



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



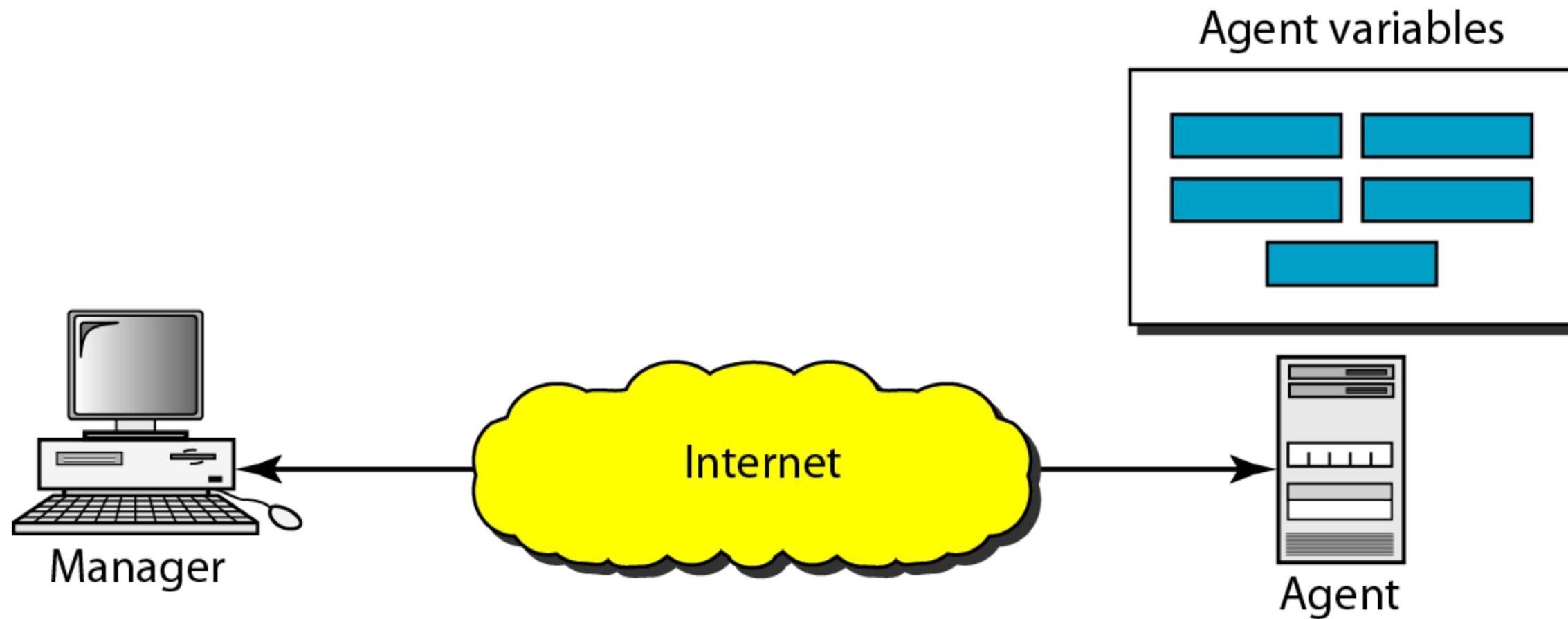


SIMPLE NETWORK MANAGEMENT PROTOCOL (SNMP)



