# MIB
## Management Information Base

Henrik Thomsen/EUC MIDT

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# MIB

- Er en standard for præsentation af data
  - Structure of Management Information (SMI)
    - SMI version 1 (RFC1155)
    - SMI version 2 (RFC2578)

**SNMPv2-SMI DEFINITIONS ::= BEGIN**

**org**            **OBJECT IDENTIFIER ::= { iso 3 }**          ← **1.3**

**dod**            **OBJECT IDENTIFIER ::= { org 6 }**          ← **1.3.6**

**internet**       **OBJECT IDENTIFIER ::= { dod 1 }**          ← **1.3.6.1**

directory          **OBJECT IDENTIFIER ::= { internet 1 }**     ← **1.3.6.1.1**

**mgmt**           **OBJECT IDENTIFIER ::= { internet 2 }**      ← **1.3.6.1.2**

**mib-2**          **OBJECT IDENTIFIER ::= { mgmt 1 }**          ← **1.3.6.1.2.1**

transmission   **OBJECT IDENTIFIER ::= { mib-2 10 }**
experimental   **OBJECT IDENTIFIER ::= { internet 3 }**
private        **OBJECT IDENTIFIER ::= { internet 4 }**

# Uddrag fra IF-MIB.my

```
IF-MIB DEFINITIONS ::= BEGIN
IMPORTS  mib-2  FROM SNMPv2-SMI;

interfaces   OBJECT IDENTIFIER ::= { mib-2 2 }          ←── 1.3.6.1.2.1.2
ifTable OBJECT-TYPE  ::= { interfaces 2 }               ←── 1.3.6.1.2.1.2.2
ifEntry OBJECT-TYPE::= { ifTable 1 }                    ←── 1.3.6.1.2.1.2.2.1
IfEntry ::=
   SEQUENCE {
      ifDescr           DisplayString,
      ifInOctets        Counter32 }
}
ifDescr OBJECT-TYPE
   SYNTAX    DisplayString (SIZE (0..255))
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
       "A textual string containing information about the
       interface.  This string should include the name of the
       manufacturer, the product name and the version of the
       interface hardware/software."
   ::= { ifEntry 2 }                                    ←── 1.3.6.1.2.1.2.2.1.2
```

# OID'er og mennesker

1.3.6.1.2.1.2.2.1.2.1 = FastEthernet0/0
1.3.6.1.2.1.2.2.1.2.2 = Serial0/0
1.3.6.1.2.1.2.2.1.2.3 = Serial0/1
1.3.6.1.2.1.2.2.1.2.4 = Null0
1.3.6.1.2.1.2.2.1.2.5 = Loopback0

iso.org.dod.internet.mgmt.mib-2.interfaces.ifTable.ifEntry.ifDescr.1 = FastEthernet0/0
iso.org.dod.internet.mgmt.mib-2.interfaces.ifTable.ifEntry.ifDescr.2 = Serial0/0
iso.org.dod.internet.mgmt.mib-2.interfaces.ifTable.ifEntry.ifDescr.3 => Serial0/1
iso.org.dod.internet.mgmt.mib-2.interfaces.ifTable.ifEntry.ifDescr.4 => Null0
iso.org.dod.internet.mgmt.mib-2.interfaces.ifTable.ifEntry.ifDescr.5 => Loopback0

IF-MIB::ifDescr.1 = STRING: FastEthernet0/0
IF-MIB::ifDescr.2 = STRING: Serial0/0
IF-MIB::ifDescr.3 = STRING: Serial0/1
IF-MIB::ifDescr.4 = STRING: Null0
IF-MIB::ifDescr.5 = STRING: Loopback0

# SNMP software utilities

- Meget anvendte  browser værktøjer er
  - GetIf
    - Windows MIB browser
    - http://www.wtcs.org/snmp4tpc/getif.htm (Gratis)
  - Net-SNMP
    - UNIX/Linux/Windows utilities (MIB browser oma.)
    - http://www.net-snmp.org  (Gratis)
  - Net::SNMP moduler til perl
    - Naturligvis gratis alle sammen

