OSI Model Revisited

Informatics 341

1

Connector Devices

Client	Device Name	Server	Data Structure
7 Application	Proxy server	7 Application	
6 Presentation		6 Presentation	
5 Session	Authoriz'n Server	5 Session	Session table
4 Transport	NAT	4 Transport	TCP/IP socket table
3 Network	Router, VPN	3 Network	IP Routing table
2 Link	Bridge, switch	2 Link	Mac port table
1 Physical	Hub, Concentrator	1 Physical	Physical port

2

Making OSI Work

Laye	Data Structure	Address	Size	Other
7		Process ID,	Next slide	HTTP
6				ASCII, binary
5	Session table	Session ID		Login/passwd
4	TCP/IP socket	TCP Port	2^16	/etc/services
3	IP Routing table	IP Address	2^32	DHCP
2	MAC port table	MAC Address	2^48	ARP Cache
1	Physical port	Wire	ex 100m	Wireless too

3

Size of the PID

```
/* pidsize.c */
#include <stdio.h>
#include <sys/types.h>
#include <unistd.h>
/* Determine the size of the PID of the running system
   The getpid() API returns a variable of type pid_t */
main() {
        printf("size of PID = %d bytes\n",\
         sizeof(pid_t)); }
```

```
make pidsize
./pidsize
size of PID = 4 bytes
```

4

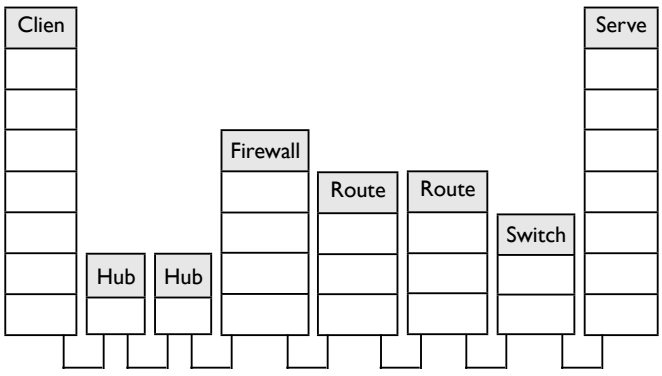
FireWall Example

FireFox	LinkSys	Apache	Data Structure
7 Application		7 Application	
6 Presentation		6 Presentation	
5 Session		5 Session	Session table
4 Transport	NAT	4 Transport	TCP/IP socket table
3 Network	Router, VPN	3 Network	IP Routing table
2 Link	Bridge, switch	2 Link	MAC port table
1 Physical	Hub, Concentrator	1 Physical	Physical port

192.168.1.x 24.16.154.x

5

Reality Check



6

Limits?

Layer	Device	Max hops	Explanation
7	Proxy Server	Depends	Performance and scaling issues
6			
5			
4	NAT	Depends	Size of NAT table
3	Router	15 or ??	RIP hopcount <=15, otherwise no limit
2	Switch, Bridge	7	Spanning Tree Protocol
1	Hub, Concen'r	4	Ethernet preamble loss