



Nordic Messaging Technologies

# **EMG SNMP Agent**

## **User's Guide - 1.1**

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# 1. Acknowledgements

## 1.1 AdventNet

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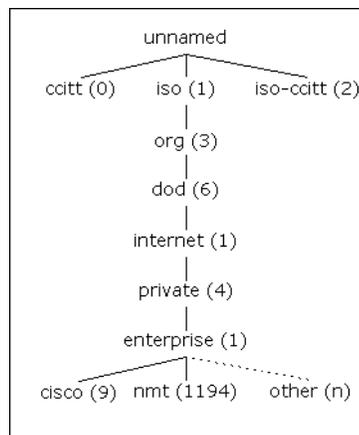
## 2. Overview

### 2.1 SNMP Management

SNMP management is based on an agent/manager model where the agent interacts with managed devices and the manager queries, sets variables in and gets responses from one or more agents.

A managed device is typically a network device or an application that contains managed objects. These managed objects can be hardware components, configuration parameters, performance statistics and so on. Information about these objects is arranged in a Management Information Base, a MIB.

The MIB hierarchy can be depicted as a tree with a nameless root where the levels are assigned to different organizations. Each node in the tree is uniquely identified by an object identifier (OID). Nordic Messaging has been assigned the root node with OID 1.3.6.1.4.1.1194 and all EMG related objects will be descendants of that OID.



Extract from the MIB tree

SNMP Agents can also notify managers when a specified condition arises by sending so called notifications or traps.

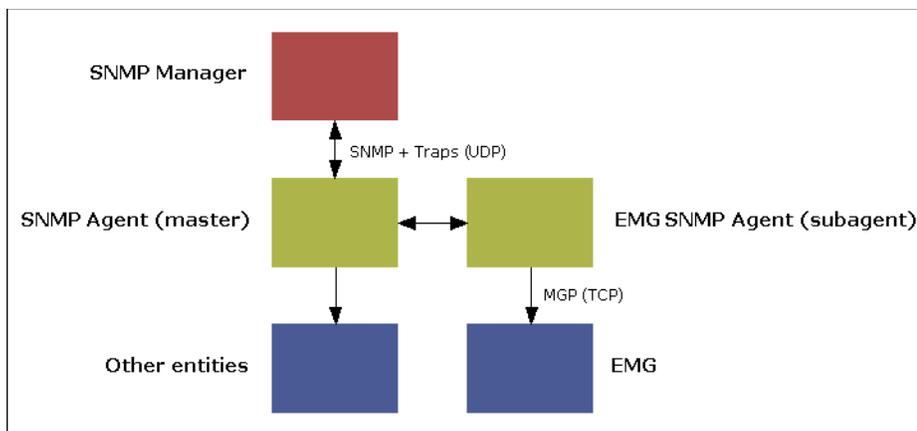
There are different SNMP versions: SNMP v1, v2c and version 3. Currently the EMG SNMP Agent support v1 and v2c.

### 2.2 The master/subagent model

Managers usually send UDP requests to an agent listening on port 161 which is the default port for SNMP. However, the same server may run multiple agents that implements different MIBs for different objects on the same server. For this the master/subagent model is used. The master agent responds to all incoming requests and is then responsible for forwarding the request to the correct agent based on the OID requested by the manager. For example on a server running Solaris, the Solaris SNMP agent may be the master agent which responds to all

incoming requests. When a request related to EMG is received that request would then be forwarded to the EMG SNMP Agent which acts as a subagent.

The EMG SNMP Agent can also act as a master agent.



## 2.3 File system layout

EMG SNMP Agent is designed to co-exist with an EMG server installation. Therefore the SNMP Agent configuration files are located in EMGDIR/snmpd where EMGDIR defaults to /etc/emg. In this document we hereafter refer to EMGDIR/snmpd as SNMPPDIR.

All directories and configuration files are created during installation based on the information entered in the installation process.

