

2 L4 , /VPN , L4  
L7 , . < >

# L5~L7

# ‘ L7 ’

QoS . . .



<jyc@piolink.com>

## L7

IT

UTP

LED

! 가

(Unmanaged)

100

TX

가

IT

? (Managed)

L2

가

L3/L4

(specification)

L7

1000/2000

L4/L7

가

L7

L7

L7

[Pointcast], ERP

, FTP, NFS, VoIP

, L7

L7

L7

L7

L7

L2, L3

L7

L4

L7

5

연·제·순·서

1. L4/L7

2. L4/L7

3. L4/L7 ( )

L7

가

가 URL

L7

가

가 L7

, L7

가

TCP/UDP

FTP, NFS, H.323, RTP

가 가

, L7

가 L7

QoS

QoS

L4

OSI (

QoS

7

L5~L7

;

(shaping),

(rate control)

L7

QoS

L7

L7

가 가

L7

- TCP/UDP

L7

- HTTP URL

QoS

L7

- 가

L4  
UDP)

L4

(TCP

UDP

L7 L3/L4

, L4 가

TCP

, L4

TCP

, L7 가

TCP

TCP

, TCP

가

SYN

- L7 7

. TCP

TCP SYN

- L7 URL

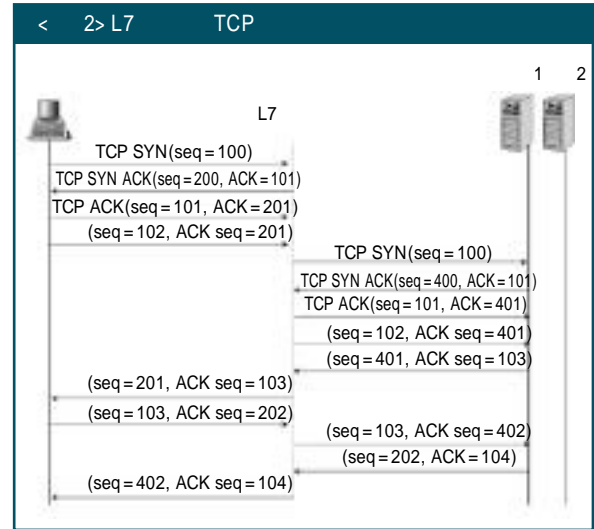
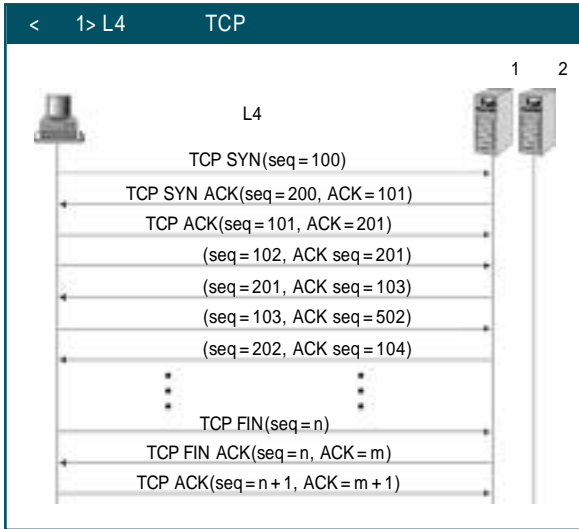
, TCP

- L7 TCP/UDP (0-65535)

가 가

TCP

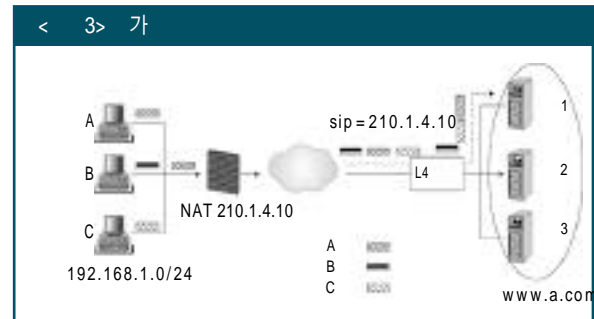
< 1 >



< 1> TCP SYN (sequence number) 100, L4  
 Host 1 sends TCP SYN (seq=100). Host 2 responds with TCP SYN ACK (seq=200, ACK=101). Host 1 sends TCP ACK (seq=101, ACK=201).  
 Host 1 sends data (seq=102, ACK seq=201). Host 2 responds with data (seq=201, ACK seq=103).  
 Host 1 sends data (seq=103, ACK seq=502). Host 2 responds with data (seq=202, ACK seq=104).  
 Host 1 sends TCP FIN (seq=n). Host 2 responds with TCP FIN ACK (seq=n, ACK=m). Host 1 sends TCP ACK (seq=n+1, ACK=m+1).  
 (application) (request data) HTTP, FTP, ...  
 L7

