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Visualizing the Health of Your Mobile App

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September 26, 2017 | Washington, DC

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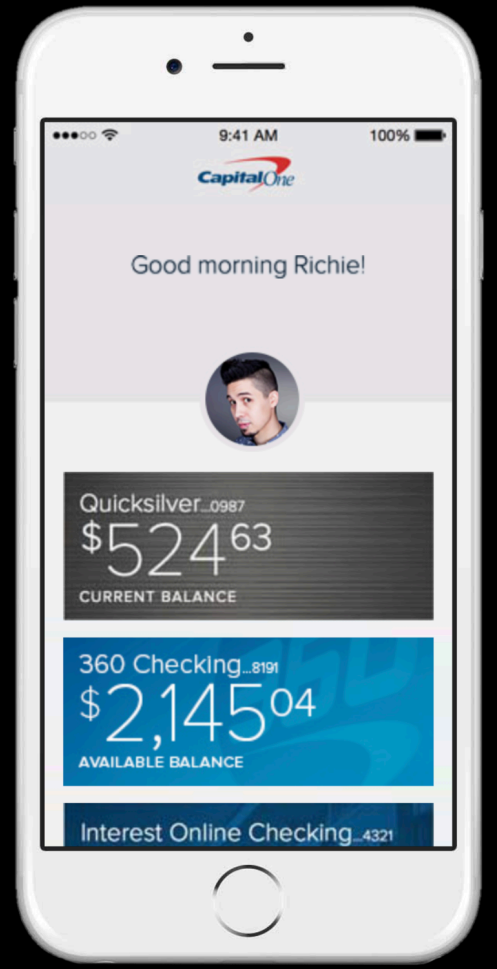
Capital One for iPhone/iPad

- Check balances, pay bills, deposit checks, redeem rewards, etc.
- Winner, J.D. Power and Associates 2017 U.S. Banking App
- Millions of users



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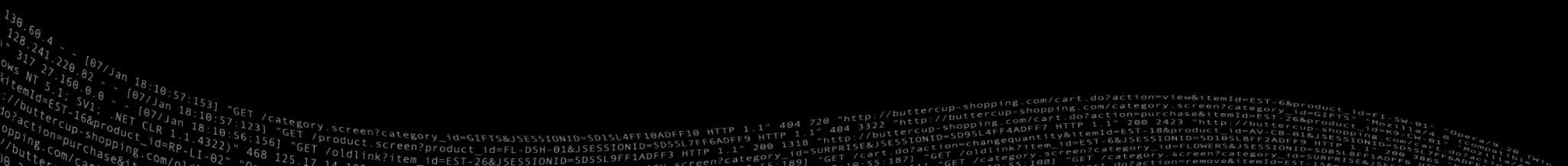
Agenda

- Why use Splunk instead of client-side analytics?
- Handle large volumes of data by narrowing your scope
- Visualize your results



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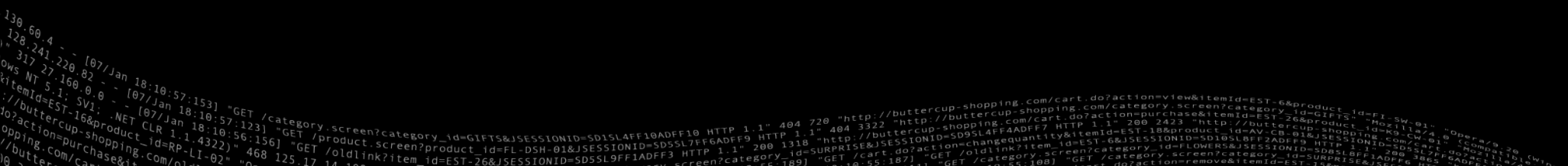
Why not client analytics?

