ZABBIX 5.0

SNMPV3 CONFIGURATION AND TROUBLESHOOTING

01

THE EVOLUTION OF SNMP

COMPARING SNMP VERSIONS

- Benefits of using SNMP v2c/v3
- Which one should I use?

IN THE BEGINNING – SNMPV1

- Standardized in 1988
- Communication is established with SNMP agent on the host device
- Supports only 32 bit counters
- Plaintext Community string is the only security method

```
# snmpget -v1 -cpublic 192.168.1.103 .1.3.6.1.2.1.25.4.2.1.5.3674
# HOST-RESOURCES-MIB::hrSWRunParameters.3674 = STRING: "--color=auto
Linux"
```

IMPROVING ON IT – SNMPV2

- New message format and protocol changes – performance improvements
- Devices can be bilingual – support for both snmpv1 and snmpv2
- 64 bit counter support
- Still relies on a plaintext community as the only Authentication measure

```
# snmpget -v2c -cpublic 192.168.1.103 1.3.6.1.2.1.31.1.1.1.6.1
# IF-MIB::ifHCInOctets.1 = Counter64: 8768072
```

FOCUSING ON ENCRYPTION– SNMPV3

- Support for message encryption
- Support for multiple contexts on a single device (select MIB according to context)
- MD5/SHA Authentication protocol support
- DES/AES Encryption of SNMP messages

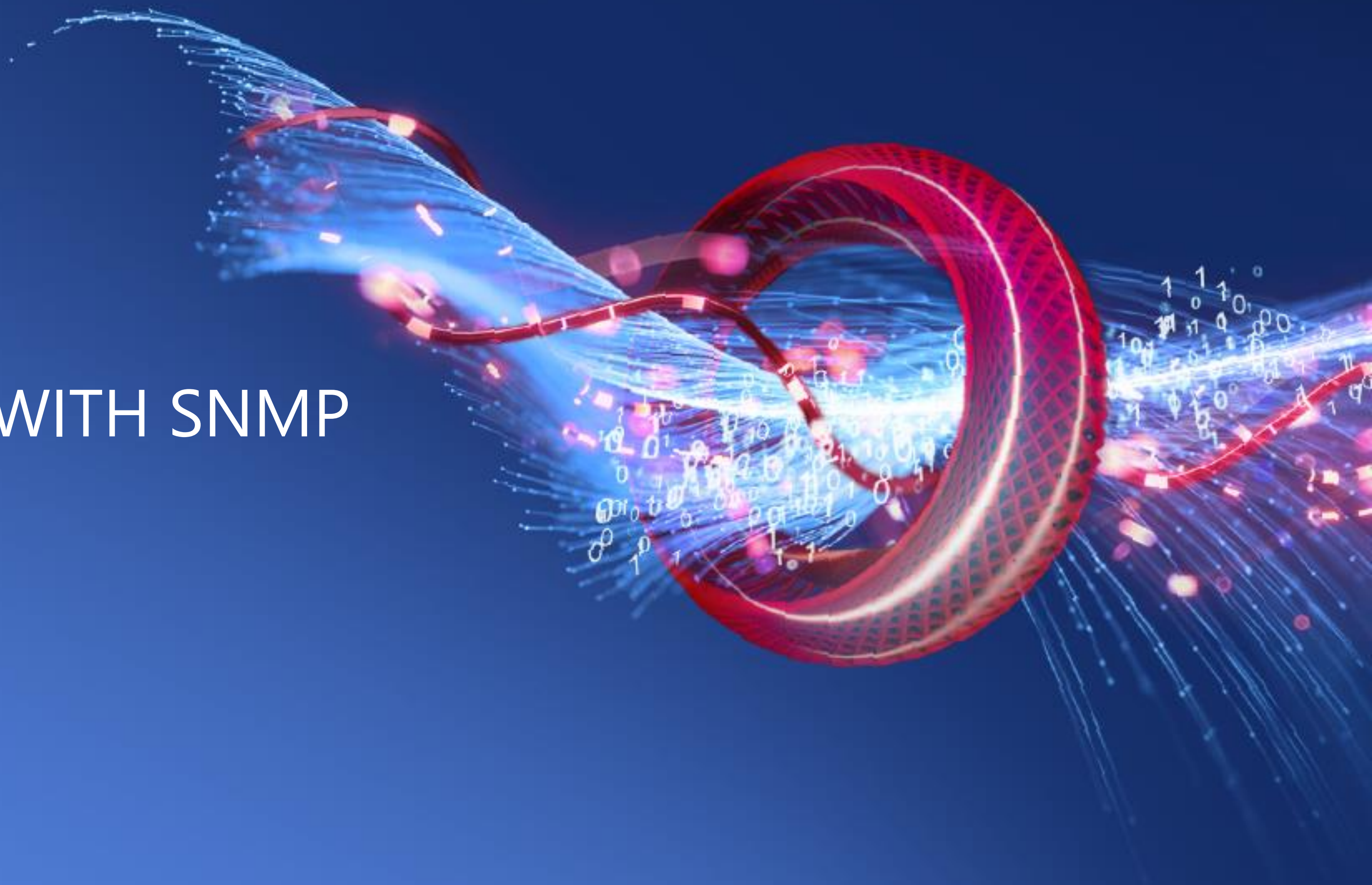
```
# snmpget -v3 -l authPriv -u admin -a SHA -A "AuthPass" -x AES -X
"PrivPass" 192.168.1.103 1.3.6.1.2.1.2.2.1.2
IF-MIB::ifDescr.1 = STRING: Adaptive Security Appliance 'v101'
interface
```

