10.10.10.0
R2(config-router)#passive-int f0/0
R2(config-router)#
*Mar 1 00:26:23.883: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 1:
Neighbor 12.12.12.3 (Serial1/0) is up: new adjacency
R2(config-router)#
*Mar 1 00:26:34.611: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 1:
Neighbor 12.12.12.3 (Serial1/0) is resync: peer graceful-
restart
```

-setting ip pada router 3 :

```
R3(config)#int s1/0
R3(config-if)#ip add 11.11.11.3 255.255.255.0
R3(config-if)#no sh
R3(config-if)#
*Mar 1 00:22:54.231: %LINK-3-UPDOWN: Interface Serial1/0,
changed state to up
R3(config-if)#

```

CISCO ITU MUDAH

```
*Mar  1 00:22:55.235: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up
R3(config-if)#int s1/1
R3(config-if)#ip add 12.12.12.3 255.255.255.0
R3(config-if)#no sh
R3(config-if)#
*Mar  1 00:23:23.387: %LINK-3-UPDOWN: Interface Serial1/1,
changed state to up
R3(config-if)#
*Mar  1 00:23:23.771: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to down
*Mar  1 00:23:24.391: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/1, changed state to up
R3(config-if)#int lo0
R3(config-if)#ip add 3.
*Mar  1 00:23:30.247: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R3(config-if)#ip add 3.3.3.3 255.255.255.255
```

-berikan routing protokol dynamic,saya menggunakan eigrp :

```
R3(config-if)#router eigrp 12
R3(config-router)#no router eigrp 12
R3(config)#router eigrp 1
R3(config-router)#network 0.0.0.0
R3(config-router)#
*Mar  1 00:26:09.983: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 1:
Neighbor 12.12.12.2 (Serial1/1) is up: new adjacency
R3(config-router)#no auto-summary
R3(config-router)#
*Mar  1 00:26:20.559: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 1:
Neighbor 12.12.12.2 (Serial1/1) is resync: summary configured
R3(config-router)#
*Mar  1 00:27:03.739: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up
```

-setting ip pada pc :

```
PC1> 1
PC1> ip 10.10.10.11/24 10.10.10.10
Checking for duplicate address...
PC1 : 10.10.10.11 255.255.255.0 gateway 10.10.10.10
```

CISCO ITU MUDAH

-setelah itu,lakukan pengecekan :

```
R1#sh standby br
          P indicates configured to preempt.
          |
Interface Grp Pri P State      Active      Standby      Virtual IP
Fa0/0       1  100 P Standby 10.10.10.2 local      10.10.10.10
```

```
R2#sh standby br
          P indicates configured to preempt.
          |
Interface Grp Pri P State      Active      Standby      Virtual IP
Fa0/0       1  105 P Active   local      10.10.10.1      10.10.10.10
```

-coba tes ping :

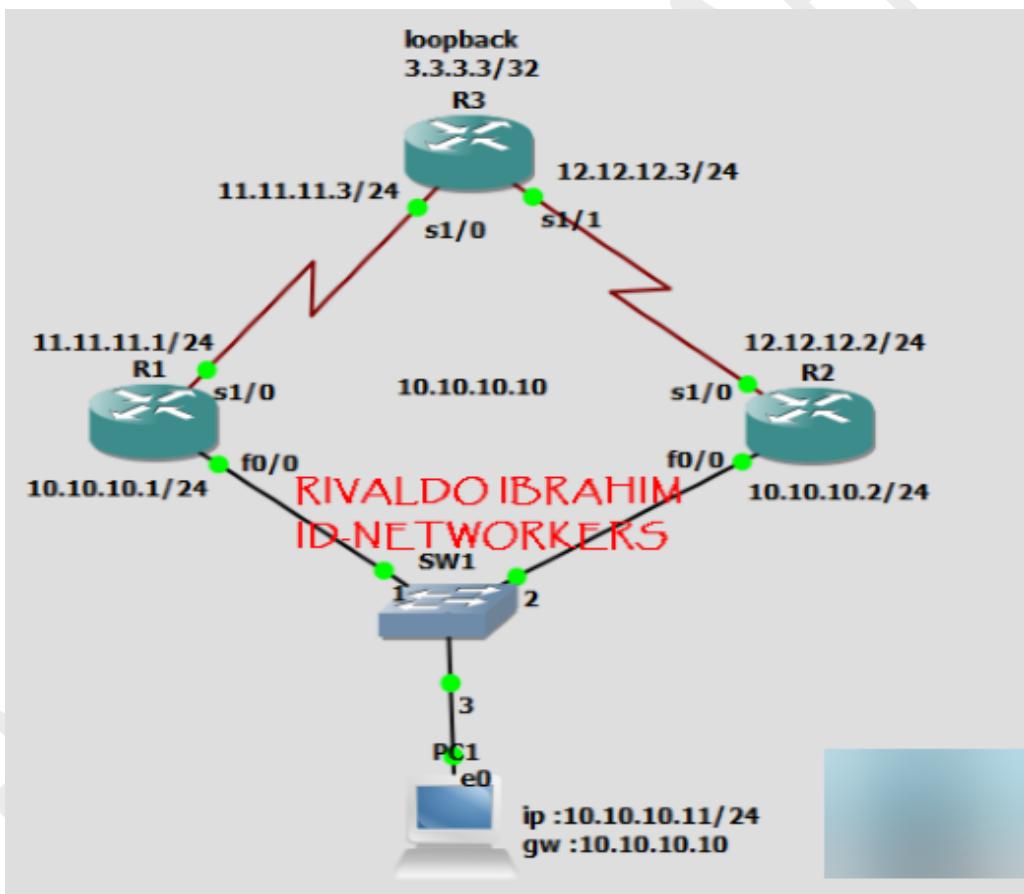
```
PC1> ping 3.3.3.3
84 bytes from 3.3.3.3 icmp_seq=1 ttl=254 time=62.400 ms
84 bytes from 3.3.3.3 icmp_seq=2 ttl=254 time=93.600 ms
84 bytes from 3.3.3.3 icmp_seq=3 ttl=254 time=78.000 ms
84 bytes from 3.3.3.3 icmp_seq=4 ttl=254 time=78.000 ms
84 bytes from 3.3.3.3 icmp_seq=5 ttl=254 time=78.000 ms
```

```
PC1> trace 3.3.3.3
trace to 3.3.3.3, 8 hops max, press Ctrl+C to stop
 1  10.10.10.2  78.000 ms  46.801 ms  31.200 ms
 2  *12.12.12.3  78.000 ms (ICMP type:3, code:3, Destination port unreachable)
```

VRRP

Pada pembahasan kali ini saya akan membahas tentang VRRP, apa itu VRRP ? VRRP singkatan dari virtual router redundancy protocol, vrrp dikembangkan oleh IEEE ini memiliki tujuan yang sama yaitu redundancy. fungsinya untuk menyediakan backup gateway. sehingga master failed traffic akan di lewaskan ke backup.

Master adalah sebuah instance VRRP yang melakukan fungsi routing untuk virtual router pada suatu waktu. Hanya satu master yang aktif pada suatu waktu untuk sebuah VRID yang diberikan. Master juga merujuk pada sebuah kondisi dari VRRP FS ketika VRRP instance sedang beroperasi sebagai master (yaitu kondisi Master/Master State). Backup adalah sebuah instance VRRP untuk sebuah VRID yang aktif namun tidak dalam kondisi master. langsung saja kita praktikkan, berikut ini langkah-langkahnya :



-hapus konfigurasi hsrp dulu :

```
R1 (config)#int f0/0
R1 (config-if)#no standby 1

R2 (config)#int f0/0
```

```
R2(config-if)#no standby 1
```

-setting vrrp nya :

```
R1(config-if)#int f0/0
R1(config-if)#ip add 10.10.10.1 255.255.255.0
R1(config-if)#
*Mar 1 01:03:41.235: %VRRP-6-STATECHANGE: Fa0/0 Grp 1 state
Init -> Backup
*Mar 1 01:03:41.243: %VRRP-6-STATECHANGE: Fa0/0 Grp 1 state
Backup -> Disable
*Mar 1 01:03:41.243: %VRRP-6-STATECHANGE: Fa0/0 Grp 1 state
Init -> Backup
R1(config-if)#
*Mar 1 01:03:44.855: %VRRP-6-STATECHANGE: Fa0/0 Grp 1 state
Backup -> Master
R1(config-if)#vrrp 1 ip 10.10.10.10
R1(config-if)#vrrp 1 priority 110
R1(config-if)#vrrp 1 trac
R1(config-if)#vrrp 1 track 1 de
R1(config-if)#vrrp 1 track 1 decrement 20
% tracked object does not exist
R1(config-if)#track 1 ip route 3.3.3.3/32 reachability
R2(config)#int f0/0
R2(config-if)#no standby 1
R2(config-if)#int f0/0
R2(config-if)#ip add 10.10.10.2 255.255.255.0
R2(config-if)#vrrp 1 ip 10.10.10.10
R2(config-if)#
*Mar 1 00:56:50.855: %VRRP-6-STATECHANGE: Fa0/0 Grp 1 state
Init -> Backup
```

-setting ip di pc :

```
PC1> 1
PC1> ip 10.10.10.11/24 10.10.10.10
Checking for duplicate address...
PC1 : 10.10.10.11 255.255.255.0 gateway 10.10.10.10
```

-coba lakukan pengecekan :

```
R1#sh vrrp br
Interface Grp Pri Time Own Pre State Master addr Group addr
Fa0/0     1   110   3570 Y    Master 10.10.10.1 10.10.10.10
R2#sh vrrp br
Interface Grp Pri Time Own Pre State Master addr Group addr
Fa0/0     1   100   3609 Y    Backup 10.10.10.1 10.10.10.10
```

-coba kita shutdown interface fa0/0 di Router 1 sebagai master :

```
R1(config)#int f0/0
R1(config-if)#sh
R1(config-if)#
*Mar  1 01:13:27.703: %VRRP-6-STATECHANGE: Fa0/0 Grp 1 state
Master -> Init
R1(config-if)#
*Mar  1 01:13:29.707: %LINK-5-CHANGED: Interface
FastEthernet0/0, changed state to administratively down
*Mar  1 01:13:30.707: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/0, changed state to down
R2#
*Mar  1 01:04:52.995: %VRRP-6-STATECHANGE: Fa0/0 Grp 1 state
Backup -> Master
```

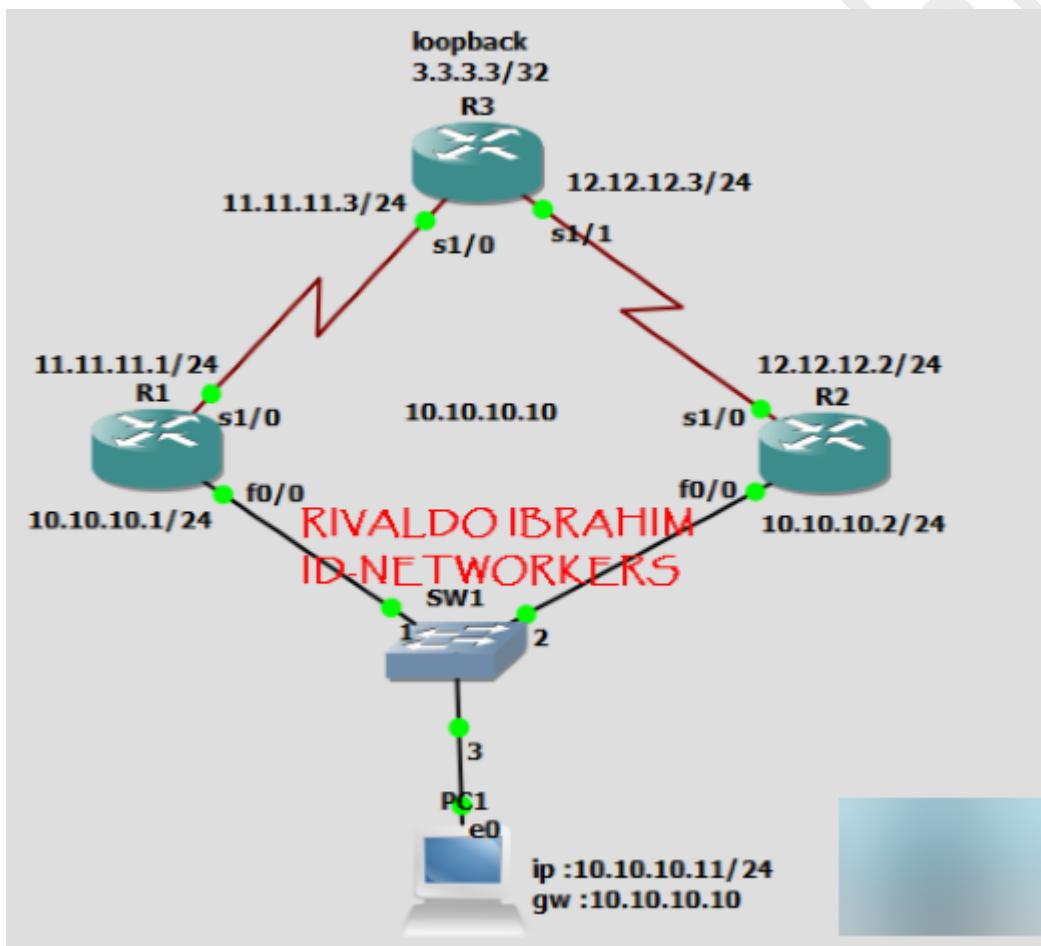
-coba kita cek pada vrrp brief:

```
R1(config-if)#do sh vrrp brief
Interface  Grp Pri Time   Own Pre State Master addr Group addr
Fa0/0      1   110 3570    Y  Init      0.0.0.0  10.10.10.10
R2#sh vrrp brief
Interface  Grp Pri Time   Own Pre State Master addr Group addr
Fa0/0      1   100 3609    Y  Master    10.10.10.2 10.10.10.10
```

GLBP

Pada pembahasan kali ini kita akan membahas tentang GLBP, apa itu GLBP ?
GLBP singkatan dari gateway load balancing protocol. Selain HSRP dan VRRP, Cisco juga mengembangkan teknologi advance yaitu glbp. glbp ini masih bisa melakukan load balancing membagi traffic walaupun router menjadi forwarding/active atau router standby/backup.

Dan menggunakan algoritma Weighted Load Balancing: traffic yang diarahkan ke router tergantung settingan "weight" yang kita kasih, Host-Dependent: host akan diijinkan memakai virtual address dia sendiri, selama virtual address berjalan pada GLBP group yang sama. langsung saja kita praktikkan. berikut langkah-langkahnya :



-hapus konfigurasi vrrp :

```
R1(config-if)#default int f0/0  
Building configuration...
```

```
Interface FastEthernet0/0 set to default configuration
```

CISCO ITU MUDAH

```
R2(config)#int f0/0
R2(config-if)#default int f0/0
Building configuration...

Interface FastEthernet0/0 set to default configuration
R2(config)#
*Mar  1 01:10:29.491: %VRRP-6-STATECHANGE: Fa0/0 Grp 1 state
Master -> Disable
```

-setting glbp :

```
R1(config)#int f0/0
R1(config-if)#ip add 10.10.10.1 255.255.255.0
R1(config-if)#no sh
R1(config-if)#glbp
*Mar  1 01:20:19.395: %LINK-3-UPDOWN: Interface
FastEthernet0/0, changed state to up
*Mar  1 01:20:20.395: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/0, changed state to up
R1(config-if)#glbp 1 ip 10.10.10.10
R1(config-if)#
*Mar  1 01:20:59.295: %GLBP-6-STATECHANGE: FastEthernet0/0 Grp
1 state Standby -> Active
R1(config-if)#
*Mar  1 01:21:09.295: %GLBP-6-FWDSTATECHANGE: FastEthernet0/0
Grp 1 Fwd 1 state Listen -> Active
R1(config-if)#{^Z
R2(config)#int f0/0
R2(config-if)#ip add 10.10.10.2 255.255.255.0
R2(config-if)#no sh
R2(config-if)#glbp 1 ip 10.10.10.10
R2(config-if)#
*Mar  1 01:13:09.331: %GLBP-6-FWDSTATECHANGE: FastEthernet0/0
Grp 1 Fwd 2 state Listen -> Active
```

-setting ip di pc :

```
PC1> ip 10.10.10.11/24 10.10.10.10
Checking for duplicate address...
PC1 : 10.10.10.11 255.255.255.0 gateway 10.10.10.10
```

-lakukan pengecekan :

```
R1#sh glbp br
Interface GrpFwd Pri State Address Active router Standby router
Fa0/0      1   -   100 Active 10.10.10.10 local      10.10.10.2
Fa0/0      1   1   -   Active 0007.b400.0101 local      -
Fa0/0      1   2   -   Listen 0007.b400.0102 10.10.10.2   -

R2#sh glbp br
```

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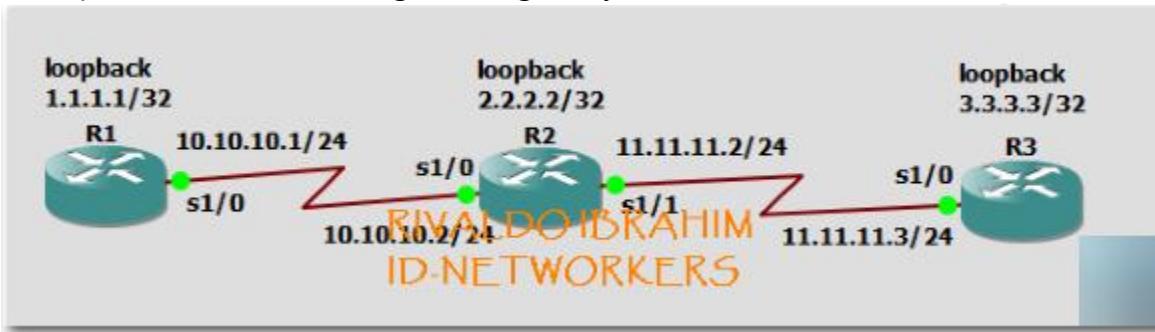
```
Interface GrpFwdPri State Address Active router Standby router
Fa0/0      1    - 100 Standby 10.10.10.10  10.10.10.1      local
Fa0/0      1    1    - Listen   0007.b400.0101 10.10.10.1      -
Fa0/0      1    2    - Active   0007.b400.0102 local           -
```

-coba trace dari pc 1 ke R2 :

```
PC1> trace 3.3.3.3
trace to 3.3.3.3, 8 hops max, press Ctrl+C to stop
 1  10.10.10.1  30.001 ms  40.000 ms  10.000 ms
 2  *10.10.10.1  10.000 ms (ICMP type:3, code:1, Destination
host unreachable)
```

EIGRP-basic

Pada kesempatan kali ini kita akan membahas tentang eigrp basic, disini kita melakukan routing dengan eigrp, eigrp ini termasuk dynamic routing dan hanya merupakan priority cisco, berarti hanya bisa digunakan di cisco. Untuk konsepnya sama seperti EIGRP lab sebelumnya. Bedanya kita akan menggunakan kabel serial langsung saja kita praktikkan. Berikut langkah-langkahnya :



-setting ip address :

```
R1(config)#int lo0
R1(config-if)#
*Mar 1 00:04:54.059: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R1(config-if)#ip add 1.1.1.1 255.255.255.255
R1(config-if)#int s1/0
R1(config-if)#ip add 10.10.10.1 255.255.255.0
R1(config-if)#no sh
R1(config-if)#
*Mar 1 00:06:30.051: %LINK-3-UPDOWN: Interface Serial1/0,
changed state to up
R1(config-if)#
*Mar 1 00:06:31.055: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up
R1(config-if)#
*Mar 1 00:06:55.487: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to down
R1(config-if)#
*Mar 1 00:07:25.455: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up

R2(config)#int lo0
R2(config-if)#
*Mar 1 00:06:59.571: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R2(config-if)#ip add 2.2.2.2 255.255.255.255
R2(config-if)#int s1/0
R2(config-if)#ip add 10.10.10.2 255.255.255.0
```

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```
R2(config-if)#no sh
R2(config-if)#
*Mar  1 00:07:33.083: %LINK-3-UPDOWN: Interface Serial1/0,
changed state to up
R2(config-if)#
*Mar  1 00:07:34.087: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up
R2(config-if)#int s1/1
R2(config-if)#ip add 11.11.11.2 255.255.255.0
R2(config-if)#no sh
R2(config-if)#
*Mar  1 00:07:55.371: %LINK-3-UPDOWN: Interface Serial1/1,
changed state to up
R2(config-if)#
*Mar  1 00:07:56.375: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/1, changed state to up
R2(config-if)#
*Mar  1 00:08:23.895: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/1, changed state to down
R2(config-if)#
*Mar  1 00:12:03.863: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/1, changed state to up

R3(config)#int lo0
R3(config-if)#
*Mar  1 00:11:12.771: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R3(config-if)#ip add 3.3.3.3 255.255.255.255
R3(config-if)#int s1/0
R3(config-if)#ip add 11.11.11.3 255.255.255.0
R3(config-if)#no sh
R3(config-if)#
*Mar  1 00:11:44.483: %LINK-3-UPDOWN: Interface Serial1/0,
changed state to up
R3(config-if)#
*Mar  1 00:11:45.487: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up
```

-setting eigrp pada masing-masing router :

```
R1(config-if)#router eigrp 10
R1(config-router)#network 1.1.1.1 0.0.0.0
R1(config-router)#network 10.10.10.1 0.0.0.0
R1(config-router)#no auto-summary
R1(config-router)#
*Mar  1 00:14:24.167: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.2 (Serial1/0) is up: new adjacency
```

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```
R1(config-router)#
*Mar 1 00:14:48.791: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.2 (Serial1/0) is resync: peer graceful-
restart
R1(config-router)#{^Z

R2(config-if)#router eigrp 10
R2(config-router)#network 2.2.2.2 0.0.0.0
R2(config-router)#network 10.10.10.2 0.0.0.0
R2(config-router)#networ
*Mar 1 00:14:35.715: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (Serial1/0) is up: new adjacency
R2(config-router)#network 11.11.11.2 0.0.0.0
R2(config-router)#no auto-summary
R2(config-router)#
*Mar 1 00:15:00.183: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (Serial1/0) is resync: summary configured
R2(config-router)#
*Mar 1 00:15:33.003: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (Serial1/1) is up: new adjacency
R2(config-router)#
*Mar 1 00:15:41.903: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (Serial1/1) is resync: peer graceful-
restart

R3(config-if)#router eigrp 10
R3(config-router)#network 3.3.3.3
R3(config-router)#network 3.3.3.3 0.0.0.0
R3(config-router)#network 11.11.11.3 0.0.0.0
R3(config-router)#
*Mar 1 00:15:17.303: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.2 (Serial1/0) is up: new adjacency
R3(config-router)#no auto-summary
R3(config-router)#
*Mar 1 00:15:26.107: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.2 (Serial1/0) is resync: summary configured
R3(config-router)#{^Z
```

-lakukan pengecekan :

```
R1#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
      inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
      type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
```

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```
i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -  
IS-IS level-2  
ia - IS-IS inter area, * - candidate default, U - per-  
user static route  
o - ODR, P - periodic downloaded static route  
  
Gateway of last resort is not set  
  
      1.0.0.0/32 is subnetted, 1 subnets  
C        1.1.1.1 is directly connected, Loopback0  
 2.0.0.0/32 is subnetted, 1 subnets  
D    2.2.2.2 [90/2297856] via 10.10.10.2, 00:00:57,  
Serial1/0  
 3.0.0.0/32 is subnetted, 1 subnets  
D    3.3.3.3 [90/2809856] via 10.10.10.2, 00:00:15,  
Serial1/0  
      10.0.0.0/24 is subnetted, 1 subnets  
C        10.10.10.0 is directly connected, Serial1/0  
 11.0.0.0/24 is subnetted, 1 subnets  
D    11.11.11.0 [90/2681856] via 10.10.10.2, 00:00:57,  
Serial1/0
```

-coba kita tes ping :

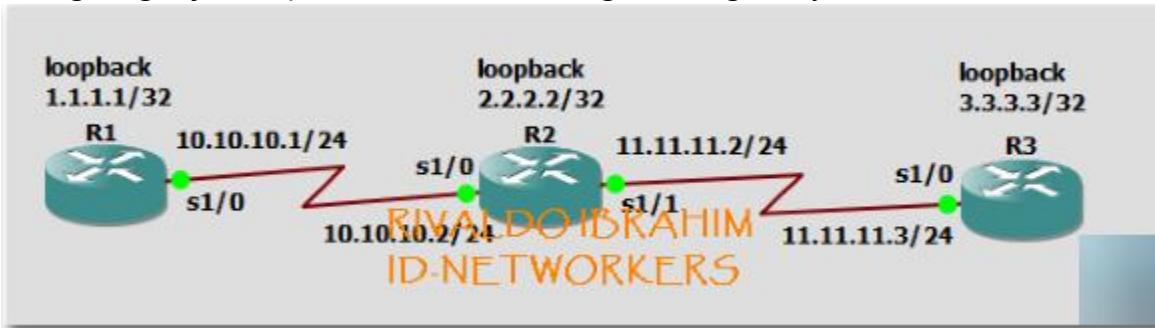
```
R1#ping 2.2.2.2  
  
Type escape sequence to abort.  
Sending 5, 100-byte ICMP Echos to 2.2.2.2, timeout is 2  
seconds:  
!!!!!  
Success rate is 100 percent (5/5), round-trip min/avg/max =  
16/38/76 ms
```

```
R1#ping 3.3.3.3  
  
Type escape sequence to abort.  
Sending 5, 100-byte ICMP Echos to 3.3.3.3, timeout is 2  
seconds:  
!!!!!  
Success rate is 100 percent (5/5), round-trip min/avg/max =  
64/95/152 ms
```

Lab 33

EIGRP filtering distribute list

Pada pembahasan kali ini,kita akan membahas tentang filtering distribute list,kita masih menggunakan topologi yang sama.kita akan mencoba memblok ip 2.2.2.2 agar tidak muncul pada table route router 1,ada 2 cara bisa dengan IN bisa dengan OUT.langsung saja kita praktekkan.berikut langkah-langkahnya :



Cara pertama :

-kita filter dengan menggunakan IN,berikut caranya :

```
R1(config)#access-list 10 deny 2.2.2.2
R1(config)#access-list 10 permit any
R1(config)#router eigrp 10
R1(config-router)#distribute 10 in s1/0
R1(config-router)#^Z
R1#sh ip
*Mar 1 03:59:22.031: %SYS-5-CONFIG_I: Configured from console
by console
R1#sh ip route\
*Mar 1 03:59:28.951: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.2 (Serial1/0) is resync: route configuration
changed
```

-coba kita lihat table route :

```
R1#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
user static route
      o - ODR, P - periodic downloaded static route

Gateway of last resort is not set
```

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```
        1.0.0.0/32 is subnetted, 1 subnets
C          1.1.1.1 is directly connected, Loopback0
        3.0.0.0/32 is subnetted, 1 subnets
D          3.3.3.3 [90/2809856] via 10.10.10.2, 03:44:03,
Serial1/0
        10.0.0.0/24 is subnetted, 1 subnets
C          10.10.10.0 is directly connected, Serial1/0
        11.0.0.0/24 is subnetted, 1 subnets
D          11.11.11.0 [90/2681856] via 10.10.10.2, 03:44:45,
Serial1/0
```

-lalu,kita balikan lagi ip loopback 2.2.2.2 dalam tabel route R1 :

```
R1(config)#no access-list 10 deny 2.2.2.2
R1(config)#no access-list 10 permit any
R1(config)#access-list 10 permit any
*Mar  1 04:02:33.450: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.2 (Serial1/0) is resync: route configuration
changed
R1(config)#router eigrp 10
R1(config-router)#no distribute 10 in s1/0
R1(config-router)#^Z
R1#sh
*Mar  1 04:02:52.334: %SYS-5-CONFIG_I: Configured from console
by console
```

-coba kita lihat table route :

```
R1#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
user static route
      o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

        1.0.0.0/32 is subnetted, 1 subnets
C          1.1.1.1 is directly connected, Loopback0
        2.0.0.0/32 is subnetted, 1 subnets
D          2.2.2.2 [90/2297856] via 10.10.10.2, 00:00:22,
Serial1/0
```

```
3.0.0.0/32 is subnetted, 1 subnets
D      3.3.3.3 [90/2809856] via 10.10.10.2, 03:47:25,
Serial1/0
      10.0.0.0/24 is subnetted, 1 subnets
C          10.10.10.0 is directly connected, Serial1/0
      11.0.0.0/24 is subnetted, 1 subnets
D      11.11.11.0 [90/2681856] via 10.10.10.2, 03:48:07,
Serial1/0
R1#
*Mar 1 04:03:00.046: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.2 (Serial1/0) is resync: route configuration
changed
```

-coba lihat table route lagi :

```
R1#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
user static route
      o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

      1.0.0.0/32 is subnetted, 1 subnets
C          1.1.1.1 is directly connected, Loopback0
      2.0.0.0/32 is subnetted, 1 subnets
D      2.2.2.2 [90/2297856] via 10.10.10.2, 00:00:31,
Serial1/0
      3.0.0.0/32 is subnetted, 1 subnets
D      3.3.3.3 [90/2809856] via 10.10.10.2, 03:47:34,
Serial1/0
      10.0.0.0/24 is subnetted, 1 subnets
C          10.10.10.0 is directly connected, Serial1/0
      11.0.0.0/24 is subnetted, 1 subnets
D      11.11.11.0 [90/2681856] via 10.10.10.2, 03:48:15,
Serial1/0
R1#
```

Cara kedua :

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-sekarang,kita filter lagi ip 2.2.2.2 dengan menggunakan OUT:

```
R2(config-router)#router eigrp 10
R2(config-router)#access-list 10 deny 2.2.2.2
R2(config)#access-list 10 permit any
R2(config)#router eigrp 10
R2(config-router)#distribute-list 10 out s1/0
R2(config-router)#
*Mar 1 04:07:30.502: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (Serial1/0) is resync: route configuration
changed
R2(config-router)#

```

-coba lakukan pengecekan :

```
R1#sh ip route
*Mar 1 04:07:19.186: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.2 (Serial1/0) is resync: peer graceful-
restart
R1#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
       inter area
           N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
       type 2
           E1 - OSPF external type 1, E2 - OSPF external type 2
           i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
       IS-IS level-2
           ia - IS-IS inter area, * - candidate default, U - per-
       user static route
           o - ODR, P - periodic downloaded static route

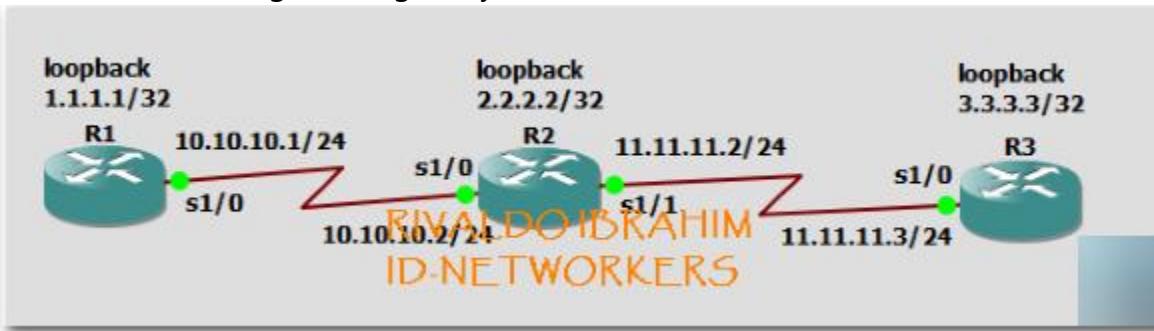
Gateway of last resort is not set

      1.0.0.0/32 is subnetted, 1 subnets
C          1.1.1.1 is directly connected, Loopback0
 3.0.0.0/32 is subnetted, 1 subnets
D       3.3.3.3 [90/2809856] via 10.10.10.2, 03:51:54,
 Serial1/0
          10.0.0.0/24 is subnetted, 1 subnets
C          10.10.10.0 is directly connected, Serial1/0
          11.0.0.0/24 is subnetted, 1 subnets
D       11.11.11.0 [90/2681856] via 10.10.10.2, 03:52:35,
 Serial1/0

```

EIGRP prefix list in

Pada pembahasan kali ini,kita akan membahas tentang prefix list in,jadi kita akan buat loopback dari subnet yang berbeda dari prefix 24 sampai 32.setelah itu kita akan coba memblok 24 sampai 28,selain dari itu ditampilkan pada router 3.langsung saja kita praktekan.berikut langkah-langkahnya :



-pertama,kita setting ip pada masing-masing router :

```
R1(config)#int lo0
R1(config-if)#
*Mar 1 00:00:59.931: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R1(config-if)#ip add 1.1.1.1 255.255.255.255
R1(config-if)#int s1/0
R1(config-if)#ip add 10.10.10.1 255.255.255.0
R1(config-if)#serial restart-delay 0
R1(config-if)#no sh
R1(config-if)#
*Mar 1 00:01:37.691: %LINK-3-UPDOWN: Interface Serial1/0,
changed state to up
R1(config-if)#
*Mar 1 00:01:38.695: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up
R1(config-if)#
*Mar 1 00:02:05.455: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to down
R1(config-if)#
*Mar 1 00:02:55.443: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up

R2(config)#int lo0
R2(config-if)#
*Mar 1 00:01:52.407: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R2(config-if)#ip add 2.2.2.2 255.255.255.255
R2(config-if)#int s1/0
R2(config-if)#ip add 10.10.10.2 255.255.255.0
```

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```
R2(config-if)#serial restart-delay 0
R2(config-if)#no sh
R2(config-if)#
*Mar  1 00:02:27.395: %LINK-3-UPDOWN: Interface Serial1/0,
changed state to up
R2(config-if)#
*Mar  1 00:02:28.399: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up
R2(config-if)#int s1/1
R2(config-if)#ip add 11.11.11.2 255.255.255.0
R2(config-if)#serial restart-delay 0
R2(config-if)#no sh
R2(config-if)#
*Mar  1 00:02:53.283: %LINK-3-UPDOWN: Interface Serial1/1,
changed state to up
R2(config-if)#
*Mar  1 00:02:54.287: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/1, changed state to up
R2(config-if)#
*Mar  1 00:03:14.615: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/1, changed state to down
R2(config-if)#
*Mar  1 00:04:24.595: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/1, changed state to up

R3(config)#int lo0
R3(config-if)#
*Mar  1 00:03:55.859: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R3(config-if)#ip add 3.3.3.3 255.255.255.255
R3(config-if)#int s1/0
R3(config-if)#ip add 11.11.11.3 255.255.255.0
R3(config-if)#serial restart-delay 0
R3(config-if)#no sh
R3(config-if)#
*Mar  1 00:04:34.455: %LINK-3-UPDOWN: Interface Serial1/0,
changed state to up
R3(config-if)#
*Mar  1 00:04:35.459: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up
```

-lalu,kita buat routing protocol eigrp :

```
R1(config-if)#router eigrp 10
R1(config-router)#network 0.0.0.0
R1(config-router)#no auto-summary
R1(config-router)#

```

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```
*Mar 1 00:05:10.783: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 10.10.10.2 (Serial1/0) is up: new adjacency  
R1(config-router)#  
*Mar 1 00:05:19.379: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 10.10.10.2 (Serial1/0) is resync: peer graceful-  
restart  
  
R2(config-if)#router eigrp 10  
R2(config-router)#network 0.0.0.0  
R2(config-router)#no a  
*Mar 1 00:04:55.383: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 10.10.10.1 (Serial1/0) is up: new adjacency  
R2(config-router)#no auto-summary  
R2(config-router)#  
*Mar 1 00:05:03.927: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 10.10.10.1 (Serial1/0) is resync: summary configured  
R2(config-router)#  
*Mar 1 00:05:17.447: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 11.11.11.3 (Serial1/1) is up: new adjacency  
R2(config-router)#  
*Mar 1 00:05:22.483: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 11.11.11.3 (Serial1/1) is resync: peer graceful-  
restart  
  
R3(config-if)#router eigrp 10  
R3(config-router)#network 0.0.0.0  
R3(config-router)#no a  
*Mar 1 00:05:33.491: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 11.11.11.2 (Serial1/0) is up: new adjacency  
R3(config-router)#no auto-summary  
R3(config-router)#  
*Mar 1 00:05:38.339: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 11.11.11.2 (Serial1/0) is resync: summary configured  
R3(config-router)#  
*Mar 1 00:10:13.879: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 11.11.11.2 (Serial1/0) is resync: peer graceful-  
restart
```

-setelah itu,kita buat ip loopback pada router 1 yang bermacam-macam untuk di filter :

```
R1(config-router)#int lo1  
R1(config-if)#  
*Mar 1 00:06:03.311: %LINEPROTO-5-UPDOWN: Line protocol on  
Interface Loopback1, changed state to up  
R1(config-if)#ip add 3.3.3.17 255.255.255.240  
  
