*For instructions on using this template, please see Notes to Author/Template Instructions on page 13. Notes on accessibility: This template has been tested and is best accessible with JAWS 11.0 or higher. For questions about using this template, please contact* [*CMS IT Governance*](mailto:IT_Governance@cms.hhs.gov)*. To request changes to the template, please submit an* [*XLC Process Change Request*](https://www.cms.gov/Research-Statistics-Data-and-Systems/CMS-Information-Technology/XLC/Downloads/XLCProcessChangeRequestCR.docx) *(CR).*

|  | Centers for Medicare & Medicaid Services  CMS eXpedited Life Cycle (XLC) |
| --- | --- |

<Project Name / Acronym>

Test Case Template

Version X.X

MM/DD/YYYY

**Document Number:** <document’s configuration item control number>

**Contract Number:** <current contract number of company maintaining document>

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# Introduction

Instructions: Provide full identifying information for the automated system, application, or situation for which the Test Case Specification applies, including as applicable, identification number(s), title(s)/name(s), abbreviation(s)/acronym(s), part number(s), version number(s), and release number(s). Summarize the purpose of the document, the scope of activities that resulted in its development, the intended audience for the document, and expected evolution of the document. Also describe any security or privacy considerations associated with use of the Test Case Specification.

# Overview

Instructions: Briefly describe the purpose and context for the system or situation, and summarize the history of its development. Include the high-level context diagram(s) for the system and subsystems previously provided in the High-Level Technical Design Concept/Alternatives, Requirements Document, and/or System Design Document (SDD), updated as necessary to reflect any changes that have been made based on more current information or understanding. If the high-level context diagram has been updated, identify the changes that were made and why.

# Assumptions/Constraints/Risks

## Assumptions

Instructions: Describe any assumptions affecting the creation and/or execution of the test cases/scripts in general. Assumptions made specific to an individual test case/script are to be described in a later section corresponding with that particular test case/script.

## Constraints

Instructions: Describe any limitations or constraints that have a significant impact on the test cases/scripts in general. Constraints specific to an individual test case/script are to be described in a later section corresponding with that particular test case/script. Constraints may be imposed by any of the following (the list is not exhaustive):

1. Hardware or software environment
2. End-user environment
3. Availability of resources
4. Interoperability requirements
5. Interface/protocol requirements
6. Data repository and distribution requirements.

## Risks

Instructions: Describe any risks associated with the test cases/scripts and proposed mitigation strategies.

# Test Case Summary

Instructions: Provide an overview of the test cases/scripts that will be executed. List each test case/script by its project-unique identifier and title. Test cases/scripts may be grouped by test function (e.g., user acceptance testing, Section 508 testing, system testing, regression testing, etc.). If test case/script information is maintained in an automated tool, this information may be exported or printed from the tool and included as an appendix to this document that is referenced here.

Table 1: Test Case Summary

| Test Case / Script Identifier | Test Case / Script Title | Execution Priority |
| --- | --- | --- |
|  |  |  |
|  |  |  |

# Test Case-To-Requirements Traceability Matrix

Instructions: Provide a table that maps all of the requirements contained within the Requirements Document to their corresponding test cases/scripts. Reference the Appendices section of this document for a sample template for a Test Case-to-Requirements Traceability Matrix. The completed traceability matrix should be inserted here or a reference made to its inclusion as a separate appendix. If test case/script information is maintained in an automated tool, the matrix may be exported or printed from the tool for inclusion in this document.

# Test Case Details

Instructions: Provide details for each test case/script identified in the Test Case Summary section. There should be a separate detail section for each test case/script. If test case/script information is maintained in an automated tool, the information described in the following sub-sections should be collected for each test case/script. This information may be printed from the tool and included as an appendix to this document that is referenced here. The test case/script details may also be printed in a tabular format to allow groupings of test cases/scripts with similar characteristics to reduce the volume of reported information and make it easier to review the content.

