SRE by Influence, not Authority

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Agenda

● Who We Are
● How We Got Here
● Case Study: Midterms Elections Readiness
Appx 1,600 journalists on staff

15 bureaus in the U.S and 31 international bureaus

Publish around 250 pieces of original journalism each day
As of Q2 2019, The New York Times has 4.7 million total paid subscriptions of which 3.8 million are digital-only.
Our Technology Today

500+ in Technology

- Content Management and Publishing Systems
- Engagement Experiences, like Personalization and Comments
- Web and Mobile Platforms
- e-Commerce, Brand and Marketing
- Advertising Technology
- Data Analytics
- Customer Care Platforms
- Information Security and Compliance
- New Ventures like Games, Parenting, and Cooking
How did we get here?
Abridged History of NYT on the Internet

1974
Computers arrive in the Newsroom

1994
@times on AOL

1996
Officially online at www.nytimes.com

2010
Start on AWS

2015
Decision to shut down datacenters

2016
Tech-wide CI/CD
Formation of Delivery Engineering
From Greg Dziemidowicz's blog “Delivery Engineering Team”
“Delivery engineering team enables others to deliver business value faster.”

From Greg Dziemidowicz’s blog “Delivery Engineering Team”
What We Do

Tooling & Automation

Engagements

Process & Guidance
What We Are Not

- Infrastructure
- Networking
- Systems
“The output of this team are tools and processes that developers use to be more productive and happier in their daily jobs.”

From, “Delivery Engineering Mission FAQ” in March 2016
“...the focus will primarily be on how the various engineering teams perceive this team.”

From, “Delivery Engineering Mission FAQ” in March 2016
Product Management Mindset

- We view our internal teams as customers
- We incentivize vs. standardize our tooling and processes
- We seek feedback and data to drive our decision making
Migration to the Cloud in 2018
In 2018, www.nytimes.com becomes cloud native

300+

Applications Migrated

We shut down 140+ apps and rolled out common tools and guidance.
EVERYTHING IS AWESOME!
While migration was successful, there was still significant of work to be done.
Business workflows span across multiple teams
Processes still reflect the datacenter ops model
Not every team is at same level of SRE skill
Trouble appears...
I Am Part of the Resistance Inside the Trump Administration

I work for the president but like-minded colleagues and I have vowed to thwart parts of his agenda and his worst inclinations.

Sept. 5, 2018
~2x Digital News Subscribers
since the 2016 Presidential Election
Midterms and Political Climate

The battle for the House
All 435 seats are up for election in November

Republicans
- 140 Safe
- 55 Seats they’ll probably win
- 45 Could go either way

Democrats
- 182 Safe
- 10 Seats they’ll probably win
- 3 Could go either way

218 needed for control

Source: Cook Political Report (updated 30 October)

The battle for the Senate
Just 35 of 100 seats are up for election in November

Republicans
- 4 Safe
- 1 Seats they’ll probably win
- 4 Could go either way

Democrats
- 14 Safe
- 6 Seats they’ll probably win
- 6 Could go either way

51 needed for control

Source: Cook Political Report (updated 26 Oct)
Changes in Business Strategy
POST-MIGRATION GROWING PAINS + SUBSCRIBER GROWTH + POLITICAL CLIMATE + CHANGES IN BUSINESS STRATEGY
With only **8 weeks** to prepare over **20 teams**
The New York Times

MIDTERM ELECTIONS 2018
Execution: Structure

Delivery Engineering SRE

Project Leads

Product Engineering Teams
Project Design Principles

- Move quickly to find weaknesses
- Trust teams
- Drive collaboration
<table>
<thead>
<tr>
<th>What we needed to do quickly...</th>
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<tbody>
<tr>
<td><strong>Architecture Reviews</strong></td>
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<tr>
<td>Cross-functional working sessions evaluated systems prior to Midterms to find quick resiliency wins.</td>
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Architecture Reviews
Architecture Review Template

Application Overview

Diagrams

Repositories

Documents & Resources
  ● RFCs
  ● Documentation
  ● SLOs (If they exist)
  ● Monitoring
  ● Logging
  ● Projects & Accounts
  ● Load
    ○ Load Test results
    ○ Normal traffic graphs

Questions
  ❑ What part of the application is most likely to fail?
  ❑ How do you determine if the application is healthy?
  ❑ Are these health checks automated? Could you provide an endpoint for us to scrape?
  ❑ What systems does your application rely on?
  ❑ Can your application survive if a dependent system fails? If so how long?
HUGS