R1(config-if)#int lo2
```

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```
R1(config-if)#  
*Mar 1 00:06:37.971: %LINEPROTO-5-UPDOWN: Line protocol on  
Interface Loopback2, changed state to up  
R1(config-if)#ip add 3.3.3.33 255.255.255.248  
R1(config-if)#int lo3  
R1(config-if)#  
*Mar 1 00:06:58.827: %LINEPROTO-5-UPDOWN: Line protocol on  
Interface Loopback3, changed state to up  
R1(config-if)#ip add 3.3.3.150 255.255.255.252  
R1(config-if)#int lo4  
R1(config-if)#  
*Mar 1 00:07:18.663: %LINEPROTO-5-UPDOWN: Line protocol on  
Interface Loopback4, changed state to up  
R1(config-if)#ip add 3.3.3.200 255.255.255.240  
R1(config-if)#int lo5  
R1(config-if)#  
*Mar 1 00:07:42.243: %LINEPROTO-5-UPDOWN: Line protocol on  
Interface Loopback5, changed state to up  
R1(config-if)#ip add 3.3.3.100 255.255.255.224
```

-coba lihat table route pada router 1 :

```
R1#sh ip route  
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP  
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF  
       inter area  
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external  
       type 2  
       E1 - OSPF external type 1, E2 - OSPF external type 2  
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -  
       IS-IS level-2  
       ia - IS-IS inter area, * - candidate default, U - per-  
       user static route  
       o - ODR, P - periodic downloaded static route  
  
Gateway of last resort is not set  
  
      1.0.0.0/32 is subnetted, 1 subnets  
C        1.1.1.1 is directly connected, Loopback0  
      2.0.0.0/32 is subnetted, 1 subnets  
D        2.2.2.2 [90/2297856] via 10.10.10.2, 00:02:53,  
Serial1/0  
      3.0.0.0/8 is variably subnetted, 6 subnets, 5 masks  
D        3.3.3.3/32 [90/2809856] via 10.10.10.2, 00:02:34,  
Serial1/0  
C        3.3.3.16/28 is directly connected, Loopback1  
C        3.3.3.32/29 is directly connected, Loopback2
```

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```
C      3.3.3.96/27 is directly connected, Loopback5
C      3.3.3.148/30 is directly connected, Loopback3
C      3.3.3.192/28 is directly connected, Loopback4
    10.0.0.0/24 is subnetted, 1 subnets
C          10.10.10.0 is directly connected, Serial1/0
    11.0.0.0/24 is subnetted, 1 subnets
D          11.11.11.0 [90/2681856] via 10.10.10.2, 00:02:55,
Serial1/0
R1#
*Mar 1 00:10:12.523: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.2 (Serial1/0) is resync: peer graceful-
restart

R1#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-
user static route
       o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

      1.0.0.0/32 is subnetted, 1 subnets
C          1.1.1.1 is directly connected, Loopback0
      2.0.0.0/32 is subnetted, 1 subnets
D          2.2.2.2 [90/2297856] via 10.10.10.2, 00:05:17,
Serial1/0
      3.0.0.0/8 is variably subnetted, 6 subnets, 5 masks
D          3.3.3.3/32 [90/2809856] via 10.10.10.2, 00:04:58,
Serial1/0
C          3.3.3.16/28 is directly connected, Loopback1
C          3.3.3.32/29 is directly connected, Loopback2
C          3.3.3.96/27 is directly connected, Loopback5
C          3.3.3.148/30 is directly connected, Loopback3
C          3.3.3.192/28 is directly connected, Loopback4
    10.0.0.0/24 is subnetted, 1 subnets
C          10.10.10.0 is directly connected, Serial1/0
    11.0.0.0/24 is subnetted, 1 subnets
D          11.11.11.0 [90/2681856] via 10.10.10.2, 00:05:20,
Serial1/0
```

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-lalu,kita konfigurasi prefix list filtering pada router 2 :

```
R2(config-router)#ip prefix-list EIGRP_IN seq 5 deny 3.3.3.0/24
1e 28
R2(config)#ip prefix-list EIGRP_IN seq 10 permit 0.0.0.0/0 le
32
R2(config)#router eigrp 10
R2(config-router)#distribute-list prefix EIGRP_IN in
R2(config-router)#
*Mar 1 00:09:57.731: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (Serial1/0) is resync: route configuration
changed
*Mar 1 00:09:57.731: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (Serial1/1) is resync: route configuration
changed
```

-coba lihat table route di router 2 :

```
R2#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
user static route
      o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

      1.0.0.0/32 is subnetted, 1 subnets
D        1.1.1.1 [90/2297856] via 10.10.10.1, 00:05:11,
Serial1/0
      2.0.0.0/32 is subnetted, 1 subnets
C        2.2.2.2 is directly connected, Loopback0
      3.0.0.0/8 is variably subnetted, 3 subnets, 3 masks
D        3.3.3.3/32 [90/2297856] via 11.11.11.3, 00:04:44,
Serial1/1
D        3.3.3.32/29 [90/2297856] via 10.10.10.1, 00:03:28,
Serial1/0
D        3.3.3.148/30 [90/2297856] via 10.10.10.1, 00:03:07,
Serial1/0
      10.0.0.0/24 is subnetted, 1 subnets
C        10.10.10.0 is directly connected, Serial1/0
      11.0.0.0/24 is subnetted, 1 subnets
```

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```
C      11.11.11.0 is directly connected, Serial1/1
```

-coba cek pada router 3 :

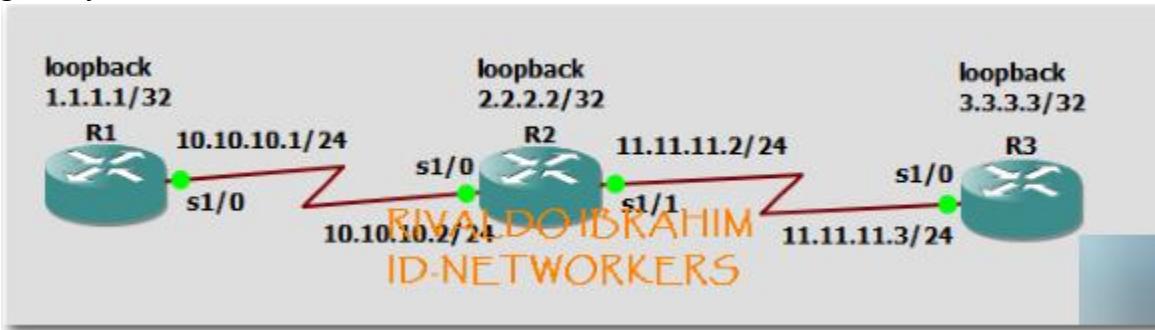
```
R3#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
       inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
       type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
           i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
       IS-IS level-2
           ia - IS-IS inter area, * - candidate default, U - per-
       user static route
           o - ODR, P - periodic downloaded static route
```

Gateway of last resort is not set

```
    1.0.0.0/32 is subnetted, 1 subnets
D      1.1.1.1 [90/2809856] via 11.11.11.2, 00:17:51,
Serial1/0
    2.0.0.0/32 is subnetted, 1 subnets
D      2.2.2.2 [90/2297856] via 11.11.11.2, 00:17:51,
Serial1/0
    3.0.0.0/8 is variably subnetted, 3 subnets, 3 masks
C      3.3.3.3/32 is directly connected, Loopback0
D      3.3.3.32/29 [90/2809856] via 11.11.11.2, 00:16:29,
Serial1/0
D      3.3.3.148/30 [90/2809856] via 11.11.11.2, 00:16:09,
Serial1/0
    10.0.0.0/24 is subnetted, 1 subnets
D      10.10.10.0 [90/2681856] via 11.11.11.2, 00:17:53,
Serial1/0
    11.0.0.0/24 is subnetted, 1 subnets
C      11.11.11.0 is directly connected, Serial1/0
```

Lab 35
EIGRP filtering prefix list out

Pada pembahasan kali ini,kita akan membahas tentang filtering prefix list out,sama seperti tadi tetapi di filter dan hanya muncul beberapa prefix pada table route,hampir menyerupai summarization.langsung saja kita praktekkan,berikut langkah-langkahnya :



-pertama,kita hapus konfigurasi prefix list in :

```
R2(config)#router eigrp 10
R2(config-router)#no distribute-list prefix EIGRP_IN in
R2(config-router)#
*Mar 1 00:27:13.247: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (Serial1/0) is resync: route configuration
changed
*Mar 1 00:27:13.251: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (Serial1/1) is resync: route configuration
changed
```

-lalu,kita pastikan semua network muncul pada router 1 :

```
R1#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
user static route
      o - ODR, P - periodic downloaded static route

Gateway of last resort is not set
```

```
          1.0.0.0/32 is subnetted, 1 subnets
C            1.1.1.1 is directly connected, Loopback0
          2.0.0.0/32 is subnetted, 1 subnets
D            2.2.2.2 [90/2297856] via 10.10.10.2, 00:22:13,
Serial1/0
```

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```
3.0.0.0/8 is variably subnetted, 6 subnets, 5 masks
D      3.3.3.3/32 [90/2809856] via 10.10.10.2, 00:21:55,
Serial1/0
C      3.3.3.16/28 is directly connected, Loopback1
C      3.3.3.32/29 is directly connected, Loopback2
C      3.3.3.96/27 is directly connected, Loopback5
C      3.3.3.148/30 is directly connected, Loopback3
C      3.3.3.192/28 is directly connected, Loopback4
10.0.0.0/24 is subnetted, 1 subnets
C      10.10.10.0 is directly connected, Serial1/0
11.0.0.0/24 is subnetted, 1 subnets
D      11.11.11.0 [90/2681856] via 10.10.10.2, 00:22:17,
Serial1/0
```

-setelah itu,kita konfigurasi prefix list filtering out pada R2 :

```
R2(config-router)#ip prefix-list EIGRP_OUT seq 5 deny
3.3.3.0/24 ge 28 le 30
R2(config)#ip prefix-list EIGRP_OUT seq 10 permit 0.0.0.0/0 ge
24
R2(config)#router eigrp 10
R2(config-router)#distribute-list prefix EIGRP_OUT out
R2(config-router)#
*Mar 1 00:33:02.039: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (Serial1/0) is resync: route configuration
changed
*Mar 1 00:33:02.039: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (Serial1/1) is resync: route configuration
changed
```

-coba kita lihat di table route :

```
R3#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-
user static route
       o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

1.0.0.0/32 is subnetted, 1 subnets
```

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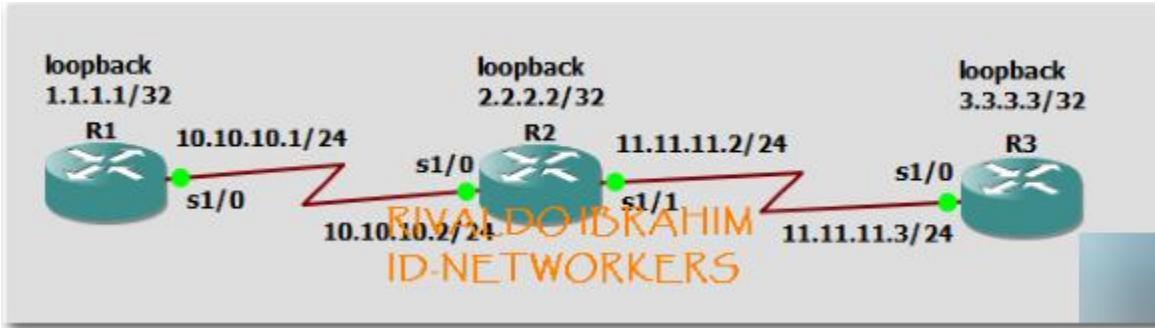
```
D      1.1.1.1 [90/2809856] via 11.11.11.2, 00:29:41,  
Serial1/0  
      2.0.0.0/32 is subnetted, 1 subnets  
D      2.2.2.2 [90/2297856] via 11.11.11.2, 00:29:41,  
Serial1/0  
      3.0.0.0/8 is variably subnetted, 2 subnets, 2 masks  
C      3.3.3.3/32 is directly connected, Loopback0  
D      3.3.3.96/27 [90/2809856] via 11.11.11.2, 00:07:45,  
Serial1/0  
      10.0.0.0/24 is subnetted, 1 subnets  
D      10.10.10.0 [90/2681856] via 11.11.11.2, 00:29:41,  
Serial1/0  
      11.0.0.0/24 is subnetted, 1 subnets  
C      11.11.11.0 is directly connected, Serial1/0
```

RIVALDO IBRAHIM

Lab 36
EIGRP filtering ACL

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Pada pembahasan kali ini,kita akan membahas tentang filtering access list,disini kita akan buat beberapa ip loopback ganjil dan genap.setelah itu,kita akan memfilter berdasarkan ganjil dan genapnya loopback.langsung saja kita praktekkan,berikut langkah-langkahnya :



-pertama,buat loopback ganjil dan genap pada table routing :

```
R1(config)#int lo1
R1(config-if)#ip add 22.22.22.1 255.255.255.255
R1(config-if)#int lo2
R1(config-if)#ip add 22.22.22.2 255.255.255.255
R1(config-if)#int lo3
R1(config-if)#ip add 22.22.22.3 255.255.255.255
R1(config-if)#int lo4
R1(config-if)#ip add 22.22.22.4 255.255.255.255
R1(config-if)#int lo5
R1(config-if)#ip add 22.22.22.5 255.255.255.255
R1(config-if)#int lo6
R1(config-if)#ip add
*Mar 1 00:50:48.031: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback6, changed state to up
R1(config-if)#ip add 22.22.22.6 255.255.255.255
R1(config-if)#int lo7
R1(config-if)#
*Mar 1 00:51:08.035: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback7, changed state to up
R1(config-if)#ip add 22.22.22.7 255.255.255.255
R1(config-if)#int lo8
R1(config-if)#
*Mar 1 00:51:24.579: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback8, changed state to up
R1(config-if)#ip add 22.22.22.8 255.255.255.255
```

-lalu,kita advertise menggunakan eigrp :

```
R1(config-if)#router eigrp 10
```

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```
R1(config-router)#network 22.22.22.1 0.0.0.0
R1(config-router)#network 22.22.22.2 0.0.0.0
R1(config-router)#network 22.22.22.3 0.0.0.0
R1(config-router)#network 22.22.22.4 0.0.0.0
R1(config-router)#network 22.22.22.5 0.0.0.0
R1(config-router)#network 22.22.22.6 0.0.0.0
R1(config-router)#network 22.22.22.7 0.0.0.0
R1(config-router)#network 22.22.22.8 0.0.0.0
```

-coba kita lihat hasil settingan loopback kita di table route :

```
R3#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
user static route
      o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

      1.0.0.0/32 is subnetted, 1 subnets
D          1.1.1.1 [90/2809856] via 11.11.11.2, 00:47:12,
Serial1/0
      2.0.0.0/32 is subnetted, 1 subnets
D          2.2.2.2 [90/2297856] via 11.11.11.2, 00:47:12,
Serial1/0
      3.0.0.0/32 is subnetted, 1 subnets
C          3.3.3.3 is directly connected, Loopback0
      22.0.0.0/32 is subnetted, 8 subnets
D          22.22.22.6 [90/2809856] via 11.11.11.2, 00:01:45,
Serial1/0
D          22.22.22.7 [90/2809856] via 11.11.11.2, 00:01:25,
Serial1/0
D          22.22.22.4 [90/2809856] via 11.11.11.2, 00:02:15,
Serial1/0
D          22.22.22.5 [90/2809856] via 11.11.11.2, 00:02:03,
Serial1/0
D          22.22.22.2 [90/2809856] via 11.11.11.2, 00:02:48,
Serial1/0
D          22.22.22.3 [90/2809856] via 11.11.11.2, 00:02:28,
Serial1/0
```

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```
D      22.22.22.1 [90/2809856] via 11.11.11.2, 00:03:04,  
Serial1/0  
D      22.22.22.8 [90/2809856] via 11.11.11.2, 00:01:18,  
Serial1/0  
      10.0.0.0/24 is subnetted, 1 subnets  
D          10.10.10.0 [90/2681856] via 11.11.11.2, 00:47:20,  
Serial1/0  
      11.0.0.0/24 is subnetted, 1 subnets  
C          11.11.11.0 is directly connected, Serial1/0
```

-lalu,kita akan menfilter yang ganjil saja

```
R3(config)#access-list 10 permit 0.0.0.1 255.255.255.254  
R3(config)#router eigrp 10  
R3(config-router)#distribute-list 10 in s1/0  
R3(config-router)#  
*Mar 1 00:57:06.087: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 11.11.11.2 (Serial1/0) is resync: route configuration  
changed
```

-coba lihat table route dan lihat perbedaannya :

```
R3(config-router)#do sh ip route  
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP  
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF  
       inter area  
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external  
       type 2  
       E1 - OSPF external type 1, E2 - OSPF external type 2  
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -  
       IS-IS level-2  
       ia - IS-IS inter area, * - candidate default, U - per-  
       user static route  
       o - ODR, P - periodic downloaded static route  
  
Gateway of last resort is not set
```

```
      1.0.0.0/32 is subnetted, 1 subnets  
D          1.1.1.1 [90/2809856] via 11.11.11.2, 00:51:41,  
Serial1/0  
      3.0.0.0/32 is subnetted, 1 subnets  
C          3.3.3.3 is directly connected, Loopback0  
      22.0.0.0/32 is subnetted, 4 subnets  
D      22.22.22.7 [90/2809856] via 11.11.11.2, 00:05:54,  
Serial1/0  
D      22.22.22.5 [90/2809856] via 11.11.11.2, 00:06:29,  
Serial1/0
```

```
D      22.22.22.3 [90/2809856] via 11.11.11.2, 00:06:54,  
Serial1/0  
D      22.22.22.1 [90/2809856] via 11.11.11.2, 00:07:25,  
Serial1/0  
      11.0.0.0/24 is subnetted, 1 subnets  
C      11.11.11.0 is directly connected, Serial1/0
```

-Sekarang kita akan mencoba menfilter yang genap,tetapi kita hapus dulu settingan yang ganjilnya atau sampai semua muncul network nya ,dengan cara :

```
R3(config)#no access-list 10 permit 0.0.0.1 255.255.255.254  
R3(config)#router eigrp 10  
R3(config-router)#distribute-list 10 in s1/0  
*Mar 1 01:02:53.411: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 11.11.11.2 (Serial1/0) is resync: route configuration  
changed  
  
R3(config-router)#no distribute-list 10 in s1/0  
R3(config-router)#  
*Mar 1 01:03:11.115: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 11.11.11.2 (Serial1/0) is resync: route configuration  
changed
```

-coba kita lihat table route :

```
R3(config-router)#do sh ip route  
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP  
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF  
inter area  
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external  
type 2  
        E1 - OSPF external type 1, E2 - OSPF external type 2  
        i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -  
IS-IS level-2  
        ia - IS-IS inter area, * - candidate default, U - per-  
user static route  
        o - ODR, P - periodic downloaded static route  
  
Gateway of last resort is not set
```

```
      1.0.0.0/32 is subnetted, 1 subnets  
D      1.1.1.1 [90/2809856] via 11.11.11.2, 00:57:45,  
Serial1/0  
      2.0.0.0/32 is subnetted, 1 subnets  
D      2.2.2.2 [90/2297856] via 11.11.11.2, 00:00:25,  
Serial1/0  
      3.0.0.0/32 is subnetted, 1 subnets  
C      3.3.3.3 is directly connected, Loopback0
```

```
22.0.0.0/32 is subnetted, 8 subnets
D      22.22.22.6 [90/2809856] via 11.11.11.2, 00:00:25,
Serial1/0
D      22.22.22.7 [90/2809856] via 11.11.11.2, 00:11:58,
Serial1/0
D      22.22.22.4 [90/2809856] via 11.11.11.2, 00:00:27,
Serial1/0
D      22.22.22.5 [90/2809856] via 11.11.11.2, 00:12:35,
Serial1/0
D      22.22.22.2 [90/2809856] via 11.11.11.2, 00:00:27,
Serial1/0
D      22.22.22.3 [90/2809856] via 11.11.11.2, 00:13:00,
Serial1/0
D      22.22.22.1 [90/2809856] via 11.11.11.2, 00:13:36,
Serial1/0
D      22.22.22.8 [90/2809856] via 11.11.11.2, 00:00:32,
Serial1/0
          10.0.0.0/24 is subnetted, 1 subnets
D      10.10.10.0 [90/2681856] via 11.11.11.2, 00:00:32,
Serial1/0
          11.0.0.0/24 is subnetted, 1 subnets
C      11.11.11.0 is directly connected, Serial1/0
```

-setelah itu,kita konfigurasi filter yang genap saja :

```
R3(config)#access-list 10 permit 0.0.0.0 255.255.255.254
R3(config)#router eigrp 10
R3(config-router)#distribute-list 10 in s1/0
R3(config-router)#
*Mar 1 01:07:15.767: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.2 (Serial1/0) is resync: route configuration
changed
```

-coba kita lihat table route dan lihat perubahannya :

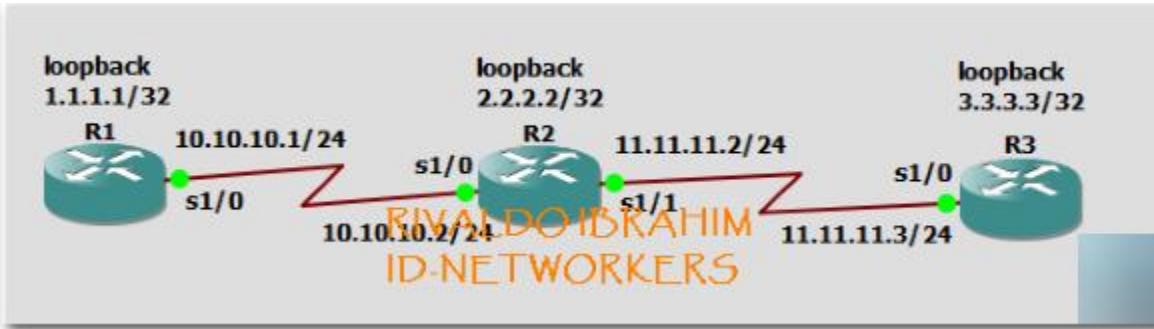
```
R3(config-router)#do sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
user static route
      o - ODR, P - periodic downloaded static route
```

```
Gateway of last resort is not set

    2.0.0.0/32 is subnetted, 1 subnets
D        2.2.2.2 [90/2297856] via 11.11.11.2, 00:04:58,
Serial1/0
    3.0.0.0/32 is subnetted, 1 subnets
C        3.3.3.3 is directly connected, Loopback0
22.0.0.0/32 is subnetted, 4 subnets
D        22.22.22.6 [90/2809856] via 11.11.11.2, 00:04:58,
Serial1/0
D        22.22.22.4 [90/2809856] via 11.11.11.2, 00:04:58,
Serial1/0
D        22.22.22.2 [90/2809856] via 11.11.11.2, 00:04:58,
Serial1/0
D        22.22.22.8 [90/2809856] via 11.11.11.2, 00:04:58,
Serial1/0
    10.0.0.0/24 is subnetted, 1 subnets
D        10.10.10.0 [90/2681856] via 11.11.11.2, 00:05:00,
Serial1/0
    11.0.0.0/24 is subnetted, 1 subnets
C        11.11.11.0 is directly connected, Serial1/0
```

EIGRP filtering AD

Pada pembahasan kali ini,kita akan membahas tentang filtering administrative distance,disini saya akan menambahkan loopback 44.44.44.44,jika saya tambahkan AD misalnya : 255.maka ip tersebut jika kita setting dengan AD tidak muncul pada table route.langsung saja kita praktekkan,berikut langkah-langkahnya :



-pertama,buat loopback di router 3 :

```
R3(config-router)#int lol
R3(config-if)#
*Mar 1 01:11:46.251: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback1, changed state to up
R3(config-if)#ip add 44.44.44.44 255.255.255.255
```

-lalu,kita advertise dengan menggunakan eigrp :

```
R3(config-if)#router eigrp 10
R3(config-router)#network 44.44.44.44 0.0.0.0
R3(config-router)#
*Mar 1 01:14:19.523: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.2 (Serial1/0) is down: Interface Goodbye
received
*Mar 1 01:14:20.459: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.2 (Serial1/0) is up: new adjacency
```

-coba kita lihat di table route :

```
R2#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
user static route
      o - ODR, P - periodic downloaded static route
```

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```
Gateway of last resort is not set

    1.0.0.0/32 is subnetted, 1 subnets
D          1.1.1.1 [90/2297856] via 10.10.10.1, 01:07:33,
Serial1/0
    2.0.0.0/32 is subnetted, 1 subnets
C          2.2.2.2 is directly connected, Loopback0
    3.0.0.0/32 is subnetted, 1 subnets
D          3.3.3.3 [90/2297856] via 11.11.11.3, 01:07:06,
Serial1/1
    22.0.0.0/32 is subnetted, 8 subnets
D          22.22.22.6 [90/2297856] via 10.10.10.1, 00:21:44,
Serial1/0
D          22.22.22.7 [90/2297856] via 10.10.10.1, 00:21:23,
Serial1/0
D          22.22.22.4 [90/2297856] via 10.10.10.1, 00:22:13,
Serial1/0
D          22.22.22.5 [90/2297856] via 10.10.10.1, 00:22:01,
Serial1/0
D          22.22.22.2 [90/2297856] via 10.10.10.1, 00:22:47,
Serial1/0
D          22.22.22.3 [90/2297856] via 10.10.10.1, 00:22:26,
Serial1/0
D          22.22.22.1 [90/2297856] via 10.10.10.1, 00:22:59,
Serial1/0
D          22.22.22.8 [90/2297856] via 10.10.10.1, 00:21:12,
Serial1/0
    10.0.0.0/24 is subnetted, 1 subnets
C          10.10.10.0 is directly connected, Serial1/0
    11.0.0.0/24 is subnetted, 1 subnets
C          11.11.11.0 is directly connected, Serial1/1
44.0.0.0/32 is subnetted, 1 subnets
D          44.44.44.44 [90/2297856] via 11.11.11.3, 00:00:38,
Serial1/1
```

-coba kita tes ping

```
R2#ping 3.3.3.3

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 3.3.3.3, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
64/83/116 ms
```

```
R2#ping 44.44.44.44
```

```
Type escape sequence to abort.  
Sending 5, 100-byte ICMP Echos to 44.44.44.44, timeout is 2  
seconds:  
!!!!!
```

Disini kita akan menghilangkan network 44.44.44.44 dengan mengeset distance 255 sehingga ip tersebut tidak muncul pada table route.

```
R2(config)#access-list 44 permit 44.44.44.44  
R2(config)#router eigrp 10  
R2(config-router)#distance 255 0.0.0.0 255.255.255.255 44  
R2(config-router)#  
*Mar 1 01:14:03.483: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 10.10.10.1 (Serial1/0) is down: route configuration  
changed  
*Mar 1 01:14:03.503: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 11.11.11.3 (Serial1/1) is down: route configuration  
changed  
*Mar 1 01:14:04.271: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 11.11.11.3 (Serial1/1) is up: new adjacency  
R2(config-router)#  
*Mar 1 01:14:07.227: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 10.10.10.1 (Serial1/0) is up: new adjacency
```

-setelah itu,coba lihat table route ,dan lihat perubahannya :

```
R2(config-router)#do sh ip route  
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP  
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF  
        inter area  
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external  
        type 2  
        E1 - OSPF external type 1, E2 - OSPF external type 2  
        i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -  
        IS-IS level-2  
        ia - IS-IS inter area, * - candidate default, U - per-  
        user static route  
        o - ODR, P - periodic downloaded static route  
  
Gateway of last resort is not set  
  
        1.0.0.0/32 is subnetted, 1 subnets  
D            1.1.1.1 [90/2297856] via 10.10.10.1, 00:00:20,  
Serial1/0  
        2.0.0.0/32 is subnetted, 1 subnets  
C            2.2.2.2 is directly connected, Loopback0  
        3.0.0.0/32 is subnetted, 1 subnets
```

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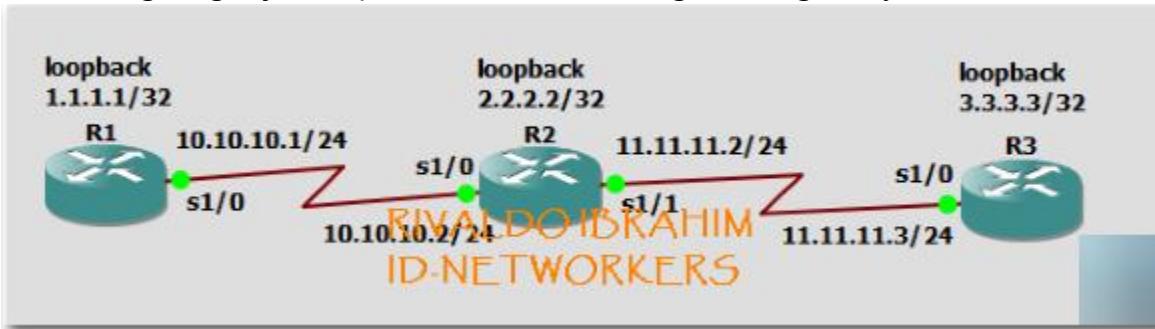
```
D      3.3.3.3 [90/2297856] via 11.11.11.3, 00:00:23,  
Serial1/1  
      22.0.0.0/32 is subnetted, 8 subnets  
D      22.22.22.6 [90/2297856] via 10.10.10.1, 00:00:20,  
Serial1/0  
D      22.22.22.7 [90/2297856] via 10.10.10.1, 00:00:20,  
Serial1/0  
D      22.22.22.4 [90/2297856] via 10.10.10.1, 00:00:22,  
Serial1/0  
D      22.22.22.5 [90/2297856] via 10.10.10.1, 00:00:22,  
Serial1/0  
D      22.22.22.2 [90/2297856] via 10.10.10.1, 00:00:22,  
Serial1/0  
D      22.22.22.3 [90/2297856] via 10.10.10.1, 00:00:22,  
Serial1/0  
D      22.22.22.1 [90/2297856] via 10.10.10.1, 00:00:23,  
Serial1/0  
D      22.22.22.8 [90/2297856] via 10.10.10.1, 00:00:22,  
Serial1/0  
      10.0.0.0/24 is subnetted, 1 subnets  
C      10.10.10.0 is directly connected, Serial1/0  
      11.0.0.0/24 is subnetted, 1 subnets  
C      11.11.11.0 is directly connected, Serial1/1
```

-coba kita tes ping :

```
R2(config-router)#do ping 44.44.44.44  
  
Type escape sequence to abort.  
Sending 5, 100-byte ICMP Echos to 44.44.44.44, timeout is 2  
seconds:  
.....  
Success rate is 0 percent (0/5)
```

Lab 38
EIGRP authentication

Pada pembahasan kali ini,saya akan membahas tentang authentication,kita akan memberikan authentication alias autentikasi atau keamanan,bisa kita beri password.langsung saja kita praktekkan,berikut langkah-langkahnya :



-pertama,kita setting authentication :

```
R1(config)#key chain rivaldo
R1(config-keychain)#key 1
R1(config-keychain-key)#key-string ibrahim
R1(config-keychain-key)#int s1/0
R1(config-if)#ip authentication mode eigrp 10 md5
R1(config-if)#ip a
*Mar 1 01:29:01.899: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.2 (Serial1/0) is down: authentication mode
changed
R1(config-if)#ip authentication key-chain eigrp 10 rivaldo
R1(config-if)#
*Mar 1 01:31:05.803: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.2 (Serial1/0) is up: new adjacency
R1(config-if)#^Z

R2(config)#key chain rivaldo
R2(config-keychain)#key 1
R2(config-keychain-key)#key-string ibrahim
R2(config-keychain-key)#int s1/0
R2(config-if)#ip authentication mode eigrp 10 md5
R2(config-if)#ip authentication key-chain eigrp 10 rivaldo
R2(config-if)#
*Mar 1 01:30:50.275: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (Serial1/0) is up: new adjacency
```

-coba kita cek debug pada router 1 :

```
R1#debug eigrp packets
EIGRP Packets debugging is on
(UPDATE, REQUEST, QUERY, REPLY, HELLO, IPXSAP, PROBE, ACK,
STUB, SIAQUERY, SIAREPLY)
R1#
```

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```
*Mar  1 00:12:04.731: EIGRP: received packet with MD5
authentication, key id = 1
*Mar  1 00:12:04.731: EIGRP: Received HELLO on Serial1/0 nbr
10.10.10.2
*Mar  1 00:12:04.731:    AS 10, Flags 0x0, Seq 0/0 idbQ 0/0
iidbQ un/rely 0/0 peerQ un/rely 0/0
*Mar  1 00:12:05.187: EIGRP: Sending HELLO on Serial1/0
*Mar  1 00:12:05.187:    AS 10, Flags 0x0, Seq 0/0 idbQ 0/0
iidbQ un/rely 0/0
R1#
*Mar  1 00:12:07.203: EIGRP: Sending HELLO on Loopback0
*Mar  1 00:12:07.203:    AS 10, Flags 0x0, Seq 0/0 idbQ 0/0
iidbQ un/rely 0/0
*Mar  1 00:12:07.207: EIGRP: Received HELLO on Loopback0 nbr
1.1.1.1
*Mar  1 00:12:07.211:    AS 10, Flags 0x0, Seq 0/0 idbQ 0/0
*Mar  1 00:12:07.211: EIGRP: Packet from ourselves ignored
R1#uu
*Mar  1 00:12:09.039: EIGRP: received packet with MD5
authentication, key id = 1
*Mar  1 00:12:09.043: EIGRP: Received HELLO on Serial1/0 nbr
10.10.10.2
*Mar  1 00:12:09.043:    AS 10, Flags 0x0, Seq 0/0 idbQ 0/0
iidbQ un/rely 0/0 peerQ un/rely 0/0
*Mar  1 00:12:09.811: EIGRP: Sending HELLO on Serial1/0
*Mar  1 00:12:09.811:    AS 10, Flags 0x0, Seq 0/0 idbQ 0/0
iidbQ un/rely 0/0
R1#u
*Mar  1 00:12:12.051: EIGRP: Sending HELLO on Loopback0
*Mar  1 00:12:12.051:    AS 10, Flags 0x0, Seq 0/0 idbQ 0/0
iidbQ un/rely 0/0
*Mar  1 00:12:12.059: EIGRP: Received HELLO on Loopback0 nbr
1.1.1.1
*Mar  1 00:12:12.059:    AS 10, Flags 0x0, Seq 0/0 idbQ 0/0
*Mar  1 00:12:12.059: EIGRP: Packet from ourselves ignored
R1#unden
*Mar  1 00:12:13.467: EIGRP: received packet with MD5
authentication, key id = 1
*Mar  1 00:12:13.467: EIGRP: Received HELLO on Serial1/0 nbr
10.10.10.2
*Mar  1 00:12:13.467:    AS 10, Flags 0x0, Seq 0/0 idbQ 0/0
iidbQ un/rely 0/0 peerQ un/rely 0/0
*Mar  1 00:12:14.459: EIGRP: Sending HELLO on Serial1/0
*Mar  1 00:12:14.459:    AS 10, Flags 0x0, Seq 0/0 idbQ 0/0
iidbQ un/rely 0/0
R1#undeb
```

CISCO ITU MUDAH

