July 29, 2008 Chino Hills, CA M5.4 Earthquake Post Mortem
Final Report
from EHP Web Team   08/07/08

This earthquake generated approximately the same amount of web traffic as the M5.6 October 31, 2007 Alum Rock, CA earthquake. Delivery of earthquake information on the website was, in general, good, but there were a few minor issues that need to be pursued.

Statistics:

Peak traffic occurred	13 minutes after the earthquake.
Peak hits	17,730 hits/sec
Peak bandwidth	1065 Mbits/sec
Akamai Offload	88%
24 hours after EQ	57.6 million hits
	9.1 million page views
	789,953 unique visitors
Top URL	Did You Feel It? map
DYFI? responses	40,000

Issues:

PROBLEM: The event page was intermittently appearing blank for 1-5 minutes during the peak web traffic. This was due to a combination of many requests causing fast-cgi to choke, and Apache not being reconfigured to use the increase of memory from 4GB to 8GB.
ACTION: Reconfigure Apache to use more memory, and increase the number of allowed processes. Change creation/caching of HTML event page to not unnecessarily loop back through Apache.
RESOLUTION: Caching of HTML event page was modified to not loop back through Apache. Apache config was modified on ehpmaster and ehpdevel to utilize additional memory and is still being tested before implementation on ehp1-4 and ehpbackup. **NOT COMPLETE**

PROBLEM: DYFI? received fewer than expected responses. This may be due to the event page not being accessible for several minutes during the peak traffic.
ACTION: Look at error logs for page viewing, and continue to look for other causes.
RESOLUTION: No errors found. **COMPLETE**

PROBLEM: ShakeMap experienced delays getting to the website. The trigger arrived at the secondary ShakeMap machine 3 minutes after the earthquake, but arrived at the primary machine after 12 minutes. It was manually pushed from the secondary machine after it arrived there. It is unknown why the trigger to the primary machine was delayed.
ACTION: Look for cause of delayed trigger to primary machine. Unknown as of yet.
RESOLUTION: Dave Wald has asked Brian Flagg and Doug Given for information, but he has not yet received any response. **UNRESOLVED**

PROBLEM: PAGER experienced delays getting to the website probably due to the ShakeMap delay.

ACTION: None needed, but other minor issues: 1) RSS reader error that Wan needs to look at 2) Change permissions for making invisible PAGER files in the Admin area.
RESOLUTION: COMPLETE

PROBLEM: STEP map didn't update for at least 90 minutes; it's supposed to update after a significant earthquake.
ACTION: Figure out why it took so long to update.
RESOLUTION: Looks like it is just running quite slowly. Matt Gerstenberger (author of code) "suspects it could do with a bit of a tidy up of old sequences". **UNKNOWN**

PROBLEM: ENS webpages for account registration and profile management went down after the earthquake because of too many database connections (100 is the max). Eric took down the page for 24 hours so it wouldn't bog down the rest of the site.
ACTION: We may want to create a stand-in webpage for situations like this that says something like "ENS account management webpages are not currently available because of unusually high web traffic; please try again later."
RESOLUTION: This request for a temporary page and a way to implement it automatically if possible, will be entered into the EHP website ticketing system for attention. **COMPLETE**

Of Note:

eQuake Alert – reported by Bob Simpson
"eQuake Alert" is a plugin for FireFox that requests an xml catalog of earthquakes from our servers. Default configuration is for a 5 minute interval between requests, but I think this can be set to more frequent intervals if the user wishes. (https://addons.mozilla.org/en-US/firefox/addon/2239)

Here are some statistics on eQuake requests before and after the Chino Hills event, based on the apache logfile from ehp2 for July29, 2008.

Before:
eQuake represents 8.7% of the total hits before the earthquake.
[Before compression this was 33% of total USGS Akamai MB bandwidth.]

Although there are other RSS readers active, eQuake accounts for 83% of all requests for the file "eqs7day-M2.5.xml"

After:
Only a 6.8% jump in rate of eQuake requests after the event.

