Laporan AOL Computer Network

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**Devices used, Networking Media types and length of media used**

Jadi kami dalam mengerjakan AOL ini memilih Universitas Bina Nusantara Alam Sutera dengan 3 lantai yaitu lantai 4, 5, dan 6. Berikut kami lampirkan gambaran dan penjelasan desain jaringan dan device media komunikasi di setiap lantainya dengan menggunakan tools Cisco Packet Tracer.

Jadi kami mulai dengan lantai 4 terlebih dahulu. Pada lantai 4 ini terdapat beberapa kelas lab dan kelas lec. Pada kelas LEC ini menggunakan beberapa topology salah satunya topology star untuk menghubungkan antara komputer dengan switchnya. Kemudian ada juga topologi bus juga untuk kelas lab karena terdapat kabel tunggal sebagai pusat lalu lintas jaringannya dan juga agar tidak memakan biaya dalam pembelian kabelnya. Dilantai ini juga terdiri dari beberapa kabel yaitu copper straight, copper cross. Pada setiap kelas juga terdapat satu switch untuk membentuk local area network dan satu router untuk menghubungkan beberapa jaringan.

|  | Daftar kebutuhan pada lantai 4   | No | Jaringan atau komponen yang dibutuhkan | Jumlah Client | Keterangan | | --- | --- | --- | --- | | 1 | Switch | 12 buah | Karena di setiap ruangan diletakkan 1 buah switch untuk menghubungkan beberapa pc ke dalam jaringan | | 2 | Router | 2 buah | Dibutuhkan router ini untuk membuat Local Area Network | | 3 | Kabel UTP CAT 6 | 50 meter | Penghubung dari pc ke switch | | 4 | PC Client | 29 buah |  | | 5 | LAN Card | 29 buah | Konekting ke switch menggunakan kabel | | 6 | RJ-45 | 42 buah | Digunakan untuk menyambungkan router ke switch, switch ke perangkat pc dan server ke switch | |
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|  | Pada lantai 5 terdapat 11 kelas dan 1 ruangan auditorium. Setelah peninjauan di setiap kelasnya memiliki 1 pc, router dan switch. Kemudian pada ruangan auditorium terdapat 2 pc. Disini kami menggunakan beberapa jenis kabel salah satunya ada copper straight untuk menghubungkan 2 device berbeda seperti switch ke pc. Pada lantai ini kita menggunakan topology     | No | Jaringan atau komponen yang dibutuhkan | Jumlah | | --- | --- | --- | | 1 | Switch | 11 | | 2 | Wireless Router | 11 | | 3 | PC Client | 13 | | 4 | Kabel UTP | 50 meter | | 5 | Router | 2 | | 6 | RJ-45 | 26 |     Pada lantai 6 ini terdapat 4 ruangan yang yaitu kelas A0601, A0603, A0608, dan Drawing class A0605-06. Setelah kami melakukan peninjauan di setiap ruangan memiliki 1 pc yang terhubung dengan internet. Karena terhubung dengan internet maka memerlukan switch dan juga router untuk local area network. Di lantai 6 ini juga menggunakan topologi star karena setiap komputer terhubung dengan switch yang menghubungkan setiap server.     | No | Jaringan atau komponen yang dibutuhkan | Jumlah | | --- | --- | --- | | 1 | Switch | 4 | | 2 | Wireless Router | 4 | | 3 | PC Client | 4 | | 4 | Kabel UTP | 50 meter | | 5 | Router | 1 |   Kemudian untuk menyambungkan dari tiap-tiap lantainya menggunakan router yang menghubungkan beberapa jaringan sehingga dapat meneruskan data dari satu jaringan lantai ke jaringan lantai lainnya. |

