

GO-JEK



Metric Tracking



and

Nuances of Memory Management

A bit more about me
Gopher @ Gojek
Love to code
Also known as Blackvirus

So what are we trying to do



What is an order?

Interaction between 3 parties Merchant,
Driver, Customer

Created -> Waiting for Driver Allocation -> Driver
OTW to pickup -> Driver OtW to Destination ->
Complete

1. Create
2. *GetState*
3. Allocated
4. *GetState*
5. Pickup Food
6. *Get State*
7. Going to Destination
8. *Get State*
9. Complete
10. *Get State*



Safety Net

Metrics Tracking

NewRelic

Profiling

Safety Net

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NewRelic

Profiling

Safety Net

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NewRelic

Profiling

Writing

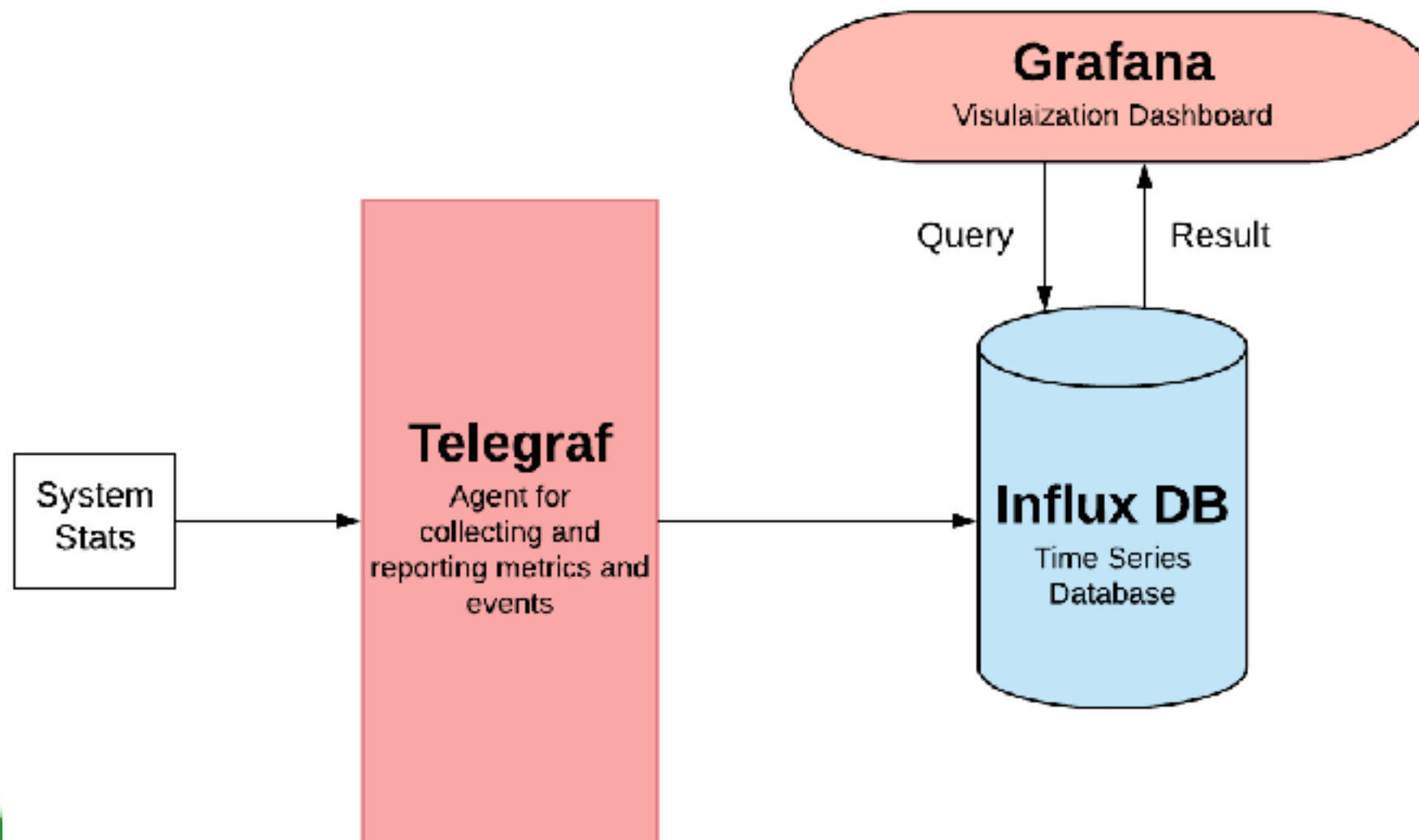


Would you like to know if there is a



Memory leak

Metric Tracking Architecture



Initialise Statsd

```
InitiateStatsDMetrics (config StatsDConfig) {  
    address := fmt.Sprintf("%s:%s", host, port)  
    statsD, err := statsdv2.New(statsdv2.Address(address),  
statsdv2.Prefix(appname))  
}
```

StatsD Middleware

```
func StatsDMiddlewareLogger() negroni.HandlerFunc {  
    return negroni.HandlerFunc(func(rw http.ResponseWriter, r *http.Request, next  
http.HandlerFunc) {  
        vars := mux.Vars(r)  
        path := r.URL.Path  
        key := GetKeyStructure(r.URL.Path)  
        t := TimingInStatsD()  
        next(rw, r)  
        noOfGoRoutine := runtime.NumGoroutine()  
        SendInStatsD(key+".time", t)  
        IncrementInStatsD(key + ".calls")  
        GaugeKeyInStatsD(key+".goroutines", noOfGoRoutine)  
    })  
}
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StatsD Middleware

```
func TimingInStatsD()  
*statsdv2.Timing {  
if statsD == nil {  
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}  
t := statsD.NewTiming()  
return &t  
}
```

