

Доктор, откуда у вас такие
картинки?

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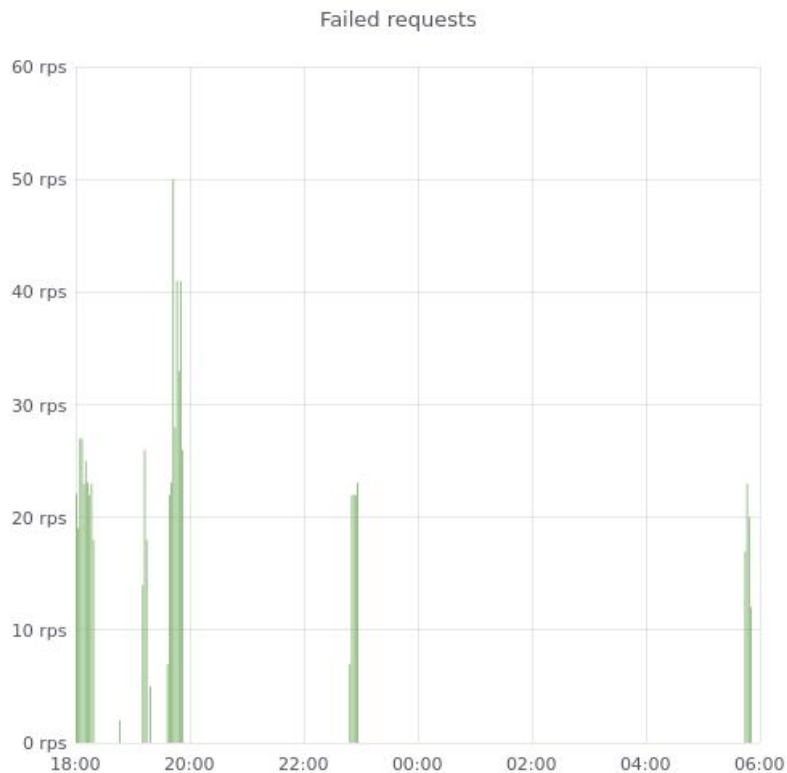
“Дырки” на графиках

Сколько ошибок было в полночь?



```
SELECT
    $timeSeries AS t,
    count() as requests
FROM $table
WHERE
    $timeFilter
    AND failed = 1
GROUP BY
    t
ORDER BY
    t
```

Используем bars

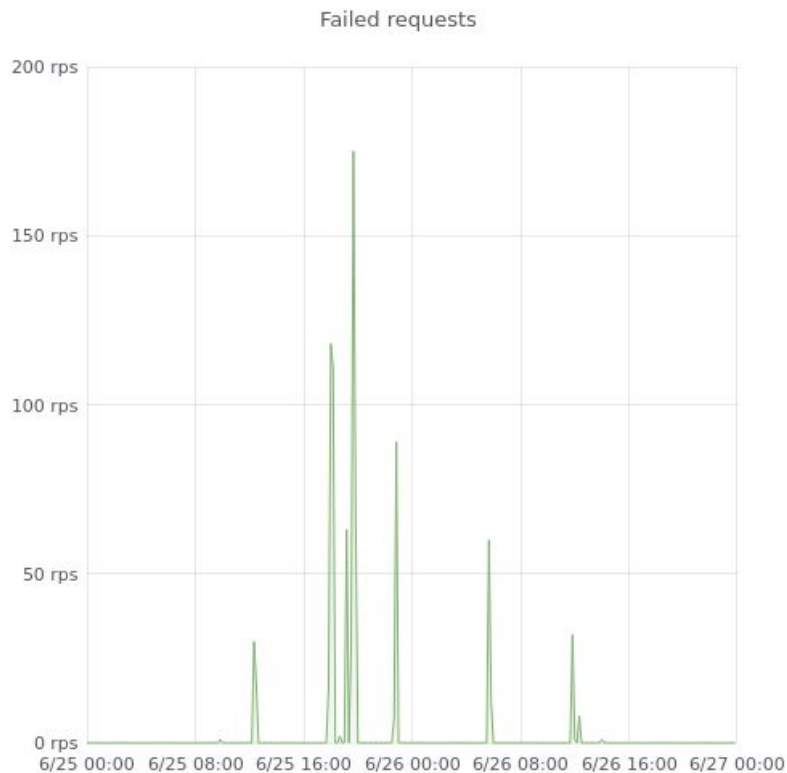


```
SELECT
    $timeSeries AS t,
    count() as requests
FROM $table
WHERE
    $timeFilter
    AND failed = 1
GROUP BY
    t
ORDER BY
    t
```

