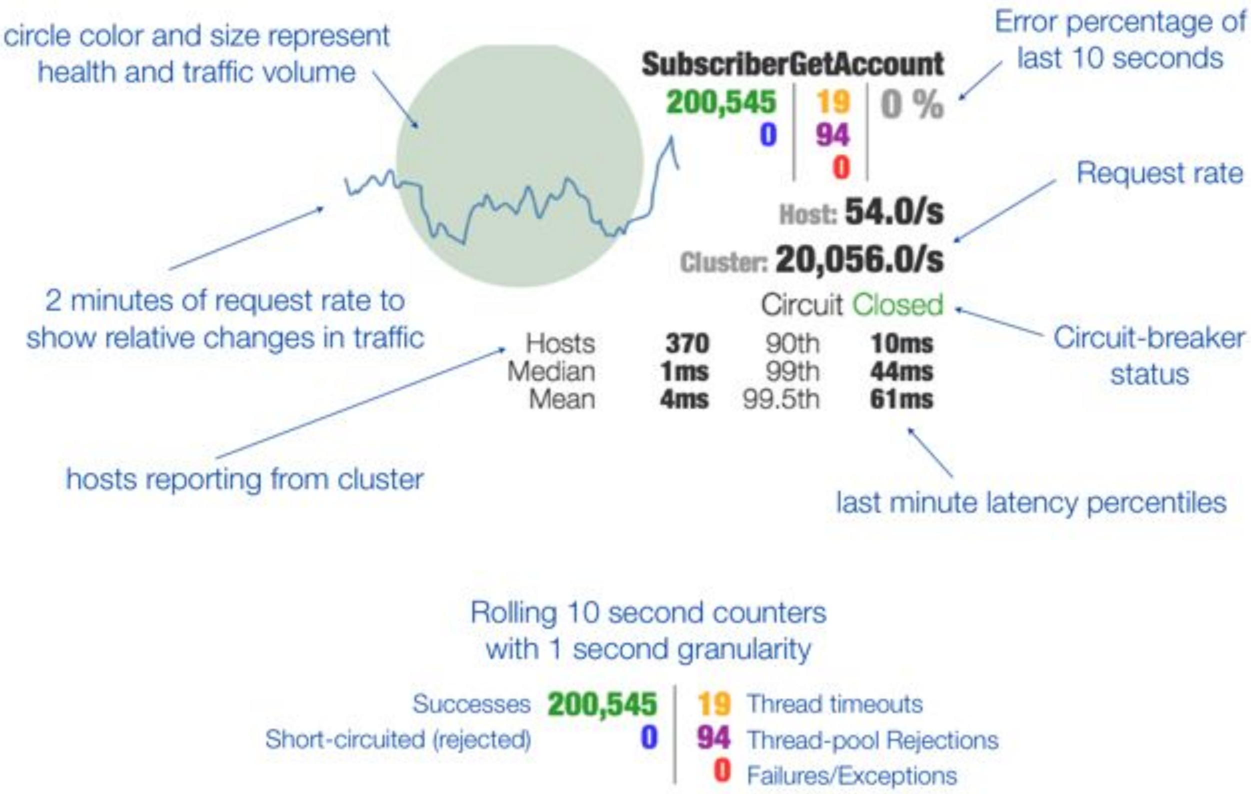
Pivotal

Spring Cloud Netflix Turbine - Hystrix Streams Aggregation

Hystrix Dashboard - Recap

- A standalone application providing visualization of circuit state
- Calling application emits metrics via websocket endpoint /hystrix.stream
- Dashboard application consumes stream and renders metrics visualization for each circuit
- “Reduces time to discover and recover from operational events”

