Bromine 3 RC2

Open Source Test Management Tool

For

Automation using Selenium

Whitepaper

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1. Introduction

Bromine is an open source test management tool which helps one in managing the Automated Test Cases/Script generated using Selenium. Selenium is an open source automation tool which helps in automating any web application. There are many advantages of Bromine. Few of them are managing the traceability between requirement and test cases are done through tool; all your automated test cases are managed at a single location. One can execute these test cases on different OS/Browser combination using Bromine. This is the one of the best automation test management tool in open source arena. This white paper highlights the installation, feature and usage of this tool. One can easily learn the usage of Bromine by going through this white paper. This white paper also highlights some of the best practices while using Bromine with Selenium.

2. Installation

Please follow the below mentioned steps for Installing latest version of Bromine 3 RC2 as a Web Based Application:

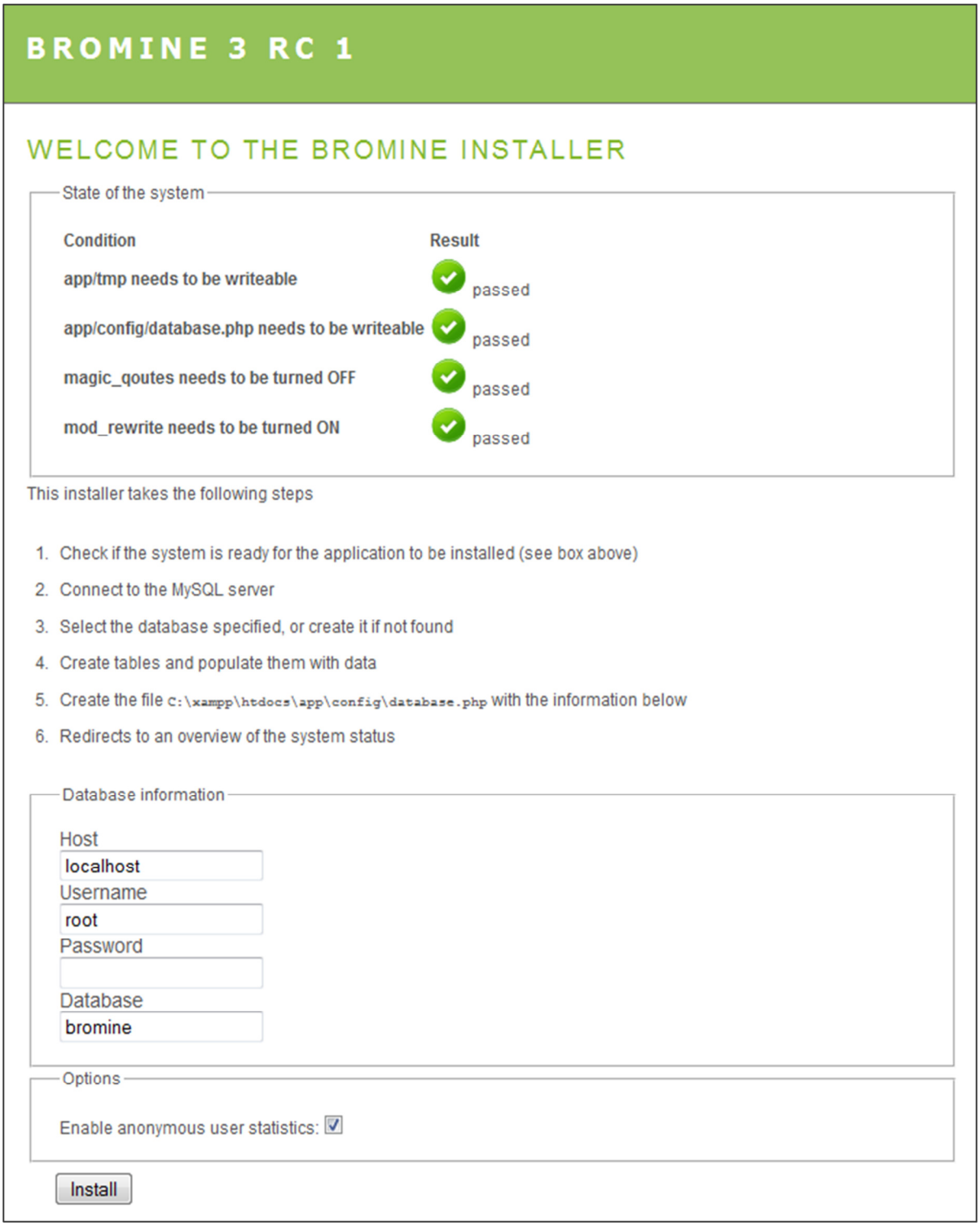
2.1. Pre-requisite

- Windows or Linux Based Machine with Server Type Configuration.
- Download XAMPP from http://xampp.en.softonic.com/download. This will install the pre-requisite such as PHP, MySQL, Apache on your server.
- Download the Bromine Source code version from http://www.brominefoundation.org/download.php?f=bromine3_rc2.zip

