ChatOps at Shopify
Inviting Bots in Our Day-to-Day Operations
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Daniella Niyonkuru
@niyodanie
Production Engineering
500k+ merchants
1200+ developers
Rails
Ruby on Rails since 2006
10k peak rps
$40b total sales
40+ daily deploys
ChatOps
Conversation Driven Development

Teams  Chat App  Chat Bot  Third-Party Services

Infrastructure
How do you choose a Chat Bot?
ChatOps at Shopify
# defining a new command
command :find_answer, 'answer', help: 'the answer to life, universe, and everything'

def find_answer
  reply(42)
end

Adding Commands

```text
$ spy find_answer
  42
$ spy help find_answer
  the answer to life, universe, and everything
```
Infrastructure
A Global Scale Resilient Web App

The Internet

Edge Router

Load Balancers
Web Servers
Job Servers
DB Writer
DB Reader
DB Standby

Region

CDN
The spy cdn show traffic command displays the traffic distribution across different regions for different domains. The traffic distribution is as follows:

- **cdn.shopify.com**
  - global: akamai = 15 (94%), fastly = 1 (6%)
  - us-west: akamai = 5 (31%), fastly = 11 (69%)
  - us-central: akamai = 5 (31%), fastly = 11 (69%)
  - us-east: akamai = 5 (31%), fastly = 11 (69%)
  - eu-west: akamai = 5 (31%), fastly = 11 (69%)
  - eu-central: akamai = 5 (31%), fastly = 11 (69%)
  - eu-east: akamai = 5 (31%), fastly = 11 (69%)
  - asia: akamai = 15 (94%), fastly = 1 (6%)

- **globali.shopifycdn.com**
  - global: akamai = 1 (6%), fastly = 15 (94%)

- **wildcard.s.shopifycdn.com**
  - global: akamai = 1 (6%), fastly = 15 (94%)

The spy cdn backend [region] command shows the backend distribution as follows:

- **global**
  - us-east-1_img_0 = 1 (25%)
  - us-east-1_img_1 = 1 (25%)
  - us-west-2_img_0 = 1 (25%)
  - us-west-2_img_1 = 1 (25%)
● spy revisions

- Daniella Niyonkuru 6:04 PM
- spy revisions

- spy revision(s): 774b7b2f79cd4a2f6c137e37ac3d2f1162454958
- chi2 running accepted revision(s): 774b7b2f79cd4a2f6c137e37ac3d2f1162454958
- cloud1 running accepted revision(s): 774b7b2f79cd4a2f6c137e37ac3d2f1162454958
- cloud2 running accepted revision(s): 774b7b2f79cd4a2f6c137e37ac3d2f1162454958

● spy shops

- Daniella Niyonkuru 6:00 PM
- spy shops

- spy shops

- Top Traffic Shops in the last 5 minutes

  - www.fashionnova.com: shard: 16, thousand
  - store.tonyrobbins.com: shard: 14, thousand
  - br.ouladeals.com: shard: 10, thousand
  - www.humankindpet.com: shard: 36, thousand
  - www.gruntstyle.com: shard: 5, thousand
  - www.thelittlemarket.com: shard: 2, thousand
  - kit.com: shard: 6, thousand
  - www.radishhock.com: shard: 15, thousand
  - www.maperformance.com: shard: 2, thousand
  - yeezysupply.com: shard: 18, thousand

● spy profile shopify
- spy resque [dc=x]

Daniella Niyonkuru 5:53 PM
spy resque dc=ash

- maintenance_low: 74
- maintenance: 17
- low: 1
- webhook: 5

- spy job working [dc=x]

Daniella Niyonkuru 6:08 PM
spy job working dc=chi2

Workers in CHI2 are running:
- attributedsessionskafkaconsumerjob (low: 4)
- elasticsearch:paddedworkerjob (default: 7)
- insightskafkaconsumerjob (low: 19)
- insightsrealtimelastskafkaconsumerjob (low: 5)
- maintenance:backfillcheckoulineitemmeasurementtask (maintenance_low: 1)
- maintenance:backfillinventoryitemmeasurementtask (maintenance_low: 1)
- webhookjob (webhook: 5)
- **spy shards**

  Daniella Niyonkuru 1:34 PM
  spy shard1

  spy APP 1:34 PM
  One moment while I get that information for you.

  [https://.../spy/node_visuals-c4fe77c92dc27.png](https://.../spy/node_visuals-c4fe77c92dc27.png) (22kB)

- **spy shard load**

  Daniella Niyonkuru 1:36 PM
  spy shard load

  spy APP 1:36 PM
  One moment please while I get that data for you.

