

Elasticsearch VS Easysearch 性能测试报告



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Elastic 线程及队列

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Easysearch 线程及队列

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对比

压测索引 1 主分片 1 副本

Elastic 吞吐

Elastic 线程及队列

资源消耗

Easysearch 吞吐

Easysearch 线程及队列

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对比

压测索引 7 主分片

Elastic 吞吐

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资源消耗

Easysearch 吞吐

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对比

总结

压测环境

虚拟机配置

使用阿里云上规格：[ecs.u1-c1m4.4xlarge](#)，PL2: 单盘IOPS性能上限10万(适用的云盘容量范围：461GiB–64TiB)

vCPU	内存 (GiB)	磁盘(GB)	带宽 (Gbit/s)	数量
16	64	500	5000	24

Easysearch 配置

7 节点集群，版本：1.9.0

实例名	内网IP	软件	vCPU	JVM	磁盘
i-2zeg56cijnzklcn2410	172.22.75.144	Easysearch	16	31G	500GB
i-2zeg56cijnzklcn240u	172.23.15.97	Easysearch	16	31G	500GB
i-2zeg56cijnzklcn240i	172.25.230.228	Easysearch	16	31G	500GB
i-2zeg56cijnzklcn240y	172.22.75.142	Easysearch	16	31G	500GB
i-2zeg56cijnzklcn240x	172.22.75.143	Easysearch	16	31G	500GB
i-2zeg56cijnzklcn240z	172.24.250.252	Easysearch	16	31G	500GB
i-2zeg56cijnzklcn240r	172.24.250.254	Easysearch	16	31G	500GB

Elasticsearch 配置

7 节点集群，版本：7.10.2

实例名称	内网IP	软件	vCPU	JVM	磁盘
i-2zegn56cijnzklcn240m	172.24.250.251	Elasticsearch	16	31G	500GB
i-2zegn56cijnzklcn240p	172.22.75.145	Elasticsearch	16	31G	500GB
i-2zegn56cijnzklcn240o	172.17.67.246	Elasticsearch	16	31G	500GB
i-2zegn56cijnzklcn240t	172.22.75.139	Elasticsearch	16	31G	500GB
i-2zegn56cijnzklcn240q	172.22.75.140	Elasticsearch	16	31G	500GB
i-2zegn56cijnzklcn240v	172.24.250.253	Elasticsearch	16	31G	500GB
i-2zegn56cijnzklcn240l	172.24.250.250	Elasticsearch	16	31G	500GB

监控集群配置

单节点 Easysearch 集群，版本：1.9.0

实例名	内网IP	软件	vCPU	内存	磁盘
i-2zegn56cijnzklcn240f	172.25.230.226	监控集群：Console	16	64G	500GB
i-2zegn56cijnzklcn240j	172.23.15.98	监控集群：Easysearch	16	64G	500GB

压测 loadgen 配置

loadgen版本：1.25.0

4 台压 Easysearch，4 台压 Elasticsearch。

实例名	内网IP	软件	vCPU	内存	磁盘
i-2zegn56cijnzklcn240n	172.17.67.245	Loadgen – 压 Easysearch	16	64G	500GB
i-2zegn56cijnzklcn2411	172.22.75.141	Loadgen – 压 Easysearch	16	64G	500GB
i-2zegn56cijnzklcn240k	172.25.230.227	Loadgen – 压 Easysearch	16	64G	500GB
i-2zegn56cijnzklcn240e	172.22.75.138	Loadgen – 压 Easysearch	16	64G	500GB

i-2zeg56cijnzklcn240h	172.24.250.255	Loadgen – 压 Elasticsearch	16	64G	500GB
i-2zeg56cijnzklcn240w	172.24.251.0	Loadgen – 压 Elasticsearch	16	64G	500GB
i-2zeg56cijnzklcn240g	172.24.250.248	Loadgen – 压 Elasticsearch	16	64G	500GB
i-2zeg56cijnzklcn240s	172.24.250.249	Loadgen – 压 Elasticsearch	16	64G	500GB

压测索引 Mapping

```
1  PUT nginx
2  {
3      "mappings": {
4          "properties": {
5              "method": {
6                  "type": "keyword"
7              },
8              "bandwidth": {
9                  "type": "integer"
10             },
11             "service_name": {
12                 "type": "keyword"
13             },
14             "ip": {
15                 "type": "ip"
16             },
17             "memory_usage": {
18                 "type": "integer"
19             },
20             "upstream_time": {
21                 "type": "float"
22             },
23             "url": {
24                 "type": "keyword"
25             },
26             "response_size": {
27                 "type": "integer"
28             },
29             "request_time": {
30                 "type": "float"
31             },
32             "request_body_size": {
33                 "type": "integer"
34             },
35             "error_code": {
36                 "type": "keyword"
37             },
38             "metrics": {
39                 "properties": {
40                     "queue_size": {
41                         "type": "integer"
42                     },
43                     "memory_usage": {
44                         "type": "integer"
45                     },
46                     "thread_count": {
47                         "type": "integer"
48                     },
49                     "cpu_usage": {
50                         "type": "integer"
51                     },
52                     "active_connections": {
```

```
53         "type": "integer"
54     }
55 }
56 },
57 "cpu_usage": {
58     "type": "integer"
59 },
60 "user_agent": {
61     "type": "keyword"
62 },
63 "connections": {
64     "type": "integer"
65 },
66 "timestamp": {
67     "type": "date",
68     "format": "yyyy-MM-dd'T'HH:mm:ss.SSS"
69 },
70 "status": {
71     "type": "integer"
72 }
73 }
74 },
75 "settings": {
76     "number_of_shards": 7,
77     "number_of_replicas": 0,
78     "refresh_interval": "30s"
79 }
80 }
```

压测方法

每 4 个 loadgen 使用批量写入接口 bulk 轮询压测同一集群的 7 个节点，每个请求写入 10000 个文档。

具体请求如下：

```

1  requests:
2    - request: #prepare some docs
3      method: POST
4      runtime_variables:
5        # batch_no: uuid
6      runtime_body_line_variables:
7        # routing_no: uuid
8        # url: ${env.ES_ENDPOINT}}/_bulk
9      url: ${ip}}/_bulk
10     body_repeat_times: 10000
11     basic_auth:
12       username: "${env.ES_USERNAME}"
13       password: "${env.ES_PASSWORD}"
14     body: |
15       {"index": {"_index": "nginx", "_type": "_doc", "_id": "${uuid}}"}
16       ${message}]

