Visualize your threats

Philipp Krenn @xeraa

elastic

elastic

Infrastructure | Developer Advocate

Meetup

ViennaDB
Papers We Love Vienna

elastic

elasticsearch.

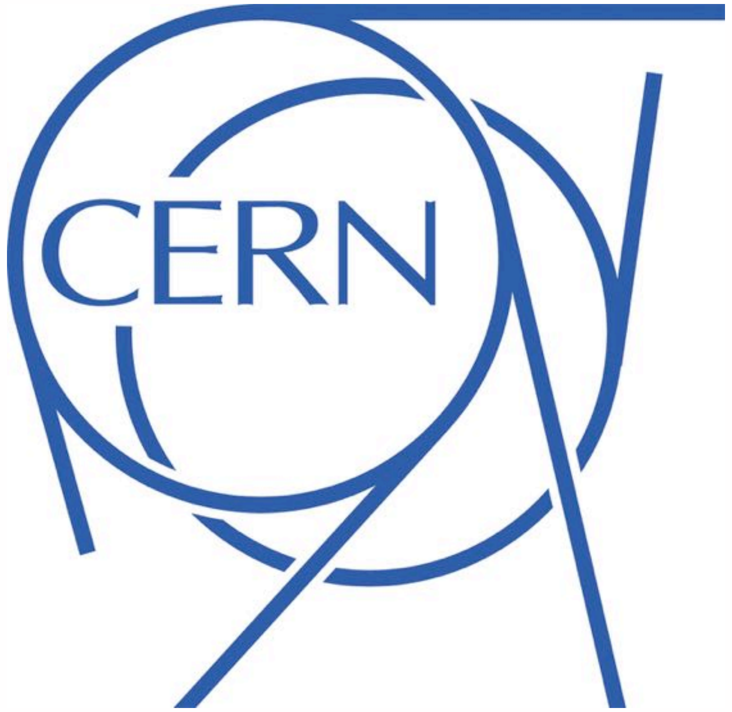
You Know, for Search

kibana

logstash

ELK Stack

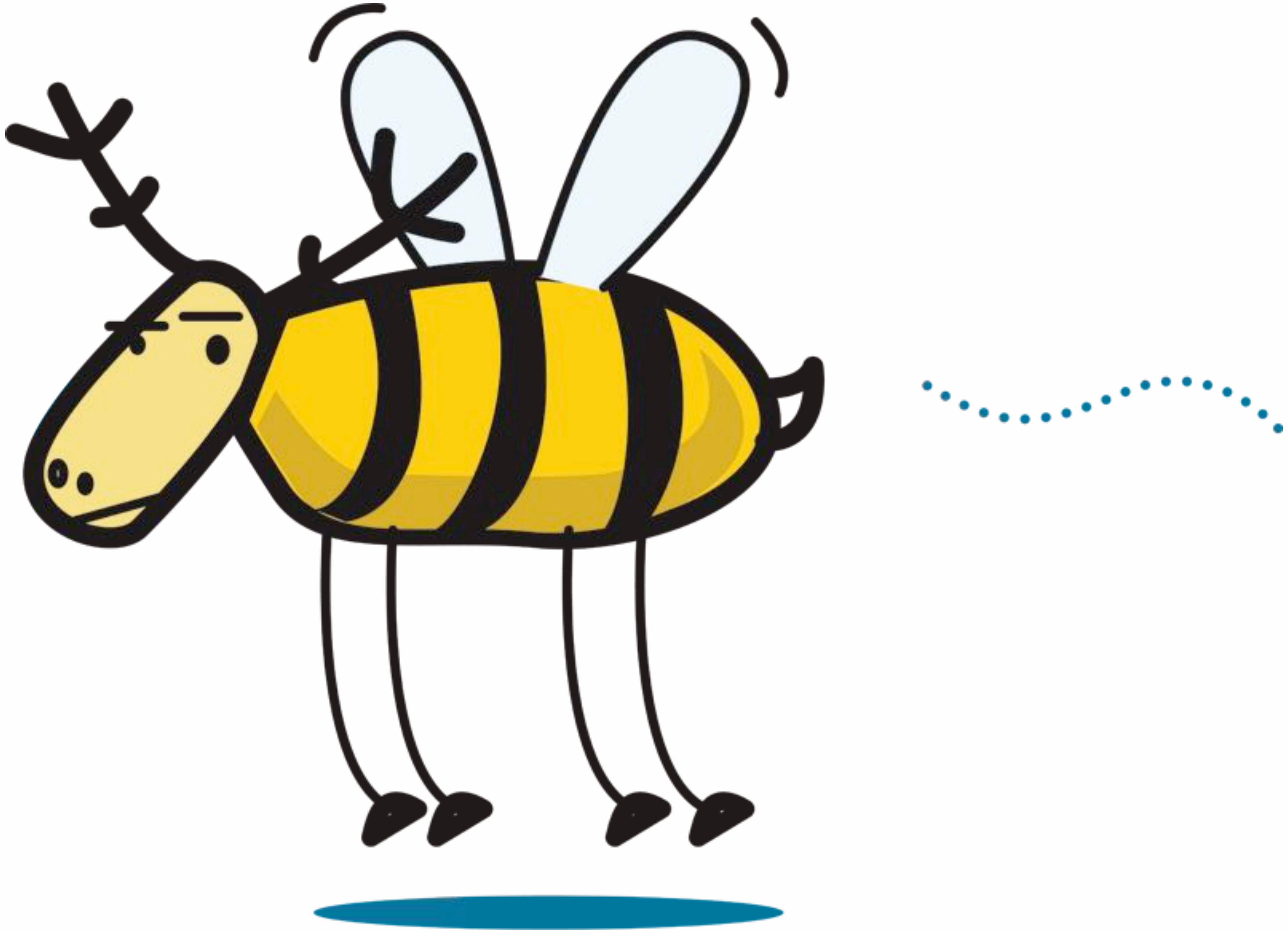
elastic


CERN

Goldman
Sachs

salesforce

elastic



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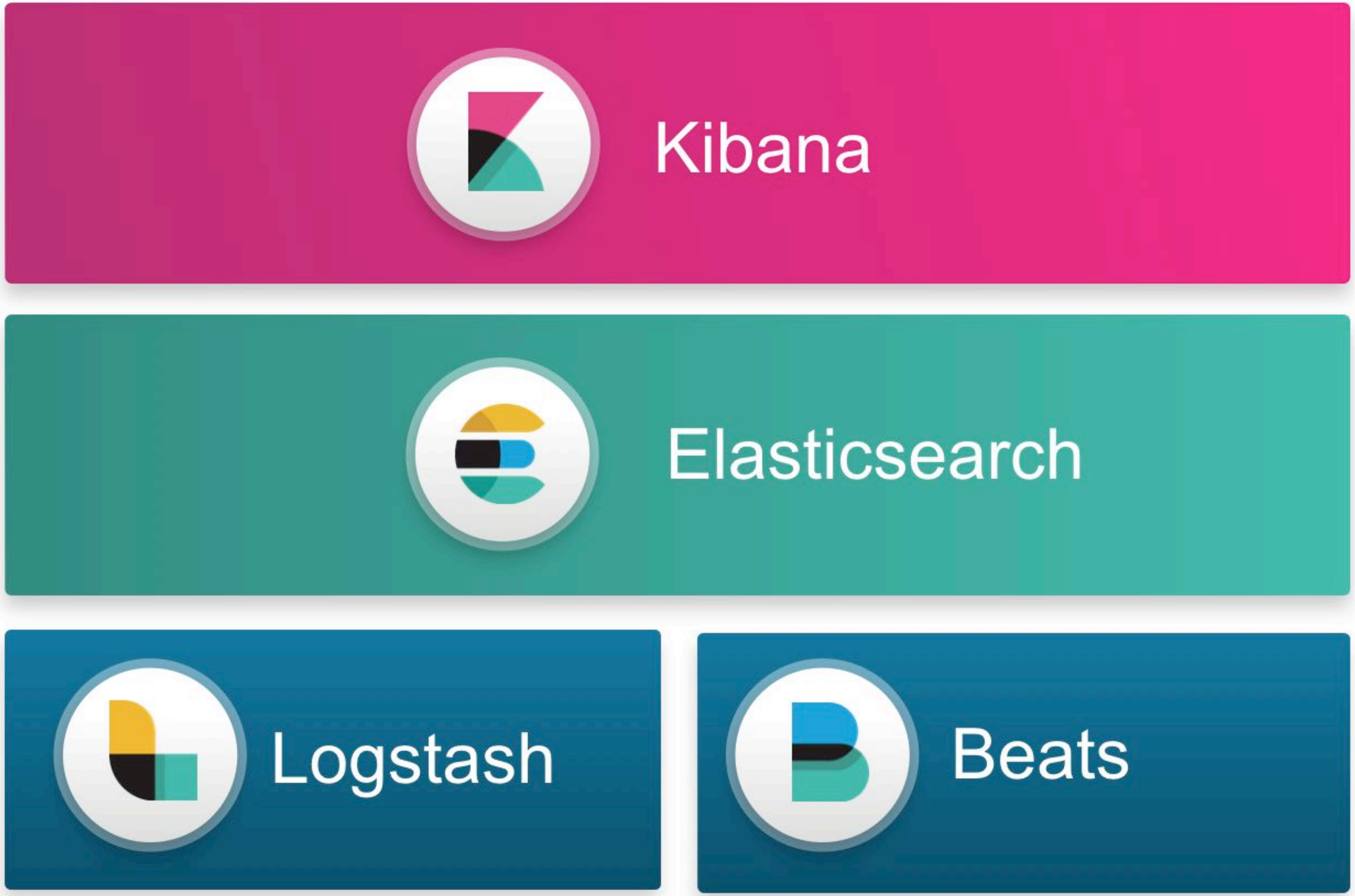
Elastic Stack