```
func SendInStatsD(key string, t *statsdv2.Timing) bool {  
if statsD == nil {  
return false  
}  
t.Send(key)  
return true  
}
```

```
func IncrementInStatsD(key string) bool {  
if statsD == nil {  
return false  
}  
statsD.Increment(key)  
return true  
}
```

```
func GetKeyStructure(url string) string {  
baseKey := "go.response"  
basePath := strings.Split(url, "/GF")[0]  
keyBasePath := strings.Replace(basePath, "/",  
".", len(basePath))  
key := baseKey + keyBasePath  
return key  
}
```

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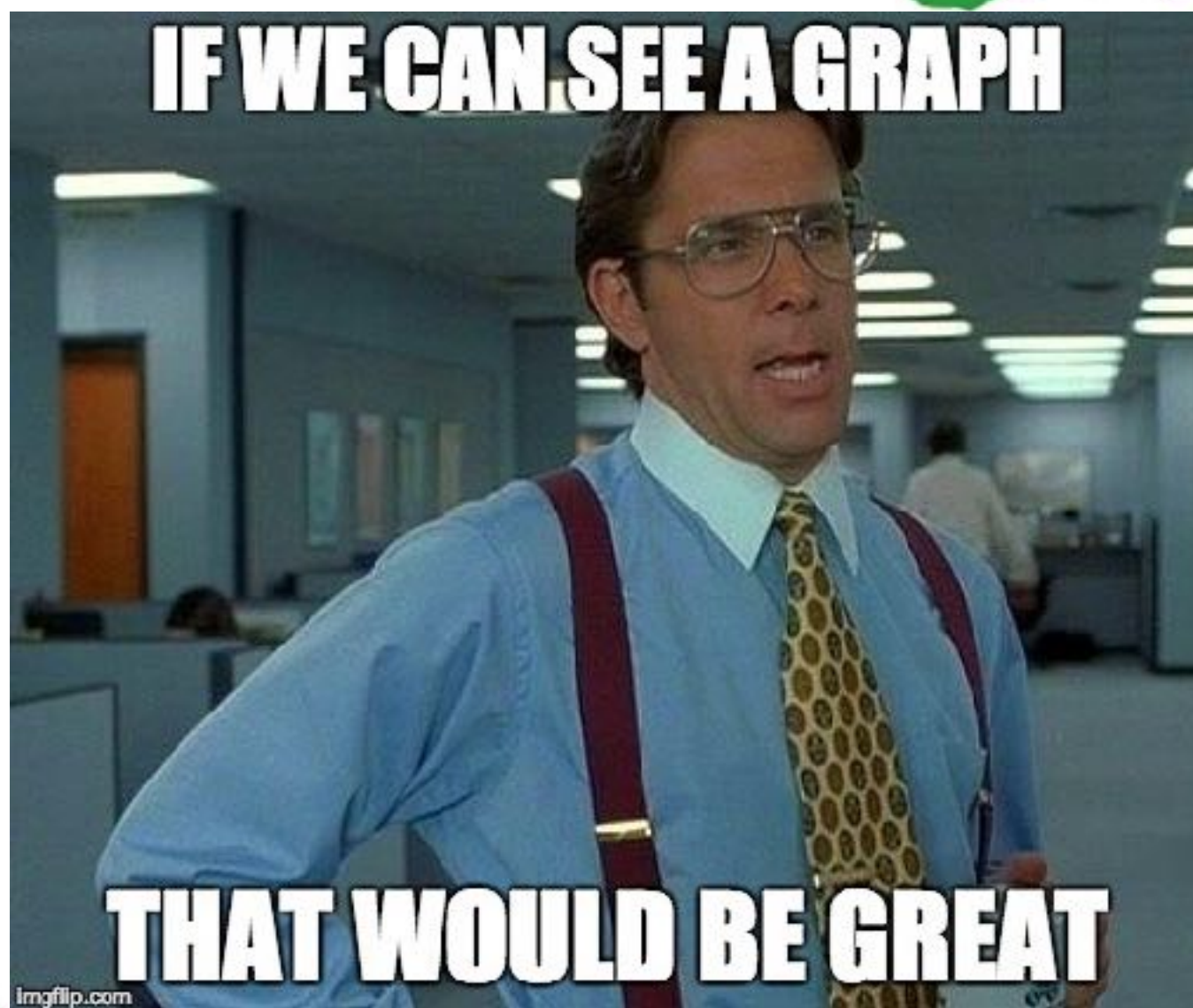
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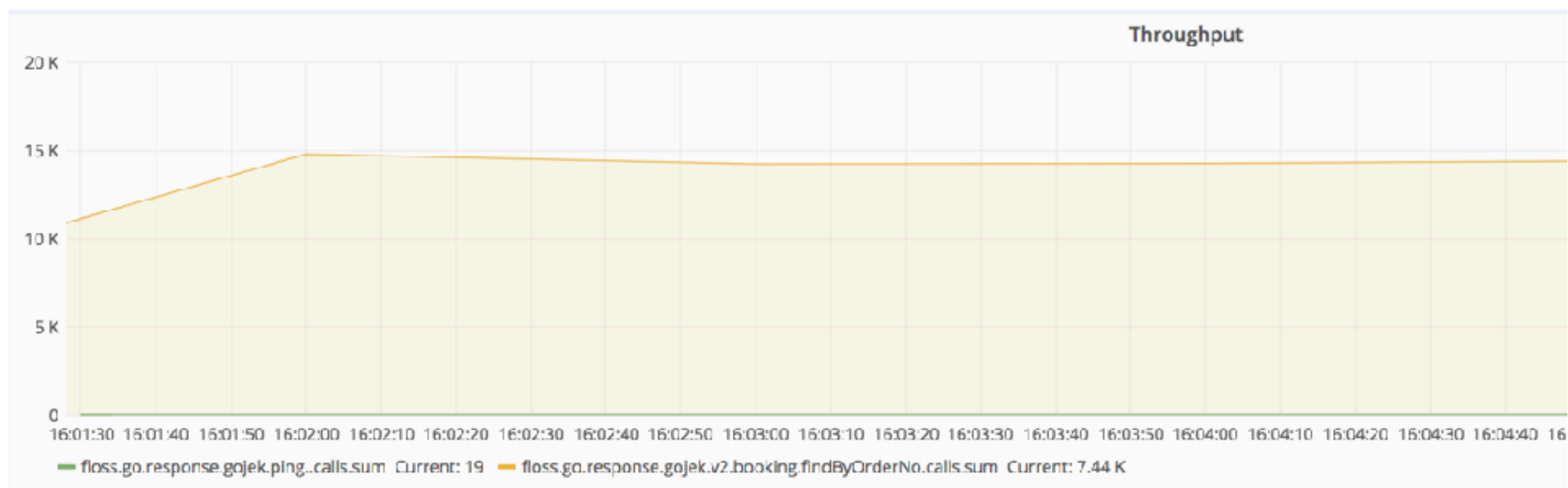
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basePath := strings.Split(url, "/GF")[0]  
keyBasePath := strings.Replace(basePath, "/",  
".", len(basePath))  
key := baseKey + keyBasePath  
return key  
}
```