```

压测数据样本

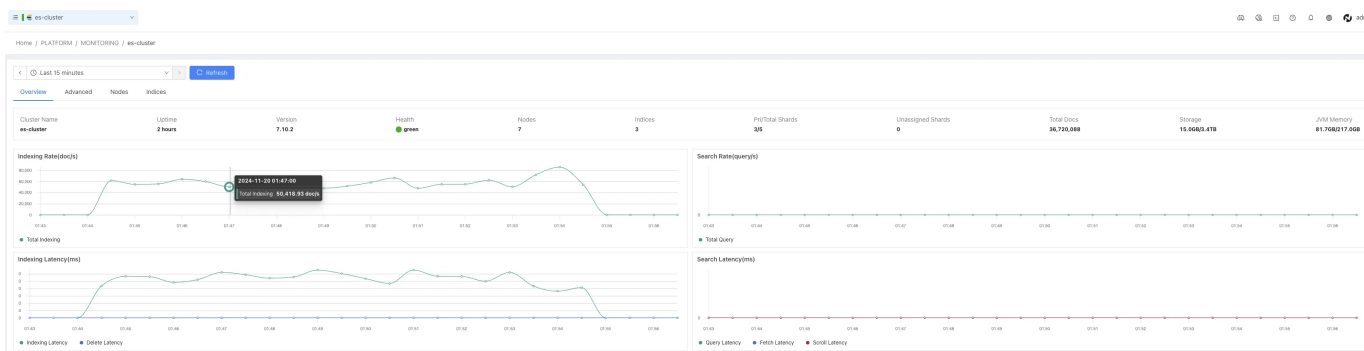
```

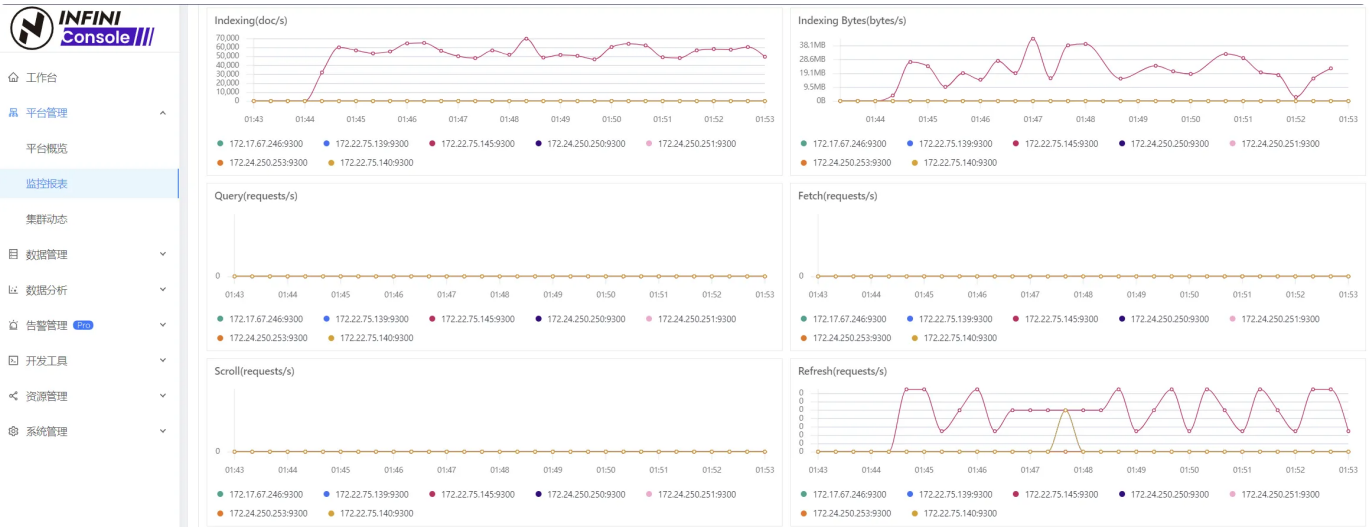
1  {"method":"DELETE","bandwidth":1955,"service_name":"cart-service","ip":"120.204.26.24
0","memory_usage":1463,"upstream_time":"1.418","url":"/health","response_size":421,"req
uest_time":"0.503","request_body_size":1737,"error_code":"SYSTEM_ERROR","metrics":{"que
ue_size":769,"memory_usage":1183,"thread_count":65,"cpu_usage":68,"active_connections":
837},"cpu_usage":70,"user_agent":"Mozilla/5.0 (iPad; CPU OS 14_6 like Mac OS X) AppleWe

```

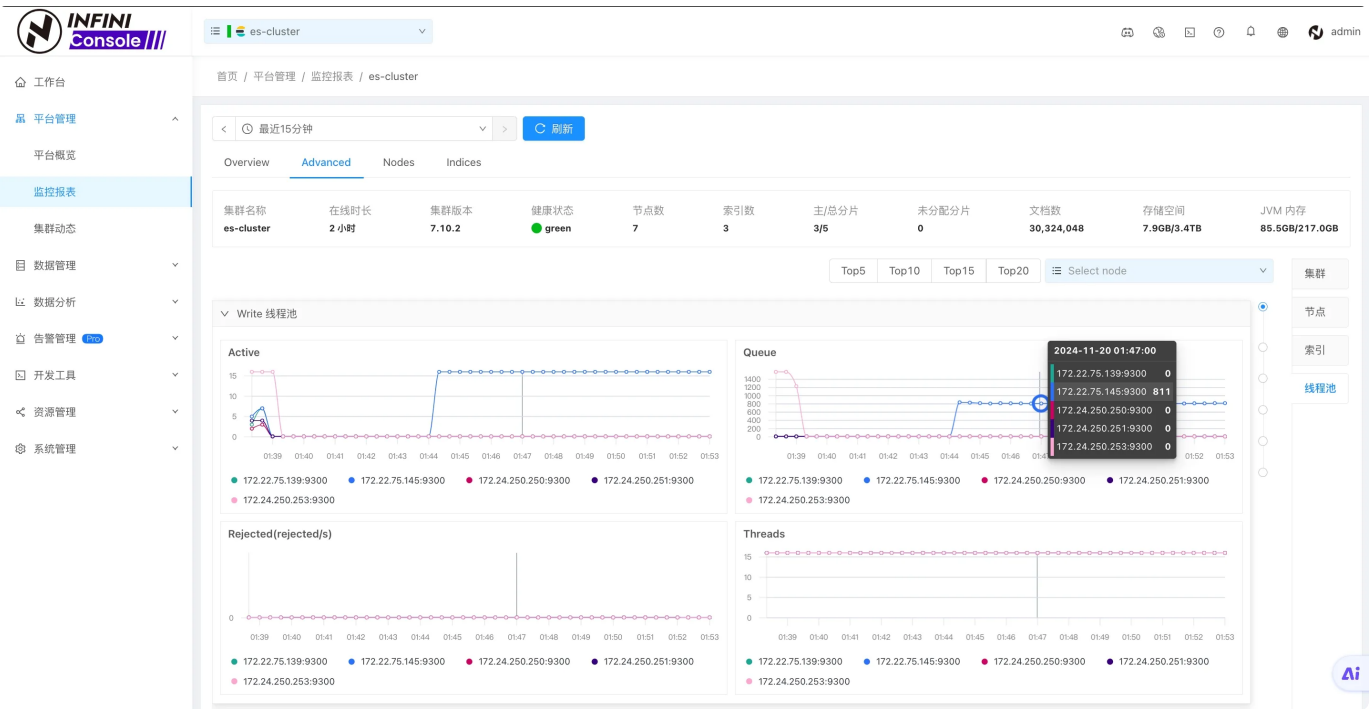
压测索引 1 主分片 0 副本

Elastic 吞吐

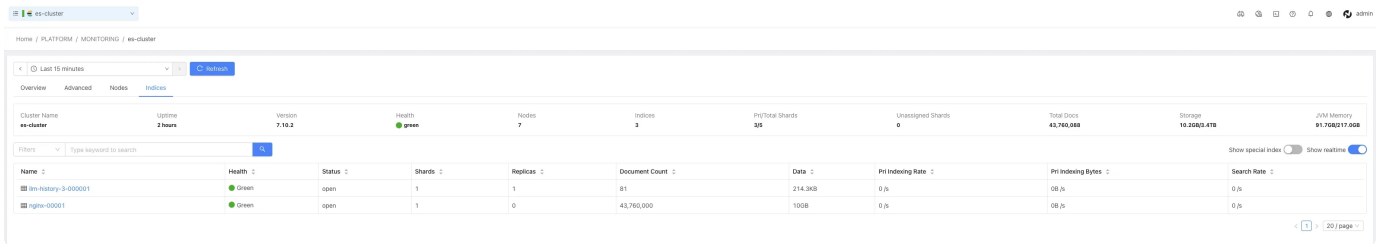
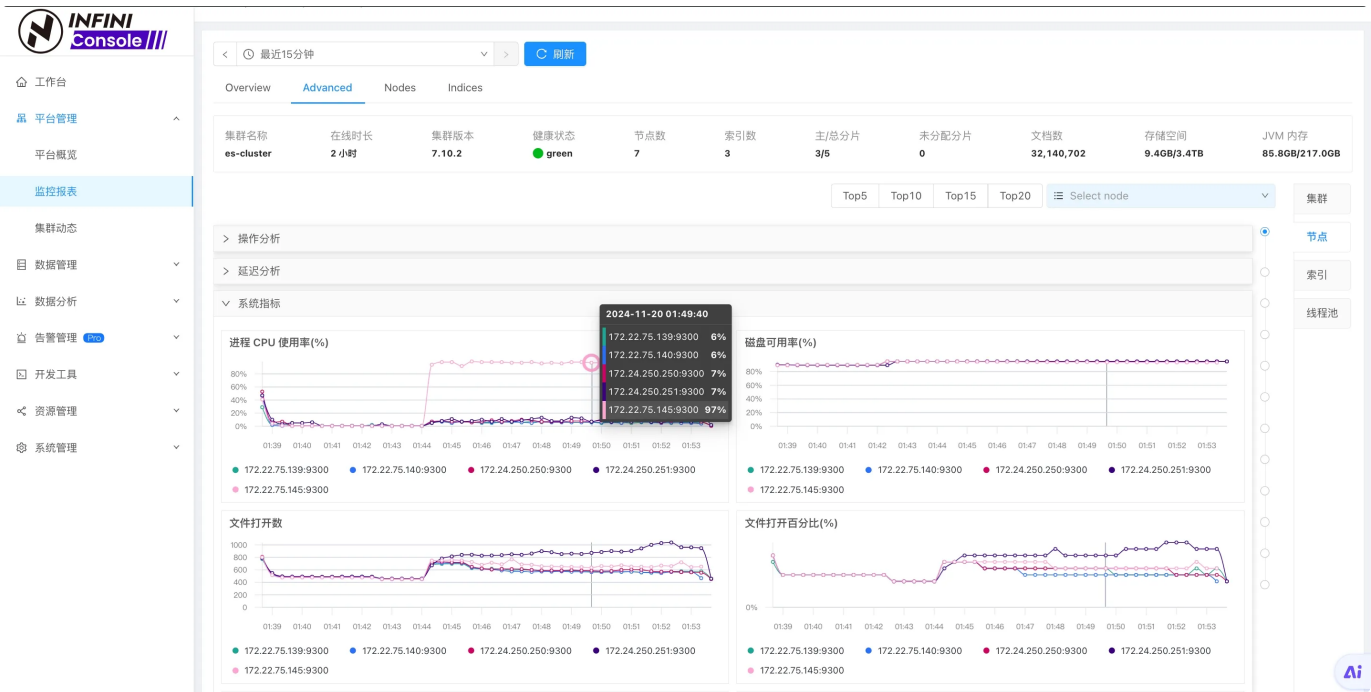