elastic



Kibana

Elasticsearch

Logstash

Beats

elastic

What about security?

Once upon a time...

Honeypot

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Dataset

https://github.com/tcrug/marx_data

Condensed into one day

2016-01-12

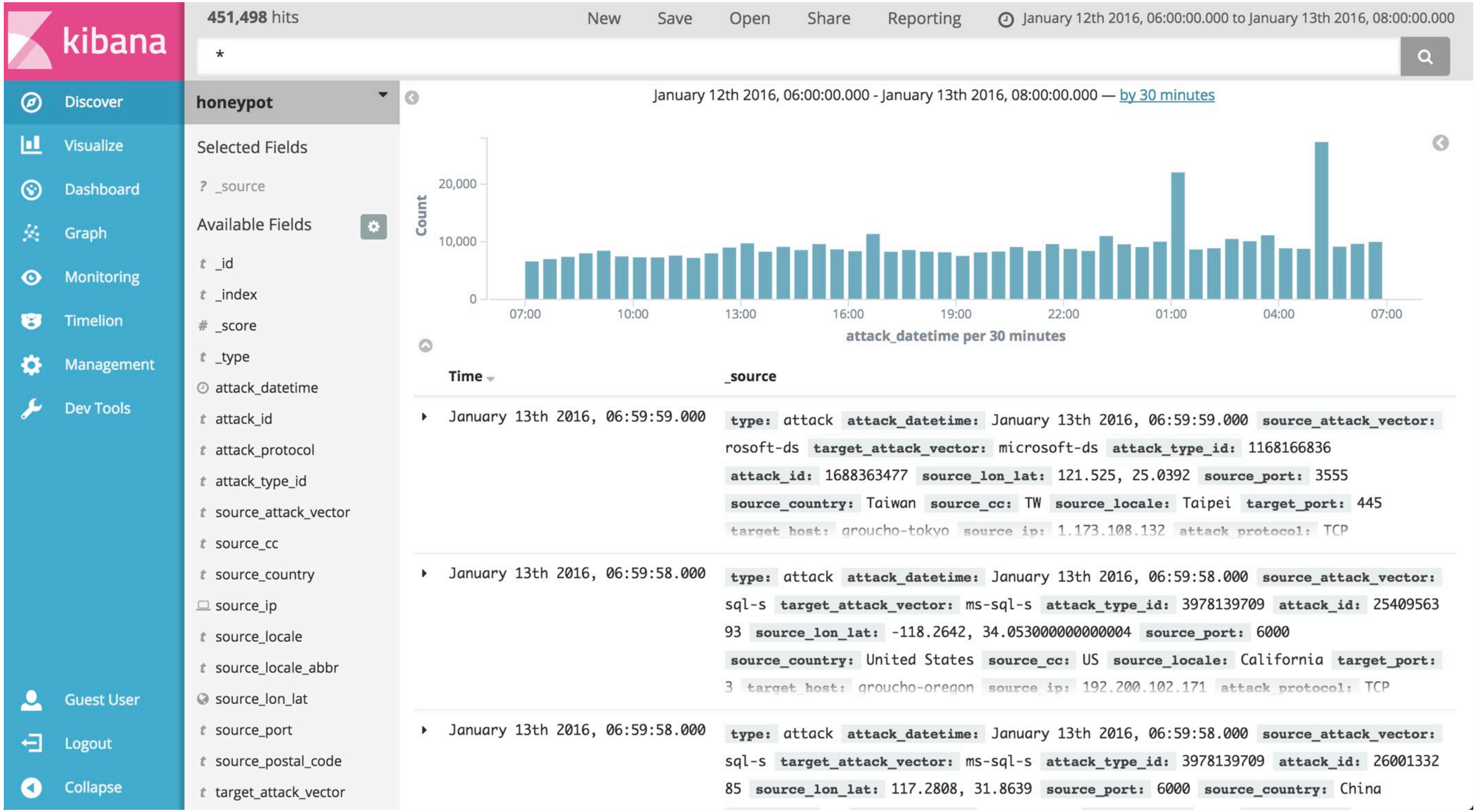
Enriched

Port numbers, unique attack types, individual attacks, GeoIP

Metrics

Generated

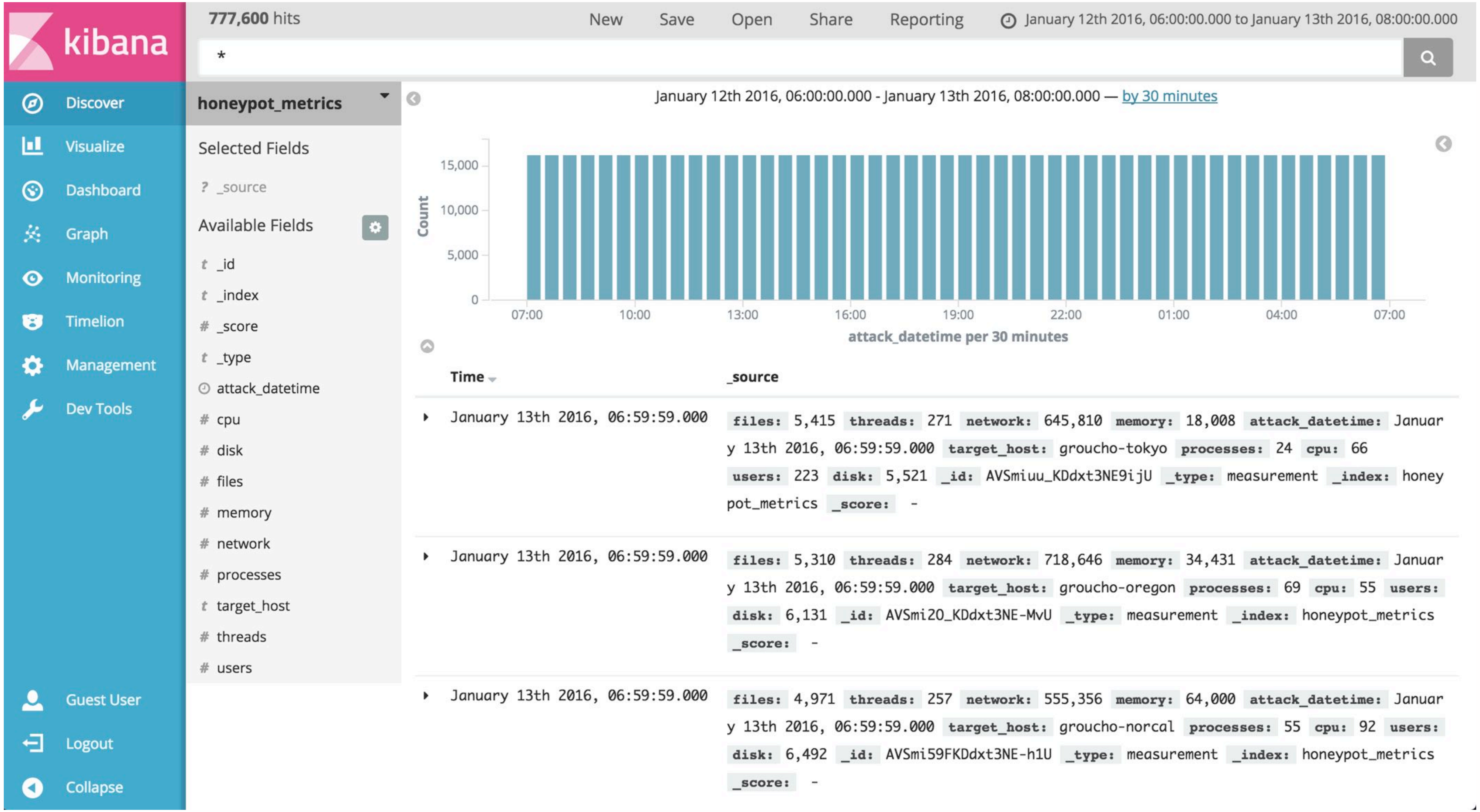
Discover



January 13th 2016, 06:59:59.000 type: attack attack_datetime: January 13th 2016, 06:59:59.000 source_attack_vector: rosoft-ds target_attack_vector: microsoft-ds attack_type_id: 1168166836 attack_id: 1688363477 source_lon_lat: 121.525, 25.0392 source_port: 3555 source_country: Taiwan source_cc: TW source_locale: Taipei target_port: 445 target_host: groucho-tokyo source_ip: 1.173.108.132 attack_protocol: TCP

January 13th 2016, 06:59:58.000 type: attack attack_datetime: January 13th 2016, 06:59:58.000 source_attack_vector: sql-s target_attack_vector: ms-sql-s attack_type_id: 3978139709 attack_id: 2540956393 source_lon_lat: -118.2642, 34.053000000000004 source_port: 6000 source_country: United States source_cc: US source_locale: California target_port: 3 target_host: groucho-oregon source_ip: 192.200.102.171 attack_protocol: TCP

January 13th 2016, 06:59:58.000 type: attack attack_datetime: January 13th 2016, 06:59:58.000 source_attack_vector: sql-s target_attack_vector: ms-sql-s attack_type_id: 3978139709 attack_id: 2600133285 source_lon_lat: 117.2808, 31.8639 source_port: 6000 source_country: China



