



Near Real Time Retail Analytics @ Walmart

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Walmart Technology

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Agenda

1

About Us

2

Elasticsearch and X-Pack

3

Retail Use Cases @Walmart

4

Questions / Feedback

Walmart in a nutshell

11,500 Stores

\$485.9 Billion Revenue

150 Distribution Centers

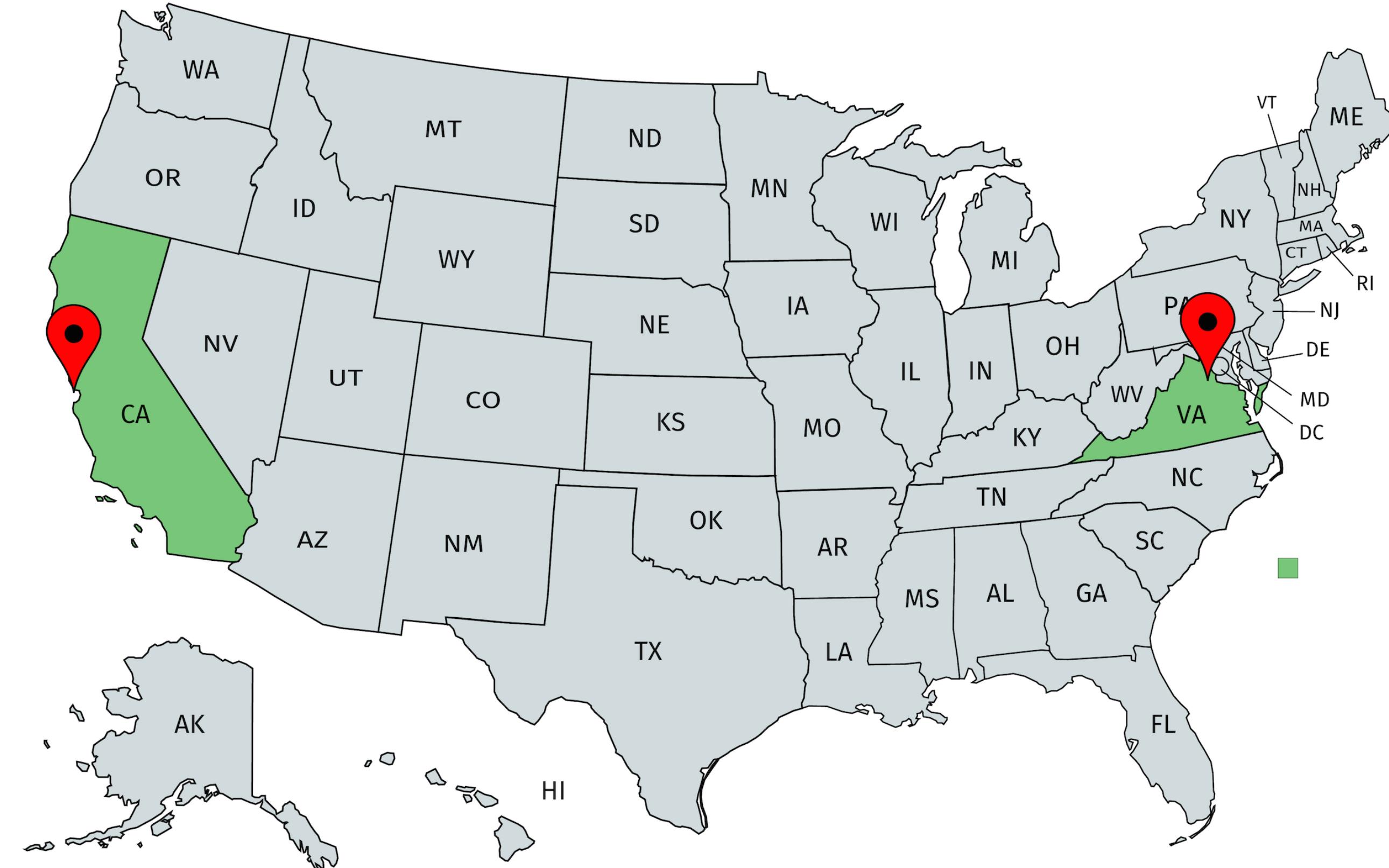
28 Countries

2.3 Million Employees

260 Million Customers



Walmart Technology - East



Created with mapchart.net ©

Walmart Store





Inventory



Receiving



