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The server experts



Raise your Uptime

How to monitor heterogeneous server
environments with Linux

LPI Forum Warsaw, 28th September 2012

Agenda

- 1) Introduction
- 2) Why monitoring?
- 3) Icinga Setup and Usage
- 4) IPMI
- 5) Conclusions

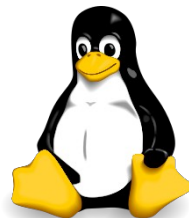
1) Introduction

who I am ...

Werner
Fischer



Linux user
since 2001

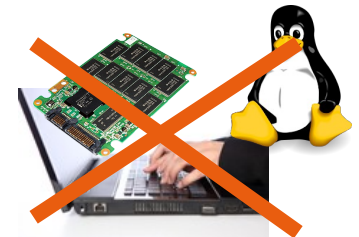


Teamlead
R&D at

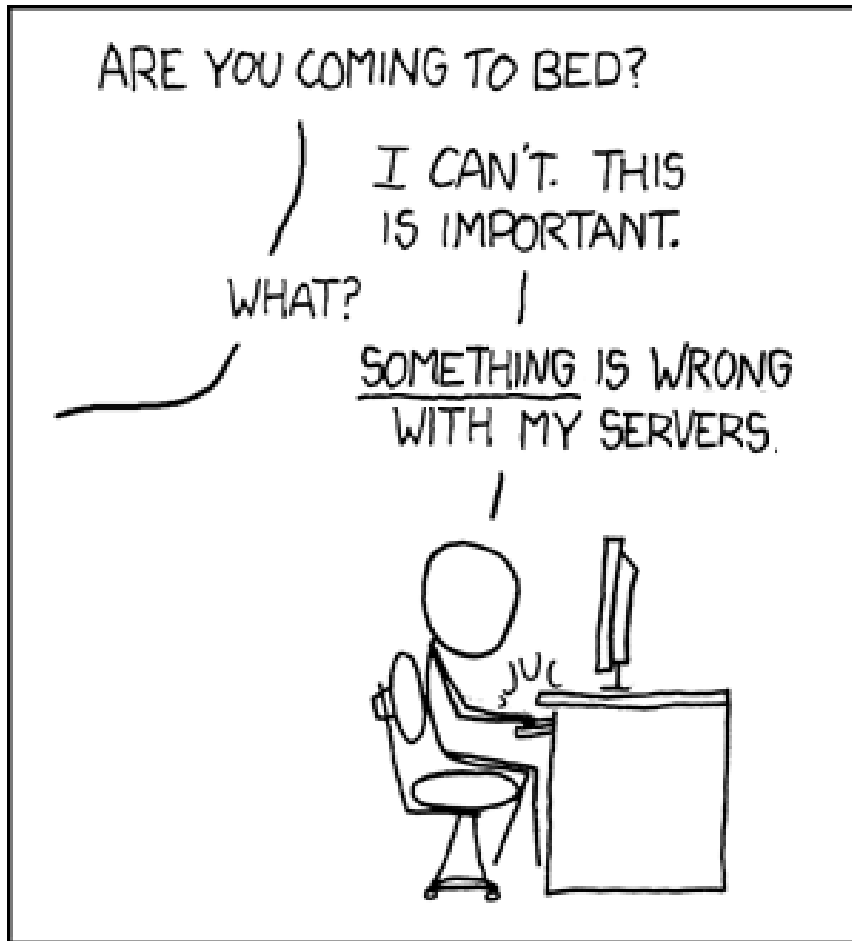


who I'm not

Kernel or
H/W dev.



2) Why monitoring?



You'll get alerts
in realtime

It tells you the
"SOMETHING"

It'll save you
a lot of time!

2) Why monitoring?

- So why do monitoring?
 - Check Availability
 - send realtime alerts
 - Check Performance
 - discover trends
 - Collect SLA Data
 - prove uptimes

2) What can I monitor?