# Øvelse

- Installer og leg med GetIf

- Installer og leg med Net-SNMP
  - Der er mange små programmer prøv fx.
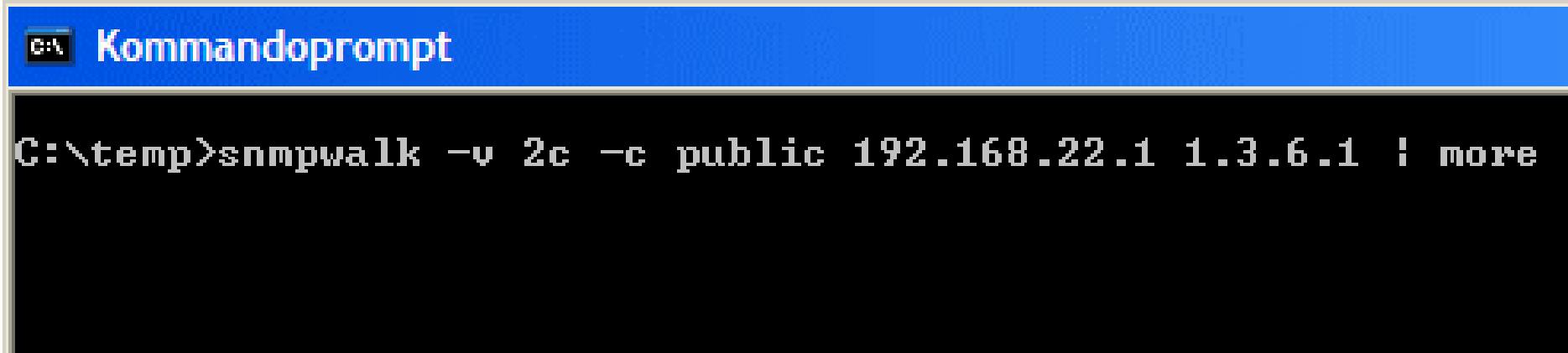
**Kommandoprompt**

```
C:\temp>snmpwalk -v 2c -c public 192.168.22.1 1.3.6.1 | more
```

# Cisco RMON configuration

snmp-server community public RO
snmp-server community private RW
snmp-server ifindex persist
snmp-server trap-source FastEthernet0/0
snmp-server location QoS Rack name: R2
snmp-server contact Henrik Thomsen - Phone: 89281000
snmp-server chassis-id Cisco 2620XM
snmp-server host 192.168.22.223 public
rmon event 1 log trap public description "High ifInOctets" owner config
rmon event 2 log description "Low ifInOctets" owner config
rmon alarm 25 ifEntry.10.2 10 delta rising-threshold 90000 1 falling-
threshold 85000 2 owner config

```
[root@bsd /tmp]# snmptrapd
[root@bsd /tmp]# tail -f /var/log/messages
mib-2.16.3.1.1.1.25 = INTEGER: 25, SNMPv2-SMI::mib-2.16.3.1.1.3.25 = OID:
IF-MIB::ifInOctets.2, SNMPv2-SMI::mib-2.16.3.1.1.4.25 = INTEGER: 2,
SNMPv2-SMI::mib-2.16.3.1.1.5.25 = INTEGER: 2685271, SNMPv2-SMI::mib-
2.16.3.1.1.7.25 = INTEGER: 90000

....
```

# Projektoplæg version 1

- Lav et Perl script der skal kører uovervåget på en UNIX maskine hvert 10'ende minut.

- Scriptet skal hente en række OID fra netværksudstyr og logge dem til en fil.

- OID'erne er beskrevet i en konfigurationsfil
  - Se næste slide

# Projektoplæg version 1

```
# SNMP konfigurationsfil
# Auther:
# Date:
# Modificatins:
#
#######################################
192.168.22.1        1.3.6.1.2.1.2.2.1.7.2        # Serial0/0 operational status
192.168.22.1        1.3.6.1.2.1.2.2.1.10.2       # Serial0/0 ifInOctets
192.168.22.1        1.3.6.1.2.1.2.2.1.16.2       # Serial0/0 ifOutOctets
```

# Projektoplæg version 2

- Projektet udvides med en facilitet der checker grænser.
  - Hvis grænserne overskrides skal der sendes en mail (Net::SMTP pakken)
- Er der noget vi skal overveje?

# Projektoplæg version 2

```
# SNMP konfigurationsfil
# Auther:
# Date:
# Modificatins:
#
########################################
:mailto heth@bsd.tekkom.dk
########################################
192.168.22.1      1.3.6.1.2.1.2.2.1.7.2      =0       # Serial0/0 ifOperStatus
192.168.22.1      1.3.6.1.2.1.2.2.1.19.2     >100     # Serial0/0 ifOutDiscards
192.168.22.1      1.3.6.1.2.1.2.2.1.10.2              # Serial0/0 ifInOctets
192.168.22.1      1.3.6.1.2.1.2.2.1.16.2              # Serial0/0 ifOutOctets
```

# Oplæg version 1

```
# SNMP konfigurationsfil
# Auther:
# Date:
# Modificatins:
#
#######################################
:mailto heth@bsd.tekkom.dk
#######################################
192.168.22.1      1.3.6.1.2.1.2.2.1.7.2       =0        # Serial0/0 ifOperStatus
192.168.22.1      1.3.6.1.2.1.2.2.1.19.2      >100      # Serial0/0 ifOutDiscards
192.168.22.1      1.3.6.1.2.1.2.2.1.10.2                # Serial0/0 ifInOctets
192.168.22.1      1.3.6.1.2.1.2.2.1.16.2                # Serial0/0 ifOutOctets
```