777,600 hits

January 12th 2016, 06:00:00.000 to January 13th 2016, 08:00:00.000

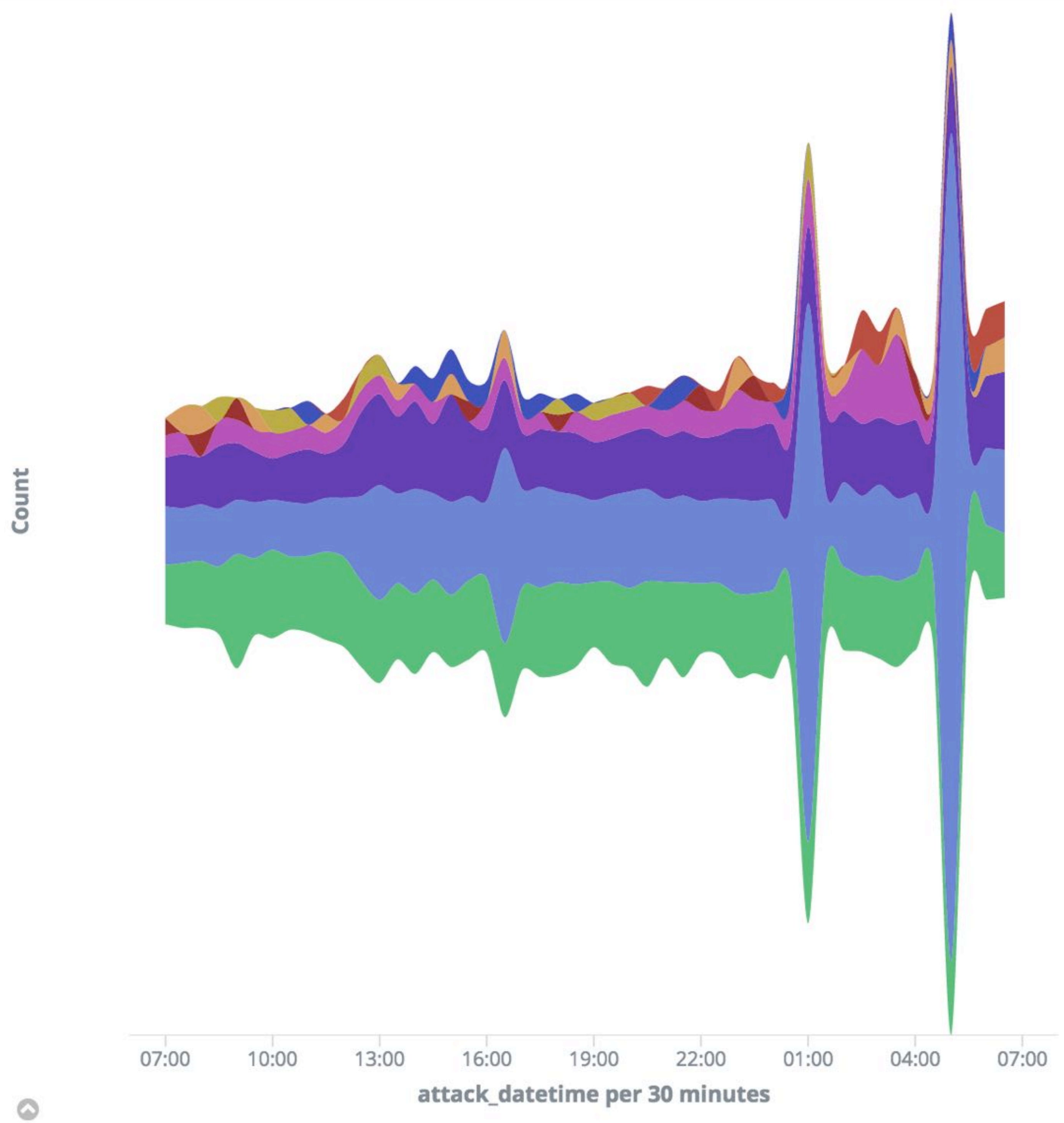
*

January 12th 2016, 06:00:00.000 - January 13th 2016, 08:00:00.000 — by 30 minutes

Time	_source
January 13th 2016, 06:59:59.000	**files:** 5,415 **threads:** 271 **network:** 645,810 **memory:** 18,008 **attack_datetime:** January 13th 2016, 06:59:59.000 **target_host:** groucho-tokyo **processes:** 24 **cpu:** 66 **users:** 223 **disk:** 5,521 **_id:** AVSmiuu_KDdxt3NE9ijU **_type:** measurement **_index:** honeypot_metrics **_score:** -
January 13th 2016, 06:59:59.000	**files:** 5,310 **threads:** 284 **network:** 718,646 **memory:** 34,431 **attack_datetime:** January 13th 2016, 06:59:59.000 **target_host:** groucho-oregon **processes:** 69 **cpu:** 55 **users:** **disk:** 6,131 **_id:** AVSmi2O_KDdxt3NE-MvU **_type:** measurement **_index:** honeypot_metrics **_score:** -
January 13th 2016, 06:59:59.000	**files:** 4,971 **threads:** 257 **network:** 555,356 **memory:** 64,000 **attack_datetime:** January 13th 2016, 06:59:59.000 **target_host:** groucho-norcal **processes:** 55 **cpu:** 92 **users:** **disk:** 6,492 **_id:** AVSmi59FKDdxt3NE-h1U **_type:** measurement **_index:** honeypot_metrics **_score:** -

Visualize

Attacks by host and time


Count
07:00
10:00
13:00
16:00
19:00
22:00
01:00
04:00
07:00
attack_datetime per 30 minutes

