

# FIELD-CATALOG MONITORING WITH NAGIOS



# Presentation Overview

- Part I: Meet Devin
  - Background
- Part II: Project Specifics
  - The Problem
  - The Approach
  - The Result
- Conclusion
  - Future Features
  - Retrospective
- Questions



# Part I

## Hello World!

**HELLO**  
**my name is**

# Background



- Metropolitan State University of Denver
  - Computer Science & Mathematics
- Coding Experience
  - Language Affinity / Experience
  - Previous “Real World” Positions?
- NCAR
  - Cool Scientific Research
  - S.U.P.E.R.
  - EOL-CDS-CTM / Erik Johnson

# Part II

## Cats and Conundrums

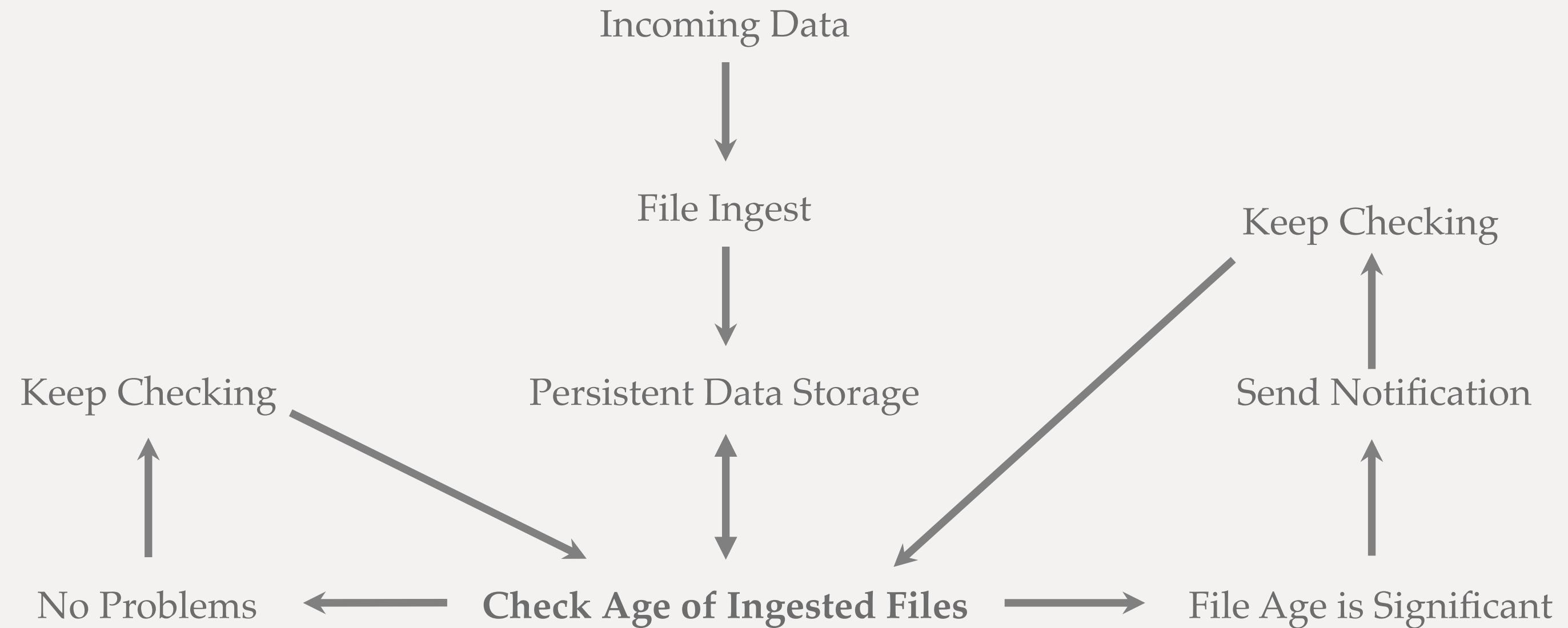


# The Problem



- Field Projects Produce Data
- Hundreds of Individual Products
- Data placed in persistent storage
- Problems During Ingestion
  - Data Never Arrives
  - Internal Database Issues
  - File Ingest Errors