2.2. Steps for Installation

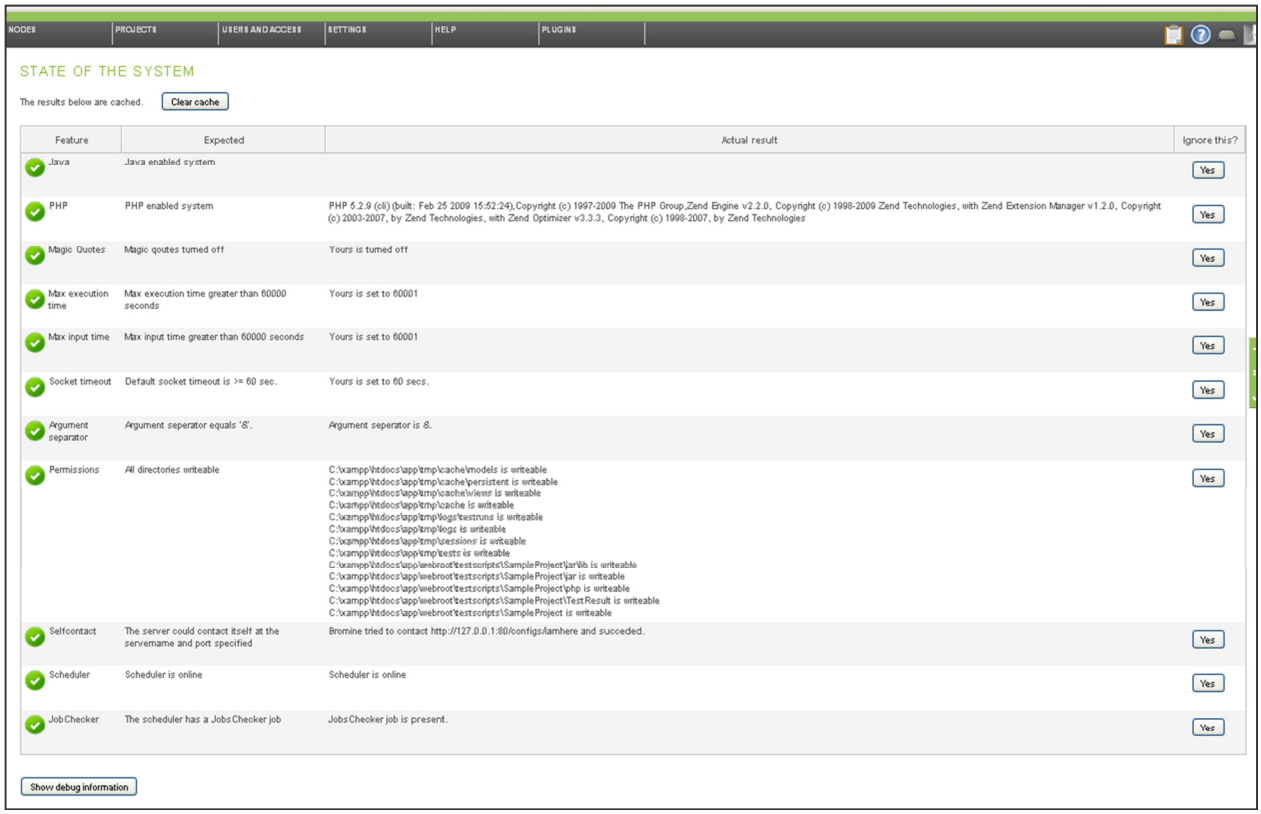
Assuming that XAMPP is installed on your C: Drive, follow the below mentioned steps for successful installation of Bromine:

- Navigate to C:\Xampp\
- Take a backup of **htdocs** folder
- Unzip the bromine3_rc2.zip to C:\Xampp\htdocs folder. Overwrite existing files.
- Now navigate to C:\Xampp\php
- Set the PHP Path in the Environment variable
- Open PHP.INI file
- Make the below mentioned configuration changes:
    - Set *max_execution_time* = 60001
    - Set *max_input_time* = 60001
    - Comment the line ***arg_separator.output = "&"***with ";".
    - Set *magic_quotes_gpc* = Off
- Restart the apace webserver.
- Navigate to http://localhost/install(See the screen shot given below)



- Follow the instruction on the install page. Enter the Database details as follows:
  - Enter UserId = root
  - Leave Password as Blank
  - Define the DB Name as “brominedb”

- Enter the detail of Admin user and complete the installation process.
- Now you will be directed to Bromine Login Page, provide your login credentials and then you will be navigated to State of the System Page (See the screen shot given below). Please ensure that you have all Green Status on this page. In case you have any error, the best practice is to correct that error and reload this page to check if the error has been rectified. Do not ignore the error by clicking the “Yes” Button.



- This will complete the Installation of Your Bromine tool and now Bromine is ready for usage. The below sections will focus mainly on the usage of the tool and will give details on How you can define the Project, Requirement, Test Cases, Execution of Test Cases, Creating New User, Setting Nodes etc.

3. Administrative Features

One can access the Administrative feature through the control panel section of Bromine. There are many administrative tasks that can be done through control panel but we will focus mainly on the frequently used Administrative feature.

3.1. Projects

The Projects module provides you the ability to define the Project Name, Description, URL, Users that should be provided an access to the project. You can also View, Edit or Delete the Project from this interface. The screen shot of the Project Module is given below:

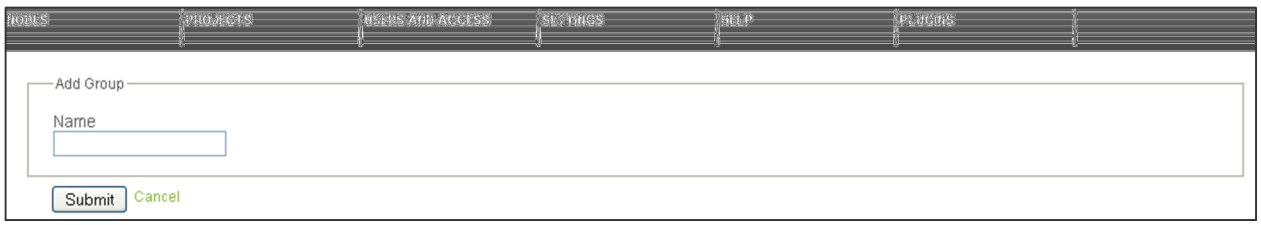
It is always a good practice to define your user first, and then create the project. This will enable you to map the user to the project when you create the project.

3.2. Users and Access

The user setup module provides you an ability to define and control access to your user. Using this module you can define the user group such as Administrator, Test Scripter, Executor, Business Analyst. Define your access on the group and then map the user with a particular group.

3.2.1. Groups

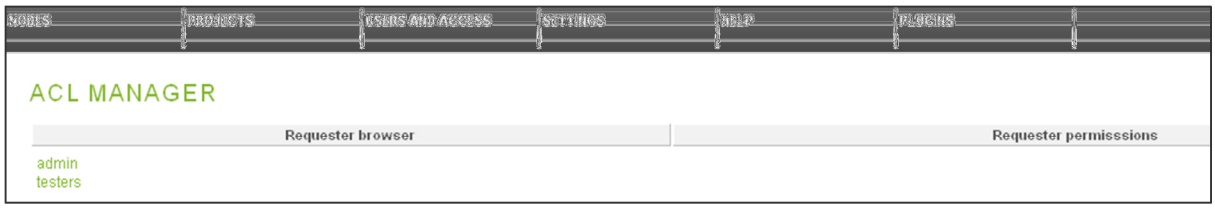
As mentioned above you can define various user groups such as Admin, Tester, BA, Manager etc. Navigate to control panel and then Users->User Setup module. See the screen shot given below:



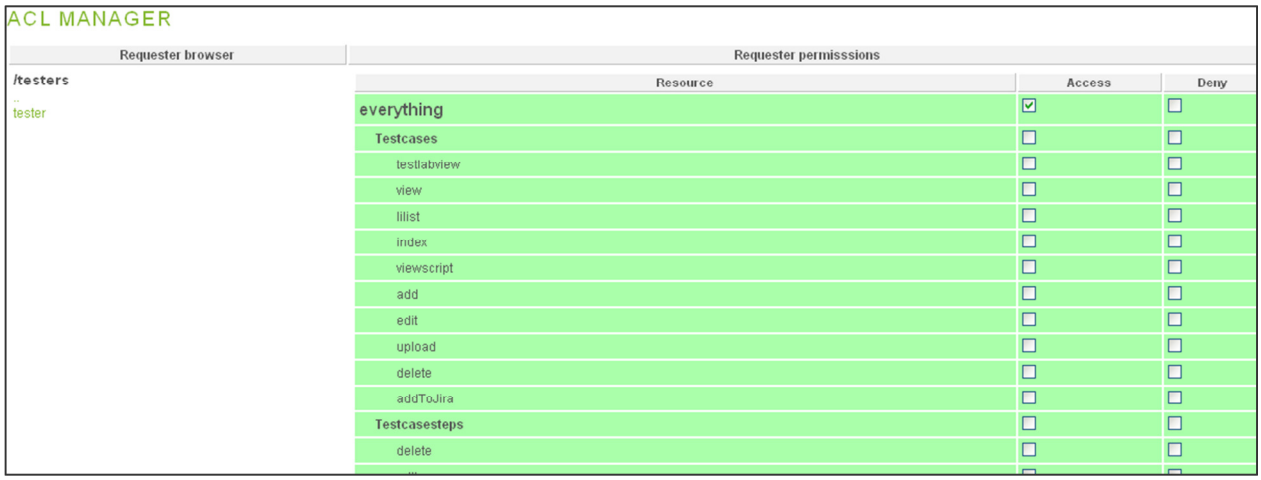
You can View, Edit or Delete the Groups from this page. After the Group gets created, then you provide the access control (3.2.2) on each group and finally when user is created, then you are going to put the user in the relevant groups.

3.2.2. Access Control

After the Group has been defined, then access needs to be defined for these groups. The Access Control module provides the ability to define the access of each interface within Bromine for each group. This will enable the Authorization concept in Bromine. Navigate to **User and Access->Access Control** to reach this module. The screen shot is given below:



On the above page, click the relevant Group and then comes the ACL Manager page where you can define the access for each group. This page gets saved as you select or deselect the access or deny checkbox. There is no Submit or Save buttons on this page. See the screen shot given below:

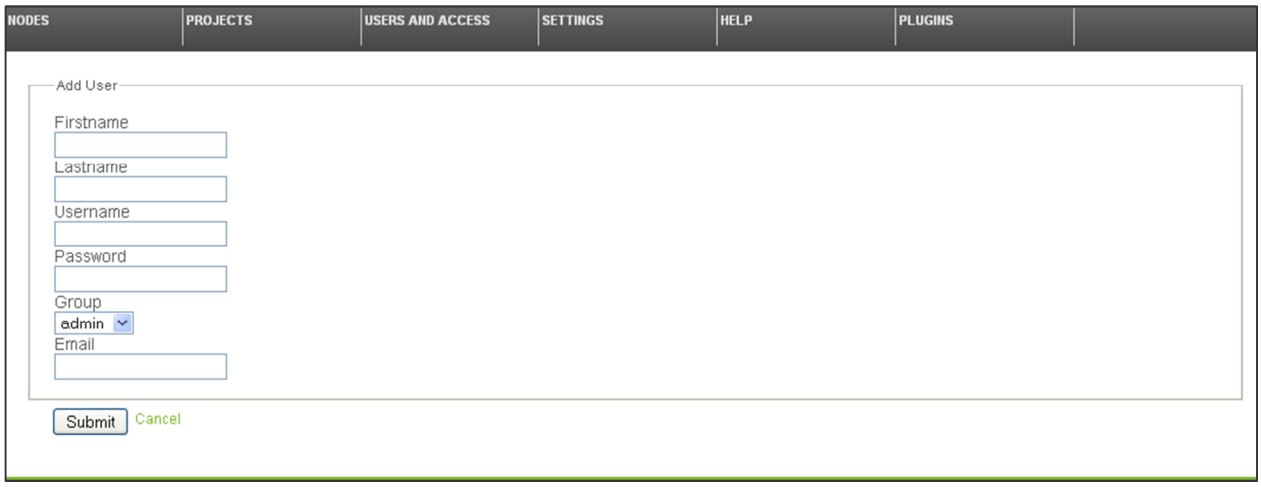


As a best practice, select everything first and then use Deny Checkbox to restrict the user from accessing a particular module. This will help you to easily manage the access control for each group and you will not face many issues while the tool is being used by various user groups.

3.2.3. Users

Here comes the last part of User and Access. Creation of user so that they can start using the Bromine tool. Navigate to User and Access->Users. Enter First Name, Last Name, Username, Password, Group (mapping), Email (unfortunately email will not get fired and you have to

manually inform the user about their login credentials) and then submit the information so that user will get created. The screen shot is given below:



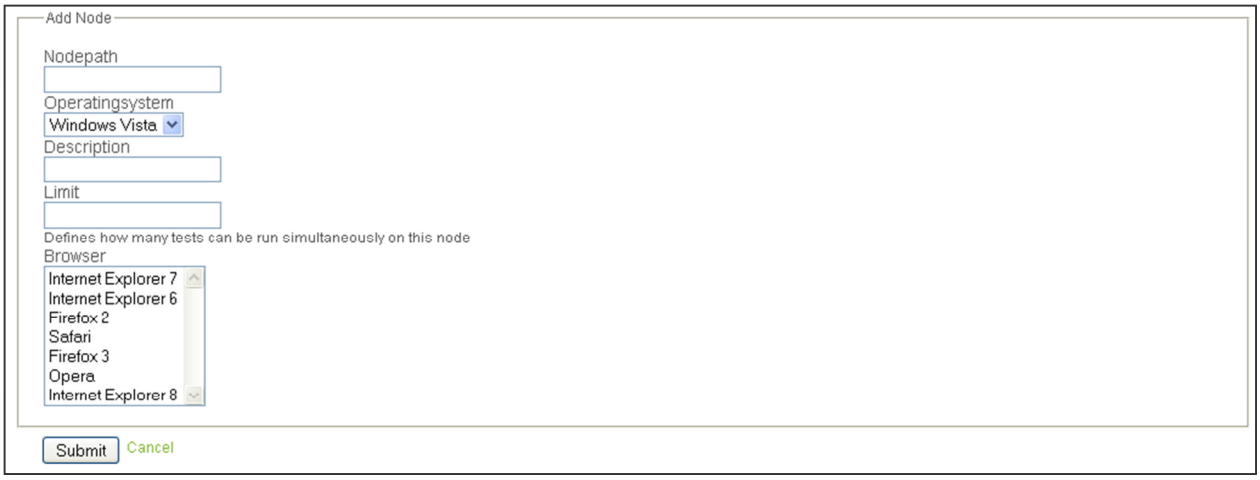
You can view, edit or delete the user from this module.