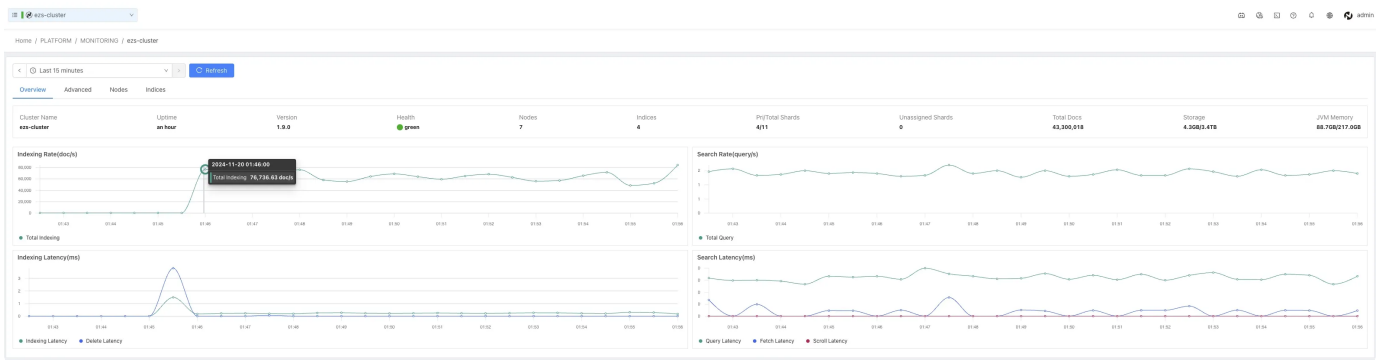
Elastic 线程及队列



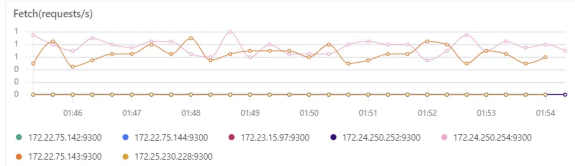
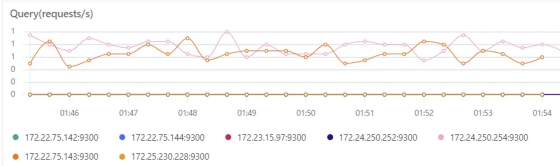
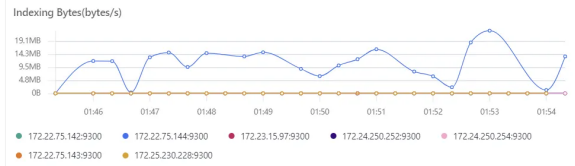
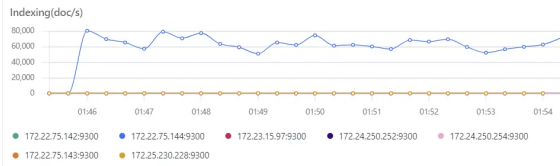
资源消耗



Easysearch 吞吐



操作分析



Easysearch 线程及队列

ezs-cluster

admin

首页 / 平台管理 / 监控报表 / ezs-cluster

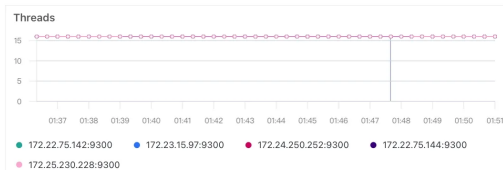
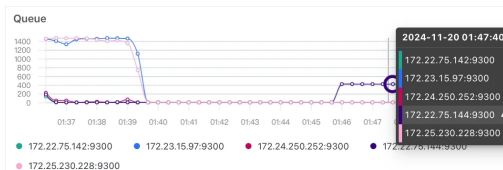
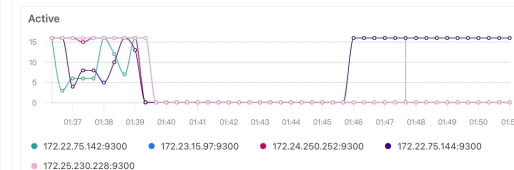
最近15分钟

Overview Advanced Nodes Indices

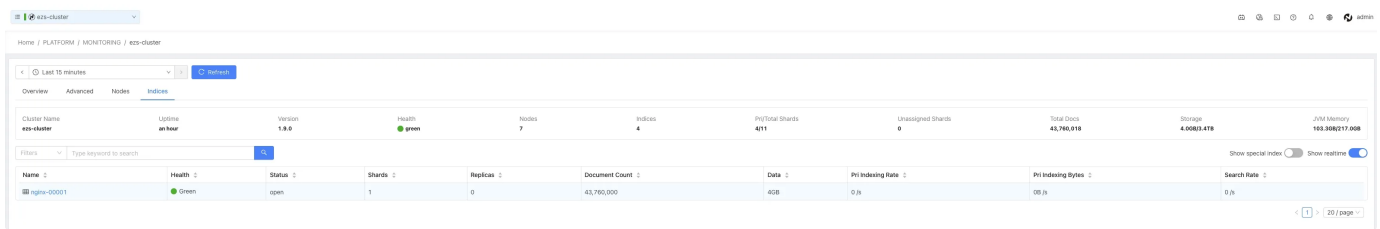
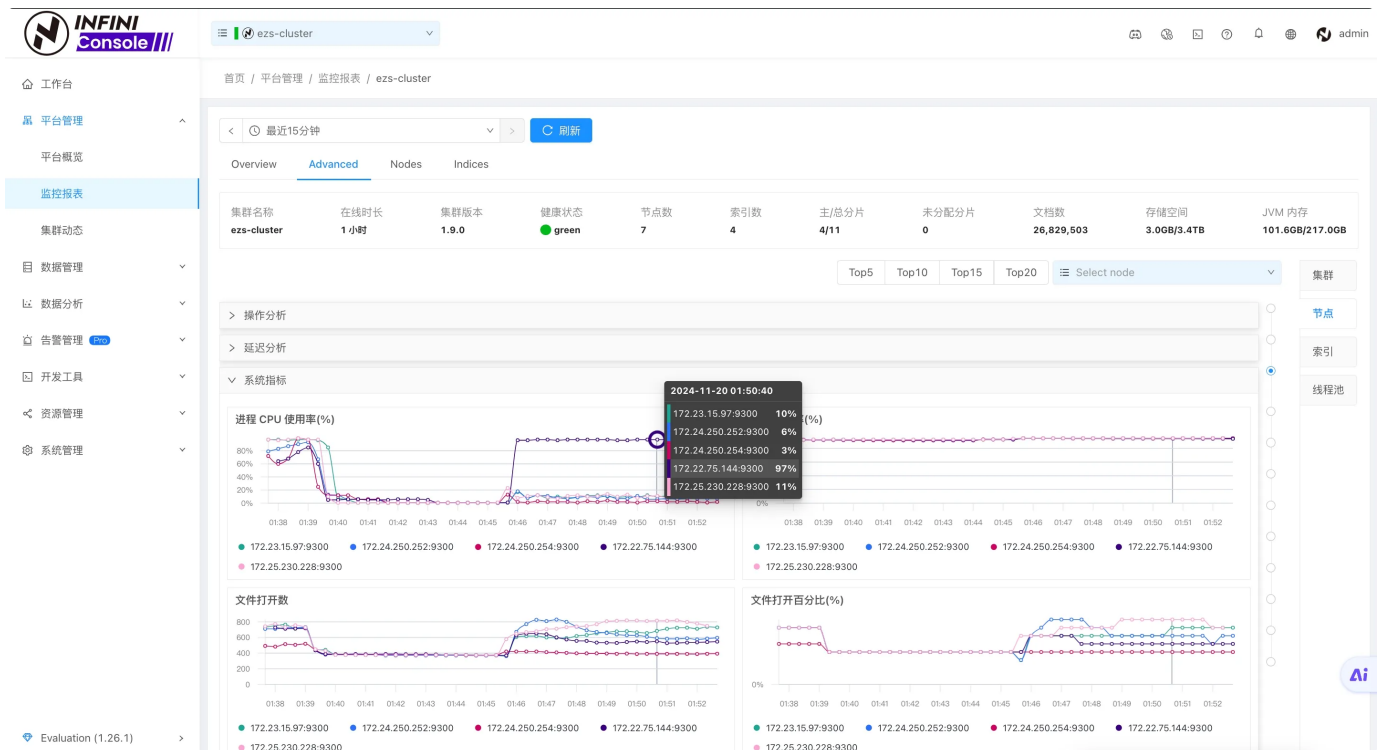
集群名称	在线时长	集群版本	健康状态	节点数	索引数	主/总分片	未分配分片	文档数	存储空间	JVM 内存
ezs-cluster	1 小时	1.9.0	green	7	4	4/11	0	21,605,361	2.30B/3.4TB	116.80B/217.00B