  Database Transactions by Shard in the last 1 hours

<table>
<thead>
<tr>
<th>Shard 1-shard1.ch2 (R)</th>
<th>Shard 1-shard1.ch2 (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>26</td>
</tr>
<tr>
<td>Thousand</td>
<td>Thousand</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Failovers

- spy failover shopify pod :pod to :location
A pod is an isolated set of shops.
Pods

- spy pods

Daniella Niyonkuru  4:57 PM  ⭐
spy pods

spy  APP  4:57 PM
- ash: master, 1, 39, 40
- chi2: 0, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24, 25, 26, 27, 28, 29, 30, 31, 36, 37, 38
- cloud1: 21
- cloud2: 22, 32, 33, 34, 35

Daniella Niyonkuru  5:57 PM  ⭐
spy pods

spy  APP  5:57 PM
- ash: master, 0, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24, 25, 26, 27, 28, 29, 30, 31, 36, 37, 38, 39, 40
- chi2: 1
- cloud1: <no active pods>
- cloud2: 21, 22, 32, 33, 34, 35
Failovers

- **spy failover shopify pod:** ids to location

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**Niko Kurtti**  🐾  9:05 AM  ☆

spy failover shopify pod 21 to cloud2

**spy**  APP  9:05 AM  ☆

Failing over pod 21 to cloud2.

Please monitor the failover in #pod-failovers and datadog: https://app.datadoghq.com/dash/361908/failovers?

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[@niko](https://twitter.com/niko) (Niko Kurtti) is running [BETA] Failover a pod for activefailover/production `TARGET=cloud2 POD_ID=21` (logs)

(deploy): A failover for pods: 21 to cloud2 has started.

(deploy): A failover for pods: 21 to cloud2 succeeded.
Failovers: User Authentication

Niko Kurtti 🐠 9:15 AM
spy failover shopify pod 22 to cloud2

spy APP 9:15 AM ✭
niko: https:// . . . . . . . . . /auth/niko.kurtti

Failing over pod 22 to cloud2.

Please monitor the failover in #pod-failovers and datadog:
https://app.datadoghq.com/dash/361908/failovers?

@niko (Niko Kurtti) is running [BETA] Failover a pod for
activefailover/production TARGET=cloud2 POD_ID=22 (logs)
Emil Stolarsky 16:52
spy pods

Emil Stolarsky 16:52
spy APP 16:52
- chi2: master, 0, 2, 4, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28
- chi1: 1, 5, 6, 7, 9, 11, 15, 16, 18, 19, 26, 27
- cloud2: 21
- cloud1: 22

Emil Stolarsky 16:52
spy shard1

Emil Stolarsky 16:52
One moment while I get that information for you.

https://shopify-opsbot.s3.amazonaws.com/spy/node_visuals-6a4a5a43be?7b3.png (28kB)

Emil Stolarsky 17:58
spy pods cloud21

Emil Stolarsky 17:58
spy APP 17:58
No pods found matching: cloud21
And More...

- spy chef environment :environment :server
- spy newrelic :app
- spy datadog :metric
Incident Management
An incident was reported at 2017-02-23 22:42:36 UTC. @daniella is the IMOC.

Status summary: checkout is down

Incident was bound to #war-room. Please use #war-room for communications, or rebind the incident with incident channel .

set the channel topic: 🔥 @daniella is IMOC for incident: checkout is down

sh*t
The Incident Manager On Call (IMOC)’s role is to lead the incident response.
Incident Response

➔ Shit breaks
➔ Detection
➔ Start Incident
➔ Communicate
➔ Fix
➔ Stop Incident
➔ Document (Service Disruption)
➔ Investigation
➔ Root Cause Analysis (RCA)
➔ Action Items
➔ Resolution
Three main sets of commands:

- spy page
- spy incident
- spy status
Shit Breaks

→ spy page imoc "order notifications not going out"
Start Incident

➔ **spy incident start me order fraud analysis outage**

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**#war-room**

Daniella Niyonkuru 12:24 PM
spy incident start me order fraud analysis outage

An incident was reported at 2017-04-06 16:25:01 UTC. @daniella is the IMOC.
Status summary: order fraud analysis outage
Incident was bound to #war-room. Please use #war-room for communications, or rebind the incident with: *incidents channel*.

Izaak Alpert 12:25 PM
set the channel topic: @daniella is IMOC for incident: order fraud analysis outage

Izaak Alpert 12:25 PM
joined #war-room. Also, @damianapol joined.

