



# **SNS COLLEGE OF ENGINEERING**

**Kurumbapalayam(Po), Coimbatore – 641 107**

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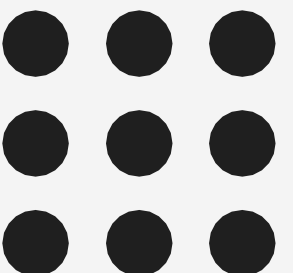
## **Department of Information Technology**

**Course Name – 23ITT204 & Computer Networks**

**II Year / III Semester**

**Unit 1 – Introduction and Application Layer**

**Topic 10 - SNMP**



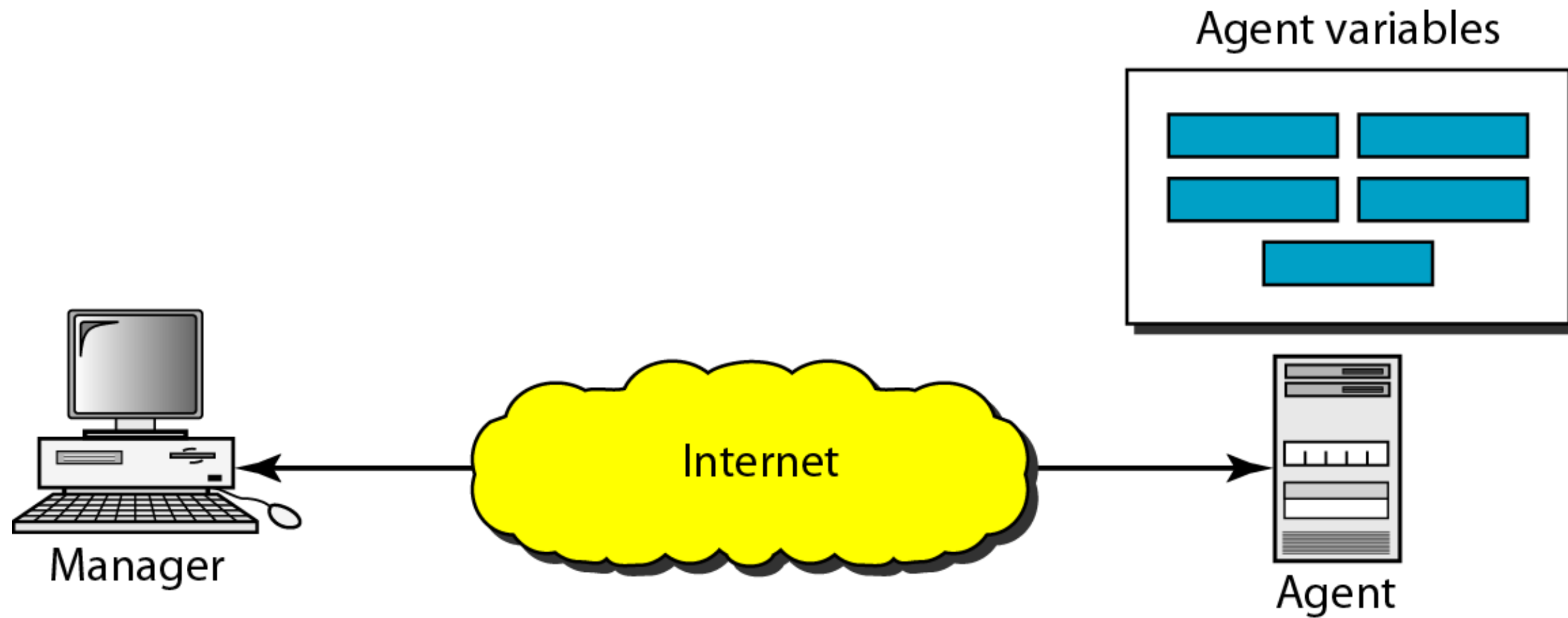


# SIMPLE NETWORK MANAGEMENT PROTOCOL (SNMP)



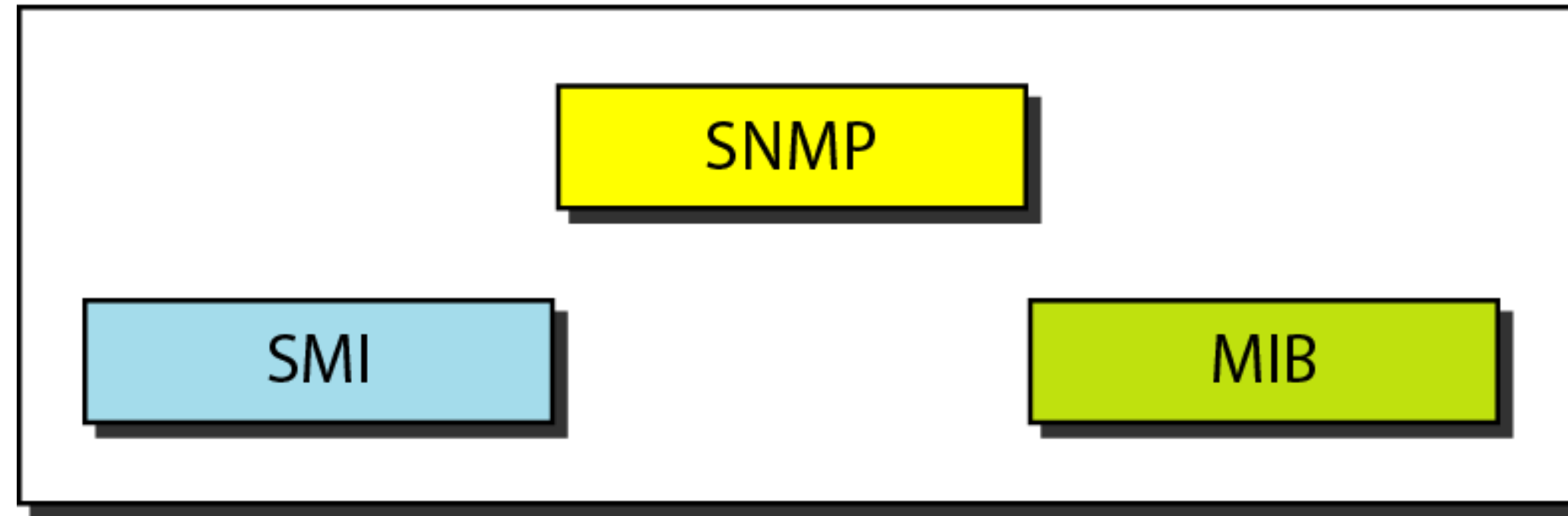
- The Simple Network Management Protocol (SNMP) is a framework for managing devices in an internet using the TCP/IP protocol suite.
- It provides a set of fundamental operations for monitoring and maintaining an internet.

# SNMP concept



# Components of network management on the Internet

Management



- SNMP defines the format of packets exchanged between a manager and an agent.
- It reads and changes the status (values) of objects (variables) in SNMP packets.



