



Cloud Computing - Ch 05 S05

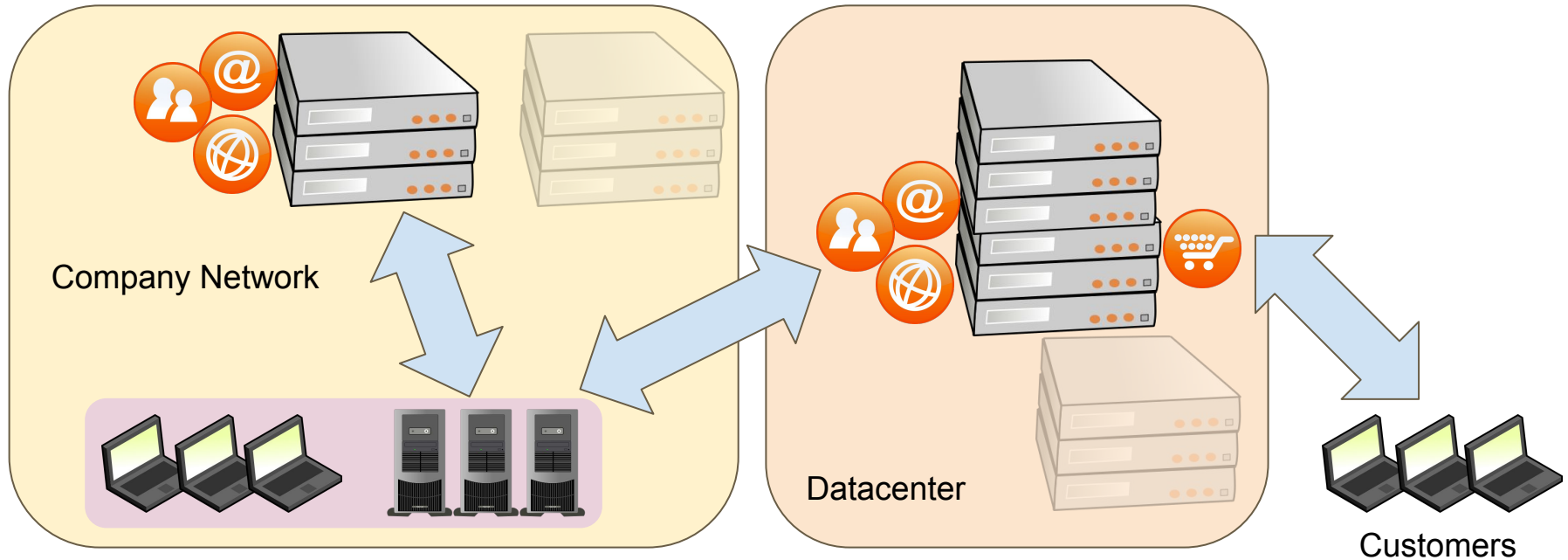
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Case Studies in Cloud Migration

