Preparing for the Unexpected

Samuel Parkinson
samuel.parkinson@ft.com
#qconlondon #prepfortheunexpected

Photo by Hush Naidoo on Unsplash

Let’s start with a story

What’s the worst thing that could happen?

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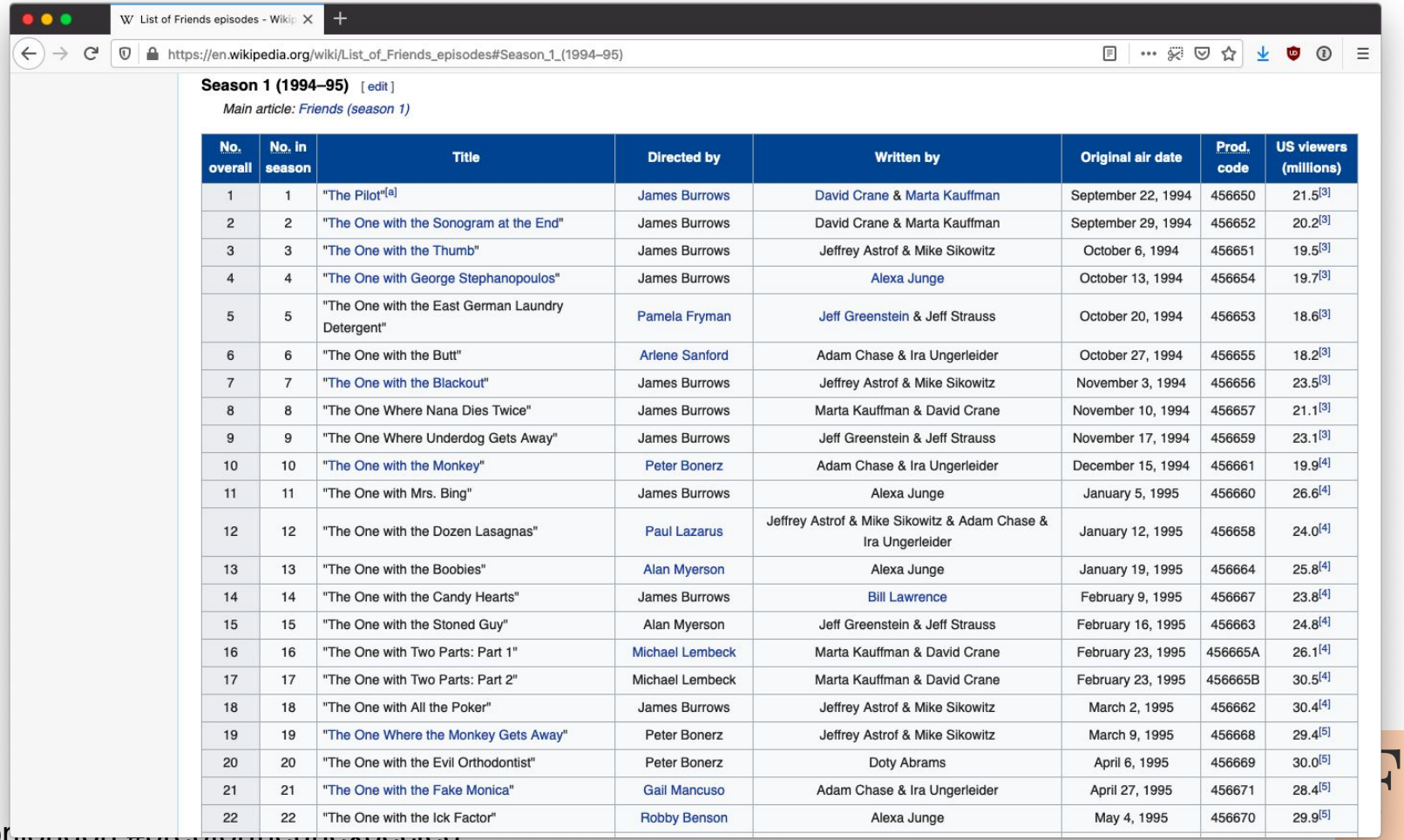

Season 1 (1994–95) [edit]

Main article: Friends (season 1)

No. overall	No. in season	Title	Directed by	Written by	Original air date	Prod. code	US viewers (millions)
1	1	"The Pilot"[a]	James Burrows	David Crane & Marta Kauffman	September 22, 1994	456650	21.5[3]
2	2	"The One with the Sonogram at the End"	James Burrows	David Crane & Marta Kauffman	September 29, 1994	456652	20.2[3]
3	3	"The One with the Thumb"	James Burrows	Jeffrey Astrof & Mike Sikowitz	October 6, 1994	456651	19.5[3]
4	4	"The One with George Stephanopoulos"	James Burrows	Alexa Junge	October 13, 1994	456654	19.7[3]
5	5	"The One with the East German Laundry Detergent"	Pamela Fryman	Jeff Greenstein & Jeff Strauss	October 20, 1994	456653	18.6[3]
6	6	"The One with the Butt"	Arlene Sanford	Adam Chase & Ira Ungerleider	October 27, 1994	456655	18.2[3]
7	7	"The One with the Blackout"	James Burrows	Jeffrey Astrof & Mike Sikowitz	November 3, 1994	456656	23.5[3]
8	8	"The One Where Nana Dies Twice"	James Burrows	Marta Kauffman & David Crane	November 10, 1994	456657	21.1[3]
9	9	"The One Where Underdog Gets Away"	James Burrows	Jeff Greenstein & Jeff Strauss	November 17, 1994	456659	23.1[3]
10	10	"The One with the Monkey"	Peter Bonerz	Adam Chase & Ira Ungerleider	December 15, 1994	456661	19.9[4]
11	11	"The One with Mrs. Bing"	James Burrows	Alexa Junge	January 5, 1995	456660	26.6[4]
12	12	"The One with the Dozen Lasagnas"	Paul Lazarus	Jeffrey Astrof & Mike Sikowitz & Adam Chase & Ira Ungerleider	January 12, 1995	456658	24.0[4]
13	13	"The One with the Boobies"	Alan Myerson	Alexa Junge	January 19, 1995	456664	25.8[4]
14	14	"The One with the Candy Hearts"	James Burrows	Bill Lawrence	February 9, 1995	456667	23.8[4]
15	15	"The One with the Stoned Guy"	Alan Myerson	Jeff Greenstein & Jeff Strauss	February 16, 1995	456663	24.8[4]
16	16	"The One with Two Parts: Part 1"	Michael Lembeck	Marta Kauffman & David Crane	February 23, 1995	456665A	26.1[4]
17	17	"The One with Two Parts: Part 2"	Michael Lembeck	Marta Kauffman & David Crane	February 23, 1995	456665B	30.5[4]
18	18	"The One with All the Poker"	James Burrows	Jeffrey Astrof & Mike Sikowitz	March 2, 1995	456662	30.4[4]