# Structure of Management Information (SMI)

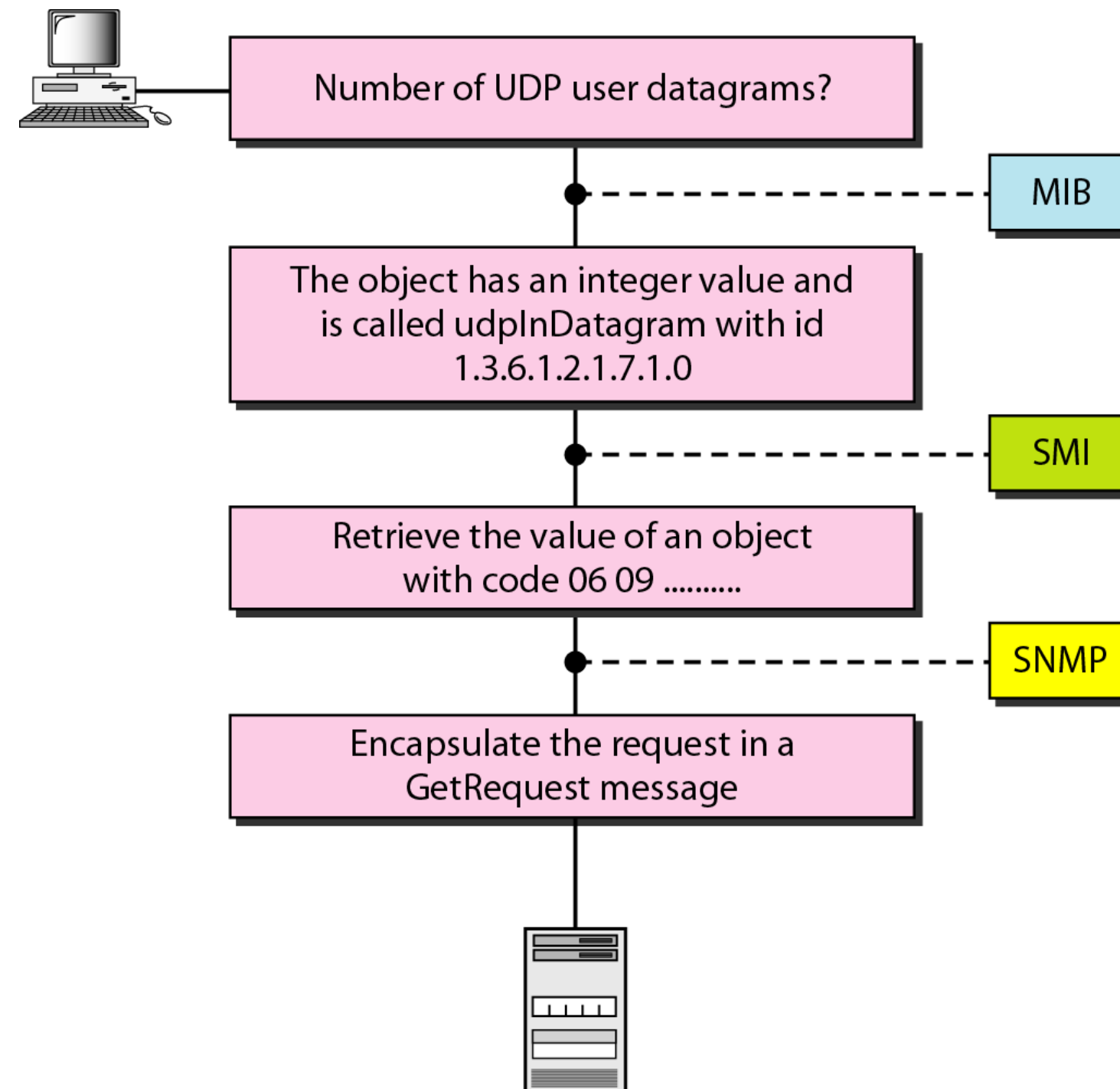
- SMI defines the general rules for naming objects, defining object types (including range and length), and showing how to encode objects and values.
- SMI does not define the number of objects an entity should manage or name the objects to be managed or define the association between the objects and their values.



# Management Information Base (MIB)

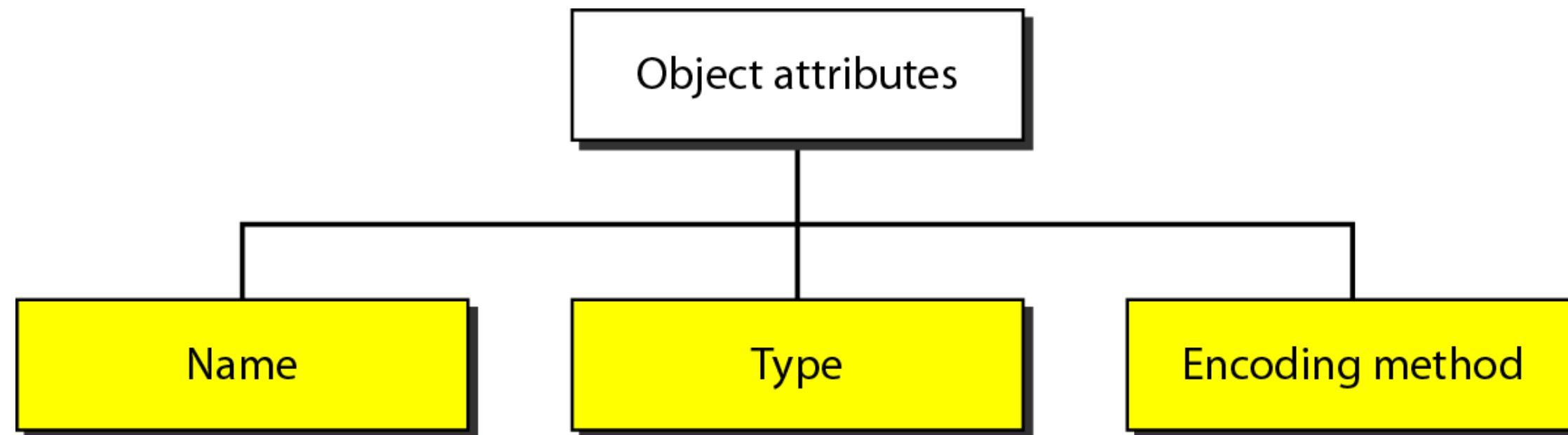
- MIB creates a collection of named objects, their types, and their relationships to each other in an entity to be managed.