```
*Mar  1 00:12:16.399: EIGRP: Sending HELLO on Loopback0
*Mar  1 00:12:16.399:    AS 10, Flags 0x0, Seq 0/0 idbQ 0/0
iidbQ un/rely 0/0
*Mar  1 00:12:16.403: EIGRP: Received HELLO on Loopback0 nbr
1.1.1.1
*Mar  1 00:12:16.407:    AS 10, Flags 0x0, Seq 0/0 idbQ 0/0
*Mar  1 00:12:16.407: EIGRP: Packet from ourselves ignored
R1#undebuig
*Mar  1 00:12:18.243: EIGRP: received packet with MD5
authentication, key id = 1
*Mar  1 00:12:18.243: EIGRP: Received HELLO on Serial1/0 nbr
10.10.10.2
*Mar  1 00:12:18.243:    AS 10, Flags 0x0, Seq 0/0 idbQ 0/0
iidbQ un/rely 0/0 peerQ un/rely 0/0
*Mar  1 00:12:18.747: EIGRP: Sending HELLO on Serial1/0
*Mar  1 00:12:18.747:    AS 10, Flags 0x0, Seq 0/0 idbQ 0/0
iidbQ un/rely 0/0
R1#undebug
*Mar  1 00:12:21.159: EIGRP: Sending HELLO on Loopback0
*Mar  1 00:12:21.159:    AS 10, Flags 0x0, Seq 0/0 idbQ 0/0
iidbQ un/rely 0/0
*Mar  1 00:12:21.163: EIGRP: Received HELLO on Loopback0 nbr
1.1.1.1
*Mar  1 00:12:21.167:    AS 10, Flags 0x0, Seq 0/0 idbQ 0/0
*Mar  1 00:12:21.167: EIGRP: Packet from ourselves ignored
R1#undebug eigrp
*Mar  1 00:12:22.779: EIGRP: received packet with MD5
authentication, key id = 1
*Mar  1 00:12:22.779: EIGRP: Received HELLO on Serial1/0 nbr
10.10.10.2
*Mar  1 00:12:22.779:    AS 10, Flags 0x0, Seq 0/0 idbQ 0/0
iidbQ un/rely 0/0 peerQ un/rely 0/0
*Mar  1 00:12:23.599: EIGRP: Sending HELLO on Serial1/0
*Mar  1 00:12:23.599:    AS 10, Flags 0x0, Seq 0/0 idbQ 0/0
iidbQ un/rely 0/0
R1#undebug eigrp packets
*Mar  1 00:12:25.947: EIGRP: Sending HELLO on Loopback0
*Mar  1 00:12:25.947:    AS 10, Flags 0x0, Seq 0/0 idbQ 0/0
iidbQ un/rely 0/0
*Mar  1 00:12:25.951: EIGRP: Received HELLO on Loopback0 nbr
1.1.1.1
*Mar  1 00:12:25.955:    AS 10, Flags 0x0, Seq 0/0 idbQ 0/0
*Mar  1 00:12:25.955: EIGRP: Packet from ourselves ignored
```

-jika ingin menghentikan debug,ketikkan "undebug eigrp packets":

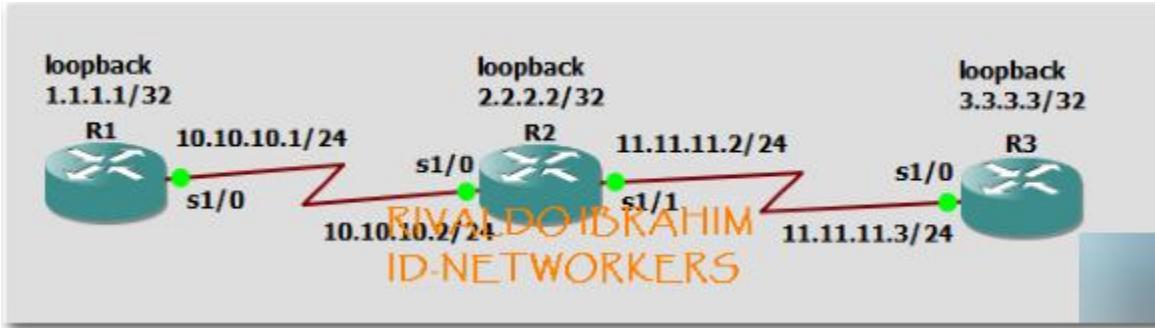
```
R1#undebug eigrp packets
```

EIGRP Packets debugging is off

-lalu kita cek lagi :

```
R1#sh ip eigrp neighbors
IP-EIGRP neighbors for process 10
  H   Address Interface Hold Uptime SRTT RTO   Q   Seq
              (sec)   (ms) Cnt Num
  0   10.10.10.2 Se1/0    14 00:04:03 134 804  0   21
```

Pada pembahasan kali ini,kita akan membahas tentang eigrp summarization. disini kita menggunakan topologi yang sama.kita buat loopback agak banyak pada router 2,lalu kita ringkas table routenya dari yang agak banyak jadi lebih simple.langsung saja kita praktekkan,berikut langkah-langkahnya:



-pertama,buat loopback di router 2 :

```
R2(config-if)#int lo1
R2(config-if)#
*Mar 1 00:20:22.271: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback1, changed state to up
R2(config-if)#ip add 33.33.33.1 255.255.255.255
R2(config-if)#int lo2
R2(config-if)#
*Mar 1 00:20:41.435: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback2, changed state to up
R2(config-if)#ip add 33.33.33.2 255.255.255.255
R2(config-if)#int lo3
R2(config-if)#
*Mar 1 00:20:55.091: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback3, changed state to up
R2(config-if)#ip add 33.33.33.3 255.255.255.255
R2(config-if)#int lo4
R2(config-if)#
*Mar 1 00:21:11.523: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback4, changed state to up
R2(config-if)#ip add 33.33.33.4 255.255.255.255
R2(config-if)#int lo5
R2(config-if)#
*Mar 1 00:21:33.271: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback5, changed state to up
R2(config-if)#ip add 33.33.33.5 255.255.255.255
R2(config-if)#int lo6
R2(config-if)#
*Mar 1 00:21:49.607: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback6, changed state to up
R2(config-if)#ip add 33.33.33.6 255.255.255.255
```

```
R2(config-if)#int lo7
R2(config-if)#
*Mar 1 00:22:40.071: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback7, changed state to up
R2(config-if)#ip add 33.33.33.7 255.255.255.255
R2(config-if)#int lo8
R2(config-if)#
*Mar 1 00:22:56.019: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback8, changed state to up
R2(config-if)#ip add 33.33.33.8 255.255.255.255
```

-lalu,kita advertise menggunakan eigrp :

```
R2(config-if)#router eigrp 10
R2(config-router)#network 33.33.33.1 0.0.0.0
R2(config-router)#network 33.33.33.2 0.0.0.0
R2(config-router)#network 33.33.33.3 0.0.0.0
R2(config-router)#network 33.33.33.4 0.0.0.0
R2(config-router)#network 33.33.33.5 0.0.0.0
R2(config-router)#network 33.33.33.6 0.0.0.0
R2(config-router)#network 33.33.33.7 0.0.0.0
R2(config-router)#network 33.33.33.8 0.0.0.0
```

-coba cek table route,pastikan settingan loopback nya sudah ada di table routenya :

```
R3#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
      inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
      type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
      IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
      user static route
      o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

      1.0.0.0/32 is subnetted, 1 subnets
D          1.1.1.1 [90/2809856] via 11.11.11.2, 00:17:36,
Serial1/0
      2.0.0.0/32 is subnetted, 1 subnets
D          2.2.2.2 [90/2297856] via 11.11.11.2, 00:22:54,
Serial1/0
      33.0.0.0/32 is subnetted, 8 subnets
```

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```
D      33.33.33.1 [90/2297856] via 11.11.11.2, 00:04:14,
Serial1/0
D      33.33.33.3 [90/2297856] via 11.11.11.2, 00:04:04,
Serial1/0
D      33.33.33.2 [90/2297856] via 11.11.11.2, 00:04:08,
Serial1/0
D      33.33.33.5 [90/2297856] via 11.11.11.2, 00:03:55,
Serial1/0
D      33.33.33.4 [90/2297856] via 11.11.11.2, 00:04:02,
Serial1/0
D      33.33.33.7 [90/2297856] via 11.11.11.2, 00:03:49,
Serial1/0
D      33.33.33.6 [90/2297856] via 11.11.11.2, 00:03:53,
Serial1/0
D      33.33.33.8 [90/2297856] via 11.11.11.2, 00:03:45,
Serial1/0
          10.0.0.0/24 is subnetted, 1 subnets
D      10.10.10.0 [90/2681856] via 11.11.11.2, 00:22:59,
Serial1/0
          11.0.0.0/24 is subnetted, 1 subnets
C      11.11.11.0 is directly connected, Serial1/0
```

-setelah itu,kita konfigurasi summarizationnya di interface s1/1 pada router 2 :

```
R2(config)#int s1/1
R2(config-if)#ip summary-address eigrp 10 33.33.33.0
255.255.255.248
R2(config-if)#
*Mar 1 00:29:53.731: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (Serial1/1) is resync: summary configured
```

-coba kita lihat di table route dan lihat perubahannya :

```
R3#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
user static route
      o - ODR, P - periodic downloaded static route

Gateway of last resort is not set
```

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```
    1.0.0.0/32 is subnetted, 1 subnets
D          1.1.1.1 [90/2809856] via 11.11.11.2, 00:18:58,
Serial1/0
    2.0.0.0/32 is subnetted, 1 subnets
D          2.2.2.2 [90/2297856] via 11.11.11.2, 00:24:17,
Serial1/0
33.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
D          33.33.33.0/29 [90/2297856] via 11.11.11.2, 00:00:05,
Serial1/0
D          33.33.33.8/32 [90/2297856] via 11.11.11.2, 00:05:05,
Serial1/0
    10.0.0.0/24 is subnetted, 1 subnets
D          10.10.10.0 [90/2681856] via 11.11.11.2, 00:24:17,
Serial1/0
    11.0.0.0/24 is subnetted, 1 subnets
C          11.11.11.0 is directly connected, Serial1/0
```

-coba kita tes ping :

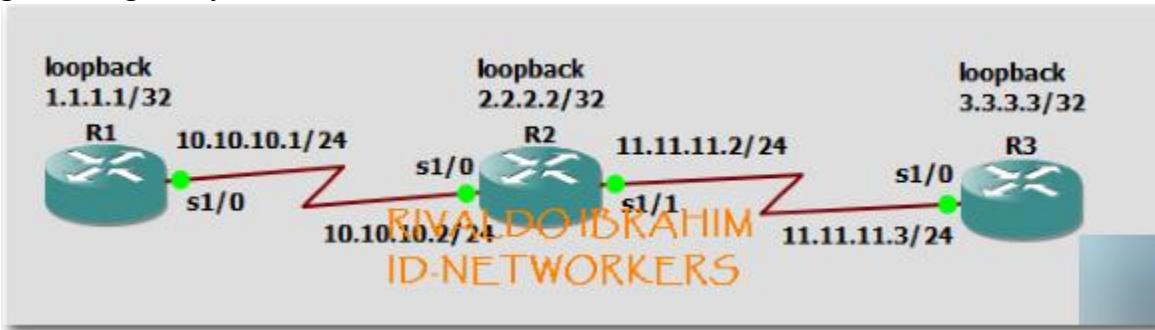
```
R3#ping 33.33.33.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 33.33.33.1, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
32/65/100 ms
```

```
R3#ping 33.33.33.8
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 33.33.33.8, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
32/74/168 ms
```

Lab 40
EIGRP unicast update

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Pada pembahasan ini kita akan membahas tentang unicast update,eigrp melakukan update melalui ip multicast dengan 224.0.0.10,disini kita akan mengubah update dari multicast ke unicast neighboranya.langsung saja kita praktekkan,berikut langkah-langkahnya :



-pertama,cek multicast pada router 1 :

```
R1#debug ip packet detail
IP packet debugging is on (detailed)
R1#
*Mar 1 00:44:41.879: IP: s=10.10.10.2 (Serial1/0),
d=224.0.0.10, len 100, rcvd 2, proto=88
*Mar 1 00:44:42.591: IP: s=10.10.10.1 (local), d=224.0.0.10
(Serial1/0), len 100, sending broad/multicast, proto=88
*Mar 1 00:44:42.595: IP: s=1.1.1.1 (local), d=224.0.0.10
(Loopback0), len 60, sending broad/multicast, proto=88
*Mar 1 00:44:42.599: IP: s=1.1.1.1 (Loopback0), d=224.0.0.10,
len 60, rcvd 2, proto=88
R1#
*Mar 1 00:44:46.531: IP: s=10.10.10.2 (Serial1/0),
d=224.0.0.10, len 100, rcvd 2, proto=88
*Mar 1 00:44:47.115: IP: s=1.1.1.1 (local), d=224.0.0.10
(Loopback0), len 60, sending broad/multicast, proto=88
*Mar 1 00:44:47.119: IP: s=1.1.1.1 (Loopback0), d=224.0.0.10,
len 60, rcvd 2, proto=88
*Mar 1 00:44:47.479: IP: s=10.10.10.1 (local), d=224.0.0.10
(Serial1/0), len 100, sending broad/multicast, proto=88
R1#undebbug
*Mar 1 00:44:51.219: IP: s=10.10.10.2 (Serial1/0),
d=224.0.0.10, len 100, rcvd 2, proto=88
*Mar 1 00:44:51.651: IP: s=1.1.1.1 (local), d=224.0.0.10
(Loopback0), len 60, sending broad/multicast, proto=88
*Mar 1 00:44:51.655: IP: s=1.1.1.1 (Loopback0), d=224.0.0.10,
len 60, rcvd 2, proto=88
*Mar 1 00:44:51.803: IP: s=10.10.10.1 (local), d=224.0.0.10
(Serial1/0), len 100, sending broad/multicast, proto=88
```

-untuk menghentikan debug,ketikkan undebbug seperti dibawah ini ;

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```
R1#undebug ip packet detail  
IP packet debugging is off (detailed)
```

-setelah itu kita konfigurasikan link dari router 1 ke router 2 menjadi unicast,seperti berikut :

```
R1(config)#router eigrp 10  
R1(config-router)#neighbor 10.10.10.2 s1/0  
R1(config-router)#  
*Mar 1 00:50:13.803: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 10.10.10.2 (Serial1/0) is down: Static peer configured  
R1(config-router)#  
*Mar 1 00:50:41.507: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 10.10.10.2 (Serial1/0) is up: new adjacency  
  
R2(config-if)#router eigrp 10  
R2(config-router)#neighbor 10.10.10.1 s1/0  
R2(config-router)#  
*Mar 1 00:50:36.123: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 10.10.10.1 (Serial1/0) is up: new adjacency
```

-coba cek debug detail pada router 1 :

```
R1#debug ip packet detail  
IP packet debugging is on (detailed)  
R1#  
*Mar 1 00:51:02.639: IP: s=1.1.1.1 (local), d=224.0.0.10  
(Loopback0), len 60, sending broad/multicast, proto=88  
*Mar 1 00:51:02.643: IP: s=1.1.1.1 (Loopback0), d=224.0.0.10,  
len 60, rcvd 2, proto=88  
R1#  
*Mar 1 00:51:03.731: IP: s=10.10.10.1 (local), d=10.10.10.2  
(Serial1/0), len 100, sending, proto=88  
*Mar 1 00:51:04.667: IP: tableid=0, s=10.10.10.2 (Serial1/0),  
d=10.10.10.1 (Serial1/0), routed via RIB  
*Mar 1 00:51:04.667: IP: s=10.10.10.2 (Serial1/0),  
d=10.10.10.1 (Serial1/0), len 100, rcvd 3, proto=88  
R1#  
*Mar 1 00:51:07.051: IP: s=1.1.1.1 (local), d=224.0.0.10  
(Loopback0), len 60, sending broad/multicast, proto=88  
*Mar 1 00:51:07.055: IP: s=1.1.1.1 (Loopback0), d=224.0.0.10,  
len 60, rcvd 2, proto=88  
R1#  
*Mar 1 00:51:08.715: IP: s=10.10.10.1 (local), d=10.10.10.2  
(Serial1/0), len 100, sending, proto=88  
*Mar 1 00:51:09.091: IP: tableid=0, s=10.10.10.2 (Serial1/0),  
d=10.10.10.1 (Serial1/0), routed via RIB
```

```
*Mar 1 00:51:09.091: IP: s=10.10.10.2 (Serial1/0),  
d=10.10.10.1 (Serial1/0), len 100, rcvd 3, proto=88  
R1#  
*Mar 1 00:51:11.779: IP: s=1.1.1.1 (local), d=224.0.0.10  
(Loopback0), len 60, sending broad/multicast, proto=88  
*Mar 1 00:51:11.783: IP: s=1.1.1.1 (Loopback0), d=224.0.0.10,  
len 60, rcvd 2, proto=88  
R1#undebug  
*Mar 1 00:51:13.359: IP: s=10.10.10.1 (local), d=10.10.10.2 (Serial1/0), len 100, sending, proto=88  
*Mar 1 00:51:13.983: IP: tableid=0, s=10.10.10.2 (Serial1/0),  
d=10.10.10.1 (Serial1/0), routed via RIB  
*Mar 1 00:51:13.983: IP: s=10.10.10.2 (Serial1/0),  
d=10.10.10.1 (Serial1/0), len 100, rcvd 3, proto=88  
R1#undebug ip pack  
*Mar 1 00:51:16.543: IP: s=1.1.1.1 (local), d=224.0.0.10  
(Loopback0), len 60, sending broad/multicast, proto=88  
*Mar 1 00:51:16.547: IP: s=1.1.1.1 (Loopback0), d=224.0.0.10,  
len 60, rcvd 2, proto=88  
R1#undebug ip packet de  
*Mar 1 00:51:18.131: IP: s=10.10.10.1 (local), d=10.10.10.2 (Serial1/0), len 100, sending, proto=88  
*Mar 1 00:51:18.375: IP: tableid=0, s=10.10.10.2 (Serial1/0),  
d=10.10.10.1 (Serial1/0), routed via RIB  
*Mar 1 00:51:18.375: IP: s=10.10.10.2 (Serial1/0),  
d=10.10.10.1 (Serial1/0), len 100, rcvd 3, proto=88  
R1#undebug ip packet deta  
*Mar 1 00:51:21.111: IP: s=1.1.1.1 (local), d=224.0.0.10  
(Loopback0), len 60, sending broad/multicast, proto=88  
*Mar 1 00:51:21.115: IP: s=1.1.1.1 (Loopback0), d=224.0.0.10,  
len 60, rcvd 2, proto=88
```

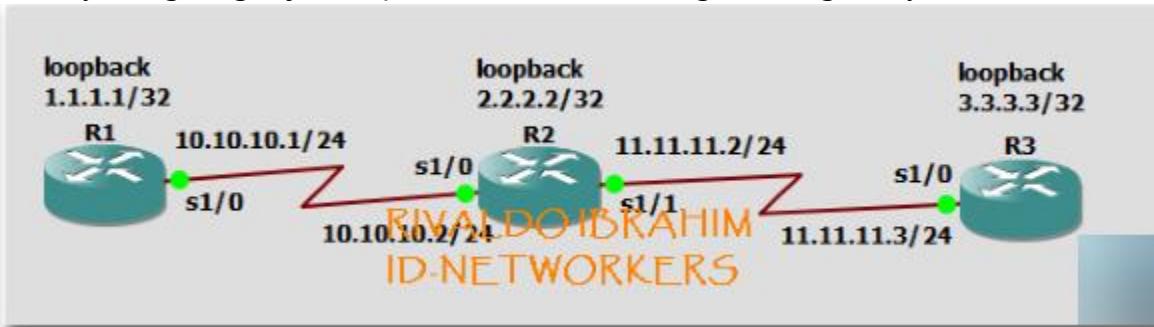
-untuk menghentikan debug,ketikkan undebug seperti dibawah ini ;

```
R1#undebug ip packet detail  
IP packet debugging is off (detailed)
```

Lab 41

EIGRP default route summary address

Pada pembahasan kali ini,kita akan membahas tentang default route summary address,disini kita akan membuat ip route tetapi kita berikan summary pada addressnya.langsung saja kita praktekkan,berikut langkah-langkahnya :



-konfigurasikan summary pada router 1 :

```
R1(config)#int s1/0
R1(config-if)#ip summary-address eigrp 10 0.0.0.0 0.0.0.0
R1(config-if)#
*Mar 1 01:14:31.571: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.2 (Serial1/0) is resync: summary configured
```

-coba cek ip route dan lihat hasilnya :

```
R1(config-if)#do sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
        inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
        type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2
        i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
        IS-IS level-2
        ia - IS-IS inter area, * - candidate default, U - per-
        user static route
        o - ODR, P - periodic downloaded static route

Gateway of last resort is 0.0.0.0 to network 0.0.0.0

    1.0.0.0/32 is subnetted, 1 subnets
C      1.1.1.1 is directly connected, Loopback0
    2.0.0.0/32 is subnetted, 1 subnets
D      2.2.2.2 [90/2297856] via 10.10.10.2, 00:24:03,
Serial1/0
    33.0.0.0/32 is subnetted, 8 subnets
D      33.33.33.1 [90/2297856] via 10.10.10.2, 00:24:03,
Serial1/0
D      33.33.33.3 [90/2297856] via 10.10.10.2, 00:24:03,
```

Gateway of last resort is 0.0.0.0 to network 0.0.0.0

```
    1.0.0.0/32 is subnetted, 1 subnets
C      1.1.1.1 is directly connected, Loopback0
    2.0.0.0/32 is subnetted, 1 subnets
D      2.2.2.2 [90/2297856] via 10.10.10.2, 00:24:03,
Serial1/0
    33.0.0.0/32 is subnetted, 8 subnets
D      33.33.33.1 [90/2297856] via 10.10.10.2, 00:24:03,
Serial1/0
D      33.33.33.3 [90/2297856] via 10.10.10.2, 00:24:03,
```

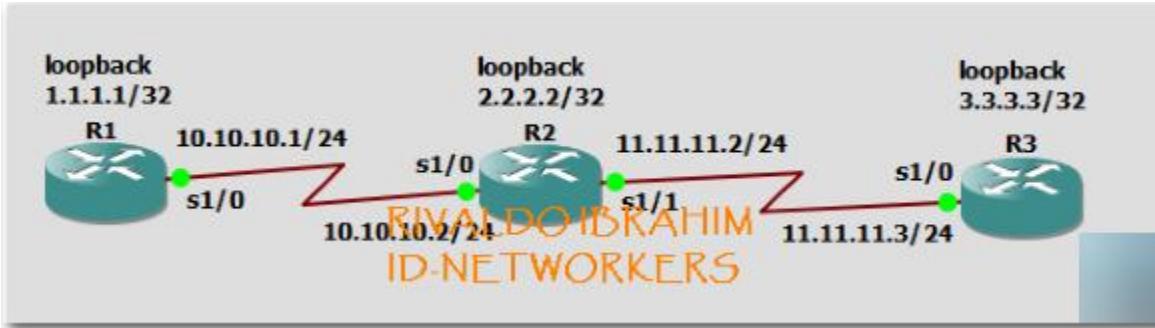
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```
D      33.33.33.2 [90/2297856] via 10.10.10.2, 00:24:03,  
Serial1/0  
D      33.33.33.5 [90/2297856] via 10.10.10.2, 00:24:05,  
Serial1/0  
D      33.33.33.4 [90/2297856] via 10.10.10.2, 00:24:05,  
Serial1/0  
D      33.33.33.7 [90/2297856] via 10.10.10.2, 00:24:05,  
Serial1/0  
D      33.33.33.6 [90/2297856] via 10.10.10.2, 00:24:05,  
Serial1/0  
D      33.33.33.8 [90/2297856] via 10.10.10.2, 00:24:05,  
Serial1/0  
          10.0.0.0/24 is subnetted, 1 subnets  
C        10.10.10.0 is directly connected, Serial1/0  
          11.0.0.0/24 is subnetted, 1 subnets  
D        11.11.11.0 [90/2681856] via 10.10.10.2, 00:24:06,  
Serial1/0  
D* 0.0.0.0/0 is a summary, 00:00:16, Null0
```

Lab 42

EIGRP redistribution rip

Pada pembahasan kali ini,kita akan membahas tentang redistribution rip,disini kita akan mendistribusi atau membagi rip ke eigrp.kita tambahkan loopback di router 1, dan bila di lihat table route harus ada tanda EX.langsung saja kita praktekkan,berikut langkah-langkahnya :



-pertama,kita tambahkan loopback pada router 1 :

```
R1(config-router)#int lo1
R1(config-if)#
*Mar 1 00:11:32.807: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback1, changed state to up
R1(config-if)#ip add 22.22.22.22 255.255.255.255
```

-lalu,kita konfigurasi rip pada router 1 :

```
R1(config-if)#router rip
R1(config-router)#version 2
R1(config-router)#network 22.22.22.0
R1(config-router)#no auto-summary
-.setelah itu,kita redistribute rip ke eigrp :
R1(config-router)#router eigrp 10
R1(config-router)#redistribute rip metric 1 1 1 1 1
```

-coba kita lihat table route :

```
R1(config-router)#do sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2
        i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
IS-IS level-2
        ia - IS-IS inter area, * - candidate default, U - per-
user static route
        o - ODR, P - periodic downloaded static route

Gateway of last resort is not set
```

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```
    1.0.0.0/32 is subnetted, 1 subnets
C      1.1.1.1 is directly connected, Loopback0
2.0.0.0/32 is subnetted, 1 subnets
D      2.2.2.2 [90/2297856] via 10.10.10.2, 00:03:26,
Serial1/0
    3.0.0.0/32 is subnetted, 1 subnets
D      3.3.3.3 [90/2809856] via 10.10.10.2, 00:02:16,
Serial1/0
    22.0.0.0/32 is subnetted, 1 subnets
C      22.22.22.22 is directly connected, Loopback1
    10.0.0.0/24 is subnetted, 1 subnets
C      10.10.10.0 is directly connected, Serial1/0
11.0.0.0/24 is subnetted, 1 subnets
D      11.11.11.0 [90/2681856] via 10.10.10.2, 00:03:09,
Serial1/0
```

```
R3#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-
user static route
       o - ODR, P - periodic downloaded static route
```

Gateway of last resort is not set

```
    1.0.0.0/32 is subnetted, 1 subnets
D      1.1.1.1 [90/2809856] via 11.11.11.2, 00:03:04,
Serial1/0
    2.0.0.0/32 is subnetted, 1 subnets
D      2.2.2.2 [90/2297856] via 11.11.11.2, 00:03:04,
Serial1/0
    3.0.0.0/32 is subnetted, 1 subnets
C      3.3.3.3 is directly connected, Loopback0
22.0.0.0/32 is subnetted, 1 subnets
D EX 22.22.22.22 [170/2561024256] via 11.11.11.2, 00:00:47,
Serial1/0
    10.0.0.0/24 is subnetted, 1 subnets
D      10.10.10.0 [90/2681856] via 11.11.11.2, 00:03:06,
Serial1/0
    11.0.0.0/24 is subnetted, 1 subnets
```

```
C      11.11.11.0 is directly connected, Serial1/0
```

-coba kita tes ping :

```
R3#ping 22.22.22.22
```

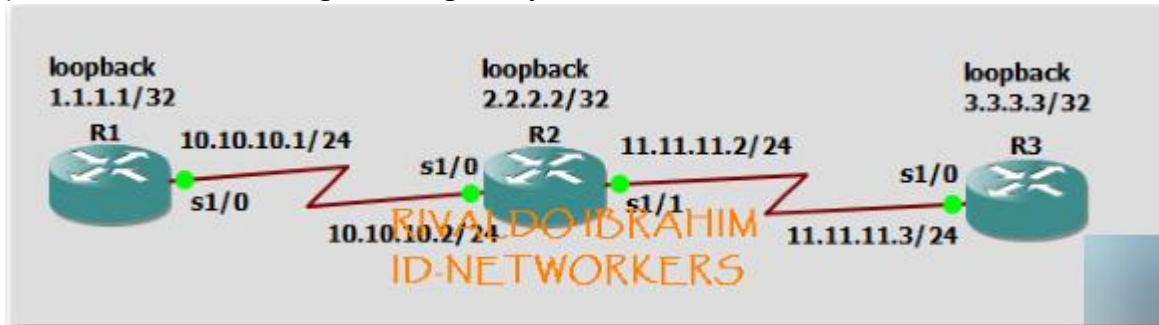
```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 22.22.22.22, timeout is 2  
seconds:
```

```
!!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max =  
60/94/140 ms
```

Pada pembahasan kali ini,kita akan membahas tentang redistribution ospf,sama seperti lab sebelumnya tetapi mendistribusi ospf ke eigrp dan rip.langsung saja kita praktekkan,berikut langkah-langkahnya :



-pertama,kita tambahkan loopback pada router 2 :

```
R2(config)#int lo1
R2(config-if)#
*Mar 1 00:22:00.791: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback1, changed state to up
R2(config-if)#ip add 33.33.33.33 255.255.255.255
```

-lalu kita konfigurasi ospf di router 2 :

```
R2(config-if)#router ospf 11
R2(config-router)#network 33.33.33.33 0.0.0.0 area 0
```

-setelah itu,kita redistribute rip ke eigrp :

```
R2(config-router)#router eigrp 10
R2(config-router)#redistribute ospf 11 metric 1 1 1 1 1
```

-coba kita lihat table route :

```
R1#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
      inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
      type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
      IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
      user static route
      o - ODR, P - periodic downloaded static route

      Gateway of last resort is not set

      1.0.0.0/32 is subnetted, 1 subnets
C          1.1.1.1 is directly connected, Loopback0
```

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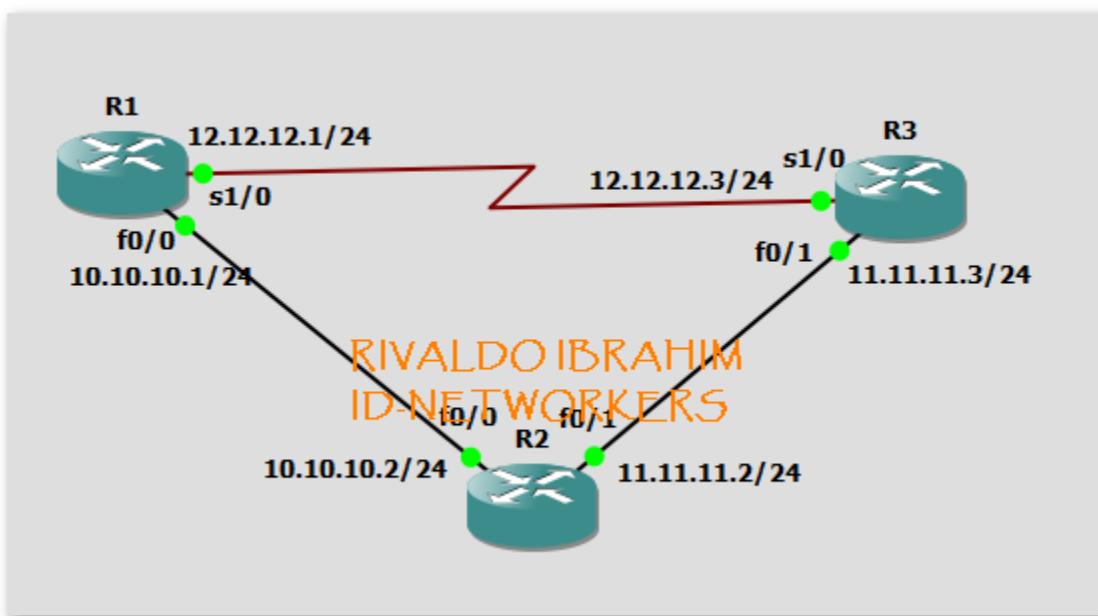
```
2.0.0.0/32 is subnetted, 1 subnets
D      2.2.2.2 [90/2297856] via 10.10.10.2, 00:13:30,
Serial1/0
33.0.0.0/32 is subnetted, 1 subnets
D EX  33.33.33.33 [170/2560512256] via 10.10.10.2, 00:00:06,
Serial1/0
      3.0.0.0/32 is subnetted, 1 subnets
D      3.3.3.3 [90/2809856] via 10.10.10.2, 00:12:20,
Serial1/0
      22.0.0.0/32 is subnetted, 1 subnets
C      22.22.22.22 is directly connected, Loopback1
      10.0.0.0/24 is subnetted, 1 subnets
C      10.10.10.0 is directly connected, Serial1/0
      11.0.0.0/24 is subnetted, 1 subnets
D      11.11.11.0 [90/2681856] via 10.10.10.2, 00:13:20,
Serial1/0
```

-coba kita tes ping :

```
R1#ping 33.33.33.33

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 33.33.33.33, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
44/72/88 ms
```

Pada pembahasan kali ini,kita akan membahas tentang mindah jalur delay. dimaksudkan bahwa kita bisa memindahkan jalur misal : si router ini ada di ip sekian lalu kita pindah jalur ke ip lainnya,kita disini menggunakan delay untuk memindahkan jalur tersebut.langsung saja kita praktekkan,berikut langkah-langkahnya :



-pertama,kita setting ip pada masing-masing router :

```
R1(config)#int lo0
R1(config-if)#
*Mar  1 00:00:39.267: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R1(config-if)#ip add 1.1.1.1 255.255.255.255
R1(config-if)#int f0/0
R1(config-if)#ip add 10.10.10.1 255.255.255.0
R1(config-if)#no sh
R1(config-if)#
*Mar  1 00:01:11.711: %LINK-3-UPDOWN: Interface
FastEthernet0/0, changed state to up
*Mar  1 00:01:12.711: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/0, changed state to up
R1(config-if)#int s1/0
R1(config-if)#ip add 12.12.12.1 255.255.255.0
R1(config-if)#no sh
R1(config-if)#
*Mar  1 00:03:08.011: %LINK-3-UPDOWN: Interface Serial1/0,
changed state to up
R1(config-if)#

```

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```
*Mar 1 00:03:09.015: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up
R1(config-if)#
*Mar 1 00:03:33.527: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to down
R1(config-if)#
*Mar 1 00:05:23.503: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up

R2(config)#int lo0
R2(config-if)#
*Mar 1 00:03:38.131: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R2(config-if)#ip add 2.2.2.2 255.255.255.255
R2(config-if)#int f0/0
R2(config-if)#ip add 10.10.10.2 255.255.255.0
R2(config-if)#no sh
R2(config-if)#
*Mar 1 00:04:17.031: %LINK-3-UPDOWN: Interface
FastEthernet0/0, changed state to up
*Mar 1 00:04:18.031: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/0, changed state to up
R2(config-if)#int f0/1
R2(config-if)#ip add 11.11.11.2 255.255.255.0
R2(config-if)#no sh
R2(config-if)#
*Mar 1 00:04:42.995: %LINK-3-UPDOWN: Interface
FastEthernet0/1, changed state to up
*Mar 1 00:04:43.995: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/1, changed state to up

R3(config-if)#int lo0
R3(config-if)#
*Mar 1 00:20:09.523: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R3(config-if)#ip add 3.3.3.3 255.255.255.255
R3(config-if)#int f0/1
R3(config-if)#ip add 11.11.11.3 255.255.255.0
R3(config-if)#no sh
R3(config-if)#
*Mar 1 00:05:13.955: %LINK-3-UPDOWN: Interface
FastEthernet0/1, changed state to up
*Mar 1 00:05:14.955: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/1, changed state to up
R3(config-if)#int s1/0
R3(config-if)#ip add 12.12.12.3 255.255.255.0
```

```
R3(config-if)#no sh
R3(config-if)#
*Mar  1 00:05:30.399: %LINK-3-UPDOWN: Interface Serial1/0,
changed state to up
R3(config-if)#
*Mar  1 00:05:31.403: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up
```

-lalu,kita setting eigrp pada masing-masing router:

```
R1(config-if)#router eigrp 10
R1(config-router)#network 1.1.1.1 0.0.0.0
R1(config-router)#network 10.10.10.1 0.0.0.0
R1(config-router)#network 12.12.12.1 0.0.0.0
R1(config-router)#no auto-summary
R1(config-router)#
*Mar  1 00:26:42.683: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.2 (FastEthernet0/0) is up: new adjacency
R1(config-router)#
*Mar  1 00:27:04.127: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.2 (FastEthernet0/0) is resync: peer graceful-
restart
R1(config-router)#
*Mar  1 00:28:12.271: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 12.12.12.3 (Serial1/0) is up: new adjacency
R1(config-router)#
*Mar  1 00:28:19.131: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 12.12.12.3 (Serial1/0) is resync: peer graceful-
restart
R1(config-router)#

R2(config-if)#router eigrp 10
R2(config-router)#network 2.2.2.2 0.0.0.0
R2(config-router)#network 10.10.10.2 0.0.0.0
R2(config-router)#netwo
*Mar  1 00:26:53.767: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is up: new adjacency
R2(config-router)#network 11.11.11.2 0.0.0.0
R2(config-router)#no auto-summary
R2(config-router)#
*Mar  1 00:27:15.083: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is resync: summary
configured
R2(config-router)#
*Mar  1 00:28:10.247: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is up: new adjacency
R2(config-router)#

```

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```
*Mar 1 00:28:30.243: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 11.11.11.3 (FastEthernet0/1) is resync: peer graceful-  
restart  
  
R3(config-if)#router eigrp 10  
R3(config-router)#network 3.3.3.3 0.0.0.0  
R3(config-router)#network 11.11.11.3 0.0.0.0  
R3(config-router)#net  
*Mar 1 00:28:10.727: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 11.11.11.2 (FastEthernet0/1) is up: new adjacency  
R3(config-router)#network 12.12.12.3 0.0.0.0  
R3(config-router)#no a  
*Mar 1 00:28:23.643: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 12.12.12.1 (Serial1/0) is up: new adjacency  
R3(config-router)#no auto-summary  
R3(config-router)#  
*Mar 1 00:28:30.531: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 11.11.11.2 (FastEthernet0/1) is resync: summary  
configured  
*Mar 1 00:28:30.535: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 12.12.12.1 (Serial1/0) is resync: summary configured
```

-untuk mengetahui route ke ip 3.3.3.3,ketikkan seperti berikut :

```
R1#sh ip route 3.3.3.3  
Routing entry for 3.3.3.3/32  
    Known via "eigrp 10", distance 90, metric 435200, type  
internal  
        Redistributing via eigrp 10  
        Last update from 10.10.10.2 on FastEthernet0/0, 00:03:59 ago  
        Routing Descriptor Blocks:  
            * 10.10.10.2, from 10.10.10.2, 00:03:59 ago, via  
FastEthernet0/0  
                Route metric is 435200, traffic share count is 1  
                Total delay is 7000 microseconds, minimum bandwidth is  
10000 Kbit  
                Reliability 255/255, minimum MTU 1500 bytes  
                Loading 1/255, Hops 2
```

-untuk mengetahui route apa yang bisa digunakan ke ip 3.3.3.3,ketikkan seperti berikut :
:

```
R1#sh ip eigrp top 3.3.3.3 255.255.255.255  
IP-EIGRP (AS 10): Topology entry for 3.3.3.3/32  
    State is Passive, Query origin flag is 1, 1 Successor(s), FD  
is 435200  
    Routing Descriptor Blocks:
```

