Microsoft Test Manager Visual Studio 2012

Test Impact Analysis

Wednesday, July 18, 2012

Visual Studio ALM Rangers
Anutthara Bharadwaj, Hassan Fadili, Richard Fennel, Richard Albrecht
Microsoft Corporation

Visual Studio ALM Rangers
This content was created by the Visual Studio ALM Rangers, a special group with members from the Visual Studio Product Team, Microsoft Services, Microsoft Most Valued Professionals (MVPs) and Visual Studio Community Leads.

Table of Contents

Table of Figures

Table of Tables

Foreword by Anutthara Bharadwaj

Wouldn't it be nice if every time a developer made a checkin, you could automatically figure out exactly the right set of tests to run? The test impact analysis scenario in Visual Studio ALM attempts to provide exactly this value to the end user. Whether you want to run tests as part of your automated build or as part of manual test runs in Microsoft Test Manager, the test impact analysis data diagnostic adapter enables users to identify a subset of tests that are impacted by changes between target builds. As adoption of VS ALM has grown, we have often heard asks from users to provide explicit detailed guidance on how to use the test impact analysis scenario to get to the set of recommended tests.

The Rangers TIA guide seeks to address this ask and provide detailed and comprehensive guidance around the two test impact analysis scenarios available in Visual Studio ALM. The scenarios are described in an easy to follow how-to style with detailed illustrations and snapshots to take you through the workflow. We hope you find this guide useful in your efforts to identify impacted tests automatically.

Anutthara Bharadwaj (Principal Program Manager Lead, Visual Studio ALM Testing)

Introduction

Overview

> This guidance should be used in conjunction with documentation that accompanies the product and Microsoft Developer Network (MSDN) at http://msdn.microsoft.com.

Test impact analysis with unit testing and manual testing was introduced in Visual Studio 2010 and was accessible from the Visual Studio IDE and Microsoft Test Manager. With Visual Studio 2012 test impact analysis is only accessible from the Microsoft Test Manager. This document will provide information on how to setup and use test impact analysis. Also the document will focus the guidance on how to best use manual testing with test impact analysis.

Visual Studio ALM Rangers

Visual Studio ALM Rangers is a special group with members from the Visual Studio Product group, Microsoft Services, Microsoft Most Valued Professionals (MVP) and Visual Studio Community Leads. Their mission is to provide out of band solutions to missing features and guidance.

This guide is intended for Microsoft “200-300 level” users of the Test Impact Analysis feature in Visual Studio. They are intermediate to advanced users of Microsoft Test Manager Features in Visual Studio and have in-depth understanding of the product features in a real-world environment. Parts of this guide might be useful to novices and experts, but they are not the intended audience for this guide.

Understanding the Epics and Personas

WHAT'S IN THIS CHAPTER?

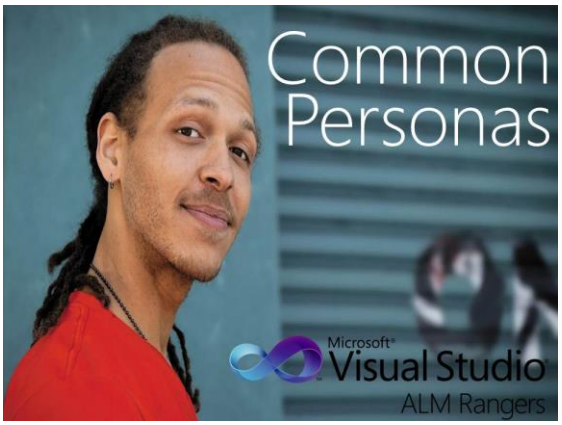
- Purpose of Epics and Personas in this document
- The Tester Persona
- Microsoft Test Manager Visual Studio 2012

Overview

This guidance is based on hypothetical customer profiles, personas, and scenarios (user stories). The intention is to demonstrate, in a realistic and convincing way, how personas leverage technology, along with this guidance, to perform a task and create a quantifiable outcome within their environment.

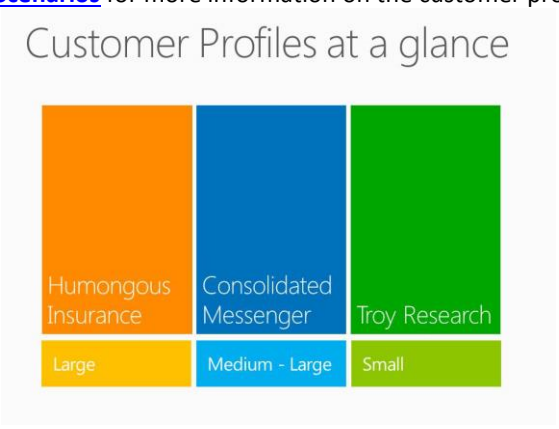
Personas

Refer to **Visual Studio ALM Rangers Personas and Scenarios** [1] for more information on the personas.



