Mobile Application Performance Testing (Opera Mobile Browser Emulator) – IBM Rational Performance Tester

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March 23, 2016

Introduction

This article will demonstrate how you can performance test a web application accessed via the Opera Mobile Emulator using IBM Rational Performance Tester. It would also cover the basic configuration required to be set on the Opera Mobile Browser Emulator from IBM Rational Performance Tester perspective. You would also get to know the key parameters which need to be focused on, in order to capture the traffic via RPT's proxy port.

Opera Mobile Emulator Features

The ability to test web data in a multi configuration environment is accounting to be a costly affair and cannot be overlooked with respect to the business projects. Undoubtedly the Mobile Emulators have proven to be a useful tool right from the designers to developers and testers.
These days most of the browser configurations also provide built-in emulator kind of functionality, Firefox browser being exceptional here, but allows it to be added as an external plugin.

Whatever may be the reason here, when competing the browsers against mobile/Desktop emulators, the key success solely depends on the rendering engine incorporated in these. Few browsers may use different rendering engines such as Blink (used by Chrome and Opera), Trident (Used by Internet Explorer), but the challenge remains about how consistently the data or rather the page elements/contents are getting displayed.

Well a lot depends on such factors when you are getting into performance testing such data. Emulators are pretty much exactly as their names suggest, they emulate how a browser would render a web page. The obvious benefit is the ability to test out your web pages under multiple browsers without having multiple installations of browser applications and versions installed on your computer.

In this section, we shall focus on the Opera Mobile Emulator which is basically gets installed as a native application and easy to install. Upon launching this, you would experience a selective list of various profiles which spawns different set of phone configurations as you see below

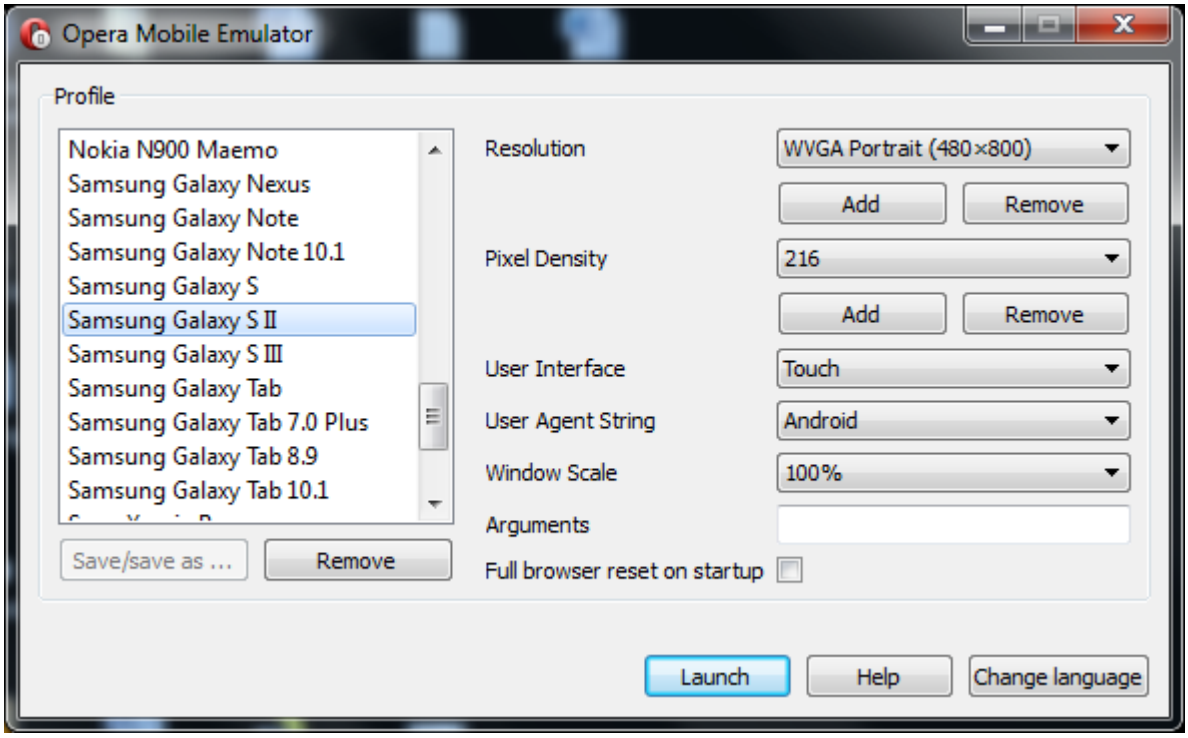


Figure01: Profile Selector

These profiles are pre-configured with popular profile configurations. By selecting any of the given profile and clicking "Launch" button will help you invoke the respective Opera Mobile browser instance.

From IBM Rational performance Tester perspective, you should be able to record traffic which communicates or rather flows using the HTTP protocol over TCP/IP. However the traffic gets recorded by RPT only when the data is flown via RPT's proxy port which we shall discuss in later part of the section.