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```
10.10.10.2 (FastEthernet0/0), from 10.10.10.2, Send flag is  
0x0  
    Composite metric is (435200/409600), Route is Internal  
    Vector metric:  
        Minimum bandwidth is 10000 Kbit  
        Total delay is 7000 microseconds  
        Reliability is 255/255  
        Load is 1/255  
        Minimum MTU is 1500  
        Hop count is 2  
12.12.12.3 (Serial1/0), from 12.12.12.3, Send flag is 0x0  
    Composite metric is (2297856/128256), Route is Internal  
    Vector metric:  
        Minimum bandwidth is 1544 Kbit  
        Total delay is 25000 microseconds  
        Reliability is 255/255  
        Load is 1/255  
        Minimum MTU is 1500  
        Hop count is 1
```

-lalu,kita pindah jalur dengan mengubah dari port f0/0 ke port s1/0,seperti ini :

```
R1(config)#int f0/0  
R1(config-if)#delay 100000  
R1(config-if)#do clear ip eigrp neighbors  
R1(config-if)#  
*Mar 1 00:38:05.143: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 10.10.10.2 (FastEthernet0/0) is down: manually cleared  
*Mar 1 00:38:05.155: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 12.12.12.3 (Serial1/0) is down: manually cleared  
R1(config-if)#  
*Mar 1 00:38:08.183: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 10.10.10.2 (FastEthernet0/0) is up: new adjacency  
*Mar 1 00:38:08.547: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 12.12.12.3 (Serial1/0) is up: new adjacency
```

-coba cek lagi dan lihat perubahannya :

```
R1#sh ip eigrp top 3.3.3.3 255.255.255.255  
IP-EIGRP (AS 10): Topology entry for 3.3.3.3/32  
    State is Passive, Query origin flag is 1, 1 Successor(s), FD  
is 2297856  
    Routing Descriptor Blocks:  
12.12.12.3 (Serial1/0), from 12.12.12.3, Send flag is 0x0  
    Composite metric is (2297856/128256), Route is Internal  
    Vector metric:  
        Minimum bandwidth is 1544 Kbit  
        Total delay is 25000 microseconds
```

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```
Reliability is 255/255
Load is 1/255
Minimum MTU is 1500
Hop count is 1
10.10.10.2 (FastEthernet0/0), from 10.10.10.2, Send flag is
0x0
Composite metric is (26009600/409600), Route is Internal
Vector metric:
    Minimum bandwidth is 10000 Kbit
Total delay is 1006000 microseconds
Reliability is 255/255
Load is 1/255
Minimum MTU is 1500
Hop count is 2
```

-cek lagi :

```
R1#sh ip route 3.3.3.3
Routing entry for 3.3.3.3/32
    Known via "eigrp 10", distance 90, metric 2297856, type
internal
    Redistributing via eigrp 10
    Last update from 12.12.12.3 on Serial1/0, 00:07:05 ago
    Routing Descriptor Blocks:
        * 12.12.12.3, from 12.12.12.3, 00:07:05 ago, via Serial1/0
            Route metric is 2297856, traffic share count is 1
            Total delay is 25000 microseconds, minimum bandwidth is
1544 Kbit
            Reliability 255/255, minimum MTU 1500 bytes
            Loading 1/255, Hops 1
```

-coba kita tes traceroute :

```
R1#traceroute 3.3.3.3

Type escape sequence to abort.
Tracing the route to 3.3.3.3

 1 12.12.12.3 76 msec 72 msec 20 msec
```

```
R1#traceroute 2.2.2.2
```

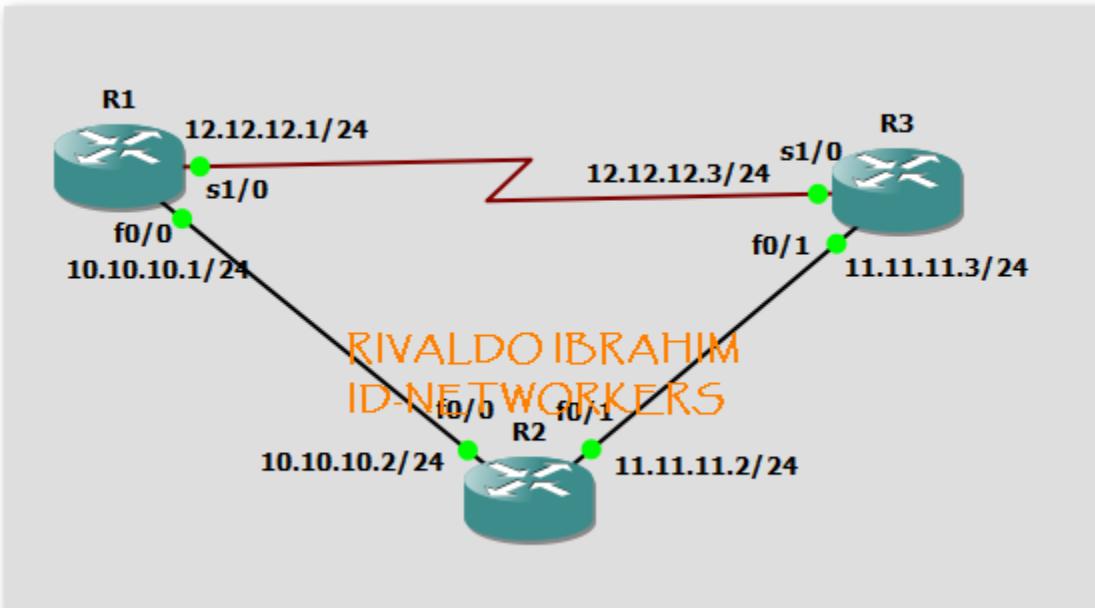
```
Type escape sequence to abort.
Tracing the route to 2.2.2.2
```

```
 1 12.12.12.3 112 msec 116 msec 56 msec
 2 11.11.11.2 40 msec 100 msec 32 msec
```

Lab 45

EIGRP mindah jalur bandwidth

Pada pembahasan kali ini,kita akan membahas tentang mindah jalur bandwidth,seperti lab sebelumnya.tetapi caranya memindahkan jalur yaitu melalui bandwidth.langsung saja kita praktekkan,berikut langkah-langkahnya :



-pertama,kita hapus settingan delay :

```
R1(config)#int f0/0
R1(config-if)#no delay 100000
```

-lalu,lakukan pengecekan :

```
R1(config-if)#do sh ip eigrp top 3.3.3.3 255.255.255.255
IP-EIGRP (AS 10): Topology entry for 3.3.3.3/32
  State is Passive, Query origin flag is 1, 1 Successor(s), FD
  is 435200
  Routing Descriptor Blocks:
    10.10.10.2 (FastEthernet0/0), from 10.10.10.2, Send flag is
    0x0
      Composite metric is (435200/409600), Route is Internal
      Vector metric:
        Minimum bandwidth is 10000 Kbit
        Total delay is 7000 microseconds
        Reliability is 255/255
        Load is 1/255
        Minimum MTU is 1500
        Hop count is 2
    12.12.12.3 (Serial1/0), from 12.12.12.3, Send flag is 0x0
      Composite metric is (2297856/128256), Route is Internal
```

Vector metric:

```
Minimum bandwidth is 1544 Kbit
Total delay is 25000 microseconds
Reliability is 255/255
Load is 1/255
Minimum MTU is 1500
Hop count is 1
```

-setelah itu,kita setting bandwidth :

```
R1(config)#int f0/0
R1(config-if)#bandwidth 1000
```

-lalu,kita refresh table routenya :

```
R1(config)#do clear ip eigrp neighbors
R1(config)#
*Mar 1 00:54:28.823: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.2 (FastEthernet0/0) is down: manually cleared
*Mar 1 00:54:28.835: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 12.12.12.3 (Serial1/0) is down: manually cleared
*Mar 1 00:54:29.351: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.2 (FastEthernet0/0) is up: new adjacency
*Mar 1 00:54:29.363: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 12.12.12.3 (Serial1/0) is up: new adjacency
```

-setelah itu,lakukan pengecekan dan lihat perubahannya :

```
R1(config)#do sh ip eigrp top 3.3.3.3 255.255.255.255
IP-EIGRP (AS 10): Topology entry for 3.3.3.3/32
State is Passive, Query origin flag is 1, 1 Successor(s), FD
is 2297856
Routing Descriptor Blocks:
12.12.12.3 (Serial1/0), from 12.12.12.3, Send flag is 0x0
Composite metric is (2297856/128256), Route is Internal
Vector metric:
Minimum bandwidth is 1544 Kbit
Total delay is 25000 microseconds
Reliability is 255/255
Load is 1/255
Minimum MTU is 1500
Hop count is 1
10.10.10.2 (FastEthernet0/0), from 10.10.10.2, Send flag is
0x0
Composite metric is (2739200/409600), Route is Internal
Vector metric:
Minimum bandwidth is 1000 Kbit
Total delay is 7000 microseconds
Reliability is 255/255
Load is 1/255
```

```
Minimum MTU is 1500
Hop count is 2
```

-setelah itu,kita cek hasil table route :

```
R1#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
      inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
      type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
      IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
      user static route
      o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

      1.0.0.0/32 is subnetted, 1 subnets
C          1.1.1.1 is directly connected, Loopback0
2.0.0.0/32 is subnetted, 1 subnets
D          2.2.2.2 [90/2323456] via 12.12.12.3, 00:02:33,
Serial1/0
3.0.0.0/32 is subnetted, 1 subnets
D          3.3.3.3 [90/2297856] via 12.12.12.3, 00:02:33,
Serial1/0
      10.0.0.0/24 is subnetted, 1 subnets
C          10.10.10.0 is directly connected, FastEthernet0/0
11.0.0.0/24 is subnetted, 1 subnets
D          11.11.11.0 [90/2195456] via 12.12.12.3, 00:02:33,
Serial1/0
      12.0.0.0/24 is subnetted, 1 subnets
C          12.12.12.0 is directly connected, Serial1/0
```

-coba kita tes dengan traceroute :

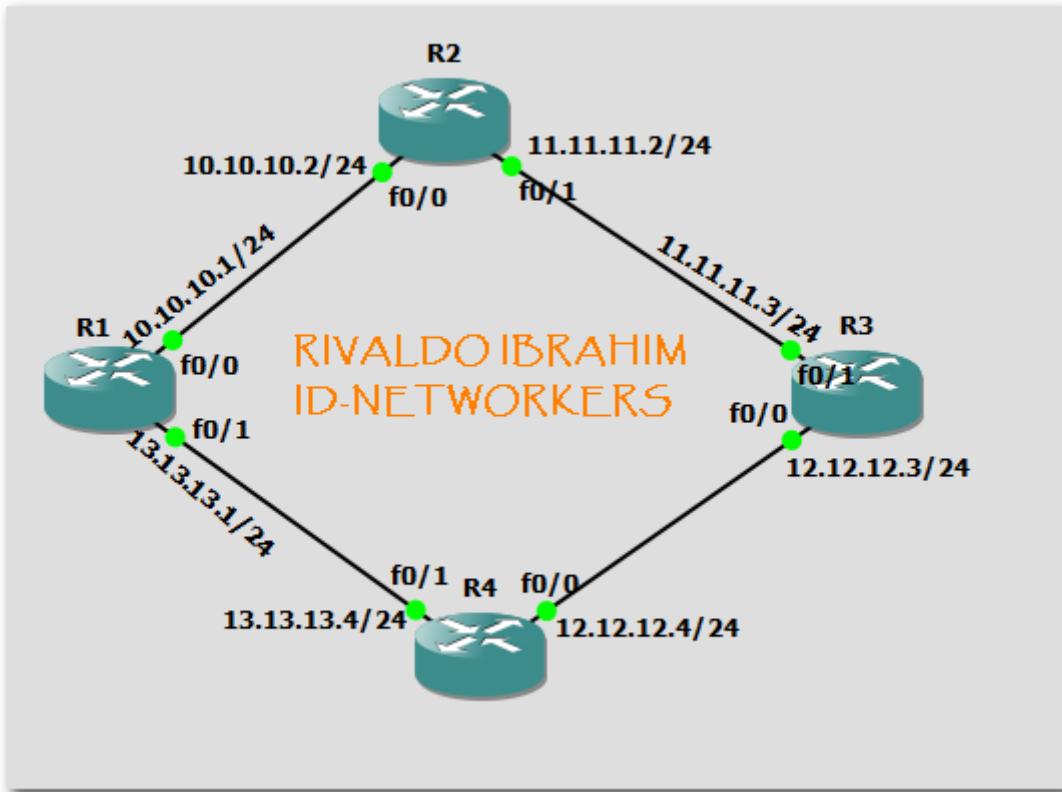
```
R1#traceroute 3.3.3.3
Type escape sequence to abort.
Tracing the route to 3.3.3.3
  1 12.12.12.3 120 msec 100 msec 48 msec

R1#traceroute 2.2.2.2
Type escape sequence to abort.
Tracing the route to 2.2.2.2
  1 12.12.12.3 112 msec 132 msec 40 msec
  2 11.11.11.2 68 msec 68 msec 40 msec
```

Lab 46

EIGRP equal load balancing

Pada pembahasan kali ini,kita akan membahas tentang equal load balancing,disini kita akan melewatkkan paket data pada dua jalur.langsung saja kita praktekkan,berikut langkah-langkahnya :



-pertama,kita setting ip pada masing-masing router :

```
R1(config)#int lo0
R1(config-if)#
*Mar  1 00:01:27.203: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R1(config-if)#ip add 1.1.1.1 255.255.255.255
R1(config-if)#int f0/0
R1(config-if)#ip add 10.10.10.1 255.255.255.0
R1(config-if)#no sh
R1(config-if)#
*Mar  1 00:02:31.379: %LINK-3-UPDOWN: Interface
FastEthernet0/0, changed state to up
*Mar  1 00:02:32.379: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/0, changed state to up
R1(config-if)#int f0/1
R1(config-if)#ip add 13.13.13.1 255.255.255.0
```

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```
R1(config-if)#no sh
R1(config-if)#
*Mar  1 00:03:01.983: %LINK-3-UPDOWN: Interface
FastEthernet0/1, changed state to up
*Mar  1 00:03:02.983: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/1, changed state to up

R2(config)#int lo0
R2(config-if)#
*Mar  1 00:03:36.967: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R2(config-if)#ip add 2.2.2.2 255.255.255.255
R2(config-if)#int f0/0
R2(config-if)#ip add 10.10.10.2 255.255.255.0
R2(config-if)#no sh
R2(config-if)#
*Mar  1 00:04:39.491: %LINK-3-UPDOWN: Interface
FastEthernet0/0, changed state to up
*Mar  1 00:04:40.491: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/0, changed state to up
R2(config-if)#int f0/1
R2(config-if)#ip add 11.11.11.2 255.255.255.0
R2(config-if)#no sh
R2(config-if)#
*Mar  1 00:05:03.251: %LINK-3-UPDOWN: Interface
FastEthernet0/1, changed state to up
*Mar  1 00:05:04.251: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/1, changed state to up

R3(config)#int lo0
R3(config-if)#
*Mar  1 00:06:05.203: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R3(config-if)#ip add 3.3.3.3 255.255.255.0
R3(config-if)#int f0/1
R3(config-if)#ip add 11.11.11.3 255.255.255.0
R3(config-if)#int f0/0
R3(config-if)#int f0/1
R3(config-if)#ip add 11.11.11.3 255.255.255.0
R3(config-if)#no sh
R3(config-if)#
*Mar  1 00:07:13.223: %LINK-3-UPDOWN: Interface
FastEthernet0/1, changed state to up
*Mar  1 00:07:14.223: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/1, changed state to up
R3(config-if)#int f0/0
```

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```
R3(config-if)#ip add 12.12.12.3 255.255.255.0
R3(config-if)#no sh
R3(config-if)#
*Mar 1 00:07:34.591: %LINK-3-UPDOWN: Interface
FastEthernet0/0, changed state to up
*Mar 1 00:07:35.591: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/0, changed state to up

R4(config)#int lo0
R4(config-if)#
*Mar 1 00:07:50.371: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R4(config-if)#ip add 4.4.4.4 255.255.255.255
R4(config-if)#int f0/0
R4(config-if)#ip add 12.12.12.4 255.255.255.0
R4(config-if)#no sh
R4(config-if)#
*Mar 1 00:08:25.087: %LINK-3-UPDOWN: Interface
FastEthernet0/0, changed state to up
*Mar 1 00:08:26.087: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/0, changed state to up
R4(config-if)#int f0/1
R4(config-if)#ip add 13.13.13.4 255.255.255.0
R4(config-if)#no sh
R4(config-if)#
*Mar 1 00:08:50.763: %LINK-3-UPDOWN: Interface
FastEthernet0/1, changed state to up
*Mar 1 00:08:51.763: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/1, changed state to up
```

-setelah itu,kita gunakan eigrp :

```
R1(config-if)#router eigrp 16
R1(config-router)#network 0.0.0.0
R1(config-router)#no auto-summary
R1(config-router)#
*Mar 1 00:16:25.827: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 16:
Neighbor 10.10.10.2 (FastEthernet0/0) is up: new adjacency
R1(config-router)#
*Mar 1 00:16:34.483: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 16:
Neighbor 10.10.10.2 (FastEthernet0/0) is resync: peer graceful-
restart
R1(config-router)#
*Mar 1 00:17:04.659: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 16:
Neighbor 13.13.13.4 (FastEthernet0/1) is up: new adjacency
R1(config-router)#

```

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```
*Mar  1 00:17:11.567: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 16:  
Neighbor 13.13.13.4 (FastEthernet0/1) is resync: peer graceful-  
restart  
  
R2(config-if)#router eigrp 16  
R2(config-router)#network 0.0.0.0  
R2(config-router)#no  
*Mar  1 00:16:18.215: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 16:  
Neighbor 10.10.10.1 (FastEthernet0/0) is up: new adjacency  
R2(config-router)#no auto-summary  
R2(config-router)#  
*Mar  1 00:16:26.775: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 16:  
Neighbor 10.10.10.1 (FastEthernet0/0) is resync: summary  
configured  
R2(config-router)#  
*Mar  1 00:16:41.075: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 16:  
Neighbor 11.11.11.3 (FastEthernet0/1) is up: new adjacency  
R2(config-router)#  
*Mar  1 00:16:45.535: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 16:  
Neighbor 11.11.11.3 (FastEthernet0/1) is resync: peer graceful-  
restart  
  
R3(config-if)#router eigrp 16  
R3(config-router)#network 0.0.0.0  
R3(config-router)#no aut  
*Mar  1 00:17:03.051: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 16:  
Neighbor 11.11.11.2 (FastEthernet0/1) is up: new adjacency  
R3(config-router)#no auto-summary  
R3(config-router)#  
*Mar  1 00:17:07.419: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 16:  
Neighbor 11.11.11.2 (FastEthernet0/1) is resync: summary  
configured  
R3(config-router)#  
*Mar  1 00:17:18.887: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 16:  
Neighbor 12.12.12.4 (FastEthernet0/0) is up: new adjacency  
R3(config-router)#  
*Mar  1 00:17:26.023: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 16:  
Neighbor 12.12.12.4 (FastEthernet0/0) is resync: peer graceful-  
restart  
  
R4(config-if)#router eigrp 16  
R4(config-router)#network 0.0.0.0  
R4(config-router)#no a  
*Mar  1 00:17:19.351: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 16:  
Neighbor 13.13.13.1 (FastEthernet0/1) is up: new adjacency
```

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```
*Mar 1 00:17:19.355: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 16:  
Neighbor 12.12.12.3 (FastEthernet0/0) is up: new adjacency  
R4(config-router)#no auto-summary  
R4(config-router)#  
*Mar 1 00:17:26.307: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 16:  
Neighbor 12.12.12.3 (FastEthernet0/0) is resync: summary  
configured  
*Mar 1 00:17:26.311: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 16:  
Neighbor 13.13.13.1 (FastEthernet0/1) is resync: summary  
configured
```

-coba lakukan pengecekan pada table route :

```
R1#sh ip route  
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP  
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF  
inter area  
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external  
type 2  
       E1 - OSPF external type 1, E2 - OSPF external type 2  
           i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -  
IS-IS level-2  
           ia - IS-IS inter area, * - candidate default, U - per-  
user static route  
           o - ODR, P - periodic downloaded static route
```

Gateway of last resort is not set

```
    1.0.0.0/32 is subnetted, 1 subnets  
C        1.1.1.1 is directly connected, Loopback0  
    2.0.0.0/32 is subnetted, 1 subnets  
D 2.2.2.2 [90/409600] via 10.10.10.2, 00:04:19, FastEthernet0/0  
      3.0.0.0/24 is subnetted, 1 subnets  
D 3.3.3.0 [90/435200] via 13.13.13.4, 00:03:47, FastEthernet0/1  
      [90/435200] via 10.10.10.2, 00:03:47, FastEthernet0/0  
      4.0.0.0/32 is subnetted, 1 subnets  
D 4.4.4.4 [90/409600] via 13.13.13.4, 00:03:42, FastEthernet0/1  
      10.0.0.0/24 is subnetted, 1 subnets  
C        10.10.10.0 is directly connected, FastEthernet0/0  
      11.0.0.0/24 is subnetted, 1 subnets  
D 11.11.11.0 [90/307200] via 10.10.10.2, 00:03:48,  
FastEthernet0/0  
      12.0.0.0/24 is subnetted, 1 subnets  
D 12.12.12.0 [90/307200] via 13.13.13.4, 00:03:44,  
FastEthernet0/1  
      13.0.0.0/24 is subnetted, 1 subnets  
C        13.13.13.0 is directly connected, FastEthernet0/1
```

-coba lakukan pengecekan route pada 3.3.3.3 :

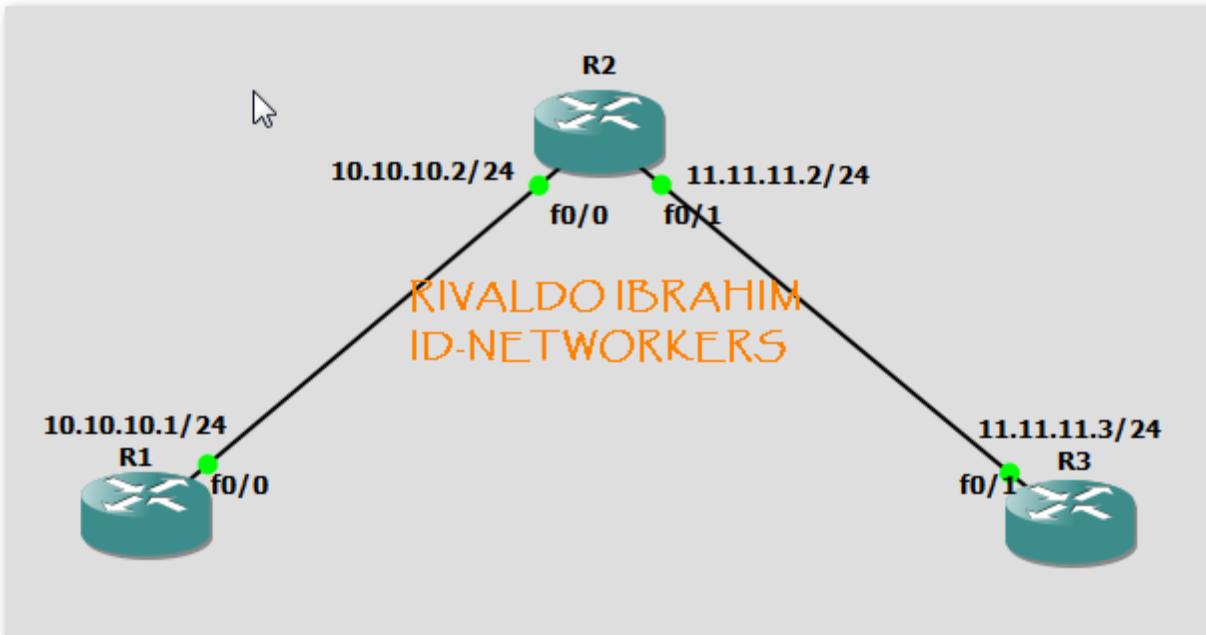
```
R1#sh ip route 3.3.3.3
Routing entry for 3.3.3.0/24
  Known via "eigrp 16", distance 90, metric 435200, type
internal
  Redistributing via eigrp 16
  Last update from 13.13.13.4 on FastEthernet0/1, 00:04:49 ago
  Routing Descriptor Blocks:
    13.13.13.4, from 13.13.13.4, 00:04:49 ago, via
FastEthernet0/1
      Route metric is 435200, traffic share count is 1
      Total delay is 7000 microseconds, minimum bandwidth is
10000 Kbit
      Reliability 255/255, minimum MTU 1500 bytes
      Loading 1/255, Hops 2
    * 10.10.10.2, from 10.10.10.2, 00:04:49 ago, via
FastEthernet0/0
      Route metric is 435200, traffic share count is 1
      Total delay is 7000 microseconds, minimum bandwidth is
10000 Kbit
      Reliability 255/255, minimum MTU 1500 bytes
      Loading 1/255, Hops 2
```

RIVALDO'

Lab 47

EIGRP stub connected + summary

Pada pembahasan kali ini,kita akan membahas tentang stub connected + summary.fungsinya yang directly connected dan summary address yang akan kita advertise.langsung saja kita praktekkan,berikut langkah-langkahnya :



-pertama,kita setting ip pada masing-masing router :

```
R1(config)#int lo0
R1(config-if)#
*Mar 1 00:02:12.135: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R1(config-if)#ip add 1.1.1.1 255.255.255.255
R1(config-if)#int f0/0
R1(config-if)#ip add 10.10.10.1 255.255.255.0
R1(config-if)#no sh
R1(config-if)#
*Mar 1 00:03:58.831: %LINK-3-UPDOWN: Interface
FastEthernet0/0, changed state to up
*Mar 1 00:03:59.831: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/0, changed state to up

R2(config)#int lo0
R2(config-if)#
*Mar 1 00:12:02.479: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R2(config-if)#ip add 2.2.2.2 255.255.255.255
```

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```
R2(config-if)#int f0/0
R2(config-if)#ip add 10.10.10.2 255.255.255.0
R2(config-if)#no sh
^
% Invalid input detected at '^' marker.

R2(config-if)#no sh
R2(config-if)#
*Mar 1 00:12:40.995: %LINK-3-UPDOWN: Interface
FastEthernet0/0, changed state to up
*Mar 1 00:12:41.995: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/0, changed state to up
R2(config-if)#int f0/1
R2(config-if)#ip add 11.11.11.2 255.255.255.0
R2(config-if)#no sh
R2(config-if)#
*Mar 1 00:18:00.439: %LINK-3-UPDOWN: Interface
FastEthernet0/1, changed state to up
*Mar 1 00:18:01.439: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/1, changed state to up

R3(config)#int lo0
R3(config-if)#
*Mar 1 00:18:48.239: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R3(config-if)#ip add 3.3.3.3 255.255.255.255
R3(config-if)#int f0/1
R3(config-if)#ip add 11.11.11.3 255.255.255.0
R3(config-if)#no sh
R3(config-if)#
*Mar 1 00:19:24.279: %LINK-3-UPDOWN: Interface
FastEthernet0/1, changed state to up
*Mar 1 00:19:25.279: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/1, changed state to up
```

-kita tambahkan loopback pada router 2 :

```
R2(config)#int lo1
R2(config-if)#
*Mar 1 00:27:09.939: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback1, changed state to up
R2(config-if)#ip add 22.22.21.1 255.255.255.0
R2(config-if)#int lo2
R2(config-if)#
*Mar 1 00:27:32.703: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback2, changed state to up
R2(config-if)#ip add 22.22.22.1 255.255.255.0
```

```
R2(config-if)#int lo3
R2(config-if)#
*Mar  1 00:28:01.031: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback3, changed state to up
R2(config-if)#ip add 22.22.23.1 255.255.255.0
R2(config-if)#int lo4
R2(config-if)#
*Mar  1 00:28:15.331: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback4, changed state to up
R2(config-if)#ip add 22.22.24.1 255.255.255.0
R2(config-if)#int lo5
R2(config-if)#
*Mar  1 00:28:32.967: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback5, changed state to up
R2(config-if)#ip add 22.22.25.1 255.255.255.0
```

-lalu,kita setting routing protocol pada masing-masing router :

```
R1(config-router)#router eigrp 10
R1(config-router)#redistribute static
R1(config-router)#network 10.10.10.1 0.0.0.0
R1(config-router)#no aut
*Mar  1 00:11:37.751: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.2 (FastEthernet0/0) is up: new adjacency
R1(config-router)#no auto-summary
R1(config-router)#
*Mar  1 00:12:13.863: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.2 (FastEthernet0/0) is resync: peer graceful-
restart

R2(config-if)#router eigrp 10
R2(config-router)#redistribute static
R2(config-router)#redistribute rip metric 1 1 1 1 1
R2(config-router)#network 2.2.2.2 0.0.0.0
R2(config-router)#network 10.10.10.2 0.0.0.0
R2(config-router)#network 22.22.0.0 0.0.0.0
R2(config-router)#network
*Mar  1 00:11:38.223: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is up: new adjacency
R2(config-router)#network 11.11.11.2 0.0.0.0
R2(config-router)#no auto-summary
R2(config-router)#
*Mar  1 00:12:14.387: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is resync: summary
configured
R2(config)#router rip
R2(config-router)#network 22.0.0.0
```

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```
R2(config-router)#
R2(config-router)#ip route 1.1.1.1 255.255.255.255 f0/0
R2(config)#
R2(config)#int f0/1
R2(config-if)#ip summary-address eigrp 10 22.22.0.0 255.255.0.0
5
R2(config-if)#
*Mar 1 00:14:33.651: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is up: new adjacency
R2(config-if)#
*Mar 1 00:14:40.143: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is resync: peer graceful-
restart

R3(config-if)#router eigrp 10
R3(config-router)#network 3.3.3.3 0.0.0.0
R3(config-router)#network 11.11.11.3 0.0.0.0
R3(config-router)#no au
*Mar 1 00:14:34.639: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.2 (FastEthernet0/1) is up: new adjacency
R3(config-router)#no auto-summary
R3(config-router)#
*Mar 1 00:14:40.999: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.2 (FastEthernet0/1) is resync: summary
configured
```

-coba kita lihat hasil table route :

```
R3#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
user static route
      o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

      1.0.0.0/32 is subnetted, 1 subnets
D EX    1.1.1.1 [170/307200] via 11.11.11.2, 00:00:17,
FastEthernet0/1
      2.0.0.0/32 is subnetted, 1 subnets
```

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```
D      2.2.2.2 [90/409600] via 11.11.11.2, 00:00:17,
FastEthernet0/1
    3.0.0.0/32 is subnetted, 1 subnets
C      3.3.3.3 is directly connected, Loopback0
    22.0.0.0/16 is subnetted, 1 subnets
D      22.22.0.0 [90/2560025856] via 11.11.11.2, 00:00:17,
FastEthernet0/1
    10.0.0.0/24 is subnetted, 1 subnets
D      10.10.10.0 [90/307200] via 11.11.11.2, 00:00:19,
FastEthernet0/1
    11.0.0.0/24 is subnetted, 1 subnets
C      11.11.11.0 is directly connected, FastEthernet0/1
```

-setelah itu,kita tambahkan konfigurasi stub nya pada router 2 :

```
R2(config-if)#router eigrp 10
R2(config-router)#eigrp stub
R2(config-router)#
*Mar  1 00:18:06.499: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is down: peer info
changed
*Mar  1 00:18:06.511: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is down: peer info
changed
R2(config-router)#
*Mar  1 00:18:08.223: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is up: new adjacency
*Mar  1 00:18:08.823: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is up: new adjacency
```

-coba kita cek lagi table route dan lihat perubahannya,pastikan redistribute hilang :

```
R3#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
user static route
      o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

      2.0.0.0/32 is subnetted, 1 subnets
```

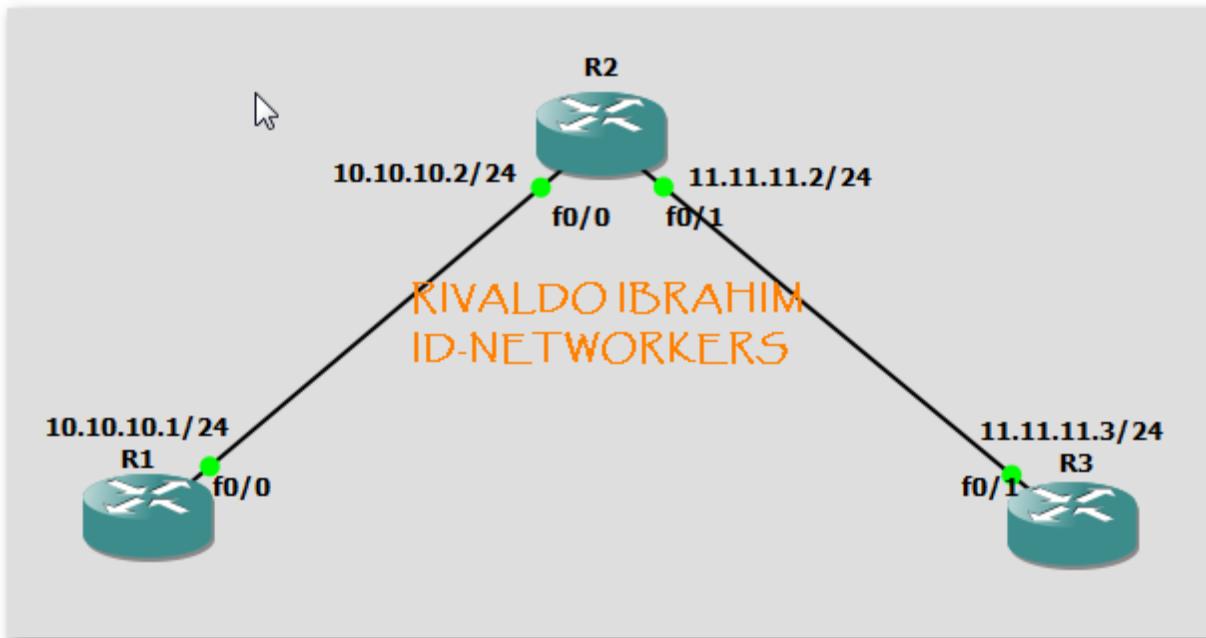
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```
D      2.2.2.2 [90/409600] via 11.11.11.2, 00:01:24,
FastEthernet0/1
    3.0.0.0/32 is subnetted, 1 subnets
C      3.3.3.3 is directly connected, Loopback0
    22.0.0.0/16 is subnetted, 1 subnets
D      22.22.0.0 [90/2560025856] via 11.11.11.2, 00:01:24,
FastEthernet0/1
    10.0.0.0/24 is subnetted, 1 subnets
D      10.10.10.0 [90/307200] via 11.11.11.2, 00:01:24,
FastEthernet0/1
    11.0.0.0/24 is subnetted, 1 subnets
C      11.11.11.0 is directly connected, FastEthernet0/1
```

Lab 48

EIGRP stub connected

Pada pembahasan kali ini,kita akan membahas stub connected.fungsinya yang directly connected akan di advertise,jadi bila ada yang sudah langsung terhubung maka akan di kenalkan ke router lainnya.langsung saja kita praktekkan,berikut langkah-langkahnya :



-pertama,kita hapus konfigurasi stub :

```
R2(config)#router eigrp 10
R2(config-router)#no eigrp stub
R2(config-router)#
*Mar 1 00:21:55.247: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is down: peer info
changed
*Mar 1 00:21:55.259: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is down: peer info
changed
R2(config-router)#
*Mar 1 00:21:56.267: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is up: new adjacency
*Mar 1 00:21:56.623: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is up: new adjacency
```

-coba lihat table routenya,redistributennya kita tampilkan :

```
R3#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
```

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```
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF  
inter area  
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external  
type 2  
E1 - OSPF external type 1, E2 - OSPF external type 2  
i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -  
IS-IS level-2  
ia - IS-IS inter area, * - candidate default, U - per-  
user static route  
o - ODR, P - periodic downloaded static route
```

Gateway of last resort is not set

```
1.0.0.0/32 is subnetted, 1 subnets  
D EX 1.1.1.1 [170/307200] via 11.11.11.2, 00:01:19,  
FastEthernet0/1  
    2.0.0.0/32 is subnetted, 1 subnets  
D        2.2.2.2 [90/409600] via 11.11.11.2, 00:01:19,  
FastEthernet0/1  
    3.0.0.0/32 is subnetted, 1 subnets  
C        3.3.3.3 is directly connected, Loopback0  
22.0.0.0/16 is subnetted, 1 subnets  
D      22.22.0.0 [90/2560025856] via 11.11.11.2, 00:01:19,  
FastEthernet0/1  
    10.0.0.0/24 is subnetted, 1 subnets  
D        10.10.10.0 [90/307200] via 11.11.11.2, 00:01:21,  
FastEthernet0/1  
    11.0.0.0/24 is subnetted, 1 subnets  
C        11.11.11.0 is directly connected, FastEthernet0/1
```

-sekarang kita aktifkan stub connectednya :