Customer types

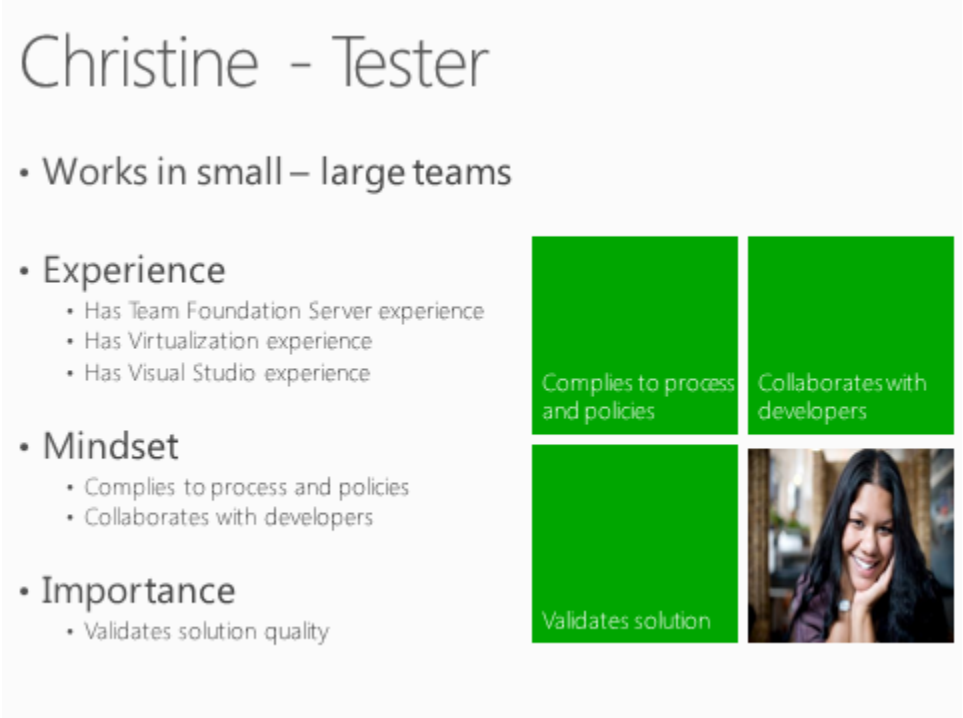
Refer to **Visual Studio ALM Rangers Personas and Scenarios** for more information on the customer profiles.



[1] http://go.microsoft.com/fwlink/?LinkID=230942

Scenarios and Guidance Cross Reference

Christine - "Tester"



Scenario	Refer to page
How to best use manual testing and test impact analysis	9

Table 1 - Christine Scenarios to guidance mapping

How to Best Use Manual Testing and Test Impact Analysis

WHAT'S IN THIS CHAPTER?

- What is Test Impact Analysis?
- Enabling Test Impact Data Collection
- Gather baseline Manual Test coverage data
- Using test Impact data to advise on which Manual Test to run

What is Test Impact Analysis

Though it is preferable to run all test available for a new build of a solution, running a full suite of tests, whether they be manual or automated, can be time consuming.

To provide an alternative to running the entire test suite or having to decide which tests to run yourself, since Visual Studio 2010, Test Impact Analysis is part of the Visual Studio Premium and Ultimate SKU[2]

Test Impact Analysis is a related concept to test code coverage. Test coverage tools tell you what percentage of the code base is covered by tests. By knowing which tests cover which blocks of production code, it is possible to say which tests need to be run if a given block of production code is edited. This technology can be applied to manual tests, as well as to unit tests, as long as suitable diagnostic data is gathered when a manual test is first run.

WARNING

A really common mistake is to try to make use of test impact analysis before a test has been successfully run at least one. Visual Studio/TFS cannot advise of test impact without the data stored from a successful test run. This applies equally to both manual and automated unit tests.

Remember also that test impact data is not collected when you file a bug, irrespective of whether the test is marked as passed or failed.

Enabling the Gathering Test Impact Data

Enabling Test Impact in the Team Build

Team Build is the key to the way Test Impact works with manual testing. When a build is run, as well as compiling the code and running the unit tests it can also perform Test Impact Analysis. It uses the data from previous manual test runs on past builds (of the same build definition) to see which manual tests need to be re-run due to changes in the production code.

Test Impact Analysis for a build is enabled by default. However, the setting can be checked in the build definition. The property **Analyse Test Impact** is in the **Advanced** section of the build definition.

