Data Ingestion with Azure Event Hubs

Data Science Dojo

Typical Event Processing

Applications

Cloud Gateways (WebAPIs)

Scalable Event Broker

External Data Sources

Web/Thick Client Dashboards

Devices

Field Gateways

Search and Query

Data Analytics

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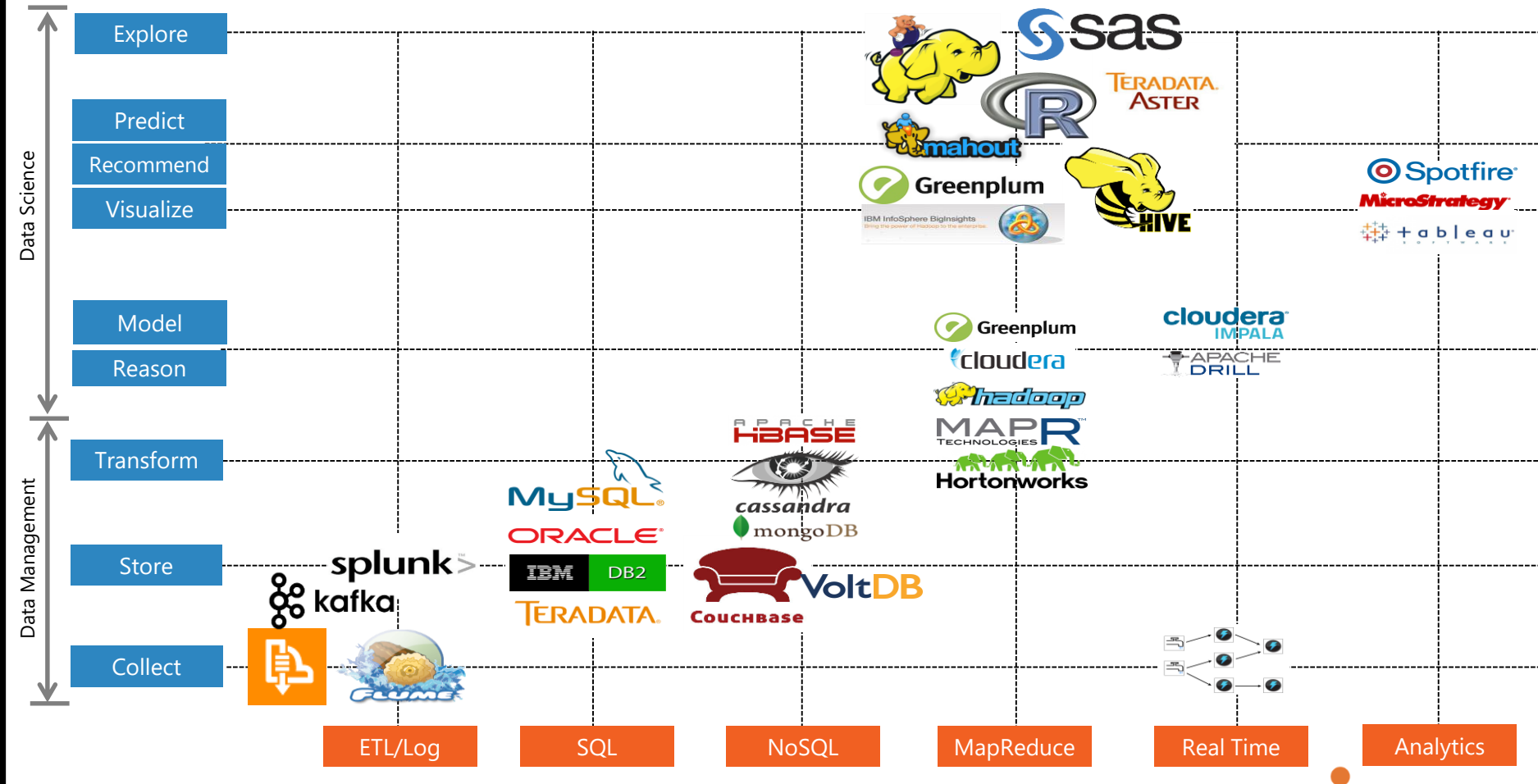

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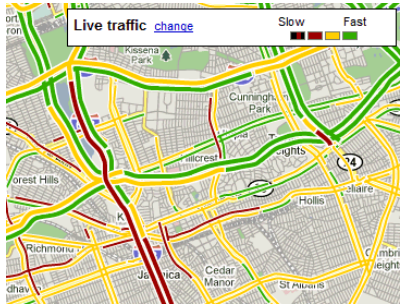
The Post Office & Shipping Centers

- Tracks address changes
- Tries again tomorrow if send failed
- Holds packages in short term
  - Too many failed deliveries
  - Vacations
- Reduces complexity through specialization
- Optimized to send, receive, and temporarily house packages

Hypothetical Scenario



Sends Traffic Data

Bureau of Transportation Statistics

Server: ABC, Port 123

SQL DB

Your Company

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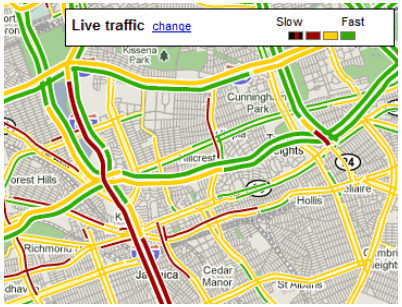
Things Change