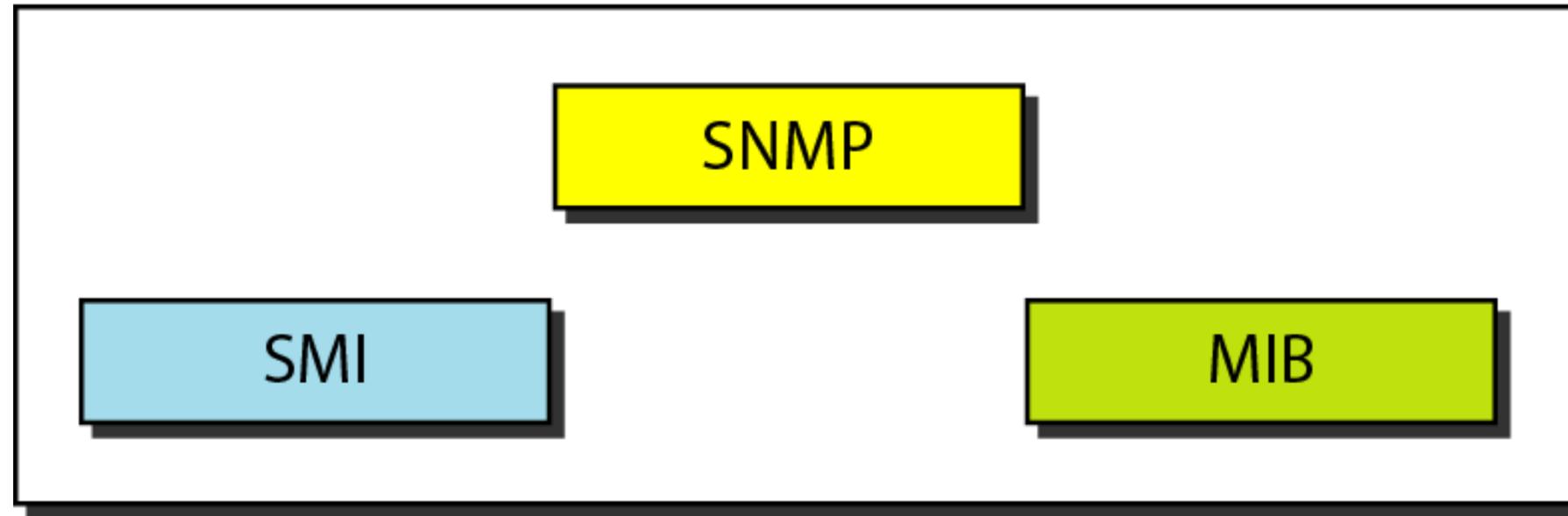
- The Simple Network Management Protocol (SNMP) is a framework for managing devices in an internet using the TCP/IP protocol suite.
- It provides a set of fundamental operations for monitoring and maintaining an internet.

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.