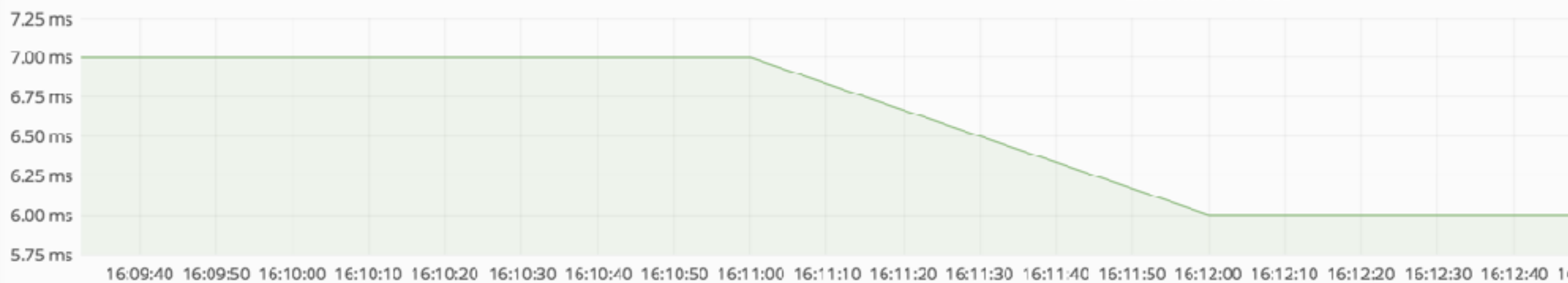
StatsD Middleware

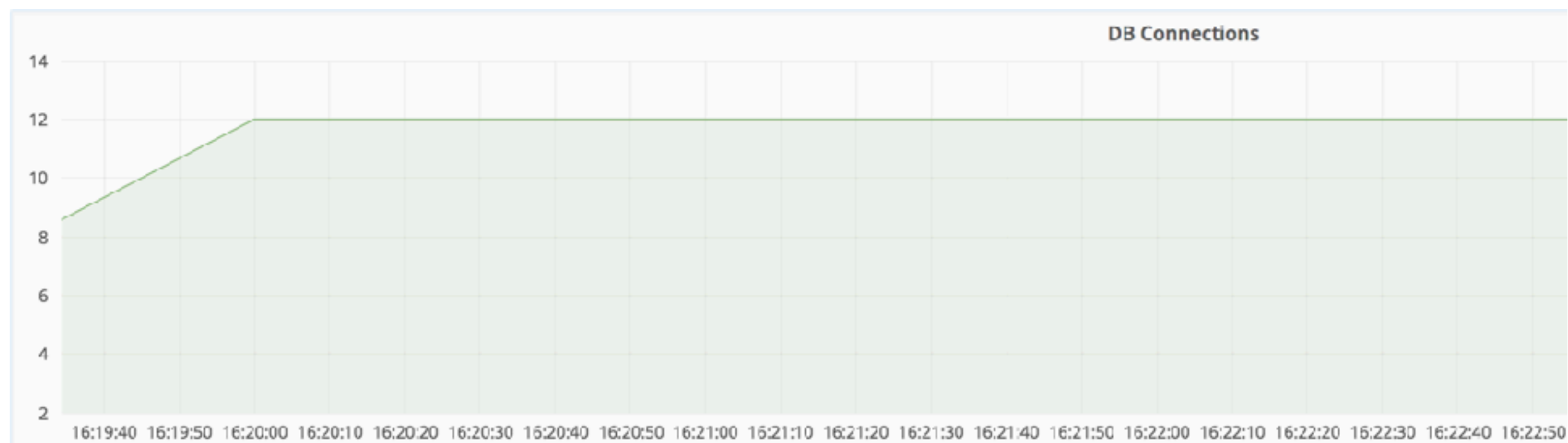
```
n := negroni.New(negroni.NewRecovery())  
n.Use(instrumentation.StatsDMiddlewareLogger())
```

