Simulasi Untuk Suatu Perusahaan Menggunakan Hybrid Network

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*Abstract*—Topologi,Jaringan,Hybrid,Simulasi,Cisco Packettracer,VLSM,Switch,Router,Routing Table,IPv4,Subnet Mask,Prefix,Static Routing,DNS,Server. (hybrid

Keywords—component, formatting, style, styling, insert (key words)

I. PENDAHULUAN

**1.1 Latar Belakang**

Hybrid network adalah jaringan berbasis client-server dimana di dalam jaringan tersebut selain server menyediakan kebanyakan sumber yang dibutuhkan oleh user, tetapi user juga masih dapat mengakses sumber-sumber yang disediakan oleh user lain (peer-to-peer) dalam satu workgroup.

# **1.2 Tujuan**

Tujuan dari dari Tugas Besar ini untuk mensimulasikan suatu perancangaan jaringan di suatu lingkup perusahaan dengan mengimplementasikan teknologi jaringan berbasis Topologi Hybrid, sehingga kedepannya simulasi ini diharapkan dapat mempermudah siapapun untuk membangun sebuah jaringan telekomunikasi.

**1.3 Pembatasan Masalah**

Pembatasan masalah pada Tugas Besar ini adalah sebagai berikut:

1.Konfigurasi router menggunakan metode static maupun dinamik

2.Perancangan Topologi Hybrid

3.Manajemen IP Address dengan metode VLSM

4.Konfigurasi DNS Server

**II. DASAR TEORI**

**2.1 Topologi**

Topologi jaringan adalah salah satu aturan bagaimana menghubungkan computer (node) satu sama lain secara fisik dan pola hubungan antara komponen-komponen yang berkomunikasi melalui media atau peralatan jaringan, seperti server,workstation, hub/switch, dan pemasangan kabel (media transmisi data). Dalam simulasi kali ini kita menggunakan Topologi Hybrid yaitu adanya penggabungan dari dua maupun lebih jenis topologi jaringan yang tidak sama. Seperti pada suatu jaringan yang telah menggunakan topologi ring kemudian digabungkan pada jaringan yang lainnya dan menggunakan topologi star. Dengan hal ini maka untuk topologi yang baru telah terbentuk dari hubungan topologi jaringan tersebut.

**2.2 Cisco Packettracker**

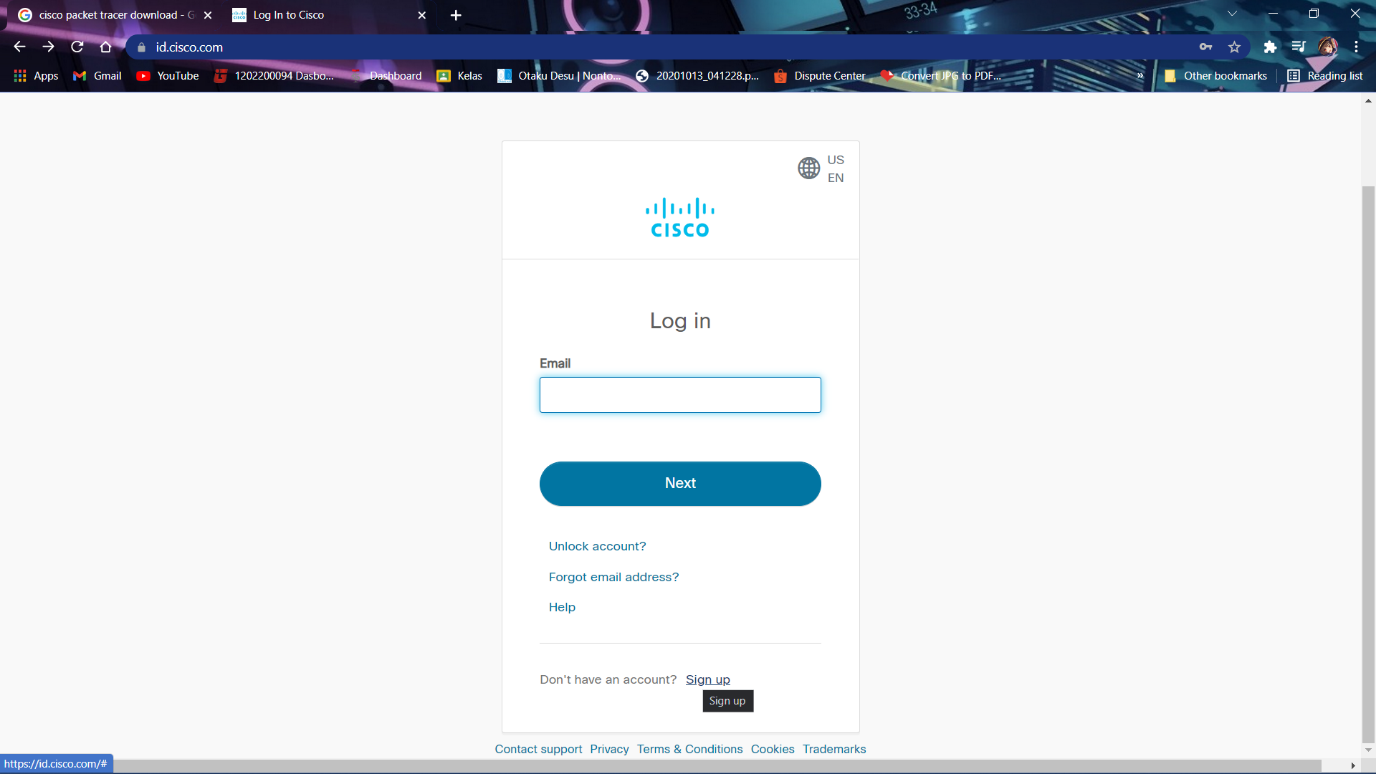
Packet Tracer adalah simulator alat-alat jaringan Cisco yang sering digunakan sebagai media pembelajaran dan pelatihan, dan juga dalam bidang penelitian simulasi jaringan komputer.