< 2> TCP SYN L7 가 L7 가 TCP L7  
 Host 1 sends TCP SYN (seq=100). Host 2 responds with TCP SYN ACK (seq=200, ACK=101). Host 1 sends TCP ACK (seq=101, ACK=201).  
 Host 2 sends TCP SYN (seq=100). Host 1 responds with TCP SYN ACK (seq=400, ACK=101). Host 1 sends TCP ACK (seq=101, ACK=401).  
 Host 1 sends data (seq=102, ACK seq=401). Host 2 responds with data (seq=401, ACK seq=103).  
 Host 1 sends data (seq=103, ACK seq=402). Host 2 responds with data (seq=202, ACK=104).  
 Host 1 sends TCP ACK (seq=402, ACK seq=104).  
 L7 IP L7 L4

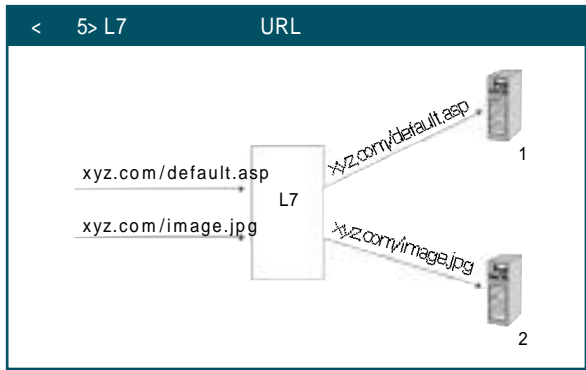
< 3> 가 TCP 가 TCP TCP (delayed binding), TCP (splicing) TCP (termination) TCP  
 Host 1 sends TCP SYN (seq=100). Host 2 responds with TCP SYN ACK (seq=200, ACK=101). Host 1 sends TCP ACK (seq=101, ACK=201).  
 Host 1 sends data (seq=102, ACK seq=201). Host 2 responds with data (seq=201, ACK seq=103).  
 Host 1 sends data (seq=103, ACK seq=502). Host 2 responds with data (seq=202, ACK seq=104).  
 Host 1 sends TCP FIN (seq=n). Host 2 responds with TCP FIN ACK (seq=n, ACK=m). Host 1 sends TCP ACK (seq=n+1, ACK=m+1).  
 L7



< 3> (192.168.1.0/24) NAT (www.a.com) NAT

IP(210.1.4.10)  
 . www.a.com L4  
 가 3 가 ,  
 가 . L4  
 A,B,C  
 , L4  
 A,B,C , IP  
 ( 1) TCP  
 1  
 가 .  
 , ( )  
 가 (megaproxy) AOL 가

IP 가  
 HTTP ( ; user = 1,  
 user = 2)  
 < 4>  
 .  
 (URL partitioning)  
 L7 URL  
 가 가 . < 5>  
 URL 가 L7



(cookie-based persistency)

IP가 NAT(network address translation) ,  
 IP  
 가  
 HTTP (cookie)

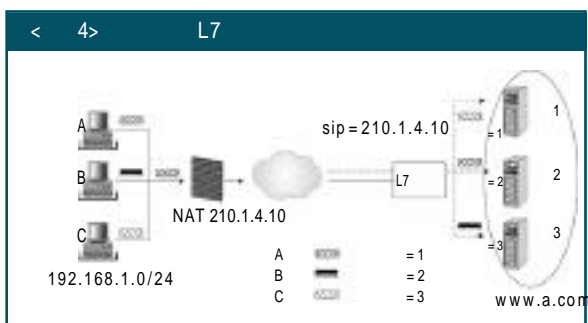
< 5> default.asp  
 1 , image.jpg  
 html 2

HTTP , 가  
 가  
 (shopping cart)

IDS

가 L7

L7



IIS



L7 (flow classification)가 , (IDS), 가 (VPN) , QoS , CDN(Content Delivery Network) ,

L7 , L4 , 10 가 가

SLB, CSLB, FWLB TCP iSCSI

L7 / L7 , IP TCP 가

L7 L7 가

L7 L4/L7 QoS , L7

가



2

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