
Accelerating DevOps with ChatOps

When, where and how to use ChatOps



Hello! I'm Vishwa

Co-founder @ YellowAnt

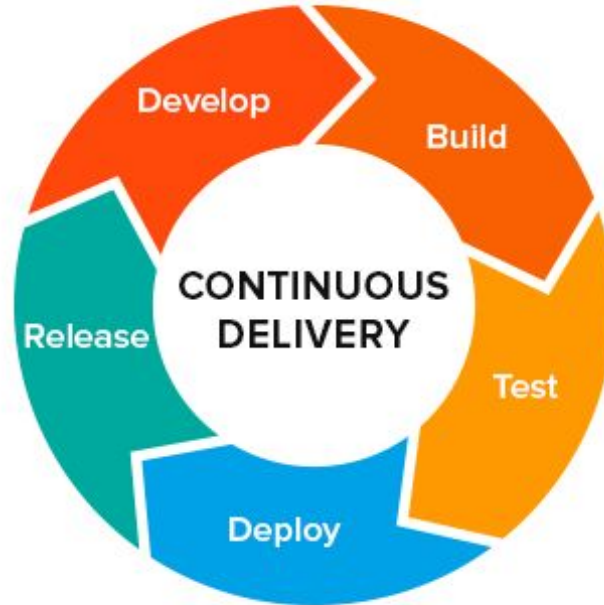


VishwaKK



/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**



Microsoft Teams



Cisco Spark



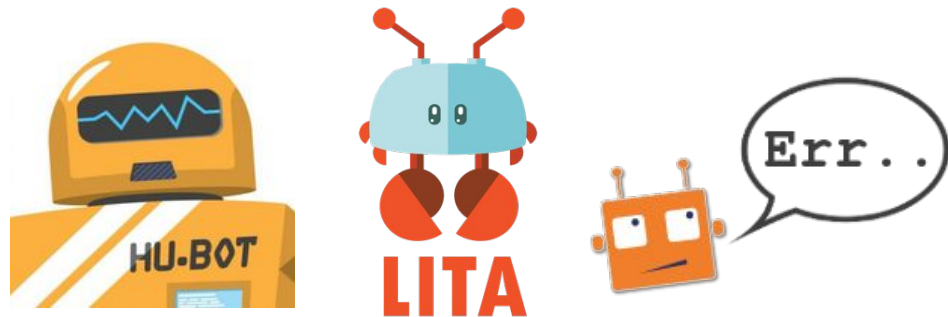
Hipchat



Mattermost



Bots





Situational awareness

Connecting people and bringing people on the same page

#war-room

☆ | 👤 425 | 🔒 0 | No incidents right now.



Daniella Niyonkuru 5:42 PM

spy incident start me checkout is down

spy APP 5:42 PM



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 ...

spy APP 5:42 PM

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



Camilo Lopez 🏠 5:42 PM ☆

shit

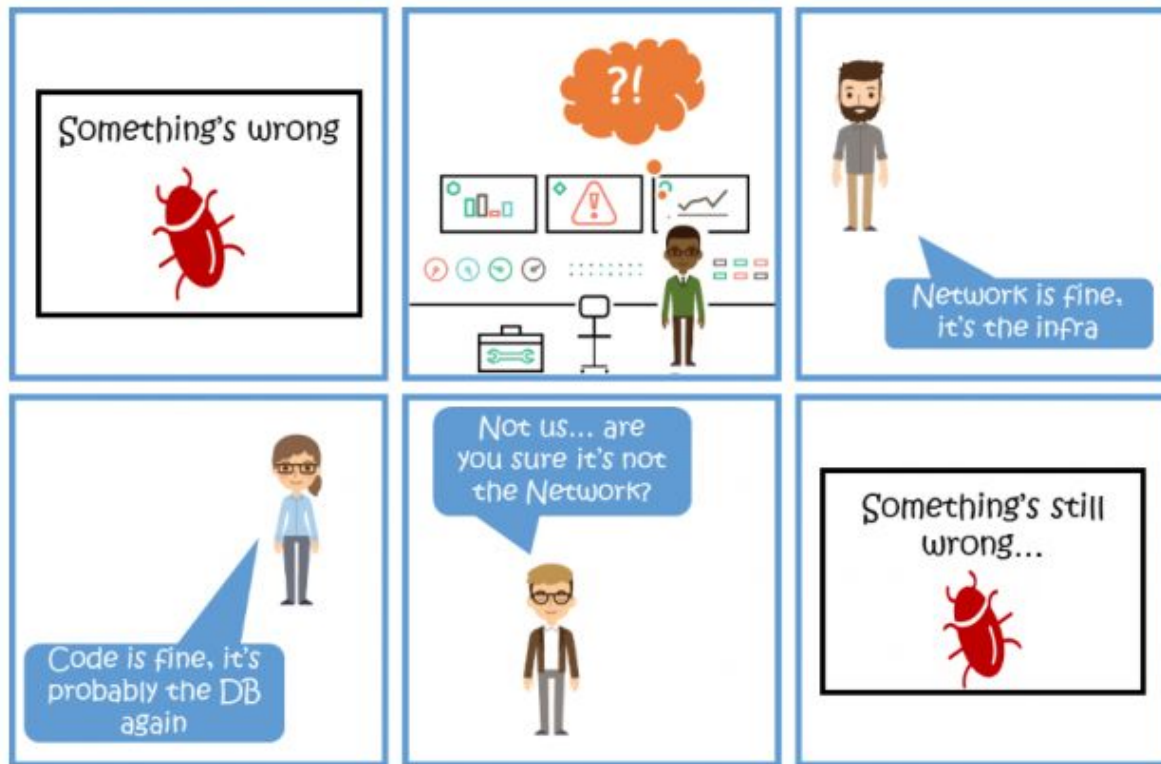


Shopify Incident Management Bot

Leverage tribal knowledge

The Team is Greater than the Sum of Its Members

Teams working in silos



Status Quo



APM incidents - Old methods

Jason: Hey Dan ... did you see that spike in CPU usage on Prod1.. ~ 3 minutes ago?

Old methods

Dan: No. Let me check. brb

Dan: Shit. Yeah, I see it. Looks ok now. I think :-/

Jason: Think we should let Mike know? He might want to dig in to it later.

Dan: Yeah, I'll take a screenshot and email it to him.

Jason: Would anyone else need to know about it?

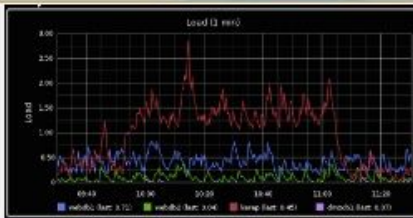
Dan: Prob. I'll cc the DevOps team so everyone knows

APM incidents - New methods

Jason: Hubot graphite load 1 min on serverABC

New method
w/ bots

Hubot:



Jason: @Dan ... you seeing this?

Dan: Yeah.