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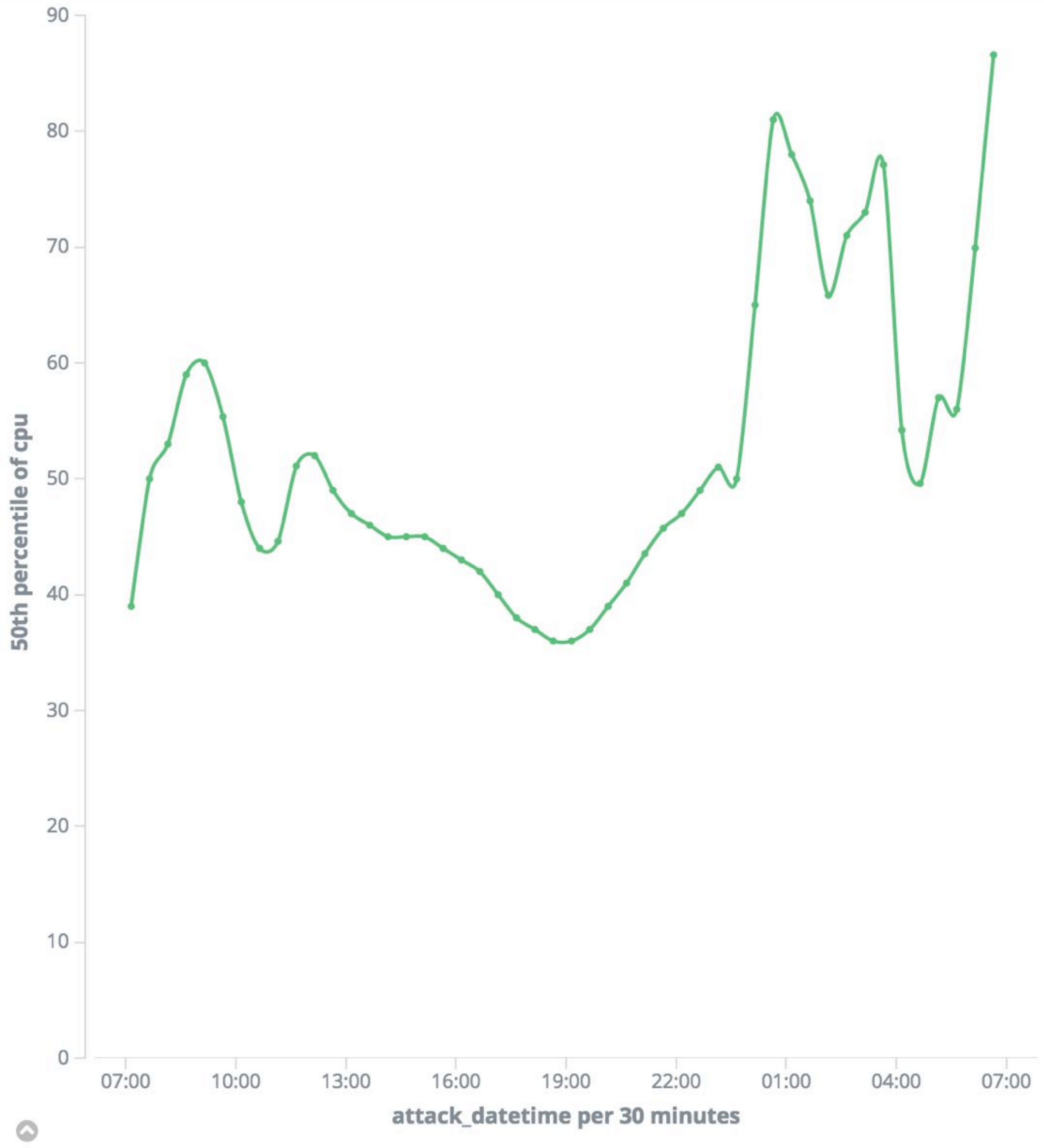
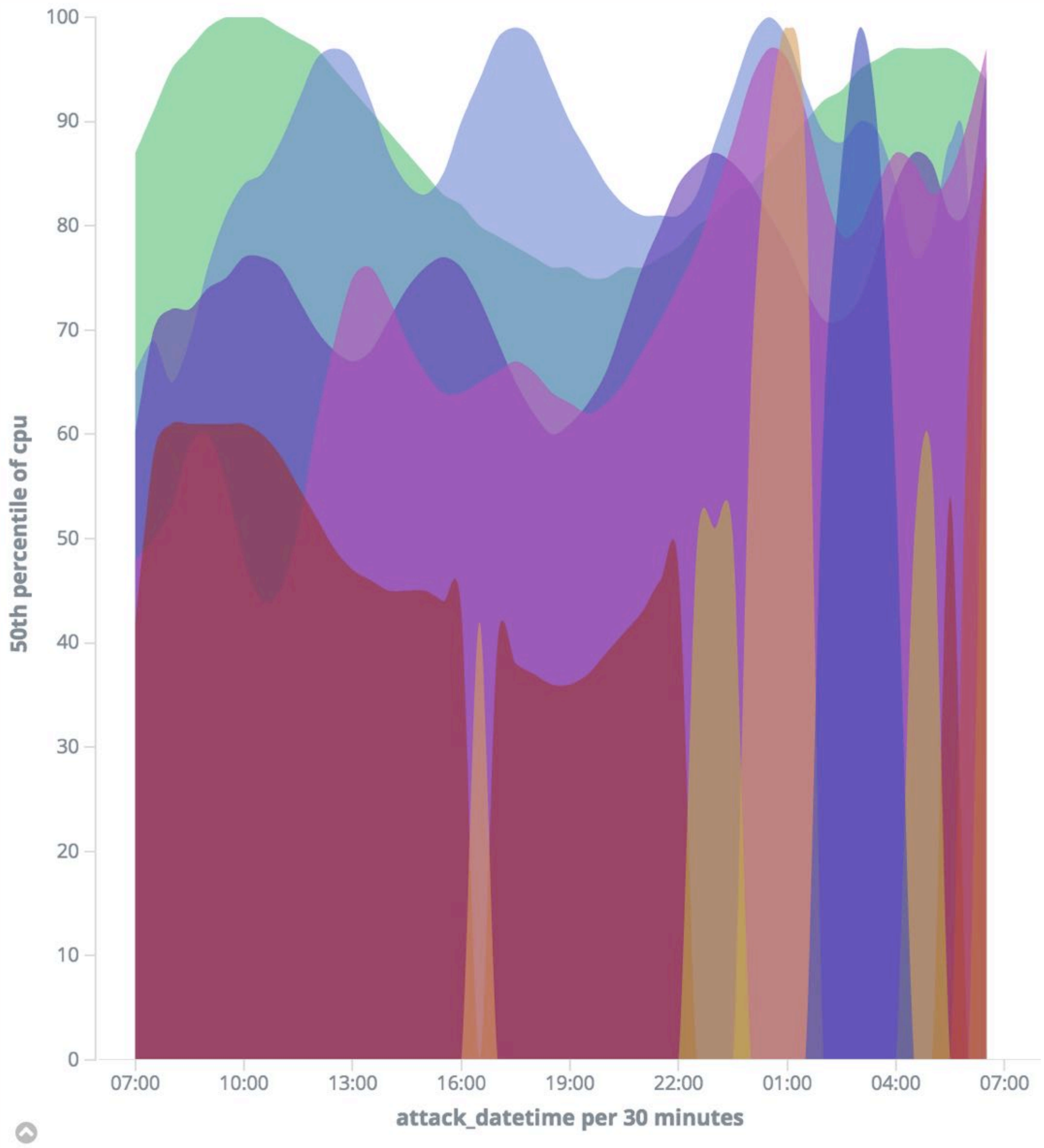
CPU over time


90
80
70
60
50
40
30
20
10
0
50th percentile of cpu
07:00
10:00
13:00
16:00
19:00
22:00
01:00
04:00
07:00
attack_datetime per 30 minutes

CPU over time by host



100
90
80
70
60
50
40
30
20
10
0
50th percentile of cpu
07:00
10:00
13:00
16:00
19:00
22:00
01:00
04:00
07:00
attack_datetime per 30 minutes

