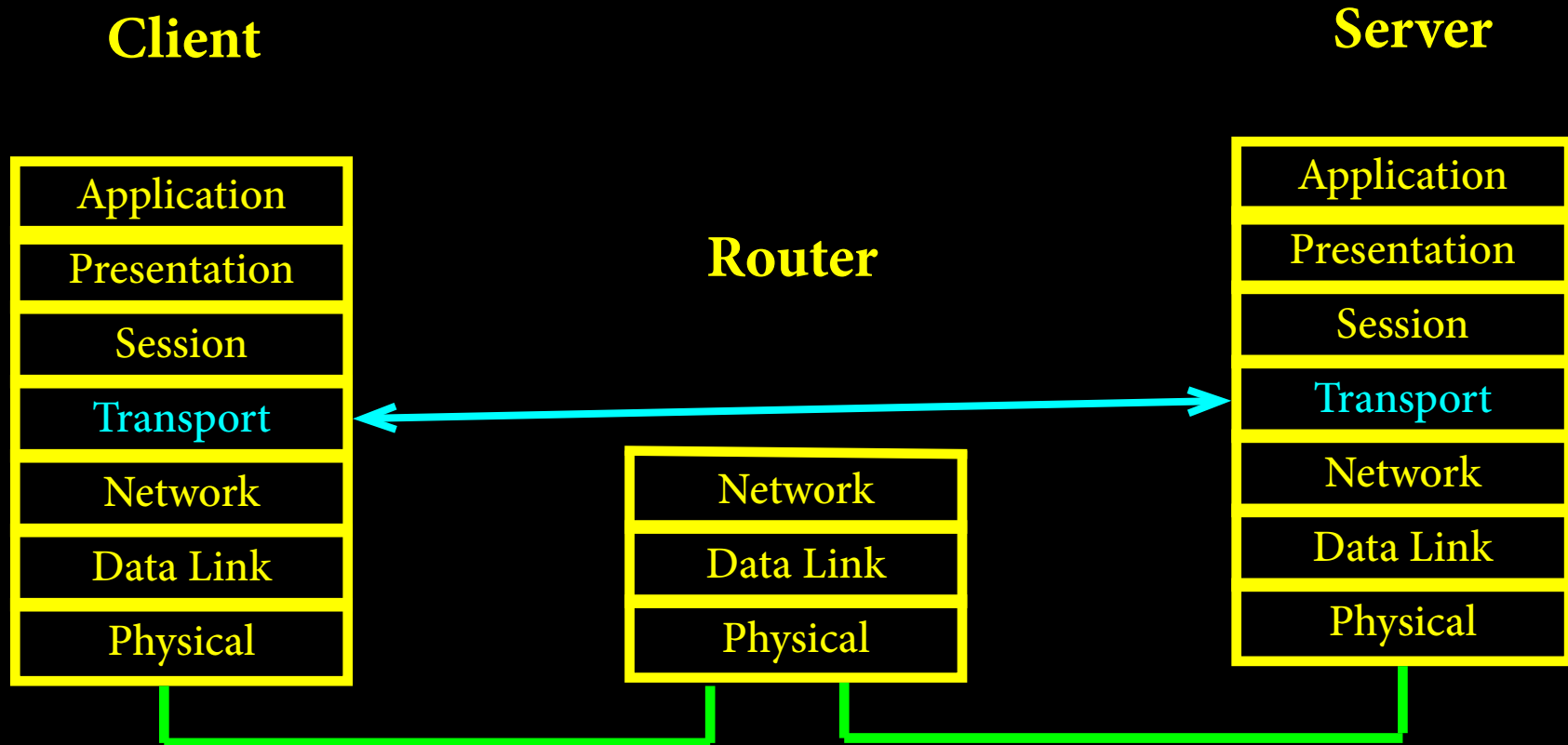
