Building Performance

FOR THE LONG TERM

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@aemcknig

Smashing Conference
London 2018
Etsy
“We build for the long term.”
Without a performance culture, performance is not sustainable.
LIVE
FAST
DIE
YOUNG
AGENDA

Getting buy-in

Understanding performance

Empowering teams

To infinity and beyond
Getting **buy-in** for performance
GETTING BUY-IN

- Performance work isn’t given priority
- At your company
- On your team
GETTING BUY-IN FROM YOUR BOSS

Time, resources, and support necessary for performance work
GETTING BUY-IN FROM YOUR COWORKERS

Makes performance work sustainable by involving creators
Which business metrics are most important for your company?
Link performance to business metrics
160 KB added images

12% increase in bounce rate
Etsy saw a 12% increase in bounce rate when they added 160KB of images to their mobile page.
But those sites were slow. *Our* site isn't slow!

Very Important Person,
Your Company
But those sites were slow. *Our* site isn't slow!

Very Important Person,
Your Company
Show, don’t tell
Test a website's performance

Enter a Website URL

Test Location: Moto G (gen 4)
Browser: Moto G4 - Chrome

Advanced Settings

Test Settings: Advanced, Chrome, Auth, Script, Block, SPOF, Custom
Connection: Cable (5/1 Mbps 28ms RTT)
Number of Tests to Run: 3
Repeat View: First View Only
Capture Video: On
Keep Test Private: Off
Label:

Select from Map
Be accountable to your users
Site Performance Report

Page generation time in milliseconds (smaller is better)

- **Listing**
  - Aug: 449 (Average) 580 (95th Percentile)

- **Profile**
  - Aug: 505 (Average) 790 (95th Percentile)

- **Search**
  - Aug: 492 (Average) 750 (95th Percentile)

- **Shop**
  - Aug: 536 (Average) 880 (95th Percentile)

- **Home**
  - Aug: 982 (Average) 1610 (95th Percentile)
Site Performance Report

Page generation time in milliseconds (smaller is better)

- Listing
  - Aug: 449
  - Nov: 359

- Profile
  - Aug: 505
  - Nov: 427

- Search
  - Aug: 492
  - Nov: 528

- Shop
  - Aug: 536
  - Nov: 362

- Home
  - Aug: 982
  - Nov: 342

Average and 95th Percentile
Comments

“Load time is important, the quicker, the better!”

“Looks like great improvements to me! Can’t wait to see how other features are going to be optimized! Thanks for working so hard engineering team!”

“Cool! Keep up the good work.”
Understanding performance
UNDERSTANDING PERFORMANCE

• You don’t know how fast (or slow) your users’ experiences are
• You don’t know why your users’ experiences are fast (or slow)
• How is my site’s performance?
• How is my site’s performance changing?
• Where are performance issues coming from?
Metrics

- How is my site’s performance?
- How is my site’s performance changing?
- Where are performance issues coming from?
Synthetic  

Real User Monitoring (RUM)
Synthetic

- Artificial page loads
- Controlled, consistent environment

“Why does my site perform this way?”
Real User Monitoring (RUM)

- Timing from real users
- Represents your user base

“How is my site performing for my real users?”
Empower teams
EMPOWERING TEAMS

- Your organization understands the value of performance
- You have built infrastructure that helps you understand your site's performance
Integrate performance into product workflows
### Error Logs (All) (1 hour)

<table>
<thead>
<tr>
<th>Category</th>
<th>Graphs</th>
</tr>
</thead>
<tbody>
<tr>
<td>File/Script Not Found</td>
<td><img src="image1.png" alt="Graph" /></td>
</tr>
<tr>
<td>Exceptions</td>
<td><img src="image2.png" alt="Graph" /></td>
</tr>
<tr>
<td>Fatals</td>
<td><img src="image3.png" alt="Graph" /></td>
</tr>
<tr>
<td>Errors</td>
<td><img src="image4.png" alt="Graph" /></td>
</tr>
<tr>
<td>Warnings</td>
<td><img src="image5.png" alt="Graph" /></td>
</tr>
<tr>
<td>Segmentation Faults</td>
<td><img src="image6.png" alt="Graph" /></td>
</tr>
<tr>
<td>Memory Allocation Fatals</td>
<td><img src="image7.png" alt="Graph" /></td>
</tr>
<tr>
<td>Execution Time Fatals</td>
<td><img src="image8.png" alt="Graph" /></td>
</tr>
<tr>
<td>Cache Conn Failures</td>
<td><img src="image9.png" alt="Graph" /></td>
</tr>
<tr>
<td>File Name Too Long</td>
<td><img src="image10.png" alt="Graph" /></td>
</tr>
</tbody>
</table>

