SNS COLLEGE OF ENGINEERING

Kurumbapalayam(Po), Coimbatore – 641 107
Accredited by NAAC-UGC with 'A' Grade
Approved by AICTE, Recognized by UGC & Affiliated to Anna University, Chennai

Department of CSE-IOT

Course Name – 23ITT204 & Computer Networks

II Year / IV Semester

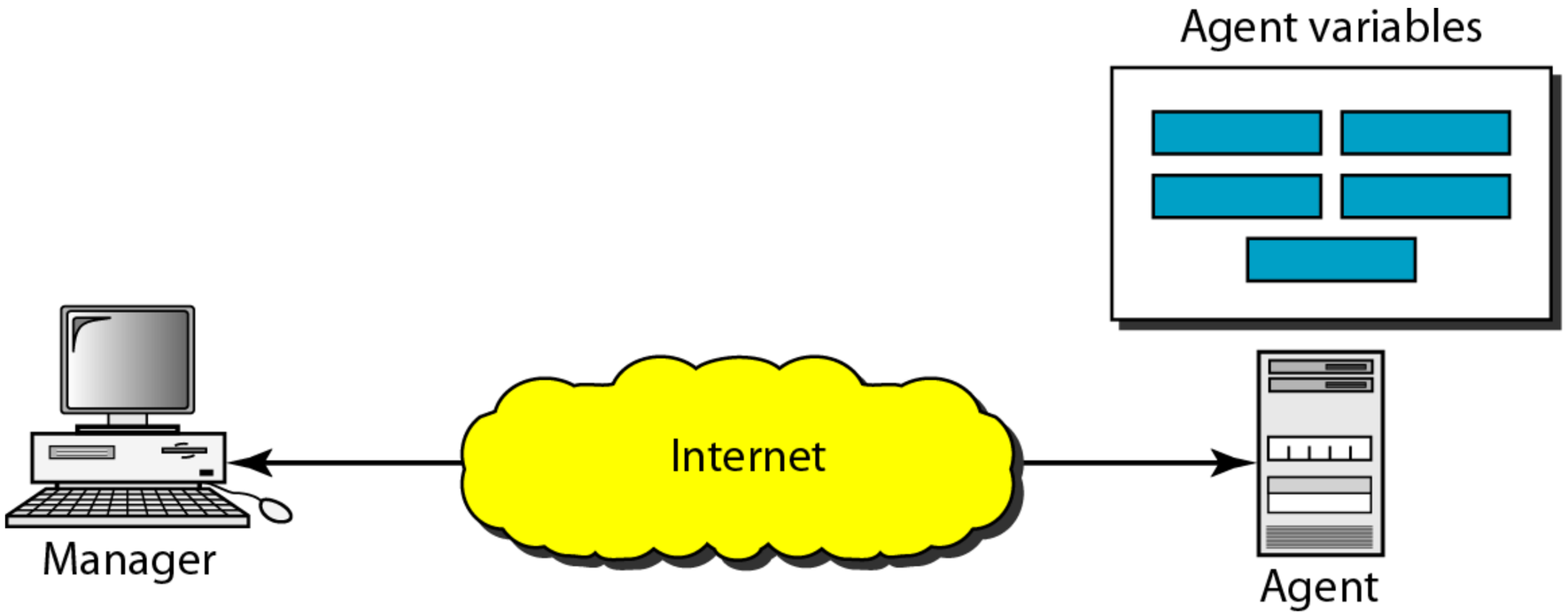
Unit 1 – Introduction and Application Layer