Client analytics

- Might not have instrumentation for all code paths
- Doesn't cover unexpected behavior
- Doesn't include server error

Splunk

- Faster
- Easier comparison across metrics
- Easy, flexible visualizations



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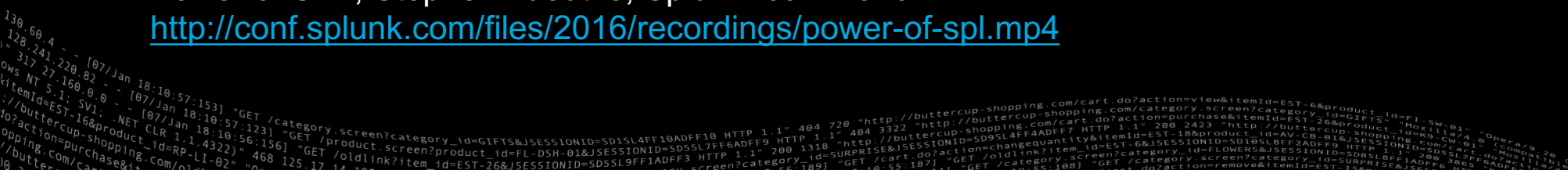
Narrow your events

Limit the scope ASAP

search and filter | munge | report | cleanup

- Everything you do after the search step will benefit from less data to process
- `index=security | spath "response.loginStatus" | search "response.loginStatus"=DENIED`

Power of SPL, Stephen Luedtke, Splunk .conf 2016
http://conf.splunk.com/files/2016/recordings/power-of-spl.mp4



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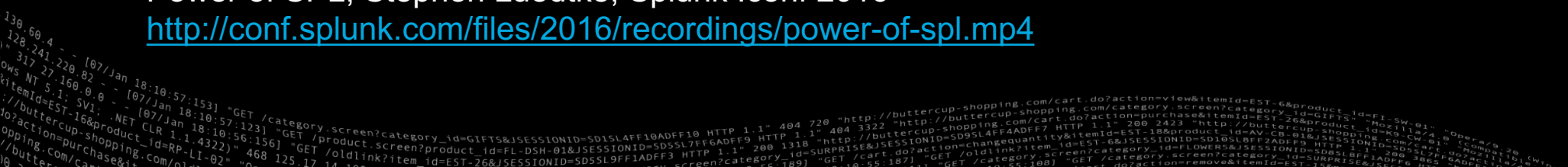

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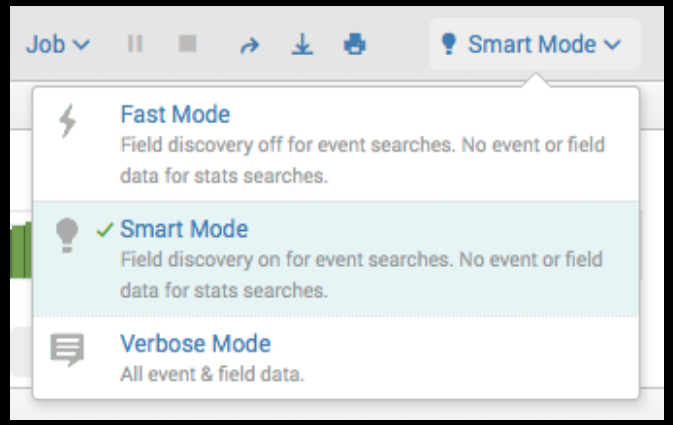
Narrow your events

Limit the scope ASAP

search and filter | munge | report | cleanup

- Everything you do after the search step will benefit from less data to process
- `index=security` **`DENIED`** `| spath "response.loginStatus" | search "response.loginStatus"=DENIED`
- Sampling
- Fast mode
  Or even `| stats count`



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Narrow your events

Comparing Thursday to Thursday of the previous week

- ```
  index=access URL="/v1/login" date_wday=thursday
    | timechart count span=1h
    | timewrap w
    | where strftime(_time,"%u")="4"
  ```
- Time range of 1 week means that search head retrieves a lot of data, so limit it to what you really need.

