

# DSMP2

## Hardware Monitoring on Microsoft Windows via SNMP

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## **2 Overview**

The DSMP2-Agent for Windows provides the capability to monitor various hardware sensors (for example, coolers and temperature sensors) via SNMP and send SNMP-Traps in case of a value exceeding/falling below a certain threshold (thresholds may be configured individually).

## **3 Software Installation**

### ***3.1 Installation***

Requirements:

- Active Windows SNMP service; this service is included in Microsoft Windows and simply has to be installed and/or activated. SNMP-WMI service is not required.

Installation:

- Copy the 3 provided files (DSMP2config.exe, DSMP2a.DLL and DSMP2h.DLL) to a directory of your choice; this directory will be marked as the installation path in the registry during installation and must not be changed afterwards!
- Open a command prompt (Administrator privileges are required!) and execute „DSMP2config –install“. Data of all sensors recognized by DSMP2 can now be accessed. There is no sensor monitoring happening at this point.
- Brief help: start „DSMP2config.exe“ without command options to show all available command options.

### ***3.2 Update***

- Stop SNMP service
- replace DSMP2a.dll, DSMP2h.dll and DSMP2config.exe with updated files
- start SNMP service

### ***3.3 Uninstallation***

- For uninstallation without deletion of registry settings: „DSMP2config –uninstall“.
- For uninstallation and removal of all registry settings: „DSMP2config –remove“.

## **4 Software Configuration**

In a MIB browser you will find all detected sensors in the allSensorsTable (.1.3.6.1.4.1.37813.1.2.10) with their respective information. DeviceID, SensorID, SensorName and possibly SensorClass are essential for configuring a sensor for permanent monitoring.

To permanently monitor a sensor execute „DSMP2config.exe –addsensor“ with the respective command options. The sensor name must have the exact syntax as in „allSensorsTargetName“ to distinctly identify it and also prevent problems with the detection of sensors later on. You can find additional information in the chapter “configuration tool for DSMP2” and the FAQ.

DSM provides sample scripts for monitoring of a system with DSMP2 with Nagios.

## **5 Program Description**

### ***5.1 Description of SNMP information***

info: General Information (.1.3.6.1.4.1.37813.1.1)

- copyright: DSMP2 agent copyright
- agentVersion: DSMP2 agent version
- mibVersion: the MIB version of DSMP2 this DSMP2 version is programmed for
- hwmVersion: hardwaremonitor DLL version
- licenseInfo: licence owner and number of licensed clients
- updateIntervall: interval in seconds between updates (current value and average value). Interval value may be changed via SNMP or DSMP2config.
- numberOfValuesForAverage: how many individual values are factored in when calculating the average value. numberOfValuesForAverage may only be changed via DSMP2config.
- storeSNMPSetInRegistry: thresholds for triggering an SNMP Trap, and Trap control may be changed via SNMP. storeSNMPSetInRegistry is used to configure if changes are permanent (Registry entries changed), or lost at a restart of the SNMP service (for short tests, for example).
- monitoredSensorsOK: indicates at service start if all monitoring-enabled sensors could be identified with their respective correct short names (for additional information see FAQ). May be set to false in test mode (see section monitoredSensors).
- testValueIsLowerCritical: shows if the default value of TestValues in the monitoredSensors-tables is lowerCritical-1 (true) or lowerWarn+1 (false). testValueIsLowerCritical may only be changed via DSMP2config. If sensors are not found depending on this value sensor-traps are sent.

allSensors: Info about all recognized sensors (.1.3.6.1.4.1.37813.1.2)