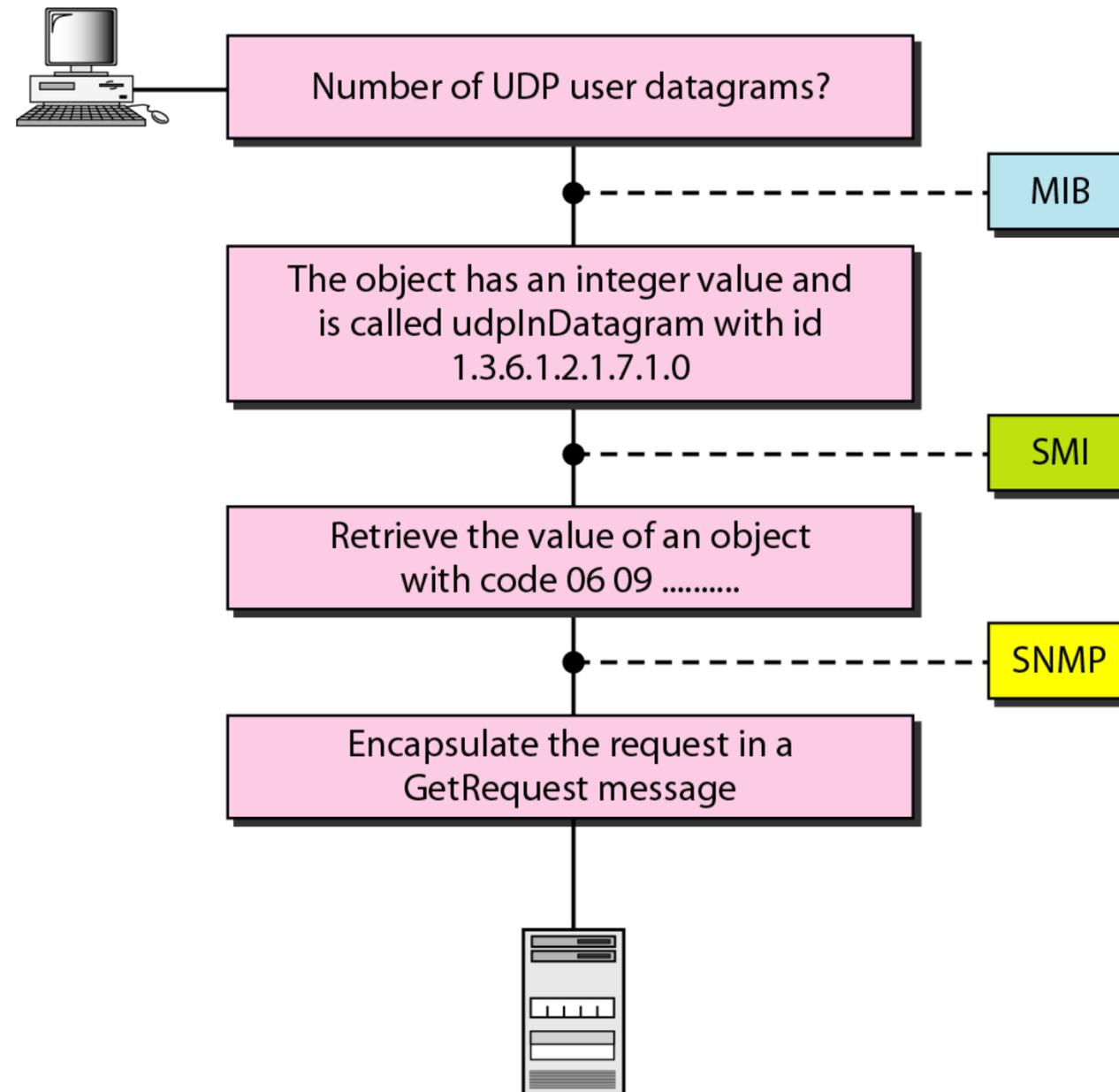


Management Information Base (MIB)



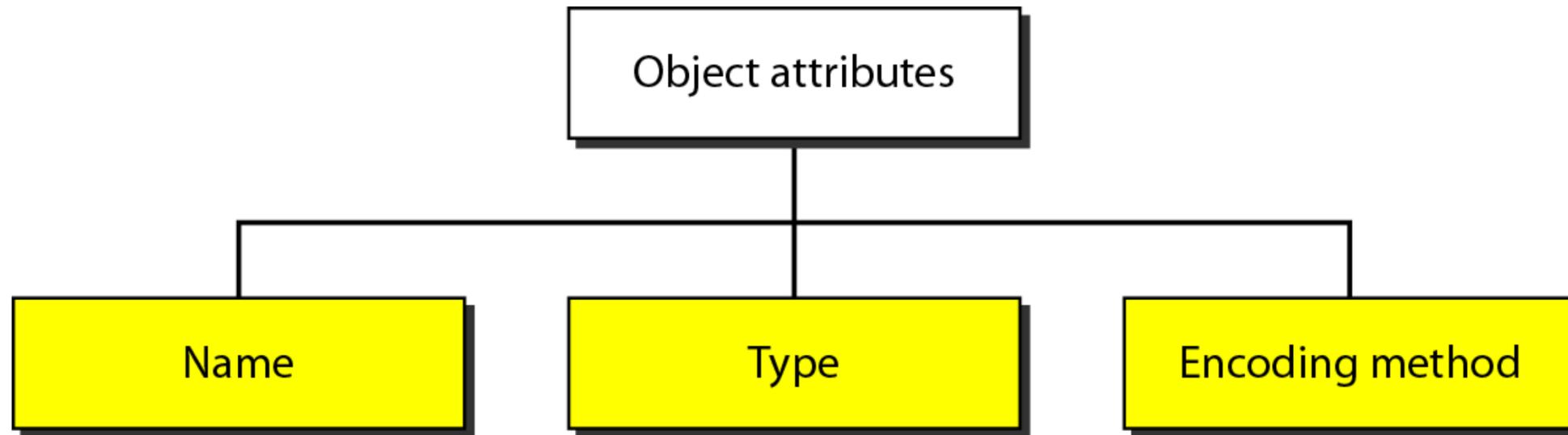
- MIB creates a collection of named objects, their types, and their relationships to each other in an entity to be managed.

