Accelerating DevOps with ChatOps

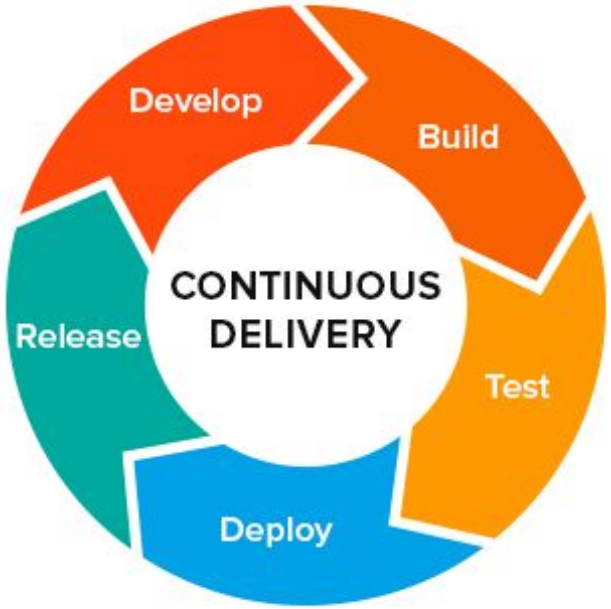
When, where and how to use ChatOps

Hello! I’m Vishwa

Co-founder @ YellowAnt

VishwaKK /ishwa306

Continuous Improvement



High performing IT teams experience **60 times less failure,** recover from failure **168 times faster,** deploy **30 times** more frequently with **200 times shorter** lead time

- Rouan Wilsenach, ThoughtWorks

Did you know - Amazon deploys every 11.6 seconds!

DevOps Toolchain

Short Release cycles, rapid feedback, minimize MTTR

Culture
Automation
Measurement
Sharing

ChatOps

Putting tools right in the middle of conversations

- Jesse Newland, Github

A collaboration model that connects people, tools, processes, conversations into a transparent workflow

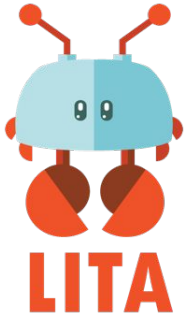
- Jason Hand, VictorOps

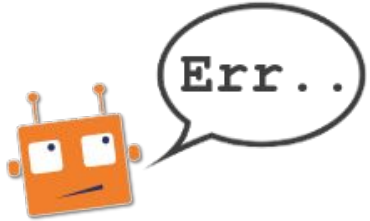
Ingredients

Bot-enabled communication platform with Channels or Groups

Mattermost

Bots

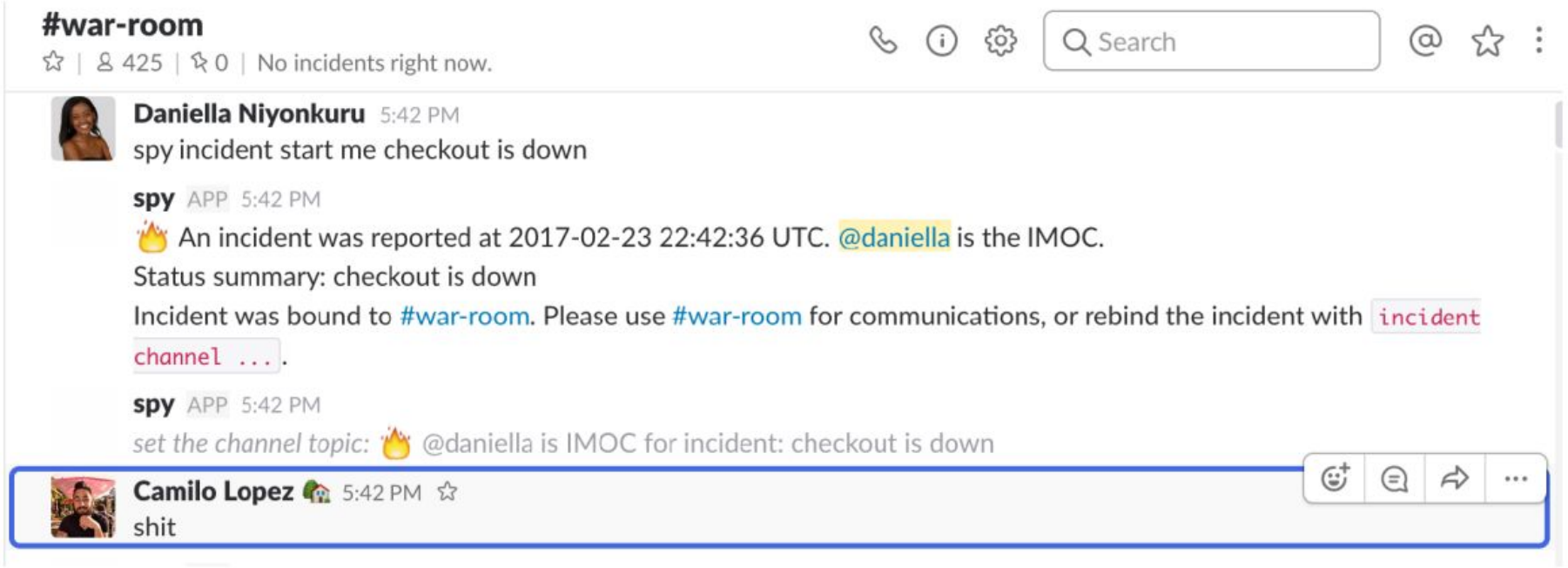




01
Plan
Capture & Tracking
Collaboration
Analysis
02
Develop
SCM
Repo Mgmt
CI
Build Tools
03
Test
Functional
Data Mgmt
Performance
SV
04
Release
Deployment
Config Mgmt
Containers
Release
Cloud
05
Operate
Monitoring
UX
BI
IBM
SpectT
Hewlett Packard Enterprise
VERSIONONE
servicenow
blueprint
CONFORMIQ
TRICENTIS
JIRA
ADPART
Wrike
Confluence
Trello
slack
HipChat
MySQL
SYBASE
H2
SQL Server
GitLab
Bitbucket
archiva
PostgreSQL
docker
TeamCity
Bamboo
JFrog Artifactory
nexus
npm
shippable
GRUNT
gradle
maven
tableau
Qlik
Spotfire
Keboola
kibana
Power BI
Apteligent
Adobe Analytics
tealeaf
FLURRY
appcelerator
APPDYNAMICS
ZABBIX
Hewlett Packard Enterprise
dynatrace
splunk>
JUnit
JMeter
ARMA
Ranorex
QUnit
Perfecto
cucumber
TestPlant
appium
redgate
LIQUIBASE
informatica
DATICAL
DBmaestro
IBM
BlazeMeter
LoadComplete
LoadStorm
appvance
Hewlett Packard Enterprise
PARASOFT
SOASTA
IBM
SMARTBEAR
SERENA
rackspace
kubernetes
CFEngine
SALTSTACK
go
RUNDECK
DEPLOY
bmc
OPENSHIFT
ANSIBLE
Automic
heroku
Octopus Deploy
PLUTORA
openstack
docker
puppet
ElasticBox
RELEASE
rkt
CHEF
urban (code)
Skytap
amazon
IBM Bluemix
v13

Situational awareness

Connecting people and bringing people on the same page



Shopify Incident Management Bot

Credits: Daniella N, Shopify

Leverage tribal knowledge

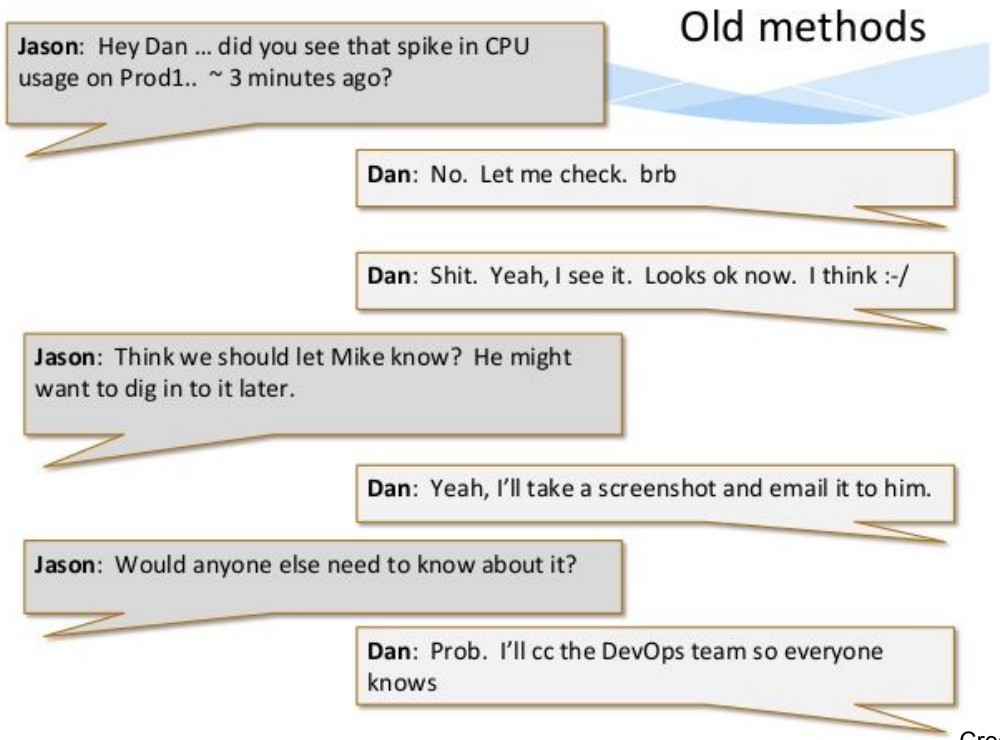
The Team is Greater than the Sum of Its Members

