

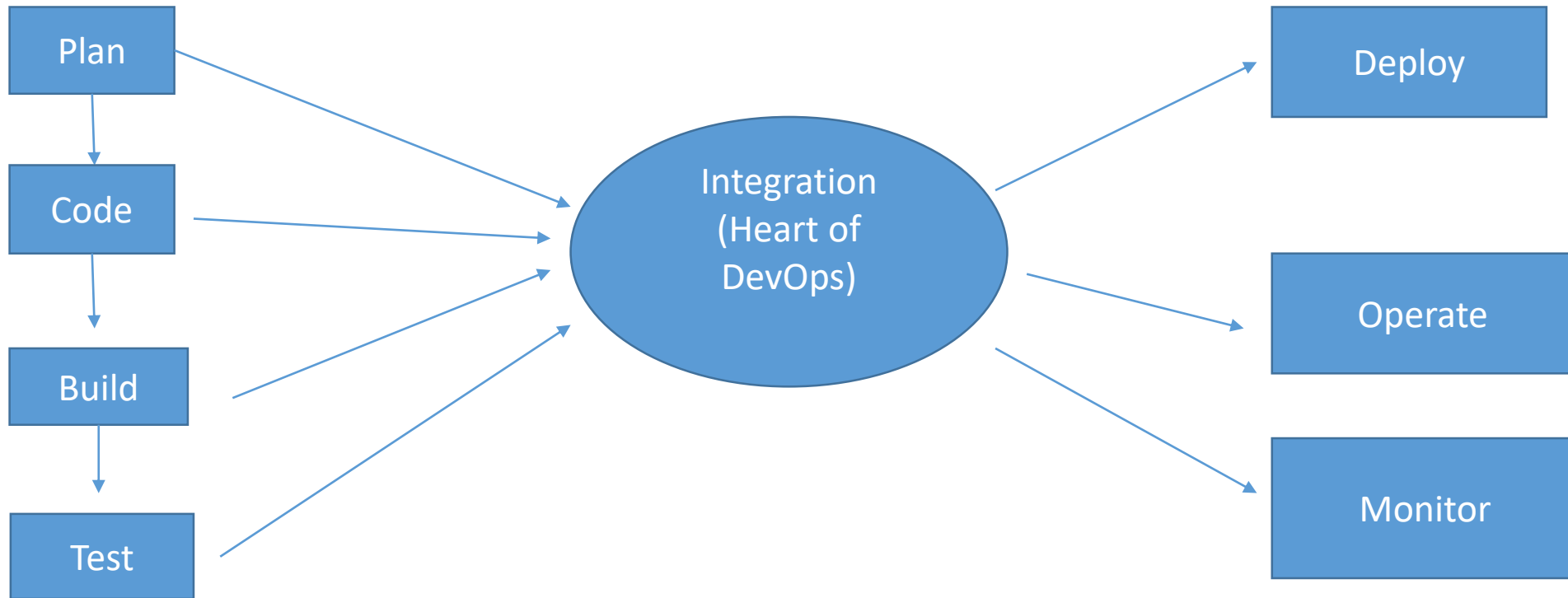
DevOps for RPA

Contents

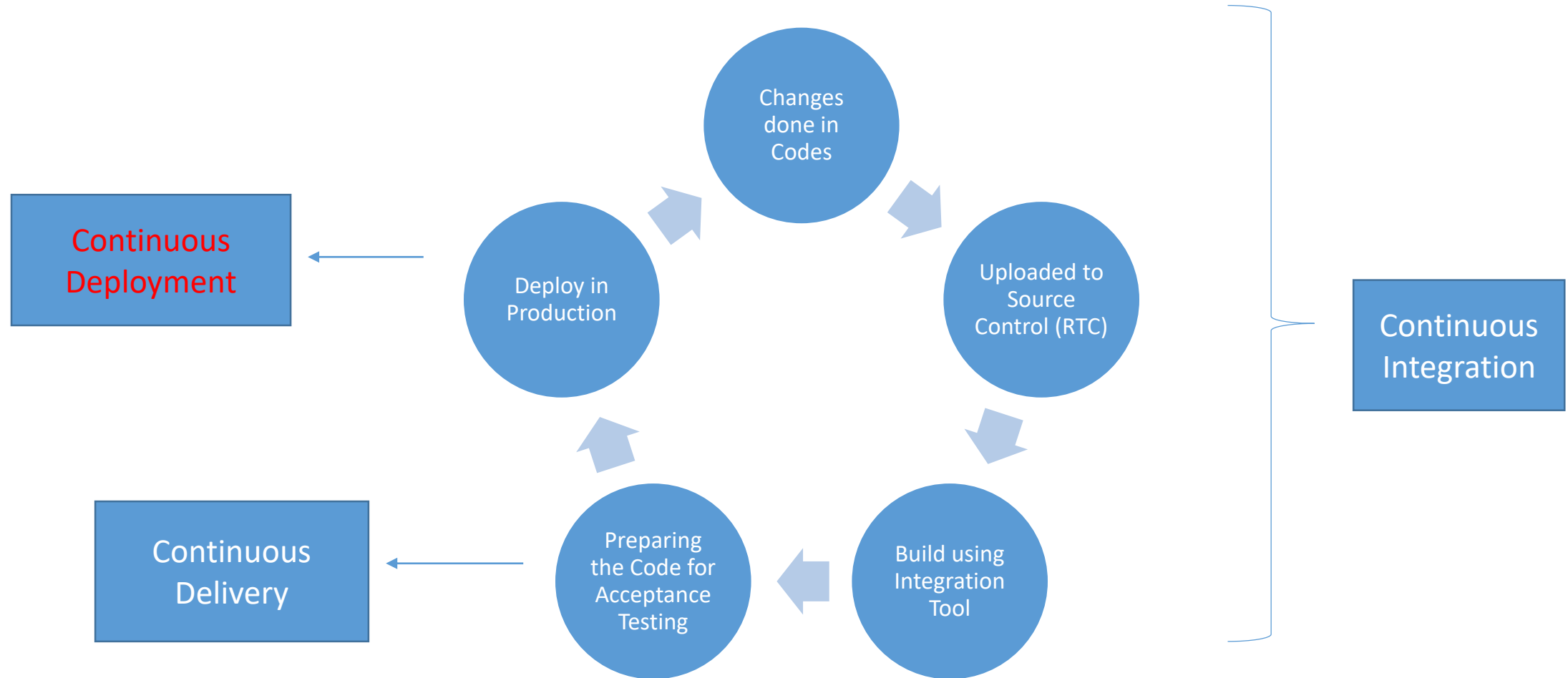
- Why DevOps?
- Tools Used for Source Control, Building Nuget Packages and Deployment.
- Details and Points to consider in Maybank RPA Setup.

Why DevOps?

- It is a software Development strategy to bridge the gap between development and operations team.



