Aerohive Networks Inc.

Function Specification for Reboot History

Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Date | Author | Description |
| 0.1 | 8/26/2013 | Xiaoyin Xia | Initial version |
| 0.2 | 9/03/2013 | Xiaoyin Xia | Modify by review |

**Table of Contents**

1. Introduction 3

2. Overview 3

3. Usage Scenarios and Assumptions 3

3.1. User Scenario for Super Admin 4

3.2. User Scenario for VHM Admin 4

4. Feature Function Description 4

4.1. Database 5

4.2. CSV File 6

4.3. Password Protected File 6

4.4. CAPWAP Interface 6

4.5. Upgrade 8

5. Acronym 8

6. Reference 8

7. Review Minutes 8

# Introduction

This document describes the Function Specification for Reboot History.

Currently when support and escalation team receives cases from customer that are related to multiple reboots and crashes, there are no tools available to tell how many reboots had occurred, what are the reboot causes and frequency of reboots. Supports need to involved customer to collect tech data from multiple devices that encountered crashes. They need to manually look into the log files and extract information to formulate a report to help them better troubleshoot the issues. This process is time consuming and quite frequently further increases customer’s frustration.

To simplify troubleshoot, HM shall store the reboot history information from devices and be able to provide the data upon request.

# Overview

HM provide a password protected compress CSV file of below columns as part of Tech Data, sorted by Received Timestamp and Device MAC.

* Device Name
* Device MAC
* Device SN
* Device model
* Device version
* Topology
* Reboot Type
* Reboot Timestamp
* Received Timestamp

Because Device maybe get the time before NTP sync, so the reboot time maybe incorrect. HM will record the received time for reboot notification from device.

When “Get Tech Data” is clicked, in addition to two existing Tech Data files(“device\_crash\_logs.tar.gz”&“device\_tech\_logs.tar.gz”), a third one (“device\_diagnosis\_logs.tar.gz”) will be generated for selected devices.

Only “device\_diagnosis\_log.tar.gz” file will be generated in Tech Data if “Get Tech Data” is clicked with no device selected.

Devices provide reboot notification when devices reboot, and HM store the reboot information into DB.

# Usage Scenarios and Assumptions

This feature is available for both HMOL and OPHM.

Reboot history can only be collected by super admins and VHM admins.

Reboot history can be collected for:

* Selected devices of a VHM (include home VHM) by VHM admins.
* All devices of a VHM (include home VHM) by VHM admins, when no device is selected.
* Selected devices of all VHMs by super admins.
* All devices of all VHMs by super admins, when no device is selected.

## UserScenario for Super Admin

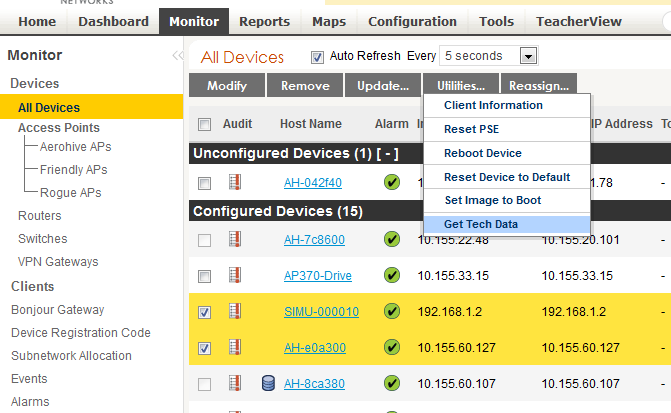
1. Super admin logs in HMOL (OPHM).
2. Click “Monitor/All Devices”, or click “Monitor/Aerohive APs”, or click “Monitor/Routes”, or click “Monitor/Switches”, or click “Monitor VPN Gateways”.
3. Collect reboot history for all devices of this catalog when click “Utilities…/Get Tech Data” with no device is selected; Collect reboot history for selected devices when click “Utilities…/Get Tech Data”.
4. Switch to a specific VHM(include home VHM).
5. Collect reboot history for all devices of this catalogin this VHM when click “Utilities…/Get Tech Data” with no device is selected; Collect reboot history for selected devices when click “Utilities…/Get Tech Data”.

