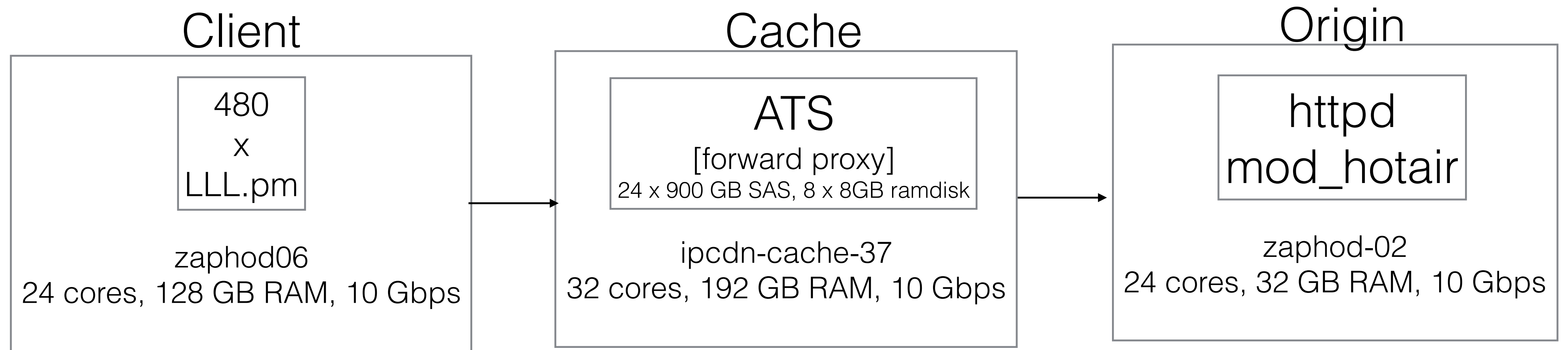


Caching ABR “Live” TV

Mark Torluemke, Phil Sorber
October 2014



Testing Setup - Picture



Testing Setup - Origin Server

mod_hotair: httpd module, knowledge of common HSS, HLS URL formats, sends proper # of bytes.

The image shows a Wireshark packet capture of an HTTP 200 OK response. The top section shows the packet list with two entries: a GET request (frame 2582) and an HTTP 200 OK response (frame 2674). The response is for a video/mp4 file. The packet details pane shows the following information:

- Frame 832: 1161 bytes on wire (9288 bits), 1161 bytes captured (9288 bits)
- Ethernet II, Src: Hewlett-4f:6d:88 (2c:27:d7:4f:6d:88), Dst: JuniperN_f5:49:6f (28:c0:da:f5:49:6f)
- Internet Protocol Version 4, Src: 69.252.122.58 (69.252.122.58), Dst: 69.241.62.86 (69.241.62.86)
- Transmission Control Protocol, Src Port: 80 (80), Dst Port: 47061 (47061), Seq: 1129275890, Ack: 1046549858, Len: 1095
- [199 Reassembled TCP Segments (1119138 bytes): #588(187), #589(2896), #590(2896), #591(2896), #592(2896), #593(1448), #596(2896), #597(2896), #598(2896), #599(2896), #600(2896), #601(2896), #602(2896), #603(2896), #604(2896), #606(2896), #6]
- Hypertext Transfer Protocol**
 - HTTP/1.1 200 OK\r\n
 - Date: Wed, 15 Oct 2014 02:33:25 GMT\r\n
 - Server: Apache/2.4.6 (CentOS)\r\n
 - Content-Length: 1118951\r\n
 - Cache-Control: max-age=172800\r\n
 - ETag: 333-444-456\r\n
 - Content-Type: video/mp4\r\n
 - \r\n
 - [HTTP response 2/4]
 - [Time since request: 0.007679000 seconds]
 - [\[Prev request in frame: 33\]](#)
 - [\[Prev response in frame: 538\]](#)
 - [\[Request in frame: 587\]](#)
 - [\[Next request in frame: 1288\]](#)
 - [\[Next response in frame: 1548\]](#)
- [Expert Info (Note/Malformed): HTTP body subdissector failed, trying heuristic subdissector]
- Media Type**
 - Media Type: video/mp4 (1118951 bytes)

The packet bytes pane shows the raw data of the response, including the Content-Length header and the start of the video data (0x33).

```
000050 4f 53 29 0d 0a 43 6f 6e 74 65 6e 74 2d 4c 65 6e 05)..Con tent-Len
000060 67 74 68 3a 20 31 31 31 38 39 35 31 0d 0a 43 61 gth: 111 8951..Ca
000070 63 68 65 2d 43 6f 6e 74 72 6f 6c 3a 20 6d 61 78 che-Cont rol: max
000080 2d 61 67 65 3d 31 37 32 38 30 30 0d 0a 45 54 61 -age=172 800..ETa
000090 67 3a 20 33 33 33 2d 34 34 34 2d 34 35 36 0d 0a g: 333-4 44-456..
0000a0 43 6f 6e 74 65 6e 74 2d 54 79 70 65 3a 20 76 69 Content- Type: vi
0000b0 64 65 6f 2f 6d 70 34 0d 0a 0d 0a 33 33 33 33 33 deo/mp4. ...33333
0000c0 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33333333 33333333
0000d0 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33333333 33333333
0000e0 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33333333 33333333
0000f0 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33333333 33333333
000100 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33333333 33333333
000110 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33333333 33333333
000120 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33333333 33333333
000130 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33333333 33333333
000140 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33333333 33333333
000150 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33333333 33333333
000160 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33333333 33333333
```

Frame (1161 bytes) | Reassembled TCP (1119138 bytes)

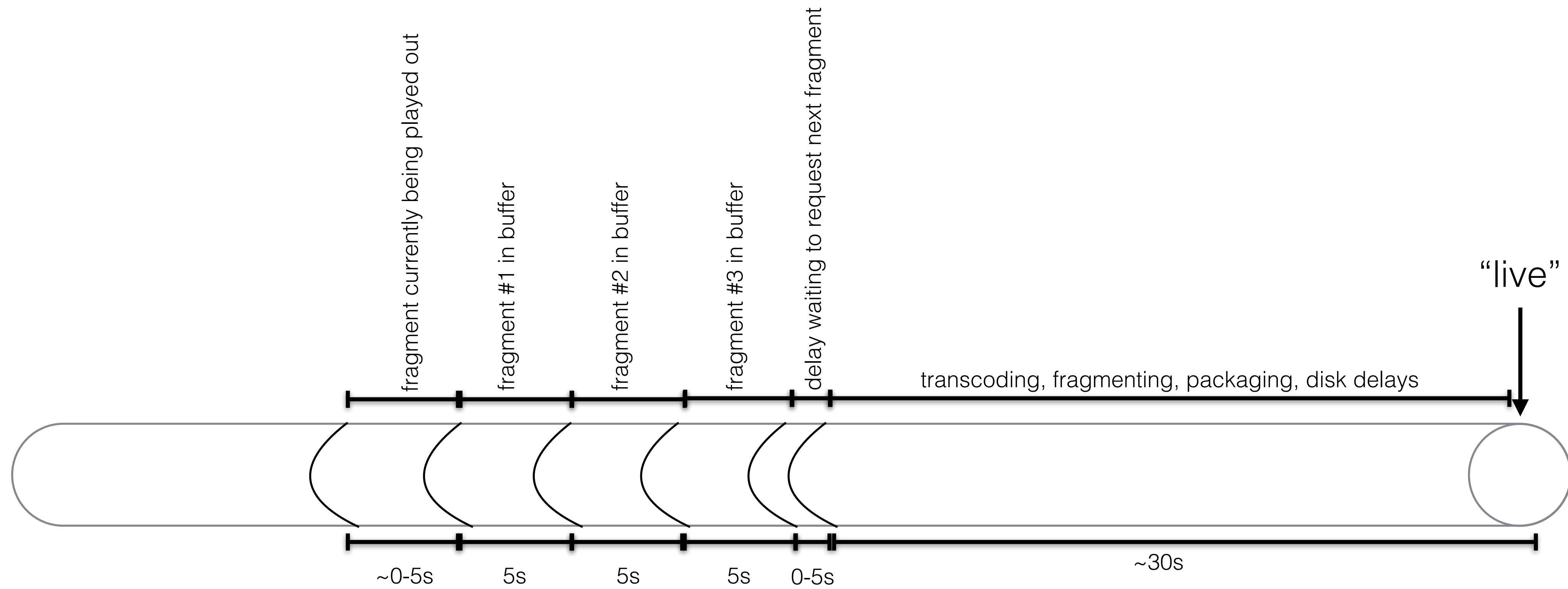
Testing Setup - Client

- Real ABR client! (...from the CDN's perspective)
- Perl thread 'watching' the video
 - Follows time codes
 - Sleeps for (duration_of_frag - time_taken_to_get_frag)
- Replicated 480 times

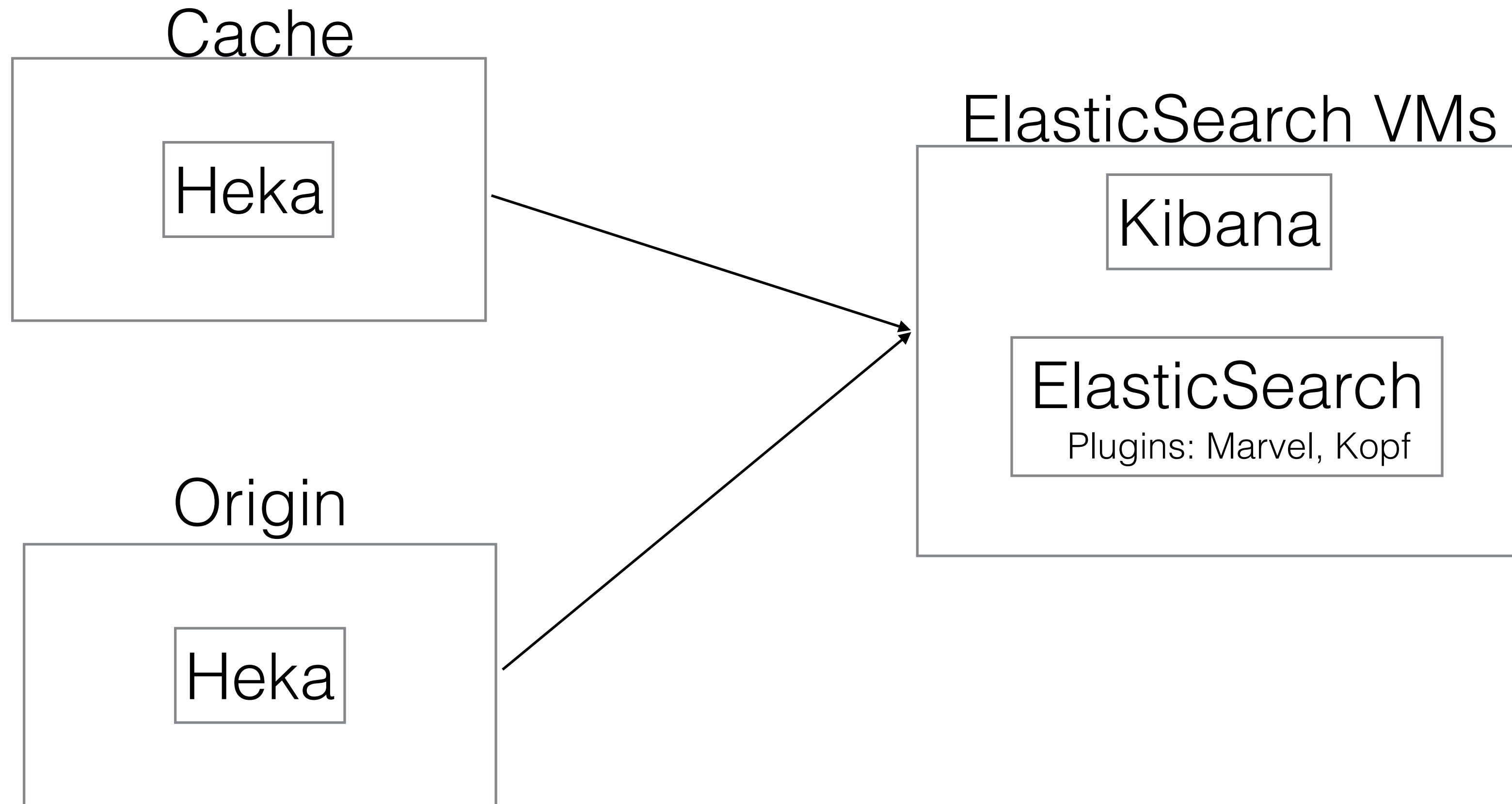
Design Goals

- Don't hammer the origin (1 request/frag, please)
- Handle real-world origin scenarios
 - Network latency
 - Transcoding (MPEG2->MPEG4 * ~8 bitrates) / Fragmenting (MPEG4-10) / Packaging (HLS/HDS/HSS formats) is hard, delays happen
 - Full failure (hardware, network, human error)
- Send timely failures to client

Timeline



Logging Setup



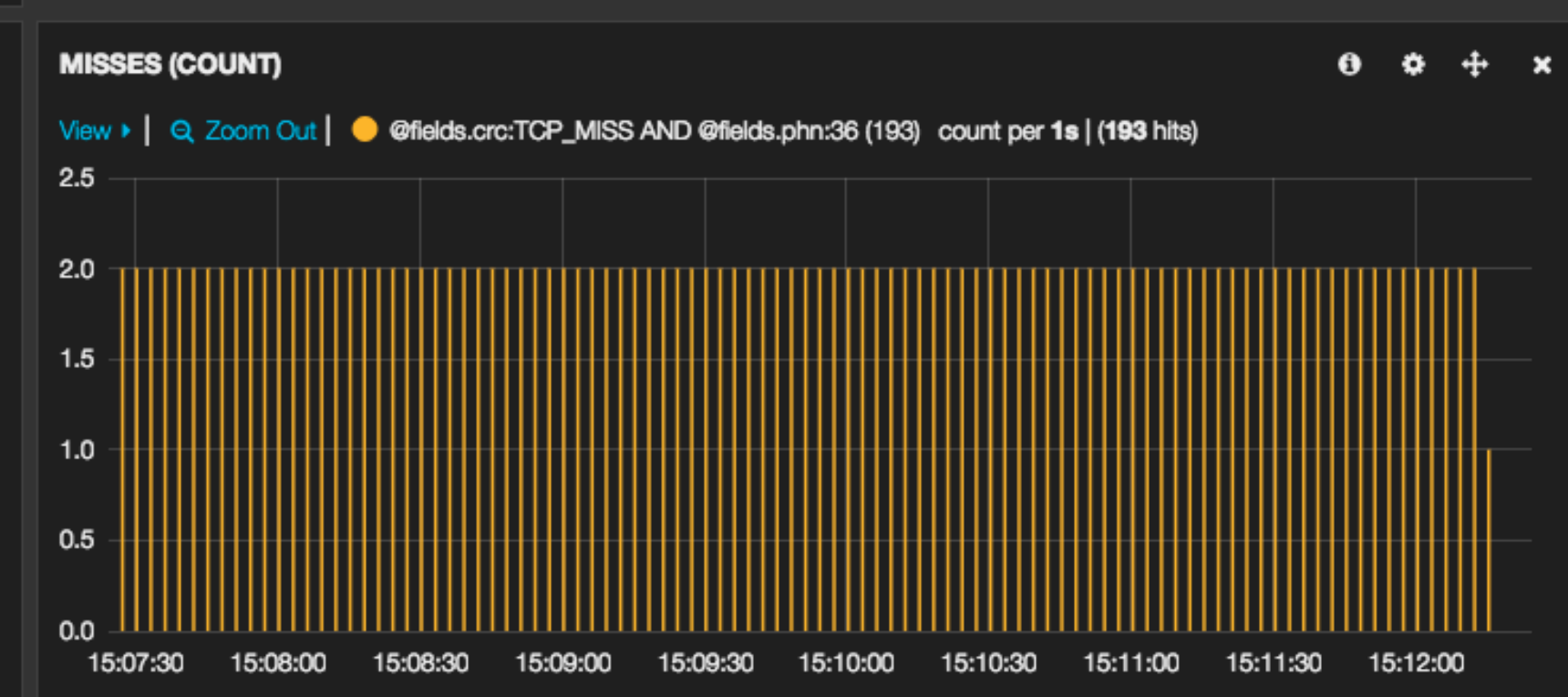
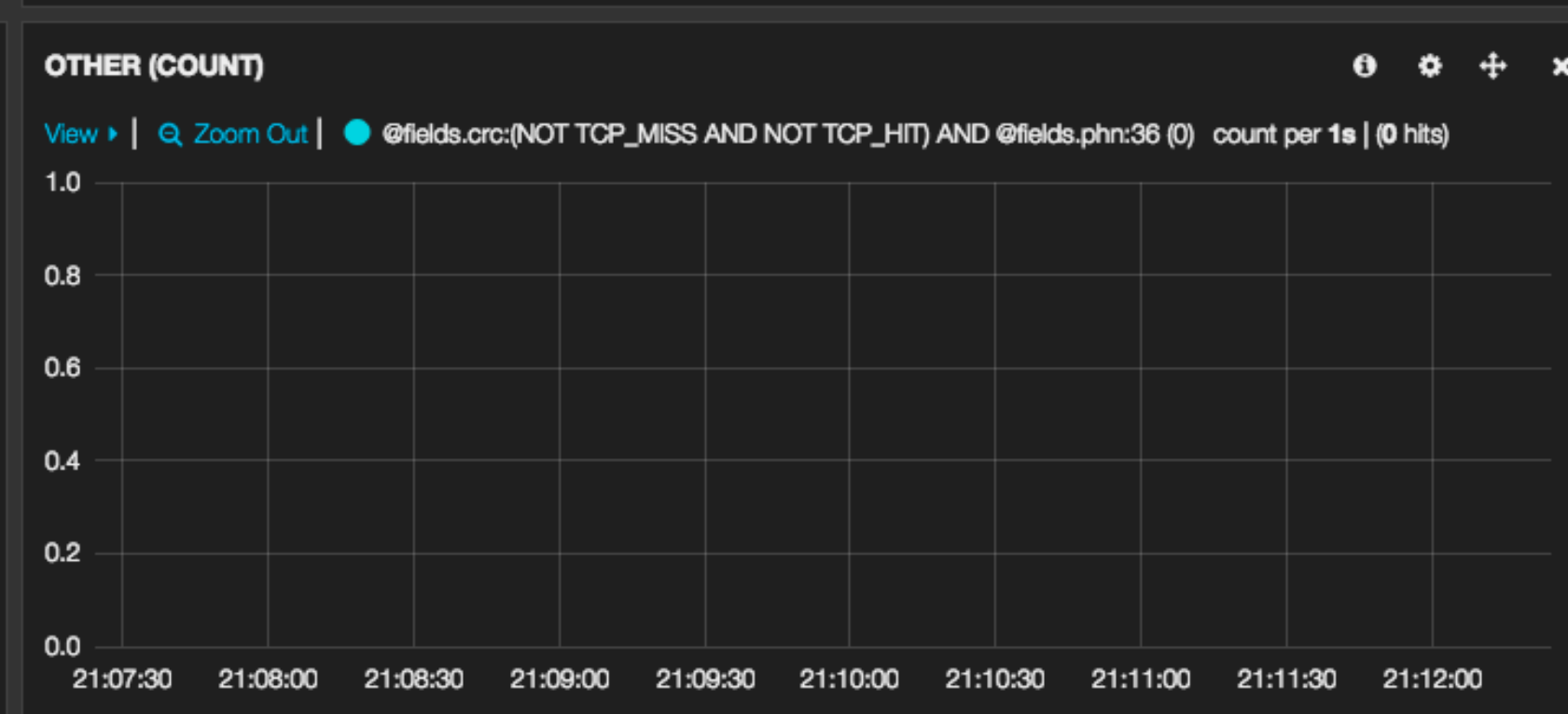
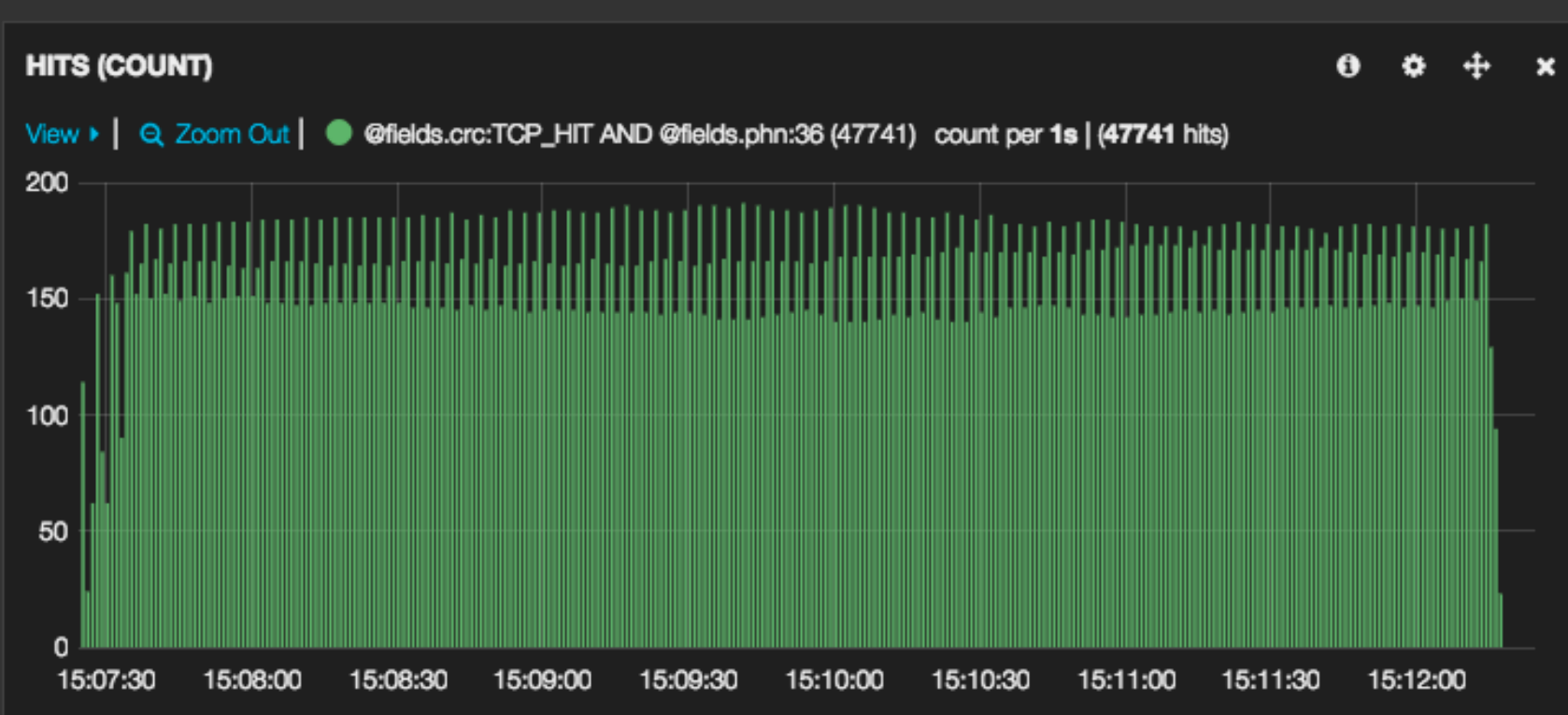
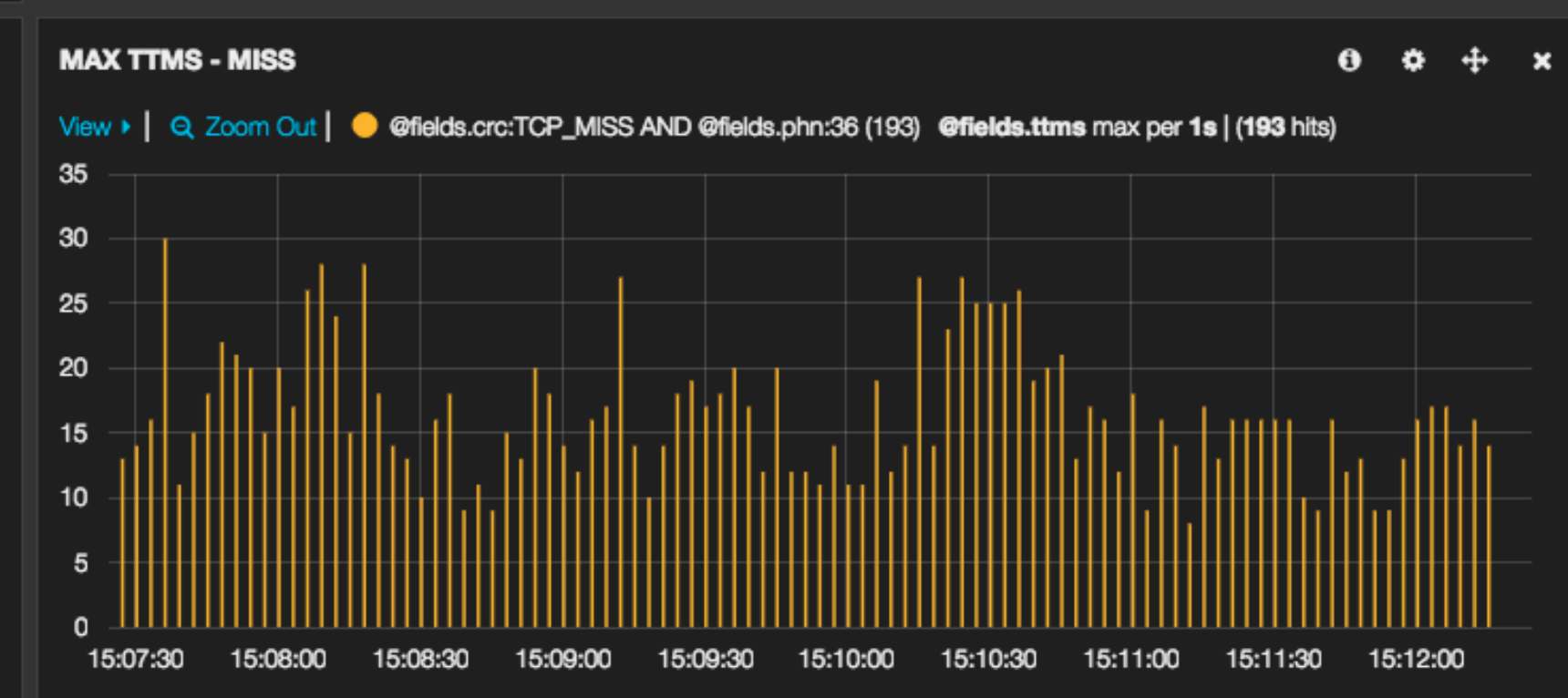
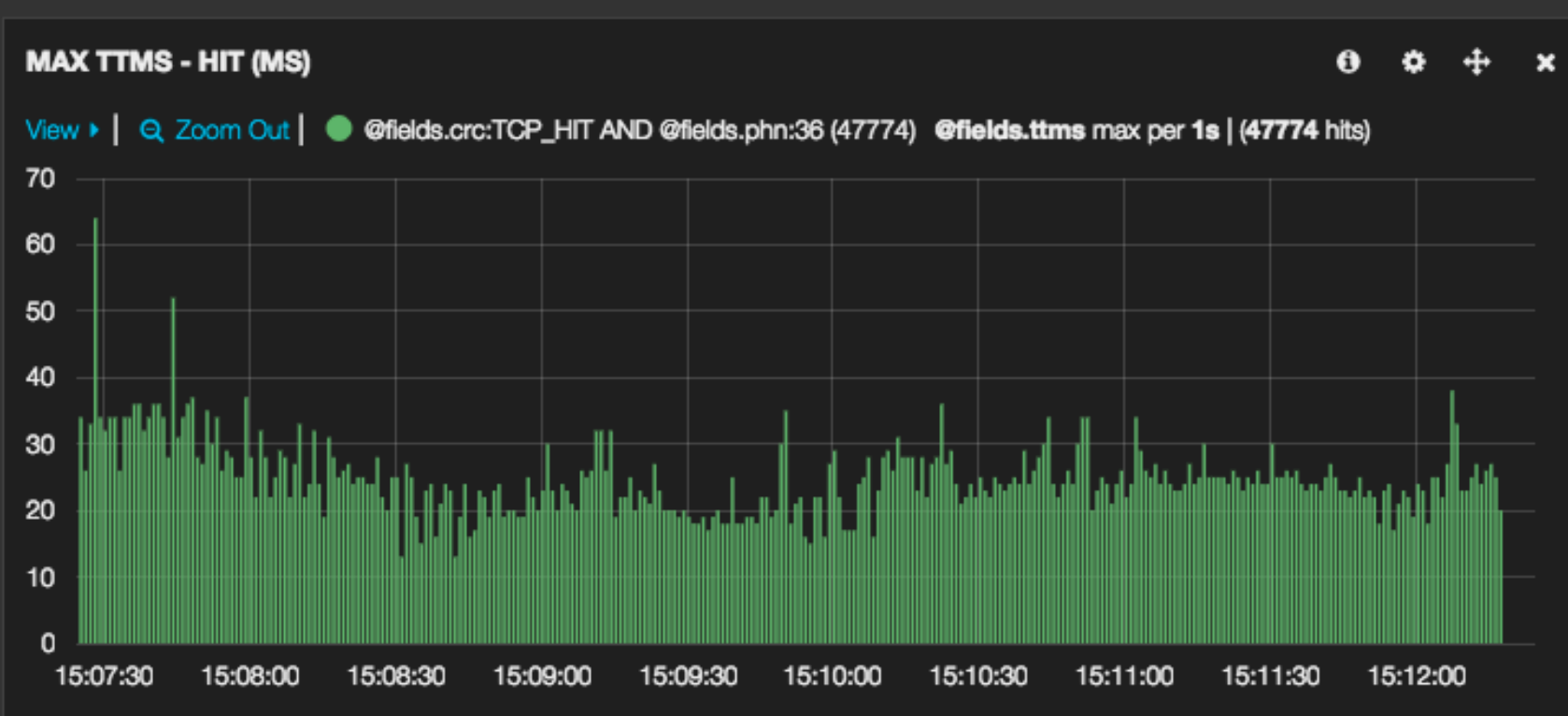
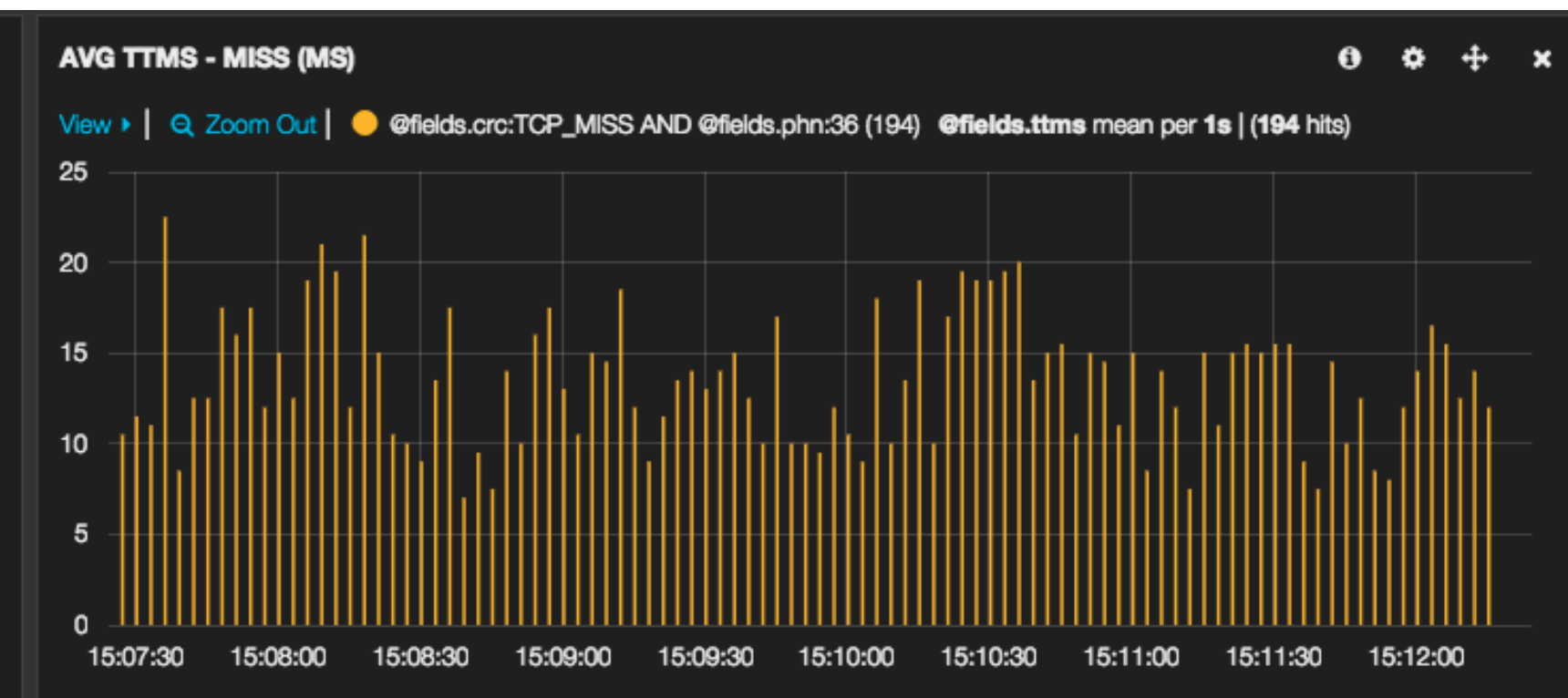
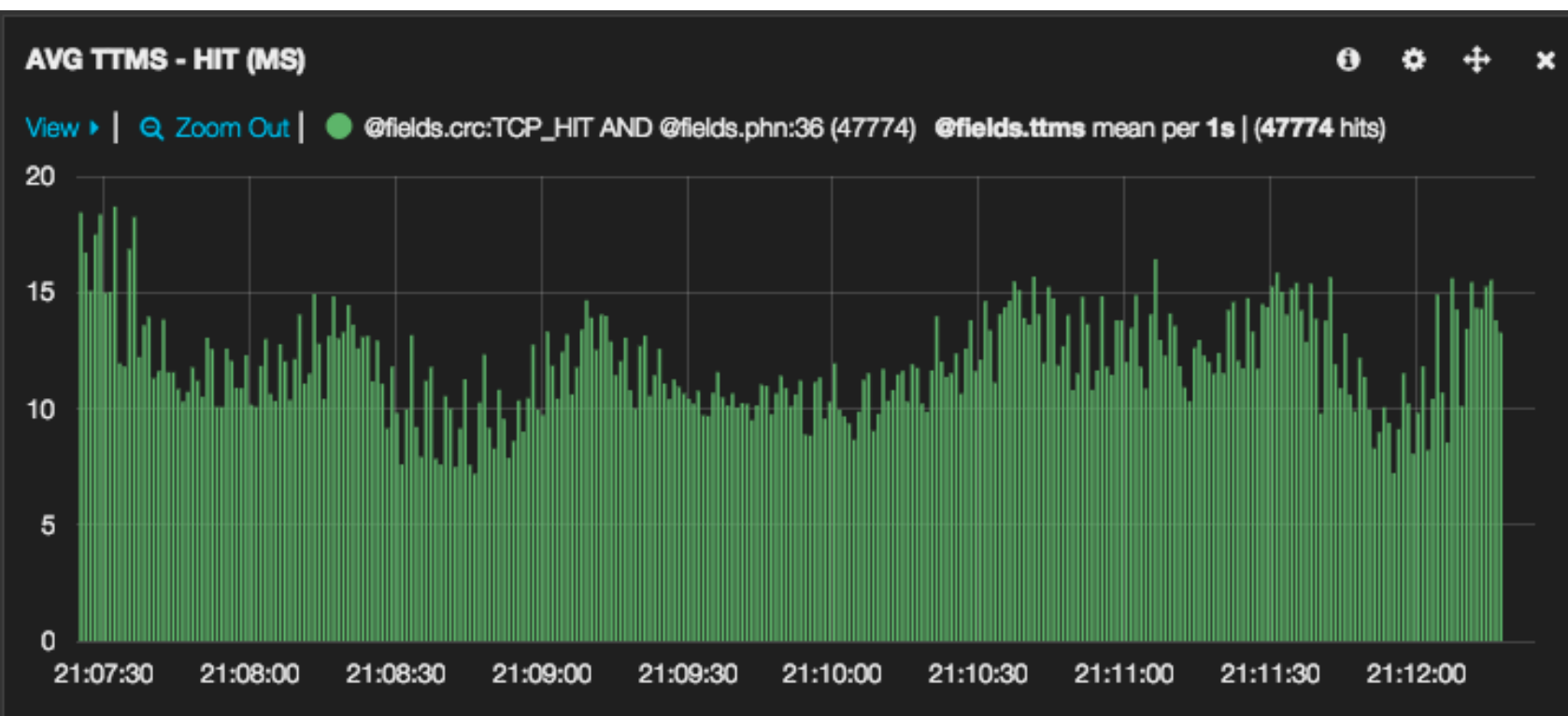
Original setup - ATS v3.2.0, read_while_writer off

```
[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$\|^$#'
LoadModule hotair_module      /usr/lib64/httpd/modules/mod_hotair.so
<LocationMatch "(\\.ism*|\\.f4m|\\.Seg\\d-Frag\\d.*|\\.m3u8|\\.ts)">
    SetHandler hotair
</LocationMatch>
[root@zaphod02 ~]#
```

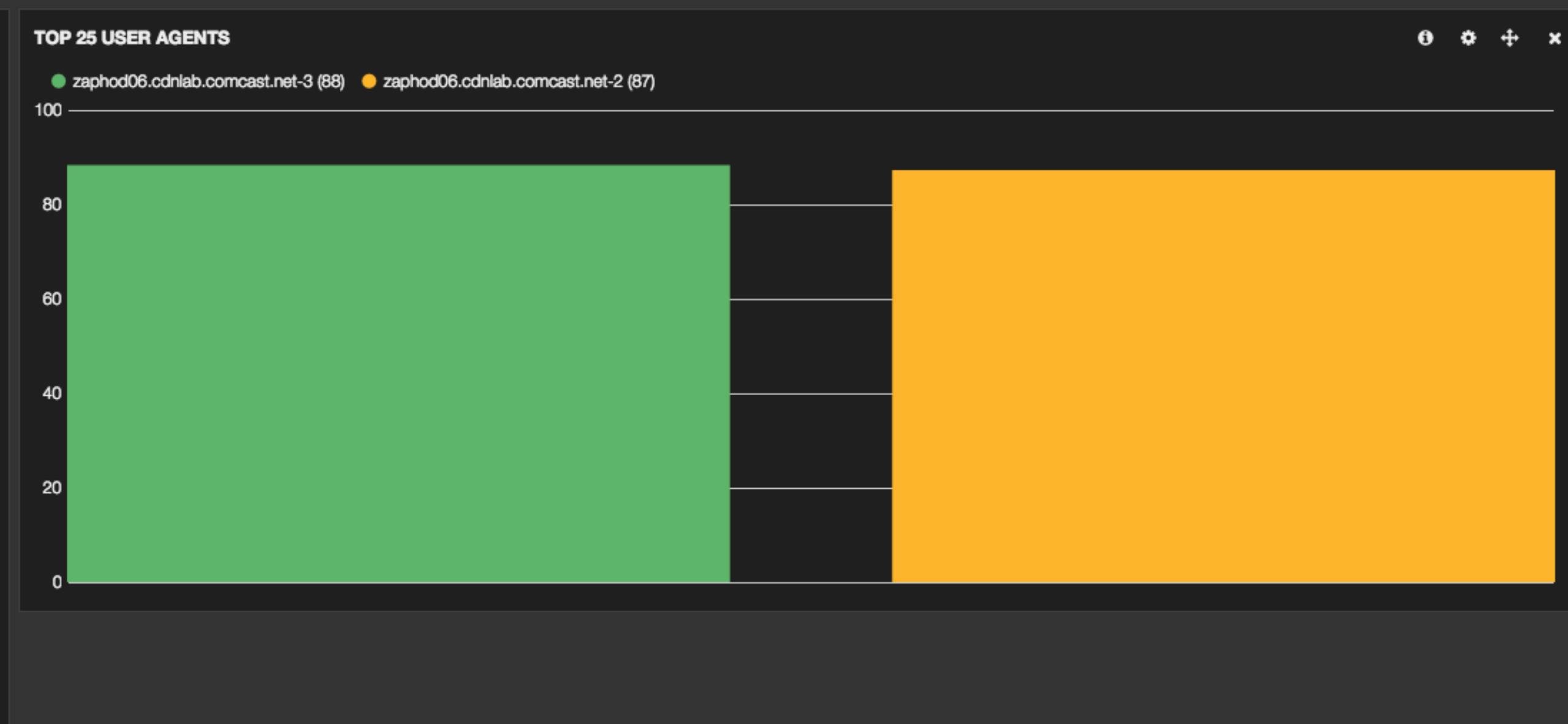
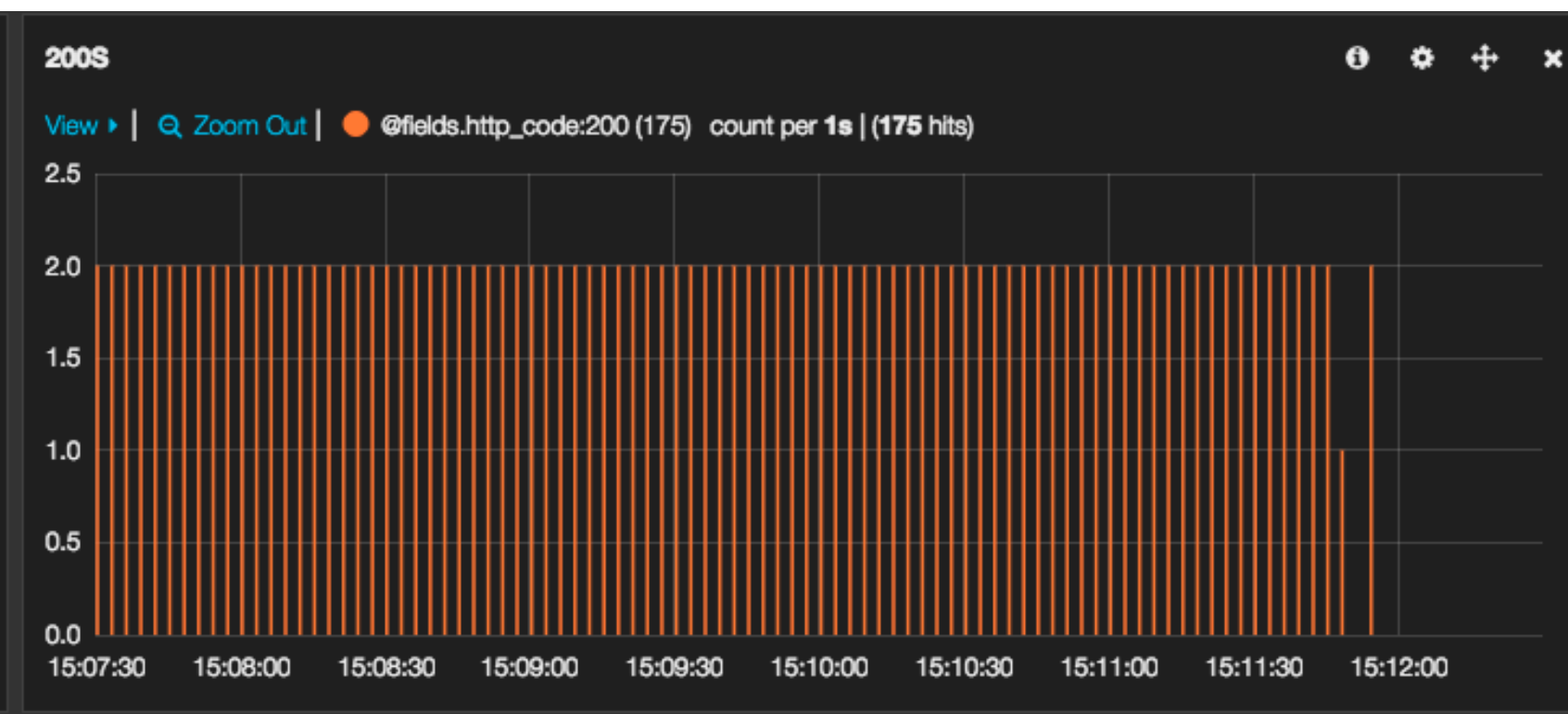
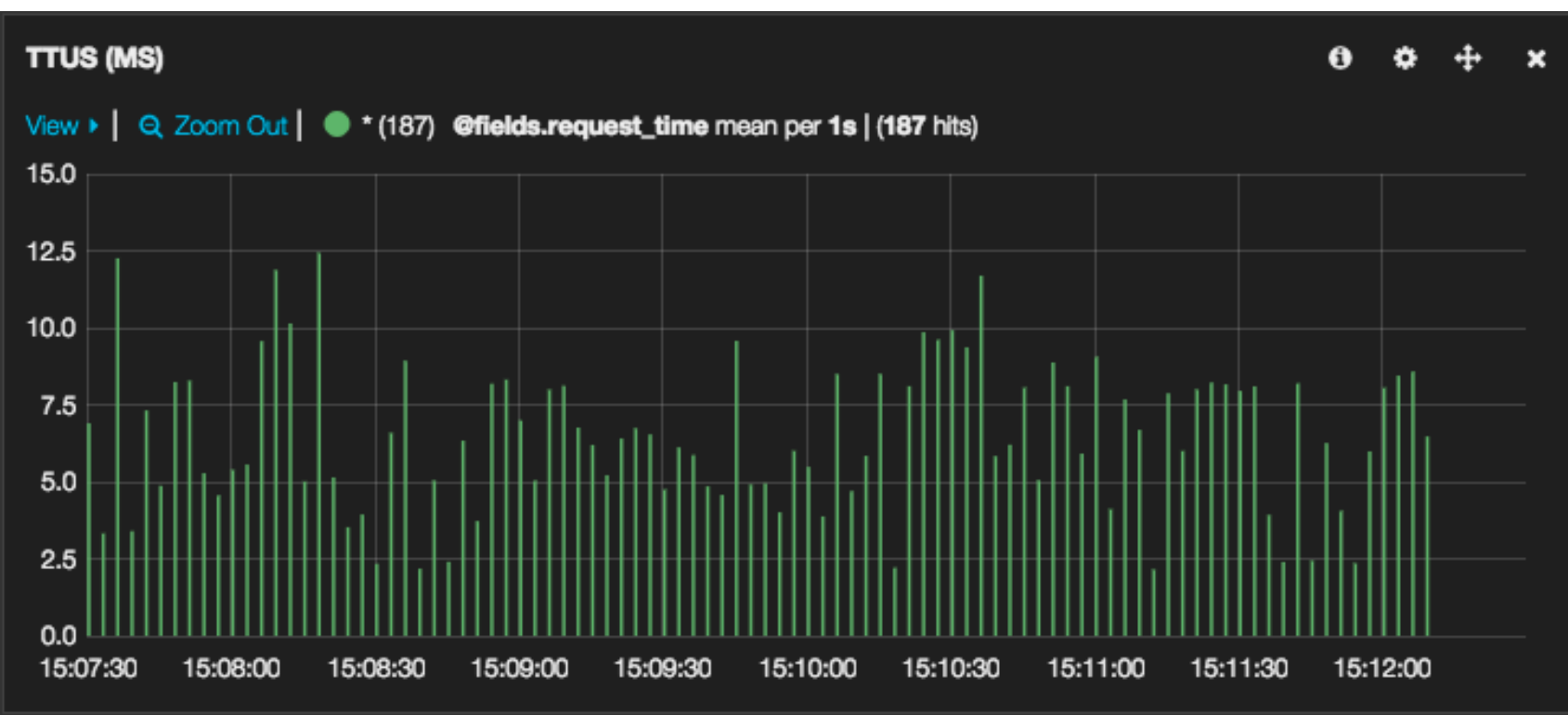
```
[20:45:25 ipcdn-cache-36]~$ /opt/ort/ipcdn_install_ort.pl report warn
Mon Oct 20 20:45:30 UTC 2014
Version of this script: 0.36b
[20:45:32 ipcdn-cache-36]~$
[20:45:45 ipcdn-cache-36]~$ rpm -qa | grep traffic
trafficserver-3.2.0-4812.el6.x86_64
[20:45:57 ipcdn-cache-36]~$
```

```
[mtorlu9137e@zaphod06]lcontrol$ cat fwd_proxy_tight_c36.json
{
    "clients": "480",
    "bitrate": "2500000",
    "test_type": "TestEngines::LLL",
    "abr_type": "hls",
    "frag_duration": "50000000",
    "origins": "1",
    "live": "100",
    "active_channels": "1",
    "vod_cache_name" : "load-test-01.cdnlab.comcast.net",
    "live_cache_name" : "live-orig-01-dns.cdnlab.comcast.net",
    "cache_ip" : "69.241.62.82",
    "vod_cache_hitratio" : "80",
    "live_active_fragments" : "2",
    "vod_bitrates" : "4300000,3000000",
    "live_bitrates" : "6710886,5033164",
    "max_long_tts_percentage" : "0.5",
    "long_tts_time" : "1.5",
    "proxy_mode" : "forward",
    "ipv6_percentage" : 0,
    "via_headers" : 1
}
[mtorlu9137e@zaphod06]lcontrol$
```

Mid graphs



Origin graphs



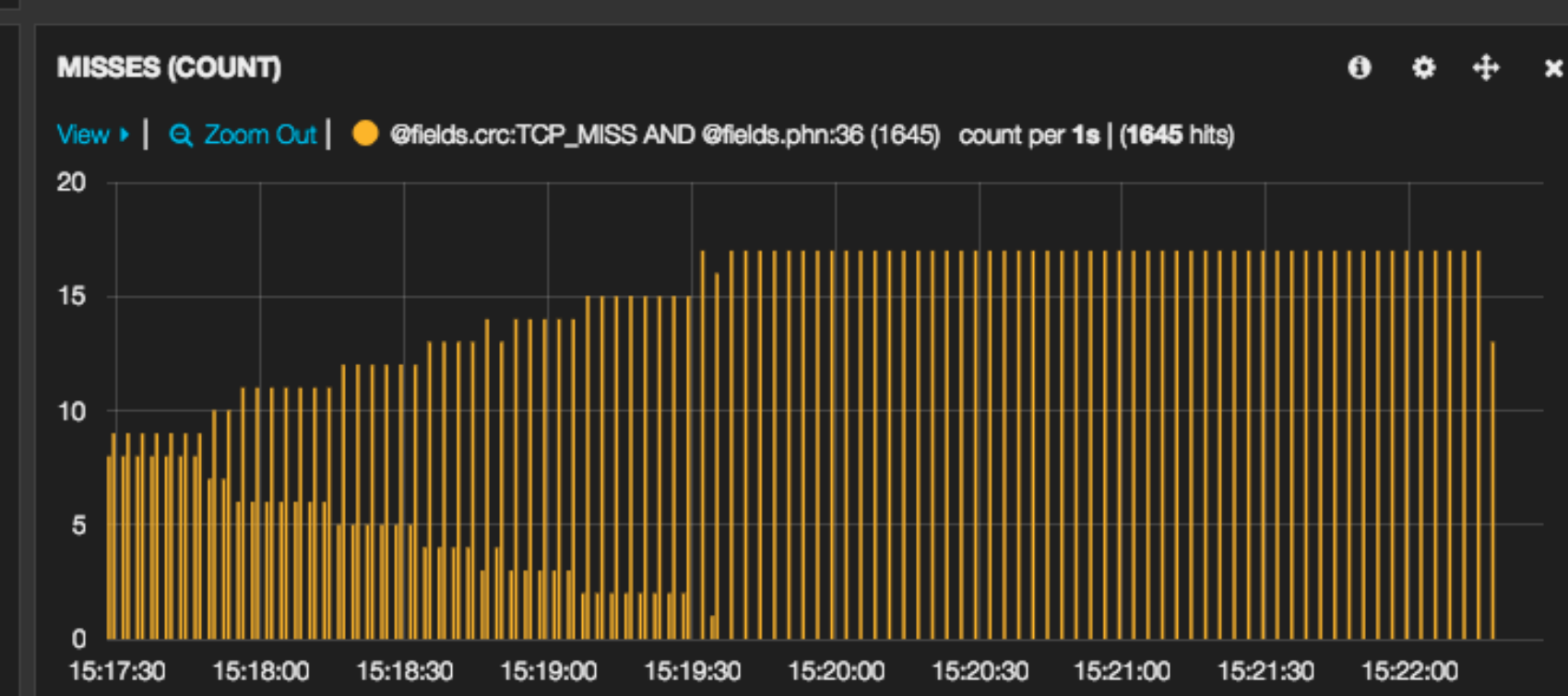
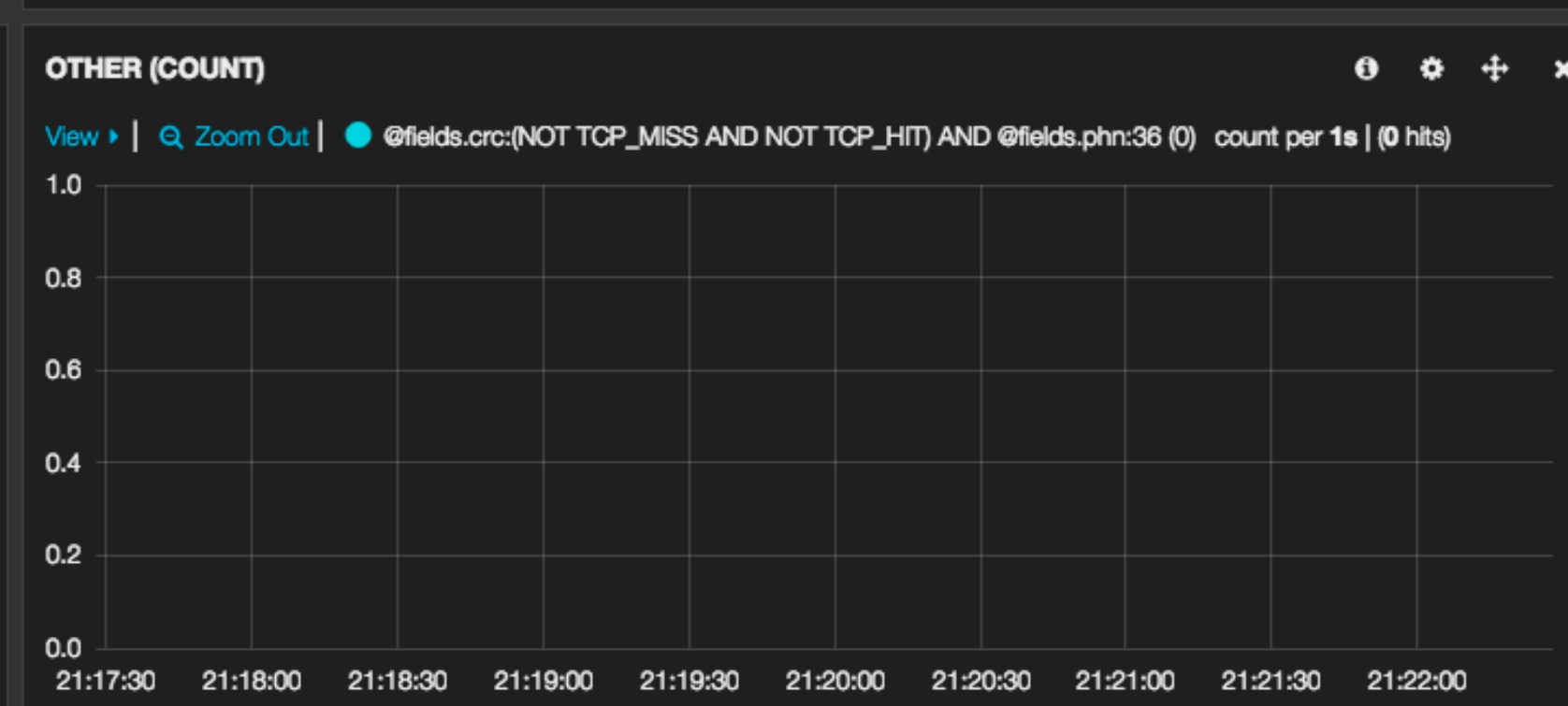
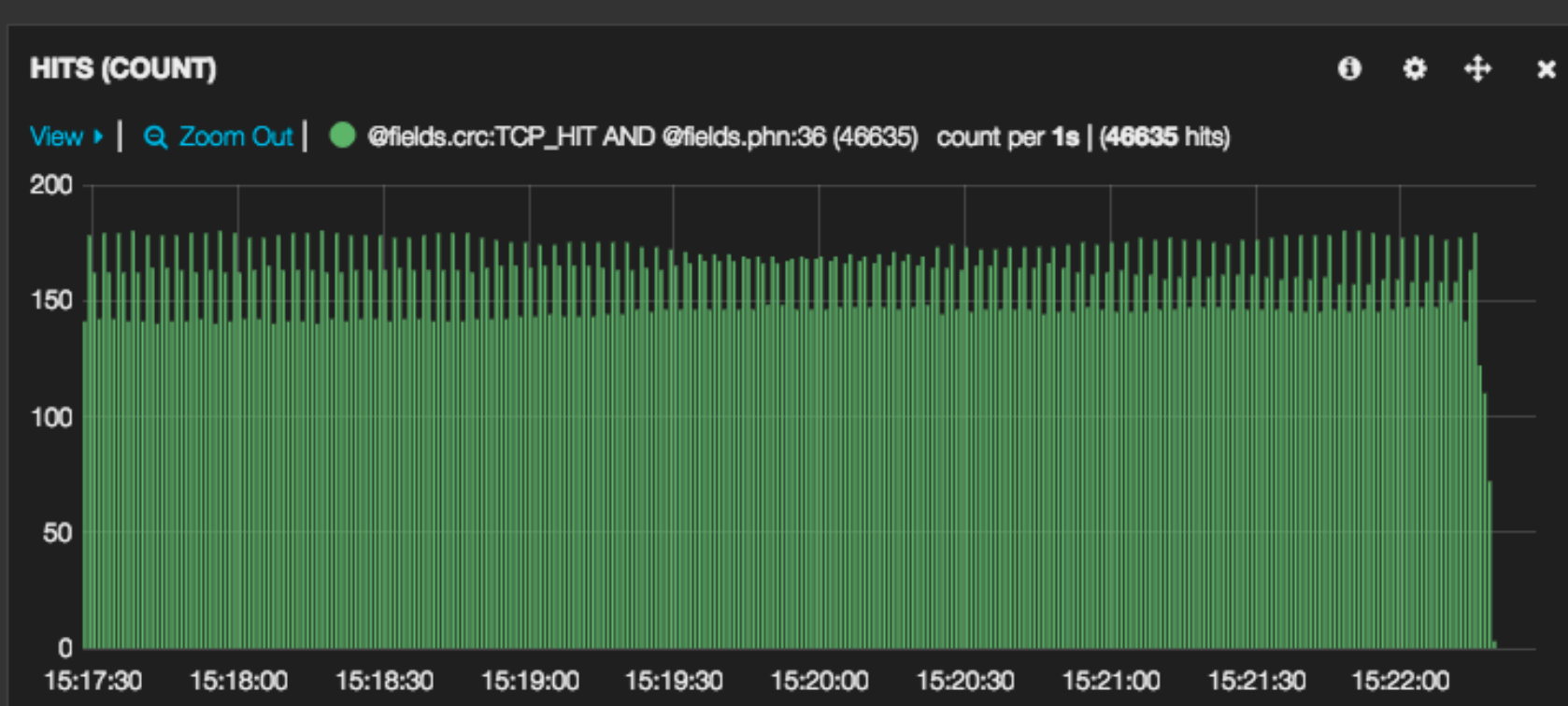
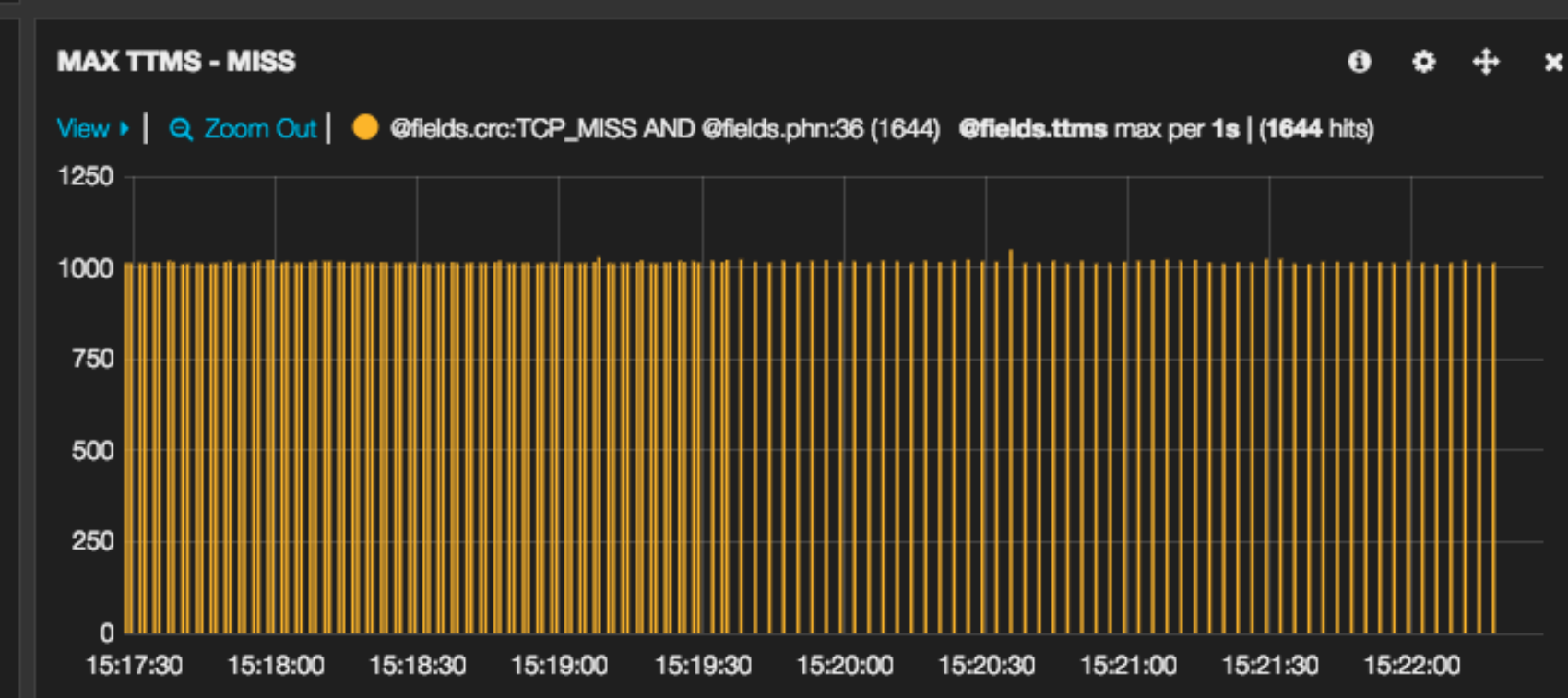
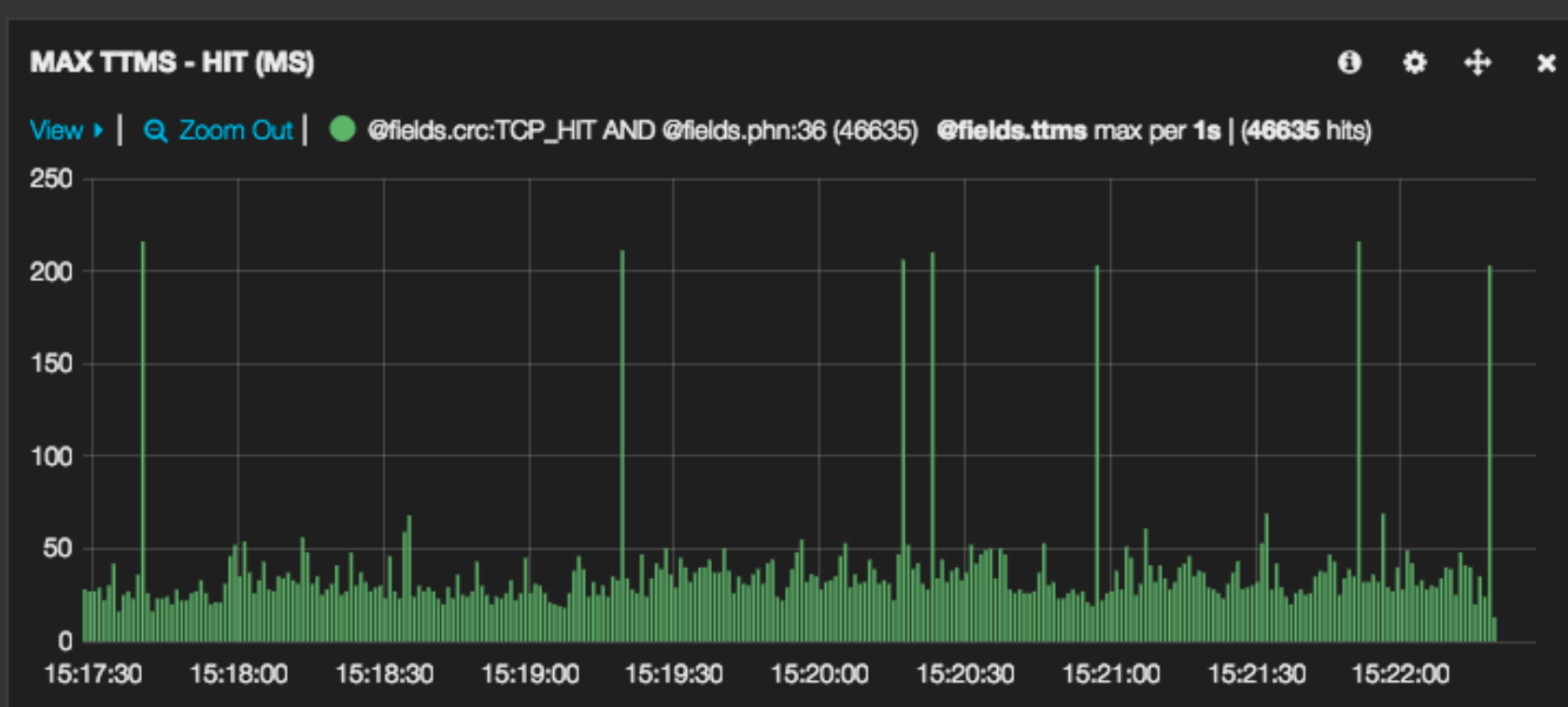
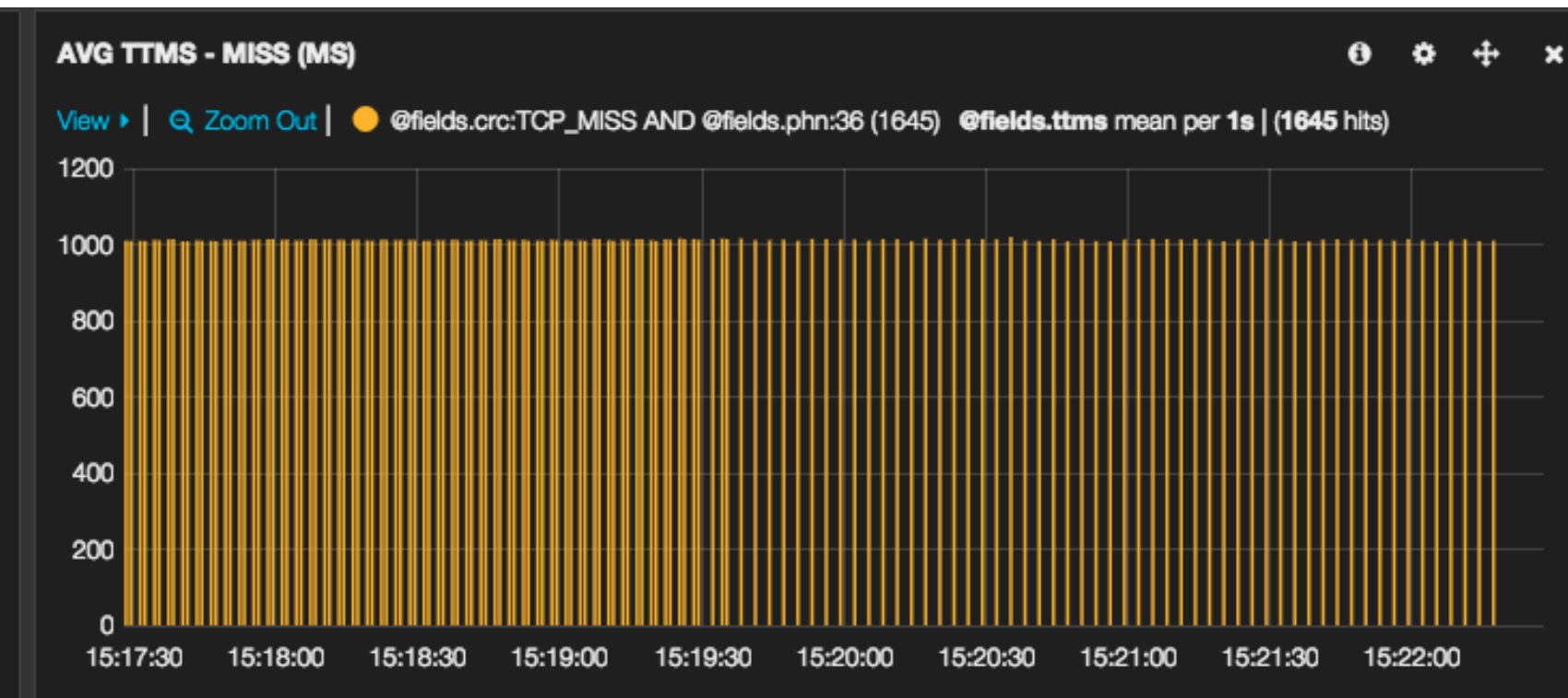
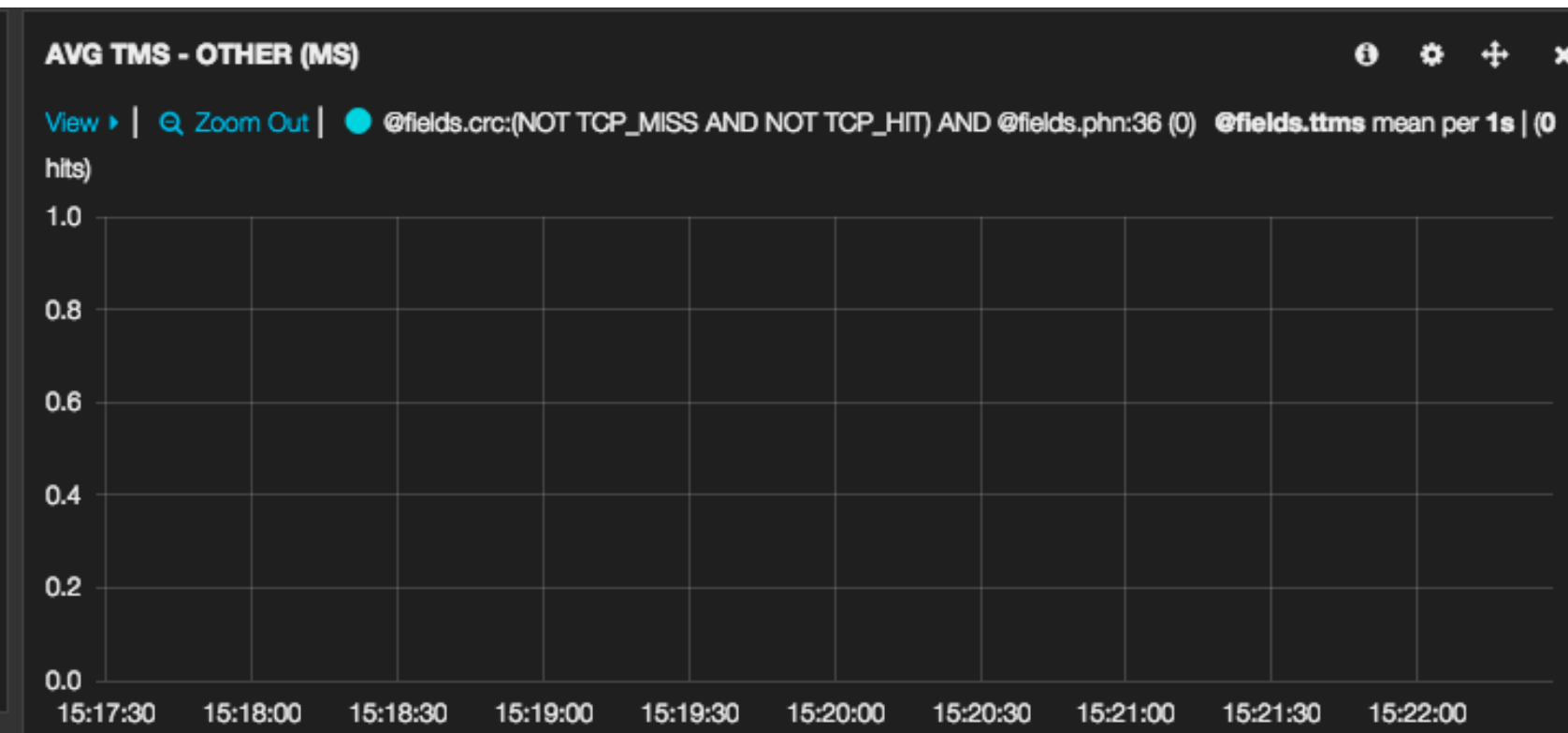
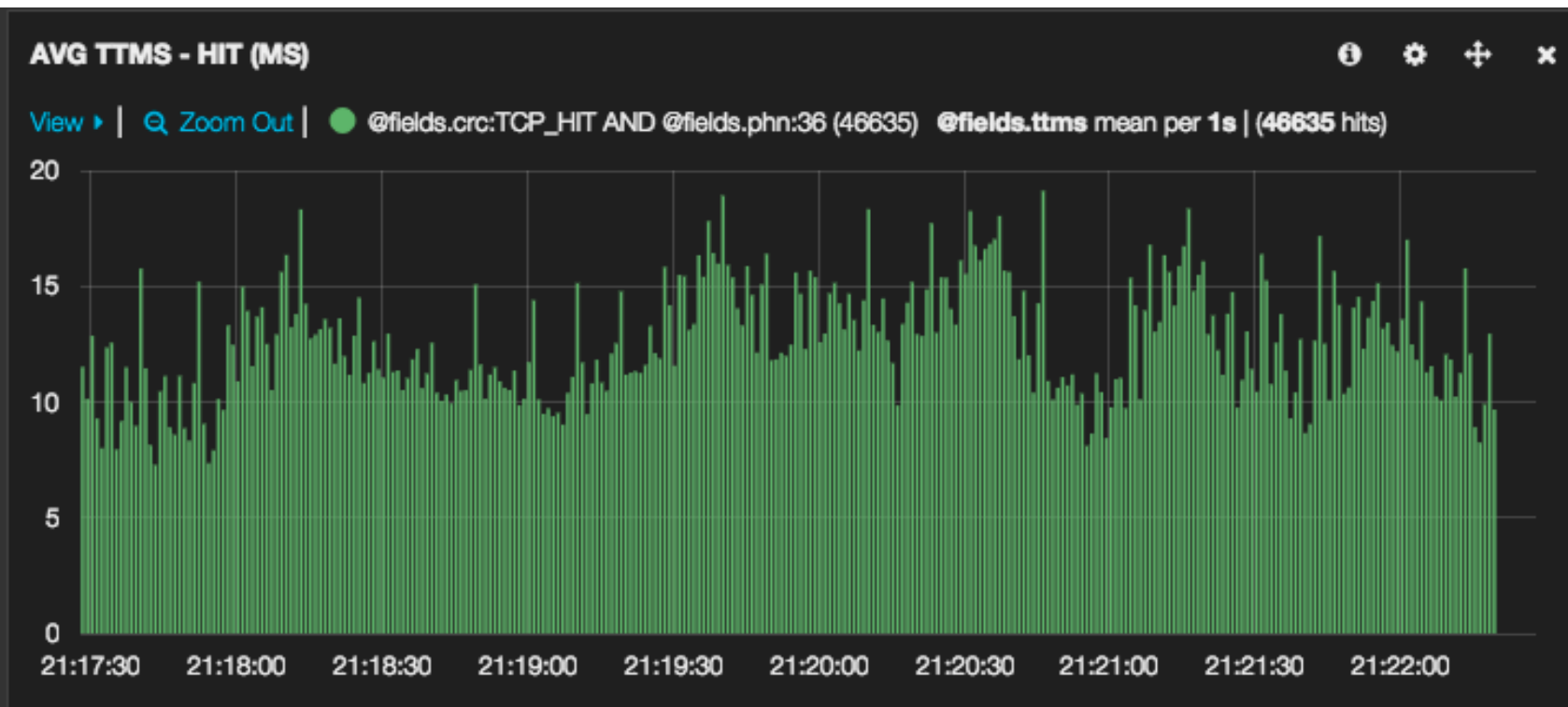
ATS v3.2.0 — add static origin TTFB = 1.0s

```
[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$|^\\#'
LoadModule hotair_module      /usr/lib64/httpd/modules/mod_hotair.so
<LocationMatch "(\\.ism*|\\.f4m|\\..*Seg\\d-Frag\\d.*|\\.m3u8|\\.ts)">
    SetHandler hotair
</LocationMatch>
HotairDelayOnFirstByteInMs 1000
[root@zaphod02 ~]#
```

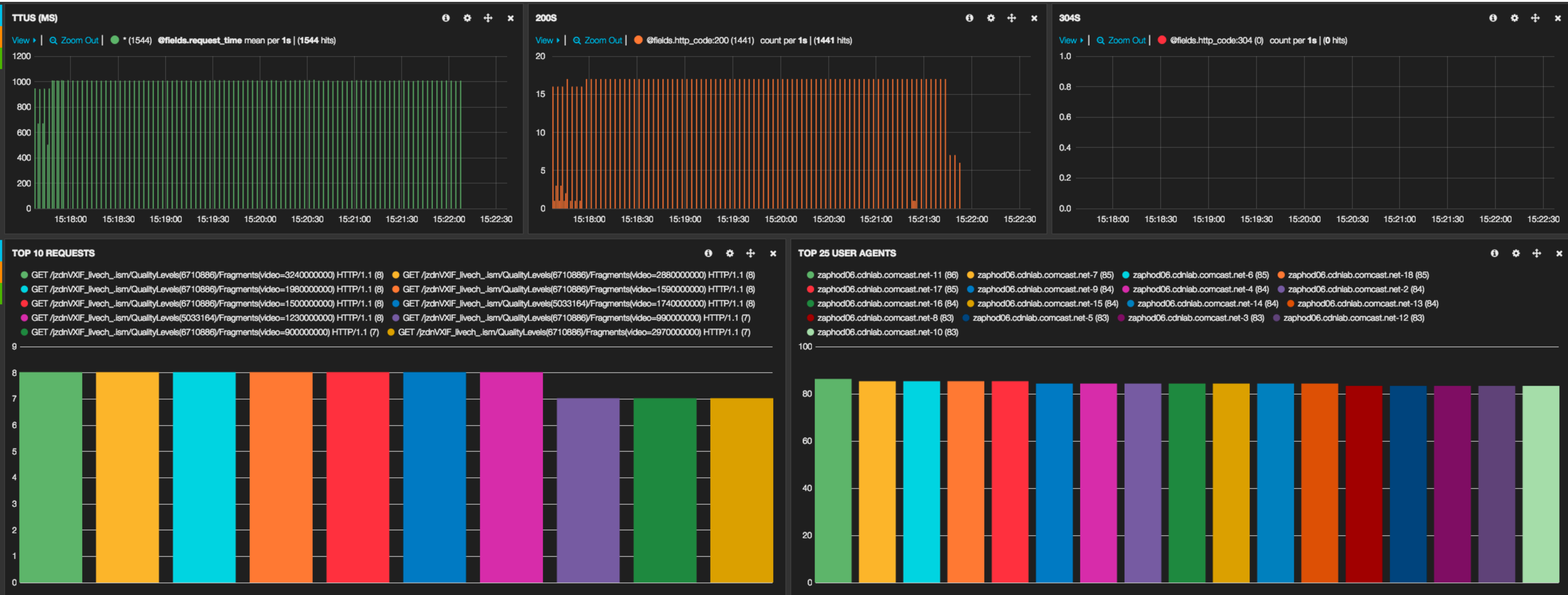
```
[21:15:40 ipcdn-cache-36]~$ /opt/ort/ipcdn_install_ort.pl report warn
Mon Oct 20 21:15:42 UTC 2014
Version of this script: 0.36b
[21:15:47 ipcdn-cache-36]~$
```

```
[mtorlu9137e@zaphod06]lcontrol$ cat fwd_proxy_tight_c36.json
{
  "clients": "480",
  "bitrate": "2500000",
  "test_type": "TestEngines::LLL",
  "abr_type": "hls",
  "frag_duration": "50000000",
  "origins": "1",
  "live": "100",
  "active_channels": "1",
  "vod_cache_name" : "load-test-01.cdnlab.comcast.net",
  "live_cache_name" : "live-orig-01-dns.cdnlab.comcast.net",
  "cache_ip" : "69.241.62.82",
  "vod_cache_hitratio" : "80",
  "live_active_fragments" : "2",
  "vod_bitrates" : "4300000,3000000",
  "live_bitrates" : "6710886,5033164",
  "max_long_tts_percentage" : "0.5",
  "long_tts_time" : "1.5",
  "proxy_mode" : "forward",
  "ipv6_percentage" : 0,
  "via_headers" : 1
}
[mtorlu9137e@zaphod06]lcontrol$
```


Mid graphs



Origin graphs



Add packet delay @ origin = 100ms

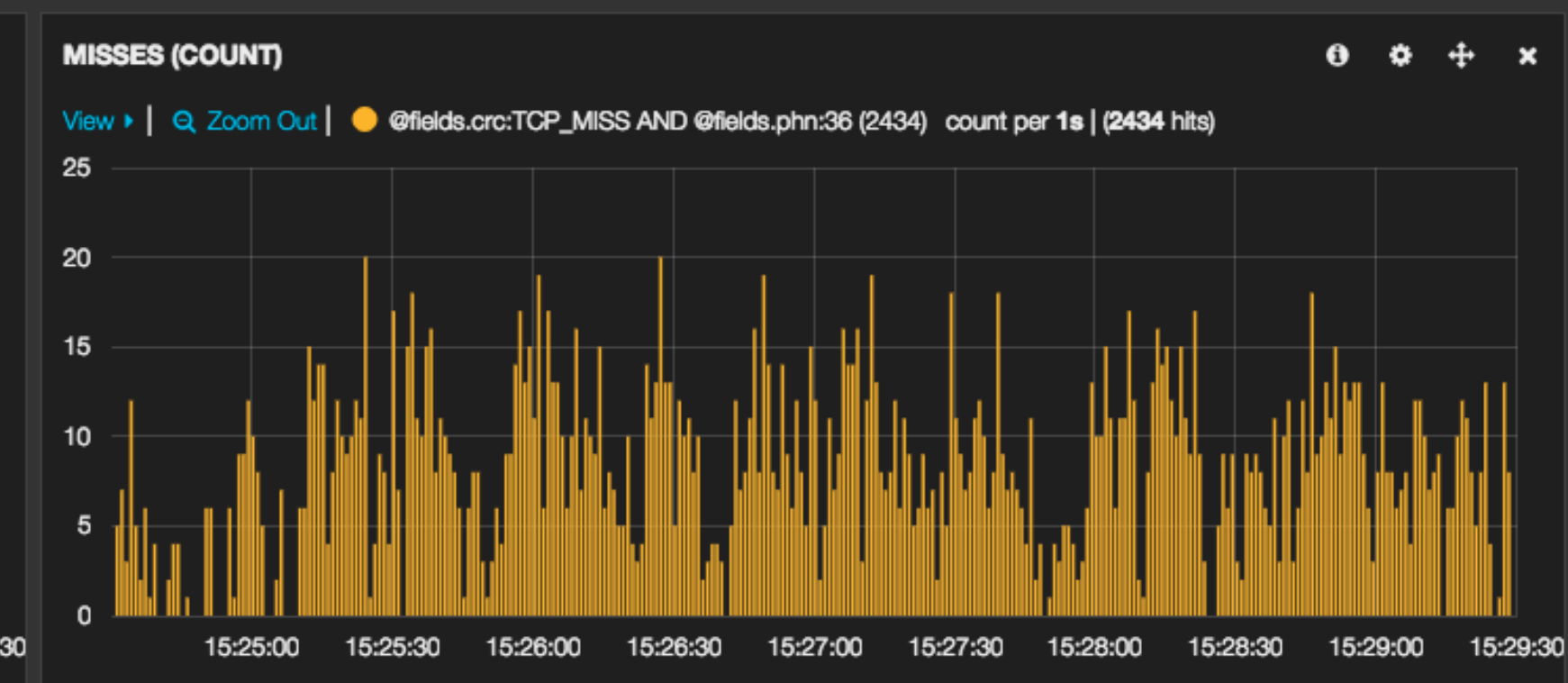
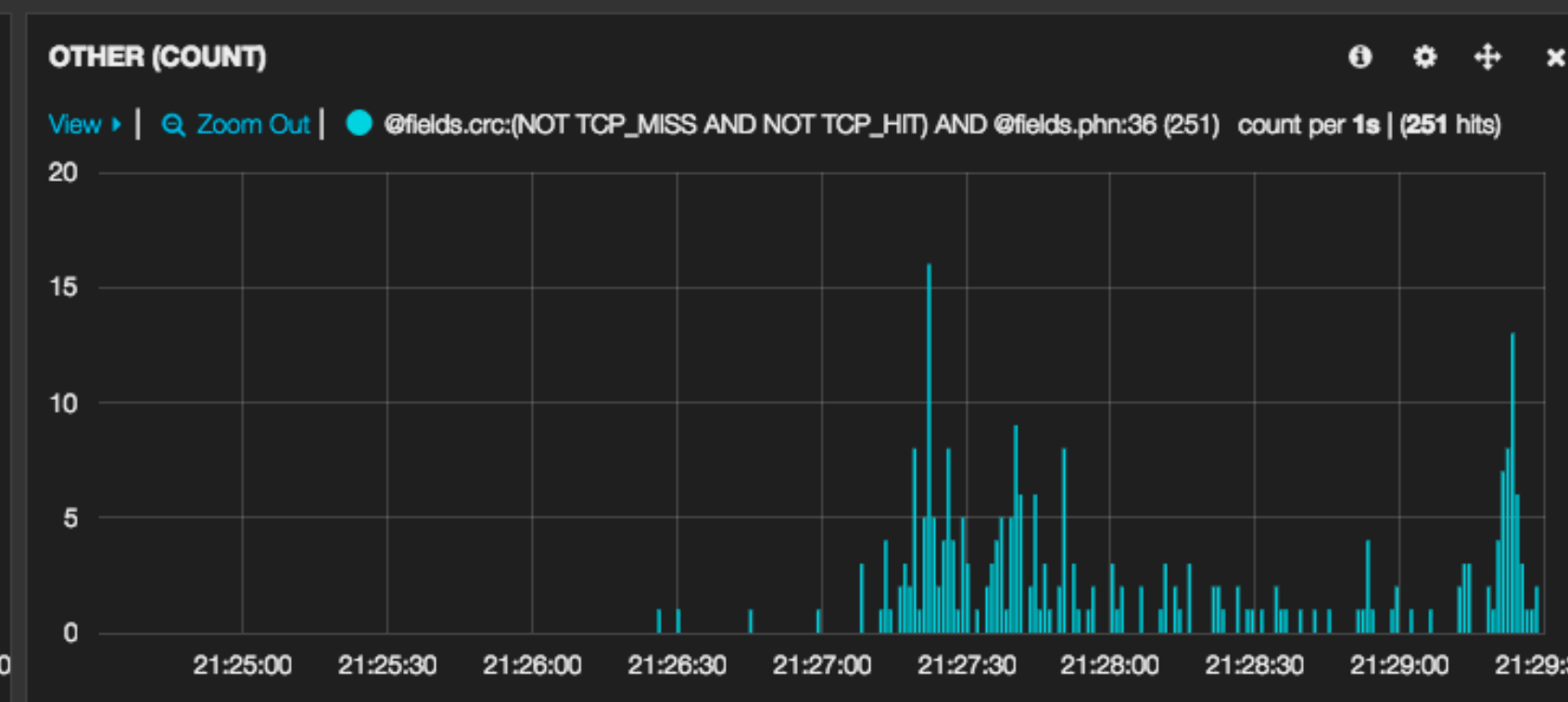
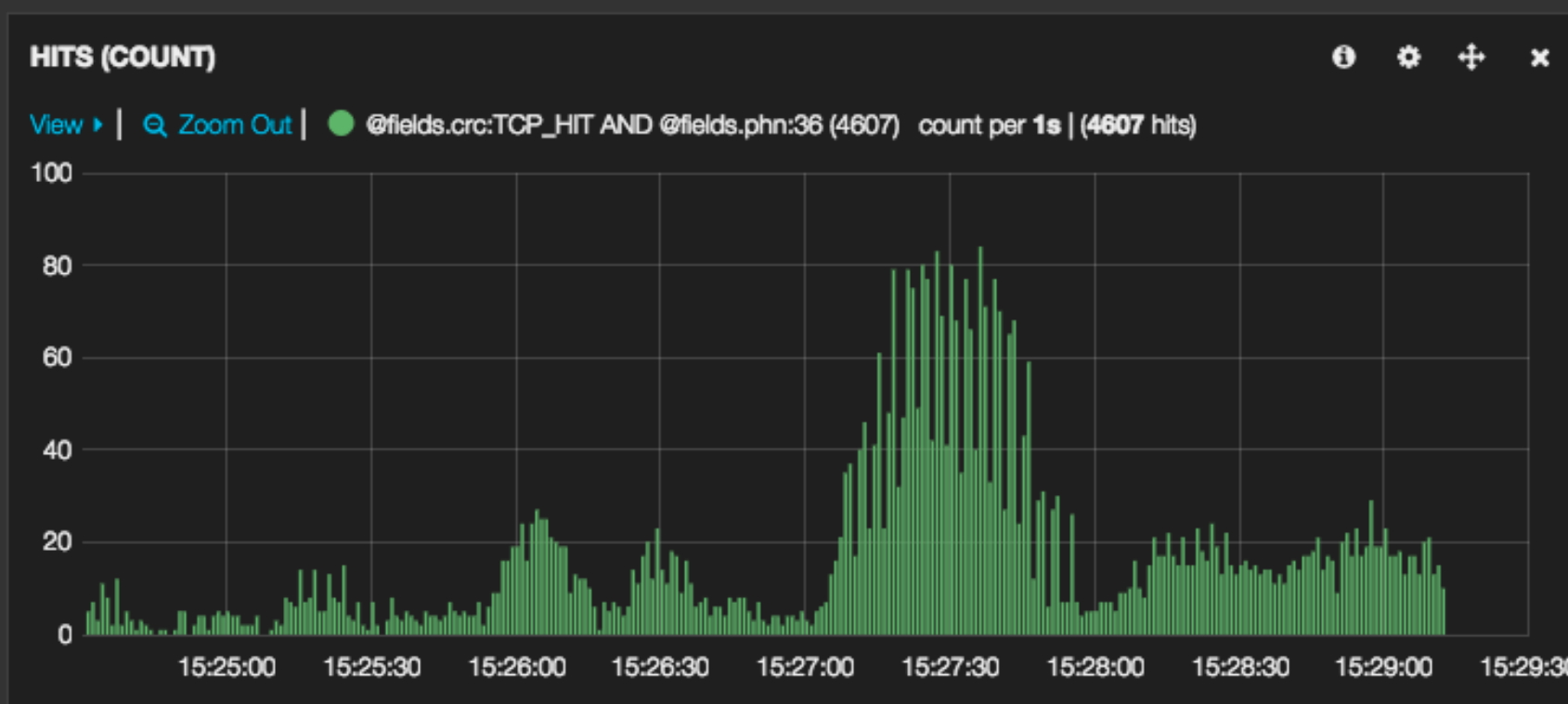
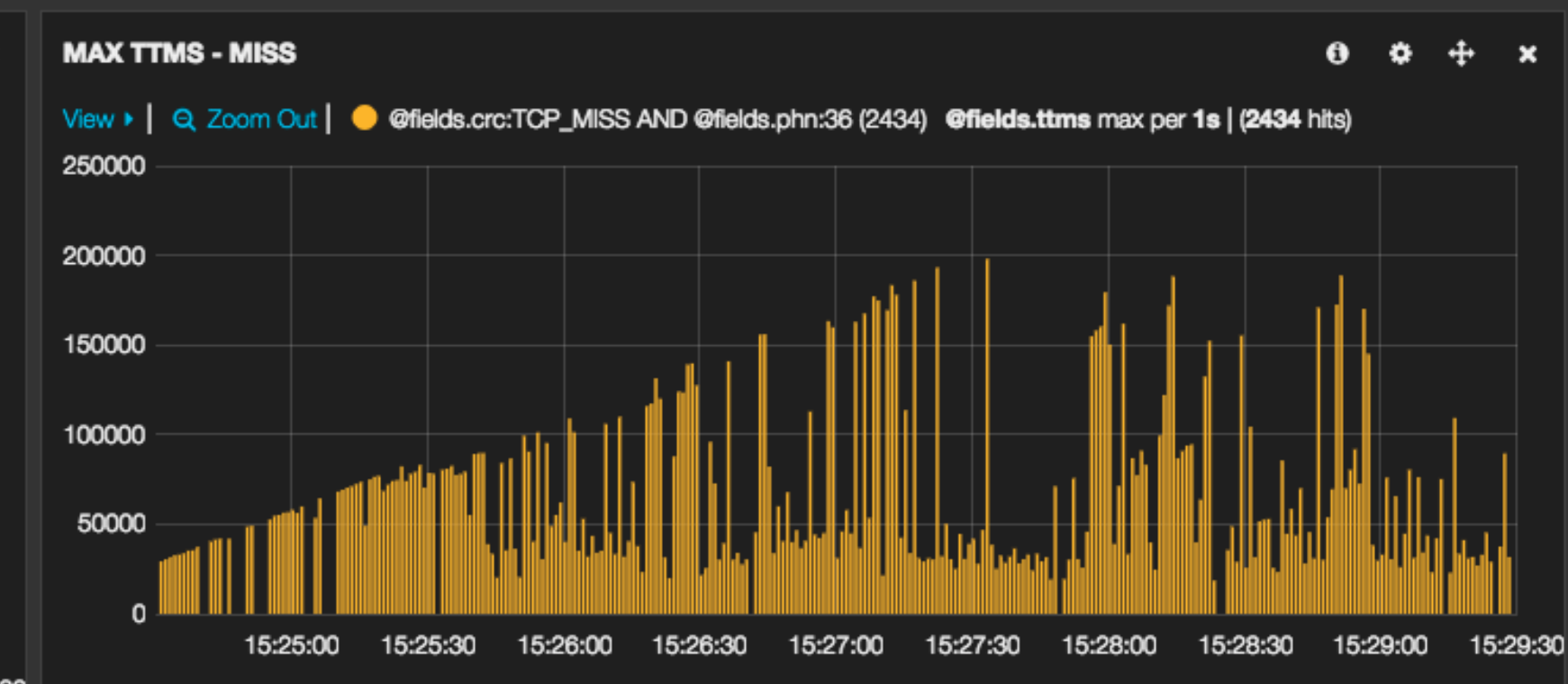
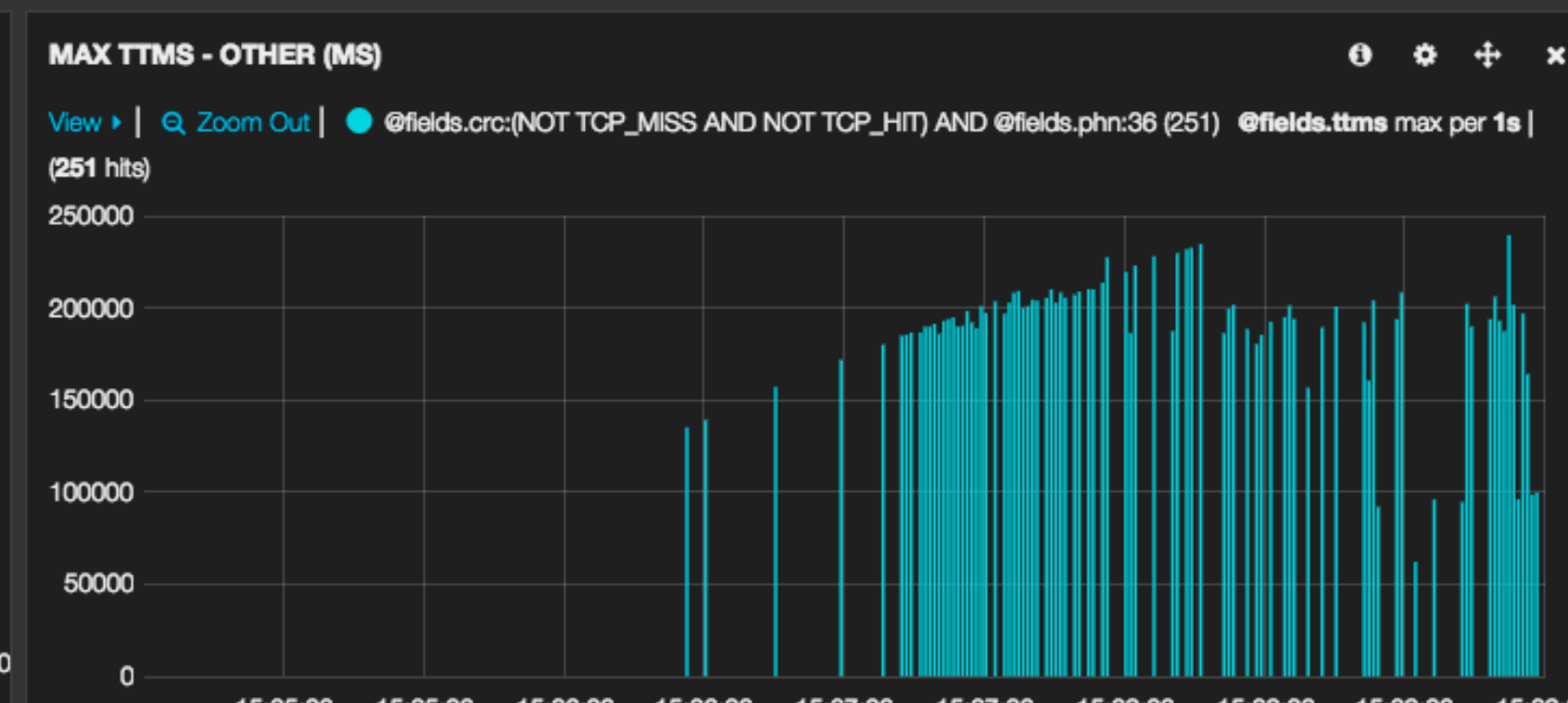
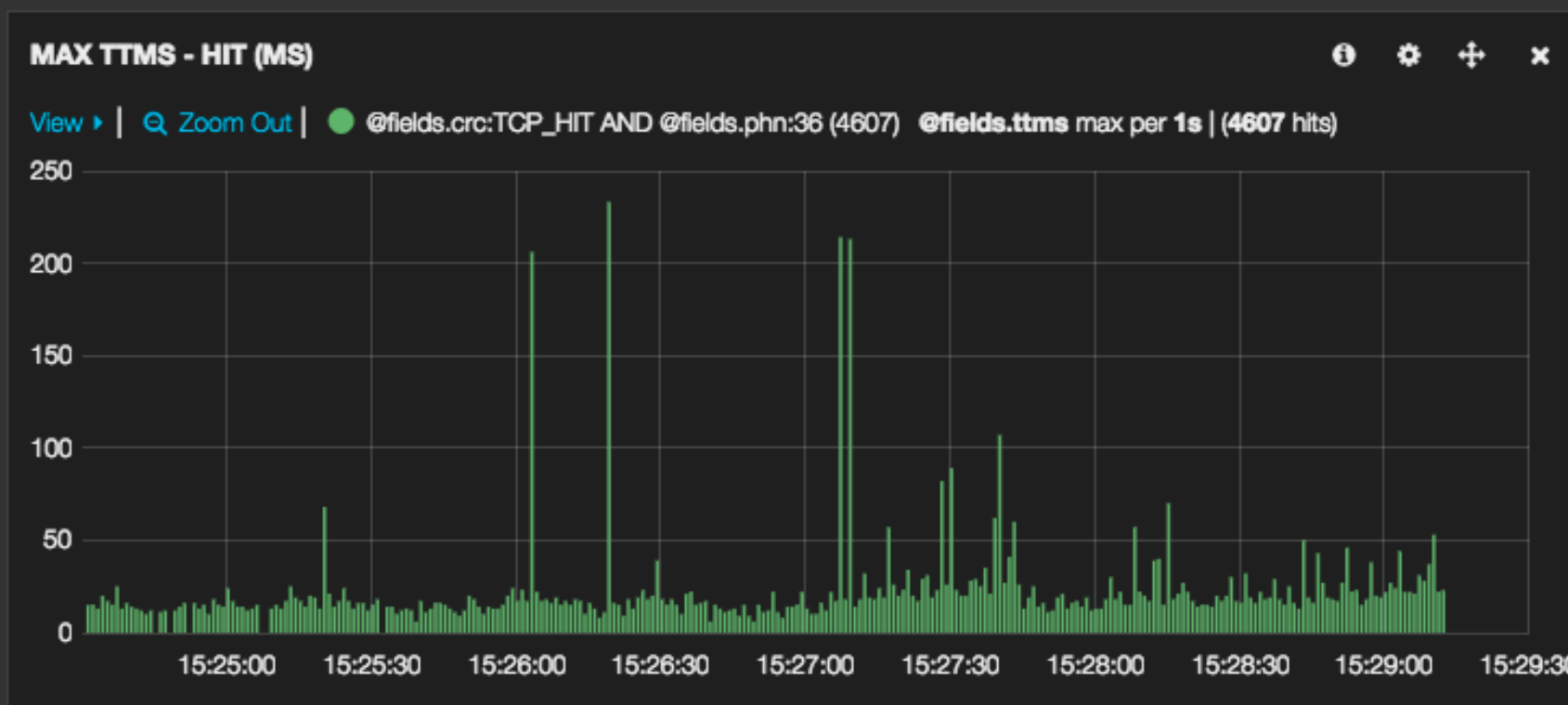
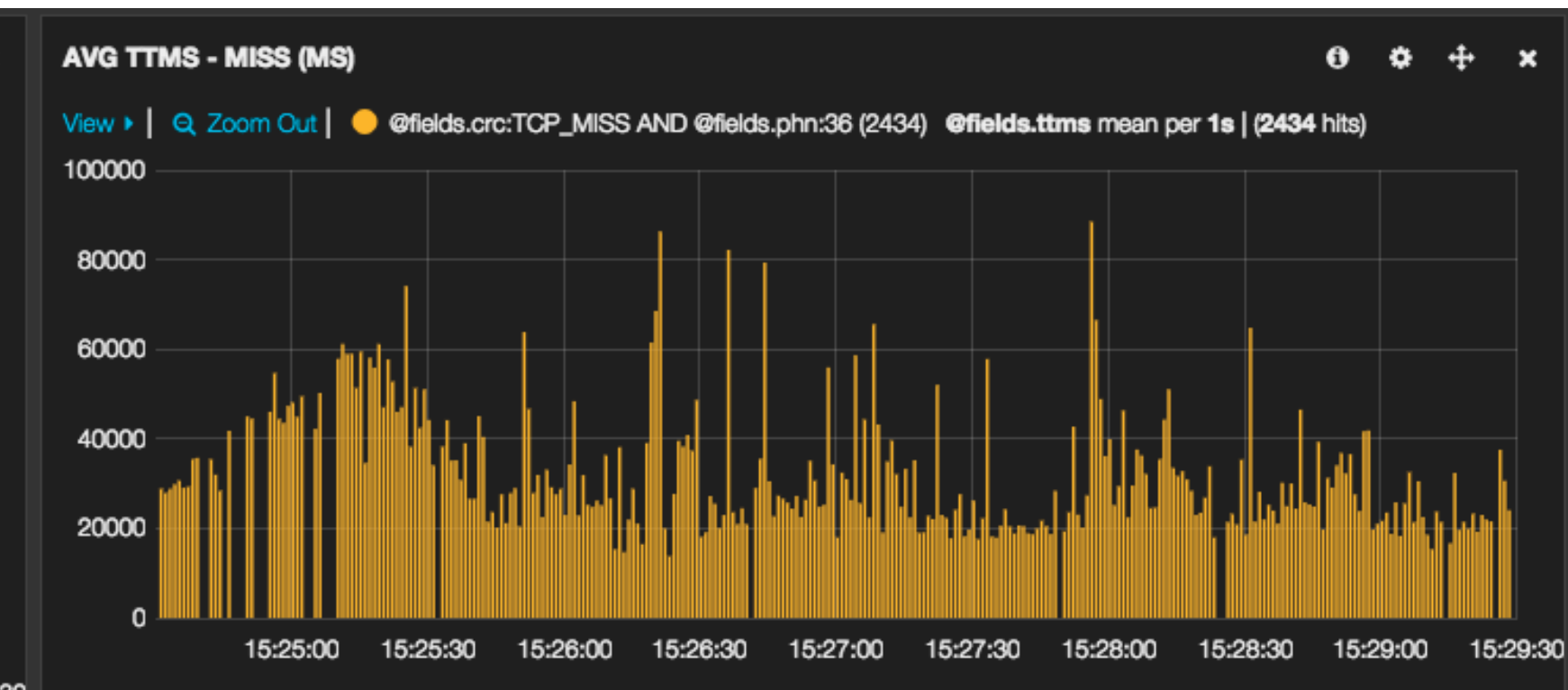
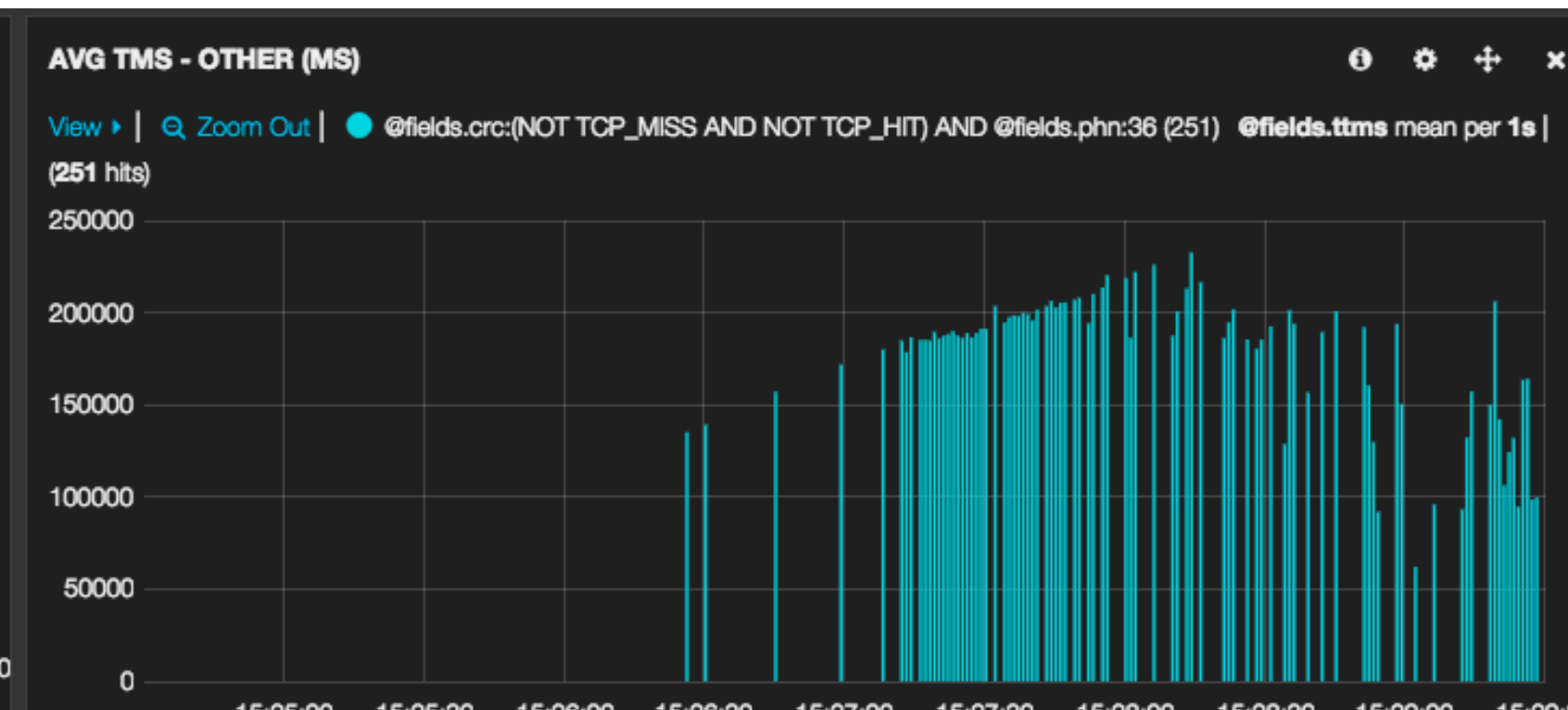
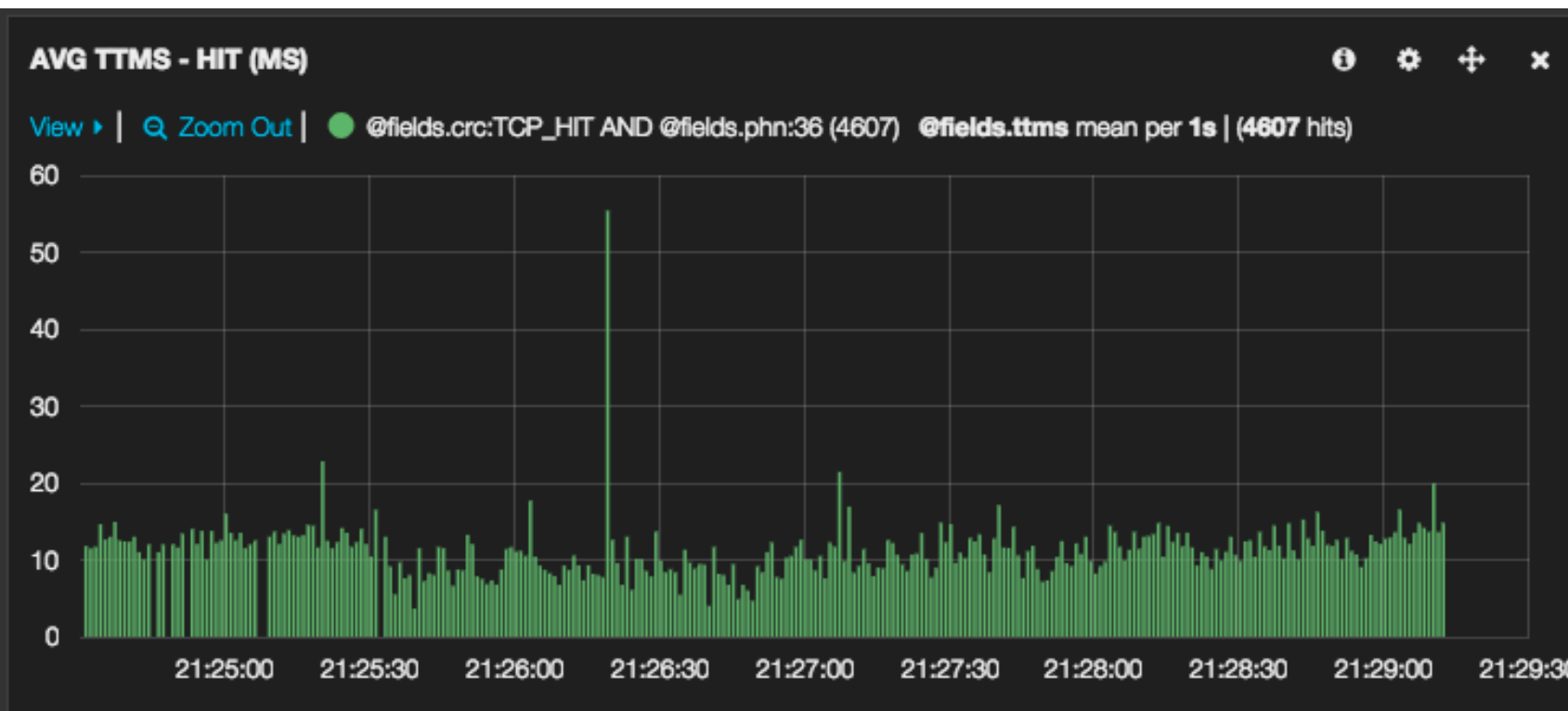
```
[root@zaphod02 ~]# tc qdisc show dev ens2f0
qdisc netem 8005: root refcnt 2 limit 1000 delay 100.0ms
[root@zaphod02 ~]#

[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$|^$#'
LoadModule hotair_module      /usr/lib64/httpd/modules/mod_hotair.so
<LocationMatch "(\\.ism*|\\.f4m|\\.m3u8|\\.ts)">
    SetHandler hotair
</LocationMatch>
HotairDelayOnFirstByteInMs 1000
[root@zaphod02 ~]#
```

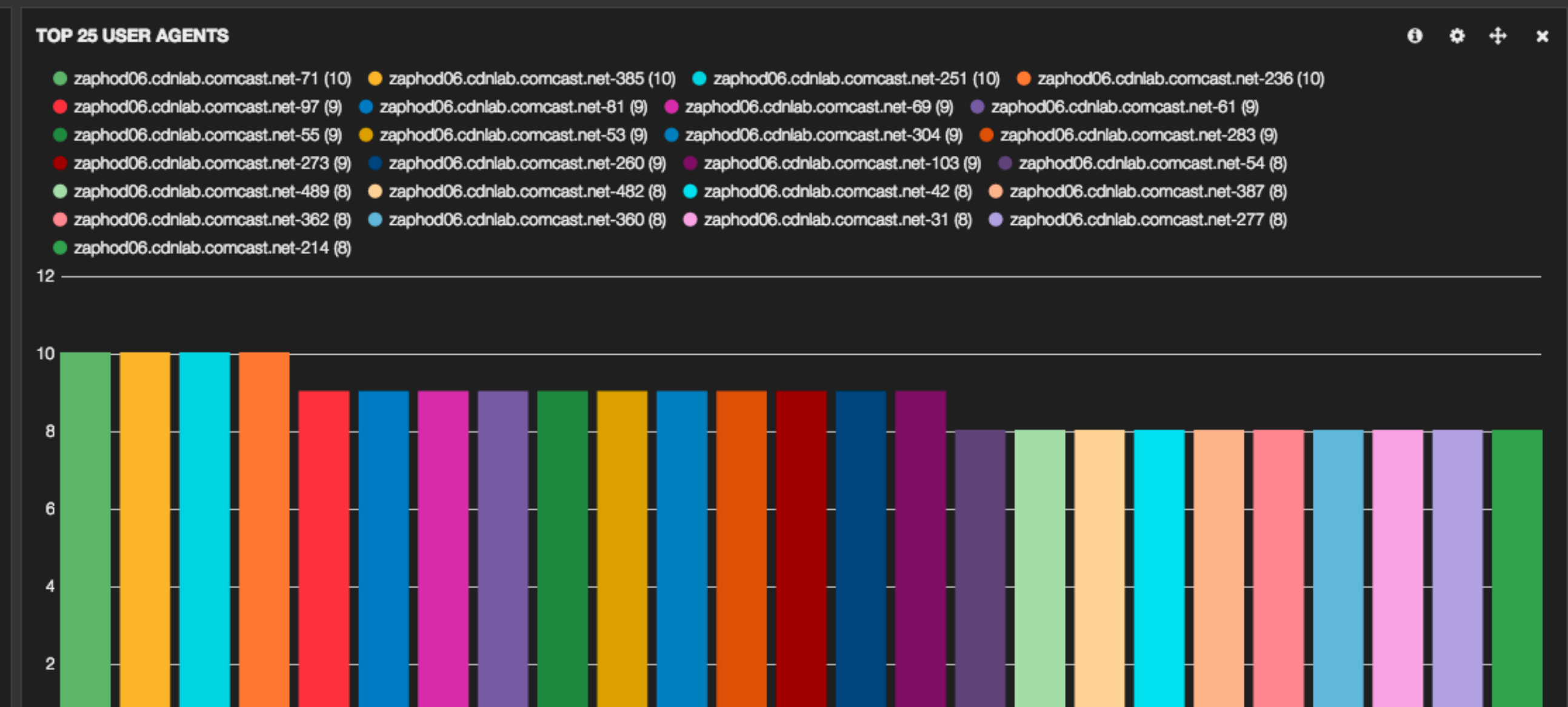
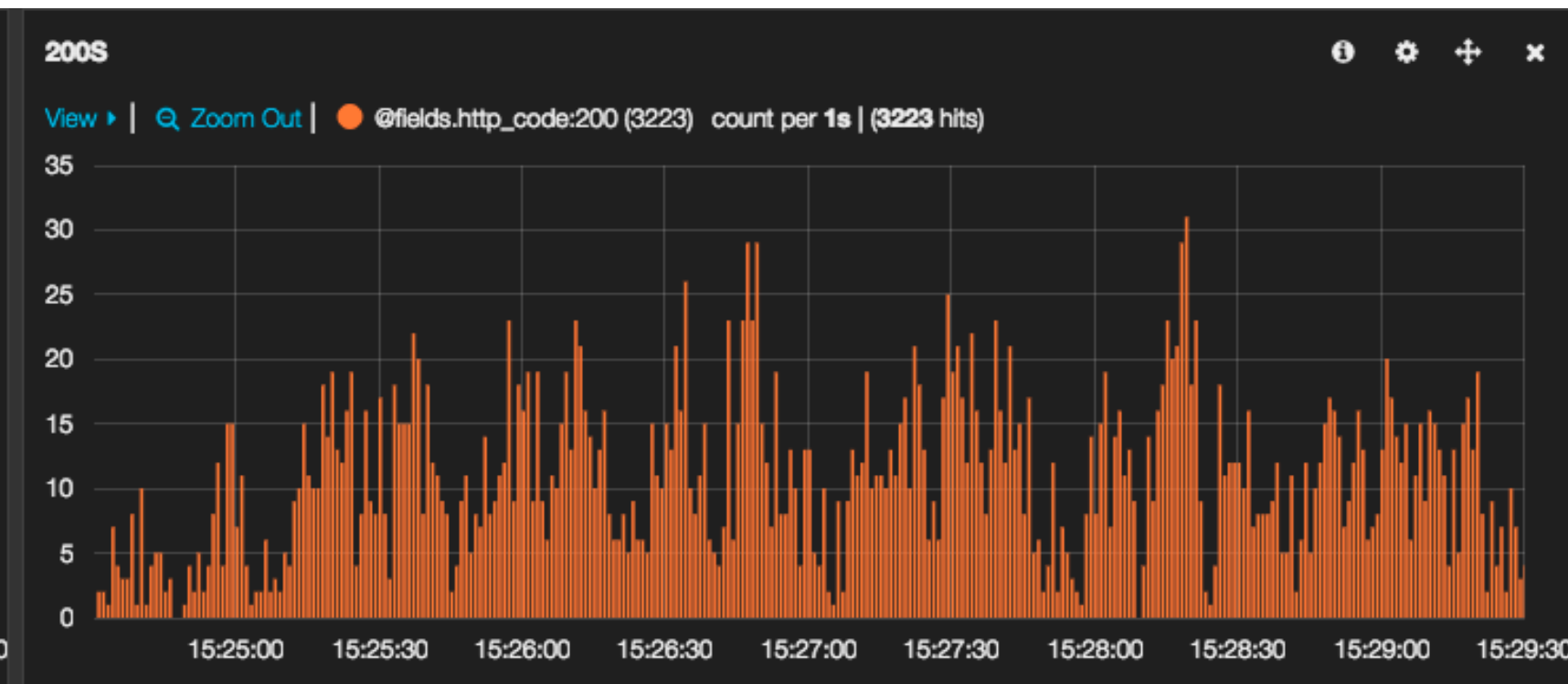
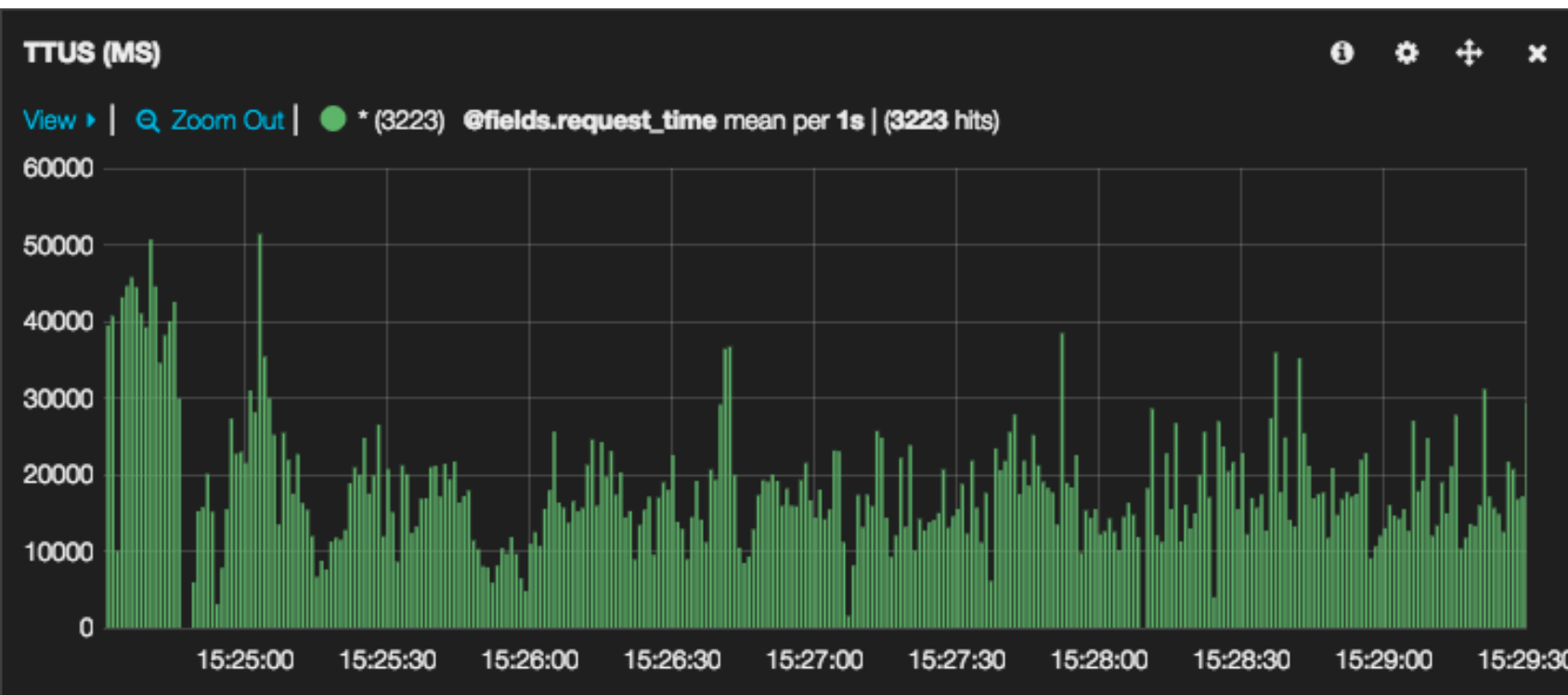
```
[21:23:51 ipcdn-cache-36]~$ /opt/ort/ipcdn_install_ort.pl report warn
Mon Oct 20 21:23:52 UTC 2014
Version of this script: 0.36b
[21:23:57 ipcdn-cache-36]~$
```

```
[mtorlu9137e@zaphod06]lcontrol$ cat fwd_proxy_tight_c36.json
{
  "clients": "480",
  "bitrate": "2500000",
  "test_type": "TestEngines::LLL",
  "abr_type": "hls",
  "frag_duration": "5000000",
  "origins": "1",
  "live": "100",
  "active_channels": "1",
  "vod_cache_name" : "load-test-01.cdnlab.comcast.net",
  "live_cache_name" : "live-orig-01-dns.cdnlab.comcast.net",
  "cache_ip" : "69.241.62.82",
  "vod_cache_hitratio" : "80",
  "live_active_fragments" : "2",
  "vod_bitrates" : "4300000,3000000",
  "live_bitrates" : "6710886,5033164",
  "max_long_tts_percentage" : "0.5",
  "long_tts_time" : "1.5",
  "proxy_mode" : "forward",
  "ipv6_percentage" : 0,
  "via_headers" : 1
}
[mtorlu9137e@zaphod06]lcontrol$
```


Mid graphs



Origin graphs



ATS 4.2.1, read_while_writer (still) off, no origin TTFB

```
[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$|^$#'
LoadModule hotair_module      /usr/lib64/httpd/modules/mod_hotair.so
<LocationMatch "(\\.ism*|\\.f4m|\\.Seg\\d-Frag\\d.*|\\.m3u8|\\.ts)">
    SetHandler hotair
</LocationMatch>
[root@zaphod02 ~]#
```

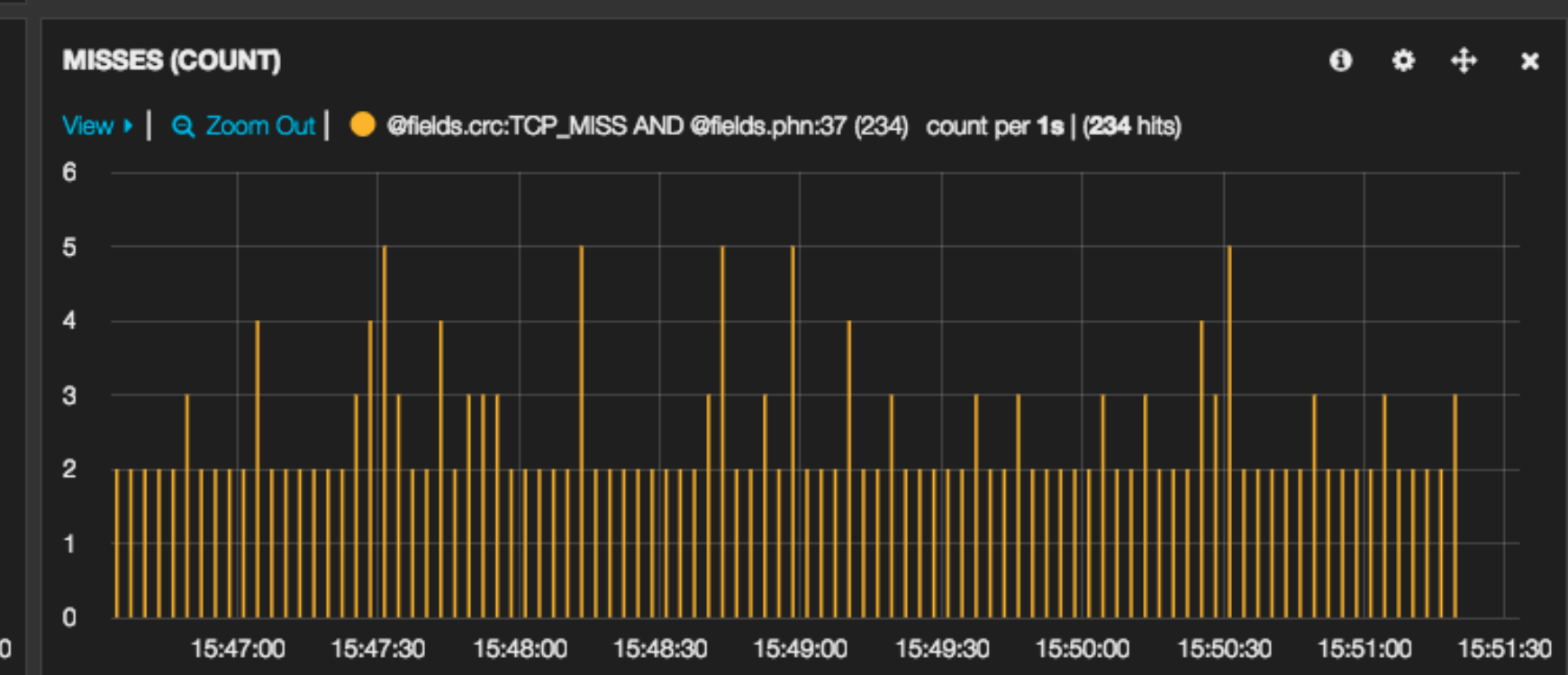
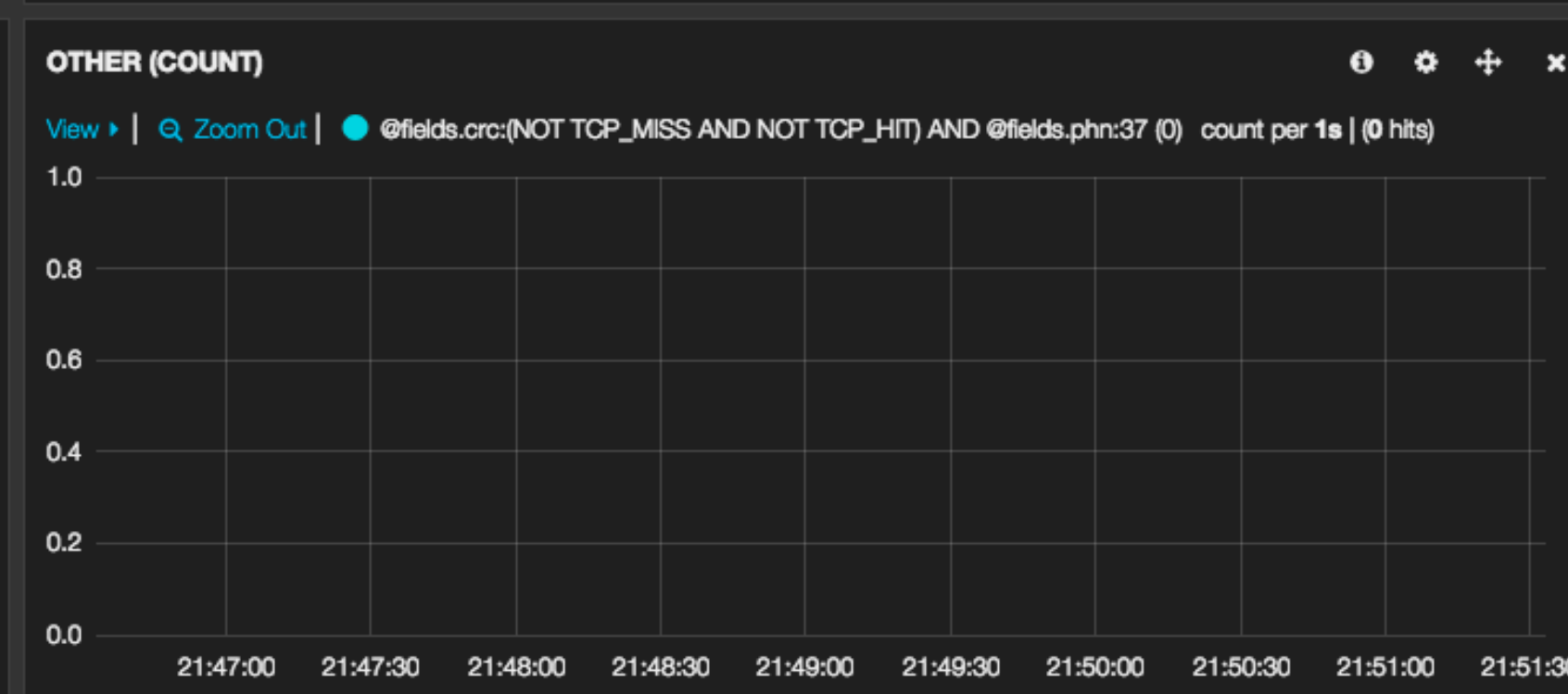
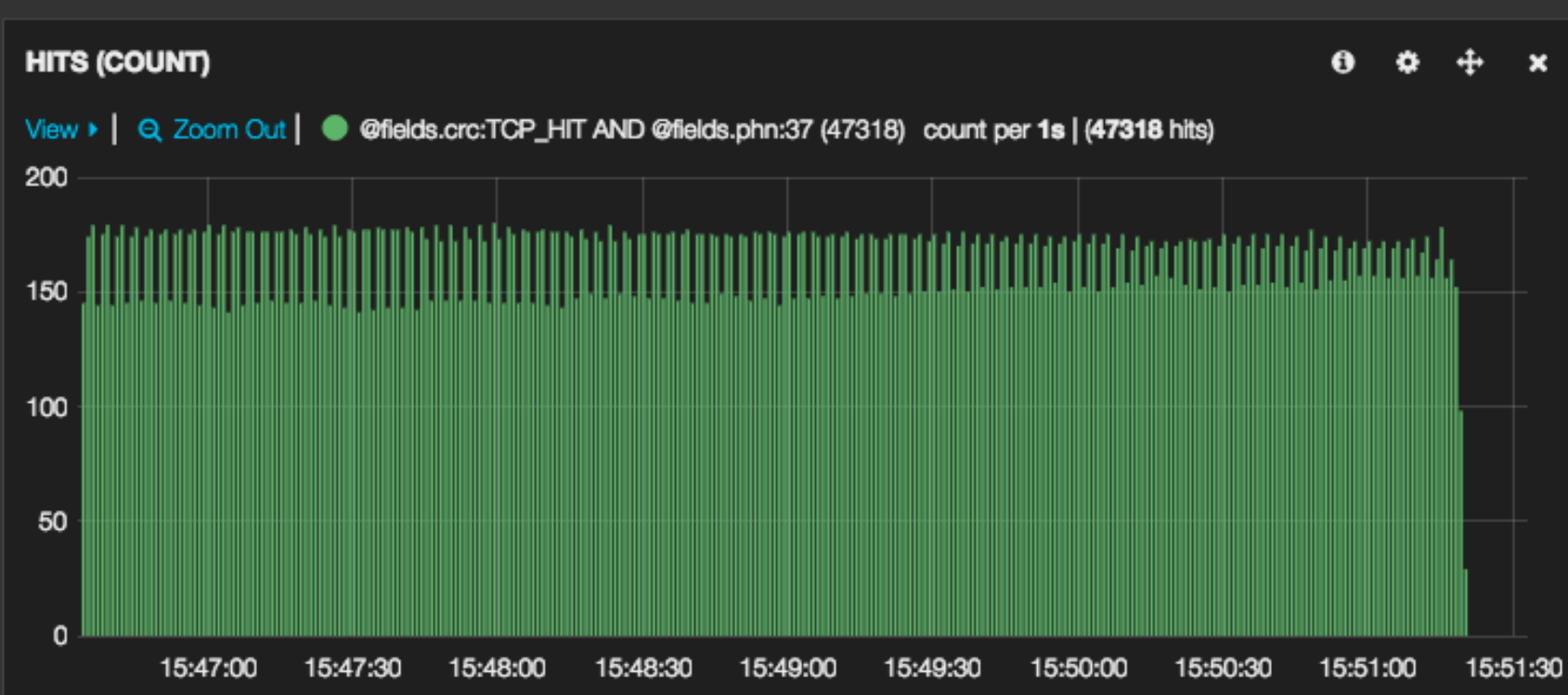
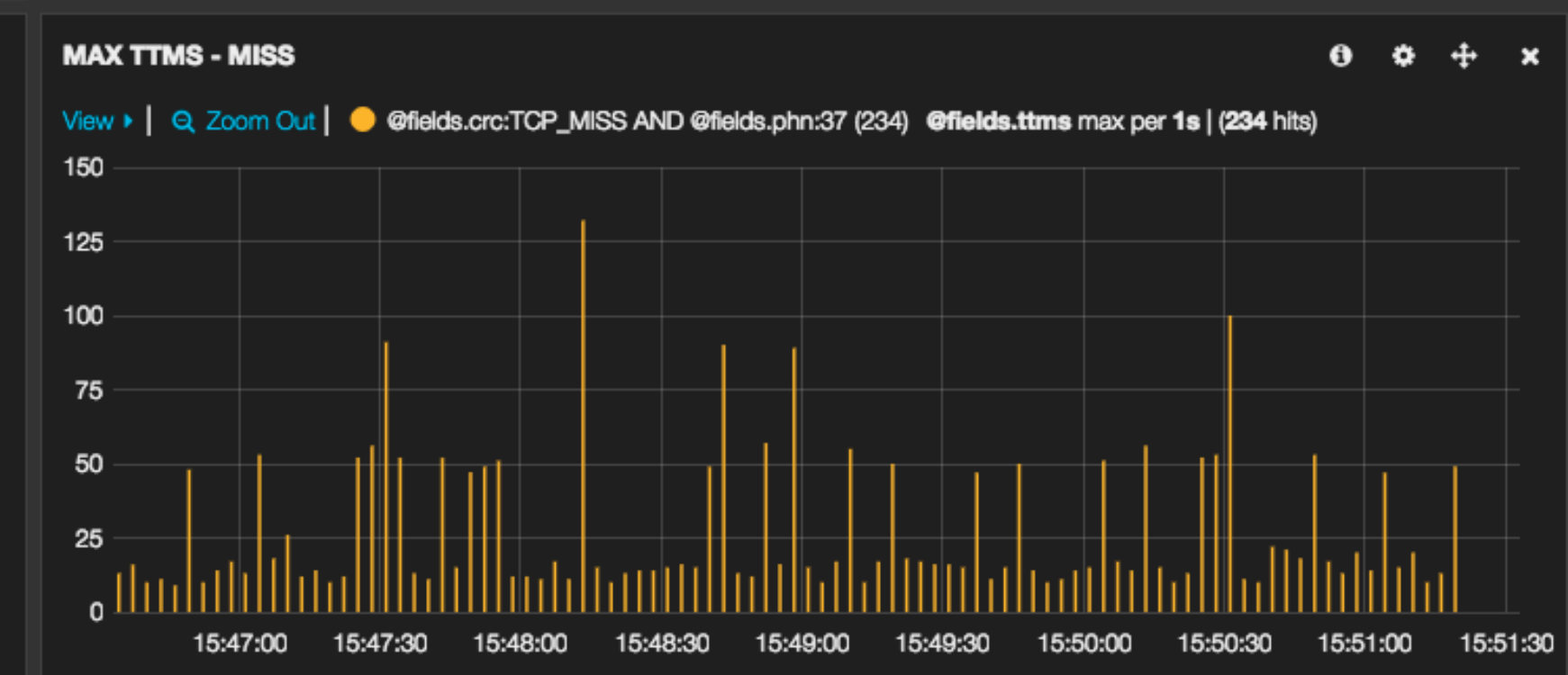
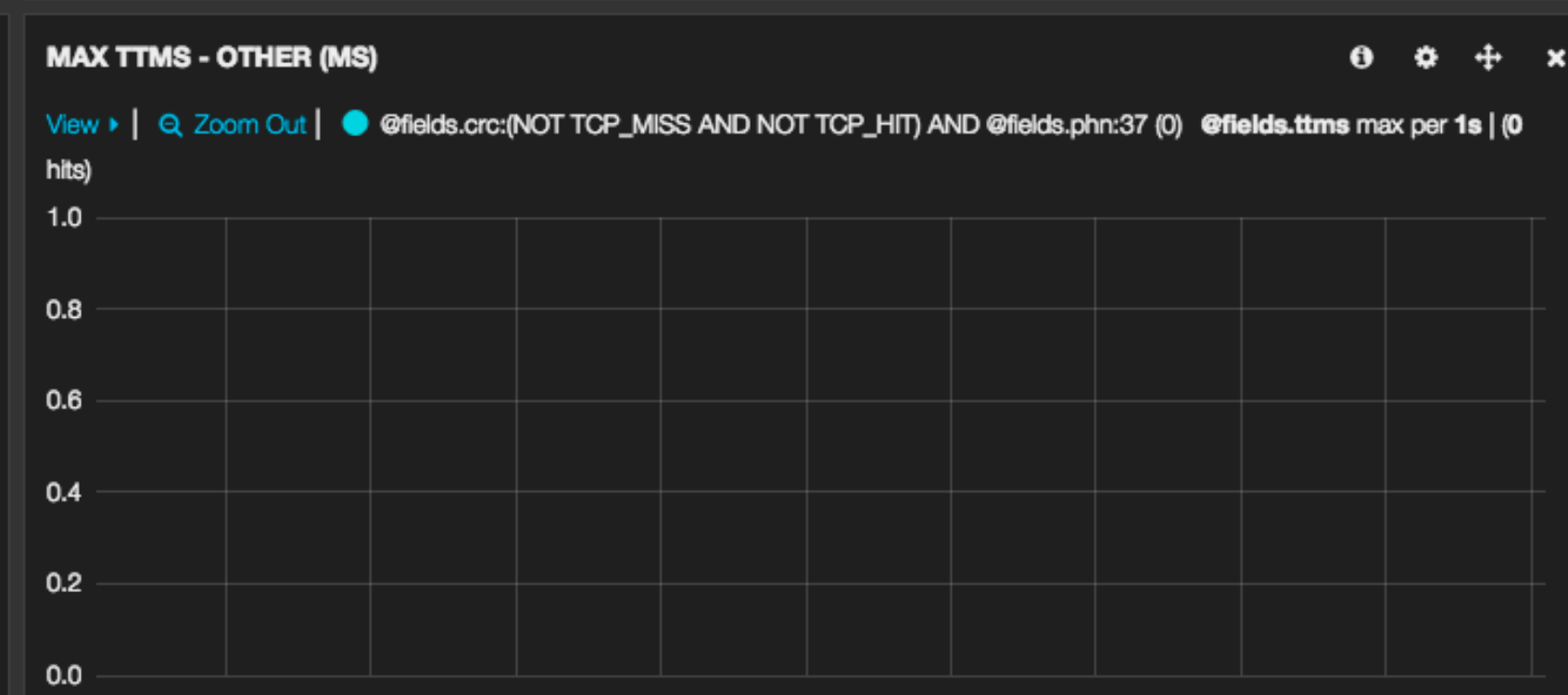
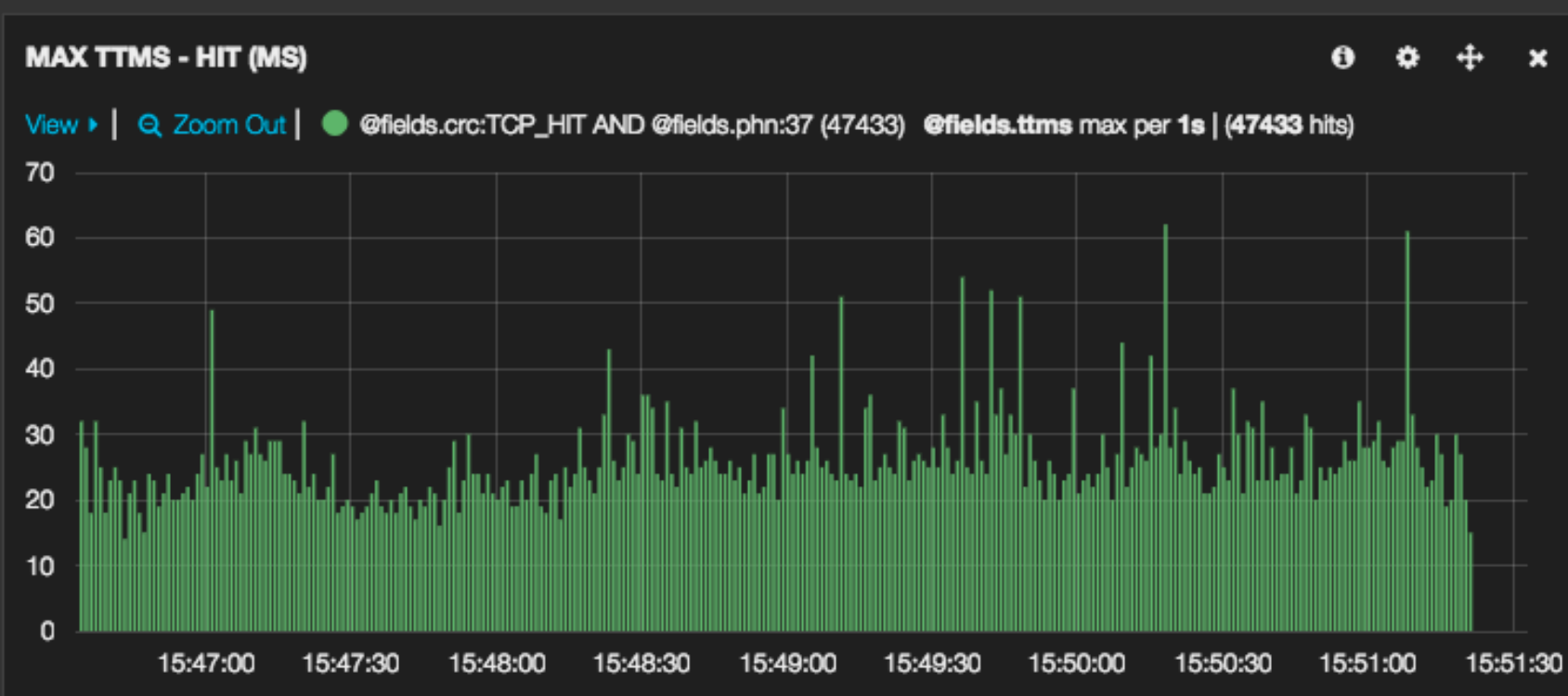
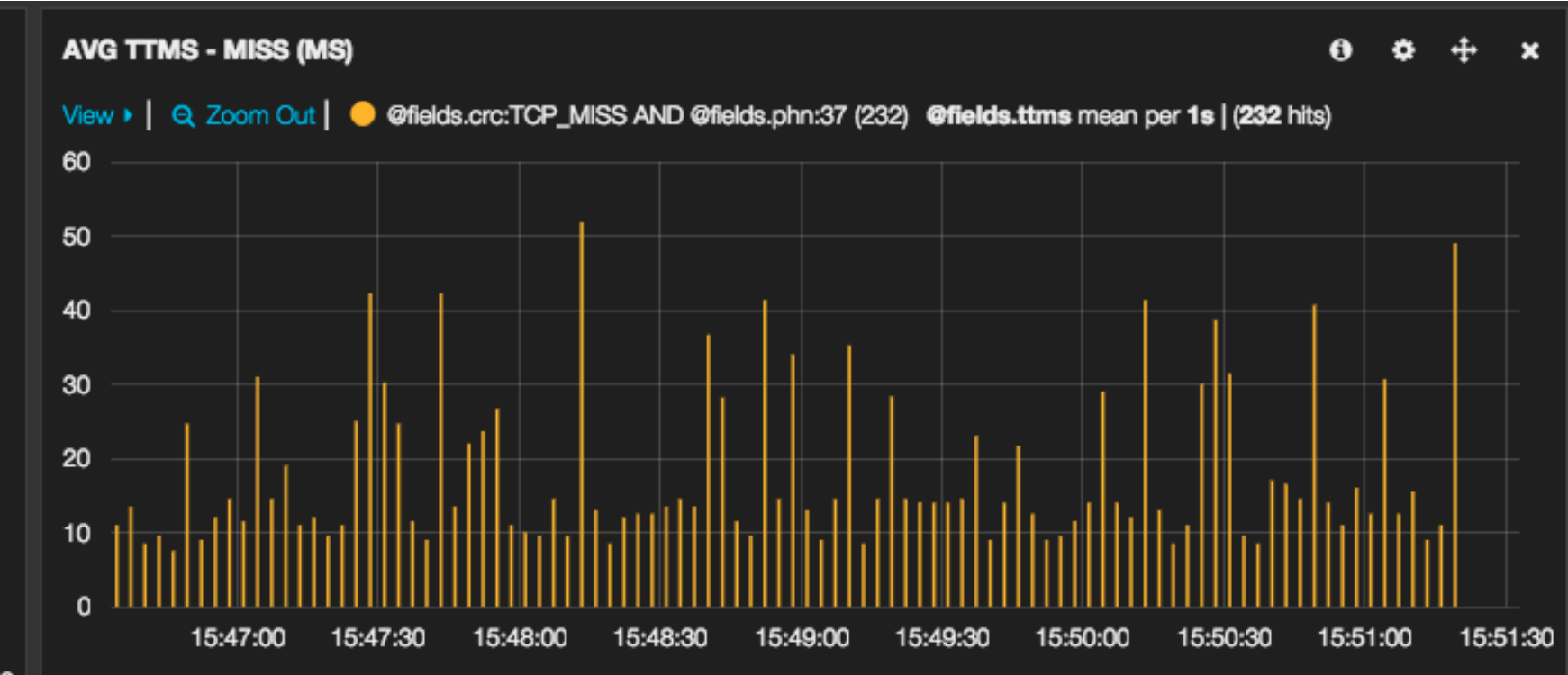
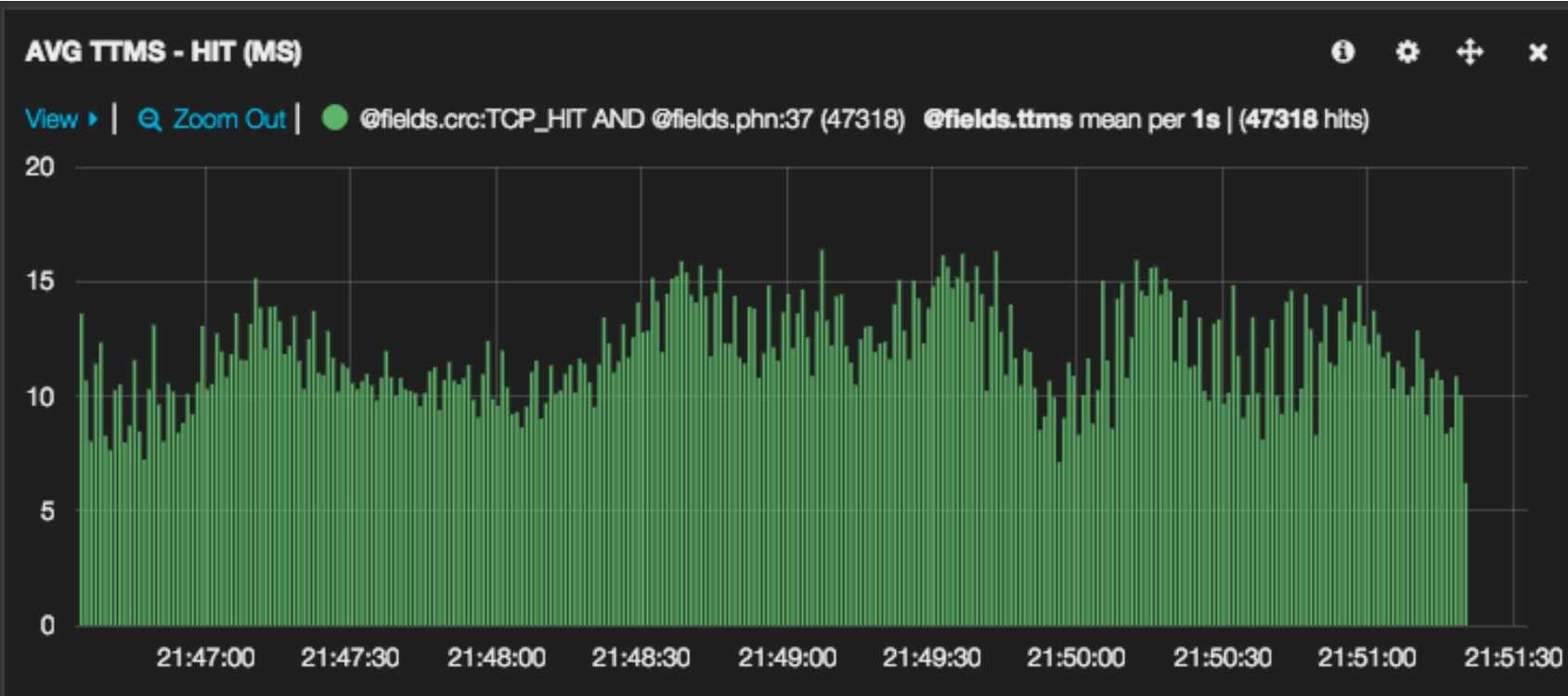
```
[root@zaphod02 ~]# tc qdisc show dev ens2f0
qdisc pfifo_fast 0: root refcnt 2 bands 3 priomap  1 2 2 2 1 2 0 0 1 1 1 1 1 1 1 1
[root@zaphod02 ~]#
```

```
[mtorlu9137e@zaphod06]lcontrol$ cat fwd_proxy_tight_c37.json
{
  "clients": "480",
  "bitrate": "2500000",
  "test_type": "TestEngines::LLL",
  "abr_type": "hls",
  "frag_duration": "50000000",
  "origins": "1",
  "live": "100",
  "active_channels": "1",
  "vod_cache_name": "load-test-01.cdnlab.comcast.net",
  "live_cache_name": "live-orig-01-dns.cdnlab.comcast.net",
  "cache_ip": "69.241.62.86",
  "vod_cache_hitratio": "80",
  "live_active_fragments": "2",
  "vod_bitrates": "4300000,3000000",
  "live_bitrates": "6710886,5033164",
  "max_long_tts_percentage": "0.5",
  "long_tts_time": "1.5",
  "proxy_mode": "forward",
  "ipv6_percentage": 0,
  "via_headers": 1
}
[mtorlu9137e@zaphod06]lcontrol$
```

