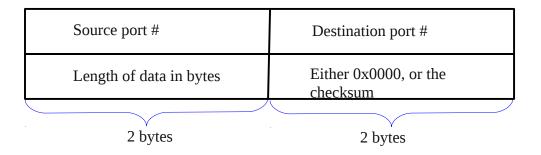
## A UDP datagram - RFC 768 http://www.ietf.org/rfc/rfc768.txt

The UDP header attached to a UDP datagram has a definite structure as shown in the diagram below.



The UDP header is always 8 bytes, with structure as shown above. Remember that a hex # is 4 bits, so 2 hex numbers will constitute a byte, and 4 hex numbers will be 2 bytes. So in a UDP header, each of the source port, destination port, Length, and checksum are all 2 bytes long. The checksum is not required to be calculated – if it is not calculated, this field is 0x0000.

See separate slide on checksum calculation.

The following wireshark screenshot shows a UDP packet captured from the wire. Its source port is 0x0035, Destination port is 0x9cfc, total length is 0x0101, and checksum is 0x8a44. In other words, the total data length (without UDP header) is 0x0101 bytes = (257 decimal) bytes; the source port (in decimal) is 53, destination port (in decimal) is 40188.

Filter: u	dp			~	Expression	Clear	Apply
No.	: Time	Source		Destination		rotoco : Lei	
	50.460364	167.206.25		192.168.2.111 167.206.251.13		NS NS	291 Standar 91 Standar
	50.480082	167.206.25		192.168.2.111		NS	291 Standar
266	50.565294	192.168.2.		167.206.251.1	30 D	NS	89 Standar
267	50.585637	167.206.25	51.130	192.168.2.111	D	NS	300 Standar
	3 50.586036	192.168.2.		167.206.251.1		NS	89 Standar
	50.604493	167.206.25		192.168.2.111		NS	300 Standar
297	51.293655	192.168.2.	.107	239.255.255.2	50 S	SDP	221 NOTIFY
	n Name Syste						
0000 70	) fl al 87 b	5 ca 00 0f	66 9e 85	e0 08 00 45 00			
0010 01						fE.	
0020 02	15 00 00 4 2 6f <mark>00 35 9</mark>	0 00 39 11 c fc 01 01	da 6f a7 8a 44 e3	ce fb 82 c0 a8 84 81 80 00 01	@.9. .o <mark>.5</mark>	.o	
0020 02 0030 00	15 00 00 4 2 6f <mark>00 35 9</mark> ) Øc 00 00 0	0 00 39 11 c fc 01 01 0 00 0c 73	da 6f a7 8a 44 e3 61 66 65	ce fb 82 c0 a8 84 81 80 00 01 62 72 6f 77 73	@.9. .o <mark>.5</mark> s	.o .D afebrows	
0020 02 0030 00 0040 69 0050 ød	15 00 00 4 2 6f 00 35 9 0 0c 00 00 0 7 6e 67 07 6 5 65 03 63 6	0 00 39 11 c fc 01 01 0 00 0c 73 3 6c 69 65 f 6d 00 00	da 6f a7 8a 44 e3 61 66 65 6e 74 73	ce fb 82 c0 a8 84 81 80 00 01	@.9. .o <mark>.5</mark> s ing.clie	.o	
0020 02 0030 00 0040 69 0050 60 0050 60	15       00       00       4         2       6f       00       35       9         0       0c       00       00       0         0       6c       67       07       6         c       65       03       63       6         0       00       00       01       0	0 00 39 11 c fc 01 01 0 00 0c 73 3 6c 69 65 f 6d 00 00 f 00 0c 07	da 6f a7 8a 44 e3 61 66 65 6e 74 73 01 00 01 63 6c 69	ce fb 82 c0 a8 84 81 80 00 01 62 72 6f 77 73 06 67 6f 6f 67 c0 0c 00 05 00 65 6e 74 73 01	@.9. .o <mark>.5</mark> s ing.clie le.com	.o .D afebrows nts.goog	
0020 02 0030 00 0040 69 0050 66 0060 03	15       00       00       4         2       6f       00       35       9         0       0c       00       00       0         6e       67       07       6         5       03       63       6         0       00       00       01       0         c       c       02       00       03       63         c       00       00       01       0       0         c       c0       21       c0       3	0 00 39 11 c fc 01 01 0 00 0c 73 3 6c 69 65 f 6d 00 00 f 00 0c 07 d 00 01 00	da 6f a7 8a 44 e3 61 66 65 6e 74 73 01 00 01 63 6c 69 01 00 00	ce fb 82 c0 a8 84 81 80 00 01 62 72 6f 77 73 06 67 6f 6f 67 c0 0c 00 05 00	@.9. .o <mark>.5s</mark> ing.clie le.com l.!.=	.o .D afebrows nts.goog	
0020         02           0030         00           0040         69           0050         60           0060         03           0070         60           0080         70           0090         70	15       00       00       4         2       6f       00       35       9         0       0c       00       00       0         6e       67       07       6         5       03       63       6         0       00       00       01       0         c       c0       21       c0       3         e2       c0       c0       3       3	0 00 39 11 c fc 01 01 0 00 0c 73 3 6c 69 65 f 6d 00 00 f 00 0c 07 d 00 01 00 d 00 01 00 d 00 01 00	da 6f a7 8a 44 e3 61 66 65 6e 74 73 01 00 01 63 6c 69 01 00 00 01 00 00 01 00 00	ce         fb         82         c0         a8           84         81         80         00         01           62         72         6f         77         73           06         67         6f         6f         67           c0         0c         00         05         00           65         6e         74         73         01           00         b7         00         04         4a           00         b7         00         04         4a           00         b7         00         04         4a	@.9. .o <mark>.5s</mark> ing.clie le.com l.!.=	.o afebrows nts.goog clients.	