Topic 10 - SNMP

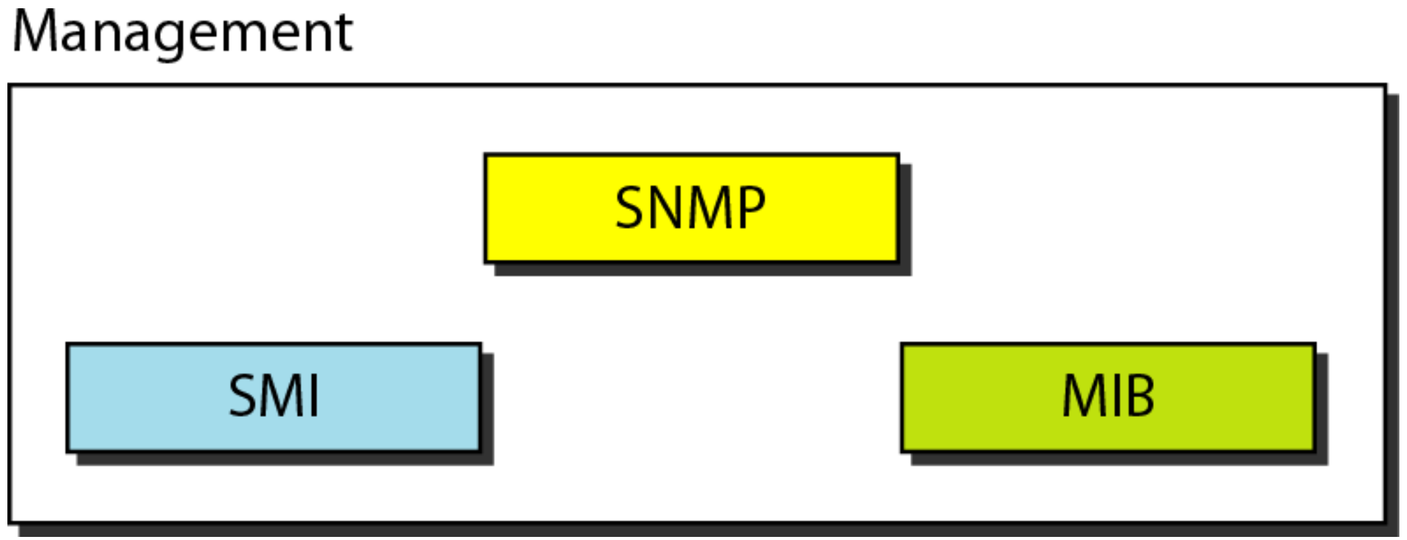
SIMPLE NETWORK MANAGEMENT PROTOCOL (SNMP)

- 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



- 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)

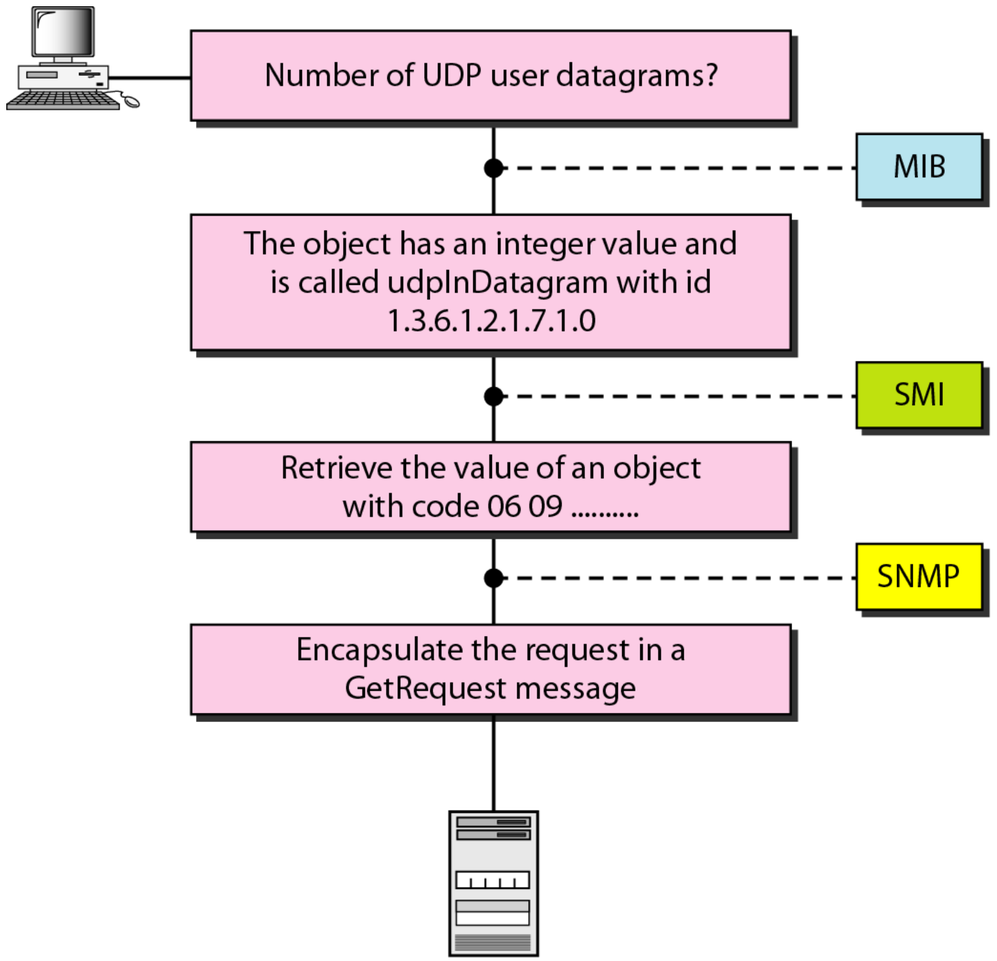
•SMI defines the general rules for naming objects, defining object types (including range and length), and showing how to encode objects and values.

