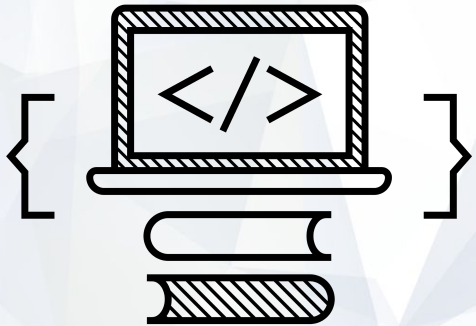
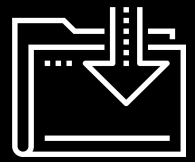


Elastic Beanstalk

Course: Java

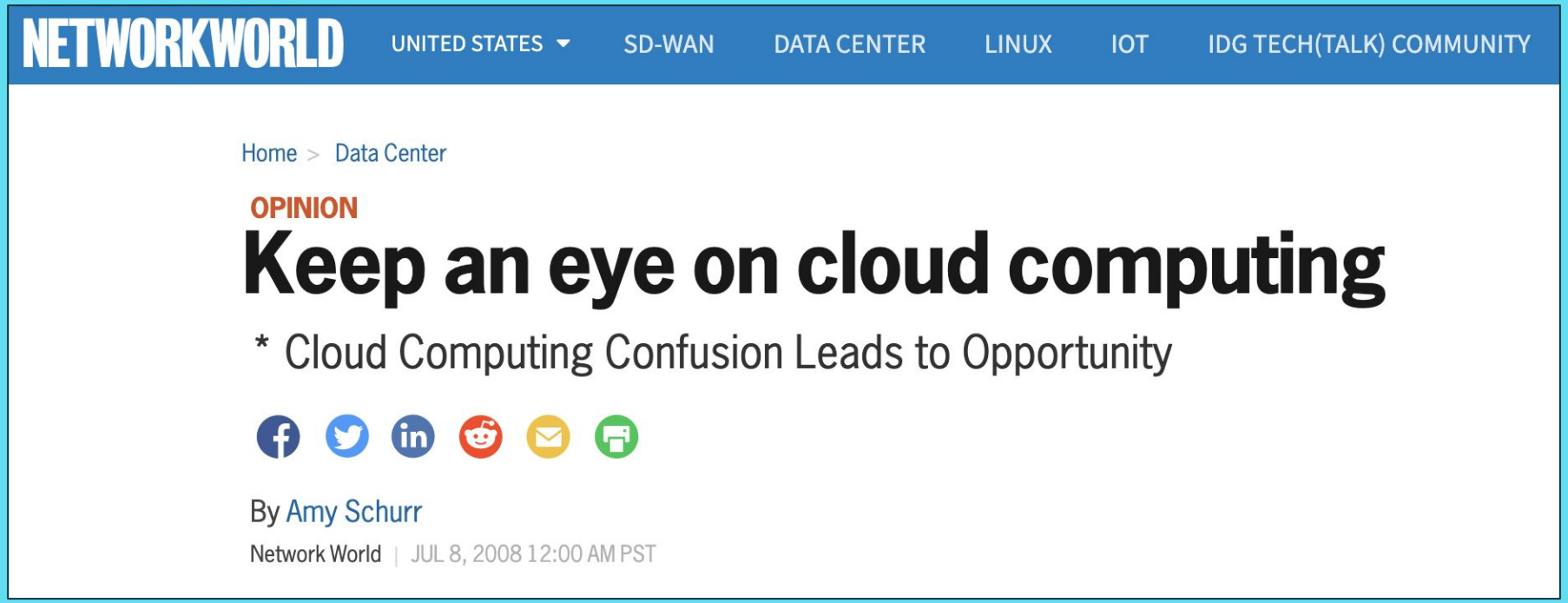
S1



Imagine it's 2006. Amazon just released their Elastic Compute Cloud product. While the term and idea of a "cloud" was not new, the concepts that cloud computing brought to the forefront have peaked our interest. As developers, we must always be learning.

Cloud Computing

Now it's 2008. An opinion article comes out telling us to
"Keep an eye on cloud computing."



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OPINION

Keep an eye on cloud computing

* Cloud Computing Confusion Leads to Opportunity

By Amy Schurr

Network World | JUL 8, 2008 12:00 AM PST

Learning Outcomes

By the end of this lesson, you will be able to:

01 Compare and contrast cloud models

02 Discuss Infrastructure as a Service (IaaS)

03 Discuss Software as a Service (SaaS)

04 Discuss Platform as a Service (PaaS)

05 Discuss Elastic Beanstalk

06 Create an Elastic Beanstalk account

07 Deploy a simple web service to Elastic Beanstalk

08 Deploy an existing database backed Spring Boot application to Elastic Beanstalk

We have to stay current in tech! That means spending time exploring new things—even if they aren't really all that new.