[2] http://msdn.microsoft.com/en-us/library/dd264992.aspx

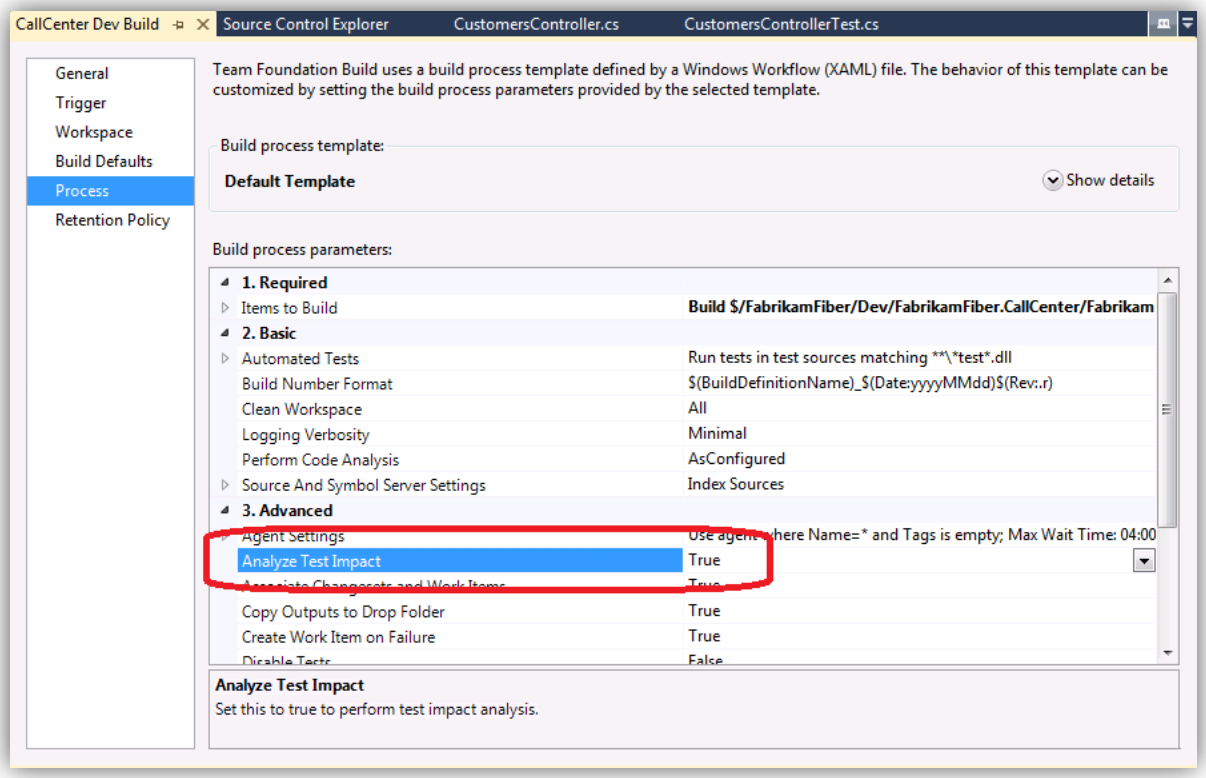


Figure 1 - Setting the Test Impact property of a build definition

Enabling Test Impact Analysis for Manual Tests

Once a build has been defined and run then it is possible to perform manual tests against it. However to gather the test Impact data the test impact data collector must be enabled within Microsoft Test Manager. The process to enable this is as follows

- Load Microsoft Test Manager
- Select your Team Project and Test Plan
- Select the **Plan** Tab
- Select the **Properties** Tab

- Select the **Manual runs: Test Setting** that you wish to use from the combo box (or create a new one)

