

Hardware Monitoring with the new Nagios IPMI Plugin



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Thomas-Krenn.AG[®]
Speed is (y)our success



Agenda



- 1) About Thomas Krenn**
- 2) IPMI basics**
- 3) Nagios IPMI Sensor Monitoring Plugin**
- 4) Conclusions**



1) About Thomas Krenn



- **Server systems, virtualization and accessories**
"Made in Germany"
- **Unique service and support and 24h express delivery**
- **History**
 - 2002: founded by Max Wittenzellner and Thomas Krenn
 - 2005: turned into stock corporation
 - 2008: DIN ISO 9001:2000 certification
 - today:
 - 70 employees – 20 of them being technicians ;-)
 - over 9.000 customers



2) IPMI basics



- **IPMI (Intelligent Platform Management Interface) – main features:**
 - Inventory (FRU information)
 - Monitoring (temperatures, fans, voltages, etc.)
 - Logging (System Event Log)
 - Recovery Control (power on/off a server)



2) IPMI basics



- **Channel Privilege Levels**

Privilege Level	Description
Callback	Lowest Privilege Level. Allows only initiating a callback.
User	Allows only IPMI 'begin' commands (query sensors). Changing the BMC configuration, writing data to the BMC, executing power on/off or reset commands is prohibited.
Operator	Allows nearly all IPMI commands. Only changes of out-of-band interfaces are prohibited.
Administrator	Allows all IPMI commands.

- **use privilege level 'User' for monitoring purposes**



2) IPMI basics



- **IPMI example configuration of a LAN interface**

```
[root@testserver ~]# ipmitool lan print 1
Set in Progress           : Set Complete
Auth Type Support         : NONE MD5 PASSWORD
Auth Type Enable          : Callback :
                           : User      : MD5
                           : Operator :
                           : Admin    : MD5
                           : OEM      :
IP Address Source         : Static Address
IP Address                 : 192.168.1.211
Subnet Mask                : 255.255.255.0
MAC Address                : 00:0e:0c:ea:92:a2
[...]
```



2) IPMI basics



- **example query with ipmitool**


```
[root@testserver ~]# ipmitool sdr type Other
PS1 +12V Power      | 7Ch | ok  | 10.1 | 80 Watts
PS2 +12V Power      | 7Dh | ok  | 10.2 | 104 Watts
[root@testserver ~]# ipmitool sdr type Other -v
Sensor ID           : PS1 +12V Power (0x7c)
Entity ID           : 10.1 (Power Supply)
Sensor Type (Analog) : Other
Sensor Reading      : 80 (+/- 6) Watts
Status              : ok
Nominal Reading     : 372.000
Normal Minimum      : 100.000
Normal Maximum      : 744.000
Upper critical      : 840.000
Upper non-critical  : 792.000
[...]
```



3) Nagios IPMI Sensor Monitoring Plugin



- **how it works**
 - it's a shell script (Bash)
 - it uses ipmitool, gawk
 - you can use the plugin with every IPMI-compatible server
 - it follows the *Nagios plug-in development guidelines*
 - clear illustration within the Nagios web interface

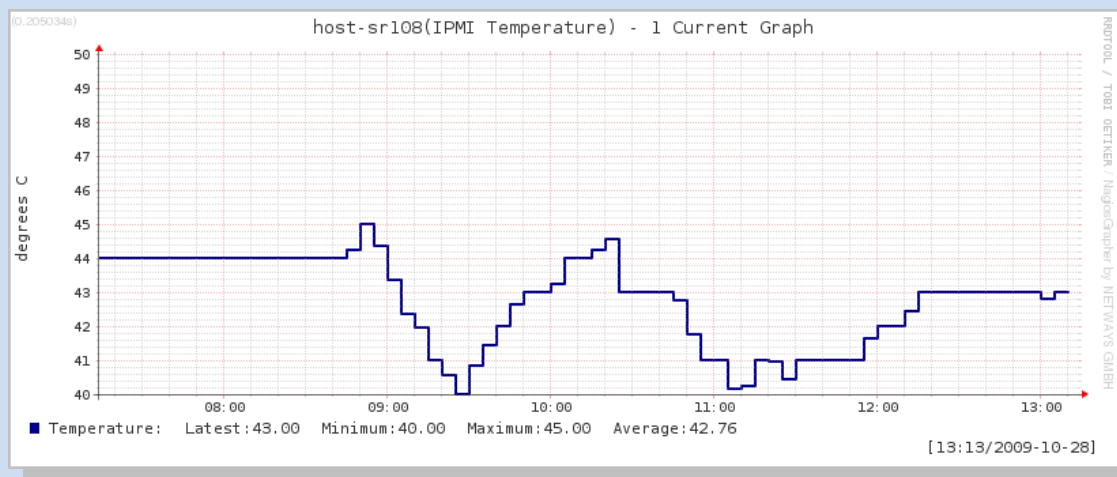
Host ↑↓	Service ↑↓	Status ↑↓	Last Check ↑↓	Duration ↑↓	Attempt ↑↓	Status Information
examplehost	IPMI Fans  OK	OK	2009-11-02 16:06:33	0d 0h 6m 12s	1/4	Fan Status: OK
	IPMI Power Supply  OK	OK	2009-11-02 16:06:24	0d 0h 32m 21s	1/4	Power Supply Status: OK
	IPMI Physical Security  WARNING	WARNING	2009-11-02 16:06:14	0d 0h 40m 32s	4/4	Physical Security Status: Warning [Intrusion = Inc]
	IPMI Temperature  OK	OK	2009-11-02 16:06:02	0d 0h 31m 43s	1/4	Temperature Status: OK
	IPMI Voltage  OK	OK	2009-11-02 16:05:48	0d 0h 31m 57s	1/4	Voltage Status: OK



3) Nagios IPMI Sensor Monitoring Plugin



- **using performance data**
 - performance data available for temperature ($^{\circ}\text{C}$), voltage (V), current (A), power (W), drive (RPM)
 - allows you to visualize data with NagiosGrapher (or the new NETWAYS Grapher V2)
 - allows you to discover trends



3) Nagios IPMI Sensor Monitoring Plugin



- **new features of version 1.2**
 - check_ipmi_sensor does not return a warning anymore when a sensor reports "ns" status
 - added "-f <password_file>" option – in this way the IPMI password will not be visible in the process list
 - changed default interface for network communication from lan to lanplus (encrypted communication)
 - added "-t <SDR-type>" option in addition to "-T <sensor type>"



3) Nagios IPMI Sensor Monitoring Plugin






- **licensing and development**
 - Open Source, GPLv3
 - developed by Werner Fischer (Thomas-Krenn.AG)
 - feedback from Michael Streb (NETWAYS GmbH)
 - contributions by the community:
 - multiple patches, e.g. localhost.patch (NRPE)
 - tests with additional hardware: IBM, HP, Dell, Sun, ...
 - download and further information (in German):
<http://www.thomas-krenn.com/ipmi-plugin>
 - mailing lists:
<http://lists.thomas-krenn.com>



4) Conclusions



- you need only a little time to set up the IPMI Plugin
- it monitors every IPMI compatible server for you
- it provides valuable information on the status of your hardware

Host ↑↓	Service ↑↓	Status ↑↓	Last Check ↑↓	Duration ↑↓	Attempt ↑↓	Status Information
examplehost	IPMI Fans 	OK	2009-11-02 16:06:33	0d 0h 6m 12s	1/4	Fan Status: OK
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→ go and see it live at our booth 201 in hall 7.2a

→ then just use it ;-)