Management overview

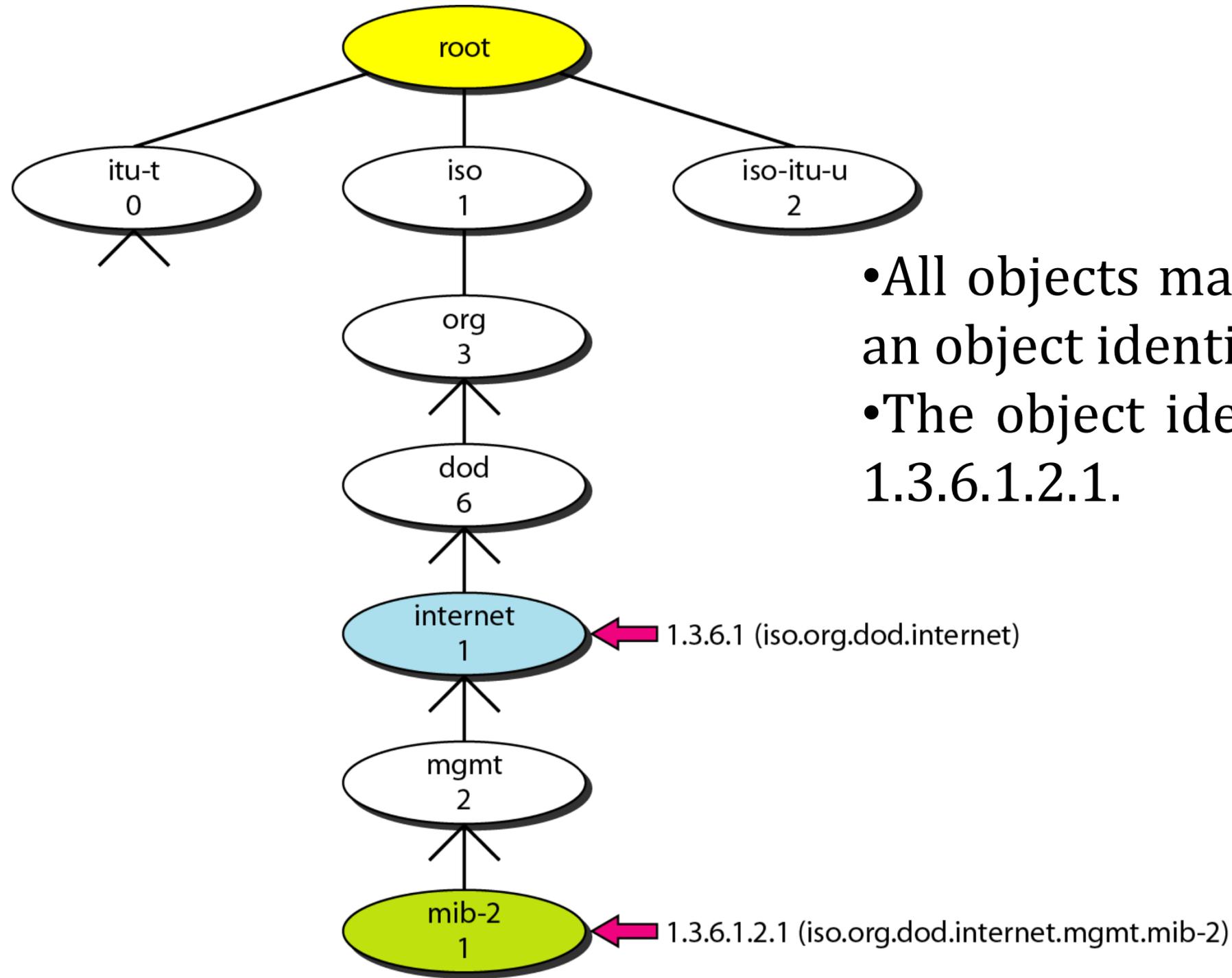




Object attributes

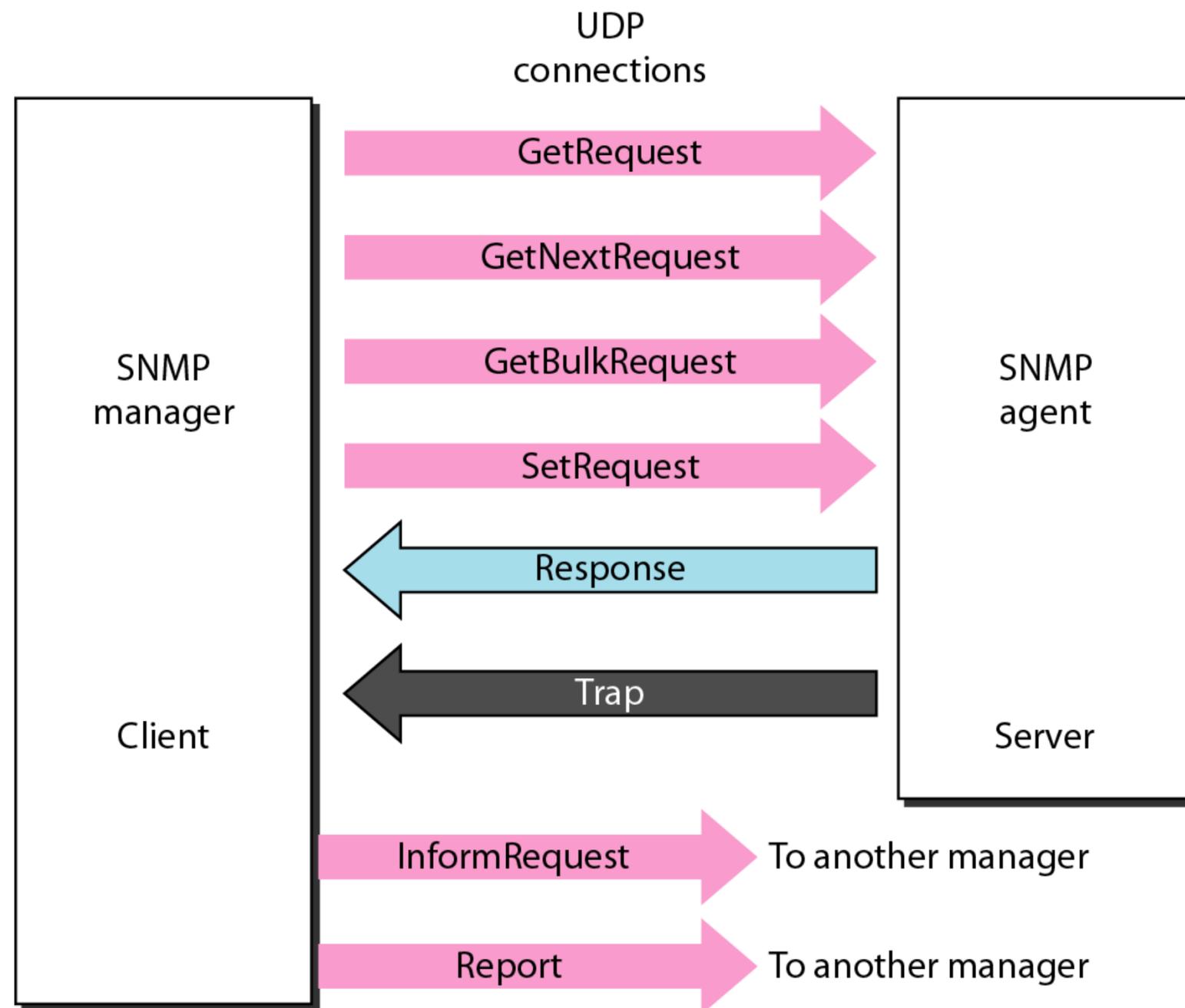