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  ```

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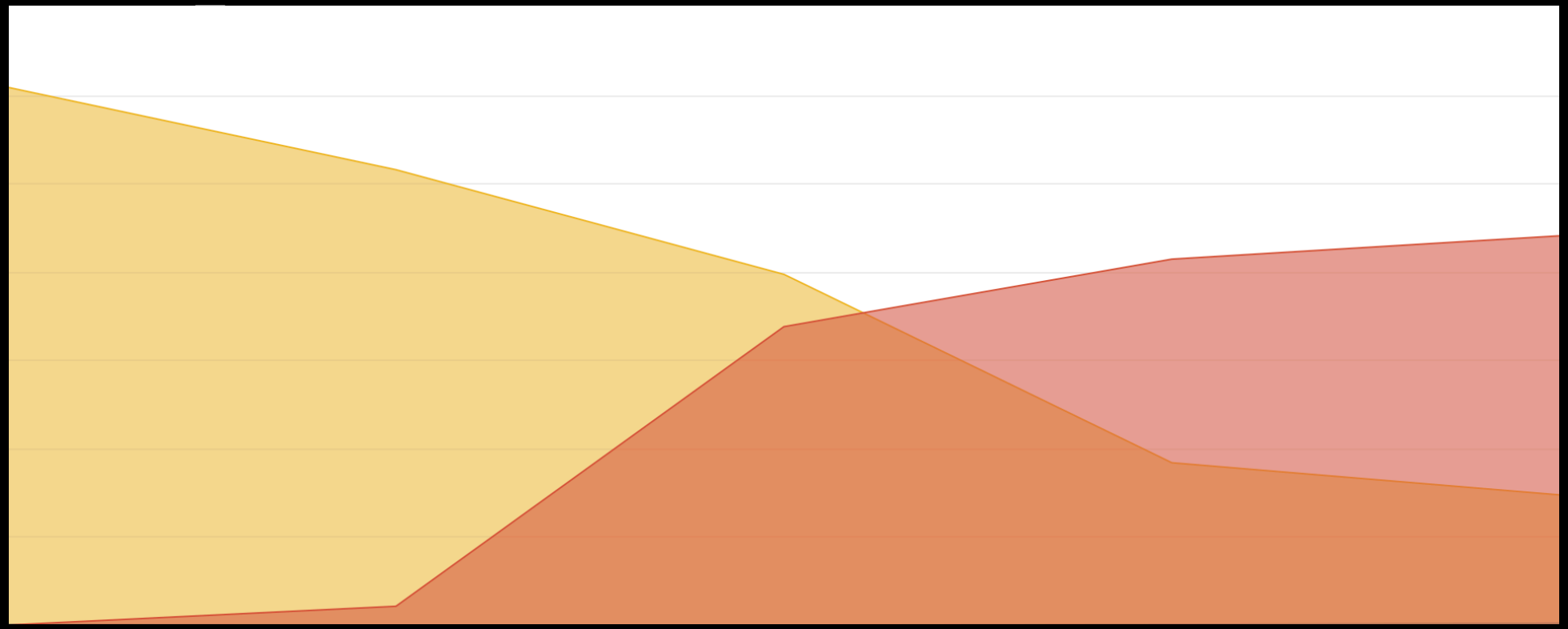
Case study: spike in call rate

Visual

- `index=access URL="/v1/login" | timechart count by client_version`



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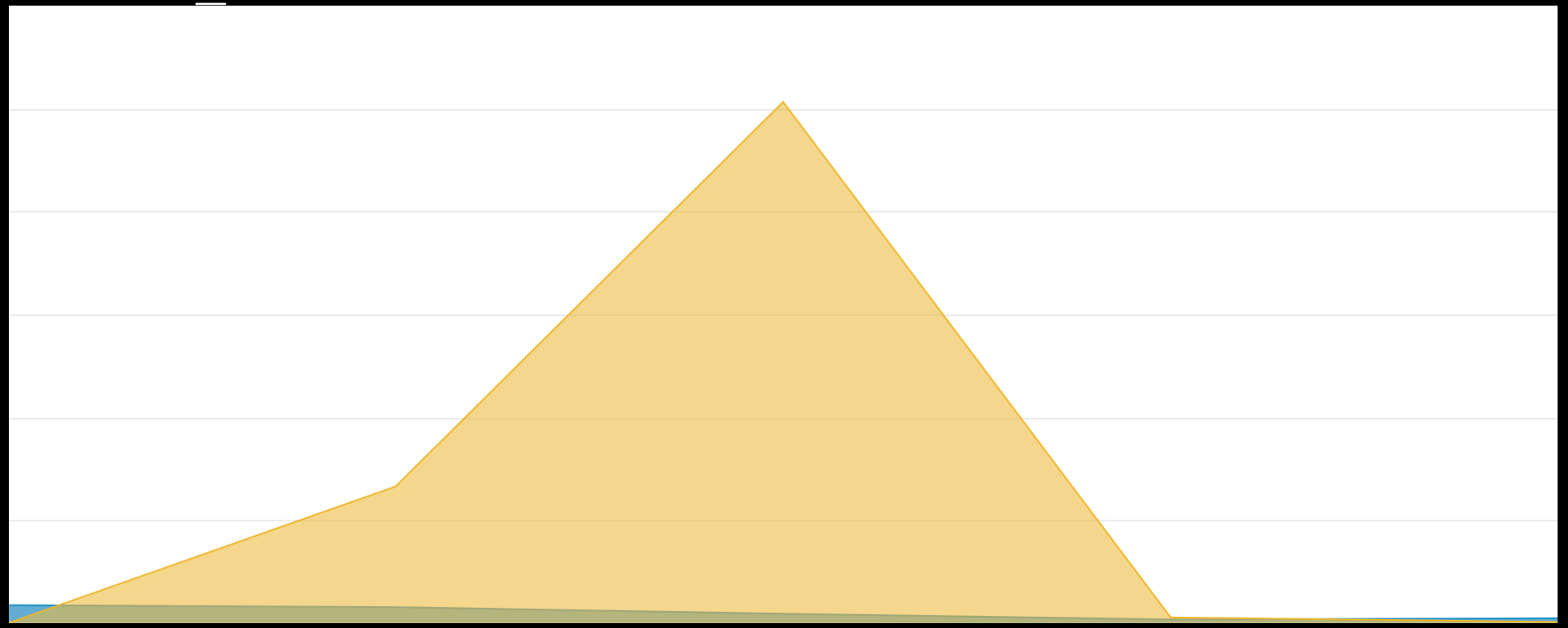
Case study: spike in call rate

