MICHIGAN STATE UNIVERSITY

Project Plan

Detecting Security Threats from User Authentication Patterns

The Capstone Experience

Team Symantec

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From Students…
…to Professionals

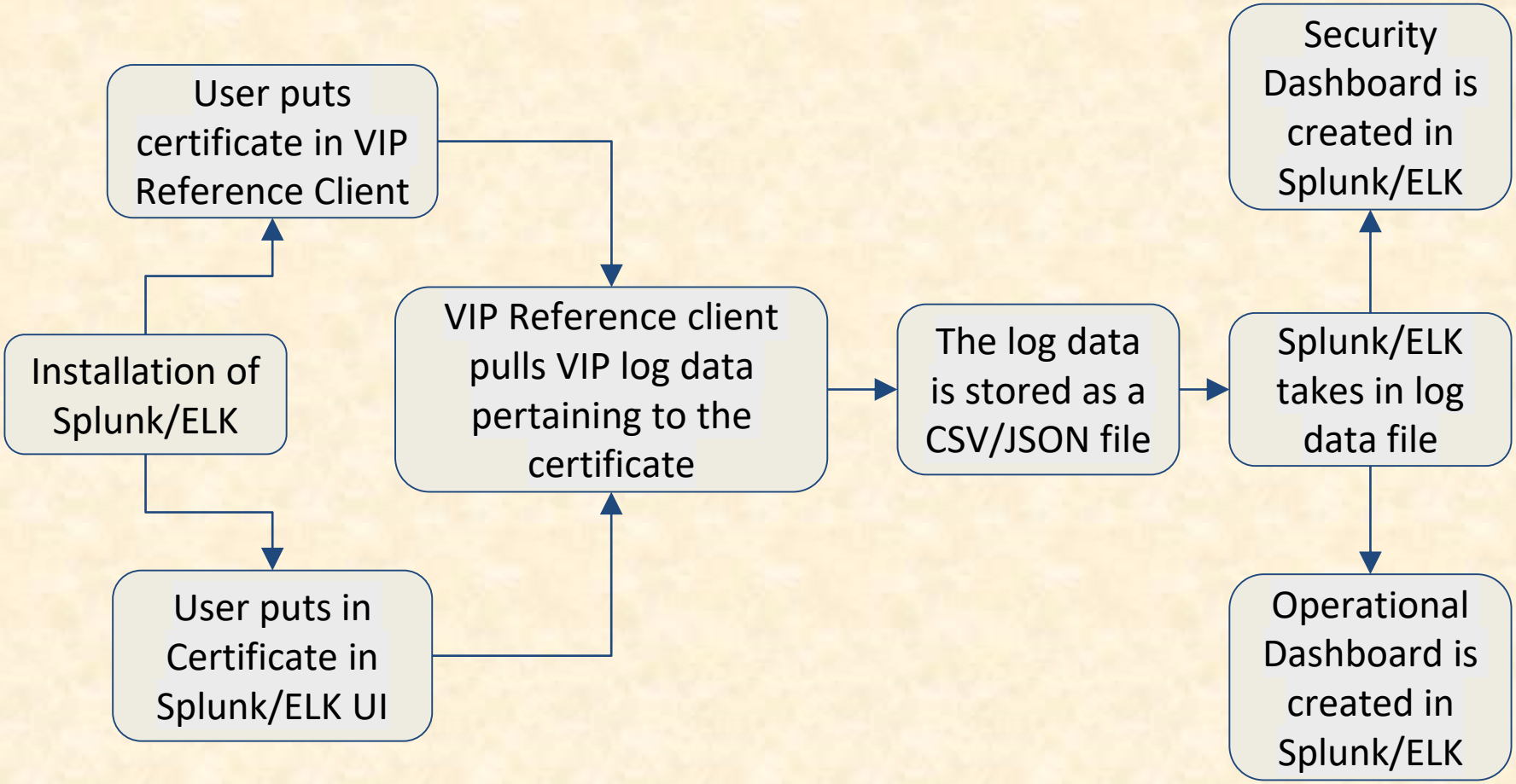
Functional Specifications

- The goal of the project is to provide VIP customers a Splunk add-on and an AWS AMI to visualize various operational and security trend information present in log data and analyze it in near real-time
- Both applications should alert users when suspicious or malicious activity is detected
- Launching and deployment of both of those applications should be frictionless