19	19	"The One Where the Monkey Gets Away"	Peter Bonerz	Jeffrey Astrof & Mike Sikowitz	March 9, 1995	456668	29.4[5]
20	20	"The One with the Evil Orthodontist"	Peter Bonerz	Doty Abrams	April 6, 1995	456669	30.0[5]
21	21	"The One with the Fake Monica"	Gail Mancuso	Adam Chase & Ira Ungerleider	April 27, 1995	456671	28.4[5]
22	22	"The One with the Ick Factor"	Robby Benson	Alexa Junge	May 4, 1995	456670	29.9[5]

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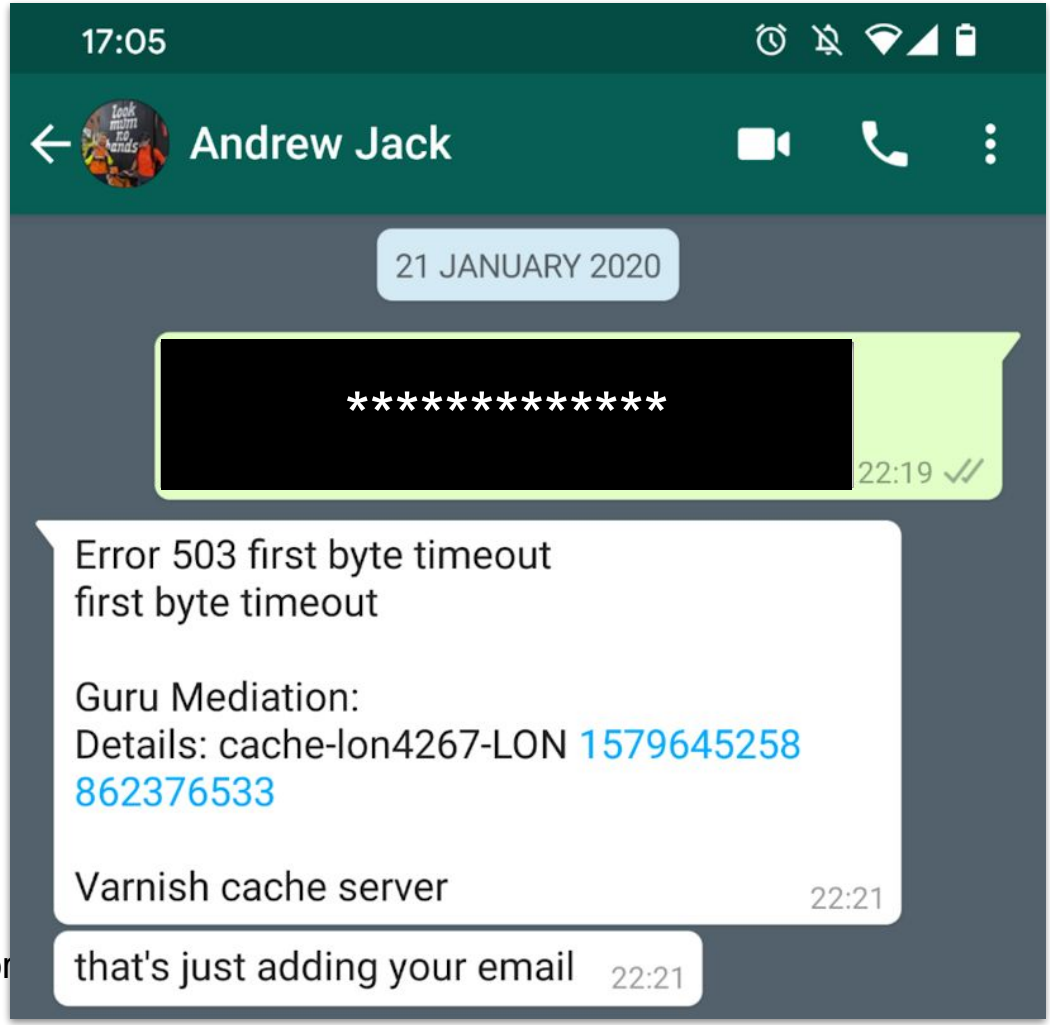
17:05
Andrew Jack
21 JANUARY 2020
****
22:19
Error 503 first byte timeout
first byte timeout
Guru Mediation:
Details: cache-lon4267-LON 1579645258
862376533
Varnish cache server
22:21
that's just adding your email
22:21

FT

Alice Bartlett 22:06

sam if you happen to see this - there's a reeeeeal [redacted] of an incident happening

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The FT.com zone was missing

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```
$ host www.ft.com
Host www.ft.com not found: 3(NXDOMAIN)
```


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FT.com has over 5,100 subdomains 😬

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This impacted the whole company

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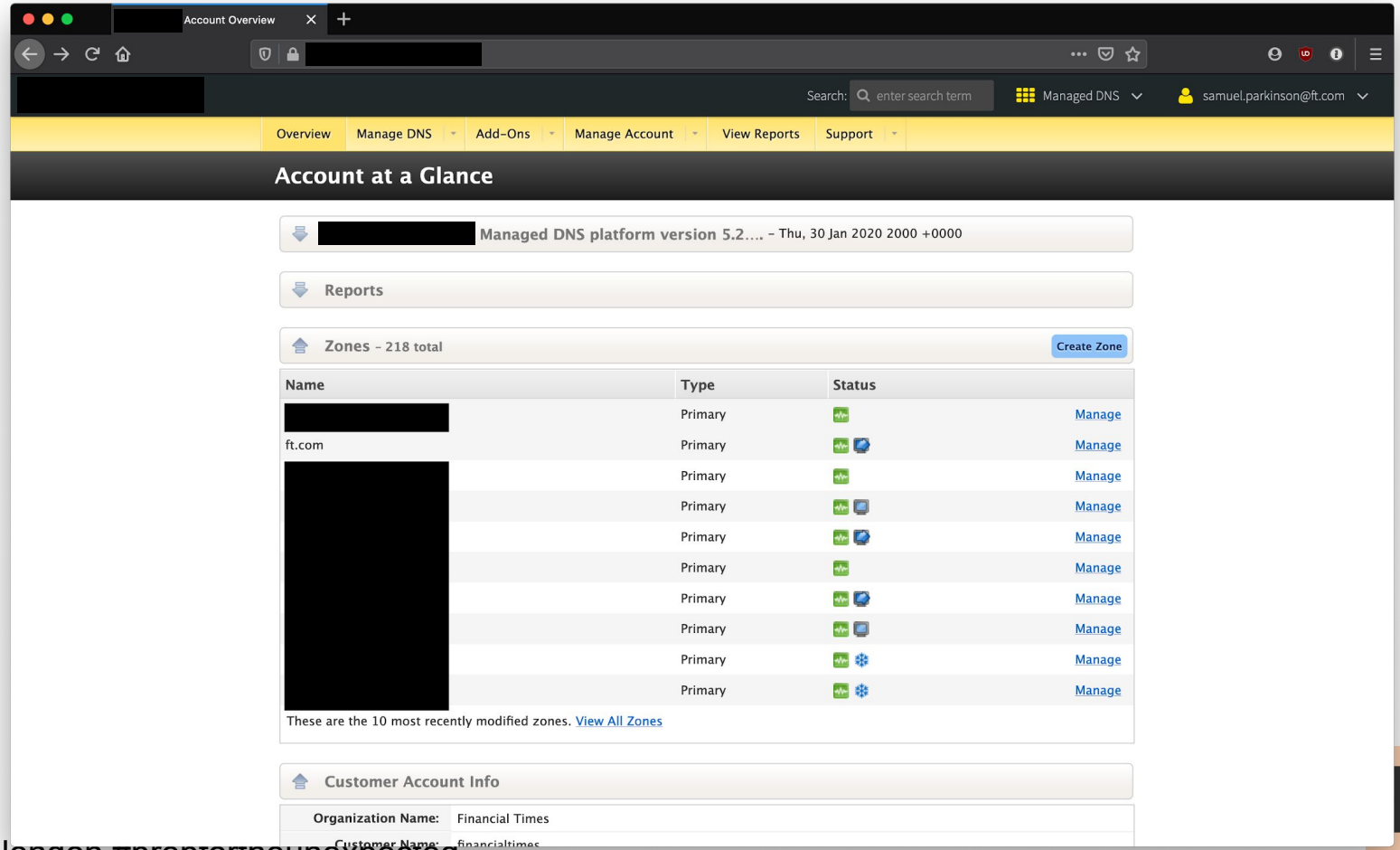

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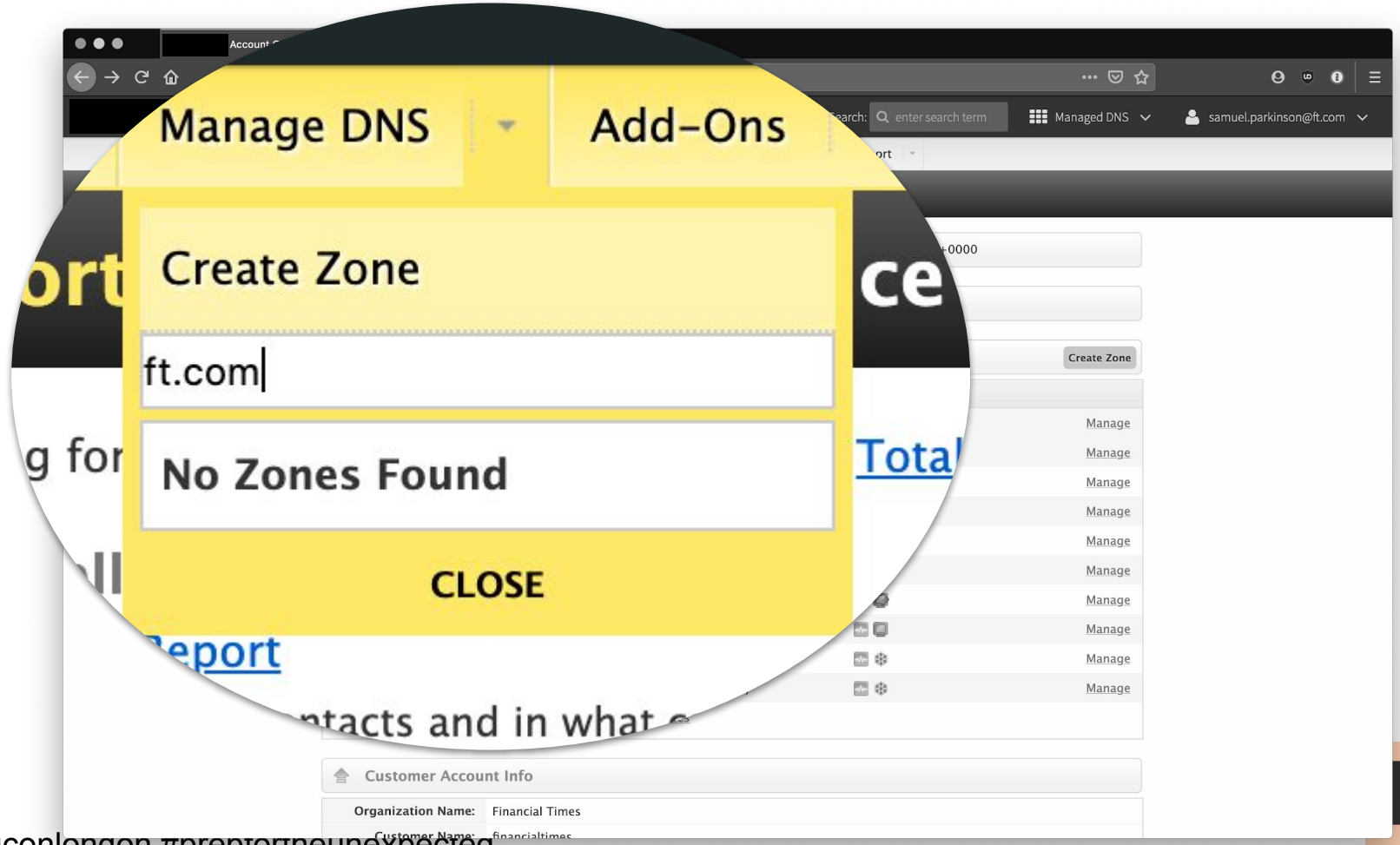

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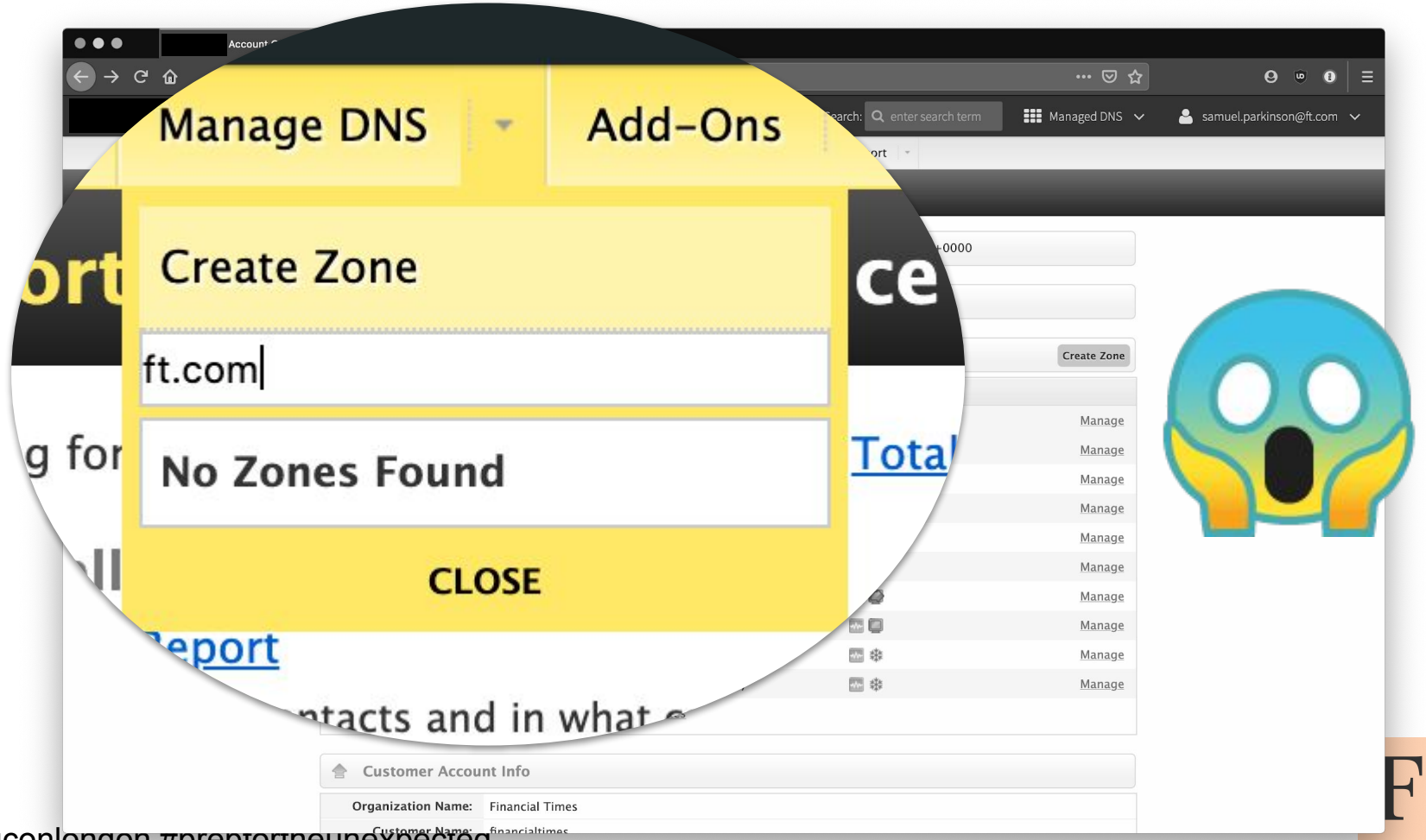

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We have never prepared for such an incident

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It’s a classic data loss situation

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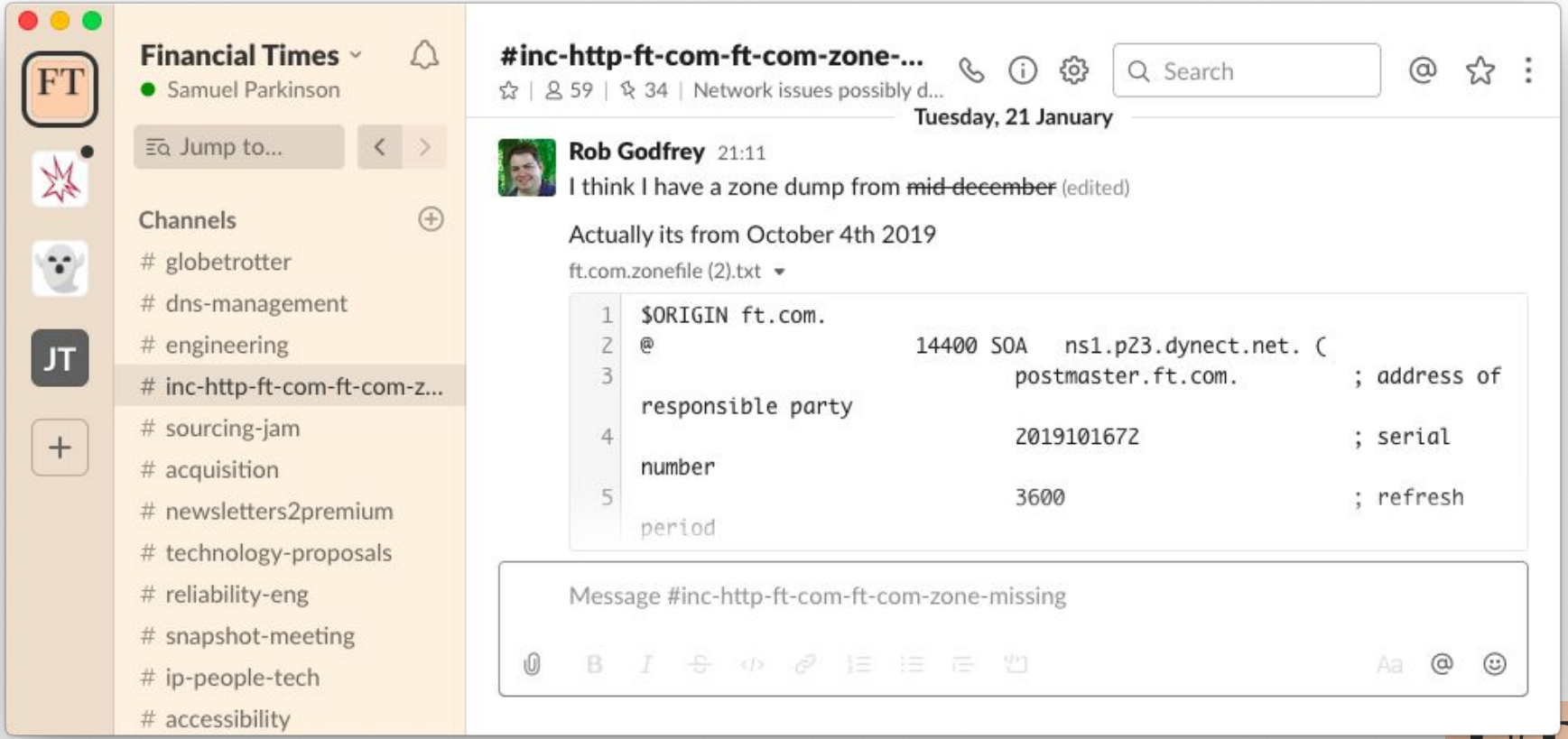

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Our provider had a partial backup

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But critical records we used for DNS load balancing were missing

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About 10 people worked to resolve the incident

And over 30 people were online to follow along

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Most were not called, but still volunteered their time

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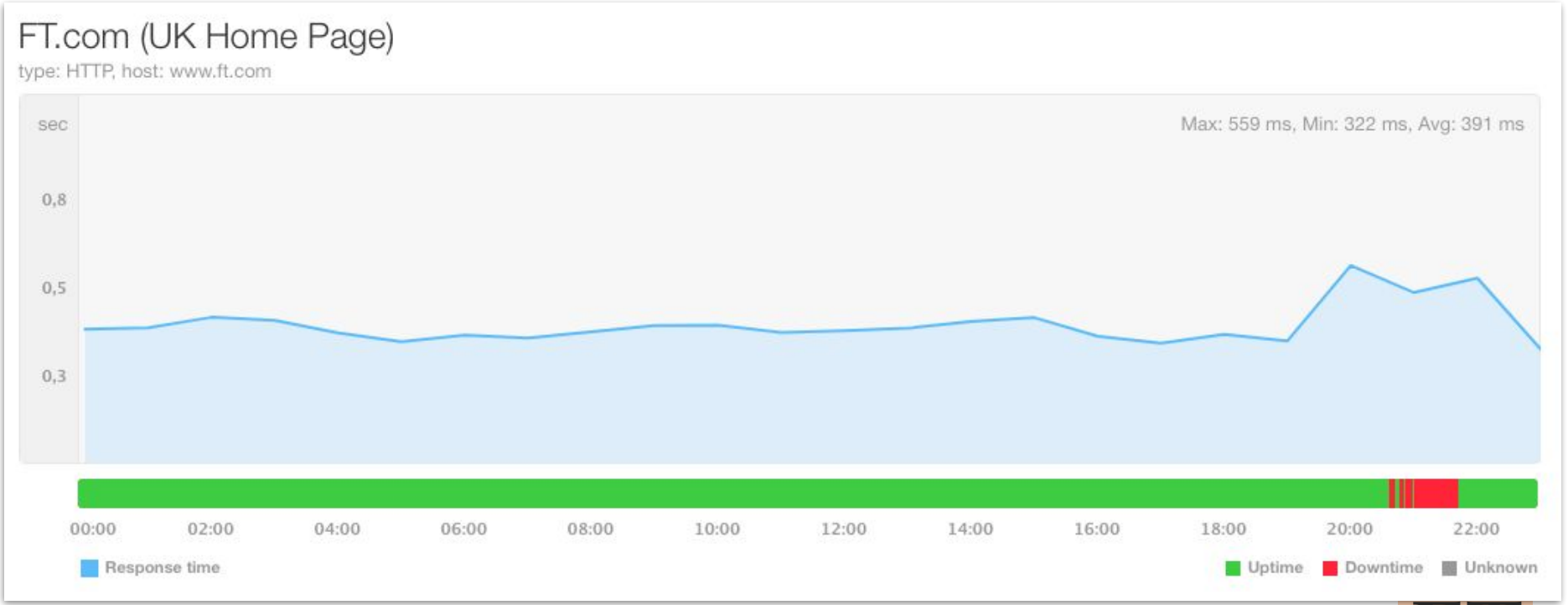

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4h 30m

The first hour was a total outage.