# The Approach



# Technologies



- Ruby
- Nagios
- Git / GitHub
- IRC
- Rails / Active Record
- MySQL
- YAML

# The Results

## Script Commands

```
$ ./bin/check-file-feed-age -h

Usage: ./bin/check-file-feed-age [options]

Options:
  -y, --yaml <path>          Specify configuration file <path> for runtime settings
  -l, --label <name>          Specify verbose product label.
  -p, --path-strftime <path>  The file path, may include 'strftime'-stamps.
  -w, --warning <time>        Specify the file-age warning boundary as <DD:HH:MM:SS>
  -c, --critical <time>       Specify the file-age critical boundary as <DD:HH:MM:SS>
  -v, --verbose [<integer>]    Specify output verbosity as <integer>, 0-3
  -m, --many-files [<boolean>] Toggle many-files check algorithm via 'true' or 'false'
  -h, --help                  List all available options
```

# SCRIPT COMMANDS

## Rake Tasks

another large component of this program is its ability to easily generate and move configuration files into place.

### Loading Data / Zith9 DB Interation

```
$ rake -T nagios:data:
rake nagios:data:load[file]  # Load Nagios checks from YAML fixtures file.
rake nagios:data:unload[file] # Unload Nagios checks from YAML fixtures file.

rake nagios:config:deploy    # Deploy files to the deployment directory.
rake nagios:config:forward   # Move forward one deployment revision.
rake nagios:config:generate  # Generate Nagios config files from zith9 database.
rake nagios:config:revert    # Revert back one deployment revision.
```

# CONFIGURATIONS

## Configuring Time Boundaries

### Vanilla Usage

```
$ ./bin/check-file-feed-age -w 4000 -c 8000 -p /some/test/file/data.mkz
```

### Advanced Usage

time definable in DAYS: HOURS:MINUTES:SECONDS

```
$ ./bin/check-file-feed-age -w 5:00:00 -c -w 8:00:00 -p /some/test/file/data.mkz
```

flags are optional, default values exist

```
$ ./bin/check-file-feed-age -c 1:05:30:6 -p /some/test/file/data.mkz
```

## YAML Usage

configurations can get pretty complex...

```
$ ./bin/check-file-feed-age -y config/products/some-yaml-config.yml
```

## Levels of Detail

boring...

```
$ ./bin/check-file-feed-age -p /usr/local/catalog/catalog-nagios/config.ru
Status: CRITICAL.
```

lets see some stats!

```
$ ./bin/check-file-feed-age -p /usr/local/catalog/catalog-nagios/config.ru -v 3 -l "Look I Made
Something"
Status: CRITICAL.
```

Feed Age: 4 days, 06:05:58

File Location: /usr/local/catalog/catalog-nagios/config.ru

Product label: Look I Made Something

Additional Comparison Information

Over warning bound by:	4 days, 05:55:58
Over critical bound by:	4 days, 05:50:58

Settings

Warning Bound:	00:10:00
Critical Bound:	00:15:00
Verbosity:	3

# OUTPUT

# Large File Systems on SCALE

## "Many Files"

what is that "many files" command?

lets look at a real product for this.

```
$ ./bin/check-file-feed-age -p /net/%DATESTAMP/research.Al_LMA.%DATETIMESTAMP.10minute_36kft.png -v 2
Status: CRITICAL.

Feed Age: 31 days, 08:16:18

File Location: /net/20120703/research.Al_LMA.201207031212.10minute_36kft.png
```

that took a long time! That's a problem. Nagios times out its checks at around 10 seconds.

lets try the "many flags" feature.

```
$ ./bin/check-file-feed-age -p /net/%DATESTAMP/research.Al_LMA.%DATETIMESTAMP.10minute_12kft.png -v 2 -m true -c 45:00:00:00
Status: WARNING.

Feed Age: 31 days, 08:15:08

File Location: /net/20120703/research.Al_LMA.201207031212.10minute_12kft.png
```

whoah nice, that's quick! much quicker in fact, depending on the age of the file and the format of included timestamps, it can be several times faster.