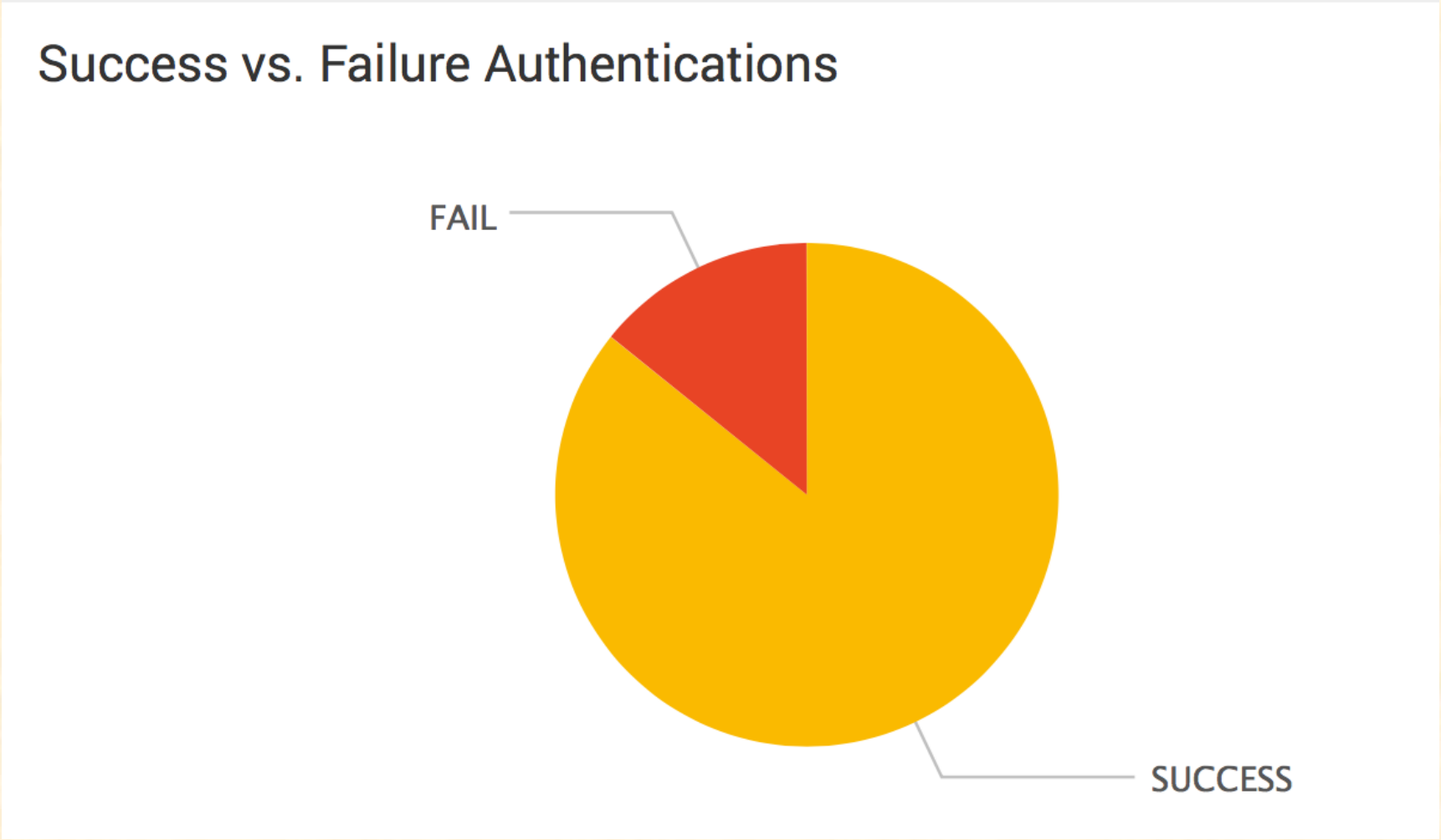
Design Specifications

- Create easy to read graphs and charts to represent authentication data
  - Successful vs Failed
  - Device Types
  - Authentications over time
- Create premade graphics and searches and allow users to choose which ones to display.
- Highlight patterns that could reveal suspicious or malicious activity

