

StackStorm

If-This-Than-That for DevOps automation

Dmitri Zimine

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@Stack_Storm

@dzimine



Agenda

What is StackStorm

Use cases

What is next

StackStorm: What is it?

Event-Driven Automation

StackStorm is a powerful open-source automation platform that wires together all of your apps, services and workflows. It's extendable, flexible, and built with love for DevOps and ChatOps

Looking for additional features and enterprise level support? Then try [Brocade Workflow Composer](#), powered by StackStorm



**INSTALL
STACKSTORM**



[JOIN COMMUNITY](#)



StackStorm is like ...







for DevOps

Some example Recipes

if  **then** 
Save my Instagram photos to Dropbox

if  **then** 
Nearly home? Direct message the person who should know

if  **then** 
Email your new iPhone photos to yourself

if  **then** 
Backup your contacts to a Google Spreadsheet

Handwritten annotations:

- RECIPE** (bracketed over the first recipe)
- TRIGGER CHANNEL** (pointing to the Instagram icon)
- ACTION CHANNEL** (pointing to the Dropbox icon)
- DESCRIPTION** (pointing to the text 'Save my Instagram photos to Dropbox')

IFTTT, *for DevOps*

artifacts are code

```
cat /opt/stackstorm/packs/st2-demos/rules/demo.yaml
---
name: "sensu_crit_to_slack"
pack: "st2-demos"
description: "Post all critical alerts to the demo"
enabled: true
trigger:
  type: "sensu.event_handler"
criteria:
  trigger.check.status:
    pattern: 2
    type: "equals"
  trigger.check.name:
    pattern: "demo_.*"
    type: "matchregex"
action:
  ref: "slack.post_message"
  parameters:
    message: >
      [ALERT]{{trigger.client.name}}
      {{trigger.check.output}}
    channel: "#demos"
```



Rules



ST2-DEMOS

diskspace_remediation

Clean up disk space on critical monitoring event.

IF **sensu.event_handler**
Trigger type for sensu event handler.

THEN **st2-demos.diskspace_remediation**
Remediation workflow for disk space al...

sensu_crit_to_slack
Post all critical alerts to the demo channel in Slack

IF **sensu.event_handler**
Trigger type for sensu event handler.

THEN **slack.post_message**
Post a message to the Slack channel.

sensu_ok_to_slack
Post all sensu oks to the demo channel in Slack

IF **sensu.event_handler**
Trigger type for sensu event handler.

THEN **slack.post_message**
Post a message to the Slack channel.

TWEETER

relay_tweet_to_slack
Relay Tweet to the Slack channel.

IF **twitter.matched_tweet**
Trigger which represents a matching tweet

THEN **slack.post_message**
Post a message to the Slack channel

st2-demos.sensu_crit_to_slack

Post all critical alerts to the demo channel in Slack

IF **sensu.event_handler**

THEN **slack.post_message**

[GENERAL](#)[CODE](#)

```
---
description: 'Post all critical alerts to the demo channel'
tags: []
type:
  ref: standard
  parameters:
    enabled: true
    name: sensu_crit_to_slack
  trigger:
    ref: sensu.event_handler
    type: sensu.event_handler
    parameters:
      criteria:
        trigger.check.status:
          pattern: 2
          type: equals
      trigger.check.name:
        pattern: 'demo_.*'
```

[EDIT](#)[DELETE](#)

Rule

sensu_crit_to_slack

Post all critical alerts to the demo channel in Slack

IF



`sensu.event_handler`

Trigger type for sensu event handler.

THEN



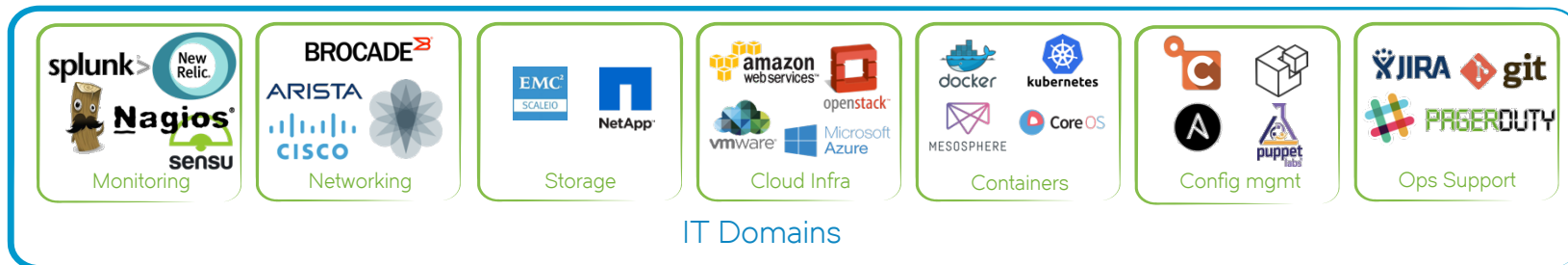
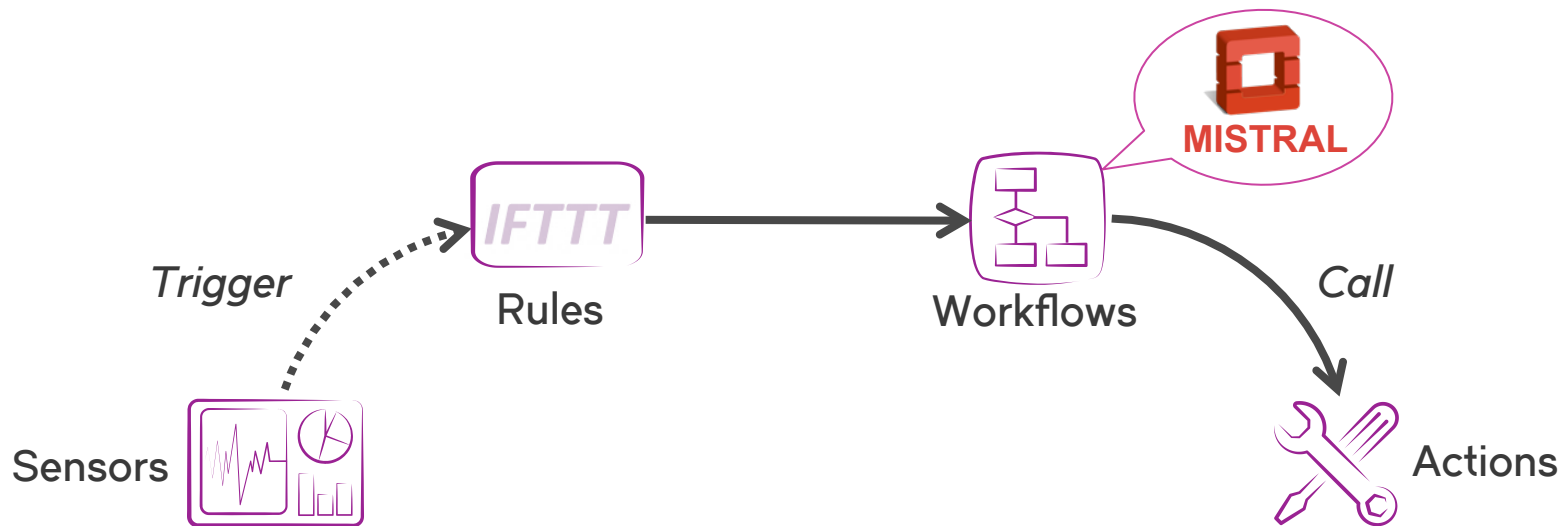
`slack.post_message`

Post a message to the Slack channel.