Bureau of Transportation Statistics



Sends Traffic Data

WAS Server: ABC, Port 123
Now Server: DEF, Port 456

SQL DB

Your Company

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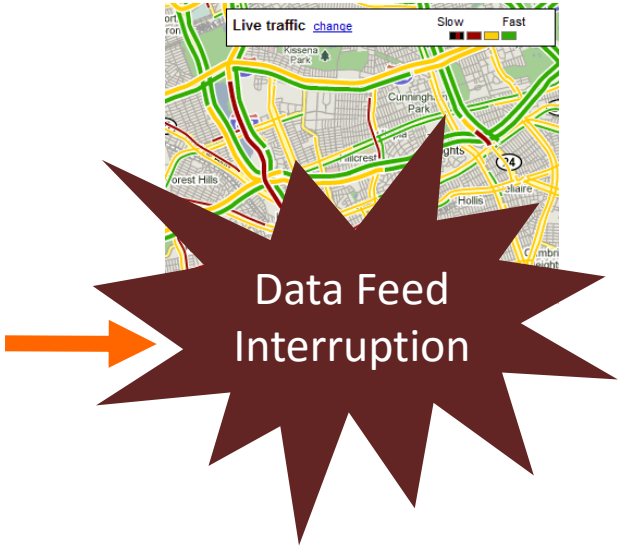
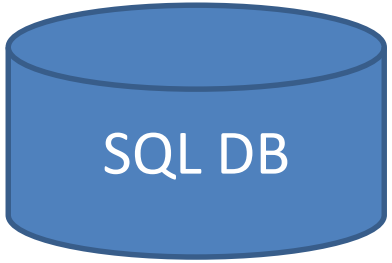
Interruption Occurs

Bureau of Transportation Statistics



WAS Server: ABC, Port 123
Now Server: DEF, Port 456



Your Company

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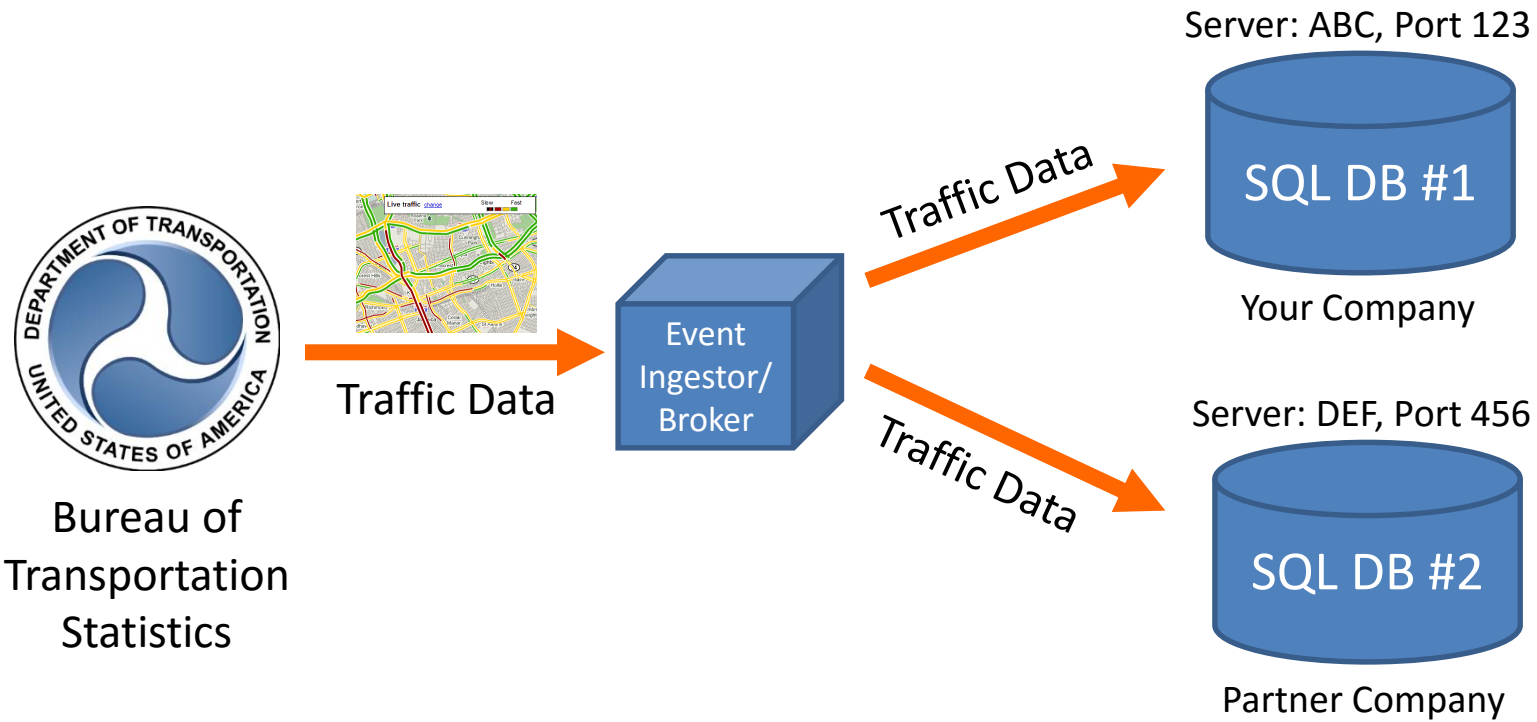
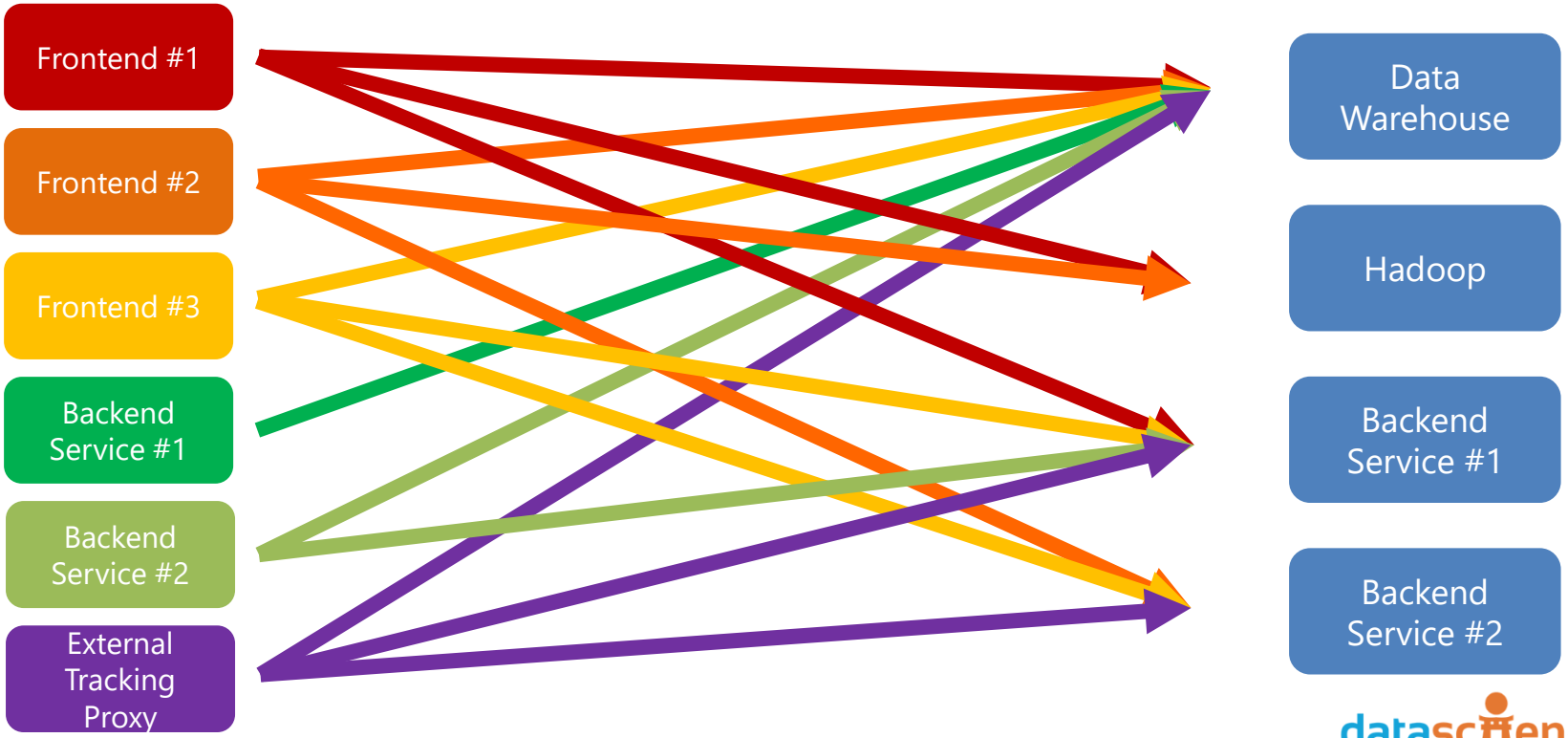
Reactive Remedy

