



splunk>

# Marcus by Goldman Sachs

## Launching an Online Banking Startup With Splunk

October 2018



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# Splunk .conf18 Speakers



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# Marcus by Goldman Sachs

## Marcus Lending Video

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## Marcus Savings Video



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## Overview



\$4+ Billion

In Loan  
Originations



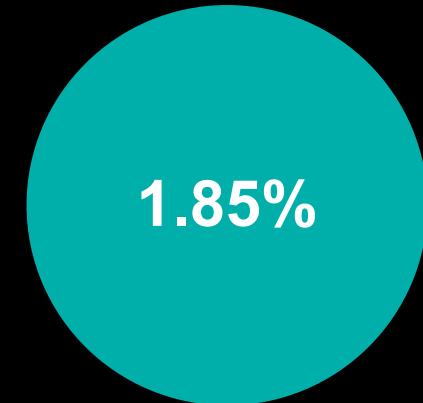
\$23+ Billion

In Retail  
Deposits



\$1

Minimum to  
Earn APY



1.85%

Savings  
APY

# DevOps Requirements

1. Centralized Repository where all system events can be stored, visualized, and analyzed
2. Real-time monitoring and alerting mechanism
3. Event correlation between many different systems for testing and troubleshooting

# Marcus by Goldman Sachs

## DevOps Environment

50+

# Distinct Microservices

200+

# Production Servers

400+

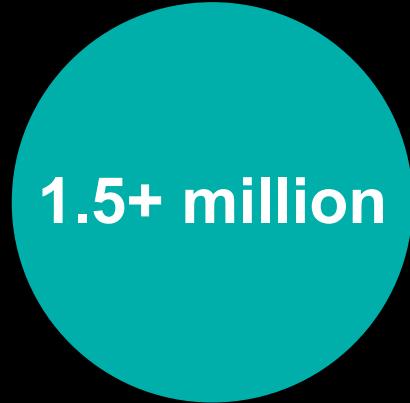
# Distinct Log Files

# Marcus Splunk Users

1. Production Support
2. Development Team
3. Quality Assurance
4. DevOps & Infrastructure
5. Security
6. Audit
7. Product
8. Call Center Agents
9. Agile Scrum Masters

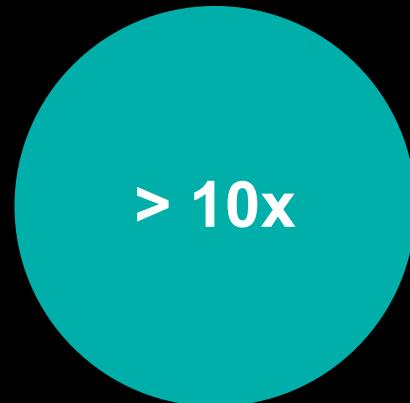
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## Growth



1.5+ million

Customers  
Across  
Marcus  
Businesses



> 10x

Over 10x  
the Original  
Log Volume



# Data, more data, even more data, and more analytics!

Summary of my team's book of work

# Splunk Lessons Learned

1. Searches Getting Queued – Build Splunk Cluster to increase capacity
2. Searches/Dashboards are slow – Be sure to follow documented hardware requirements and note recommended settings (eg. ulimit)
3. Older data got aged out – Define your preferred archiving policy
4. Scheduled alerts getting skipped – Monitoring Console will help identify Cluster issues
5. Different teams stepping on each other's toes – build dedicated Search Head Clusters for each

# The Splunk team is always there to help — Just ask!

Main Lesson Learned

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# Challenge Yourself

1. Expand existing use-cases into other areas. For example, show Operational Dashboards to QA team
2. Automate all the things or at least the boring things
3. Check-out Splunk Apps & AddOns. They might have valuable pre-built knowledge objects that increase visibility of the data you are already collecting
4. Develop your own Splunk Apps and submit them to Splunkbase!

# Crawl, Walk, Run!

# **Splunk is powerful, learn to wield it**

- ▶ Use case: Web App Analytics
    - What are customers looking for?
    - How many customers apply for the loan they are viewing?
    - Why do some abandon their loan application?
    - How can we help them to complete the application?
  - ▶ Data source:
    - Web application logs
  - ▶ Use case: Web App Ops
    - What is the response time of our applications?
    - What errors are our customers encountering?
    - Is anything broken and why?
    - How can we improve the customer experience?
  - ▶ Data source:
    - Web application logs
  - ▶ Use case: Web App Security/Fraud
    - Is anyone trying to harvest accounts?
    - Is anybody looking for sensitive info?
    - Who is attempting SQLi attacks?
    - Have legitimate user accounts been compromised?
  - ▶ Data source:
    - Web application logs

# Even More Value!

**Squeeze out every ounce.**

# CI/CD

Did the recent build break anything?

# Business Analytics

# What does customer journey look like?

# Customer UX

# Where can we improve customer experience?



And many more!

# Splunkbase

## Splunk apps can speed time to use case delivery

The screenshot shows the Splunkbase website interface. At the top, there's a search bar labeled "Search App by keyword, technology...". Below it, a navigation bar includes "My Account" and "Support". The main content area features a large banner for "Splunk 7.1 Overview" with a sub-section titled "Splunk Built". To the left of the banner is a "Platform" section with three screenshots of Splunk interfaces. Below the banner, there are several app cards: "Splunk 7.1 Overview" (with a right-pointing arrow icon), "Palo Alto Networks App" (with a blue square icon), "Splunk ES Content Update" (with a green square icon), "Splunk App for AWS" (with a white square icon), and "Splunk Machine Learning Toolkit" (with an orange square icon). At the bottom, there's a "Browse by Category" section with six categories: "DevOps" (98 Apps, icon of two brackets), "Security, Fraud & Compliance" (805 Apps, icon of a padlock), "IT Operations" (835 Apps, icon of a gear), "Utilities" (649 Apps, icon of a wrench), "Business Analytics" (122 Apps, icon of a chart), and "IoT & Industrial Data" (102 Apps, icon of a network node).

- ▶ 1800+ Apps
  - Visualization
  - Log parsing
  - Data enrichment
- ▶ All use case categories
  - DevOps
  - Security, Fraud, and Compliance
  - Business Analytics

# Wrapping Things Up

What have we learned?



# Customer Takeaways

1. Splunk can monitor all phases of the development and production lifecycles
2. Above and beyond traditional IT & Security use-cases, Splunk can also provide immediate feedback on business insights
3. Single data store – multiple use-cases, help your peers solve their challenges
4. Splunkbase apps can speed up your time to value – most are free
5. Ask your Splunk team to help – their time is free for you!

# Thank You

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