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|  | **IP Addressing & Subnetting:**   * Lantai 4 : * Network Address : 172.16.0.0 * Subnet Mask Initial : 255.255.0.0 * Ruangan IT   + Host = 24   + h = 2^n - 2 >= host   + h = 5   + CIDR = 32 - h = /27   + New subnet mask = 255.255.255.224   + Network Address = 172.16.0.0   + Broadcast Address = 172.16.0.31   + Usable IP range = 172.16.0.1 - 172.16.0.30   + Gateway IP = 172.16.0.1 * Ruangan LSC   + Host = 16   + h = 2^n - 2 >= host   + h = 5   + CIDR = 32 - h = /27   + New subnet mask = 255.255.255.224   + Network Address = 172.16.0.32   + Broadcast Address = 172.16.0.63   + Usable IP range = 172.16.0.33 - 172.16.0.62   + Gateway IP = 172.16.0.33 * Ruangan B0402   + Host = 2   + h = 2^n - 2 >= host   + h = 3   + CIDR = 32 - h = /29   + New subnet mask = 255.255.255.248   + Network Address = 172.16.0.64   + Broadcast Address = 172.16.0.71   + Usable IP range = 172.16.0.65 - 172.16.0.70   + Gateway IP = 172.16.0.65 * Ruangan B0403   + Host = 2   + h = 2^n - 2 >= host   + h = 3   + CIDR = 32 - h = /29   + New subnet mask = 255.255.255.248   + Network Address = 172.16.0.72   + Broadcast Address = 172.16.0.79   + Usable IP range = 172.16.0.73 - 172.16.0.78   + Gateway IP = 172.16.0.73 * Ruangan B0404   + Host = 2   + h = 2^n - 2 >= host   + h = 3   + CIDR = 32 - h = /29   + New subnet mask = 255.255.255.248   + Network Address = 172.16.0.80   + Broadcast Address = 172.16.0.87   + Usable IP range = 172.16.0.81 - 172.16.0.86   + Gateway IP = 172.16.0.81 * Ruangan B0405   + Host = 2   + h = 2^n - 2 >= host   + h = 3   + CIDR = 32 - h = /29   + New subnet mask = 255.255.255.248   + Network Address = 172.16.0.88   + Broadcast Address = 172.16.0.95   + Usable IP range = 172.16.0.89 - 172.16.0.94   + Gateway IP = 172.16.0.89 * Ruangan C0401   + Host = 2   + h = 2^n - 2 >= host   + h = 3   + CIDR = 32 - h = /29   + New subnet mask = 255.255.255.248   + Network Address = 172.16.0.96   + Broadcast Address = 172.16.0.103   + Usable IP range = 172.16.0.97 - 172.16.0.102   + Gateway IP = 172.16.0.97 * Ruangan C0403   + Host = 2   + h = 2^n - 2 >= host   + h = 3   + CIDR = 32 - h = /29   + New subnet mask = 255.255.255.248   + Network Address = 172.16.0.104   + Broadcast Address = 172.16.0.111   + Usable IP range = 172.16.0.105 - 172.16.0.110   + Gateway IP = 172.16.0.105 * Ruangan C0406   + Host = 2   + h = 2^n - 2 >= host   + h = 3   + CIDR = 32 - h = /29   + New subnet mask = 255.255.255.248   + Network Address = 172.16.0.112   + Broadcast Address = 172.16.0.119   + Usable IP range = 172.16.0.113 - 172.16.0.118   + Gateway IP = 172.16.0.113 * Ruangan C0410   + Host = 2   + h = 2^n - 2 >= host   + h = 3   + CIDR = 32 - h = /29   + New subnet mask = 255.255.255.248   + Network Address = 172.16.0.120   + Broadcast Address = 172.16.0.127   + Usable IP range = 172.16.0.121 - 172.16.0.126   + Gateway IP = 172.16.0.121 * Ruangan C0411   + Host = 2   + h = 2^n - 2 >= host   + h = 3   + CIDR = 32 - h = /29   + New subnet mask = 255.255.255.248   + Network Address = 172.16.0.128   + Broadcast Address = 172.16.0.135   + Usable IP range = 172.16.0.129 - 172.16.0.134   + Gateway IP = 172.16.0.129 * Ruangan C0412   + Host = 2   + h = 2^n - 2 >= host   + h = 3   + CIDR = 32 - h = /29   + New subnet mask = 255.255.255.248   + Network Address = 172.16.0.136   + Broadcast Address = 172.16.0.143   + Usable IP range = 172.16.0.137 - 172.16.0.142   + Gateway IP = 172.16.0.137 * Lantai 5 : * Network Address : 172.16.1.0/16 * Subnet Mask Initial : 255.255.0.0 * Ruangan AUDITORIUM   + Host = 2   + h = 2^n - 2 >= host   + h = 3   + CIDR = 32 - h = /29   + New subnet mask = 255.255.255.248   + Network Address = 172.16.1.0   + Broadcast Address = 172.16.1.7   + Usable IP range = 172.16.1.1 - 172.16.1.6   + Gateway IP = 172.16.1.1 * Ruangan A0503   + Host = 1   + h = 2^n - 2 >= host   + h = 2   + CIDR = 32 - h = /30   + new subnet mask = 255.255.255.252   + Network Address = 172.16.1.8   + Broadcast Address = 172.16.1.11   + Usable IP range = 172.16.1.9 - 172.16.1.10   + Gateway IP = 172.16.1.9 * Ruangan A0501   + Host = 1   + h = 2^n - 2 >= host   + h = 2   + CIDR = 32 - h = /30   + new subnet mask = 255.255.255.252   + Network Address = 172.16.1.12   + Broadcast Address = 172.16.1.15   + Usable IP range = 172.16.1.13 - 172.16.1.14   + Gateway IP = 172.16.1.13 * Ruangan A0504   + Host = 1   + h = 2^n - 2 >= host   + h = 2   + CIDR = 32 - h = /30   + new subnet mask = 255.255.255.252   + Network Address = 172.16.1.16   + Broadcast Address = 172.16.1.19   + Usable IP range = 172.16.1.17 - 172.16.1.18   + Gateway IP = 172.16.1.17 * Ruangan A0505-06   + Host = 1   + h = 2^n - 2 >= host   + h = 2   + CIDR = 32 - h = /30   + new subnet mask = 255.255.255.252   + Network Address = 172.16.1.20   + Broadcast Address = 172.16.1.23   + Usable IP range = 172.16.1.21 - 172.16.1.22   + Gateway IP = 172.16.1.21 * Ruangan B0503   + Host = 1   + h = 2^n - 2 >= host   + h = 2   + CIDR = 32 - h = /30   + new subnet mask = 255.255.255.252   + Network Address = 172.16.1.24   + Broadcast Address = 172.16.1.27   + Usable IP range = 172.16.1.25 - 172.16.1.2   + Gateway IP = 172.16.1.25 * Ruangan B0504   + Host = 1   + h = 2^n - 2 >= host   + h = 2   + CIDR = 32 - h = /30   + new subnet mask = 255.255.255.252   + Network Address = 172.16.1.28   + Broadcast Address = 172.16.1.31   + Usable IP range = 172.16.1.29 - 172.16.1.30   + Gateway IP = 172.16.1.29 * Ruangan C0507   + Host = 1   + h = 2^n - 2 >= host   + h = 2   + CIDR = 32 - h = /30   + new subnet mask = 255.255.255.252   + Network Address = 172.16.1.32   + Broadcast Address = 172.16.1.35   + Usable IP range = 172.16.1.33 - 172.16.1.34   + Gateway IP = 172.16.1.33 * Ruangan C0503   + Host = 1   + h = 2^n - 2 >= host   + h = 2   + CIDR = 32 - h = /30   + new subnet mask = 255.255.255.252   + Network Address = 172.16.1.36   + Broadcast Address = 172.16.1.39   + Usable IP range = 172.16.1.37 - 172.16.1.38   + Gateway IP = 172.16.1.37 * Ruangan C0509   + Host = 1   + h = 2^n - 2 >= host   + h = 2   + CIDR = 32 - h = /30   + new subnet mask = 255.255.255.252   + Network Address = 