

OVERVIEW CARD

NI TestStand™ System and Architecture

NI TestStand is flexible test management software that offers the following major features:

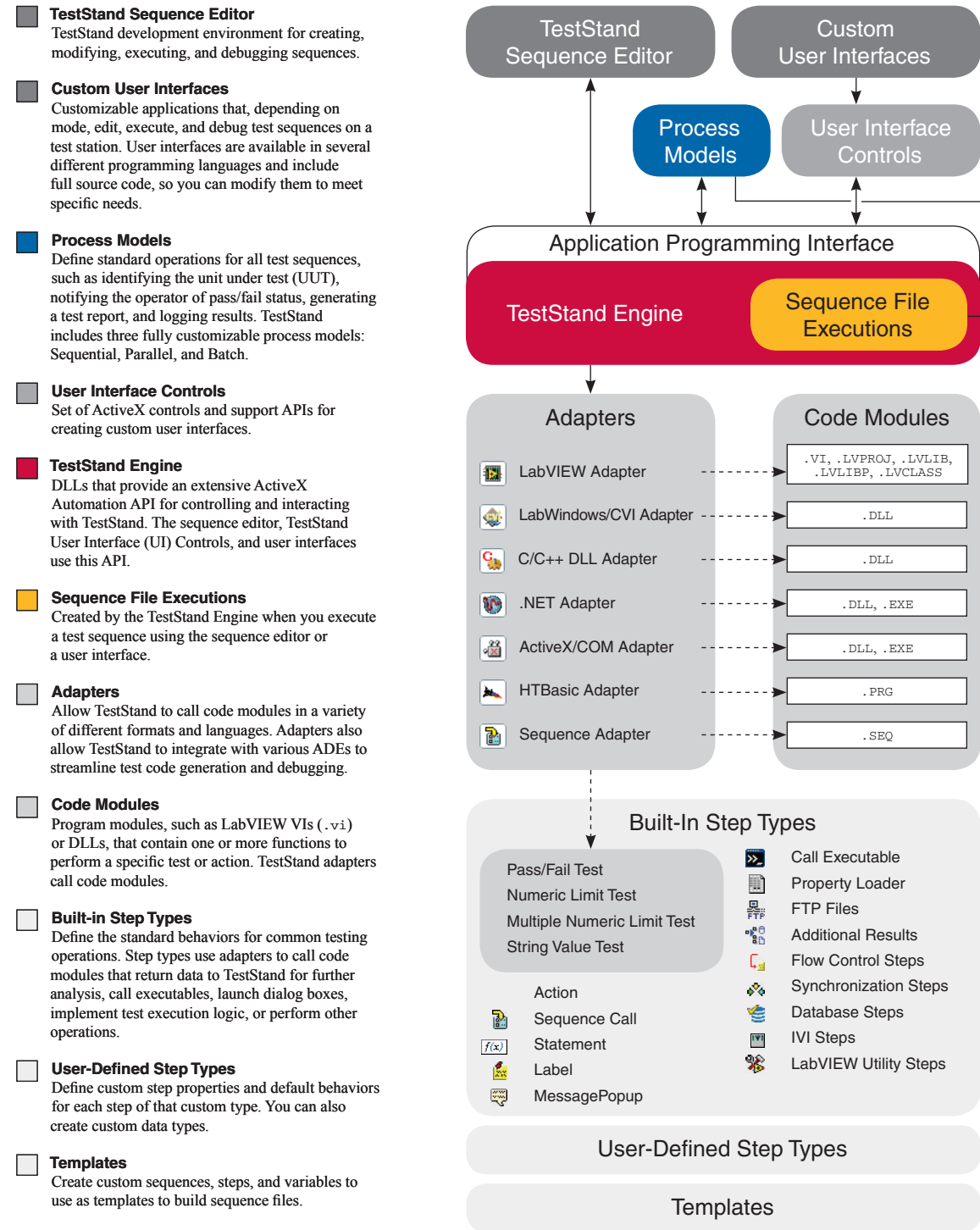
- Out-of-the-box configuration and components that provide a ready-to-run, full-featured test management environment.
- Numerous methods for modifying, configuring, and adding new components, which provide extensibility so you can create a test executive that meets specific requirements without altering the core TestStand Engine. You can upgrade to newer versions of TestStand without losing the customizations.
- Sophisticated sequencing, execution, and debugging capabilities, and a powerful TestStand Sequence Editor that is separate from the user interfaces.
- User interface controls for creating custom user interfaces and sequence editors. You can also create custom user interfaces in any programming language that can host ActiveX controls or control ActiveX Automation servers.
- Example user interfaces with source code for LabVIEW, LabWindows™/CVI™, Microsoft Visual Basic .NET, C#, and C++ Microsoft Foundation Classes (MFC).
- An open language interface that provides support for many application development environments (ADEs). You can create code modules in a variety of ADEs and call pre-existing modules or executables.
- A comprehensive application programming interface for building multi-threaded test systems and other sophisticated test applications.
- Integration with third-party source code control providers.
- Deployment tools to help you transfer a test system from development to production.