Lack of panic in the moment

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It was a slick operation and we recovered

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It took restoring from a backup and manual entry to get there

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We were focused on recovery, not what happened

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People were joining the incident to learn

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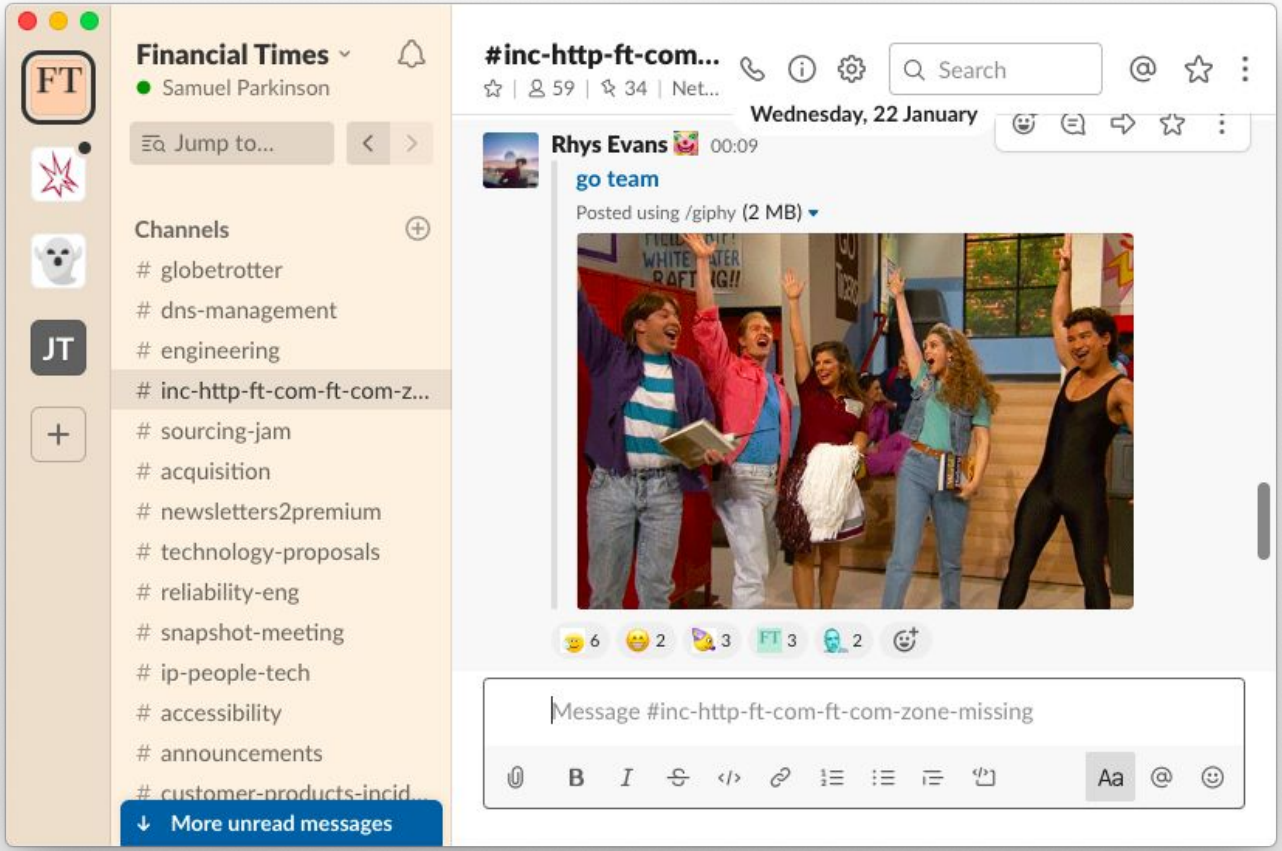

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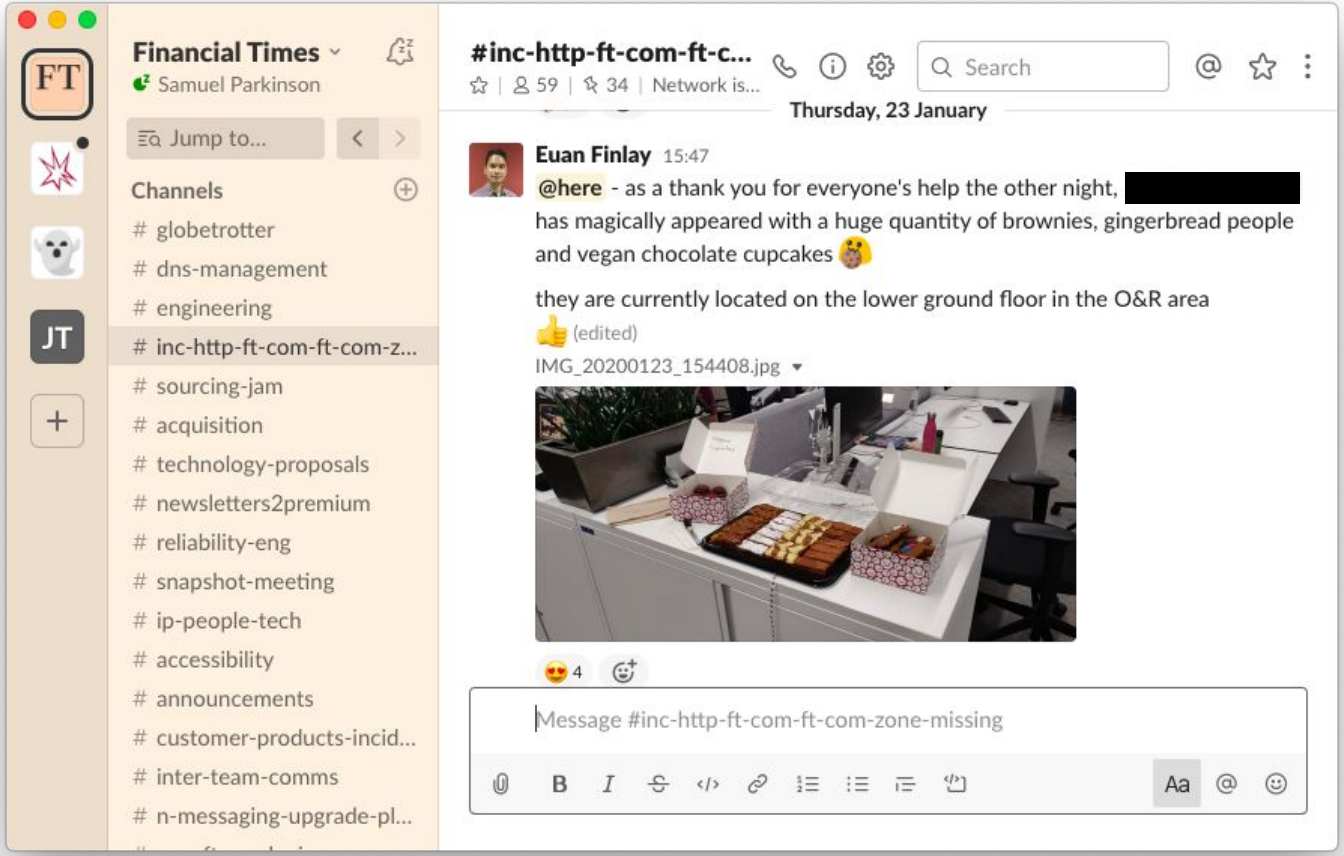

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This is where we are today

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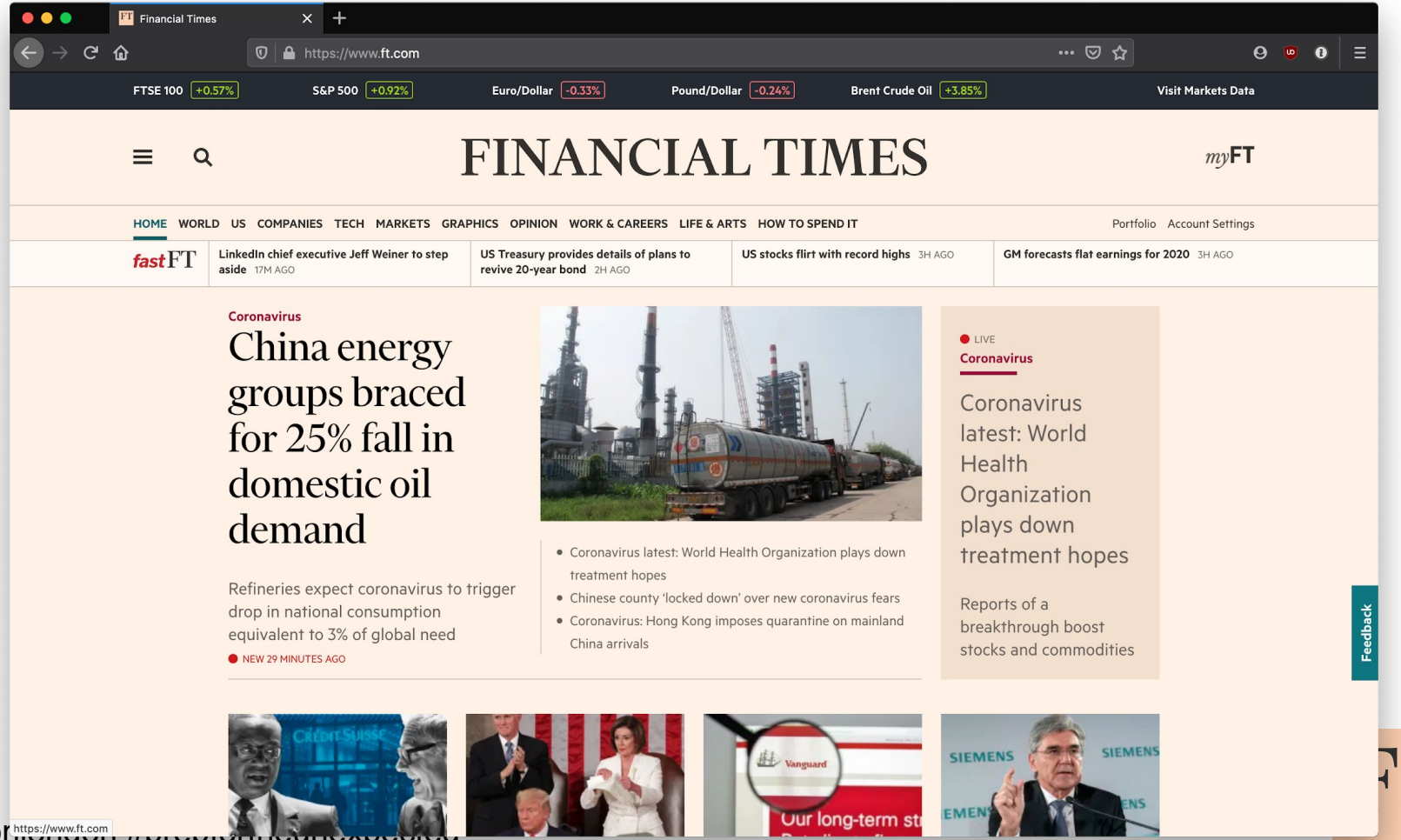
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Pound/Dollar -0.24%
Brent Crude Oil +3.85%
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US Treasury provides details of plans to revive 20-year bond 2H AGO
US stocks flirt with record highs 3H AGO
GM forecasts flat earnings for 2020 3H AGO
Coronavirus
China energy groups braced for 25% fall in domestic oil demand
Refineries expect coronavirus to trigger drop in national consumption equivalent to 3% of global need
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Coronavirus latest: World Health Organization plays down treatment hopes
Chinese county 'locked down' over new coronavirus fears
Coronavirus: Hong Kong imposes quarantine on mainland China arrivals
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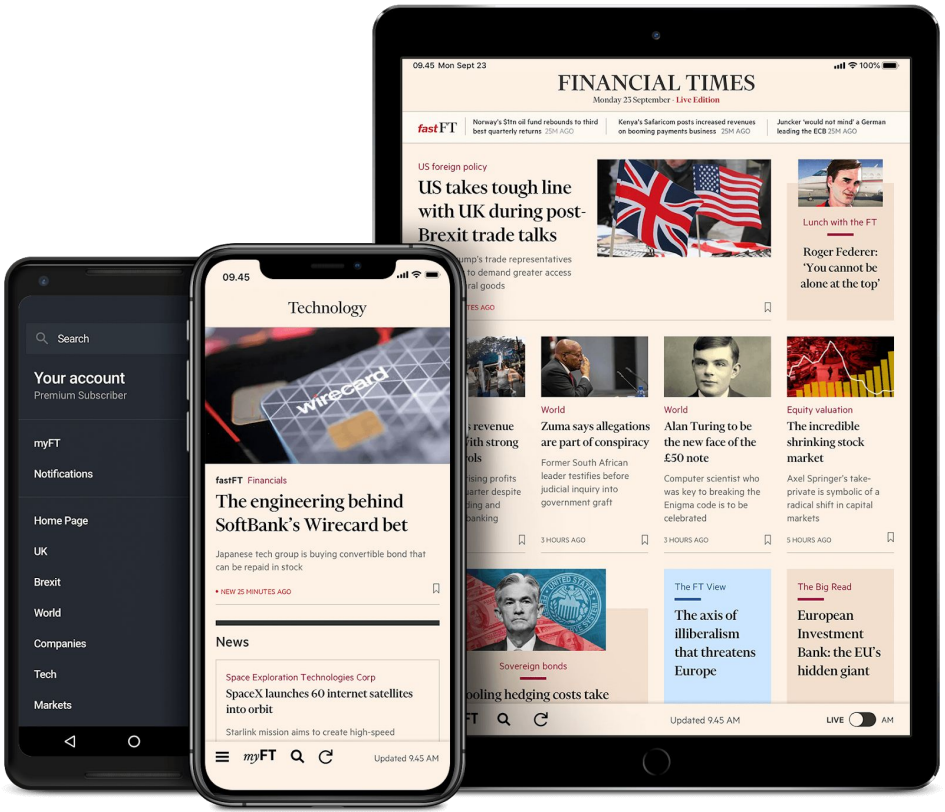

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Photo by Victor Garcia on Unsplash

Photo by Markus Spiske on Unsplash

0. How do we do on-call?
1. Our incident management challenges
2. Making out-of-hours sustainable
3. The results and takeaways

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0. How do we do on-call?