Continuous Integration, Continuous delivery, Continuous Deployment

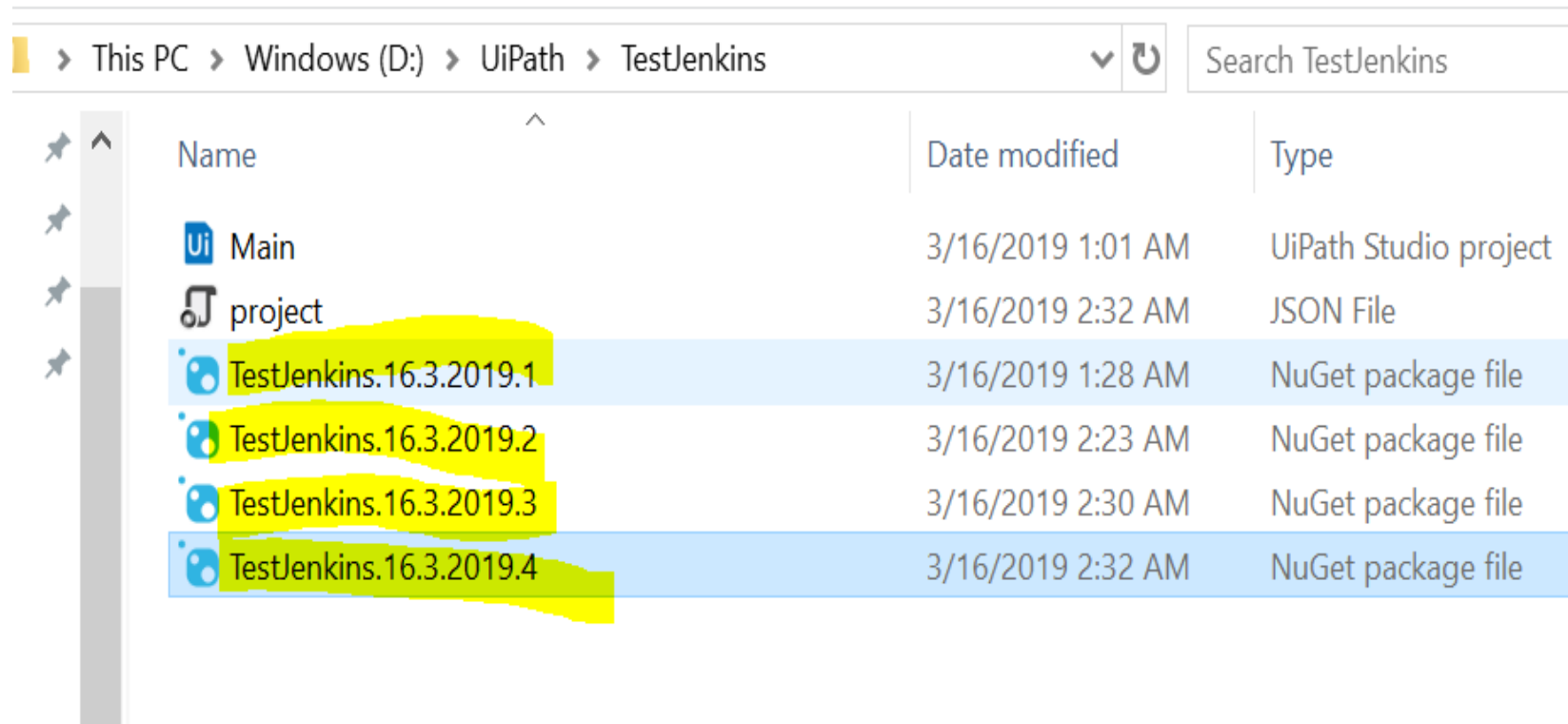


Tools Used for Source Control, Building Nuget Packages and Deployment.

- The below tools are selected as per Maybank scenario.
- Source Control Tool : RTC
- Building Nuget Packages and Deployment of packages to UiPath Orchestrator: Jenkins

Points Considered:

- The RPA Developers would be checking in XAML files to RTC
- Jenkins would be used to create Nuget packages with custom Version.
- For testing purpose I have considered version naming convention as:
ProjectName.dd.mm.yyyy.Serial_Number



Name	Date modified	Type
Ui Main	3/16/2019 1:01 AM	UiPath Studio project
project	3/16/2019 2:32 AM	JSON File
TestJenkins.16.3.2019.1	3/16/2019 1:28 AM	NuGet package file
TestJenkins.16.3.2019.2	3/16/2019 2:23 AM	NuGet package file
TestJenkins.16.3.2019.3	3/16/2019 2:30 AM	NuGet package file
TestJenkins.16.3.2019.4	3/16/2019 2:32 AM	NuGet package file

Points Considered:

- Build Jobs and Deployment Jobs would be different in Jenkins, Email notifications for approval will be sent out to approvers after building packages and prior to deployment.
- Once approved the Deployment jobs to upload packages to orchestrator would be executed.

Package Versions for TestJenkins

Versions

Change Log

REMOVE ALL INACTIVE

<input type="checkbox"/>	STATUS	VERSION	PUBLISHED	
<input type="checkbox"/>	Inactive	16.3.2019.4	an hour ago	

Items: 10 ◿ ◀ < Page 1/1 > ▶ 1 Item

CLOSE

Few Requirements to be considered:

- UiPath should be installed in machine that would be used for DevOps.
- Installation is important as we would need UiRobot.exe configuration file.
- Also the UiPath version should support nuget packaging using cmd.
- Location in my PC: C:\Users\User\AppData\Local\UiPath\app-19.2.0
- The above path is for Community edition
- For Enterprise Edition:
C:\Program Files (x86)\UiPath\Studio\UiRobot.exe
- This packaging command is available from 2018.3 only, previous version robots will not support this.