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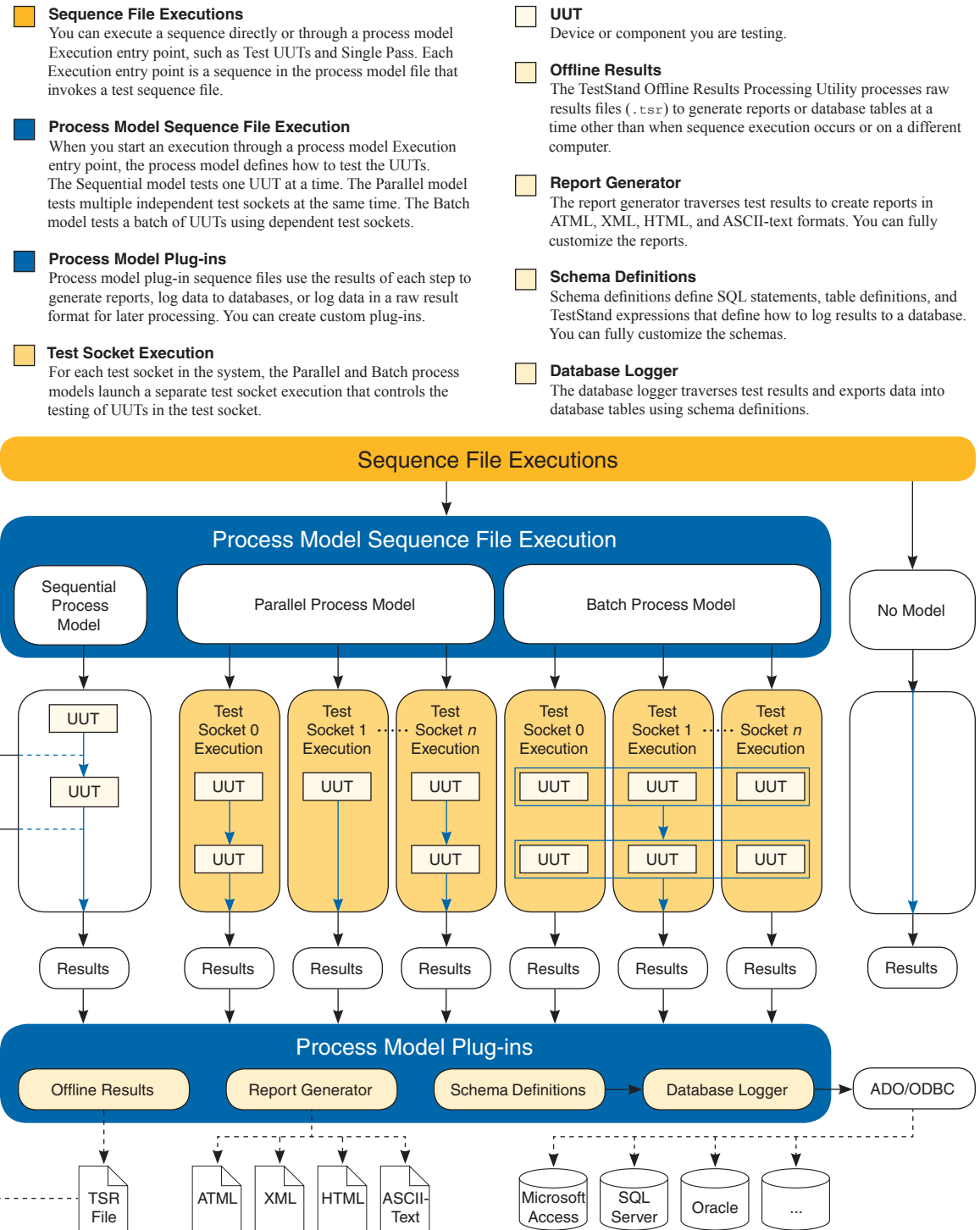
