splunk> 4 rookies

Hands-On Workshop

splunk>

Forward-looking statements

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splunk>

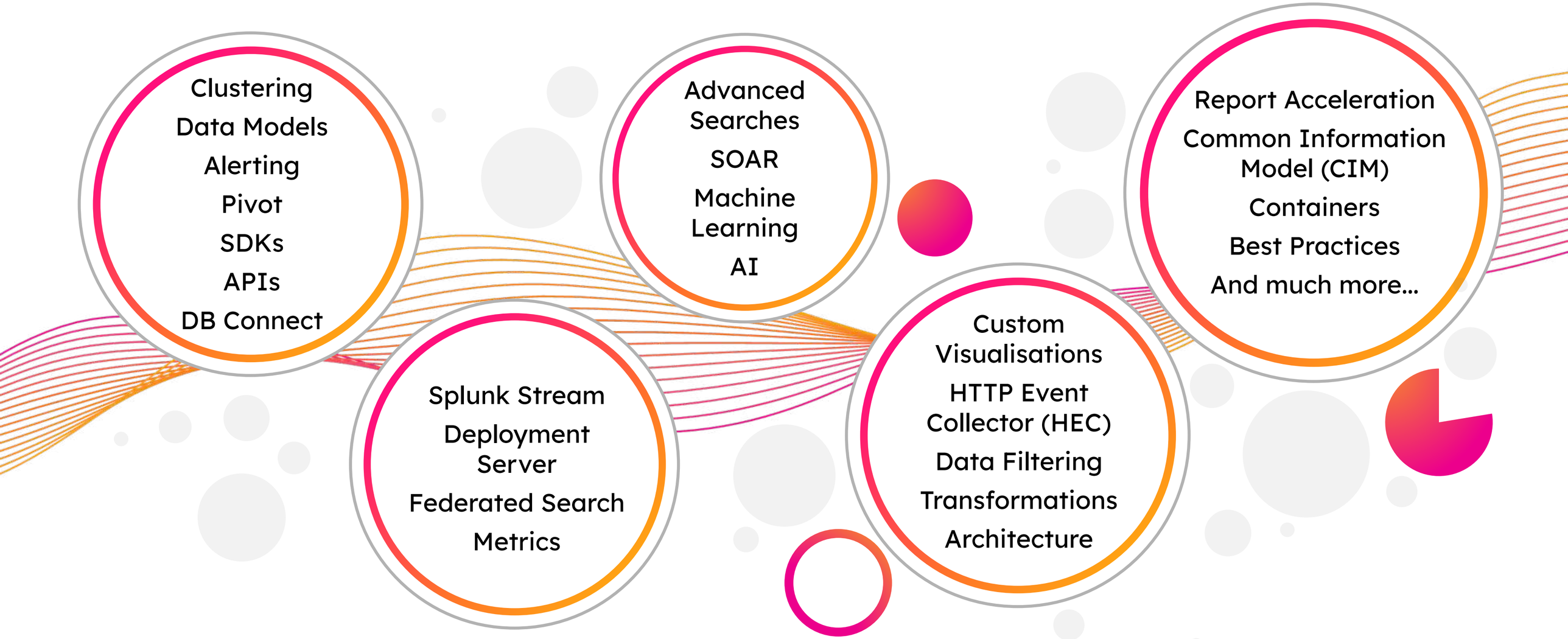
Please introduce yourself!

- Name
- Company/organisation
- Role
- Are you currently using Splunk?
- What are you interested in using Splunk for?

Workshop Agenda

- Building digital resilience with Splunk
- Creating a Splunk app
- Adding data
- Searching and reporting
- Extracting a new field
- Using lookups
- Creating a dashboard for multiple use cases
- Splunk resources

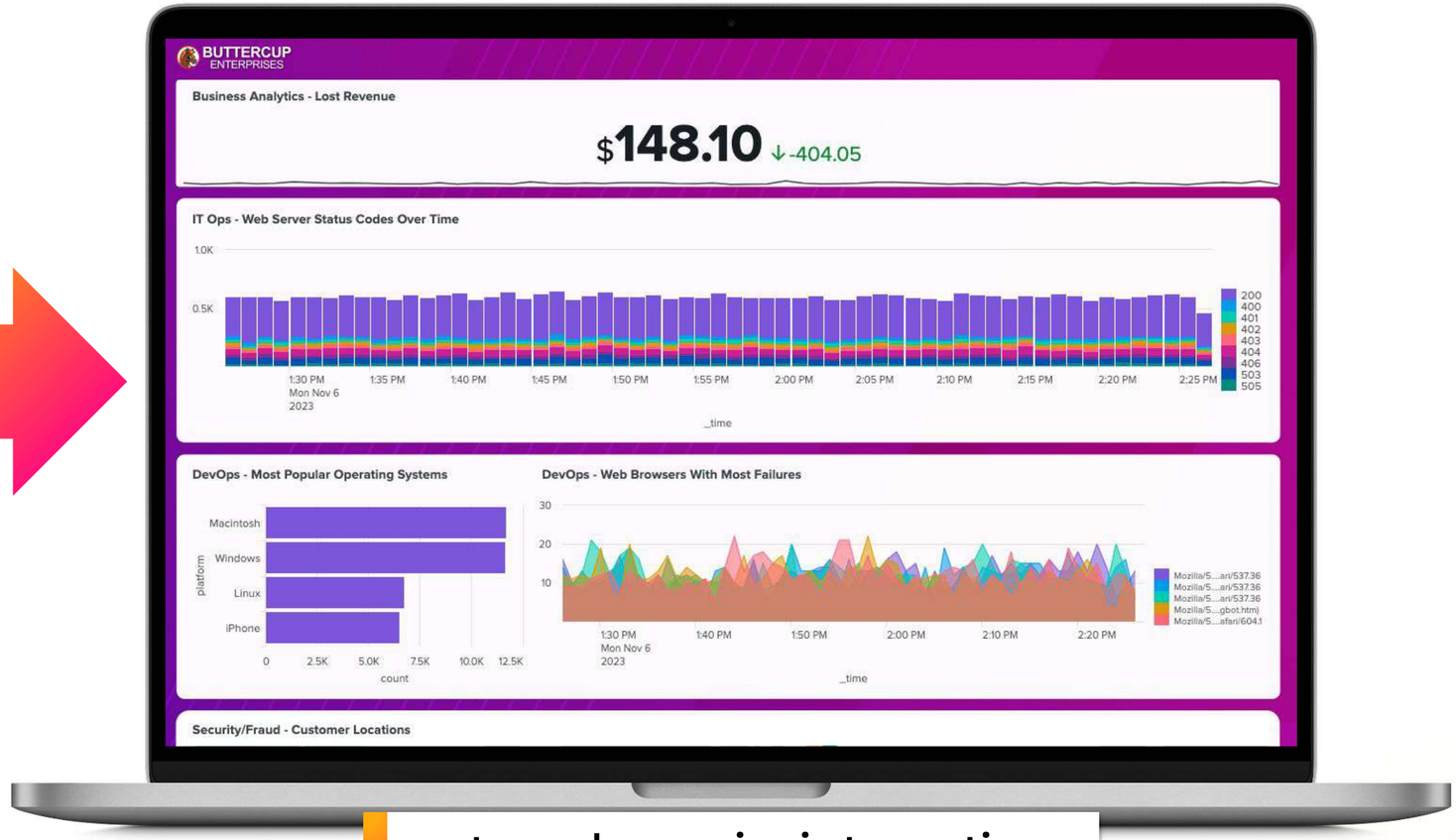
There’s a Lot More to Splunk



Visit https://splunk.com/training to learn more!

Objective for Today

Go from messy machine data…



…to a dynamic, interactive dashboard!

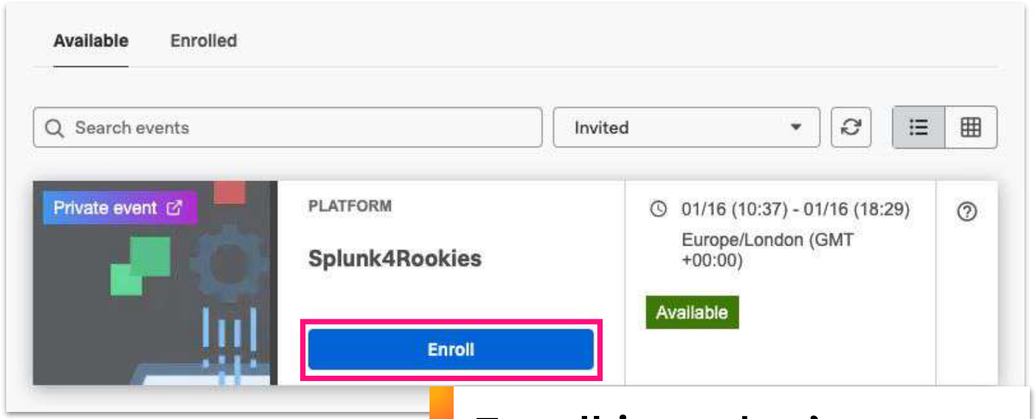
Enroll in Today's Workshop

Tasks

1. Get a splunk.com account if you don't have one yet:
   https://splk.it/SignUp
2. Enroll in the Splunk Show workshop event:
   https://show.splunk.com/event/<eventID>
3. Download the hands-on lab guide:
   https://splk.it/S4R-CSX-Lab-Guide

   Contains step-by-step instructions for all of today's exercises!
4. Download a copy of today's slide deck:
   https://splk.it/S4R-CSX-Attendee

Goal



Enroll in today's event

Data is your Competitive Advantage

Data isn’t just a record.
Data makes things happen.
Splunk makes it possible.

Turning Real-time Data Into Action is Hard

The Power of Splunk

Delivering Unified Security and Observability

See

End-to-end visibility

No sampling or blind spots

Act

Investigate across massive data sets and take **action** fast

Extend

Extend the **platform** to use data to solve problems across the business

Splunk enables faster detection, investigation and response

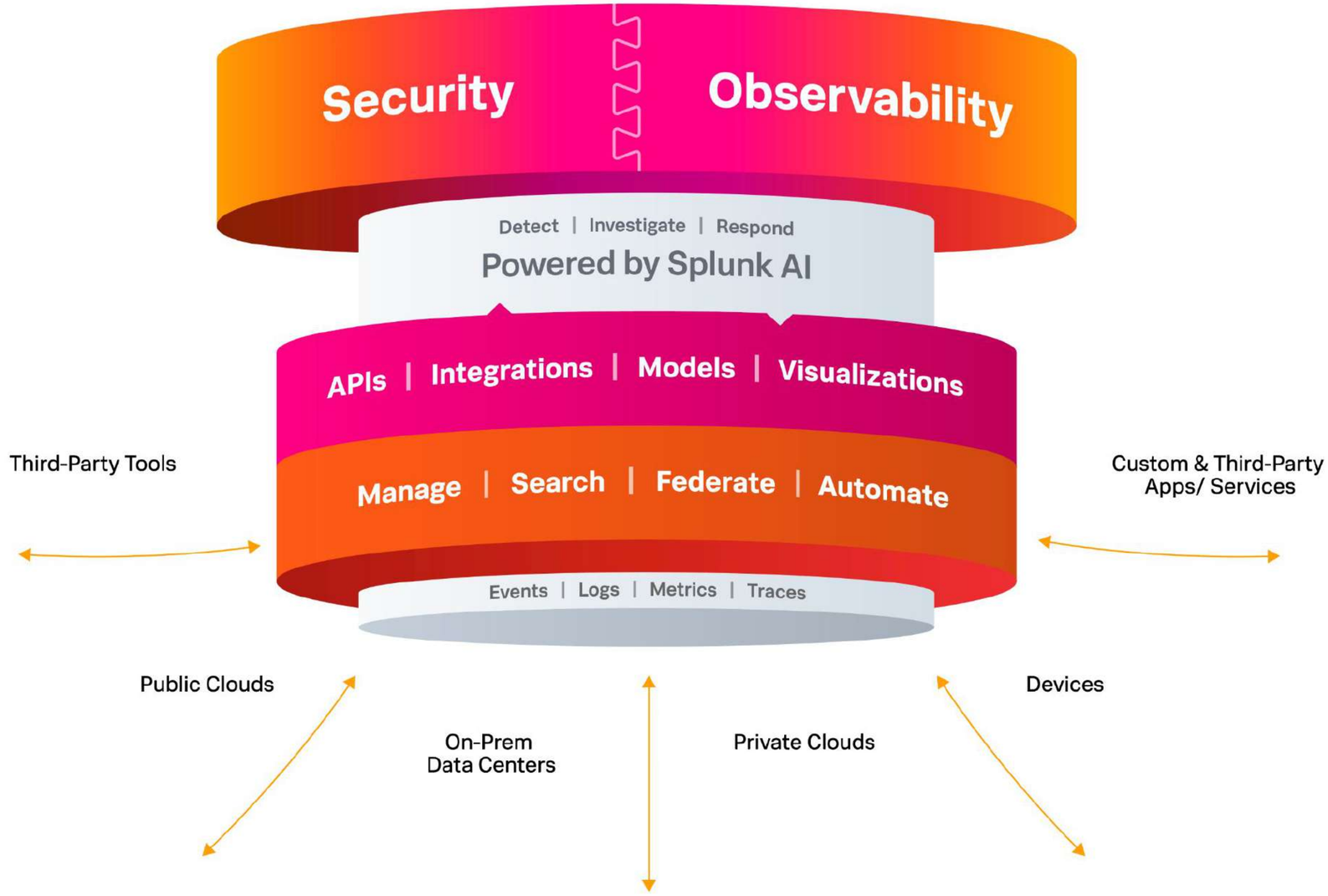
Optimized Response

Comprehensive Visibility

Rapid Detection and Investigation

- ✓ Hybrid
- ✓ Scalable
- ✓ Interoperable

The Unified Security and Observability Platform



Deploy Splunk in the cloud, or in your data centers.

15+ aws

7 Google Cloud

4 Microsoft Azure

Splunk as a Service

Fastest time to value | Minimum Infrastructure | Maximum Value

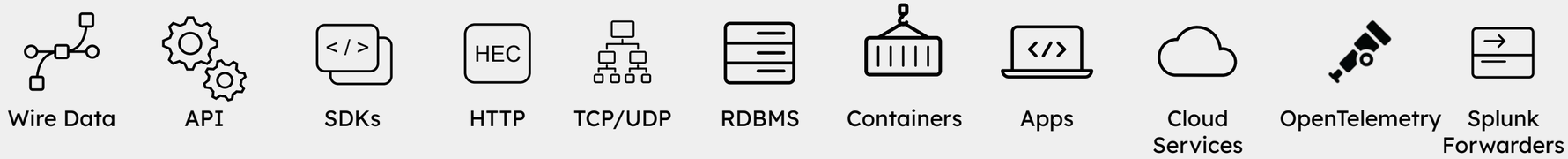
3 Simple Steps:

1. Onboard data
2. Onboard users
3. Get value from your data

splunk>cloud™

- **Fastest time to value**
- **Software as a service** - AWS, GCP, Azure
- **Secure** - ISO 27001, SOC 2 Type II, FedRAMP Moderate/High, DoD IL5, PCI DSS, HIPAA, IRAP, ISMAP
- **Encryption-in-transit** - plus optional encryption-at-rest
- **Resilient infrastructure**
- **100% uptime guarantee**
- **24/7 NOC/SOC support team**

Flexible options for data collection and forwarding

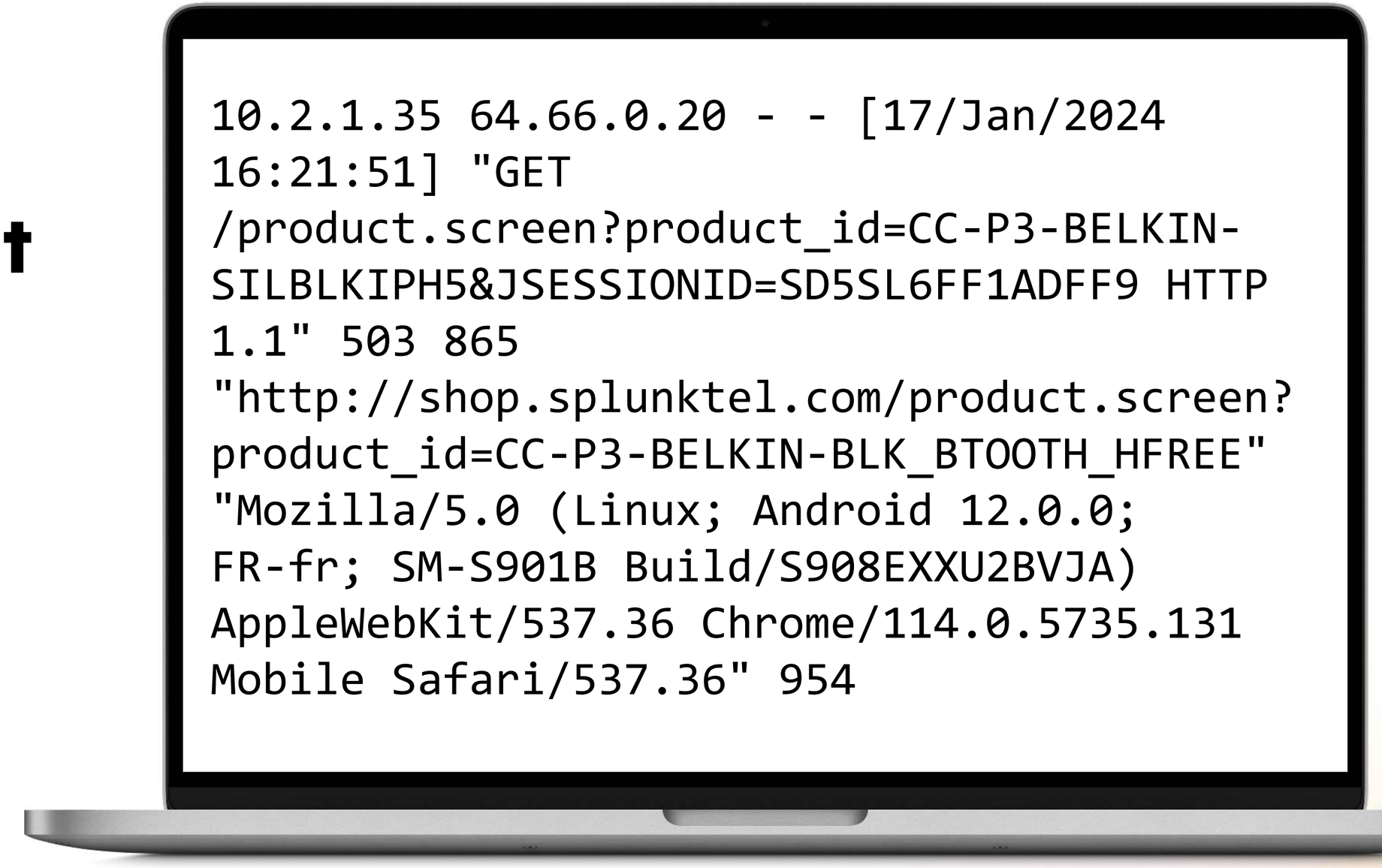


Splunk Cloud Service Description: https://splk.it/SplunkCloudServDesc

What is a Splunk Universal Forwarder?

- Reliable collection of data from remote locations
- Includes methods for collecting from a variety of data sources
- Lightweight but powerful:
  - Buffering / guaranteed delivery
  - Encryption
  - Compression
  - Load balancing
  - And more!
- Very small footprint
- Just forwards data – no parsing beforehand!

Machine data is valuable not complex!