## User Scenario for VHM Admin

1. VHM admin logs in HMOL (OPHM).
2. Click “Monitor/All Devices”, or click “Monitor/Aerohive APs”, or click “Monitor/Routes”, or click “Monitor/Switches”, or click “Monitor VPN Gateways”.
3. Collect reboot history for all devices of this catalog in this VHM when click “Utilities…/Get Tech Data” with no device is selected; Collect reboot history for selected devices when click “Utilities…/Get Tech Data”.

# Feature Function Description

Reboot history data is provided when “Get tech Data” is clicked.



## Database

Reboot history information should save into DB.

Table hm\_reboot\_history:

|  |  |  |  |
| --- | --- | --- | --- |
| Field | Type | Primary | Note |
| id | bigserial | Yes | Auto increase |
| mac | varchar(12) | No | Not null |
| reboottype | smallint | No | Not null |
| reboottimestamp | bigint | No | Not null |
| Receivedtimestamp | Bigint | No | Not null |
| Owner | bigint | No | Not null |

Index :idx\_hm\_reboot\_hisotry\_mac(mac).

The reboot history will be kept for 30 days (not configurable).

## CSV File

The reboot history information exports to a CVS file, the data is sorted by timestamp and device MAC.

The CVS file format is following:

Device name, Device MAC, Device SN, Device model, Topology, Reboot type, Reboot Timestamp, Receive Timestamp

AH-112233, 001977112233, 34001234567890, HiveAP330, root, Power cycle, 2013-08-26 10:12:11, 2012-08-26 10:14:00:00

The CSV file will include max 100000 records even if reboot history records are more than 100000.

CVS file will compress into file “device\_diagnosis\_logs.tar.gz” with password protected, the password is “evih0rea”.

## Password Protected File

For CSV file, we need provide a password protected file “device\_diagnosis\_log.tar.gz”.

In CentOS, tar common has not provided encryption service. Need openssl to encrypt the file.

HM save reboot history data to a CSV file , reboot\_history.csv.

tar and encrypt CSV file:

tar czvf - reboot\_history.csv | openssl enc -aes-256-cbc -e -pass pass:evih0rea > device\_diagnosis\_log.tar.gz

decrypt and untar file:

openssl enc -in device\_diagnosis\_log.tar.gz -aes-256-cbc -d -pass pass:evih0rea | tar xzvf -

Note:

**The password protected file cannot be decrypt and untar in Window**.

## CAPWAP Interface

***Device should send reboot information to HM when device connects to HM first time after reboot.***

*Reboot information is added in “state change message”.*

Reboot information include reboot type (1 byte) and reboot time (4 bytes).

Reboot information is added into element type 5010 (hiveap\_info).

Type is 7, length is 5.

Reboot type: 1 byte

Reboot time: 4 bytes.

|  |  |  |
| --- | --- | --- |
| Name | Size  (in octet) | Description |
| reboot type | 1 | 0: power cycle  1: unknown  2: hardware watchdog  3: software watchdog  4: reboot by user  5: kernel panic  6: debug  7: hardware watchdog confirmed  8: radio stuck  9: reset button  10: memory PM  11: out of memory  12: lockup issue  13: PCI bus error  14: kernel exception |
| timestamp | 4 | Int |

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

## Upgrade

The reboot history data need upgrade

# Acronym

# Reference

# Review Minutes

* 9/03/2013 Meeting Minutes

Attendees: Steven Kongxiaohai; Guojun Zhao; Minfei Jin; Xiaorong Feng; Tiesong Wang; Leilei Wang; Jiasheng Zhou; Shengqiang Zhang; Qin Shen

Issues discussed:

1. Device maybe get the reboot time before NTP sync, the time maybe incorrect, add HM received time in CSV file.
2. We can encrypt and tar a password protected file and decrypt and untar in centos, but this file cannot be decrypted and untar in Windows, is it OK.

* 9/4/2013 US review notes

Attendees: Scott, David G, Christina, Kevin, Brian, David D.

Notes:

* Add Device Version