

# Razvoj Java aplikacija u Amazon AWS Cloud: Praktična demonstracija

Robert Dukarić

University of Ljubljana  
Faculty of Computer and Information Science  
Laboratory for information systems integration  
Competence Center for SOA [www.soa.si](http://www.soa.si)  
Cloud Computing Competence Center [www.cloud.si](http://www.cloud.si)



Univerza v Ljubljani  
Fakulteta *za računalništvo  
in informatiko*

# Outline

- What is AWS?
- AWS services - overview
  - Compute & Networking
  - Storage & Content Delivery
  - Database
  - Deployment & Management
  - App Services
- AWS Elastic Beanstalk
- **Practical demonstration**

WHAT IS AWS?

# Amazon Web Services – What is AWS?

- Amazon Web Services is a collection of remote computing services (also called web services) that together make up a **cloud computing platform**, offered over the Internet by Amazon.com.
- Amazon Web Services (AWS) comprises about 25 services, each of which exposes an area of functionality.
- It provides a variety of **infrastructure-**, **platform-** and **storage-as-a-service** functionalities.
- **The largest public cloud provider in the world!**



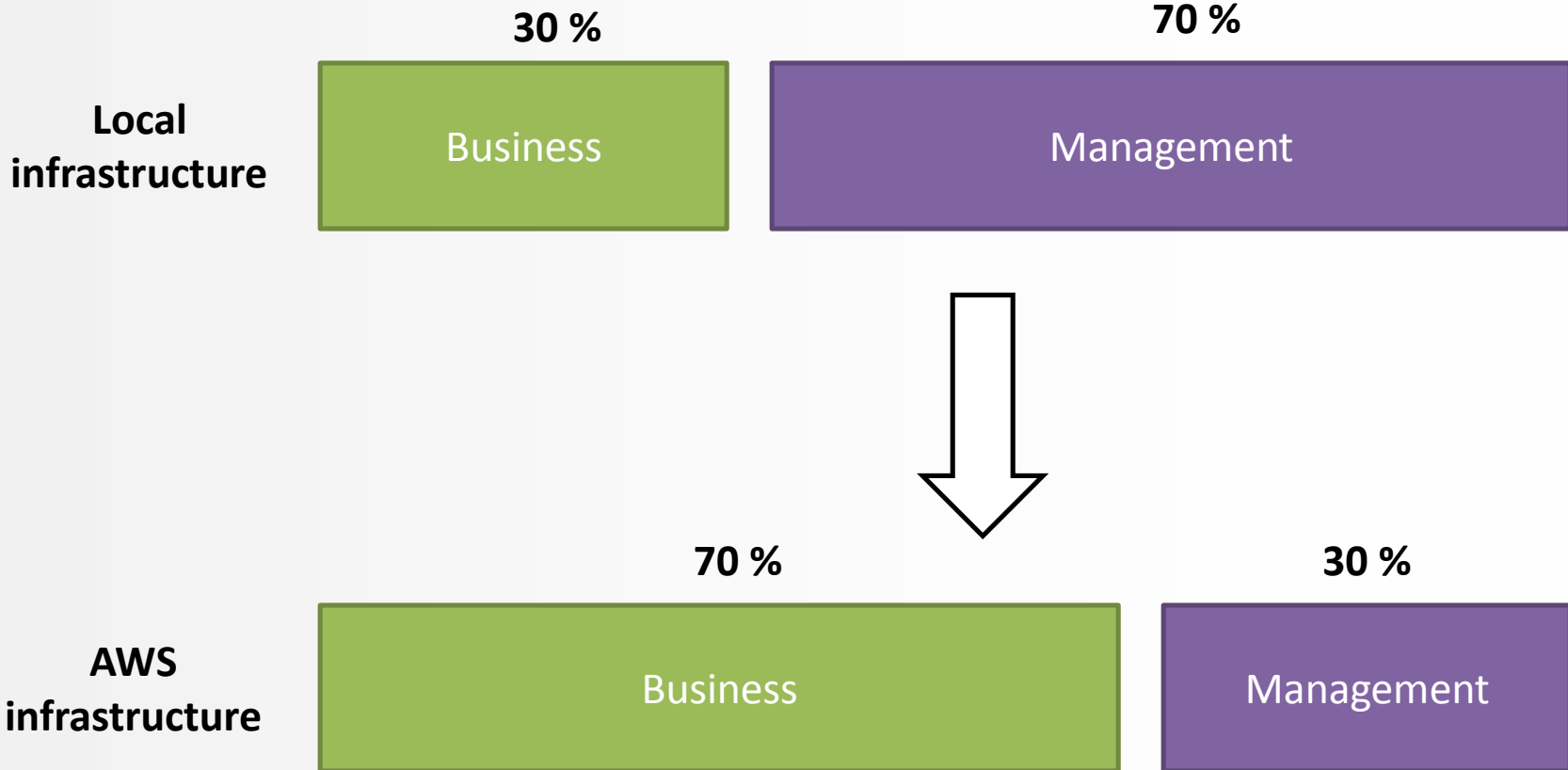
# Amazon Web Services - Magic Quadrant

- Magic Quadrant for Cloud Infrastructure as a Service



Source: Gartner (August 2013)

# Amazon Web Services - goals



# Amazon Web Services

## ■ AWS Global Infrastructure

**N. Virginia**  
**Oregon**  
**N. California**  
**Ireland**  
**Singapore**  
**Tokyo**  
**Sydney**  
**São Paulo**  
**GovCloud**



# Amazon Web Services

- Business partners





# Amazon Web Services

- AWS Management Console
  - simple and intuitive web-based user interface

The screenshot displays the AWS Management Console interface. The top navigation bar includes the AWS logo, a 'Services' dropdown menu, and an 'Edit' dropdown menu. The main content area is titled 'Amazon Web Services' and is organized into three columns of service categories:

- Compute & Networking:** Direct Connect (Dedicated Network Connection to AWS), EC2 (Virtual Servers in the Cloud), Elastic MapReduce (Managed Hadoop Framework), Route 53 (Scalable Domain Name System), and VPC (Isolated Cloud Resources).