Marketing Use Case

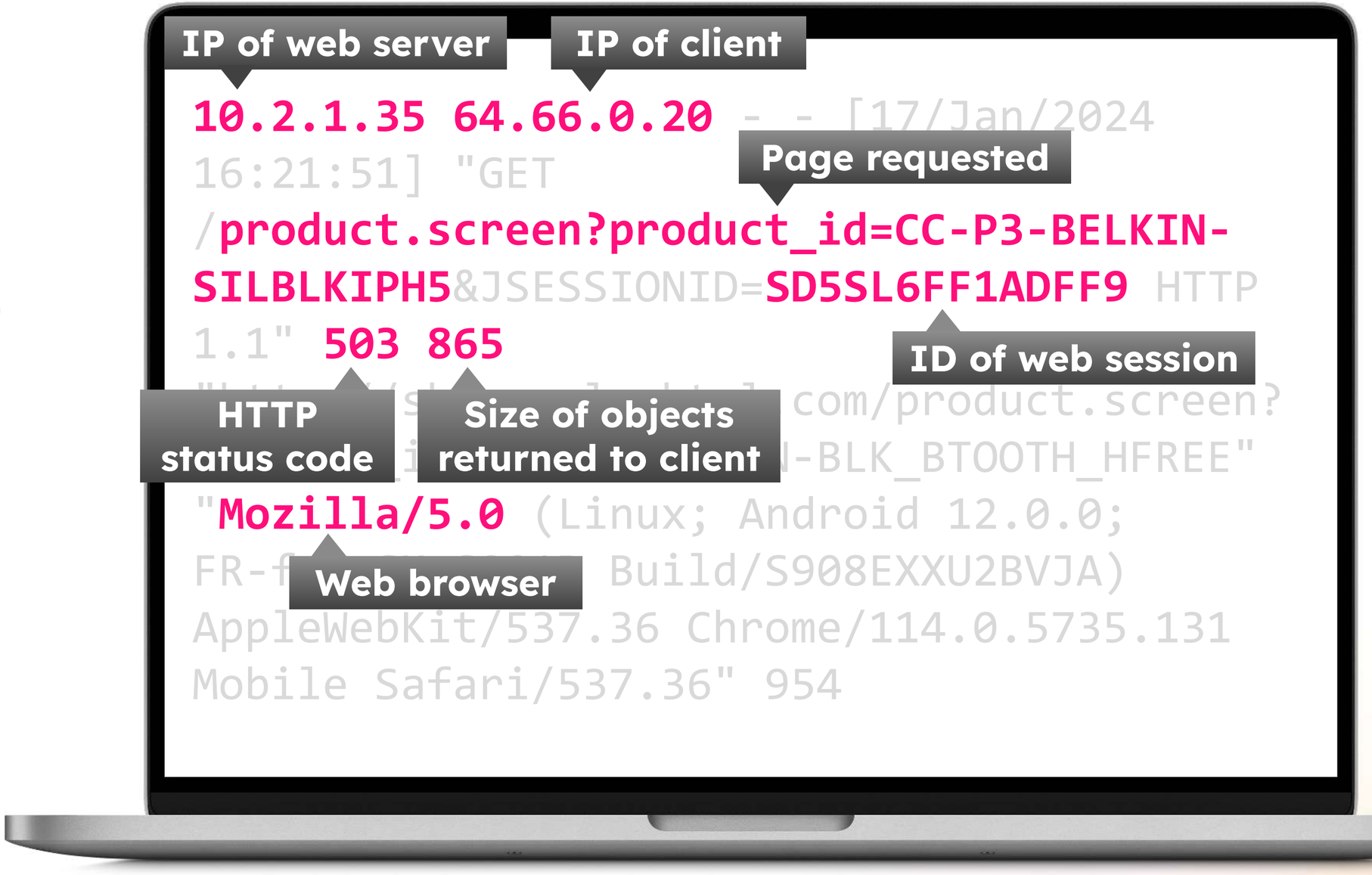
Show the top products viewed by language

DevOps Use Case

Which mobile handsets should I test the most before releasing my new app?

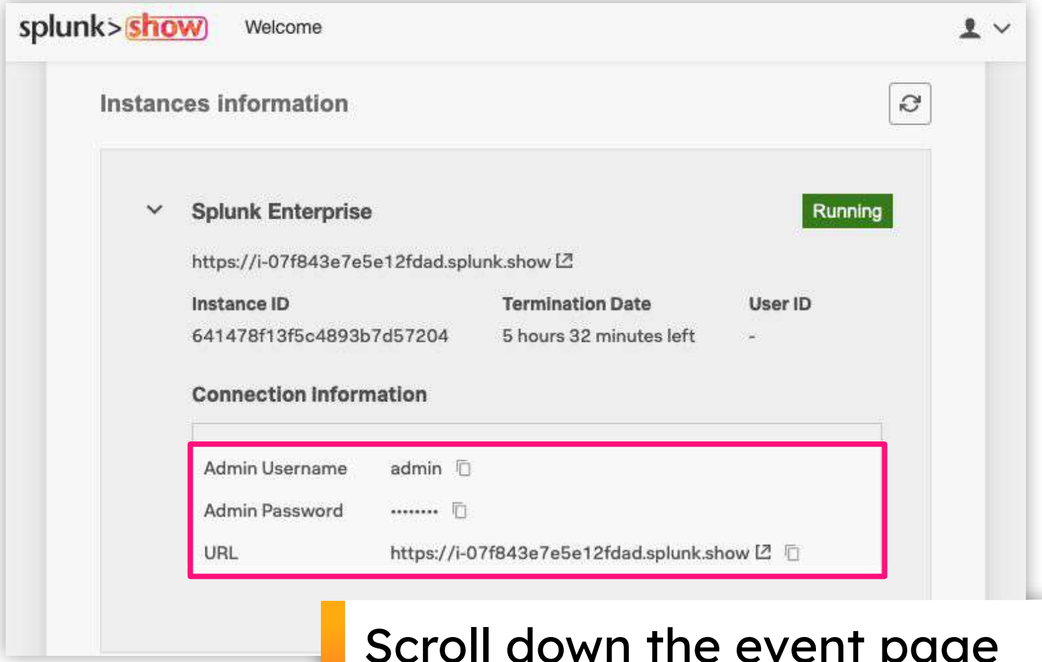
IT Ops Use Case

Which web pages are generating the most errors?



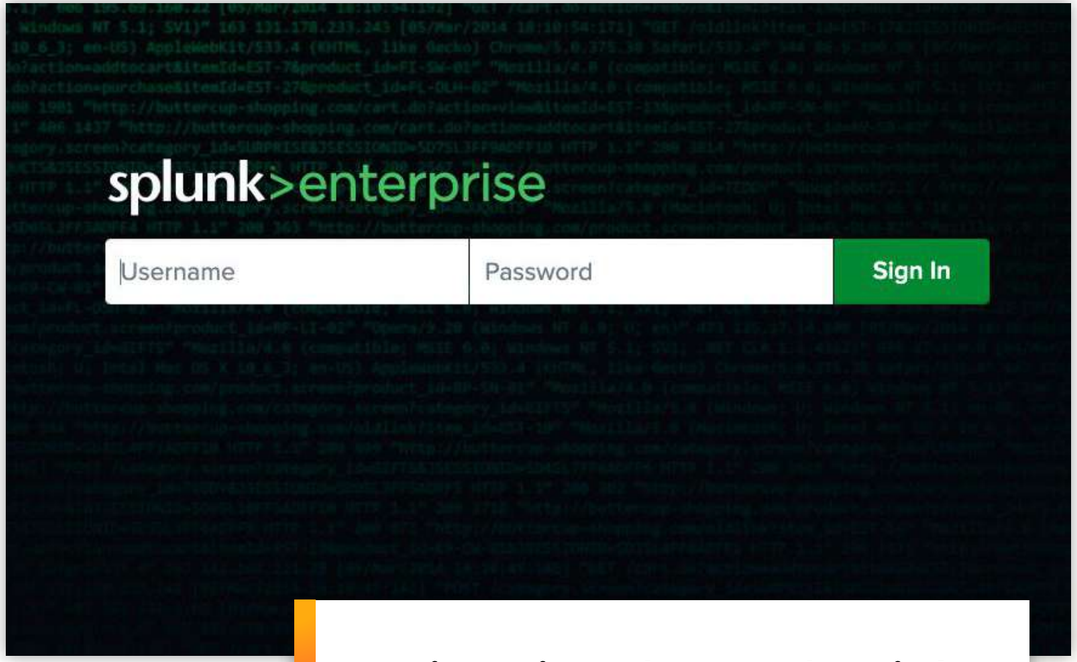
Login to Splunk

Locate your instance URL and credentials in the Splunk Show event
https://show.splunk.com



Scroll down the event page and expand the **Splunk Enterprise** section to view your login details

Log in to your Splunk instance



Login using the credentials from Splunk Show

Apps and Add-ons

- 2200+ free apps and add-ons available from https://splunkbase.splunk.com/
- Built either by Splunk, our technology partners or members of our user community
- Prebuilt packages that help to enhance and extend the Splunk platform
- Provide content and capabilities – such as reports, dashboards and integrations – for a specific technology, purpose or use case, with the flexibility to customise for your own needs

Apps

Content designed to bring fast time-to-value from your data in Splunk, including pre-built dashboards, reports, alerts, visualisations and workflows

Add-ons

Provide specific capabilities to Splunk, such as getting data in, mapping data, or providing saved searches and macros

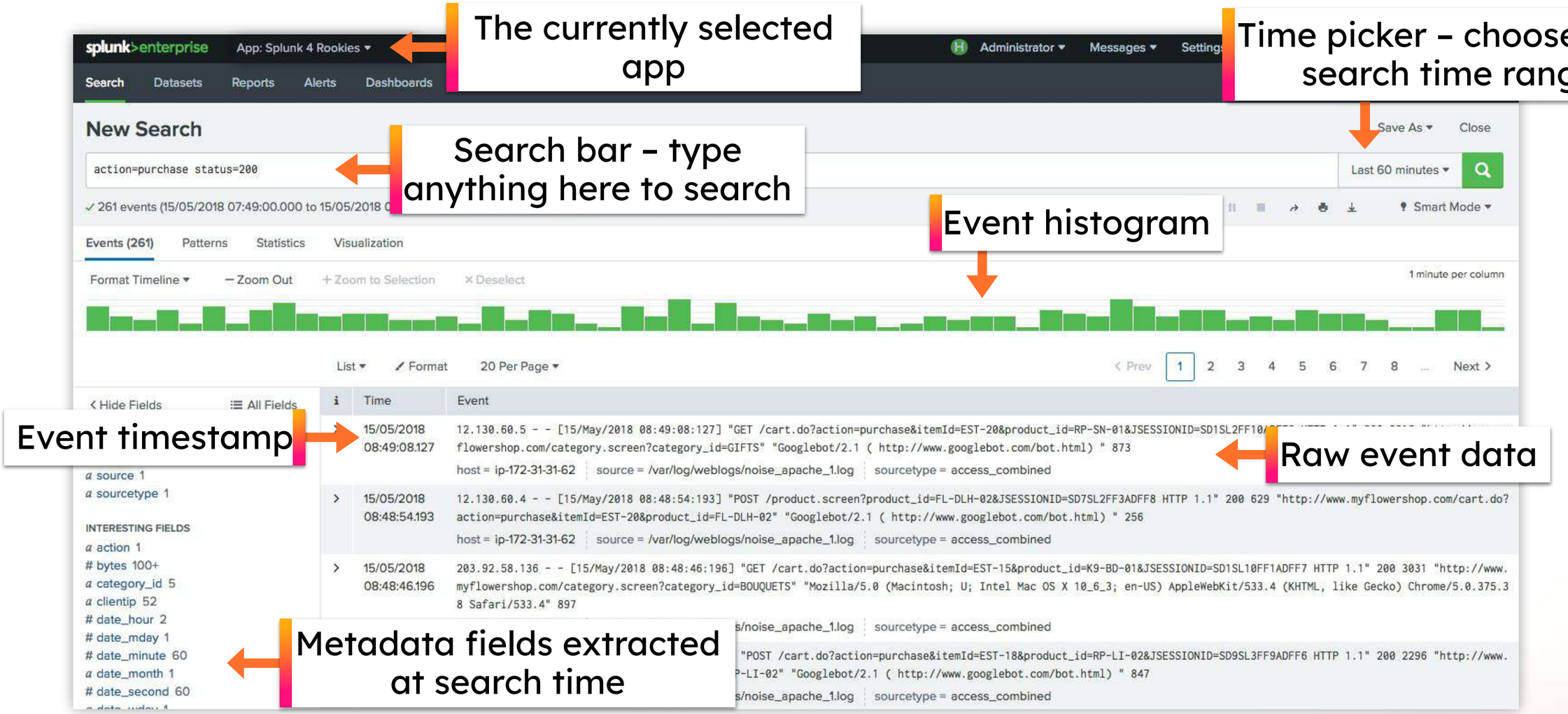
Create an App and Add Some Data

Tasks

1. Create a new app
2. Monitor a directory: /var/log/weblogs
3. Select a source type: access_combined
4. View your data in Splunk

Reminder
Download the lab guide for step-by-step instructions!

Open your app and have a play!



Start Exploring Your Data

Example searches:

`503 purchase`	Find all events that contain the words “503” and “purchase”
`503 pur*`	Find all events containing “503” and words beginning with “pur”
`503 (purchase OR addtocart)`	Boolean operators (`AND`/`OR`/`NOT`) – must be UPPERCASE!
`status=503 action=purchase`	Use *fieldname* = *value* to ensure accurate search results

How would you find events with a status code of 200 that are NOT purchase events?

```
status=200 NOT action=purchase

status=200 action!=purchase
```

Splunk's Search Processing Language (SPL)

Search Terms

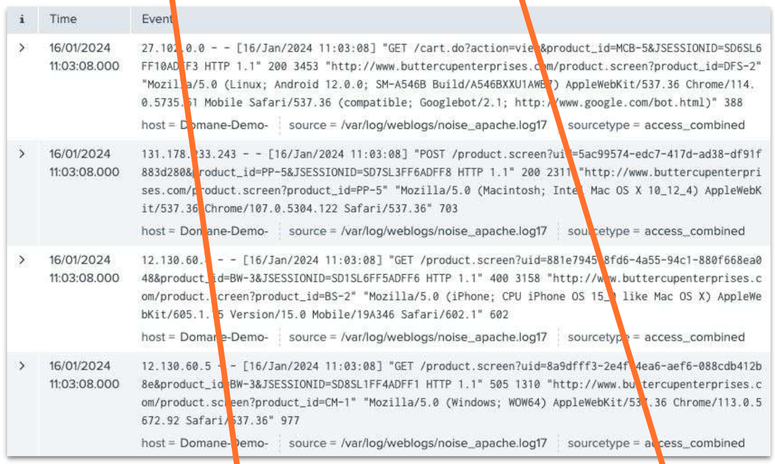
Commands

```
index=main action=purchase | stats count by status | rename count as "number of events"
```

Pipe character: Output of left is input to right

Functions

e.g. `index=main action=purchase` `| stats count by status` `| rename count as "number of events"`



status	count
200	850
400	81
401	76
402	50
403	57

status	number of events
200	850
400	81
401	76
402	50
403	57

Want to know more? Check out:
Splunk Quick Reference Guide: https://splk.it/SplunkQuickRef
Search manual: https://splk.it/SplunkSearchManual

Generative Commands

Fields : UC v lc

Transformative Commands

More Interesting Searches

A teaser to show a quick showing of some more interesting searches that do a bit more

- Difference in statistical usage and display
- Different ways to filter or search

Interesting Searches - 1

Differences between statistics call behavior and display

```
index=main
sourcetype=access_combined
action=purchase
|stats count by status, useragent
```

status	useragent	count
200	Mozilla/5.0 (Linux; Android 12.0.0; SM-A546B Build/A546BXXU1AWB7) AppleWebKit/537.36 Chrome/114.0.5735.61 Mobile Safari/537.36 (compatible; Googlebot/2.1; http://www.google.com/bot.html)	367
200	Mozilla/5.0 (Linux; Android 12.0.0; SM-S901B Build/S908EXXU2BVJA) AppleWebKit/537.36 Chrome/114.0.5735.131 Mobile Safari/537.36	381
200	Mozilla/5.0 (Linux; Android 13.0.0; Pixel Build/TQ1A.230205.001.D2) AppleWebKit/537.36 Chrome/100.0.4896.127 Mobile Safari/537.36	393

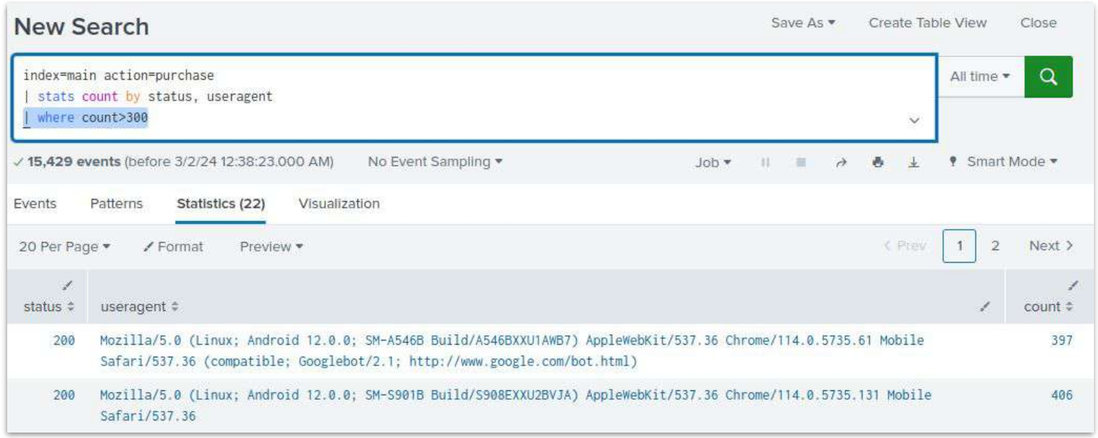
```
index=main
sourcetype=access_combined
action=purchase
| stats count by status,
useragent
| stats list(status) by useragent
```

useragent	list(status)
Mozilla/5.0 (Linux; Android 12.0.0; SM-A546B Build/A546BXXU1AWB7) AppleWebKit/537.36 Chrome/114.0.5735.61 Mobile Safari/537.36 (compatible; Googlebot/2.1; http://www.google.com/bot.html)	200 400 401 402 403 404 406 503 505
Mozilla/5.0 (Linux; Android 12.0.0; SM-S901B Build/S908EXXU2BVJA) AppleWebKit/537.36 Chrome/114.0.5735.131 Mobile Safari/537.36	200 400 401 402 403 404 406 503 505