```
R2(config-router)#eigrp stub connected  
R2(config-router)#  
*Mar 1 00:24:15.995: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 10.10.10.1 (FastEthernet0/0) is down: peer info  
changed  
*Mar 1 00:24:16.007: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 11.11.11.3 (FastEthernet0/1) is down: peer info  
changed  
R2(config-router)#  
*Mar 1 00:24:19.463: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 10.10.10.1 (FastEthernet0/0) is up: new adjacency  
*Mar 1 00:24:19.807: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:  
Neighbor 11.11.11.3 (FastEthernet0/1) is up: new adjacency
```

CISCO ITU MUDAH

.coba kita lihat table routenya :

```
R3#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
      inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
      type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
      IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
      user static route
      o - ODR, P - periodic downloaded static route

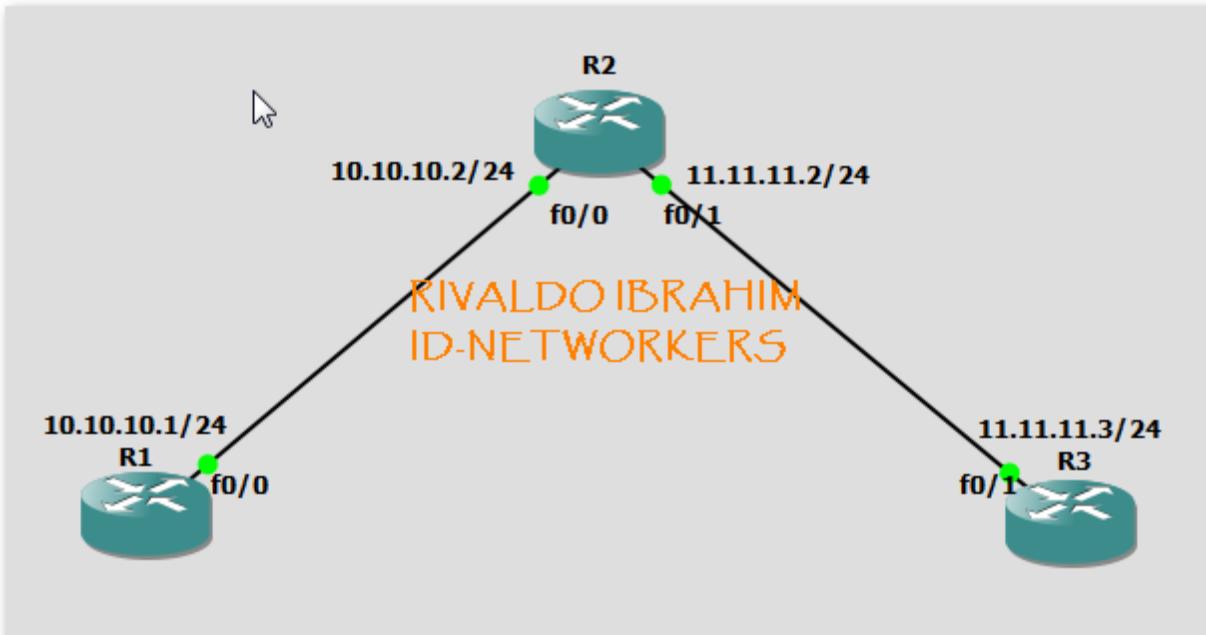
Gateway of last resort is not set

  2.0.0.0/32 is subnetted, 1 subnets
D        2.2.2.2 [90/409600] via 11.11.11.2, 00:00:47,
FastEthernet0/1
        3.0.0.0/32 is subnetted, 1 subnets
C          3.3.3.3 is directly connected, Loopback0
        10.0.0.0/24 is subnetted, 1 subnets
D          10.10.10.0 [90/307200] via 11.11.11.2, 00:00:47,
FastEthernet0/1
        11.0.0.0/24 is subnetted, 1 subnets
C          11.11.11.0 is directly connected, FastEthernet0/1
```

Lab 49

EIGRP stub summary

Pada pembahasan kali ini,saya akan membahas tentang stub summary.fungsinya yang hanya di advertise yang summary addressnya saja.langsung saja kita praktekkan,berikut langkah-langkahnya :



-pertama,kita hapus konfigurasi stub :

```
R2 (config-router) #router eigrp 10
R2 (config-router) #no eigrp stub
R2 (config-router) #
*Mar 1 00:32:43.455: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is down: peer info
changed
*Mar 1 00:32:43.467: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is down: peer info
changed
R2 (config-router) #
*Mar 1 00:32:47.363: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is up: new adjacency
*Mar 1 00:32:47.807: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is up: new adjacency
```

-setelah itu,kita lihat table route :

```
R3#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
inter area
```

CISCO ITU MUDAH

```
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
E1 - OSPF external type 1, E2 - OSPF external type 2
    i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
IS-IS level-2
    ia - IS-IS inter area, * - candidate default, U - per-
user static route
    o - ODR, P - periodic downloaded static route
```

Gateway of last resort is not set

```
1.0.0.0/32 is subnetted, 1 subnets
D EX 1.1.1.1 [170/307200] via 11.11.11.2, 00:01:05,
FastEthernet0/1
    2.0.0.0/32 is subnetted, 1 subnets
D      2.2.2.2 [90/409600] via 11.11.11.2, 00:01:05,
FastEthernet0/1
    3.0.0.0/32 is subnetted, 1 subnets
C      3.3.3.3 is directly connected, Loopback0
    22.0.0.0/16 is subnetted, 1 subnets
D      22.22.0.0 [90/2560025856] via 11.11.11.2, 00:01:05,
FastEthernet0/1
    10.0.0.0/24 is subnetted, 1 subnets
D      10.10.10.0 [90/307200] via 11.11.11.2, 00:01:07,
FastEthernet0/1
    11.0.0.0/24 is subnetted, 1 subnets
C      11.11.11.0 is directly connected, FastEthernet0/1
```

-setelah itu,kita aktifkan stub summary :

```
R2(config-router)#eigrp stub summary
R2(config-router)#
*Mar 1 00:35:15.759: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is down: peer info
changed
*Mar 1 00:35:15.771: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is down: peer info
changed
R2(config-router)#
*Mar 1 00:35:17.331: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is up: new adjacency
R2(config-router)#
*Mar 1 00:35:19.447: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is up: new adjacency
```

-coba kita lihat table route dan lihat perubahannya :

```
R3#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
      inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
      type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
      IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
      user static route
      o - ODR, P - periodic downloaded static route

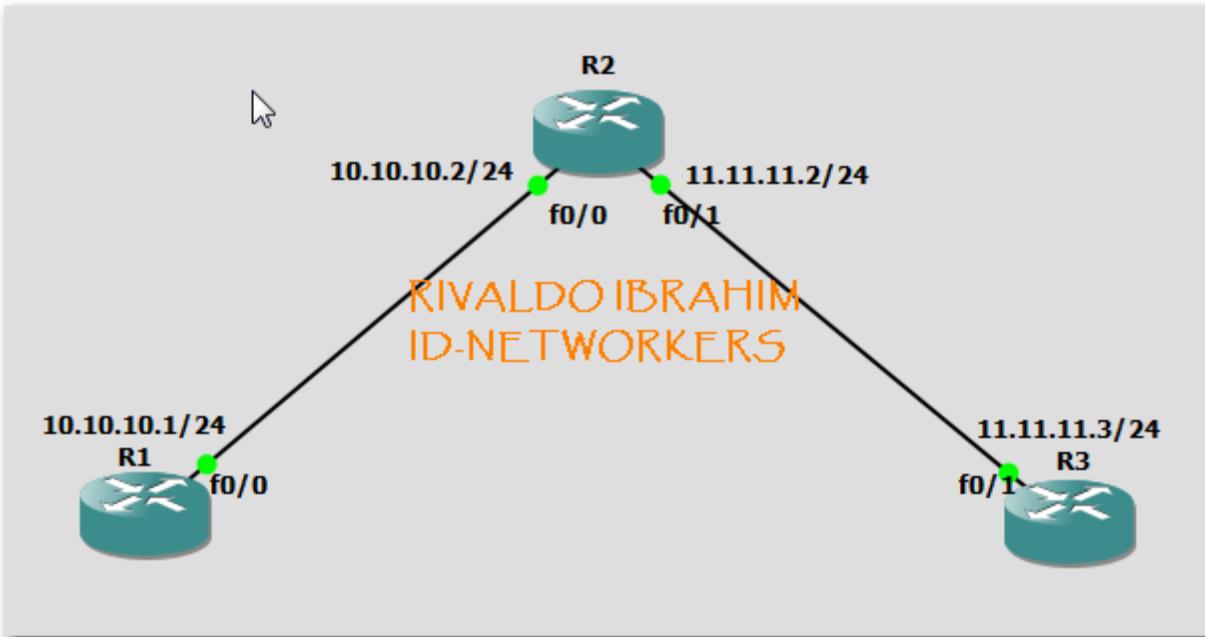
Gateway of last resort is not set

      3.0.0.0/32 is subnetted, 1 subnets
C          3.3.3.3 is directly connected, Loopback0
      22.0.0.0/16 is subnetted, 1 subnets
D          22.22.0.0 [90/2560025856] via 11.11.11.2, 00:01:00,
FastEthernet0/1
      11.0.0.0/24 is subnetted, 1 subnets
C          11.11.11.0 is directly connected, FastEthernet0/1
```

Lab 50

EIGRP stub static

Pada pembahasan kali ini,kita akan membahas tentang stub static.fungsinya jika kita gunakan static route sebelum di advertise kita redistribute dulu.langsung saja kita praktekkan,berikut langkah-langkahnya :



-pertama,kita hapus konfigurasi stub :

```

R2(config)#router eigrp 10
R2(config-router)#no eigrp stub
R2(config-router)#
*Mar 1 00:38:42.271: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is down: peer info
changed
*Mar 1 00:38:42.283: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is down: peer info
changed
*Mar 1 00:38:43.131: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is up: new adjacency
R2(config-router)#
*Mar 1 00:38:46.283: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is up: new adjacency
    
```

-coba kita lihat table route nya :

```

R3#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
      inter area
    
```

CISCO ITU MUDAH

```
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
E1 - OSPF external type 1, E2 - OSPF external type 2
    i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
IS-IS level-2
    ia - IS-IS inter area, * - candidate default, U - per-
user static route
    o - ODR, P - periodic downloaded static route
```

Gateway of last resort is not set

```
1.0.0.0/32 is subnetted, 1 subnets
D EX 1.1.1.1 [170/307200] via 11.11.11.2, 00:00:45,
FastEthernet0/1
2.0.0.0/32 is subnetted, 1 subnets
D 2.2.2.2 [90/409600] via 11.11.11.2, 00:00:45,
FastEthernet0/1
    3.0.0.0/32 is subnetted, 1 subnets
C      3.3.3.3 is directly connected, Loopback0
22.0.0.0/16 is subnetted, 1 subnets
D 22.22.0.0 [90/2560025856] via 11.11.11.2, 00:00:45,
FastEthernet0/1
10.0.0.0/24 is subnetted, 1 subnets
D 10.10.10.0 [90/307200] via 11.11.11.2, 00:00:48,
FastEthernet0/1
    11.0.0.0/24 is subnetted, 1 subnets
C      11.11.11.0 is directly connected, FastEthernet0/1
```

-lalu,kita aktifkan stub static :

```
R2(config-router)#eigrp stub static
R2(config-router)#
*Mar 1 00:40:24.791: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is down: peer info
changed
*Mar 1 00:40:24.803: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is down: peer info
changed
R2(config-router)#
*Mar 1 00:40:28.915: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is up: new adjacency
*Mar 1 00:40:29.227: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is up: new adjacency
```

-coba lihat table route :

```
R3#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
      inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
      type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
      IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
      user static route
      o - ODR, P - periodic downloaded static route

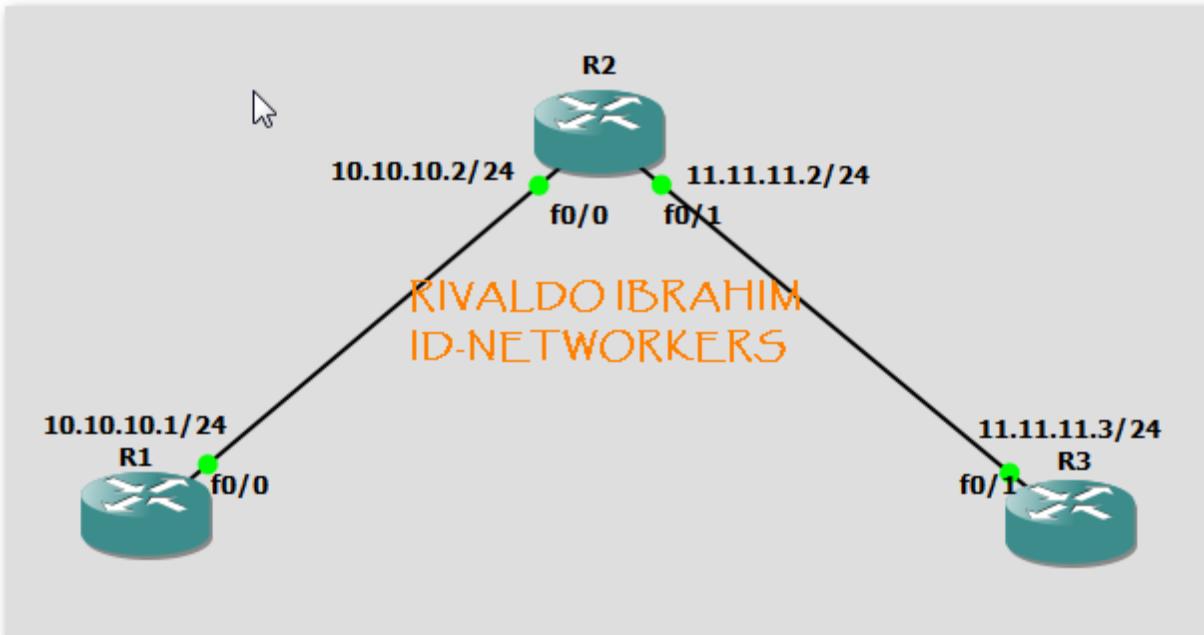
Gateway of last resort is not set

1.0.0.0/32 is subnetted, 1 subnets
D EX  1.1.1.1 [170/307200] via 11.11.11.2, 00:04:16,
FastEthernet0/1
      3.0.0.0/32 is subnetted, 1 subnets
C        3.3.3.3 is directly connected, Loopback0
      11.0.0.0/24 is subnetted, 1 subnets
C        11.11.11.0 is directly connected, FastEthernet0/1
```

Lab 51

EIGRP stub redistributed

Pada pembahasan kali ini,kita akan membahas tentang stub redistributed. fungsinya yang diredistribute atau di distribusikan akan dikirim langsung saja kita praktekan,berikut langkah-langkahnya :



-pertama,kita hapus konfigurasi stub :

```
R2(config)#router eigrp 10
R2(config-router)#no eigrp stub
R2(config-router)#
*Mar 1 00:47:03.879: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is down: peer info
changed
*Mar 1 00:47:03.891: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is down: peer info
changed
R2(config-router)#
*Mar 1 00:47:05.571: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is up: new adjacency
R2(config-router)#
*Mar 1 00:47:07.207: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is up: new adjacency
```

-coba kita lihat table route :

```
R3#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
```

CISCO ITU MUDAH

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2
i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
ia - IS-IS inter area, * - candidate default, U - per-user static route
o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

1.0.0.0/32 is subnetted, 1 subnets
D EX 1.1.1.1 [170/307200] via 11.11.11.2, 00:00:39,
FastEthernet0/1
2.0.0.0/32 is subnetted, 1 subnets
D 2.2.2.2 [90/409600] via 11.11.11.2, 00:00:39,
FastEthernet0/1
3.0.0.0/32 is subnetted, 1 subnets
C 3.3.3.3 is directly connected, Loopback0
22.0.0.0/16 is subnetted, 1 subnets
D 22.22.0.0 [90/2560025856] via 11.11.11.2, 00:00:39,
FastEthernet0/1
10.0.0.0/24 is subnetted, 1 subnets
D 10.10.10.0 [90/307200] via 11.11.11.2, 00:00:41,
FastEthernet0/1
11.0.0.0/24 is subnetted, 1 subnets
C 11.11.11.0 is directly connected, FastEthernet0/1

-lalu,kita aktifkan stub redistributed :

```
R2(config-router)#eigrp stub redistributed
R2(config-router)#
*Mar 1 00:48:35.123: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is down: peer info
changed
*Mar 1 00:48:35.131: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is down: peer info
changed
R2(config-router)#
*Mar 1 00:48:37.331: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is up: new adjacency
*Mar 1 00:48:37.791: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is up: new adjacency
```

-coba kita lihat table route :

```
R3#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
user static route
      o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

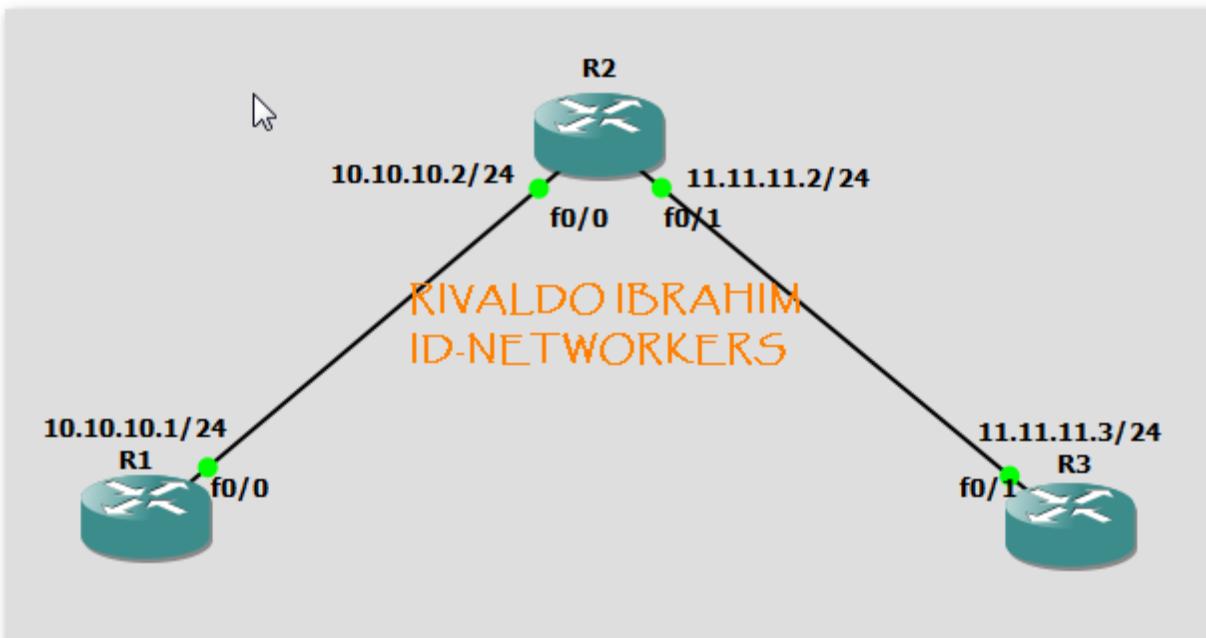
1.0.0.0/32 is subnetted, 1 subnets
D EX   1.1.1.1 [170/307200] via 11.11.11.2, 00:01:05,
FastEthernet0/1
2.0.0.0/32 is subnetted, 1 subnets
D     2.2.2.2 [90/409600] via 11.11.11.2, 00:01:05,
FastEthernet0/1
      3.0.0.0/32 is subnetted, 1 subnets
C       3.3.3.3 is directly connected, Loopback0
22.0.0.0/16 is subnetted, 1 subnets
D     22.22.0.0 [90/2560025856] via 11.11.11.2, 00:01:05,
FastEthernet0/1
10.0.0.0/24 is subnetted, 1 subnets
D     10.10.10.0 [90/307200] via 11.11.11.2, 00:01:07,
FastEthernet0/1
      11.0.0.0/24 is subnetted, 1 subnets
C       11.11.11.0 is directly connected, FastEthernet0/1
```

RIV

Lab 52

EIGRP stub receive only

Pada pembahasan kali ini,kita akan membahas tentang stub receive only. fungsinya hanya menerima advertise dari router lain.jadi dikhkususkan bagi router tertentu.langsung saja kita praktekkan,berikut langkah-langkahnya :



-pertama,kita hapus konfigurasi stub :

```

R2(config)#router eigrp 10
R2(config-router)#no eigrp stub
R2(config-router)#
*Mar 1 00:53:29.527: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is down: peer info
changed
*Mar 1 00:53:29.539: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is down: peer info
changed
R2(config-router)#
*Mar 1 00:53:31.059: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is up: new adjacency
R2(config-router)#
*Mar 1 00:53:32.119: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is up: new adjacency
    
```

-coba kita lihat table route :

```

R3#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
    
```

CISCO ITU MUDAH

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2
i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
ia - IS-IS inter area, * - candidate default, U - per-user static route
o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

1.0.0.0/32 is subnetted, 1 subnets
D EX 1.1.1.1 [170/307200] via 11.11.11.2, 00:00:47,
FastEthernet0/1
2.0.0.0/32 is subnetted, 1 subnets
D 2.2.2.2 [90/409600] via 11.11.11.2, 00:00:47,
FastEthernet0/1
3.0.0.0/32 is subnetted, 1 subnets
C 3.3.3.3 is directly connected, Loopback0
22.0.0.0/16 is subnetted, 1 subnets
D 22.22.0.0 [90/2560025856] via 11.11.11.2, 00:00:47,
FastEthernet0/1
10.0.0.0/24 is subnetted, 1 subnets
D 10.10.10.0 [90/307200] via 11.11.11.2, 00:00:49,
FastEthernet0/1
11.0.0.0/24 is subnetted, 1 subnets
C 11.11.11.0 is directly connected, FastEthernet0/1

-setelah itu,kita aktifkan stub receive-only:

```
R2(config-router)#eigrp stub receive-only
R2(config-router)#
*Mar 1 00:55:18.427: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is down: peer info
changed
*Mar 1 00:55:18.439: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is down: peer info
changed
R2(config-router)#
*Mar 1 00:55:21.355: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 10.10.10.1 (FastEthernet0/0) is up: new adjacency
*Mar 1 00:55:21.619: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 10:
Neighbor 11.11.11.3 (FastEthernet0/1) is up: new adjacency
```

CISCO ITU MUDAH

-coba kita lihat table route dan lihat perubahannya :

```
R3#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
      inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
      type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
      IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
      user static route
      o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

      3.0.0.0/32 is subnetted, 1 subnets
C          3.3.3.3 is directly connected, Loopback0
      11.0.0.0/24 is subnetted, 1 subnets
C          11.11.11.0 is directly connected, FastEthernet0/1
```

-coba kita lihat table route :

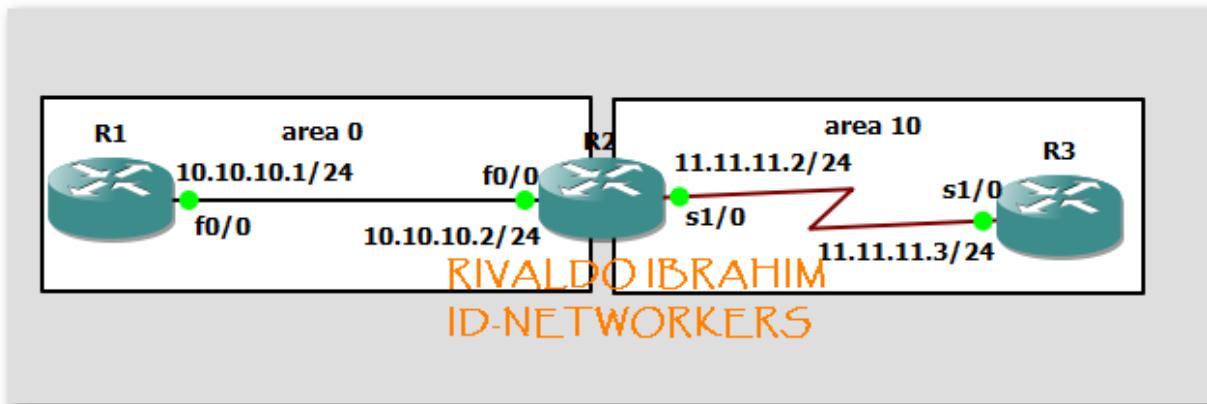
```
R1#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
      inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
      type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
      IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
      user static route
      o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

      1.0.0.0/32 is subnetted, 1 subnets
C          1.1.1.1 is directly connected, Loopback0
      10.0.0.0/24 is subnetted, 1 subnets
C          10.10.10.0 is directly connected, FastEthernet0/0
```

Lab 53
Ospf basic

Pada pembahasan kali ini,kita akan membahas tentang ospf basic.untuk konsep dan pemahamannya,sama pada ospf umumnya,tetapi menggunakan kabel serial.langsung saja kita praktekkan,berikut langkah-langkahnya :



-pertama,setting ip address pada masing-masing router :

```
R1(config)#int lo0
R1(config-if)#
*Mar 1 00:04:10.359: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R1(config-if)#ip add 1.1.1.1 255.255.255.255
R1(config-if)#int f0/0
R1(config-if)#ip add 10.10.10.1 255.255.255.0
R1(config-if)#no sh
R1(config-if)#
*Mar 1 00:04:34.751: %LINK-3-UPDOWN: Interface
FastEthernet0/0, changed state to up
*Mar 1 00:04:35.751: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/0, changed state to up

R2(config)#int lo0
R2(config-if)#
*Mar 1 00:04:35.163: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R2(config-if)#ip add 2.2.2.2 255.255.255.255
R2(config-if)#int f0/0
R2(config-if)#ip add 10.10.10.2 255.255.255.0
R2(config-if)#no sh
R2(config-if)#
*Mar 1 00:05:01.619: %LINK-3-UPDOWN: Interface
FastEthernet0/0, changed state to up
```

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```
*Mar  1 00:05:02.619: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/0, changed state to up
R2(config-if)#int s1/0
R2(config-if)#ip add 11.11.11.2 255.255.255.0
R2(config-if)#no sh
R2(config-if)#
*Mar  1 00:05:22.827: %LINK-3-UPDOWN: Interface Serial1/0,
changed state to up
R2(config-if)#
*Mar  1 00:05:23.831: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up
R2(config-if)#
*Mar  1 00:05:44.099: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to down
R2(config-if)#
*Mar  1 00:06:14.067: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up

R3(config)#int lo0
R3(config-if)#
*Mar  1 00:05:48.191: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Loopback0, changed state to up
R3(config-if)#ip add 3.3.3.3 255.255.255.255
R3(config-if)#int s1/0
R3(config-if)#ip add 11.11.11.3 255.255.255.0
R3(config-if)#no sh
R3(config-if)#
*Mar  1 00:06:27.411: %LINK-3-UPDOWN: Interface Serial1/0,
changed state to up
R3(config-if)#
*Mar  1 00:06:28.415: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Serial1/0, changed state to up
```

-lalu,kita berikan routing protocol dengan ospf :

```
R1(config-if)#router ospf 10
R1(config-router)#router-id 1.1.1.1
R1(config-router)#network 1.1.1.1 0.0.0.0 area 0
R1(config-router)#network 10.10.10.0 0.0.0.255 area 0
R1(config-router)#
*Mar  1 00:07:46.671: %OSPF-5-ADJCHG: Process 10, Nbr 2.2.2.2
on FastEthernet0/0 from LOADING to FULL, Loading Done

R2(config-if)#router ospf 10
R2(config-router)#router-id 2.2.2.2
R2(config-router)#network 2.2.2.2 0.0.0.0 area 10
R2(config-router)#network 10.10.10.0 0.0.0.255 area 0
```

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```
R2(config-router)#network 11.11.11.0 0.0.0.255 area 10
R2(config-router)#
*Mar 1 00:07:38.843: %OSPF-5-ADJCHG: Process 10, Nbr 1.1.1.1
on FastEthernet0/0 from LOADING to FULL, Loading Done
R2(config-router)#
*Mar 1 00:08:17.867: %OSPF-5-ADJCHG: Process 10, Nbr 3.3.3.3
on Serial1/0 from LOADING to FULL, Loading Done

R3(config-if)#router ospf 11
R3(config-router)#router-id 3.3.3.3
R3(config-router)#network 3.3.3.3 0.0.0.0 area 10
R3(config-router)#network 11.11.11.0 0.0.0.255 area 10
R3(config-router)#
*Mar 1 00:08:38.251: %OSPF-5-ADJCHG: Process 11, Nbr 2.2.2.2
on Serial1/0 from LOADING to FULL, Loading Done
```

-setelah itu,coba cek table route pada masing-masing router :

```
R1#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
user static route
      o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

      1.0.0.0/32 is subnetted, 1 subnets
C        1.1.1.1 is directly connected, Loopback0
 2.0.0.0/32 is subnetted, 1 subnets
O IA  2.2.2.2 [110/11] via 10.10.10.2, 00:01:00,
FastEthernet0/0
 3.0.0.0/32 is subnetted, 1 subnets
O IA  3.3.3.3 [110/75] via 10.10.10.2, 00:00:21,
FastEthernet0/0
      10.0.0.0/24 is subnetted, 1 subnets
C        10.10.10.0 is directly connected, FastEthernet0/0
 11.0.0.0/24 is subnetted, 1 subnets
O IA  11.11.11.0 [110/74] via 10.10.10.2, 00:01:00,
FastEthernet0/0
```

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```
R2#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
      inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
      type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
      IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
      user static route
      o - ODR, P - periodic downloaded static route

Gateway of last resort is not set
```

```
1.0.0.0/32 is subnetted, 1 subnets
O   1.1.1.1 [110/11] via 10.10.10.1, 00:01:22,
FastEthernet0/0
    2.0.0.0/32 is subnetted, 1 subnets
C      2.2.2.2 is directly connected, Loopback0
3.0.0.0/32 is subnetted, 1 subnets
O   3.3.3.3 [110/65] via 11.11.11.3, 00:00:43, Serial1/0
    10.0.0.0/24 is subnetted, 1 subnets
C      10.10.10.0 is directly connected, FastEthernet0/0
    11.0.0.0/24 is subnetted, 1 subnets
C      11.11.11.0 is directly connected, Serial1/0
```

```
R3#sh ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
      inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
      type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 -
      IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-
      user static route
      o - ODR, P - periodic downloaded static route

Gateway of last resort is not set
```

```
1.0.0.0/32 is subnetted, 1 subnets
O IA   1.1.1.1 [110/75] via 11.11.11.2, 00:00:59, Serial1/0
    2.0.0.0/32 is subnetted, 1 subnets
```

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```
O      2.2.2.2 [110/65] via 11.11.11.2, 00:00:59, Serial1/0
      3.0.0.0/32 is subnetted, 1 subnets
C      3.3.3.3 is directly connected, Loopback0
10.0.0.0/24 is subnetted, 1 subnets
O IA  10.10.10.0 [110/74] via 11.11.11.2, 00:00:59, Serial1/0
      11.0.0.0/24 is subnetted, 1 subnets
C      11.11.11.0 is directly connected, Serial1/0
```

-coba kita tes ping :

```
R1#ping 2.2.2.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2.2.2.2, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
24/60/120 ms

R1#ping 3.3.3.3

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 3.3.3.3, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
32/70/148 ms
```

-coba kita cek ospf databasenya pada router 2 :

```
R2#sh ip ospf database

OSPF Router with ID (2.2.2.2) (Process ID 10)

Router Link States (Area 0)

Link ID     ADV Router     Age     Seq#             Checksum Link count
1.1.1.1     1.1.1.1       142     0x800000003     0x00903C 2
2.2.2.2     2.2.2.2       141     0x800000002     0x007761 1

Net Link States (Area 0)

Link ID             ADV Router     Age             Seq#
Checksum
10.10.10.1         1.1.1.1       142             0x80000001
0x009476

Summary Net Link States (Area 0)
```

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Link ID	ADV Router	Age	Seq#	Checksum
2.2.2.2	2.2.2.2	152	0x80000001	0x00FA31
3.3.3.3	2.2.2.2	97	0x80000001	0x004F98
11.11.11.0	2.2.2.2	137	0x80000001	0x004291

Router Link States (Area 10)

Link ID	ADV Router	Age	Seq#	Checksum	Link count
2.2.2.2	2.2.2.2	102	0x80000004	0x001413	3
3.3.3.3	3.3.3.3	104	0x80000002	0x0037E9	3

Summary Net Link States (Area 10)

Link ID	ADV Router	Age	Seq#	Checksum
1.1.1.1	2.2.2.2	138	0x80000001	0x008D98
10.10.10.0	2.2.2.2	148	0x80000001	0x0048C4

Lab 54

PRTG

Pada pembahasan kali ini kita akan membahas tentang PRTG, apa itu PRTG ?, PRTG singkatan dari paessler router traffic grapher, digunakan untuk memonitoring bandwidth dan parameter jaringan melalui SNMP, jadi, kita bisa menggunakan software ini. nah, PRTG ini masuk ke bab NMS (network management system). langsung saja kita praktikkan, berikut langkah-langkahnya :



- . kita membutuhkan perangkat, seperti di bawah ini :

- . 1 router
- . 1 pc
- . 1 kabel utp

Lalu kita pasangkan perangkat tersebut, jika sudah kita konfigurasi pada pc. di pc ini kita menggunakan aplikasi putty untuk meremote. seperti berikut ini :

- . kita sambungkan kabel converter serial to usb, dari pc ke router, seperti ini :

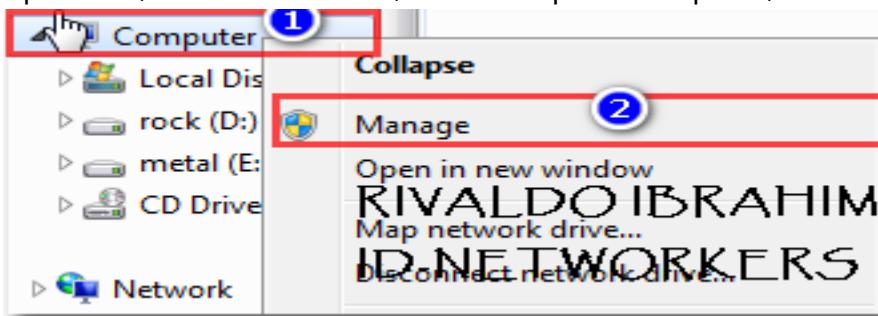


-lalu,kita juga sambungkan kabel UTP ke router,seperti ini :

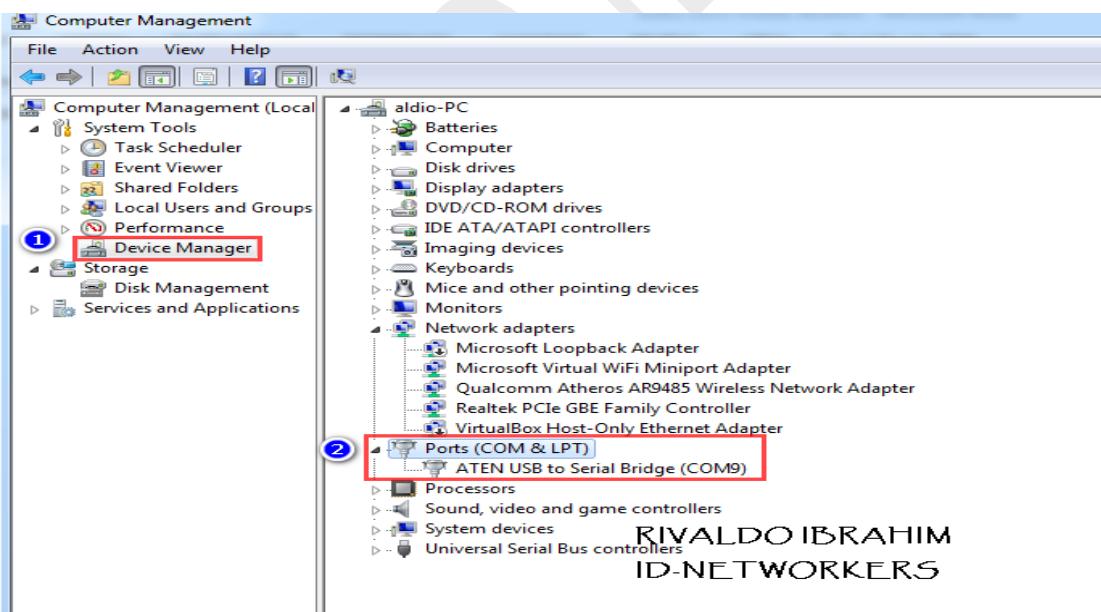


-setelah tersambung,kita cek apakah driver serial di pc atau laptop kita sudah terinstall atau belum caranya :

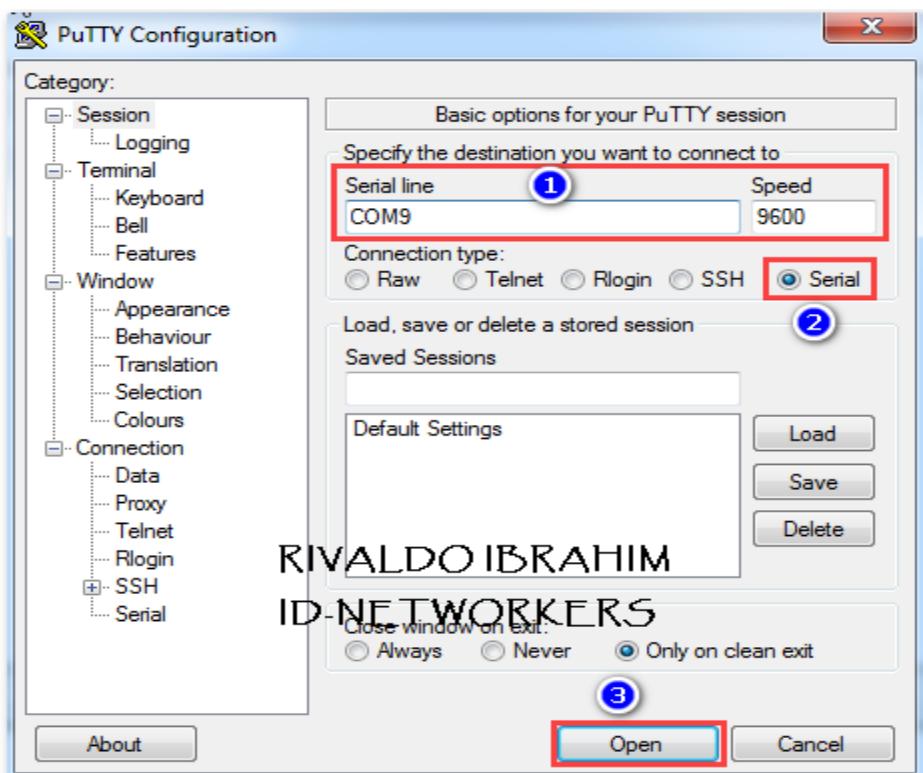
-pertama,kita buka libraries,klik kanan pada computer,lalu klik manage :



-lalu,ke tab device manager,kita lihat ada ports COM atau tidak,jika tidak di install dulu,jika sudah maka tampilannya akan seperti ini :



-setelah itu,kita hubungkan pc atau laptop pada router dan buka aplikasi putty untuk meremote router,kita pilih type serial,masukkan serial line-nya dan ok,seperti di bawah ini :



-jika sudah dibuka,maka hasilnya akan seperti ini :