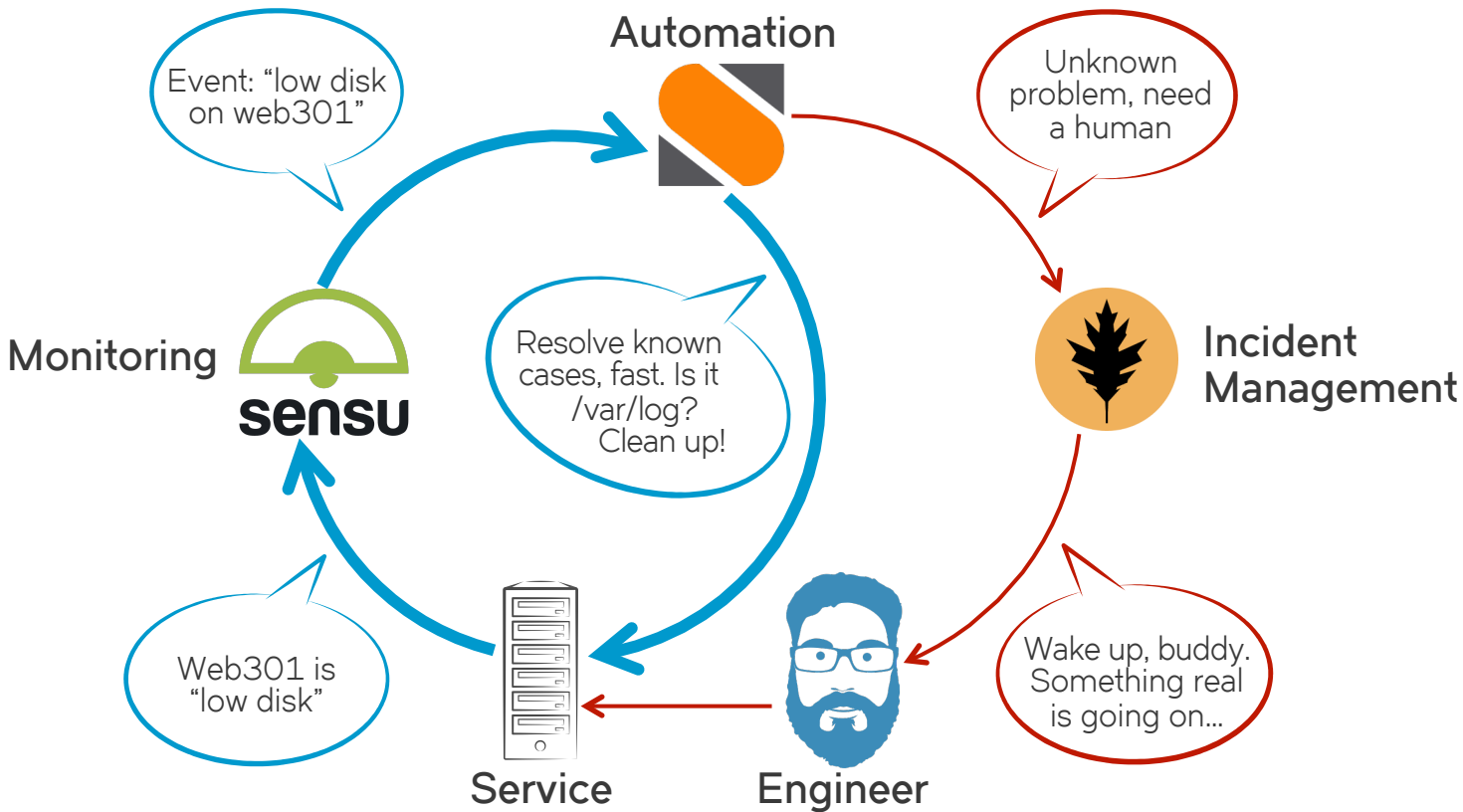
Trigger

Action

Ingredients



Automation Example



What can be it automated?

Got StackStorm !



Every automation looks like a nail

What SHOULD be automated?

From: Practice of Cloud System Administration, by Thomas Limoncelli

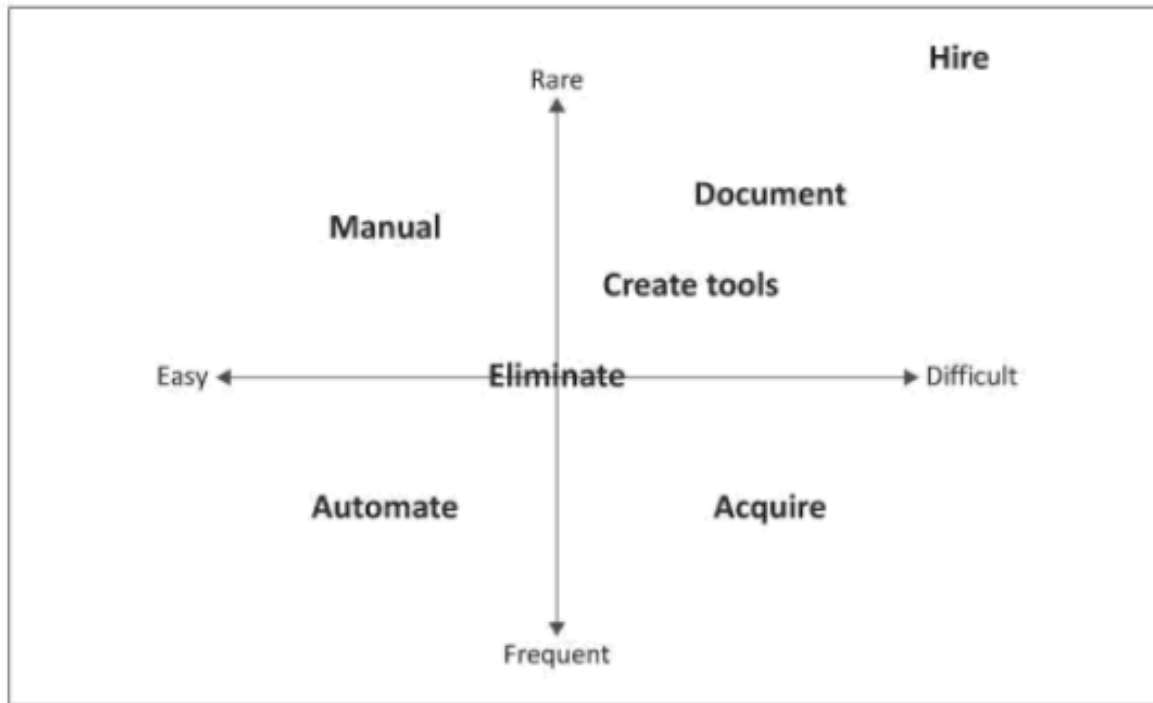


Figure 12.1: Tasks can be classified by effort and frequency, which determines the next step in how to optimize them.