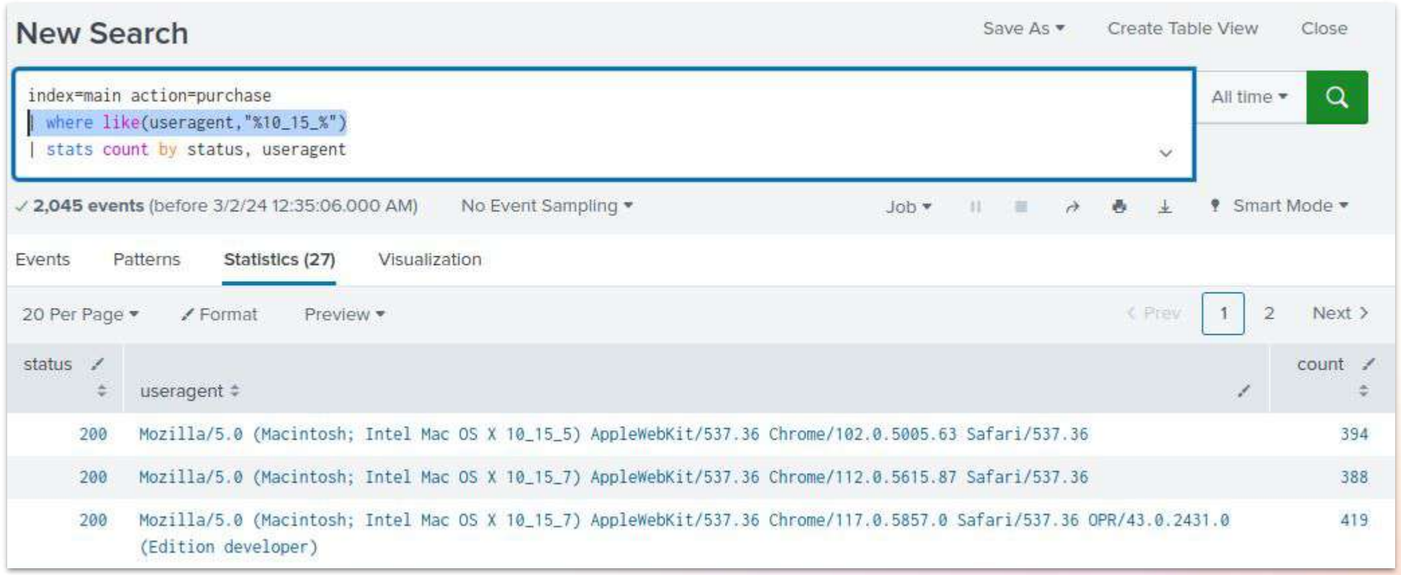
Interesting Searches - 2

Differences between filter/search behavior

```
index=main action=purchase
| stats count by status, useragent
| where count > 300
```




```
index=main action=purchase
| where like(useragent,"%10_1%_%")
| stats list(useragent) by status
```



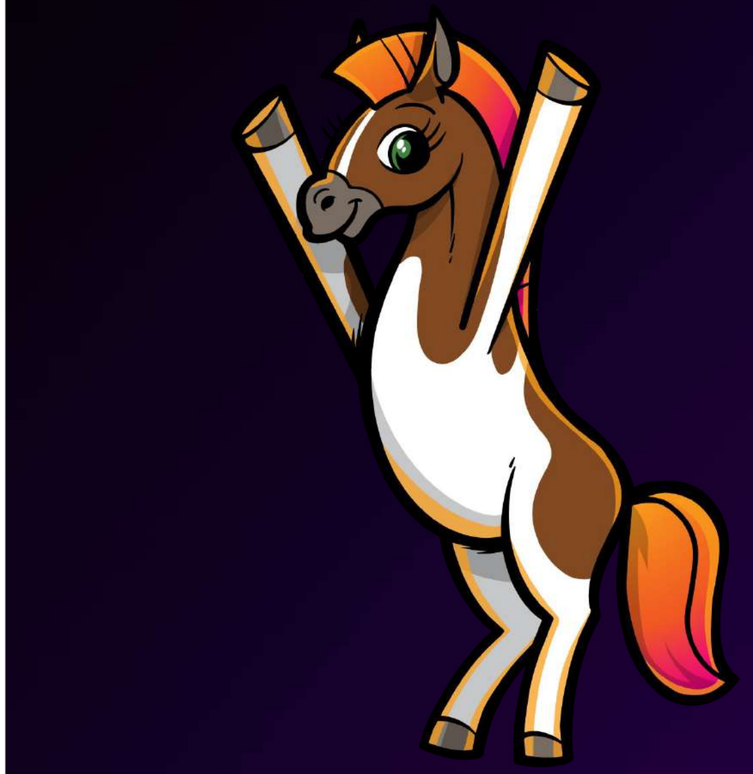
Today’s Scenario

Your Company

- Buttercup Enterprises is a large national online retailer operating in the US, which sells a variety of books, clothing and other gifts through its online webstore
- Buttercup Enterprises have recently invested in Splunk and now they want to start making use of it across the business

Your Role

- You are one of the chosen few: a Splunk power user!
- Your responsibility is to provide insights to users throughout the company
- The teams you support include:
  - **IT Operations**
  - **DevOps**
  - **Business Analytics**
  - **Security and Fraud**



BUTTERCUP ENTERPRISES

What Does the Business Want to See?

We need to create a dashboard with four views:

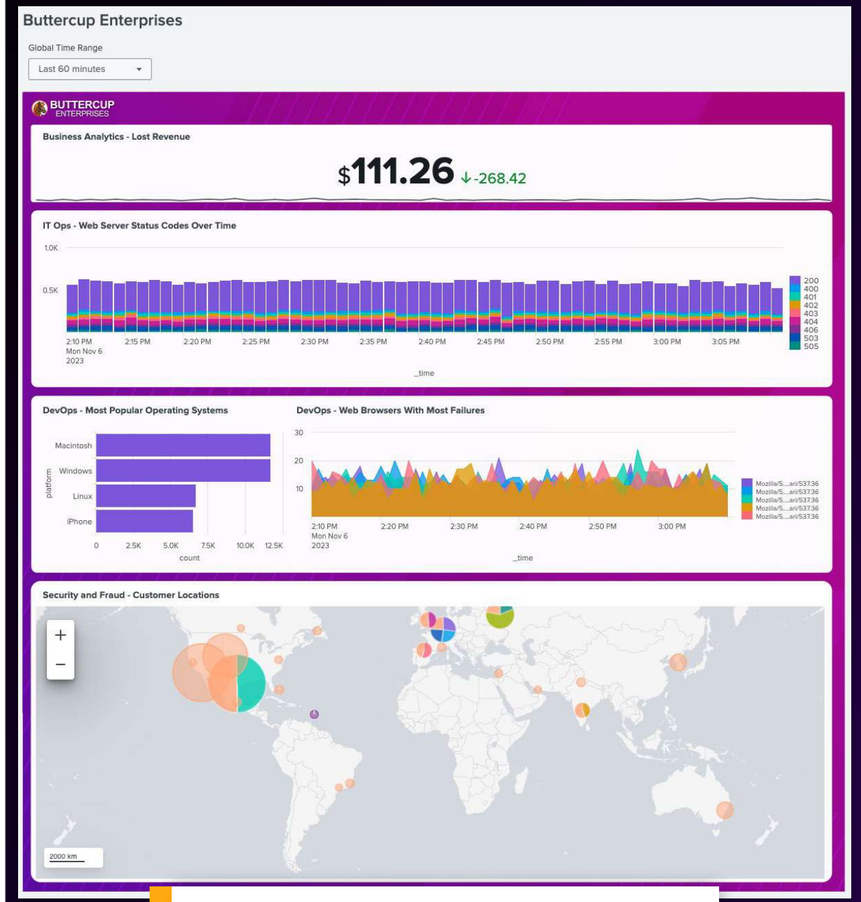
IT Operations team: Investigate successful versus unsuccessful web server requests over time

DevOps team: Show the most common customer operating systems and which web browsers are experiencing the most failures

Business Analytics team: Show lost revenue from the Buttercup Enterprises website

Security and Fraud team: Show website activity by geographic location

Buttercup Enterprises: Add all of this to a single dashboard with a custom background image



This is the dashboard we're aiming for!

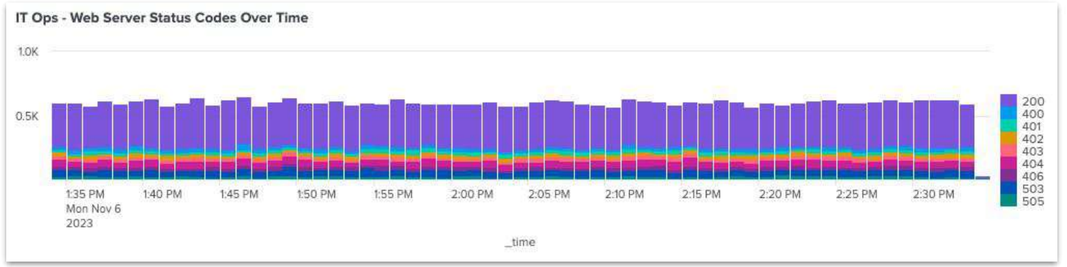
IT Operations Team

Investigate successful versus unsuccessful web server requests over time

Tasks

1. Show successful vs unsuccessful web server requests over time
2. Use a stacked column chart visualisation
3. Add your chart to a new dashboard
4. Choose ‘Dashboard Studio’ and use ‘Absolute’ layout mode to allow for future dashboard customisation!

Goal



Splunk Dashboards

Classic Dashboards (Simple XML)

- Easy to deploy a **wide variety of visualisations**, but **hard to craft a story**
- **Flexible and extensible**, but **time consuming** to build something truly beautiful (e.g. custom JS, CSS)
- **PDF export loses look/feel** of dashboard

Dashboard Studio

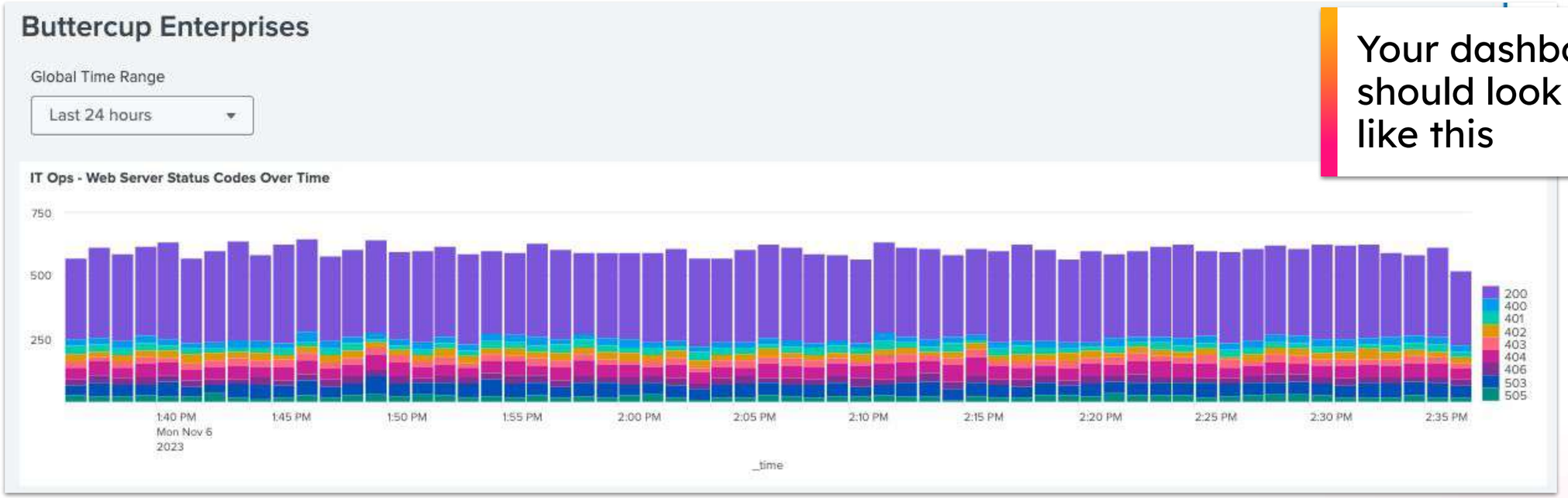
- Create **powerful, story-telling dashboards** with **advanced visualisation tools**
- **Streamlined editing experience** with **flexible layouts**
- Support for **images**, **text boxes**, **shapes**, **lines** and **icons**, with **intact PDF export**
- **No custom code** required

IT Operations Team

Investigate successful versus unsuccessful web server requests over time

Solution:

```
index=main sourcetype=access_combined | timechart count by status limit=10
```

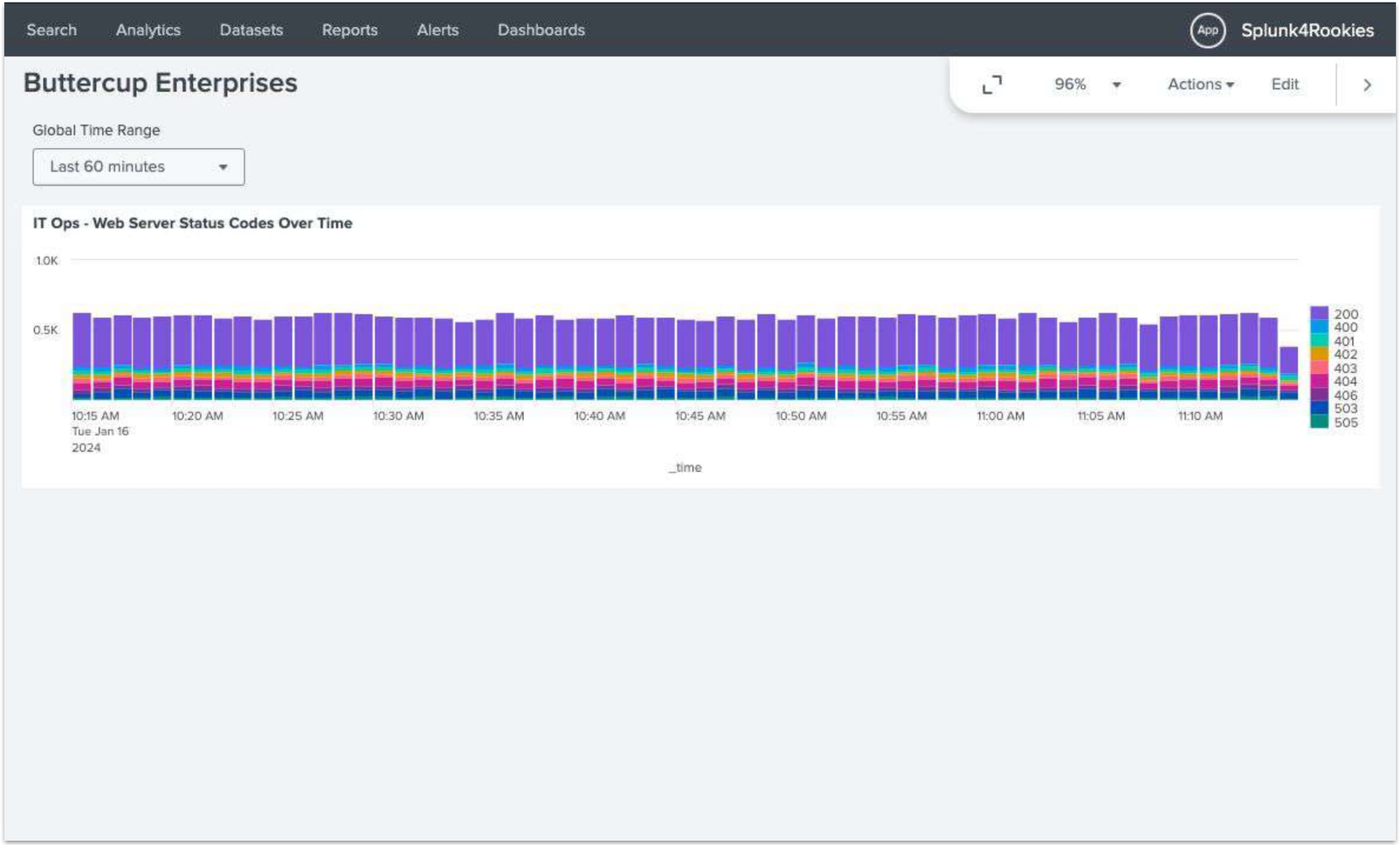


Your dashboard panel should look something like this

Time Range

Your dashboard so far...

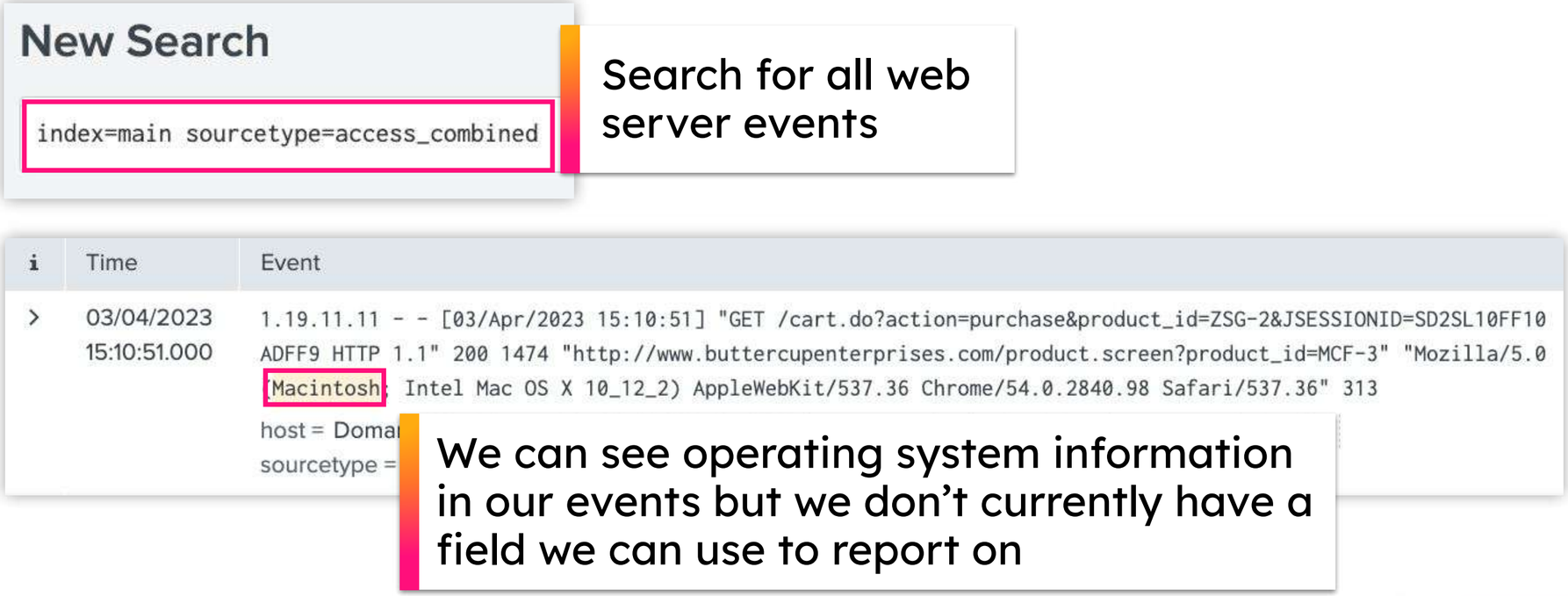
IT Operations team ✓



DevOps Team

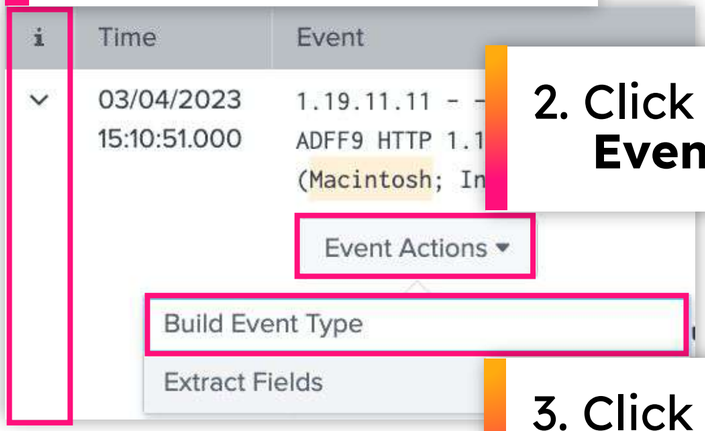
Show the most common customer operating systems and which web browsers are experiencing the most failures