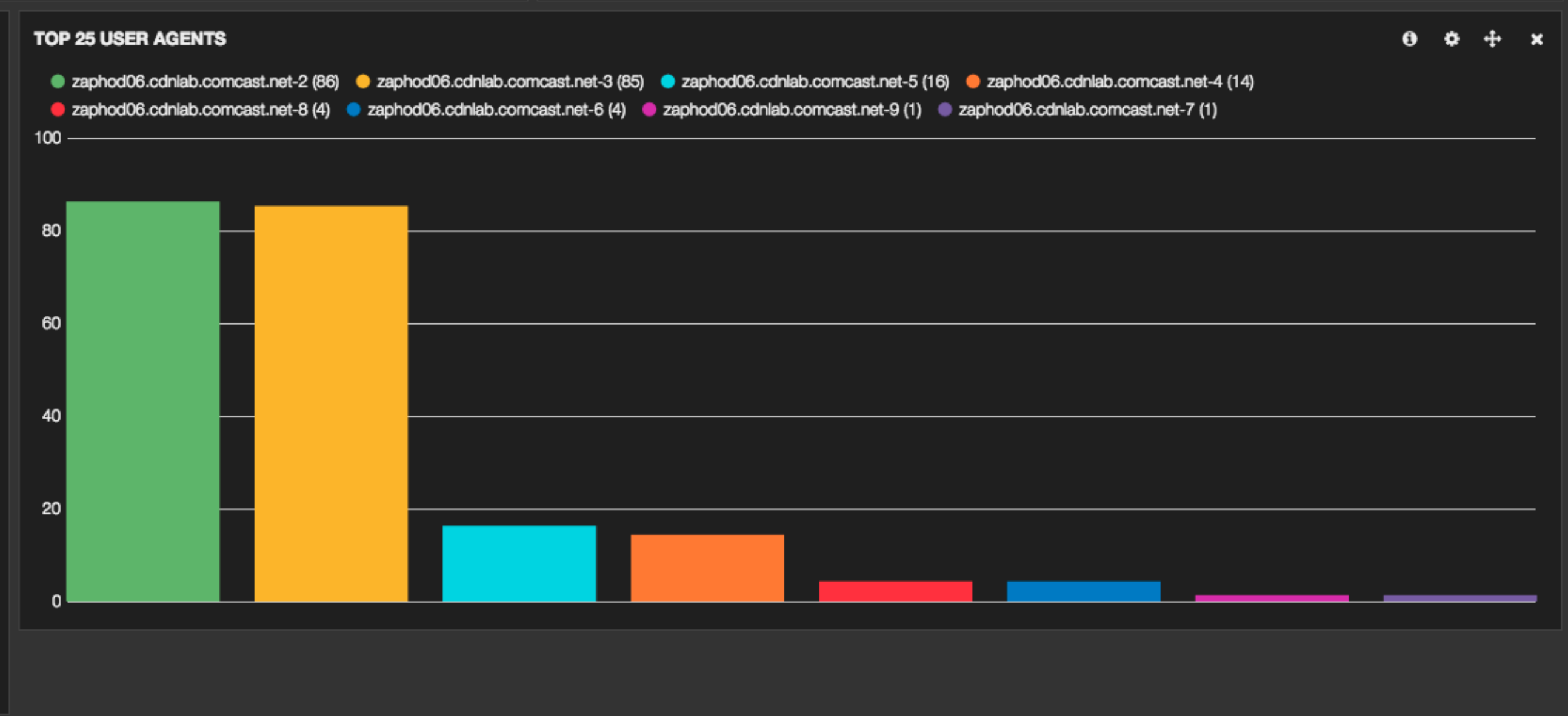
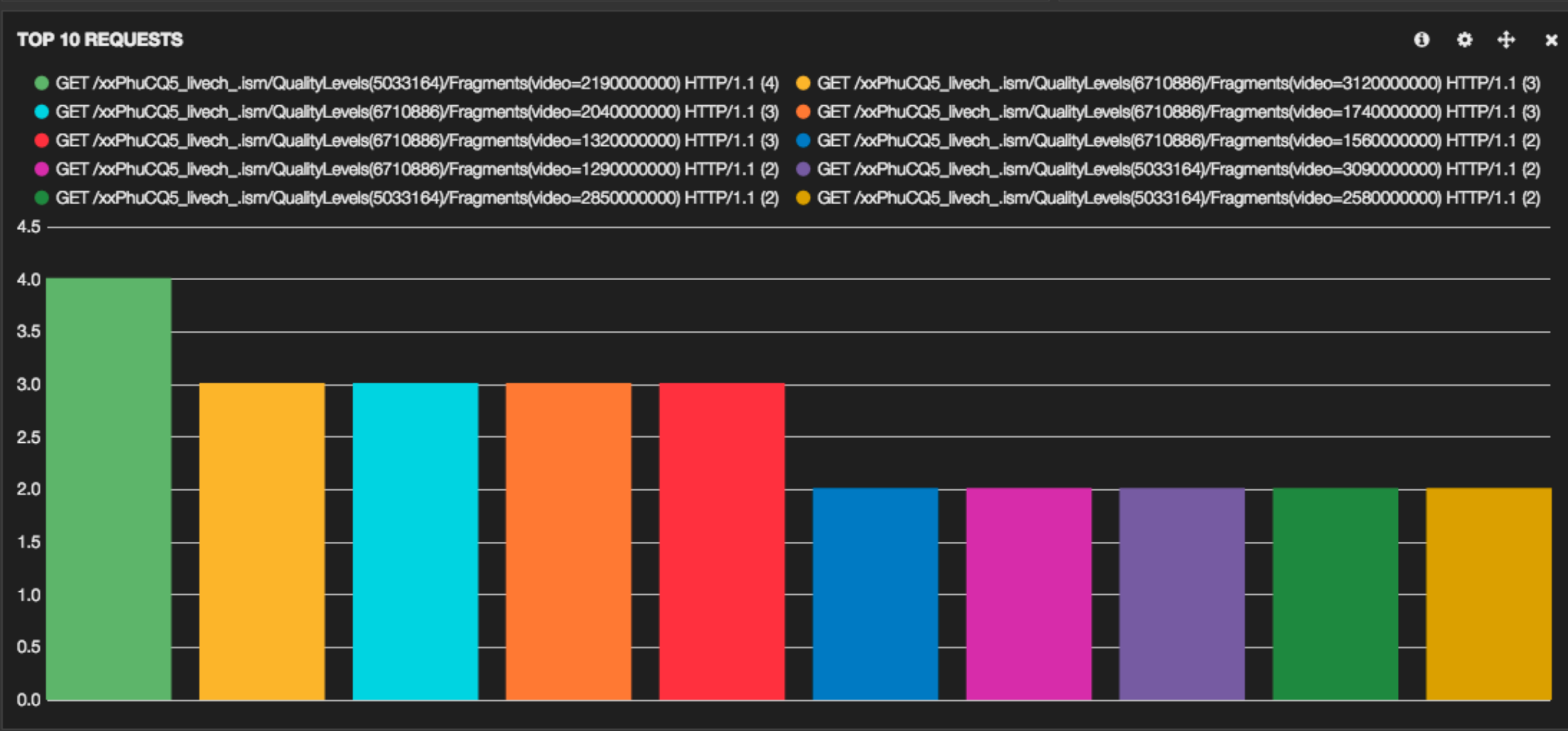
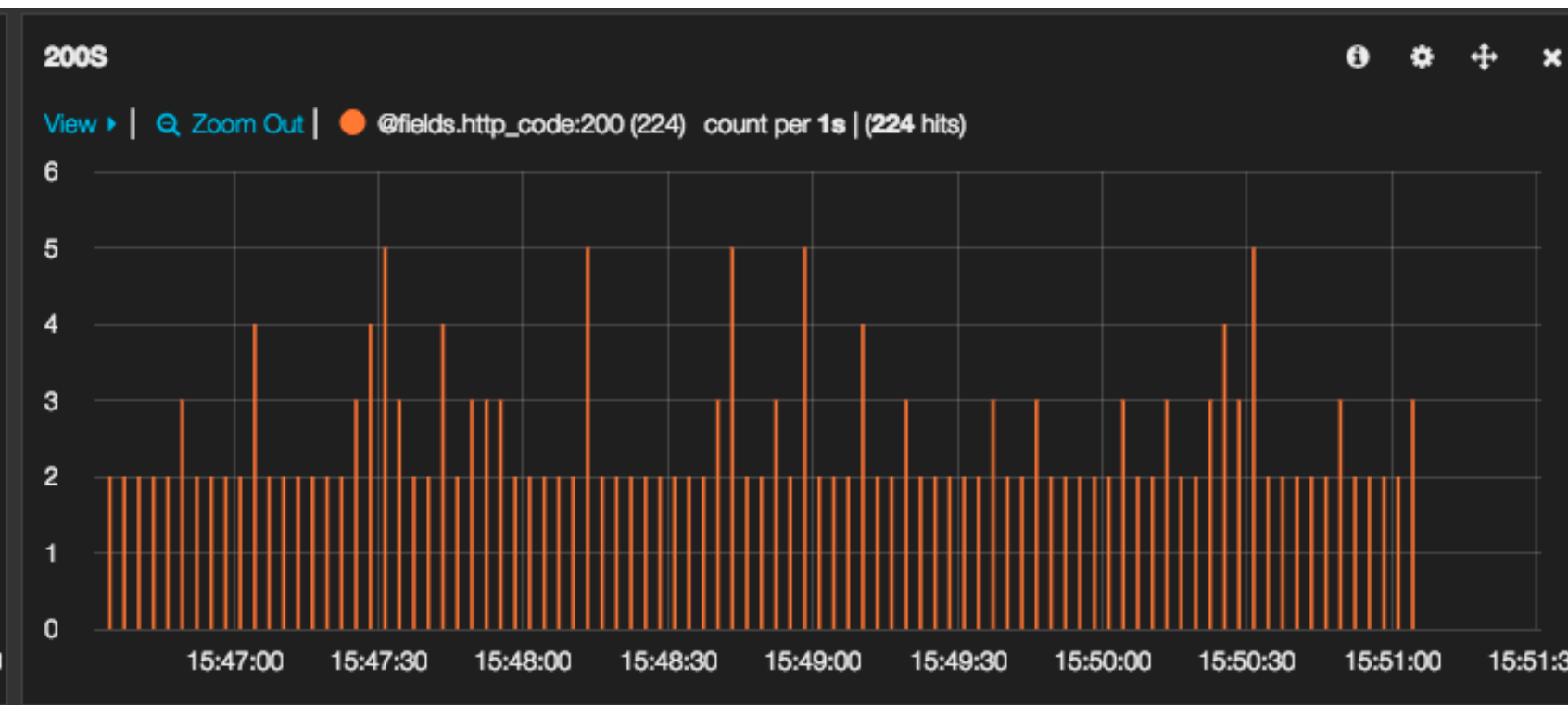
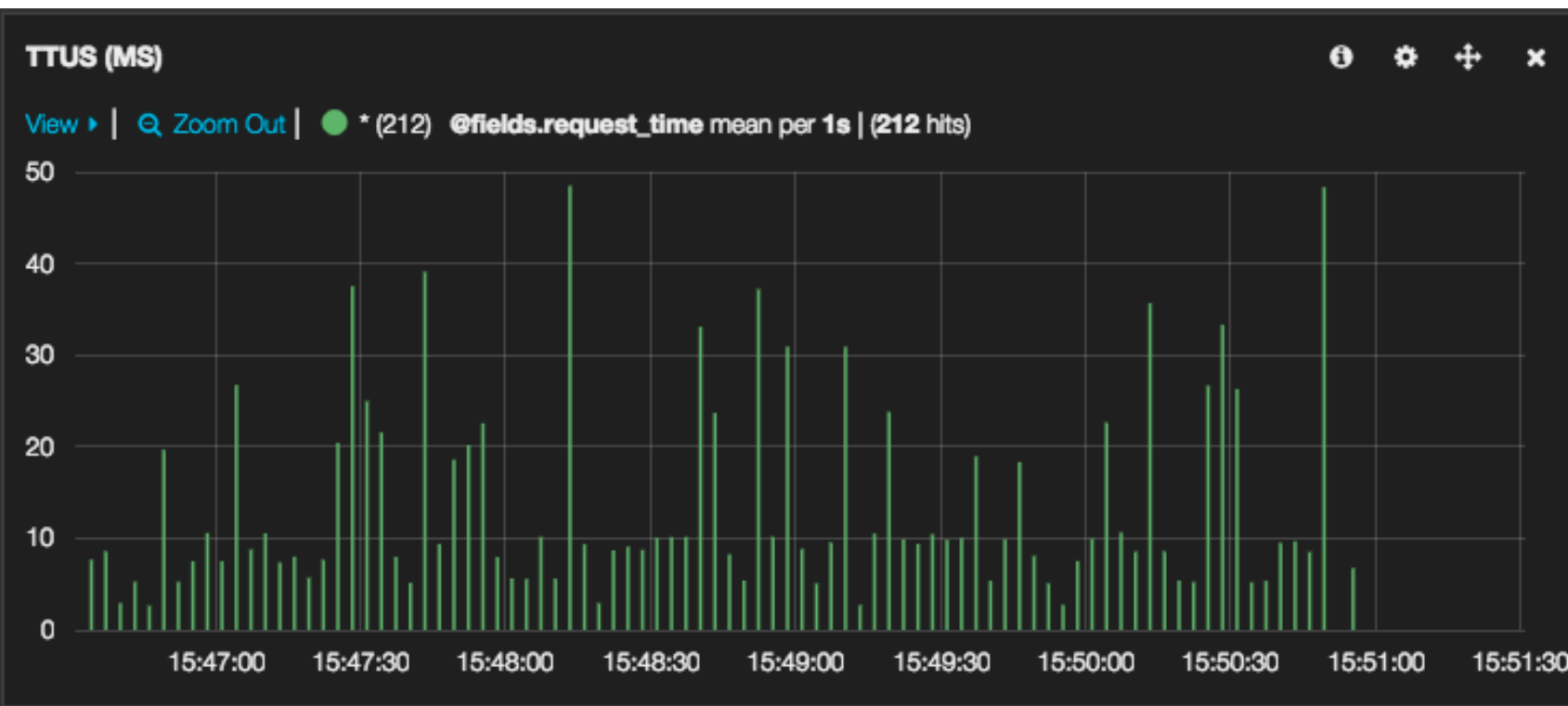
```
[mtorlu9137e@ipcdn-cache-37]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn
Mon Oct 20 21:35:38 UTC 2014
Version of this script: 0.34e
ERROR Lines in /opt/trafficserver/etc/trafficserver//records.config do not match Twelve Monkeys.
ERROR Config file: records.config line only in 12M: CONFIG proxy.config.cache.enable_read_while_writer INT 1
ERROR Config file: records.config line only on disk: CONFIG proxy.config.cache.enable_read_while_writer INT 0
[mtorlu9137e@ipcdn-cache-37]~$
```

```
[mtorlu9137e@ipcdn-cache-37]~$ rpm -qa | grep trafficserver
trafficserver-4.2.1-6.el6.x86_64
[mtorlu9137e@ipcdn-cache-37]~$
```


Mid graphs



Origin graphs



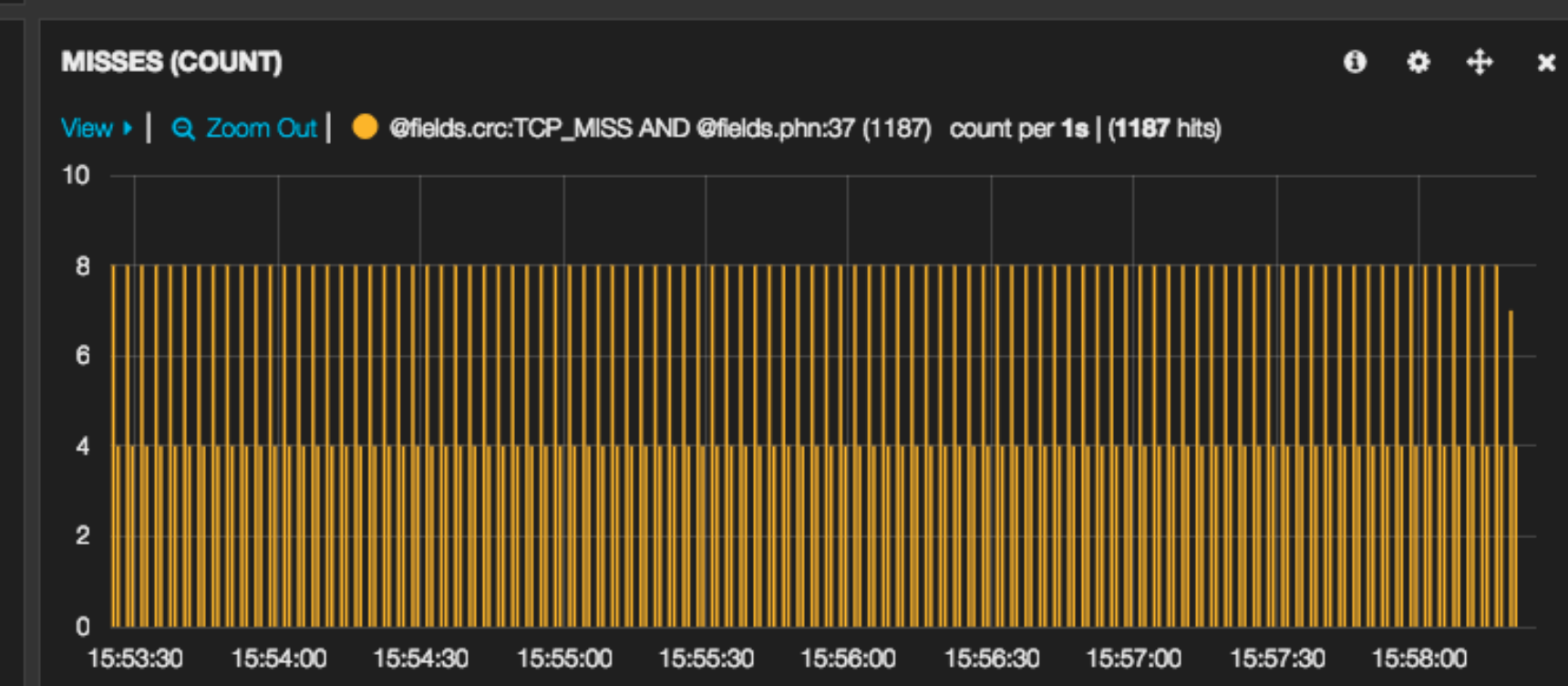
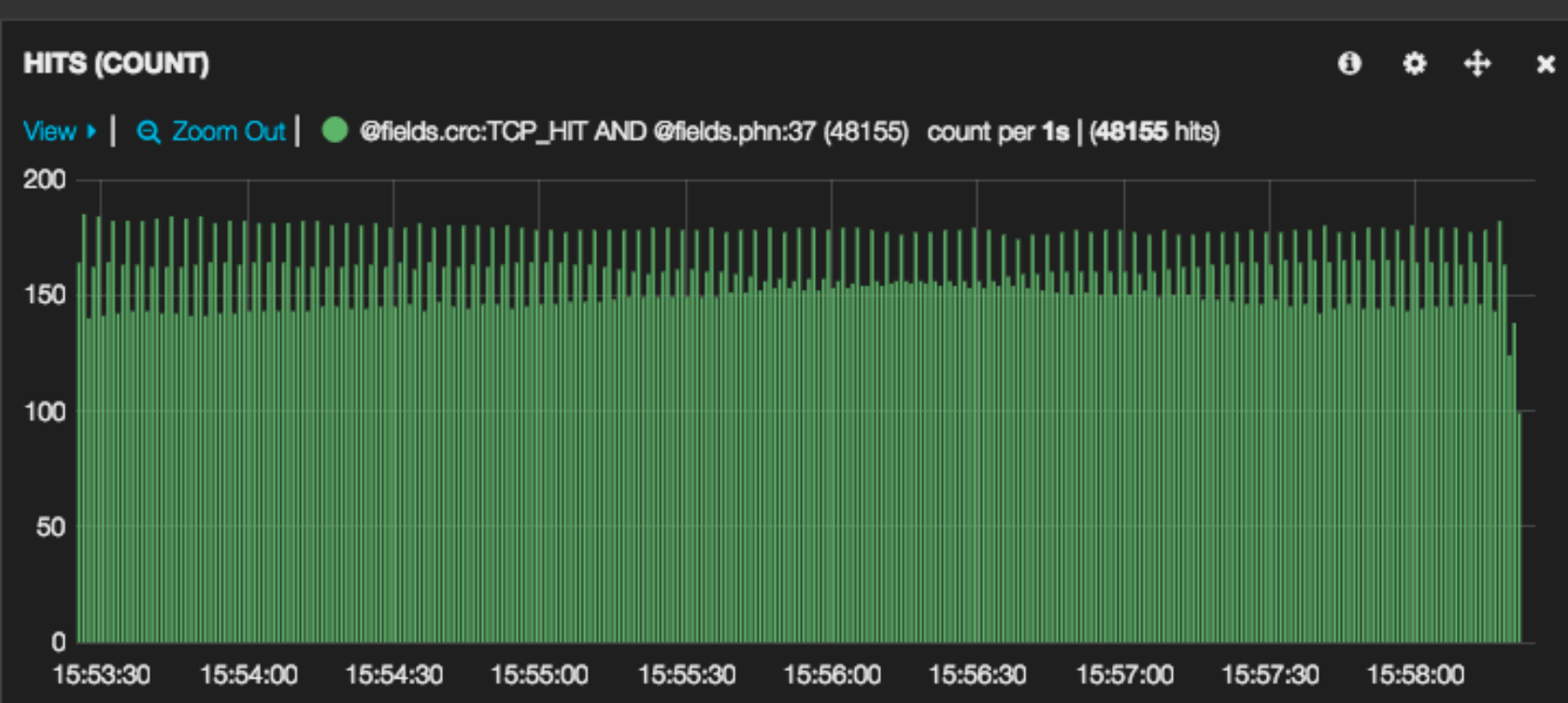
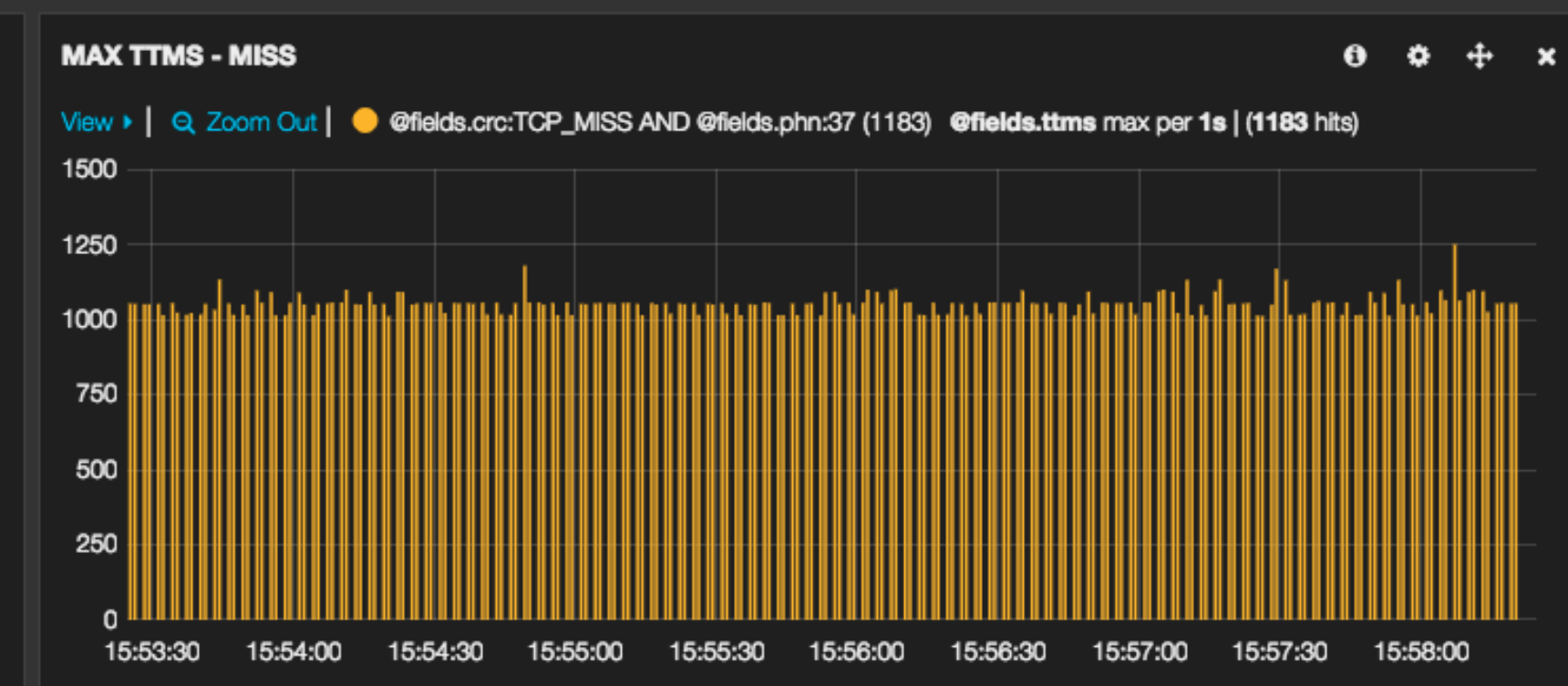
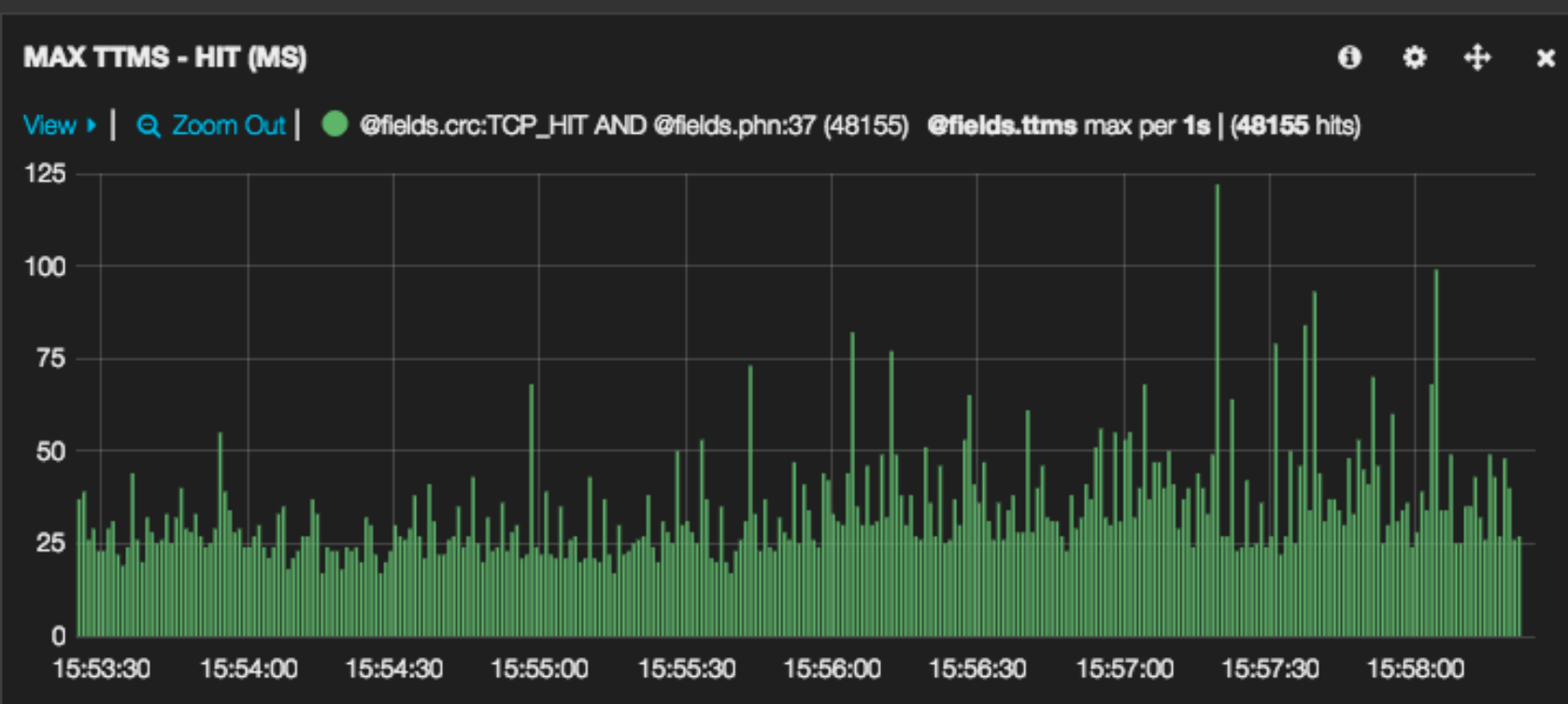
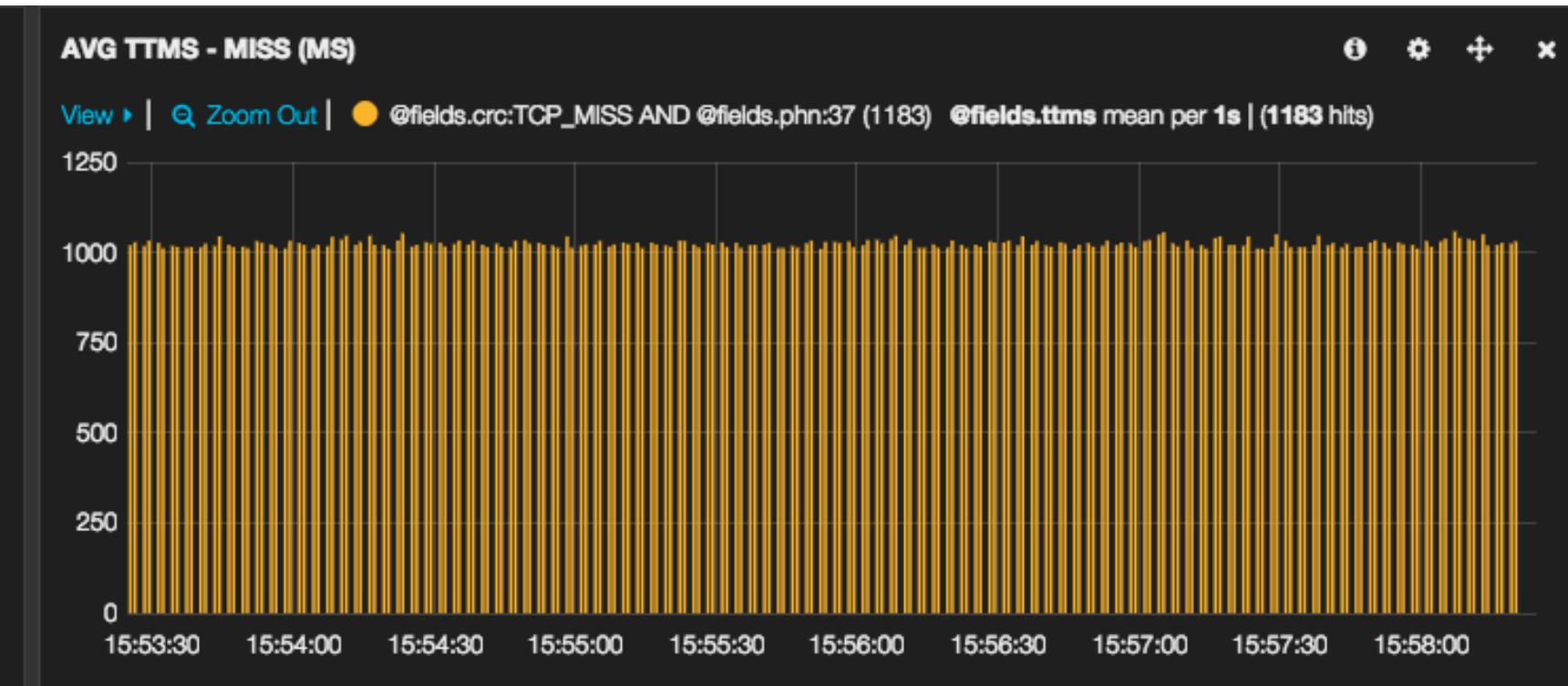
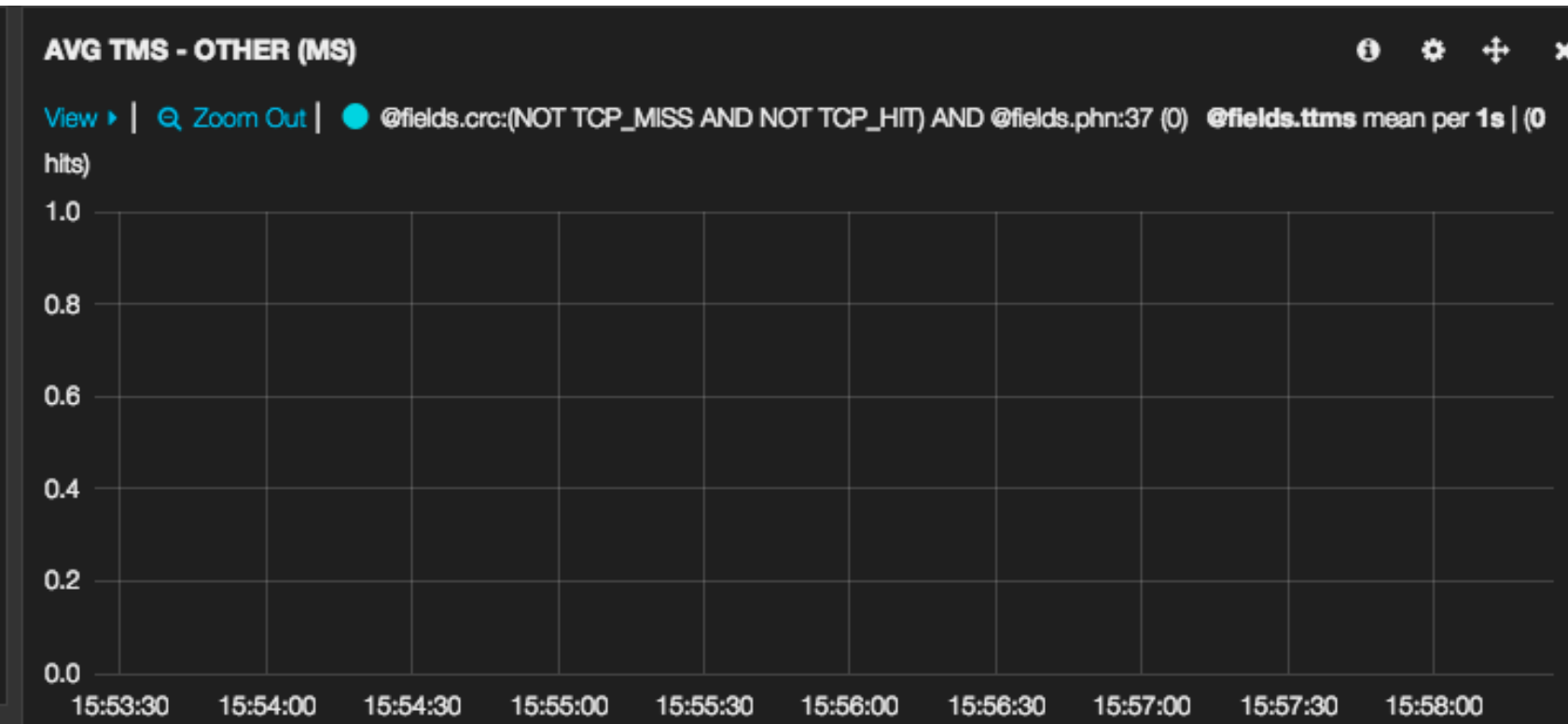
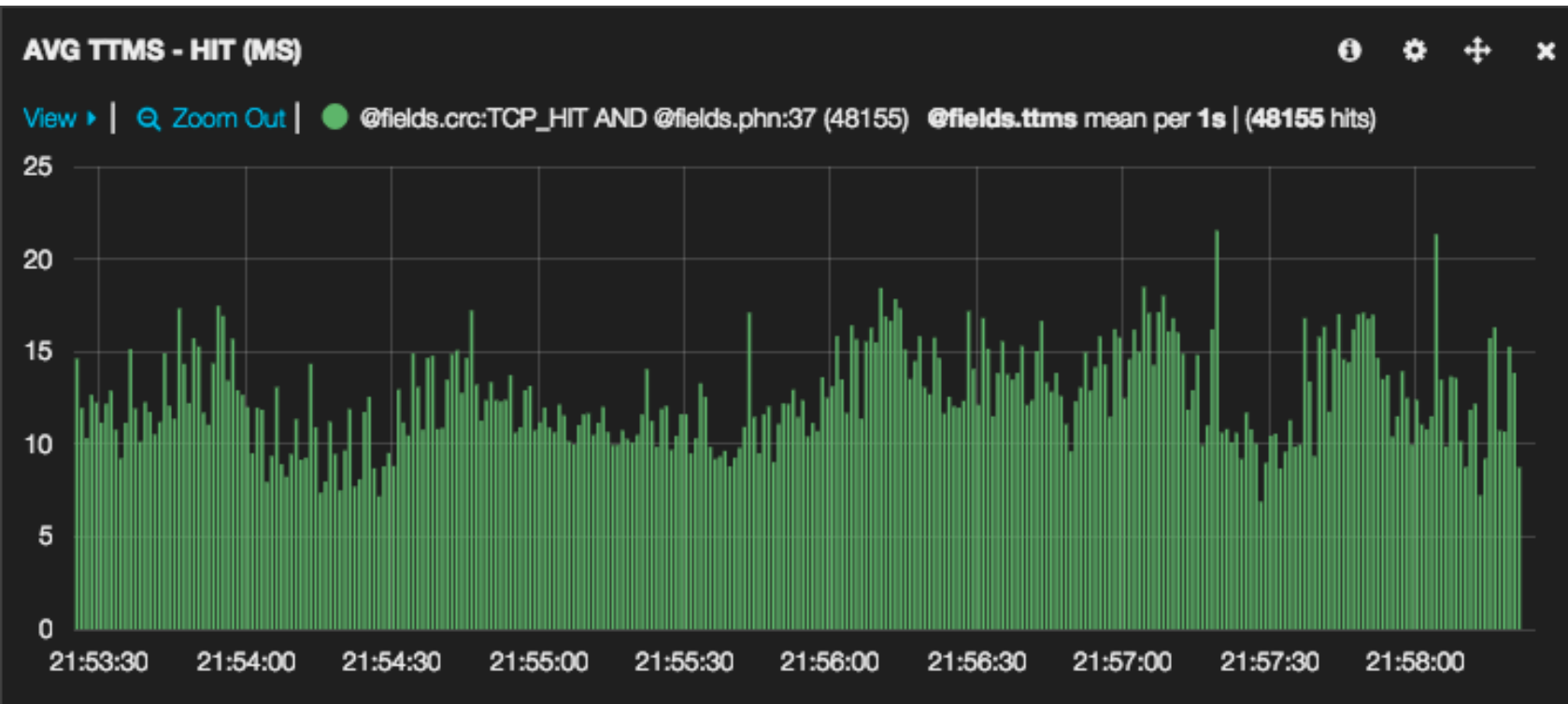
add origin delay = 1.0s

```
[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$|^$#'
LoadModule hotair_module      /usr/lib64/httpd/modules/mod_hotair.so
<LocationMatch "(\\.ism*|\\.f4m|.*Seg\\d-Frag\\d.*|\\.m3u8|\\.ts)">
    SetHandler hotair
</LocationMatch>
HotairDelayOnFirstByteInMs 1000
[root@zaphod02 ~]#
```

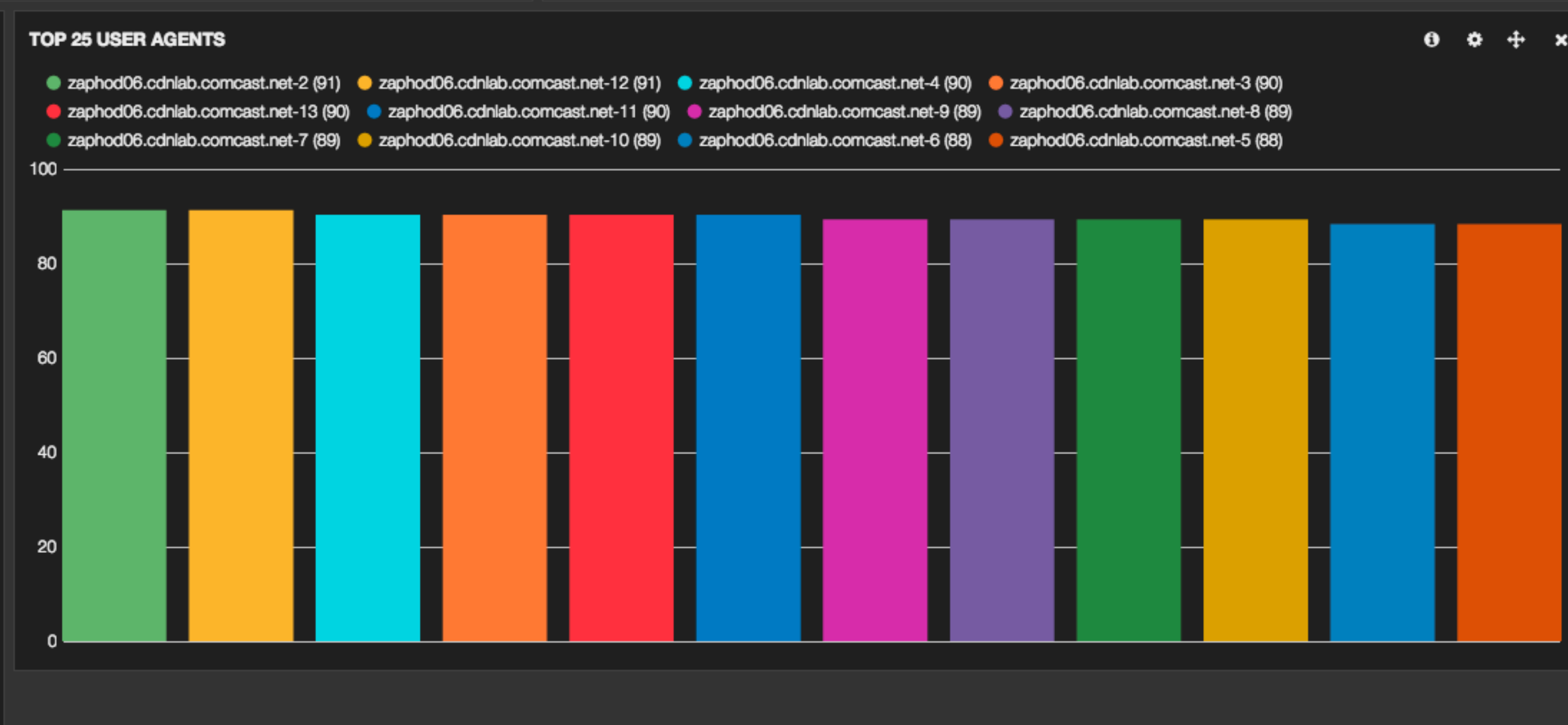
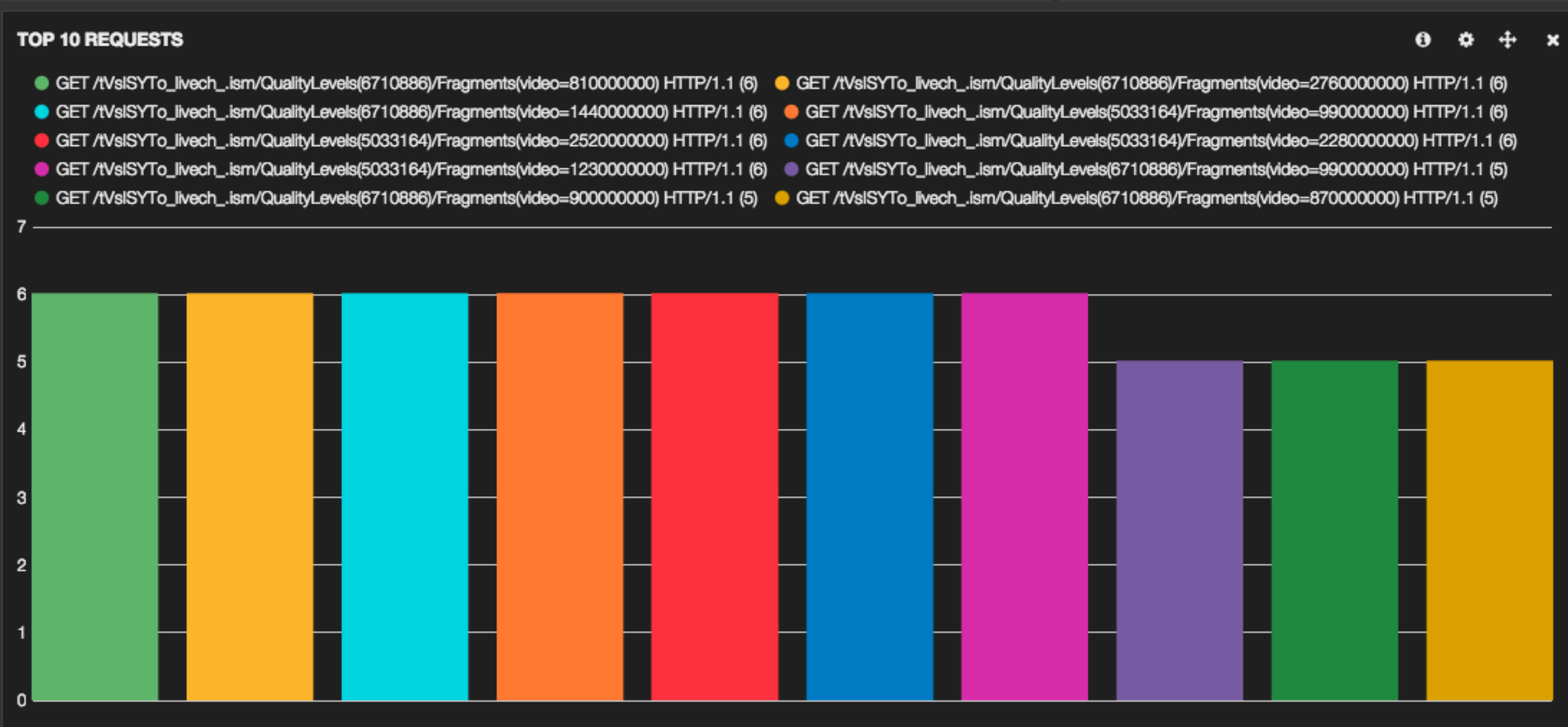
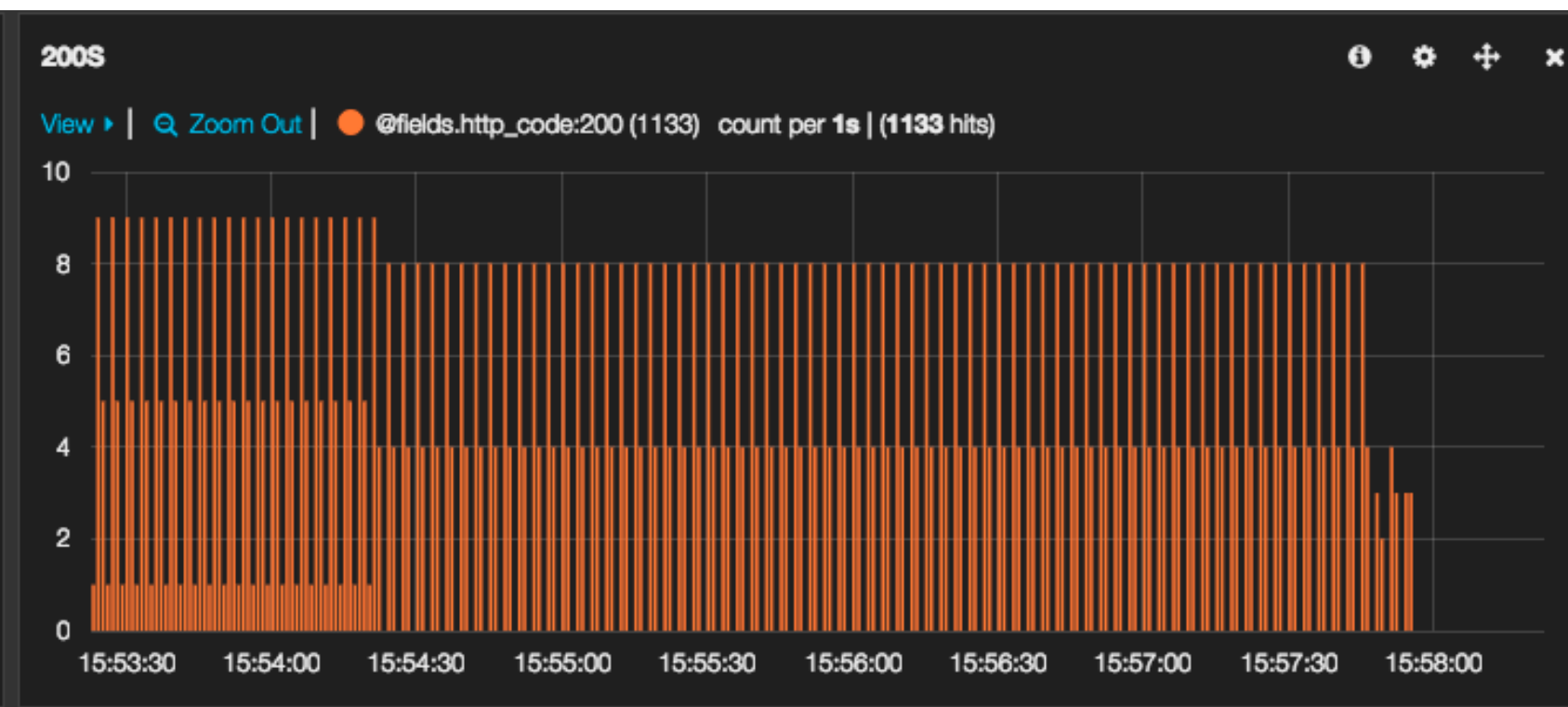
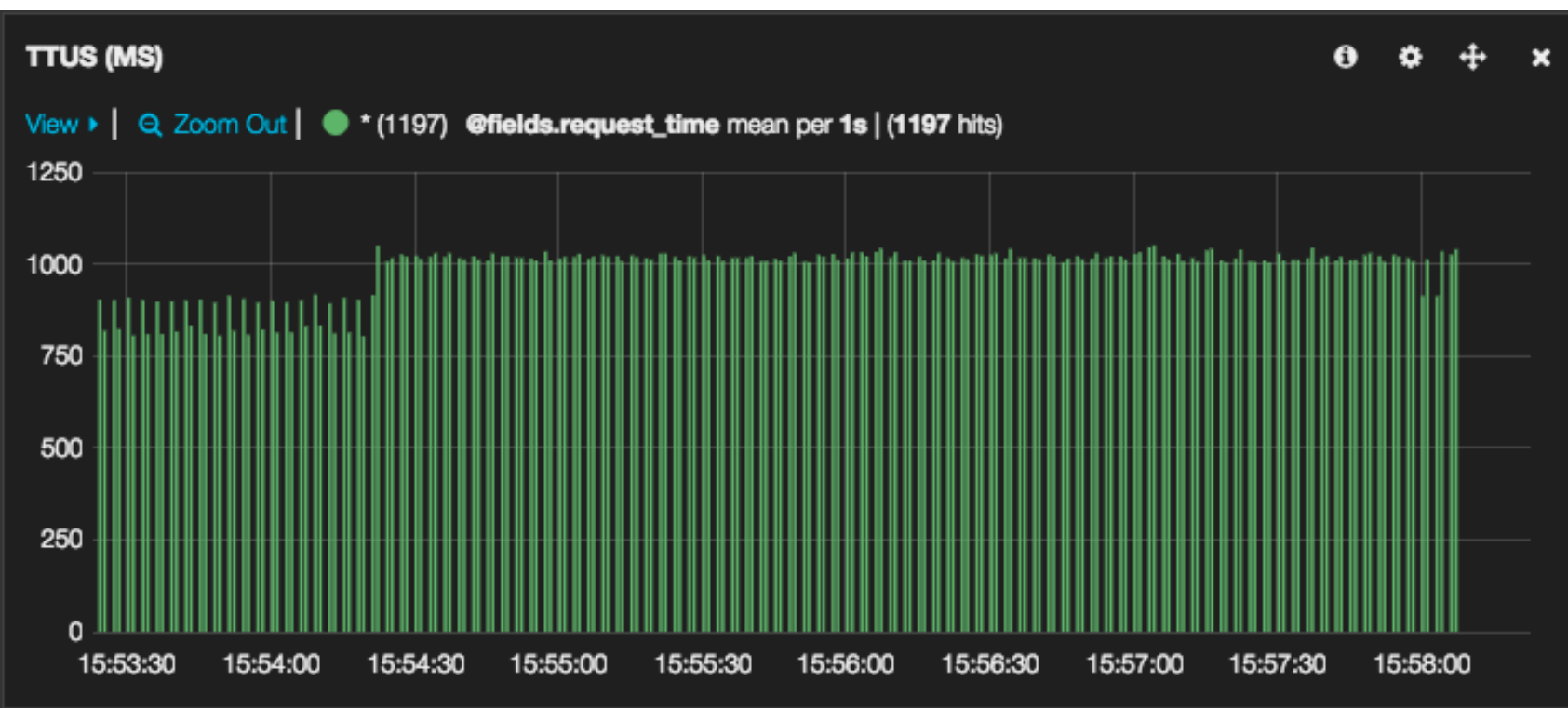
```
[mtorlu9137e@zaphod06]lcontrol$ cat fwd_proxy_tight_c37.json
{
    "clients": "480",
    "bitrate": "2500000",
    "test_type": "TestEngines::LLL",
    "abr_type": "hls",
    "frag_duration": "50000000",
    "origins": "1",
    "live": "100",
    "active_channels": "1",
    "vod_cache_name" : "load-test-01.cdnlab.comcast.net",
    "live_cache_name" : "live-orig-01-dns.cdnlab.comcast.net",
    "cache_ip" : "69.241.62.86",
    "vod_cache_hitratio" : "80",
    "live_active_fragments" : "2",
    "vod_bitrates" : "4300000,3000000",
    "live_bitrates" : "6710886,5033164",
    "max_long_tts_percentage" : "0.5",
    "long_tts_time" : "1.5",
    "proxy_mode" : "forward",
    "ipv6_percentage" : 0,
    "via_headers" : 1
}
[mtorlu9137e@zaphod06]lcontrol$
```

```
[mtorlu9137e@ipcdn-cache-37]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn
Mon Oct 20 21:53:12 UTC 2014
Version of this script: 0.34e
ERROR Lines in /opt/trafficserver/etc/trafficserver//records.config do not match Twelve Monkeys.
ERROR Config file: records.config line only in 12M: CONFIG proxy.config.cache.enable_read_while_writer INT 1
ERROR Config file: records.config line only on disk: CONFIG proxy.config.cache.enable_read_while_writer INT 0
[mtorlu9137e@ipcdn-cache-37]~$
```

Mid graphs



Origin graphs



Add packet delay @ origin = 100ms

```
[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$|^$#'
LoadModule hotair_module      /usr/lib64/httpd/modules/mod_hotair.so
<LocationMatch "(\\.ism*|\\.f4m|\\..*Seg\\d-Frag\\d.*|\\.m3u8|\\.ts)">
    SetHandler hotair
</LocationMatch>
HotairDelayOnFirstByteInMs 1000
[root@zaphod02 ~]#
```

```
[root@zaphod02 ~]# tc qdisc show dev ens2f0
```

```
qdisc netem 8006: root refcnt 2 limit 1000 delay 100.0ms
```

```
[root@zaphod02 ~]#
```

```
[mtorlu9137e@ipcdn-cache-37]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn
```

```
Mon Oct 20 22:01:12 UTC 2014
```

```
Version of this script: 0.34e
```

```
ERROR Lines in /opt/trafficserver/etc/trafficserver//records.config do not match Twelve Monkeys.
```

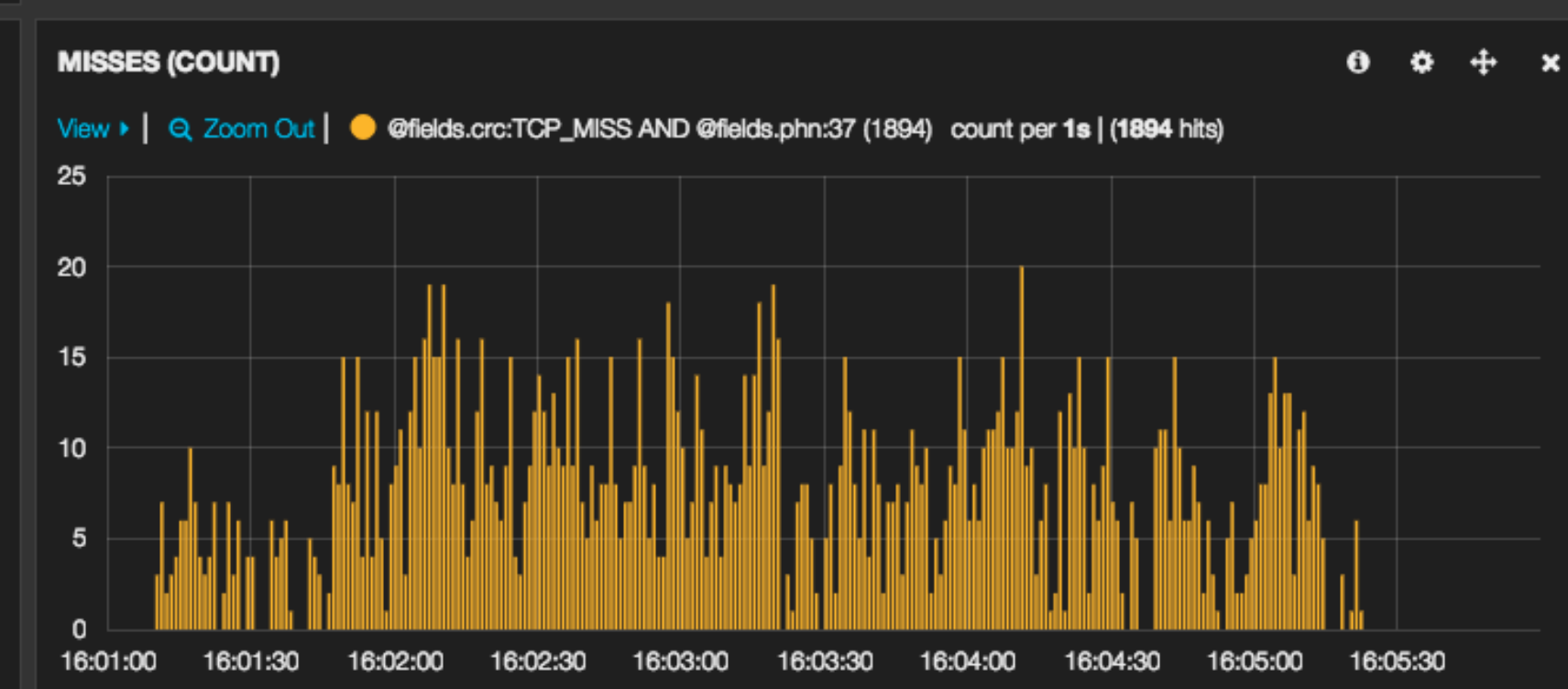
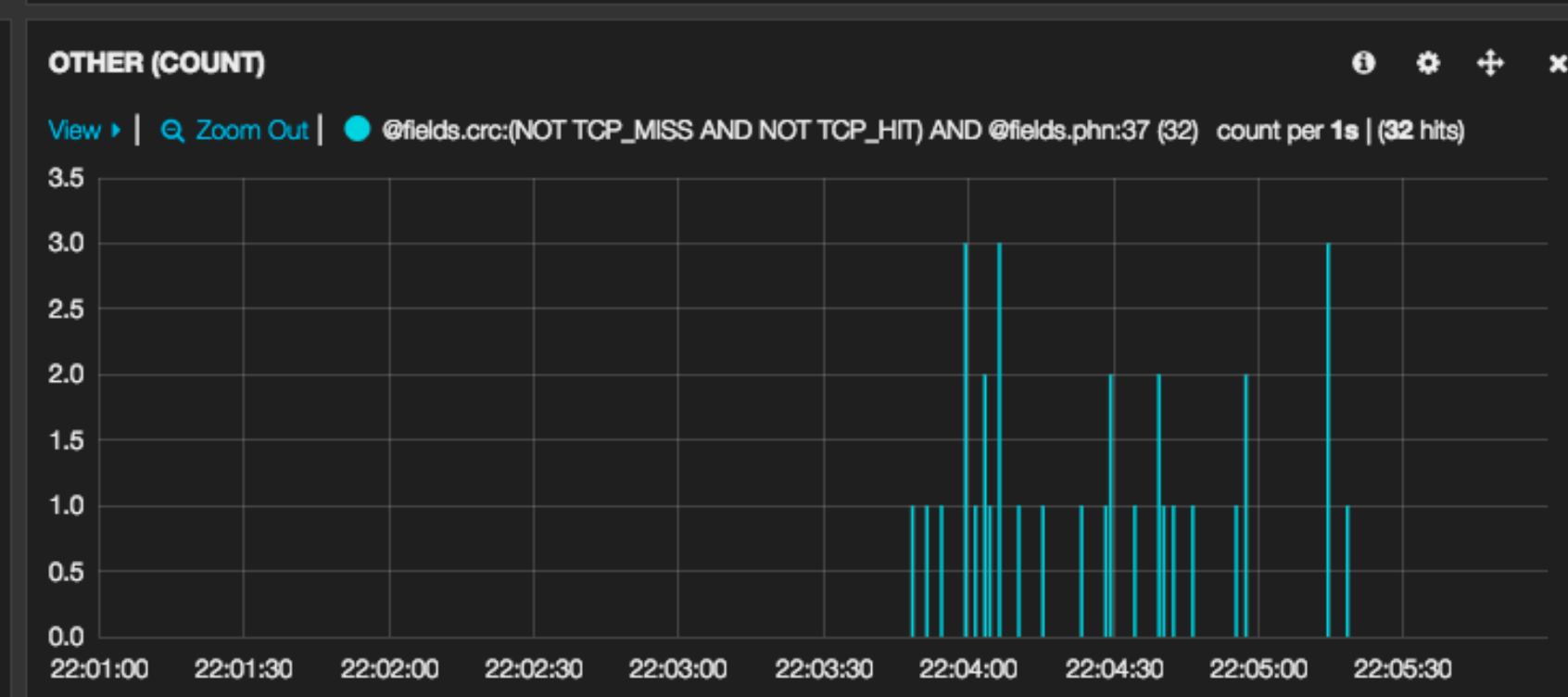
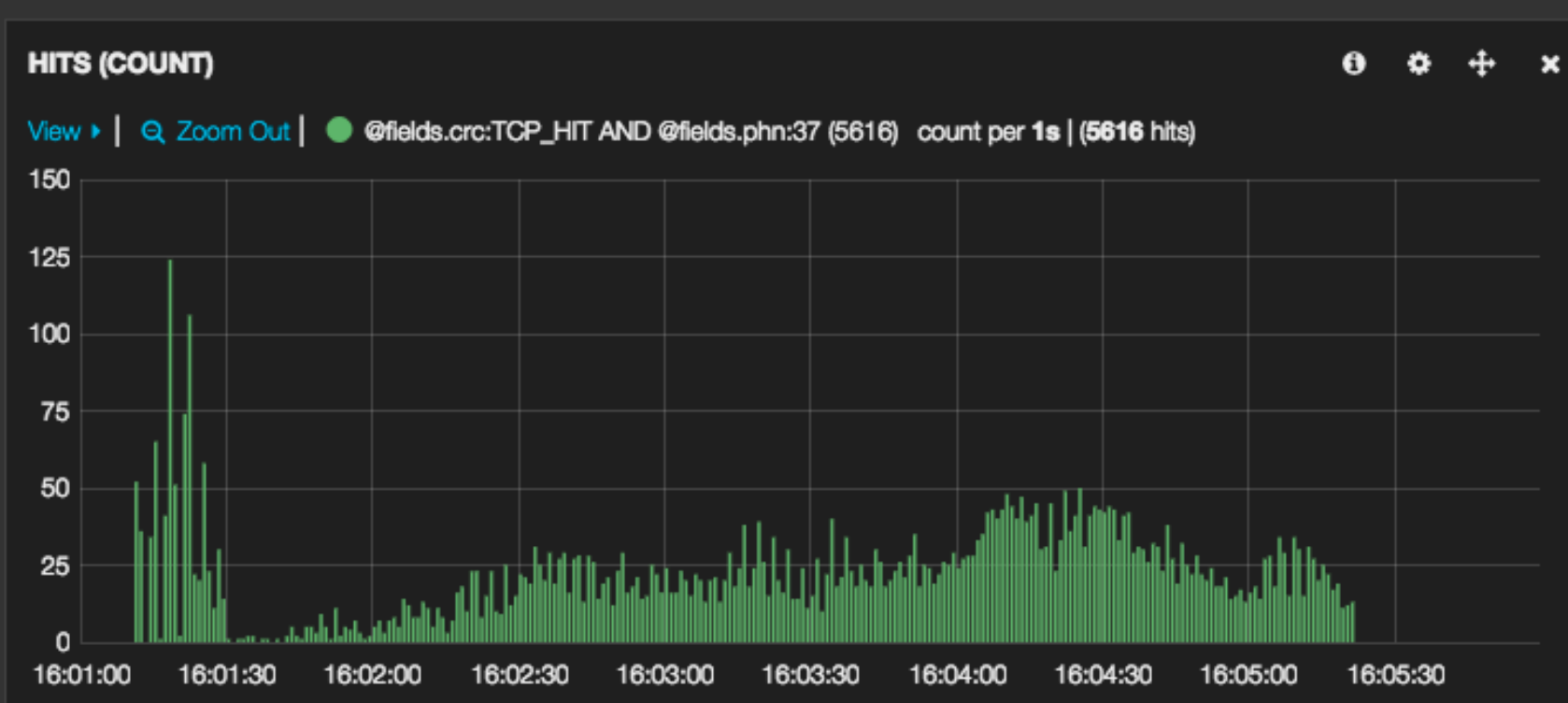
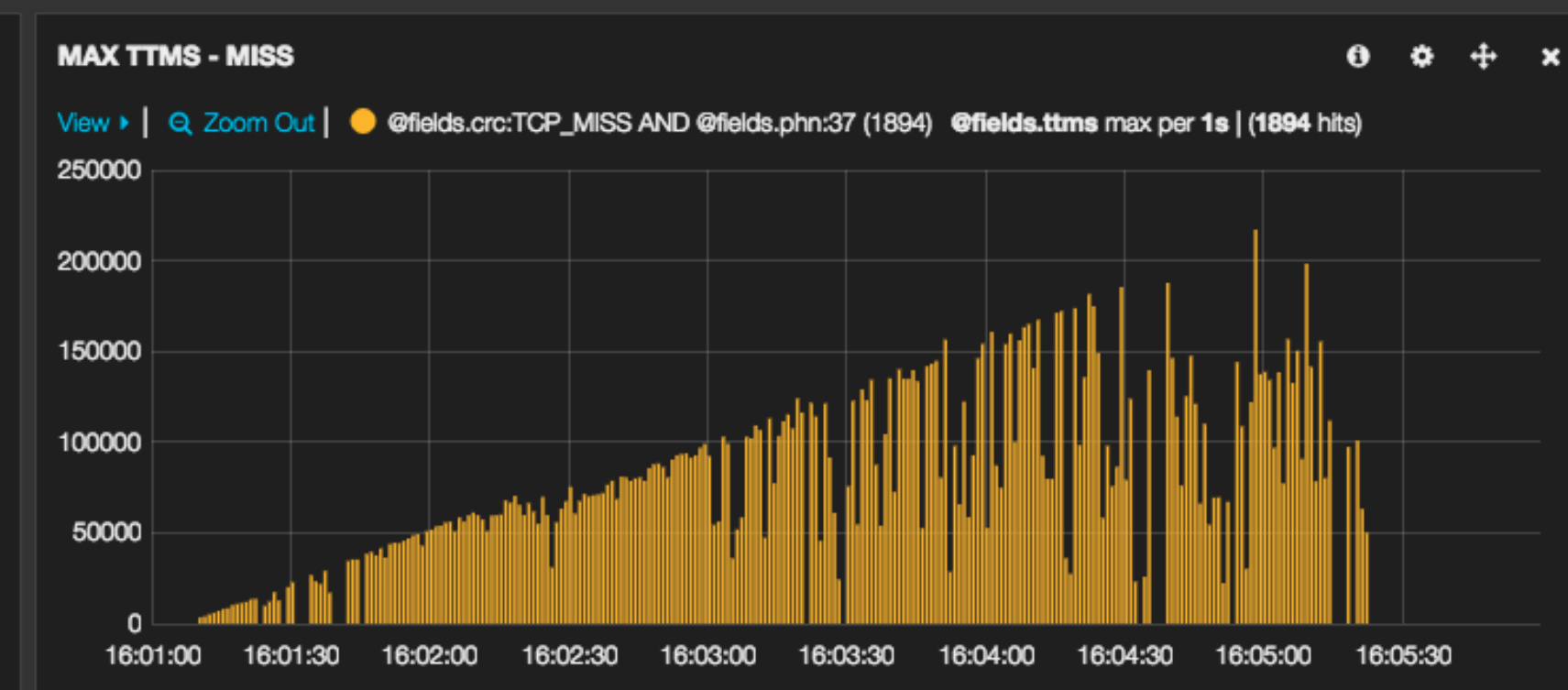
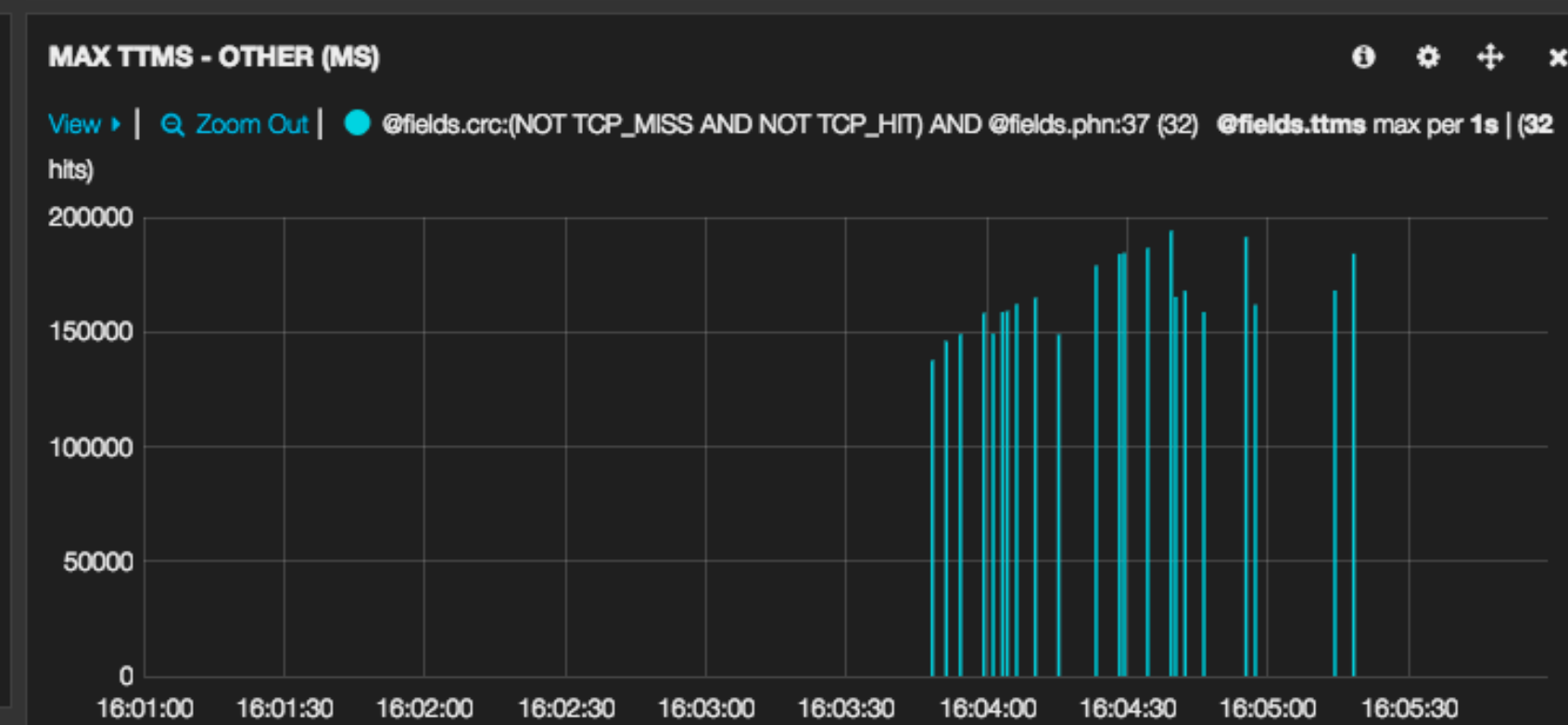
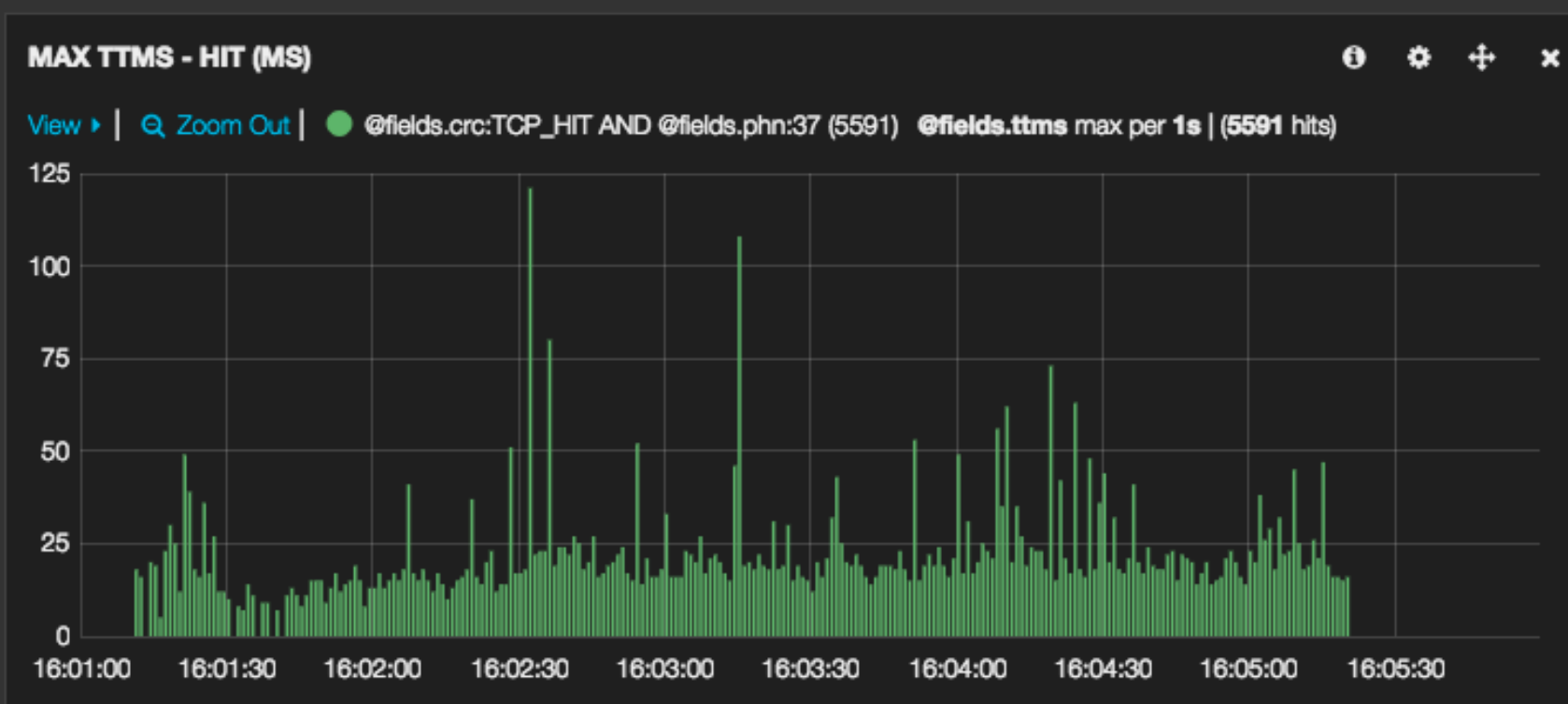
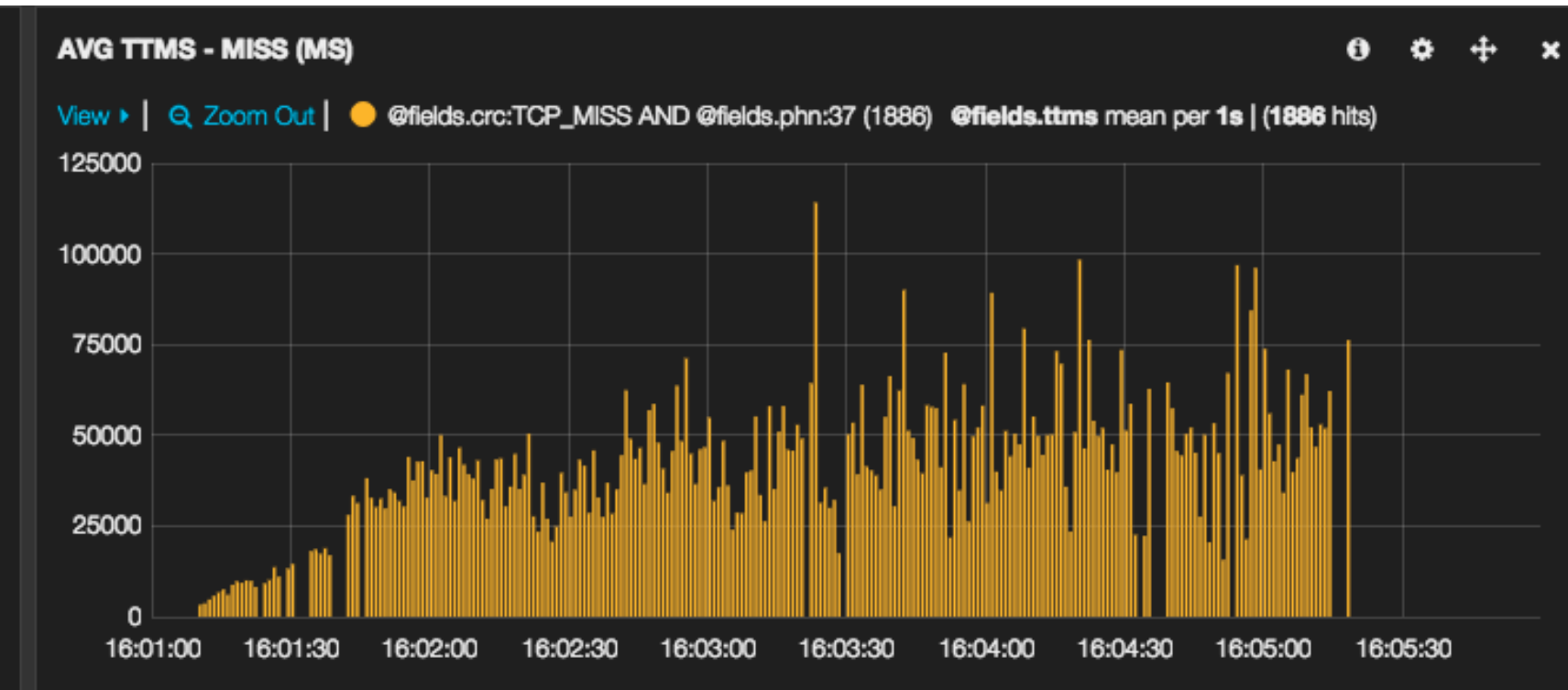
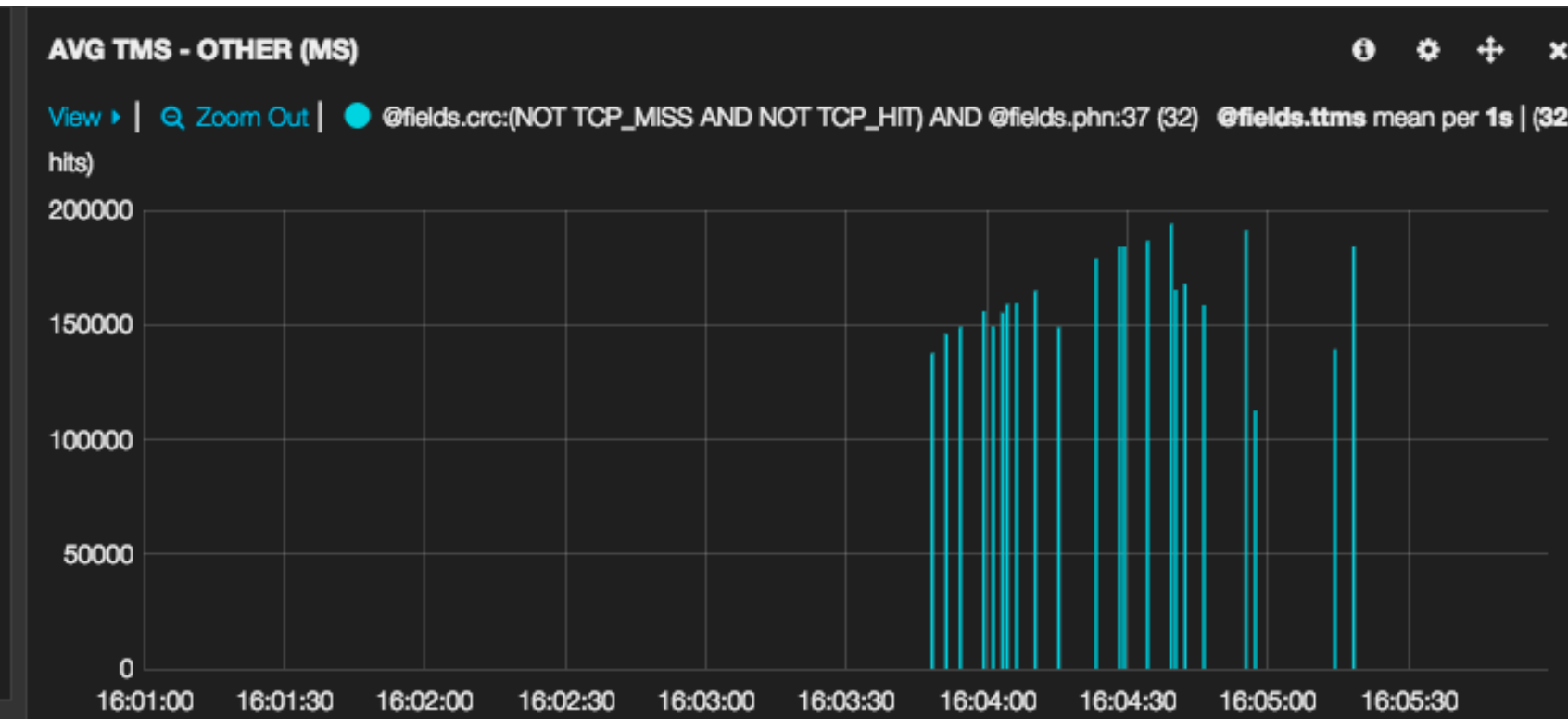
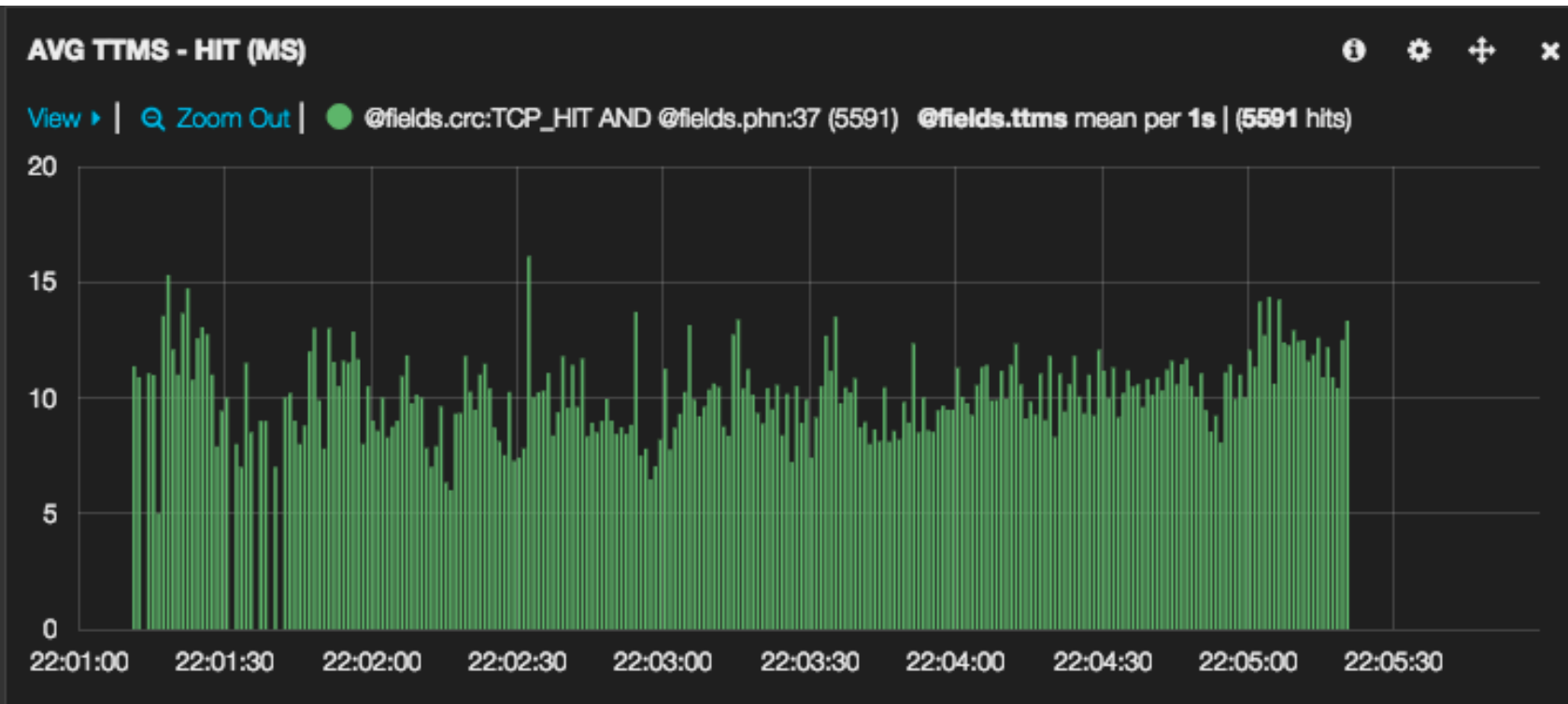
```
ERROR Config file: records.config line only in 12M: CONFIG proxy.config.cache.enable_read_while_writer INT 1
```

```
ERROR Config file: records.config line only on disk: CONFIG proxy.config.cache.enable_read_while_writer INT 0
```

```
[mtorlu9137e@ipcdn-cache-37]~$
```

```
[mtorlu9137e@zaphod06]lcontrol$ cat fwd_proxy_tight_c37.json
{
  "clients": "480",
  "bitrate": "2500000",
  "test_type": "TestEngines::LLL",
  "abr_type": "hls",
  "frag_duration": "50000000",
  "origins": "1",
  "live": "100",
  "active_channels": "1",
  "vod_cache_name" : "load-test-01.cdnlab.comcast.net",
  "live_cache_name" : "live-orig-01-dns.cdnlab.comcast.net",
  "cache_ip" : "69.241.62.86",
  "vod_cache_hitratio" : "80",
  "live_active_fragments" : "2",
  "vod_bitrates" : "4300000,3000000",
  "live_bitrates" : "6710886,5033164",
  "max_long_tts_percentage" : "0.5",
  "long_tts_time" : "1.5",
  "proxy_mode" : "forward",
  "ipv6_percentage" : 0,
  "via_headers" : 1
}
[mtorlu9137e@zaphod06]lcontrol$
```

Mid graphs



Zoom in on errors...

mid-tier cache

@fields.b	@fields.uas	@fields.ttms	@fields.sssc	@fields.pssc	@fields.crc	@timestamp	@fields.utime
0	zaphod06.cdnlab.comcast.net-376	148885	000	502	ERR_CONNECT_FAIL	2014-10-20T22:03:54.000Z	1413842634.179
0	zaphod06.cdnlab.comcast.net-355	154340	000	502	ERR_CONNECT_FAIL	2014-10-20T22:03:59.000Z	1413842639.321
0	zaphod06.cdnlab.comcast.net-323	154911	000	502	ERR_CONNECT_FAIL	2014-10-20T22:03:59.000Z	1413842639.321
0	zaphod06.cdnlab.comcast.net-336	183871	000	504	ERR_READ_TIMEOUT	2014-10-20T22:04:28.000Z	1413842668.519
0	zaphod06.cdnlab.comcast.net-115	165208	000	504	ERR_READ_TIMEOUT	2014-10-20T22:04:40.000Z	1413842680.210
0	zaphod06.cdnlab.comcast.net-105	164257	000	504	ERR_READ_TIMEOUT	2014-10-20T22:05:14.000Z	1413842714.369
0	zaphod06.cdnlab.comcast.net-41	167965	000	504	ERR_READ_TIMEOUT	2014-10-20T22:05:14.000Z	1413842714.369
0	zaphod06.cdnlab.comcast.net-164	184103	000	504	ERR_READ_TIMEOUT	2014-10-20T22:05:18.000Z	1413842718.351
0	zaphod06.cdnlab.comcast.net-266	82739	000	502	ERR_CONNECT_FAIL	2014-10-20T22:05:34.000Z	1413842734.280
0	zaphod06.cdnlab.comcast.net-171	165244	000	502	ERR_CONNECT_FAIL	2014-10-20T22:05:39.000Z	1413842739.289
0	zaphod06.cdnlab.comcast.net-383	145931	000	502	ERR_CONNECT_FAIL	2014-10-20T22:03:51.000Z	1413842631.334
0	zaphod06.cdnlab.comcast.net-245	158186	000	502	ERR_CONNECT_FAIL	2014-10-20T22:03:59.000Z	1413842639.320
0	zaphod06.cdnlab.comcast.net-397	159072	000	504	ERR_READ_TIMEOUT	2014-10-20T22:04:04.000Z	1413842644.685
0	zaphod06.cdnlab.comcast.net-353	161195	000	502	ERR_CONNECT_FAIL	2014-10-20T22:04:06.000Z	1413842646.142
0	zaphod06.cdnlab.comcast.net-310	161988	000	502	ERR_CONNECT_FAIL	2014-10-20T22:04:06.000Z	1413842646.150
0	zaphod06.cdnlab.comcast.net-368	184344	000	504	ERR_READ_TIMEOUT	2014-10-20T22:04:29.000Z	1413842669.515
0	zaphod06.cdnlab.comcast.net-404	186428	000	502	ERR_CONNECT_FAIL	2014-10-20T22:04:34.000Z	1413842674.147
0	zaphod06.cdnlab.comcast.net-370	194006	000	504	ERR_READ_TIMEOUT	2014-10-20T22:04:39.000Z	1413842679.207
0	zaphod06.cdnlab.comcast.net-394	193707	000	504	ERR_READ_TIMEOUT	2014-10-20T22:04:39.000Z	1413842679.273
0	zaphod06.cdnlab.comcast.net-234	167896	000	504	ERR_READ_TIMEOUT	2014-10-20T22:04:42.000Z	1413842682.286
1261	zaphod06.cdnlab.comcast.net-83	191338	200	200	ERR_CLIENT_ABORT	2014-10-20T22:04:55.000Z	1413842695.079
0	zaphod06.cdnlab.comcast.net-293	161807	000	502	ERR_CONNECT_FAIL	2014-10-20T22:04:57.000Z	1413842697.352
0	zaphod06.cdnlab.comcast.net-425	76084	000	504	ERR_READ_TIMEOUT	2014-10-20T22:05:20.000Z	1413842720.223
0	zaphod06.cdnlab.comcast.net-56	75920	000	502	ERR_CONNECT_FAIL	2014-10-20T22:05:31.000Z	1413842731.187
0	zaphod06.cdnlab.comcast.net-86	92078	000	502	ERR_CONNECT_FAIL	2014-10-20T22:05:35.000Z	1413842735.339
0	zaphod06.cdnlab.comcast.net-501	149006	000	502	ERR_CONNECT_FAIL	2014-10-20T22:04:01.000Z	1413842641.314
0	zaphod06.cdnlab.comcast.net-457	151548	000	502	ERR_CONNECT_FAIL	2014-10-20T22:04:03.000Z	1413842643.206
0	zaphod06.cdnlab.comcast.net-395	164846	000	504	ERR_READ_TIMEOUT	2014-10-20T22:04:10.000Z	1413842650.430
13032	zaphod06.cdnlab.comcast.net-401	183347	200	200	ERR_CLIENT_ABORT	2014-10-20T22:04:29.000Z	1413842669.019
0	zaphod06.cdnlab.comcast.net-25	158446	000	504	ERR_READ_TIMEOUT	2014-10-20T22:04:46.000Z	1413842686.185
0	zaphod06.cdnlab.comcast.net-133	85239	000	504	ERR_READ_TIMEOUT	2014-10-20T22:05:14.000Z	1413842714.424

read_while_writer on

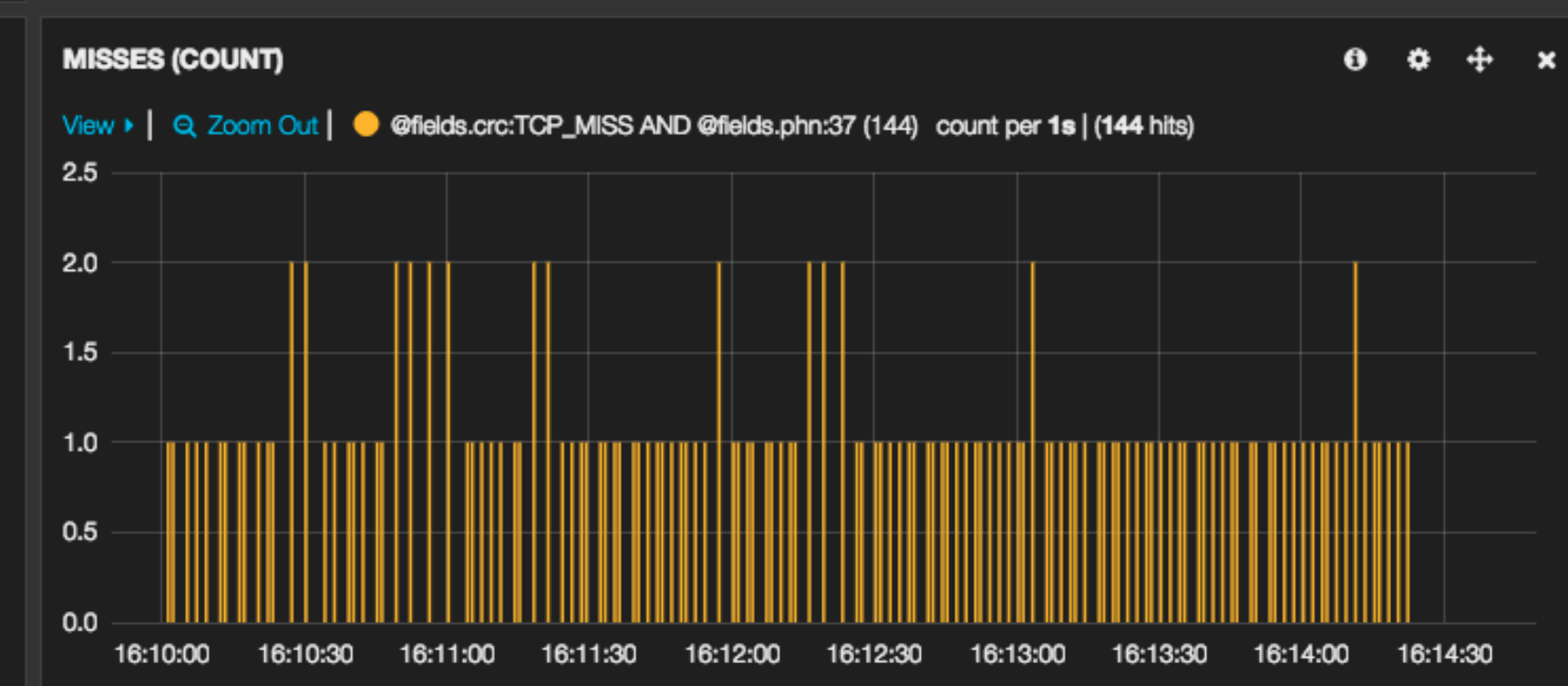
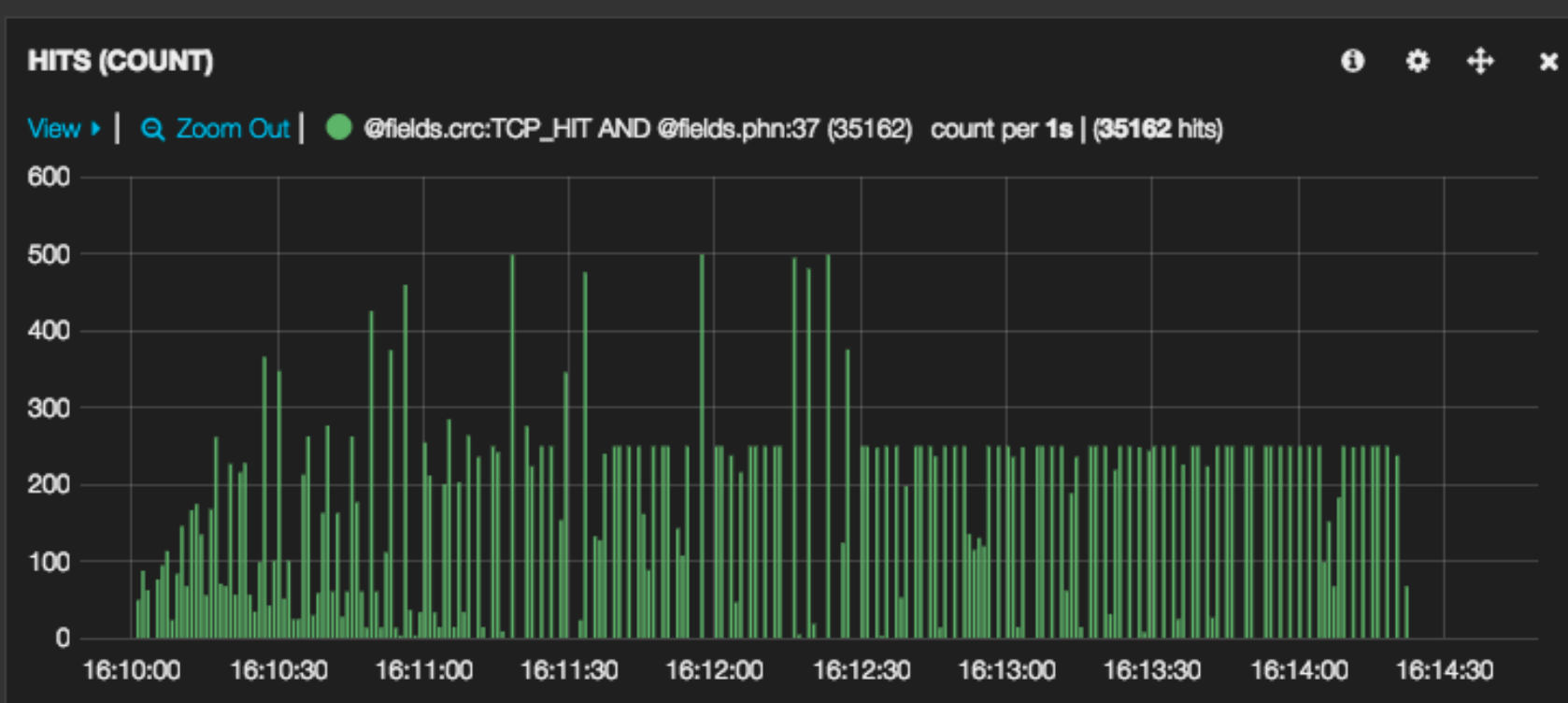
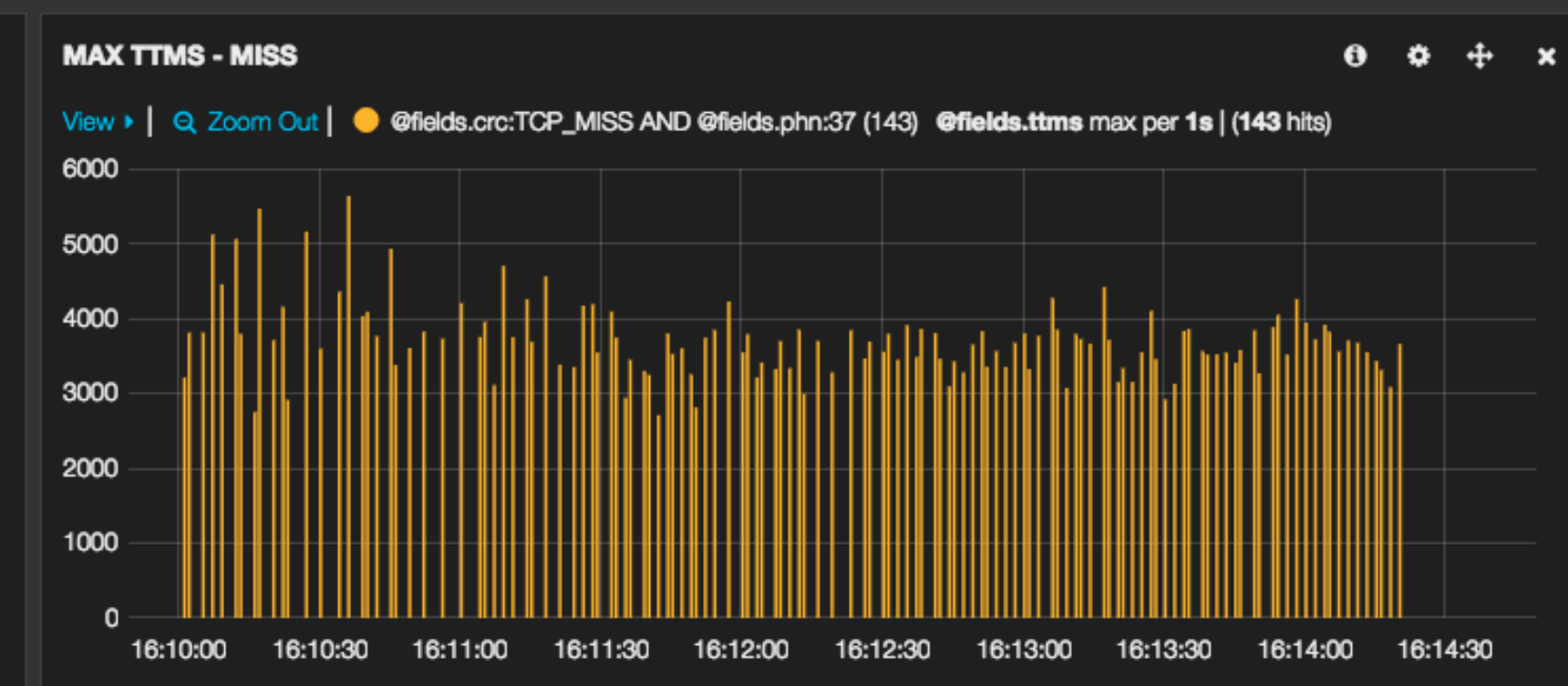
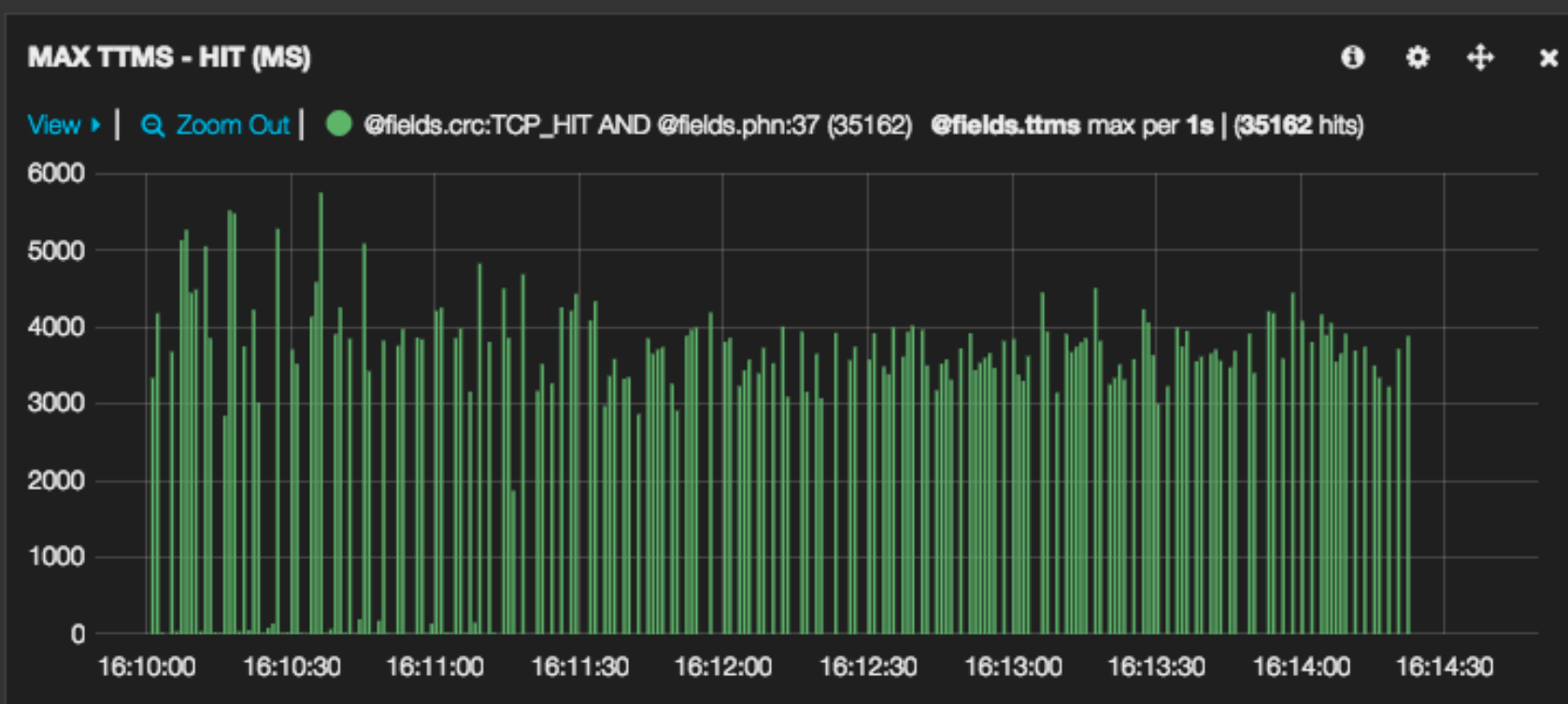
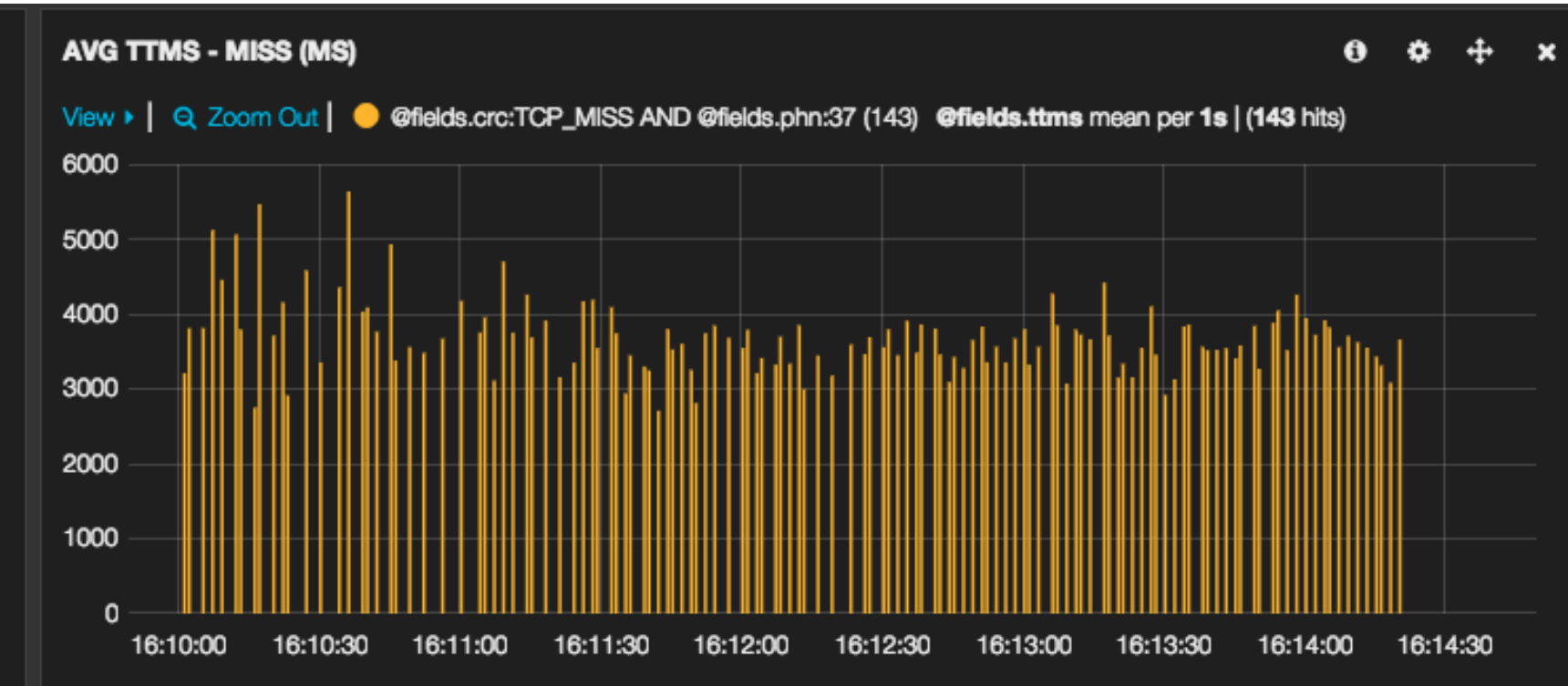
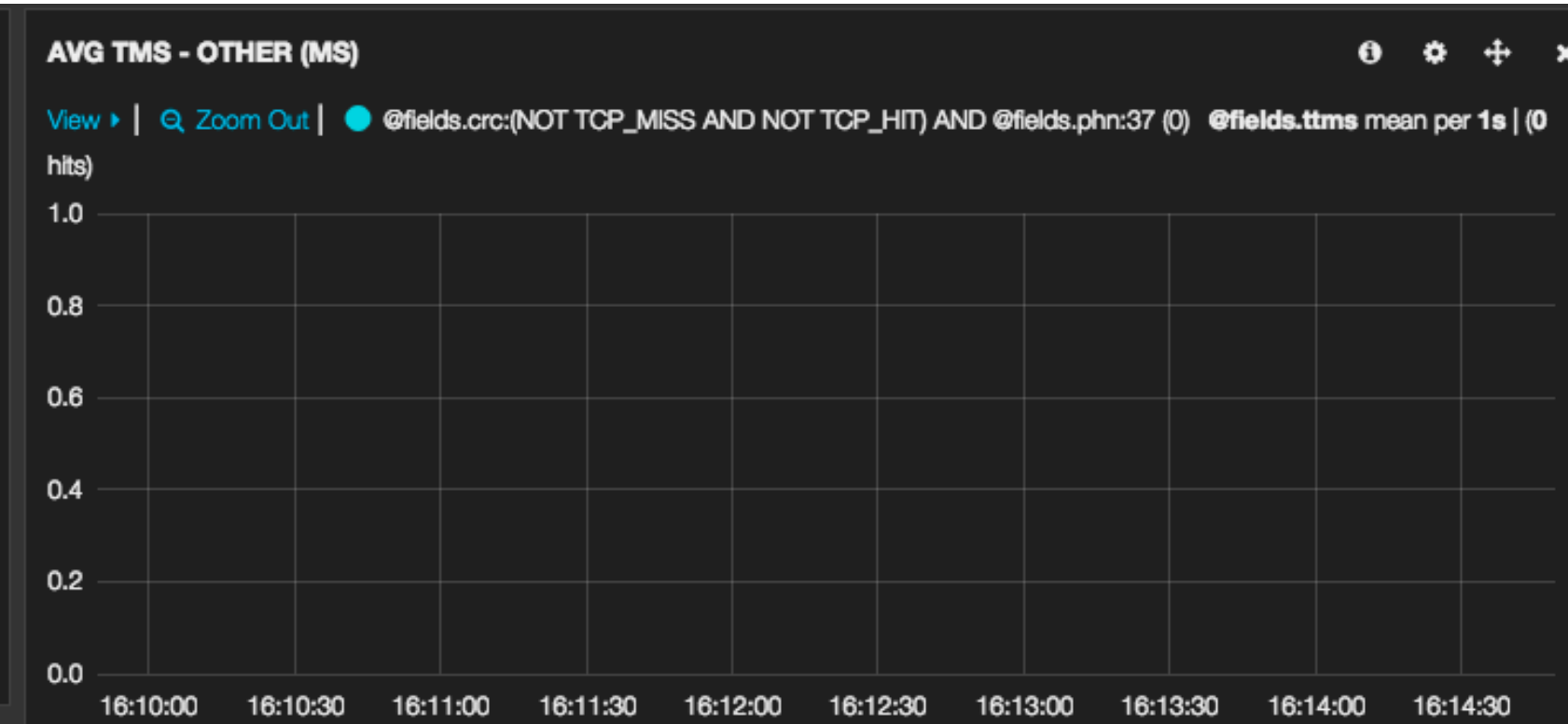
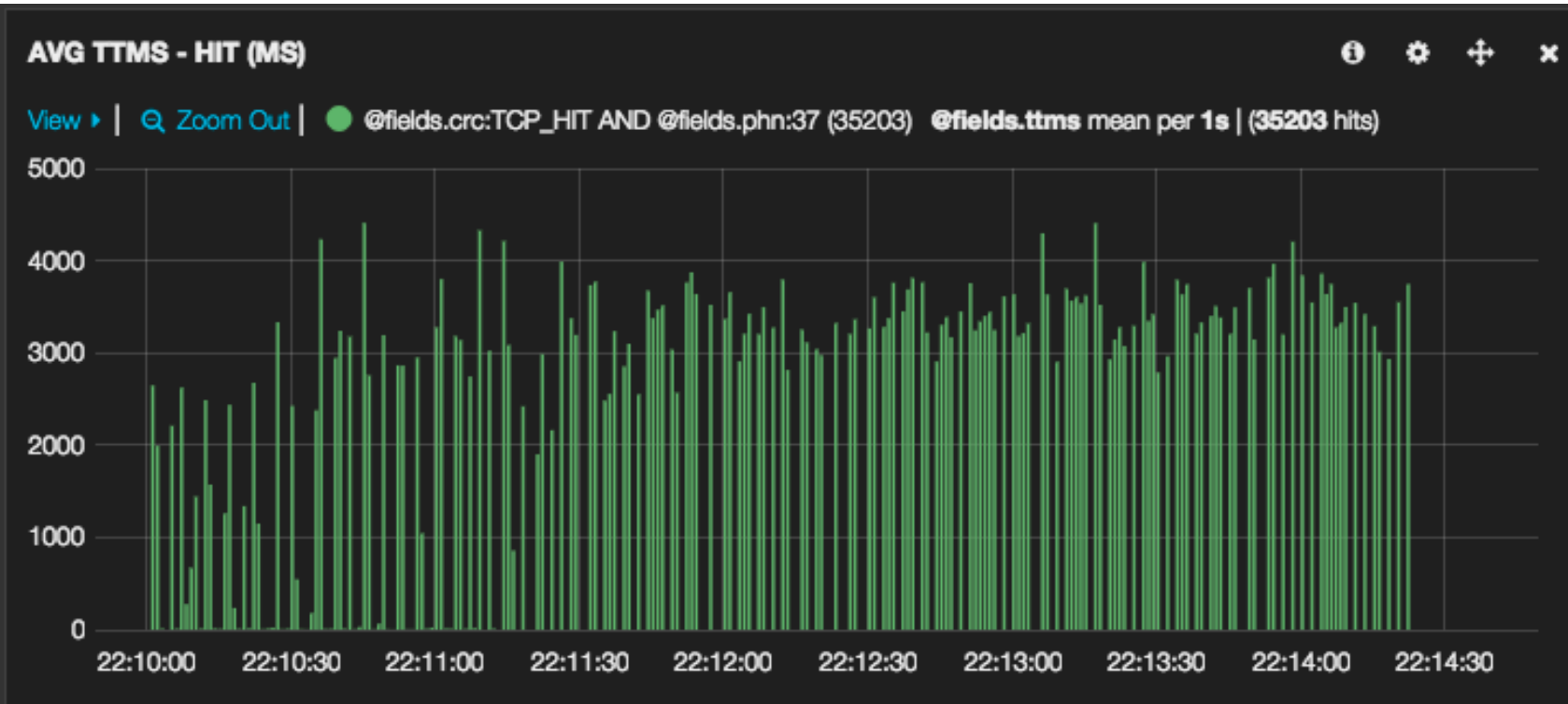
```
[mtorlu9137e@ipcdn-cache-37]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn  
Mon Oct 20 22:09:40 UTC 2014  
Version of this script: 0.34e  
[mtorlu9137e@ipcdn-cache-37]~$
```

```
[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$|^$#'  
LoadModule hotair_module /usr/lib64/httpd/modules/mod_hotair.so  
<LocationMatch "(\\.ism*|\\.f4m|\\.Seg\\d-Frag\\d.*|\\.m3u8|\\.ts)">  
    SetHandler hotair  
</LocationMatch>  
HotairDelayOnFirstByteInMs 1000  
[root@zaphod02 ~]#
```

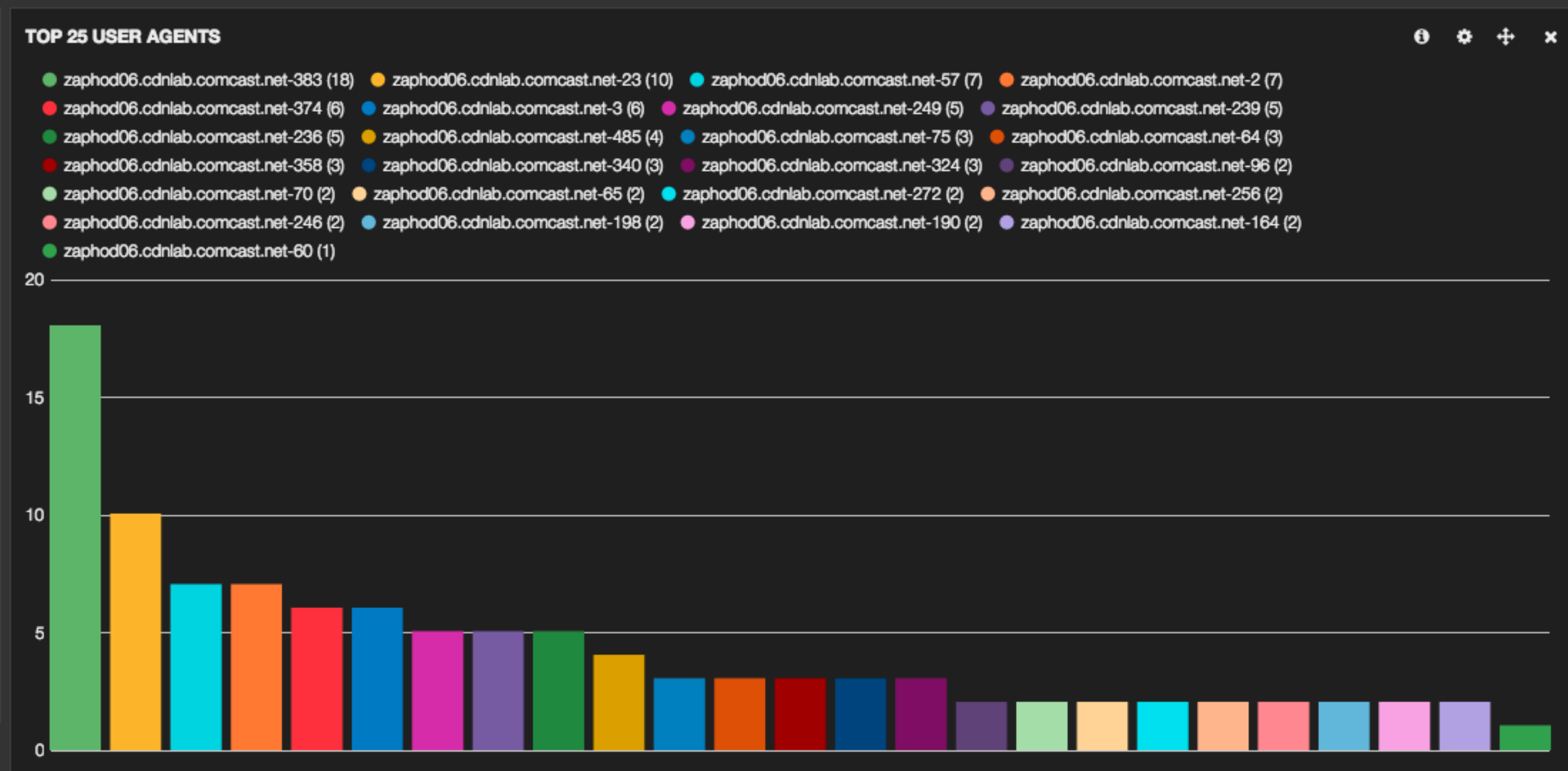
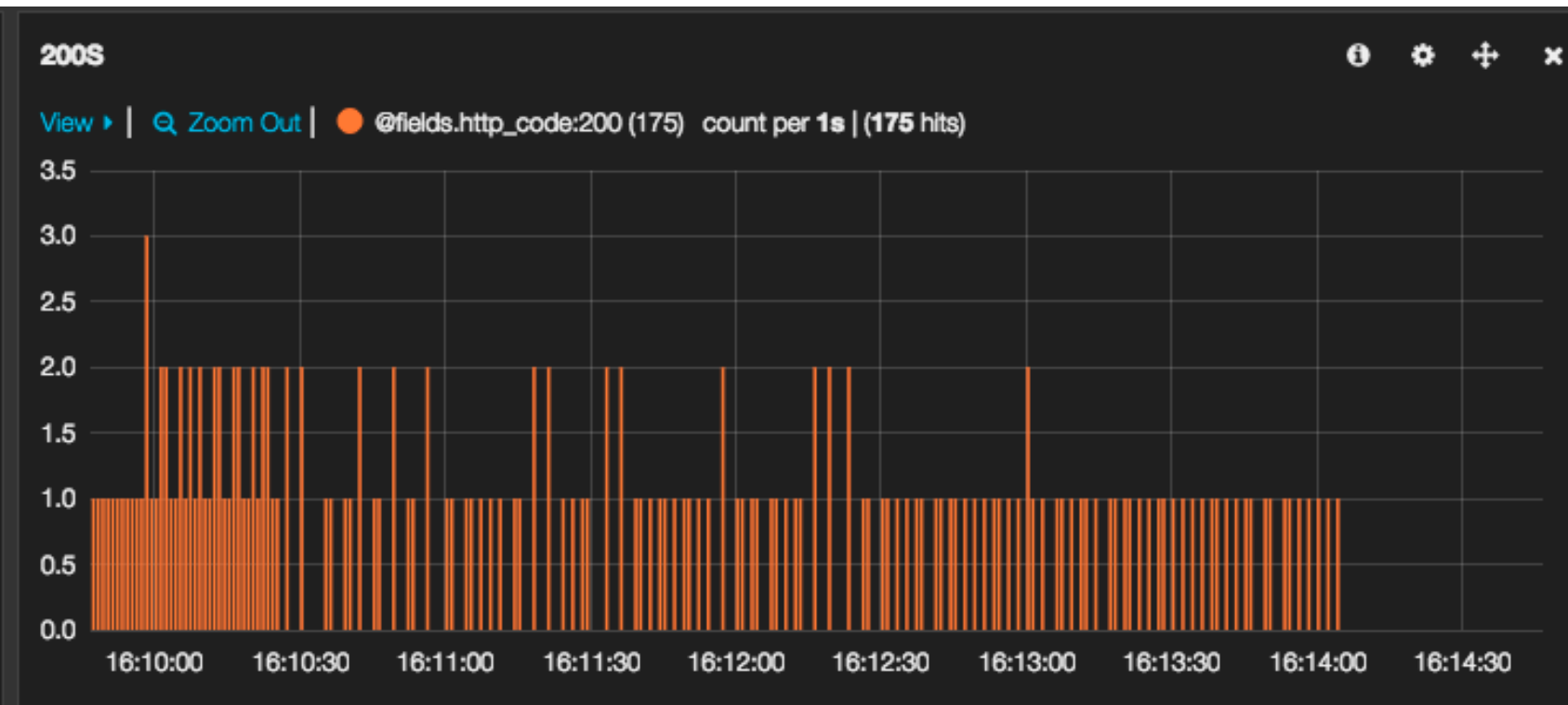
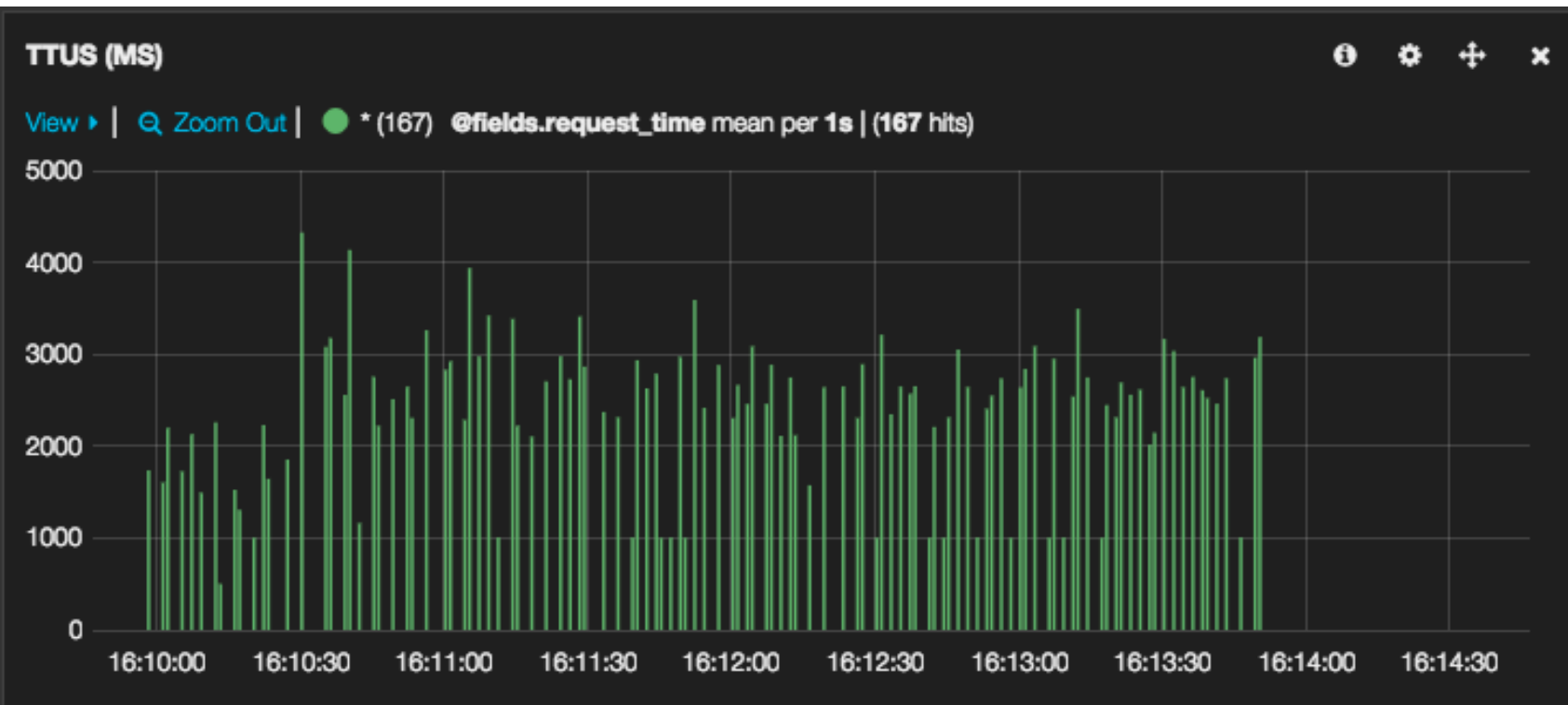
```
[root@zaphod02 ~]# tc qdisc show dev ens2f0  
qdisc netem 8006: root refcnt 2 limit 1000 delay 100.0ms  
[root@zaphod02 ~]#
```

```
[mtorlu9137e@zaphod06]lcontrol$ cat fwd_proxy_tight_c37.json  
{  
  "clients": "480",  
  "bitrate": "2500000",  
  "test_type": "TestEngines::LLL",  
  "abr_type": "hls",  
  "frag_duration": "50000000",  
  "origins": "1",  
  "live": "100",  
  "active_channels": "1",  
  "vod_cache_name" : "load-test-01.cdnlab.comcast.net",  
  "live_cache_name" : "live-orig-01-dns.cdnlab.comcast.net",  
  "cache_ip" : "69.241.62.86",  
  "vod_cache_hitratio" : "80",  
  "live_active_fragments" : "2",  
  "vod_bitrates" : "4300000,3000000",  
  "live_bitrates" : "6710886,5033164",  
  "max_long_tts_percentage" : "0.5",  
  "long_tts_time" : "1.5",  
  "proxy_mode" : "forward",  
  "ipv6_percentage" : 0,  
  "via_headers" : 1  
}  
[mtorlu9137e@zaphod06]lcontrol$
```

Mid graphs



Origin graphs



New test:

Timely fail to client

packet delay off, origin delay=2.0s, read_while_writer on

```
[mtorlu9137e@ipcdn-cache-37]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn
Mon Oct 20 22:22:39 UTC 2014
Version of this script: 0.34e
[mtorlu9137e@ipcdn-cache-37]~$
```

```
[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$|^\\#'
LoadModule hotair_module      /usr/lib64/httpd/modules/mod_hotair.so
<LocationMatch "(\\.ism*|\\.f4m|\\.Seg\\d-Frag\\d.*|\\.m3u8|\\.ts)">
    SetHandler hotair
</LocationMatch>
```