RPT – Record Playback Features

IBM Rational Performance Tester is generally a user load performance testing application and is based on Eclipse platform and monitoring framework Hyades. A versatile performance testing solutions are currently being addressed by RPT and can effectively help performance engineers to verify and validate the performance bottlenecks of the system under test.

The offerings include Eclipse based UI interface with various perspectives, Built-in report generation capabilities covering Transaction reports, Response time variation reports , Resource Monitoring data and so on.

On the other hand, it also provides customization options (Java Scripting) for advanced analysis and expert testers, and provides access to a wealth of test information.

IBM Rational® Performance Tester creates, executes, and analyzes tests to validate the reliability of complex e-business applications. Some of the features include:

1. Provides testing that requires no or very minimal programing knowledge.
2. Find and diagnoses the cause of performance problems.
3. Advanced data access and manipulation.
4. Automatic data correlation and synchronization of input parameters.
5. Verification points for content matching response code checking, response size checking, and page title checking.
6. Automatic ARM instrumentation for transactions to correlate with downstream applications and resources for problem isolation.
7. Improved scalability allows for higher playback rates and more concurrent playbacks on a single system, which limits costs of licenses and maintenance.
8. Network level statistics for DNS, SSL Connect time, Server Response Time and Delivery.
9. Rendered HTML view of web pages visited during test recording.

A performance test allows you to record sessions with an HTTP application, and generates tests from the recording. Creating a Performance test involves three steps :

1. Starting a recording
2. Starting an application
3. Starting a test generator

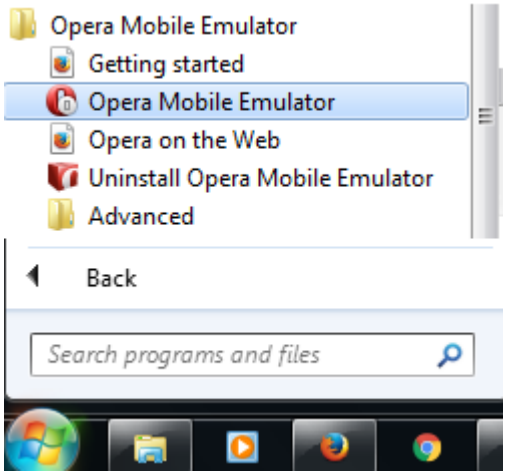
IBM® Rational® Performance Tester automates these steps for you with the help of user friendly user Interface Wizard. For more information on how to invoke the recording process and script the user actions performed on the Application under Test, you may refer the IBM Knowledge Center.

Opera Mobile Emulator Configuration

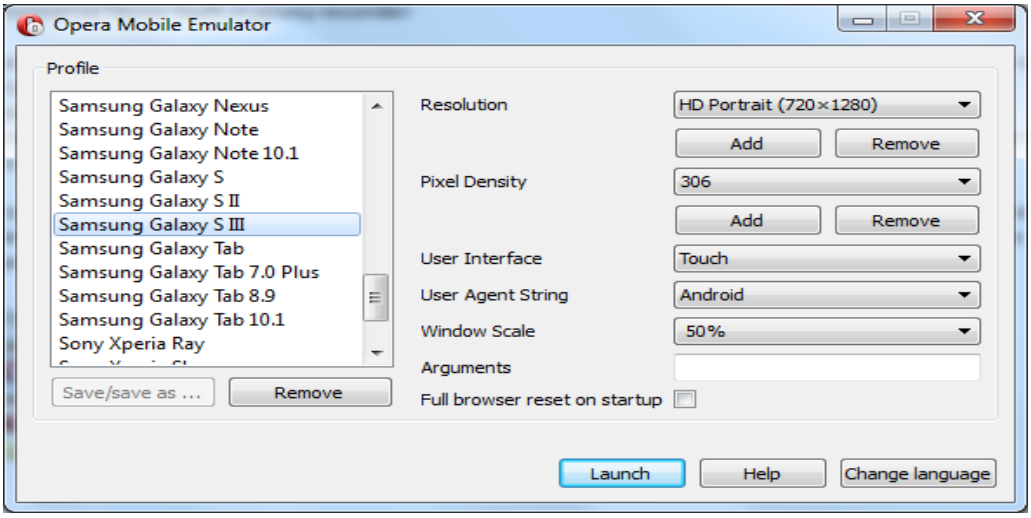
In-order to demonstrate how RPT records HTTP request data from the application browser launched in the Opera Mobile Emulator, you need to understand how to configure this Emulator with IBM Rational Performance Tester built-in proxy recorder

Rational Performance Tester supports browser configurations that connect directly to the Web Server as well as connection via a HTTP/HTTPS proxy server. The first thing to confirm is if you are using a supported configuration setting prior to attempting a recording.
For similar configurations related to any other browsers such as Internet Explorer or Mozilla Firefox and so on, you may refer this article here.

