

1. Given that a frame is formatted as follows:

Destination Hardware Address	Source Hardware Address	Frame Type	Frame Data
6 Bytes	6 Bytes	2 Bytes	46 - 1500 Bytes

And given that a datagram is formatted as follows:

Byte	0							1							2							3										
bit	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
0	Version			Header Length				Type Of Service							Total Length																	
4	Identification															Flags		Fragment Offset														
8	TTL							Type							Header Checksum																	
12	Source IP Address																															
16	Destination IP Address																															
Optional	IP Options (May Be Omitted)																							Padding								
20	IP Payload Data																															

And given the following frame with an encapsulated datagram:

AB	36	0A	10	79	E4	82	2C	FB	B4	08	DC	08	00	45	F6
00	72	1A	6B	34	57	EC	13	9F	71	DA	83	0C	3C	5A	51
9E	C3	3F	31	9F	3B	DE	E1	58	9D	2E	56	44	27	34	D1
2D	5E	FB	65	31	47	AA	D8	F0	89	59	50	0E	1E	C1	A9
5F	29	AC	2A	BA	97	A3	BD	0B	8D	36	B5	18	FA	C6	49
F8	8F	84	DC	AE	D5	19	C9	9C	01	65	47	A6	E7	EA	5A
EF	C7	42	14	56	BF	4B	92	39	16	CB	66	8B	02	E3	9A
4C	C9	D9	6B	E2	19	BB	75	4F	51	A0	84	36	BE	B2	4A

- Find the destination hardware address.
- Find the source hardware address.
- What type of frame is this?
- What is the Identification?
- What Flag(s) are set in the IP header?
- What is the fragment offset?
- What is the TTL count?
- What is the Header Checksum?
- Find the source IP address.
- What class is the source IP address?
- What is the network ID in the source IP address?
- What is the host ID in the source IP address?
- Write the source IP address in dotted decimal notation.
- Find the destination IP address.
- What class is the destination IP address?
- What is the network ID in the destination IP address?
- What is the host ID in the destination IP address?
- Write the destination IP address in dotted decimal notation.
- If the IP header includes no options or padding, what are the first five bytes of the datagram data?
- Can this message be delivered directly by the source to the destination, or will it require routers to handle the message. Explain.

2. Given that a frame is formatted as follows:

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And given the following frame with an encapsulated datagram:

7A	21	06	E9	EA	71	BE	8E	61	68	FD	D6	08	00	45	B9
00	72	AE	AD	30	29	2D	5F	97	46	8E	9D	7E	E1	CB	D1
2C	DE	E0	37	86	48	D4	62	15	51	C8	E0	7D	29	2B	1C
E9	84	99	2F	BE	19	73	D8	D9	0A	F7	59	7E	DE	C1	BA
E4	3A	47	D0	62	6F	3E	B5	65	2F	F6	1D	FE	43	C9	93
BC	5B	BC	02	DF	59	89	1A	63	B0	8D	3C	9D	CD	6A	E1
0C	E3	7D	45	AC	DA	88	FC	15	95	3A	F6	E8	8C	87	81
BF	88	40	4C	32	B0	CC	B2	5B	E2	DE	E6	B1	A5	3D	AC

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- What class is the source IP address?
- What is the network ID in the source IP address?
- What is the host ID in the source IP address?
- Write the source IP address in dotted decimal notation.
- Find the destination IP address.
- What class is the destination IP address?
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- Write the destination IP address in dotted decimal notation.
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And given the following frame with an encapsulated datagram:

BA	74	B6	5D	05	B7	11	AF	04	19	8C	CE	08	00	45	69
00	72	61	78	31	2F	7B	19	1C	FC	3F	FF	57	9F	D1	41
67	7F	BA	90	71	3F	DB	C5	A3	DF	01	09	2B	D7	1F	7B
D5	08	00	4C	10	EA	D9	60	2F	BD	28	95	20	DE	AA	AD
69	87	AD	B3	08	B4	14	60	C3	1E	98	D6	B0	3A	2B	1C
E9	24	05	84	04	D0	88	1A	BB	A7	96	E7	A9	78	BF	C3
7A	69	3A	EA	CA	F5	BC	43	76	B8	94	B3	A0	54	CA	DB
A3	A7	E9	DE	3A	1B	C5	50	93	43	7C	79	0A	CE	A9	41

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- Find the destination IP address.
- What class is the destination IP address?
- What is the network ID in the destination IP address?
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- Write the destination IP address in dotted decimal notation.
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And given the following frame with an encapsulated datagram:

8D	67	D8	04	0F	E0	30	C6	89	4A	94	6C	08	00	45	46
00	72	DB	8E	22	37	75	B6	21	F2	AD	F1	2F	EF	50	25
56	C6	AD	F2	57	D6	90	92	9D	4F	FA	D9	D6	95	F3	43
20	51	1C	BF	2B	B1	DA	5F	B3	0A	8A	E1	EE	86	52	AB
79	08	D9	57	9F	01	D9	F4	7A	2D	48	DC	D7	19	E7	16
78	37	76	9A	08	56	69	66	0A	32	AE	8E	A3	3C	42	90
74	0F	A0	35	4A	01	0E	F9	60	58	84	3B	5F	75	19	CC
F9	FB	DD	D9	61	DF	F5	6B	C2	65	0C	66	E7	7F	A7	D3

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