Time to Code

Investigate Cloud Models

Suggested Time:

30 minutes

Infrastructure as a Service

The **capability provided to the consumer** is to provision processing, storage, networks, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software, which can include operating systems and applications.

Infrastructure as a Service

The consumer does not manage or control the underlying cloud infrastructure but has control over operating systems, storage, and deployed applications; and possibly limited control of select networking components (e.g., host firewalls).

What is a data center?

Data Center

A data center is a location used to house computer systems and associated components, such as telecommunications and storage systems.

Elastic Beanstalk Applications

Elastic Beanstalk applications are deployed to the Amazon EC2, a central part of Amazon AWS.

- Perimeter Layer
- Infrastructure Layer
- Data Layer
- Environmental Layer

What are some of the services that IaaS providers provide?

IaaS Provider Services

- Billing
- Scaling
- Monitoring
- Log access
- Security
- Load balancing
- Data partitioning
- Backup

IaaS Examples

- Amazon Web Services (AWS)
- Cisco Metapod
- Microsoft Azure
- Google Compute Engine (GCE)

IaaS Pros and Cons

PROS

- Cost-efficient
  (cost based on consumption)
- Highly scalable
- Most flexible model
  (when compared to PaaS and SaaS)

CONS

- Costs may be higher than expected since they are more granular
- Lack of details of infrastructure configuration and performance

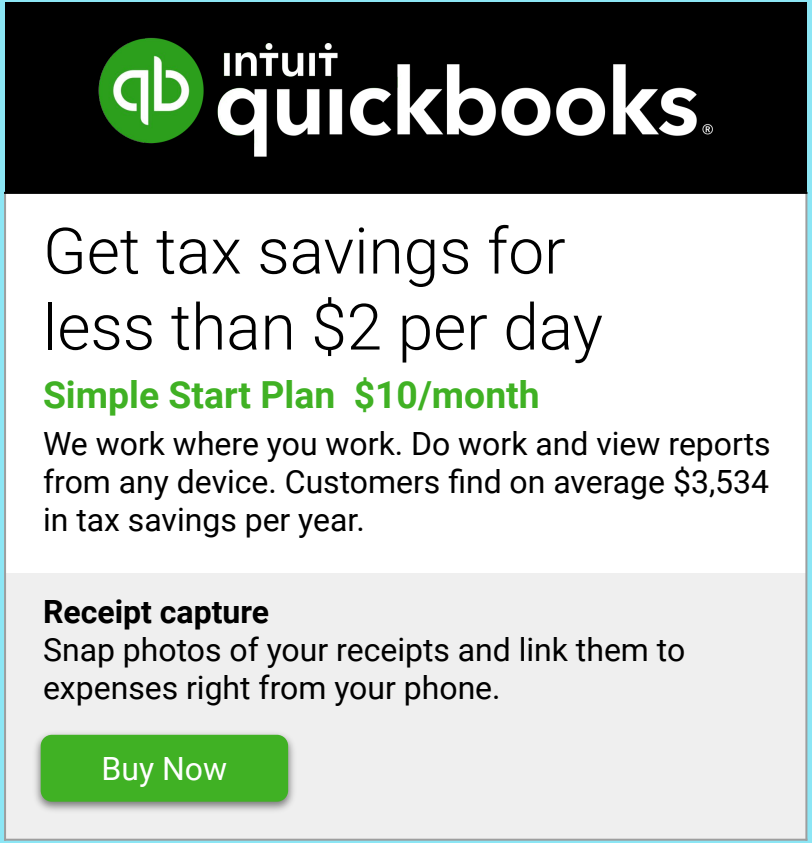
What is SaaS?

SaaS (Software-as-a-Service).

When a company delivers access to its software via customer subscriptions.

SaaS Examples

- Google Apps
- Slack
- Microsoft Office 365
- DropBox



What are some of the characteristics of SaaS?

Characteristics of SaaS

- Managed from a central location
- User not responsible for hardware and software updates
- Configuration and customization
- Customers can typically set configuration options
- Accelerated feature delivery
- Can be updated frequently
- Open integration protocols
- Collaborative functionality

What were some of the technical advancements that led to SaaS being adopted?