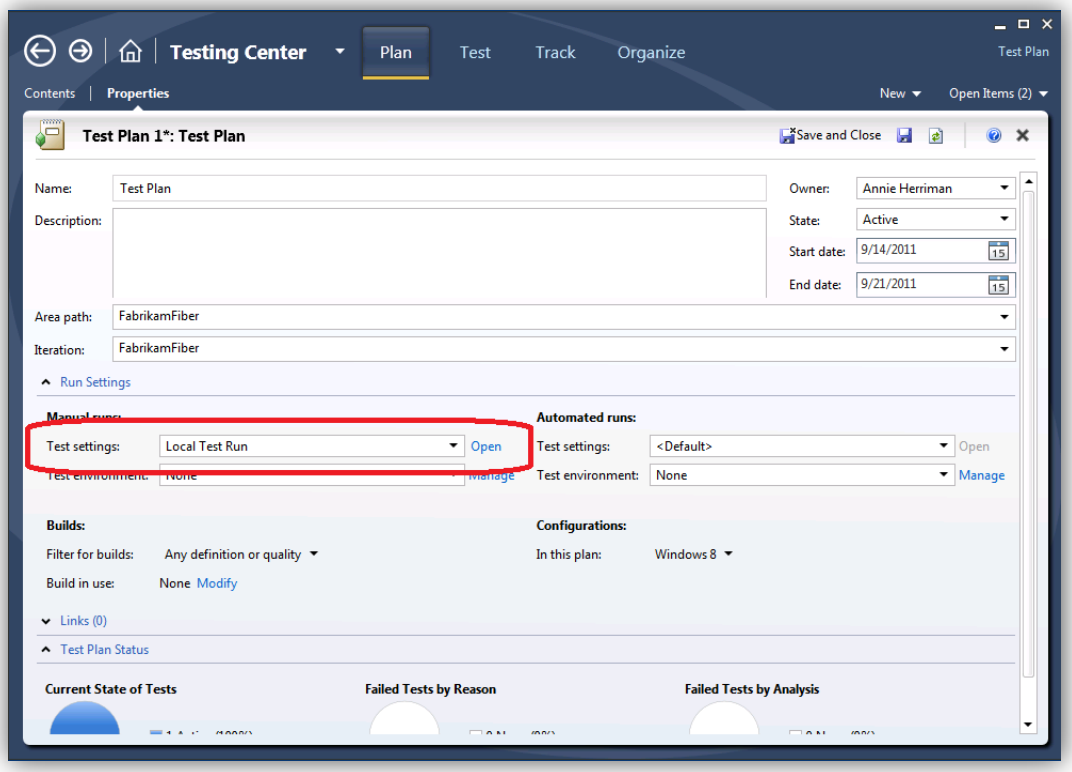


Figure 2 - Selecting the Test Settings

- Make sure that the **Test Impact** diagnostic data collector is enabled

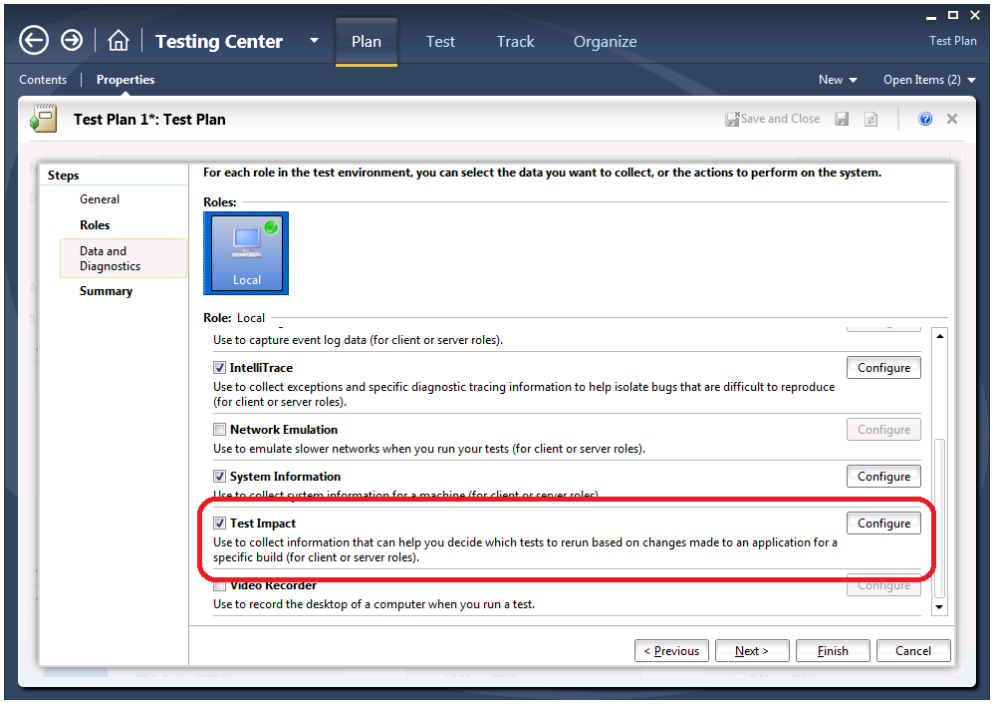


Figure 3 - Enabling Test Impact data collector

- You now have the option to configure what will be monitored by the collector i.e. select which assemblies and/or processes to monitor or ignore

