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UFT Digital Lab
Appium (Open Source) Extension

Extend the power of open source testing using UFT Digital Lab's integrations with tools such as Appium and Selenium. Save budget and lower technical barriers all the while supporting continuous testing of omnichannel mobile apps.

UFT Digital Lab with Appium at a Glance:

- **Remote Tests Execution:**
  Remote tests execution in parallel with simplified architecture

- **iOS Test Automation:**
  iOS tests automation without the need for a Mac

- **Smart Lab Management:**
  Smart lab management capabilities allow users to choose a device by any criteria or capabilities, such as a combination of iPhone and iOS versions, automatically locate an available device, reserve and execute the script on it, and see device users

- **Services Virtualization:**
  Execute test for mobile app and simulate external REST API, Bluetooth and NFC services

- **Network Virtualization:**
  The embedded OpenText Network Virtualization software can virtualize real-world network conditions including bandwidth, latency, jitter, and packet loss on multiple platforms alongside all test activities

Cross-Platform Mobile Testing

OpenText™ UFT Digital Lab amplifies team productivity by providing a centralized, enterprise-level, end-to-end lab and management gateway of distributed real mobile devices and emulators that helps teams develop, debug, test, monitor, and optimize their omnichannel mobile applications to promote an enhanced user experience across all digital touchpoints. Developers and testers can validate all aspects of the mobile user experience including functionality, performance, and security using services simulations and network virtualization. UFT Digital Lab supports continuous testing and drives continuous improvement and optimization by analyzing availability and performance of mobile application via production monitoring.

For many reasons, Appium is a popular mobile app testing framework. Developers use their preferred integrated development environment (IDE) to develop and run the test and choose their programming language. Better still, Appium is open source and free.

Yet, while Appium is a good mobile test execution framework, it lacks lab management capabilities and doesn't provide everything needed for companies that deal with large projects and frequent app releases that must be proven to perform well on any device, any network, and in any user context. These companies have additional enterprise requirements, such as:

- Parallel executions in distributed locations
- Scalable and simplified architecture for on-premises and hybrid environments
- Proliferation of devices used
- Low maintenance costs
- Server authentication with roles and permissions

UFT Digital Lab integrates with Appium to address these needs, and more. UFT Digital Lab extends Appium with defects fixing and optimizations for specific Appium flows' performance, such as finding elements and objects. In some cases, UFT Digital Lab maintains backward compatibility for APIs which were deprecated, so scripts can be maintained across Appium versions. Together, UFT Digital Lab and Appium create a unique combination to empower end-to-end mobile application lifecycle development and testing on any combination of real devices and emulators using the IDE and scripting languages of choice.

Unique Combination Delivers Superior Testing Platform

Meet enterprise requirements by relying on UFT Digital Lab's out-of-the-box support for Appium. With UFT Digital Lab, your mobile development teams can continue to use their preferred testing framework and development language while taking advantage of enterprise-grade capabilities powered by UFT Digital Lab. These capabilities help your organization easily scale mobile application performance testing projects, achieve aggressive testing goals, run tests on multiple devices under different network conditions in parallel, and rapidly release superior applications to the market.
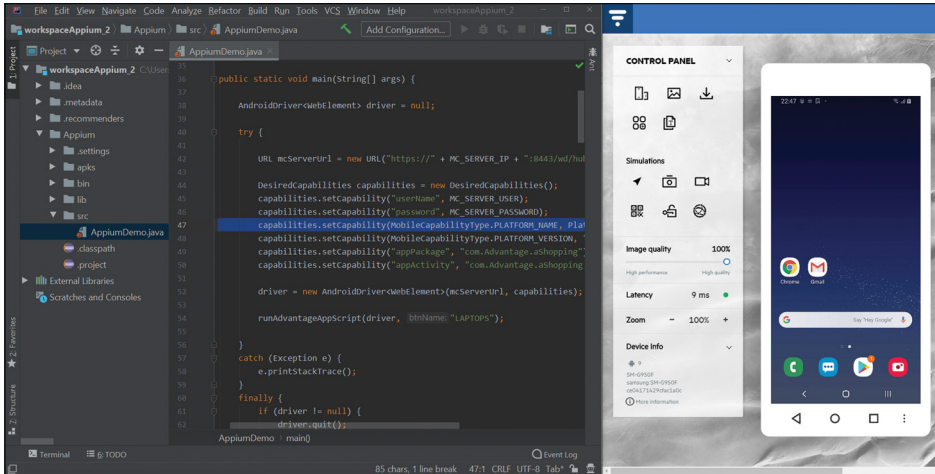
Figure 1. Your development team can now run Appium scripts with UFT Digital Lab