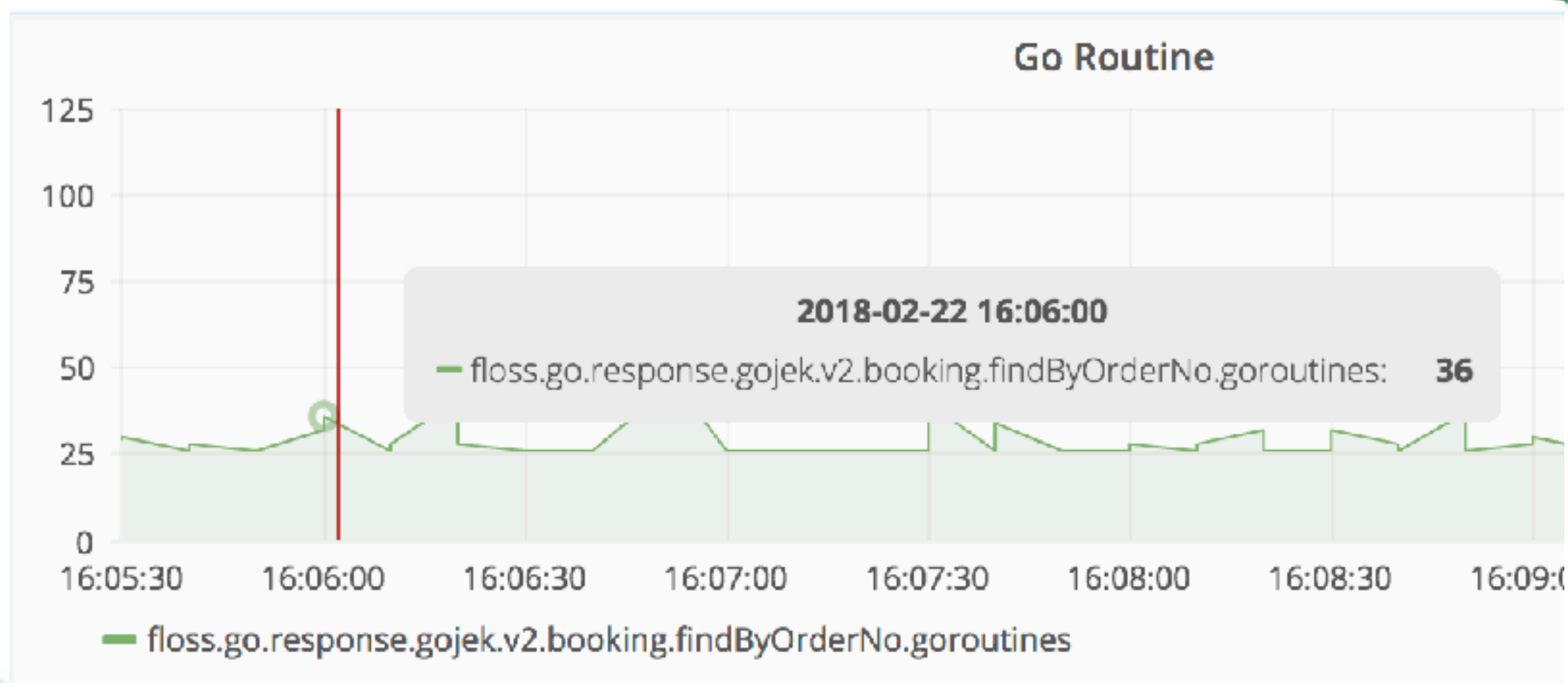




External Services







New Relic Instrumentations

```
func StartDataSegmentNowForDataStore(op string, tableName string,  
txn newrelic.Transaction, datastore newrelic.DatastoreProduct)  
newrelic.DatastoreSegment {  
    s := newrelic.DatastoreSegment{  
        Product:    datastore,  
        Collection: tableName,  
        Operation:  op,  
    }  
  
    s.StartTime = newrelic.StartSegmentNow(txn)  
    return s  
}
```

