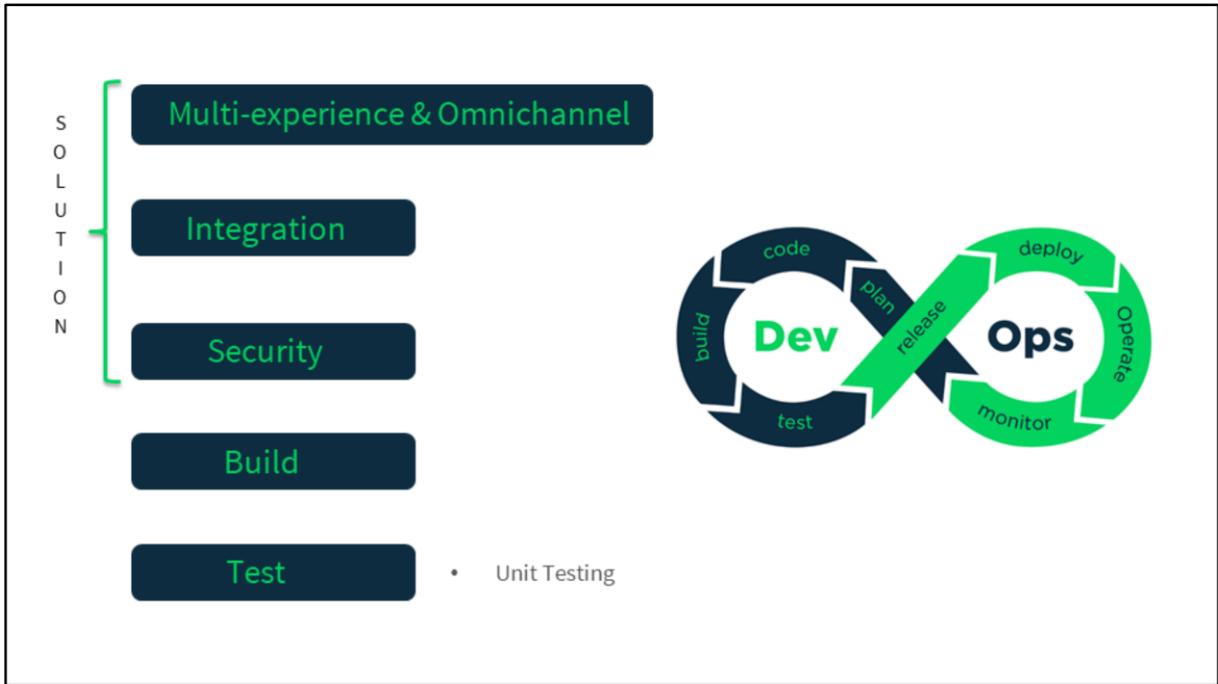
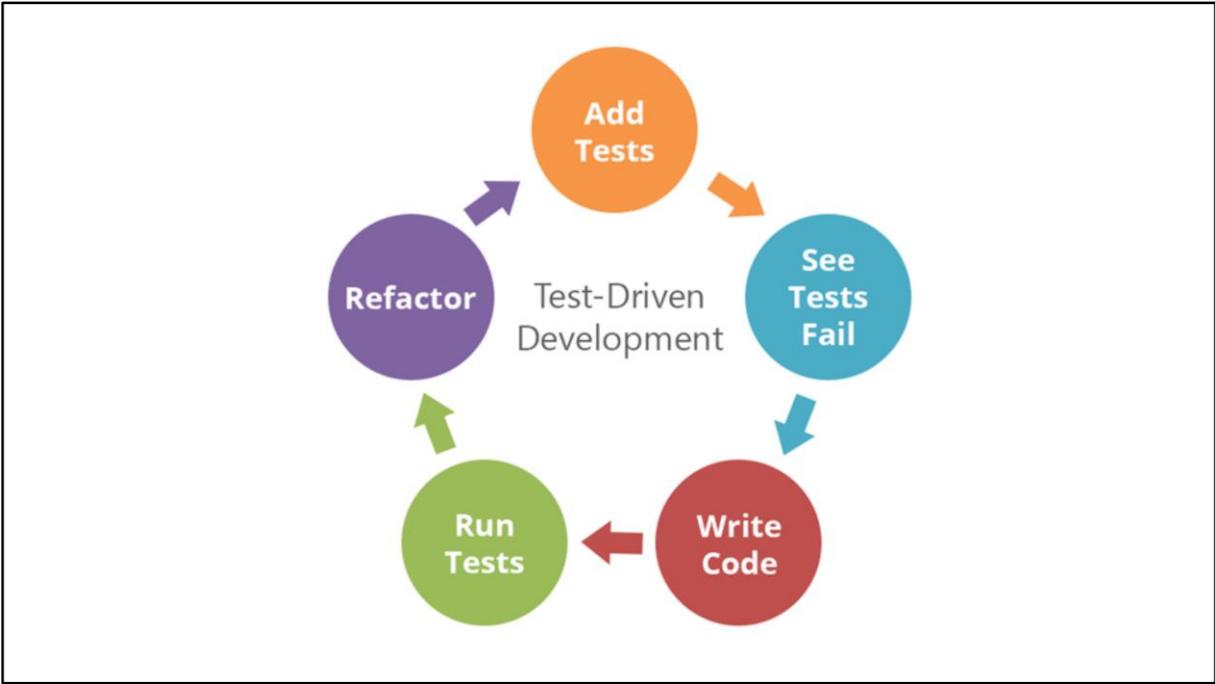


