

## **Appendix - C&I Test Suite development procedures**

### **1) Terminology**

This appendix refers to the following terms:

**Test Specification** – is the document that describes each of the test elements, what is tested, how it is tested, what procedures are followed to run the tests, and the **Test Tools** that comprise the C&I Test Suite.

**Test Tools** – is the set of test software, test hardware fixtures, and instrumentation necessary to the implement the C&I Test Suite described in the **Test Specification**.

**Target Specification(s)** – is the document or documents that contain the PCI-SIG Specification or ECN to be tested by the C&I Test Suite described in the **Test Specification** document using the **Test Tools**.

**WG** – is the Work Group developing the C&I Test Suite (which may or may not be different to the Work Group developing the Target Specification).

**C&I SoA** – is the Compliance and Interoperability section of the Statement of Authorization that describes the scope and requirements for the C&I Test Suite. Completion of the C&I SoA may be delayed up to the time the 0.5 draft of the Target Specification must be approved.

### **2) C&I Test Suite milestones**

If a C&I Test Suite is required by the C&I SoA, it is considered an integral part of the deliverables of the PCI-SIG specification and must be developed along with the Target Specification in accordance with the procedures described below.

The Test Specification shall follow the development procedures described in the PCI-SIG Specification Development Procedures document, and must conform to the version numbering and the review and approval cycles by the relevant Work Groups, PCI-SIG membership, and BoD.

In addition the WG shall observe the following milestones for the Test Specification and synchronize them with corresponding milestones of the Target Specification as described below:

#### **Test Specification draft 0.1**

The Test Specification development process shall start when the Target specification rev 0.5 is approved by the BoD. The Test Suite features and tests shall be chosen from the 0.5 rev of the Target Specification to meet the scope and requirements of the C&I SoA.

The 0.1 draft of the Test Specification shall include a list of all of the features of the Target Specification selected to be tested. The 0.1 draft, once approved by the WG, must be submitted to the BoD and to the Chair (or appointed liaison) of all active work groups in the SIG. The BoD shall review the document for consistency with the C&I SoA. 0.1 drafts will not normally be distributed to the general membership but may be at the BoD's discretion.

#### **Test Specification draft 0.3**

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The 0.3 draft of the Test Specification shall include some details on how the tests will be written and some initial implementation details such as the outline of test hardware fixtures and instruments required, however some sections may be missing in part or total. Once voted and approved by the WG, the BoD will either accept or reject the 0.3 draft for distribution to the membership. [Note that the BoD is not approving the content of the Test Specification, only verifying compliance with the C&I SoA, level of professionalism, and level of completeness.] If rejected for distribution by the BoD, the WG must rectify the objections to the BoD's satisfaction before moving on to the 0.4 draft.

Sufficient information must be present to enable membership to understand the basic coverage and structure of the C&I tests. The goal is to facilitate an initial IP review plus to allow members the opportunity to determine if they should actively participate in the further work of the WG. While member feedback is welcome, it should pertain to the test coverage and structure at a conceptual level; detailed review is premature at this stage.

### **Test Specification draft 0.5**

This is the first comprehensive draft of the Test Specification and no sections may be missing, although TBDs within sections are expected. Once voted and approved by the WG, the BoD will either accept or reject the document for distribution to the membership. [Note that the BoD is not approving the content of the specification, only verifying compliance with the C&I SoA, level of professionalism, and level of completeness.]

Sufficient information must be present to enable membership to review the C&I tests in detail and to provide formal feedback. The goal of this review is to identify holes in the test structure and methods, especially in the context of the total range of applications for the Target Specification anticipated by its Scope of Authorization.

The approval of the 0.5 draft of the Test Specification is dependant on the BoD approval of the 0.7 draft of the Target Specification.

This draft of the Test Specification will contain enough detail to start implementation of individual tests and Test Tools. Alpha testing of those tests that are implemented is open to, and may begin at any of the member companies who are participating in the development of the Test Specification and/or Test Tools.

