LOG JARINGAN KOMUNIKASI DATA – WEEK 06

IP Adressing

Subnetting

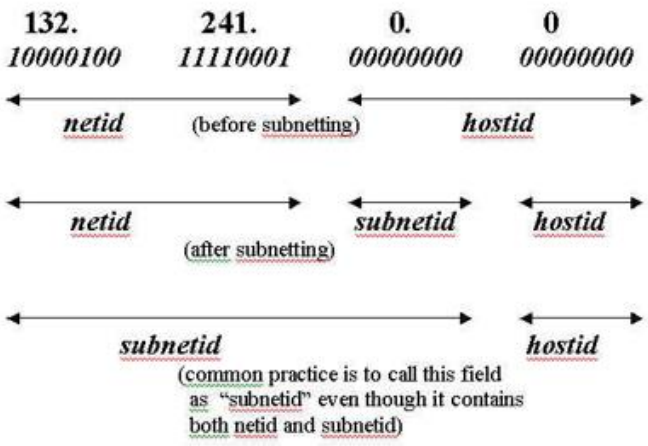
The LAN can be divided into manageable sizes.

Dua tipe Subnetting:

- Static Subnetting
- Variable Length Subnet Mask (VLSM)

Variable length is the more flexible of the two.

Static Subnetting



Before and After Subnetting

- Before Subnetting (204.17.5.0/24)

Network Address (NA)	4th Octet of NA (in binary)	Subnet Mask	First Host	Last Host
204.17.5.0	x.x.x.00000000	255.255.255.0	204.17.5.1	204.17.5.254

- After Subnetting (two subnets)

Network Address (NA)	4th Octet of NA (in binary)	Subnet Mask	First Host	Last Host
204.17.5.0	x.x.x.00000000	255.255.255.128	204.17.5.1	204.17.5.126
204.17.5.128	x.x.x.10000000	255.255.255.128	204.17.5.129	204.17.5.254

VLSM

VLSM digunakan agar pembagian subnet optimal sehingga tidak tejadi hal seperti alokasi 30 host yang hanya terpakai 2.

Cara termudah untuk assign subnet adalah assign yang terbesar dahulu.

Based on the previous example, develop a subnetting scheme with the use of VLSM

- netA: must support 14 hosts
- netB: must support 28 hosts
- netC: must support 2 hosts
- netD: must support 7 hosts
- netE: must support 28 host

Determine what mask allows the required number of hosts.

netA: requires a /28 (255.255.255.240) mask to support 14 hosts
netB: requires a /27 (255.255.255.224) mask to support 28 hosts
netC: requires a /30 (255.255.255.252) mask to support 2 hosts
netD*: requires a /28 (255.255.255.240) mask to support 7 hosts
netE: requires a /27 (255.255.255.224) mask to support 28 hosts

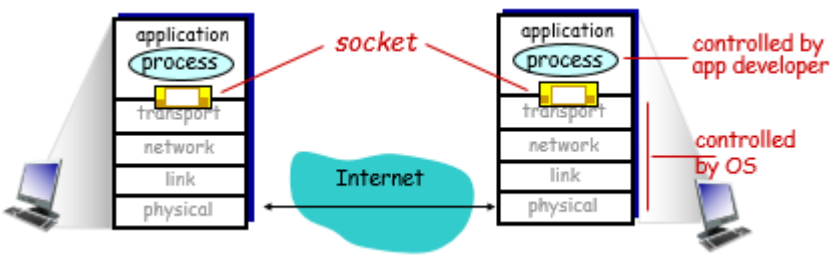
* a /29 (255.255.255.248) would only allow 6 usable host addresses, therefore netD requires a /28 mask.

Process adalah program yang berjalan dalam suatu host.

- Client process: menginisiasi komunikasi
- Server process: menunggu untuk dikontak

Socket

Proses mengirimkan atau menerima pesan ke socket atau dari socket:



Untuk menerima pesan dibutuhkan identifier yang berisi IP address dan port numbers.

Contoh port numbers:

- HTTP server: 80
- mail server: 25

Beberapa hal yang harus diperhatikan saat transport service:

- Data integrity
- Timing
- Throughput
- Security

TCP vs UDP

Internet apps: application, transport protocols

application	application layer protocol	underlying transport protocol
e-mail	SMTP [RFC 2821]	TCP
remote terminal access	Telnet [RFC 854]	TCP
Web	HTTP [RFC 2616]	TCP
file transfer	FTP [RFC 959]	TCP
streaming multimedia	HTTP (e.g., YouTube), RTP [RFC 1889]	TCP or UDP
Internet telephony	SIP, RTP, proprietary (e.g., Skype)	TCP or UDP

Dapat disimpulkan bawha TCP sebaiknya digunakan jika kita menginginkan data integrity, reliable, dan tidak time sensitive, sementara UDP digunakan untuk file transfer yang menitikberatkan pada kecepatan transfer, bukan pada kualitas file.

SSL

SSL dapat mengenkripsi TCP, menyajikan data integrity, berjalan pada application layer.

Web and HTTP

HTTP: hypertext transfer protocol. Merupakan web’s application layer protocol

Jalan kerjanya menggunakan TCP:

Client menginisiasi TCP (membuat socket), server menerima TCP connection dari client, terjadi pertukaran HTTP message antara browser dan web server, kemudian TCP ditutup.

Sifat dari HTTP adalah stateless, yang artinya tidak ada client requests yang disimpan pada server.

HTTP connections

- Non-persistent HTTP
  Hanya satu objek yang dikirimkan melalui TCP connection. Untuk mendownload banyak objek membutuhkan multiple connections.
  non-persistent HTTP response time = 2RTT+ file transmission time
- Persistent HTTP
  Banyak objek bisa dikirimkan dengan satu TCP connection antara client dan server.

HTTP request message

- Request
- Response

HTTP response status codes

- 200 OK
  request succeeded, requested object later in this msg
- 301 Moved Permanently
  requested object moved, new location specified later in this msg (Location:)

- 400 Bad Request
  request msg not understood by server
- 404 Not Found
  requested document not found on this server
- 505 HTTP Version Not Supported

Cookies

Keeping “state”. When initial HTTP requests arrives at site, site creates: unique ID, and entry in backend database for ID.

Cookies bisa digunakan untuk:

- authorization
- shopping carts
- recommendations
- user session state (Web e-mail)

Web caches

Web caching bisa mengurangi client request response time.

FTP: the file transfer protocol

transfer file dari/ke remote host

- client: menginitiates transfer
- server: remote host

Electronic mail

Terdapat tiga komponen utama:

- user agents
  composing, editing, reading mail messages
- mail servers
  SMTP protocol between mail servers to send email messages
  client: sending mail server
  server: receiving mail server
- simple mail transfer protocol: SMTP
  multiple objects sent in one msg

DNS: domain name system

DNS berguna untuk menyesuaikan antara manusia dengan komputer dalam daftar tertentu misal manusia menggunakan nama dan komputer menggunakan angka, maka DNS berada di antara hal tersebut.