SaaS Adoption Drivers

01

Broadband access has made it easier

02

HTTPS security

03

Standardization of web technologies

SaaS Pros and Cons

PROS

- No need to install software on local machines
- Vertical scalability
- Automatic updates
- Access from multiple devices

CONS

- Security may be an issue
- Cloud-based may cause latency
- User may be forced into adopting new versions
- Relies on internet connection
- What happens if the vendor goes out of business?


Break

Platform as a Service

PaaS (Platform as a Service).

A platform serves as the basic foundation for the development and support of hardware and software.

PaaS Examples

AWS Elastic Beanstalk

Windows Azure

Heroku

Google App Engine

PaaS Pros and Cons

PROS

- Developers can focus on creating apps, not building infrastructure
- Simplifies the code-writing process
- Cost is per-use
- Scalability

CONS

- Service outages
- Provider lock-in
- Reduced control

Activity: Investigate Platform as a Service

In this activity you will work in pairs to investigate PaaS

Suggested Time:

10 minutes

Beanstalk Basics

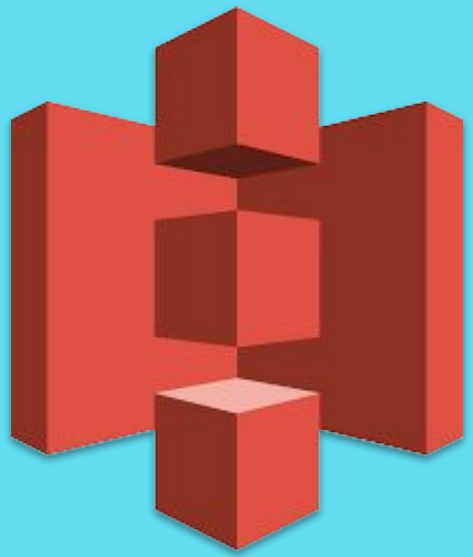
An **Elastic Beanstalk application** is a logical collection of Elastic Beanstalk components, including environments, versions, and environment configurations.

In Elastic Beanstalk an application is conceptually similar to a folder.

In Elastic Beanstalk, an **application version** refers to a specific, labeled iteration of deployable code for a web application.

Application Version

An application version points to an Amazon Simple Storage Service (Amazon S3) object that contains the deployable code, such as a Java WAR file.

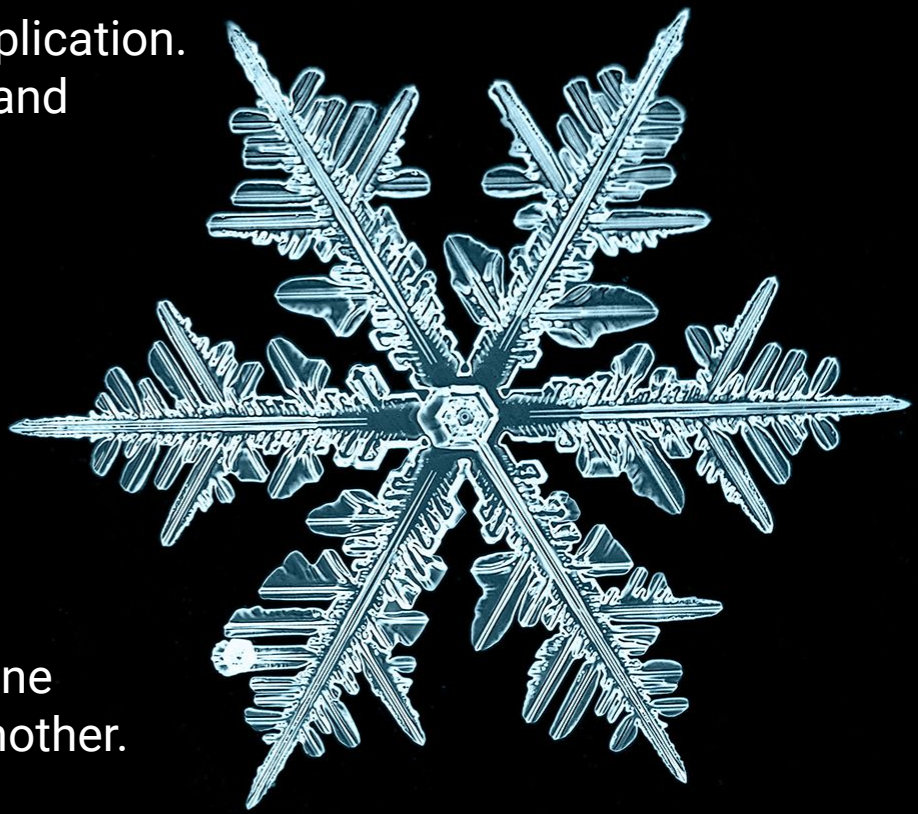


Application Version

An application version is part of an application. Applications can have many versions and each application version is unique.