**spy** 12:25 PM
**Status Page Summary**
*** Components Report ***
Admin: operational
Checkout: operational
Reports and Dashboards: operational
Storefront: operational
API & Mobile: operational
Support: operational
Third party services: operational
*** Unresolved Incidents Report ***
No reported unresolved incidents.
Communicate

→ spy incident tldr

"App store is down, data missing from database"
Timeline:
2017-08-21 18:47:38 UTC: Started tracking an incident with commander: hormoz
Incident Commander (IMOC) Support Response (SRM)
@hormoz @charliealamode
Channel Failures Started
#war-room
Incident Started Failures Mitigated
2017-08-21 18:47:38 UTC
Communicate with other teams

➔ spy incident tell :team message
➔ spy page datastores
Actions

#war-room

Willem van Bergen 12:30 PM
@leex around? we may have Shopify - Cardserver network issues

Darren Foo 12:30 PM
spy cs traffic 0 100

spy APP 12:30 PM
CS ratio update to 0% Virginia / 100% Oregon has been submitted. Please wait...

Felix Glaser 😞 12:30 PM
joined #war-room by invitation from Willem van Bergen.

Willem van Bergen 12:31 PM
spy incident note Network issue suspected, traffic team pinged

spy APP 12:31 PM
Sync of DNS servers for ratio update to 0% Virginia / 100% Oregon is now completed!

Willem van Bergen 12:31 PM
spy incident note Darren fails over cardserver traffic to us-west
Third Party Services

➔ spy status
➔ spy status :provider :status for :feature
➔ spy pager imoc res 123
Reminders

when: [30, stop]
command: :check_status_page

when: 120
command: :notify_support_atc
message: 'Spy has notified the Support Response Manager (SRM) on your behalf.'

when: 120
command: :srm_fill_out_doc

when: 300
message: 'You should coordinate external comms with the support incident responder.'

when: 600
command: :srm_checking_in

when: [3600]
command: :notify_imoc_team

when: stop
message: 'Please create a Service Disruptions report.'
Stop Incident

spy incident stop

Daniella Niyonkuru 4:54 PM
spy incident stop

spy APP 4:54 PM

✅ Incident stopped at 2017-02-23 21:54:59 UTC. Thanks for letting us know.

Status Page Summary

*** Components Report ***
Admin : operational
Checkout : operational
Reports and Dashboards : operational
Storefront : operational
API & Mobile : operational
Support : operational
Third party services : operational

*** Unresolved Incidents Report ***
No reported unresolved incidents.

spy APP 4:55 PM
cleared the channel topic
Generating the SD report

➔ spy incident note & 💌
spy helps us to reduce the impact and duration of incidents.
Developer Onboarding
Learn commands by seeing others execute them.
Hit The Ground Running

- spy github add user :user :team
- spy circle add my_new_shiny_project
- spy buildkite add my_new_shiny_repo
- spy shipit lock :stack *message
Deploying Code

spy  APP  11:09 AM  ⭐
Your commit is deploying for shopify/production

Deployer: (Shipit)
Deploying to Revision: 9aacf49d
Links: (logs/abort/rollback|diff)
Please keep an eye on #operations, and the deploy dashboard until it's complete.

- 9aacf49d @daniella: Add recent verifiable shop moves alert job (#131878)

spy  APP  11:18 AM  ⭐
Deploy of the following commit completed successfully.

- 9aacf49d @daniella: Add recent verifiable shop moves alert job (#131878)

Please make sure your changes work and perform correctly.
If they don’t, rollback.
If something is broken that is impacting customers, page IMOC using spy page
IMOC [message] to start an incident.
Resiliency.
What if Slack is down?
Benefits & Lessons Learned
● Increased sharing and focus
● Shortened feedback loop
● Eliminated manual toil
● Smoother incident handling
● Faster onboarding experience

But, we have also learned ...
Summary

Infrastructure

Incident Management

Developer Onboarding
Thanks!

@niyodanie
Resiliency Testing with Toxiproxy

Thursday, November 02, 2017 - 12:00 pm–12:30 pm
Jake Pittis, Shopify

Abstract:
Fibers get cut, databases crash, and you’ve adopted Chaos Engineering to challenge your production environment as much as possible. But what are you doing to craft the resiliency test suites that minimizes the impact of your application as much as possible? How do you debug resiliency problems locally, and make sure to architect for robustness as development-time? Toxiproxy is an open-source tool we've used for the past 2 years to emulate timeouts, latency and outages and one we believe could benefit nearly every company faced with these issues. In this talk, we'll dive into practical tips, lessons learned, and best practices so you can use Toxiproxy to write resilient test suites.
Questions?

@niyodanie