

## TCP Header

*Bit Number*

1  
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1

Source Port								Destination Port							
Sequence Number															
Acknowledgement Number															
Offset				Reserved				Flags				Window			
Checksum								Urgent Pointer							
Options (optional)															

### TCP Header Contents

#### Common TCP Well-Known Server Ports

7 echo	110 pop3
19 chargen	111 sunrpc
20 ftp-data	119 nntp
21 ftp-control	139 netbios-ssn
22 ssh	143 imap
23 telnet	179 bgp
25 smtp	389 ldap
53 domain	443 https (ssl)
78 finger	445 microsoft-ds
80 http	1080 socks

#### Offset

Number of 32-bit words in TCP header; min value=5

#### Reserved

4 bits; set to 0

ECN bits (used when ECN employed; else 00)

CWR (1 = sender has cut congestion window in half)

ECN-Echo (1 = receiver cuts congestion window in half)

#### Flags (UAPRSF)

- U (1 = Urgent pointer valid)
- A (1 = Acknowledgement field value valid)
- P (1 = Push data)
- R (1 = Reset connection)
- S (1 = Synchronize sequence numbers)
- F (1 = no more data; Finish connection)

#### Checksum

Covers pseudoheader and entire TCP segment

#### Urgent

Points to the sequence number of the byte following urgent data

#### Options

- |                        |                    |
|------------------------|--------------------|
| 0 End of Options list  | 3 Window scale     |
| 1 No operation (pad)   | 4 Selective ACK ok |
| 2 Maximum segment size | 8 Timestamp        |