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New Relic Instrumentations

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    s.StartTime = newrelic.StartSegmentNow(txn)
    return s
}
```

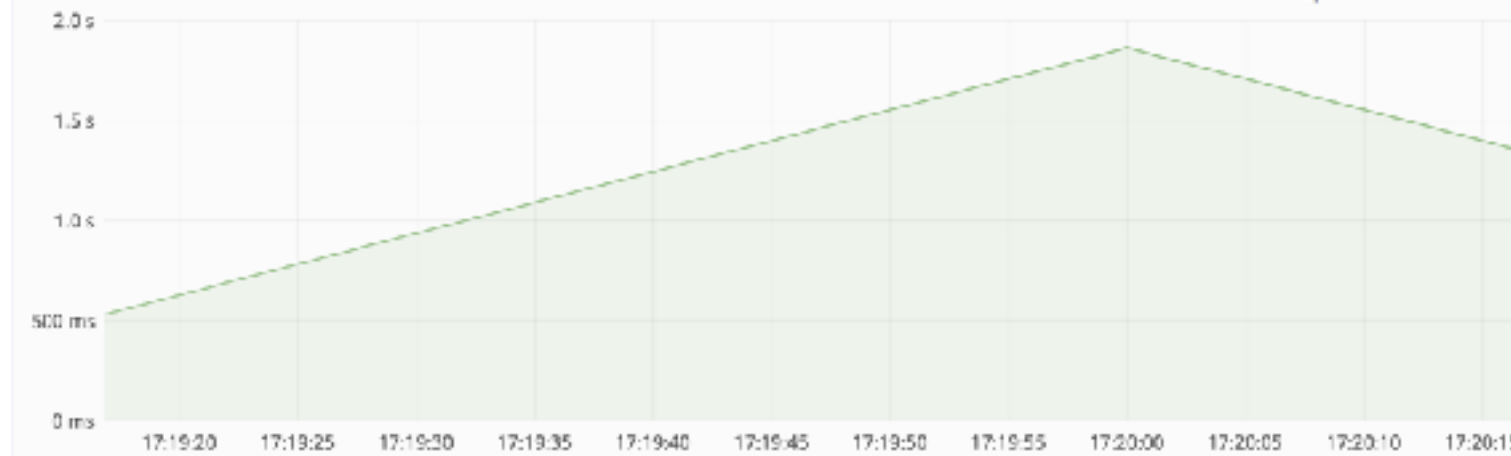
Name	Vendor	Operation	Collection	Call count	Throughput (cpm)	Avg (ms)	Min (ms)	Max (ms)
MySQL findBookingQuery	MySQL	findBookingQuery	(all)	125,000	4,150	0.025	0.001	1.89
MySQL Booking findBookingQuery	MySQL	findBookingQuery	(all)	125,000	4,150	0.025	0.001	1.89
MySQL findRouteItemRepository	MySQL	findRouteItemRepository	(all)	114,000	3,800	0.008	0.001	1.73
MySQL route_item findRouteItemRepository	MySQL	findRouteItemRepository	(all)	114,000	3,800	0.008	0.001	1.73
MySQL findAddressQuery	MySQL	findAddressQuery	(all)	113,000	3,760	0.006	0.001	1.69
MySQL booking_route findAddressQuery	MySQL	findAddressQuery	(all)	113,000	3,760	0.006	0.001	1.69
MySQL booking_driver_cancellation_log findBookingDriverCancellationQuery	MySQL	findBookingDriverCancellationQuery	(all)	114,000	3,790	0.006	0.001	1.97
MySQL findBookingDriverCancellationQuery	MySQL	findBookingDriverCancellationQuery	(all)	114,000	3,790	0.006	0.001	1.97
MySQL pricing_info findPriceInfoQuery	MySQL	findPriceInfoQuery	(all)	20,600	686	0.003	0.001	0.903
MySQL findPriceInfoQuery	MySQL	findPriceInfoQuery	(all)	20,600	686	0.003	0.001	0.903

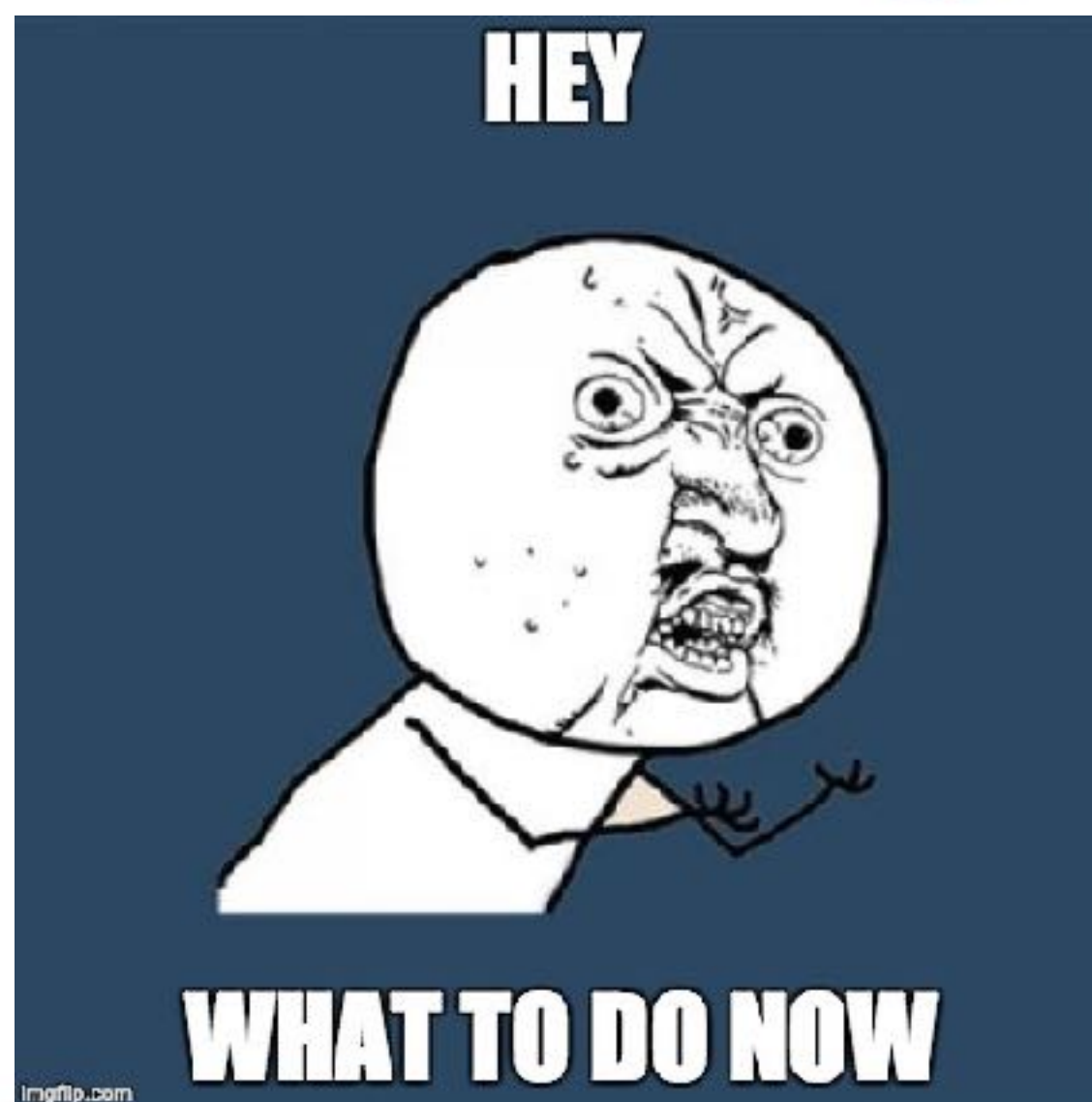


Go Routine



Response Time