Top5 Top10 Top15 Top20 Select node

Write 线程池



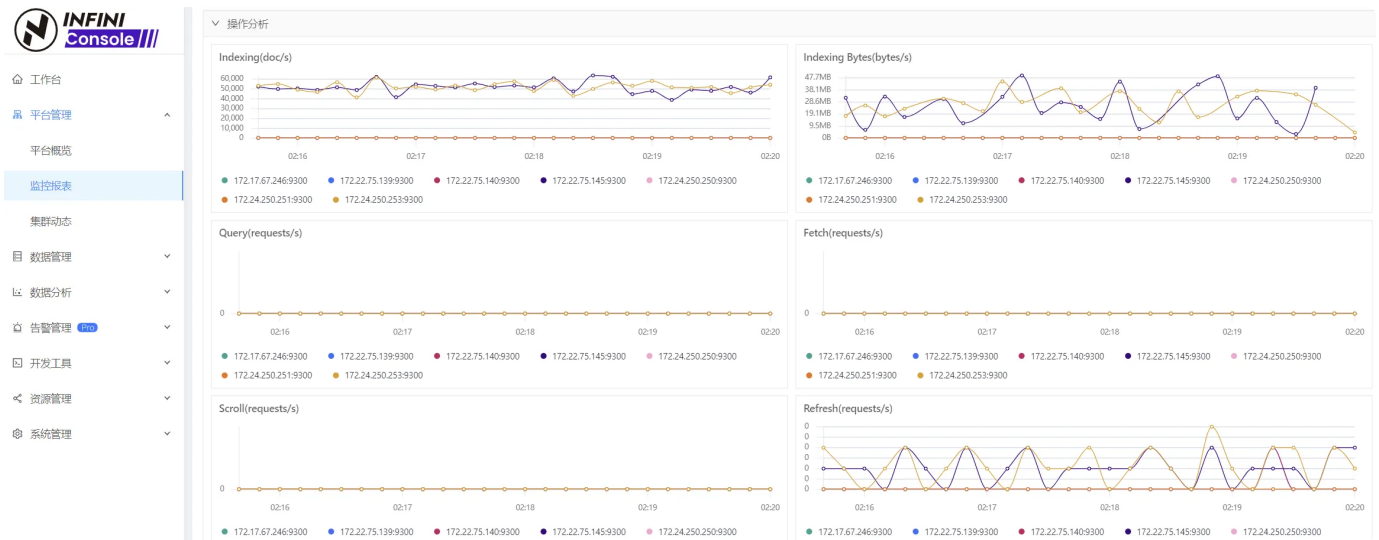
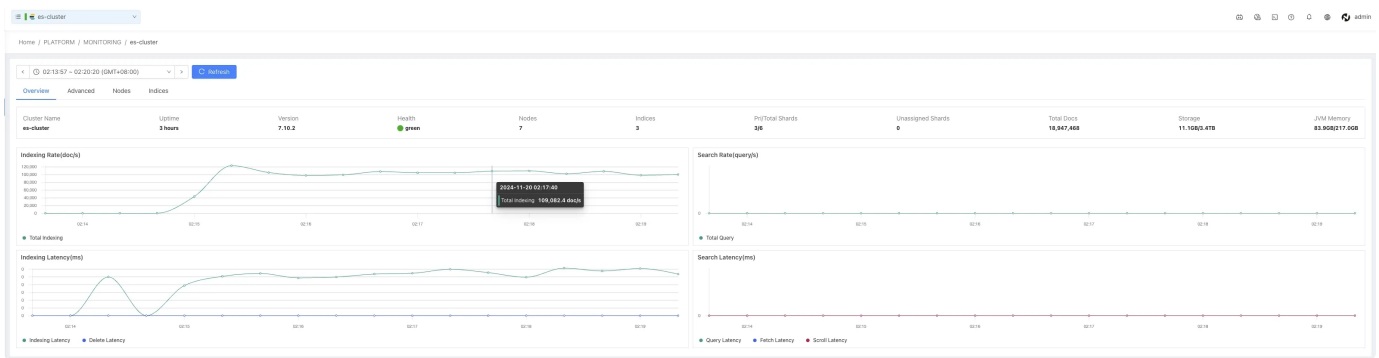
资源消耗



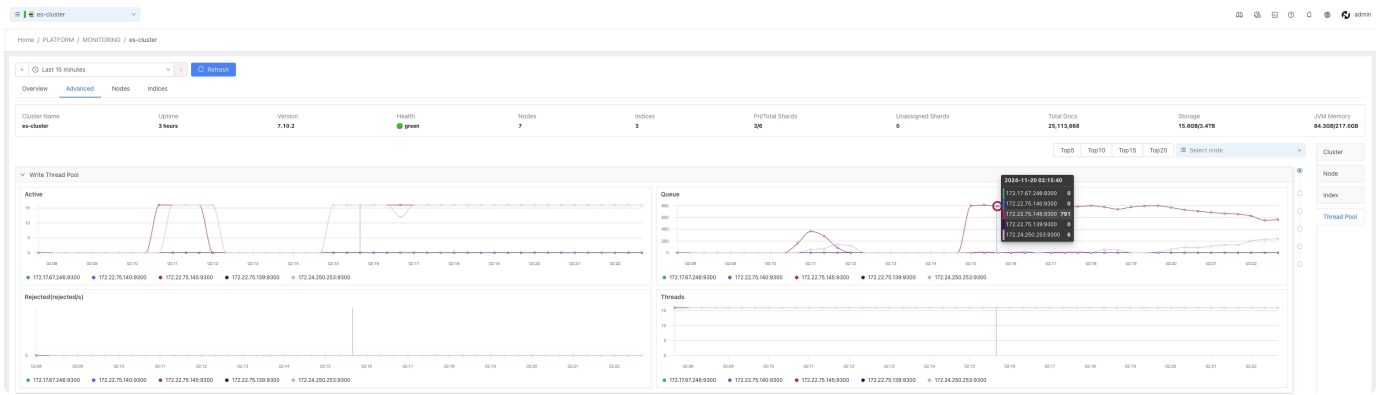
软件	平均集群吞吐	平均单节点吞吐	最大队列	磁盘消耗
Elasticsearch	5w	5w	811	10G
Easysearch	7w	7w	427	4G