Mike: That was me. I was running a giant report.
Should be fine now

Nick (new guy): Cool. Thanks for showing me how to
do that. ;-)

Use case - Deployment



rickmak 11:41 AM

chima deploy trelhub/edge to pandawork



chima BOT 11:41 AM

rickmak: Deployment of trelhub/edge to pandawork created



faseng BOT 11:41 AM

#1407816 - trelhub / edge / pandawork

| #1407816 : rickmak is deploying trelhub to pandawork (compare)



rickmak 11:41 AM

Hi faseng



faseng BOT 11:42 AM

| #1407816 : rickmak's pandawork deployment of trelhub is done!

Use case - Incident Management

➡ `spy incident start me order fraud analysis outage`

#war-room
☆ | 8 417 | 1 | No Incidents right now.

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

spy APP 12:25 PM ☆
🔥 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 `incident channel ...`.

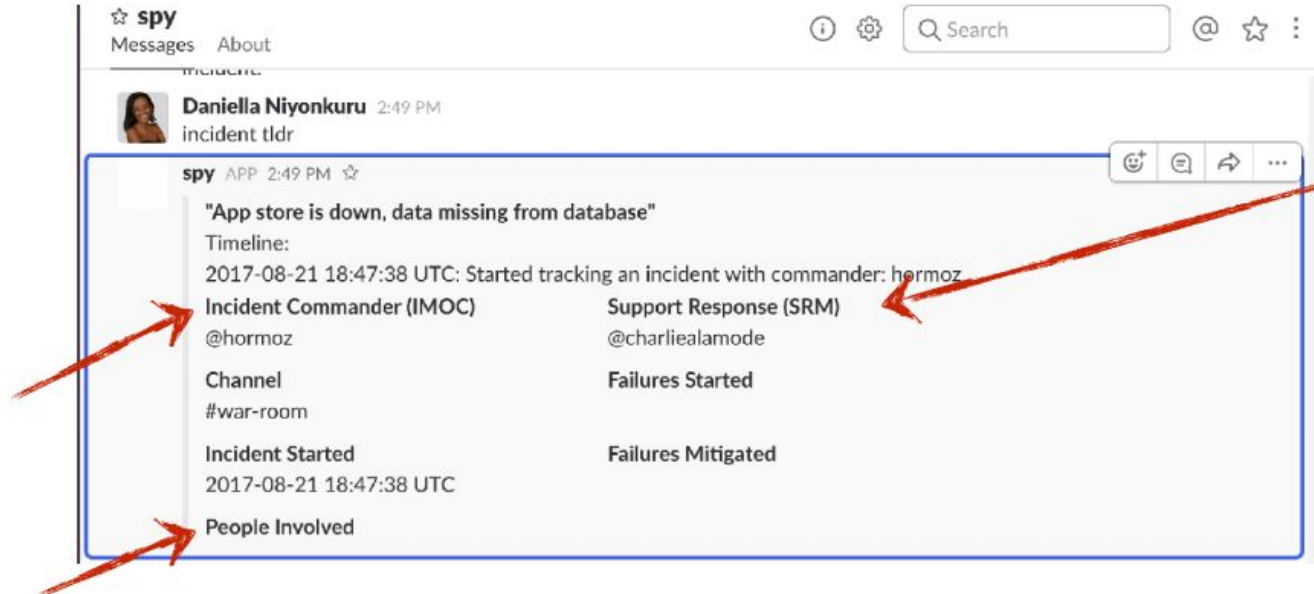
spy APP 12:25 PM
set the channel topic: 🔥 @daniella is IMOC for incident: order fraud analysis outage

izaak alpert 12:25 PM
joined #war-room. Also, @damian.polan joined.

spy APP 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.

Use case - Incident Management

➡ **spy incident tldr**



Use case - Checking Job status



rickmak 11:45 AM

chima: travis jobs



chima BOT 11:45 AM

rickmak: Travis:

Started Jobs (0):

Queued Jobs (6):

- oursky/[REDACTED](staging) ([REDACTED])
- oursky/[REDACTED](master) ([REDACTED])
- oursky/[REDACTED](master) ([REDACTED])
- oursky/[REDACTED]-ios(master) ([REDACTED])
- oursky/[REDACTED]-web(staging) ([REDACTED])
- oursky/[REDACTED]-ios(master) ([REDACTED])

Use case - Build alerts

3:33 PM **github** BOT

[greetabl:braintree] 1 new commit by Mafi

3:33 PM **pivotaltracker** BOT

[greetabl] Damian Legawiec added comment: "Commit by Mafi
<https://github.com/spark-solutions/greetabl/commit/d0ba9dd6cdb0c00d6d4bd497374520c17f84348b>
[#111128890] Ask PayPal for billing address": As a Visitor on Checkout
Billing I can pay with PayPal

3:37 PM **circleci** BOT

Success: Mafi88's build (#812; push in [spark-solutions/greetabl \(braintree\)](#)
- [#111128890] Ask PayPal for billing address ([d0ba9dd](#) by Mafi88)

11:14 PM **Rollbar** BOT

[greetabl] production - 100th Error: Failsafe from rollbar-gem: error in
process_payload <https://rollbar.com/greetabl/greetabl/items/87/>

Use case - Infrastructure monitoring

Alert in [#bot](#)

RDS Event:

Multi-AZ instance failover started

Time

2017-06-30 06:22:36.466

Source

db-instance marbot

AWS Management Console

[Details](#)

How would you like to react?

[Acknowledge](#)

[Pass](#)

[Close](#)

Use case - Infrastructure monitoring



Cloudwatch BOT 9:22 PM ★

RDS - AU2 - High CPU

Threshold Crossed: 1 datapoint (10.6675) was greater than or equal to the threshold (1.0).

Region

APAC - Sydney

State

ALARM

RDS - AU2 - High CPU

Threshold Crossed: 1 datapoint (12.1475) was not greater than or equal to the threshold (65.0).