In a running environment, you can deploy any application version you already uploaded to the application, or you can upload and immediately deploy a new application version.

You might upload multiple application versions to test differences between one version of your web application and another.



An **environment** is a collection of AWS resources running an application version.

Web Application Architecture

Each environment runs only one application version at a time. However, you can run the same application version or different application versions in many environments simultaneously.

When you create an environment, Elastic Beanstalk provisions the resources needed to run the application version you specified.

Elastic Beanstalk Applications

When you launch an Elastic Beanstalk environment, you first choose an environment tier.

The **environment tier** designates the type of application that the environment runs, and determines what resources Elastic Beanstalk provisions to support it.

Environment Tier

01

An application that serves HTTP requests runs in a web server environment tier.

02

A backend environment that pulls tasks from an Amazon Simple Queue Service (Amazon SQS) queue runs in a worker environment tier.

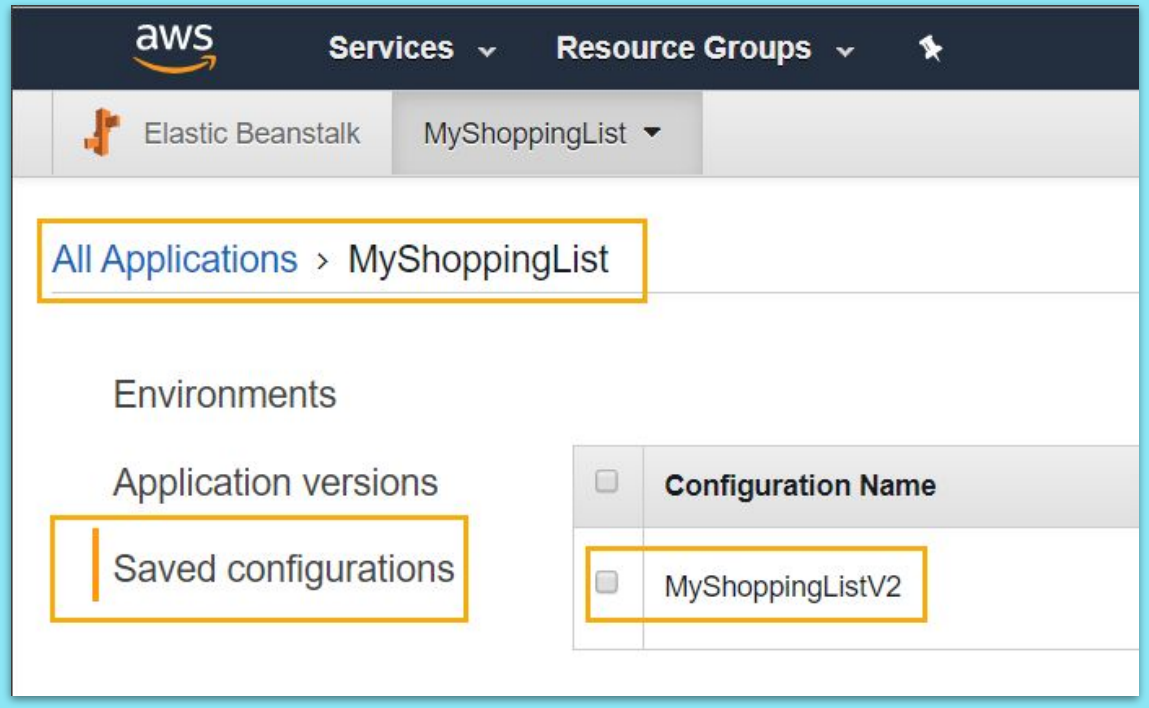
An **environment configuration** identifies a collection of parameters and settings that define how an environment and its associated resources behave.

When you update an environment's configuration settings, Elastic Beanstalk automatically applies the changes to existing resources or deletes and deploys new resources (depending on the type of change).

A **saved configuration** is a template that you can use as a starting point for creating unique environment configurations.

Saved Configuration

You can create and modify saved configurations, and apply them to environments, using the Elastic Beanstalk console, EB CLI, AWS CLI, or API.



A **platform** is a combination of an operating system, programming language runtime, web server, application server, and Elastic Beanstalk components.

You design and target your web application to a platform. Elastic Beanstalk provides a variety of platforms on which you can build your applications.


RECAP

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Questions?