"many files" has its downsides though, which is why we prefer to avoid "many files" on a default basis.

# Nagios Web Interface

Nagios Core

ctm-dev.eol.ucar.edu/nagios/

Travel / Outdoors Business / Side Proj Nerd / Tech Academia / Work Odd Ends Amazon.com: iOS Pr

## Nagios®

General

- Home
- Documentation

Current Status

- Tactical Overview
- Map
- Hosts
- Services
- Host Groups
  - Summary
  - Grid
- Service Groups
  - Summary
  - Grid
- Problems
  - Services (Unhandled)
  - Hosts (Unhandled)
  - Network Outages

Quick Search:

Reports

- Availability
- Trends
- Alerts
  - History
  - Summary
  - Histogram
- Notifications
- Event Log

System

- Comments
- Downtime
- Process Info
- Performance Info
- Scheduling Queue
- Configuration

Current Network Status

Last Updated: Tue Aug 7 16:46:09 MDT 2012  
Updated every 90 seconds  
Nagios® Core™ 3.3.1 - www.nagios.org  
Logged in as nagiosadmin

View History For all hosts  
View Notifications For All Hosts  
View Host Status Detail For All Hosts

Host Status Totals

Up	Down	Unreachable	Pending
4	0	0	0
All Problems All Types			
0	4		

Service Status Totals

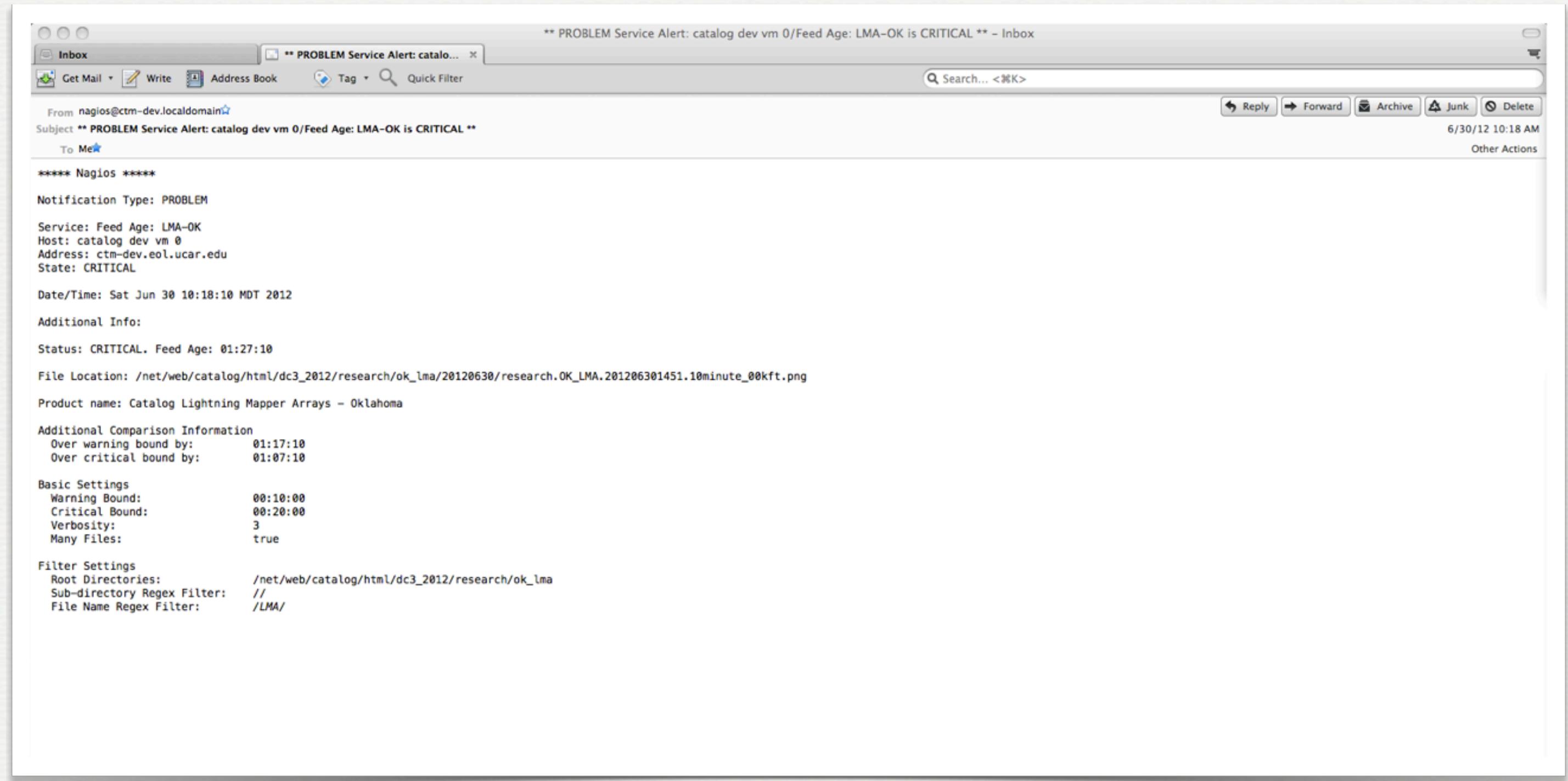
Ok	Warning	Unknown	Critical	Pending
24	0	0	0	0
All Problems All Types				
0	24			