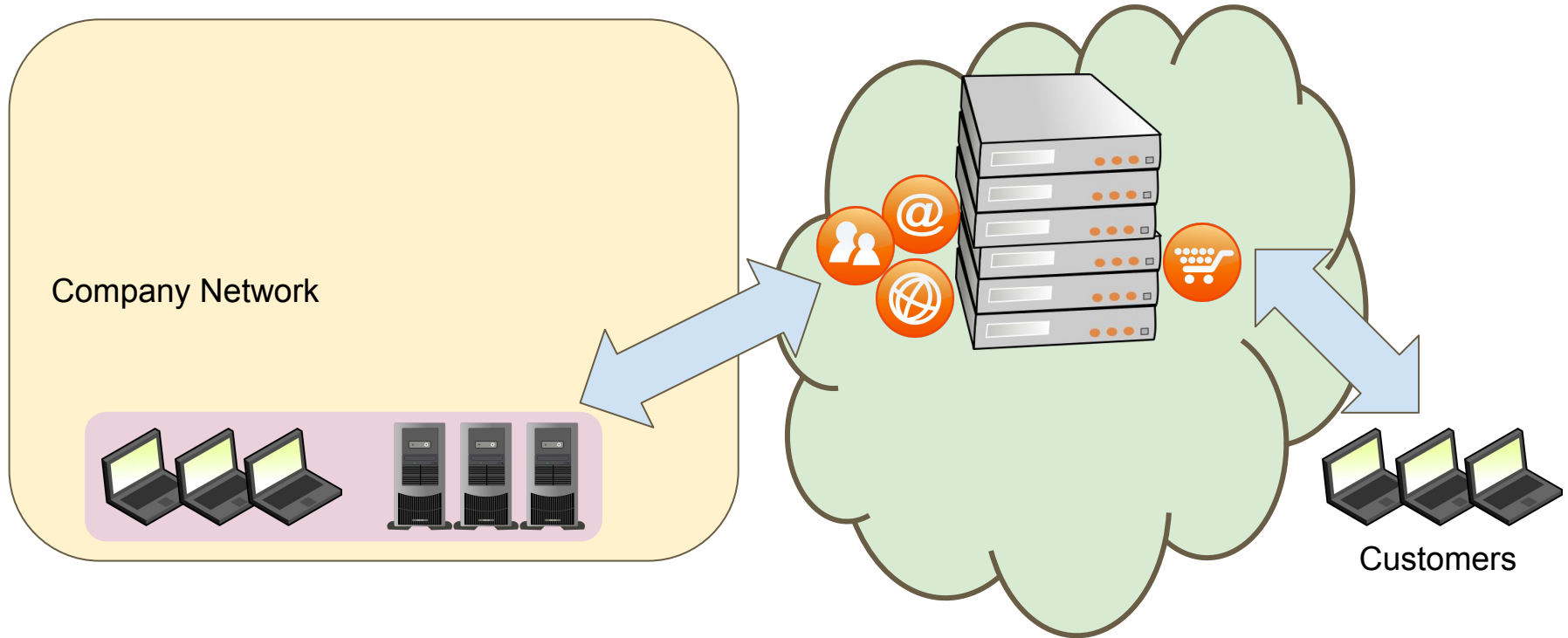


Background - Typical In-house IT Model



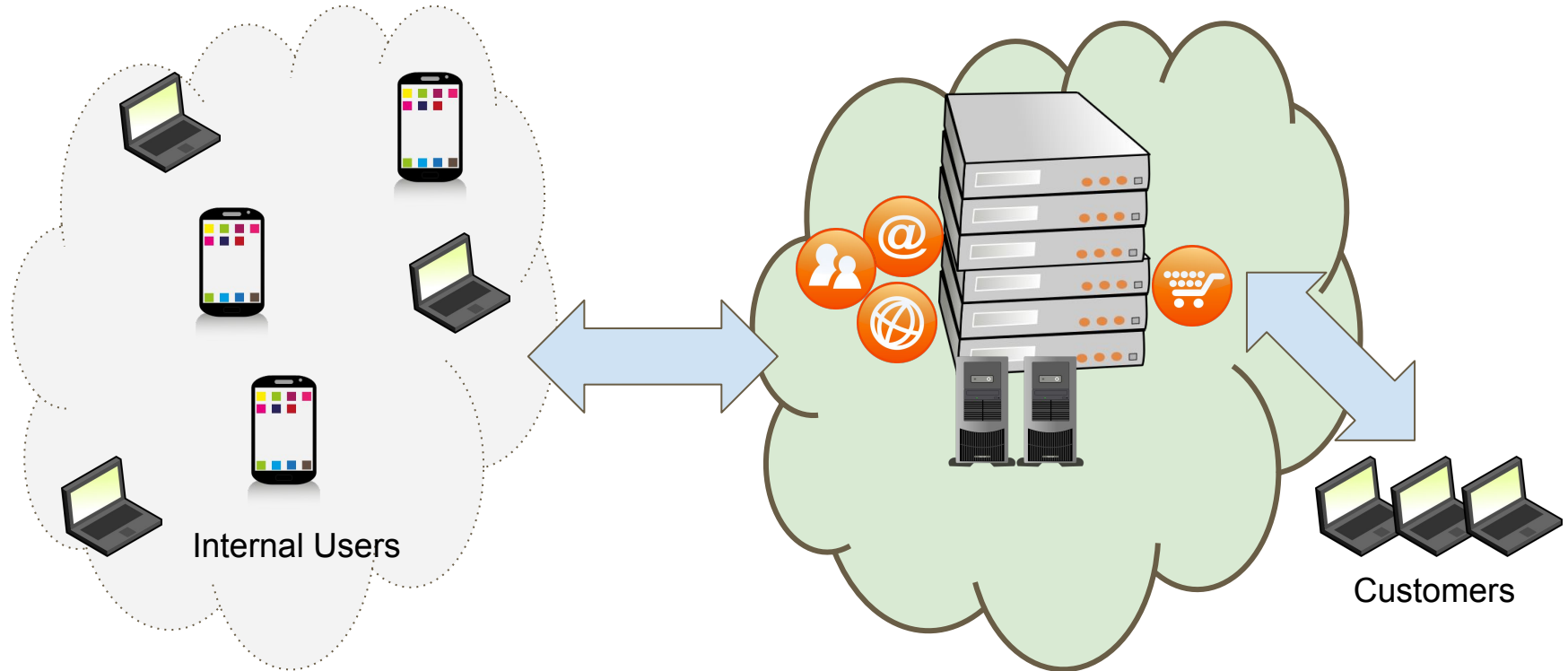


Background - Ideal Cloud based IT Model





Background - Futuristic Cloud based IT Model





What Makes People to Switch

- Compute Scale
 - Several Concurrent Users only for a short time of the year
- Large Volumes of Localized Data (Data Scale?)
- Responsiveness
- New Age Customers (e.g. Internal Digital Marketing) = New Age Information Availability Needs
- Global Availability
- Industry Expertise



Alameda County: AWS

Challenge: How can a government organization, within a short time, provide a scalable infrastructure to meet sudden needs of online presence during election



Alameda County Case Study: Key factors

- Compute vs Reuse
- Normalize data
- Get ready for new-age users (mobile users)



Alameda County Case Study: Paradigm Shift

Example:

If $\text{avg}(a_1, a_2, a_3, \dots, a_n) = x$,

what is $\text{avg}(a_1, a_2, a_3, \dots, a_n, a_{n+1})$?

- Solution 1: $\text{avg} = (a_1 + a_2 + \dots + a_n + a_{n+1}) / (n+1)$
- Solution 2: $\text{avg} = (n*x + a_{n+1}) / (n+1)$

