

Certified TestStand Developer Exam Preparation Guide

Education Services
National Instruments

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Certification Overview

The National Instruments TestStand Certification Program consists of the following two certification levels:

- Certified TestStand Developer (CTD)
- Certified TestStand Architect (CTA)

The TestStand Associate Developer (CTD) certification represents core knowledge and skill in the design, development and integration of production tests in the TestStand environment. A CTD can demonstrate the following competencies in TestStand:

- Apply concepts, definitions and configuration options
- Utilize TestStand data storage and data passing mechanisms
- Develop and debug tests using standard development environments

A CTD is a test developer who leverages the TestStand framework to develop, analyze, debug and deploy tests. The CTD certification is for developers who possess technical expertise in a certain product and wish to distinguish their TestStand knowledge, skills and experience in test development.

CTDs may wish to advance their credentials by gaining knowledge and experience in developing and customizing TestStand frameworks and distinguishing themselves by attaining the CTA certification.

The TestStand Developer (CTA) certification represents a professional skill level in the design, development and deployment of a customized TestStand based test system (framework) to meet a set of requirements. In addition to the competencies of the CTD, the CTA demonstrates the following:

- Skills in translating TestStand specifications to design documents
- Competency in the development and customization of TestStand framework
- Experience in the design of a scalable, maintainable and well documented TestStand framework that utilizes established development guidelines and practices

A CTA is a TestStand framework developer who creates or customizes the TestStand framework to meet a set of test systems requirements. The CTA certification is for developers who wish to distinguish their software development skills and technical experience in the TestStand system.

Candidates wishing to certify at the CTA level must possess a valid CTD certification.



Note The CTD certification is a prerequisite to taking the CTA exam. There are no exceptions to this requirement.

Exam Overview

Your test computer will have the TestStand Full Development System version 2019 or later installed for developing your sequence.

Please note that you will not receive extra time for the exam to compensate for unfamiliarity with the TestStand environment.

Refer the TestStand help for details about product features.

- Exam Duration: 4 hours
- Style of exam: Practical – Sequence development
- Passing grade: 70%

The exam validates problem solving skills, knowledge, and experience in the development of TestStand Sequences. The exam involves software development only and does not involve any hardware.

Simulated device driver libraries will be provided installed on the online environment, or provided on the USB stick as NI Packages, with your exam. These libraries install to the users\public\CTD\ directory. These libraries contain the code modules you will use to complete the exam. These code libraries are available in the following languages: LabVIEW.

The use of resources available in TestStand, such as the TestStand Help, examples, and templates are allowed during the exam. Externally developed VIs or resources are prohibited.

A detailed Test specification will be provided. The specifications consist of general and technical requirements for the application. You must not detach the binding staple, copy, or reproduce any section of the exam document. Failure to comply will result in failure.

After you have completed your exam, you must correctly package your exam for grading. You must run CTD_StudentZipUp.exe and select your sequence file for your exam to be graded successfully.

Exam Topics

Examinee shall perform tasks to demonstrate the following capabilities

- Call LabVIEW code modules
- Pass custom data types to and from code modules
- Manage shared memory between TestStand and Code Modules
- Create custom data types
 - Manage type conflicts
 - Storage location
- Override and use model callbacks
- Override and use engine callbacks
- Create a clutter free report with the proper result data
- Call a sub-sequence
- Proper use of Parameters
- Proper use of Local Variables
- Proper use of FileGlobal Variables
- Proper use of 2 or more different test step types (e.g. Pass/Fail, Numeric, String, etc...)
- Proper use of 3 or more different non-code module step types (e.g. Wait, Flow, Property Loader, etc...)
- Proper use of Step Groups
 - Startup/Cleanup
- Control execution flow (if/else, looping)
- Configure a report
 - Add results
 - Misc. configuration (SME discretion)
- Deploy test system
- Dependency management
 - Workspace file(s)
 - Station Settings
 - Environment Settings
- Debug broken/error sequences
 - Trace execution to determine source of error
 - Distinguish difference between errors and warnings
 - Ignore appropriate warnings
- Execute simple code modules in parallel
 - EG. Temp chamber + measurement, independent processes, no shared information.
- Expressions
 - Control flow
 - Create and modify PropertyObjects using expressions

CTD Exam Evaluation Criteria

The CLD exam consists of a total of 100 points, allocated as follows:

- Functionality: 100 points

Passing Score: 70%

The grading of the CTD exam is automated and will test the submitted sequence file against several criteria:

- Does the sequence run without error?
- Does the sequence perform all the steps required by the user story?
- Does the sequence generate the correct report?
- Does the report contain extra/additional/unnecessary information?
- How does the sequence respond to instrument errors?
- How does the sequence respond to DUT errors?
- Does the sequence accurately pass and fail DUTs?
- Is the sequence performant? (how long does it take to run?)
- Are variables scoped correctly
 - Locals, fileglobals, etc.
- Proper use of Setup, Main and Cleanup step groups.
- Are steps properly named and documented?

CTD Exam Preparation Resources

Use the following resources for exam preparation.

CTD Exam Preparation

- [CTD Exam Preparation Resources](#) (includes links to preparation guides, sample exams)

National Instruments Instructor-led or Self-paced training courses:

- [Developing Test Programs using TestStand](#)

National Instruments TestStand Learning Badges

- [TestStand Sequence Development](#)

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