### Service Status Details For All Hosts

Host	Service	Status	Last Check	Duration	Attempt	Status Information
ctm-dev	WMS goes-13_ch1_latest.txt	OK	08-07-2012 16:37:42	0d 0h 18m 27s	1/3	Status: OK.
	WMS goes-13_ch1_previous.txt	OK	08-07-2012 16:38:22	0d 0h 17m 47s	1/3	Status: OK.
	WMS goes-13_ch2_latest.txt	OK	08-07-2012 16:39:02	0d 0h 17m 7s	1/3	Status: OK.
	WMS goes-13_ch2_previous.txt	OK	08-07-2012 16:39:42	0d 0h 16m 27s	1/3	Status: OK.
	WMS goes-13_ch3_latest.txt	OK	08-07-2012 16:37:18	0d 0h 15m 47s	1/3	Status: OK.
	WMS goes-13_ch4_previous.txt	OK	08-07-2012 16:38:37	0d 0h 7m 32s	1/3	Status: OK.
	WMS goes-13_ch6_latest.txt	OK	08-07-2012 16:39:57	0d 0h 6m 12s	1/3	Status: OK.
	WMS goes-13_ch6_previous.txt	OK	08-07-2012 16:41:16	0d 0h 4m 53s	1/3	Status: OK.
	WMS goes-15_ch1_latest.txt	OK	08-07-2012 16:42:36	0d 0h 3m 33s	1/3	Status: OK.
	WMS goes-15_ch1_previous.txt	OK	08-07-2012 16:43:56	0d 0h 2m 13s	1/3	Status: OK.
	WMS goes-15_ch2_latest.txt	OK	08-07-2012 16:38:18	0d 0h 9m 51s	1/3	Status: OK.
	WMS goes-15_ch2_previous.txt	OK	08-07-2012 16:45:02	0d 0h 11m 7s	1/3	Status: OK.
	WMS goes-15_ch3_latest.txt	OK	08-07-2012 16:45:42	0d 0h 10m 27s	1/3	Status: OK.
	WMS goes-15_ch3_previous.txt	OK	08-07-2012 16:36:22	0d 0h 9m 47s	1/3	Status: OK.
	WMS goes-15_ch4_latest.txt	OK	08-07-2012 16:37:02	0d 0h 9m 7s	1/3	Status: OK.
WMS goes-15_ch4_previous.txt	OK	08-07-2012 16:37:52	0d 0h 18m 17s	1/3	Status: OK.	
WMS goes-15_ch6_latest.txt	OK	08-07-2012 16:38:32	0d 0h 17m 37s	1/3	Status: OK.	
WMS goes-15_ch6_previous.txt	OK	08-07-2012 16:39:12	0d 0h 16m 57s	1/3	Status: OK.	
localhost	PING	OK	08-07-2012 16:42:38	100d 22h 42m 49s	1/4	PING OK - Packet loss = 0%, RTA = 0.03 ms
	Root Partition	OK	08-07-2012 16:44:52	100d 22h 42m 12s	1/4	DISK OK - free space: / 25578 MB (45% inode=94%);
	SSH	OK	08-07-2012 16:43:57	100d 22h 41m 34s	1/4	SSH OK - OpenSSH_5.3 (protocol 2.0)
	Total Processes	OK	08-07-2012 16:45:17	100d 22h 40m 19s	1/4	PROCS OK: 80 processes with STATE = RSZDT
	sferic	HTTP	OK	08-07-2012 16:41:36	15d 0h 26m 31s	1/3
sferic-dev	Catalog HTTP	OK	08-07-2012 16:42:58	1d 0h 2m 14s	1/3	HTTP OK: HTTP/1.1 200 OK - 9975 bytes in 0.150 second response time

