

# Understanding the OSI Model



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# ayer 1 – Physical Layer



Layer 7  
Application

Layer 6  
Presentation

Layer 5  
Session

Layer 4  
Transport

Layer 3  
Network

Layer 2  
Data Link

Layer 1  
Physical

- The physics of the network
  - Signaling, cabling, connectors
  - This layer isn't about protocols

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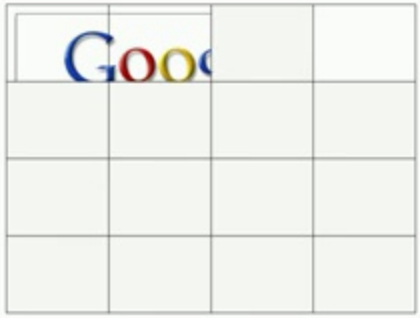


# Layer 4 – Transport Layer



- Layer 7 Application
- Layer 6 Presentation
- Layer 5 Session
- Layer 4 Transport
- Layer 3 Network
- Layer 2 Data Link
- Layer 1 Physical

- The “post office” layer  
– Parcels and letters
- TCP (Transmission Control Protocol) and UDP (User Datagram Protocol)



# Real-world to OSI model



V



Layer 7  
Application

Layer 6  
Presentation

Layer 5  
Session

Layer 4  
Transport

Layer 3  
Network

- IP Address, Router, Packet

Layer 2  
Data Link

- Frame, MAC address, Extended Unique Identifier (EUI-48, EUI-64), Switch

Layer 1  
Physical

- Cables, fiber, and the signal itself

# OSI in the real world



- Layer 7  
Application
- Layer 6  
Presentation
- Layer 5  
Session
- Layer 4  
Transport
- Layer 3  
Network
- Layer 2  
Data Link
- Layer 1  
Physical

(Untitled) - Wireshark

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No.	Time	Source	Destination	Protocol	Info
82	8.655522	192.168.0.8	72.14.247.19	TCP	18429 > https [ACK] Seq=6597 Ack=31296 win=65060 Len=0
83	8.657261	192.168.0.8	72.14.247.19	TLSv1	Application Data
84	8.711490	72.14.247.19	192.168.0.8	TCP	https > 18430 [ACK] Seq=733 Ack=3837 win=18240 Len=0
85	8.734488	72.14.247.19	192.168.0.8	TLSv1	Application Data
86	8.734491	72.14.247.19	192.168.0.8	TLSv1	Application Data
87	8.734501	192.168.0.8	72.14.247.19	TCP	18430 > https [ACK] Seq=3837 Ack=1576 win=65780 Len=0
88	8.808609	192.168.0.8	72.14.247.19	TLSv1	Application Data
89	8.855499	72.14.247.19	192.168.0.8	TCP	https > 18429 [ACK] Seq=31296 Ack=8548 win=32000 Len=0
90	8.868495	72.14.247.19	192.168.0.8	TLSv1	Application Data

Frame 88 (2005 bytes on wire, 2005 bytes captured)

- Ethernet II, Src: Dell\_6f:06:f2 (00:21:70:6f:06:f2), Dst: Netgear\_d4:bb:fe (00:09:5b:d4:bb:fe)
- Internet Protocol, Src: 192.168.0.8 (192.168.0.8), Dst: googlemail.l.google.com (72.14.247.19)
- Transmission Control Protocol, Src Port: 18429 (18429), Dst Port: https (443), Seq: 6597, Ack: 31296, Len: 1951
- Secure Socket Layer

```
0000 00 09 5b d4 bb fe 00 21 70 6f 06 f2 08 00 45 00  ..{...!po...E.
0010 07 c7 5c 29 40 00 80 06 00 00 c0 a8 00 08 48 0e  ..G...?#...QIP.
0020 f7 13 47 fd 01 bb 37 23 d4 97 99 8a 51 49 50 18  ?.....X.
0030 3f 89 ff d8 00 00 17 03 01 07 9a cf be d4 58 c4  ?.....A..H..p7f.
0040 89 db 93 13 c3 09 5e 92 09 48 fb 0e 70 37 66 aa  ?..%.B...nd.Pvw?u
0050 d8 69 29 2a a7 42 d8 06 6e 64 88 50 56 57 3f 75  ?..n...r{.D.%
0060 8a 32 3f 35 9a 6c 76 83 1f 78 6e f0 f7 bc c8 d7  ?..C...#X
0070 cc 8a ca 6e ba ff 93 a8 e8 72 7b 96 44 07 25 ab  ?..C...K.
0080 76 6b 2f 33 06 ba 34 cc 79 d9 04 67 8a d7 0c c3  vk/3..4.y.g....
0090 d6 ec 11 63 7e dc 23 58 86 d5 01 e5 d5 c7 95 85  ?..C...#X
00a0 d9 fc 87 8f 27 ef 92 0f 3d 61 20 15 a3 ea 9f 86  ?..C...K.
00b0 aa f0 1d 1f 30 59 6e 07 c5 ba f9 53 46 9e 4f  ?..C...K.
00c0 eb 63 2c b5 87 96 4b f1 d8 fc c6 db d2 e6 f6 05  ?..C...K.
00d0 ce db 1d b1 fc cd e3 c4 32 e3 48 b2 c5 b0 41 72  ?..C...K.
00e0 48 2e 91 2d ad 35 14 8e 18 4a 0a 31 75 82 3c 76  H...5...J.lu.<v
00f0 99 e8 c0 2f da d5 ea a5 43 8a 86 01 18 cd 7f f0  ?..C...K.
0100 65 76 14 0d f3 0a 4b 24 3b hr hr 4b 86 ff 6h 44  ?..C...K.
```

File: "C:\Users\jmesser\AppData\Local\Temp..." Packets: 181 Displayed: 181 Marked: 0 Dropped: 0 Profile: Default



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