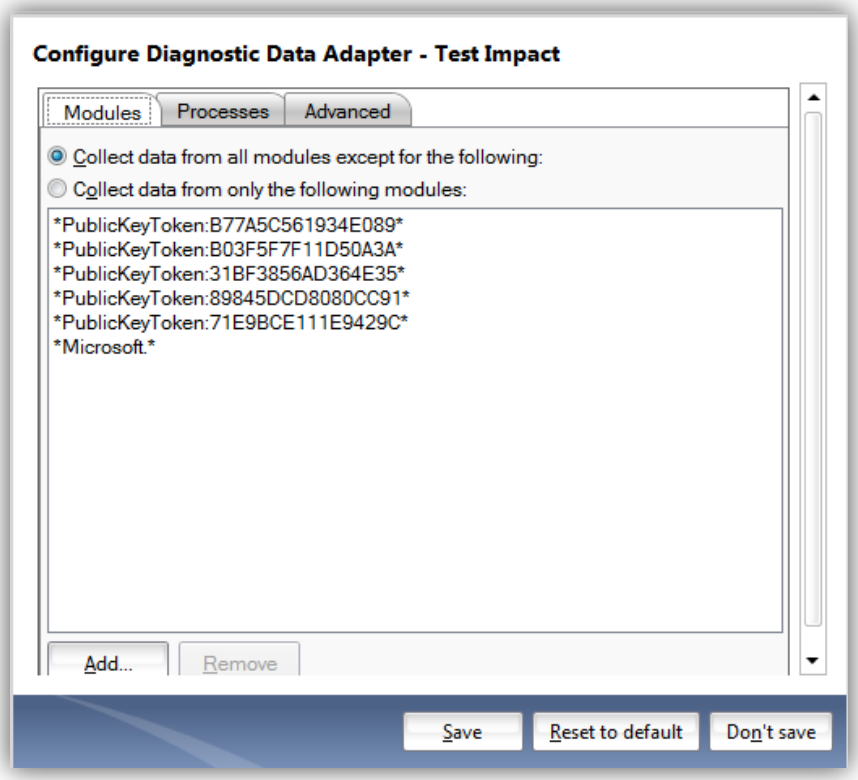


Figure 4 - Selecting which process to monitor for Test Impact

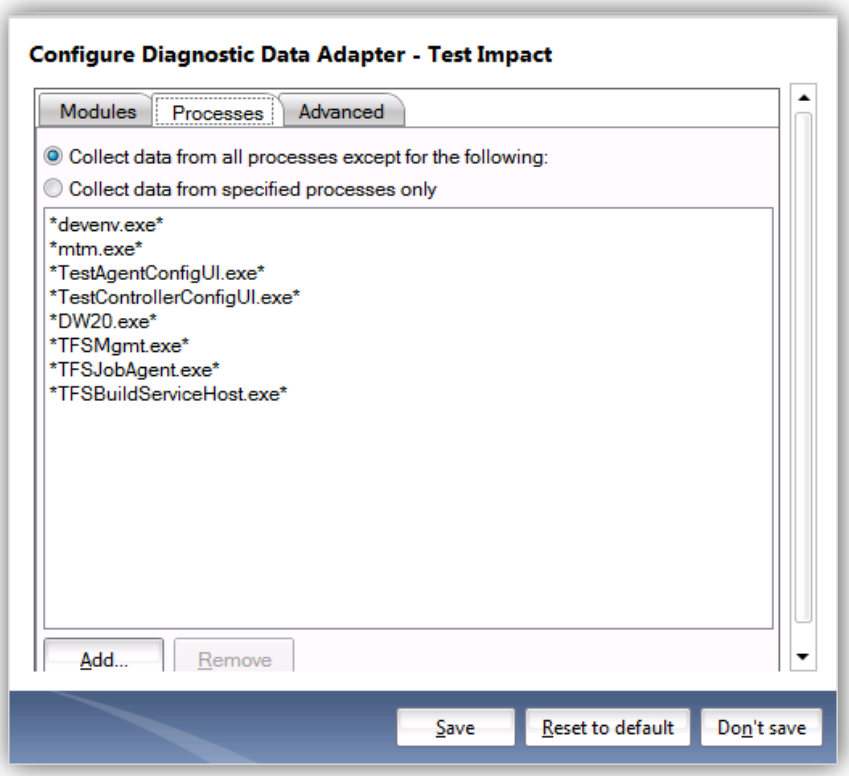


Figure 5 - Selecting which processes to monitor for test Impact

- On the **Advanced** tab of this dialog you are warned that if you wish to use Test Impact with an ASP.NET application on IIS then you must, as well as checking the checkbox in this dialog, also enable the **ASP.NET client proxy for IntelliTrace and test impact** collector.

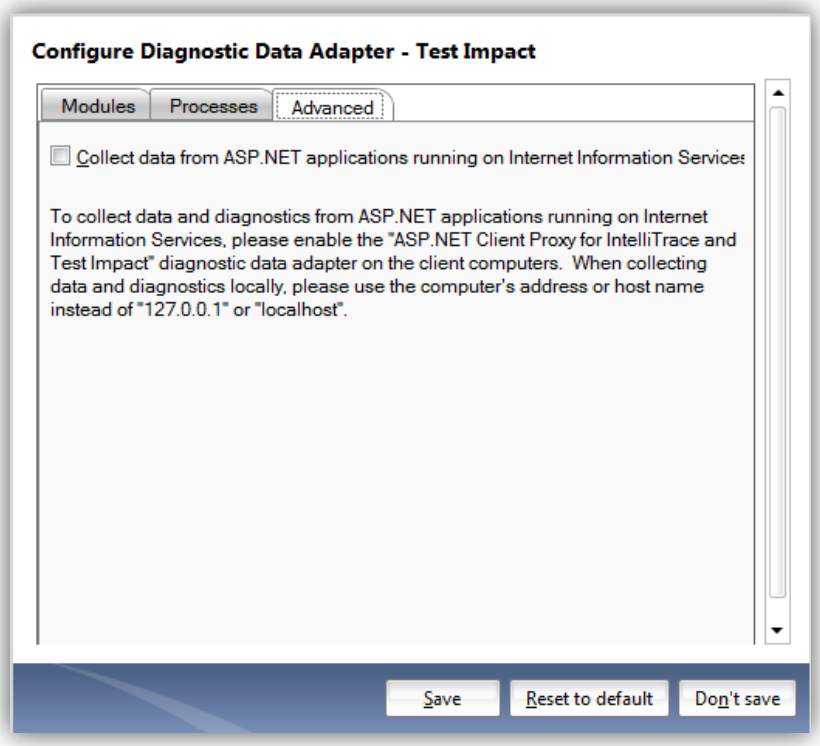


Figure 6 - Enabling Test Impact proxy

- The **ASP.NET client proxy for IntelliTrace and test impact** can be found in the same list as the **Test Impact** collector. Though there is a configuration button for the client proxy data collector, no configuration is available or required.