- allSensorsCtr: number of recognized sensors
- allSensorsResetMinMax: always false. If set by SNMP to true(1), all min and max values in allSensorsTable are reset.
- allSensorsTable: detailed information about all recognized sensors. Every entry contains the following information:
  - o Index: number of the sensor
  - o Name: consists of type (fan, temperature), unit (rpm, C), device name, and sensor name
  - o TargetName: short name of the sensor; this must be used when registering the sensor for monitoring, see –addsensor in the description of DSMP2config.exe
  - o NameMatch: always true in this table
  - o Value: current value of the sensor during its last update interval (see updateIntervall)
  - o AverageValue: average value; see numberOfValuesForAverage
  - o DeviceID, SensorID and SensorClass: important information for permanent monitoring of the sensor; see –addsensor in the description of DSMP2config.exe

- DeviceType: mainboard, processor, Drive, ...
- ValueMin, ValueMax: min and max of Value since the last start of DSMP2 or since the last reset with allSensorsResetMinMax.
- AverageValueMin, AverageValueMax: min and max of AverageValue since the last start of DSMP2 or since the last reset with allSensorsResetMinMax.

monitoredSensors: Info about monitored sensors (.1.3.6.1.4.1.37813.1.3)

- misc, temperature und fan: sensor type
  - other, cpu, and system: sensor location
    - TargetNumber: number of registered sensors (target amount).
    - RealCounter: number of recognized sensors (actual amount).
    - TableOK: when all sensors where recognized with their respective correct names (see FAQ)
    - TableErrorTestMode: if „TableErrorTestMode“ is set to „true (1)“, then „RealCounter“ is reduced by 1. As a consequence "TableOK" for this type and location, and „monitoredSensorsOK“ in the info area are set to "false (2)" (for additional background see FAQ)
    - Table: detailed information about monitored sensors
      - Index, Name, Value, AverageValue: see allSensors above
      - TargetName: must be identical to sensor shortname (target amount; see FAQ)
      - NameMatch: is sensor shortname identical to TargetName
      - UpperCritical: upper limit for trap-triggering of a critical trap
      - UpperWarn: upper limit for trap-triggering of a warning trap
      - LowerWarn: lower limit for trap-triggering of a warning trap
      - LowerCritical: lower limit for trap-triggering of a critical trap
      - DisableTraps: disable all traps for this specific sensor
      - DisableWarningTraps: enable or disable warning traps for this specific sensor
      - TestMode: chooses between the real value (TestMode false) or a testing value (TestMode true)
      - TestValue: value used if TestMode is true

traps: general control of traps (.1.3.6.1.4.1.37813.1.10)

- trapControl: controls
  - disableAllTraps: enable or disable ALL traps; this setting overrides all settings in specific sensors!
  - disableAllWarningTraps: enable or disable all warning traps
  - disableNormaleTraps: default is true(1); if set to false(2) a normal trap will be sent when value is back to normal (no warning or critical) condition on a sensor
  - disableTableAlarmTraps: enable or disable table alarms. Table Alarm traps are sent, if the number of to be monitored sensors and/or the sensor shortnames are not identical to the parameters
  - trapRepeat: sets how often warning, critical, and tablealarm traps are sent; if set to 0 there will be only a single trap set if a threshold is reached, a value greater 0 will send a trap every (value) updates (see updateIntervall)
- trapVariables: necessary variables for trap informations

## 5.2 Configuration tool DSMP2config.exe

Executing "DSMP2config.exe" without parameters will show a short help.

-stopsnmp: stops the SNMP service and DSMP2

-startsnmp: starts the SNMP service (with DSMP2 if DSMP2 is installed)

-install: installs the DSMP2 agent und sets all agent values to default (only if there are no pre-existing values from an earlier installation)

-uninstall: uninstalls the DSMP2 agent, but leaves all agent and sensor values in the registry

-remove: uninstalls the DSMP2 agent and removes all agent and sensor values from the registry

-addsensor SENSORTYPE LOCATION DEVICEID SENSORID [SENSORCLASS] "SENSORNAME"  
[UPPERCRITICAL UPPERWARN LOWERWARN LOWERCRITICAL DISABLEWARNINGTRAPS  
DISABLETRAPS]

Adds a sensor for monitoring.

