



Zabbix community day

Simple Network Management Protocol

#whoami

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A little history lesson

- Internet standard dating back to 1988
- UDP port 161
- SNMP v1 / v2c / v3
- Read / read-write

SNMP versions

- Version 1 / 2c
 - Plain-text community string
 - 32-bit counters supported (v1)
 - 64-bit counters supported (v2c)
 - GETBULK command introduced (v2c)
- Version 3
 - Adds authentication, encryption & multiple contexts
 - Improved error reporting

SNMPv3

Security level	Authentication	Secure response
noAuthNoPriv	✗	✗
authNoPriv	✓	✗
authPriv	✓	✓

SNMP Get

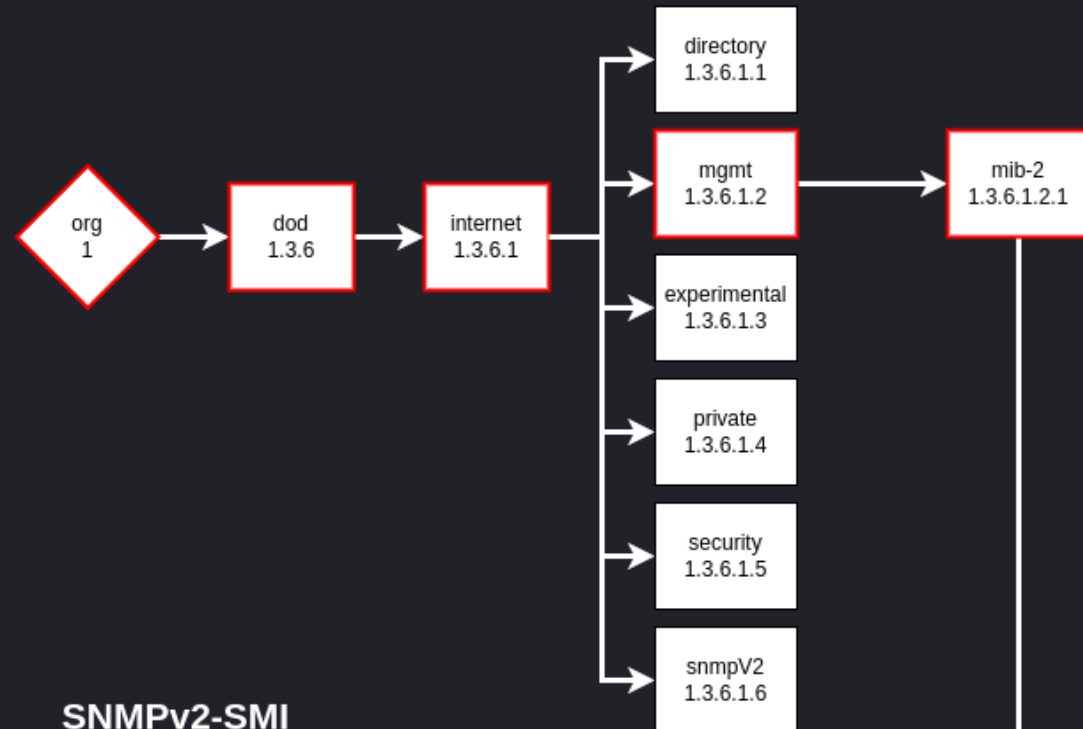
- **SNMP manager**: communicate with SNMP agent
- **SNMP agent**: Programs on network connected device
- **Zabbix server & proxy** can be SNMP manager

Metrics

- OID: `.1.3.6.1.2.1.1.5.0`
- textual: `.org.dod.internet.mgmt.mib-2.system.sysName`
- short: `SNMPv2-MIB::sysName.0`