Di dalamnya kita disediakan beberapa device seperti Router, Switch, HUB, dan END-Device (PC dan Laptop) untuk kita simulasikan. Kita juga dapat mengkonfigurasi router dengan metode static maupun routing dinamik. Pada END-Device kita juga dapat mensetting IP Address, IPV4, maupun IPV6

dengan metode static maupun DHCP.

**2.3 Cara Instal**

Pertama log in jika sudah sudah mempunyai akun Cisco atau sign up untuk membuat akun

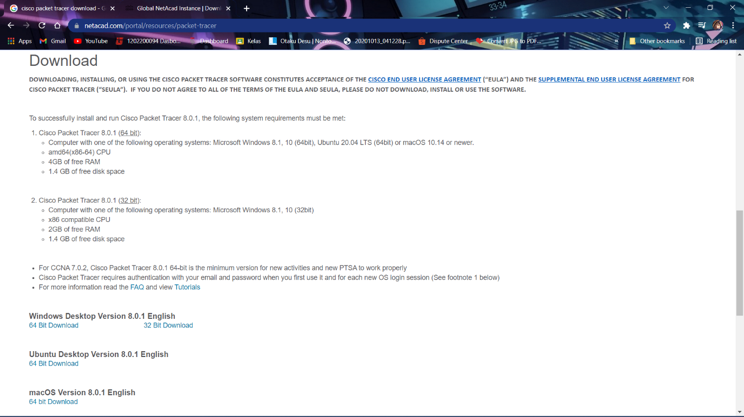


Setelah log in kita dapat mendownload Packet Tracernya di menu resource lalu pilih download Packet Tracer

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Lalu kita dapat memilih menginstall Paket Tracer 32 bit atau 64 bit tergantung dengan sistem operasi yang di miliki



Setelah di download program file nya dapat di buka dan tampilannya akan seperti ini

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Kemudian pilih accept the aggrement lalu tekan next

Graphical user interface, text, application

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Lalu kita memilih folder tempat penyimpanan paket tracer tersebut lalu tekan next

# Graphical user interface, text, application, email Description automatically generated

Setelah itu kita menunggu proses intalasi yang sedang berlangsung hingga selesai

Graphical user interface, application

Description automatically generated

Jika sudah selesai kita klik finish dan mencentang launch Cisco Packet Tracer jika ingin membukanya.