Many Use Cases – One Platform

Assisted
Troubleshooting

Auto
Remediation

IT process
integration

CI/CD
Continuous Deployment

Security
Orchestration

Network
Automation

NFV

ChatOps

IoT
Internet of Things

Serverless

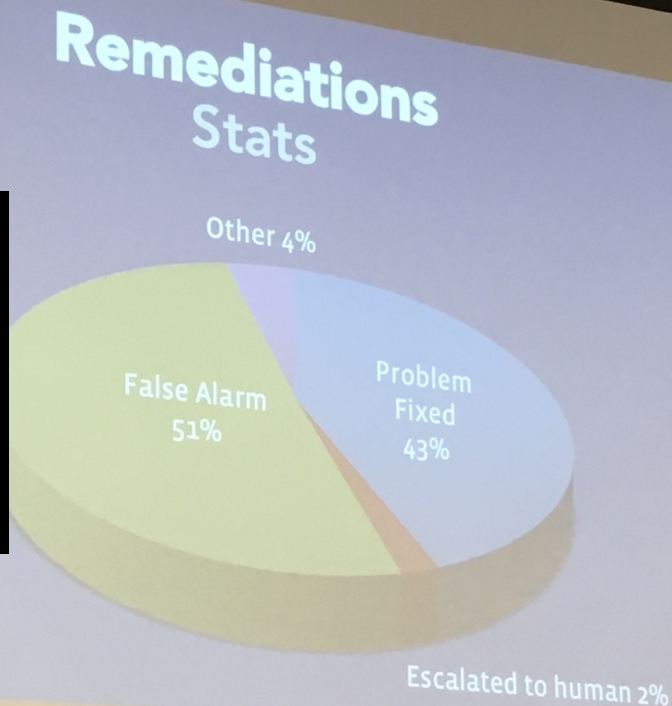
StackStorm automation platform



Auto-Remediation

FB auto-remediates 98% alarms,
can you?

Facebook FBAR:
43 % Problem Fixed
51 % False positives
94 % Automated



94%+ Alarms automatically cleared without human intervention



“Auto-Remediation & Automation at Facebook” @ Auto-Remediation Meetup SF
<https://www.meetup.com/Auto-Remediation-and-Event-Driven-Automation/events/236704012/>



Remediations Stats

Other 4%

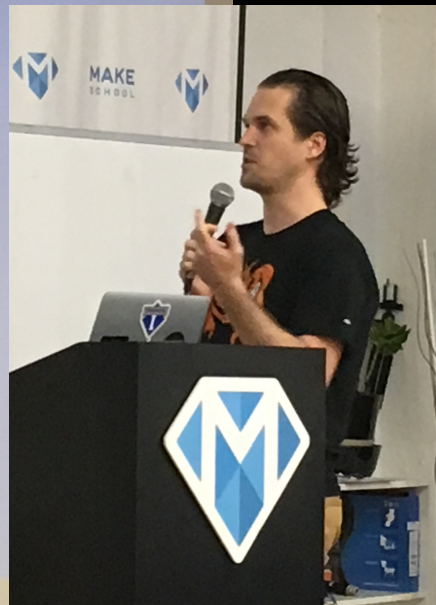
Escalated to human 2%

94%+ Alarms automatically cleared without human intervention

FBAR & StackStorm are friends

StackStorm is inspired by FBAR

StackStorm and FBAR collaborating since 2014

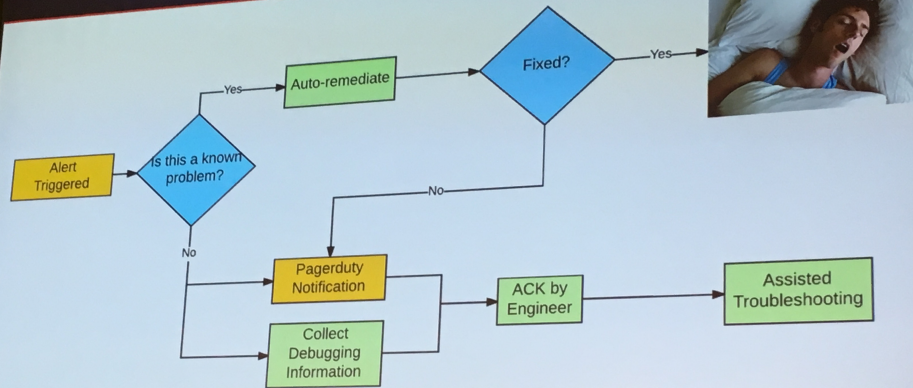


“Auto-Remediation & Automation at Facebook” @ Auto-Remediation Meetup SF

<https://www.meetup.com/Auto-Remediation-and-Event-Driven-Automation/events/236704012/>

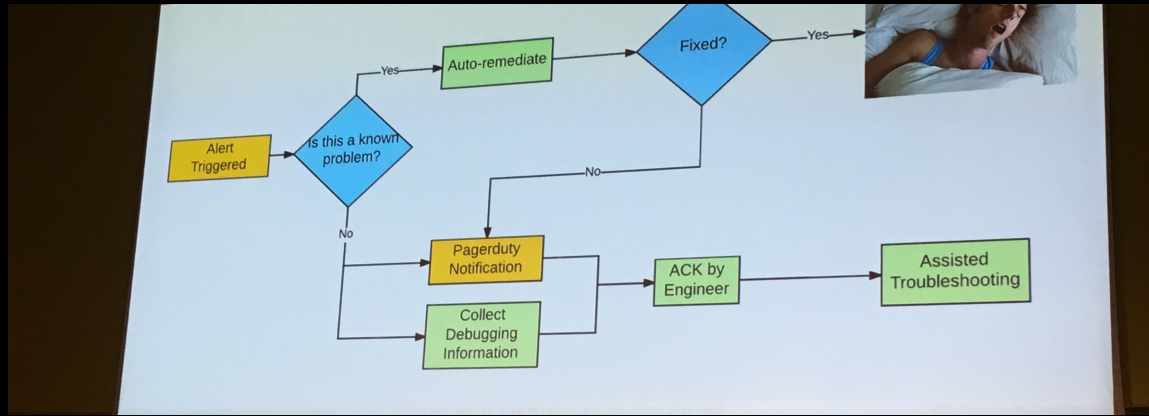


Automate!



