아마존 혁신 및 아마존 웹서비스 소개

노경훈, Business Developing Manager, AWS Korea
Feb. 2017
Most people know Amazon for...
Amazon is innovating across many domains.

- Drone Development
- Fire OS
- Kindle
- In-house Entertainment
- Grocery Delivery
- Video Streaming
- Cross Site Shopping
- Cloud Computing

Amazon Web Services
Customers can learn from Amazon’s innovation approach.
Technological innovation drives growth
AWS Platform for Innovation
Innovation requires culture that fosters invention
Welcome to Amazon.com Books!

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SPOTLIGHT! -- AUGUST 16TH

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EYES & EDITORS, A PERSONAL NOTIFICATION SERVICE

Like to know when that book you want comes out in paperback or when your favorite author releases a new title? Eyes, our tireless, automated search agent, will send you mail. Meanwhile, our human editors are busy previewing galleys and reading advance reviews. They can let you know when especially wonderful works are published in particular genres or subject areas. Come in, meet Eyes, and have it all explained.

YOUR ACCOUNT

Check the status of your orders or change the email address and password you have on file with us. Please note that you do not need an account to use the store. The first time you place an order, you will be given the opportunity to create an account.
In the beginning....

- One single executable ran everything
- Lots of people working to maintain the entire single code base
- Challenging to coordinate join team efforts
50 page business plan
Capital Budgeting
3-month Requirements Analysis
Functional Documentation
9-month Development Project
Amazon.com’s Journey

- Organization
- Architecture
- Mechanisms
- Culture
How Amazon thinks about Innovation

\[ f(\text{innovation}) = (\text{org} \times \text{arch}) \]

(mechanisms * culture)
How Amazon thinks about Innovation

\[ f(\text{innovation}) = (\text{org} \times \text{arch}) \]

(mechanisms \times \text{culture})
Organization

Resource focus
- Fixed and rigid
- Long change cycles
- Top down control

Business focus
- Evolving & adapting
- Rapid change cycles
- De-centralized & emergent
Organization - Resource Focus

- B2C Consumers
- Business
- Wall
- Requirements
- Developer
- Wall
- Code
- IT Operations
Organization - Resource Focus

- B2C Consumers
- Business
- Requirements
- Agile Development
- Developer
- Code
- Wall
- IT Operations
Organization - Resource Focus

- Business
- Developer
- IT Operations

B2C Consumers

Requirements → Code

Agile Development

DevOps

IT Operations

Consumers

Graph
Organization – Business Focus

Service Team

Business

Developers (application)

IT Operations (infrastructure)

Agile Development
- Iterative development
- Scrum, sprints, stories
- Velocity

DevOps
- Continuous Integration
- Continuous Deployment
- IT Automation
- Application Management

Business Case • Requirements • Use Case • Features • Plan • Go to market

Design • Code • Refactor • Unit Test • Bug Fix • Deploy

Provision • Configure • Orchestrate • Deploy • Report • Monitor
- Decentralized
- Two-pizza teams
- Agility, autonomy, accountability, and ownership
- “DevOps”
How Amazon thinks about Innovation

\[ f(\text{innovation}) = (\text{org} \times \text{arch}) \]
• There is no ESB, no Service Orchestration
• All services must communicate with each other through APIs
• Lots of Service APIs
• The service team is responsible for maintaining and providing an SDK
• The service team is responsible for dealing with degraded or impaired service calls
• SDK implements everything you should need
• Reduce or eliminate dependencies on traditional SQL databases
• Do your own caching, make yourself resilient and performant despite other dependencies
Each page on Amazon.com is an aggregation of 200 to 300 Business Services.

Timing is everything!
Access everything in AWS via CLI, API or Console

Infrastructure as Code

var Server = New Ec2Instance();
Server.Start();
...
Server.Terminate();

Automate Infrastructure based on business rules, system rules or environmental conditions

Scale to Meet Business Rules

var Event = New Date("Daily @9 am");
var ASG = New AutoSaclingGrp();
ASG.ScheduledCapacity(Event, 10);
...