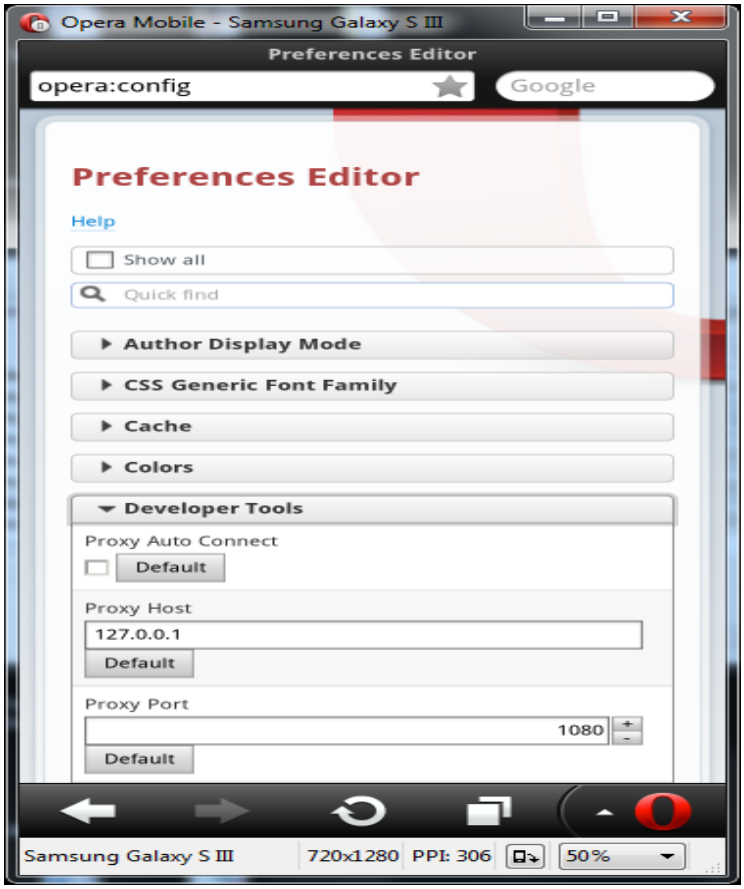
For configuring the Opera Mobile Emulator with the proxy settings provided from Rational Performance Tester perspective, you have to first launch the Opera Mobile Emulator as shown below and select the respective profiles under test



As soon as the emulator is launched you see the below dialog listing various profiles specific to different mobile devices. Using the profiles on the left side, you can launch one or more Opera Mobile instances with device-specific settings.



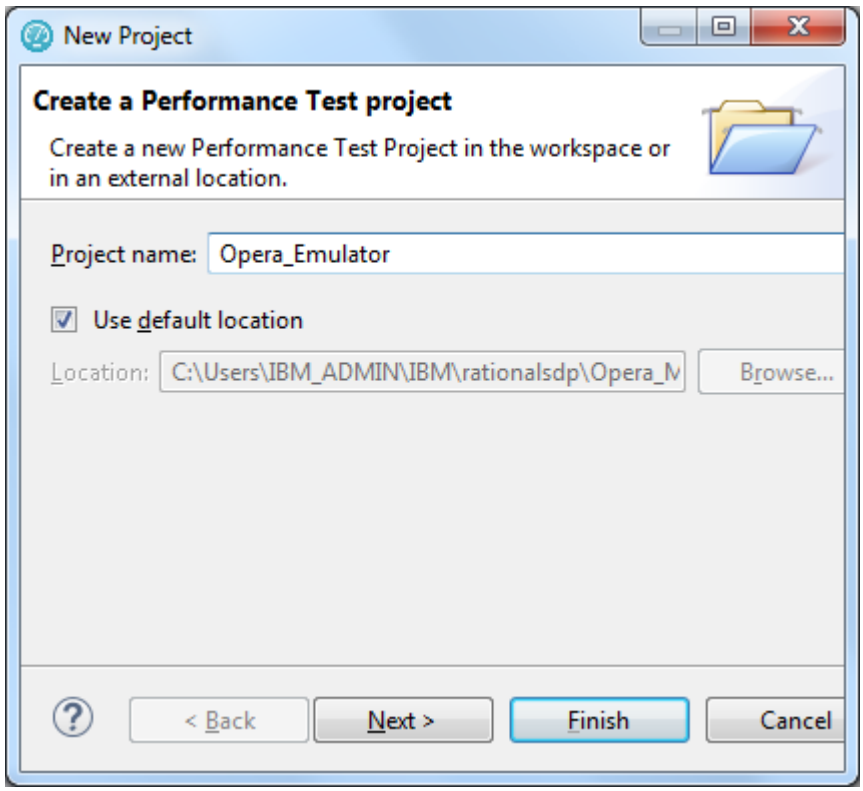
Upon clicking "Launch" button you are greeted with the below window frame. Navigate to **Opera:Config** to setup the proxy host and port values.