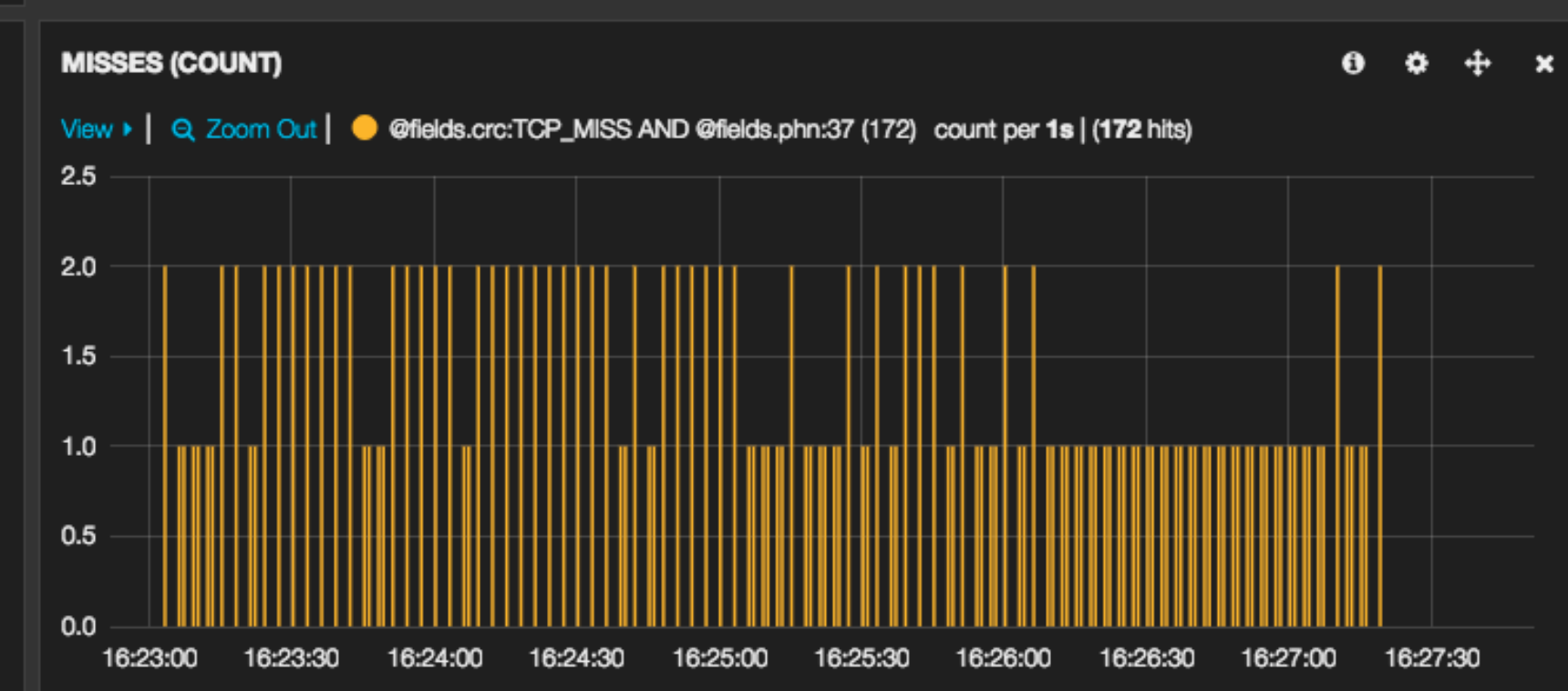
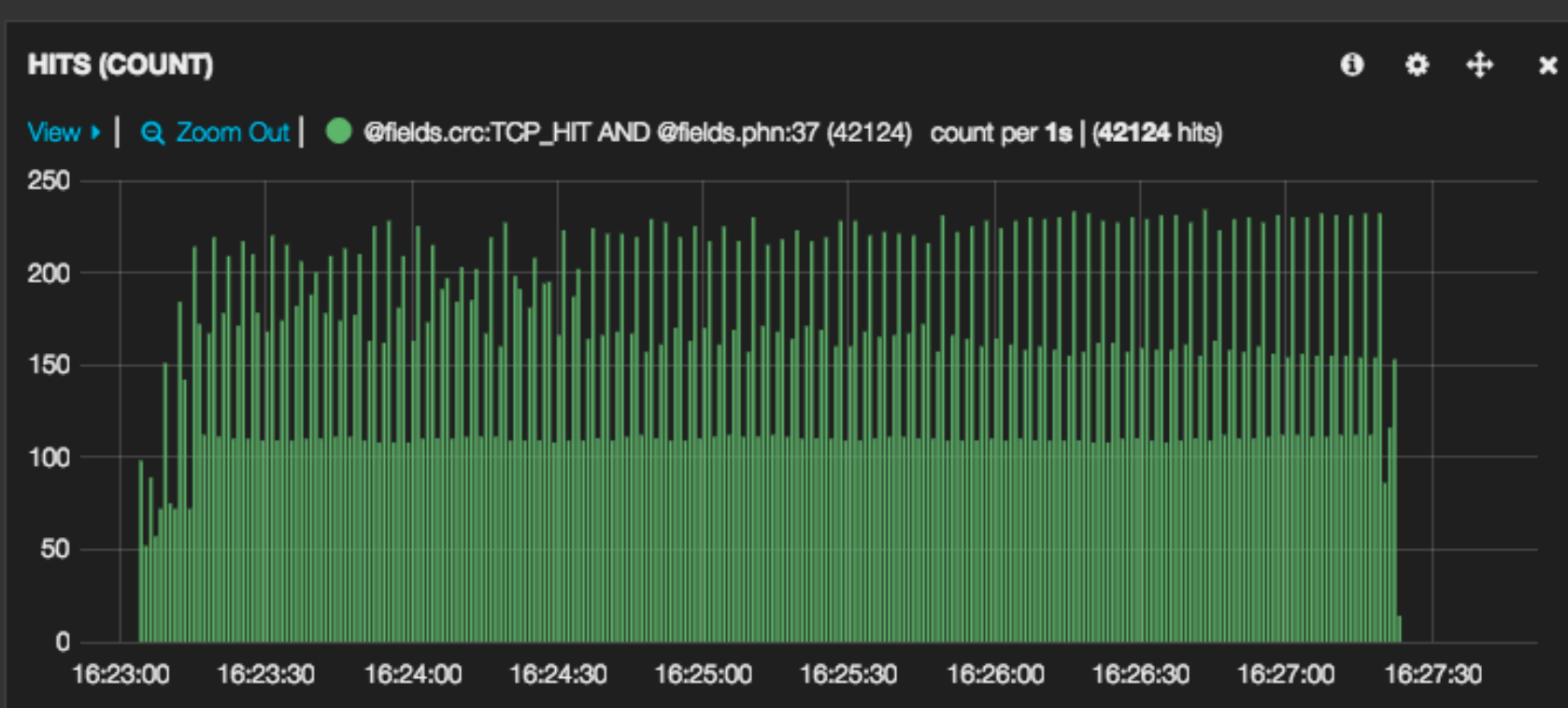
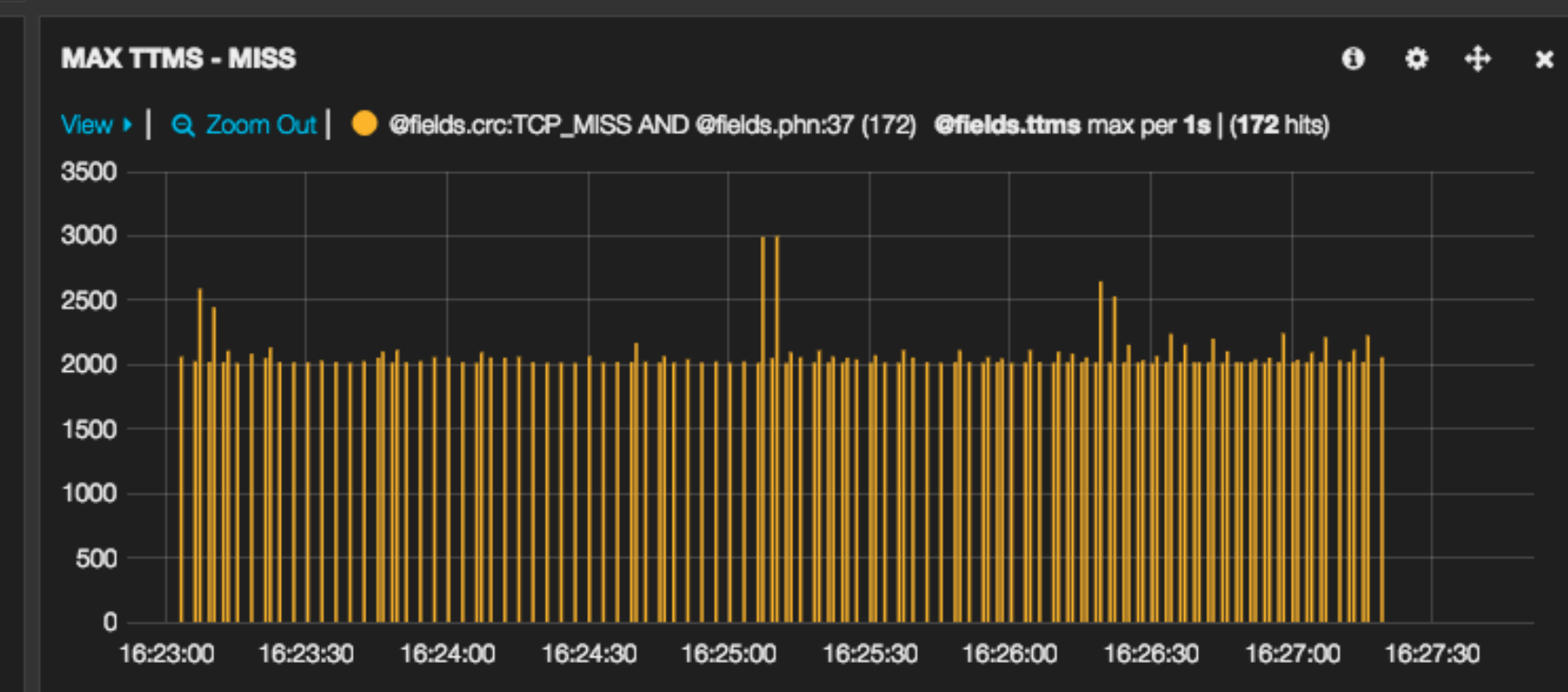
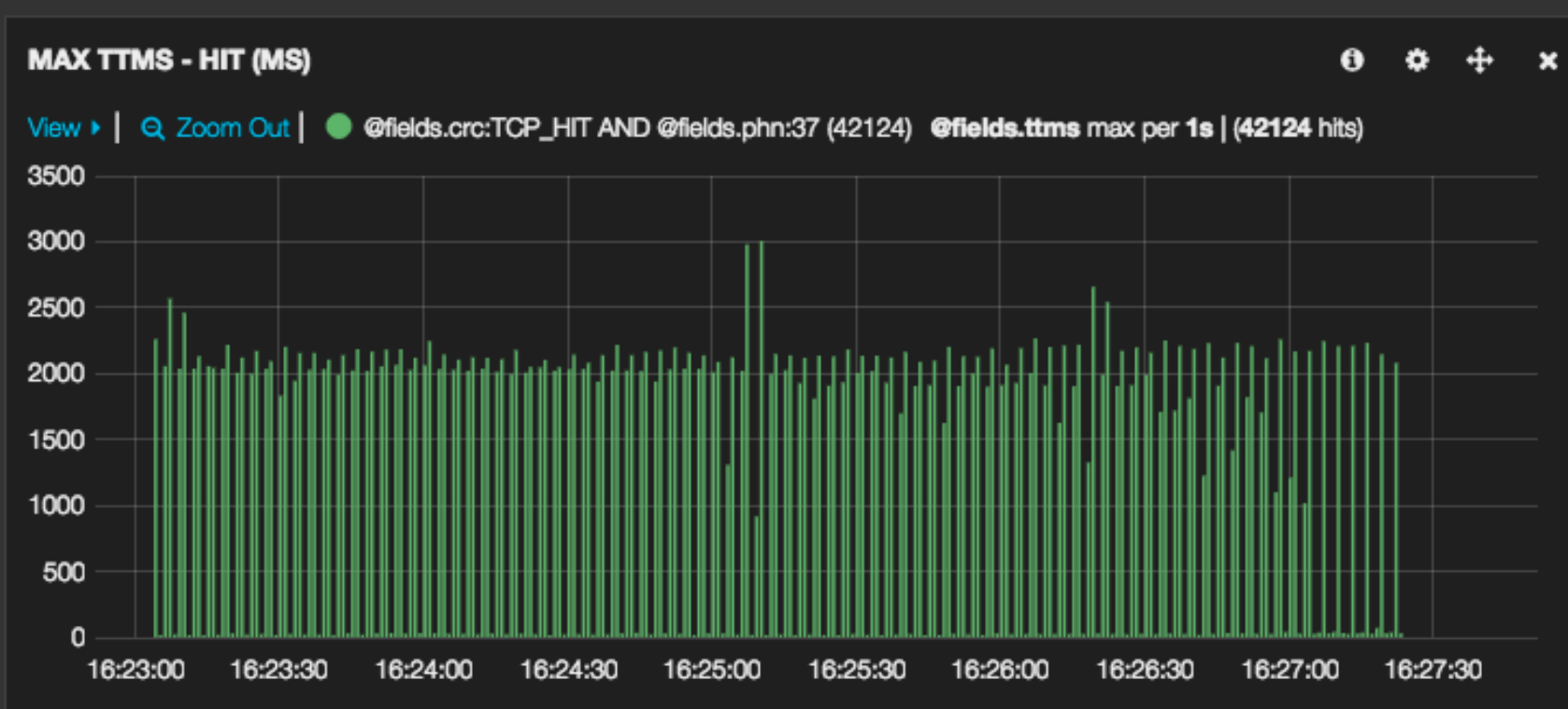
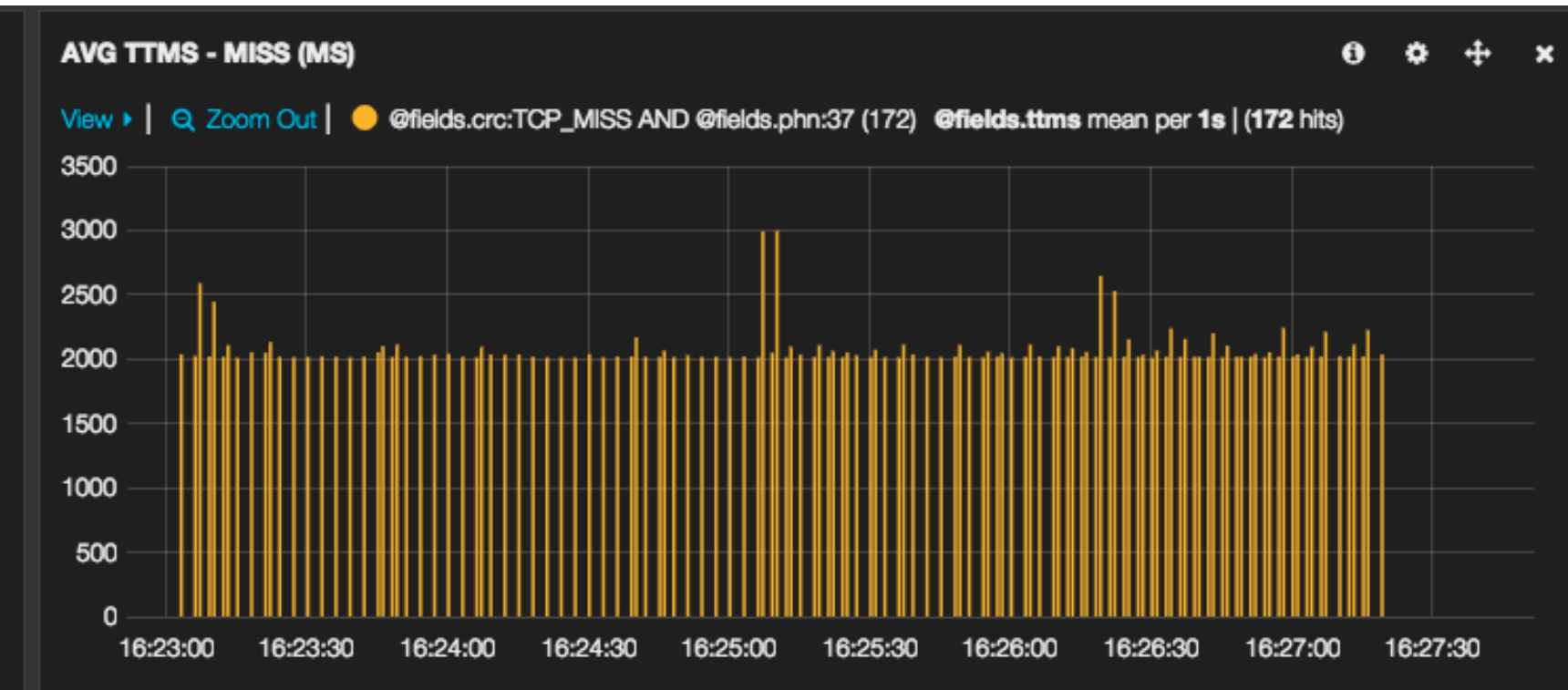
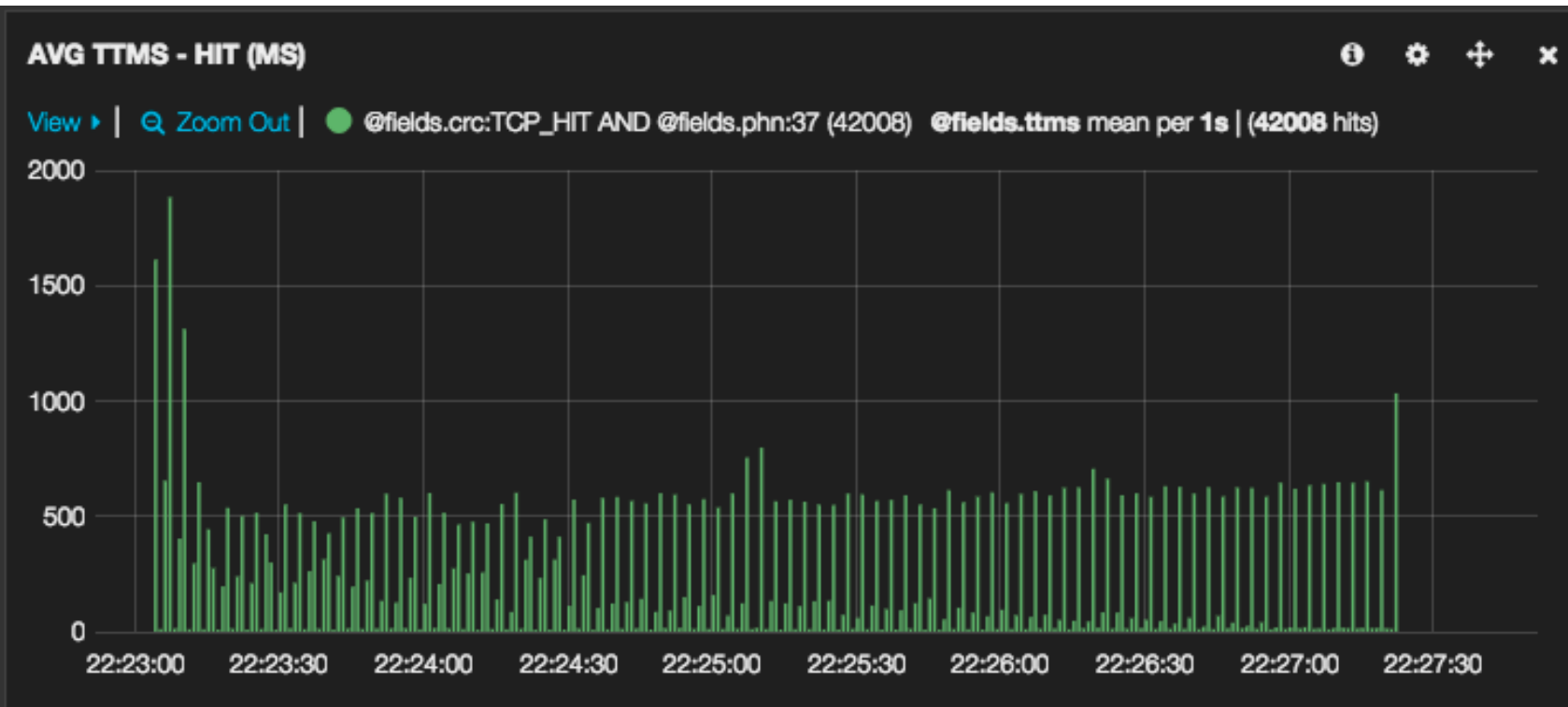
HotairDelayOnFirstByteInMs 2000

```
[root@zaphod02 ~]#
```

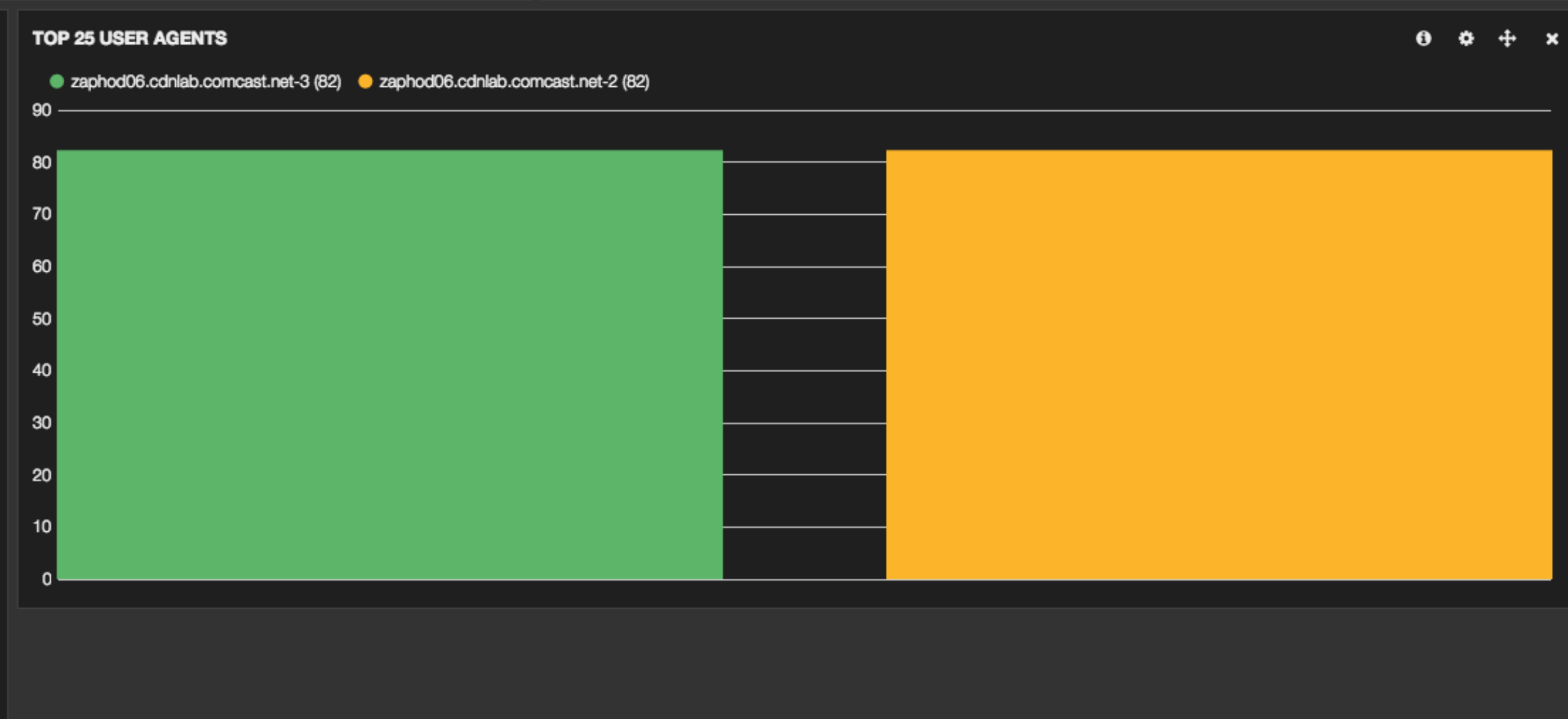
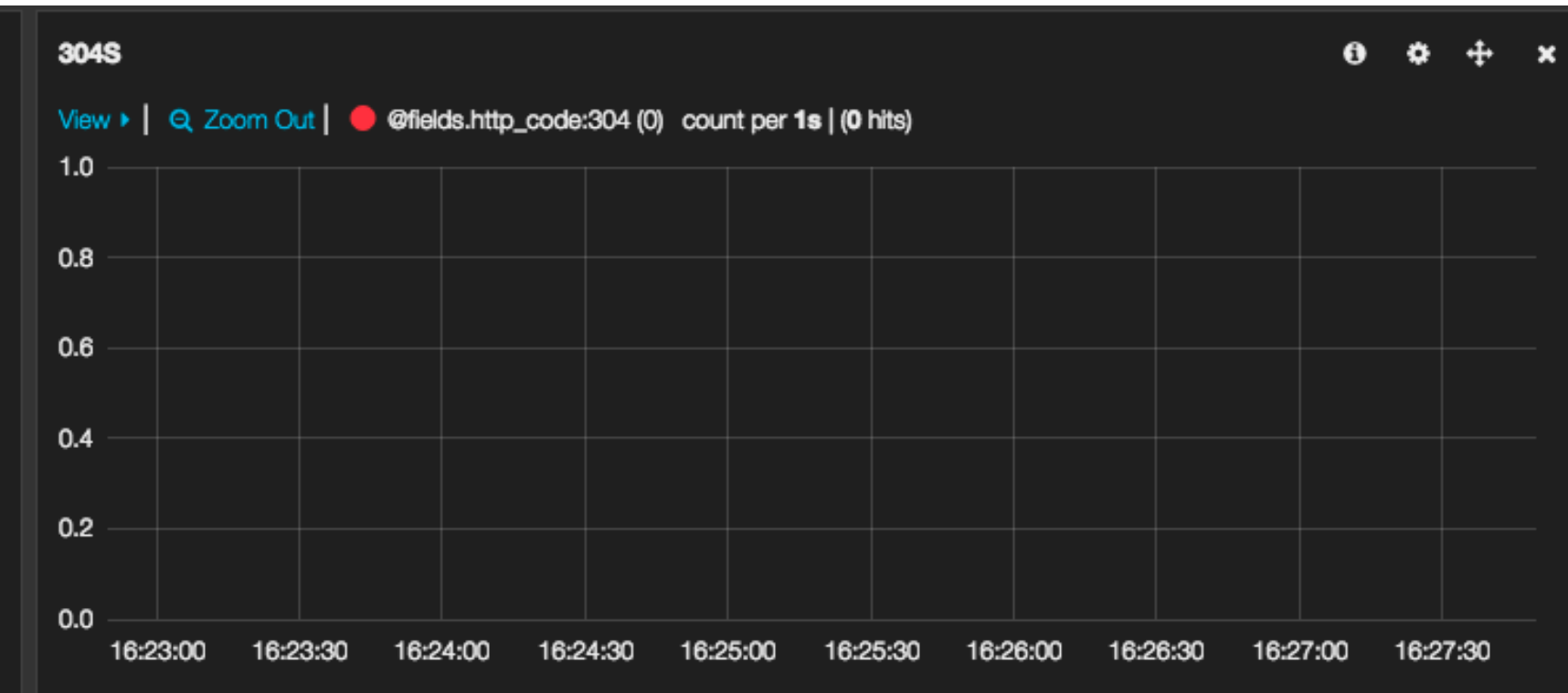
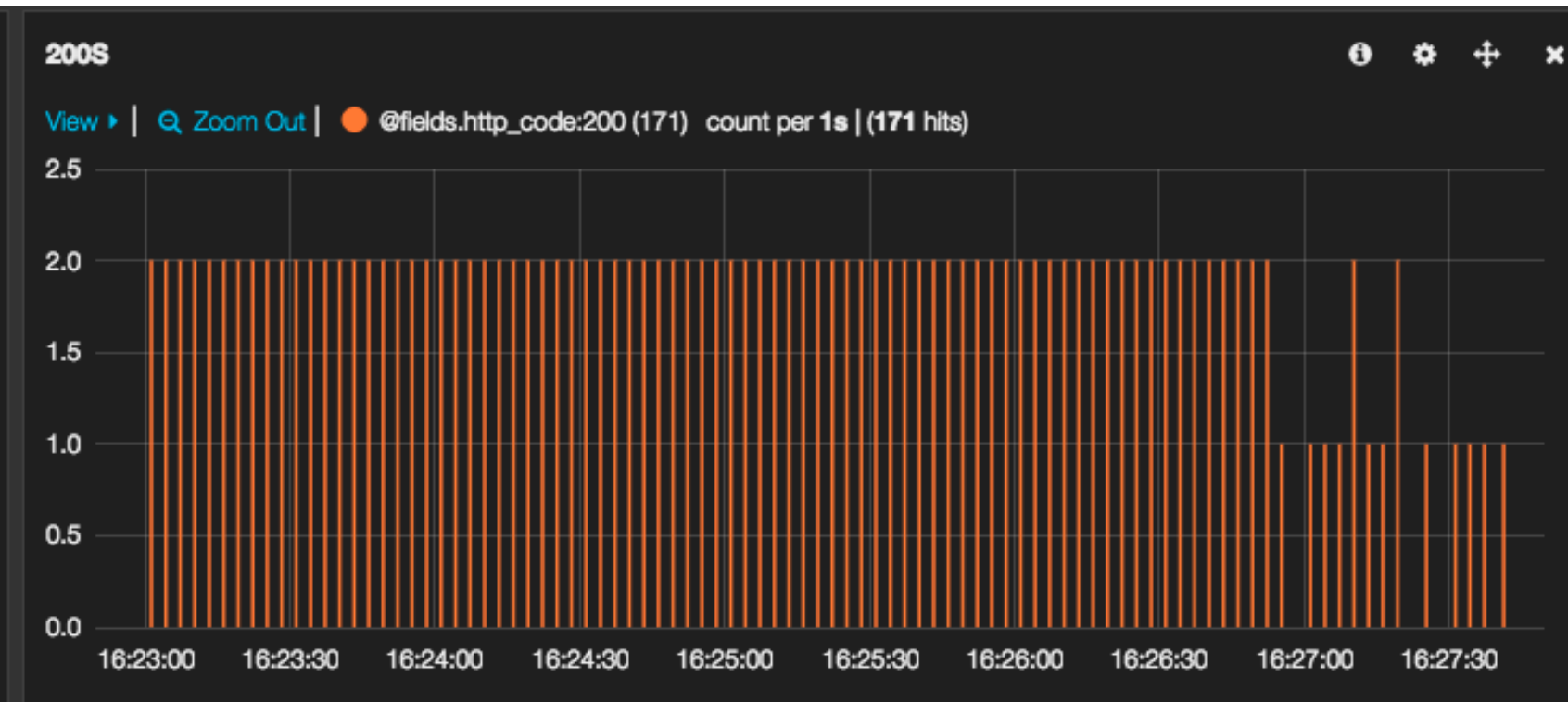
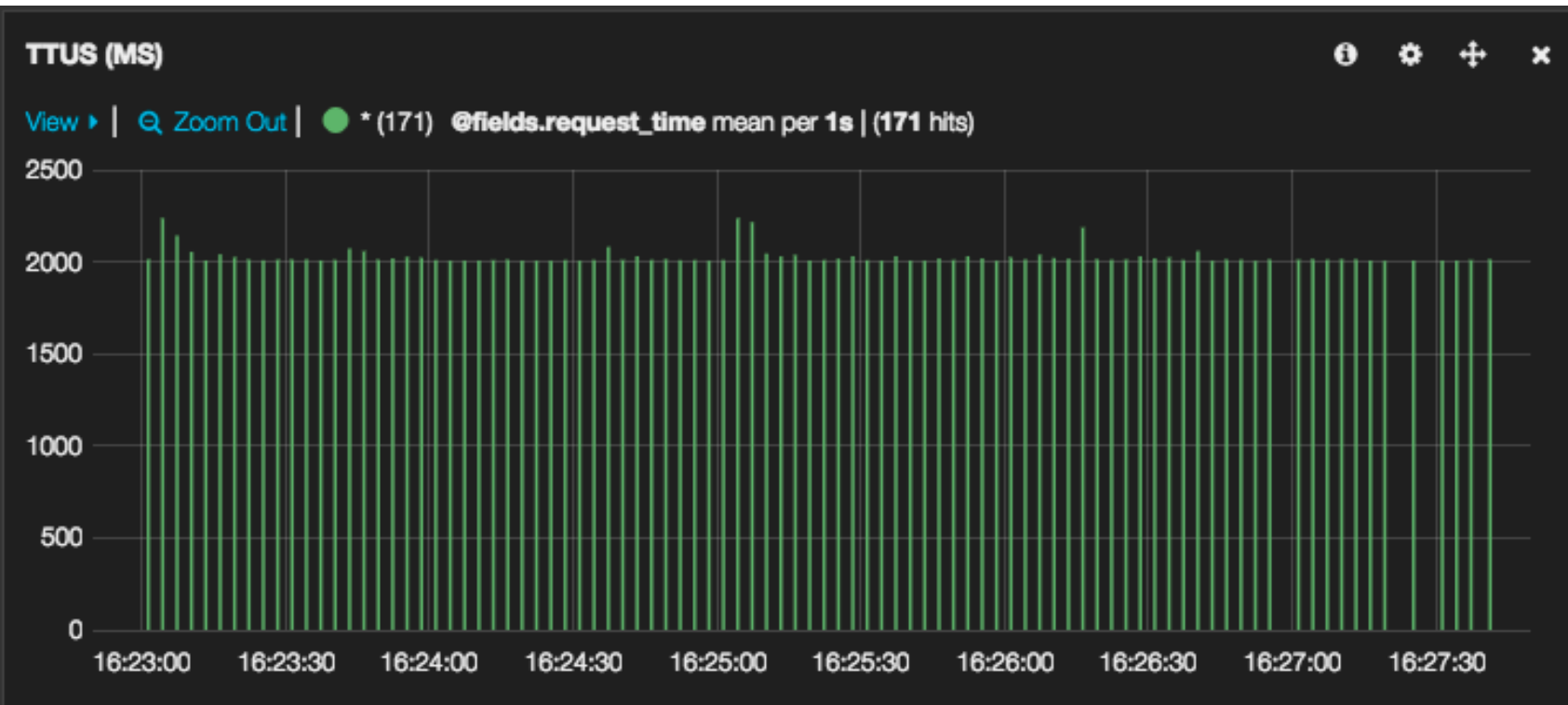
```
[root@zaphod02 ~]# tc qdisc show dev ens2f0
qdisc pfifo_fast 0: root refcnt 2 bands 3 priomap  1 2 2 2 1 2 0 0 1 1 1 1 1 1 1 1
[root@zaphod02 ~]#
```

```
[mtorlu9137e@zaphod06]lcontrol$ cat fwd_proxy_tight_c37.json
{
  "clients": "480",
  "bitrate": "2500000",
  "test_type": "TestEngines::LLL",
  "abr_type": "hls",
  "frag_duration": "50000000",
  "origins": "1",
  "live": "100",
  "active_channels": "1",
  "vod_cache_name" : "load-test-01.cdnlab.comcast.net",
  "live_cache_name" : "live-orig-01-dns.cdnlab.comcast.net",
  "cache_ip" : "69.241.62.86",
  "vod_cache_hitratio" : "80",
  "live_active_fragments" : "2",
  "vod_bitrates" : "4300000,3000000",
  "live_bitrates" : "6710886,5033164",
  "max_long_tts_percentage" : "0.5",
  "long_tts_time" : "1.5",
  "proxy_mode" : "forward",
  "ipv6_percentage" : 0,
  "via_headers" : 1
}
[mtorlu9137e@zaphod06]lcontrol$
```


Mid graphs



Origin graphs



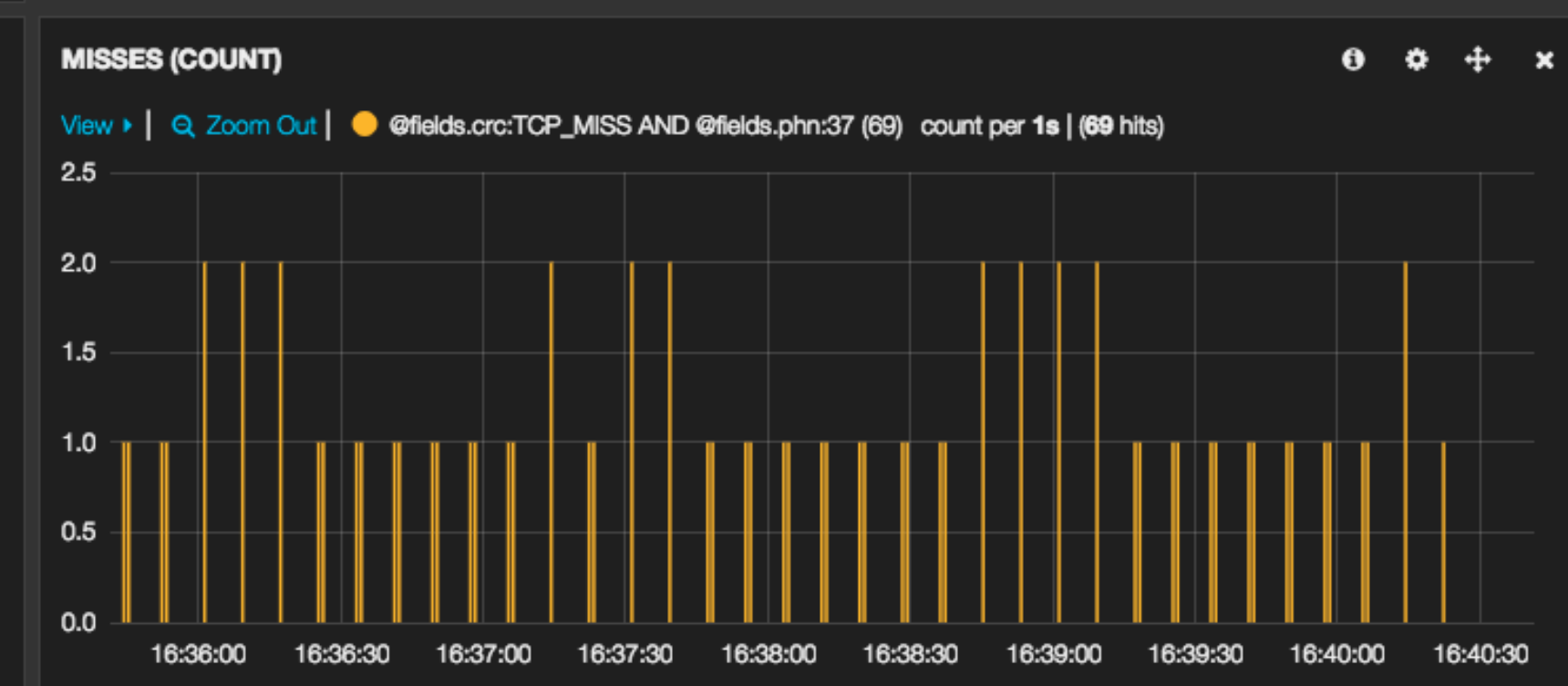
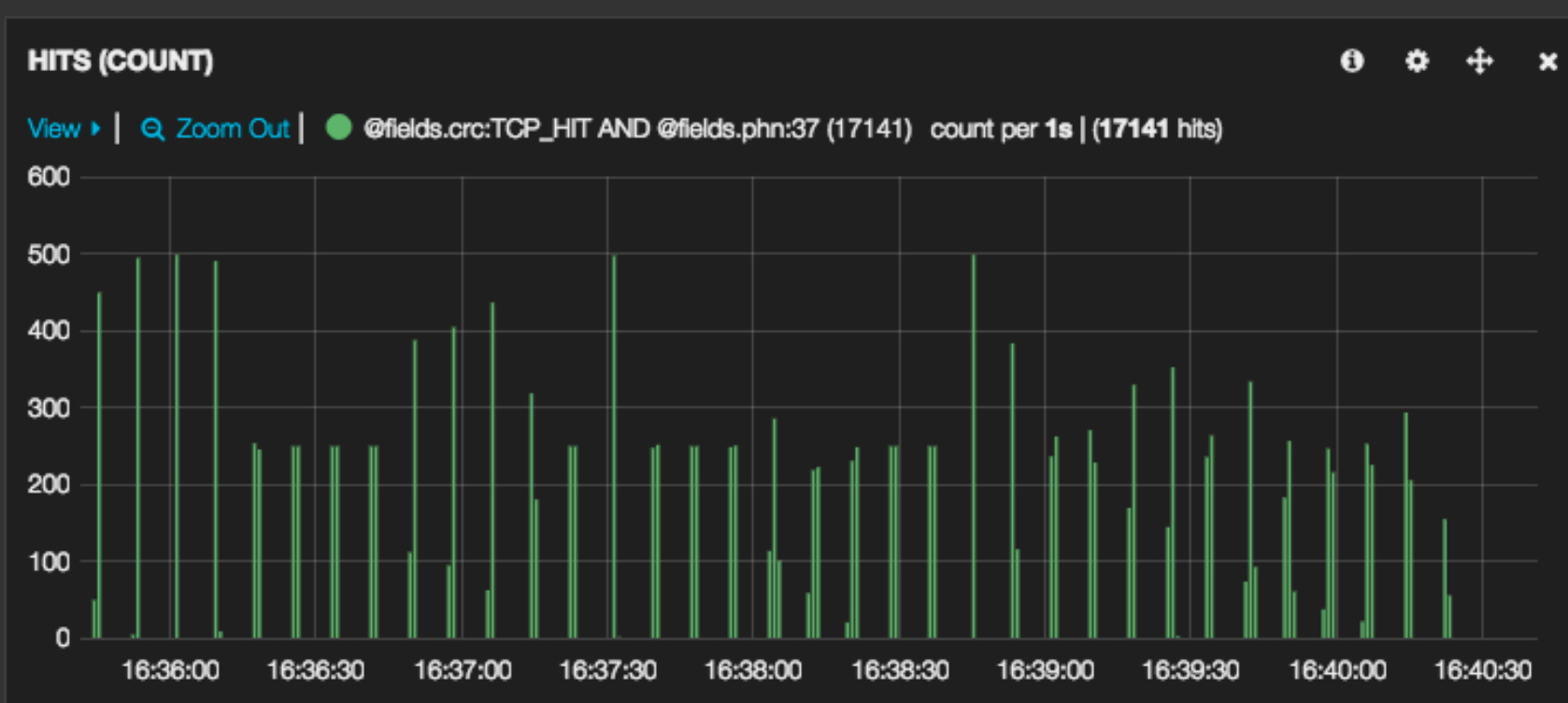
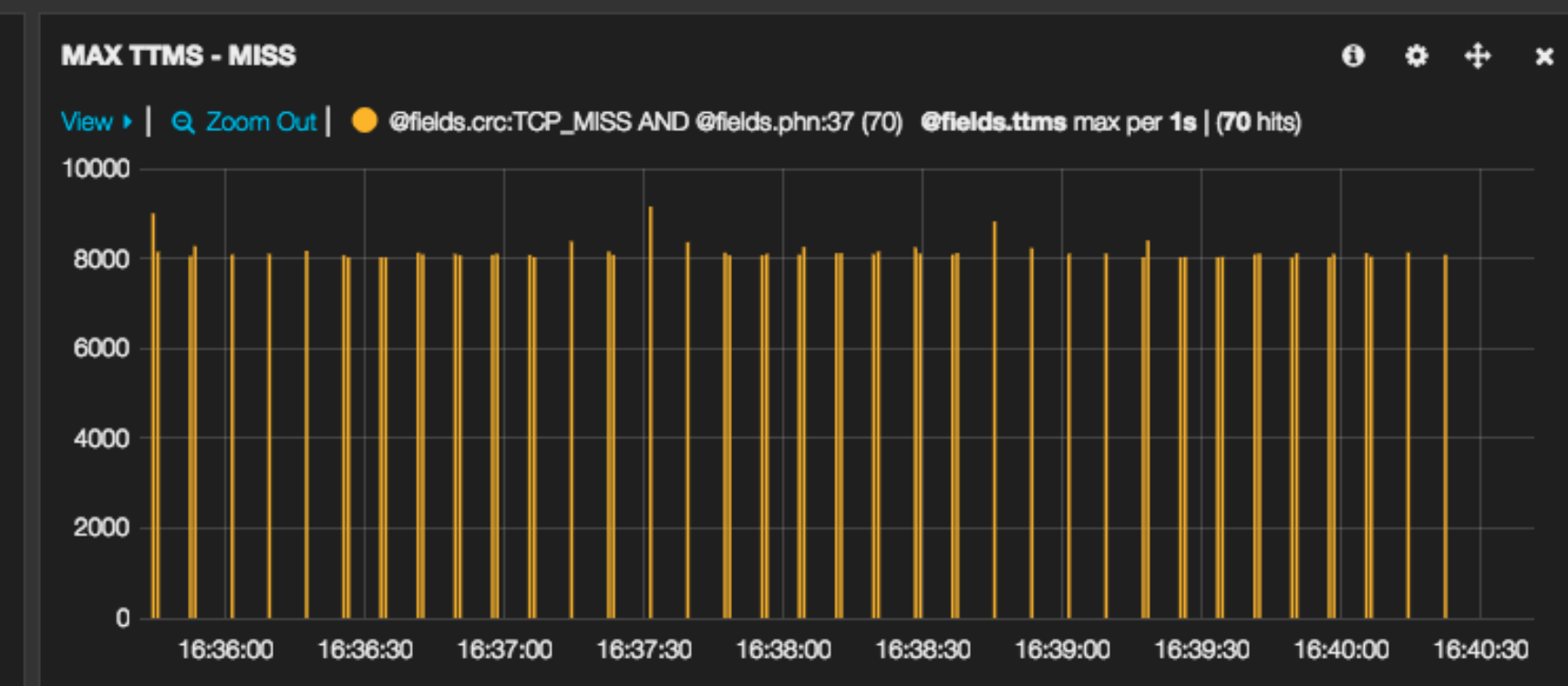
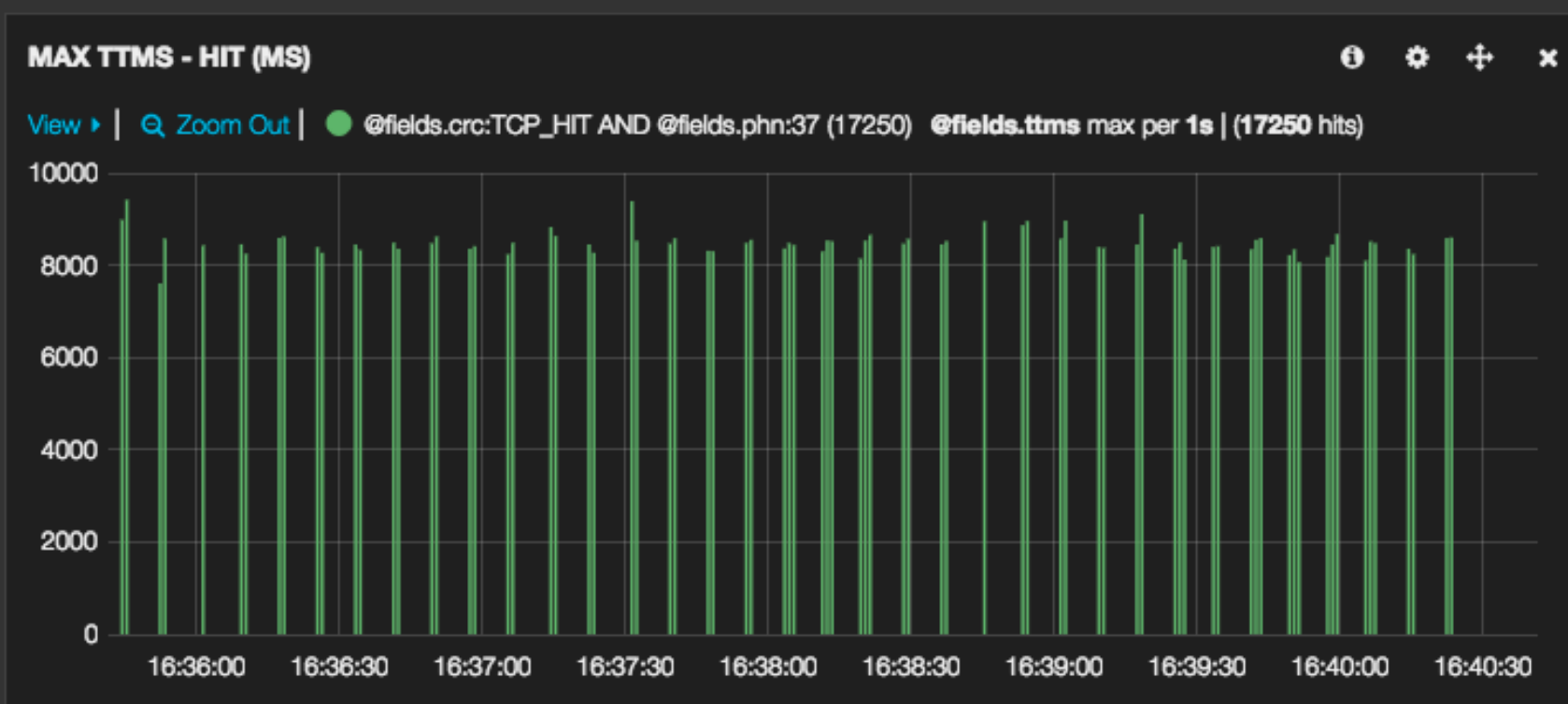
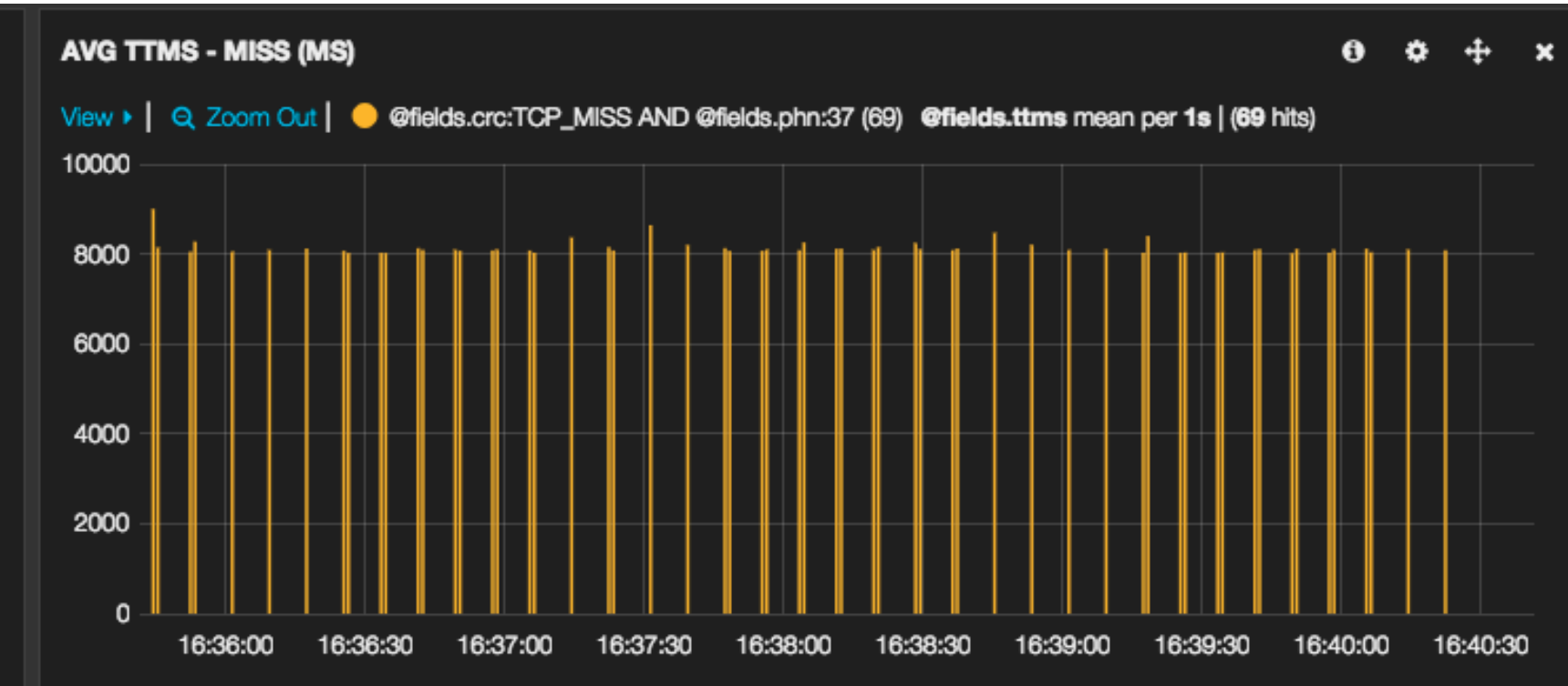
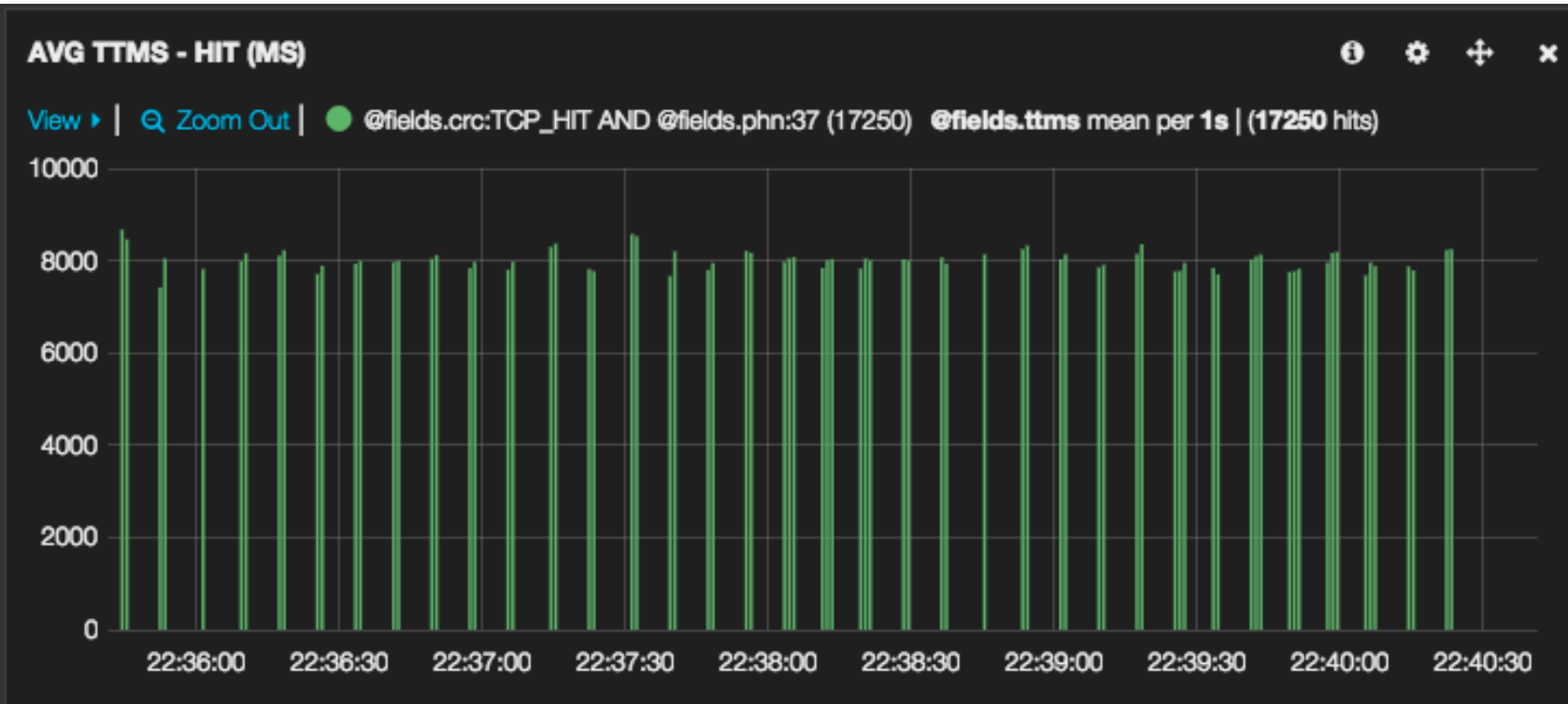
Origin TTFB = 8.0s

```
[mtorlu9137e@ipcdn-cache-37]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn
Mon Oct 20 22:29:16 UTC 2014
Version of this script: 0.34e
[mtorlu9137e@ipcdn-cache-37]~$
```

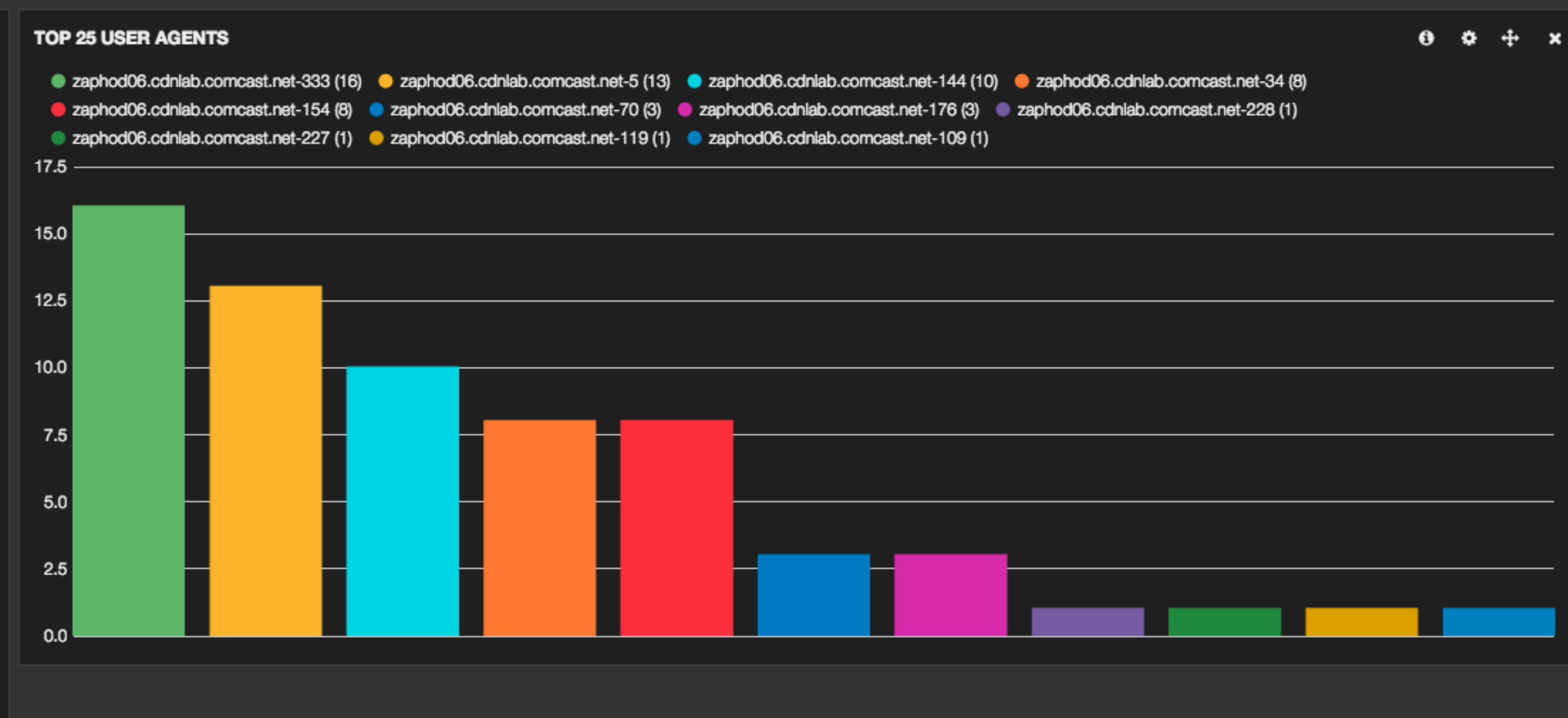
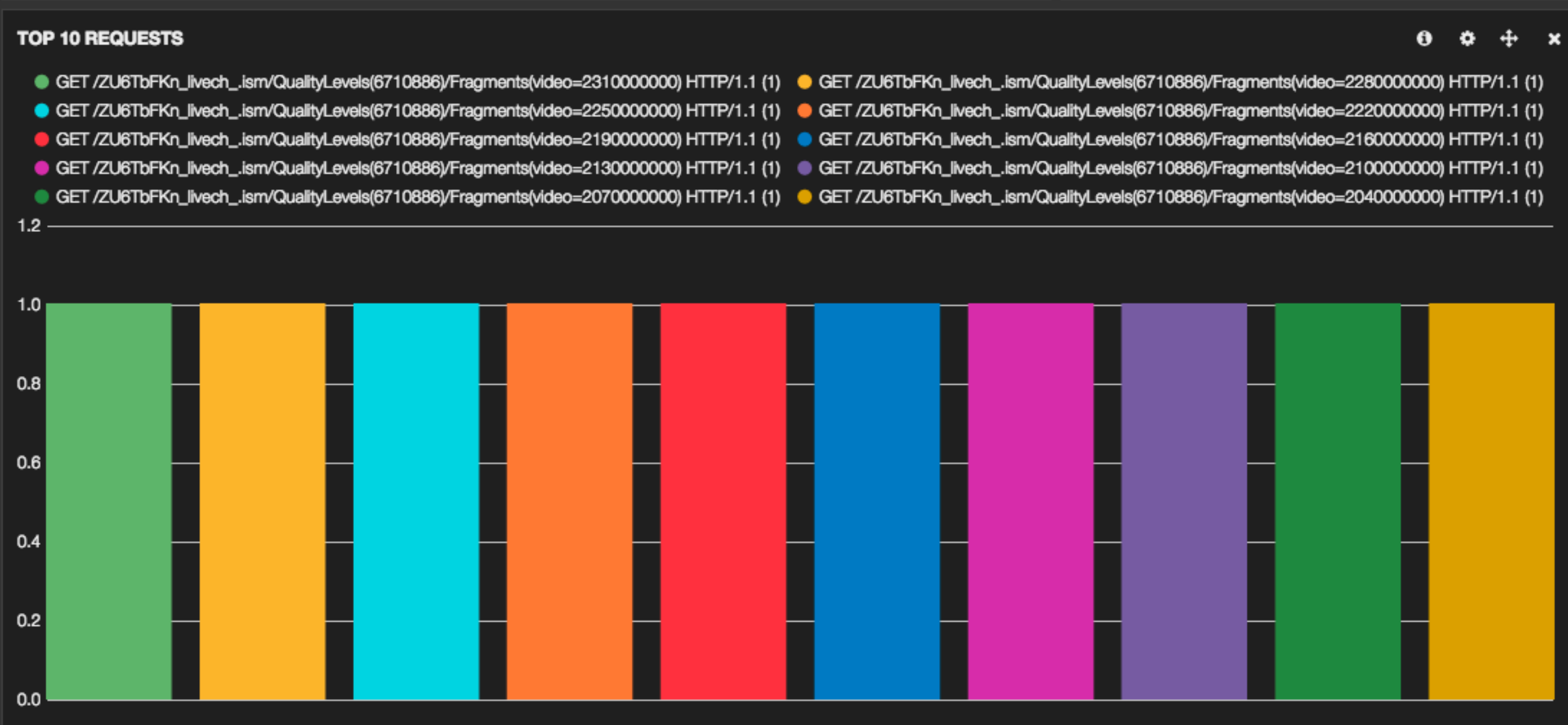
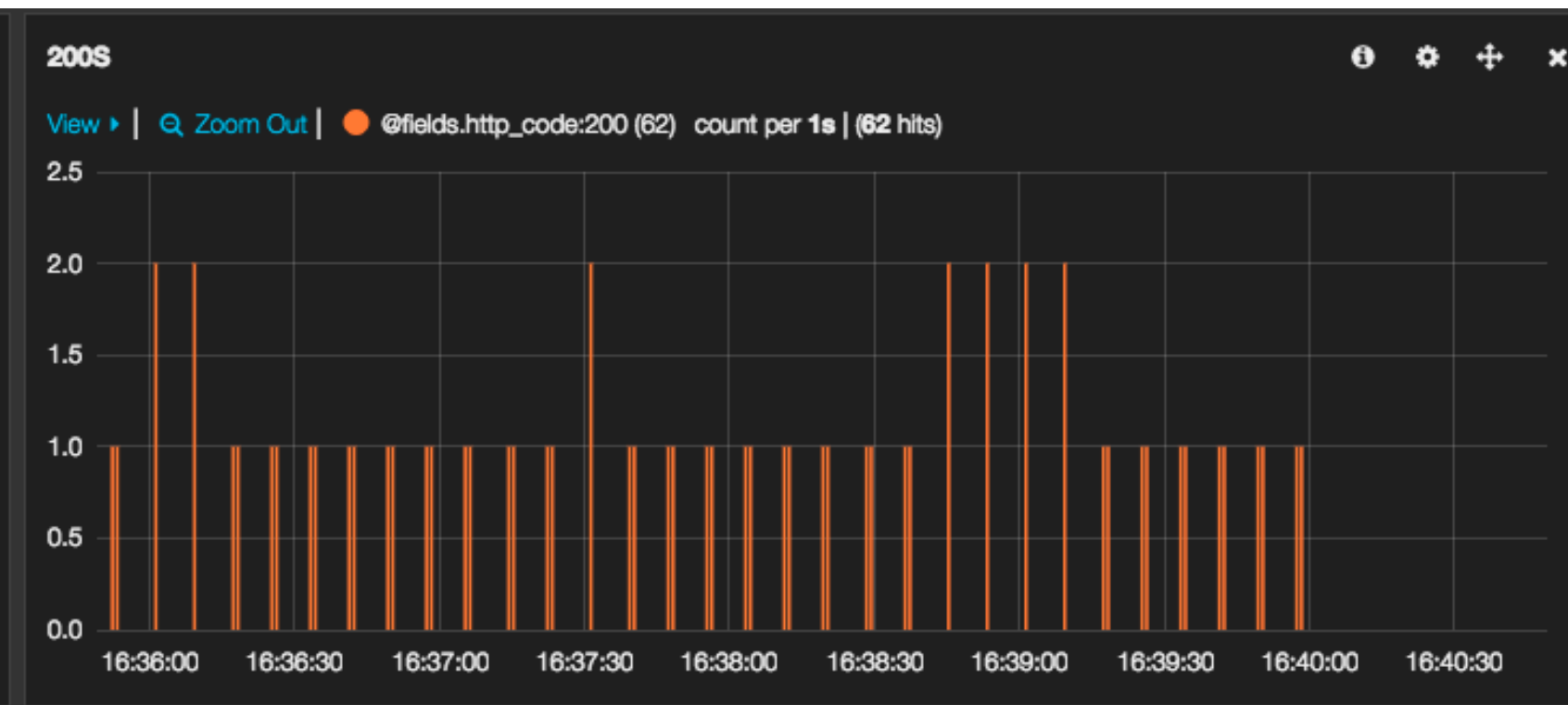
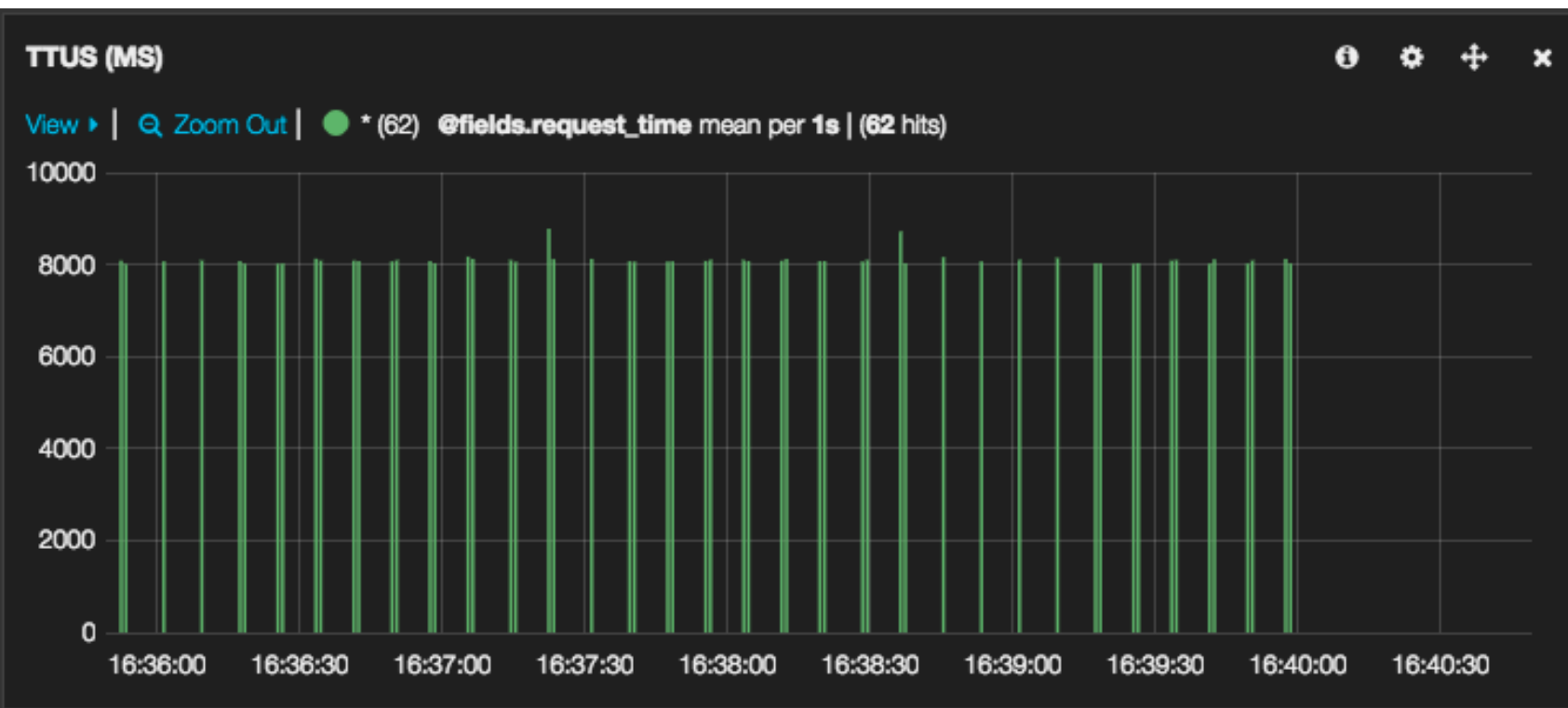
```
[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$|^$#'
LoadModule hotair_module      /usr/lib64/httpd/modules/mod_hotair.so
<LocationMatch "(\\.ism*|\\.f4m|\\..*Seg\\d-Frag\\d.*|\\.m3u8|\\.ts)">
    SetHandler hotair
</LocationMatch>
HotairDelayOnFirstByteInMs 8000
[root@zaphod02 ~]#
[root@zaphod02 ~]# tc qdisc show dev ens2f0
qdisc pfifo_fast 0: root refcnt 2 bands 3 priomap  1 2 2 2 1 2 0 0 1 1 1 1 1 1 1 1
[root@zaphod02 ~]#
```

```
[mtorlu9137e@zaphod06]lcontrol$ cat fwd_proxy_tight_c37.json
{
  "clients": "480",
  "bitrate": "2500000",
  "test_type": "TestEngines::LLL",
  "abr_type": "hls",
  "frag_duration": "50000000",
  "origins": "1",
  "live": "100",
  "active_channels": "1",
  "vod_cache_name" : "load-test-01.cdnlab.comcast.net",
  "live_cache_name" : "live-orig-01-dns.cdnlab.comcast.net",
  "cache_ip" : "69.241.62.86",
  "vod_cache_hitratio" : "80",
  "live_active_fragments" : "2",
  "vod_bitrates" : "4300000,3000000",
  "live_bitrates" : "6710886,5033164",
  "max_long_tts_percentage" : "0.5",
  "long_tts_time" : "1.5",
  "proxy_mode" : "forward",
  "ipv6_percentage" : 0,
  "via_headers" : 1
}
[mtorlu9137e@zaphod06]lcontrol$
```


Mid graphs



Origin graphs



connect_attempts_timeout = 2

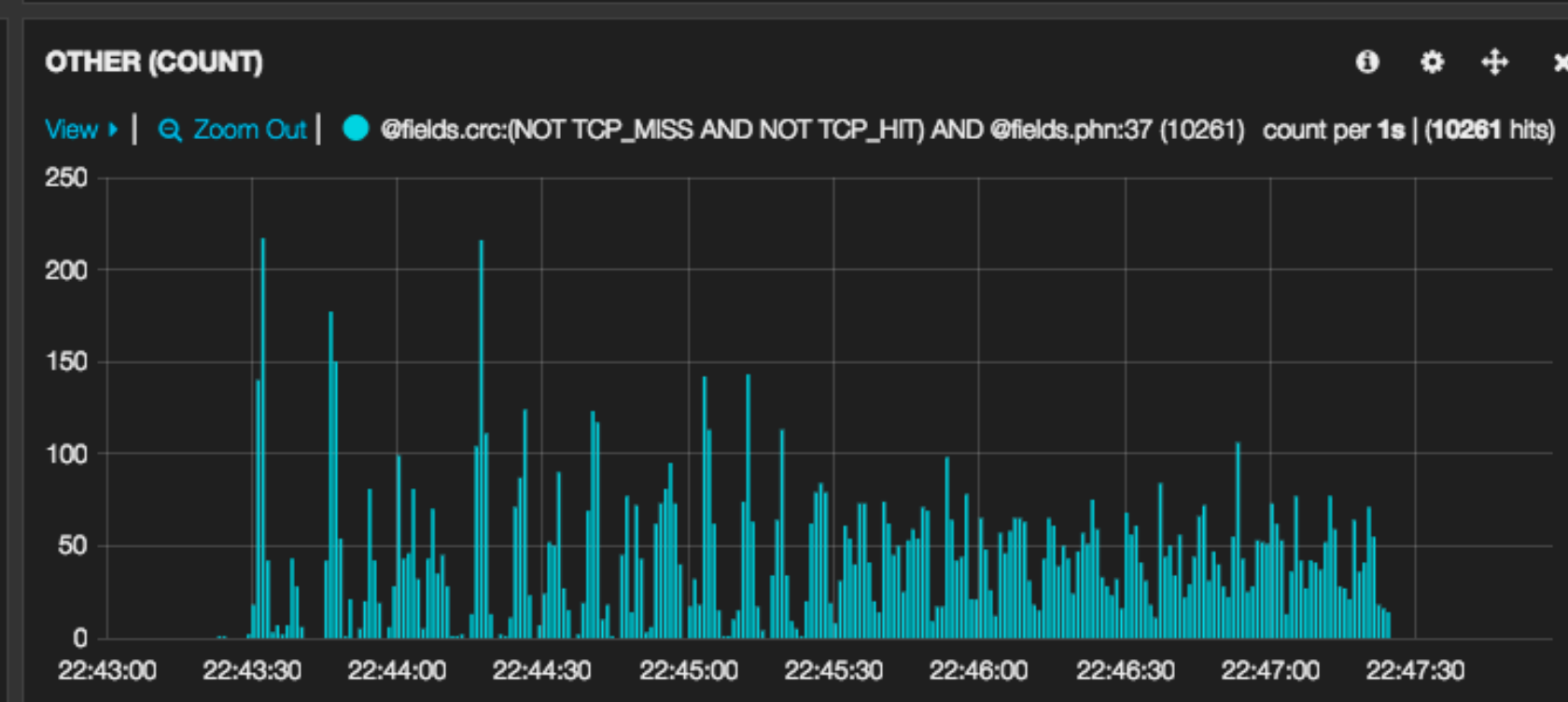
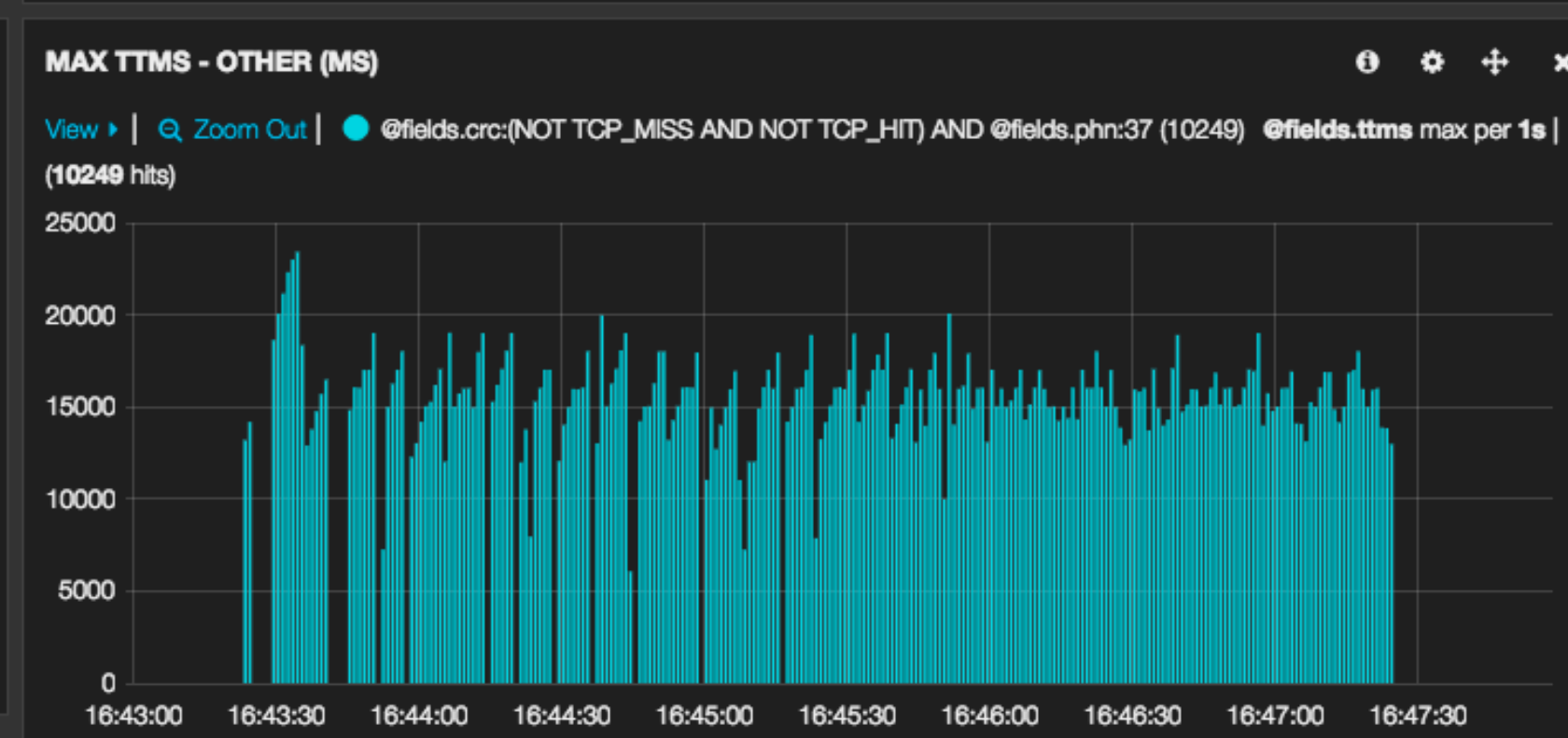
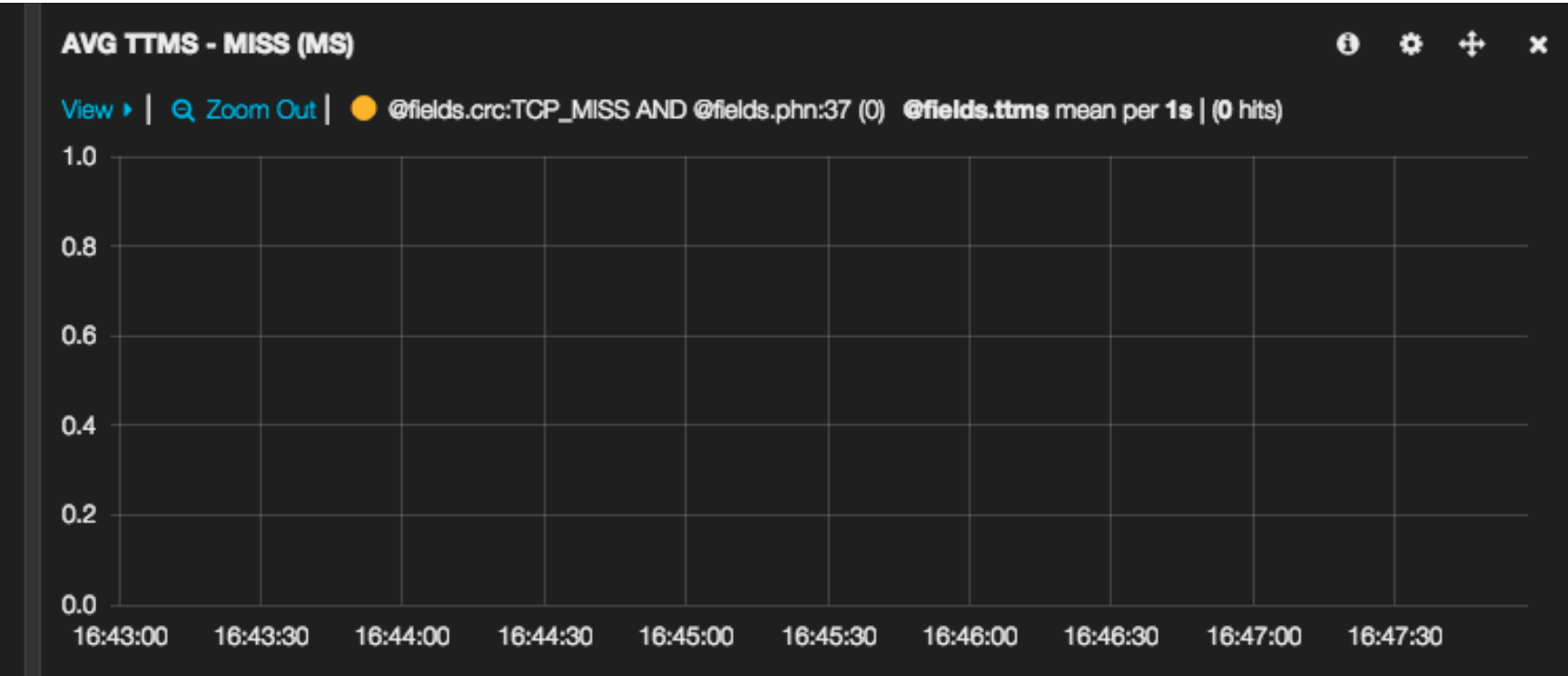
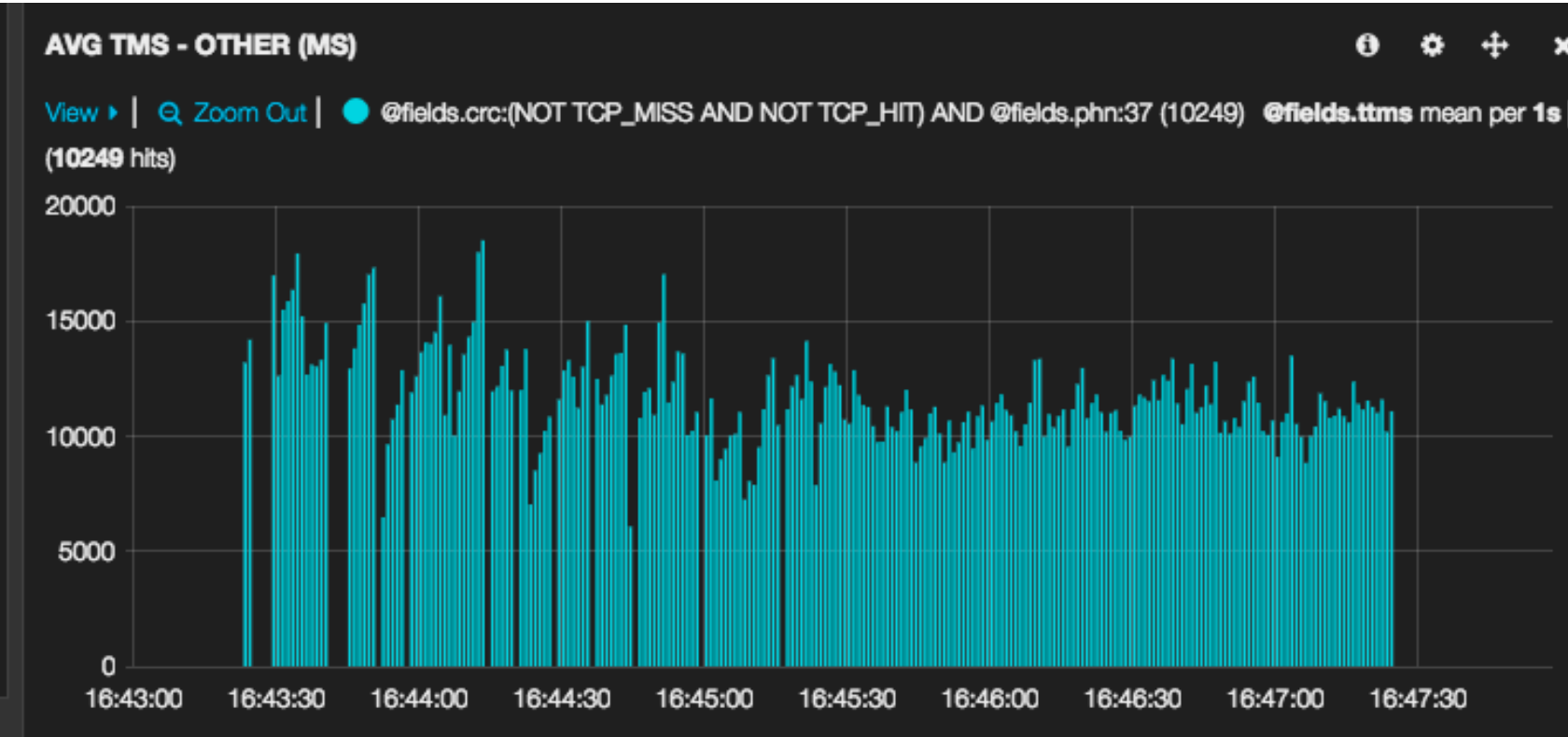
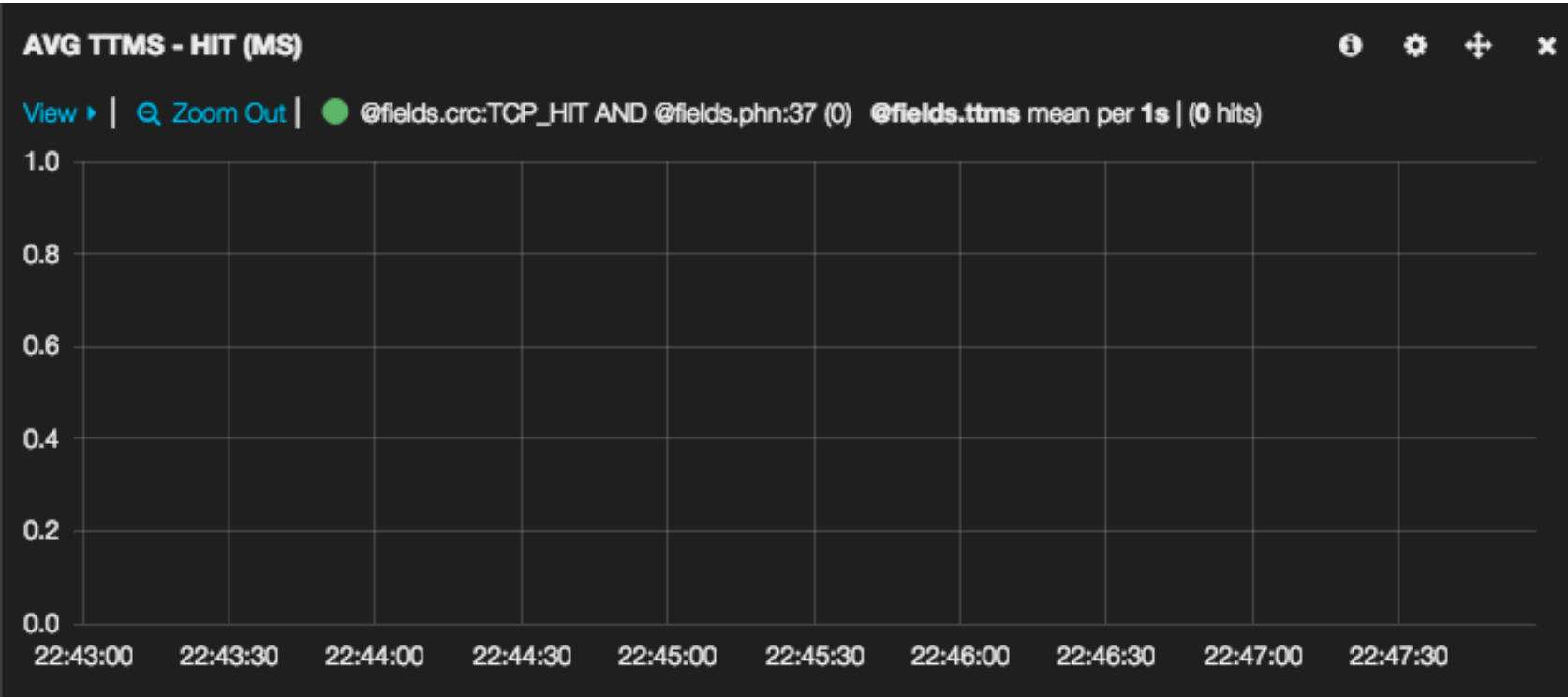
```
[mtorlu9137e@ipcdn-cache-37]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn
Mon Oct 20 22:43:22 UTC 2014
Version of this script: 0.34e
ERROR Lines in /opt/trafficserver/etc/trafficserver//plugin.config do not match Twelve Monkeys.
ERROR Config file: plugin.config line only on disk: header_rewrite.so hrrw.conf
[mtorlu9137e@ipcdn-cache-37]~$

[mtorlu9137e@ipcdn-cache-37]~$ sudo cat /usr/local/etc/header_rewrite/hrrw.conf | grep -v "^\\#"
cond %{READ_REQUEST_HDR_HOOK}
cond %{HEAD} = live-orig-01-dns.cdnlab.comcast.net
set-config proxy.config.http.connect_attempts_timeout 2
[mtorlu9137e@ipcdn-cache-37]~$
```

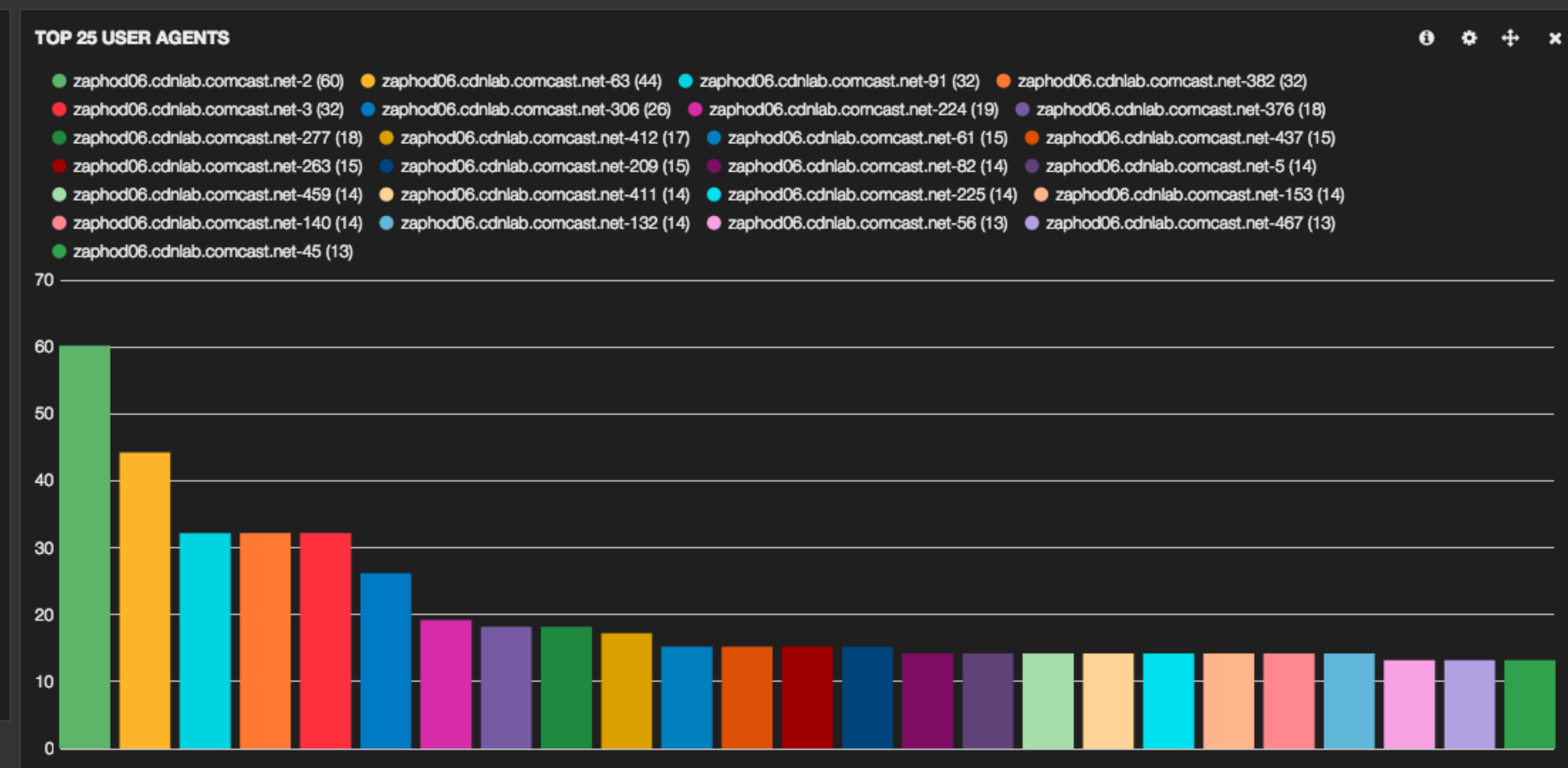
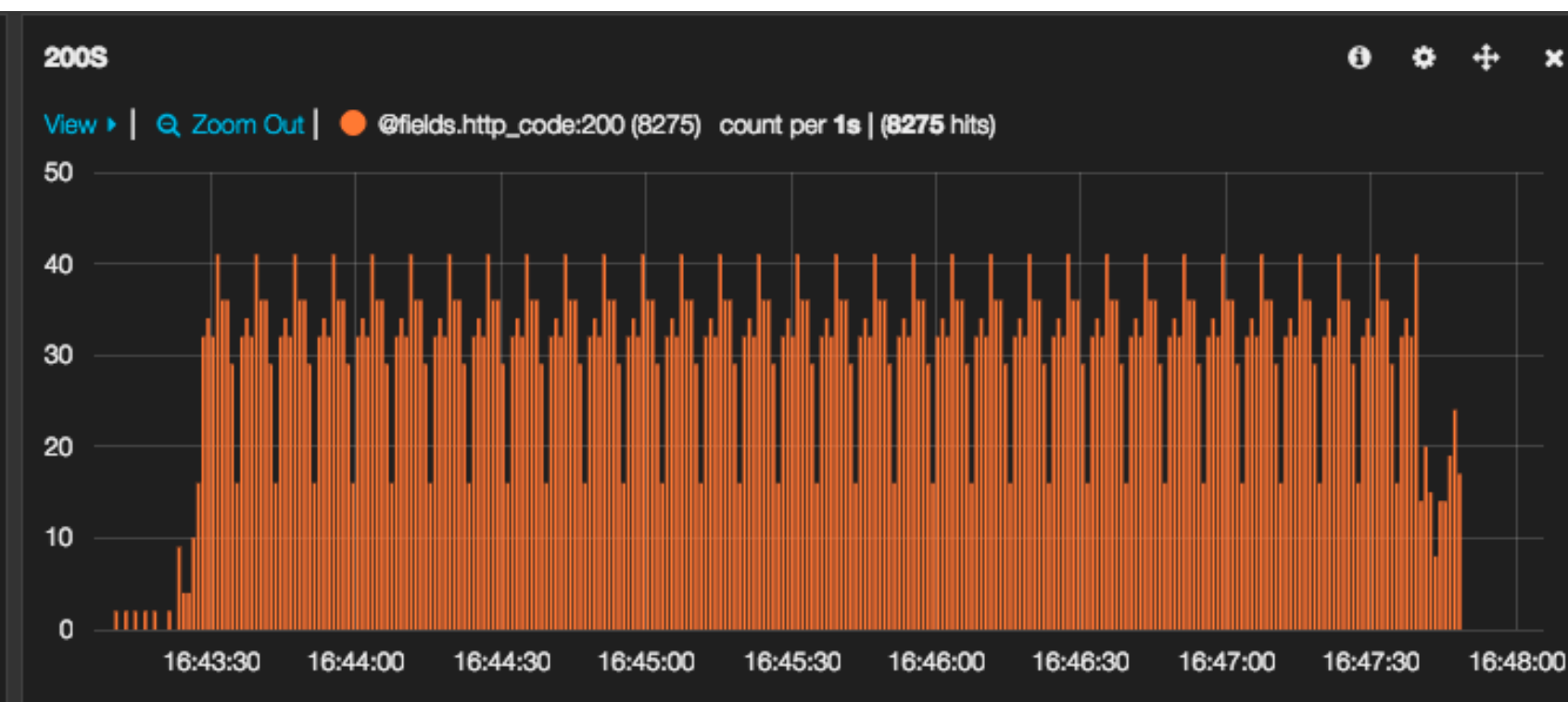
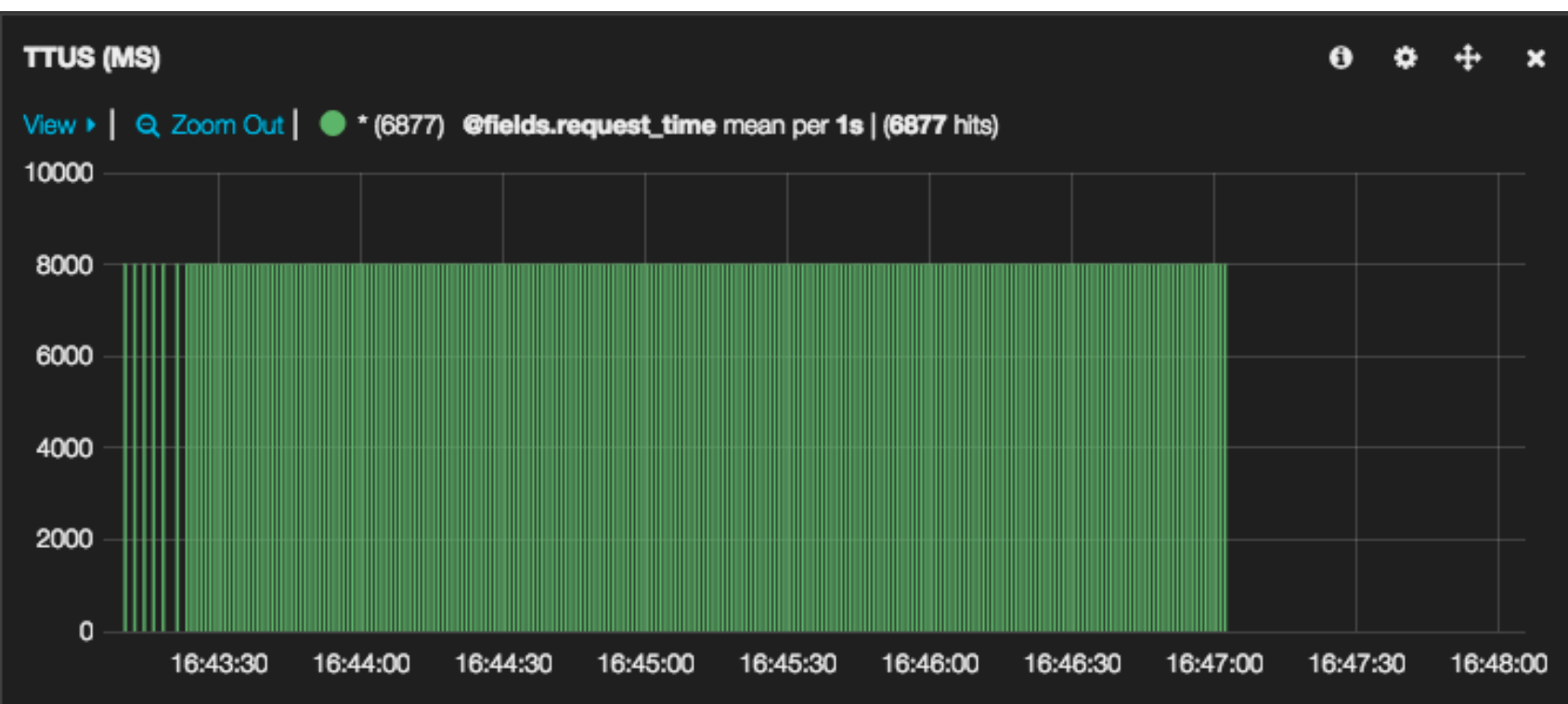
```
[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$|^\\#'
LoadModule hotair_module      /usr/lib64/httpd/modules/mod_hotair.so
<LocationMatch "(\\.ism*|\\.f4m|\\.Seg\\d-Frag\\d.*|\\.m3u8|\\.ts)">
    SetHandler hotair
</LocationMatch>
HotairDelayOnFirstByteInMs 8000
[root@zaphod02 ~]#
```

```
[mtorlu9137e@zaphod06]lcontrol$ cat fwd_proxy_tight_c37.json
{
  "clients":"480",
  "bitrate":"2500000",
  "test_type":"TestEngines::LLL",
  "abr_type":"hls",
  "frag_duration":"50000000",
  "origins": "1",
  "live": "100",
  "active_channels":"1",
  "vod_cache_name" : "load-test-01.cdnlab.comcast.net",
  "live_cache_name" : "live-orig-01-dns.cdnlab.comcast.net",
  "cache_ip" : "69.241.62.86",
  "vod_cache_hitratio" : "80",
  "live_active_frags" : "2",
  "vod_bitrates" : "4300000,3000000",
  "live_bitrates" : "6710886,5033164",
  "max_long_tts_percentage" : "0.5",
  "long_tts_time" : "1.5",
  "proxy_mode" : "forward",
  "ipv6_percentage" : 0,
  "via_headers" : 1
}
[mtorlu9137e@zaphod06]lcontrol$
```

Mid graphs

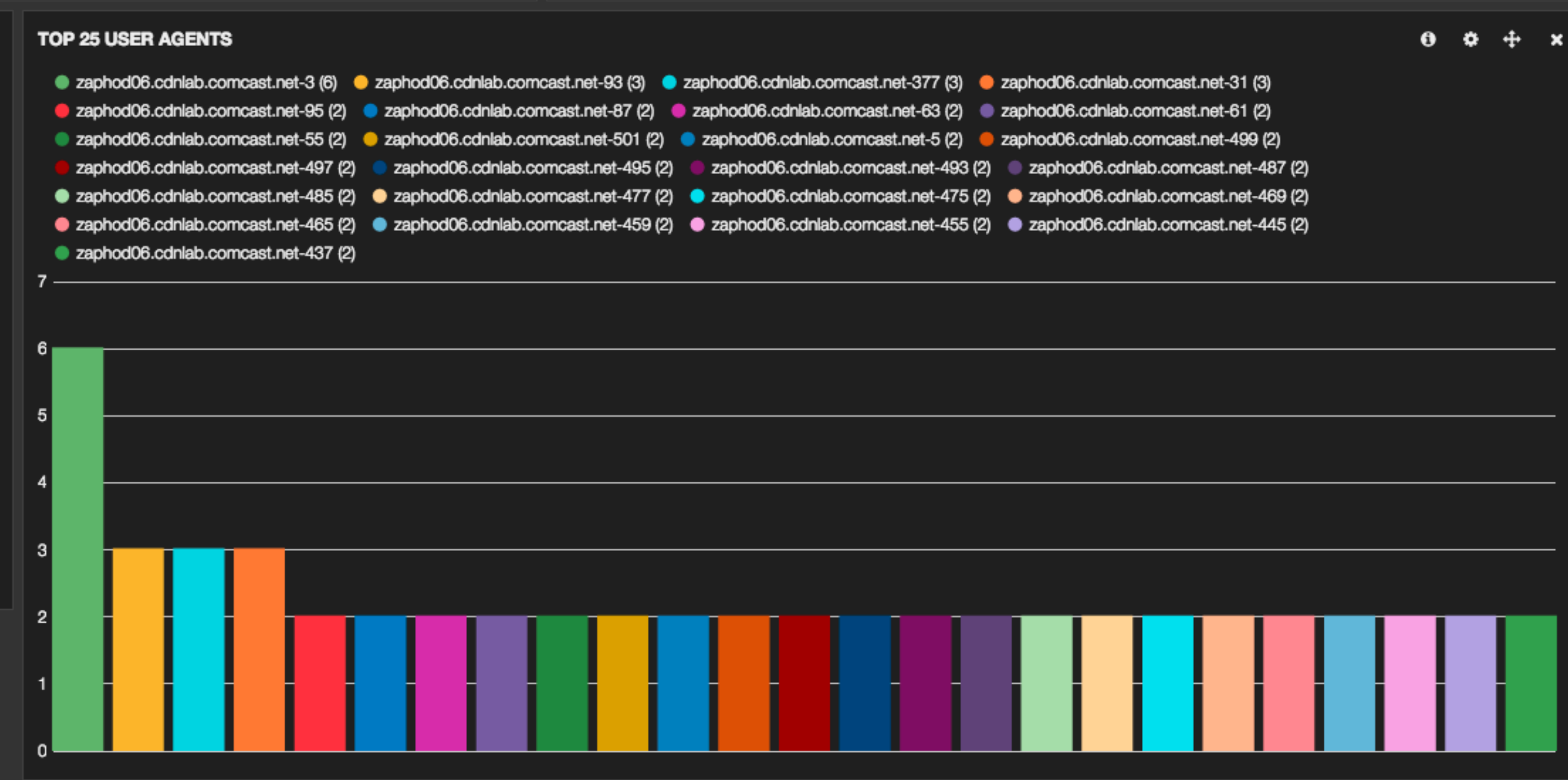
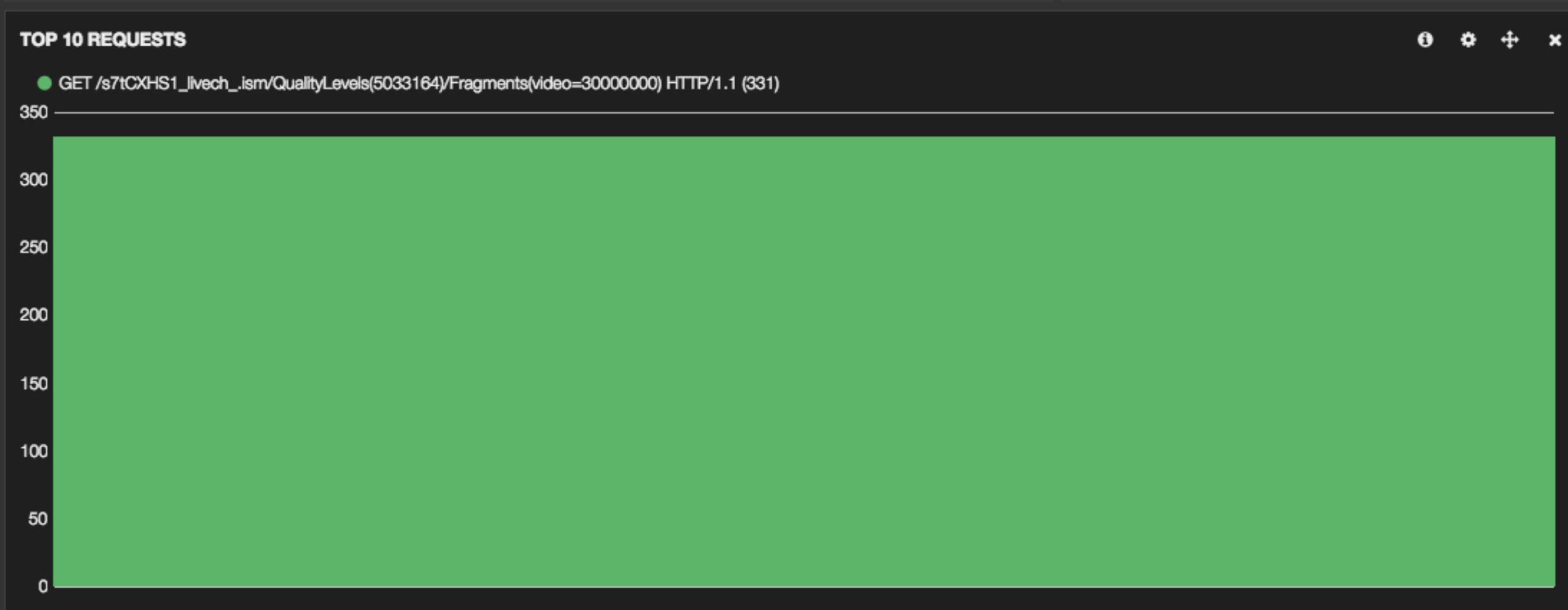
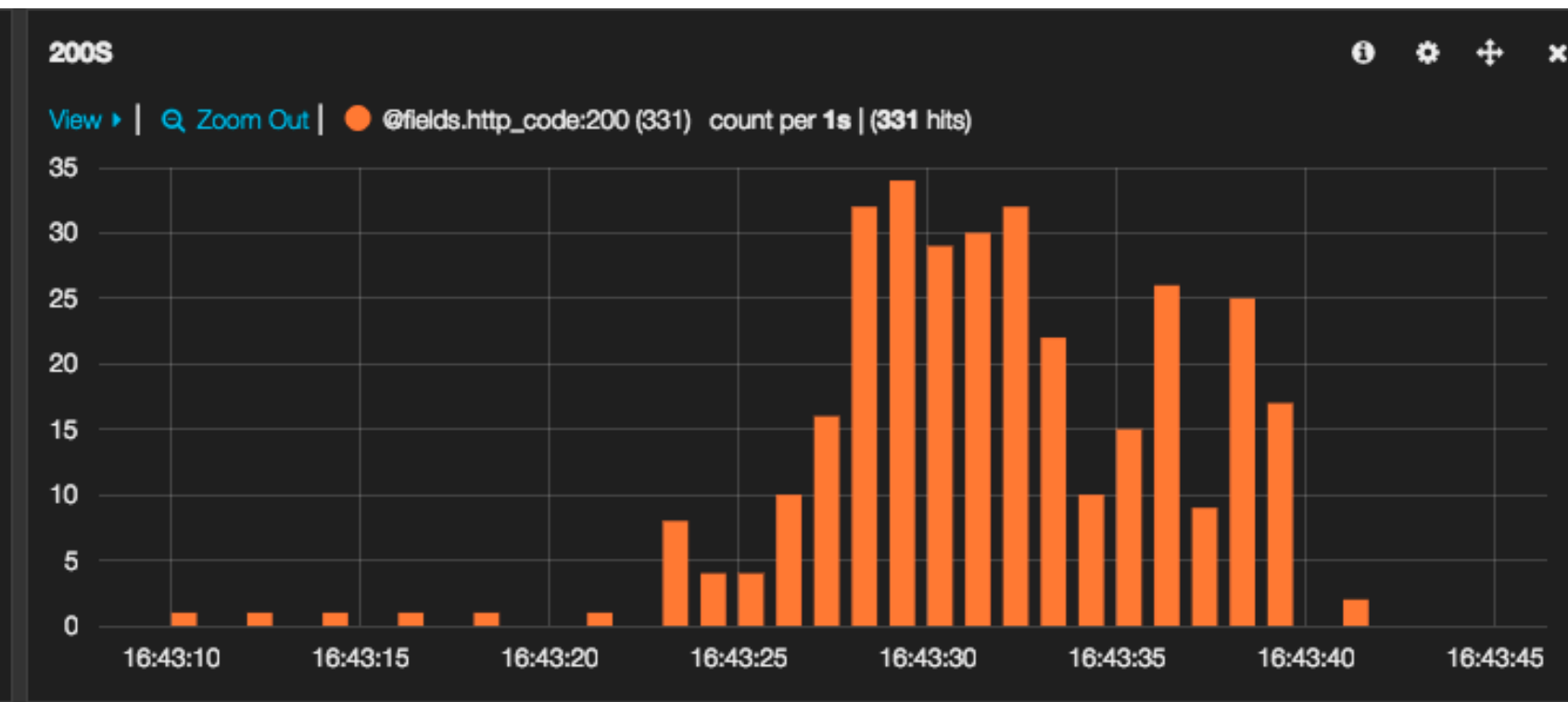
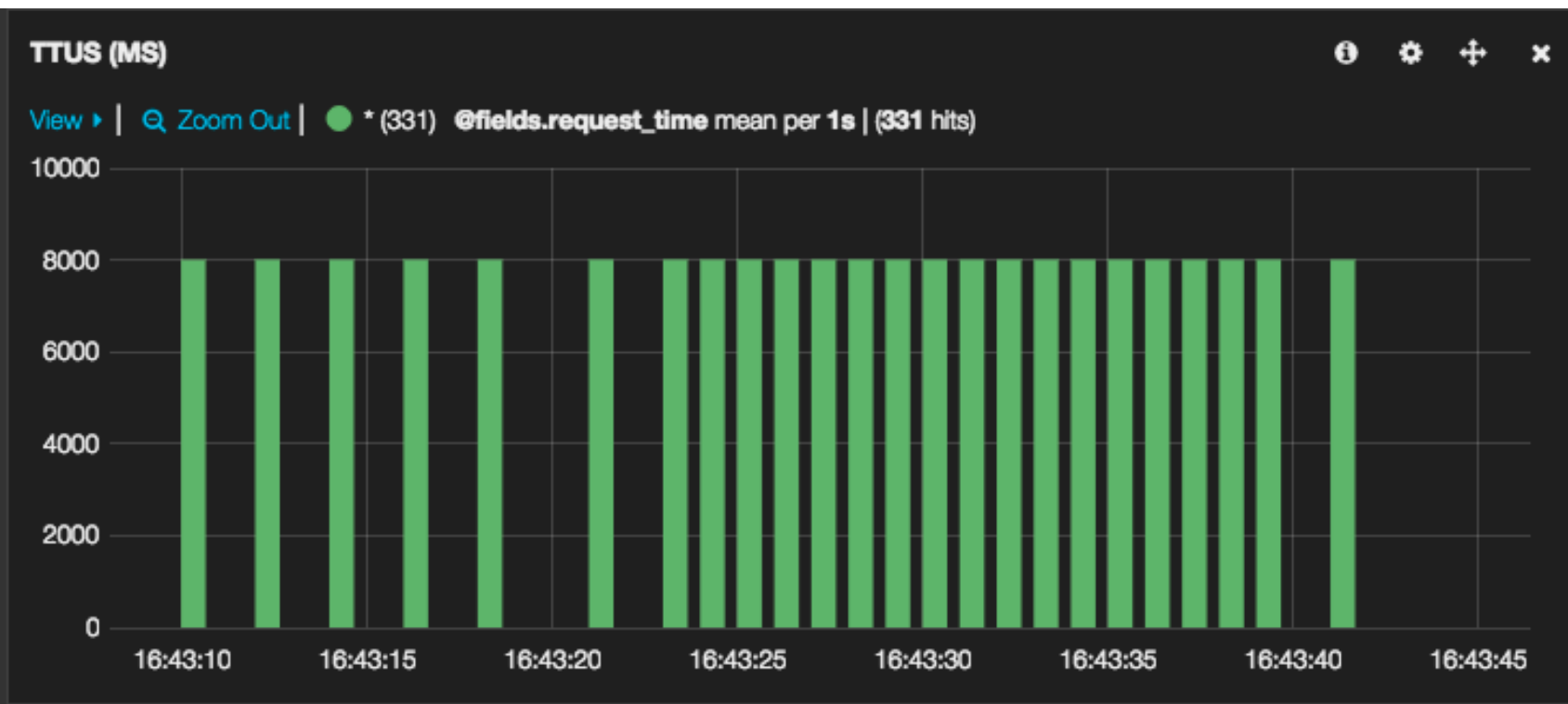


Origin graphs



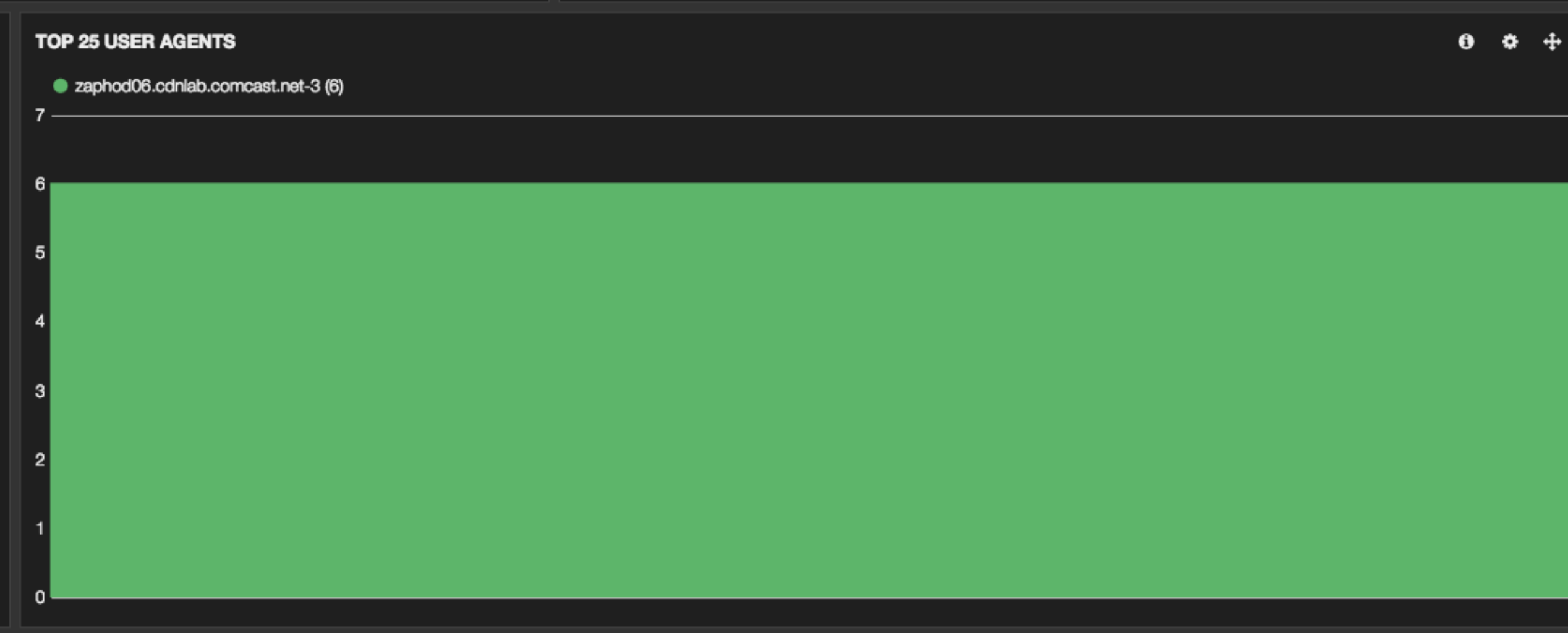
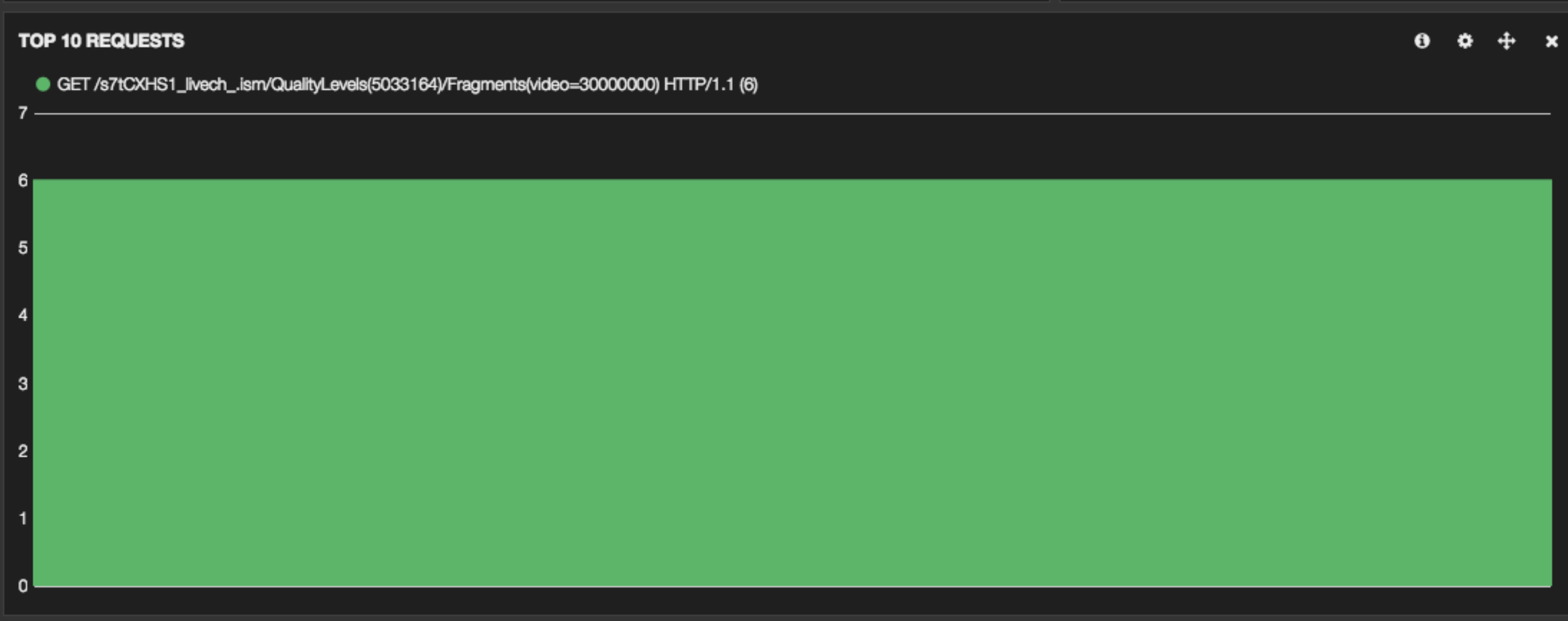
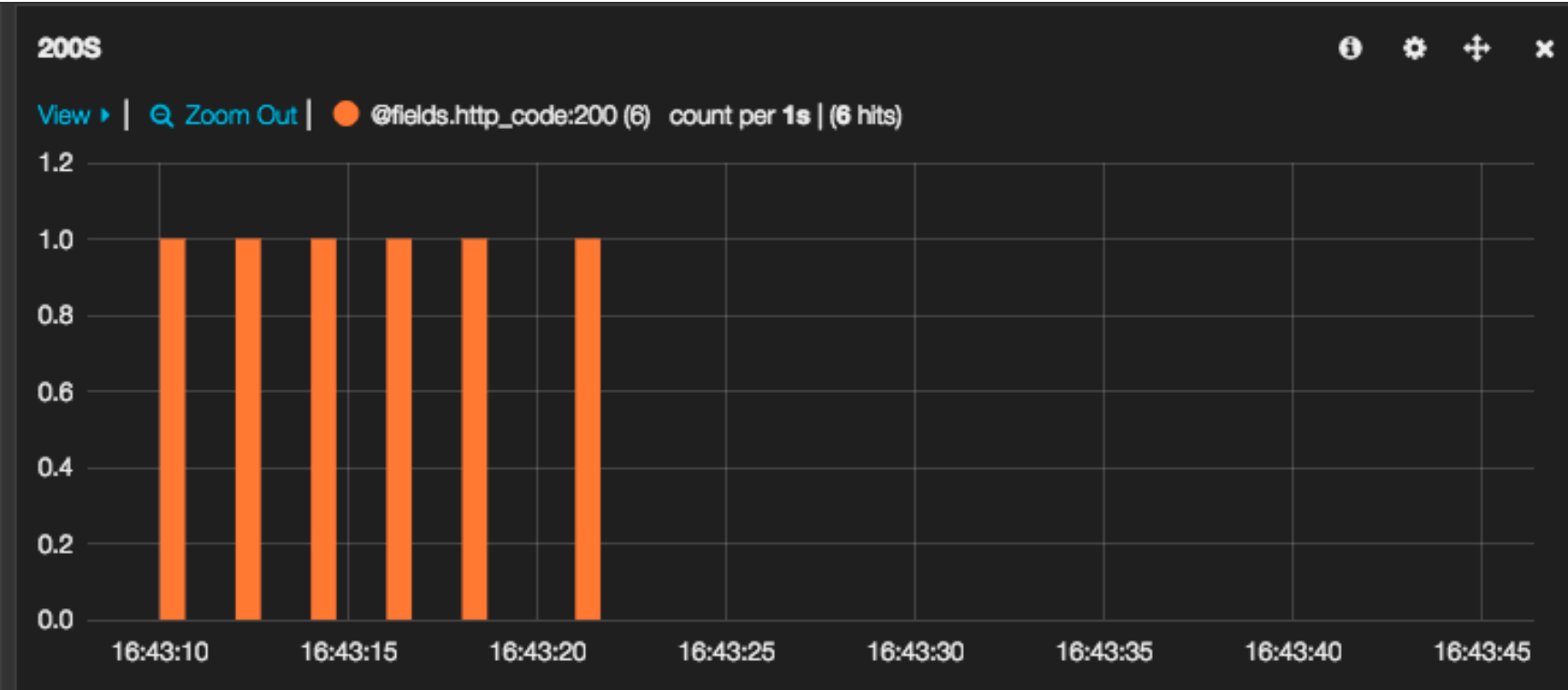
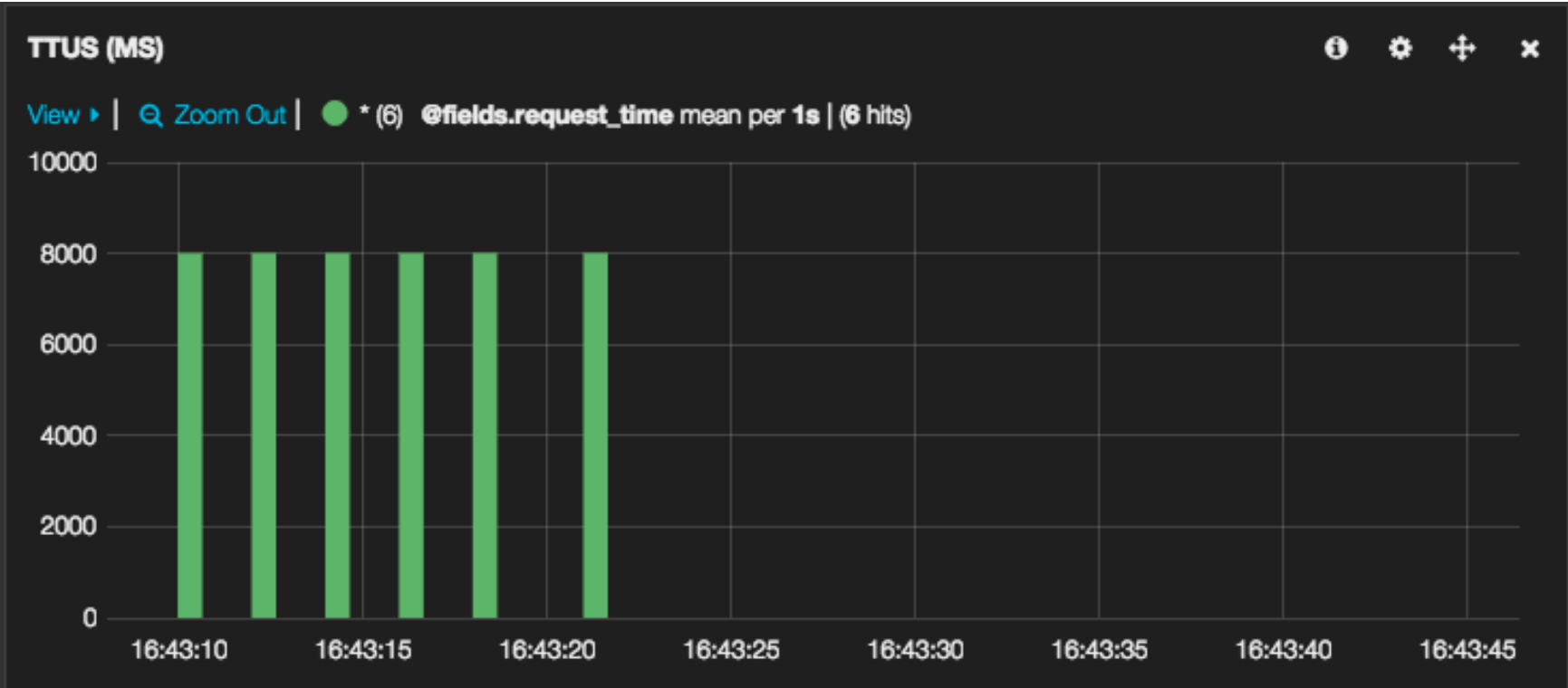
Zoom In

Origin graphs



Zoom In more

Origin graphs



EVENTS

0 to 6 of 6 available for paging

Fields	@timestamp	@fields.sec_frac	@fields.request	@fields.http_user_agent	@fields.request_time	@fields.http_code
All (27) / Current (21)	2014-10-20T22:43:10.000Z	0.065	GET /s7tCXHS1_livech_ism/QualityLevels(5033164)/Fragments(video=30000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-3	8004574	200
Type to filter...	2014-10-20T22:43:12.000Z	0.244	GET /s7tCXHS1_livech_ism/QualityLevels(5033164)/Fragments(video=30000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-3	8008888	200
Note These fields have been extracted from your mapping. Not all fields may be available in your source document.	2014-10-20T22:43:14.000Z	0.248	GET /s7tCXHS1_livech_ism/QualityLevels(5033164)/Fragments(video=30000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-3	8008870	200
	2014-10-20T22:43:16.000Z	0.251	GET /s7tCXHS1_livech_ism/QualityLevels(5033164)/Fragments(video=30000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-3	8008722	200
	2014-10-20T22:43:18.000Z	0.255	GET /s7tCXHS1_livech_ism/QualityLevels(5033164)/Fragments(video=30000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-3	8008711	200
	2014-10-20T22:43:21.000Z	0.255	GET /s7tCXHS1_livech_ism/QualityLevels(5033164)/Fragments(video=30000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-3	8010023	200

@envversion

max_retries_dead_server = 2

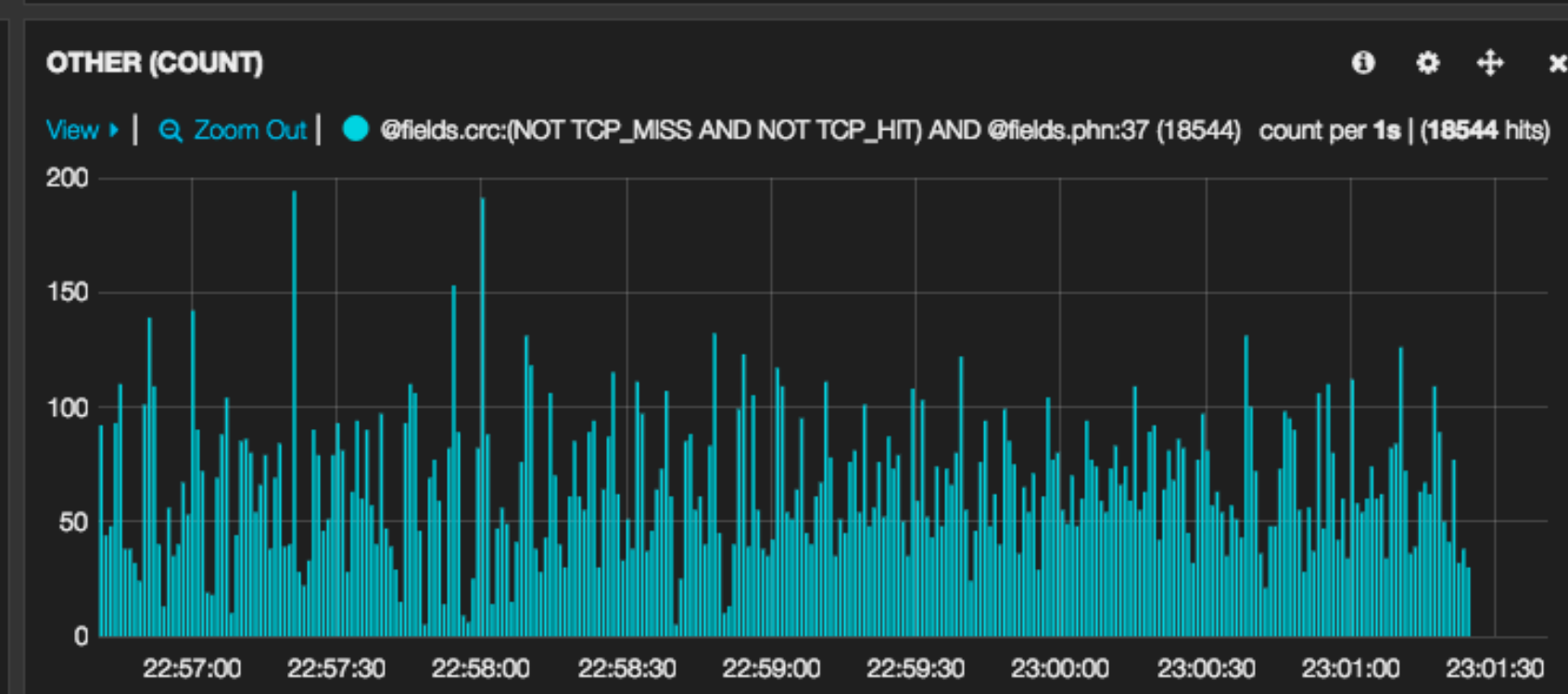
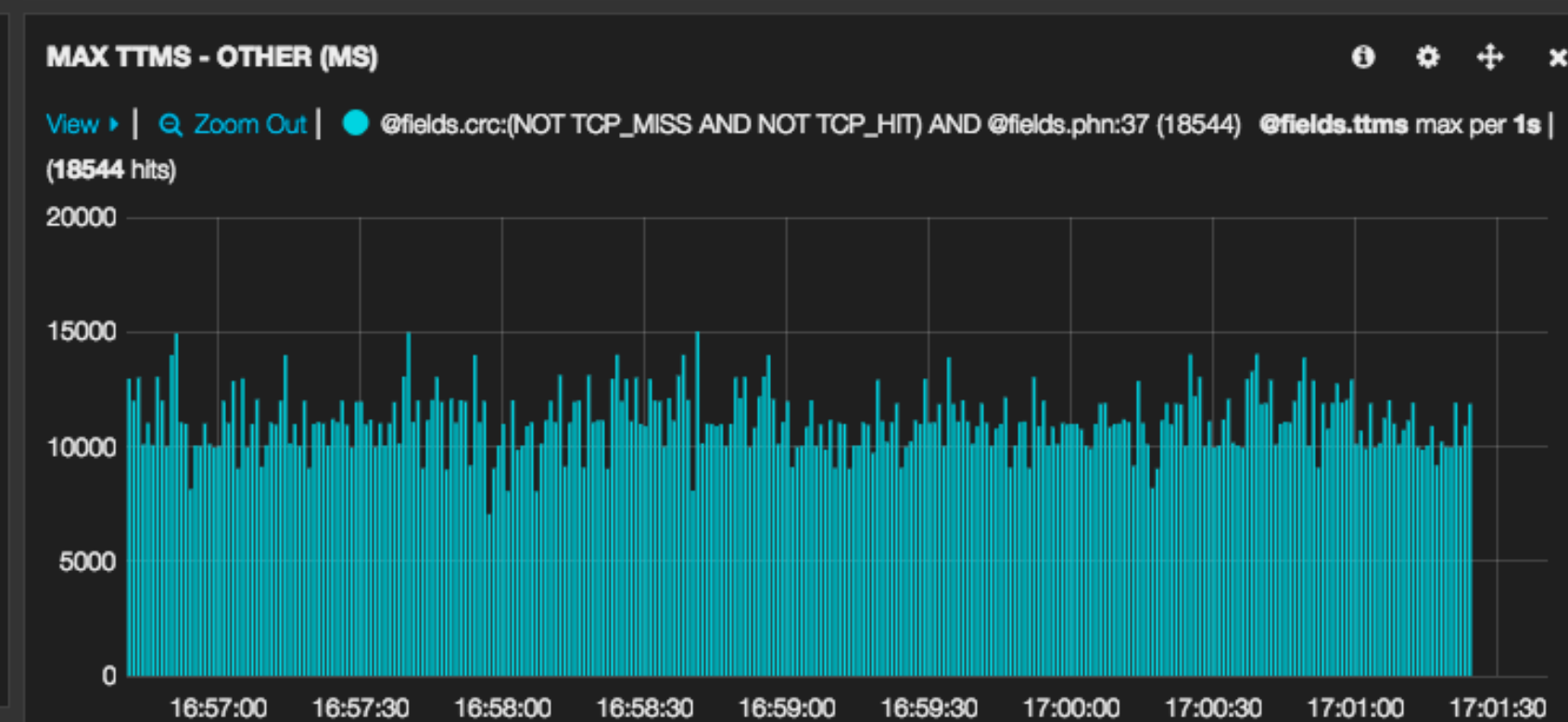
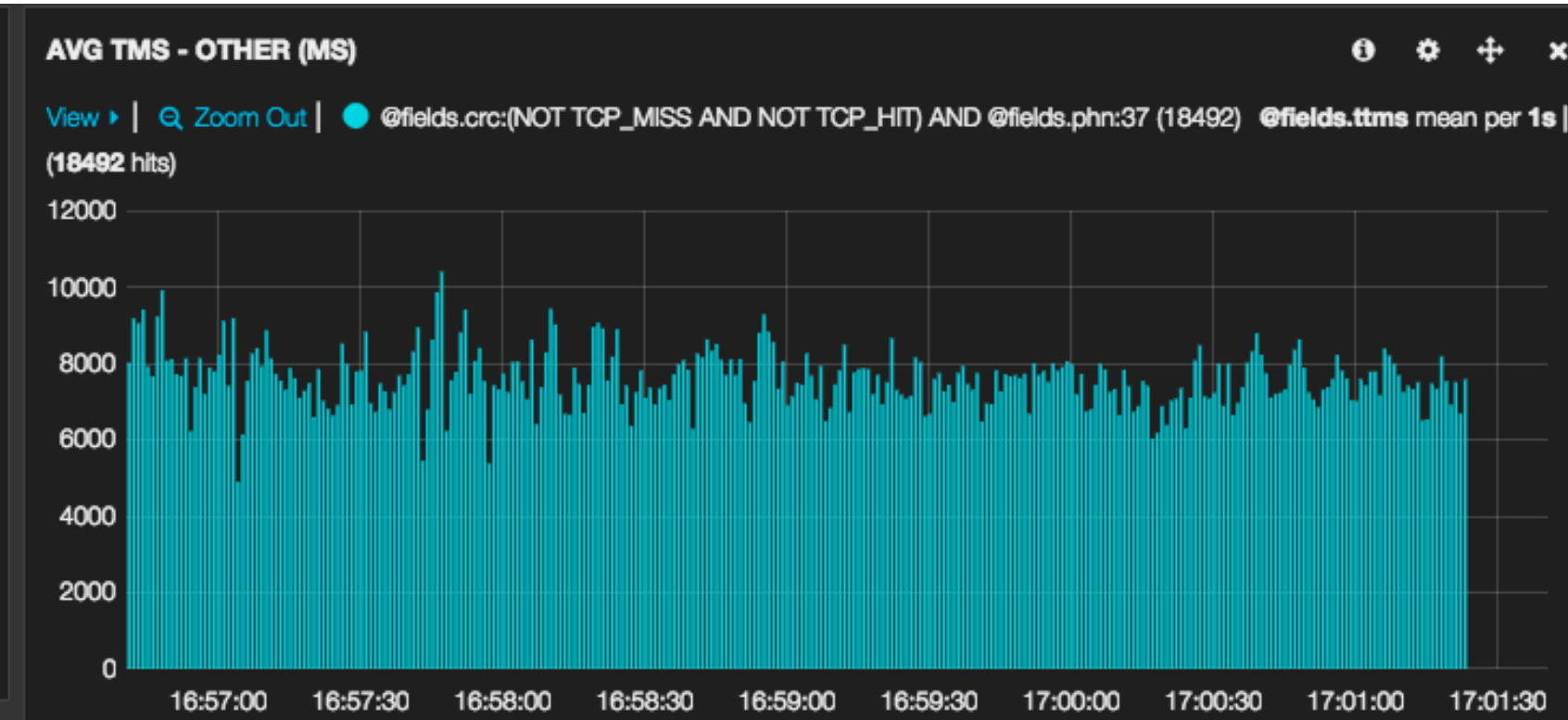
```
[mtorlu9137e@ipcdn-cache-37]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn
Mon Oct 20 22:55:46 UTC 2014
Version of this script: 0.34e
ERROR Lines in /opt/trafficserver/etc/trafficserver//plugin.config do not match Twelve Monkeys.
ERROR Config file: plugin.config line only on disk: header_rewrite.so hrrw.conf
[mtorlu9137e@ipcdn-cache-37]~$
```

```
[mtorlu9137e@ipcdn-cache-37]~$ sudo cat /usr/local/etc/header_rewrite/hrrw.conf | grep -v "^#\#"
cond %{READ_REQUEST_HDR_HOOK}
cond %{HEAD} = live-orig-01-dns.cdnlab.comcast.net
set-config proxy.config.http.connect_attempts_timeout 2
set-config proxy.config.http.connect_attempts_max_retries_dead_server 2 [L]
[mtorlu9137e@ipcdn-cache-37]~$
```

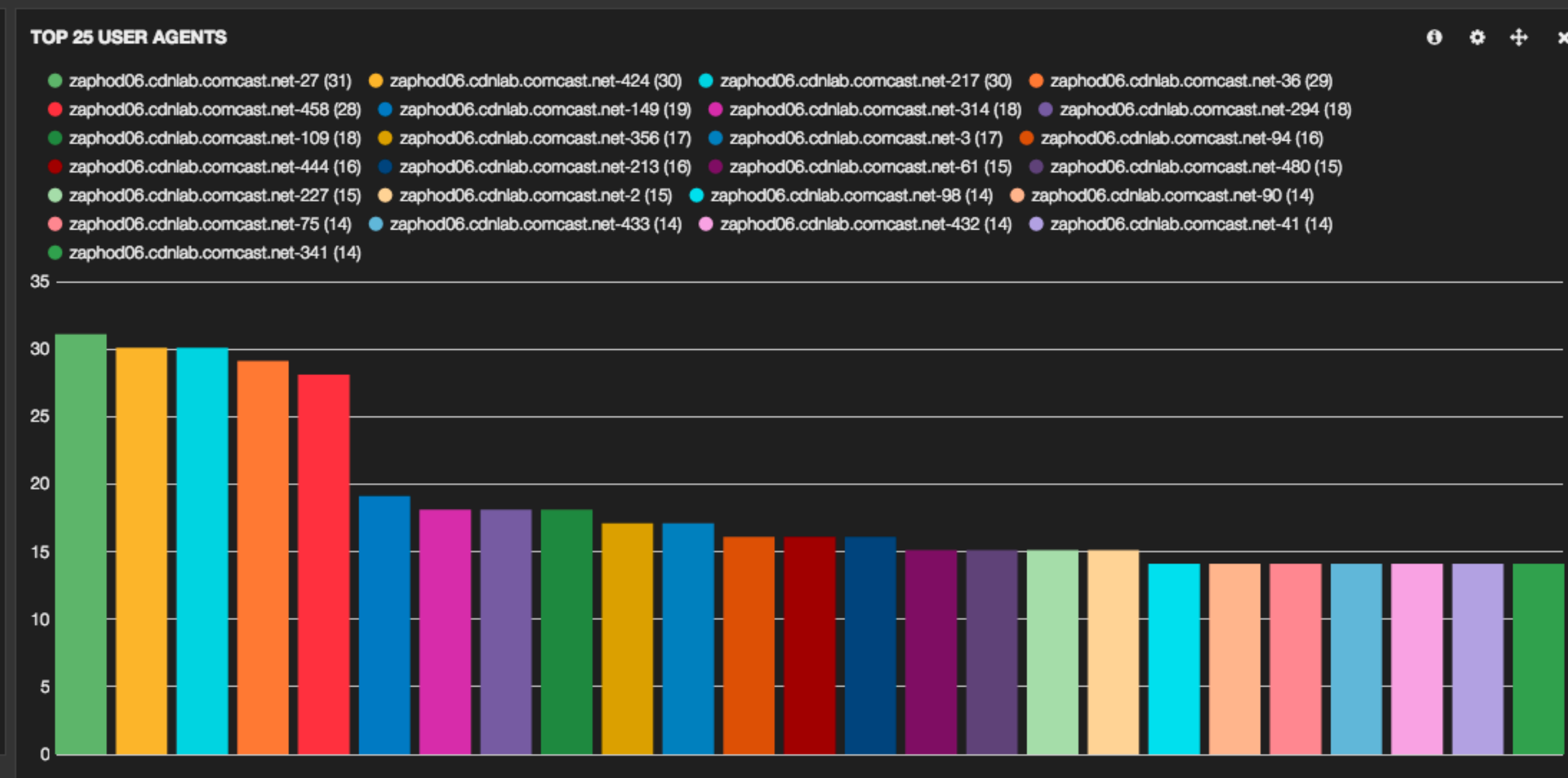
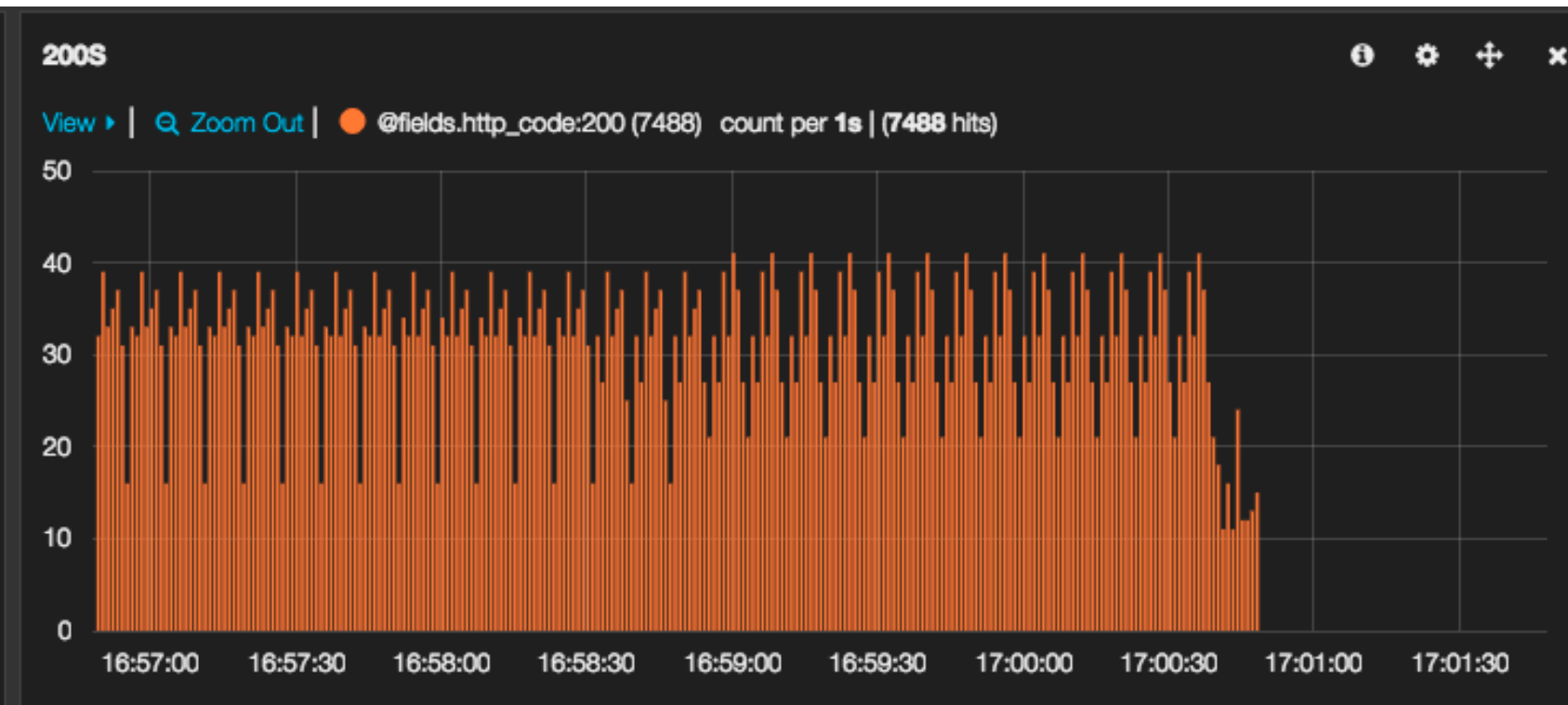
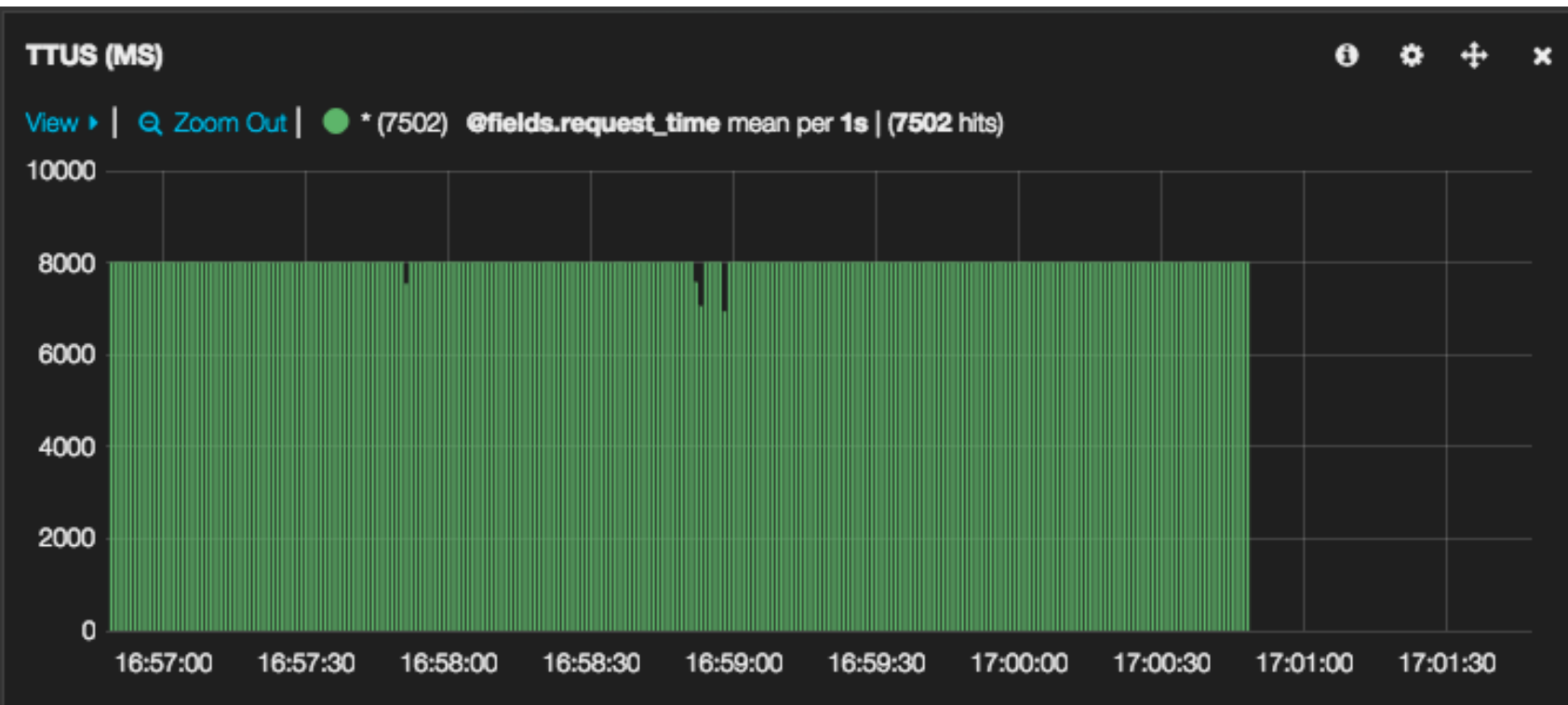
```
[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$|^#\#'
LoadModule hotair_module /usr/lib64/httpd/modules/mod_hotair.so
<LocationMatch "(\.ism*|\.f4m|.*Seg\d-Frag\d.*|\.m3u8|\.ts)">
    SetHandler hotair
</LocationMatch>
HotairDelayOnFirstByteInMs 8000
[root@zaphod02 ~]#
```

```
[mtorlu9137e@zaphod06]lcontrol$ cat fwd_proxy_tight_c37.json
{
  "clients": "480",
  "bitrate": "2500000",
  "test_type": "TestEngines::LLL",
  "abr_type": "hls",
  "frag_duration": "50000000",
  "origins": "1",
  "live": "100",
  "active_channels": "1",
  "vod_cache_name" : "load-test-01.cdnlab.comcast.net",
  "live_cache_name" : "live-orig-01-dns.cdnlab.comcast.net",
  "cache_ip" : "69.241.62.86",
  "vod_cache_hitratio" : "80",
  "live_active_fragments" : "2",
  "vod_bitrates" : "4300000,3000000",
  "live_bitrates" : "6710886,5033164",
  "max_long_tts_percentage" : "0.5",
  "long_tts_time" : "1.5",
  "proxy_mode" : "forward",
  "ipv6_percentage" : 0,
  "via_headers" : 1
}
[mtorlu9137e@zaphod06]lcontrol$
```