### Other Errors (1 hour)

<table>
<thead>
<tr>
<th>Category</th>
<th>Graphs</th>
</tr>
</thead>
<tbody>
<tr>
<td>StatsD packet receive errors</td>
<td><img src="image11.png" alt="Graph" /></td>
</tr>
<tr>
<td>CSRF Mismatch</td>
<td><img src="image12.png" alt="Graph" /></td>
</tr>
<tr>
<td>CSRF Missing</td>
<td><img src="image13.png" alt="Graph" /></td>
</tr>
<tr>
<td>Client Side (JS) Errors</td>
<td><img src="image14.png" alt="Graph" /></td>
</tr>
<tr>
<td>Empty Image URLs</td>
<td><img src="image15.png" alt="Graph" /></td>
</tr>
</tbody>
</table>
Page Performance by Site Section (1 hour)

PHP time (median)
- listing
- shop
- profile
- search
- homepage

PHP time (95th percentile)
- listing
- shop
- profile
- search
- homepage

Cart Performance
- median
- perc95

Statistics displayed represent signed page requests. See Page Performance Dashboard for more detail.

Web Cluster (1 hour)

NY4
home performance is at WARNING levels

**nagios@etsy.com**
to performance-team, alice, bob

**home perc95 is at 763 ms**, 9% above alert threshold (700 ms).
home has been above warning levels (700 ms) for **46 minutes** (was: warning)

**Additional information**

Features on this page that changed in the last hour: [Homepage hero image](#) ramped up to 15%
Home perc95 is at 700 ms, 5% above alert threshold (700 ms).
Home has been above warning levels (700 ms) for **46 minutes** (was: warning)

**Additional information**

View from '-4h' ago

![View from '-4h' ago graph]

24-hour View

![24-hour View graph]

**Features on this page that changed in the last hour:** Homepage hero image ramped up to 15%
home performance is at WARNING levels

home perc95 is at 763 ms, 9% above alert threshold (700 ms).
home has been above warning levels (700 ms) for 46 minutes (was: warning)

Additional information
View from '-4h' ago

24-hour View
Always be A/B testing!
market

Warning: 500 ms, Critical: 600 ms

50%
Warning: 500 ms, Critical: 600 ms

- 50%
- 100%
Always be integrating!
### Sonic

<table>
<thead>
<tr>
<th>Pages impacted</th>
<th>A/B test</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Search experience performance improvements</td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Make the market page more shiny</td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
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</table>

**Negatively impacting 1 page**
# Make the homepage more shiny

<table>
<thead>
<tr>
<th>variant</th>
<th>time to first byte</th>
<th>DOMContentLoaded</th>
<th>page load</th>
</tr>
</thead>
<tbody>
<tr>
<td>control</td>
<td>633 ms</td>
<td>2036 ms</td>
<td>3354 ms</td>
</tr>
<tr>
<td>variant</td>
<td>662 ms (4.6% slower)</td>
<td>2184 ms (7.3% slower)</td>
<td>3619 ms (7.9% slower)</td>
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Help teams understand why performance is changing
Synthetic

“Why does my site perform this way?”
VALENTINE’S DAY
Lots of love went into making these gifts.

Shop ›

Cute pets need equally cute accessories

Shop leather with personalized letters ›

Recently viewed
Teach tools and practices
# Performance Budgets

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<tr>
<th>Metric</th>
<th>How to measure</th>
<th>Target</th>
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<tr>
<td>Total page load time</td>
<td>RUM, 95th percentile</td>
<td>2 seconds</td>
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<tr>
<td>Speed Index</td>
<td>WebPagetest (Dulles, Cable)</td>
<td>1,200</td>
</tr>
<tr>
<td>Total page weight - web</td>
<td>WebPagetest (signed in)</td>
<td>2000 KB</td>
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Be specific!

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Performance Budgets

• Make optimizations to the new feature to get within budget

• Optimize or remove an existing feature to make space

• Don’t include the new feature

this is okay
Make informed decisions about tradeoffs
To infinity and beyond
Expand
You don’t have to start measuring everything all at once
Iterate
Maintain expertise
Celebrate performance
CREATE A CULTURE THAT values performance AND empowers teams
THANK YOU!