“Sleep Better at Night: OpenStack Cloud Auto-Healing” @ OpenStack Summit Barcelona
Mirantis: Auto-remediating 2,000 node OpenStack cluster at Symantec with StackStorm

StackStorm at Symantec



User: Symantec (Mirantis)

Use case: OpenStack cluster remediation

Presented by Mirantis at OpenStack Barcelona

“Sleep Better at Night: OpenStack Cloud Auto-Healing” @ OpenStack Summit Barcelona
Mirantis: Auto-remediating 2,000 node OpenStack cluster at Symantec with StackStorm

On-call, Without Automation

2:00 AM



PagerDuty
Alert

2:02 AM



Engineer
Wakes up

2:07 AM



Logs in
and ACK

2:10 AM



Studies
the alert

2:15 AM



Checks
runbook

2:20 AM



Runs
diagnostics

2:30 AM

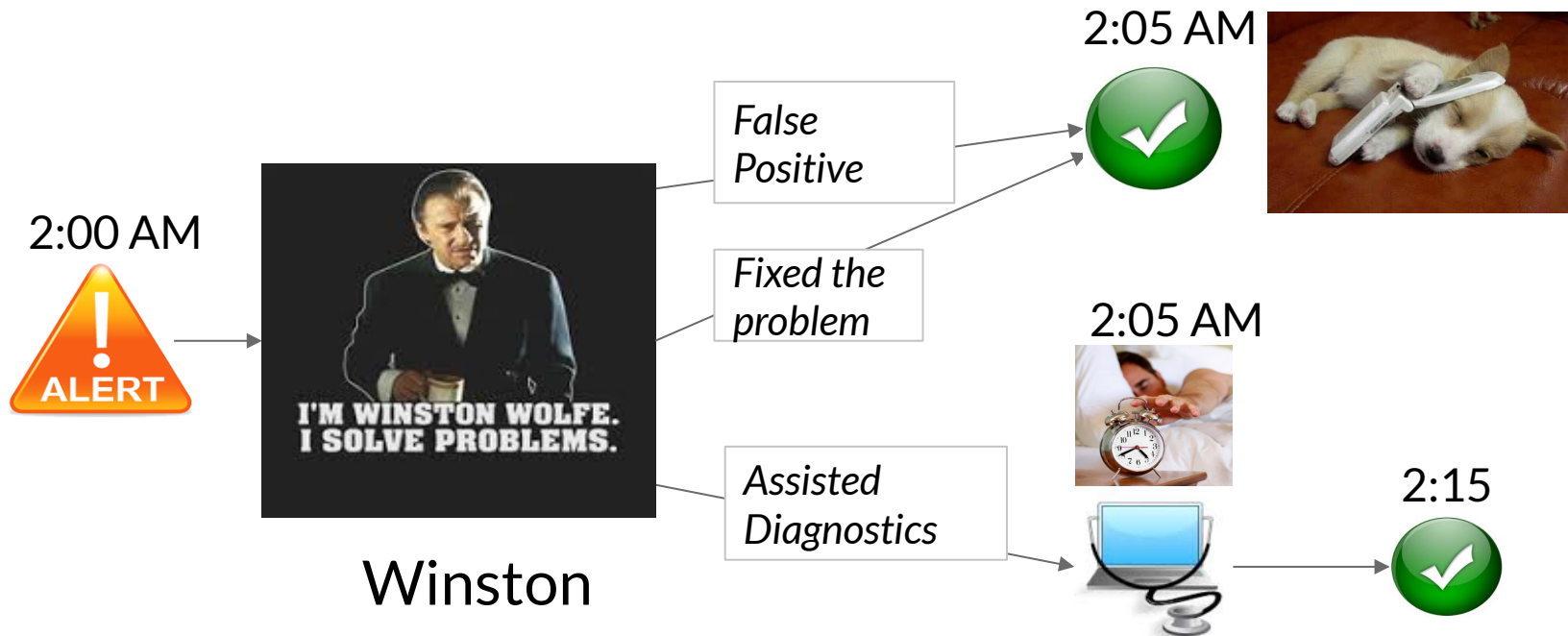


Fixes the
problem

Source: “Winston: Helping Netflix Engineers Sleep at Night” @ Qcon ‘16 SF
<https://goo.gl/IHzq4r>

NETFLIX

On-call With Winston



Source: "Winston: Helping Netflix Engineers Sleep at Night" @ Qcon '16 SF
<https://goo.gl/IHzq4r>

NETFLIX

Benefits

- Reduce MTR (Mean Time to Resolution)
- Avoid failures (fixing on computer time, not human time)
- Reduce risk of human error (no fat fingers)
- Positive team impact
 - Avoid pager fatigue and team burn-out
 - Turn from reactive to proactive (break reactive vicious cycle)
 - Capture operational knowledge – as code



Network Automation

Now supporting Multiple Vendors

Network Automation Suites

Network Automation Suites

Free install as part of Brocade Workflow Composer install scripts

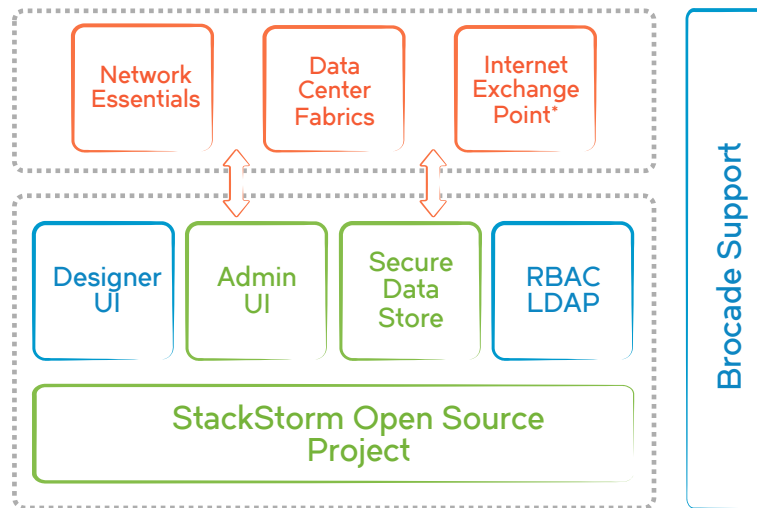
Brocade Workflow Composer Automation Platform

Free trial at:
www.brocade.com/workflowcomposer

StackStorm Open Source Project

Free install at: www.stackstorm.com

Workflow Composer Automation Suites





Make and receive SMS messages in your applications with just a few lines of code.

Welcome to NAPALM's documentation!



Anthony Chow

@vCloudernBeer

Following

Ensuring Network Configuration Consistency with @Stack_Storm + NAPALM



Ensuring Network Configuration Consistency with StackStorm

Apr 11, 2017 by Matt Oswalt If you've been paying attention to the news around new StackStorm integrations, you may have noticed the NAPALM pack was created a few weeks ago. For ... stackstorm.com

3:50 PM - 11 Apr 2017



- Vyos

You can select the driver you need by doing the following:

Multivendor support)
network device

onfigurations or to



Make and receive SMS messages in your applications with just a few lines of code.

Welcome to NAPALM's documentation!

NAPALM (Network Automation and Programmability Abstraction Layer with Multivendor support) is a Python library that implements a set of functions to interact with different network device Operating Systems using a unified API.

NAPALM supports several methods to connect to the devices, to manipulate configurations or to retrieve data.