Object identifier

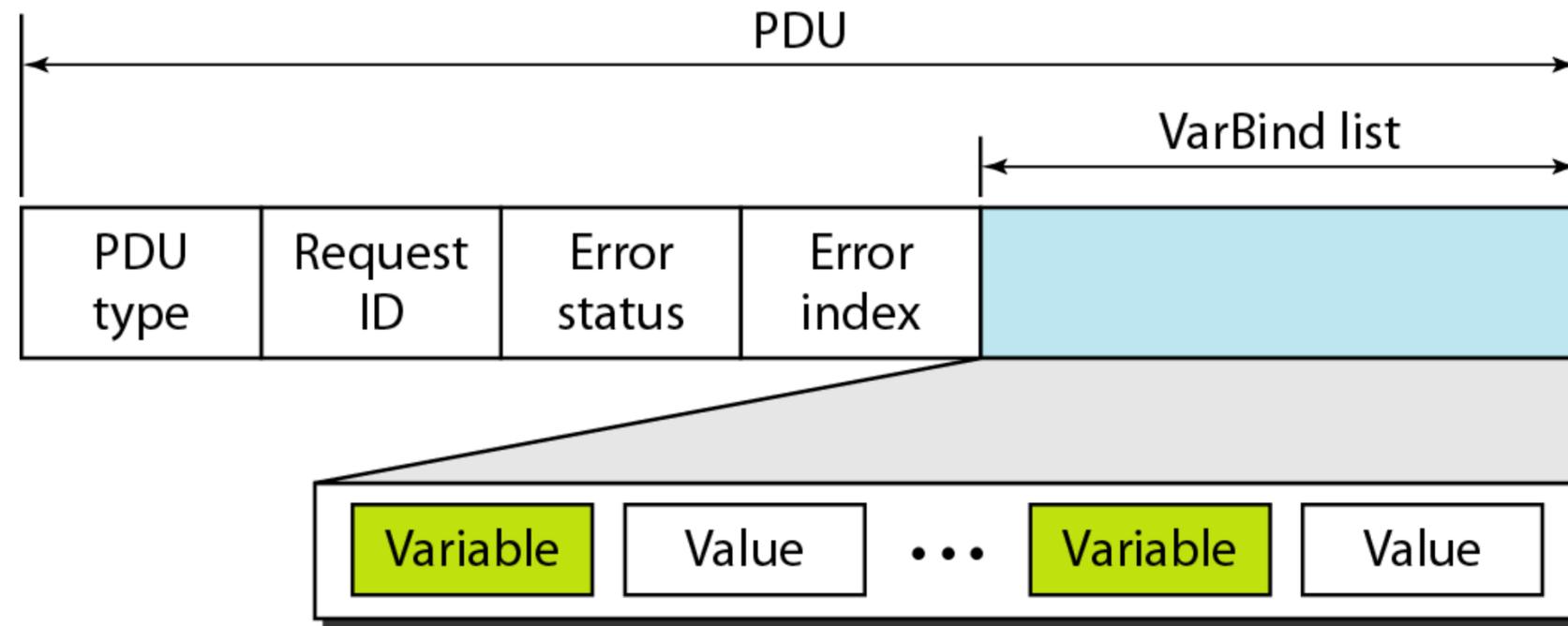


- All objects managed by SNMP are given an object identifier.
- The object identifier always starts with 1.3.6.1.2.1.

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.



