

Custom Visualizations And You

A How-To For Developers

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September 25, 2017 | Washington, DC

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About This Session

- Advanced Track
- Developer Focused
- ▶ Code Will Be Shown
- Exposure To Following
 - Javascript
 - HTML
 - Web Development
 - CSS
- Be inspired and empowered





About Me

- ▶ Principal SE Architect @ Splunk 4.5 years
- ► Former Splunk Customer 2 years
- Tools developer and Javascript tinkerer
- Custom Viz Author
 - Clustered Single Value Map Visualization
 - Custom Image Map Visualization
- ► Father of 3
- ▶ Lifelong A's fan



Agenda

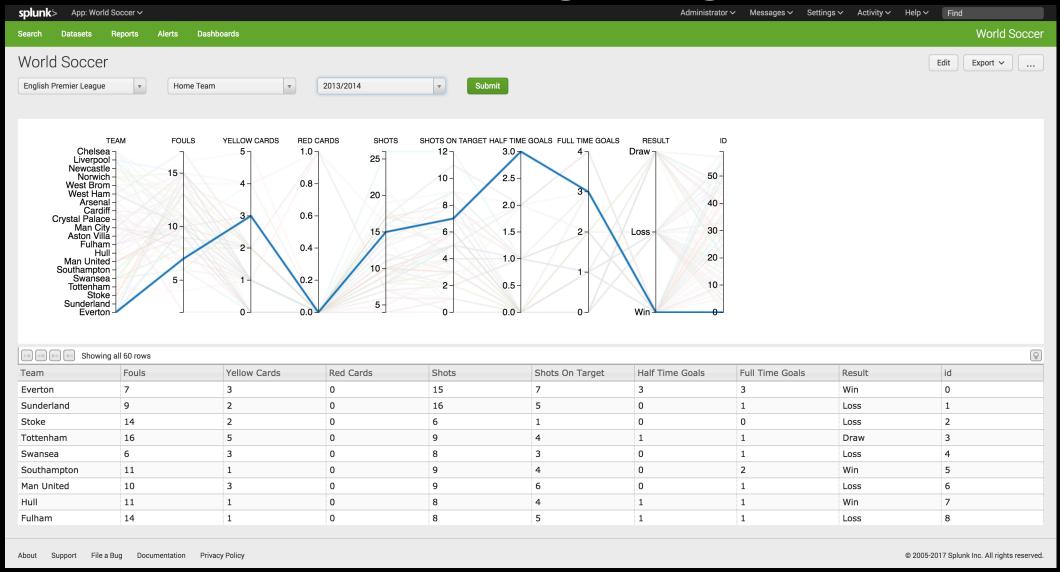
- Viz Evolution
- Anatomy of a Viz
- ► API
- Dependencies & Packaging
- Debugging
- Community & Adoption
- ► Tips & Tricks



Viz Evolution



In The Beginning



9: "GET / Category.screen?category_id=GIFTS&JSESSIONID=SDISL4FF19ADFF19 HTTP 1.1" 494 728 "http://buttercup-shopping.com/category.screen?screen?screen?screen?screen?screen?screen?screen?screen?screen?screen?screen?screen.screen?screen.sc



There Was Light

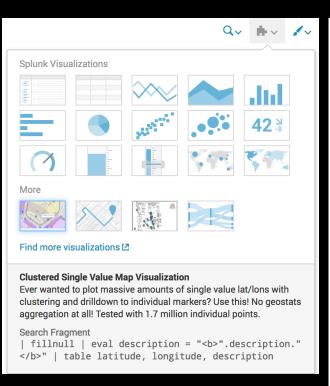
- ► HTML dashboard SplunkJS (Splunk 6.0)
- SimpleXML with Javascript/CSS Extensions

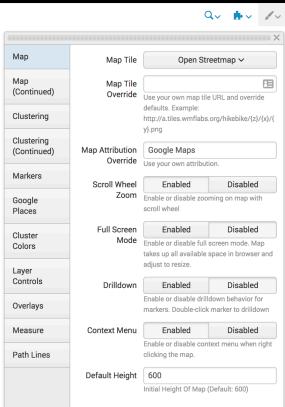
```
<dashboard script="filename.js" stylesheet="filename.css">
```

