

# Tutorial for Chapter 4

SNMPv1 Network Management: Organization and Information Models

NET 311 – Computer Network Management

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## Problem 1

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Represent the OBJECT IDENTIFIER of the following hub starting from the root of the tree:

- a. in hybrid format
- b. in numeric format

Title: System Information : 172.16.46.2  
Name or IP Address: 172.16.46.2

System Name	:	
System Description	:	3Com LinkBuilder FMS, SW version:3.02
System Contact	:	
System Location	:	
System Object ID	:	.iso.org.dod.internet.private.enterprises.43.1.8.5
System Up Time	:	(2475380 437) 286 days, 12:03:24.37

(a) System Information on 172.16.46.2 Hub

## Solution

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a.

iso.org.dod.internet.private.enterprises.43.1.8.5

iso.3.6.internet.private.enterprises.43.1.8.5

1.3.dod.1.private.enterprises.43.1.8.5

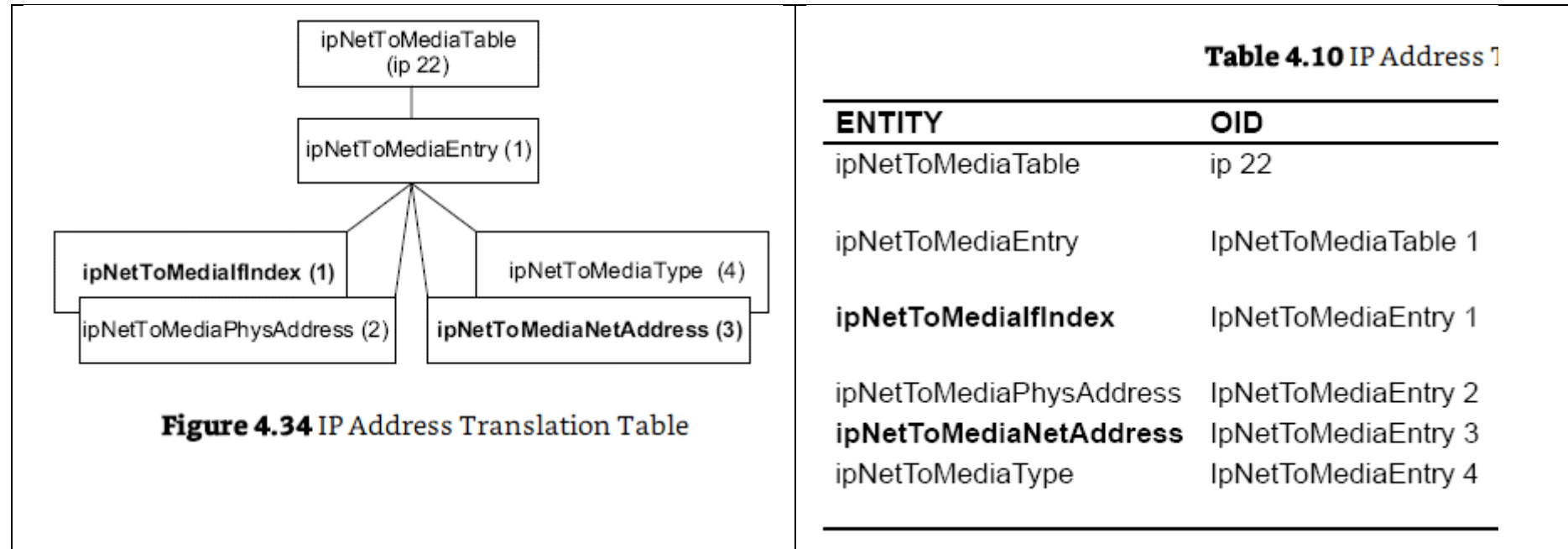
...

b.

1.3.6.1.4.1.43.1.8.5

## Problem 2

Referring to the IP Address Translation table shown in Figure 4.34 and Table 4.10



List the columnar objects under ipNetToMediaEntry.

## Solution

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ipNetToMediaIfIndex (1)

ipNetToMediaPhysAddress (2)

ipNetToMediaNetAddress (3)

ipNetToMediaType (4)

## Problem 3

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a. Redraw the following table filling each cell in the table with its OID.

Replace 1.3.6.1.2.1.4.22.1 with N for ipNetToMediaEntry in the table.

The index columns are: **ipNetToMediaIfIndex**, **ipNetToMediaNetAddress**.

ipNetToMediaIfIndex	ipNetToMediaPhysAddress	ipNetToMediaNetAddress	ipNetToMediaType
1	0x00000C3920AC	172.16.46.1	4
2	0x00000C3920AF	172.16.49.1	4
3	0x00000C3920B0	172.16.52.1	4

b. What is the full OID for the ipNetToMediaPhysAddress 0x00000C3920AF?

## Solution

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a.

ipNetToMediaIfIndex	ipNetToMediaPhysAddress	ipNetToMediaNetAddress	ipNetToMediaType
N.1.1.172.16.46.1	N.2.1.172.16.46.1	N.3.1.172.16.46.1	N.4.1.172.16.46.1
N.1.2.172.16.49.1	N.2.2.172.16.49.1	N.3.2.172.16.49.1	N.4.2.172.16.49.1
N.1.3.172.16.52.1	N.2.3.172.16.52.1	N.3.3.172.16.52.1	N.4.3.172.16.52.1

b.

1.3.6.1.2.1.4.22.1.2.2.172.16.49.1

## Problem 4

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Encode the IP address 10.20.30.40 using BER encoding rule.

The definition of IPAddress (from RFC 2578):

```
IpAddress ::= [APPLICATION 0]  
              IMPLICIT OCTET STRING (SIZE (4))
```

The codes of the types used:

Type	Tag (hex)
IpAddress	40



## Solution

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Type	Length	Value
IpAddress	4 bytes	10.20.30.40 (decimal) hex value of 10 = 0A, 20 = 14, 30 = 1E, 40 = 28
40	04	0A 14 1E 28

Final Answer:

40 04 0A 14 1E 28

# Useful Links

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[http://support.ipmonitor.com/mibs\\_byoidtree.aspx](http://support.ipmonitor.com/mibs_byoidtree.aspx)

<http://www.oid-info.com/get/>

<https://www.ietf.org/rfc/rfc1213.txt>

<https://www.ietf.org/rfc/rfc2578.txt>

[http://wiki.treck.com/SNMP\\_Programmer's\\_Reference](http://wiki.treck.com/SNMP_Programmer's_Reference)