Teams working in silos

Credits: Jason Hand, VictorOps

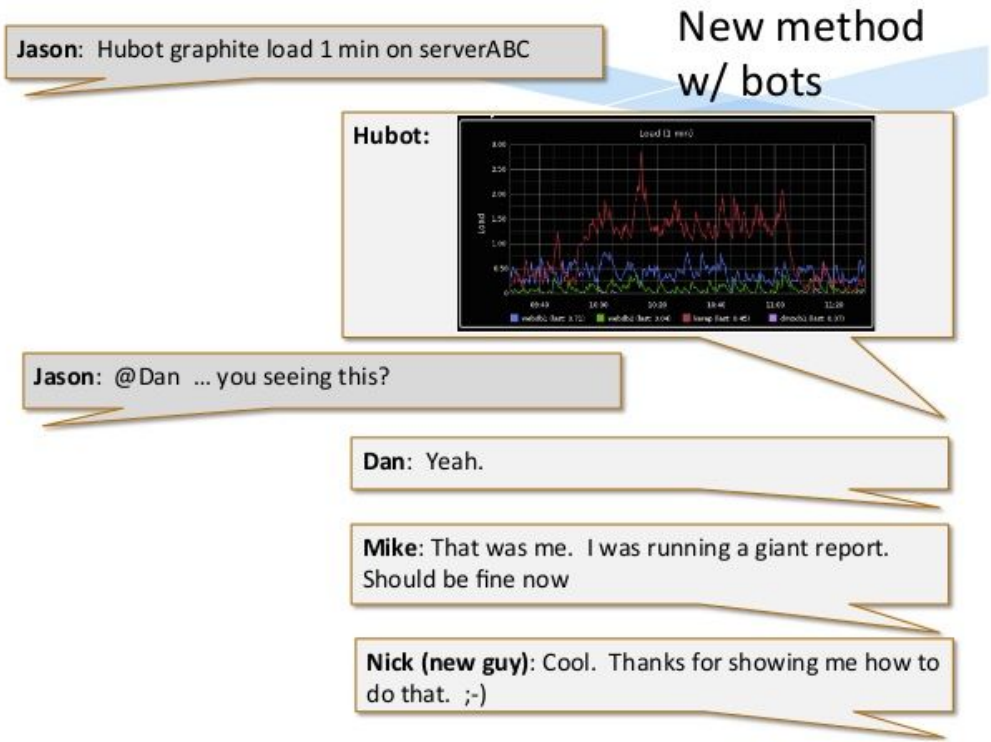
Status Quo

APM incidents - Old methods



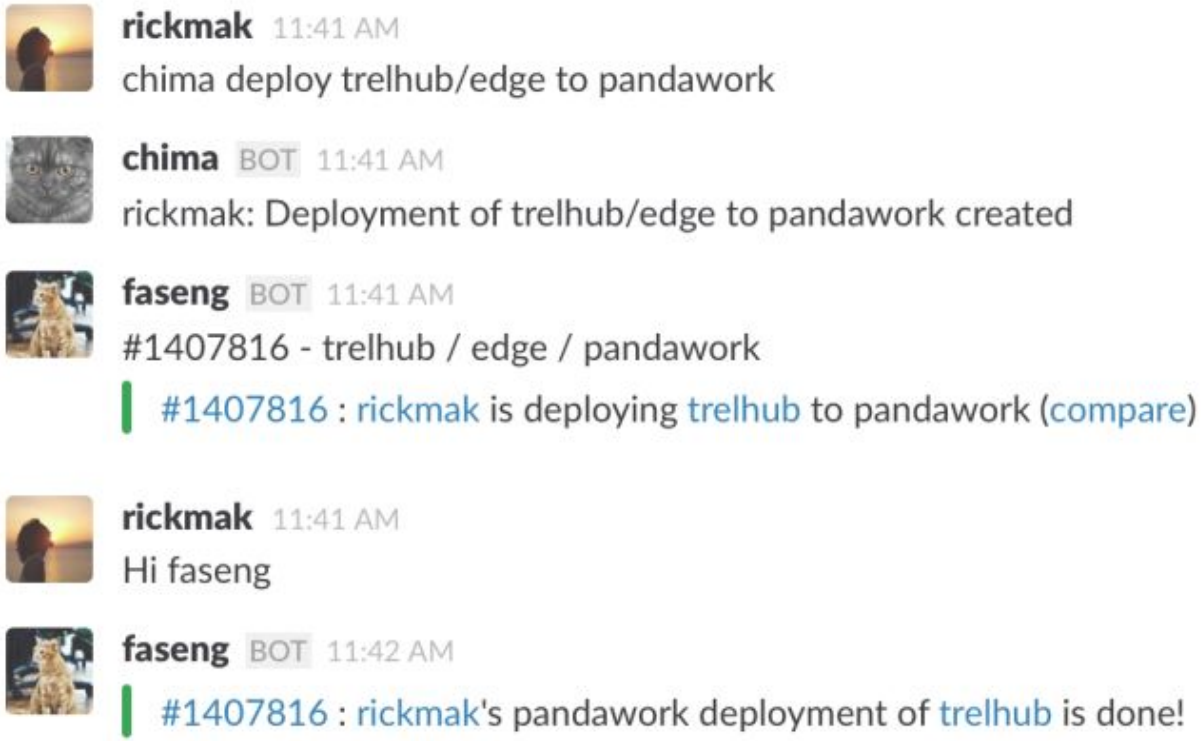
Credits: Jason Hand, VictorOps

APM incidents - New methods



Credits: Jason Hand, VictorOps

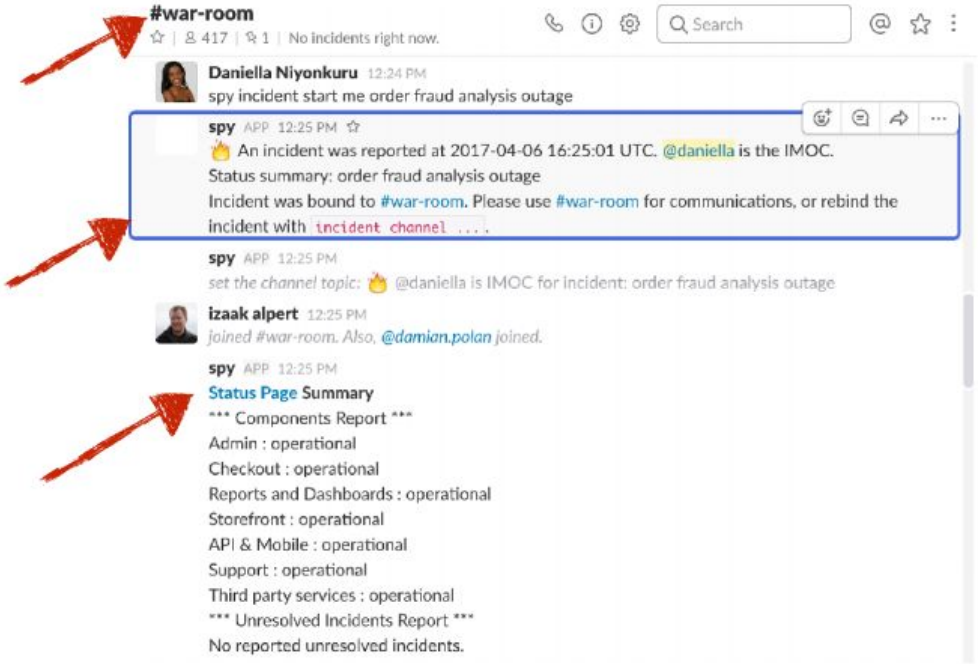
Use case - Deployment



Credits: Rick Mak, Oursky

Use case - Incident Management

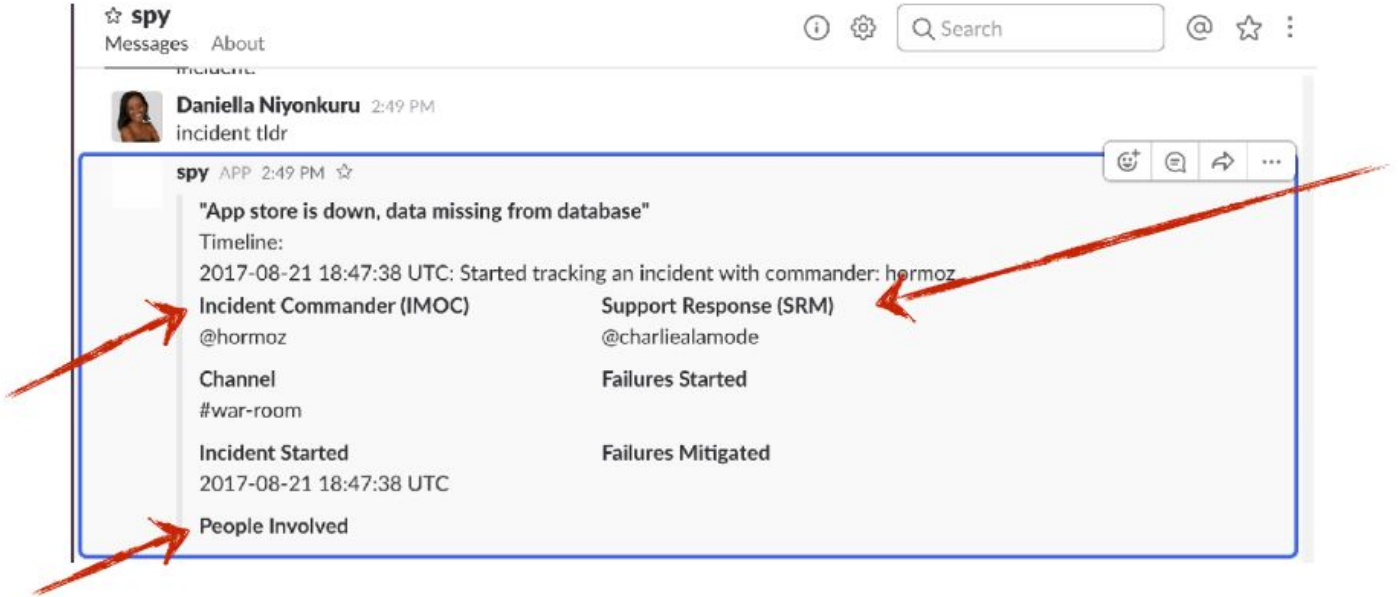
➡ `spy incident start me order fraud analysis outage`



