NAT-MCH SNMP Overview r1.7
Last Changed FW V2.20.2

NAT-MCH SNMP Overview:

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1 NAT-MCH SNMP Overview

This document provides information about the new SNMP functionality of the NAT-MCH firmware.

2 SNMPv1 Protocol Stack

The next firmware release of the NAT-MCH will support the SNMPv1 protocol. This protocol stack is a part of the Light Weight IP project, which is licensed under a BSD-style license.

The SNMP of LwIP supports the following methods:

- GET-Response
- GET-NEXT-Response
- SET-Response
- SEND Trap
- Variable binding
- Community

3 Standard and Private MIBs

All SNMP communication between a management software and the NAT MCH is based on the Object Identifier (OID) tree. It is possible to extend this OID tree so new devices can be integrated. This extension is done by so-called MIB files which can usually be imported by the SNMP management software. (MIB is an abbreviation for Management Information Base).

3.1 MIB-2

The MIB-2 [OID = *1.3.6.1.2.1*] is the most important standard MIB specified by RFC1213.
This management group is defined for use with network management protocols in TCP/IP-based internets. MIB-II support is already integrated into the protocol stack. Furthermore, NAT-MCH provides ifTable of MIB-2 for Ethernet switch port, to request port information like ifDescr, ifOperStatus, ofAdminStatus and so on.

3.2 Private MIBs

N.A.T. supplies all necessary SNMP related information about the N.A.T. MCH using private MIBs

```
[OID = 1.3.6.1.4.1.27768.1].
```

These MIBs are representing:

- Generic Board Information of the N.A.T.-MCH and its modules (e.g. version and serial number see Figure 1).
- SNMP Traps for MCH Events

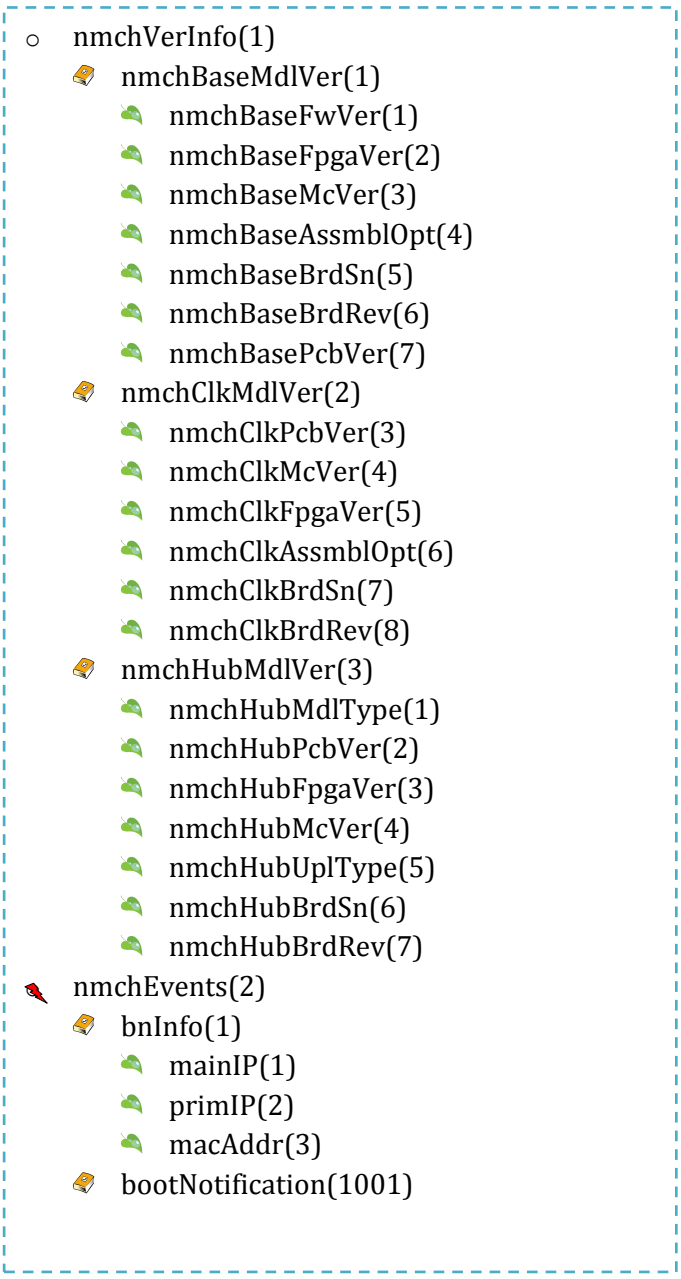

Figure 1: NAT-MCH Private MIB

3.3 SNMP Traps

3.3.1 IPMI Traps

Whenever a sensor threshold is trespassed IPMI events are being generated and sent to the carrier manager. SNMP implements this behaviour by using so-called SNMP traps that are being sent to the SNMP manager. SNMP traps are specified in *IPMI Platform Event Trap Format Specification v1.0 (1998)* and implemented by *Wired for Management* MIB:

```
[OID=1.3.6.internet(1).private(4).enterprises(1).wired_for_management(3183).PET(1).version(1)]
```