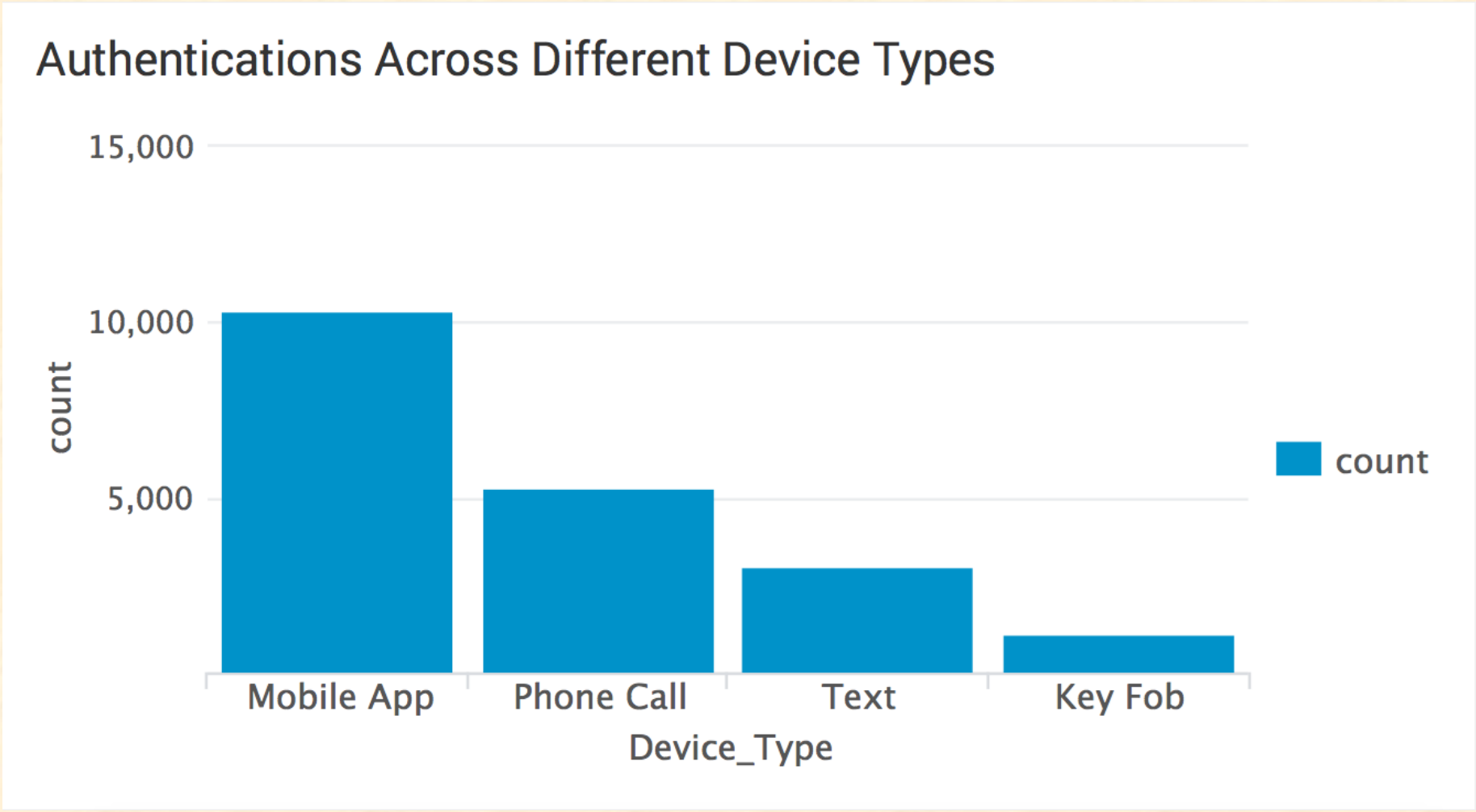
Process Flow



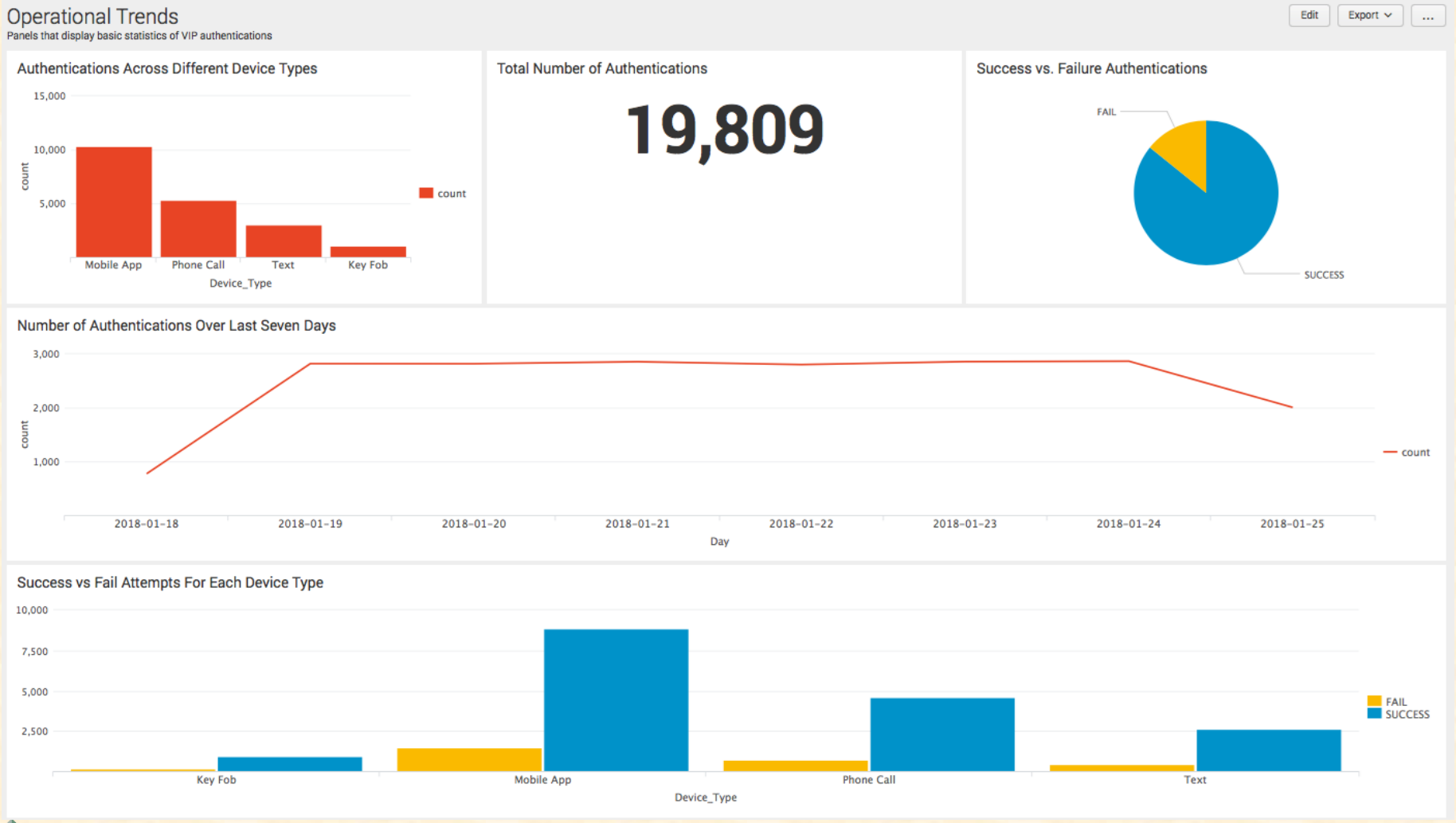
Screen Mockup: Pie Chart Panel



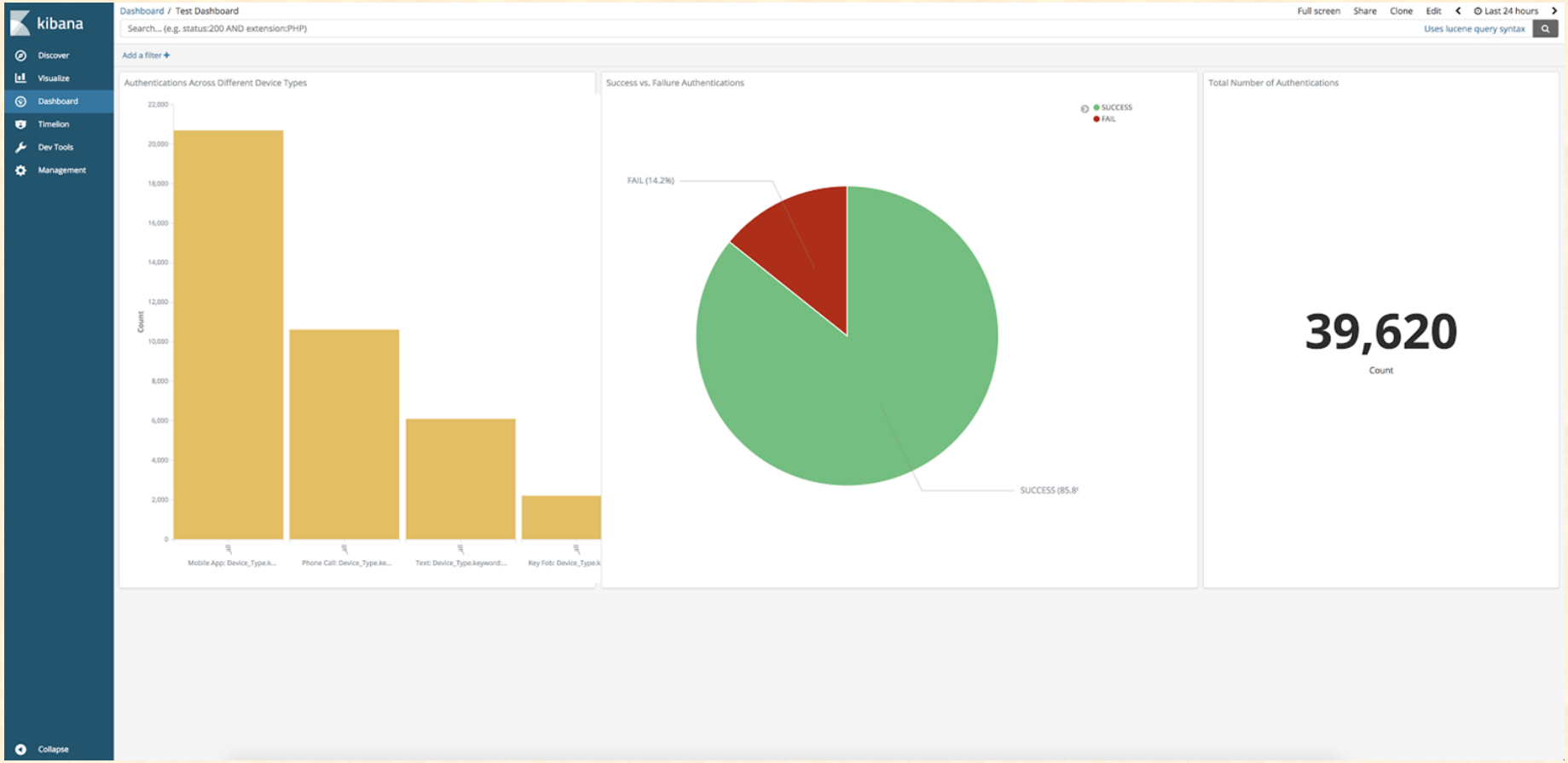
Screen Mockup: Bar Graph Panel



Screen Mockup: Dashboard in Splunk



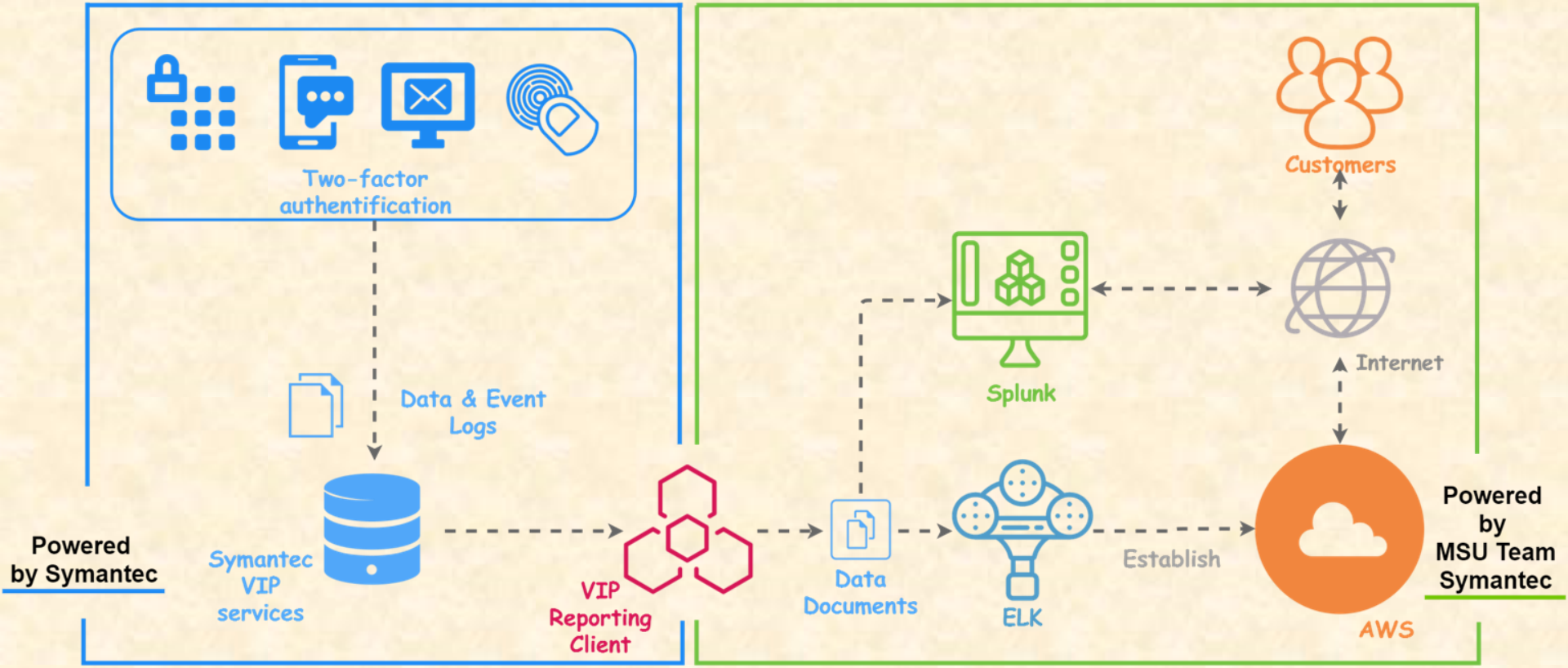
Screen Mockup: Dashboard in ELK



Technical Specifications

- SOAP (Simple Object Access Protocol) API
- Java
- VIP Reporting Service Client (REST API)
- JavaScript, HTML
- SPL (Search Processing Language)

System Architecture



System Components

- Hardware Platforms
  - Amazon Web Services
    - Amazon Machine Images
  - Software Platforms / Technologies
  - Splunk
  - Elasticsearch, Logstash, Kibana (ELK)

Risks

Risks

- Ability to Detect suspicious patterns
  - There is a wide range of threats to detect and want to avoid false flags
  - Consult with experienced security advisor and identify possible threats
- Test Data
  - Real VIP data is necessary to identify accurate threat patterns
  - Get MSU's VIP data
- Consistency between Splunk and ELK
  - Making sure that functionality is consistent between both platforms
  - Develop both applications concurrently
- AWS Servers
  - The possibility of deploying the ELK applications on the AWS server
  - Use AWS documentation and use online resources

Questions?