C:\Windows\System32\cmd.exe

Examples:

```
UiRobot -file "C:\UiPath\Project\Main.xaml"
UiRobot -file "C:\UiPath\Project\Main.xaml" -input "{ 'inArg': 'value' }" --rdp
UiRobot -file "C:\UiPath\Project\project.json"
UiRobot -file "C:\UiPath\Package\Notepad.1.0.6682.21636.nupkg"
```

Start process command:

```
-process <process_name> [-input <input_params>]
    -p, -process      Process name (available version will be used)
    -i, -input        Dictionary of input parameters in JSON format
```

Examples:

```
UiRobot -process UiPathDemo
UiRobot -process "UiPathDemo" -input "{ 'inArg': 'value' }"
```

Pack project command:

```
-pack <project_path> -o <destination_folder> [-v <version>]
    -pack              Project file path
    -o, -output        Destination folder
    -v, -version       Package version
```

Examples:

```
UiRobot -pack "C:\UiPath\Project\project.json" -o "C:\UiPath\Package" -v 1.0.6820.22047
```

Connect to server commands:

```
--connect [-url <server_url> -key <robot_key>] | [-connectionString <connection_string>]
--disconnect
    --connect          If used alone, it opens the Settings dialog
    --disconnect       Disconnect from server
    -url               Set URL used to connect to server
    -key               Set RobotKey used to connect to server
    -connectionString Set the connection string for automatic deployment
```

Few Requirements to be considered:

- Jenkins Download:



- URL: localhost:8080/Juv

- UiPath Plugin for Jenkins:




- Batch file used for building packages in Jenkins:


```
JenkinsBatch new 1
1 @echo off
2 start cmd.exe \k
3 C:
4 cd\Users\User\AppData\Local\UiPath\app-19.2.0
5 UiRobot.exe -pack "D:\UiPath\TestJenkins\project.json" -o "D:\UiPath\TestJenkins" -v "16.03.2019.5"
6 exit
```


Starting With Jenkins


- Install Jenkins and Manage Plugins.
- Once done, the dashboard shall appear:


 **Jenkins** 2


Jenkins ▶


 New Item


 People


 Build History


 Manage Jenkins


 My Views

 Lockable Resources


 P4 Trigger

 Credentials


 New View





















Build Queue 

No builds in the queue.

Build Executor Status 

1 Idle
2 Idle

All 

S	W	Name ↓	Last Success	Last Failure	Last Duration
		aaa	N/A	N/A	N/A
		AgainTest	N/A	10 hr - #1	4.2 sec
		BuildingNugetPackageForUiPathProjects	N/A	N/A	N/A
		BuildNow	N/A	10 hr - #1	2.7 sec
		BuildXaml	N/A	N/A	N/A
		Deploy	1 hr 37 min - #4	1 hr 47 min - #1	2 min 15 sec
		NugetPackage_BuildPhaseMaybank	N/A	N/A	N/A
		TestCMDLine	N/A	9 hr 45 min - #1	0.37 sec
		TestingBuild	10 hr - #1	N/A	0.32 sec
		TestJenkins	N/A	10 hr - #2	0.31 sec

Installing UiPath Plugin to Jenkins

- Click on Manage Jenkins:



Installing UiPath Plugin to Jenkins

- Click on Manage Plugins



Secure Jenkins, define who is allowed to access/use the system.



Configure Credentials

Configure the credential providers and types



Global Tool Configuration

Configure tools, their locations and automatic installers.



Reload Configuration from Disk

Discard all the loaded data in memory and reload everything from file system. Useful when disk.



Manage Plugins

Add, remove, disable or enable plugins that can extend the functionality of Jenkins.



There are updates available



System Information

Displays various environmental information to assist trouble-shooting.

Installing UiPath Plugin to Jenkins

- Click on Advanced

Filter

Updates Available Installed **Advanced**

Install **Name** ↓

<input checked="" type="checkbox"/>	Analysis Model API Jenkins API plug-in for the Static Analysis Model and Parsers.
<input checked="" type="checkbox"/>	Warnings Next Generation This plugin collects compiler warnings or issues reported by static analysis tools and visualizes the re built-in support for numerous static analysis tools (including several compilers), see the list of support formats .