- Call Bureau of Transportation Statistics to change their outbound data to funnel into server DEF and port 456
- Bureau makes support ticket
  - Your request enters their task queue
- 4 days later… ports are changed

Preventative Solution: Middleware



Data Pipeline Complexity at LinkedIn



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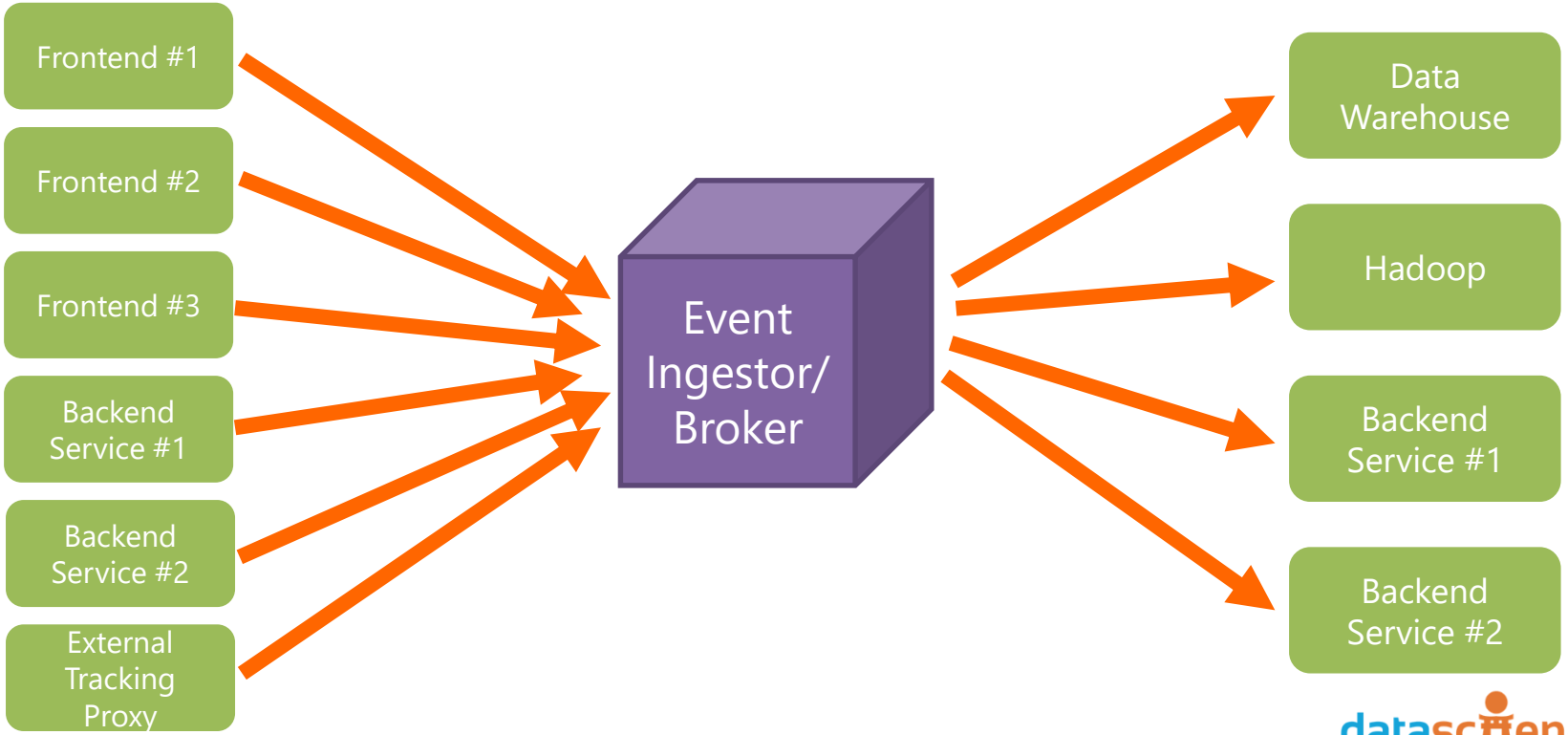
Data Pipeline Complexity at LinkedIn