As a best practice, you first have to create Group, then Provide the Access to each group and finally create the user and then map the user with Group and later on with the Project.

Note: For Access Control matrix, please refer the Access Control Matrix sheet which mentions the guidelines for setting the permissions for accessing the module for each group.

3.3. Node Setup

This is one of very important administrative features which provides the ability to setup multiple nodes so that you can run your test script on multiple systems having different configuration settings of OS and Browser. The only pre-requisite for defining the node is that Selenium RC server must be available on the nodes which are being defined in this module. Navigate to Nodes -> New Node. You can View/Edit/Delete the node from this module. You need to provide below mentioned information as shown in the screen shot, for creating a node. The information that should be provided are Nodepath (must be in **IP & Port Number** format. For e.g **127.0.0.1:4444**), Operating System of Node, Description about node (For e.g. Selenium RC Server on NODSWD0098 or any meaningful description), Limit (Defines how many tests can be run simultaneously on this node), Browser (The browser available on the node. You can define multiple browsers for the node, if all those browsers are available on the node machine).



Sometimes it might happen that although the Node shows Online (Green), but your test is not running. The possible reason for this is that “Node is actually not online at that time”. Clear the Cache by clicking the "Clear Cache” button and then you will find that Node is shown as offline.

The Node feature really provides the power of running your test simultaneously on various systems in less time.

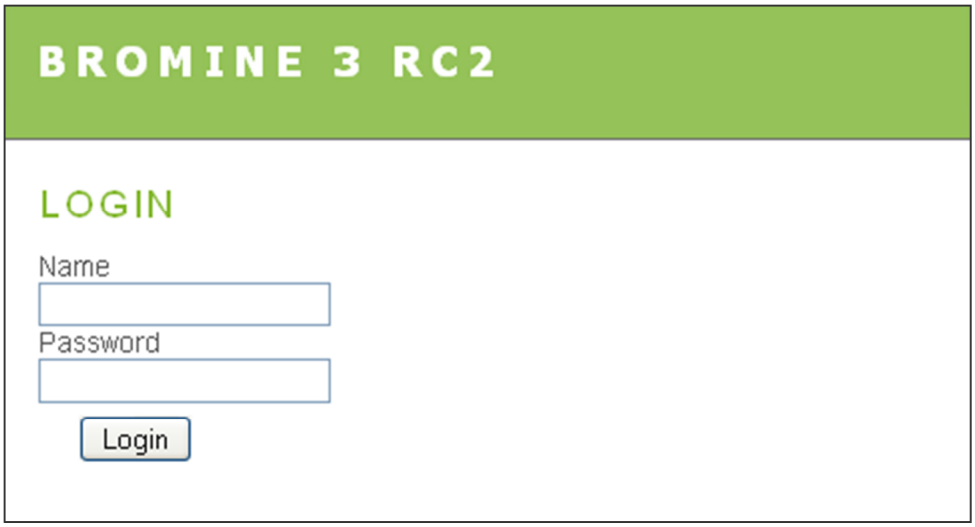
As a best practice, please ensure that nobody is actually working or using the system when the Test is running on various nodes. This is required so that your test will run uninterrupted and you have a reliable test result. Try to run your test on a nightly batch run, when no one is using the system.

4. Business Features

This section will help you in understanding Bromine from usage point of view. How you can login, create requirements, test cases, modify or delete requirement, test cases, establish traceability between requirement and test cases, schedule your test run, test run process and test result process.

4.1. Login

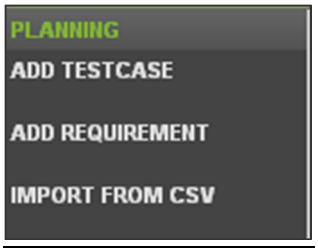
Open Bromine by navigating to the address where it is installed. If Bromine is installed or configured on a system or server, then ask your System Administrator for the path from where you can access it. For e.g. if you have installed Bromine in your local machine following the steps mentioned in this document, then just type http://localhost and you will see a Bromine Login Page. See below:



Once you login into the system, then you have to select the Project which has been allocated to you. You will see the list of only those projects in which you have access rights. After selecting the project, you will navigate to the Bromine Main Page (also called Workspace), from where you can now create your requirement, test cases etc.

4.2. Planning Module

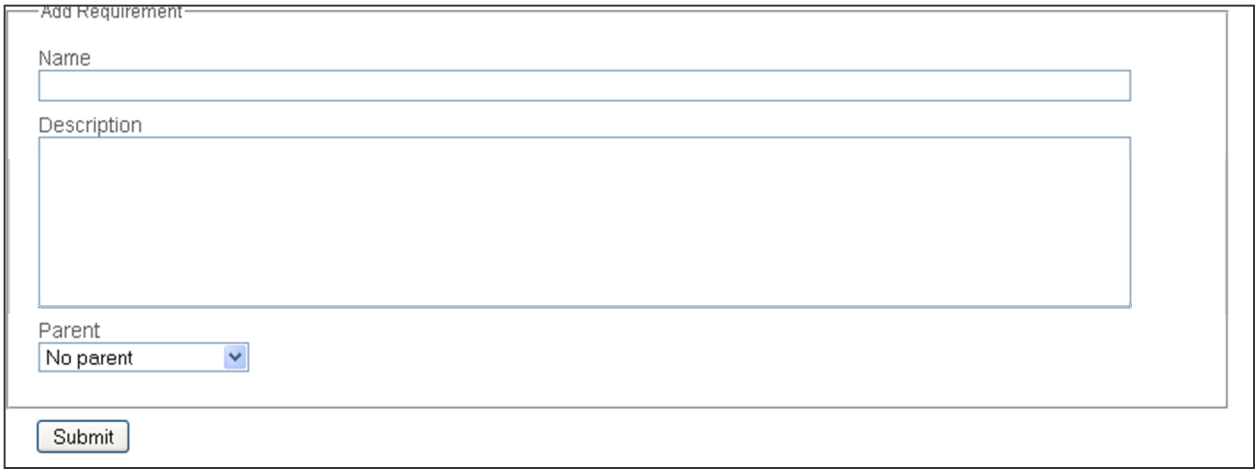
In the workspace area, you should see planning module, test lab module and Plugins (not a part of this document). The Planning Module is the starting point of defining the requirement and then creating Test Cases based on those requirements. Normally the Requirement should be created by Business Analyst and then the Test Team should start developing the Test Cases based on that requirement. But this might vary from Organization to Organization. As a best practice, it is always good to have requirements created by Business and then the Test Team should start writing their Test Cases.