```
*Oct 27 21:33:26.183: %LINK-5-CHANGED: Interface FastEthernet0/0, changed state to administratively down
*Oct 27 21:33:26.183: %LINK-5-CHANGED: Interface FastEthernet0/1, changed state to administratively down
*Oct 27 21:33:26.183: %LINK-5-CHANGED: Interface Serial0/0/0, changed state to administratively down
*Oct 27 21:33:26.183: %LINK-5-CHANGED: Interface Serial0/1/0, changed state to administratively down
*Oct 27 21:33:27.183: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down
*Oct 27 21:33:28.815: %IP-5-WEBINST_KILL: Terminating DNS process
*Oct 27 21:33:30.423: %SYS-5-RESTART: System restarted --
Cisco IOS Software, 1841 Software (C1841-ADVIPSERVICESK9-M), Version 12.4(15)T14
, RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2010 by Cisco Systems, Inc.
Compiled Tue 17-Aug-10 05:26 by prod_rel_team
*Oct 27 21:33:30.427: %SNMP-5-COLDSTART: SNMP agent on host Router is undergoing a cold start
*Oct 27 21:33:30.627: %CRYPTO-6-ISAKMP_ON_OFF: ISAKMP is OFF
*Oct 27 21:33:30.627: %CRYPTO-6-GDOI_ON_OFF: GDOI is OFF
*Oct 27 21:33:30.631: %CRYPTO-6-ISAKMP_ON_OFF: ISAKMP is OFF
*Oct 27 21:33:30.631: %CRYPTO-6-GDOI_ON_OFF: GDOI is OFF
Router> [REDACTED]
```

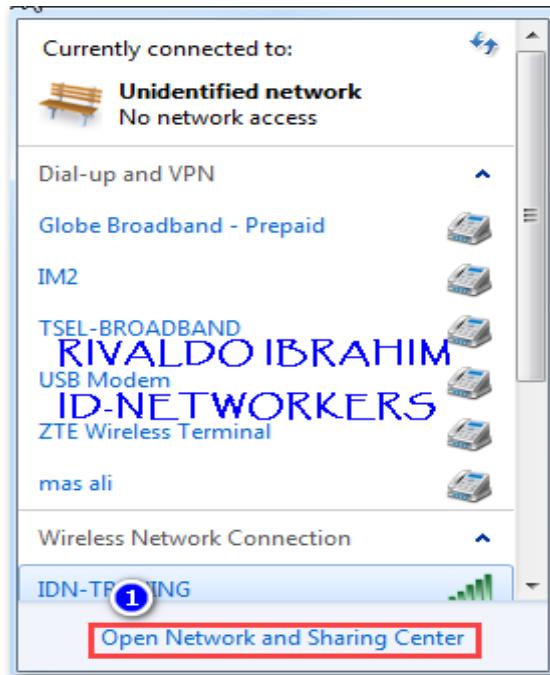
-kita buat ip pada routernya,sebagai berikut :

```
Router>EN
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
```

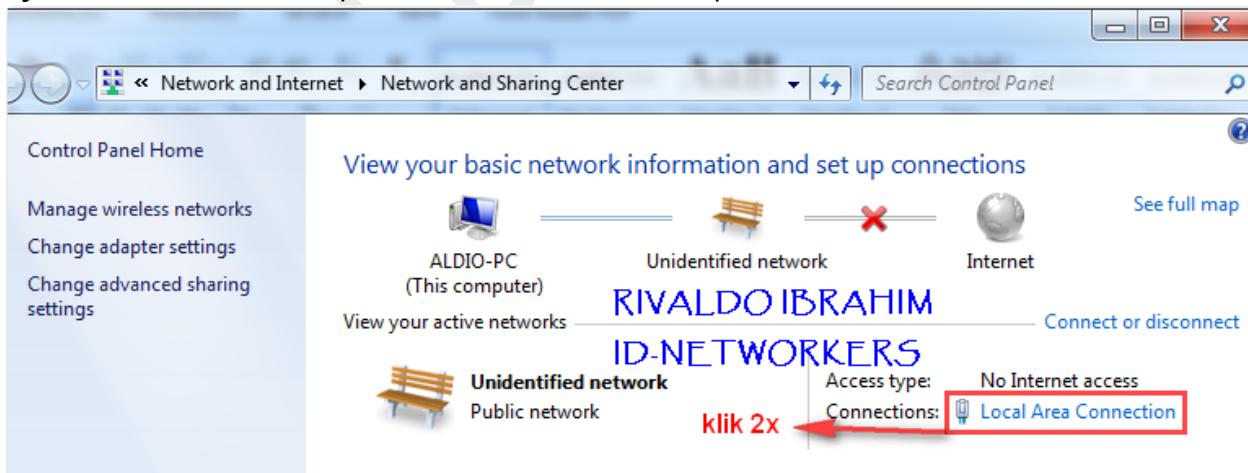
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```
Router(config)#int f0/1
Router(config-if)#ip add 12.12.12.1 255.255.255.0
Router(config-if)#no sh
Router(config-if)#
*Oct 27 21:40:08.151: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet0/1, changed state to up
```

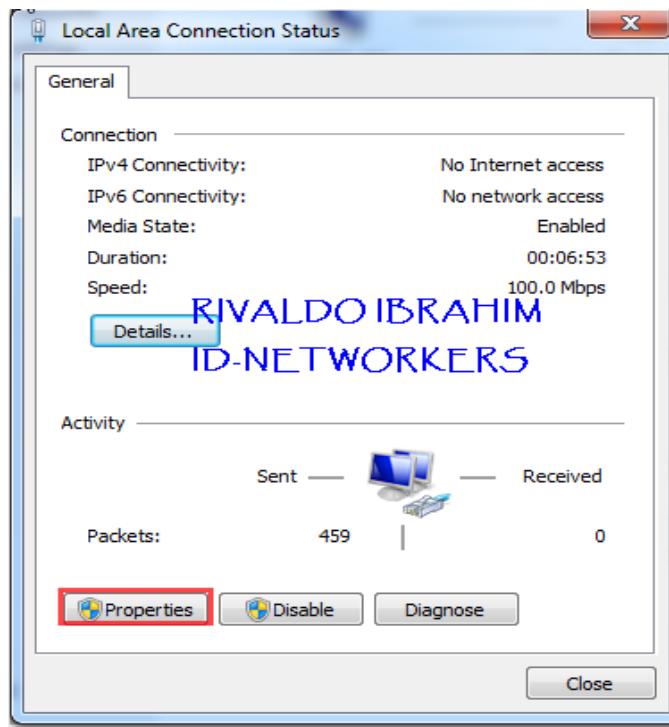
-setelah itu,kita akan setting ip pada pc atau laptop,kita klik open network and sharing center,seperti di bawah ini :



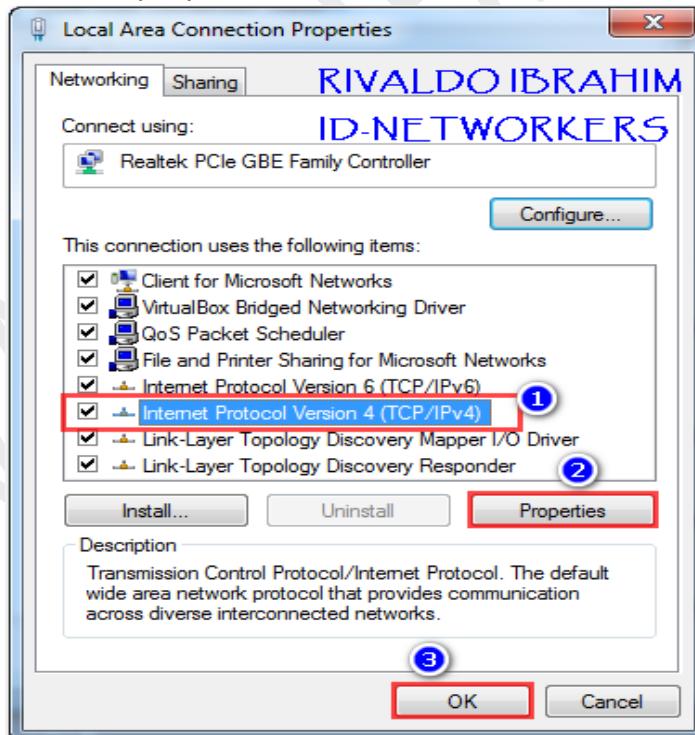
-jika sudah kita klik 2 x,pada local area network,seperti di bawah ini :



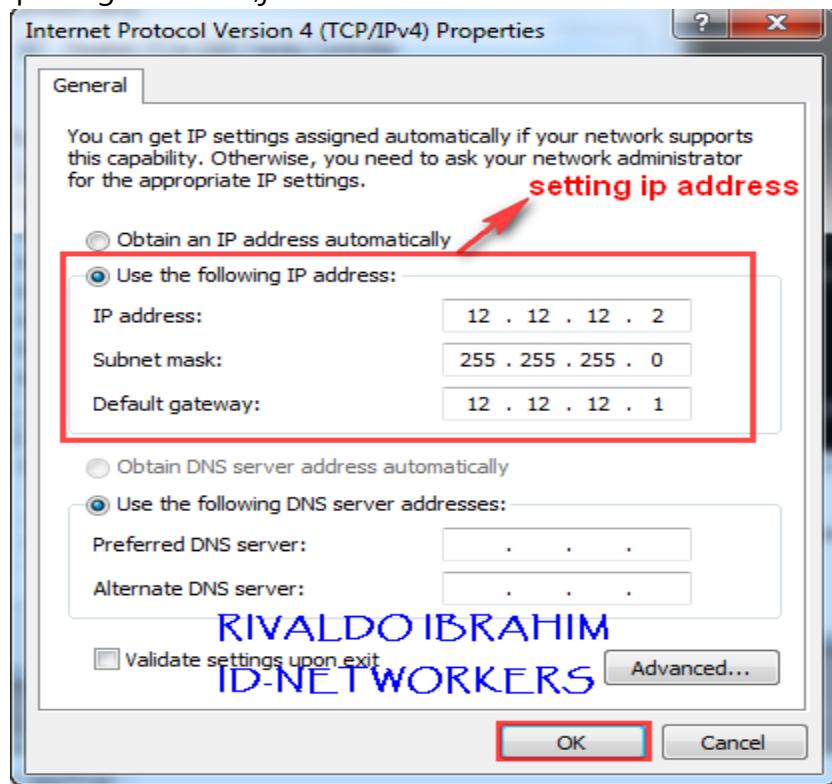
-lalu,klik properties,seperti di bawah ini :



-lalu,kita pilih yang IPv4,klik properties dan ok



-setelah itu,kita setting ip client nya,jangan lupa beri default gateway karena menggunakan perangkat router,jika sudah klik ok



-coba kita ping pc atau laptop,pastikan sudah bisa saling ping,seperti di bawah ini :

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\aldo>ping 12.12.12.1 → ping ke ip server
Pinging 12.12.12.1 with 32 bytes of data:
Reply from 12.12.12.1: bytes=32 time=1ms TTL=255
Reply from 12.12.12.1: bytes=32 time=1ms TTL=255
Reply from 12.12.12.1: bytes=32 time=1ms TTL=255
Reply from 12.12.12.1: bytes=32 time=1ms TTL=255 → berarti telah sukses

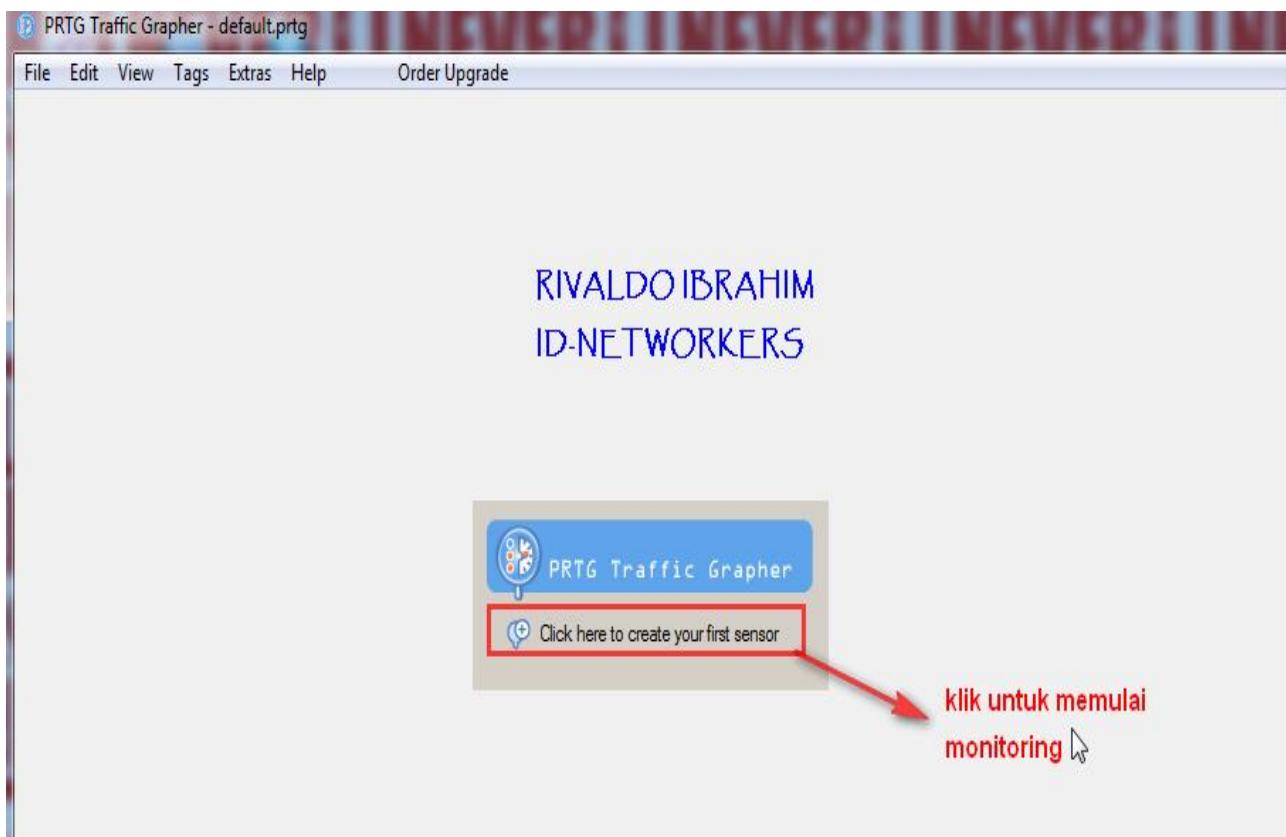
Ping statistics for 12.12.12.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms
RIVALDO IBRAHIM
ID-NETWORKERS

C:\Users\aldo>_
```

-lalu,sebelum menggunakan PRTG konfigurasikan dulu seperti di bawah ini :