Download now and install after restart Update information obtained: 11 hr ago **Check now**

Select: [All](#), [None](#)

This page lists updates to the plugins you currently use.

Disabled rows are already upgraded, awaiting restart. Shaded but selectable rows are [in progress or failed](#).

Installing UiPath Plugin to Jenkins

- Upload the .hpi file

Submit

Upload Plugin

You can upload a .hpi file to install a plugin from outside the central plugin repository.

File: No file chosen

Upload


Building jobs in Jenkins to create Nuget Package

- Jenkins dashboard → New Item


Enter an item name

» This field cannot be empty, please enter a valid name

1


**Freestyle project**

This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system or something other than software build.




Maven project

Build a maven project. Jenkins takes advantage of your POM files and drastically reduces the configuration required to build a Maven project.



Pipeline


Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (for organizing complex activities that do not easily fit in free-style job type).



External Job

This type of job allows you to record the execution of a process run outside Jenkins, even on a remote machine. Use Jenkins as a dashboard of your existing automation system.

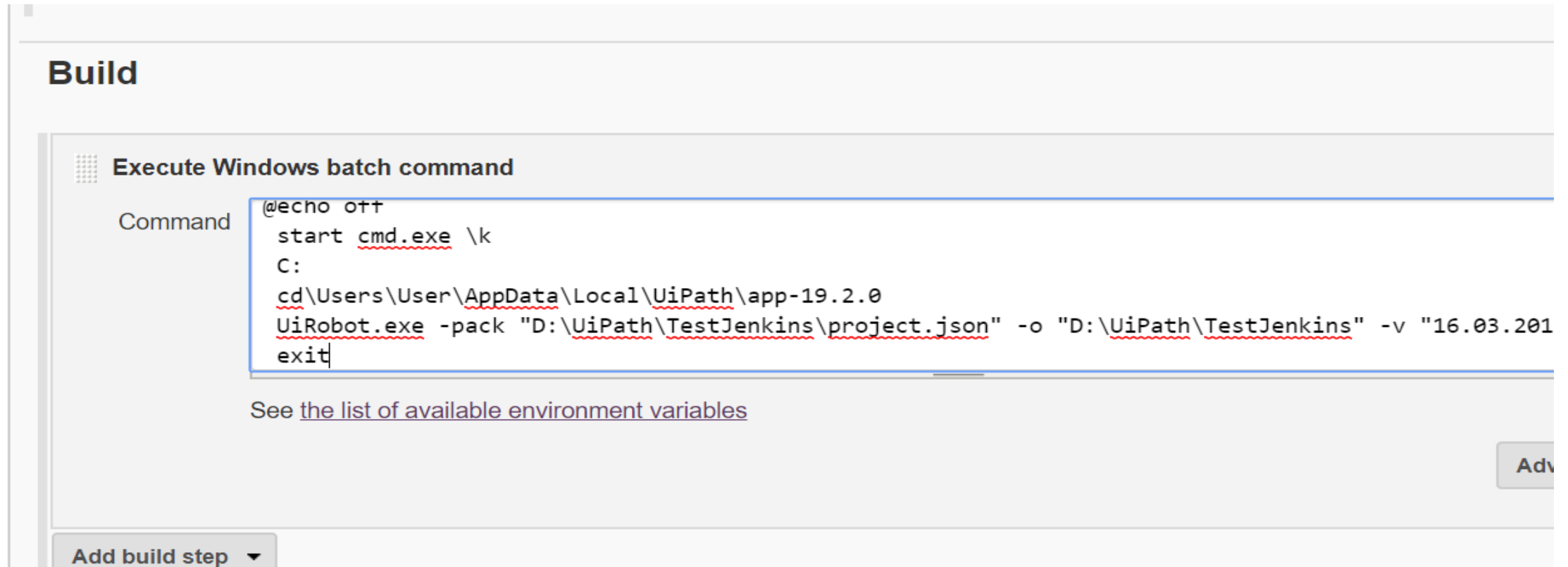
2

**Multi-configuration project**

Suitable for projects that need a large number of different configurations, such as testing on multiple environments.

