Traffic Ops

Go Rewrite

Progress

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Original Initiative

- Mojolicious Perl API Version 1.2 - (2010 - Present)
- Perl to Go with the assumption of API compatibility
- Minimize Deployment footprint (use the same rpms)
- Design philosophy "override" through route mapping to "Strangle Out" the Perl

Traffic Control 2.1

Traffic Ops 2.1

Features TC Summit Fall 2017

- 1.2 Go Proxy Conceived (July 13, 2017)
- API Version 1.2
- Low Level Features
  - Configurable Logging
  - Go Perl Config parser
  - tocookie for backward compatibility to Mojolicious Perl
  - Add header (via wrapper) to Go endpoints
  - CORS headers
  - Unit Tests
- Documentation

Traffic Control 2.2

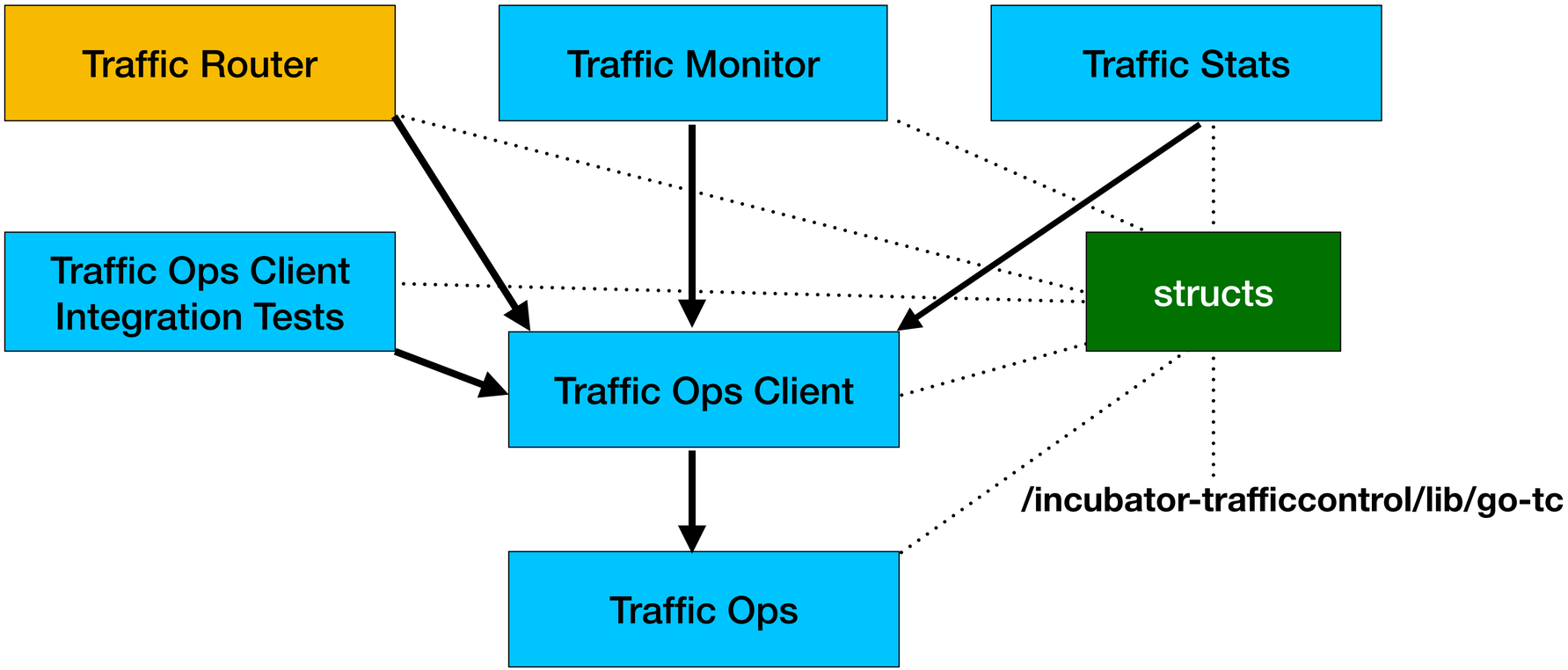
Traffic Ops 2.2

- API Versions 1.2 and 1.3
- CRUD Interfaces framework to standardize Postgres interaction
- Login API - PR
  - Mojolicious Perl (still required)
- Change Log Interface

Traffic Ops 2.2

- Tenancy - scope control of Delivery Services and Users
- CHANGELOG.MD (https://github.com/apache/incubator-trafficcontrol/blob/master/CHANGELOG.md)
- APIs are moving Semantic Versioning - Major.Minor.Patch
  - Consensus still needed

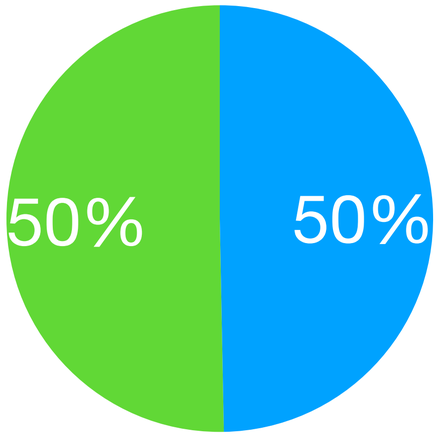
Traffic Ops Go
Components
(master)