SENSORTYPE must have one of the following values: „misc“, „temperature“, „fan“ (lower case only!).

LOCATION must have one of the following values: „other“, „cpu“, „system“ (lower case only!).

SENSORTYPE and LOCATION set the sensor's exact position within the MIB-tree.

DEVICEID and SENSORID define the specific sensor. DEVICEID and SENSORID may be extracted from the "allSensors" table in .1.3.6.1.4.1.37813.1.2.2.

If SENSORTYPE is „misc“ the type of sensor (SENSORCLASS) must be specified, which is also listed in "allSensorsTable". With SENSORTYPE „temperature“ or „fan“, SENSORCLASS is not necessary!

SENSORNAME states the sensor's short name, which is listed in "allSensorsTable" in column "allSensorsTargetName". This name must be typed in exactly as it is listed in the table (upper and lower cases, spaces and/or special characters). For DSMP2 to accept the name quotation marks must be added at the beginning and end of the name "Example Sensor01Name"). The sensor shortname is needed to determine the selection of the correct sensor at service start.

The thresholds UPPERCRITICAL, UPPERWARN, LOWERWARN, and LOWERCRITICAL, and the control settings DISABLEWARNINGTRAPS and DISABLETRAPS have default values, but can be individually set when setting up the sensor via -addsensor.

DSMP2 triggers traps (warning or critical) according to the thresholds. Warning traps for a specific sensor may be enabled or disabled with DISABLEWARNINGTRAPS. All traps (normal, warning, and critical) may be enabled or disabled for a specific sensor with DISABLETRAPS.

Default values for (temperature) sensors (order see above) are: 100, 80, 20, 0, false, false.

Default values for (fan) sensors (order see above) are: 8500, 7500, 200, 50, false, false

Default values for other (misc) sensors are: 100, 80, 20, 5, true, true. Because of the various possibilities of sensors covered by (misc) trap triggers are disabled by default here.

Thresholds and settings may be changed via SNMP.

Thresholds must be integer (positive or negative)! Settings must be "1" (true) or "2" (false)!

-delsensor SENSORTYPE LOCATION SENSORNUMBER

Removes a sensor from monitoring. Find descriptions for SENSORTYPE and LOCATION at "-addsensor". SENSORNUMBER is the sensor's index. Any remaining sensors in SENSORTYPE and LOCATION will be assigned new index numbers to assure them to be consecutively numbered. The order will be preserved.

### -setoption BASEOPTION VALUE

sets/changes basic options of DSMP. These options are mainly used for the initial configuration via batch.

#### BASEOPTION:

- „updateinterval“: sets interval in seconds for updates of current value and average value
- „valuesforaverage“ sets the amount of values used to calculate average value. Agent must be restarted after changing this option.
- „storesnmpinregistry“: when set to "1" this will activate persistent registry storage of settings changed via SNMP-SET (any value different from "1" deactivates registry storage)
- „testvalueislowercritical“: At the start of DSMP2, TestValues are set to a default value. If testValuesLowerCritical is set to 1, TestValues get the value of LOWERCRITICAL – 1. If set to any other value TestValues are set to LOWERWARN + 1. If a sensor is inactive and not found, it depends on the value of TestValue if a trap may be sent.
- „disablealltraps“: when set to "1" all traps (warning, critical, and normal) are disabled (any value different from "1" enables all traps)
- „disablewarningtraps“: when set to "1" all warning traps are disabled. Critical traps are not affected. Please note that warning traps are never sent if "disablealltraps" is set to "1".
- „disablenormaltraps“: When set to "1" this disables the sending of traps signalling the return of a sensor to a normal state.
- „disabletablealarmtraps“: when set to "1" this disables traps signalling an incorrect detection of a sensor.
- „traprepeat“: sets the rate of intervals between traps. If this is "0" there will be only a single trap sent, if the threshold is reached. As soon as the sensor value falls below/above the threshold into normal ranges again the trap is reset, to be sent again if triggered.