Step 1: Show the most common customer operating systems



Extracting a New Field

1. Click on the arrow to expand an event

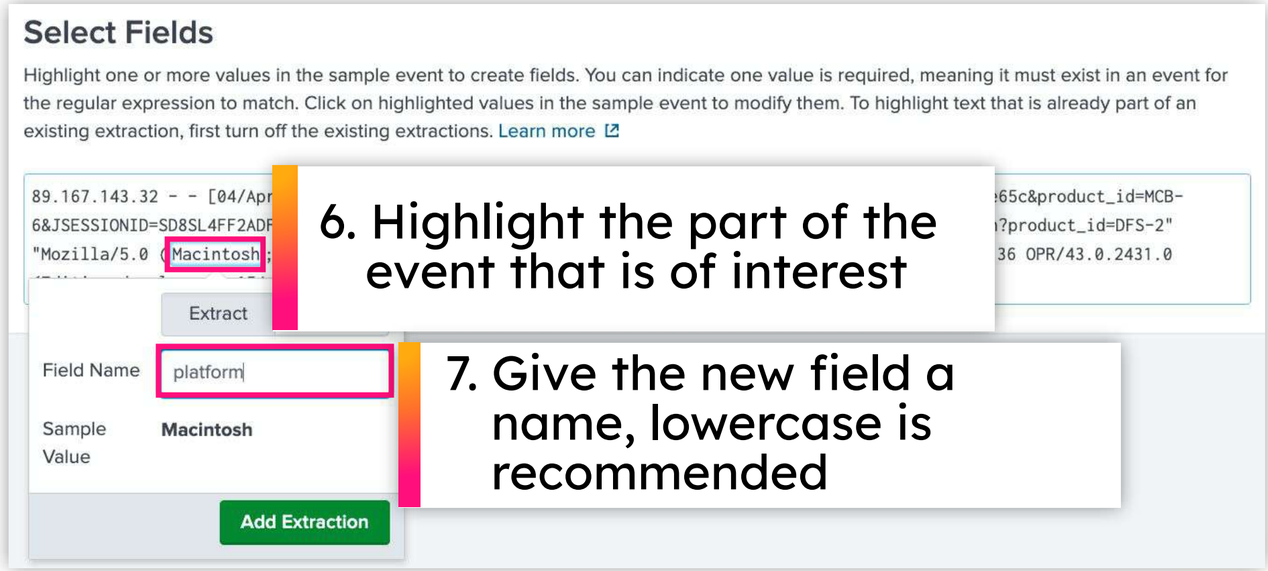


2. Click on **Event Actions**

3. Click on **Extract Fields**

4. Click on **Regular Expression**

5. Click **Next**



6. Highlight the part of the event that is of interest

7. Give the new field a name, lowercase is recommended

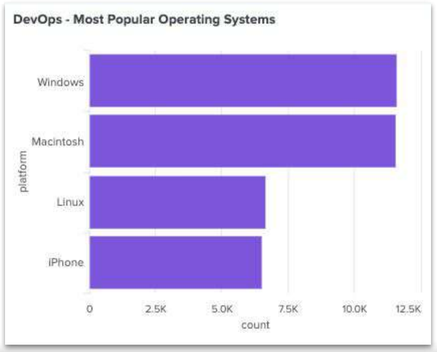
DevOps Team

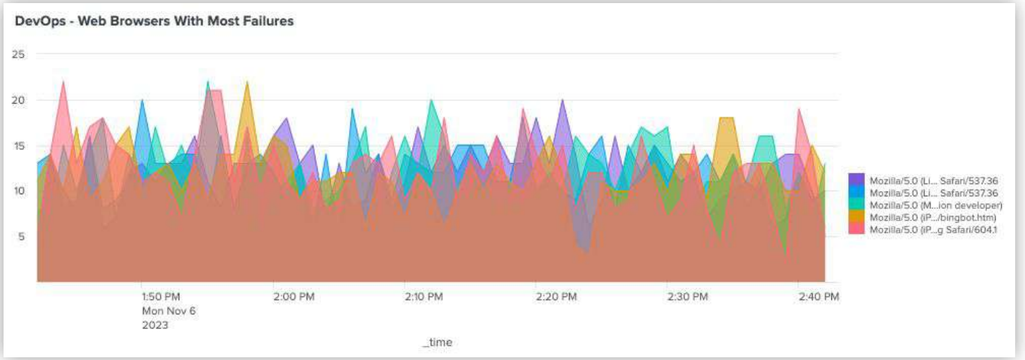
Show the most common customer operating systems and which web browsers are experiencing the most failures

Tasks

1. Extract a new platform field
2. Show the top values using a bar chart visualisation
3. Create an area chart showing the top 5 web browsers that are experiencing the most failures over time
4. Add your charts to your existing dashboard

Goal



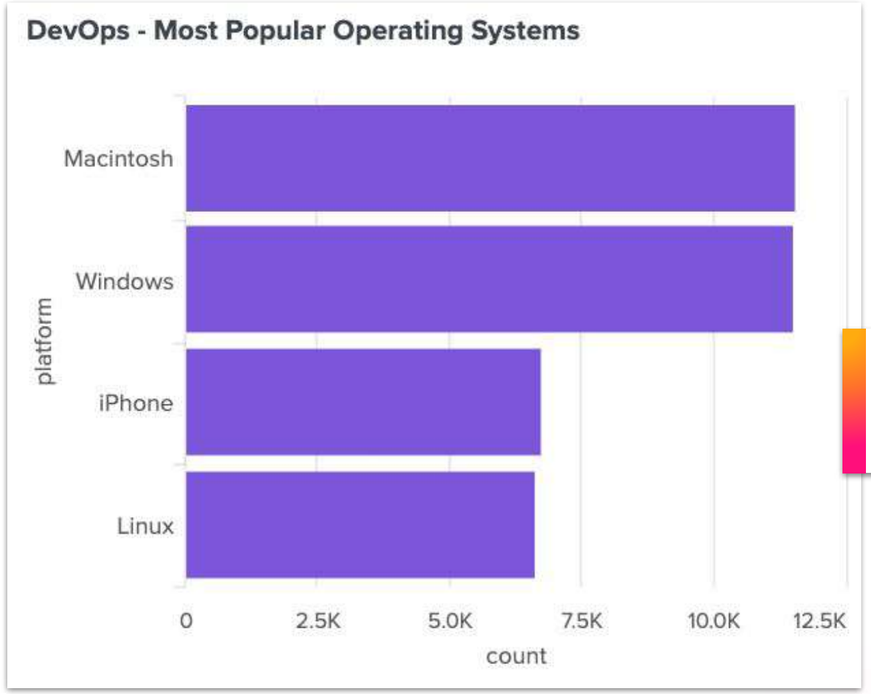


DevOps Team

Show the most common customer operating systems

Solution:

```
index=main sourcetype=access_combined | top limit=20 platform showperc=f
```



When you're happy with your chart add it to your dashboard!

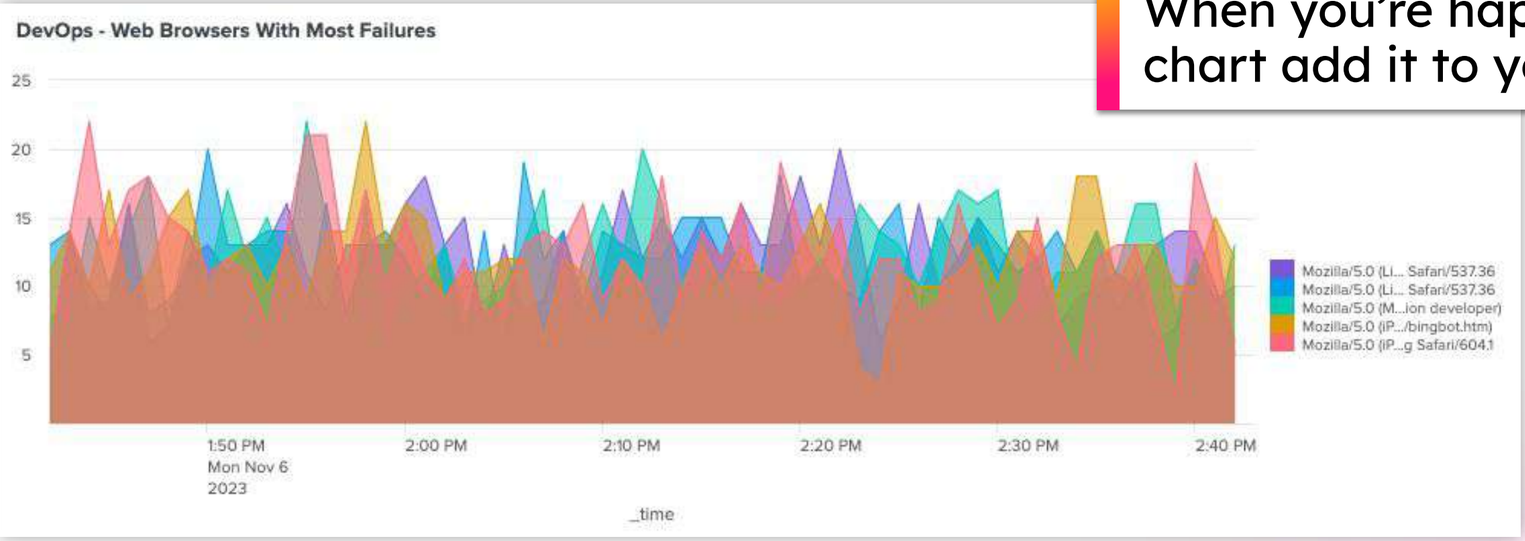
DevOps Team

Create a graph showing the top 5 web browsers that are experiencing the most failures over time

Solution:

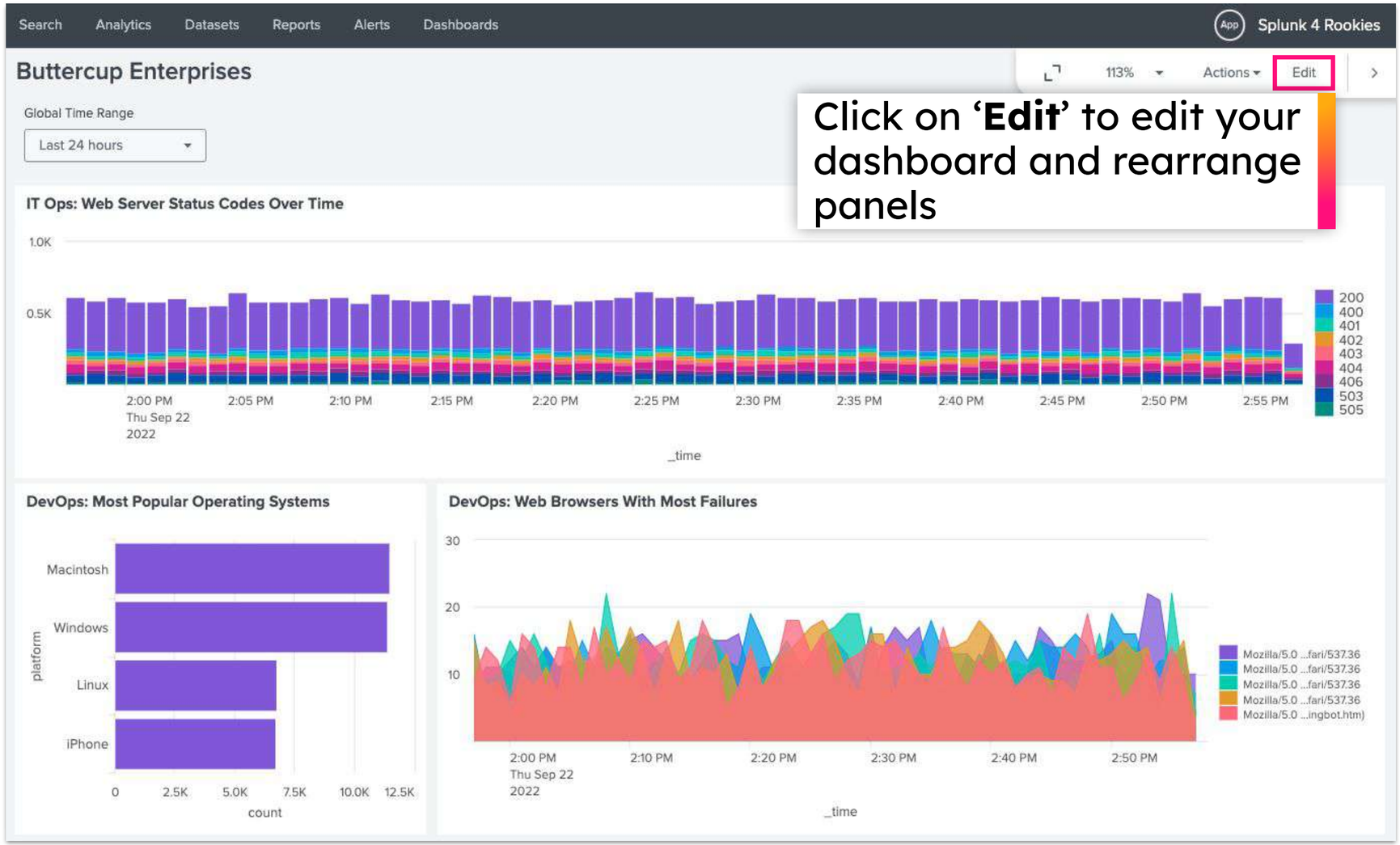
```
index=main sourcetype=access_combined status>=400
| timechart count by useragent limit=5 useother=f
```

When you're happy with your chart add it to your dashboard!



Your dashboard so far...

- IT Operations team ✓
- DevOps team ✓



Working with statistics? Use `stats` and `timechart`

Usage:

```
<your search> | stats <function> <by clause>
<your search> | timechart <function> <by clause>
```

Examples:

```
index=main sourcetype=access_combined
| stats distinct_count(clientip) by status
```

status	distinct_count(clientip)
200	67
400	67
401	67
402	

Calculates statistics based on fields in your events

```
index=main sourcetype=access_combined
| timechart count by status
```

_time	200	400	401	402	403	404
2022-10-05 11:20:00	368	29	26	20	18	50
2022-10-05 11:21:00	374	23	19	25	33	57

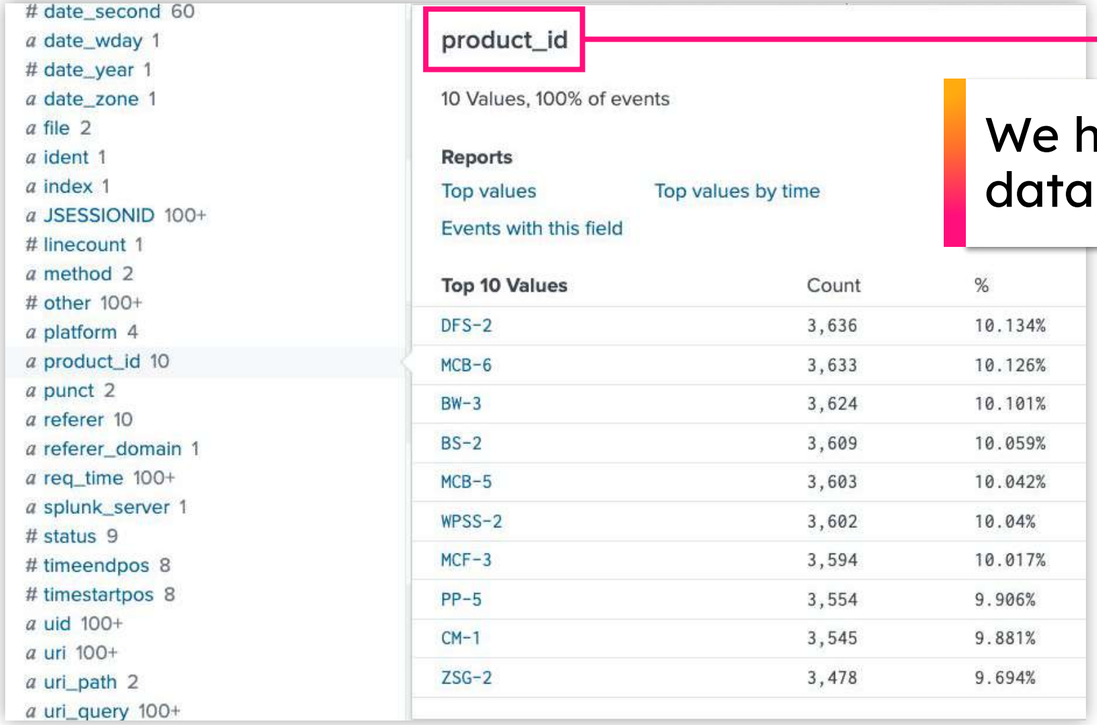
Creates a time series chart with a corresponding table of statistics

Want to know more? Check out:
Splunk Quick Reference Guide: https://splk.it/SplunkQuickRef

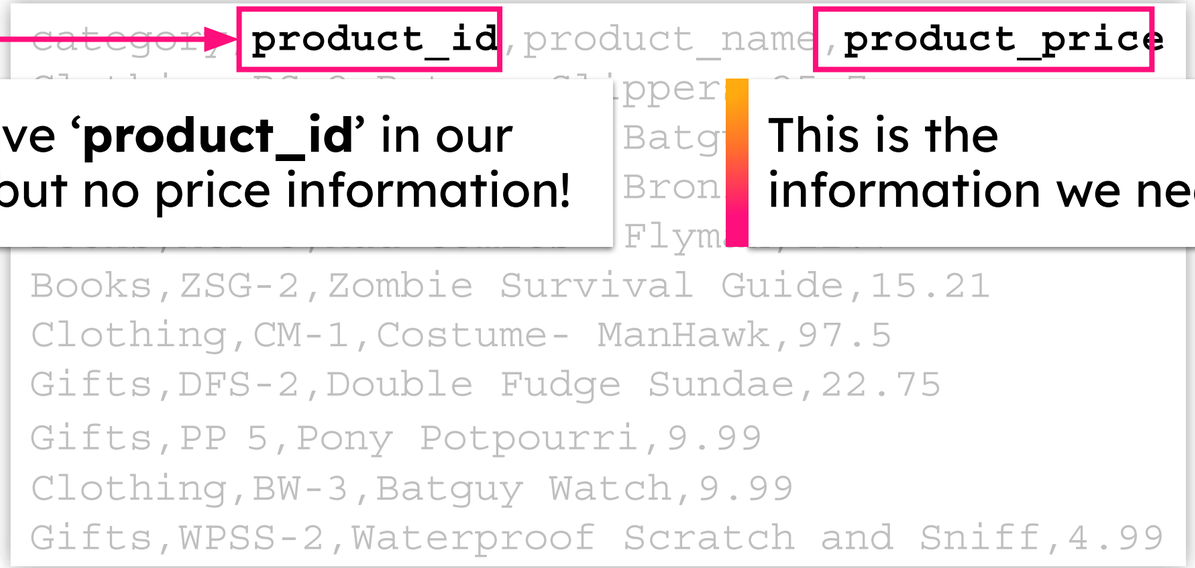
Business Analytics Team

Show lost revenue from the website

Fields extracted from events by Splunk:



External CSV file:

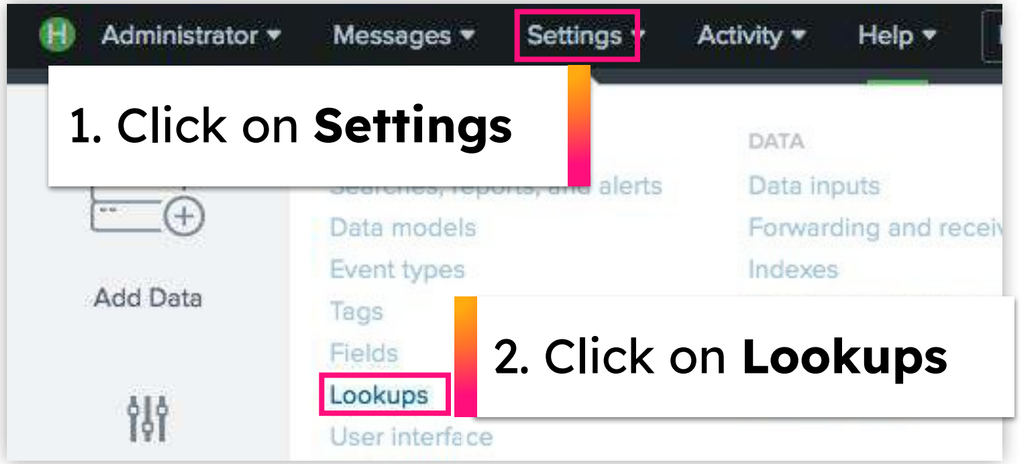


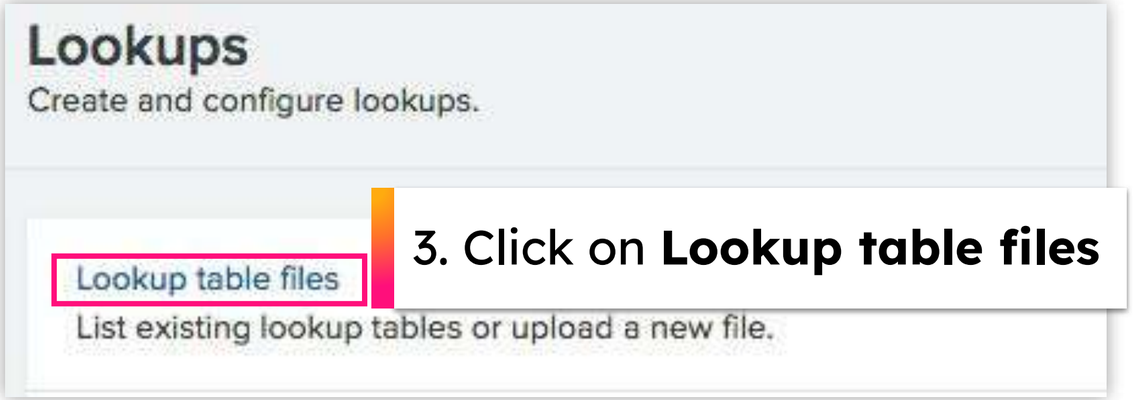
We have '**product_id**' in our data, but no price information!

