Software Requirements Specification for Deployment and Operate in DevOps

Version 1.1 approved

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Contents

Revision History

Name	Date	Reason For Changes	Version
Group 5	13.11.2017	First Release	1.0
Group 5	8.1.2018	Before the system testing	1.1

1 Introduction

1.1 Purpose

Deployment is methodical procedure of introducing an activity, process, program, or system to all applicable areas of an organization. Purpose of deployment in DevOps projects is that deploy the code that was builded and passed the test phases successfully by using a release tool. Deployment should be such that any changes made any time on the code, should not affect the runtime of the code even in high traffic of the website. Hence, during the deployment process, the system administrator should keep on scaling up the servers in order to welcome higher number of host users. The release tool which we use is AWS CodeDeploy.

1.2 Document Conventions

1.2.1 Terms or Abbreviations	1.2.2 Definitions
AWS	Amazon Web Services
AMI	Amazon Machine Image
ARN	Amazon Resources Name
API	Application Programming Interface
App	Application
CLI	Command Line Interface
EC2	Elastic Compute Cloud
HTTPS	HyperText Transfer Protocol Secure
IAM	Identity and Access Management
JSON	JavaScript Object Notation Language
LTS	Long Term Support
SDK	Software Development Kit
Upt	Update
XML	Extensible Markup Language

1.3 Intended Audience and Reading Suggestions

⇒ DevOps intends to software developers, project managers.

⇒ Deployment tool AWS CodeDeploy intends to software developers which working about monitoring or interface.

1.4 Product Scope

AWS CodeDeploy is a service that automates code deployments to any instance, including Amazon EC2 instances and instances running on-premises.

1.5   References

AWS CodeDeploy website:

- https://aws.amazon.com/codedeploy/

IEEE Template for System Requirement Specification Documents:

- https://standards.ieee.org/findstds/standard/830-1998.html

Django:

- https://tutorial.djangogirls.org/tr/

- https://djangobook.com/

Mule:

- https://docs.mulesoft.com/mule-user-guide/v/3.7/

Overview of Deployment:

- https://sequencediagram.org/

- https://www.quora.com/What-is-Deployment-in-DEVOPS

- http://www.wisegeek.com/what-is-software-deployment.htm

2 Overall Description

2.1 Product Perspective

Deployment is after the programming is made into an executable file, the software deployment procedure also should have an install program that helps people install the program and obfuscation to protect the programmer. After deployment you should be able to test your code in real environment.

DevOps is one the the best culture to do continuous deployment. Continuous deployment stands as one of the prevailing goals of effective DevOps.

Continuous deployment has additional costs. It depends on tools to ensure that new functionality does not result in bugs and also in platform(infrastructure) that allows effortlessly backing out new features when a defect has not been caught by automated tests.

2.1.1 Hardware Interfaces

System can be used from any browser that have internet connection. For use, required components are just mouse and keyboard. Every computer can run this system.