•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.

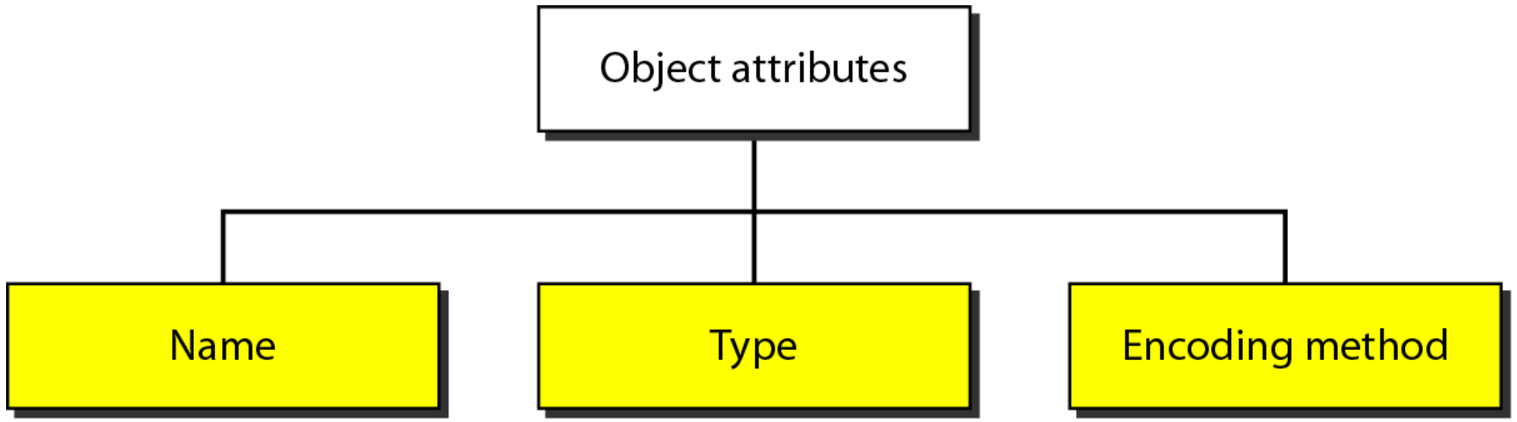
Management Information Base (MIB)