1. Our incident management challenges
2. Making out-of-hours sustainable
3. The results and takeaways

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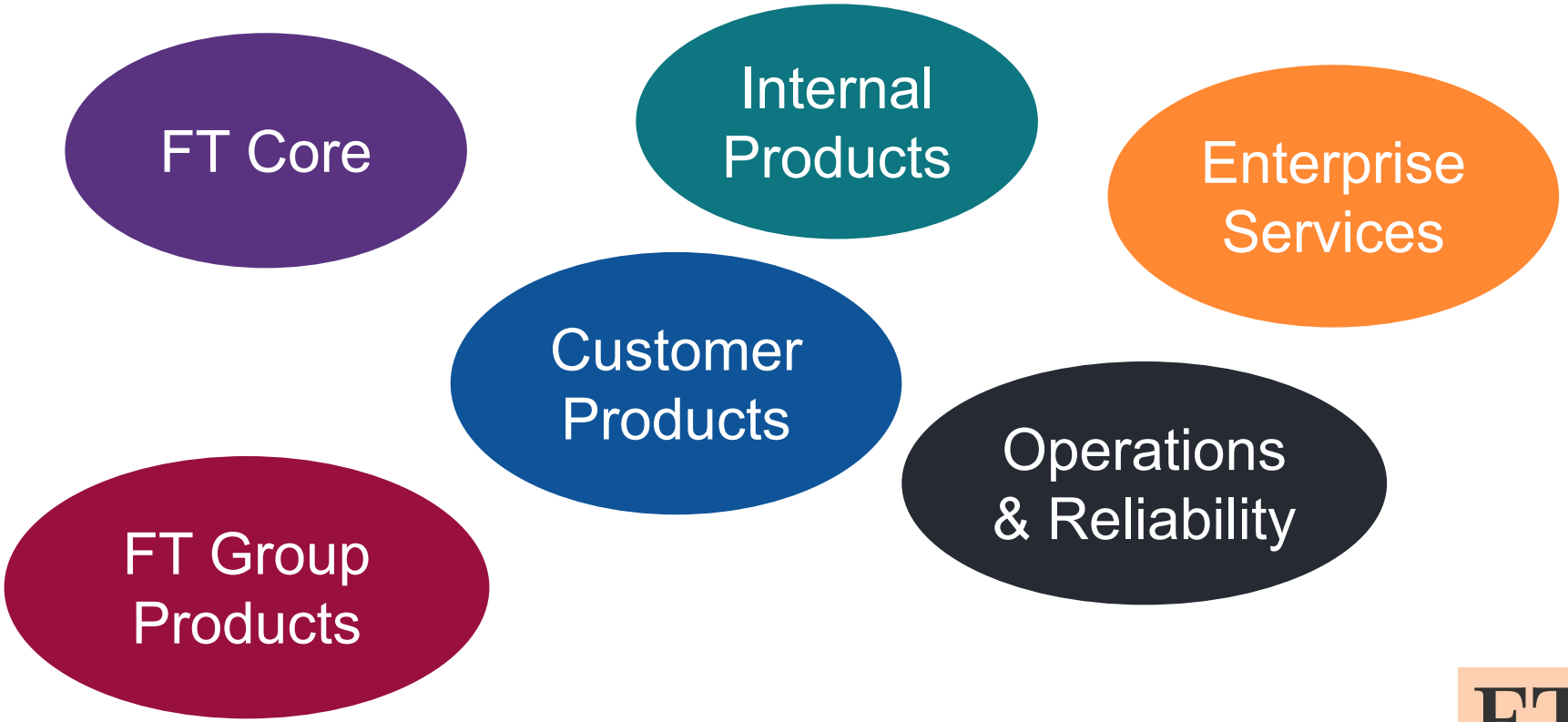

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We are

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45 engineers and counting

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And we own about 180 systems

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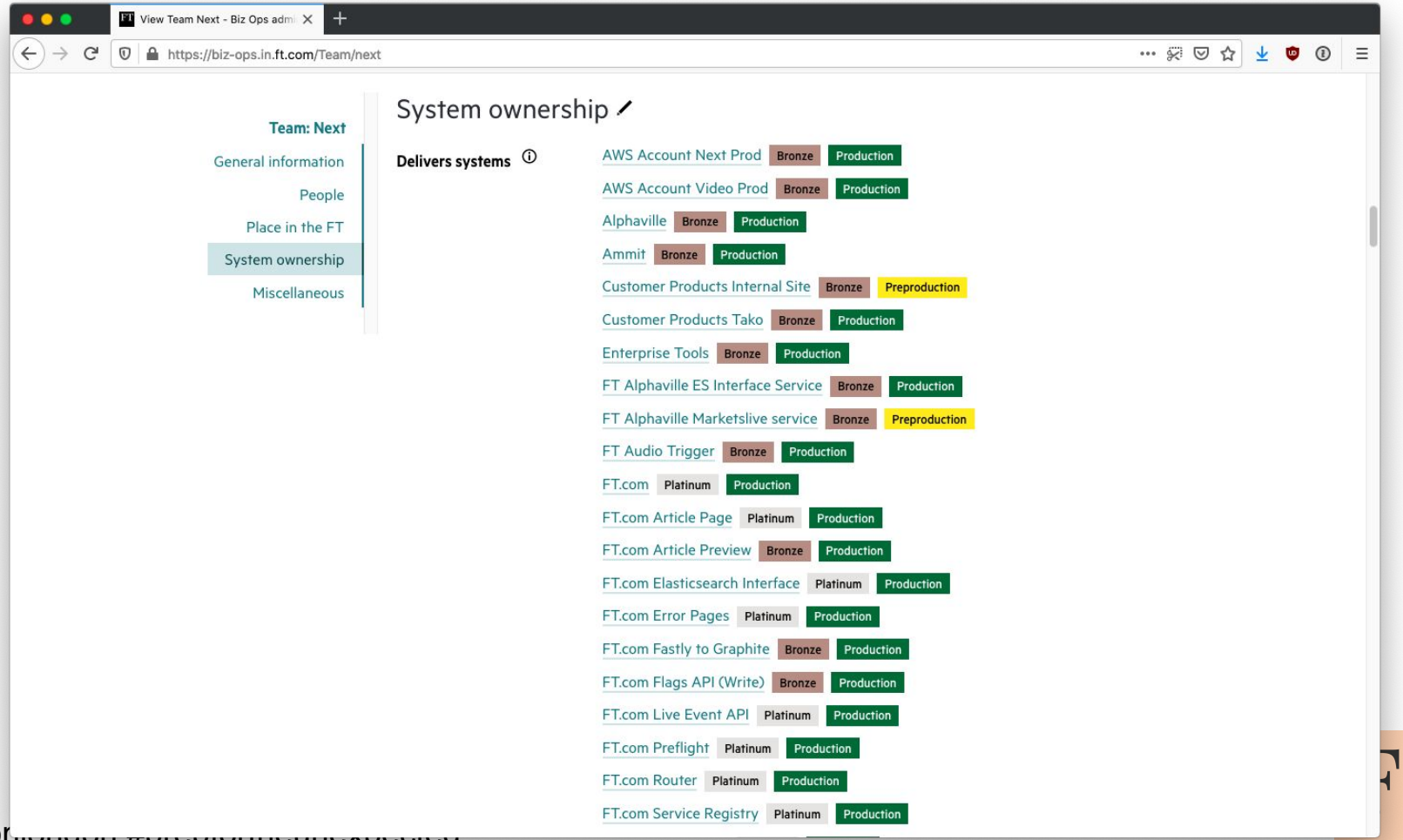
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Team: Next
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People
Place in the FT
System ownership
Miscellaneous
System ownership
Delivers systems
AWS Account Next Prod Bronze Production
AWS Account Video Prod Bronze Production
Alphaville Bronze Production
Ammit Bronze Production
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FT.com Error Pages Platinum Production
FT.com Fastly to Graphite Bronze Production
FT.com Flags API (Write) Bronze Production
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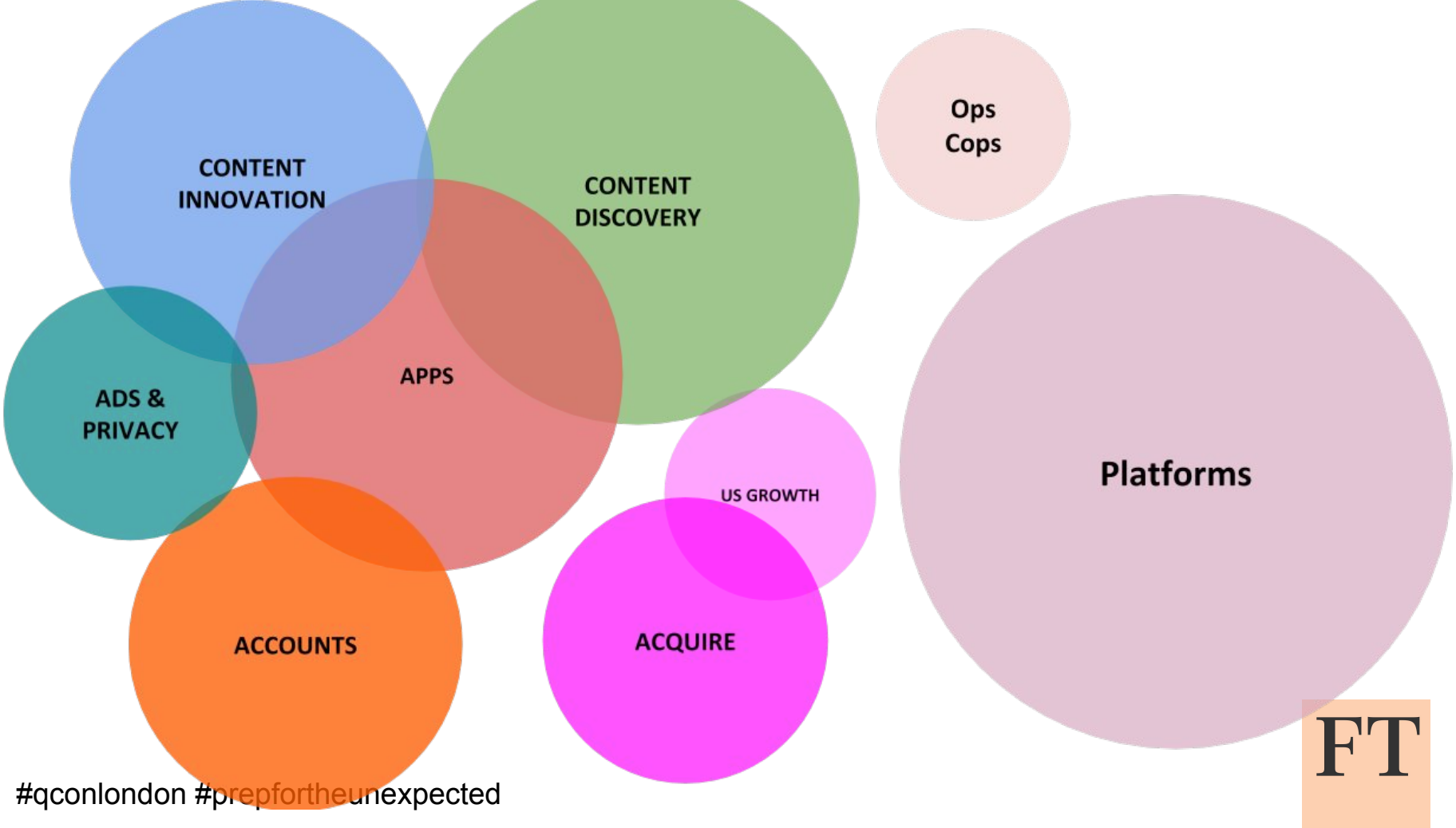
FT.com Preflight Platinum Production
FT.com Router Platinum Production
FT.com Service Registry Platinum Production

Split into 9 teams



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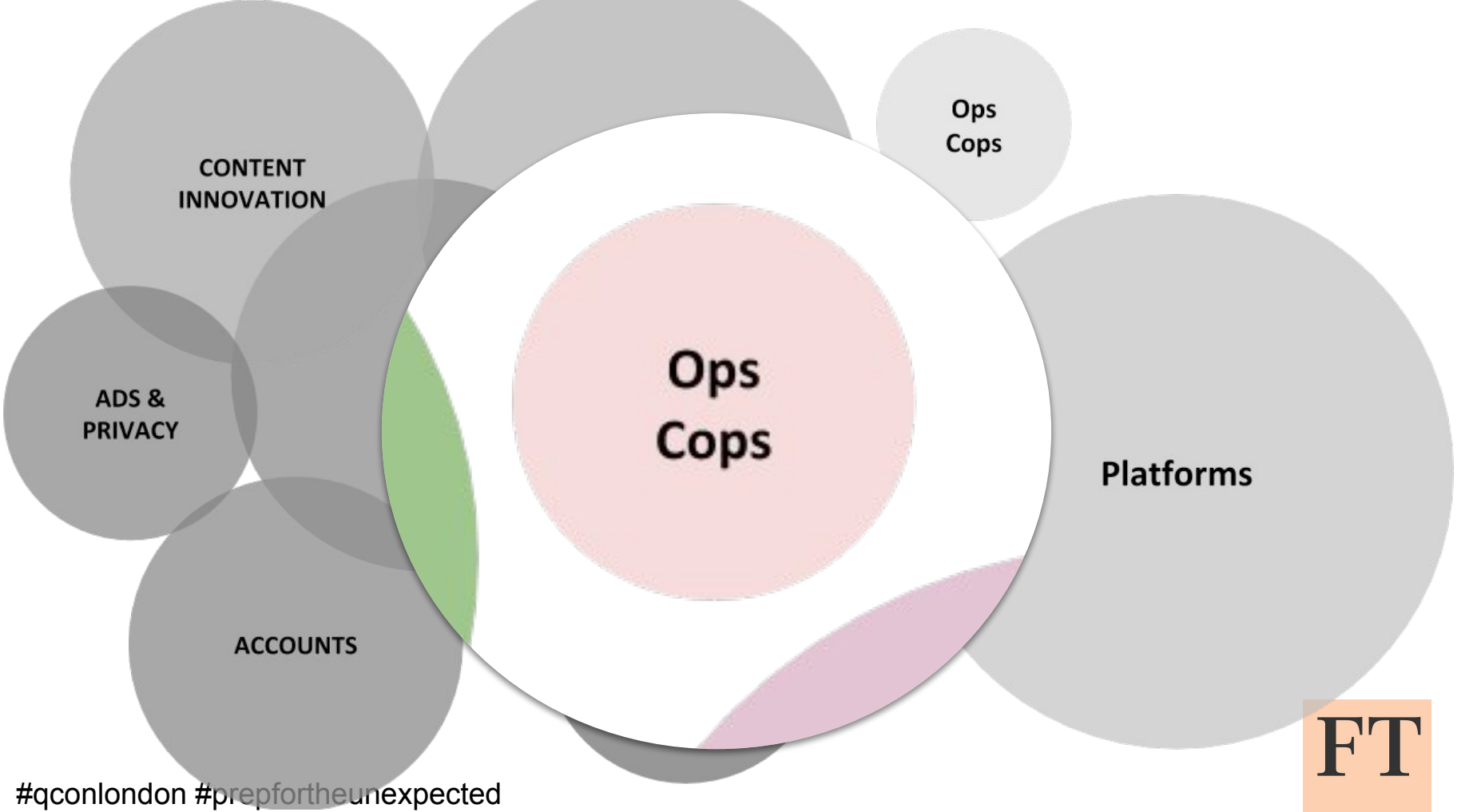
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INNOVATION
Ops
Cops
ADS &
PRIVACY
Ops
Cops
Platforms
ACCOUNTS

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Operations monitor our entire estate 24/7

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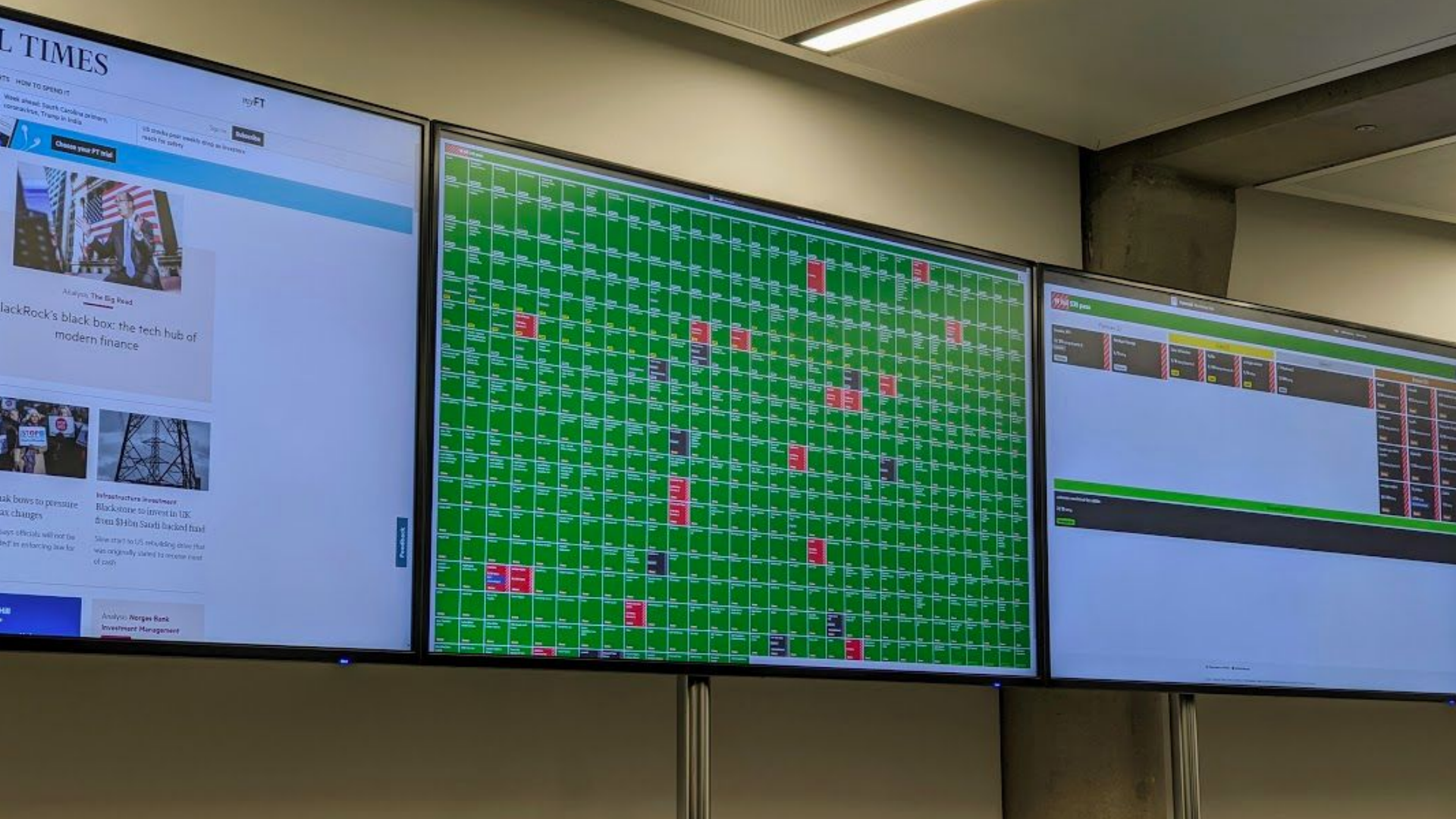
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Our systems are a drop in the pond

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You build it, you run it

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Supporting our systems out-of-hours

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This is our approach to DevOps

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Photo by Joshua Coleman on Unsplash

We’re putting on our incident management hat

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How do we do support out-of-hours?

