



Hackathon Wrap-Up

TJ Trask, facebook
Anna, Chris, Sean NANO G

NANOG 71 Hackathon

- Saturday evening tutorial “Let’s Build a BGP Traffic Engineering Controller” by Brandon Bennett
- 80 registered attendees for Sunday Hackathon
- 12+ groups resulting in 10 projects which gave 3-5 minute presentations in prototype forum
- Winner presentation follows wrap-up and first 2 runner-up projects will present Monday afternoon

Join Us

- NANOG is no longer just a conference for “conf t”
 - Past NANOG tutorials for Network Engineers on python, automation, Netconf, and Yang
 - NANOG 71 presentations on Openconfig, Flowspec API and model driven APIs for network layer
 - NANOG 71 Hackathon [idea pad](#)
 - #netengcode facebook group
 - Local automation meetups and future hackathons
 - PC welcomes submissions for tutorials, NANOG on the Road content, and hackathon tutorials

Hackathon Challenge

- Challenge: Hack on a project to support dynamic control of edge traffic egress from your network environment
 - Telemetry and data collection code to support traffic controller
 - Decision logic for shifting network traffic possibly incorporating performance targets or business rules
 - Interacting or injecting routing information into network to modify traffic forwarding

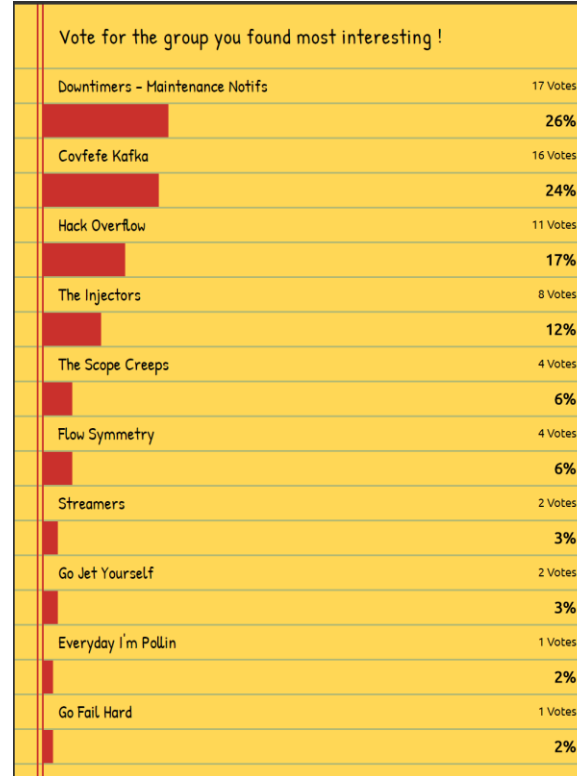
Hackathon Groups

Vote for the group you found most int...

- | | |
|--|---|
| <input type="radio"/> Covfefe Kafka | <input type="radio"/> Everyday I'm Pollin |
| <input type="radio"/> Hack Overflow | <input type="radio"/> Flow Symmetry |
| <input type="radio"/> The Scope Creeps | <input type="radio"/> Go Fail Hard |
| <input type="radio"/> The Injectors | |
| <input type="radio"/> Streamers | |
| <input type="radio"/> Go Jet Yourself | |
| <input type="radio"/> Downtimers - Main... | |

Winning hacks

- Winner: Downtimers
- 1st Runner Up: Covfefe Kafka
- 2nd Runner Up: Hack Overflow



Thanks!



facebook

Maintenance Traffic Controller

Colin McIntosh (Netflix)
Aaron Atac (DePaul University)

Background

- We get too many maintenance notifications
- It's too hard to track them all
- With lots of external connections or circuits it can be a pain to manage downtime

