

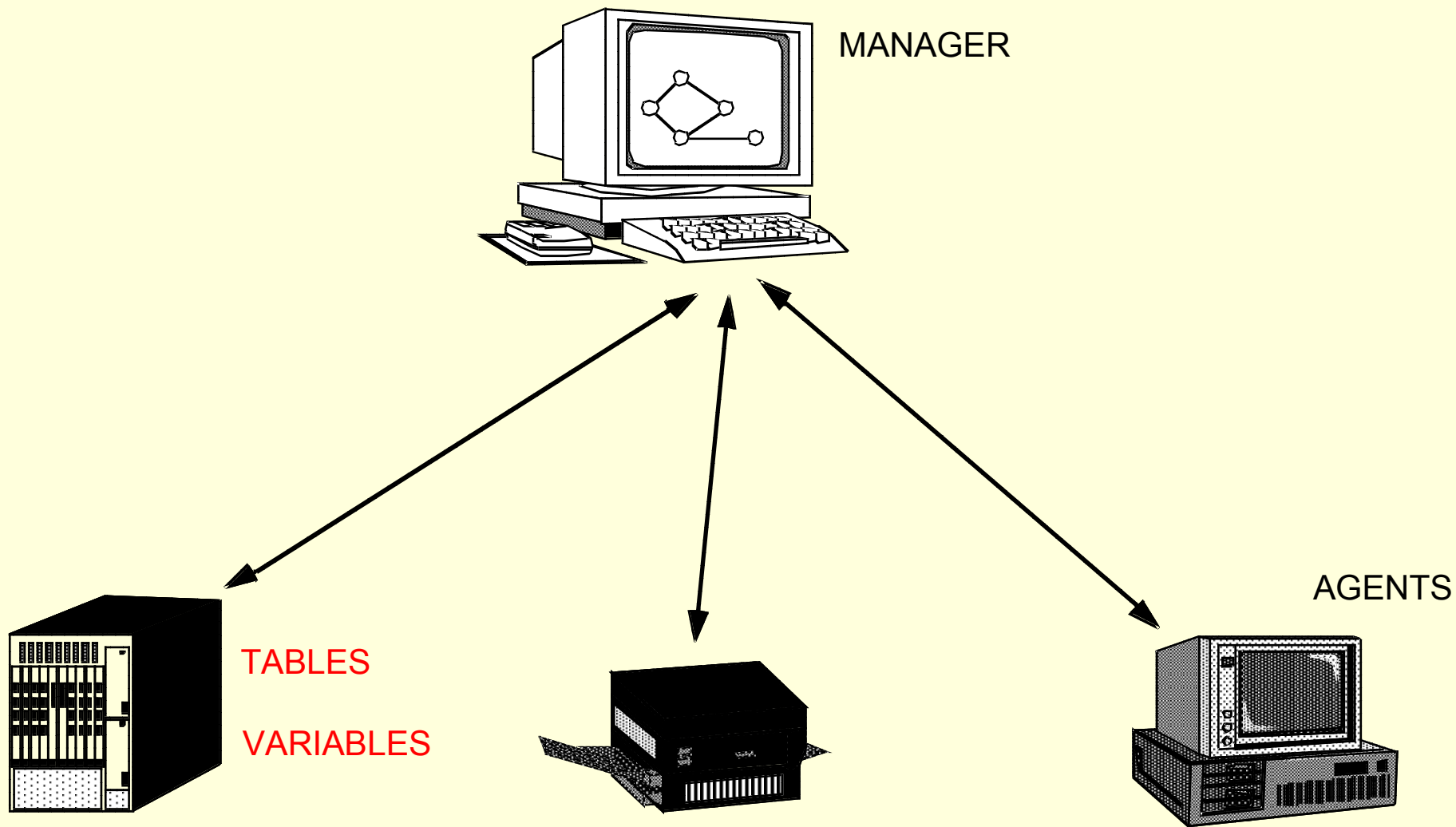
Moderní technologie Internetu

(1)