Agility: The Programmable Infrastructure
### Your Orders

<table>
<thead>
<tr>
<th>Order Placed</th>
<th>Delivered on</th>
<th>Order Number</th>
<th>Recipient</th>
<th>Order Total</th>
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<tbody>
<tr>
<td><strong>September 6, 2012</strong></td>
<td>Monday October 1, 2012</td>
<td>029-9172520-543468</td>
<td>Laura Girl</td>
<td>$380.44</td>
</tr>
</tbody>
</table>
Amazon Website – 1000’s of A/B Tests…
How Amazon thinks about Innovation

\[ f(\text{innovation}) = (\text{org} \times \text{arch}) \]
How do we decide what to build?
“When a feature or enhancement is ready, we push it out and make it instantly available to all.” – Jeff Bezos
1. Customer
• Start with the customer and work backwards

• Enable new things that customers couldn’t do before…

• Make things customers could already do much cheaper, simpler and better
2. Narrative process
Amazon Web Services Launches New Capabilities for Mobile Developers

AWS Mobile Services make it simpler and more cost-effective to build and scale mobile apps on the AWS Cloud

SEATTLE-(BUSINESS WIRE)--Mon. XX, 2014--Amazon Web Services, Inc. (AWS), an Amazon.com company (NASDAQ:AMZN), today announced several new capabilities to make it easier for developers to build, deploy, and scale mobile applications. Amazon Cognito is a new service that provides simple user identity and data synchronization that lets developers create apps that authenticate users through popular public login providers, and then keep app data such as user preferences and game states synced between devices. The new Amazon Mobile Analytics service allows developers to easily collect and analyze app usage data, up to billions of events per day from millions of users, and delivers usage reports within an hour of data being sent by the app. AWS is also introducing a new unified Mobile Software Development Kit (SDK) that makes it easy for iOS, Android, and Fire OS developers to access the new Amazon Cognito and Amazon Mobile Analytics services as well as popular AWS services like Amazon S3 and Amazon DynamoDB. To get started with AWS Mobile Services, visit http://aws.amazon.com/mobile.

Today, many app developers around the world use the AWS Cloud as infrastructure building blocks for the back-end services that power their mobile applications. Still, these mobile app developers have had to spend valuable time on undifferentiated heavy lifting like connecting apps to storage and database services and integrating core functionality such as authentication, user management, notifications, and usage data analytics. With Amazon Cognito, Amazon Mobile Analytics, and the AWS Mobile SDK, developers are now able to focus more of their energy on what matters, the differentiated functionality of their app that attracts and retains end users.

With AWS Mobile Services, developers can:

- **Securely store, manage, and sync user identities and data (Amazon Cognito)**

As more and more users utilize the same apps across various devices running different mobile platforms, developers often have to manage multiple user logins to securely store and retrieve data for their users, reconcile different versions of the data as devices go on and offline, and keep data in sync between devices. With Amazon Cognito, developers can incorporate these capabilities into their apps with just a few lines of code. Amazon Cognito lets developers build apps that allow users to start off as unauthenticated guests and then sign in with Amazon, Facebook, or Google. Amazon Cognito manages the complexity of keeping app data in sync on all devices associated with a user identity. Developers can also use Amazon Cognito's client SDK to create a local data store, which caches user data on the device so that apps can keep working the same way regardless of whether the device is on or offline. Additionally, Amazon Cognito makes it simple to implement AWS security best practices (such as not embedding AWS credentials into source code) by providing a set of temporary, limited-privilege AWS credentials that developers can use to access AWS services such as Amazon Mobile Analytics, Amazon SNS, Amazon S3, or Amazon DynamoDB from their mobile app. Developers receive 10 GB of storage for synced data and one million sync operations per month for free for us to 12 months with the AWS Free Tier.

- **Quickly access and understand app usage data (Amazon Mobile Analytics)**

Analytics such as how many users use an app has, how much revenue it's generating, and what a user is doing with the app are critical to the success of a mobile app. Amazon Mobile Analytics helps mobile app developers measure app usage to find out what's working, and what isn't, to improve their apps and understand how well they're performing.