Mid graphs

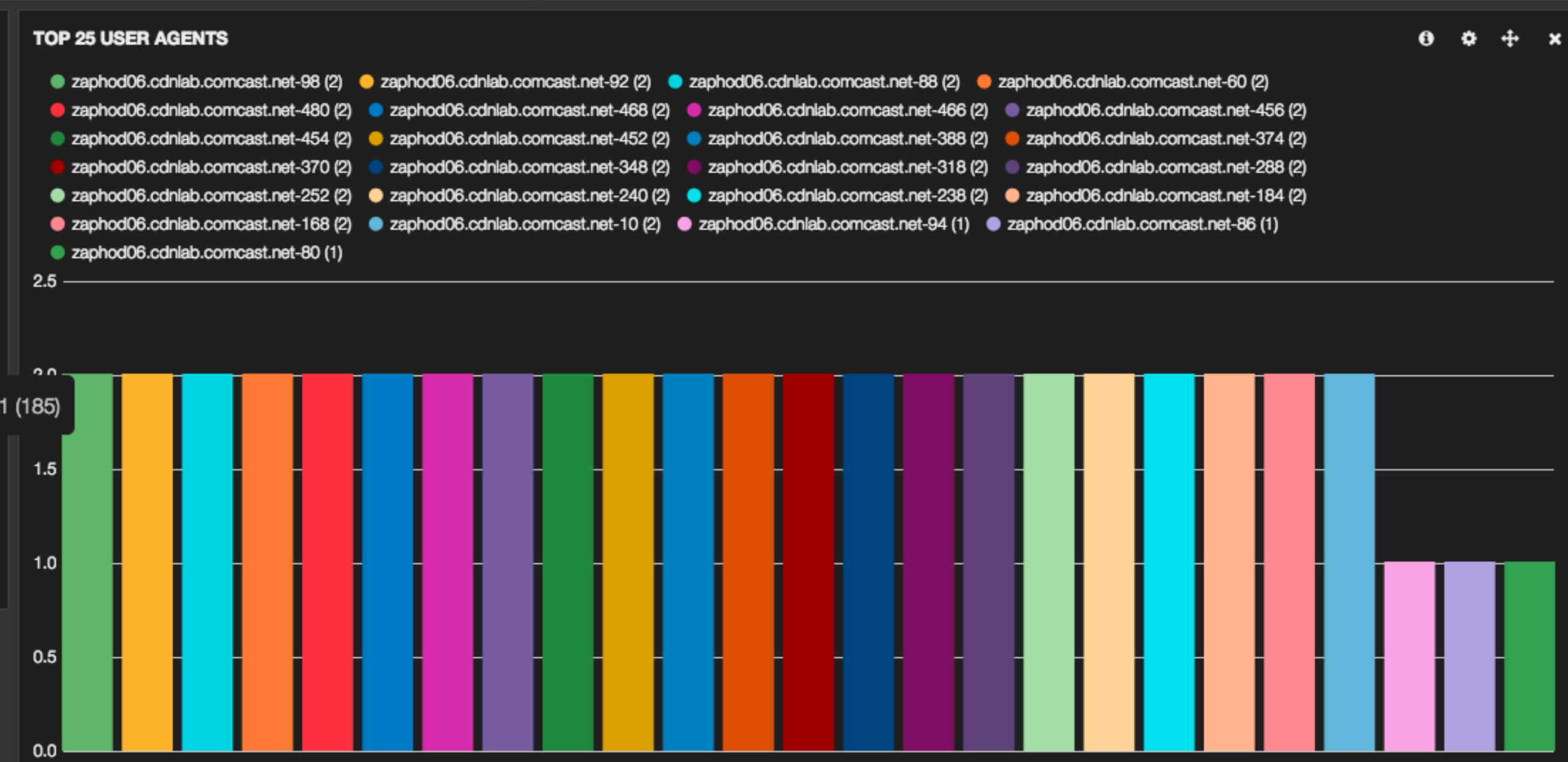
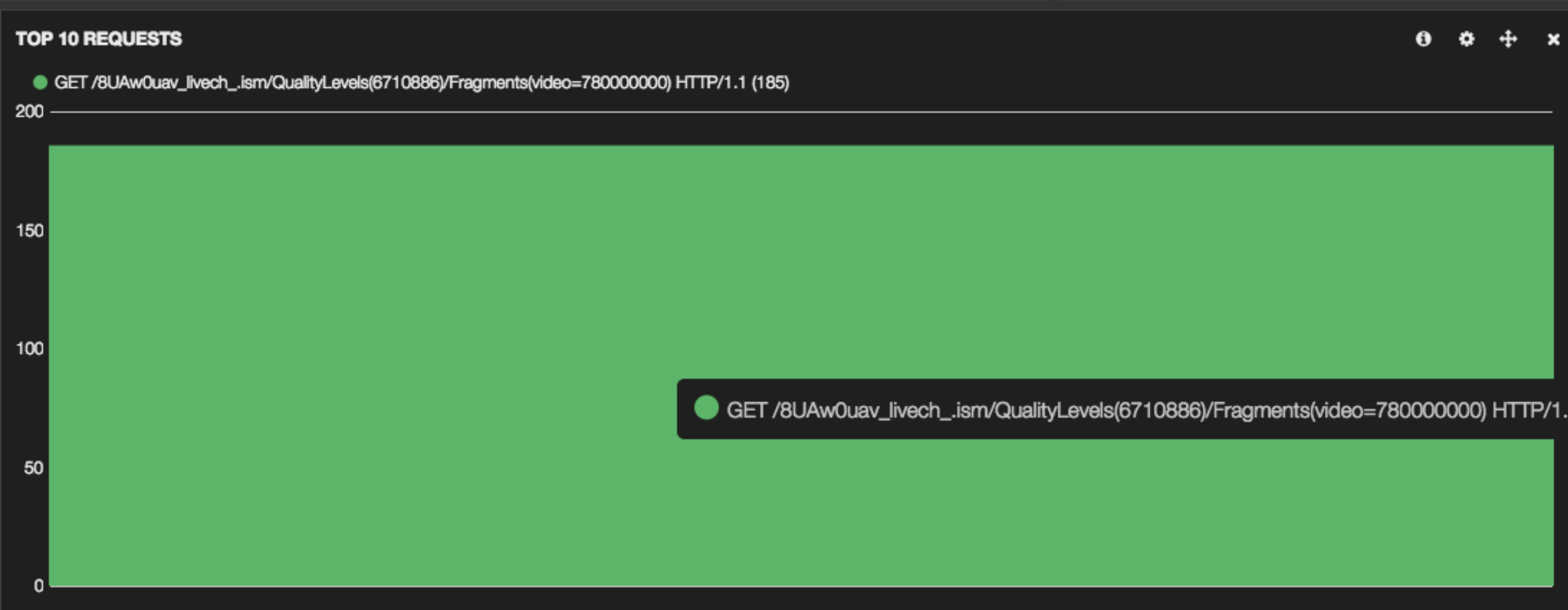
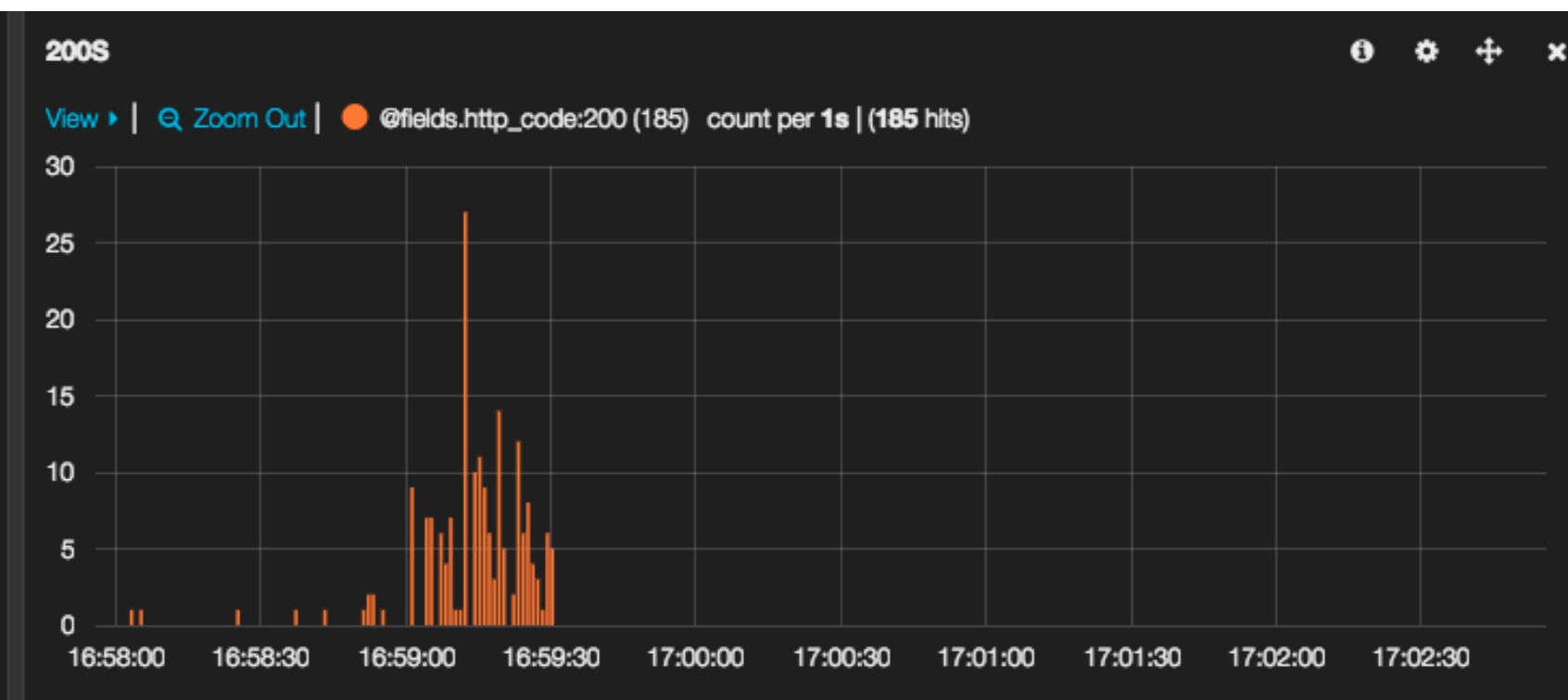
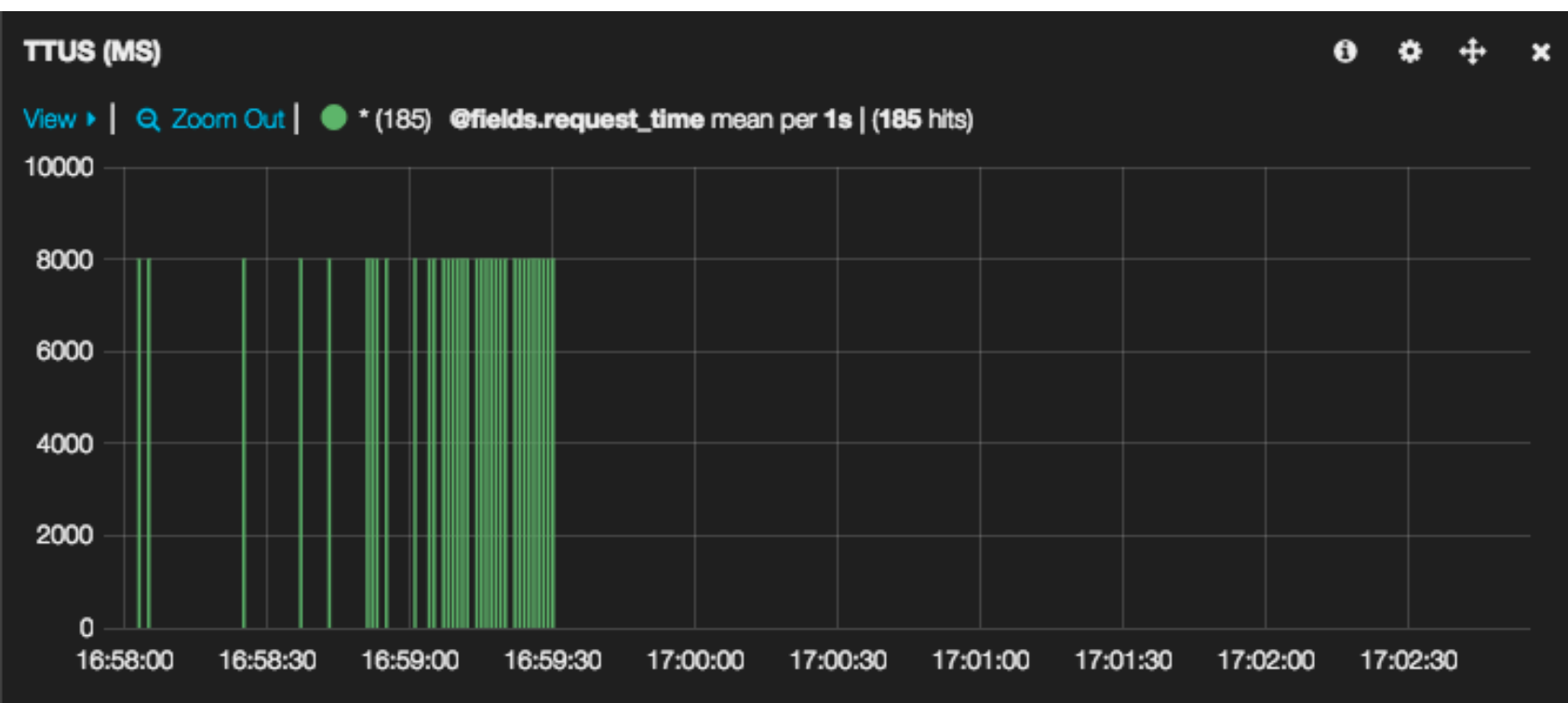


Origin graphs



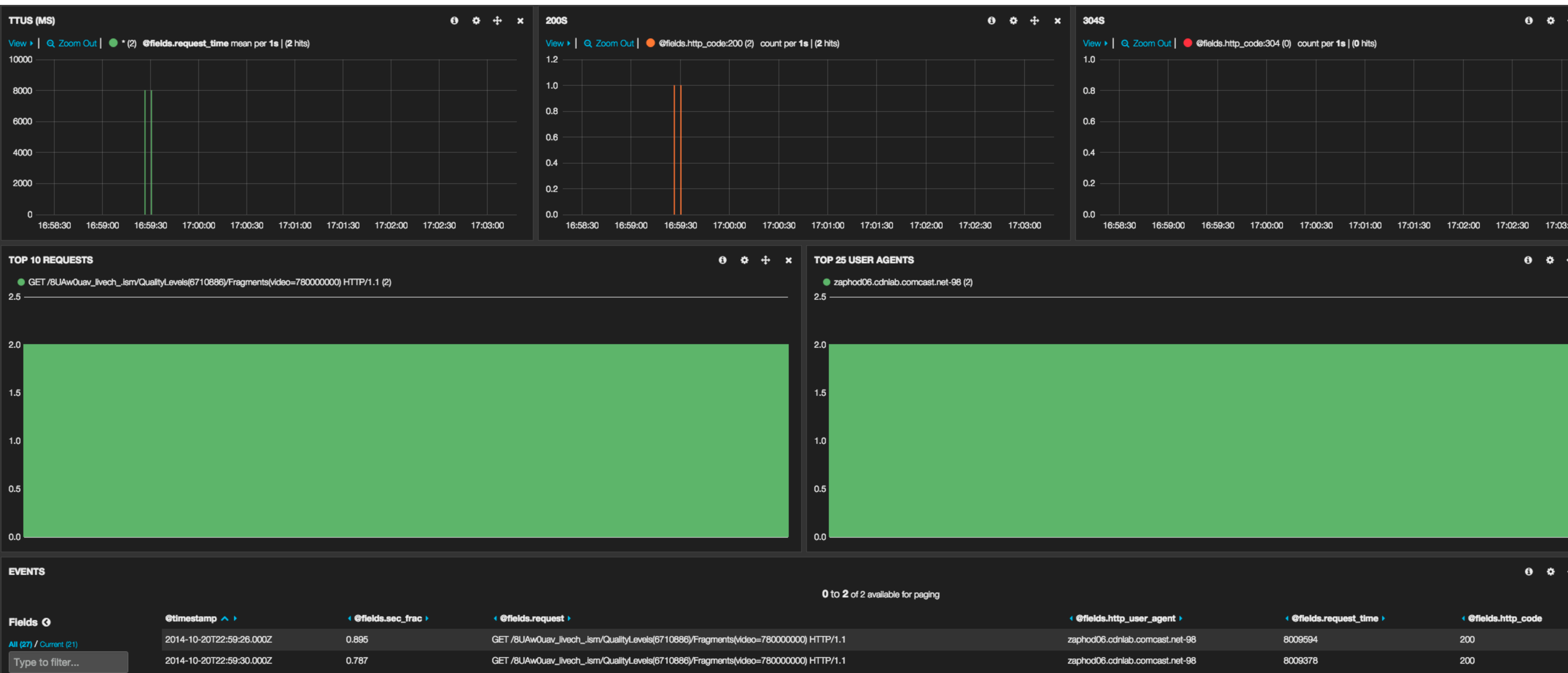
Zoom In

Origin graphs



Zoom in further

Origin graphs



```
[mtorlu9137e@ipcdn-cache-37]~$ grep "/8UAw0uav_livech_ism/QualityLevels(6710886)/Fragments(video=780000000)" /opt/trafficserver/var/log/trafficserver/custom_ats_2.log | grep "zaphod06.cdnlab.comcast.net-98" | awk '{print $1,$5,$8,$9,$10,$11,$14,$15,$16,$17}'
1413845968.638 url=http://live-orig-01-dns.cdnlab.comcast.net/8UAw0uav_livech_ism/QualityLevels(6710886)/Fragments(video=780000000) pssc=504 ttms=7910 b=0 sssc=000 pfsc=TIMEOUT crc=ERR_READ_TIMEOUT phr=TIMEOUT_DIRECT uas="zaphod06.cdnlab.comcast.net-98"
[mtorlu9137e@ipcdn-cache-37]~$
```

Packet capture on a 502

Packet capture on a 504

No.	Time	Time	Delta time	Source	Dest	Protocol	Length	UserAgent	Info
47280	1413230021.932931	2014-10-13 19:53:41.932931	43.018090	zaphod06	ipcdn-cache-37	TCP	74		54098_80 [SYN] Seq=1888400430 Win=17920 Len=0 MSS=8960 SACK_PERM=1 TSval=1810085836 TSecr=0 WS=256
47281	1413230021.932941	2014-10-13 19:53:41.932941	0.000010	ipcdn-cache-37	zaphod06	TCP	74		80_54098 [SYN, ACK] Seq=2776282810 Ack=1888400431 Win=17896 Len=0 MSS=8960 SACK_PERM=1 TSval=1748998418 TSecr=1810085836 WS=128
47288	1413230021.933035	2014-10-13 19:53:41.933035	0.000094	zaphod06	ipcdn-cache-37	TCP	66		54098_80 [ACK] Seq=1888400431 Ack=2776282811 Win=17920 Len=0 TSval=1810085836 TSecr=1748998418
47292	*REF*	*REF*	*REF*	zaphod06	ipcdn-cache-37	HTTP	325	zaphod06.cdnlab.comcast.net-208	GET http://live-orig-01-dns.cdnlab.comcast.net/jrcEjf36_livech_.ism/QualityLevels(6710886)/Fragments(video=750000000) HTTP/1.1
47293	1413230021.933283	2014-10-13 19:53:41.933283	0.000012	ipcdn-cache-37	zaphod06	TCP	66		80_54098 [ACK] Seq=2776282811 Ack=1888400690 Win=19072 Len=0 TSval=1748998418 TSecr=1810085837
55523	1413230028.915823	2014-10-13 19:53:48.915823	6.982540	ipcdn-cache-37	zaphod06	TCP	66		80_54098 [FIN, ACK] Seq=2776282811 Ack=1888400690 Win=19072 Len=0 TSval=1749005401 TSecr=1810085837
55528	1413230028.916048	2014-10-13 19:53:48.916048	0.000225	zaphod06	ipcdn-cache-37	TCP	66		54098_80 [FIN, ACK] Seq=1888400690 Ack=2776282812 Win=17920 Len=0 TSval=1810092820 TSecr=1749005401
55529	1413230028.916058	2014-10-13 19:53:48.916058	0.000010	ipcdn-cache-37	zaphod06	TCP	66		80_54098 [ACK] Seq=2776282812 Ack=1888400691 Win=19072 Len=0 TSval=1749005401 TSecr=1810092820

```
[mtorlu9137e@ipcdn-cache-37]~$ grep "jrcEjf36_livech_.ism/QualityLevels(6710886)/Fragments(video=750000000)" /opt/trafficserver/var/log/trafficserver/custom_ats_2.log | grep "zaphod06.cdnlab.comcast.net-208" | awk '{print $1,$5,$8,$9,$10,$11,$14,$15,$16,$17}'
1413230028.915 url=http://live-orig-01-dns.cdnlab.comcast.net/jrcEjf36_livech_.ism/QualityLevels(6710886)/Fragments(video=750000000) pssc=504 ttms=6982 b=0 sssc=000 pfsc=TIMEOUT crc=ERR_READ_TIMEOUT phr=TIMEOUT_DIRECT uas="zaphod06.cdnlab.comcast.net-208"
[mtorlu9137e@ipcdn-cache-37]~$
```

No.	Time	Time	Delta time	Source	Dest	Protocol	Length	UserAgent	Info
52479	1413230026.914829	2014-10-13 19:53:46.914829	47.999988	ipcdn-cache-37	zaphod02	TCP	74		57223_80 [SYN] Seq=3502915585 Win=17920 Len=0 MSS=8960 SACK_PERM=1 TSval=1749003400 TSecr=0 WS=128
52483	1413230026.915034	2014-10-13 19:53:46.915034	0.000205	zaphod02	ipcdn-cache-37	TCP	74		80_57223 [SYN, ACK] Seq=2570847948 Ack=3502915586 Win=14480 Len=0 MSS=1460 SACK_PERM=1 TSval=864792407 TSecr=1749003400 WS=128
52484	1413230026.915044	2014-10-13 19:53:46.915044	0.000010	ipcdn-cache-37	zaphod02	TCP	66		57223_80 [ACK] Seq=3502915586 Ack=2570847949 Win=17920 Len=0 TSval=1749003400 TSecr=864792407
52485	*REF*	*REF*	*REF*	ipcdn-cache-37	zaphod02	HTTP	387	zaphod06.cdnlab.comcast.net-208	GET /jrcEjf36_livech_.ism/QualityLevels(6710886)/Fragments(video=750000000) HTTP/1.1
52887	1413230027.136761	2014-10-13 19:53:47.136761	0.221693	ipcdn-cache-37	zaphod02	HTTP	387	zaphod06.cdnlab.comcast.net-208	[TCP Retransmission] GET /jrcEjf36_livech_.ism/QualityLevels(6710886)/Fragments(video=750000000) HTTP/1.1
52888	1413230027.136995	2014-10-13 19:53:47.136995	0.000234	zaphod02	ipcdn-cache-37	TCP	66		80_57223 [ACK] Seq=2570847949 Ack=3502915907 Win=15616 Len=0 TSval=864792629 TSecr=1749003622
55524	1413230028.915849	2014-10-13 19:53:48.915849	1.778854	ipcdn-cache-37	zaphod02	TCP	66		57223_80 [FIN, ACK] Seq=3502915907 Ack=2570847949 Win=17920 Len=0 TSval=1749005401 TSecr=864792629
55743	1413230028.955839	2014-10-13 19:53:48.955839	0.039990	zaphod02	ipcdn-cache-37	TCP	66		80_57223 [ACK] Seq=2570847949 Ack=3502915908 Win=15616 Len=0 TSval=864794448 TSecr=1749005401
66009	1413230038.735576	2014-10-13 19:53:58.735576	9.779737	zaphod02	ipcdn-cache-37	TCP	2962		[TCP segment of a reassembled PDU]
66010	1413230038.735599	2014-10-13 19:53:58.735599	0.000023	ipcdn-cache-37	zaphod02	TCP	54		57223_80 [RST] Seq=3502915908 Win=0 Len=0
66011	1413230038.735619	2014-10-13 19:53:58.735619	0.000020	zaphod02	ipcdn-cache-37	TCP	2962		[TCP segment of a reassembled PDU]
66012	1413230038.735622	2014-10-13 19:53:58.735622	0.000003	ipcdn-cache-37	zaphod02	TCP	54		57223_80 [RST] Seq=3502915908 Win=0 Len=0
66013	1413230038.735626	2014-10-13 19:53:58.735626	0.000004	zaphod02	ipcdn-cache-37	TCP	5858		[TCP segment of a reassembled PDU]
66014	1413230038.735629	2014-10-13 19:53:58.735629	0.000003	ipcdn-cache-37	zaphod02	TCP	54		57223_80 [RST] Seq=3502915908 Win=0 Len=0
66015	1413230038.735634	2014-10-13 19:53:58.735634	0.000005	zaphod02	ipcdn-cache-37	TCP	2962		[TCP segment of a reassembled PDU]
66016	1413230038.735636	2014-10-13 19:53:58.735636	0.000002	ipcdn-cache-37	zaphod02	TCP	54		57223_80 [RST] Seq=3502915908 Win=0 Len=0

max_retries_dead_server = 1

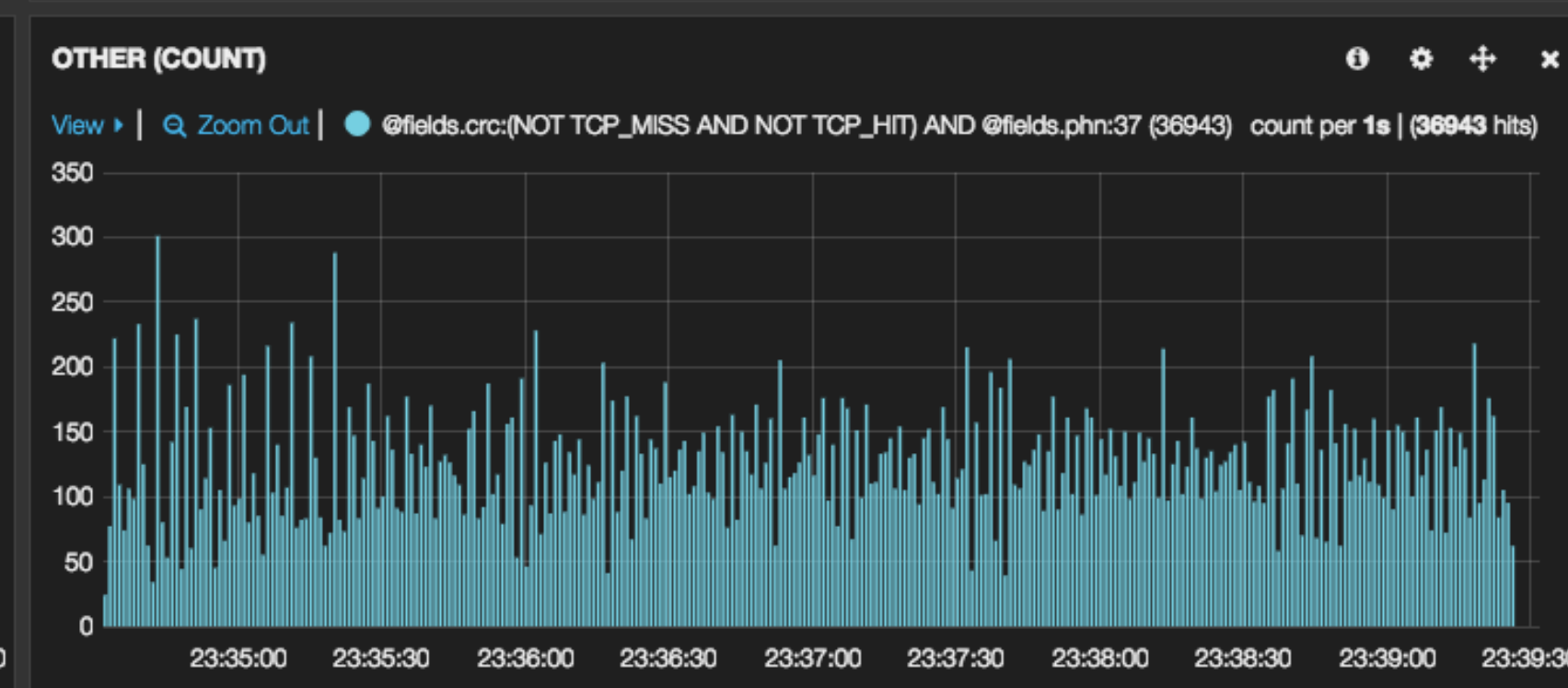
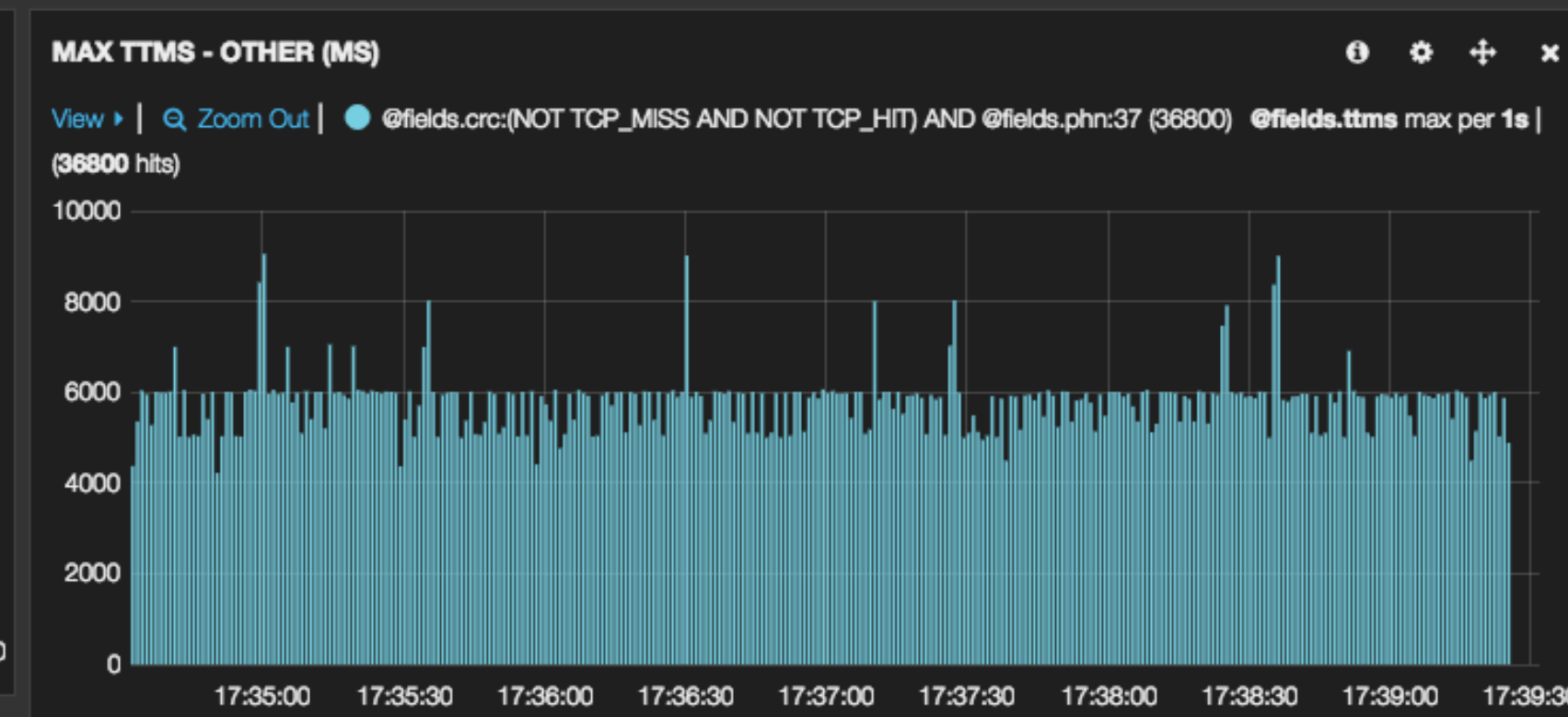
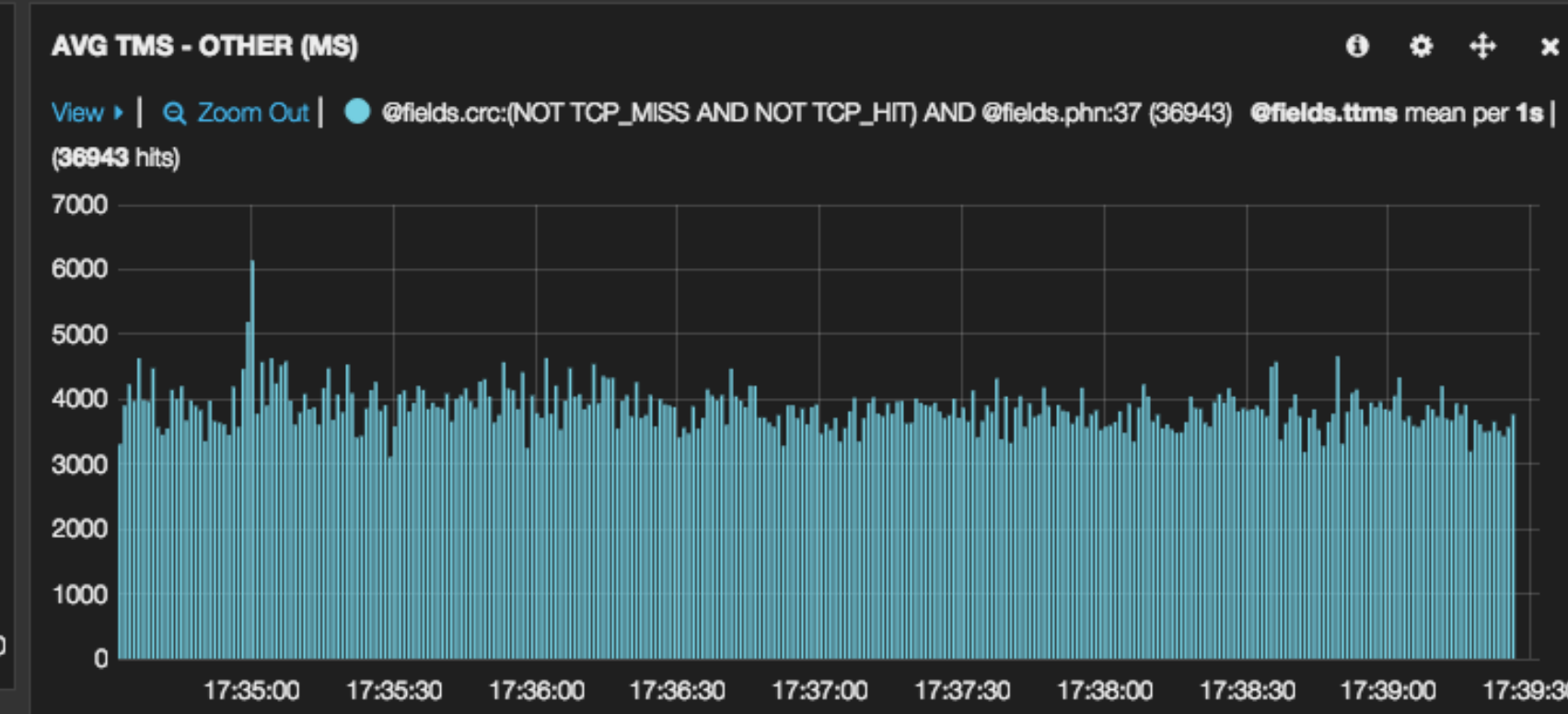
```
[mtorlu9137e@ipcdn-cache-37]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn
Mon Oct 13 16:43:17 UTC 2014
Version of this script: 0.34e
ERROR Lines in /opt/trafficserver/etc/trafficserver//plugin.config do not match Twelve Monkeys.
ERROR Config file: plugin.config line only on disk: header_rewrite.so hrrw.conf
[mtorlu9137e@ipcdn-cache-37]~$
```

```
[mtorlu9137e@ipcdn-cache-37]~$ sudo cat /usr/local/etc/header_rewrite/hrrw.conf | grep -v "^#"
cond %{READ_REQUEST_HDR_HOOK}
cond %{HEAD} = live-orig-01-dns.cdnlab.comcast.net
set-config proxy.config.http.connect_attempts_timeout 2
set-config proxy.config.http.connect_attempts_max_retries_dead_server 1 [L]
[mtorlu9137e@ipcdn-cache-37]~$
```

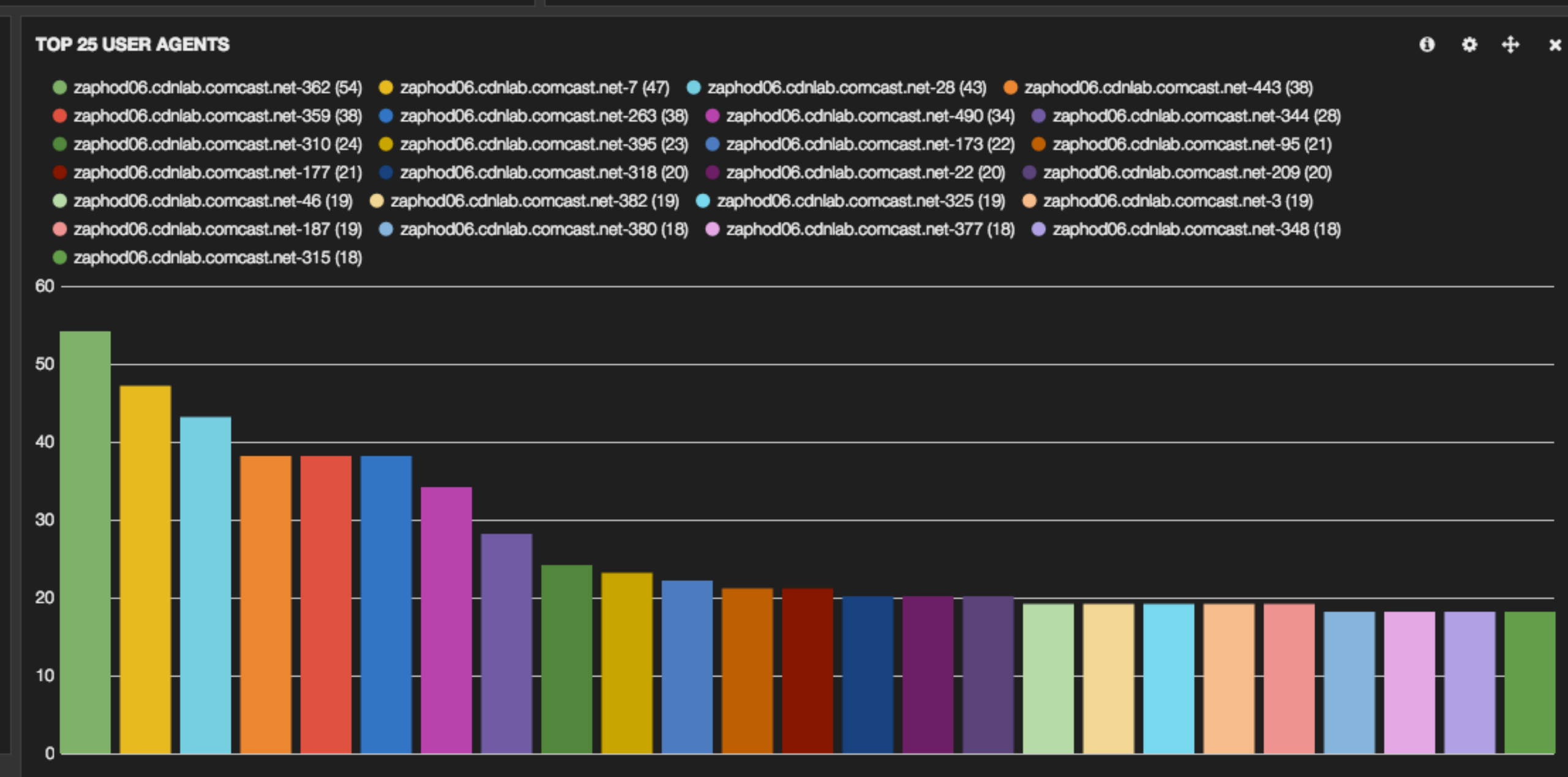
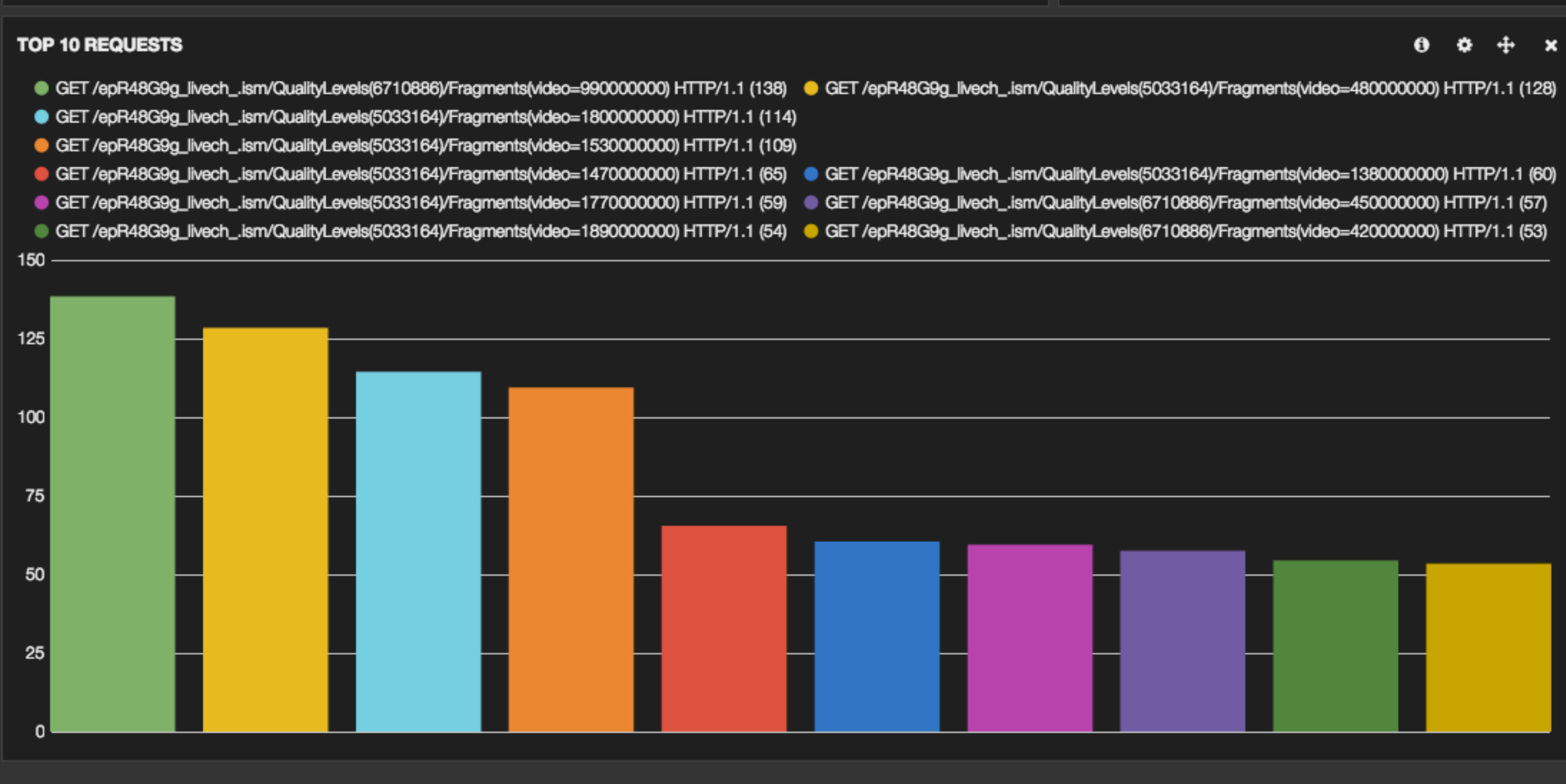
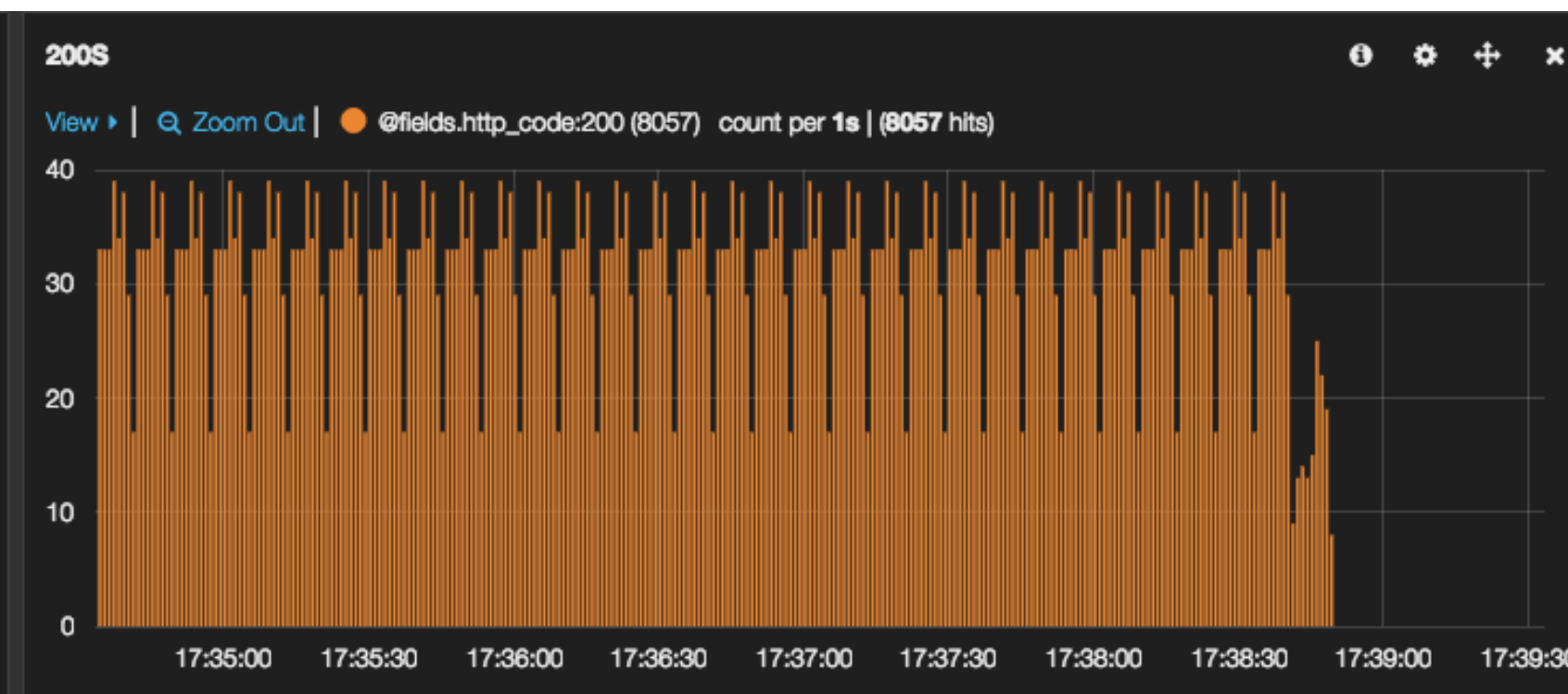
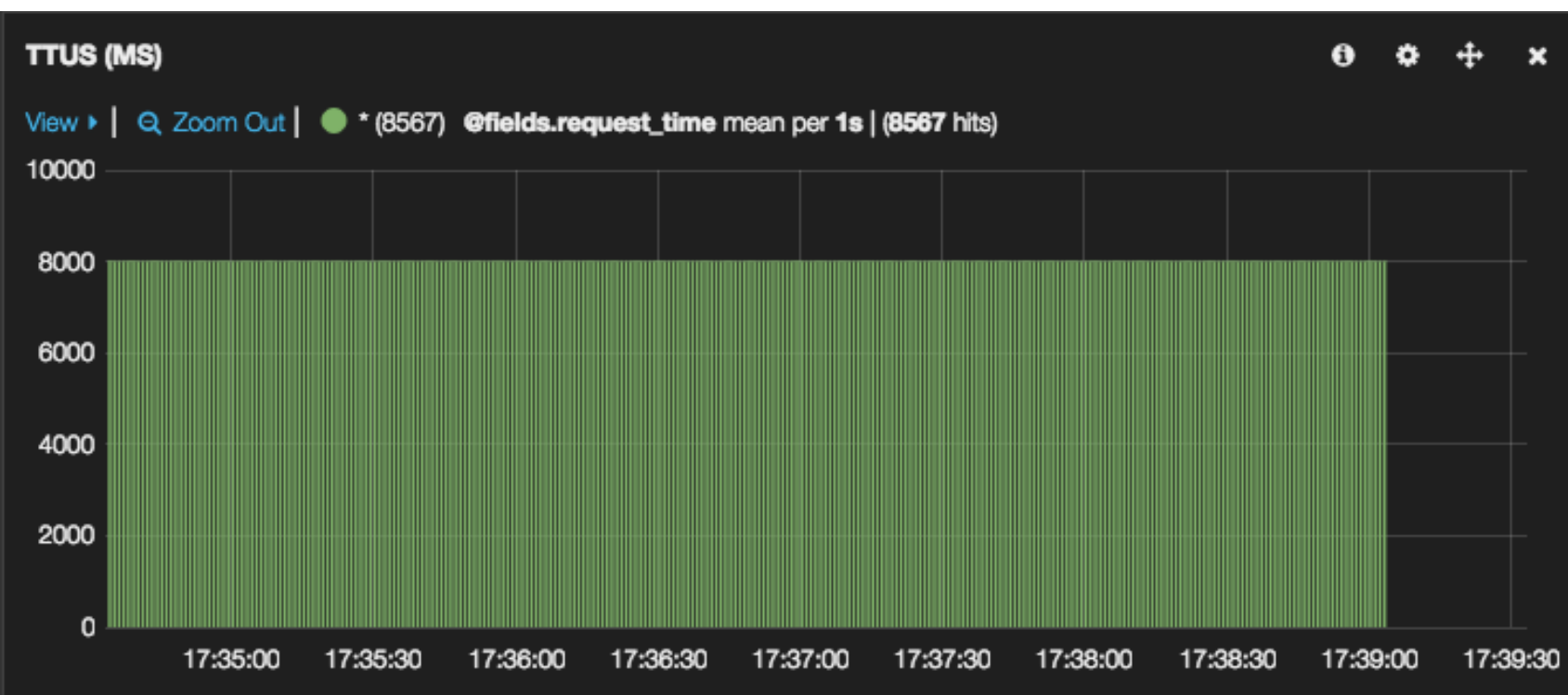
```
[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$|^#'
LoadModule hotair_module      /usr/lib64/httpd/modules/mod_hotair.so
<LocationMatch "(\\.ism*|\\.f4m|.*Seg\\d-Frag\\d.*|\\.m3u8|\\.ts)">
    SetHandler hotair
</LocationMatch>
HotairDelayOnFirstByteInMs 8000
[root@zaphod02 ~]#
```

```
[mtorlu9137e@zaphod06]lcontrol$ cat fwd_proxy_tight_c37.json
{
  "clients": "480",
  "bitrate": "2500000",
  "test_type": "TestEngines::LLL",
  "abr_type": "hls",
  "frag_duration": "50000000",
  "origins": "1",
  "live": "100",
  "active_channels": "1",
  "vod_cache_name" : "load-test-01.cdnlab.comcast.net",
  "live_cache_name" : "live-orig-01-dns.cdnlab.comcast.net",
  "cache_ip" : "69.241.62.86",
  "vod_cache_hitratio" : "80",
  "live_active_fragments" : "2",
  "vod_bitrates" : "4300000,3000000",
  "live_bitrates" : "6710886,5033164",
  "max_long_tts_percentage" : "0.5",
  "long_tts_time" : "1.5",
  "proxy_mode" : "forward",
  "ipv6_percentage" : 0,
  "via_headers" : 1
}
[mtorlu9137e@zaphod06]lcontrol$
```


Mid graphs

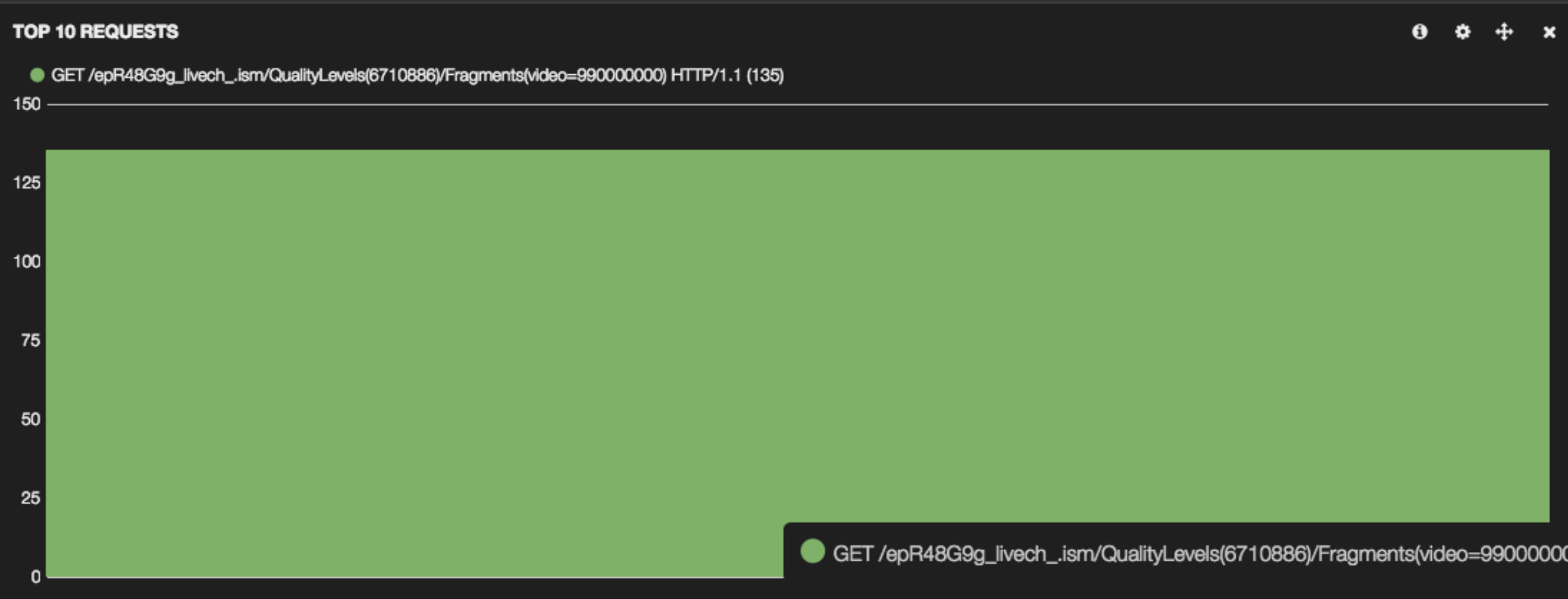
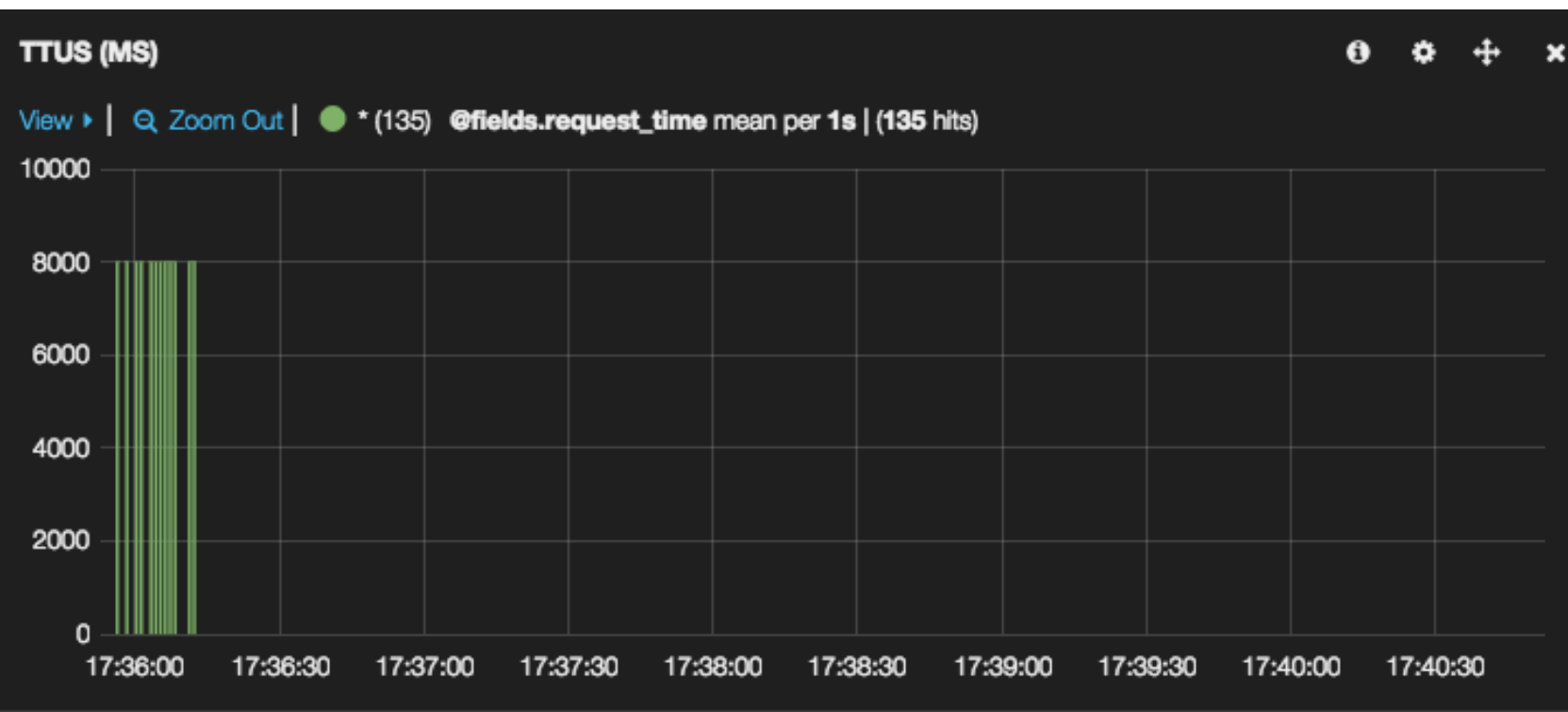


Origin graphs



Zoom In

Origin graphs



Add realistic Pareto dist from origin ("dead_server" should not apply anymore)

```
[mtorlu9137e@ipcdn-cache-37]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn
Mon Oct 20 23:41:52 UTC 2014
Version of this script: 0.34e
ERROR Lines in /opt/trafficserver/etc/trafficserver//plugin.config do not match Twelve Monkeys.
ERROR Config file: plugin.config line only on disk: header_rewrite.so hrrw.conf
[mtorlu9137e@ipcdn-cache-37]~$ sudo cat /usr/local/etc/header_rewrite/hrrw.conf | grep -v "^\\#"

```

```
[mtorlu9137e@ipcdn-cache-37]~$
cond %{READ_REQUEST_HDR_HOOK}
cond %{HEAD} = live-orig-01-dns.cdnlab.comcast.net
set-config proxy.config.http.connect_attempts_timeout 2
set-config proxy.config.http.connect_attempts_max_retries_dead_server 1 [L]
[mtorlu9137e@ipcdn-cache-37]~$

```

```
[mtorlu9137e@zaphod06]lcontrol$ cat fwd_proxy_tight_c37.json

```

```
{
  "clients": "480",
  "bitrate": "2500000",
  "test_type": "TestEngines::LLL",
  "abr_type": "hls",
  "frag_duration": "50000000",
  "origins": "1",
  "live": "100",
  "active_channels": "1",
  "vod_cache_name": "load-test-01.cdnlab.comcast.net",
  "live_cache_name": "live-orig-01-dns.cdnlab.comcast.net",
  "cache_ip": "69.241.62.86",
  "vod_cache_hitratio": "80",
  "live_active_frags": "2",
  "vod_bitrates": "4300000,3000000",
  "live_bitrates": "6710886,5033164",
  "max_long_tts_percentage": "0.5",
  "long_tts_time": "1.5",
  "proxy_mode": "forward",
  "ipv6_percentage": 0,
  "via_headers": 1
}
```

```
[mtorlu9137e@zaphod06]lcontrol$
```

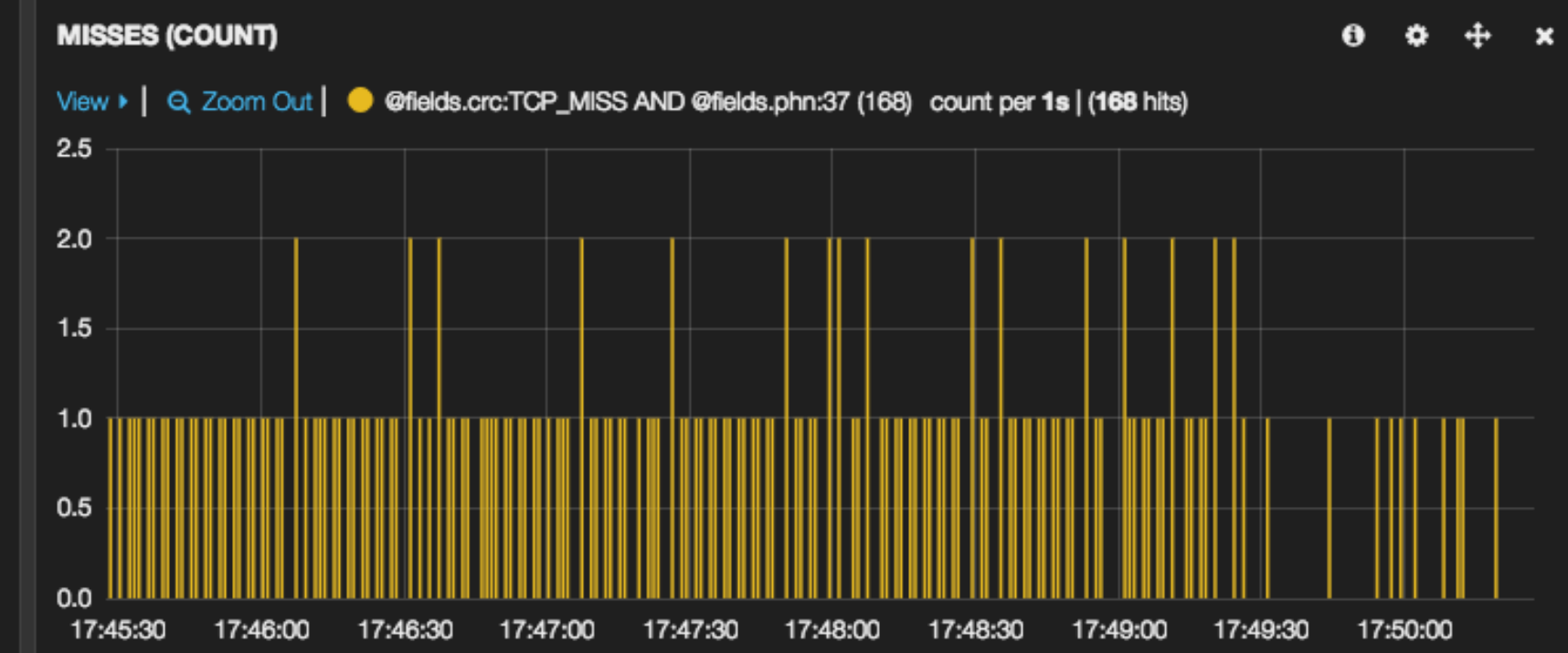
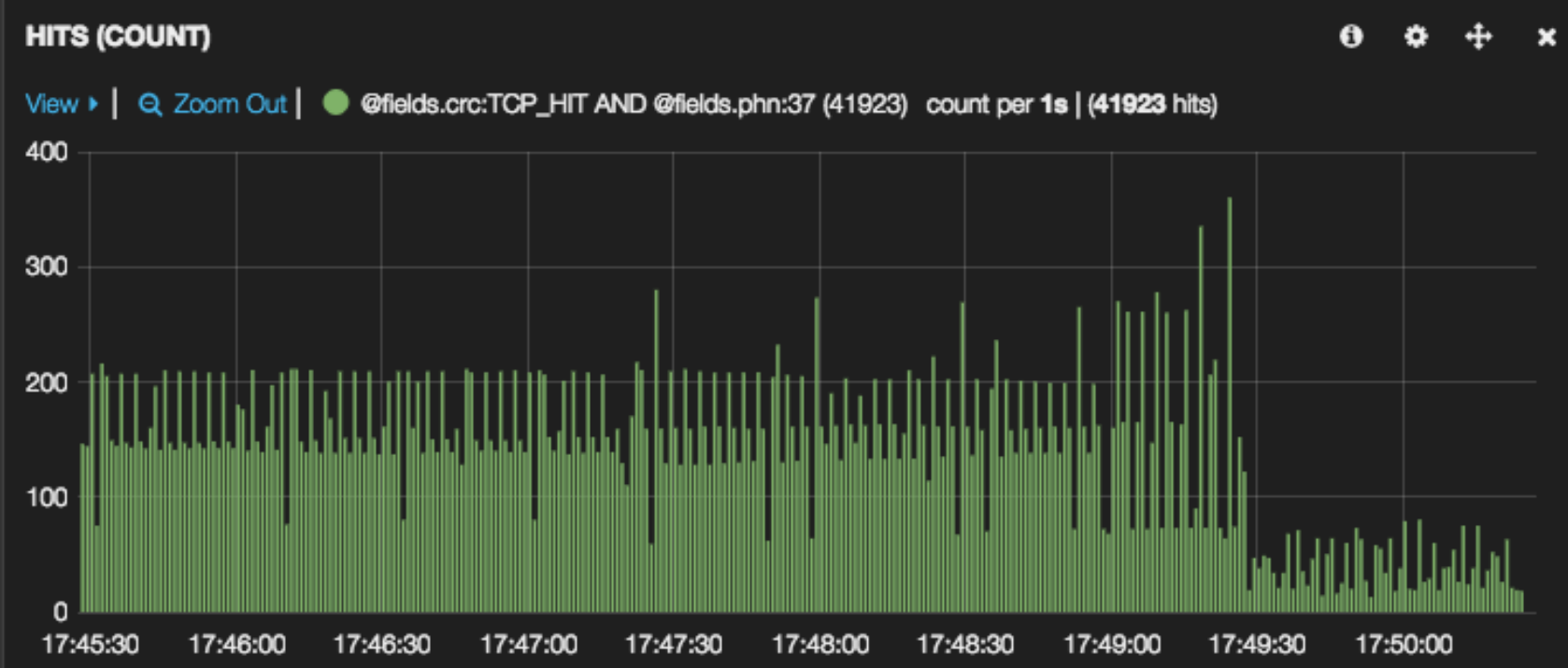
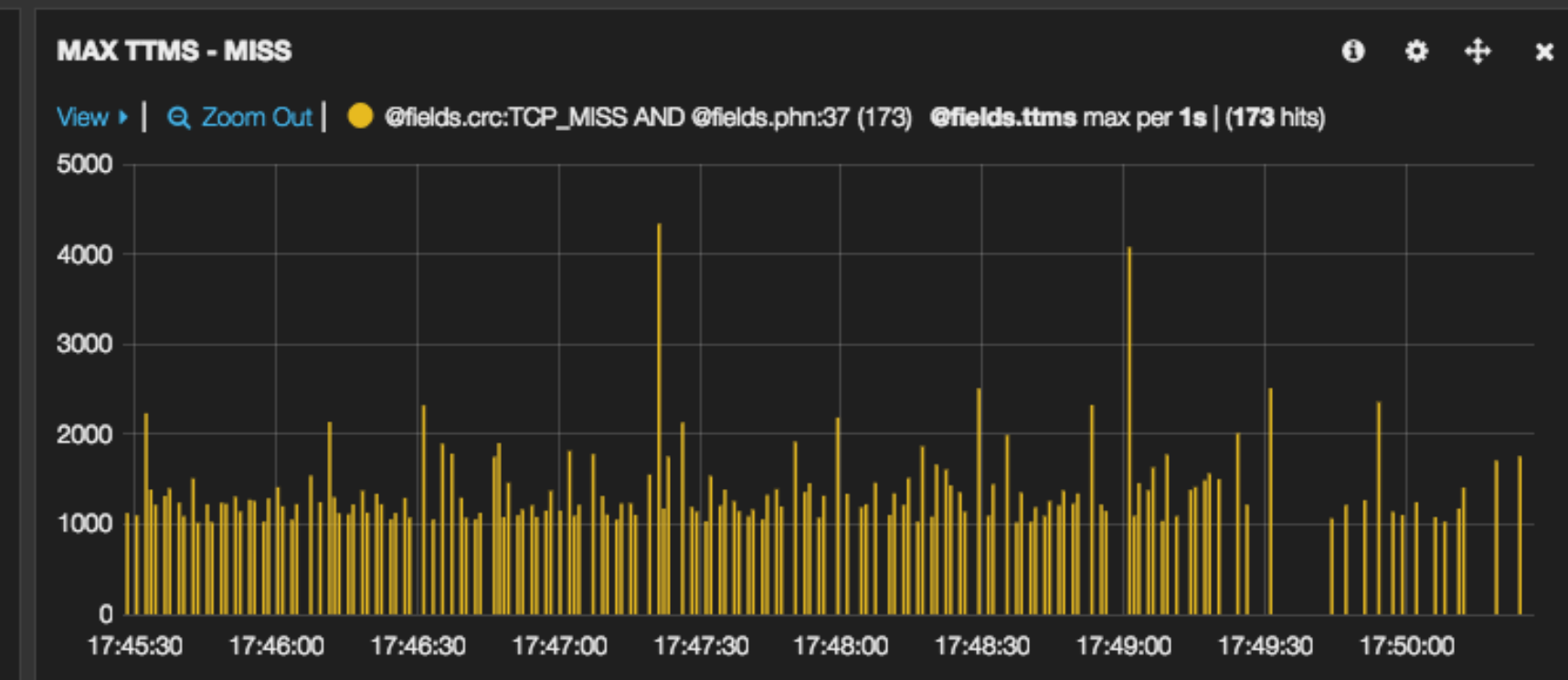
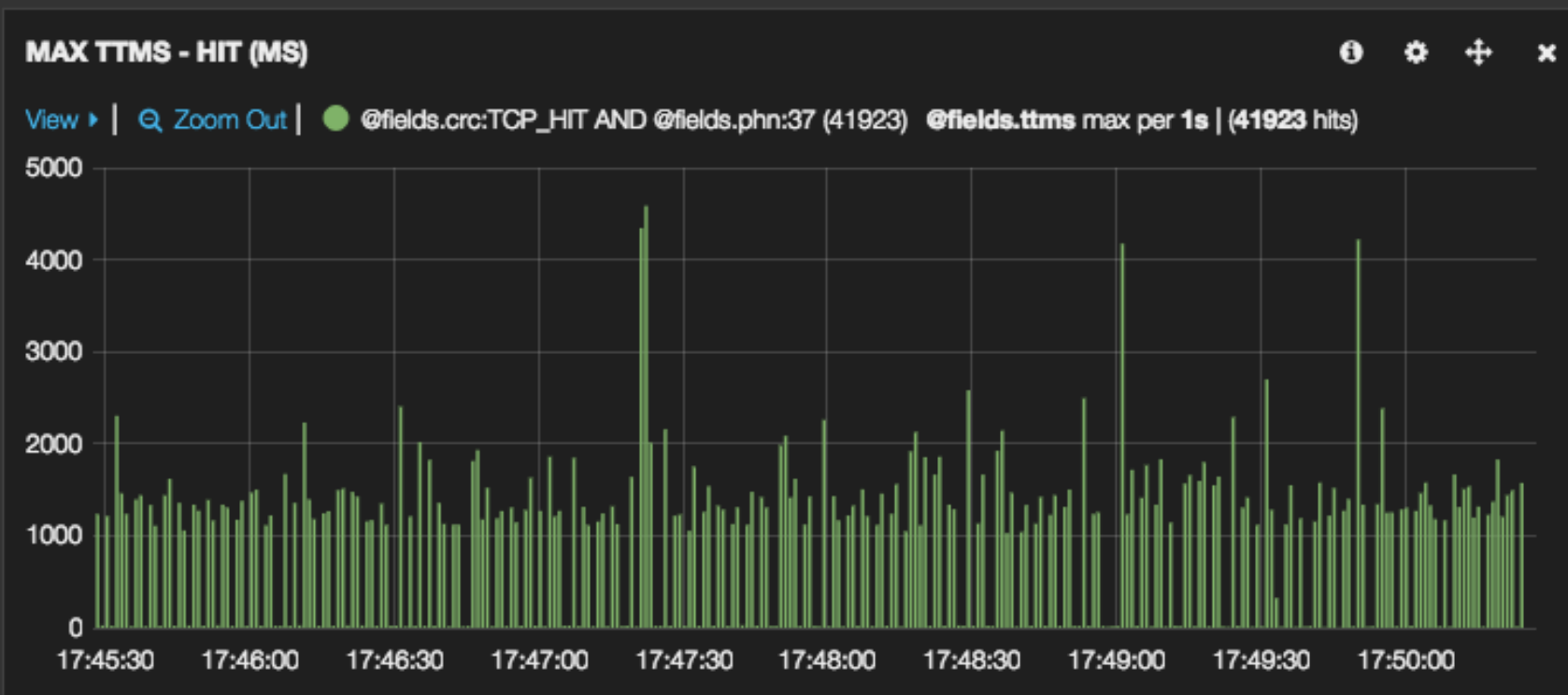
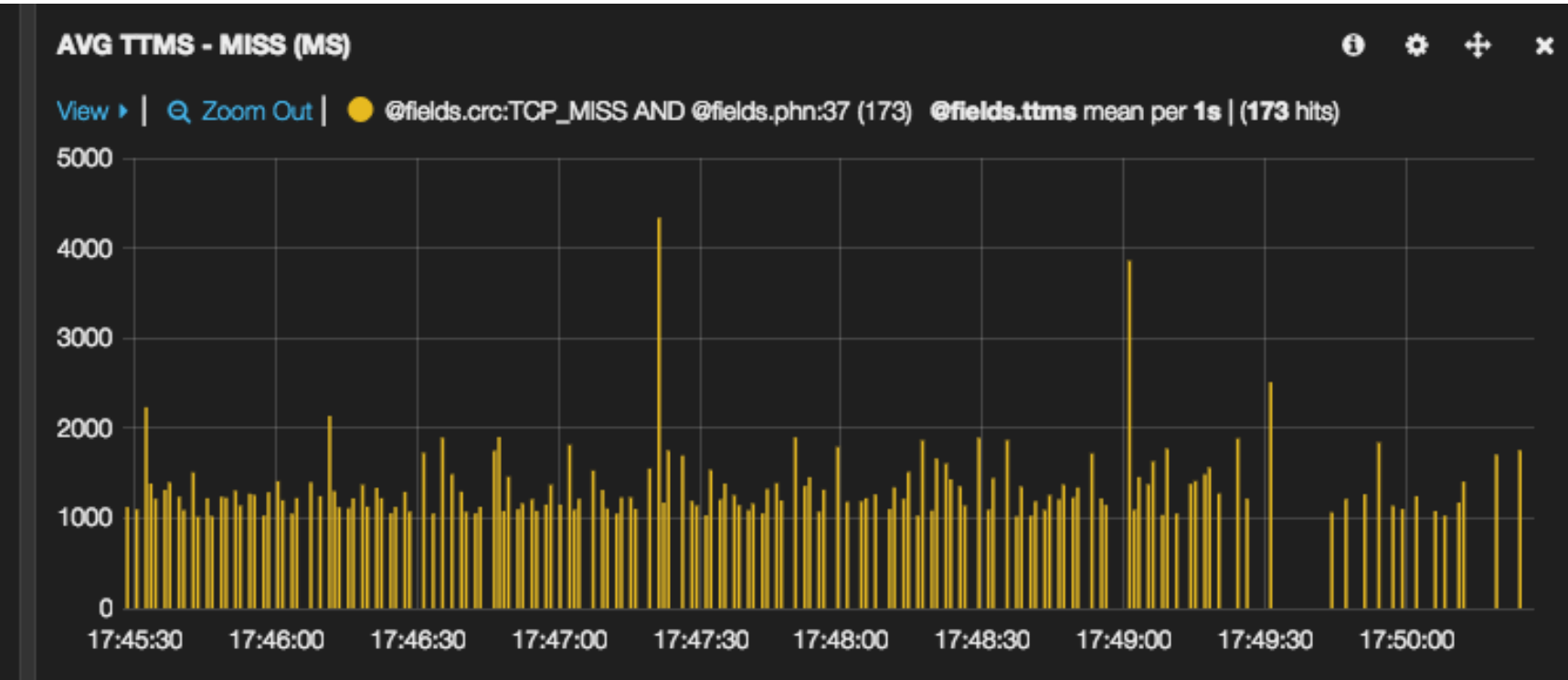
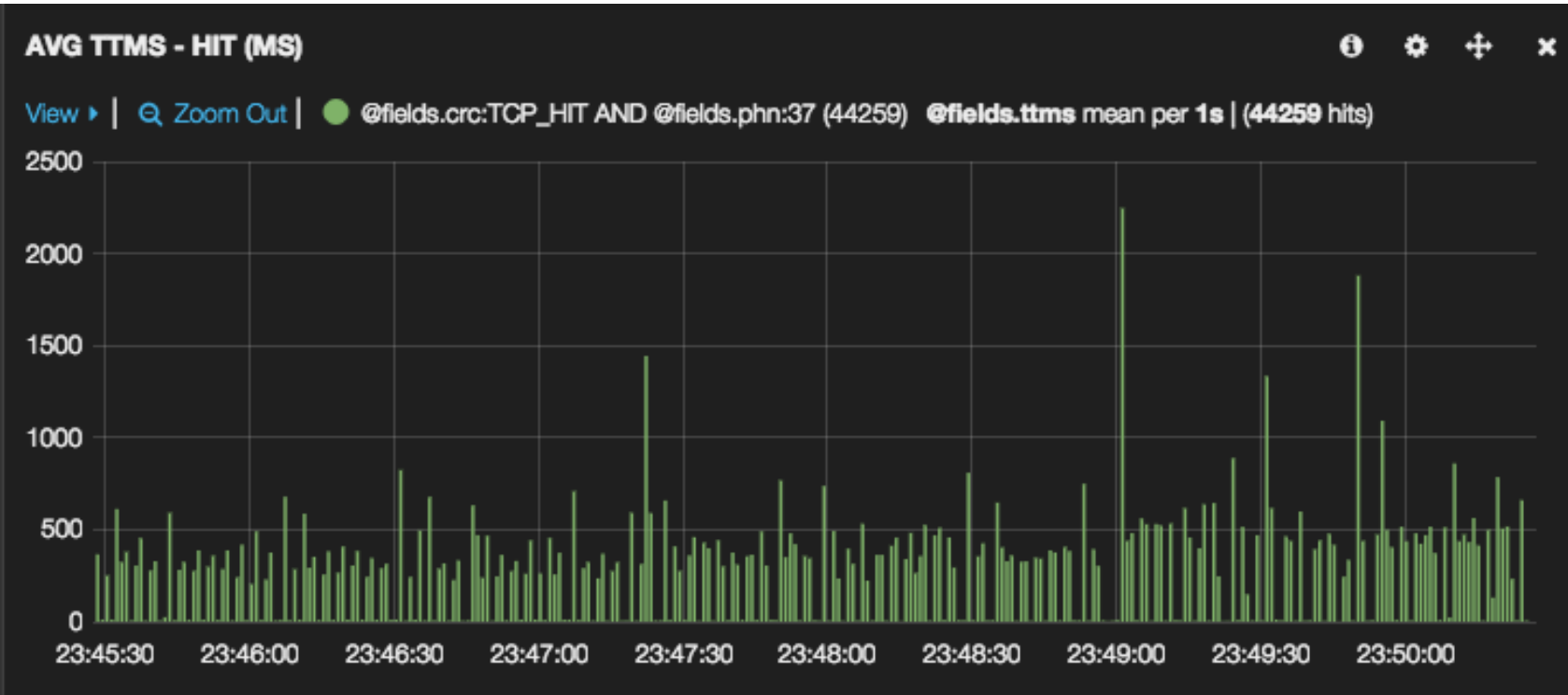
```
[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$|^$#'
LoadModule hotair_module /usr/lib64/httpd/modules/mod_hotair.so
<LocationMatch "(\\.ism*|\\.f4m|.*Seg\\d-Frag\\d.*|\\.m3u8|\\.ts)">
  SetHandler hotair
</LocationMatch>
```

HotairDelayParetoParams 4.2 1

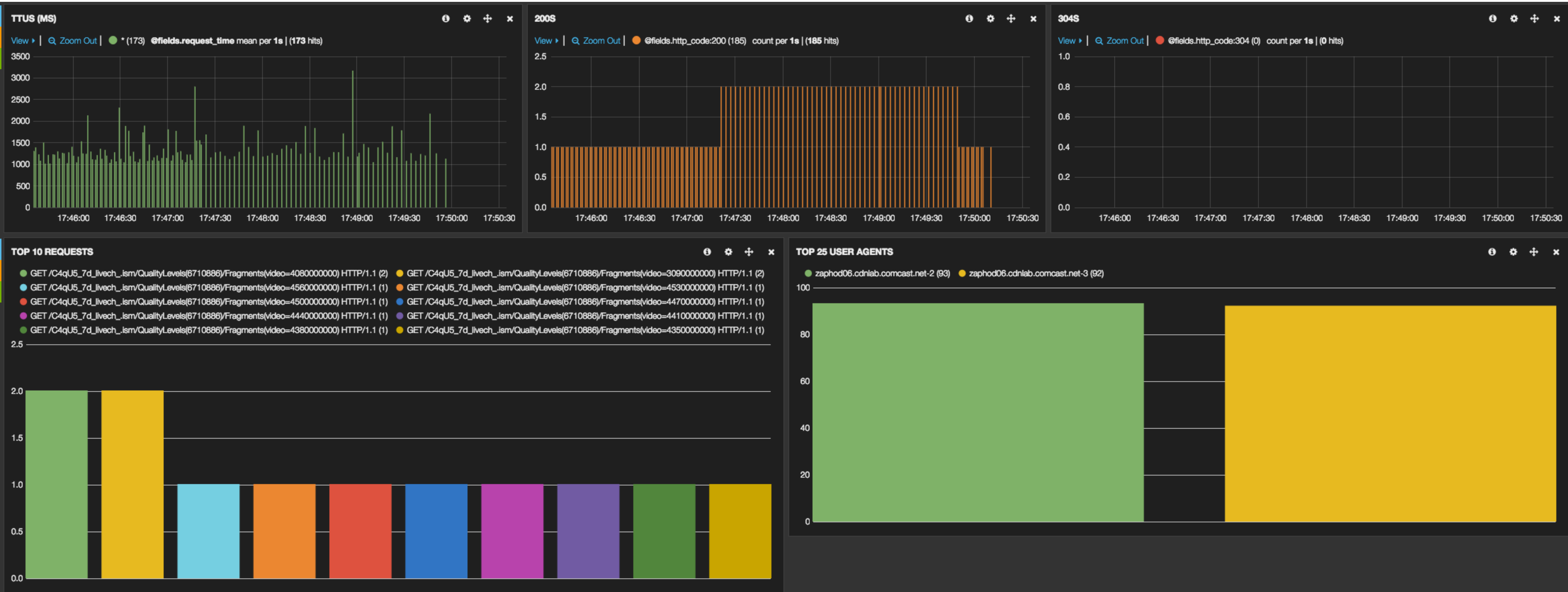
```
[root@zaphod02 ~]#
```

Pareto distribution, 100000 samples, power=4.2, scale=1.0				
Start bucket	End bucket	Count	% in	% longer
1.00	1.25	60819	60.8%	100.0%
1.25	1.50	20978	21.0%	39.2%
1.50	1.75	8756	8.8%	18.2%
1.75	2.00	4016	4.0%	9.4%
2.00	2.25	2089	2.1%	5.4%
2.25	2.50	1198	1.2%	3.3%
2.50	2.75	724	0.7%	2.1%
2.75	3.00	431	0.4%	1.4%
3.00	3.25	288	0.3%	1.0%
3.25	3.50	185	0.2%	0.7%
3.50	3.75	119	0.1%	0.5%
3.75	4.00	103	0.1%	0.4%
4.00	4.25	67	0.1%	0.3%
4.25	4.50	58	0.1%	0.2%
4.50	4.75	36	0.0%	0.2%
4.75	5.00	33	0.0%	0.1%
5.00	5.25	26	0.0%	0.1%
5.25	5.50	7	0.0%	0.1%
5.50	5.75	14	0.0%	0.1%
5.75	6.00	6	0.0%	0.0%
6.00	6.25	7	0.0%	0.0%
6.25	6.50	5	0.0%	0.0%
6.50	6.75	4	0.0%	0.0%
6.75	7.00	5	0.0%	0.0%
7.00	7.25	4	0.0%	0.0%
7.25	7.50	2	0.0%	0.0%
7.50	7.75	3	0.0%	0.0%
7.75	8.00	0	0.0%	0.0%
8.00	8.25	4	0.0%	0.0%
8.25	8.50	1	0.0%	0.0%
8.50	8.75	3	0.0%	0.0%
8.75	9.00	2	0.0%	0.0%
9.00	9.25	0	0.0%	0.0%
9.25	9.50	1	0.0%	0.0%
9.50	9.75	0	0.0%	0.0%
9.75	10.00	0	0.0%	0.0%

Mid graphs

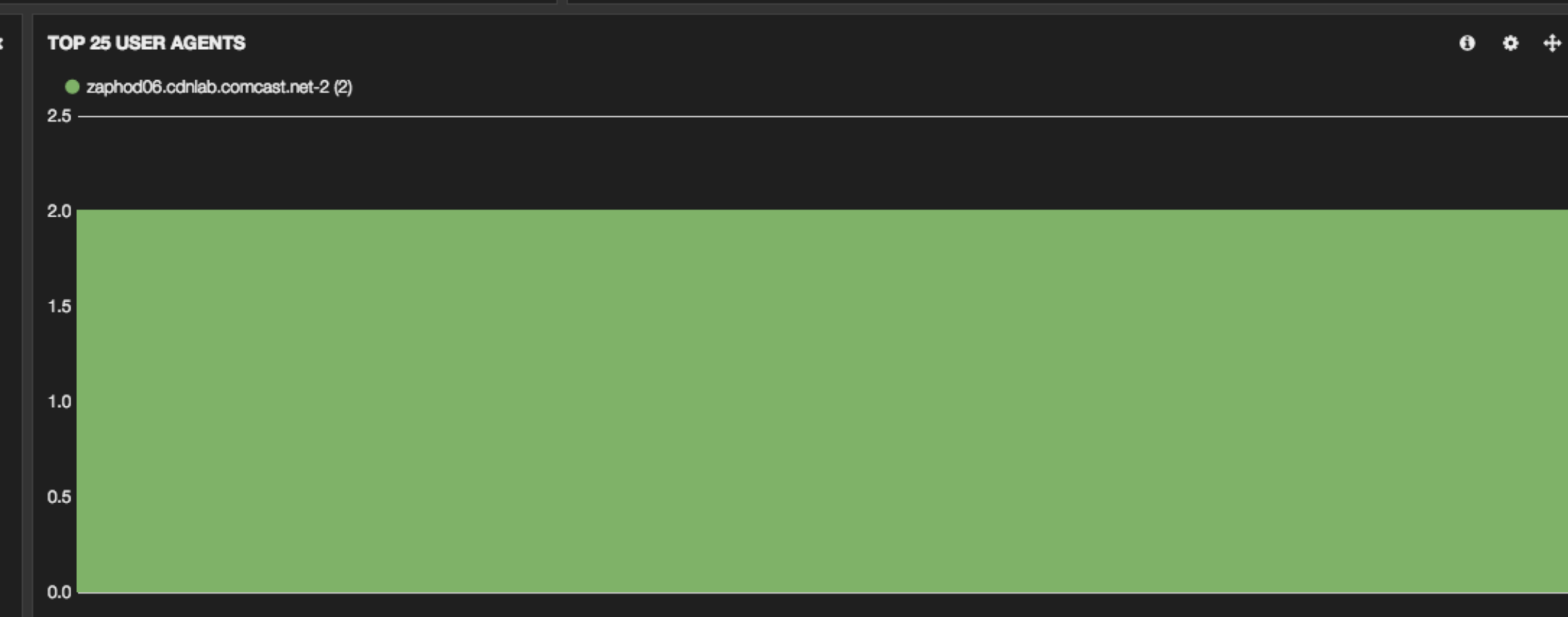
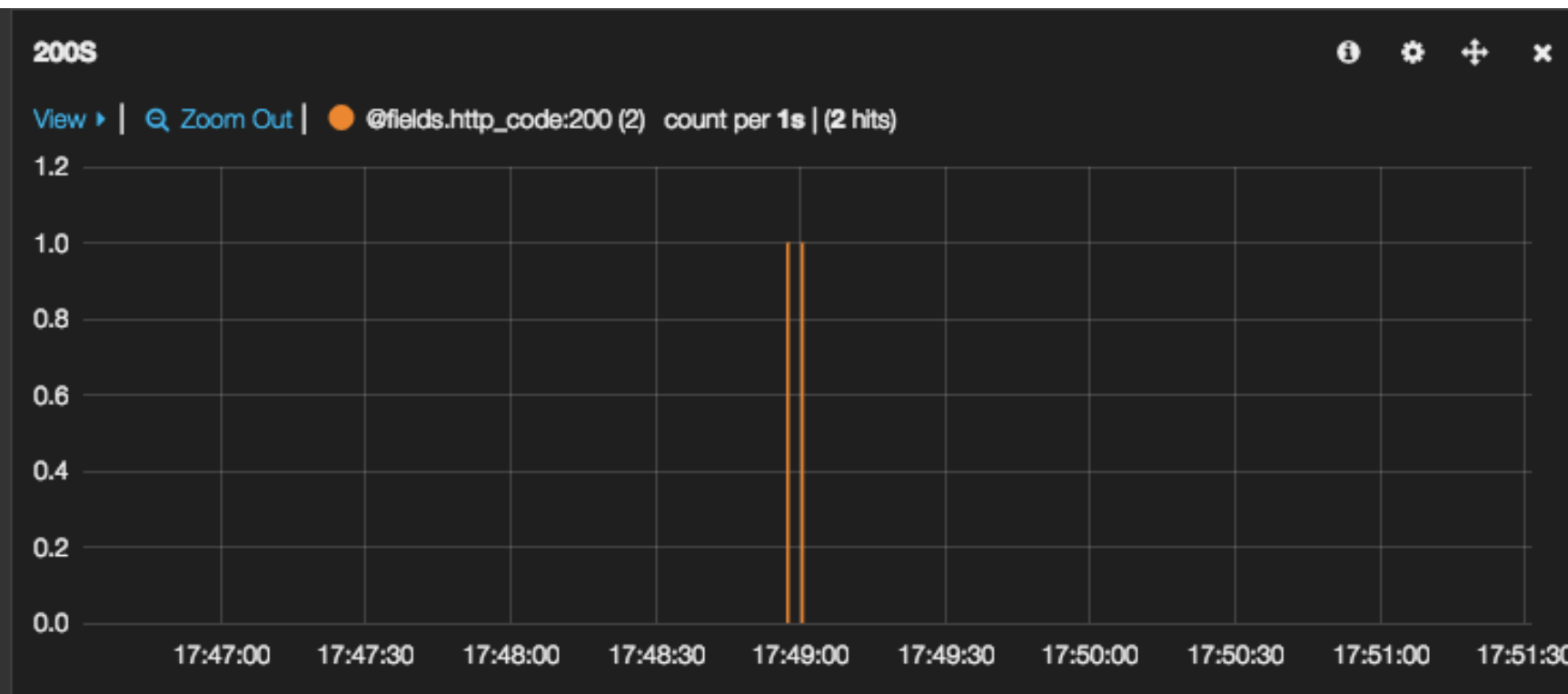
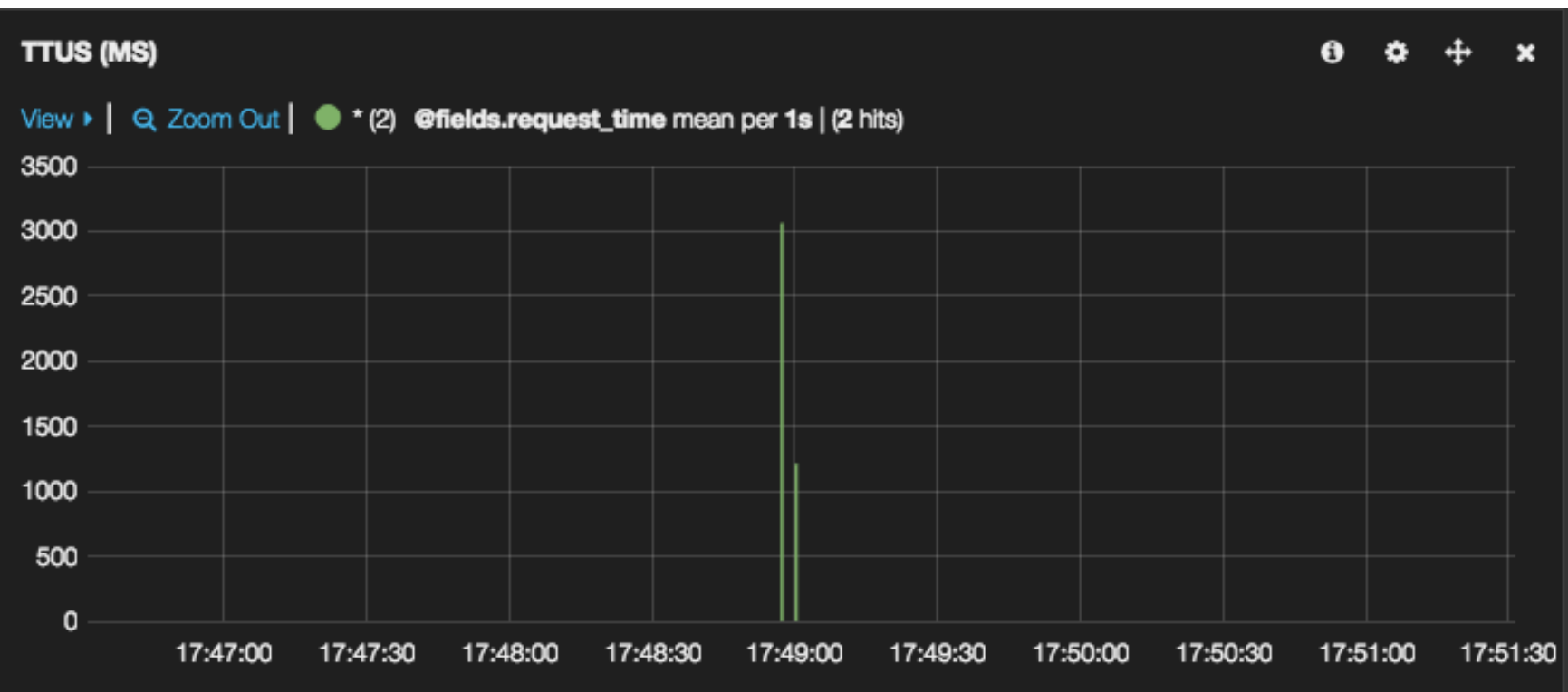


Origin graphs



Zoom In

Origin graphs



EVENTS

0 to 2 of 2 available for paging

Fields	@timestamp	@fields.sec_frac	@fields.request	@fields.http_user_agent	@fields.request_time	@fields.http_code
All (27) / Current (21)	2014-10-20T23:48:57.000Z	0.928	GET /C4qU5_7d_livech_ism/QualityLevels(6710886)/Fragments(video=4080000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-2	3062679	200
Type to filter...	2014-10-20T23:49:00.000Z	0.352	GET /C4qU5_7d_livech_ism/QualityLevels(6710886)/Fragments(video=4080000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-2	1212453	200

Make Pareto dist more dramatic

```
[mtorlu9137e@zaphod06]lcontrol$ cat fwd_proxy_tight_c37.json
```

```
{
  "clients": "480",
  "bitrate": "2500000",
  "test_type": "TestEngines::LLL",
  "abr_type": "hls",
  "frag_duration": "50000000",
  "origins": "1",
  "live": "100",
  "active_channels": "1",
  "vod_cache_name": "load-test-01.cdnlab.comcast.net",
  "live_cache_name": "live-orig-01-dns.cdnlab.comcast.net",
  "cache_ip": "69.241.62.86",
  "vod_cache_hitratio": "80",
  "live_active_fragments": "2",
  "vod_bitrates": "4300000,3000000",
  "live_bitrates": "6710886,5033164",
  "max_long_tts_percentage": "0.5",
  "long_tts_time": "1.5",
  "proxy_mode": "forward",
  "ipv6_percentage": 0,
  "via_headers": 1
}
```

```
[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$|^#'
```

```
LoadModule hotair_module /usr/lib64/httpd/modules/mod_hotair.so
```

```
<LocationMatch "(\\.ism*|\\.f4m|\\.Seg\\d-Frag\\d.*|\\.m3u8|\\.ts)">
```

```
    SetHandler hotair
```

```
</LocationMatch>
```

HotairDelayParetoParams 3.8 1

```
[root@zaphod02 ~]#
```

```
[mtorlu9137e@zaphod06]lcontrol$
```

```
[mtorlu9137e@ipcdn-cache-37]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn
```

```
Mon Oct 20 21:53:17 UTC 2014
```

```
Version of this script: 0.34e
```

```
ERROR Lines in /opt/trafficserver/etc/trafficserver//plugin.config do not match Twelve Monkeys.
```

```
ERROR Config file: plugin.config line only on disk: header_rewrite.so hrrw.conf
```

```
[mtorlu9137e@ipcdn-cache-37]~$
```

```
[mtorlu9137e@ipcdn-cache-37]~$ sudo cat /usr/local/etc/header_rewrite/hrrw.conf | grep -v '^$|^#'
```

```
cond %{READ_REQUEST_HDR_HOOK}
```

```
cond %{HEAD} = live-orig-01-dns.cdnlab.comcast.net
```

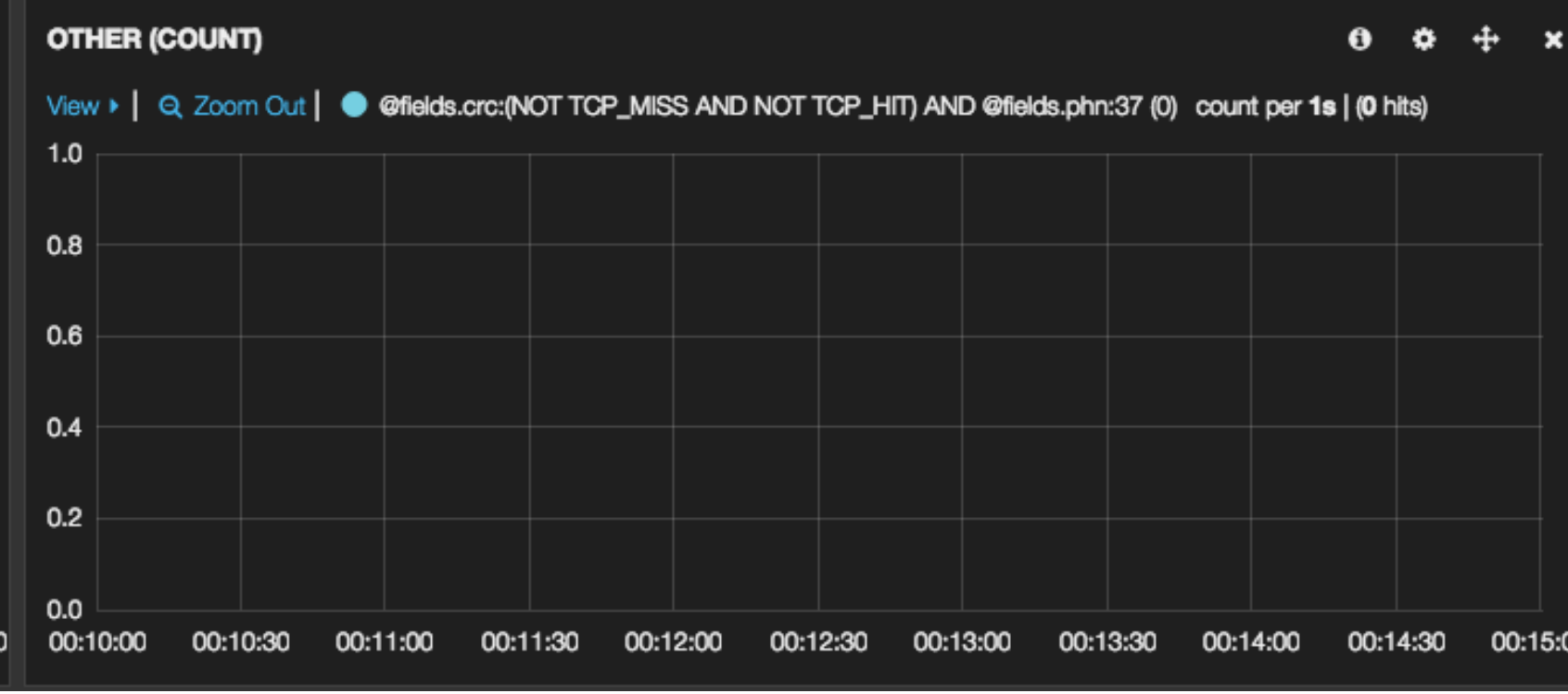
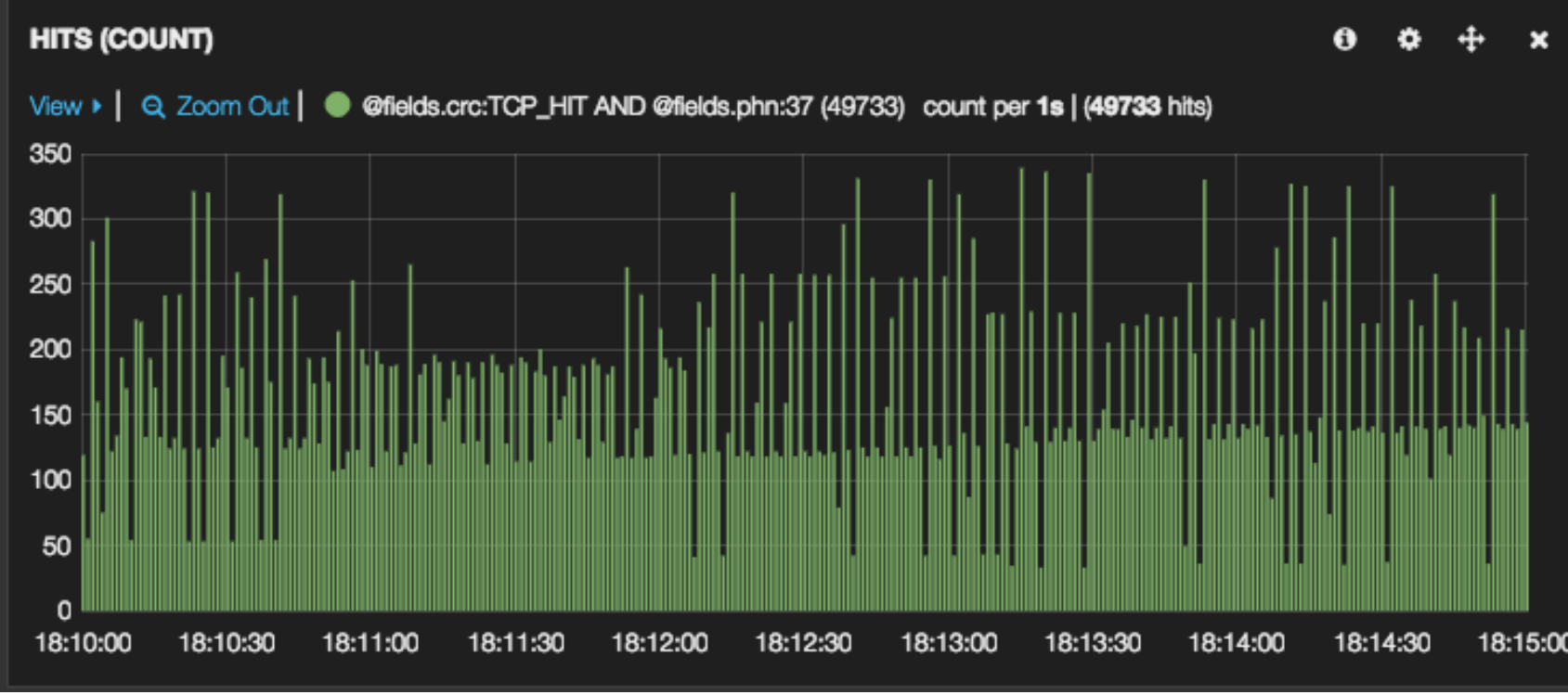
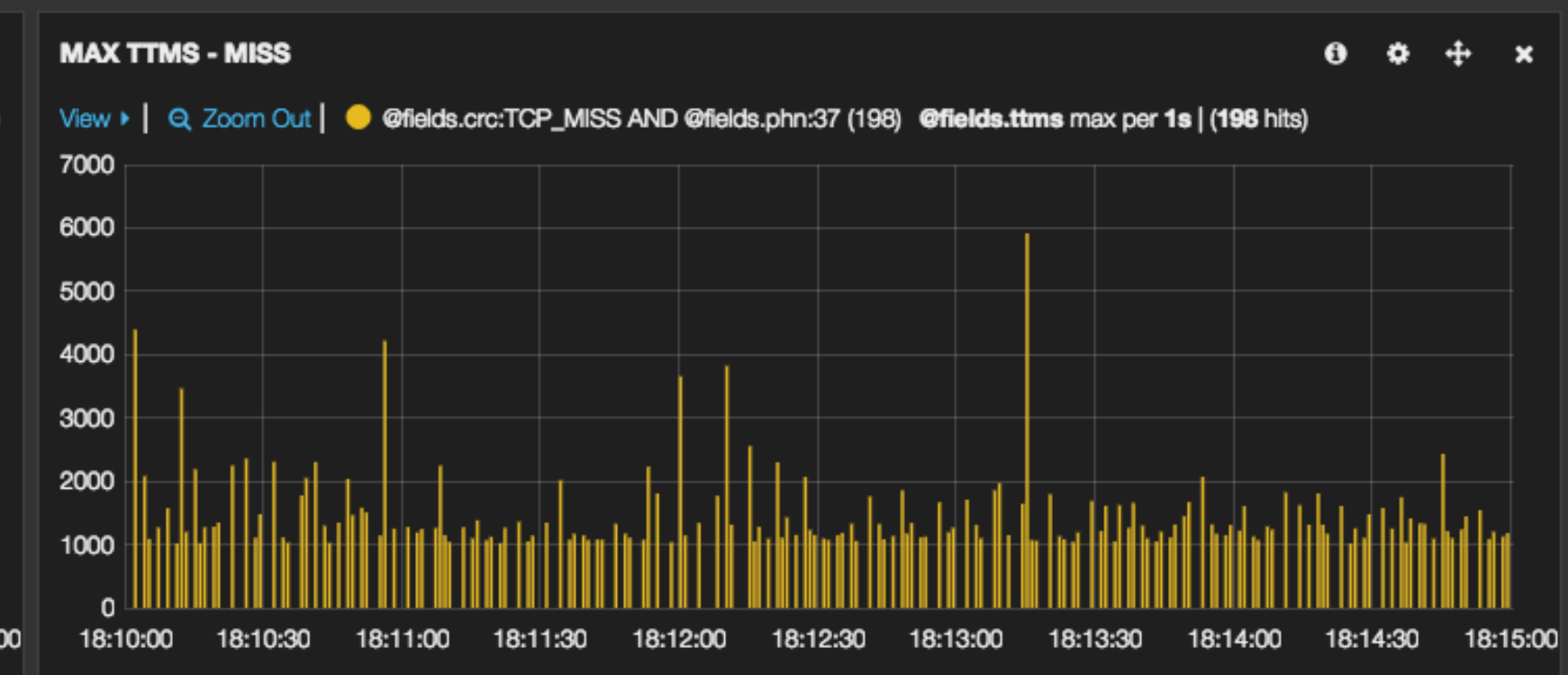
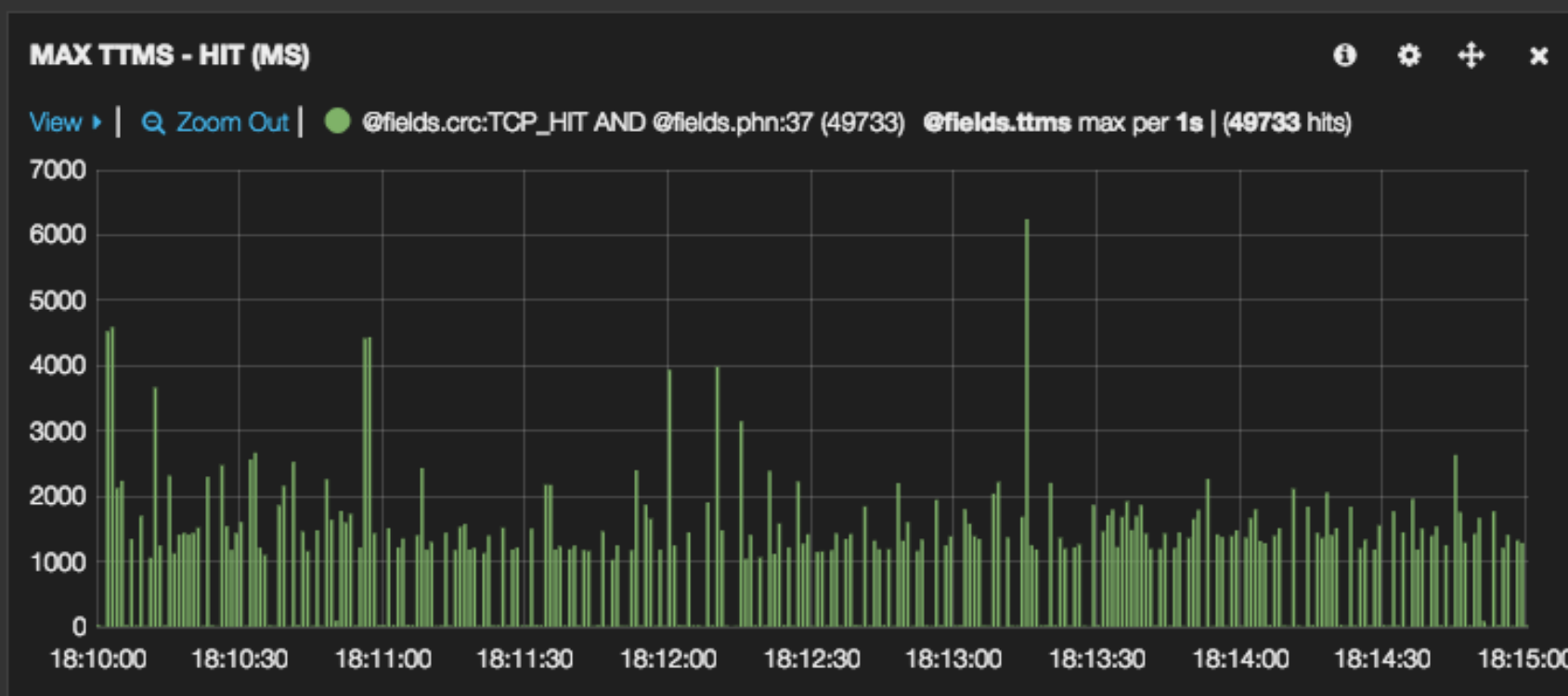
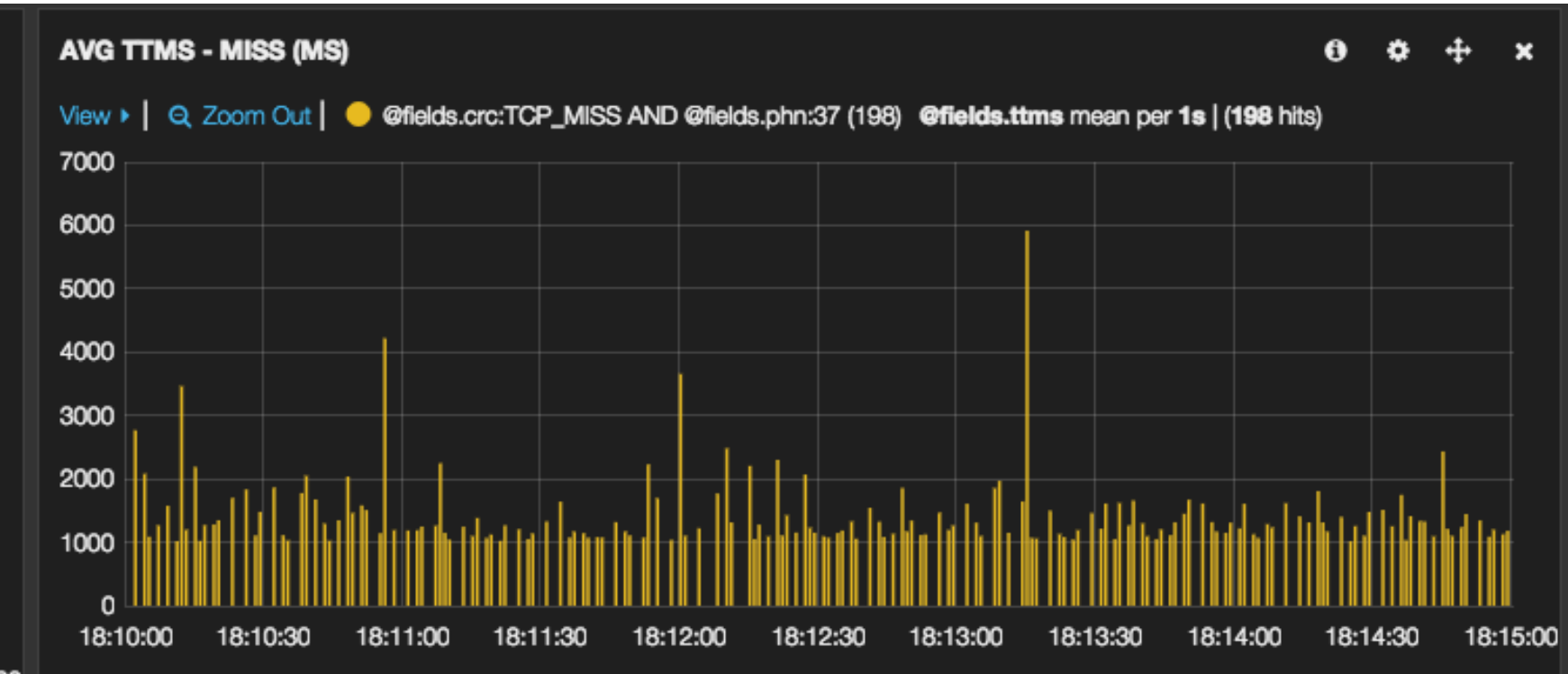
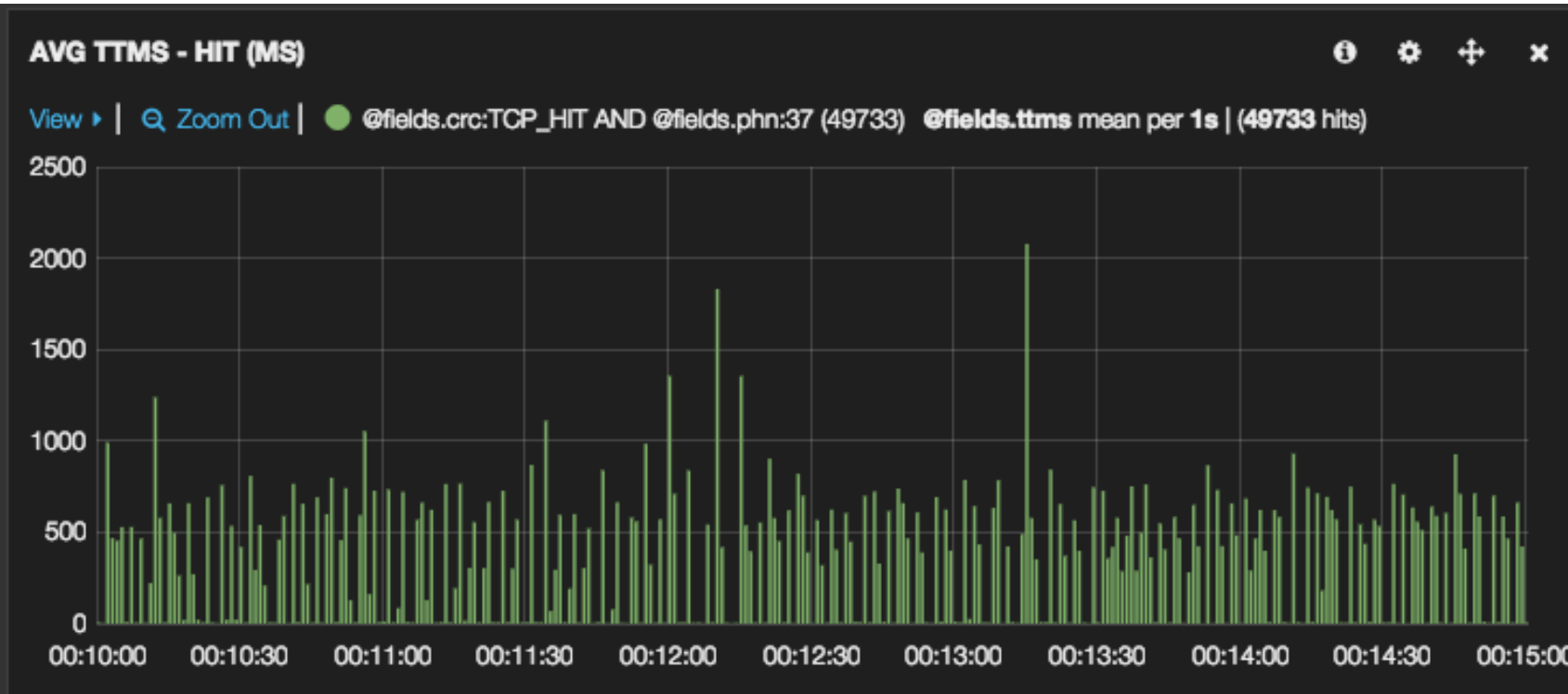
```
set-config proxy.config.http.connect_attempts_timeout 2
```

```
set-config proxy.config.http.connect_attempts_max_retries_dead_server 1 [L]
```

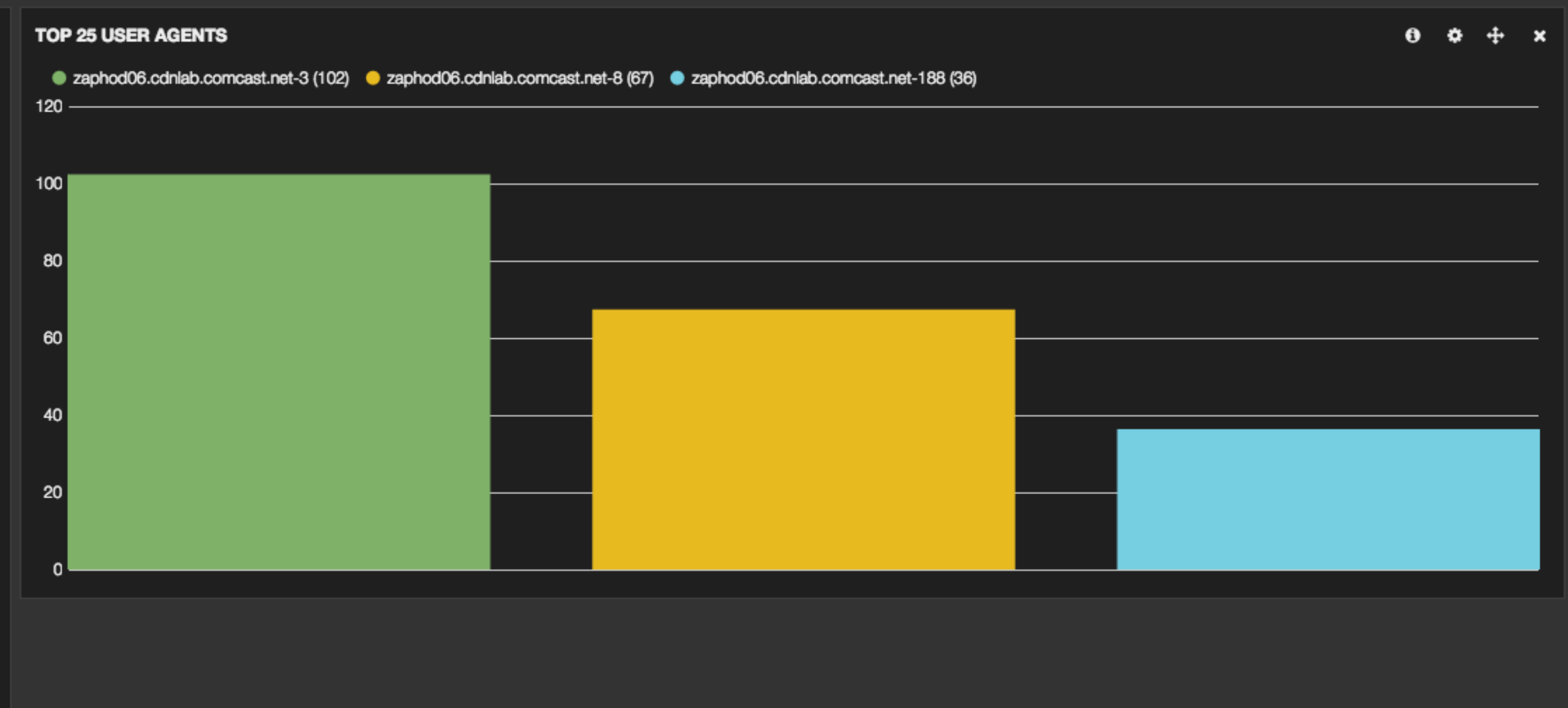
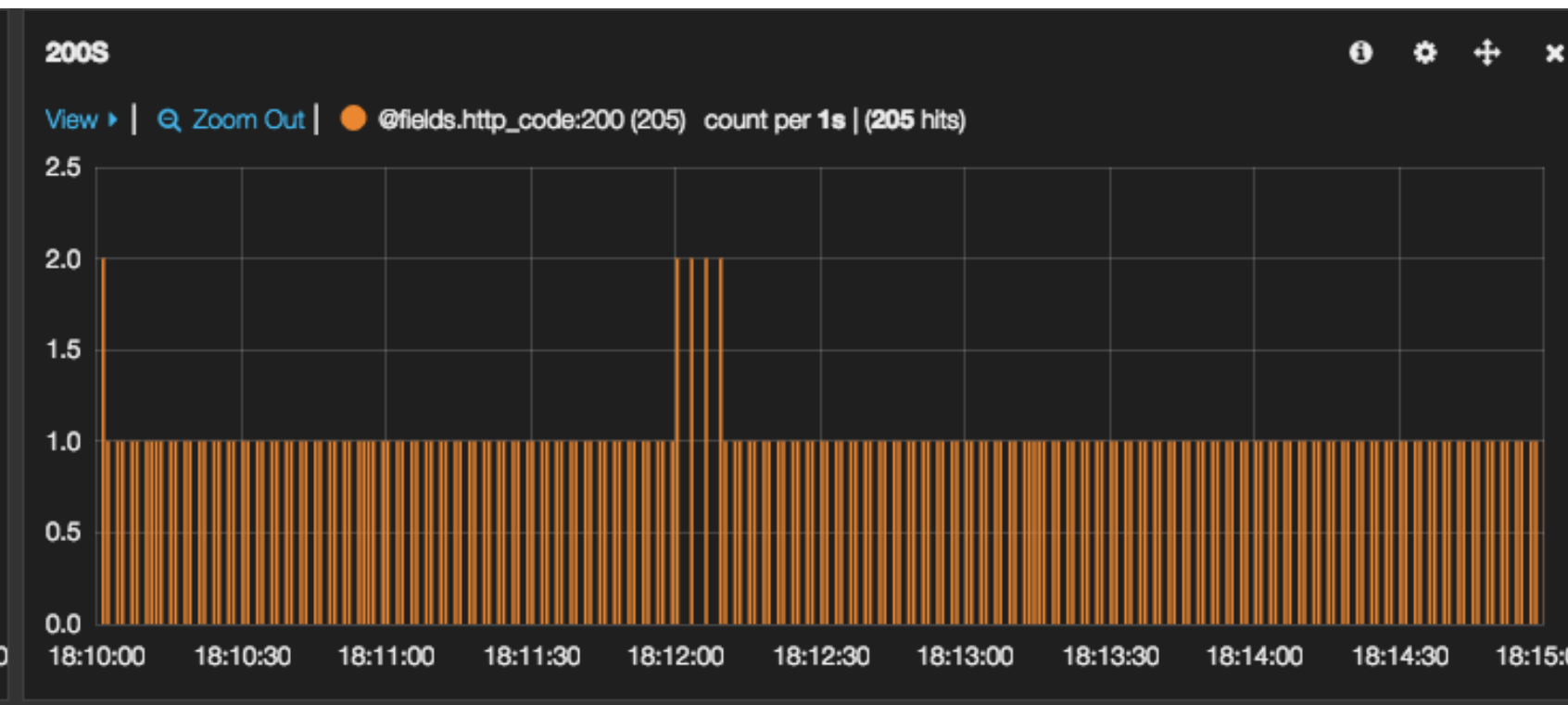
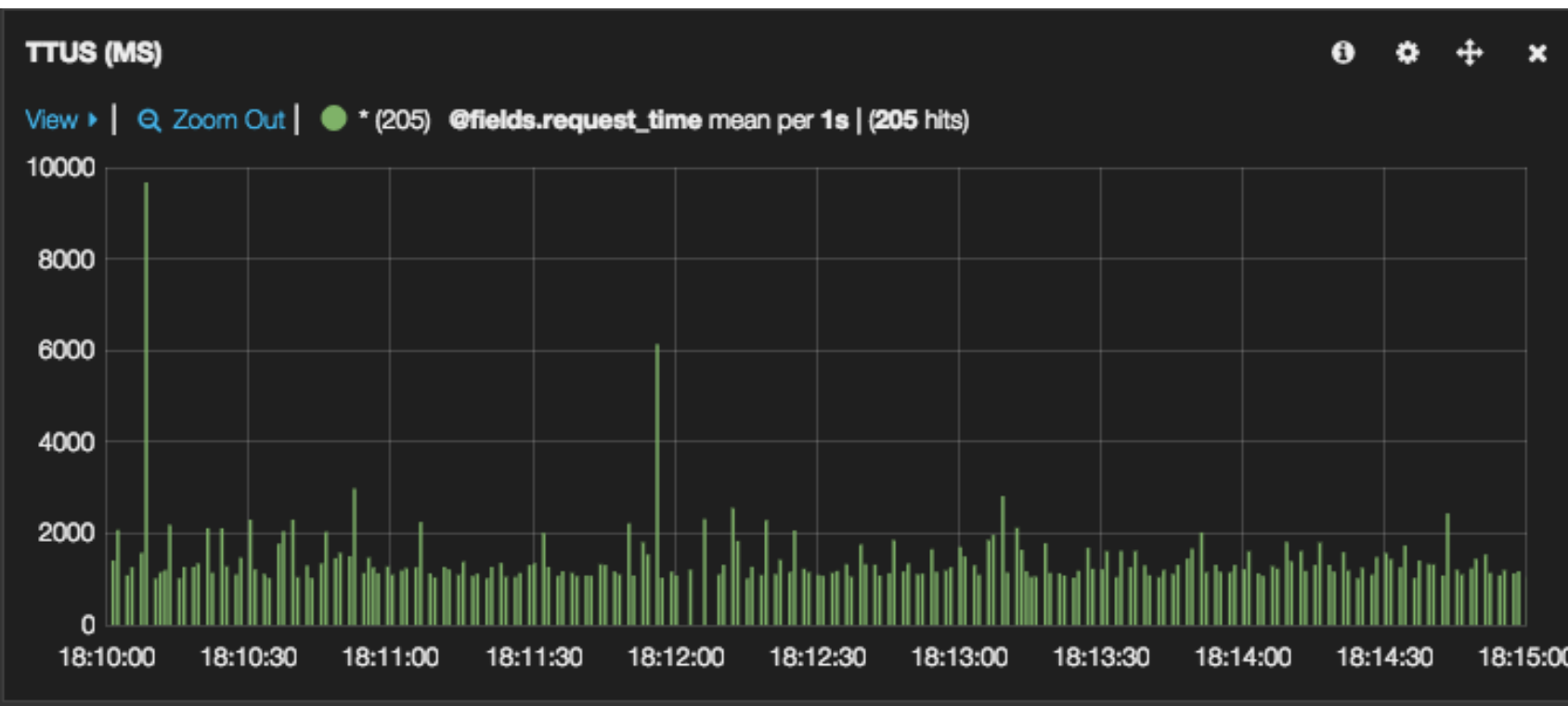
```
[mtorlu9137e@ipcdn-cache-37]~$
```

Pareto distribution, 100000 samples, power=3.8, scale=1.0				
Start bucket	End bucket	Count	% in	% longer
1.00	1.25	57156	57.2%	100.0%
1.25	1.50	21477	21.5%	42.8%
1.50	1.75	9570	9.6%	21.4%
1.75	2.00	4654	4.7%	11.8%
2.00	2.25	2532	2.5%	7.1%
2.25	2.50	1525	1.5%	4.6%
2.50	2.75	933	0.9%	3.1%
2.75	3.00	613	0.6%	2.1%
3.00	3.25	416	0.4%	1.5%
3.25	3.50	287	0.3%	1.1%
3.50	3.75	194	0.2%	0.8%
3.75	4.00	131	0.1%	0.6%
4.00	4.25	93	0.1%	0.5%
4.25	4.50	96	0.1%	0.4%
4.50	4.75	63	0.1%	0.3%
4.75	5.00	42	0.0%	0.2%
5.00	5.25	42	0.0%	0.2%
5.25	5.50	38	0.0%	0.2%
5.50	5.75	22	0.0%	0.1%
5.75	6.00	23	0.0%	0.1%
6.00	6.25	19	0.0%	0.1%
6.25	6.50	5	0.0%	0.1%
6.50	6.75	8	0.0%	0.1%
6.75	7.00	10	0.0%	0.0%
7.00	7.25	4	0.0%	0.0%
7.25	7.50	3	0.0%	0.0%
7.50	7.75	4	0.0%	0.0%
7.75	8.00	6	0.0%	0.0%
8.00	8.25	3	0.0%	0.0%
8.25	8.50	3	0.0%	0.0%
8.50	8.75	3	0.0%	0.0%
8.75	9.00	3	0.0%	0.0%
9.00	9.25	2	0.0%	0.0%
9.25	9.50	3	0.0%	0.0%
9.50	9.75	0	0.0%	0.0%
9.75	10.00	1	0.0%	0.0%

Mid graphs

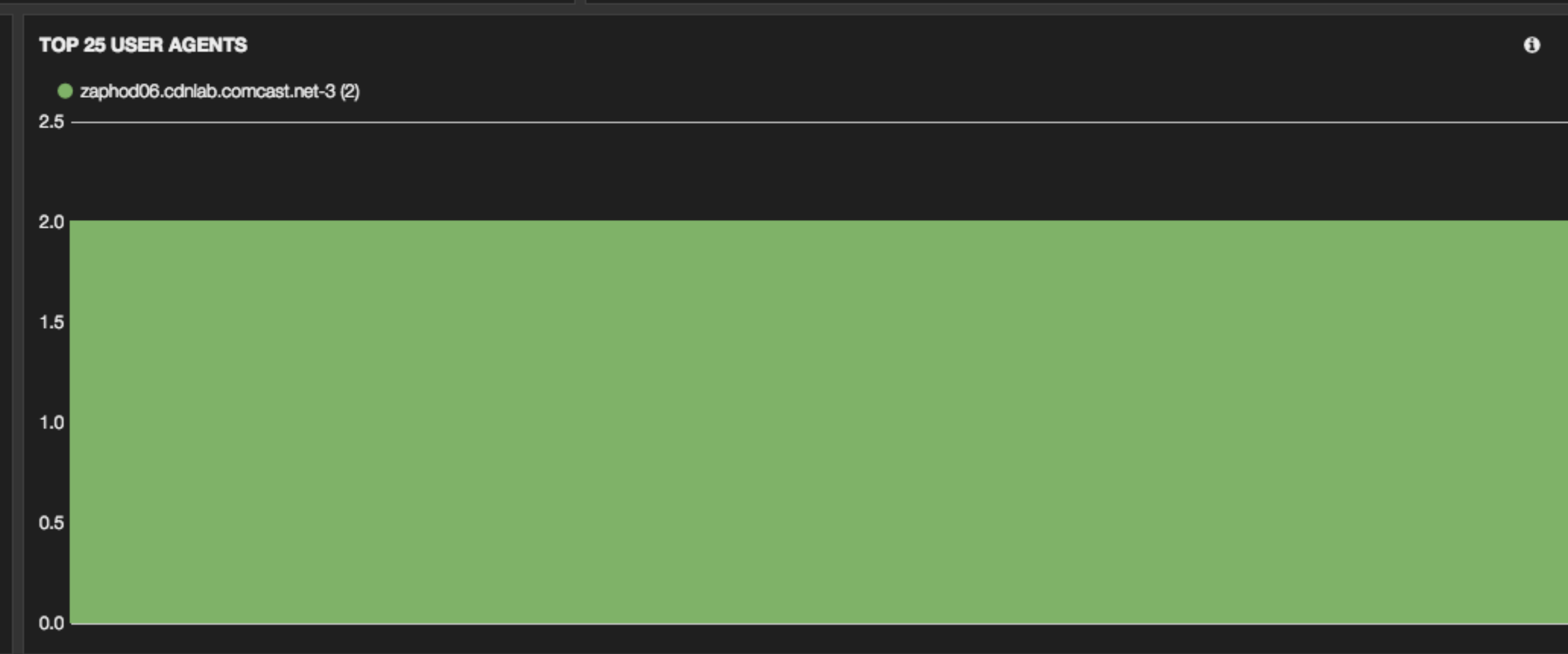
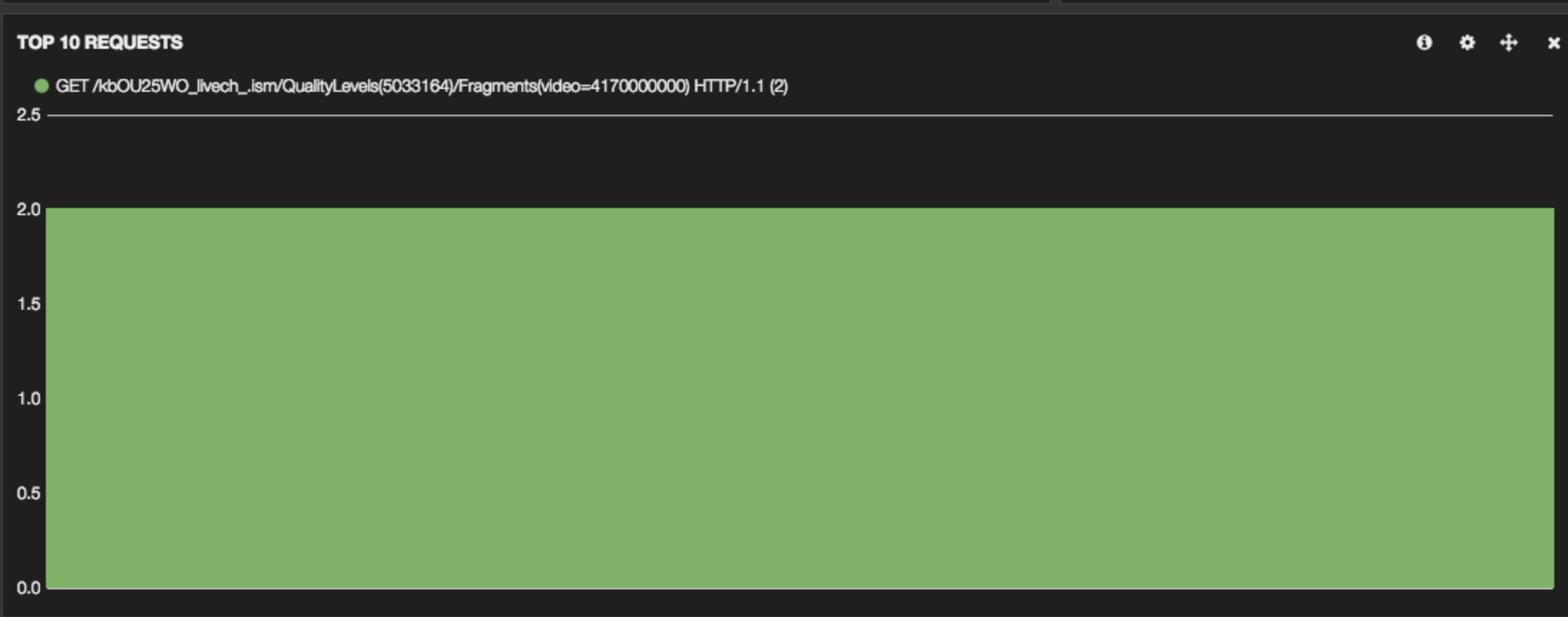
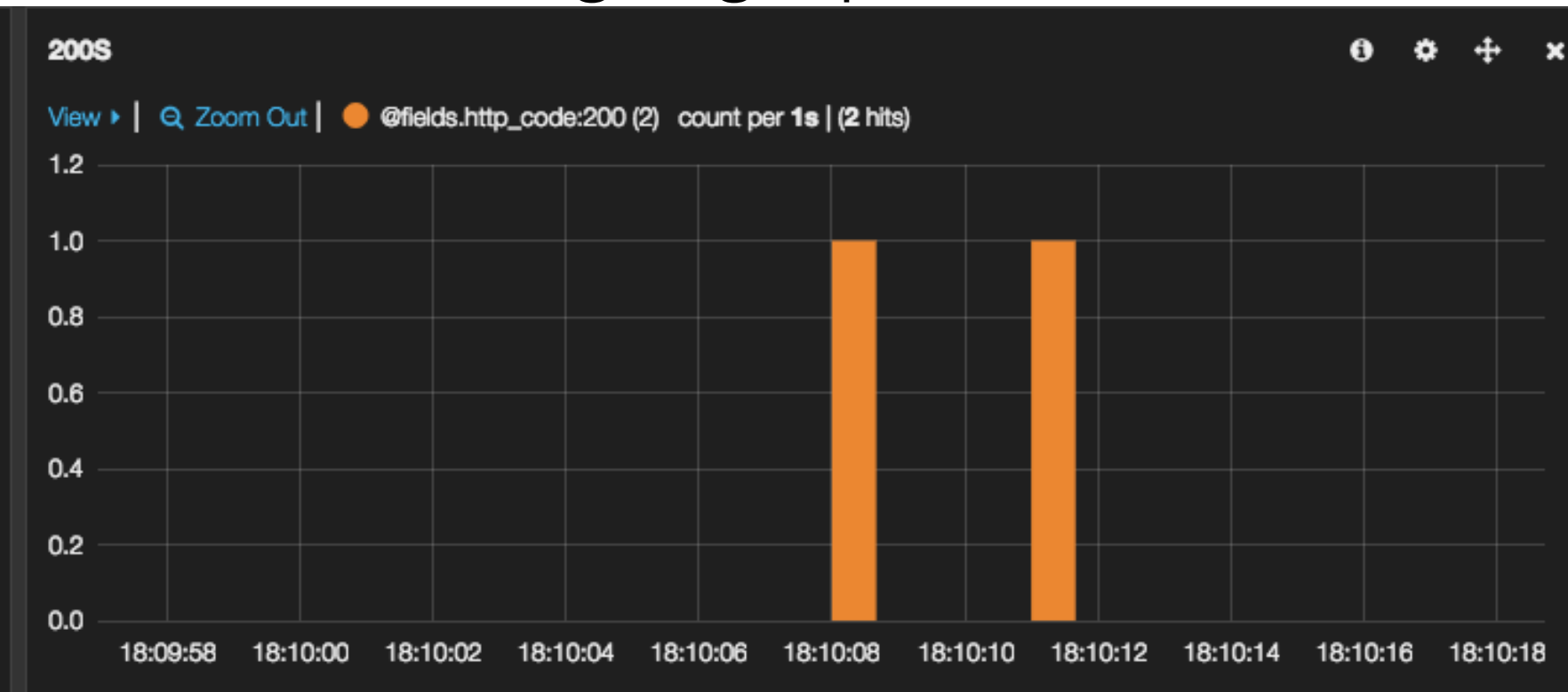
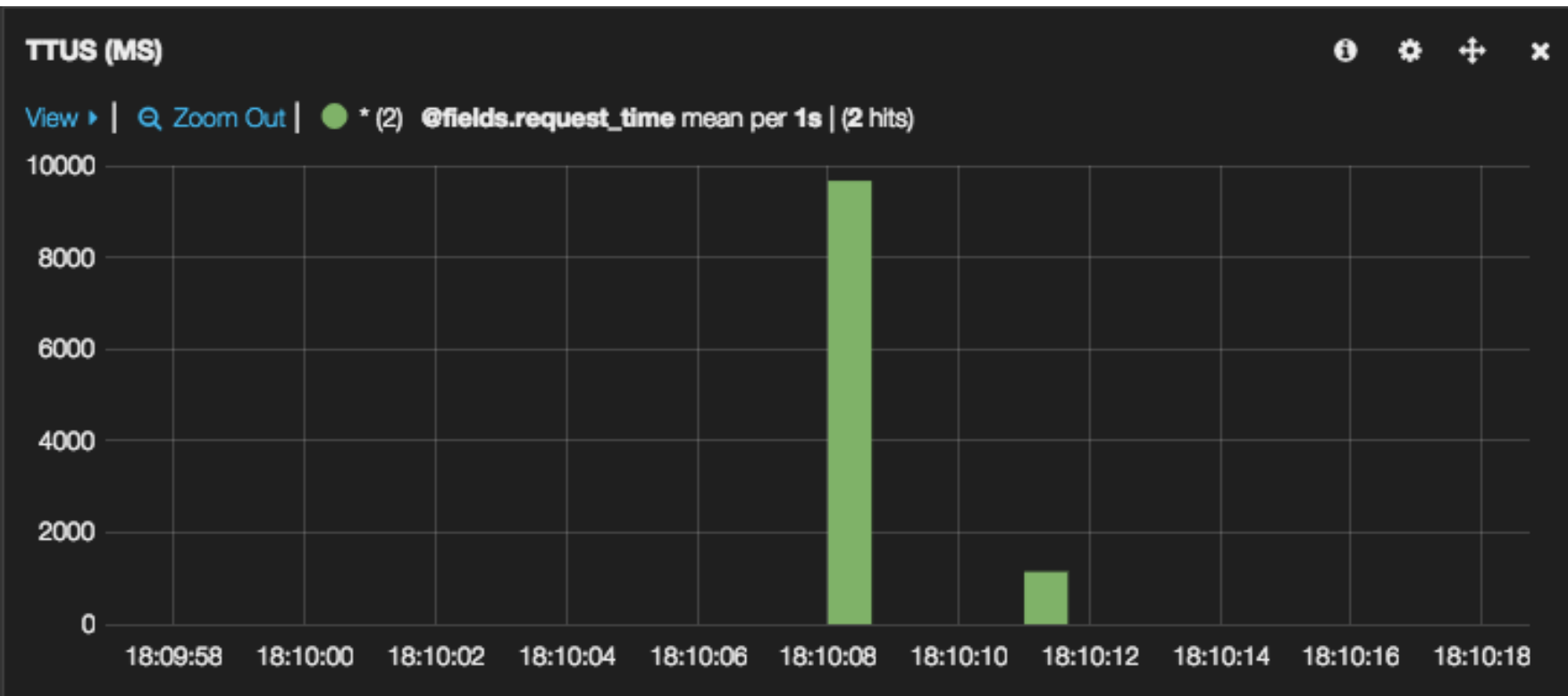


Origin graphs



Zoom In on long tts

Origin graphs

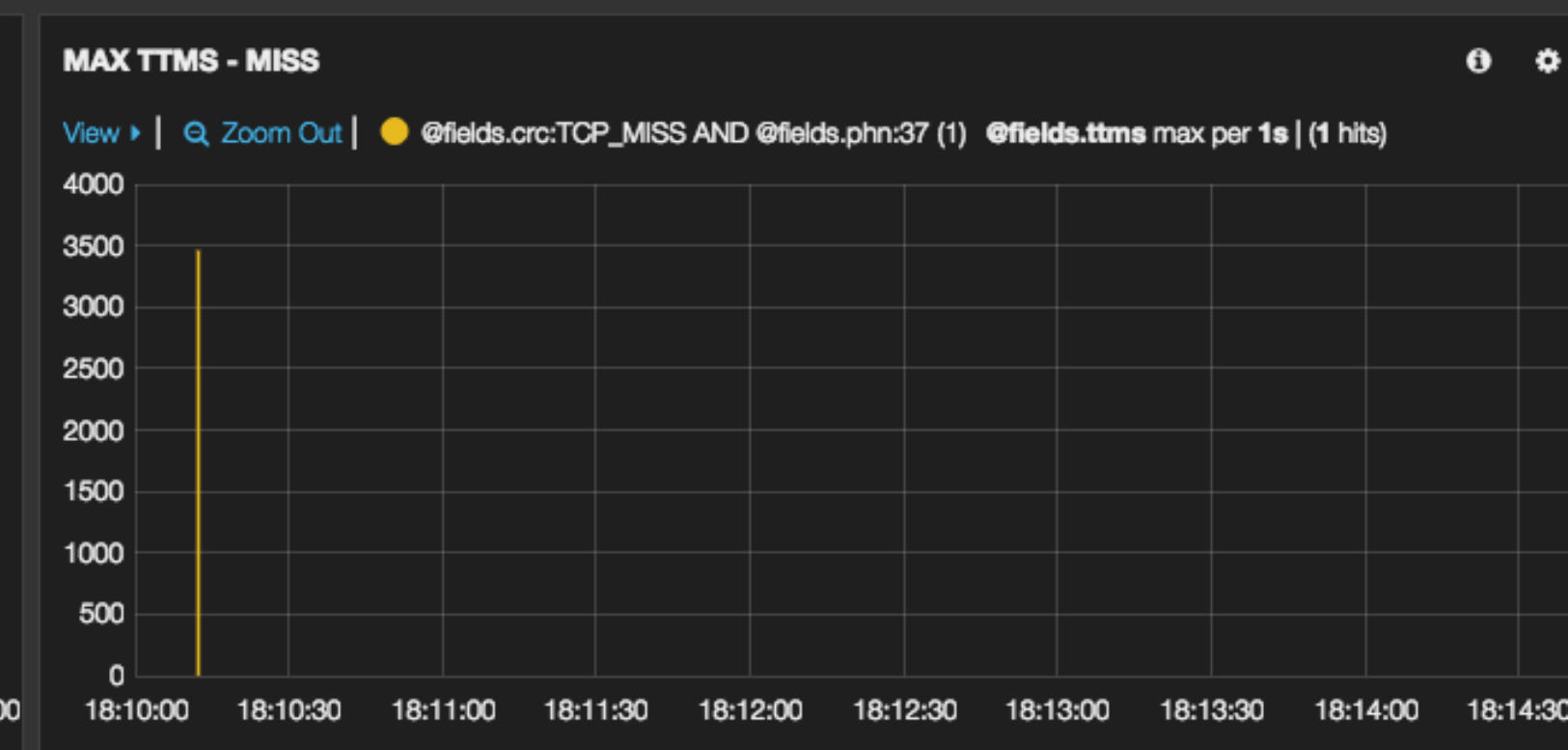
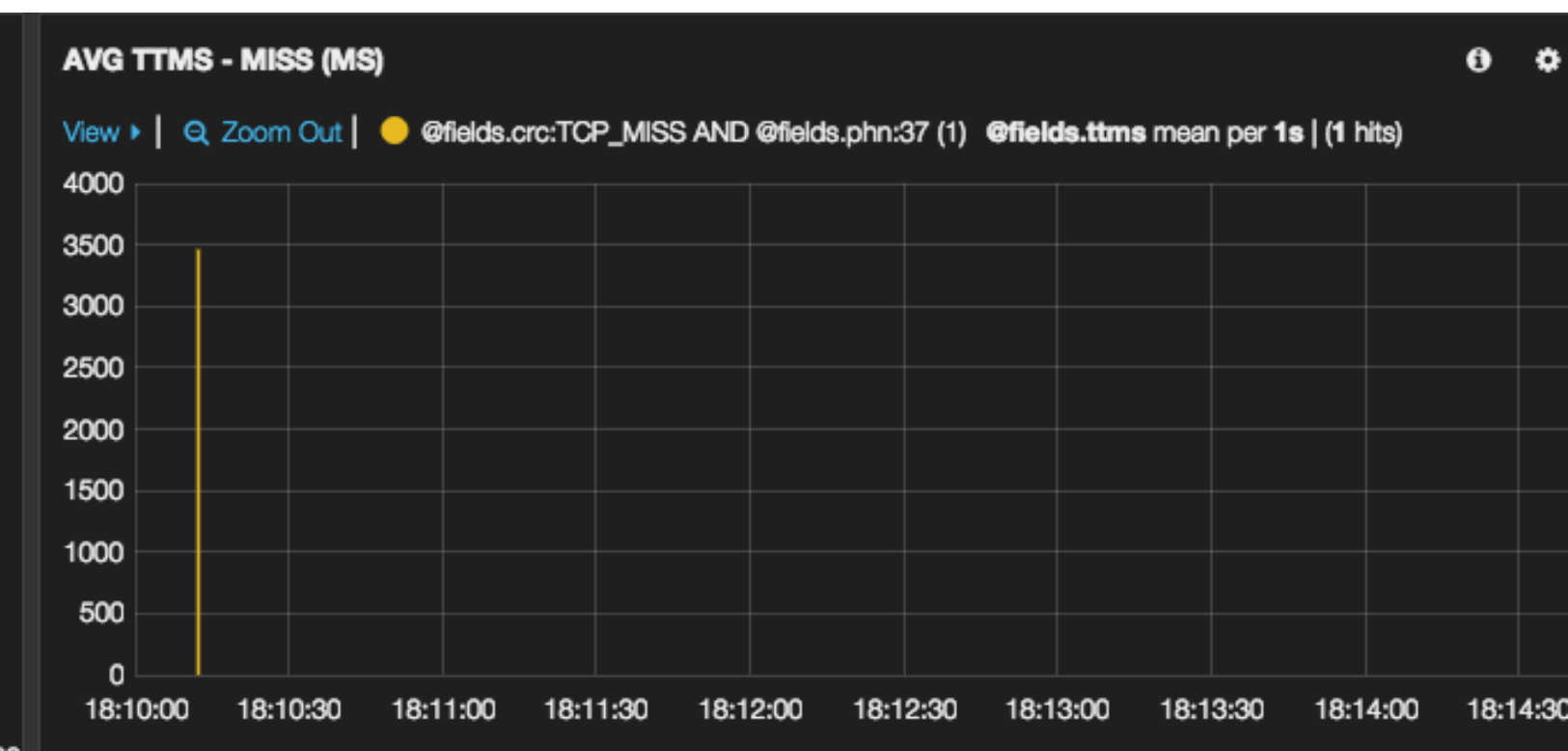
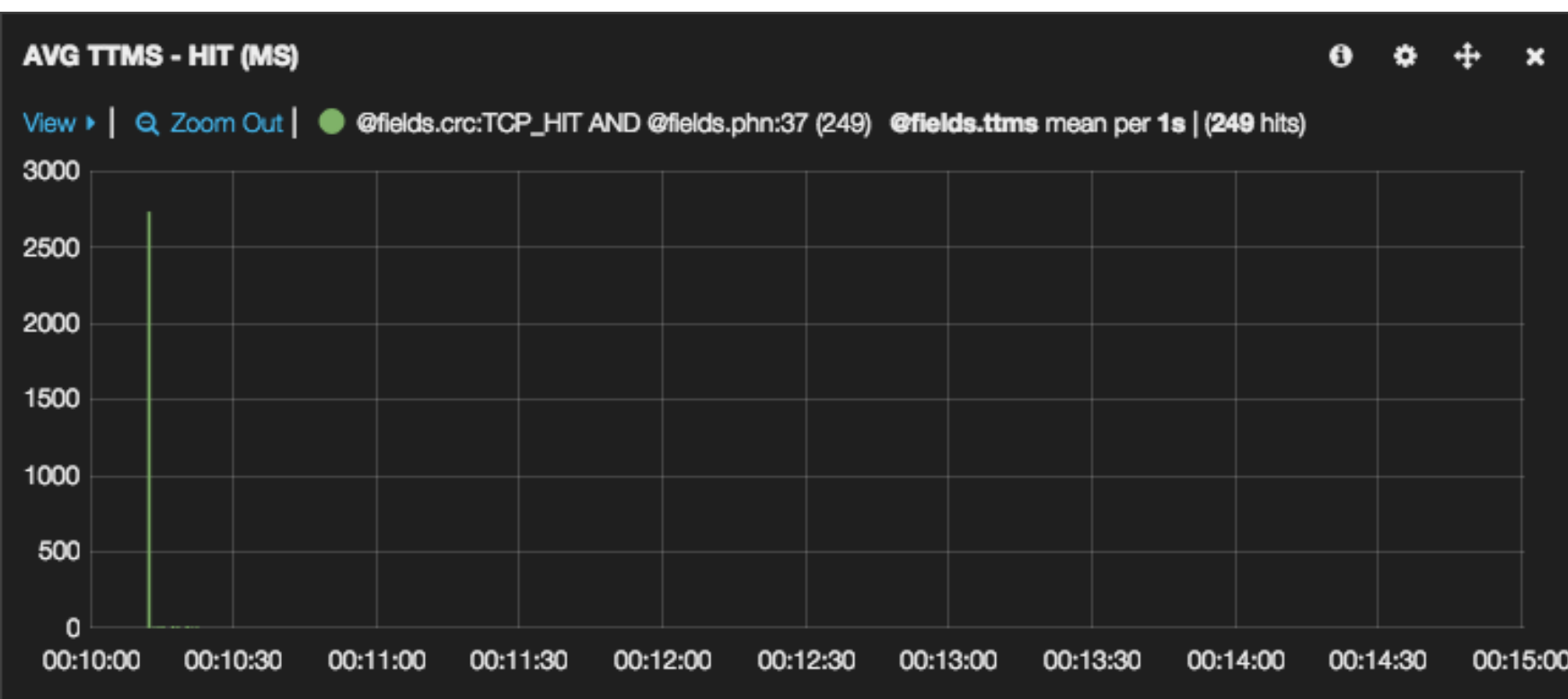


EVENTS

0 to 2 of 2 available for paging

Fields	@timestamp	@fields.sec_frac	@fields.request	@fields.http_user_agent	@fields.request_time	@fields.http_code
All (27) / Current (21)	2014-10-21T00:10:08.000Z	0.831	GET /kbOU25WO_livech_ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-3	9667065	200
Type to filter...	2014-10-21T00:10:11.000Z	0.141	GET /kbOU25WO_livech_ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-3	1143894	200

Mid graphs



EVENTS

0 to 1 of 1 available for paging

Fields	@fields.b	@fields.uas	@fields.ttms	@fields.sssc	@fields.pssc	@fields.crc	@timestamp	@fields.utime
All (51) / Current (30)	2349655	zaphod06.cdnlab.comcast.net-3	3461	200	200	TCP_MISS	2014-10-21T00:10:12.000Z	1413850212.290

New test:

TTFB fast, but total origin response is still too slow...