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Popular Event Brokers

Azure Event Hubs

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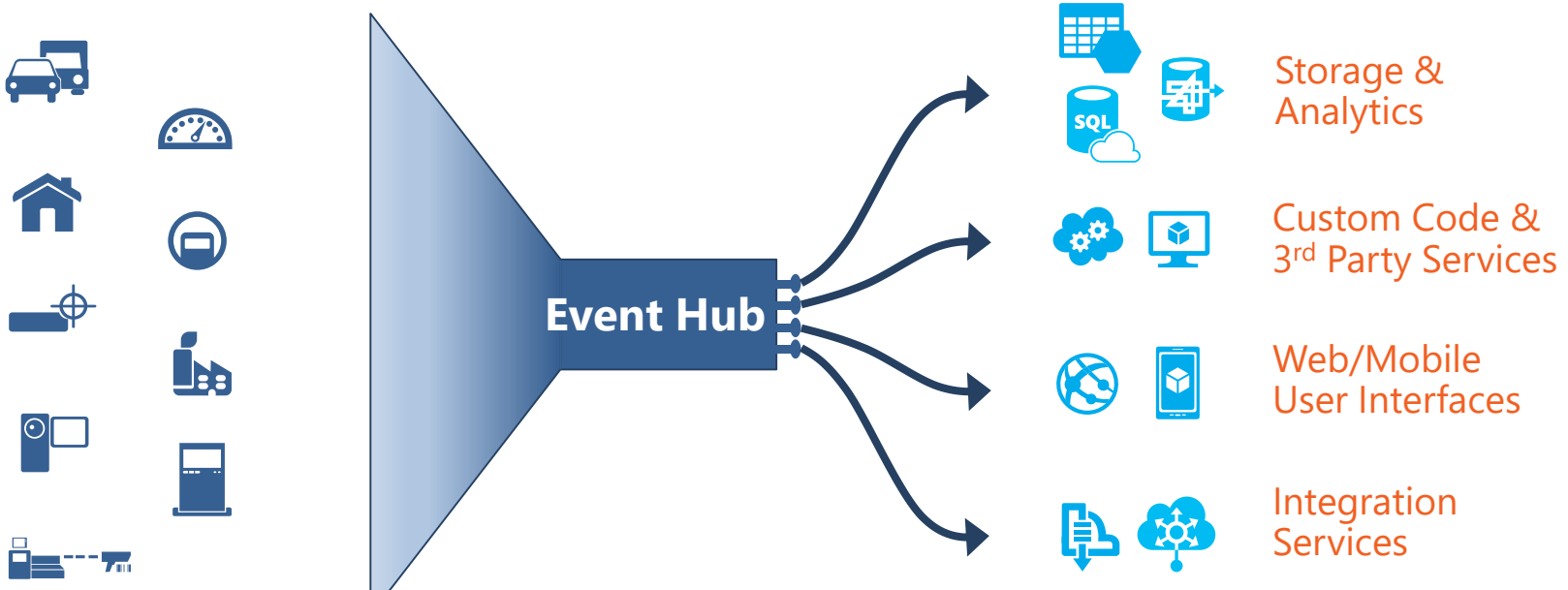
Event Hub for IoT: Big Data Ingestion