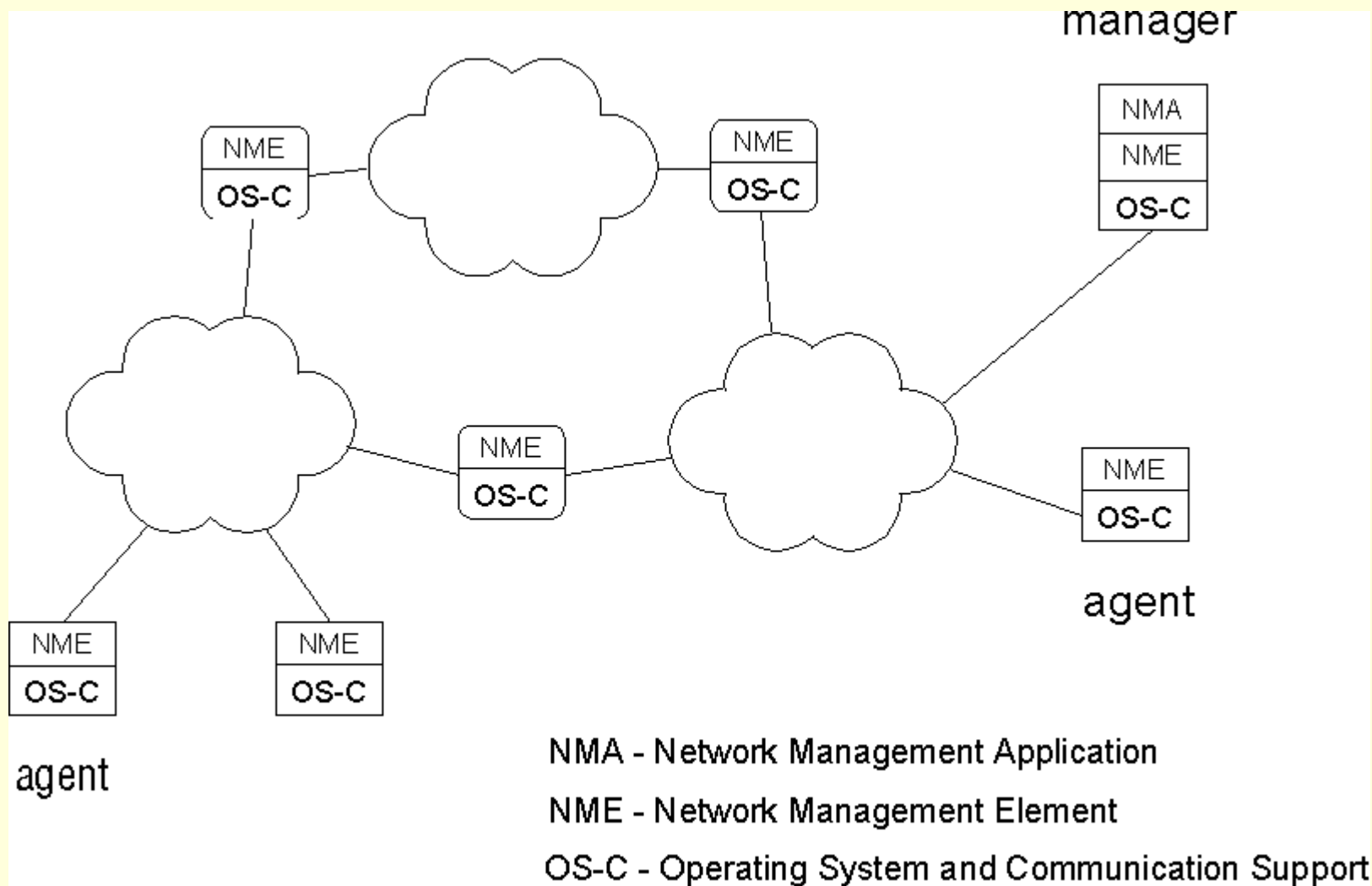
Jan Janeček

janecek@cs.felk.cvut.cz

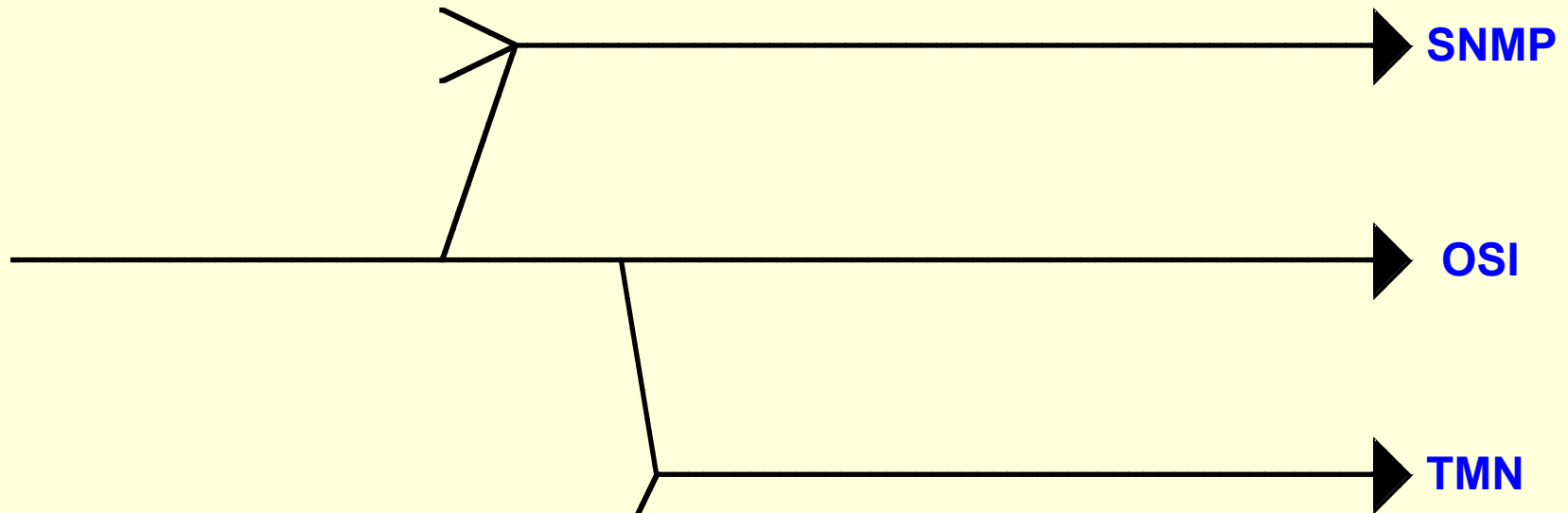
Architektura SNMP



Struktura systému správy



Systemy správy sítí



1980

1982

1984

1986

1988

1990

1992

1994

1996

1998

2000

Vývoj OSI

**SC21/WG4
ESTABLISHED**

← MANAGEMENT FRAMEWORK →

← CMIS/CMIP →

← SYSTEMS MGT.
OVERVIEW →

← MANAGEMENT FUNCTIONS →

1980

1982

1984

1986

1988

1990

1992

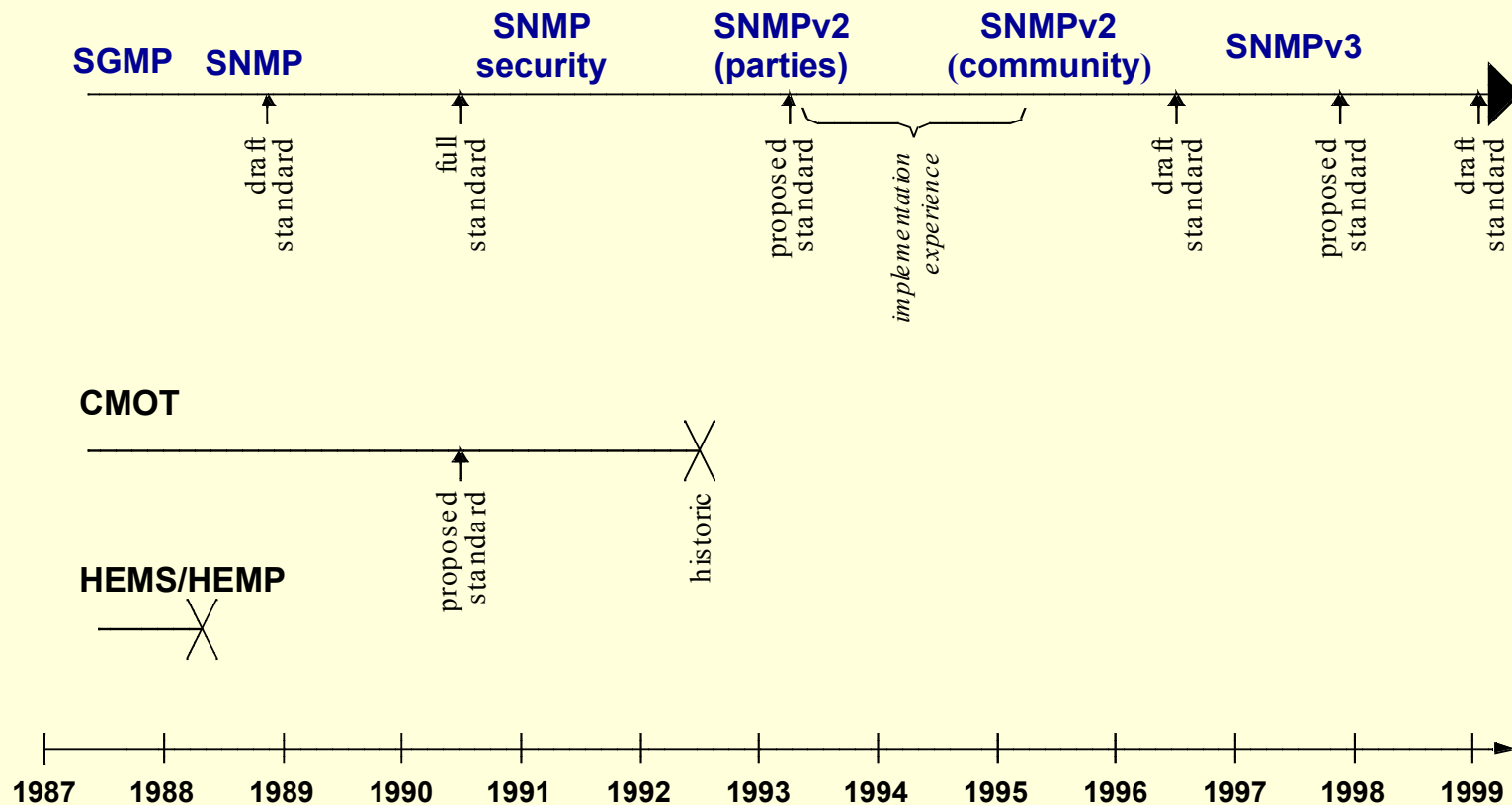
1994

1996

1998

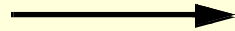
2000

Vývoj SNMP



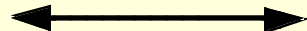
Vývoj TNM

WORK ON TMN
STARTED BY SGIV



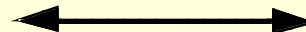
M30

IDEAS FROM OSI MGT.