### 2.3.1 Directories

SNMPPDIR/conf  
User configuration files

SNMPPDIR/conf/system  
System configuration files

SNMPPDIR/mibs  
MIB definition files

SNMPPDIR/log  
Log files

## 2.4 Licensing

The EMG SNMP Agent is licensed per server and needs a license key dependant on the hostid of the server where it will run. Usually it is the same server as the EMG server runs on. One SNMP Agent can monitor multiple EMG servers.

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## 3. Installation

EMG SNMP Agent installation includes five steps:

- ⦿ Download software
- ⦿ Get license key
- ⦿ Install software
- ⦿ Configure software
- ⦿ Start agent

### 3.1 Download software

Contact your distributor or Nordic Messaging Technologies in order to get instructions how to download the software distribution.

### 3.2 Get license key

Contact your distributor or Nordic Messaging Technologies in order to get your evaluation license key or to purchase a permanent license.

### 3.3 Install software

Extract the components in any directory. This will create a subdirectory, change to that directory and execute the install script. The install script will ask a number of questions and allow for you to enter the license key.

```
# cd /tmp
# gzip -d emgsnmpagent11-7420-linux.tar.gz
# tar xvf emgsnmpagent11-7420-linux.tar
# cd emgsnmpagent.linux
# sh ./INSTALL
```

The EMG SNMP Agent has been designed to co-exist with the EMG server. By default it will install into `/etc/emg/snmpd` and the license will be placed in `/etc/emg/license.snmpd`.

After running the installation you should be able to execute `"emgsnmpd -help"` in order to display your license information.

### 3.4 Configure software

No additional configuration is needed if correct configuration information has been specified during installation.

### 3.5 Starting and stopping the agent

The agent can be started by simply running

```
# emgsnmpd
```

It is possible to set the debug level to DEBUG using the "-debug" option. When using the "-verbose" option, it will also send the debug output to stdout.

```
# emgsnmpd -debug
```

The agent can be stopped using

```
# emgsnmpd -stop
```

---

## 4. Configuration

### 4.1 General

EMG SNMP Agent is controlled by supplying command-line parameters and via configuration files.

Command-line parameters are used for setting agent SNMP port number (for incoming requests from SNMP managers), source port for outgoing traps and port number for incoming traps (from subagents when EMG SNMP Agent acts as a master agent).

The configuration file `SNMPDIR/conf/v2managertable.cfg` contains one entry for each manager to which EMG SNMP Agent should send traps.

Please note that the default port number to which SNMP agents will listen for requests from managers is 161 and that any application that binds to ports less than 1024 needs to be run as root. Often there is already an SNMP agent running on the standard SNMP port (161) preventing EMG SNMP Agent to be started on that port. In that case the master/subagent model should be used. It is recommended that EMG SNMP Agent is run as a subagent.

### 4.2 Changing configuration files

The configuration files in `SNMPDIR/conf` can be written to by the EMG SNMP Agent. Therefore it is important to stop the SNMP Agent before making any manual changes to any configuration files. After making the changes the agent should be restarted.

### 4.3 Basic configuration

The first important decision before configuring EMG SNMP Agent is to determine whether it should be run as a master agent or as a subagent.

#### 4.3.1 EMG SNMP Agent as master agent (or stand-alone agent)

If no other SNMP Agent will run on the server, EMG SNMP Agent can be run using the default SNMP port (161). It is also possible for EMG SNMP Agent to act as a master agent and forward requests to subagents. Request forwarding is done based on OID and is configured in the `SNMPDIR/conf/subagents.cfg` file.

#### 4.3.2 EMG SNMP Agent as subagent

Since EMG SNMP Agent is primarily designed for monitoring EMG servers it is recommended that the default operating system agent is run as the master agent, forwarding EMG-related requests to the EMG SNMP Agent. In such a scenario SNMP request forwarding is done based on OID and the EMG SNMP Agent must listen on another port than the default SNMP port (161).