This paper will also highlight the best practices when to start writing the Test Cases in Bromine. As you know that in Bromine you cannot manually execute the test cases, so ideally Bromine will only contain those test cases which can be automated.

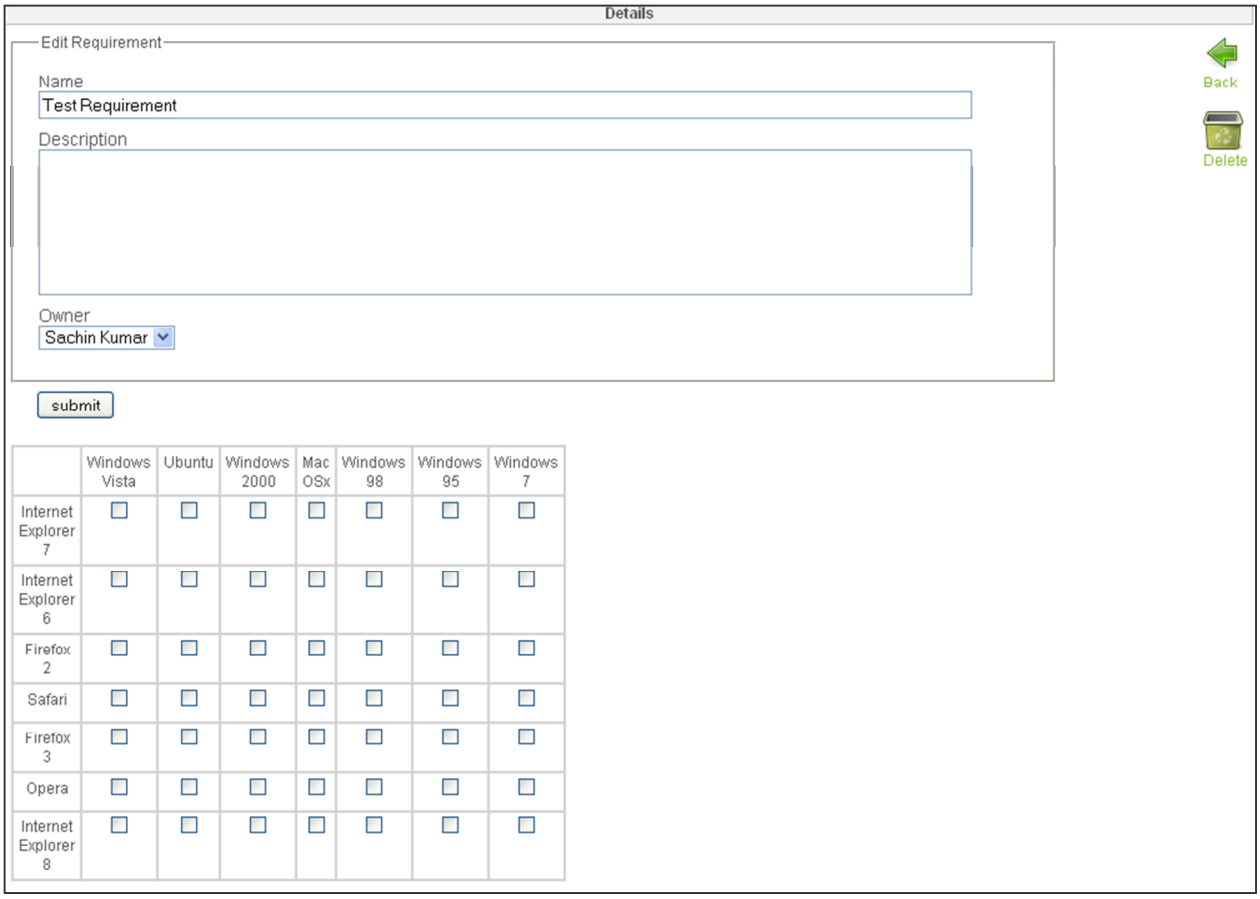
4.2.1. Add Requirement

The first thing to start with Test Planning in Bromine is to write the Requirement using Add Requirement module of Bromine. Requirement is mainly your Business Requirement for which you have to develop the Test Cases. As a best practice start adding the requirement in Bromine as soon as you start writing the SRS or Use Cases. This will ensure that both Requirement and Test Cases development can be done in parallel. See the Requirement module page as shown below:



Provide the Name and description and parent. As a best practice, each Business Scenario can be named as requirement. For e.g. Validation for Invalid Login, Search Feature etc. can be called as requirement. Provide the description which will help in developing the Test Cases. If the Child Requirement is derived from Parent, then provide the Parent Requirement for the Child. For e.g. You have a Parent Requirement of "**Login"** , when you will write the Valid and Invalid Login as requirement, then map it with parent which is **"Login".** Creation of Requirement is not a mandatory step for writing the Test Cases but as a best practice it is a mandate to map each Test Case with a Requirement. This will ensure the Traceability between Requirement and Test Cases.