```
import "net/http/pprof"
```

```
func Router(dependencies *service.Instances) *mux.Router {  
    router := mux.NewRouter()  
    router.HandleFunc("/debug/pprof/", pprof.Index)  
    router.HandleFunc("/debug/pprof/cmdline", pprof.Cmdline)  
    router.HandleFunc("/debug/pprof/profile", pprof.Profile)  
    router.HandleFunc("/debug/pprof/symbol", pprof.Symbol)  
    router.HandleFunc("/debug/pprof/trace", pprof.Trace)  
    router.HandleFunc("/debug/pprof/goroutine", pprof.Index)  
    return router  
}
```

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```

/debug/pprof/

profiles:

0 [block](#)

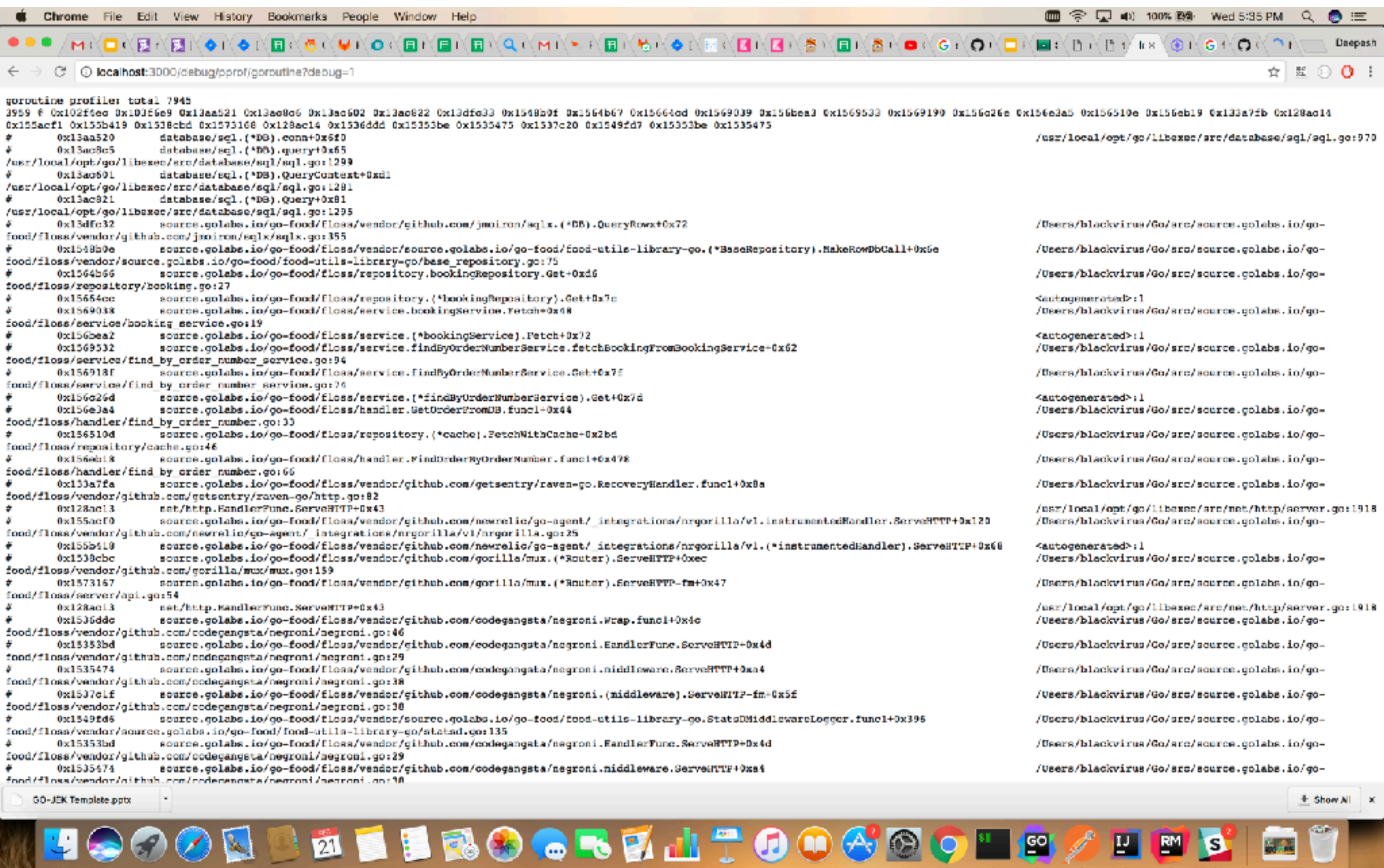
799 [goroutine](#)

72 [heap](#)

0 [mutex](#)

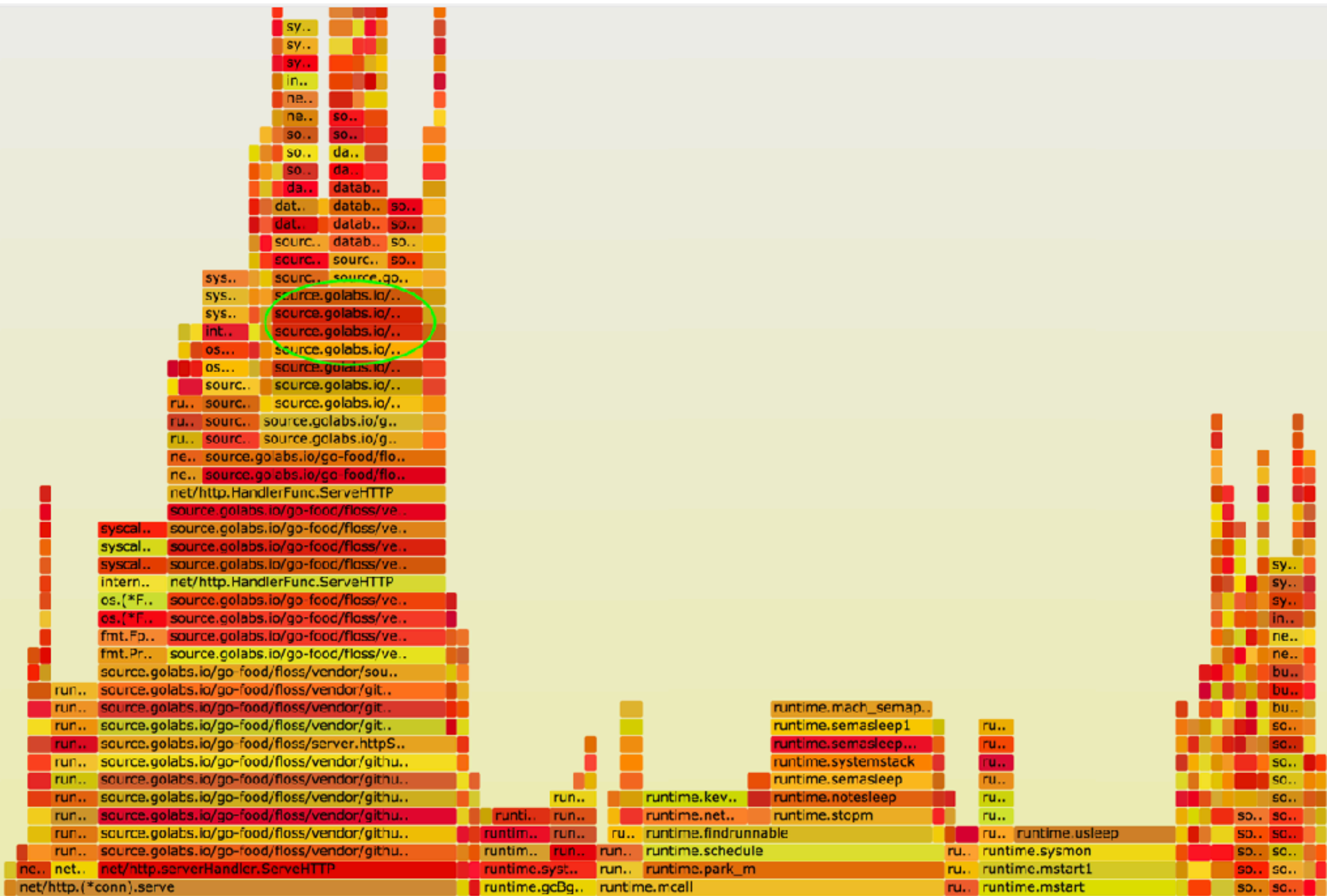
13 [threadcreate](#)

[full goroutine stack dump](#)