Credits: Daniella N, Shopify

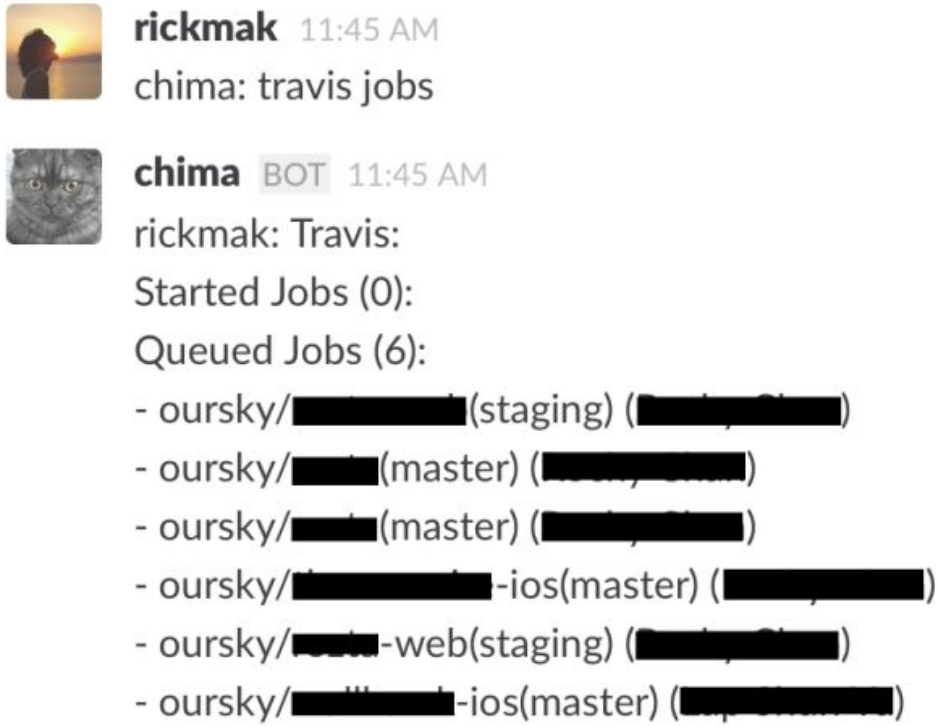
Use case - Incident Management

➡ `spy incident tldr`



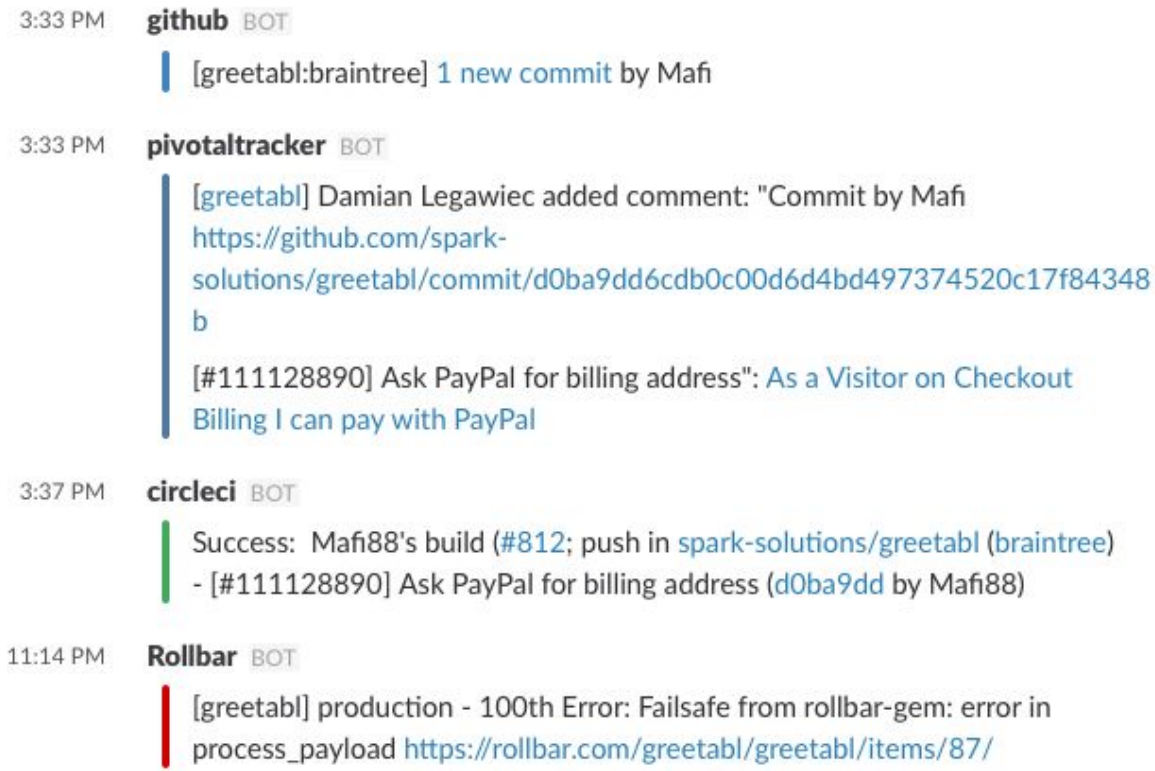
Credits: Daniella N, Shopify

Use case - Checking Job status



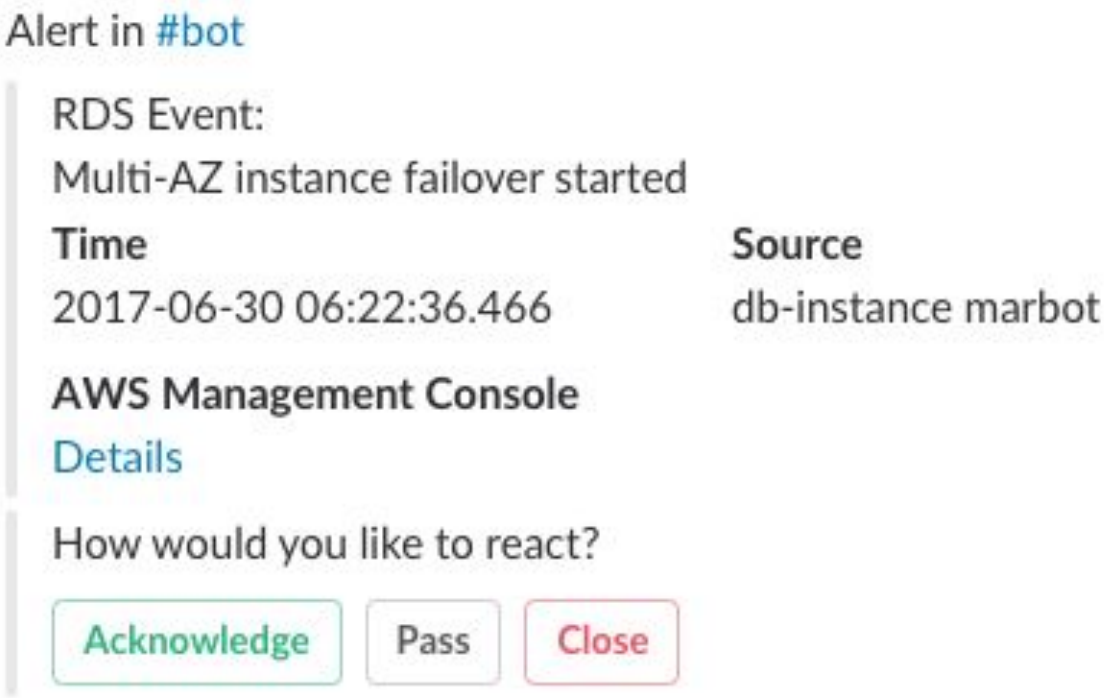
Credits: Rick Mak, Oursky

Use case - Build alerts

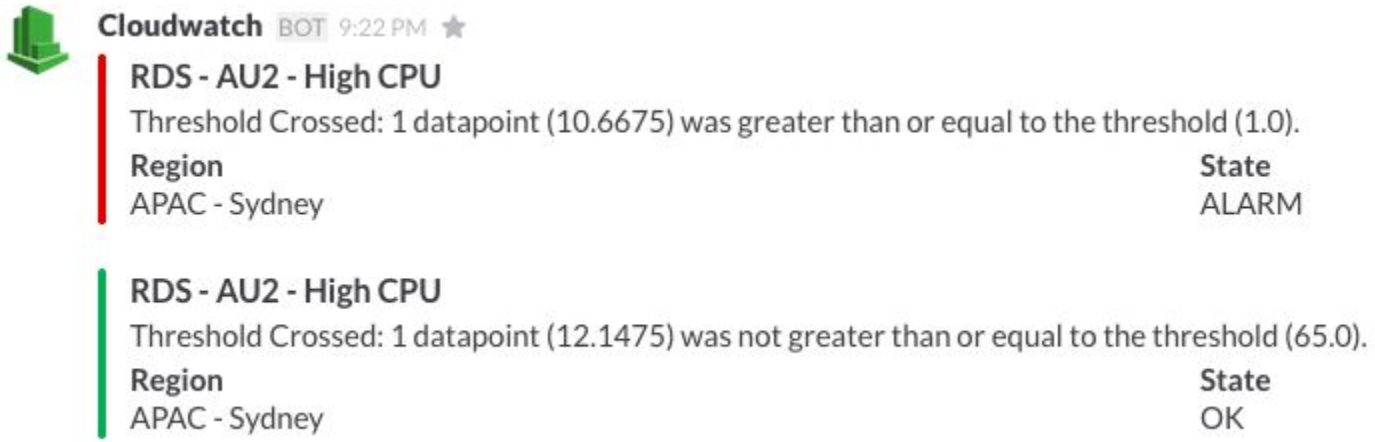


Credits: Braintree

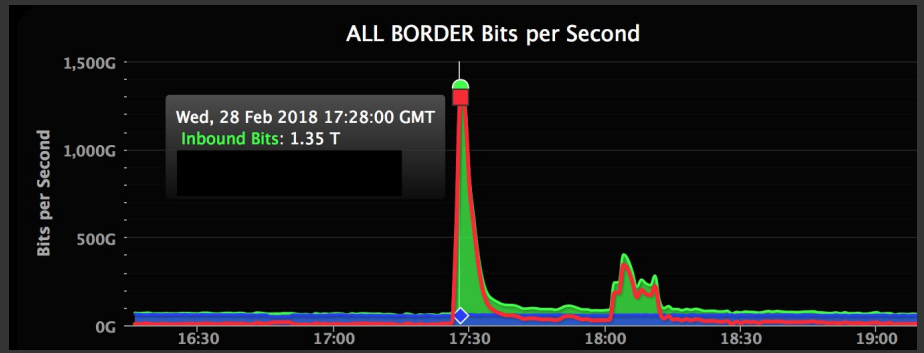
Use case - Infrastructure monitoring

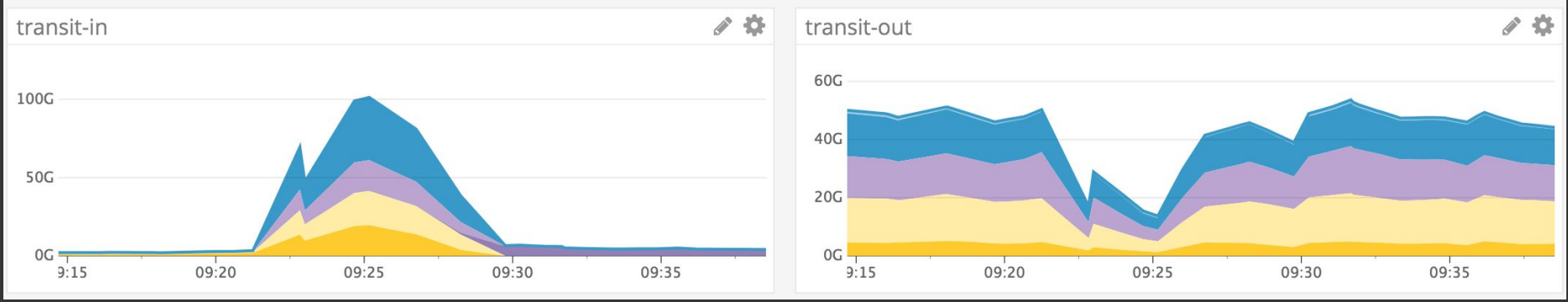


Use case - Infrastructure monitoring



Did you know? Github recently fought off a massive DDoS attack with ChatOps!





ingress/egress anomaly(DDoS) notified to on-call team in Slack channel

Bot command issued in Slack to withdraw BGP announcements over transit providers and announce AS36459 exclusively over Github's links to Akamai

Routes reconverged in the next few minutes and access control lists mitigated the attack at their border

Continuous monitoring of transit bandwidth levels and load balancer response codes until full recovery

Image Credits: S Kottler, Github

Use case - Environment provisioning

Aaron Suggs 12:13

cfn:stack-create aaron-test 'examples/ec2-instance.json' -t 'Name=aaron-test-instance' -p 'Environment=aaron'

cog BOT 12:13

aaron-test

CREATE_IN_PROGRESS

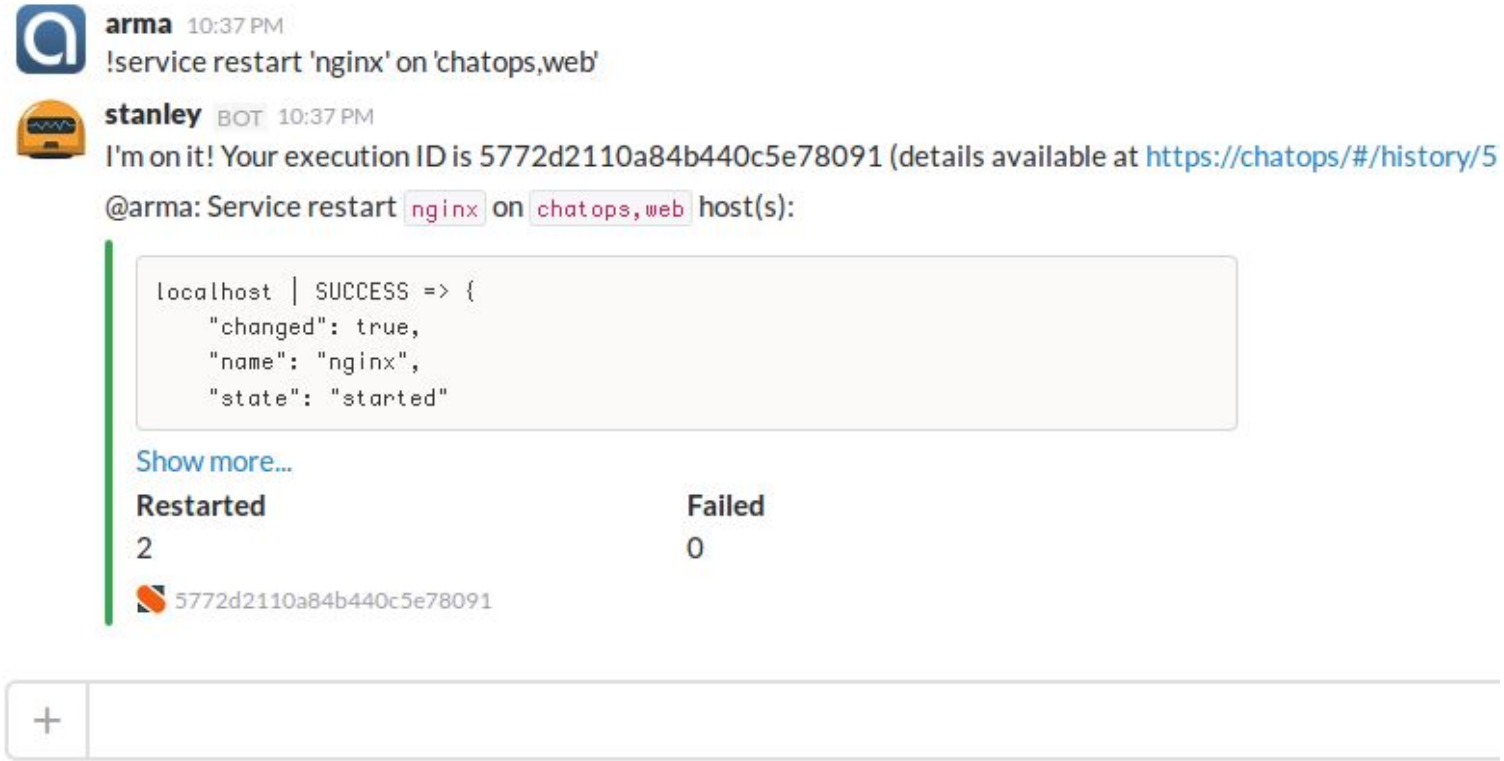
Parameters

```
+--------------+----------+
| Key          | Value    |
+--------------+----------+
| Environment  | aaron    |
| InstanceType | t2.small |
+--------------+----------+
```

Message @cog

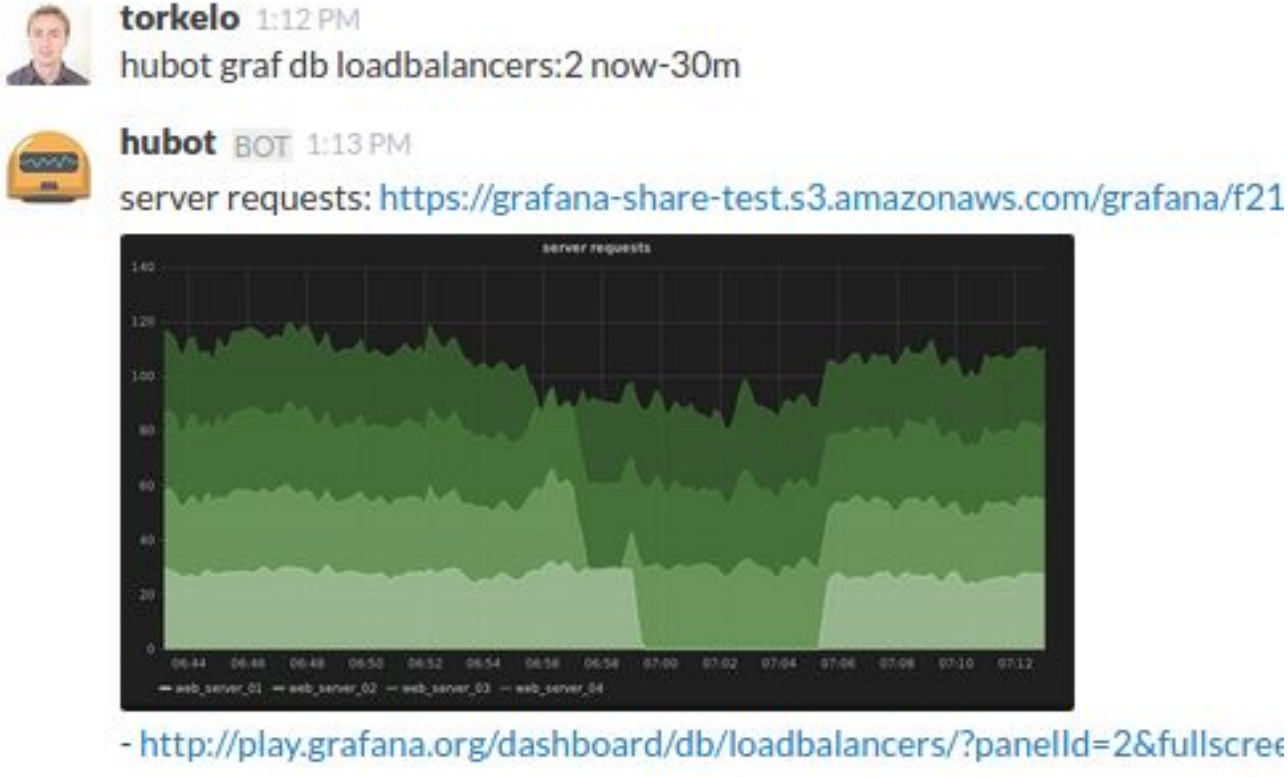
Credits: Aaron Suggs, Kickstarter

Use case - Application management



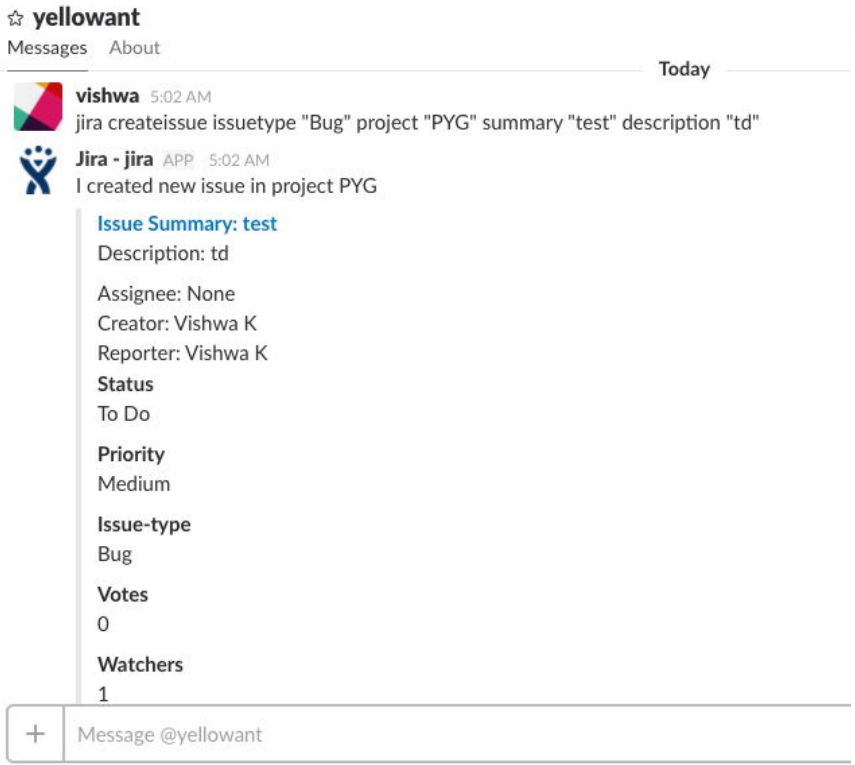
Credits: Stackstorm

Use case - Analytics



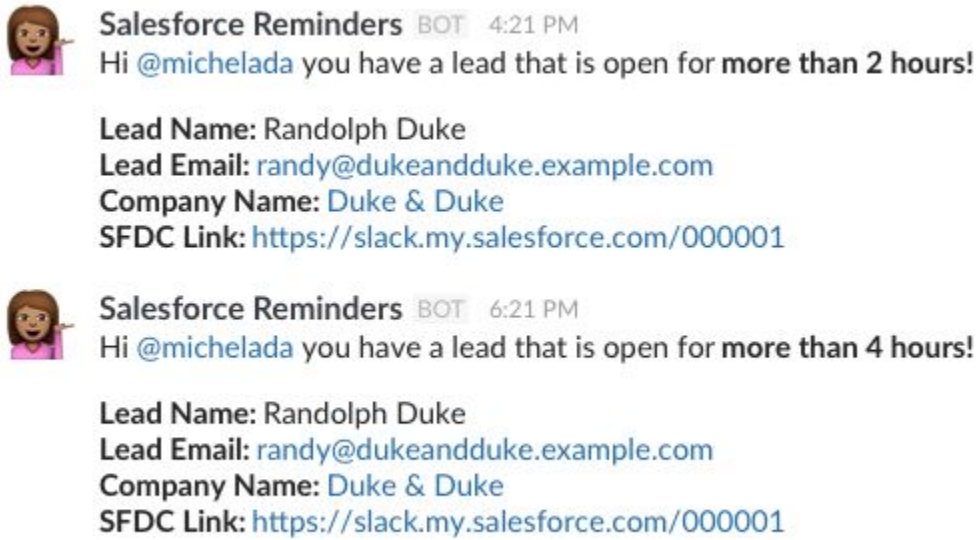
Credits: Graphana

Use case - Task Management

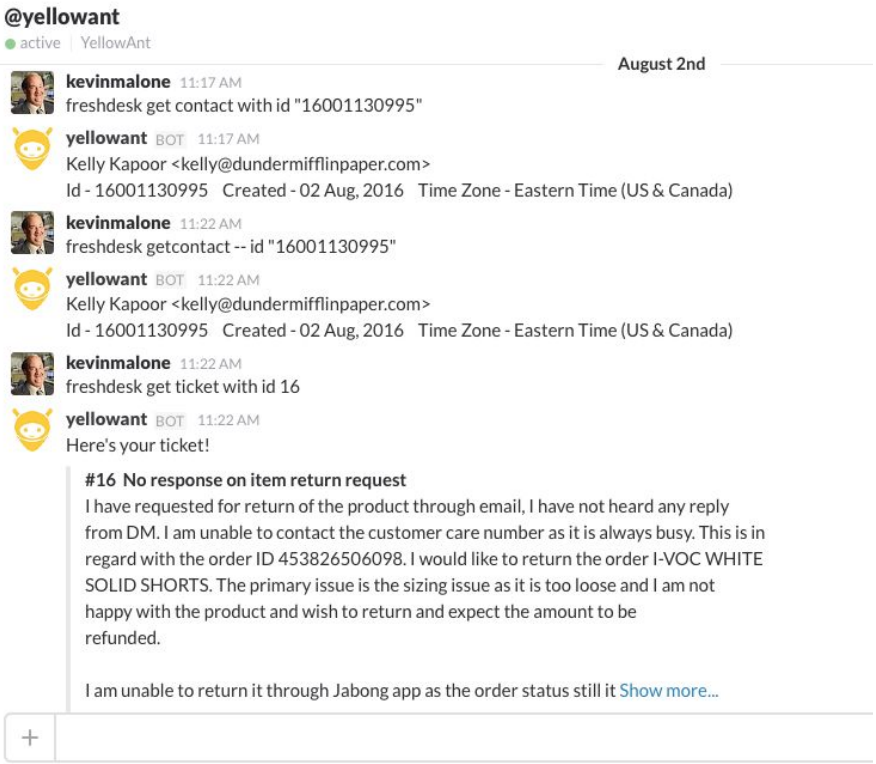


ChatOps is not just for Devs!