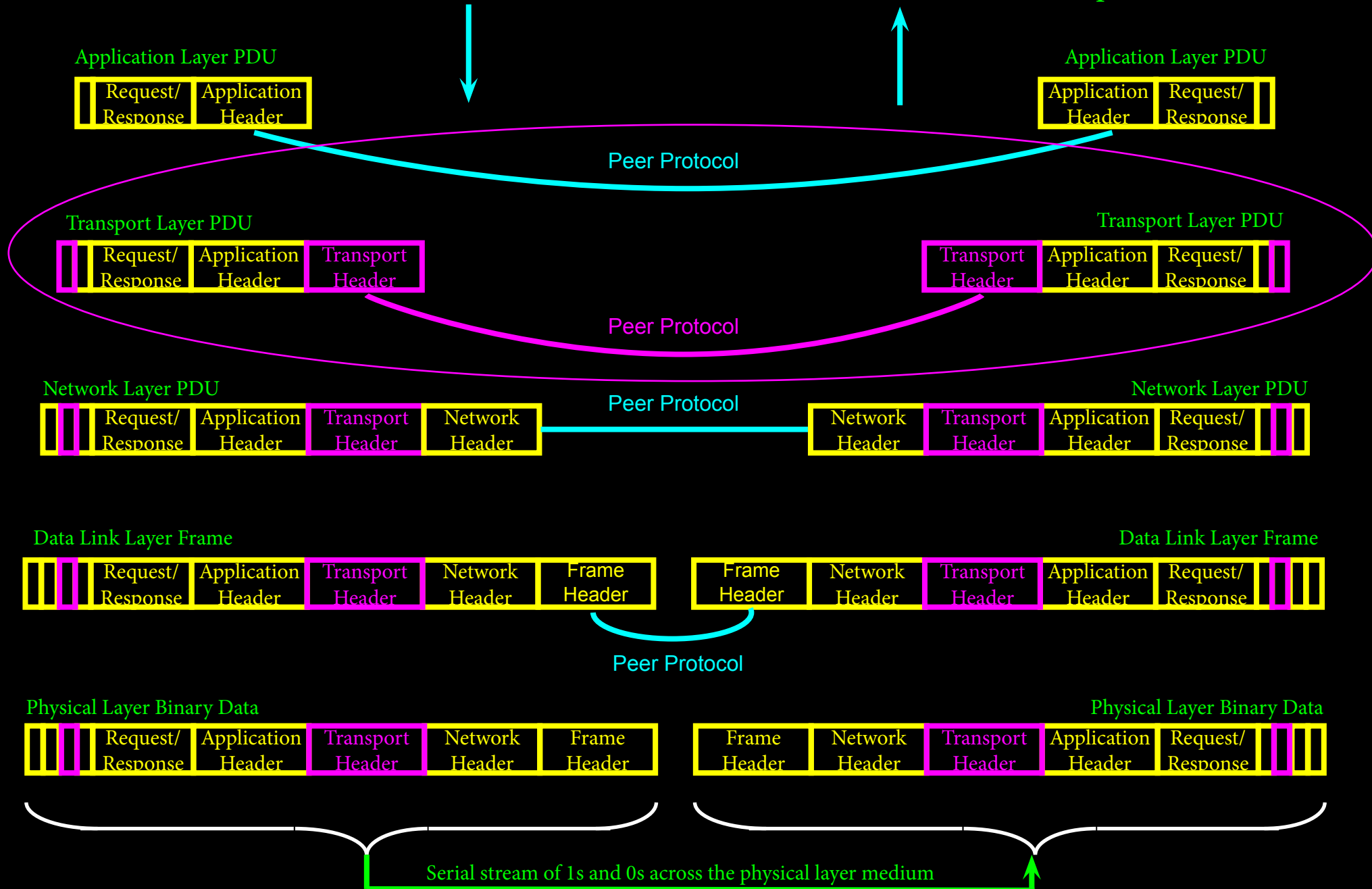