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Our engineers volunteer to be part of the out-of-hours team

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We don’t have shifts

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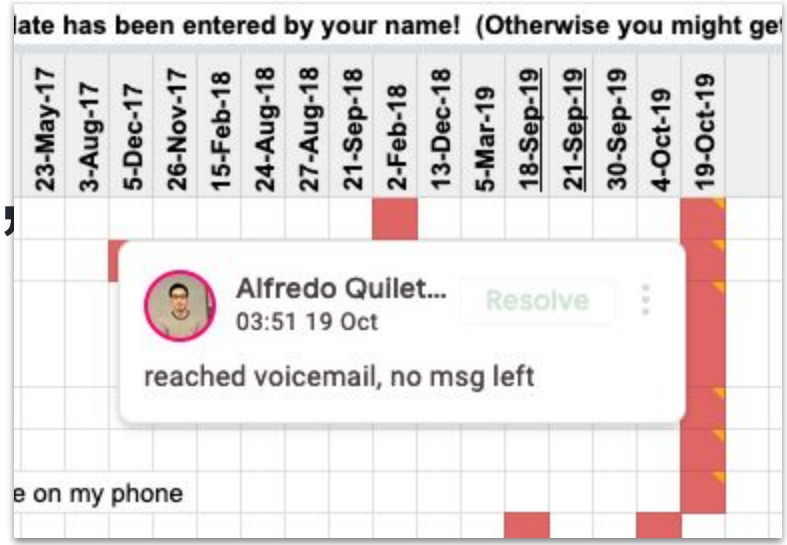
We don’



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Which means, we could all be unavailable

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What do we care about?

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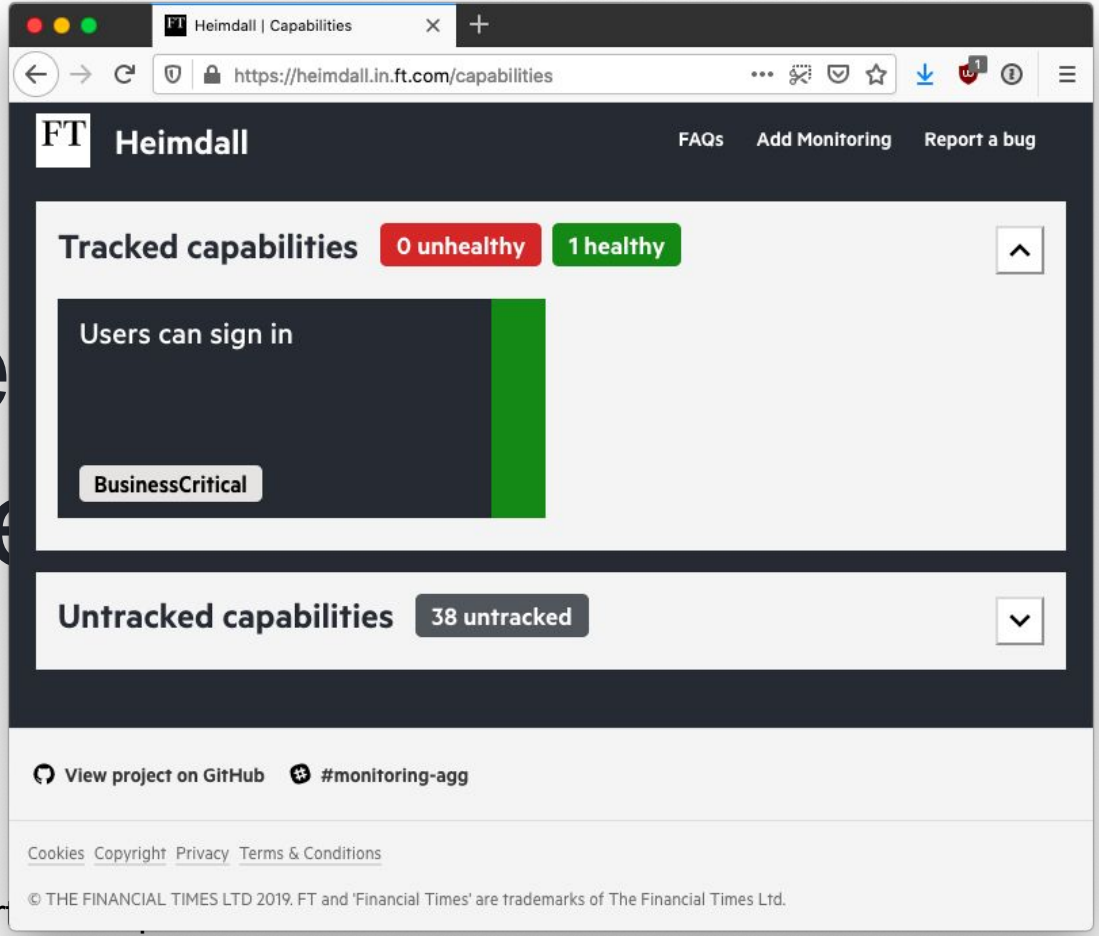
We’re talking about our business capabilities

We're
busine



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What is an incident at the FT?

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Customer Products has two really important business capabilities

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1. Our users can always read the news

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2. Journalists must be able to publish the news

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If either of these go wrong we declare an incident

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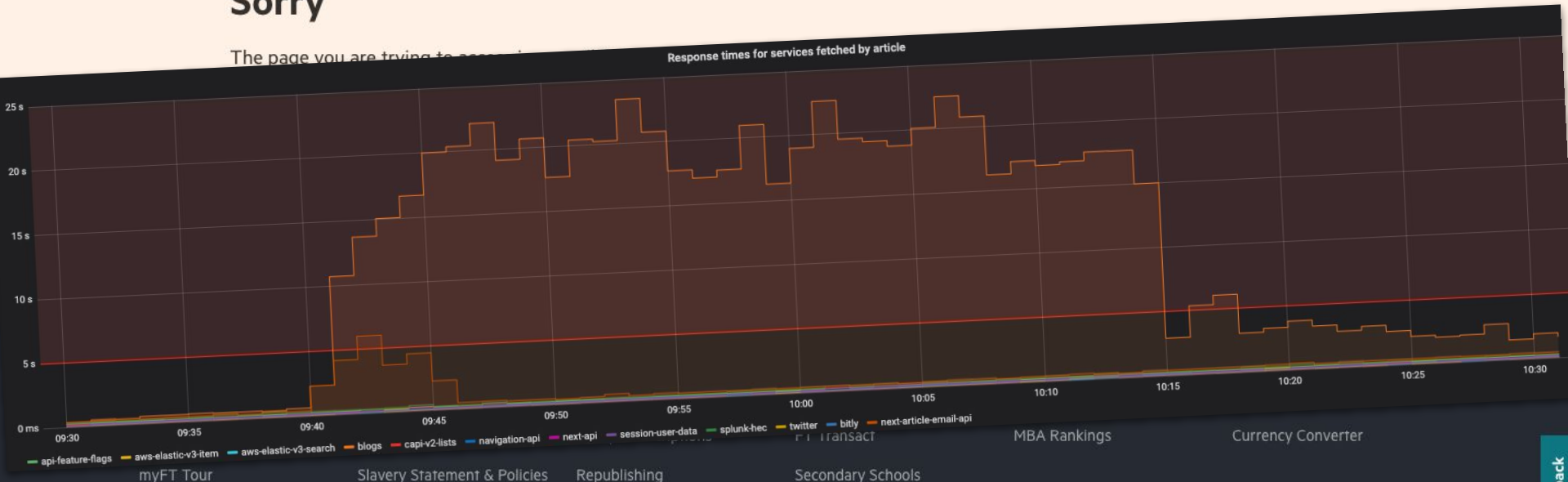

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Feedback

0. How do we do on-call?

1. Our incident management challenges

2. Making out-of-hours sustainable
3. The results and takeaways

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What were our challenges?

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We were not immediately productive on call →

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We were not immediately productive on call

We had an engineering mindset in an operations situation

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We were not immediately productive on call

Because we don’t have any SRE or DevOps specialists

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“I always start with the impact and the comms, they kinda jump in at the Tech.”

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We were not immediately productive on call

Our incident management process wasn’t second nature

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We had very few incidents in the first half of the year

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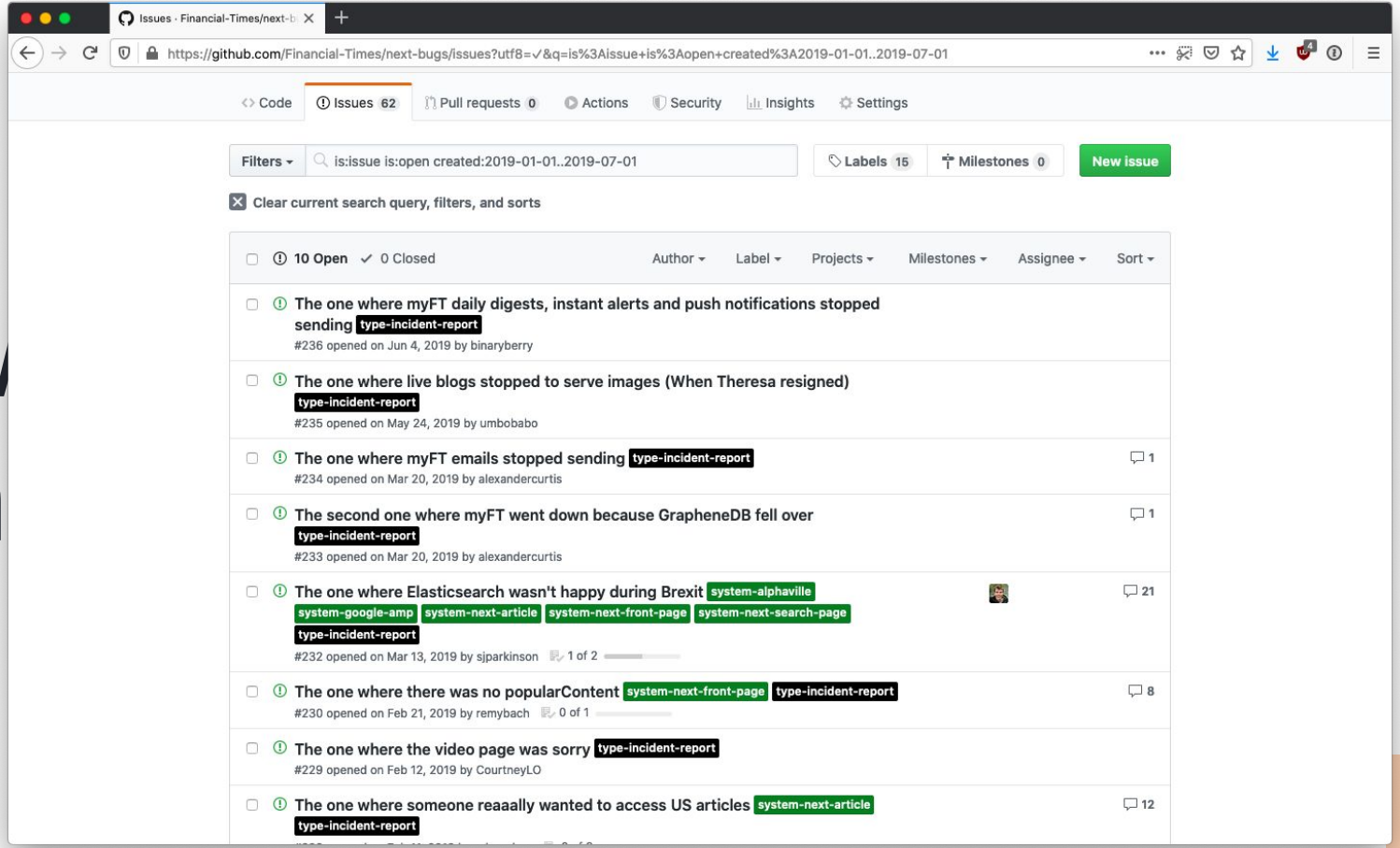

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And we were down to 5 people on the out-of-hours support team

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So we needed to make out-of-hours team sustainable

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0. How do we do on-call?
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We surveyed engineers about helping out during an incident

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There were many people on the fence

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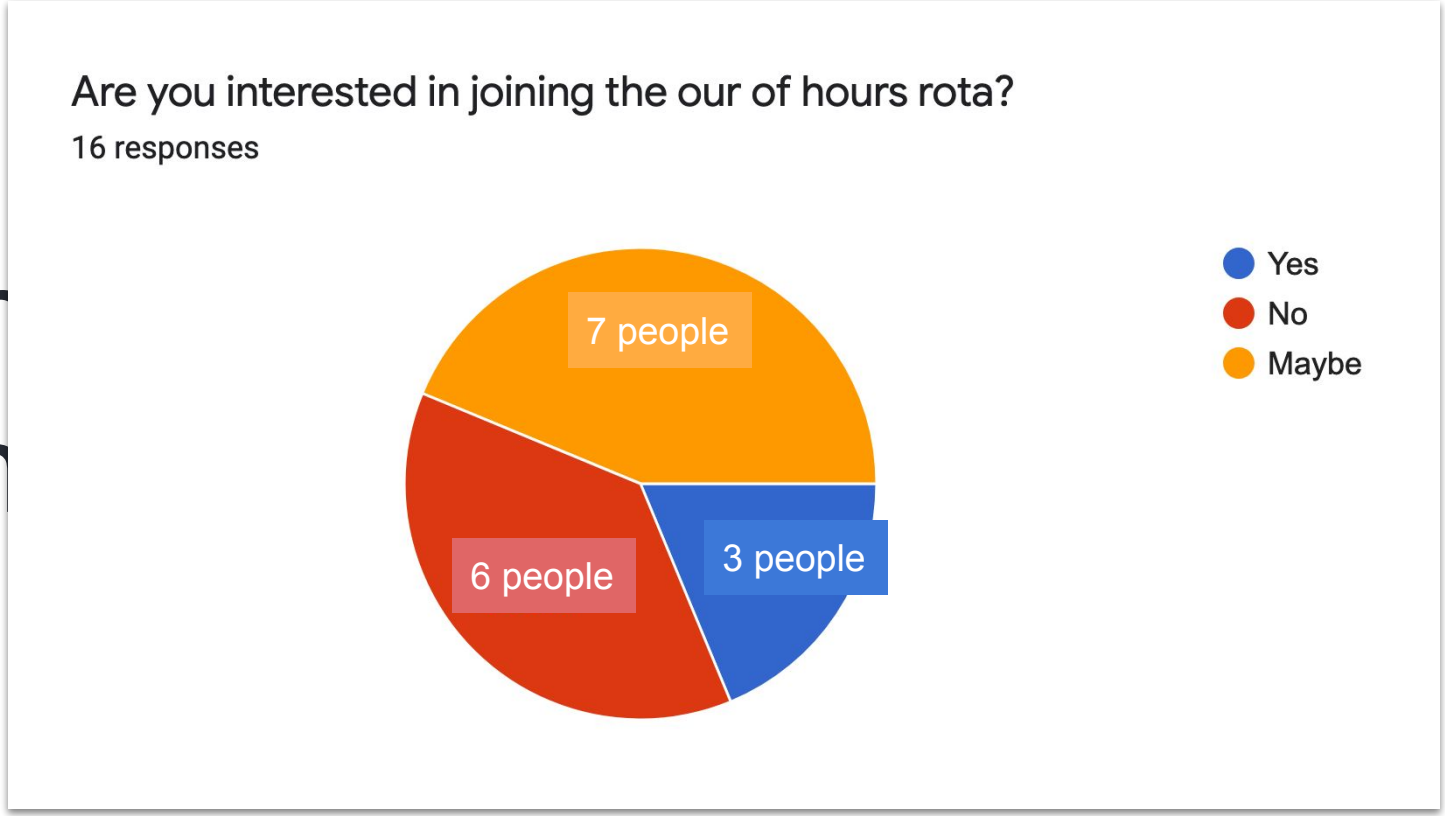

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And they told us why

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“I will need much more confidence in systems and domains knowledge.”

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> If I were to have a better understanding of how it works and what I would need to do, I would very likely join.

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We set out to convince people to join our out-of-hours team

FT

We built and ran incident workshops

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So our engineers are better prepared to take on incidents

FT

And we wrote a generic runbook for our microservices

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So engineers knew what they can do, and apply it to our ~180 systems

FT

We set out in the last 6 months of 2019 to address the situation

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Building your incident workshop →

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Building your incident workshop

Don’t Panic!

