

## **Test Environment Configuration Management.**

### **ITIL based approach to test asset Configuration Management**

Discussion Document  
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## 1.0 INTRODUCTION

Within software development there are many forms of Configuration Management mainly focused on the software itself. Configuration Management for software within development is generally referred to as revision control. There is also often an agreed policy that establishes how software components will be configured as the deployed software product or product versions. For IT Service Management the ITIL approach also has a configuration management element which is focused on the software and hardware used to provide the deployed services.

For the software test team these two approaches can be applied locally to help manage the hardware and software used for testing. Revision control of software within the test team, for items such as test scripts, tools and harnesses, should follow the policy in place for the development team. We'll assume they have a policy in place because if there isn't then that's a whole separate piece of work that needs addressing!

Similarly, we'll take it as agreed that the test team will use the same code revision tools as development. In fact it's our suggestion that this alignment of approach is generally advisable unless there is a compelling operational reason not to. Consider also the need for teams such as support or customer facing engineers to be managing their use of software in the same way.

### 1.1 Configuration Management - In the Test Team?

Given the above we have the outstanding issue of how to best manage the test teams hardware and software. But this assumes there is an issue to address, why do we need to manage the hardware and software in the test team at all?



One key requirement of software testing is in having certainty over the results. When a test is conducted we must be certain a bug is a bug and that it can be reproduced with reasonable ease. The ability to reproduce a bug requires the same conditions, that is things such as a matching environment, the same software, the same conditions before running the test and the same data.

So often a bug cannot be reproduced or not in the same way, but why is this? Consider also that a test team often raises bugs that developers can't reproduce, what's going on there? What about when a customer reports an issue and neither development or the test team can reproduce it?

### 1.2 It works on my machine!

Software that works on one system but not another occurs because like for like are not being compared. If we're drawing software versions from the same place, using the same test data and version controlled test tools, harnesses, etc. then we're still overlooking a key element. The local test environment and its configuration.

## 2.0 TEST CONFIGURATION MANAGEMENT

The key to managing the test environment is a combination of aligning with development for product code as we recommended and applying principles from ITIL. The high level component that should be developed is an ITIL derived Test Configuration Catalogue which will be a central source of information for all the Configuration Items used. It will provide the test team with a clear understanding of all the software and hardware that are used in delivering testing. The benefits of this Test Configuration Management approach include:

- Control of test hardware and software used to define software component and product quality.
- Effective management of valuable test assets.
- Impact assessment for configuration and environment changes, including replacement and upgrade.
- Enable configuration progression and reversion.
- Single, centralised source of accurate and up to date configuration management information.

### 2.1 The Goals of Test Configuration Management



There are a number of goals achieved through Test Configuration Management. It's possible to account for all the test assets, that is all the hardware and software used, and then manage approved configurations. The team can provide accurate information on configurations and their documentation to other teams such as Technical Authoring, Hosting, Support and Service Management functions.

They can also provide a sound test suite for Incident, Problem, Change and Release Management processes and allow verification of the configuration records to provide confidence in test process and results.

What does this mean in practice? Next time we have any conflict over the accuracy of test results it will be possible to check that the software and hardware used by various teams really are the same. If not then we have a way to recognise the potential source of differing results. When customers need to know the environmental configurations that will work with your new release Support can provide them accurate information. Accurate as it's the same configurations the development and testing teams have used.

### 2.2 Next steps?

I appreciate that this is one of the more difficult areas to define but which can provide great reward throughout the business. To help ensure successful delivery of a Test Configuration Management system within the business I have developed a unique approach that blends ITIL and Quality perspectives around management of the Test Infrastructure.

This approach also addresses the identification, recording, management and use of all the software and hardware in the test team. There by satisfying ISO requirements such as "Control of inspection, measuring and test equipment". What's more it provides the key elements of the ITIL component but focused on the needs of the test team.

### 3.0 COMPONENTS OF THE TEST INFRASTRUCTURE

The Test Configuration Catalogue (TCC) is the main piece in the Test Configuration Management strategy. It will include all of the Test Software Configuration Items (TSCI) and Test Hardware Configuration Items (THCI) that the team currently own. Every piece of software and hardware that can be changed individually would qualify as an Item. Each of the TSCIs and THCIs are assigned several attributes that are used to identify, track and maintain them in the catalogue. The Items come together to form recognised and approved Test Assembly Configurations (TAC).

Software and hardware that needs to be kept available for constructing TACs needs to be kept in a Hardware Store and File Store. These can be a draw in a test team desk for hardware or a network server location for software or something more elaborate, totally dependant on needs. A final note on the detailed elements - the TCC is to be distinguished from a formal Configuration Management Database (CMDB) and is intended to provide control only over TSCIs, THCIs and TACs used in test activities by the test team. This ITIL derived approach will mean integration into and support of a more formal ITIL system will be greatly facilitated.

#### 3.1 Using the Test Configuration Management System



The test team should make reference to the TAC references within the test plans and bug reports they write. This way the test planning phase will identify any deficiencies in the hardware and software the team have that will prevent delivery of testing. This will also ensure the development team know what environment they should develop on and run their unit tests within. When development state unit tests pass then the test team can proceed their own testing with confidence.

No more, 'it worked on my machine'. Recording the TAC details within bug reports ensures the development team provide valid fixes. No more, 'it failed on my machine'. The machines and environments are the same.

The TCC should be shared with the IT team to enable effective management of licenses and IT refresh planning and budgets. Senior management can be given evidence of software and hardware update requirement costs drawn from and projected using the TCC. Finally, as each software project is released, the up to date TCC can be shared with the Support team to ensure they have the latest information for customers.

#### 3.2 Managing the Test Infrastructure.

It will come as a relief to hear that the hard work is in putting the system in place, maintaining it is easy! At planned intervals the assigned owner of the TCM will need to perform Status Accounting. That is checking the TCC reflects reality and that the Items and Assemblies in use are as approved and expected. The frequency is based on how often things change or are found not to match and can be set after some experience has been gained with the system.