WORK STARTED ON DERIVED STANDARDS
RESPONSIBILITY MODEL BECAME ANNEX



M3010

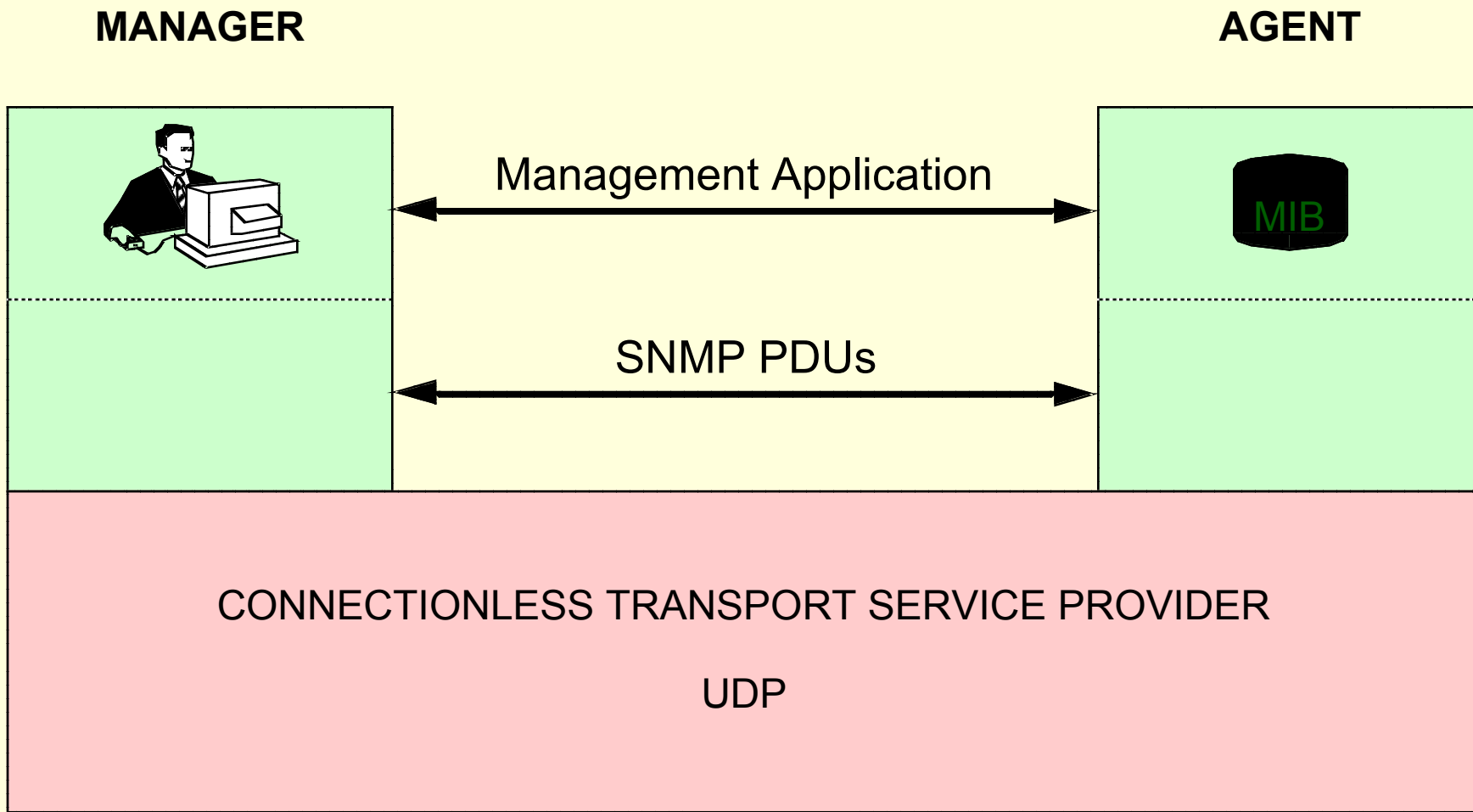
RESPONSIBILITY MODEL PART OF MAIN TEXT



M3010 (rev.)

1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000

Architektura SNMP



RFC

RFC 1155

SMI

Structure of Management Information

RFC 1157

SNMP

Simple Network Management Protocol

RFC 1213

MIB-II

Management Information Base

SMI

Structure of Management Information

RFC 1155

SMIv1

RFC 1212

CONCISE MIB DEFINITIONS

RFC 2578

SMIv2

RFC 2579

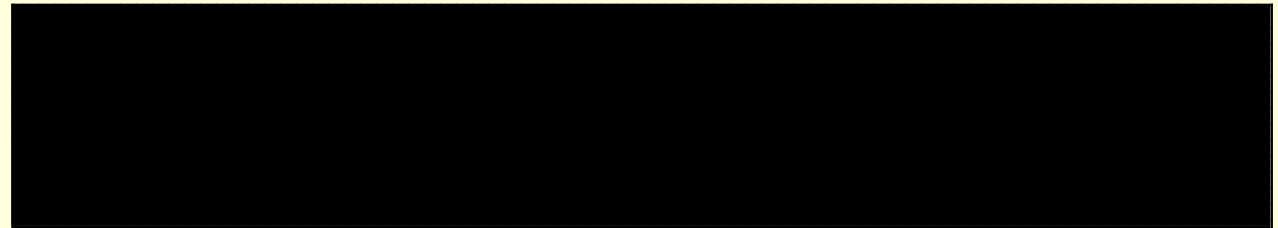
TEXTUAL CONVENTIONS

Skalární datové typy

SMIv1

SMIv2

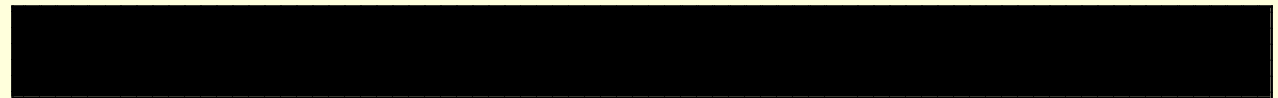
SIMPLE TYPES:



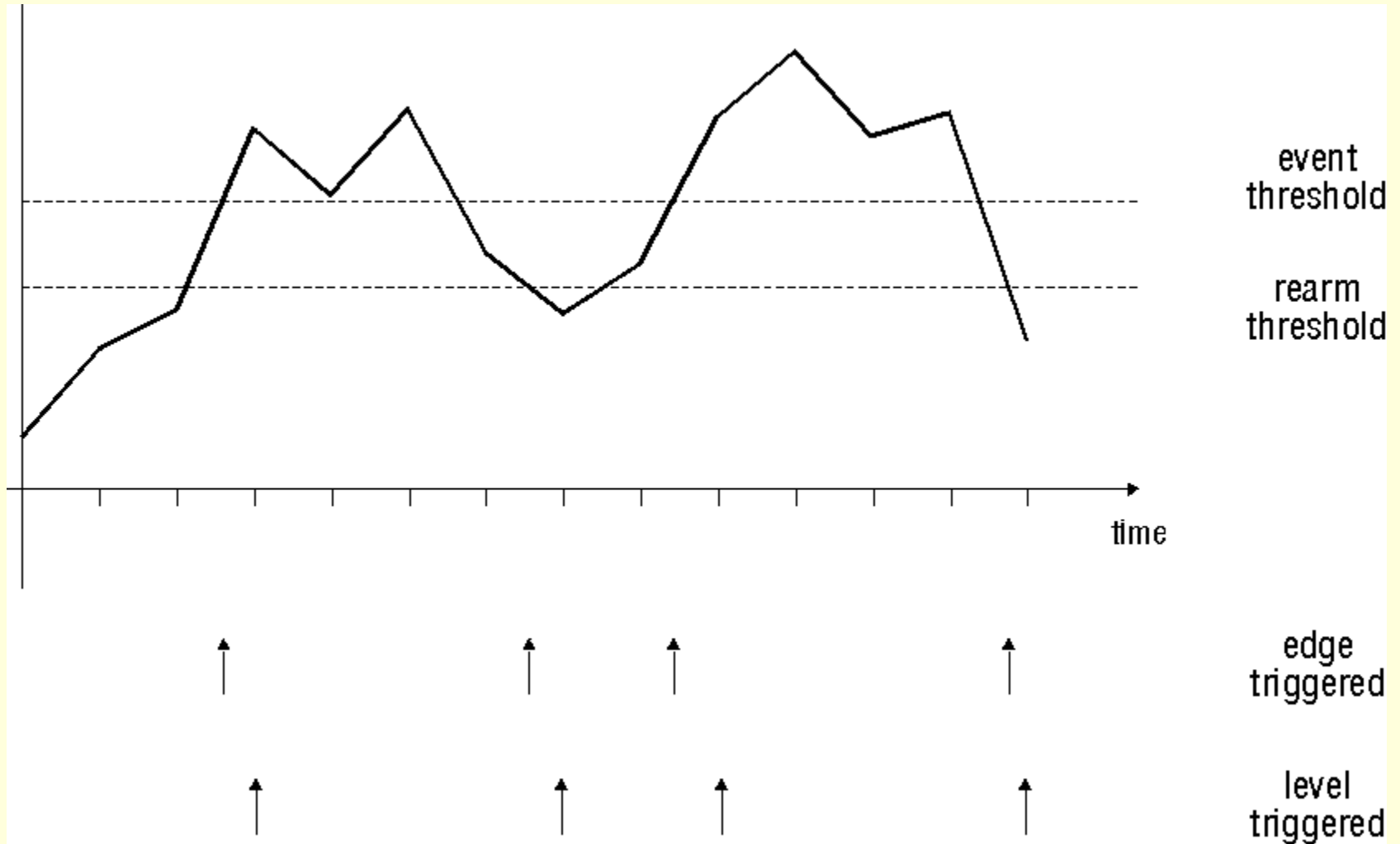
*APPLICATION-WIDE
TYPES:*



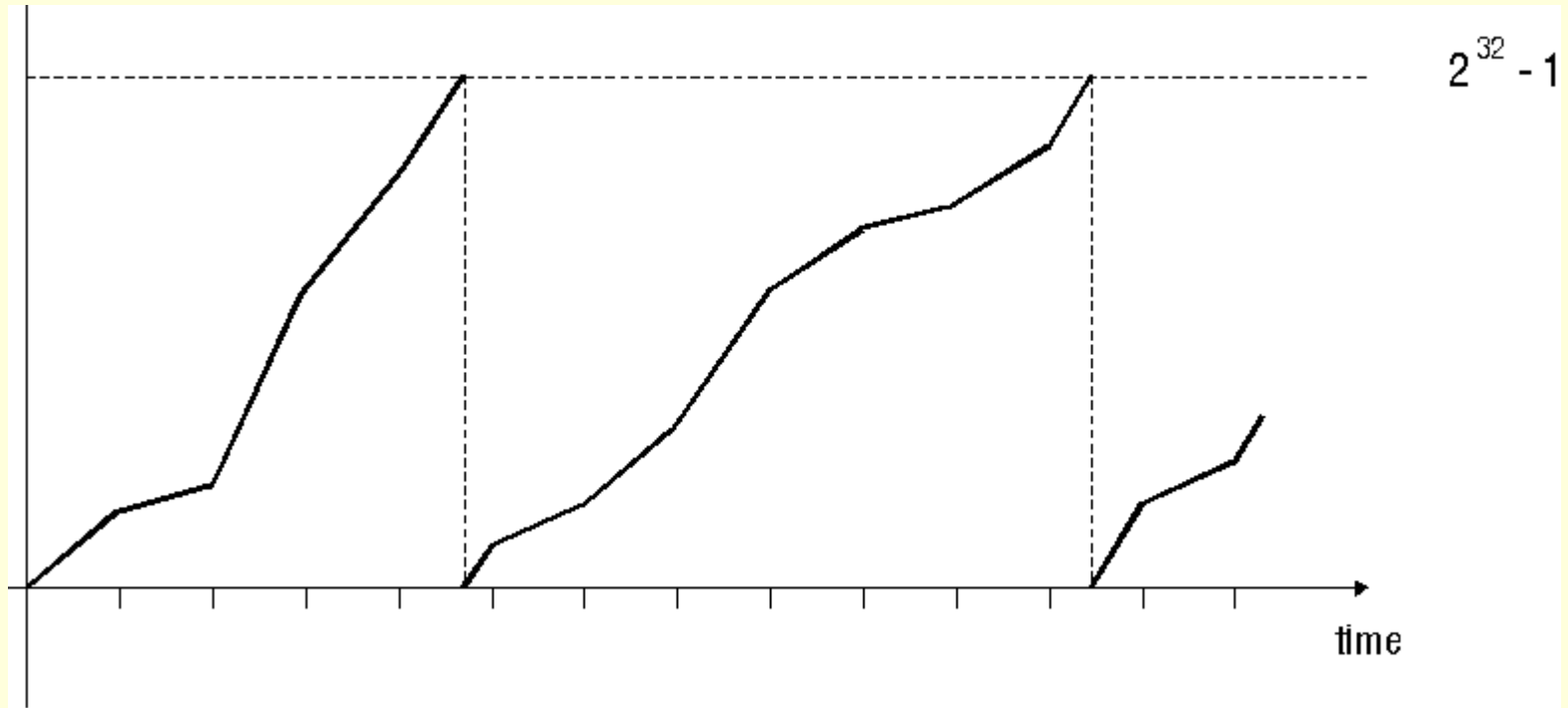
PSEUDO TYPES:



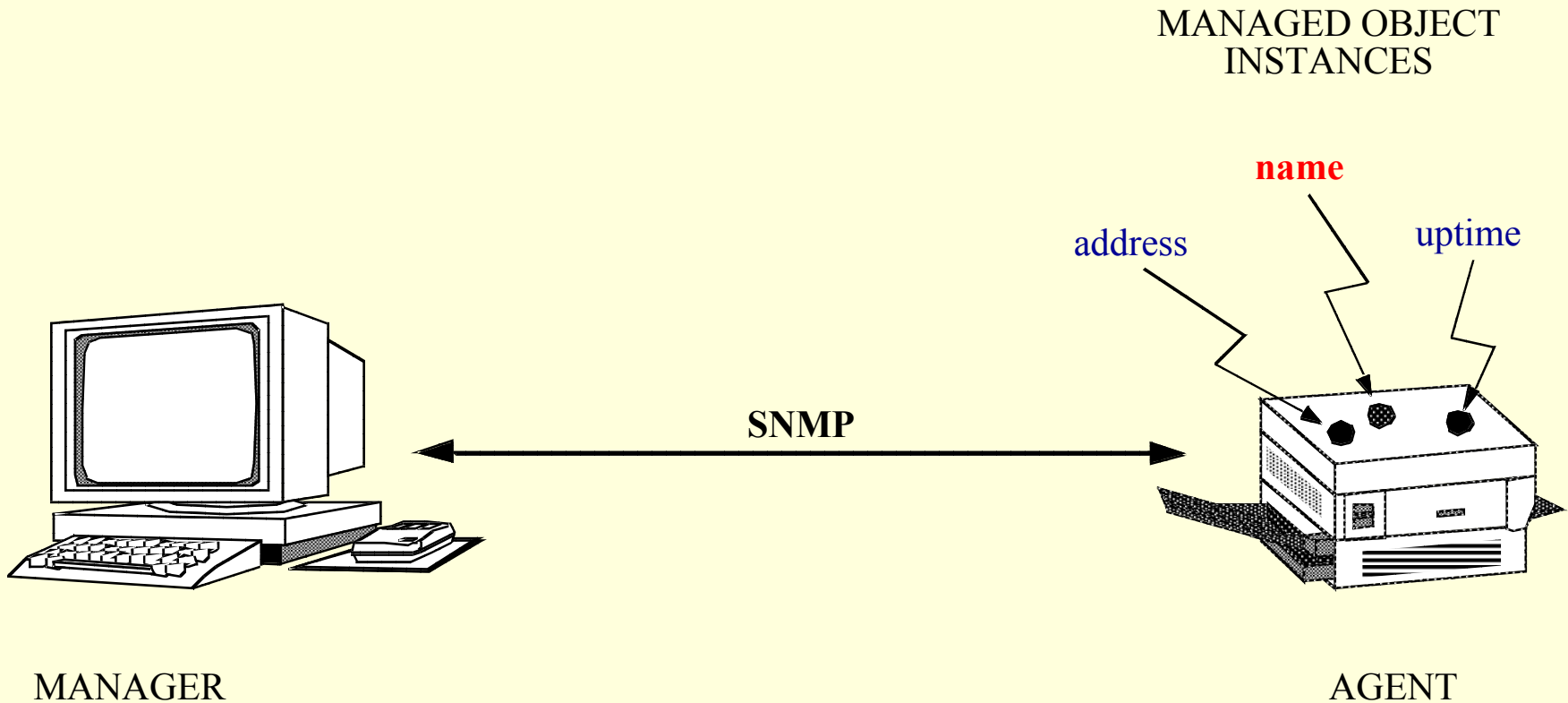
Unsigned32



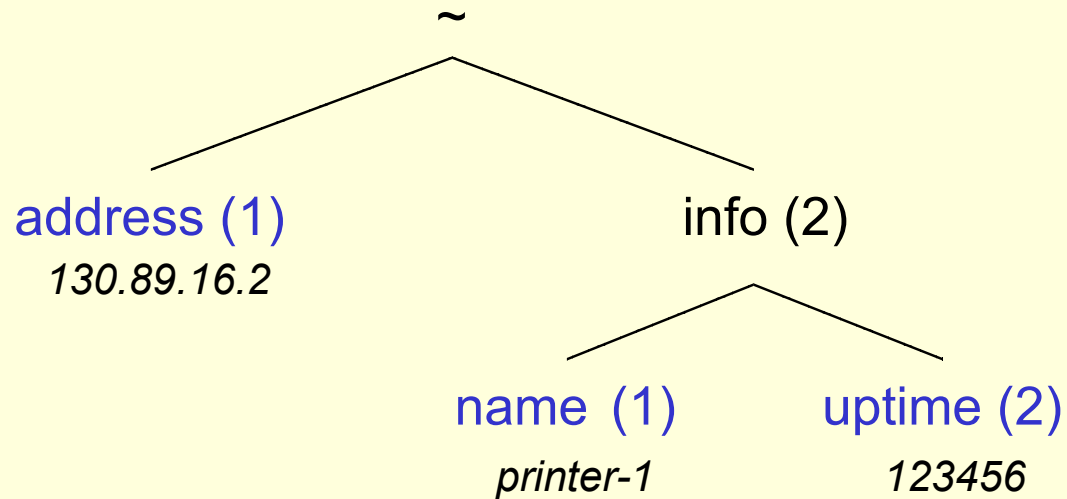
Counter32



Skalární objekty



Identifikace objektů



Identifikace objektů

address

Object ID = 1.1
Object Instance = 1.1.0
Value of Instance = 130.89.16.2

info

Object ID = 1.2

name

Object ID = 1.2.1
Object Instance = 1.2.1.0
Value of Instance = *printer-1*

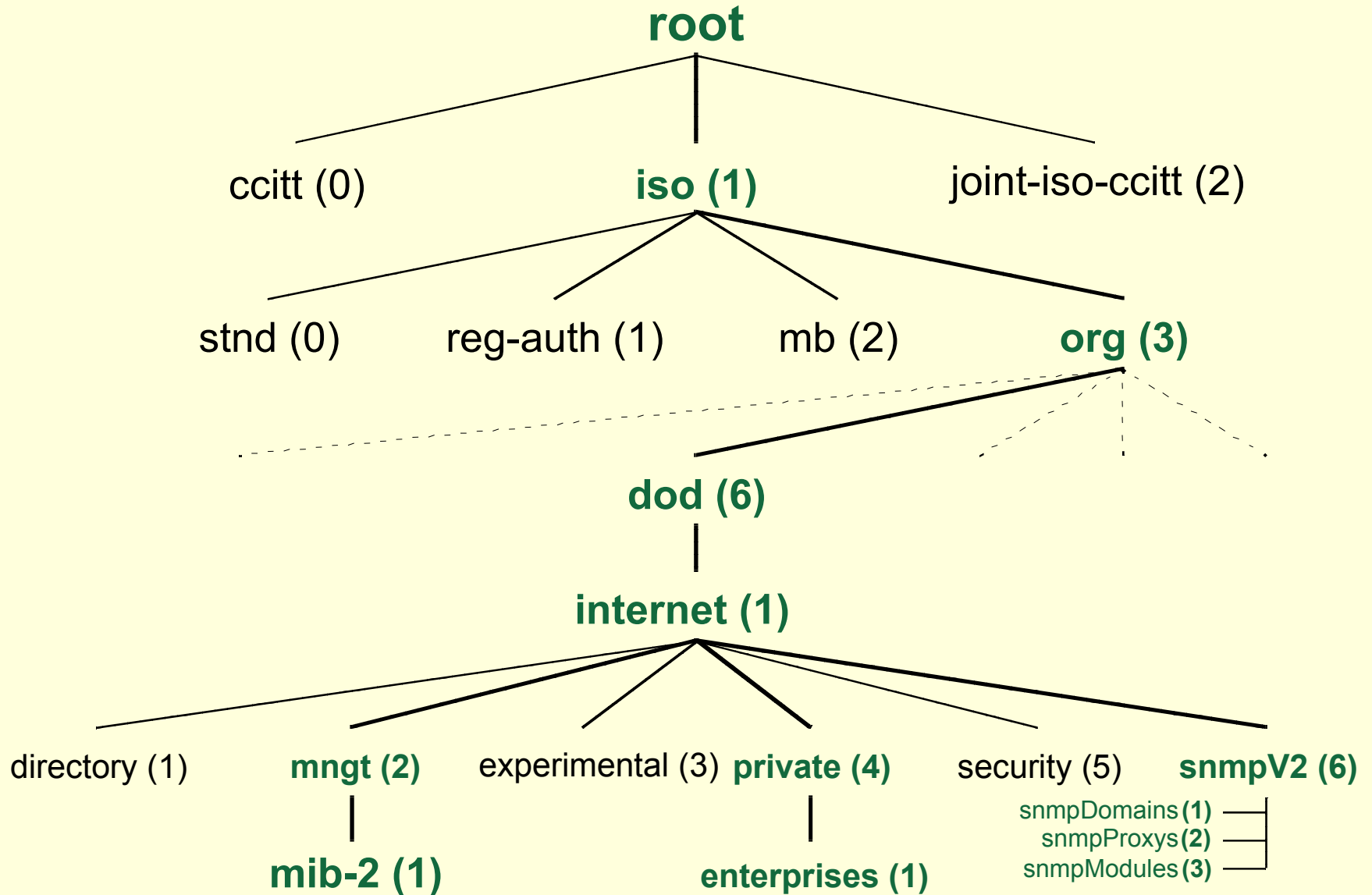
uptime

Object ID = 1.2.2
Object Instance = 1.2.2.0
Value of Instance = 123456

alternative:

Object ID = ~ info uptime

Management Information Base