TTFB=0, packet delay = 300ms

```
[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$|^$#'
LoadModule hotair_module      /usr/lib64/httpd/modules/mod_hotair.so
<LocationMatch "(\\.ism*|\\.f4m|\\.Seg\\d-Frag\\d.*|\\.m3u8|\\.ts)">
    SetHandler hotair
</LocationMatch>
[root@zaphod02 ~]#
```

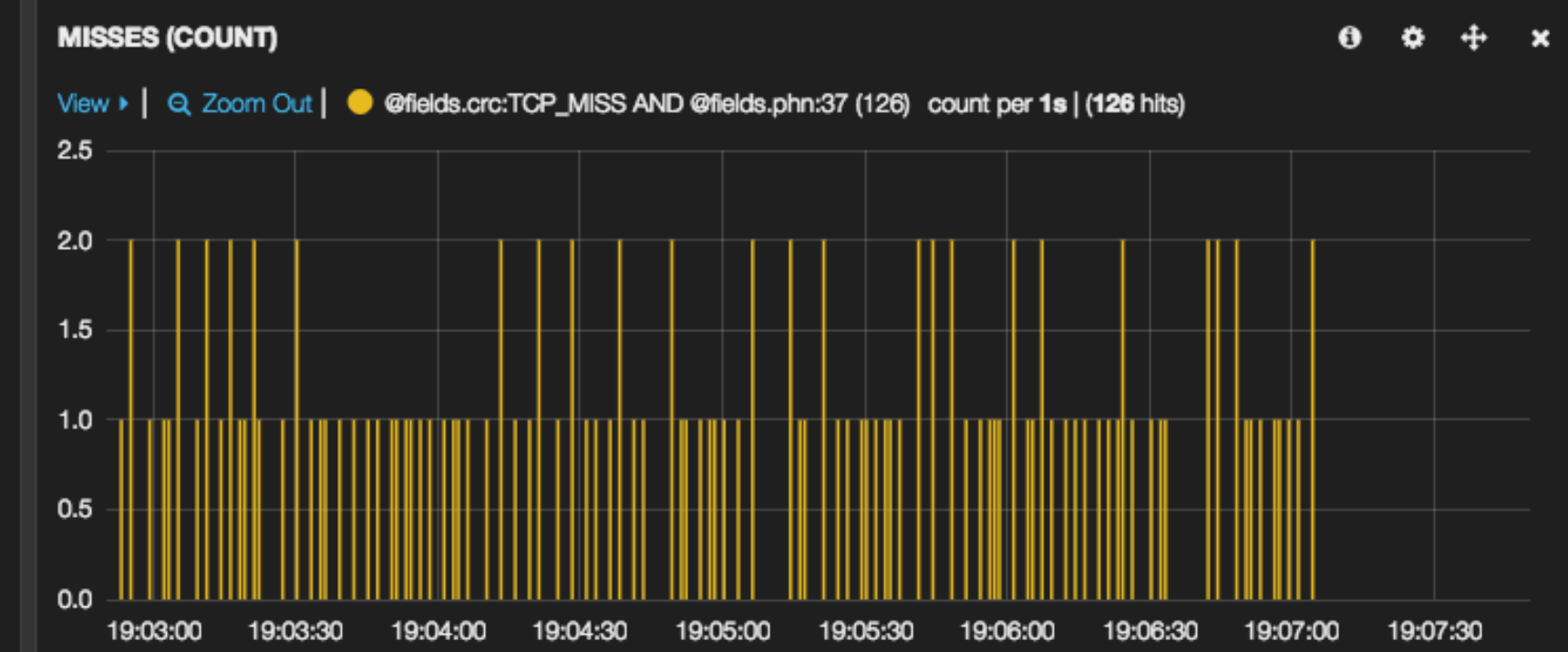
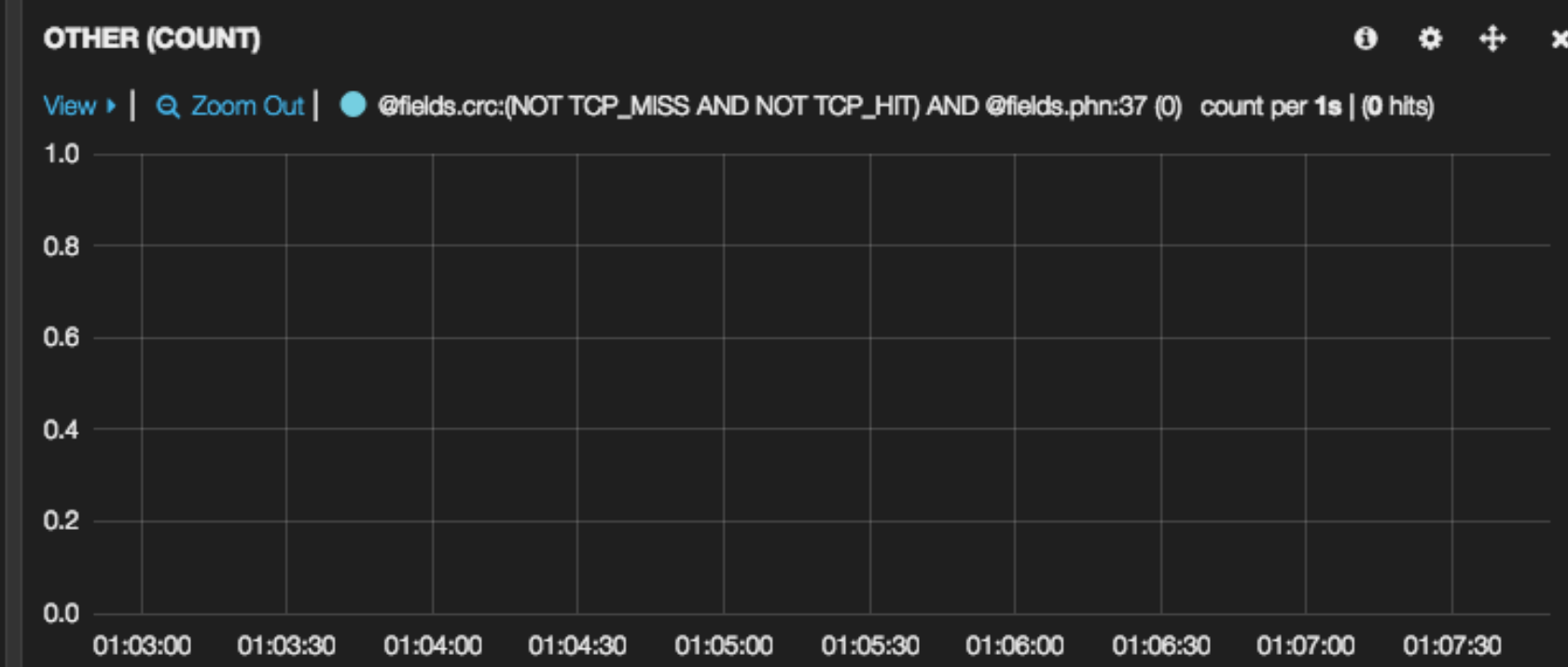
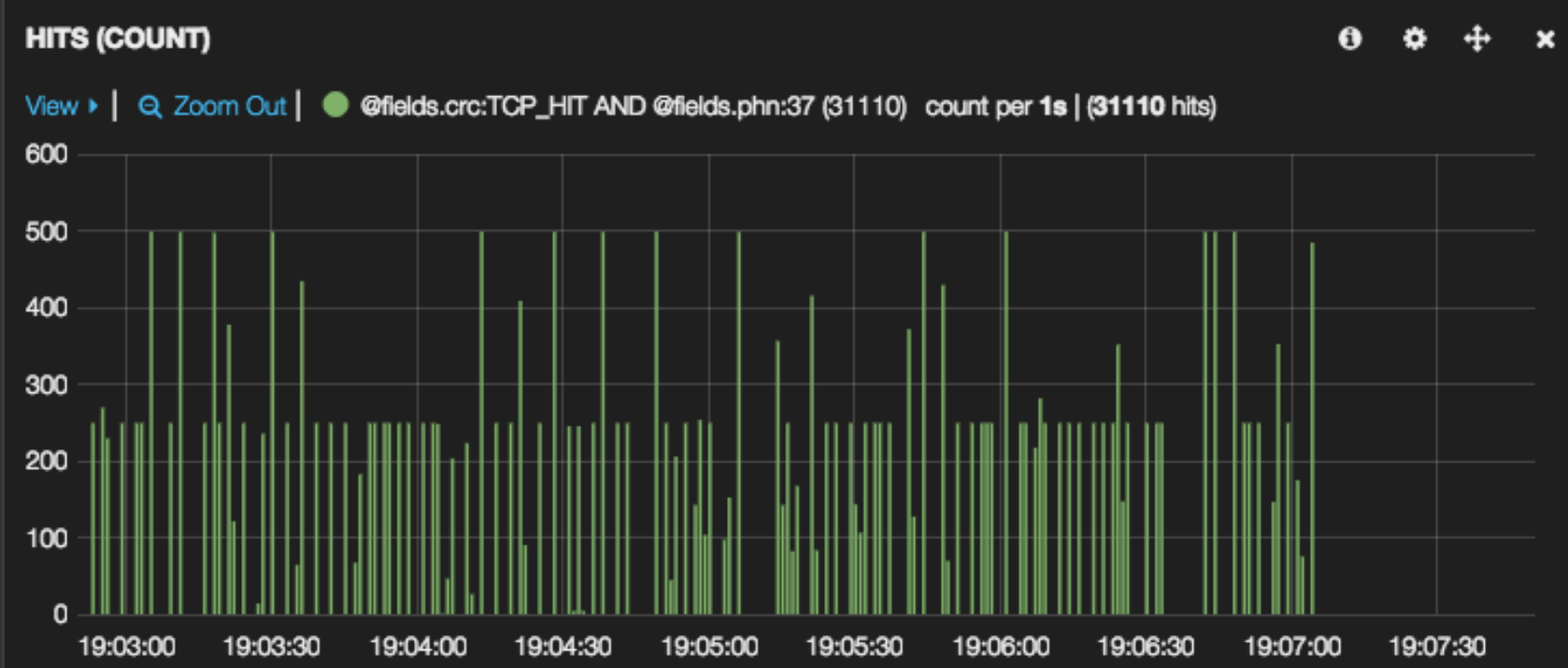
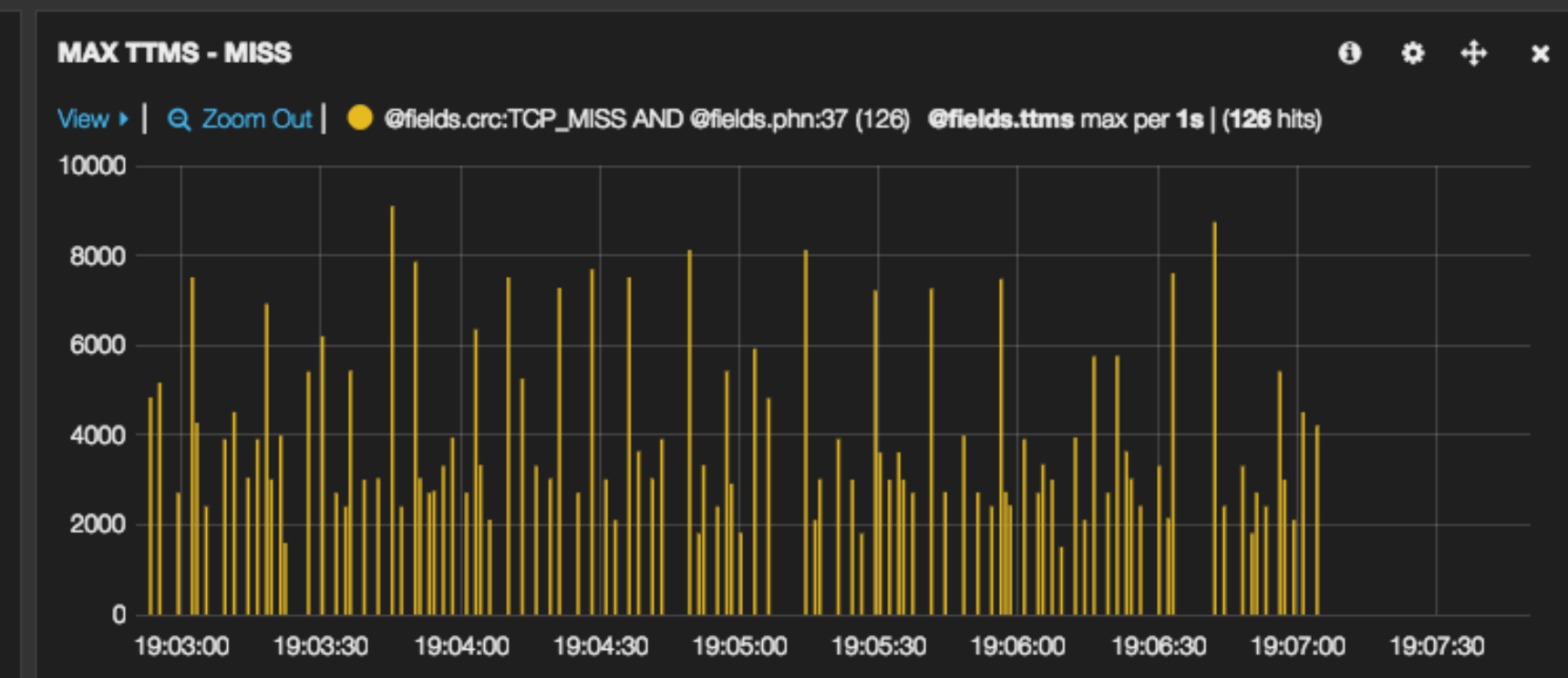
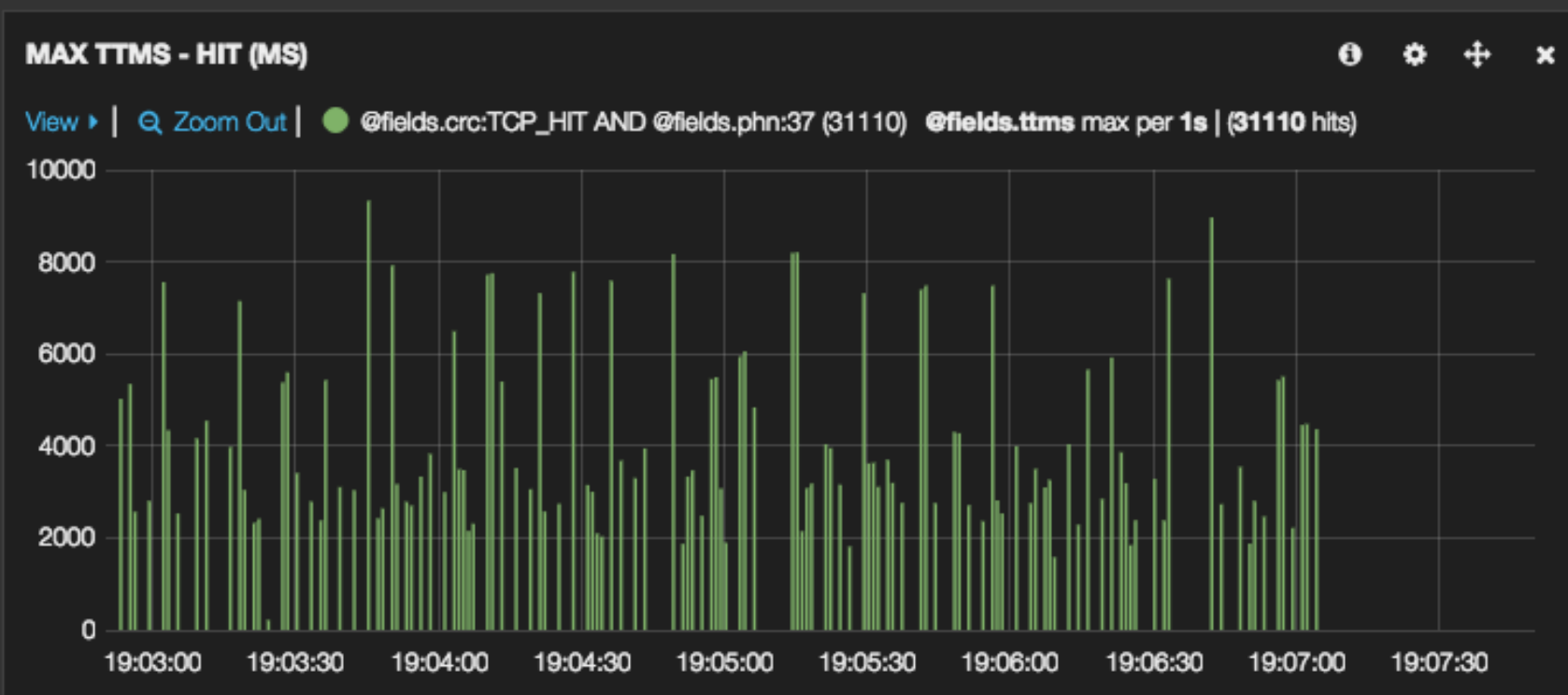
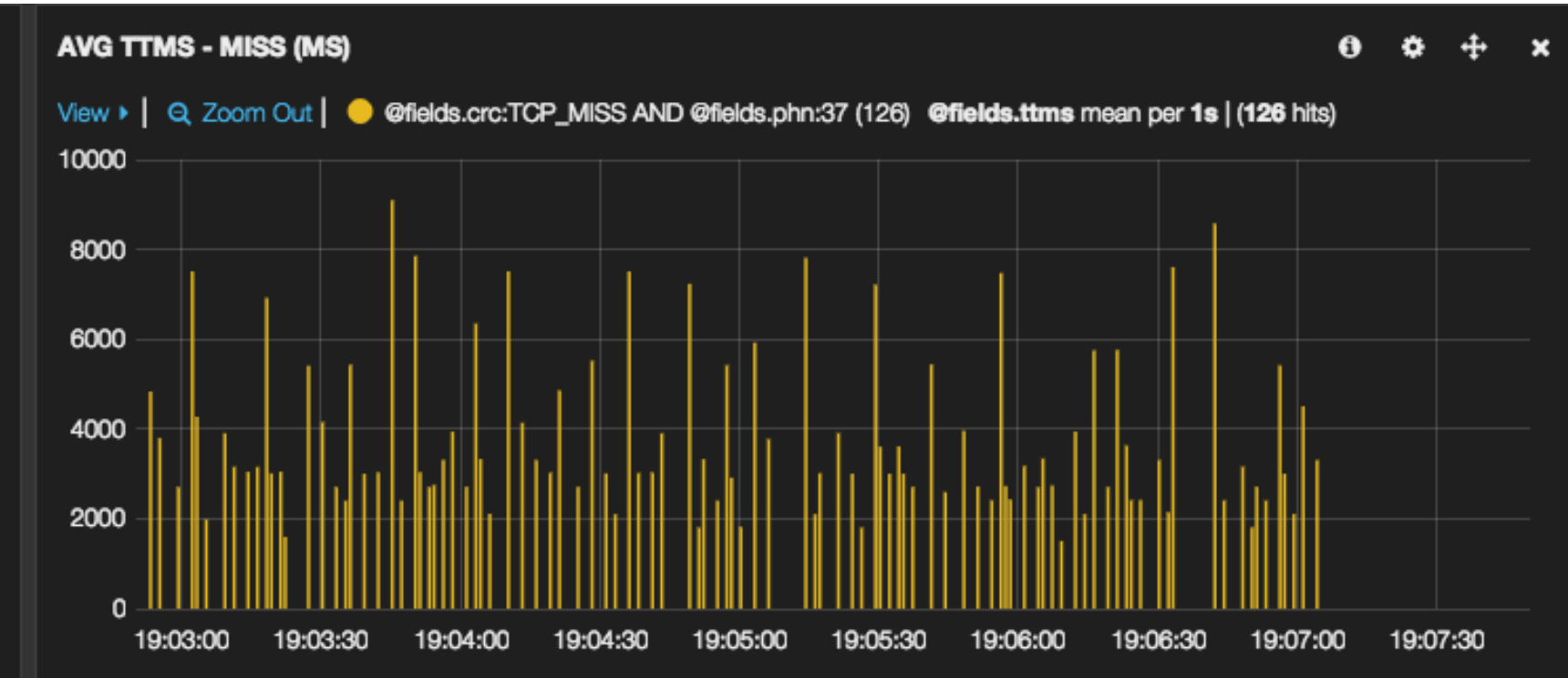
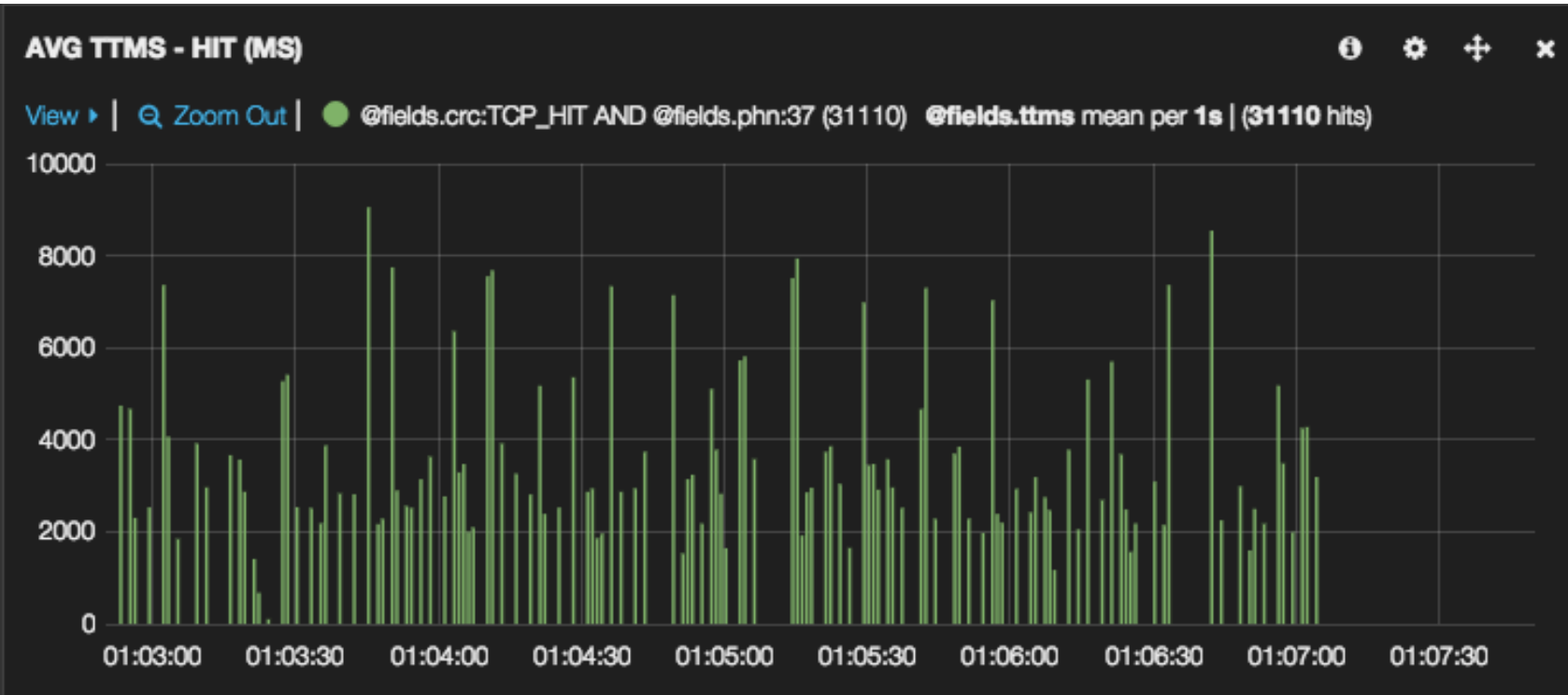
```
[root@zaphod02 ~]# tc qdisc show dev ens2f0
qdisc netem 8009: root refcnt 2 limit 1000 delay 300.0ms
[root@zaphod02 ~]#
```

```
[mtorlu9137e@ipcdn-cache-37]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn
Tue Oct 21 00:44:43 UTC 2014
Version of this script: 0.34e
ERROR Lines in /opt/trafficserver/etc/trafficserver//plugin.config do not match Twelve Monkeys.
ERROR Config file: plugin.config line only on disk: header_rewrite.so hrrw.conf
[mtorlu9137e@ipcdn-cache-37]~$
```

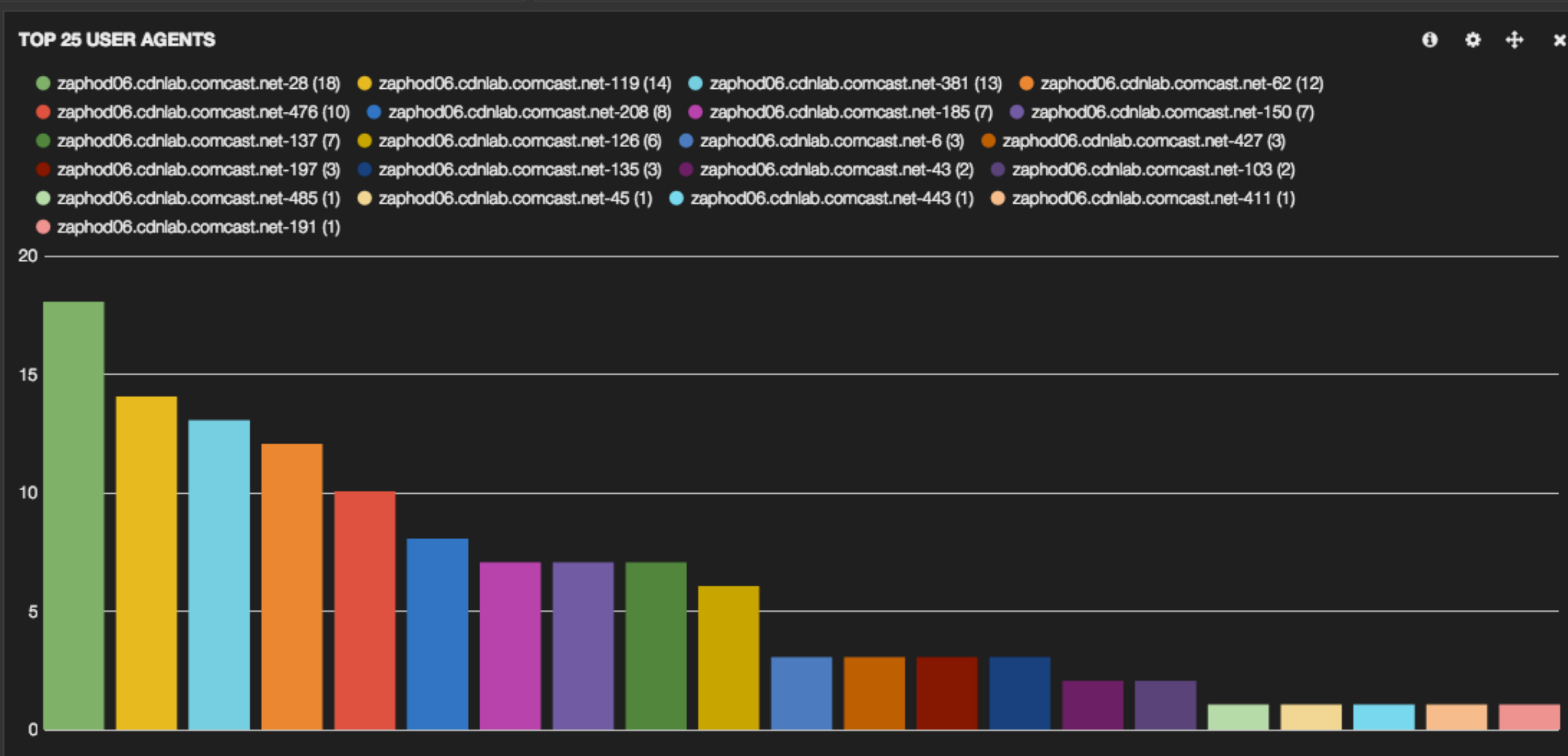
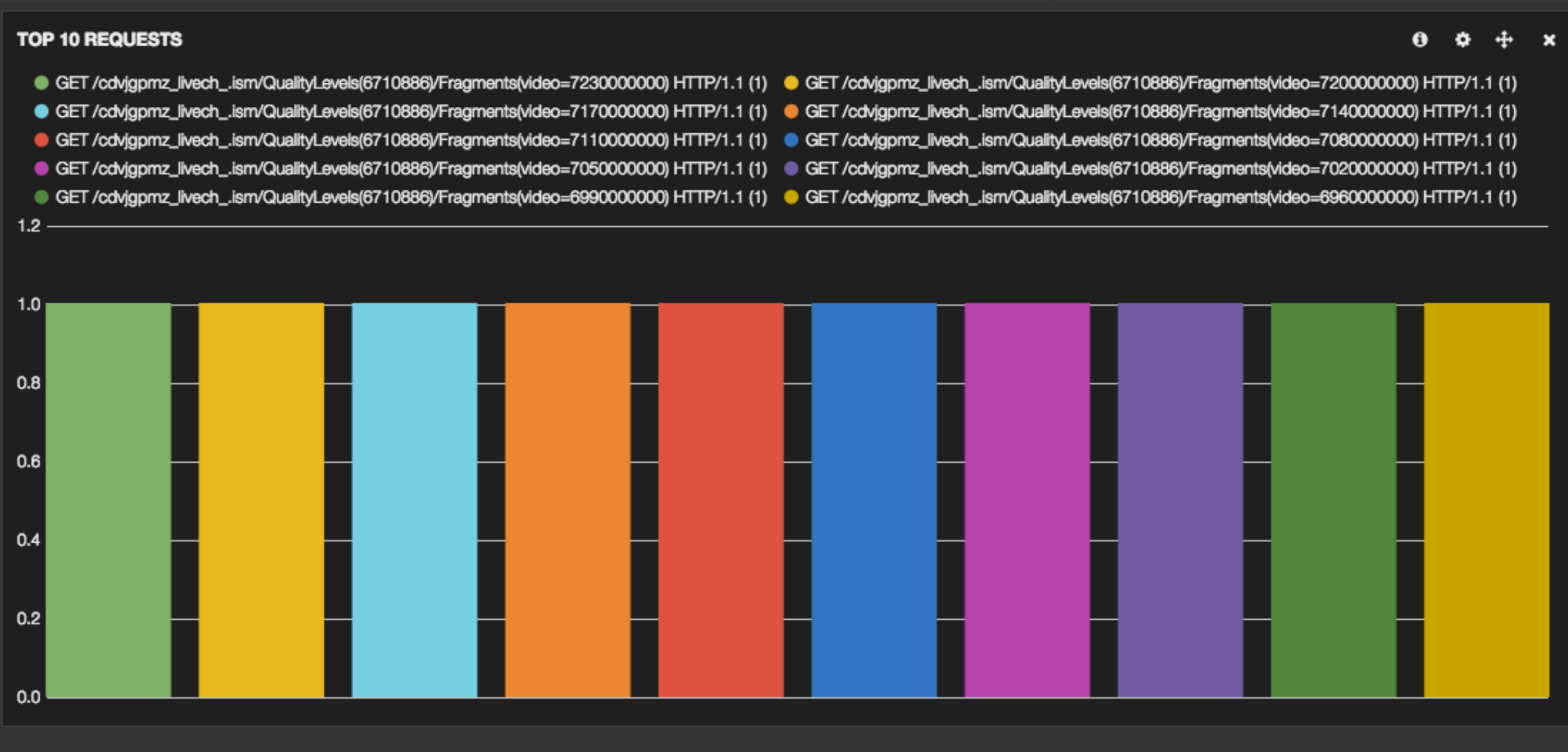
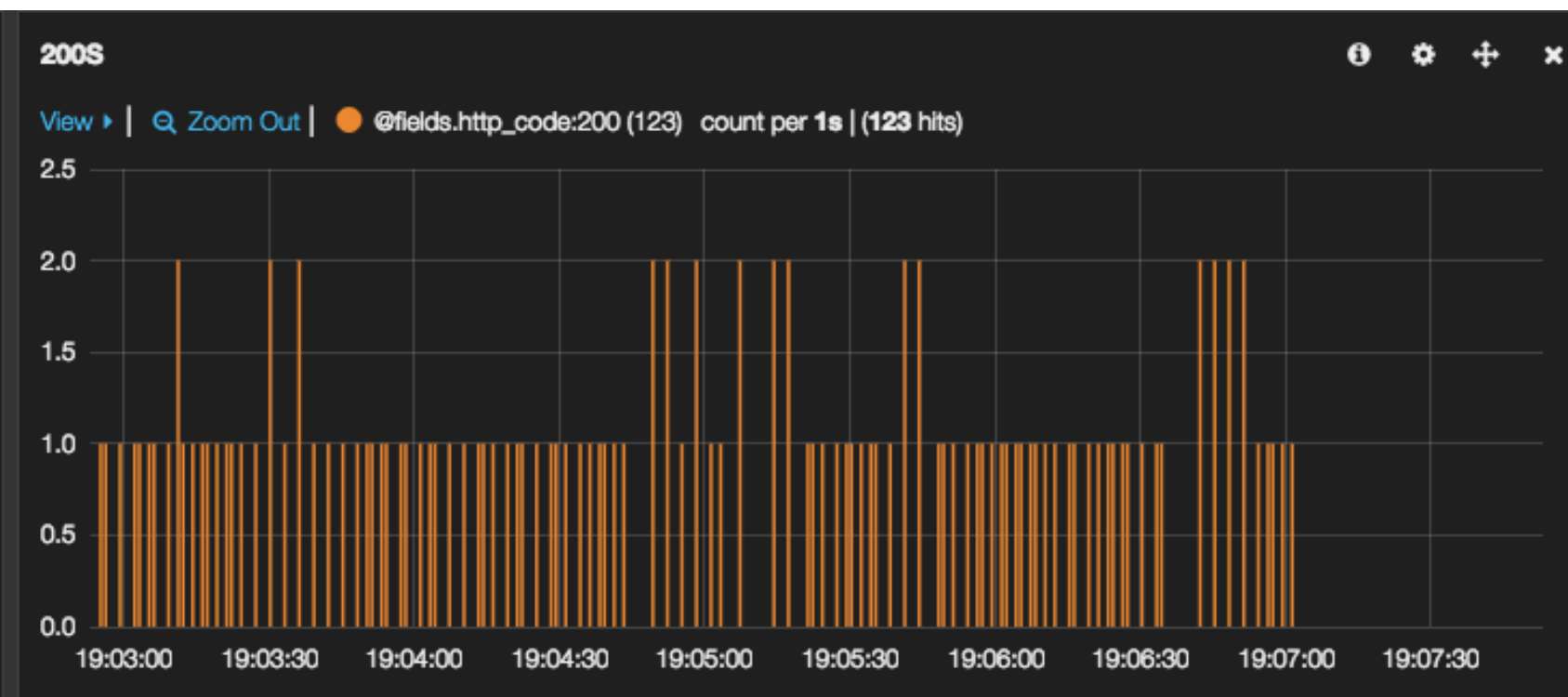
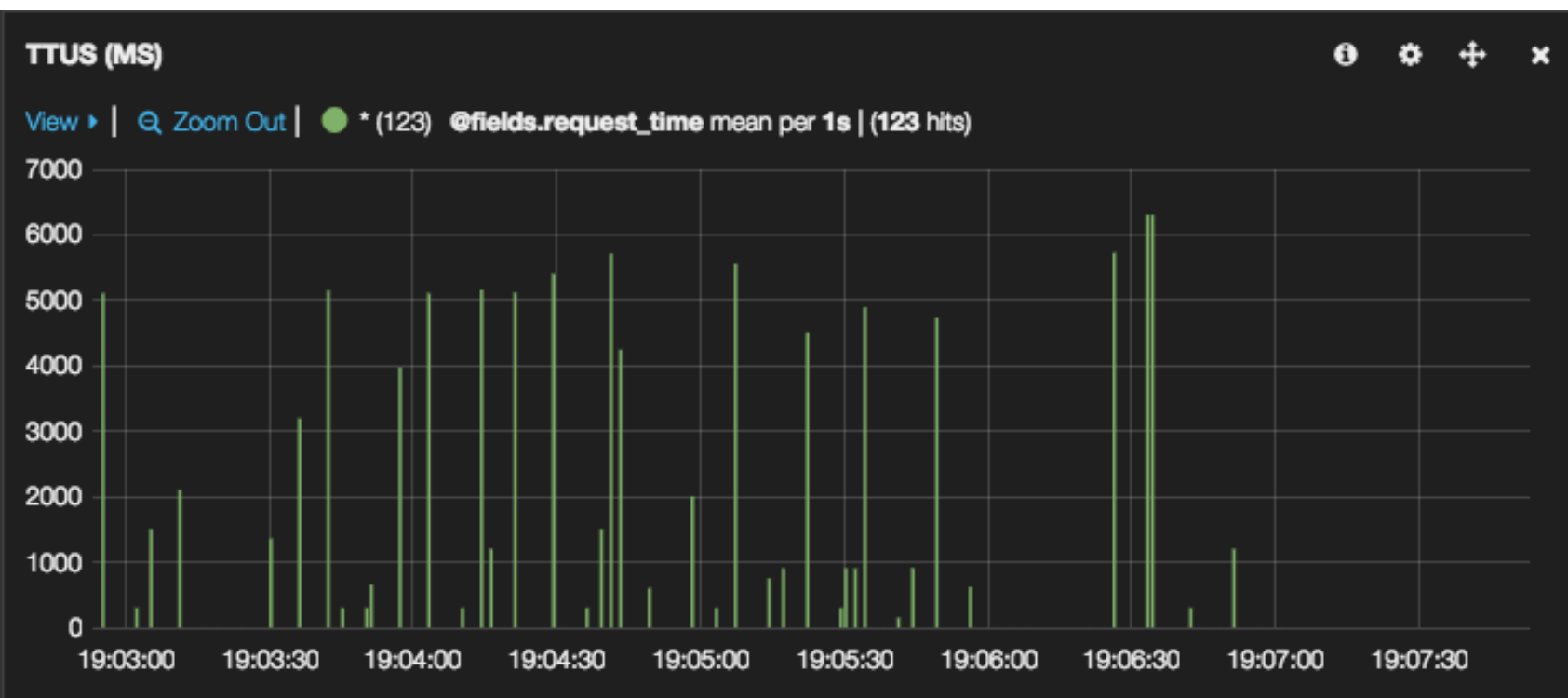
```
[mtorlu9137e@ipcdn-cache-37]~$ sudo cat /usr/local/etc/header_rewrite/hrrw.conf | grep -v "^$#"
cond %{READ_REQUEST_HDR_HOOK}
cond %{HEAD} = live-orig-01-dns.cdnlab.comcast.net
set-config proxy.config.http.connect_attempts_timeout 2
set-config proxy.config.http.connect_attempts_max_retries_dead_server 1 [L]
[mtorlu9137e@ipcdn-cache-37]~$
```

```
[mtorlu9137e@zaphod06]lcontrol$ cat fwd_proxy_tight_c37.json
{
  "clients": "480",
  "bitrate": "2500000",
  "test_type": "TestEngines::LLL",
  "abr_type": "hls",
  "frag_duration": "50000000",
  "origins": "1",
  "live": "100",
  "active_channels": "1",
  "vod_cache_name" : "load-test-01.cdnlab.comcast.net",
  "live_cache_name" : "live-orig-01-dns.cdnlab.comcast.net",
  "cache_ip" : "69.241.62.86",
  "vod_cache_hitratio" : "80",
  "live_active_fragments" : "2",
  "vod_bitrates" : "4300000,3000000",
  "live_bitrates" : "6710886,5033164",
  "max_long_tts_percentage" : "0.5",
  "long_tts_time" : "1.5",
  "proxy_mode" : "forward",
  "ipv6_percentage" : 0,
  "via_headers" : 1
}
[mtorlu9137e@zaphod06]lcontrol$
```

Mid graphs



Origin graphs



Add transaction_active_timeout_in = 5

```
[mtorlu9137e@ipcdn-cache-37]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn
```

```
Tue Oct 21 01:37:18 UTC 2014
```

```
Version of this script: 0.34e
```

```
ERROR Lines in /opt/trafficserver/etc/trafficserver//plugin.config do not match Twelve Monkeys.
```

```
ERROR Config file: plugin.config line only on disk: header_rewrite.so hrrw.conf
```

```
ERROR Lines in /opt/trafficserver/etc/trafficserver//records.config do not match Twelve Monkeys.
```

```
ERROR Config file: records.config line only in 12M: CONFIG proxy.config.http.transaction_active_timeout_in INT 900
```

```
ERROR Config file: records.config line only on disk: CONFIG proxy.config.http.transaction_active_timeout_in INT 5
```

```
[mtorlu9137e@ipcdn-cache-37]~$
```

```
[mtorlu9137e@ipcdn-cache-37]~$ sudo cat /usr/local/etc/header_rewrite/hrrw.conf | grep -v "^\\#"
```

```
cond %{READ_REQUEST_HDR_HOOK}
```

```
cond %{HEAD} = live-orig-01-dns.cdnlab.comcast.net
```

```
set-config proxy.config.http.connect_attempts_timeout 2
```

```
set-config proxy.config.http.connect_attempts_max_retries_dead_server 2 [L]
```

```
[mtorlu9137e@ipcdn-cache-37]~$
```

```
[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$|^\\#'
```

```
LoadModule hotair_module /usr/lib64/httpd/modules/mod_hotair.so
```

```
<LocationMatch "(\\.ism*|\\.f4m|\\.Seg\\d-Frag\\d.*|\\.m3u8|\\.ts)">
```

```
    SetHandler hotair
```

```
</LocationMatch>
```

```
[root@zaphod02 ~]#
```

```
[root@zaphod02 ~]#
```

```
[root@zaphod02 ~]# tc qdisc show dev ens2f0
```

```
qdisc netem 8009: root refcnt 2 limit 1000 delay 300.0ms
```

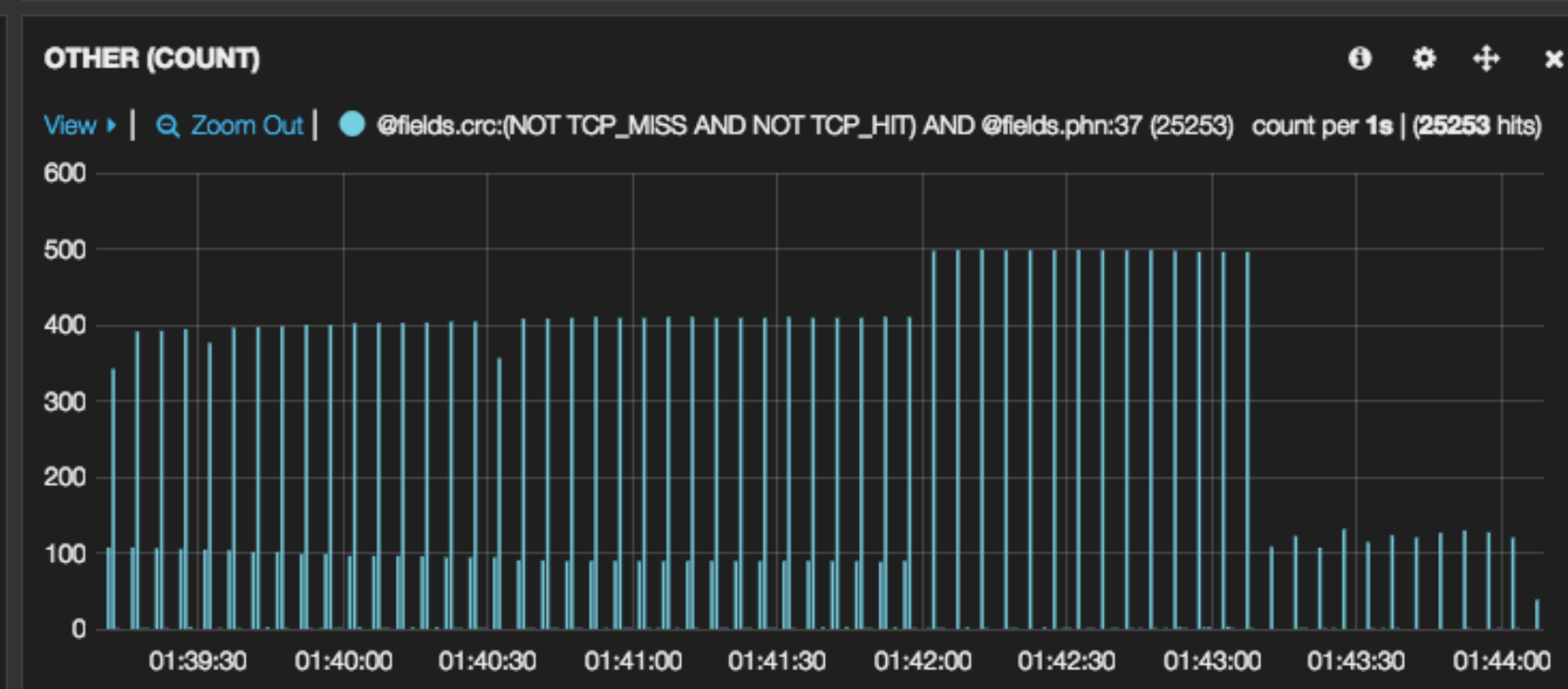
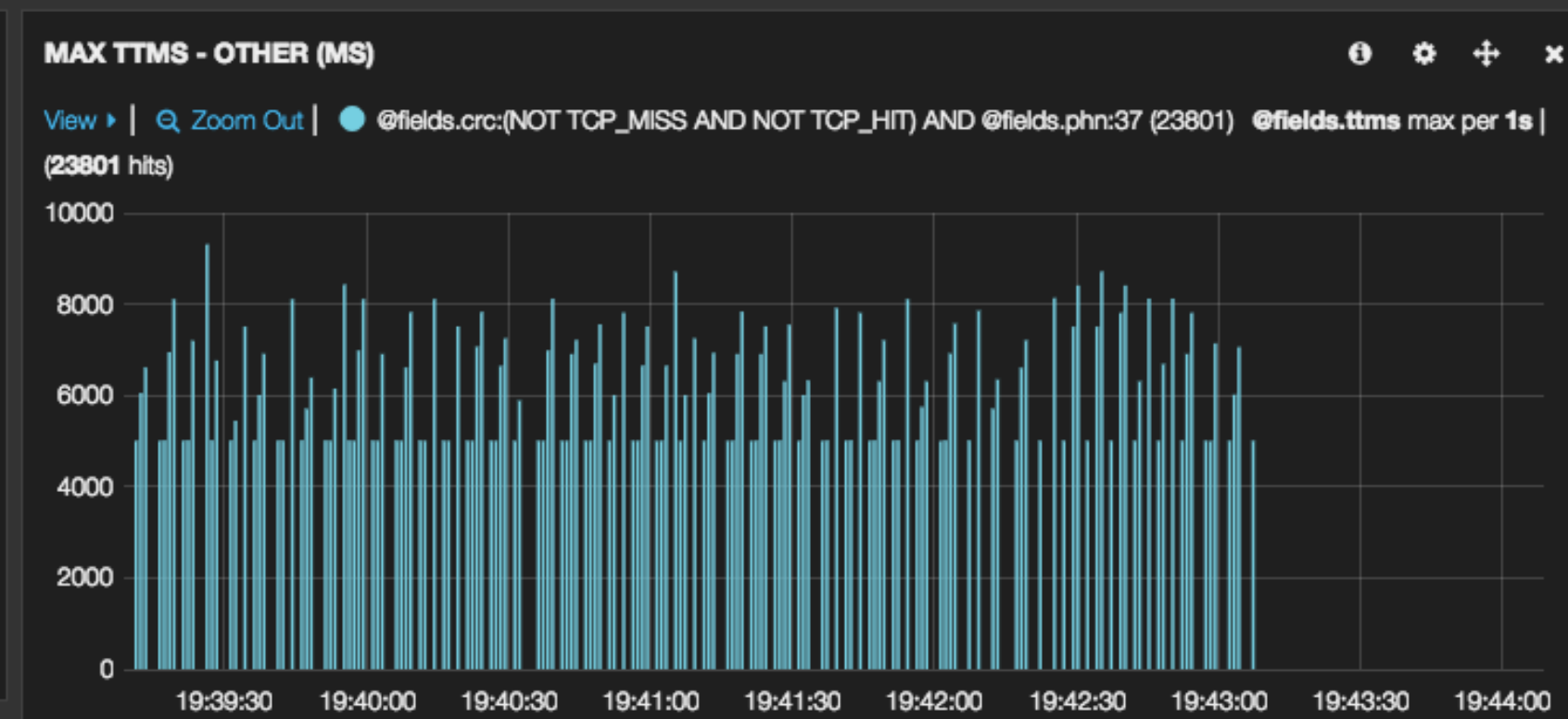
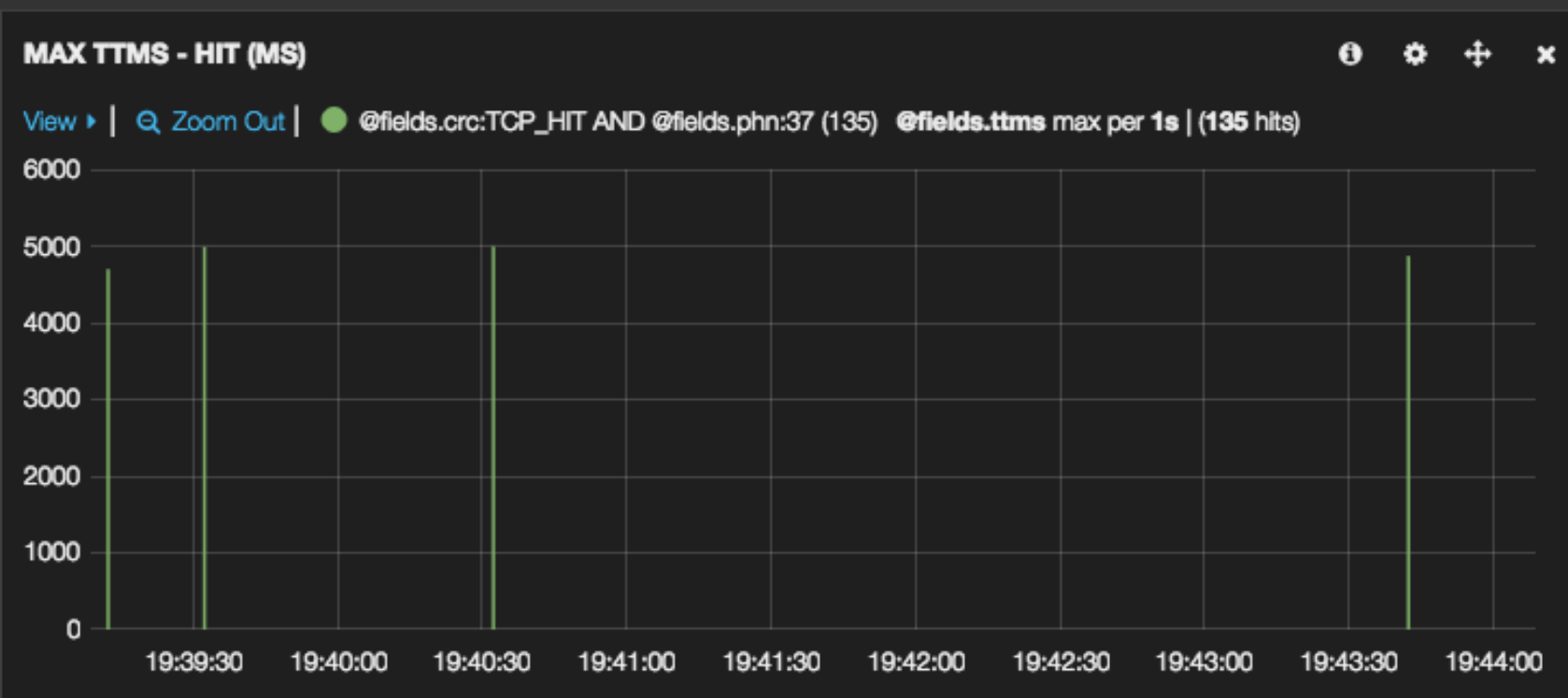
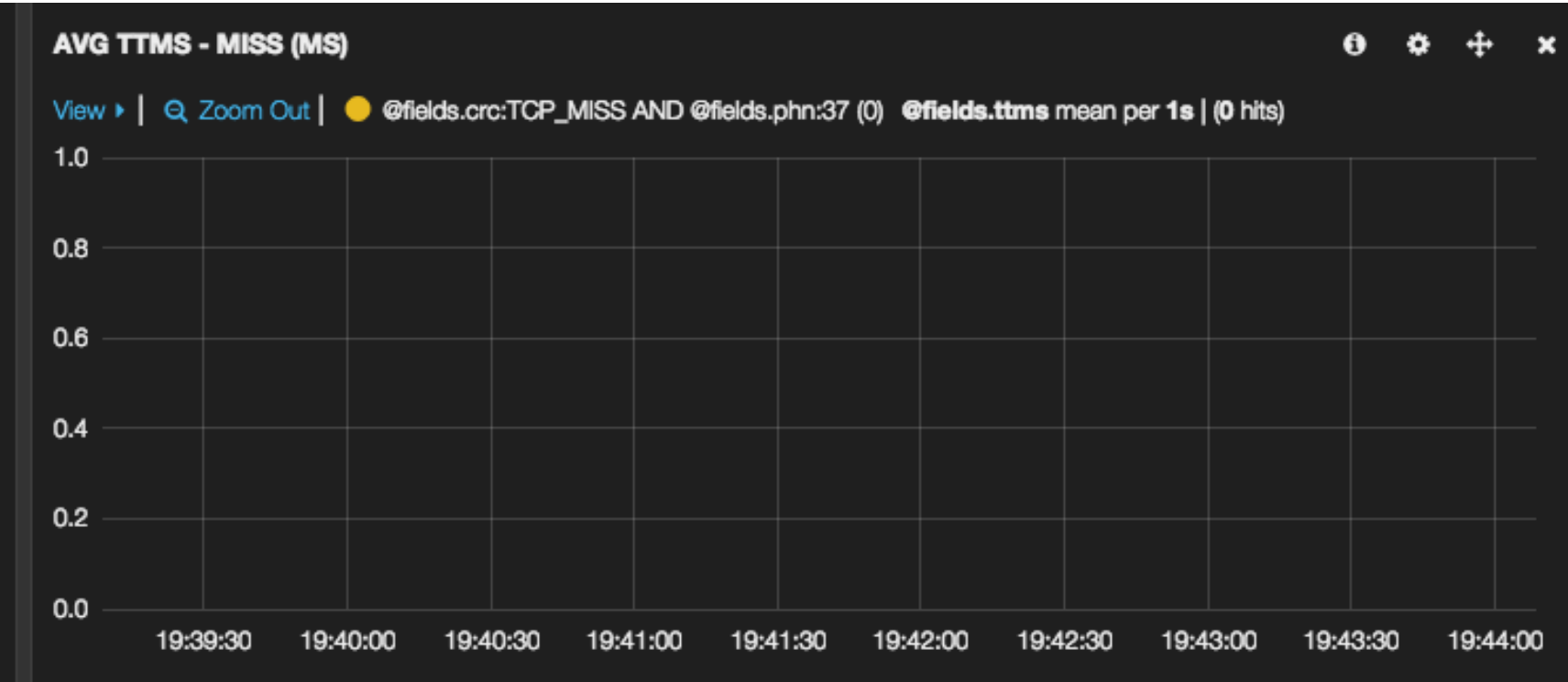
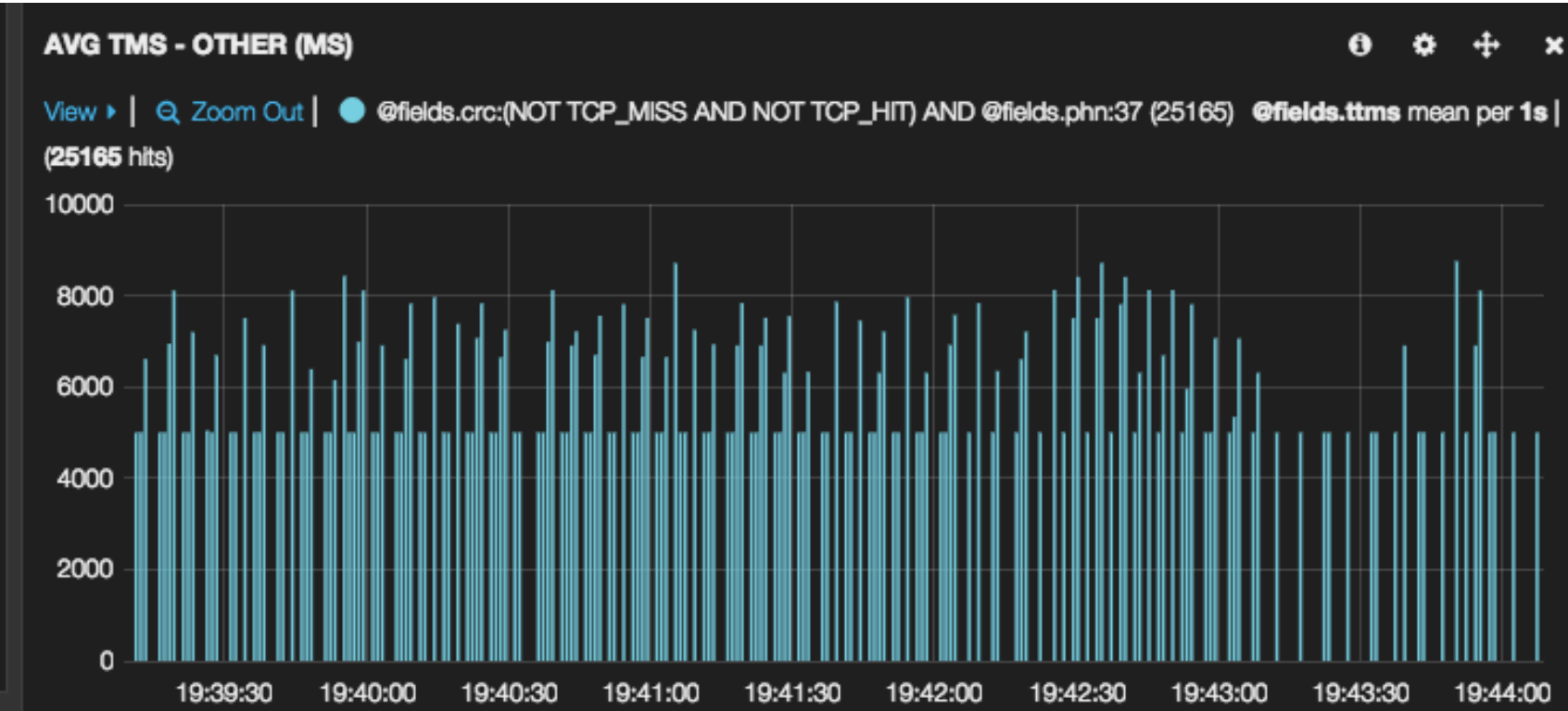
```
[root@zaphod02 ~]#
```

```
[mtorlu9137e@zaphod06]lcontrol$ cat fwd_proxy_tight_c37.json
```

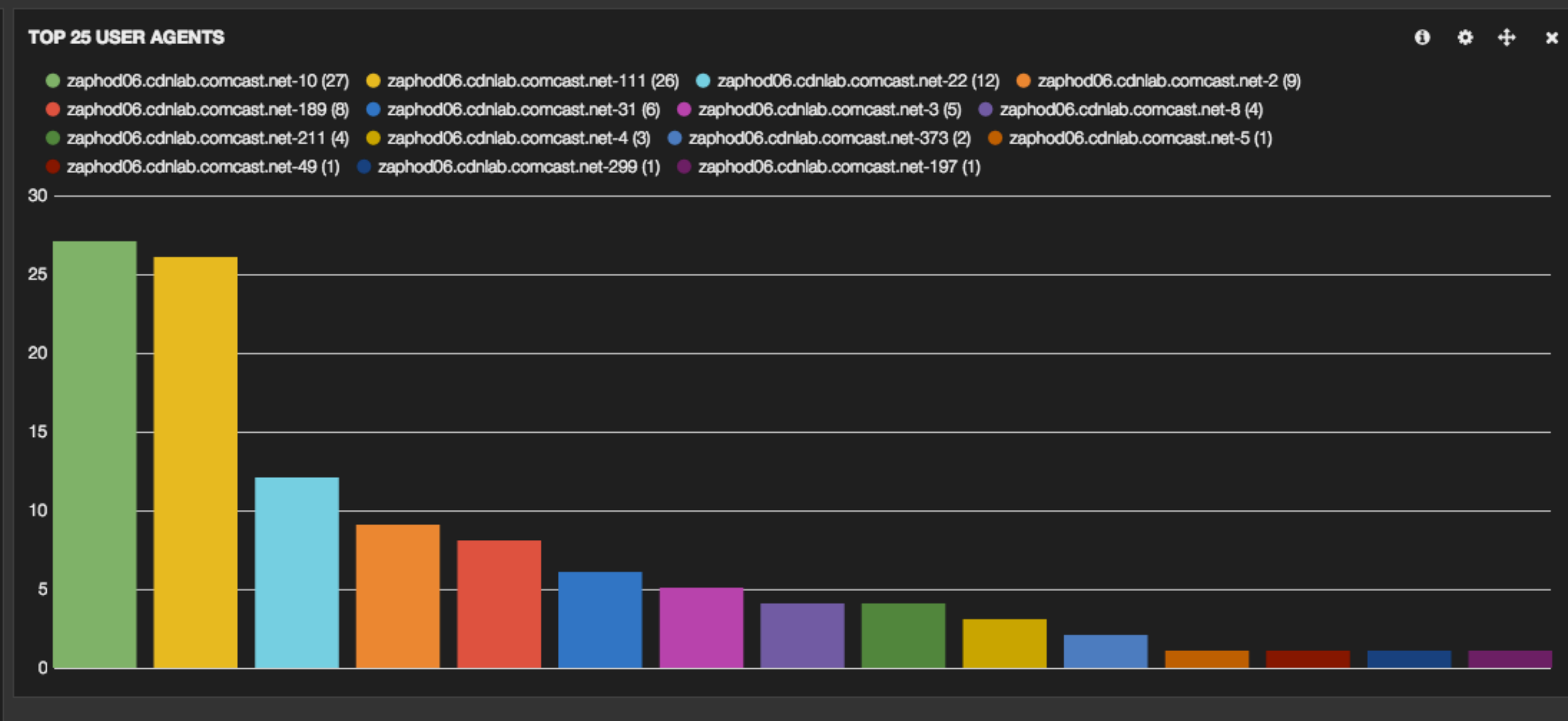
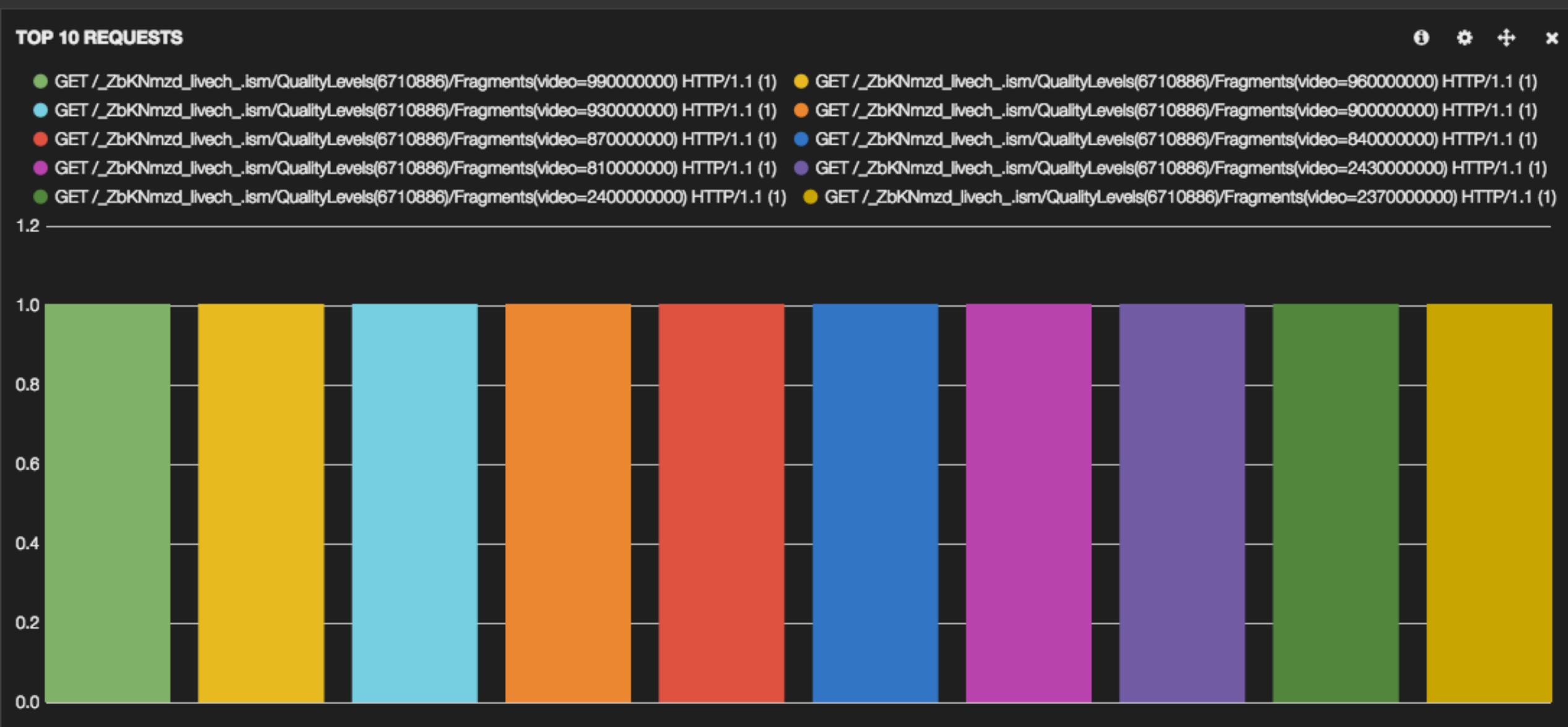
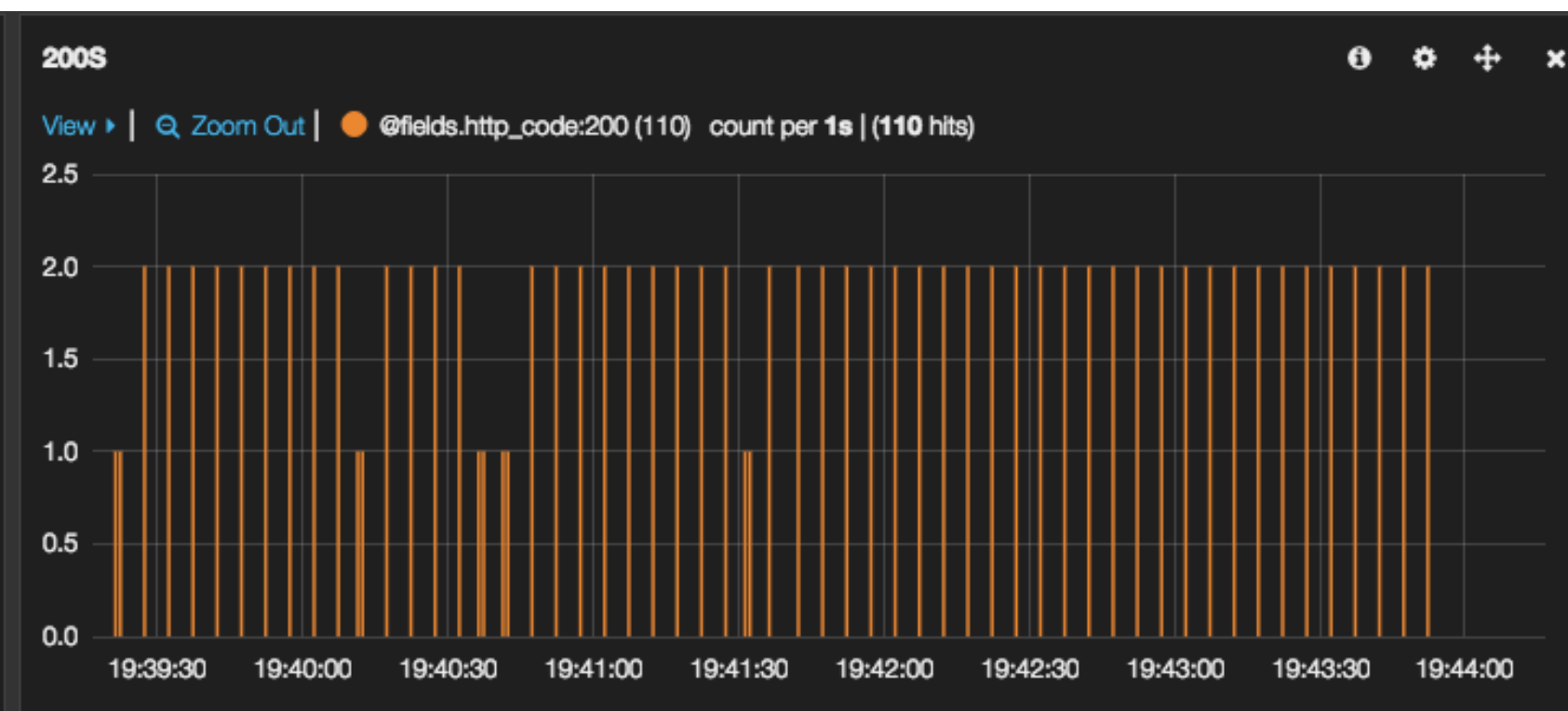
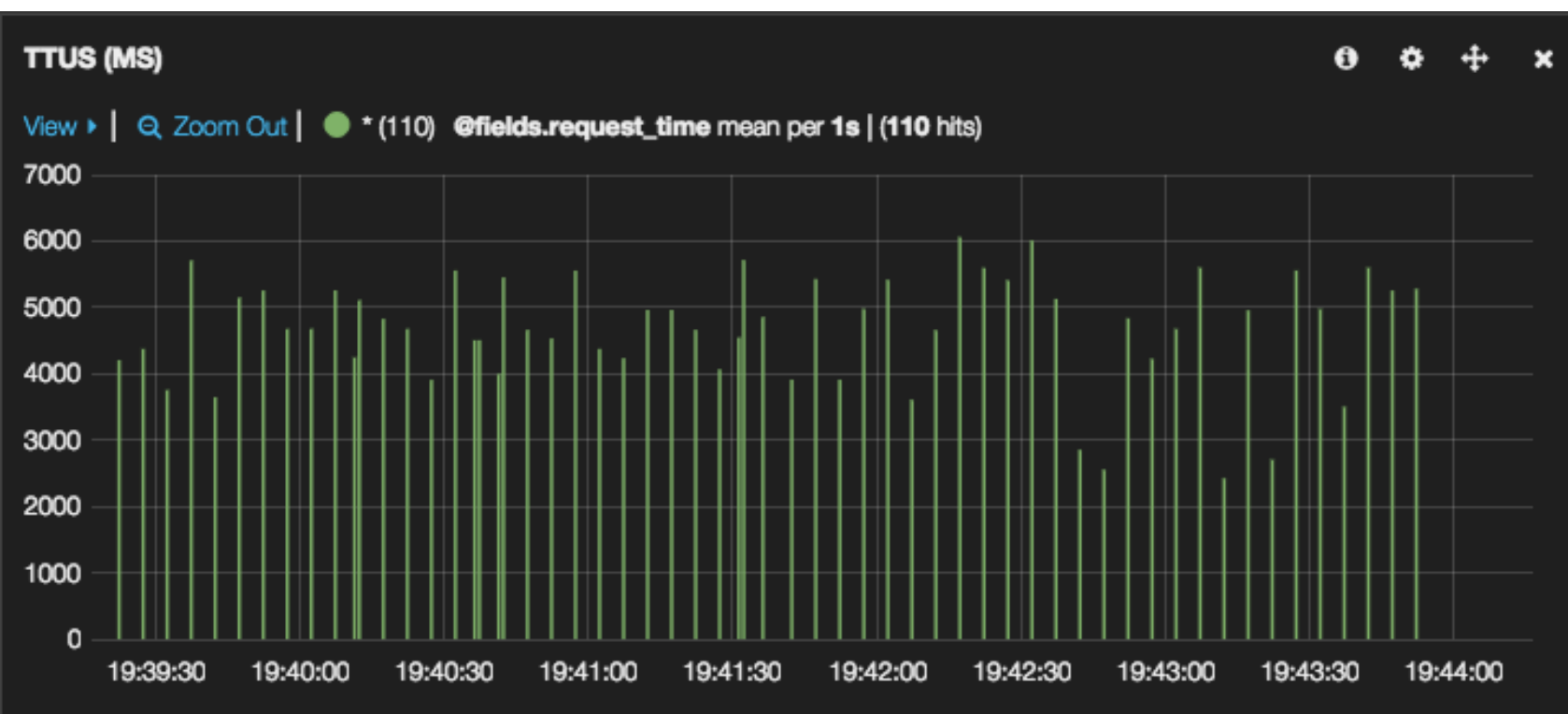
```
{
  "clients": "480",
  "bitrate": "2500000",
  "test_type": "TestEngines::LLL",
  "abr_type": "hls",
  "frag_duration": "50000000",
  "origins": "1",
  "live": "100",
  "active_channels": "1",
  "vod_cache_name": "load-test-01.cdnlab.comcast.net",
  "live_cache_name": "live-orig-01-dns.cdnlab.comcast.net",
  "cache_ip": "69.241.62.86",
  "vod_cache_hitratio": "80",
  "live_active_fragments": "2",
  "vod_bitrates": "4300000,3000000",
  "live_bitrates": "6710886,5033164",
  "max_long_tts_percentage": "0.5",
  "long_tts_time": "1.5",
  "proxy_mode": "forward",
  "ipv6_percentage": 0,
  "via_headers": 1
}
```

```
[mtorlu9137e@zaphod06]lcontrol$
```


Mid graphs

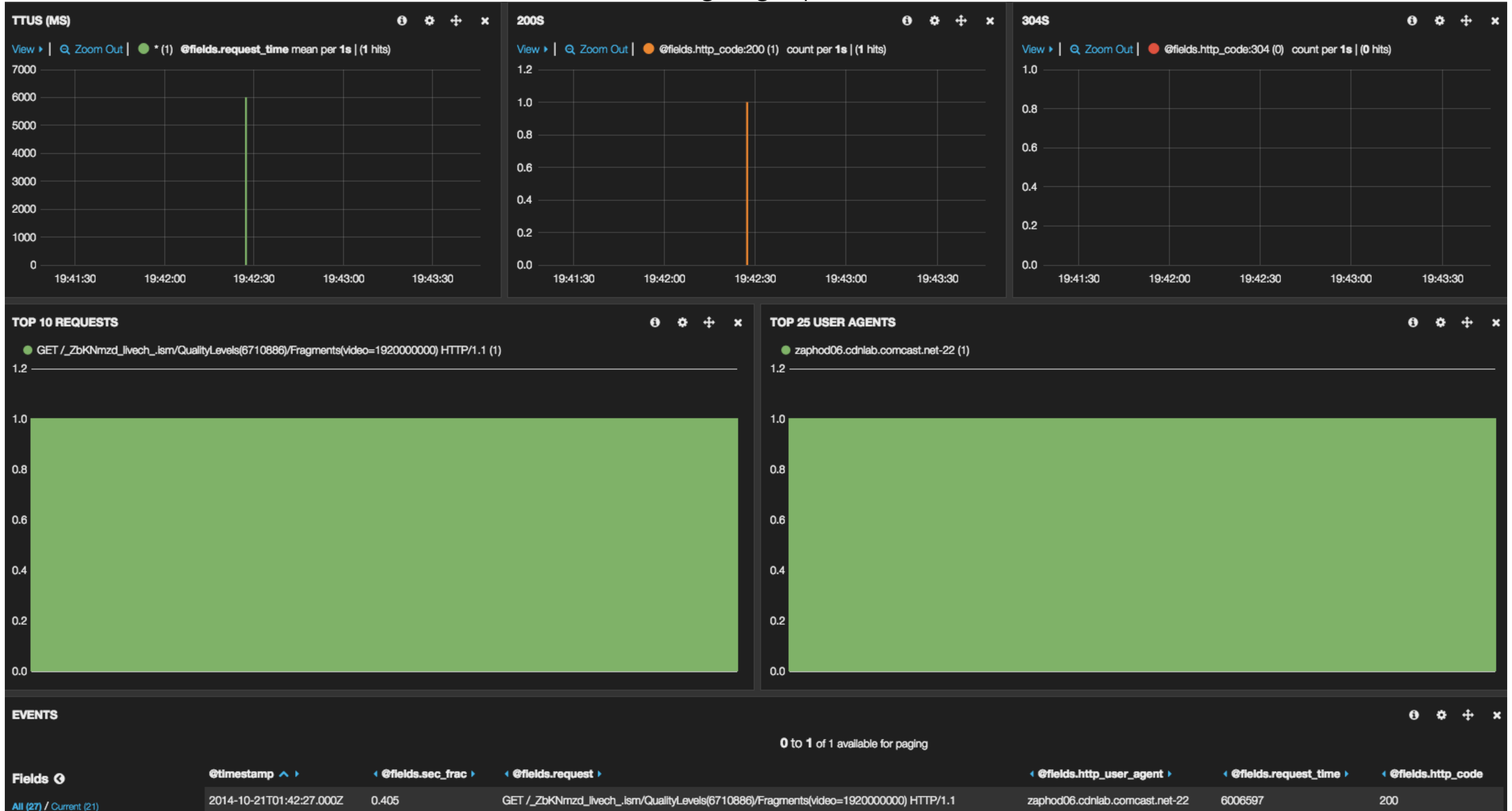


Origin graphs



Zoom in - long tts

Origin graphs

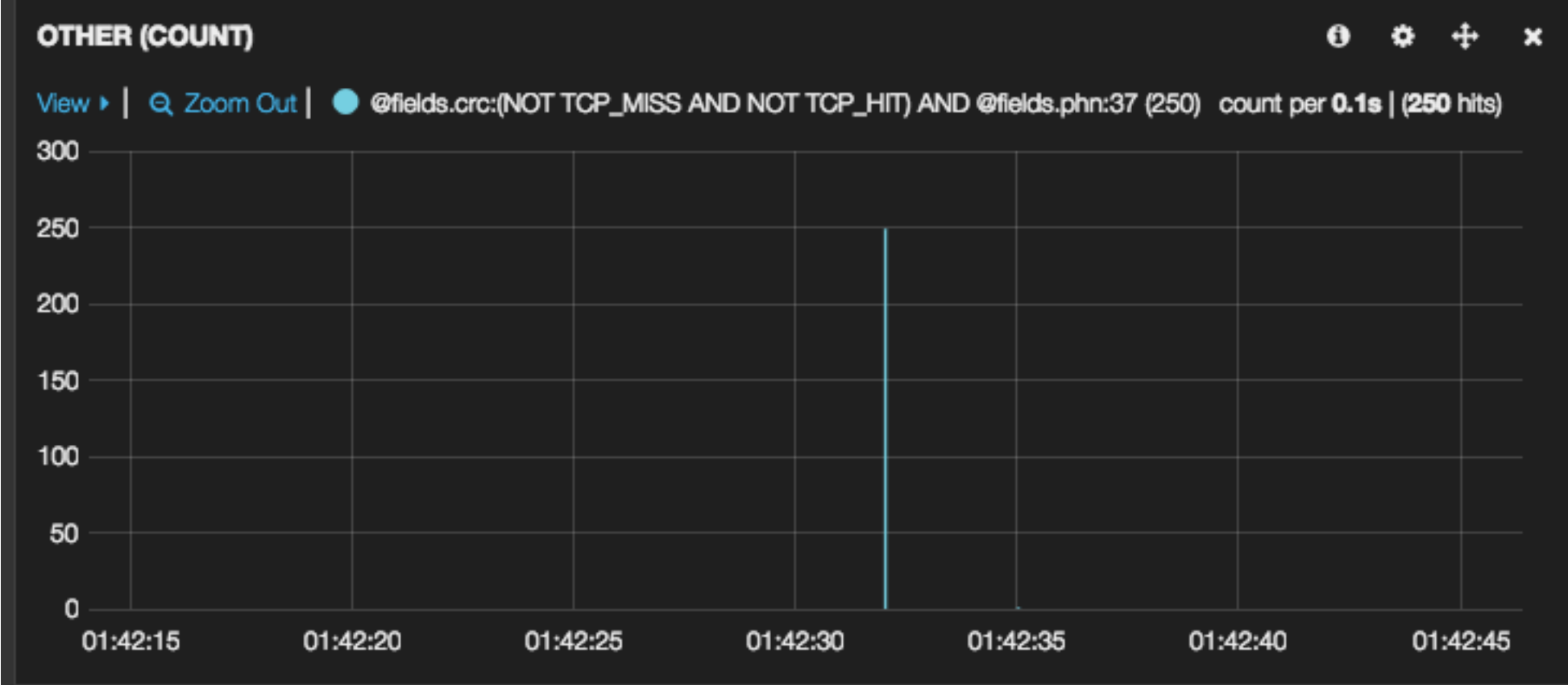
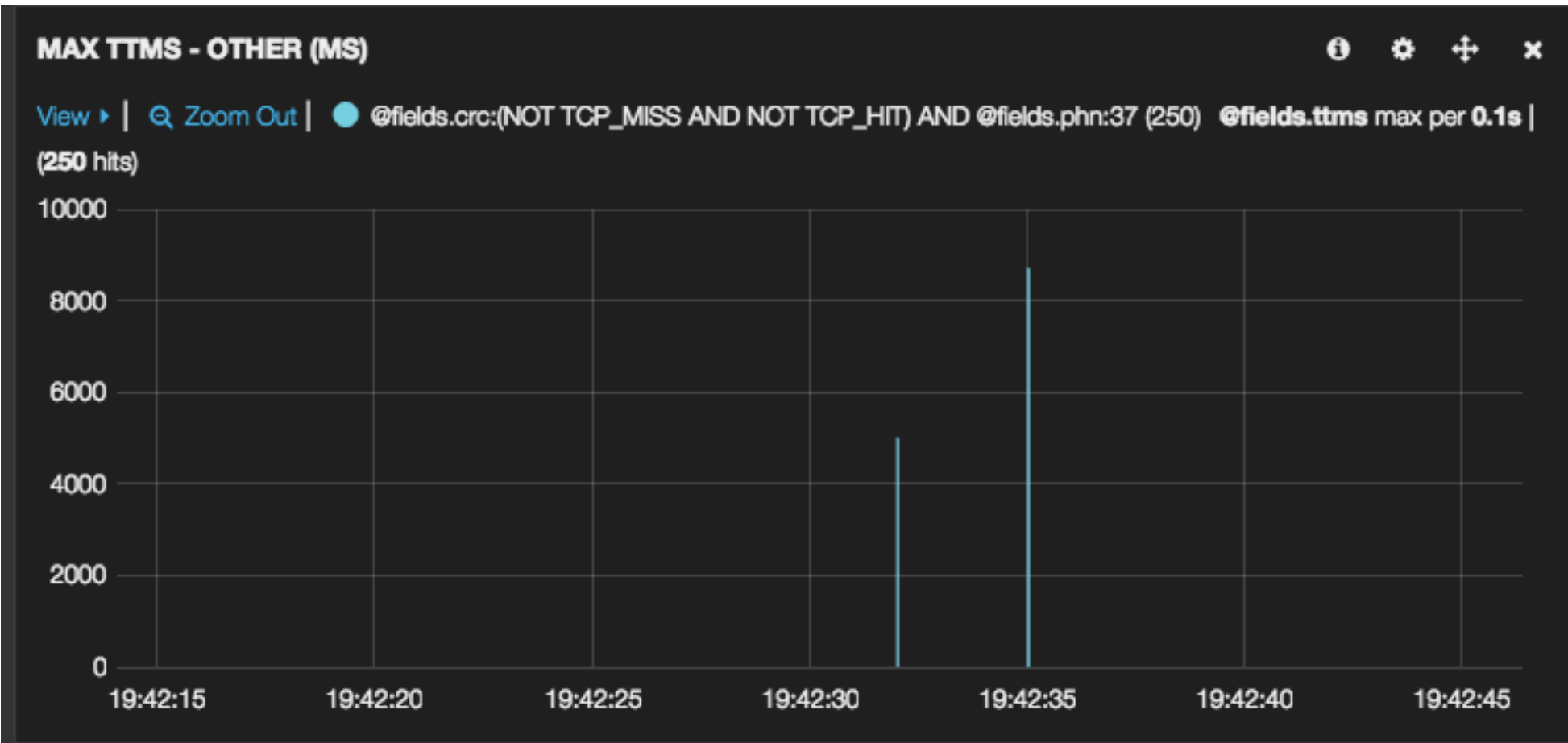


pcap on cache of ERROR_CLIENT_ABORT, logged as HTTP 200

Filter: tcp.stream eq 764 && (tcp.flags.fin == 1 || tc

No.	Time	Time	Delta time	Source	Dest	Protocol	Length	UserAgent	Info
5213	1413298382.184302	2014-10-14 14:53:02.184302	2.240158	zaphod06	ipcdn-cache-37	TCP	74		51620.80 [SYN] Seq=111288237 Win=17920 Len=0 MSS=8960 SACK_PERM=1 TSval=1878446087 TSecr=0 WS=256
5215	1413298382.184311	2014-10-14 14:53:02.184311	0.000009	ipcdn-cache-37	zaphod06	TCP	74		80_51620 [SYN, ACK] Seq=4288934834 Ack=111288238 Win=17896 Len=0 MSS=8960 SACK_PERM=1 TSval=1817358669 TSecr=1878446087 WS=128
5231	*REF*	*REF*	*REF*	zaphod06	ipcdn-cache-37	HTTP	325	zaphod06.cdnlab.comcast.net-56	GET http://live-orig-01-dns.cdnlab.comcast.net/TcwRTRHF_livech_ism/QualityLevels(6710886)/Fragments(video=3330000000) HTTP/1.1
57818	1413298387.187067	2014-10-14 14:53:07.187067	5.002345	ipcdn-cache-37	zaphod06	TCP	66		80_51620 [FIN, ACK] Seq=4289983650 Ack=111288497 Win=19072 Len=0 TSval=1817363672 TSecr=1878450883
57825	1413298387.187854	2014-10-14 14:53:07.187854	0.000787	zaphod06	ipcdn-cache-37	TCP	66		51620.80 [FIN, ACK] Seq=111288497 Ack=4289983651 Win=197120 Len=0 TSval=1878451091 TSecr=1817363672

Mid-tier cache



	@fields.b	@fields.uas	@fields.ttms	@fields.sssc	@fields.pssc	@fields.crc	@timestamp	@fields.utime
1048504	zaphod06.cdnlab.comcast.net-132	5005	000	200	ERR_CLIENT_ABORT	2014-10-21T01:42:32.000Z	1413855752.691	
992917	zaphod06.cdnlab.comcast.net-234	4998	000	200	ERR_CLIENT_ABORT	2014-10-21T01:42:32.000Z	1413855752.693	
1048504	zaphod06.cdnlab.comcast.net-248	4995	000	200	ERR_CLIENT_ABORT	2014-10-21T01:42:32.000Z	1413855752.694	
1048504	zaphod06.cdnlab.comcast.net-148	4995	000	200	ERR_CLIENT_ABORT	2014-10-21T01:42:32.000Z	1413855752.695	
456037	zaphod06.cdnlab.comcast.net-126	5000	000	200	ERR_CLIENT_ABORT	2014-10-21T01:42:32.000Z	1413855752.699	
1048504	zaphod06.cdnlab.comcast.net-496	5003	000	200	ERR_CLIENT_ABORT	2014-10-21T01:42:32.000Z	1413855752.825	
1048504	zaphod06.cdnlab.comcast.net-456	5002	000	200	ERR_CLIENT_ABORT	2014-10-21T01:42:32.000Z	1413855752.826	
1048504	zaphod06.cdnlab.comcast.net-470	5004	000	200	ERR_CLIENT_ABORT	2014-10-21T01:42:32.000Z	1413855752.829	
1048504	zaphod06.cdnlab.comcast.net-480	4998	000	200	ERR_CLIENT_ABORT	2014-10-21T01:42:32.000Z	1413855752.840	
1048504	zaphod06.cdnlab.comcast.net-416	5002	000	200	ERR_CLIENT_ABORT	2014-10-21T01:42:32.000Z	1413855752.847	
1048504	zaphod06.cdnlab.comcast.net-406	4997	000	200	ERR_CLIENT_ABORT	2014-10-21T01:42:32.000Z	1413855752.848	
1048504	zaphod06.cdnlab.comcast.net-452	5002	000	200	ERR_CLIENT_ABORT	2014-10-21T01:42:32.000Z	1413855752.848	
1048504	zaphod06.cdnlab.comcast.net-478	5005	000	200	ERR_CLIENT_ABORT	2014-10-21T01:42:32.000Z	1413855752.859	
1048504	zaphod06.cdnlab.comcast.net-464	5002	000	200	ERR_CLIENT_ABORT	2014-10-21T01:42:32.000Z	1413855752.859	
1048504	zaphod06.cdnlab.comcast.net-476	5001	000	200	ERR_CLIENT_ABORT	2014-10-21T01:42:32.000Z	1413855752.860	
1048504	zaphod06.cdnlab.comcast.net-444	5001	000	200	ERR_CLIENT_ABORT	2014-10-21T01:42:32.000Z	1413855752.871	
1048504	zaphod06.cdnlab.comcast.net-458	5001	000	200	ERR_CLIENT_ABORT	2014-10-21T01:42:32.000Z	1413855752.871	
1048504	zaphod06.cdnlab.comcast.net-440	5004	000	200	ERR_CLIENT_ABORT	2014-10-21T01:42:32.000Z	1413855752.972	
821016	zaphod06.cdnlab.comcast.net-22	8709	200	200	ERR_CLIENT_ABORT	2014-10-21T01:42:35.000Z	1413855755.813	

-22 is first request @ cache, but 2nd request was the one that tripped the timeout

New test:

All settings, realistic delays on origin

Reasonable Pareto distribution, packet delay = 100ms

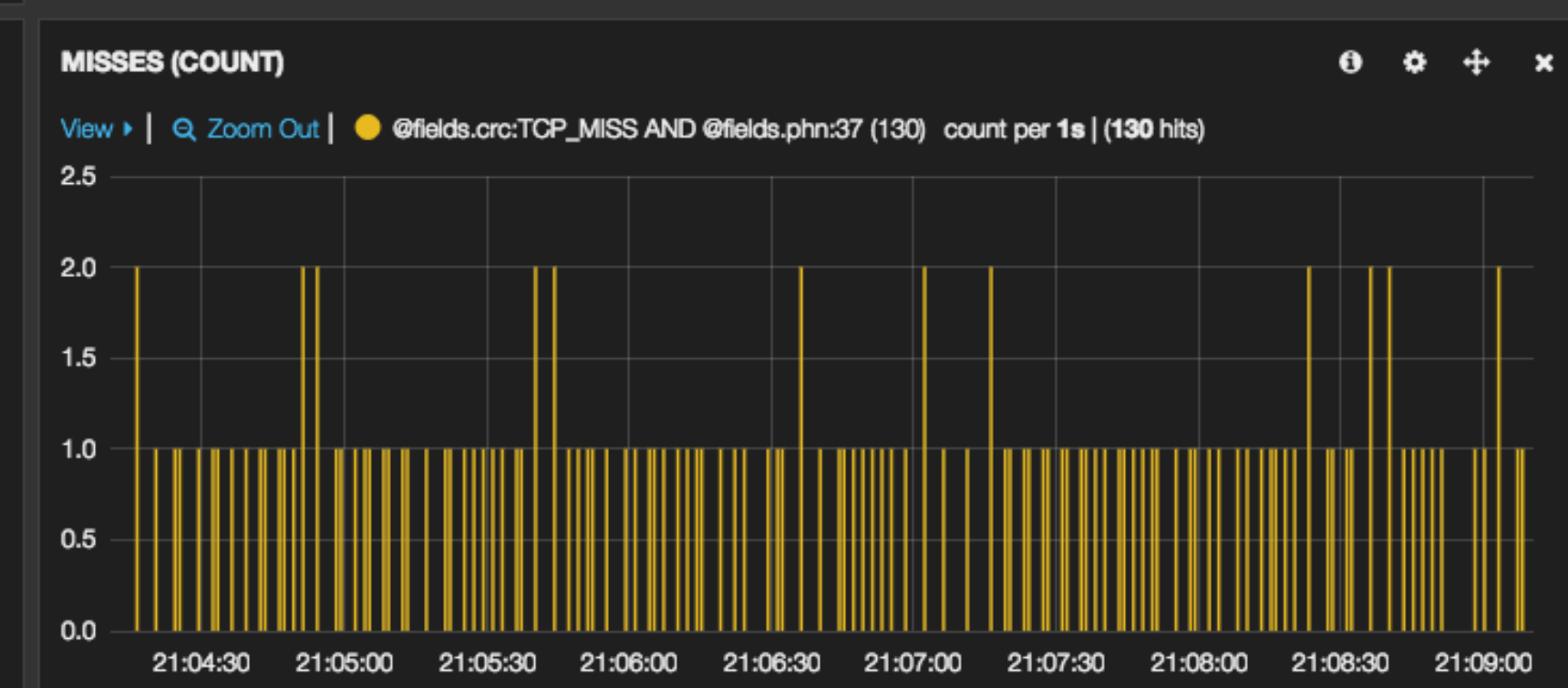
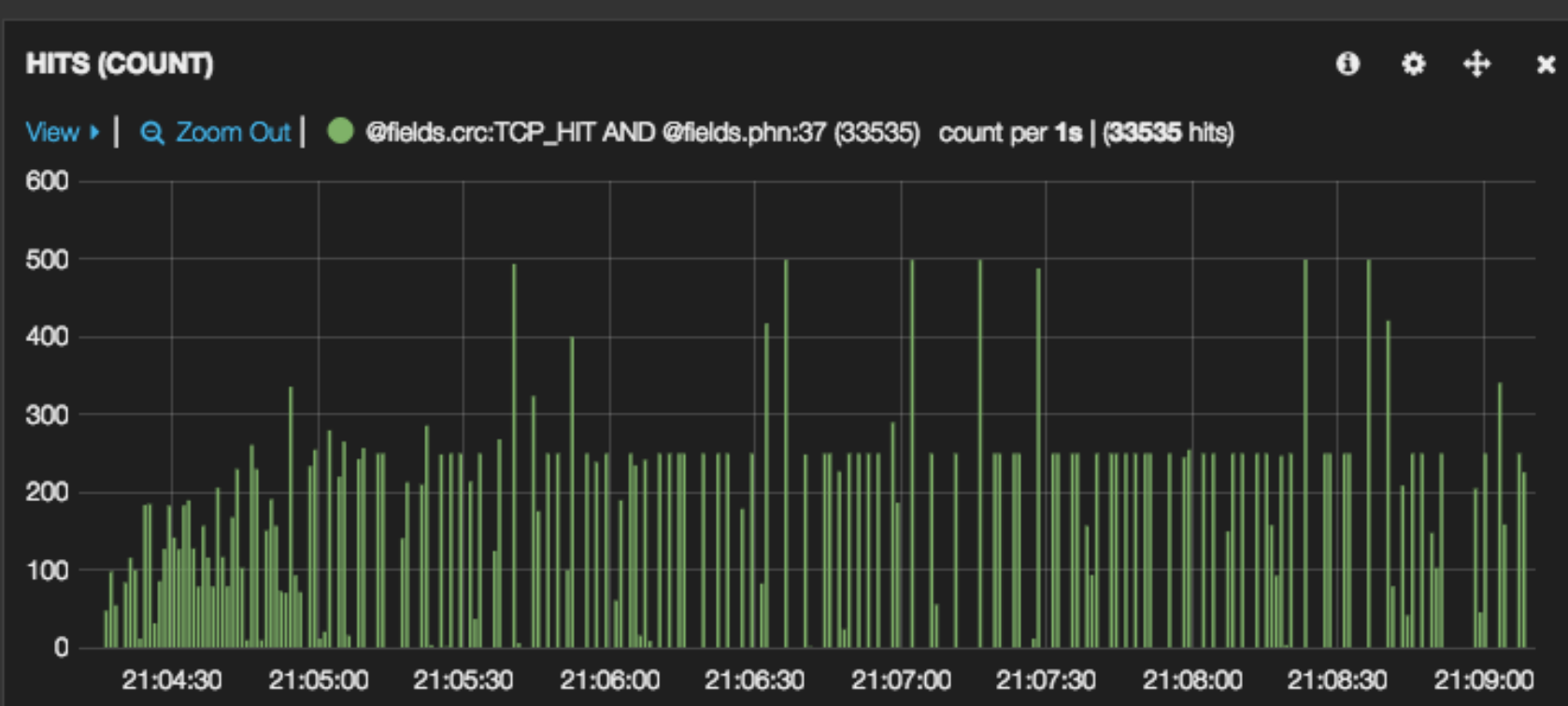
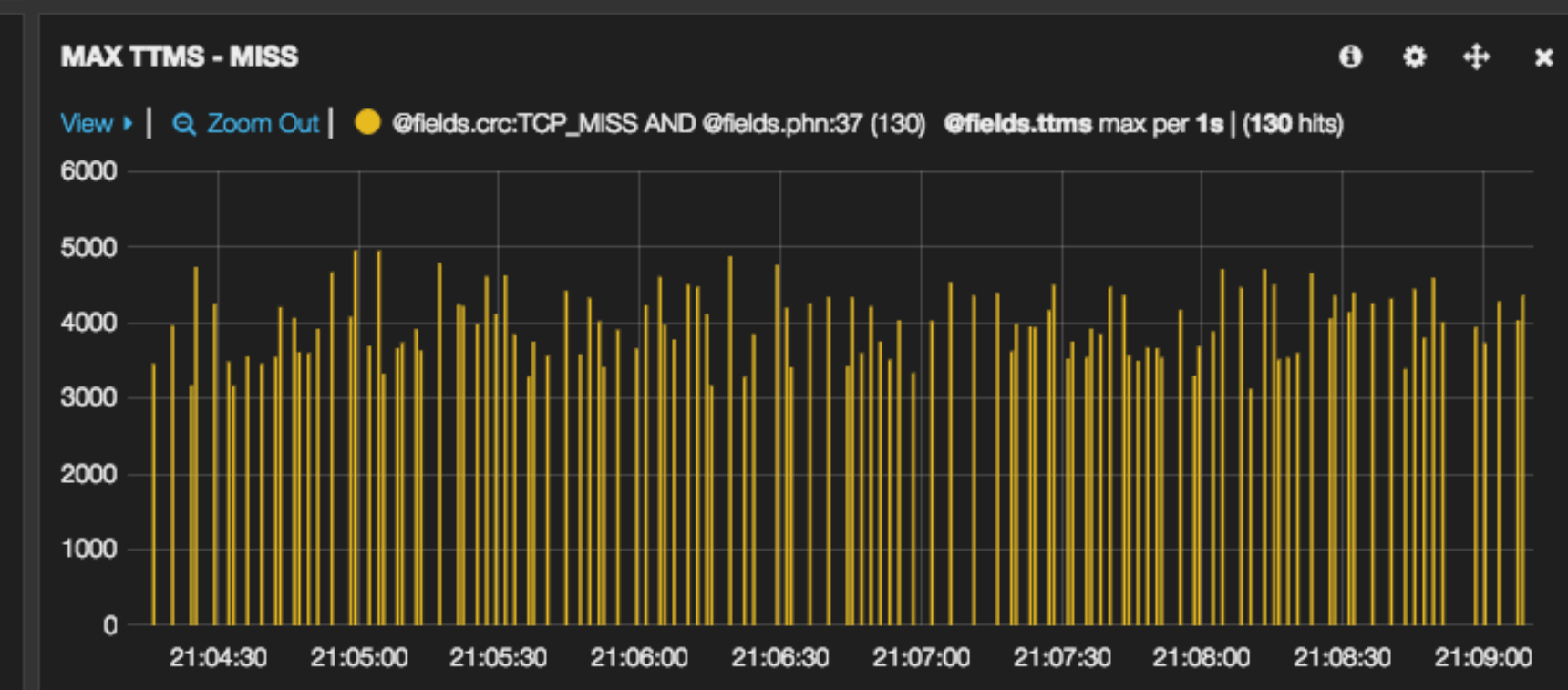
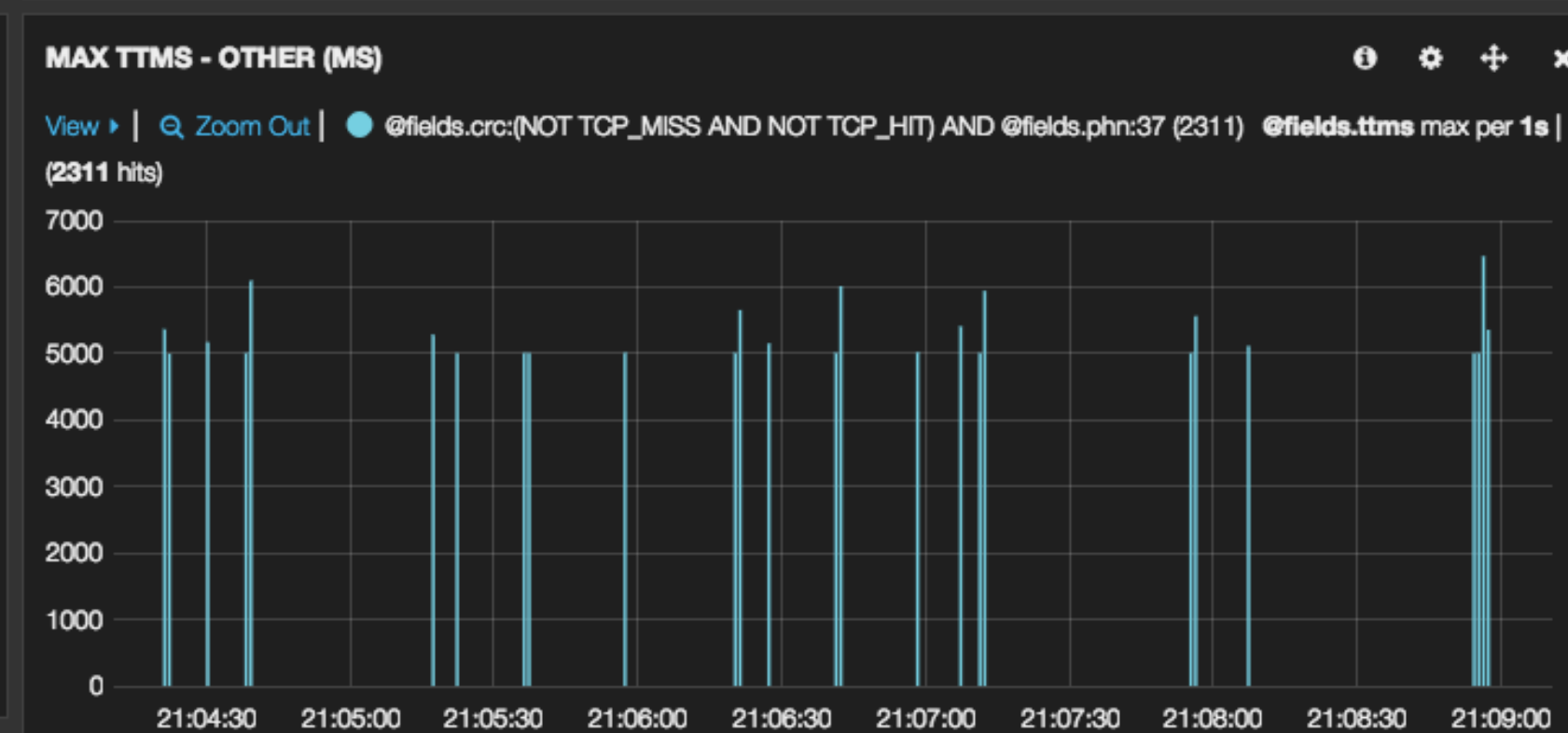
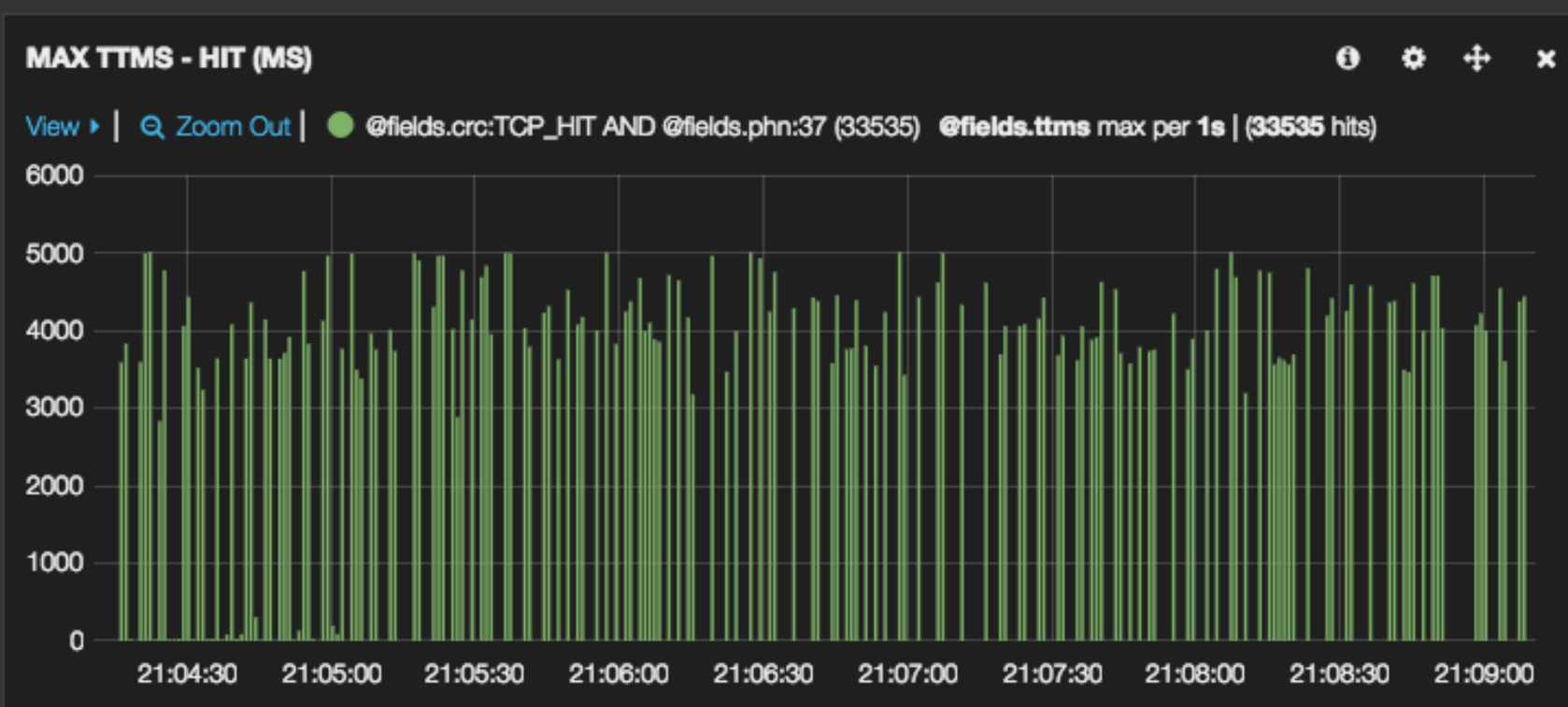
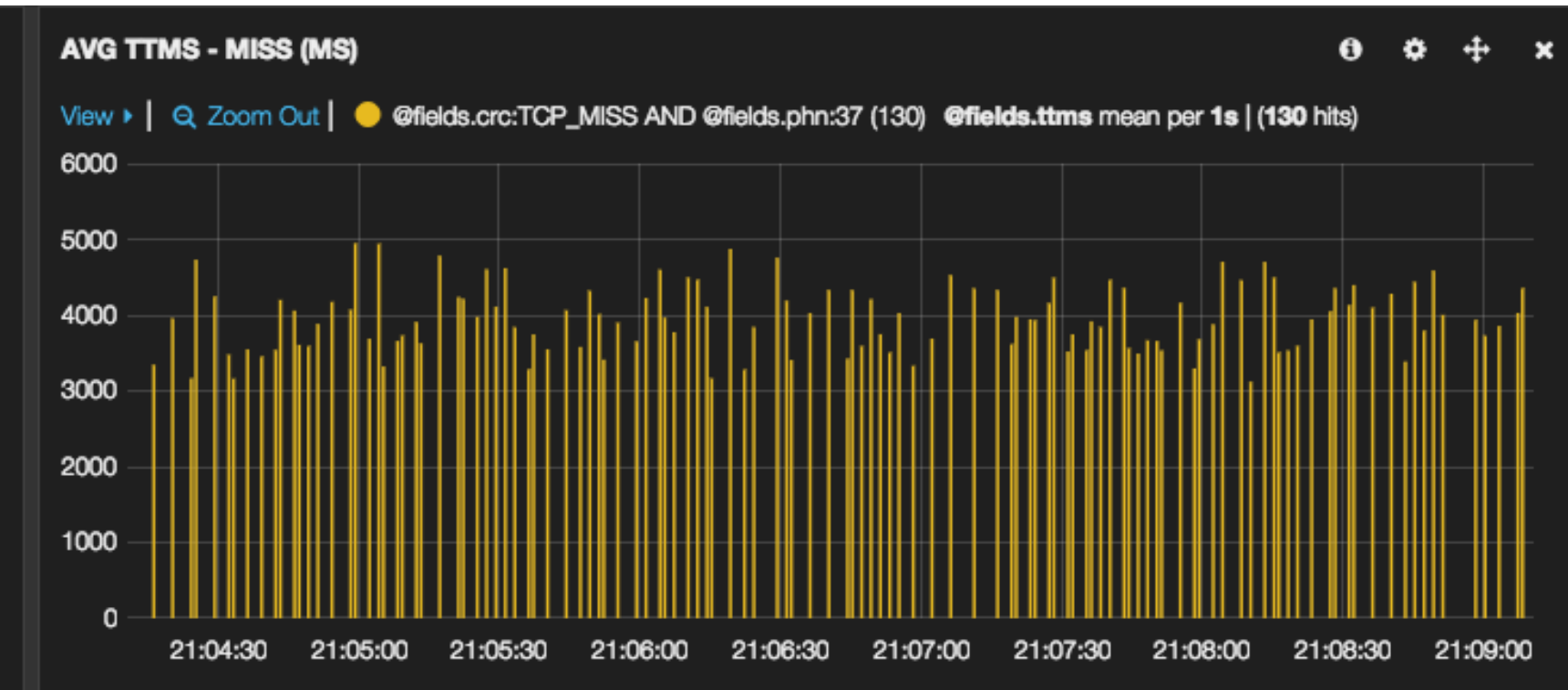
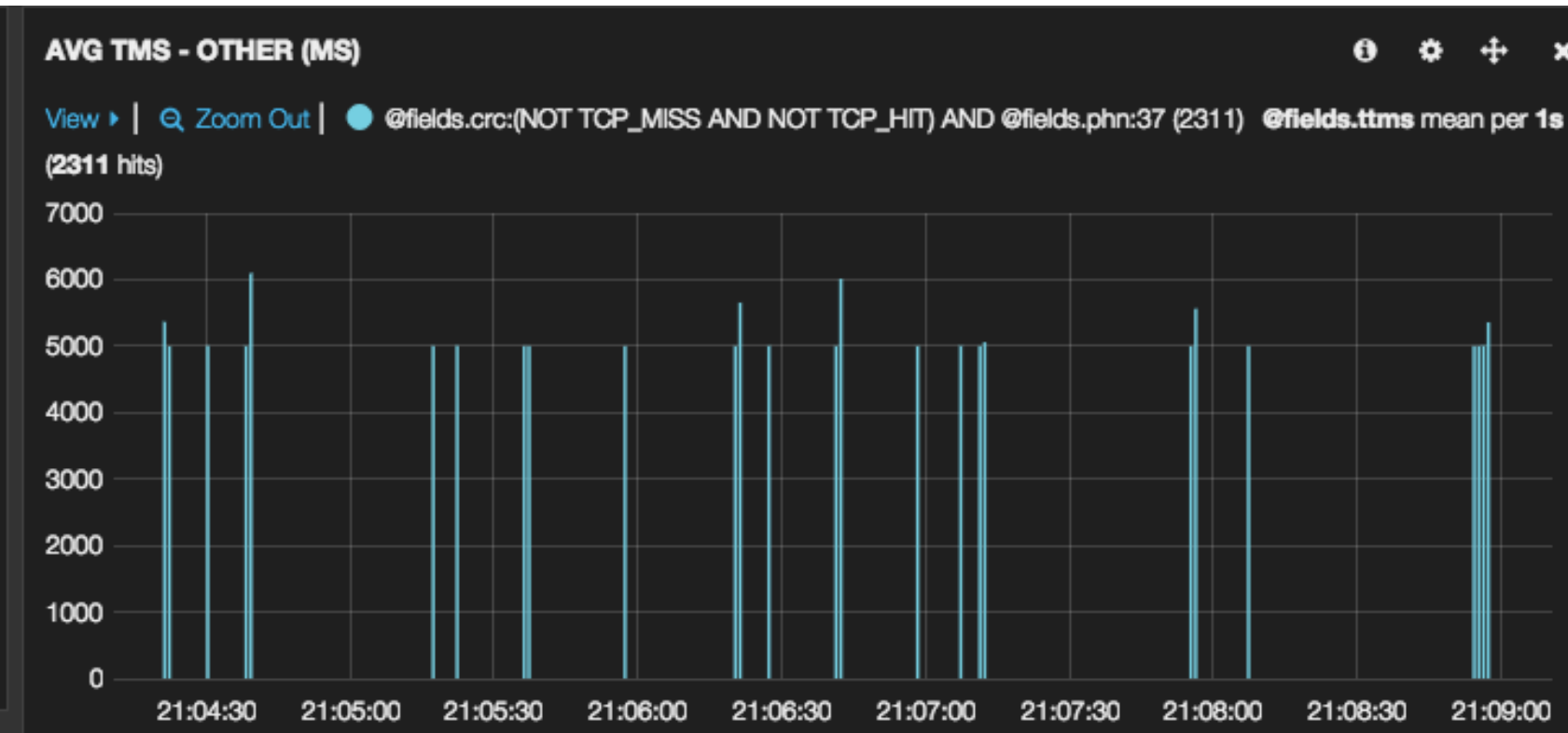
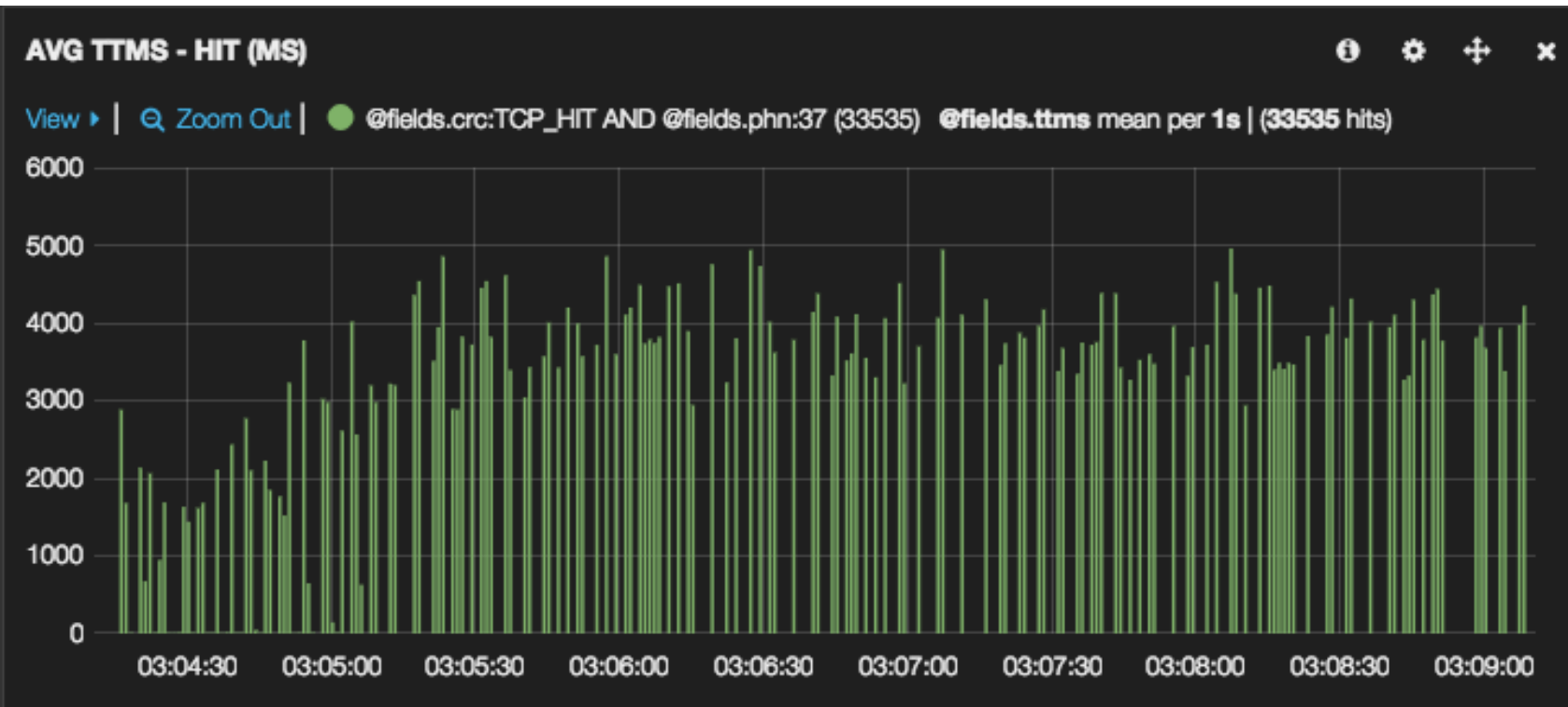
```
[root@zaphod02 ~]# tc qdisc show dev ens2f0
qdisc netem 800a: root refcnt 2 limit 1000 delay 100.0ms
[root@zaphod02 ~]#
[root@zaphod02 ~]#
[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$|^$#'
LoadModule hotair_module      /usr/lib64/httpd/modules/mod_hotair.so
<LocationMatch "(\\.ism*|\\.f4m|\\.Seg\\d-Frag\\d.*|\\.m3u8|\\.ts)">
    SetHandler hotair
</LocationMatch>
HotairDelayParetoParams 4.2 1
[root@zaphod02 ~]#
```

```
[mtorlu9137e@ipcdn-cache-37]~$ sudo cat /usr/local/etc/header_rewrite/hdrrw.conf | grep -v “^\\#”
cond %{READ_REQUEST_HDR_HOOK}
cond %{HEAD} = live-orig-01-dns.cdnlab.comcast.net
set-config proxy.config.http.connect_attempts_timeout 2
set-config proxy.config.http.connect_attempts_max_retries_dead_server 2 [L]
[mtorlu9137e@ipcdn-cache-37]~$
```

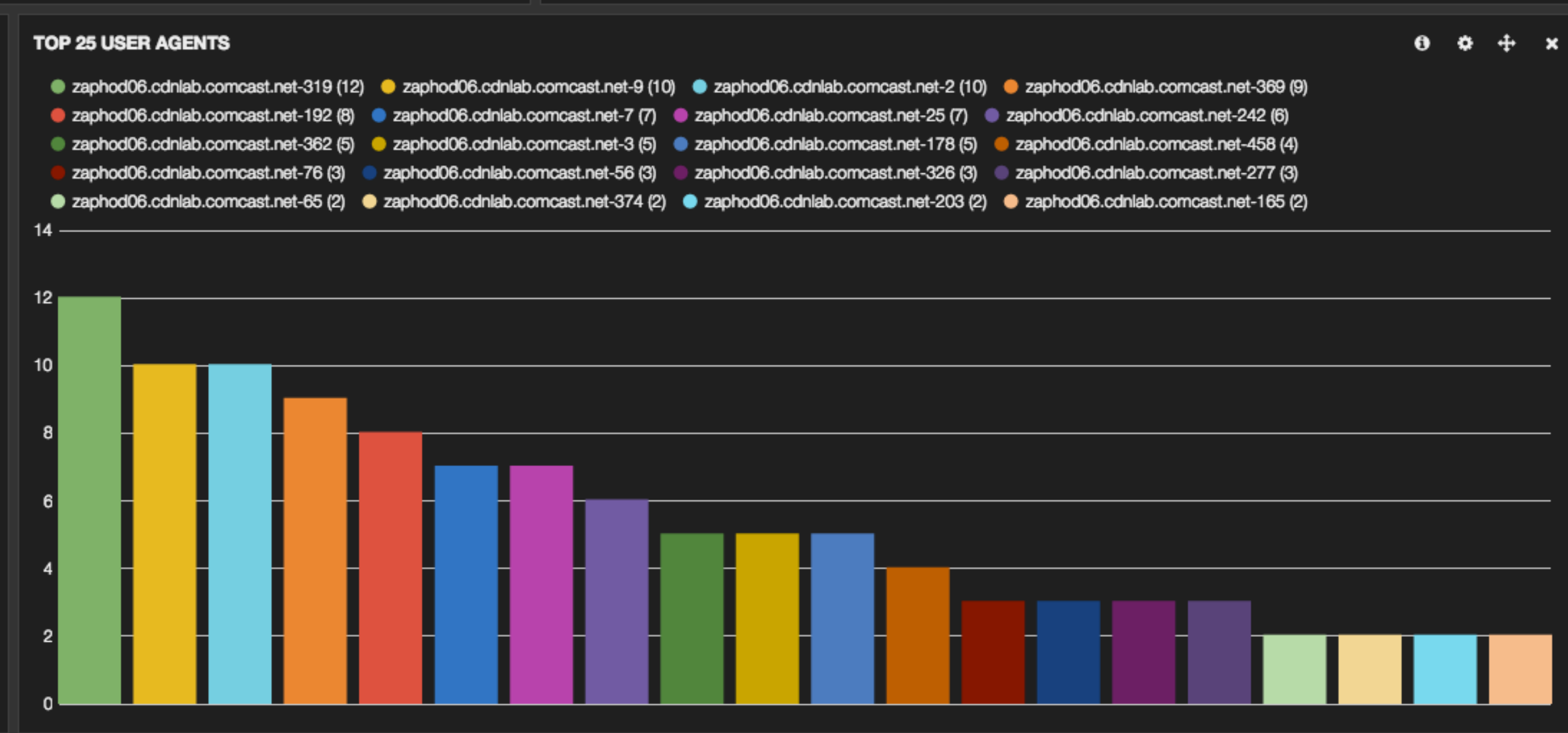
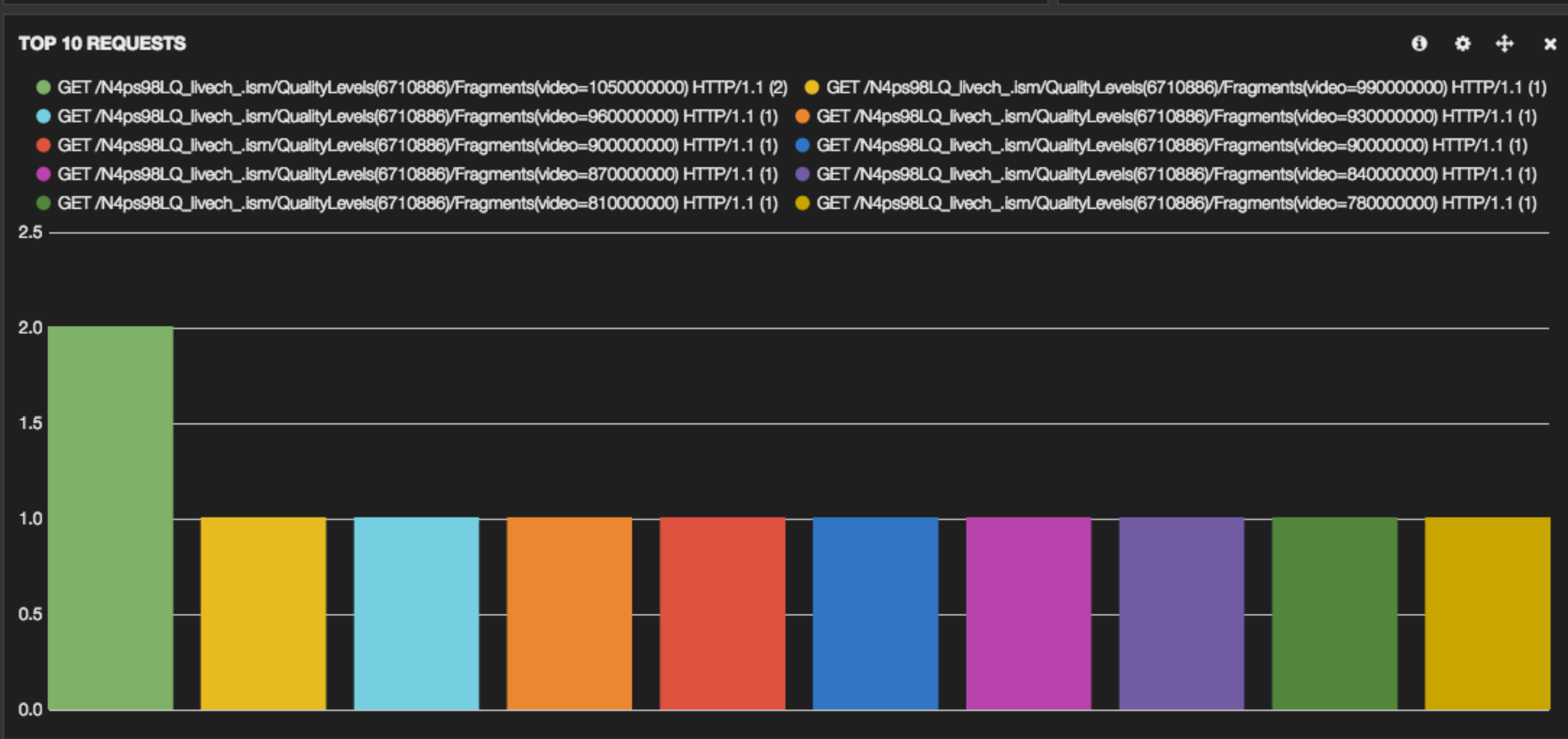
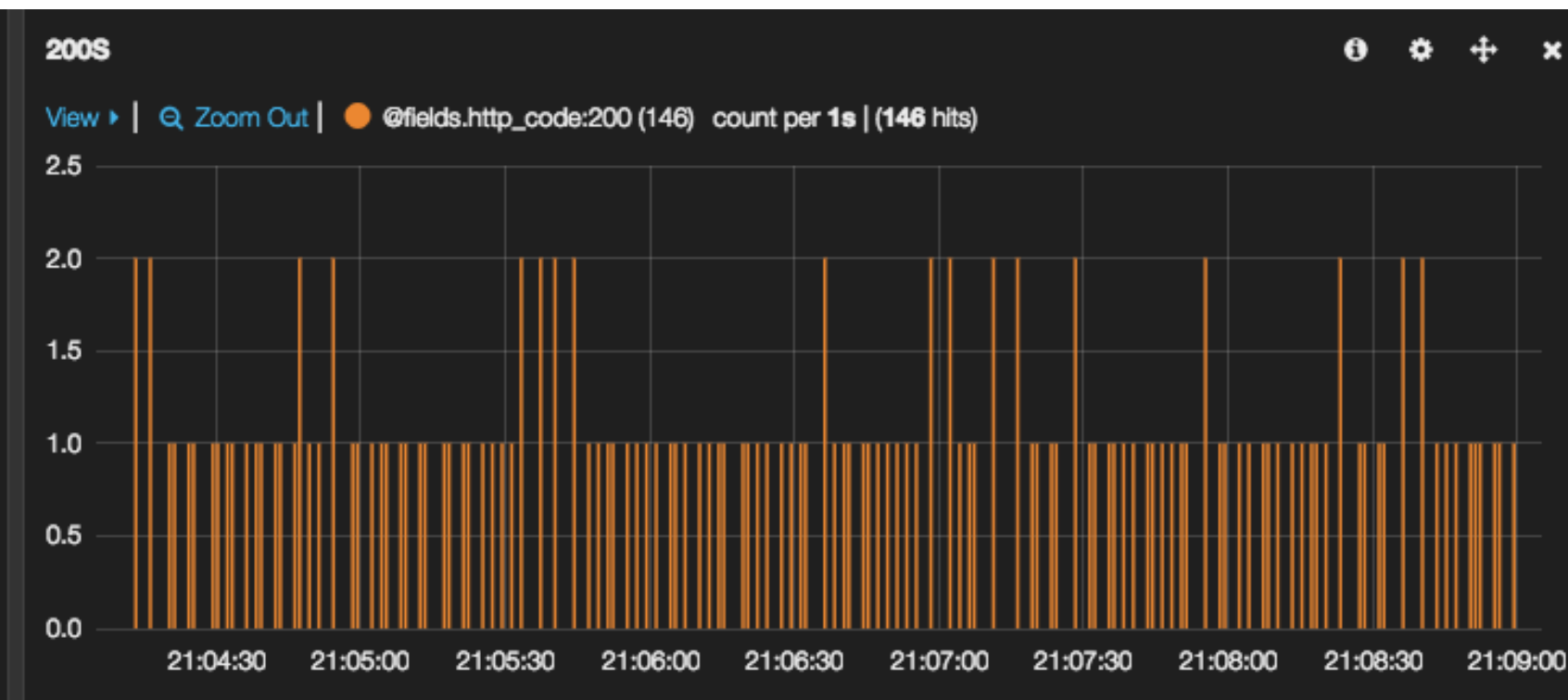
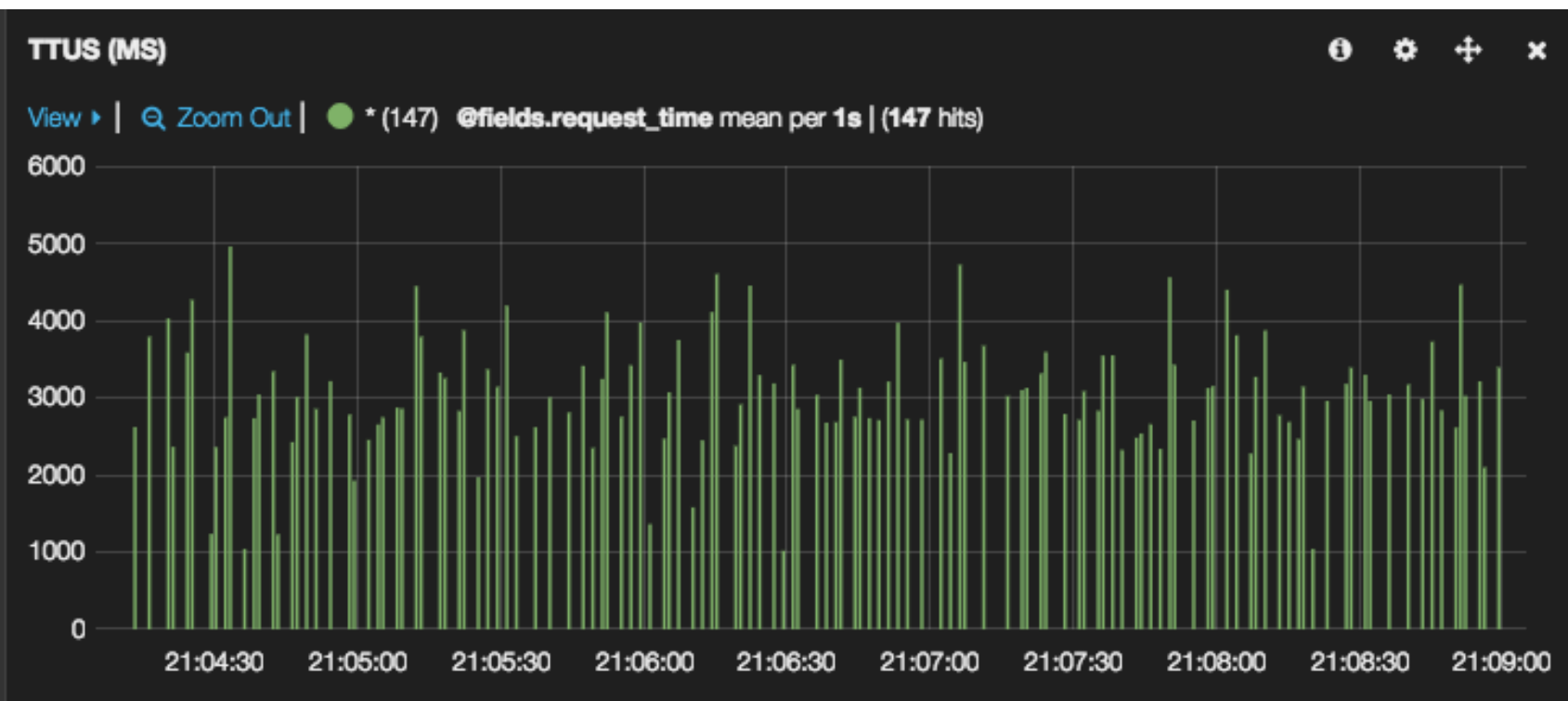
```
[mtorlu9137e@ipcdn-cache-37]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn
Tue Oct 21 02:57:05 UTC 2014
Version of this script: 0.34e
ERROR Lines in /opt/trafficserver/etc/trafficserver//plugin.config do not match Twelve Monkeys.
ERROR Config file: plugin.config line only on disk: header_rewrite.so hdrrw.conf
ERROR Lines in /opt/trafficserver/etc/trafficserver//records.config do not match Twelve Monkeys.
ERROR Config file: records.config line only in 12M: CONFIG proxy.config.http.transaction_active_timeout_in INT 900
ERROR Config file: records.config line only on disk: CONFIG proxy.config.http.transaction_active_timeout_in INT 5
[mtorlu9137e@ipcdn-cache-37]~$
```

```
[mtorlu9137e@zaphod06]lcontrol$ cat fwd_proxy_tight_c37.json
{
    "clients": "480",
    "bitrate": "2500000",
    "test_type": "TestEngines::LLL",
    "abr_type": "hls",
    "frag_duration": "50000000",
    "origins": "1",
    "live": "100",
    "active_channels": "1",
    "vod_cache_name" : "load-test-01.cdnlab.comcast.net",
    "live_cache_name" : "live-orig-01-dns.cdnlab.comcast.net",
    "cache_ip" : "69.241.62.86",
    "vod_cache_hitratio" : "80",
    "live_active_fragments" : "2",
    "vod_bitrates" : "4300000,3000000",
    "live_bitrates" : "6710886,5033164",
    "max_long_tts_percentage" : "0.5",
    "long_tts_time" : "1.5",
    "proxy_mode" : "forward",
    "ipv6_percentage" : 0,
    "via_headers" : 1
}
[mtorlu9137e@zaphod06]lcontrol$
```


