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APPLICATION NOTE

FOXMAN-UN

Higher Layer Manager (HLM) SNMPv3 Integration

Hitachi Energy

Document ID	1KHW029203-FR18	
Document edition	FOXMAN-UN System Release:	R18
	Revision:	A
	Date:	2025-08-06

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Contents

1 Purpose and basic description

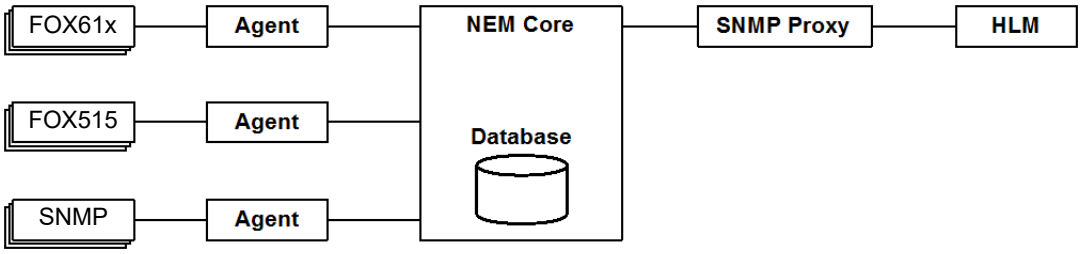
This Application Note provides a description on integrating a Higher Layer Manager (HLM) to FOXMAN-UN SNMP Northbound Interface (NBI) using SNMPv3.

It complements the SNMP NBI related information that is provided in the user manuals

- FOXMAN-UN under Linux - User Manual [1KHW002414] and
- FOXMAN-UN Northbound Interface - User Manual [1KHW002427].

2 Architecture

The following picture shows the architecture relevant to the SNMP NBI for Higher Layer Manager (HLM) access.



3 The FOXMAN-UN proxy agent

The proxy agent is the FOXMAN-UN Basic Package (BP) SNMP Agent NBI for Higher Layer Manager to access equipment and port reports, and alarms.

The relevant systemd service is nem-hlm-snmpnbi.service, and its process is snmpagentd owned by the user ‘nemadm’.

The properties for this service are defined in /opt/nem/etc/snmpagent.conf.

It supports SNMP v1, v2c, and v3.

4 SNMPv3 (default setup)

One SNMPv3 user including authentication and privacy protocol can be set up via the «snmpagentd.conf» file using the parameters «snmp_v3_userid», «snmp_v3_auth_protocol» and «snmp_v3_priv_protocol» (see Installation of the SNMP daemon).

If required SNMPv3 security can be disabled via the parameter «snmp_v3_security». This is however not recommended.

4.1 Configuration setup

Example:

We define as initial user the username zabbixhlm. The following parameters need to be defined:

```
snmp_v3_security            enable
snmp_v3_userid              zabbixhlm
snmp_v3_auth_protocol       MD5
snmp_v3_priv_protocol       DES
snmp_v3_usm_access          enable
snmp_trap_version           3
```

As user ‘nemadm’, edit /opt/nem/etc/snmpagent.conf and customize the following parameters:

snmp_v3_security	enable	# Turn on SNMPv3 security
		# Possible values: enable | disable
		# Default: enable
snmp_v3_userid	zabbixhlm	# username setup within SNMPv3 security
		# Default is equal to: big_chief
snmp_v3_auth_protocol	MD5	# The authentication protocol to set for the snmpv3 user
		# Possible values: none | SHA | MD5
		# Default: SHA
snmp_v3_priv_protocol	DES	# The privacy protocol to set for the snmpv3 user
		# Possible values are: none | DES | 3DES
		# Default: DES
snmp_v3_usm_access	enable	# Allow snmpv3 user access USM (user) tables
		# Possible values: enable | disable
		# Default: enable
snmp_trap_version	3	# Define if send SNMPv1 traps or SNMPv2 Notifications
		# Valid values are: 1 (for SNMPv1 traps)
		# 2 (for SNMPv2 notifications)
		# 3 (for SNMPv3 notifications)
		# Default is : 3

As user ‘nemadm’, stop and restart the snmpd to load the new configuration:

```
# /opt/nem/bin/snmpstop
# /opt/nem/bin/snmpstart
```

In the FOXMAN-UN database, this will create dbdata domain='snmpv3Tables' the snmp initial user called zabbixhlm with the parameters defined in the previous step.

Furthermore, the

- authentication protocol pass phrase is: zabbixhlm
- privacy protocol pass phrase is: zabbixhlm

This user can be used to connect a HLM system and create other users.