WHICH VERSION TO USE WITH ZABBIX

- SNMPv2c almost always trumps SNMPv1 – only reason to choose SNMPv1 is lack of v2c support on the device
- SNMPv3 is a lot more complex to configure
- SNMPv3 devices can cause issues if they’re not RFC compliant (Static EngineBoots time, Non-unique Engine ID)
- SNMPv3 provides immense security improvements over v1/2c

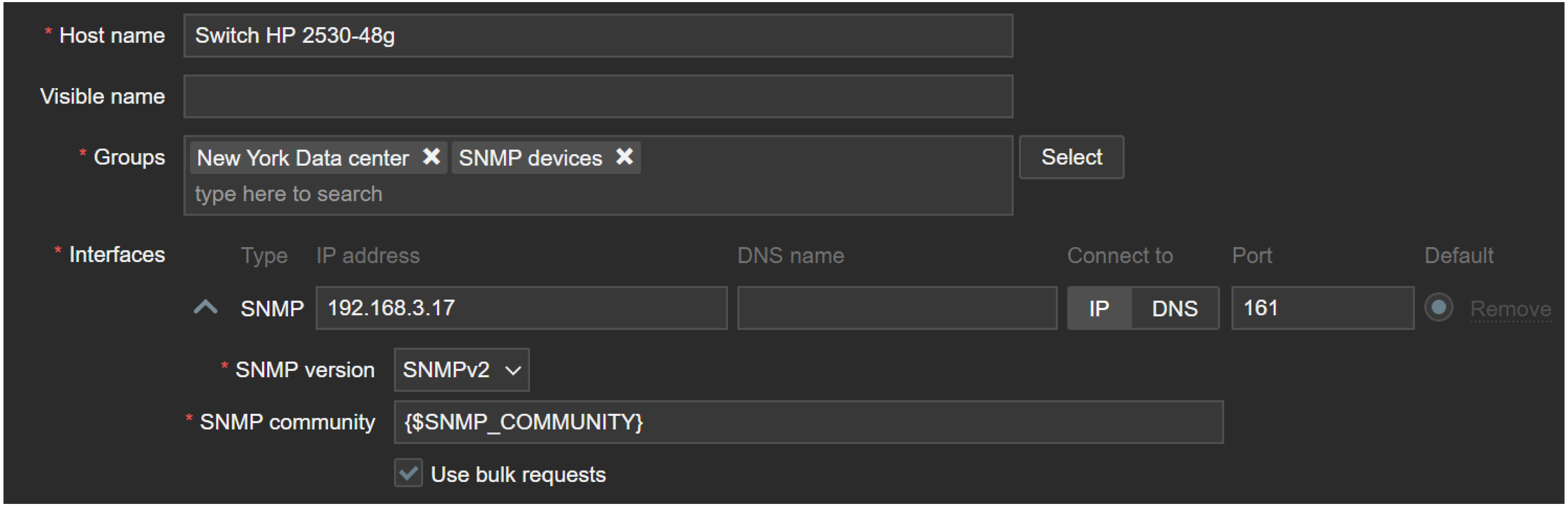
02