Visual

- `index=access URL="/v1/balances" | timechart count by client_version`



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Case study: spike in call rate

Numbers

```
index=access URL="/v1/login" OR URL="/v1/balances"
| stats count(eval(URL="/v1/login")) as logins_count,
count(eval(URL="/v1/balances")) as balances_count by
client_version
| eval balances_per_session=balances_count/logins_count
```

client_version	logins_count	balances_count	balances_per_session
1.5	4000	3972	0.993
1.6	3500	67234	19.2096864

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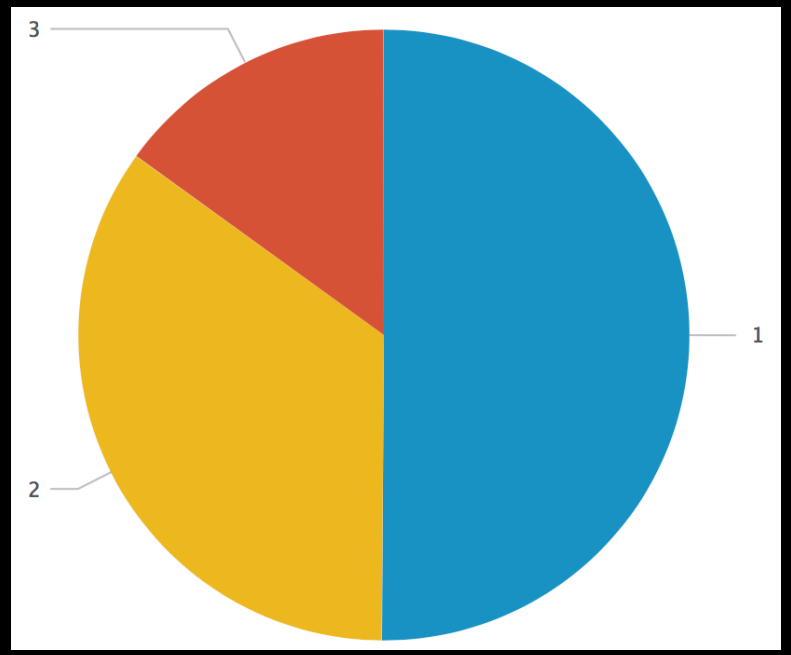
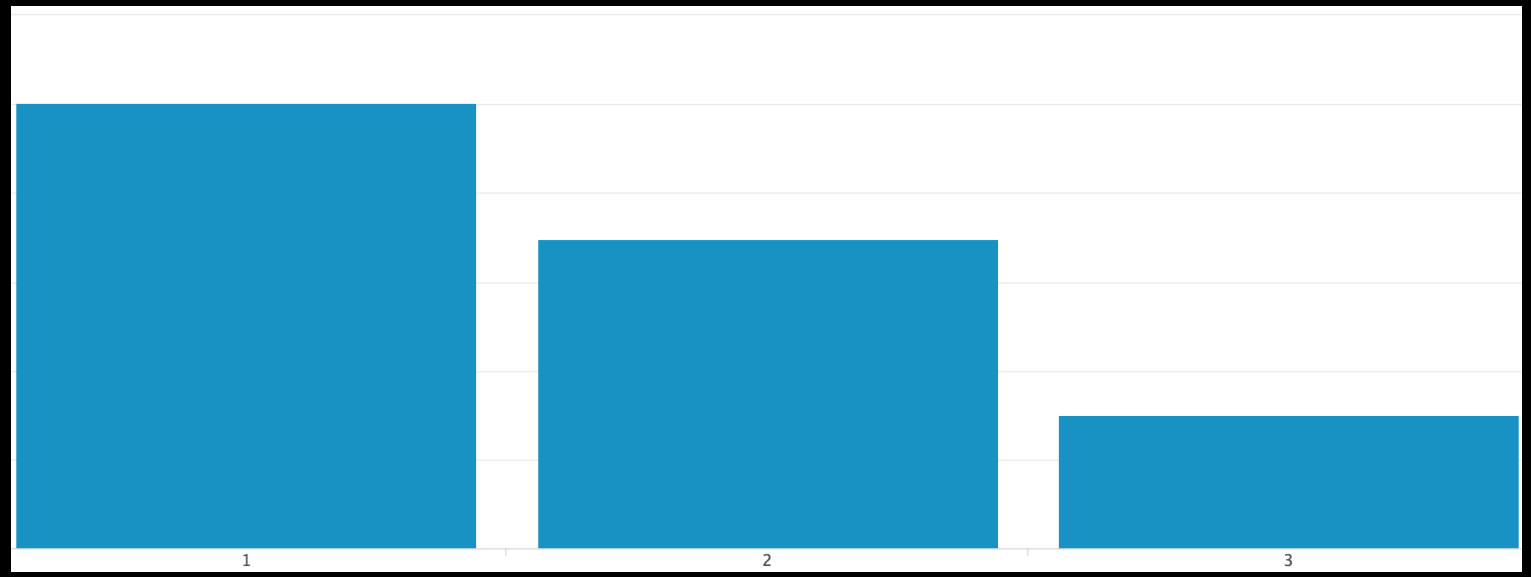
Deciding on a visualization

What is the question you're answering?

- Knowing the question also determines your search
  - App version by launch or by login
- Do you want the fraction of the whole, or how the populations compare?





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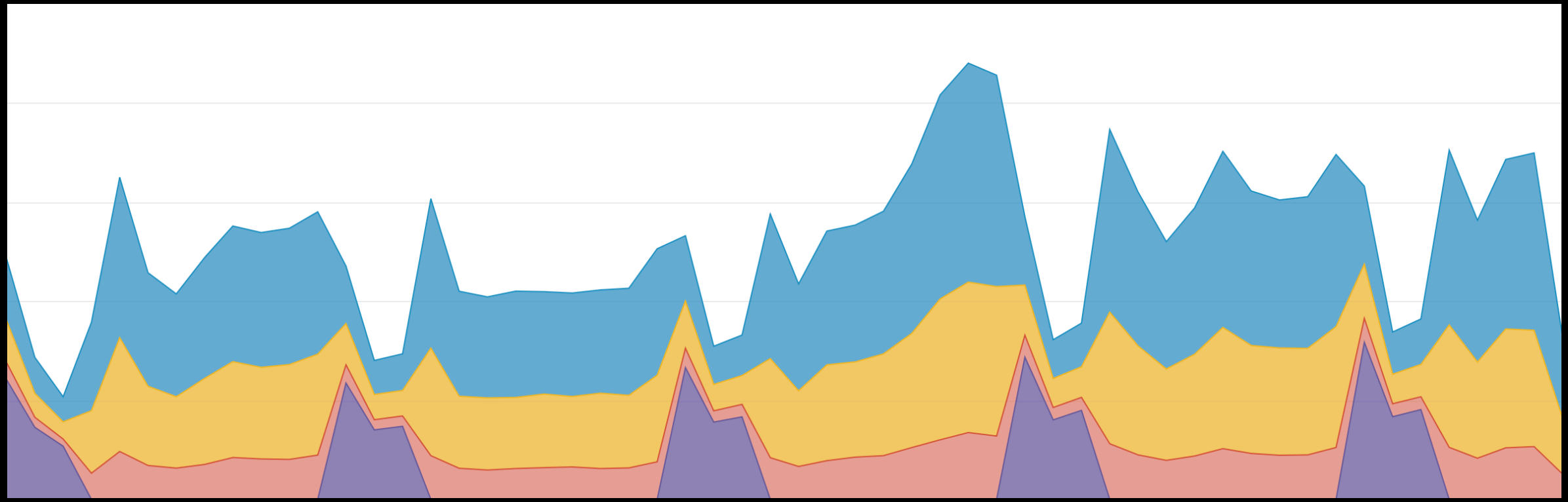
Deciding on a visualization