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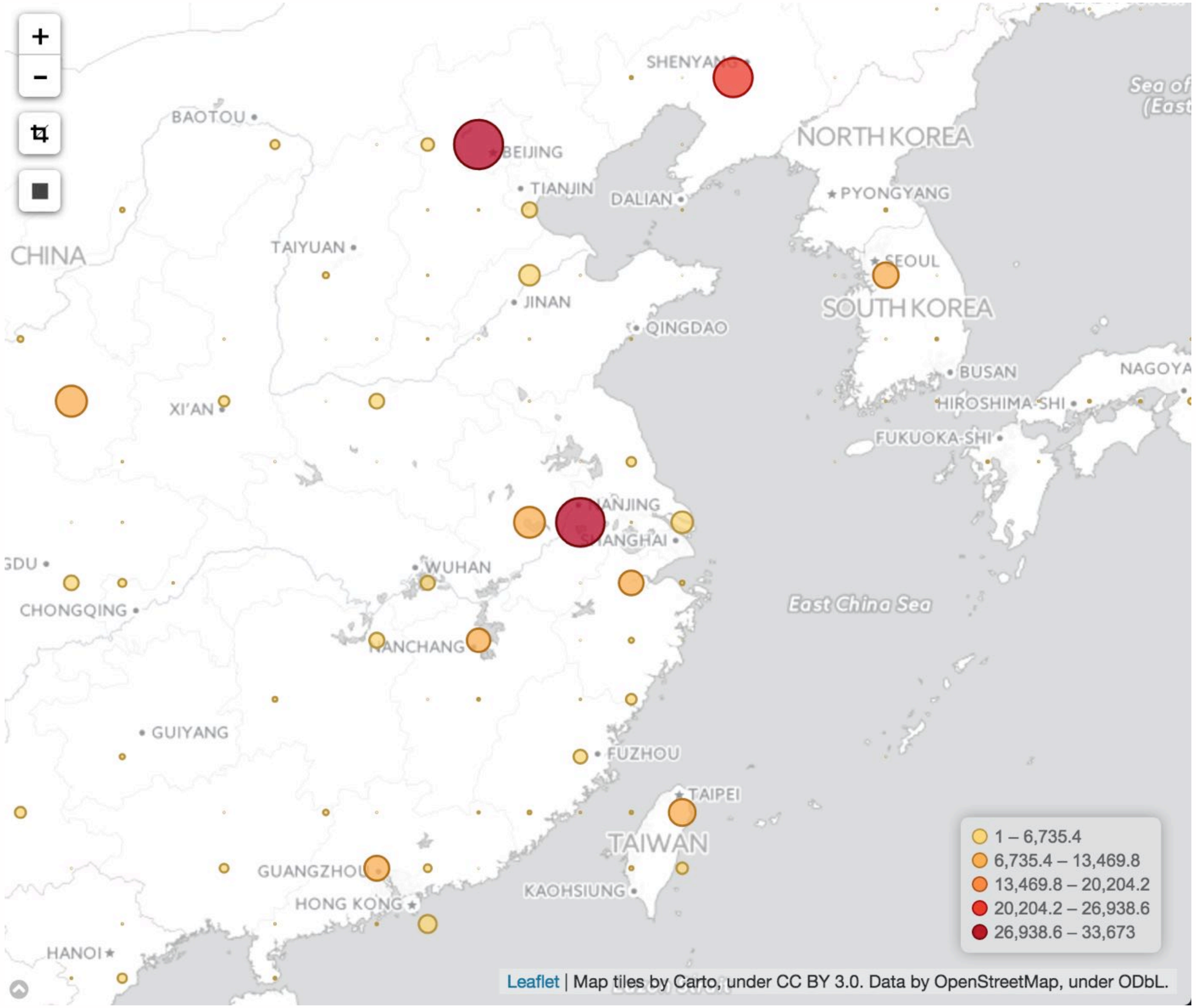
Geolocation of attacks



Leaflet | Map tiles by Carto, under CC BY 3.0. Data by OpenStreetMap, under ODbL.

Dashboard

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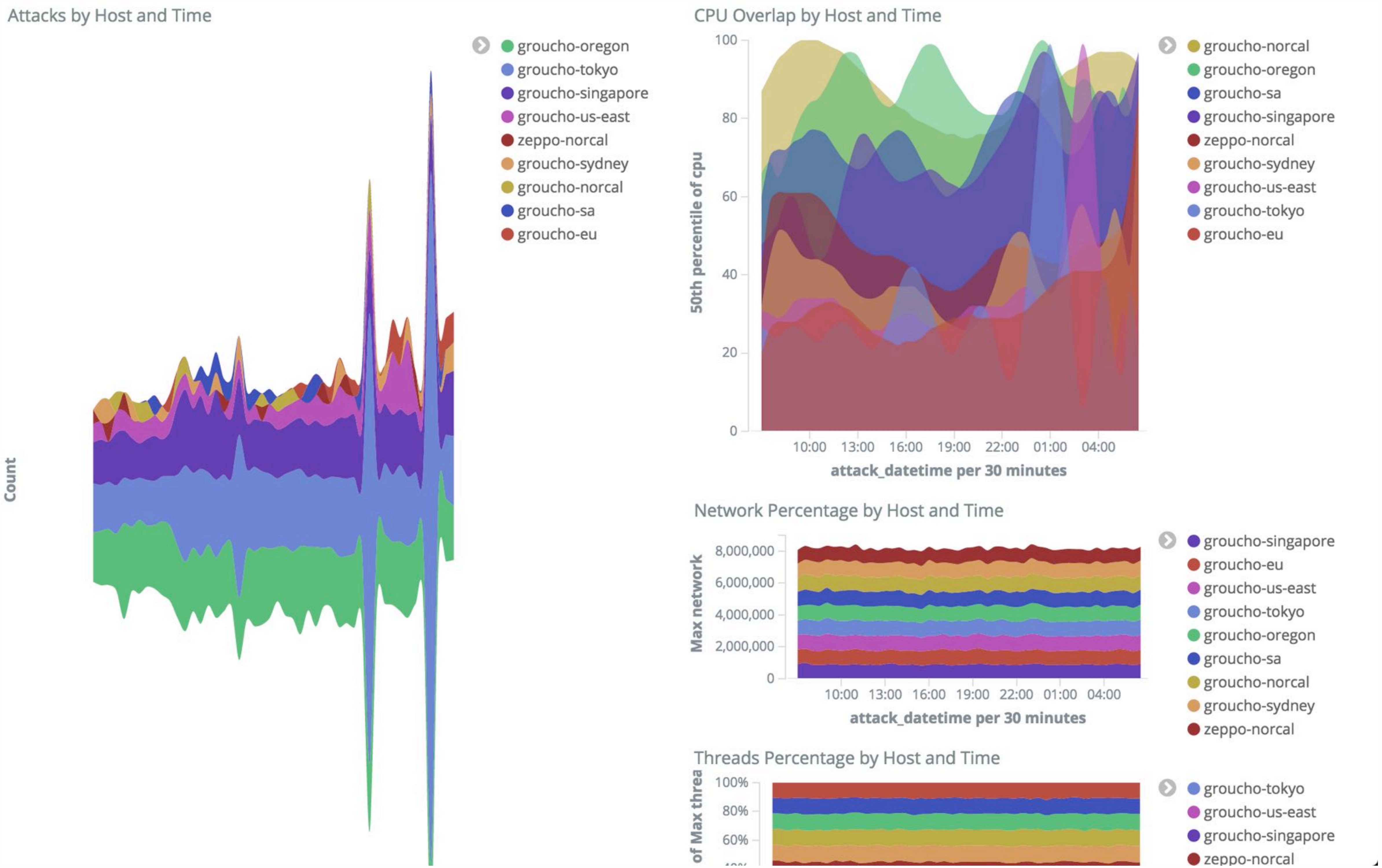
Putting it together


Attacks by Host and Time
Count
groucho-oregon
groucho-tokyo
groucho-singapore
groucho-us-east
zeppo-norcal
groucho-sydney
groucho-norcal
groucho-sa
groucho-eu
CPU Overlap by Host and Time
50th percentile of cpu
100
80
60
40
20
0
10:00
13:00
16:00
19:00
22:00
01:00
04:00
attack_datetime per 30 minutes
groucho-norcal
groucho-oregon
groucho-sa
groucho-singapore
zeppo-norcal
groucho-sydney
groucho-us-east
groucho-tokyo
groucho-eu
Network Percentage by Host and Time
Max network
8,000,000
6,000,000
4,000,000
2,000,000
0
10:00
13:00
16:00
19:00
22:00
01:00
04:00
attack_datetime per 30 minutes
groucho-singapore
groucho-eu
groucho-us-east
groucho-tokyo
groucho-oregon
groucho-sa
groucho-norcal
groucho-sydney
zeppo-norcal
Threads Percentage by Host and Time
of Max threa
100%
80%
60%
groucho-tokyo
groucho-us-east
groucho-singapore
zeppo-norcal