# Management overview



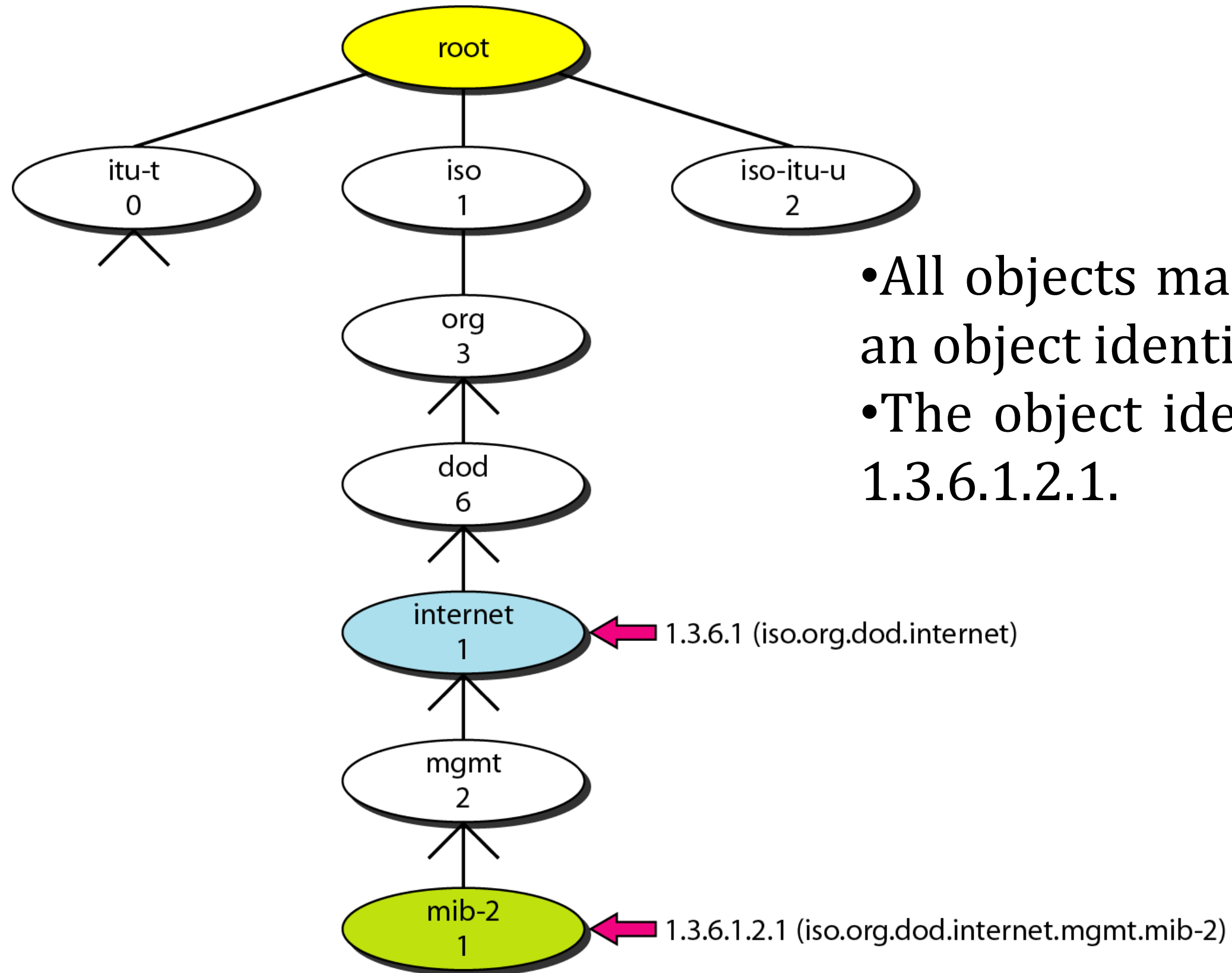


# Object attributes



