
Time Shift Testing with Time Machine® and TestComplete

TIME MACHINE AND THE TIME MACHINE SYNC SERVER

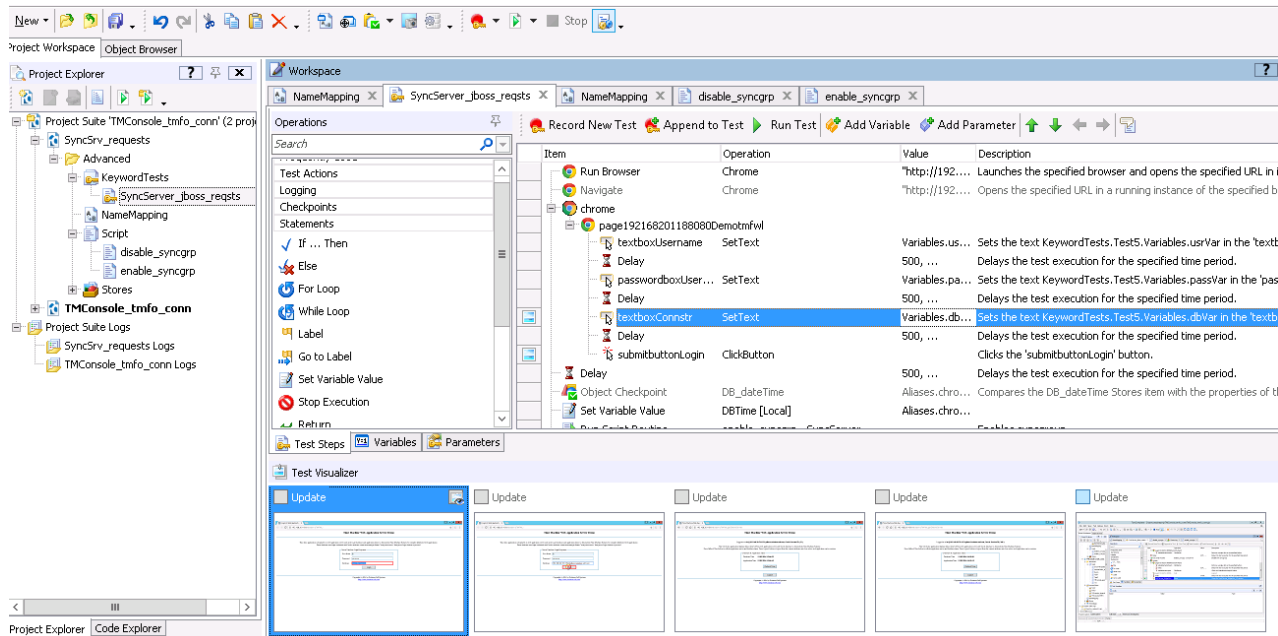
Many companies have implemented rigorous functional testing strategies to ensure an application under test meets the goals set forth in the functional requirements. With projects today growing ever more complex, test automation is essential to validating and releasing on time and within budget. [Time Machine](#) enables automation for date and time sensitive logic by using virtual clocks that avoid the need to change the system clock on a server. The [Time Machine Sync Server](#) allows for the broadcast of a synchronous virtual clock to specified targets that may be deployed across different computing nodes in the enterprise. These groups of related targets are known as Sync Groups. This paper describes how to leverage the Time Machine Sync Server API to time travel an application-under-test (AUT) while automating tests with TestComplete from SmartBear Inc.

TEST AUTOMATION AND SMARTBEAR TESTCOMPLETE

SmartBear TestComplete is an automated functional, performance and regression testing tool that allows companies to develop various automated tests based on the project test cases. TestComplete supports major programming languages and platforms such as Java, dot Net, Oracle, SAP and Siebel.

A tester has the ability to record their interaction with the AUT into their preferred scripting language such as, JavaScript, Python and VBScript, and then play back the actions at much greater speeds. Often times, a tester will choose to evolve the scripts as to verify certain data points.

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Another feature of TestComplete is the ability to simulate, programmatically, data or control flow through API testing. There are numerous supported types of API tests such as Web service, REST, Database.

USING TESTCOMPLETE AND TIME MACHINE SYNC SERVER

Once the Sync Groups are created, the developers and testers have the ability to create automated scripts that invoke the Sync Server API, thus allowing the enabling and disabling of Sync Groups, as well as the changing of the virtual clock for given Sync Group. Enabling a Sync Group establishes the virtual clocks and allows the application to time travel to the desired date/time. When testing multiple date and time sensitive test cases, progressing the virtual clocks forward in time is recommended because some applications may react negatively to the clock going backwards in time.

http://sync_server_address:sync_server_http_port/tmSyncServer?password=pwd&action=action_name&prm_list

The following code is an example of a TestComplete Python script, `enable_syncgrp`, that enables a Sync Group called `sync1` that establishes a virtual clock for the Sync Group of `30-Sept-2018 12:15:00`. In the screen capture above, you can see that the script has been added to the AUT keyword tests in the TestComplete project.

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```
from os import sys

sys.path.append("C:\Python27\Lib\site-packages")

import requests

def SyncServer():

    tmsync_srv = "http://localhost:4600/tmSyncServer?"

    ws = tmsync_srv

    data = {'username': 'admin', 'password': 'pwd1', 'action': 'EnableSyncGroup', 'name': 'sync1', 'abs_time': '093020181215', 'speed': '2'}

    headers = {"Accept": "text/plain"}

    r=requests.put(ws,params=data)
```

USING SMARTBEAR TESTCOMPLETE

Save Costs: reduced time for script creation

Improved quality: integrated functional and performance testing, script or keyword

Development platform: VBScript, Python, JavaScript

Supported platforms: Java, .NET, mobile

Application: used for functional and performance test mobile, UI and Web services

FEATURES & BENEFITS OF USING TIME MACHINE SYNC SERVER

Save Costs: Hardware and software maintenance costs

Boost Productivity: Boost engineering team productivity

Mitigate Failures: Mitigate risks for mission-critical application failures.

Successful Deployments: Ensure large scale software projects finish on time and under budget.

Travel to Past, Future, running or frozen clock: Virtual clocks can be set to the past or future, absolute or relative clocks.

Variable Speed Clock: Using the Variable Speed Clock function, applications can run up to 1000 times faster or slower than real time.

One System can perform multiple simultaneous tests: Concurrent testing of multiple virtual clocks enable one test environment to become multiple test environments.

Synchronization: Enable to sync multiple hosts, users/groups, Databases without time zone restraints.

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