Aerohive Networks Inc.

Functional Specification for device reboot information

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| Version | Date | Author | Description |
| 0.1 | 29/08/2013 | Jiasheng Zhou | draft |
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Revision History

# Introduction

This document is a function specification of reboot information structure recorded on devices and reported to Hivemanager after devices reboot(normally or abnormally).

Every time a device reboots, it should record the reboot cause of this reboot, and the reboot timestamp, and when the device connected to HiveManager for the first time, it should report those information to HiveManager for further analysis.

# Reboot-info structure

## Reboot cause

There are various causes could cause a device reboot. Normally, it could

be a user’s behavior, power off/on, or input the “reboot” cli. Abnormally, it could be kernel panic or other errors causing a watchdog reboot. **Here lists all the possible detailed reboot causes and wrapped it into a structure for either recording on devices or sending message to HiveManager.**

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| --- | --- | --- |
| Num | Reboot cause detected | Description |
| 1 | Power cycle | Power off/on |
| 2 | Reboot by admin | Reboot by reboot command or upgrade command |
| 3 | Reboot by reset button | Push reset button |
| 4 | Reboot by CPU PM | Reboot by failed PM supervision on CPU |
| 5 | Reboot by memory PM | Reboot by failed PM supervision on memory |
| 6 | Oom reboot | Out of memory (OOM) invokes kernel panic, and kernel panic stops the whole system and causes watchdog reboot |
| 7 | lockup issue reboot | lockup issue invokes kernel panic, and causes watchdog reboot |
| 8 | PCI bus error reboot | PCI bus error causes system stuck, and then causes watchdog reboot |
| 9 | exception in kernel reboot | exception in kernel causes kernel panic |
| 10 | Hardware watchdog | Unknown reason cause hardware watchdog reboot |
| 11 | Software watchdog | Software watchdog |
| 12 | Kernel panic | Unknown reason cause kernel panic |
| 13 | Debug reboot | SysRQ via ping (debug image use) |
| 14 | Unknown | no trace for reboot |

## Reboot timestamp

Recorded the reboot time on devices and show the local time, send the Linux system time to HiveManager.

# Usage

The reboot info can be showed by cli on devices and sent to HiveManager for further analysis.

1. on devices, the CLI is:

show system \_reboot-info

1. message sent to HiveManager

Here is some general design for message sent to HiveManager, detailed message structure will be illustrated in design specification.

1. device send reboot information when device connects to HM first time after reboot.
2. Reboot information is added in “state change message”.
3. Reboot information include reboot type(1 byte) and reboot time(4 bytes).
4. Reboot information is added into element type 5010 (hiveap\_info).
5. Type is 7 ,length is 5.

Reboot type: 1 byte

Reboot time: 4 bytes.

1. Element type 5010 is in the “State change message”.