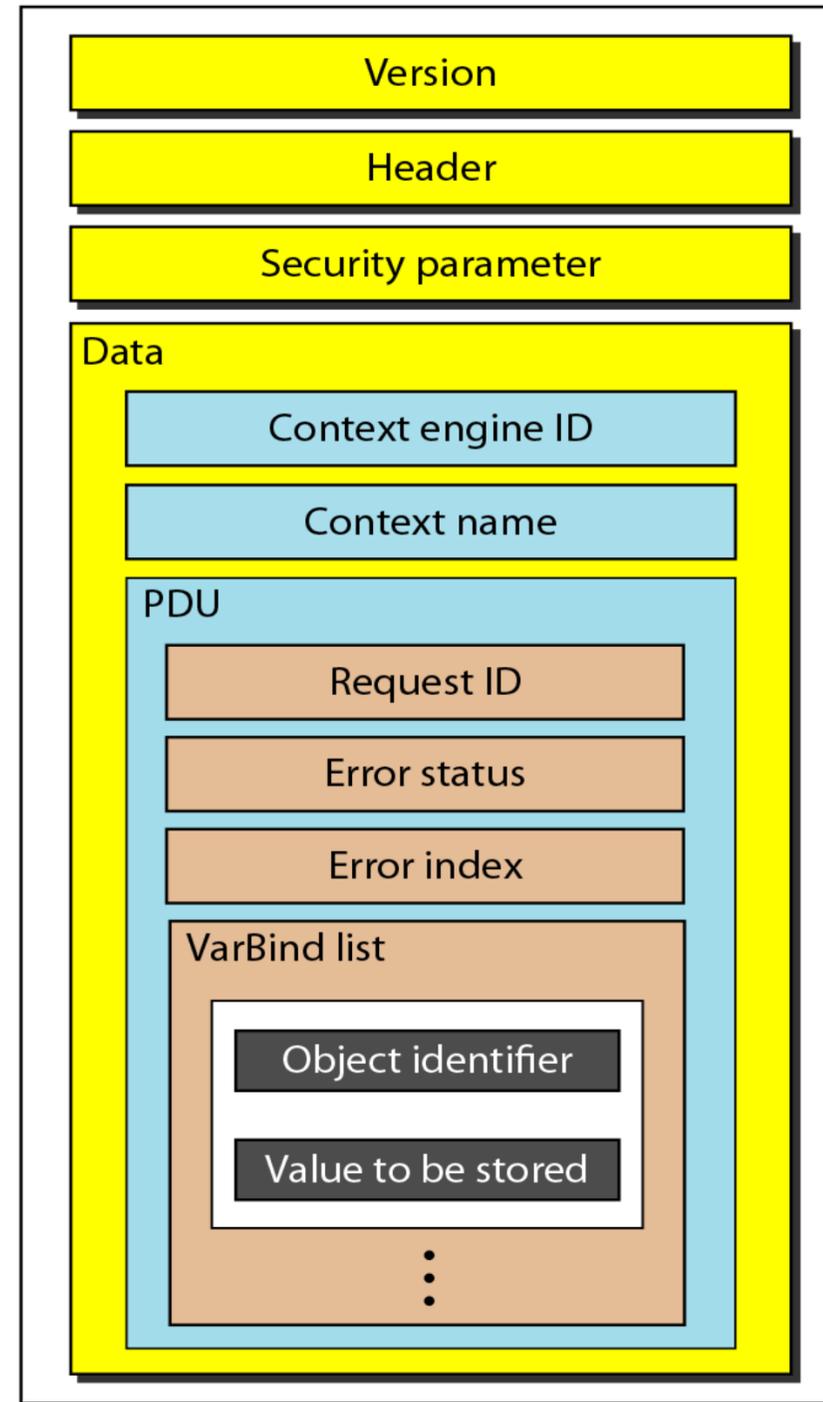
Types of errors



<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

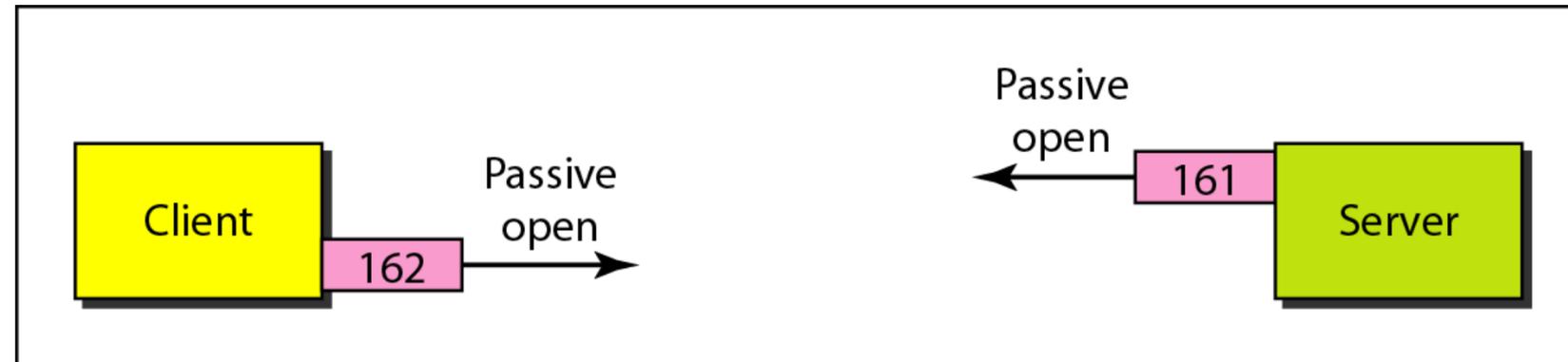




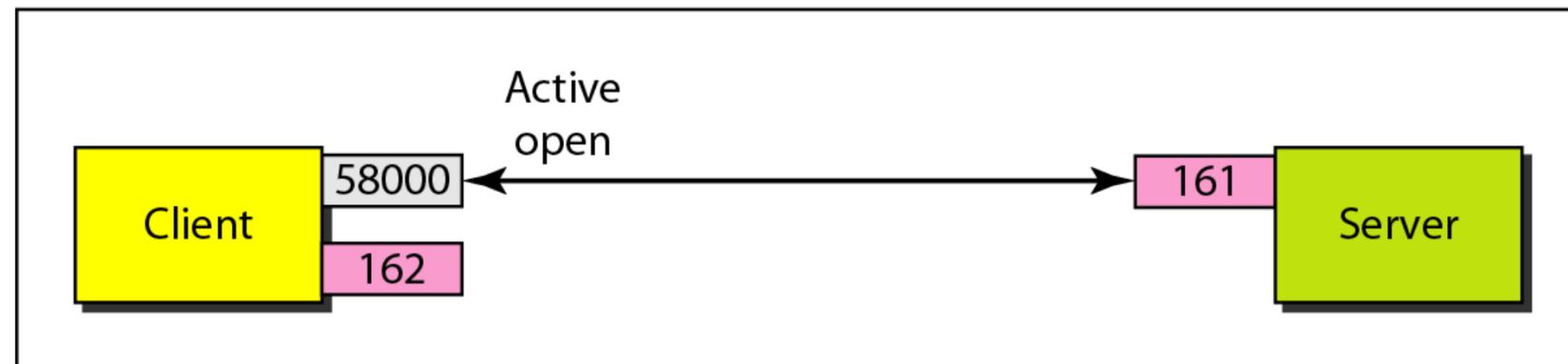
Codes for SNMP messages

<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	10100000	A0
GetNextRequest	10	1	00001	10100001	A1
Response	10	1	00010	10100010	A2