- Storage & Content Delivery:** CloudFront (Global Content Delivery Network), Glacier (Archive Storage in the Cloud), S3 (Scalable Storage in the Cloud), and Storage Gateway (Integrates On-Premises IT Environments with Cloud Storage).
- Database:** DynamoDB (Predictable and Scalable NoSQL Data Store), ElastiCache (In-Memory Cache), RDS (Managed Relational Database Service), and Redshift (Managed Petabyte-Scale Data Warehouse Service).
- Deployment & Management:** CloudFormation (Templated AWS Resource Creation), CloudWatch (Resource and Application Monitoring), Data Pipeline (Orchestration for Data-Driven Workflows), Elastic Beanstalk (AWS Application Container), IAM (Secure AWS Access Control), and OpsWorks (DevOps Application Management Service).
- App Services:** CloudSearch (Managed Search Service), Elastic Transcoder (Easy-to-use Scalable Media Transcoding), SES (Email Sending Service), SNS (Push Notification Service), SQS (Message Queue Service), and SWF (Workflow Service for Coordinating Application Components).

Below the service categories, there is a detailed view of the EC2 Instances page. The breadcrumb navigation shows 'Services' > 'EC2' > 'S3' > 'Edit'. The page title is 'EC2 Dashboard' and it shows 'Events'. A 'Launch Instance' button and an 'Actions' dropdown menu are visible. The 'Viewing:' dropdown is set to 'All Instances'. A table lists the instances:

	Name	Instance
<input checked="" type="checkbox"/>	Website	i-45a
<input type="checkbox"/>	Ruby-prod	i-cde
<input type="checkbox"/>	MongoDB	i-bc0
<input type="checkbox"/>	Selenium	i-1fel

# AWS SERVICES (IAAS AND PAAS)

# Amazon Web Services - services

## ▪ Compute & Networking

- Direct Connect
- EC2
- Elastic MapReduce
- Route 53
- VPC

## ▪ Storage & Content Delivery

- CloudFront
- Glacier
- S3
- Storage Gateway

## ▪ Database

- DynamoDB
- ElastiCache
- RDS
- Redshift **NEW**

## ▪ Deployment & Management

- CloudFormation
- CloudWatch
- Data Pipeline
- Elastic Beanstalk
- IAM
- OpsWorks **NEW**

## ▪ App Services

- CloudSearch
- Elastic Transcoder **NEW**
- SES
- SNS
- SQS
- SWF

# Amazon Web Services – Compute & Networking

- Direct Connect
  - Dedicated Network Connection to AWS
- EC2 (Elastic Compute Cloud)
  - Virtual Servers in the Cloud
- Elastic MapReduce
  - Managed Hadoop Framework
- Route 53
  - Scalable Domain Name System (DNS)
- VPC (Virtual Private Cloud)
  - Isolated Cloud Resources