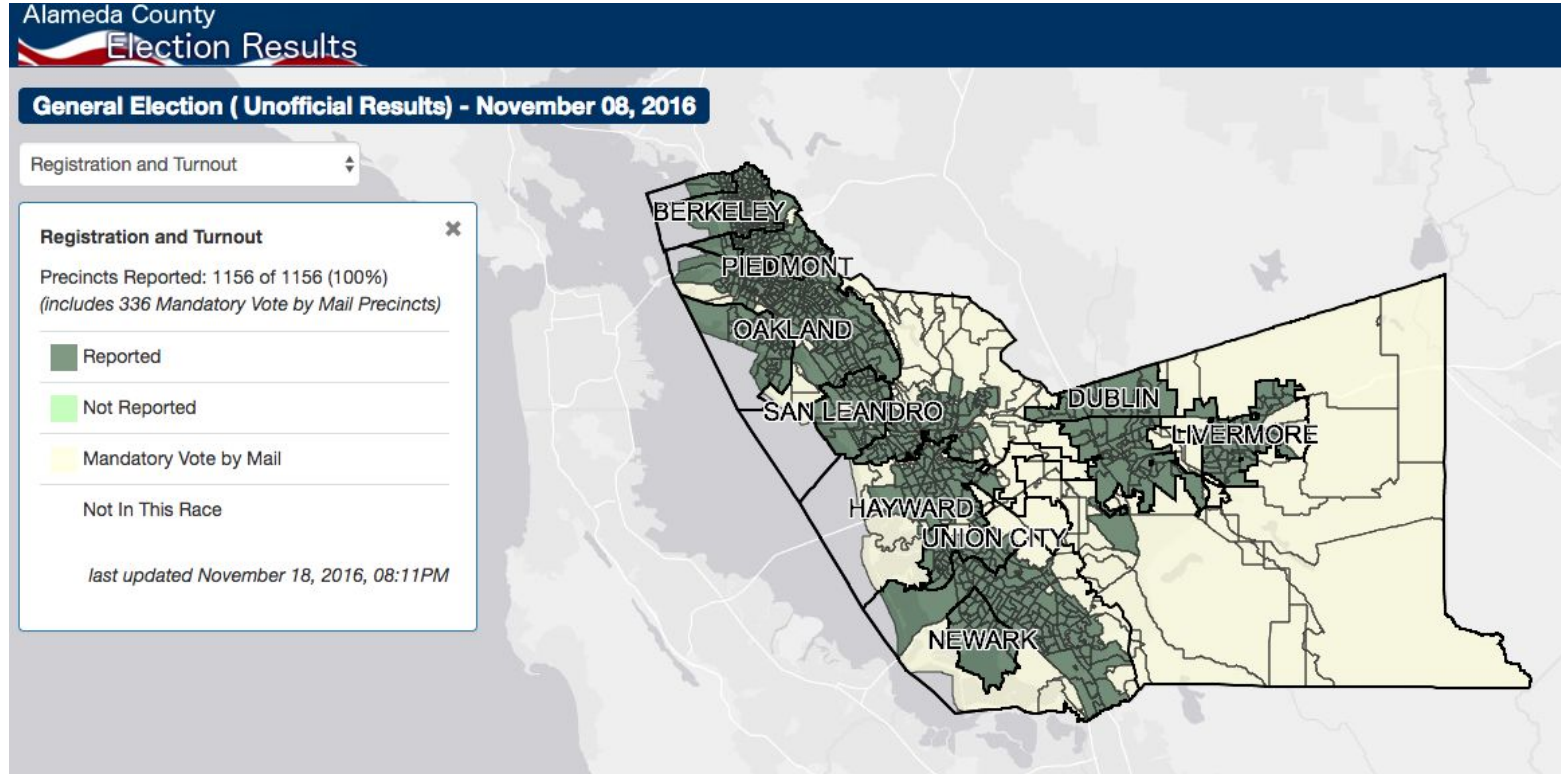


Alameda County Case Study: Technologies

- Amazon Simple Storage Service (S3)
- Amazon Lambda (Serverless Compute)
- Amazon CloudFront (Content Delivery)
- Amazon AWS Access and Identity Management (IAM)