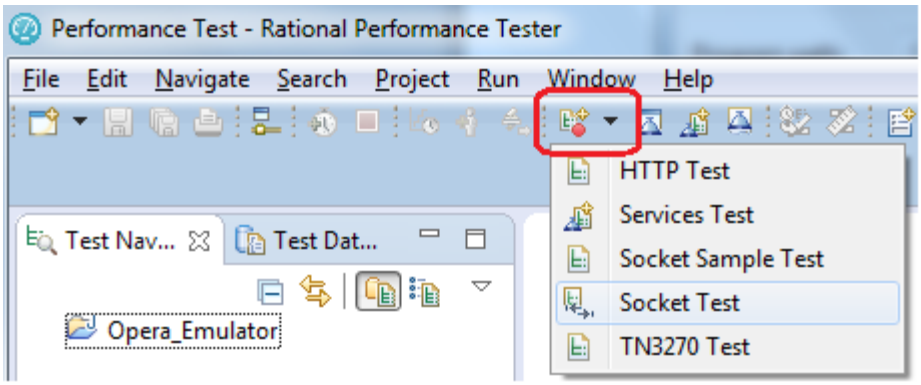
So in this section, configure the client (Opera Mobile Emulator) to use a HTTP proxy server at *<RPT_Host>*:1080

Note1: < *RPT_Host*> is the name of the computer on which you are running the recorder. Typically localhost (or 127.0.0.1) would work. In some cases you might be running the application to be recorded on a different computer than the recorder.

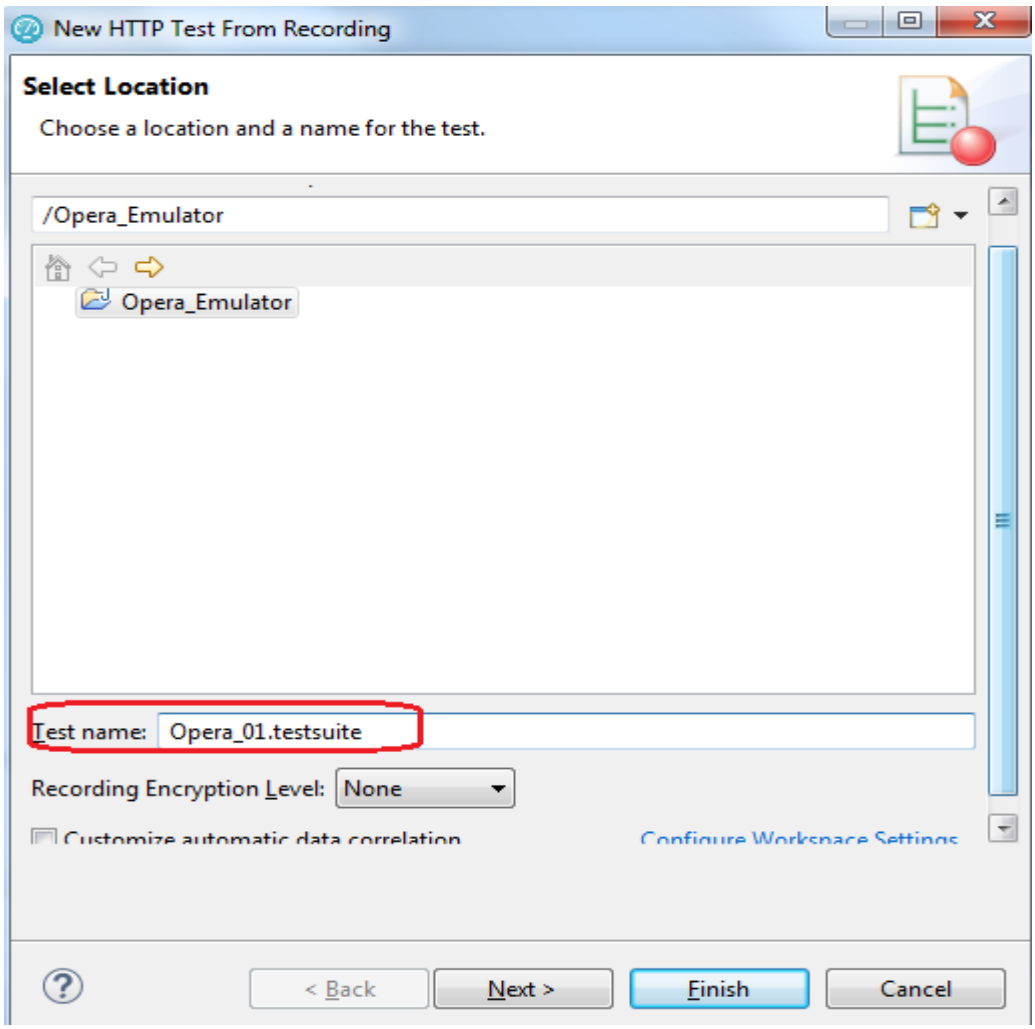
Once this configuration is completed, you may launch IBM Rational Performance Tester and create a new Performance Project as shown below. The project name can be user defined one.