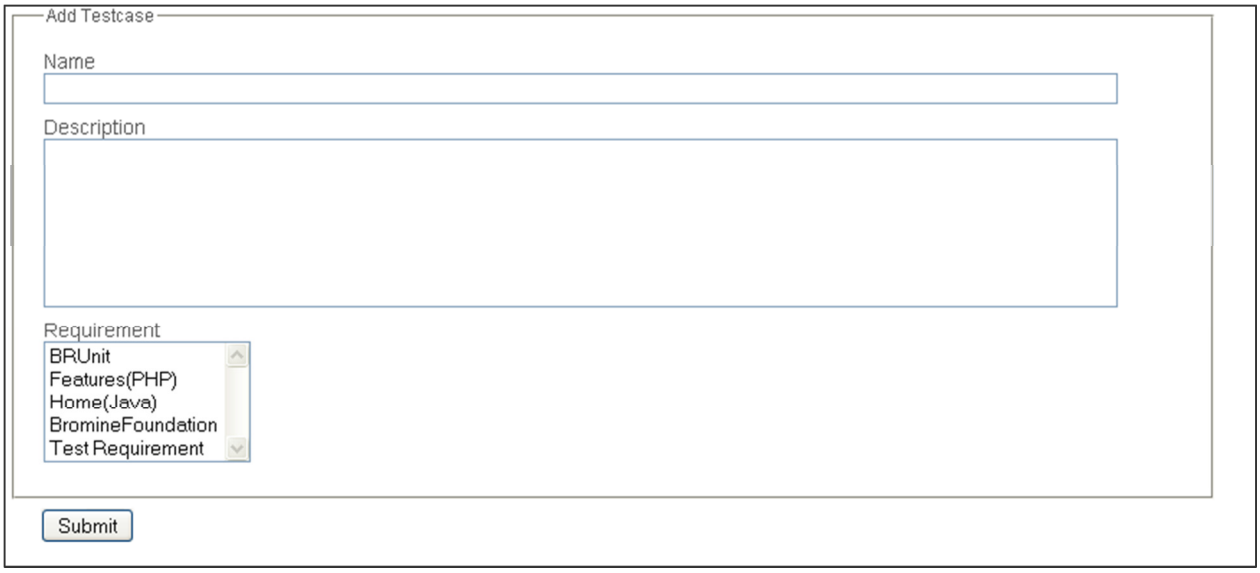
One can edit or delete the requirement by opening the Requirement. To delete a requirement, open the requirement in Edit Mode and then click the Delete button. See the screen shots given below:



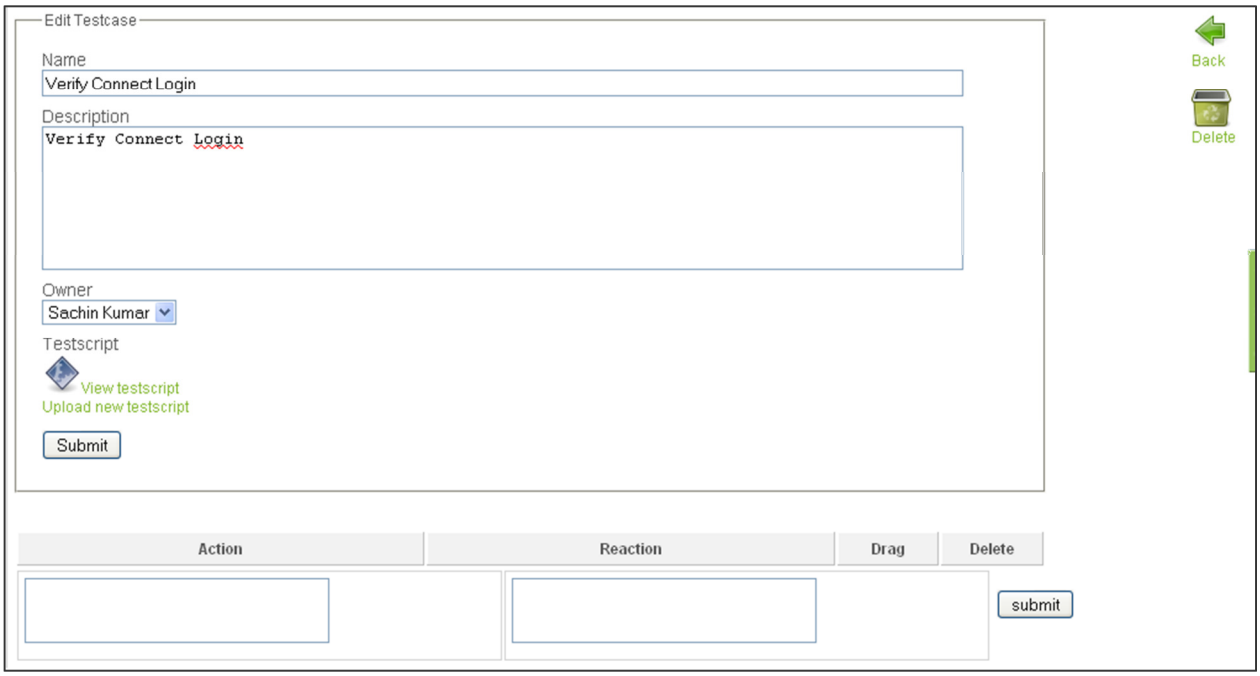
One can also define the OS/Browser Combination for each requirement. The above OS/Browser Matrix will be available after adding the requirement and then opening the requirement in Edit Mode.

4.2.2. Add Test Case

After Requirement comes the Test Cases. As soon as Requirement gets added, one can start developing the test cases on the basis of Requirement. To add the test cases, navigate to Planning->Add Test Case module. Refer the screen shot given below for the input required for Test Case writing:



Enter the Test Scenario in the Name field and give a small description (although not required). Select the Requirement to which this Test Case will map to. You can select multiple requirements as well as single requirement for the single test case. After the Test Cases have been created, then you can add the Test Steps and Upload the Test Script. As a best practice, one team creates the Test Cases and another Team generates the Test Script and then uploads the Test Script with their respective Test Cases. To generate the Test Script, the AUT should be made available. Generate your Test Script in Selenium and then convert it in either PHP or Java and upload the Test Script in Bromine. See the screen shots given below:

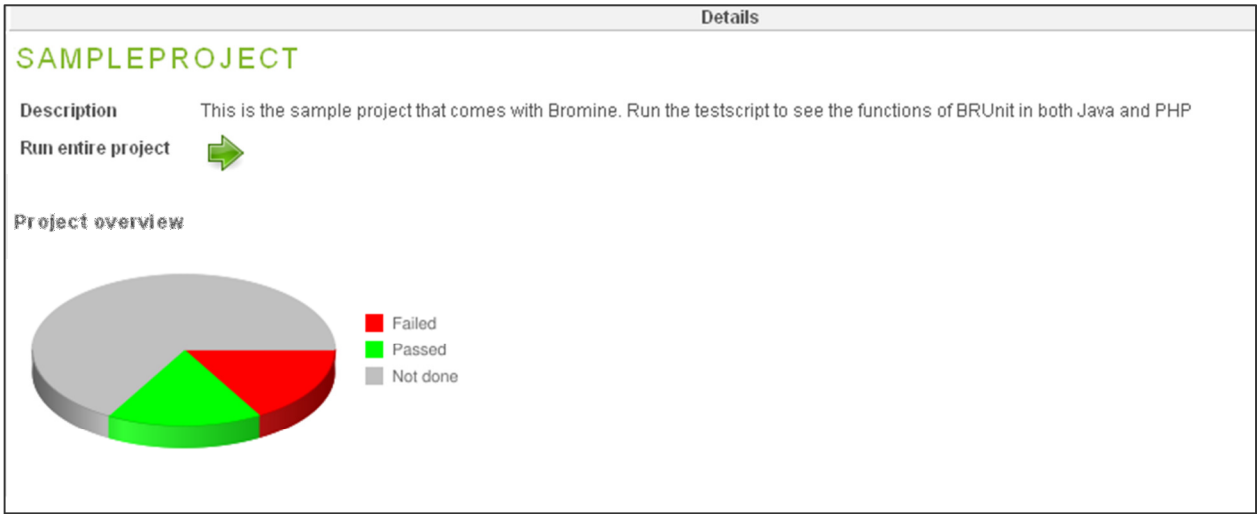


You can add your Test Steps in Action and Reaction Text Area. You can also arrange your Test Steps by doing a drag and drop. In case you want to delete the Test Case, use Delete Icon to Delete. Click