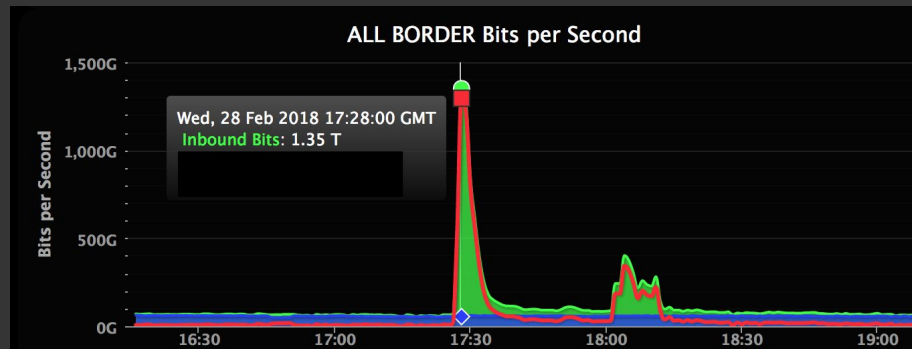
Region

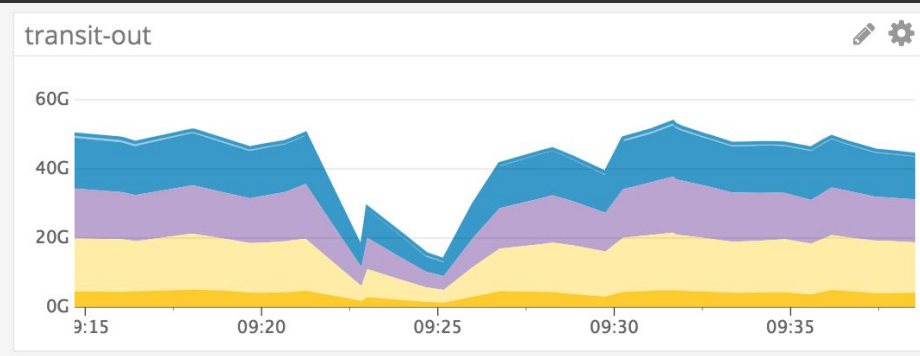
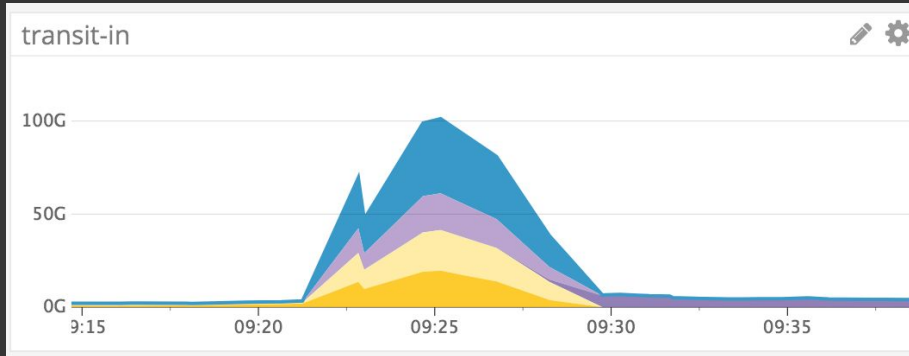
APAC - Sydney

State

OK

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

Use case - Environment provisioning



Aaron Suggs 12:13

cf: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



Use case - Application management



arma 10:37 PM

!service restart 'nginx' on 'chatops,web'



stanley BOT 10:37 PM

I'm on it! Your execution ID is 5772d2110a84b440c5e78091 (details available at <https://chatops/#/history/5>)

@arma: Service restart `nginx` on `chatops,web` host(s):

```
localhost | SUCCESS => {  
  "changed": true,  
  "name": "nginx",  
  "state": "started"
```

[Show more...](#)

Restarted

2

Failed

0



5772d2110a84b440c5e78091



Use case - Analytics



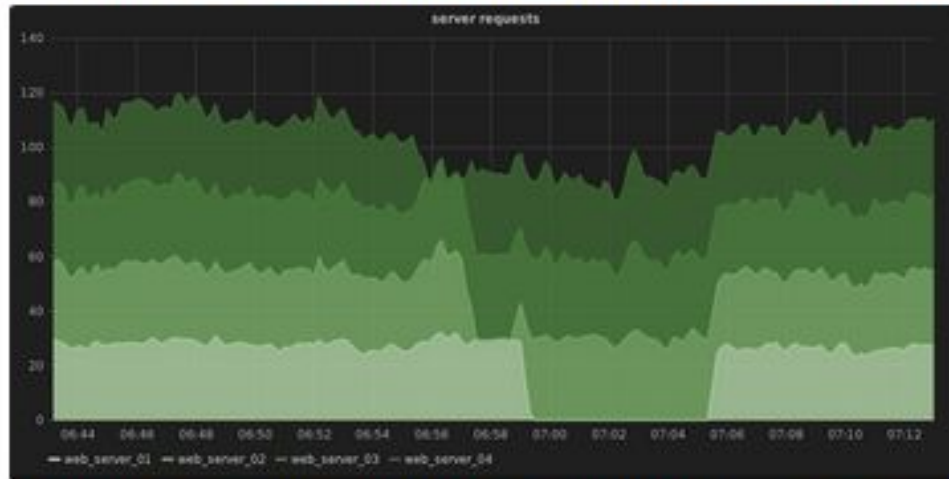
torkelo 1:12 PM

hubot graf db loadbalancers:2 now-30m



hubot BOT 1:13 PM

server requests: <https://grafana-share-test.s3.amazonaws.com/grafana/f21>




- <http://play.grafana.org/dashboard/db/loadbalancers/?panelId=2&fullscreen>

Use case - Task Management

☆ **yellowant**

Messages About

Today



vishwa 5:02 AM
jira createissue issuetype "Bug" project "PYG" summary "test" description "td"



Jira - jira APP 5:02 AM
I created new issue in project PYG

Issue Summary: test

Description: td

Assignee: None

Creator: Vishwa K

Reporter: Vishwa K

Status

To Do

Priority

Medium

Issue-type

Bug

Votes

0

Watchers

1

+

Message @yellowant

ChatOps is not just for Devs!

Use case - Salesforce management



Salesforce Reminders BOT 4:21 PM

Hi @michelada you have a lead that is open for more than 2 hours!

Lead Name: Randolph Duke

Lead Email: randy@dukeandduke.example.com

Company Name: Duke & Duke

SFDC Link: <https://slack.my.salesforce.com/000001>



Salesforce Reminders BOT 6:21 PM

Hi @michelada you have a lead that is open for more than 4 hours!

Lead Name: Randolph Duke

Lead Email: randy@dukeandduke.example.com

Company Name: Duke & Duke

SFDC Link: <https://slack.my.salesforce.com/000001>

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



GrowthBot BOT 11:35 AM

@amajack asked `/growthbot show me a random example of what you can do`



GrowthBot BOT 11:35 AM

Here are some sample commands to try:

1. what are top articles this week on growth hacking?
2. what marketing software does [zendesk.com](https://www.zendesk.com) use?
3. show me top posts from moz.com
4. what keywords does buffer.com rank for?
5. what ppc keywords is uber.com buying ?
6. what ad networks is dollarshaveclub.com using?
7. give me company info on producthunt.com
8. show me public companies using hubspot
9. lookup email dharmesh@hubspot.com
10. watch company wistia.com for updates
11. what is trending on inbound.org?
12. show me a comic
13. show me a random example of what you can do

Use case - File sharing

Support(support)

Trello(trello)

Twitter(twitter)


Twitter(twitter-yellowant)

Incoming Webhooks(webhooks)


Wikipedia(wikipedia)

YellowAnt(yellowant)


YouTube(youtube)




vishwa 12:43 AM
[@yellowant](#) drive search file "Saas metrics"



Google Drive - drive APP 12:43 AM
Senthil Profile - Bigdata NoSQL_2016.pdf - Owned by Senthil Kumar [Link](#)
SaaS Metrics Dashboard - Owned by Christoph Janz [Link](#)