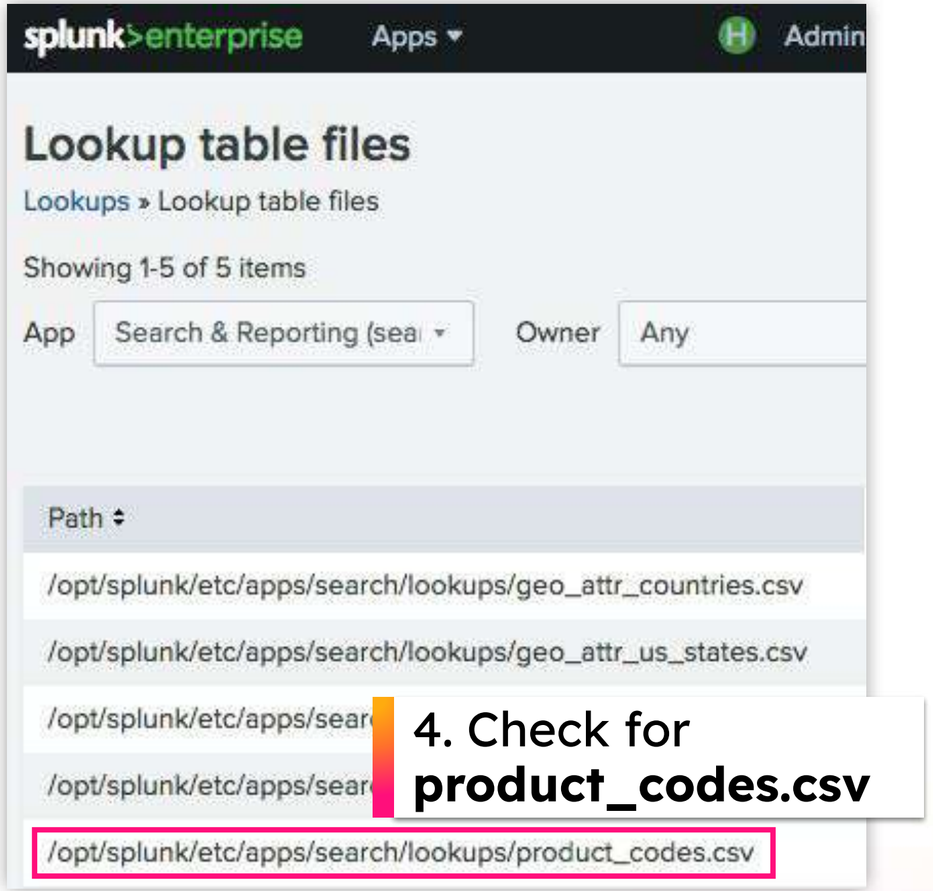
This is the information we need!

Verify That the Lookup File Exists

A lookup file has already been uploaded for you!







Enriching Data with the lookup Command

Usage:

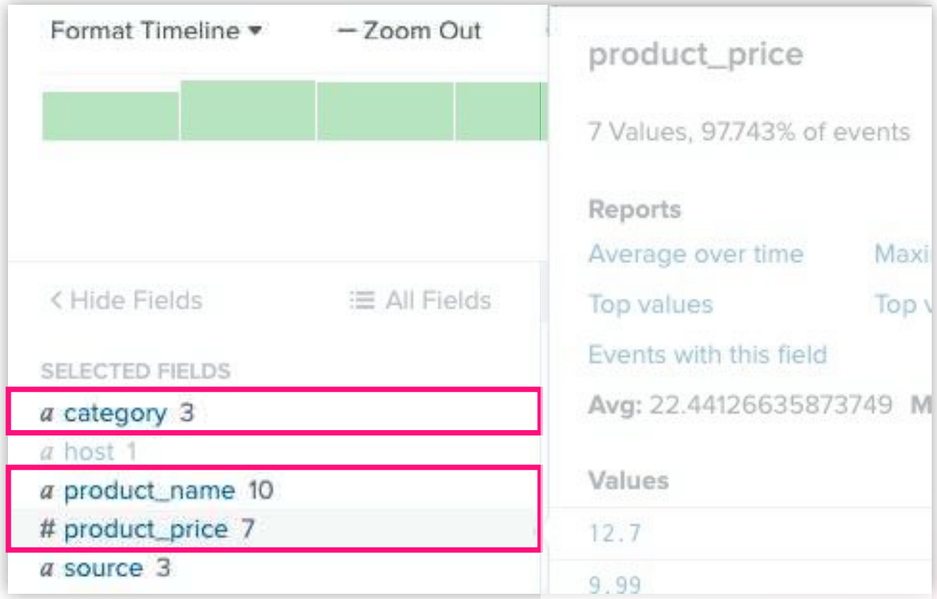
```
<your search> | lookup product_codes.csv product_id
```

Splunk command to enrich data on-the-fly

The name of the lookup file uploaded to Splunk

The field to join on - 'product_id' is the field that exists in both the Splunk data and the lookup file

The lookup command retrieves additional fields from the lookup file



Business Analytics Team

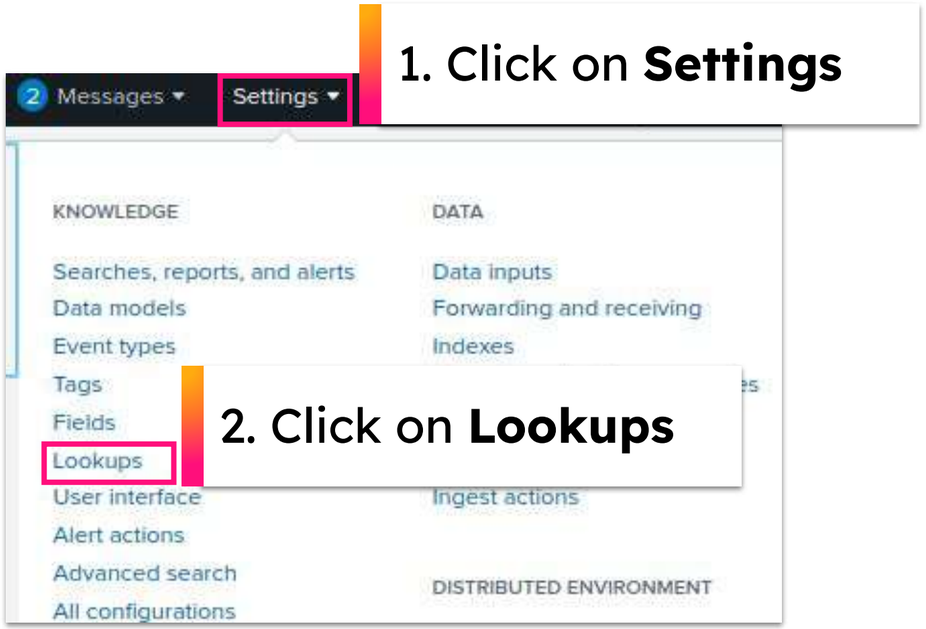
Show lost revenue from the website

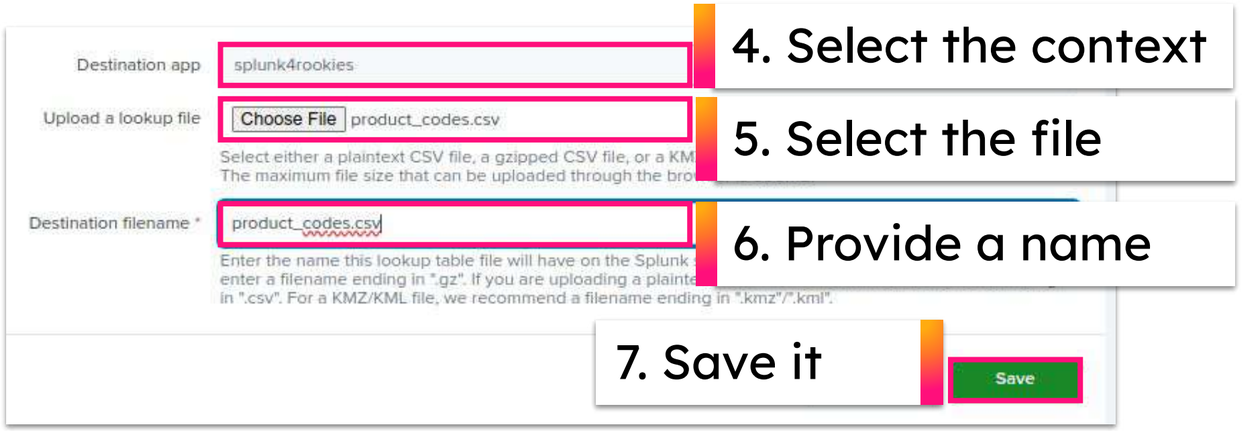
Tasks

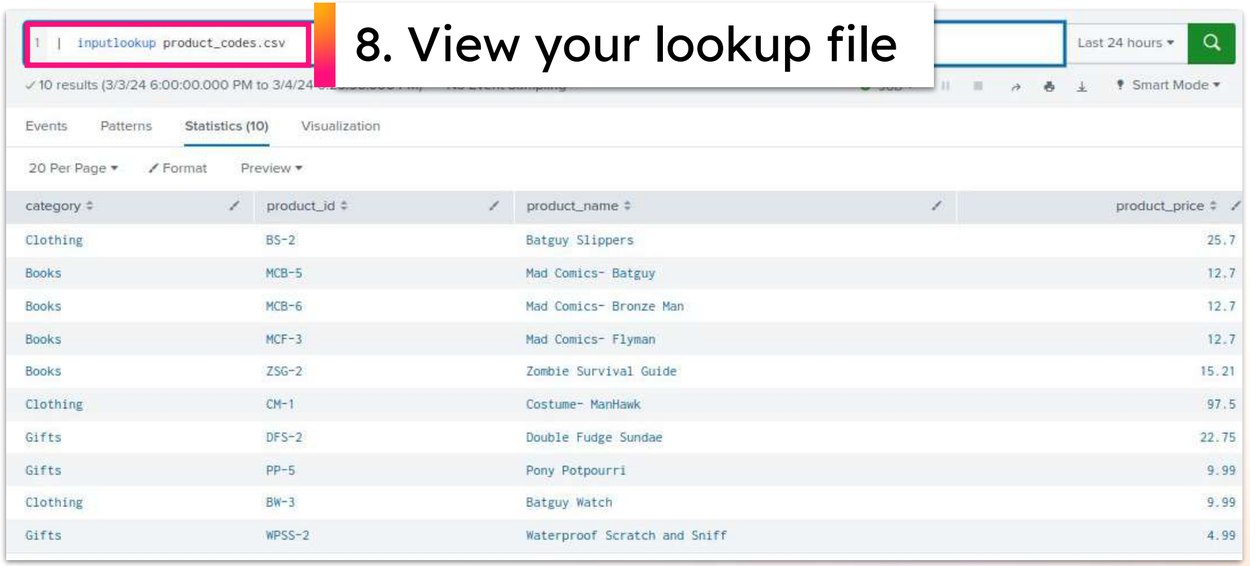
1. Use the `lookup` command to enrich the events with price data from our lookup file
2. Show lost website revenue using a Single Value visualisation
3. Add your visualisation to your existing dashboard

Goal

How to Create a Lookup File







category	product_id	product_name	product_price
Clothing	BS-2	Batguy Slippers	25.7
Books	MCB-5	Mad Comics- Batguy	12.7
Books	MCB-6	Mad Comics- Bronze Man	12.7
Books	MCF-3	Mad Comics- Flyman	12.7
Books	ZSG-2	Zombie Survival Guide	15.21
Clothing	CM-1	Costume- ManHawk	97.5
Gifts	DFS-2	Double Fudge Sundae	22.75
Gifts	PP-5	Pony Potpourri	9.99
Clothing	BW-3	Batguy Watch	9.99
Gifts	WPSS-2	Waterproof Scratch and Sniff	4.99

Business Analytics Team

Show lost revenue from the website

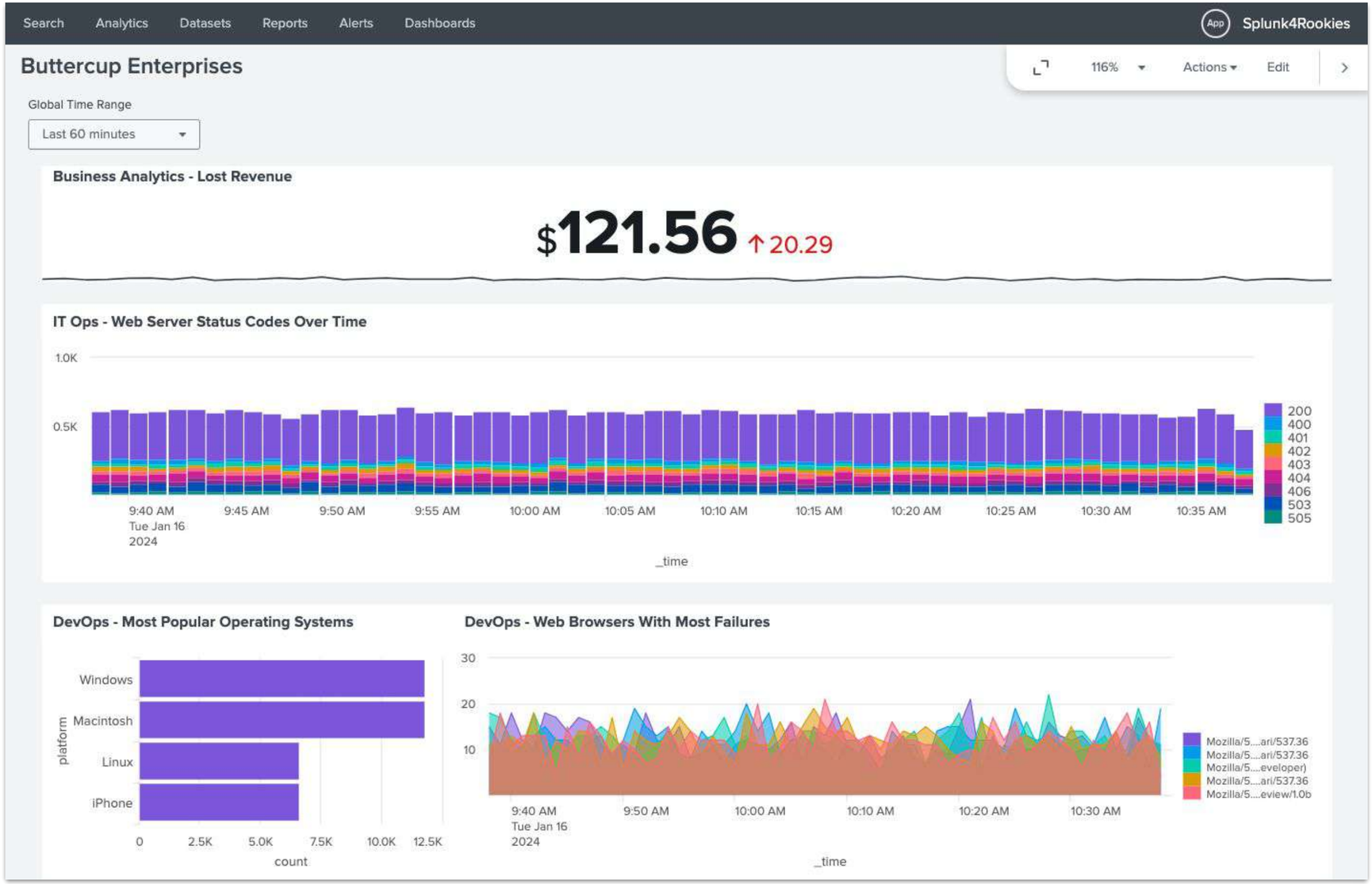
Solution:

```
index=main sourcetype=access_combined action=purchase status>=400
| lookup product_codes.csv product_id
| timechart sum(product_price)
```

When you're happy with your chart add it to your dashboard!

Your dashboard so far...