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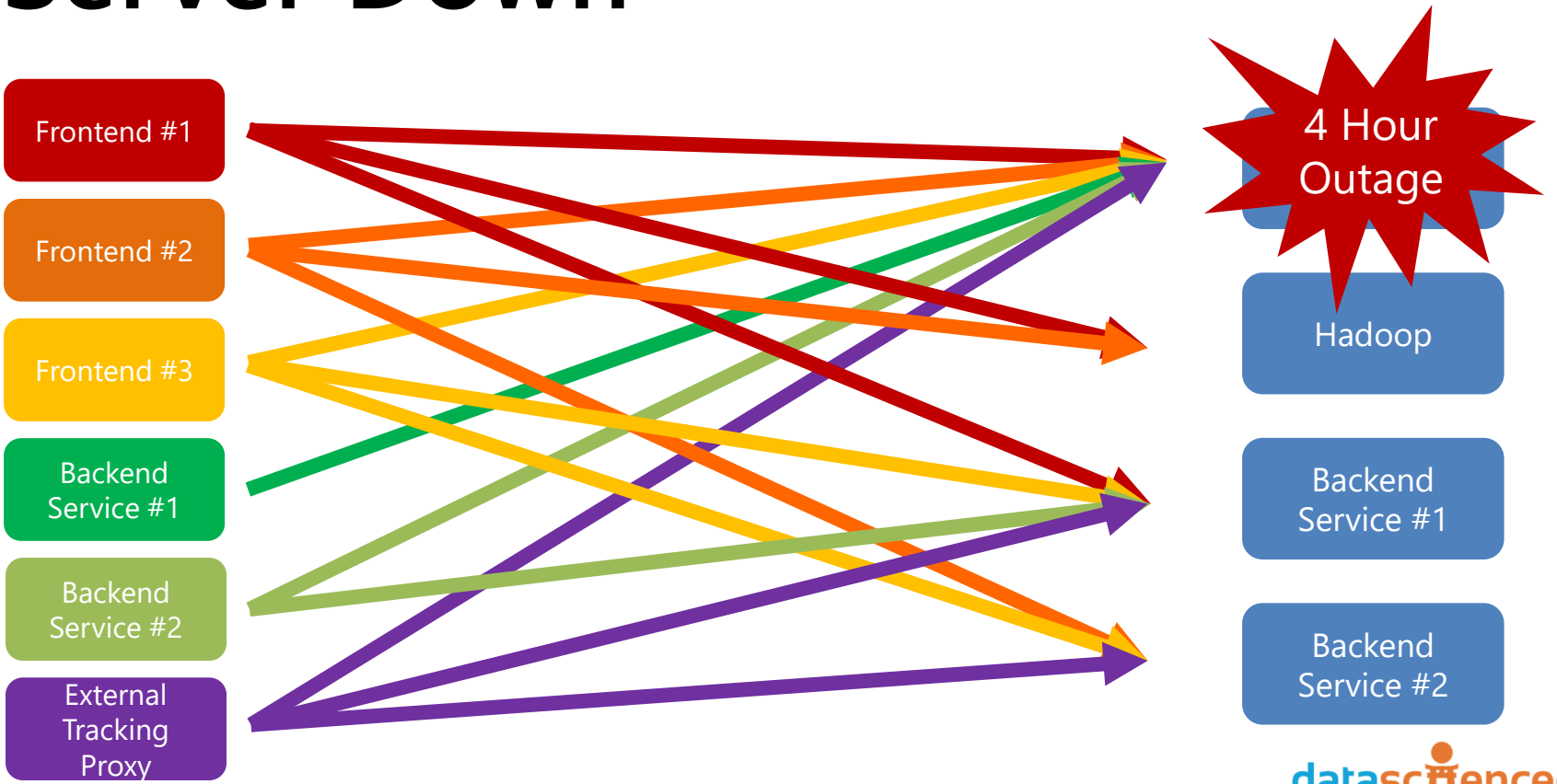
Server Down



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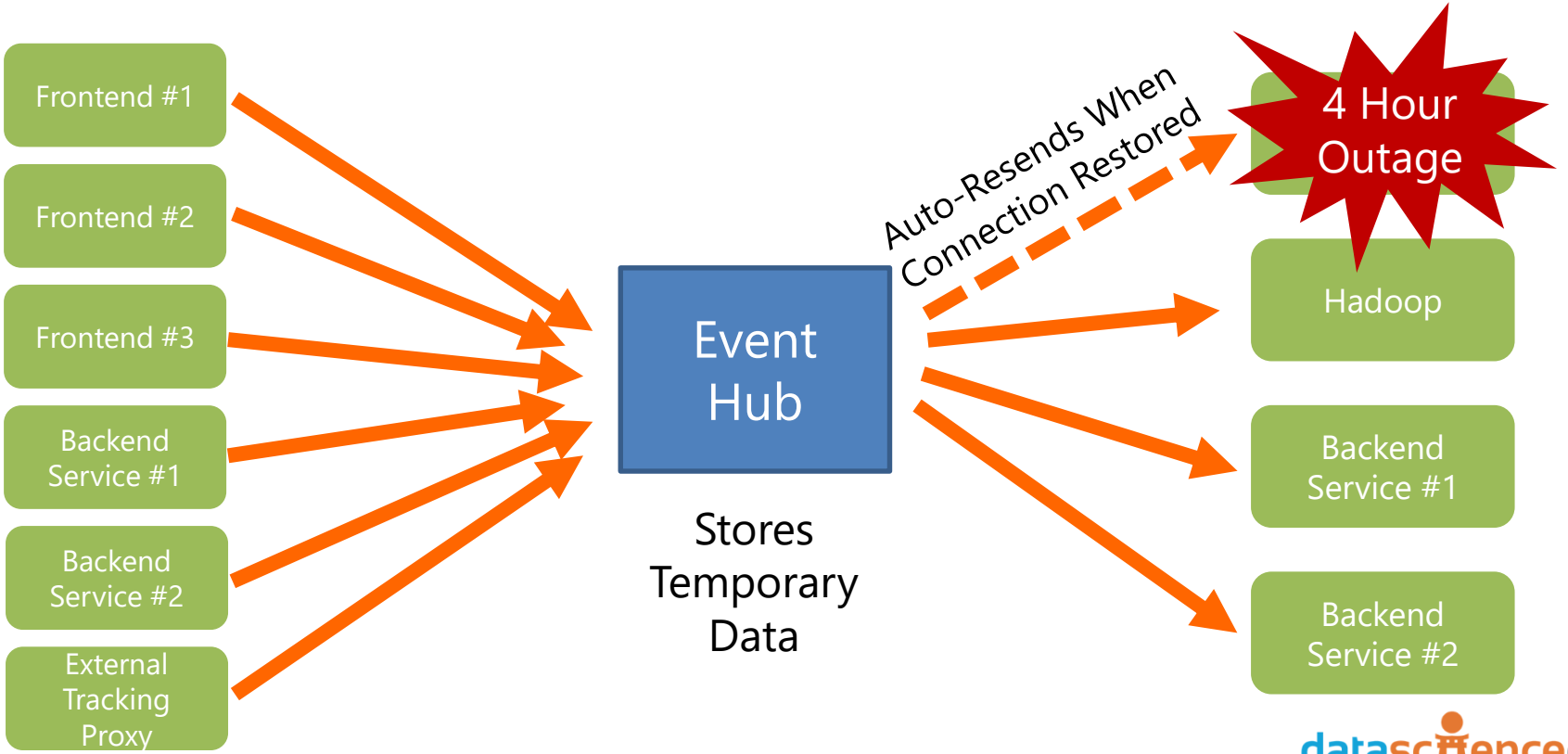
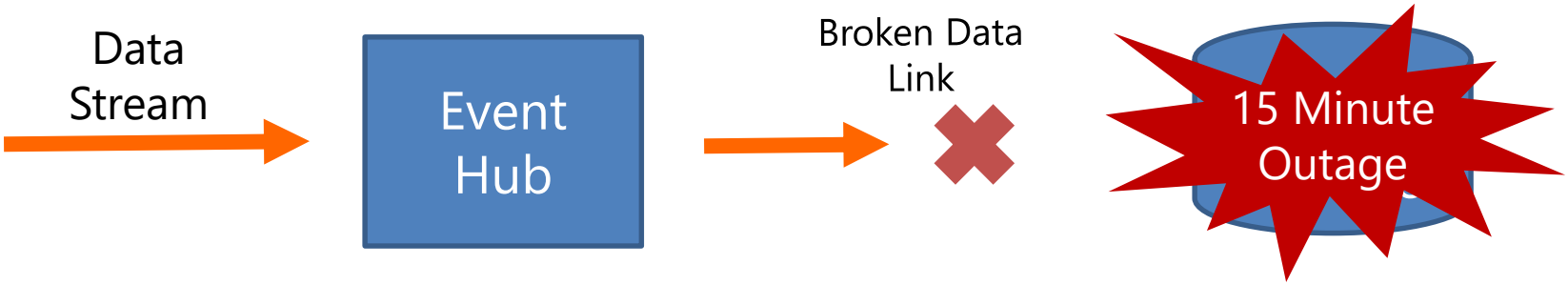
Temporary Storage