Mid graphs

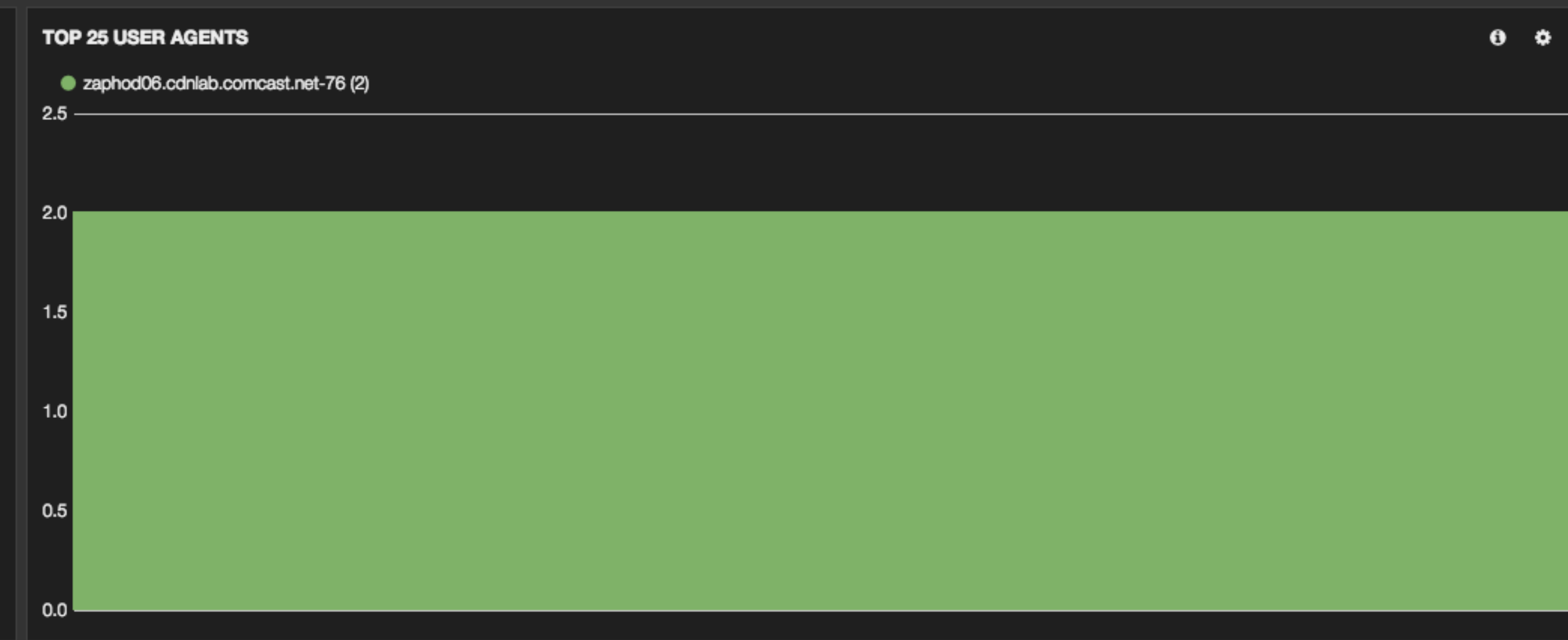
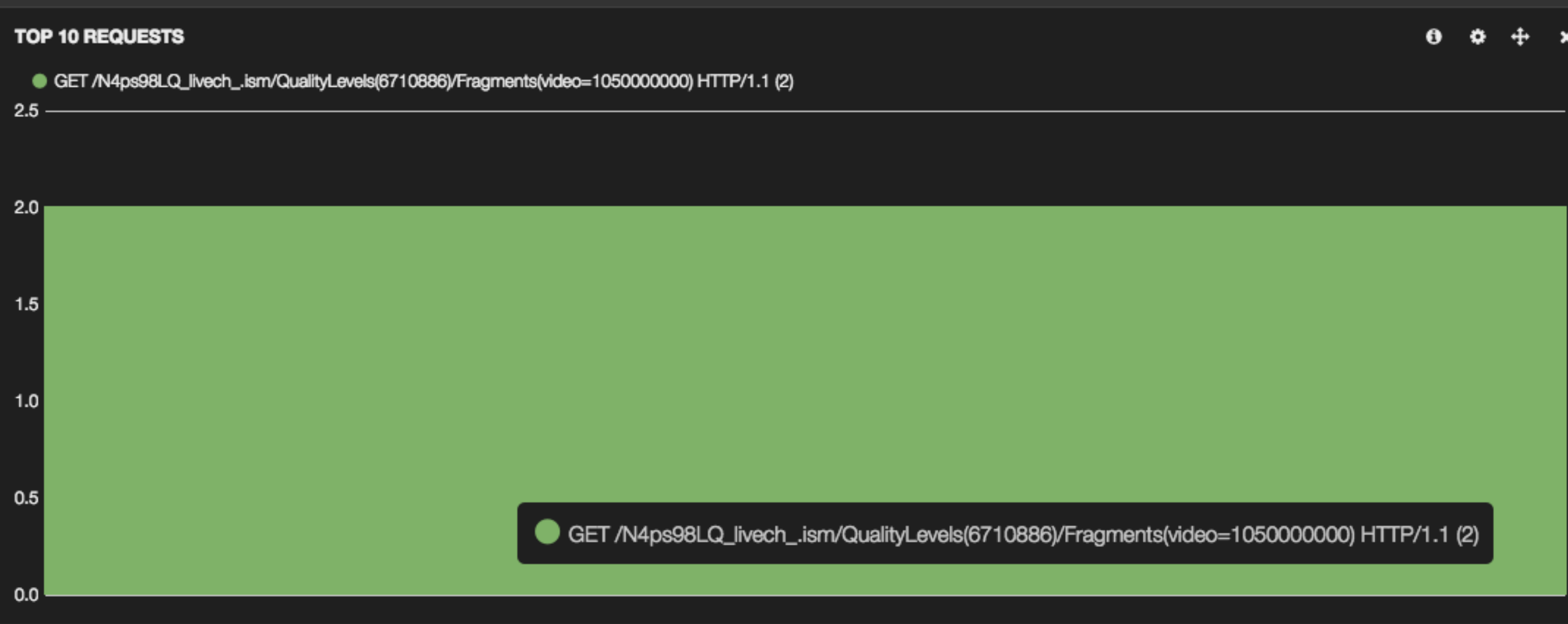
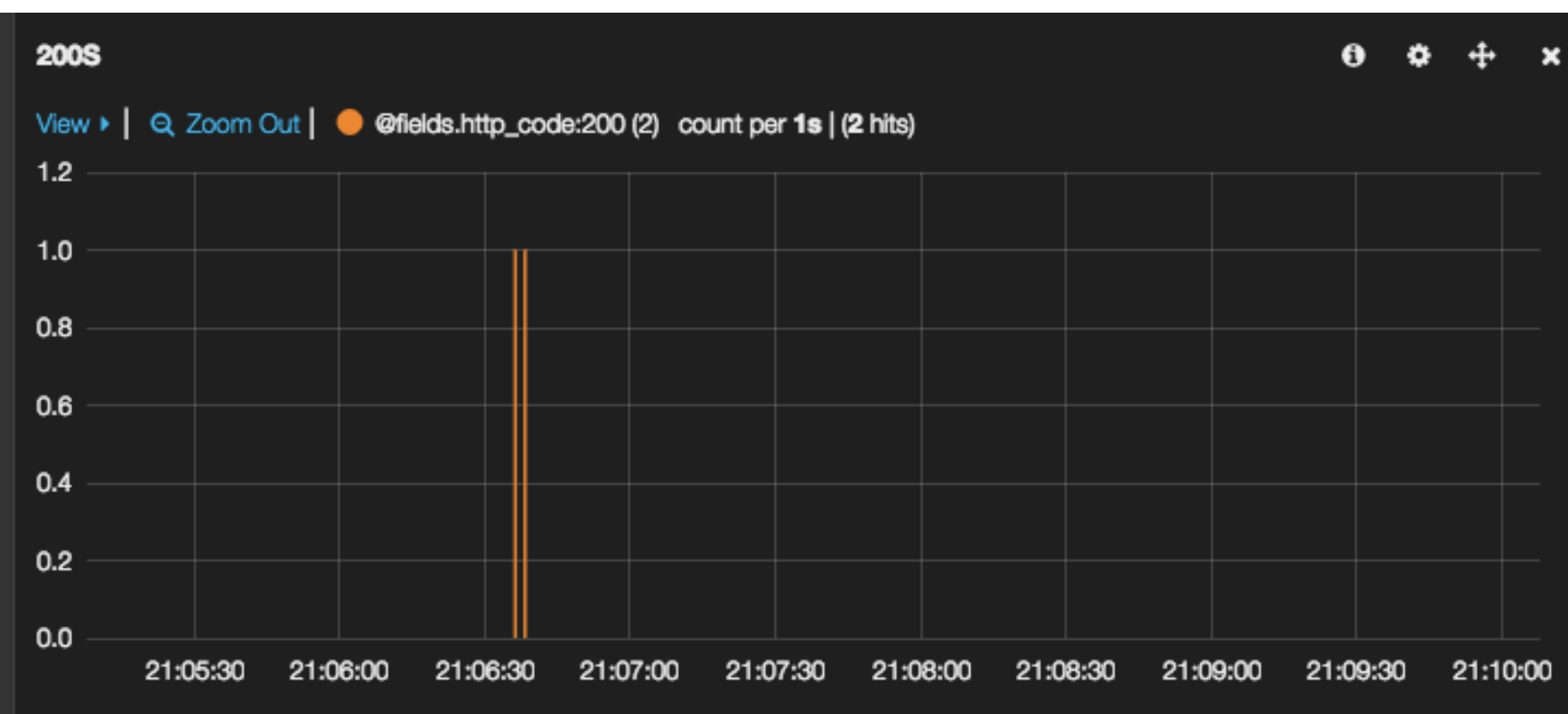
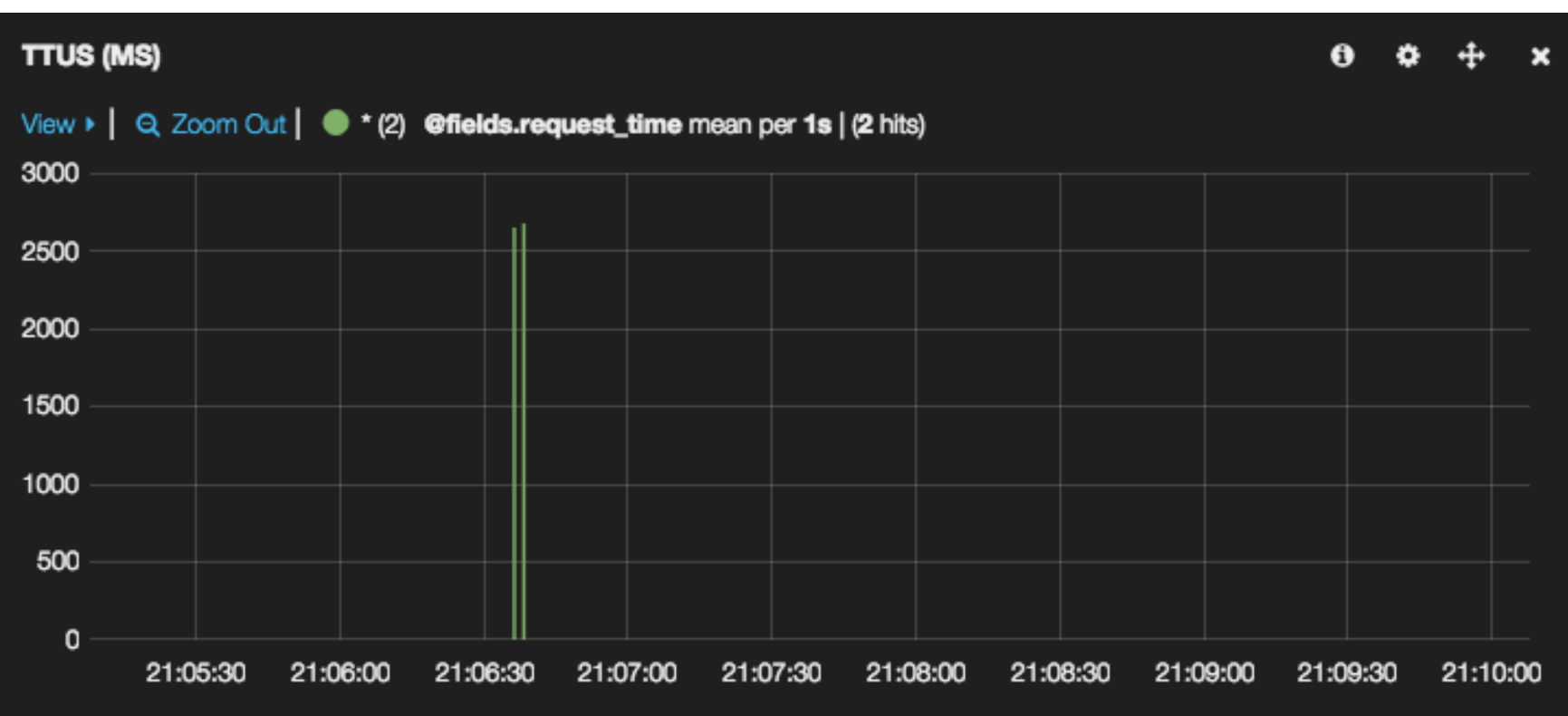


Origin graphs



Zoom in

Origin graphs



EVENTS

0 to 2 of 2 available for paging

Fields	@timestamp	@fields.sec_frac	@fields.request	@fields.http_user_agent	@fields.request_time	@fields.http_code
All (27) / Current (21)	2014-10-21T03:06:36.000Z	0.24	GET /N4ps98LQ_livech_ism/QualityLevels(6710886)/Fragments(video=1050000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-76	2647974	200
Type to filter...	2014-10-21T03:06:38.000Z	0.807	GET /N4ps98LQ_livech_ism/QualityLevels(6710886)/Fragments(video=1050000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-76	2674139	200

New test:

How does RWW perform when first request requires a revalidation?

max-age=1

```
[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$|^\\#'
LoadModule hotair_module      /usr/lib64/httpd/modules/mod_hotair.so
<LocationMatch "(\\.ism*|\\.f4m|\\.m3u8|\\.ts)">
    SetHandler hotair
    Header set Cache-Control "max-age=1"
</LocationMatch>
HotairDelayParetoParams 4.2 1
[root@zaphod02 ~]#

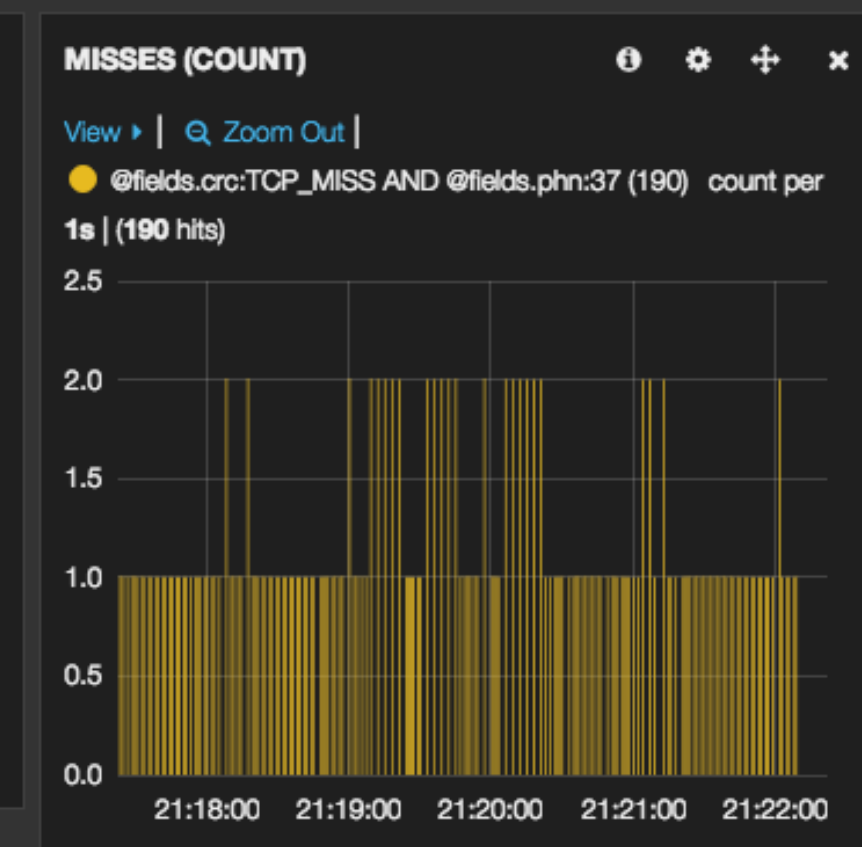
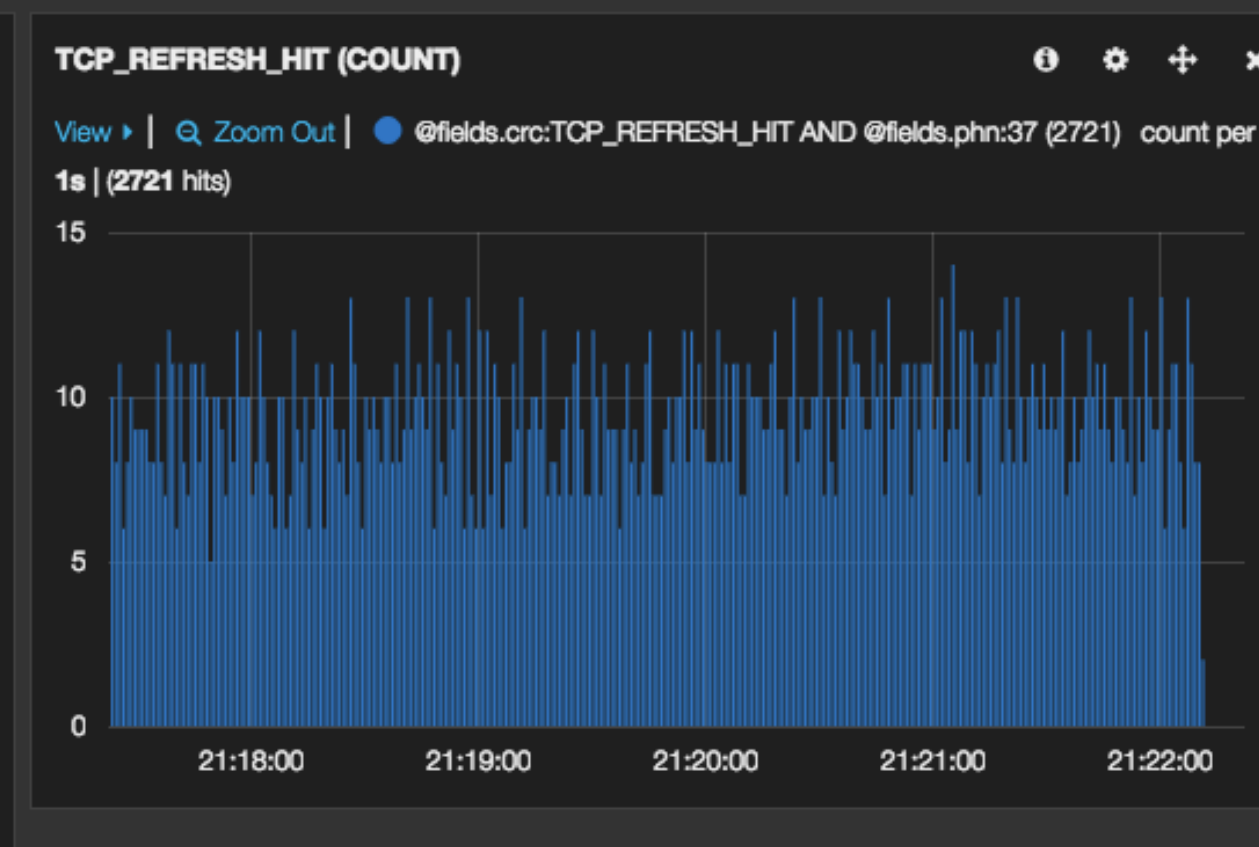
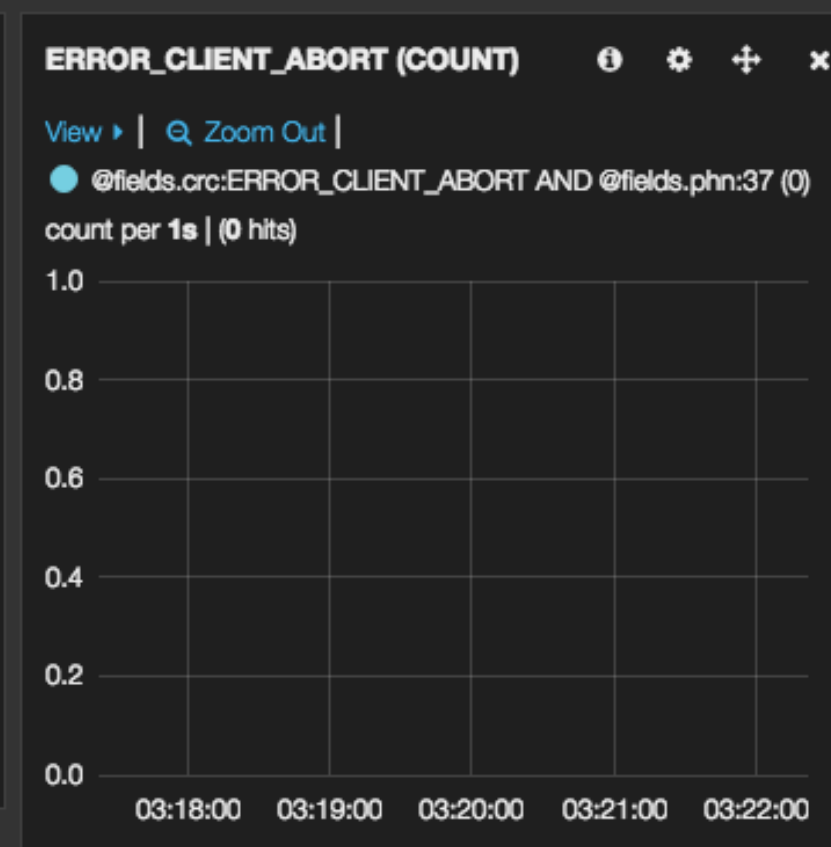
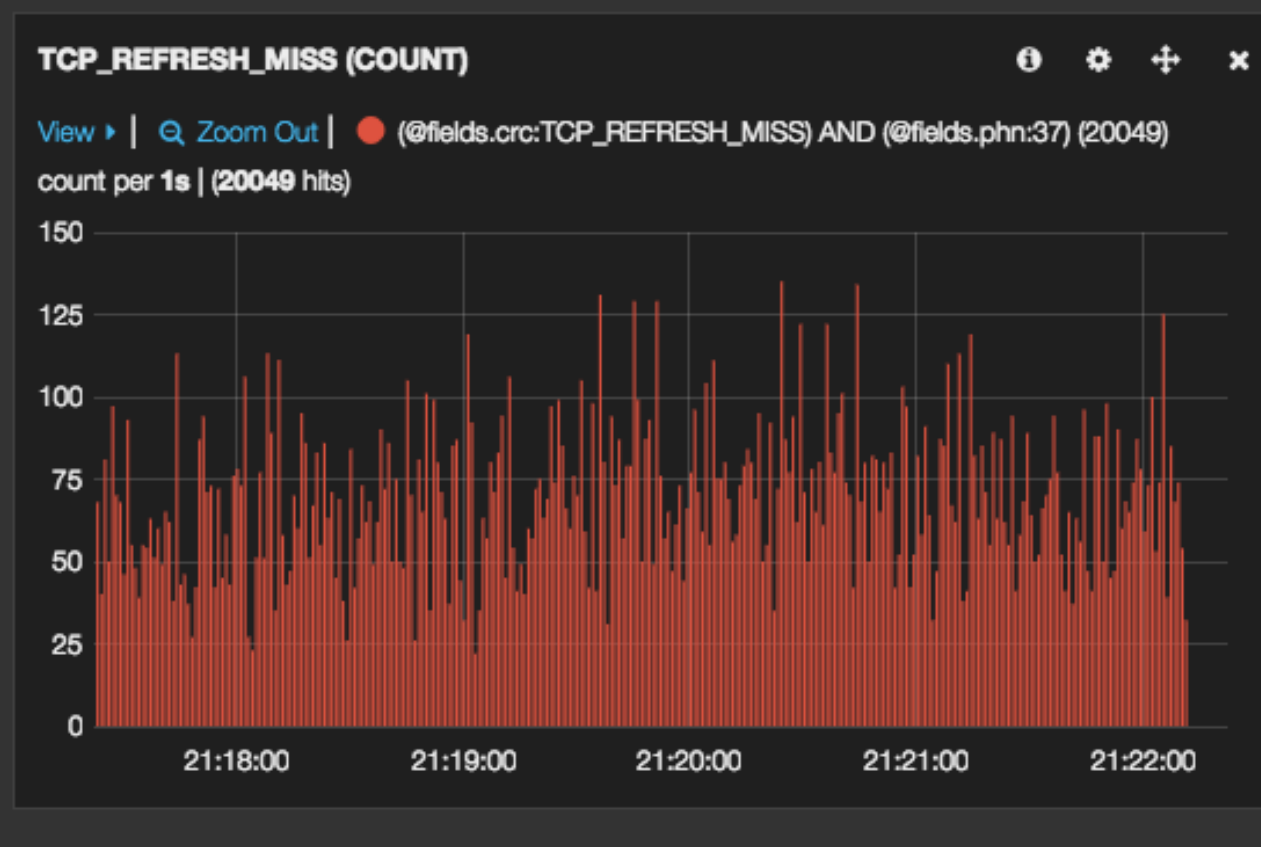
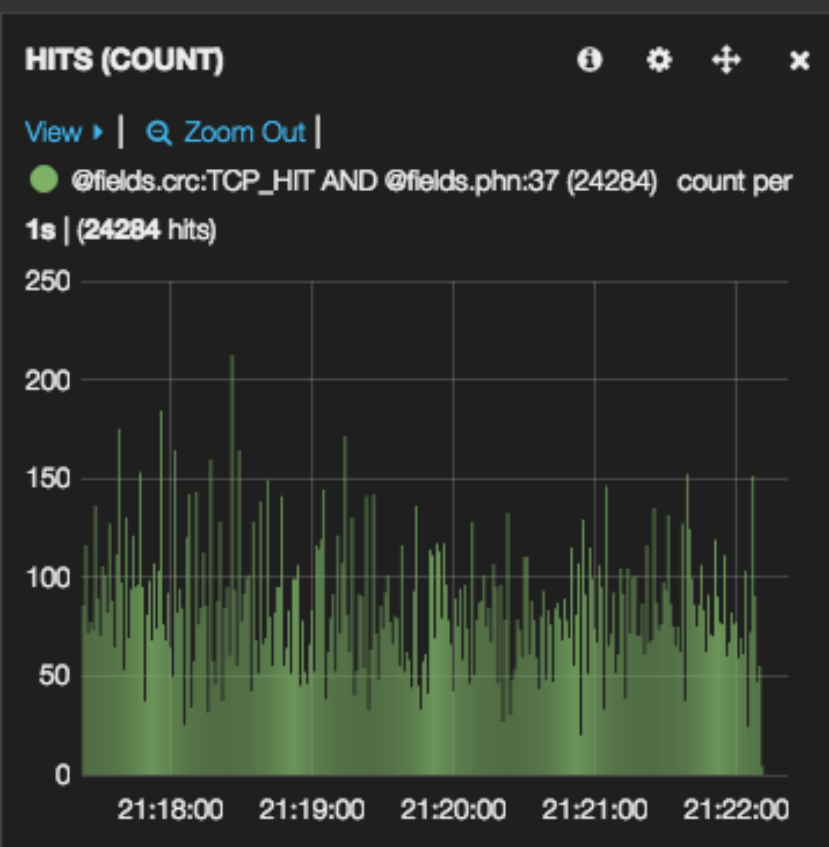
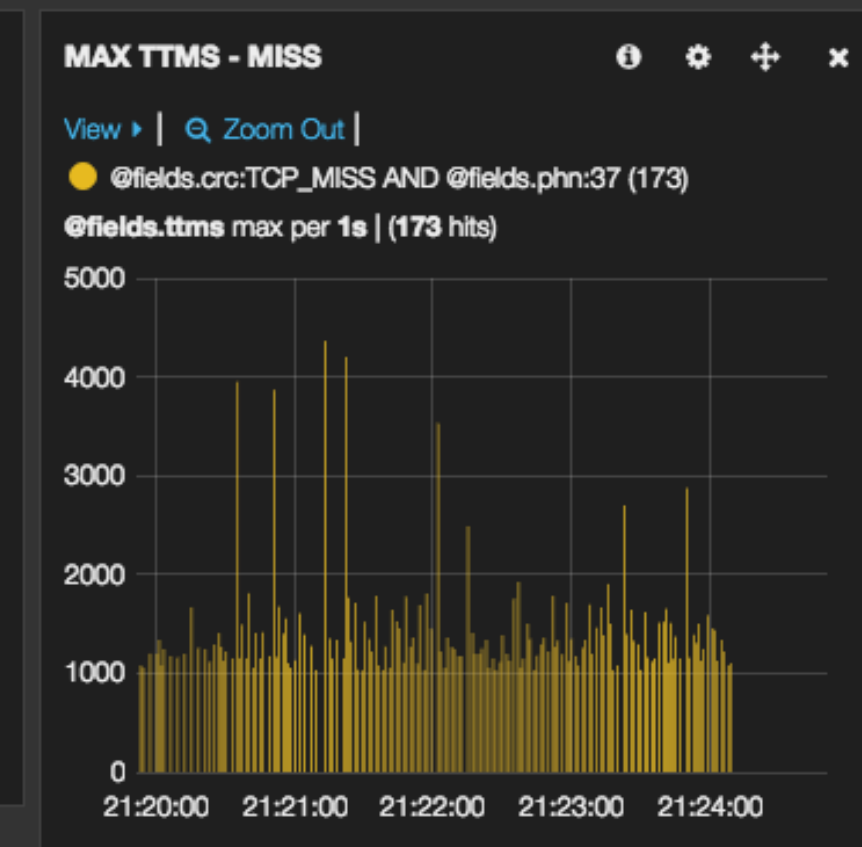
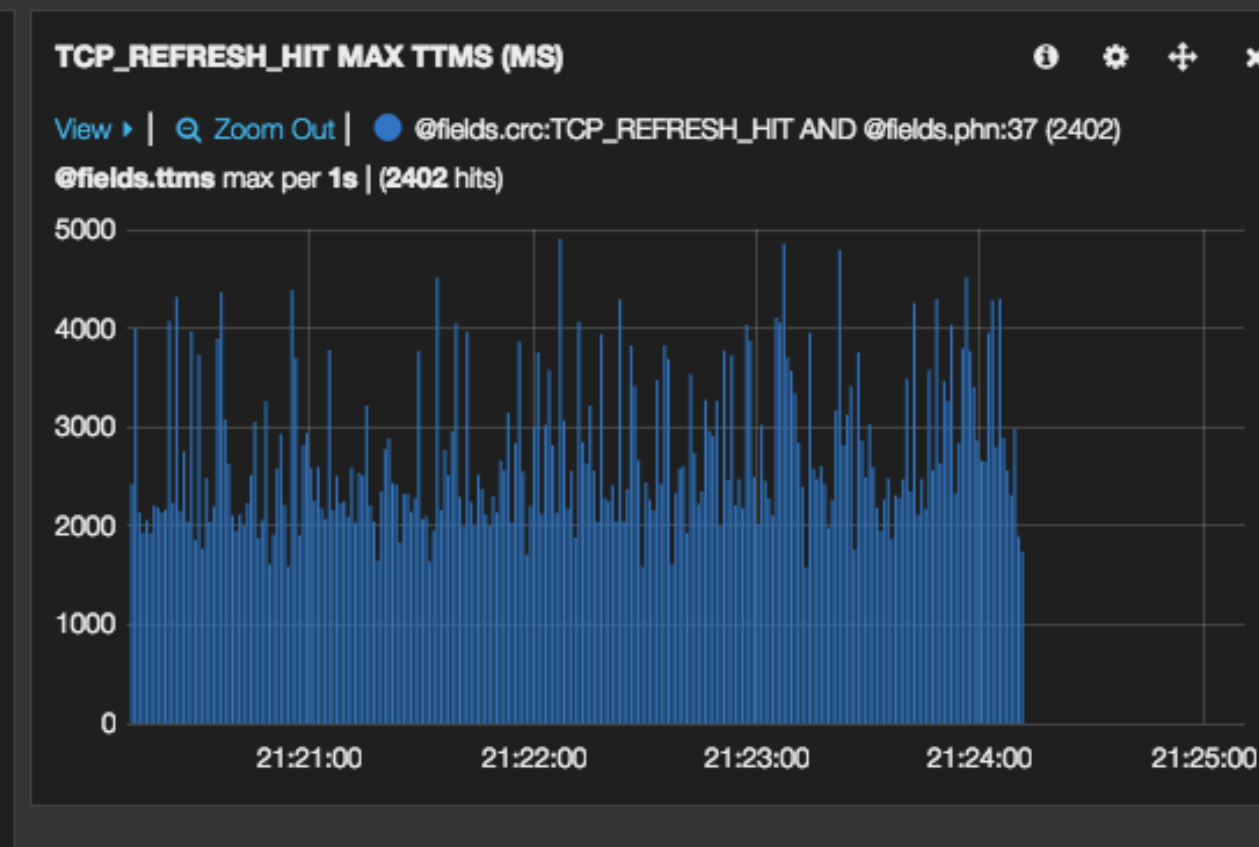
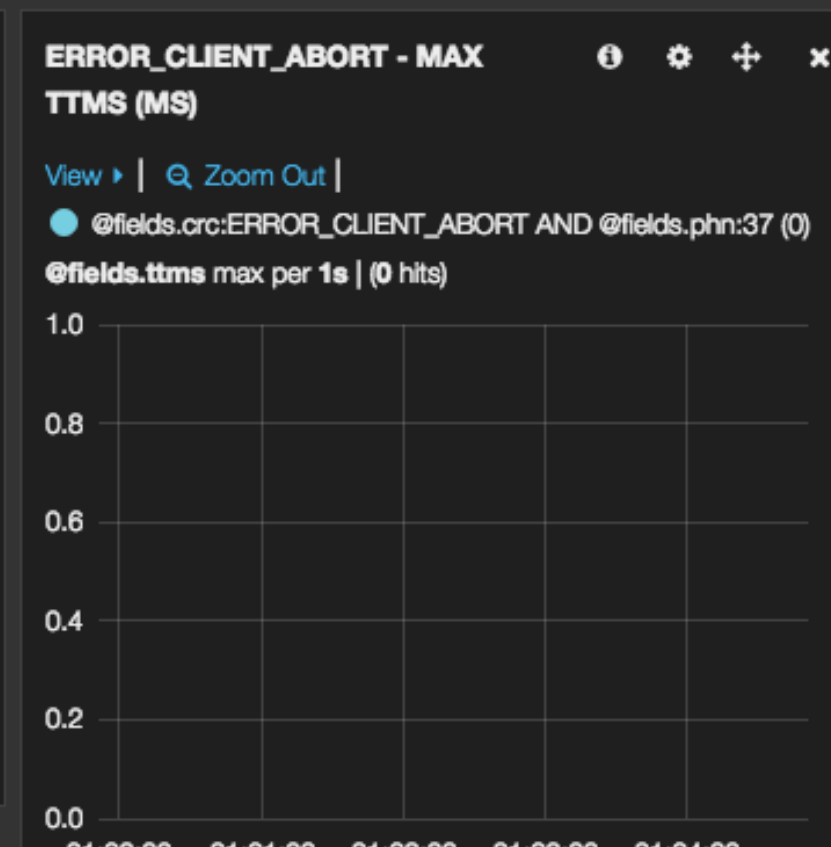
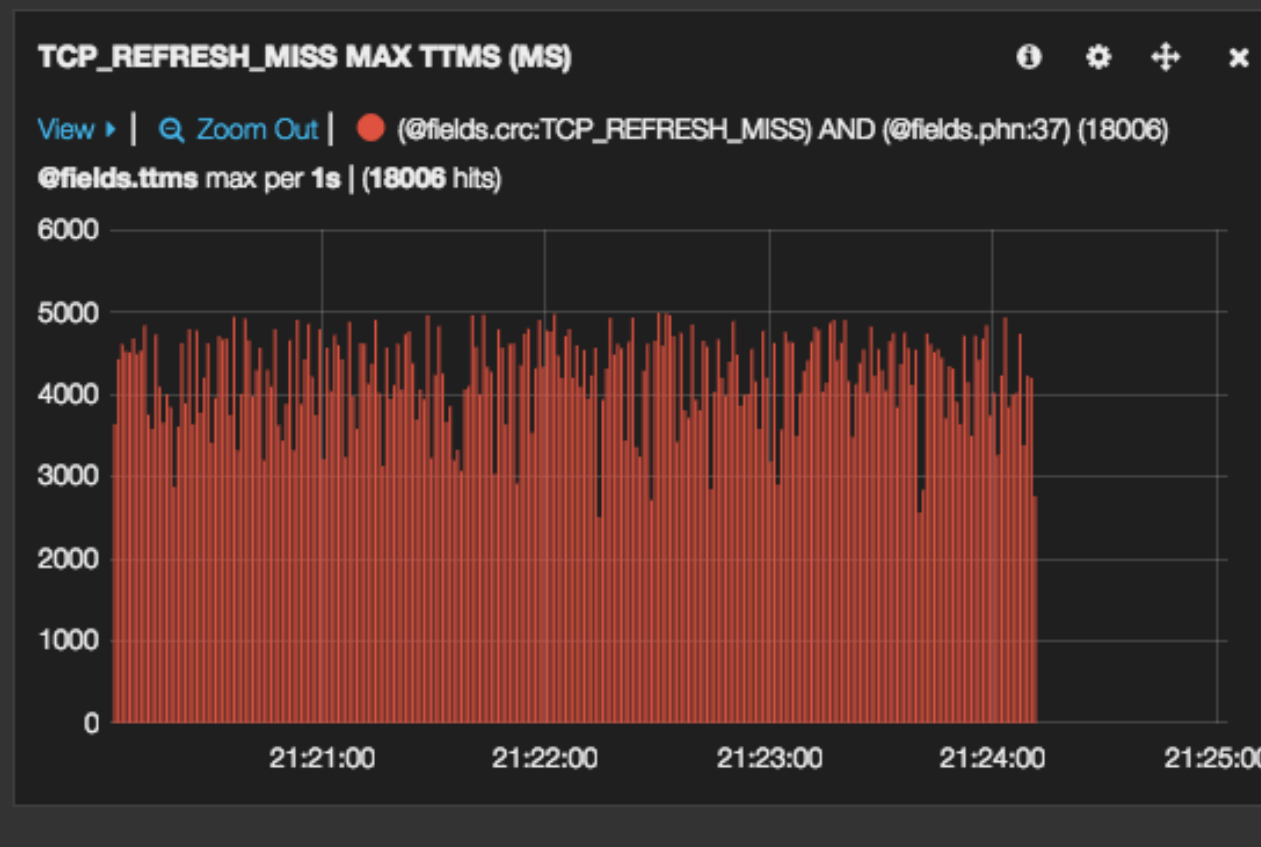
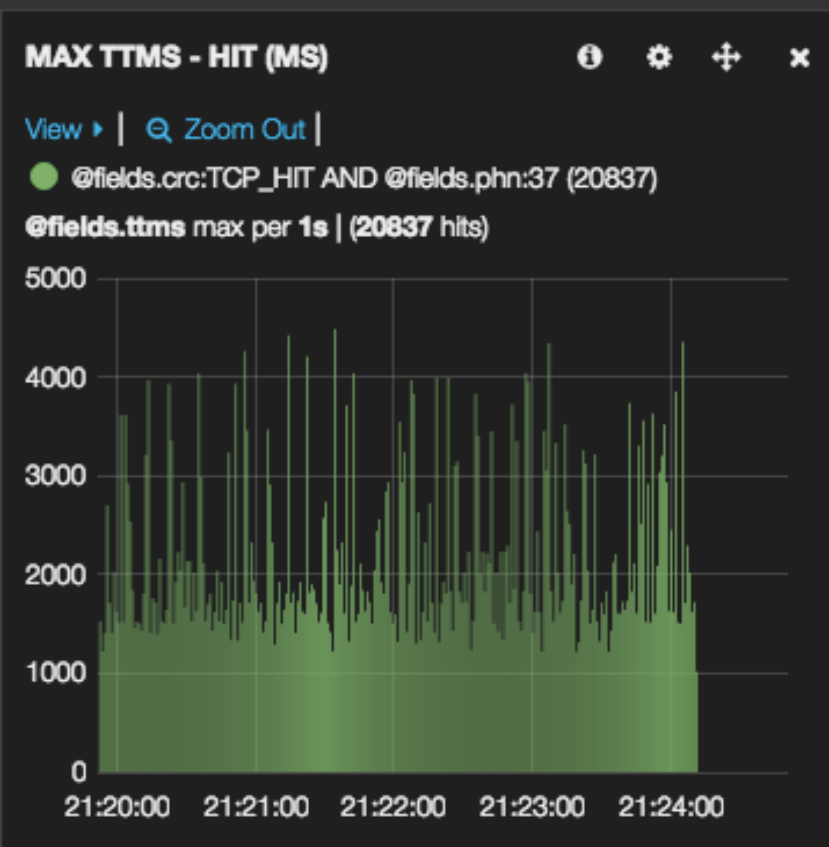
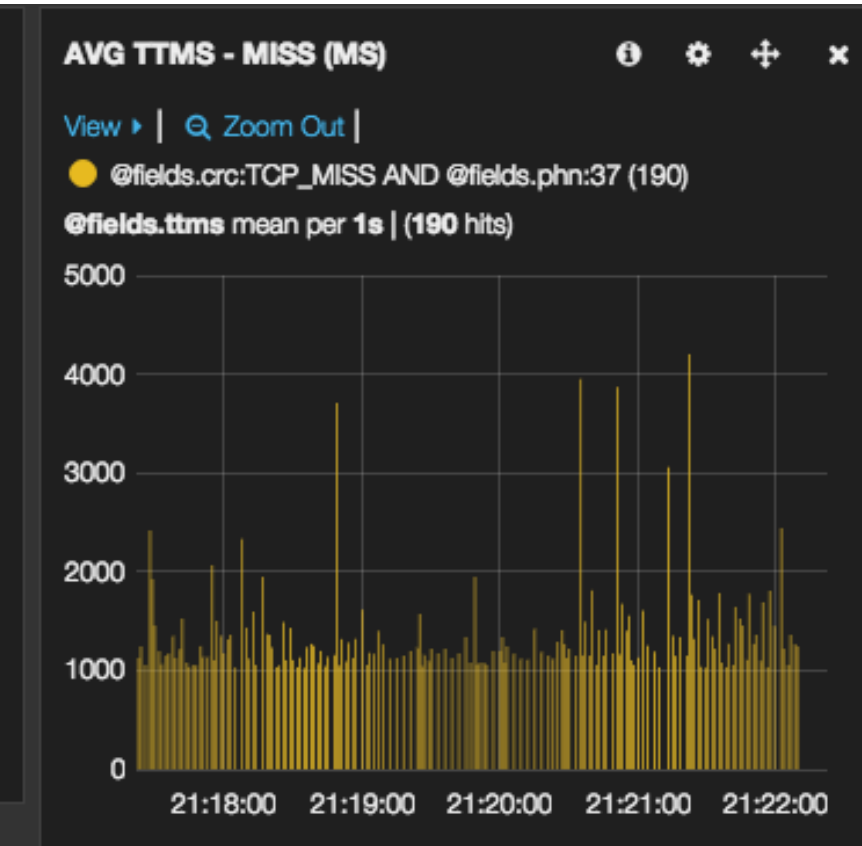
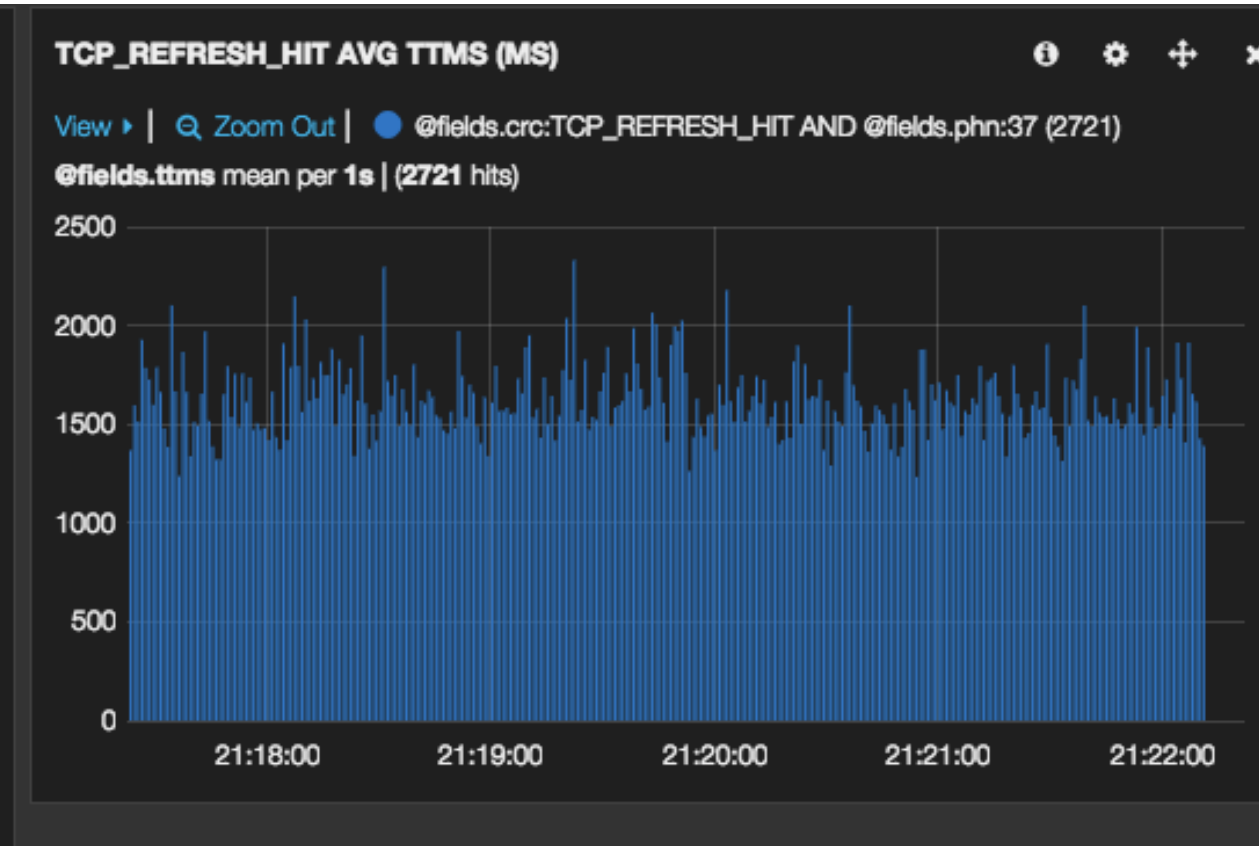
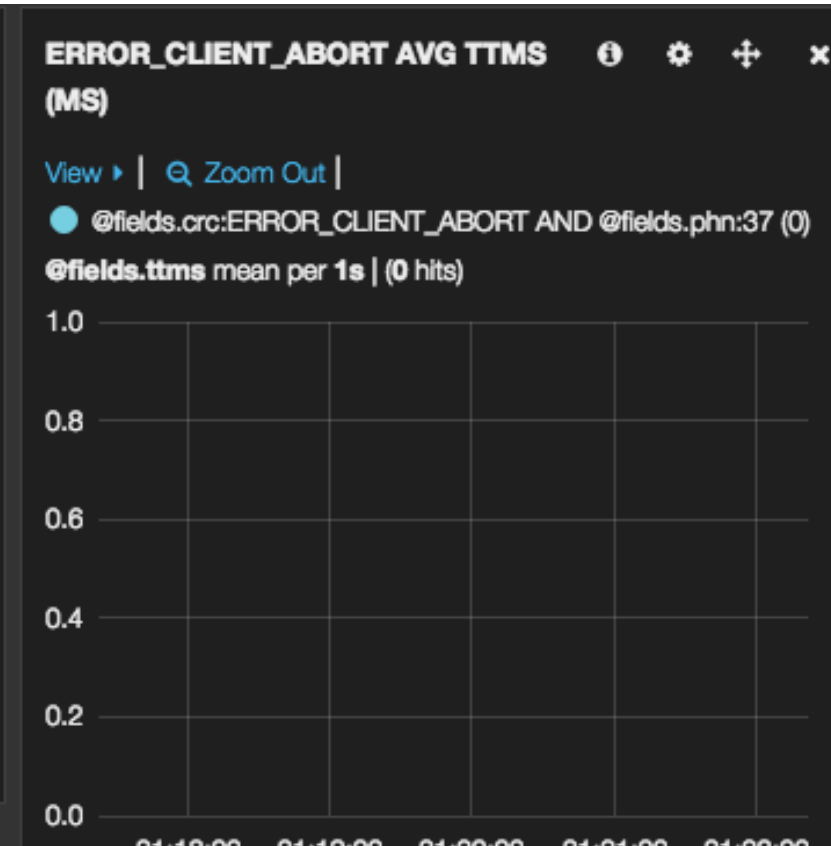
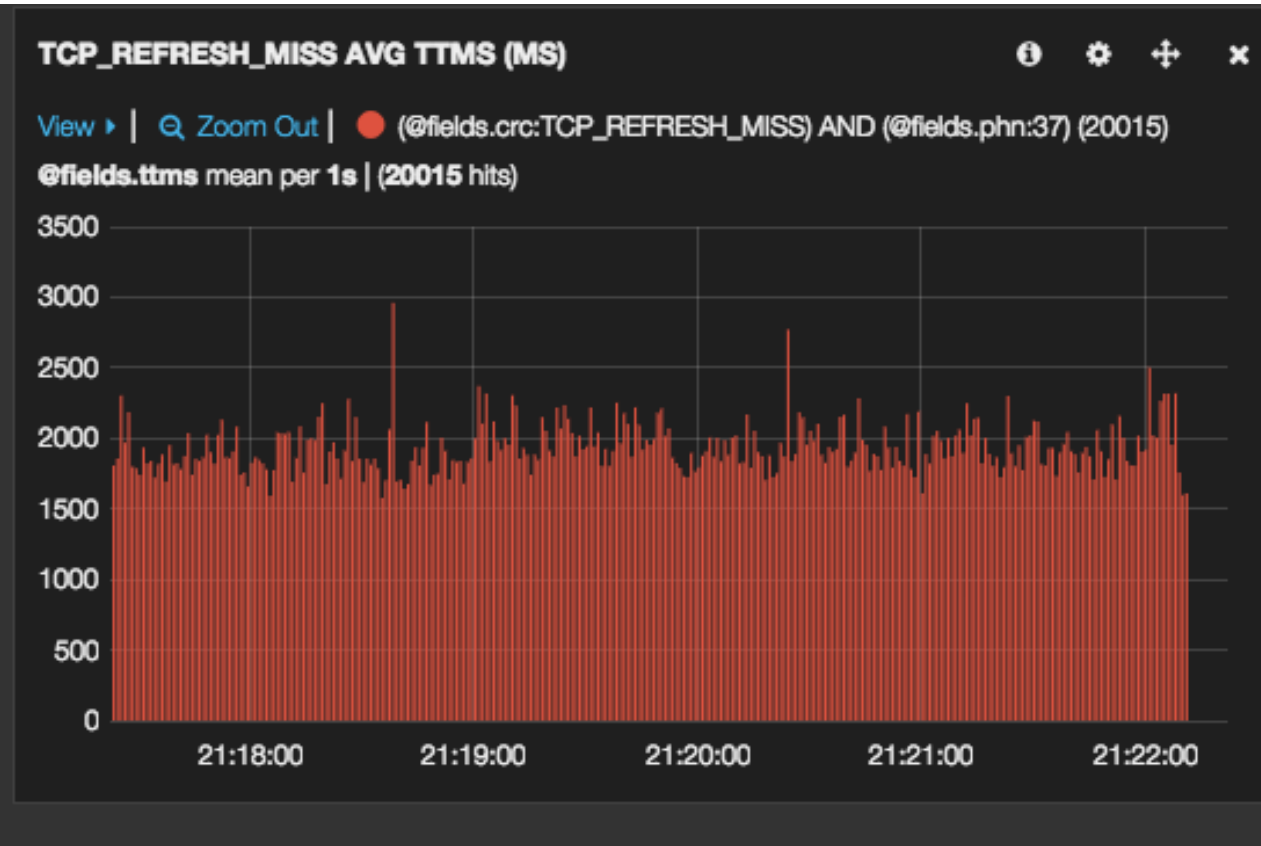
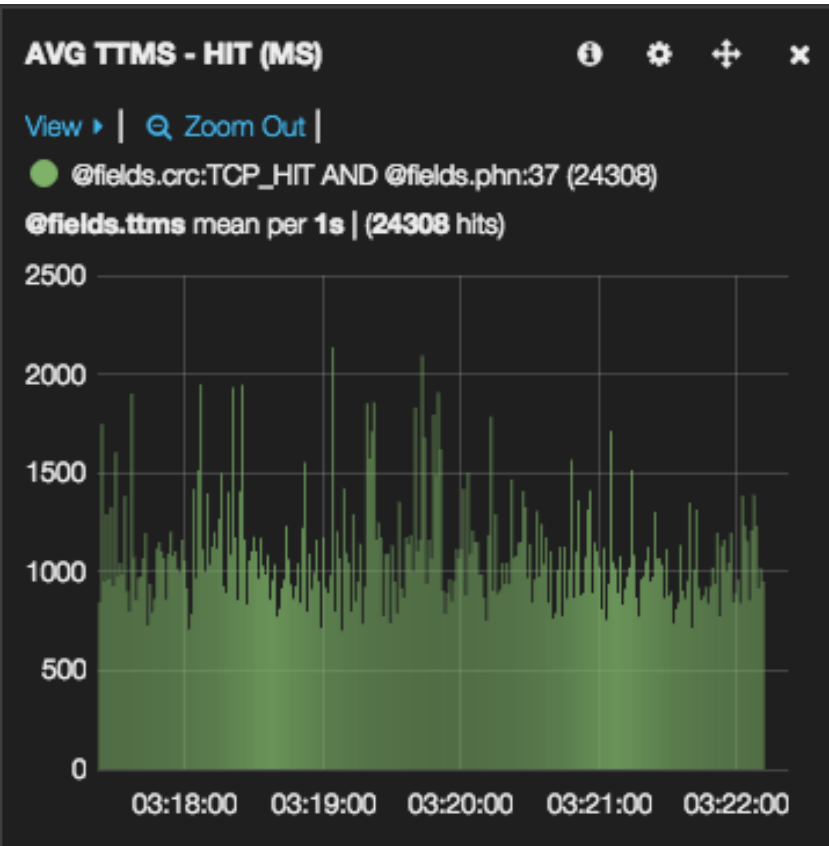
[root@zaphod02 ~]# tc qdisc show dev ens2f0
qdisc pfifo_fast 0: root refcnt 2 bands 3 priomap  1 2 2 2 1 2 0 0 1 1 1 1 1 1 1 1
[root@zaphod02 ~]#
```

```
[mtorlu9137e@zaphod06]lcontrol$ cat fwd_proxy_tight_c37.json
{
    "clients": "480",
    "bitrate": "2500000",
    "test_type": "TestEngines::LLL",
    "abr_type": "hls",
    "frag_duration": "50000000",
    "origins": "1",
    "live": "100",
    "active_channels": "1",
    "vod_cache_name" : "load-test-01.cdnlab.comcast.net",
    "live_cache_name" : "live-orig-01-dns.cdnlab.comcast.net",
    "cache_ip" : "69.241.62.86",
    "vod_cache_hitratio" : "80",
    "live_active_fragments" : "2",
    "vod_bitrates" : "4300000,3000000",
    "live_bitrates" : "6710886,5033164",
    "max_long_tts_percentage" : "0.5",
    "long_tts_time" : "1.5",
    "proxy_mode" : "forward",
    "ipv6_percentage" : 0,
    "via_headers" : 1
}
[mtorlu9137e@zaphod06]lcontrol$
```

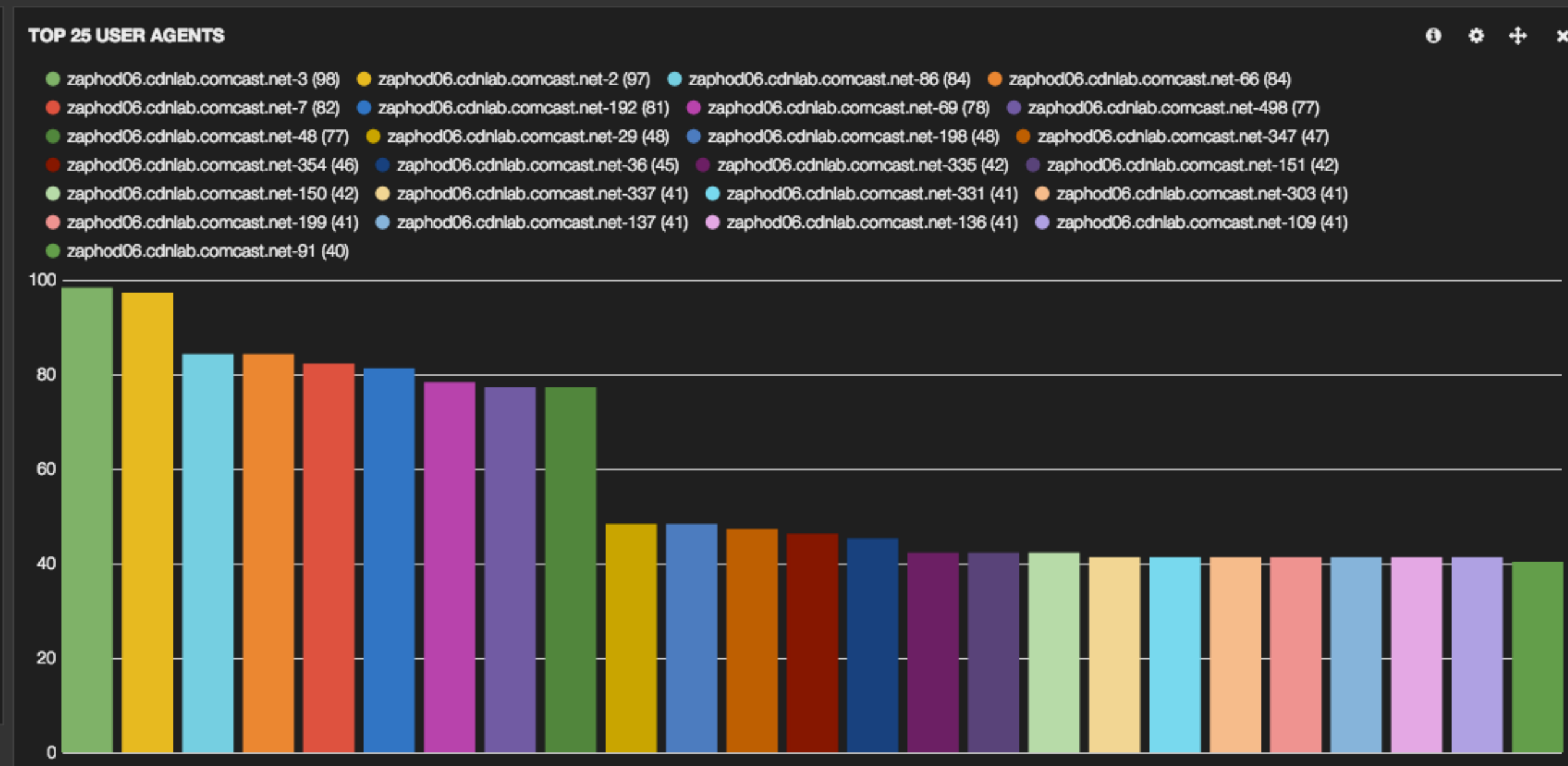
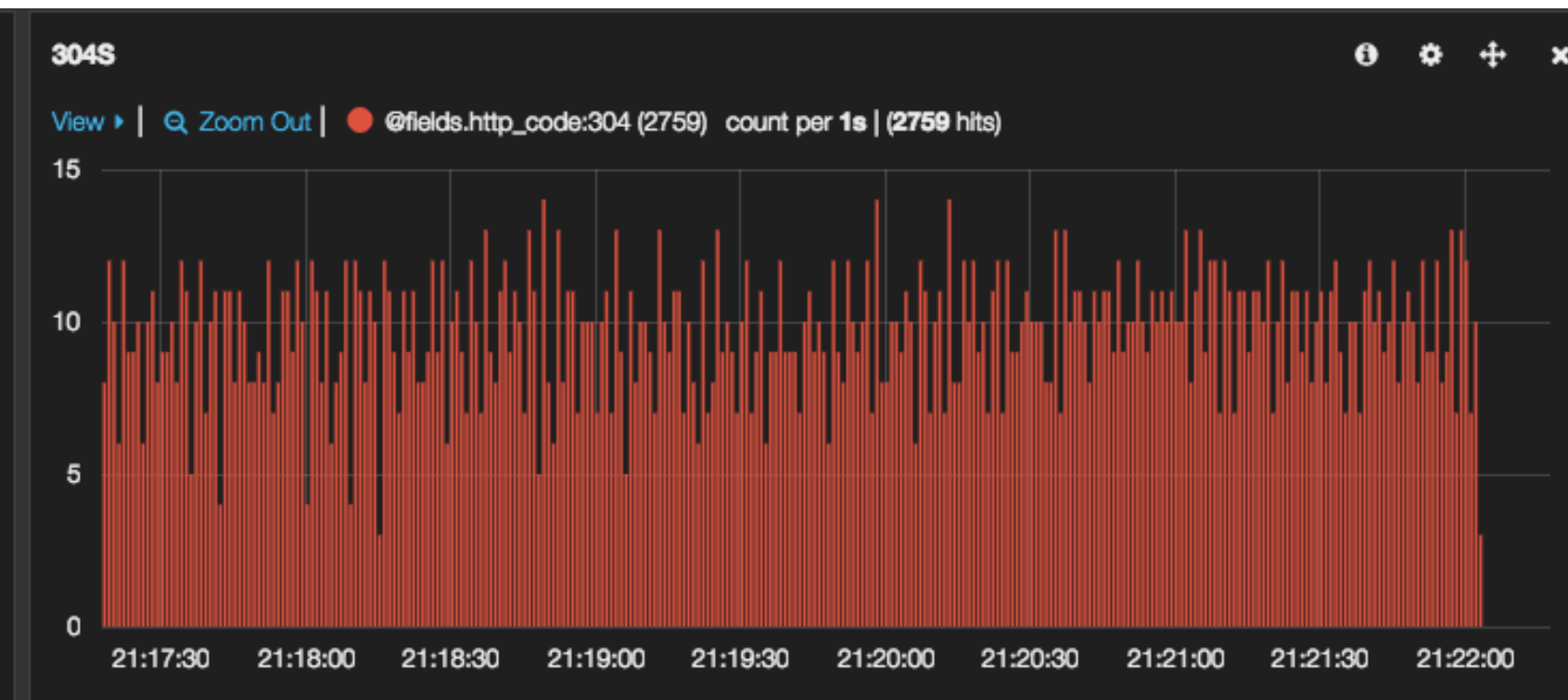
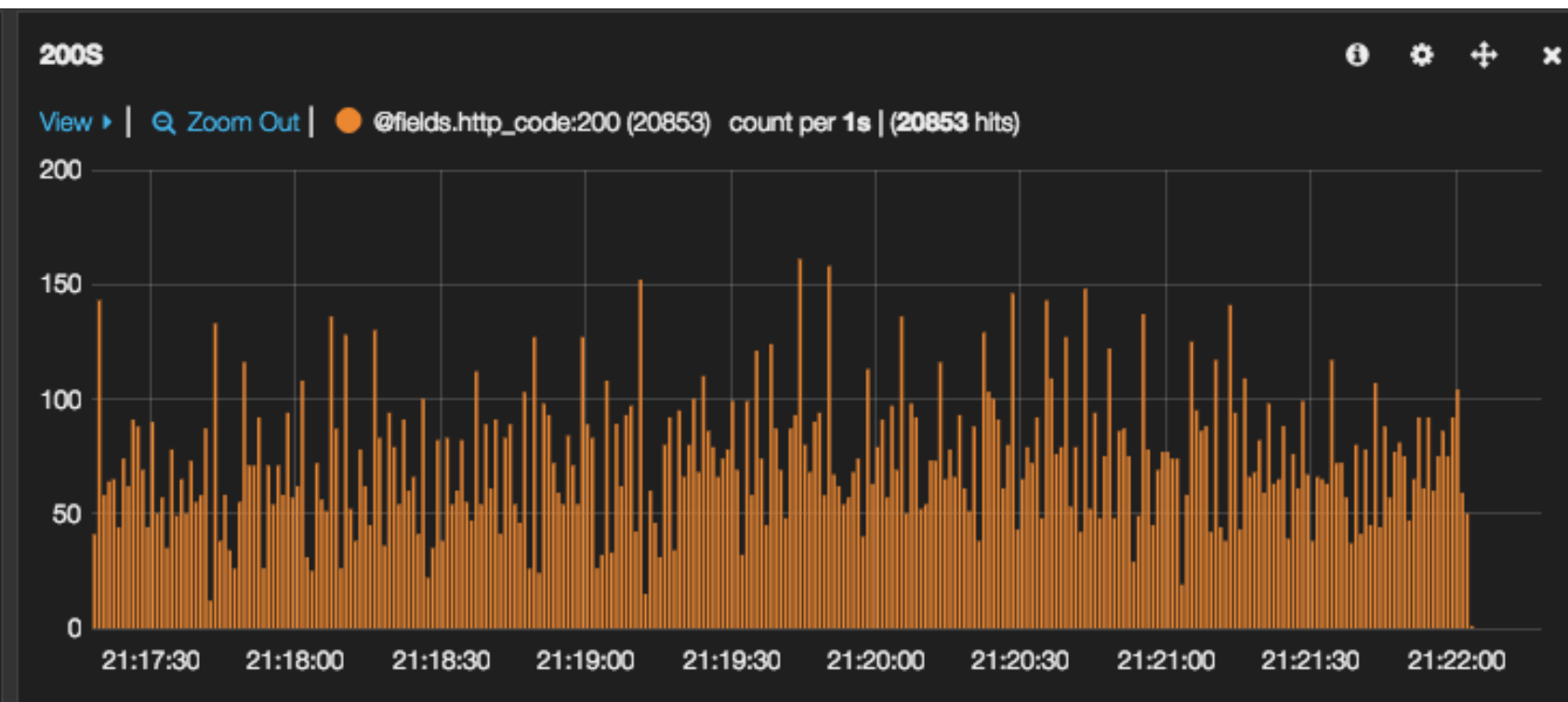
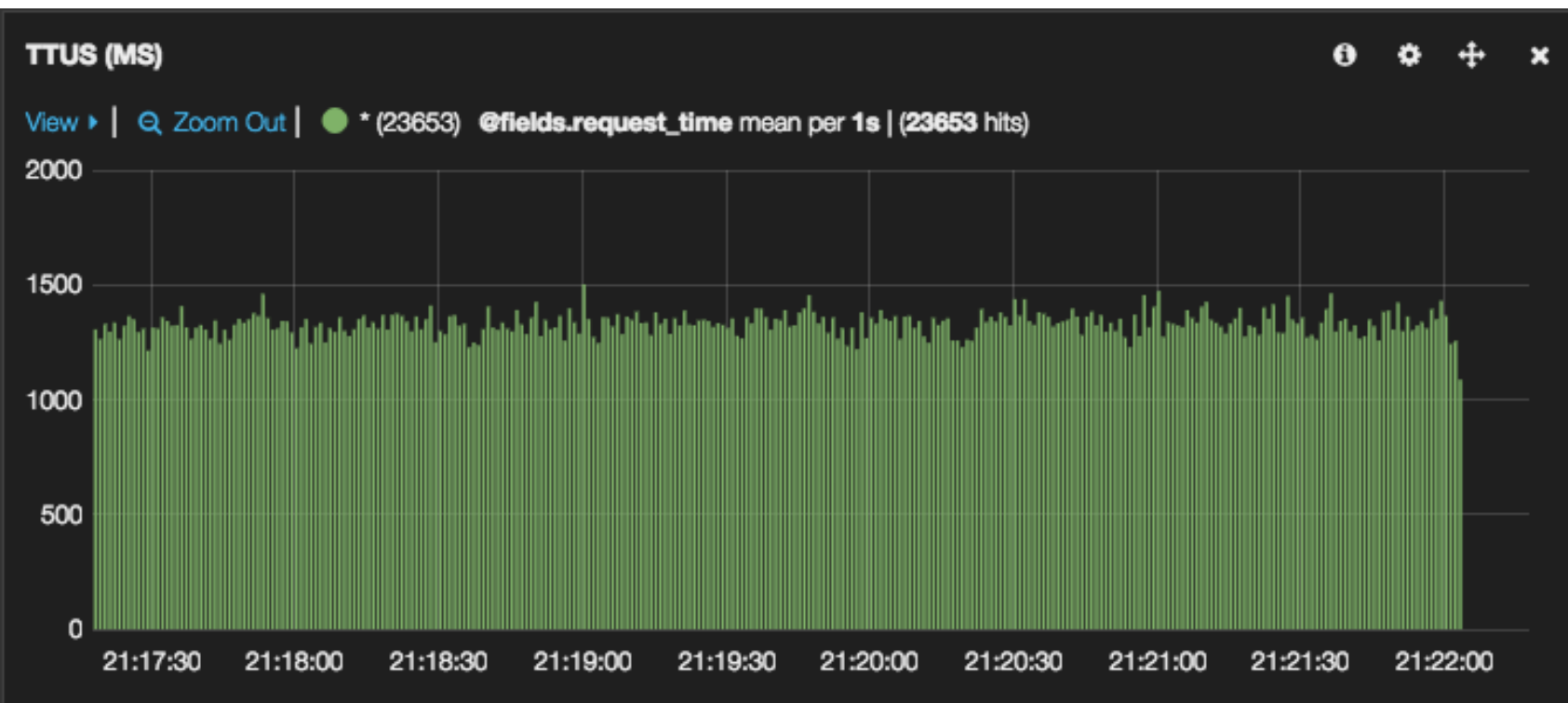
```
[mtorlu9137e@ipcdn-cache-37]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn
Tue Oct 21 03:11:02 UTC 2014
Version of this script: 0.34e
ERROR Lines in /opt/trafficserver/etc/trafficserver//plugin.config do not match Twelve Monkeys.
ERROR Config file: plugin.config line only on disk: header_rewrite.so hrrw.conf
ERROR Lines in /opt/trafficserver/etc/trafficserver//records.config do not match Twelve Monkeys.
ERROR Config file: records.config line only in 12M: CONFIG proxy.config.http.transaction_active_timeout_in INT 900
ERROR Config file: records.config line only on disk: CONFIG proxy.config.http.transaction_active_timeout_in INT 5
[mtorlu9137e@ipcdn-cache-37]~$
```

```
[mtorlu9137e@ipcdn-cache-37]~$ sudo cat /usr/local/etc/header_rewrite/hrrw.conf | grep -v "^\\#"
cond %{READ_REQUEST_HDR_HOOK}
cond %{HEAD} = live-orig-01-dns.cdnlab.comcast.net
set-config proxy.config.http.connect_attempts_timeout 2
set-config proxy.config.http.connect_attempts_max_retries_dead_server 2 [L]
[mtorlu9137e@ipcdn-cache-37]~$
```

Mid graphs

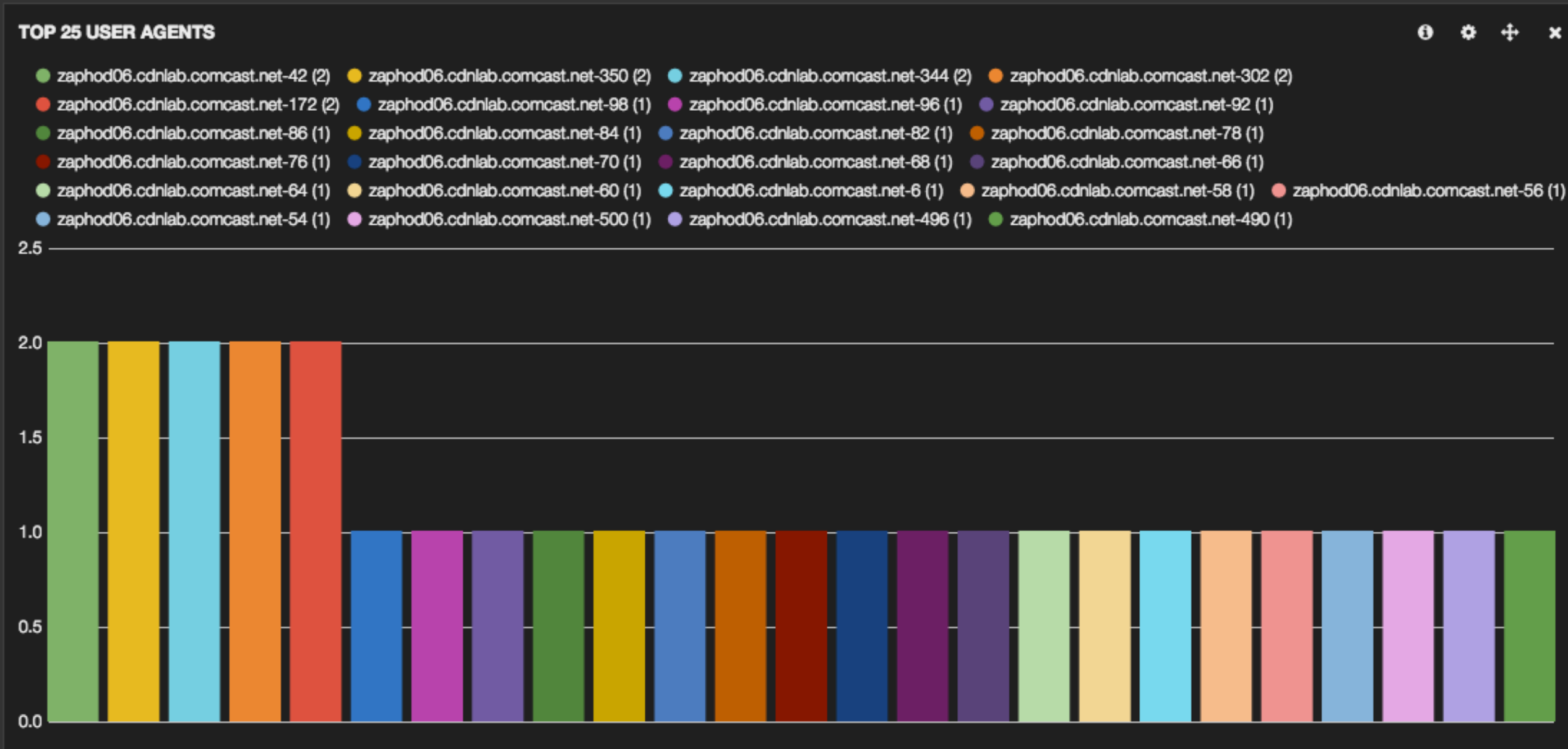
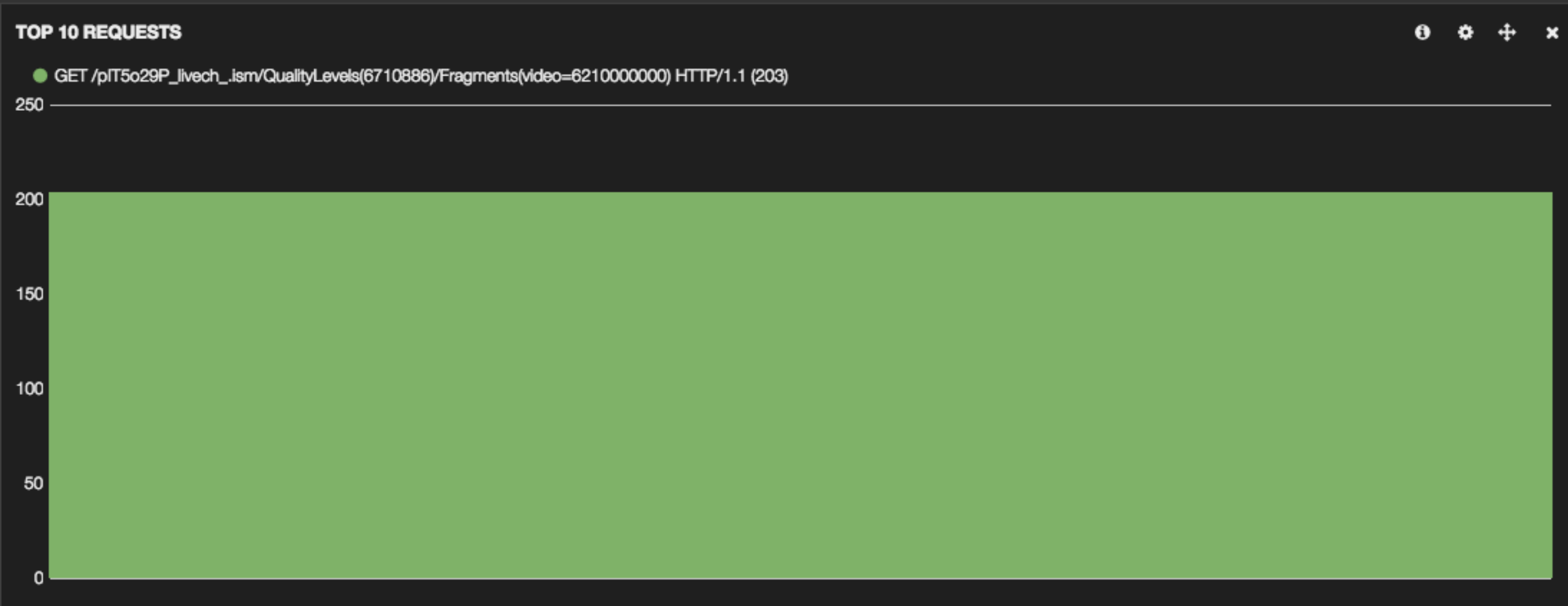
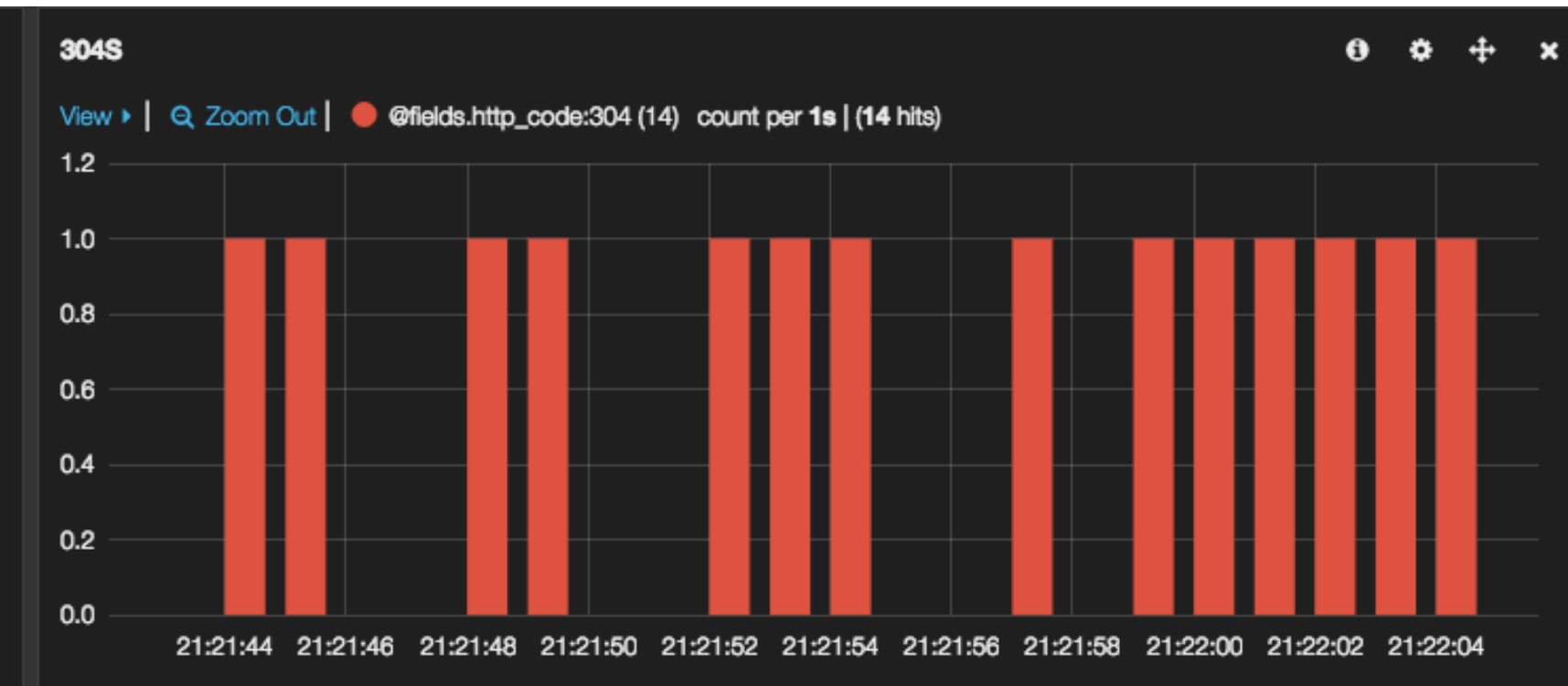
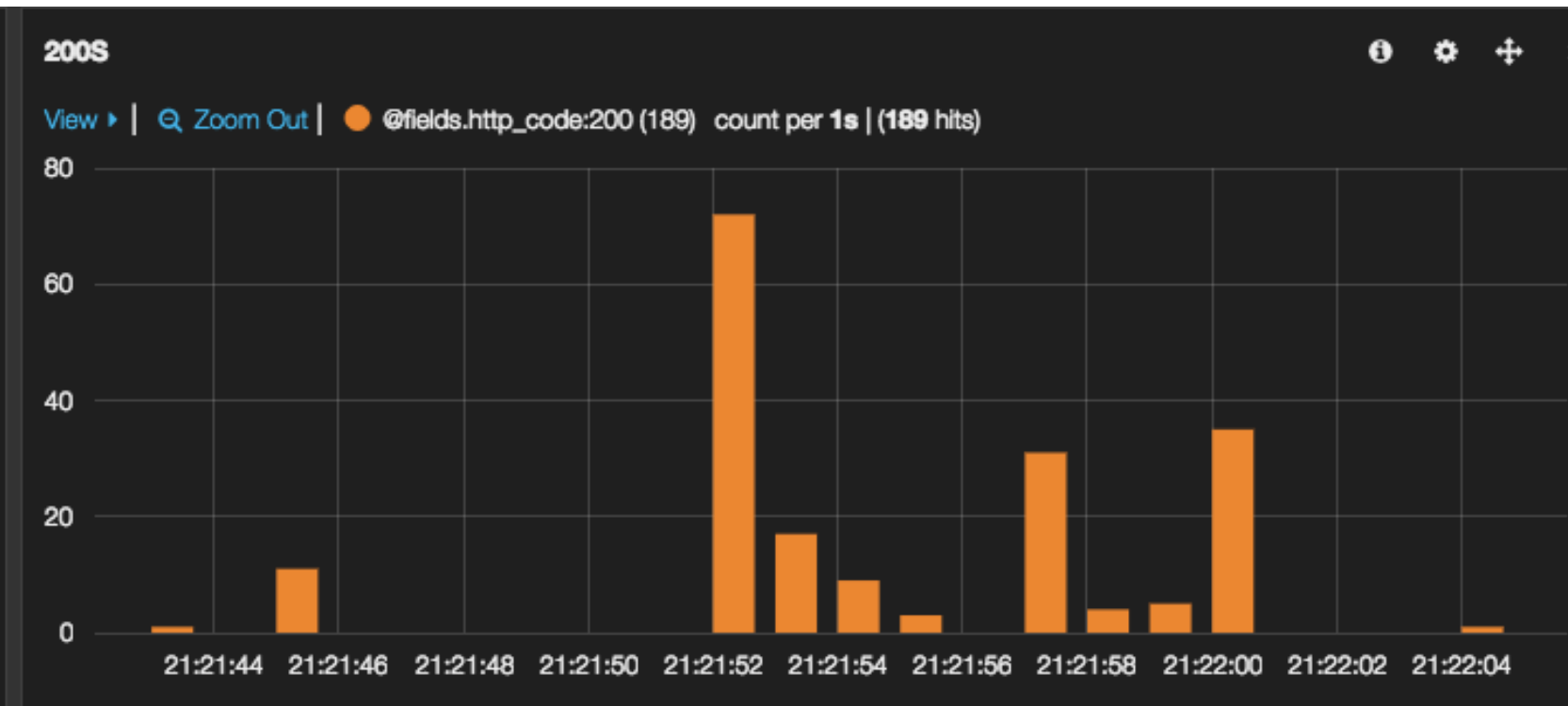
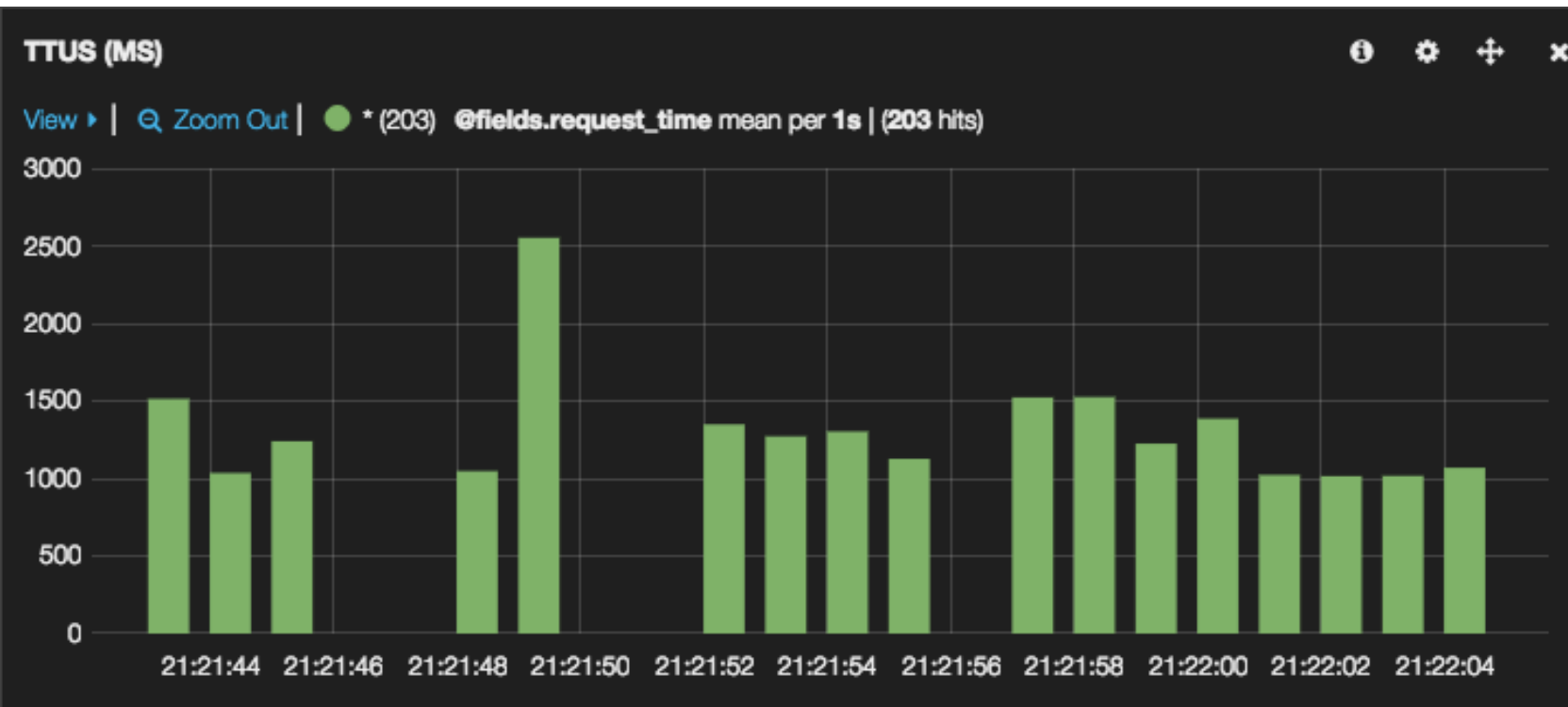


Origin graphs



Zoom In

Origin graphs

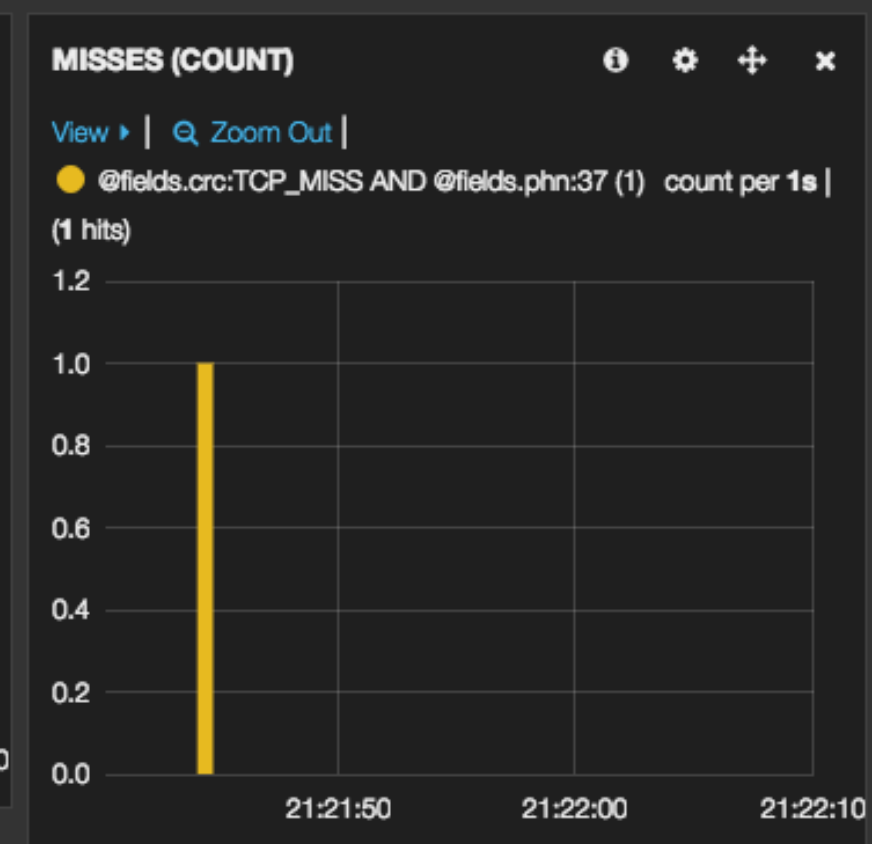
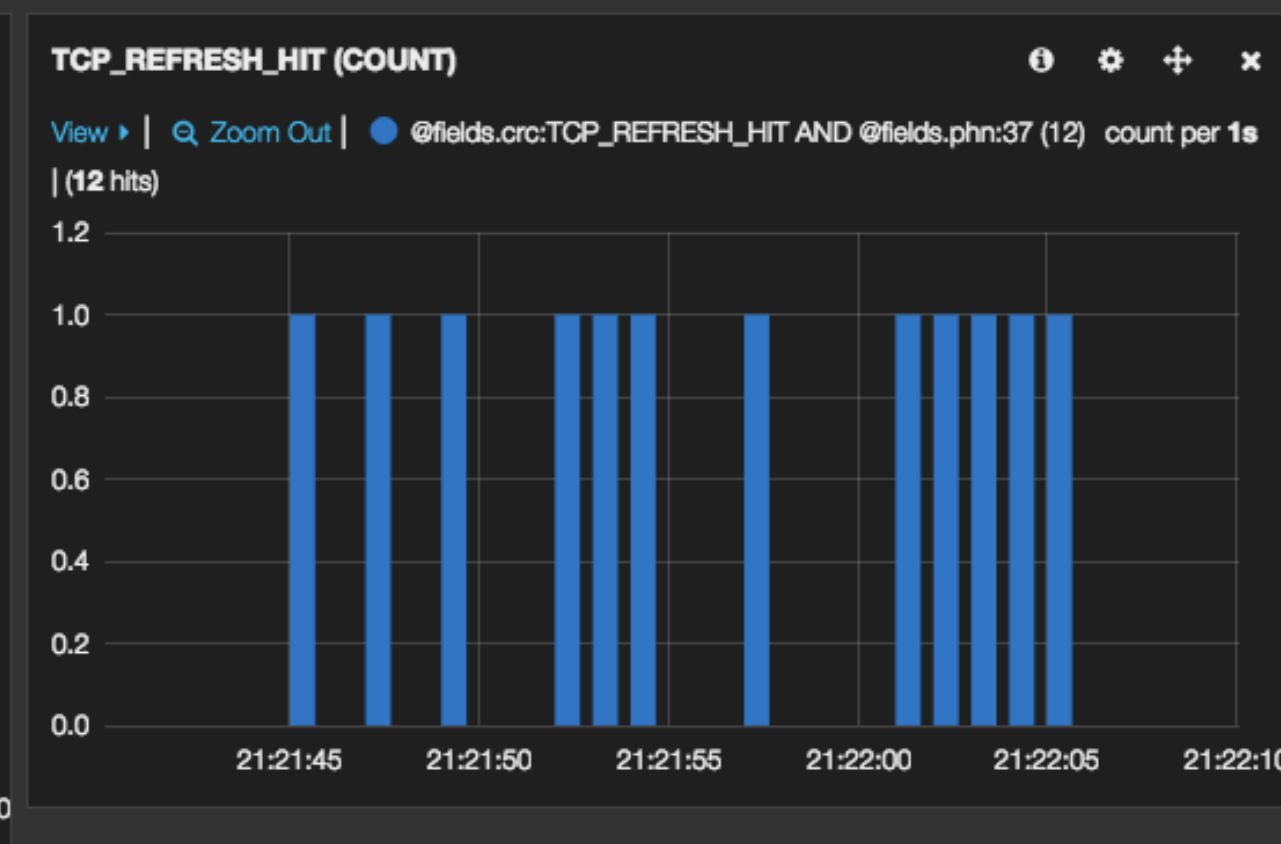
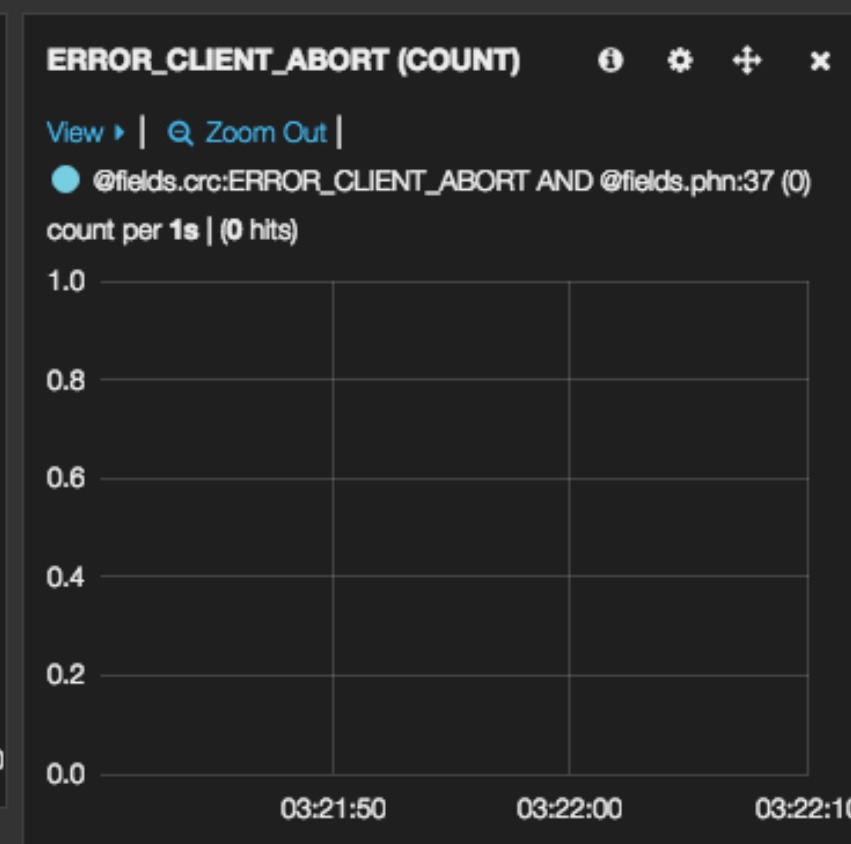
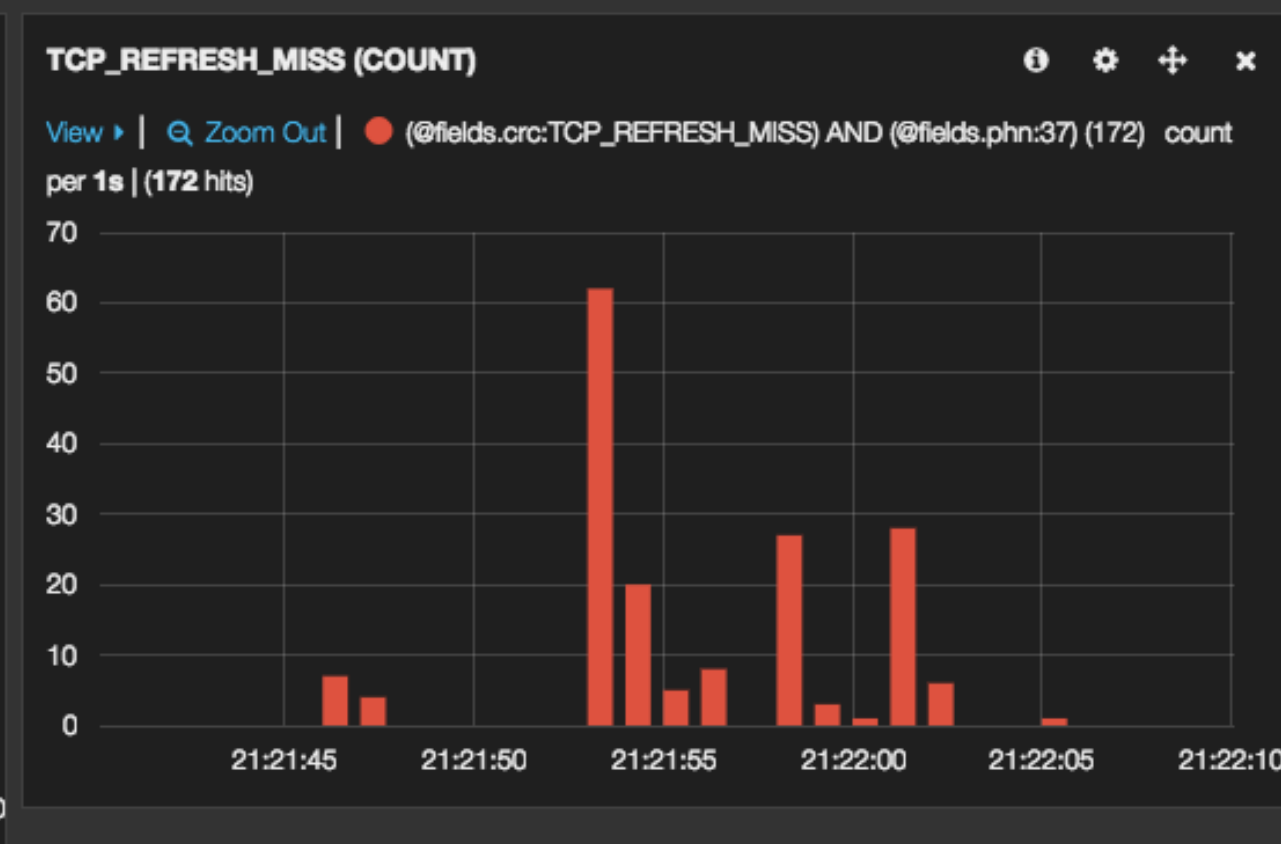
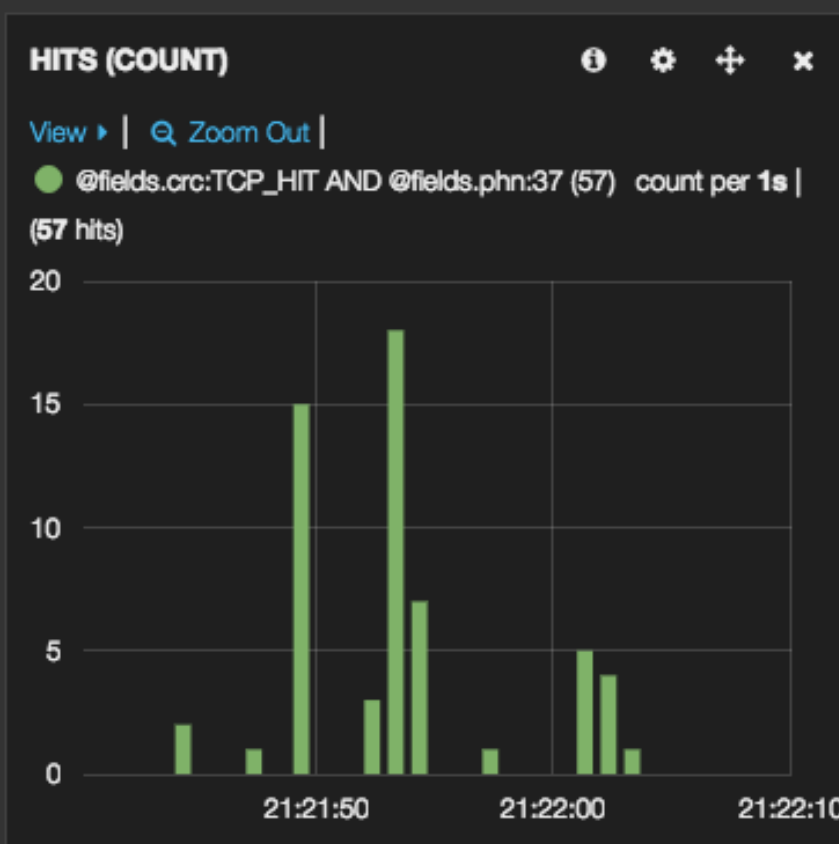
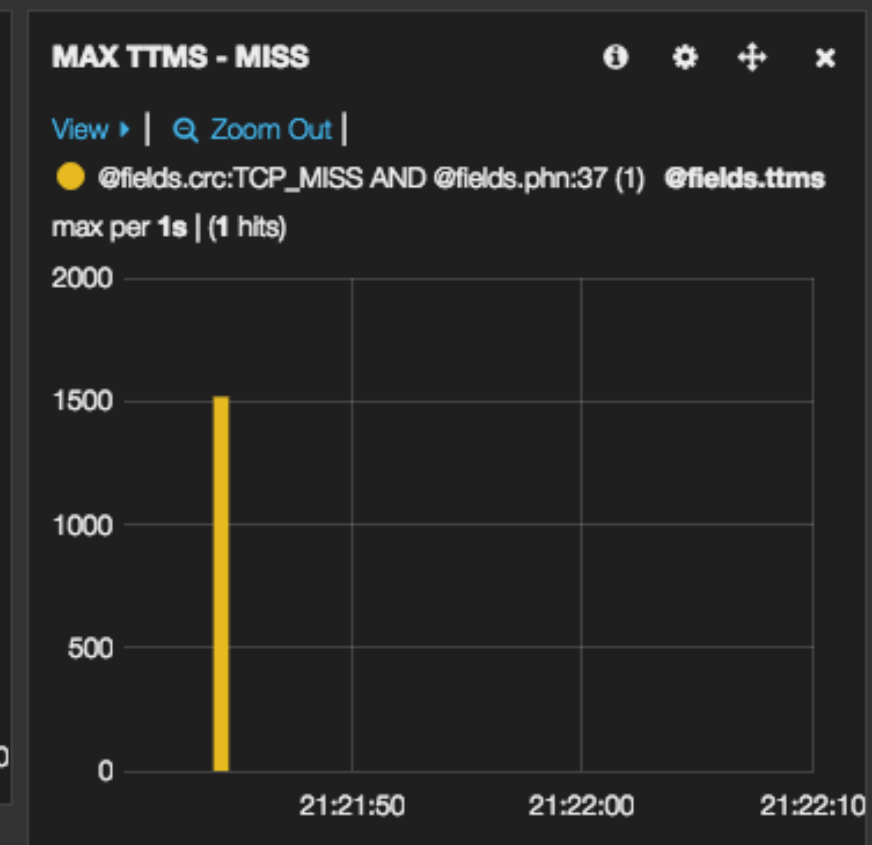
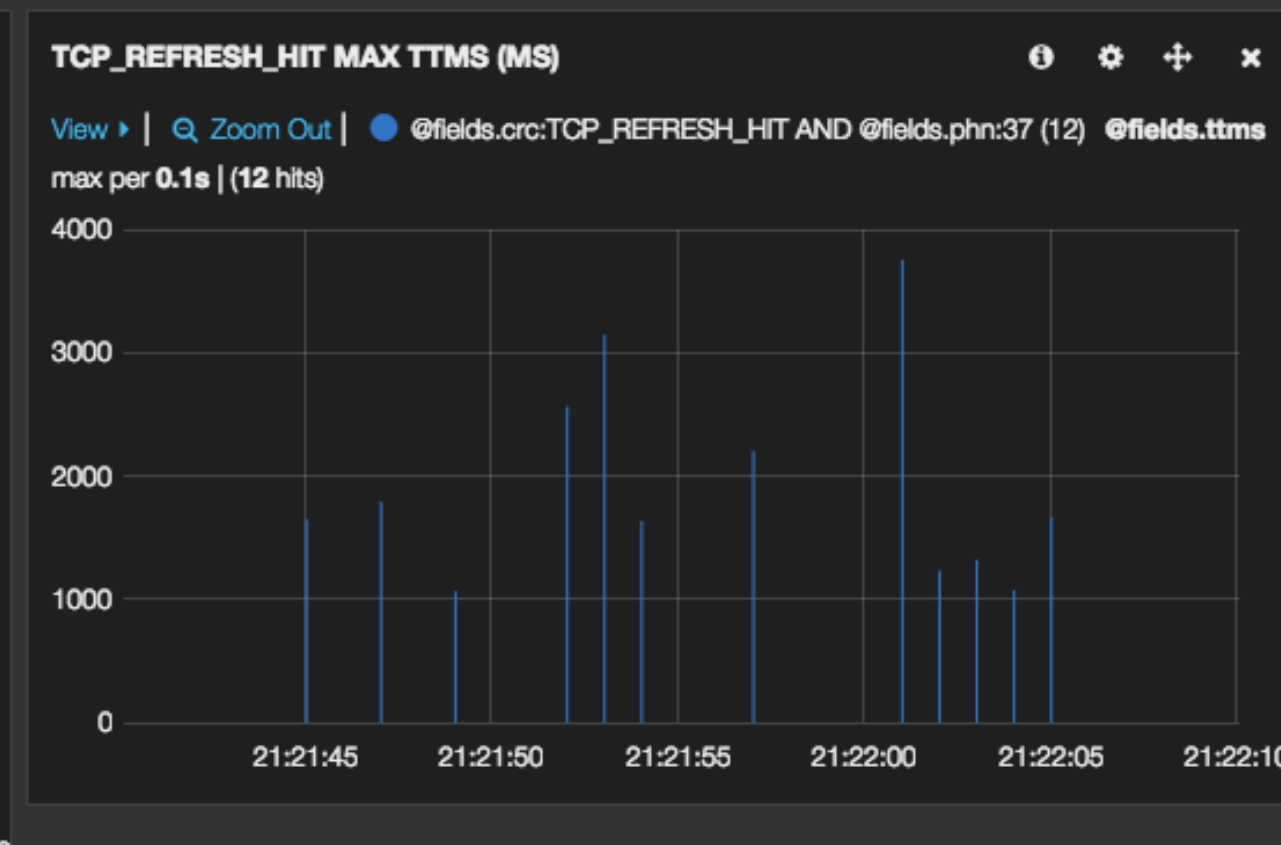
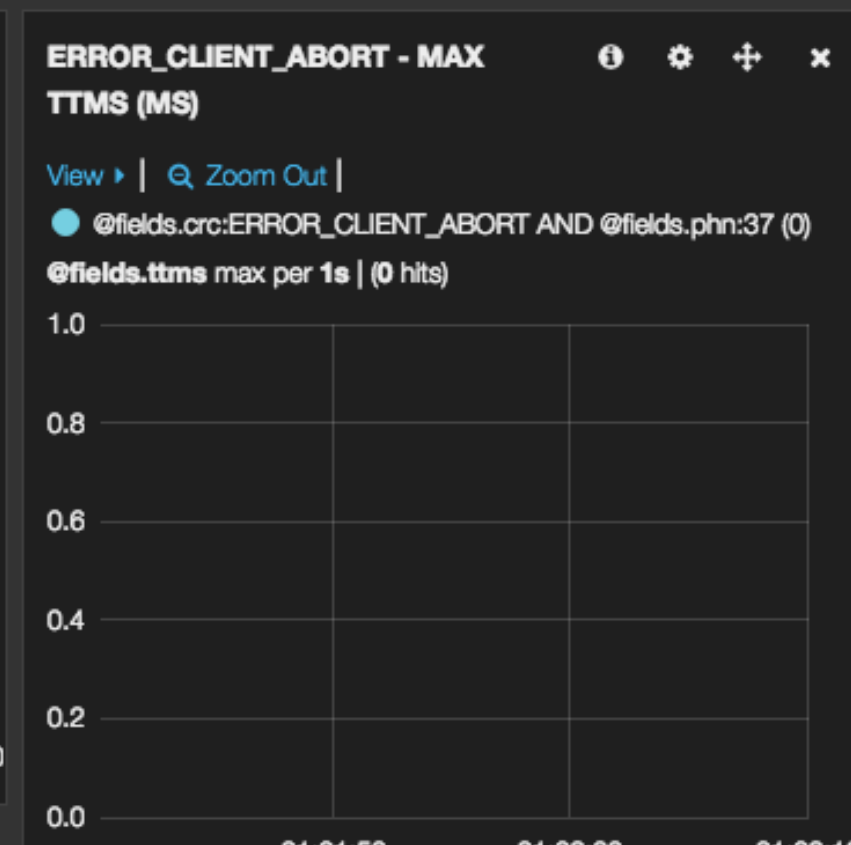
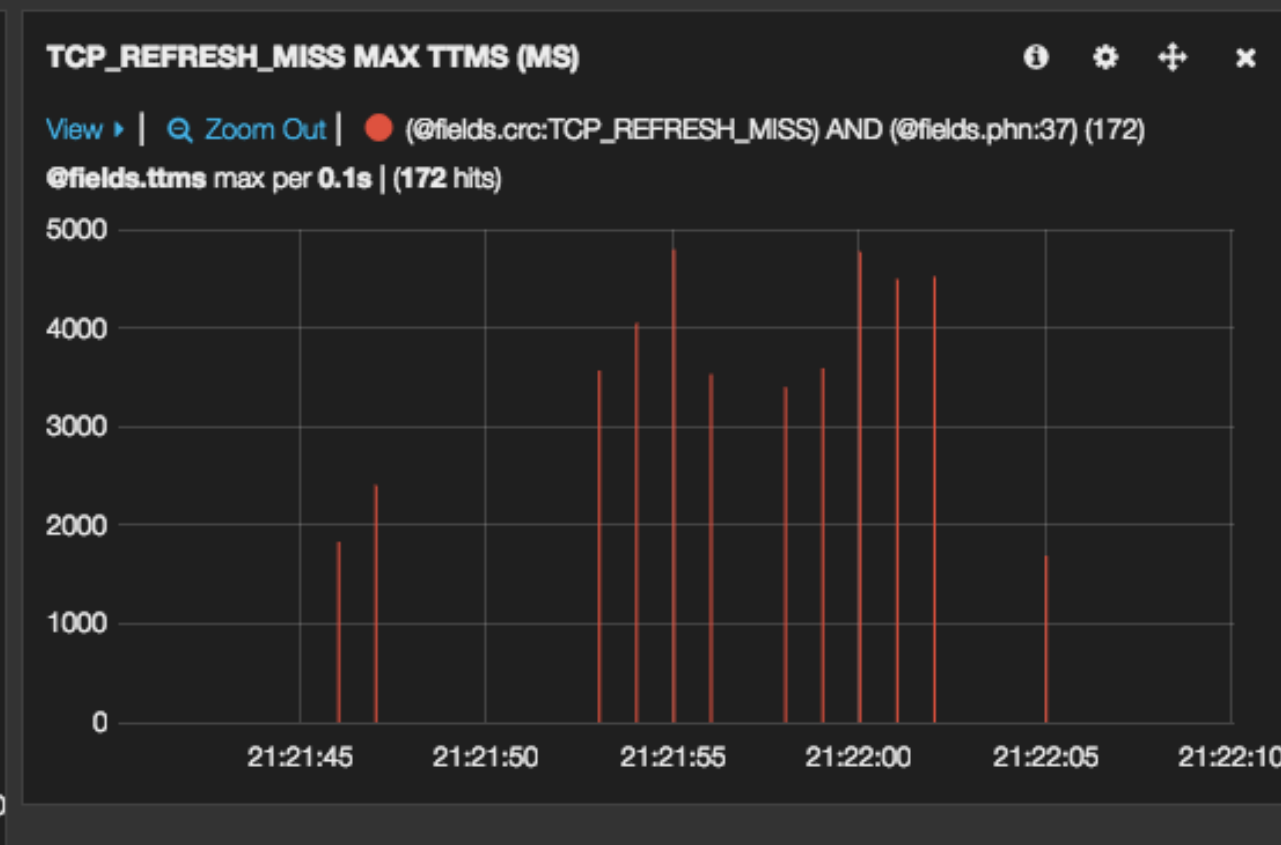
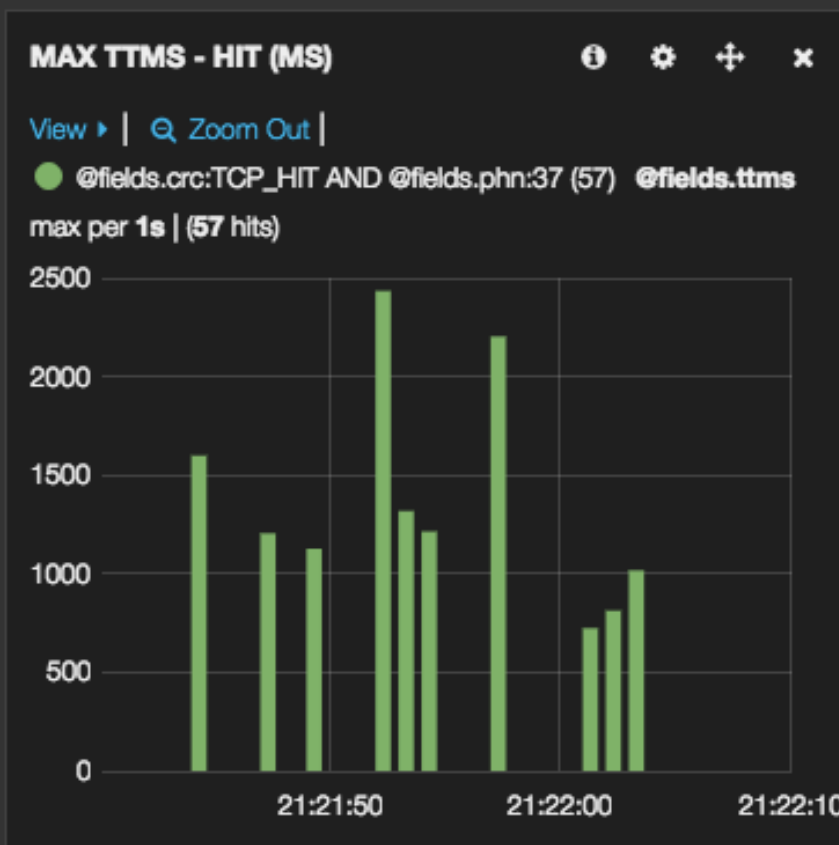
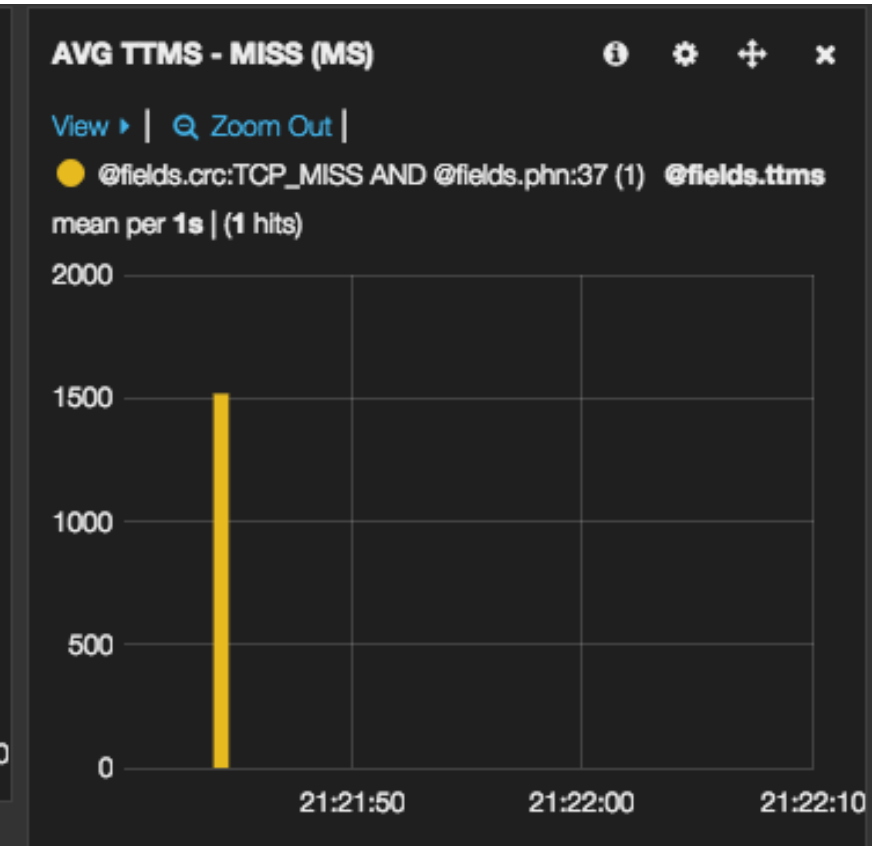
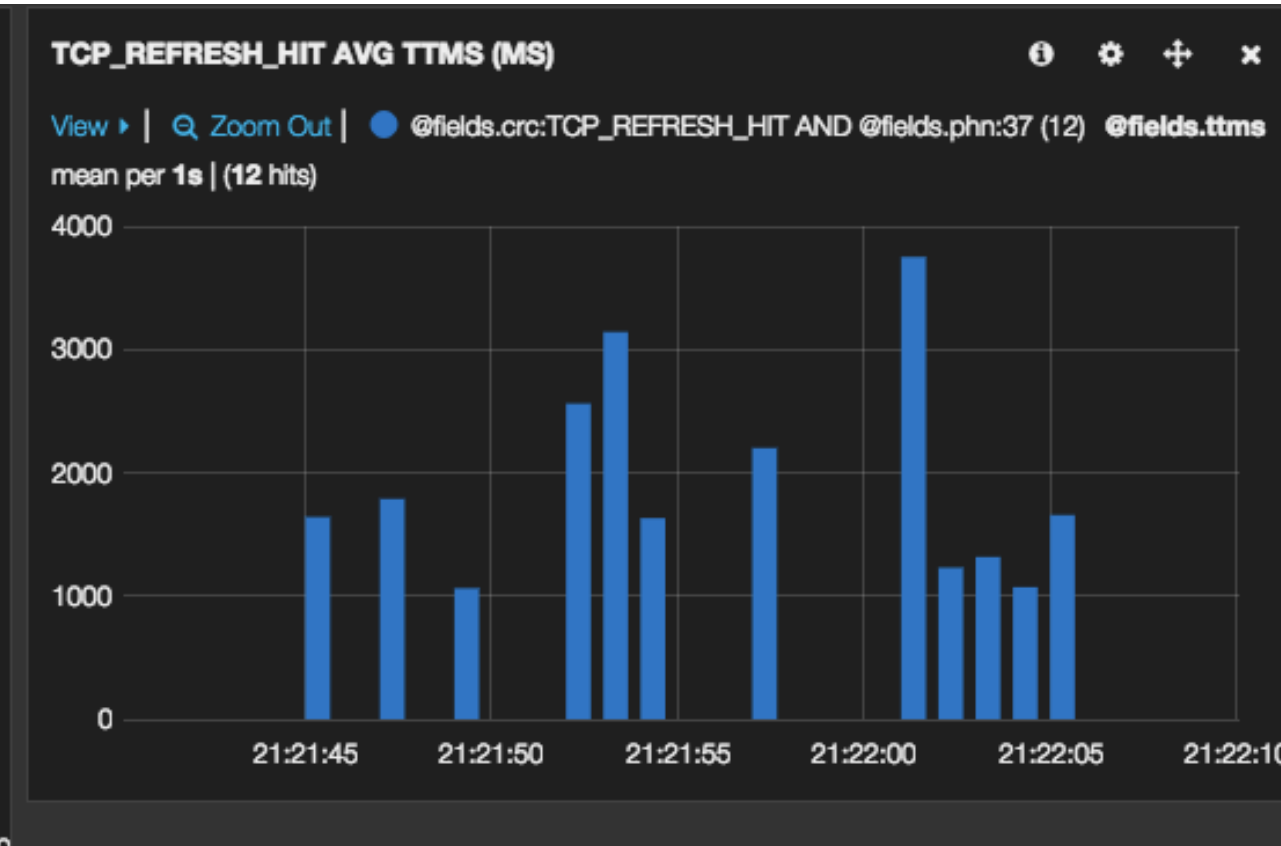
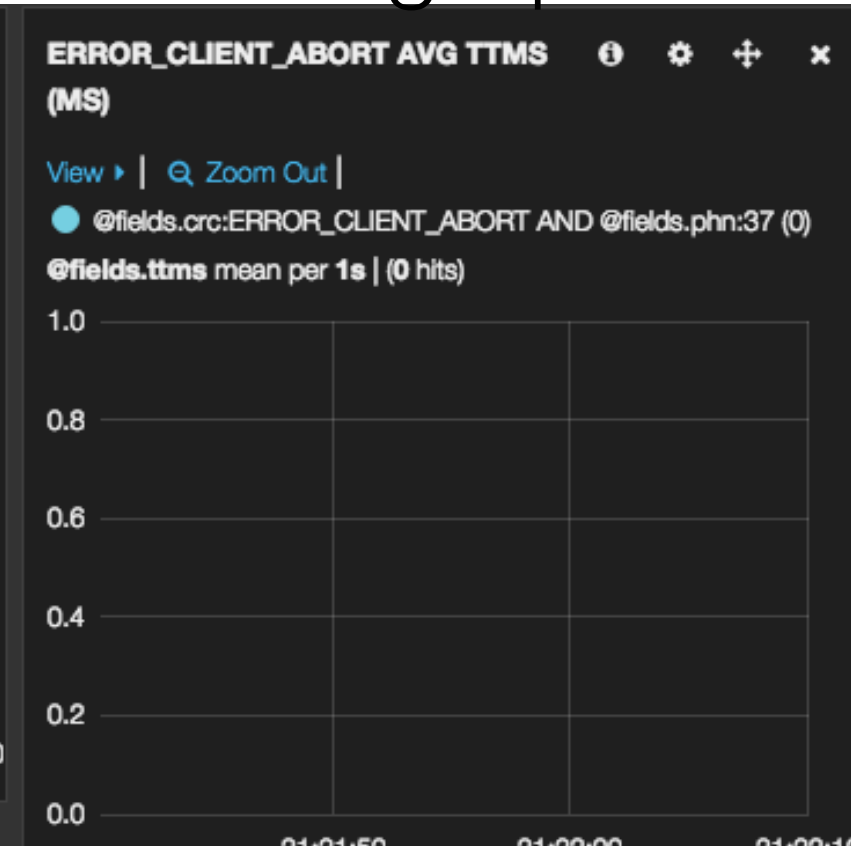
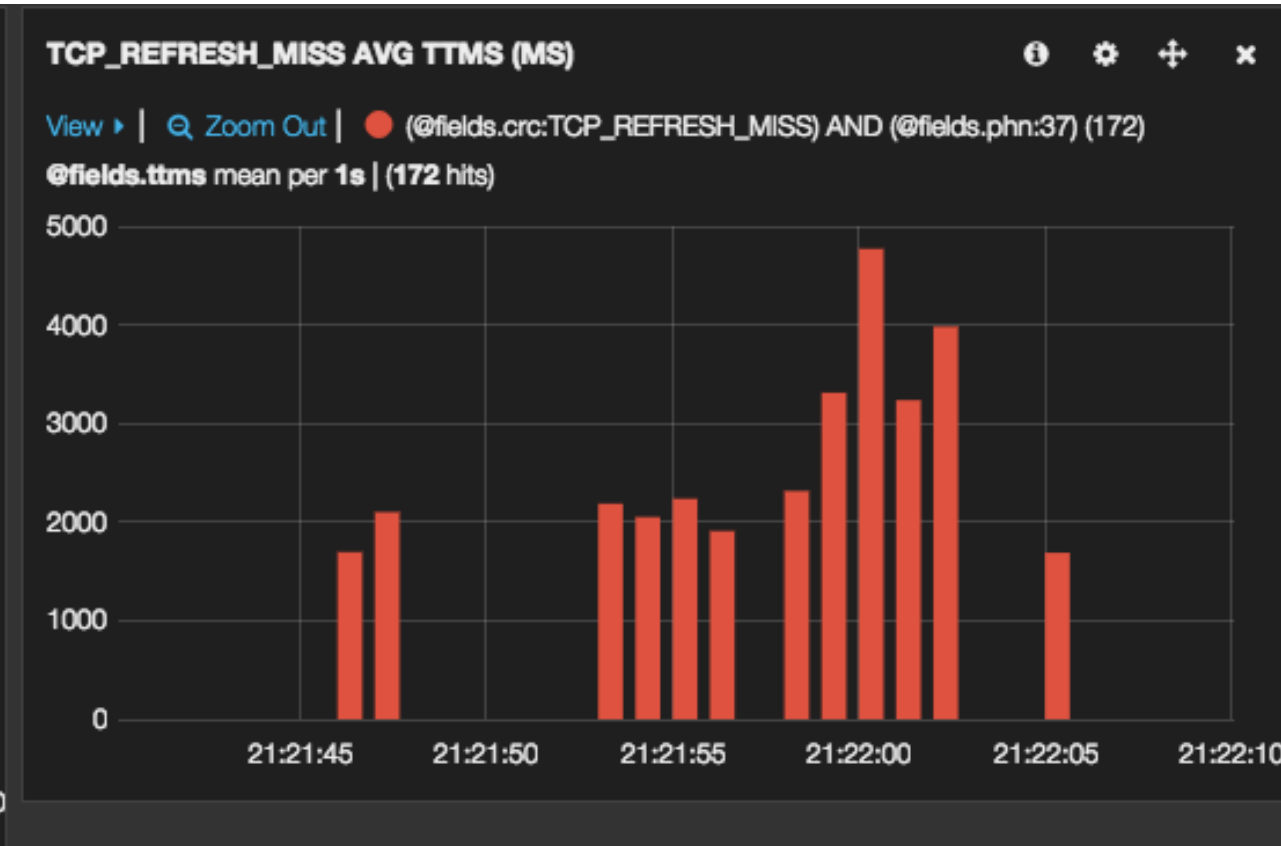
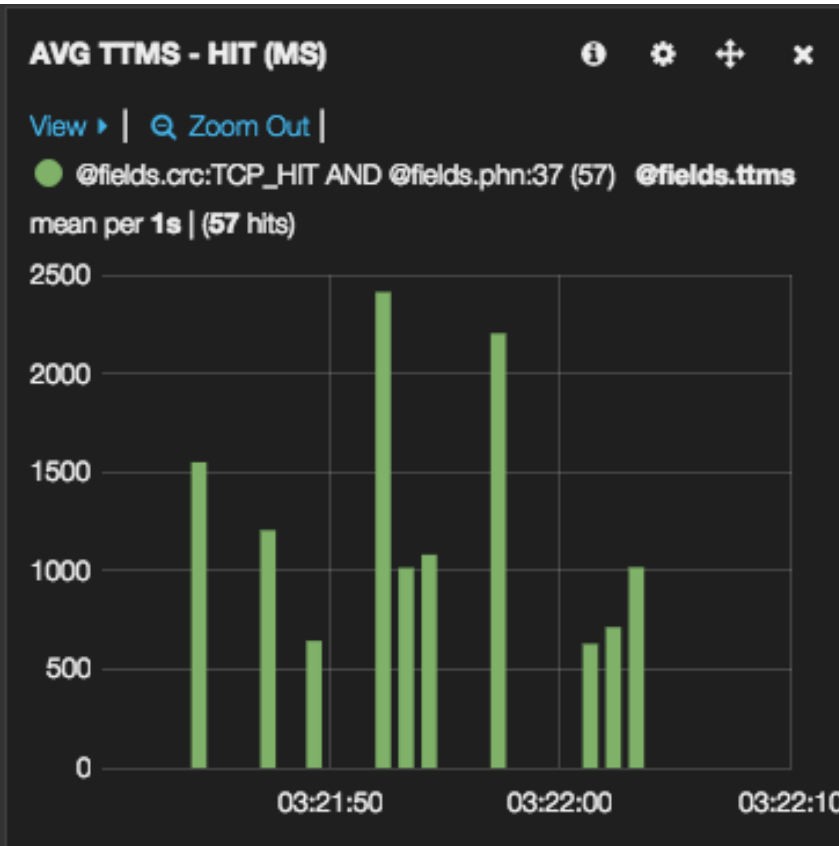


EVENTS

0 to 100 of 203 available for paging

Fields	@timestamp	@fields.sec_frac	@fields.request	@fields.http_user_agent	@fields.request_time	@fields.http_code
	2014-10-21T03:21:43.000Z	0.113	GET /pIT5o29P_livech_ism/QualityLevels(6710886)/Fragments(video=6210000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-2	1513622	200
	2014-10-21T03:21:44.000Z	0.723	GET /pIT5o29P_livech_ism/QualityLevels(6710886)/Fragments(video=6210000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-18	1035403	304
	2014-10-21T03:21:45.000Z	0.779	GET /pIT5o29P_livech_ism/QualityLevels(6710886)/Fragments(video=6210000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-12	1056097	200
	2014-10-21T03:21:45.000Z	0.829	GET /pIT5o29P_livech_ism/QualityLevels(6710886)/Fragments(video=6210000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-38	1026136	200

Mid graphs



mid-tier cache

@fields.b	@fields.uas	@fields.ttms	@fields.sssc	@fields.pssc	@fields.crc	@timestamp	@fields.utime
2939841	zaphod06.cdnlab.comcast.net-8	1599	000	200	TCP_HIT	2014-10-21T03:21:44.000Z	1413861704.709
2939841	zaphod06.cdnlab.comcast.net-12	1671	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:46.000Z	1413861706.821
2939841	zaphod06.cdnlab.comcast.net-76	2109	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:47.000Z	1413861707.278
2939841	zaphod06.cdnlab.comcast.net-56	2402	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:47.000Z	1413861707.542
2939841	zaphod06.cdnlab.comcast.net-86	1063	304	200	TCP_REFRESH_HIT	2014-10-21T03:21:49.000Z	1413861709.061
2939841	zaphod06.cdnlab.comcast.net-16	712	000	200	TCP_HIT	2014-10-21T03:21:49.000Z	1413861709.084
2939841	zaphod06.cdnlab.comcast.net-152	410	000	200	TCP_HIT	2014-10-21T03:21:49.000Z	1413861709.090
2939841	zaphod06.cdnlab.comcast.net-44	705	000	200	TCP_HIT	2014-10-21T03:21:49.000Z	1413861709.095
2939841	zaphod06.cdnlab.comcast.net-166	2434	000	200	TCP_HIT	2014-10-21T03:21:52.000Z	1413861712.328
2939841	zaphod06.cdnlab.comcast.net-264	2943	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:53.000Z	1413861713.290
2939841	zaphod06.cdnlab.comcast.net-296	2135	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:53.000Z	1413861713.372
2939841	zaphod06.cdnlab.comcast.net-138	1831	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:53.000Z	1413861713.391
2939841	zaphod06.cdnlab.comcast.net-28	3297	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:53.000Z	1413861713.405
2939841	zaphod06.cdnlab.comcast.net-210	1602	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:53.000Z	1413861713.408
2939841	zaphod06.cdnlab.comcast.net-338	1456	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:53.000Z	1413861713.436
2939841	zaphod06.cdnlab.comcast.net-206	2271	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:53.000Z	1413861713.470
2939841	zaphod06.cdnlab.comcast.net-270	1467	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:53.000Z	1413861713.488
2939841	zaphod06.cdnlab.comcast.net-58	1629	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:53.000Z	1413861713.491
2939841	zaphod06.cdnlab.comcast.net-252	1790	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:53.000Z	1413861713.560
2939841	zaphod06.cdnlab.comcast.net-162	1928	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:53.000Z	1413861713.651
2939841	zaphod06.cdnlab.comcast.net-156	3472	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:53.000Z	1413861713.736
2939841	zaphod06.cdnlab.comcast.net-148	2272	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:54.000Z	1413861714.157
2939841	zaphod06.cdnlab.comcast.net-224	1638	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:54.000Z	1413861714.727
2939841	zaphod06.cdnlab.comcast.net-328	1800	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:55.000Z	1413861715.145
2939841	zaphod06.cdnlab.comcast.net-336	1084	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:55.000Z	1413861715.963
2939841	zaphod06.cdnlab.comcast.net-332	2258	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:56.000Z	1413861716.293
2939841	zaphod06.cdnlab.comcast.net-196	2371	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:56.000Z	1413861716.397
2939841	zaphod06.cdnlab.comcast.net-182	1229	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:58.000Z	1413861718.124
2939841	zaphod06.cdnlab.comcast.net-260	1420	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:58.000Z	1413861718.221
2939841	zaphod06.cdnlab.comcast.net-386	2501	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:58.000Z	1413861718.254
2939841	zaphod06.cdnlab.comcast.net-368	2446	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:58.000Z	1413861718.257
2939841	zaphod06.cdnlab.comcast.net-418	2457	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:58.000Z	1413861718.320
2939841	zaphod06.cdnlab.comcast.net-488	2499	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:58.000Z	1413861718.337
2939841	zaphod06.cdnlab.comcast.net-500	1459	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:58.000Z	1413861718.413
2939841	zaphod06.cdnlab.comcast.net-496	2611	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:58.000Z	1413861718.561
2939841	zaphod06.cdnlab.comcast.net-398	2943	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:58.000Z	1413861718.789
2939841	zaphod06.cdnlab.comcast.net-96	3107	200	200	TCP_REFRESH_MISS	2014-10-21T03:21:58.000Z	1413861718.966
0	zaphod06.cdnlab.comcast.net-350	4999	000	000	ERR_CLIENT_ABORT	2014-10-21T03:22:00.000Z	1413861720.760

packet capture

http.response.code == 200 && !(http.response.line == "ETag: 333-444-456\r\n")

Filter: `http.response.line == "ETag: 333-444-456\r\n"` Expression... Clear Apply Save

No.	Time	Time	Delta time	Source	Dest	Protocol	Length	UserAgent	Info
-----	------	------	------------	--------	------	----------	--------	-----------	------

File: "/Users/mtorlu9137e/hotair-maxage1-1.pcap" 775 MB 00:00:05 Packets: 63648 · Displayed: 0 (0.0...) Profile: Default

No.	Time	Time	Delta time	Source	Dest	Protocol	Length	UserAgent	Info
773	1413342512.173270	2014-10-15 03:08:32.173270	0.000000	69.241.62.86	69.252.122.58	HTTP	415	zaphod06.cdnlab.comcast.net-87	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
16157	1413342513.688619	2014-10-15 03:08:33.688619	1.515349	69.241.62.86	69.252.122.58	HTTP	416	zaphod06.cdnlab.comcast.net-249	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
29107	1413342514.813231	2014-10-15 03:08:34.813231	1.124612	69.241.62.86	69.252.122.58	HTTP	416	zaphod06.cdnlab.comcast.net-203	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
43884	1413342516.087715	2014-10-15 03:08:36.087715	1.274484	69.241.62.86	69.252.122.58	HTTP	416	zaphod06.cdnlab.comcast.net-295	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1

▶ Frame 773: 415 bytes on wire (3320 bits), 415 bytes captured (3320 bits)
 ▶ Ethernet II, Src: JuniperN_f5:49:6f (28:c0:da:f5:49:6f), Dst: Hewlett-_4f:6d:88 (2c:27:d7:4f:6d:88)
 ▶ Internet Protocol Version 4, Src: 69.241.62.86 (69.241.62.86), Dst: 69.252.122.58 (69.252.122.58)
 ▶ Transmission Control Protocol, Src Port: 51423 (51423), Dst Port: 80 (80), Seq: 3426021305, Ack: 3698667183, Len: 349
 ▼ Hypertext Transfer Protocol
 ▼ GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1\r\n
 ▶ [Expert Info (Chat/Sequence): GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1\r\n]

```

Request Method: GET
Request URI: /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000)
Request Version: HTTP/1.1
Host: live-orig-01-dns.cdnlab.comcast.net\r\n
User-Agent: zaphod06.cdnlab.comcast.net-87\r\n
Client-ip: 69.252.122.74\r\n
X-Forwarded-For: 69.252.122.74\r\n
Via: http/1.1 ipcdn-cache-37.cdnlab.comcast.net[45F13E56] (ApacheTrafficServer/4.2.1)\r\n
If-None-Match: 333-444-456\r\n
  
```

```

[mtorlu9137e@ipcdn-cache-37]~$ grep "vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000)" /opt/trafficserver/var/log/trafficserver/custom_ats_2.log | awk '{print $1,$5,$8,$9,$10,$11,$14,$15,$16,$17}' | egrep '\-87|\-249|\-203|\-295'
1413342513.202 url=http://live-orig-01-dns.cdnlab.comcast.net/vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) pssc=200 ttms=1029 b=2349655 sssc=304 pfsc=FIN crc=TCP_REFRESH_HIT phr=DIRECT uas="zaphod06.cdnlab.comcast.net-87"
1413342514.803 url=http://live-orig-01-dns.cdnlab.comcast.net/vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) pssc=200 ttms=1115 b=2349655 sssc=304 pfsc=FIN crc=TCP_REFRESH_HIT phr=DIRECT uas="zaphod06.cdnlab.comcast.net-249"
1413342516.087 url=http://live-orig-01-dns.cdnlab.comcast.net/vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) pssc=200 ttms=2079 b=2349655 sssc=304 pfsc=FIN crc=TCP_REFRESH_HIT phr=DIRECT uas="zaphod06.cdnlab.comcast.net-203"
1413342517.092 url=http://live-orig-01-dns.cdnlab.comcast.net/vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) pssc=200 ttms=2006 b=2349655 sssc=304 pfsc=FIN crc=TCP_REFRESH_HIT phr=DIRECT uas="zaphod06.cdnlab.comcast.net-295"
[mtorlu9137e@ipcdn-cache-37]~$
  
```


No.	Time	Time	Delta time	Source	Dest	Protocol	Length	UserAgent	Info
776	1413342512.173388	2014-10-15 03:08:32.173388	0.000000	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-191	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
29113	1413342514.819193	2014-10-15 03:08:34.819193	2.645805	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-255	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
29115	1413342514.822284	2014-10-15 03:08:34.822284	0.003091	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-271	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
29117	1413342514.823235	2014-10-15 03:08:34.823235	0.000951	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-147	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
29121	1413342514.841228	2014-10-15 03:08:34.841228	0.017993	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-205	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
29123	1413342514.855233	2014-10-15 03:08:34.855233	0.014005	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-143	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
29231	1413342514.886245	2014-10-15 03:08:34.886245	0.031012	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-289	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
29233	1413342514.893372	2014-10-15 03:08:34.893372	0.007127	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-105	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
29235	1413342514.895264	2014-10-15 03:08:34.895264	0.001892	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-167	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
44131	1413342516.094241	2014-10-15 03:08:36.094241	1.198977	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-139	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
44675	1413342516.113513	2014-10-15 03:08:36.113513	0.019272	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-215	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
45005	1413342516.120622	2014-10-15 03:08:36.120622	0.007109	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-209	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
45072	1413342516.124182	2014-10-15 03:08:36.124182	0.003560	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-239	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
45211	1413342516.130454	2014-10-15 03:08:36.130454	0.006272	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-293	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
45223	1413342516.130930	2014-10-15 03:08:36.130930	0.000476	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-257	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
45228	1413342516.131176	2014-10-15 03:08:36.131176	0.000246	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-259	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
45853	1413342516.149364	2014-10-15 03:08:36.149364	0.018188	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-283	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
46128	1413342516.162348	2014-10-15 03:08:36.162348	0.012984	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-269	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
46137	1413342516.164218	2014-10-15 03:08:36.164218	0.001870	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-279	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
46149	1413342516.168346	2014-10-15 03:08:36.168346	0.004128	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-181	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
46160	1413342516.169186	2014-10-15 03:08:36.169186	0.000840	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-281	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1
46336	1413342516.178215	2014-10-15 03:08:36.178215	0.009029	69.241.62.86	69.252.122.58	HTTP	388	zaphod06.cdnlab.comcast.net-237	GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1

```

> Frame 29113: 388 bytes on wire (3104 bits), 388 bytes captured (3104 bits)
> Ethernet II, Src: JuniperN_f5:49:6f (28:c0:da:f5:49:6f), Dst: Hewlett-_4f:6d:88 (2c:27:d7:4f:6d:88)
> Internet Protocol Version 4, Src: 69.241.62.86 (69.241.62.86), Dst: 69.252.122.58 (69.252.122.58)
> Transmission Control Protocol, Src Port: 50992 (50992), Dst Port: 80 (80), Seq: 2446461536, Ack: 402161982, Len: 322
< Hypertext Transfer Protocol
  < GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1\r\n
    < [Expert Info (Chat/Sequence): GET /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) HTTP/1.1\r\n]
      Request Method: GET
      Request URI: /vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000)
      Request Version: HTTP/1.1
      Host: live-orig-01-dns.cdnlab.comcast.net\r\n
      User-Agent: zaphod06.cdnlab.comcast.net-255\r\n
      Client-ip: 69.252.122.74\r\n
      X-Forwarded-For: 69.252.122.74\r\n
      Via: http/1.1 ipcdn-cache-37.cdnlab.comcast.net[45F13E56] (ApacheTrafficServer/4.2.1)\r\n
      \r\n
  <

```

```

[mtorlu9137e@ipcdn-cache-37]~$ grep "vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000)" /opt/trafficserver/var/log/trafficserver/custom_ats_2.log | awk '{print $1,$5,$8,$9,$10,$11,$14,$15,$16,$17}' | egrep '\-191|\-255|\-271|\-147|\-205|\-143|\-289|\-105|\-167'
1413342513.655 url=http://live-orig-01-dns.cdnlab.comcast.net/vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) pssc=200 ttms=1482 b=2349655 sssc=200 pfsc=FIN crc=TCP_REFRESH_MISS phr=DIRECT uas="zaphod06.cdnlab.comcast.net-191"
1413342516.005 url=http://live-orig-01-dns.cdnlab.comcast.net/vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) pssc=200 ttms=1486 b=2349655 sssc=200 pfsc=FIN crc=TCP_REFRESH_MISS phr=DIRECT uas="zaphod06.cdnlab.comcast.net-147"
1413342516.029 url=http://live-orig-01-dns.cdnlab.comcast.net/vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) pssc=200 ttms=1378 b=2349655 sssc=200 pfsc=FIN crc=TCP_REFRESH_MISS phr=DIRECT uas="zaphod06.cdnlab.comcast.net-143"
1413342516.190 url=http://live-orig-01-dns.cdnlab.comcast.net/vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) pssc=200 ttms=1499 b=2349655 sssc=200 pfsc=FIN crc=TCP_REFRESH_MISS phr=DIRECT uas="zaphod06.cdnlab.comcast.net-105"
1413342516.210 url=http://live-orig-01-dns.cdnlab.comcast.net/vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) pssc=200 ttms=1419 b=2349655 sssc=200 pfsc=FIN crc=TCP_REFRESH_MISS phr=DIRECT uas="zaphod06.cdnlab.comcast.net-205"
1413342516.305 url=http://live-orig-01-dns.cdnlab.comcast.net/vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) pssc=200 ttms=1613 b=2349655 sssc=200 pfsc=FIN crc=TCP_REFRESH_MISS phr=DIRECT uas="zaphod06.cdnlab.comcast.net-167"
1413342516.474 url=http://live-orig-01-dns.cdnlab.comcast.net/vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) pssc=200 ttms=1881 b=2349655 sssc=200 pfsc=FIN crc=TCP_REFRESH_MISS phr=DIRECT uas="zaphod06.cdnlab.comcast.net-289"
1413342516.489 url=http://live-orig-01-dns.cdnlab.comcast.net/vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) pssc=200 ttms=1721 b=2349655 sssc=200 pfsc=FIN crc=TCP_REFRESH_MISS phr=DIRECT uas="zaphod06.cdnlab.comcast.net-255"
1413342516.764 url=http://live-orig-01-dns.cdnlab.comcast.net/vXG3FnMm_livech_.ism/QualityLevels(5033164)/Fragments(video=4170000000) pssc=200 ttms=1992 b=2349655 sssc=200 pfsc=FIN crc=TCP_REFRESH_MISS phr=DIRECT uas="zaphod06.cdnlab.comcast.net-271"
[mtorlu9137e@ipcdn-cache-37]~$

```

New test:

How does RWW perform, when first request is a 404 from origin?