Area charts

- Area charts and statistics can hide significant trends in overall volume. Purple is ~10%.



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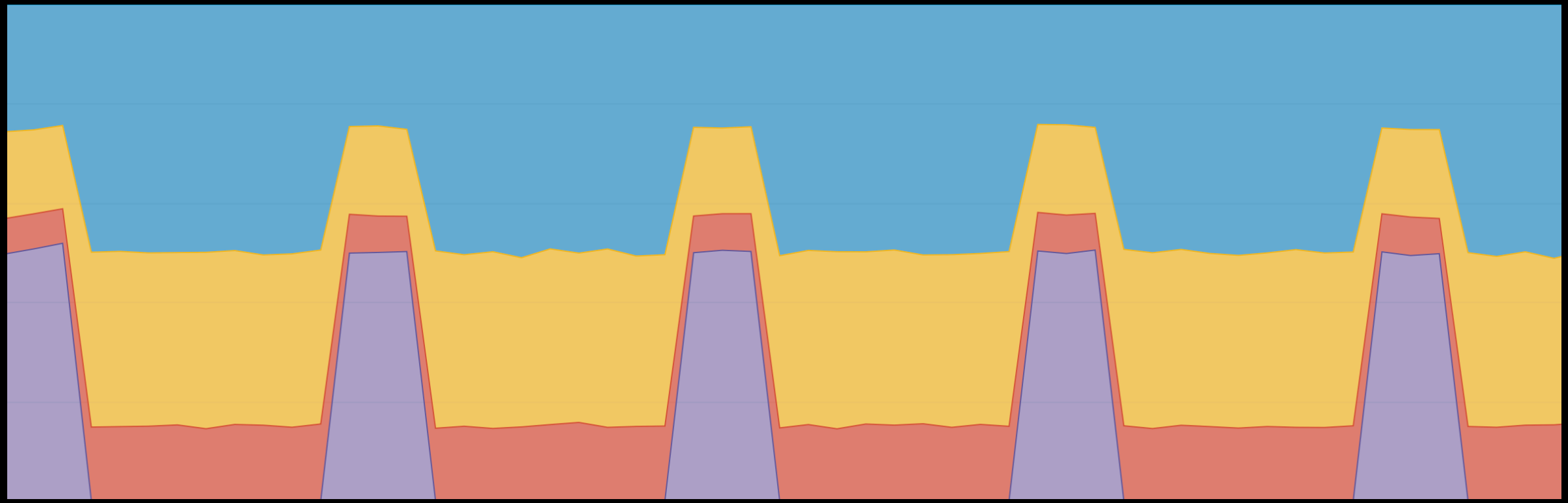
Deciding on a visualization

Area charts

- Area charts can hide significant trends in overall volume, so use Stacked 100%, and play with your `span(=2h)`. Purple is 50% at late night.