Circuit Breaker Monitoring



circle color and size represent health and traffic volume

2 minutes of request rate to show relative changes in traffic

hosts reporting from cluster

SubscriberGetAccount

200,545	**19**	**0 %**
0	**94**	
	0	

Error percentage of last 10 seconds

Host: **54.0/s**

Cluster: **20,056.0/s**

Request rate

Circuit Closed

Circuit-breaker status

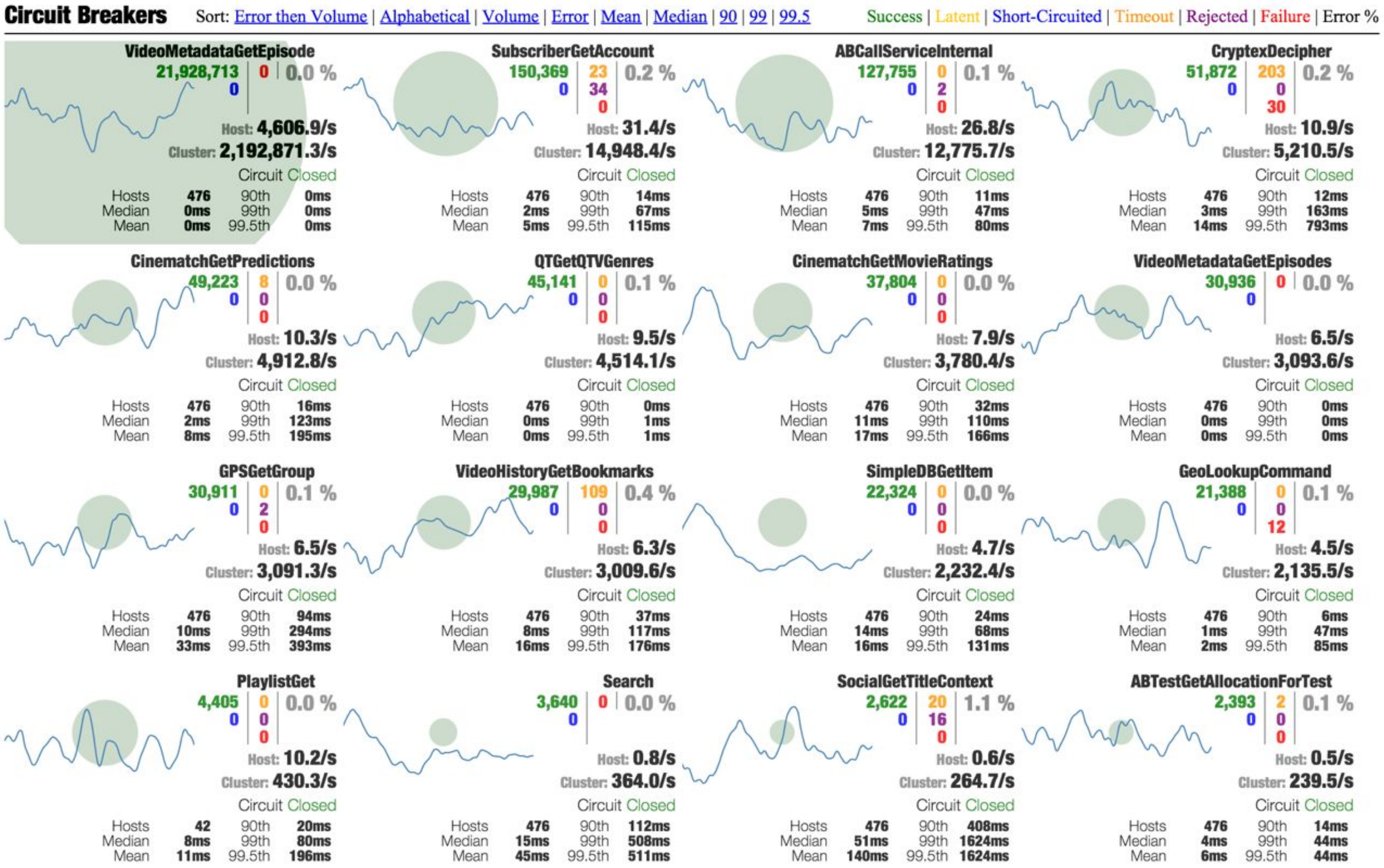
Hosts	**370**	90th	**10ms**
Median	**1ms**	99th	**44ms**
Mean	**4ms**	99.5th	**61ms**

last minute latency percentiles

Rolling 10 second counters with 1 second granularity

Successes	**200,545**	**19**	Thread timeouts
Short-circuited (rejected)	**0**	**94**	Thread-pool Rejections
		0	Failures/Exceptions