# Amazon Web Services – Storage & Content Delivery

- CloudFront
  - Global Content Delivery Network
- Glacier
  - Archive Storage in the Cloud
- S3 (Simple Storage Service)
  - Scalable Storage in the Cloud
- Storage Gateway
  - Integrates On-Premises IT Environments with Cloud Storage

# Amazon Web Services – Database

- DynamoDB
  - Predictable and Scalable NoSQL Data Store
- ElastiCache
  - In-Memory Cache
- RDS (Relational Database Service)
  - Managed Relational Database Service
- Redshift **NEW**
  - Managed Petabyte-Scale Data Warehouse Service

# Amazon Web Services – Deployment & Management

- CloudFormation
  - Templated AWS Resource Creation
- CloudWatch
  - Resource and Application Monitoring
- Data Pipeline
  - Orchestration for Data-Driven Workflows
- Elastic Beanstalk
  - AWS Application Container
- IAM (Identity and Access Management)
  - Secure AWS Access Control
- OpsWorks **NEW**
  - DevOps Application Management Service

# Amazon Web Services – App Services

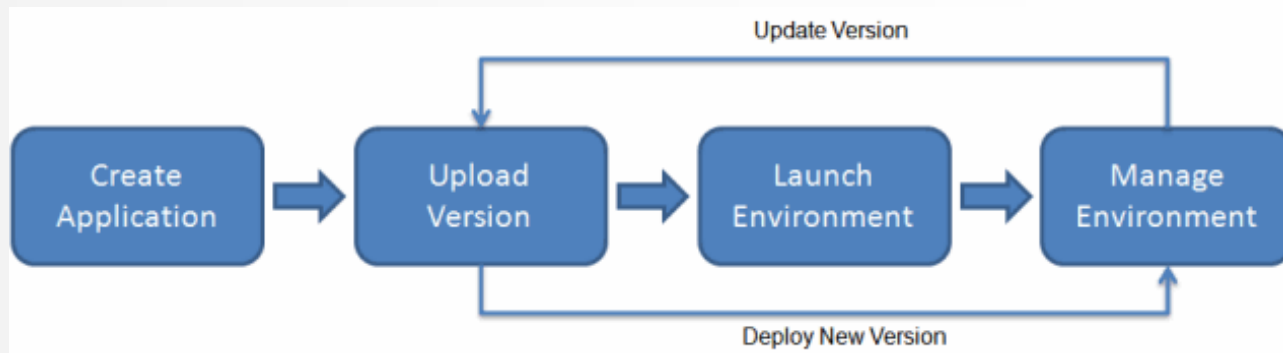
- CloudSearch
  - Managed Search Service
- Elastic Transcoder **NEW**
  - Easy-to-use Scalable Media Transcoding
- SES (Simple Email Service)
  - Email Sending Service
- SNS (Simple Notification Service)
  - Push Notification Service
- SQS (Simple Queue Service)
  - Message Queue Service
- SWF (Simple Workflow Service)
  - Workflow Service for Coordinating Application Components



# AWS ELASTIC BEANSTALK

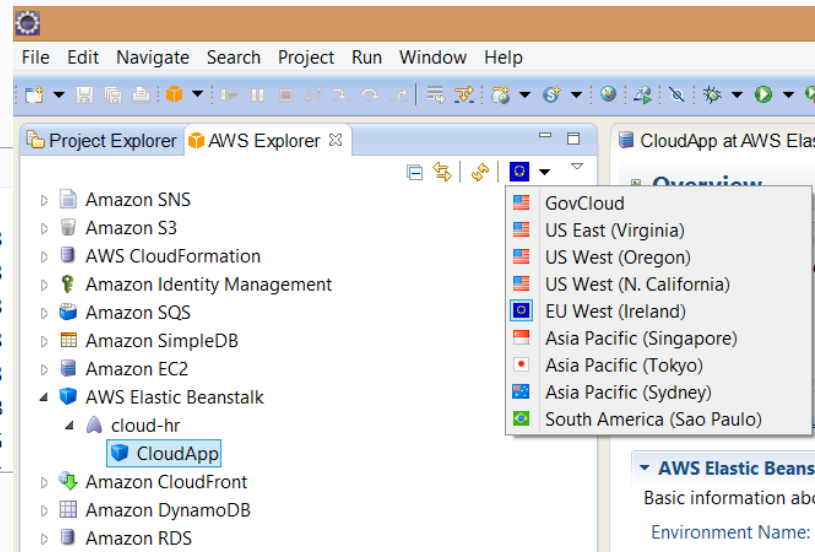
# Amazon Web Services – AWS Elastic Beanstalk

- AWS Elastic Beanstalk is a Platform-as-a-Service (PaaS)
- Allows us to **quickly deploy and manage applications** in the AWS cloud without worrying about the infrastructure that runs those applications.