Supported Network Operating Systems:

- Arista EOS
- Cisco IOS
- Cisco IOS-XR
- Cisco NX-OS
- Fortinet Fortios
- IBM
- Juniper JunOS
- Mikrotik RouterOS
- Palo Alto NOS
- Pluribus
- Vyos

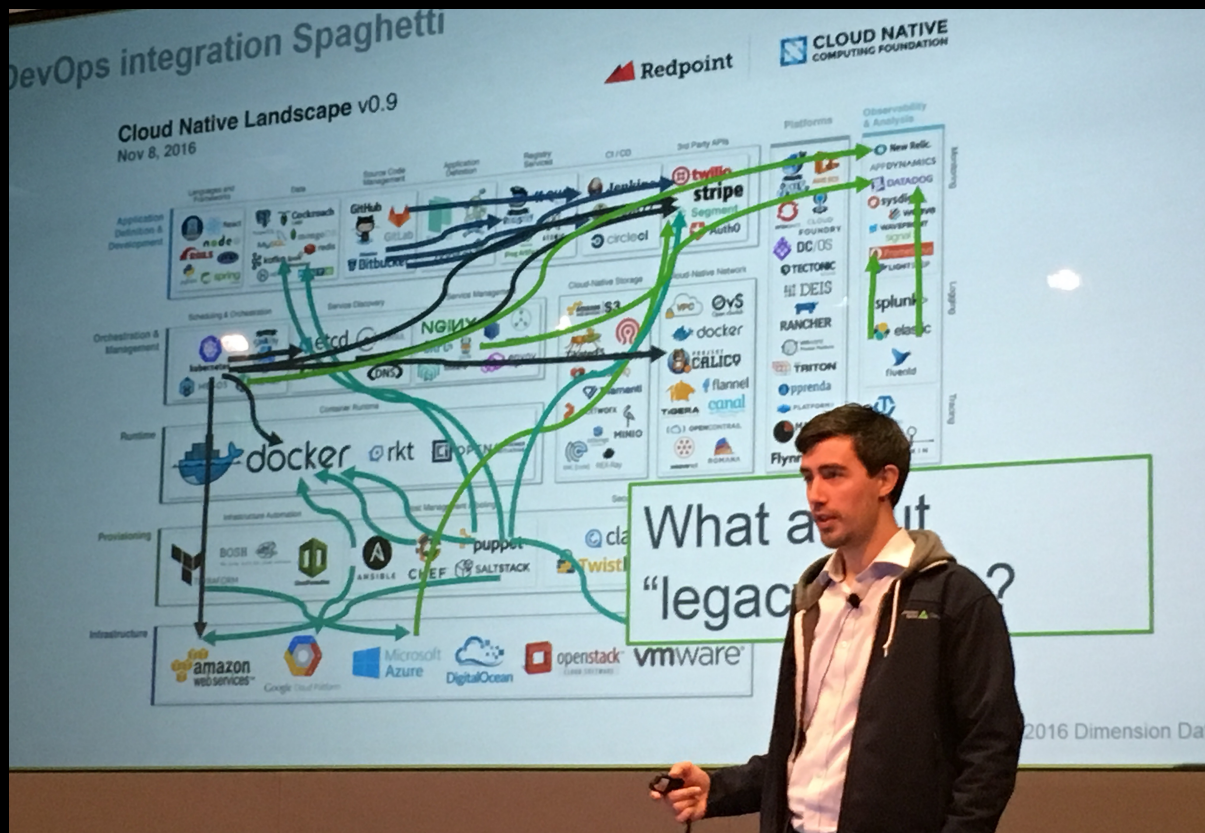
You can select the driver you need by doing the following:



Integration

Including legacy, business apps ...

Dimension Data (SP, part of NTT)



“Innovation at Dimension Data: Optimizing Operations with Event Driven Automation”
<https://stackstorm.com/2016/12/15/dimension-data-devops-beyond-deployment/>

Dimension Data (SP, part of NTT)

- Integrate IT systems & tools
- Security automation
- Legacy Run-book replacement
- Automation-aaS to end-users
- Top st2 contributors



“Innovation at Dimension Data: Optimizing Operations with Event Driven Automation”

<https://stackstorm.com/2016/12/15/dimension-data-devops-beyond-deployment/>





IoT

Fun stuff



nest



StackStorm integration with Nest Thermostats

v0.2.0

James Fryman



tesla



car horn automation

tesla

v0.2.0

Anthony Shaw



hue



Philips Hue Pack

hue

philips

iot

v0.0.2

James Fryman



cubesensors



st2 content pack containing CubeSensors integrations

cubesensors

iot

smart home

sensors

probes

home automation

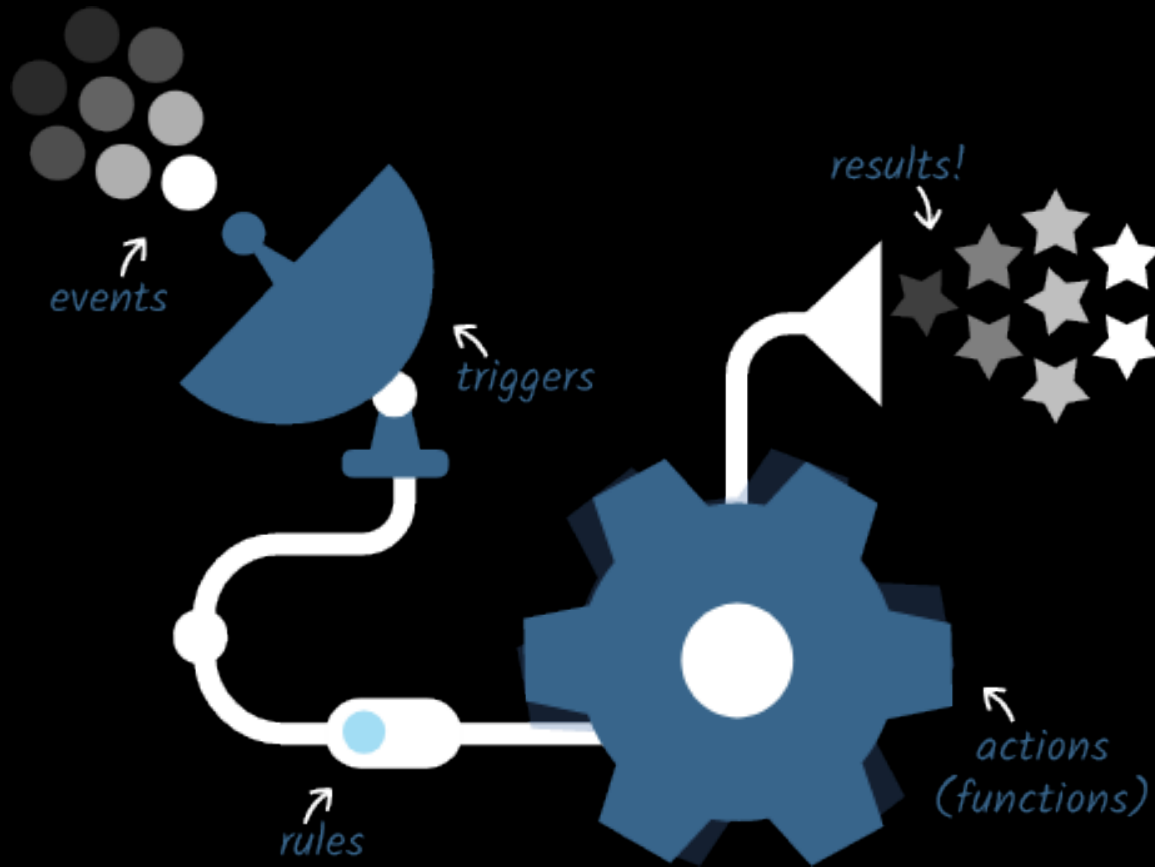
v0.2.0

StackStorm, Inc.