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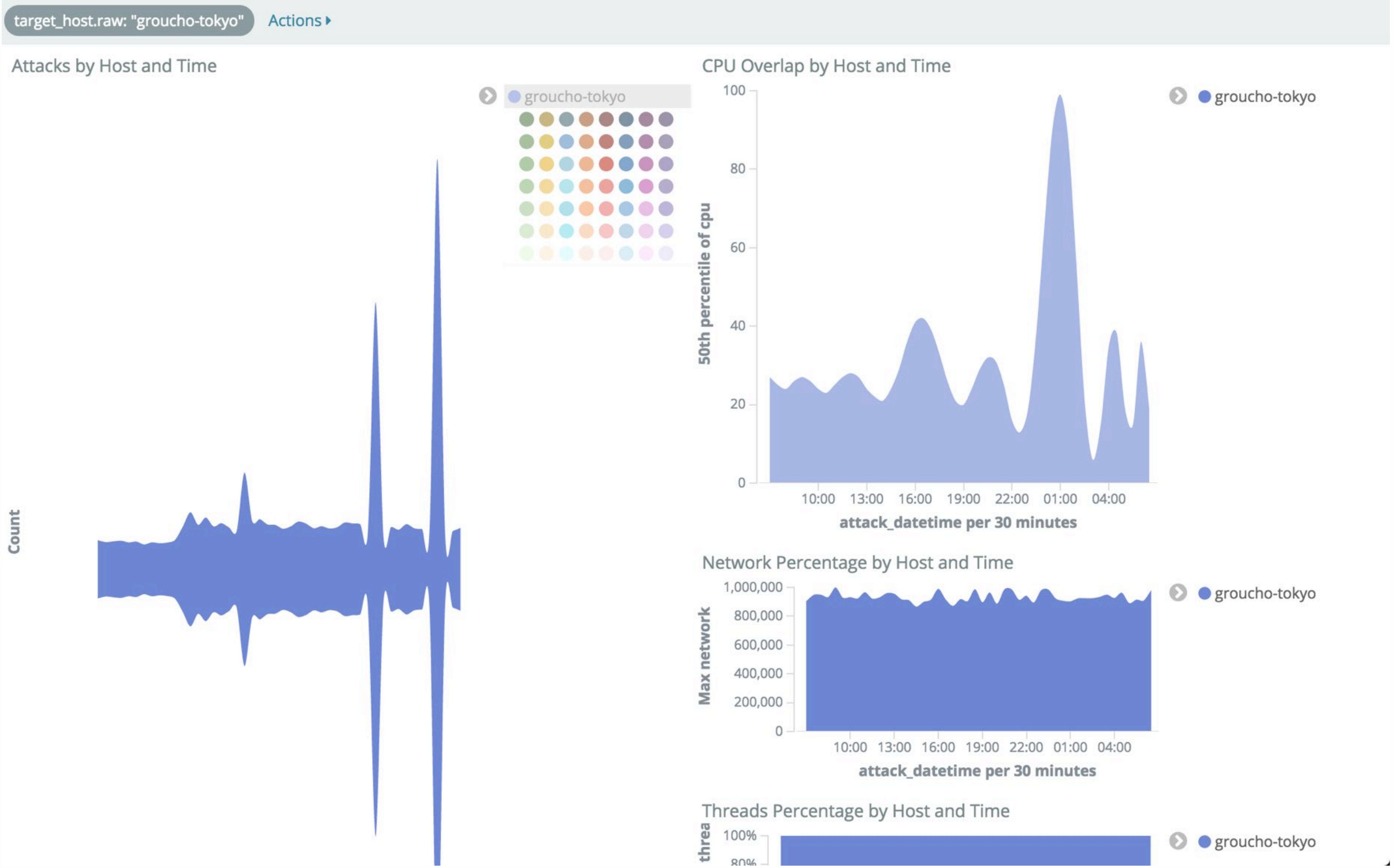

target_host.raw: "groucho-tokyo"

Attacks by Host and Time

CPU Overlap by Host and Time

Network Percentage by Host and Time

Threads Percentage by Host and Time

Timelion

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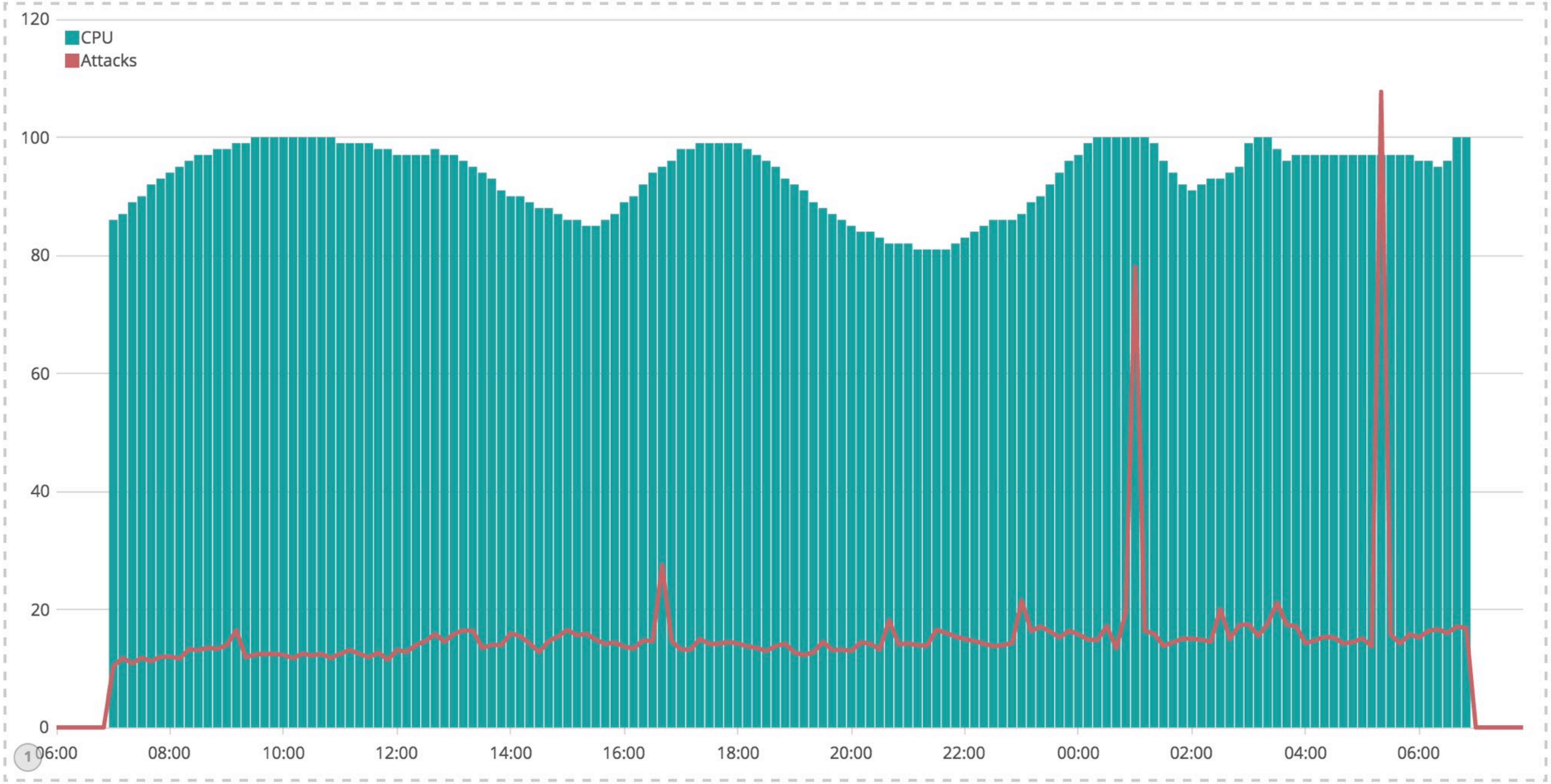
Compare honey data and metrics



120
100
80
60
40
20
0
🟩 CPU
🟥 Attacks
1
06:00
08:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
00:00
02:00
04:00
06:00