Definice objektu

OBJECT-TYPE:

SYNTAX

INTEGER
OCTET STRING
OBJECT IDENTIFIER
BITS
IpAddress
Integer32
Counter32
Counter64
Gauge32
TimeTicks
Opaque
New Type

MAX-ACCESS

read-only
read-write
read-create
accessible-for-notify
not-accessible

STATUS

current
deprecated
obsolete

DESCRIPTION

""

Definice objektu

-- Definition of address

address

SYNTAX

MAX-ACCESS

STATUS

DESCRIPTION

::= {NEW-MIB 1}

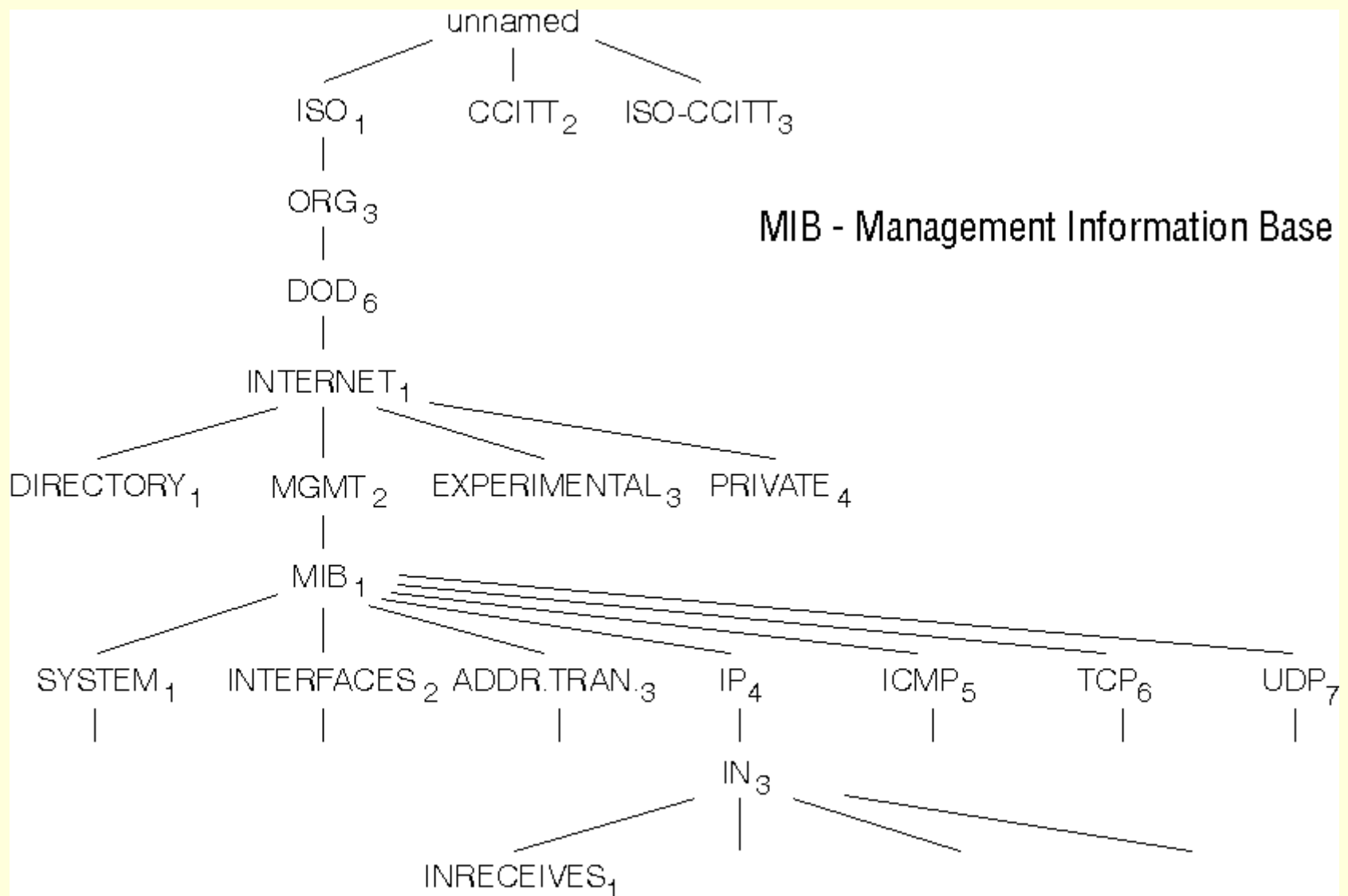
OBJECT-TYPE

IpAddress

read-write

current

"The Internet address of this system"