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

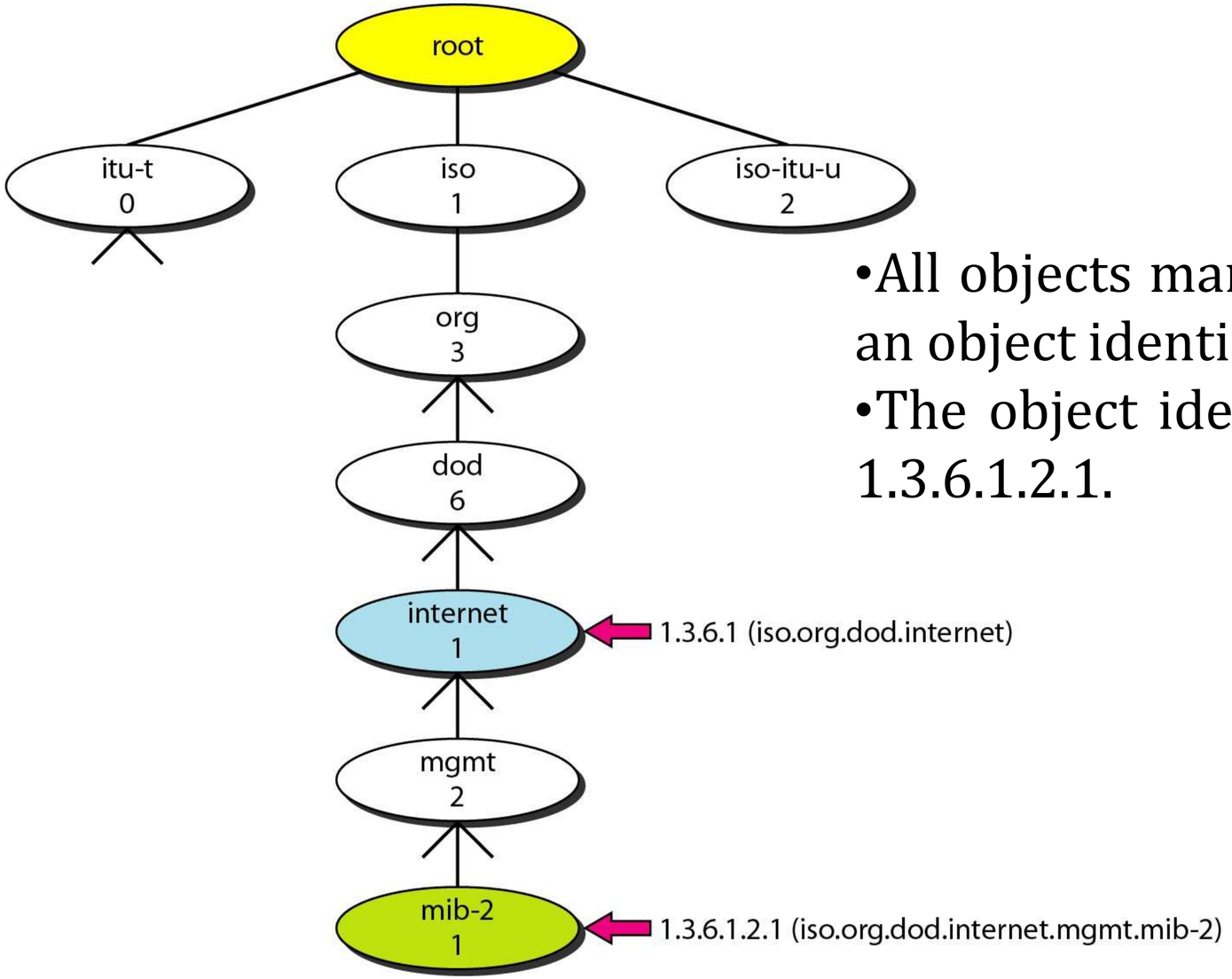
Management overview



Object attributes

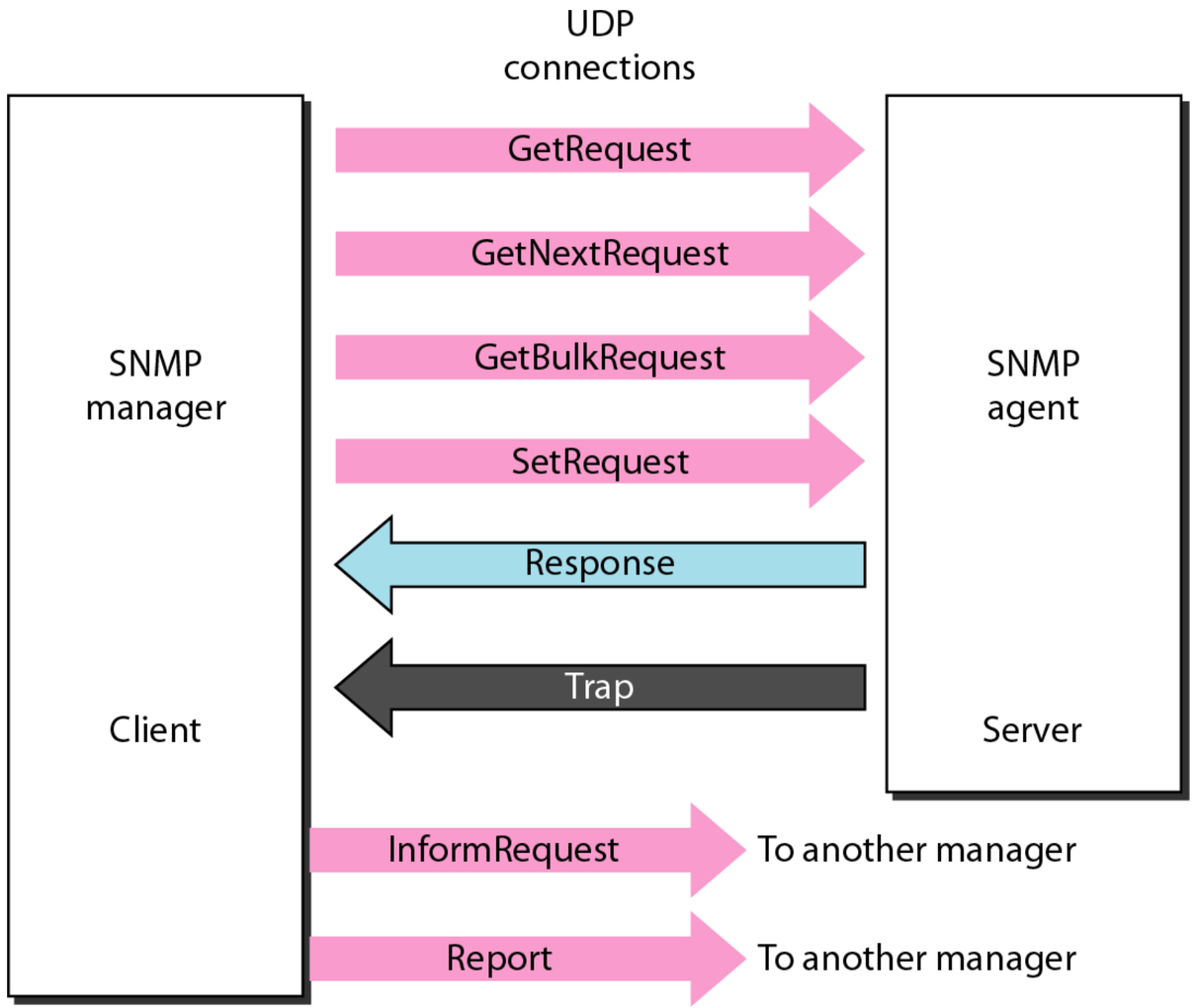


Object identifier