- Hardware
 - Server (IPMI)
 - Storage Systems
 - Environment
- Operating Systems
 - CPU, Memory, Disk
 - Processes
 - Log files
 - ...
- Services
 - eg. DNS, FTP, HTTP
 - SSH, SMTP, ...
 - TCP & UDP ports
- Applications
 - SAP
 - all Databases
 - Directory services
 - ...

3) Icinga Setup

- To setup your monitoring environment:

- Install Ubuntu 12.04
- `sudo apt-get install icinga`

ubuntu 

 ICINGA

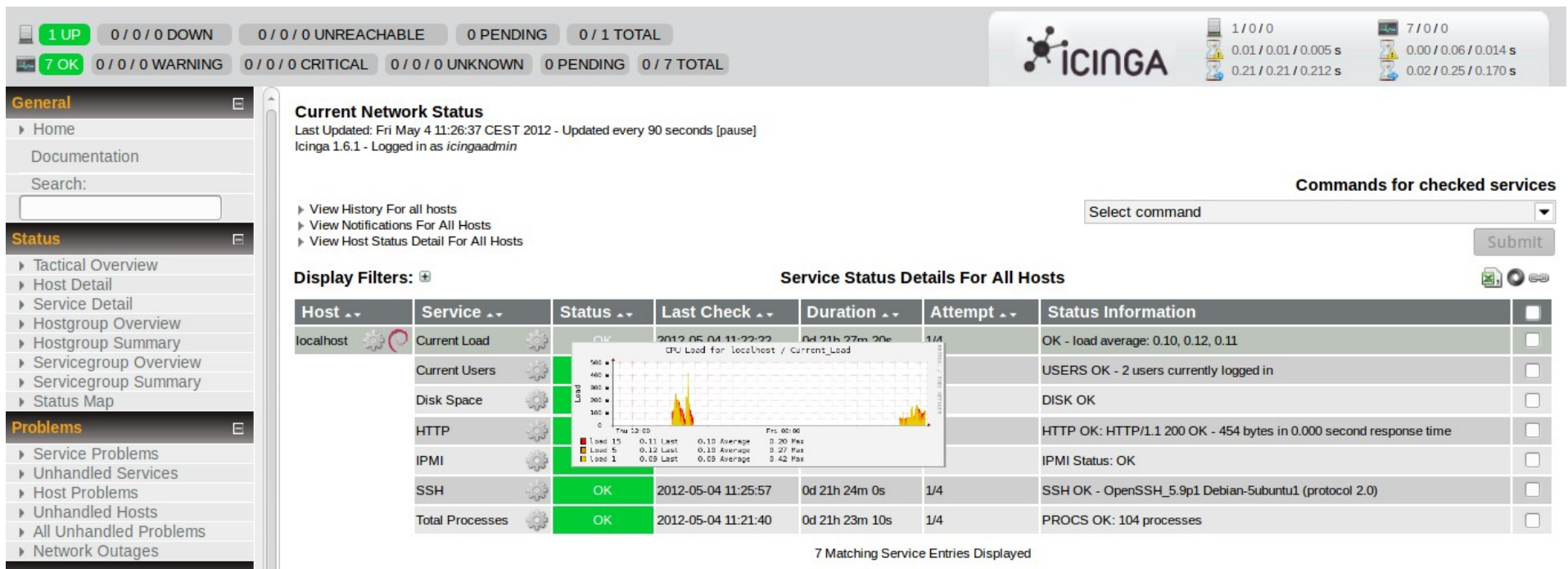
- To get nice diagrams:

- `sudo apt-get install pnp4nagios`

 PNP4Nagios

3) Use Icinga

- Icinga Classic web interface



General

1 UP 0 / 0 / 0 DOWN 0 / 0 / 0 UNREACHABLE 0 PENDING 0 / 1 TOTAL

7 OK 0 / 0 / 0 WARNING 0 / 0 / 0 CRITICAL 0 / 0 / 0 UNKNOWN 0 PENDING 0 / 7 TOTAL

Current Network Status
Last Updated: Fri May 4 11:26:37 CEST 2012 - Updated every 90 seconds [pause]
Icinga 1.6.1 - Logged in as *icingaadmin*