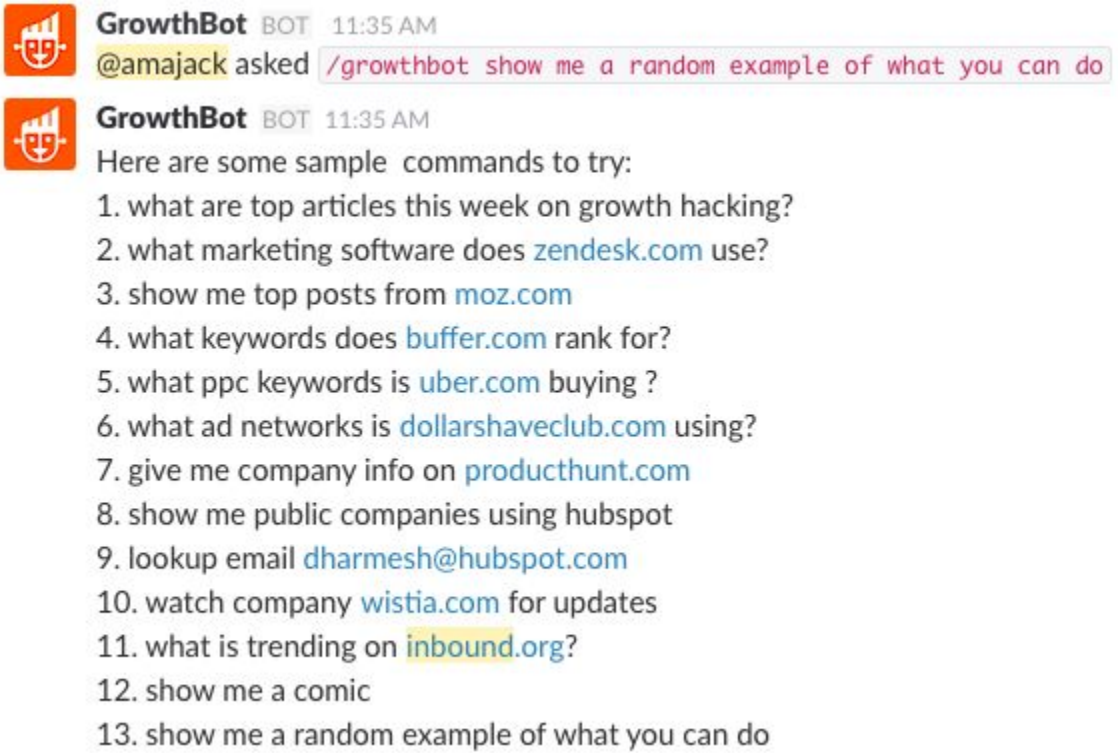
Use case - Salesforce management



Use case - CRM

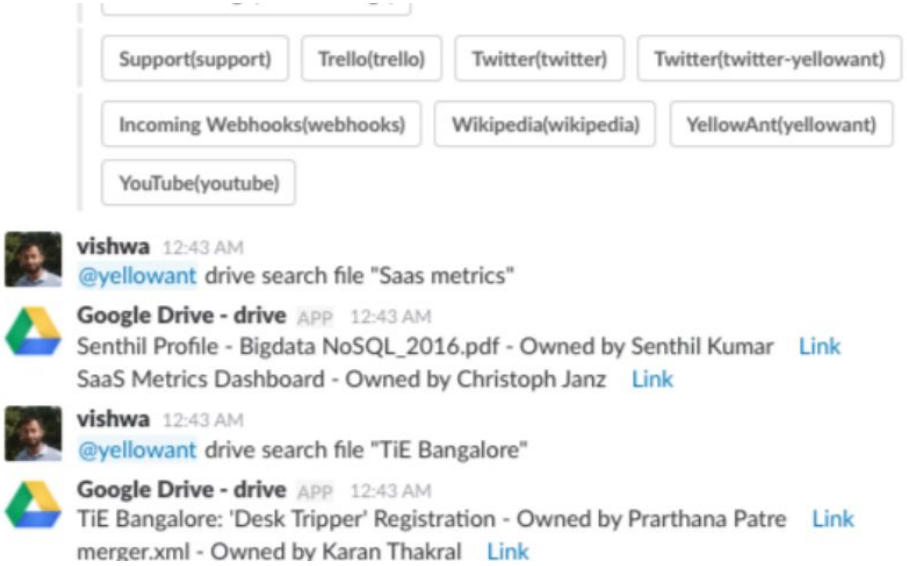

@yellowant
active | YellowAnt
August 2nd
kevinmalone 11:17 AM
freshdesk get contact with id "16001130995"
yellowant BOT 11:17 AM
Kelly Kapoor <kelly@dundermifflinpaper.com>
Id - 16001130995 Created - 02 Aug, 2016 Time Zone - Eastern Time (US & Canada)
kevinmalone 11:22 AM
freshdesk getcontact -- id "16001130995"
yellowant BOT 11:22 AM
Kelly Kapoor <kelly@dundermifflinpaper.com>
Id - 16001130995 Created - 02 Aug, 2016 Time Zone - Eastern Time (US & Canada)
kevinmalone 11:22 AM
freshdesk get ticket with id 16
yellowant BOT 11:22 AM
Here's your ticket!
#16 No response on item return request
I have requested for return of the product through email, I have not heard any reply from DM. I am unable to contact the customer care number as it is always busy. This is in regard with the order ID 453826506098. I would like to return the order I-VOC WHITE SOLID SHORTS. The primary issue is the sizing issue as it is too loose and I am not happy with the product and wish to return and expect the amount to be refunded.
I am unable to return it through Jabong app as the order status still it Show more...

Use case - Marketing



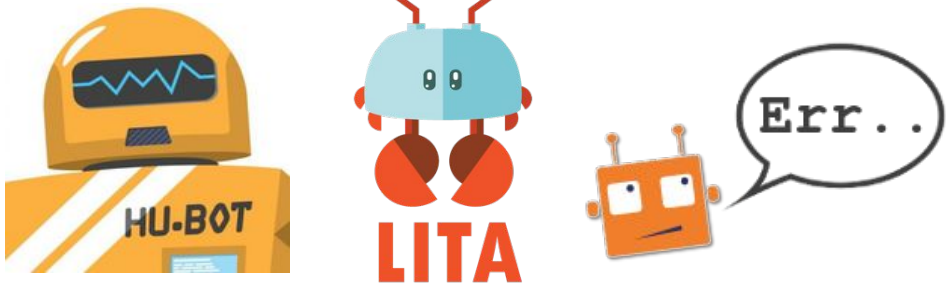
Credits: Dharmesh Shah, Hubspot

Use case - File sharing



How to implement ChatOps for your team?

Open Source frameworks



Regex based command parsers

```
module.exports = (robot) ->
  robot.hear /badger/i, (res) ->
    res.send "Badgers? BADGERS? WE DON'T NEED NO STINKIN BADGERS"

  robot.respond /open the pod bay doors/i, (res) ->
    res.reply "I'm afraid I can't let you do that."

  robot.hear /I like pie/i, (res) ->
    res.emote "makes a freshly baked pie"
```

Credits: Hubot

Hubot setup

```
%  npm install -g yo generator-hubot
```

```
% mkdir myhubot
% cd myhubot
% yo hubot
```

```
% mkdir hubot-my-awesome-script
% cd hubot-my-awesome-script
% yo hubot:script
```

https://hubot.github.com/docs/

Credits: Hubot

Hubot script - Example

```
robot.respond /(?:pager|major)(?: me)? ack(?:nowledge)? (.+)$/i, (msg) ->
  msg.finish()
  if pagerduty.missingEnvironmentForApi(msg)
    return

  incidentNumbers = parseIncidentNumbers(msg.match[1])

  # only acknowledge triggered things, since it doesn't make sense to re-acknowledge if it's already in re-acknowledge
  # if it ever doesn't need acknowledge again, it means it's timed out and has become 'triggered' again anyways
  updateIncidents(msg, incidentNumbers, 'triggered,acknowledged', 'acknowledged')
```

Add script to package.json

Credits: Hubot

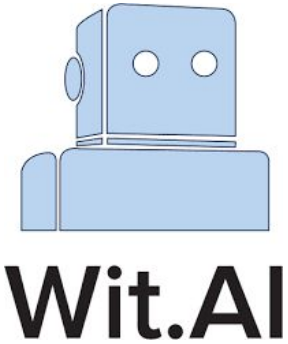
Hubot script - Example

mattschwabby 1:53 PM
@jarvis help

jarvis BOT 1:53 PM
@mattschwabby: **@jarvis account info <alias>** - Returns the MRR, server count, support level, home data center, business name, number of sub accounts and compute resource consumption for a given account alias (server count includes templates and machines that are powered off).
@jarvis contact info <alias> - Returns a list of account administrators containing names, email addresses, phone numbers and titles for a given account alias.
@jarvis cross dcs <alias> - returns the cross data center connectivity for all accounts rolling up to a given parent alias.
@jarvis dcs <alias> - Returns the data center footprint of the given account alias.
@jarvis estimate mrr <alias> - Returns the estimated MRR and month to date billing figure of a given account alias.
@jarvis inventory <alias> <email> - Emails the requester a server inventory rolling up all sub accounts to a given parent alias (includes templates and machines that are powered off).
@jarvis invoice <alias> <month (ex: 03)> <year (ex: 2016)> <email> - Emails the requester a usage invoice for a given account alias, month and year. (Note: This data is pulled directly from the API and has not been processed through BRM or Vantive).
@jarvis mrr <alias> - Returns the most recent MRR for a given account alias. Will display a chart breaking down the spend per data center (Note: This data is pulled from the API and has not processed through BRM or Vantive).
@jarvis parents <alias> - Returns a list of parent accounts for the given alias.
@jarvis server count <alias> - Returns the amount of servers in a given account alias (includes templates and machines that are

Credits: Hubot

NLP - Extracting intent and entities from commands



Limitations of Hubot, Lita, Err & Cog

- No set command syntax for every application → Syntax Overload
- Command with complex inputs are hard to implement and use
- Language! Application scripts need to be written in a single language(CoffeeScript, Ruby, Python etc.)
- Access Control - Difficult to implement access control
- Steep learning curve, mostly through repetition
- Lack of richer interaction elements like Buttons, Dialogs, Dropdowns etc.
- Lack of Cross-application interaction capability. For example, create a Github issue AND a JIRA Ticket in a single command

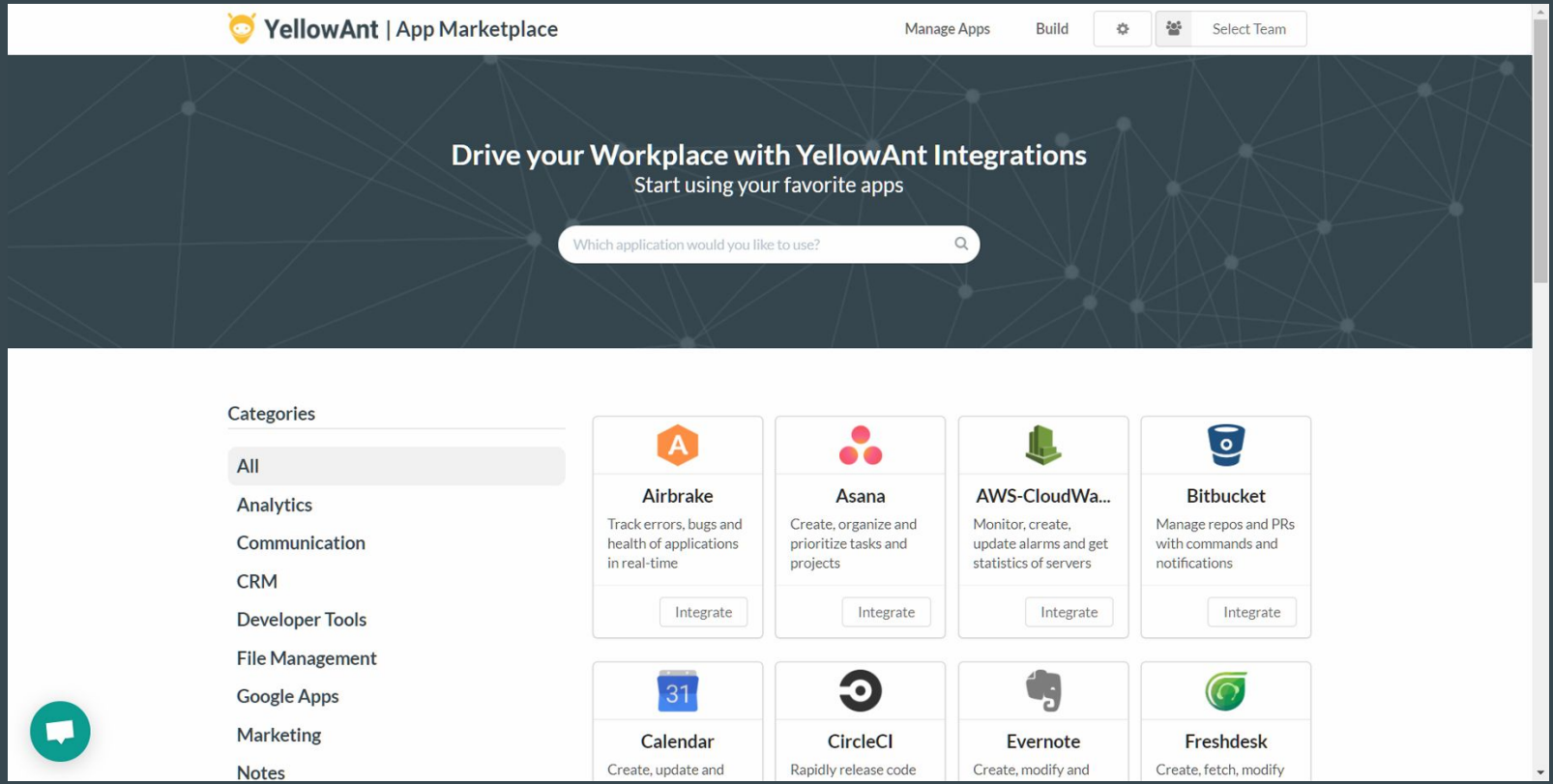
ChatOps 2.0 (2018-present)