For testing, install net-snmp-utils, then run as ‘root’ (sample command line):

```
[root]$ snmpwalk -v 3 -u zabbixhlm -l authPriv -a MD5 -A zabbixhlm -x
DES -X zabbixhlm HLMserver:161 sysUpTime
snmpwalk: DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (21841)
0:03:38.41
```

4.2 Create an additional user

To create an additional user, you need an SNMP tool to execute snmpusm and snmpvacm commands, e.g.:

net-snmp-utils

Use the snmpusm command and initial user zabbixhlm to create the user ‘testuser’:

```
# snmpusm -v3 -u zabbixhlm -n "" -l authPriv -a MD5 -A zabbixhlm -x DES
-X zabbixhlm r15bnohd:161 create testuser zabbixhlm
User successfully created.
```

Please note:
The user ‘testuser’ is cloned from ‘zabbixhlm’ in the process, so it inherits that user's passphrase ("zabbixhlm").

Add the new user to nemGroup:

```
# snmpvacm -v 3 -u zabbixhlm -n "" -l authPriv -a MD5 -A zabbixhlm -x
DES -X zabbixhlm r15bnohd:161 createSec2Group 3 testuser nemGroup
Sec2group successfully created.
```

Verify that the new user can access NBI SNMPv3:

```
# snmpwalk -v 3 -u testuser -l authPriv -a MD5 -A zabbixhlm -x DES -X
zabbixhlm r15bnohd:161 sysUptime
snmpwalk: DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (21841)
0:03:38.41
```

Change the new user's passphrase:

After creating the user ‘testuser’ with the same passphrase as the ‘zabbixhlm’ user, we need to change its passphrase. The below command changes it from “zabbixhlm”, which was inherited from the initial user, to “testuser12345”.

```
# snmpusm -v3 -u testuser -n "" -l authPriv -a MD5 -A zabbixhlm -x DES
-X zabbixhlm r15bnohd:161 passwd zabbixhlm testuser12345
SNMPv3 Key(s) successfully changed.
```

Verify that the new user can access NBI SNMPv3 using its new passphrase:

```
# snmpwalk -v 3 -u testuser -l authPriv -a MD5 -A testuser12345 -x DES
-X testuser12345 r15bnohd:161 sysUptime
snmpwalk: DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (13055)
0:02:10.55
```

Change the initial user's passphrase:

```
# snmpusm -v3 -u zabbixhlm -n "" -l authPriv -a MD5 -A zabbixhlm -x DES
-X zabbixhlm r15bnohd:161 passwd zabbixhlm Z@bb1xh7m
SNMPv3 Key(s) successfully changed.
```

As user ‘nemadm’, stop and restart the snmpd to load the new configuration:

```
# /opt/nem/bin/snmpstop
# /opt/nem/bin/snmpstart
```

4.3 Get all alarms as traps

For the HLM, to receive all alarms from the NEM Core alarmTable as traps, use the following SNMP set command. The SNMP set command will trigger the SNMP NBI to send the content of the alarmTable via traps (here shown as an example for SNMPv2c):

The OID of the SET command is the following:

```
snmpset -v 2c -c public localhost:10161 1.3.6.1.4.1.21696.93.1.4.1.1.4.0 i -1
```

ABB Root OID:

```
snmpset -v 2c -c public localhost:10161 1.3.6.1.4.1.17268.2818.93.1.4.1.1.4.0 i -1
```

where 1.3.6.1.4.1.21696.93.1.4.1.1.4.0 = alarmTable.alarmCardSlot.alarmType.alarmCardId

with :

alarmCardSlot = 4

alarmType = 4

alarmCardId = 0

The value to set is the NEID

-1 means alarms for all NEs.

5 Annex

5.1 Associated documents

Ref.	Document
[1KHW002414]	FOXMAN-UN under Linux - User Manual
[1KHW002427]	FOXMAN-UN Northbound Interface - User Manual

5.2 Document history

Table 1: Document History

Document ID	FOXMAN-UN Release	Date	Changes since previous version
1KHW029203 Rev A	R18	2025-02-20	Updated for current system release R18.
1KHW029203 Rev A	R17A	2024-01-08	Updated for current system release R17A.
1KHW029203 Rev A	R16B	2023-02-27	Updated for current system release R16B.
1KHW029203 Rev A	R16A	2022-12-08	First version published for R16A.

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Document ID: 1KHW029203 FR18 Rev. A