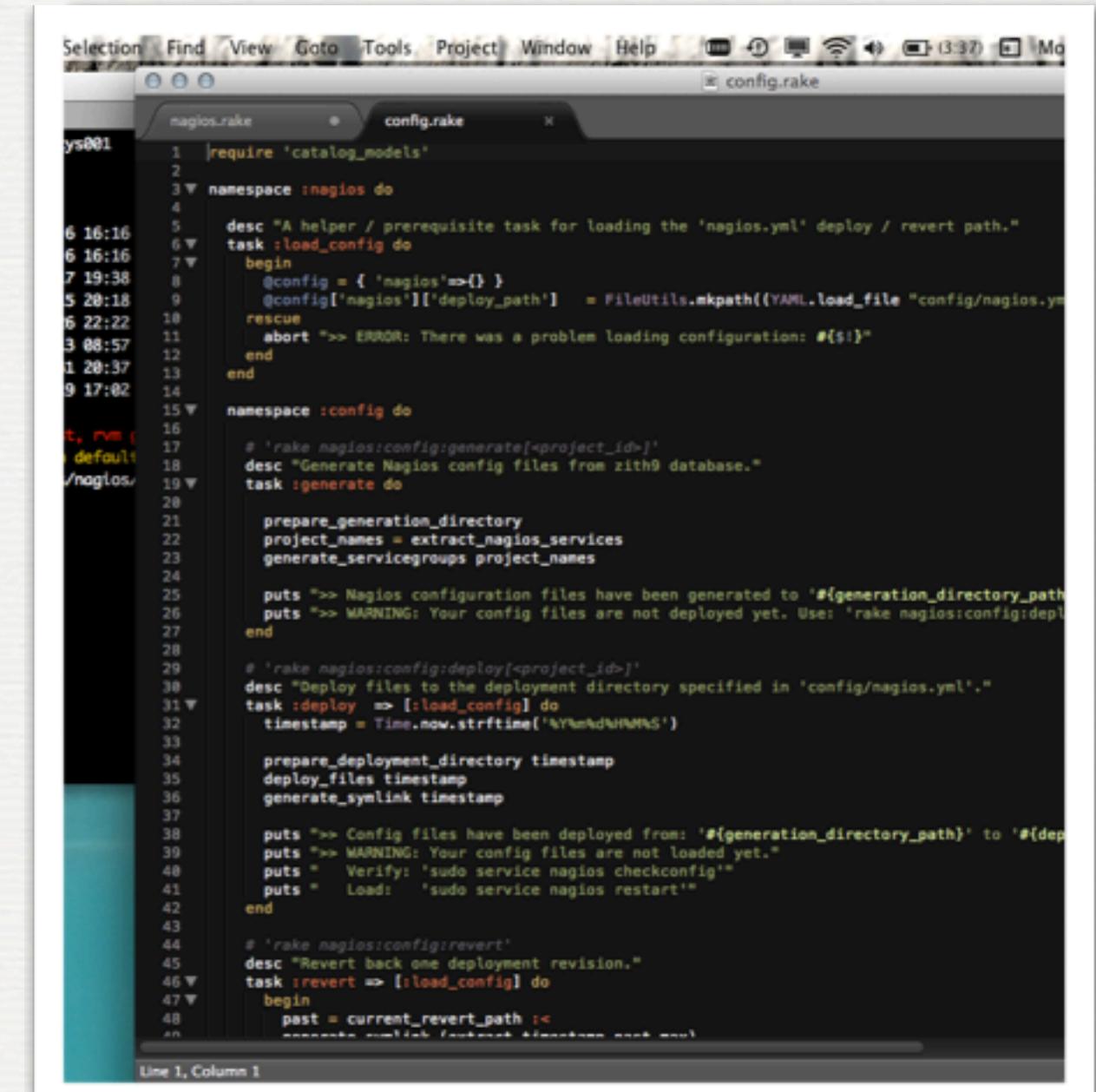
24 Matching Service Entries Displayed

# Email Notifications



# Future Features

- Integrated Contact Configuration
- SMS Notifications
- Web Configuration Interface
- Handle Daylight-Bounded Feeds
  - i.e GOES Visible Imagery