0020 02 0030 00 0040 69 0050 60 0060 02 0070 60 0080 70 0080 70 0090 70	15       00       00       4         2       6f       00       35       9         0       0c       00       00       0         6e       67       07       6         5       03       63       6         60       00       00       01       0         c       c0       21       c0       3         e2       c0       c0       3       6	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	da 6f a7 8a 44 e3 61 66 65 6e 74 73 01 00 01 63 6c 69 01 00 00 01 00 00 01 00 00 01 00 00	ce         fb         82         c0         a8           84         81         80         00         01           62         72         6f         77         73           06         67         6f         6f         67           c0         0c         00         05         00           65         6e         74         73         01           00         b7         00         04         4a           00         b7         00         04         4a	@.9. .o <mark>.5s</mark> ing.clie le.com l.!.=	.o afebrows nts.goog clients.	
0020 02 0030 00 0040 69 0050 66 0050 66 0050 76 0050 76 0050 76 0050 76 0050 76	15       00       00       4         2       6f       00       35       9         0       0c       00       00       0         6e       67       07       6         5       03       63       6         0       00       00       01       0         c       c0       21       c0       3         e2       c0       c0       3       3         e2       c5       c0       3         e2       c1       c0       3         e2       c2       c0       3         e2       c4       c0       3	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	da 6f a7 8a 44 e3 61 66 65 6e 74 73 01 00 01 63 6c 69 01 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 00 00	ce         fb         82         c0         a8           84         81         80         00         01           62         72         6f         77         73           06         67         6f         6f         67           c0         0c         00         05         00           65         6e         74         73         01           00         b7         00         04         4a	@.9. .o <mark>.5s</mark> ing.clie le.com l.!.=	.o. afebrows nts.goog J J J J	
0020         02           0030         00           0040         69           0050         60           0060         01           0070         60           0080         70           0090         70           0090         70           0090         70           0090         70           0090         70           0090         70           0090         70           0000         70           0000         70	15       00       00       4         2       6f       00       35       9         0       0       00       00       00       0         6e       67       07       6         5       03       63       6         1       00       00       01       0         1       62       c0       c0       3         1       62       c0       c0       3         1       62       c5       c0       3         1       62       c5       c0       3         1       62       c1       c0       3         1       62       c2       c0       3         1       62       c4       c0       3         1       62       c7       c0       3	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	da 6f a7 8a 44 e3 61 66 65 6e 74 73 01 00 01 63 6c 69 01 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 00 00 01 00 00	ce         fb         82         c0         a8           84         81         80         00         01           62         72         6f         77         73           06         67         6f         6f         67           c0         0c         00         05         00           65         6e         74         73         01           00         b7         00         04         4a	@.9. .o <mark>.5s</mark> ing.clie le.com l.!.= }= }= }= }=	.o. afebrows nts.goog J J J J	
0020         02           0030         00           0040         69           0050         60           0060         01           0070         60           0090         70           0090         70           0090         70           0090         70           0090         70           0090         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70	15       00       00       4         2       6f       00       35       9         0       0       00       00       00       0         6e       67       07       6         5       03       63       6         0       00       00       01       0         c       65       03       63       6         c       00       00       01       0         c       2       c0       c0       3         e2       c5       c0       3         e2       c1       c0       3         e2       c2       c0       3         e2       c4       c0       3         e2       c7       c0       3         e2       c6       c0       3         e2       c6       c0       3         e2       c3       c0       3	0 00 39 11 c fc 01 01 0 00 0c 73 3 6c 69 65 f 6d 00 00 f 00 0c 07 d 00 01 00 d 00 01 00	da 6f a7 8a 44 e3 61 66 65 6e 74 73 01 00 01 63 6c 69 01 00 00 01 00 00	ce         fb         82         c0         a8           84         81         80         00         01           62         72         6f         77         73           06         67         6f         6f         67           c0         0c         00         05         00           65         6e         74         73         01           00         b7         00         04         4a	@.9. .o <mark>.5s</mark> ing.clie le.com l.!.= }= }= }= }=	.o. afebrows nts.goog J J J J	