The Combination of UFT Digital Lab and Appium Delivers These Key Advantages:

- **Simple maintenance**—Simplify the parallel executions process and achieve iOS test automation using Appium without a Mac

- **Device management**—Rely on capabilities for scheduling device reservations, and controlling devices remotely

- **App management**—Upload app to UFT Digital Lab, automatically install app on the device, and gain a central view of all app versions

- **Fewer tests**—Test multiple apps, including systems apps, in a single run

- **User management**—Manage roles and permissions and device pools access

- **Device flexibility**—Select test device by specifying its capabilities in a very flexible manner; you don't have to specify the device UDID or exact version number

- **End-to-end mobile security**—Assess the security of source code, binaries, and the mobile app to underscore vulnerabilities across the client side

- **Remote Viewer**—Access a live remote demo while tests are running

- **Network Virtualization**—Emulate real-world network conditions to observe the network impact on end user experience and use NV Insights report to analyze performance results and view recommendations for improving application performance

- **Service Virtualization**—Accurately simulate the behavior of the actual component and enable Developers and Testers to begin performing functional or performance testing right away, in parallel—even when the real services are not available, when data access is restricted, when data is difficult to attain, or when the services are not suitable for the particular test

Ways to Improve Mobile Testing

Here are ways to significantly improve mobile testing with UFT Digital Lab and Appium:

- Reduce the dependencies on a Mac

- Eliminate the need for Selenium Grid and multiple Appium server instances

- Enable full automation on multiple apps, including system apps, within the same test

- Emulate real-world network conditions to observe the actual user experience of mobile users with different mobile connections (such as 3G and 4G)

- Use NV Insights report to analyze and improve application performance

Using Appium with UFT Digital Lab: 4 Simple Steps

It's easy to work with UFT Digital Lab and Appium. Just follow these four simple steps:

1. Plug any Android or iOS device into UFT Digital Lab, locally or remotely.

2. Let UFT Digital Lab automatically discover the connected devices.

3. Upload your apps to UFT Digital Lab via API (link) or via the UI.

4. Execute your Appium mobile application test against any device locally or from your Continuous Integration framework.

How It Works

Here is sample code used to get UFT Digital Lab and Appium to work together.

Select a Device by Capabilities

```
//Capabilities:
DesiredCapabilities capabilities = new
DesiredCapabilities();

//Device capabilities—use one or more
    capabilities
capabilities.setCapability
("platformName", "Android");
//use any android device
capabilities.setCapability
("platformVersion", ">5.0.1");
```

```
//use version 5.0.1 or above
capabilities.setCapability
("deviceName", "LG");

//in Appium only you must supply the UDID
//capabilities.setCapability("udid",
DEVICE_UDID);
```

Modify your Appium code to point to the UFT Digital Lab server. In the code that starts the session, replace the Appium server URL and port with the URL and port of UFT Digital Lab using the following format (see below for Java examples):

Start Android Session with UFT Digital Lab
```
driver = new AndroidDriver(new
URL("https:// UFTMServer:
<port>/wd/hub"), capabilities);
```

Start iOS Session with UFT Digital Lab
```
driver = new IOSDriver(new
URL("https://UFTMServer>:
<port>/wd/hub"), capabilities)
```