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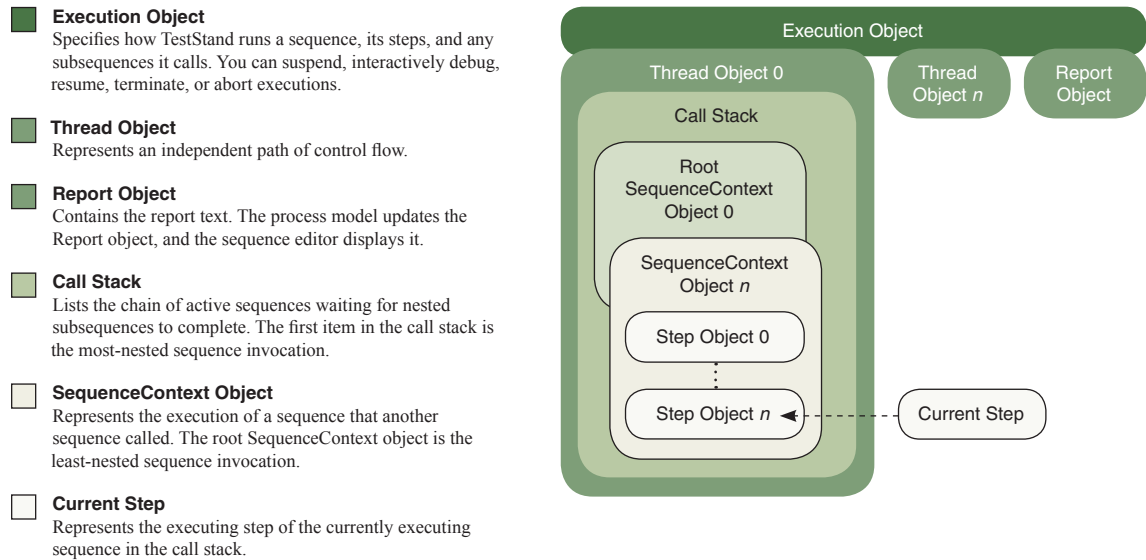
Architecture Overview