- IT Operations team ✓
- DevOps team ✓
- Business Analytics team ✓



Obtaining Location Information with the `iplocation` and `geostats` Commands

Usage:

The name of a field in your data that contains IP addresses

Generates the 'tiles' that will be rendered on the map when visualised

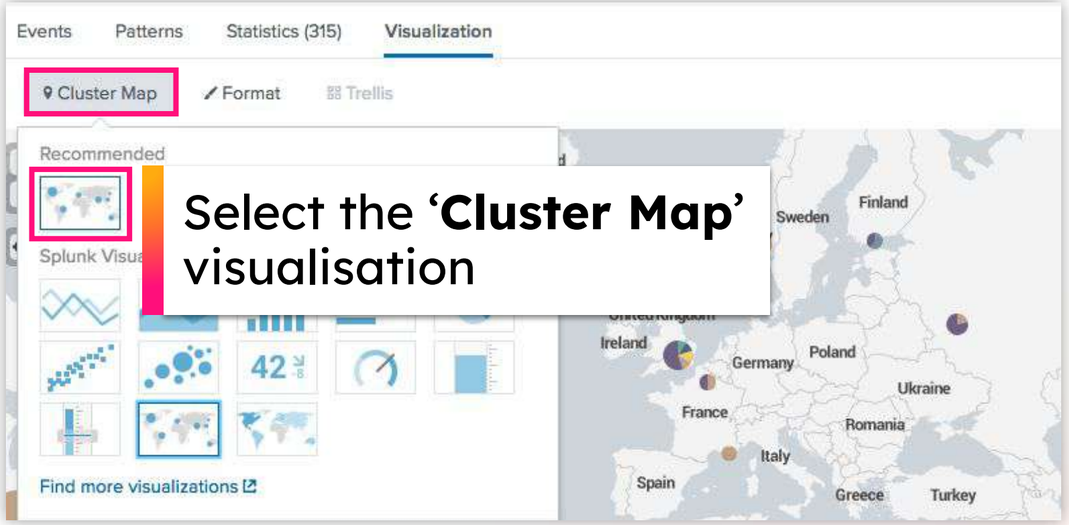
Split your results by a specific field for more detailed analysis

```
<your search> | iplocation clientip | geostats count by <field>
```

Enriches IP data on-the-fly with location data

- a City 54
- a Country 23
- # lat 56
- # lon 56
- a Region 41

The `iplocation` command produces additional fields containing geographic data



Security and Fraud Team

Show website activity by geographic location

Tasks

1. Use the `iplocation` command to enrich the events with location data
2. Generate a world map showing the geographic location of all website activity down to the city level
3. Add your visualisation to your existing dashboard

Goal

Security and Fraud Team

Show website activity by geographic location

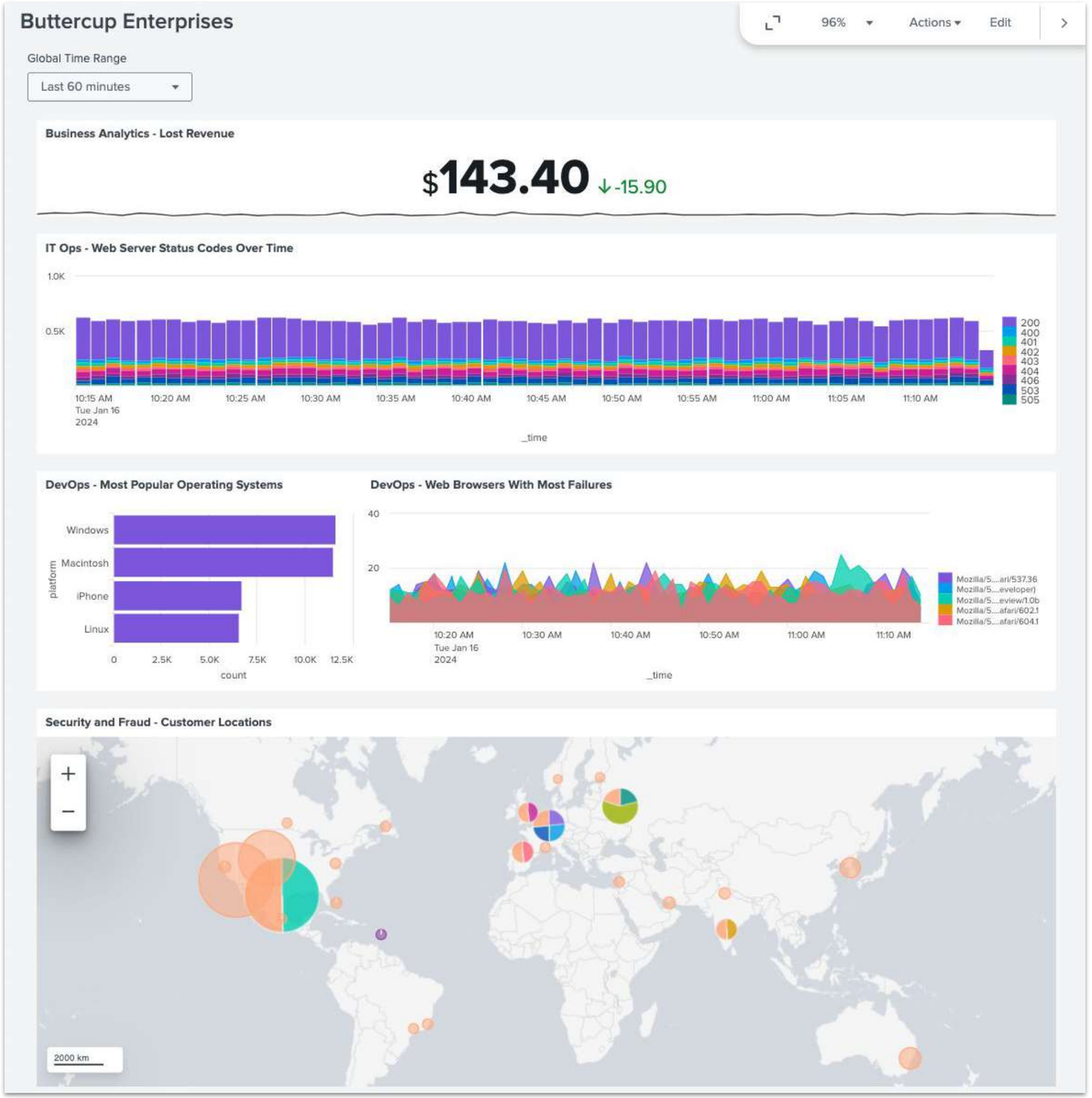
Solution:

```
index=main sourcetype=access_combined
| iplocation clientip | geostats count by City
```

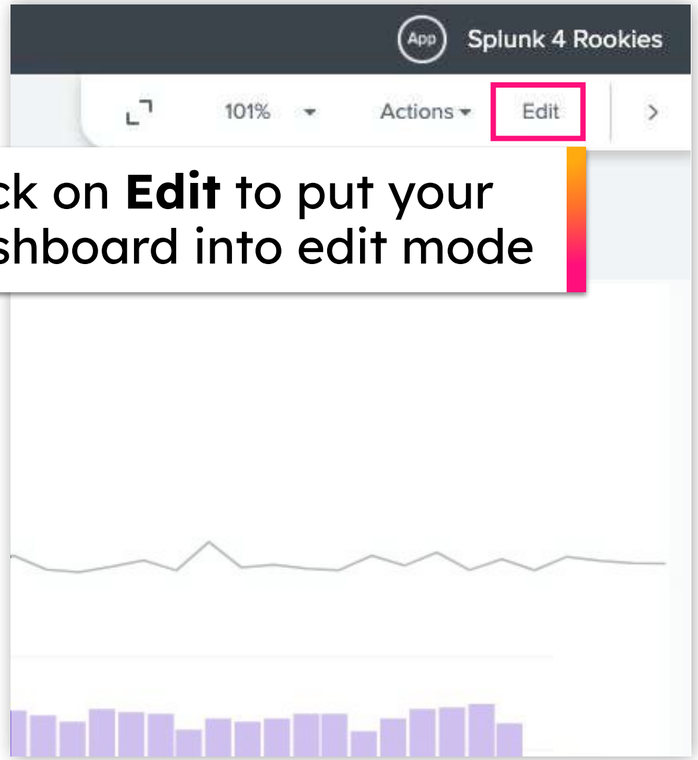
When you're happy with your chart add it to your dashboard!

Your dashboard so far...

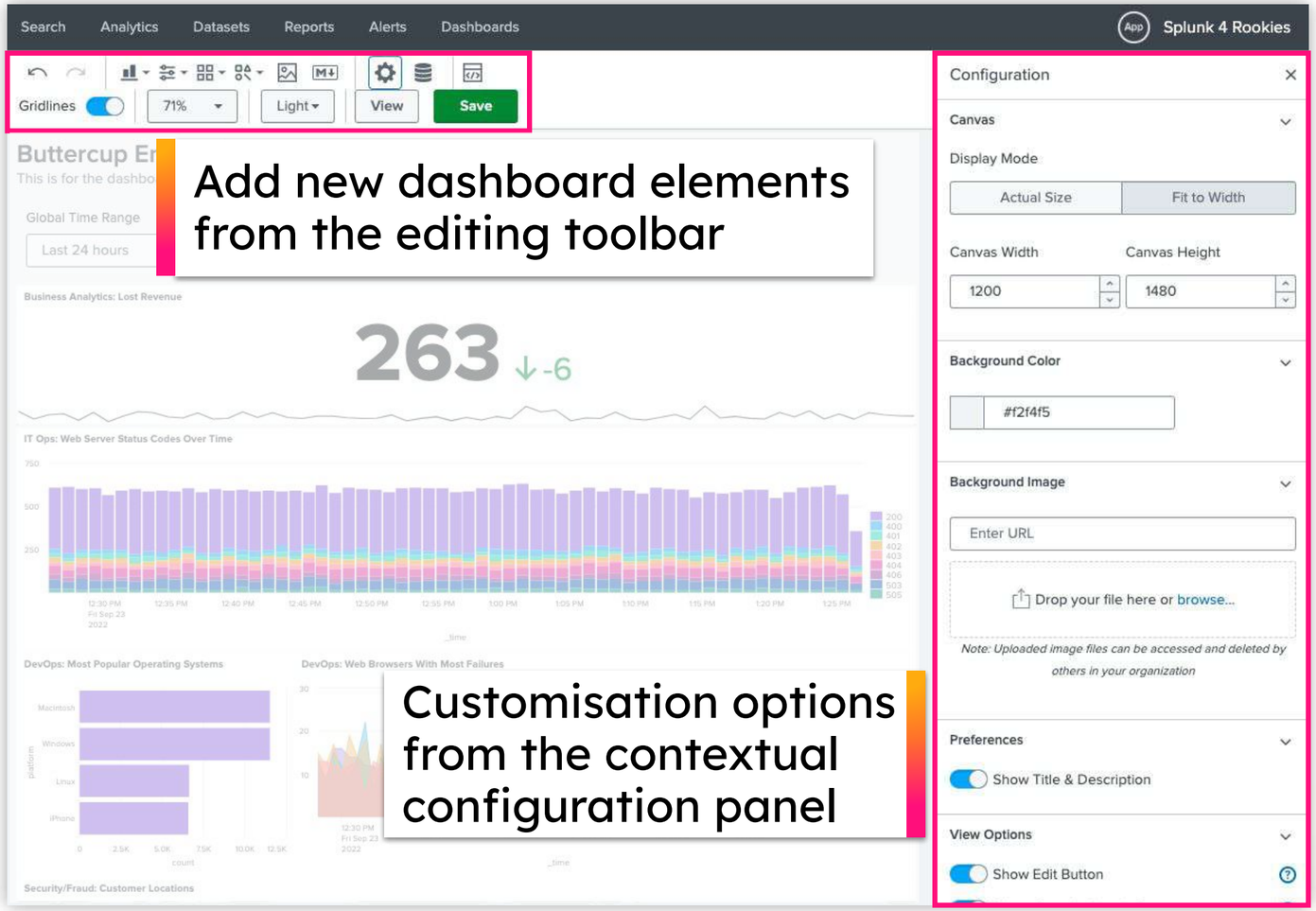
- IT Operations team ✓
- DevOps team ✓
- Business Analytics team ✓
- Security and Fraud team ✓



Customise Your Dashboard



Click on **Edit** to put your dashboard into edit mode



Add new dashboard elements from the editing toolbar

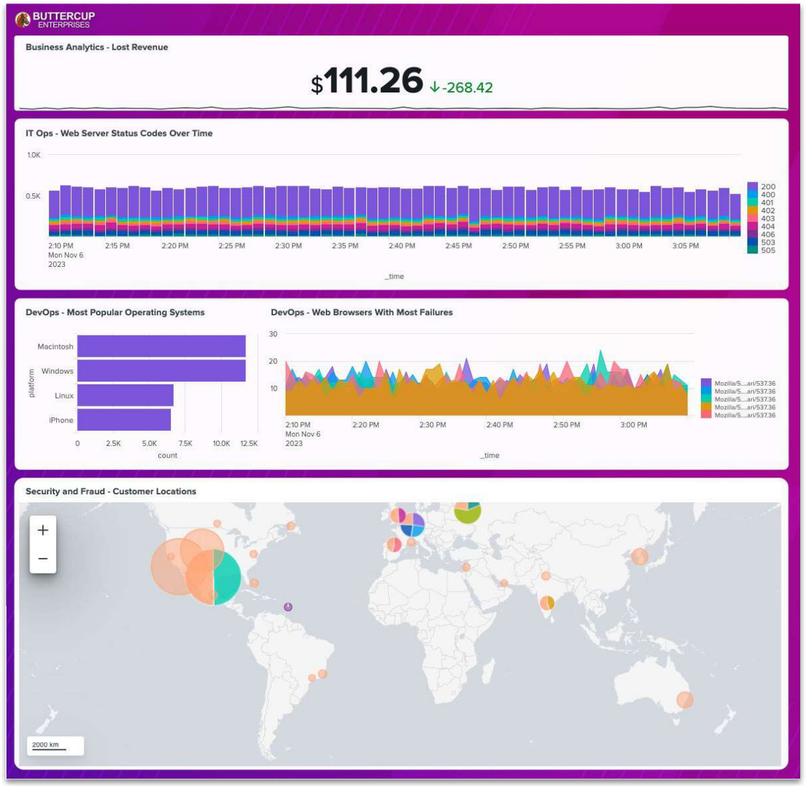
Customisation options from the contextual configuration panel

Customise Your Dashboard

Tasks

1. Add a custom background image provided by the Buttercup Enterprises Marketing team (https://splk.it/ButtercupBackground)
2. Resize your dashboard panels to fit within the boxes on the background image
3. Link your dashboard panels to the global time picker

Goal



Some Search & Dashboard Best Practices

Search: Always use two of index=<>, source=<>, sourcetype=<>

Search: Never use leading “*” in any use – never is a really long time, but be truly aware of what you are doing

Search: Understand the importance of the first “|” character – for the most part, everything after it is done on the searchhead, maximize to the left of the “|”

Search: Be aware of the architecture – Map/Reduce parallelization implies push the work onto the indexers

Search: Use stats rather than other inefficient agglutination commands, such as join or transaction

Search: Minimize the use of subsearches – understand how they work and how to be as efficient as possible with them

Search: No Real-Time searches, use shortest time possible, avoid “All Time” as well

Search: Avoid “index=main”. Be sure that events go into appropriate indexes

Search: Use fields and filters as much as possible, be inclusive rather than exclusive (avoid “NOT”, know your data)

Dashboard: Be as efficient in your dashboard searches as you are with the adhoc/saved searches

Dashboard: Use base or chained searches

Dashboard: Understand your data and how to present it

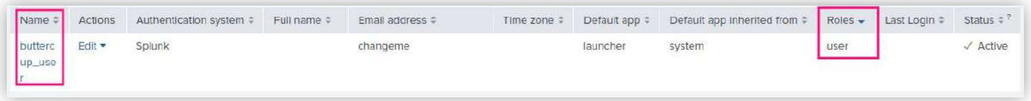
Dashboard: Don’t use auto-updating dashboards unless an admin builds the dashboard … don’t permit auto-updates unless an admin makes it available to the larger audience

Users & Roles

Tasks

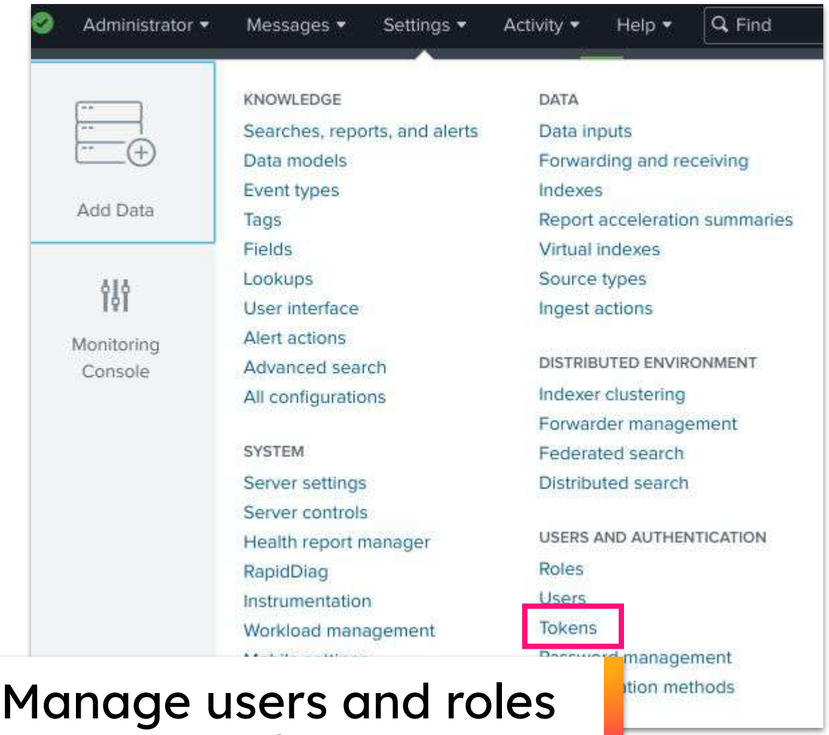
1. Discover Roles in Splunk
   - ↳ Find the definitions of roles in the Splunk interface
2. Discover Users in Splunk
   - ↳ Find the user definitions in Splunk and assign a role to the user
3. Observe the assigned ability in Splunk

Goal



1. See a new user with the “user” role
2. Experience how the role sets the user’s abilities

Users -> Roles

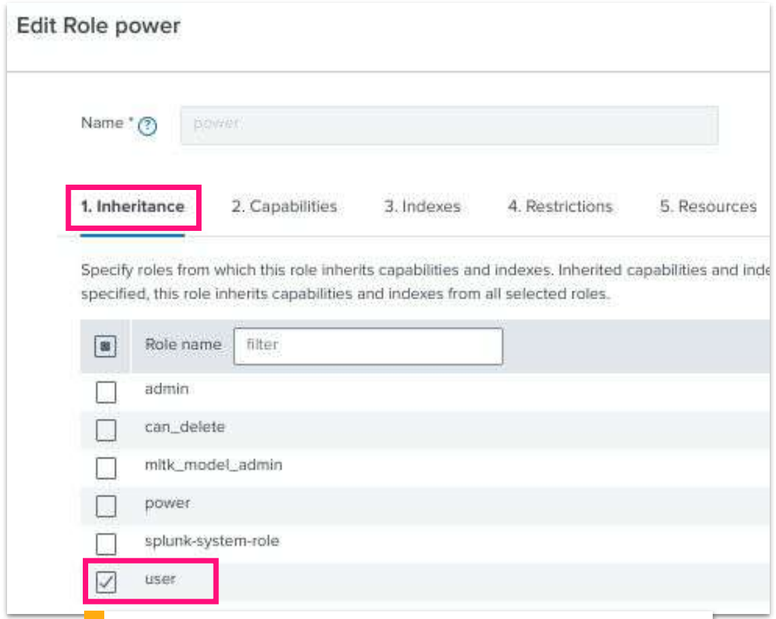


Manage users and roles via the **Settings** menu

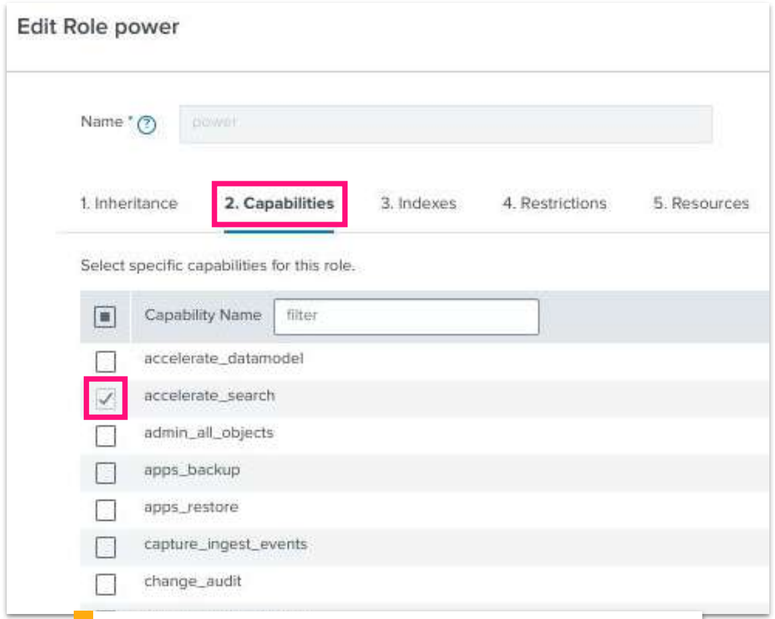
Here we see that the **admin** user has the "**admin**" role