## <Test Case / Script Identifier>

Instructions: Provide a project-unique identifier and descriptive title for the test case or test script. Identify the date, number, and version of the test case/script and any subsequent changes to the test case/script specification. The number of the test case/script may identify its level in relation to the level of the corresponding software to assist in coordinating software development and test versions within configuration management.

### Test Objective

Instructions: Describe the purpose of the test case/script and provide a brief description. Also, identify if the test case/script may be used by multiple test functions.

### Inter-Case Dependencies

Instructions: List any prerequisite test cases/scripts that would create the test environment or input data in order to run this test case/script. Also, list any post-requisite test cases/scripts for which the running of this test case/script would create the test environment or input data.

### Test Items

Instructions: Describe the items or features (e.g., requirements, design specifications, and code) to be tested by the test case/script. Keep in mind the level for which the test case/script is written and describe the items/features accordingly. The item description and definition can be referenced from any one of several sources, depending on the level of the test case/script. It may be a good idea to reference the source document as well (e.g., Requirements Document, System Design Document, Users Manual, Operations & Maintenance Manual, Installation Instructions from Version Description Document, etc.)

### Prerequisite Conditions

Instructions: Identify any prerequisite conditions that must be established prior to performing the test case/script. The following considerations should be discussed, as applicable:

1. Environmental needs (e.g., hardware configurations, system software (e.g., operating systems, tools), other software applications, facilities, training);
2. Stubs, drivers, flags, initial breakpoints, pointers, control parameters, or initial data to be set/reset prior to test commencement;
3. Preset hardware conditions or states necessary to run the test case/script;
4. Initial conditions to be used in making timing measurements;
5. Conditioning of the simulated environment; and
6. Other special conditions (e.g., interfaces) peculiar to the test case/script.

### Input Specifications

Instructions: Describe all inputs required to execute the test case/script. Keep in mind the level for which the test case/script is written and describe the inputs accordingly. Be sure to identify all required inputs (e.g., data (values, ranges, sets), tables, human actions, conditions (states), files (databases, control files, transaction files), and relationships (timing)). The input can be described using text, a picture of a properly completed screen, a file identifier, or an interface to another system. It is also acceptable to simplify the documentation by using tables for data elements and values. Include, as applicable, the following:

1. Name, purpose, and description (e.g., range of values, accuracy) of each test input;
2. Source of the test input and the method to be used for selecting the test input;
3. Whether the test input is real or simulated;
4. Time or event sequence of test input; and
5. The manner in which the input data will be controlled to:
6. Test the item(s) with a minimum/reasonable number of data types and values.
7. Exercise the item(s) with a range of valid data types and values that test for overload, saturation, and other “worst case” effects.
8. Exercise the item(s) with invalid data types and values to test for appropriate handling of irregular inputs.
9. Permit retesting, if necessary.

### Expected Test Results

Instructions: Identify all expected test results for the test case/script, including both intermediate and final results. Describe what the system should look like after the test case/script is run by examining particular screens, reports, files, etc. Identify all outputs required to verify the test case/script. Keep in mind the level for which the test case/script is written and describe the outputs accordingly. Be sure to identify all outputs (e.g., data (values, sets), tables, human actions, conditions (states), files (databases, control files, transaction files), relationships, timing (response times, duration)). The description of outputs can be simplified by using tables, and may even be included in the same table as the associated input to further simplify the documentation and improve its usefulness.

### Pass / Fail Criteria

Instructions: Identify the criteria to be used for evaluating the intermediate and final results of the test case/script, and determining the success or failure of the test case/script. For each test result, the following information should be provided, as applicable:

1. The range or accuracy over which an output can vary and still be acceptable;
2. Minimum number of combinations or alternatives of input and output conditions that constitute an acceptable test result;
3. Maximum/minimum allowable test duration, in terms of time or number of events;
4. Maximum number of interrupts, halts, or other system breaks that may occur;
5. Allowable severity of processing errors;
6. Conditions under which the result is inconclusive and re-testing is to be performed;
7. Conditions under which the outputs are to be interpreted as indicating irregularities in input test data, in the test database/data files, or in test procedures;
8. Allowable indications of the control, status, and results of the test and the readiness for the next test case/script (may be output of auxiliary test software); and
9. Other criteria specific to the test case/script.