0020         02           0030         00           0040         69           0050         60           0060         01           0070         60           0080         70           0090         70           0090         70           0090         70           0040         70	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	0         00         39         11           c         fc         01         01           0         00         0c         73           3         6c         69         65           f         6d         00         00           f         00         0c         07           d         00         01         00	da 6f a7 8a 44 e3 61 66 65 6e 74 73 01 00 01 63 6c 69 01 00 00 01 00 00	$\begin{array}{cccc} & fb & 82 & c0 & a8 \\ 84 & 81 & 80 & 00 & 01 \\ 62 & 72 & 6f & 77 & 73 \\ 06 & 67 & 6f & 6f & 67 \\ c0 & 0c & 00 & 05 & 00 \\ 65 & 6e & 74 & 73 & 01 \\ 00 & b7 & 00 & 04 & 4a \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 &$	@.9. .o <mark>.5s</mark> ing.clie le.com l.!.= }= }= }= }=	.o. afebrows nts.goog J J J J	
0020         02           0030         00           0040         68           0050         60           0060         02           0070         60           0080         70           0090         70           0090         70           0090         70           0090         70           0090         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0100         70           0100         70           0100         70	15       00       00       4         2       6f       00       35       9         0       0       00       00       00       0         6e       67       07       6         5       03       63       6         0       00       00       01       0         c       65       03       63       6         c       00       00       01       0         c       2       c0       c0       3         e2       c5       c0       3         e2       c1       c0       3         e2       c2       c0       3         e2       c4       c0       3         e2       c4       c0       3         e2       c6       c0       3         e2       c3       c0       3         e2       c8       c0       3         e2       c8       c0       3         e2       c8       c0       3         e2       c8       c0       3	0         00         39         11           c         fc         01         01           0         00         0c         73           3         6c         69         65           f         6d         00         00           f         00         0c         07           d         00         01         00	da 6f a7 8a 44 e3 61 66 65 6e 74 73 01 00 01 63 6c 69 01 00 00 01 00 00	ce         fb         82         c0         a8           84         81         80         00         01           62         72         6f         77         73           06         67         6f         6f         67           c0         0c         00         05         00           65         6e         74         73         01           00         b7         00         04         4a	@.9. .o <mark>.5s</mark> ing.clie le.com l.!.= }= }= }= }=	.o. afebrows nts.goog J J J J	
0020         02           0030         00           0040         68           0050         60           0060         02           0070         60           0080         70           0090         70           0090         70           0090         70           0090         70           0090         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0100         70           0100         70           0100         70	15       00       00       4         2       6f       00       35       9         0       0       00       00       00       0         6e       67       07       6         5       03       63       6         0       00       00       01       0         c       65       03       63       6         c       00       00       01       0         c       2       c0       c0       3         e2       c5       c0       3         e2       c1       c0       3         e2       c2       c0       3         e2       c4       c0       3         e2       c4       c0       3         e2       c6       c0       3         e2       c3       c0       3         e2       c8       c0       3         e2       c8       c0       3         e2       c8       c0       3         e2       c8       c0       3	0         00         39         11           c         fc         01         01           0         00         0c         73           3         6c         69         65           f         6d         00         00           f         00         0c         07           d         00         01         00	da 6f a7 8a 44 e3 61 66 65 6e 74 73 01 00 01 63 6c 69 01 00 00 01 00 00	$\begin{array}{cccc} & fb & 82 & c0 & a8 \\ 84 & 81 & 80 & 00 & 01 \\ 62 & 72 & 6f & 77 & 73 \\ 06 & 67 & 6f & 6f & 67 \\ c0 & 0c & 00 & 05 & 00 \\ 65 & 6e & 74 & 73 & 01 \\ 00 & b7 & 00 & 04 & 4a \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 &$	@.9. .o <mark>.5s</mark> ing.clie le.com l.!.