Serverless

Grab StackStorm & DIY



StackStorm is like ...



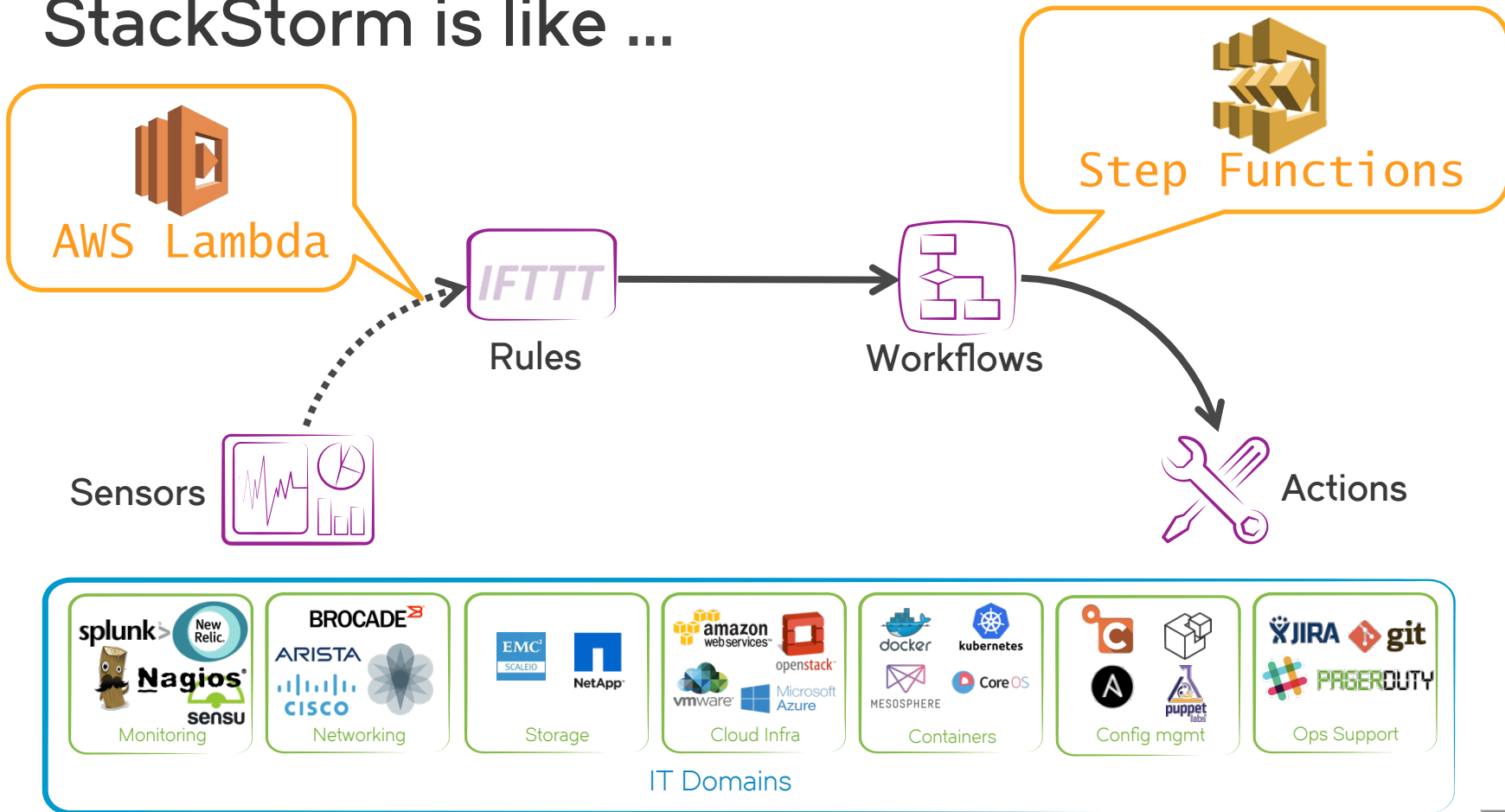
AWS Lambda



AWS Step Functions

OpenSource, for DIY Serverless

StackStorm is like ...



To learn more: Wed 9 am 2nd floor

🕒 Wed 10 , 9:00am-9:40am

📍 Sheraton Boston Hotel - 2nd Floor - Grand Ballroom

Serverless on OpenStack with Docker Swarm, Mistral, and StackStorm 📺

How To & Best Practices

PRESENTATION

It's just a matter of [short] time when your users will demand Serverless from your OpenStack Oh, do they, already? Indeed, "Serverless computing" can be a good fit for variety of tasks and workloads. Where it fits, it offers a better consumption/usage model for developers and higher resource utilization for cloud operations.

In this talk we show how to build a DIY serverless solution that matches and goes beyond AWS Lambda or