GETTING STARTED WITH SNMP IN ZABBIX



CHANGES IN ZABBIX 5.0

- Community and SNMP version configuration moved to the host level configuration



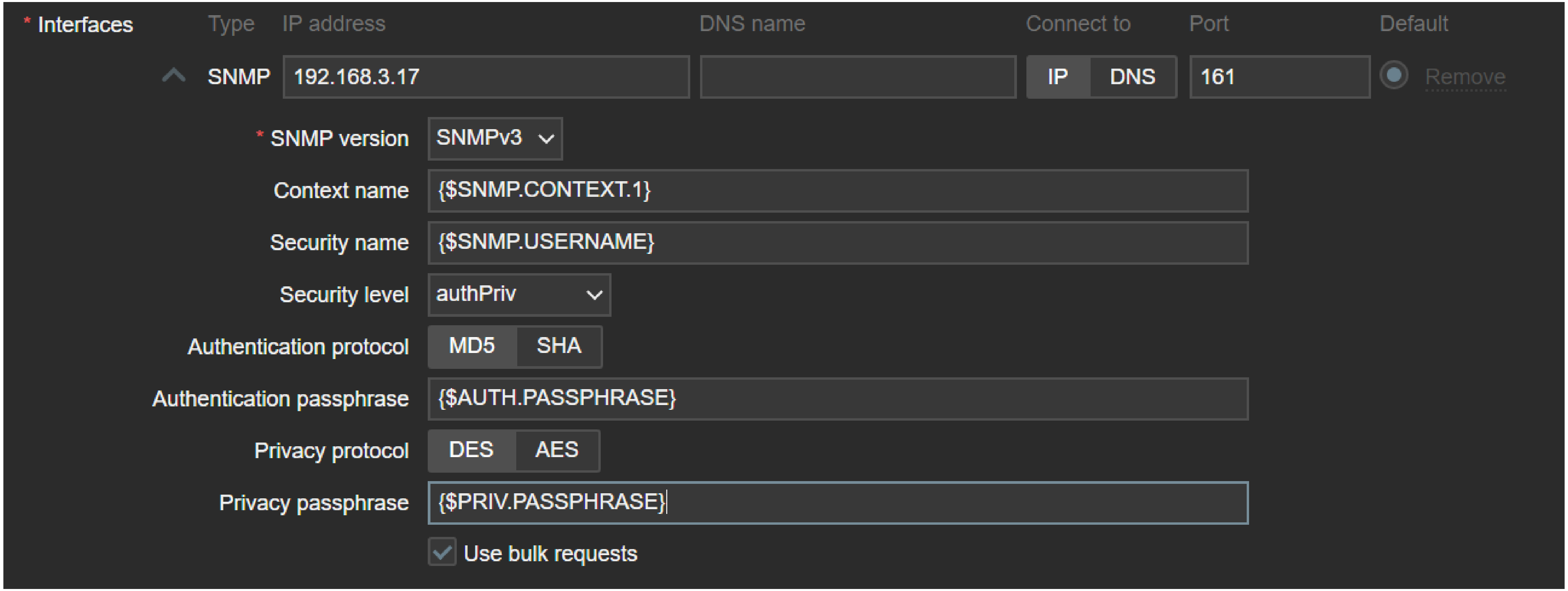
CHANGES IN ZABBIX 5.0

- Ability to reload SNMP cache, clear the SNMP properties (engine time, engine boots, engine id, credentials) for all hosts.

```
# zabbix_server -R snmp_cache_reload
# zabbix_server [7414]: command sent successfully
```