- Challenges
 - Configuration
 - Re-usability
 - Flexibility
 - Maintenance
 - Lacking Standards



A Better Way



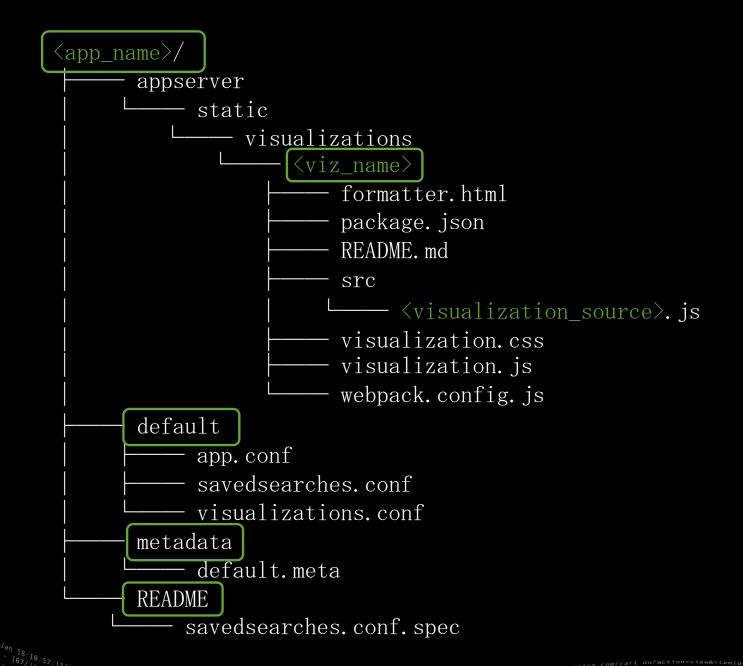


(123) "det gory.screen?category_id=GIFTS&JSESSIONID=SDISLAFF10ADFF10 HTTP 1.1" 404 720 "http: 56:156] "GET /product.screen?product_id=FL-DSH-01&JSESSIONID=SDSSL7FF6ADFF9 HTTP 1.1" 404 726 "http://b" 468 125:17 14" 405 1318 HTTP 1.1" 200 1318 HTTP 1.1" 000 1318

- Custom Viz API
- Standardization
- Consistent Behavior
- Packaging and distribution on Splunkbase
- ACL's & App Context Namespacing

Anatomy Of A Viz







The Big 6

- src/<visualization_src>.js
 - Source code for viz make all edits here
- **▶** visualization.js
 - Webpack built file for rendering viz
- ► formatter.html
 - HTML for rendering format menu options
- **▶** visualization.css
 - CSS rules or links to stylesheets
- ► README/savedsearches.conf.spec
 - Config property names and types
- ▶ default/savedsearches.conf
 - Config property default values







Core Methods

▶ updateView *

- Called when search results are update or viz format changes
- Data and config parameters

getInitialDataParams *

- Required for data to be returned from search.
- Specifies data output format and max number of results
 - Column Major, Row Major, Raw