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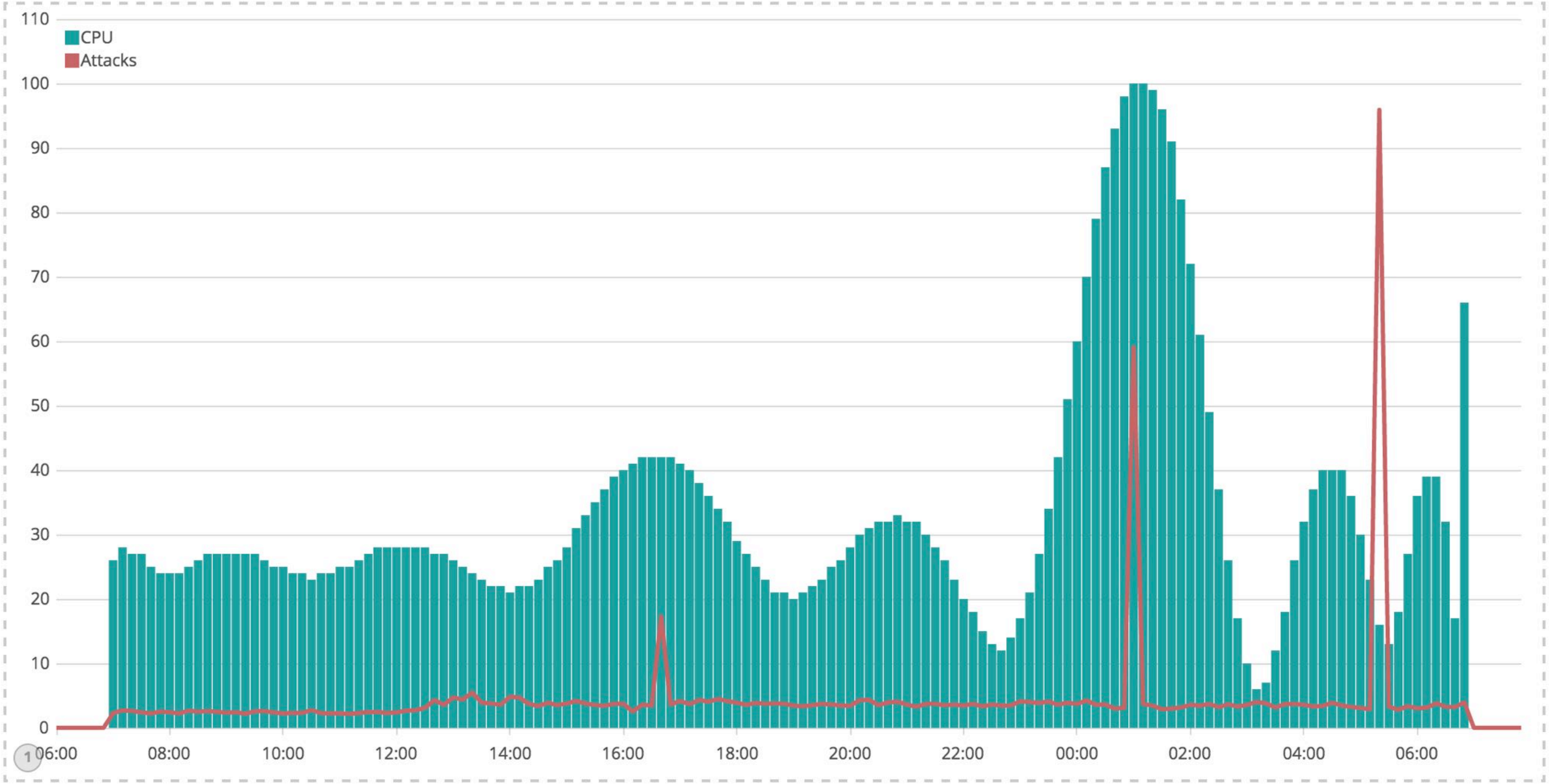
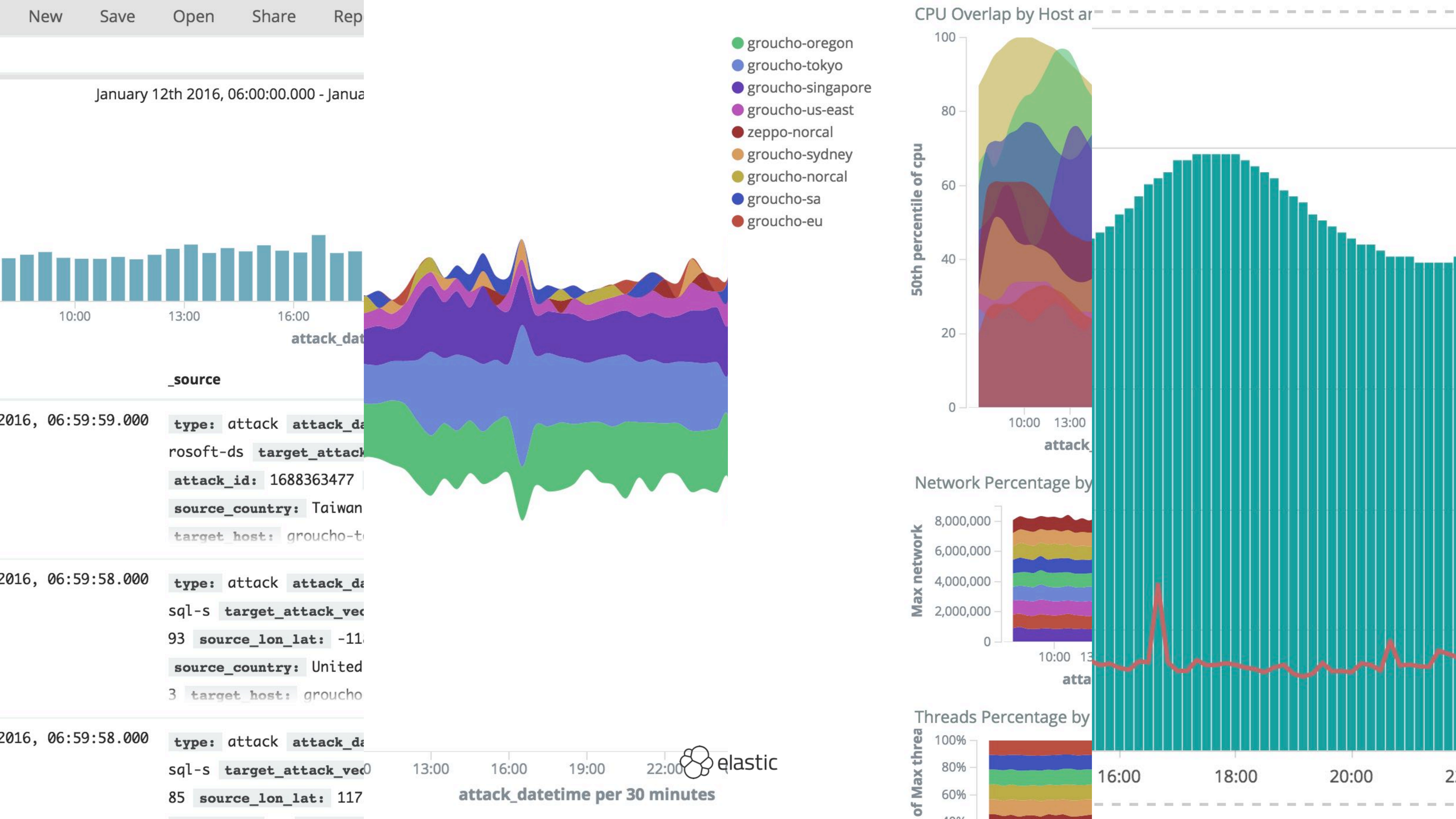
Compare honey data and metrics for Tokyo


110
100
90
80
70
60
50
40
30
20
10
0
🟩CPU
🟥Attacks
1
06:00
08:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
00:00
02:00
04:00
06:00