View History For all hosts
View Notifications For All Hosts
View Host Status Detail For All Hosts

Commands for checked services
Select command
Submit

Display Filters: +

Service Status Details For All Hosts

Host	Service	Status	Last Check	Duration	Attempt	Status Information
localhost	Current Load	OK	2012-05-04 11:22:22	0d 21h 27m 20s	1/4	OK - load average: 0.10, 0.12, 0.11
	Current Users	OK				USERS OK - 2 users currently logged in
	Disk Space	OK				DISK OK
	HTTP	OK				HTTP OK: HTTP/1.1 200 OK - 454 bytes in 0.000 second response time
	IPMI	OK				IPMI Status: OK
	SSH	OK	2012-05-04 11:25:57	0d 21h 24m 0s	1/4	SSH OK - OpenSSH_5.9p1 Debian-Subuntu1 (protocol 2.0)
	Total Processes	OK	2012-05-04 11:21:40	0d 21h 23m 10s	1/4	PROCS OK: 104 processes

7 Matching Service Entries Displayed

Load Graph: CPU Load for localhost / Current_Load
Y-axis: Load (0 to 500)
X-axis: Time (7m 12:00 to 11:24:00)
Legend: Load 15 (0.11 Last, 0.10 Average, 0.20 Max), Load 5 (0.12 Last, 0.18 Average, 0.27 Max), Load 1 (0.09 Last, 0.09 Average, 0.42 Max)

4) IPMI Introduction

- IPMI = Intelligent Platform Management Interface
 - Developed 1998 by Intel, HP, NEC, Dell
 - Current IPMI v2.0 since 2004
- Purpose:

1

Monitoring
(temp, fans,...)

3

Logging
(system event log)