Leveraging rich UI elements to interface with bots

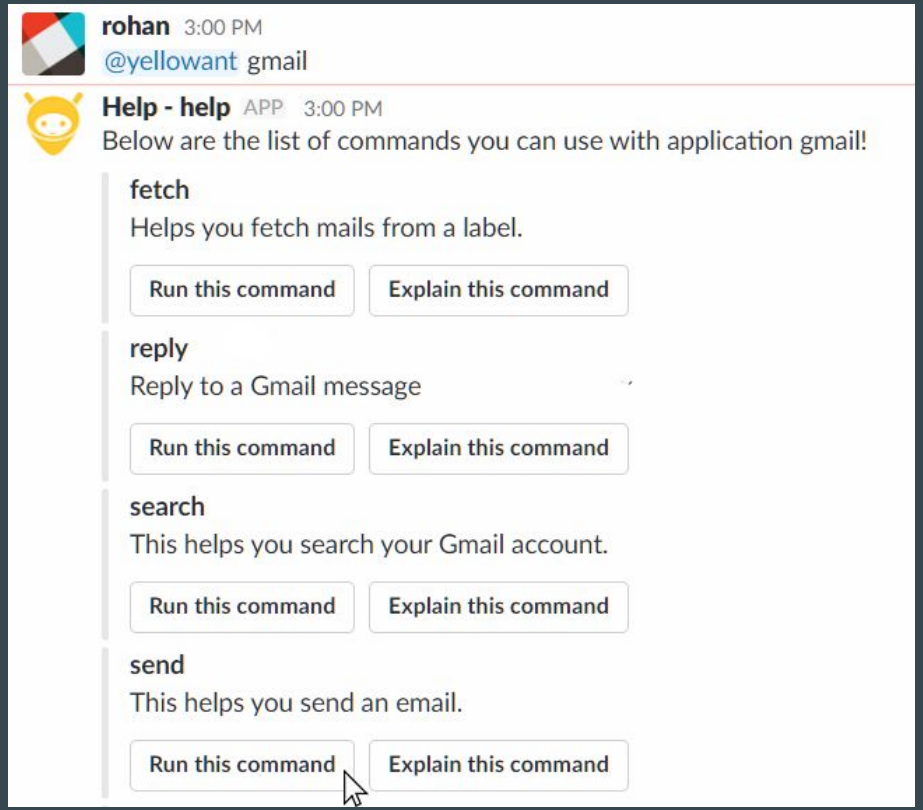
Meet YellowAnt

A bot that lets you interface with your services and applications and helps you automate work from Slack, Microsoft Teams, Cisco Spark, FB Workplace

YellowAnt - application marketplace

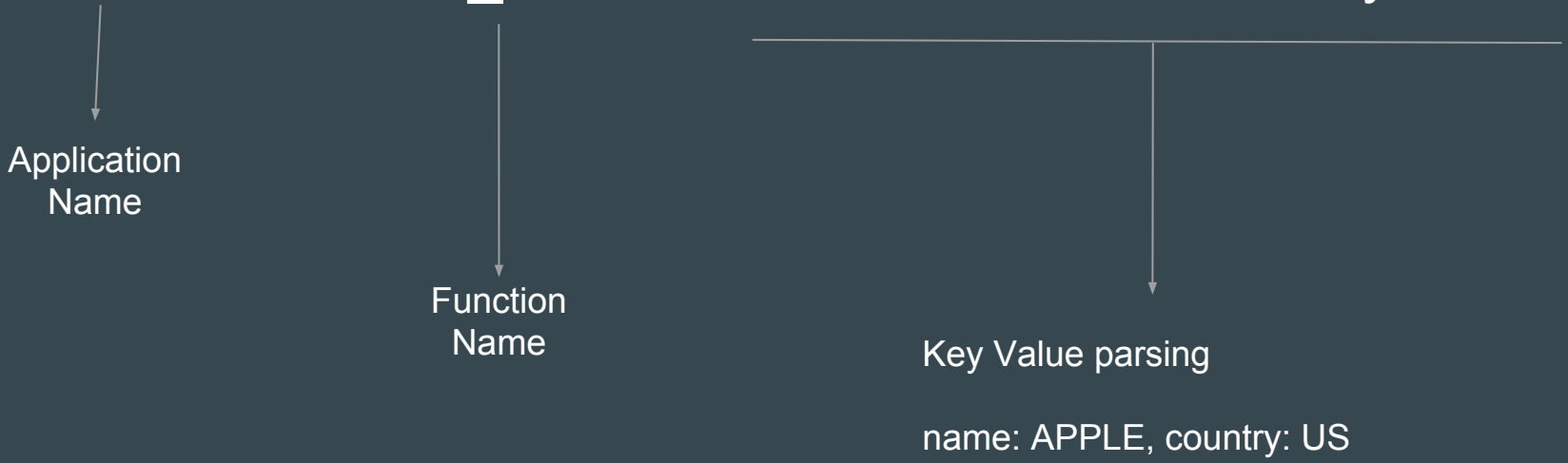


Every application comprises of a set of commands

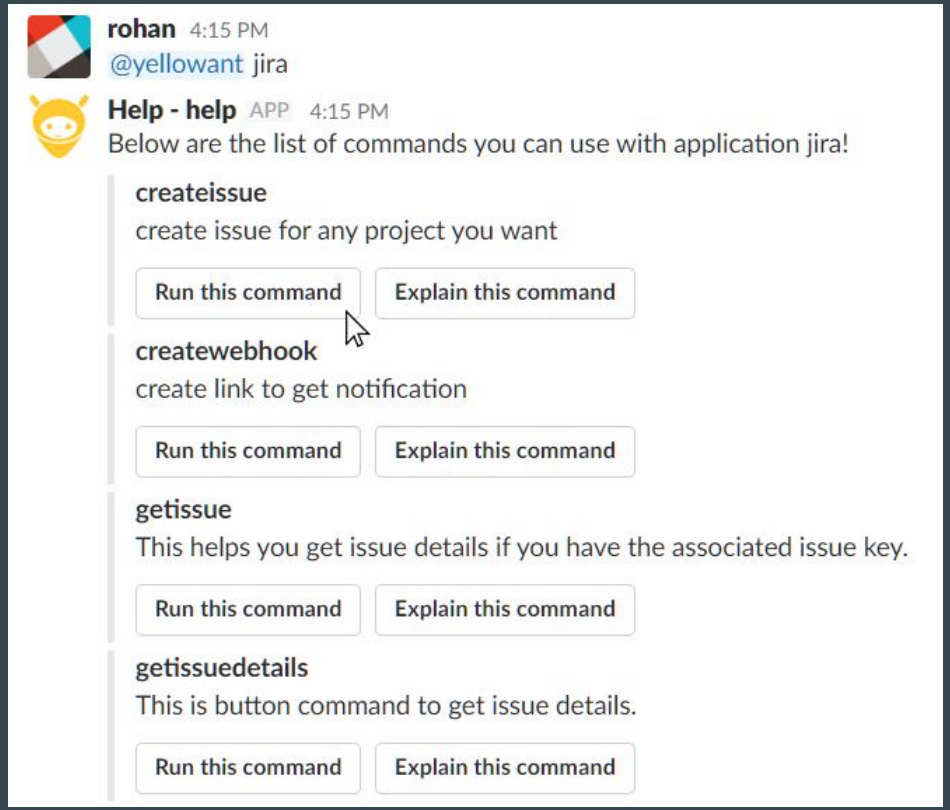


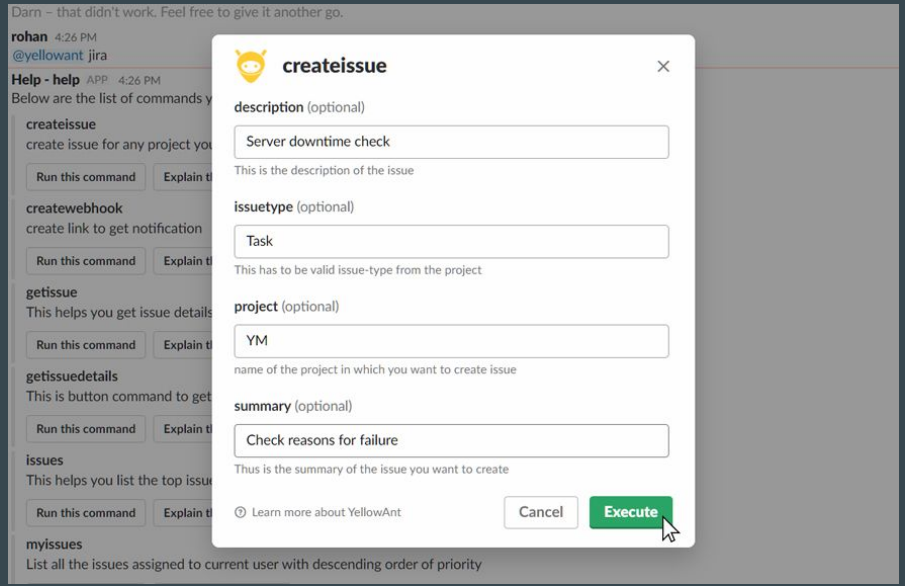
How YellowAnt commands get parsed

maestro search_customer name “APPLE” country “US”