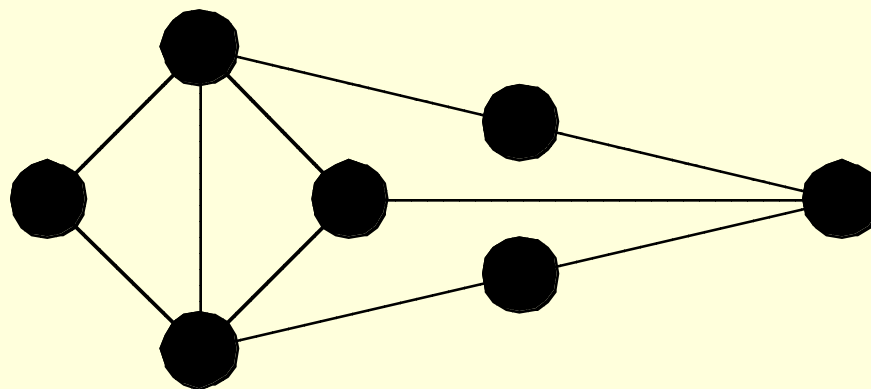
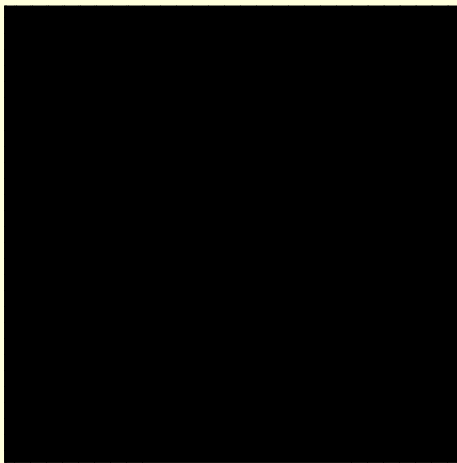


MIB - Management Information Base

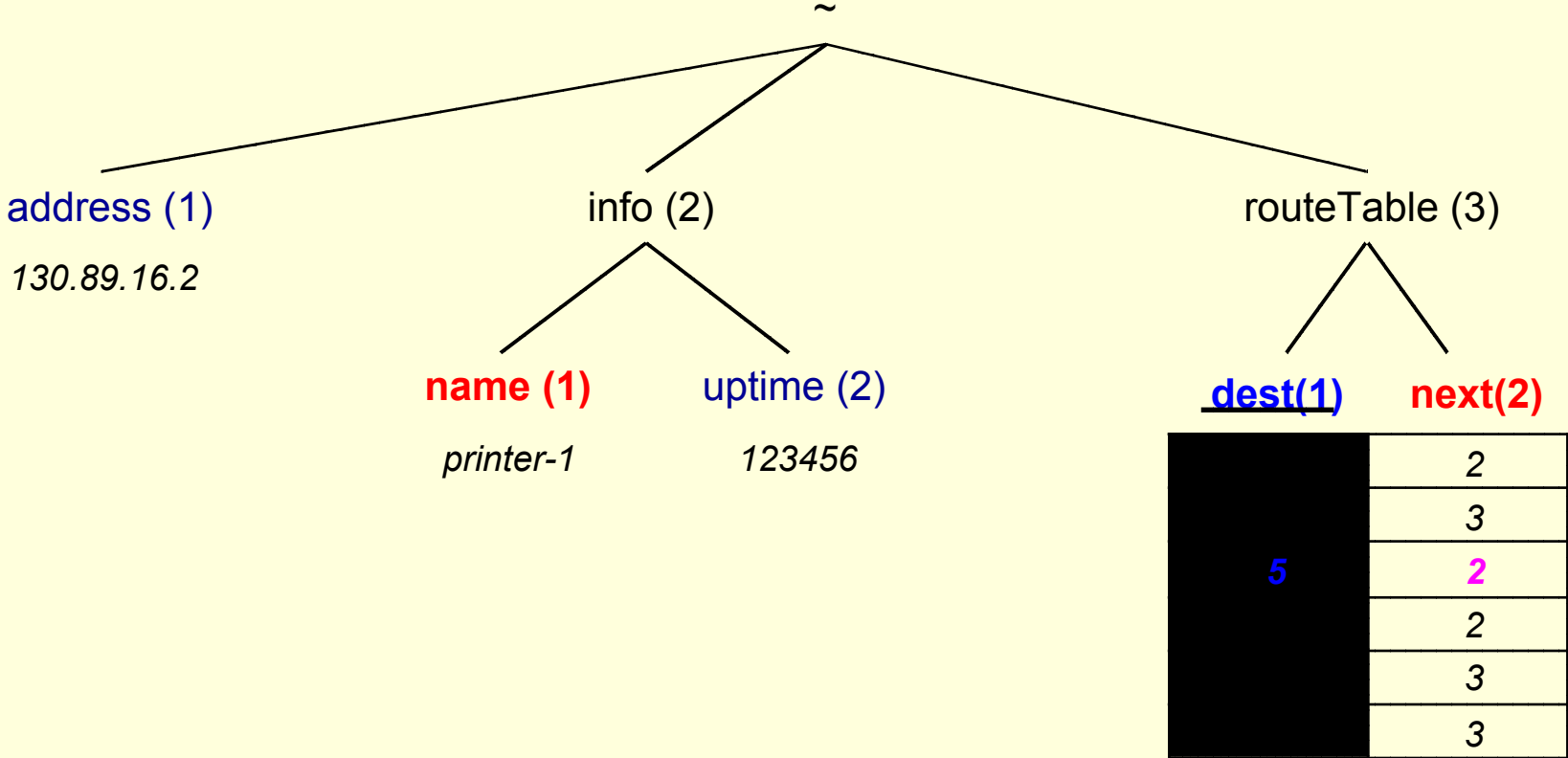
iso.org.dod.internet.management.mib.ip.in.InReceives - 1.3.6.1.2.1.4.3.0