▶ formatData

Use to error check/clean/transform data passed into updateView

▶ setupView

One-time view setup logic



▶ updateDataParams

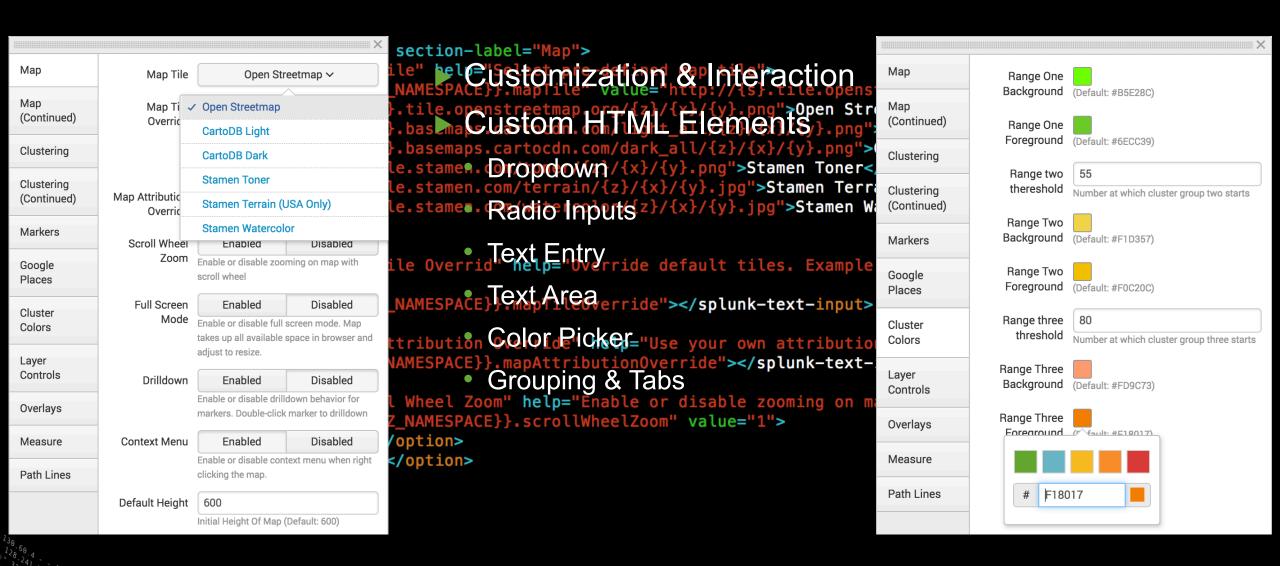
- Use to process results > 50k events in chunks
- Count and offset parameters

▶ drilldown

- Define drilldown interaction
- Field-value or Geo-spatial
- Supports earliest / latest time modifiers