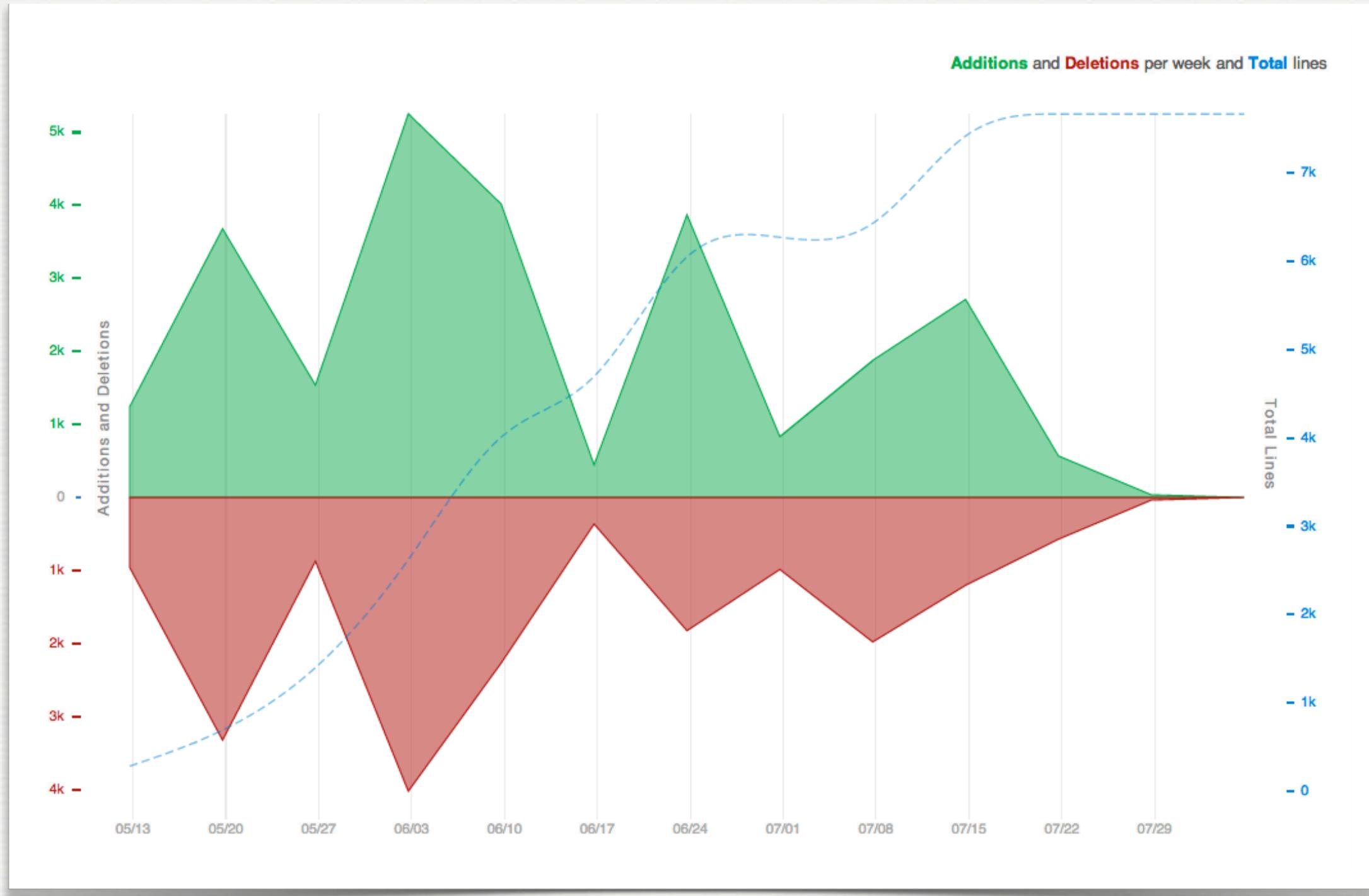


```
Selection Find View Goto Tools Project Window Help (337) M config.rake
nagiosrake config.rake
ys001
1 |require 'catalog_models'
2
3 namespace :nagios do
4
5   desc "A helper / prerequisite task for loading the 'nagios.yml' deploy / revert path."
6   task :load_config do
7     begin
8       @config = { 'nagios'=>{} }
9       @config['nagios']['deploy_path'] = FileUtils.mkpath(YAML.load_file "config/nagios.y
10      rescue
11        abort ">> ERROR: There was a problem loading configuration: #{$!}"
12      end
13    end
14
15 namespace :config do
16
17   # 'rake nagios:config:generate[<project_id>]'
18   desc "Generate Nagios config files from zith9 database."
19   task :generate do
20
21     prepare_generation_directory
22     project_names = extract_nagios_services
23     generate_servicegroups project_names
24
25     puts ">> Nagios configuration files have been generated to '#{generation_directory_path}'"
26     puts ">> WARNING: Your config files are not deployed yet. Use: 'rake nagios:config:dep
27   end
28
29   # 'rake nagios:config:deploy[<project_id>]'
30   desc "Deploy files to the deployment directory specified in 'config/nagios.yml'."
31   task :deploy => [:load_config] do
32     timestamp = Time.now.strftime('%Y%m%d%H%M%S')
33
34     prepare_deployment_directory timestamp
35     deploy_files timestamp
36     generate_symlink timestamp
37
38     puts ">> Config files have been deployed from: '#{generation_directory_path}' to '#{dep
39     puts ">> WARNING: Your config files are not loaded yet."
40     puts " Verify: 'sudo service nagios checkconfig'"
41     puts " Load: 'sudo service nagios restart'"
42   end
43
44   # 'rake nagios:config:revert'
45   desc "Revert back one deployment revision."
46   task :revert => [:load_config] do
47     begin
48       past = current_revert_path <
49         ...
```

# Challenges / Retrospective

- What Went Well?
  - Having a Mentor
  - Version Control
    - Branch Workflow
  - Issue-Driven Development
- Communication
  - IRC
  - GitHub
  - Code Reviews
- Challenges
  - Dealing with “Time”
  - Minimizing SCALE Interaction
  - Elegant Solutions
  - Clean, Maintainable Code
  - Technology Learning Curve
  - Details