Squash

BUGS
Let engineers raise lurking issues
Raise and prioritize things we find

- Create tickets for reliability improvements across teams and systems

- Scrum-of-Scrums - 2x weekly reviews - Talk through blocker issues
Architecture
Plan Degradation Strategy
Incident Training
Things go wrong - be ready

Goal: develop a shared understanding of incident lifecycles and roles
Understand Roles

Roles

Incident Commander

- Brings order to chaos
- The IC will ensure that an incident is being managed appropriately.
- The IC will setup communication channels and steer people towards these channels.
- The IC will collect application status information & proposed solutions from various SMEs associated with an incident.
- The IC will delegate the necessary actions required to help bring an incident to closure.
Focus on bigger picture

Incident Life Cycle

- Status: Provide a status update
- Query: Query your SMEs for ideas that could help fix the issue
- Verify: Have your SMEs verify that their changes fixed the issue
- Consensus: Gain consensus by querying for strong objections to previously supplied ideas
- Apply: Have your SMEs apply their suggested changes
Emphasize non-engineering bits

Complexity

I don’t understand all the systems involved

You’re part of a team, your subject matter experts are there to help with the complexity.
Some stats

Sessions held: 11
Technical Staff trained: 120

How likely would you recommend this training to a colleague?
63 responses

- 44 (69.8%)
- 17 (27%)
- 2 (3.2%)
- 0 (0%)
- 0 (0%)
- 0 (0%)
Stress Testing and Review
## See What Breaks

<table>
<thead>
<tr>
<th>LOAD TESTING</th>
<th>STRESS TESTING</th>
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<tbody>
<tr>
<td>Test system behavior under expected load</td>
<td>Test capacity limits under extreme load</td>
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<tr>
<td>Determine throughput, understand resources needed, etc.</td>
<td>Identify bottlenecks in the system, prepare for anticipated high traffic events</td>
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<tr>
<td>Things <em>might</em> brake</td>
<td>Thing <em>will</em> break</td>
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</table>

*LOAD TESTING*  
- Test system behavior under expected load  
- Determine throughput, understand resources needed, etc.  
- Things *might* brake

*STRESS TESTING*  
- Test capacity limits under extreme load  
- Identify bottlenecks in the system, prepare for anticipated high traffic events  
- Thing *will* break
Approach

- Test as a whole system
- Test in production
- Test during the day when folks are in office
I don't always test my code

But when I do, I make sure it's in production

I DON'T ALWAYS
TEST MY CODE

BUT WHEN I DO I
DO IT IN PRODUCTION

TEST IN PRODUCTION

WHAT COULD GO WRONG

ONE DOES NOT SIMPLY
TEST IN PRODUCTION

Stress Testing in Production:

Shesh Patel
ENGINEERING MANAGER
THE NEW YORK TIMES
Little warning for the news

White House forced to deny new claims that Trump asked former FBI chief James Comey to drop Michael Flynn investigation

GUARDIAN
Yesterday, 5:35 PM
Got a minute? The White House is a hot mess

NYTIMES
Yesterday, 5:26 PM
“He is a good guy,” President Trump said about Michael Flynn, according to a memo James...
Preparations

Teams’ Prep
Provide data to help design stress tests
- Endpoints
- Typical load

Our Prep
Partner with teams to:
- Implement tests
- Productionalize the stress testing
The “War Room”
Learning from Results

<table>
<thead>
<tr>
<th>System</th>
<th>Overall</th>
<th>Test Preparations &amp; Communications</th>
<th>Systems Readiness for Elections</th>
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<tbody>
<tr>
<td>Bulbasaur</td>
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<td>Ivysaur</td>
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<td>Pidgey</td>
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<td>Oddish</td>
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<td>Jigglypuff</td>
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<td>Eevee</td>
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- All good on Systems and Preparations/Communications. **We are confident for Elections.**
- Minor risks/issues. **But we feel confident they can be resolved by Elections.**
- Significant risks/issues; potentially inconclusive results. **Management attention needed.**
Learning Reviews + Re-test

- Coordinated learning reviews
- What went well? What didn’t?
- Tickets for action items and improvements
- Re-test
Results and Outcomes
Election night
The Results

- Record traffic for Midterms
- Registration Paywall Meter 40x traffic
- Significant registration growth
- Fast incident response with minimal user disruption
- Demand for more operational maturity exercises
“In my 7 years at The Times, I have never seen people come together and work towards a common goal in the way everyone came together for these elections. I'd love to ... enable this way of working as a norm for our org...”
Looking Forward
We’re hiring

nytco.com/careers

@NYTDevs | developers.nytimes.com
@timesopen | open.nytimes.com
Thank you!

Please reach out if you have questions.

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