```
Router(config) #snmp-server community baim
```

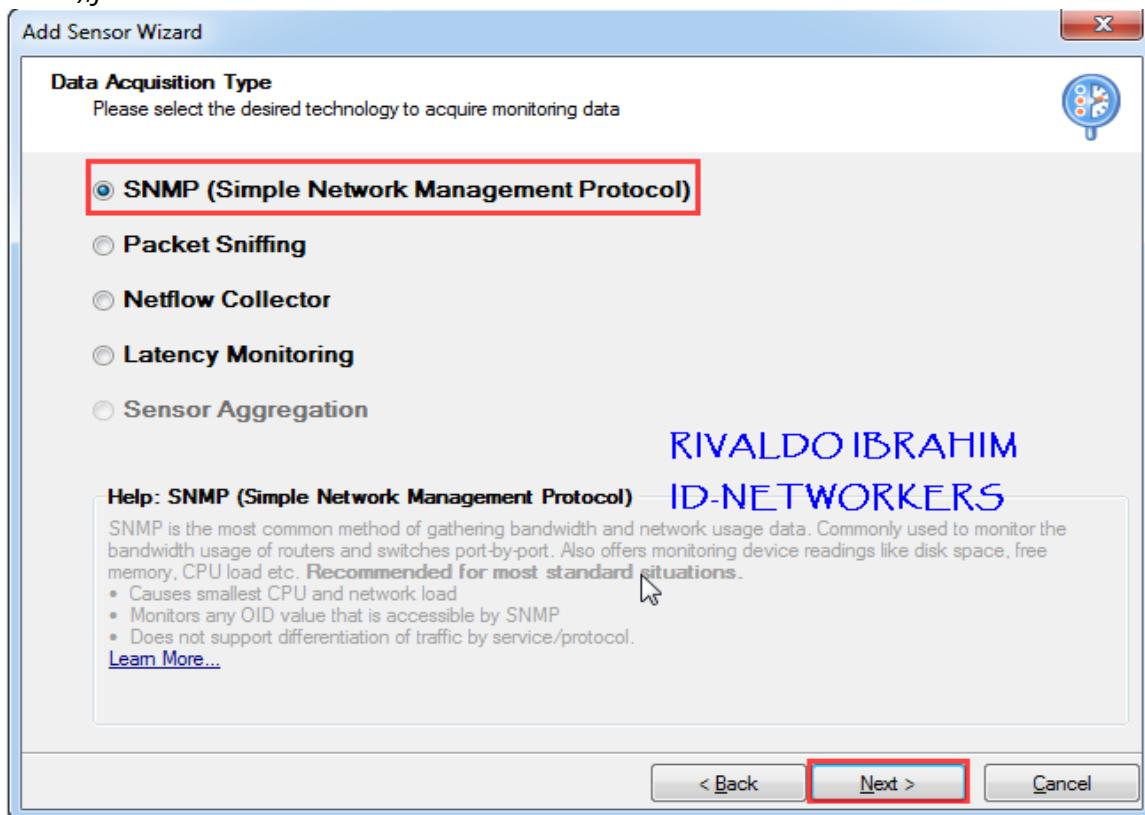
-silahkan kita buka aplikasi untuk memonitoring jaringan,yaitu PRTG,nah PRTG itu untuk melihat aktifitas yang di gunakan pengunjung pada saat menggunakan jaringan,seperti di bawah ini software :



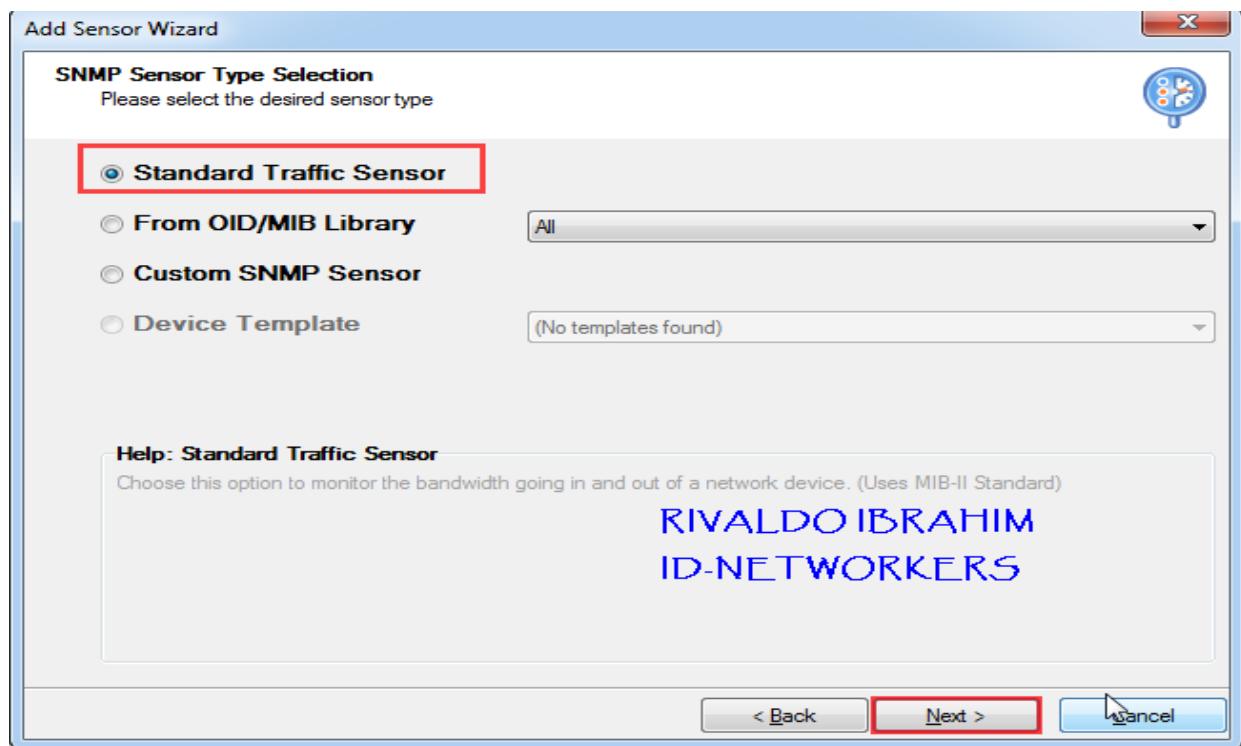
-kita klik next



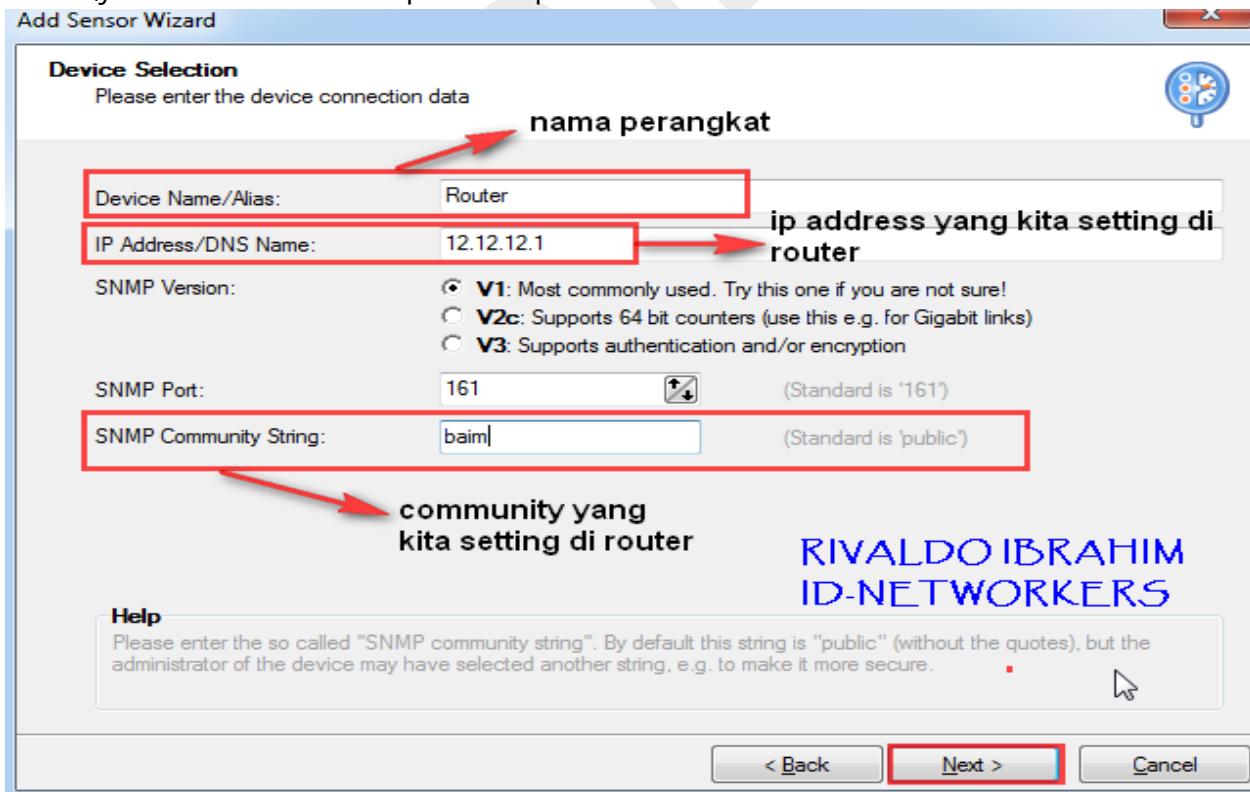
-untuk data acquisition type,kita pilih yang SNMP (simple network management protocol),jika sudah klik next



-pada sensor type,kita pilih standard traffic sensor,lalu next

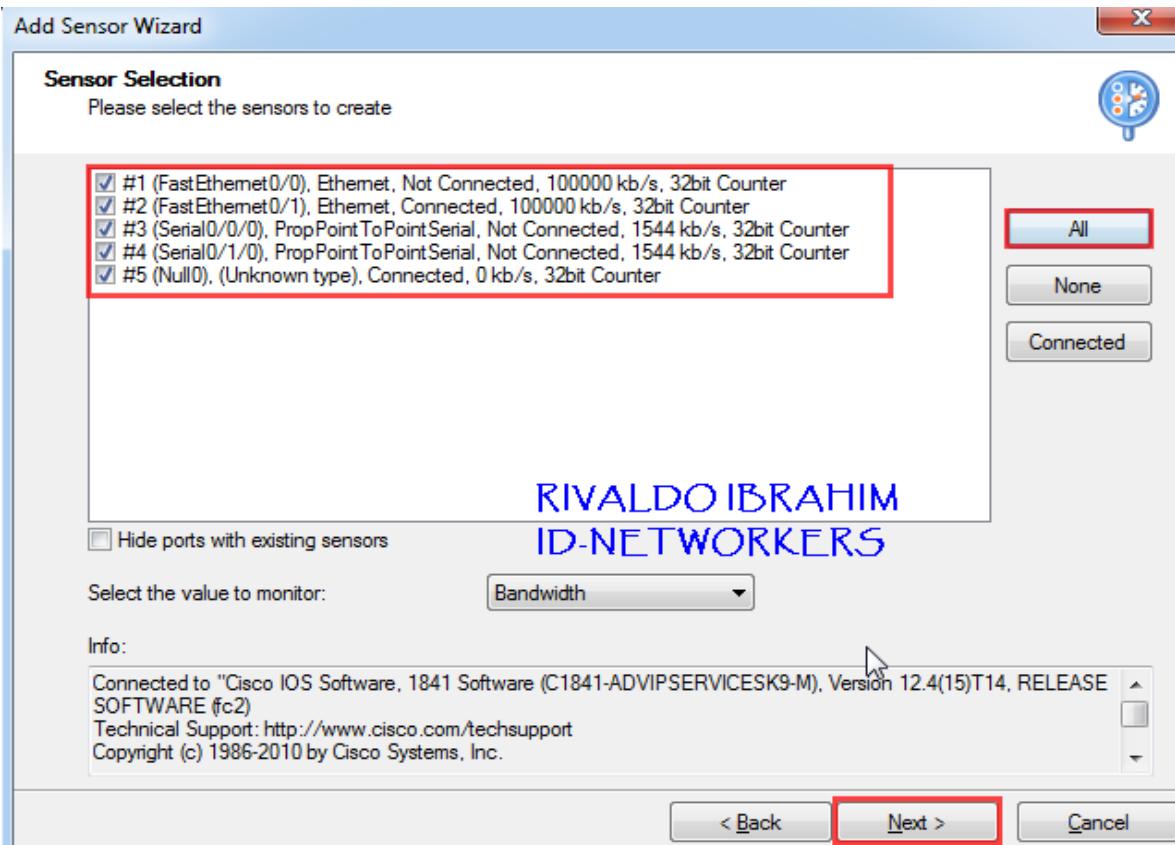


-setelah itu,di device selection ini,kita setting nama device,ip device,community device,jika sudah klik next.seperti tampilan di bawah ini :

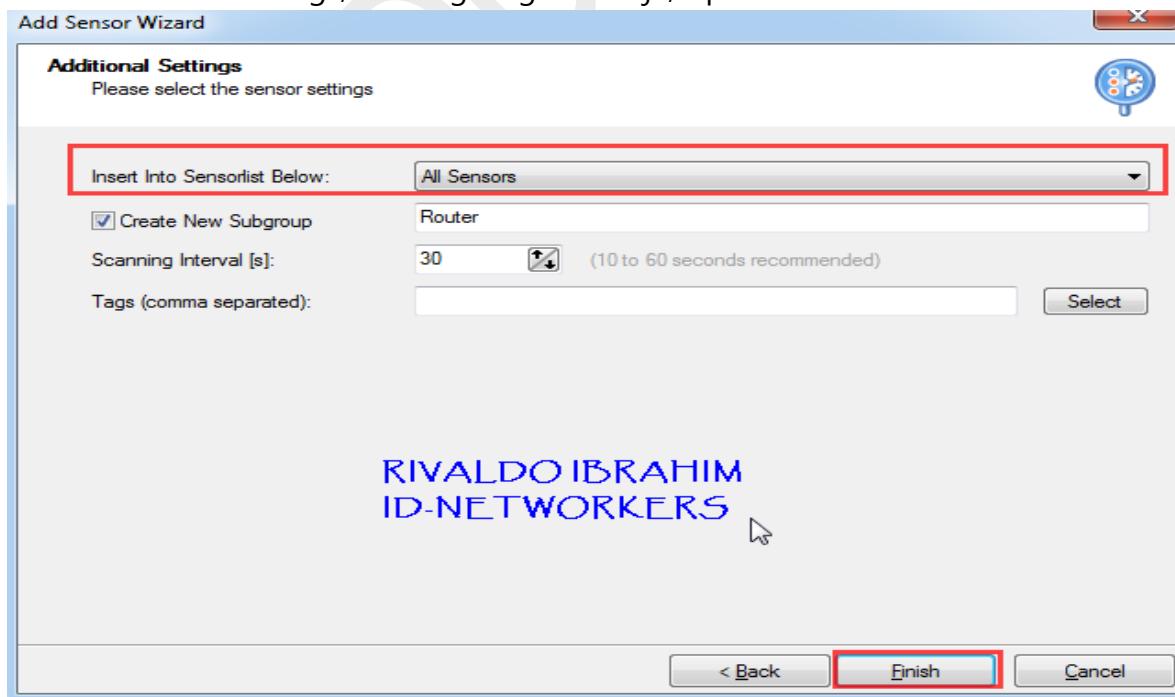


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-.lalu,dalam sensor selection,kita klik all,dan next

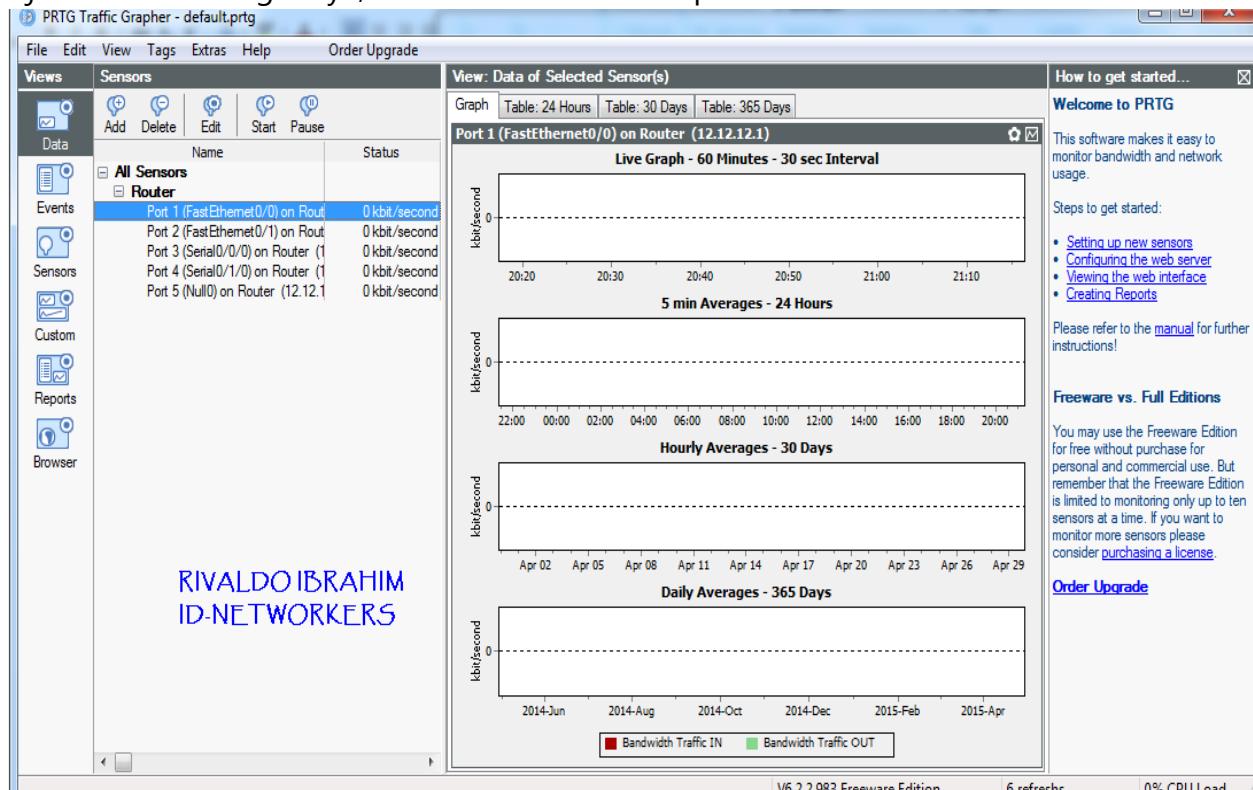


-.untuk additional settings,kita langsung next saja,seperti di bawah ini :



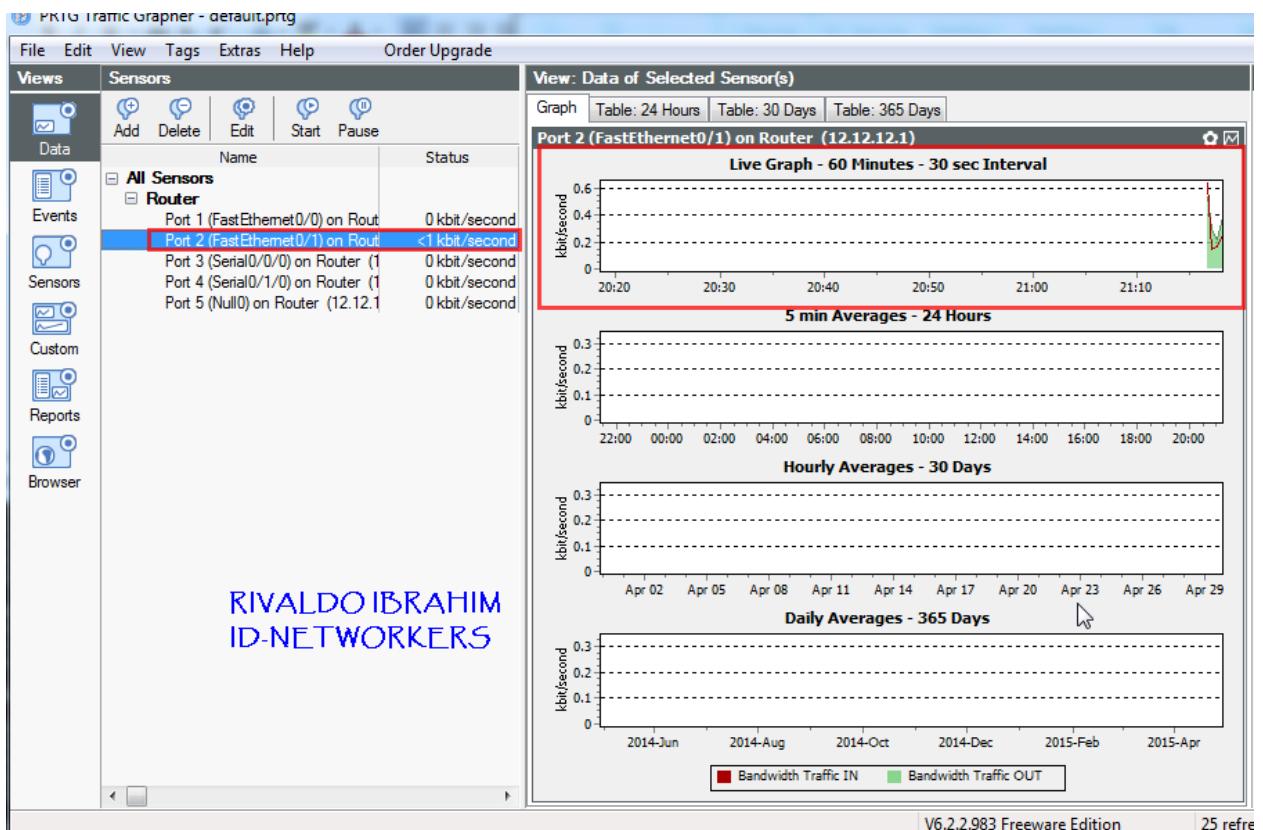
CISCO ITU MUDAH

-jika sudah settingannya,maka akan muncul tampilan berikut :

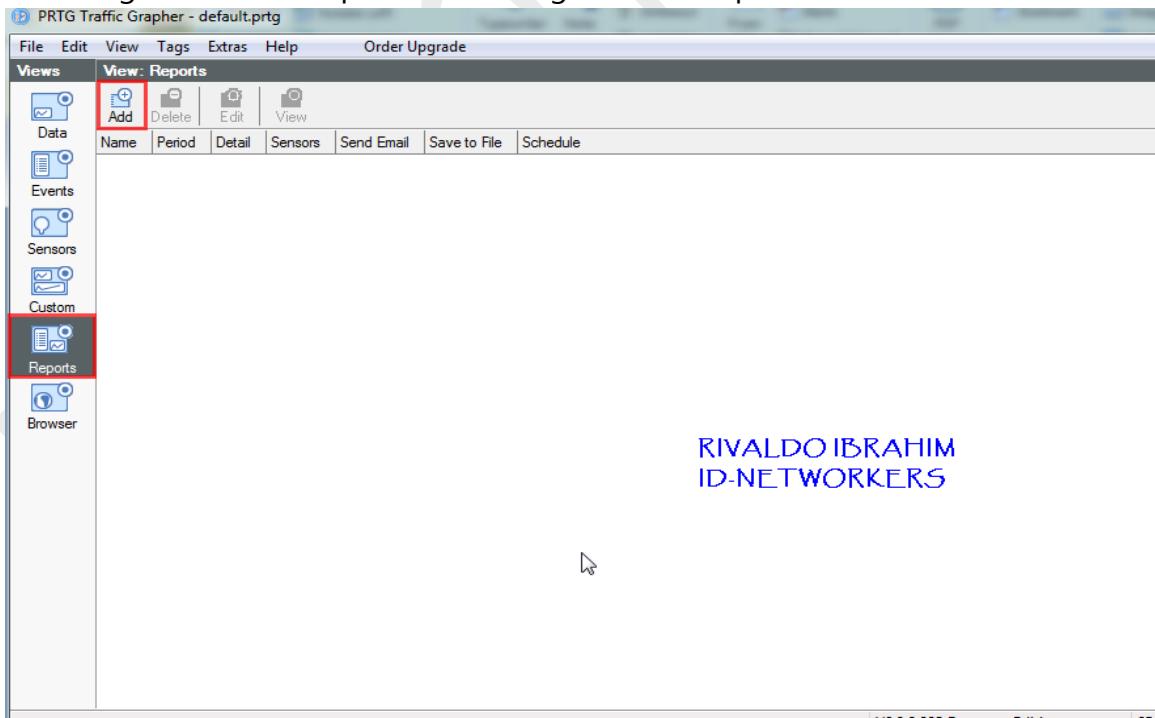


-sekarang kita pindah tab ke fast Ethernet yang nyambung ke internet,dan lihat yang terjadi ?.ada sebuah perubahan pada traffic,seperti berikut ini :

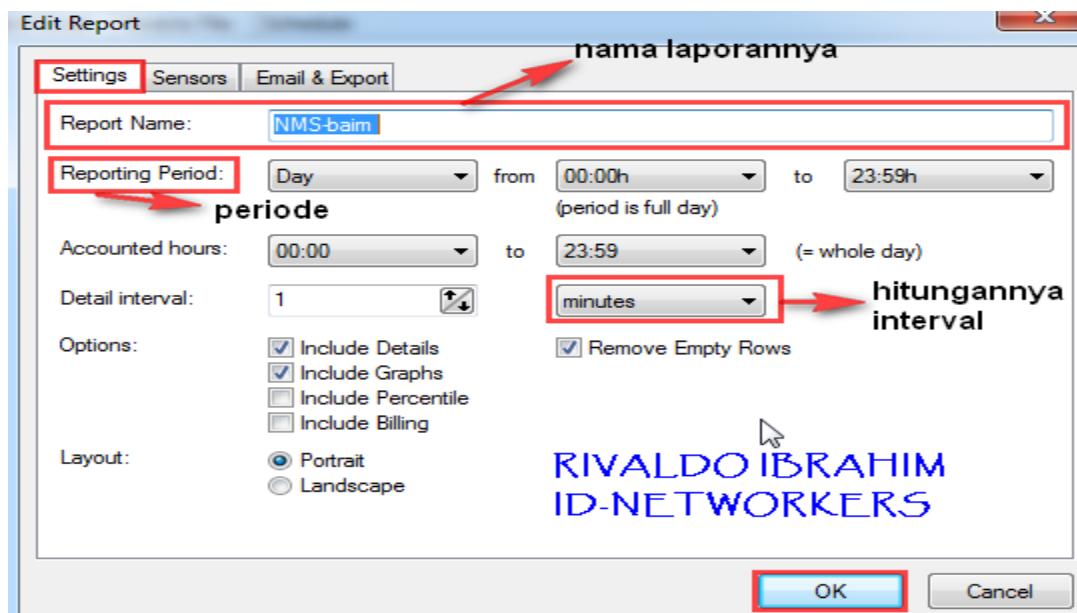
CISCO ITU MUDAH



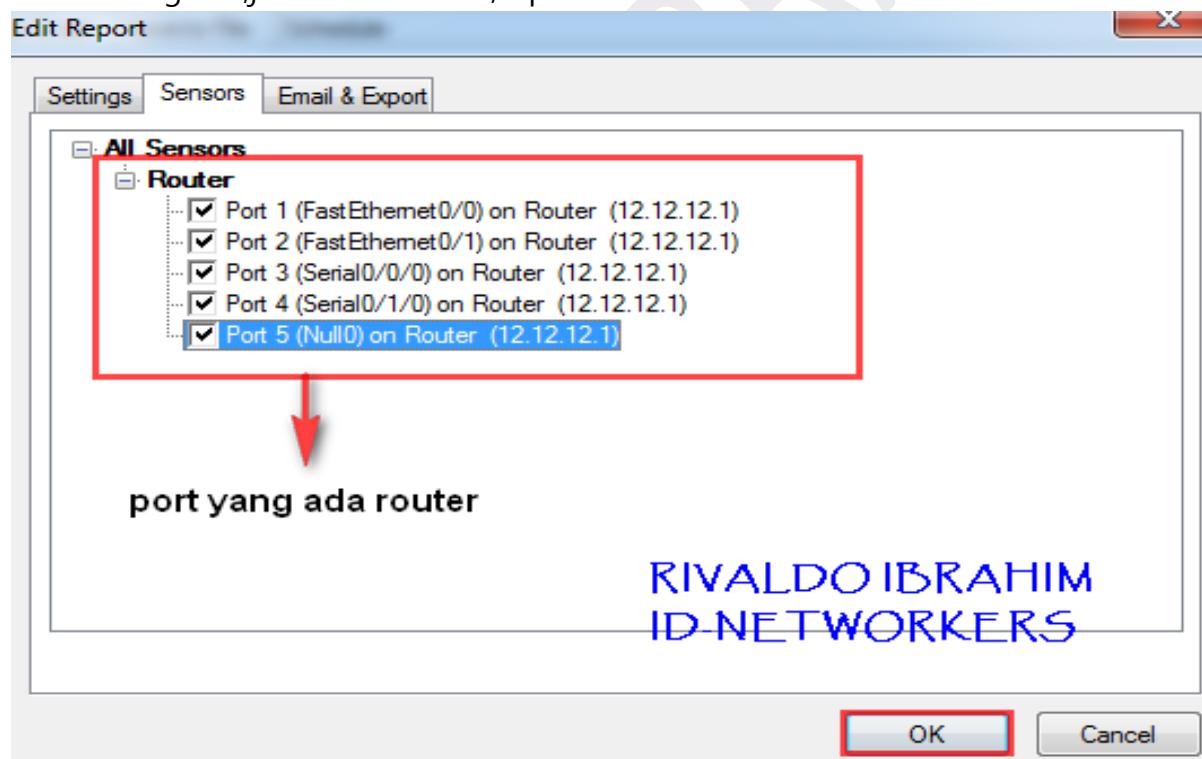
-jika kita ingin membuat laporan bisa,dengan ke tab reports,lalu klik add



-setelah itu,pada edit report kita ke settings dan ubah nama,periode,dan hitungan interval,lalu ok.maka akan seperti di bawah ini :



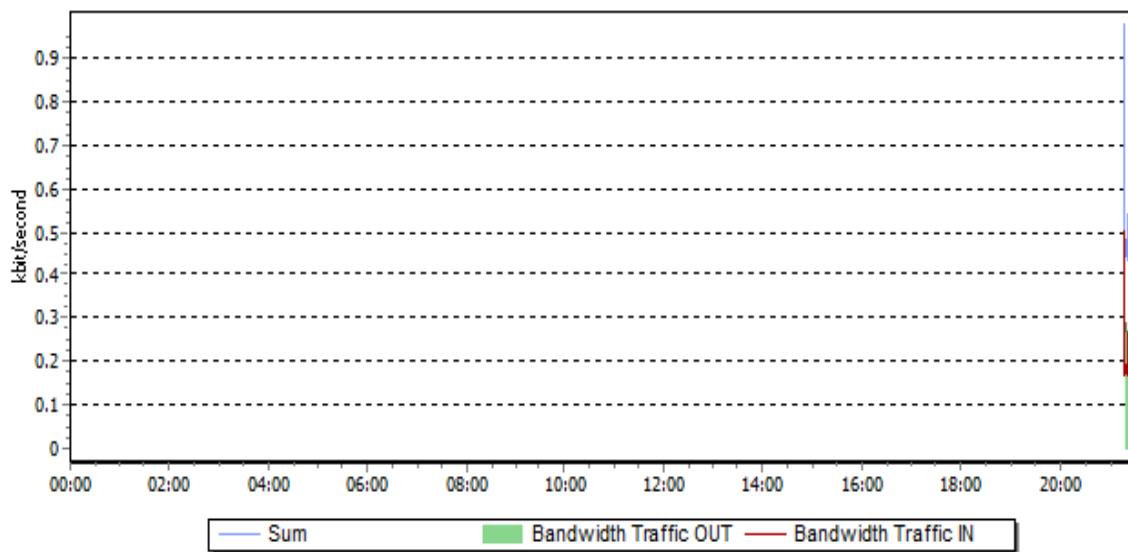
-lalu kita pindah ke tab sensors,dan pilih port yang ada pada router terhubung,bebas sesuai keinginan,jika sudah klik ok,seperti di bawah ini :



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- akhirnya,sudah selesai dalam mengedit laporannya,dan hasilnya nanti seperti ini :

Wednesday, April 29, 2015



	Bandwidth Traffic IN		Bandwidth Traffic OUT		Sum		Coverage %
	kbyte	kbit/second	kbyte	kbit/second	kbytes	kbit/second	
4/29/2015 9:32 PM - 9:33 PM	1.211	0.165	1.924	0.263	3.135	0.428	100
4/29/2015 9:31 PM - 9:32 PM	1.207	0.165	1.962	0.268	3.169	0.433	100
4/29/2015 9:30 PM - 9:31 PM	1.476	0.202	1.960	0.268	3.436	0.469	100
4/29/2015 9:29 PM - 9:30 PM	1.484	0.203	1.968	0.269	3.452	0.471	100
4/29/2015 9:28 PM - 9:29 PM	1.199	0.164	1.972	0.269	3.171	0.433	100
4/29/2015 9:27 PM - 9:28 PM	1.209	0.165	1.965	0.268	3.174	0.433	100
4/29/2015 9:26 PM - 9:27 PM	1.685	0.230	1.927	0.263	3.611	0.493	100
4/29/2015 9:25 PM - 9:26 PM	1.405	0.192	2.024	0.276	3.430	0.468	100
4/29/2015 9:24 PM - 9:25 PM	1.199	0.164	1.928	0.263	3.127	0.427	100
4/29/2015 9:23 PM - 9:24 PM	1.441	0.197	1.976	0.270	3.417	0.467	100
4/29/2015 9:22 PM - 9:23 PM	1.219	0.166	1.929	0.263	3.147	0.430	100
4/29/2015 9:21 PM - 9:22 PM	1.979	0.270	1.975	0.270	3.953	0.540	100
4/29/2015 9:20 PM - 9:21 PM	1.488	0.203	1.976	0.270	3.464	0.473	100
4/29/2015 9:19 PM - 9:20 PM	1.260	0.172	1.967	0.269	3.227	0.441	100
4/29/2015 9:18 PM - 9:19 PM	1.396	0.191	2.154	0.294	3.551	0.485	100
4/29/2015 9:17 PM - 9:18 PM	1.226	0.167	1.983	0.271	3.209	0.438	100
4/29/2015 9:16 PM - 9:17 PM	1.203	0.503	1.134	0.474	2.337	0.977	33

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ID-NETWORKERS

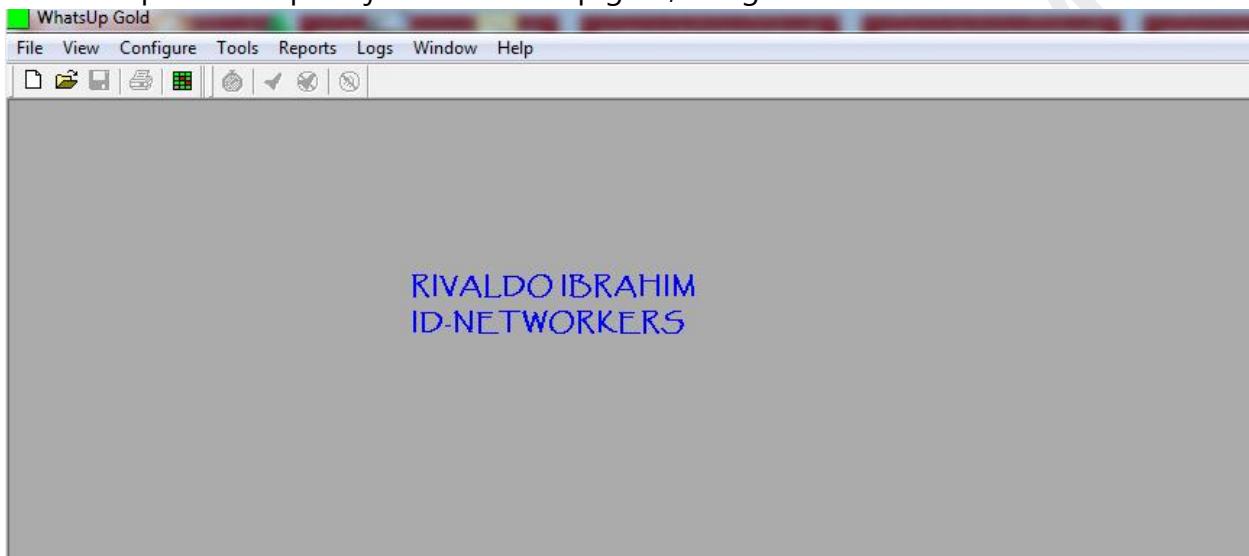
	Bandwidth Traffic IN		Bandwidth Traffic OUT		Sum		Coverage %
	kbyte	kbit/second	kbyte	kbit/second	kbytes	kbit/second	
Total	23.287		32.722		56.009		
Average	1.380	0.207	1.974	0.282	1.677	0.489	1

Lab 55

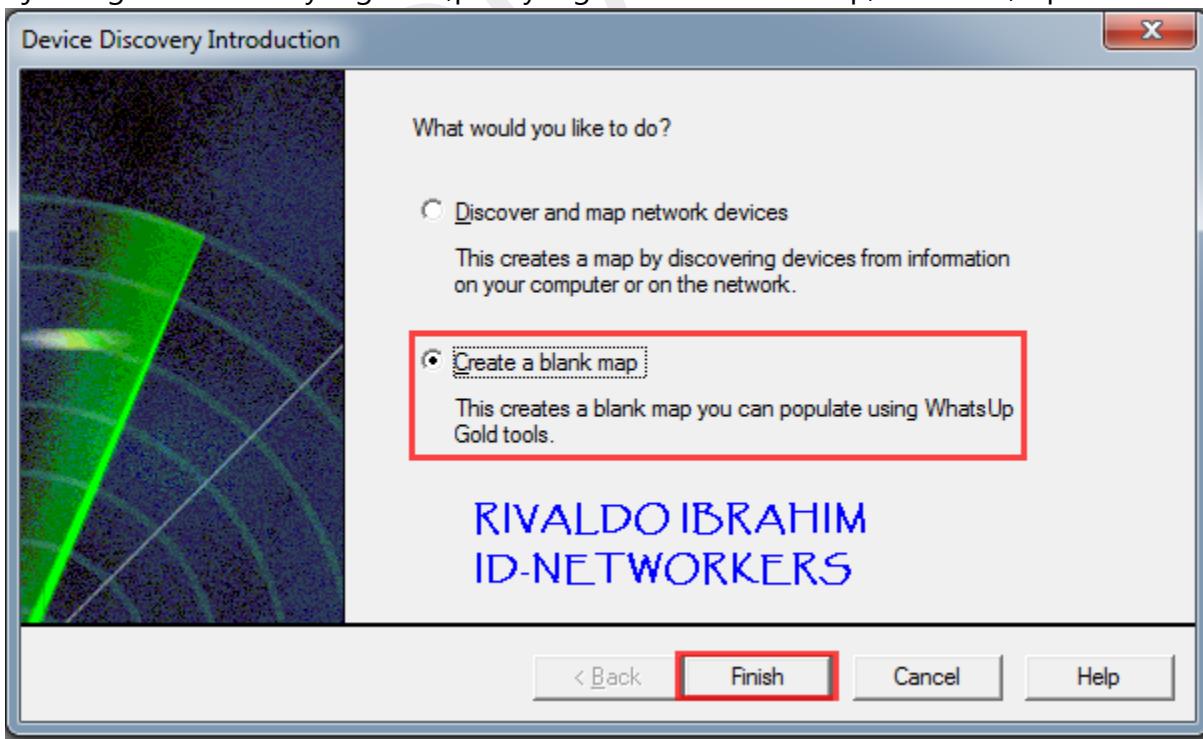
Whatsup gold

Pada pembahasan kali ini saya akan menjelaskan tentang whatsup gold.whatup ini digunakan untuk memonitoring status perangkat jaringan tersebut,dan bila ada salah satu perangkat yang down maka akan berbunyi sirine (alarm).langsung saja kita praktekkan,berikut langkah-langkahnya :

-ini merupakan tampilan jendela whatsup gold,sebagai berikut :

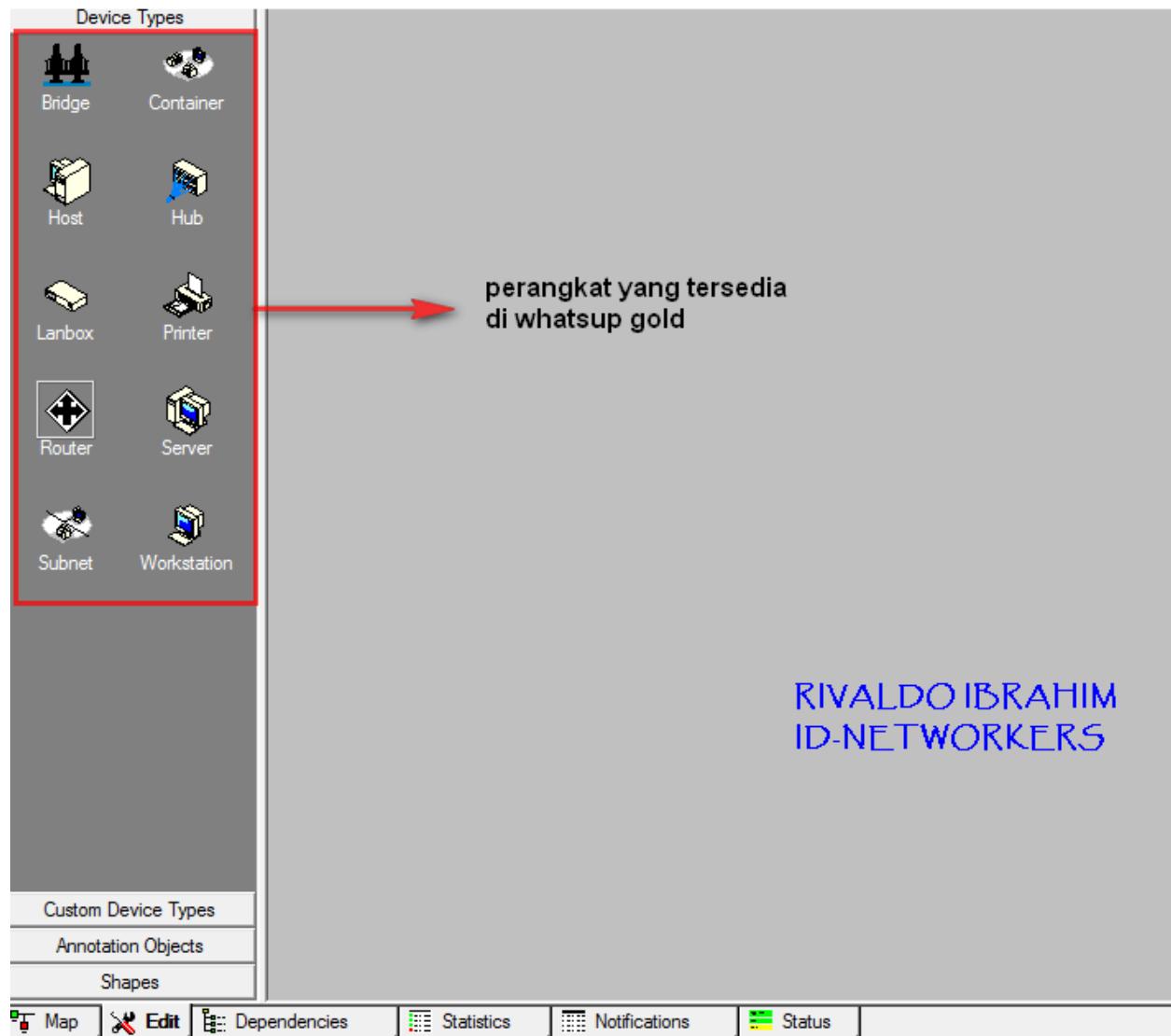


-jika ingin membuat yang baru,pilih yang create a blank map,lalu finish,seperti ini :



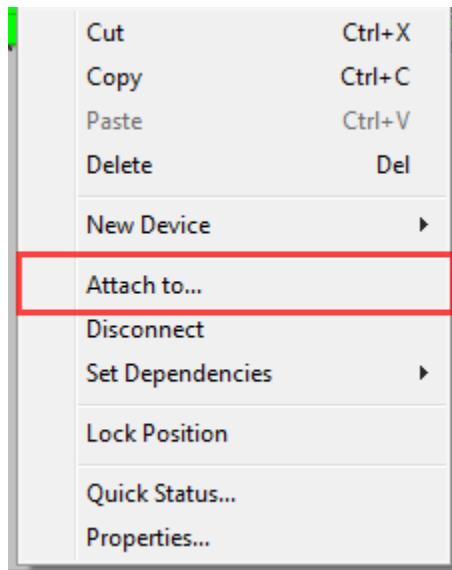
-setelah itu,jika sudah maka akan muncul tampilan seperti ini,untuk paling kiri perangkat yang biasa digunakan :

I



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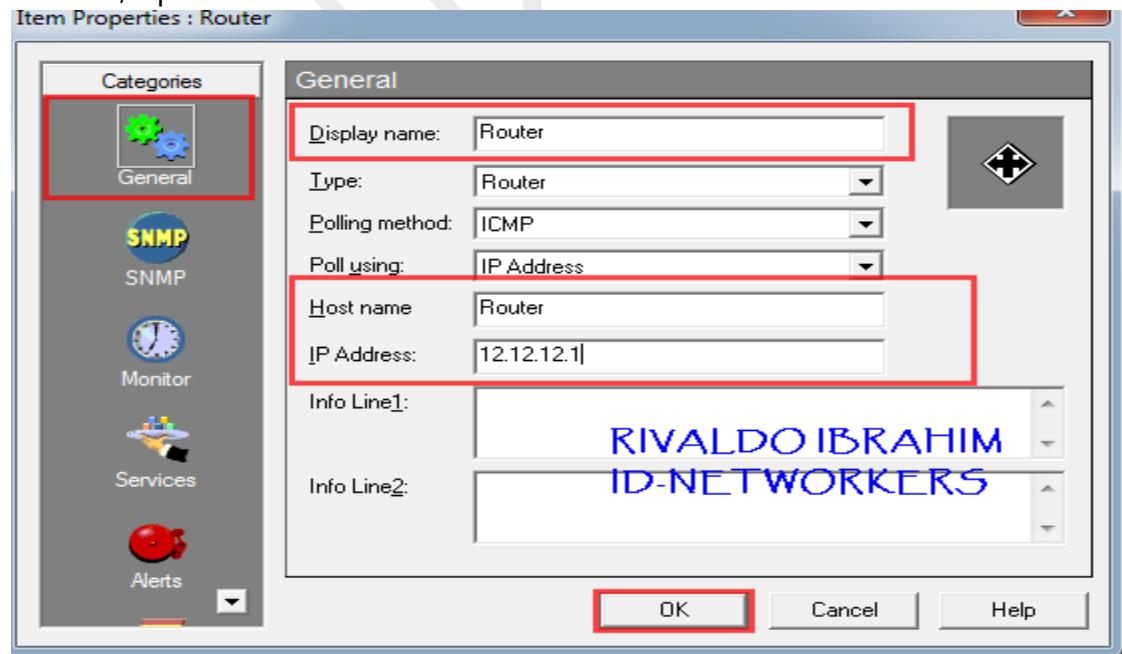