GeneXus[™]
The power of doing



So far we have gone through the first parts of the DevOps diagram, aspects that make the application we are developing and how to do it with GeneXus. On Build we already talked in the introduction and something else will be said later.

Now we'll see what's new in Testing, and then move on to what it does to Operations, the green part of the diagram.



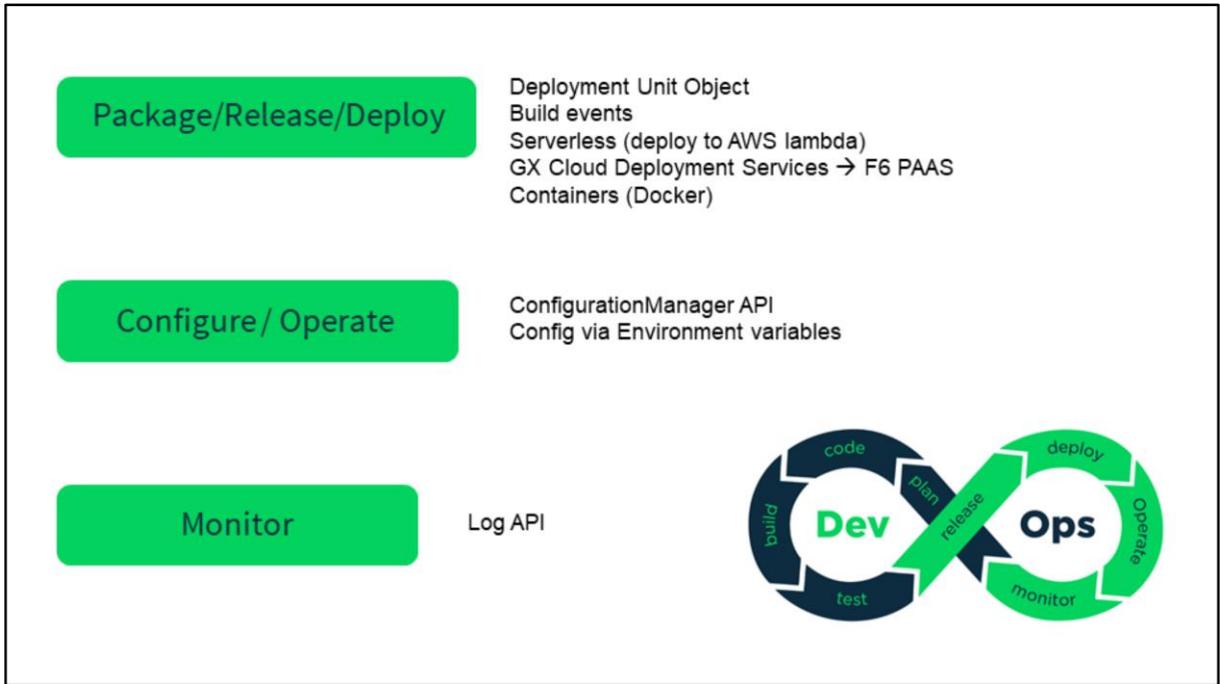
Unit Tests

- Unit Tests for Procedures and Data Providers
- Easy to Create Tests
- Easy to Add Test-Cases
- Allows us to use TDD practices
- Each unit tests adds to the test-suite that we can use to validate each Build



Continuous development /
Continuous integration

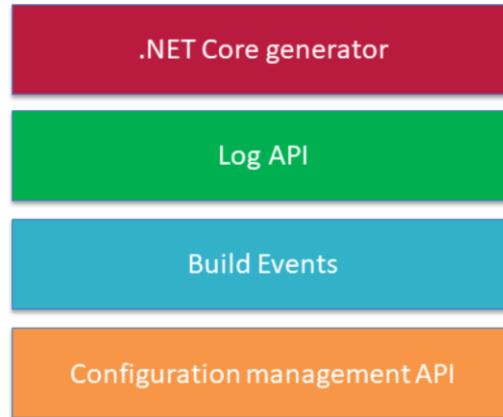
GeneXus™ 16



In the introduction we separate the functionalities that make the Operations. Now we will see the aspects of Package, Release, Deploy.

Build

Build



Build

.NET Core generator

Generation in .NET Core language
is available!

The default is still .NET, for now
both generators are going to
coexist.

<https://wiki.genexus.com/commwiki/servlet/wiki?38603>

GeneXus

<https://wiki.genexus.com/commwiki/servlet/wiki?38603>

Build

Log API

