StackStorm

*If-This-Than-That for DevOps automation*

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# Agenda

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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.
StackStorm is like ... for DevOps
**IFTTT, for DevOps**

artifacts are code

```yaml
name: "sensu_crit_to_slack"
pack: "st2-demos"

description: "Post all critical alerts to the demo"
enabled: true
	rigger:
  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
THEN st2-demos.diskspace Remediation
Remediation workflow for diskspace alerts.

sensu_crit_to_slack
Post all critical alerts to the demo channel in Slack

IF sensu.event_handler
THEN slack.post_message
Post a message to the Slack channel.

sensu_ok_to_slack
Post all sensu ok alerts to the demo channel in Slack

IF 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
THEN slack.post_message
Post a message to the Slack channel.
Rule

Trigger: sensu_crit_to_slack
Post all critical alerts to the demo channel in Slack

Action: sensu.event_handler
Trigger type for sensu event handler.

THEN

Action: slack.post_message
Post a message to the Slack channel.
Ingredients

IT Domains

Operational Support

Monitoring

Networking

Storage

Cloud Infrastructure

Containers

Configuration Management

Sensors

Trigger

Rules

Workflows

Call

Actions
Automation Example

Event: “low disk on web301”

Web301 is “low disk”

Resolve known cases, fast. Is it /var/log? Clean up!

Unknown problem, need a human

Wake up, buddy. Something real is going on…
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

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
FBAR & StackStorm are friends
StackStorm is inspired by FBAR
StackStorm and FB FBAR collaborating since 2014
“Sleep Better at Night: OpenStack Cloud Auto-Healing” @ OpenStack Summit Barcelona

Mirantis: Auto-remediating 2,000 node OpenStack cluster at Symantec with StackStorm
User: Symantec (Mirantis)
Use case: OpenStack cluster remediation
Presented by Mirantis at OpenStack Barcelona
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/lHzq4r
On-call With Winston

2:00 AM

Winston

2:05 AM

False Positive

Fixed the problem

Assisted Diagnostics

2:05 AM

2:15

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

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Network Automation

Now supporting Multiple Vendors
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

* Availability TBD
Ensuring Network Configuration Consistency with @Stack_Storm + NAPALM

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

You can select the driver you need by doing the following:
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
- Piuribus
- Vyos

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

Including legacy, business apps ...
“Innovation at Dimension Data: Optimizing Operations with Event Driven Automation”
• 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”
IoT

Fun stuff
Serverless

Grab StackStorm & DIY
StackStorm is like ...

AWS Lambda + AWS Step Functions

OpenSource, for DIY Serverless
StackStorm is like ...

AWS Lambda

IFTTT

Rules

Workflows

Step Functions

Sensors

Actions

IT Domains:

- Splunk
- New Relic
- Nagios
- Sensu
- Brocade
- Arista
- Cisco
- EMC
- NetApp
- VMware
- Amazon Web Services
- OpenStack
- Docker
- Kubernetes
- Mesosphere
- CoreOS
- JIRA
- Git
- PagerDuty

Monitoring
Networking
Storage
Cloud Infra
Containers
Config mgmt
Ops Support
To learn more: Wed 9 am 2nd floor

Serverless on OpenStack with Docker Swarm, Mistral, and StackStorm
How To & Best Practices

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
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?

Fucking Shell Scripts

The easiest, most common sense server configuration management tool...because you just use fucking shell scripts.

Completely confused by Chef? Blowing your brains out over Ansible? Lost control of your Puppets? Wanna just use fucking shell scripts to configure a server? Read on!
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”
<table>
<thead>
<tr>
<th>Time</th>
<th>Action</th>
<th>Trigger</th>
</tr>
</thead>
<tbody>
<tr>
<td>01:29:05 UTC</td>
<td>st2-demos.diskspace_remediation</td>
<td>sensu.event_handler</td>
</tr>
<tr>
<td>01:29:07 UTC</td>
<td>silence_check</td>
<td>sensu.silence</td>
</tr>
<tr>
<td>01:29:08 UTC</td>
<td>check_dir_size</td>
<td>st2-demos.check_dir_size</td>
</tr>
<tr>
<td>01:29:13 UTC</td>
<td>remove_files</td>
<td>core.remote_sudo</td>
</tr>
<tr>
<td>01:29:16 UTC</td>
<td>validate_dir_size</td>
<td>st2-demos.check_dir_size</td>
</tr>
<tr>
<td>01:29:20 UTC</td>
<td>post_success_to_slack</td>
<td>slack.post_message</td>
</tr>
</tbody>
</table>
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

In a Nutshell, StackStorm...

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

Installations/month
- StackStorm
- BWC

Installations/month over time:
- September: 2000
- October: 2200
- November: 1800
- December: 2500
- January: 2200
- February: 2800
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`
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`
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
Thank You!

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http://github.com/StackStorm/st2