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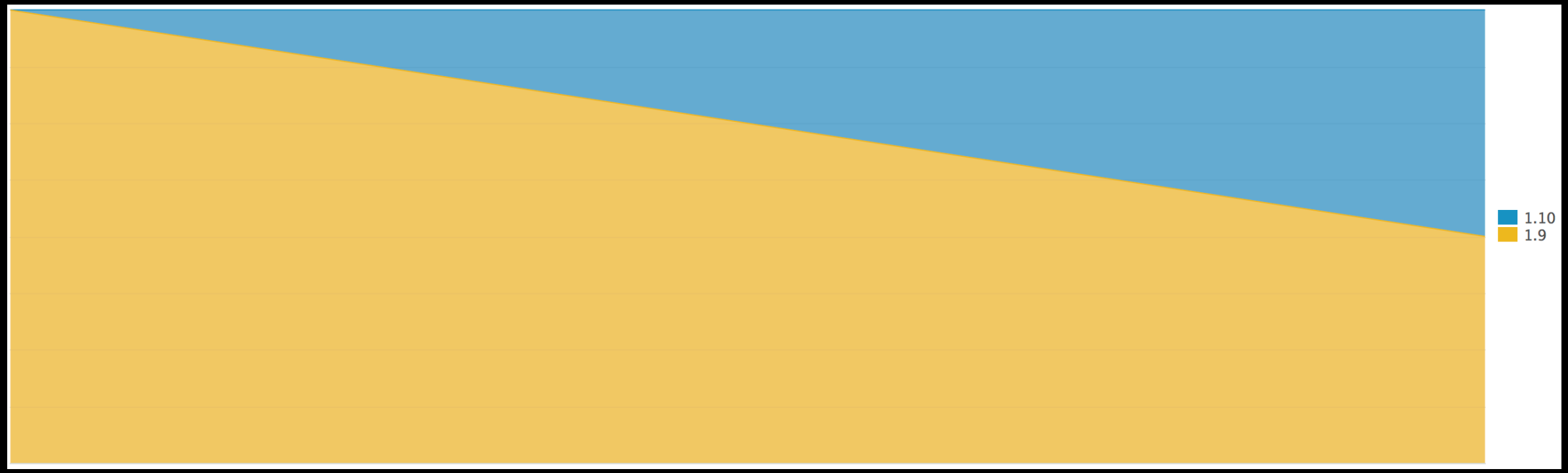
Ordering groupings in a chart

`timechart` is just a table

- Pipe the output of `timechart` to `| table _time, first, second, etc.`



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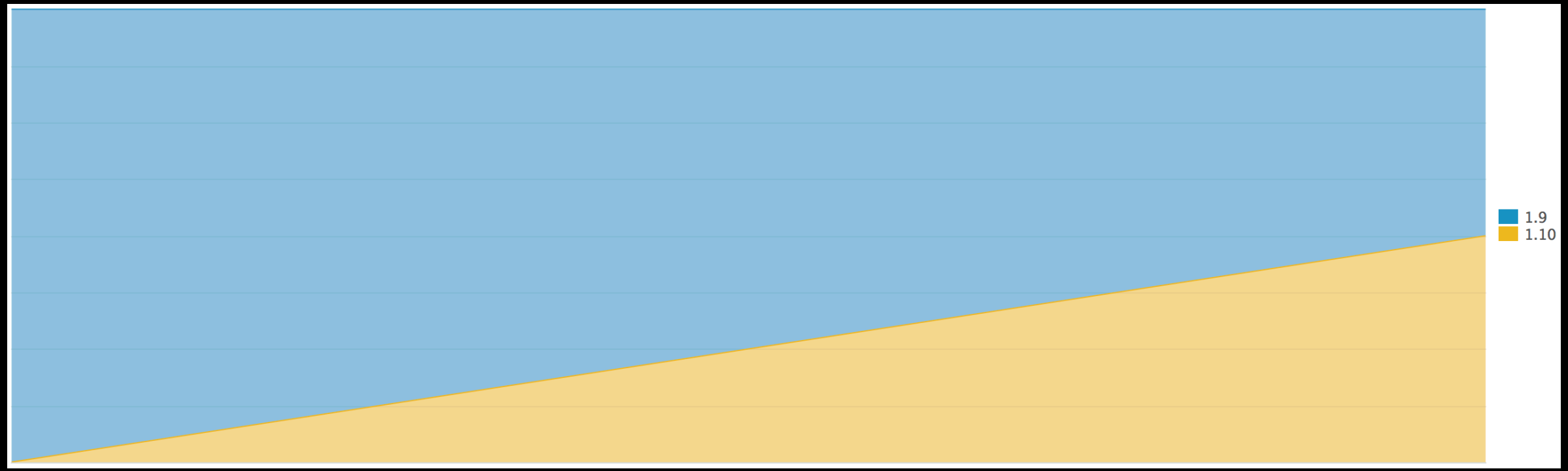
Ordering groupings in a chart