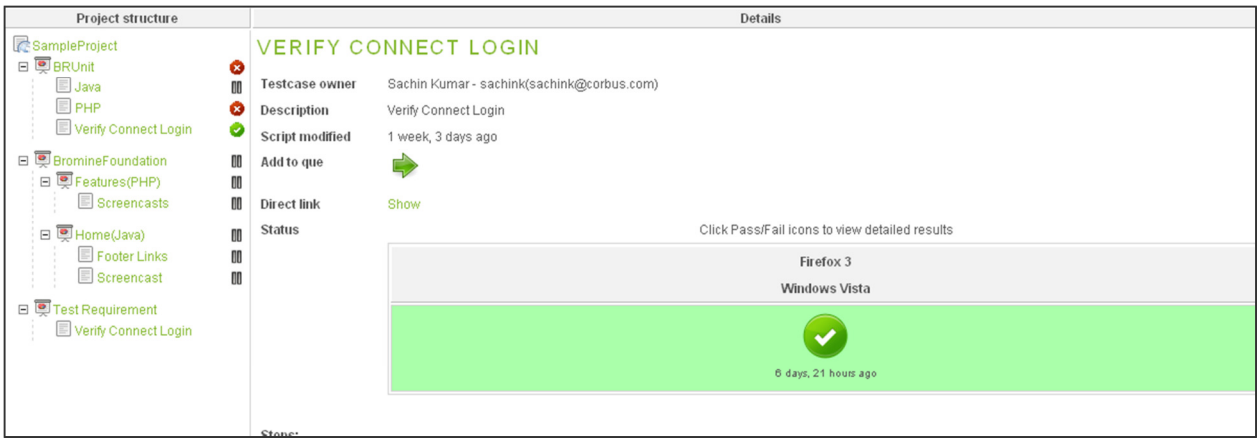
Upload New Test Script to Upload your Test Script file. This script will get in use when you will run your Test Cases from the Test Lab module. If you do not have any test script uploaded against the Test cases, then you cannot run your Test cases from the Test Lab module.

4.3. Test Lab Module

The Test Lab Module helps you in running your Test Cases/Script. You can run your entire Test Suite from the test lab module. This Test Lab Module provides you the Project Overview in terms of Test Cases Failed, Passed and Not Run.



To run individual Test Script, select and open the Test Script from left navigation and then click Add to que Green Arrow. See the screen shot given below:



The Other Modules under Test Lab provide you with detailed results. Check the below module for explanation.

4.3.1. Latest Suites

This Module provides the statistical detail of Test Suite Run. It will give you the detail in terms of Passed Vs Failed Test Cases. You can also view each Test Run by clicking the View link under Action Column. See the screen shot given below.

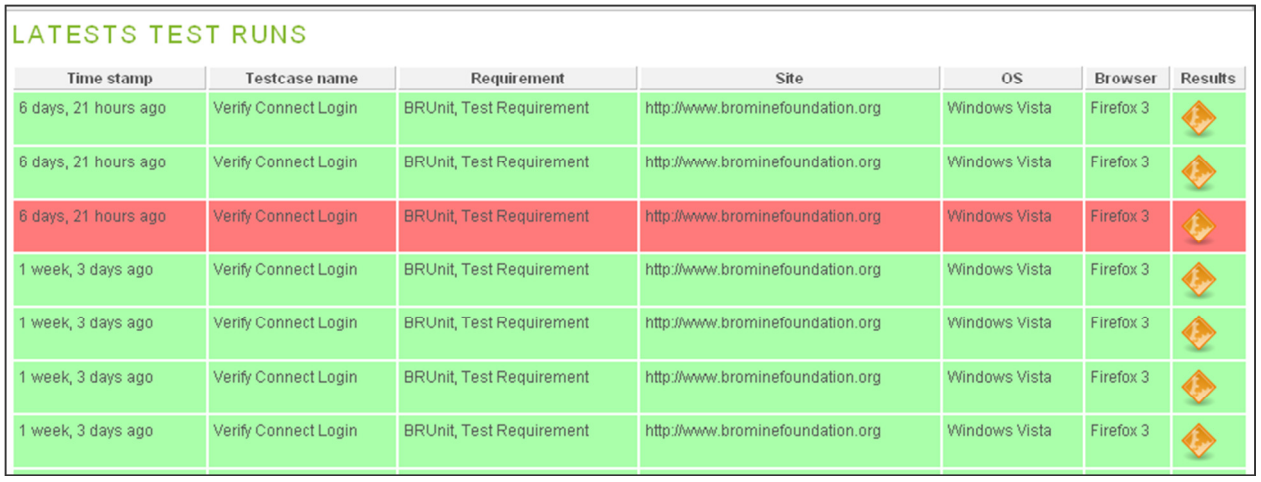
Suites

Page 1 of 3, showing 20 records out of 54 total, starting on record 1, ending on 20

Id	Status	Error ratio	Test passed	Test failed	Site	User	Actions
54		0%	1	0	http://www.brominefoundation.org	sachink	View
53		0%	1	0	http://www.brominefoundation.org	sachink	View
52		100%	0	1	http://www.brominefoundation.org	sachink	View
51		0%	1	0	http://www.brominefoundation.org	sachink	View
50		0%	1	0	http://www.brominefoundation.org	sachink	View
49		0%	1	0	http://www.brominefoundation.org	sachink	View
48		0%	1	0	http://www.brominefoundation.org	sachink	View
47		0%	1	0	http://www.brominefoundation.org	sachink	View
46		0%	1	0	http://www.brominefoundation.org	sachink	View
45		0%	1	0	http://www.brominefoundation.org	sachink	View
44		0%	1	0	http://www.brominefoundation.org	sachink	View
43		0%	1	0	http://www.brominefoundation.org	sachink	View
42		100%	0	1	http://www.brominefoundation.org	sachink	View