172.16.1.40   + Broadcast Address = 172.16.1.43   + Usable IP range = 172.16.1.41 - 172.16.1.42   + Gateway IP = 172.16.1.41 * Ruangan C0511   + Host = 1   + h = 2^n - 2 >= host   + h = 2   + CIDR = 32 - h = /30   + new subnet mask = 255.255.255.252   + Network Address = 172.16.1.44   + Broadcast Address = 172.16.1.47   + Usable IP range = 172.16.1.45 - 172.16.1.46   + Gateway IP = 172.16.1.45 * Lantai 6 : * Network Address Initial : 172.16.2.0/16 * Subnet Mask Initial : 255.255.0.0 * Ruangan A0601 :   + Host = 1   + h = 2^n - 2 >= host   + h = 2   + CIDR = 32 - h = /30   + new subnet mask = 255.255.255.252   + Network Address = 172.16.2.0   + Broadcast Address = 172.16.2.3   + Usable IP range = 172.16.2.1 - 172.16.2.2   + Gateway IP = 172.16.2.1 * Ruangan A0603 :   + Host = 1   + h = 2^n - 2 >= host   + h = 2   + CIDR = 32 - h = /30   + new subnet mask = 255.255.255.252   + Network Address = 172.16.2.4   + Broadcast Address = 172.16.2.7   + Usable IP range = 172.16.2.5 - 172.16.2.6   + Gateway IP = 172.16.2.5 * Ruangan A0608 :   + Host = 1   + h = 2^n - 2 >= host   + h = 2   + CIDR = 32 - h = /30   + new subnet mask = 255.255.255.252   + Network Address = 172.16.2.8   + Broadcast Address = 172.16.2.11   + Usable IP range = 172.16.2.9 - 172.16.2.10   + Gateway IP = 172.16.2.9 * Drawing Room A0605-06 :   + Host = 1   + h = 2^n - 2 >= host   + h = 2   + CIDR = 32 - h = /30   + new subnet mask = 255.255.255.252   + Network Address = 172.16.2.12   + Broadcast Address = 172.16.2.15   + Usable IP range = 172.16.2.13 - 172.16.2.14   + Gateway IP = 172.16.2.13   Sehingga didapatkan tabel seperti ini dengan Network Address: 172.16.2.0   | **Room** | **Total Host** | **Subnet mask** | **NA** | **BA** | **Usable IP** | | --- | --- | --- | --- | --- | --- | | Ruangan A0601 | 1 | /30 | 172.16.2.0/30 | 172.16.2.3/30 | 172.16.2.1 - 172.16.2.2 | | Ruangan A0603 | 1 | /30 | 172.16.2.4/30 | 172.16.2.7/30 | 172.16.2.5 - 172.16.2.6 | | Ruangan A0608 | 1 | /30 | 172.16.2.8/30 | 172.16.2.11/30 | 172.16.2.9 - 172.16.2.10 | | Drawing Room A0605-06 | 1 | /30 | 172.16.2.12/30 | 172.16.2.15/30 | 172.16.2.13 - 172.16.2.14 | |
|  | **Routing:**  Routing pada Router Lantai 4:    Routing pada Router Lantai 5:    Routing pada Router Lantai 6:    **Application Layer :**  STTP & HTTP Server Lantai 4:  IPv4 Address : 172.16.0.1 - 172.16.0.142  Subnet Mask : 255.255.255.224  Default Gateway : 172.16.0.31  URL : http://172.16.0.31  Mail Domain Name : Aolcompnet.com  Host Incoming Mail Server : 172.16.0.31  Host Outgoing Mail Server : 172.16.0.31  STTP & HTTP Server Lantai 5:  IPv4 Address : 172.16.1.1 - 172.16.1.46  Subnet Mask : 255.255.255.248  Default Gateway : 172.16.1.1  URL : https://172.16.1.1  Mail Domain Name : Aolcompnet.com  Host Incoming Mail Server : 172.16.1.1  Host Outgoing Mail Server : 172.16.1.1  STTP & HTTP Server Lantai 6:  IPv4 Address : 172.16.2.1 - 172.16.2.14  Subnet Mask : 255.255.255.252  Default Gateway : 172.16.2.1  URL : Aolcompnet.com  Mail Domain Name : http://172.16.2.1  Host Incoming Mail Server : 172.16.2.1  Host Outgoing Mail Server : 172.16.2.1 |