Speed is product feature number one

The criticality of performance testing for today's applications

Paola Rossaro, PhD, CTO and co-founder at Nouvola
Something about me

✓ PhD Computer Science (performance)
✓ 20+ years high-tech
✓ CTO and Co-founder Nouvola
✓ And a mom!
Why Performance?

You should know speed is product feature number 1
- Larry Page, Google founder, quoted by Urs Hölzle at Velocity conference 2010

People will visit a Web site less often if it is slower than a close competitor by more than 250 milliseconds

Sources:
http://www.bookofspeed.com/chapter1.html
http://www.nytimes.com/2012/03/01/technology/impatient-web-users-flee-slow-loading-sites.html?pagewanted=all
WHY?

- Higher conversion rate
- Increase visibility
- Revenue growth
- Resource optimization
- Brand loyalty
- Costs reduction
Visibility

✔ SEO search ranking

✔ The faster the higher on the list

Google: 4/10 of a sec delay

8 Million searches lost/day

Source: https://blog.kissmetrics.com/loading-time/
Conversion rates

For each 1 sec delay there is 7% loss in conversion.

1 SEC = 7% LOSS

Sources:
http://www.forbes.com/sites/rogerdooley/2012/12/04/fast-sites
Increase revenue

✓ Amazon: 1 second lost could cost $1.6 billion in sales each year

✓ OR: if you make $100,000 a day, 1 second faster can increase your revenue to $2.5 MILLION

Sources:
https://blog.kissmetrics.com/loading-time/
Cost savings

Where is your site on the curve?
Brand Loyalty

Obamacare Website Suffers issues on Last Day of Enrollment

Apple’s live stream its iPhone reveal buckled under traffic

- Business insider, 2014

Sources:
http://time.com/43569/obamacare-website-suffers-outages-on-last-day-of-enrollment/
Who knew?

The Knee Defender.
The gizmo’s website crashed today after traffic surged...

*Bloomberg, Aug 2014*

The Biggest Bar Exam Disaster Ever? ExamSoft Makes Everyone’s Life Hard

It’s certainly the most serious bar disaster I’ve ever covered in the eight years since I started Above the Law.

*Above the Law, Jul 2014*

Aaron Paul likes breaking things. The *Breaking Bad* actor just caused his wife’s website to break by mentioning it in his heartfelt Emmy speech.

*Mashable, Aug 2014*
DevOps and performance

- Cloud complexity
- Software stack
- Cloud infrastructure
“To make error is human. To propagate error to all servers in automatic ways is devops.” - DevOps Borat
DevOps and performance

- Make it part of the cloud challenge
- Focus on non functional testing
Tools or...

Deploy and Pray?
Think different

Each application has unique configuration

Different Clouds, high complexity

Dynamic problem space

Monitoring is not enough

No solution that fits all
What you can do

- Test
- Measure
- Make the right decisions
- Optimize
- Iterate
Test & Measure

Test > Measure > Deploy

Repeat

NOUVOLA
Performance testing

Load testing
- Helps understand the behavior of the system under a specific expected load.

Stress testing
- Helps understand the upper limits of capacity within a system.
- Helps understand the performance of a system under different loads and conditions.
What to test

✓ Realistic scenarios
✓ Any load, any device, any geo
✓ User experience
✓ Application behavior

GOAL: detect issues before it is too late
Realistic scenarios with Nouvola DiveCloud

- Record & play via DiveTrace
- MultiSessions
- Randomized data
- Geo-location
What to measure

✓ User performance metrics
✓ End to End metrics
✓ Throughput
✓ Error rate
✓ System logs

GOAL: Resolve issues before deployment
When do you test?

Test > Measure > Deploy

Repeat

Nouvola Confidential
When do you test?

Performance Degradation !!

Total response time
Server response time

Page load time, [sec]
Deployment Date

2/7/14 2/14/14 2/21/14 2/28/14 3/7/14 3/14/14 3/21/14 3/28/14
Not just then!

Online interest in the Amazon Kindle (Weekly traffic to pages on Amazon.com)

Oprah features the Kindle

Thanksgiving week
MEET LISA:
She has a problem

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This time, Lisa wants:

1 second

Expected traffic of 100,000 concurrent users
With Nouvola DiveCloud, Lisa discovers:

**3-4 seconds**

![Graph showing page load time vs. number of concurrent users. The graph indicates that page load time increases significantly after a certain threshold of concurrent users.]
WHAT CAN SHE DO?

✓ She runs some tests
✓ She makes some adjustments: the load balancer is not working well.
✓ She runs more tests
✓ She makes more adjustments: Caching of the DB helps too.
✓ She iterates
Test & Measure

Test

Measure

Deploy

Repeat
After this, Lisa gets: 

**.6 seconds!**
Nouvola Divecloud

✔ Thousands of virtual users
✔ DiveTrace: record&play
✔ Multi-sessions: multiple scenarios at once
✔ Virtual credentials: test behind login
✔ POST sessions: data randomization
✔ Distribute users geographically
✔ End to end user metrics
Real World Testing

• DiveTrace
  – Record web page requests

• Multi-Sessions
  – Test multiple scenarios simultaneously from different sections of your website

• Virtual Credentials
  – Test pages that are behind log-in screens

• Post Sessions
  – Generate random data

• Pass/Fail
  – Set threshold of how long it takes a webpage to load

• Random Think Times
  – Adds random intervals of time for each request
Summary

✓ Speed is product feature number 1

✓ Performance is critical for any application

✓ Performance testing is a MUST HAVE in the development life cycle

✓ Performance testing should be part of your continuous integration process

✓ Be proactive and not reactive!
Thank You!

Predictive Cloud Scalability And Reliability

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