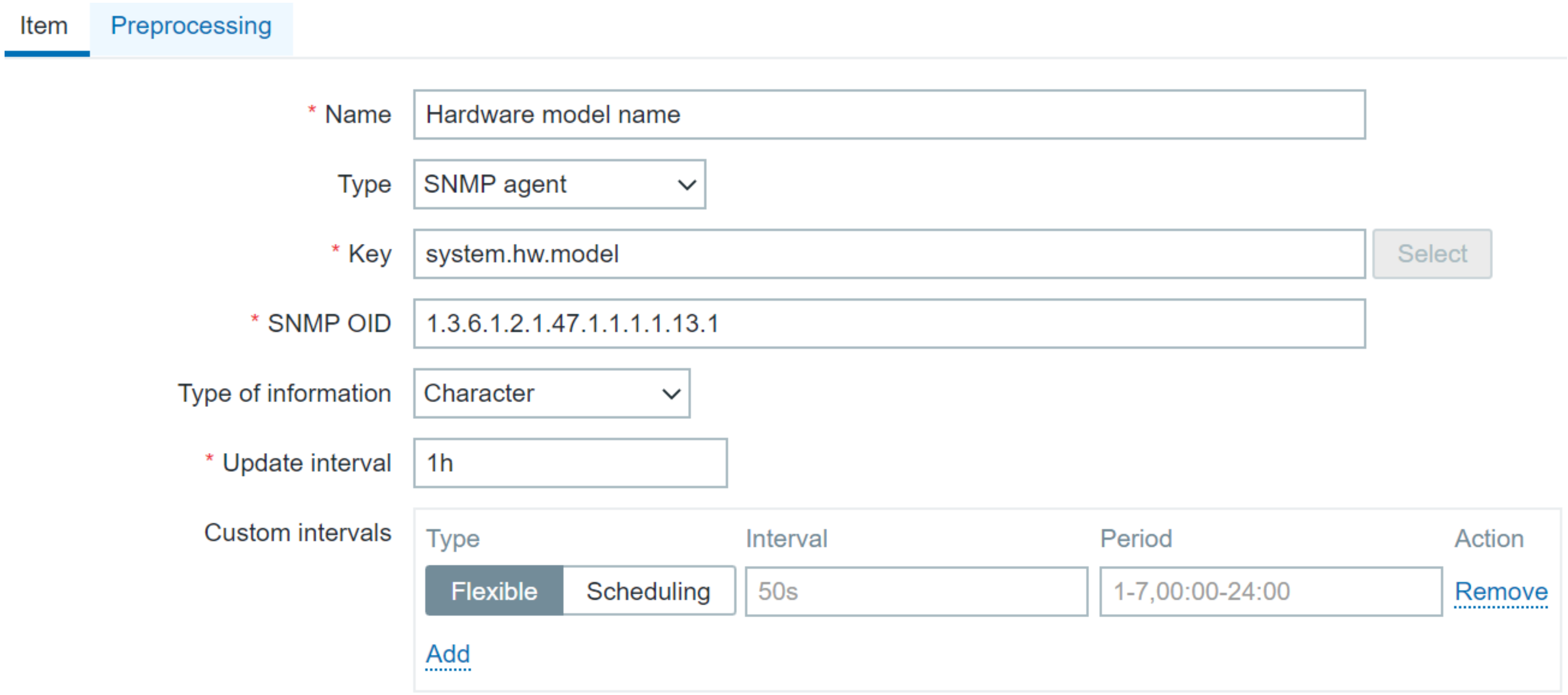
CONFIGURING YOUR SNMP HOST

- Configure the SNMPv3 interface according to your device configuration:

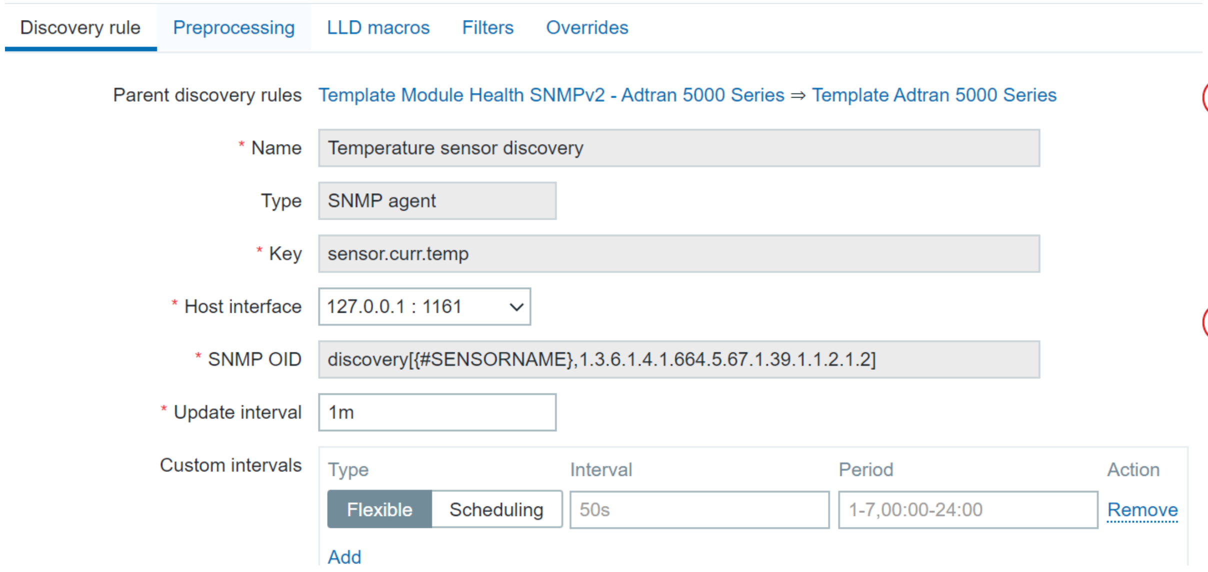


CREATE SNMP ITEMS MANUALLY OR VIA LLD

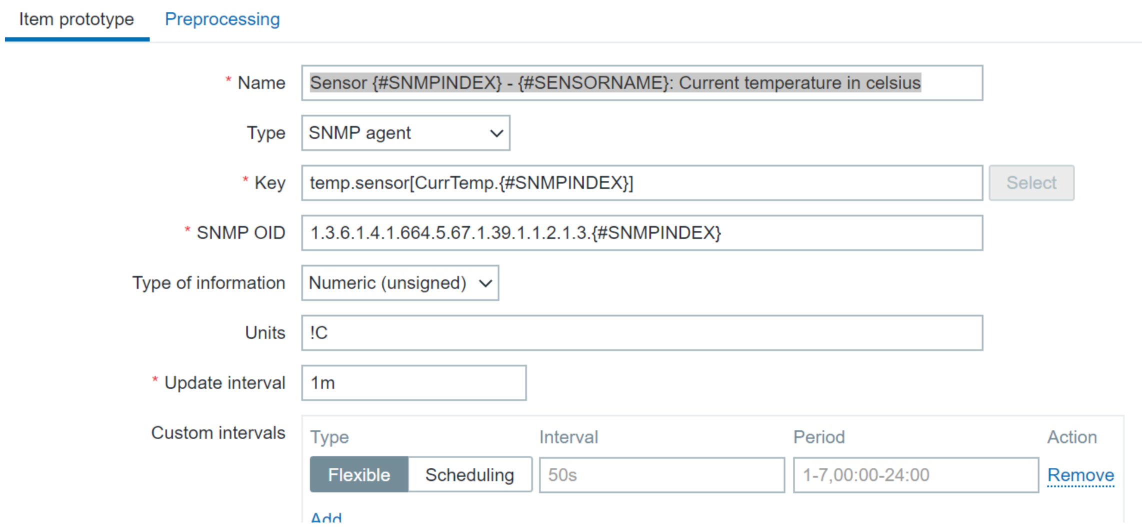
- Create items pointing at the proper OID files
- If requried, use preprocessing to transform data



USING SNMP LLD



- Discover indexes by pointing your discovery rule at a specific OID
- Use filters to Filter out unnecessary data



