



## System Development and Life-Cycle Management (SDLCM) Methodology

<b>Subject</b> Unit Test	<b>Type</b>	Procedure
	<b>Identifier</b>	P-5101
	<b>Effective Date</b>	February 2002
	<b>Revision No.</b>	1

Approval

CISSCO Program Director

### 1. PURPOSE

This procedure specifies how to execute a unit test plan. The desired outcome of executing a unit test plan is to certify that the unit behaves as specified, either from a functional point of view or from a path sequence point of view, depending on the type of unit test specified.

### 2. APPLICABILITY

This procedure applies to all NRC Project/Tasks subject to the SDLCM Methodology.

Unit test plans must be developed for all new software units and all software units that have been modified in any way (such as being enhanced or fixed).

Unit test plans are typically created and executed by technical staff responsible for designing and implementing software units.

### 3. REFERENCE PUBLICATIONS

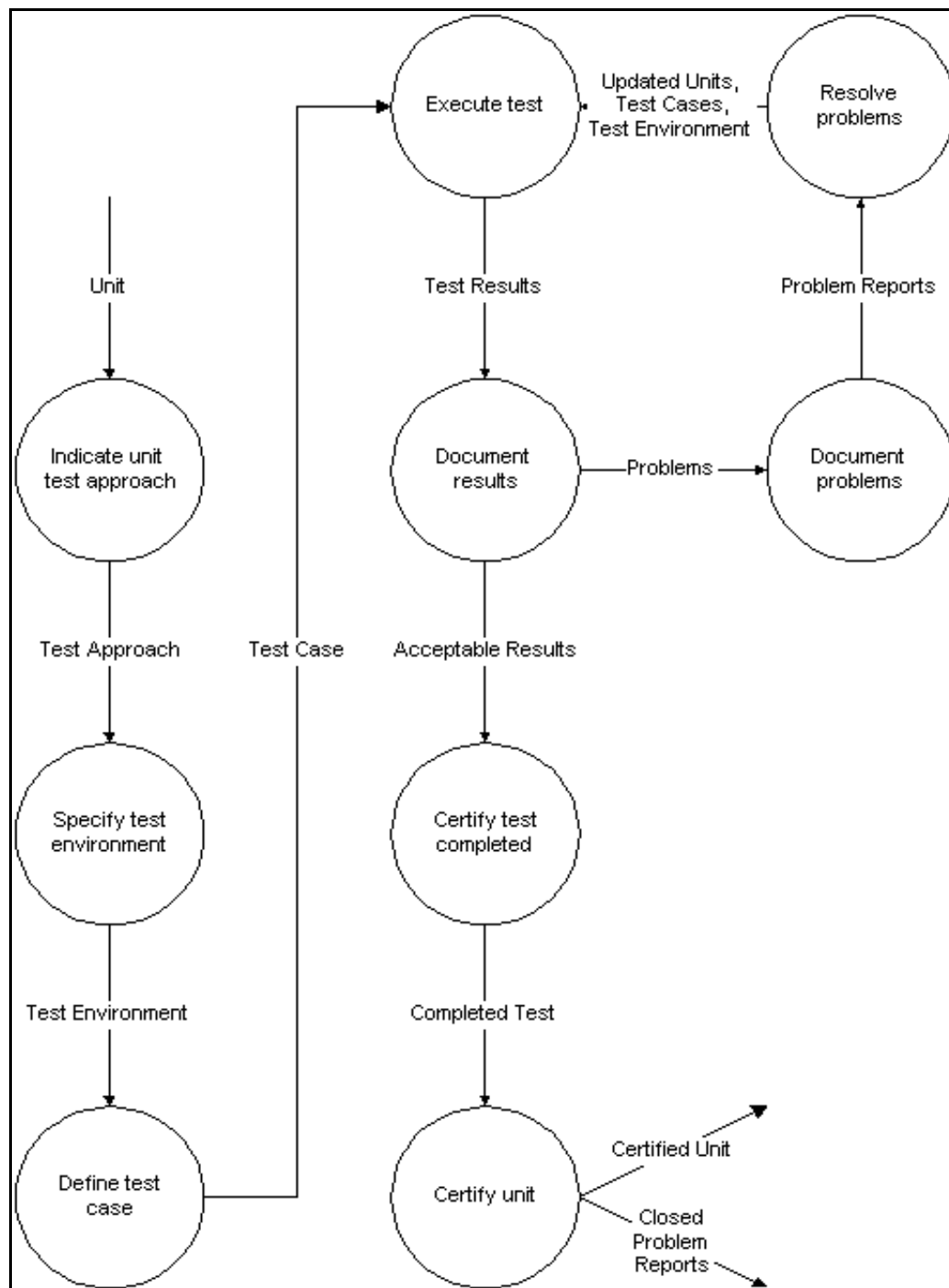
- *SDLCM Methodology Handbook*

### 4. PROCEDURE

#### 4.1 Process Flow Diagram

The unit test procedure consists of those steps identified in Figure 5101-1.

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**Figure 5101-1. Unit Test Procedure**

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## 4.2 Entry Criteria

The following input is necessary to begin this procedure:

- The unit

The following trigger is necessary to begin this procedure:

- The unit is ready to be tested, as determined by the developer of the unit

## 4.3 Steps

1. Document the type of unit test approach to be used for the unit: functional or path testing.
2. Identify the unit test execution environment, including drivers, stubs, and tools to be used and the nonstandard hardware or configuration setup required.
3. Define the test case. Document the identification of the function or path to be tested, the input to the test case, and the expected results. for test cases that are complicated to perform, document the steps required to execute the test case. in situations where it is not feasible to execute certain functions or paths (for example, due to hardware exception cases or event sequence timing), document those cases and explain why they cannot be tested.
4. Execute the unit test by performing the steps of the unit test.
5. Document the unit test results in the unit test log.
6. Document problems—if unexpected results occur—in a problem report.
7. Resolve test problems, that is, fix any problems with the test procedure, software, or environment.
8. Certify that the test was completed successfully. Provide a means for the test certifier (typically a peer of the tester) to check off or initial individual test cases to certify that the expected results were obtained.
9. Certify the unit, that is, provide a means for QA to certify the unit.

## 4.4 Exit Criteria

Results of the unit test are:

- All problems have been resolved
- The test results have been certified

Outputs of the unit test procedure are:

- Certified unit
- Closed problem reports

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#### 4.5 Verification

Quality assurance (QA) verifies that the unit test has been performed and all problems resolved.

#### 4.6 Roles

Table 5101–1 specifies the roles and responsibilities for each of the steps in the unit test procedure.

**Table 5101–1. Unit Test Step-Role Table**

<b>Steps:</b>	<b>Roles:</b>	<b>Tester</b>	<b>Test Certifier</b>	<b>QA</b>
1. Identify the unit to be tested.		P		
2. Document the type of unit test approach to be used.		P		
3. Identify the unit test execution environment.		P		
4. Define the test case, including the input, function or path to be tested, and the expected results.		P		
5. Execute the unit test.		P		
6. Document the unit test results in the unit test log.		P		
7. Document problems, if any, in a problem report.		P		
8. Resolve test problems.		P		
9. Certify test is complete.			P	
10. Certify unit.				P

Legend: P=Performs, R=Reviews, A=Approves, S=Supports