Formatter API



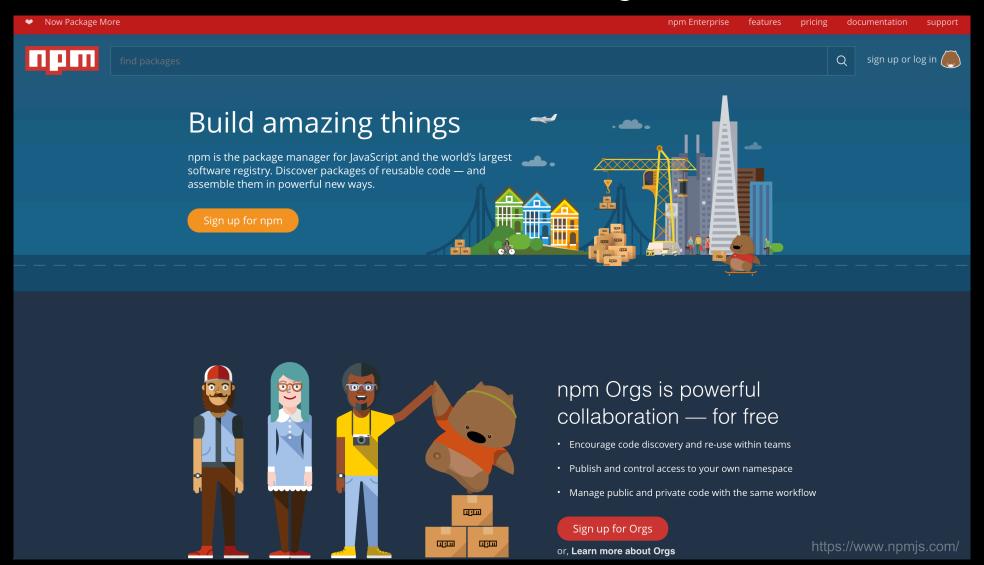




Dependencies & Packaging

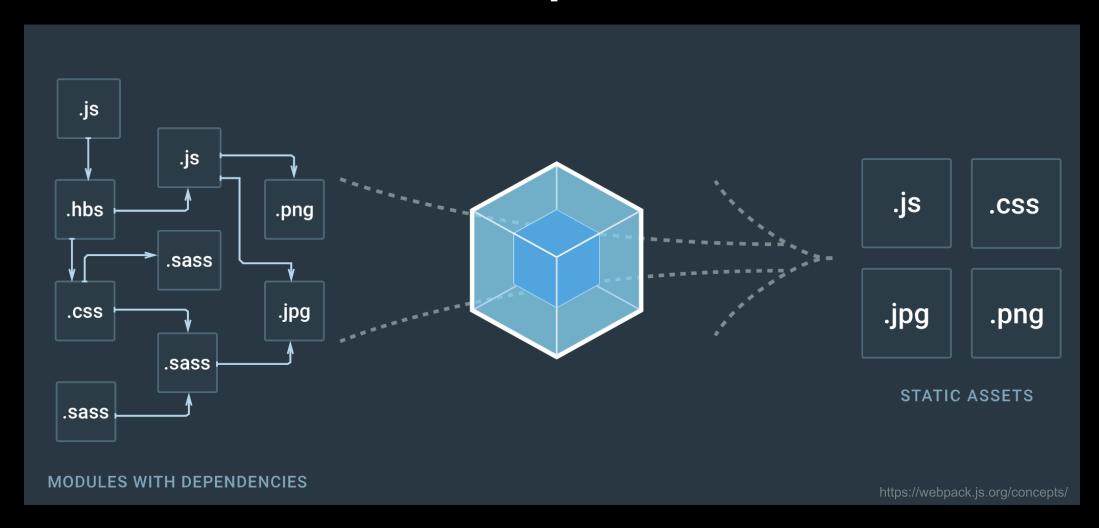


NPM & Node.js





Webpack



123] "GET / Product.screen?category_id=GIFTS&JSESSIONID=SDISL4FF10ADFF10 HTTP 1.1" 404 720 "http://bc. 6:153] "GET / Product.screen?product_id=GIFTS&JSESSIONID=SDISL4FF10ADFF10 HTTP 1.1" 200 1318 "http://buttercup_shooping.com/retemid=EST-18&product_id=A 458] "GET / Old[ink?item_id=EST-26&JSESSIONID=SDISL9FF1ADFF3 HTTP 1.1" 200 1318 "http://documents.com/retemid=EST-6&JSESSIONID=SDISSL9FF1ADFF3 HTTP 1.1" 200 1318 "http://documents.com/retemid=EST-6&JSESSIONID=EST-6&JSESSIONID=EST-6&JSESSIONID=EST-6&JSESSIONID=EST-6&JSESSIONID=EST-6&JSESSIONID=EST-6&JSESSIONID=EST-



package.json

```
"name": "leaflet_maps_app",
"version": "1.5.7",
"description": "Leaflet maps app with Markercluster plugin functionality.",
"main": "visualization.js",
"scripts": {
 "build": "node ./node_modules/webpack/bin/webpack.js",
"author": "Splunk",
"license": "MIT",
"devDependencies": {
   "imports-loader": |"^0.6.5",
   "webpack": "^1.12.6"
"dependencies": {
  "jquery": "^2.2.0",
  "underscore": "^1.8.3",
   "leaflet": "^1.0.3",
```

```
webpack.config.js
```

```
var webpack = require('webpack');
var path = require('path');
module.exports = {
    entry: 'leaflet_maps',
    resolve: {
        root:
            path.join(__dirname, 'src'),
    output:
        filename: 'visualization.js',
        libraryTarget: 'amd'
    module: ₹
        loaders: [
                test: /leaflet\.markercluster-src\.js$/,
                loader: 'imports-loader?L=leaflet'
            },
                test: /leaflet\.awesome-markers\.js$/,
                loader: 'imports-loader?L=leaflet'
            },
                test: /leaflet-vector-markers\.js$/,
loader: 'imports-loader?L=leaflet'
            },
                test: /leaflet\.featuregroup\.subgroup-src\.js$/,
                 loader: 'imports-loader?define=>false'
                test: /leaflet-measure\.js$/,
                loaders: ['imports-loader?L=leaflet', 'transform/cacheable?brfs']
    externals:
        'api/SplunkVisualizationBase',
```

```
'api/SplunkVisualizationUtils
```