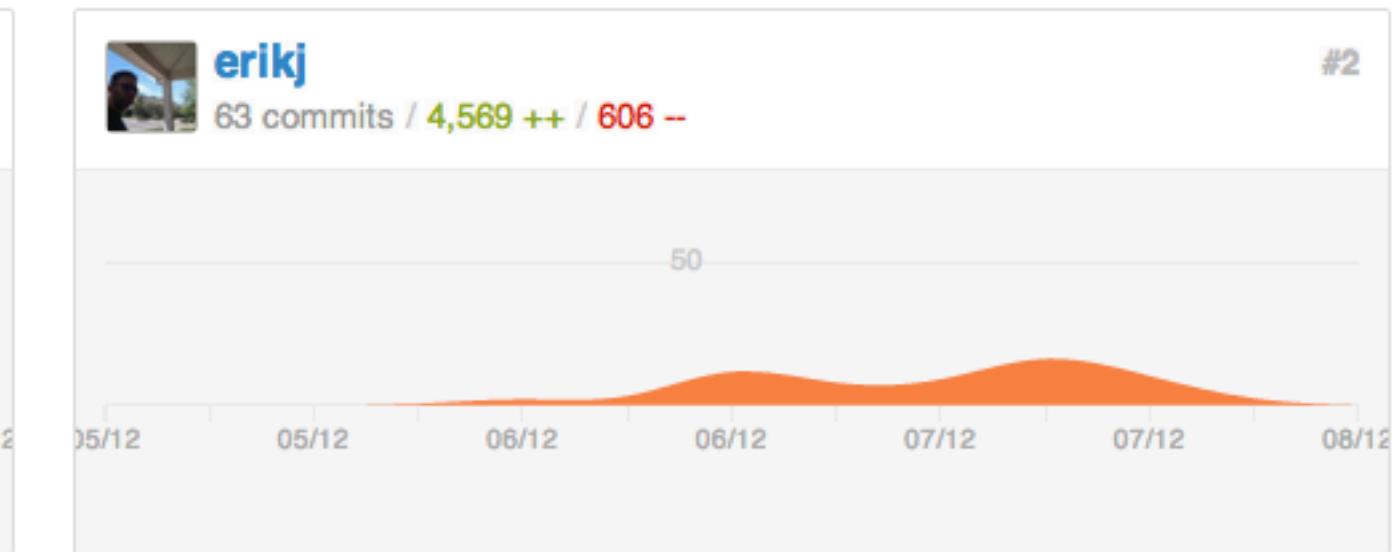
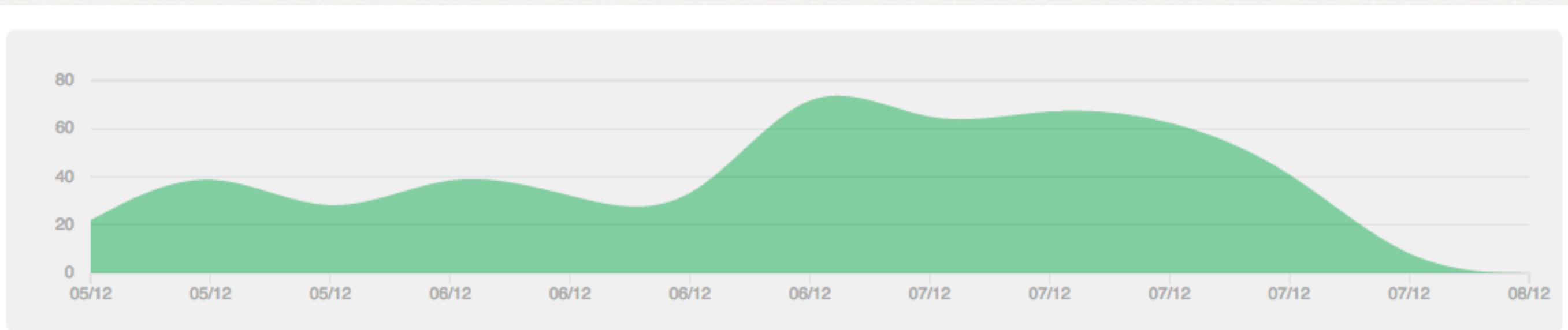
# Development Stats



Code Frequency

# Development Stats

## Contributions



Thanks!