- Specify the OIDs on item prototypes
- These OIDs will be populated by discovered indexes

ZABBIX AND SNMPV3 TRAPS

- You need to create an SNMPv3 user in your snmpd.conf
- The user needs to be linked to the EngineID of the device sending the traps

```
createUser -e 0x8000000001020304 traptest SHA AuthPass
AES PrivPass
```

ZABBIX AND SNMPV3 TRAPS

- If you want to receive v3 traps (or informs) sent with **noAuthNoPriv**, you'll need to add **noauth** to the **authUser** line:

```
authUser log,execute,net SNMPUser noauth
```

- Log - log the details of the notification
- Execute - pass the details of the trap to a specified handler program
- forward the trap to another notification receiver.

TESTING SNMPV3 TRAPS

- You can use the following command to test the SNMPv3 traps locally:

```
#snmptrap -v 3 -n «ContextName" -a SHA -A AuthPass -x AES
-X PrivPass -l authPriv -u SNMPUser -e
0x80000634b210008894719abe08 127.0.0.1 0 linkUp.0
```

03

COMMON ISSUES AND MISCONFIGURATION

SNMPV3 CONFIGURATION AND TROUBLESHOOTING

- Testing your SNMPv3 devices
- Configuring an SNMPV3 interface in Zabbix frontend
- Detecting any potential SNMPv3 issues

DUPLICATE SNMP ENGINE ID

The SNMPv3 device needs to return the following values in accordance with RFC specification:

msgAuthoritativeEngineID: Unique device Engine ID

msgAuthoritativeEngineBoots: Count of Device reboots

msgAuthoritativeEngineTime: Device Uptime

DUPLICATE SNMP ENGINE ID

Devices with **authNoPriv** or **AuthPriv** security respond to a get request only if all three of these parameters are correct.

Otherwise, you might see the following entries in your Zabbix

```
# SNMP agent item «TrafficIfIn" on host "SNMPHOST" failed: first network error, wait for 15 seconds
# SNMP agent item «TrafficIfOut" on host "SNMPHOST" failed: another network error, wait for 15 seconds
# temporarily disabling SNMP agent checks on host "SNMPHOST": host unavailable
```

DUPLICATE SNMP ENGINE ID - DETECTION

- Multiple approaches to help detect this
- Peform an snmpget for SNMP-FRAMEWORK-MIB::snmpEngineID.0
- Use a script to get the Engine ID’s en masse

```
for seq in {1..254};do echo 192.168.1.$seq >>
/tmp/engineid.out && snmpget -v 3 -l authPriv -u user -x AES -
X ‘PRIVPASS' -a SHA -A ‘AUTHPASS!' 192.168.1.$seq <OID> >>
/tmp/engineid.out ;done
```

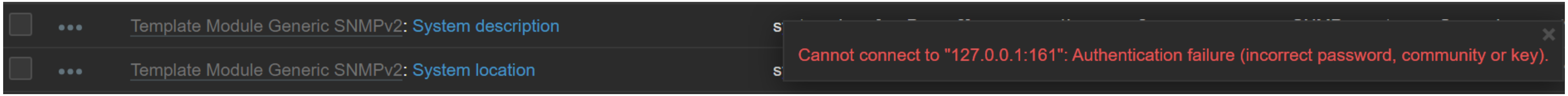
DUPLICATE SNMP ENGINE ID - DETECTION

- Try to inspect the packet capture from the Zabbix server or proxy to detect the duplicate engine IDs

```
Destination Port: 161
Length: 154
Checksum: 0x2cab [unverified]
[Checksum Status: Unverified]
[Stream index: 4554]
> [Timestamps]
Simple Network Management Protocol
  msgVersion: snmpv3 (3)
> msgGlobalData
> msgAuthoritativeEngineID: 80001f8880812dfa5b44a4c85b
  msgAuthoritativeEngineBoots: 1
  msgAuthoritativeEngineTime: 623326
```