404s from origin

```
[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$|^\\#'
LoadModule hotair_module      /usr/lib64/httpd/modules/mod_hotair.so
<LocationMatch "(\\.ism*|\\.f4m|.*Seg\\d-Frag\\d.*|\\.m3u8|\\.ts)">
    SetHandler hotair
    Header set Cache-Control "max-age=1"
</LocationMatch>
HotairServeStatusCode 404 10
[root@zaphod02 ~]#

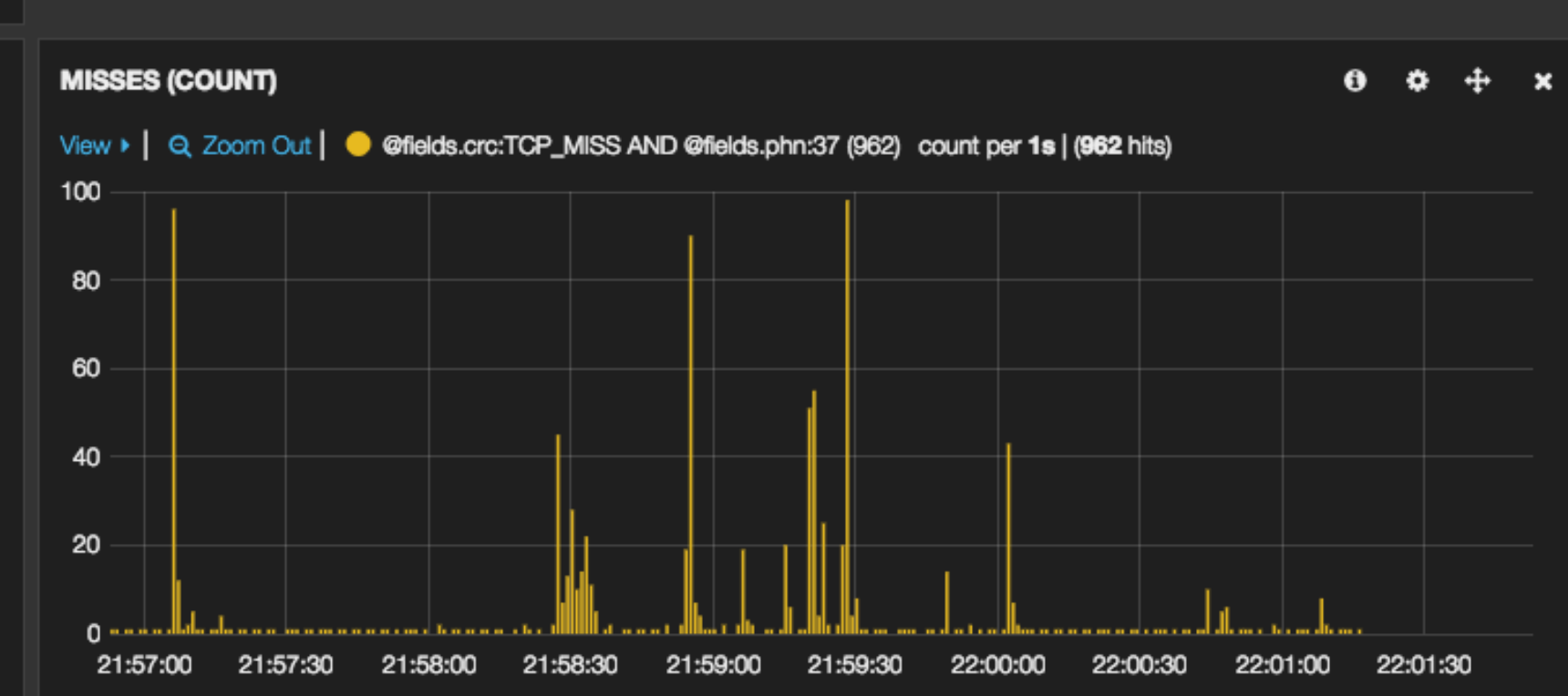
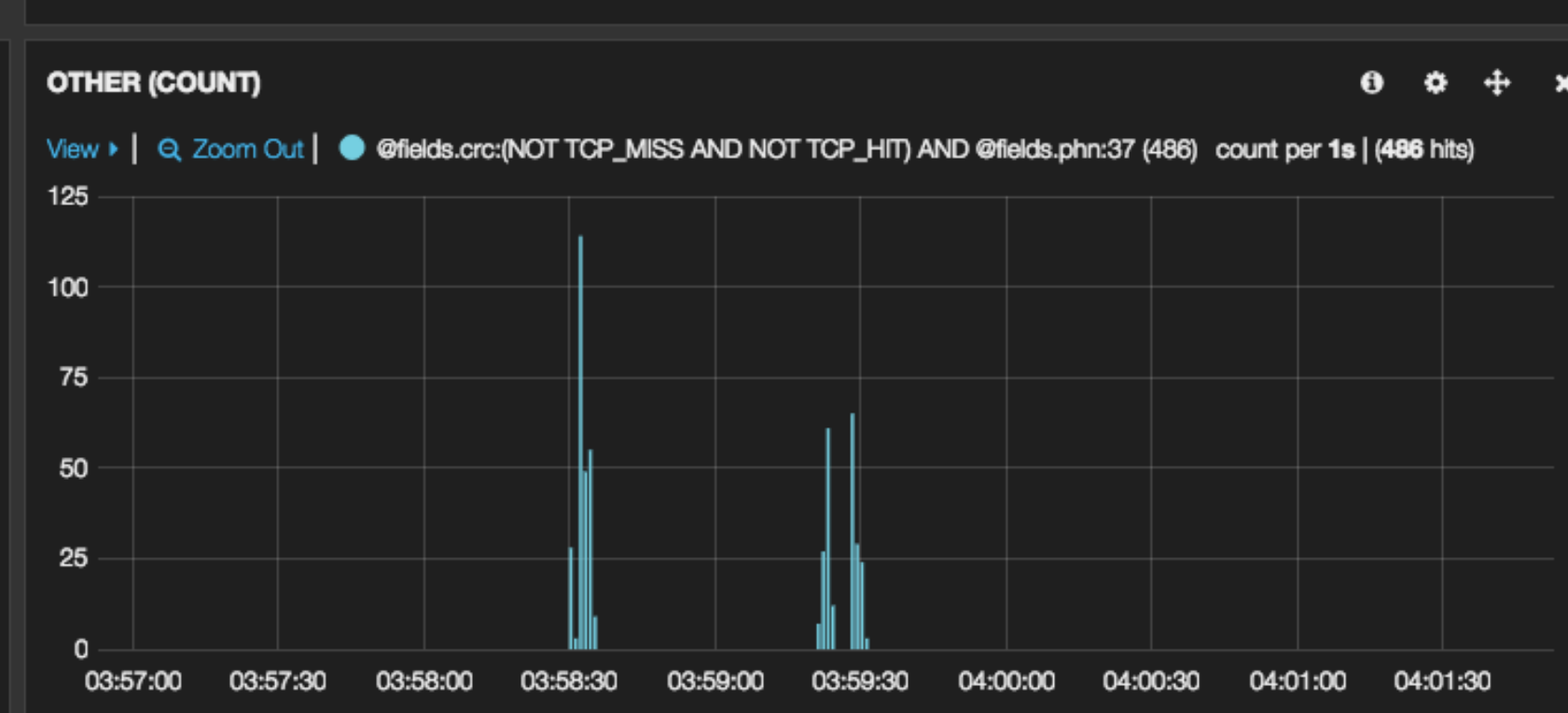
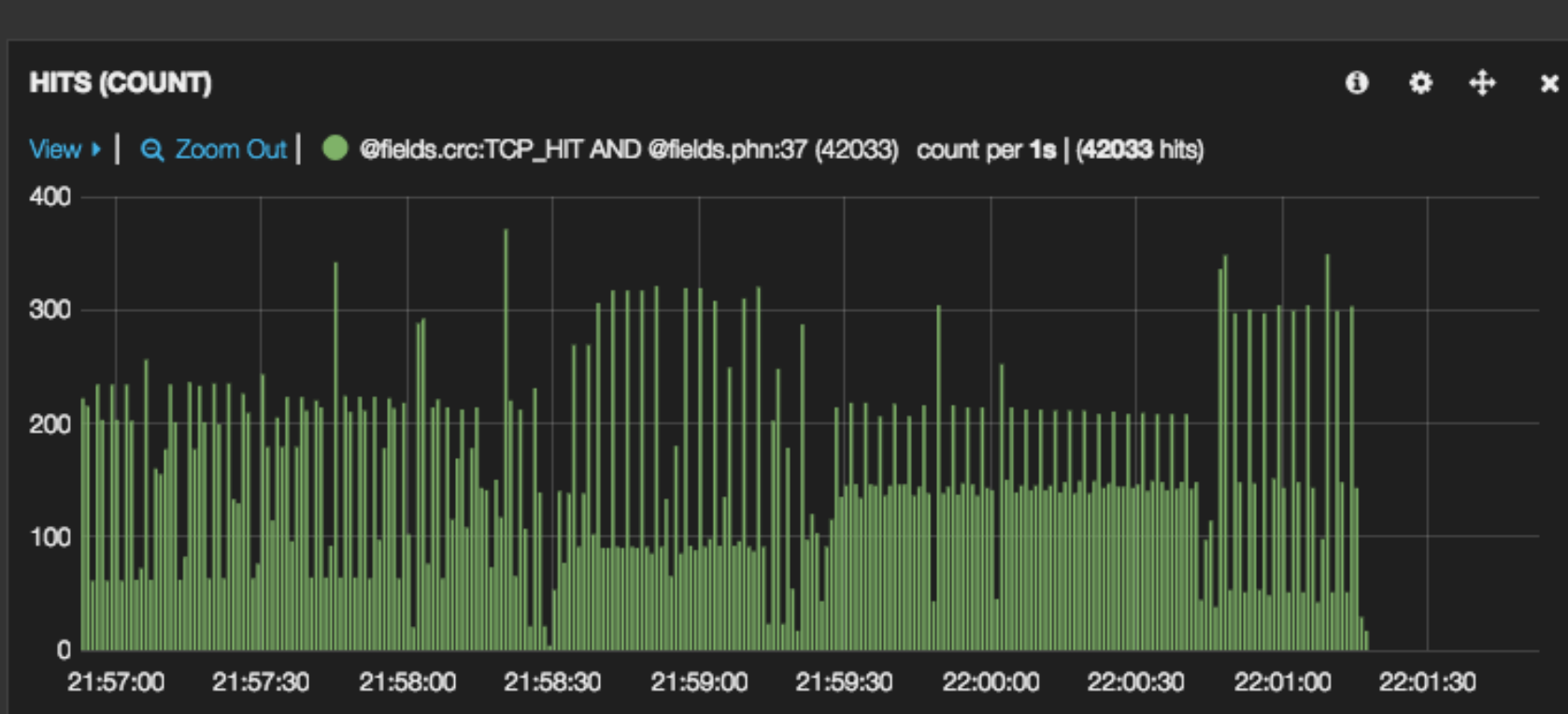
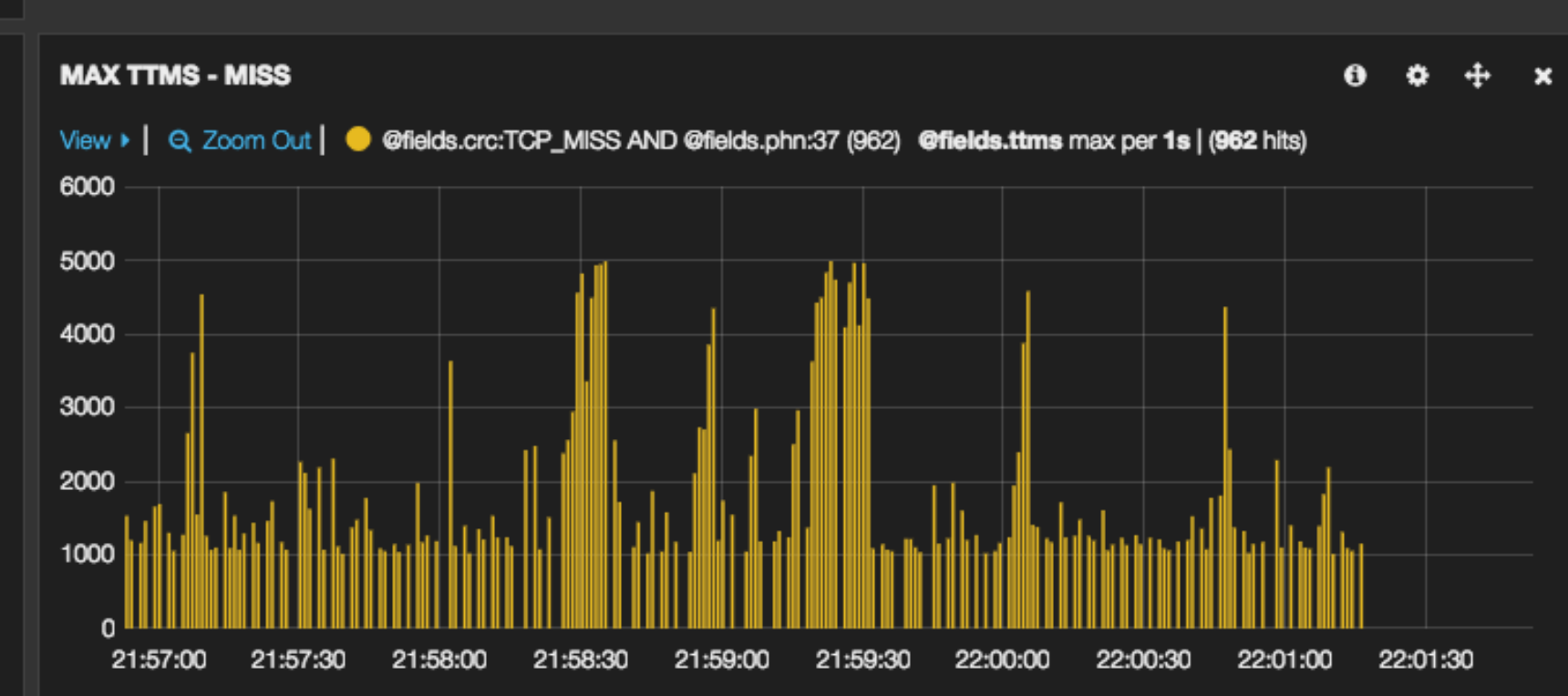
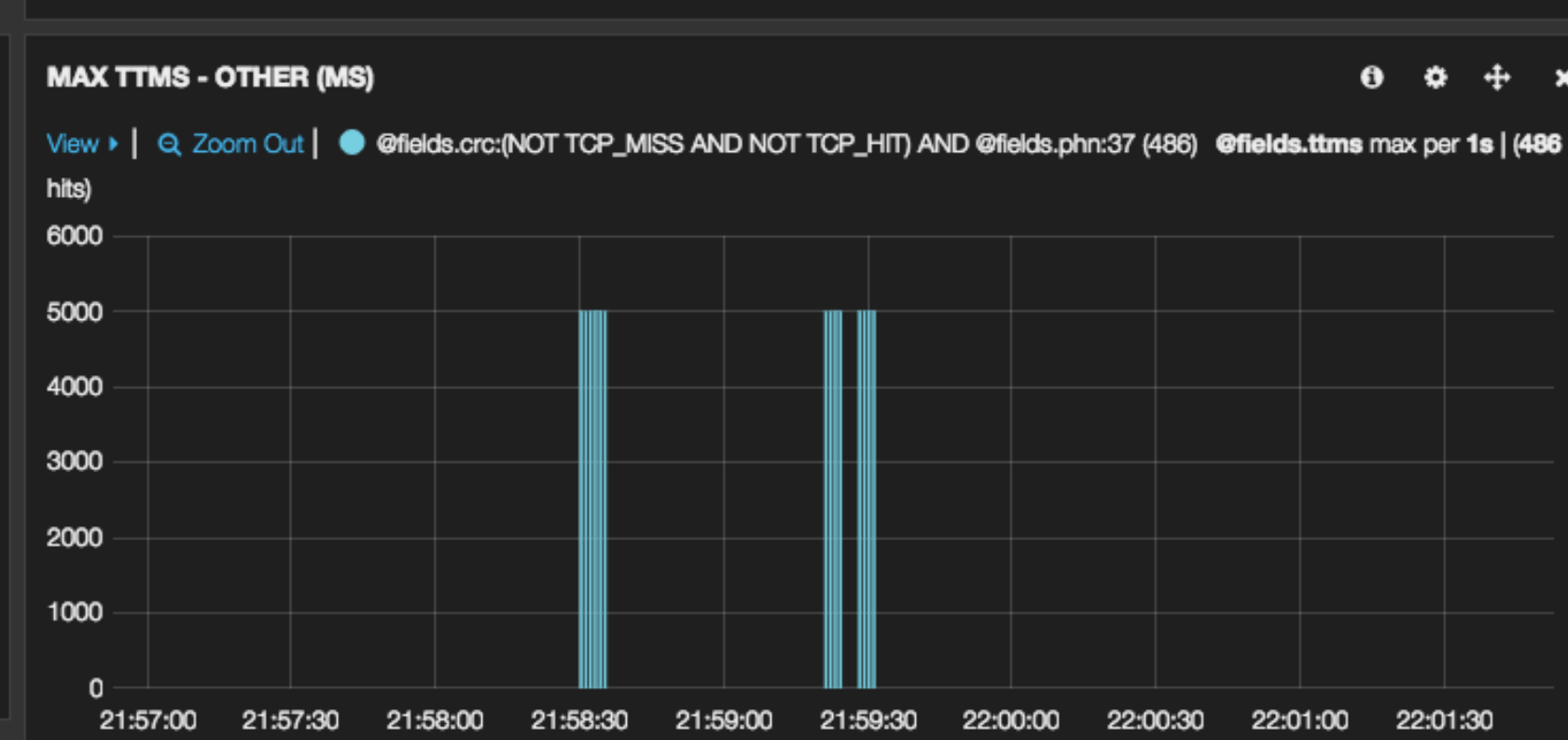
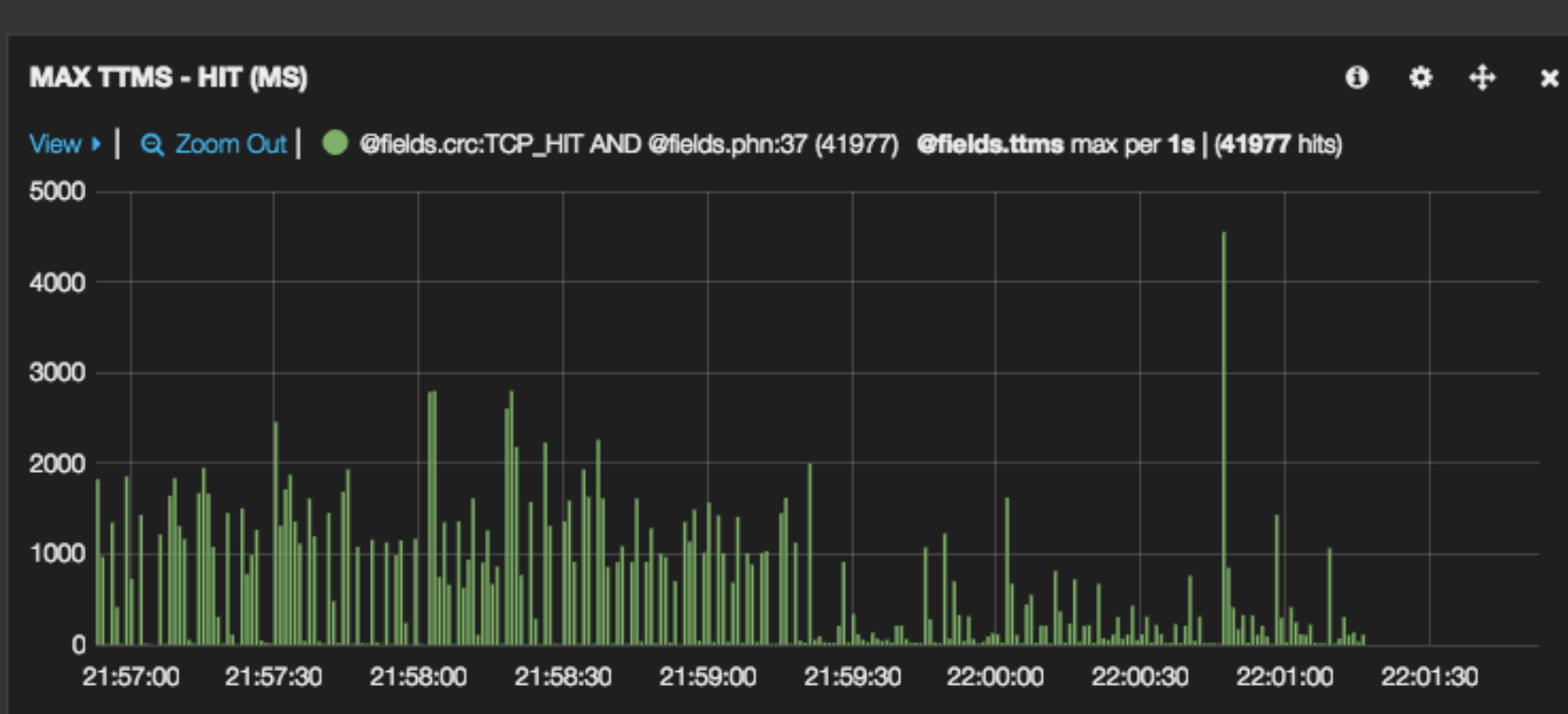
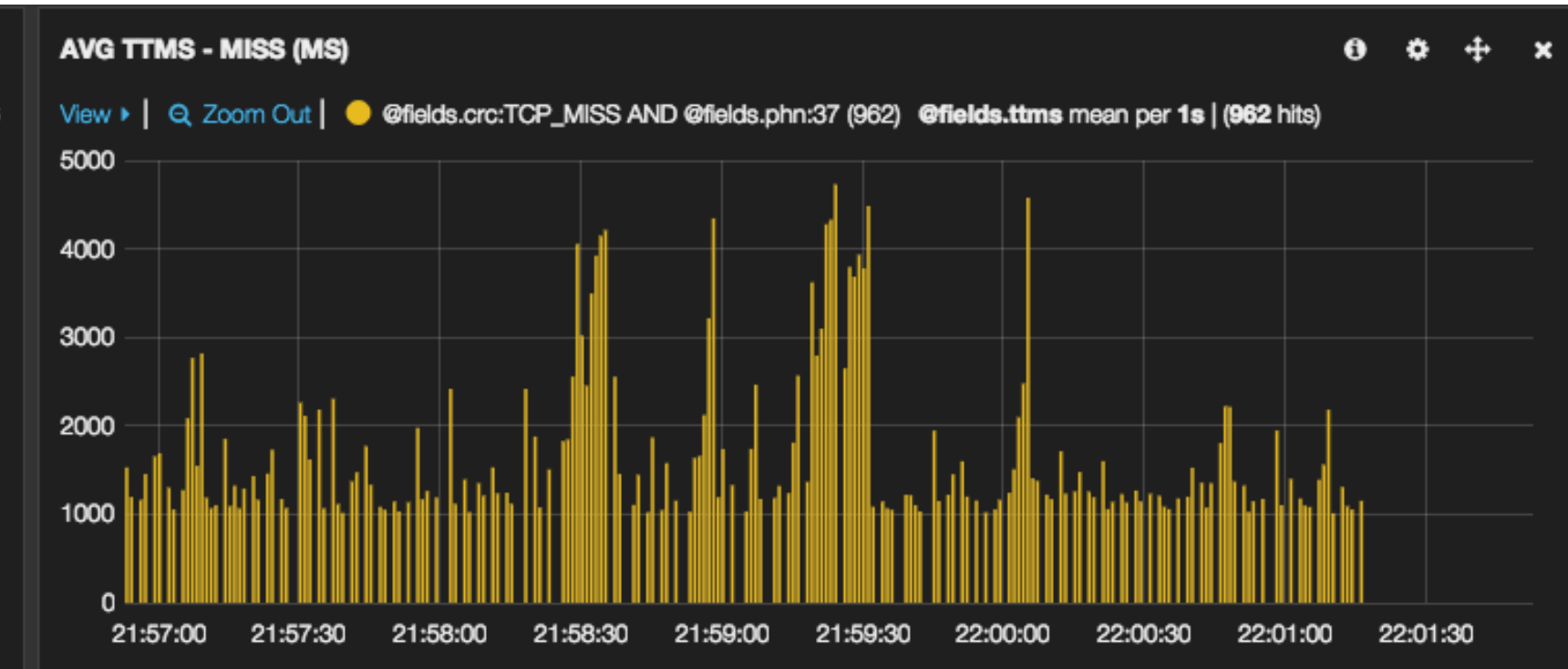
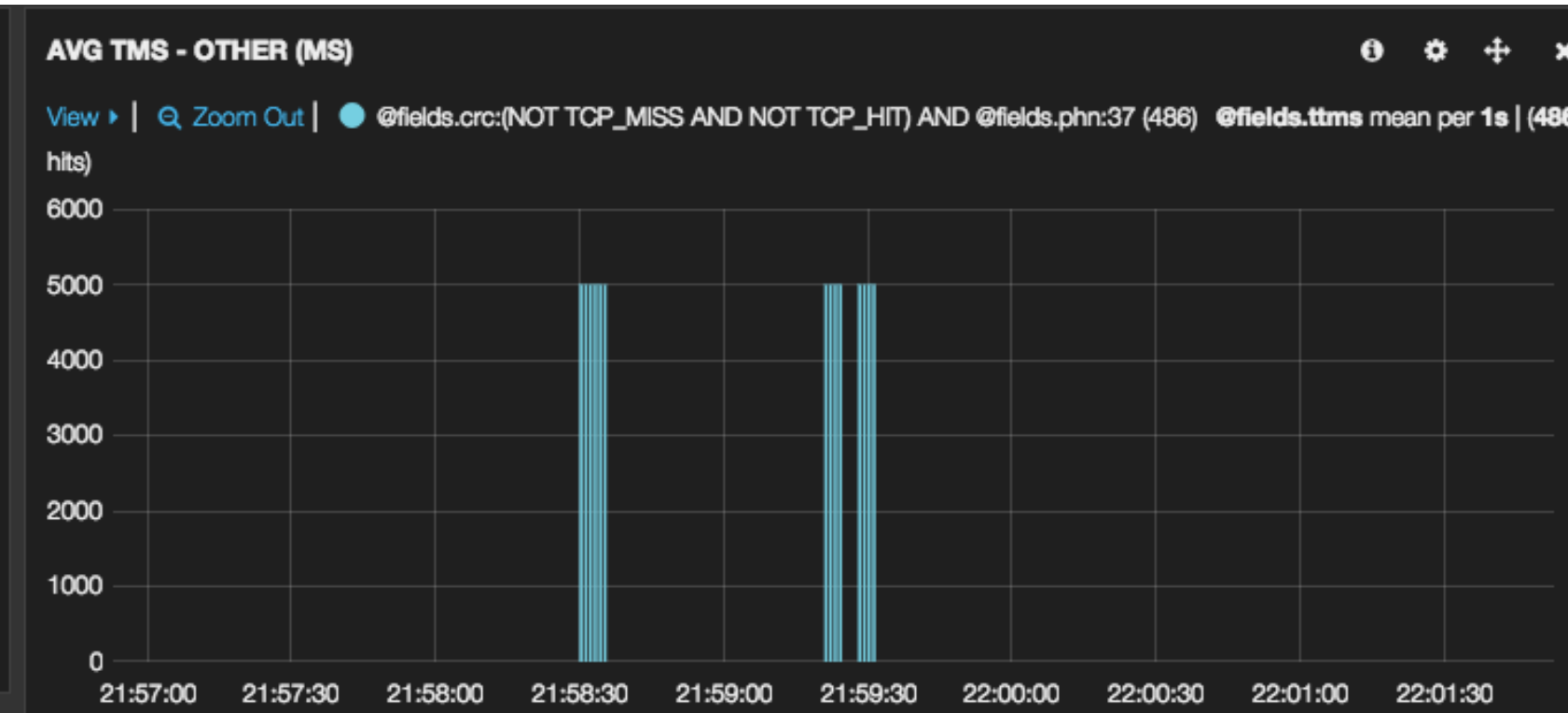
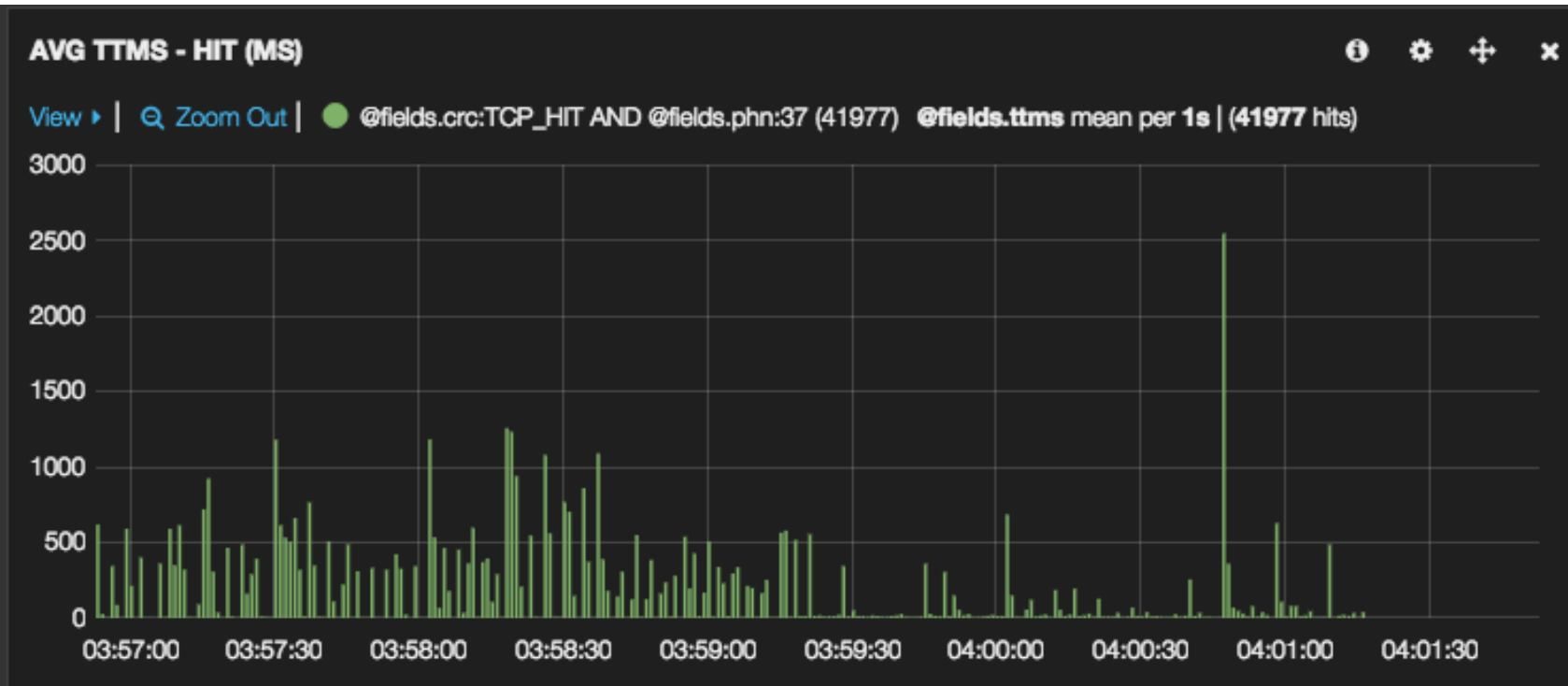
[root@zaphod02 ~]# tc qdisc show dev ens2f0
qdisc pfifo_fast 0: root refcnt 2 bands 3 priomap  1 2 2 2 1 2 0 0 1 1 1 1 1 1 1 1
[root@zaphod02 ~]#
```

```
[mtorlu9137e@zaphod06]lcontrol$ cat fwd_proxy_tight_c37.json
{
  "clients": "480",
  "bitrate": "2500000",
  "test_type": "TestEngines::LLL",
  "abr_type": "hls",
  "frag_duration": "50000000",
  "origins": "1",
  "live": "100",
  "active_channels": "1",
  "vod_cache_name" : "load-test-01.cdnlab.comcast.net",
  "live_cache_name" : "live-orig-01-dns.cdnlab.comcast.net",
  "cache_ip" : "69.241.62.86",
  "vod_cache_hitratio" : "80",
  "live_active_fragments" : "2",
  "vod_bitrates" : "4300000,3000000",
  "live_bitrates" : "6710886,5033164",
  "max_long_tts_percentage" : "0.5",
  "long_tts_time" : "1.5",
  "proxy_mode" : "forward",
  "ipv6_percentage" : 0,
  "via_headers" : 1
}
[mtorlu9137e@zaphod06]lcontrol$
```

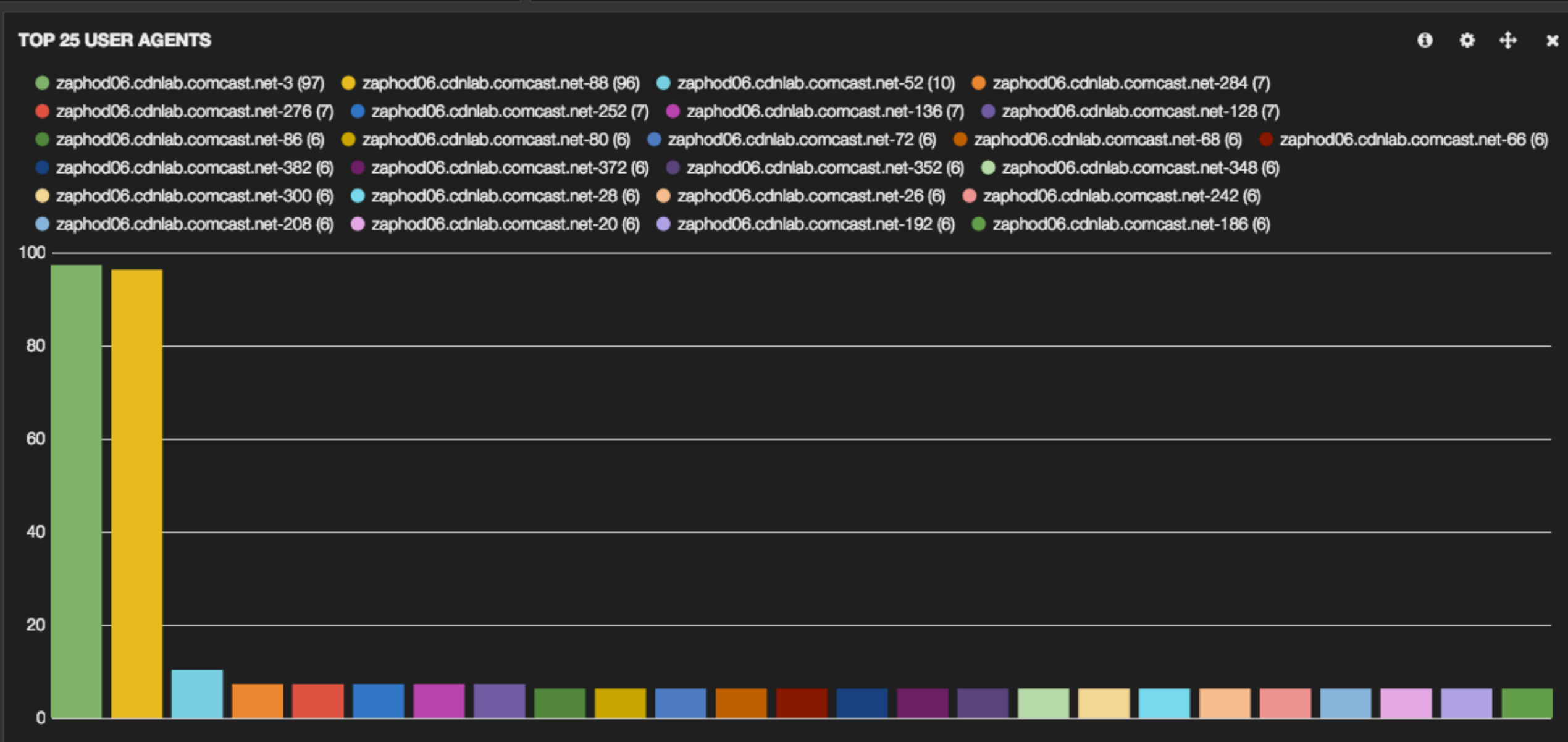
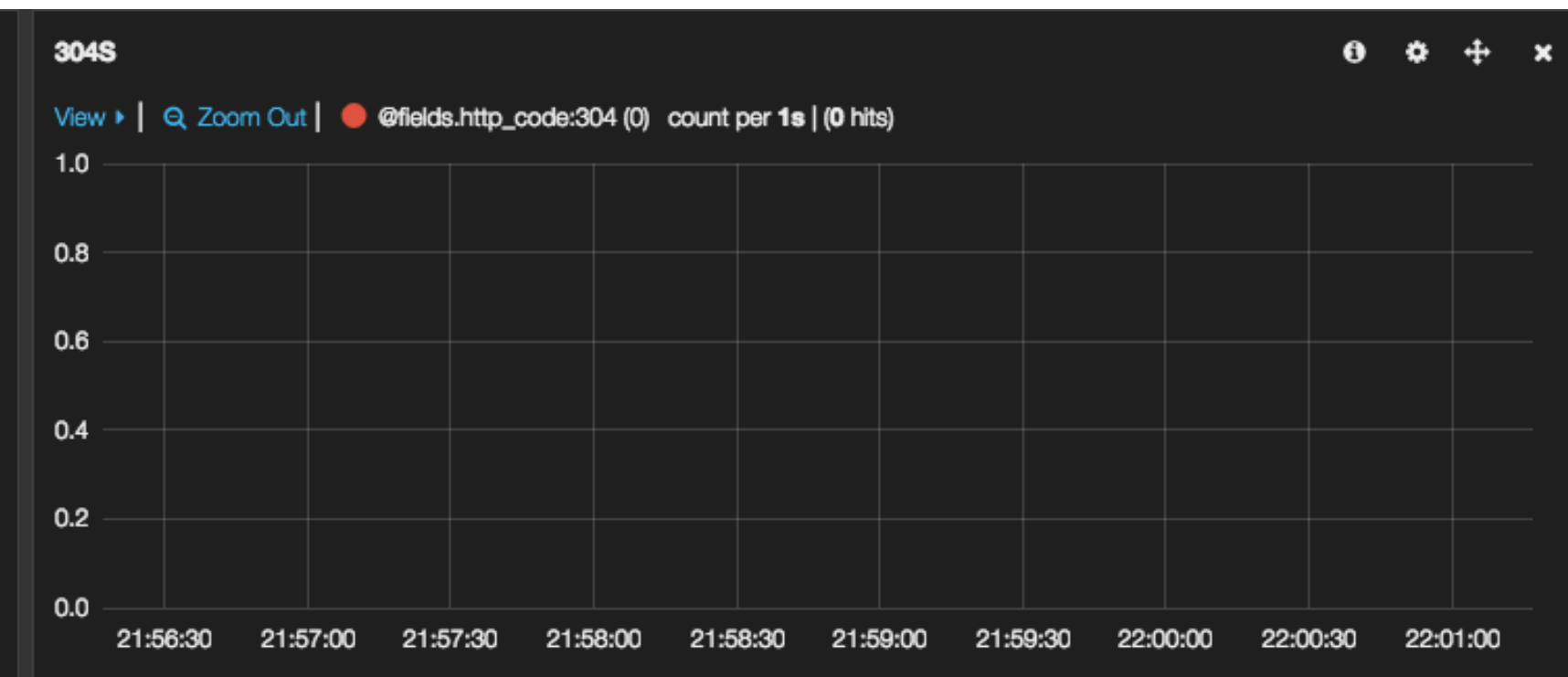
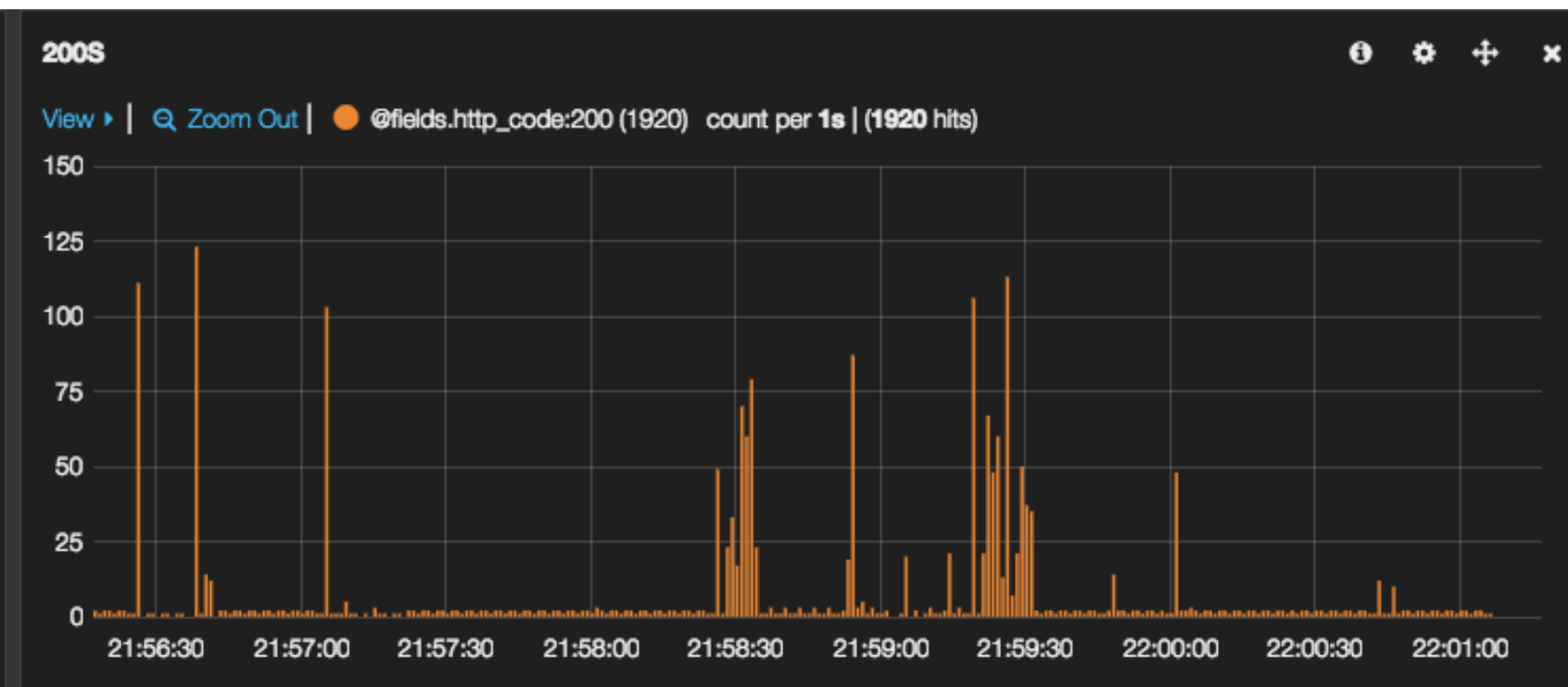
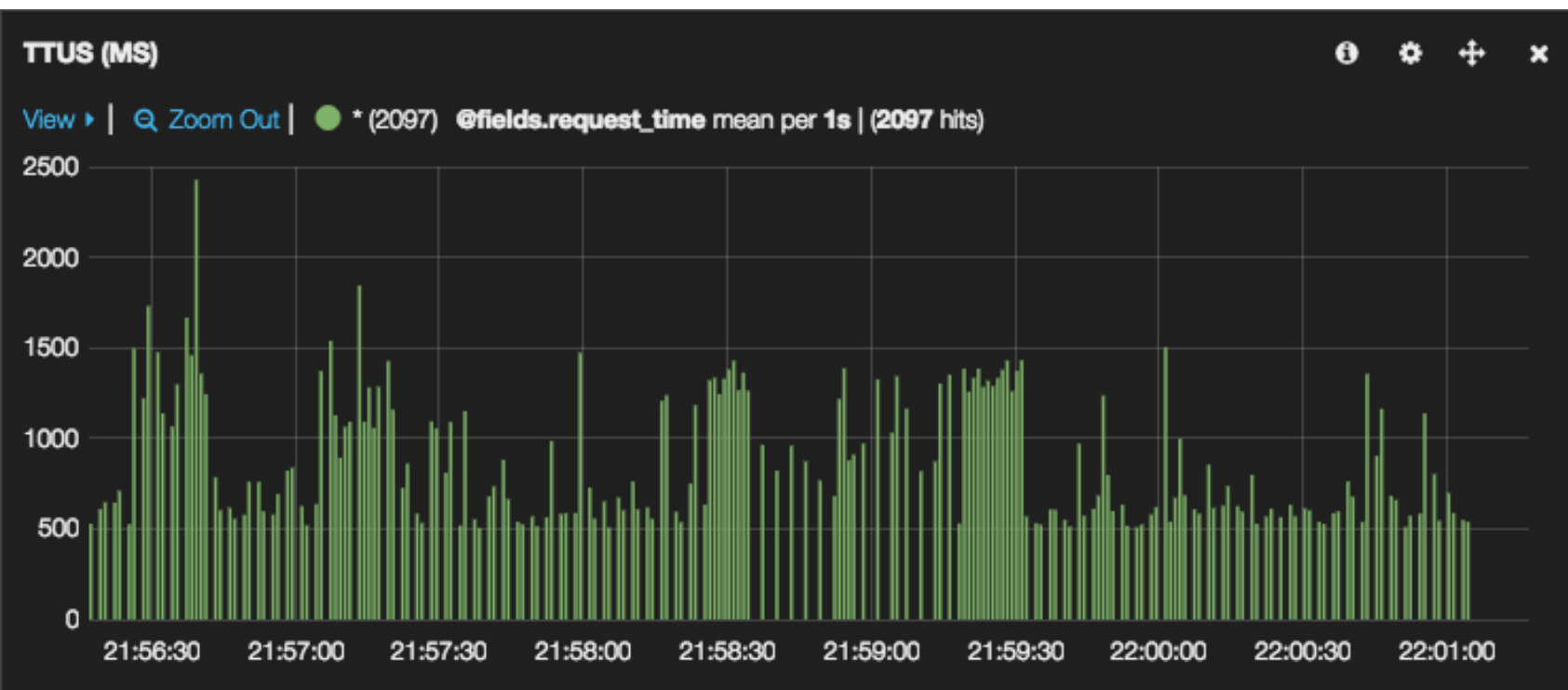
```
[mtorlu9137e@ipcdn-cache-37]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn
Tue Oct 21 03:11:02 UTC 2014
Version of this script: 0.34e
ERROR Lines in /opt/trafficserver/etc/trafficserver//plugin.config do not match Twelve Monkeys.
ERROR Config file: plugin.config line only on disk: header_rewrite.so hrrw.conf
ERROR Lines in /opt/trafficserver/etc/trafficserver//records.config do not match Twelve Monkeys.
ERROR Config file: records.config line only in 12M: CONFIG proxy.config.http.transaction_active_timeout_in INT 900
ERROR Config file: records.config line only on disk: CONFIG proxy.config.http.transaction_active_timeout_in INT 5
[mtorlu9137e@ipcdn-cache-37]~$
```

```
[mtorlu9137e@ipcdn-cache-37]~$ sudo cat /usr/local/etc/header_rewrite/hrrw.conf | grep -v "^\#"
cond %{READ_REQUEST_HDR_HOOK}
cond %{HEAD} = live-orig-01-dns.cdnlab.comcast.net
set-config proxy.config.http.connect_attempts_timeout 2
set-config proxy.config.http.connect_attempts_max_retries_dead_server 2 [L]
[mtorlu9137e@ipcdn-cache-37]~$
```

Mid graphs

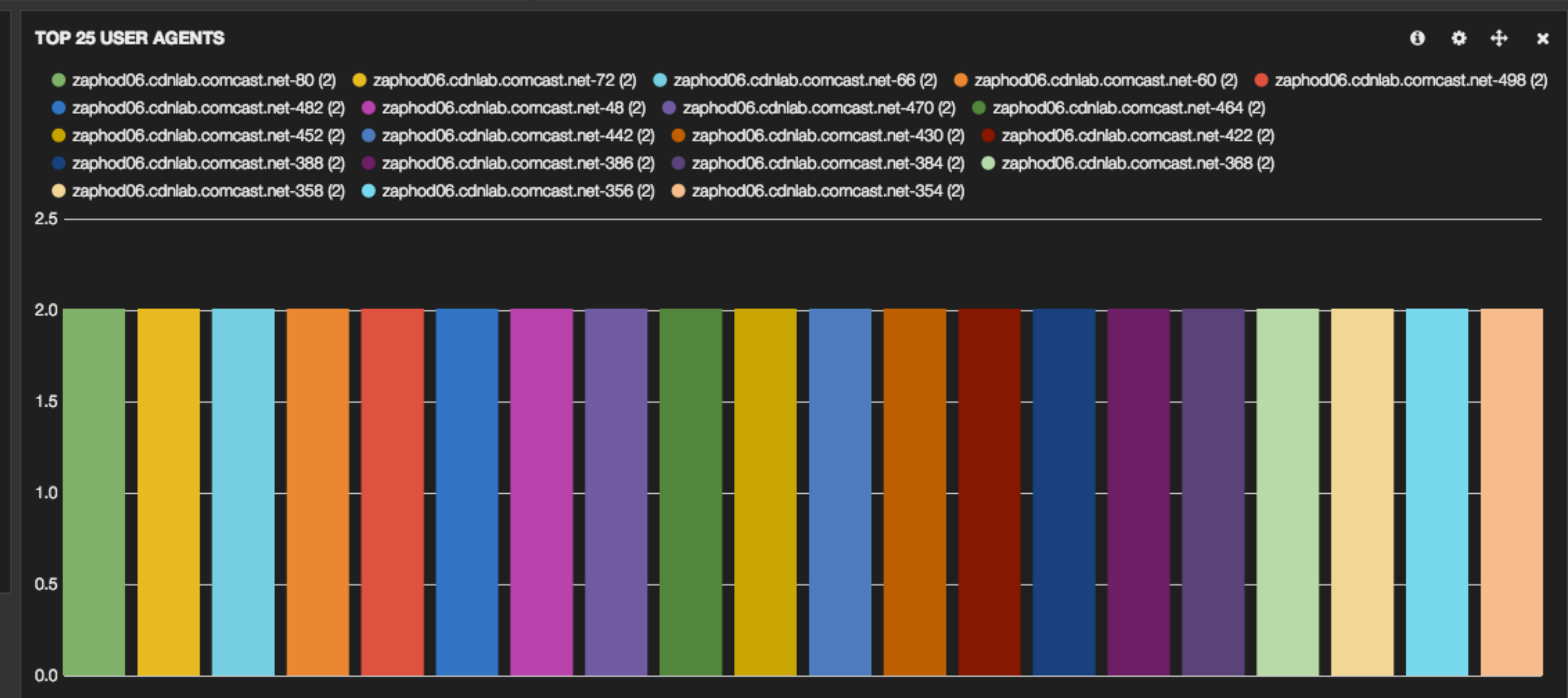
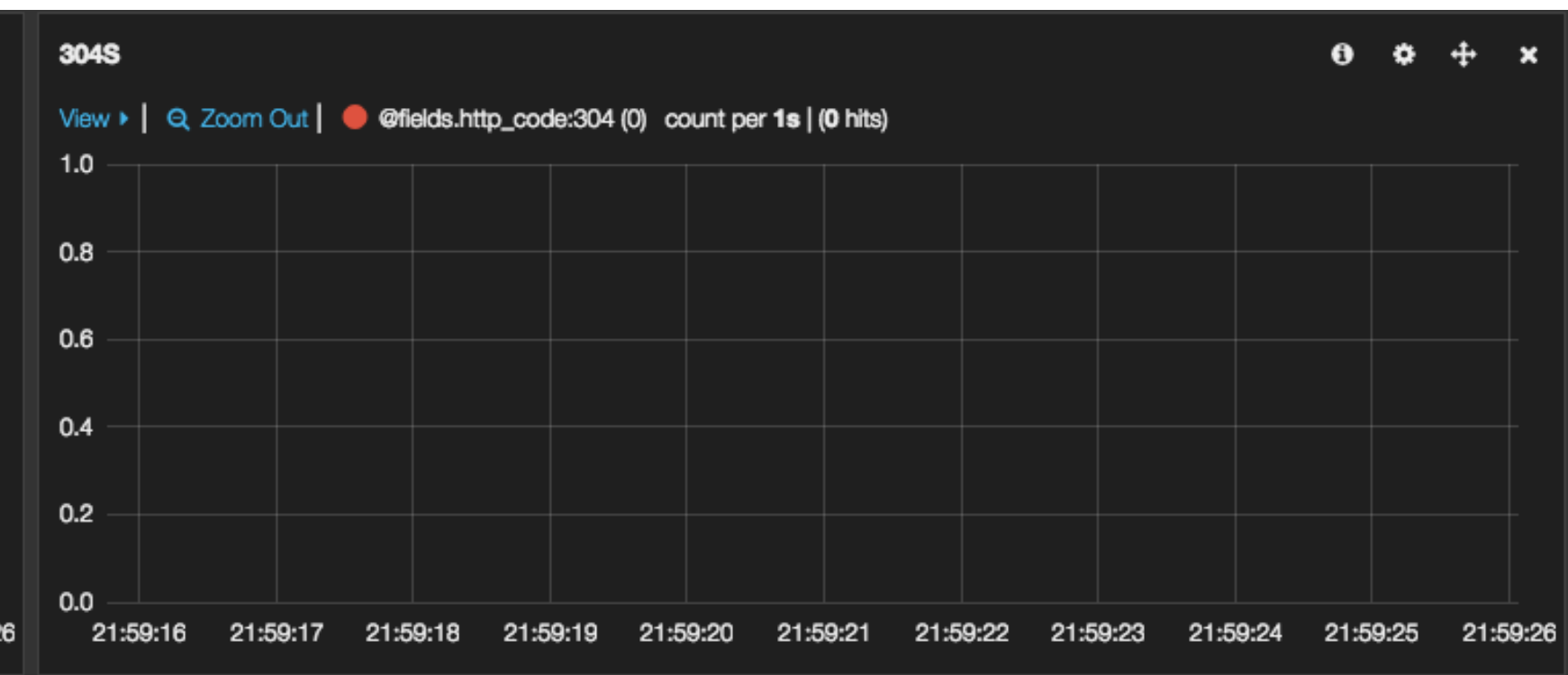
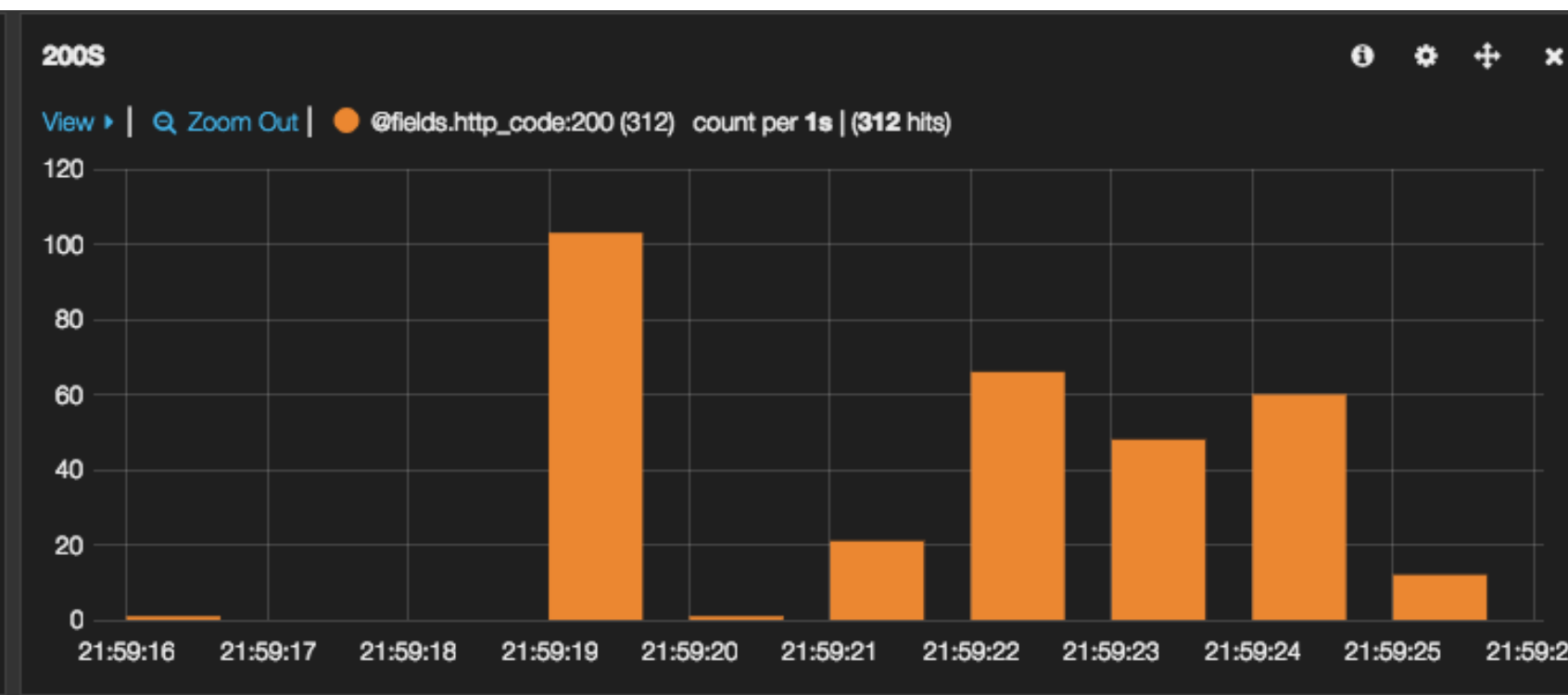
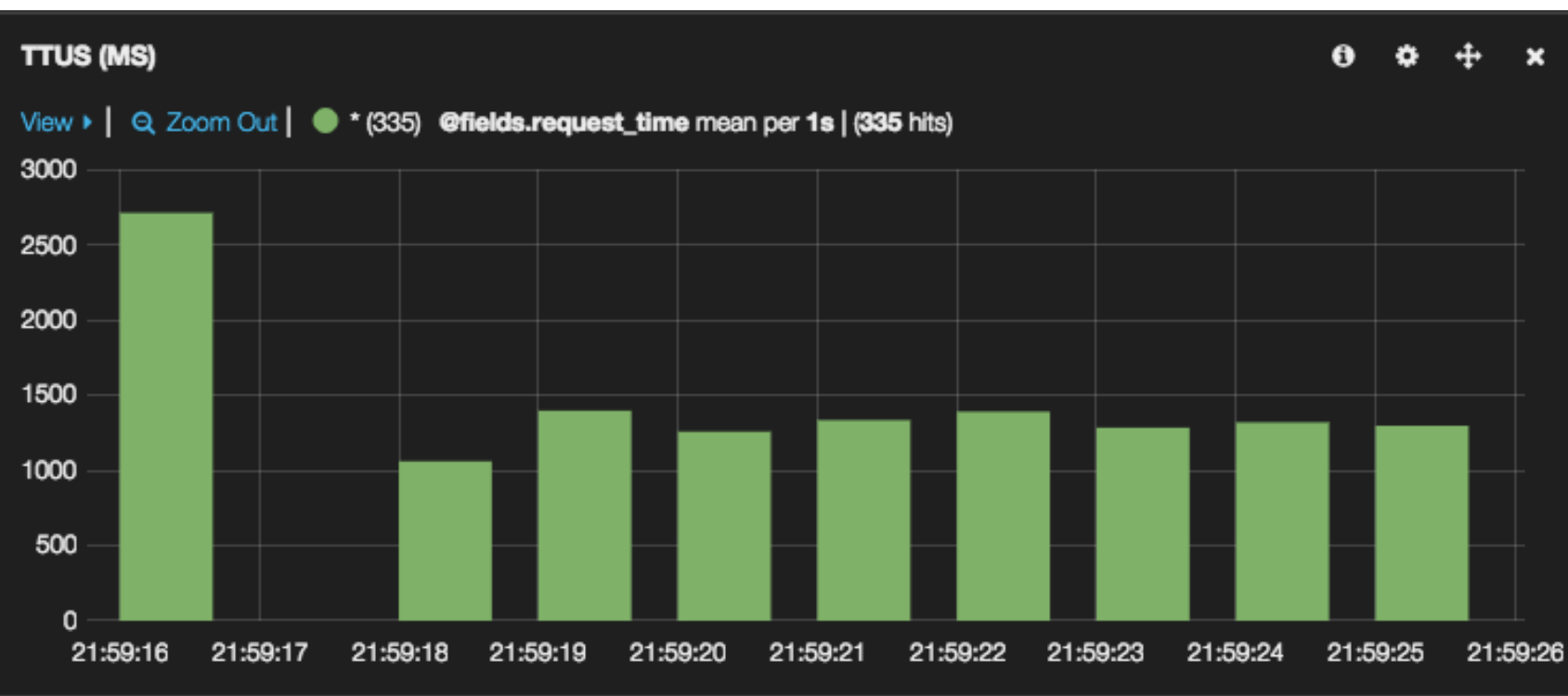


Origin graphs



Zoom In

Origin



Origin

@timestamp ^	@fields.sec_frac	@fields.request	@fields.http_user_agent	@fields.request_time	@fields.http_code
2014-10-21T03:59:16.000Z	0.187	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-88	2709830	200
2014-10-21T03:59:18.000Z	0.747	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-88	1059760	404
2014-10-21T03:59:19.000Z	0.813	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-128	1034243	200
2014-10-21T03:59:19.000Z	0.815	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-346	1048185	200
2014-10-21T03:59:19.000Z	0.829	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-382	1034021	200
2014-10-21T03:59:19.000Z	0.873	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-36	1018987	200
2014-10-21T03:59:19.000Z	0.815	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-270	1076883	200
2014-10-21T03:59:19.000Z	0.816	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-82	1091793	200
2014-10-21T03:59:19.000Z	0.814	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-488	1101962	200
2014-10-21T03:59:19.000Z	0.826	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-242	1095707	200
2014-10-21T03:59:19.000Z	0.834	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-450	1105965	200
2014-10-21T03:59:19.000Z	0.822	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-150	1121236	200
2014-10-21T03:59:19.000Z	0.835	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-234	1118002	404
2014-10-21T03:59:19.000Z	0.831	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-244	1126023	200
2014-10-21T03:59:19.000Z	0.842	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-458	1155942	200
2014-10-21T03:59:19.000Z	0.808	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-68	1192551	200
2014-10-21T03:59:19.000Z	0.829	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-62	1183544	200
2014-10-21T03:59:19.000Z	0.81	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-92	1203712	200
2014-10-21T03:59:19.000Z	0.815	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-212	1198865	200
2014-10-21T03:59:19.000Z	0.843	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-420	1191537	200
2014-10-21T03:59:19.000Z	0.845	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-142	1194887	200
2014-10-21T03:59:19.000Z	0.816	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-402	1229553	200
2014-10-21T03:59:19.000Z	0.831	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-500	1216975	200
2014-10-21T03:59:19.000Z	0.844	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-172	1222607	200
2014-10-21T03:59:19.000Z	0.843	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-100	1224280	200
2014-10-21T03:59:19.000Z	0.841	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-206	1231220	200
2014-10-21T03:59:19.000Z	0.853	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-158	1242638	200
2014-10-21T03:59:19.000Z	0.84	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-426	1267656	200
2014-10-21T03:59:19.000Z	0.826	GET /oKRk51PI_livech_ism/QualityLevels(6710886)/Fragments(video=1341000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-350	1296896	200

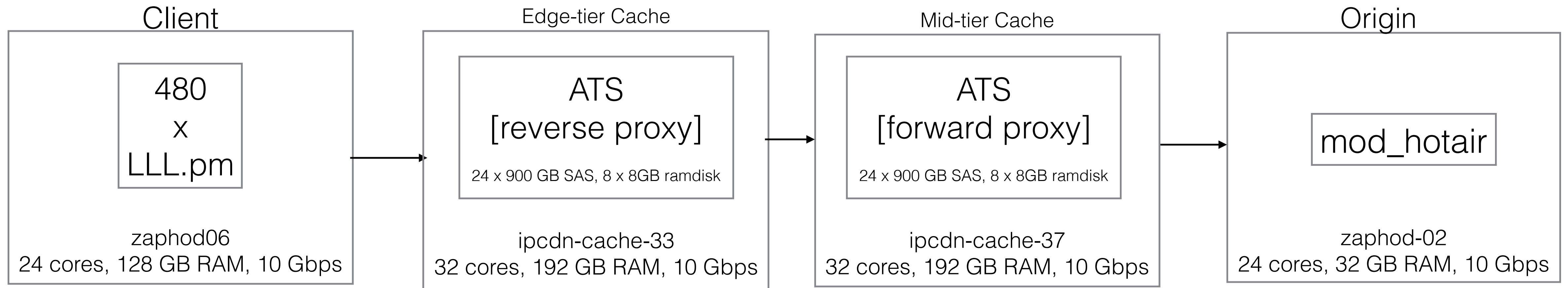
Mid-tier cache

@fields.b	@fields.uas	@fields.ttms	@fields.sssc	@fields.pssc	@fields.crc	@timestamp	@fields.utime
270	zaphod06.cdnlab.comcast.net-362	2756	404	404	TCP_MISS	2014-10-21T03:59:20.000Z	1413863960.843
2996455	zaphod06.cdnlab.comcast.net-36	2626	200	200	TCP_MISS	2014-10-21T03:59:20.000Z	1413863960.870
2996455	zaphod06.cdnlab.comcast.net-202	2266	200	200	TCP_MISS	2014-10-21T03:59:20.000Z	1413863960.873
2996455	zaphod06.cdnlab.comcast.net-310	2512	200	200	TCP_MISS	2014-10-21T03:59:20.000Z	1413863960.885
2996455	zaphod06.cdnlab.comcast.net-242	3741	200	200	TCP_MISS	2014-10-21T03:59:20.000Z	1413863960.898
2996455	zaphod06.cdnlab.comcast.net-156	3055	200	200	TCP_MISS	2014-10-21T03:59:20.000Z	1413863960.922
270	zaphod06.cdnlab.comcast.net-76	2545	404	404	TCP_MISS	2014-10-21T03:59:20.000Z	1413863960.928
2996455	zaphod06.cdnlab.comcast.net-232	2875	200	200	TCP_MISS	2014-10-21T03:59:20.000Z	1413863960.954
2996455	zaphod06.cdnlab.comcast.net-208	2786	200	200	TCP_MISS	2014-10-21T03:59:20.000Z	1413863960.961
2996455	zaphod06.cdnlab.comcast.net-374	2881	200	200	TCP_MISS	2014-10-21T03:59:20.000Z	1413863960.972
2996455	zaphod06.cdnlab.comcast.net-458	1362	200	200	TCP_MISS	2014-10-21T03:59:20.000Z	1413863960.977
2996455	zaphod06.cdnlab.comcast.net-366	2895	200	200	TCP_MISS	2014-10-21T03:59:20.000Z	1413863960.988
2996455	zaphod06.cdnlab.comcast.net-500	2821	200	200	TCP_MISS	2014-10-21T03:59:21.000Z	1413863961.026
2996455	zaphod06.cdnlab.comcast.net-224	3082	200	200	TCP_MISS	2014-10-21T03:59:21.000Z	1413863961.053
2996455	zaphod06.cdnlab.comcast.net-158	4161	200	200	TCP_MISS	2014-10-21T03:59:21.000Z	1413863961.072
270	zaphod06.cdnlab.comcast.net-344	3463	404	404	TCP_MISS	2014-10-21T03:59:21.000Z	1413863961.557
2996455	zaphod06.cdnlab.comcast.net-230	3336	200	200	TCP_MISS	2014-10-21T03:59:21.000Z	1413863961.612
0	zaphod06.cdnlab.comcast.net-252	4999	000	000	ERR_CLIENT_ABORT	2014-10-21T03:59:21.000Z	1413863961.642
2996455	zaphod06.cdnlab.comcast.net-198	3685	200	200	TCP_MISS	2014-10-21T03:59:21.000Z	1413863961.645
2996455	zaphod06.cdnlab.comcast.net-376	3445	200	200	TCP_MISS	2014-10-21T03:59:21.000Z	1413863961.657
2996455	zaphod06.cdnlab.comcast.net-282	3609	200	200	TCP_MISS	2014-10-21T03:59:21.000Z	1413863961.685
2996455	zaphod06.cdnlab.comcast.net-162	3834	200	200	TCP_MISS	2014-10-21T03:59:21.000Z	1413863961.706
0	zaphod06.cdnlab.comcast.net-54	4998	000	000	ERR_CLIENT_ABORT	2014-10-21T03:59:21.000Z	1413863961.715
2996455	zaphod06.cdnlab.comcast.net-240	3547	200	200	TCP_MISS	2014-10-21T03:59:21.000Z	1413863961.754
2996455	zaphod06.cdnlab.comcast.net-258	3236	200	200	TCP_MISS	2014-10-21T03:59:21.000Z	1413863961.773
2996455	zaphod06.cdnlab.comcast.net-480	1875	000	200	TCP_HIT	2014-10-21T03:59:21.000Z	1413863961.826
2996455	zaphod06.cdnlab.comcast.net-118	3596	200	200	TCP_MISS	2014-10-21T03:59:22.000Z	1413863962.013

New test:

Add in the edge tier

Testing Setup - Picture



Config

```
[mtorlu9137e@zaphod06]lcontrol$ cat c33_tight_c37.json
```

```
{
  "clients": "480",
  "bitrate": "2500000",
  "test_type": "TestEngines::LLL",
  "abr_type": "hls",
  "frag_duration": "50000000",
  "origins": "1",
  "live": "100",
  "active_channels": "1",
  "vod_cache_name" : "load-test-01.cdnlab.comcast.net",
  "live_cache_name" : "edge.live-l1-dns.top.cdnlab.comcast.net",
  "cache_ip" : "69.241.62.70",
  "vod_cache_hitratio" : "80",
  "live_active_fragments" : "2",
  "vod_bitrates" : "4300000,3000000",
  "live_bitrates" : "6710886,5033164",
  "max_long_tts_percentage" : "0.5",
  "long_tts_time" : "1.5",
  "proxy_mode" : "reverse",
  "ipv6_percentage" : 0,
  "via_headers" : 1
}
```

```
[mtorlu9137e@zaphod06]lcontrol$
```

```
[mtorlu9137e@ipcdn-cache-33]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn
Tue Oct 21 12:59:27 UTC 2014
Version of this script: 0.34e
[mtorlu9137e@ipcdn-cache-33]~$
```

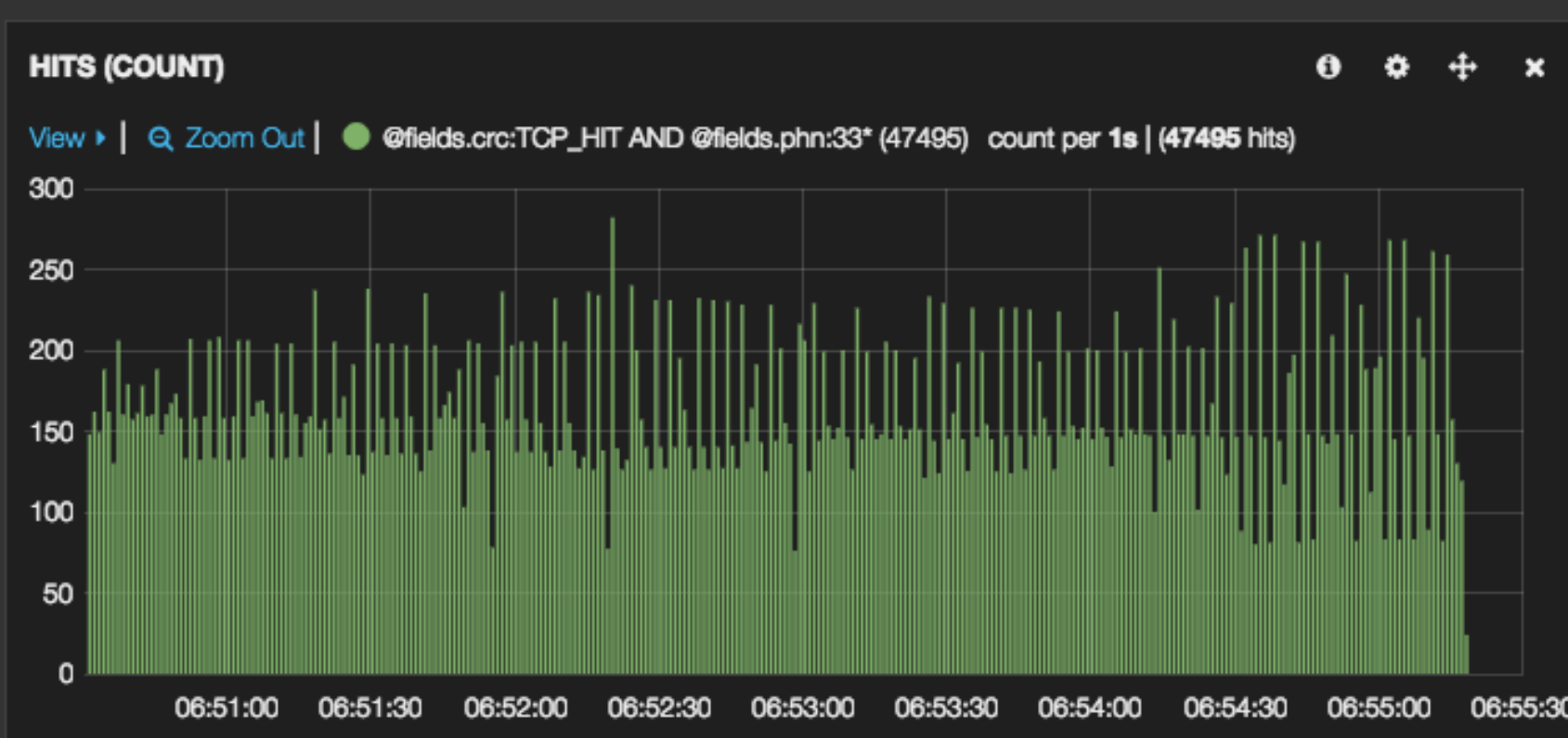
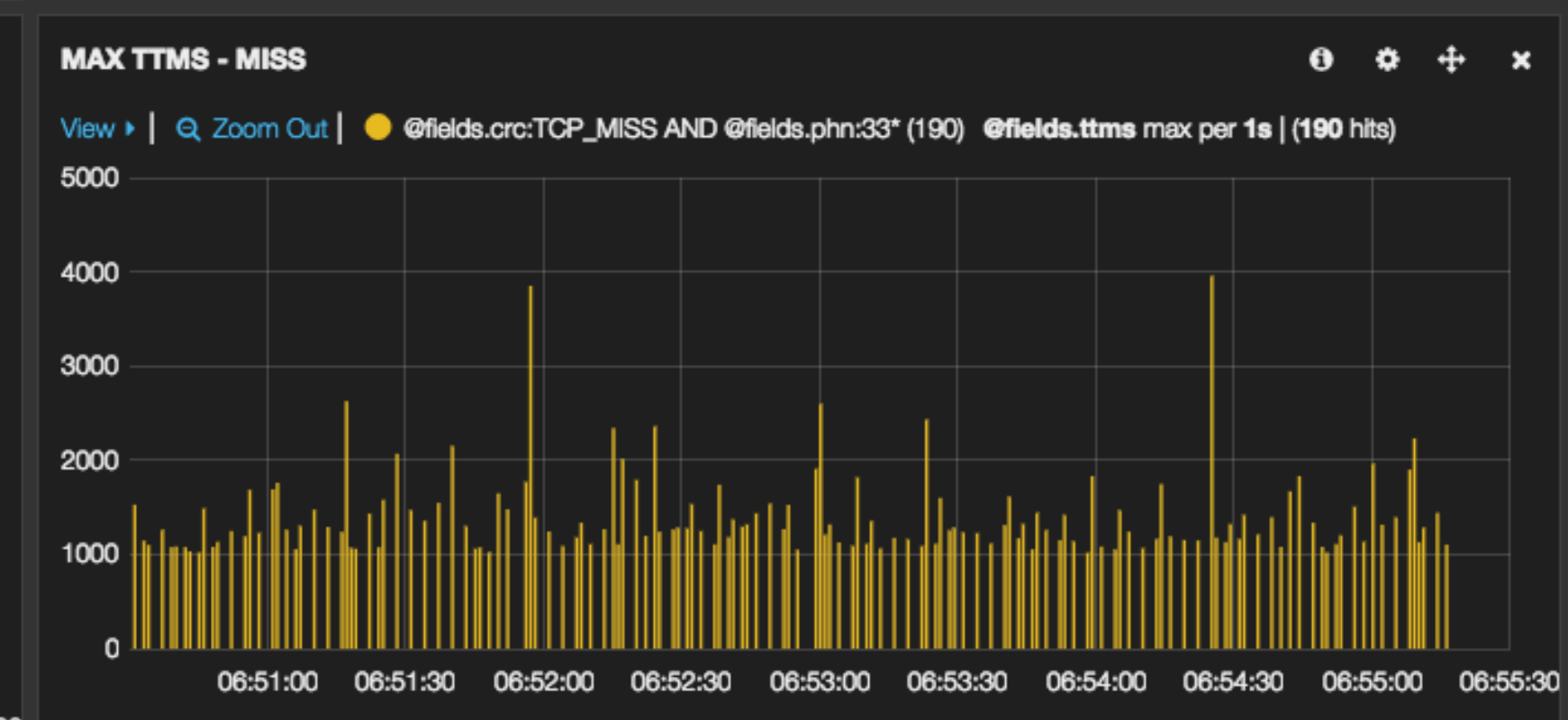
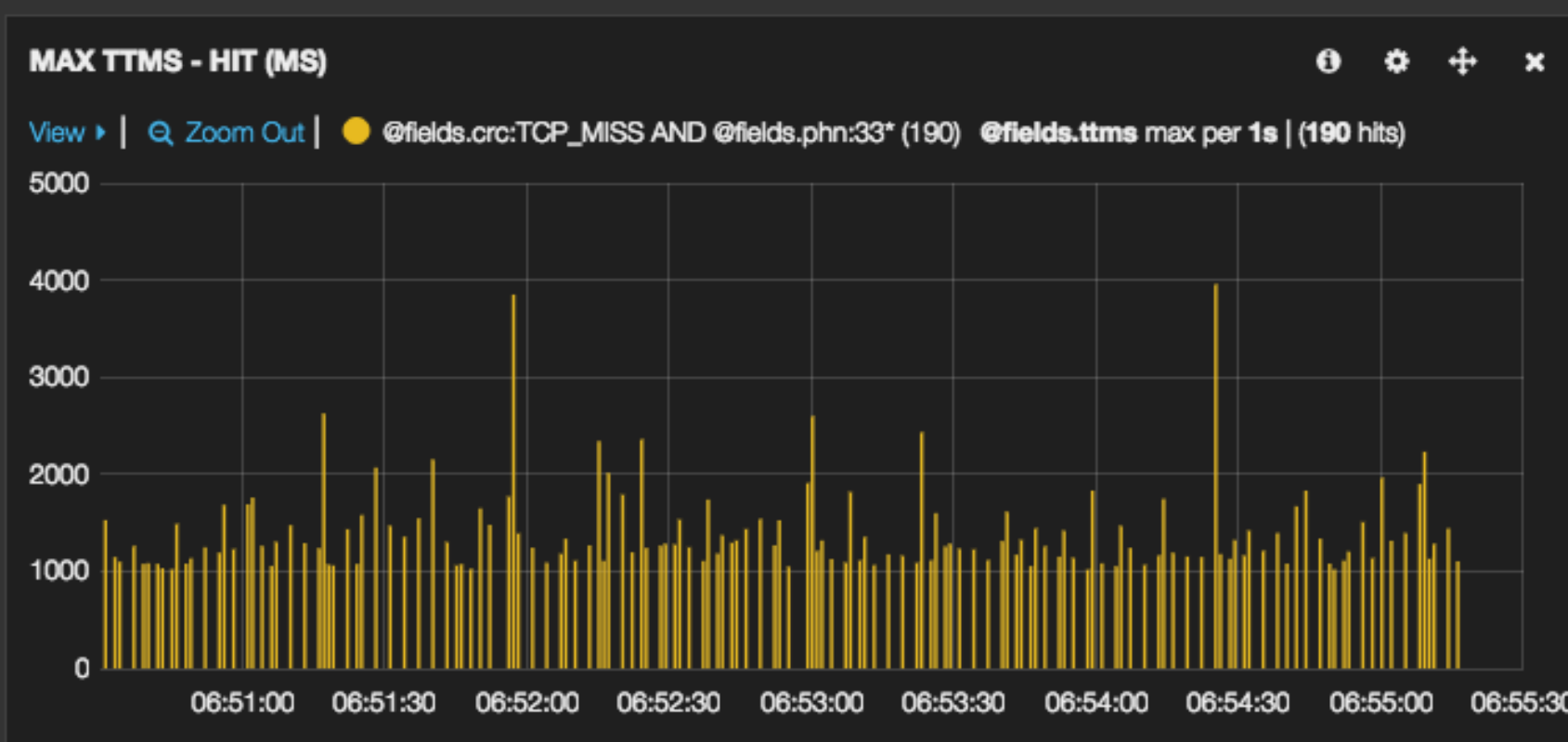
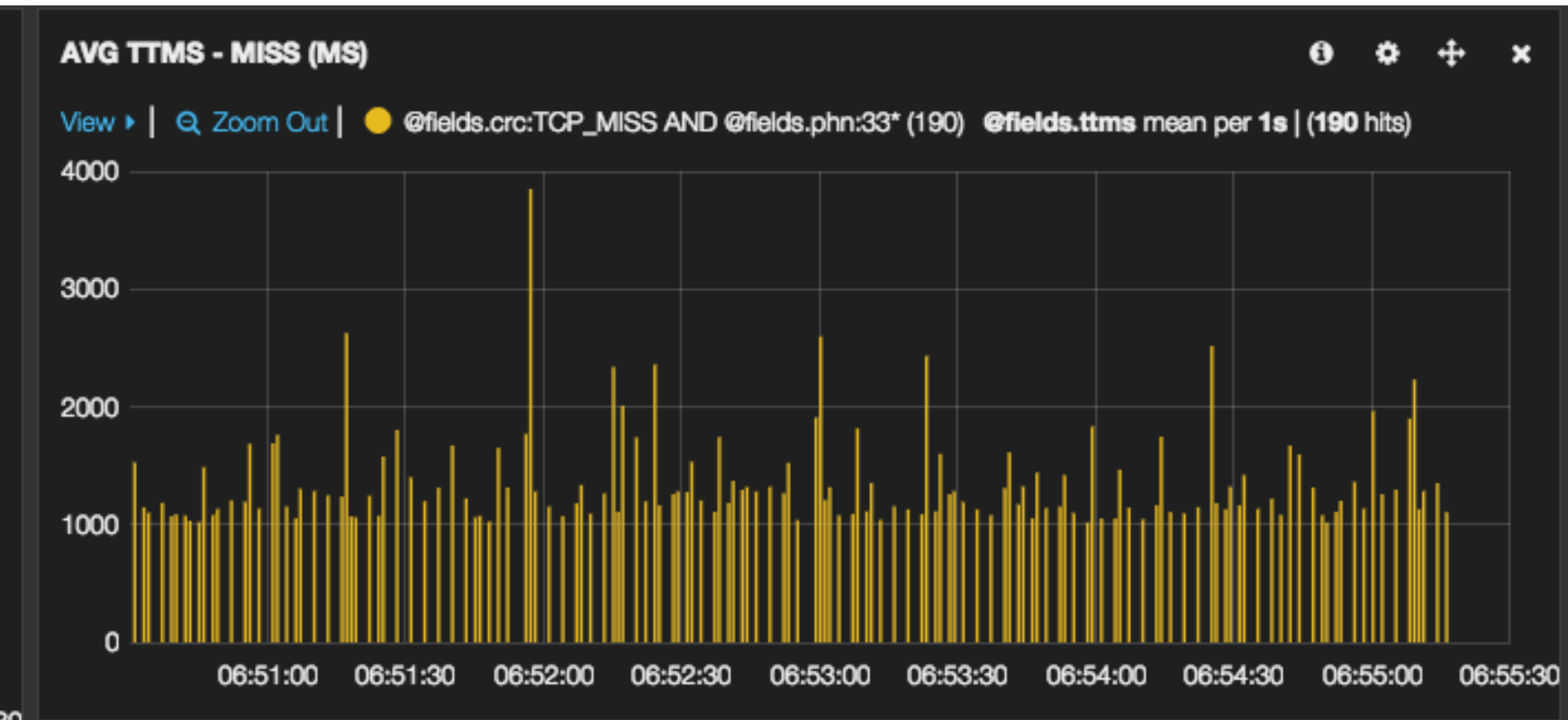
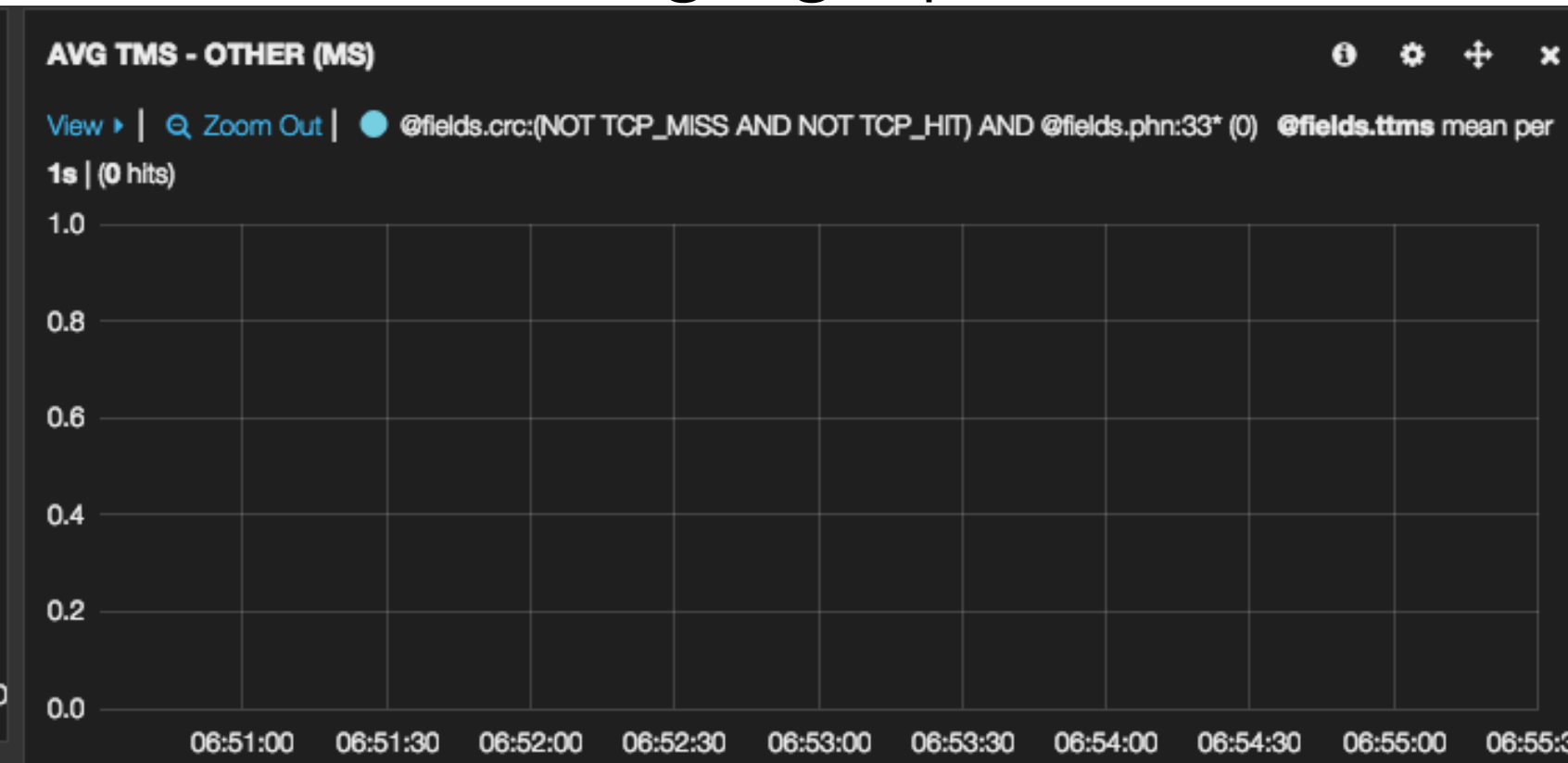
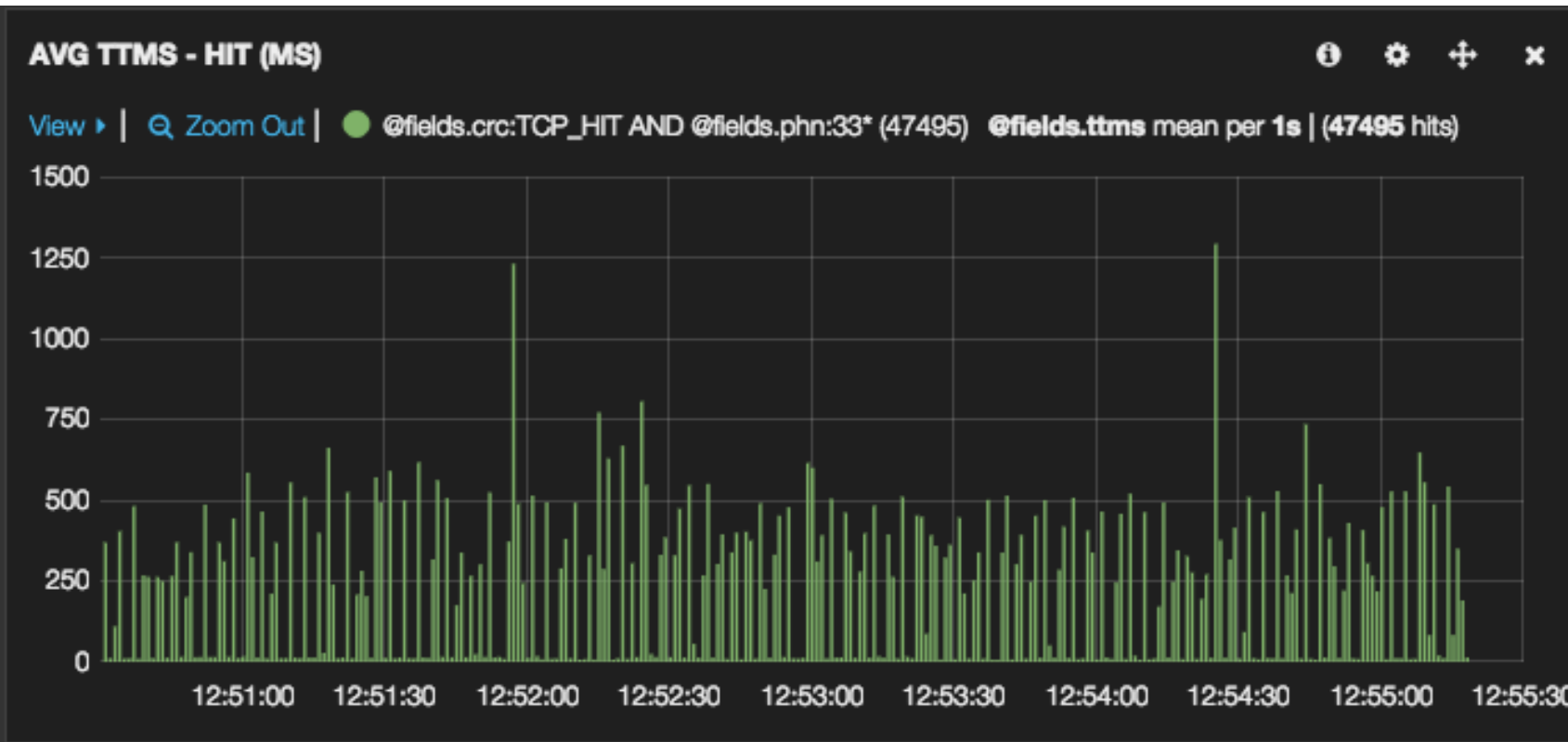
```
[mtorlu9137e@ipcdn-cache-37]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn
Tue Oct 21 12:46:51 UTC 2014
Version of this script: 0.34e
ERROR Lines in /opt/trafficserver/etc/trafficserver//plugin.config do not match Twelve Monkeys.
ERROR Config file: plugin.config line only on disk: header_rewrite.so hrrw.conf
ERROR Lines in /opt/trafficserver/etc/trafficserver//records.config do not match Twelve Monkeys.
ERROR Config file: records.config line only in 12M: CONFIG proxy.config.http.transaction_active_timeout_in INT 900
ERROR Config file: records.config line only on disk: CONFIG proxy.config.http.transaction_active_timeout_in INT 5
[mtorlu9137e@ipcdn-cache-37]~$
```

```
[mtorlu9137e@ipcdn-cache-37]~$ sudo cat /usr/local/etc/header_rewrite/hrrw.conf | grep -v "^#\#"
cond %{READ_REQUEST_HDR_HOOK}
cond %{HEAD} = live-orig-01-dns.cdnlab.comcast.net
set-config proxy.config.http.connect_attempts_timeout 2
set-config proxy.config.http.connect_attempts_max_retries_dead_server 2 [L]
[mtorlu9137e@ipcdn-cache-37]~$
```

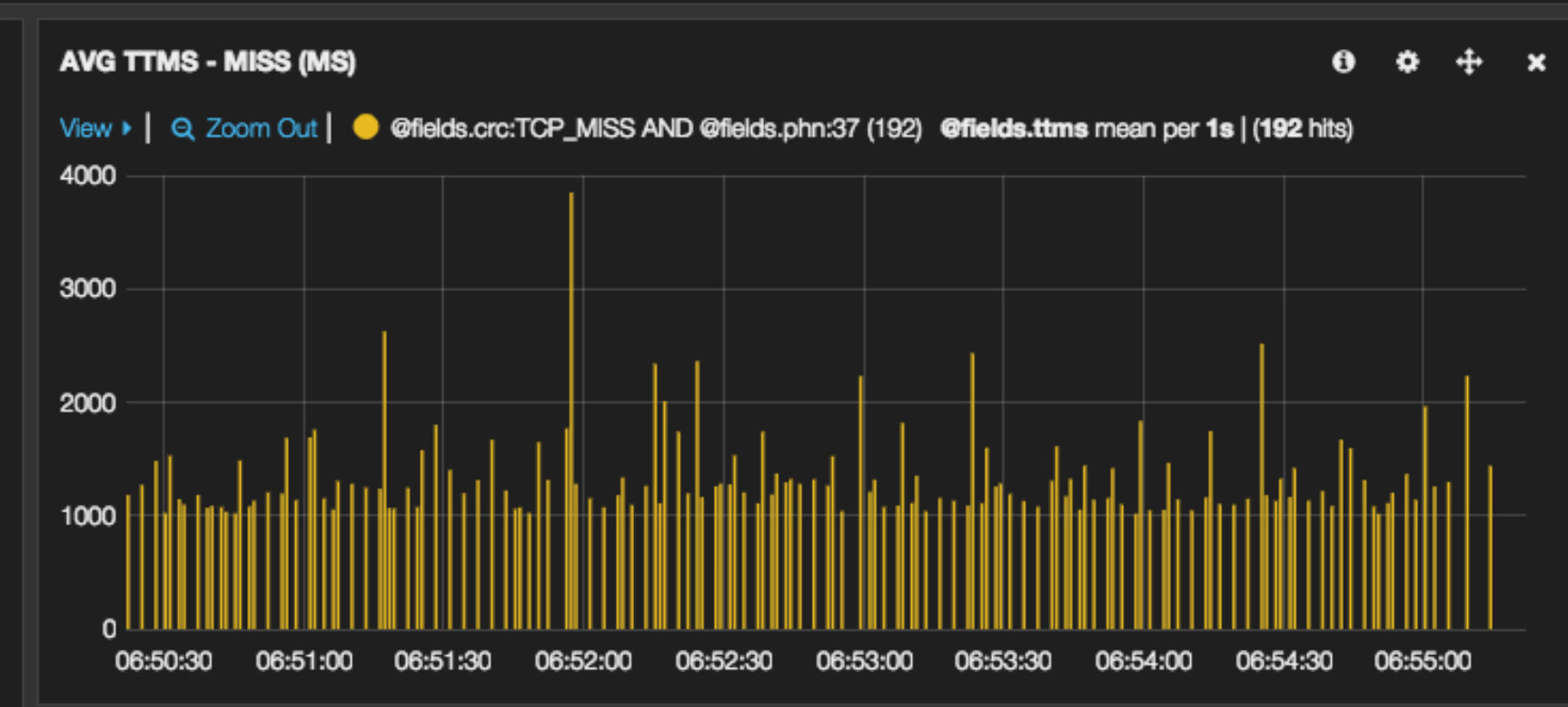
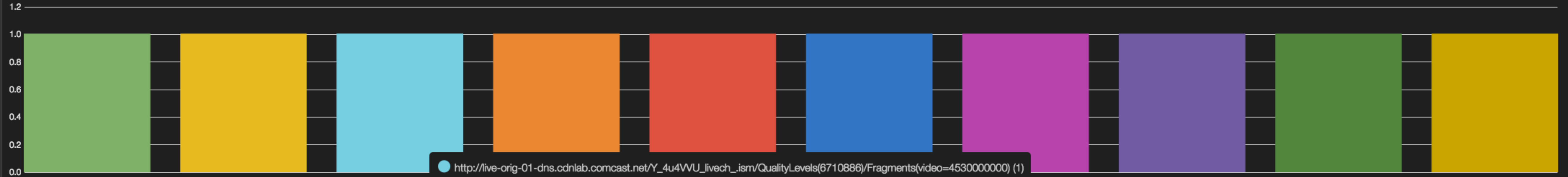
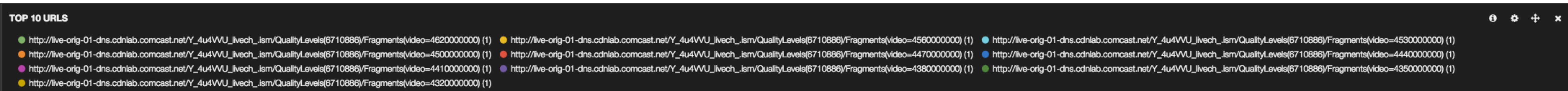
```
[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$|^#\|^ \#'
LoadModule hotair_module /usr/lib64/httpd/modules/mod_hotair.so
<LocationMatch "(\\.ism*|\\.f4m|\\..*Seg\\d-Frag\\d.*|\\.m3u8|\\.ts)">
  SetHandler hotair
</LocationMatch>
HotairDelayParetoParams 4.2 1
[root@zaphod02 ~]#
```

```
[root@zaphod02 ~]# tc qdisc show dev ens2f0
qdisc pfifo_fast 0: root refcnt 2 bands 3 priomap 1 2 2 2 1 2 0 0 1 1 1 1 1 1 1 1
[root@zaphod02 ~]#
```

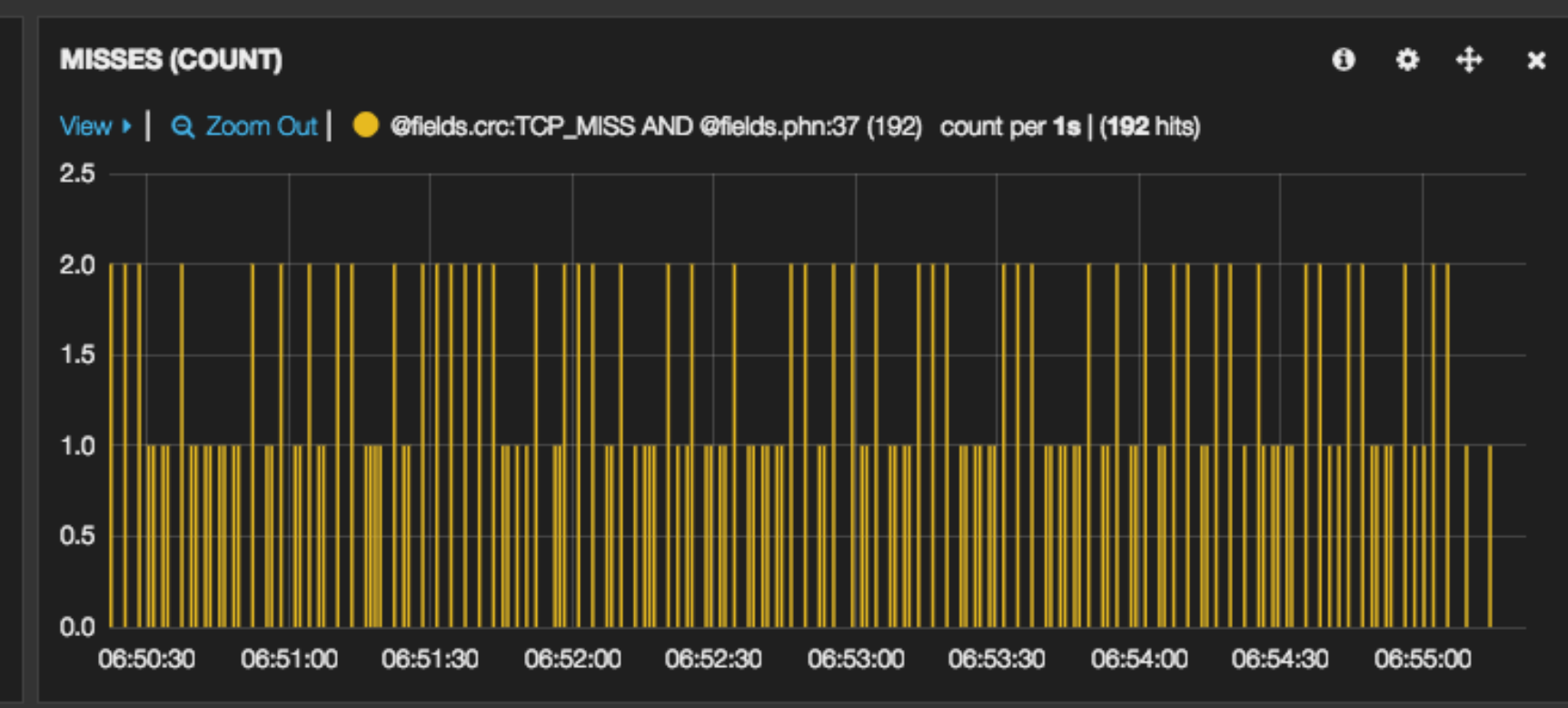
Edge graphs



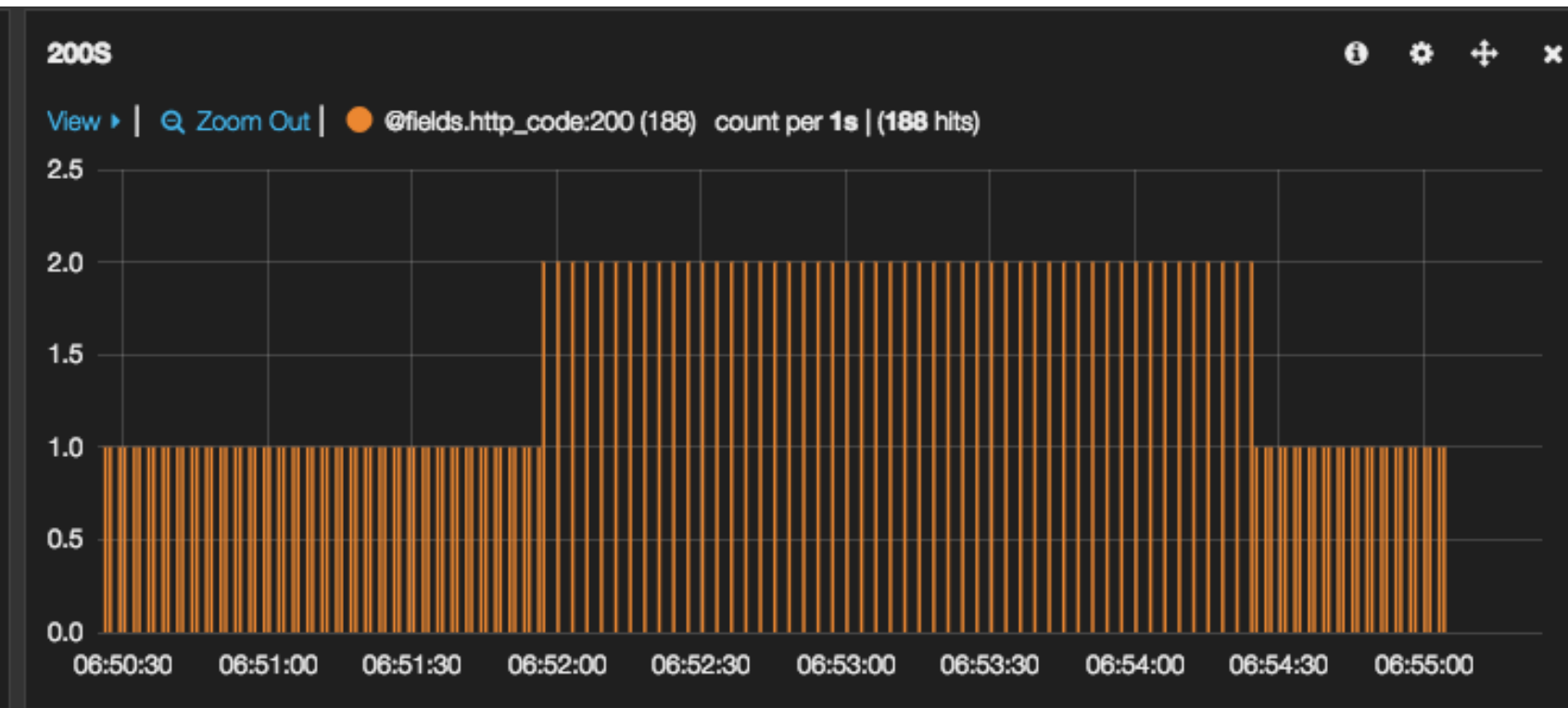
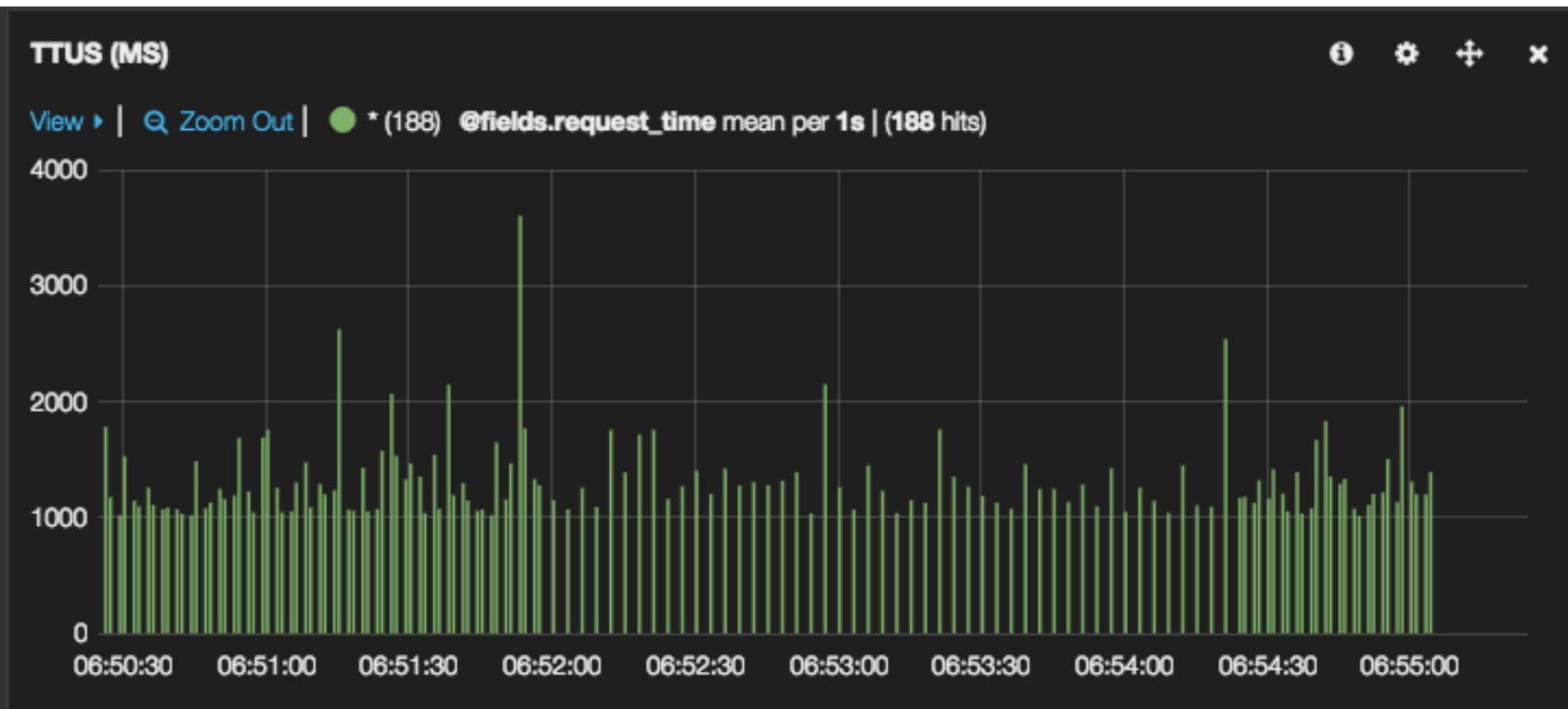
Mid graphs



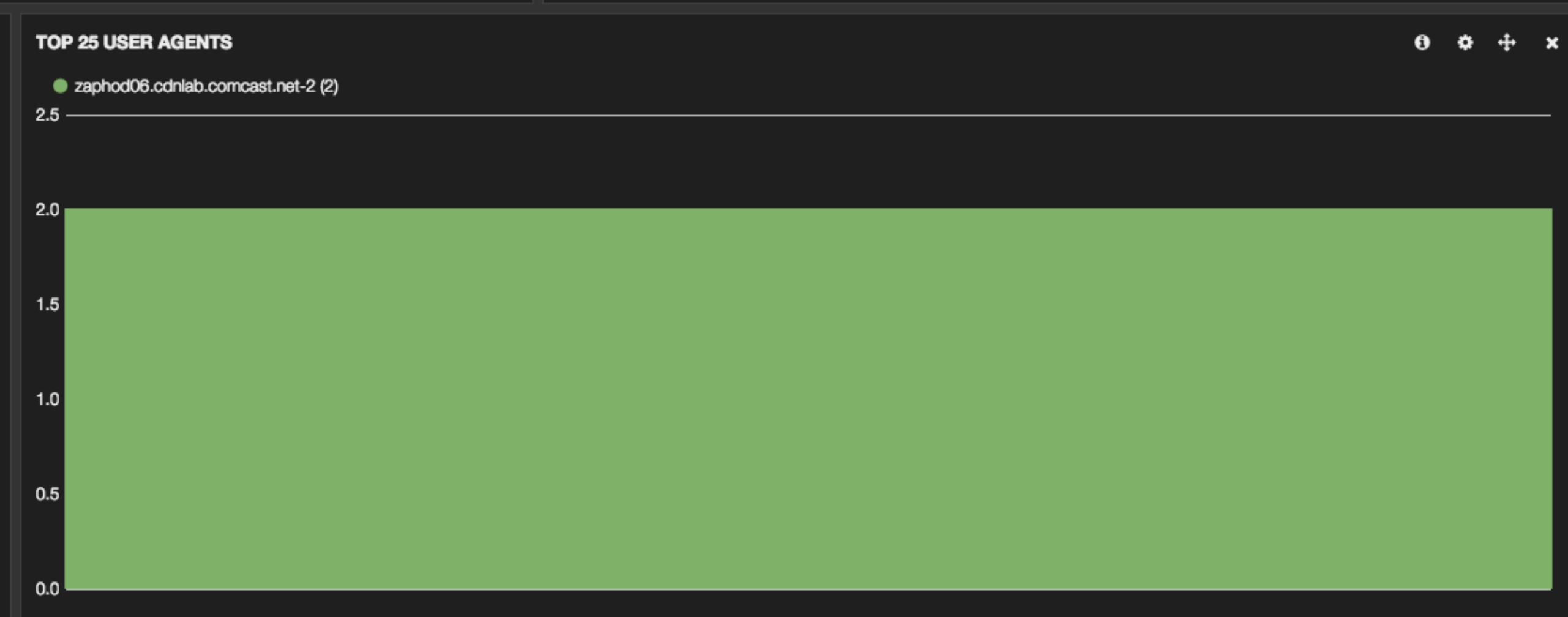
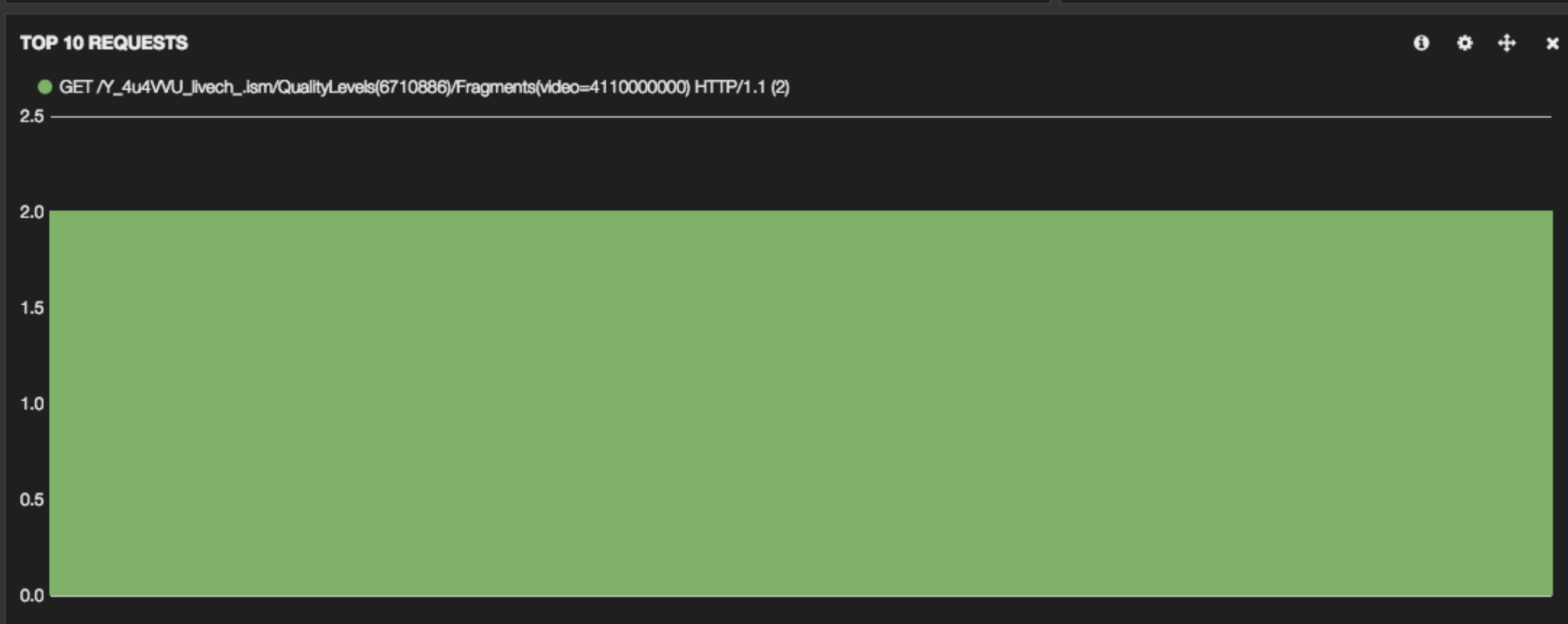
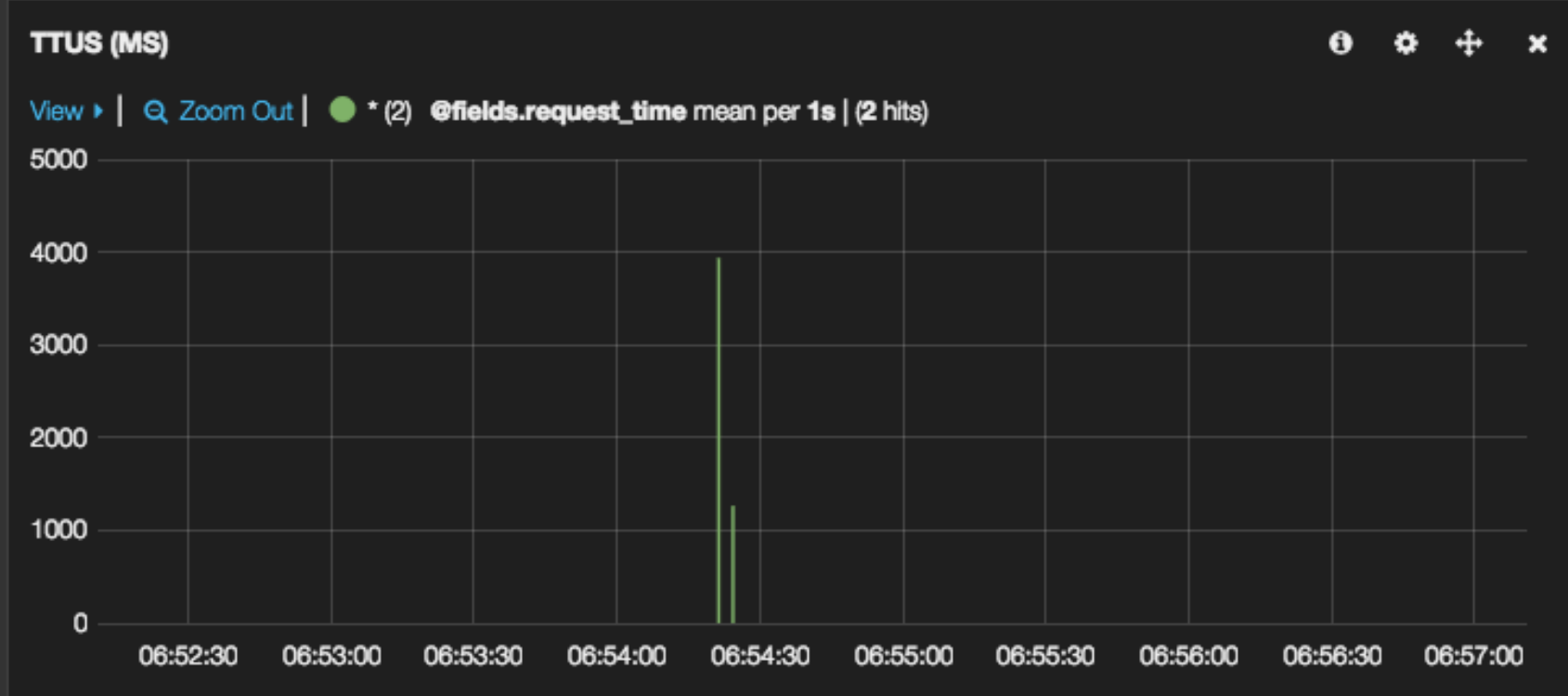
TTMS_MAX



Origin graphs



Zoom In



EVENTS

0 to 2 of 2 available for paging

Fields	@timestamp	@fields.sec_frac	@fields.request	@fields.http_user_agent	@fields.request_time	@fields.http_code
All (27) / Current (21)	2014-10-21T12:54:21.000Z	0.485	GET /Y_4u4WU_livech_ism/QualityLevels(6710886)/Fragments(video=411000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-2	3936097	200
Type to filter...	2014-10-21T12:54:24.000Z	0.175	GET /Y_4u4WU_livech_ism/QualityLevels(6710886)/Fragments(video=411000000) HTTP/1.1	zaphod06.cdnlab.comcast.net-2	1260107	200

Work-around RWW problems? — transaction_in timeout on edge, not on mid

TTFB=8.0s

```
[mtorlu9137e@ipcdn-cache-37]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn
Tue Oct 21 13:16:06 UTC 2014
Version of this script: 0.34e
ERROR Lines in /opt/trafficserver/etc/trafficserver//plugin.config do not match Twelve Monkeys.
ERROR Config file: plugin.config line only on disk: header_rewrite.so hrrrw.conf
[mtorlu9137e@ipcdn-cache-37]~$
```

```
[mtorlu9137e@ipcdn-cache-37]~$ sudo cat /usr/local/etc/header_rewrite/hrrrw.conf | grep -v "^\  
cond %{READ_REQUEST_HDR_HOOK}  
cond %{HEAD} = live-orig-01-dns.cdnlab.comcast.net  
set-config proxy.config.http.connect_attempts_timeout 2  
set-config proxy.config.http.connect_attempts_max_retries_dead_server 2 [L]  
[mtorlu9137e@ipcdn-cache-37]~$
```

```
[mtorlu9137e@ipcdn-cache-33]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn
Tue Oct 21 13:00:49 UTC 2014
Version of this script: 0.34e
ERROR Lines in /opt/trafficserver/etc/trafficserver//records.config do not match Twelve Monkeys.
ERROR Config file: records.config line only in 12M: CONFIG proxy.config.http.transaction_active_timeout_in INT 900
ERROR Config file: records.config line only on disk: CONFIG proxy.config.http.transaction_active_timeout_in INT 5
[mtorlu9137e@ipcdn-cache-33]~$
```

```
[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$|^\  
LoadModule hotair_module /usr/lib64/httpd/modules/mod_hotair.so  
<LocationMatch "(\\.ism*|\\.f4m|.*Seg\\d-Frag\\d.*|\\.m3u8|\\.ts)">  
    SetHandler hotair  
</LocationMatch>  
HotairDelayOnFirstByteInMs 8000  
[root@zaphod02 ~]#
```

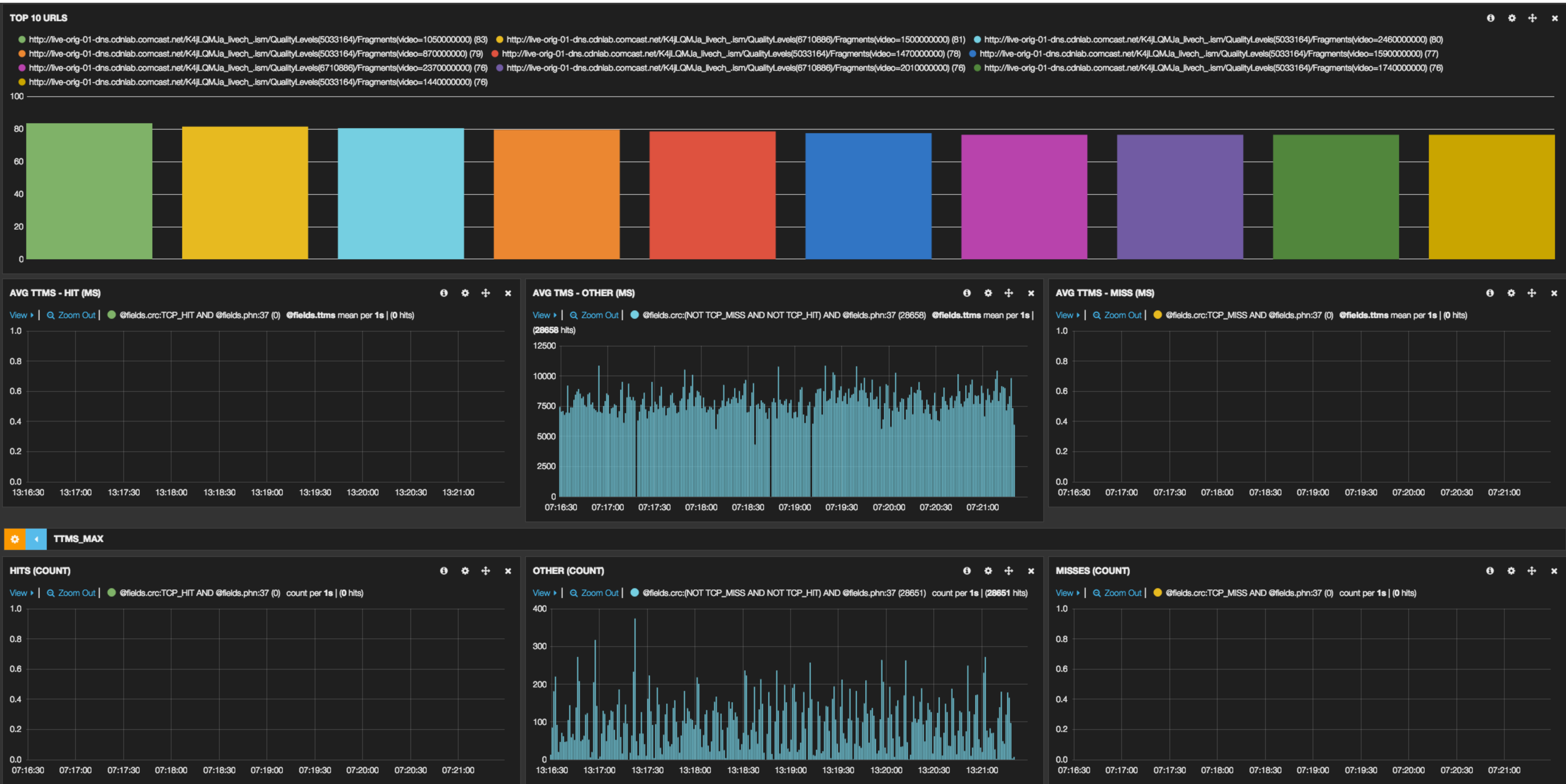
```
[root@zaphod02 ~]# tc qdisc show dev ens2f0  
qdisc pfifo_fast 0: root refcnt 2 bands 3 priomap 1 2 2 2 1 2 0 0 1 1 1 1 1 1 1 1  
[root@zaphod02 ~]#
```

```
[mtorlu9137e@zaphod06]lcontrol$ cat c33_tight_c37.json  
{  
    "clients": "480",  
    "bitrate": "2500000",  
    "test_type": "TestEngines::LLL",  
    "abr_type": "hls",  
    "frag_duration": "50000000",  
    "origins": "1",  
    "live": "100",  
    "active_channels": "1",  
    "vod_cache_name" : "load-test-01.cdnlab.comcast.net",  
    "live_cache_name" : "edge.live-11-dns.top.cdnlab.comcast.net",  
    "cache_ip" : "69.241.62.70",  
    "vod_cache_hitratio" : "80",  
    "live_active_fragments" : "2",  
    "vod_bitrates" : "4300000,3000000",  
    "live_bitrates" : "6710886,5033164",  
    "max_long_tts_percentage" : "0.5",  
    "long_tts_time" : "1.5",  
    "proxy_mode" : "reverse",  
    "ipv6_percentage" : 0,  
    "via_headers" : 1  
}  
[mtorlu9137e@zaphod06]lcontrol$
```

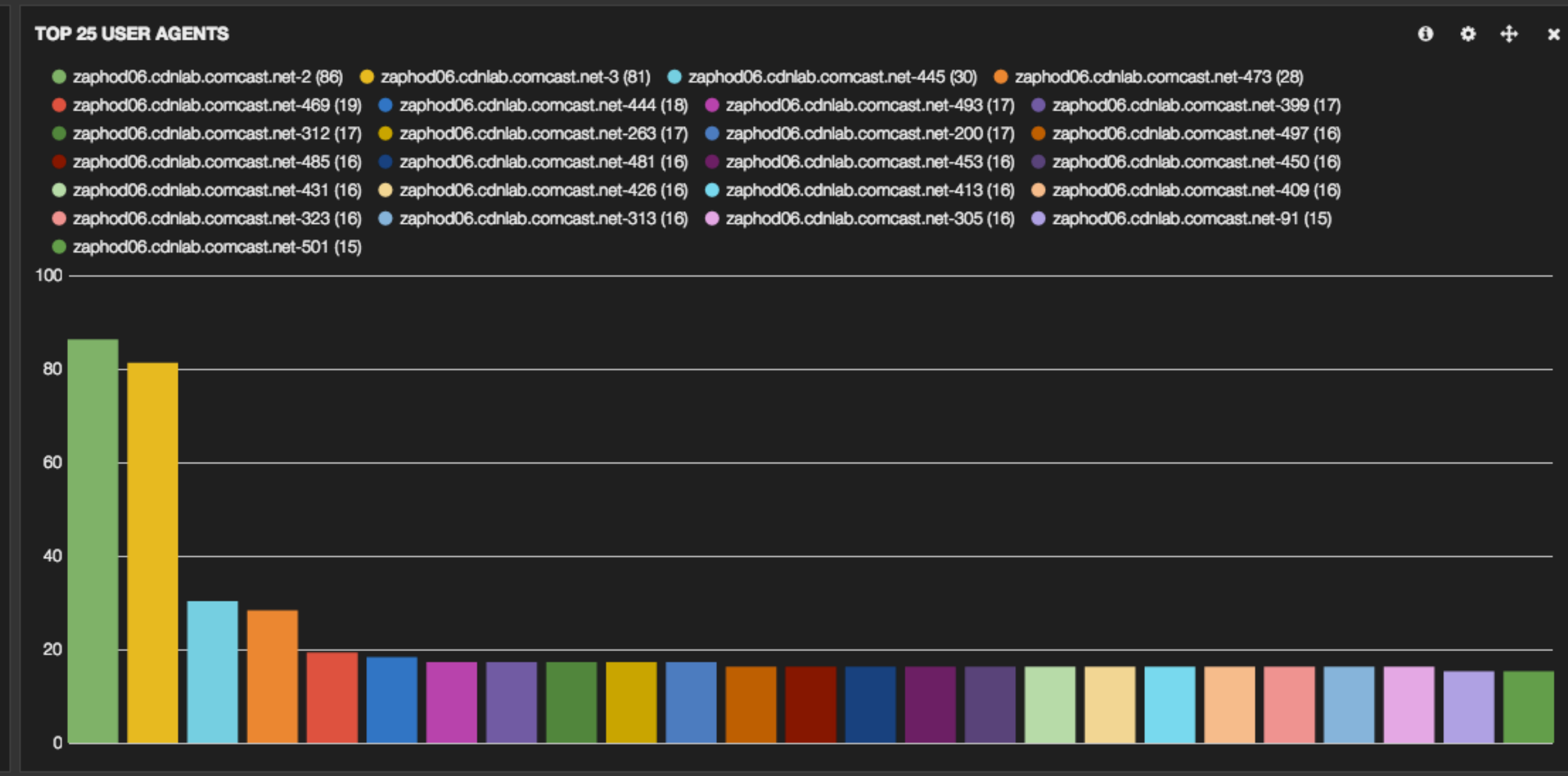
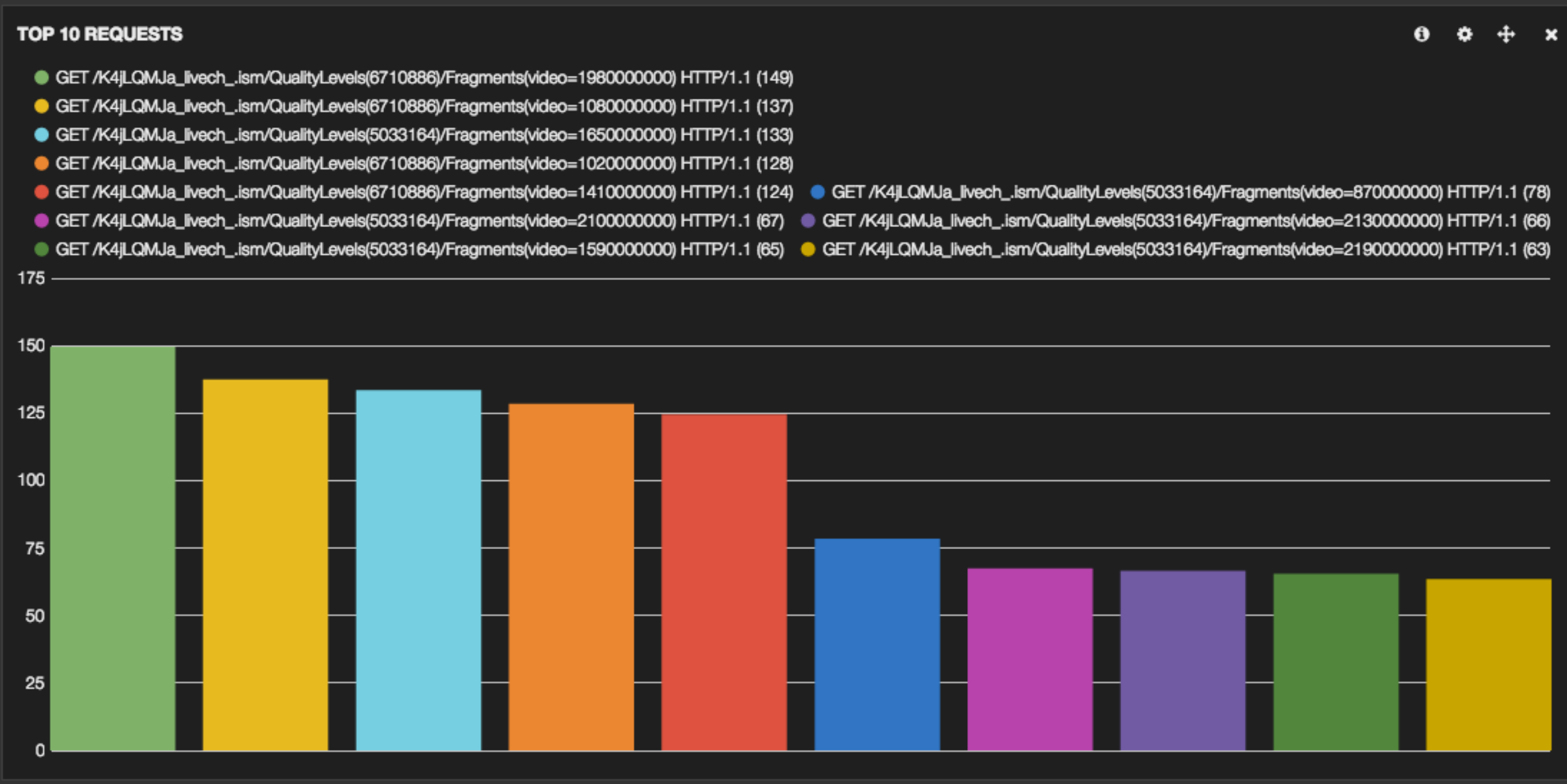
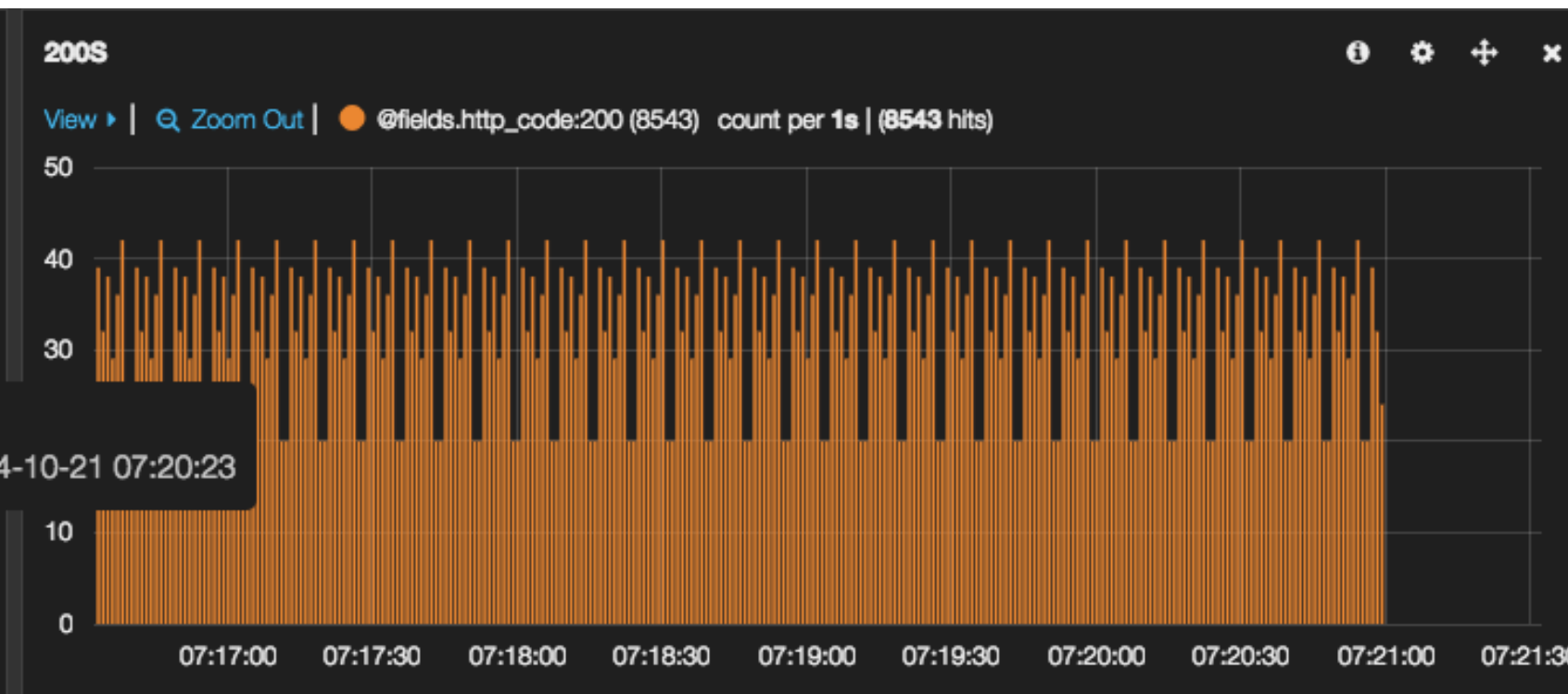
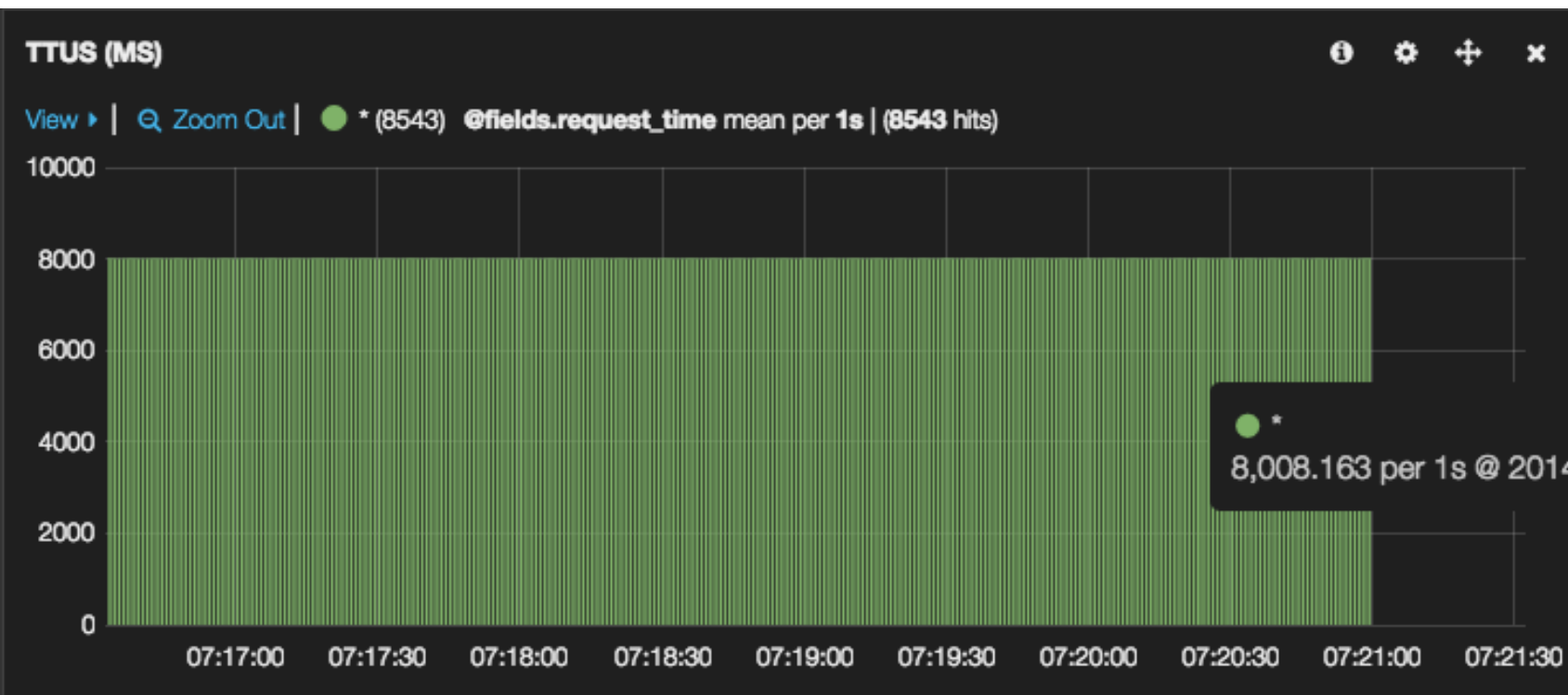