Install & Build

[root@3b44f0edb9c6 leaflet_maps]# npm install

[root@3b44f0edb9c6 leaflet_maps]# npm run build

> leaflet_maps_app@1.5.7 build
/opt/splunk/etc/apps/leaflet_maps_app/appserver/static/visualizations/l
eaflet_maps

> node ./node_modules/webpack/bin/webpack.js

Hash: 882f9a141e227ccd6951

Version: webpack 1.15.0

Time: 1467ms

Asset Size Chunks

visualization.js 1.73 MB 0 [emitted] main [0] ./src/leaflet_maps.js 43.6 kB {0} [built]

+ 124 hidden modules

Chunk Names



Debugging



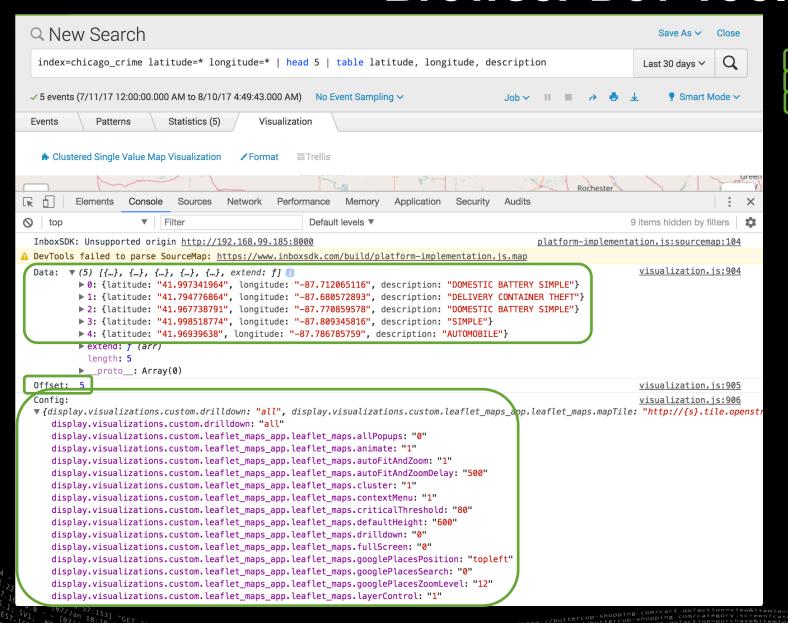


Developer Mode

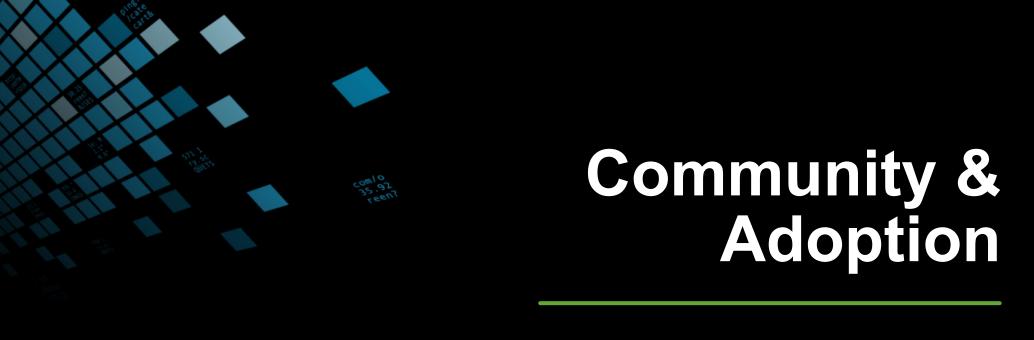
\$SPLUNK_HOME/etc/system/local/web.conf

```
[settings]
minify_js = False
minify_css = False
js_no_cache = True
cacheEntriesLimit = 0
cacheBytesLimit = 0
enableWebDebug = True
```