Tabulka

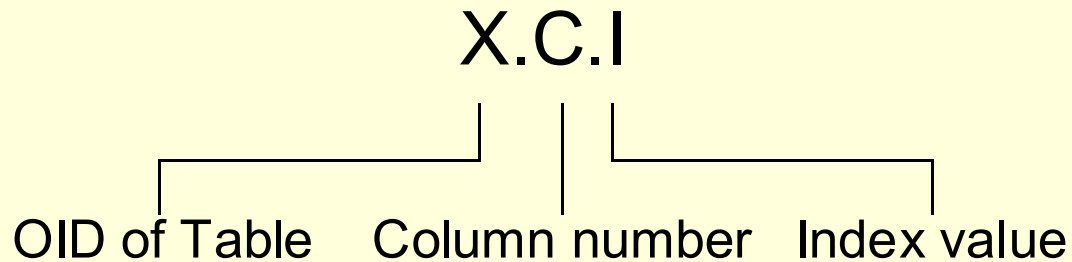
směrovací tabulka



Tabulka

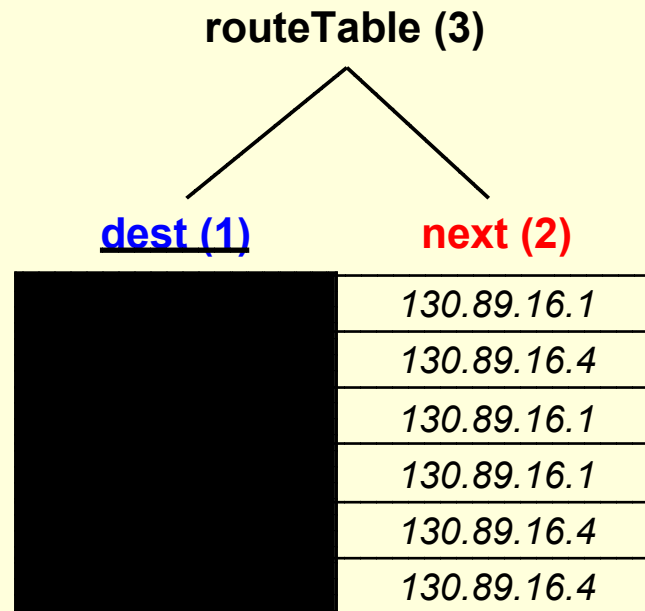


Indexace



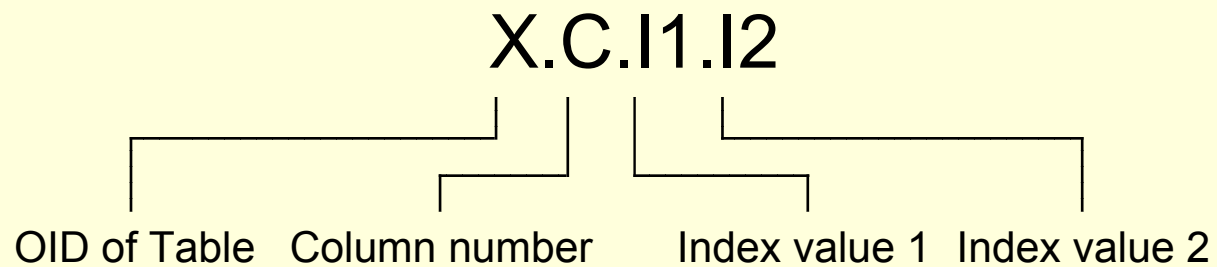
OID of Table = 1.3
1.3.1.5 => 5
1.3.2.5 => 2
1.3.1.9 => 9
1.3.2.9 => 3
1.3.2.7 => 2
1.3.1.1 => *entry does not exist*
1.3.2.1 => *entry does not exist*

Indexace

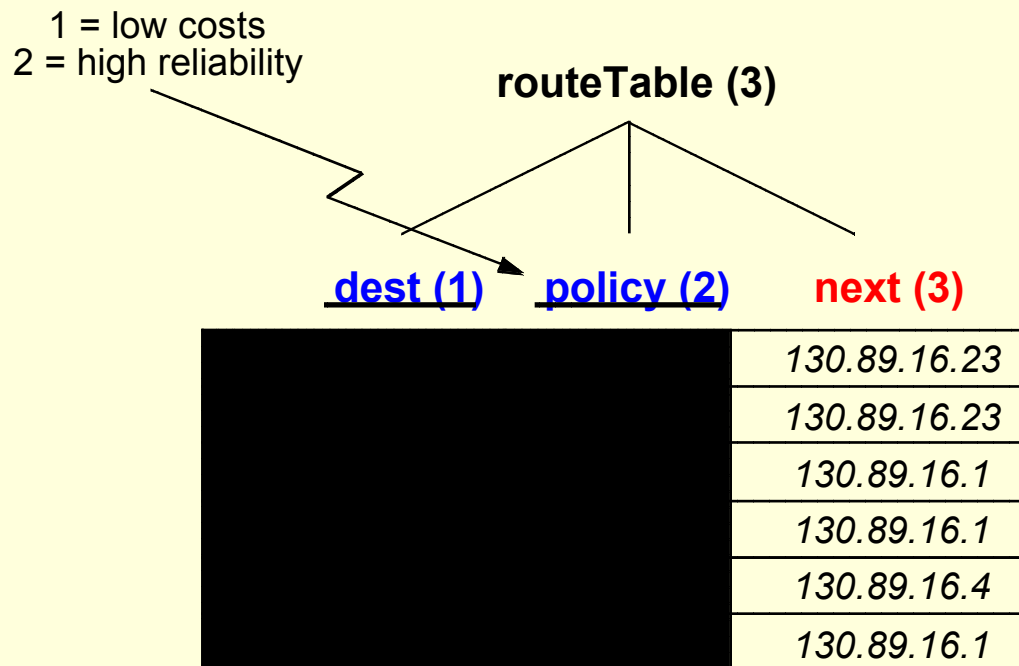


OID of Table = 1.3
1.3.1.130.89.16.23 => 130.89.16.23
1.3.2.130.89.16.23 => 130.89.16.1
1.3.1.193.22.11.97 => 193.22.11.97
1.3.2.193.22.11.97 => 130.89.16.4
1.3.2.130.89.19.121 => 130.89.16.1

Vícenásobná indexace



Vícenásobná indexace



1.3.3.192.1.23.24.1 => 130.89.16.1

1.3.3.192.1.23.24.2 => 130.89.16.4

Definice tabulky

```
RouteEntry ::=  
  SEQUENCE {  
    dest    ipAddress,  
    policy  INTEGER,  
    next    ipAddress  
  }
```

Definice tabulky

dest SYNTAX ACCESS STATUS DESCRIPTION ::= {route-entry 1}	OBJECT-TYPE ipAddress read-only current "The address of a particular destination"
policy SYNTAX ACCESS STATUS DESCRIPTION ::= {route-entry 2}	OBJECT-TYPE INTEGER { costs(1) -- lowest delay reliability(2)} -- highest reliability read-only current "The routing policy to reach that destination"
next SYNTAX ACCESS STATUS DESCRIPTION ::= {route-entry 3}	OBJECT-TYPE ipAddress read-write current "The internet address of the next hop"

Konec

■ ■ ■