## 6 FAQ

How to install the licence key?

- The licence key contains the number of clients and company name. It is provided as a single file (dsmp2key.txt). To import the licence use the following command (execute with Administrator privileges): DSMP2config –setkey < dsmp2key.txt

What hardware supports DSMP2? Why are not all of my hardware's sensors recognized by DSMP2?

- DSMP2 uses CPU-Z's libraries for sensor recognition. Sensors and/or monitoring ICs unknown to CPU-Z can't be found in DSMP2.

Why is it required to specify a sensor name? Are DeviceID and SensorID not sufficient?

- It may occur that a sensor is recognized at a system's first start and configured as a monitored sensor, but will disappear after a DSMP2 restart. This depends on the BIOS. For example, an existing cooler with 0 rpm could be ignored by the BIOS and labelled as nonexistent, therefore DSMP2 would not recognize the cooler and could not create a table entry for this sensor (allSensorsTable)
- All recognized sensors are numbered consecutively. If a sensor is missing this can be detected with the total number of sensors.
- If there are multiple sensors of the same type which are not all monitored, there may be the case of a faulty sensor and a previously unmonitored sensor would be then wrongly monitored.
  - o To notice this the sensor shortname must be used for a unique identification.
  - o For this error case there are special information entries (TableOK, monitoredSensorsOK), also there is the possibility to trigger traps (TableError).
- An Example for this problem:
  - o At DeviceID 0 there are 3 sensors: FANIN0 with SensorID 0, FANIN1 with SensorID 1, and FANIN2 with SensorID 2. There are coolers connected to all 3 sensors.
  - o Only coolers FANIN0 and FANIN1 are monitored; FANIN2 is connected and working, but is not monitored.
  - o A power outage happens. After system restart FANIN1 doesn't work and has an RPM of 0. The BIOS therefore deactivates this sensor, DSMP2 can no longer recognize FANIN1.

- Because sensors are numbered consecutively FANIN0 still has SensorID 0, but FANIN2 now has SensorID 1. SensorID2 is not used, since there are now only 2 sensors recognized by DSMP2.
  - The number of monitored coolers (TargetNumber) is still 2 and there are 2 coolers recognized (RealCounter) on SensorID 0 and SensorID 1.
  - But now FANIN2 is monitored instead of FANIN1. To notice this error the sensor's short name must be specified at sensor installation.
  - This will set the value "NameMatch" in FANIN1's table entry false, as the short name does not match anymore.
  - This sets the value "TableOK" to false and results in the value "monitoredSensorsOK" to be set to false.
  - The values „TargetNumber“, „RealCounter“, „TableOK“, and „NameMismatch“ provide help in localizing the error (what is wrong were / are all sensors recognized / is a name not a match)
- As seen in this example the number of monitored sensors alone is insufficient.

Why does a sensor's DeviceID suddenly change?

- Devices are numbered consecutively at DSMP2 startup. This numbering may change (for example through the connecting of external devices, like a USB). This behaviour can be observed easily with temperature sensors of HDDs.

Does the number of and numbering of devices / sensors change while DSMP2 is running?

- Numbering of recognized devices and sensors happens only at DSMP2 startup. Changes afterwards (for example the connecting of a USB stick) have no effect unless DSMP2 is restarted.

Why are there multiple tables for monitored sensors, instead of a single large table?

- In a single table the index of every sensor must be known. A system cooler may be at Index 2 in one system and Index 4 in another system, which complicates monitoring via SNMP-GET in Nagios. The current MIB structure places system coolers fixed to the OID "fan-system".

## **7 Support / Contact**

Support for DSMP2 is only available for hardware of DSM Computer.

Support is only available by email or in the (German) forum (we will answer in English to English questions☺).

eMail: [dsm2@dsm-computer.de](mailto:dsm2@dsm-computer.de)

Forum: <http://forum.dsm-computer.de> location DSMP2



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