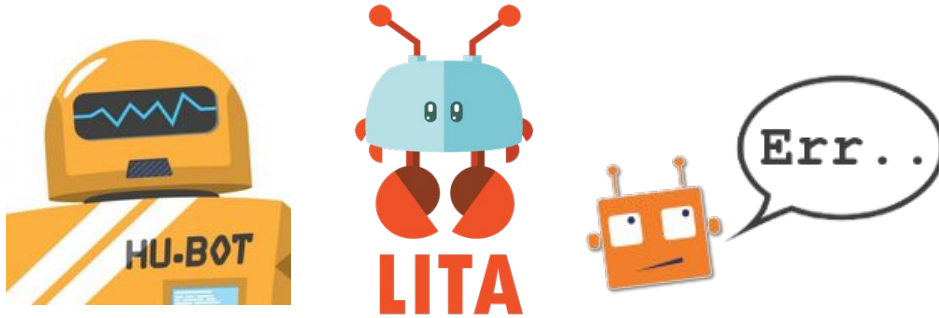
vishwa 12:43 AM
[@yellowant](#) drive search file "TiE Bangalore"



Google Drive - drive APP 12:43 AM
TiE Bangalore: 'Desk Tripper' Registration - Owned by Prarthana Patre [Link](#)
merger.xml - Owned by Karan Thakral [Link](#)