Example Dashboard



Circuit Breakers Sort: Error then Volume | Alphabetical | Volume | Error | Mean | Median | 90 | 99 | 99.5

Success | Latent | Short-Circuited | Timeout | Rejected | Failure | Error %

VideoMetadataGetEpisode
21,928,713 | 0 | 0.0 %
0
Host: 4,606.9/s
Cluster: 2,192,871.3/s
Circuit Closed

Hosts	476	90th	0ms
Median	0ms	99th	0ms
Mean	0ms	99.5th	0ms

SubscriberGetAccount
150,369 | 23 | 0.2 %
0 | 34
0
Host: 31.4/s
Cluster: 14,948.4/s
Circuit Closed

Hosts	476	90th	14ms
Median	2ms	99th	67ms
Mean	5ms	99.5th	115ms

ABCallServiceInternal
127,755 | 0 | 0.1 %
0 | 2
0
Host: 26.8/s
Cluster: 12,775.7/s
Circuit Closed

Hosts	476	90th	11ms
Median	5ms	99th	47ms
Mean	7ms	99.5th	80ms

CryptexDecipher
51,872 | 203 | 0.2 %
0 | 0
30
Host: 10.9/s
Cluster: 5,210.5/s
Circuit Closed

Hosts	476	90th	12ms
Median	3ms	99th	163ms
Mean	14ms	99.5th	793ms

CinematchGetPredictions
49,223 | 8 | 0.0 %
0 | 0
0
Host: 10.3/s
Cluster: 4,912.8/s
Circuit Closed

Hosts	476	90th	16ms
Median	2ms	99th	123ms
Mean	8ms	99.5th	195ms

QTGetQTVGenres
45,141 | 0 | 0.1 %
0 | 0
0
Host: 9.5/s
Cluster: 4,514.1/s
Circuit Closed

Hosts	476	90th	0ms
Median	0ms	99th	1ms
Mean	0ms	99.5th	1ms

CinematchGetMovieRatings
37,804 | 0 | 0.0 %
0 | 0
0
Host: 7.9/s
Cluster: 3,780.4/s
Circuit Closed

Hosts	476	90th	32ms
Median	11ms	99th	110ms
Mean	17ms	99.5th	166ms

VideoMetadataGetEpisodes
30,936 | 0 | 0.0 %
0
Host: 6.5/s
Cluster: 3,093.6/s
Circuit Closed

Hosts	476	90th	0ms
Median	0ms	99th	0ms
Mean	0ms	99.5th	0ms

GPSGetGroup
30,911 | 0 | 0.1 %
0 | 2
0
Host: 6.5/s
Cluster: 3,091.3/s
Circuit Closed

Hosts	476	90th	94ms
Median	10ms	99th	294ms
Mean	33ms	99.5th	393ms

VideoHistoryGetBookmarks
29,987 | 109 | 0.4 %
0 | 0
0
Host: 6.3/s
Cluster: 3,009.6/s
Circuit Closed

Hosts	476	90th	37ms
Median	8ms	99th	117ms
Mean	16ms	99.5th	176ms

SimpleDBGetItem
22,324 | 0 | 0.0 %
0 | 0
0
Host: 4.7/s
Cluster: 2,232.4/s
Circuit Closed

Hosts	476	90th	24ms
Median	14ms	99th	68ms
Mean	16ms	99.5th	131ms

GeoLookupCommand
21,388 | 0 | 0.1 %
0 | 0
12
Host: 4.5/s
Cluster: 2,135.5/s
Circuit Closed

Hosts	476	90th	6ms
Median	1ms	99th	47ms
Mean	2ms	99.5th	85ms

PlaylistGet
4,405 | 0 | 0.0 %
0 | 0
0
Host: 10.2/s
Cluster: 430.3/s
Circuit Closed