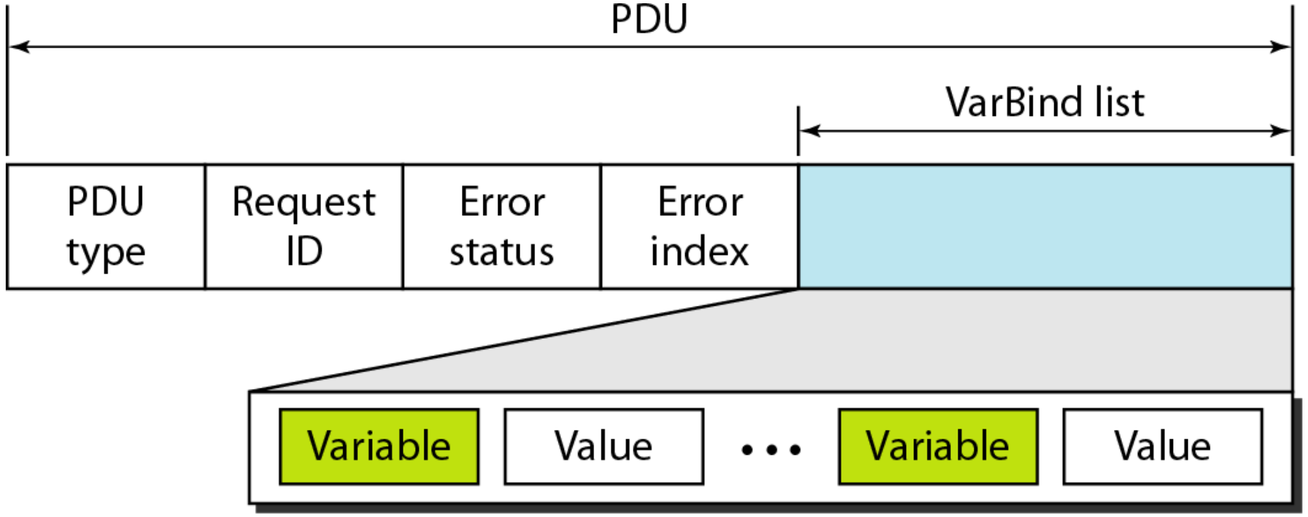


- All objects managed by SNMP are given an object identifier.
- The object identifier always starts with 1.3.6.1.2.1.

SNMP PDUs


UDP
connections
SNMP
manager
SNMP
agent