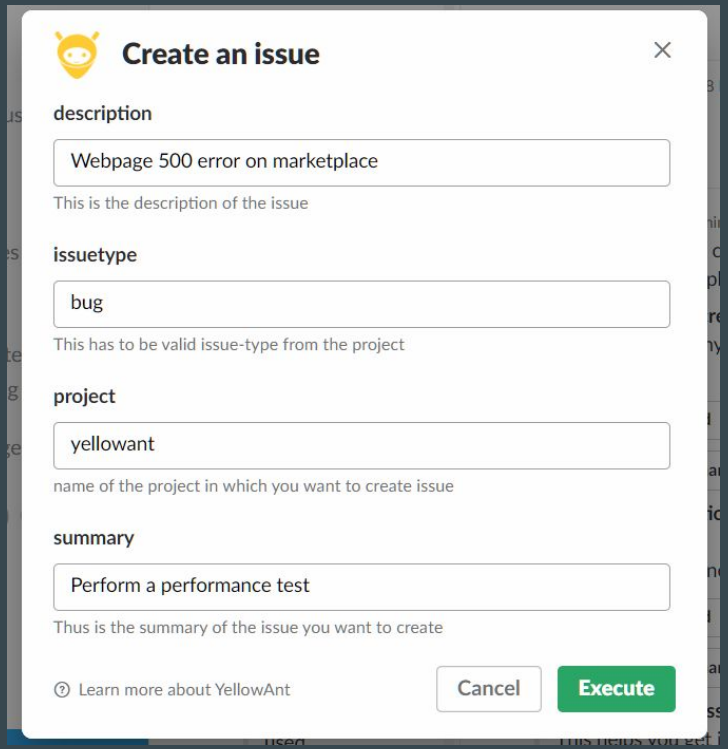


Dialog inputs - better alternative to text commands





Dialogs - better alternative to text commands



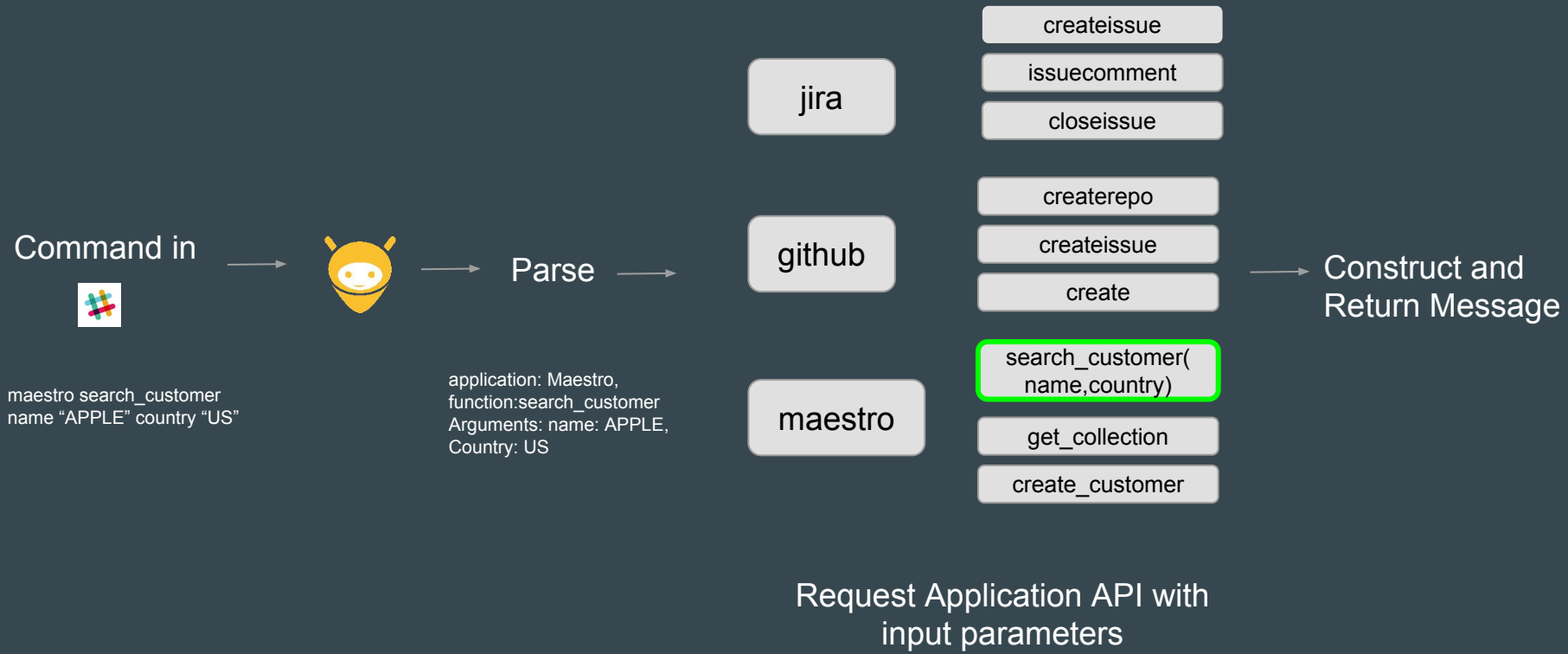
Application: Maestro

Function: Create Issue

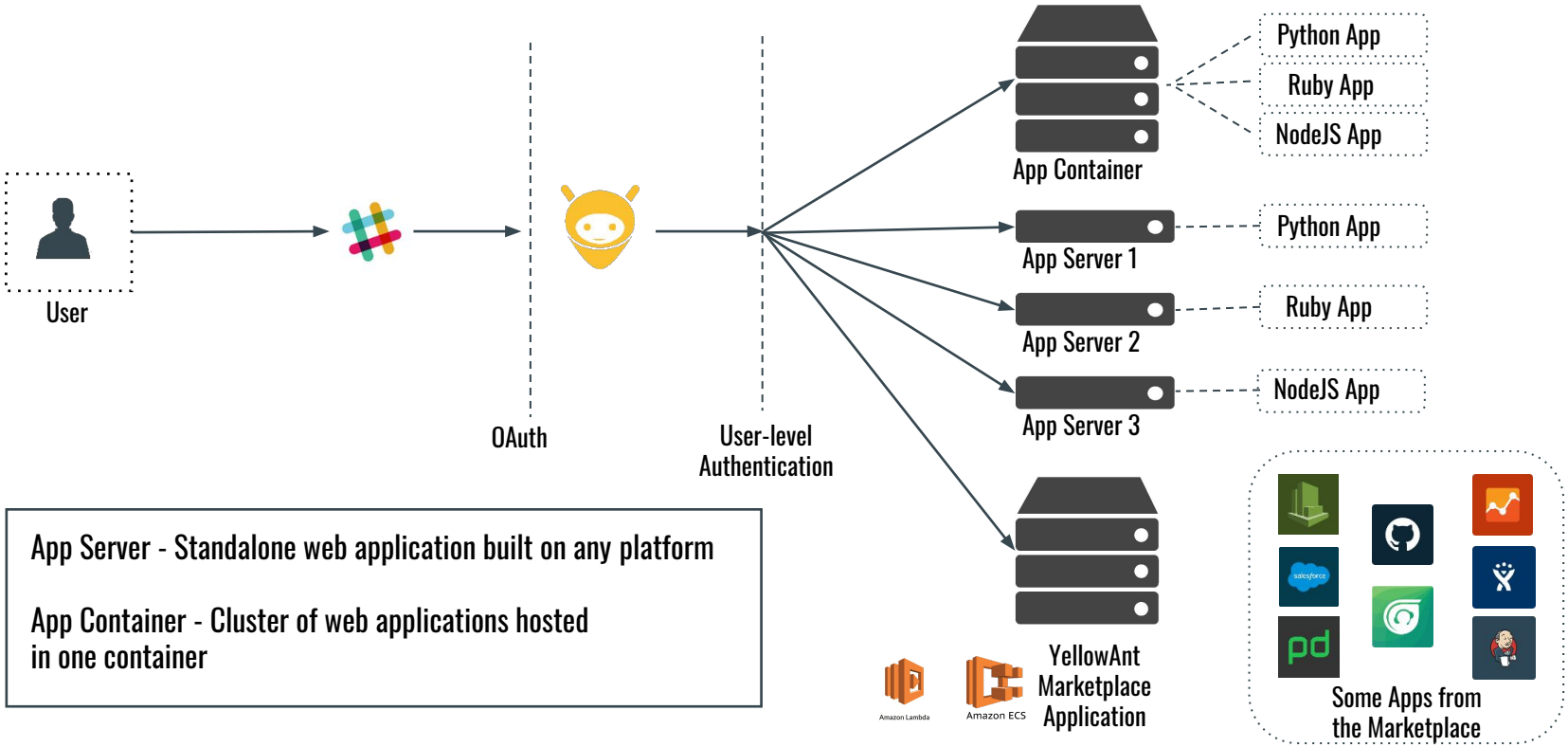
Arguments:

description: Webpage 500 error …
issuetype: bug
project: yellowant
summary: Perform a performance test

Interaction - Command Flow



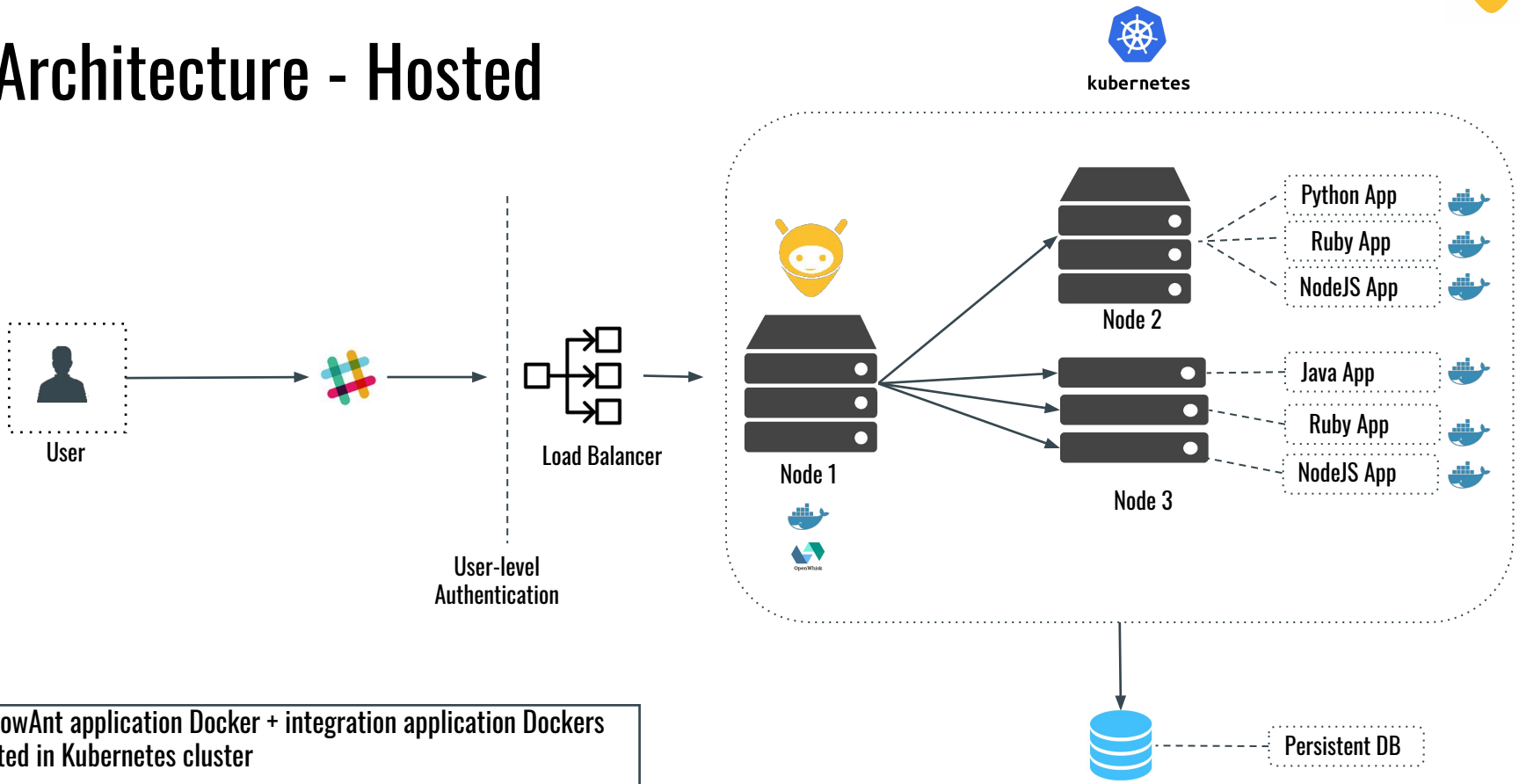
Architecture - Cloud



App Server - Standalone web application built on any platform

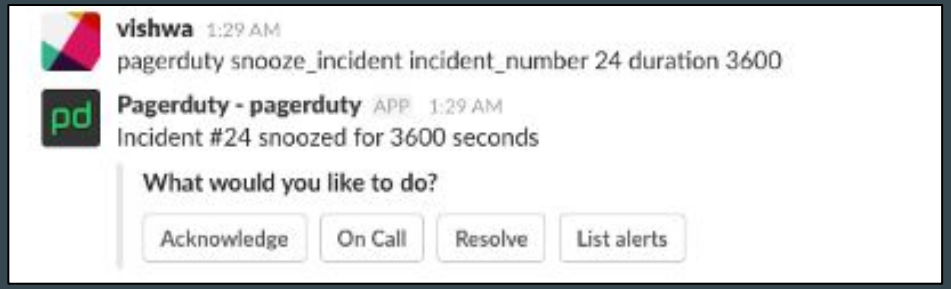
App Container - Cluster of web applications hosted in one container

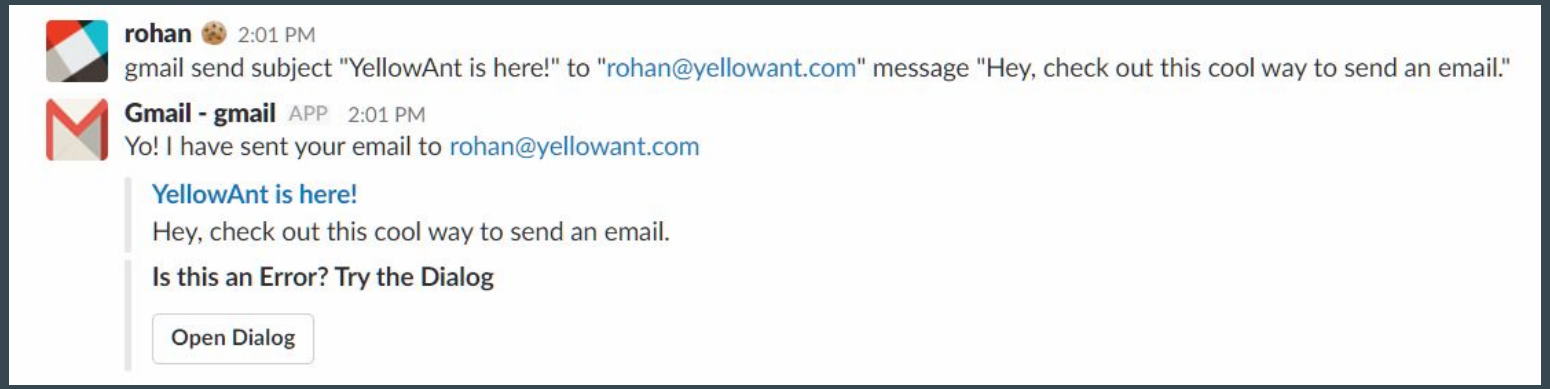
Architecture - Hosted



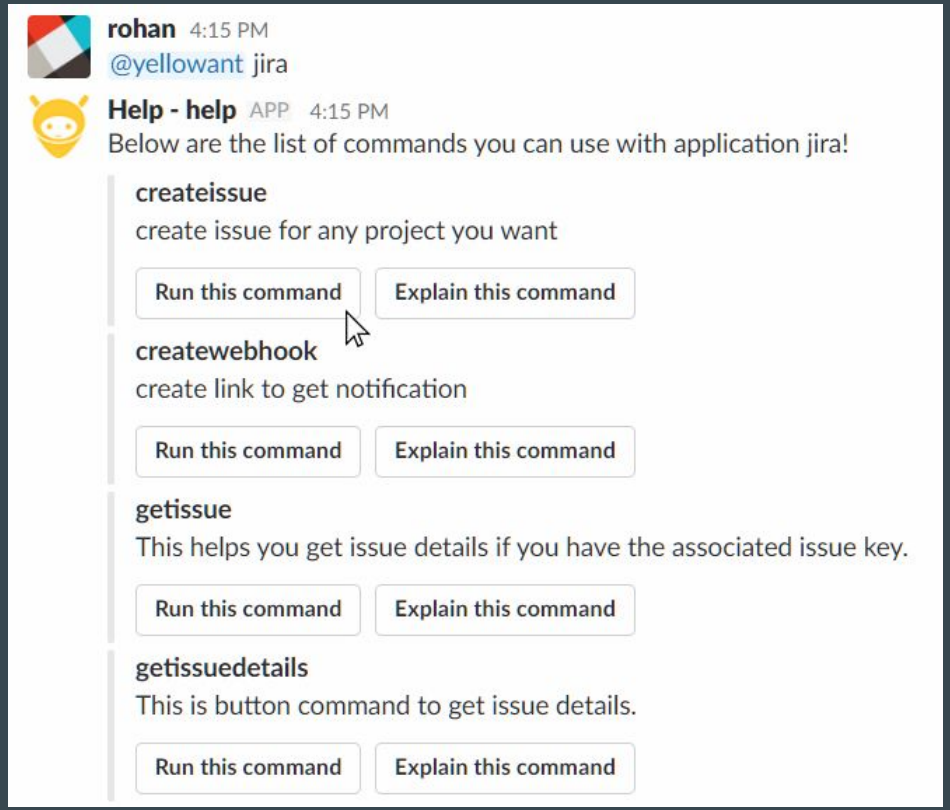
YellowAnt application Docker + integration application Dockers hosted in Kubernetes cluster

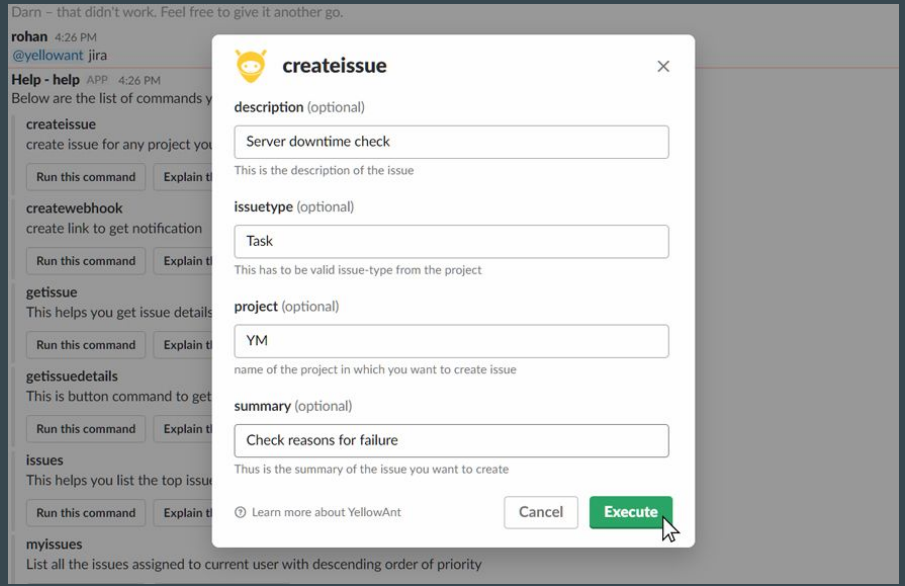
Examples


vishwa 1:29 AM
pagerduty snooze_incident incident_number 24 duration 3600
Pagerduty - pagerduty APP 1:29 AM
Incident #24 snoozed for 3600 seconds
What would you like to do?
Acknowledge
On Call
Resolve
List alerts


rohan 2:01 PM
gmail send subject "YellowAnt is here!" to "rohan@yellowant.com" message "Hey, check out this cool way to send an email."
Gmail - gmail APP 2:01 PM
Yo! I have sent your email to rohan@yellowant.com
YellowAnt is here!
Hey, check out this cool way to send an email.
Is this an Error? Try the Dialog
Open Dialog