Browser Dev Tools









Share & Follow

VERSION

1.5.7

BUILT BY

Splunk Works

CONTRIBUTORS

Scott Haskell

CATEGORY & CONTENTS

Categories: Utilities

App Type: App

App Contents: Visualizations

COMPATIBILITY

Products: Splunk Cloud, Splunk Enterprise

Splunk Versions: 6.6, 6.5, 6.4 Platform: Platform Independent

LICENSING

End User License Agreement for Third-Party Content

SUPPORT

Community Supported

Questions on Splunk Answers

Flag as inappropriate

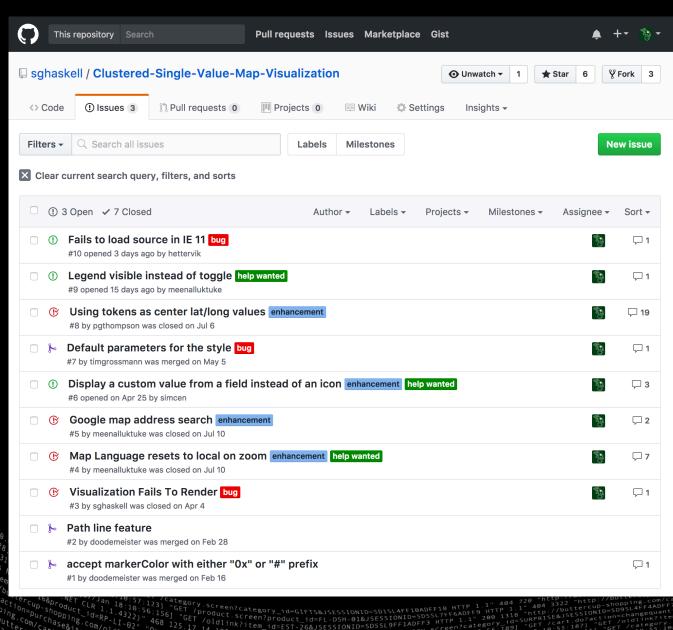
Subscribe

Share

- Post your visualization to Splunkbase
- Subscribe to your app and follow answers posts



Open Source Your Code



- Use GitHub for
 - Documentation
 - Issue Tracking
 - Feature Requests
 - Collaboration



Tips & Tricks



Get Creative



0.57.

3. 18. 13. 1 "GET / Category.screen?Category_id=GIFTS&JSESSIONID=SD3SLAFF10ADFF10 HTTP 1.1" 404 720 "http://buttercup-shopping.com/cart.do?action=viaw&itemi1d=EST-6&production=gory_id=GIFTS&JSESSIONID=SD3SLAFF10ADFF10 HTTP 1.1" 404 720 "http://buttercup-shopping.com/cart.do?action=purchase&itemi1d=EST-6&production=gory_id=GIFTS&JSESSIONID=SD3SLAFF10ADFF10 HTTP 1.1" 404 720 "http://buttercup-shopping.com/cart.do?action=purchase&itemi1d=ST3F00ADFF10 HTTP 1.1" 404 720 "http://buttercup-shopping.com/cart.do?action=purchase&itemi1d=EST-6&product_id=Su3F00ADFF10 HTTP 1.1" 404 720 "http://buttercup-shopping.com/cart.do?action=com/cart.do?act



Nuggets

► formatter.html

```
{{VIZ_NAMESPACE}}.mapTileOverride __maps_app.leaflet_maps.mapTileOverride
```

▶ visualization.css

```
@import url('./contrib/css/leaflet.css');
```

- **▶** formatData
 - Check for empty data
 - Check for unexpected values and throw useful errors