= }= }= }= }=	.o. afebrows nts.goog J J J J	
020         02           030         00           040         68           050         66           050         66           050         66           050         76           050         76           050         76           050         76           050         76           050         76           050         76           050         76           050         76           050         76           050         76           050         76           050         76           050         76           050         76           050         76           050         76           050         76           050         76           100         76           110         76	15       00       00       4         2       6f       00       35       9         0       0       00       00       00       0         6e       67       07       6         5       03       63       6         0       00       00       01       0         c       65       03       63       6         c       00       00       01       0         c       2       c0       c0       3         e2       c5       c0       3         e2       c1       c0       3         e2       c2       c0       3         e2       c4       c0       3         e2       c4       c0       3         e2       c6       c0       3         e2       c3       c0       3         e2       c8       c0       3         e2       c8       c0       3         e2       c8       c0       3         e2       c8       c0       3	0         00         39         11           c         fc         01         01           0         00         0c         73           3         6c         69         65           f         6d         00         00           f         00         0c         07           d         00         01         00	da 6f a7 8a 44 e3 61 66 65 6e 74 73 01 00 01 63 6c 69 01 00 00 01 00 00	$\begin{array}{cccc} & fb & 82 & c0 & a8 \\ 84 & 81 & 80 & 00 & 01 \\ 62 & 72 & 6f & 77 & 73 \\ 06 & 67 & 6f & 6f & 67 \\ c0 & 0c & 00 & 05 & 00 \\ 65 & 6e & 74 & 73 & 01 \\ 00 & b7 & 00 & 04 & 4a \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 &$	@.9. .o <mark>.5s</mark> ing.clie le.com l.!.= }= }= }= }=	.o. afebrows nts.goog J J J J	
0020         02           0030         00           0040         69           0050         60           0070         60           0070         60           0070         70           0090         70           0090         70           0090         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0100         70           0100         70           0100         70	15       00       00       4         2       6f       00       35       9         0       6c       00       00       0         6e       67       07       6         5       03       63       6         00       00       01       0         c       00       00       01       0         c       02       c0       23       3         e2       c5       c0       3         e2       c1       c0       3         e2       c2       c0       3         e2       c4       c0       3         e2       c6       c0       3         e2       c3       c0       3         e2       c8       c0       3         e2       c8       c0       3         e2       c8       c0       3         e2       c8       c0       3         e2       c9       3       6	0 00 39 11 c fc 01 01 0 00 0c 73 3 6c 69 65 f 6d 00 00 f 00 0c 07 d 00 01 00 d 00 01 00	da 6f a7 8a 44 e3 61 66 65 6e 74 73 01 00 01 63 6c 69 01 00 00 01 00 00	ce         fb         82         c0         a8           84         81         80         00         01           62         72         6f         77         73           06         67         6f         6f         67           c0         0c         00         05         00           65         6e         74         73         01           00         b7         00         04         4a		.o. afebrows nts.goog J J J J	