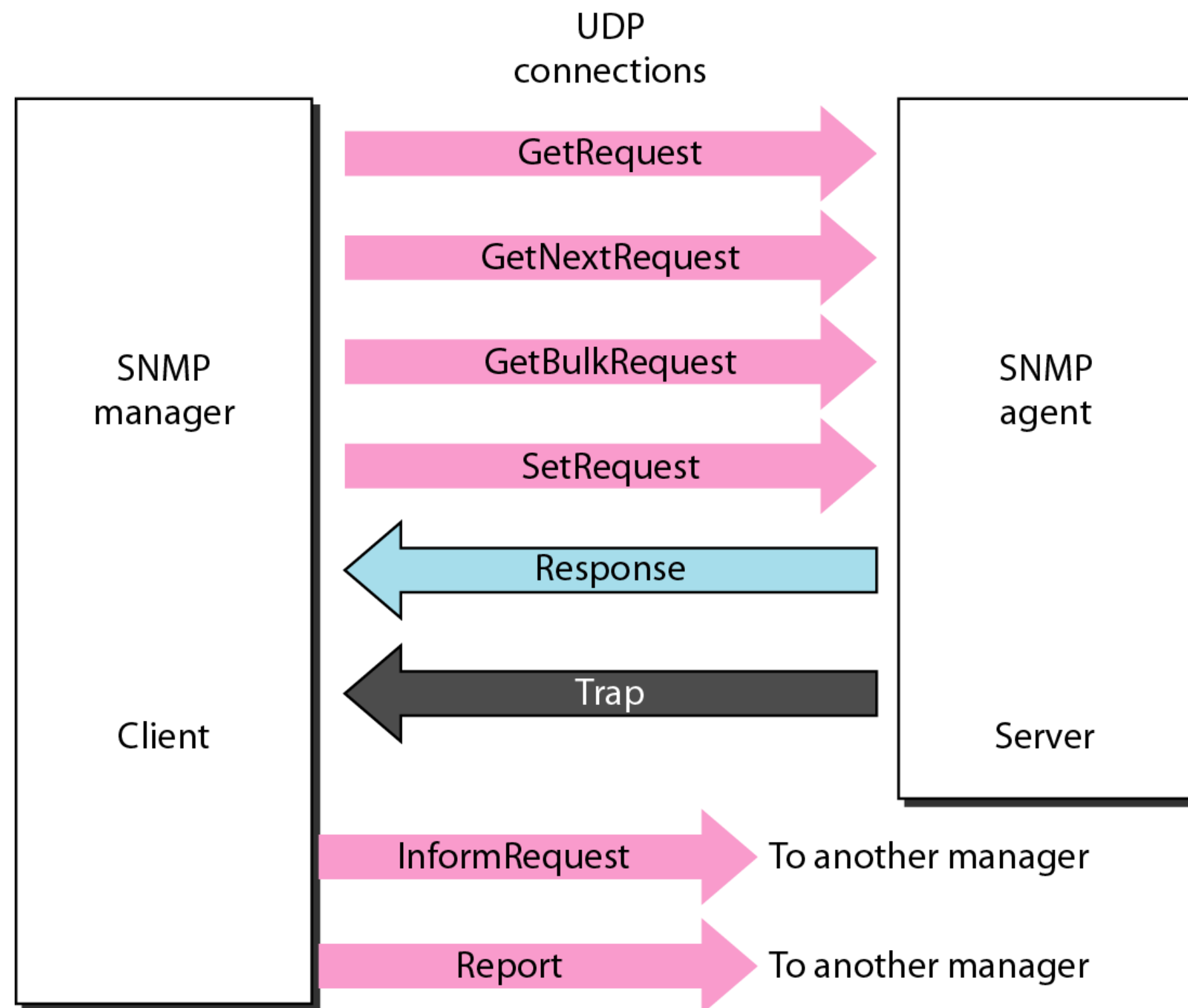


# Object identifier

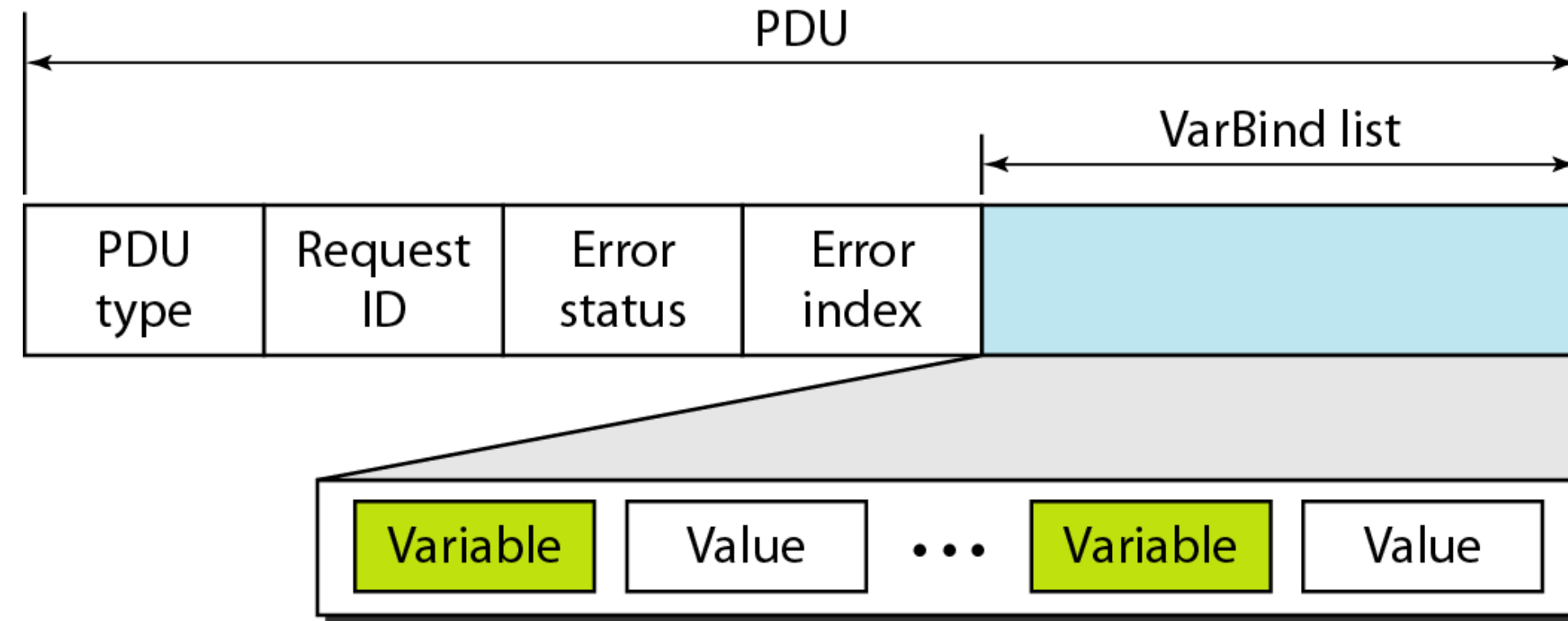


- All objects managed by SNMP are given an object identifier.
- The object identifier always starts with 1.3.6.1.2.1.