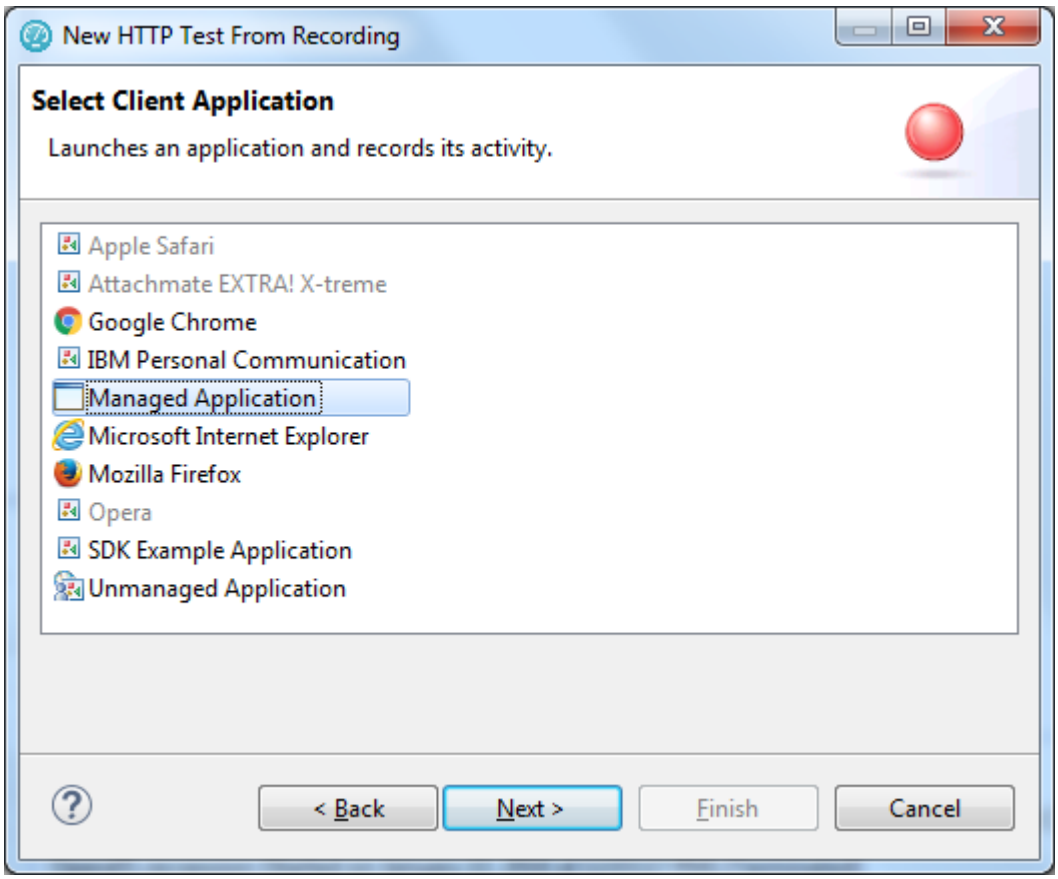
Once the Performance Project is created, invoke the built-in recorder option by clicking on the **"New Test From Recording"** button visible on the top of the RPT application.



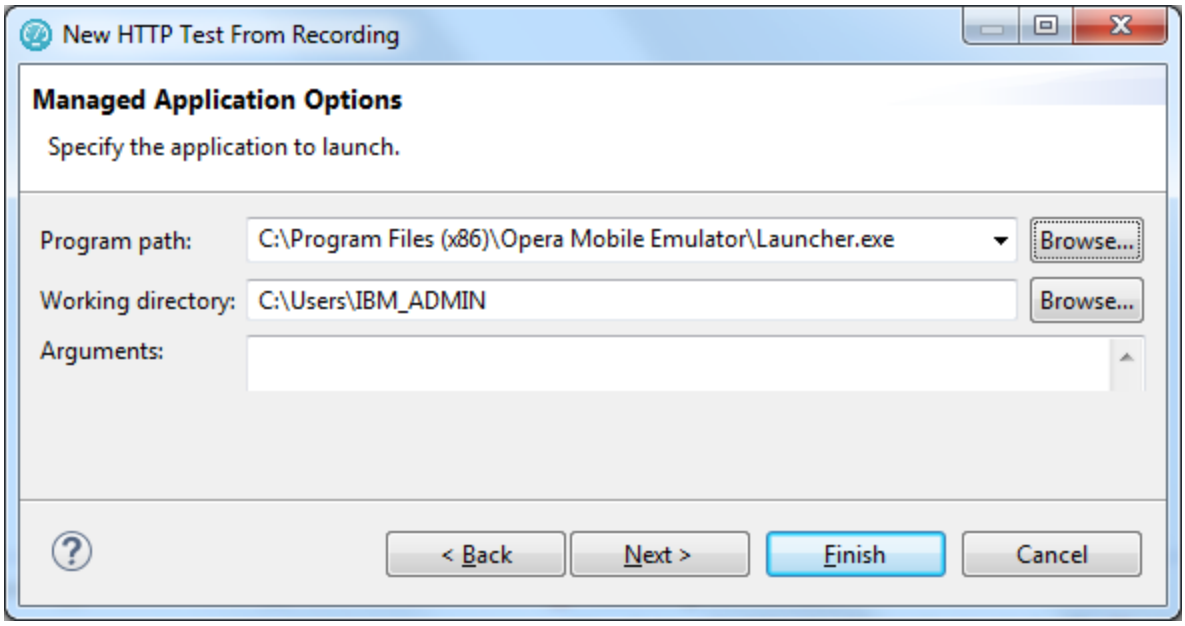
Select the **"Socket Test"** recorder option and Specify a Test name