SetRequest	10	1	00011	10100011	A3
GetBulkRequest	10	1	00101	10100101	A5
InformRequest	10	1	00110	10100110	A6
Trap (SNMPv2)	10	1	00111	10100111	A7
Report	10	1	01000	10101000	A8

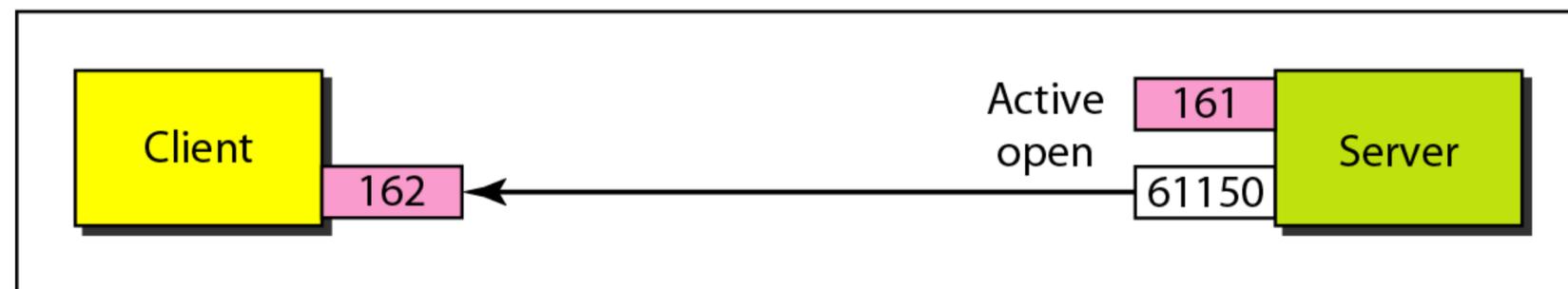
Port numbers for SNMP



a. Passive open by both client and server



b. Exchange of request and response messages



c. Server sends trap message



THANK YOU