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"
```

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/>

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

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).

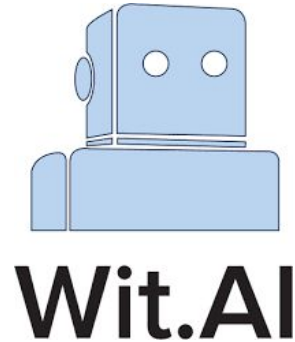
@jarvis invoice <alias> <month (ex: 03)> <year (ex: 2016)> <email> - Emails the requester a usage invoice for a given account alias, month and year. (Note: This data is pulled directly from the API and has not been processed through BRM or Vantive).

@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

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

 **YellowAnt** | App Marketplace

Manage AppsBuild⚙️👤Select Team

Drive your Workplace with YellowAnt Integrations

Start using your favorite apps

Which application would you like to use?

Categories

All

Analytics

Communication

CRM


Developer Tools

File Management


Google Apps

Marketing


Notes

**Airbrake**
Track errors, bugs and health of applications in real-time


Integrate

**Asana**
Create, organize and prioritize tasks and projects


Integrate


**AWS-CloudWa...**
Monitor, create, update alarms and get statistics of servers


Integrate


**Bitbucket**
Manage repos and PRs with commands and notifications

Integrate


**Calendar**
Create, update and


**CircleCI**
Rapidly release code

**Evernote**
Create, modify and

**Freshdesk**
Create, fetch, modify

Every application comprises of a set of commands

**rohan** 3:00 PM
@yellowant gmail

**Help - help** APP 3:00 PM
Below are the list of commands you can use with application gmail!

fetch
Helps you fetch mails from a label.
[Run this command](#) [Explain this command](#)

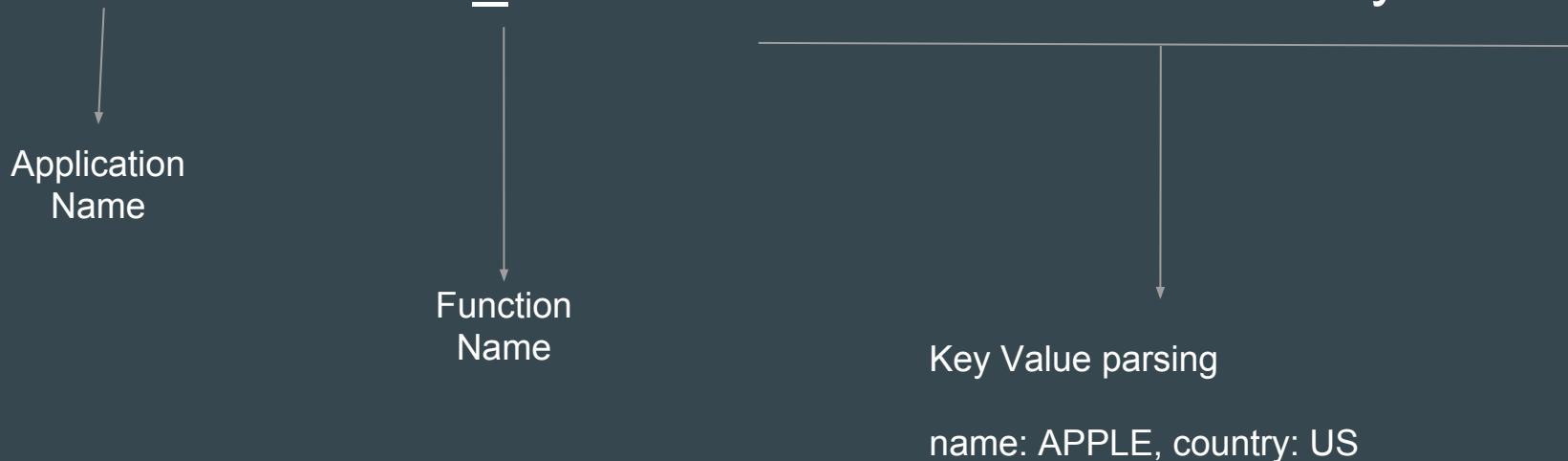
reply
Reply to a Gmail message