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Set aside a couple of hours to write a workshop

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Start by having a read of your old incidents

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Building your incident workshop

Start by b

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Use the first page to set the scene

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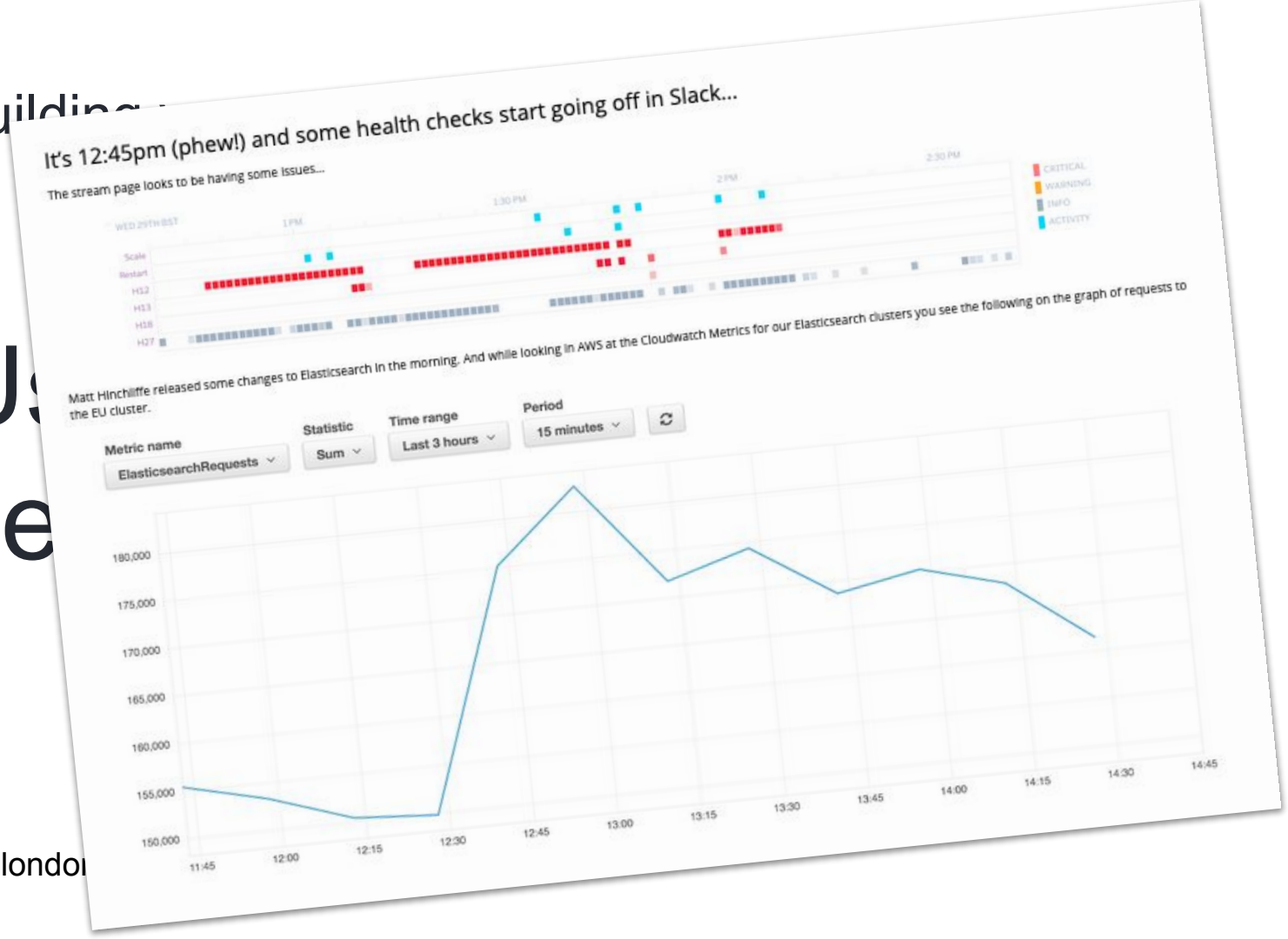

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Follow it with several pages of graphs and information

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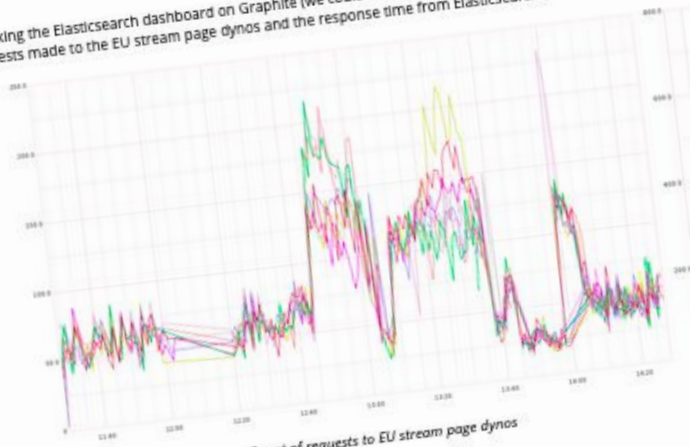
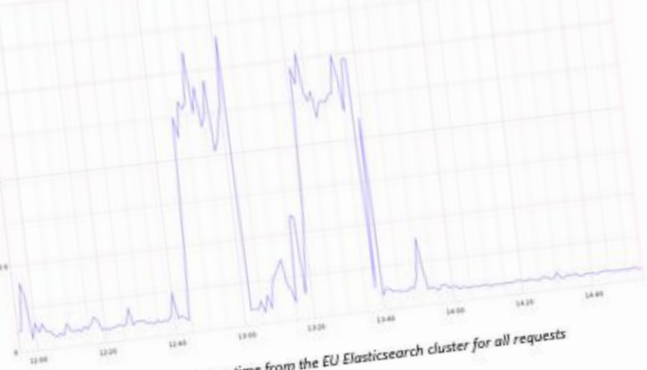
Checking the Elasticsearch dashboard on Graphite (we could also have used our Grafana dashboard at http://grafana.ft.com/d/000000173/ft-com-elasticsearch) this is what we see for the number of requests made to the EU stream page dynos and the response time from Elasticsearch.

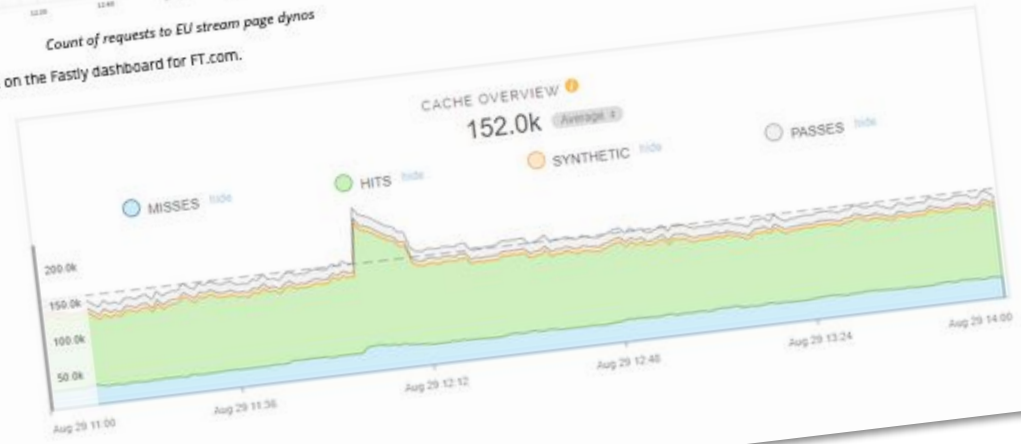


Count of requests to EU stream page dynos



Median response time from the EU Elasticsearch cluster for all requests

And here's what it looks like on the Fastly dashboard for FT.com.



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Each page progresses the incident

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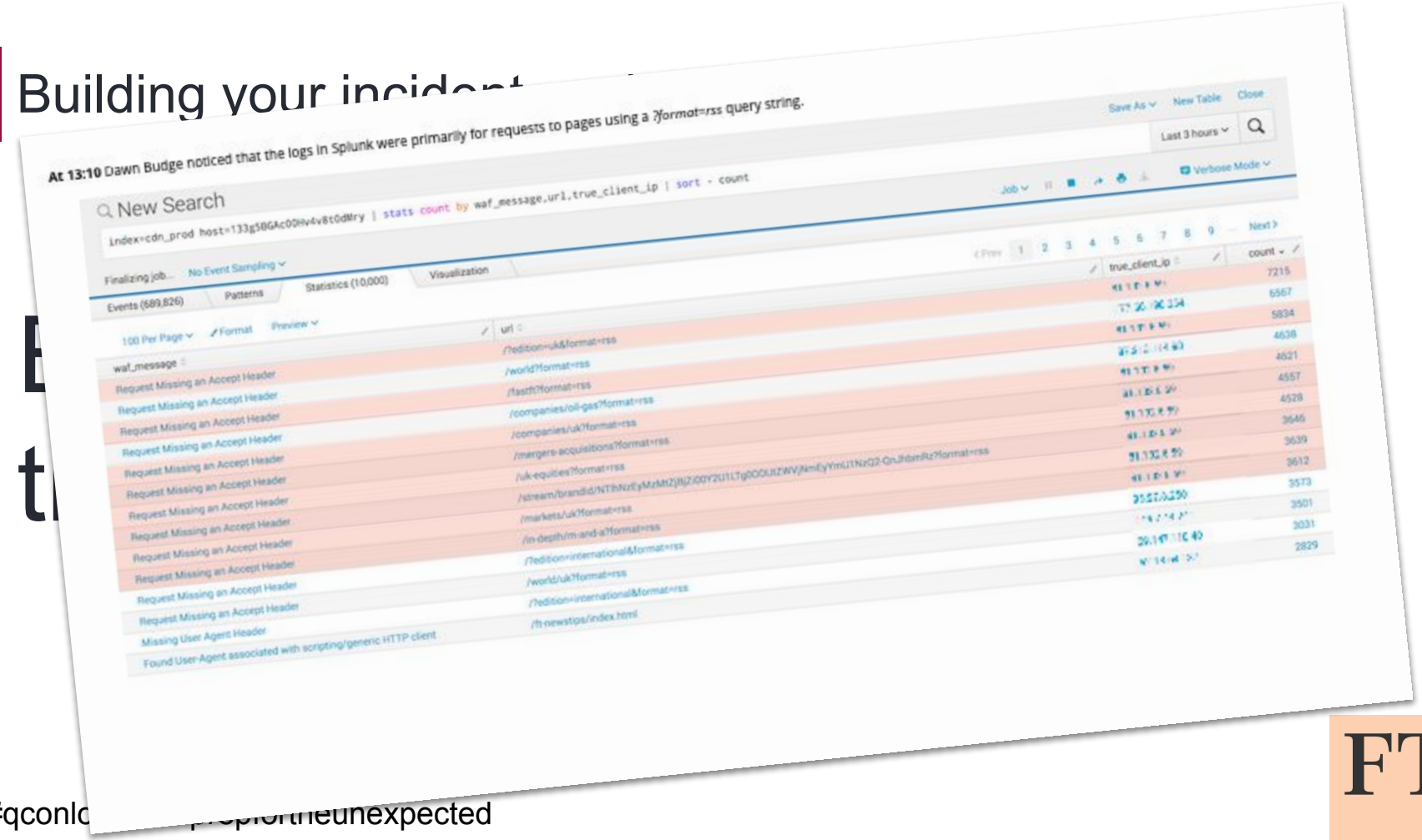
Building your incident



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And is an opportunity to ask questions about tools and systems

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Include the dead ends you encountered in production

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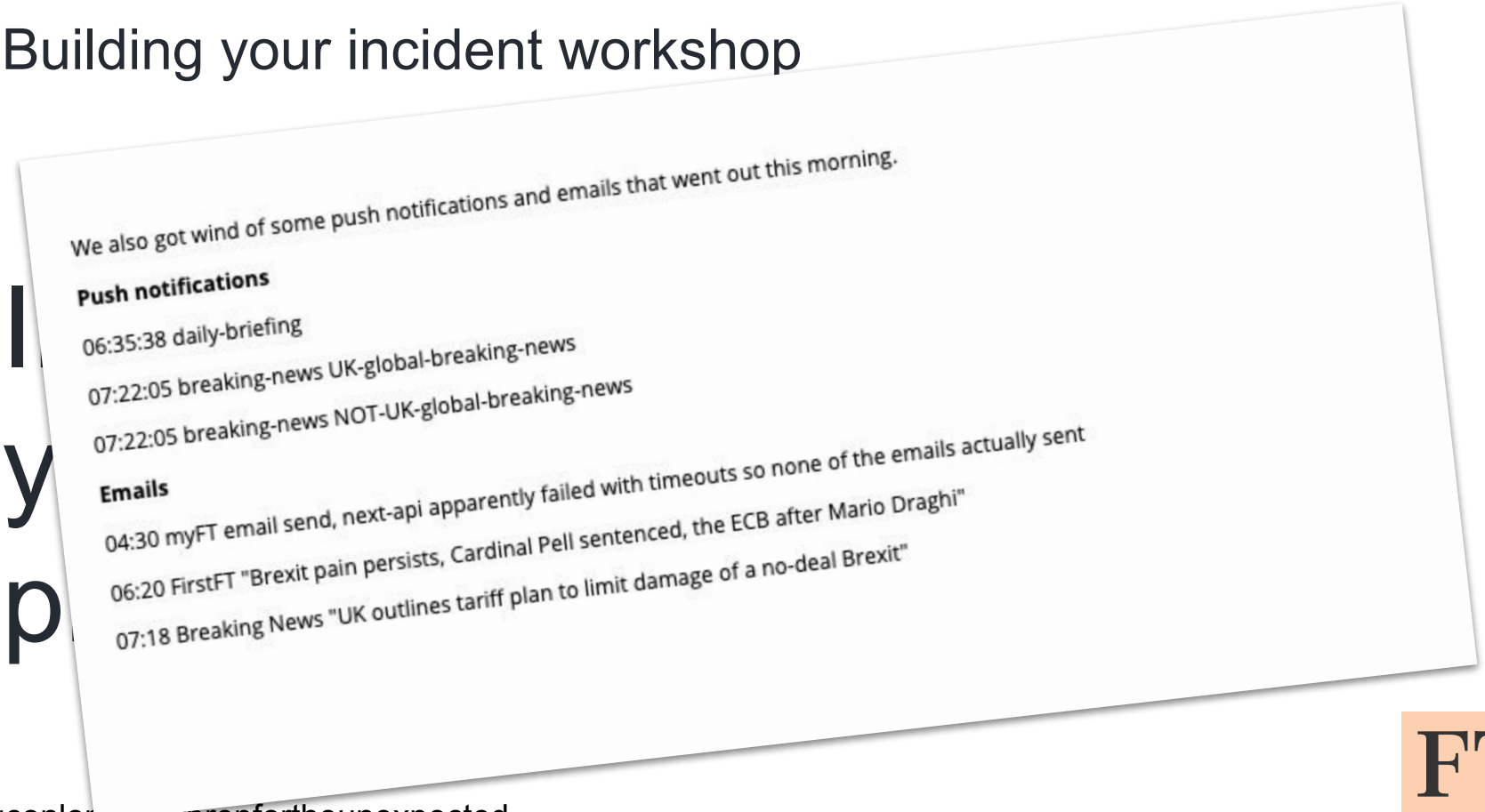
Building your incident workshop



We also got wind of some push notifications and emails that went out this morning.

Push notifications

06:35:38 daily-briefing

07:22:05 breaking-news UK-global-breaking-news

07:22:05 breaking-news NOT-UK-global-breaking-news

Emails

04:30 myFT email send, next-api apparently failed with timeouts so none of the emails actually sent

06:20 FirstFT "Brexit pain persists, Cardinal Pell sentenced, the ECB after Mario Draghi"

07:18 Breaking News "UK outlines tariff plan to limit damage of a no-deal Brexit"

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Then wrap it up in a summary page

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Building your incid

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What was it?

We received a high volume of requests, about 50% of which were for RSS feeds, in 3 bursts lasting approximately 90 minutes.

Many of these missed the CDN cache and hit the application. This increased the number of requests to our EU Elasticsearch cluster which began to timeout due to the large volume of data requested each time by the stream page.