压测索引 1 主分片 1 副本

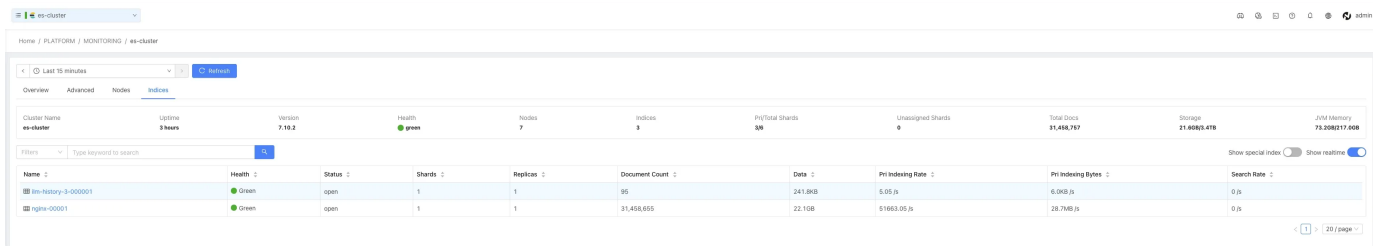
Elastic 吞吐



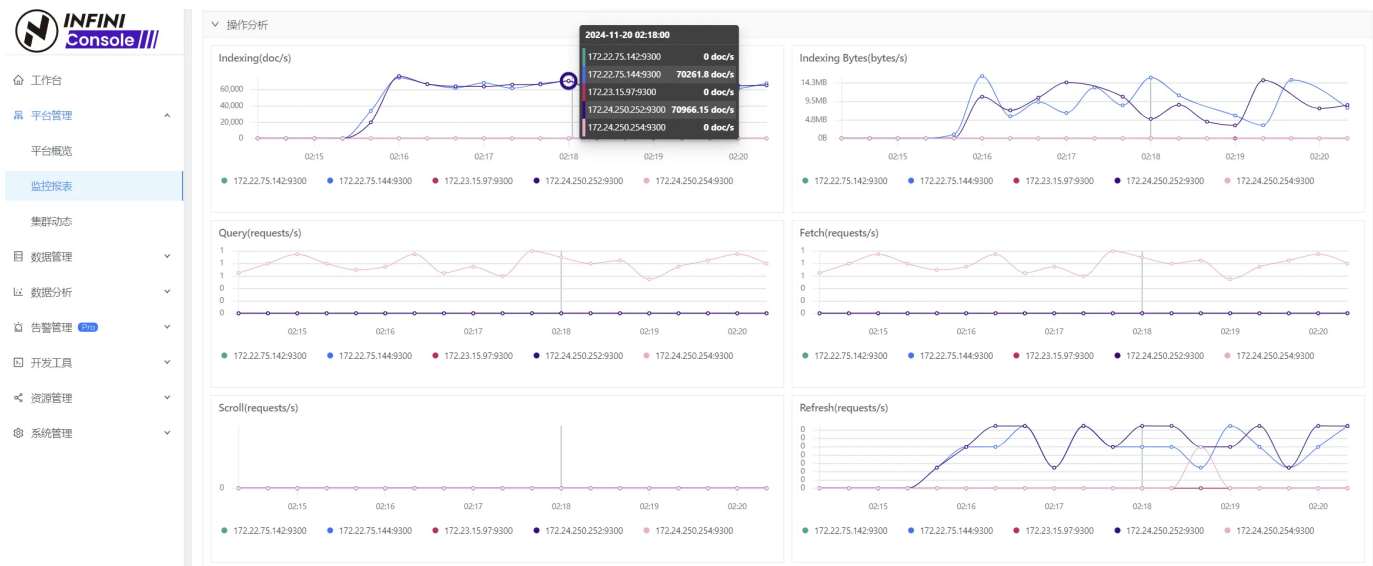
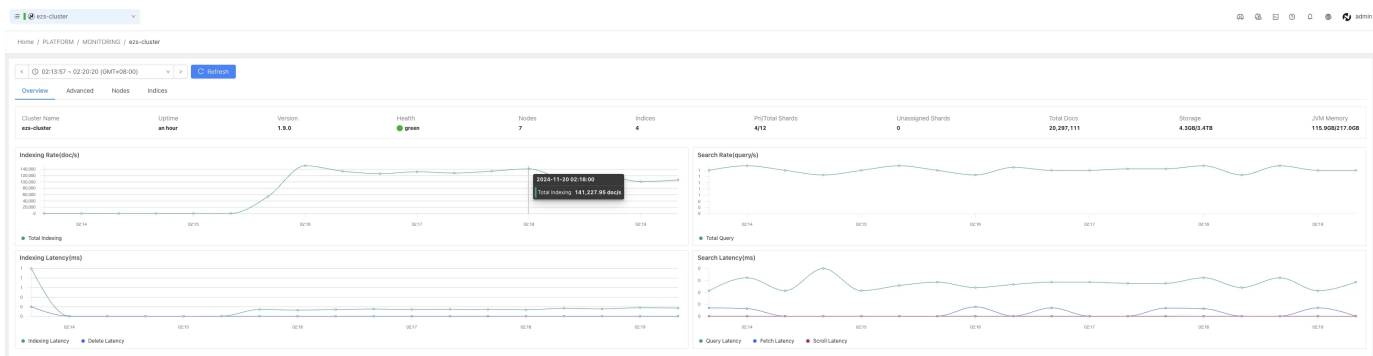
Elastic 线程及队列