`timechart` is just a table

- Pipe the output of `timechart` to `| table _time, first, second, etc.`
- `timechart … | table _time, “1.9”, “1.10”`



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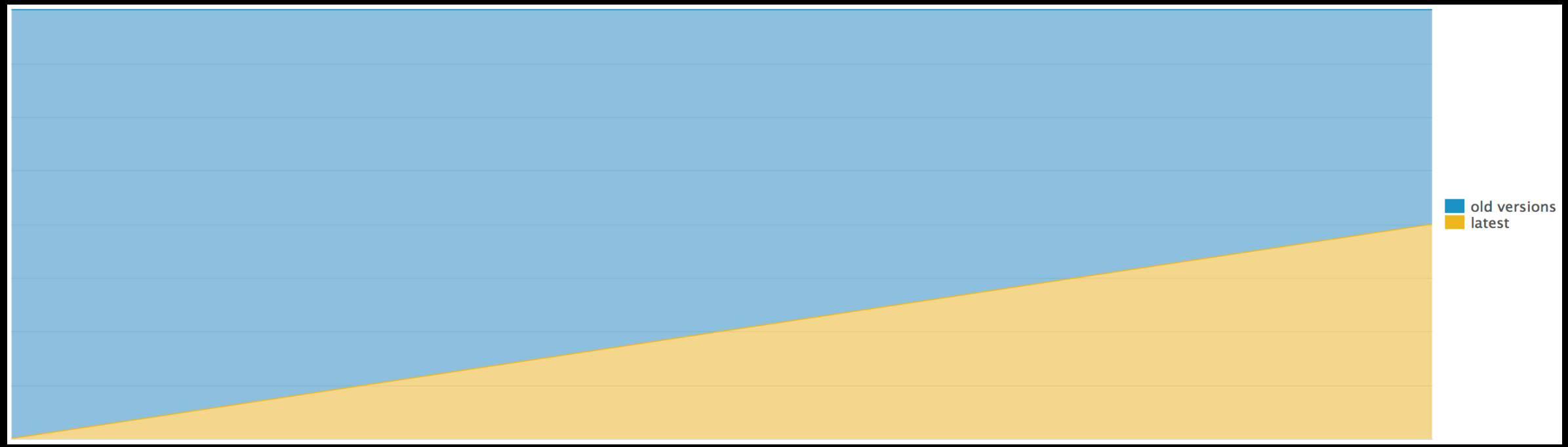
Renaming groupings in a chart

Summarizing values

- `<search> | eval latest=if(version="1.10","latest","old versions") | timechart count by latest | table _time, "old versions", "latest"`



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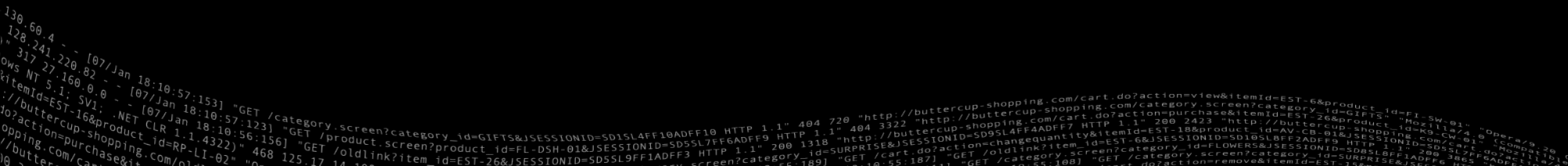
Renaming groupings in a chart

Adding more detail

- iOS 11 betas report their version as simply “11.0”
- Combine with the networking framework version from user-agent for more granularity
-
```
index=access URL="/v1/logins”
 | rex field=user_agent "
CFNetwork/(?<cfnetwork_version>[.0-9]*) ”
 | eval detailed_ios_version=iosversion."-
".cfnetwork_version
 | top detailed_ios_version
```



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Key Takeaways

1. You can get great data about your client applications from the server logs.
2. Your search query should be as narrow as possible before processing.
3. You should always keep in mind the question you're answering.

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Thank You

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