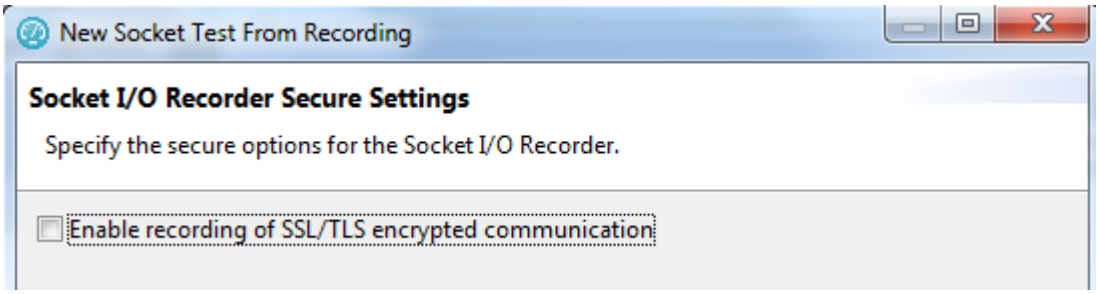
Select "**Managed Application"** as the client Application type and click "Next".



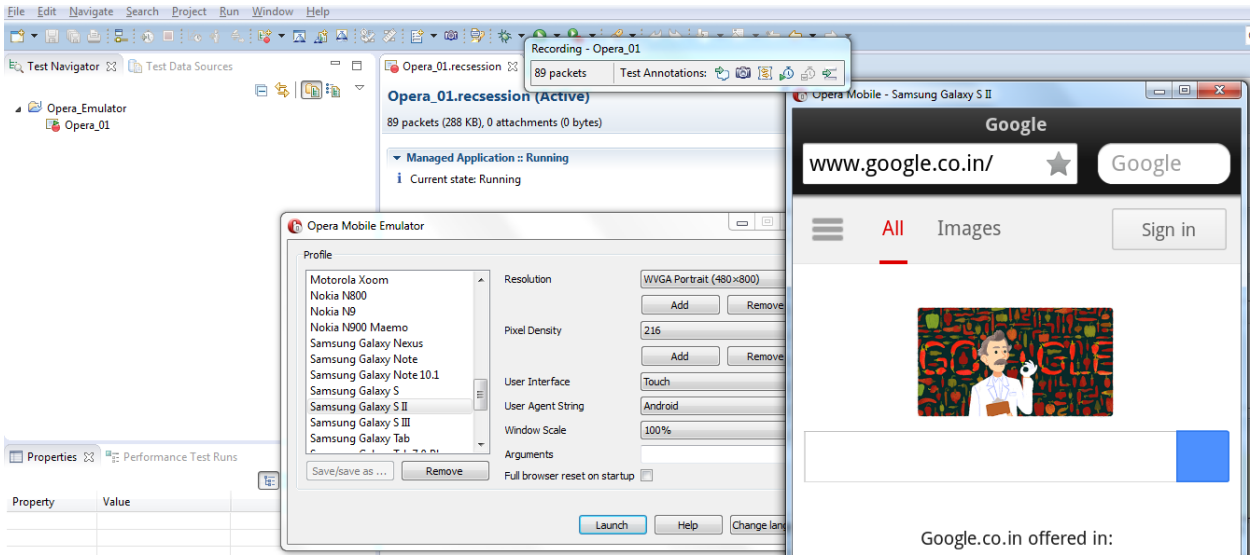
Navigate to the “Launcher.exe” file as shown below. The “Launcher.exe” would ideally launch the window where you are greeted with multiple profile selector options. The location of the “Working Directory” could be any folder where you have the “Read/Write” Access.