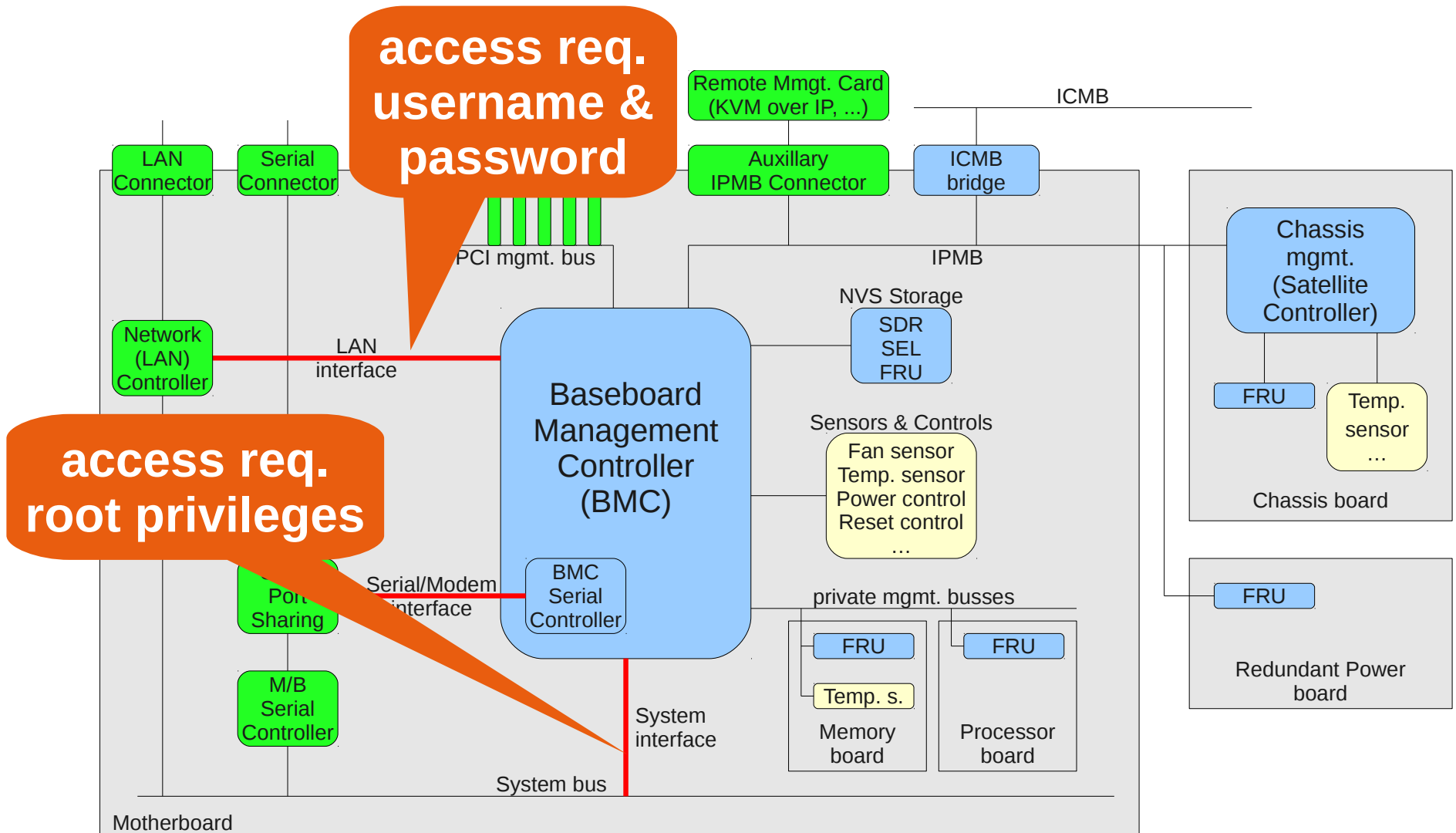
2

Recovery Control
(power on/off/reset)

4

Inventory
(FRU information)

4) IPMI Introduction



4) IPMI Sensor Classes

- No need to configure threshold values

NVS Storage

SDR
SEL
FRU

Sensors & Controls

Fan sensor
Temp. sensor
Power control
Reset control
...

