Logo, company name

Description automatically generated

Selenium Grid

Parallel Execution

September 13, 2021

vrize inc

7320 East Fletcher Avenue, Temple Terrace, Tampa 33637



Table of Contents

1. **What is Selenium Grid and why use it**
2. **Pre-requisite for Selenium Grid**
3. **How to Implement the Grid**
4. **How to Implement in IDE**
5. **What is Selenium Grid and why use it?**

* Selenium Grid allows you to perform tests execution on different machines, with multiple browsers and operating systems at the same time, regardless of the local development environment. It creates a central hub, which distributes the execution to remote nodes.
* Selenium Grid has a **Hub** and a **Node**.
* **Hub** – The hub can also be understood as a server which acts as the central point where the tests would be triggered. A Selenium Grid has only one Hub and it is launched on a single machine once.
* **Node** – Nodes are the Selenium instances that are attached to the Hub which execute the tests. There can be one or more nodes in a grid which can be of any OS and can contain any of the Selenium supported browsers.
* **2. Pre-requisite for Selenium Grid:**
* Java 1.8 Version must be installed.
* Create a one folder in **C drive** – Download Browser Driver and Selenium Jar file.
* The above installable needs to be available in the machines where Hub and nodes needed to be set up.
* **Download Chrome Driver**

1. Navigate to <https://www.selenium.dev/downloads/>
2. Click on **releases.**
3. Select respective browser and download the Windows driver.

* Graphical user interface, text, application

  Description automatically generated
* Download [**selenium-server-standalone-3.141.59.jar**](https://github.com/SeleniumHQ/selenium/releases/download/selenium-3.141.59/selenium-server-standalone-3.141.59.jar)
* **3. How to Implement the Grid:**
* For selenium grid to work, Hub and Nodes needs to be setup. Below are the details about creating Hub and Nodes.
* **Creating HUB:**
* Launch Command prompt
* Navigate (CD) to the folder where the driver and jar is kept.
* Execute the below command
* ***java -jar selenium-server-standalone-3.141.59.jar -role hub -timeout 60 -browserTimeout 300***
* Text

  Description automatically generated
* **Hub gets registered and can be accessed using the URL mentioned in the Command prompt.**
* <http://192.168.1.6:4444/wd/hub> **---- Access the Grid hub using the mentioned URL, The IP needs to be updated with machine IP of Hub.**
* **Access the GRID UI using the above URL. The screen would be empty since there are no nodes registered yet.**
* Graphical user interface, application, Word

  Description automatically generated
* **Creating Node:**
* Launch Command prompt
* Navigate (CD) to the folder where the driver and jar is kept.
* Execute the below command by mentioning browser driver path and hub IP correctly.
* Port number can be used between 5555-5559, based on the requirement.
* *Java Dwebdriver.chrome.driver="<****driver path****>" -jar selenium-server-standalone-3.141.59.jar -role node -hub http://<****node ip****>:4444/grid/register -port* ***5555***
* Node is getting created.
* Graphical user interface

  Description automatically generated
* Go back to Hub Machine and refresh the Grid URL, Node details would get display on the screen.
* Graphical user interface, application

  Description automatically generated

1. **Configure in Execution XML:**

* **Open TestNG.Xml file in any IDE.**
* **Run Test cases in parallel across Nodes**
* **Update the configurations as mentioned below.**
* **Test cases execution are distributed across nodes randomly based on node availability.**
* <suite name=*"PIM Automation"* parallel=*"methods"* thread-count=*"2"*
* **Run Test classes in parallel across Nodes**
* **Update the configurations as mentioned below.**
* **Test classes execution are distributed across nodes randomly based on node availability.**
* <suite name=*"PIM Automation"* parallel=*"classes"* thread-count=*"2"*>

1. **Using Remote Driver:**

* To use Grid, we must always use Remote Web Driver, this has already been configured in the code as shown below.
* Below are the Remote web driver details used in code. Hub URL must be used here as a URL. If executed in local, the HUB URL can be localhost.
* Graphical user interface, text, application

  Description automatically generated
* **The executed must be performed in remote mode, so the config value for runmode must be “remote” to execute test in GRID environment. Else the test case get executed in local machine.**
* Graphical user interface, text

  Description automatically generated