### Test Procedure

Instructions: Describe the series of individually numbered steps that are to be completed in sequential order to execute the test procedure for the test case/script. For convenience in document maintenance, the test procedures may be included as an appendix and referenced in this paragraph. The appropriate level of detail in the test procedure depends on the type of software being tested. For most software, each step may include a logically-related series of keystrokes or other actions, as opposed to each keystroke being a separate test procedure step. The appropriate level of detail is the level at which it is useful to specify expected results and compare them to actual results. The following should be provided for the test procedure, as applicable:

1. Test operator actions and equipment operation required for each step, including commands, as applicable, to:
2. Initiate the test case/script and apply test inputs
3. Inspect test conditions
4. Perform interim evaluations of test results
5. Record data
6. Halt or interrupt the test case/script
7. Request diagnostic aids
8. Modify the database/data files
9. Repeat the test case if unsuccessful
10. Apply alternate modes as required by the test case/script
11. Terminate the test case/script.
12. Expected result and evaluation criteria for each step.
13. If the test case/script addresses multiple requirements, identification of which test procedure step(s) address which requirements.
14. Actions to follow in the event of a program stop or indicated error, such as:
15. Recording of critical data from indicators for reference purposes
16. Halting or pausing time-sensitive test-support software and test apparatus
17. Collection of system and operator records of test results
18. Actions to be used to reduce and analyze test results to accomplish the following:
19. Detect whether an output has been produced
20. Identify media and location of data produced by the test case/script
21. Evaluate output as a basis for continuation of test sequence
22. Evaluate test output against required output.

Table 2: Test Procedure Steps for Given Test Case / Script Identifier

| Step # | Action | Expected Results / Evaluation Criteria | Requirement(s) Tested |
| --- | --- | --- | --- |
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### Assumptions and Constraints

Instructions: Identify any assumptions made and constraints or limitations imposed in the description of the test case due to system or test conditions (e.g., limitations on timing, interfaces, equipment, personnel, and database/data files. If waivers or exceptions to specified limits and parameters are approved, they are to be identified and their effects and impacts upon the test case/script described.

## <Test Case / Script Identifier>

### Test Objective

### Inter-Case Dependencies

### Test Items

### Prerequisite Conditions

### Input Specifications

### Expected Test Results

### Pass / Fail Criteria

### Test Procedure

### Assumptions and Constraints

1. Record of Changes

*Instructions: Provide information on how the development and distribution of the Test Case Specification will be controlled and tracked. Use the table below to provide the version number, the date of the version, the author/owner of the version, and a brief description of the reason for creating the revised version.*

Table 3: Record of Changes

| Version  Number | Date | Author/Owner | Description of Change |
| --- | --- | --- | --- |
| 1 | 05/08/2024 | TUNGNT | Init |
| 2 | 07/08/2024 | TEST MANAGER | Change …. |
| 3 | 10/08/2024 | TUNGNT | Chane … |
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1. Acronyms

Instructions: Provide a list of acronyms and associated literal translations used within the document. List the acronyms in alphabetical order using a tabular format as depicted below.

Table 4: Acronyms

| Acronym | Literal Translation |
| --- | --- |
| **CMS** | Centers for Medicare & Medicaid Services |
| **O&M** | Operations and Maintenance |
| **UAT** | User Acceptance Testing |
| **VDD** | Version Description Document |
|  |  |

1. Glossary

Instructions: Provide clear and concise definitions for terms used in this document that may be unfamiliar to readers of the document. Terms are to be listed in alphabetical order.

Table 5: Glossary

| Term | Definition |
| --- | --- |
|  |  |
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1. Referenced Documents

Instructions: Summarize the relationship of this document to other relevant documents. Provide identifying information for all documents used to arrive at and/or referenced within this document (e.g., related and/or companion documents, prerequisite documents, relevant technical documentation, etc.).

