Using

Log Messages and Alert Actions

in Dell OpenManage Server Administrator

System administrators can effectively monitor Dell™ PowerEdge™ servers by using error messages and alert actions provided by Dell OpenManage™ Server Administrator software. This article analyzes several critical event logs and alert actions that are configurable in the Dell OpenManage Server Administrator software.

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Dell OpenManage Server Administrator has an excellent logging feature that stores the event messages and logs of Dell PowerEdge servers. The logs are categorized into four types: hardware log, alert log, power-on self-test (POST) log, and command log.

- **Hardware log:** The hardware log reports potential problems in a PowerEdge server's hardware components. This log, which is also referred to as the Embedded Server Management (ESM) log—or on some systems, the system event log (SEL)—comprises a set of embedded instructions that can send hardware status messages to Dell OpenManage systems management software.

- **Alert log:** The alert log is the list of all events generated by the Server Administrator instrumentation service in response to sensor status changes such as temperature, voltage, and specified threshold values. The alert log also records other monitored parameters such as chassis intrusion, log capacity, and so forth.

- **POST log:** The POST log consists of a list of the POST codes and their corresponding descriptions. The POST operation tests various system components

such as RAM, hard drives, and the keyboard before the operating system (OS) loads, and then provides details of these tests in the POST log.

- **Command log:** The command log provides the details of the commands executed from the Server Administrator graphical user interface (GUI) and from the Server Administrator command-line interface (CLI).

Both the hardware log and the alert log provide details of system events, categorizing each event by its corresponding severity status: normal, warning, or critical. Each event description has an associated date and time, for efficient tracking. The Dell OpenManage Server Administrator logging feature is designed such that, when a heading is selected, the columns are sorted in ascending or descending order. Each log page has a status indicator at the top, which changes from a green check mark to a yellow triangle containing an exclamation point when the log file reaches 80 percent capacity. At this point, the administrator is advised to export the current logs to a different location on the hard drive and clear the logs present in the Server Administrator software.

Responding to critical error messages

Critical error messages appear in both the hardware and alert logs when system events occur. Error messages related to temperature, fan, voltage, and current sensors are reported as nonrecoverable failures when the specified system detects an error from which it cannot recover.

Following are examples of critical event messages that can appear in the Dell OpenManage Server Administrator hardware and alert logs. If Dell OpenManage Server Administrator displays any of these critical error messages, the system administrator should take remedial action immediately and contact Dell for technical support if necessary.

Thermal shutdown protection has been initiated. The hardware and alert logs display this message when a system is configured for thermal shutdown because of an error event. If a temperature sensor reading exceeds the error threshold for which the system is configured, the OS shuts down and the system powers off. This event may also be initiated when a fan enclosure is removed from a system for an extended period of time.

Automatic System Recovery (ASR) action was performed. The alert log displays this message when an automatic system recovery action is performed because of a hung operating system. The action performed and the time the action occurred are provided.

Memory device status is *<status>*. The hardware and alert logs display this message when a memory device correction rate exceeds an acceptable value, a memory spare bank is activated, or a multibit error-correcting code (ECC) error occurs. The system continues to function normally except in the case of a multibit ECC error.

AC power has been lost. The hardware and alert logs display this message if an AC power cord loses power, because the resulting lack of redundancy requires this event to be classified as an error. The sensor location and chassis location information are provided.

The error messages and alert actions provided by Dell OpenManage Server Administrator software are designed to help system administrators effectively manage their Dell PowerEdge servers.

Log size is near or at capacity. The hardware and alert logs display this message when the size of a log is near or at full capacity. The message will indicate which log—either hardware, alert, POST, or command—is near capacity.

Temperature sensor detected a failure value. The hardware and alert logs display this message, which indicates that a temperature sensor on the backplane board, system board, or drive carrier in the specified system has exceeded

its failure threshold. The sensor location, chassis location, previous state, and temperature sensor value are provided.

Fan sensor detected a failure value. The hardware and alert logs display this message if a fan sensor in the specified system has detected the failure of one or more fans in the server. The sensor location, chassis location, previous state, and fan sensor value are provided.

Voltage sensor detected a failure value. The hardware and alert logs display this message if a voltage sensor in the specified system has exceeded its failure threshold. The sensor location, chassis location, previous state, and voltage sensor value are provided.

Current sensor detected a failure value. The hardware and alert logs display this message if a current sensor on the power supply for the specified system has exceeded its failure threshold. The sensor location, chassis location, previous state, and current sensor value are provided.

Chassis intrusion detected. The hardware and alert logs display this message when a chassis intrusion sensor in the specified system detects that the system cover was opened while the system was operating. The sensor location, chassis location, previous state, and chassis intrusion state are provided.

Power supply detected a failure. The hardware and alert logs display this message when a power supply is disconnected or fails. The sensor location, chassis location, previous state, and additional power supply status information are provided.