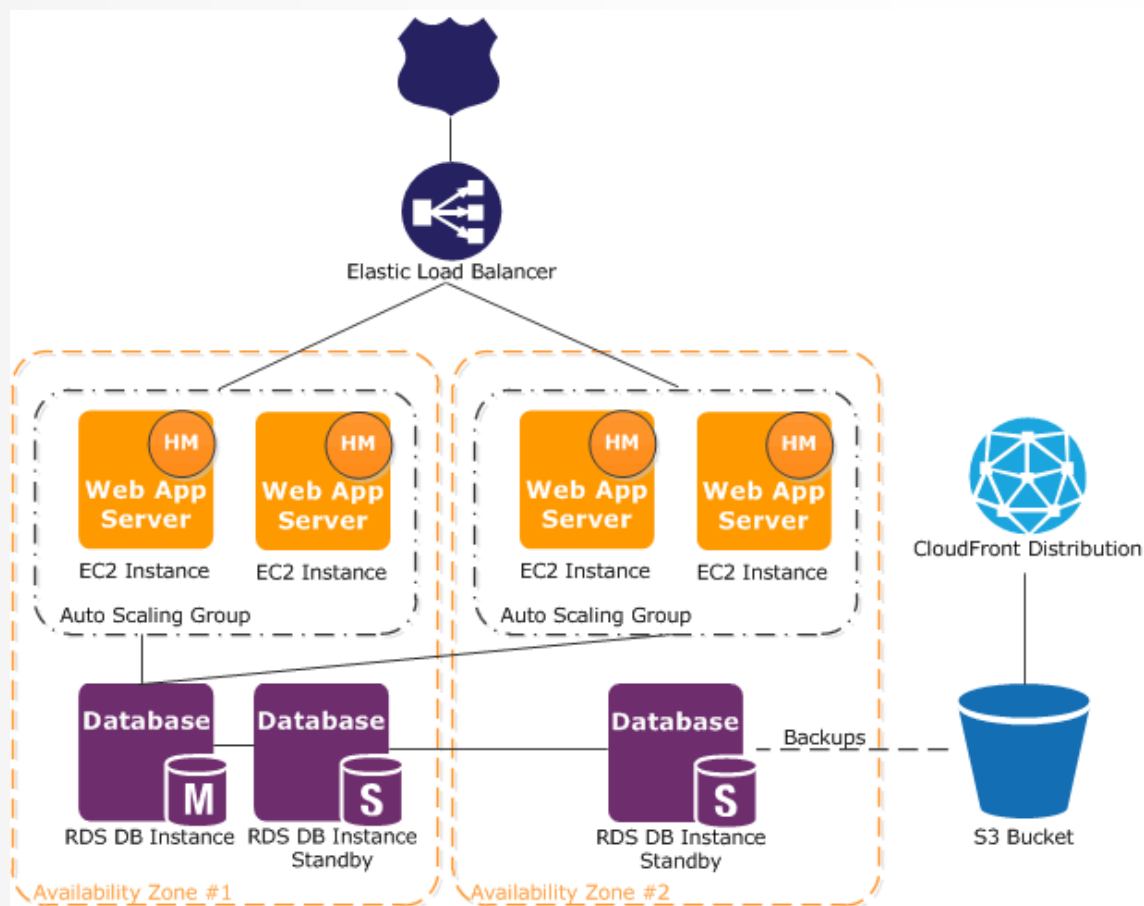
- AWS Toolkit for Eclipse, Visual Studio...