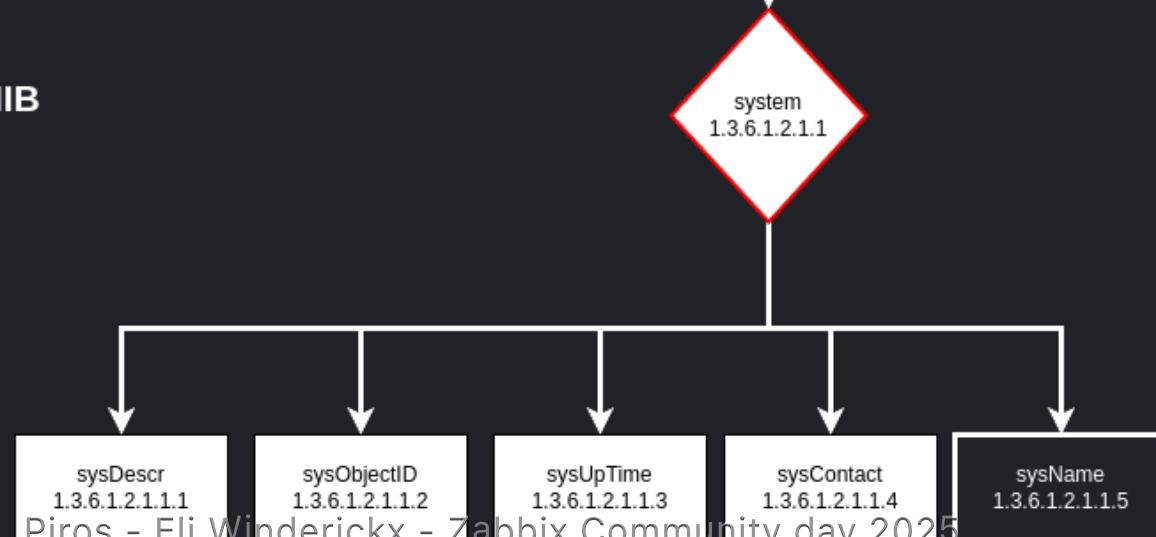
MIB files

- Plain text
- Hierarchical tree-like structure
- Located in `/usr/share/snmp/mibs`
- Mib Browser Online



SNMPv2-SMI

SNMPv2-MIB



SNMPv2-SMI

```
-- the path to the root

org          OBJECT IDENTIFIER ::= { iso 3 }  -- "iso" = 1
dod        OBJECT IDENTIFIER ::= { org 6 }
internet     OBJECT IDENTIFIER ::= { dod 1 }

directory    OBJECT IDENTIFIER ::= { internet 1 }

mgmt         OBJECT IDENTIFIER ::= { internet 2 }
mib-2      OBJECT IDENTIFIER ::= { mgmt 1 }
transmission OBJECT IDENTIFIER ::= { mib-2 10 }
```

SNMPv2-MIB

```
sysName OBJECT-TYPE
    SYNTAX      DisplayString (SIZE (0..255))
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "An administratively-assigned name for this managed
        node.  By convention, this is the node's fully-qualified
        domain name.  If the name is unknown, the value is
        the zero-length string."
    ::= { system 5 }
```

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SNMP in Zabbix

- Supports all versions
- Max repetition count

```
snmpbulkget -v2c -cpublic -On -Cr6 -Cn0 localhost .1.3.6.1.2.1.1.5.0
```

Zabbix: Get

- Get a singular values
 - get[OID] --> Asynchronous
 - OID --> Synchronous

```
snmpget -v2c -c public localhost .1.3.6.1.2.1.1.5.0
```

Zabbix: Walk

1. Go one or more specific OIDs
 - walk[OID,OID,...]
2. Get all values underneath (IF-MIB)

```
snmpwalk -v2c -c public localhost IF-MIB::ifDescr
snmpwalk -v2c -c public localhost IF-MIB::ifInOctets
snmpwalk -v2c -c public localhost IF-MIB::ifOutOctets
```

Using AI or other tools

- Great for identifying important metrics
- Not great for creating templates

Create an SNMP agent

```
sudo dnf install net-snmp-utils net-snmp-devel
sudo systemctl stop snmpd
sudo net-snmp-create-v3-user -ro -A password -a SHA-512 -x AES -X encryptPass username
sudo firewall-cmd --add-port=161/udp --permanent
sudo firewall-cmd --reload
```

Create an SNMP manager

```
sudo dnf install net-snmp-utils
```




Scale as
you go with
Zabbix Cloud

Assignment

- SNMP walk
 - Interface description
 - Incoming traffic
 - Outgoing traffic
- Preprocess every unique value

Required information

- IF-MIB::ifDescr
- IF-MIB::ifInOctets
- IF-MIB::ifOutOctets

IP-address: 13.53.122.115

version: SNMPv3

Security name:

zday

Security level: AuthPriv

Authentication protocol: SHA1

Authentication Passphrase:

HavingFun@Leuven!

Privacy protocol: AES128

Privacy passphrase:

HavingFun@Leuven!

Want to learn more?

- Zabbix Certified Specialist (5 days)
- Zabbix Certified Professional (3 days)
- Advanced Zabbix SNMP monitoring (1 day)



Need help?

- Consultancy
- Training
- Turn-key solution



Call us

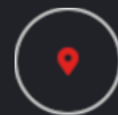
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