Open Systems Interconnection (OSI) Reference Model (by the ISO)

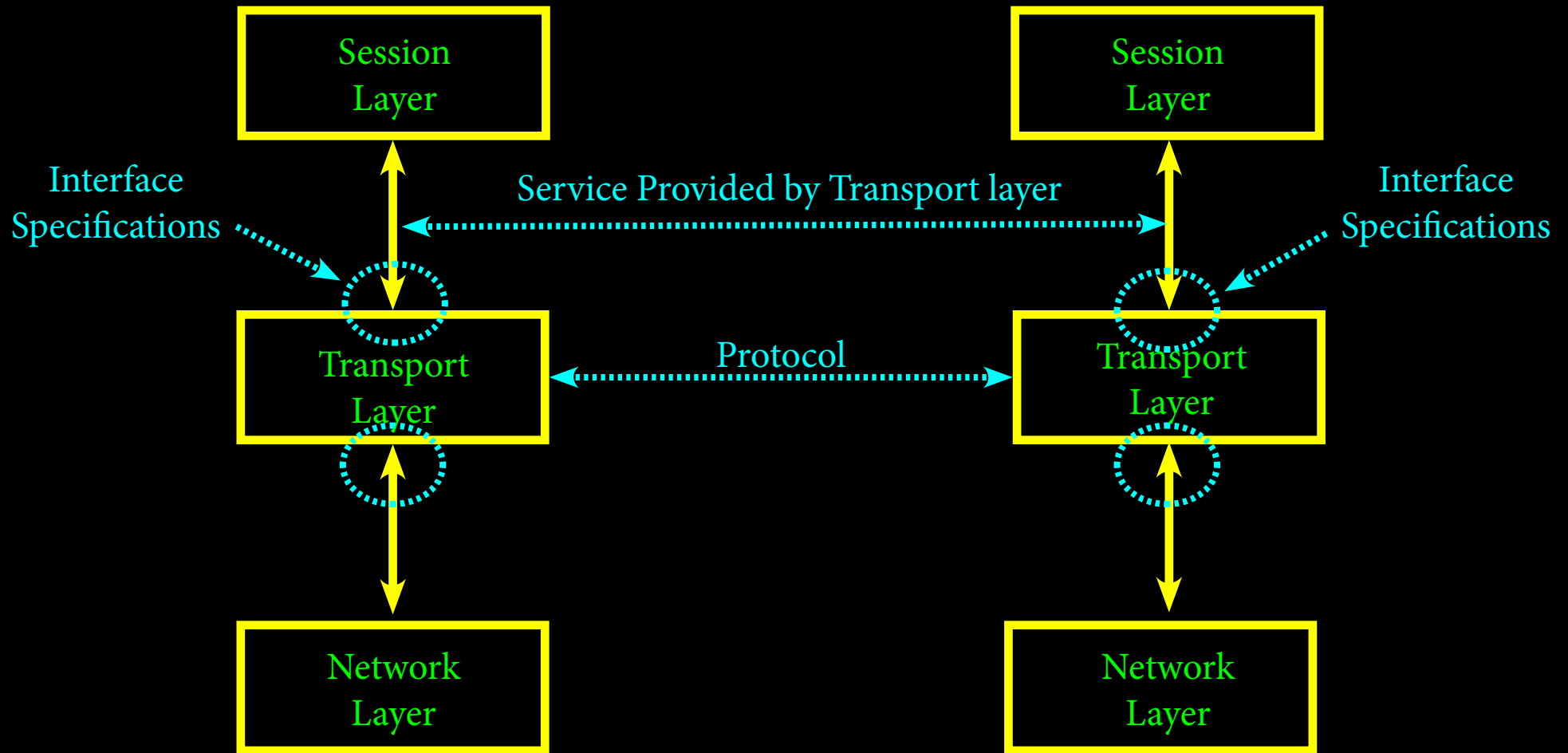


Sender Encapsulation

Receiver De-capsulation



OSI Reference Model *Transport* Layer Attributes



Transport Layer Attribute Detail

Service Attribute:

1. End-to-end connectivity
 - Connection-oriented
 - Connectionless-oriented
2. Data transfer management:
 - Sequencing
 - Blocking
 - Concatenation
 - Segmenting
 - Multiplexing/splitting
 - Flow control
 - Error detection/recovery
 - Expedited data transfer
3. Port Address Translation (PAT)

Transport Layer Attribute Detail

Protocol Attribute:

1. TCP - Connection Oriented
2. UDP - Connectionless Oriented

Transport Layer Attribute Detail

Interface Attribute:

1. Encapsulating:

From application layer down to transport layer:
Application layer's service port numbers

From transport layer down to network layer:
Transport layer's protocol number

2. De-capsulating:

From network layer up to transport layer:
Transport layer's protocol number

From transport layer up to application layer:
Application layer's destination service port number

Request de-capsulation at server?