Name	Version
AWS Toolkit for Eclipse	
Amazon DynamoDB Management	1.0.0.v201308121803
Amazon EC2 Management	1.1.0.v201308121803
Amazon RDS Management	1.0.0.v201308121803
Amazon SimpleDB Management	1.0.0.v201308121803
AWS CloudFormation Tools	1.0.0.v201308121803
AWS Elastic Beanstalk	1.0.0.v201309091708
AWS SDK for Android	1.0.0.v2012121110105



# Amazon Web Services – AWS Elastic Beanstalk

- Uses other AWS services:
  - Amazon EC2, Amazon S3, Amazon SNS, Amazon CloudWatch, Elastic Load Balancing, Auto Scaling
- **Executable model** for AWS Elastic Beanstalk



# Amazon Web Services – development environments

## ■ Java

- EC2 Linux VM instances with Tomcat 6 or 7 support
- AWS Toolkit for Eclipse allows the development, monitoring and App deployment from Eclipse IDE

## ■ PHP

- EC2 Linux instances with PHP 5.3 or PHP 5.4 support
- Deployment is also possible through eb command line (Elastic Beanstalk Command Line) or through git

## ■ Windows in .NET

- EC2 Windows Server 2008 R2 instance with IIS 7.5 or EC2 Windows Server 2012 with IIS 8
- AWS Toolkit for Visual Studio allows the development, monitoring and deployment on Visual Studio IDE
- Development with .NET Framework 2.0 (or higher) is supported

# Amazon Web Services – development environments

## ■ Python

- EC2 instances that support applications on Apache z WSGI (Web Server Gateway Interface)
- Includes the support for some popular frameworks, such as Django in Flask
- Deployment is also possible through eb command line (Elastic Beanstalk Command Line) or through git

## ■ Ruby

- EC2 instances with Amazon Linux with Ruby 1.8.7 or Ruby 1.9.3
- Deployment is also possible through eb command line (Elastic Beanstalk Command Line) or through git

## ■ Node.js

- EC2 instances with Amazon Linux running Node.js
- Deployment is also possible through eb command line (Elastic Beanstalk Command Line) or through git

# Amazon Web Services – AWS Elastic Beanstalk

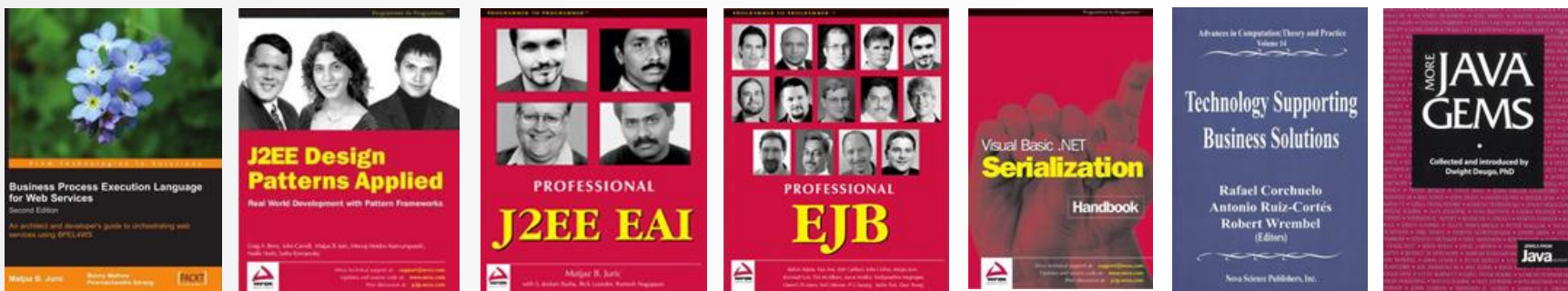
## ■ Pricing

- There is **no additional charge** for Elastic Beanstalk – you only pay for the underlying AWS resources (e.g. Amazon EC2, Amazon S3) that your application consumes.

### Application Running on Windows Server

Service and Resource	Unit	Cost Breakout	Cost
Amazon EC2 Windows t1.micro instance	1	\$0.02/hr * 24 hours * 30 days	\$14.40
Elastic Load Balancer	1	\$0.025/hr * 24 hours * 30 days	\$18.00
Elastic Load Balancer Data Processing	15GB	\$0.008/GB * 15GB	\$ 0.12
Elastic Block Store volume	8GB	\$0.10/GB * 8GB	\$ 0.80
S3 Storage for WAR File and Access	1GB	\$0.095/1GB + \$0.01 for<1k PUTs + \$0.01 for <10k GETs	\$ 0.115
Bandwidth In and Out	15GB	Inbound is free, 1 GB out is free + 14GB *\$0.12	\$ 1.68
<b>Total Monthly Cost without Free Tier</b>			<b>\$35.115</b>
<b>Total Monthly Cost with Free Tier</b>			<b>\$0</b>

DEMO



THANKS!



e-naslov: <http://www.cloud.si>

e-naslov: <http://www.soa.si>

e-pošta: [info@cloud.si](mailto:info@cloud.si)