Building jobs in Jenkins to create Nuget Package

- Build → Execute Windows Batch Command → Save



The screenshot shows the Jenkins 'Build' configuration page. The 'Build' section is active, and the 'Execute Windows batch command' step is selected. The command field contains the following text:

```
@echo off
start cmd.exe /k
C:
cd\Users\User\AppData\Local\UiPath\app-19.2.0
UiRobot.exe -pack "D:\UiPath\TestJenkins\project.json" -o "D:\UiPath\TestJenkins" -v "16.03.201
exit
```

Below the command field, there is a link: [See the list of available environment variables](#). At the bottom left, there is a button labeled 'Add build step' with a dropdown arrow. At the bottom right, there is a button labeled 'Adv'.

Jenkins

DemoBuildNugetPackage

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 [Rename](#)

 [Embeddable Build Status](#)

Project DemoBuildNugetPackage

 [Workspace](#)

 [Recent Changes](#)

Permalinks

 **Build History**

[trend](#) 

find

x



Console Output

Progress: 

Started by user [admin](#)











[EnvInject] - Loading node environment variables.

Building in workspace C:\Program Files (x86)\Jenkins\workspace\DemoBuildNugetPackage

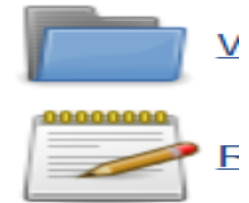
[DemoBuildNugetPackage] \$ cmd /c call C:\Windows\TEMP\jenkins8020637461230917400.bat

Packed project 'D:\UiPath\TestJenkins\project.json' to 'D:\UiPath\TestJenkins\TestJenkins.16.3.2019.5.nupkg'





-  [Back to Dashboard](#)
-  **Status**
-  [Changes](#)
-  [Workspace](#)
-  [Build Now](#)
-  [Delete Project](#)
-  [Configure](#)
-  [Rebuild Last](#)
-  [Rename](#)
-  [Embeddable Build Status](#)


Project






Permalink

- [Last build](#)

 **Build History** [trend](#) 




 **#1** Mar 16, 2019 12:26 PM


 [RSS for all](#)  [RSS for failures](#)





