

UDP Header

Bit Number

1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 3 3

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
Length	Checksum

UDP Header Information

Common UDP Well-Known Server Ports

7	echo	138	netbios-dgm
19	chargen	161	snmp
37	time	162	snmp-trap
53	domain	500	isakmp
67	bootps (DHCP)	514	syslog
68	bootpc (DHCP)	520	rip
69	tftp	33434	traceroute
137	netbios-ns		

Length

(Number of bytes in entire datagram including header;
minimum value = 8)

Checksum

(Covers pseudo-header and entire UDP datagram)

ARP

Bit Number

1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 3 3

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

Hardware Address Type										Protocol Address Type									
H/w Addr Len					Prot. Addr Len					Operation									
Source Hardware Address																			
Source Hardware Addr (cont.)										Source Protocol Address									
Source Protocol Addr (cont.)										Target Hardware Address									
Target Hardware Address (cont.)																			
Target Protocol Address																			

ARP Parameters (for Ethernet and IPv4)

Hardware Address Type	1 Ethernet 6 IEEE 802 LAN
Protocol Address Type	2048 IPv4 (0x0800)
Hardware Address Length	6 for Ethernet/IEEE 802
Protocol Address Length	4 for IPv4
Operation	1 Request 2 Reply

DNS

<i>Bit Number</i>															
										1	1	1	1	1	1
0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5

LENGTH (TCP ONLY)															
ID.															
QR	Opcode	AA	TC	RD	RA	Z	RCODE								
QDCOUNT															
ANCOUNT															
NSCOUNT															
ARCOUNT															
Question Section															
Answer Section															
Authority Section															
Additional Information Section															

DNS Parameters

Query/Response

0 Query

1 Response

Opcode

0 Standard query (QUERY)

1 Inverse query (IQUERY)

2 Server status request (STATUS)

AA

(1 = Authoritative Answer)

TC

(1 = TrunCation)

RD

(1 = Recursion Desired)

RA

(1 = Recursion Available)

Z

(Reserved; set to 0)

Response code

0 No error

1 Format error

2 Server failure

3 Non-existant domain (NXDOMAIN)

4 Query type not implemented

5 Query refused

QDCOUNT

(No. of entries in Question section)

ANCOUNT

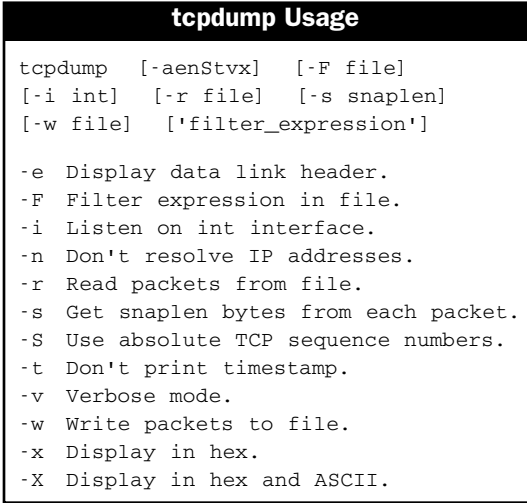
(No. of resource records in Answer section)

NSCOUNT

(No. of name server resource records in Authority section)

ARCOUNT

(No. of resource records in Additional Information section.



Acronyms			
AH	Authentication Header (RFC 2402)	ISAKMP	Internet Security Association & Key Management Protocol (RFC 2408)
ARP	Address Resolution Protocol (RFC 826)	L2TP	Layer 2 Tunneling Protocol (RFC 2661)
BGP	Border Gateway Protocol (RFC 1771)	NNTP	Network News Transfer Protocol (RFC 977)
CWR	Congestion Window Reduced (RFC 2481)	OSPF	Open Shortest Path First (RFC 1583)
DF	Don't Fragment bit (IP)	POP3	Post Office Protocol v3 (RFC 1460)
DHCP	Dynamic Host Configuration Protocol (RFC 2131)	RFC	Request for Comments
DNS	Domain Name System (RFC 1035)	RIP	Routing Information Protocol (RFC 2453)
ECN	Explicit Congestion Notification (RFC 3168)	LDAP	Lightweight Directory Access Protocol (RFC 2251)
EGRP	Extended IGRP (Cisco)	SKIP	Simple Key-Management for Internet Protocols
ESP	Encapsulating Security Payload (RFC 2406)	SMTP	Simple Mail Transfer Protocol (RFC 821)
FTP	File Transfer Protocol (RFC 959)	SNMP	Simple Network Management Protocol (RFC 1157)
GRE	Generic Routing Encapsulation (RFC 2784)	SSH	Secure Shell
HTTP	Hypertext Transfer Protocol (RFC 1945)	SSL	Secure Sockets Layer (Netscape)
ICMP	Internet Control Message Protocol (RFC 792)	TCP	Transmission Control Protocol (RFC 793)
IGMP	Internet Group Management Protocol (RFC 2236)	TFTP	Trivial File Transfer Protocol (RFC 1350)
IGRP	Interior Gateway Routing Protocol (Cisco)	TOS	Type of Service field (IP)
IMAP	Internet Message Access Protocol (RFC 2060)	UDP	User Datagram Protocol (RFC 768)
IP	Internet Protocol (RFC 791)		

All RFCs can be found at <http://www.rfc-editor.org>