# SNMP PDUs



# SNMP PDU format



## Differences:

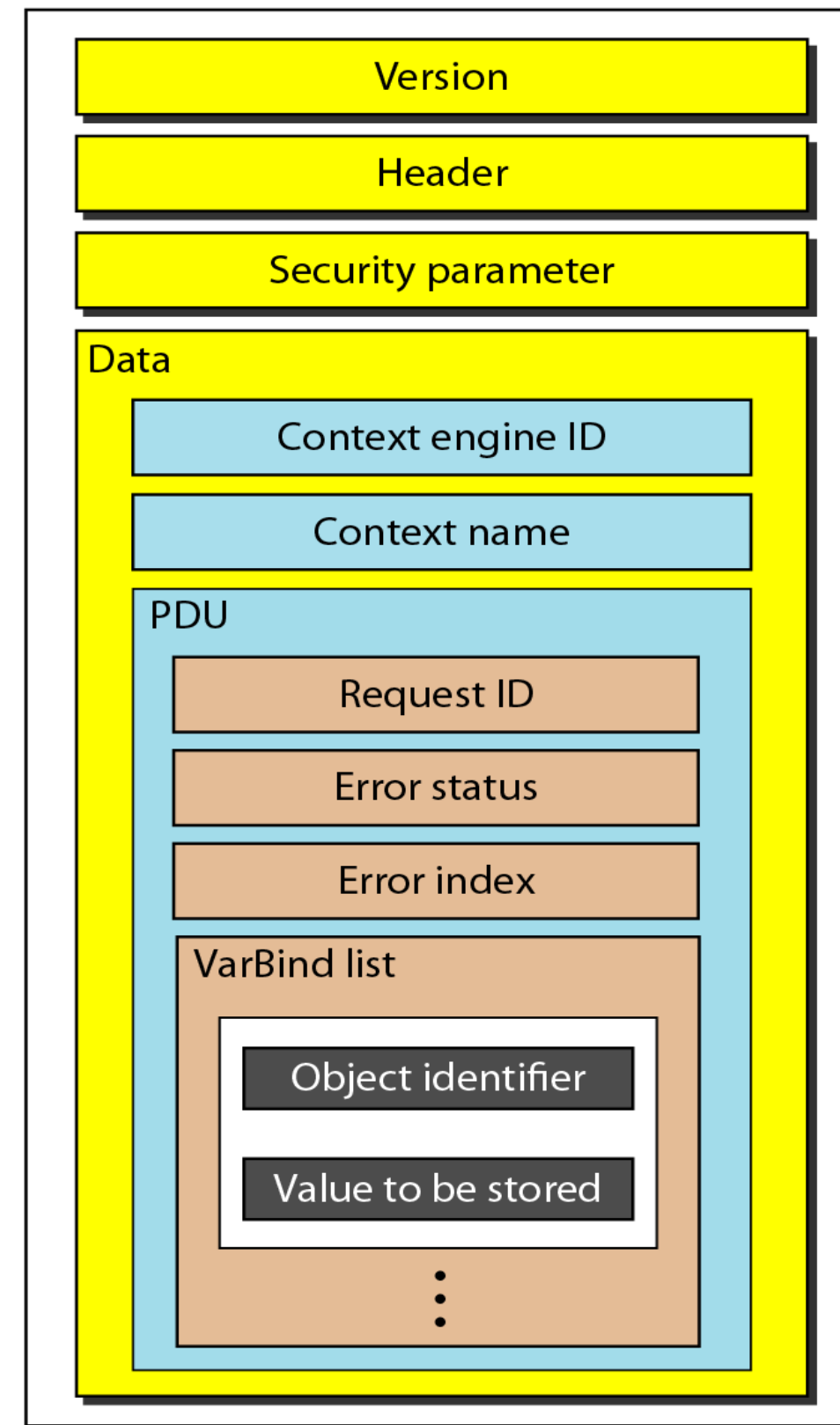
1. Error status and error index values are zeros for all request messages except GetBulkRequest.
2. Error status field is replaced by nonrepeater field and error index field is replaced by max-repetitions field in GetBulkRequest.

# Types of errors

<i>Status</i>	<i>Name</i>	<i>Meaning</i>
0	noError	No error
1	tooBig	Response too big to fit in one message
2	noSuchName	Variable does not exist
3	badValue	The value to be stored is invalid
4	readOnly	The value cannot be modified
5	genErr	Other errors