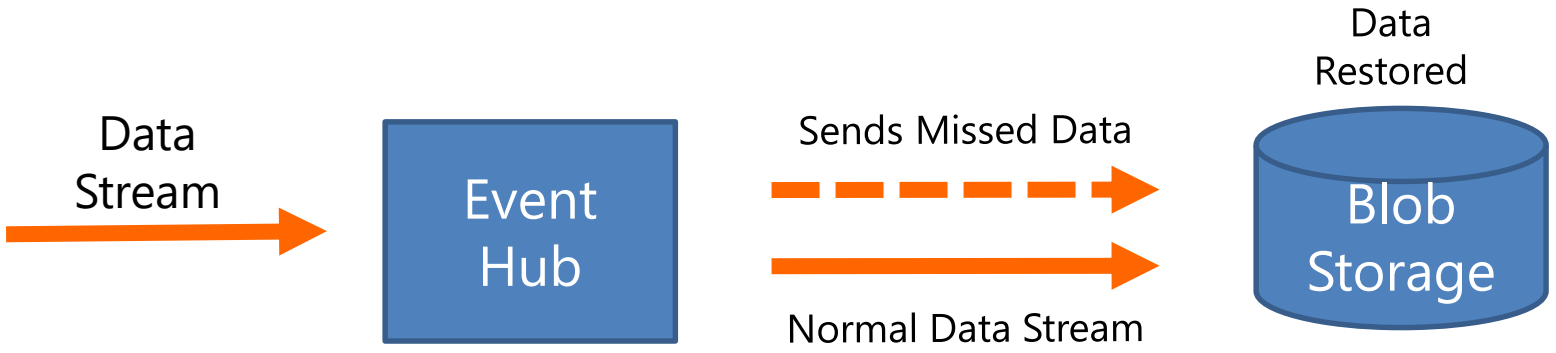


Demo: Normal Scenario

Demo: Output Downage



Demo: Output Restored



The Post Office

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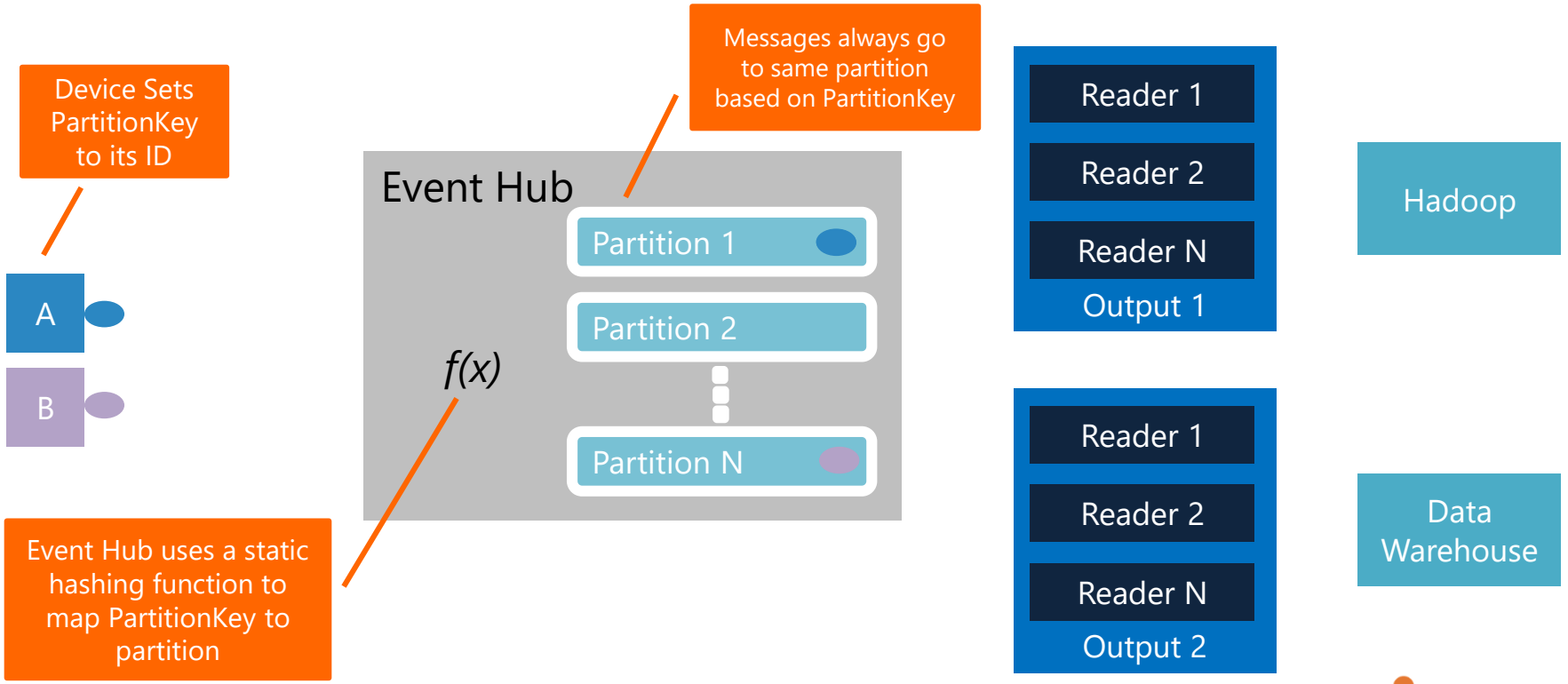