GetRequest
GetNextRequest
GetBulkRequest
SetRequest
Response
Trap
Client
Server
InformRequest
To another manager
Report
To another manager

SNMP PDU format



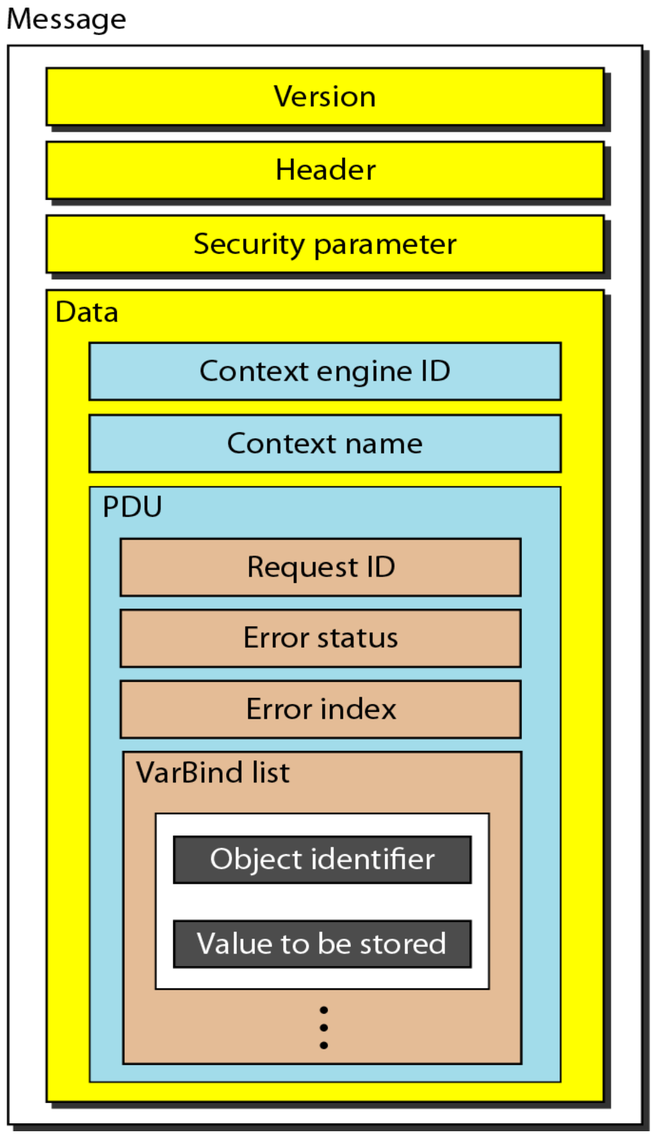
Differences:

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

Status	*Name*	*Meaning*
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

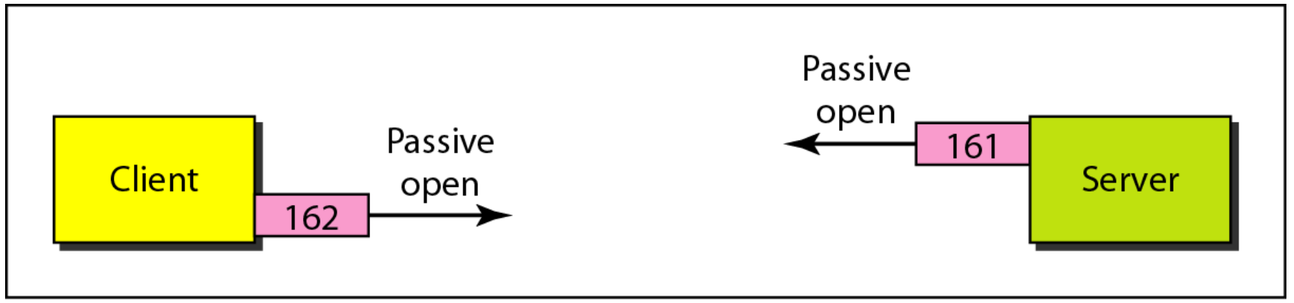
SNMP message



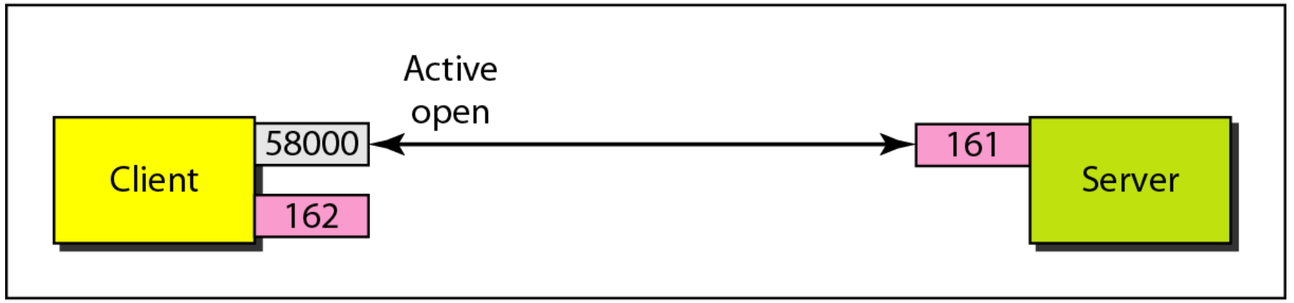
Codes for SNMP messages

Data	*Class*	*Format*	*Number*	*Whole Tag (Binary)*	*Whole Tag (Hex)*
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**

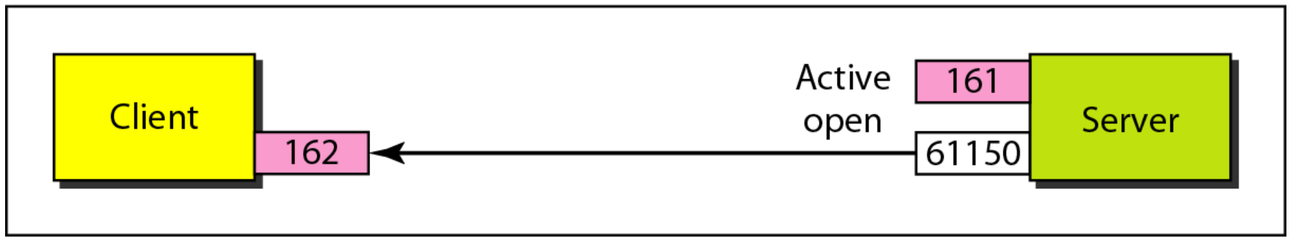
Port numbers for SNMP



a. Passive open by both client and server



b. Exchange of request and response messages



c. Server sends trap message

THANK YOU