3.3.2 BootNotification Trap

The NAT-MCH generates trap `bootNotification`, if primary IP interface has been configured previously. The NAT-MCH sends the trap once-only when MCH becomes primary role (on start-up or after switchover):

```
[OID = 1.3.6.1.4.1.27768.1.nmchEvents(2). bootNotification (1001)]
```

The `bootNotification` cares variable bindings to refer regular IP interface:

```
[OID = 1.3.6.1.4.1.27768.1.nmchEvents(2).bnInfo(1).mainIP(1)]
```

primary IP interface:

```
[OID = 1.3.6.1.4.1.27768.1.nmchEvents(2).bnInfo(1). primIP(2)]
```

and their shared MAC address:

```
[OID = 1.3.6.1.4.1.27768.1.nmchEvents(2).bnInfo(1).macAddr(3)]
```

3.3.3 LinkUp Trap

The Nat-MCH supports linkup to notify new link state of Ethernet port/interface:

```
[OID = 1.3.6.1.6.3.1.1.5.4]
```

The MCH sends the trap automatically when link state of Ethernet switch port has been changed. The trap contains interface variable (ifTable of MIB-2) to refer event port and to notify new link state of a port.

4 SNMP Settings

The SNMP has two parameters that can to be configured. “Enable/Disable” state and IP address of the Trap Receiver.
The first parameter determines the initialization state of SNMP server after MCH-firmware startup. The next parameter set the IP address of the host, which has to receive and to process the SNMP traps generated by the NAT-MCH. To apply the reboot of MCH is necessary. If Trap Receiver option has not been configured or IP address is set to <0.0.0.0> the NAT-MCH generates no SNMP Trap.

4.1 SNMP Settings – Web Interface

The SNMP can be configured over web interface of the NAT-MCH. Use “SNMP Options” which are available in the “Base Configuration” menu.

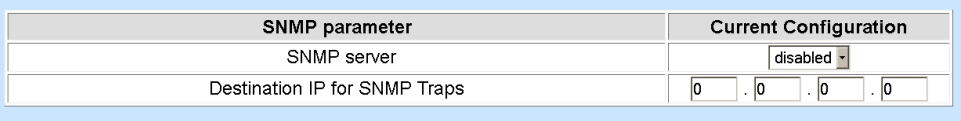

Figure 2: web interface - SNMP Options

To apply new configuration please confirm the changes by “Save” and reboot NAT-MCH.

Appendix A: Reference Documentation

[1] RFC 1157 - A simple network management protocol
[2] RFC 1213 - Version 2 of management information base (MIB-2) for network management of TCP/IP-based internets
[3] IPMIv2.0 - Intelligent Platform Management Interface Specification (Second Generation)
[4] IPMI Platform Event Trap Format Specification v1.0

Appendix B: Document's History

Revision	Date	Description	Author
1.0	14.03.2014	initial release	al
1.1	08.12.2014	Removed 4. Field Replaceable Unit (FRU) representation in SNMP; Removed 5. IPMI Sensor Data Records (SDR) Added 5. SNMP Settings(FW V2.15)	al
1.2	14.012015	Added 5. SNMP Settings(FW V2.16)	al
1.3	7.04.2015	Added related firmware version to title page	al
1.3	7.04.2015	Removed in chapter "Private MIBs» description about "History Buffer" and "Summered FRU information of system" (not more supported by FW V2.17)	al
1.3	7.04.2015	Removed version unrelated parts in the chapter "SNMP Settings"	al
1.4	24.08.2017	Updated document information for the NAT-MCH firmware V2.19.2	al
1.5	15.09.2017	Updated document information for the NAT-MCH firmware V2.19.3	al
1.6	11.12.2017	Current released version changed to last changed FW version.	al
1.7	11.07.2018	Added description about bootNotification	al
	31.10.2018	Added sub chapters "IPMI Traps", "BootNotification Trap" and "LinkUp Trap"	al