Discrete sensors

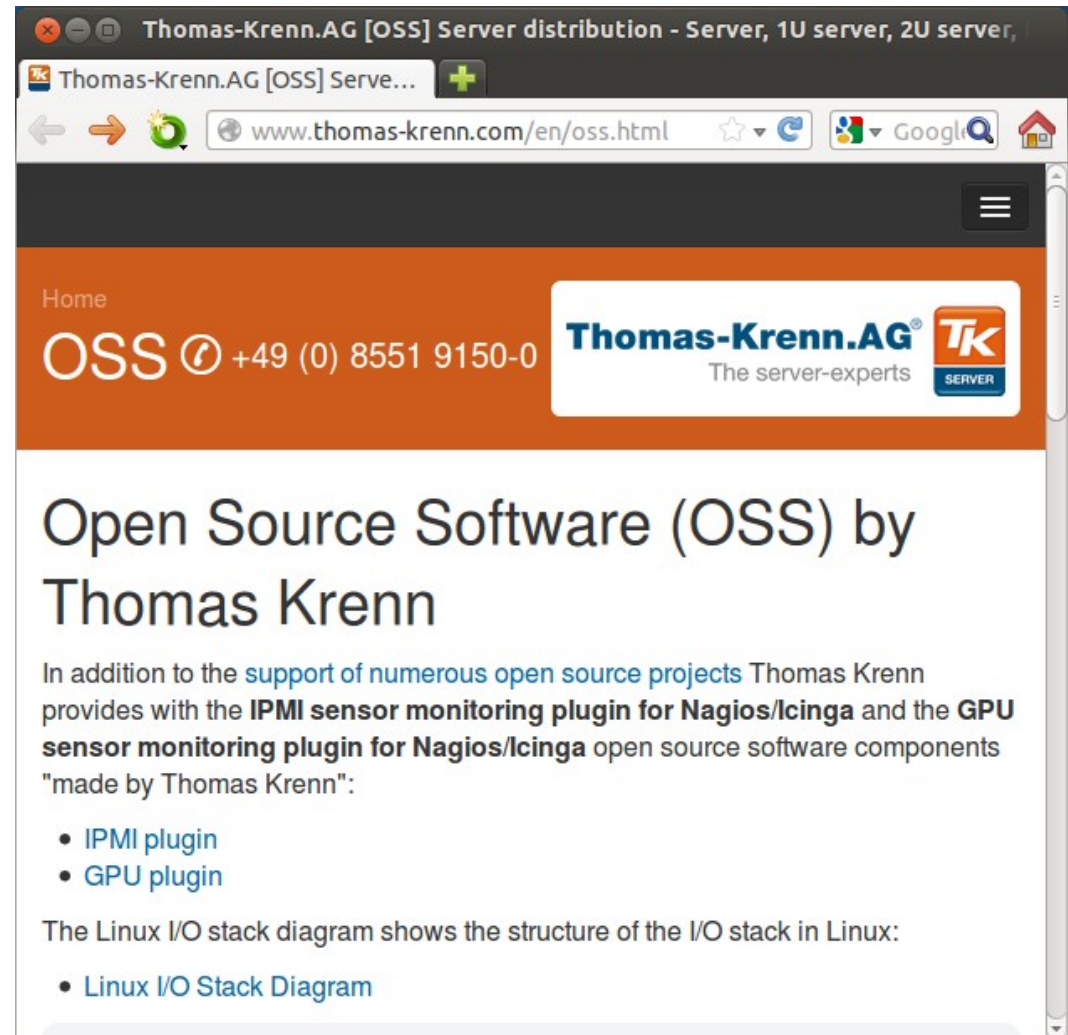
```
[root@test ~]# ipmitool sdr get "PS2 Status"
Sensor ID           : PS2 Status (0x71)
Entity ID           : 10.2 (Power Supply)
Sensor Type (Discrete) : Power Supply
States Asserted     : Power Supply
                    : [Presence detected]
                    : [Power Supply AC lost]
Assertion Events    : Power Supply
                    : [Presence detected]
                    : [Power Supply AC lost]
Assertions Enabled  : Power Supply
                    : [Presence detected]
                    : [Failure detected]
                    : [Predictive failure]
                    : [Power Supply AC lost]
[...]
Deassertions Enabled : Power Supply
[...]
```

Threshold sensors

```
[root@test ~]# ipmitool sdr get "Fan 1"
Sensor ID           : Fan 1 (0x50)
Entity ID           : 29.1 (Fan Device)
Sensor Type (Analog) : Fan
Sensor Reading      : 5719 (+/- 0) RPM
Status              : ok
Nominal Reading     : 6708.000
Normal Minimum      : 2451.000
Normal Maximum      : 10965.000
Lower critical       : 1720.000
Lower non-critical  : 1978.000
Positive Hysteresis : 86.000
Negative Hysteresis : 86.000
Minimum sensor range : Unspecified
Maximum sensor range : Unspecified
Event Message Control : Per-threshold
Readable Thresholds : lcr inc
Settable Thresholds : lcr inc
Threshold Read Mask : lcr inc
Assertion Events     :
Assertions Enabled   : lnc- lcr-
Deassertions Enabled : lnc- lcr-
```