Log external object allows the developer to write messages in the log system in different levels:
Fatal, Error, Warning, Info or Debug

Default Log Level Property
Log Output = File

<https://wiki.genexus.com/commwiki/servlet/wiki?37872>

GeneXus

Build

Build Events

Allows you to program simple tasks before or after the build process takes place. Using Build -> Build Events menu, you access a simple interface where you can type your commands.

<https://wiki.genexus.com/commwiki/servlet/wiki?39474>

GeneXus

Build

Configuration management API

ConfigurationManager external object allows you to read the application configuration at runtime, stored in:

- Environment variables
- Configuration files (web.config, client.cfg, cloudservices.config, etc.)

Methods:

- **HasValue**
- **GetValue**

<https://wiki.genexus.com/commwiki/servlet/wiki?40085>

GeneXus

Deployment

Deployment

✔ Export Reorganization

✔ Improvements to Application Deployment Tool

✔ Changes in GeneXus Cloud Deployment Services

Deployment:

Export Reorganization

Use: Build / Export Reorganization

- **Java environment : a .jar file is created**
- **.Net environment: a .zip file is created**

Deployment:

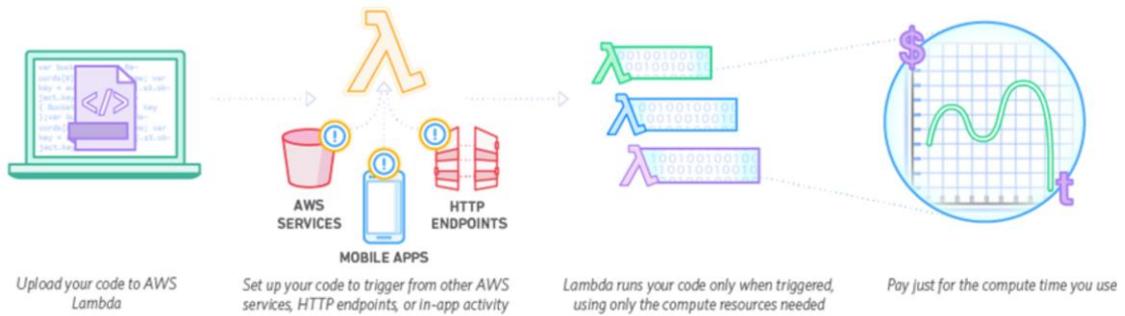
Improvements to Application Deployment Tool