Dialog inputs - better alternative to text commands

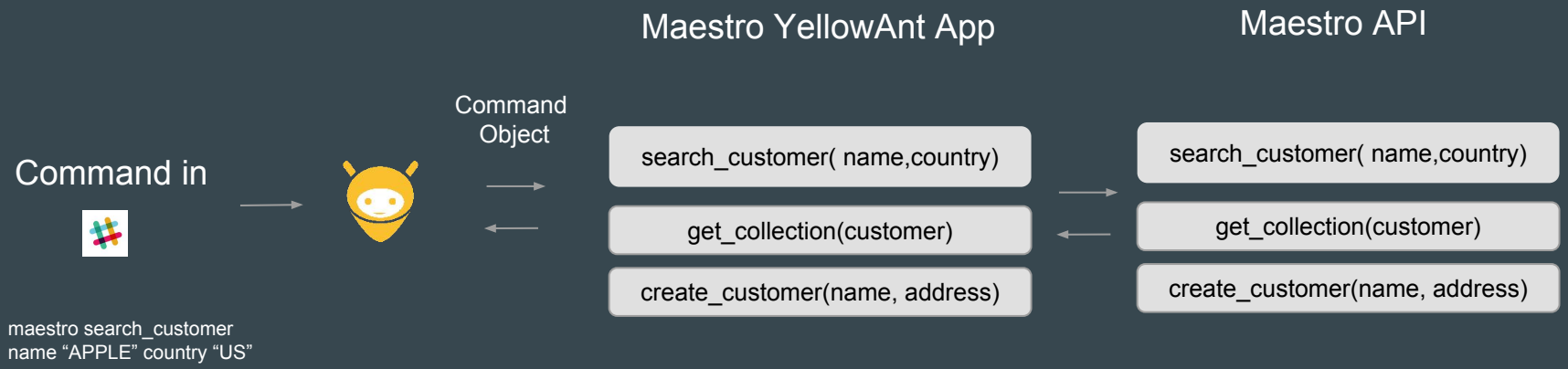




Command Object - transforming text and dialog commands


```
{
  "data":{
     "user": 4534,
     "function_name": "search_customer",
     "args": {
        "name":"APPLE",
        "country": "USA"
     },
     "verification_token": "bgwreASFth09243rWE134804tnb",
     "application": 5639,
     "event": 5043867,
     "application_invoke_name": "maestro",
     "function": 74645,
     "event_type": "command"
  }
}
```

How YellowAnt interacts with Applications



YellowAnt commands mapped to Maestro API

How to build applications on YellowAnt

Step 1: Storyboarding - Identify use cases

Step 2: Create YellowAnt Application in YellowAnt developer console

Step 3: Define application functions and their arguments

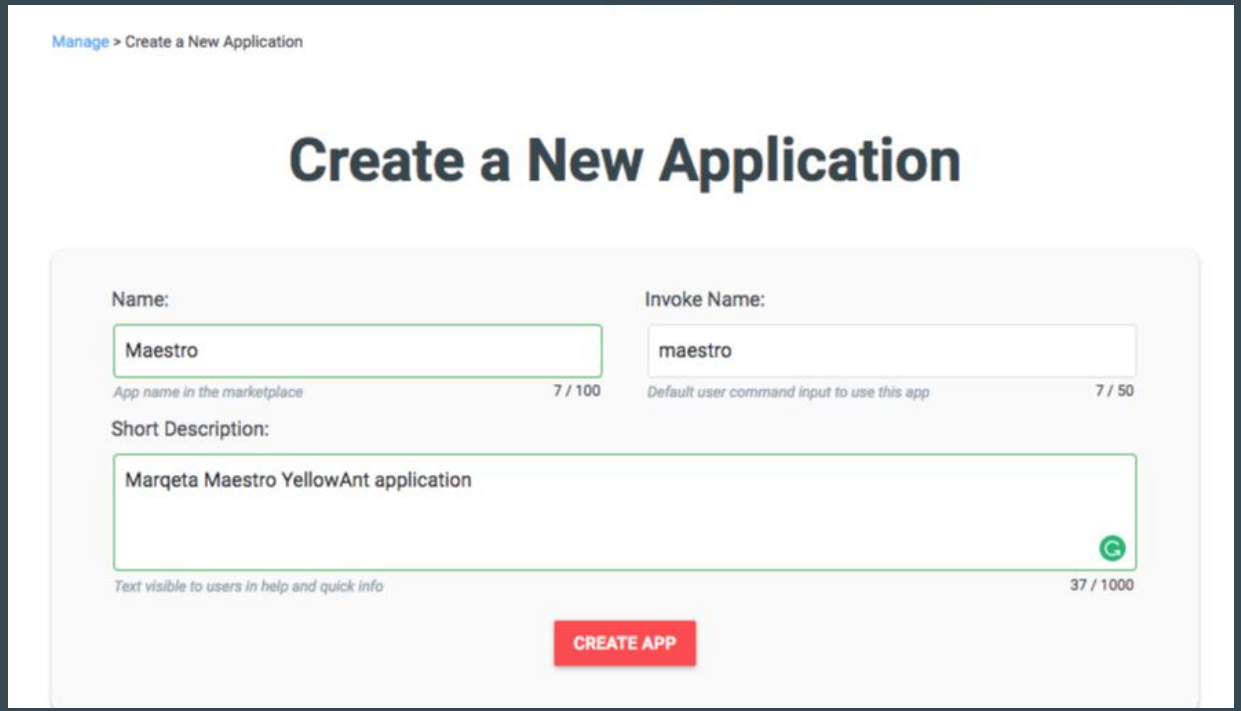
Step 4: Write code to implement user authentication, handle Command object and respond to user

Step 1: Storyboarding

Sample YellowAnt application storyboard

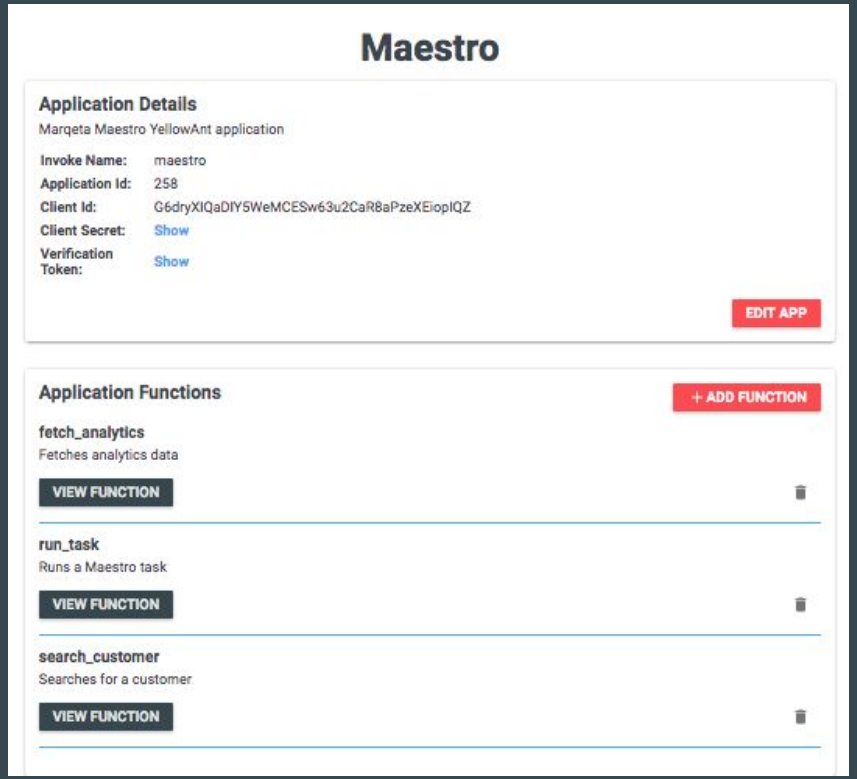
1. Run Tasks with Maestro API
2. Fetch Analytics data
3. Query customer data

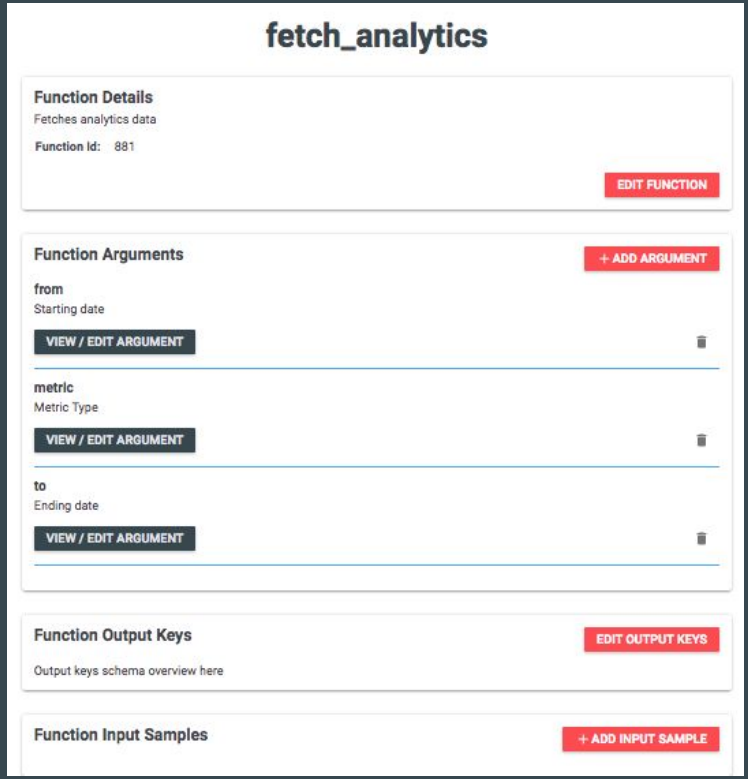
Step 2: Create YellowAnt application in developer console



