Every Second Counts

Ravi Maira, Akamai
Bryan Einwalter, Grainger
Brad Ledford, Build.com
How fast is fast enough?
We were pretty sure speed mattered…
... and then we knew for sure.

Impact of site performance on overall site conversion rate.

**Baseline – 1 in 2 site visits had response time > 4 seconds**

* Sharp decline in conversion rate as average site load time increases from 1 to 4 seconds

* Overall average site load time is lower for the converted population (3.22 Seconds) than the non-converted population (6.03 Seconds)

Note: Load Time here is the time taken from head of the page to page ready (T/Page)
Real users come from many situations
Situational Performance

Which device?
Which browser?
Which version?
Which network type?
What latency?
IPv4 or v6?
Third party content?
Front End Optimization - Situationally

Improves performance by adjusting content based on condition
Real Users – Real Stories

Evolving Performance Monitoring

Bryan Einwalter

Grainger

For the ones who get it done

Evolving Performance Optimization

Brad Ledford

Build.com

Smarter Home Improvement

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About Me

Director of Performance Engineering – Grainger

➢ bryan.einwalter@grainger.com
➢ @beinwal

Focused on creating a fast and reliable online experience for our customers.

Sites:
http://www.grainger.com
http://m.grainger.com
Monitoring

- Measure Everything
- Create Visibility
- Transparency
- SLA Compliance
- Real Time Access
Understand Your Users

- Who are they (i.e. new, returning, bots)?
- Where are they located?
- What is their connection speed?
- Which browser/device are they using?
- How do they use your site/app?
- How do they use third party widgets?
- What drives them to convert?
Synthetic Monitoring

- Measuring core business transactions
- Attempt to emulate what you *think* your customers are doing
- Great for:
  - Performance Baselines
  - Availability (Are the lights on? Can someone place an order?)
  - Waterfall Analysis
  - Benchmarks
  - Third Party Monitoring
Synthetic Limitations

- Tests are run from ideal conditions
- Limited number of physical locations, browsers, bandwidths
- Can be cost prohibitive to run large number of tests
- Need to maintain scripts
Navigation Timing

- Supported in IE9+, Chrome 6+, FF 7+
- API to expose performance data captured by the browser.
Real User Monitoring

- Measuring performance from the user’s perspective
- Numbers will be much different
- Data explosion
- Great for:
  - Real time visibility to all of your user activity
  - Understanding the actual user experience
  - Correlating to key business metrics
  - Look beyond the averages
RUM is Actionable

- Segment the data:
  - Customer Types
  - Functional Areas (i.e. Browse, Search, Checkout, Profile)
  - Location
  - Browser
  - Device

- Correlate the data to your business KPIs:
  - Conversion
  - Bounce Rate
  - Page Views Per Session
Sample RUM Chart

RUM – Conversion vs. Response Time

- User Sessions
- Conversion Rate

Average Session Response Time (Seconds)

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What’s next?

• Resource Timing
• W3C - Candidate Recommendation (CR)
• Object Level RUM
Summary

• Analytics & Performance Metrics will continue to converge
• Collecting and analyzing all of the data together
  • Benefit your bottom line
  • Benefit your users
• The faster you can understand your users, the better.
Making the Case for FEO

Brad Ledford, Build.com
The Lead Up to Action

Jon, Product Owner: “Amazon finds that for every 100ms of latency it cost them 1% in sales. We should make the sites faster.”

M’k. How bad is the problem?

Oh, crap.

Let’s fix it!

Sidebar: how did we get here?

10.1

7.5

6.0

3.5
Investigating the Issue: PullsDirect.com, WebPageTest.org

- Page Load (First View) = 8.0s

- Problem perceived as systemic, encouraging brainstorming from many angles.
  - “We have a serious DB query issue on that portion of the page”
  - “We should use CSS sprites for those images…they never change”
  - “Let’s move to Node.js, I hear that’s fast.”
- All valid points…time to discuss approaches
…but don’t discuss for too long.

Many months of discussion
...and “Stay on Target”
- Gold Five

Isolate The Bang for Your Buck

The 1.0-2.0s Second Time to First Byte = Hard!

The 5.0-8.0s Front-end Goldmine = Hmm…
The Path to Gold: Sifting Pebbles

• No Brainers
  • Ds, Es and Fs
• Things that *should* happen
  • Bs and Cs
• As: Maybe we could do (better)
  • ?

http://www.wildernessutah.com/learn/gold-deposits.html
What’s this FEO Thing?

“Shouldn’t we do these optimizations ourselves?”

“I know how to do that.”

“Ugh. Are we going to outsource all awesomeness?”

…what about these guys we know and love?
The Path to Gold: Leverage Pain of Others

- First Mile Performance
  - Leverage holes already dug

- CDN
  - Leverage tools used by everyone else (and therefore perfected by others…oh wait, we’re in Beta, that’s us!)

- Inlining Images

- Smart Compression

- Situational Optimization
  - New paradigm…requires new solutions often outside realm of traditional platform approach

Mitigating Risk

How do you assess risk of getting it wrong?

- By domain name (e.g. Build.com Network of Stores)
- Knowledge Gaps
- Resource Impact (Opportunity Cost)

Let numbers guide the decision

- PullsDirect.com = Small % of overall revenue
- Low, but statistically significant traffic
Going Live With Automated FEO

**IT-4349 - Setup DNS Entries for Blaze Test**

“We need to setup the following DNS entries so we can start testing the Blaze front end optimization technology. This is going to provide a HUGE benefit, so we would like this implemented as soon as possible. Thanks!

Here are the instructions for creating the 2 DNS entries:
blzorig.www.pulldirect.com cnamed/aliased to origin-www.pulldirect.com
*.shrd.pulldirect.com cnamed to an Akamai edge hostname for your account

Purely an example - we need a wildcard domain for our domain sharding. We will prefix the domain with 1,2,3,etc…”
The Payoff

- Page Load - First View, “Visually Complete”
  - **6.14s** (a 25% reduction)

- Perhaps a bigger win – First View, “Document Complete”
  - **3.5s** (a 41% reduction)
Lesson Learned

Project Formation Methods

- **Organic (our chosen path)**
  - We are all Master Chief...go kill things
  - Uni-disciplinary teams individually planning how to fix the their pieces of the problem
  - Hunt and peck for success criteria
  - Measurement tools evaluated in parallel

- **Explicit (what we should have done)**
  - Discovery by single, UI-versed team with an penchant for not reinventing the wheel
  - Milestones defined
  - Chosen measurement tools normalized
  - Solutions evaluated against a scoring criteria

http://www.flickr.com/photos/webwallpapers/3741977092/
Continued Challenges

• The never ending story of Marketing scripts and pixel trackers
• Mobile Performance = Different set of problems/solutions
• “Deferred Maintenance”
Summary

Resources / Analytics
• Torbit (RUM)
• WebPageTest.org
• Google Analytics
• Catchpoint
• Omniture SiteCatalyst