► SplunkVisualizationUtils

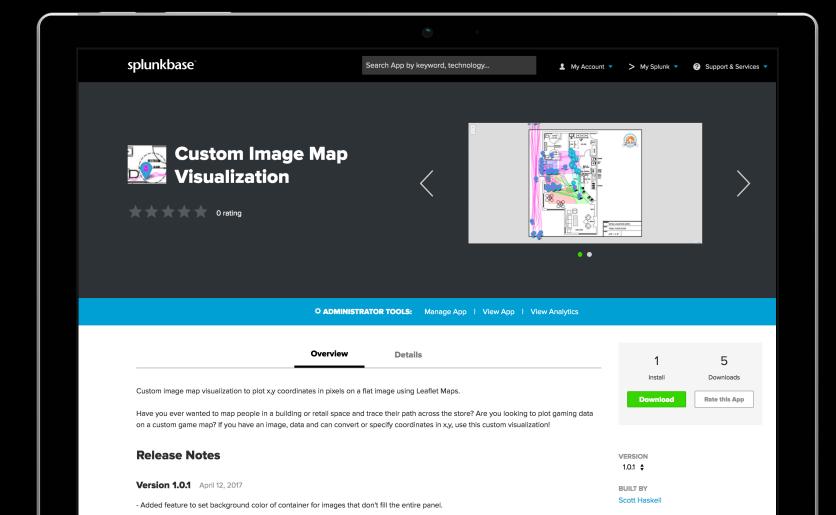
- escapeHtml(inputString) | Prevent XSS injection
- makeSafeUrl(inputUrl) | Strip dynamic content from unsafe URL schemes
- ► default/visualizations.conf
 - *supports_drilldown* = 0 | 1 (6.6.x)
 - *supports_trellis* = 0 | 1(6.6.x)

Leverage Available Resources

- Download Splunk Built Viz
- ► Follow the tutorial
 - https://docs.splunk.com/Documentation/SplunkCloud/6.6.0/AdvancedDev/CustomVizTutorial
- Use NPM
 - Credit 3rd party software
- Learn Webpack loaders
- Gain inspiration
 - D3
 - Leaflet
 - Dygraphs
 - Ember Charts



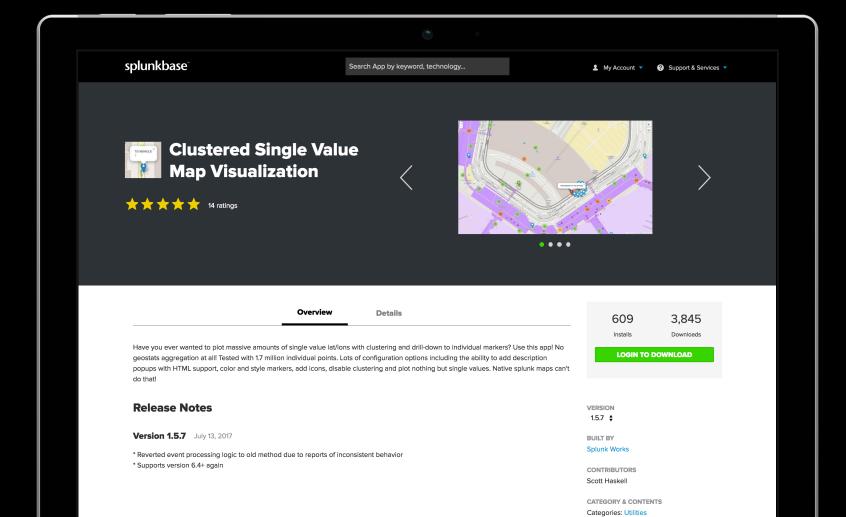
Custom Image Map Visualization



Plot markers on any custom image using x,y coordinates



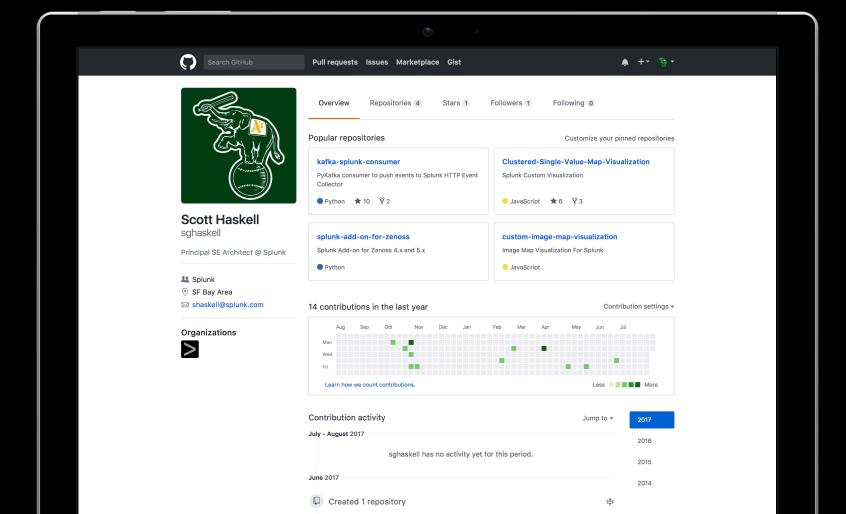
Clustered Single Value Map Visualization