Hosts	42	90th	20ms
Median	8ms	99th	80ms
Mean	11ms	99.5th	196ms

Search
3,640 | 0 | 0.0 %
0
Host: 0.8/s
Cluster: 364.0/s
Circuit Closed

Hosts	476	90th	112ms
Median	15ms	99th	508ms
Mean	45ms	99.5th	511ms

SocialGetTitleContext
2,622 | 20 | 1.1 %
0 | 16
0
Host: 0.6/s
Cluster: 264.7/s
Circuit Closed

Hosts	476	90th	408ms
Median	51ms	99th	1624ms
Mean	140ms	99.5th	1624ms

ABTestGetAllocationForTest
2,393 | 2 | 0.1 %
0 | 0
0
Host: 0.5/s
Cluster: 239.5/s
Circuit Closed

Hosts	476	90th	14ms
Median	4ms	99th	44ms
Mean	6ms	99.5th	44ms

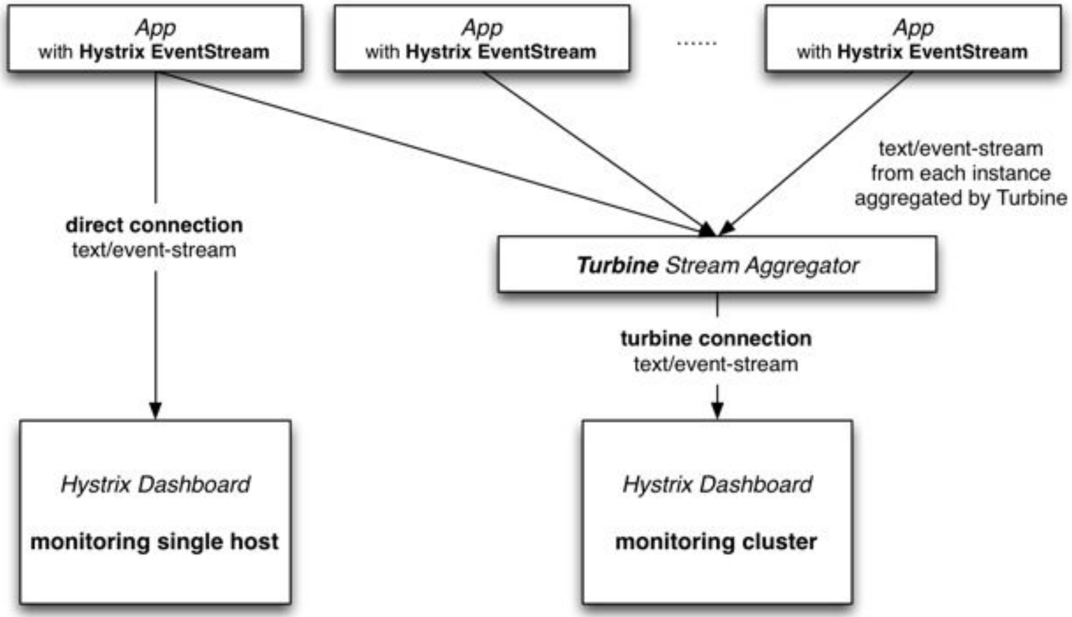
Limitations with /hystrix.stream

- Individual instance's Hystrix data is not very useful
- Does not scale well to large number instances
- Gaps in supporting Telemetry

Turbine

- Aggregates individual /hystrix.stream endpoints into a combined /turbine.stream endpoint
- Individual instances are located via Eureka

Turbine Data Flow



Source: http://techblog.netflix.com/2012/12/hystrix-dashboard-and-turbine.html

Turbine Stream

- PCF limitations impacting Turbine via Websocket:
    - Registering endpoint by route
    - Cannot distinguish instances
- Metrics Streaming via AMQP

See following for more information:

https://cloud.spring.io/spring-cloud-static/spring-cloud-netflix/2.1.2.RELEASE/single/spring-cloud-netflix.html#_turbine_stream