

what is pipeline(Work flow):- jenkins job enabled by pipeline plugin and built with simple text scripts.(Groovy programming language)

Pipeline leverage power of multiple steps to execute both simple and complex task,Pipeline can build code.

Pipeline as code allows you to describe pipelines in textual form and keep them in version control. These pipelines are written using a flexible Groovy DSL.

Why Pipeline:- (pipeline functionality is)(Pipeline attribute)

Durable: Pipelines can survive both planned and unplanned restarts of your Jenkins master.

Pausable: Pipelines can optionally stop and wait for human input or approval before completing the jobs for which they were built.

Versatile: Pipelines support complex real-world CD requirements, including the ability to fork or join, loop, and work in parallel with each other.

Efficient: Pipelines can restart from any of several saved checkpoints.

Extensible: The Pipeline plugin supports custom extensions to its DSL (domain scripting language) and multiple options for integration with other plugins.

Pipeline Vocabulary:-

Step

A “step” (often called a “build step”) is a single task that is part of sequence. Steps tell Jenkins what to do.

Node:-node allocates an executor and workspace in the Jenkins environment.(Where the build will run)

Agent:-determine where ur build will run.

echo writes simple string in the Console Output.

stages:-A sequence of one or more stage directives

Stage-logically distinct part of the execution of any task

A “stage” is a step that calls supported APIs. Pipeline syntax is comprised of stages. Each stage can have one or more build steps within it.

Stages are for setting up logical divisions within pipelines.

master - A “master” is the basic installation of Jenkins on a computer; it handles tasks for your build system. Pipeline scripts are parsed on masters, and steps wrapped in node blocks are performed on available executors.

agent - An “agent” (formerly "slave") is a computer set up to offload particular projects from the master. Your configuration determines the number and scope of operations that an agent can perform. Operations are performed by executors.

executor - An “executor” is a computational resource for compiling code. It can run on master or agent machines, either by itself or in parallel with other executors. Jenkins assigns a `java.lang.Thread` to each executor.

Preparing Jenkins to Run Pipelines

Jenkins file:- Jenkinsfile is a text file that contains the definition of a Jenkins Pipeline and is checked into source control. Consider the following Pipeline which implements a basic three-stage continuous delivery pipeline

Pipeline Syntax :-

Declarative Pipeline:- A Declarative Pipeline is defined within a 'pipeline' block. declarative pipelines is a new extension of the pipeline DSL .

ex;- Jenkinsfile (Declarative Pipeline)

```
pipeline {
    agent any
    stages {
        stage('Example') {
            steps {
                echo 'Hello World'
            }
        }
    }
    post {
        always {
            echo 'I will always say Hello again!'
        }
    }
}
```

scripted Pipeline:-

```
node {
```

```
stage('Example') {  
    try {  
        sh 'exit 1'  
    }  
    catch (exc) {  
        echo 'Something failed, I should sound the klaxons!'  
        throw  
    }  
}  
}
```

Note;- Agent is for declarative pipelines and node is for scripted pipelines.