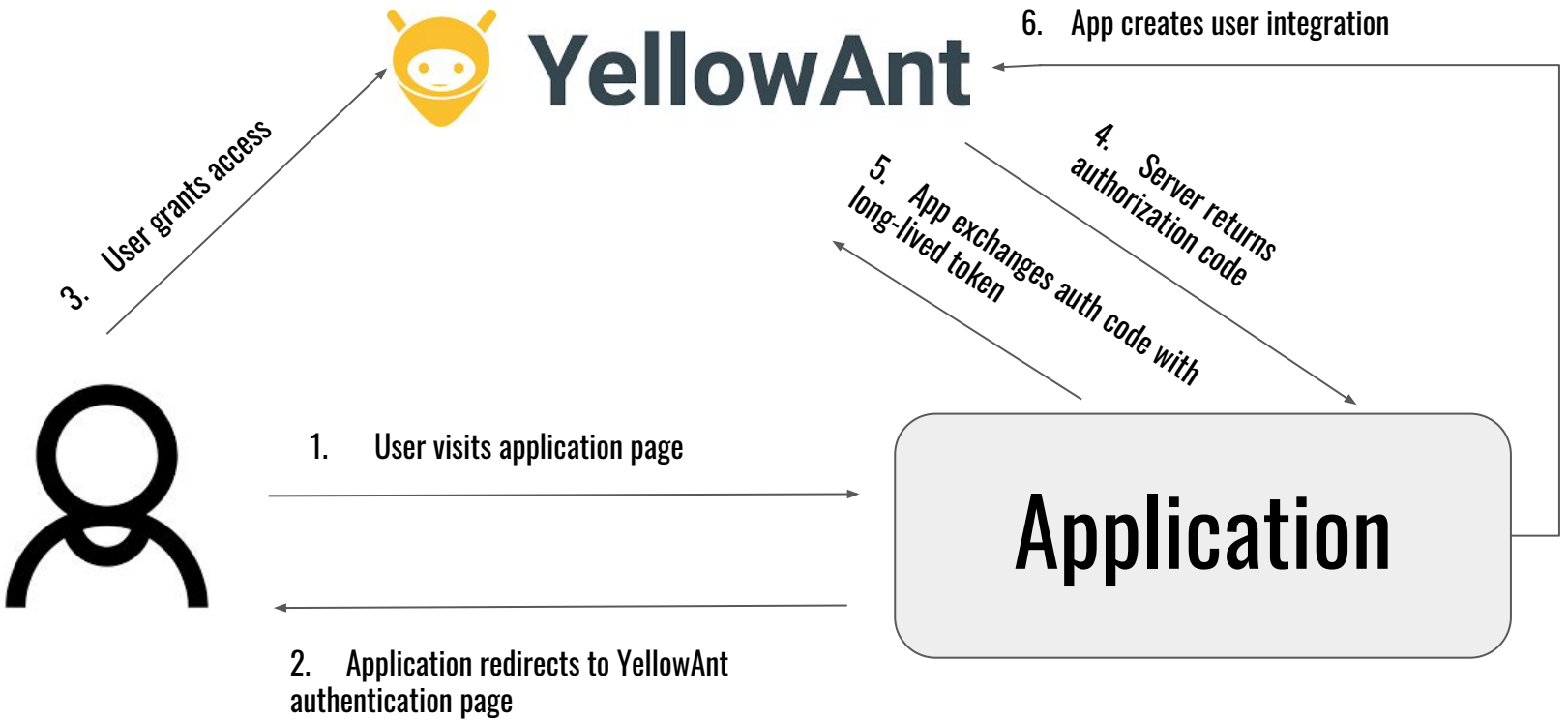
marqeta.yellowant.com/developers/

Step 3: Define application functions and their arguments





Step 4.1: User authentication

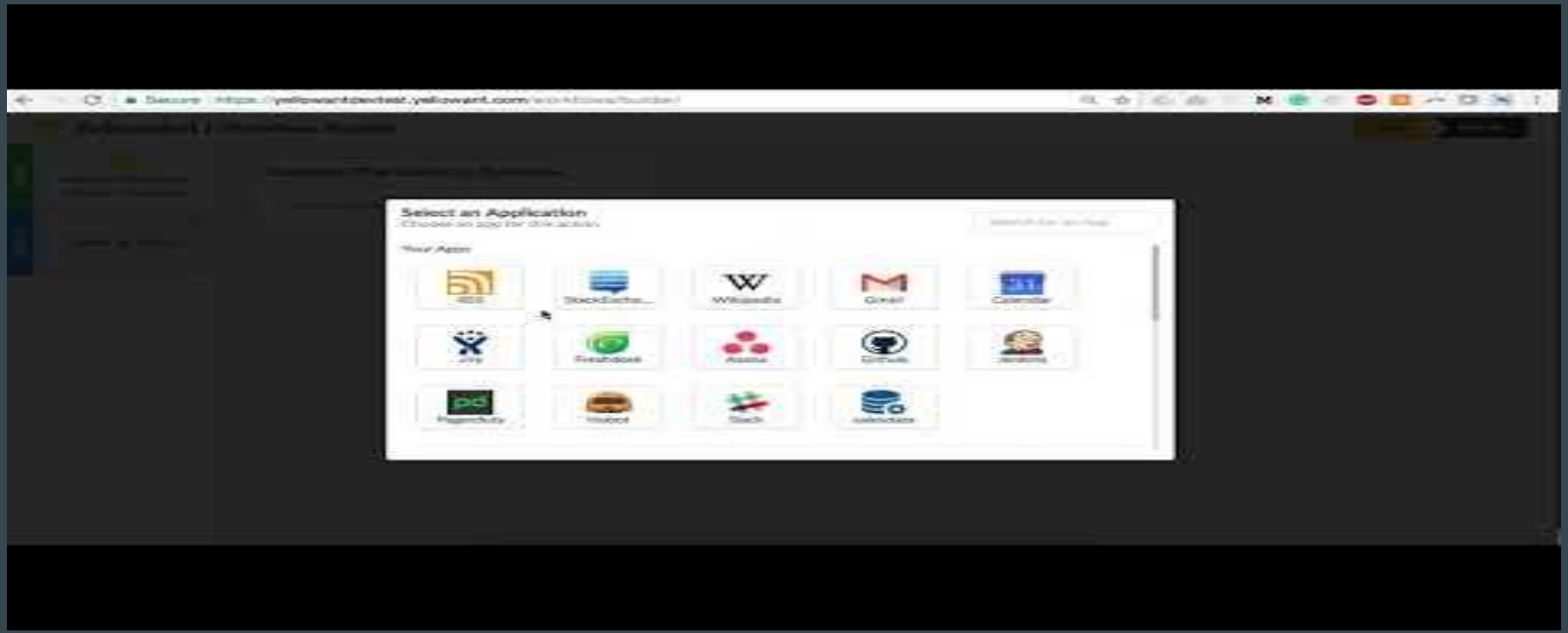


Workflows

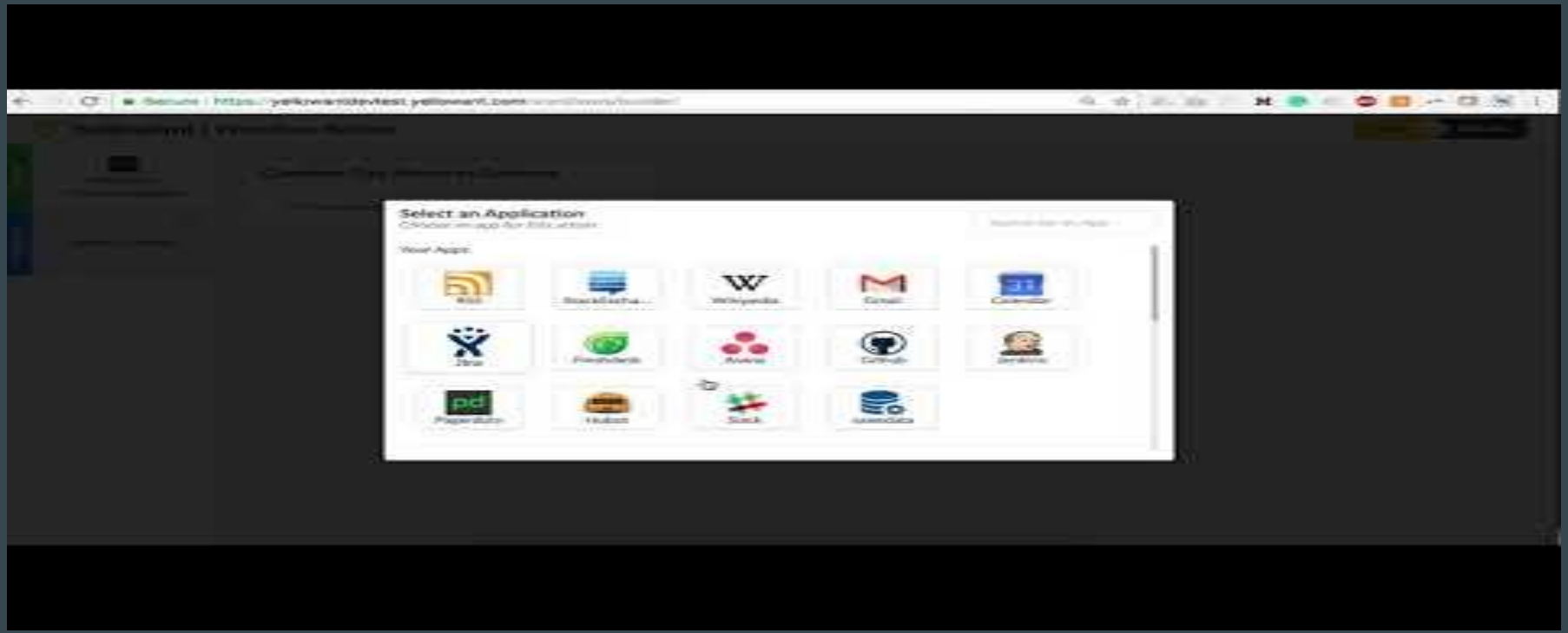
Command workflow - Club multiple commands into one command

Event workflow - Event in one application triggers actions in others

Command Workflows - Incident War room scenario



Event Workflows - demo video



Start small and simple, but dream big. Don’t be afraid to break things

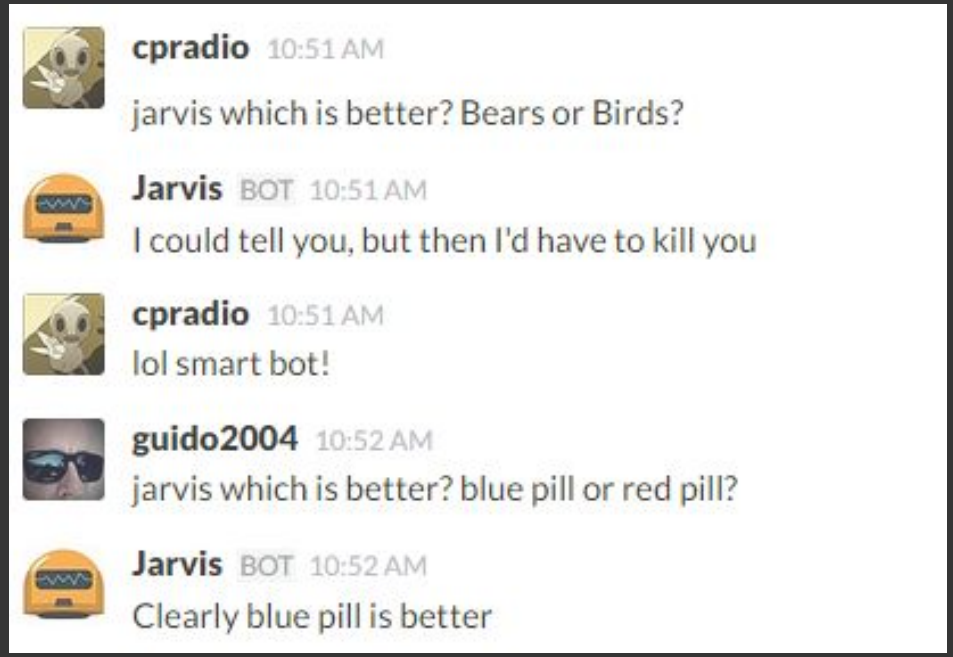
Define goals and engagement metrics, get constant feedback

Be Consistent with your UX

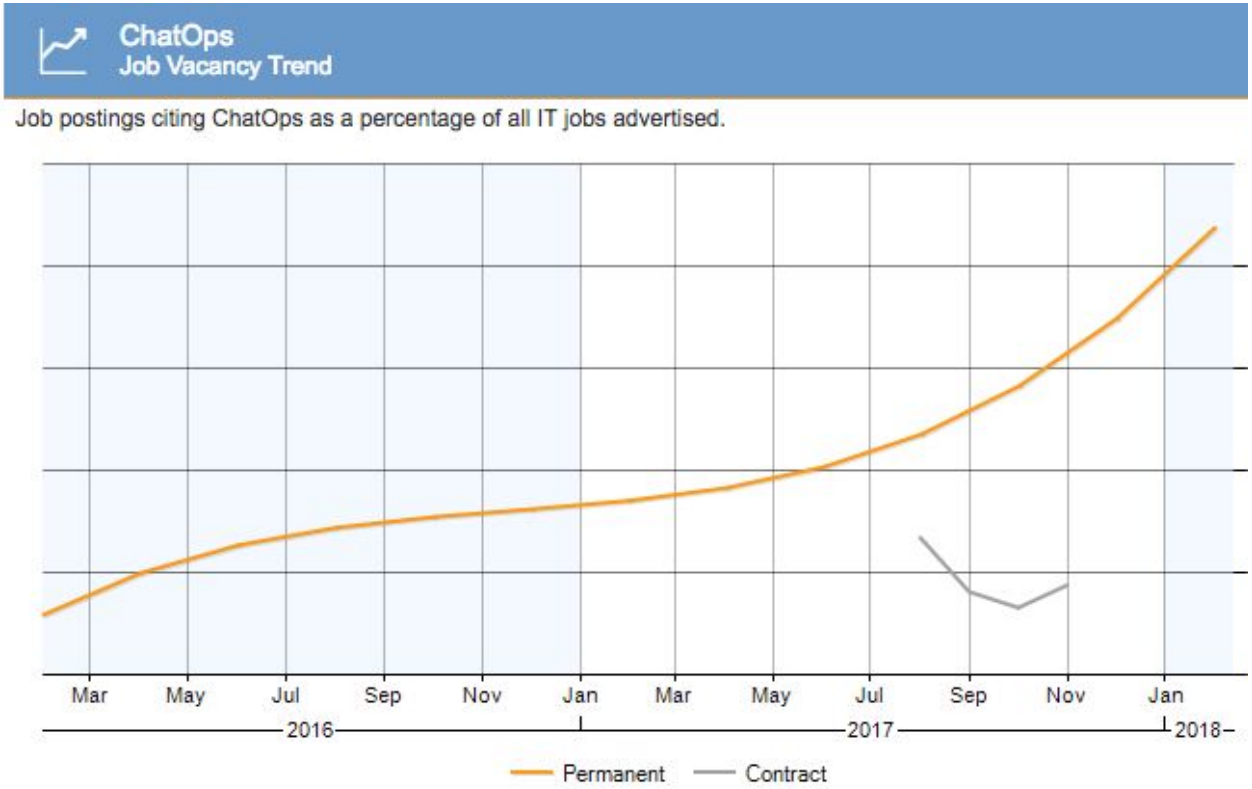
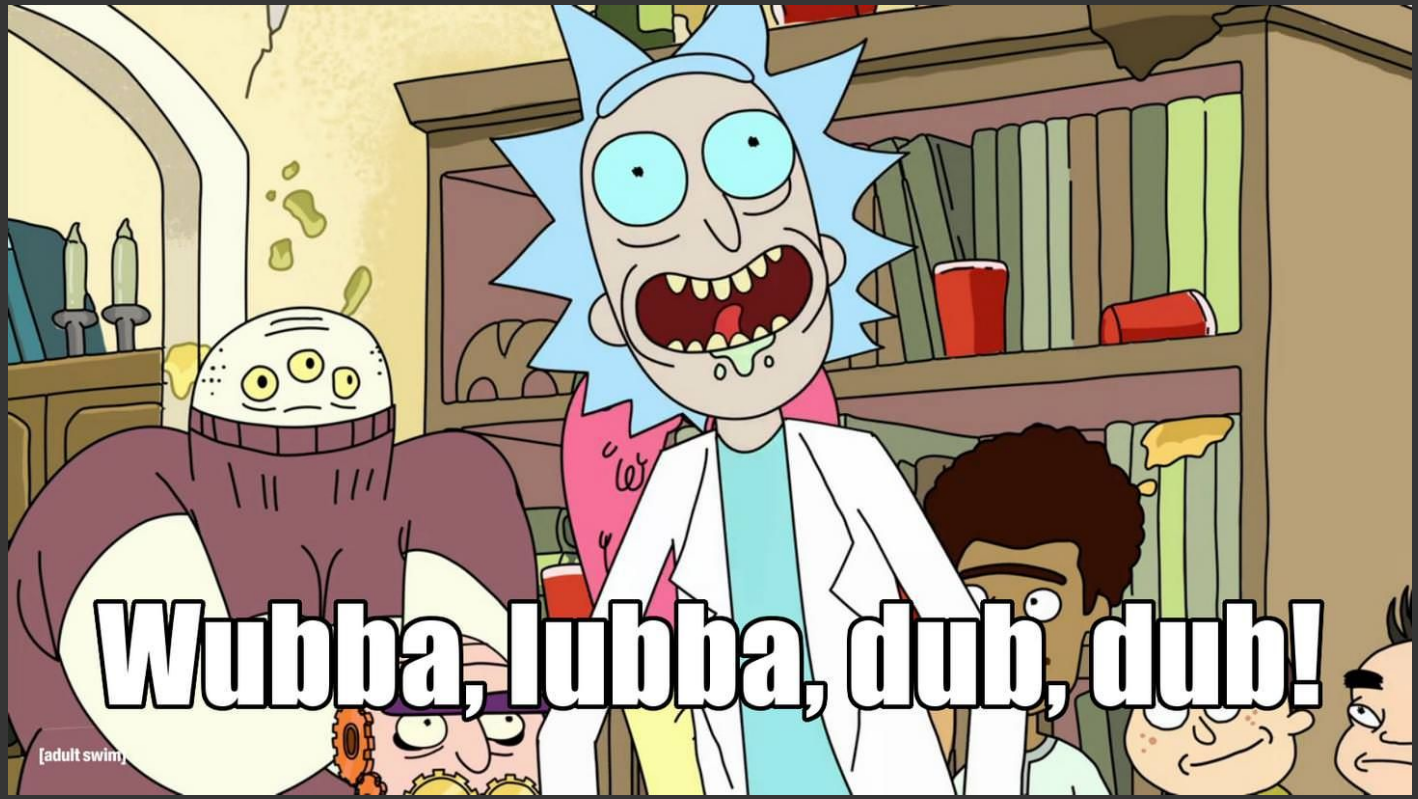
Build confidence

Evangelize!

Keep it fun!


cpradio 10:51 AM
jarvis which is better? Bears or Birds?
Jarvis BOT 10:51 AM
I could tell you, but then I'd have to kill you
cpradio 10:51 AM
lol smart bot!
guido2004 10:52 AM
jarvis which is better? blue pill or red pill?
Jarvis BOT 10:52 AM
Clearly blue pill is better

2018 is the year of ChatOps!



Thank you!