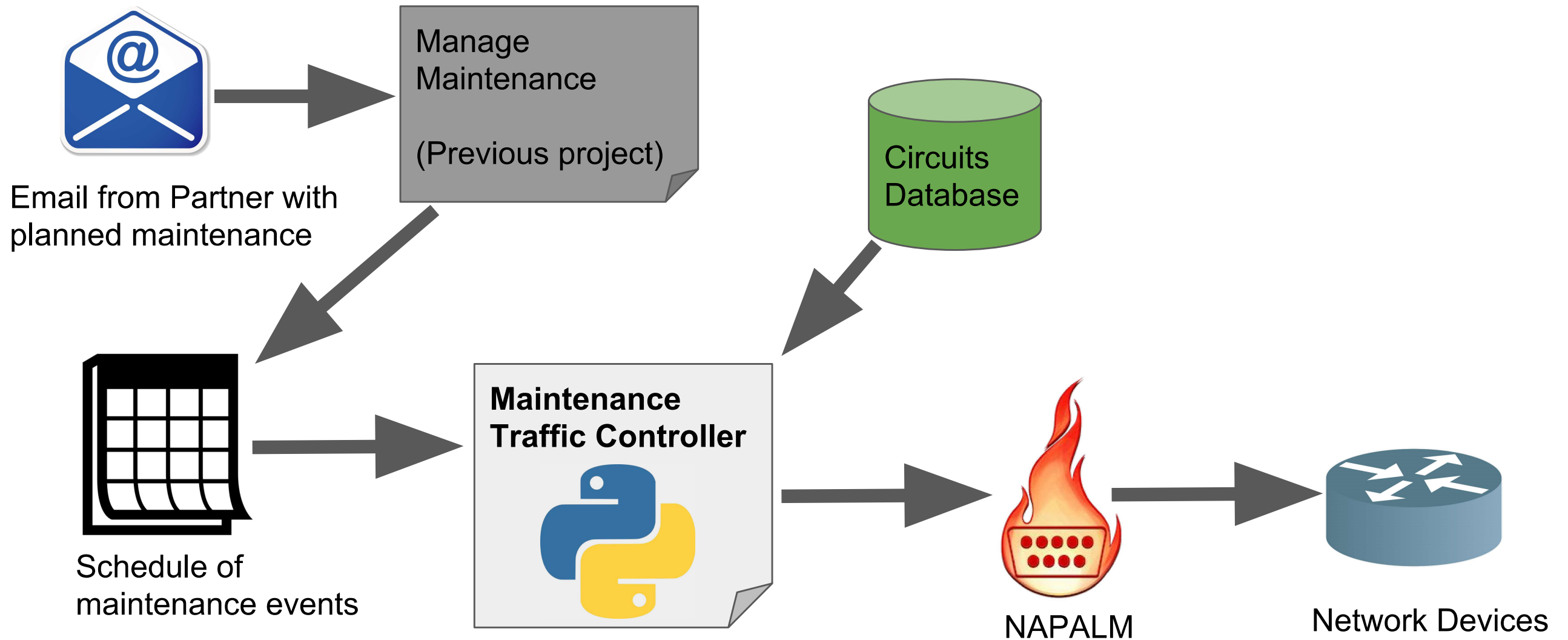
Previous Work (Last NANOG Hackathon)

- Read partner maintenance notification emails
 - In a IMAP folder
- Identify maintenance notifications
 - Use the existing maint-notification BCOP standards
 - Fallback to naive regex parsing
- Add maintenance events to calendar
 - Use Google Calendar API

Goals

- Read partner maintenance notification emails
 - Already done!
 - Work was done at the last NANOG Hackathon
- Shift traffic off network links during planned maintenance
 - Use identified circuit IDs to match with device & peer/session
 - Create a schedule of peer sessions that need to be turned up/down
 - Create a daemon that watches the schedule and shifts traffic before and after maintenance

How it works



Controller

- Matches information from email to Circuit IDs in database
- Watch schedule and “engage maintenance mode”
5 minutes before maintenance start time
- “Disengage maintenance mode” after maintenance
end time is reached