0020         02           0030         00           0040         69           0050         60           0070         60           0070         60           0070         70           0090         70           0090         70           0090         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0040         70           0100         70           0100         70           0100         70	15       00       00       4         2       6f       00       35       9         0       6c       00       00       0         6e       67       07       6         5       03       63       6         00       00       01       0         c       00       00       01       0         c       02       c0       23       3         e2       c5       c0       3         e2       c1       c0       3         e2       c2       c0       3         e2       c4       c0       3         e2       c6       c0       3         e2       c3       c0       3         e2       c8       c0       3         e2       c8       c0       3         e2       c8       c0       3         e2       c8       c0       3         e2       c9       3       6	0 00 39 11 c fc 01 01 0 00 0c 73 3 6c 69 65 f 6d 00 00 f 00 0c 07 d 00 01 00 d 00 00 00 00 00 d 00 00 00 0	da 6f a7 8a 44 e3 61 66 65 6e 74 73 01 00 01 63 6c 69 01 00 00 01 00 00	$\begin{array}{cccc} & fb & 82 & c0 & a8 \\ 84 & 81 & 80 & 00 & 01 \\ 62 & 72 & 6f & 77 & 73 \\ 06 & 67 & 6f & 6f & 67 \\ c0 & 0c & 00 & 05 & 00 \\ 65 & 6e & 74 & 73 & 01 \\ 00 & b7 & 00 & 04 & 4a \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 & 04 & 00 \\ 00 & b7 & 00 &$		.o. afebrows nts.goog J J J J	
0020         02           0030         00           0040         69           0050         60           0060         01           0070         60           0080         70           0090         70           0090         70           0090         70           0040         70	15       00       00       4         2       6f       00       35       9         0       6c       07       6         5       65       03       63       6         0       00       00       01       0         c       65       03       63       6         0       00       01       0       0         c       2       c0       c0       3         e2       c5       c0       3         e2       c1       c0       3         e2       c2       c0       3         e2       c4       c0       3         e2       c6       c0       3         e2       c8       c0       3         e2       c8       c0       3         e2       c9       3       3         Source         00       35	0 00 39 11 c fc 01 01 0 00 0c 73 3 6c 69 65 f 6d 00 00 f 00 0c 07 d 00 01 00 d 00 01 00	da 6f a7 8a 44 e3 61 66 65 6e 74 73 01 00 01 63 6c 69 01 00 00 01 00 00	ce         fb         82         c0         a8           84         81         80         00         01           62         72         6f         77         73           06         67         6f         6f         67           c0         0c         00         05         00           65         6e         74         73         01           00         b7         00         04         4a		.o. afebrows nts.goog J J J J	
0020         02           0030         00           0040         68           0050         66           0070         66           0070         66           0090         76           0090         76           0090         76           0090         76           0090         76           0090         76           0040         76           0040         76           0040         76           0040         76           0040         76           0040         76           0040         76           0040         76           0040         76           0040         76           0040         76           0040         76           0100         76           0100         76           0100         76           0100         76           0100         76	15       00       00       4         2       6f       00       35       9         0       6c       07       6         5       65       03       63       6         0       00       00       01       0         c       65       03       63       6         0       00       01       0       0         c       2       c0       c0       3         e2       c5       c0       3         e2       c1       c0       3         e2       c2       c0       3         e2       c4       c0       3         e2       c6       c0       3         e2       c8       c0       3         e2       c8       c0       3         e2       c9       3       3         Source         00       35	0 00 39 11 c fc 01 01 0 00 0c 73 3 6c 69 65 f 6d 00 00 f 00 0c 07 d 00 01 00 d 00 00 00 00 00 d 00 00 00 0	da 6f a7 8a 44 e3 61 66 65 6e 74 73 01 00 01 63 6c 69 01 00 00 01 00 00	ce       fb       82       c0       a8         84       81       80       00       01         62       72       6f       77       73         06       67       6f       6f       67         c0       0c       00       05       00         65       6e       74       73       01         00       b7       00       04       4a         00       b7       00 <td< td=""><td></td><td>.o. afebrows nts.goog J J J J</td><td></td></td<>		.o. afebrows nts.goog J J J J	