- Map massive amounts of Indvidual Points With Clustering
- ▶ 600+ Active Installs
- ▶ 4,000+ Downloads



Visit Me On GitHub

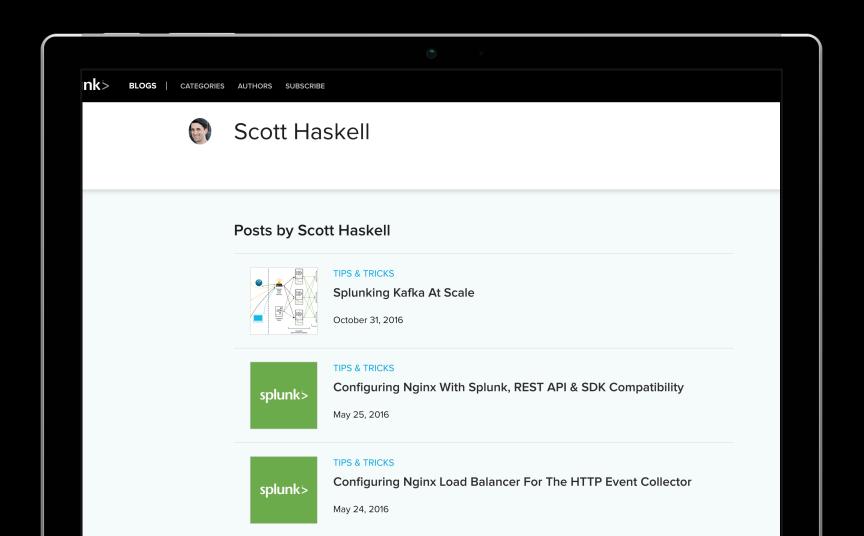


- Fork and modify my code
- Participate in visualization community
- Explore Kafka integration



Follow My Blogs

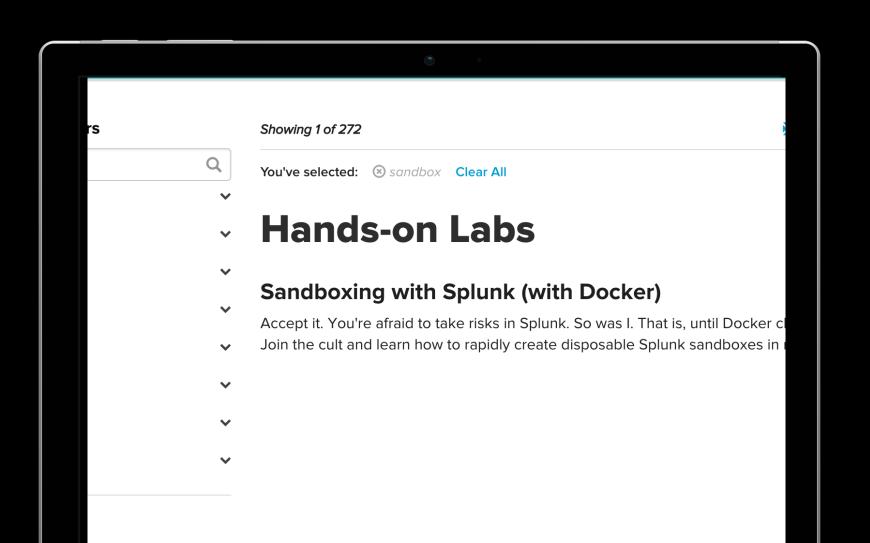
https://www.splunk.com/blog/author/shaskell.html





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