When running as a subagent most of the SNMP configuration needs to be done in the master agent while the EMG SNMP Agent only needs to be configured to

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listen on an SNMP port other than the default. Also trap configuration always needs to be done when SNMP traps should be used.

## 4.4 Trap configuration

EMG SNMP Agent can be configured to send notifications to an SNMP manager when certain conditions arise, so called traps. Trap definitions are found in the MIB and generated traps will be sent to all SNMP managers as defined in the `SNMPDIR/conf/v2managertable.cfg`. Please note that traps can be sent to multiple destinations (managers).

Since traps are sent using the UDP protocol it is also necessary to configure the source port for traps in the `SNMPDIR/conf/agent.cfg` file.

## 4.5 Configuration files

The configuration files support comments. Comments are lines that start with the character `#`. Since configuration files may be modified by the agent only comments in the beginning of the file are guaranteed to be preserved. That is comments must be added before any other lines in the configuration file.

### 4.5.1 `SNMPDIR/conf/agent.cfg`

Specifies the default port numbers used by the agent. Those values can be overridden by giving command line options, run `emgsnmpd -help` for details.

Format is a pair key-value pair (KEY=VALUE).

Currently 3 keys are supported:

- `SNMP_PORT`  
Agent SNMP port number (default: 161)
- `TRAP_SOURCE_PORT`  
Source port (UDP) for outgoing traps (default: 8002)
- `INCOMING_TRAP_PORT`  
Port for incoming traps (default: 8004)  
(Used when the agent is acting as a master agent)

Example:

```
SNMP_PORT=1234
TRAP_SOURCE_PORT=
INCOMING_TRAP_PORT=8084.
```

### 4.5.2 `SNMPDIR/conf/servertable.cfg`

Specifies which server should be monitored by the SNMP agent.

Format is one entry per line, where each entry consists of the fields specified below and separated by semicolon, `“;”`.

```
server name
IP address
port number
```

---

admin state  
max number of orphans  
username  
password  
polling interval in seconds

### 4.5.3 SNMPDIR/conf/subagents.cfg

Specifies subagents for request forwarding when EMG SNMP Agent is run as a master agent.

Format is one entry per line, where each entry consists of fields separated by semicolon, “;”.

See the provided Adventnet AGENT-CONFIG-MIB for details.

### 4.5.4 SNMPDIR/conf/v2managertable.cfg

Specifies the SNMP managers to which traps will be sent.

Format is one entry per line, where each entry consists of the fields specified below and separated by semicolon, “;”.

host  
port  
community  
timeout  
retries  
status

### 4.5.5 SNMPDIR/conf/system/connectorthresholds.cfg

This file is automatically generated when SNMP agent connects to an EMG server.

Specifies the connector thresholds to be used.

Format is one entry per line, where each entry consists of the fields specified below and separated by semicolon, “;”.

servername  
connectorname  
queue size  
throughput avg A  
throughput avg B  
throughput avg C  
max number of instances used

---

## A. Change history

Changes between EMG releases.

There are three different types of releases:

### **Major release**

A full distribution including new functionality. Migrating from one major version to another will require a new license key.

### **Minor release**

A full distribution primarily including changes and bug fixes. Usually does not require a new license key.

### **Patch release**

A binaries-only release including changes and bug fixes. Applied to an existing installation from a full distribution. Does not require a new license key.

## A.1 EMG SNMP Agent 1.1 - Build 8007

First official release

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## B. Command reference

### B.1 emgsnmpd

The EMG SNMP Agent daemon.

Options:

**-debug**

Set log level to DEBUG.

**-fg**

Run in foreground, do not detach from tty.

**-help**

Displays help information.

**-p**

Agent port number.

Default: 161

**-r**

Port number for receiving (incoming) traps.

Default: 8004

**-stop**

Stop running server.

**-t**

Source port (UDP) for outgoing traps.

Default: 8002

**-v**

Display version and license information.

**-verbose**

Display log information on stdout.