Dmitri Zimine
StackStorm Inc

Many Use Cases – One Platform

Assisted
Troubleshooting

Auto
Remediation

IT process
integration

CI/CD
Continuous Deployment

Security
Orchestration

Network
Automation

NFV

ChatOps

IoT
Internet of Things

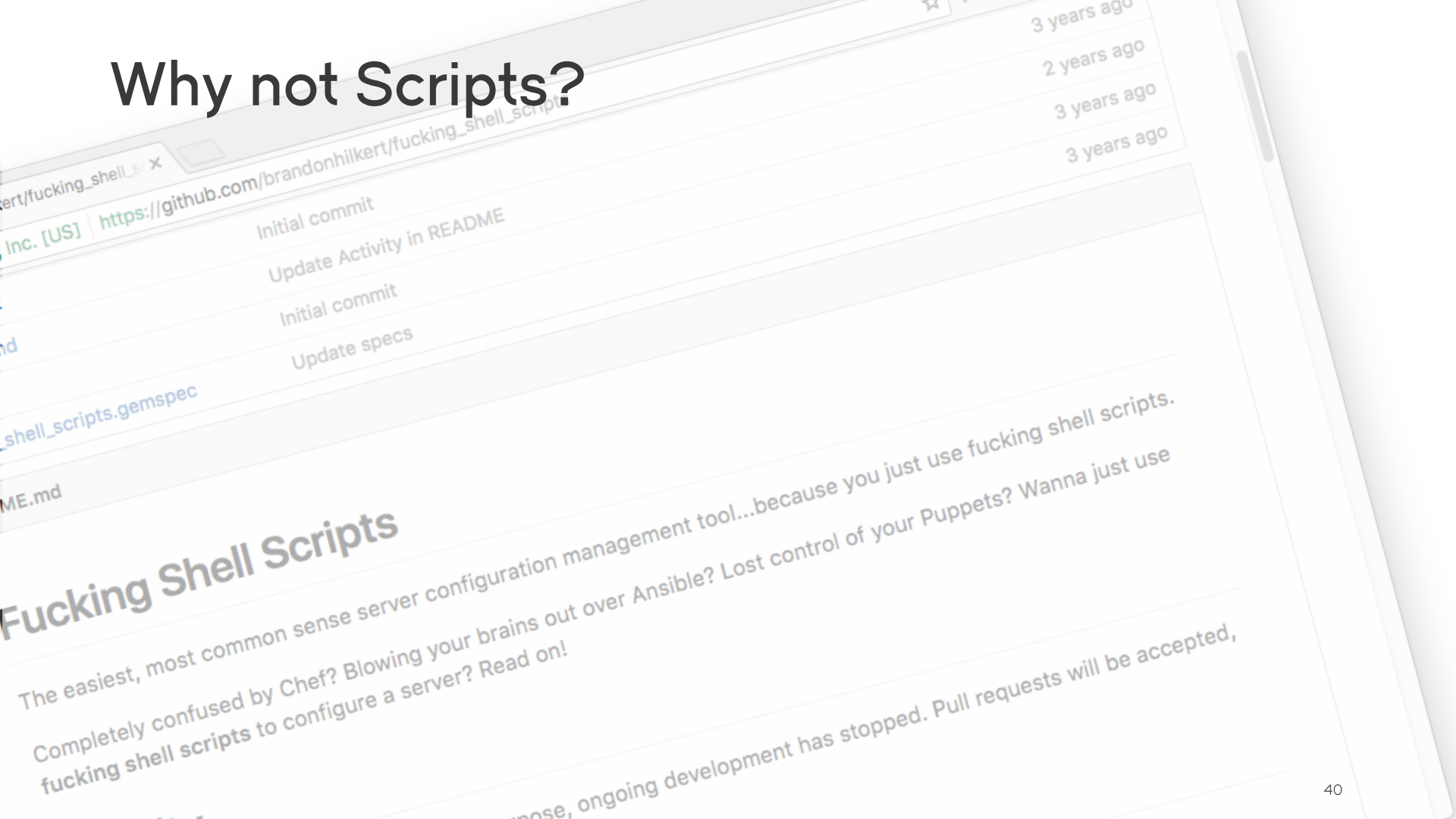
Serverless

StackStorm automation platform

Why not <...>

... or, why is it better than < ... >

Why not Scripts?



Why not Scripts?

- Simple to define, reason, visualize
- Transparent
 - state is clear, execution is trackable: running, complete, failed steps
- Reliable
 - Workflows are long-running
 - Crash tolerance
 - “Restart from point of failure”

History

Status ▾








Action: st2-demos.disksp...

Trigger Type ▾

Rule ▾



THU, 27 OCT 2016

01:29:05 UTC	st2-demos.diskspace_remediation raw_p..., even..., host..., chec..., alert..., thres..., direc...	st2-demos.diskspace_remediation sensu.event_handler	 
01:29:07 UTC	silence_check	sensu.silence client="web301.uswest2.s..., check="demo_diskspace"	
01:29:08 UTC	check_dir_size	st2-demos.check_dir_size directory="/var/log", threshold=20, hosts="web301.u...	
01:29:13 UTC	remove_files	core.remote_sudo cmd="rm -Rfv /var/log/*.l..., hosts="web301.uswest..."	
01:29:16 UTC	validate_dir_size	st2-demos.check_dir_size directory="/var/log", threshold=20, hosts="web301.u..."	
01:29:20 UTC	post_success_to_slack	slack.post_message message="DemoBot has pruned ..., channel="#demos"	

Workflows Better in Operations

- Simple to define, reason, visualize
- Transparent
 - state is clear, execution is trackable: running, complete, failed steps
- Reliable
 - Workflows are long-running
 - Crash tolerance
 - “Restart from point of failure”



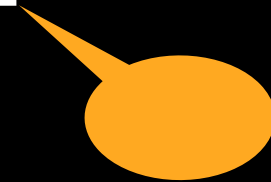
StackStorm Facts

- Apache 2.0
- 100,000,000₂ contributors (=256)
- ~3,000 installations/month
- ~100 integration packs
- Team active in OpenStack, Mistral



$256 = 100,000,000_2$

Contributors

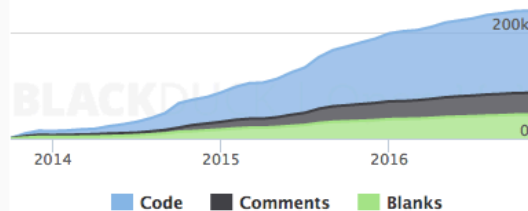


265 Contributors

Source: <https://openhub.net/p/st2>

Code

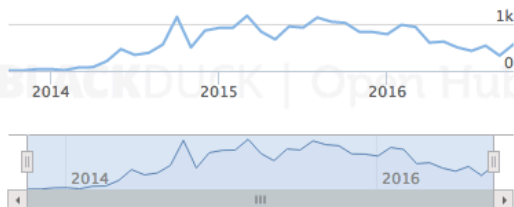
Lines of Code



Activity

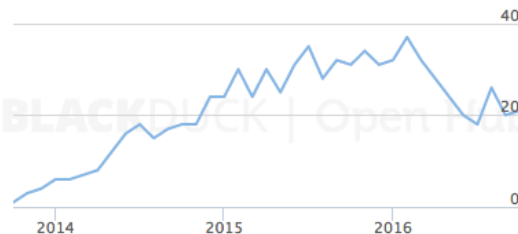
Commits per Month

Zoom 1yr 3yr All



Community

Contributors per Month



Languages



Python	82%
11 Other	11%

In a Nutshell, StackStorm...

... has had **22,292 commits** made by **256 contributors** representing **154,915 lines of code**

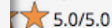
Top Contributors

- stanley
- Matt Oswalt
- Lindsay Hill

Click to add your rating



This project:



[Review this Project!](#)

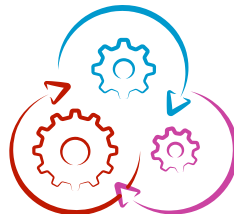
StackStorm



OpenSource Apache 2.0

- **Github:** github.com/StackStorm/st2
- **Twitter:** [Stack_Storm](#)
- **IRC:** [#stackstorm](#) on FreeNode
- stackstorm.slack.com on Slack
- www.stackstorm.com