Now it's possible to deploy to:

- **AWS Lambda & API Gateways Serverless**
- **Enterprise Application aRchive (EAR)**
- **Docker containers**
- **Deployment Unit Object**

GeneXus

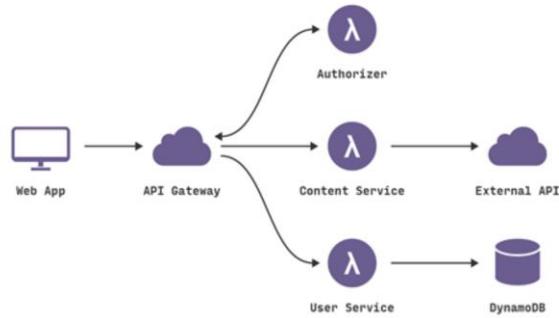
Deployment AWS Lambda - Amazon API Gateways - Serverless



AWS Lambda is a compute service that runs your code in response to events and automatically manages the compute resources, making it easy to build applications that respond quickly to new information.

Deployment

AWS Lambda - Amazon API Gateways - Serverless



Benefits:

- Integrates with AWS Lambda to allow you to create completely serverless APIs
- You create REST APIs that let you call publicly available AWS services through your code running in AWS Lambda
- You pay only for calls made to your APIs and data transfer out.

Deployment

AWS Lambda - Amazon API Gateways - Serverless

Build / Deploy Application

Target: [Options](#)

Display Name:

Deploy Target: AWS Serverless Deploy

AWS Access Key ID	
AWS Secret Access Key	
AWS Default Region	US Standard/US East (N. Virginia)

Deploy Settings

Application Name	
Stage Name (Version name)	

AWS Lambda Settings

Memory Size	512
-------------	-----

Advanced Settings

IAM Use custom Role	False
IAM Role Name	gx-aws-serverless-role

Security

Application Encryption Key	13272DAF6A1946D18DD9C3A68A4950C8
----------------------------	----------------------------------

Java

Target JRE	JRE 9 (or higher)
Package Format	Automatic

GeneXus

Deployment

Enterprise Application Archive (EAR)

- In previous version there was a EAR Deployment Wizard (part of Deployment Wizard)
- Now is generated by the **Application Deployment Tool** if some selected object (or a called one) is an Enterprise Java Beans
- The .EAR file created will have:
 - One web application with all the servlets and static contents
 - One EJB application with all the EJB defined
 - All the JAR files required by the application

Deployment

Changes in GX Cloud Deployment Services

F6 to PaaS providers:



F6 →

Deploy a new Application to your Cloud

Deploy a new Application to your Cloud
Enter your GeneXus Account information

User

Password

Remember me

Cancel Authenticate

→

Deploy a new Application to your Cloud

Deploy a new Application to your Cloud
Enter the Application Name and select Cloud & Target