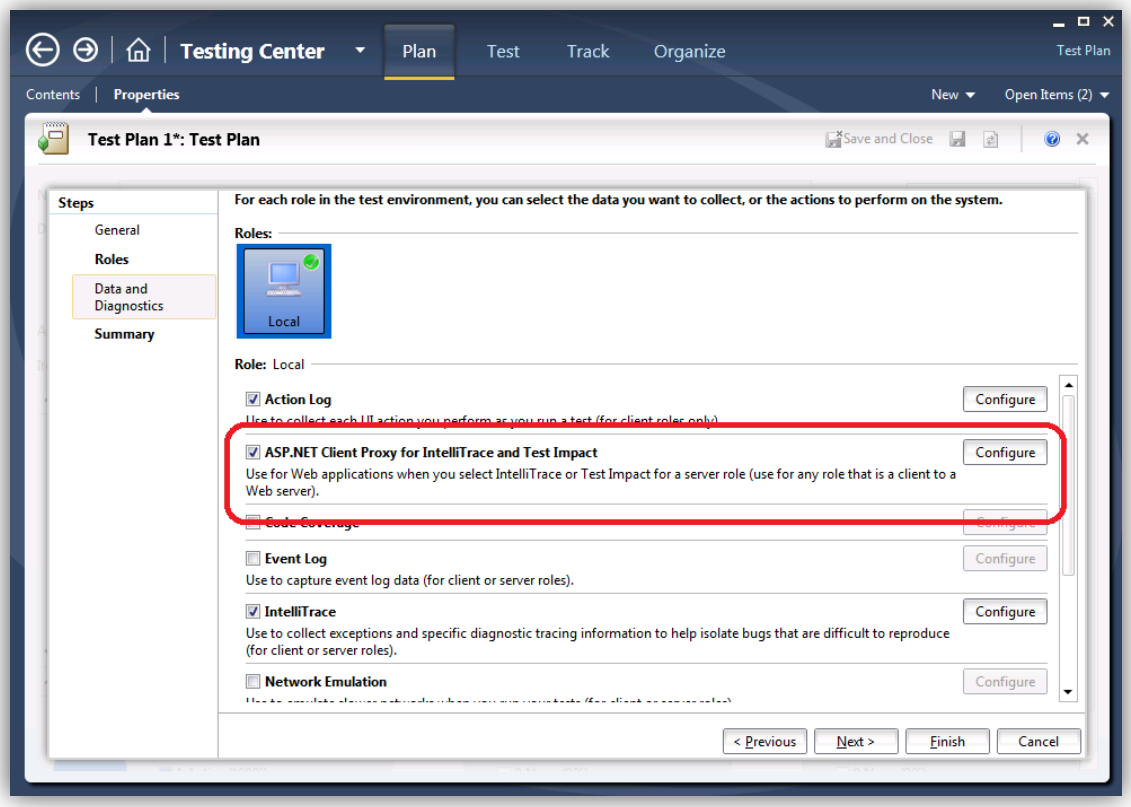


Figure 7 - Enabling ASP.NET Client proxy for IntelliTrace and Test Impact

- Once these changes are saved then tests can be run and Test Impact data will be gathered.

Gathering the Baseline Manual Test Coverage

Running the Build

Gathering the Test Impact data requires that the defined manual tests are run against a build produced by Team Build. Hence the first step in the process is to queue a Team Build that will act as the build for the baseline.

Running a Suite of Manual Test

Once a build has completed, and has been deployed to a suitable test system, manual tests can be run from within Microsoft Test Manager. The process is as follows

- Load Microsoft Test Manager
- Select your Team Project and Test Plan
- Select the **Test** tab

- Select the tests you wish to run and using the Run drop down select **Run with Options**[3]

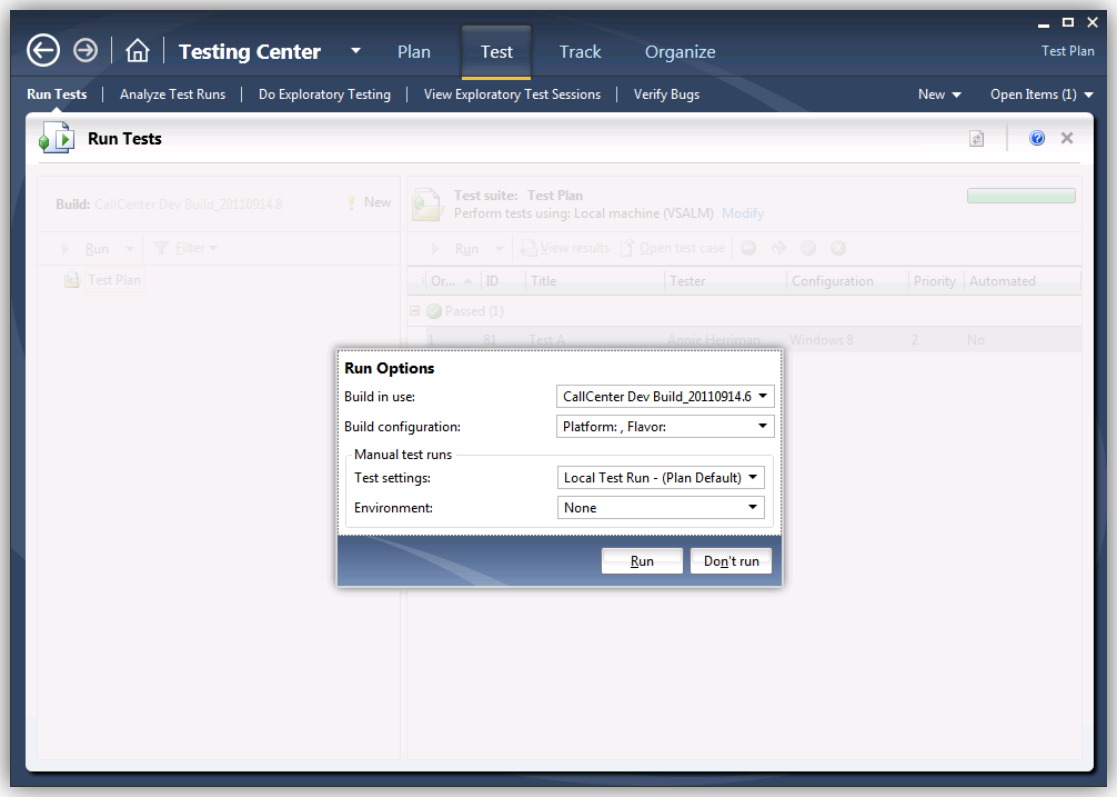


Figure 8 - Running a set of tests

- Make sure that the correct build and the test settings, configured previously, are selected. The selection of the build is key here; the manual test coverage will be associated with this build to provide the baseline
- Press the **Run** button and complete the manual tests. Remember the test must be completed without any failures, and no bugs must be logged for Test Impact data to be recorded.

Using Test Impact Data

Once the baseline has been taken, any future builds of the same type, that are configured to perform Test Impact Analysis, will highlight any tests that are impacted by a change to production code.

View Impacted Tests in the Build Report

A list of impacted tests, due to changes in the production code, can be seen at the foot of the build report.

