

Configure SNMP for the Network Services Orchestrator 5.5.3.1

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Introduction

This document describes how to configure a Simple Network Management Protocol (SNMP) for the Network Services Orchestrator (NSO).

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- SNMP configuration loaded into NSO Configuration Database (CDB).
- Alarms generated on NSO.
- Command 'snmpwalk' support on the server.

Components Used

This document is not restricted to specific software and hardware versions.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Background Information

The configuration has been tested and validated on CentOS 7. On Ubuntu 18.04, the output is

similar to the CentOS output, but the alarms are not generated.

In-built SNMP service provided by Linux can be stopped:

```
[root@nso-recreate ~]# service snmpd status
```

```
Redirectin to /bin/systemctl status snmpd.service
```

```
snmpd.service - Simple Network Management Protocol (SNMP) Daemon.
```

```
Loaded: loaded (/usr/lib/systemd/system/snmpd.service; disabled; vendor preset: disabled)
```

```
Active: inactive (dead)
```

Configuration

In the NSO CLI, go to Configuration mode and make these changes; the final SNMP configuration is:

```
admin@ncs# show running-config snmp
```

```
snmp agent enabled
```

```
snmp agent ip 0.0.0.0
```

```
snmp agent udp-port 4000
```

```
snmp agent version v1
```

```
snmp agent version v2c
```

```
snmp agent version v3
```

```
snmp agent engine-id enterprise-number 32473
```

```
snmp agent engine-id from-text testing
```

```
snmp agent max-message-size 50000
```

```
snmp system contact ""
```

```
snmp system name ""
```

```
snmp system location ""
```

```
snmp usm local user initial
```

```
auth sha password authpass
```

```
priv aes password privpass
```

```
!
```

```
snmp target monitor
```

```
ip 127.0.0.1
```

```
udp-port 162
```

```
tag [ monitor ]
```

```
timeout 1500
```

```
retries 3
```

```
v2c sec-name public
```

```
!
```

```
snmp community public
```

```
sec-name public
```

```
!
```

```
snmp notify foo
```

```
tag monitor
```

```
type trap
```

```
!
```

```
snmp vacm group initial
```

```
member initial
```

```
sec-model [ usm ]
```

```
!
```

```
access usm no-auth-no-priv
```

```
read-view internet
```

```
notify-view internet
```

```
!
```

```
access usm auth-no-priv
```

```
read-view internet
```

```
notify-view internet
```

```

!
access usm auth-priv
read-view internet
notify-view internet
!
!
snmp vacm group public
member public
sec-model [ v1 v2c ]
!
access any no-auth-no-priv
read-view internet
notify-view internet
!
!
snmp vacm view internet
subtree 1.3.6.1
included
!
!
snmp vacm view restricted
subtree 1.3.6.1.6.3.11.2.1
included
!
subtree 1.3.6.1.6.3.15.1.1
included
!
!

```

Additional Configurations

To validate whether SNMP works, you can create an alarm and verify the alarm with the `show alarms alarm-list` command:

```

admin@ncs# show alarms alarm-list
alarms alarm-list number-of-alarms 2
alarms alarm-list last-changed 2022-03-31T09:26:58.912259+00:00
alarms alarm-list alarm ios0 connection-failure /devices/device[name='ios0'] ""
is-cleared false
last-status-change 2022-03-31T09:26:58.912259+00:00
last-perceived-severity major
last-alarm-text "Failed to connect to device ios0: connection refused: NEDCOM CONNECT:
Connection refused (Connection refused) in new state"
status-change 2022-03-31T09:26:58.912259+00:00
received-time 2022-03-31T09:26:58.912259+00:00
perceived-severity major
alarm-text "Failed to connect to device ios0: connection refused: NEDCOM CONNECT: Connection
refused (Connection refused) in new state"
alarms alarm-list alarm jun0 connection-failure /devices/device[name='jun0'] ""
is-cleared false
last-status-change 2022-03-31T09:26:57.507969+00:00
last-perceived-severity major
last-alarm-text "Failed to connect to device jun0: connection refused"
status-change 2022-03-31T09:26:57.507969+00:00
received-time 2022-03-31T09:26:57.507969+00:00
perceived-severity major
alarm-text "Failed to connect to device jun0: connection refused"

```

Verify

To verify that the configurations are correct, verify the different versions of SNMP:

Note: To get the entire output, you can use the OID .1.3.6.1. To get just the alarms, you can use 1.3.6.1.4.1.