Name

Cloud

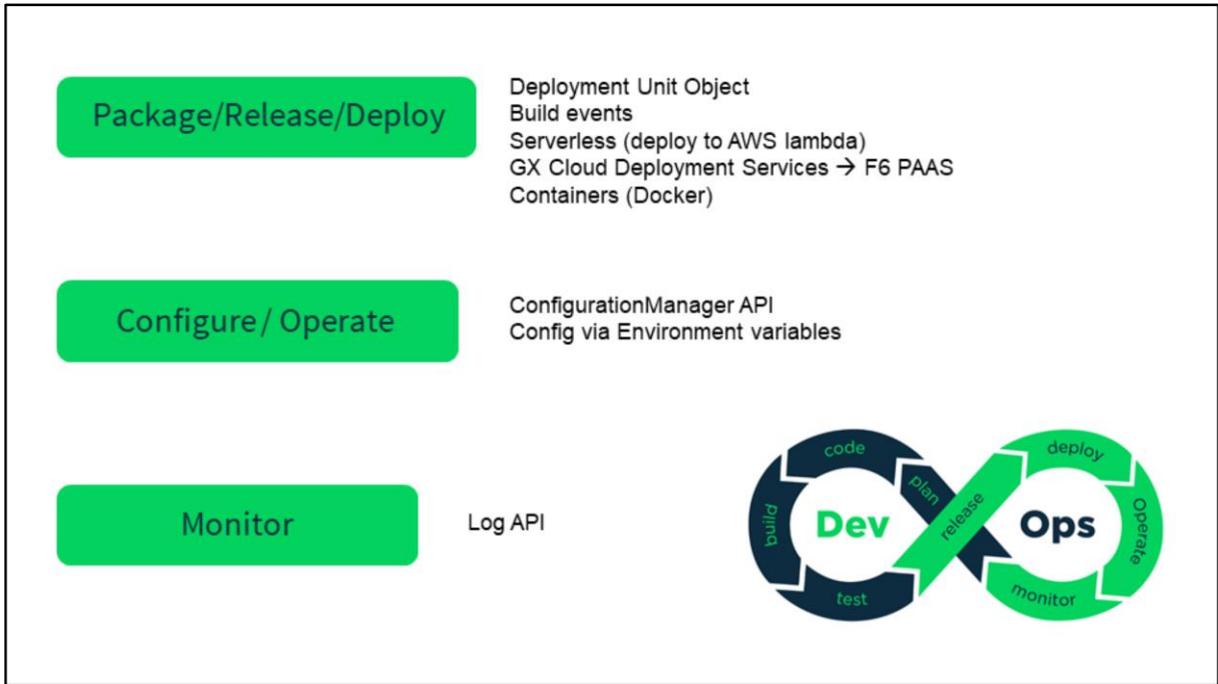
Target

Cancel Deploy

GeneXus

Deployment to a Docker Container





On the configuration apis and the Api Log we have no more to add than what was said in the introduction. But...

DevOps

Multi-experience & Omnichannel

Integration

Security

Build

Test

Package/Release/Deploy

Configure / Operate

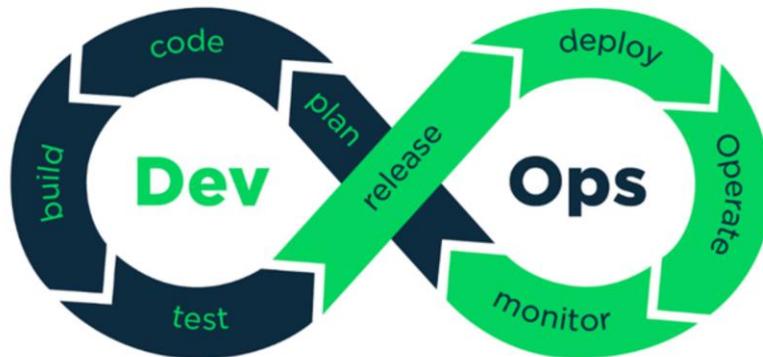
Monitor



¿Pipeline control?

We have seen how GeneXus helps us in each of the stages of the DevOps cycle,
Now ... how do we make the flow of this cycle easier?

GeneXus Server



First of all we are going to see now some news in GXServer that is a key piece - when we work as a team - to be able to integrate the code in a simple way

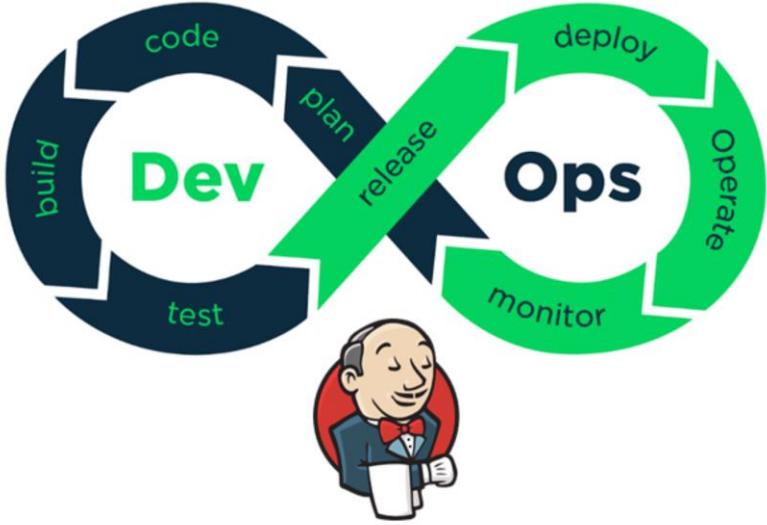
In this version there are improvements that are aimed at simplifying the management and maintenance of server installations.