Returns



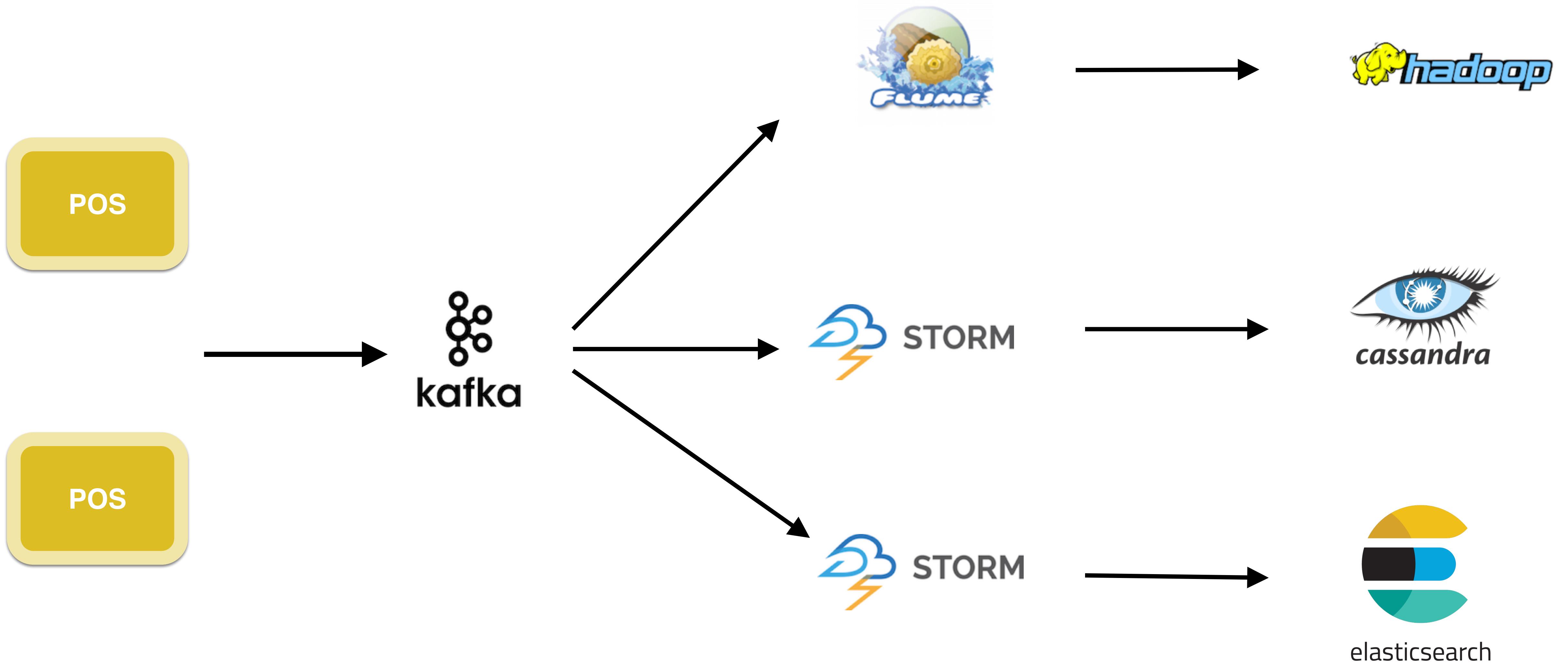
Point of Sale

Project Background

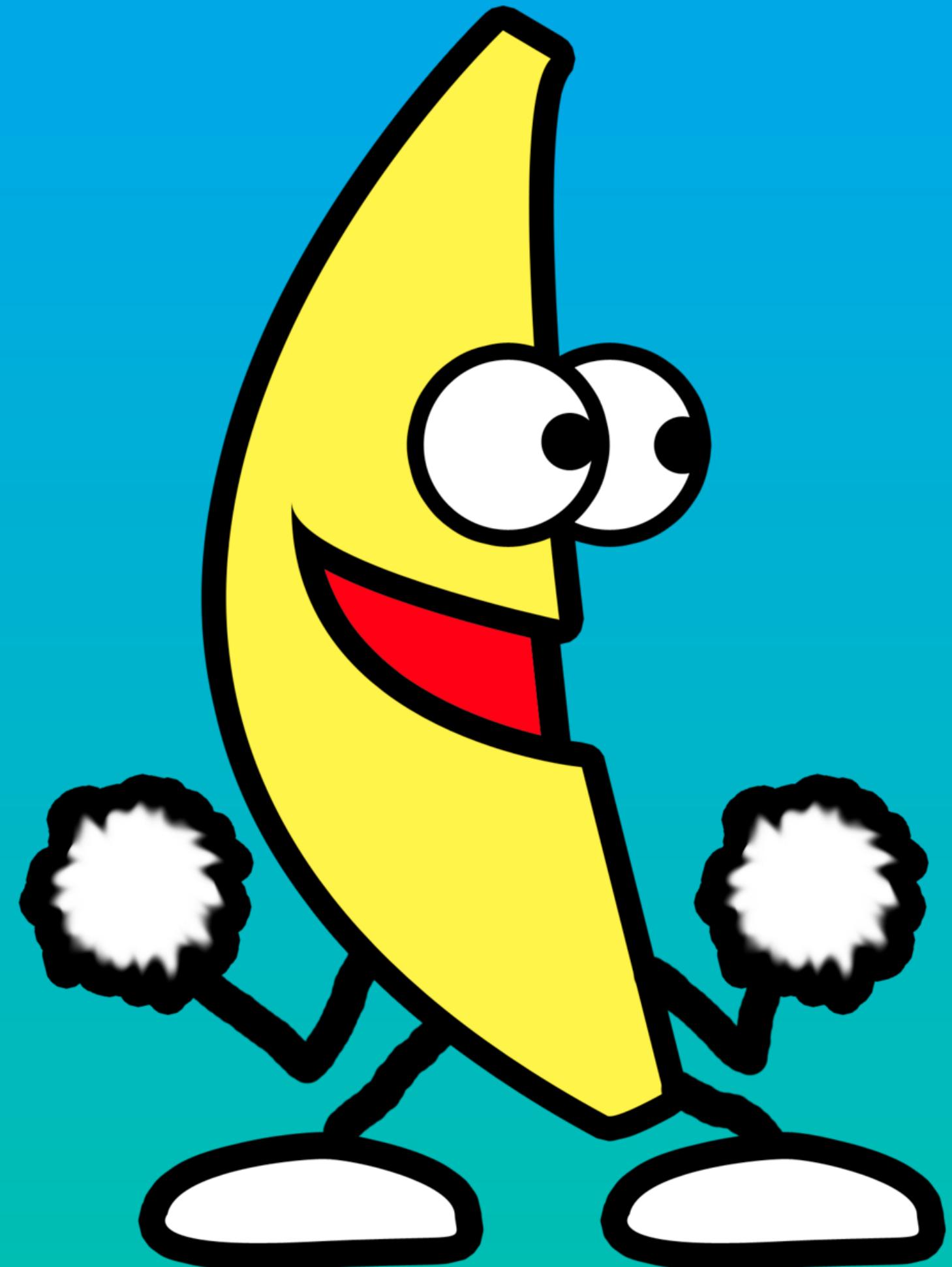
IBM / Toshiba TLog Register



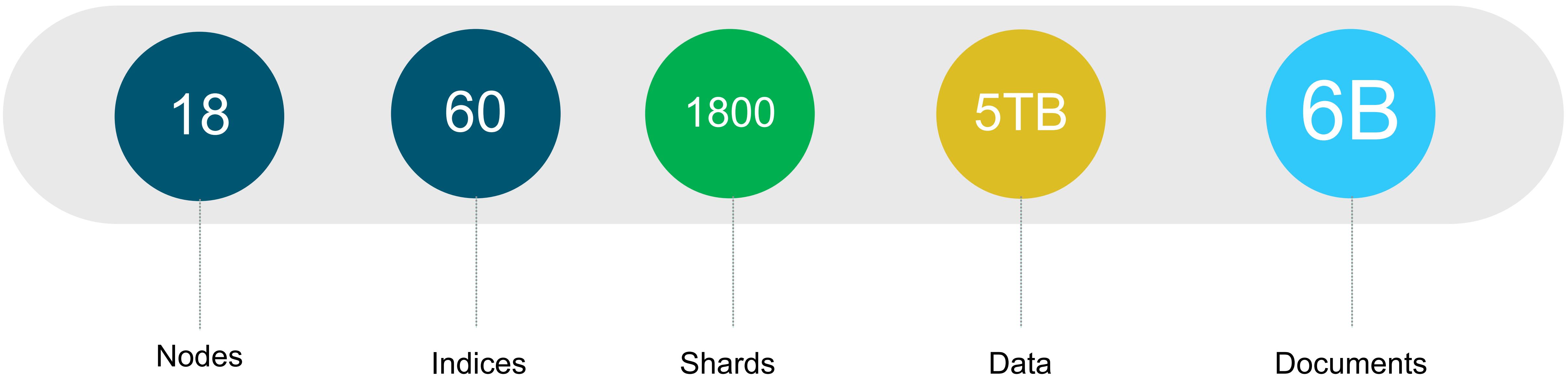
Near Real Time - Simplified



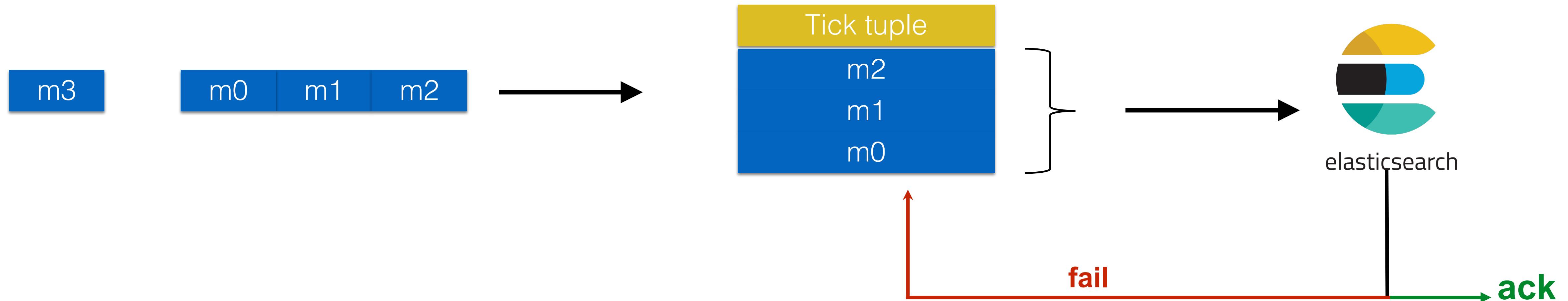
Why Elasticsearch?