2.1.2 Software Interfaces

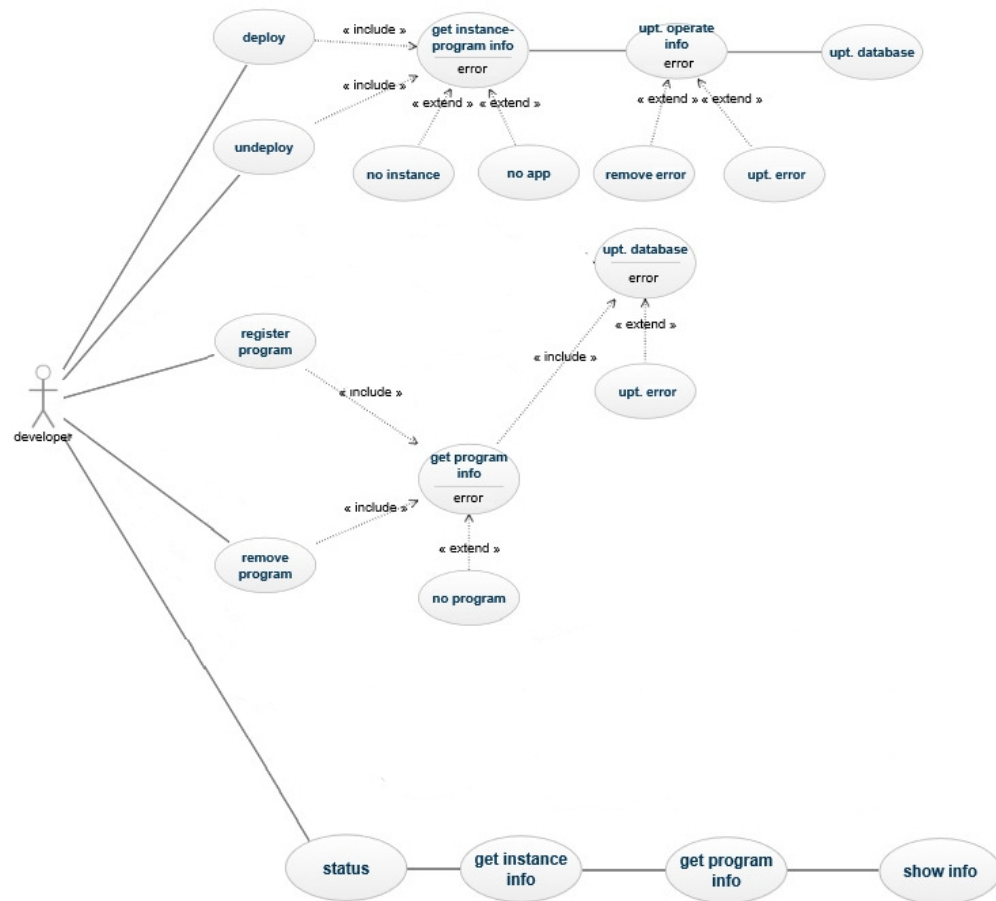All signals have a key named method.

- Received signals:
    1. create_job
        (a) Project Name
        (b) Repository Name
    2. deploy
        (a) Project Name
        (b) Commit ID
        (c) Repository Name
    3. delete_job
        (a) Project Name

- Sent signals:

  1. create_job
     (a) Status
     (b) Method
  2. deploy (To Integration)
     (a) Status
     (b) Method
  3. deploy (To Monitoring):
     (a) Method
     (b) App Name
     (c) App Path
     (d) Public IP
     (e) Pem File
     (f) Usage
  4. delete (To Integration):
     (a) Status
     (b) Method
  5. delete (To Monitoring):
     (a) Method
     (b) App Name
     (c) App Path
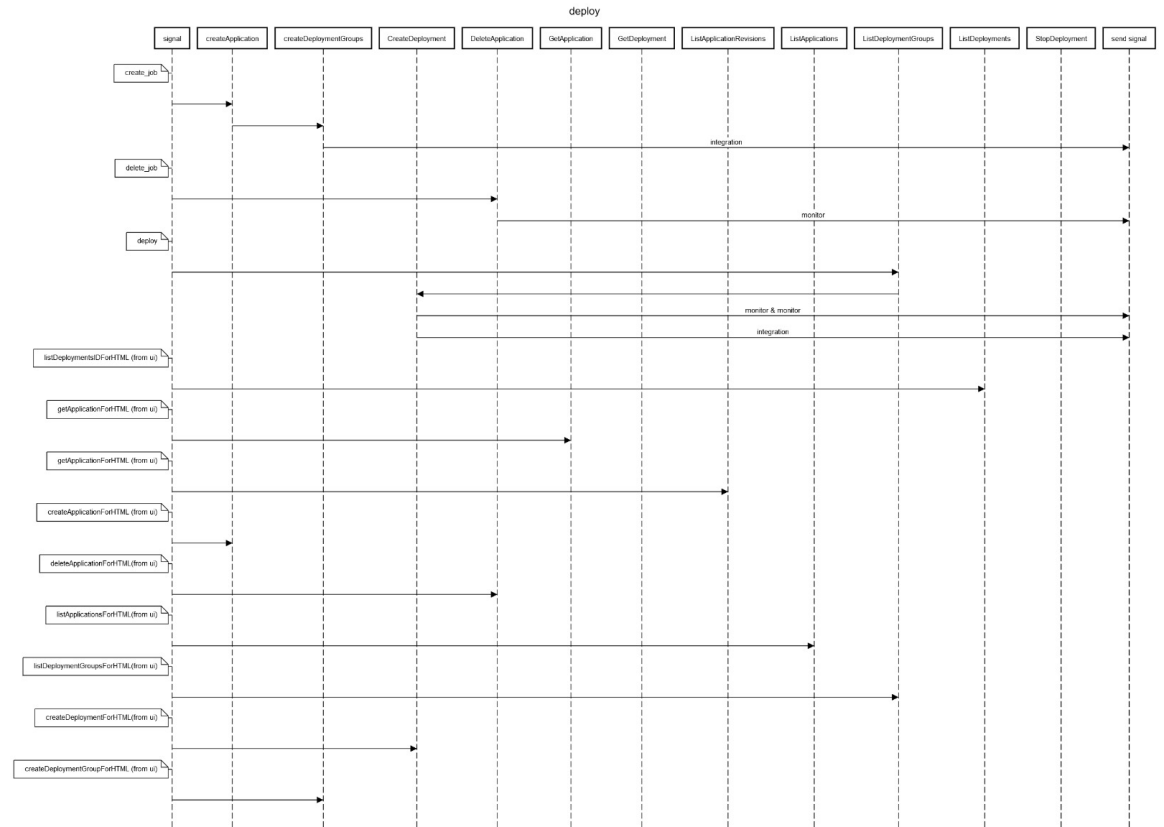   (d) Public IP
     (e) Pem File
     (f) Usage