Response de-capsulation at client?

IANA.org References

3. Port Numbers (2 byte destination service port number):

<http://www.iana.org/assignments/service-names-port-numbers/service-names-port-numbers.xhtml>

AKA: Application Layer Protocols

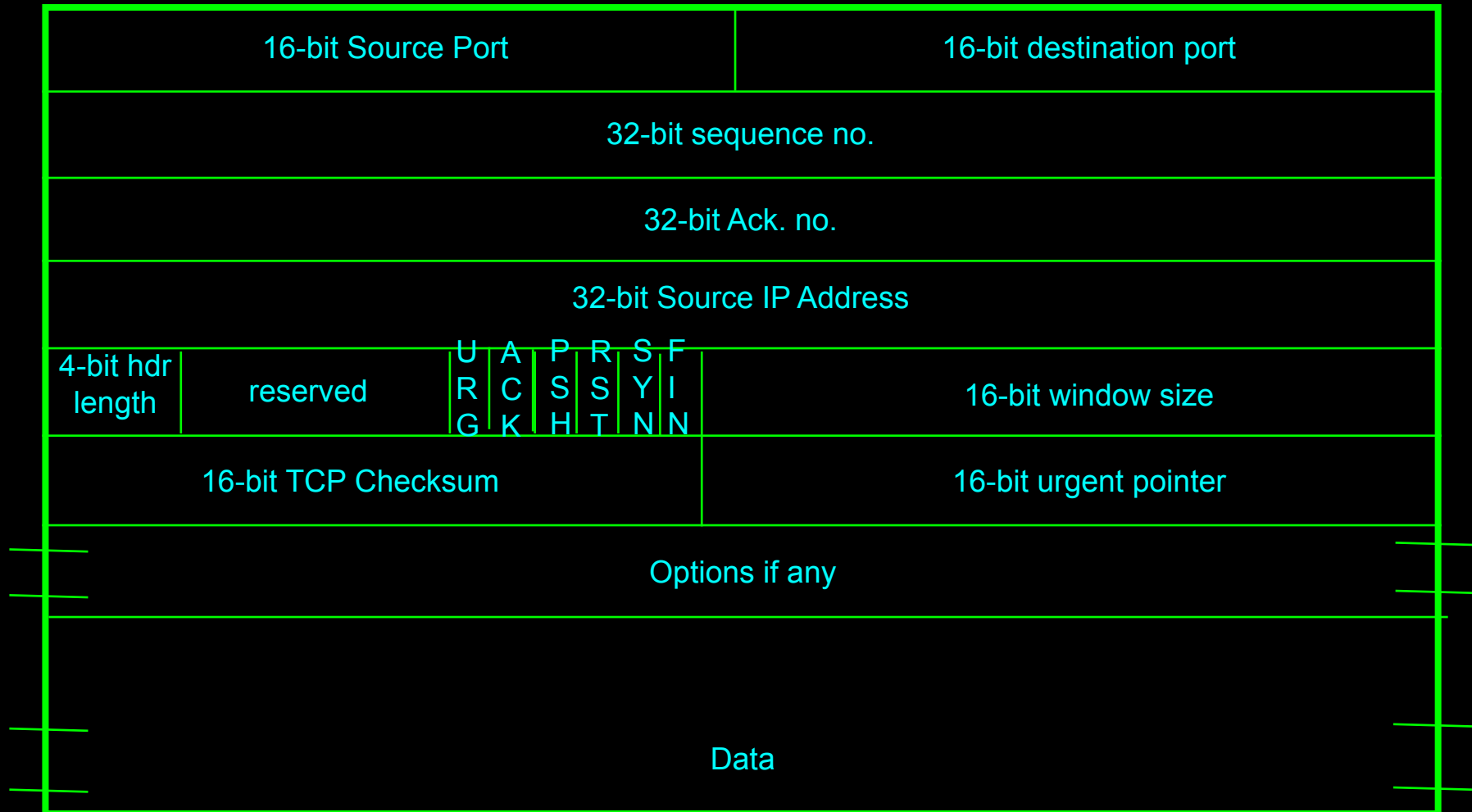
Examples (in Decimal):