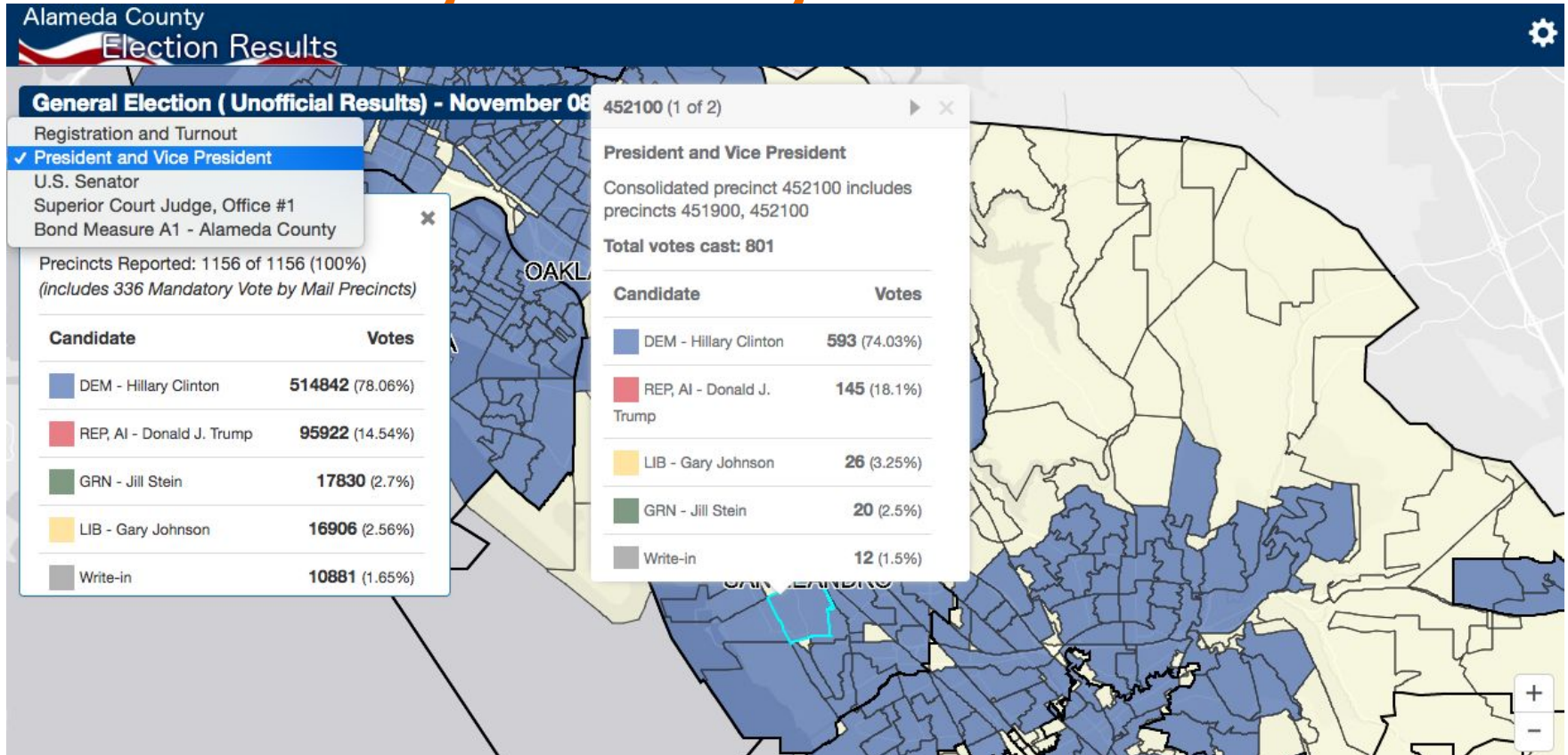


Alameda County Case Study





Alameda County Case Study





Alameda County Case Study: Highlights

- Election Night IT Cost - \$25



Unilever: AWS

Challenge: How can a global company cater to the needs of internal marketing teams spread across the globe to access data needed for new age marketing needs



Unilever Case Study: Key factors

- Information Availability for New Age Consumers
- Faster time to market
- Standardize Web Properties Hosting that evolved over time

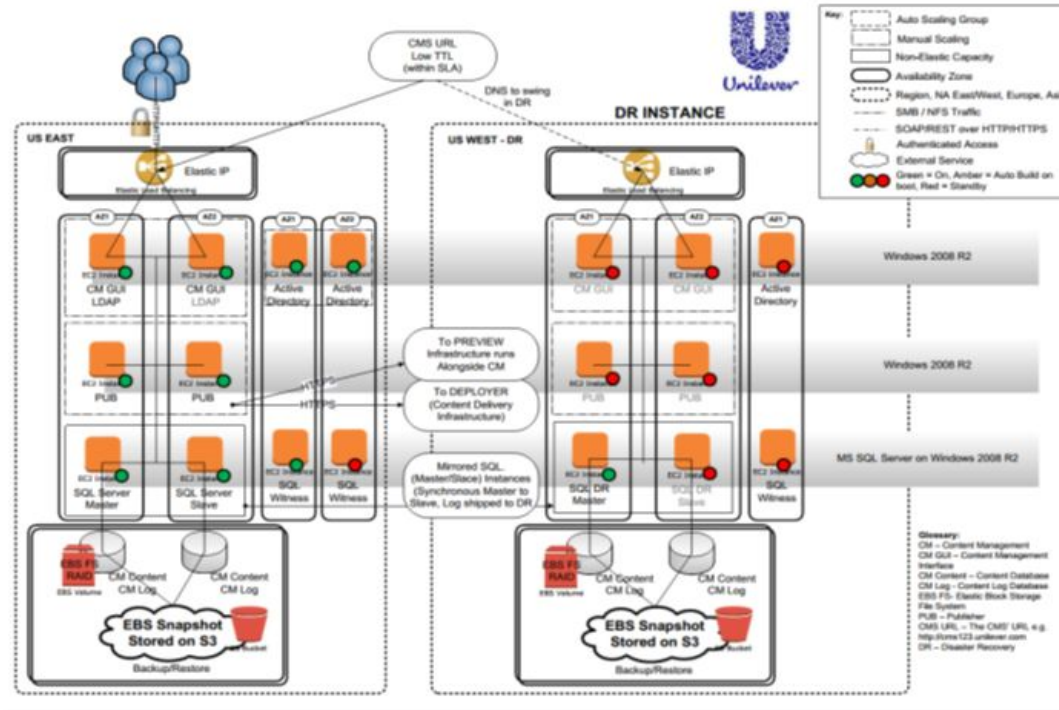


Unilever Case Study: Technologies

- Amazon Machine Images (AMIs)
- Amazon EC2 Instances
- Amazon Virtual Private Cloud (VPC)
- Amazon Simple Storage Service (S3)
- Amazon Elastic Block Store (EBS)