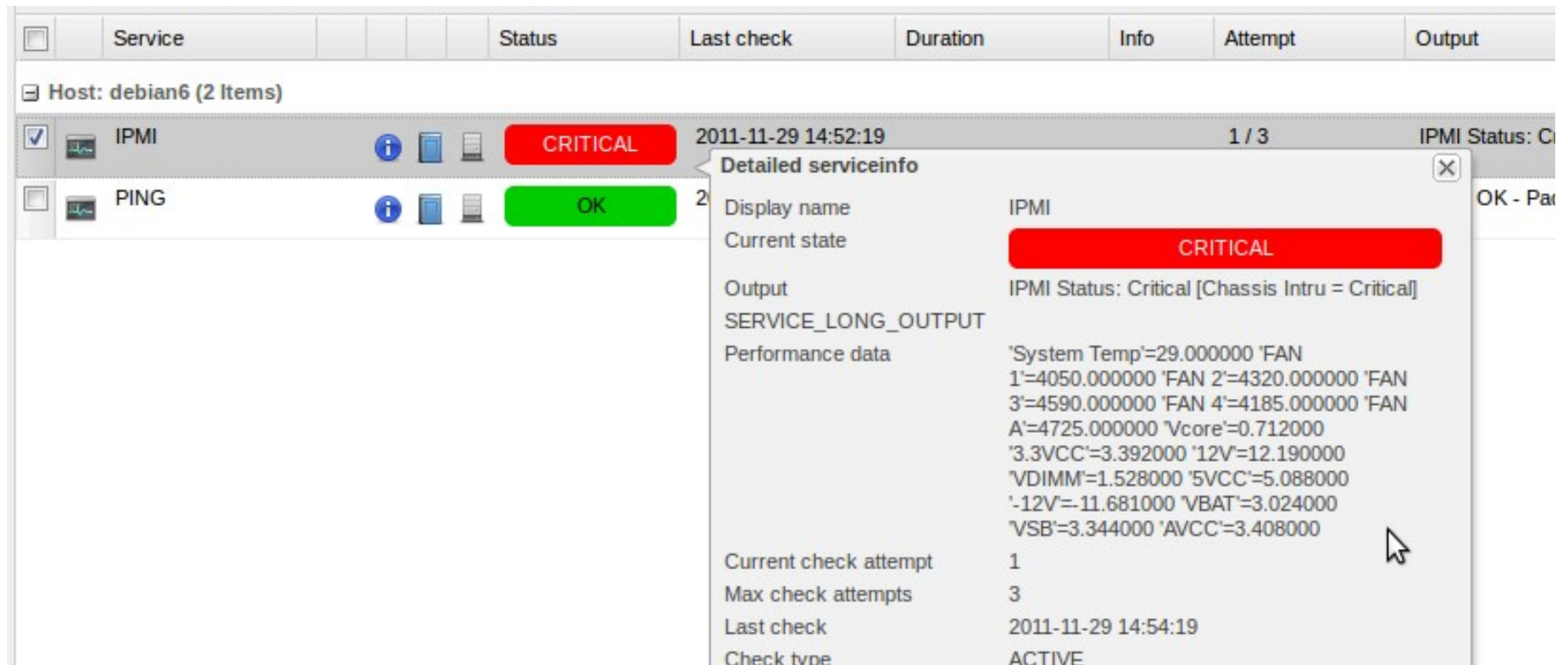
4) IPMI Plugin

- Developed by Thomas Krenn
- Open Source (GPL v3)
- www.thomas-krenn.com/en/oss



4) IPMI Service Check

- IPMI service check shows hardware issues:



Service	Status	Last check	Duration	Info	Attempt	Output
Host: debian6 (2 Items)						
IPMI	CRITICAL	2011-11-29 14:52:19			1 / 3	IPMI Status: C
PING	OK					OK - Pat

Detailed serviceinfo	
Display name	IPMI
Current state	CRITICAL
Output	IPMI Status: Critical [Chassis Intru = Critical]
SERVICE_LONG_OUTPUT	
Performance data	'System Temp'=29.000000 'FAN 1'=4050.000000 'FAN 2'=4320.000000 'FAN 3'=4590.000000 'FAN 4'=4185.000000 'FAN A'=4725.000000 'Vcore'=0.712000 '3.3VCC'=3.392000 '12V'=12.190000 'VDIMM'=1.528000 '5VCC'=5.088000 '-12V'=-11.681000 'VBAT'=3.024000 'VSB'=3.344000 'AVCC'=3.408000
Current check attempt	1
Max check attempts	3
Last check	2011-11-29 14:54:19
Check type	ACTIVE

5) Conclusions

1

Monitor hardware
with Icinga & IPMI

2

Problems?
They will tell you!

3

It'll save you
time & money