20	==>	FTP Data
21	==>	FTP Control
22	==>	SSH
23	==>	Telnet
25	==>	SMTP
53	==>	DNS
80	==>	HTTP, WWW, WWW-HTTP
110	==>	POP3
123	==>	NTP (Network Time Protocol)
143	==>	IMAP
179	==>	BGP
3949	==>	DRIP (RIP)

Transport Protocol Attributes

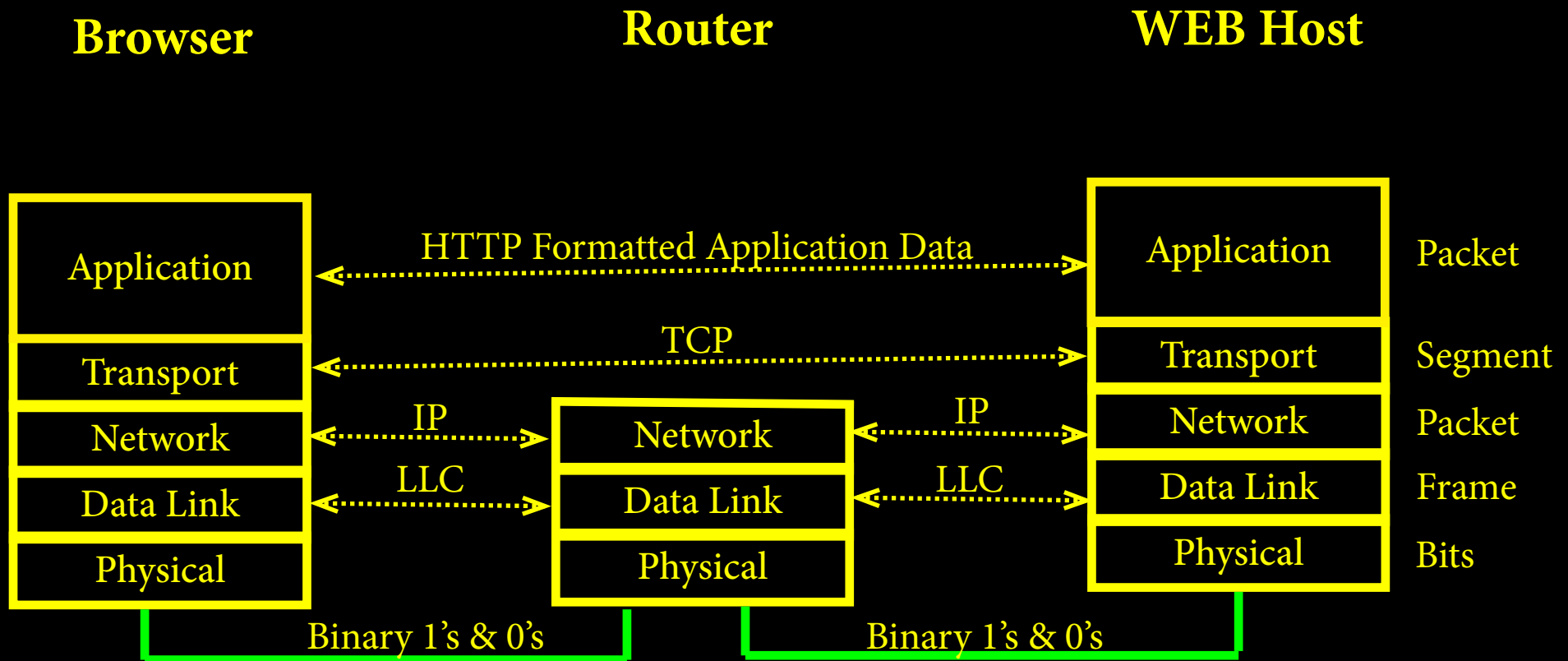
Intra- and Inter- Networking Protocols

TCP Header Format

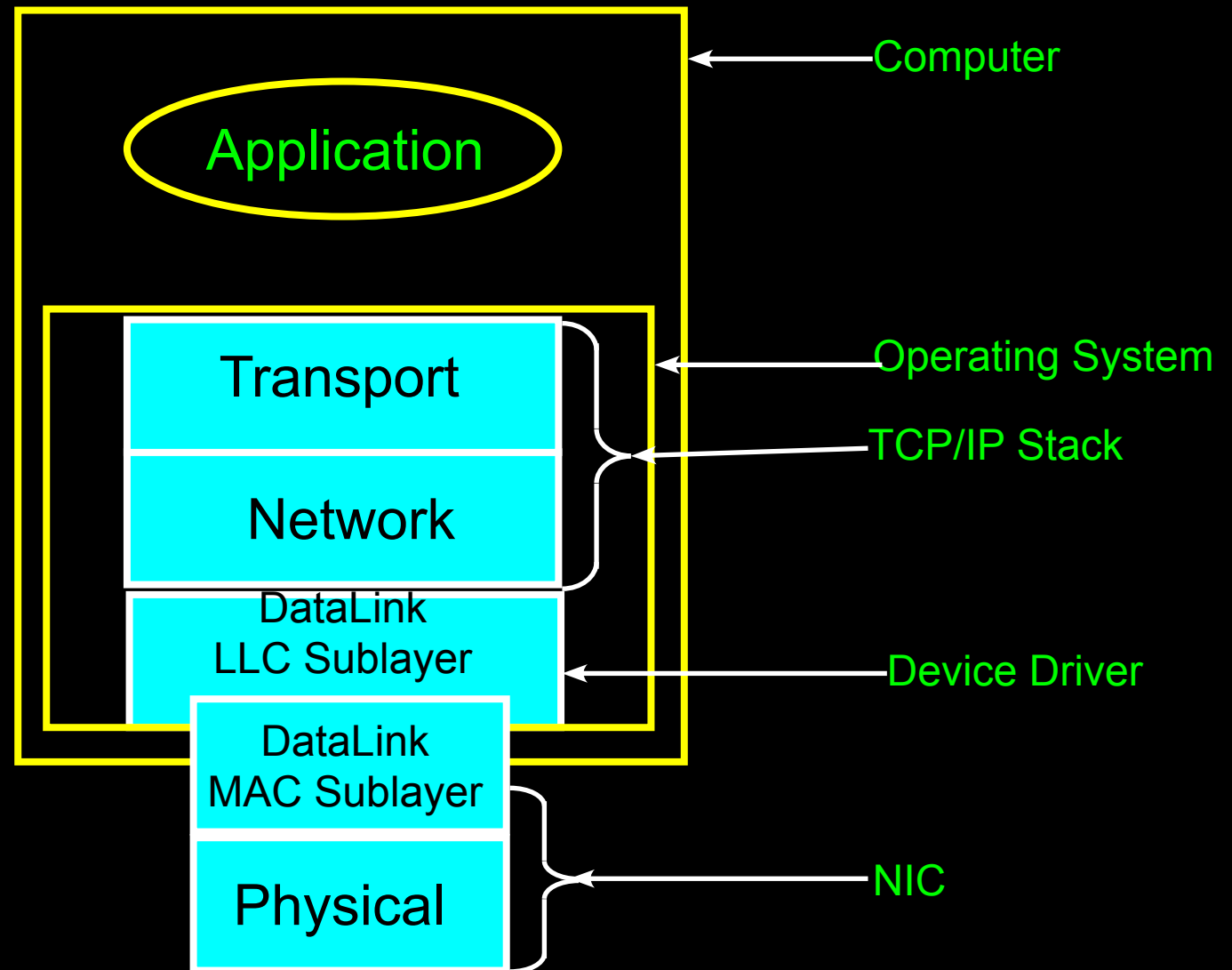


TCP/IP Reference Model

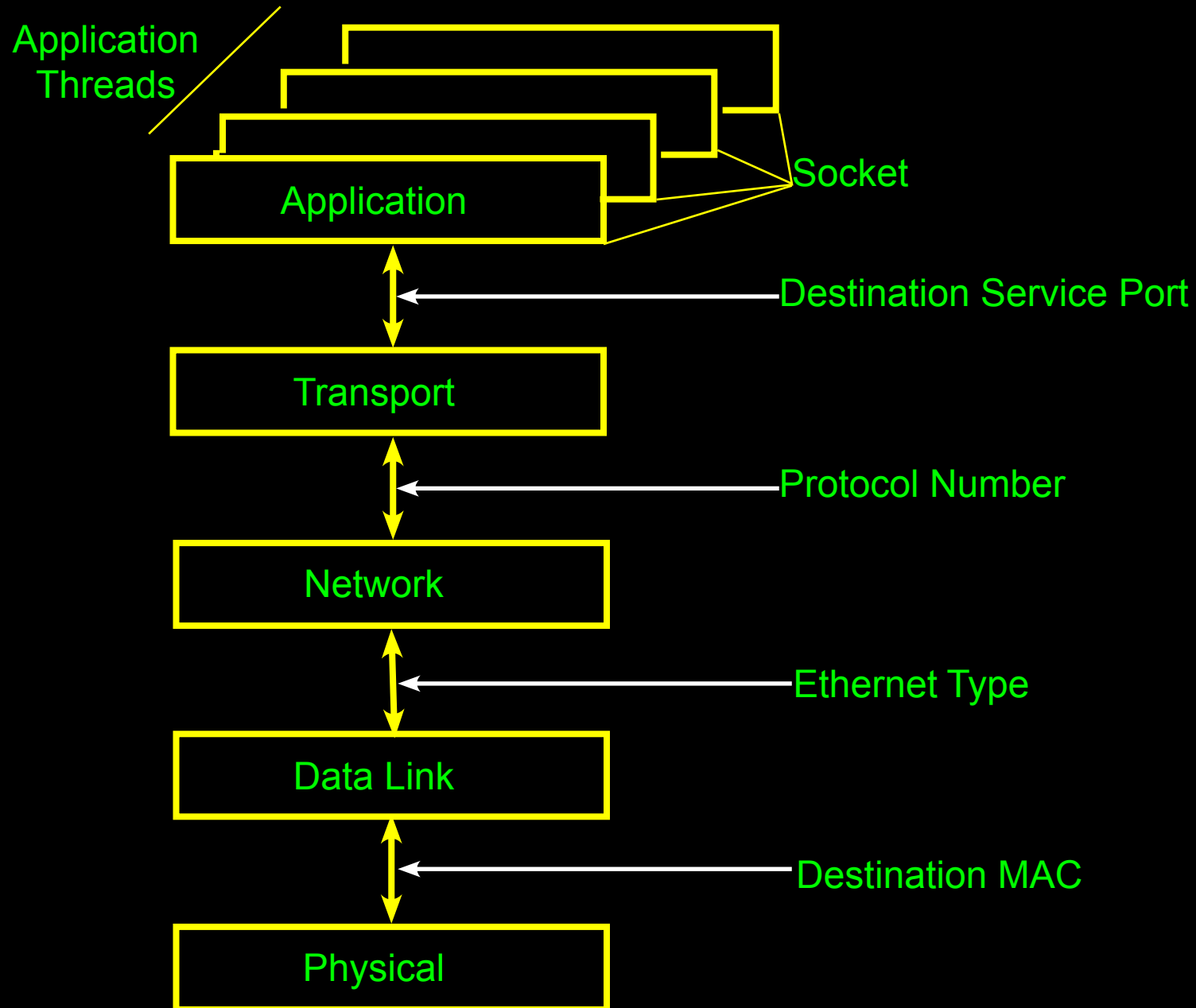
Typical WEB Client/Server Session



Typical Implementation of Physical, Data Link, Network and Transport Layers



TCP/IP Layer-to-Layer Interface Identifications aka The Demultiplexing of an Ethernet Frame



Demultiplexing of received Ethernet frame