[Run this command](#) [Explain this command](#)

search
This helps you search your Gmail account.
[Run this command](#) [Explain this command](#)

send
This helps you send an email.
[Run this command](#) [Explain this command](#)

How YellowAnt commands get parsed

maestro search_customer name "APPLE" country "US"



Dialog inputs - better alternative to text commands



rohan 4:15 PM
@yellowant jira



Help - help APP 4:15 PM

Below are the list of commands you can use with application jira!

createissue

create issue for any project you want

Run this command

Explain this command

createwebhook

create link to get notification

Run this command

Explain this command

getissue

This helps you get issue details if you have the associated issue key.

Run this command

Explain this command

getissuedetails

This is button command to get issue details.

Run this command

Explain this command

Damn - that didn't work. Feel free to give it another go.

rohan 4:26 PM
@yellowant jira

Help - help APP 4:26 PM

Below are the list of commands y

createissue

create issue for any project you

Run this command

Explain t

createwebhook

create link to get notification

Run this command

Explain t

getissue

This helps you get issue details

Run this command

Explain t

getissuedetails

This is button command to get

Run this command

Explain t

issues

This helps you list the top issue

Run this command

Explain t

myissues

List all the issues assigned to current user with descending order of priority



createissue



description (optional)

Server downtime check

This is the description of the issue

issuetype (optional)

Task

This has to be valid issue-type from the project

project (optional)

YM

name of the project in which you want to create issue

summary (optional)