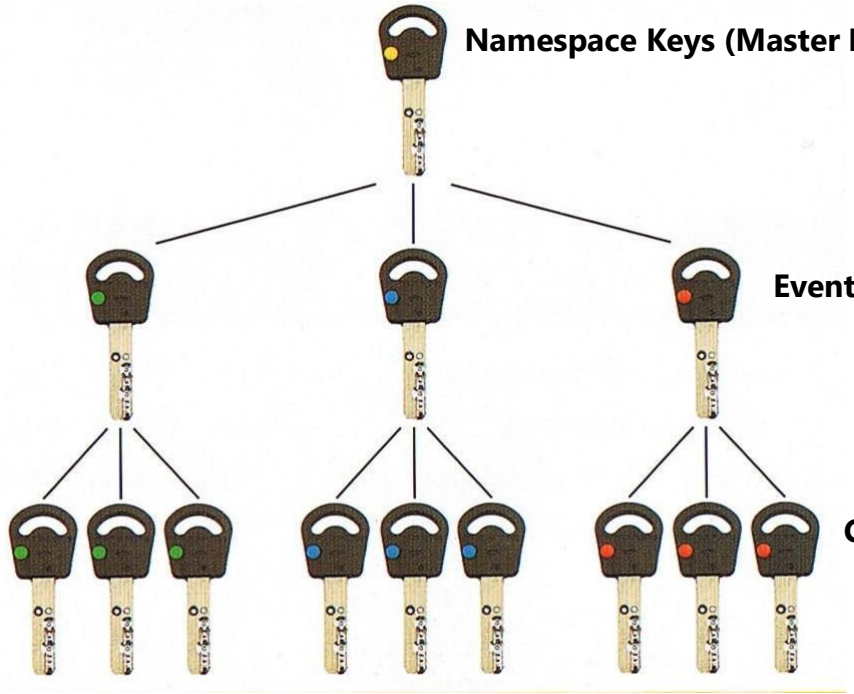
Event Hub, Stream Management

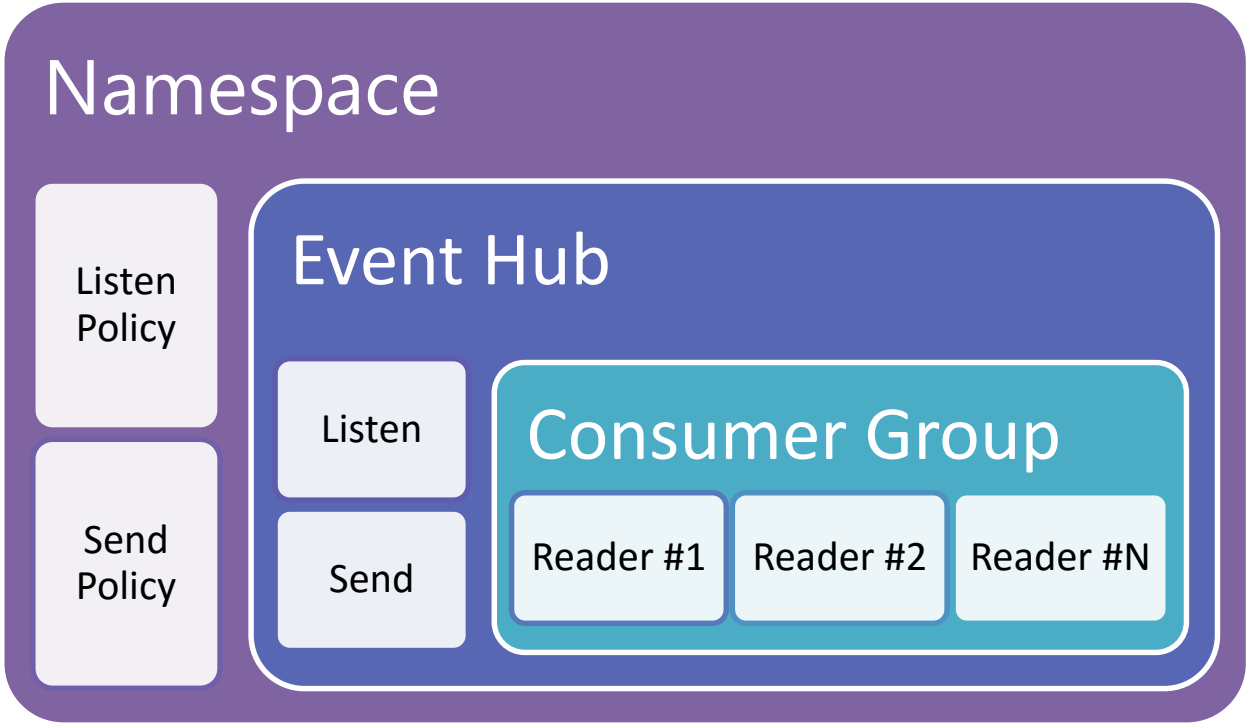


Service Bus Namespace

Access Rights, Policy, Keys



Access Rights



Access Rights

Hands-On Lab

Credit Card Transactions (swipes)