-untuk menghubungkan kabel,kita klik kanan,lalu attach to..,seperti di bawah ini :



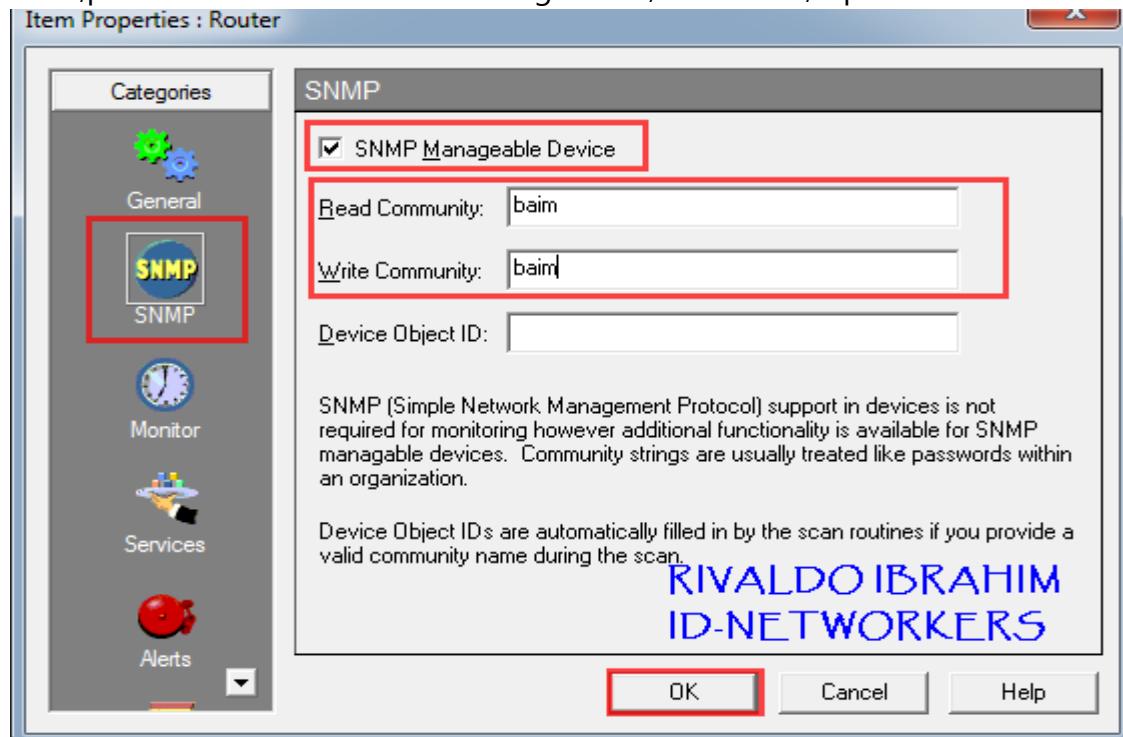
-lalu,coba kita buat topologi,seperti di bawah ini :



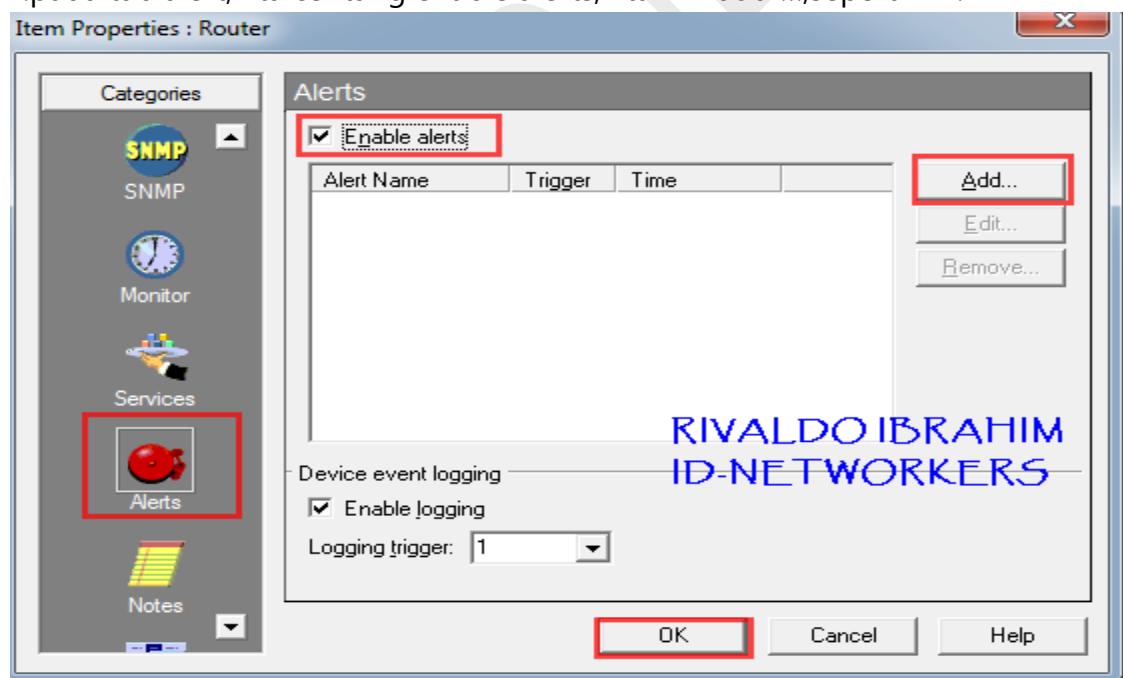
-pada router klik 2x,pada tab general setting display name,hostname dan ip address,seperti berikut :



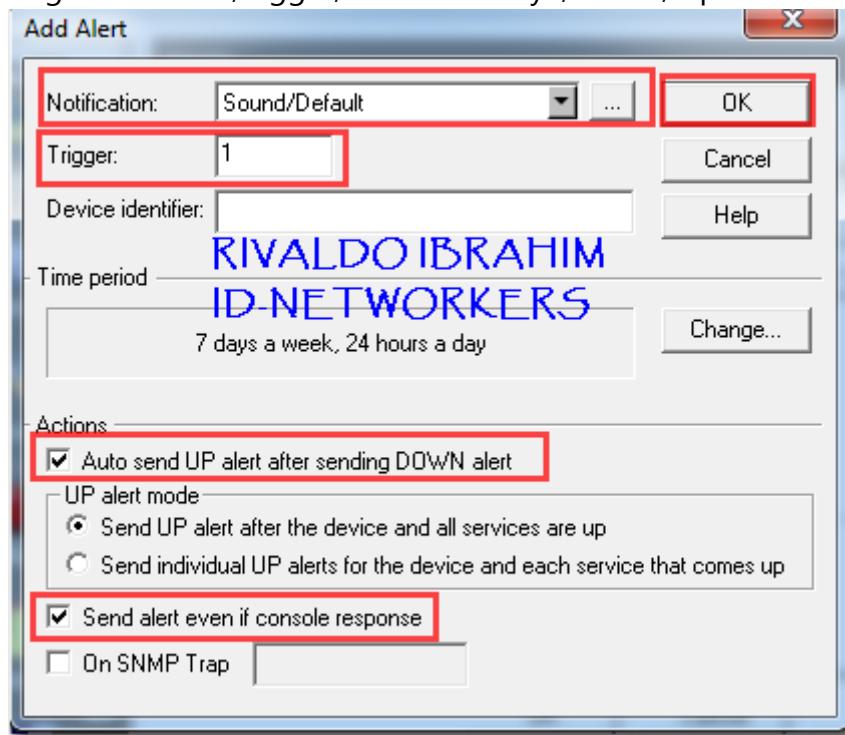
-lalu,pada tab SNMP kita beri centang SNMP,lalu klik ok,seperti ini :



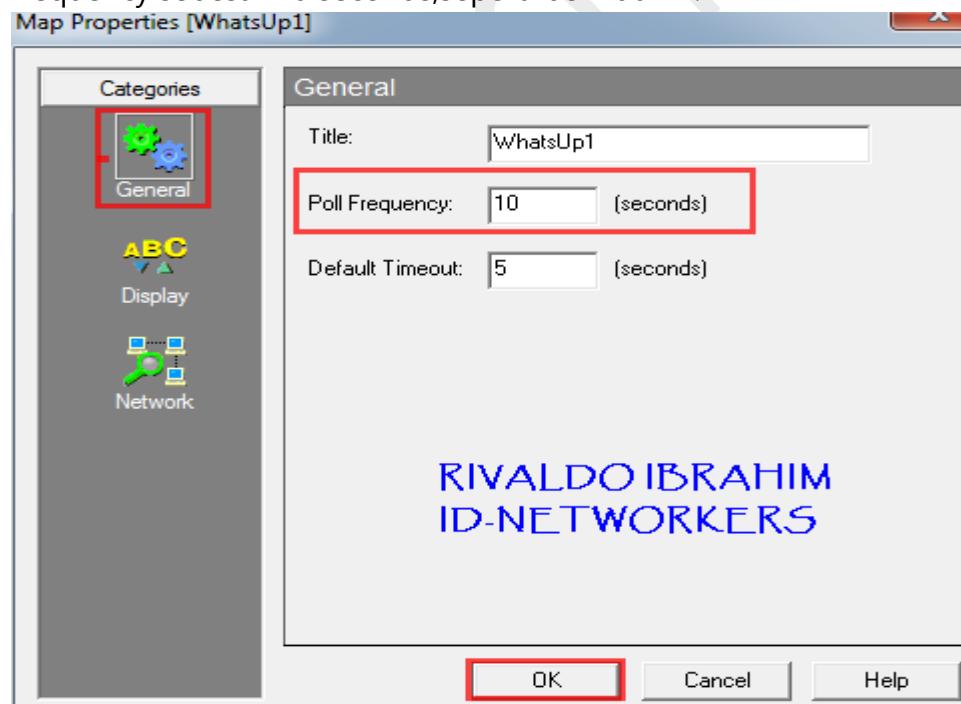
-pada tab alert,kita centang enable alerts,kita klik add ...,seperti ini :



-disini,kita setting notification,trigger,dan actions nya,lalu ok,seperti ini :

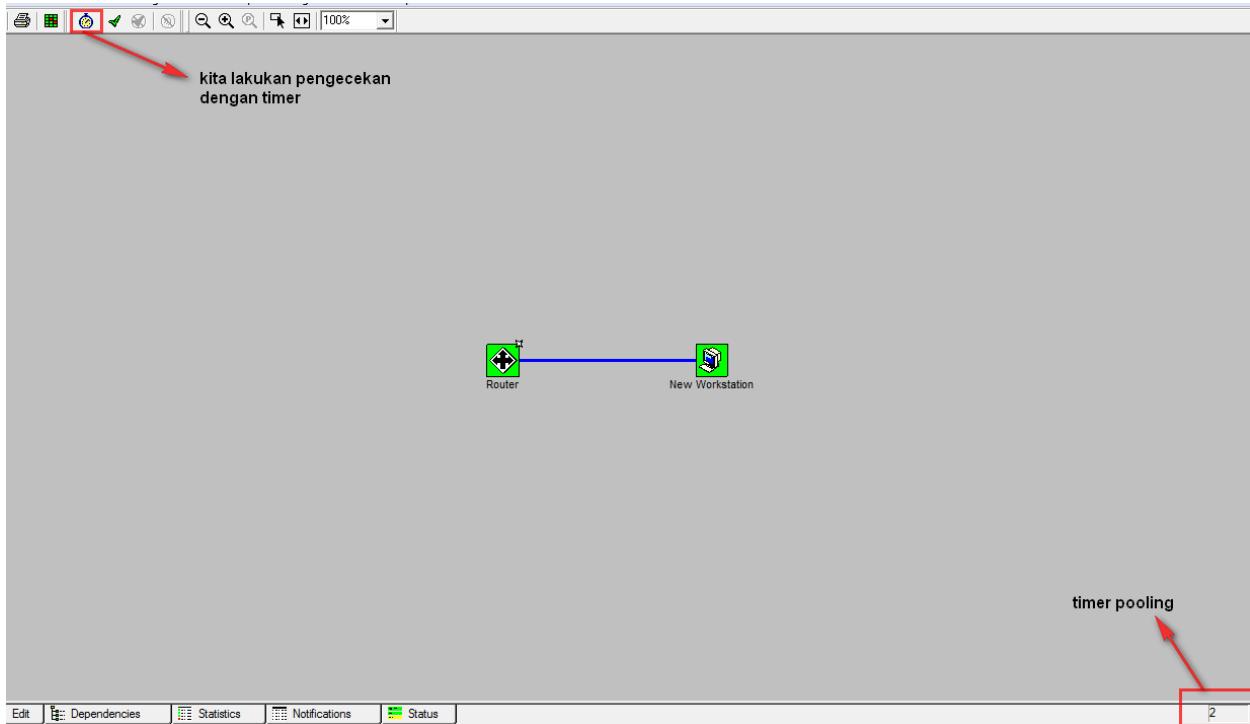


-jika sudah ,klik kanan pada map ,lalu muncul ini dan pada general menggunakan frequency sebesar 10 seconds,seperti berikut ini :



CISCO ITU MUDAH

-coba kita lakukan pengecekan,klik timer pada menu,di pojok kanan bawah,seperti ini :



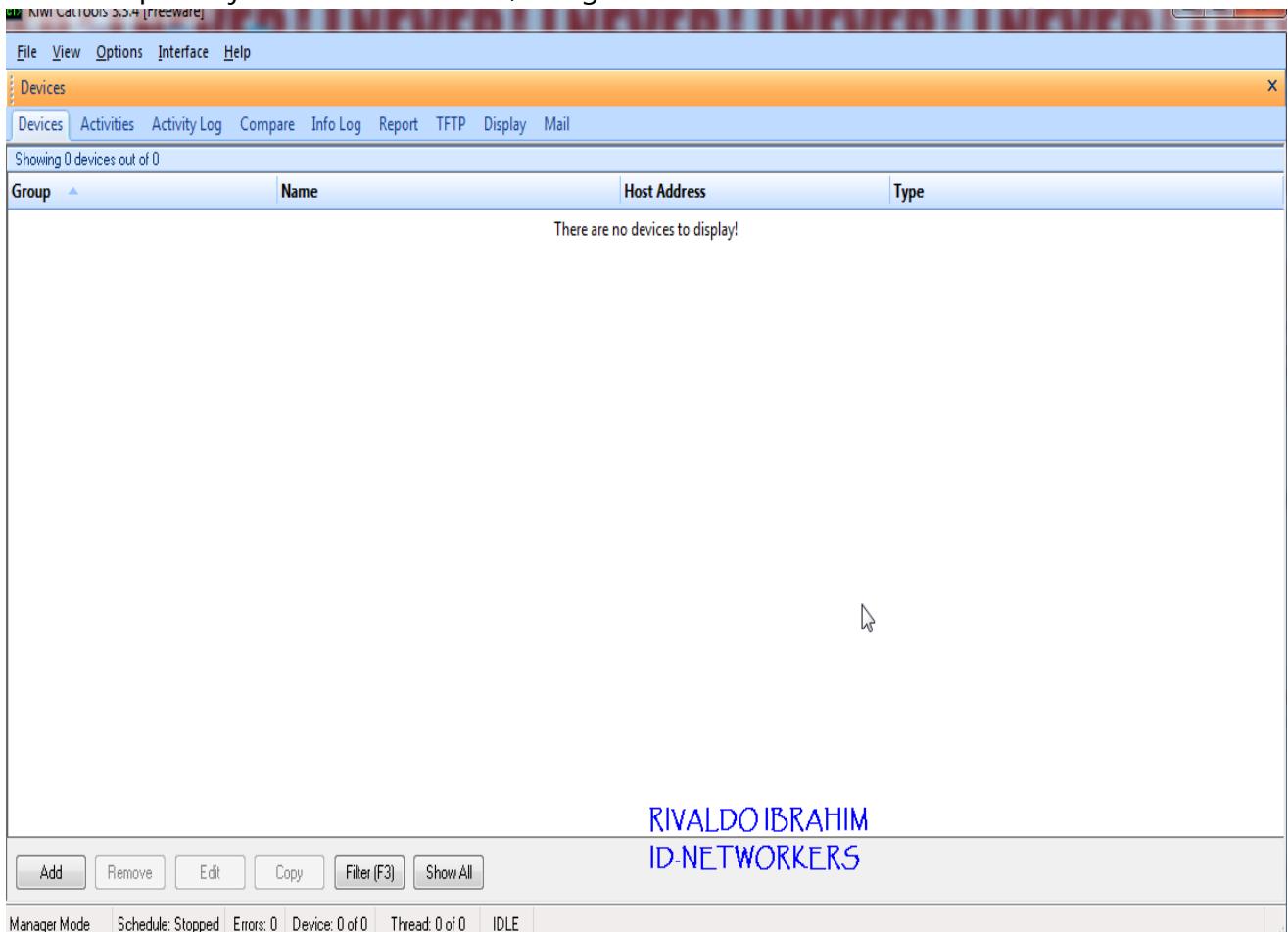
-jika pada salah satu perangkat ada yang down,maka akan berbunyi sirine,seperti ini :



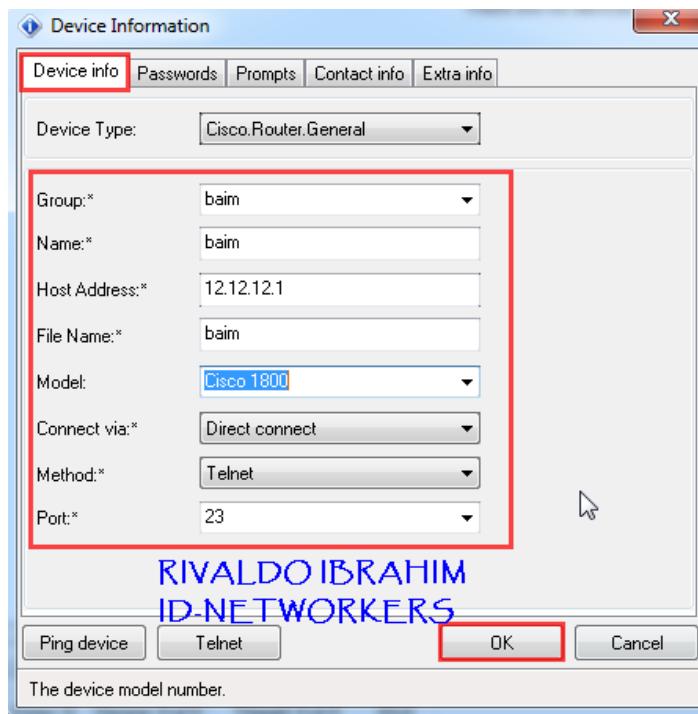
Lab 56

Kiwi catools

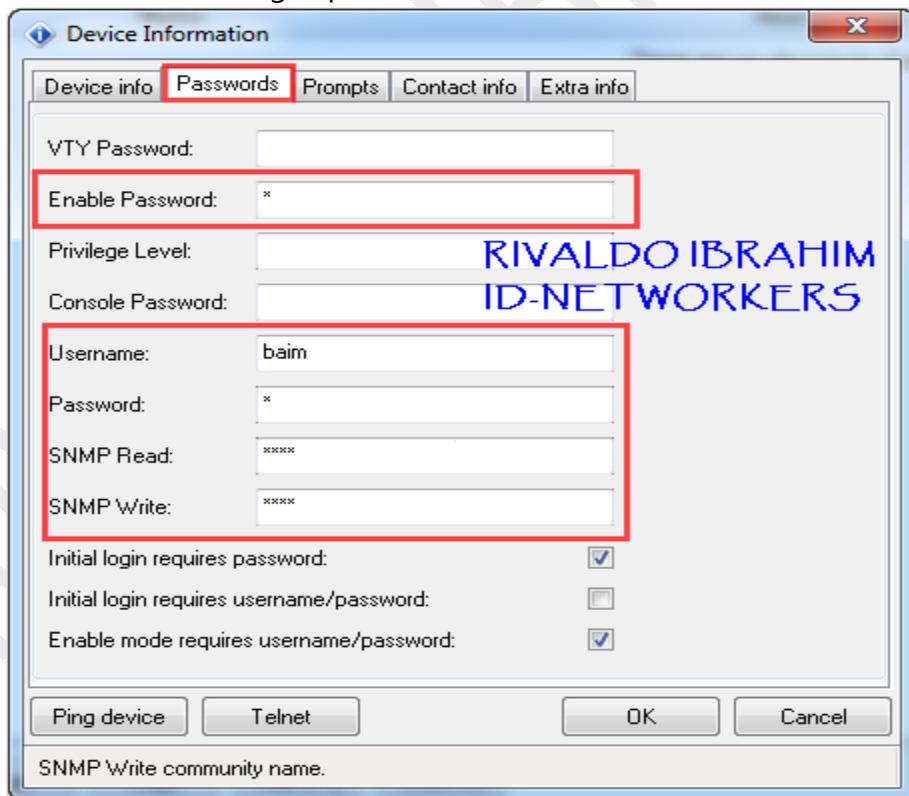
Pada pembahasan kali ini,kita akan membahas tentang kiwi catools.digunakan untuk melakukan backup konfigurasi router dan switch,serta perubahan konfigurasi secara massal.langsung saja kita praktekkan,berikut ini langkah-langkahnya :
-.ini merupakan jendela kiwi catools,sebagai berikut :



-.disini,kita konfigurasi device information pada tab device info,kita setting seperti di bawah :

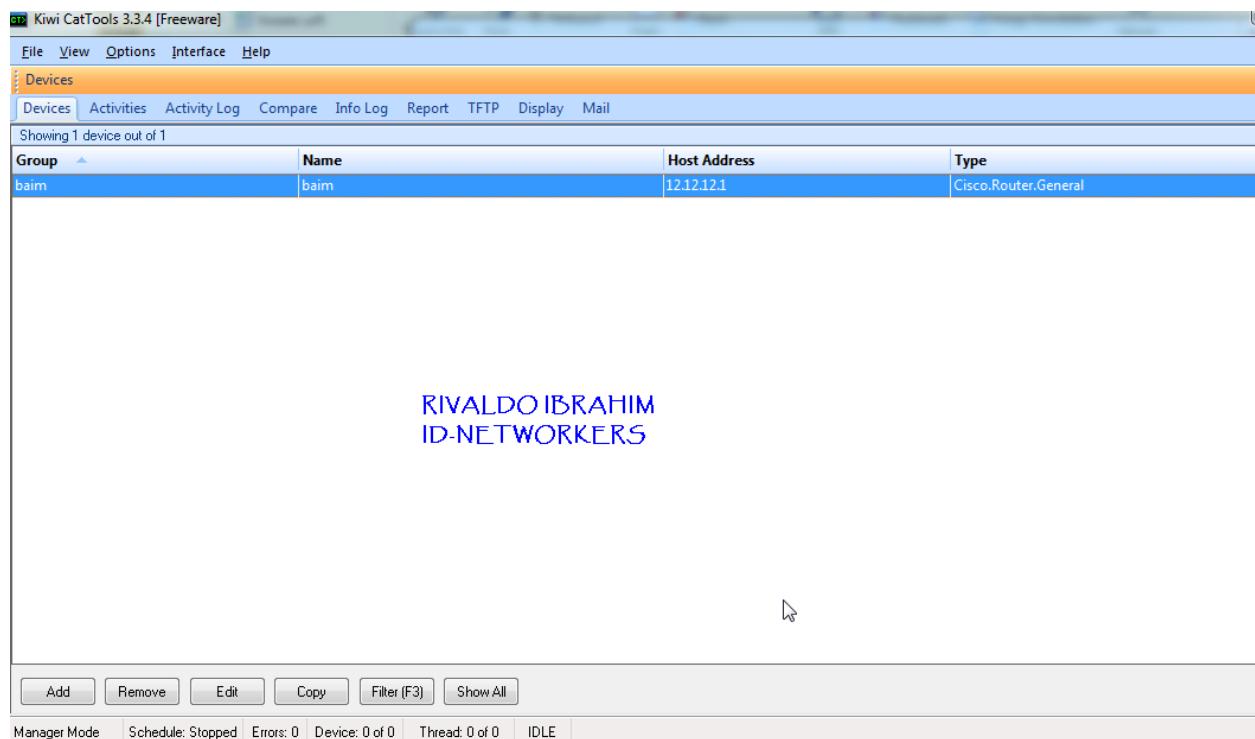


- pada tab password, kita setting seperti di bawah ini, lalu ok :

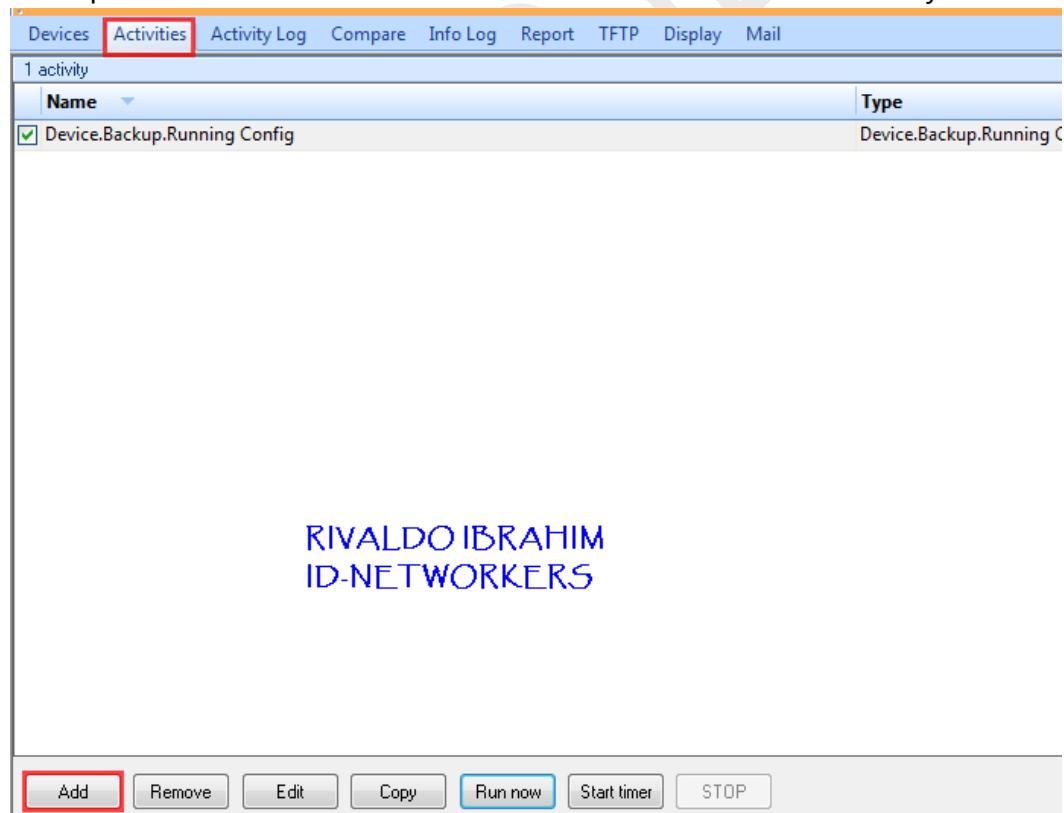


- setelah selesai menyetting, kita bisa melihat list dari devices tersebut

CISCO ITU MUDAH

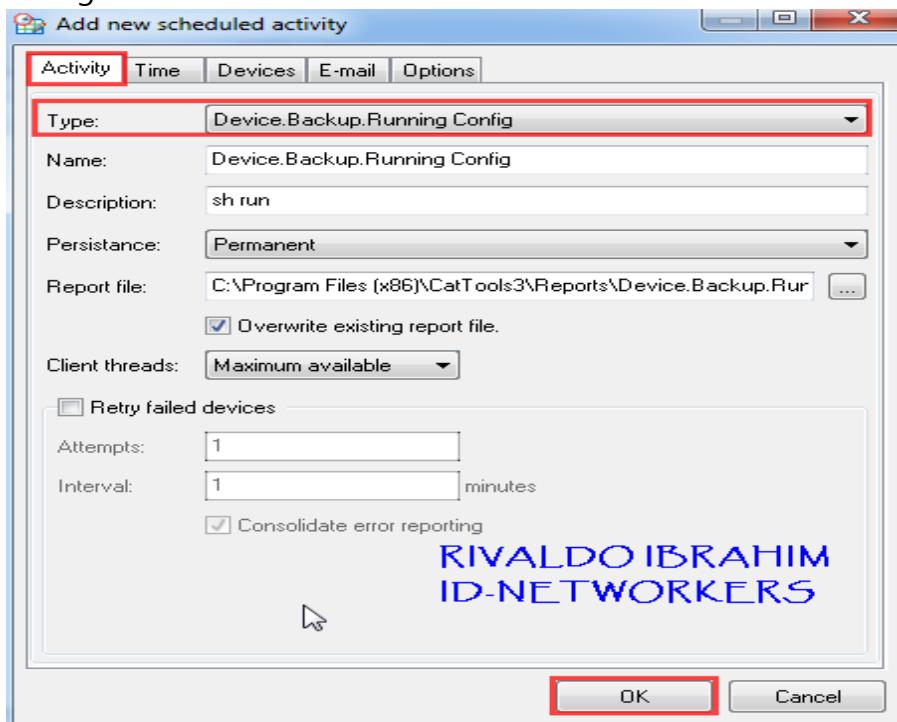


-kita pilih activities,lalu add untuk membuat new schedule activity.

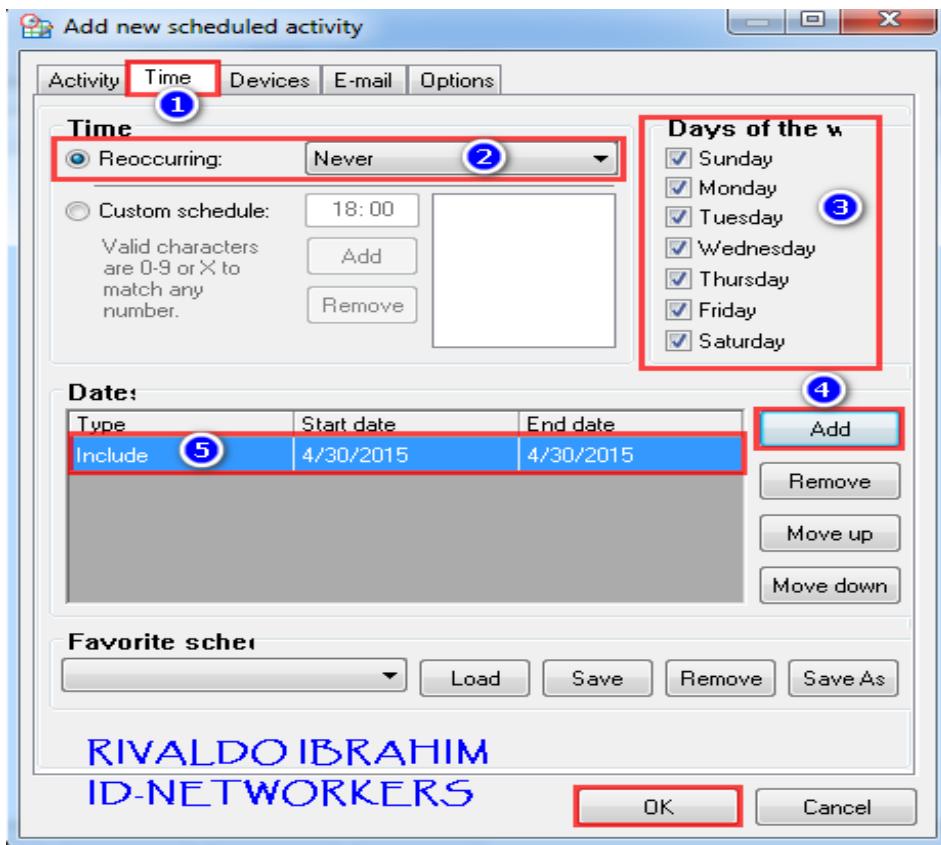


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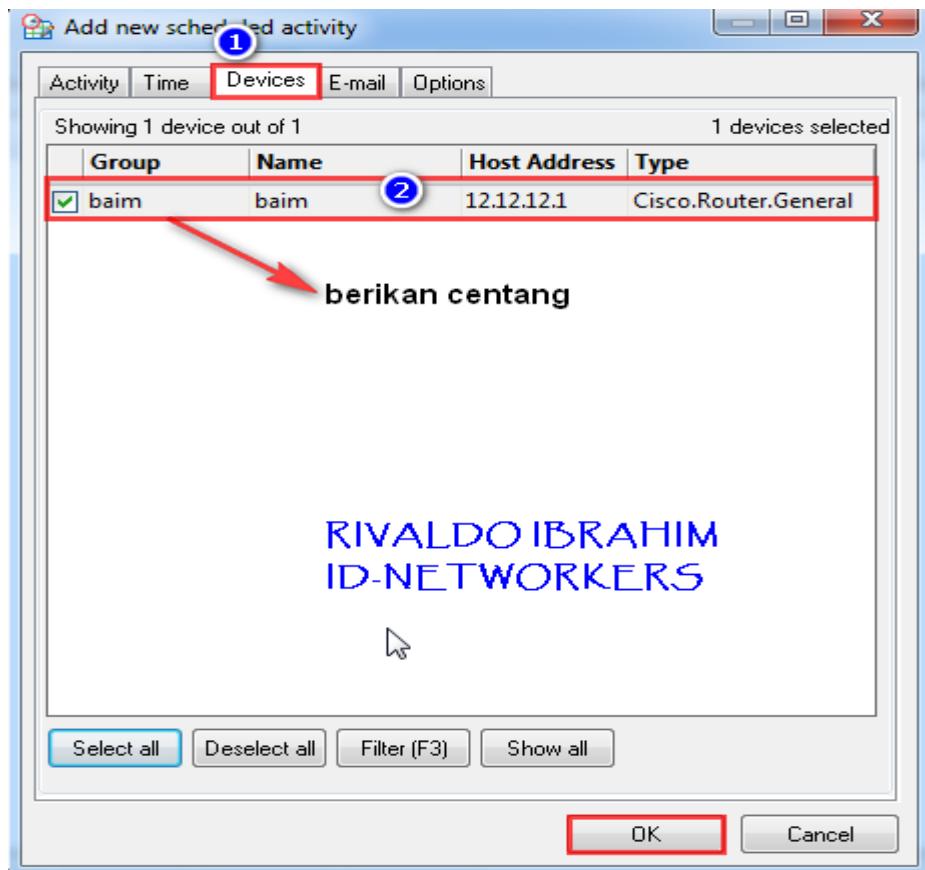
-pilih activity,dan type device.backup.running.config untuk melakukan backup konfigurasi



-pada tab time,di setting dulu jika sudah klik add untuk menambahkan,seperti di bawah ini :

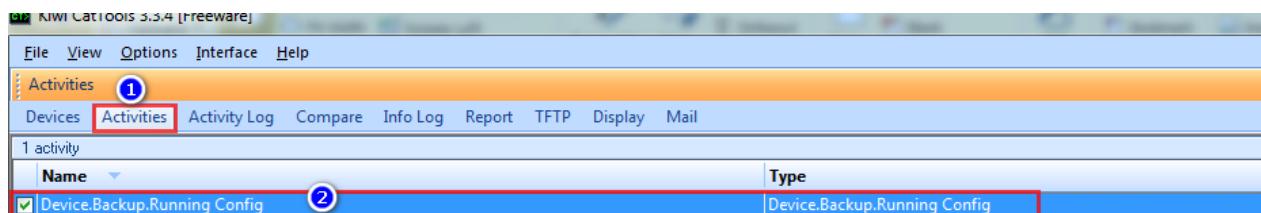


-lalu pada tab device,kita berikan centang pada device yang ada di list,seperti di bawah ini :

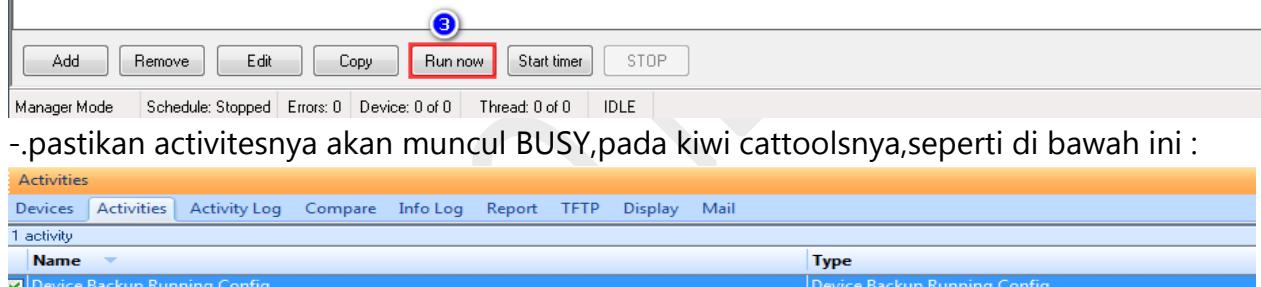


-lalu kita ke tab activities, setelah itu klik run now, seperti di bawah ini :

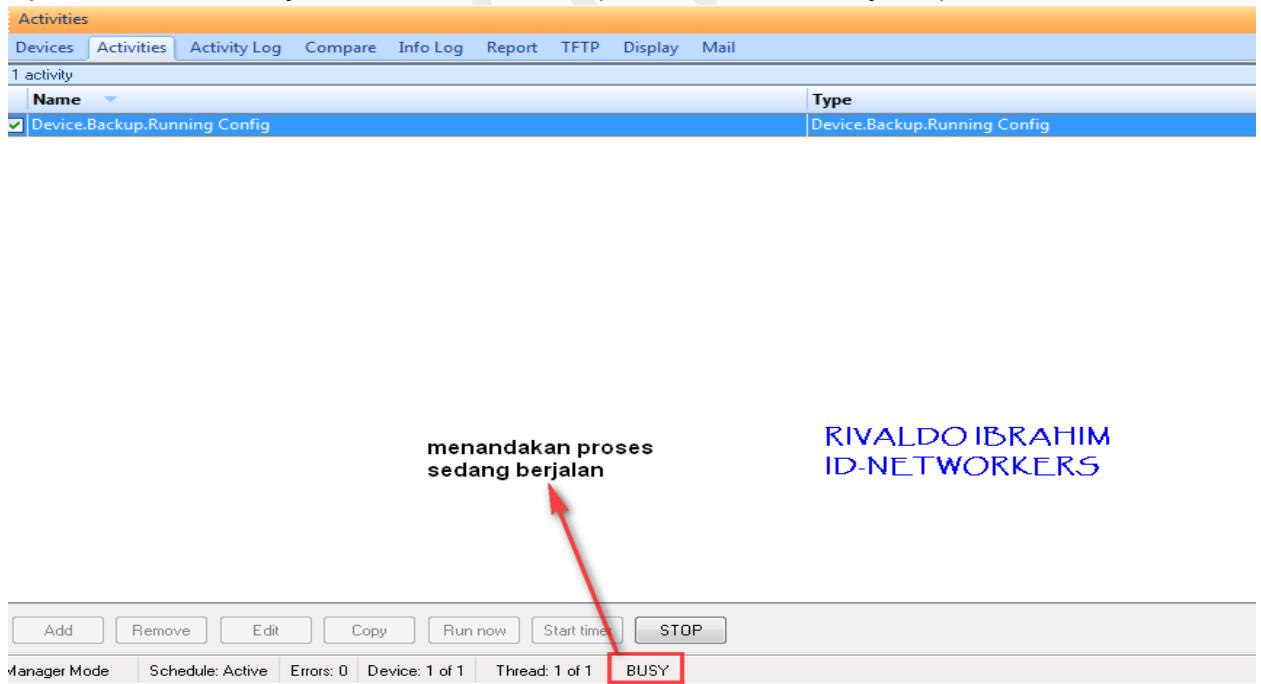
CISCO ITU MUDAH



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ID-NETWORKERS



-pastikan activitesnya akan muncul BUSY,pada kiwi cattoolsnya,seperti di bawah ini :



RIVALDO IBRAHIM
ID-NETWORKERS

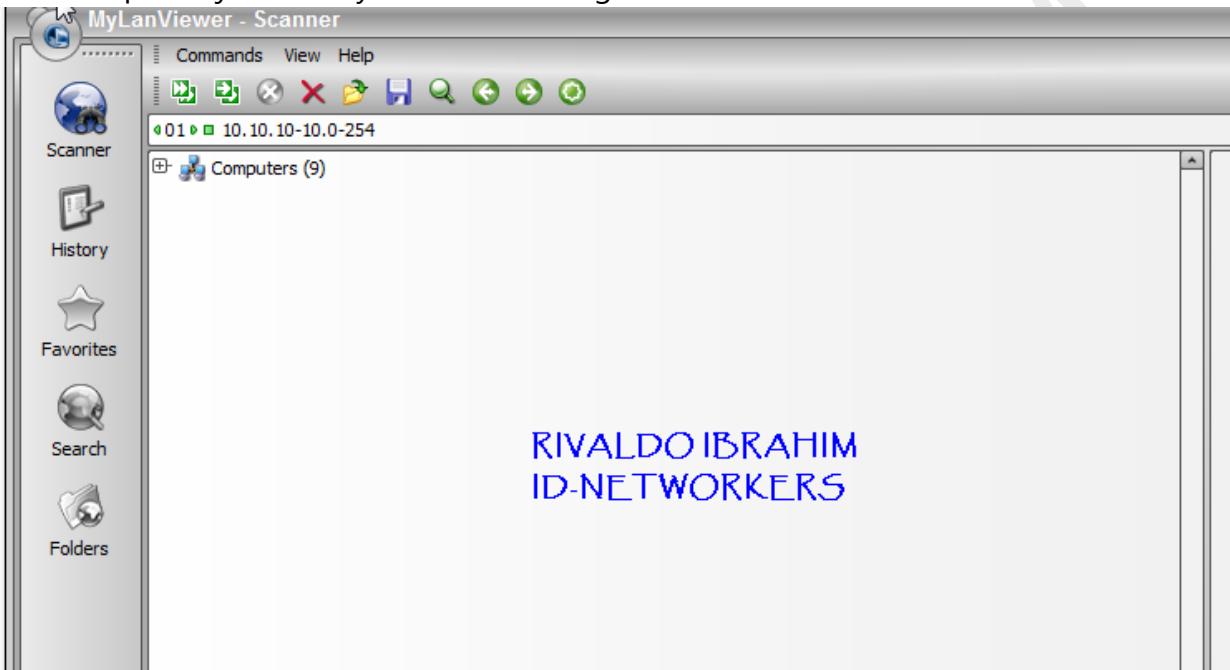
menandakan proses
sedang berjalan

Lab 57

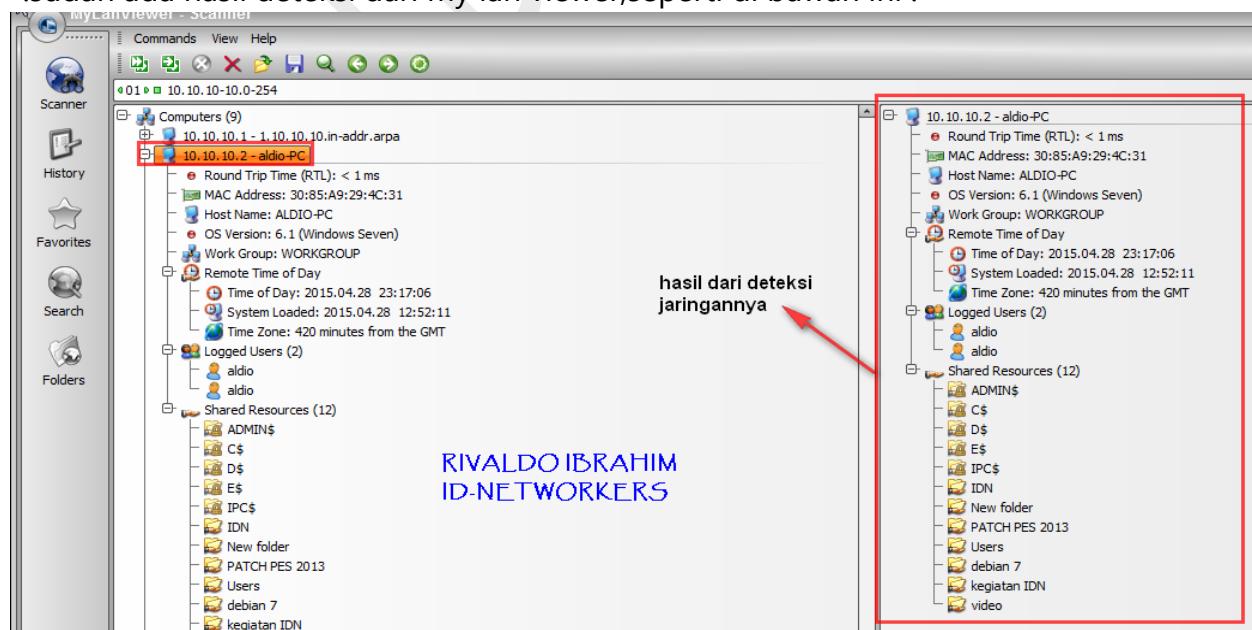
My lan viewer

Pada pembahasan kali ini,kita akan membahas tentang my lan viewer.merupakan mendeteksi kepada semua perangkat yang terhubung di dalamnya.baik ip address,mac address,host name,operating system.langsung saja kita praktekkan,berikut ini langkah-langkahnya :

-ini merupakan jendela my lan viewer,sebagai berikut :



-sudah ada hasil deteksi dari my lan viewer,seperti di bawah ini :



Kesimpulan

Dari pembahasan jobsheet ini saya dapat menarik kesimpulan bahwa dengan memahami modul tentang tutorial cisco dan fitur-fiturnya kita jadi lebih memahami materi ini dengan baik .karena itu kepada para pembaca sekalian bahwa dengan adanya jobsheet ini dapat memudahkan anda dalam memahami materi yang anda anggap cukup rumit.jika melakukan pekerjaan itu maka harus dari dasar dan teorinya harus seimbang sehingga para pembaca mampu memberikan saran dan kritik.

CISCO ITU MUDAH

Penutup

Dengan mengucapkan syukur Alhamdulillah saya panjatkan kepada allah swt atas selesainya penulisan jobsheet ini. terima kasih saya ucapkan kepada para pembimbing yang membantu saya dan telah memberikan bimbingan sehingga terlaksana penyusunan jobsheet ini,tidak lupa juga untuk teman-teman yang telah membantu saya dalam penyusunan jobsheet ini.mudah-mudahan allah dapat membalas jasa-jasa yang telah membantu saya.mohon maaf apabila dalam penyusunan jobsheet ini ada kata-kata yang kurang berkenan bagi pembaca.saya akhiri.....

Wassalamu'alaikum wr.wb

Penyusun

Rivaldo Ibrahim