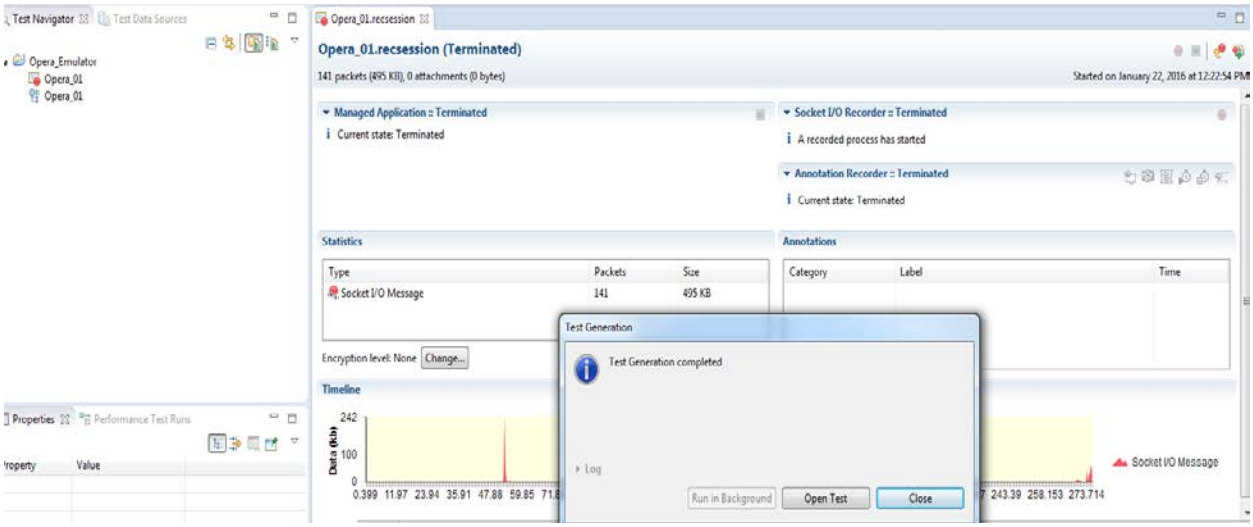
Keep this option unchecked. Click “Next” >> “Finish” button.



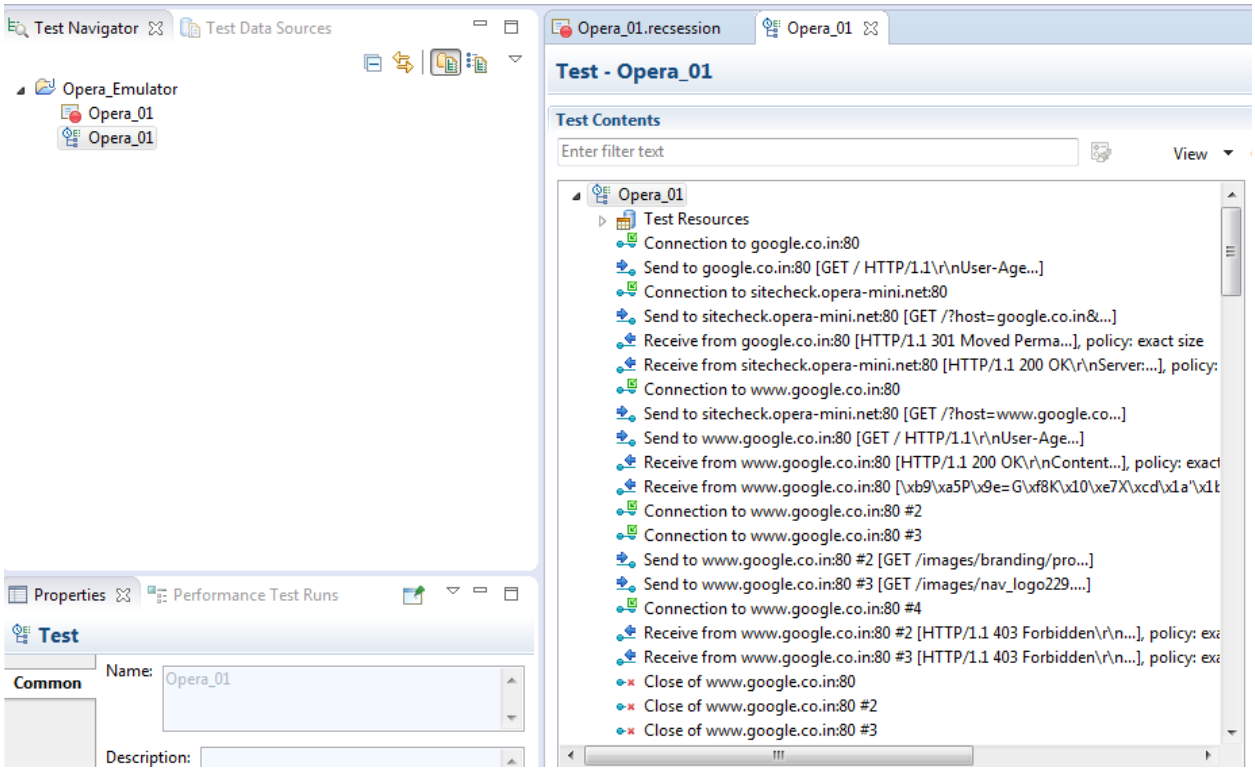
As soon as you click on “Finish” button, you are greeted with a Profile selector window where you can select one of the mobile device profile and click “Launch” button. This would invoke the Opera Mobile browser and let’s you specify or access any websites. The traffic flowing into the Opera Mobile browser would let the RPT’s proxy port (1080) to be sniffed by the active running RPT instance. The Annotation bar on the top here reflects the packet size being captured.

