Software Requirements Specification

for

Event Logging

Prepared by FRG Event Logging Team

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1. Introduction

1.1 Purpose

Event logging provides a standard, centralized way for users and applications (including the operating system) to record important software and hardware events. The event logging service records events from various event sources and stores them in a single collection called an event log.

1.2 Document Conventions

In this document, we have chosen font-family as Arial. Font-size for headings is taken to be 18,for subheadings it is 14 and for normal text it is 12.

1.3 Considered Technology

Drupal is content management software. It's used to make many of the websites and applications we use every day. Drupal has great standard features, like easy content authoring, reliable performance, and excellent security. But what sets it apart is its flexibility; modularity is one of its core principles. Its tools helps building the versatile, structured content that dynamic web experiences need.

1.4 Targeted Module

Drupal has several modules out of which Event log is considered for development. The event log module logs specific events.This module stores the events in the database. The perspective of the module is detailed in section 2.1.

The current Event log module facilitates the use of five events which are listed in section 2.2. However, more features can be added to the module to improve its utilization.
The features that are to be added are listed out in section 4 of this document.
Apart from the features, there are some issues with the existing events in the module. Some of these issues are selected for debugging and are listed in section 3 of this document.

1.5 Module Credits

This module was created and shared with the Drupal community by **Cipix Internet**.
Till date, **1,370** sites currently report using this module.

2. Case Study

2.1 Module Perspective

Event Log module logs specific events and is presently incorporated in the module section of the Drupal documentation. The events are saved in the database and are available for viewing on the page admin/reports/events. Moreover, a views integration is provided which allows us to relate, for instance a node to its events. This can be used to display the total number of views, or the number of times that node has been modified and by which users.

2.2 Module Functions

Presently, following events are supported by the module:

- User authentication (login/logout/request password)
- Node operations (CRUD)
- User operations (CRUD)
- Menu operations (custom menu's and menu items CUD operations)
- Taxonomy operations (vocabulary and term CUD operations)

The types of events in the log can be extended by using various available APIs.

2.3 User Classes and Characteristics

According to the recent reports (May 14, 2017) around 1370 sites are using this module for their event logging activities. Only Drupal websites using the Update Status module are included in the data. This module has been included with the download of Drupal since version 6.x so the data does not include older sites.

2.4 Operating Environment

Event log module has been included in the Drupal 6.x version. The operating environment for it requires to be Drupal 6.x or later versions. It can work on any operating system including Windows, Mac, Linux, etc. The Drupal Toolkit requires a lot of processing power. It can easily consume a lot of system resources, particularly during metadata harvesting, indexing of records in Solr, and node generation. Although it is not yet sure exactly what hardware requirements are necessary.

2.5 User Documentation

Proper documentation of the newly added features and countered bugs will be provided in the PDF format.

2.6 Assumptions and Dependencies

Event log module is to be modified and GitHub is to be used for sharing and committing new changes. Changes can be committed in the original module only if the Drupal community allows/accepts the changes.

3. Issues

3.1 Bugs

There are two major (active) issues reported for the Case Study of Event log module provided for Drupal.This section briefly describes these issues and their solutions.Below are reported bugs:

1) **User Login Notification**
2) **Incompatible With Special Menu Items Module: Infinite Loop On Menu Rebuild**

3.2 User Login Notification

As mentioned in introduction, Drupal's Event Log Module supports User authentication event, which has login, logout and request password as its sub-events.These events are saved in the database and can be viewed on the page admin/reports/events. But the issue has been reported that login event does not appear on the page while admin views events. More information about this bug report can be found here.

Solution :
User login event is added to the page when viewed by admin.

3.3 Incompatible With Special Menu Items Module

If a link is created with no path using Special Menu Items module the site goes into an infinite loop when Event Log tries to log the link on a menu rebuild.When the menu is rebuilt Event Log can't find the special menu item's path, because it doesn't have one, it tries to find it by rebuilding the menu, recursing forever.More information about this bug can be found here .

Solution:
Don't do menu rebuild :By once checking the menu if the path to the given menu is not found a null entry for the path attribute is saved in the log. This way infinite loop can be avoided .You can also cross check to see if any Special menu items are installed to further clarify that this link does not have path.

4. New Features

Besides correcting the bugs, following features will be incorporated in the module:

4.1 Ability to log to a file instead of DB

It would be useful to add the option to log to a file instead of to the database. On larger/more active sites, this could not only provided a performance boost, but offer a system-level approach to history.

4.2 Clear Log Messages Button

Typically all logs are verified and this feature will allow only privileged users to get rid of the ones that are verified to remove clutter and is also great during releases to start from a fresh log.

4.3 Backup Deleted Content

This feature will allow privileged users to get a backup of the event log at regular intervals of time through e-mail.

4.4 Avoiding illegal access

Additional event log monitoring features include filter thresholds which allows in becoming notified when a certain number of events appear during a certain time interval (e.g. more than 3 login failures in 1 minute). Filter thresholds can also be used to ignore repetitive events when they reach a certain count.

5. Visualization using D3

Based on the event logs that will be created on user activity, subsequent graphs will be created based on administrator requirements.
For this purpose we will be using D3.js, which is a JavaScript library for producing dynamic, interactive data visualizations in web browsers.