```
go tool pprof -raw -seconds 10 http://localhost:3000/debug/pprof/profile
```

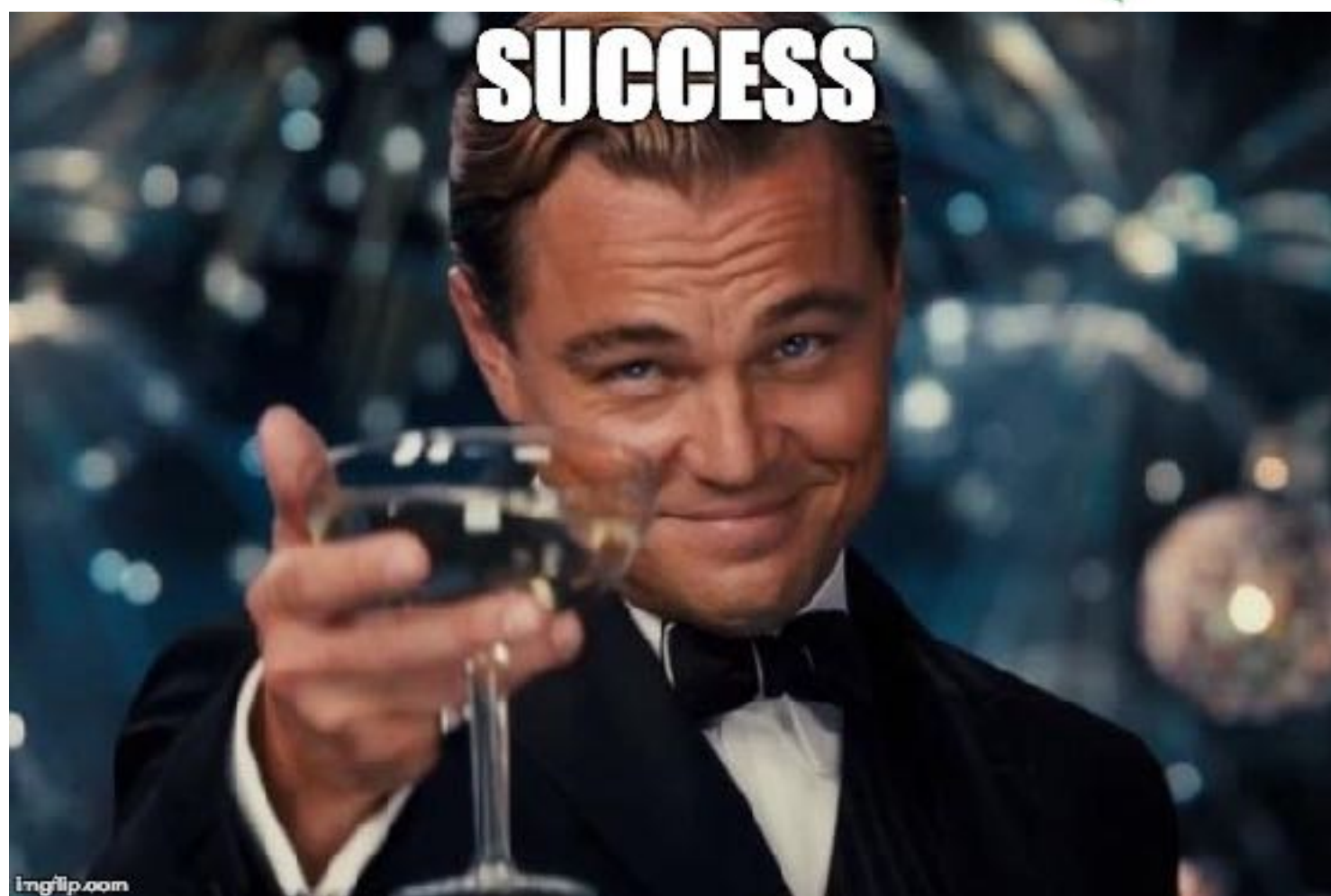
go tool pprof -raw -seconds 10 <http://localhost:3000/debug/pprof/profile>



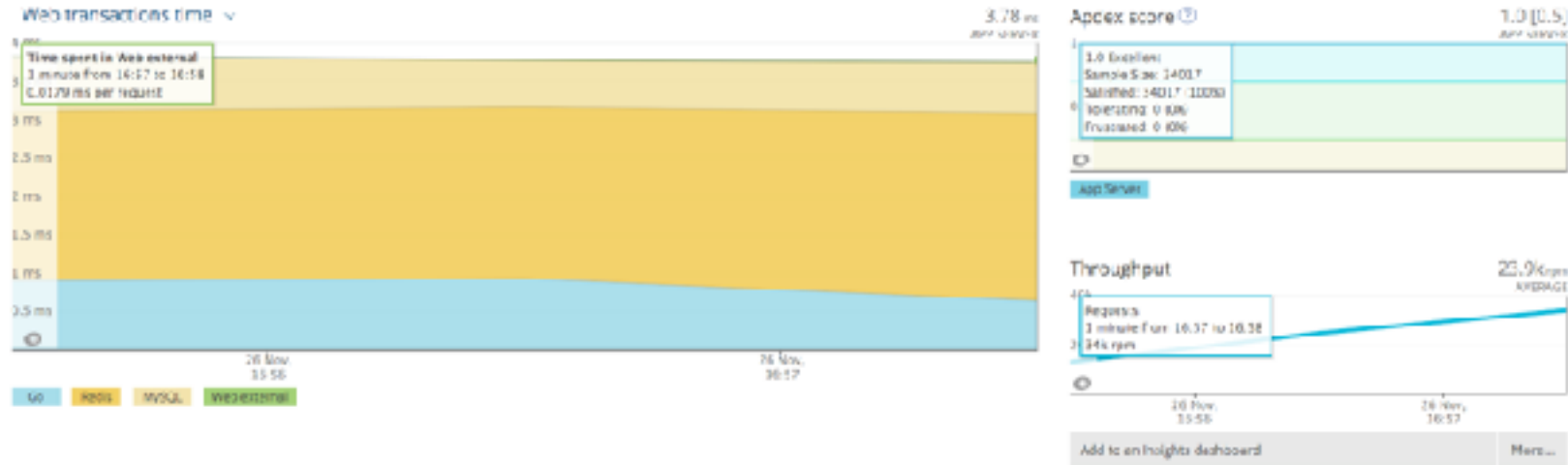
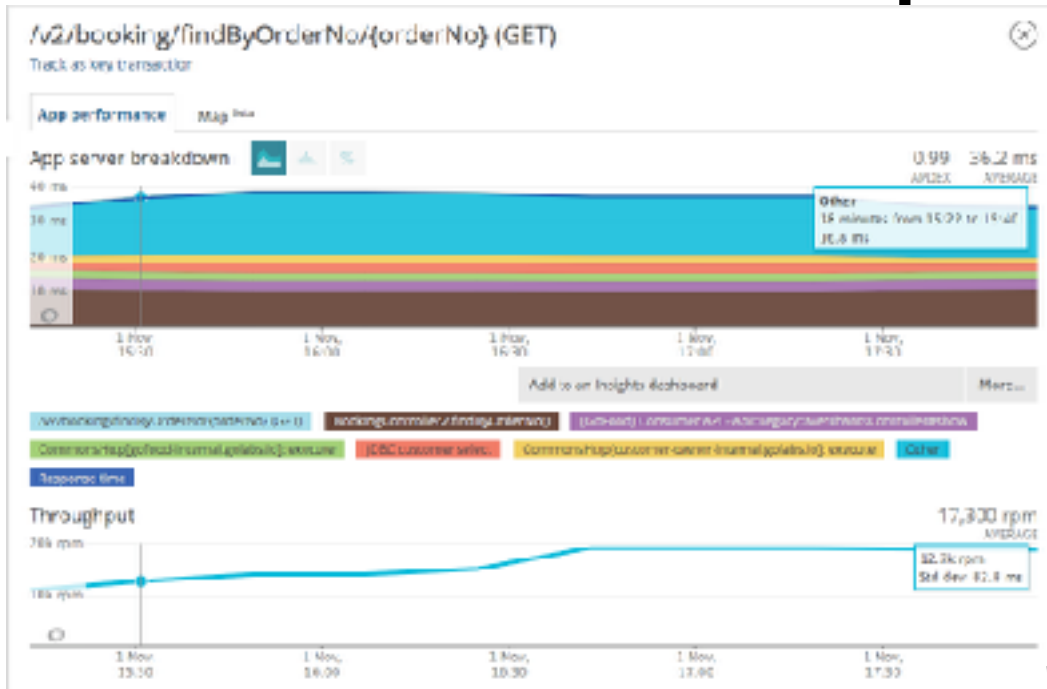


```
return rows.Next()
```

```
boolean := false
defer func() {
if rows != nil {
rows.Close()
}
}()
if rows.Next() {
boolean = true
}
return boolean, nil
```

Reduction in response times



Things to Remember

Metrics

Profiling

Monitoring

Things to Remember

Metrics

Profiling

Monitoring

Things to Remember

Metrics

Profiling

Monitoring

Thank You !

<https://github.com/blackvirus18/gophercon2018>