Elasticsearch



Bulk Ingestion

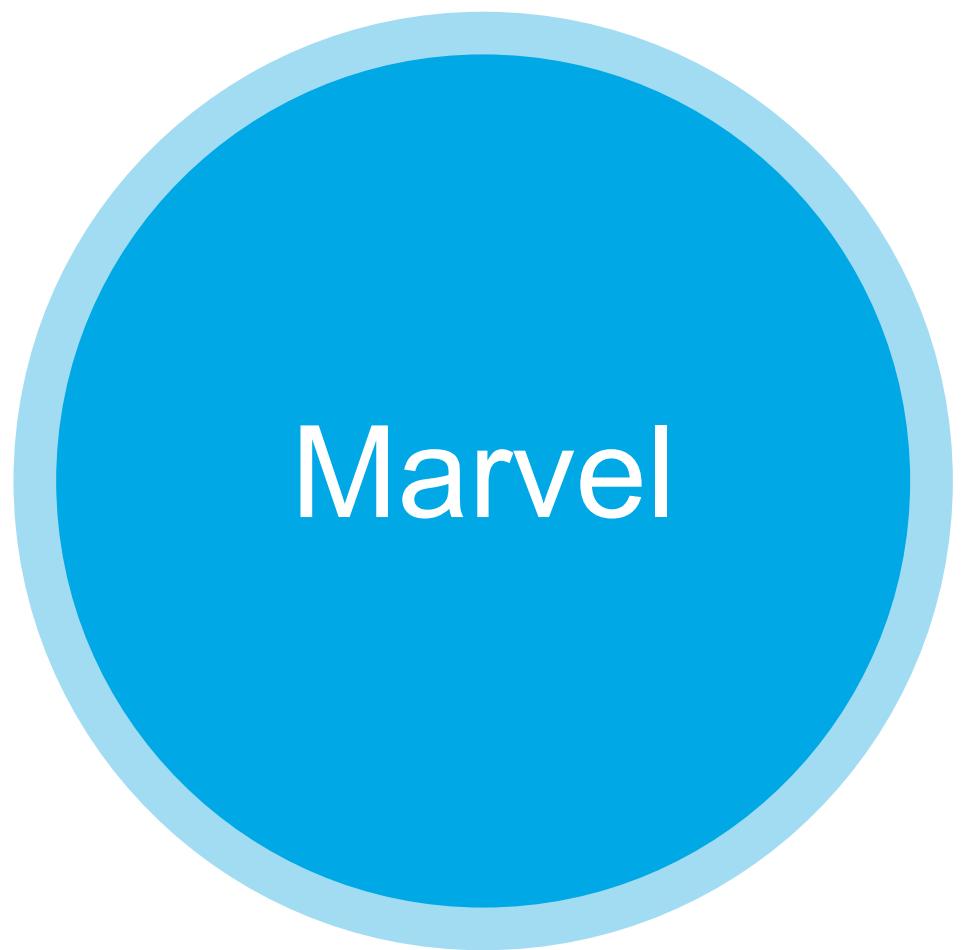


Tick tuples introduces Latency



Index.refresh_interval: 60s
Shards: 15

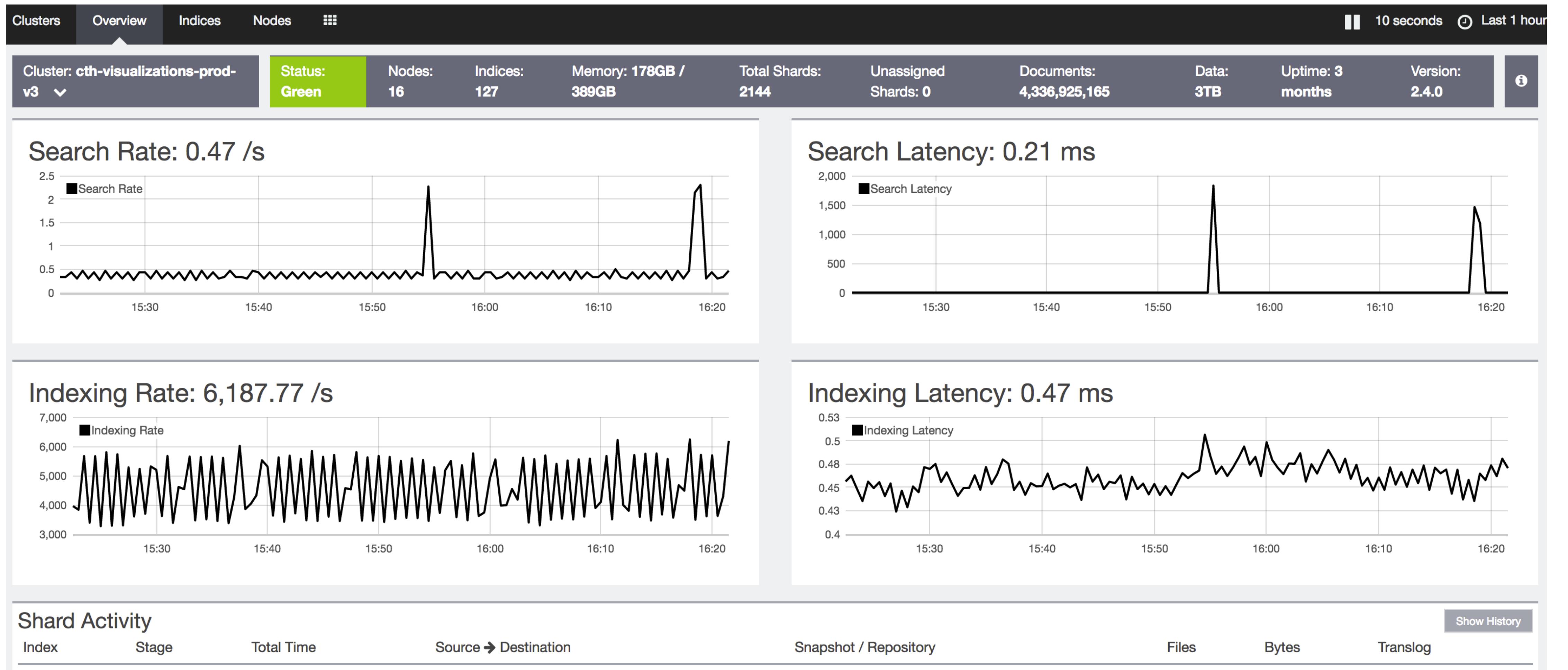
X-Pack



Shield

- Securing Financial data
- LDAP Authentication
- Document Level Security
- Role Based Access
- Message Auditing

Marvel



Watcher: Health of the Cluster

- Cluster Alerts
 - Different States: Red, Yellow and Green
 - Watch Popular metrics: CPU, Disk Usage, Ingestion Rate
- Business Use case Alerts
 - Sales of a UPC is below a threshold
 - Stores revenue > x dollars



Watcher BOT 4:04 PM

Top Customer(s) purchased more than \$200:

Account Id: 4baa100d551740510020000000000000a

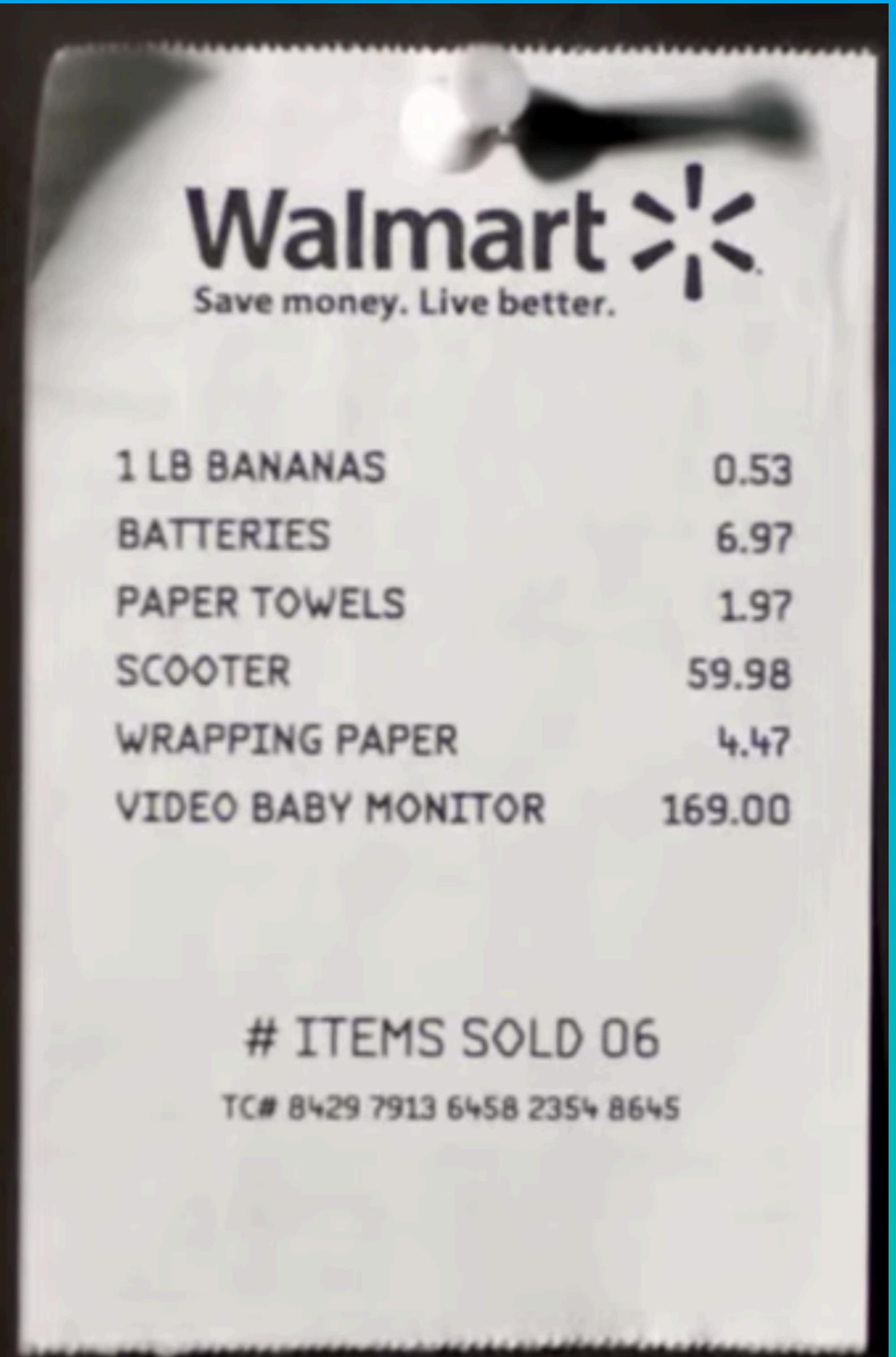
Total Purchased: 325.16

Account Id: fca10050000000000000000000000000b

Total Purchased: 249.83

Document Design

- Sale Items
- UPC
- Price
- Store Number
- Total Sales