Заполняем пустоты нулями

```
SELECT
    (intDiv($from,$interval) + i) * $interval * 1000 as t
FROM system.one
ARRAY JOIN
    range(toUInt32(ceil(($to - $from)/$interval))) as i
```

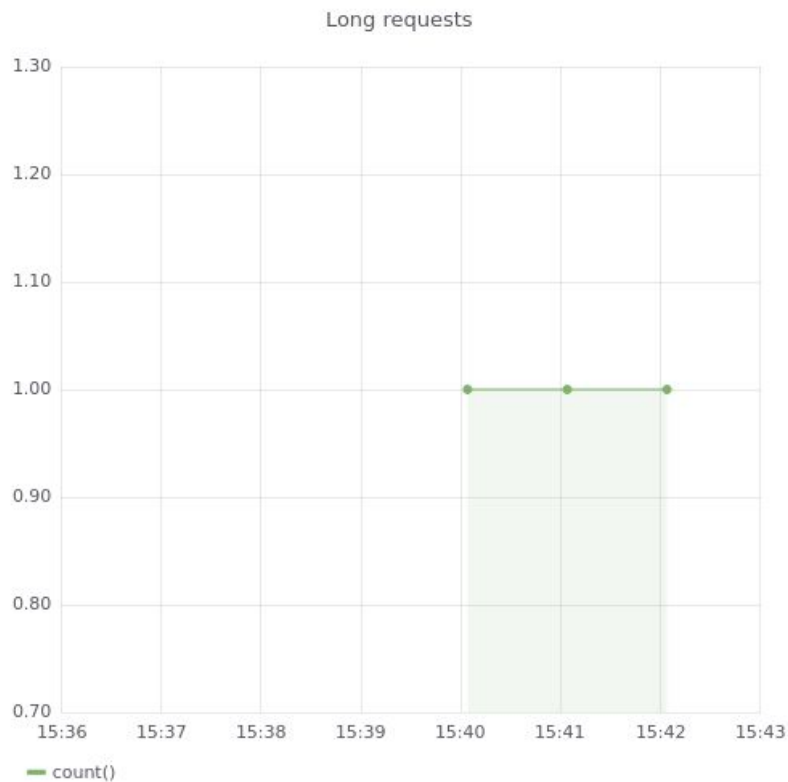
Теперь линии тоже рисуются правильно



```
SELECT
  t,
  requests
FROM (
  ... original query ...
)
ANY RIGHT JOIN (
  ... range query ...
) USING t
ORDER BY t
```

Берём производную

Непонятно, что запросы долгие



```
SELECT
    $timeSeries as t,
    count()
FROM $table
WHERE $timeFilter
GROUP BY t
ORDER BY t
```


А они долгие

```
SELECT *  
FROM long_requests  
ORDER BY datetime ASC  
FORMAT PrettyCompactMonoBlock
```

datetime		duration
2019-06-26	08:40:05	60
2019-06-26	08:41:05	300
2019-06-26	08:42:05	300

Берём производную (sort of)

```
SELECT
  t,
  sum(metric) AS metric
FROM (
  SELECT
    toUInt32(datetime) AS request_end,
    request_end - duration AS request_start,
    (intDiv(request_start,$interval)+i)*$interval*1000 as t,
    greatest(t, request_start*1000) AS chunk_start,
    least(t + $interval, request_end*1000) AS chunk_end,
    (chunk_end - chunk_start)/$interval AS metric
  FROM long_requests
  ARRAY JOIN
    range(toUInt32(ceil(duration/$interval))+1) as i
)
GROUP BY t
ORDER BY t
```

Берём производную (sort of)

toDateTime(chunk_start)	toDateTime(chunk_end)	metric
2019-06-26 08:39:05	2019-06-26 08:39:10	0.5
2019-06-26 08:39:10	2019-06-26 08:39:20	1
2019-06-26 08:39:20	2019-06-26 08:39:30	1
2019-06-26 08:39:30	2019-06-26 08:39:40	1
2019-06-26 08:39:40	2019-06-26 08:39:50	1
2019-06-26 08:39:50	2019-06-26 08:40:00	1
2019-06-26 08:40:00	2019-06-26 08:40:05	0.5

Видим, когда сколько запросов выполнялось



Считаем рост аудитории

Считаем рост аудитории

```
SELECT
    t,
    runningAccumulate(users_state) AS users
FROM (
    SELECT
        $timeSeries AS t,
        uniqState(user_id) AS users_state
        ...
    GROUP BY
        t
    ORDER BY
        t ASC
)
```

Считаем рост аудитории