GeneXus Server

Extensions, UC & Pattern Management

- An Extension, UC or Pattern needs to be installed in GeneXus only if it is actually USED in the Knowledge Base being run.
- A GeneXusIDE that doesn't have the Extension, UC or Pattern can work with the objects that DON'T use it even if other objects in the Knowledge Base use it.

Continuos Integration





Jenkins

Jenkins >

 [New Item](#)

 People

 Build History

 Manage Jenkins

 My Views

 Credentials

 New View

Build Queue —

No builds in the queue.

Build Executor Status —

1 Idle

2 Idle

Enter an item name

CitizenBuild

> Required field



Freestyle project

This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.



Maven project

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



Pipeline

Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or 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. This is designed so that you can use Jenkins as a dashboard of your existing automation system.



Multi-configuration project

Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.



Folder

A folder is a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a separate namespace, so you can have multiple things of the same name as long as they are in different folders.

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

Description Citizen Trunk Update & Build

[Plain text] [Preview](#)

- Discard old builds [?](#)
- GitHub project [?](#)
- This project is parameterized [?](#)
- Throttle builds [?](#)
- Visualize test results in real time [?](#)
- Disable this project [?](#)
- Execute concurrent builds if necessary [?](#)

[Advanced...](#)

Source Code Management

- * None [?](#)

[Save](#) [Apply](#)

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

Source Code Management

None

GeneXus Server ?

GeneXus Installation: (Default) ?

GeneXus Server URL: http://samples.genexusserver.com/v16 ?

GeneXus Server Credentials: admin***** (GxServer Admin) ? [Add](#)

Knowledge Base Name: Citizen_GX16UpdCourse ?

Version: ?

[Advanced Options...](#)

Git

Subversion ?

Build Triggers

Trigger builds remotely (e.g., from scripts) ?

Build after other projects are built ?

Build periodically ?

[Build periodically](#) [GITScm polling](#) ?

[Save](#) [Apply](#)

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

Source Code Management

None

GeneXus Server ?

GeneXus Installation: (Default) ?

GeneXus Server URL: ?

GeneXus Server Credentials: admin***** (GxServer Admin) ?

Knowledge Base Name: Citizen_GX16UpdCourse ?

Version: ?

Git

Subversion ?

Build Triggers

Trigger builds remotely (e.g., from scripts) ?

Build after other projects are built ?

Build periodically ?

TScm polling ?

Build Triggers

- Trigger builds remotely (e.g., from scripts) ?
 - Build after other projects are built ?
 - Build periodically ?
 - GitHub hook trigger for GITScm polling ?
 - Poll SCM ?
- Schedule ?
- Would last have run at Thursday, September 27, 2018 11:00:18 PM UYT, would next run at Thursday, September 27, 2018 11:11:18 PM UYT.
- Ignore post-commit hooks ?

Build Environment

- Delete workspace before build starts ?
 - Use secret text(s) or file(s) ?
 - Abort the build if it's stuck ?
 - Add timestamps to the Console Output ?
- ?

Build Environment

- Delete workspace before build starts
- Use secret text(s) or file(s) ?
- Abort the build if it's stuck
- Add timestamps to the Console Output
- Show tests in progress
- With Ant ?

Build

Build GeneXus KB ✕

GeneXus Installation: ?

Knowledge Base Path: ?

Version: ?

Environment: ?

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

Build

Build GeneXus KB ✖ ?

GeneXus Installation ?

Knowledge Base Path ?

Version ?

Environment ?

Force rebuilding all objects ?

Add build step ▾

Post-build Actions

Build other projects ✖ ?