Version 1

```
snmpwalk -v 1 -c public 0.0.0.0:4000 .1.3.6.1
```

```
snmpwalk -v 1 -c public 0.0.0.0:4000 .1.3.6.1.4.1
```

Version 2

```
snmpwalk -v 2c -c public 0.0.0.0:4000 .1.3.6.1
```

```
snmpwalk -v 2c -c public 0.0.0.0:4000 .1.3.6.1.4.1
```

Version 3

```
snmpwalk -On -v3 -a SHA -x AES -A 'authpass' -X 'privpass' -l 'authPriv' -u 'initial' 0.0.0.0:4000 .1.3.6.1
```

```
snmpwalk -On -v3 -a SHA -x AES -A 'authpass' -X 'privpass' -l 'authPriv' -u 'initial' 0.0.0.0:4000 .1.3.6.1.4.1
```

The expected output for the `snmpwalk` command is:

```
[root@nso-recreate ~]# snmpwalk -On -v3 -a SHA -x AES -A 'authpass' -X 'privpass' -l 'authPriv' -u 'initial' 0.0.0.0:4000 .1.3.6.1.4.1
.1.3.6.1.4.1.24961.2.103.1.1.1.0 = Gauge32: 2
.1.3.6.1.4.1.24961.2.103.1.1.2.0 = Hex-STRING: 07 E6 03 1F 09 1A 3A 09 2B 00 00
.1.3.6.1.4.1.24961.2.103.1.1.5.1.2.1 = STRING: "connection-failure"
.1.3.6.1.4.1.24961.2.103.1.1.5.1.2.2 = STRING: "connection-failure"
.1.3.6.1.4.1.24961.2.103.1.1.5.1.3.1 = STRING: "jun0"
.1.3.6.1.4.1.24961.2.103.1.1.5.1.3.2 = STRING: "ios0"
.1.3.6.1.4.1.24961.2.103.1.1.5.1.4.1 = STRING: "/ncs:devices/ncs:device[ncs:name='jun0']"
.1.3.6.1.4.1.24961.2.103.1.1.5.1.4.2 = STRING: "/ncs:devices/ncs:device[ncs:name='ios0']"
.1.3.6.1.4.1.24961.2.103.1.1.5.1.5.1 = OID: .0.0
.1.3.6.1.4.1.24961.2.103.1.1.5.1.5.2 = OID: .0.0
.1.3.6.1.4.1.24961.2.103.1.1.5.1.6.1 = ""
.1.3.6.1.4.1.24961.2.103.1.1.5.1.6.2 = ""
.1.3.6.1.4.1.24961.2.103.1.1.5.1.7.1 = ""
.1.3.6.1.4.1.24961.2.103.1.1.5.1.7.2 = ""
.1.3.6.1.4.1.24961.2.103.1.1.5.1.8.1 = INTEGER: 2
.1.3.6.1.4.1.24961.2.103.1.1.5.1.8.2 = INTEGER: 2
.1.3.6.1.4.1.24961.2.103.1.1.5.1.9.1 = Gauge32: 0
.1.3.6.1.4.1.24961.2.103.1.1.5.1.9.2 = Gauge32: 0
.1.3.6.1.4.1.24961.2.103.1.1.5.1.10.1 = Hex-STRING: 07 E6 03 1F 09 1A 39 05 2B 00 00
.1.3.6.1.4.1.24961.2.103.1.1.5.1.10.2 = Hex-STRING: 07 E6 03 1F 09 1A 3A 09 2B 00 00
.1.3.6.1.4.1.24961.2.103.1.1.5.1.11.1 = Hex-STRING: 07 E6 03 1F 09 1A 39 05 2B 00 00
.1.3.6.1.4.1.24961.2.103.1.1.5.1.11.2 = Hex-STRING: 07 E6 03 1F 09 1A 3A 09 2B 00 00
.1.3.6.1.4.1.24961.2.103.1.1.5.1.12.1 = INTEGER: 4
.1.3.6.1.4.1.24961.2.103.1.1.5.1.12.2 = INTEGER: 4
.1.3.6.1.4.1.24961.2.103.1.1.5.1.13.1 = INTEGER: 2
.1.3.6.1.4.1.24961.2.103.1.1.5.1.13.2 = INTEGER: 2
```

.1.3.6.1.4.1.24961.2.103.1.1.5.1.14.1 = STRING: "Failed to connect to device jun0: connection refused"

.1.3.6.1.4.1.24961.2.103.1.1.5.1.14.2 = STRING: "Failed to connect to device ios0: connection refused: NEDCOM CONNECT: Connection refused (Connection refused) in new state"

Troubleshoot Issues

Several known issues include:

- snmpwalk: Timeout

The timeout could happen because:

- NSO is down

- The IP/Port used in command is incorrect

- Unknown user name (Only v3)

The username associated is wrong/incorrect, the value after the "-u" parameter

- No Such Object available on this agent at this OID

The initial user is not assigned to any group. Add one of the options:

snmp usm local user admin

auth sha password

priv aes password

OR

nacm groups group ncsoper user-name [public initial]