4.3.2. Latest Tests

This module will again provide you the details, which you can view for reporting or analysis purpose. You can check the Result of your Test Run. This module displays both the Pass and Failed Test. This module is self explanatory. See the screen shot given below:

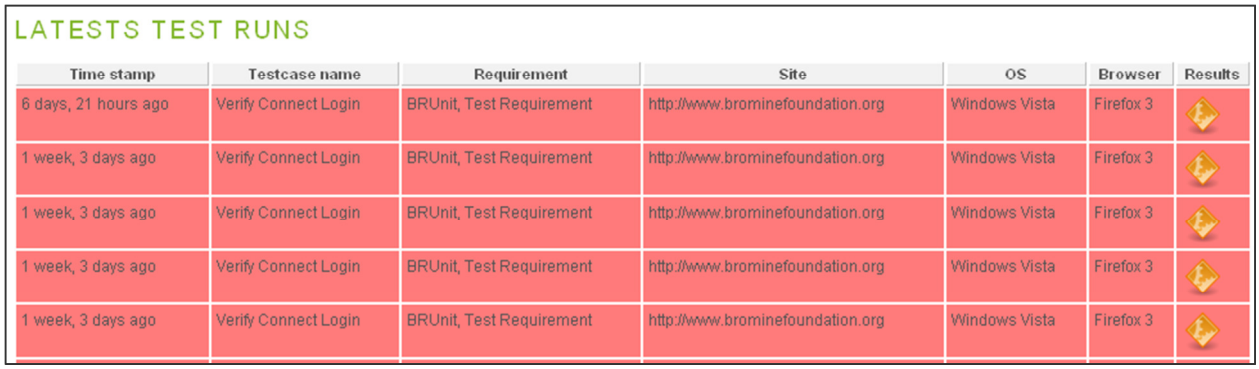


LATESTS TEST RUNS

Time stamp	Testcase name	Requirement	Site	OS	Browser	Results
6 days, 21 hours ago	Verify Connect Login	BRUnit, Test Requirement	http://www.brominefoundation.org	Windows Vista	Firefox 3	
6 days, 21 hours ago	Verify Connect Login	BRUnit, Test Requirement	http://www.brominefoundation.org	Windows Vista	Firefox 3	
6 days, 21 hours ago	Verify Connect Login	BRUnit, Test Requirement	http://www.brominefoundation.org	Windows Vista	Firefox 3	
1 week, 3 days ago	Verify Connect Login	BRUnit, Test Requirement	http://www.brominefoundation.org	Windows Vista	Firefox 3	
1 week, 3 days ago	Verify Connect Login	BRUnit, Test Requirement	http://www.brominefoundation.org	Windows Vista	Firefox 3	
1 week, 3 days ago	Verify Connect Login	BRUnit, Test Requirement	http://www.brominefoundation.org	Windows Vista	Firefox 3	
1 week, 3 days ago	Verify Connect Login	BRUnit, Test Requirement	http://www.brominefoundation.org	Windows Vista	Firefox 3	

4.3.3. Latest Tests Failed

This module will display only the Failed Tests which you can check for doing your analysis and making your final report. See the screen shot given below. Most of the details are self explanatory.

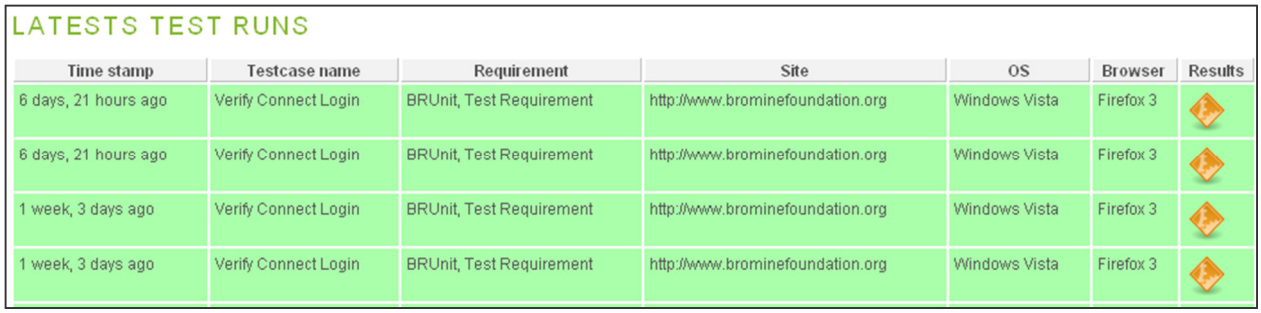


LATESTS TEST RUNS

Time stamp	Testcase name	Requirement	Site	OS	Browser	Results
6 days, 21 hours ago	Verify Connect Login	BRUnit, Test Requirement	http://www.brominefoundation.org	Windows Vista	Firefox 3	
1 week, 3 days ago	Verify Connect Login	BRUnit, Test Requirement	http://www.brominefoundation.org	Windows Vista	Firefox 3	
1 week, 3 days ago	Verify Connect Login	BRUnit, Test Requirement	http://www.brominefoundation.org	Windows Vista	Firefox 3	
1 week, 3 days ago	Verify Connect Login	BRUnit, Test Requirement	http://www.brominefoundation.org	Windows Vista	Firefox 3	
1 week, 3 days ago	Verify Connect Login	BRUnit, Test Requirement	http://www.brominefoundation.org	Windows Vista	Firefox 3	

4.3.4. Latest Tests Passed

This module will display only the Passed Tests, which you can check for doing your analysis and making your final report. See the screen shot given below. Most of the details are self explanatory.



LATESTS TEST RUNS

Time stamp	Testcase name	Requirement	Site	OS	Browser	Results
6 days, 21 hours ago	Verify Connect Login	BRUnit, Test Requirement	http://www.brominefoundation.org	Windows Vista	Firefox 3	
6 days, 21 hours ago	Verify Connect Login	BRUnit, Test Requirement	http://www.brominefoundation.org	Windows Vista	Firefox 3	
1 week, 3 days ago	Verify Connect Login	BRUnit, Test Requirement	http://www.brominefoundation.org	Windows Vista	Firefox 3	
1 week, 3 days ago	Verify Connect Login	BRUnit, Test Requirement	http://www.brominefoundation.org	Windows Vista	Firefox 3	