Fan enclosure removed from system for an extended amount of time. The hardware and alert logs display this message when a fan enclosure has been removed from the specified system for a user-definable length of time. The sensor location and chassis location are provided.

Configuring alerts using the Alert Actions feature

Dell OpenManage Server Administrator also provides an Alert Actions feature that allows administrators to configure the type of alert they want to receive when the system has encountered any of the critical error messages previously discussed.

Alert actions for Windows systems

Alert actions for servers running Microsoft® Windows® operating systems include beeping the speakers on the affected server, displaying an alert on the Server Administrator console, broadcasting a message to all the users who have drives mapped to the affected server, and executing any application specified by Server Administrator (see Figure 1). All of these alert actions can be configured from the Server Administrator main page under the Alert Actions section. A successful configuration of an alert action for an event is indicated by a check mark in the corresponding row under the specified action on the Alert Actions Information screen, as shown in Figure 1.
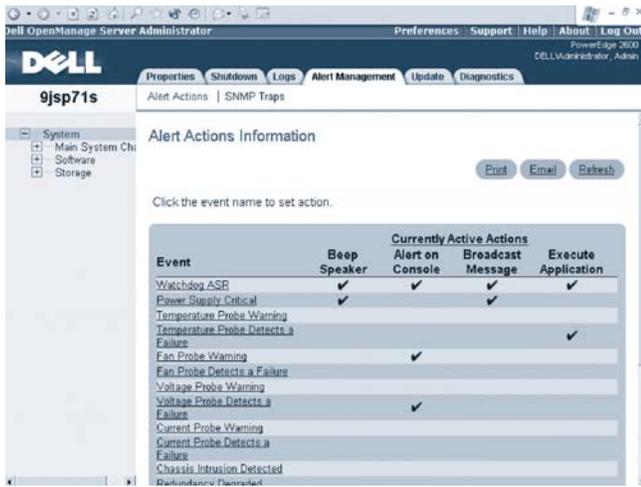
Figure 1. Configuring alerts in Server Administrator

Alert actions for Linux systems

The Alert Actions feature also can be used on servers running the Red Hat® Enterprise Linux® OS, but several details must be considered. When administrators set the alert action to "Alert on Console," Server Administrator writes a message to the console. If the Server Administrator system is running the X Window System thin client, alert messages are not displayed by default. To see alert messages when the X Window System is running, xconsole must be running.

When the alert action is set to "Broadcast Message," Server Administrator executes the `wall` command, which sends the message to every administrator who is logged in and has set their message permissions to "yes." If Server Administrator is running the X Window System, broadcast messages are not displayed by default. To see broadcast messages when the X Window System is running, a terminal service like xterm or gnome-terminal should be started.

There are limitations to the types of applications that Server Administrator can execute when the alert action is set to "Execute Application." The following guidelines can help ensure proper execution of an application under an event:

- X Window System–based applications should not be specified because Server Administrator is not designed to execute such applications.
- Applications that require input from users should not be specified because Server Administrator is not designed to execute such applications.

- To execute multiple applications (or commands) for an alert, an administrator can write a script for the actions and put the full path to the script in the "application to execute" box.

In addition, redirection of stdout and stderr to a file is recommended when specifying the application to help ensure a record of the output and the error messages. For example:

```
ps -ef >/tmp/psout.txt 2>&1
```

This command executes the application ps, redirects stdout to the file /tmp/psout.txt, and redirects stderr to the same file.

Similarly, administrators can send the server alert log to a file by using the following command:

```
omreport system alertlog > /tmp/alertmsg.txt 2>&1
```

This command outputs the alert log to the alertmsg.txt file located in the tmp directory and redirects stderr to the same file as stdout.

Finally, the following command will execute the mail application to send the message contained in the /tmp/alertmsg.txt file to the Red Hat Enterprise Linux user called Admin, with the subject line "Server Alert":

```
mail -s "Server Alert" admin </tmp/alertmsg.txt>/
    tmp/mailout.txt 2>&1
```

The /tmp/alertmsg.txt file must be created by the administrator before the event occurs. In addition, stdout and stderr are redirected to the /tmp/mailout.txt file in case an error occurs.

Enhancing system administration for Dell PowerEdge servers

The error messages and alert actions provided by Dell OpenManage Server Administrator software are designed to help system administrators effectively manage their Dell PowerEdge servers.[1] By proactively monitoring and correcting faulty conditions, administrators can help maintain high uptime for Dell PowerEdge servers.

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FOR MORE INFORMATION

Dell OpenManage Server Administrator instruction guides:
http://support.dell.com/support/edocs/software/svradmin/1.9/index.htm

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[1]For more information about error messages and alert actions, review the context-sensitive help in Dell OpenManage Server Administrator and the documentation provided on the Dell OpenManage documentation CD. This documentation is also available online at http://support.dell.com, and is accessible from the main page after login.