Table 6: Referenced Documents

| Document Name | Document Location and/or URL | Issuance Date |
| --- | --- | --- |
|  |  |  |
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1. Approvals

The undersigned acknowledge that they have reviewed the Test Case Specification and agree with the information presented within this document. Changes to this Test Case Specificationwill be coordinated with, and approved by, the undersigned, or their designated representatives.

*Instructions: List the individuals whose signatures are desired. Examples of such individuals are Business Owner, Project Manager (if identified), and any appropriate stakeholders. Add additional lines for signature as necessary.*

|  |  |  |  |
| --- | --- | --- | --- |
| Signature: |  | Date: |  |
| Print Name: |  |  |  |
| Title: |  |  |  |
| Role: |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Signature: |  | Date: |  |
| Print Name: |  |  |  |
| Title: |  |  |  |
| Role: |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Signature: |  | Date: |  |
| Print Name: |  |  |  |
| Title: |  |  |  |
| Role: |  |  |  |

1. Notes to the Author / Template Instructions

This document is a template for creating a Test Case Specification for a given investment or project. The final document should be delivered in an electronically searchable format. The Test Case Specification should stand on its own with all elements explained and acronyms spelled out for reader/reviewers, including reviewers outside CMS who may not be familiar with CMS projects and investments.

This template includes instructions, boilerplate text, and fields. The developer should note that:

* *Each section provides instructions or describes the intent, assumptions, and context for content included in that section. Instructional text appears in blue italicized font throughout this template.*
* *Instructional text in each section should be replaced with information specific to the particular investment.*
* *Some text and tables are provided as boilerplate examples of wording and formats that may be used or modified as appropriate.*

When using this template, follow these steps:

1. *Table captions and descriptions are to be placed centered, above the table.*
2. *Modify any boilerplate text, as appropriate, to your specific investment.*
3. *Do not delete any headings. If the heading is not applicable to the investment, enter “Not Applicable” under the heading.*
4. *All documents must be compliant with Section 508 requirements.*
5. *Figure captions and descriptions are to be placed centered, below the figure. All figures must have an associated tag providing appropriate alternative text for Section 508 compliance.*
6. *Delete this “Notes to the Author / Template Instructions” page and all instructions to the author before finalizing the initial draft of the document.*
7. XLC Template Revision History

The following table records information regarding changes made to the XLC template over time. This table is for use by the XLC Steering Committee only. To provide information about the controlling and tracking of this artifact, please refer to the Record of Changes section of this document.

Table 7: XLC Template Revision History

| Version  Number | Date | Author/Owner | Description of Change |
| --- | --- | --- | --- |
| 1.0 | 12/31/2009 | ESD Deliverables Workgroup | Baseline Version |
| 2.0 | 08/15/2014 | Celia Shaunessy, XLC Steering Committee | Changes made per [CR 14-012](https://share.cms.gov/office/ois/Services/XLCSC/XLCDocs/14-012_GeneralUpdates.docx). |
| 2.1 | 02/02/2015 | Surya Potu,  CMS/OEI/DPPIG | Updated CMS logo. |

1. Additional Appendices

Instructions: Utilize appendices to facilitate ease of use and maintenance of the Test Case Specification. Each appendix should be referenced in the main body of the document where that information would normally have been provided. Suggested appendices include, but are not limited to, the following:

1. Test Case Summary
2. Test Case-to-Requirements Traceability Matrix
3. Test Case Details

Below is an example of a test case-to-requirements traceability matrix. The table below should be modified appropriately to reflect the actual identification and mapping of test cases to requirements for the given system/project.

Table 8: Test Case-To-Requirements Traceability Matrix

| Requirement | Test Case 01 | Test Case 02 | Test Case 03 | Test Case 04 | Test Case 05 | Test Case 06 |
| --- | --- | --- | --- | --- | --- | --- |
| Requirement 1.0 |  |  |  |  |  |  |
| Requirement 1.1 |  |  |  |  |  |  |
| Requirement 1.2 |  |  |  |  |  |  |
| Requirement 2.0 |  |  |  |  |  |  |
| Requirement 2.1 |  |  |  |  |  |  |