Set Authentication to UFT Digital Lab Server (Optional)
```
capabilities.setCapability("oauthClientId",
UFTM_SERVER_CLIENT_ID);
capabilities.setCapability("oauthClientSecret",
UFTM_SERVER_CLIENT_SECRET);
```

Running Selenium Scripts with UFT Digital Lab
Here are some sample codes used to run Selenium mobile app testing on real devices using UFT Digital Lab:

```
// Use chrome browser
DesiredCapabilities capabilities =
DesiredCapabilities.chrome();
```

```
// Use Android device
capabilities.setCapability("platformName",
"Android");
```

```
// Endpoint for UFT Digital Lab Server http://
{ServerAddress:port}/wd/hub
RemoteWebDriver wd =
new RemoteWebDriver(new
URL("https://UFTM_SERVER:<port>/wd/hub"),
capabilities);
```

Full Examples for Selenium WebDriver for Android and iOS
```
public void test() throws
MalformedURLException {
DesiredCapabilities capabilities =
DesiredCapabilities.chrome();
capabilities.setCapability("oauthClientId",
UFTM_SERVER_CLIENT_ID);
capabilities.setCapability("oauthClientSecret",
UFTM_SERVER_CLIENT_SECRET);
capabilities.setCapability("platformName",
"Android");
RemoteWebDriver wd =
new RemoteWebDriver(new
URL("https://UFTM_SERVER:<port>/wd/
    hub"),
capabilities);
```

```
try {
wd.manage().timeouts().
implicitlyWait(60, TimeUnit.
SECONDS);
wd.get("http://SOME_URL");
WebElement element =
wd.findElement(By.name("q"));
element.sendKeys("Cheese!");
element.submit();
}finally {
wd.quit();
}
}
```

```
public void test() throws
MalformedURLException {
DesiredCapabilities capabilities =
DesiredCapabilities.safari();
capabilities.setCapability("oauthClientId",
UFTM_SERVER_CLIENT_ID);
capabilities.setCapability("oauthClientSecret",
UFTM_SERVER_CLIENT_SECRET);
capabilities.setCapability("platformName",
"Ios");
RemoteWebDriver wd =
new RemoteWebDriver(new
URL("https://UFTM_SERVER:<port>/wd/
    hub"),
capabilities);
```

```
try {
wd.manage().timeouts().
implicitlyWait(60, TimeUnit.SECONDS);
wd.get("http://www.google.com");
WebElement element =
wd.findElement(By.name("q"));
element.sendKeys("Cheese!");
element.submit();
}finally {
wd.quit();
}
}
```

Parallel Execution of Tests
Here is a look at the steps for parallel execution of Appium tests with UFT Digital Lab.

1. Create Jenkins job for parallel mobile application test execution or alternatively create multiple jobs.

2. Specify the path for the Appium test.

3. Use parameterization in Jenkins to specify apps and the device capabilities.

4. Execute the job.

UFT Digital Lab will take the following actions during test initialization:

- Discover the available devices per the requested capabilities and allocate them for the tests.

- If the app is not installed already, UFT Digital Lab will automatically install it on the designated devices.

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- Execute the mobile application test simultaneously on multiple devices.

For a more detailed technical view of automated mobile performance testing with the UFT Digital Lab–Appium combination, explore our Working with Appium site.

Get the Best of Both Worlds

You can now easily run Appium and Selenium scripts with UFT Digital Lab to empower your mobile performance testing processes. This combination gives you the best of both worlds: a great open-source tool to develop test automated mobile testing for mobile native, hybrid, and web apps coupled with an integrated software development testing suite that helps you rapidly build, test, monitor, and deliver high-quality mobile applications.

For More Information about UFT Digital Lab

- Review the UFT Digital Lab product page
- Download the Mobile testing checklist for more on key criteria and considerations.
- Explore UFT Digital Lab Help Center for more in-depth tutorials and documentation.

Learn more at
www.microfocus.com/opentext

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