[3] We are using the **Run with Options** to make it obvious which build/configuration is in use, normally selecting **Run** would be adequate as the correct defaults would be selected

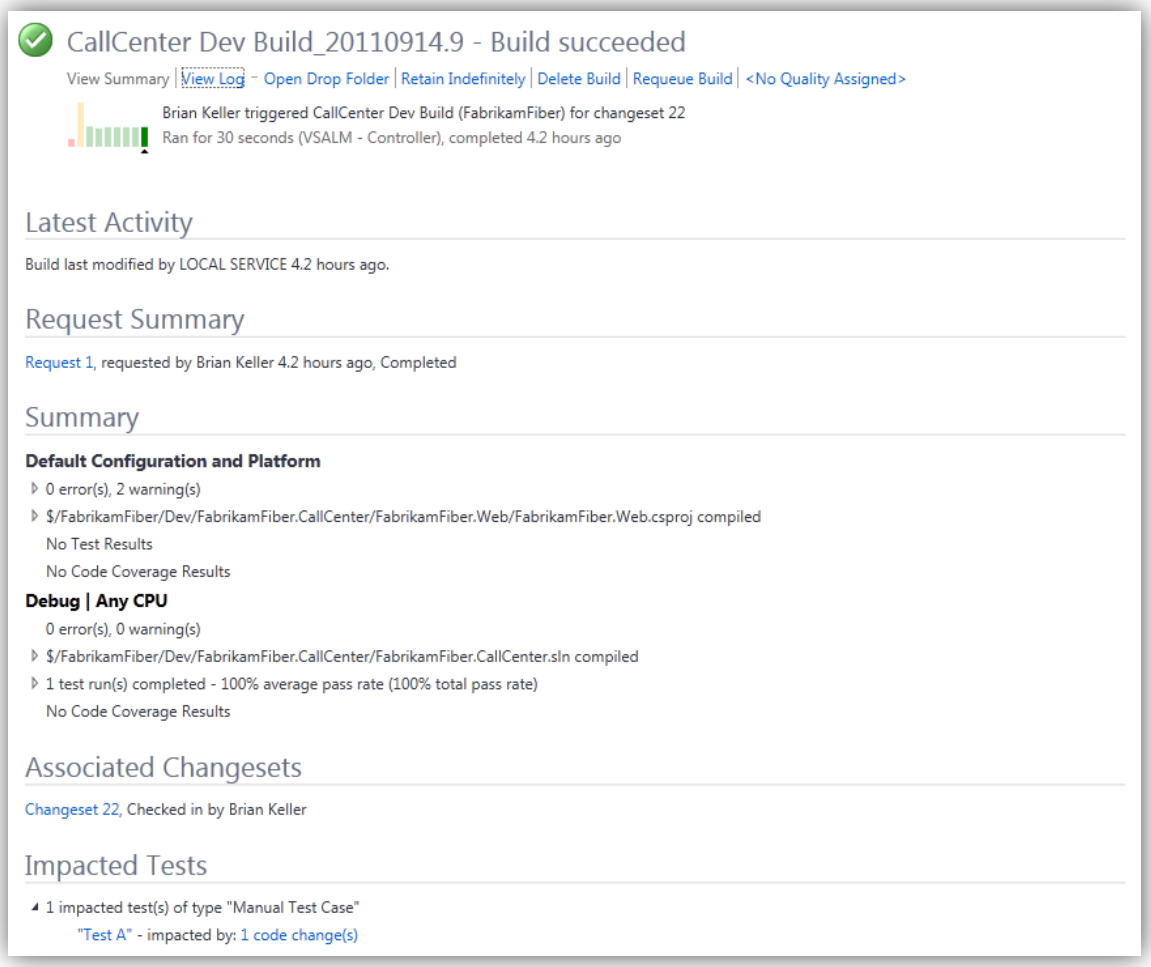


Figure 9 - Build Report showing impacted manual tests

Recommended Test

It is also possible for a tester to ascertain the impacted tests from within Microsoft Test Manager. This is achieve as follows

- Load Microsoft Test Manager
- Select your Team Project and Test Plan
- On the **Track** tab, select the **Recommended Tests**
- Make sure the **Build to use** option is set to the build that will be under test. If it is not set correctly, use the **Modify** link to change it.
- Select the **Previous build to compare.** This should be the build for which there is Test Impact data available
- Press the **Recommended tests** button to see a list of the impacted manual tests.

- A list of impacted tests will be shown.