Traffic Shifting

- Many options for moving traffic
- Using Jinja2 templates to create command scripts
- Example using DENY ALL or AS PREPEND to shift traffic:

```
1  {% if DENYALL %}
2
3  replace protocols bgp group {{peer_group_name}} import DENY-ALL
4  replace protocols bgp group {{peer_group_name}} export DENY-ALL
5
6  set policy-options policy-statement DENY-ALL then reject
7
8  {% endif %}
9
10 set policy-options policy-statement {{IN_PEER}} term LOCAL_PREF_ADJ then local-preference 5
11 set policy-options policy-statement {{IN_PEER}} term LOCAL_PREF_ADJ then accept
12 set policy-options policy-statement {{OUT_PEER}} term AS_PATH_PREPEND_3 then as-path-prepend "{{asn}} {{asn}} {{asn}}"
13 set policy-options policy-statement {{OUT_PEER}} term AS_PATH_PREPEND_3 then accept
14
15 {% endif %}
16
17 {% if TRFENG_disengage %}
18
19 delete policy-options policy-statement {{IN_PEER}} term LOCAL_PREF_ADJ
20 delete policy-options policy-statement {{OUT_PEER}} term AS_PATH_PREPEND_3
21
22 {% endif %}
```

```
INFO:maint_controller.scheduler:Starting scheduler loop
INFO:maint_controller.scheduler:Tick started.
INFO:maint_controller.scheduler:Checking for events that are starting soon...
INFO:maint_controller.scheduler:Found 1 events that are starting soon.
INFO:maint_controller.scheduler:Engaging maintenance mode for switch01.lab.local Ethernet
INFO:maint_controller.controller:Maintenance Mode ENGAGED for switch01.lab.local Ethernet
INFO:maint_controller.scheduler:Checking for events that recently ended...
INFO:maint_controller.scheduler:Found 0 events that recently ended.
INFO:maint_controller.scheduler:Tick ended
^CInterrupt. Exiting.
```

Possible Future Work

- Check link & BGP status before restoring traffic to link
- Support more routing protocols than BGP
- Enable “maintenance mode” in an Alerting system (e.g. Nagios) to suppress alerts
- Ask vendors to use X-MAINTNOTE-* headers or .ics!!!!
- Additional work on the Maint-Note BCOP

This code: <https://github.com/colinmcintosh/maintenance-traffic-controller>

References:

Previous work on Manage-Maintenance: <https://github.com/colinmcintosh/manage-maintenance>

Maint Note BCOP: <https://cloud.box.com/v/DRAFT-MaintNote-BCOP>

Maint Note Library: <https://github.com/maint-notification/maint-notification>

Contact:

Colin McIntosh: colin@colinmcintosh.com

Aaron Atac: aatac@mail.depaul.edu

AUTOMATING MAINTENANCE NOTIFICATIONS

ERIK KLAVON, BOX
TODD PARKER, TWITCH
RYAN GUNTER, TWITCH

GOALS

Establish conventions for formatting maintenance notifications to save time and reduce human error

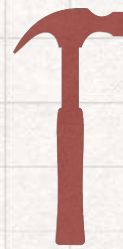
- Machine parsable content supports tooling and automation
- Preserve existing human facing content
- General enough to be useful for any service

AUTOMATING
MAINTENANCE
NOTIFICATIONS

PHASES



DRAFT THE STANDARD



DEVELOP
IMPLEMENTATIONS &
AID EARLY ADOPTERS



PUBLISH STANDARD &
ADVOCATE FOR
BROAD ADOPTION

AUTOMATING
MAINTENANCE
NOTIFICATIONS

EARLY ADOPTERS

COMMITTED

■ LEVEL 3

■ TELIA

■ ZAYO

DEVELOPMENT

PRODUCTION

SEEKING

- Carriers
- ISPs
- IX Operators
- Coders



INQUIRIES WELCOME

- Erik Klavon: erik.klavon@gmail.com
- Todd Parker: [tparker@twitch.tv](https://www.twitch.tv/tparker)
- Ryan Gunter: [rgunter@twitch.tv](https://www.twitch.tv/rgunter)

MORE INFORMATION

- <https://facebook.com/groups/maintnote/>
- <https://cloud.box.com/v/DRAFT-MaintNote-BCOP>
- <https://github.com/maint-notification/>
- <https://github.com/jda/xmaintnote-go/>
- <https://youtu.be/euSsG0aZx1U>