Projects to build

Trigger only if build is stable

Trigger even if the build is unstable

Trigger even if the build fails



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

Description

[Plain text] [Preview](#)

- Discard old builds ?
- GitHub project ?
- This project is parameterized ?
- Throttle builds ?
- Visualize test results in real time ?
- Disable this project ?
- Execute concurrent builds if necessary ?

[Advanced...](#)

Source Code Management

None ?

Build Environment

- Delete workspace before build starts
- Use secret text(s) or file(s) ?
- Abort the build if it's stuck
- Add timestamps to the Console Output
- Show tests in progress
- With Ant ?

Build

Add build step ▾

- Conditional step (single)
- Build Genesis KB
- Build a Visual Studio project or solution using MSBuild
- Conditional steps (multiple)
- Execute Windows batch command**
- Execute shell
- Invoke Ant
- Invoke top-level Maven targets
- Run with timeout
- Set build status to "pending" on GitHub commit
- Trigger all builds on other projects

- Use secret text(s) or file(s) ?
- Abort the build if it's stuck
- Add timestamps to the Console Output
- Show tests in progress
- With Ant ?

Build

Execute Windows batch command x ?

Command `c:\Deploy\DeployTrunk_u10.bat`

[See the list of available environment variables](#)

Advanced...

Add build step ▾

Post-build Actions

x ?

...k_Test



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

Description

[Plain text] [Expand](#)

- Discard old builds ?
- GitHub project ?
- This project is parameterized ?
- Throttle builds ?
- Visualize test results in real time ?
- Disable this project ?
- Execute concurrent builds if necessary ?

[Advanced...](#)

Source Code Management

None ?

Build Environment

- Delete workspace before build starts
- Use secret text(s) or file(s) ?
- Abort the build if it's stuck
- Add timestamps to the Console Output
- Show tests in progress
- With Ant ?

Build

Add build step ▾

- Conditional step (single)
- Build Genexus KB
- Build a Visual Studio project or solution using MSBuild**
- Conditional steps (multiple)
- Execute Windows batch command
- Execute shell
- Invoke Ant
- Invoke top-level Maven targets
- Run with timeout
- Set build status to "pending" on GitHub commit
- Triggered builds on other projects

Build

Build a Visual Studio project or solution using MSBuild

MSBuild Version:

MSBuild Build File:

Command Line Arguments:

```
! RunAllTests  
/p:MSBuildPath="C:\Models\Citizen_GX16\pd\Course"  
/p:GX_PROGRAM_DIR="C:\Program Files (x86)\GeneXus\GeneXus15U10"  
/p:EnvironmentName="UnitTest"  
/p:JUnitTestFilePath="C:\Program Files (x86)\Jenkins\workspace\Trunk_Test\TestResults"
```

Pass build variables as properties:

Do not use chcp command:

[Advanced...](#)

Add build step

Post-build Actions

Publish JUnit test result report

Test report XMLs:

Fileset 'includes' setting that specifies the generated raw XML report files, such as 'mavenreport\target\test-reports*.xml'. Base dir of the fileset is the workspace root.

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

Show tests in progress
 With Ant

Build

Add build step ▾

Post-build Actions

Build other projects

Projects to build

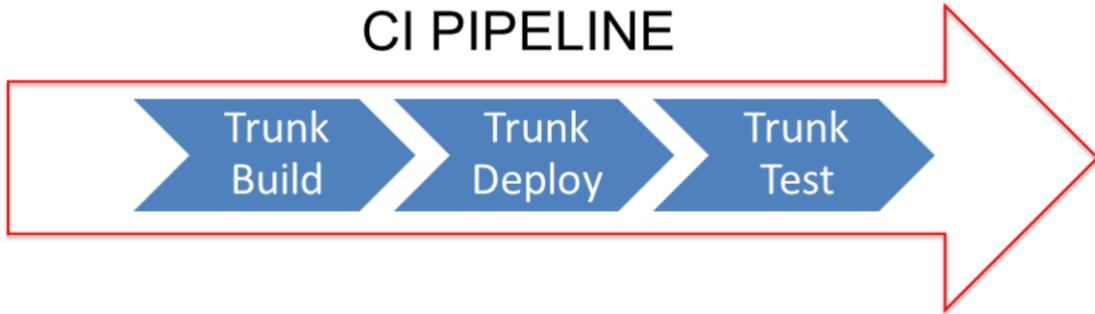
Trigger only if build is stable
 Trigger even if the build is unstable
 Trigger even if the build fails