The impact on FT.com

In particular one IP address belonging to a Virgin Media customer was identified and added to the CDN blacklist. An abuse complaint was also filed with Virgin Media.

Several other IP addresses belonging FactSet and Wall Street on Demand were also identified as making a very high number of requests to our RSS feeds.

We ruled out the following theories of what happened:

1. A recent change to the stream page app, nothing has changed recently so not this
2. Lots of purged content so more misses, wasn't a correct theory as there was a big spike in requests, most of which were hits, with a small increase in misses
3. Scrape or DDoS, we shut down some IPs that made lots of requests but still had problems
4. Something is making stream page run slow, no obvious releases that might have done that. However the app needs more than 12 dynos to deal with something like 20 requests a second. Digging into the code locally, each stream page makes a lot of requests to next-api, the world and UK streams make about 10, a more standard list-only stream makes about 6

Arjun made changes to the stream page so it no longer made calls to next-api, and we moved some of our social media pollers to a different RSS system.

FT

What actually happened?

FT

What did we do?

What caused the incident?

FT

Keep it minimal

FT

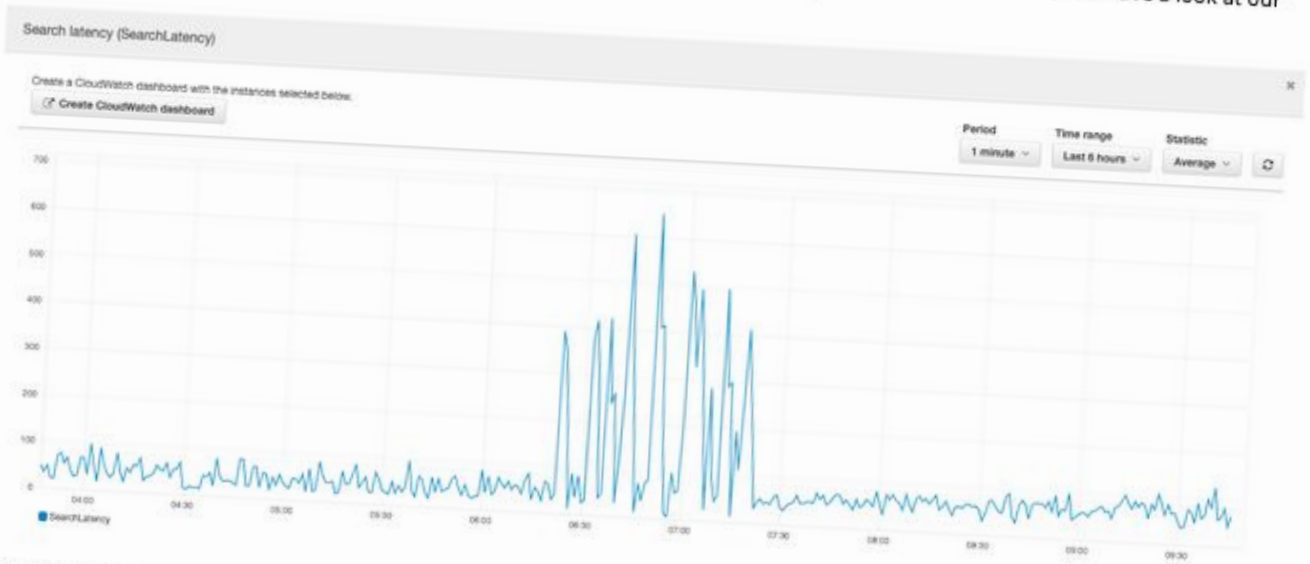
The open format encourages people to share what they know

FT

Now we've woken up

It's 9am and we're in the office...

Because there are so many systems having trouble, we think it is maybe something to do with Elasticsearch, and have a look at our clusters charts in AWS.



This is the EU graph, the US one looks much the same. Historically search latency is *very* flat, sitting below 100ms.

Running your incident workshop →

#qconlondon #prepfortheunexpected

FT

Running your incident workshop

You are the incident lead*

* aka the facilitator

#qconlondon #prepfortheunexpected

FT

Split people into small teams

FT

Introduce the session and the format

FT

Hand out that first page of background information

FT

Running your incident workshop

Give teams ~10 minutes to discuss this information

FT

Encourage the discussion, pose questions

FT

Remind people to write their thoughts down!

FT

Running

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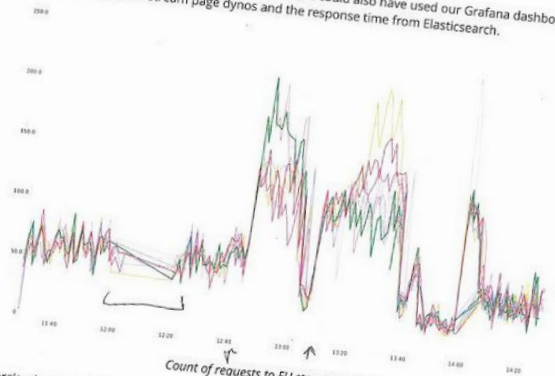
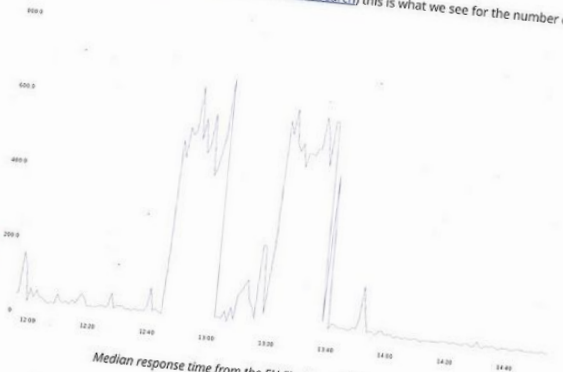
dov

Checking the Elasticsearch dashboard on Graphite (we could also have used our Grafana dashboard at http://grafana.ft.com/d/000000173/ft-com-elasticsearch) this is what we see for the number of requests made to the EU stream page dynos and the response time from Elasticsearch.



Count of requests to EU stream page dynos



Median response time from the EU Elasticsearch cluster for all requests

And here's what it looks like on the Fastly dashboard for FT.com.

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FT

Bring the teams together and ask them the following...

FT

We’re addressing that engineering mindset

FT

Running your incident workshop

1. What actions, if any, can you take right now?

FT

2. What more information do you need?

FT

3. What are you communicating?

FT

Running your incident workshop

People get really excited, so moderate the conversation!

FT

DEV
JS

Then, hand out more information.

Hopefully it’s what they’ve asked for...

FT

Repeat the handouts and questions until the incident is “over”

FT

Leave plenty of time for questions

FT

Samuel Parkinson is presenting
10:56

Documenting a generic microservices runbook →

#qconlondon #prepfortheunexpected

FT

One place for generic actions you can take during an incident

FT

Documenting a generic microservices runbook

We call it the FT.com incident tool belt

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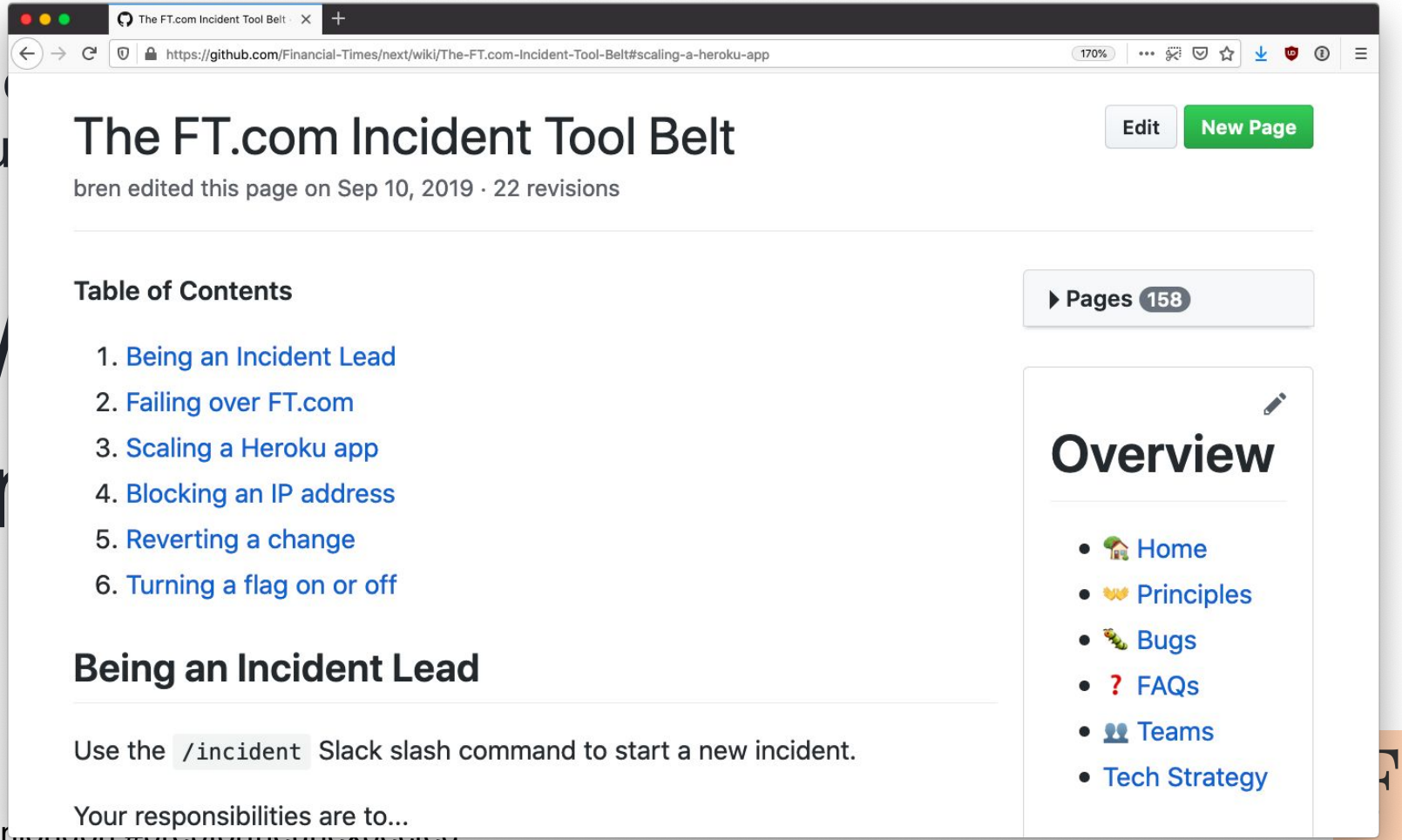
The FT.com Incident Tool Belt

https://github.com/Financial-Times/next/wiki/The-FT.com-Incident-Tool-Belt#scaling-a-heroku-app



The FT.com Incident Tool Belt

Edit New Page

bren edited this page on Sep 10, 2019 · 22 revisions

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2. Failing over FT.com
3. Scaling a Heroku app
4. Blocking an IP address
5. Reverting a change
6. Turning a flag on or off

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Overview

- 🏠 Home
- 🤝 Principles
- 🐛 Bugs
- ❓ FAQs
- 👥 Teams
- Tech Strategy

Being an Incident Lead

Use the `/incident` Slack slash command to start a new incident.

Your responsibilities are to...

#qcon

FT

Documenting a generic microservices runbook

Each action has prep, usage and previous incidents documented

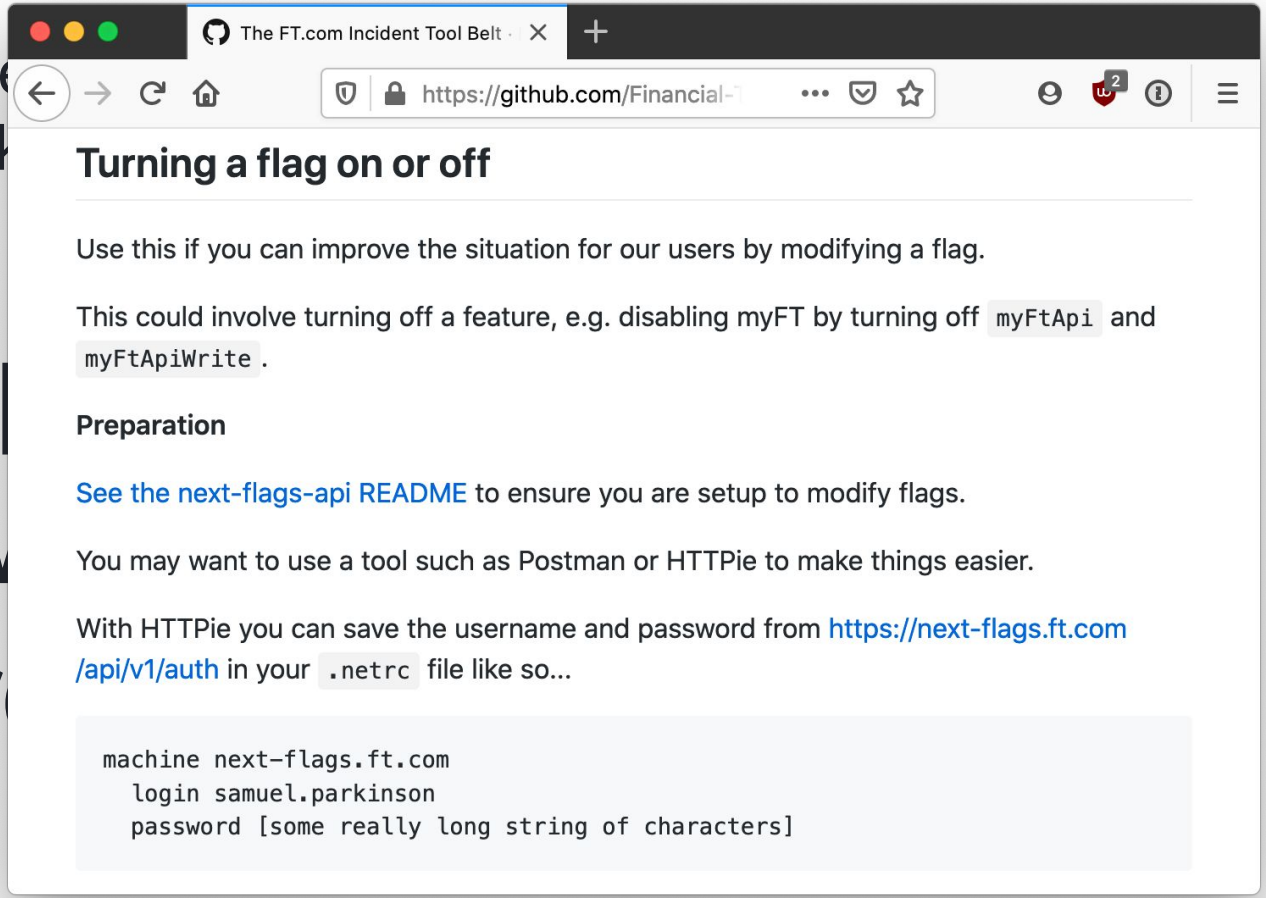
FT

Preparation, such as downloading the Heroku CLI

FT

Docume
runbook

Prep
dow
Her



#qconlondon #prepfortheunexpected

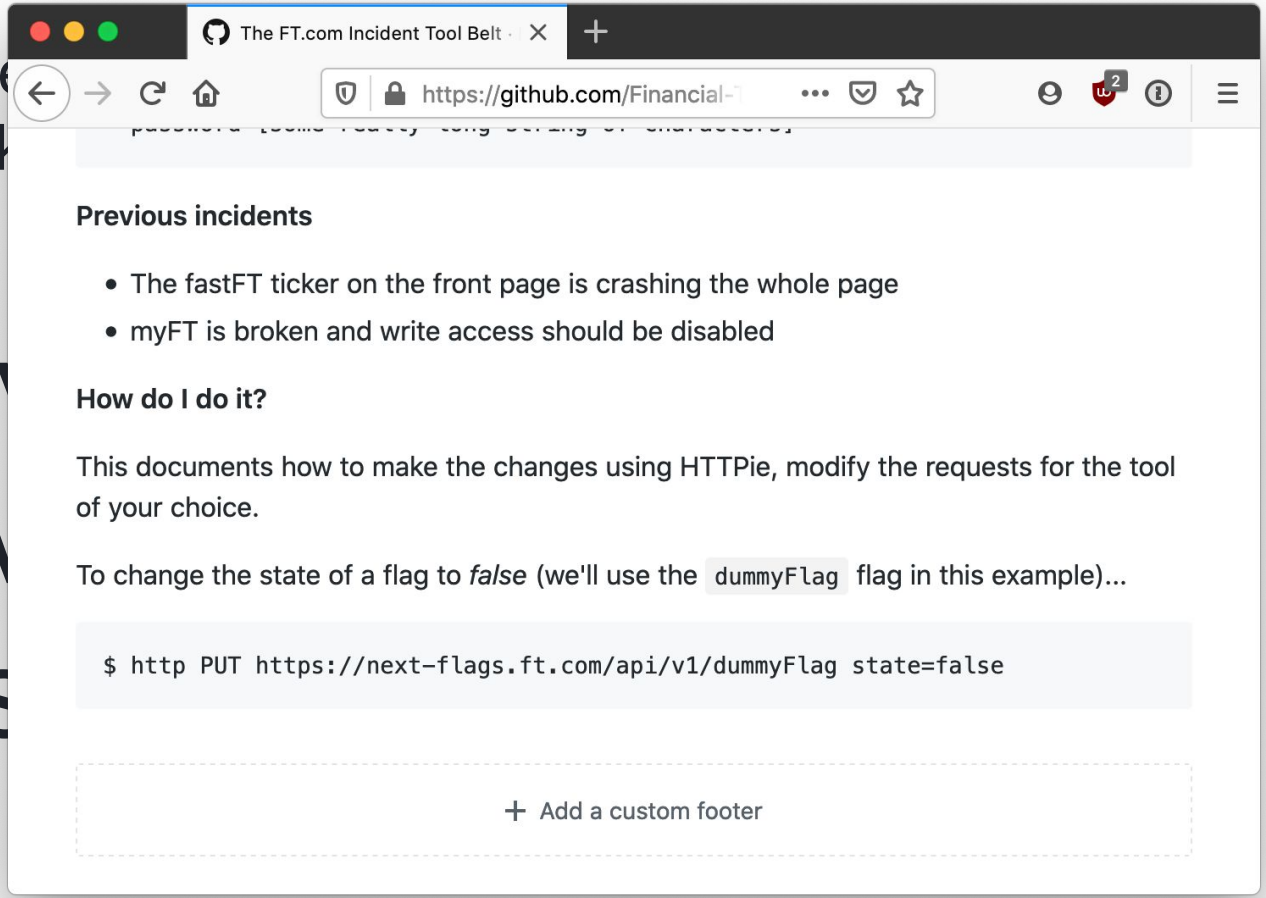
FT

Previous incidents provide context for those yet to happen

FT

Docume
runbook

Prev
prov
thos



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FT

We ran training sessions on each action

FT

They were hands on and we ran them in production

FT