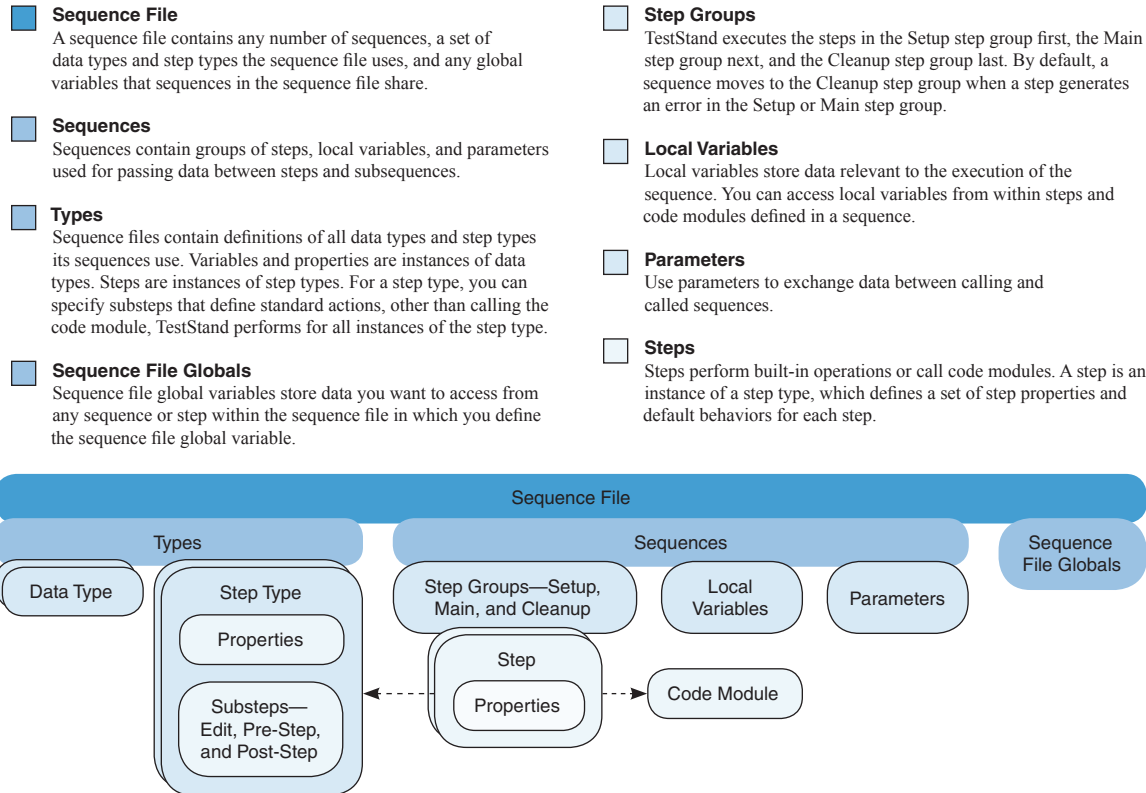
Sequence File Execution Flow



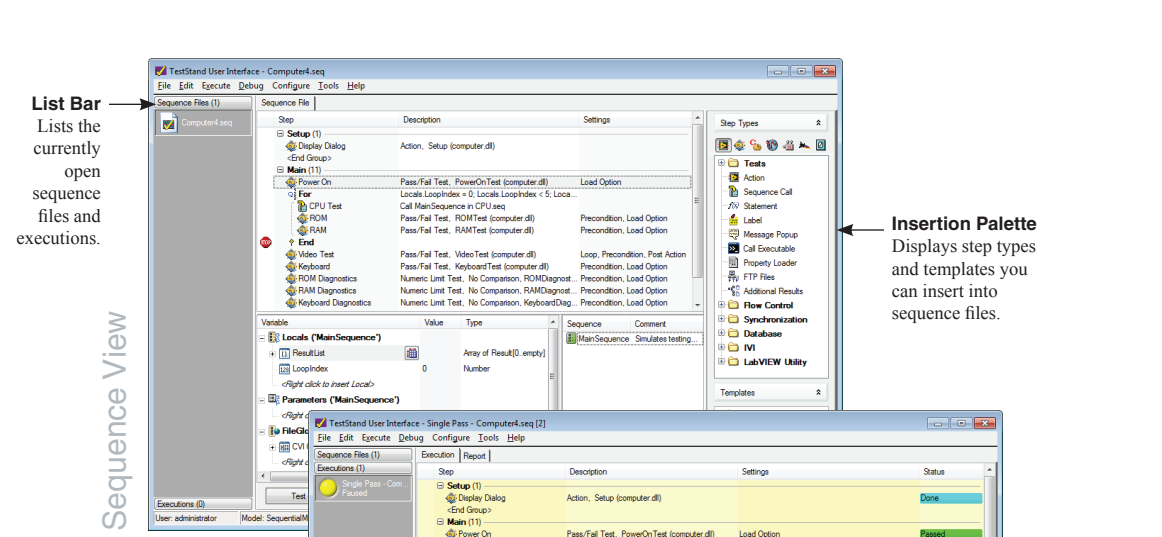
Execution Object Structure



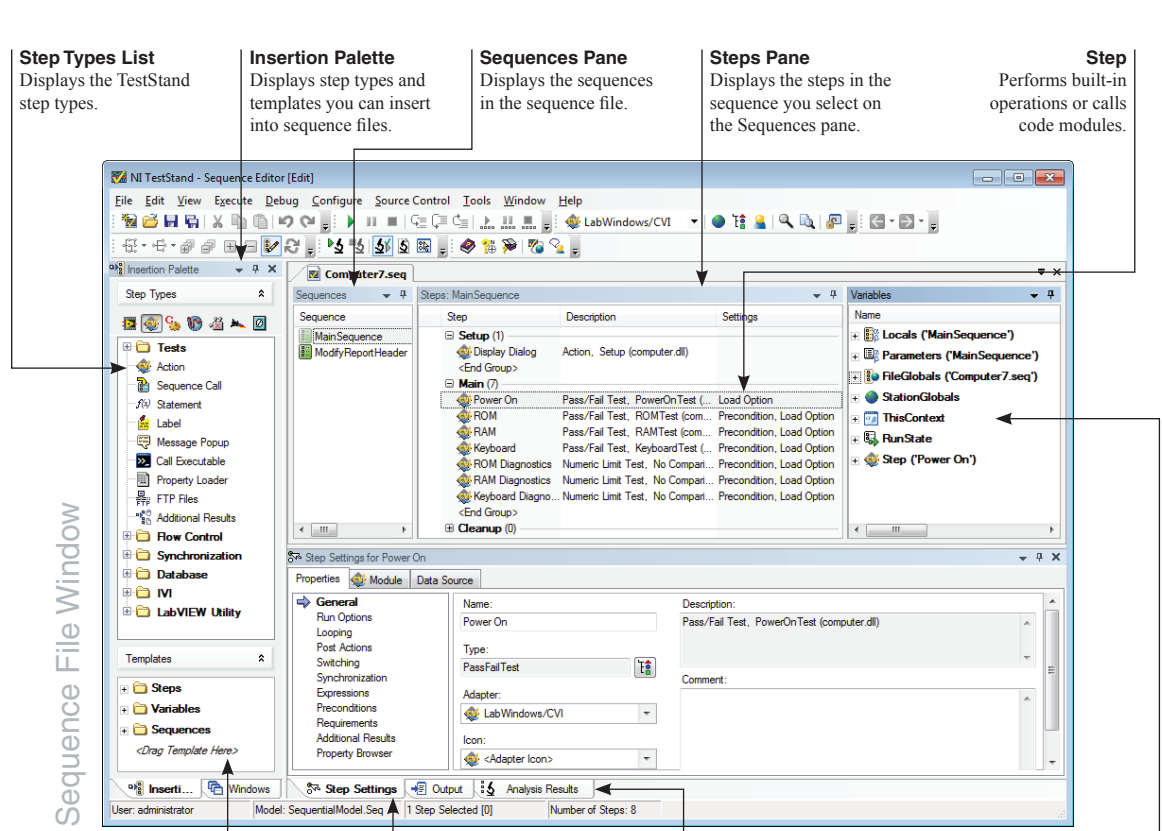
Sequence File Structure



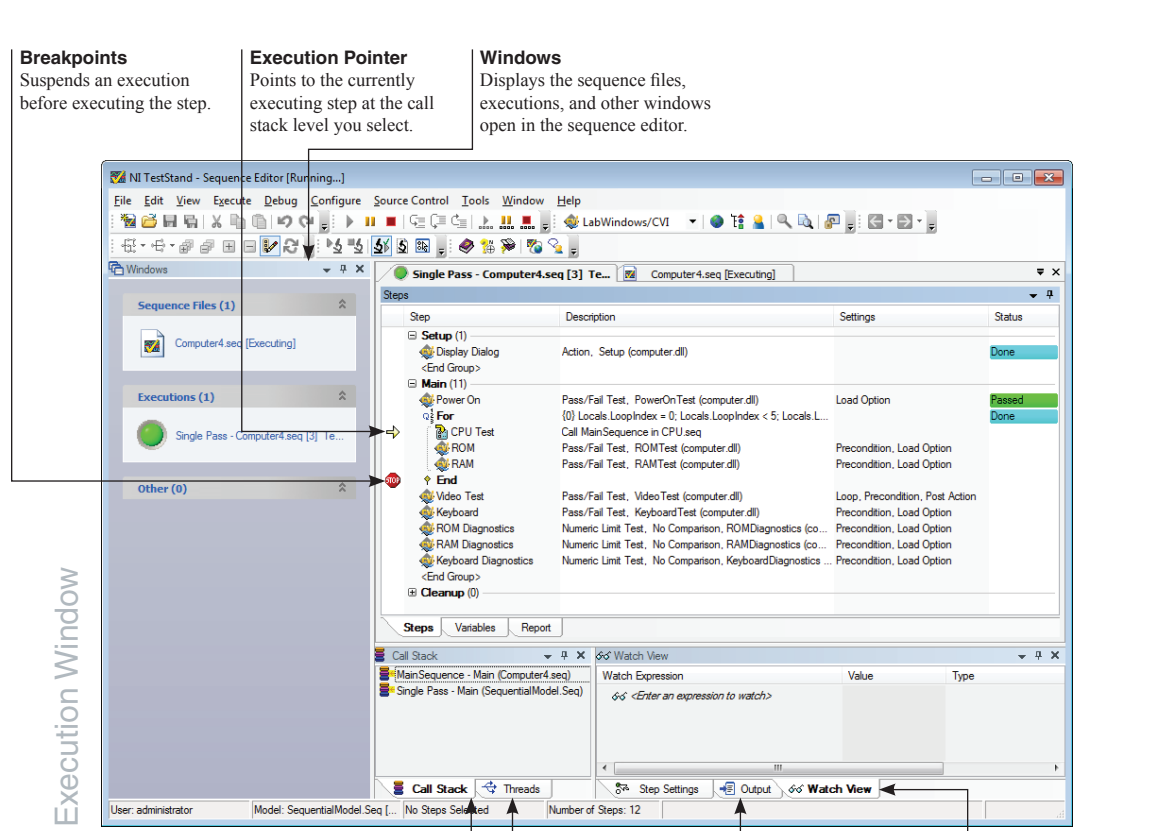
TestStand includes separate user interface applications developed in LabVIEW, LabWindows/CVI, Visual Basic .NET, C#, and C++ MFC. Because TestStand also includes the source code for each user interface, you can fully customize the user interfaces. You can create custom user interfaces using any programming language that can host ActiveX controls or control ActiveX servers. With the user interfaces in Editor Mode, you can modify sequences and create and modify sequence variables, sequence parameters, step properties, and so on. With the user interfaces in Operator Mode, you can start multiple concurrent executions, set breakpoints, and single-step through sequences.