Name



 Main

 project

 TestJenkins.16.3.2019.1

 TestJenkins.16.3.2019.2

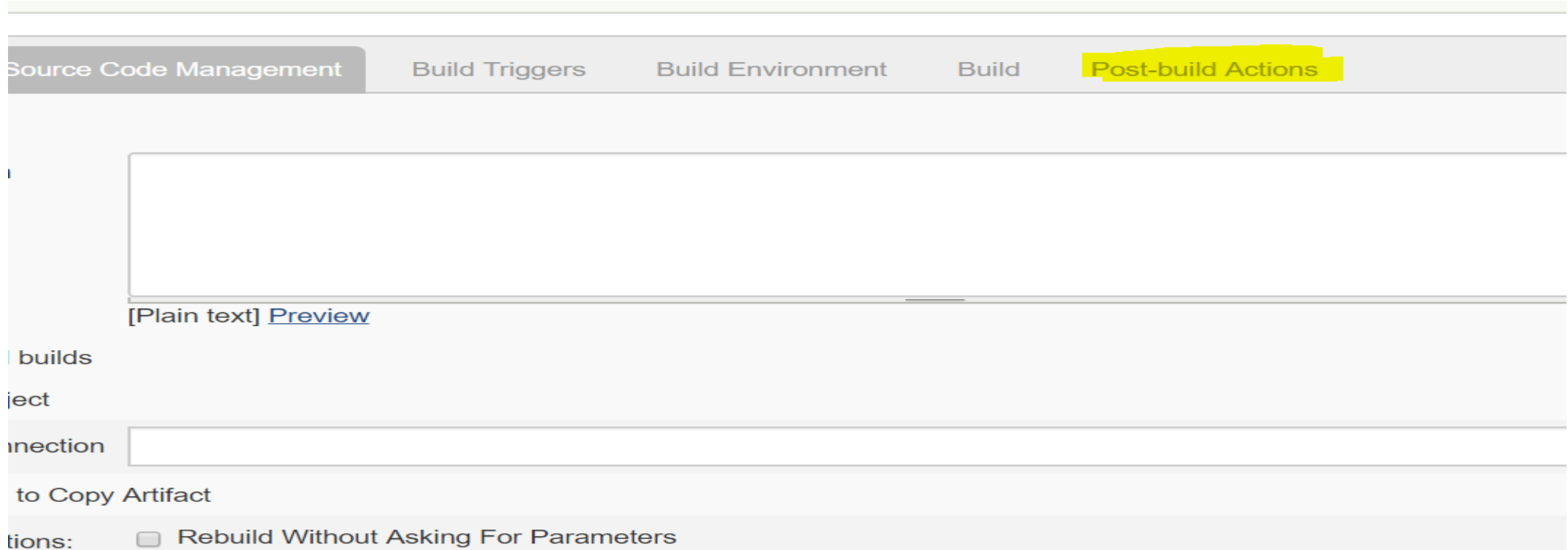
 TestJenkins.16.3.2019.3

 TestJenkins.16.3.2019.4

 TestJenkins.16.3.2019.5

Deployment: Uploading the Nuget Package to Orchestrator

- Build a New Project in Jenkins and go to Post Build Option and do the following configurations as shown. Project name for me in Jenkins: deploy



The screenshot shows the Jenkins configuration interface for a project. The 'Post-build Actions' tab is selected and highlighted in yellow. The main configuration area is empty, with a text box and a '[Plain text] [Preview](#)' label. Below this, there are sections for 'builds', 'ject', 'nection', and 'to Copy Artifact'. At the bottom, there is a checkbox labeled 'Rebuild Without Asking For Parameters'.

Source Code Management Build Triggers Build Environment Build **Post-build Actions**

[Plain text] [Preview](#)

builds

ject

nection

to Copy Artifact

tions: ☐ Rebuild Without Asking For Parameters

Post-build Actions

UiPath Deploy

X

Package(s) path `${JENKINS_HOME}\jobs\${JOB_NAME}\builds\${BUILD_NUMBER}`



Orchestrator Address `https://platform.uipath.com/`

Orchestrator Tenant `Juveria_Tenant`

Credentials `admin/*****` ⌵ 🔑 Add

Add post-build action ⌵

Save

Apply

Deployment: Uploading the Nuget Package to Orchestrator

- The Nuget Package should be in the build folder of Jenkins. For this demo I placed it manually as soon as Jenkins create a BuildNumber Folder for me in the below given path:

C:\Program Files (x86)\Jenkins\jobs\Deploy\builds


```
[Deploy] $ cmd /c call C:\Windows\TEMP\jenkins609024\1\285\261501.bat
```

```
Opening Powershell Session
```

```
Importing Powershell and extensions modules
```

```
plugin jar path is : C:\Program Files (x86)\Jenkins\plugins\ui-path-automation-package\WEB-INF\lib\ui-path-automation-package.jar
```

```
extracting powershell modules to temp folder
```

```
extracted powershell modules to temp folder
```

```
Module imported
```

```
16.03.2019 12:34:08: Deploying C:\\Program Files (x86)\\Jenkins\\jobs\\Deploy\\builds\\5 to https://platform.uipath.com/
```

```
URL : https://platform.uipath.com/
```

```
WindowsCredentials : False
```

```
Authenticated : True
```

```
ApiVersion : 8.0
```

```
BuildVersion : 2019.2.0-CE.2
```

```
OrganizationUnit :
```

```
TenantName : Juveria_Tenant
```

```
16.03.2019 12:34:10: Found 1 packages to upload to https://platform.uipath.com/
```

```
Adding C:\Program Files (x86)\Jenkins\jobs\Deploy\builds\5\TestJenkins.16.3.2019.5.nupkg
```

```
16.03.2019 12:34:11: Package C:\Program Files (x86)\Jenkins\jobs\Deploy\builds\5\TestJenkins.16.3.2019.5.nupkg  
successfully added
```

```
Exiting Powershell Session
```

```
Finished: SUCCESS
```

Versions

Change Log

REMOVE ALL INACTIVE



STATUS

VERSION

PUBLISHED



Inactive

16.3.2019.5

2 minutes ago