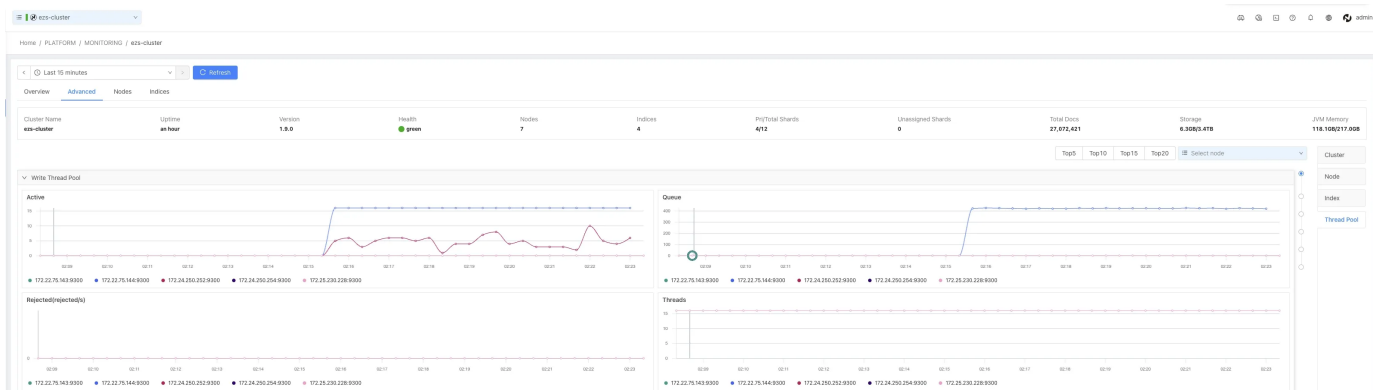
资源消耗



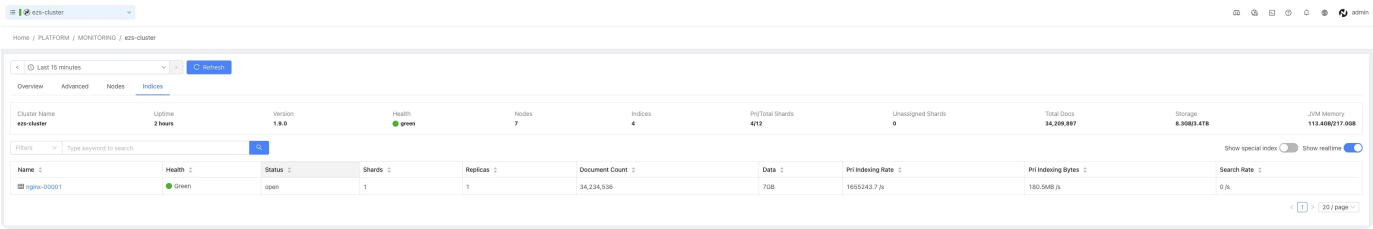
Easysearch 吞吐



Easysearch 线程及队列



资源消耗

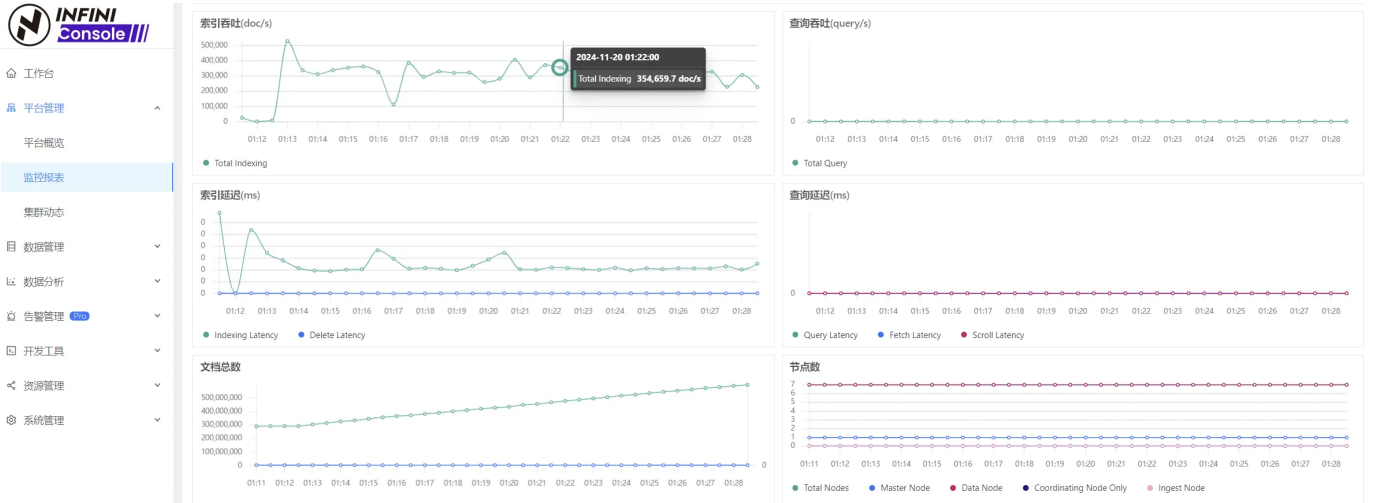


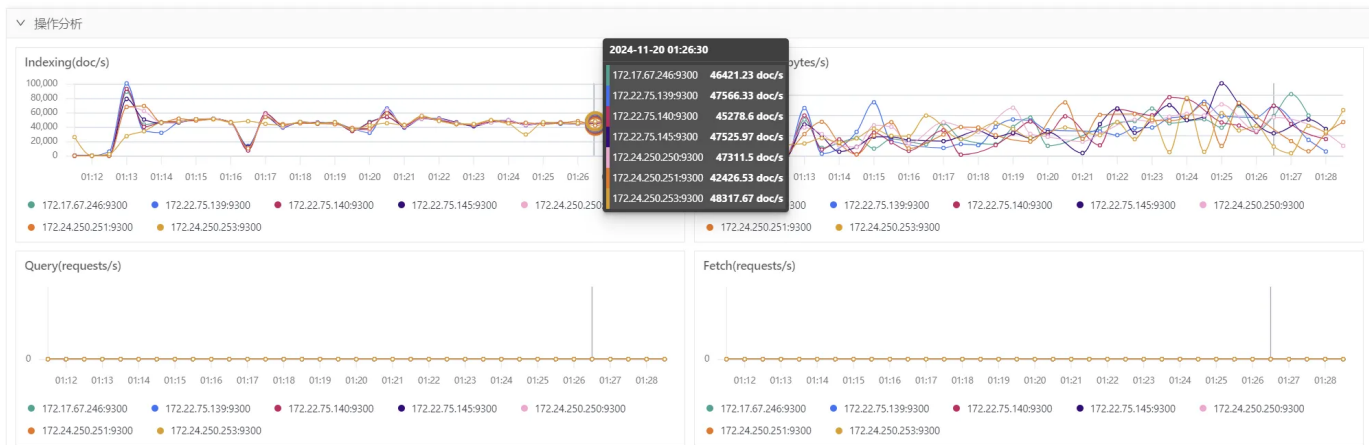
对比

软件	平均集群吞吐	平均单节点吞吐	最大队列	磁盘消耗(~3000万文档)
Elasticsearch	10w	5w	791	22G
Easysearch	14w	7w	421	7G