Roles -> Ability

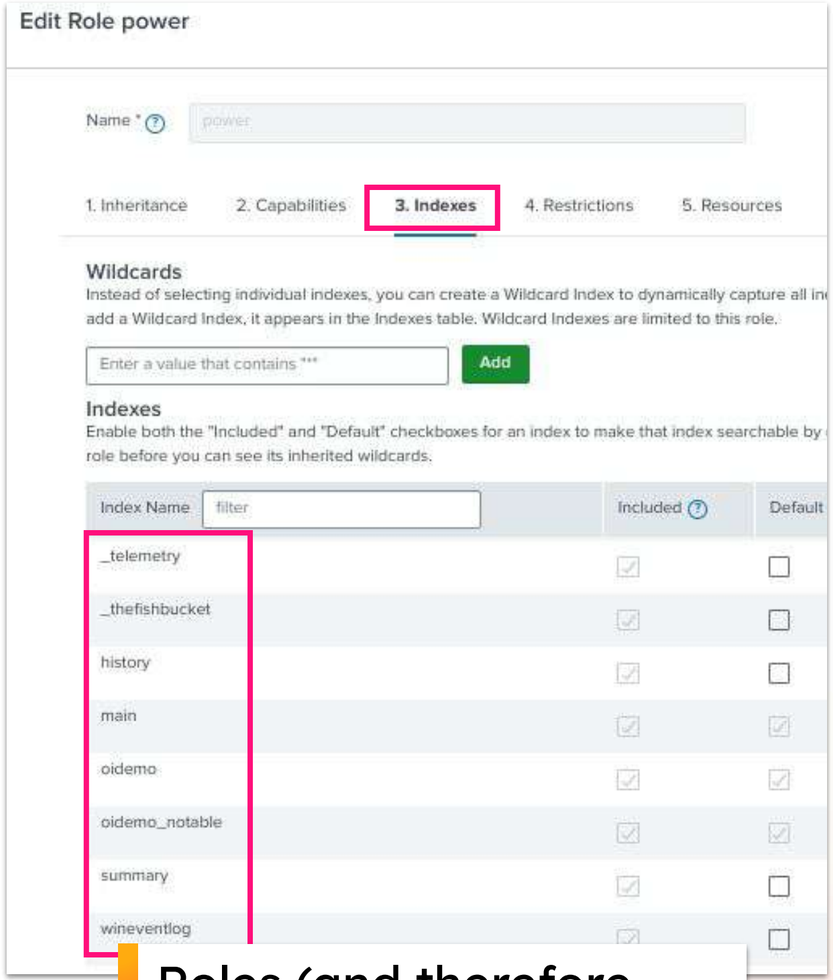
Ability = inheritance, capabilities, indexes, restrictions, resources



Roles inherit capabilities from other roles via layering



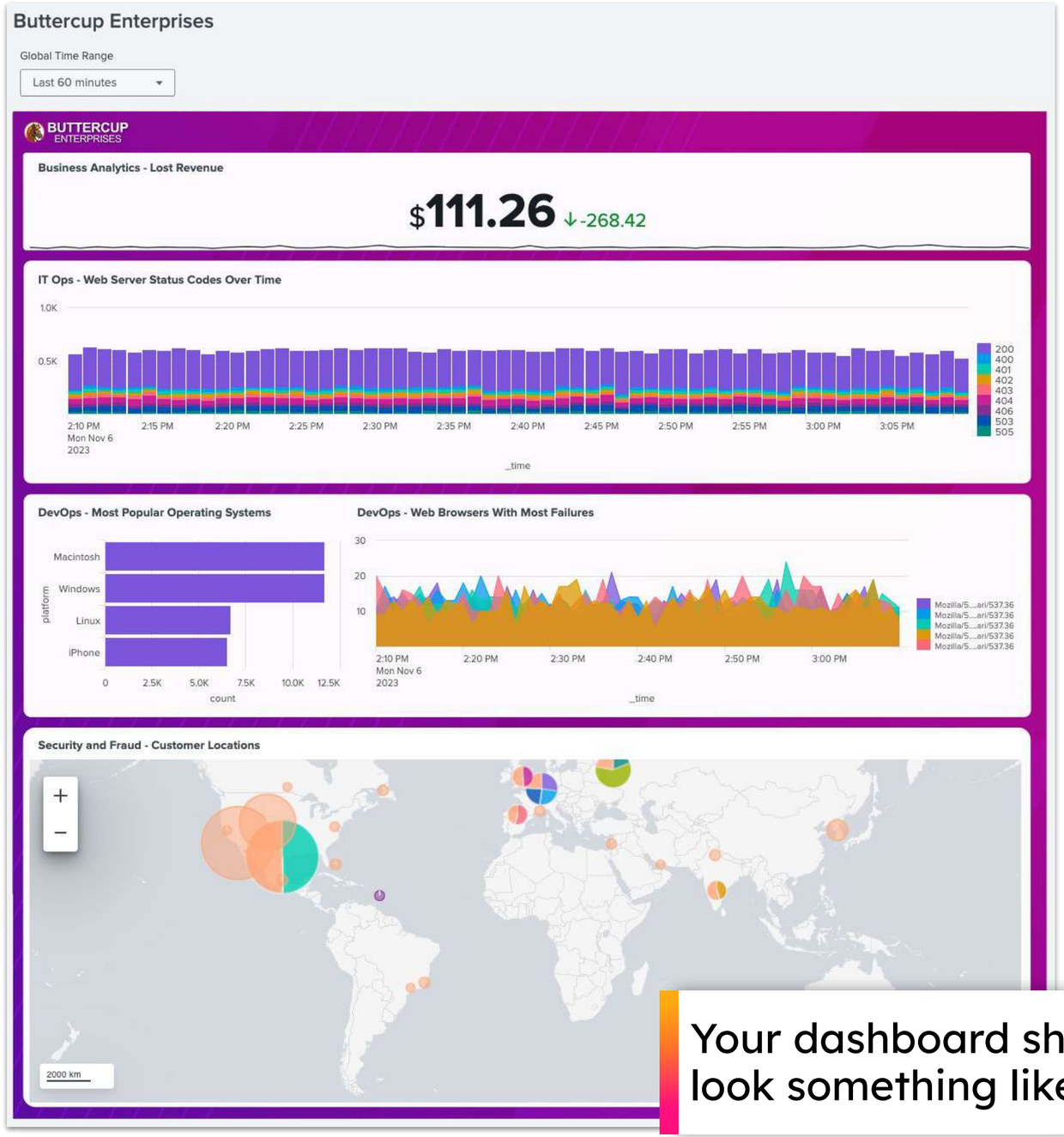
Roles carry their own capabilities (that layer)



Roles (and therefore users) gain access to indexes

You've Finished the Hands-on Exercises!

- IT Operations team ✓
- DevOps team ✓
- Business Analytics team ✓
- Security and Fraud team ✓
- Dashboard with custom background ✓

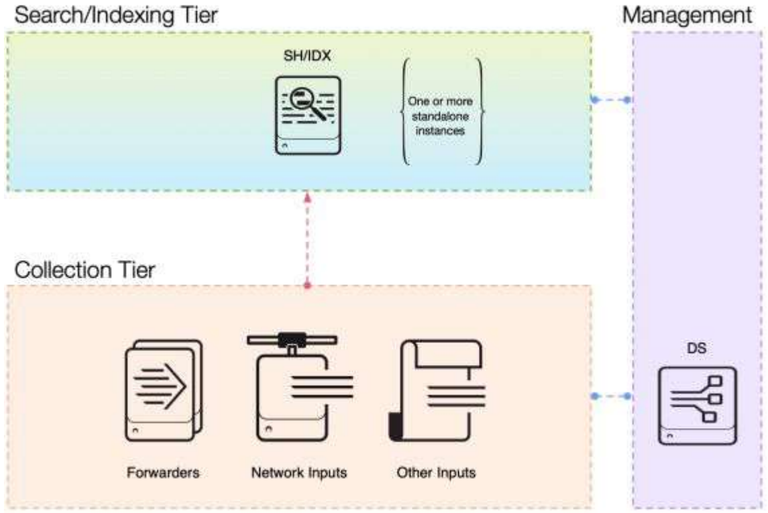


Your dashboard should look something like this

Splunk Architecture

```
index=main action=purchase | stats count by status | rename count as “number of events”
```

```
index=main action=purchase
| stats count by status
| rename count as “number of events”
```

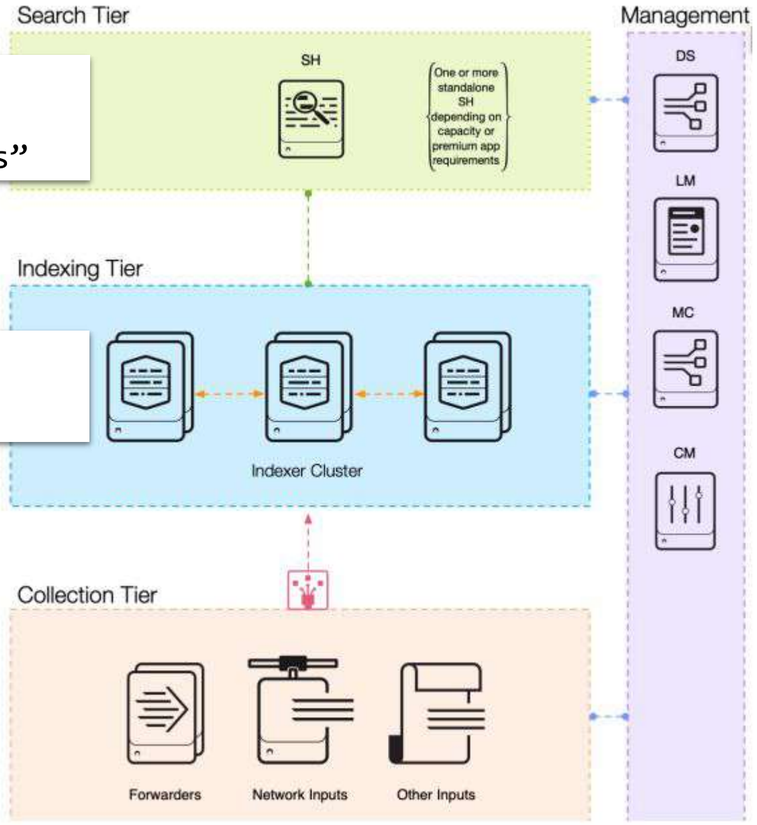


Basic Configuration

Basic Distributed Configuration

```
...
| stats count by status
| rename count as “number of events”
```

```
index=main action=purchase
```



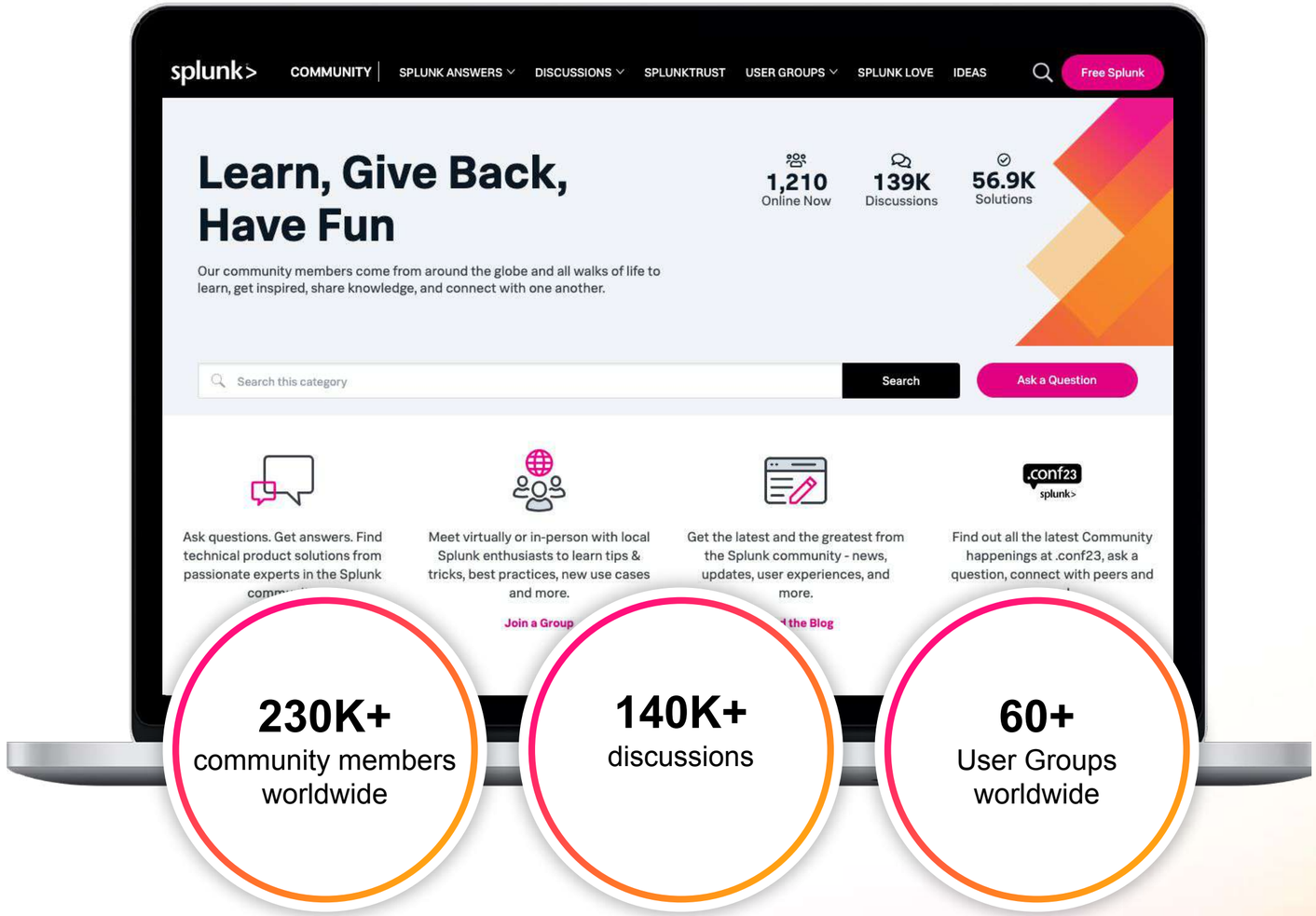
Splunk Resources

Where to go after today's workshop

Splunk Community

https://community.splunk.com

- A free way to connect, learn, have fun, and find success with Splunk
- Ask questions, get answers, and find solutions from passionate experts in the community
- Meet in-person or virtually with like-minded enthusiasts, in your area or by interest
- Search for, vote on, or submit your own ideas for new enhancements for any product or solution