2.1.3   Memory Constraints

All the system need is a computer with an internet connection.

2.1.4   Usecase Diagram

2.1.5 Sequence Diagram

deploy

| signal | createApplication | createDeploymentGroups | CreateDeployment | DeleteApplication | GetApplication | GetDeployment | ListApplicationRevisions | ListApplications | ListDeploymentGroups | ListDeployments | StopDeployment | send signal |

create_job

integration

delete_job

monitor

deploy

monitor & monitor

integration

listDeploymentsIDForHTML (from ui)

getApplicationForHTML (from ui)

getApplicationForHTML (from ui)

createApplicationForHTML (from ui)

deleteApplicationForHTML (from ui)

listApplicationsForHTML (from ui)

listDeploymentGroupsForHTML (from ui)

createDeploymentForHTML (from ui)

createDeploymentGroupForHTML (from ui)

2.2 Product Functions

- CreateApplication:

  - Creates an application

- CreateDeployment:

  - Deploys an application revision through the specified deployment group

- CreateDeploymentConfig:

  - Creates a deployment configuration.

- DeleteApplication: .

  - Deletes an application

- GetApplication:

  - Gets information about an application.

- GetDeployment:

  - Gets information about a deployment.

- ListApplicationRevisions:

  - Registers with AWS CodeDeploy a revision for the specified application.

- ListApplications:

  - Lists the applications registered with the applicable IAM user or AWS account.

- ListDeploymentGroups:

  - Lists the deployment groups for an application registered with the applicable IAM user or AWS account.

- ListDeployments:

  - Lists the deployments in a deployment group for an application registered with the applicable IAM user or AWS account.

- StopDeployment:

  - Attempts to stop an ongoing deployment.

2.3 User Classes and Characteristics

⇒ Developers who use Devops to develop applications.

⇒ The machines to be deployed.

2.4 Design and Implementation Constraints

The code was implemented using Python with AWS Codedeploy API. We use Boto3 to implement API functions. In python, there are only Boto3 libraries. Boto3 is only present in python 2.7 hence we use python 2.7 version. To obtain the communication between the code and interface we used django.