Use Cases

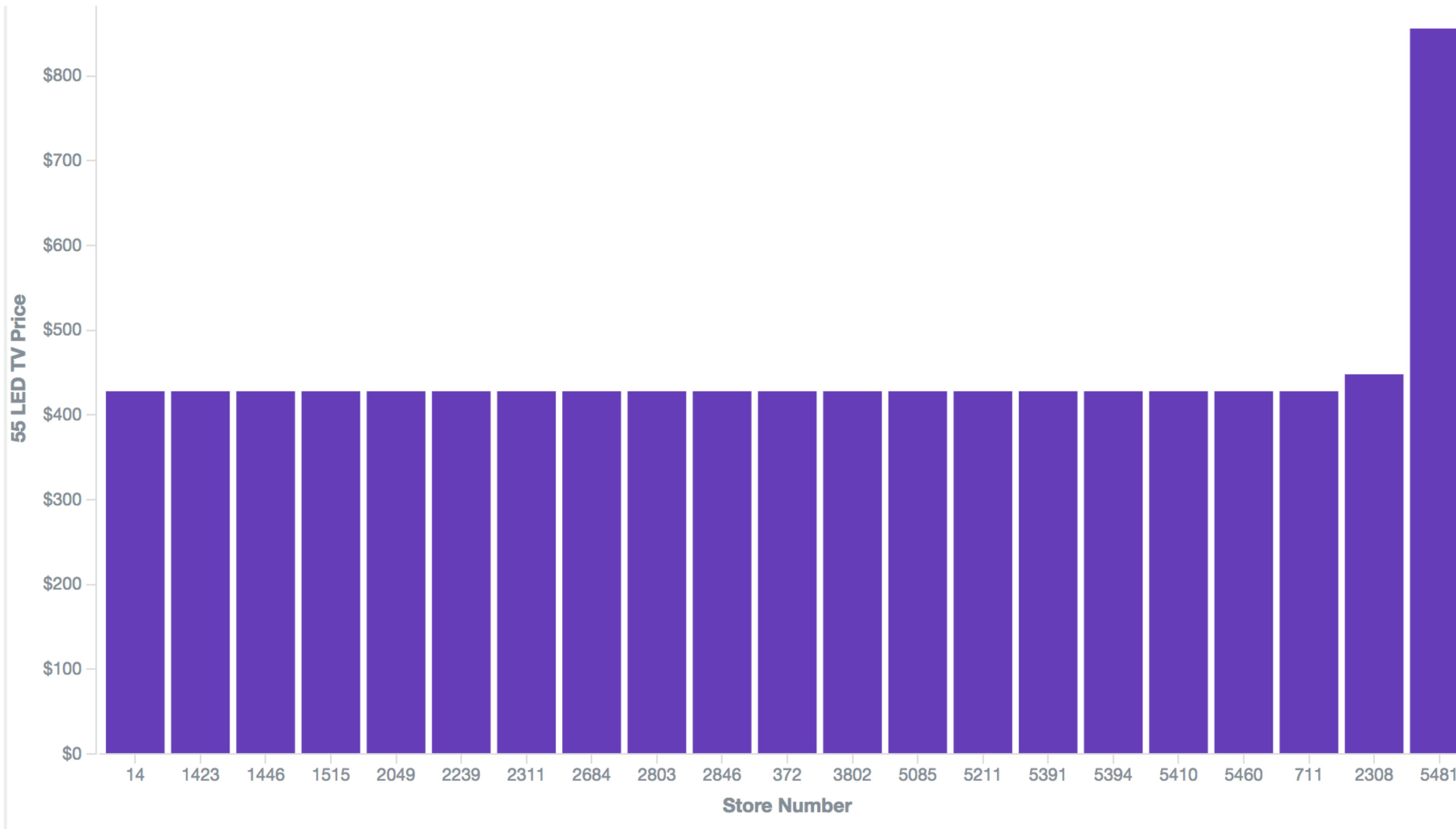
- Price Consistency
- Gift Cards Sales
- Maximizing Warranty Revenue
- Cash Availability in Stores

Price Consistency

- National Price
- Price/UPC Consistency
- Monitor in Near Real Time
- Cigarettes, gas, gift cards