Edge graphs



Mid graphs



Origin graphs



New test: 2-tier CDN - max-age=1


```
[root@zaphod02 ~]# cat /etc/httpd/conf.d/hotair.conf | egrep -v '^$|^$#'
LoadModule hotair_module      /usr/lib64/httpd/modules/mod_hotair.so
<LocationMatch "(\\.ism*|\\.f4m|.*Seg\\d-Frag\\d.*|\\.m3u8|\\.ts)">
    SetHandler hotair
    Header set Cache-Control "max-age=1"
</LocationMatch>
HotairDelayParetoParams 4.2 1
[root@zaphod02 ~]#

[root@zaphod02 ~]# tc qdisc show dev ens2f0
qdisc pfifo_fast 0: root refcnt 2 bands 3 priomap  1 2 2 2 1 2 0 0 1 1 1 1 1 1 1 1
[root@zaphod02 ~]#
```

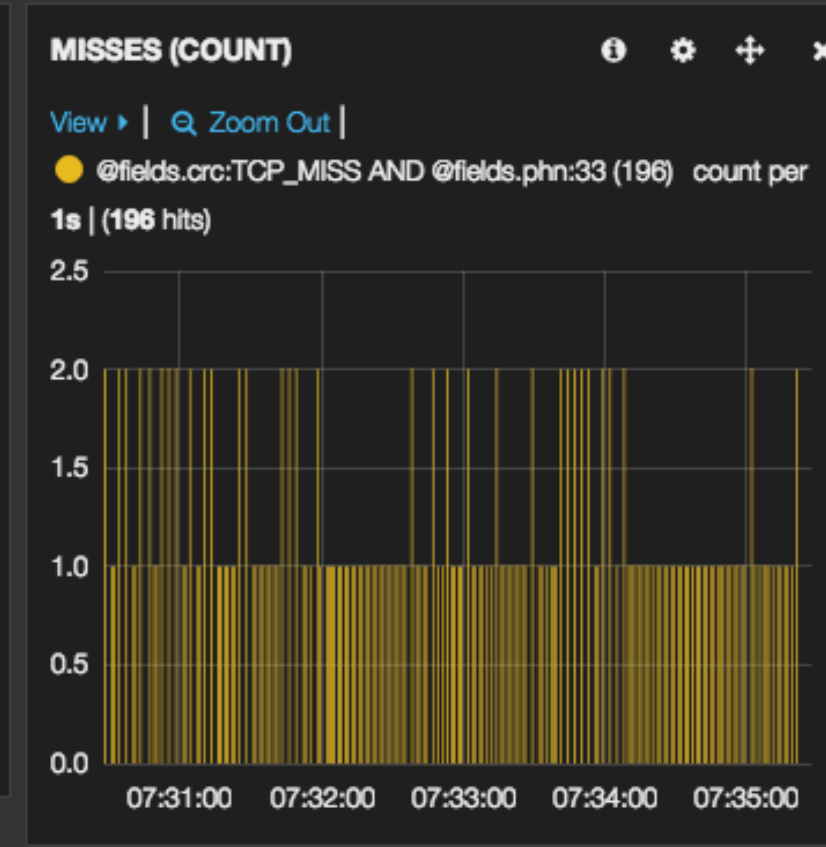
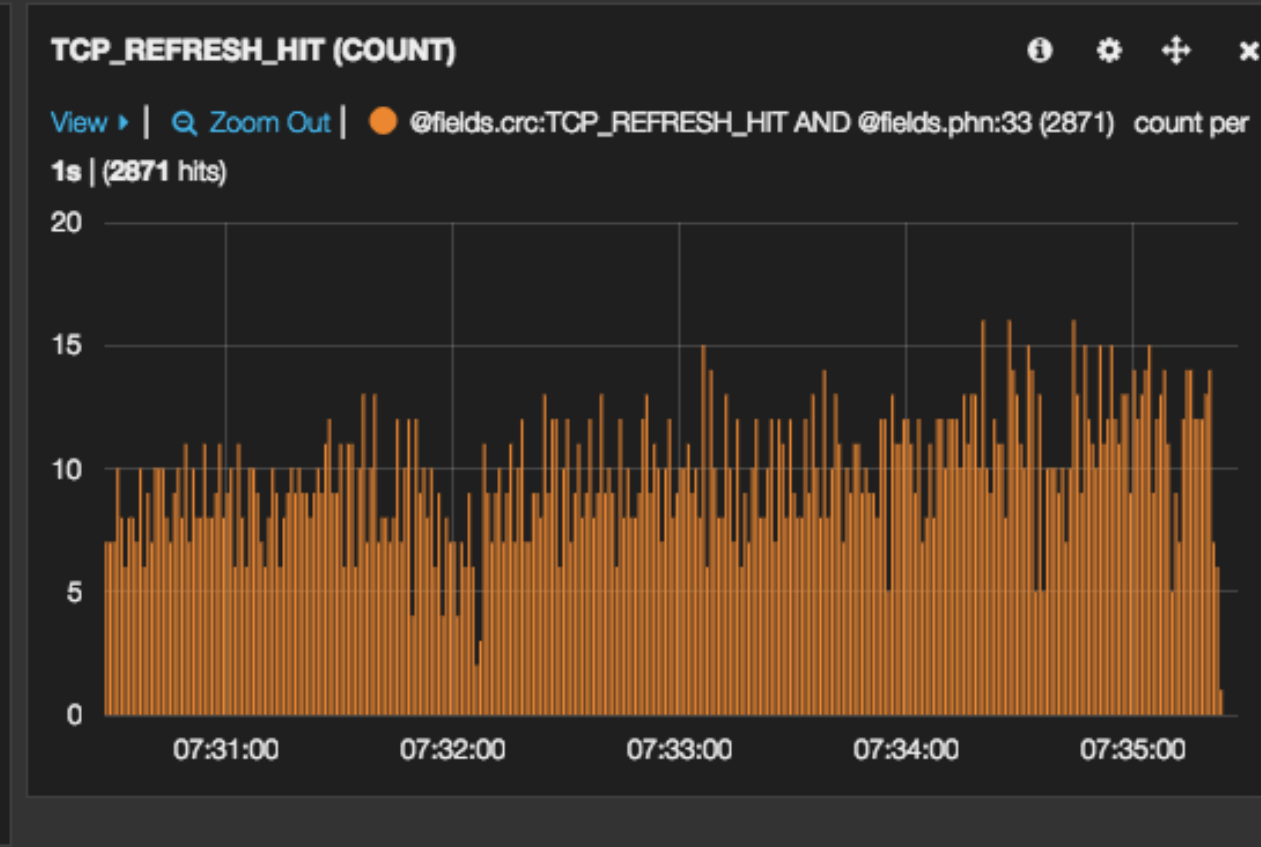
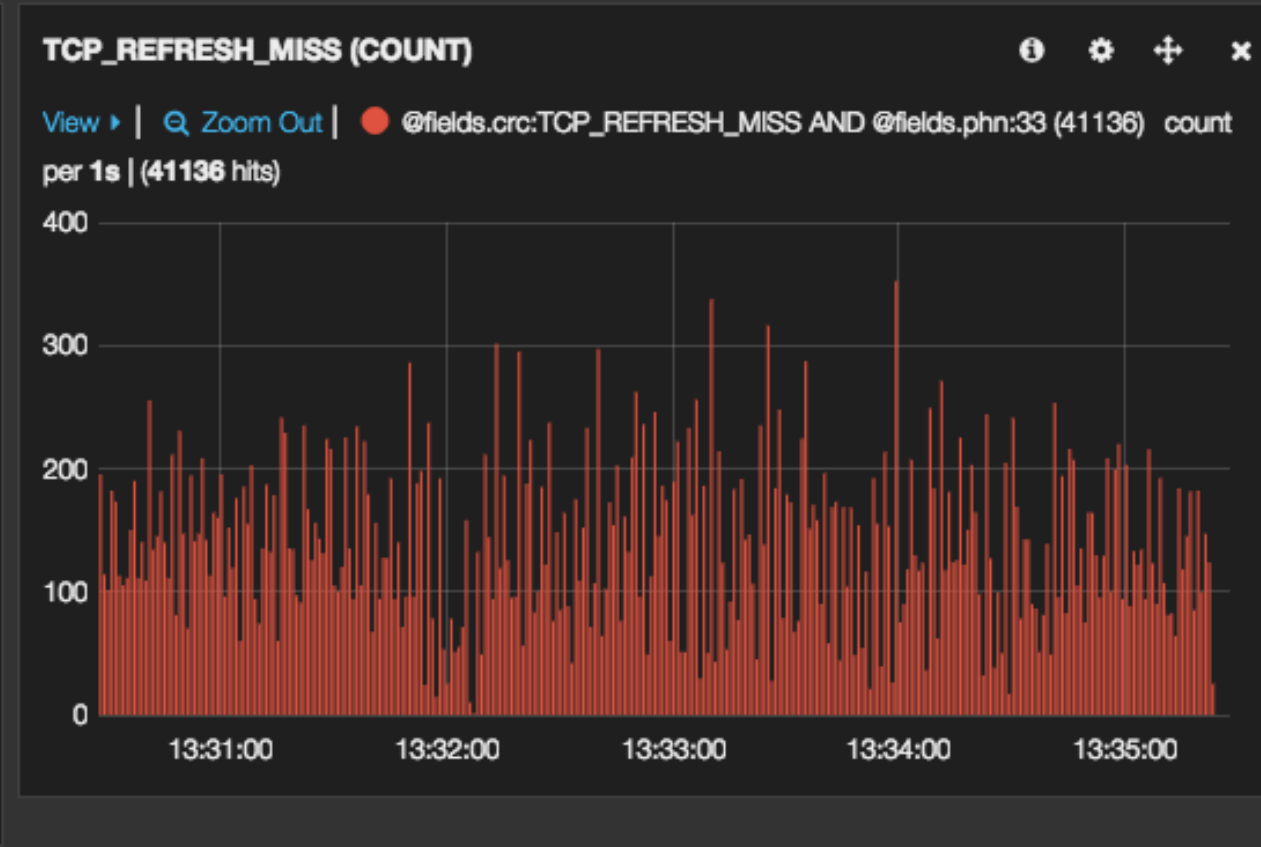
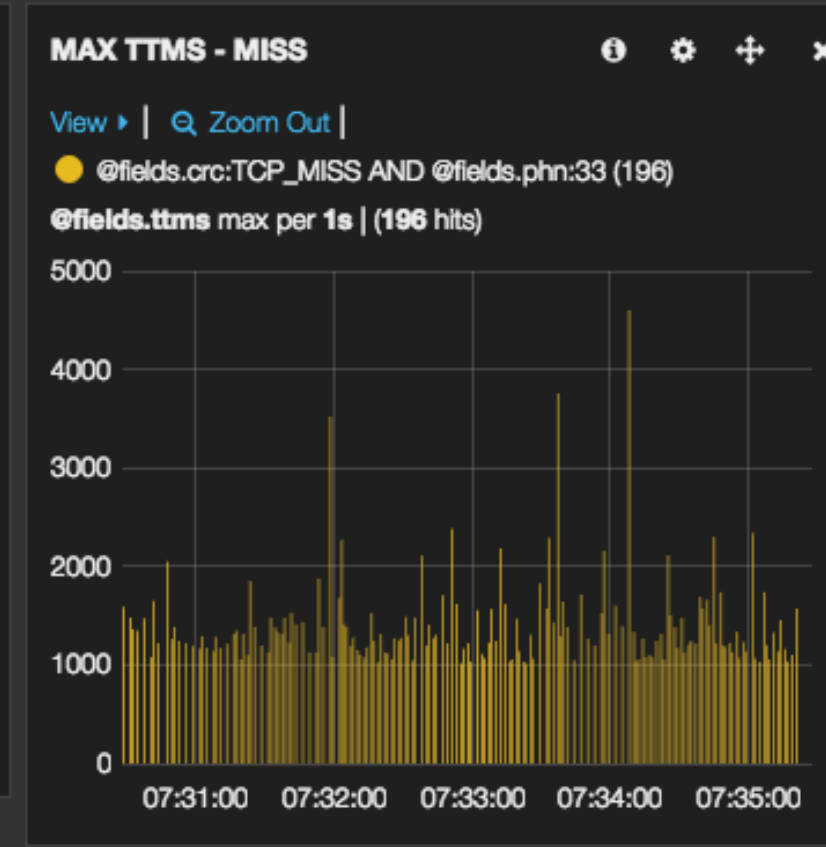
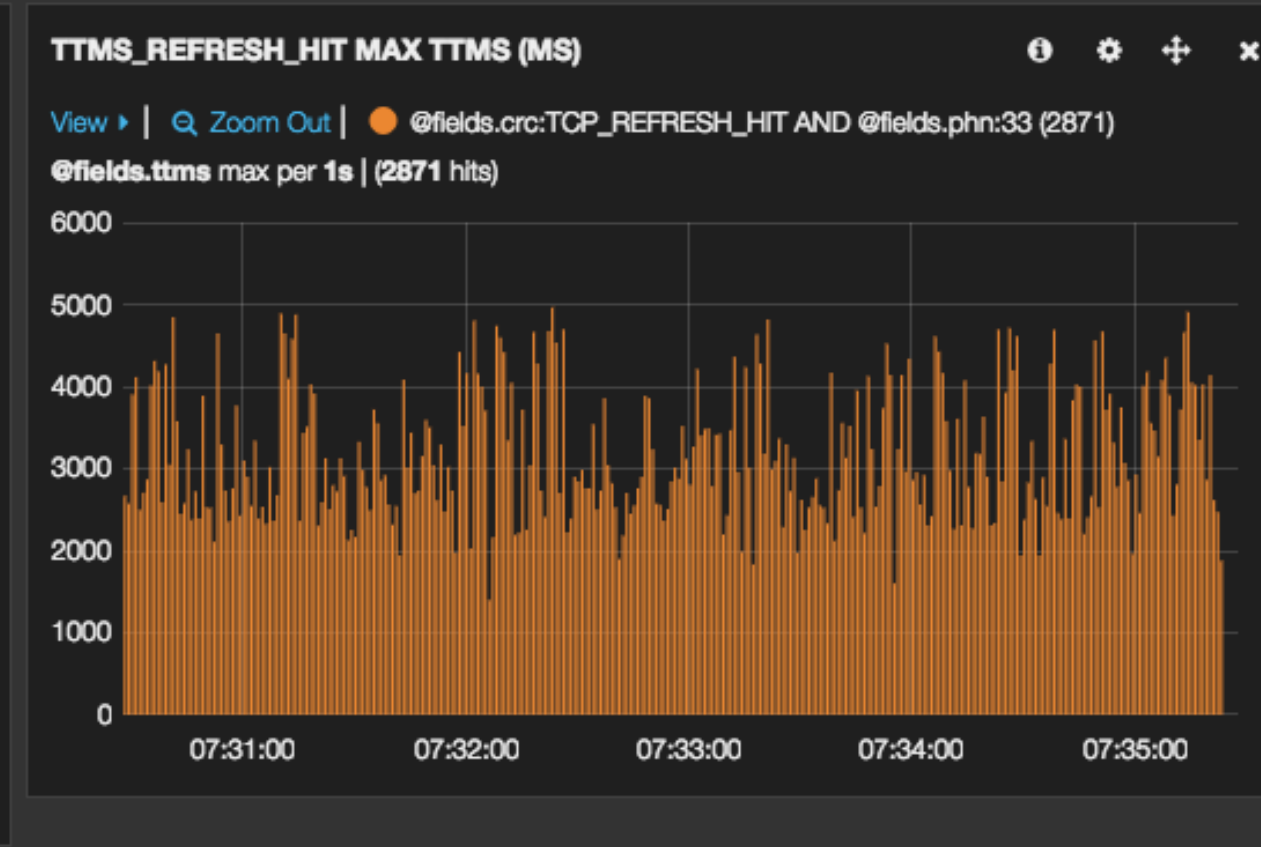
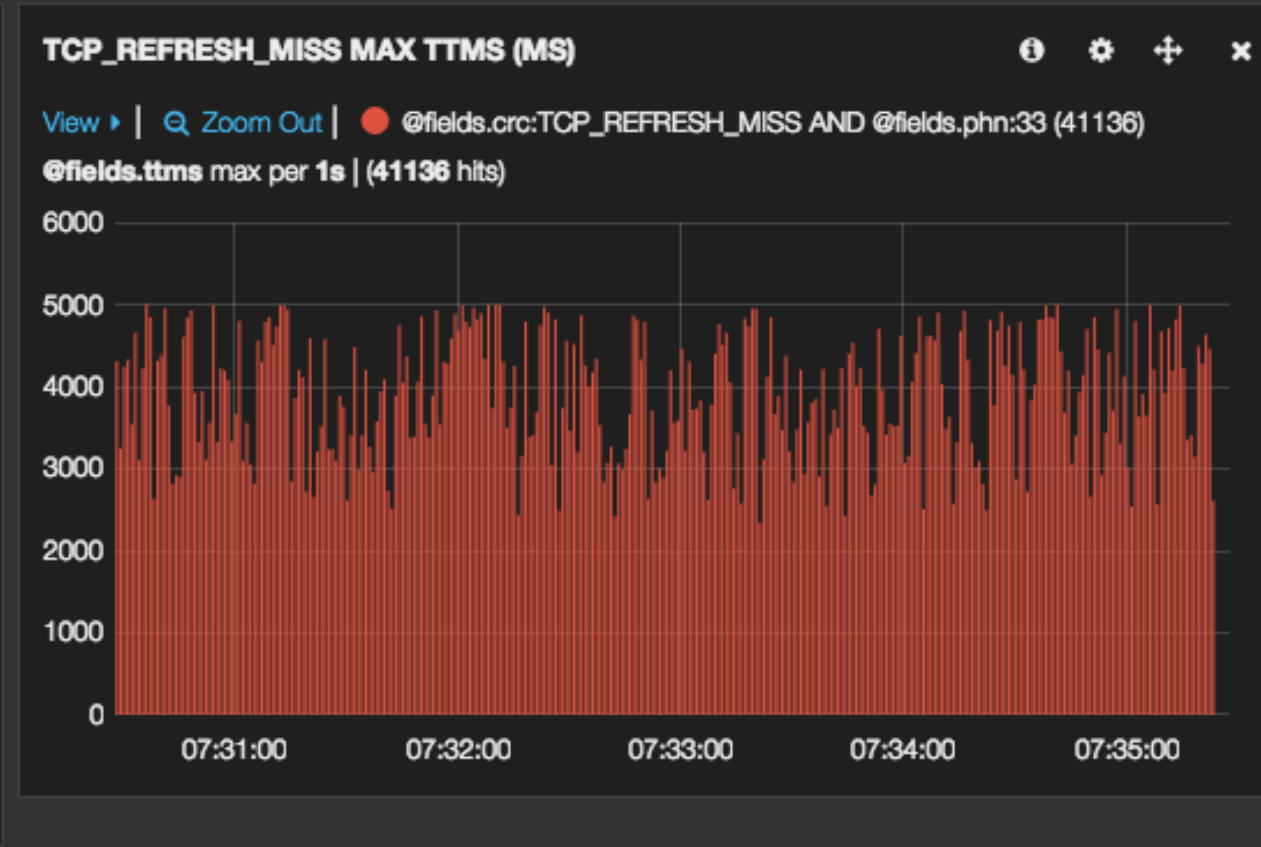
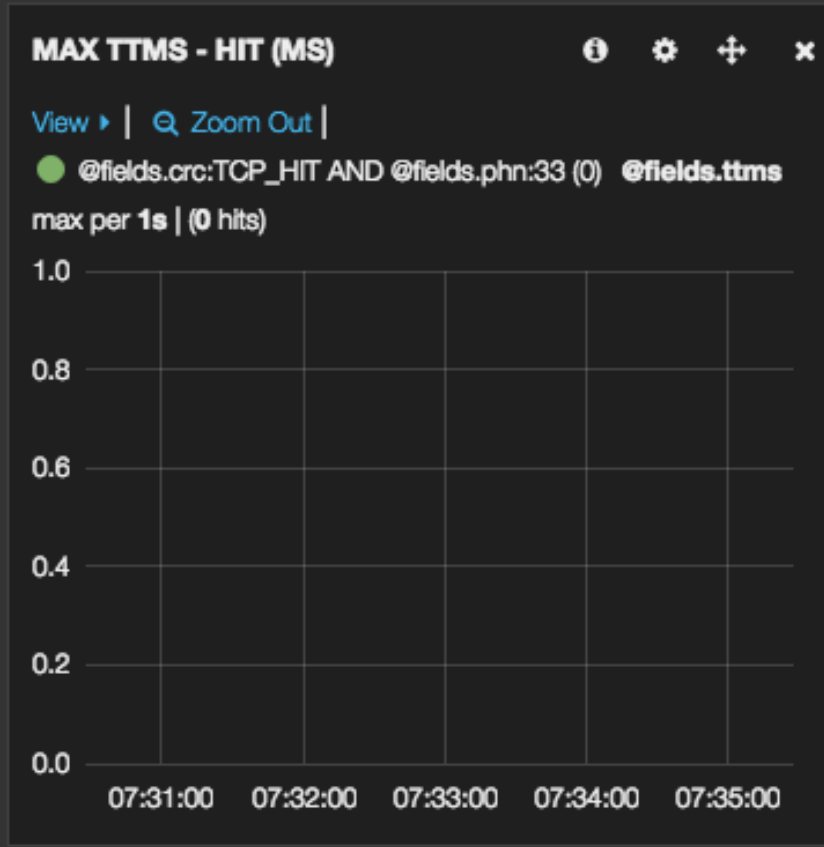
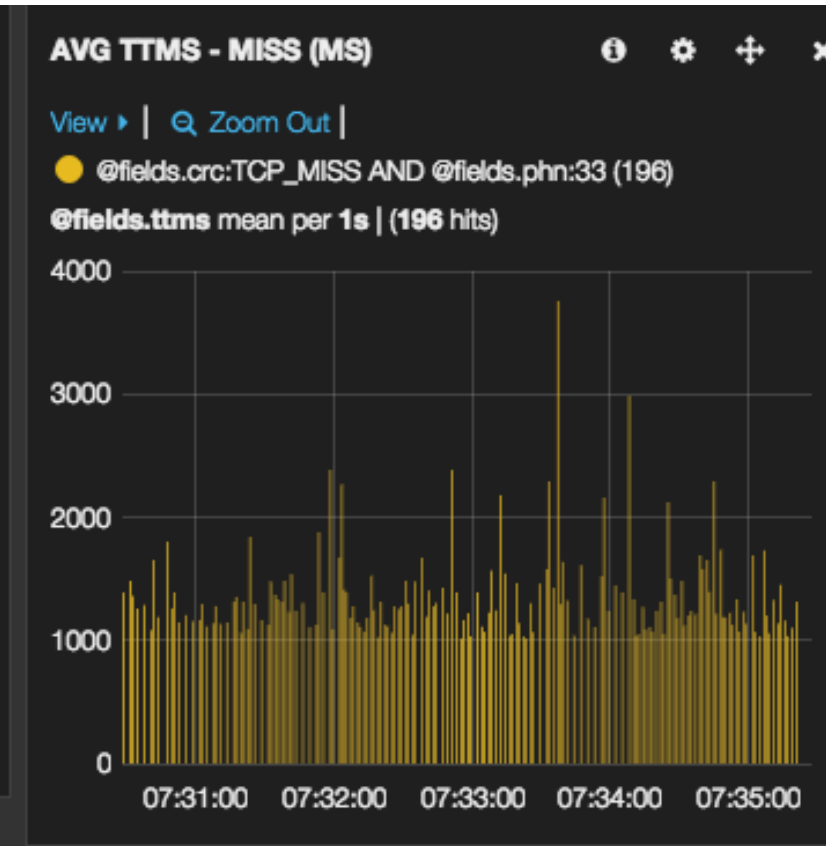
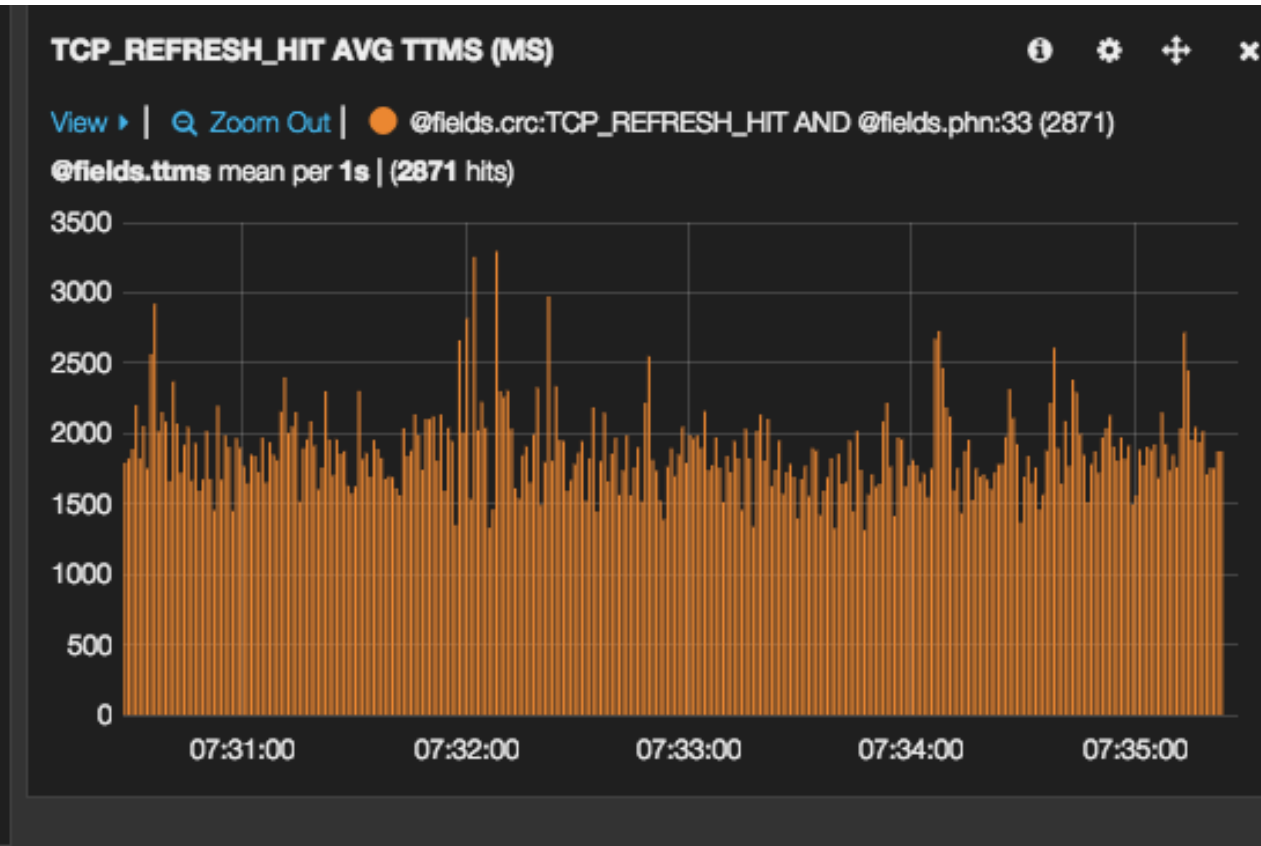
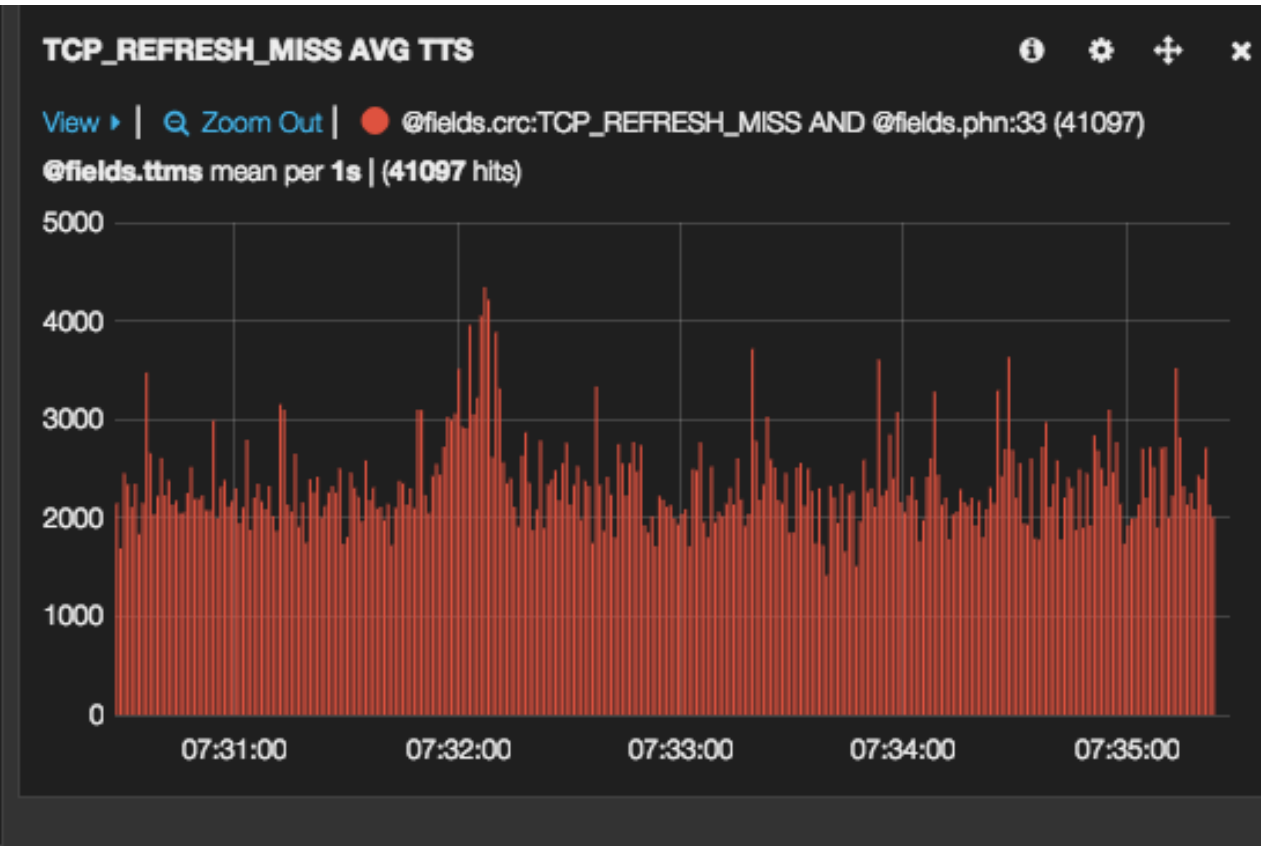
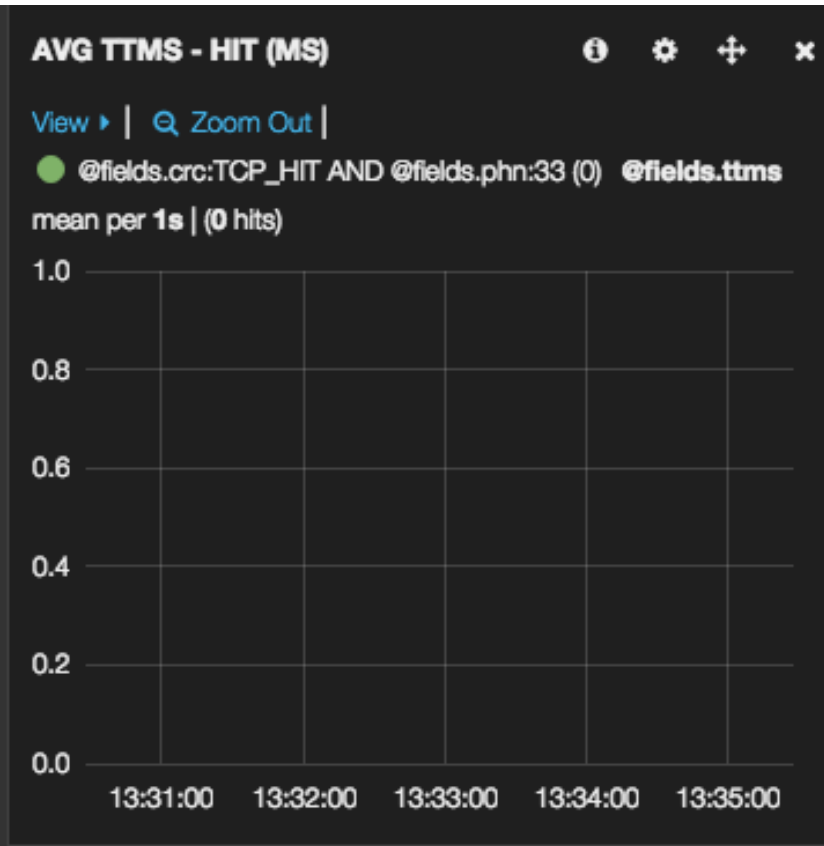
```
[mtorlu9137e@ipcdn-cache-33]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn
Tue Oct 21 13:28:19 UTC 2014
Version of this script: 0.34e
ERROR Lines in /opt/trafficserver/etc/trafficserver//records.config do not match Twelve Monkeys.
ERROR Config file: records.config line only in 12M: CONFIG proxy.config.http.transaction_active_timeout_in INT 900
ERROR Config file: records.config line only on disk: CONFIG proxy.config.http.transaction_active_timeout_in INT 5
[mtorlu9137e@ipcdn-cache-33]~$
```

```
[mtorlu9137e@ipcdn-cache-37]~$ sudo /opt/ort/ipcdn_install_ort.pl report warn
Tue Oct 21 13:28:05 UTC 2014
Version of this script: 0.34e
ERROR Lines in /opt/trafficserver/etc/trafficserver//plugin.config do not match Twelve Monkeys.
ERROR Config file: plugin.config line only on disk: header_rewrite.so hdrwr.conf
[mtorlu9137e@ipcdn-cache-37]~$
```

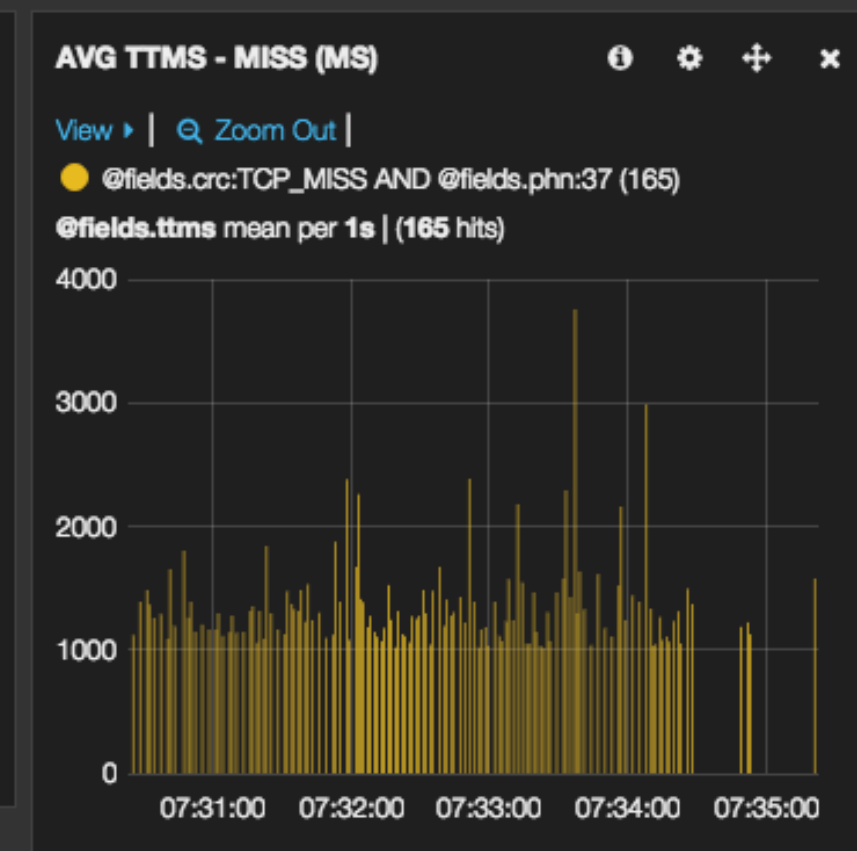
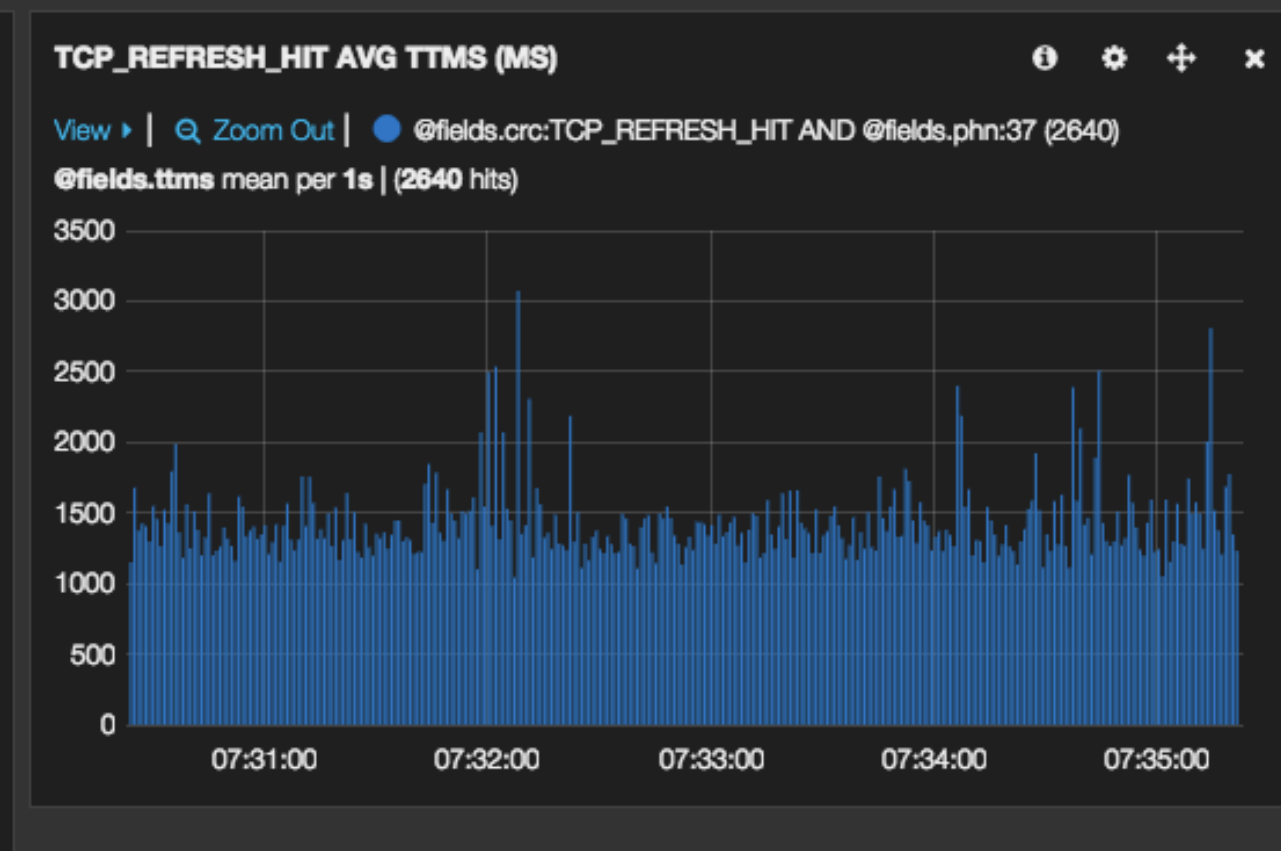
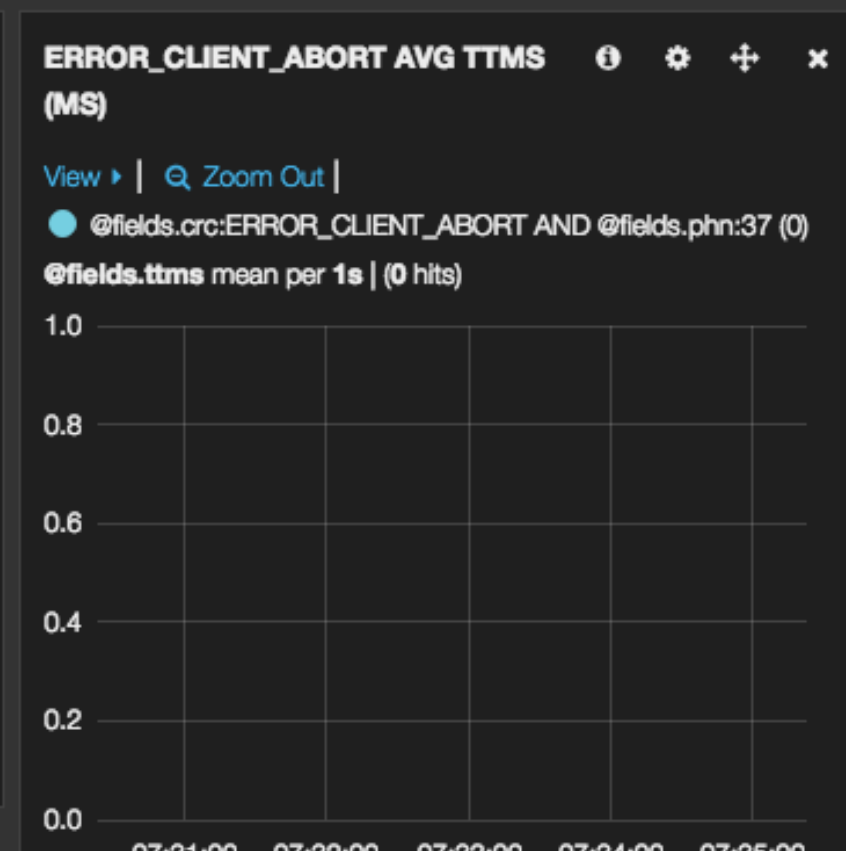
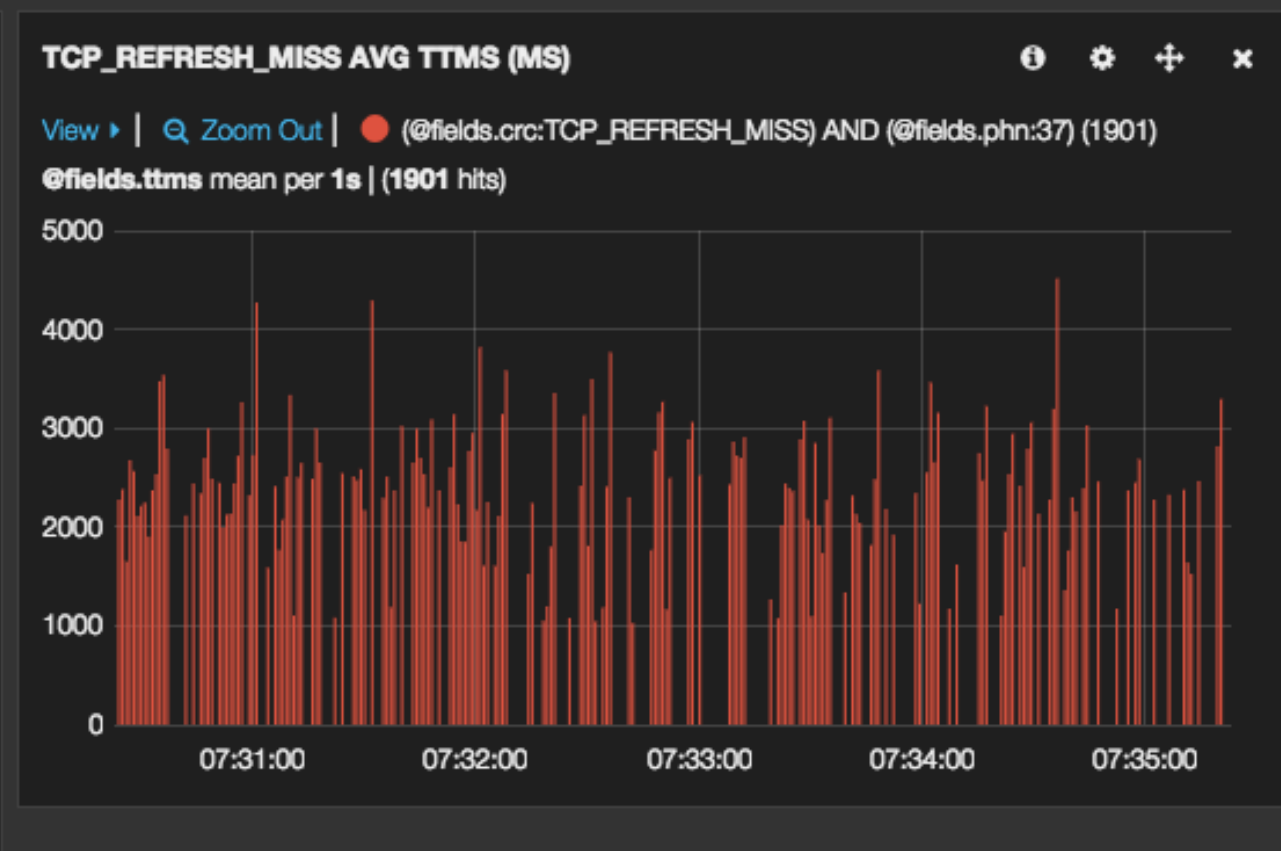
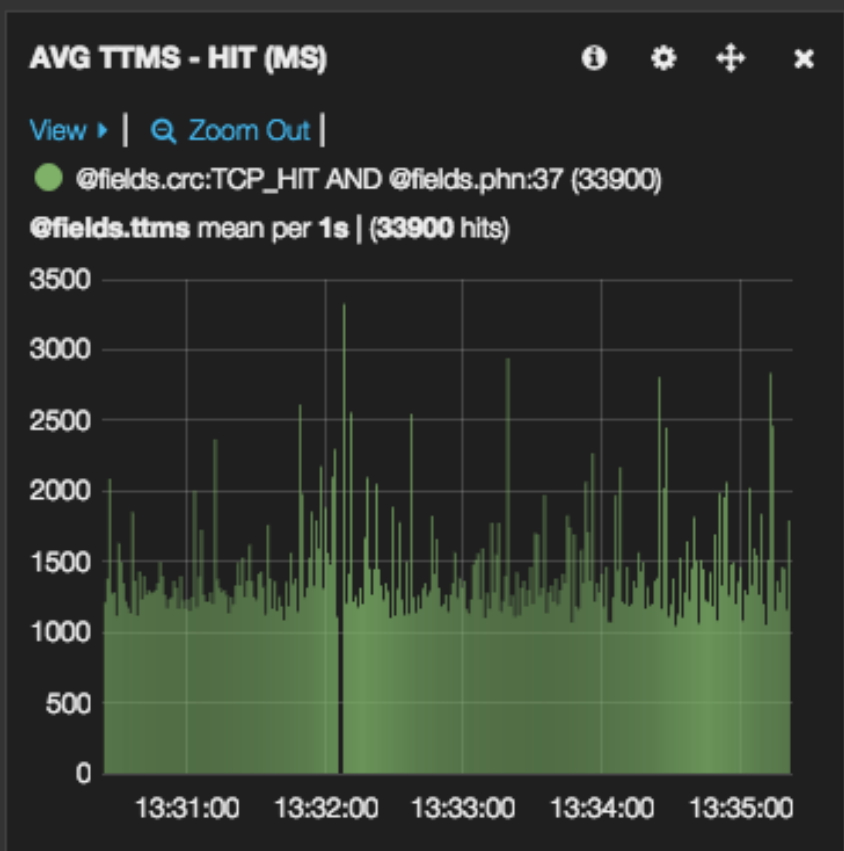
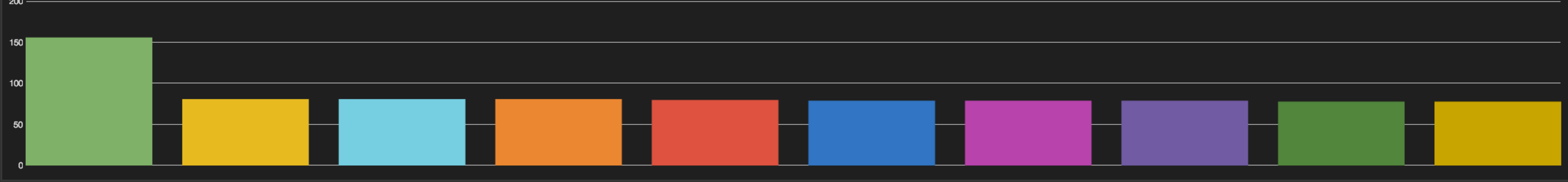
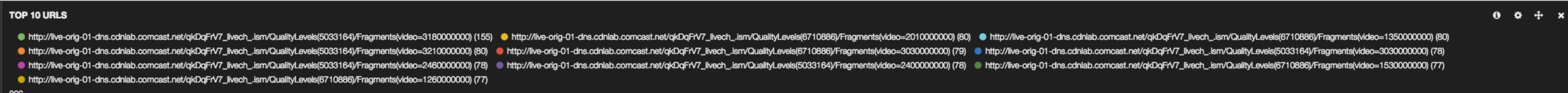
```
[mtorlu9137e@ipcdn-cache-37]~$ sudo cat /usr/local/etc/header_rewrite/hdrwr.conf | grep -v "^$#"
cond %{READ_REQUEST_HDR_HOOK}
cond %{HEAD} = live-orig-01-dns.cdnlab.comcast.net
set-config proxy.config.http.connect_attempts_timeout 2
set-config proxy.config.http.connect_attempts_max_retries_dead_server 2 [L]
[mtorlu9137e@ipcdn-cache-37]~$
```

```
[mtorlu9137e@zaphod06]lcontrol$ cat c33_tight_c37.json
{
  "clients": "480",
  "bitrate": "2500000",
  "test_type": "TestEngines::LLL",
  "abr_type": "hls",
  "frag_duration": "50000000",
  "origins": "1",
  "live": "100",
  "active_channels": "1",
  "vod_cache_name" : "load-test-01.cdnlab.comcast.net",
  "live_cache_name" : "edge.live-l1-dns.top.cdnlab.comcast.net",
  "cache_ip" : "69.241.62.70",
  "vod_cache_hitratio" : "80",
  "live_active_frags" : "2",
  "vod_bitrates" : "4300000,3000000",
  "live_bitrates" : "6710886,5033164",
  "max_long_tts_percentage" : "0.5",
  "long_tts_time" : "1.5",
  "proxy_mode" : "reverse",
  "ipv6_percentage" : 0,
  "via_headers" : 1
}
[mtorlu9137e@zaphod06]lcontrol$
```

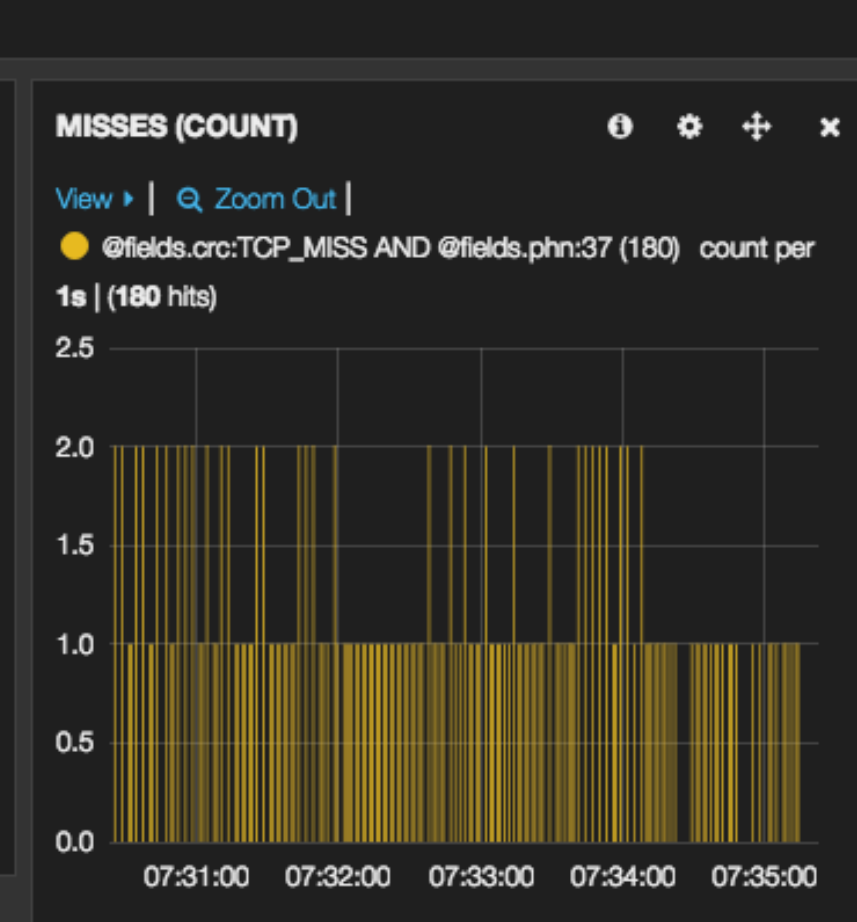
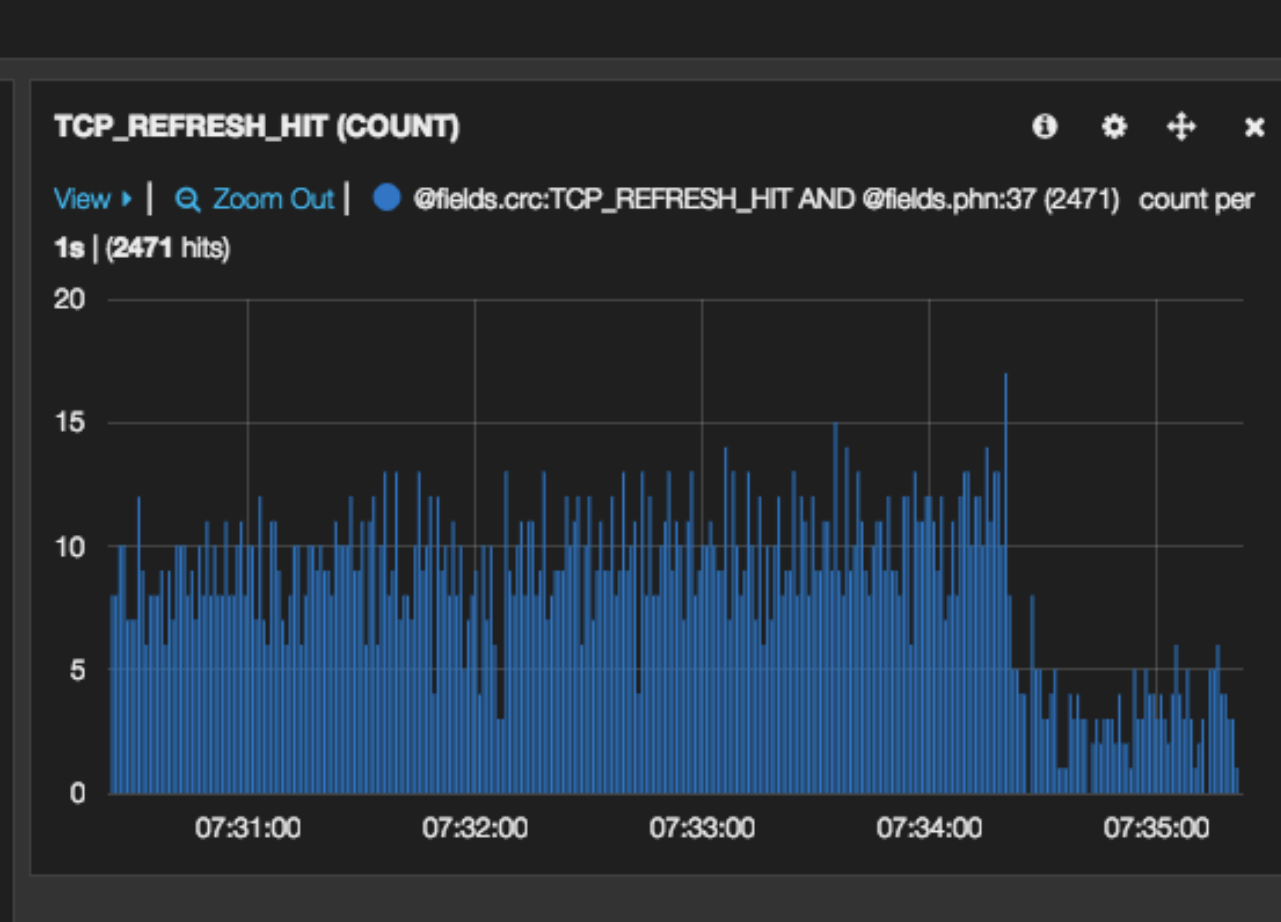
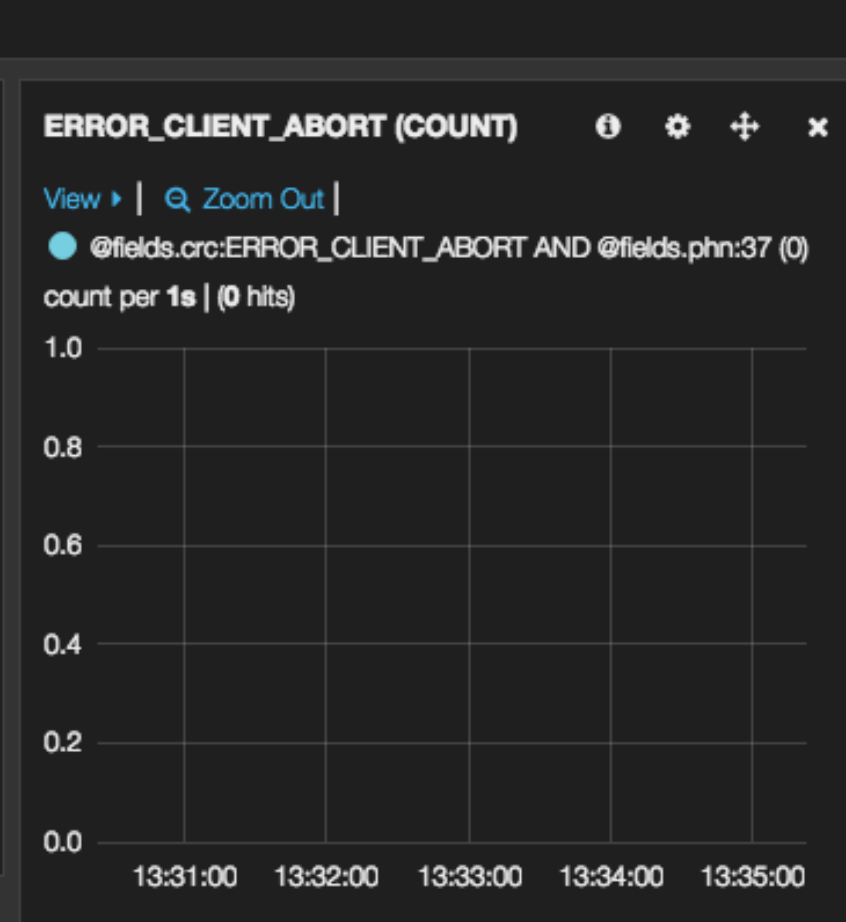
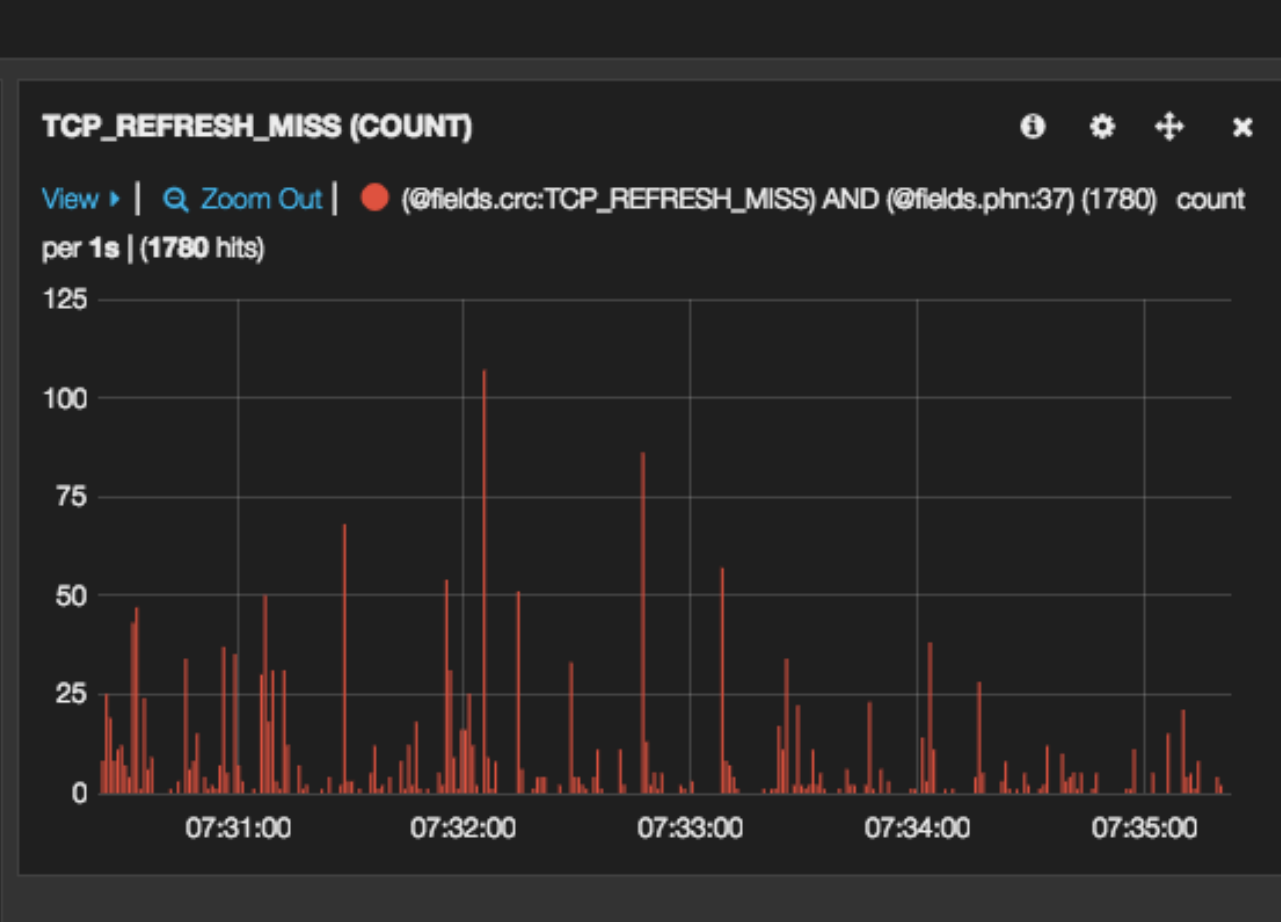
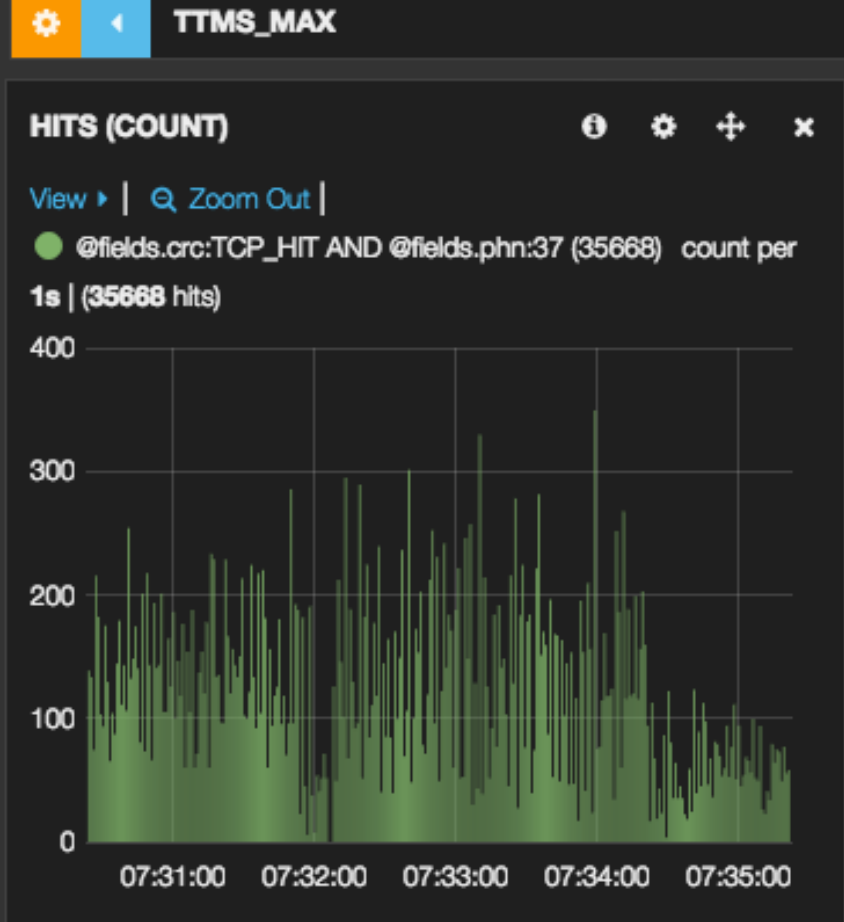
Edge graphs



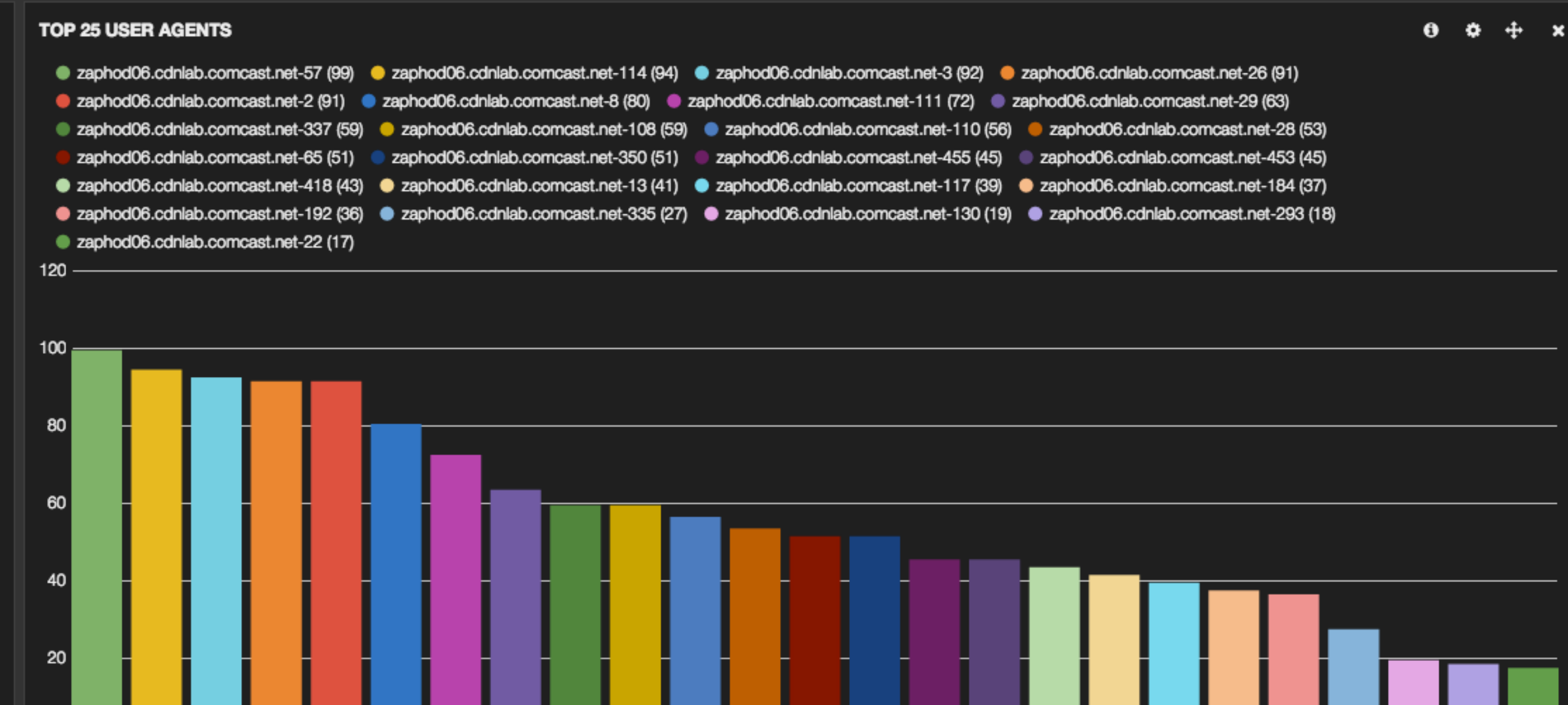
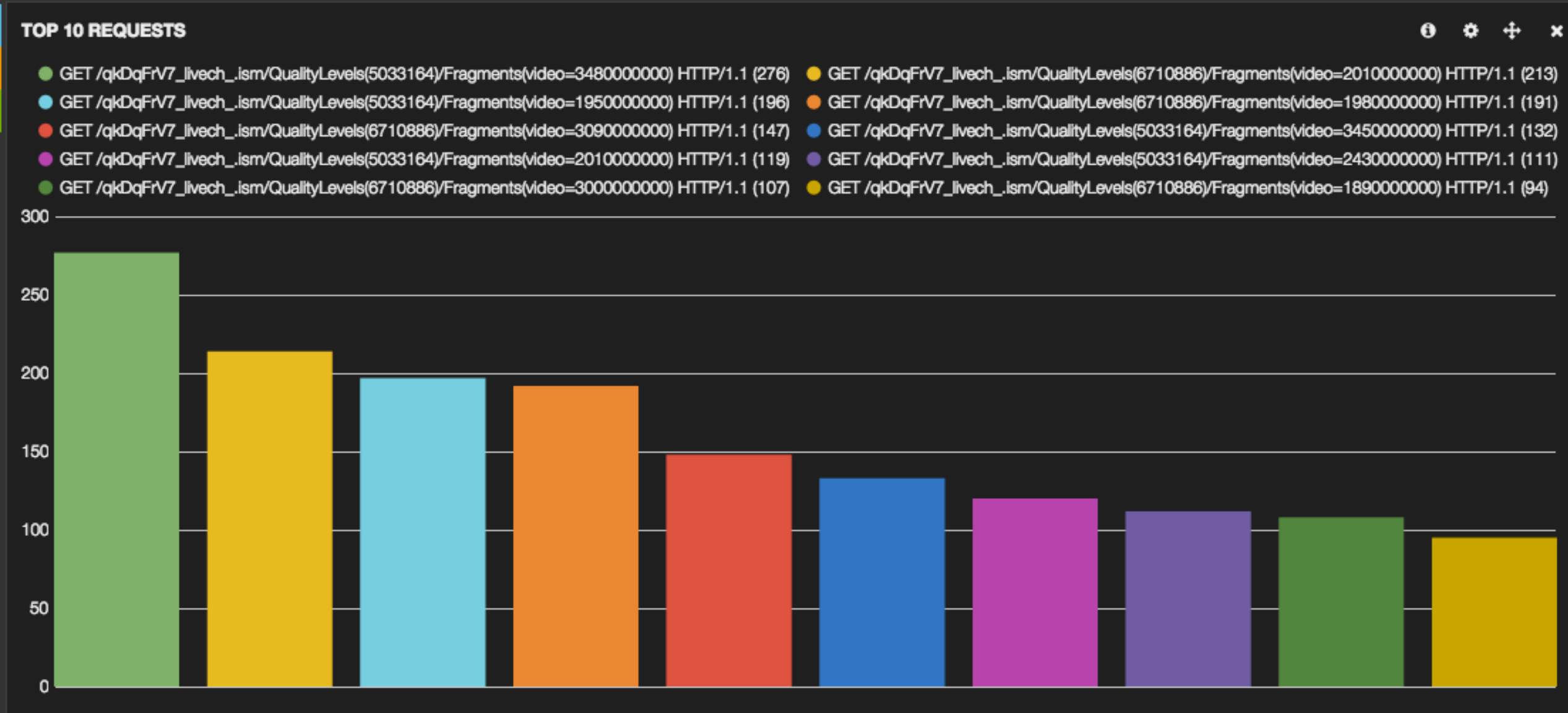
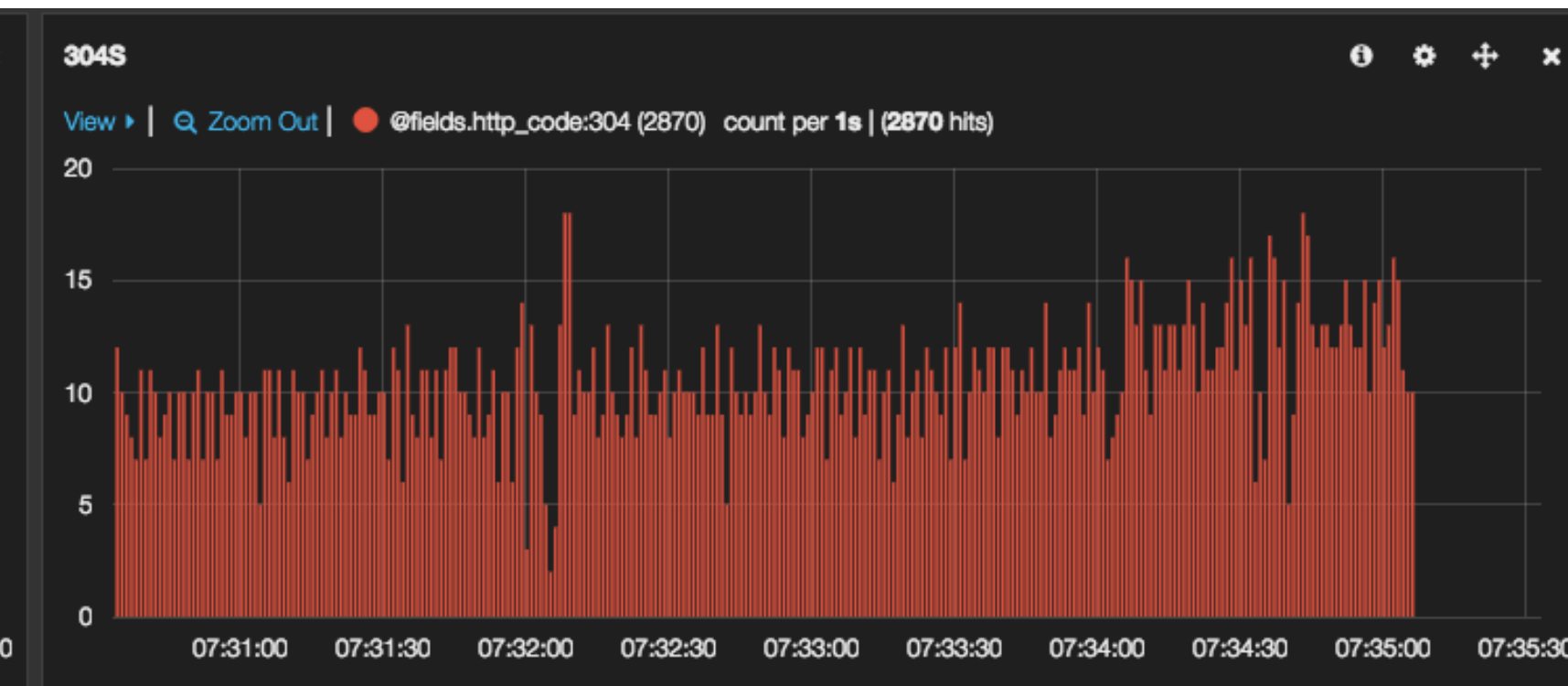
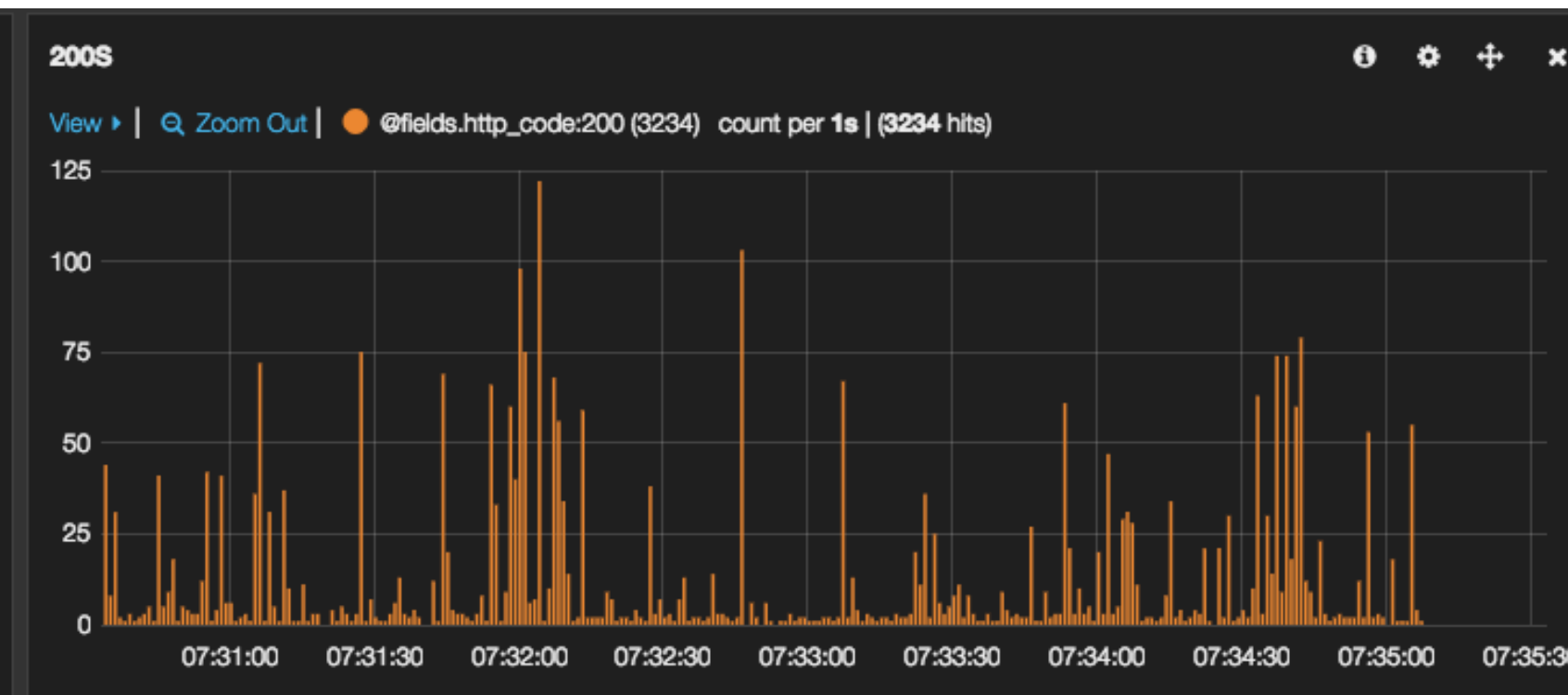
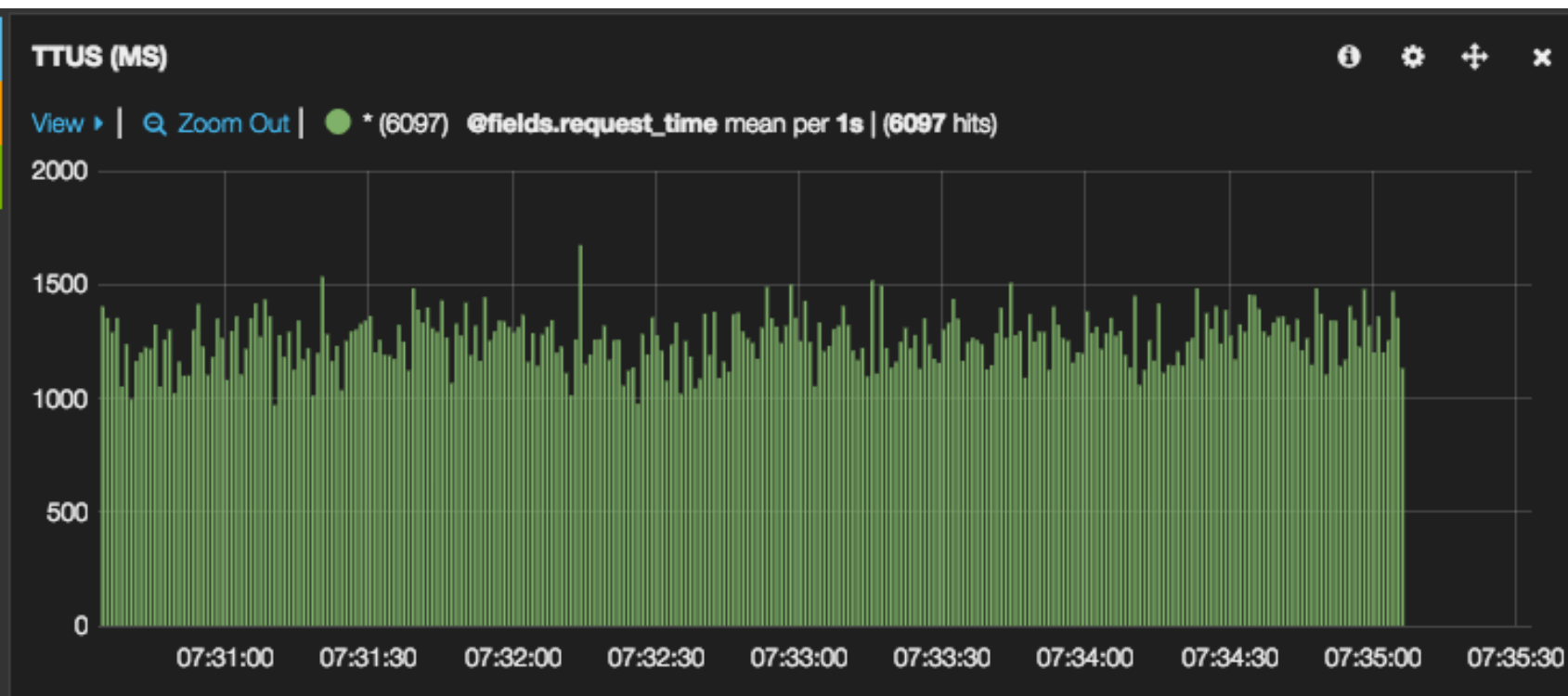
Mid graphs



TTMS_MAX

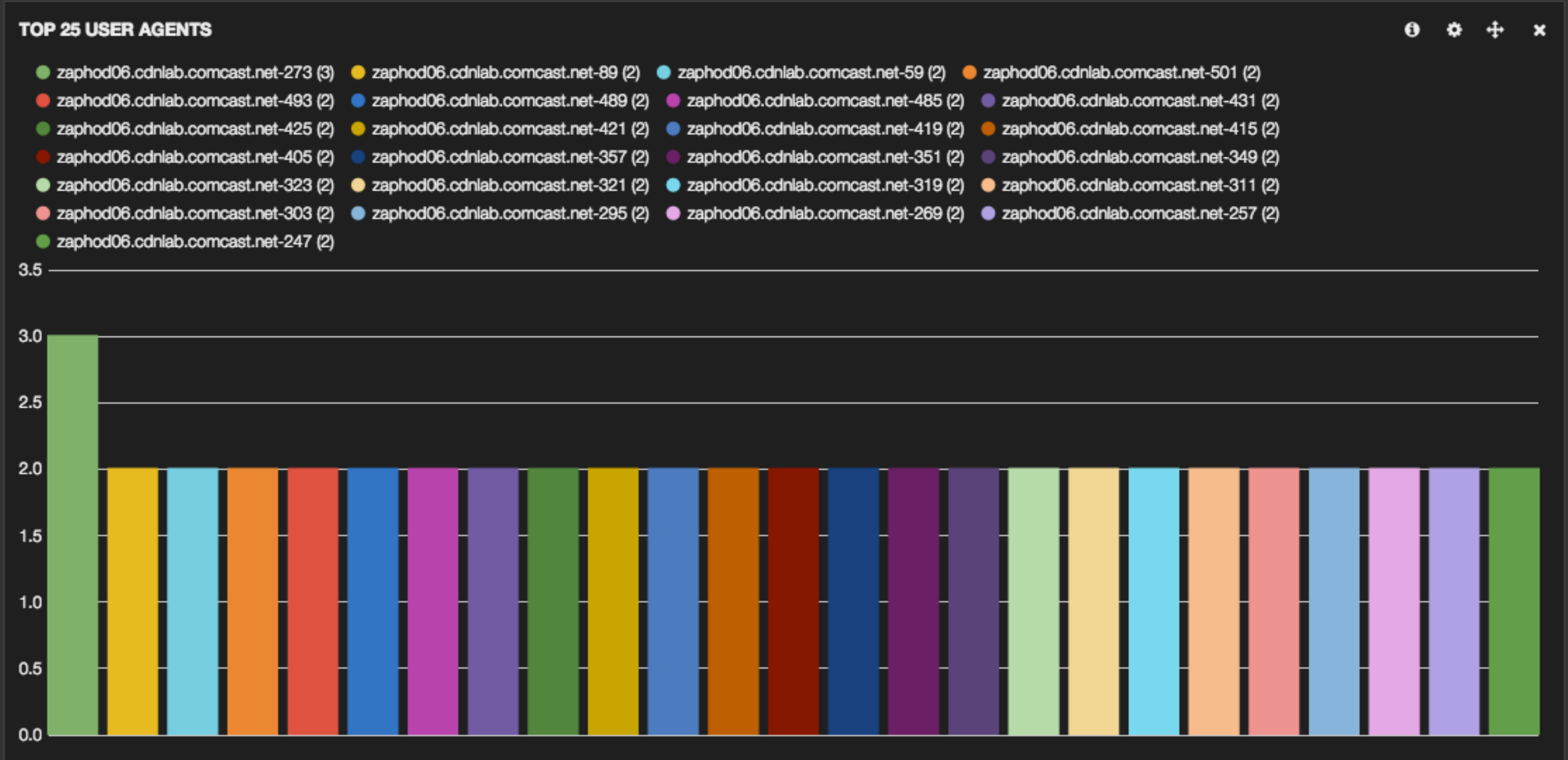
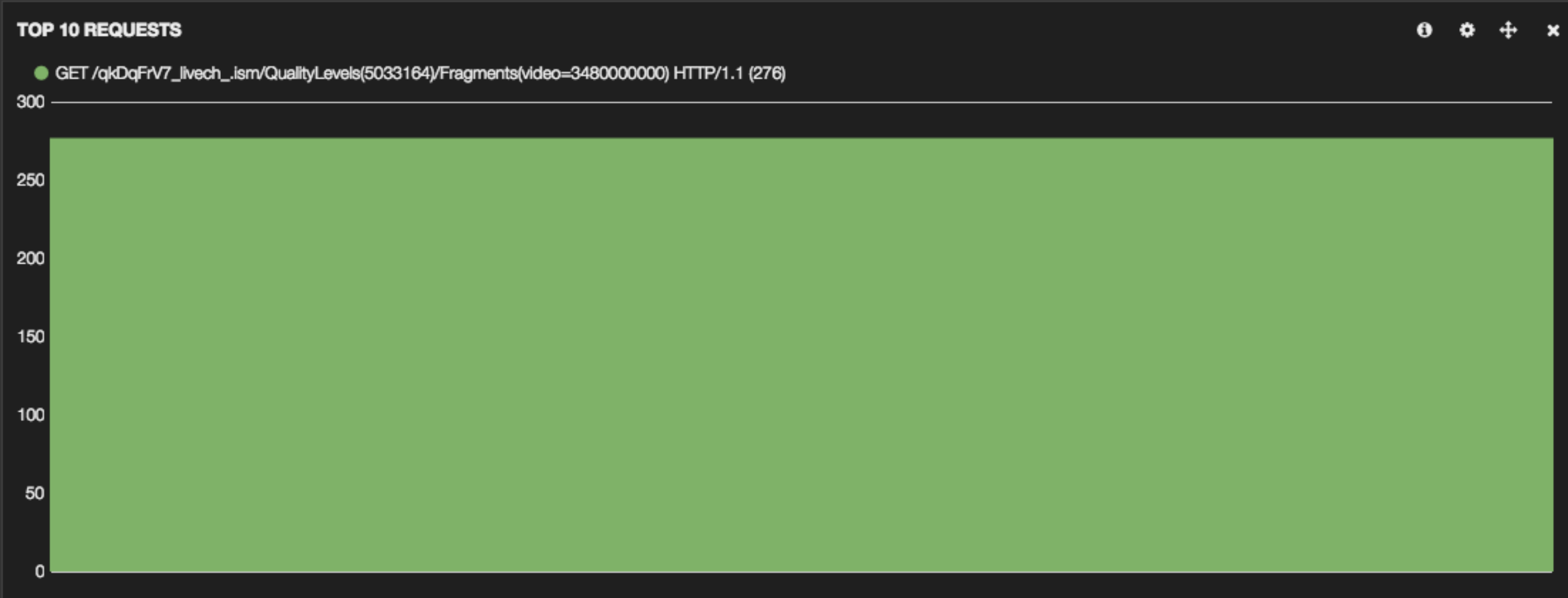
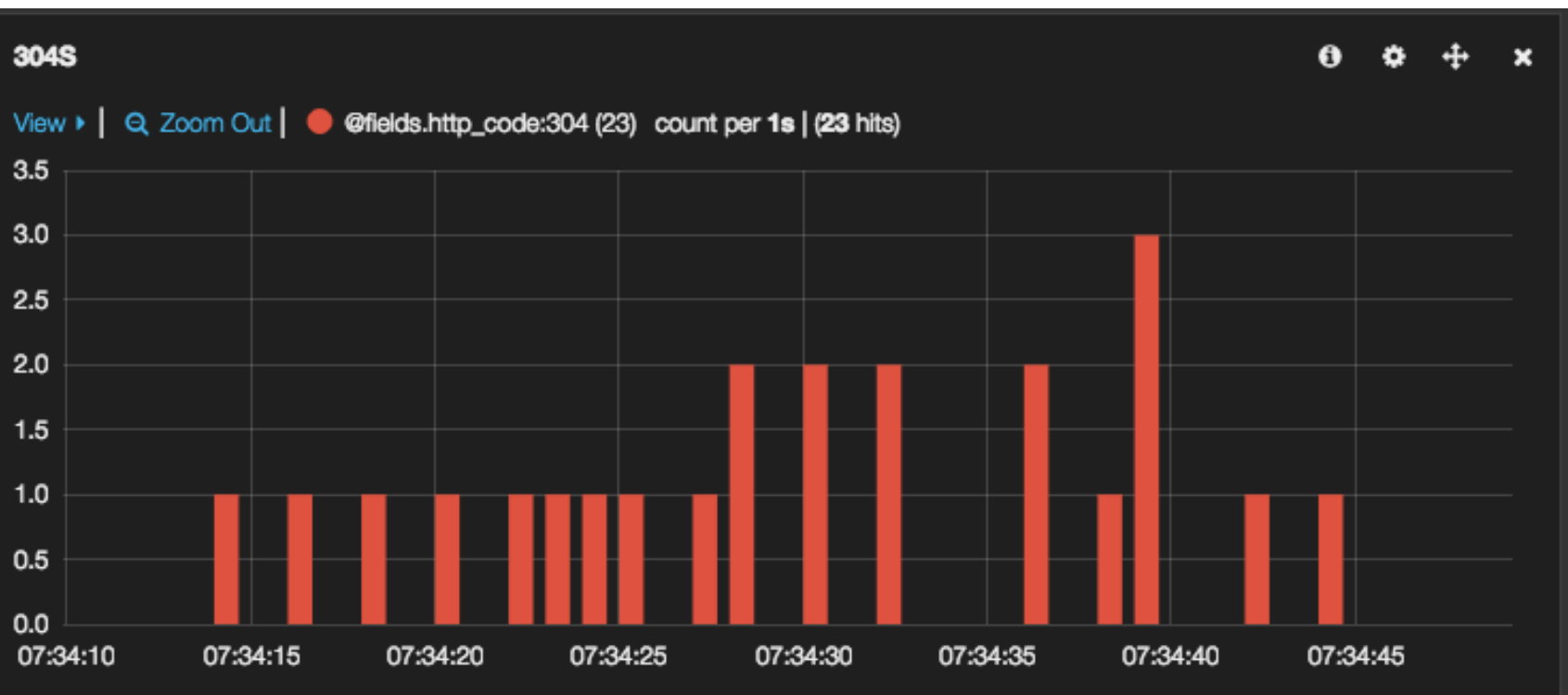
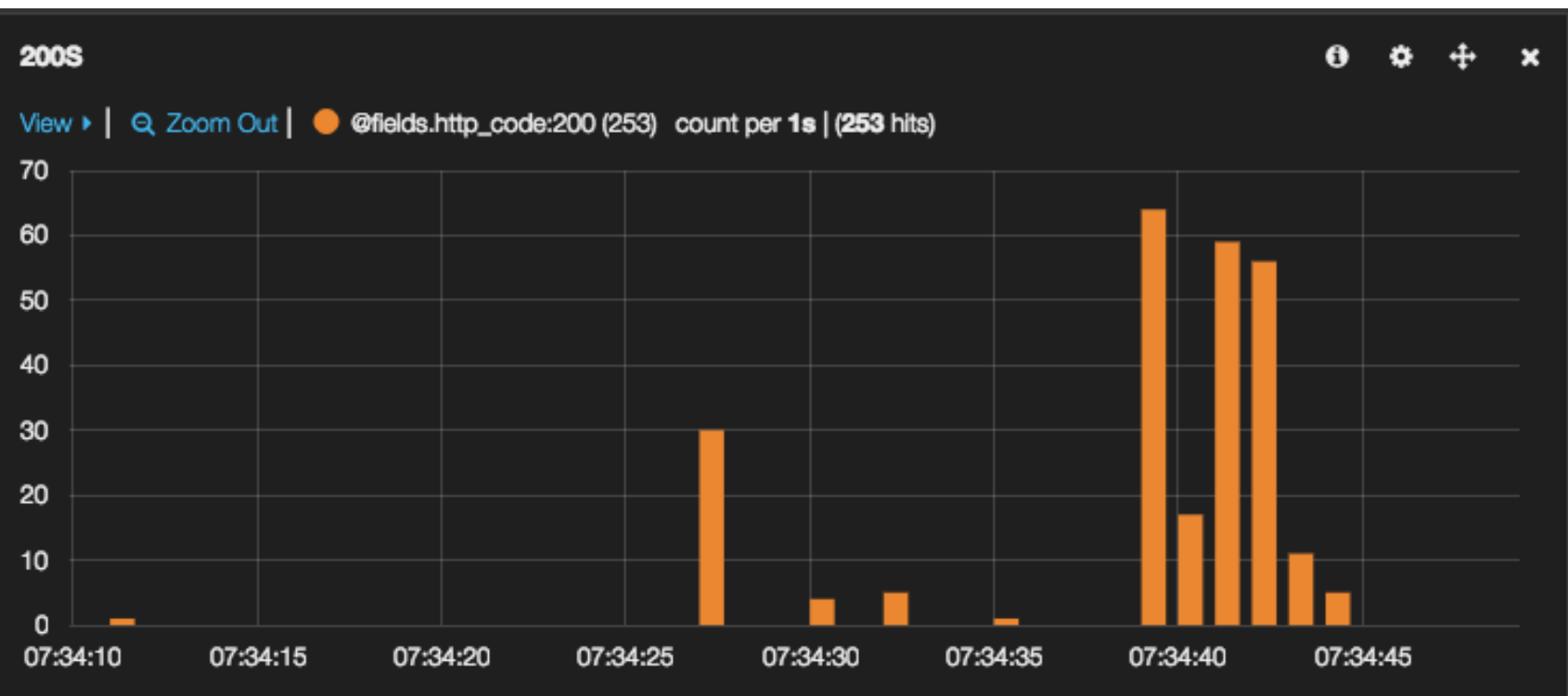
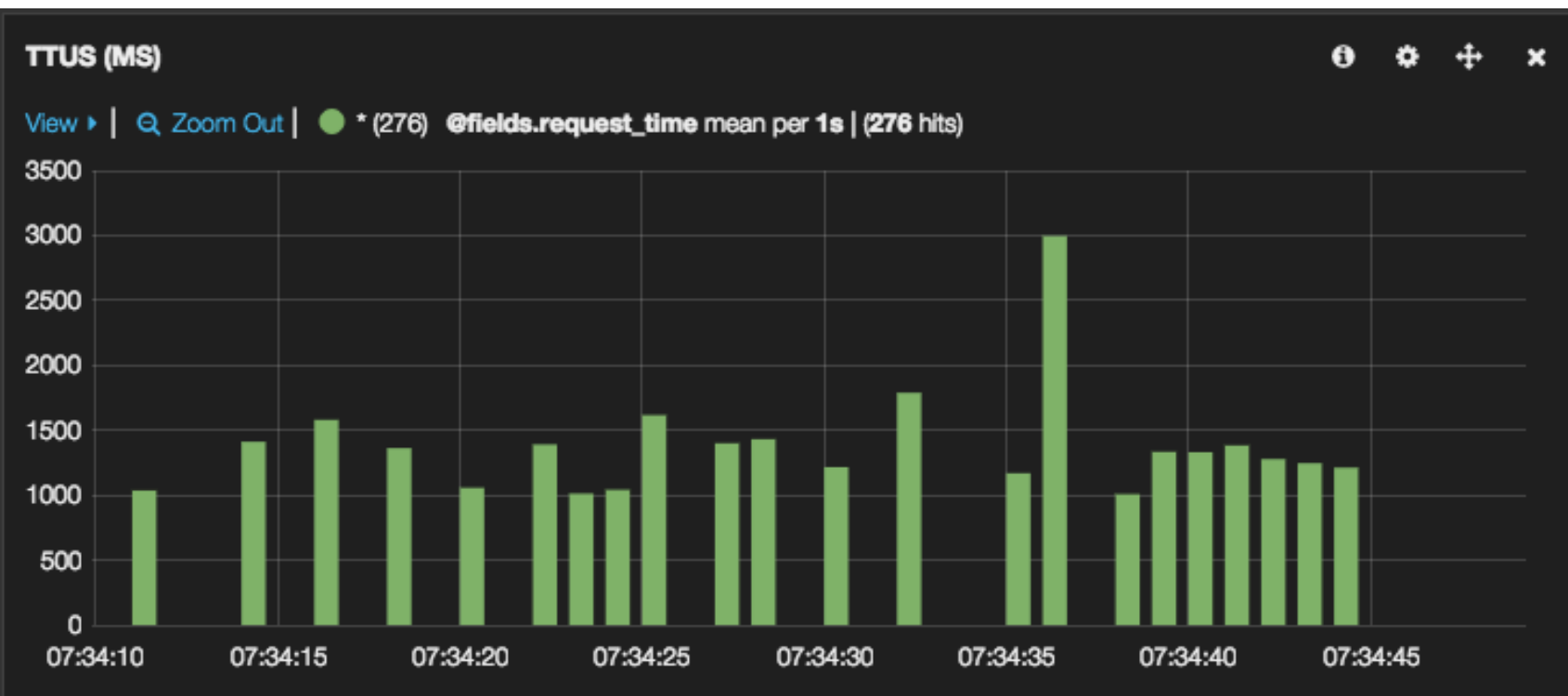


Origin graphs

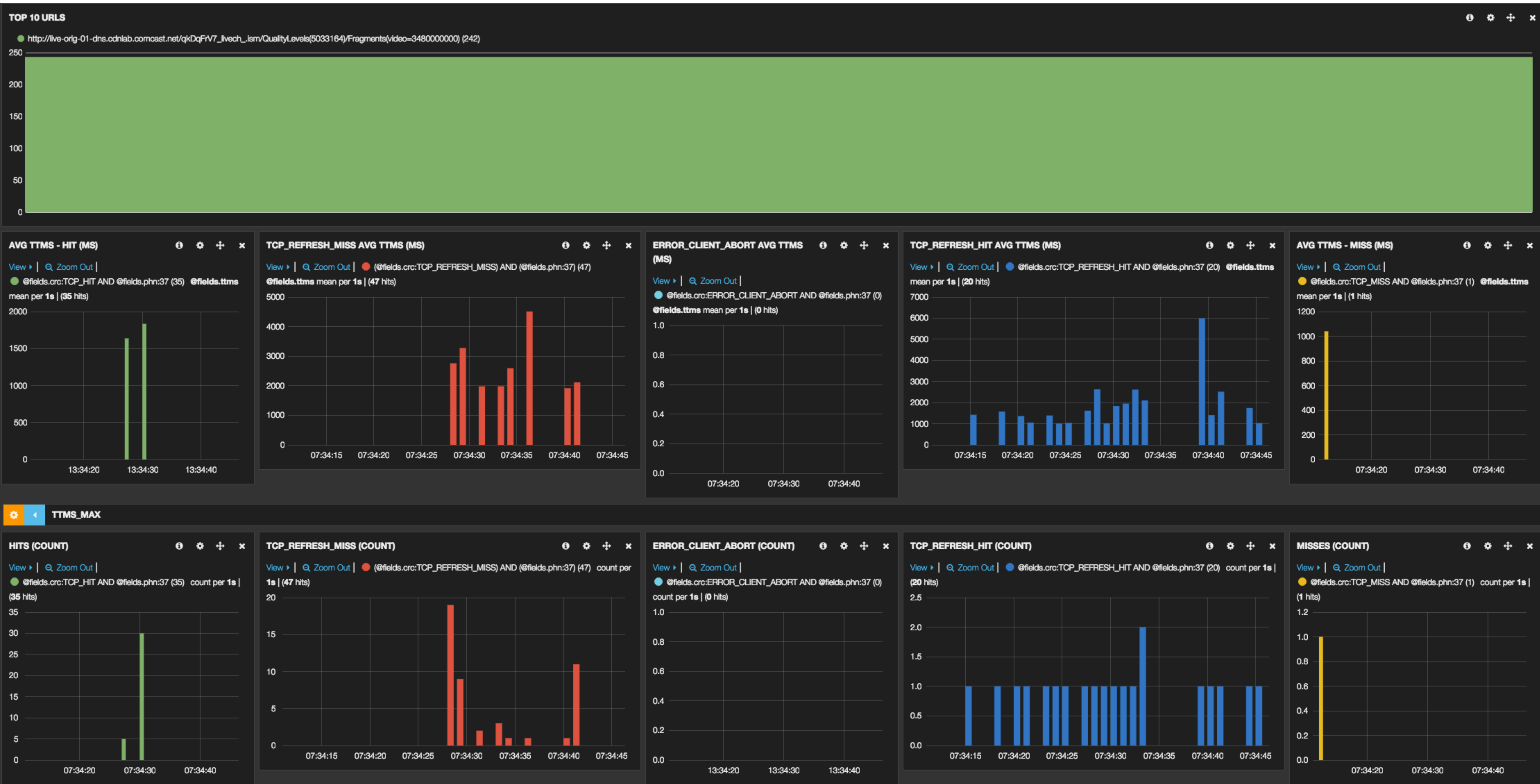


Zoom In...

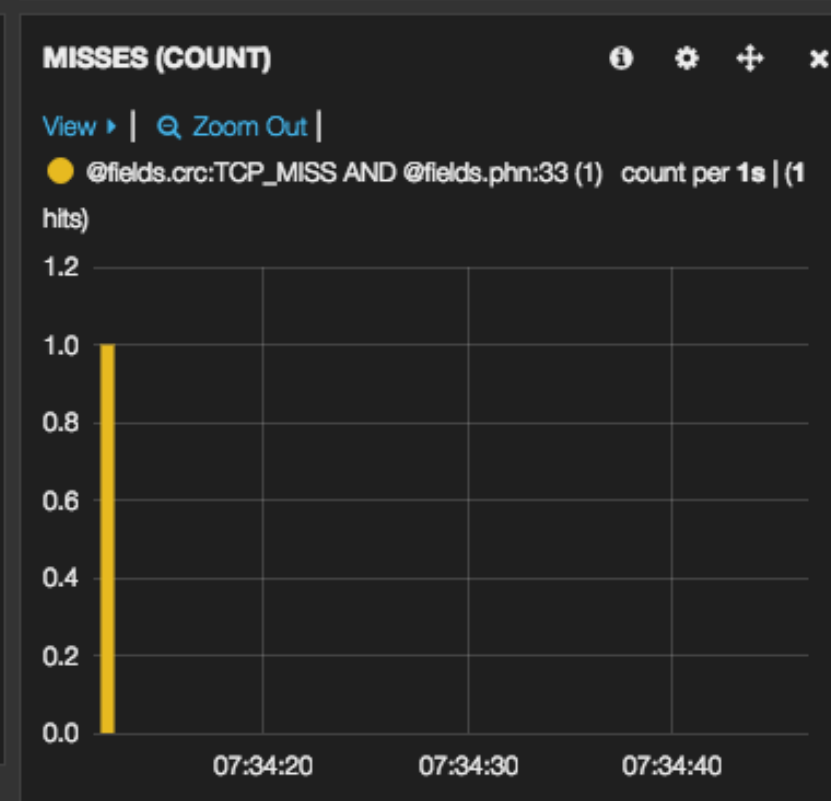
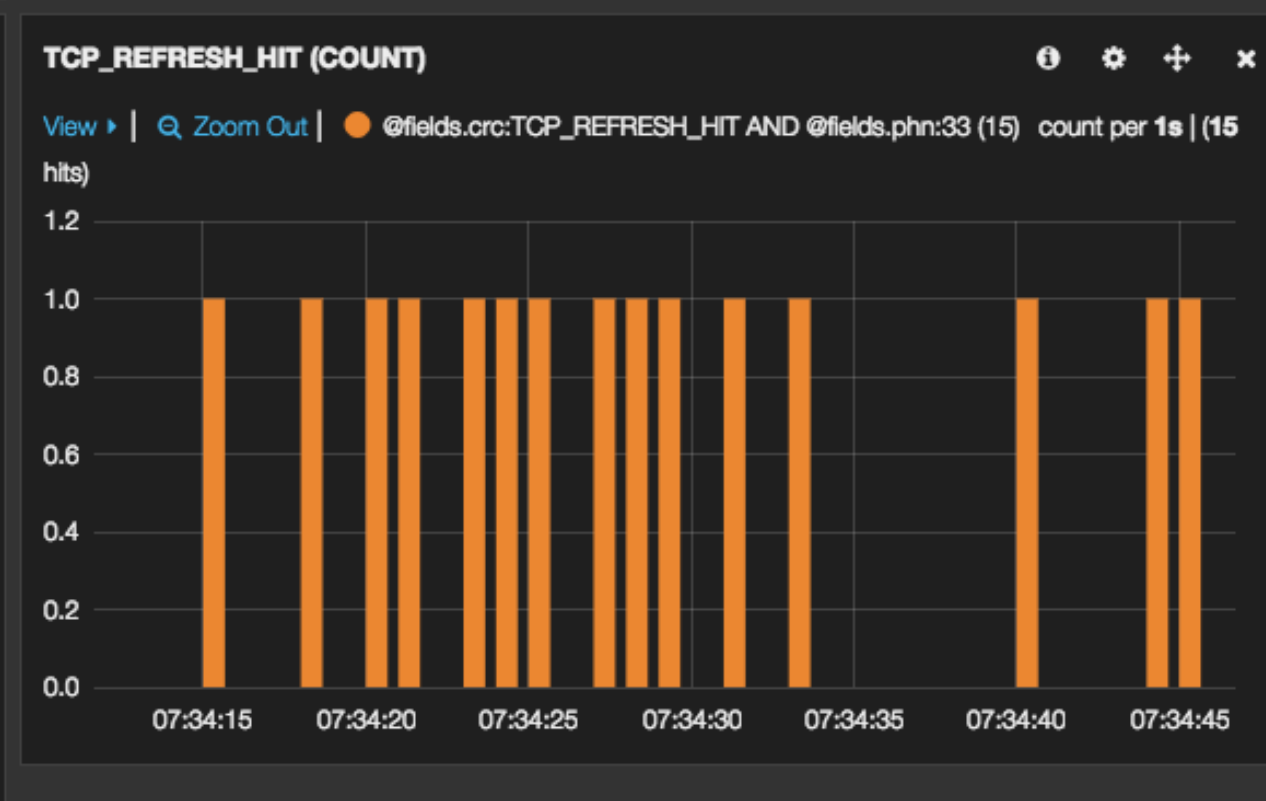
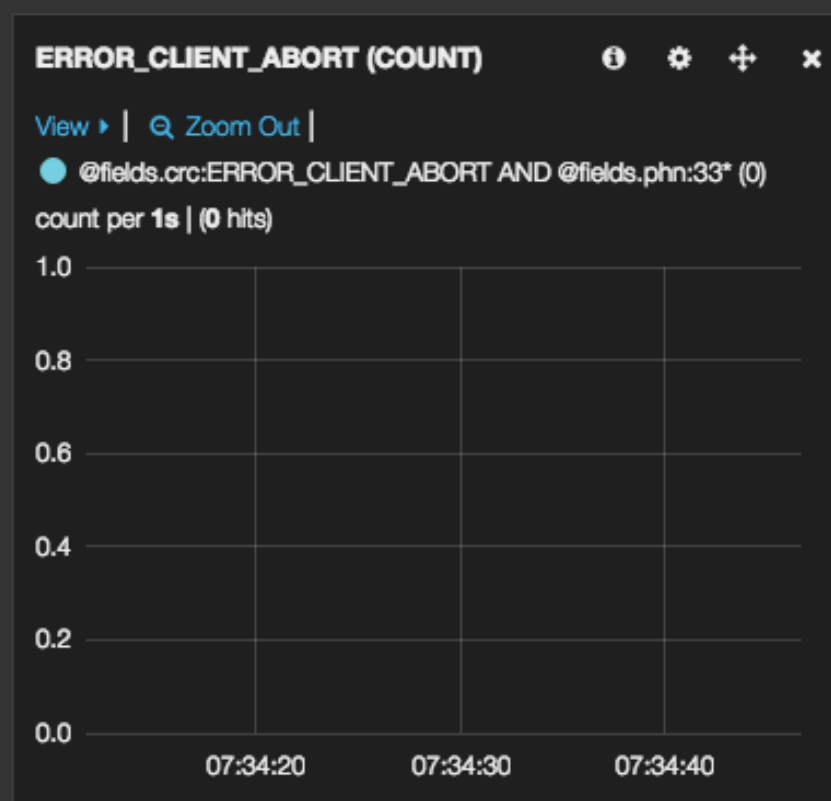
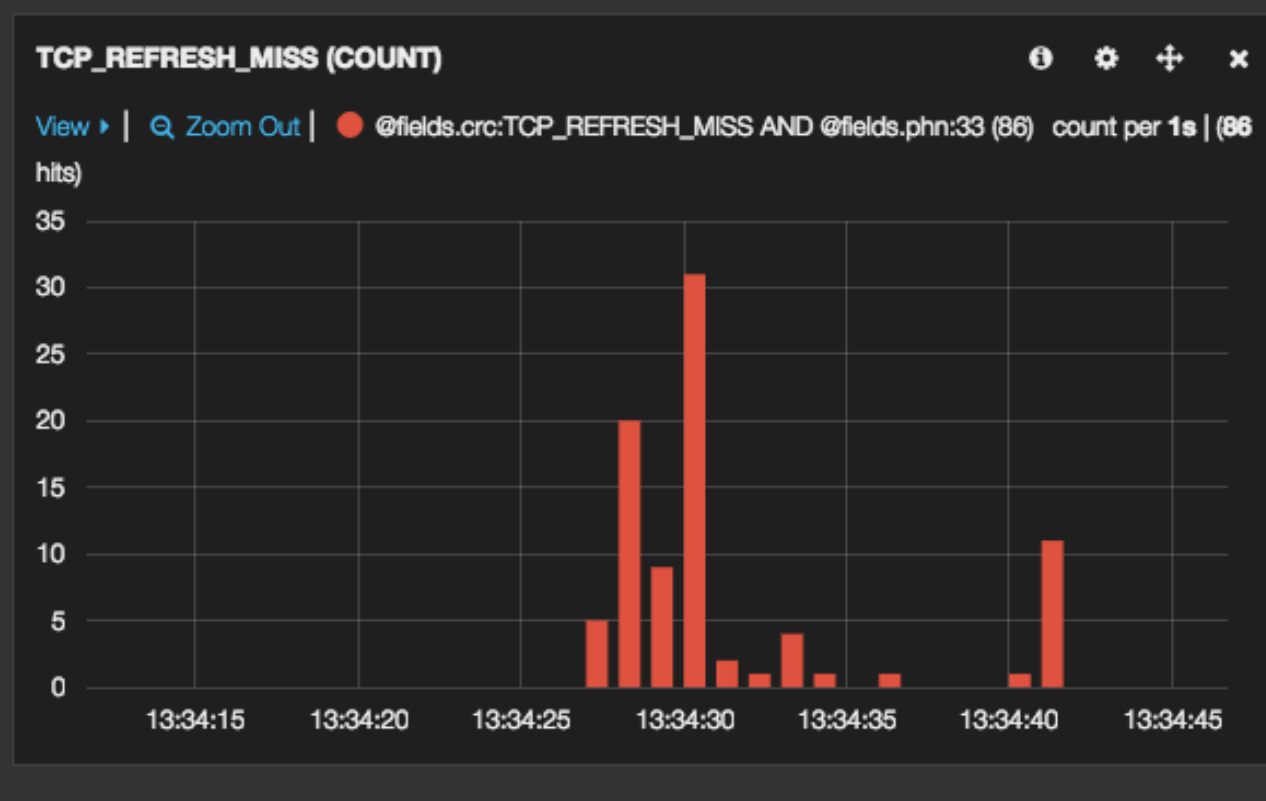
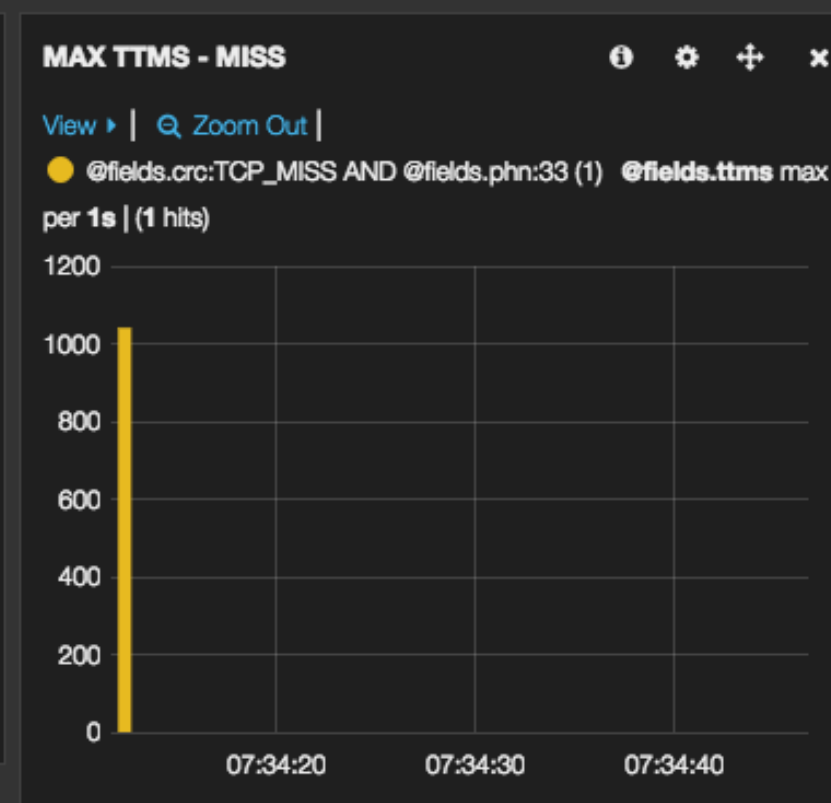
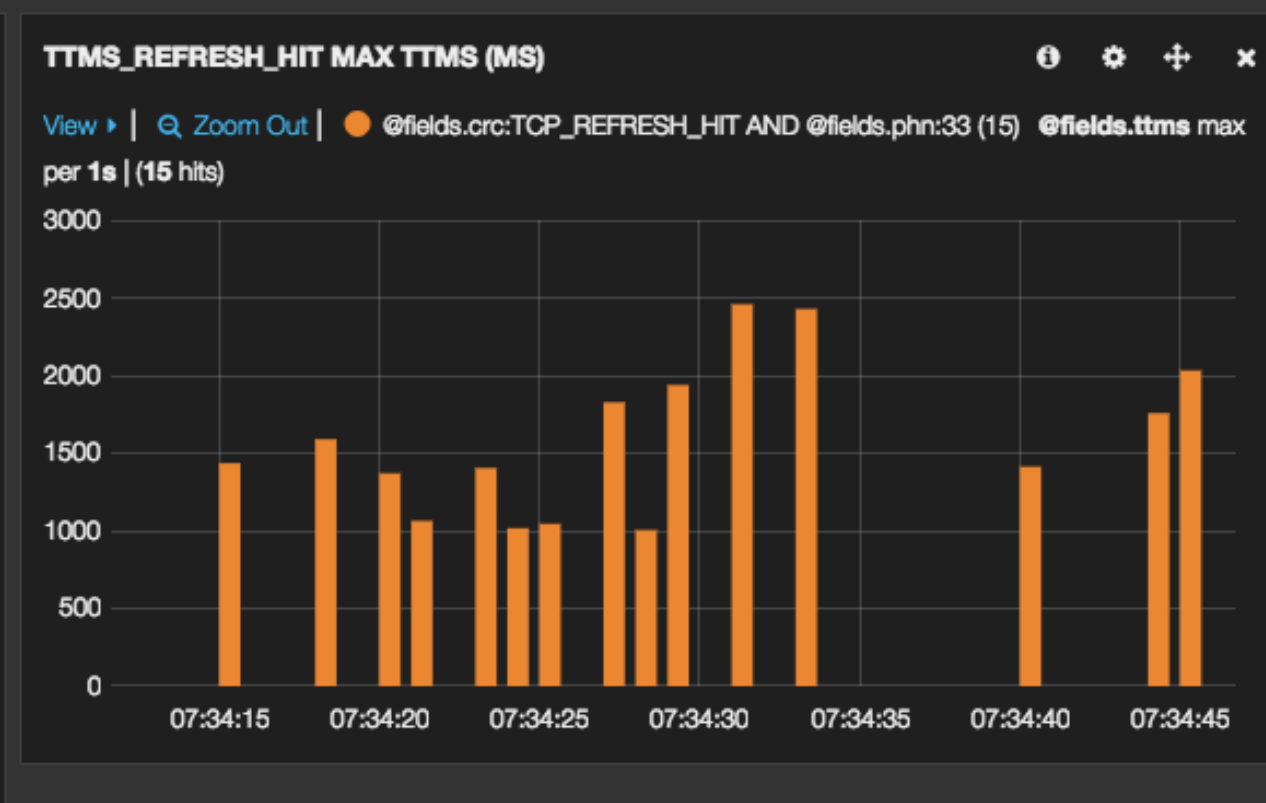
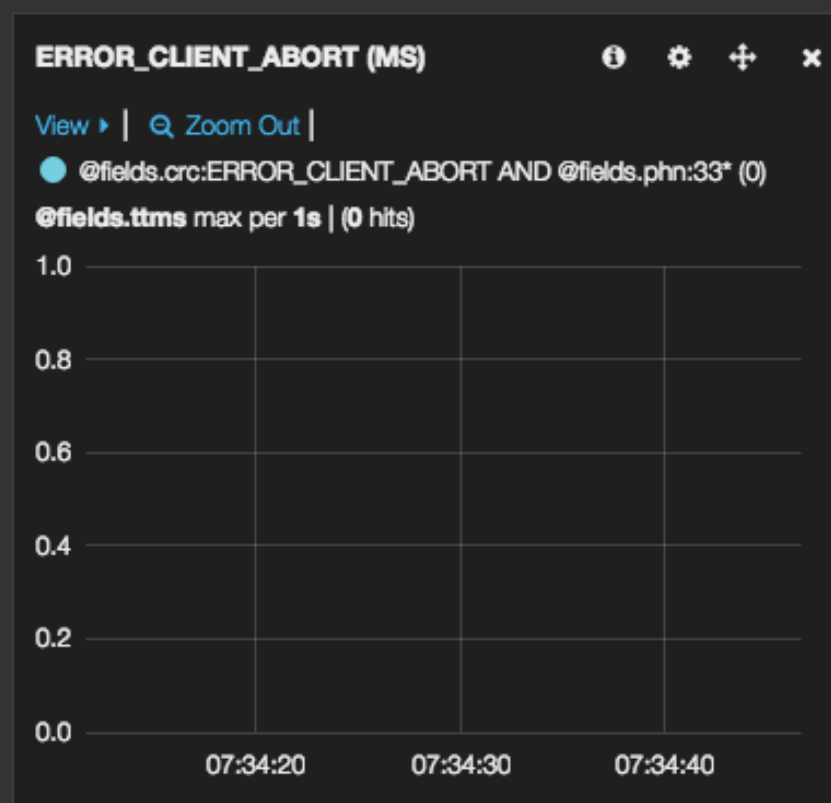
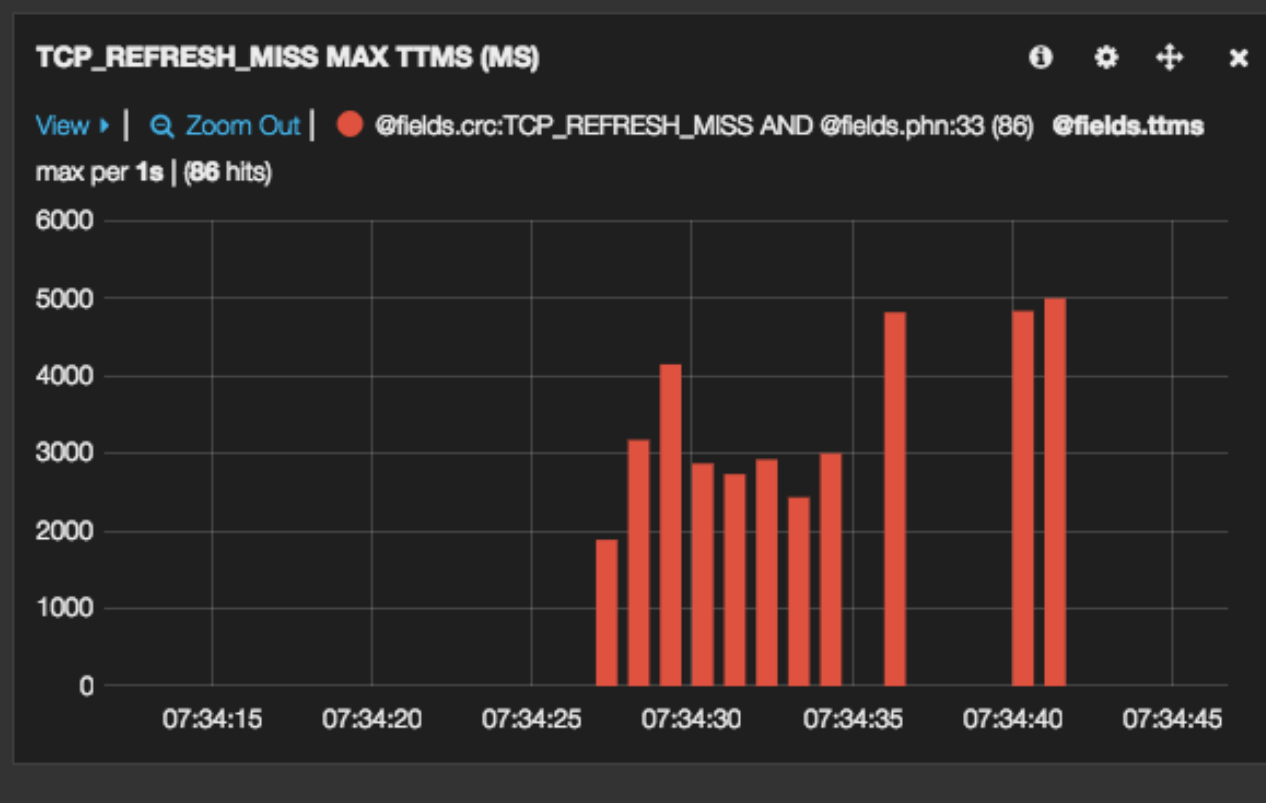
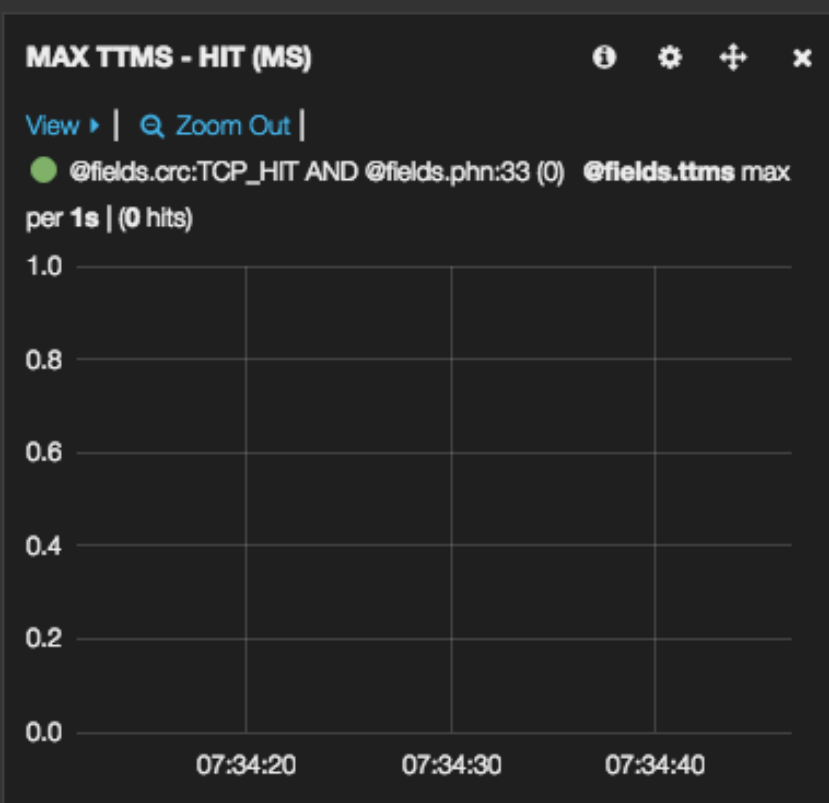
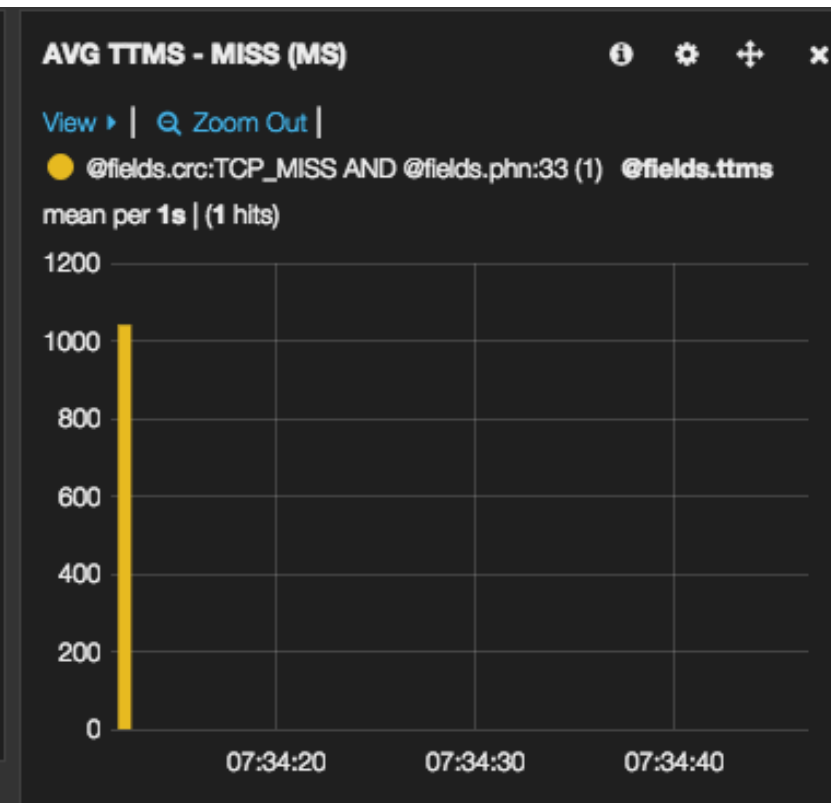
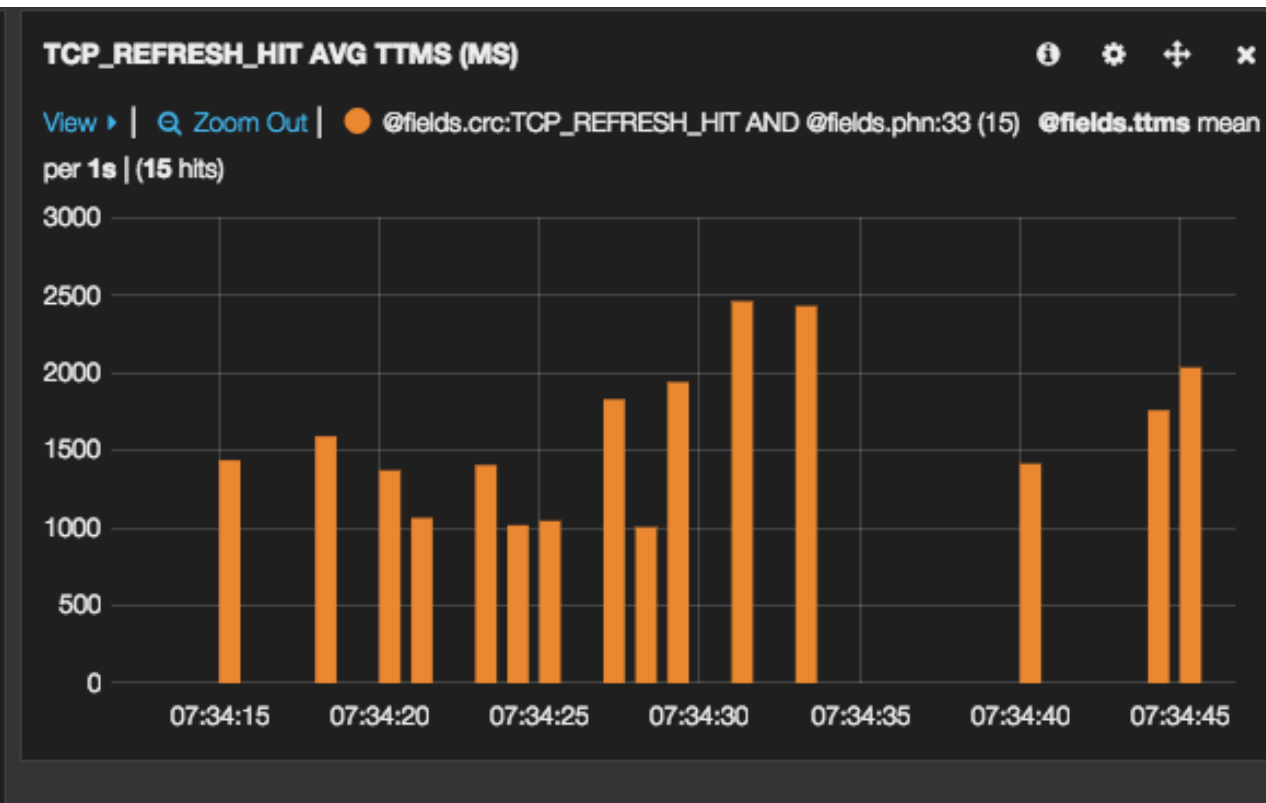
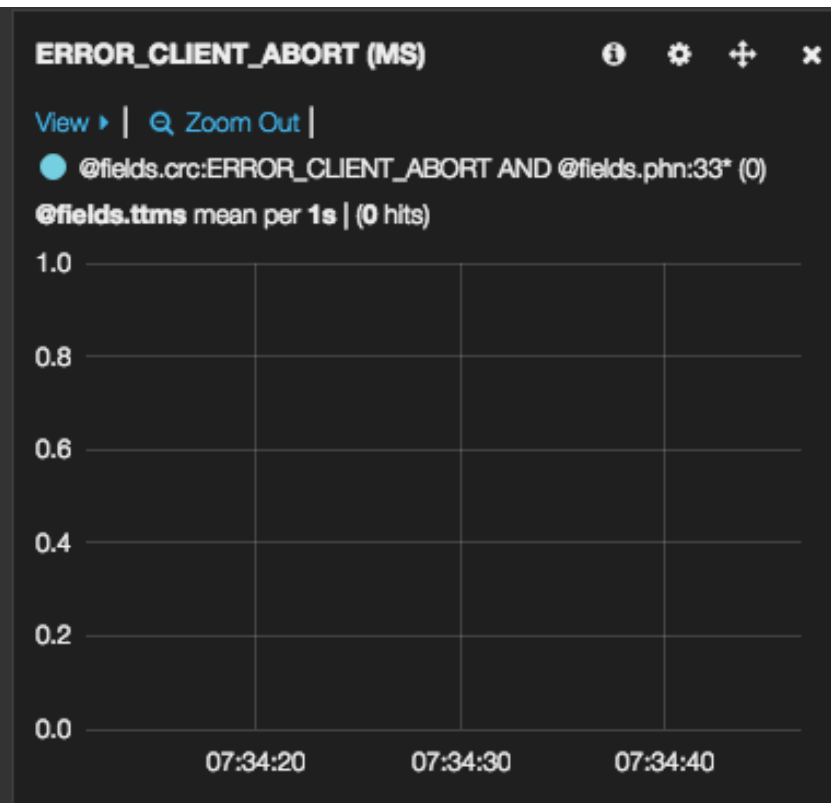
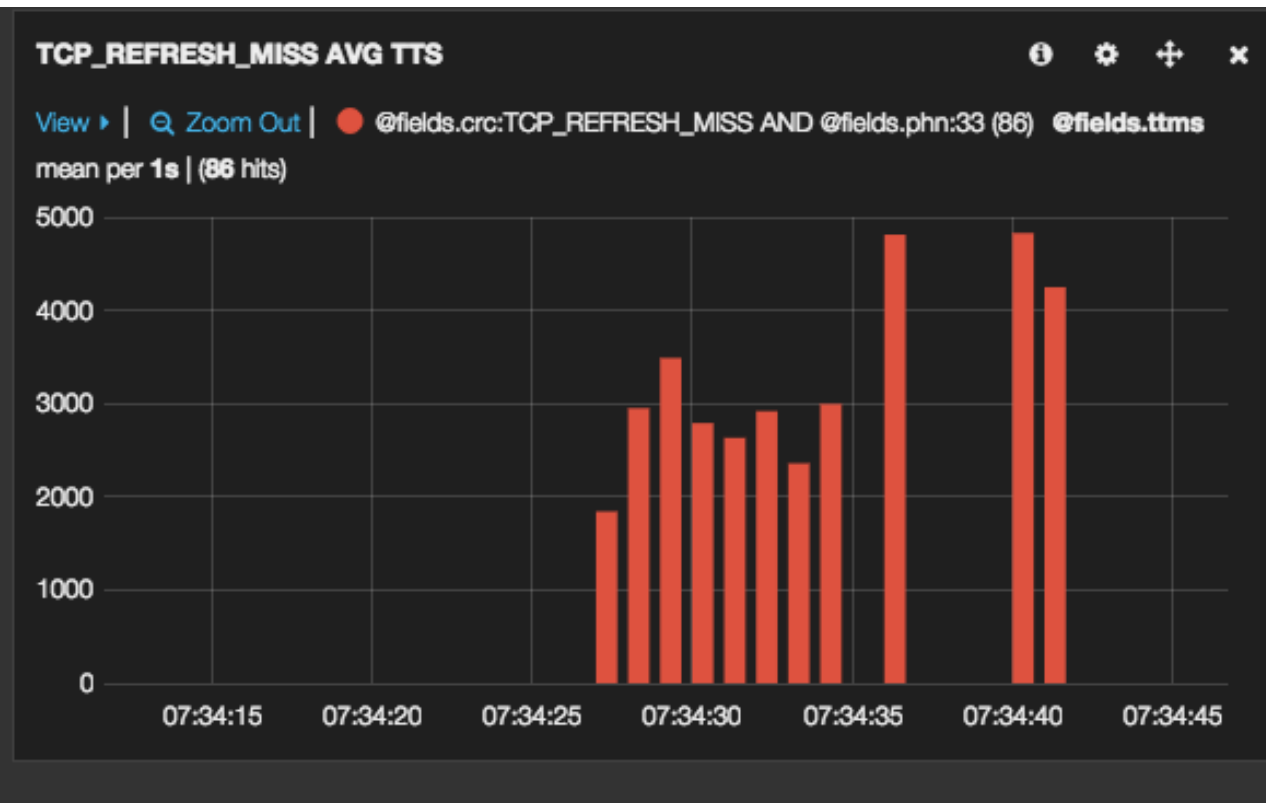
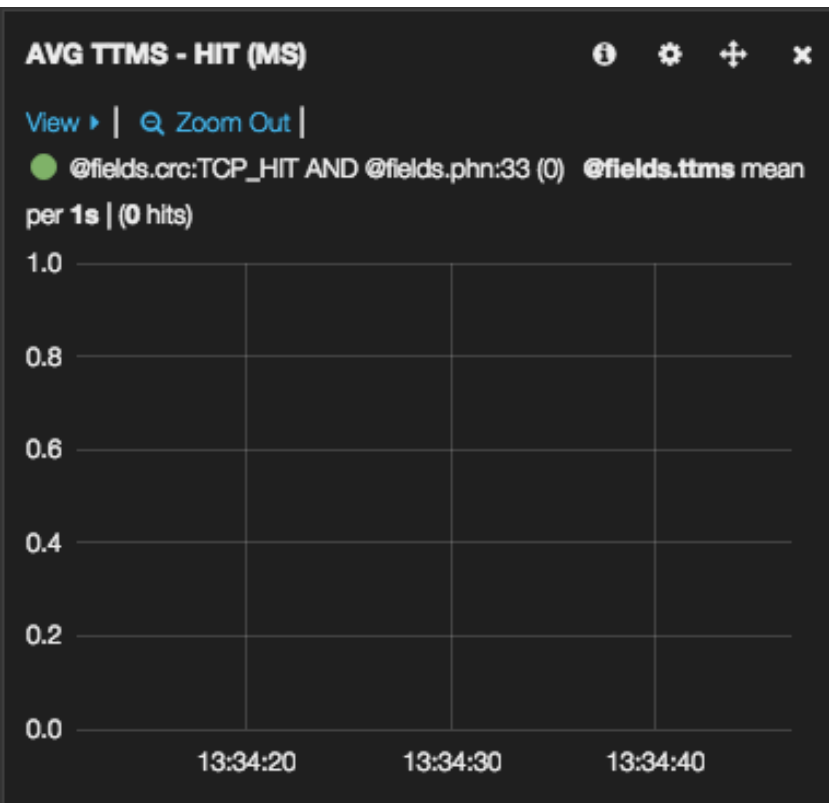
Origin



Mid-tier cache



Edge-tier cache



Summary

parameter (records.config)	Default Value (ATS 4.2+)	Tested Value	ATS Documentation	Tested Behavior
enable_read_while_writer	INT 1	INT 1	Specifies when to enable the ability to read a cached object while another connection is completing the write to cache for that same object. The goal here is to avoid multiple origin connections for the same cacheable object upon a cache miss.	Works, except when: a) revalidate is necessary b) origin returns an HTTP error c) ATS transaction timeout is reached
connect_attempts_timeout	INT 30	INT 2	The timeout value (in seconds) for an origin server connection.	The timeout when receiving HTTP headers for transaction (TCP connection is fine).
connect_attempts_max_retries_dead_server	INT 3	INT 1	The maximum number of connection retries Traffic Server can make when the origin server is unavailable.	Works, almost all the time. However, when timeout is reached, a 502 or 504 is logged, yet ATS sends TCP FIN to client.
connect_attempts_max_retries	INT 6	INT 1	The maximum number of connection retries Traffic Server can make when the origin server is not responding.	Works, but causes read_while_writer to misbehave.
transaction_active_timeout_in	INT 900	INT 5	The maximum amount of time Traffic Server can remain connected to a client. If the transfer to the client is not complete before this timeout expires, then Traffic Server closes the connection.	Works, almost all the time. However, causes read_while_writer to misbehave.
transaction_active_timeout_out	INT 0	INT 5	The maximum amount of time Traffic Server waits for fulfillment of a connection request to an origin server. If Traffic Server does not complete the transfer to the origin server before this timeout expires, then Traffic Server terminates the connection request.	?Rarely works?
transaction_no_activity_timeout_out	INT 30	INT 2	Specifies how long Traffic Server keeps connections to origin servers open if the transaction stalls.	?Doesn't work?