This is not totally unexpected, given how eQuake works. The uptick in requests probably came from folks with eQuake installed who had their computers or browsers turned off when they felt the earthquake. Folks who had eQuake installed and their browsers turned on would not have automatically increased their number of requests.

So it doesn't look like RSS feeds will pose very much of a problem in spike-times, unless a lot more folks start subscribing to them. We still need to keep an eye on the bandwidth RSS feeds are using in non-spike times, since we pay Akamai mostly based on normal bandwidth (apparently).

Google Maps Earthquake Widget – reported by Scott Haefner
The stats on our Google Maps earthquake widget indicate that we went from getting several hundred requests/day to almost 60,000/day (and growing rapidly) in just over a week. It looks like Google first placed the link on the maps home page on July 22nd, the same day David Applegate sent out the note. It's clear from the popularity of our RSS/Atom feeds, the Google Earth KML feeds, and now this Google Maps layer that people really like seeing our earthquake data displayed in more dynamic ways.

Graph by: ⓘ Hour | ☰ Day | ☰ Week | ☰ Month | ●– Pageviews ▾
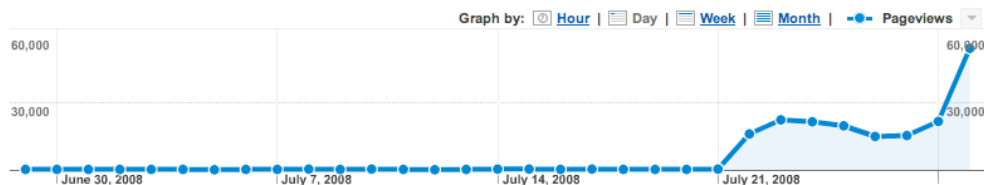
192,896 Pageviews

Sunday, June 29, 2008	0.11% (215)
Monday, June 30, 2008	0.15% (282)
Tuesday, July 1, 2008	0.11% (214)
Wednesday, July 2, 2008	0.13% (246)
Thursday, July 3, 2008	0.14% (271)
Friday, July 4, 2008	0.10% (201)
Saturday, July 5, 2008	0.09% (180)
Sunday, July 6, 2008	0.12% (236)
Monday, July 7, 2008	0.15% (292)
Tuesday, July 8, 2008	0.20% (391)
Wednesday, July 9, 2008	0.16% (315)
Thursday, July 10, 2008	0.19% (369)
Friday, July 11, 2008	0.15% (294)
Saturday, July 12, 2008	0.10% (188)
Sunday, July 13, 2008	0.14% (267)
Monday, July 14, 2008	0.20% (384)
Tuesday, July 15, 2008	0.23% (453)
Wednesday, July 16, 2008	0.14% (278)
Thursday, July 17, 2008	0.18% (355)
Friday, July 18, 2008	0.14% (270)
Saturday, July 19, 2008	0.13% (247)
Sunday, July 20, 2008	0.13% (242)
Monday, July 21, 2008	0.18% (356)
Tuesday, July 22, 2008	8.32% (16,052)
Wednesday, July 23, 2008	11.59% (22,359)
Thursday, July 24, 2008	11.20% (21,597)
Friday, July 25, 2008	10.27% (19,806)
Saturday, July 26, 2008	7.80% (15,045)
Sunday, July 27, 2008	7.99% (15,409)
Monday, July 28, 2008	11.25% (21,694)
Tuesday, July 29, 2008	28.20% (54,388)

Long-term potential actions for consideration: (This list was created after the Alum Rock earthquake.)

- Detect web traffic surge and take appropriate actions on backend webservers, such as limit extraneous processes on webservers, TBD.
- Separate real-time earthquake information from other webpages on different servers with different URLs.
- Separate processes such as CGI, GMT, etc on a different webserver.
- Make a spreadsheet or database of all EHP offerings (movies, animations, maps on demand, rss feeds, database requests, etc.) available on the ehp servers, along with some indication of load imposed on the servers in order to respond. The fear is that just a few machine-intensive requests (maps on demand, for example) during a spike after a felt earthquake could greatly impeded server ability to get out timely information.

Akamai Stats from 21 Hours After the Earthquake