Check reasons for failure

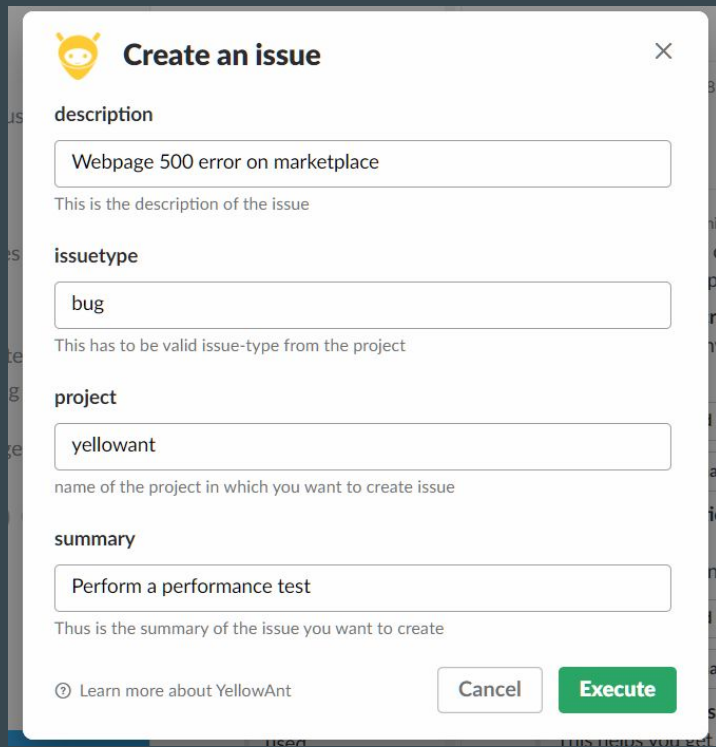
Thus is the summary of the issue you want to create

Learn more about YellowAnt

Cancel

Execute

Dialogs - better alternative to text commands



Create an issue

description
Webpage 500 error on marketplace
This is the description of the issue

issuetype
bug
This has to be valid issue-type from the project

project
yellowant
name of the project in which you want to create issue

summary
Perform a performance test
Thus is the summary of the issue you want to create

[Learn more about YellowAnt](#) Cancel Execute

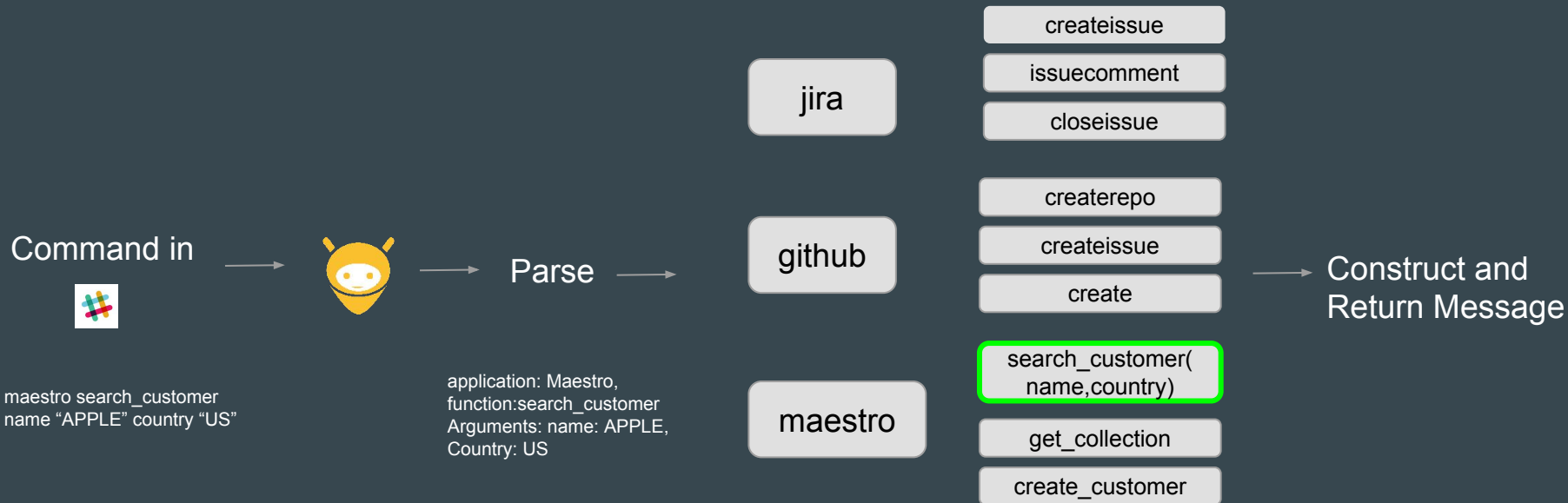
Application: Maestro

Function: Create Issue

Arguments:

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

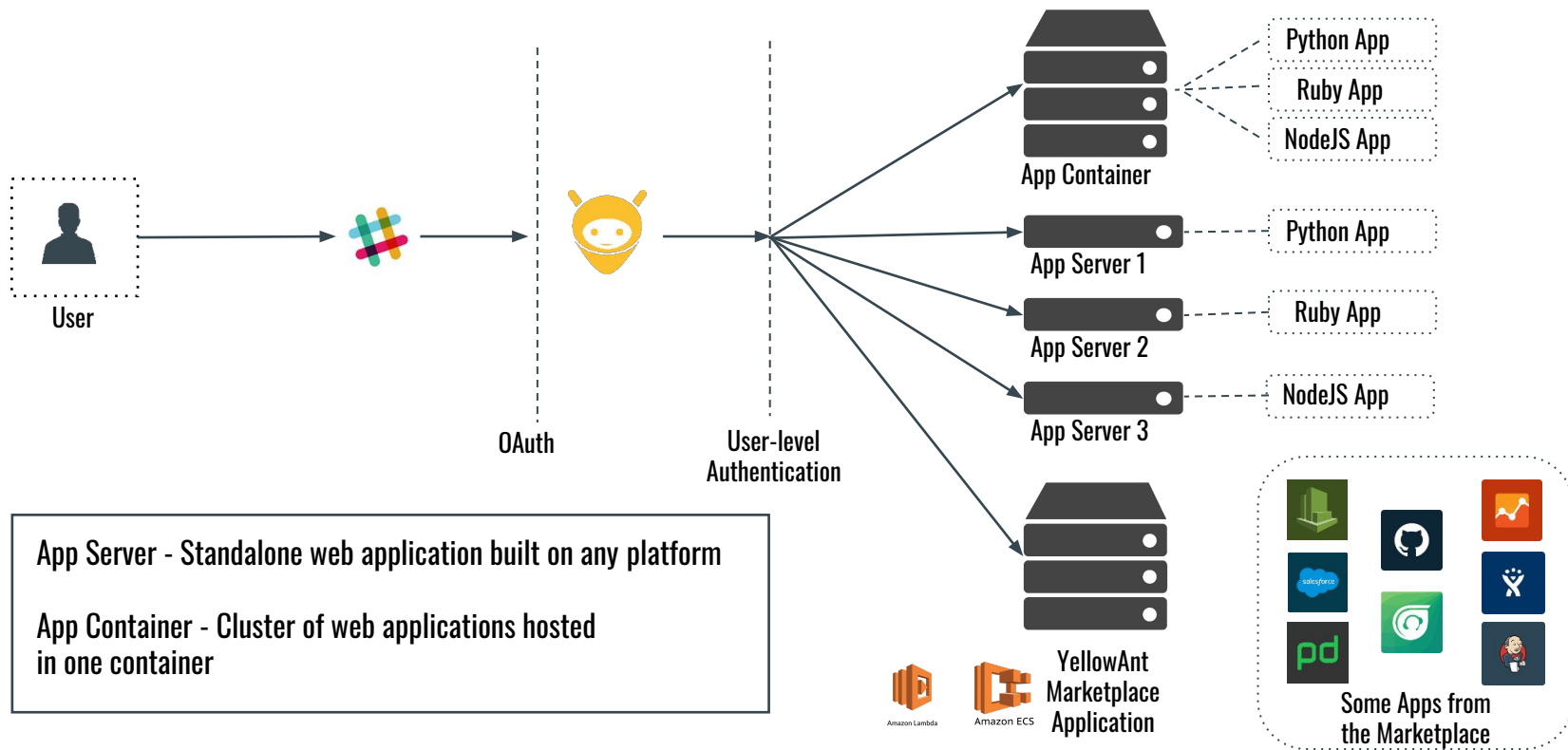
Interaction - Command Flow



Request Application API with
input parameters

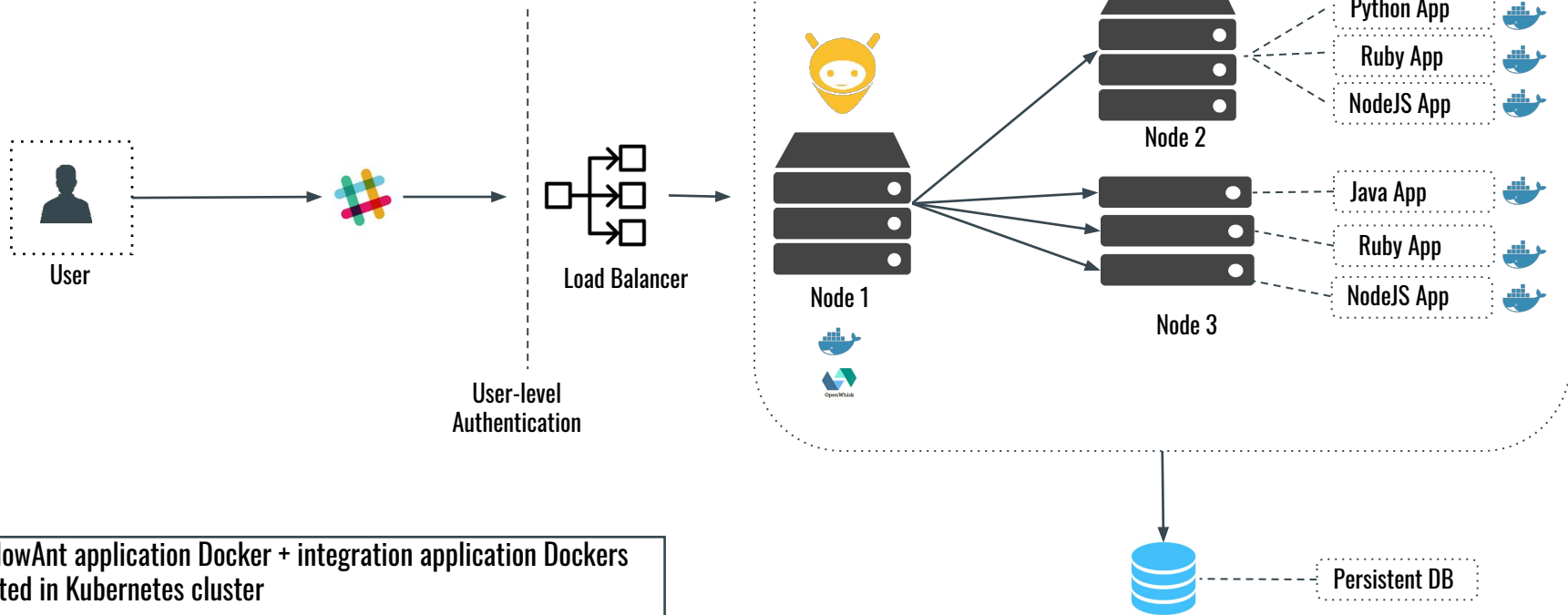


Architecture - Cloud






Architecture - Hosted




YellowAnt application Docker + integration application Docker
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?

AcknowledgeOn CallResolveList 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



rohan 4:15 PM
@yellowant jira



Help - help APP 4:15 PM

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List all the issues assigned to current user with descending order of priority



createissue



description (optional)

Server downtime check

This is the description of the issue

issuetype (optional)

Task

This has to be valid issue-type from the project

project (optional)

YM

name of the project in which you want to create issue

summary (optional)

Check reasons for failure

Thus is the summary of the issue you want to create

Learn more about YellowAnt

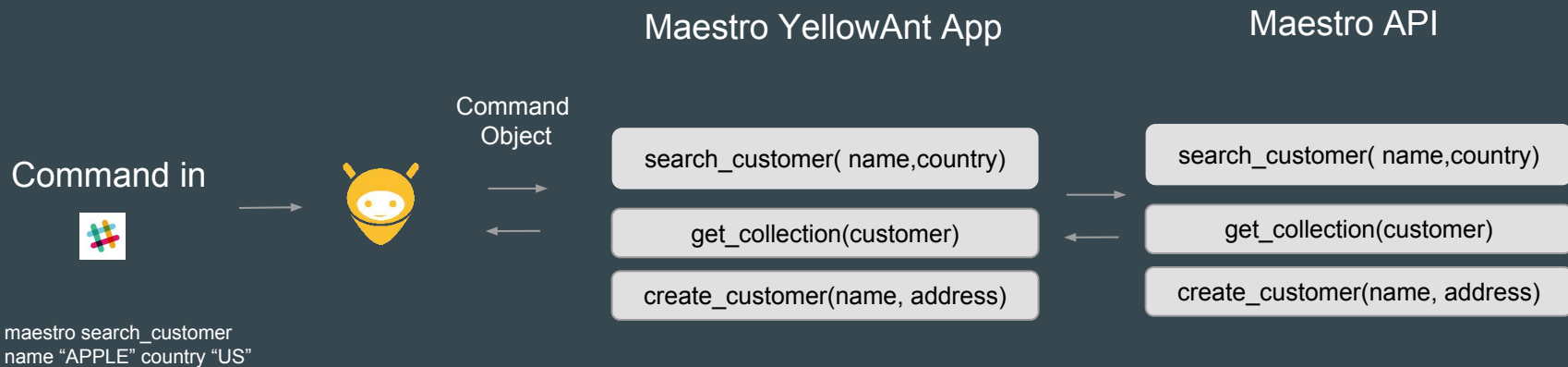
Cancel