2.5 Operating Environment

- Windows

- Linux

2.6 Assumptions and Dependencies
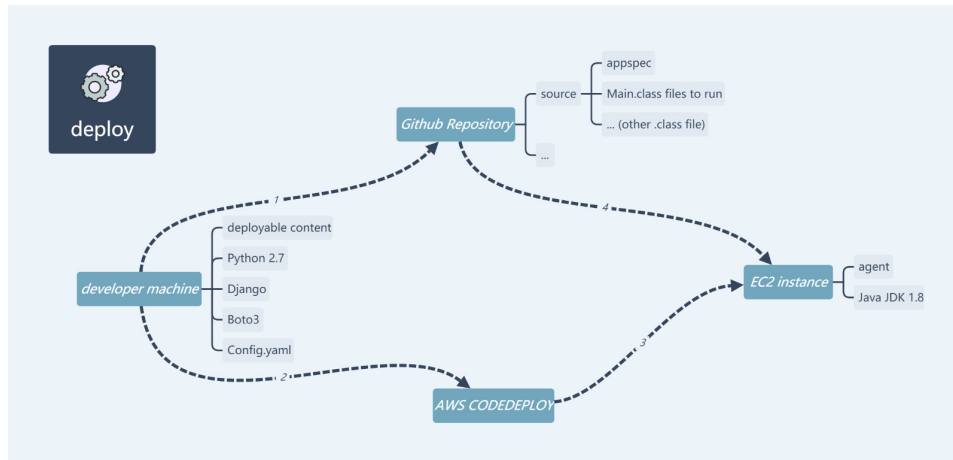
⇒ One machine to only one program deploy. We assume that project name and deployment group name are same.

⇒ We assume that appspec file is on github.

⇒ Config.yaml file has to be found on developer machine since it stores user information such that username, password, AWS Secret Key ID, AWS Public Key ID. By using this file, we obtain a connection with AWS.

⇒ Dependencies for EC2 instance:

  – AWS CodeDeploy agent
  – Java JDK 1.8

⇒ Dependencies for developers machine:

  – Python 2.7
  – Boto3
  – Django

3 External Interface Requirements

3.1 User Interface

Main Page

Home	Application	Deployment	List

Deployment & Operations
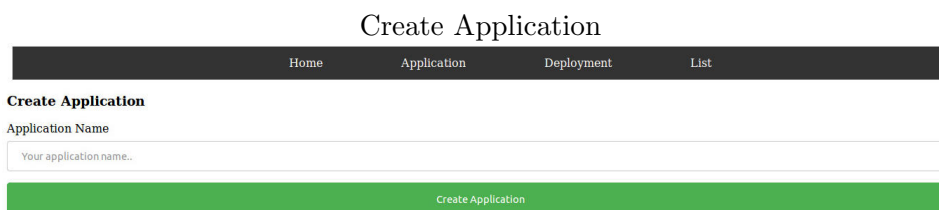
Create Application

Home	Application	Deployment	List

Create Application

Application Name

Your application name..

Create Application

Create Deployment

Create Deployment

Application Name

Your Application name..

Deployment Group Name

Your Deployment Group Name..

GitHub Repository

Your GitHub Repository..

Commit ID

Your Commit ID..

Create Deployment

Create Deployment Group

Create Deployment Group

Application Name

Your Application name...

Deployment Group Name

Your Deployment Group Name...

Create Deployment Group

Get Application

Get Application

Application Name

Your application name..

Get Application

List Application Revisions

Application Name

Your application name..

List

List Application Revisions

Revision Type	Commit ID	GitHub Repository

List Deployment Groups

List Deployment Groups

Application Name

Your application name..

List Deployment Group

Deployment Groups

3.2 Software Interfaces

- When the Signal of create_job is received, createApplication and createDeploymentGroups functions are invoked and signal is sent to integration.

- deleteApplication function are invoked and signal is sent to integration, when the Signal of delete_job is received.

- When the Signal of deploy is received, createDeployment function are invoked and signal is sent to integration and monitoring.

3.3 Communications Interfaces

In order to the deployment, AWS agencies are needed. To activate those agencies, we need policies and permissions.

4   System Features

4.1   Create Application

When the user clicks on the create application button, the system create a
new application in the CodeDeploy database.

4.2   Deploy

When the user clicks on the deploy button, it deploys files which user
uploads to the EC2s instances provided by AWS Code Deploy.

4.3   Undeploy

If something went wrong during deployment, the user can easily stop the
deployment by clicking the undeploy button.

4.4   List

The user can get information about ongoing deployment by clicking the
status button. List shows

- Deployment

- Applications

- Deployment Groups

- List Application Revisions