- **Build mobile apps that can handle concurrent users more effectively (Amazon ElastiCache for Memcached)**

ElastiCache for Memcached is a fully-managed in-memory cache service that enables developers to quickly build and deploy mobile apps that can handle concurrent users more effectively. ElastiCache for Memcached is a fully-managed in-memory cache service that enables developers to quickly build and deploy mobile apps that can handle concurrent users more effectively.
Frequently Asked Questions (FAQs)

- What is this service?
- Who should use it?
- How do I start using it?
- How much does it cost?
3. Build
Service Teams

• A dedicated team is responsible for each service
  • Features driven by direct customer feedback
  • Autonomous and self sufficient
  • Service needs to pass the high bar of scalable, available & durable
  • They build it, and run it....

• Teams ship autonomously when they are ready
  • Ship and sprint cycles are defined internally
  • Cross team involvement on a “as needed” basis

• Roadmap is defined for the next 24 months
  • Service/Feature priority list is stack ranked and subject to change on customer feedback
4. Release
“AWS is eight years old, and the team’s pace of innovation is actually accelerating.

... The development teams work directly with customers and are empowered to design, build, and launch based on what they learn. We iterate continuously, and when a feature or enhancement is ready, we push it out and make it instantly available to all. This approach is fast, customer-centric, and efficient – it’s allowed us to reduce prices more than 40 times in the past 8 years – and the teams have no plans to slow down.”

—Jeff Bezos
5. Measure
Cognito Adoption

[Diagram showing a steep increase in identities after time t₁]
6. Improve and Iterate
Product Innovation

> 50 releases since Feb 2013

Regional expansion to US West (Oregon)
Support for temporary credentials when loading data from Amazon S3
Regional expansion to EU West (Dublin)
SOC1/2/3 Compliance certification
Ability to UNLOAD encrypted files in parallel to Amazon S3
Regional expansion to Asia Pacific (Tokyo)
Support for JDBC fetch size to enable extraction of large data sets over JDBC/ODBC
Enable logging of UNLOAD statements
New built-in function to compute the SHA1 hash of a value
Added support for UTF-8 characters up to 4 bytes in size
Ability to share snapshots between accounts to simplify manageability.
Support for statement timeouts to automatically terminate queries that exceeded allotted execution time
Added support for timezone conversion in SQL
Added support for datetime values expressed in milliseconds since EPOCH to simplify ingestion
Simplified ingestion by automatically detecting date and time formats.
Added support for automatic query timeouts to workload management queues.
Enabled the use of wildcards when assigning queries to workload management queues.
New built-in function to enable customers to calculate the CRC32 checksum of a value
Console improvements to show progress bars for backup and restore operations.
Added the ability to support IAM at the resource level allowing tight control of who can take what actions on which resources.
Obtained PCI compliance
Added the ability to substitute a customer chosen character for invalid UTF-8 characters to simplify ingestion
Allowed customers to store JSON data in VARIOUS columns and added built-in functions to enable data extraction
Added support for POSIX regex expressions when using SIMILAR to in SQL queries
Added Cursor support to enable extraction of large data sets over ODBC connections
Built-in function to enable splitting a string using a supplied delimiter to make parsing values easier
Added system tables to enable logging of database activity for auditing
Regional expansion to Asia Pacific (Singapore, Sydney)
Enable customers to control cluster encryption keys by using an on premises hardware security module (HSM) or Amazon CloudHSM
Enable customers to receive alerts via SNS for informational or error-related events for cluster monitoring, management, configuration and security.
Integration with Canal to enable streaming data ingestion
Copy from an arbitrary SSH connection enabling direct copy from Amazon EMR, HDFS, or any other database that supports SSH access and script execution
Enable distributing tables to all compute nodes to speed up queries, especially those involving star or snowflake schemas
Logging of database logins, failed logins, SQL execution and data loads to 53 and integration with CloudTrails for control plane events
Enabled caching of database blocks to speed up access to frequently queried data
Increase cluster concurrency limits from 15 to 50 to enable higher concurrent query execution
Optimizations to resize code that lead to 2-4x improvement in resize performance
Approximate COUNT DISTINCT using HyperLogLog giving 10-20x performance improvements with less than 1% error
Enable customers to continuously, automatically and incrementally back up data to a second AWS region for DR
On track to obtain Fedramp certification
Deliver Redshift on SSD instances enabling a lower-cost, high performance entry point
“When a feature or enhancement is ready, we push it out and make it instantly available to all.” – Jeff Bezos
# Feature Innovation