Graphical user interface, application

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# Kemudian kita diminta untuk login sekali lagi ke dalam akun Cisco

# Graphical user interface, application Description automatically generated

Setelah log in berhasil, Cisco Packet Tracer kita sudah dapat digunakan

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# **III. PERANCANGAN**

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**3.1 *Setting* IP Berdasarkan Kebutuhan Host**

Setiap Gedung memiliki 2 buah switch cisco dan 1 buah router cisco.

Gedung 1 dan 2 terhubung ke sebuah router cisco sebagai gateway ke webserver.

IP address yang digunakan adalah 192.168.10.0 /24 dengan metode perhitungan VSLM

IP address webserver adalah IP address terakhir yang dapat dipakai di subnet terakhir hasil perhitungan

**3.1.2 Menghitung Subnetting**

|  |  |  |
| --- | --- | --- |
| **Division** | **IP address** | **Subnet Mask** |
| Divisi (A) | 192.168.10.0 /25 | 255.255.255.128 |
| Divisi (B) | 192.168.10.128 /27 | 255.255.255.224 |
| Divisi (C) | 192.168.10.192 /28 | 255.255.255.240 |
| Divisi (D) | 192.168.10.160 /27 | 255.255.255.224 |
| Router 0 – 1 | 192.168.10.240 /30 | 255.255.255.252 |
| Router 1 – 2 | 192.168.10.244 /30 | 255.255.255.252 |
| Router 1 - Webserver | 192.168.10.252 /30 | 255.255.255.252 |
| Available (cadangan untuk penambahan) | 192.168.10.208 /28 192.168.10.224 /28 | 255.255.255.240 |

**3.2 Mengisi IP (Statik) Pada Masing-Masing *End-Device* Disemua Divisi**

Host Divisi A

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Gedung 1** | | **Gedung 2** | |
| Division | A | B | C | D |
| PC Host | 64 Host | 28 Host | 7 Host | 16 Host |

Diagram

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**Graphical user interface

Description automatically generated**Host Divisi BGraphical user interface

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Host Divisi CGraphical user interface, diagram

Description automatically generated

Host Divisi D

Graphical user interface

Description automatically generated

**3.3 Mac *Address Table***

Berikut adalah mac address table yang disimpan (dikenali) switch di berbagai Divisi

Diagram

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**3.3.1 Mac *Address table* di *Switch* 0**

Berikut adalah mac address table yang disimpan (dikenali) switch 0 atau switch pada divisi A dimana didalamnya terdapat mac address dari PC0, PC1 dan router pada Gedung 1.

**Table

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Berikut adalah mac address table yang disimpan (dikenali) switch 1 atau switch pada divisi B dimana didalamnya terdapat mac address dari PC2, PC3 dan router pada Gedung 1.

**3.3.3 Mac *Address table* di *Switch* 2**

Berikut adalah mac address table yang disimpan (dikenali) switch 2 atau switch pada divisi C dimana didalamnya terdapat mac address dari PC4, PC5 dan router pada **Table

Description automatically generated**Gedung 2.

**3.3.4 Mac *Address table* di *Switch* 3**

**Table

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**3.4 *Routing Table***

Berikut ini adalah routing table pada pada setiap router yang berada pada jaringan ini

**3.4.1 *Routing Table* di *Router* 0**

**Graphical user interface, text, application

Description automatically generated**Berikut adalah routing table pada router 0 yang didalamnya terdapat alamat ip yang melewati router tersebut dan terkoneksi langsung. Router ini yang menghubungkan semua perangkat yang ada Gedung 1 (divisi a dan b) dan router 1.

**Text

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Berikut adalah routing table pada router 1 yang didalamnya terdapat alamat ip yang melewati router tersebut dan terkoneksi langsung. Router ini menghubungkan semua perangkat yang ada antara 2 Gedung dan web server.

**3.4.3 *Routing Table* di *Router* 2**

**Graphical user interface, text, application

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Berikut adalah routing table pada router 2 yang didalamnya terdapat alamat ip yang melewati router tersebut dan terkoneksi langsung. Router ini menghubungkan dengan router 1 dan Gedung 2 (divisi c dan d).

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| --- | --- | --- | --- |
| Table column subhead | Subhead | Subhead |
| copy | More table copya |  |  |

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