SNMPV3 INTERFACE MISCONFIGURATION

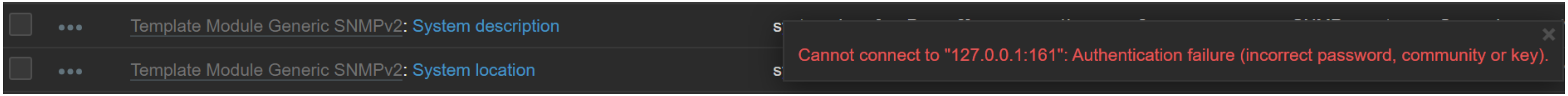
- Misconfigured security




```
# error reason for "SNMPv3
device:system.contact[sysContact.0]" changed: Cannot connect
to “192.168.1.103:161": Unknown user name.
```

ENCRYPTION MISCONFIGURATION

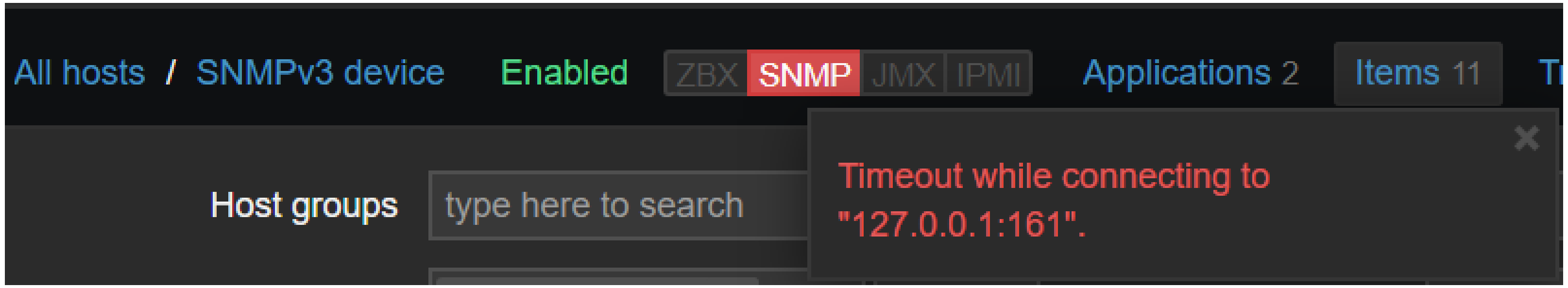
- Misconfigured Authentication password




```
# error reason for "SNMPv3 device:system.uptime[sysUpTime.0]"
changed: Cannot connect to "127.0.0.1:161": Authentication
failure (incorrect password, community or key).
```

ENCRYPTION MISCONFIGURATION

- Misconfigured Privacy password




```
# SNMP agent item "system.uptime[sysUpTime.0]" on host "SNMPv3
device" failed: first network error, wait for 15 seconds
# SNMP agent item "system.uptime[sysUpTime.0]" on host "SNMPv3
device" failed: another network error, wait for 15 seconds
# SNMP agent item "system.uptime[sysUpTime.0]" on host "SNMPv3
device" failed: another network error, wait for 15 seconds
# temporarily disabling SNMP agent checks on host "SNMPv3 device":
host unavailable
```

SNMP CACHE RELOAD

- SNMP cache reload is required for any changes in **Authentication protocol, Authentication passphrase**, **Privacy protocol** or **Privacy passphrase** to take effect
- SNMP cache can be reloaded either by executing the SNMP cache reload command (recommended, added in version 5.0) or restarting the server/proxy

```
# zabbix_server -R snmp_cache_reload
# zabbix_server [10738]: command sent successfully
```

SNMPV3 NOTES AND RECOMMENDATIONS

- If you're experiencing issues with SNMP checks on a host, try unchecking «Use bulk requests». Some devices can have issues with processing bulk requests.

```
#item "system.uptime[sysUpTime.0]" became not supported: SNMP error: (genError) A general failure occured
```

- Perform test snmpget or snmptrap requests from the CLI!

```
#snmpwalk -v3 -l authPriv -a MD5 -A AutPass -x DES -X PrivPass -u SnmpUser 192.168.1.103 .1
```

THANK YOU!