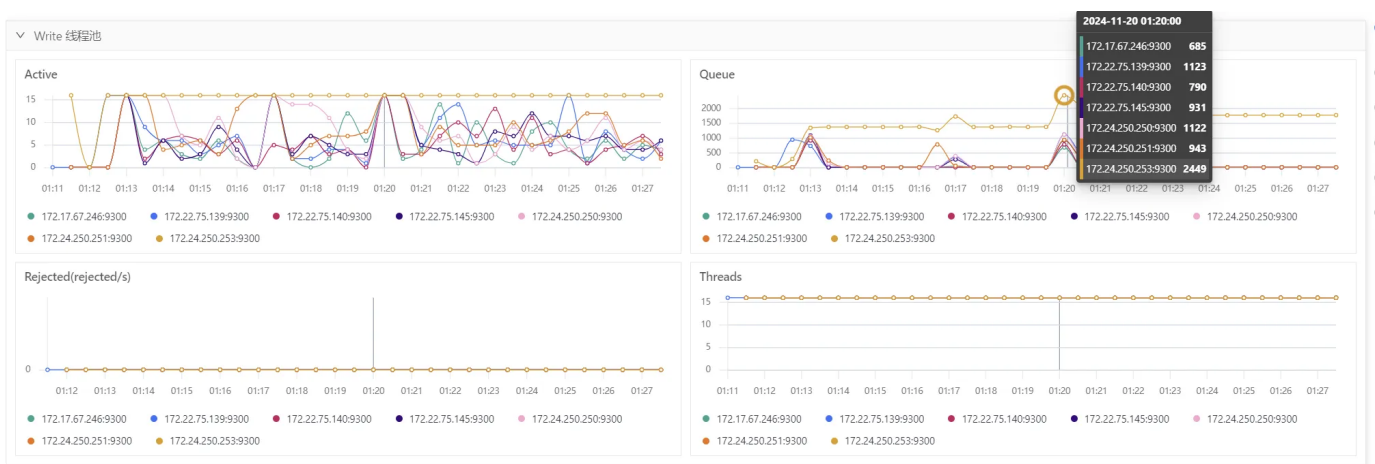
压测索引 7 主分片

Elastic 吞吐



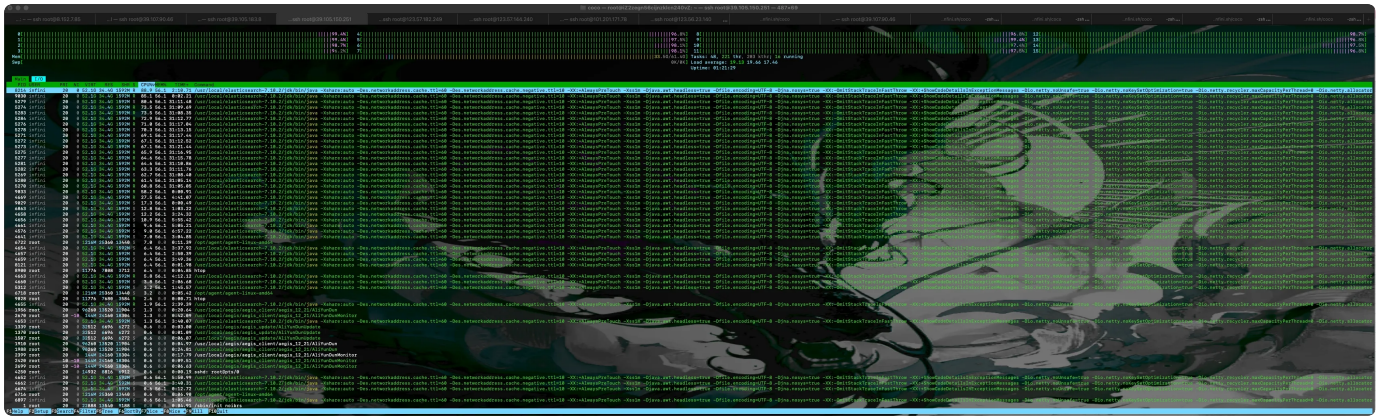


Elastic 线程及队列



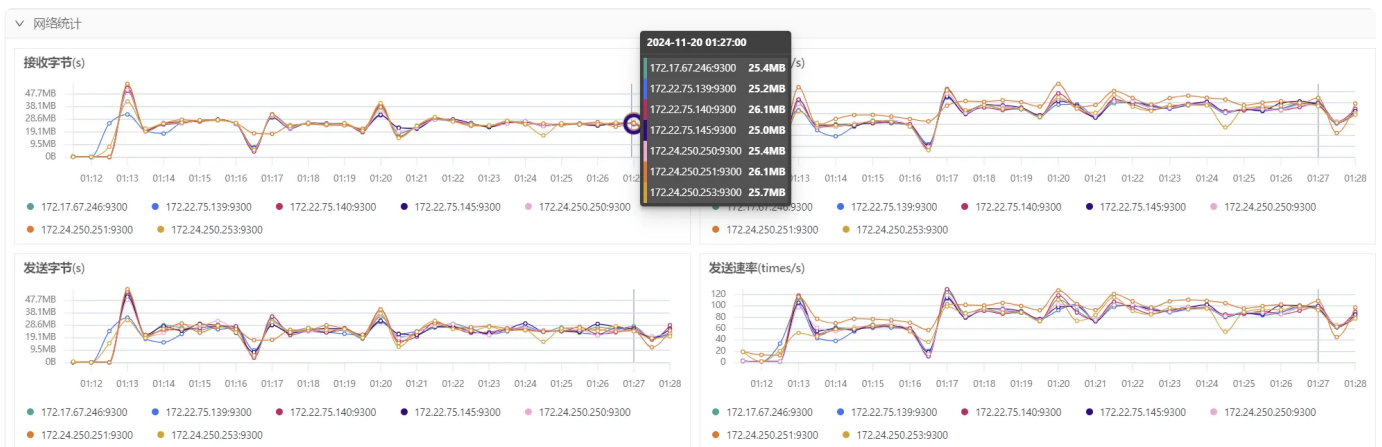
资源消耗



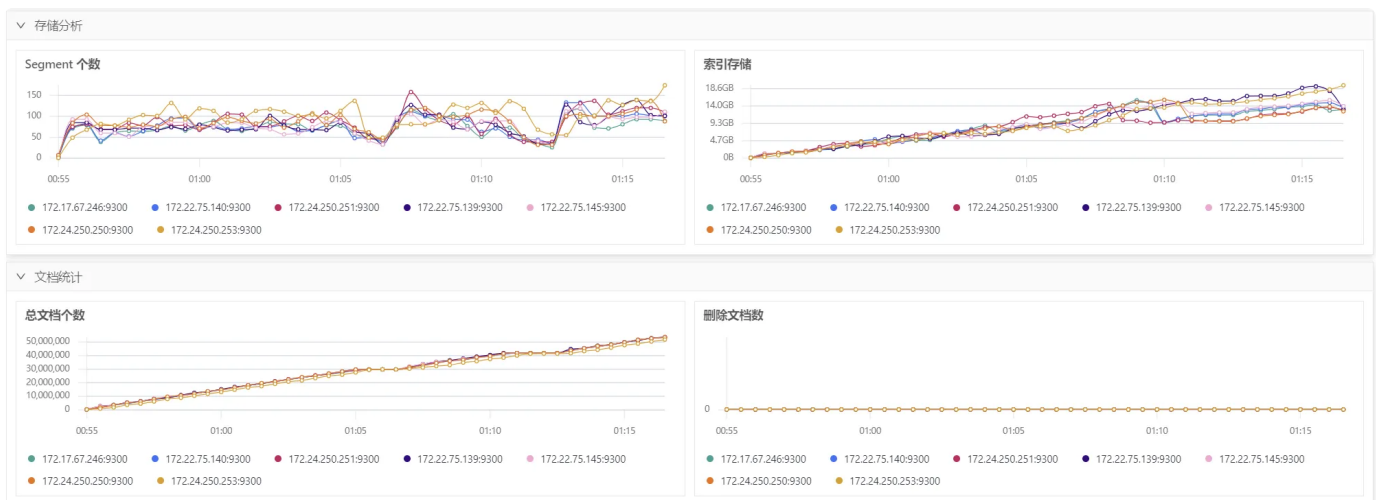


网络

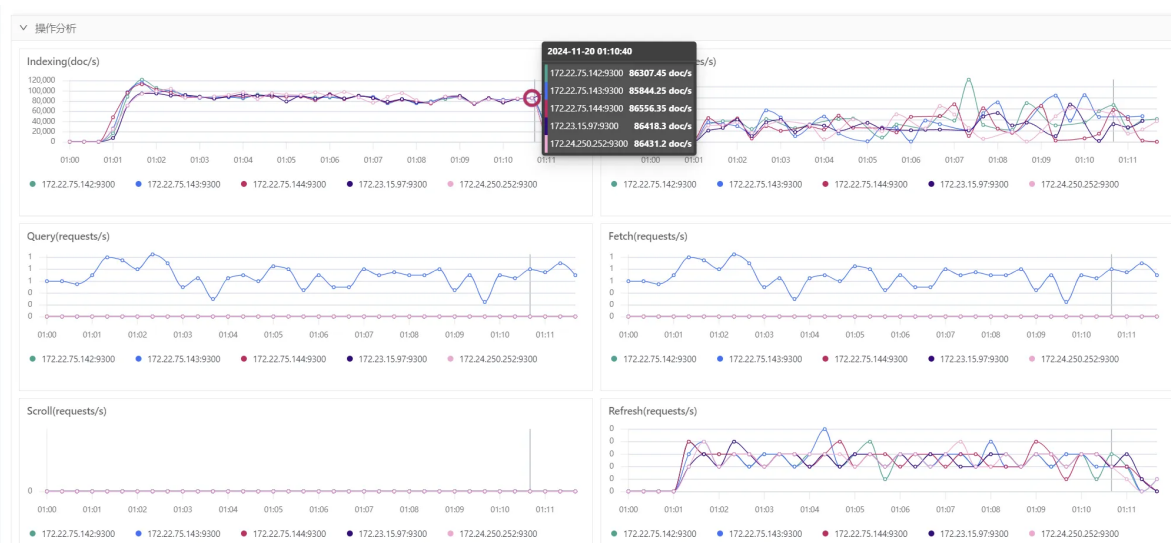
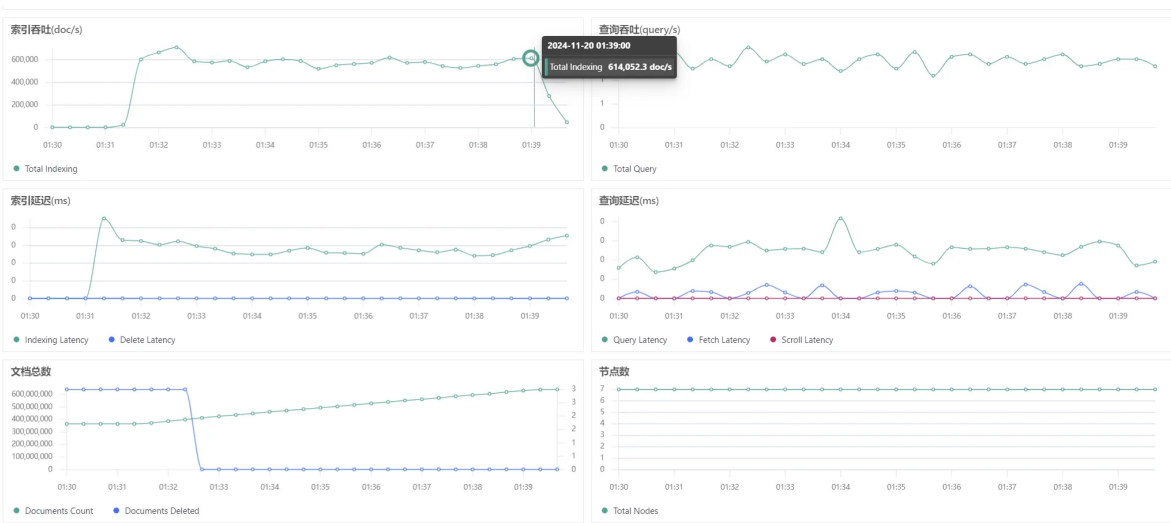
单节点平均接收 26MB/s，对应带宽：1456 Mb/s