Add post-build action ▾

Save Apply



CI PIPELINE



Jenkins

Build Auto #27920

- New Item
- People
- Build History
- Manage Jenkins
- My Views
- Credentials
- New View

[add description](#)

All

S	W	Name	Last Success	Last Failure	Last Duration	
		CitizenBuild	N/A	N/A	N/A	
		Trunk_Update	17 min - #346	2 days 10 hr - #333	2 min 9 sec	
		Trunk_Test	14 min - #138	8 days 7 hr - #92	2 min 19 sec	

Icon: S M L

Legend RSS for all RSS for failures RSS for just latest builds

Build Queue [--](#)

No builds in the queue.

Build Executor Status [--](#)

1 Idle
2 Idle

Jenkins >

- New Item
- People
- Build History
- Manage Jenkins
- My Views
- Credentials
- New View

Build Queue --

No builds in the queue.

Build_Executor_Status --

1 Idle
2 Idle

View name Trunk Pipeline

Build Pipeline View

Shows the jobs in a build pipeline view. The complete pipeline of jobs that a version propagates through are shown as a row in the view.

List View

Shows items in a simple list format. You can choose which jobs are to be displayed in which view.

My View

This view automatically displays all the jobs that the current user has an access to.

OK

- New Item
- People
- Build History
- Edit View
- Delete View
- Manage Jenkins
- My Views
- Credentials
- New View

Build Queue —
No builds in the queue.

Build Executor Status —
1 Idle
2 Idle

Name: TrunkPipeline

Description:

Filter build queue:

Filter build executors:

Build Pipeline View Title: Trunk

Pipeline Flow

Layout: Based on upstream/downstream relationship

This layout mode derives the pipeline structure based on the upstream/downstream trigger relationship between jobs. This is the only out-of-the-box supported layout mode, but is open for extension.

Upstream / downstream config

Select Initial Job: Trunk_Update

Trigger Options

Build Cards: Standard build card

Use the default build cards

OK Apply

Build Pipeline: Trunk

- Run
- History
- Configure
- Add Step
- Delete
- Manage

Pipeline #344	#344 Trunk_Update Sep 27, 2018 2:21:21 PM 2 min 14 sec	#290 Trunk_Deploy Sep 27, 2018 2:21:41 PM 2 min 18 sec	#130 Trunk_Test Sep 27, 2018 2:26:36 PM 2 min 26 sec
Pipeline #343	#343 Trunk_Update Sep 27, 2018 12:51:19 PM 2 min 28 sec	#285 Trunk_Deploy Sep 27, 2018 12:53:59 PM 2 min 15 sec	#135 Trunk_Test Sep 27, 2018 12:55:25 PM 2 min 35 sec
Pipeline #342	#342 Trunk_Update Sep 27, 2018 11:26:28 AM 2 min 18 sec	#284 Trunk_Deploy Sep 27, 2018 11:28:48 AM 2 min 12 sec	#134 Trunk_Test Sep 27, 2018 11:38:05 AM 2 min 24 sec

code

deploy

<https://wiki.genexus.com/commwiki/servlet/wiki?38329,Typical%20GeneXus%20development%20cycle%20for%20Agile>

[https://wiki.genexus.com/commwiki/servlet/wiki?20649,Version+Management+and+Work+Methodology+with+GeneXus+Server,](https://wiki.genexus.com/commwiki/servlet/wiki?20649,Version+Management+and+Work+Methodology+with+GeneXus+Server)

test

monitor





DevOps

Multi-experience & Omnichannel

Integration

Security

Build

Test

Package/Release/Deploy

Configure / Operate

Monitor



With this we have seen the most important changes between the GeneXus version 15 released and the GeneXus version 16.

GeneXus[™]
The power of doing