Splunk Events

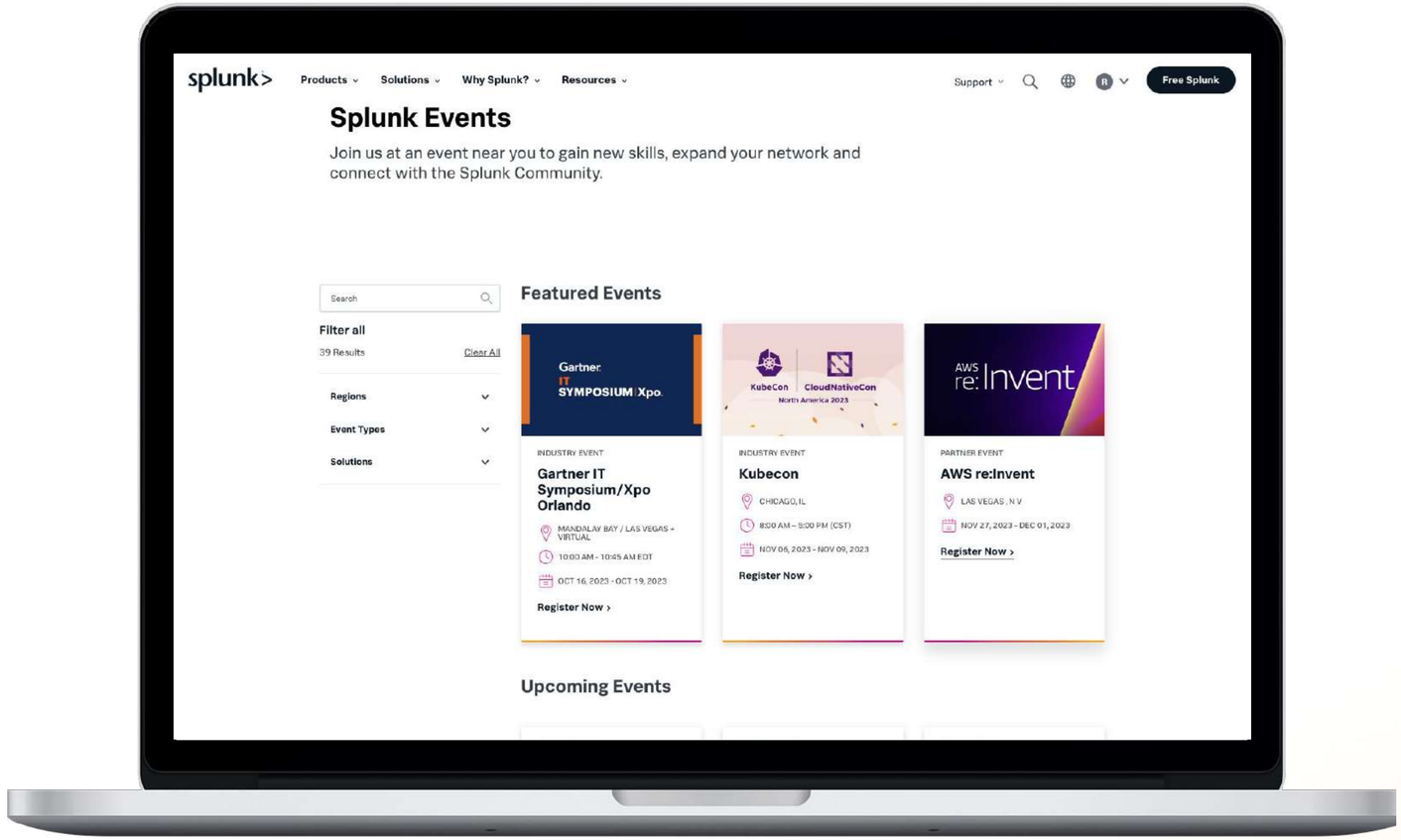
https://splunk.com/events

- Expand your network and connect with the global and local Splunk community

.conf

https://conf.splunk.com

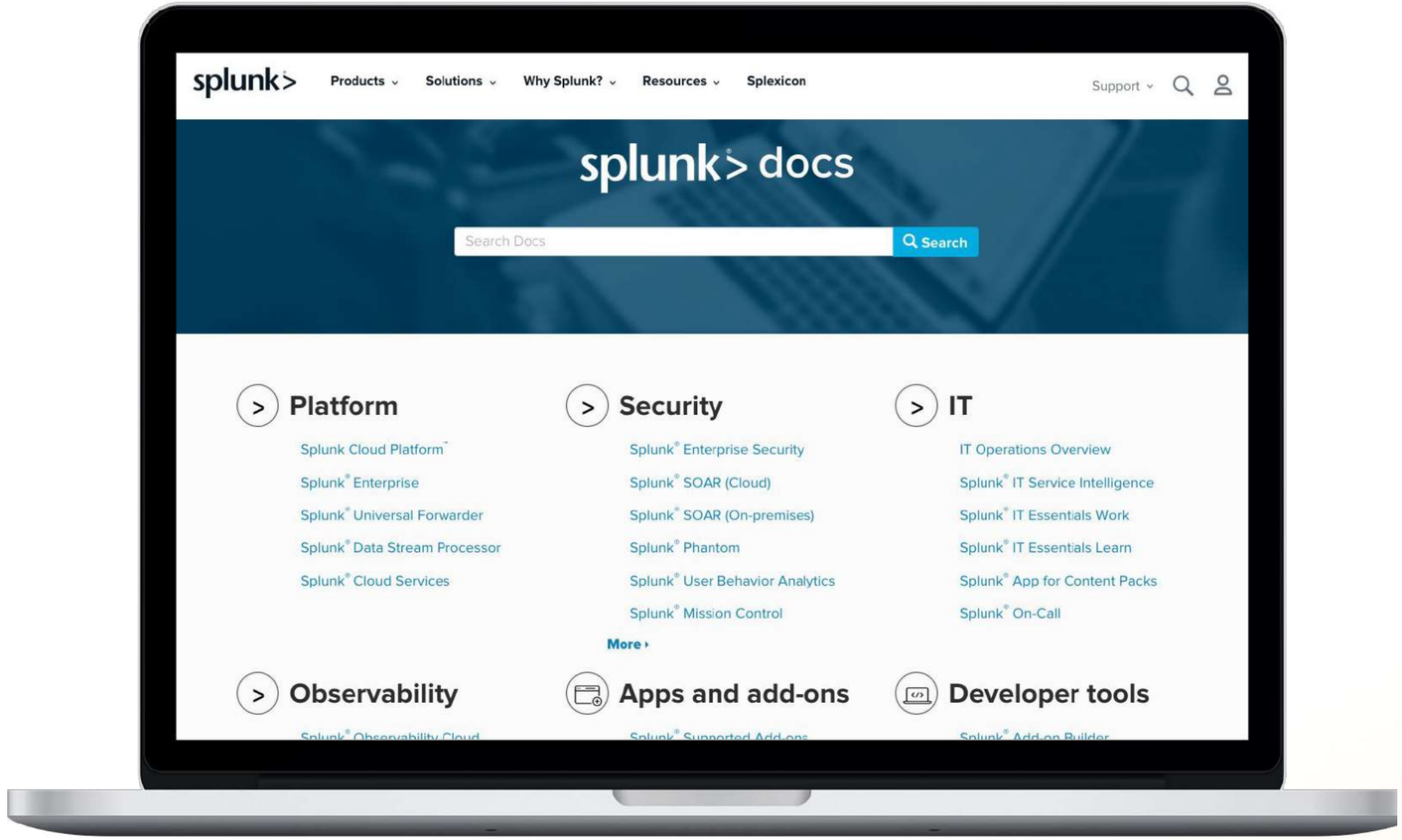
- Join us at .conf!
- Hundreds of on-demand sessions from product updates to learning new Splunk skills!



Documentation

https://docs.splunk.com

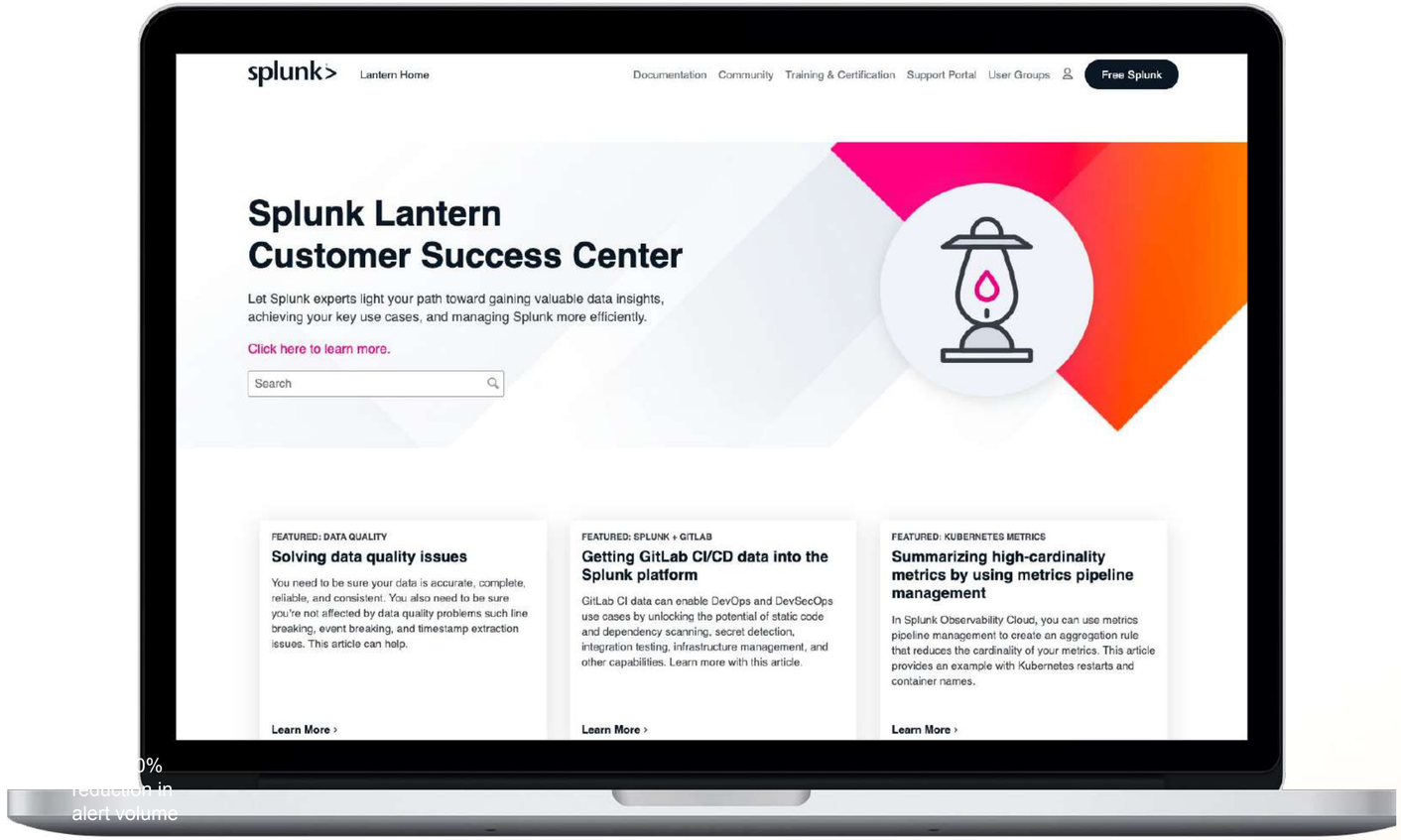
- Search reference for SPL
- Step-by-step tutorials
  Search:
  https://splk.it/SplunkSearchTutorial
  Dashboard Studio:
  https://splk.it/SplunkDashStudioTutorial
- Product references
- Procedures/guides
- And more!



Splunk Lantern

https://lantern.splunk.com

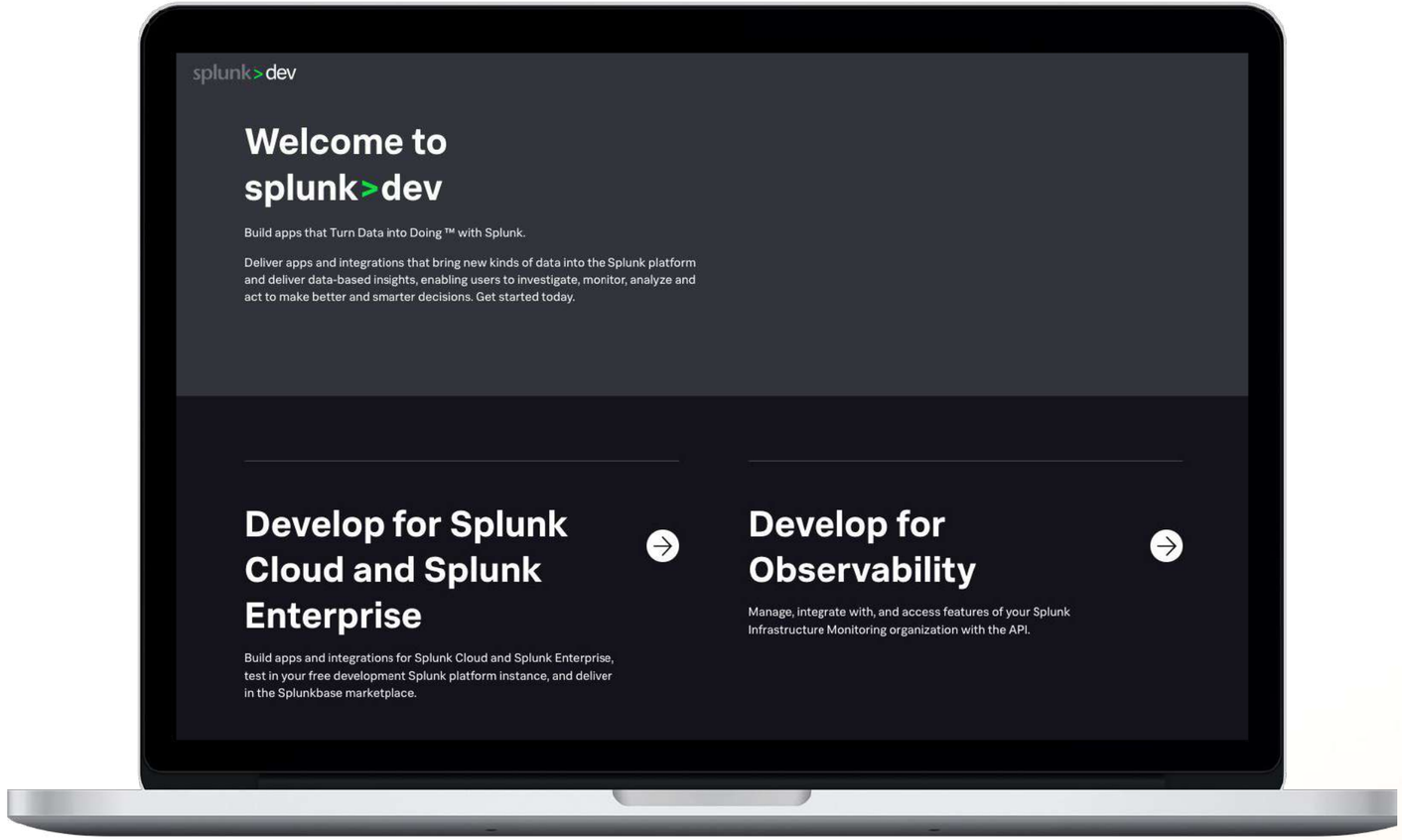
- Use case library
- Step-by-step procedures
- Map use cases to data sources
- Splunk Success Framework to realize value across your organisation



Developer Resources

https://dev.splunk.com

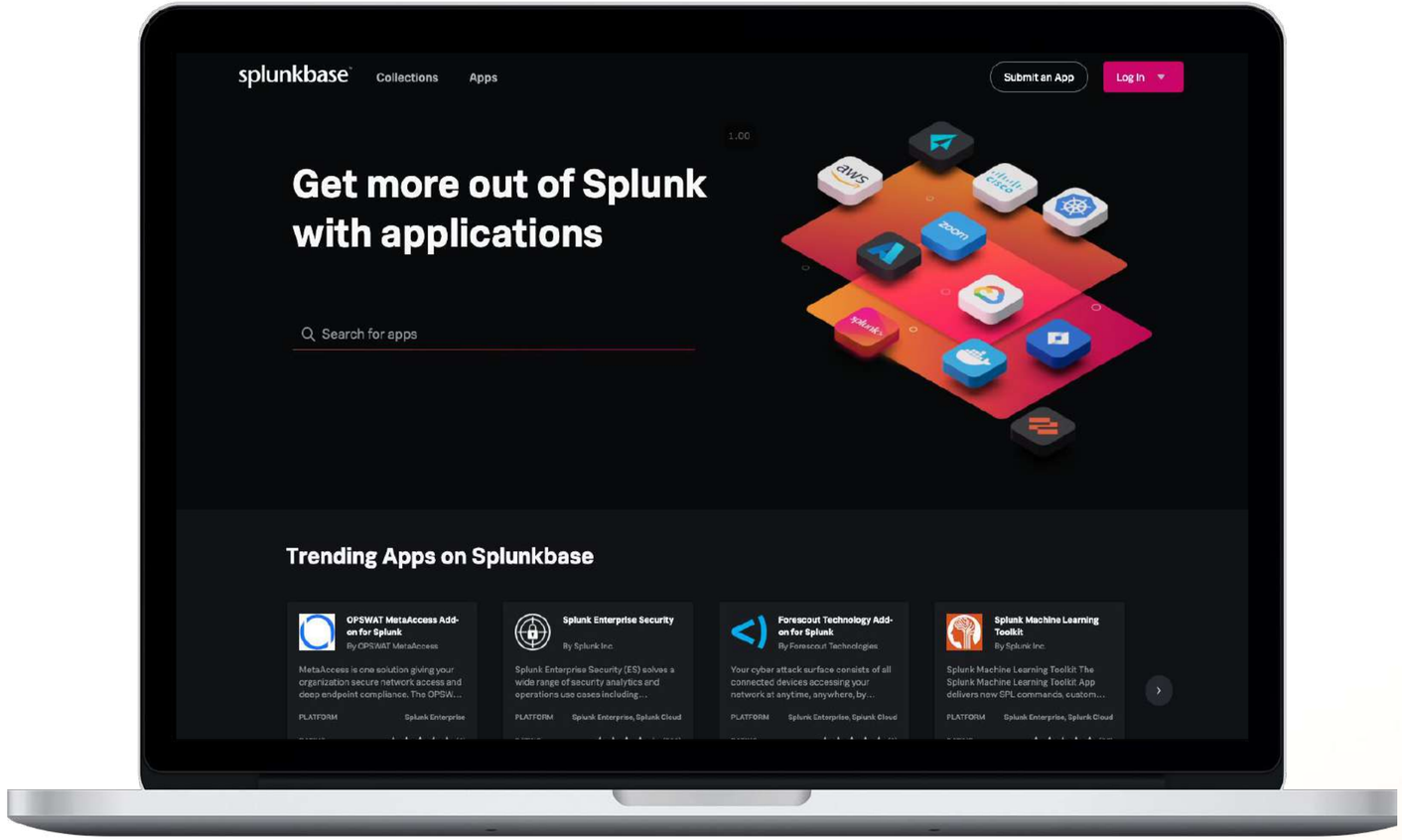
- Developer Guide
- API Reference
- Tutorials
- Downloads
  APIs, libraries, tools
- Code examples
- Free Developer licence



Splunk Apps & Add-ons

https://splunkbase.splunk.com

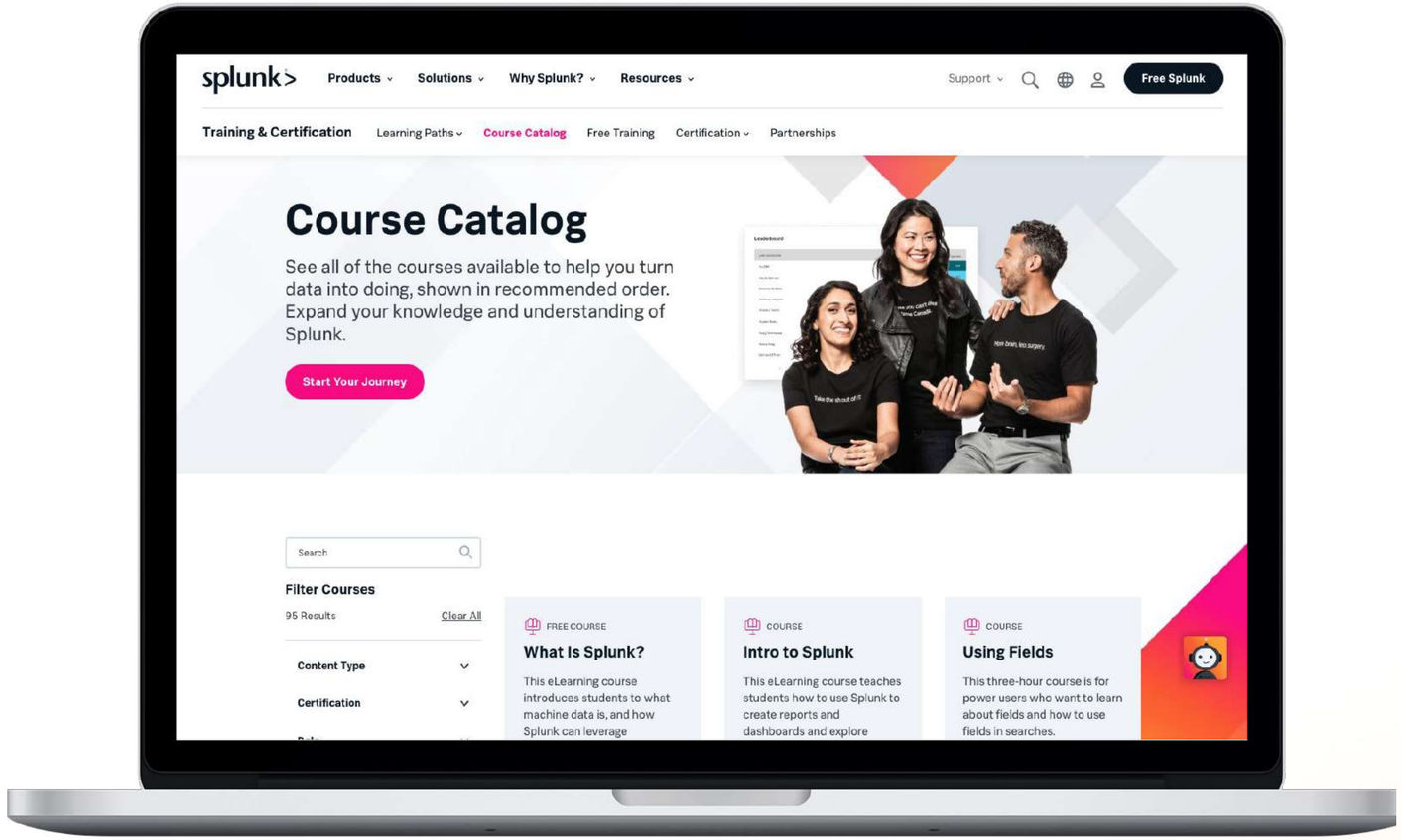
- 3100+ apps and add-ons
- Pre-built searches, reports, visualisations and integrations for specific use cases and technologies
- Download apps and customise them based on your requirements
- Fast time to value from your data
- Build and contribute your own apps!



Training & Certification

https://splunk.com/training

- **Online education classes**
  Instructor-led and self-paced eLearning
- **Certification tracks for different roles**
  User, Power User, Admin, Architect and Developer
- **Splunk Education Rewards**
  Complete training and receive points that you can redeem for Splunk swag!
- **Free education!**
  Free single-subject eLearning courses to kick start your Splunk learning



Thank you

splunk>