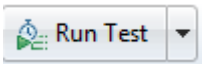


Upon completion of the use-case performed on the Opera browser here, you need to close this along with the Opera Mobile Emulator window. This would bring up the RPT instance active and you see that the use-case captured is incorporated in the generation of the Test scripts. Click “Open Test” button.

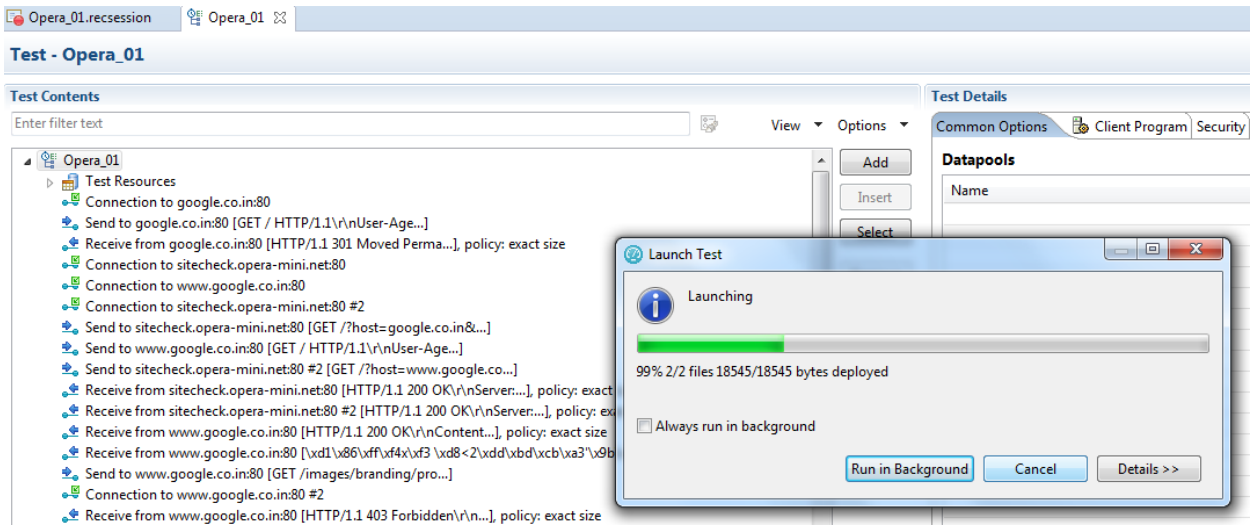


The RPT generated scripts would be seen as below:

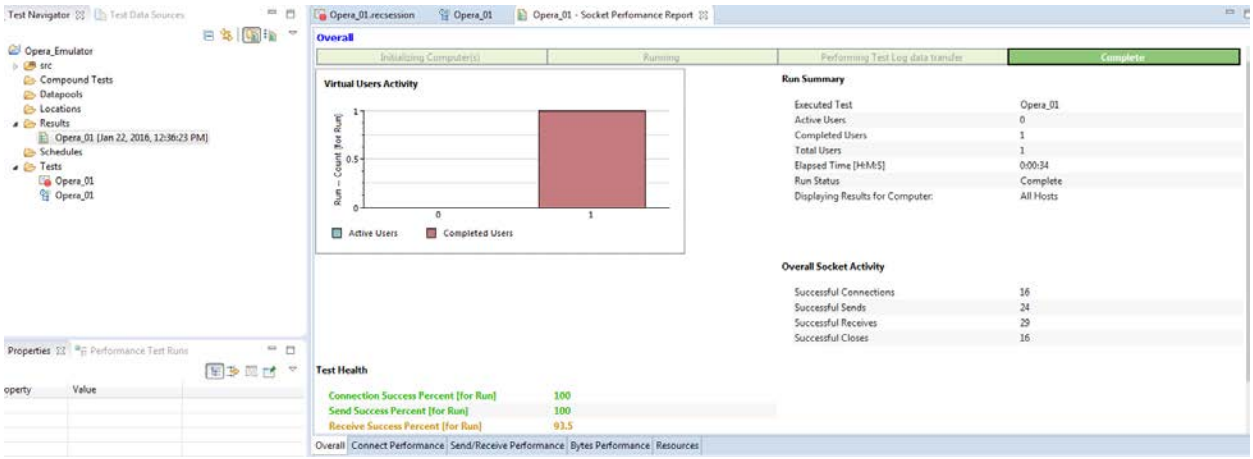


The recorded script can be played back by clicking on the 

button present on the right top corner of the RPT screen.



Upon completion of the run, RPT generates a socket report as shown below.



For more detailed information about Socket Performance statistical report analysis, please visit the [IBM Knowledge Center].

References:

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2. https://www.smashingmagazine.com/2012/08/responsive-designs-opera-mobile-emulator/
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