# SNMP message

Message

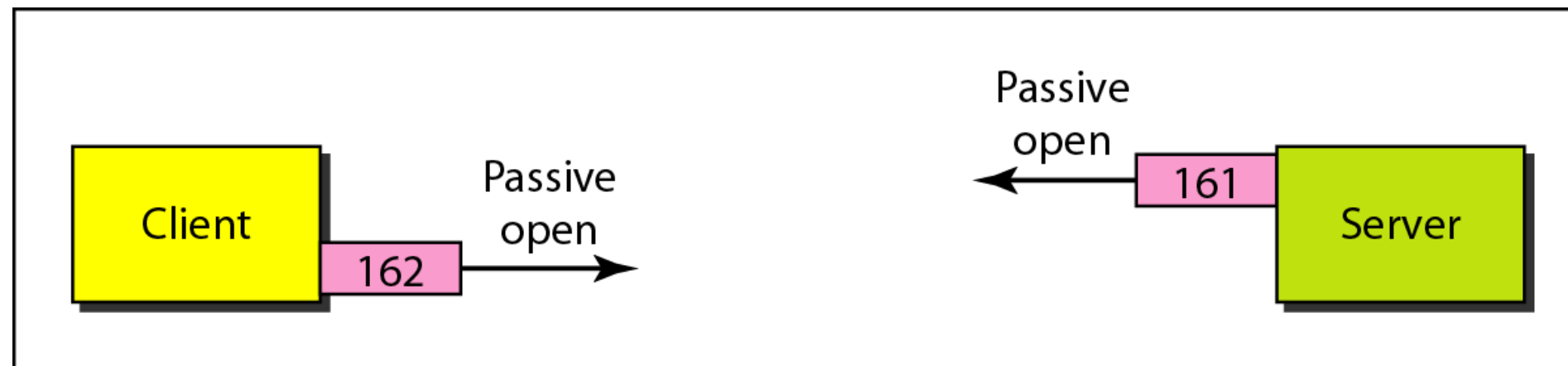




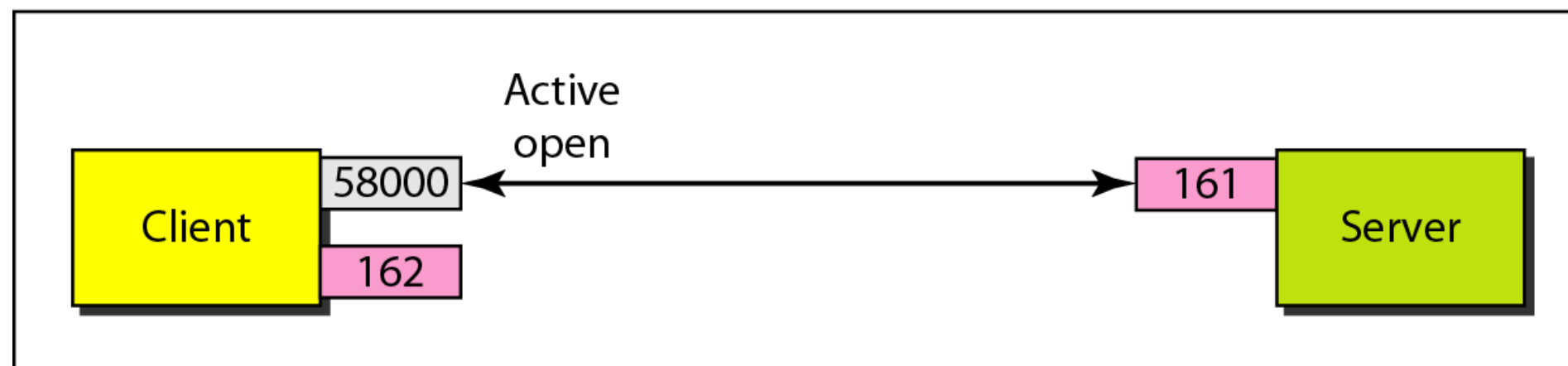
# Codes for SNMP messages

<i>Data</i>	<i>Class</i>	<i>Format</i>	<i>Number</i>	<i>Whole Tag (Binary)</i>	<i>Whole Tag (Hex)</i>
GetRequest	10	1	00000	<b>10100000</b>	<b>A0</b>
GetNextRequest	10	1	00001	<b>10100001</b>	<b>A1</b>
Response	10	1	00010	<b>10100010</b>	<b>A2</b>
SetRequest	10	1	00011	<b>10100011</b>	<b>A3</b>
GetBulkRequest	10	1	00101	<b>10100101</b>	<b>A5</b>
InformRequest	10	1	00110	<b>10100110</b>	<b>A6</b>
Trap (SNMPv2)	10	1	00111	<b>10100111</b>	<b>A7</b>
Report	10	1	01000	<b>10101000</b>	<b>A8</b>

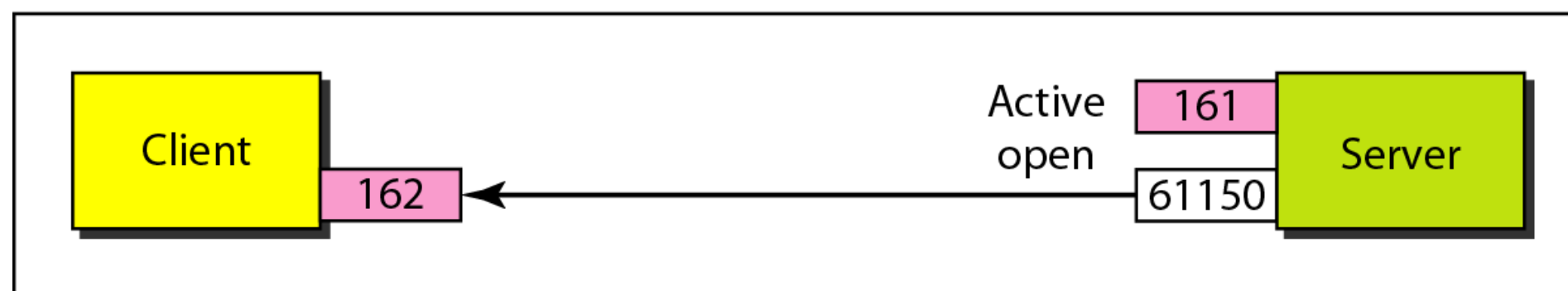
# Port numbers for SNMP



a. Passive open by both client and server



b. Exchange of request and response messages



c. Server sends trap message





**THANK YOU**