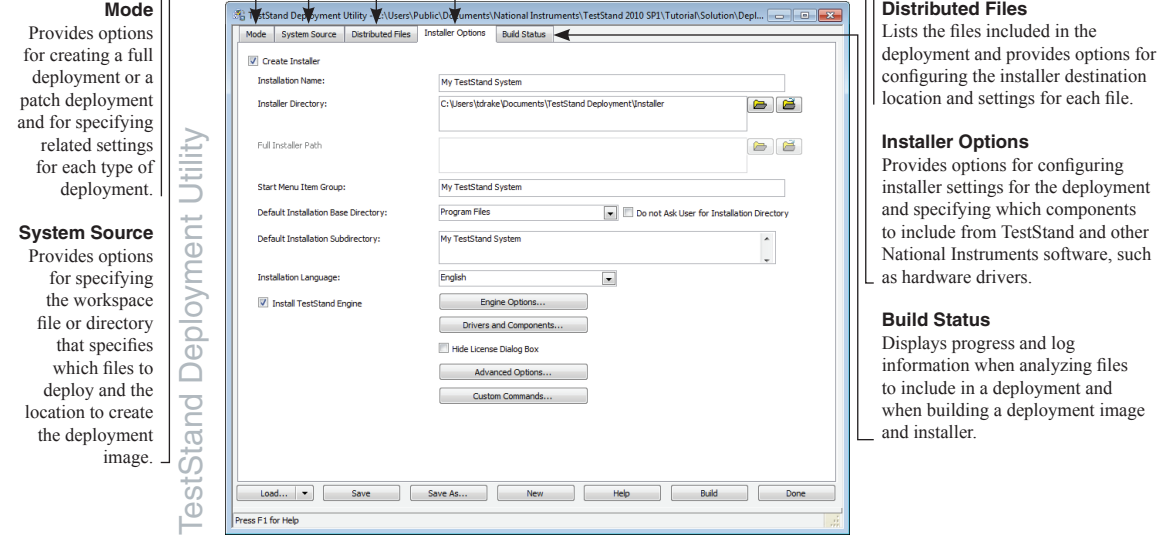
You can use the fully customizable TestStand development environment to create, modify, execute, and debug sequences. You can also use the sequence editor to modify step types, data types, process models, and process model plug-ins. You can customize the environment by docking, auto-hiding, and floating panes to optimize development tasks.



Breakpoints Suspends an execution before executing the step.	Execution Pointer Points to the currently executing step at the call stack level you select.	Windows Displays the sequence files, executions, and other windows open in the sequence editor.
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Use the TestStand Deployment Utility to create a deployable image or a patch deployment of a TestStand system and an optional installer. The deployable image can contain sequence files, code modules, process models and supporting files, user interface applications, configuration files, and step types and supporting files the TestStand system uses. The installer can contain all files from a deployable image or contain only a subset of files to create a patch deployment for a previously deployed image.



The *Guide to TestStand Documentation* topic in the *NI TestStand Help* contains links to all the TestStand documentation in electronic format and recommends the order in which you examine the documentation. You can access the *Guide to TestStand Documentation* topic in the following ways:

- Select **Help»Guide to Documentation** in the sequence editor.
- **(Windows 8.1 or 8)** Click the **NI Launcher** tile on the Start screen and select **TestStand»TestStand Documentation»TestStand Guide to Documentation**.
- **(Windows 7 or earlier)** Select **Start»All Programs»National Instruments»TestStand»TestStand Documentation»TestStand Guide to Documentation**.

Use this document to learn about system requirements, installation instructions, information about new features, and other changes since the previous version of TestStand.

Use this poster as a reference of the classes, properties, methods, and events found in the TestStand UI Controls API, as well as an illustration of the built-in connections between the TestStand UI Controls.

Use this manual to familiarize yourself with the TestStand environment and the basic features you use to build and run test sequences. Use this poster as a reference of the classes, properties, methods, and events in the TestStand API, and as an illustration of API inheritance.

NI TestStand Help

Use this help file to learn more about TestStand concepts, the TestStand environment, the TestStand User Interface Controls and TestStand Engine APIs, the TestStand ActiveX Automation server, the TestStand example programs, and deploying TestStand systems.

Example Programs

Use the TestStand example programs, located in the `<TestStand Public>\Examples` directory, to help you learn and understand key concepts and to use as a starting point for applications you create.

Use this help file, accessible only from LabVIEW, to learn more about TestStand-specific VIs and functions.

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Use this poster as a reference of the classes, properties, methods, and events in the TestStand API, and as an illustration of API inheritance.

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Refer to the *NI TestStand Advanced Architecture Series* for more advanced concept and architecture information for experienced TestStand users with complex projects. Visit ni.com/info and enter the Info Code **rdtaas** to locate the series.