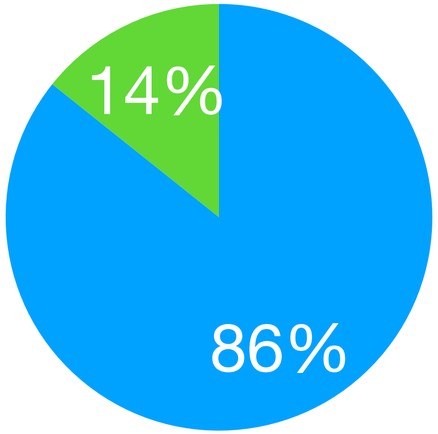
Traffic Ops APIs

by Language for TC Consumers

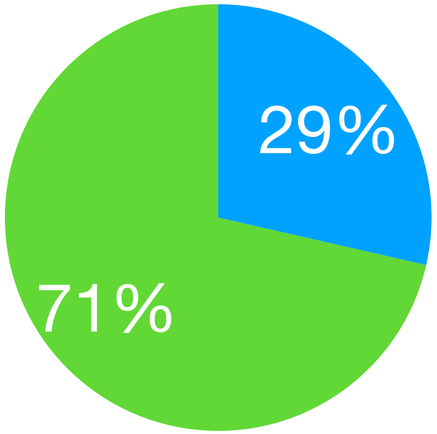
Traffic Portal



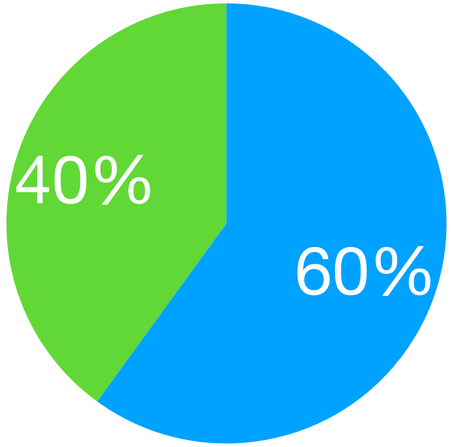
Traffic Router



Traffic Monitor



Traffic Stats



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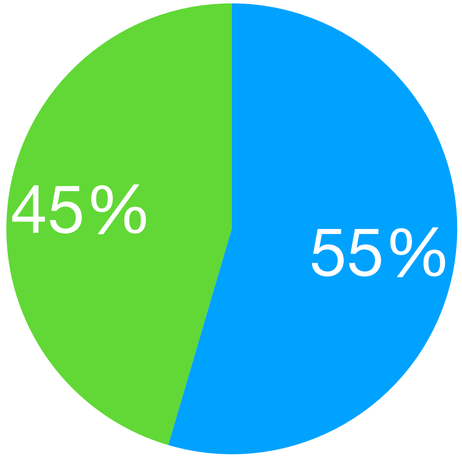

Traffic Control 2.3

Traffic Ops 2.3

- Collapse Traffic Ops Migrations
  - (remove JvD's slow migration 20170205101432_cdn_table_domain_name.go)
- Fix camelCase Consistency
  - secondaryParentCachegroupId vs secondaryParentCacheGroupId

Traffic Ops 2.3

- Move away from “xmlId” (deliveryservice “name”) and “xmppId” (hash_id)
- Correct Foreign Key naming conventions
- Foreign Key ID's would be 'cdnId' vs. 'cdn' (database alignment changes would come later)

Lessons Learned

- Go inexperience, discovering better ways for struct organization
- Use of Anonymous Structs
    - (https://play.golang.org/p/ZbcTwLF_e2H)
- Go's strong typing breaks the loosely typed Perl 1.2 API
- nil struct field pointers
    - (https://github.com/apache/incubator-trafficcontrol/blob/master/lib/go-tc/servers.go#L82)

Legacy Problems

- Inconsistent Mojo Routes patterns make it a challenge to build consistent frameworks
- Existing route patterns prevent proper matching to allow pass through to Perl
  - For Example:
    - /cdns vs /cdns/capacity
- Move existing Traffic Control API Consumers away from the legacy 1.2 API

Traffic Ops Roadmap

Traffic Ops API Roadmap

- The need for Traffic Ops API 2.0
- Bulk CRUDs using Array Json structures
- Consistency will allow for Go scaffold generation
- Top Down Design of the API with Swagger for consistency

Traffic Ops API Roadmap

- Top Down Design of the API with Swagger for consistency
- Phase out the TO clients in favor of TO client generation when needed from Swagger Tooling
- Explore Swagger for Server Side Stub generation
- pyswagger (Python), go-swagger (Go)

Traffic Ops API Roadmap

- swagger-codegen - Available Languages (86)
  - android, aspnet5, aspnetcore, async-scala, bash, cwiki, csharp, cpprest, dart, elixir, flash, python-flask, go, groovy, java, jaxrs, jaxrs-cxf-client, jaxrs-cxf, jaxrs-resteasy, jaxrs-resteasy-eap, jaxrs-spec, jaxrs-cxf-cdi, inflector, javascript, javascript-closure-angular, jmeter, nancyfx, nodejs-server, objc, perl, php, python, qt5cpp, ruby, scala, scalatra, finch, silex-PHP, sinatra, rails5, slim, spring, dynamic-html, html, html2, swagger, swagger-yaml, swift, swift3, tizen, typescript-angular2, typescript-angular, typescript-node, typescript-fetch, akka-scala, CsharpDotNet2, clojure, haskell, lumen, go-server, erlang-server, undertow, msf4j, ze-ph

Traffic Ops API Roadmap

- Hide the Traffic Ops database entirely behind the API
  - Remove dependency on "Join" tables through the API (for example “/profile_parameters”)
- Atomic API's
  - Nested relationships within API JSON objects

Traffic Ops API Roadmap

- Extensions through Proxying
- Consider Postgres Views to potentially allow for TO database versioning
- Refactor the “types” table
  - separate tables by “use_in_table” column to allow for type safety needs with Go (Go has no Generics)
  - reduces the use of constraints to help with data integrity

API Resources

https://cwiki.apache.org/confluence/display/TC/API+Guidelines