FEATURE BRIEF

Service Assurance for Virtualized Networks featuring
Intel® Infrastructure Management Technologies

Intelligent Platform Management Interface (IPMI) Information Retrieval

Intel® Platform Service Assurance

This feature brief describes the IPMI information provided by the baseboard management controller for integration to higher-level management applications for platform service assurance.

Abstract

Monitoring the health of a platform is a critical part of service assurance. The baseboard management controller (BMC) is a specialized microcontroller that monitors the physical state of a platform using sensors. The BMC is integrated into the platform and supports the industry-standard IPMI interface. IPMI provides out-of-band management and monitoring capabilities independent of the platform's CPU, firmware (BIOS or UEFI), and operating system.

Platform sensors measure temperature, power-supply voltage, and fan speeds. If any of these variables stray outside specified limits, a notification is generated. The BMC can also be used to get IPMI statistics from the sensors and monitor physical hardware state changes.

Feature Description

The IPMI information retrieval feature uses an IPMI plug-in to collect platform health status information from the BMC and make it available to higher-level management systems. The collectors can also feed the information to management/analytics systems. Some systems may poll for information, while others may expect the collectors to push information. The IPMI plug-in uses the OpenIPMI library (see Ref. 2) to enable support of IPMI features. IPMI defines many types of sensors, but groups them into two main categories, threshold and discrete (see Ref. 3). The IPMI plug-in gathers information about the platform sensors and state and the BMC generates notifications if a threshold is exceeded or a system event log (SEL) event related to detection of a platform sensor. It is important to note that while IPMI provides out-of-band management and monitoring, this feature provides in-band monitoring only.

Feature Data Sets

Threshold sensors that monitor analog variables, such as:

- Temperature
- Voltage
- Fan speed
- Current

Discrete sensors that monitor events or states, such as:

- Entity presence
- Software initialization progress
- External platform power applied

MIB support:

- Option 1 custom MIBs that have been defined by Intel® include:
  - http://www.oidview.com/mibs/343/INTELCORPORATIONBASEBOARD-MIB.html
  - http://www.circitor.fr/Mibs/Files/INTELCORPORATIONBASEBOARD-MIB.mib
  - http://www.oidview.com/mibs/343/INTELCORPORATIONBASEBOARDMAPPER-MIB.html
  - http://www.circitor.fr/Mibs/Files/INTELCORPORATIONBASEBOARDMAPPER-MIB.mib

Open Telemetry Collection Framework Support

Threshold and discrete sensor-generated events are recorded in the SEL, which is a centralized nonvolatile repository for critical, warning and informational system events (see Ref. 4). An SEL system event consists of the SEL record ID, the event date, the event time, the sensor group, the sensor name, and the sensor event that occurred. The IPMI collectd plugin provides discrete, threshold sensor information as well as SEL events to higher level management systems.

The higher-level telemetry agent supported is collectd, a daemon that receives system statistics and makes them available in various ways (see Ref. 5 for details). The telemetry agent publishes the information to external management interfaces.

Configuration

An IPMI plug-in[1] and configuration file enables configuration of the following items:

- Interval – The interval (in seconds) at which BMC sensor information is retrieved.
- Sensor – The sensors to monitor depends on the IgnoreSelected item (see following).
- IgnoreSelected – If true, all sensors are monitored, except those sensors defined in the sensor list. If false, all sensors are monitored.
- NotifySensorAdd/Remove/NotPresent – Enables or disables the sending of a notification when a sensor is added, removed, or not present.
- SELEnable – Enables or disables notification of SEL events for subscription purposes. The IPMI plug-in listens for sensor threshold and discrete events, and when a SEL event is received, a notification is sent.
- SELClearEvent – Enable or disable the clearing of a SEL event after the event has been successfully handled.

External Interface Support

External interfaces supported by the IPMI information retrieval feature include:

- SNMP support (see Ref. 6) and the SNMP MIBs listed in the feature data sets section

Feature Dependencies

The IPMI information retrieval feature depends on having the following features running on the platform:

- OpenIPMI and integrated BMC
- BMC firmware version
- Collectd for metric delivery to SNMP
- SNMP (see Ref. 6)

Where to Get More Information

For more information, visit https://networkbuilders.intel.com/network-technologies/serviceassurance

REFERENCES

TITLE	LINK
Ref. 1: IPMI technical resources	https://www.intel.com/content/www/us/en/servers/ipmi/ipmi-home.html
Ref. 2: The OpenIPMI library	http://openipmi.sourceforge.net/
Ref. 3: IPMI – A Gentle Introduction with OpenIPMI	http://openipmi.sourceforge.net/IPMI.pdf
Ref. 4: *Intel® Server Boards and Server Platforms Server Management Guide*	http://download.intel.com/support/motherboards/server/sb/g37830002_servermanagementguide_r3_1.pdf
Ref. 5: collectd	https://collectd.org/documentation.shtml
Ref. 6: *Intel Platform Service Assurance – SNMP Reporting Feature Brief*	https://networkbuilders.intel.com/network-technologies/serviceassurance

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[1] Currently being integrated into collectd