Execute

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

[Manage](#) > Create a New Application

Create a New Application

Name:

App name in the marketplace

7 / 100

Invoke Name:

Default user command input to use this app

7 / 50

Short Description:

Text visible to users in help and quick info

37 / 1000

CREATE APP

marqeta.yellowant.com/developers/

Step 3: Define application functions and their arguments

Maestro

Application Details

Marqeta Maestro YellowAnt application

Invoke Name: maestro

Application Id: 258

Client Id: G6dryXlQaDIY5WeMCEsw63u2CaR8aPzeXEioplQZ

Client Secret: [Show](#)

Verification Token: [Show](#)

[EDIT APP](#)

Application Functions

[+ ADD FUNCTION](#)

fetch_analytics

Fetches analytics data

[VIEW FUNCTION](#)

run_task

Runs a Maestro task

[VIEW FUNCTION](#)

search_customer

Searches for a customer

[VIEW FUNCTION](#)

fetch_analytics

Function Details

Fetches analytics data

Function Id: 881

[EDIT FUNCTION](#)

Function Arguments

[+ ADD ARGUMENT](#)

from

Starting date

[VIEW / EDIT ARGUMENT](#)

metric

Metric Type

[VIEW / EDIT ARGUMENT](#)

to

Ending date

[VIEW / EDIT ARGUMENT](#)

Function Output Keys

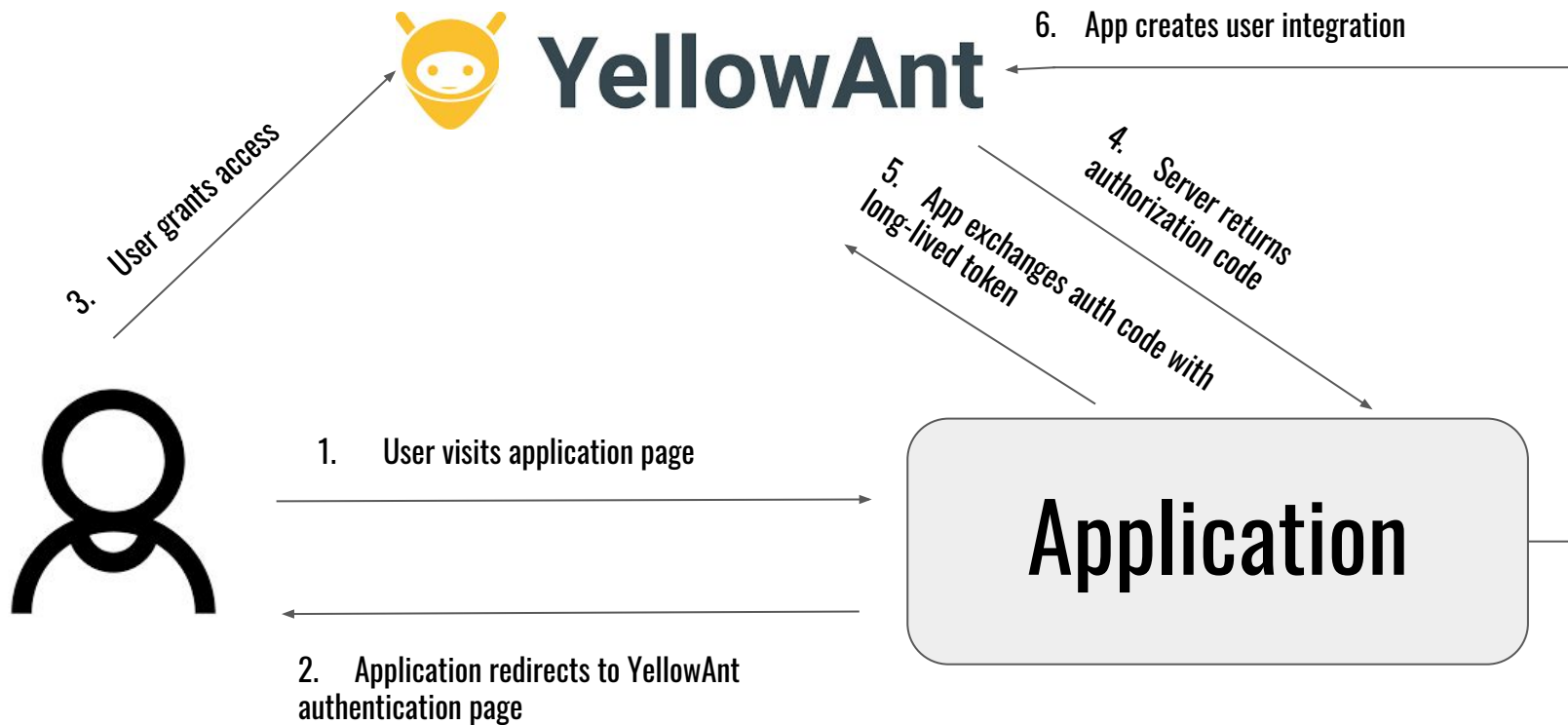
[EDIT OUTPUT KEYS](#)

Output keys schema overview here

Function Input Samples

[+ ADD INPUT SAMPLE](#)

Step 4.1: User authentication

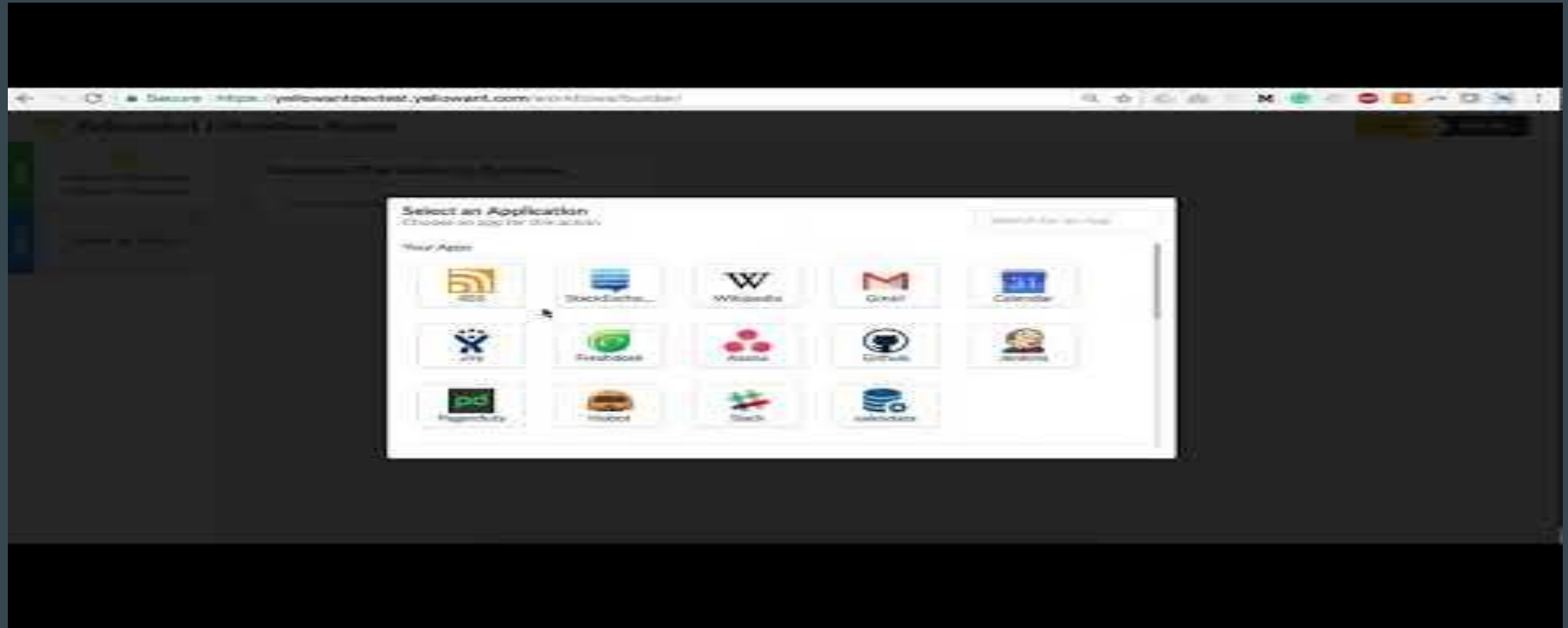


Workflows

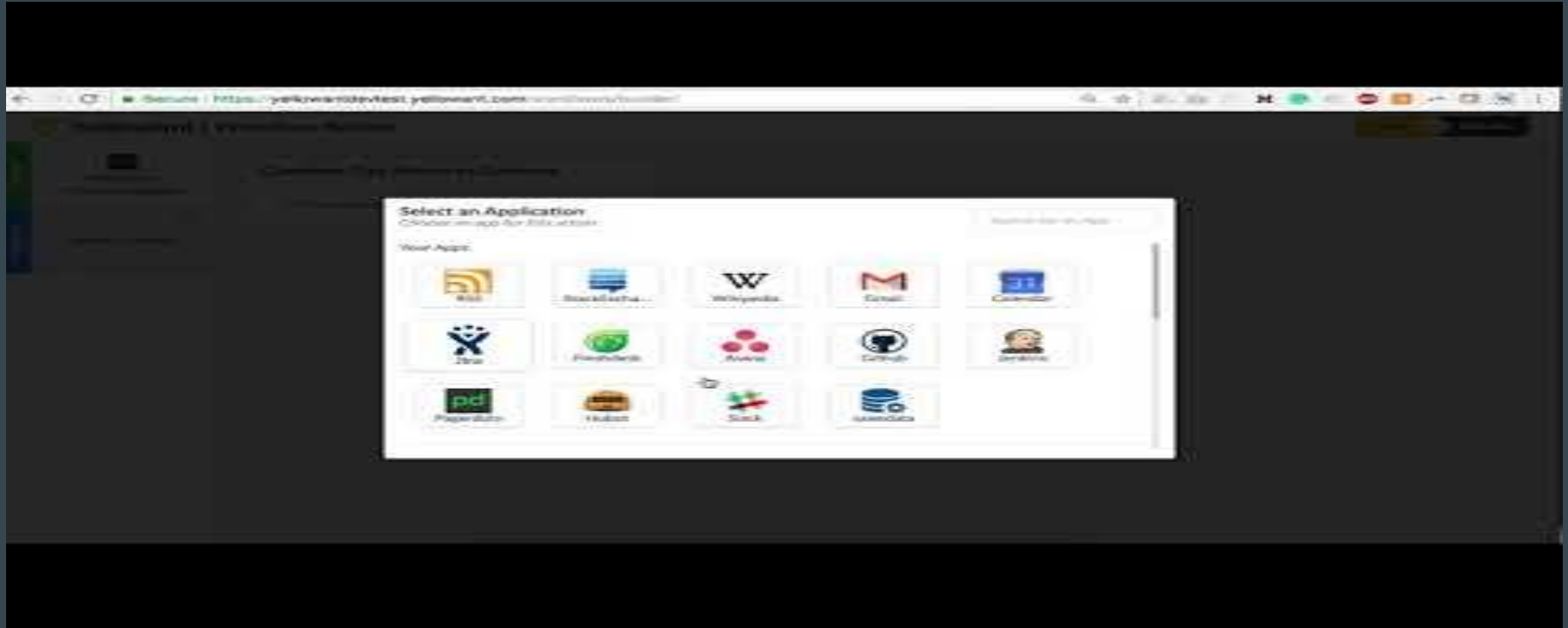
Command workflow - Club multiple commands into one command

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

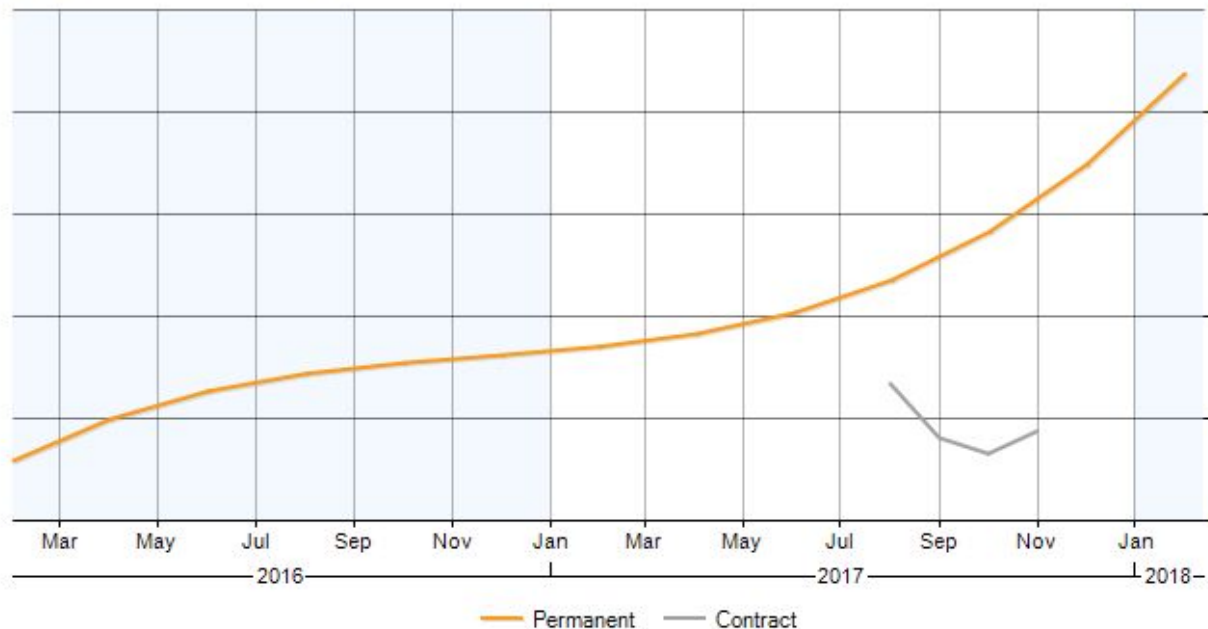
Clearly blue pill is better

2018 is the year of ChatOps!



ChatOps Job Vacancy Trend

Job postings citing ChatOps as a percentage of all IT jobs advertised.



Thank you!