Conclusion

Visualize all the things

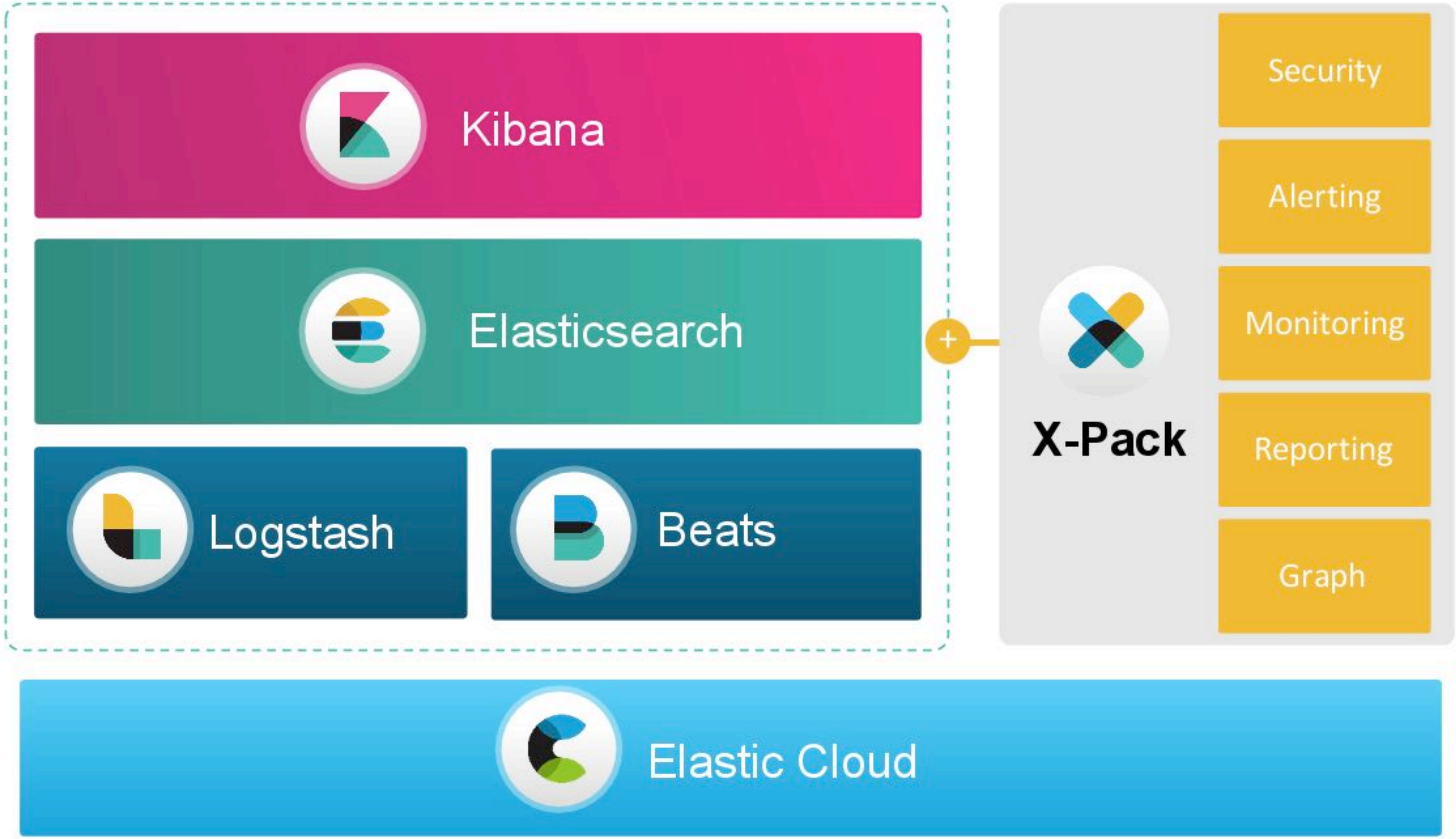


2016, 06:59:59.000 **type:** attack **attack_da**
rosoft-ds **target_attack**
attack_id: 1688363477
source_country: Taiwan
target_host: groucho-t

2016, 06:59:58.000 **type:** attack **attack_da**
sql-s **target_attack_vec**
93 **source_lon_lat:** -11
source_country: United
3 **target_host:** groucho

2016, 06:59:58.000 **type:** attack **attack_da**
sql-s **target_attack_vec**
85 **source_lon_lat:** 117

But wait, there is more


Kibana
Elasticsearch
Logstash
Beats
X-Pack
Security
Alerting
Monitoring
Reporting
Graph
Elastic Cloud

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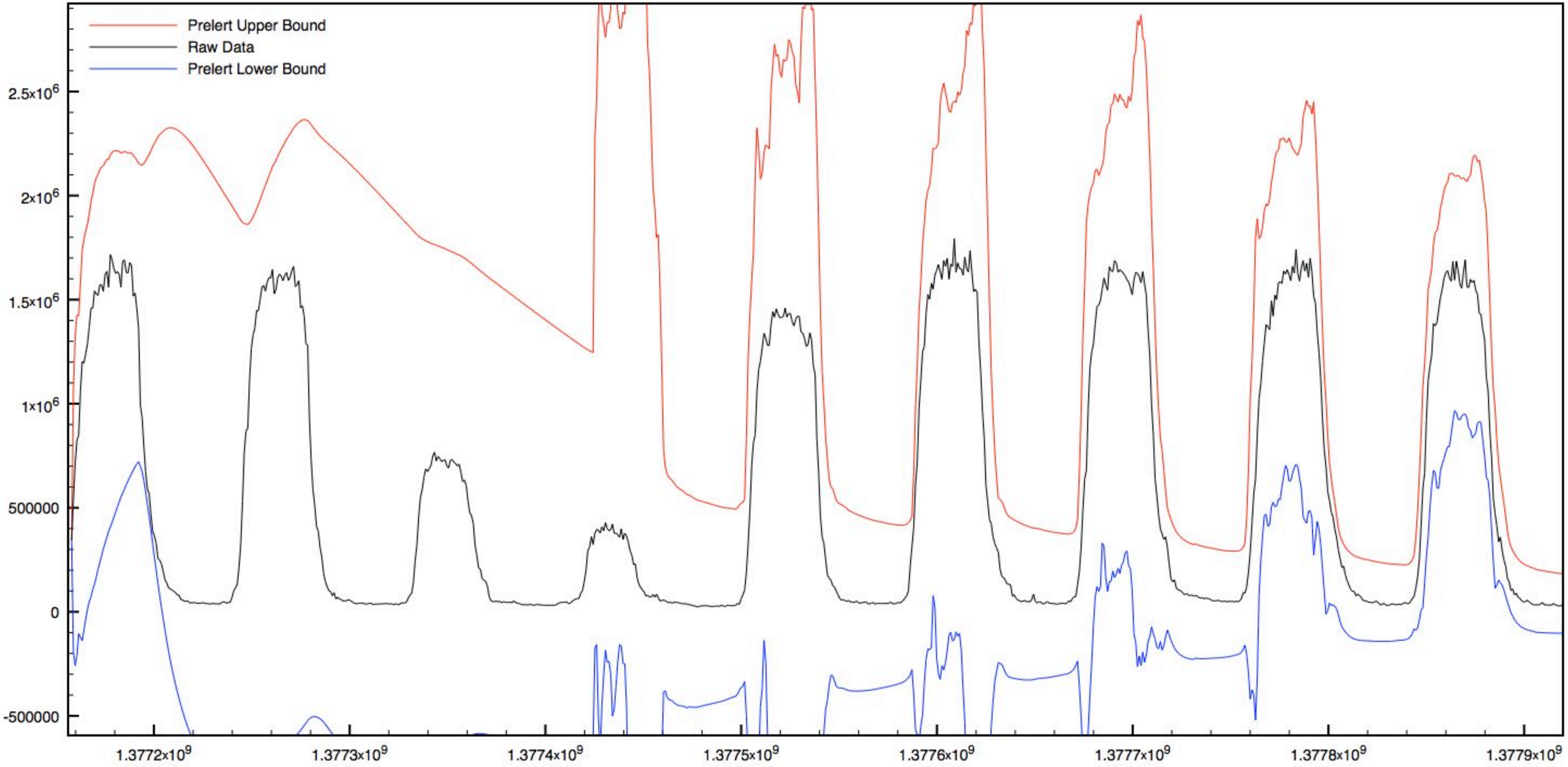
Prelert is coming


Prelert Upper Bound
Raw Data
Prelert Lower Bound
2.5x10^6
2x10^6
1.5x10^6
1x10^6
500000
0
-500000
1.3772x10^9
1.3773x10^9
1.3774x10^9
1.3775x10^9
1.3776x10^9
1.3777x10^9
1.3778x10^9
1.3779x10^9

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Try it

https://github.com/xeraa/vagrant-elastic-stack

QUESTIONS?

Philipp Krenn @xeraa

PS: Sticker