Unilever Case Study: Architecture





Unilever Case Study: Features

- Global Content Management System (CMS)
- Disaster Recovery (DR)
- EBS Snapshots on S3
- AMIs and EC2
- Auto Scaling and Manual Scaling
- Business Agility and Operational Efficiency



Bitly: IBM Cloud

Challenge: How to cater to international customers accessing over 25+ Billion data infused links



Bitly Case Study: Key Factors

- Volume: 25+ Billion Data infused links
- Responsiveness: 1+ Billion User Interaction Datasets
- Availability: Enterprise level presence across the globe
- Global: Geo-distribution - 46 POPs around the globe



Bitly Case Study: Technologies

- IBM Bluemix
- IBM Cloud for VMWare Solutions
- IBM Cloud Object Storage



Bluebee: IBM Cloud

Challenge: How to provide customers an infrastructure that aids in faster processing and analysis of genome data



Bluebee Case Study: Key Factors

- Faster Processing of Genome data and analytics
- Cost-effective processing in certain segments
- Global presence
- Adherence to local laws (related to data retention) across the globe
- Fine grained competencies of underlying hardware



Bluebee Case Study: Technologies

- IBM Aspera
- IBM Aspera Fast, Adaptive, and Secure Protocol (FASP)
- IBM Bluemix
- IBM Cloud Object Storage



asos: Azure

Challenge: How to provide personalized experience to new age customers and scale exponentially during shopping season



asos Case Study: Technologies

- Azure Cosmos DB
- Azure Data Factory
- Azure Data Lake Store
- Azure Event Hubs
- Azure Functions
- Azure HDInsight
- Azure Service Fabric
- Azure SQL Database



asos Case Study: Highlights

- 85000 items with 5000 new items every week
- Real-time product recommendations
- Instant order updates
- Migration to microservices architecture
- Personalized experience
- Mobile-first



asos Case Study: Features

- User interaction telemetry
- Machine Learning Models
- Offline Recommendation Engine
- Online Recommendation Engine
 - Elastic Scale
 - Highly Available
- Order updates
- High Volumes of orders, eg.
 - 3500 requests a sec
 - 33 orders a second
 - 40ms response time



asos Case Study: Recommendations Platform

Real-time recommendations

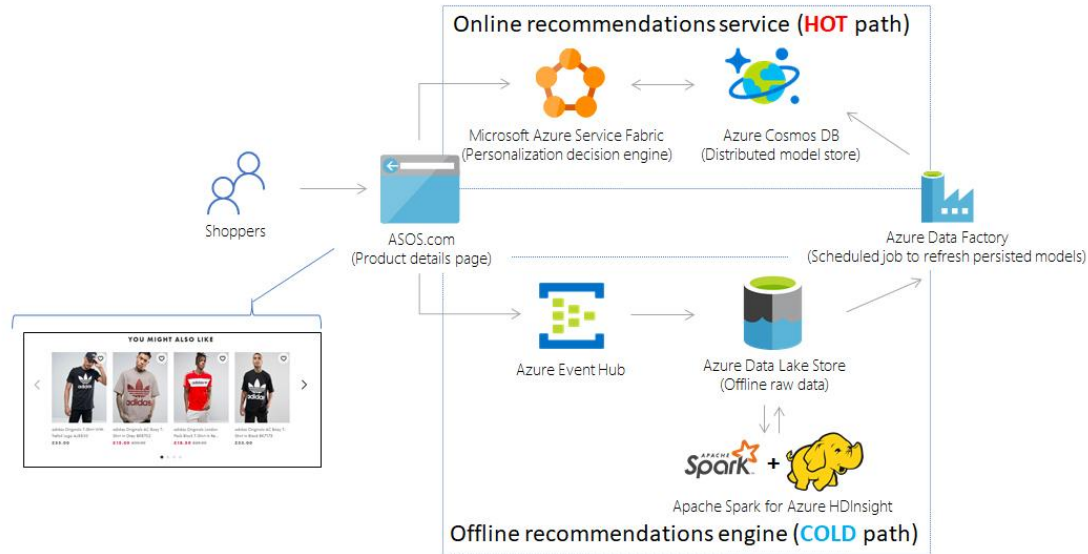


Figure 1: The ASOS recommendations platform



Revisit: What Makes People to Switch

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References

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Backup Slides