Price Anomaly



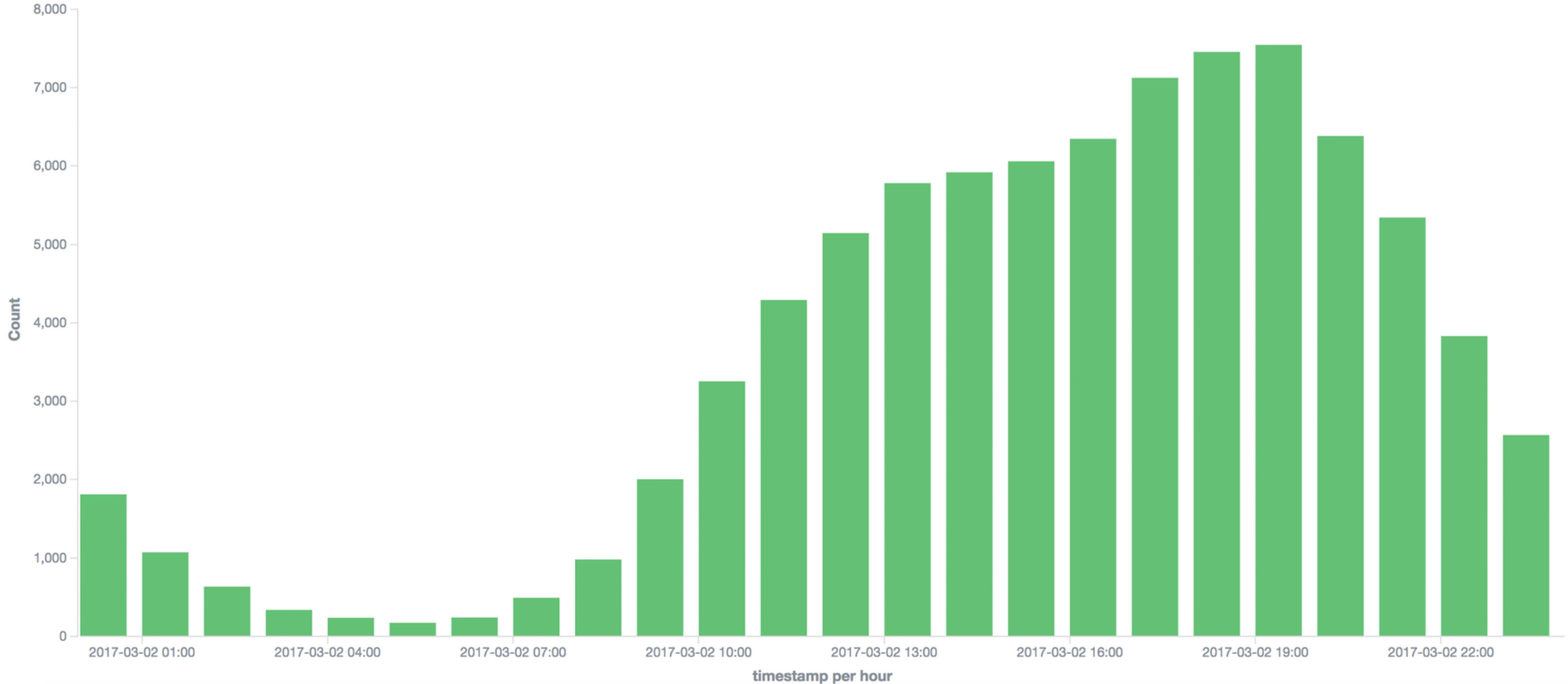
Gift Cards Sales Trends



Location Location Location



Hourly Warranty Count

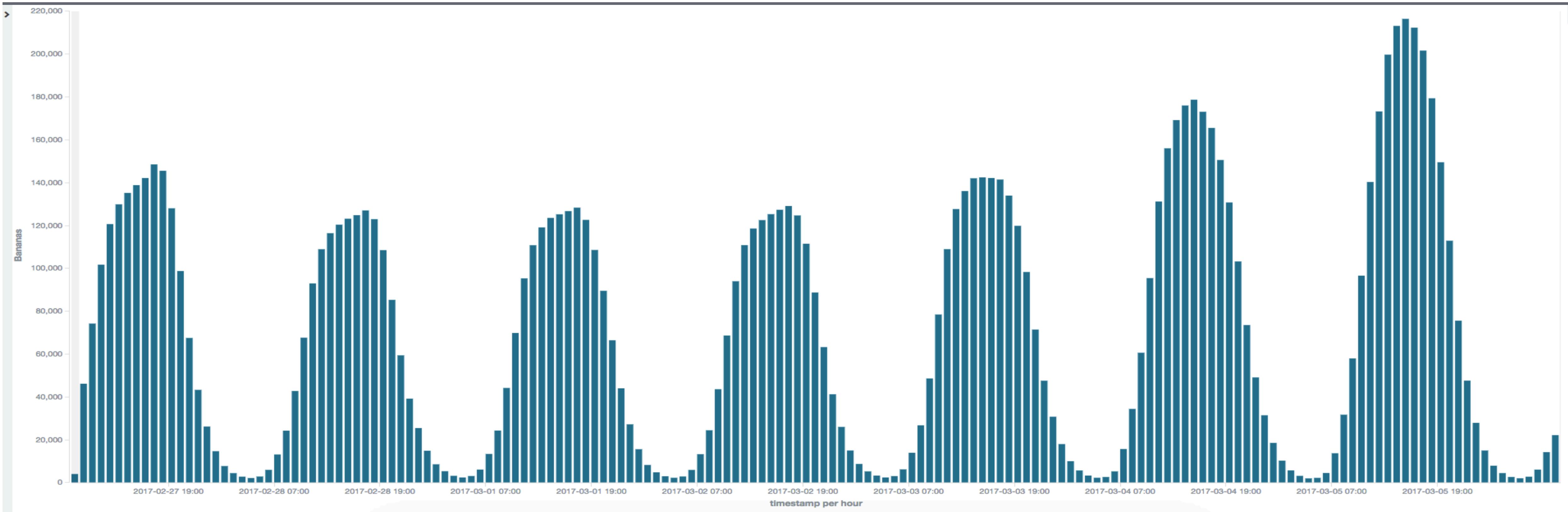


Cash Availability in Stores



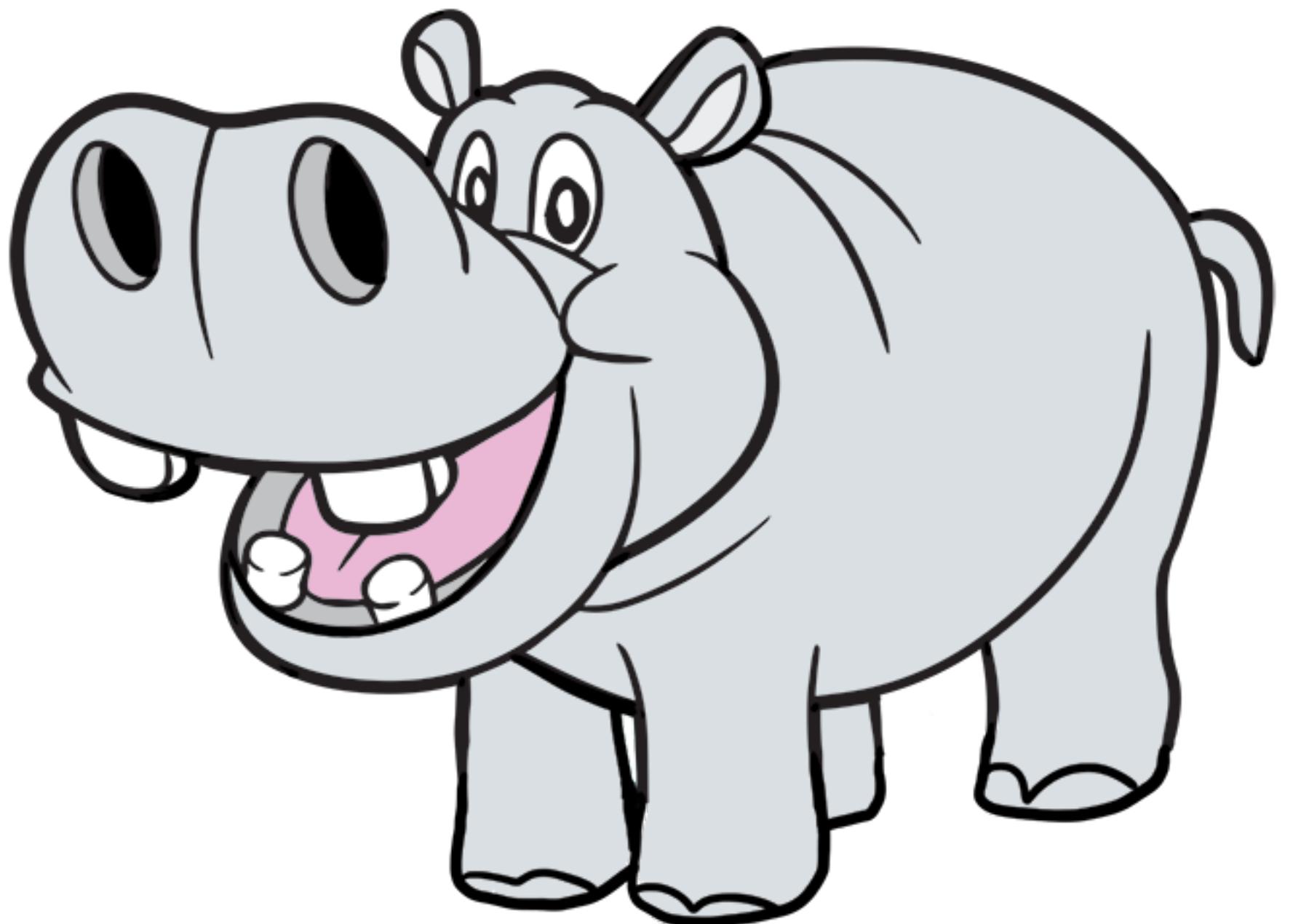
Let's go Bananas

- So do we actually sell 156 bananas / second? Lets see



Let's go Bananas

- 3,941 Scans
- 9,022.79 pounds



Let's go Bananas

- 3,941 Scans
- 9,022.79 pounds
- 6.5 oz per banana
- 370 bananas / second!

Same day, we sold 4,614,464.44 pounds of bananas, or