## Speed of deployments at amazon.com

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average time</td>
<td>11.6s</td>
</tr>
<tr>
<td>between deployments (weekday)</td>
<td></td>
</tr>
<tr>
<td>Max number of deployments in a single hour (or approx every 3 seconds)</td>
<td>1,079</td>
</tr>
<tr>
<td>Max number of instances simultaneously receiving a deployment</td>
<td>30,000</td>
</tr>
</tbody>
</table>

*With Automated Rollbacks*
How Amazon thinks about Innovation

\[ f(\text{innovation}) = (\text{org} \times \text{arch}) \]
Culture eats strategy for breakfast

Peter Drucker
Amazon’s 14 Leadership Principles

- Customer Obsession
- Ownership
- Invent and Simplify
- Are Right, A Lot
- Hire and Develop The Best
- Insist on the Highest Standards
- Think Big
- Bias for Action
- Frugality
- Learn and Be Curious
- Earn Trust of Others
- Dive Deep
- Have Backbone; Disagree and Commit
- Deliver Results
Finally, keep your vision
« We've had three big ideas at Amazon that we've stuck with for 18 years, and they're the reason we're successful: put the customer first, invent, and be patient »

-Jeff Bezos
CEO, Amazon.com
You begin your startup in a garage...
...and build a fantastic app
people love it!
and everyone wants to use it...

Now what?!
On demand

Pay as you go

Uniform

Available
90+ SERVICES

COMPUTE, STORAGE, DATABASE, APPLICATION MANAGEMENT…
고객 요구에 따른 폭넓은 클라우드 서비스

마켓 플레이스

고객 기술 지원

- 고객지원
- 프로페셔널 컨설팅
- 코딩 커뮤니티
- 교육 및 인증
- 슬루션 아키텍트
- 영업 지원
- 코딩 도구
- 보안 및 별도 시스템

데이터 분석

- 데이터 웨어하우스
- 앱 서비스
- 모바일 서비스
- 개발 및 운영 도구
- IoT
- 애플리케이션
- 인프라
- 보안 및 규정 준수
- 기본 서비스
- 클라우드 라이프 사이클
- 인프라

고객 요구에 따른 폭넓은 클라우드 서비스
“Active customer” is defined as a non-Amazon customer with AWS account usage activity in the past month, including the free tier.
Trusted by Enterprises Around the World
Global Enterprise Customers

- HOYA
- Ubisoft
- Lionsgate
- Dow Jones
- Newsweek
- Nintendo
- Expedia
- Uniliver
- Montefiori
- Booking Group
- Bankinter
- Samsung
- Misawa
- Hearst
- Kellogg's
- Discovery Communications
- News Corp
- JWT
- JPX
- Novartis
- Commonwealth
- DoCoMo
- Thomson Reuters
- Netflix
- Dole
- HTC
- The Weather Company
- Tata Motors
- The New York Times
- Vodafone
- Intuit
- Pfizer
- The Washington Post
- Comcast
- Autodesk
- Nokia
- Pacific Life
- Imshealth
- Nasdaq OMX
- FFL
- Japanese TV
- Toshiba
- TCL
- NQ Mobile
- Schneider Electric
- Inmobi
- L'Oréal
- Lafarge
- Bristol-Myers Squibb
- Thermo Fisher Scientific
- Time Inc.
- General Electric
- Capital One
- BMW
- Coca-Cola
- Johnson & Johnson
- Merck
- Nordstrom
Used by Government Agencies & Educational Institutions Worldwide
AWS 국내 고객 현황

스타트업

게임 개발사

엔터프라이즈
Thank You