0. How do we do on-call?
1. Our incident management challenges
2. Making out-of-hours sustainable

3. The results and takeaways

FT

Did the workshops and documentation help?

FT

6 incident workshops with 3 “incidents”

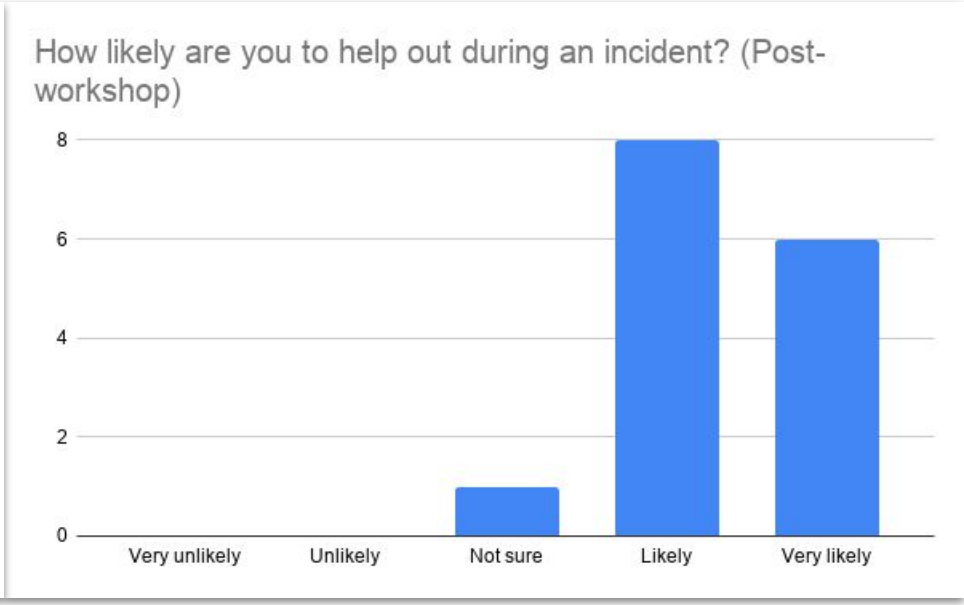
FT

6 tool box workshops

FT

How likely are you to help out during an incident?

FT



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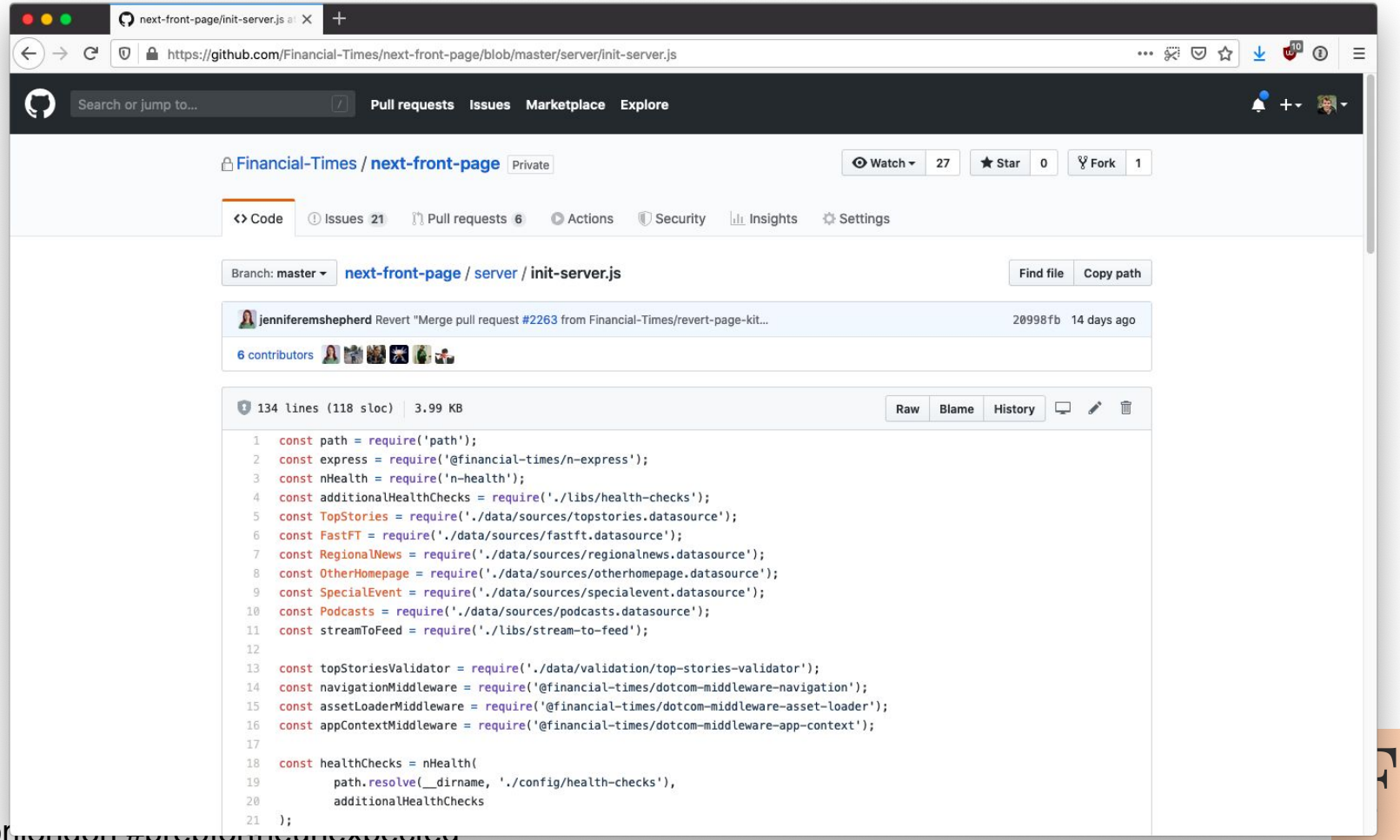
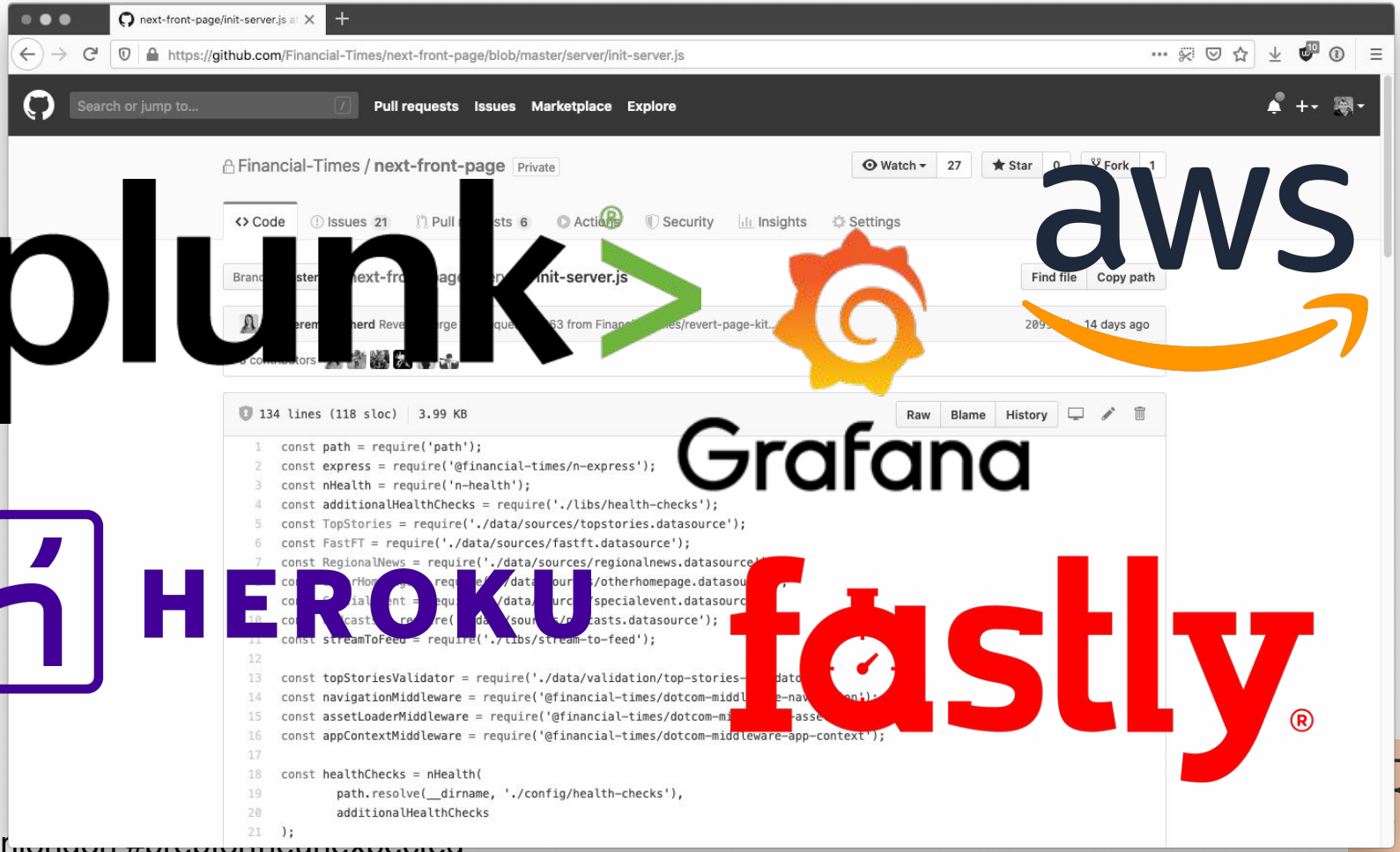
> Solving OOH incidents is probably not as scary as most of us think.

FT

The workshops expanded everyone's mental model of our systems

FT


next-front-page/init-server.js
https://github.com/Financial-Times/next-front-page/blob/master/server/init-server.js
Search or jump to...
Pull requests
Issues
Marketplace
Explore
Financial-Times / next-front-page
Private
Watch 27
Star 0
Fork 1
Code
Issues 21
Pull requests 6
Actions
Security
Insights
Settings
Branch: master
next-front-page / server / init-server.js
Find file
Copy path
jenniferemshepherd Revert "Merge pull request #2263 from Financial-Times/revert-page-kit...
20998fb 14 days ago
6 contributors
134 lines (118 sloc) 3.99 KB
Raw
Blame
History
const path = require('path');
const express = require('@financial-times/n-express');
const nHealth = require('n-health');
const additionalHealthChecks = require('./libs/health-checks');
const TopStories = require('./data/sources/topstories.datasource');
const FastFT = require('./data/sources/fastft.datasource');
const RegionalNews = require('./data/sources/regionalnews.datasource');
const OtherHomepage = require('./data/sources/otherhomepage.datasource');
const SpecialEvent = require('./data/sources/specialevent.datasource');
const Podcasts = require('./data/sources/podcasts.datasource');
const streamToFeed = require('./libs/stream-to-feed');
const topStoriesValidator = require('./data/validation/top-stories-validator');
const navigationMiddleware = require('@financial-times/dotcom-middleware-navigation');
const assetLoaderMiddleware = require('@financial-times/dotcom-middleware-asset-loader');
const appContextMiddleware = require('@financial-times/dotcom-middleware-app-context');
const healthChecks = nHealth(
path.resolve(__dirname, './config/health-checks'),
additionalHealthChecks
);



splunk>

aws

Grafana

HEROKU

fastly

FT

We got better at the process

FT

> [I’ve learnt] to focus initially on comms and customer experience, and less on finding the technical root cause.

FT

We started learning from our old incidents

FT

Photo by Aleksandar Cvetanovic on Unsplash

“

I am keen to work towards being on the out-of-hours team.

”

FT

Engineers did join the out-of-hours team

FT

There’s now 11 of us

FT

Many of whom were dialed into the big DNS incident

FT

What are we doing this year?

FT

Continue to promote joining the out-of-hours team

FT

Evangelise running incident workshops across the company

FT

Key takeaways

Photo by Ollie Jordan on Unsplash

Practicing incident management can prepare you for the unexpected

#qconlondon #prepfortheunexpected

FT

Confidence doesn’t have to come from in-depth knowledge

Take this back to your teams, and have fun!

#qconlondon #prepfortheunexpected

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We’re hiring!

https://www.ft.com/qcon

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Further reading

- Coping with Complexity by the SNAFUcatchers
- Beyond the "Fix-it" Treadmill by J. Paul Reed
- Cognitive Work of Hypothesis Exploration During Anomaly Response by Marisa R. Grayson
- Learning from Incidents in Software Blog

FT

Incident workshop examples

- FT.com Incident Workshop #1
- FT.com Incident Workshop #2
- FT.com Incident Workshop #3

FT

Thank you!

I’d love to hear your thoughts, suggestions and feedback!

samuel.parkinson@ft.com

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