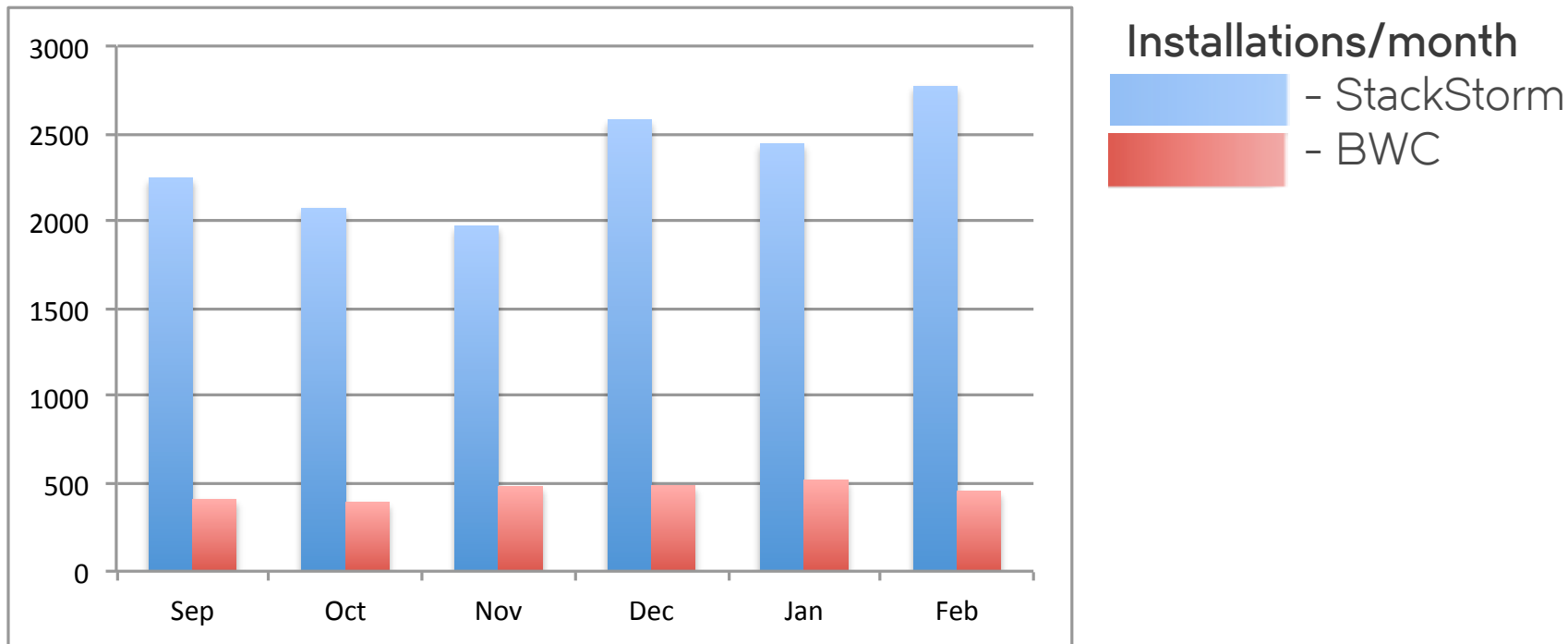
Brocade Workflow Composer

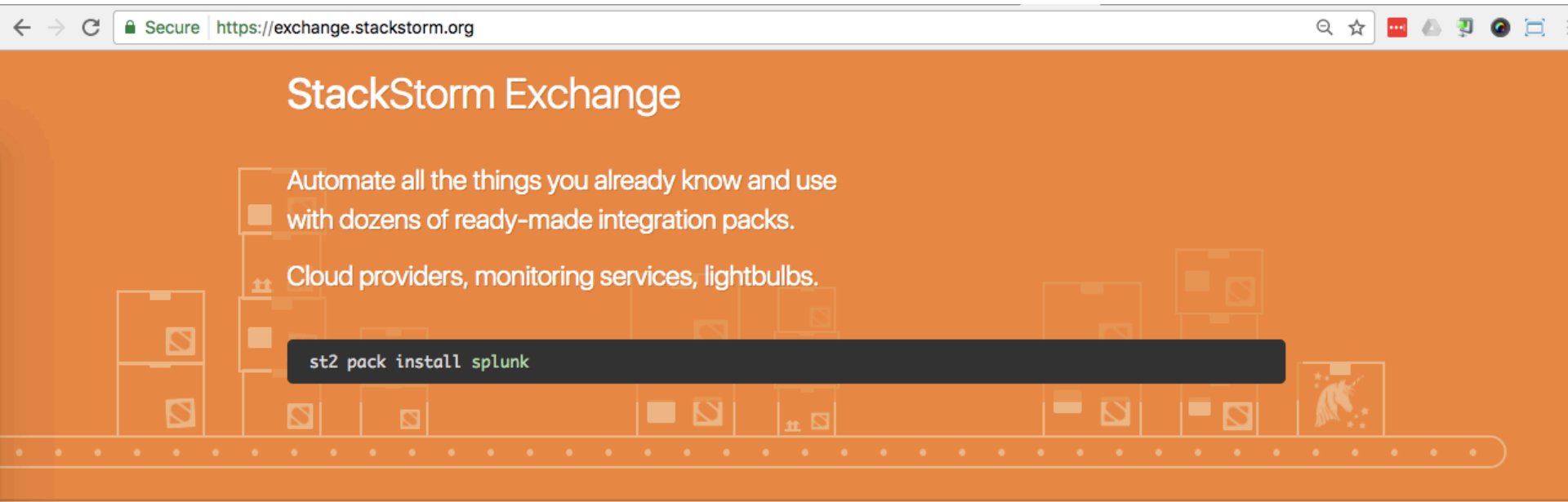


Commercial Edition

- Enterprise features
- Priority support
- brocade.com/bwc
- **docs:** bwc-docs.brocade.com
- Network lifecycle automation suite

StackStorm & BWC Usage






StackStorm Exchange

Automate all the things you already know and use with dozens of ready-made integration packs.

Cloud providers, monitoring services, lightbulbs.

```
st2 pack install splunk
```

All Staff Picks Cloud Providers Monitoring Curiosities

 **ansible**



st2 content pack containing ansible integrations

ansible **cfg management**
configuration management

v0.3.0

StackStorm, Inc.

 **aws**




st2 content pack containing Amazon Web Services integrations.

aws **amazon web services** **amazon** **ec2**
sqs **sns** **route53** **cloud** **iam** **vpc** **s3**
CloudFormation **RDS** **SQS**

v0.7.8 

StackStorm, Inc.

 **datadog**



datadog

monitoring **alerting** **saas**


v0.0.2

Lisa Bekdache

 **github**



st2 content pack containing github

 **duo**



Use Duo 2FA authentication with StackStorm actions.

2Fa **Duo**

v0.3.0 

Jon Middleton

 **hue**





StackStorm Exchange

Automate all the things you already know and use
with dozens of ready-made integration packs.

Cloud providers, monitoring services, lightbulbs.

```
st2 pack install travis_ci
```

Search

All Staff Picks Cloud Providers Monitoring Curiosities



activecampaign



Integration with ActiveCampaign

v0.2.0

DorittoShoes



alertlogic



AlertLogic ActiveIntegration APIs

AlertLogic



ansible



st2 content pack containing ansible
integrations



astral



triggers for sunrise/sunset information

v0.1.1

Tim Braly

Take away:

- * Try it
- * Use it
- * Contribute to it



**WE
CAN'T
DO IT
*ALONE***



ENLIST TODAY



Contribute! Everything counts

- **Use StackStorm.**

Try it, find automation, nail POC. Let us know, good & bad.

```
curl -sSL https://stackstorm.com/packages/install.sh | bash -s  
st2vagrant, st2-docker (stackstorm/stackstorm)  
docs.stackstorm.com/install
```

- **Commit code.** Become a “community maintainer”
It is not hard (2 days?). We help & support.

- **Spread the word**

Blog. Tweet. Talk. Mention. Bug. **Github Star!**

Thank You!



StackStorm

Dmitri Zimine

@dzimine

@Stack_Storm

<http://github.com/StackStorm/st2>



Star

1,950