### **Test Specification draft 0.7**

This is the second comprehensive draft and is materially complete, although TBDs within sections are allowed. No document restructuring is allowed passed this point without BoD approval. Language may still be a bit rough. Once the WG has voted and approved this draft, the BoD will either accept or reject the document for distribution to the membership. [Note that the BoD is not approving the content of the specification, only verifying compliance with the C&I SoA, level of professionalism, and level of completeness.]

Sufficient information must be present to enable membership to review the C&I tests in fine detail and to provide formal feedback. The goal of this review is to identify subtle issues in the test structure and methods, plus inconsistencies and ambiguities in the text.

The approval of the 0.7 draft of the Test Specification is dependant on the BoD approval of the 0.9 draft of the Target Specification.

New features to be added between the 0.7 and 0.9 drafts of the Target Specification must be reviewed to determine if additional C&I test cases are needed to be included in the Test Specification. This draft of the Test Specification will contain enough detail to finish implementation of all the individual tests and

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Test Tools, and no new tests may be added past this point. Alpha testing of the tests can be finished at member companies. Once Alpha testing is completed and the WG has approved the C&I Test Tools for Beta release, the Beta version of the Test Tools will be available for testing at C&I plugfests.

### Test Specification 0.9

This is final membership review draft/Release Candidate of the Test Specification and is feature complete. No TBDs are allowed. This draft of the Test Specification contains the changes identified from the Beta C&I testing at plugfests. Once voted on and approved by the WG, the BoD will either accept or reject the document for distribution to the membership. [Note that the BoD is not approving the content of the specification, only verifying compliance with the C&I SoA, level of professionalism, and level of completeness.] The release of this draft commences the formal 60-day IP review period. Only editorial changes are allowed past this point unless they are in direct response to member review feedback. In no case can new tests or functionality be added without returning to the 0.7 step (relaxations do not constitute a functional change).

The approval of the 0.9 draft of the Test Specification is dependant on the BoD approval of the 1.0 released version of the Target Specification.

The Test Tools must be updated to incorporate changes identified during the Beta testing and then approved by the WG to be posted on the PCI-SIG website to begin the formal 6 month FYI testing period.

### Test Specification 1.0 version

At the end of the 6 month FYI testing period is complete and the WG has voted and approved the 1.0 version of the Test Specification the BoD will vote for final approval and publication. This approval marks the start of the Official C&I testing required for inclusion on the PCI-SIG integrator's list.

## 3) Test Specification Change Process

There are several cases where a Test Specification needs to be updated:

1. When new Tests are added.
2. When the Test Specification description does not match the Test implementation, **and the Test implementation matches that the WG previously agreed to.**
3. When the Test Specification and the Test are wrong.
4. When Tests are removed.

For case 1:

The WG will first generate a new Test Specification revision that is approved by the WG. The new Test Specification will be marked as 'draft' and will include change-bars from the previous rev. Rev numbering will use minor numbering (ie. if the exiting Test Specification is Rev 1.0, the new draft will be 1.01). This draft revision will be posted for 30-day member review.

At the conclusion of the member review, the test spec will be adjusted according to comments, again approved by the WG, and then test development begins. When test development is complete, the tests will be tested and approved by the WG. After approval by the WG, both the test spec and the new tests will be posted, beginning a 6-month review and FYI cycle. At the end of the cycle, if no changes are made, the draft notation and the change-bars will be removed from the final version of the Specification. **The final version**

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and a change bar version from the previously posted rev will also be posted. The associated tests will also become required for inclusion on the Integrators List.

For case 2:

A new Test Specification rev will be generated and approved by the WG. Rev numbering, 'draft', and change-bars are done as in case #1. The Test Specification will be posted for 30-day member review. After this, the Test Specification is adjusted by any comments received, approved by the WG, the spec has the draft notation and change bars removed and becomes the final version of the spec. The final version and a change bar version from the previously posted rev will also be posted.

For case 3: Follow the same process as Case 1.

For case 4: Follow the same process as Case 2.

Older versions of Test Specifications shall be removed from the website when they are obsolete (meaning that they no longer describe the current set of required tests), however the most recent 'obsolete' Specification shall remain on the website for reference purposes.