- Credit card transactions are usually done in batch as an end-of-the-day send.
- Stream process for insights now.
- US mainland transactions

Streaming to Event Hub

Swipes

Credit Card Reader (Synthetic)

Message Broker (DataScienceDojo's Webpage)

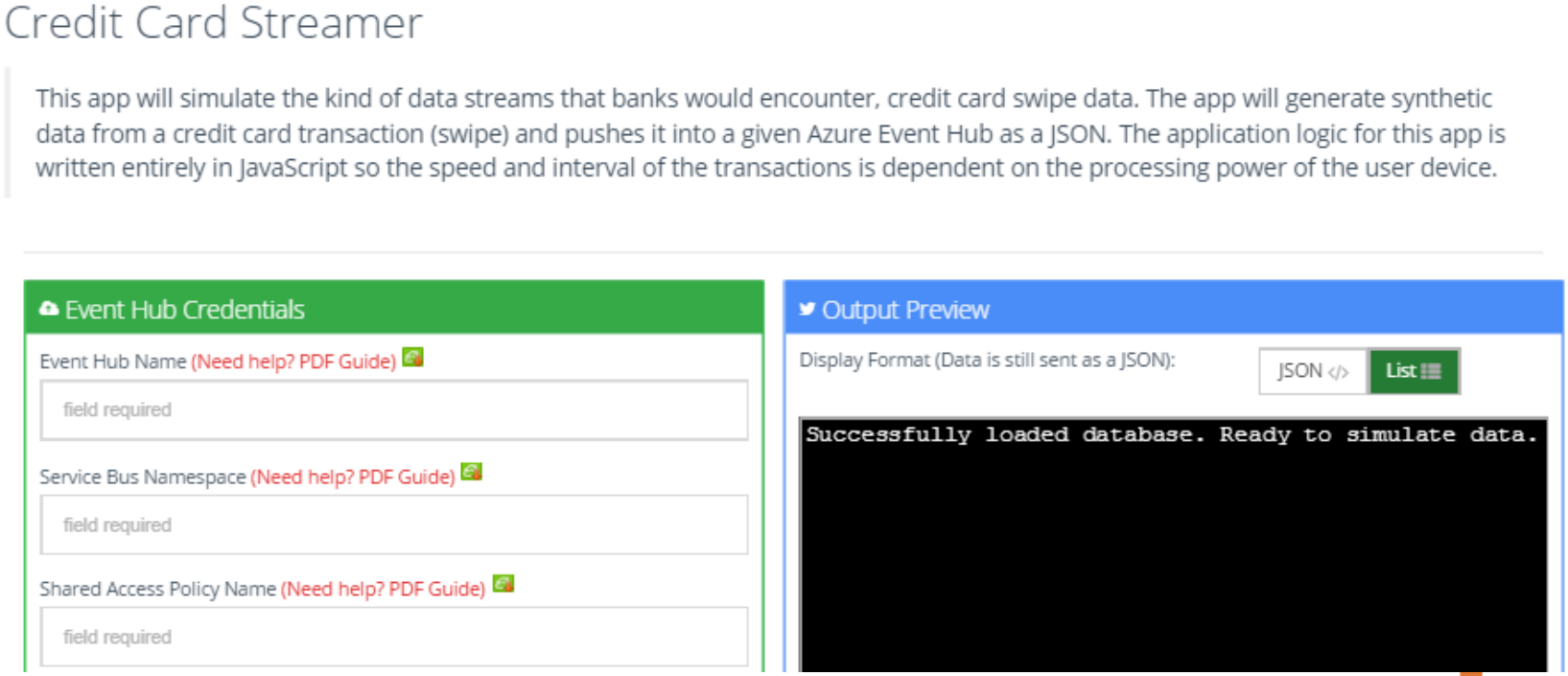
Data Ingestor (Azure Event Hub)

The Data


```
{
  "swipe_date":"2015-05-22T20:16:27.122Z",
  "transaction_id":3127484,
  "card_type":"VISA",
  "card_number":"4913419738164560",
  "expiration_month":"02",
  "expiration_year":"18",
  "cvv_code":"520",
  "user_id":"972288",
  "user_gender":"male",
  "user_first_name":“Alexander",
  "user_last_name":“Hamilton",
  "merchant":“McDonald’s",
  "transaction_amount":13.64,
  "balance":336.48,
  "merchant_fee":.5,
  "swipe_city":"New York",
  "swipe_state":"New York",
  "swip_city_state":"New York, NY",
  "InstanceNo":1
}
```

The Streamer

- http://demos.datasciencedojo.com/app/credit-card-streamer/



Inside the Event Hub

Swipes

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Service Bus Namespace:
YourNameSpace

Event Hub 1:

- Credit Card Swipes

Credit Card Reader (Synthetic)

Message Broker (DataScienceDojo's Webpage)

Setting Policies

Message Broker (DataScienceDojo's Webpage)

Data Ingestor (Azure Event Hub)

Stream Processor (Azure Stream Analytics)

QUESTIONS