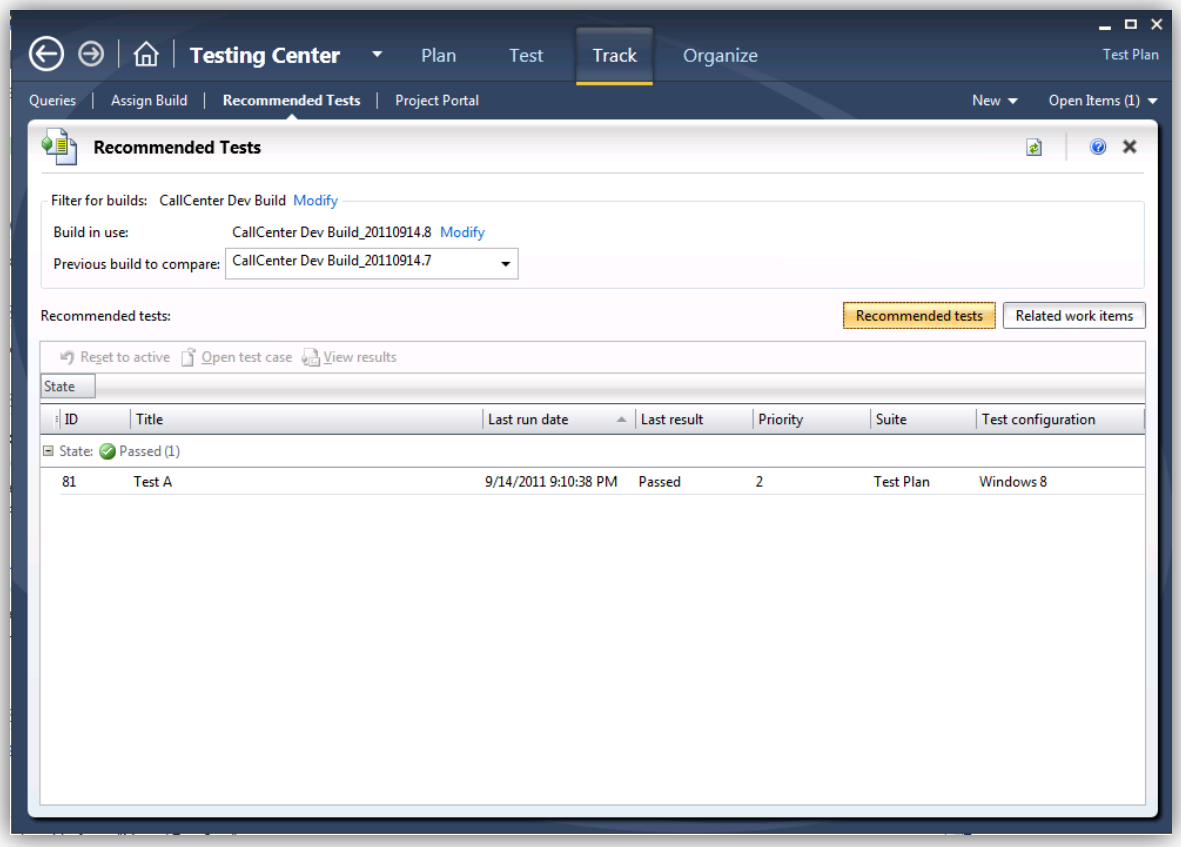


Figure 10 - Listing recommended tests in MTM

- If the tests within the list are selected, you can right click and use the **Reset to active** option. By doing this the tests will be set to the active state. They will be then shown the **Run** tab and can hence be re-run.

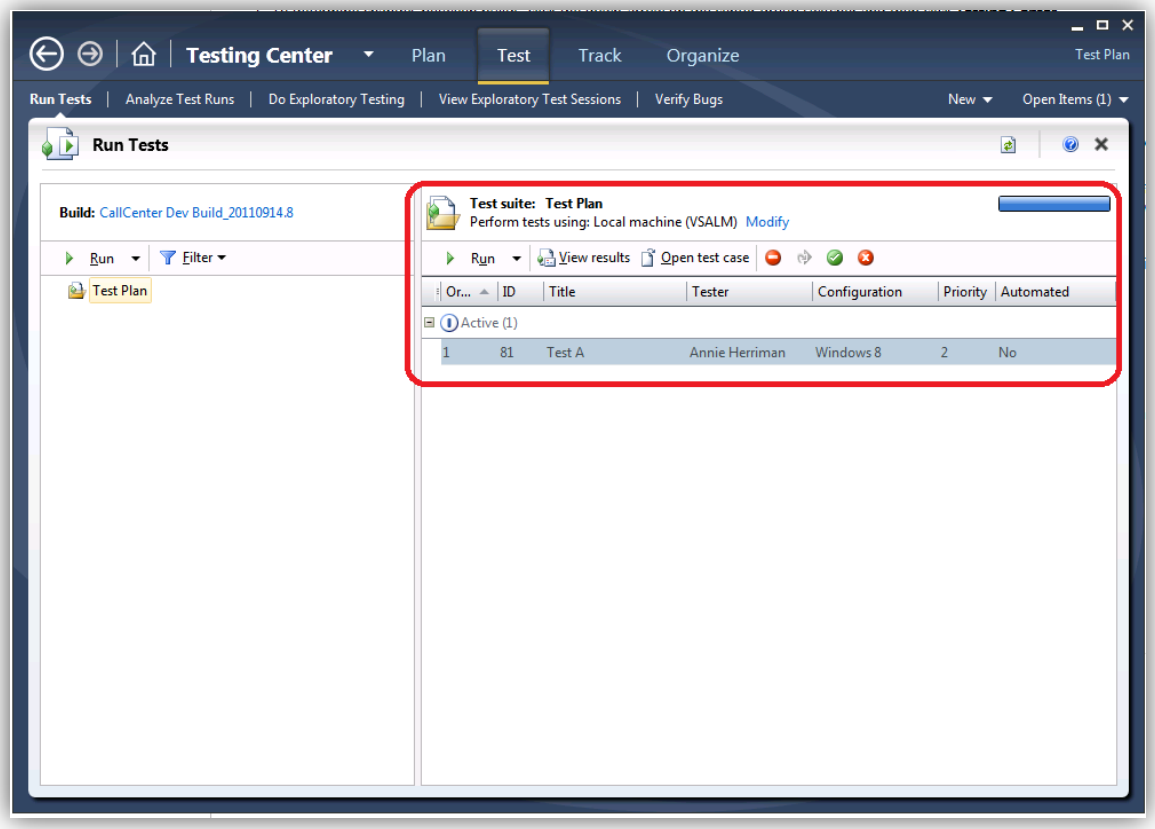


Figure 11 - Tests reset to the active state

Summary

In this section you have seen that Test Impact Analysis is not limited to unit tests, it can also be used for manual testing. Hence can be a great way to focus the efforts of a manual test team.

References

http://msdn.microsoft.com/en-us/library/dd286743(v=vs.110)
http://msdn.microsoft.com/en-us/library/dd286586(v=vs.110)
http://www.tinyurl.com/almrangers