5千万文档，总存储 105 GB，单节点 15 GB



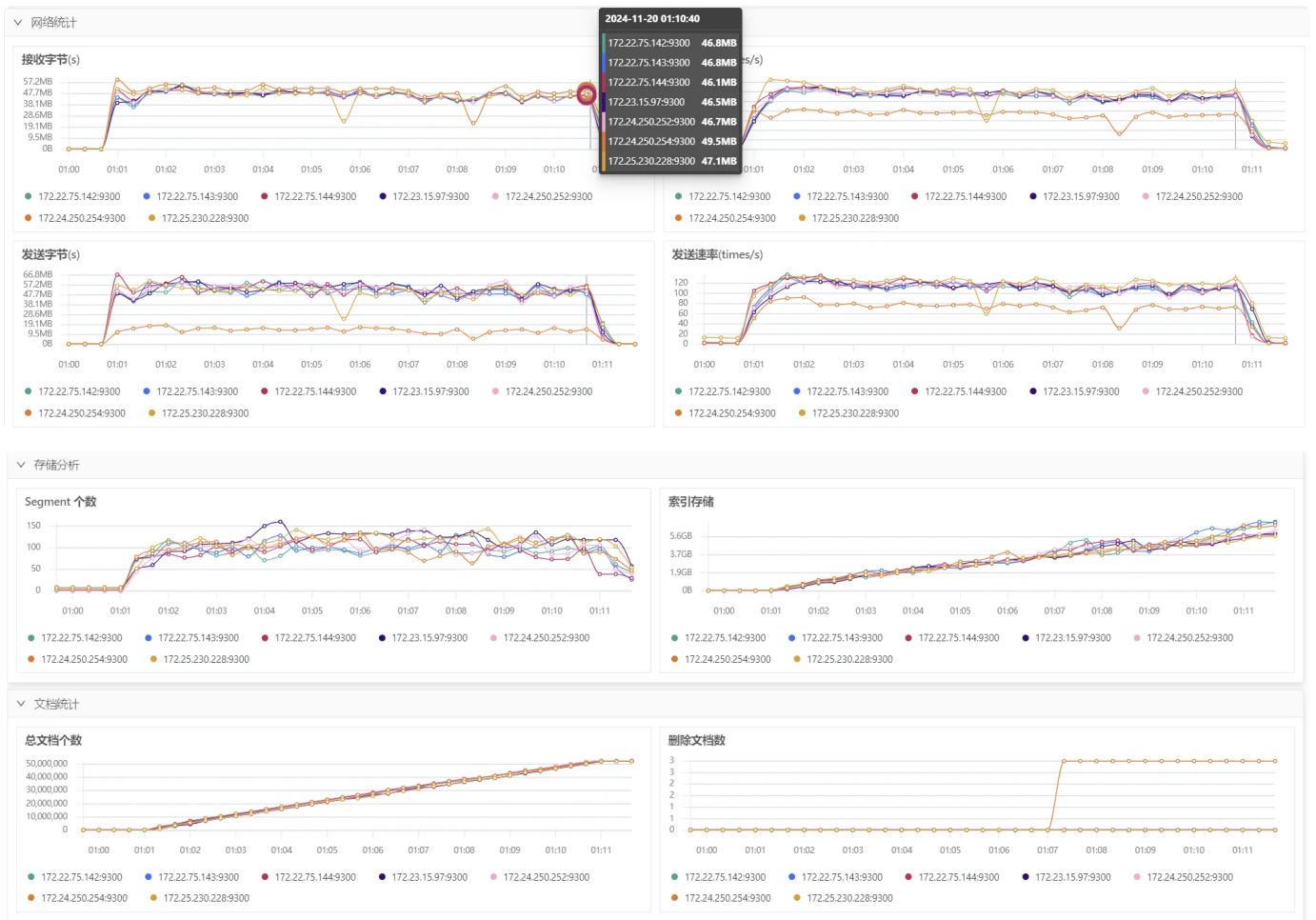
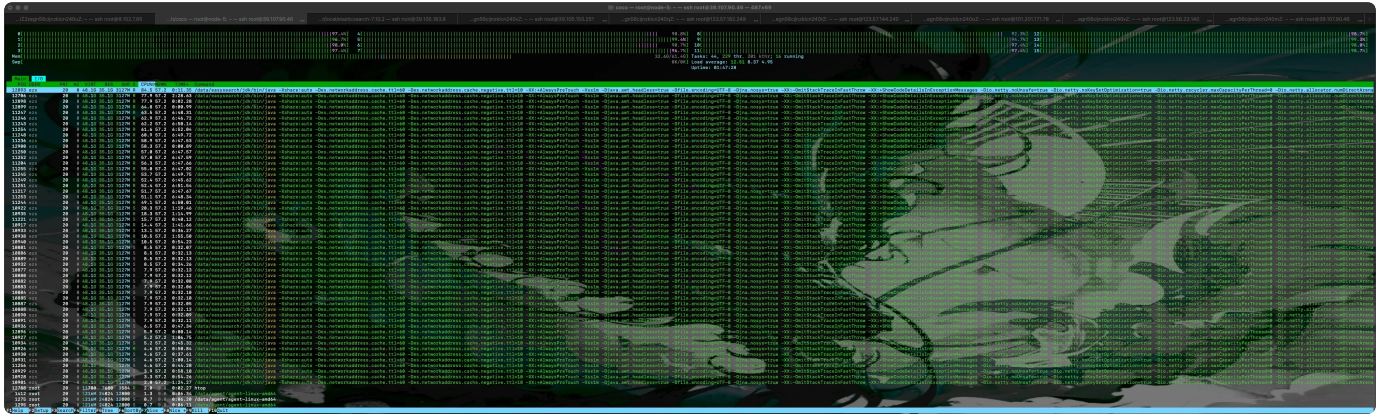
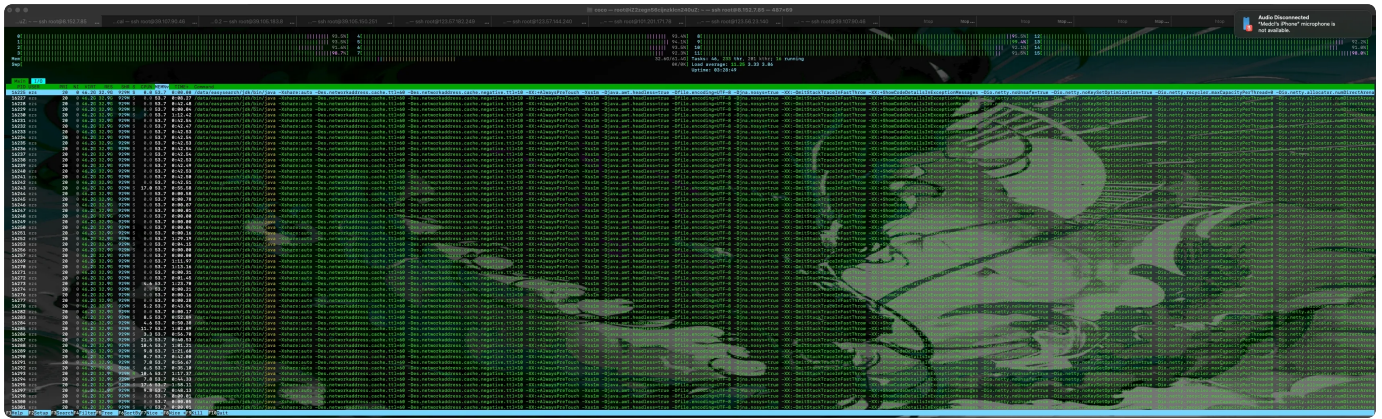
Easysearch 吞吐



Easysearch 线程及队列



资源消耗



对比

软件	平均集群吞吐	平均单节点吞吐	最大队列	磁盘消耗
Elasticsearch	35w	5w	2449	105G
Easysearch	60w	8.5w	1172	36G

总结

通过对不同场景的压测结果进行对比分析，得出以下结论：

- Easysearch 相比 Elasticsearch 的索引性能显著提升
Easysearch 集群的吞吐性能提升了 40% – 70%，且随着分片数量的增加，性能提升效果更为显著。
- Easysearch 相比 Elasticsearch 的磁盘压缩效率大幅提高
Easysearch 集群的磁盘压缩效率提升了 2.5 – 3 倍，并且随着数据量的增加，压缩效果愈发明显。

此测试结果表明，Easysearch 在日志处理场景中具有更高的性能与存储效率优势，尤其适用于大规模分片与海量数据的使用场景。

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